



# **ATC-5000NG**

## **ATC/DME Test Set**

### **Operation Manual**

**Export Control Statement:**

This document contains controlled technology under the jurisdiction of the Export Administration Regulations (EAR), 15 CFR 730-774. It cannot be transferred to any foreign party without appropriate authorization under the EAR. Violations of these regulations are punishable by fine, imprisonment, or both.

**ATC-5000NG**  
**ATC/DME Test Set**  
Operation Manual  
Rev. L0



VIAVI Solutions  
1-844-GO-VIAVI  
[www.viavisolutions.com](http://www.viavisolutions.com)



---

## Copyright

© Copyright 2020 VIAVI Solutions, Inc. All rights reserved. No part of this guide may be reproduced or transmitted, electronically or otherwise, without written permission of the publisher. VIAVI Solutions and the VIAVI logo are trademarks of VIAVI Solutions, Inc. (“VIAVI”).

## Terms and Conditions

Specifications, terms, and conditions are subject to change without notice. The provision of hardware, services, and/or software are subject to VIAVI’s standard terms and conditions, available at [www.viavisolutions.com/en-us/corporate/legal/terms-and-conditions](http://www.viavisolutions.com/en-us/corporate/legal/terms-and-conditions).

## Electromagnetic Compatibility

For continued EMC compliance, all external cables must be shielded and three meters or less in length.

## Nomenclature Statement

In this manual ATC-5000NG, Test Set or Unit refers to the ATC-5000NG ATC/DME Test Set.

## Product Warranty

Refer to <https://www.viavisolutions.com/en-us/support/warranty-quality-compliance-policies> for the Product Warranty information.



---

This page intentionally left blank.

---

# SAFETY FIRST: TO ALL OPERATIONS PERSONNEL

REFER ALL SERVICING OF UNIT TO QUALIFIED TECHNICAL PERSONNEL. THIS UNIT CONTAINS NO OPERATOR SERVICEABLE PARTS.



## **WARNING**

USING THIS EQUIPMENT IN A MANNER NOT SPECIFIED BY THE ACCOMPANYING DOCUMENTATION MAY IMPAIR THE SAFETY PROTECTION PROVIDED BY THE EQUIPMENT.

## **Avertissement**

L'UTILISATION DE CET ÉQUIPEMENT D'UNE MANIÈRE NON SPÉCIFIÉE DANS LA DOCUMENTATION ACCOMPAGNANTE PEUT NUIRE AUX PROTECTIONS DE SÉCURITÉ OFFERTES PAR L'ÉQUIPEMENT.

## **CASE, COVER OR PANEL REMOVAL**



## **WARNING**

OPENING THE CASE ASSEMBLY EXPOSES THE OPERATOR TO ELECTRICAL HAZARDS THAT CAN RESULT IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. DO NOT OPERATE THIS TEST SET WITH THE CASE ASSEMBLY OPEN.

## **Avertissement**

L'OUVERTURE DE L'ENCEINTE EXTÉRIEURE DE L'ÉQUIPEMENT EXPOSE L'UTILISATEUR A DES RISQUES ÉLECTRIQUES QUI PEUVENT PROVOQUER UNE ÉLECTROCUTION OU DES DOMMAGES A L'ÉQUIPEMENT. N'UTILISEZ PAS CET EQUIPEMENT SANS SON ENCEINTE EXTÉRIEURE.

---

## SAFETY IDENTIFICATION IN TECHNICAL MANUAL

This manual uses the following terms to draw attention to possible safety hazards, that may exist when operating or servicing this equipment.



### CAUTION

THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN EQUIPMENT OR PROPERTY DAMAGE (e.g., FIRE).



### WARNING

THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN PERSONAL INJURY OR DEATH.

## SAFETY SYMBOLS IN MANUALS AND ON UNITS



### CAUTION

Refer to accompanying documents. (This symbol refers to specific CAUTIONS represented on the unit and clarified in the text.)



### AC or DC Terminal:

Terminal that may supply or be supplied with AC or DC voltage.



### DC Terminal:

Terminal that may supply or be supplied with DC voltage.



### AC Terminal:

Terminal that may supply or be supplied with AC or alternating voltage.



### WARNING

IMPROPER GROUNDING OF EQUIPMENT CAN RESULT IN ELECTRICAL SHOCK.

### Avertissement

UNE MAUVAISE MISE À LA TERRE DE L'ÉQUIPEMENT PEUT ENTRAINER UNE ÉLECTROCTION.

**WARNING**

TO PREVENT ELECTRICAL SHOCK OR DAMAGE TO EQUIPMENT: VERIFY THAT ALL THE CONNECTIONS BETWEEN THE EQUIPMENT AND A DEVICE UNDER TEST DO NOT EXCEED MAXIMUM PORT RATINGS FOR VOLTAGE, CURRENT AND POWER.

**Avertissement**

POUR ÉVITER TOUT CHOC ÉLECTRIQUE OU D'ENDOMMAGER L'ÉQUIPEMENT: VÉRIFIEZ QUE TOUTES LES INTERCONNEXIONS ENTRE L'ÉQUIPEMENT ET UN PÉRIPHÉRIQUE TESTÉ NE DÉPASSENT PAS LES VALEURS MAXIMALES POUR LA TENSION, LE COURANT ET LA PUISSANCE DE CHAQUE PORT.

**POWER CORDS**

Power cords must not be frayed, broken nor expose bare wiring when operating this equipment.

**CAUTION**

SIGNAL GENERATORS CAN BE A SOURCE OF ELECTROMAGNETIC INTERFERENCE (EMI) TO COMMUNICATION RECEIVERS. SOME TRANSMITTED SIGNALS CAN CAUSE DISRUPTION AND INTERFERENCE TO COMMUNICATION SERVICES OUT TO A DISTANCE OF SEVERAL MILES. USERS OF THIS EQUIPMENT SHOULD SCRUTINIZE ANY OPERATION THAT RESULTS IN RADIATION OF A SIGNAL (DIRECTLY OR INDIRECTLY) AND SHOULD TAKE NECESSARY PRECAUTIONS TO AVOID POTENTIAL COMMUNICATION INTERFERENCE PROBLEMS.

**Mise en Garde**

LES GÉNÉRATEURS DE SIGNAUX PEUVENT CONSTITUER UNE SOURCE D'INTERFÉRENCES ÉLECTROMAGNÉTIQUES (IME) POUR DES RÉCEPTEURS RADIO. CERTAINS SIGNAUX ÉMIS PEUVENT PROVOQUER DES INTERFÉRENCES ET DES INTERRUPTIONS DE COMMUNICATIONS SUR UNE DISTANCE DE PLUSIEURS KILOMÈTRES. LES UTILISATEURS DE CET ÉQUIPEMENT DOIVENT EXAMINER SOIGNEUSEMENT TOUT FONCTIONNEMENT PROVOQUANT LE RAYONNEMENT D'UN SIGNAL (DIRECT OU INDIRECT) ET ILS DOIVENT PRENDRE LES DISPOSITIONS NÉCESSAIRES AFIN D'ÉVITER DES PROBLÈMES POTENTIELS D'INTERFÉRENCES AVEC DES COMMUNICATIONS.

---

This page intentionally left blank.

---

# DECLARATION OF CONFORMITY

The Declaration of Conformity Certificate included with the unit should remain with the unit.

VIAVI recommends the operator reproduce a copy of the Declaration of Conformity Certificate to be stored with the Operation Manual for future reference.

---

This page intentionally left blank.

---

# TABLE OF CONTENTS

| Title  | Chapter/Section |
|--|-----------------|
| Title / Copyright Page   |                 |
| Statements   |                 |
| Safety Page  |                 |
| Declaration of Conformity  |                 |
| Table of Contents  |                 |
| Introduction   |                 |
| Service Upon Receipt of Material   |                 |
| <br>   |                 |
| <b>Chapter 1</b>   |                 |
| Section 1 - Description . . . . .  | 1-1             |
| Section 2 - Operation . . . . .  | 1-2             |
| Section 3 - Specifications . . . . .   | 1-3             |
| Section 4 - Shipping . . . . .   | 1-4             |
| Section 5 - Storage . . . . .  | 1-5             |
| <br>   |                 |
| Appendix A - Connector Pin-Out Tables  |                 |
| Appendix B - Metric/British Imperial Conversion Table with Nautical Distance Conversions |                 |
| Appendix C - Abbreviations   |                 |
| Appendix D - ATC-5000NG Compatibility Command Set  |                 |



---

This page intentionally left blank.

---

# INTRODUCTION

This manual contains operating instructions for the ATC-5000NG. VIAVI strongly recommends that personnel be thoroughly familiar with the contents of this manual before attempting to operate the equipment.

Refer all servicing of unit to qualified technical personnel.

## ORGANIZATION

This manual is divided into the following Chapters and Sections:

### CHAPTER 1 - OPERATION

Section 1 - Description

Section 2 - OPERATION (installation; description of controls, connectors and indicators; menus and screens; operating procedures; remote operation).

Section 3 - SPECIFICATIONS

Section 4 - SHIPPING

Section 5 - STORAGE

---

This page intentionally left blank.

---

# TABLE OF CONTENTS

| TITLE   | CHAP/SEC/SUB | PAGE |
|---|--------------|------|
| <b>Section 1 – Description</b>                  |              |      |
| 1. General Description and Capabilities         | 1-1-1        | 1    |
| 1.1 Description                                 | 1-1-1        | 1    |
| 1.2 Functional Capabilities                     | 1-1-1        | 1    |
| <b>Section 2 – Operation</b>                    |              |      |
| 1. Installation                                 | 1-2-1        | 1    |
| 1.1 General                                     | 1-2-1        | 1    |
| 1.2 Safety Precautions                          | 1-2-1        | 1    |
| 1.3 AC Power Requirements                       | 1-2-1        | 2    |
| 1.4 External Cleaning                           | 1-2-1        | 3    |
| 2. Controls, Connectors and Indicators          | 1-2-2        | 1    |
| 2.1 Front Panel                                 | 1-2-2        | 1    |
| 2.2 Rear Panel                                  | 1-2-2        | 2    |
| 3. Menus and Screens                            | 1-2-3        | 1    |
| 3.1 Screen Icons and Features                   | 1-2-3        | 2    |
| 3.2 Remote (VNC) Connection                     | 1-2-3        | 5    |
| 3.3 Main Menu                                   | 1-2-3        | 9    |
| 3.4 Multi-Receiver Menu                         | 1-2-3        | 11   |
| 3.5 Transponder Menu                            | 1-2-3        | 41   |
| 3.6 DME Menu                                    | 1-2-3        | 81   |
| 3.7 UAT Menu                                    | 1-2-3        | 91   |
| 3.8 System Menu                                 | 1-2-3        | 106  |
| 3.9 Support Menu                                | 1-2-3        | 115  |
| 4. Operating Procedures and Test Configurations | 1-2-4        | 1    |
| 4.1 Operating Procedures                        | 1-2-4        | 1    |
| 4.2 Test Configurations                         | 1-2-4        | 8    |
| 5. Remote Operation                             | 1-2-5        | 1    |

|      |                                     |       |     |
|------|-------------------------------------|-------|-----|
| 5.1  | Overview . . . . .                  | 1-2-5 | 4   |
| 5.2  | Programming suggestions . . . . .   | 1-2-5 | 6   |
| 5.3  | Measurement Commands . . . . .      | 1-2-5 | 7   |
| 5.4  | Own Aircraft Commands . . . . .     | 1-2-5 | 12  |
| 5.5  | Receiver Commands . . . . .         | 1-2-5 | 13  |
| 5.6  | RTCA/DO-260 Test Commands . . . . . | 1-2-5 | 18  |
| 5.7  | Scenario Commands . . . . .         | 1-2-5 | 33  |
| 5.8  | Settings Commands . . . . .         | 1-2-5 | 98  |
| 5.9  | Transponder Commands . . . . .      | 1-2-5 | 104 |
| 5.10 | Unit Commands . . . . .             | 1-2-5 | 128 |
| 5.11 | DME Commands . . . . .              | 1-2-5 | 130 |
| 5.12 | Examples . . . . .                  | 1-2-5 | 137 |

### Section 3 - Specifications

|     |   |       |    |
|-----|---|-------|----|
| 1.  | ATC-5000NG Performance Specifications . . . . . | 1-3-1 | 1  |
| 1.1 | Transmitter . . . . .                           | 1-3-1 | 3  |
| 1.2 | Receiver . . . . .                              | 1-3-1 | 10 |
| 1.3 | Environmental . . . . .                         | 1-3-1 | 12 |
| 1.4 | AC Input Power . . . . .                        | 1-3-1 | 12 |
| 1.5 | Compliance/Standards . . . . .                  | 1-3-1 | 13 |

### Section 4 – Shipping

|     |                               |       |   |
|-----|-------------------------------|-------|---|
| 1.  | Shipping Test Sets . . . . .  | 1-4-1 | 1 |
| 1.1 | Information . . . . .         | 1-4-1 | 1 |
| 1.2 | Repacking Procedure . . . . . | 1-4-1 | 2 |

### Section 5 – Storage

|    |                           |       |   |
|----|---------------------------|-------|---|
| 1. | Storing Test Set. . . . . | 1-5-1 | 1 |
|----|---------------------------|-------|---|

# LIST OF TABLES

| TABLE            | TITLE   | CHAP/SEC/PARA | PAGE |
|------------------|---|---------------|------|
| Table 1.2.2 - 1  | ATC-5000NG Front Panel Controls . . . . .   | 2-2 . . . . . | 1    |
| Table 1.2.2 - 2  | ATC-5000NG Rear Panel Controls and Connectors . . . . .   | 2-2 . . . . . | 2    |
| Table 1.2.4 - 1  | Transponder Generator Assignments - Single Test Mode <sup>1</sup> . . . . .                                   | 2-4 . . . . . | 2    |
| Table 1.2.4 - 2  | Transponder Generator Assignments - Double Test Mode . . . . .  | 2-4 . . . . . | 3    |
| Table 1.2.4 - 3  | Transponder Generator Assignments - Interrogation Table Test Mode . . . . .                                   | 2-4 . . . . . | 4    |
| Table 1.2.4 - 4  | Transponder Generator Assignments - Block Test Mode . . . . .   | 2-4 . . . . . | 4    |
| Table 1.2.4 - 5  | Transponder Generator Assignments - Interrogation with CW . . . . .   | 2-4 . . . . . | 5    |
| Table 1.2.4 - 6  | Transponder Generator Assignments - UAT Generator Assignments<br>for ADS_B, TIS-B and FIS-B Payload . . . . . | 2-4 . . . . . | 5    |
| Table 1.2.4 - 7  | DME Generator Assignments . . . . .   | 2-4 . . . . . | 6    |
| Table 1.2.4 - 8  | Multi-Receiver Generator Assignments - Scenario Test Mode . . . . .   | 2-4 . . . . . | 6    |
| Table 1.2.4 - 9  | Multi-Receiver Generator Assignments - Block Test Mode . . . . .  | 2-4 . . . . . | 6    |
| Table 1.2.4 - 10 | Multi-Receiver Generator Assignments - DO-260 Test Mode . . . . .   | 2-4 . . . . . | 7    |
| Table A.1 - 1    | Front Panel I/O Connectors . . . . .  | A-1 . . . . . | 1    |
| Table A.1 - 2    | Rear Panel I/O Connectors . . . . .   | A-1 . . . . . | 2    |
| Table A.1 - 3    | External Pulse Modulation I/O Connector . . . . .   | A-1 . . . . . | 3    |
| Table A.1 - 4    | ATE LINE Connector Pin-Out Table . . . . .  | A-1 . . . . . | 4    |
| Table A.1 - 5    | GPIB BUS Connector Pin-Out Table . . . . .  | A-1 . . . . . | 5    |
| Table A.1 - 6    | LAN Connector Pin-Out Table . . . . .   | A-1 . . . . . | 6    |
| Table A.1 - 7    | USB (A) Connector Pin-Out Table . . . . .   | A-1 . . . . . | 7    |
| Table A.1 - 8    | USB (B) Connector Pin-Out Table . . . . .   | A-1 . . . . . | 7    |
| Table B.1 - 1    | Metric/British Imperial Conversion Table . . . . .  | B-1 . . . . . | 1    |

---

This page intentionally left blank.

# LIST OF FIGURES

| FIGURE/TITLE  | CHAP/SEC/PARA   | PAGE |
|---|-----------------|------|
| Figure 1.1.1 - 1 . . . . .ATC-5000NG ATC/DME Test Set . . . . .   | 1-1-1. . . . .  | 1    |
| Figure 1.2.2 - 1 . . . . .ATC-5000NG Front Panel . . . . .  | 1-2-2 . . . . . | 1    |
| Figure 1.2.2 - 2 . . . . .ATC-5000NG Rear Panel . . . . .   | 1-2-2 . . . . . | 2    |
| Figure 1.2.3 - 1 . . . . .ATC-5000NG Main Screen . . . . .  | 1-2-3 . . . . . | 9    |
| Figure 1.2.3 - 2 . . . . .Multi-Receiver Menu . . . . .   | 1-2-3 . . . . . | 11   |
| Figure 1.2.3 - 3 . . . . .Multi-Receiver Settings Menu . . . . .  | 1-2-3 . . . . . | 12   |
| Figure 1.2.3 - 4 . . . . .Own Aircraft Menu . . . . .   | 1-2-3 . . . . . | 14   |
| Figure 1.2.3 - 5 . . . . .Multi-Receiver, Receiver Menu . . . . .   | 1-2-3 . . . . . | 15   |
| Figure 1.2.3 - 6 . . . . .Multi-Receiver, Receiver Capture Menu . . . . .   | 1-2-3 . . . . . | 16   |
| Figure 1.2.3 - 7 . . . . .Multi-Receiver, Receiver Data Logging Menu . . . . .                                    | 1-2-3 . . . . . | 19   |
| Figure 1.2.3 - 8 . . . . .Multi-Receiver, Receiver Filtered Masked Menu . . . . .                                 | 1-2-3 . . . . . | 20   |
| Figure 1.2.3 - 9 . . . . .Multi-Receiver, Receiver Predefined Masks Menu . . . . .                                | 1-2-3 . . . . . | 21   |
| Figure 1.2.3 - 10 . . . . .Multi-Receiver Mode S Mask Menu . . . . .  | 1-2-3 . . . . . | 22   |
| Figure 1.2.3 - 11 . . . . .Multi-Receiver, Highlight Masked Menu . . . . .  | 1-2-3 . . . . . | 23   |
| Figure 1.2.3 - 12 . . . . .RTCA/DO-260 Tests Menu (Normal) . . . . .  | 1-2-3 . . . . . | 24   |
| Figure 1.2.3 - 13 . . . . .RTCA/DO-260 Special Test Definition Menu (Normal) . . . . .                            | 1-2-3 . . . . . | 26   |
| Figure 1.2.3 - 14 . . . . .RTCA/DO-260 Timing Definition Menu (Normal) . . . . .                                  | 1-2-3 . . . . . | 27   |
| Figure 1.2.3 - 15 . . . . .RTCA/DO-260 Generator Definition Menu (Normal) . . . . .                               | 1-2-3 . . . . . | 28   |
| Figure 1.2.3 - 16 . . . . .RTCA/DO-260 Generator Definition Menu -<br>Frame Details (Normal) . . . . .            | 1-2-3 . . . . . | 30   |
| Figure 1.2.3 - 17 . . . . .RTCA/DO-260 Generator Definition Menu -<br>Mode S Pulse Information (Normal) . . . . . | 1-2-3 . . . . . | 31   |
| Figure 1.2.3 - 18 . . . . .RTCA/DO-260 Generator Definition Menu -<br>ATCRBS Pulse Information (Normal) . . . . . | 1-2-3 . . . . . | 32   |
| Figure 1.2.3 - 19 . . . . .Multi-Receiver Scenario Menu . . . . .   | 1-2-3 . . . . . | 33   |
| Figure 1.2.3 - 20 . . . . .Multi-Receiver 1090 Targets Menu (Dynamic) . . . . .                                   | 1-2-3 . . . . . | 36   |
| Figure 1.2.3 - 21 . . . . .Multi-Receiver 1030 Targets Menu . . . . .   | 1-2-3 . . . . . | 38   |
| Figure 1.2.3 - 22 . . . . .Multi-Receiver 1090 Target Squitter Definition Menu . . . . .                          | 1-2-3 . . . . . | 39   |
| Figure 1.2.3 - 23 . . . . .Multi-Receiver Squitter Frame Fields Menu . . . . .                                    | 1-2-3 . . . . . | 40   |
| Figure 1.2.3 - 24 . . . . .Multi-Receiver Squitter Schedule Menu . . . . .  | 1-2-3 . . . . . | 40   |
| Figure 1.2.3 - 25 . . . . .ATC-5000NG Transponder Menu . . . . .  | 1-2-3 . . . . . | 41   |
| Figure 1.2.3 - 26 . . . . .Transponder Settings Menu . . . . .  | 1-2-3 . . . . . | 42   |
| Figure 1.2.3 - 27 . . . . .Transponder Scope Mode Screen/Menu . . . . .   | 1-2-3 . . . . . | 43   |
| Figure 1.2.3 - 28 . . . . .Transponder - Scope Measurement Mode . . . . .   | 1-2-3 . . . . . | 45   |
| Figure 1.2.3 - 29 . . . . .Transponder Receiver Menu . . . . .  | 1-2-3 . . . . . | 47   |



|  |                 |    |
|--|-----------------|----|
| Figure 1.2.3 - 30 . . . Transponder Receiver, Capture Menu . . . . .                       | 1-2-3 . . . . . | 48 |
| Figure 1.2.3 - 31 . . . Transponder Receiver Display Menu . . . . .                        | 1-2-3 . . . . . | 49 |
| Figure 1.2.3 - 32 . . . Transponder Receiver Data Logging Menu . . . . .                   | 1-2-3 . . . . . | 50 |
| Figure 1.2.3 - 33 . . . Transponder Receiver Filtered Masked Menu . . . . .                | 1-2-3 . . . . . | 51 |
| Figure 1.2.3 - 34 . . . Transponder Receiver Predefined Masked Menu . . . . .              | 1-2-3 . . . . . | 52 |
| Figure 1.2.3 - 35 . . . Transponder Receiver Customize Mode S Mask Menu . . . . .          | 1-2-3 . . . . . | 53 |
| Figure 1.2.3 - 36 . . . Highlight Masked Menu . . . . .                                    | 1-2-3 . . . . . | 54 |
| Figure 1.2.3 - 37 . . . Transponder Test Menu - Single Interrogation . . . . .             | 1-2-3 . . . . . | 55 |
| Figure 1.2.3 - 38 . . . Single Interrogation Mode Menu . . . . .                           | 1-2-3 . . . . . | 57 |
| Figure 1.2.3 - 39 . . . Instrument Settings Menu . . . . .                                 | 1-2-3 . . . . . | 58 |
| Figure 1.2.3 - 40 . . . Interference Pulse Menu . . . . .                                  | 1-2-3 . . . . . | 59 |
| Figure 1.2.3 - 41 . . . Transponder Test Menu - Double Interrogation . . . . .             | 1-2-3 . . . . . | 60 |
| Figure 1.2.3 - 42 . . . Transponder Double Interrogation Menu . . . . .                    | 1-2-3 . . . . . | 62 |
| Figure 1.2.3 - 43 . . . Transponder - Double Interrogation, Double Settings Menu . . . . . | 1-2-3 . . . . . | 64 |
| Figure 1.2.3 - 44 . . . Interrogation Pulse Setting Menu . . . . .                         | 1-2-3 . . . . . | 66 |
| Figure 1.2.3 - 45 . . . Interrogation Definition Menu . . . . .                            | 1-2-3 . . . . . | 67 |
| Figure 1.2.3 - 46 . . . Transponder Test Menu - Interrogation Table Menu . . . . .         | 1-2-3 . . . . . | 70 |
| Figure 1.2.3 - 47 . . . Interrogation Table Settings . . . . .                             | 1-2-3 . . . . . | 71 |
| Figure 1.2.3 - 48 . . . Burst Settings Menu . . . . .                                      | 1-2-3 . . . . . | 72 |
| Figure 1.2.3 - 49 . . . Transponder Test Menu - Block Transmission . . . . .               | 1-2-3 . . . . . | 73 |
| Figure 1.2.3 - 50 . . . Transponder Block Transmission Menu . . . . .                      | 1-2-3 . . . . . | 75 |
| Figure 1.2.3 - 51 . . . Message Details Menu . . . . .                                     | 1-2-3 . . . . . | 77 |
| Figure 1.2.3 - 52 . . . Frame Details Menu . . . . .                                       | 1-2-3 . . . . . | 78 |
| Figure 1.2.3 - 53 . . . Transponder Test Menu - Interrogation with CW . . . . .            | 1-2-3 . . . . . | 79 |
| Figure 1.2.3 - 54 . . . ATC-5000NG Transponder Menu . . . . .                              | 1-2-3 . . . . . | 81 |
| Figure 1.2.3 - 55 . . . DME Settings Menu . . . . .  | 1-2-3 . . . . . | 82 |
| Figure 1.2.3 - 56 . . . DME Settings, Signal Generator Menu . . . . .                      | 1-2-3 . . . . . | 83 |
| Figure 1.2.3 - 57 . . . DME Measurements, Scope Mode Menu . . . . .                        | 1-2-3 . . . . . | 84 |
| Figure 1.2.3 - 58 . . . DME Measurements, Scope Measurement Mode . . . . .                 | 1-2-3 . . . . . | 86 |
| Figure 1.2.3 - 59 . . . DME Test Menu . . . . .  | 1-2-3 . . . . . | 88 |
| Figure 1.2.3 - 60 . . . DME Test, Instrument Settings Menu . . . . .                       | 1-2-3 . . . . . | 89 |
| Figure 1.2.3 - 61 . . . UAT Menu . . . . .   | 1-2-3 . . . . . | 91 |
| Figure 1.2.3 - 62 . . . UAT Settings Menu . . . . .  | 1-2-3 . . . . . | 92 |
| Figure 1.2.3 - 63 . . . UAT Receiving Station Menu . . . . .                               | 1-2-3 . . . . . | 93 |
| Figure 1.2.3 - 64 . . . UAT Receiver Menu . . . . .  | 1-2-3 . . . . . | 94 |
| Figure 1.2.3 - 65 . . . UAT Receiver, Capture Menu . . . . .                               | 1-2-3 . . . . . | 95 |
| Figure 1.2.3 - 66 . . . UAT Receiver, Display Menu . . . . .                               | 1-2-3 . . . . . | 97 |
| Figure 1.2.3 - 67 . . . UAT Receiver, Display Menu . . . . .                               | 1-2-3 . . . . . | 98 |
| Figure 1.2.3 - 68 . . . UAT Receiver Filtered Masked Menu . . . . .                        | 1-2-3 . . . . . | 99 |

---

|  |                 |     |
|--|-----------------|-----|
| Figure 1.2.3 - 69 . . . UAT Receiver, Filtered Masked Menu . . . . .                               | 1-2-3 . . . . . | 100 |
| Figure 1.2.3 - 70 . . . UAT Receiver, Predefined Masks Menu . . . . .                              | 1-2-3 . . . . . | 101 |
| Figure 1.2.3 - 71 . . . UAT Receiver, Customize Mode S Mask Menu . . . . .                         | 1-2-3 . . . . . | 102 |
| Figure 1.2.3 - 72 . . . UA Receiver, Highlight Masked Menu . . . . .                               | 1-2-3 . . . . . | 103 |
| Figure 1.2.3 - 73 . . . UAT Scenario Menu - Normal Mode . . . . .                                  | 1-2-3 . . . . . | 104 |
| Figure 1.2.3 - 74 . . . ATC-5000NG System Menu . . . . .   | 1-2-3 . . . . . | 106 |
| Figure 1.2.3 - 75 . . . System Menu, Software Update Menu . . . . .                                | 1-2-3 . . . . . | 108 |
| Figure 1.2.3 - 76 . . . System Menu, Network Connections Menu . . . . .                            | 1-2-3 . . . . . | 110 |
| Figure 1.2.3 - 77 . . . Network Connections, Change Settings Menu -<br>Auto IP Address. . . . .    | 1-2-3 . . . . . | 111 |
| Figure 1.2.3 - 78 . . . Network Connections, Change Settings Menu -<br>Manual IP Address . . . . . | 1-2-3 . . . . . | 112 |
| Figure 1.2.3 - 79 . . . System, Configuration Menu . . . . .                                       | 1-2-3 . . . . . | 113 |
| Figure 1.2.3 - 80 . . . System, Calibration Menu . . . . .   | 1-2-3 . . . . . | 114 |
| Figure 1.2.3 - 81 . . . ATC-5000NG Support Menu . . . . .  | 1-2-3 . . . . . | 115 |
| Figure 1.4.1 - 1 . . . . Repacking Procedure . . . . .   | 1-4-1 . . . . . | 2   |

---

This page intentionally left blank.

---

# SERVICE UPON RECEIPT OF MATERIAL

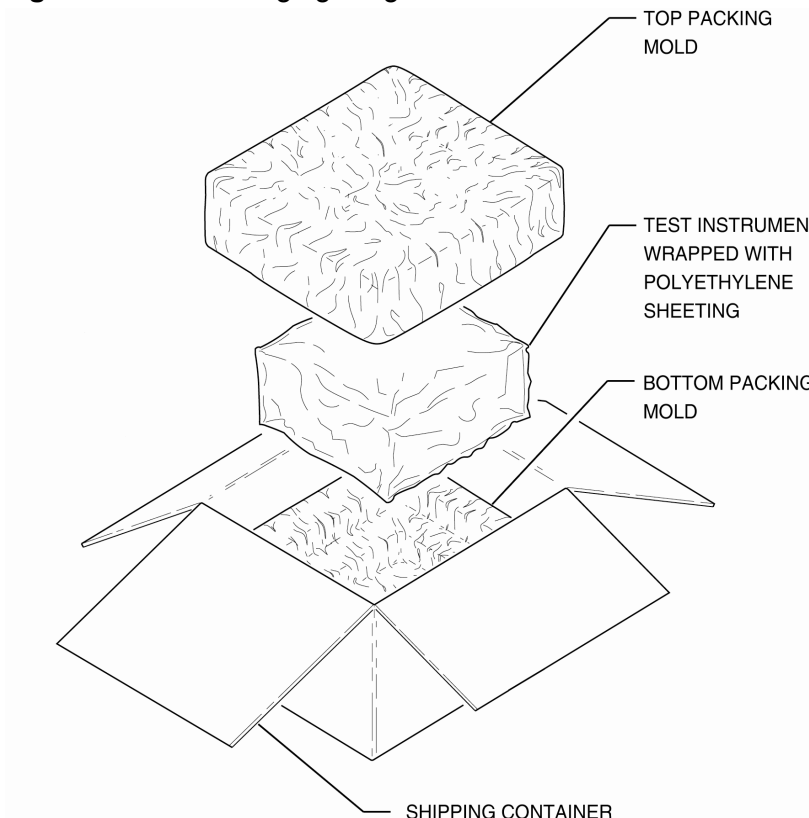
## Unpacking

Special-design packing material inside the shipping container provides maximum protection for the ATC-5000NG. Avoid damaging the shipping container and packing material during equipment unpacking.

Use the following steps for unpacking the ATC-5000NG.

- 1 Cut and remove the sealing tape on top of the shipping container and open the shipping container.
- 2 Remove the top packing mold.
- 3 Remove ATC-5000NG and packing material from the bottom packing mold.
- 4 Remove the protective plastic bag from the ATC-5000NG and inspect the contents.
- 5 Place the protective plastic bag and packing material inside the shipping container.
- 6 Store the shipping container for future use should the ATC-5000NG need to be returned/shipped.

**Figure 1** Packaging Diagram



---

## Checking Unpacked Equipment

Check the equipment for damage incurred during shipment. If the equipment has been damaged or if items seem to be absent from the shipment, report the damage and/or discrepancies to VIAVI Customer Service.

VIAVI Solutions

Customer Service Department

10200 West York Street

Wichita, KS 67215

Telephone: 800-835-2350

Fax: 316-529-5330

email: [AvComm.Service@viavisolutions.com](mailto:AvComm.Service@viavisolutions.com)

## Standard Items

**Table 1** List of Standard Items

| Description                          | PART NUMBER | QTY |
|--------------------------------------|-------------|-----|
| ATC-5000NG ATC/DME Test Set          | 138156      | 1   |
| Manual, Getting Started (Paper)      | 139189      | 1   |
| Manual, Operation (CD)               | 139188      | 1   |
| Power Cable (AC) (110 Use) (US Only) | 62302       | 1   |
| Power Cables (AC) (220 Use) (Europe) | 64020       | 1   |
| Touchpad                             | 114114      | 1   |

**Figure 2** Standard Accessories

**ATC-5000NG/ #138156**

Manual, Getting Started Page(s) 13, 20, 21



**VIavi**

**ATC-5000NG**  
ATC/DME Test Set  
Getting Started Manual



**Manual, Operation (CD) \ #139188**

**Power Cable (AC) (110 Use) (US Only) / #62302**



**Power Cable ( AC ) ( North America )  
(27478)**

**Power Cables (AC) (220 Use) (Eu) / #64020**

**Touchpad / #114114**



**OPTIONAL ITEMS**

**Table 2** List of Optional Items

| <b>Description</b>                         | <b>OPTION NUMBER</b> | <b>PART NUMBER</b> |
|--|----------------------|--------------------|
| DME Option                                 | ATCNGOPT01           | 139311             |
| UAT 978 MHz Option                         | ATCNGOPT02           | 138157             |
| Multi-Receiver Option                      | ATCNGOPT03           | 138159             |
| SDX Command Set Compatibility Option       | ATCNGOPT04           | 138158             |
| 1400/1403 Command Set Compatibility Option | ATCNGOPT05           | 138223             |
| DO-260B MOPS Test Option                   | ATCNGOPT06           | 139310             |

---

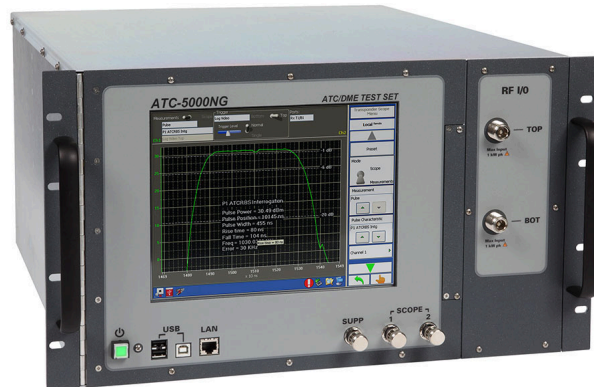
This page intentionally left blank.

## Section 1 – Description

### 1. GENERAL DESCRIPTION AND CAPABILITIES

#### 1.1 DESCRIPTION

Figure 1.1.1 - 1 ATC-5000NG ATC/DME Test Set



The ATC-5000NG is an RF Signal Generator/Receiver for testing Mode A, C and S Transponders.

#### 1.2 FUNCTIONAL CAPABILITIES

- Generates ATCRBS/Mode S interrogations.
- Software defined architecture supports legacy and NextGen transponders.
- 10.4 inch touch screen LCD display for operator control.
- Can be remotely controlled via GPIB or Ethernet.
- Legacy command sets supported:
  - SDX-2000 (Optional)
  - 1400/1403DL (Optional)
- Support for current standards:
  - ATCRBS/Mode S, DO-181E
  - ADS-B, DO-260, DO-260A, DO-260B
  - UAT, DO-282B (Optional)
- DME (Optional)
- Multi-Receiver test capability (Optional)
- TX/RX data logging capability
- Full diversity testing capability
- Enhanced measurement capabilities
- Supports interrogation tables and block transmissions.



- Enhanced single and double interrogation modes
- Contains six transmitters.
- Capable of performing most MOPS tests for DO-181E, DO-260, DO-260A, DO-260B, DO-282B.
- Equipment tested:
  - Transponders Mode S/ADS-B Out
  - ADS-B In Receivers
  - UAT Transceivers
  - 1090MHz DF18 Emitters (surface vehicles)
  - ADS-B In Ground Station Receivers
  - ADS-R, TIS-B Ground Station Transmitters
  - DMEs

## Section 2 – Operation

### 1. INSTALLATION

#### 1.1 GENERAL

##### 1.1.1 BENCH USE

Refer to 1 - 2 - 2, [Figure 1.2.2 - 1](#) and [Figure 1.2.2 - 2](#) for location of controls, connectors or indicators.

| STEP | PROCEDURE |
|------|-----------|
|------|-----------|

- 1 Set the ATC-5000NG into operating position.
- 2 Connect the AC Power Cable to the Power Connector and to an external AC power source (100 to 240 VAC, 50 to 60 Hz).



#### NOTE

The AC Power Cable is used to fully disconnect the Test Set from AC Power. The Test Set should not be positioned so the disconnection of the AC Power Cable is prevented.

#### REMARQUE

Le câble d'alimentation c.a. sert à couper complètement l'alimentation c.a. du dispositif de test. Le dispositif de test ne doit pas être placé d'une manière qui empêche le débranchement du câble d'alimentation c.a.

- 3 Set the Power Switch (on the Test Set Rear Panel) to the ON position (I).
- 4 Press the Power Switch (on the Test Set Front Panel) to power ON the Test Set.
- 5 Verify the Power Switch Indicator illuminates.
- 6 Wait while the Test Set completes the power-up sequence. When the power-up sequence is complete the ATC-5000NG Main Menu is displayed.

##### 1.1.2 RACK MOUNT

Contact VIAVI for information on installing the ATC-5000NG in a rack.

#### 1.2 SAFETY PRECAUTIONS

The following safety precautions must be observed during installation and operation. VIAVI assumes no liability for failure to comply with any safety precaution outlined in this manual.

##### 1.2.1 COMPLYING WITH INSTRUCTIONS

Installation/operating personnel should not attempt to install or operate the ATC-5000NG without reading and complying with instructions contained in this manual. All procedures contained in this manual must be performed in exact sequence and manner described.

## 1.2.2 GROUNDING POWER CORD



### **WARNING**

DO NOT USE A THREE-PRONG TO TWO-PRONG ADAPTER PLUG. DOING SO CREATES A SHOCK HAZARD BETWEEN THE CHASSIS AND ELECTRICAL GROUND.

### **Avertissement**

N'UTILISEZ PAS D'ADAPTATEUR DE TROIS BROCHES À DEUX BROCHES. UN TEL ADAPTATEUR CRÉE UN DANGER DE CHOC ENTRE LE CHÂSSIS ET LA MASSE.

For AC operation, the AC Line Cable is equipped with standard three-prong plug and must be connected to a properly grounded three-prong receptacle that is easily accessible. It is the customer's responsibility to:

- Have a qualified electrician check receptacle(s) for proper grounding.
- Replace any standard two-prong receptacle(s) with properly grounded three-prong receptacle(s).

## 1.2.3 VENTILATION

The ATC-5000NG is air-cooled by fans that draw air through vents in the case. Do not obstruct the air vents while the instrument is in use. Avoid standing the instrument on or close to other equipment that is hot.

## 1.2.4 OPERATING SAFETY



### **WARNING**

DUE TO POTENTIAL FOR ELECTRICAL SHOCK WITHIN THE TEST SET, THE CASE ASSEMBLY MUST BE CLOSED WHEN THE TEST SET IS CONNECTED TO AN EXTERNAL POWER SOURCE.

### **Avertissement**

EN RAISON DU RISQUE DE CHOC ÉLECTRIQUE DANS LE DISPOSITIF DE TEST, SON BOÎTIER DOIT ÊTRE FERMÉ LORSQUE LE DISPOSITIF EST CONNECTÉ À UNE SOURCE D'ALIMENTATION EXTERNE.

## 1.2.5 CAUTION AND WARNING LABELS

Extreme care should be exercised when performing any operations preceded by a CAUTION or WARNING label. CAUTION labels appear where possibility of damage to equipment exists and WARNING labels denote conditions where bodily injury or death may result.

## 1.3 AC POWER REQUIREMENTS

The ATC-5000NG power supply operates over a voltage range of 100 to 240 VAC, 50 to 60 Hz.

## 1.4 EXTERNAL CLEANING

The following procedure contains routine instructions for cleaning the outside of the Test Set.



### CAUTION

DISCONNECT POWER FROM TEST SET TO AVOID POSSIBLE DAMAGE TO ELECTRONIC CIRCUITS.

### Avertissement

DÉBRANCHEZ L'ALIMENTATION DU DISPOSITIF DE TEST AFIN D'ÉVITER D'ENDOMMAGER LES CIRCUITS ÉLECTRONIQUES.

| STEP | PROCEDURE  |
|------|--|
| 1    | Clean front panel buttons and display face with soft lint-free cloth. If dirt is difficult to remove, dampen cloth with water and a mild liquid detergent. |
| 2    | Remove grease, fungus and ground-in dirt from surfaces with soft lint-free cloth dampened (not soaked) with isopropyl alcohol.                             |
| 3    | Remove dust and dirt from connectors with soft-bristled brush.   |
| 4    | Cover connectors, not in use, with suitable dust cover to prevent tarnishing of connector contacts.  |
| 5    | Clean cables with soft lint-free cloth.  |
| 6    | Paint exposed metal surface to avoid corrosion.  |

This page intentionally left blank.

## 2. CONTROLS, CONNECTORS AND INDICATORS

### 2.1 FRONT PANEL

Refer to [Figure 1.2.2 - 1](#) and [Table 1.2.2 - 1](#) for location of ATC-5000NG Front Panel controls, connectors or indicators.

**Figure 1.2.2 - 1** ATC-5000NG Front Panel



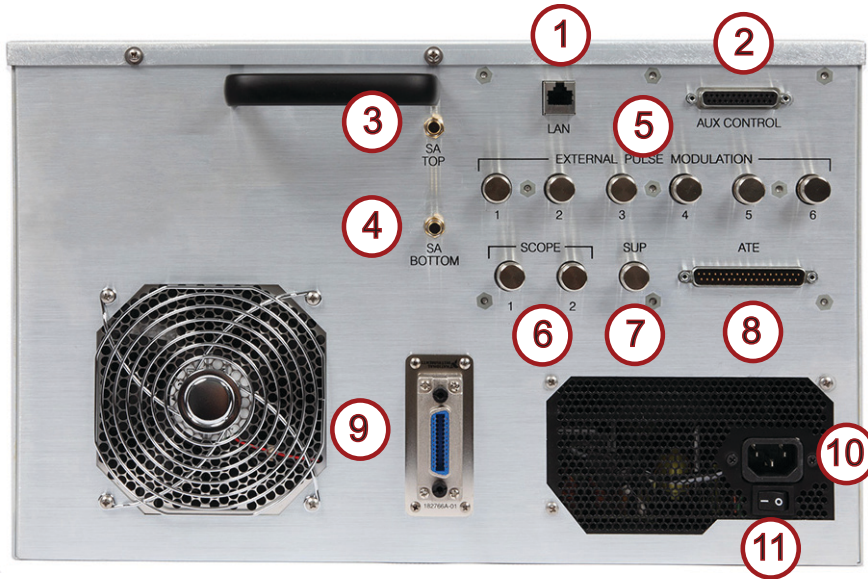
**Table 1.2.2 - 1** ATC-5000NG Front Panel Controls

| Idx# | Item Name                              | Description   |
|------|--|---|
| 1    | <b>Color LCD Touch Screen Display</b>  | Used to interact with the Test Set menus.   |
| 2    | <b>Power Button</b>                    | Used for turning the Test Set ON and OFF. Indicator is lit when the Test Set is ON.   |
| 3    | <b>USB Connectors</b>                  | Type A Connectors used for interface to external USB devices (keypad, mouse, flash drive, etc.).<br>Type B Connector used for remote control of the Test Set. |
| 4    | <b>LAN Connector</b>                   | Used for remote control of the Test Set via TCP/IP.   |
| 5    | <b>SUPP Connector</b>                  | Used for testing of the UUT (suppressor output).  |
| 6    | <b>SCOPE Connectors</b>                | Used for testing of the UUT.  |
| 7    | <b>RF I/O Connectors (TOP, BOTTOM)</b> | Used for testing of the UUT.  |

## 2.2 REAR PANEL

Refer to [Figure 1.2.2 - 2](#) and [Table 1.2.2 - 2](#) location of ATC-5000NG Rear Panel controls, connectors or indicators.

**Figure 1.2.2 - 2** ATC-5000NG Rear Panel



**Table 1.2.2 - 2** ATC-5000NG Rear Panel Controls and Connectors

| Idx# | Item Name                                   | Description  |
|------|---|--|
| 1    | <b>LAN Connector</b>                        | Used for remote control of the Test Set via TCP/IP.  |
| 2    | <b>AUX CONTROL Connector</b>                | Reserved for Future Use  |
| 3    | <b>SA TOP Connector</b>                     | Used for coupled output from the Top Receiver (Spectrum Analyzer).   |
| 4    | <b>SA BOTTOM Connector</b>                  | Used for coupled output from the Bottom Receiver (Spectrum Analyzer).  |
| 5    | <b>EXTERNAL PULSE MODULATION Connectors</b> | Used for I/O applications with external equipment.   |
| 6    | <b>SCOPE Connectors</b>                     | Used for testing of the UUT.   |
| 7    | <b>SUPP Connector</b>                       | Used for testing of the UUT (suppressor output).   |
| 8    | <b>ATE Line Connector</b>                   | Used for connection to external equipment. The connector contains discrete inputs, discrete outputs and 429 Tx/Rx. |

**Table 1.2.2 - 2 ATC-5000NG Rear Panel Controls and Connectors**

| <b>Idx#</b> | <b>Item Name</b>          | <b>Description</b>  |
|-------------|---------------------------|---|
| <b>9</b>    | <b>GPIB Bus Connector</b> | 24-pin female connector conforming to IEEE standard 488-1978 for interface of general purpose programmable instrumentation. |
| <b>10</b>   | <b>Power Connector</b>    | Standard 3-prong power receptacle for connection to AC power source (100 to 240 VAC, 50 to 60 Hz).                          |
| <b>11</b>   | <b>Power Switch</b>       | Connects (I) or disconnects (O) external AC power from the ATC-5000NG.  |



This page intentionally left blank.

### 3. MENUS AND SCREENS



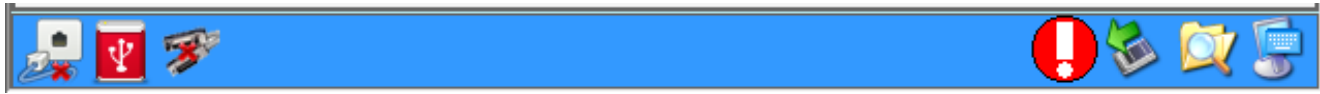
**NOTE**

The screen images shown in this section are representations of the screens that users may encounter when using the test set. Some screen images contain Optional Functions which are shown for display purposes only and which may not be enabled on your Test Set.

- 3. Menus and Screens . . . . . 1
  - 3.1 Screen Icons and Features . . . . . 2
    - 3.1.1 Screen Icons and Indicators . . . . . 2
    - 3.1.2 Screen Features . . . . . 3
  - 3.2 Remote (VNC) Connection . . . . . 5
  - 3.3 Main Menu . . . . . 9
  - 3.4 Multi-Receiver Menu . . . . . 11
    - 3.4.1 Multi-Receiver Settings Menu . . . . . 12
    - 3.4.2 Own Aircraft Menu . . . . . 14
    - 3.4.3 Multi-Receiver, Receiver Menu . . . . . 15
    - 3.4.4 Multi-Receiver, Receiver Capture Menu . . . . . 16
    - 3.4.5 Multi-Receiver, Receiver Display Menu . . . . . 17
    - 3.4.6 Multi-Receiver, Data Logging Menu . . . . . 19
    - 3.4.7 Multi-Receiver RTCA/DO-260 Tests . . . . . 24
    - 3.4.8 Scenario Menu . . . . . 33
  - 3.5 Transponder Menu . . . . . 41
    - 3.5.1 Transponder Settings Menu . . . . . 42
    - 3.5.2 Transponder Measurements Menu . . . . . 43
    - 3.5.3 Transponder Receiver Menu . . . . . 47
    - 3.5.4 Transponder Test Menu - Single Interrogation . . . . . 55
    - 3.5.5 Transponder Test Menu - Double Interrogation . . . . . 60
    - 3.5.6 Transponder Test Menu - Interrogation Table . . . . . 68
    - 3.5.7 Transponder Test Menu - Block Transmission . . . . . 73
    - 3.5.8 Transponder Test Menu - Interrogation with CW . . . . . 79
  - 3.6 DME Menu . . . . . 81
    - 3.6.1 DME Settings Menu . . . . . 82
    - 3.6.2 DME Measurements Menu . . . . . 84
    - 3.6.3 DME Test Menu . . . . . 88
  - 3.7 UAT Menu . . . . . 91
    - 3.7.1 UAT Settings Menu . . . . . 92
    - 3.7.2 UAT Receiving Station Menu . . . . . 93
    - 3.7.3 UAT Receiver Menu . . . . . 94
    - 3.7.4 UAT Scenario Menu - Normal Mode . . . . . 104
  - 3.8 System Menu . . . . . 106
    - 3.8.1 Software Update Menu . . . . . 108
    - 3.8.2 Network Connections Menu . . . . . 110
    - 3.8.3 Configuration Menu . . . . . 113
    - 3.8.4 Calibration Menu . . . . . 114
  - 3.9 Support Menu . . . . . 115

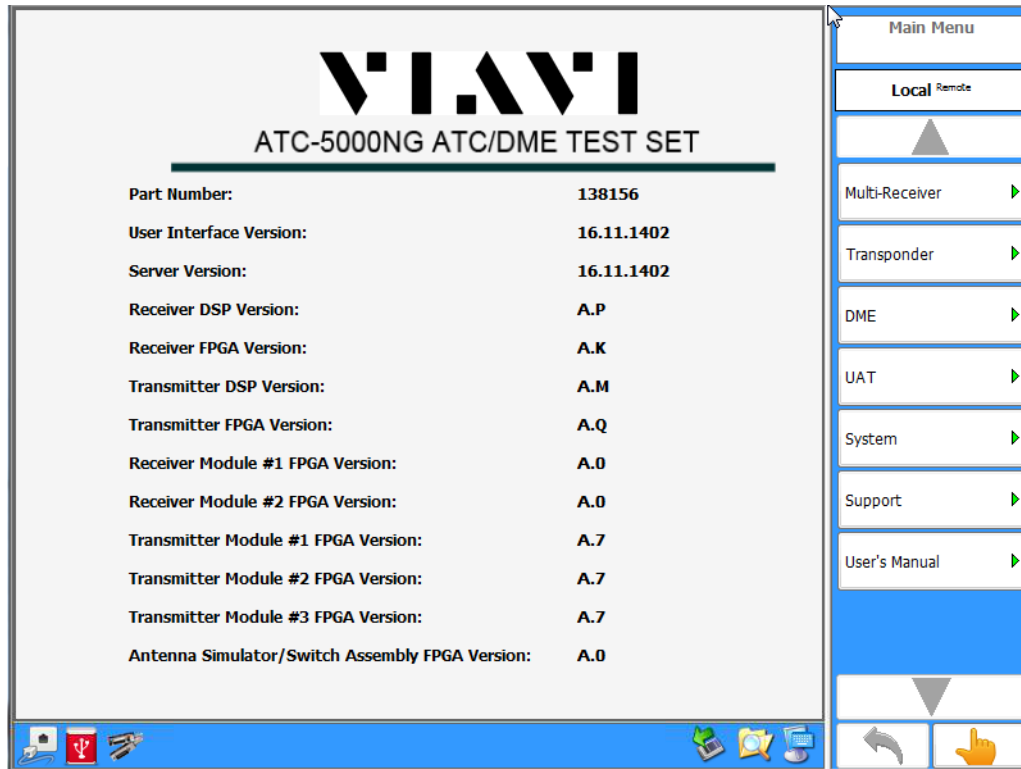
### 3.1 SCREEN ICONS AND FEATURES

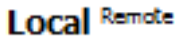
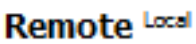
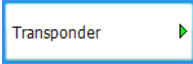



#### 3.1.1 SCREEN ICONS AND INDICATORS





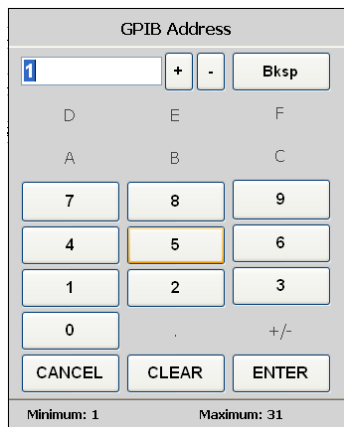
| Screen ICON | Description  |
|-------------|--|
|             | External equipment is <u>not</u> connected to the LAN Connector (Front or Rear Panel).   |
|             | External equipment is connected to the USB Connector.  |
|             | External equipment is <u>not</u> connected to the USB Connector.   |
|             | External equipment is connected to the GPIB Connector.   |
|             | External equipment is <u>not</u> connected to the GPIB Connector.  |
|             | The configuration does not match with the subassemblies present in the system or a DSP or FPGA firmware version is incorrect.  |
|             | An error has occurred. Place the mouse cursor over the icon to see a description of the error or double click on the icon to go to the Error Menu to see a list of errors. |
|             | Press this icon to open safely remove hardware dialog.   |
|             | Opens the on-screen keyboard for data entry.   |
|             | Press this icon to open Windows Explorer.  |

### 3.1.2 SCREEN FEATURES



| Screen Feature  | Description  |
|---|--|
|  | Local Mode - All controls on the Touch Screen are enabled.   |
|  | Remote Mode - All controls on the Touch Screen are disabled.   |
|  | Softkeys are used to display a menu, function screen or access a menu field. A green arrow to the right on the Softkey displays additional Softkeys. |
|  | When green, press the arrow to display additional Softkeys. Inactive when gray.  |
|  | When green, press the arrow to display additional Softkeys. Inactive when gray.  |
|  | Touch Screen Mode - Press a control to display a numeric keypad, keyboard or listbox for selection or entry of the parameter.                        |

| Screen Feature  | Description  |
|---|--|
|  | Normal Mode - Controls are modified using an external mouse or keypad. |
|  | When green, the previous menu is displayed.<br>Inactive when gray.     |



**Touch Screen Numeric Control**



**Touch Screen Keyboard Control**

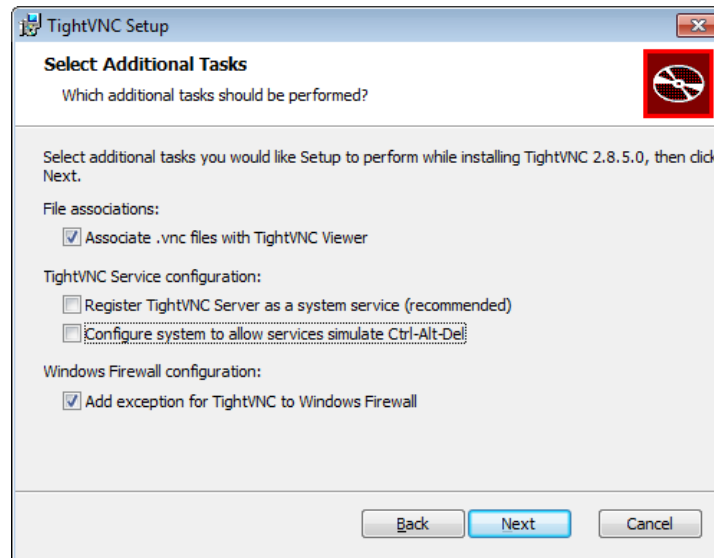
### 3.2 REMOTE (VNC) CONNECTION

To create a Remote (VNC) Connection to the ATC-5000NG, perform the following steps:

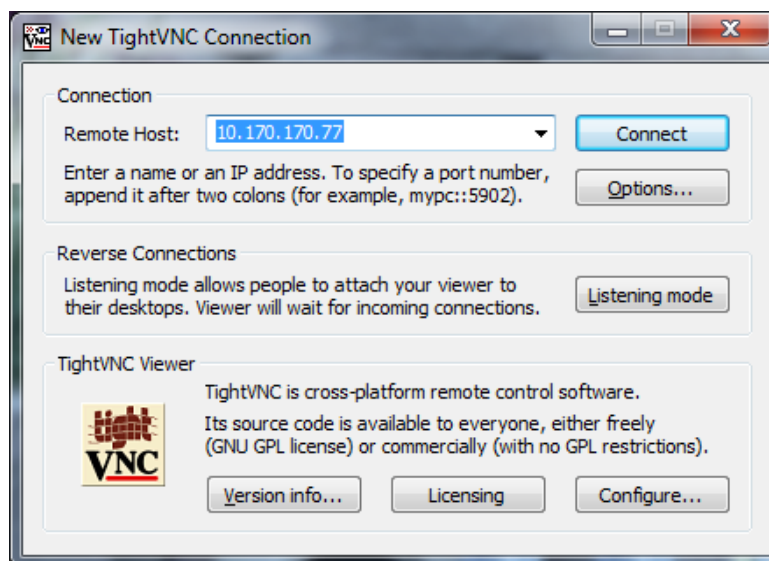
PC

STEP PROCEDURE

- 1 Open Internet Browser (Internet Explorer, Mozilla, Safari, etc.) in the Address Field and enter <http://www.tightvnc.com>. Select the link to “Get your free copy of TightVNC!” Select the proper installer for the PC and install the TightVNC Viewer program. During the installation the TightVNC Setup screen is displayed.



- 2 Uncheck the boxes under TightVNC Service Configuration and select the “Next” Button.
- 3 When installation is complete open the TightVNC Program and the New TightVNC Connection is displayed.



STEP PROCEDURE (CONT)

- 4 Plug an Ethernet Cable into the LAN Connector on the Front or Rear Panel of the ATC-5000NG. To determine the proper Ethernet Address see Section 3.8.2 Network Connections Menu in this manual. Enter the Ethernet Address and press the Connect button.



**NOTE**

THE AC POWER CABLE IS USED TO FULLY DISCONNECT THE TEST SET FROM AC POWER. THE TEST SET SHOULD NOT BE POSITIONED SO THE DISCONNECTION OF THE AC POWER CABLE IS PREVENTED. THE AC POWER CABLE IS USED TO FULLY DISCONNECT THE TEST SET FROM AC POWER. THE TEST SET SHOULD NOT BE POSITIONED SO THE DISCONNECTION OF THE AC POWER CABLE IS PREVENTED.

**REMARQUE**

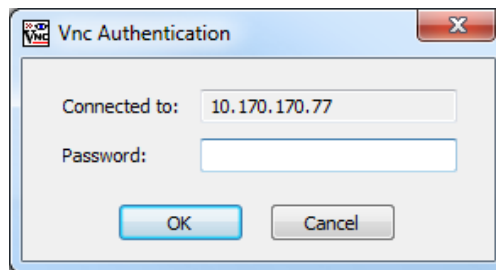
LE CÂBLE D'ALIMENTATION C.A. SERT À COUPER COMPLÈTEMENT L'ALIMENTATION C.A. DU DISPOSITIF DE TEST. LE DISPOSITIF DE TEST NE DOIT PAS ÊTRE PLACÉ D'UNE MANIÈRE QUI EMPÊCHE LE DÉBRANCHEMENT DU CÂBLE D'ALIMENTATION C.A.

- 5 With the VNC Authentication screen displayed enter the ???, the password (atc) and select the OK Button.



**NOTE**

THE ATC-5000NG PASSWORD (ATC) IS SET BY DEFAULT AT THE FACTORY. IF THE OPERATOR HAS CHANGED THE PASSWORD OF THE ATC-5000NG, THE NEW PASSWORD SHOULD BE USED.

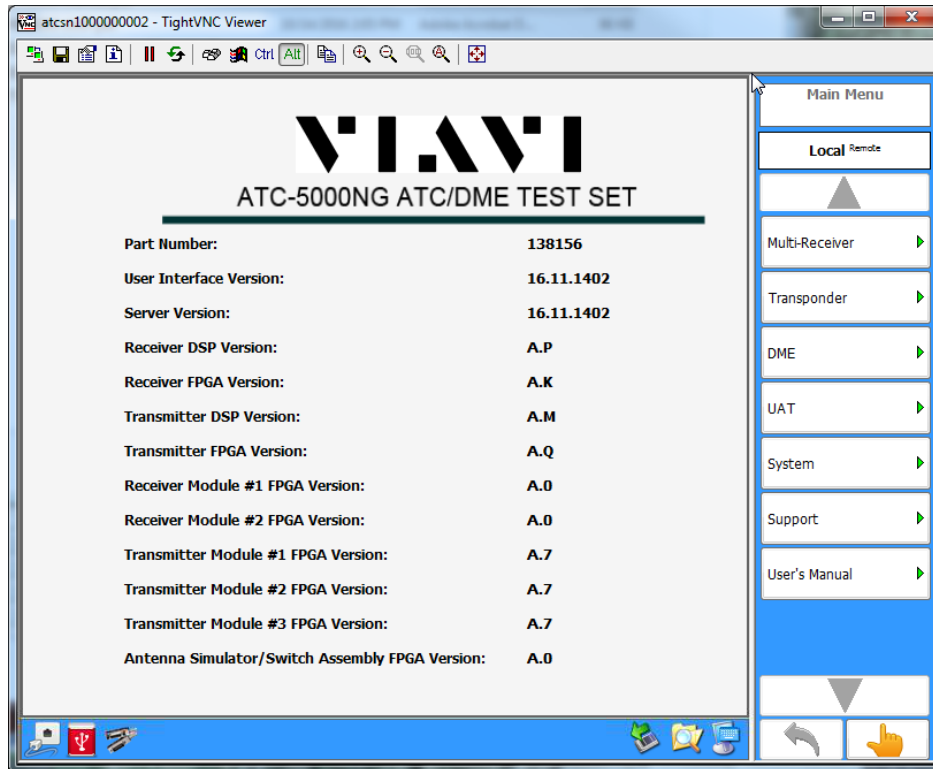


STEP

PROCEDURE

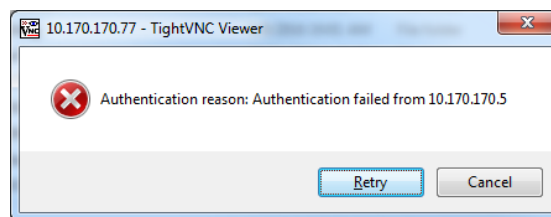
(CONT)

- 6 Once the password has been authenticated, a VNC Viewer is displayed with the current ATC-5000NG screen. Use the PC's mouse and keyboard to navigate between screens and to modify parameters on the ATC-5000NG. To stop using the VNC Viewer close the VNC Viewer form.



### IPad / Smartphone

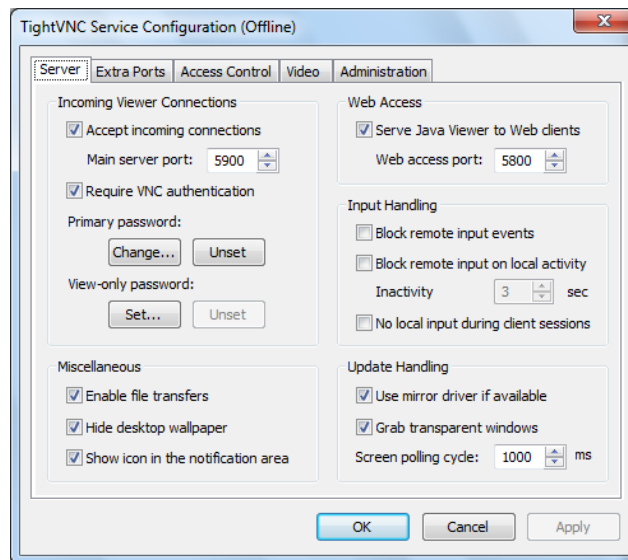
- 7 To establish a VNC Remote Connection from an IPad or Smartphone, download the VNC App into the device. Enter the IP Address of the ATC-5000NG. Enter the password and the ATC-5000NG screen is displayed on the IPad or Smartphone.
- 8 If unable to connect to the ATC-5000NG and an error screen is displayed (Authentication Error), an incorrect password may have been typed, the password entered has been changed from the factory default password or the Caps Lock is ON.





If the issue cannot be resolved, perform the following steps to reset the ATC-5000NG password.

- Connect a mouse to the USB (Type A) Connector on the Front Panel of the ATC-5000NG. Verify the mouse works. Press the Power Switch on the Front Panel of the ATC-5000NG and verify the Power Switch Indicator is not illuminated.
- Press the Power Switch on the Front Panel of the ATC-5000NG and verify the Power Switch Indicator is illuminated. Wait for the Windows desktop to be displayed.
- On the Start Menu, Navigate to All Programs\TightVNC\TightVNC Server (Service Mode) and open the TightVNC Service – Offline Configuration program.
- A window similar to Figure 4.6 (TightVNC Configuration) should be displayed. On the Server Tab under Primary Password, press the Set or Change button.



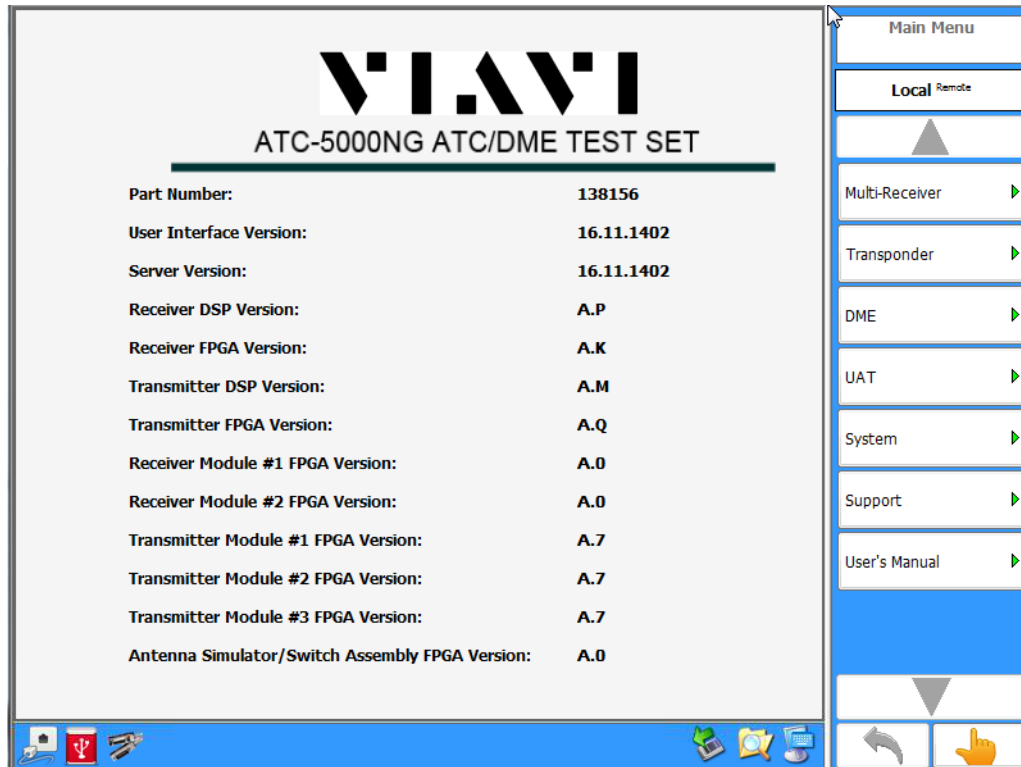
- Enter atc for the password in both fields and press Ok. Press the Apply button followed by the Ok button at the bottom of the window.
- Restart the unit and allow it to boot normally.

### 3.3 MAIN MENU

The Main Menu displays the status of the Test Set configurations and software versions.

Press ALT + R to refresh the firmware versions.

**Figure 1.2.3 - 1** ATC-5000NG Main Screen



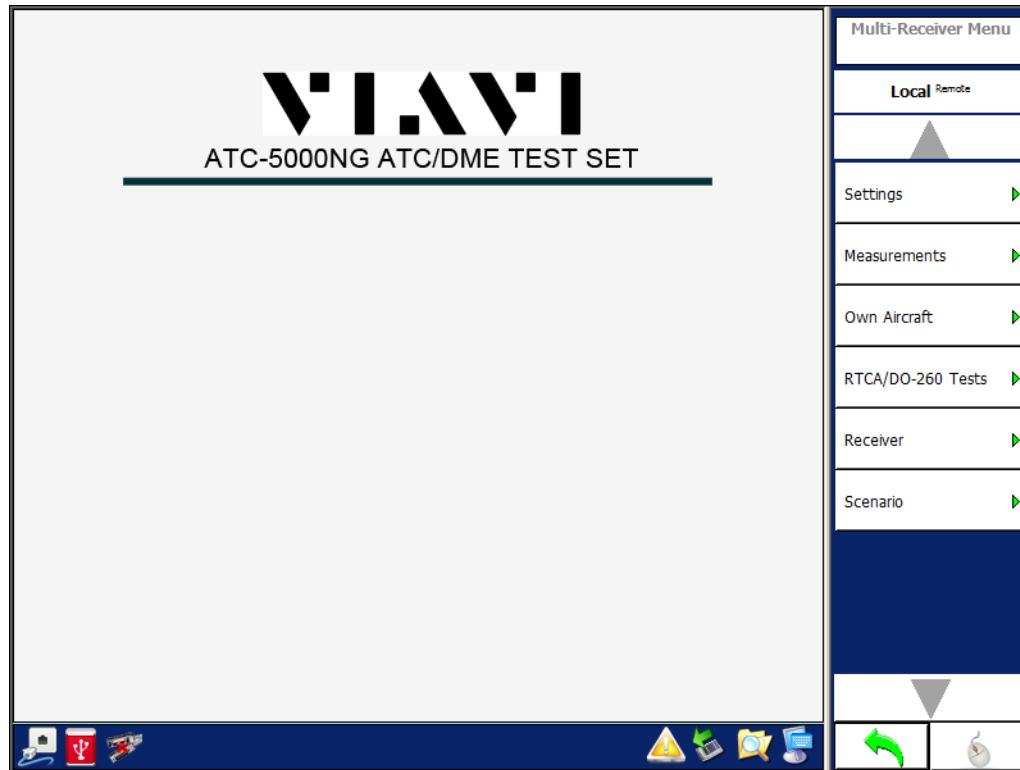
| Screen Components                      | Description  |
|--|--|
| <b>Part Number</b>                     | Displays the part number of the Test Set.                      |
| <b>User Interface Version</b>          | Displays the User Interface (Touch Screen) Version.            |
| <b>Server Version</b>                  | Displays the Server (Kernel) Software Version.                 |
| <b>Receiver DSP Version</b>            | Displays the Receiver DSP Embedded Software Version.           |
| <b>Receiver FPGA Version</b>           | Displays the I/O Controller Receiver FPGA Firmware Version.    |
| <b>Transmitter DSP Version</b>         | Displays the Transmitter DSP Embedded Software Version.        |
| <b>Transmitter FPGA Version</b>        | Displays the I/O Controller Transmitter FPGA Firmware Version. |
| <b>Receiver Module #1 FPGA Version</b> | Displays the Receiver Module #1 FPGA Version.                  |
| <b>Receiver Module #2 FPGA Version</b> | Displays the Receiver Module #2 FPGA Version.                  |

| <b>Screen Components</b>                              | <b>Description</b>   |
|---|--|
| <b>Transmitter Module #1 FPGA Version</b>             | Displays the Transmitter Module #1 FPGA Version.             |
| <b>Transmitter Module #2 FPGA Version</b>             | Displays the Transmitter Module #2 FPGA Version.             |
| <b>Transmitter Module #3 FPGA Version</b>             | Displays the Transmitter Module #3 FPGA Version.             |
| <b>Antenna Simulator/Switch Assembly FPGA Version</b> | Displays the Antenna Simulator/Switch Assembly FPGA Version. |
| <b>Multi-Receiver Softkey</b>                         | Displays the Multi-Receiver Menu.                            |
| <b>Transponder Softkey</b>                            | Displays the Transponder Menu.                               |
| <b>DME Softkey</b>                                    | Displays the DME Menu.                                       |
| <b>UAT Softkey</b>                                    | Displays the UAT Menu.                                       |
| <b>System Softkey</b>                                 | Displays the System Menu.                                    |
| <b>Support Softkey</b>                                | Displays the Support Menu.                                   |
| <b>User's Manual Softkey</b>                          | Displays a PDF copy of the ATC-5000NG Operation Manual.      |

### 3.4 MULTI-RECEIVER MENU

The Multi-Receiver Menu allows the user to perform DO-260 tests and also allows the user to set up scenarios that output 1090 messages (ADS-B), 1030 interrogations (Mode S and ATRBS) and UAT messages (Airborne and Groundlink) simultaneously on an antenna port.

**Figure 1.2.3 - 2** Multi-Receiver Menu



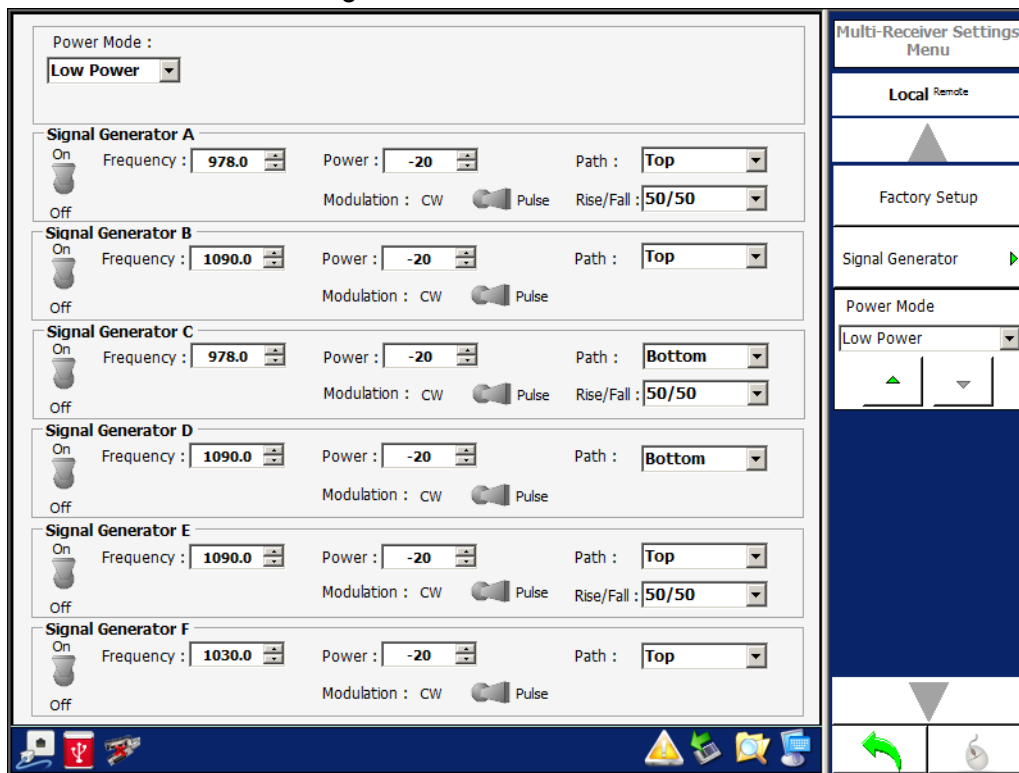
| Screen Components                | Description   |
|----------------------------------|---|
| <b>Settings Softkey</b>          | Allows the user to set Generator parameters and troubleshoot the Test Set.  |
| <b>Measurements Softkey</b>      | Allows the user to view the transmissions of the UUT and to perform pulse characteristic, frequency and phase measurements.   |
| <b>Own Aircraft Softkey</b>      | Allows the user to change the Own Aircraft information if set to Manual.<br>If not set to manual entry, the user Own Aircraft information from the selected source is displayed in the TCAS Menu. |
| <b>RTCA/DO-260 Tests Softkey</b> | Allows the user to perform RTCA/DO-260 Tests.   |
| <b>Receiver Softkey</b>          | Allows the user to select messages to capture and log from the UUT or the Test Set.   |

| Screen Components          | Description  |
|----------------------------|--|
| <b>Transmitter Softkey</b> | Allows the user to perform either DO-260 Tests or Block Transmissions. |
| <b>Scenario Softkey</b>    | Allows the user to design and execute a Scenario Test.                 |

### 3.4.1 MULTI-RECEIVER SETTINGS MENU

The Multi-Receiver Settings Menu allows the user to configure the Transmitter, Receiver and Antenna Simulator modules within the Test Set for Multi-Receiver tests. The Multi-Receiver Settings Menu is mainly used for testing and troubleshooting of the Test Set.

**Figure 1.2.3 - 3 Multi-Receiver Settings Menu**



| Screen Components | Description  |
|-------------------|--|
| <b>Power Mode</b> | Allows the user to select the Power Mode.                      |
| <b>ON/OFF</b>     | Allows the user to enable/disable the Transmitter.             |
| <b>Frequency</b>  | Allows the user to select the Transmitter frequency.           |
| <b>Power</b>      | Allows the user to set the Transmitter power.                  |
| <b>Path</b>       | Allows the user to select the Transmitter Path (Antenna Port). |
| <b>Modulation</b> | Allows the user to select the Modulation.                      |

| <b>Screen Components</b> | <b>Description</b>  |
|--------------------------|---|
| <b>Rise/Fall</b>         | Allows the user to select the Rise/Fall.<br>Generator A, C and E only.                                  |
| <b>Factory Setup</b>     | Allows the user to set all hardware to the default settings<br>according to the hardware configuration. |

---

### 3.4.2 OWN AIRCRAFT MENU

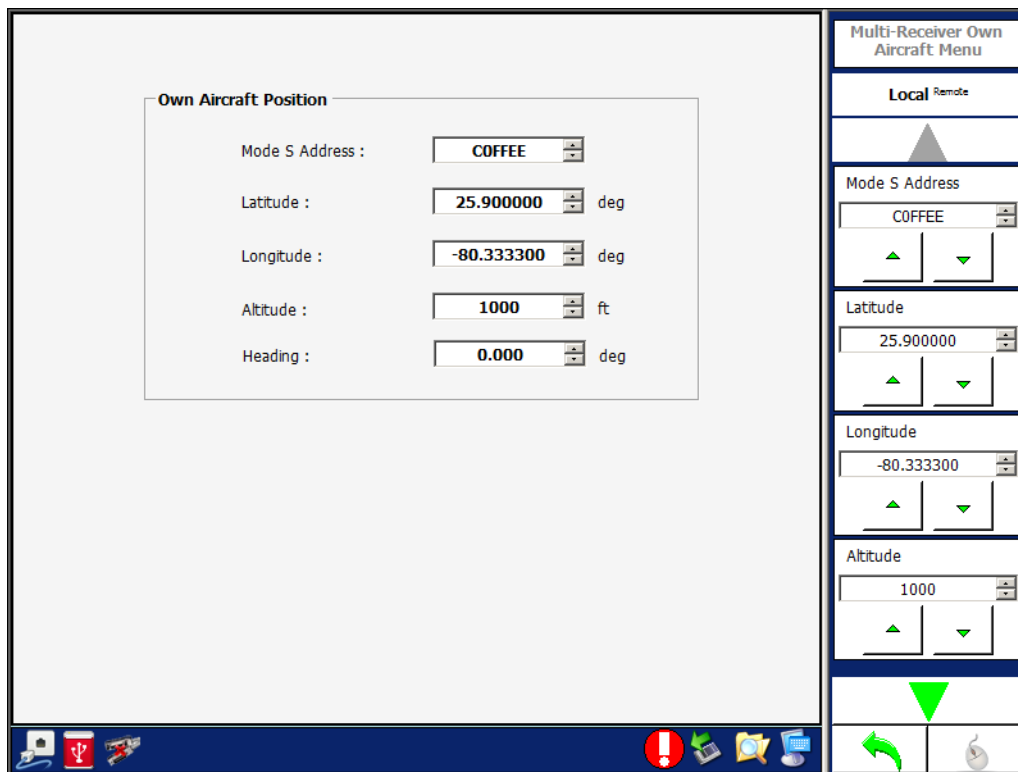
The Own Aircraft Menu allows the user to change the latitude, longitude, altitude, heading and Mode S address of the Own Aircraft.



**NOTE**

WHEN AN EXTERNAL SOURCE (ETHERNET OR 429) IS USED, THE OWN AIRCRAFT INFORMATION IS UPDATED EVERY 5 SECONDS WHEN A SCENARIO IS NOT RUNNING OR EVERY SECOND IF THE SCENARIO IS RUNNING.

**Figure 1.2.3 - 4 Own Aircraft Menu**



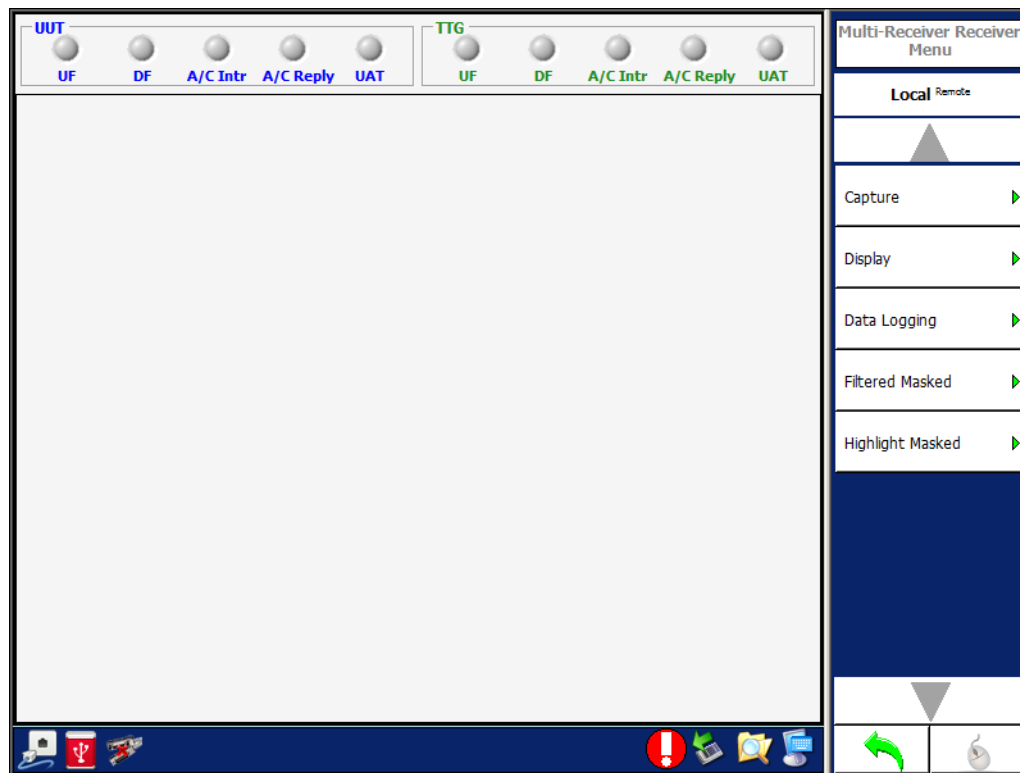
| Screen Components     | Description   |
|-----------------------|---|
| <b>Mode S Address</b> | Allows the user to select the Mode S Address (Hexadecimal). |
| <b>Latitude</b>       | Allows the user to select the Latitude of the Own Aircraft. |
| <b>Longitude</b>      | Allows the user to select the Longitude of the Own Aircraft |
| <b>Altitude</b>       | Allows the user to select the Altitude of the Own Aircraft. |
| <b>Heading</b>        | Allows the user to select the Heading of the Own Aircraft   |

### 3.4.3 MULTI-RECEIVER, RECEIVER MENU

The Receiver Menu allows the user to view the transmissions from the UUT and the Test Set.

The last 8 receptions are displayed. Blue LEDs/lines are receptions from the UUT and green LEDs/lines are receptions from the Test Set.

**Figure 1.2.3 - 5** Multi-Receiver, Receiver Menu



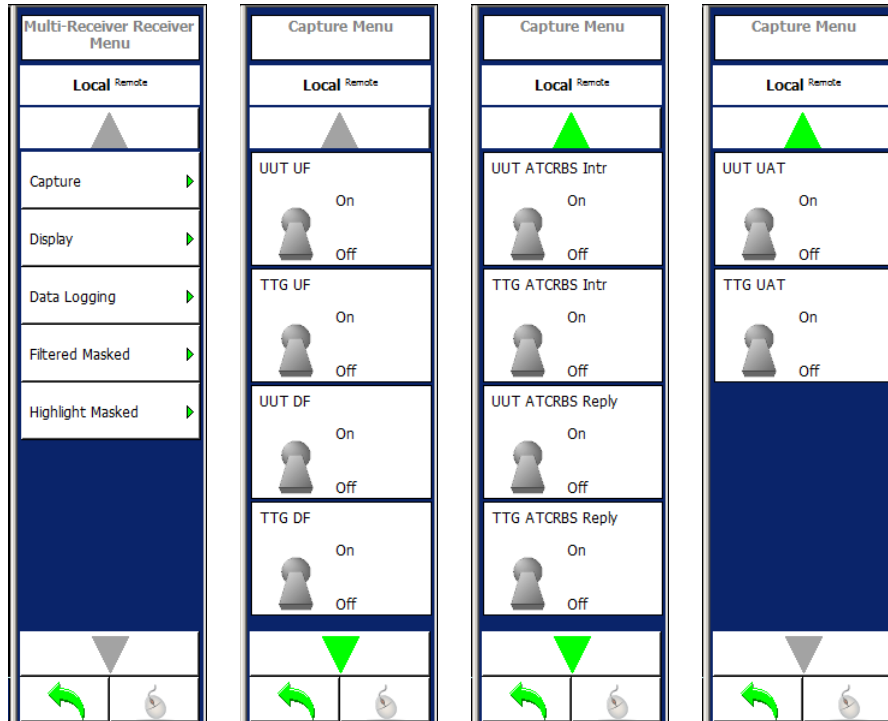
| Screen Components | Description   |
|-------------------|---|
| <b>LEDs</b>       | Displays the status of receptions from the UUT (Rx Group) and transmissions from the Test Set (Tx Group). |
| LED               | UF UF Interrogation   |
|                   | DF DF Reply   |
|                   | A/C Intr ATCRBS Interrogation   |
|                   | A/C Reply ATCRBS Reply  |
|                   | UAT UAT   |



### 3.4.4 MULTI-RECEIVER, RECEIVER CAPTURE MENU

The Capture softkey accessed the following:

**Figure 1.2.3 - 6** Multi-Receiver, Receiver Capture Menu

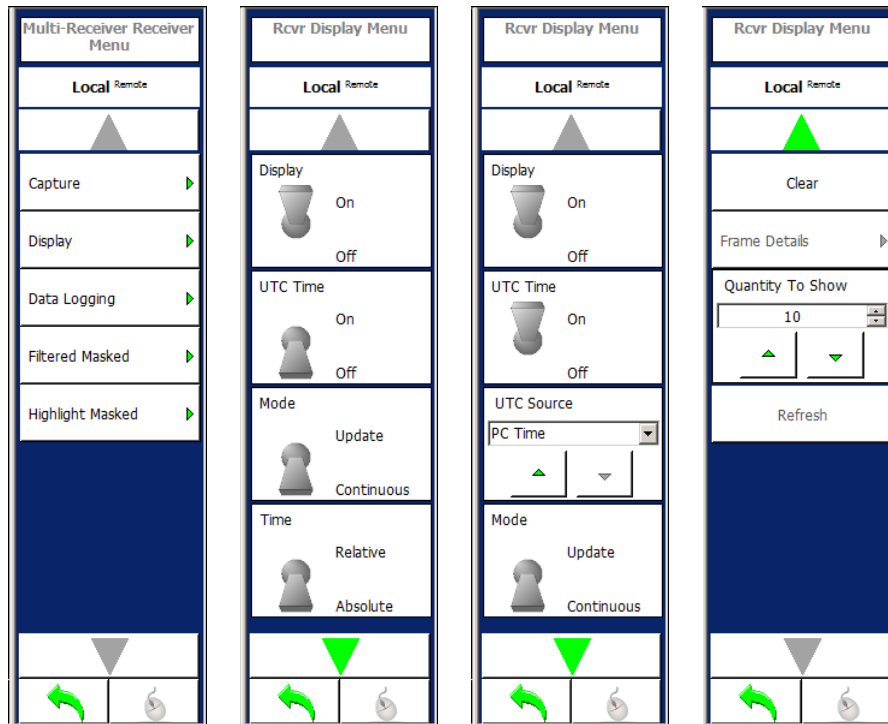


| Screen Component | Description  |
|------------------|--|
| UUT UF           | Allows the user to enable/disable capture of TCAS UF messages.               |
| ATC UF           | Allows the user to enable/disable capture of Test Set UF messages.           |
| UUT DF           | Allows the user to enable/disable capture of Transponder DF messages.        |
| ATC DF           | Allows the user to enable/disable capture of Test Set DF messages.           |
| UUT ATCRBS Intr  | Allows the user to enable/disable capture of TCAS ATCRBS interrogations.     |
| ATC ATCRBS Intr  | Allows the user to enable/disable capture of Test Set ATCRBS interrogations. |
| UUT ATCRBS Reply | Allows the user to enable/disable capture of Transponder ATCRBS replies.     |
| ATC ATCRBS Reply | Allows the user to enable/disable capture of Test Set ATCRBS replies.        |

| Screen Component | Description  |
|------------------|--|
| UUT UAT          | Allows the user to enable/disable capture of UAT messages.               |
| ATC UAT          | Allows the user to enable/disable capture of UAT messages from Test Set. |

### 3.4.5 MULTI-RECEIVER, RECEIVER DISPLAY MENU

The Display softkey accesses the following:



| Screen Component       | Description   |
|------------------------|---|
| <b>Display Softkey</b> | Allows the user to select the display settings.   |
| <b>Display Toggle</b>  | Allows the user to turn ON/OFF displaying new receptions.                                       |
| <b>UTC Time</b>        | Allows the user to enables/disable the UTC time stamp.  |
| <b>UTC Source</b>      | Allows the user to select the PC Time.  |
| <b>Mode</b>            |   |
| <b>Update</b>          | Allows the user to display data received by updating a message style with the latest reception. |
| <b>Continuous</b>      | Allows the user to display all data received in a continuous order by time.                     |
| <b>Time</b>            |   |
| <b>Relative</b>        | Allows the user to display time relative to previous message.                                   |
| <b>Absolute</b>        | Allows the user to display the time received.   |

---

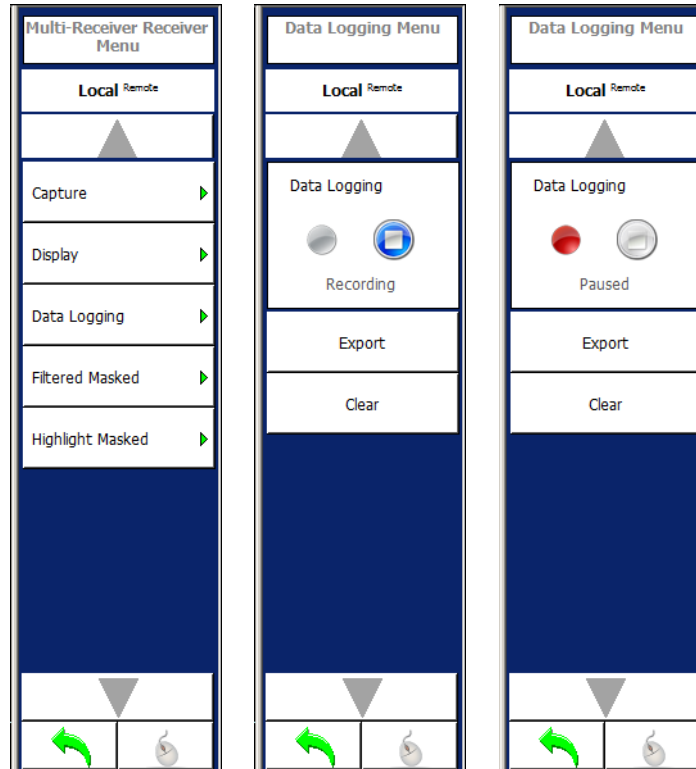
| <b>Screen Component</b> | <b>Description</b>  |
|-------------------------|---|
| <b>Clear</b>            | Allows the user to clear all messages in the Receiver Menu.   |
| <b>Frame Details</b>    | Allows the user to display the detailed breakdown of a selected reception. The detailed breakdown of the message can also be displayed by turning OFF the Display Softkey and double-clicking on the desired message. |
| <b>Quantity to Show</b> | Allows the user to enter how many messages to show. (Maximum 1000 messages).  |
| <b>Refresh</b>          | Allows the user to refresh the Receiver Menu.   |

---

### 3.4.6 MULTI-RECEIVER, DATA LOGGING MENU

The Data Logging Softkey accesses the following:

**Figure 1.2.3 - 7 Multi-Receiver, Receiver Data Logging Menu**

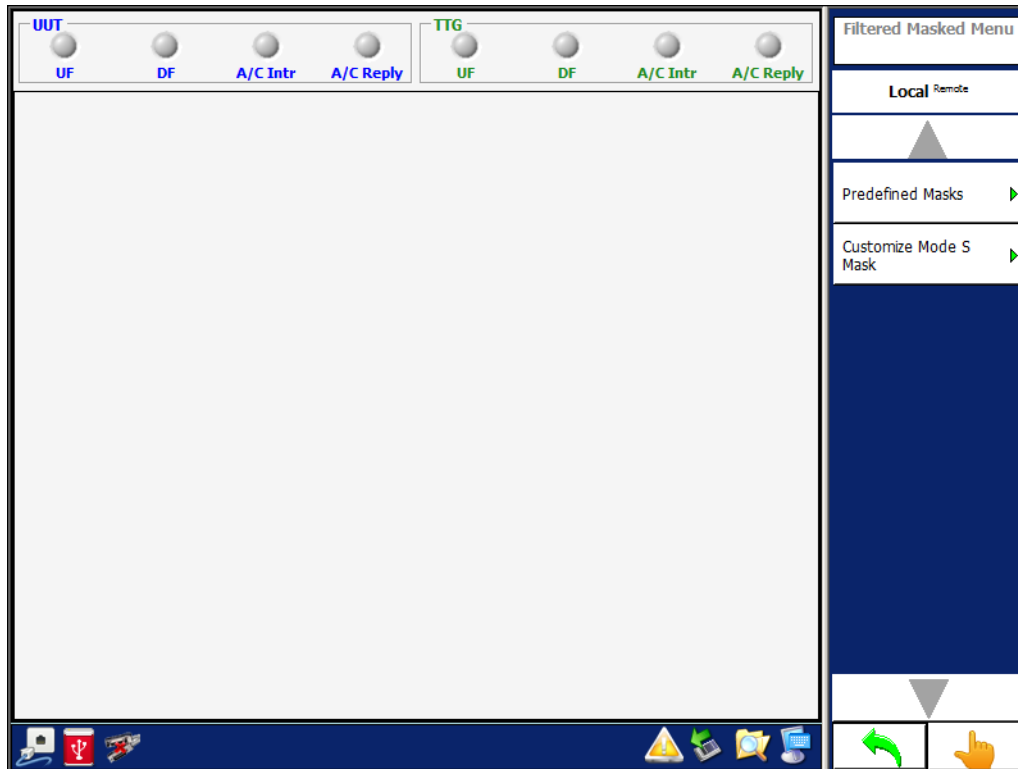


| Screen Component        | Description   |
|-------------------------|---|
| <b>Recording/Paused</b> | Allows the user to record or pause data logging receive messages. |
| <b>Export</b>           | Allows the user to export the received messages to a file.        |
| <b>Clear</b>            | Allows the user to clear all recorded messages.                   |

### 3.4.6.1 Multi-Receiver, Filtered Masked Menu

The Filtered Masked softkey Displays the Filtered Masked Menu which contains controls that allows the user to select the messages to filter and display in the Receiver Menu.

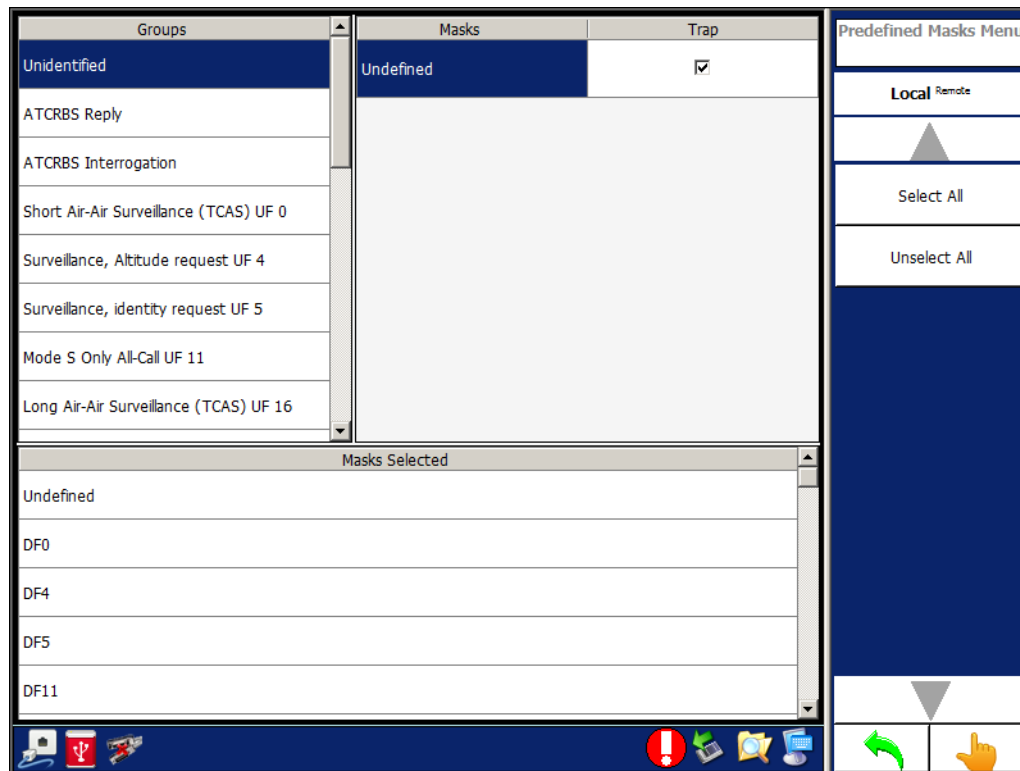
**Figure 1.2.3 - 8** Multi-Receiver, Receiver Filtered Masked Menu



| Screen Component                     | Description                              |
|--------------------------------------|--|
| <b>Predefined Masks Softkey</b>      | Displays the Predefined Masks Menu.      |
| <b>Customize Mode S Mask Softkey</b> | Displays the Customize Mode S Mask Menu. |

### 3.4.6.2 Multi-Receiver, Predefined Masks Menu

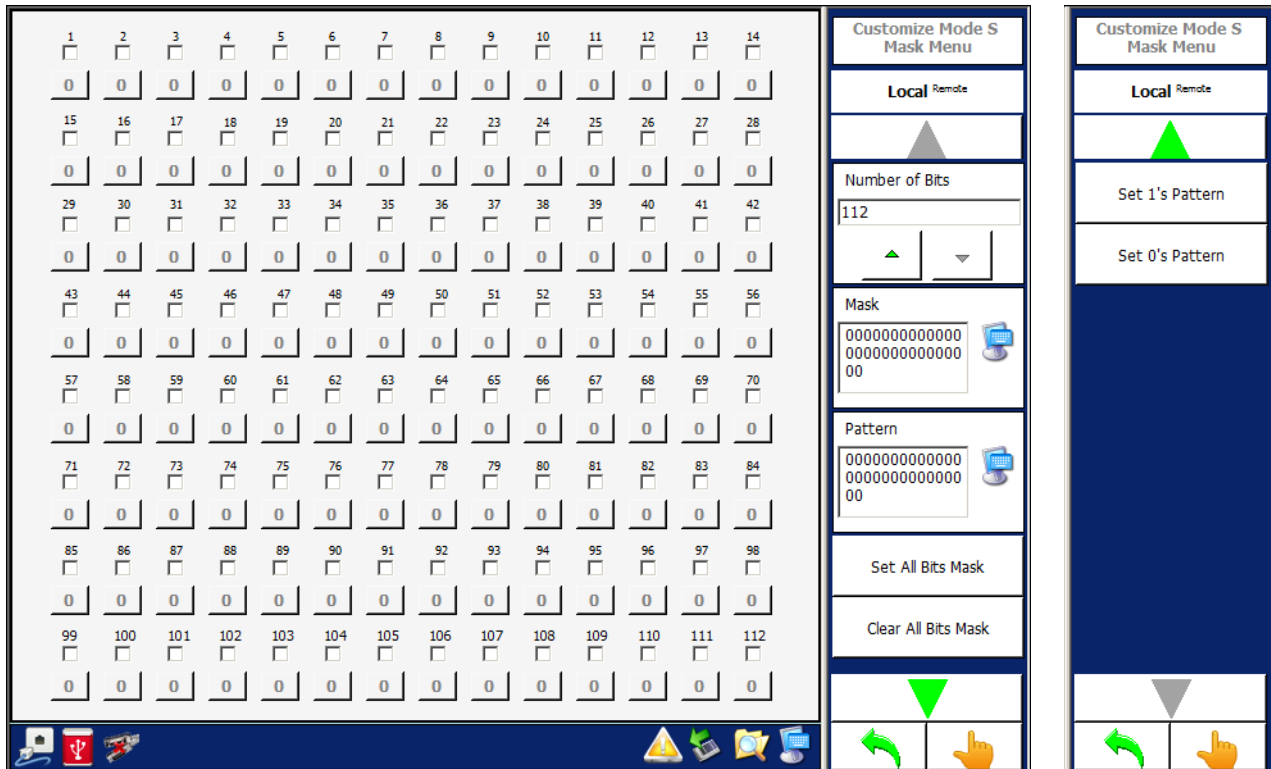
Figure 1.2.3 - 9 Multi-Receiver, Receiver Predefined Masks Menu



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Groups</b>               | Allows the user to select groups of UF and DF messages.                       |
| <b>Masks</b>                | Displays the sub-messages of the selected group.                              |
| <b>Trap</b>                 | Allows the user to enable/disable the sub-messages.                           |
| <b>Masks Selected</b>       | Displays the messages selected to perform the filter.                         |
| <b>Select All Softkey</b>   | Allows the user to select all messages to be displayed. No filter is applied. |
| <b>Unselect All Softkey</b> | Allows the user to de-select all messages. No messages are displayed.         |

### 3.4.6.3 Multi-Receiver, Customize Mode S Mask Menu

Figure 1.2.3 - 10 Multi-Receiver Mode S Mask Menu

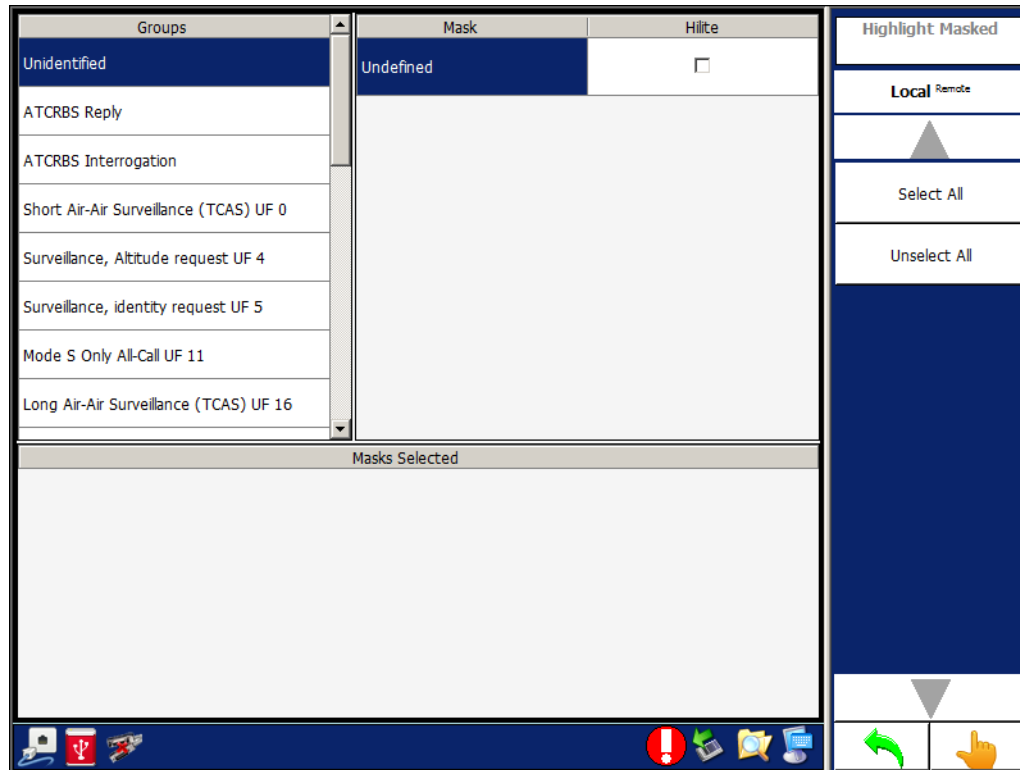


| Screen Components                  | Description   |
|------------------------------------|---|
| <b>Number</b>                      | Allows the user to enable/disable the selected pattern bit. |
| <b>Bit</b>                         | Allows the user to pattern bit.                             |
| <b>Number of Bits Softkey</b>      | Allows the user to select the number of bits.               |
| <b>Mask Softkey</b>                | Allows the user to Mask.                                    |
| <b>Pattern Softkey</b>             | Allows the user to Pattern.                                 |
| <b>Set All Bits Mask Softkey</b>   | Allows the user to select all bits.                         |
| <b>Clear All Bits Mask Softkey</b> | Allows the user to clear all bits.                          |
| <b>Set 1's Pattern Softkey</b>     | Allows the user to select "1" for all patterns.             |
| <b>Set 0's Pattern Softkey</b>     | Allows the user to select "0" for all patterns.             |

### 3.4.6.4 Multi-Receiver, Highlight Masked Menu

The Highlight Masked softkey Displays the Filtered Masked Menu which contains controls that allow the user to select the messages to highlight during the display of messages in the Transponder Receiver Menu.

**Figure 1.2.3 - 11** Multi-Receiver, Highlight Masked Menu



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Groups</b>               | Allows the user to select groups of UF and DF messages.                       |
| <b>Masks</b>                | Displays the sub-messages of the selected group.                              |
| <b>Hilite</b>               | Allows the user to enable/disable the sub-messages.                           |
| <b>Masks Selected</b>       | Displays the messages selected to perform the highlight.                      |
| <b>Select All Softkey</b>   | Allows the user to select all messages to be displayed. No filter is applied. |
| <b>Unselect All Softkey</b> | Allows the user to de-select all messages. No messages are displayed.         |

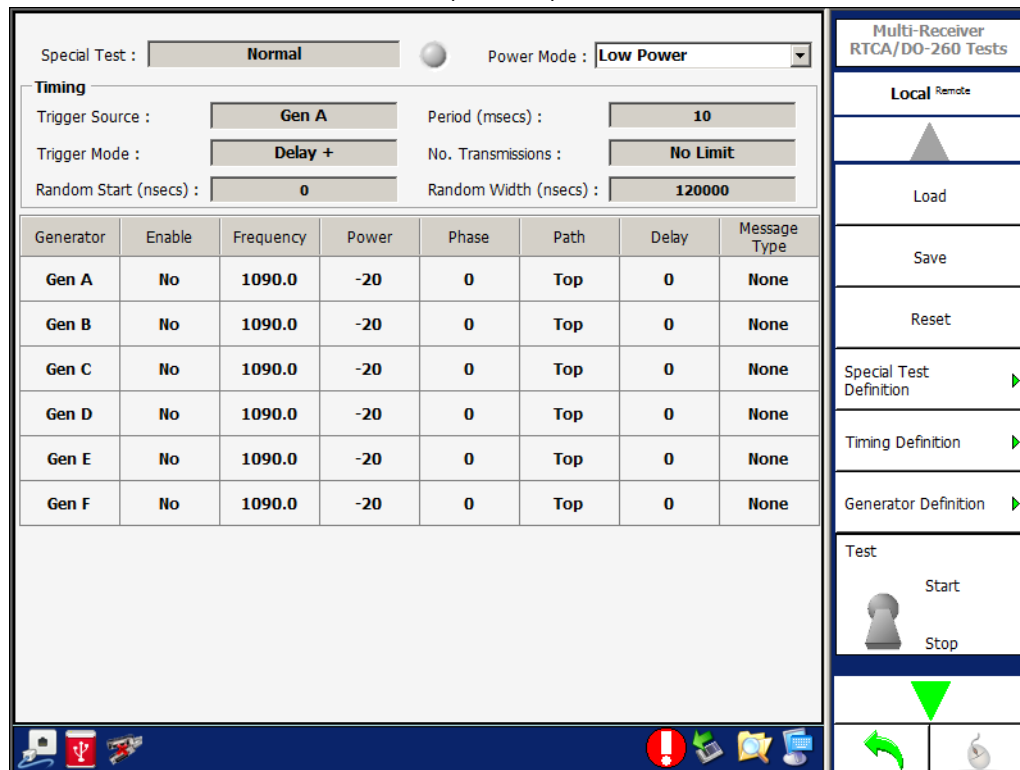


### 3.4.7 MULTI-RECEIVER RTCA/DO-260 TESTS

The RTCA/DO-260 Tests Menu allows the user to define tests that set the Test Set Transmitters for RTCA DO-260 Receiver testing.

#### 3.4.7.1 RTCA/DO-260 Tests Menu (Normal)

Figure 1.2.3 - 12 RTCA/DO-260 Tests Menu (Normal)



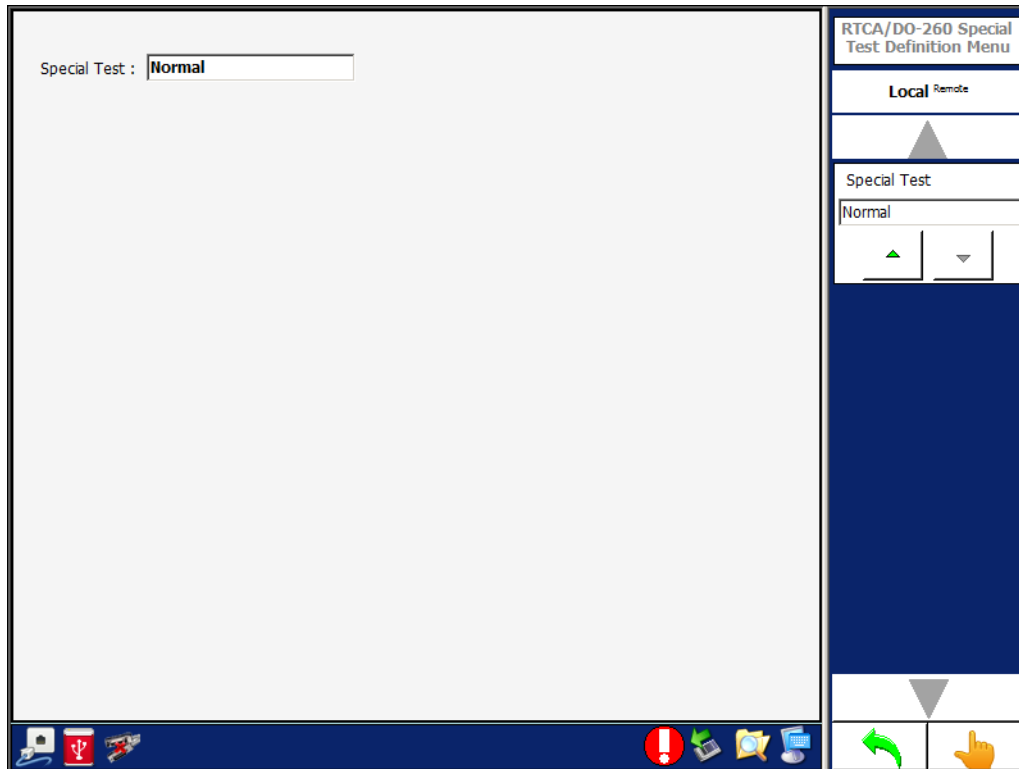
| Screen Components     | Description   |
|-----------------------|---|
| <b>Special Test</b>   | Allows the user to select the Special Test.   |
| <b>Power Mode</b>     | Allows the user to select the Power Mode.   |
| <b>Trigger Source</b> | Allows the user to select the Trigger Source.   |
| <b>Trigger Mode</b>   | Allows the user to select the Trigger Mode.<br>If delay is selected, the delay defined in the Generator setting is used for + or – delay.<br>If random is selected, Random Start and Random Width are added to the screen to select the minimal starting time and width of the random starting time.<br>If Walk is selected, a signal is set at a positive or negative delay and moves the signal by 25 ns delay each transmission. |

| Screen Components                      | Description   |
|--|---|
| <b>Random Start</b>                    | Allows the user to select the Random Start, the minimal starting position compared to the reference Generator.  |
| <b>Period</b>                          | Allows the user to select the Period of time between Triggers.  |
| <b>No. Transmissions</b>               | Allows the user to select the Number of Transmissions.  |
| <b>Random Width</b>                    | Allows the user to select the Random Width.<br>Only active when Trigger Mode is set to Random.  |
| <b>Generator</b>                       | Allows the user to select the Generator.  |
| <b>Enable</b>                          | Allows the user to enable/disable the selected Generator.<br>If the Generator selected is the trigger source, this parameter is disabled and the Generator is enabled.  |
| <b>Frequency</b>                       | Allows the user to select the Generator output frequency.   |
| <b>Power</b>                           | Allows the user to set the Generator output power.  |
| <b>Phase</b>                           | Allows the user to select the output Phase of the Generator.  |
| <b>Path</b>                            | Allows the user to select the Path of the Generator.  |
| <b>Delay</b>                           | Allows the user to set the delay from the trigger source.<br>If the Generator that is being set is the trigger source, this parameter is disabled.<br>The delay value is the positive or negative in accordance with the setting in the timing definition of delay+ or delay- |
| <b>Message Type</b>                    | Allows the user to select the Message Type.   |
| <b>Load Softkey</b>                    | Allows the user to select a stored DO-260 test.   |
| <b>Save Softkey</b>                    | Allows the user to save the current DO-260 test.  |
| <b>Reset Softkey</b>                   | Allows the user to reset the test settings to the default values.   |
| <b>Special Test Definition Softkey</b> | Allows the user to set up one of the Special Tests.   |
| <b>Timing Definition Softkey</b>       | Allows the user to select the timing definitions.   |
| <b>Generator Definition Softkey</b>    | Allows the user to select the Generator definitions.  |
| <b>Test Softkey</b>                    | Allows the user to start or stop the defined DO-260 test.   |

### 3.4.7.2 RTCA/DO-260 Special Test Definition Menu (Normal)

When the RTCA/DO-260 Special Test Definition Menu is displayed, the user can alter the parameters.

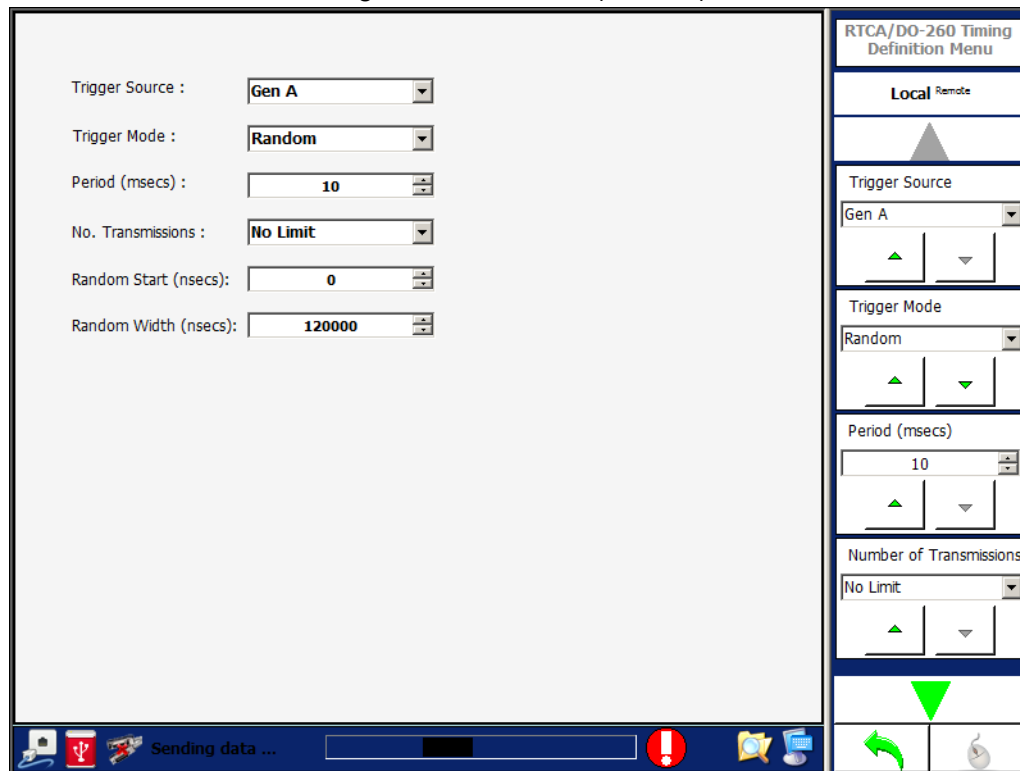
**Figure 1.2.3 - 13** RTCA/DO-260 Special Test Definition Menu (Normal)



| Screen Components | Description                                      |
|-------------------|--|
| Special Test      | Allows the user to select the Special Test mode. |

### 3.4.7.3 RTCA/DO-260 Timing Definition Menu (Normal)

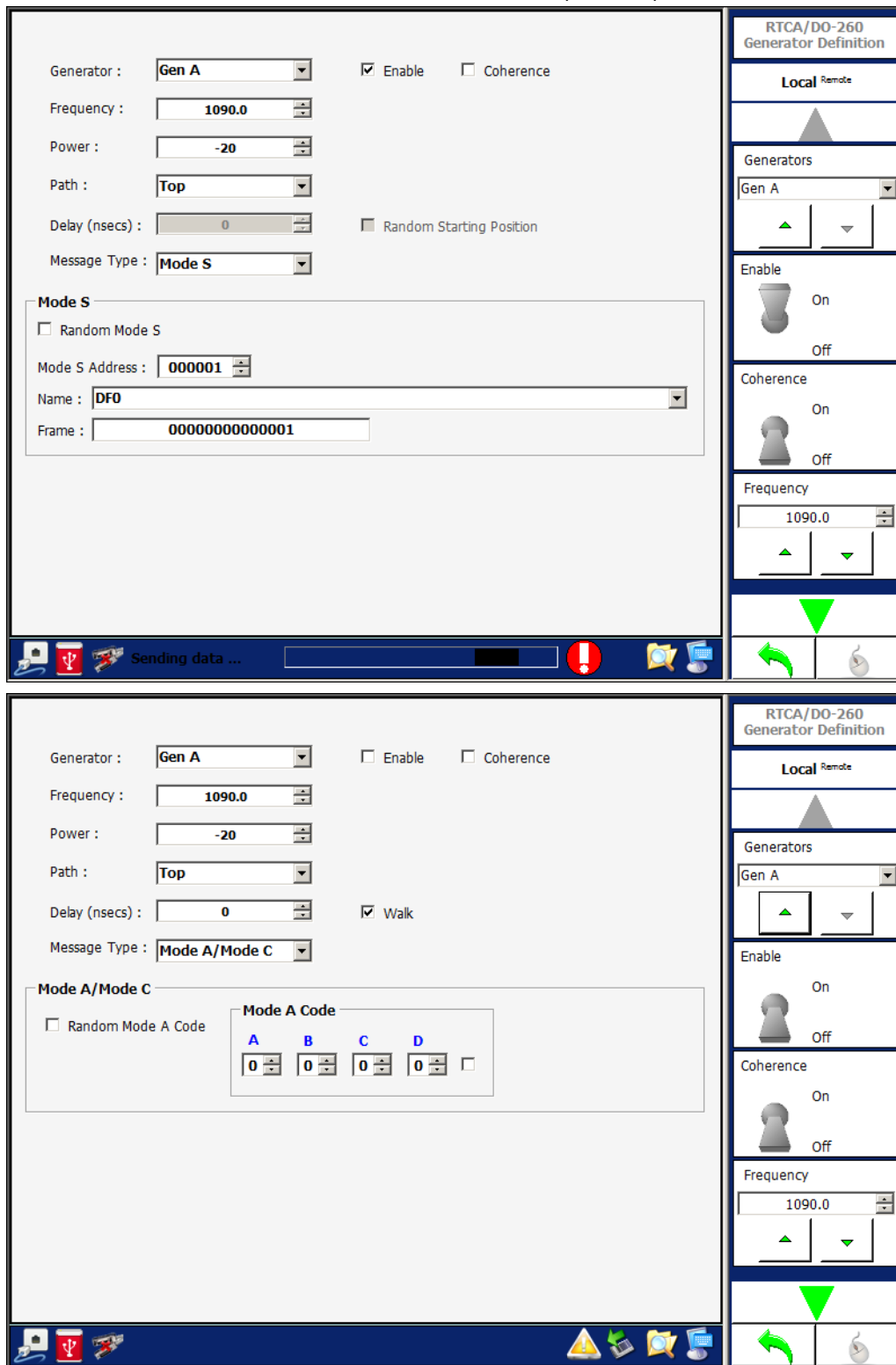
Figure 1.2.3 - 14 RTCA/DO-260 Timing Definition Menu (Normal)



| Screen Components        | Description  |
|--------------------------|--|
| <b>Trigger Source</b>    | Allows the user to select the Trigger Source.          |
| <b>Trigger Mode</b>      | Allows the user to select the Trigger Mode.            |
| <b>Period</b>            | Allows the user to select the Period.                  |
| <b>No. Transmissions</b> | Allows the user to select the Number of Transmissions. |
| <b>Random Start</b>      | Allows the user to select the Random Start.            |
| <b>Random Width</b>      | Allows the user to select the Random Width.            |

### 3.4.7.4 RTCA/DO-260 Generator Definition Menu (Normal)

Figure 1.2.3 - 15 RTCA/DO-260 Generator Definition Menu (Normal)



| Screen Components               | Description  |
|---------------------------------|--|
| <b>Generator</b>                | Allows the user to select the Generator.   |
| <b>Frequency</b>                | Allows the user to select the Generator output frequency.  |
| <b>Power</b>                    | Allows the user to set the Generator output power.   |
| <b>Phase</b>                    | Allows the user to select the output Phase of the Generator.   |
| <b>Path</b>                     | Allows the user to select the Path.  |
| <b>Delay</b>                    | Allows the user to set the delay from the trigger source.<br>If the Generator that is being set is the trigger source, this parameter is disabled.<br>The delay value is the positive or negative in accordance with the setting in the timing definition of delay+ or delay-.   |
| <b>Message Type</b>             | Allows the user to select the Message Type.  |
| <b>Enable</b>                   | Allows the user to enable/disable the Generator for the test.<br>If the Generator selected is the trigger source, this parameter is disabled and the Generator is enabled.   |
| <b>Coherence</b>                | Allows the user to select the Coherence.<br>If enabled the two Generators of a transmitter module are in coherence.<br>This is available when defining Gen A, Gen C and Gen E.   |
| <b>Random Starting Position</b> | Allows the user to change the starting position of each message from the delay value.  |
| <b>Random Mode S</b>            | Allows the user to set the message.<br>For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field<br>For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses).  |
| <b>Mode S Address</b>           | Allows the user to set the message.<br>For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field.<br>For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses). |
| <b>Name</b>                     | Allows the user to set the message.<br>For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field.<br>For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses). |

| Screen Components         | Description  |
|---------------------------|--|
| <b>Frame</b>              | Allows the user to set the message.<br>For Mode S the parameters that can be set are Mode S Address, Mode S Message Type, and if the data is random, excluding the first five bits and the PI field.<br>For ATCRBS the parameters that can be set are Mode A Code or random (two frame pulses with five random data pulses). |
| <b>Random Mode A Code</b> | Allows the user to select the Random Mode A Code.  |
| <b>Mode A Code</b>        | Allows the user to select the Mode A Code.   |

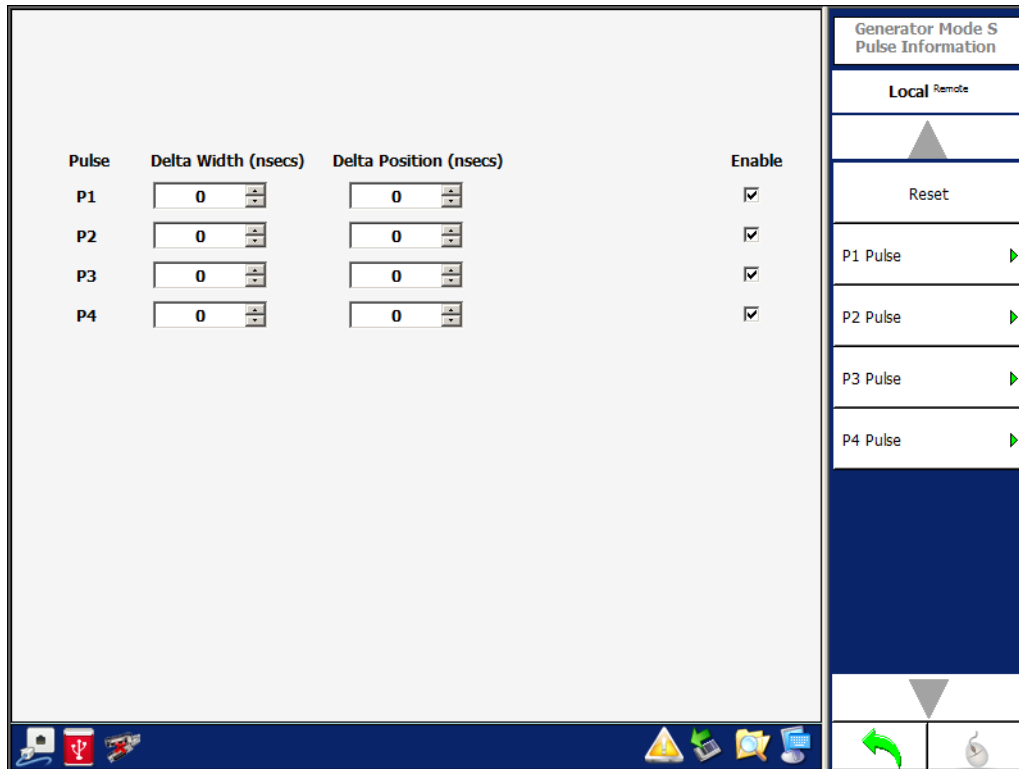
### 3.4.7.5 RTCA/DO-260 Generator Definition Menu - Frame Details (Normal)

Figure 1.2.3 - 16 RTCA/DO-260 Generator Definition Menu - Frame Details (Normal)

| Name  | Value   | Units | LSB | Description               | Low   | High   | Invalid |
|-------|---------|-------|-----|---------------------------|-------|--------|---------|
| DF    | 0       | N/A   | 0   |                           | 0     | 0      | False   |
| VS    | 0       | N/A   | 0   | Airborne                  | 0     | 1      | False   |
| CC    | 0       | N/A   | 0   | Crosslink Not Supported   | 0     | 1      | False   |
| Spare | 0       | N/A   | 0   |                           | 0     | 0      | False   |
| SL    | 0       | N/A   | 0   | No TCAS Sensitivity Level | 0     | 7      | False   |
| Spare | 0       | N/A   | 0   |                           | 0     | 0      | False   |
| RI    | 0       | N/A   | 0   | Non on-board TCAS         | 0     | 15     | False   |
| Spare | 0       | N/A   | 0   |                           | 0     | 0      | False   |
| AC    | No Data | N/A   | 1   |                           | -1300 | 128000 | True    |

### 3.4.7.6 RTCA/DO-260 Generator Definition Menu - Mode S Pulse Information (Normal)

Figure 1.2.3 - 17 RTCA/DO-260 Generator Definition Menu - Mode S Pulse Information (Normal)

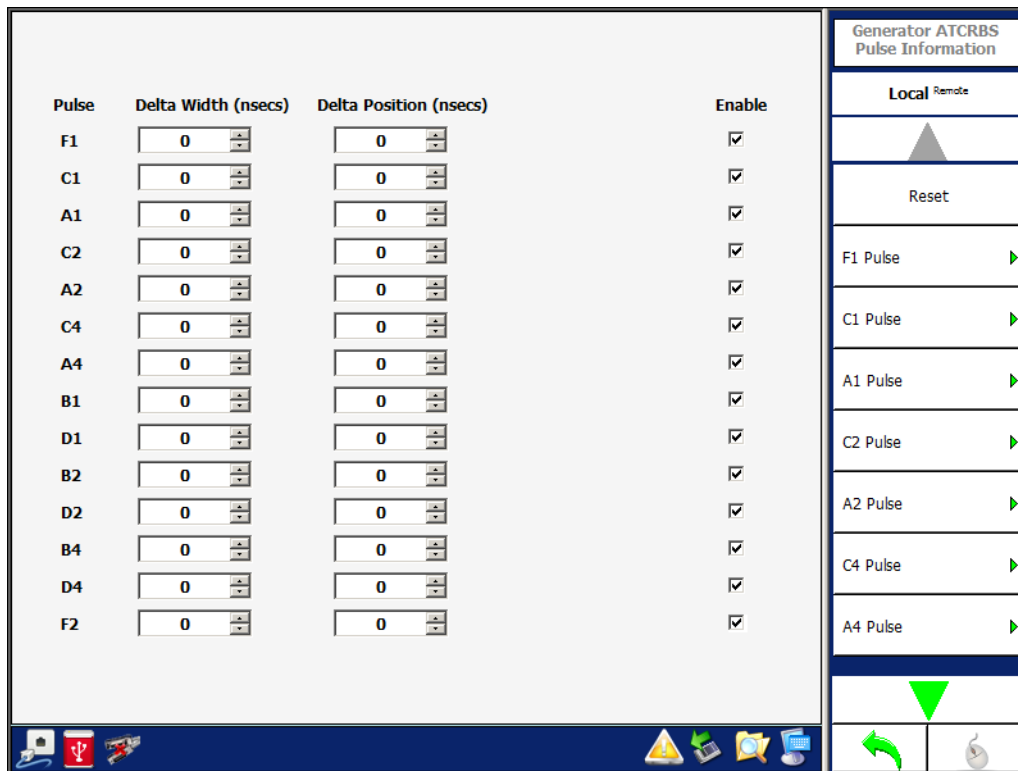


| Screen Components | Description   |
|-------------------|---|
| Reset Softkey     | Allows the user to reset all Mode S pulse settings. |



### 3.4.7.7 RTCA/DO-260 Generator Definition Menu - ATCRBS Pulse Information (Normal)

Figure 1.2.3 - 18 RTCA/DO-260 Generator Definition Menu - ATCRBS Pulse Information (Normal)

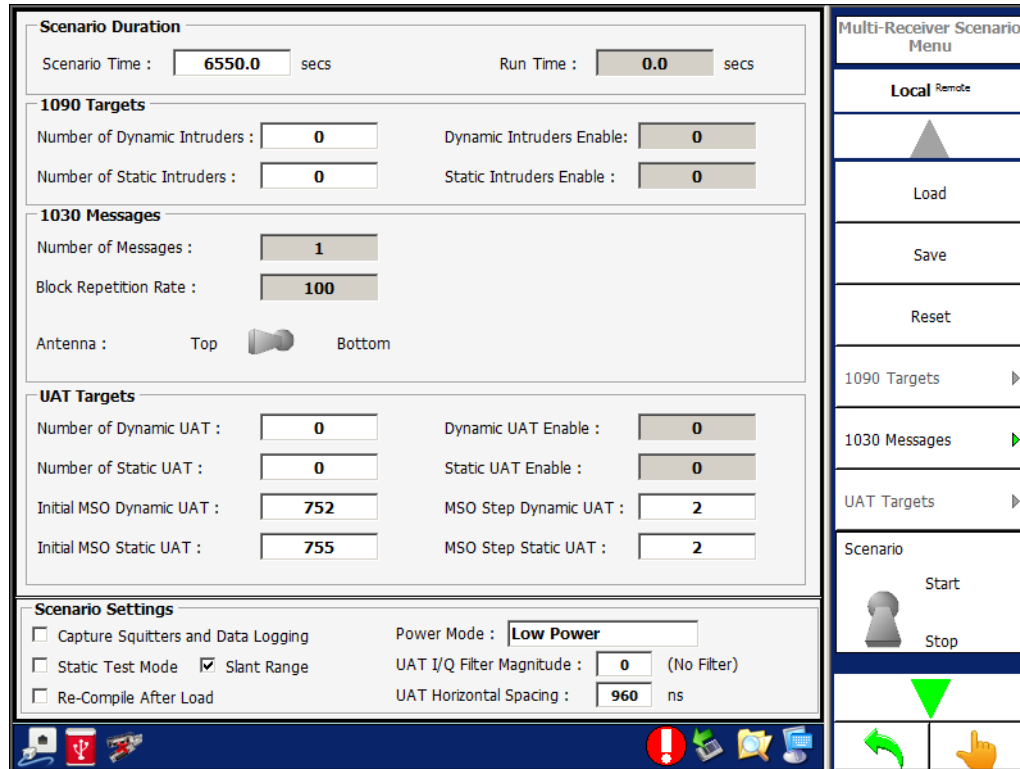


| Screen Components | Description   |
|-------------------|---|
| Reset Softkey     | Allows the user to reset all ATCRBS pulse settings. |

### 3.4.8 SCENARIO MENU

The Scenario Menu allows the user to define tests that set the Test Set to transmit 1090 ADS-B messages, 1030 Interrogation messages and UAT messages simultaneously.

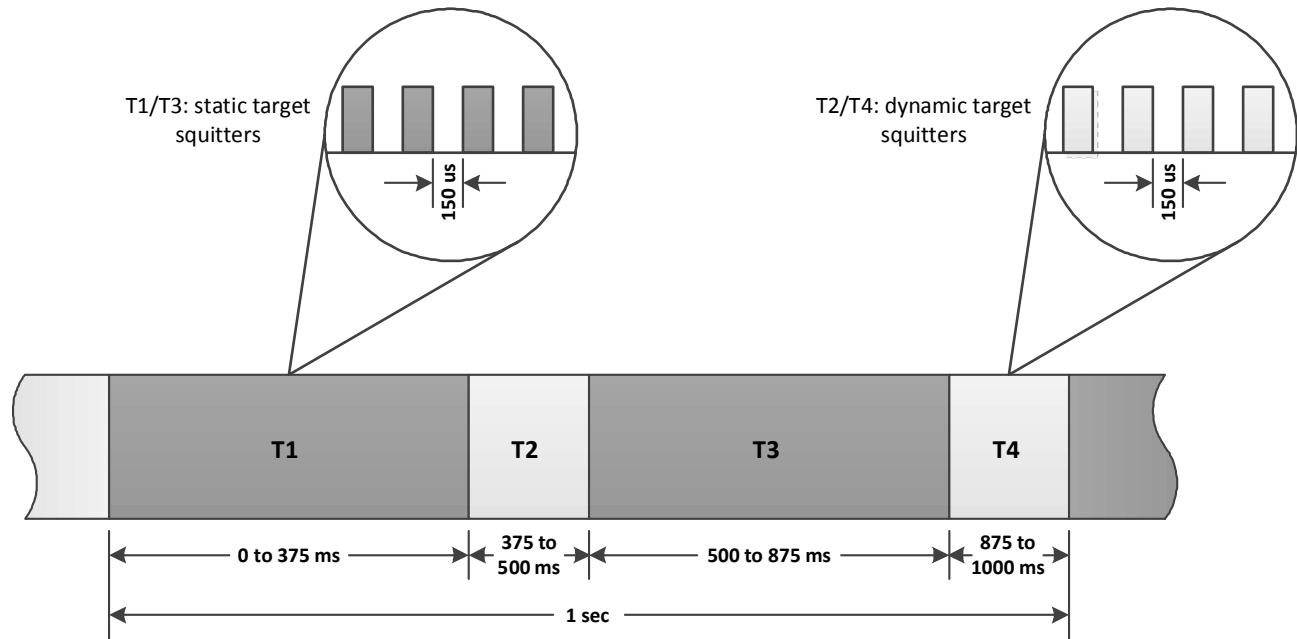
Figure 1.2.3 - 19 Multi-Receiver Scenario Menu



| Screen Components                  | Description   |
|------------------------------------|---|
| <b>Scenario Time</b>               | Allows the user to select the scenario time (duration).   |
| <b>Run Time</b>                    | Displays the Scenario Current Run Time.   |
| <b>Number of Dynamic Intruders</b> | Allows the user to select the number of 1090 Dynamic Intruders. (See “Multi-Receiver, ADS-B Target, Transmission Sequence Figure) |
| <b>Number of Static Intruders</b>  | Allows the user to select the number of 1090 Static Intruders. (See “Multi-Receiver, ADS-B Target, Transmission Sequence Figure)  |
| <b>Dynamic Intruders Enable</b>    | Allows the user to select the number of 1090 Dynamic Intruders enabled.   |
| <b>Static Intruders Enable</b>     | Allows the user to select the number of 1090 Static Intruders enabled.  |
| <b>Number of Messages</b>          | Allows the user to select the number of 1030 Messages.  |

| Screen Components                         | Description  |
|---|--|
| <b>Block Repetition Rate</b>              | Allows the user to select the 1030 Block Repetition Rate.  |
| <b>Antenna</b>                            | Allows the user to select the Antenna.   |
| <b>Number of Dynamic UAT</b>              | Allows the user to select the Number of UAT Dynamic Targets.   |
| <b>Number of Static UAT</b>               | Allows the user to select the Number of UAT Static Targets.  |
| <b>Initial MSO Dynamic UAT</b>            | Allows the user to select the Initial MSO for UAT Dynamic Targets.   |
| <b>Initial MSO Static UAT</b>             | Allows the user to select the Initial MSO for UAT Static Targets.  |
| <b>Dynamic UAT Enable</b>                 | Allows the user to select the Dynamic UAT Enable   |
| <b>Static UAT Enable</b>                  | Allows the user to select the Static UAT Enable  |
| <b>MSO Step Dynamic UAT</b>               | Allows the user to select the MSO Steps between Dynamic Targets.   |
| <b>MSO Step Static UAT</b>                | Allows the user to select the MSO Step between Static Targets.   |
| <b>Capture Squitters and Data Logging</b> | Allows the user to log all the messages received during the scenario according to the message mask assigned in the Receiver Menu.<br>The data log is reset at the start of the scenario.   |
| <b>Static Test Mode</b>                   | Not Used   |
| <b>Recompile After Load</b>               | Allows the user to select the Recompile After Load that is loaded.<br>If enabled, when a scenario file is loaded, all the Mode S Squitters are recompiled.   |
| <b>Slant Range</b>                        | Allows the user to select the Slant Range.<br>If enabled, the Test Set calculates the range using the intruder range, intruder altitude and Own Aircraft altitude.<br>If disabled, the range is the horizontal range that is defined in the intruder definition. |
| <b>Power Mode</b>                         | Allows the user to select the Power Mode.  |
| <b>UAT I/Q Filter Magnitude</b>           | Allows the user to select the UAT I/Q Filter Magnitude.  |
| <b>UAT Horizontal Spacing</b>             | Allows the user to select the UAT Horizontal Spacing.  |
| <b>Load Softkey</b>                       | Allows the user to load a saved scenario configuration.  |
| <b>Save Softkey</b>                       | Allows the user to store the current scenario configuration to a file.   |
| <b>Reset Softkey</b>                      | Allows the user to clear all intruders, ground stations and video blocks data.   |
| <b>1090 Targets Softkey</b>               | Displays the 1090 Targets Menu.  |
| <b>1030 Messages Softkey</b>              | Displays the 1030 Messages Menu  |
| <b>Scenario Softkey</b>                   | Allows the user to enable/disable the Scenario Test.   |

### 3.4.8.1 Multi-Receiver, ADS-B Target, Transmission Sequence



**T1 (static targets):**

- Even Position Messages (DF17/DF18 Airborne or Surface, TISB and ADSR)
- Velocity Messages (if enabled and airborne)
- Identification Messages (if enabled)
- maximum of 1388 squitters

**T3 (static targets):**

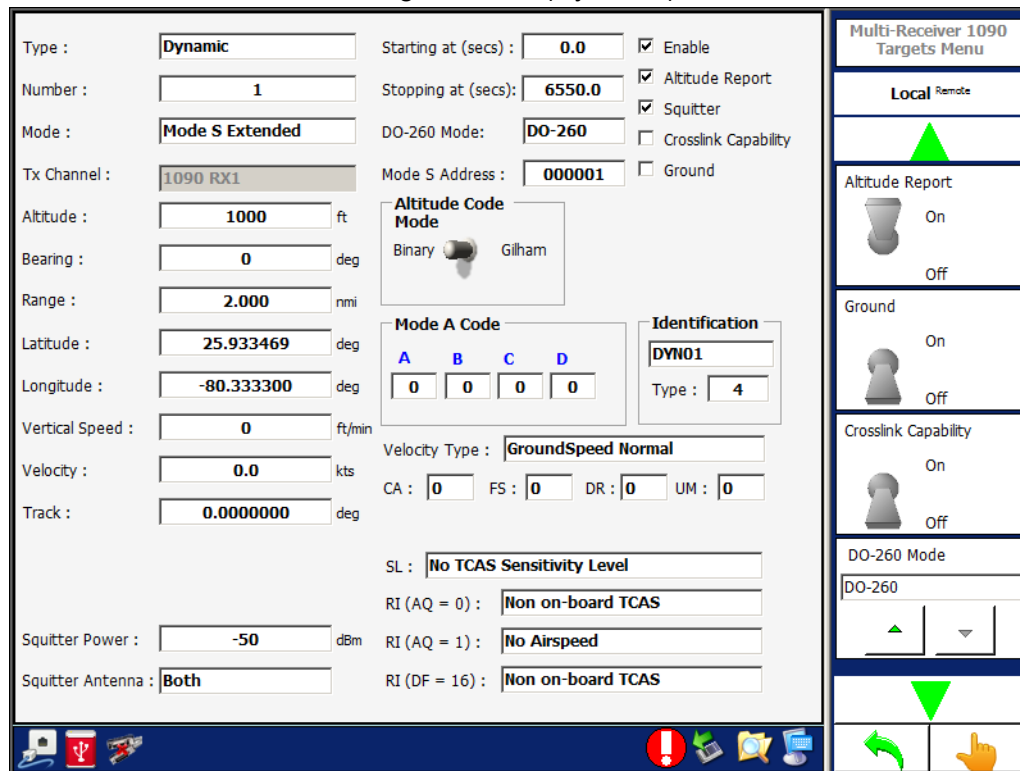
- Odd Position Messages (DF17DF18 Airborne or Surface, TISB and ADSR)
- Target State Messages (if enabled)
- Velocity Messages (if enabled, airborne and rate is 0.5 s, T1 only if rate is 1.0 s)
- Aircraft Status Emergency Messages (if enabled)
- DF11 Messages (if enabled)
- maximum of 1388 squitters

**T2 and T4 (dynamic targets):**

- Each of the enabled messages' rates are set by the user. Messages are transmitted in accordance to the settings.
- maximum of 32 dynamic targets with all squitter types enabled

### 3.4.8.2 Multi-Receiver, 1090 Targets Menu (Dynamic)

Figure 1.2.3 - 20 Multi-Receiver 1090 Targets Menu (Dynamic)

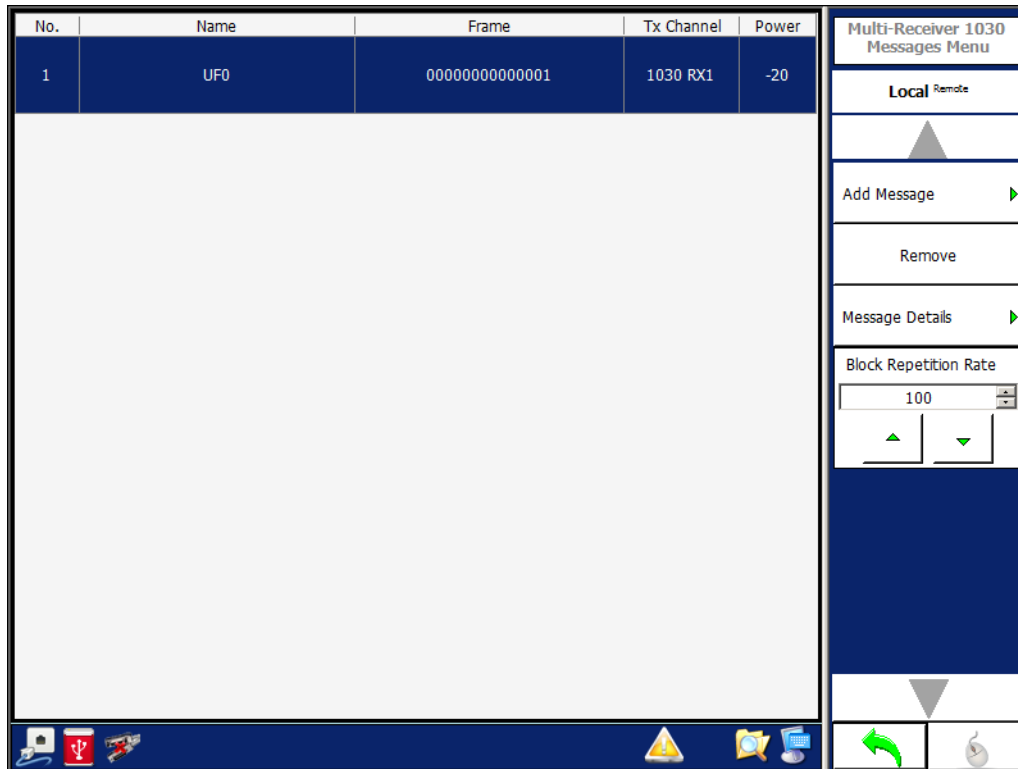


| Screen Components     | Description  |
|-----------------------|--|
| <b>Type</b>           | Allows the user to select the Type.                |
| <b>Number</b>         | Allows the user to select the Number.              |
| <b>Mode</b>           | Allows the user to select the Mode.                |
| <b>Tx Channel</b>     | Allows the user to select the Tx Channel.          |
| <b>Altitude</b>       | Allows the user to select the Altitude.            |
| <b>Bearing</b>        | Allows the user to select the Bearing (Phase).     |
| <b>Range</b>          | Allows the user to select the Range.               |
| <b>Latitude</b>       | Allows the user to select the Latitude.            |
| <b>Longitude</b>      | Allows the user to select the Longitude.           |
| <b>Vertical Speed</b> | Allows the user to select the Vertical Speed.      |
| <b>Velocity</b>       | Allows the user to select the Velocity (Squitter). |
| <b>Track</b>          | Allows the user to select the Track Angle.         |
| <b>Squitter Power</b> | Allows the user to select the Squitter Power.      |

| Screen Components           | Description   |
|-----------------------------|---|
| <b>Squitter Antenna</b>     | Allows the user to select the Squitter Antenna.   |
| <b>Starting at</b>          | Allows the user to select the start time.   |
| <b>Stopping at</b>          | Allows the user to select the stop time.  |
| <b>DO-260 Mode</b>          | Allows the user to select the DO-260 Mode.  |
| <b>Mode S Address</b>       | Allows the user to select the Mode S Address (Hexadecimal).   |
| <b>Enable</b>               | Allows the user to enable/disable transmitting the required messages for this intruder.   |
| <b>Altitude Report</b>      | Allows the user to enable/disable the Altitude Report.<br>If enabled, the altitude code is present in the DF0 reply.<br>If disabled, the altitude code is set to 0. |
| <b>Squitter</b>             | Allows the user to enable/disable the Squitter.   |
| <b>Crosslink Capability</b> | Allows the user to enable/disable the Crosslink Capability  |
| <b>Ground</b>               | Allows the user to enable/disable setting the intruder on the ground.   |
| <b>Altitude Code Mode</b>   | Allows the user to select the Altitude Code Mode.   |
| <b>Mode A Code</b>          | Allows the user to select the Mode A Code.  |
| <b>Identification</b>       | Allows the user to select the Intruder Identification.  |
| <b>Type</b>                 | Allows the user to select the Intruder Identification Type.   |
| <b>Velocity Type</b>        | Allows the user to select the Velocity Type.  |
| <b>CA</b>                   | Allows the user to select the Transponder Capability.   |
| <b>FS</b>                   | Allows the user to select the Flight Status.  |
| <b>DR</b>                   | Allows the user to select the Downlink Request.   |
| <b>UM</b>                   | Allows the user to select the Utility Message.  |
| <b>Target State Subtype</b> | Allows the user to select the Target State Subtype.<br>DO-260B Mode only.   |
| <b>AS Subtype</b>           | Allows the user to select the AS Subtype.<br>DO-260B Mode only.   |
| <b>SL</b>                   | Allows the user to select the Sensitivity Level.  |
| <b>RI (AQ = 0)</b>          | Allows the user to select the Runway Incursion (Acquisition = 0).   |
| <b>RI (AQ = 1)</b>          | Allows the user to select the Runway Incursion (Acquisition = 1).   |
| <b>RI (DF = 16)</b>         | Allows the user to select the Runway Incursion (Direction Finding = 16).  |

### 3.4.8.3 Multi-Receiver, 1030 Messages Menu

Figure 1.2.3 - 21 Multi-Receiver 1030 Targets Menu



| Screen Components            | Description   |
|------------------------------|---|
| <b>Add Message</b>           | Allows the user to add a new 1030 interrogation.          |
| <b>Remove</b>                | Allows the user to remove an existing 1030 interrogation. |
| <b>Message Details</b>       | Allows the user to select the Message Details.            |
| <b>Block Repetition Rate</b> | Allows the user to select the Block Repetition Rate.      |

### 3.4.8.4 Multi-Receiver, 1090 Target Squitter Definition Menu

Figure 1.2.3 - 22 Multi-Receiver 1090 Target Squitter Definition Menu

| Name   | Frame                        |
|--|------------------------------|
| DF11   | 580000011F1B04               |
| Extended Squitter - Airborne Aircraft Operational Status Type 31 Version 0 | 88000001F8000000000000F09F7E |
| Extended Squitter - Airborne Position Type 9 (Even)                        | 88000001480B0119FC540FFC6836 |
| Extended Squitter - Airborne Position Type 9 (Odd)                         | 88000001480B049DD0521A9A8729 |
| Extended Squitter - Aircraft Status Emergency Priority Status              | 88000001E1000000000000F7053F |
| Extended Squitter - Identification Type 4                                  | 88000001244D4054C30C6054DD60 |
| Extended Squitter - Velocity Over Ground Subtype 1                         | 88000001990801002004016BDB19 |

SELEX Mode S Squitters Menu

Local Remote

▲

Squitter Details ▶

Schedule ▶

▼

🔄 🗑️

| Screen Components        | Description                              |
|--------------------------|--|
| Squitter Details Softkey | Displays the Squitter Frame Fields Menu. |
| Schedule Softkey         | Displays the Squitter Schedule Menu.     |



Figure 1.2.3 - 23 Multi-Receiver Squitter Frame Fields Menu

| Name                   | Value  | Units | LSB | Description                                     | Low    | High     | Invalid |
|------------------------|--------|-------|-----|---|--------|----------|---------|
| DF                     | 11     | N/A   | 0   |   | 11     | 11       | False   |
| Transponder Capability | 0      | N/A   | 0   | Transponder Level 1 no CA = 7 for air or ground | 0      | 7        | False   |
| Address Announced      | 000001 | N/A   | 0   |   | 000000 | 16777215 | False   |

**Squitter Frame Fields Menu**

Local Remote

DF

11

Transponder Capability

Transponder Level 1 no CA = 7 for air or ground

Address Announced

000001

Figure 1.2.3 - 24 Multi-Receiver Squitter Schedule Menu

| No. | Start Time | Stop Time | Enable | Power (dBm) | Rate (secs) |
|-----|------------|-----------|--------|-------------|-------------|
| 1   | 0.0        | 6550.0    | No     | -50         | 1.0         |

**SELEX Squitter Schedule Menu**

Local Remote

Add

Remove

Start Time (sec)

0.0

Stop Time (sec)

6550.0

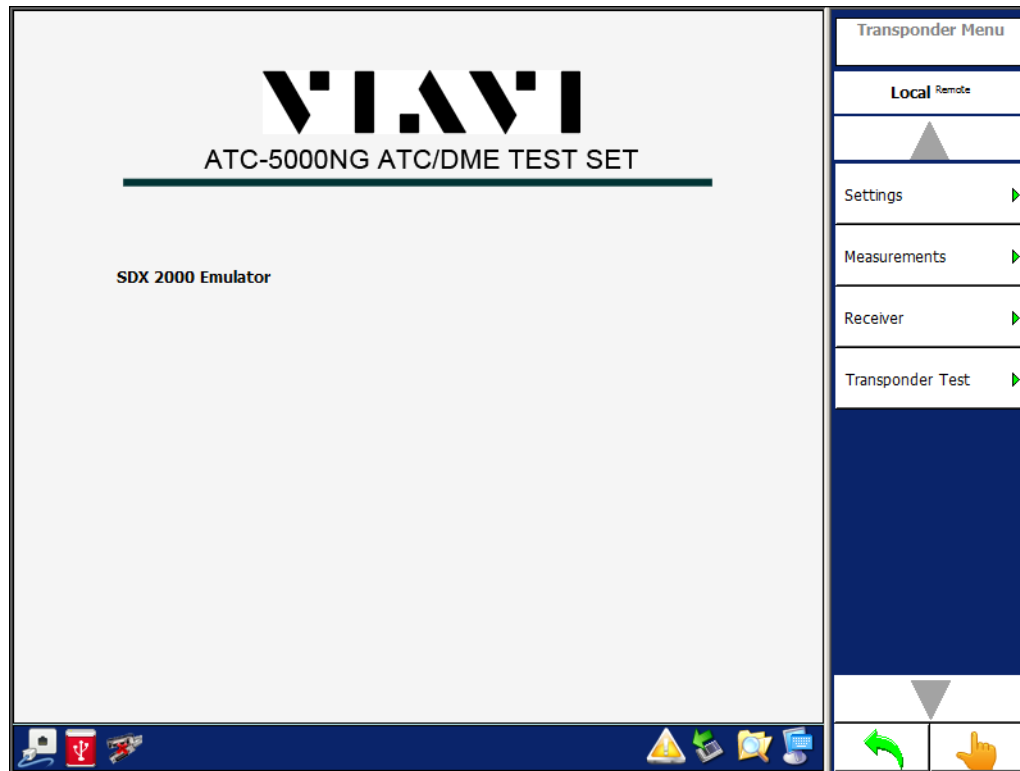
Enable

On

Off

### 3.5 TRANSPONDER MENU

**Figure 1.2.3 - 25 ATC-5000NG Transponder Menu**

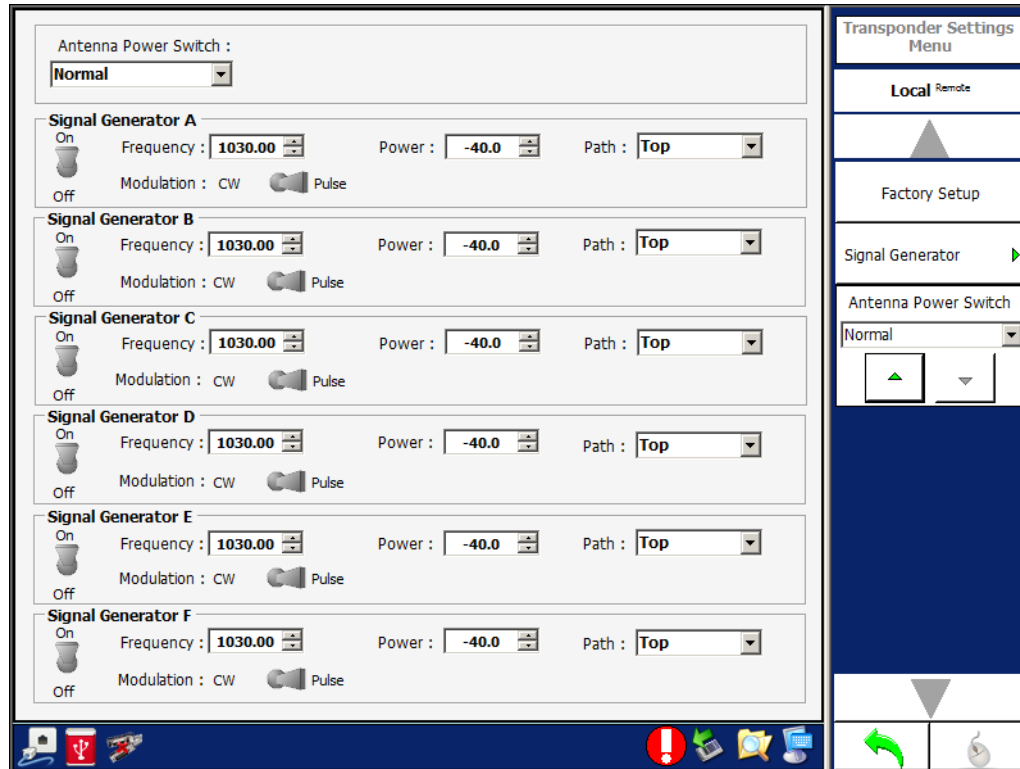


| Screen Components               | Description                                 |
|---------------------------------|---|
| <b>Settings Softkey</b>         | Displays the Transponder Settings Menu.     |
| <b>Measurements Softkey</b>     | Displays the Transponder Measurements Menu. |
| <b>Receiver Softkey</b>         | Displays the Transponder Receiver Menu.     |
| <b>Transponder Test Softkey</b> | Displays the Transponder Test Menu.         |

### 3.5.1 TRANSPONDER SETTINGS MENU

Allows the user to configure the Transmitter, Receiver and Antenna/Switch modules in the Test Set for transponder tests. The Transponder Settings Menu is used for testing and troubleshooting of the Test Set.

Figure 1.2.3 - 26 Transponder Settings Menu



| Screen Components            | Description  |
|------------------------------|--|
| <b>Antenna Power Switch</b>  | Allows the user to select the path of the Antenna Power Switch.                                      |
| <b>Signal (ON/OFF)</b>       | Allows the user to enable/disable the Transmitter.   |
| <b>Frequency</b>             | Allows the user to select the Transmitter frequency.   |
| <b>Power</b>                 | Allows the user to set the Transmitter power.  |
| <b>Path</b>                  | Allows the user to select the Transmitter Path (RF I/O Port).  |
| <b>Modulation</b>            | Allows the user to select the Modulation.  |
| <b>Factory Setup Softkey</b> | Allows the user to set all hardware to the default settings according to the hardware configuration. |

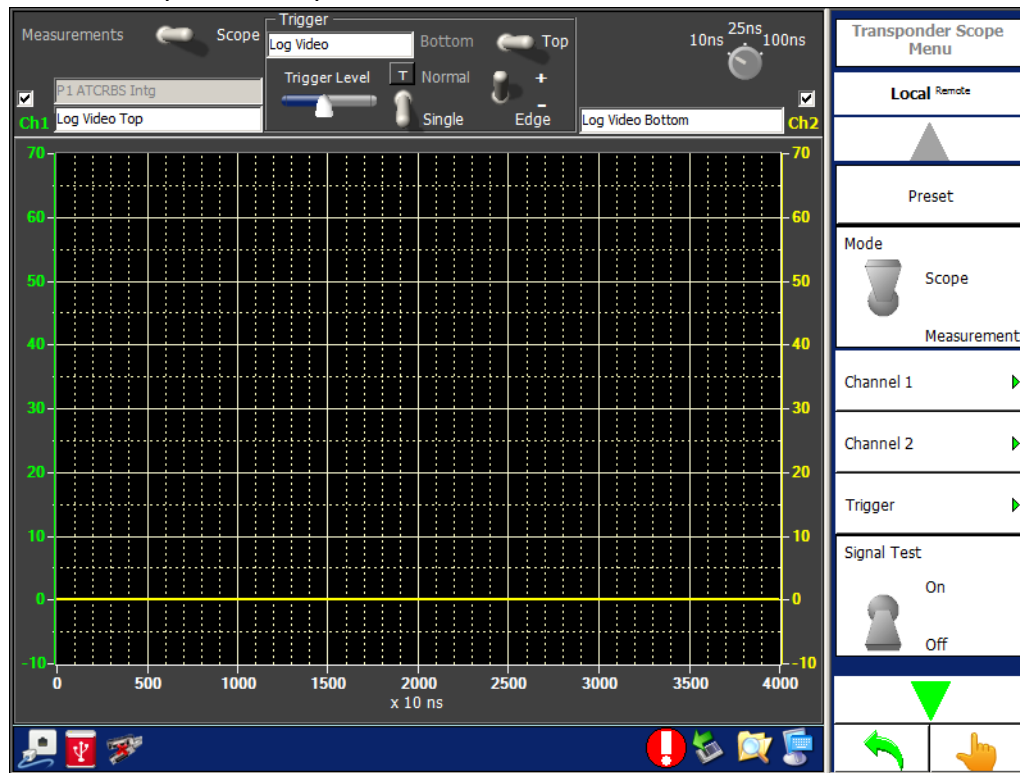
### 3.5.2 TRANSPONDER MEASUREMENTS MENU

Allows the user to view the pulses from the Transponder or ADS-B Transmitter. The Transponder Measurements Menu allows the user to make measurements for power, pulse width, rise time, fall time, spacing and frequency.

Dragging the mouse or finger on the Touch Screen over the axis and graph can change the horizontal/vertical scales and horizontal/vertical positions.

#### 3.5.2.1 Scope Mode

**Figure 1.2.3 - 27** Transponder Scope Mode Screen/Menu

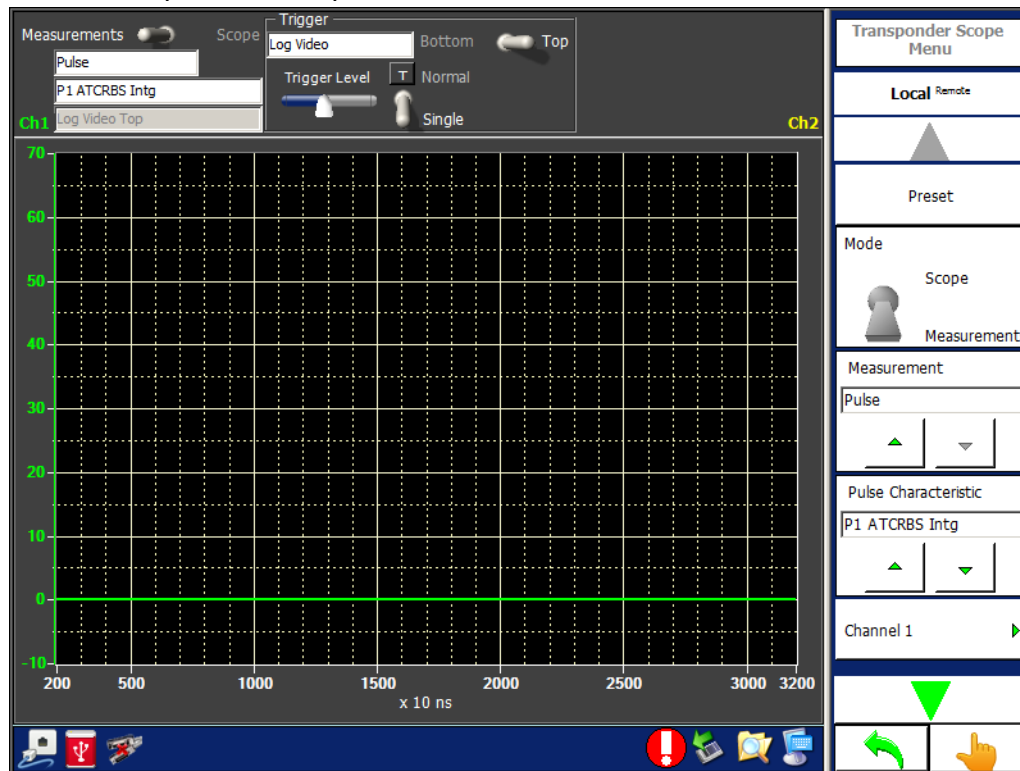


| Screen Components        | Description  |
|--------------------------|--|
| <b>Measurement/Scope</b> | Allows the user to perform a measurement or set the scope to view a received waveform. |
| <b>Ch1</b>               | Allows the user to select the Channel 1 selection.                                     |
| <b>Ch2</b>               | Allows the user to select the Channel 2 selection.                                     |
| <b>Trigger Source</b>    | Allows the user to select the Trigger Source.  |

| <b>Screen Components</b> | <b>Description</b>  |
|--------------------------|---|
| <b>Trigger Level</b>     | If ATE Line Mode C/Mode A is selected for the Trigger Source, a combobox to select the whisper/shout level is displayed.<br>If Log Video is selected for the Trigger Source, a slider for the power level is displayed. |
| <b>Trigger Mode</b>      | Allows the user to select the Trigger Mode.   |
| <b>Trigger Edge</b>      | Allows the user to select the Trigger Edge.   |
| <b>Trigger Antenna</b>   | Allows the user to select the Trigger Antenna.  |
| <b>Horizontal Scale</b>  | Allows the user to select the Horizontal Scale.   |
| <b>Preset Softkey</b>    | Allows the user to set the fields to preset levels and selections.  |
| <b>Channel 1 Softkey</b> | Allows the user to select the Channel 1 selection.  |
| <b>Enable</b>            | Allows the user to enable the Channel 1 selection.  |
| <b>Source</b>            | Same as Screen Components.  |
| <b>Clear</b>             | Allows the user to clear the Channel 1 selection.   |
| <b>Channel 2 Softkey</b> | Allows the user to select the Channel 2 selection.  |
| <b>Enable</b>            | Allows the user to enable the Channel 2 selection.  |
| <b>Source</b>            | Same as Screen Components.  |
| <b>Clear</b>             | Allows the user to clear the Channel 2 selection.   |

### 3.5.2.2 Transponder, Scope Measurement Mode

Figure 1.2.3 - 28 Transponder - Scope Measurement Mode



| Screen Components           | Description  |
|-----------------------------|--|
| <b>Measurements/Scope</b>   | Allows the user to perform a measurement or set the scope to view a received waveform.   |
| <b>Measurement Type</b>     | Allows the user to select the Measurement Type.  |
| <b>Pulse Characteristic</b> | Allows the user to select the Pulse.   |
| <b>Ch1</b>                  | Allows the user to select the Channel 1 selection.   |
| <b>Ch2</b>                  | Allows the user to select the Channel 2 selection.   |
| <b>Measurement</b>          | Allows the user to select the Measurement Type.  |
| <b>Trigger Level</b>        | If ATE Line Mode C is selected for the Trigger Source, a combobox to select the whisper/shout level is displayed.<br>If Log Video is selected for the Trigger Source, a slider for power level is displayed. |
| <b>Trigger Mode</b>         | Allows the user to select the Trigger Mode.  |
| <b>Trigger Source</b>       | Allows the user to select the Trigger Source.  |
| <b>Trigger Antenna</b>      | Allows the user to select the Trigger Antenna.   |

| <b>Screen Components</b> | <b>Description</b>   |
|--------------------------|--|
| <b>Preset Softkey</b>    | Allows the user to set the fields to preset levels and selections. |

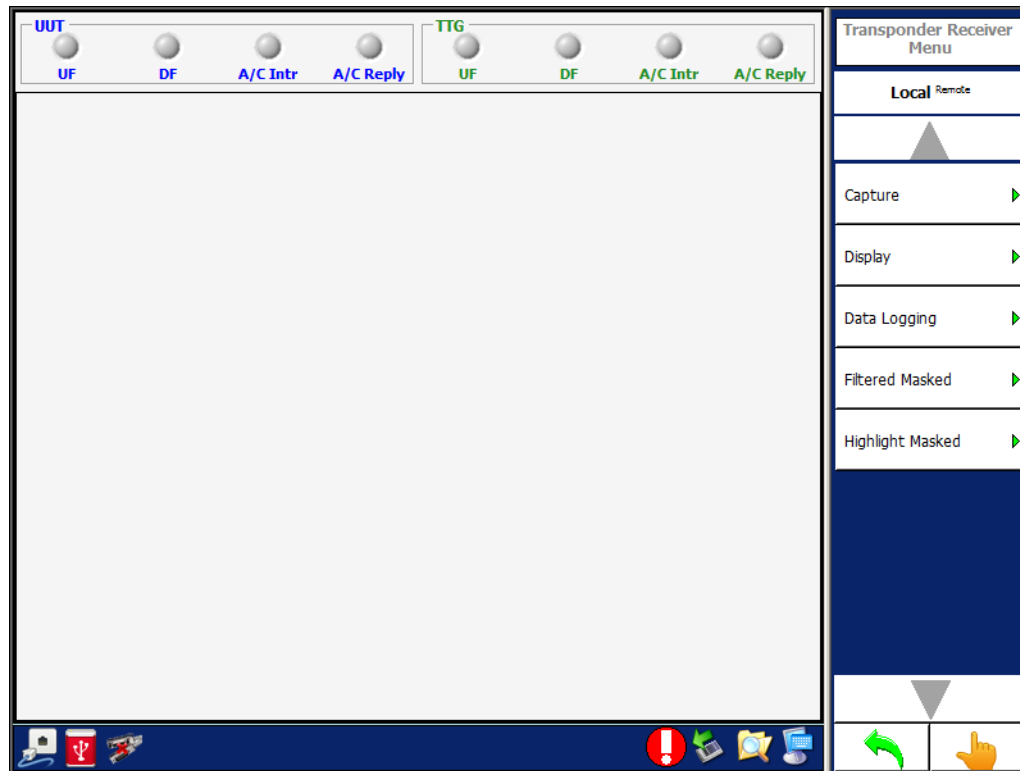
### 3.5.3 TRANSPONDER RECEIVER MENU

Allows the user to view the transmissions from the UUT and transmissions from the Test Set.

The last 8 receptions are displayed. Blue lines are receptions from the UUT and green lines are receptions from the Test Set.

When performing an export, the Test Set generates a SDF (Compact Database File) and exports the file to the selected file location. All the DF17 position, velocity and identification messages are decoded.

**Figure 1.2.3 - 29** Transponder Receiver Menu



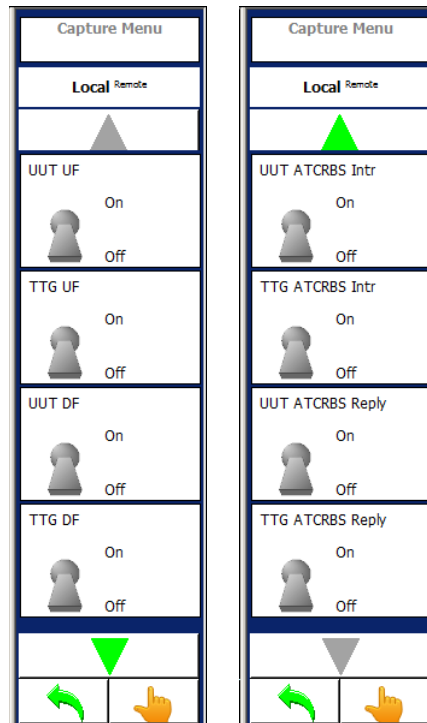
| Screen Components | Description  |
|-------------------|--|
| <b>LEDs</b>       | Displays the status of reception from the UUT or Test Set. |
|                   | LED      UF              UF Interrogation                  |
|                   | DF              DF Reply                                   |
|                   | A/C Intr        ATCRBS Interrogation                       |
|                   | A/C Reply      ATCRBS Reply                                |



### 3.5.3.1 Transponder Receiver, Capture Menu

The Capture softkey accesses the following:

**Figure 1.2.3 - 30** Transponder Receiver, Capture Menu

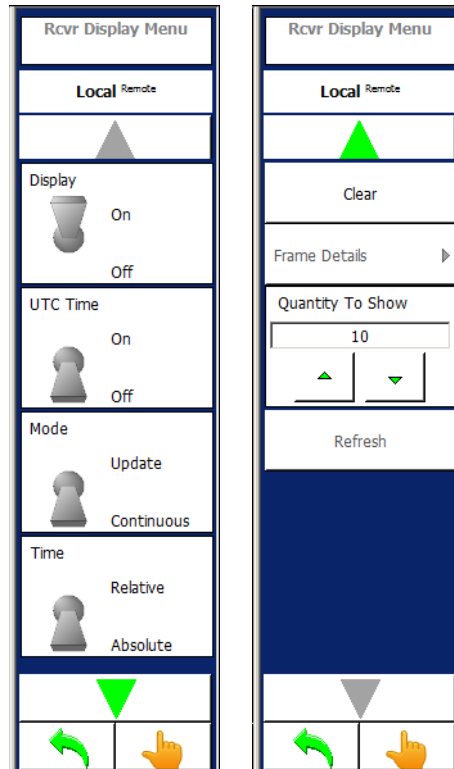


| Screen Components       | Description  |
|-------------------------|--|
| <b>UUT UF</b>           | Allows the user to enable/disable capture of TCAS UF messages.               |
| <b>ATC UF</b>           | Allows the user to enable/disable capture of Test Set UF messages.           |
| <b>UUT DF</b>           | Allows the user to enable/disable capture of Transponder DF messages.        |
| <b>ATC DF</b>           | Allows the user to enable/disable capture of Test Set DF messages.           |
| <b>UUT ATCRBS Intr</b>  | Allows the user to enable/disable capture of TCAS ATCRBS interrogations.     |
| <b>ATC ATCRBS Intr</b>  | Allows the user to enable/disable capture of Test Set ATCRBS interrogations. |
| <b>UUT ATCRBS Reply</b> | Allows the user to enable/disable capture of Transponder ATCRBS replies.     |
| <b>ATC ATCRBS Reply</b> | Allows the user to enable/disable capture of Test Set ATCRBS replies.        |

### 3.5.3.2 Transponder Receiver, Display Menu

The Display softkey accessed controls that allow the user to set the parameters for the status of reception from the UUT or Test Set:

**Figure 1.2.3 - 31** Transponder Receiver Display Menu



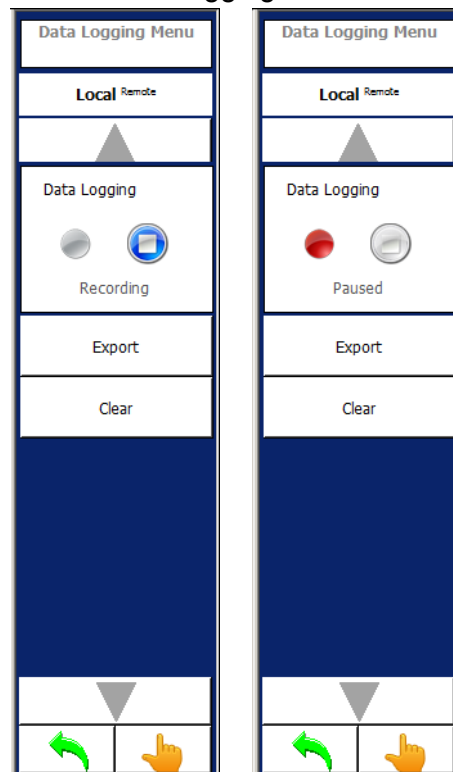
| Screen Component        | Description  |
|-------------------------|--|
| <b>Display</b>          | Allows the user to display new receptions (ON or OFF)  |
| <b>UTC Time</b>         | Allows the user to display the UTC Time (ON or OFF).   |
| <b>Mode</b>             | Allows the user to display the data received by updating a message style with the latest reception (Update) or display all data received in a continuous order (Continuous). |
| <b>Time</b>             | Allows the user to display the time relative to the previous message (Relative) or display the time received (Absolute).   |
| <b>Clear</b>            | Allows the user to clear all messages in the Transponder Receiver Menu.  |
| <b>Frame Details</b>    | Allows the user to display the digital breakdown of a selected reception.  |
| <b>Quantity to Show</b> | Allows the user to select how many messages to display (100 messages maximum).   |

| Screen Component | Description  |
|------------------|--|
| <b>Refresh</b>   | Allows the user to refresh the Transponder Receiver Menu with the selected quantity of messages. |

### 3.5.3.3 Transponder Receiver, Data Logging Menu

The Data Logging Menu allows the user to set the parameters for the status of reception from the UUT or Test Set:

**Figure 1.2.3 - 32** Transponder Receiver Data Logging Menu

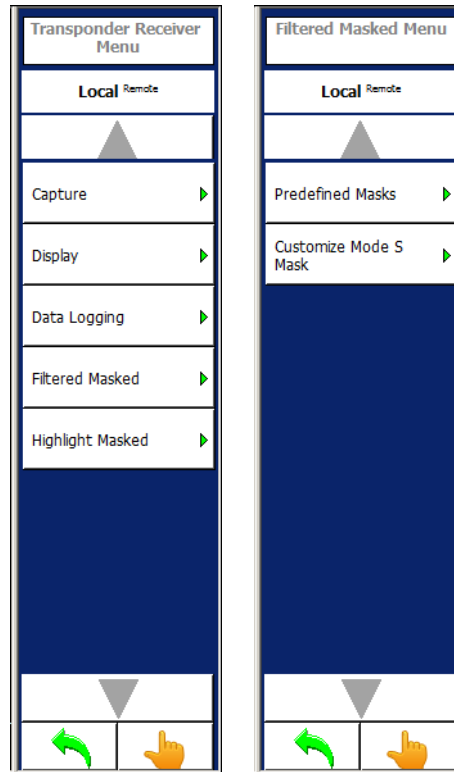


| Screen Component          | Description   |
|---------------------------|---|
| <b>Recording / Paused</b> | Allows the user to start (Recording) or stop (Paused) the data logging of the receive messages. |
| <b>Export</b>             | Allows the user to export the receive messages to a file.                                       |
| <b>Clear</b>              | Allows the user to clear all recorded messages.   |

### 3.5.3.4 Transponder Receiver, Filtered Masked Menu

Filtered Masked Softkey accesses additional softkeys which allow the user to select from predefined masks or to create custom Mode S masks. Allows the user to select the messages to filter and display in the Transponder Receiver Menu

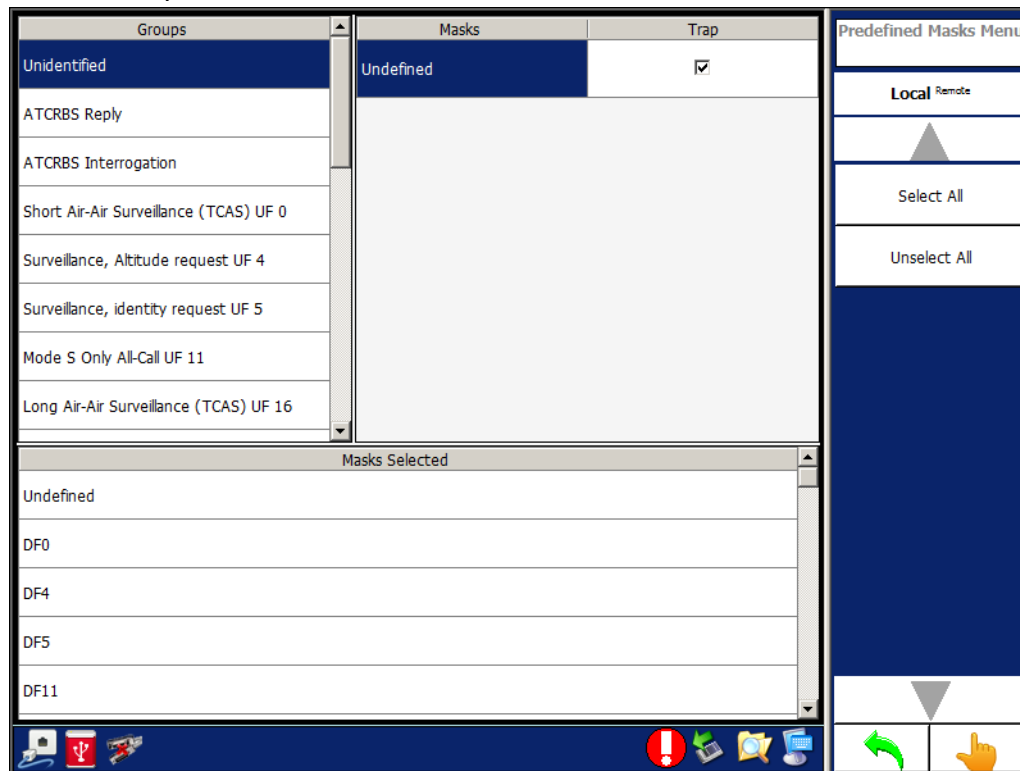
**Figure 1.2.3 - 33** Transponder Receiver Filtered Masked Menu



| Screen Component             | Description                              |
|------------------------------|--|
| <b>Predefined Masks</b>      | Displays the Predefined Masks Menu.      |
| <b>Customize Mode S Mask</b> | Displays the Customize Mode S Mask Menu. |

### 3.5.3.5 Predefined Masks Menu

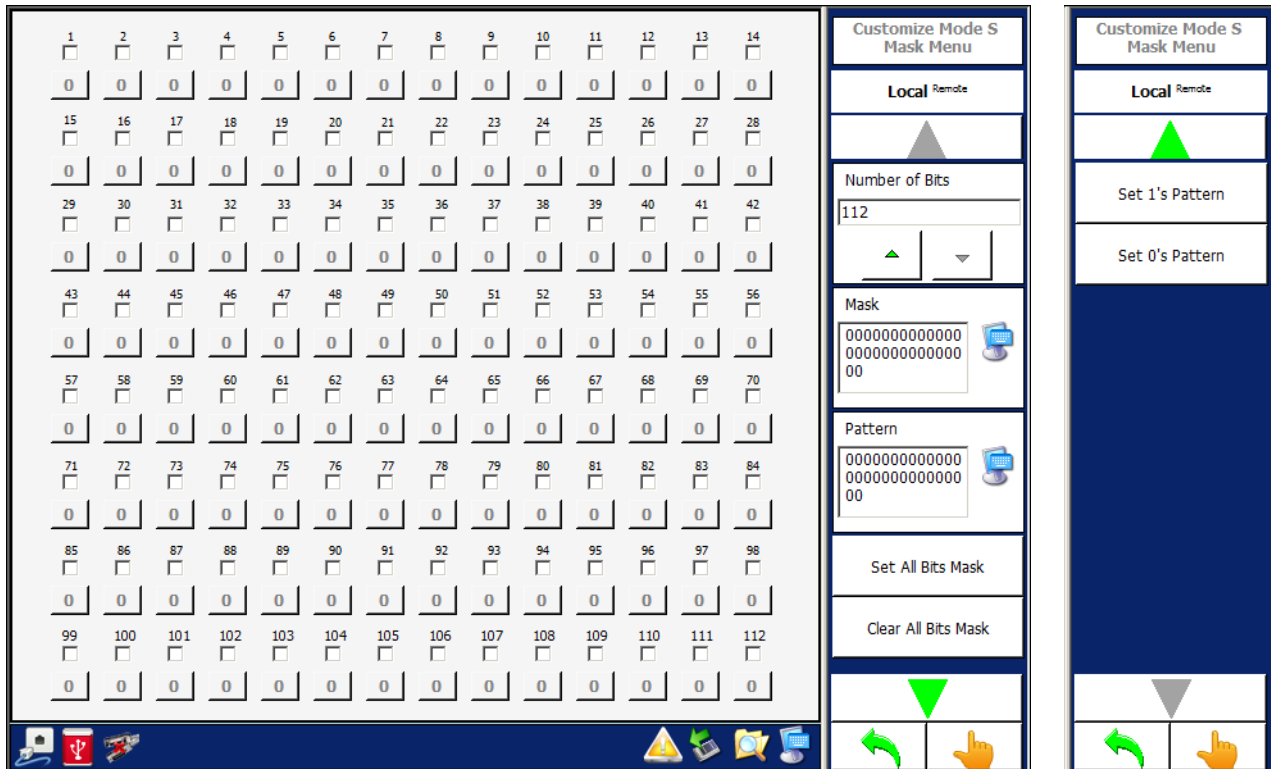
Figure 1.2.3 - 34 Transponder Receiver Predefined Masked Menu



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Groups</b>               | Allows the user to select groups of UF and DF messages.                       |
| <b>Masks</b>                | Displays the sub-messages of the selected group.                              |
| <b>Trap</b>                 | Allows the user to enable/disable the sub-messages.                           |
| <b>Masks Selected</b>       | Displays the messages selected to perform the filter.                         |
| <b>Select All Softkey</b>   | Allows the user to select all messages to be displayed. No filter is applied. |
| <b>Unselect All Softkey</b> | Allows the user to de-select all messages. No messages are displayed.         |

### 3.5.3.6 Customize Mode S Mask Menu

Figure 1.2.3 - 35 Transponder Receiver Customize Mode S Mask Menu

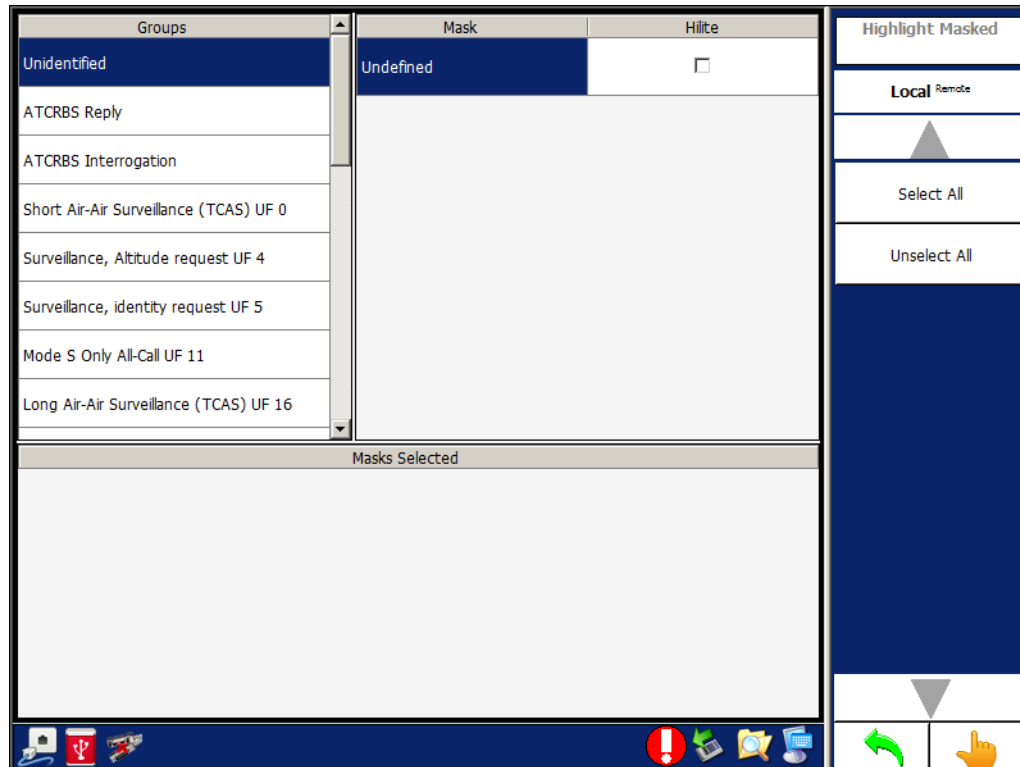


| Screen Components                  | Description   |
|------------------------------------|---|
| <b>Number</b>                      | Allows the user to enable/disable the selected pattern bit. |
| <b>Bit</b>                         | Allows the user to pattern bit.                             |
| <b>Number of Bits Softkey</b>      | Allows the user to select the number of bits.               |
| <b>Mask Softkey</b>                | Allows the user to Mask.                                    |
| <b>Pattern Softkey</b>             | Allows the user to Pattern.                                 |
| <b>Set All Bits Mask Softkey</b>   | Allows the user to select all bits.                         |
| <b>Clear All Bits Mask Softkey</b> | Allows the user to clear all bits.                          |
| <b>Set 1's Pattern Softkey</b>     | Allows the user to select "1" for all patterns.             |
| <b>Set 0's Pattern Softkey</b>     | Allows the user to select "0" for all patterns.             |

### 3.5.3.7 Highlight Masked Menu

Allows the user to select the messages to highlight during the display of messages in the Transponder Receiver Menu.

Figure 1.2.3 - 36 Highlight Masked Menu

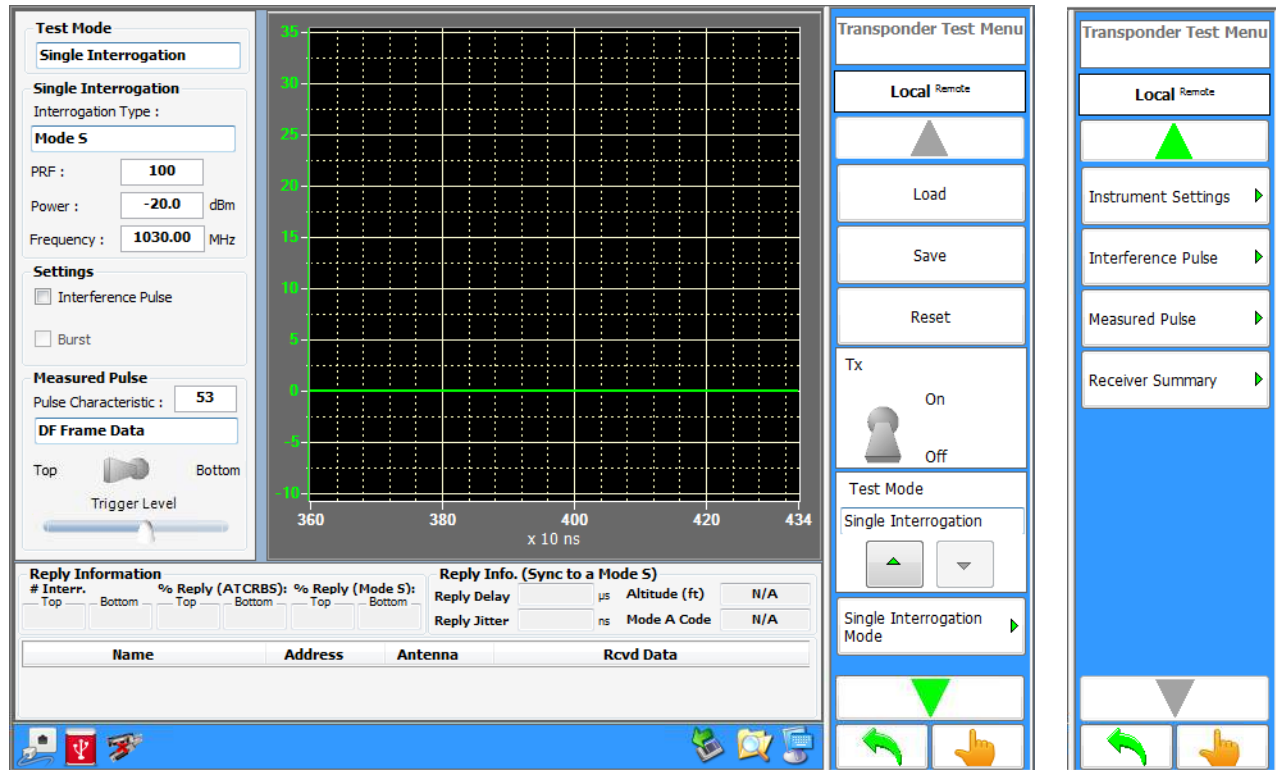


| Screen Components           | Description   |
|-----------------------------|---|
| <b>Groups</b>               | Allows the user to select groups of UF and DF messages.                       |
| <b>Masks</b>                | Displays the sub-messages of the selected group.                              |
| <b>Hilite</b>               | Allows the user to enable/disable the sub-messages.                           |
| <b>Masks Selected</b>       | Displays the messages selected to perform the highlight.                      |
| <b>Select All Softkey</b>   | Allows the user to select all messages to be displayed. No filter is applied. |
| <b>Unselect All Softkey</b> | Allows the user to de-select all messages. No messages are displayed.         |

### 3.5.4 TRANSPONDER TEST MENU - SINGLE INTERROGATION

The Transponder Test Menu in Single Interrogation Mode allows the user to set up the Test Set to transmit a Mode A, Mode C, Mode A All-Call, Mode C All-Call, Mode A/Mode S All-Call, Mode C/Mode S All-Call, Mode S, P1-P2, Pulse, DME pulse pair, or Alternate Mode A/Mode C.

Figure 1.2.3 - 37 Transponder Test Menu - Single Interrogation



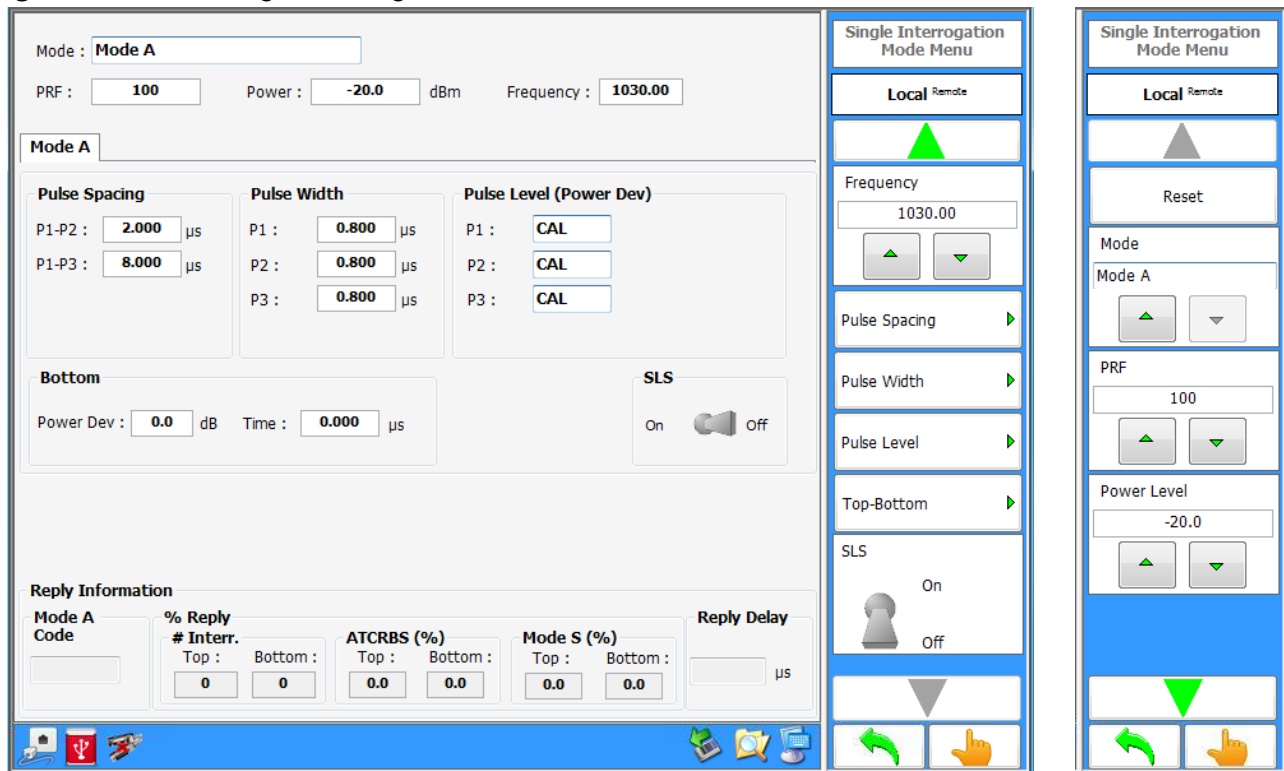
| Screen Component            | Description  |
|-----------------------------|--|
| <b>Test Mode</b>            | Allows the user to select the Test Mode.   |
| <b>Interrogation Type</b>   | Allows the user to select the Interrogation Type.  |
| <b>PRF</b>                  | Allows the user to enter the PRF (Pulse Repetition Frequency).   |
| <b>Power</b>                | Allows the user to enter transmit Power.   |
| <b>Frequency</b>            | Allows the user to enter the Transmitter Frequency.  |
| <b>Settings</b>             | Allows the users to enable Interference Pulse.   |
| <b>Pulse Characteristic</b> | Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit. |
| <b>Antenna Selection</b>    | Allows the user to select the antenna port from which reply measurements will be derived.  |
| <b>Trigger Level</b>        | Allows the user to select the scope trigger level.   |



| <b>Screen Component</b>          | <b>Description</b>   |
|----------------------------------|--|
| <b>Reply Information</b>         | Displays ATCRBS and Mode S % reply.  |
| <b>Reply Info.</b>               | Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.    |
| <b>Load</b>                      | Allows the user to load a saved transponder test.  |
| <b>Save</b>                      | Allows the user to save the current test setup to a file.  |
| <b>Reset</b>                     | Allows the user to reset the current screen to default values.   |
| <b>Tx Switch</b>                 | Allows the user to Start (On) or Stop (Off) transmissions.   |
| <b>Test Mode</b>                 | Allows the user to select the Test Mode.   |
| <b>Single Interrogation Mode</b> | Open Single Mode Interrogation Menu  |
| <b>Instrument Settings</b>       | Opens the Instrument Settings Menu (See Instrument Setting Menu.).   |
| <b>Interference Pulse</b>        | Opens the Interference Pulse Menu allowing the user to configure interference pulse parameters (See Interference Pulse Menu.). |
| <b>Measured Pulse</b>            | Allows the user to select the reply pulse to measure, antenna source and trigger level.  |
| <b>Receiver Summary</b>          | Opens the Receiver Summary Menu. Displays squitter rates and data for common Transponder squitters.                            |

### 3.5.4.1 Single Interrogation Mode Menu

Figure 1.2.3 - 38 Single Interrogation Mode Menu



#### Screen Components

#### Description

**Mode**

Allows the user to select the interrogation type.

**PRF**

Allows the user to enter the PRF (Pulse Repetition Frequency).

**Power**

Allows the user to enter the transmit Power.

**Frequency**

Allows the user to enter the transmit Frequency.

**Pulse Spacing**

Allows the user to enter Pulse Spacing.

**Pulse Width**

Allows the user to enter Pulse Width.

**Pulse Level (Power Dev)**

Allows the user to enter Pulse Level (Power Dev) for P1, P2, P3, P4, P5 and P6 (depending on which interrogation is selected).

**Bottom**

Allows the user to enter the Bottom antenna power and timing deviation relative to the Top antenna transmission.

**SLS Switch**

Allows the user to turn SLS On or Off.

**Reply Information**

Displays reply code, % reply and reply delay data.

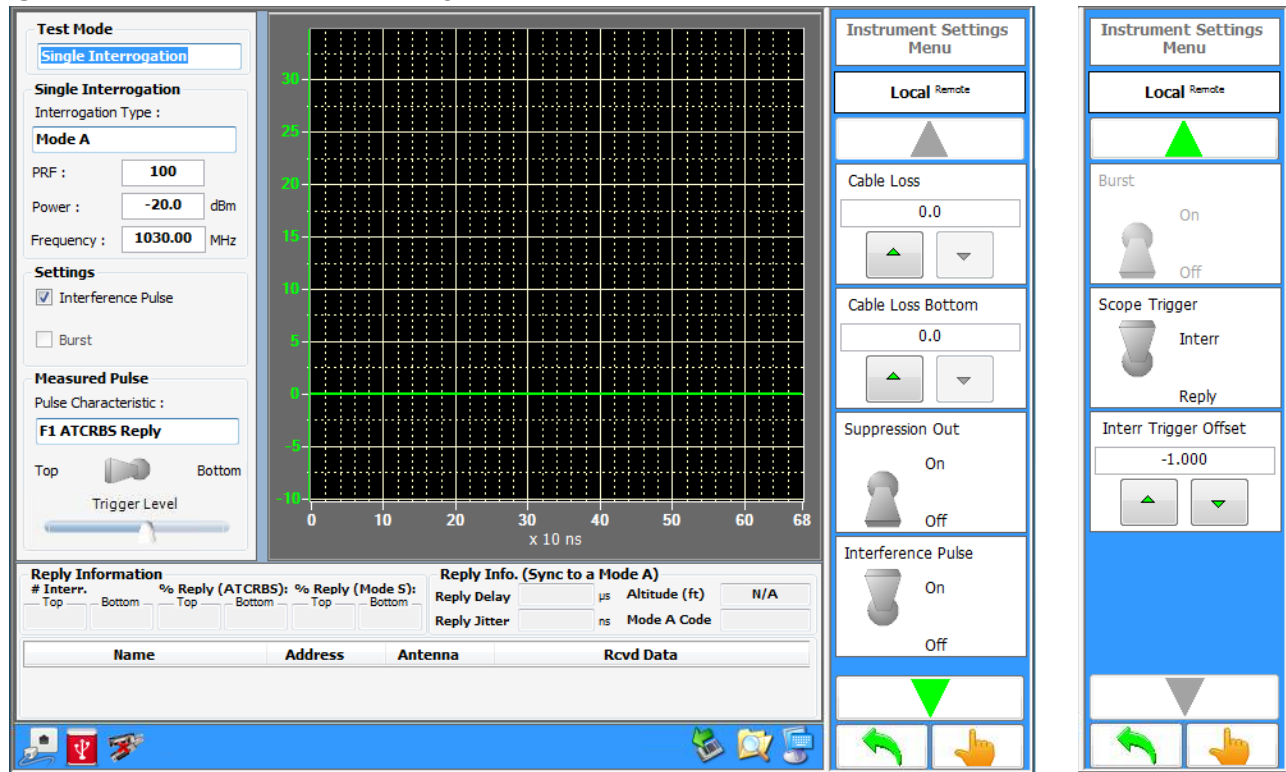
**Reset**

Allows the user to reset the current screen to default values.

### 3.5.4.2 Instrument Settings Menu

Instrument Settings accessed the following:

Figure 1.2.3 - 39 Instrument Settings Menu



#### Screen Components

#### Description

##### Cable Loss

Allows the user to enter the top antenna cable loss.

##### Cable Loss Bottom

Allows the user to enter the bottom antenna cable loss.

##### Suppression Out

Allows the user to turn Suppression Out ON or OFF.

##### Interference Pulse

Allows the user to turn the Interference Pulse ON or OFF.

##### Scope Trigger (switch)

Allows the user to select Scope Sync for Interr (Interrogation) or Reply.

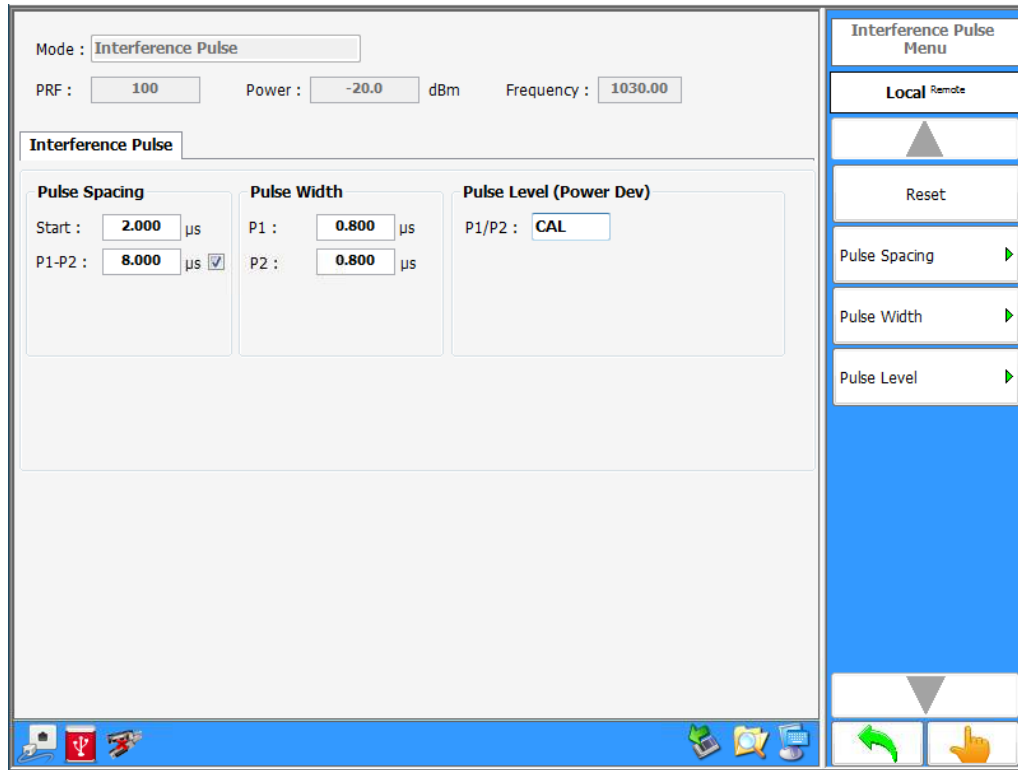
##### Interr Trigger Offset

Allows the user to enter the Scope-Sync, interrogation-trigger, offset time.

### 3.5.4.3 Interference Pulse Menu

Interference Pulse accesses the following:

**Figure 1.2.3 - 40** Interference Pulse Menu

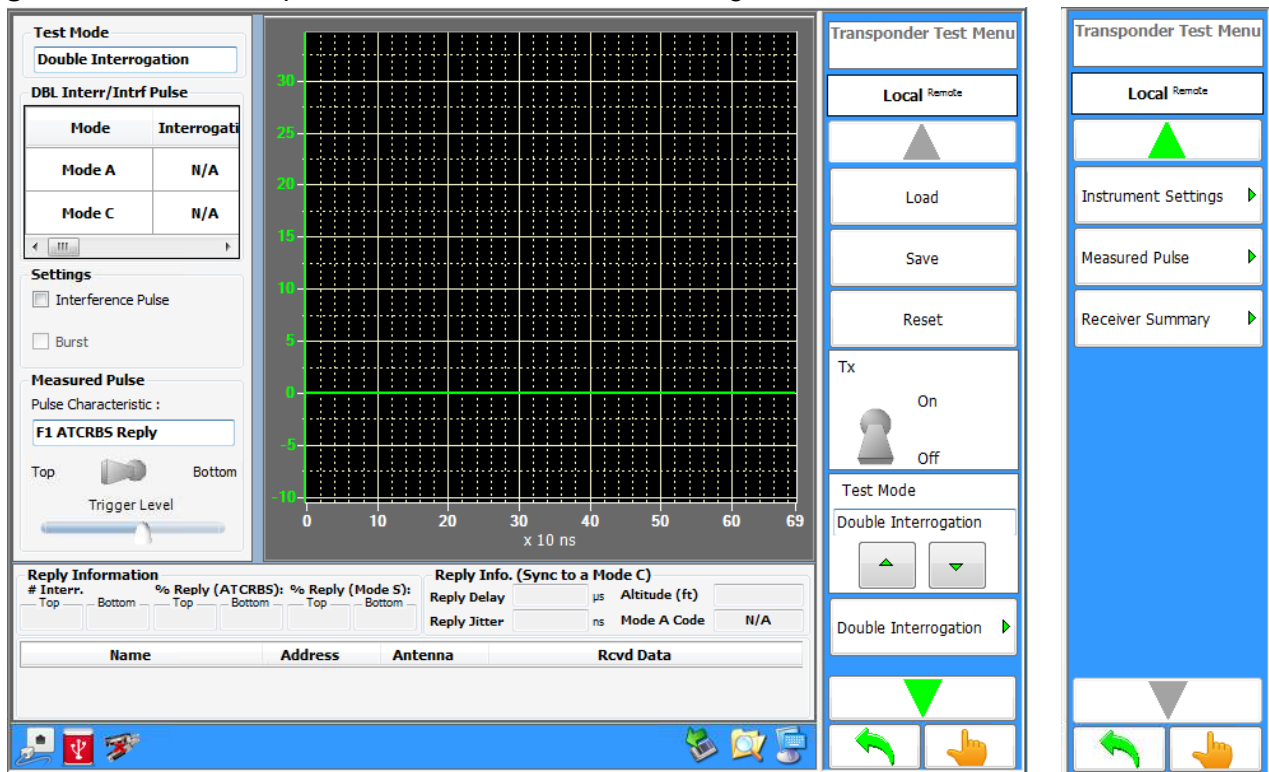


| Screen Components              | Description   |
|--------------------------------|---|
| <b>Reset</b>                   | Reset all Interference Pulse values.  |
| <b>Pulse Spacing</b>           | Allows the user to select one (P1) or two (P1-P2) interference pulses and to enter the start and spacing time values. |
| <b>Pulse Width</b>             | Allows the user to enter pulse widths.  |
| <b>Pulse Level (Power Dev)</b> | Allows the user to enter P1 and P2 Pulse Level (Power Dev).   |

### 3.5.5 TRANSPONDER TEST MENU - DOUBLE INTERROGATION

The transponder test menu allows the user to set up the Test Set to transmit a double interrogation of Mode A, Mode C, Mode A All-Call, Mode C All-Call, Mode A/Mode S All-Call, Mode C/ Mode S All-Call, Mode S, P1-P2, Pulse, DME pulse pair, or Alternate Mode A/Mode C. In double interrogation mode, both messages are transmitted on the Top Antenna only.

**Figure 1.2.3 - 41** Transponder Test Menu - Double Interrogation



| Screen Component                 | Description  |
|----------------------------------|--|
| <b>Test Mode</b>                 | Allows the user to select the Test Mode.   |
| <b>Double Interr/Intrf Pulse</b> | Displays the two interrogations selected for transmission.   |
| <b>Settings</b>                  | Allows the users to select the Interference Pulse (See Single Interrogation, <a href="#">“Interference Pulse Menu” on page 59</a> ).   |
| <b>Pulse Characteristic</b>      | Allows the user to select the reply pulse to measure.  |
| <b>Antenna Selection</b>         | Allows the user to select the antenna port from which reply measurements will be derived.<br>Note: In Double Interrogation Mode, interrogations are transmitted on the Top Antenna only. |
| <b>Trigger Level</b>             | Allows the user to select the scope trigger level.   |
| <b>Reply Information</b>         | Displays % Reply for ATRCBS and Mode S interrogations on Top Antenna only.   |

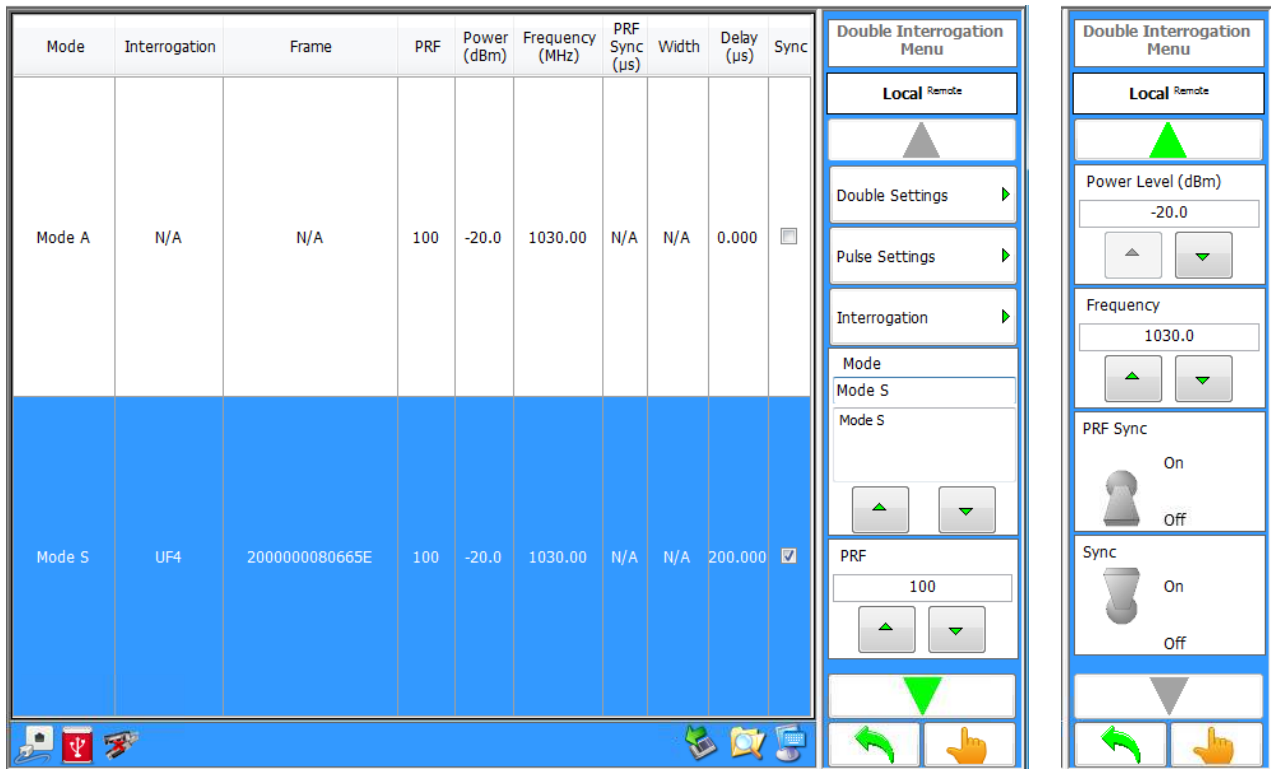
---

| <b>Screen Component</b>     | <b>Description</b>  |
|-----------------------------|---|
| <b>Reply Info.</b>          | Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.   |
| <b>Load</b>                 | Allows the user to load a saved transponder test.   |
| <b>Save</b>                 | Allows the user to save the current test setup to a file.   |
| <b>Reset</b>                | Allows the user to reset the current screen to default values.  |
| <b>Tx (switch)</b>          | Allows the user to Start (On) or Stop (Off) transmissions.  |
| <b>Double Interrogation</b> | Opens the Double Interrogation Menu which allows the user to modify the interrogation types and their associated interrogation parameters i.e., pulse spacing, pulse width, etc (See the Double Interrogation Menu section.). |
| <b>Instrument Settings</b>  | Opens the Instrument Settings Menu (See menu description in Single Interrogation, Instrument Settings Menu).  |
| <b>Interference Pulse</b>   | Opens the Interference Pulse Menu allowing the user to configure interference pulse parameters (See Single Interrogation, Interference Pulse Menu.).  |
| <b>Measured Pulse</b>       | Allows the user to select the reply pulse to measure, antenna source and trigger level.   |
| <b>Receiver Summary</b>     | Opens the Receiver Summary Menu. Displays squitter rates and data for common Transponder squitters.   |

---

### 3.5.5.1 Double Interrogation Menu

Figure 1.2.3 - 42 Transponder Double Interrogation Menu



#### Screen Component

#### Description

##### Double Settings

Allows the user to select the Power Mode (Low Power, High Power, or Very Low Power), P1 to P1 Spacing, Interlace Interrogation ON/OFF, and Interlace Ratio.

##### Pulse Settings

Opens the Pulse Settings Menu. Allows the user to enter pulse width and spacing parameters for the selected transmission.

##### Interrogation (Is displayed Only when Mode S Interrogation is selected)

Allows the user to select Interrogation Name, Interrogation Type, Interrogation Identifier, Transponder Address and Frame Details for the select Mode S Interrogation.

##### Mode

Allows the user to select the Interrogation Mode.

##### PRF

Allows the user to enter the PRF (Pulse Repetition Frequency).

##### Power Level

Allows the user to select the Power Level.

##### Frequency

Allows the user to select the Transmitter frequency.

##### PRF Sync (switch)

Allows the user to sync or unsync the PRF of the first transmission with the second. Only available for P1-P2, Pulse or DME interrogations.

---

**Sync (switch)**

Allows the user to select the specific interrogation whose reply measurement values will be derived from.

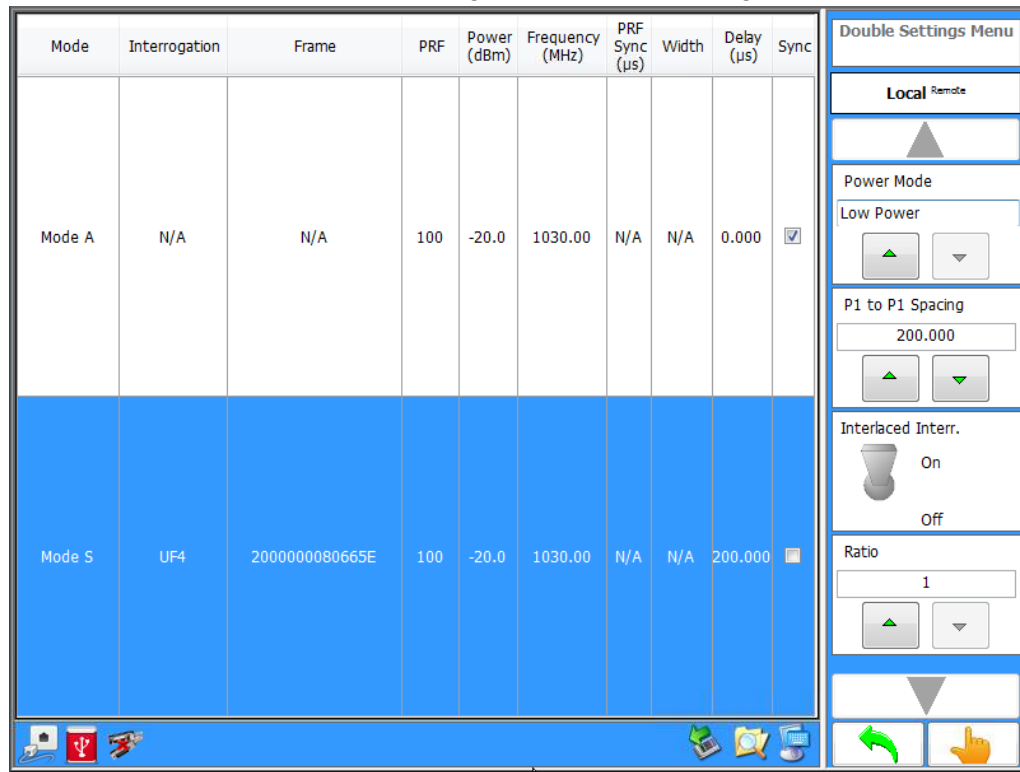
---



### 3.5.5.2 Double Settings Menu

Doubles Settings accessed the following:

**Figure 1.2.3 - 43 Transponder - Double Interrogation, Double Settings Menu**



#### Screen Components

#### Description

##### Power Mode

Allows the user to select the power mode ranges of Low Power, High Power or Very Low Power.

##### P1 to P1 Spacing

Allows the user to enter P1 to P1 Spacing (Refer to “Minimum P1 to P1 Spacing for Second Reply Measurement” chart.).

##### Interlace Interr.

Allows the user to switch Interlace Interrogation Mode On or Off.

##### Ratio

Allows the user to enter the Interlace Ratio.

---

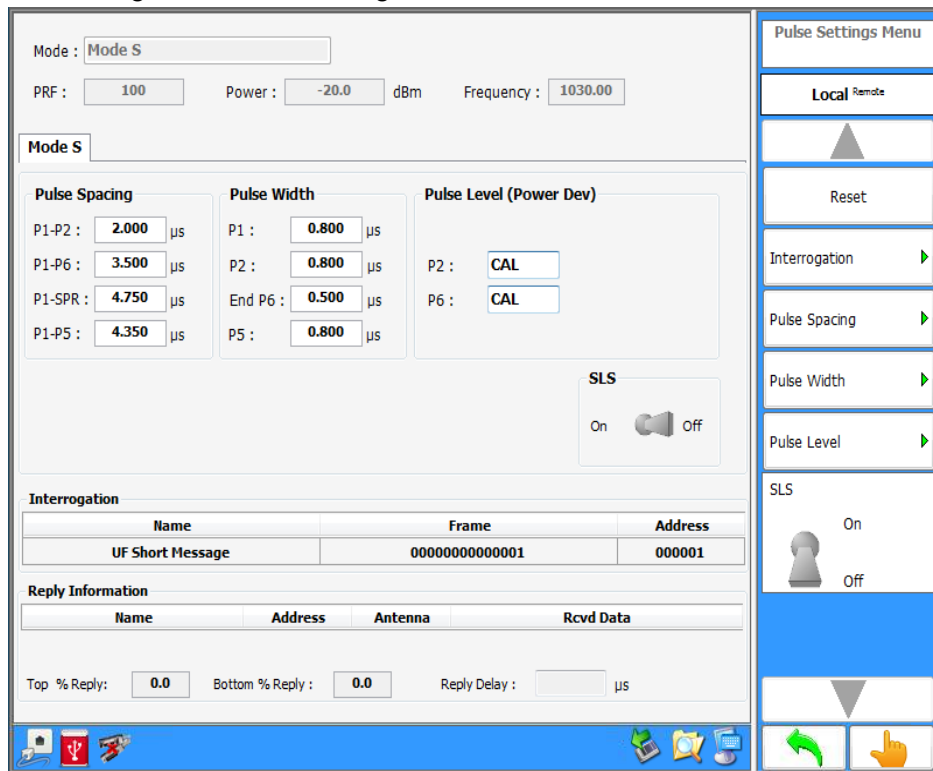
**Minimum P1 to P1 Spacing for Second Reply Measurement, Double Interrogation Test Mode**

| <b>"Double Interrogation Pairing<br/>First Interrogation / Second Interrogation"</b> | <b>100% Reply Spacing (us)</b> |
|--|--------------------------------|
| <b>Mode A SPI Off/ All Interrogations</b>  | 38                             |
| <b>Mode A SPI On / All Interrogations</b>  | 57                             |
| <b>Mode C / All Interrogations</b>   | 52                             |
| <b>Mode A All-Call Short / All Interrogations</b>                                    | 39                             |
| <b>Mode C All-Call Short / All Interrogations</b>                                    | 52                             |
| <b>Mode A All-Call Long / All Interrogations</b>                                     | 205                            |
| <b>Mode C All-Call Long / All Interrogations</b>                                     | 218                            |
| <b>Mode S Short / All Interrogations</b>   | 199                            |
| <b>Mode S Long / All Interrogations</b>  | 255                            |
| <b>P1 / All Interrogations</b>   | 3                              |
| <b>P1-P2 / All Interrogations</b>  | 5                              |
| <b>Alternate Mode A-Mode C / All Interrogations</b>                                  | 52                             |
| <b>DME 12 us / All Interrogations</b>  | 16                             |
| <b>DME 30 us / All Interrogations</b>  | 34                             |

---

### 3.5.5.3 Interrogation Pulse Setting Menu

Figure 1.2.3 - 44 Interrogation Pulse Setting Menu



#### Screen Components

#### Description

##### Reset

Allows the user to reset to the default interference pulse parameters.

##### Interrogation (Is displayed Only when Mode S Interrogation is selected)

Allows the user to select Interrogation Name, Transponder Address and Frame Details

##### Pulse Spacing

Allows the user to enter the Pulse Spacing.

##### Pulse Width

Allows the user to enter the Pulse Width.

##### Pulse Level (Power Dev)

Allows the user to select the Pulse Level (Power Dev) for P1, P2, P3, P4, P5 and P6 (depending on which interrogation is selected).

##### SLS (switch)

Allows the user to turn SLS On or Off.

### 3.5.5.4 Interrogation Definition Menu

Figure 1.2.3 - 45 Interrogation Definition Menu

| Mode   | Interrogation | Frame            | PRF | Power (dBm) | Frequency (MHz) | PRF Sync (µs) | Width | Delay (µs) | Sync                                |
|--------|---------------|------------------|-----|-------------|-----------------|---------------|-------|------------|-------------------------------------|
| Mode A | N/A           | N/A              | 100 | -20.0       | 1030.00         | N/A           | N/A   | 0.000      | <input checked="" type="checkbox"/> |
| Mode S | UF0           | 0000000000000001 | 100 | -20.0       | 1030.00         | N/A           | N/A   | 200.000    | <input type="checkbox"/>            |

**Interrogation Definition Menu**

Local Remote

▲

Interrogation Name

UF0

UF0

▲ ▼

Transponder Address

000001

▲ ▼

Frame Details ▶

▼

↩ ✎

#### Screen Components

#### Description

**Interrogation Name**

Allows the user to select the Interrogation name.

**Transponder Address**

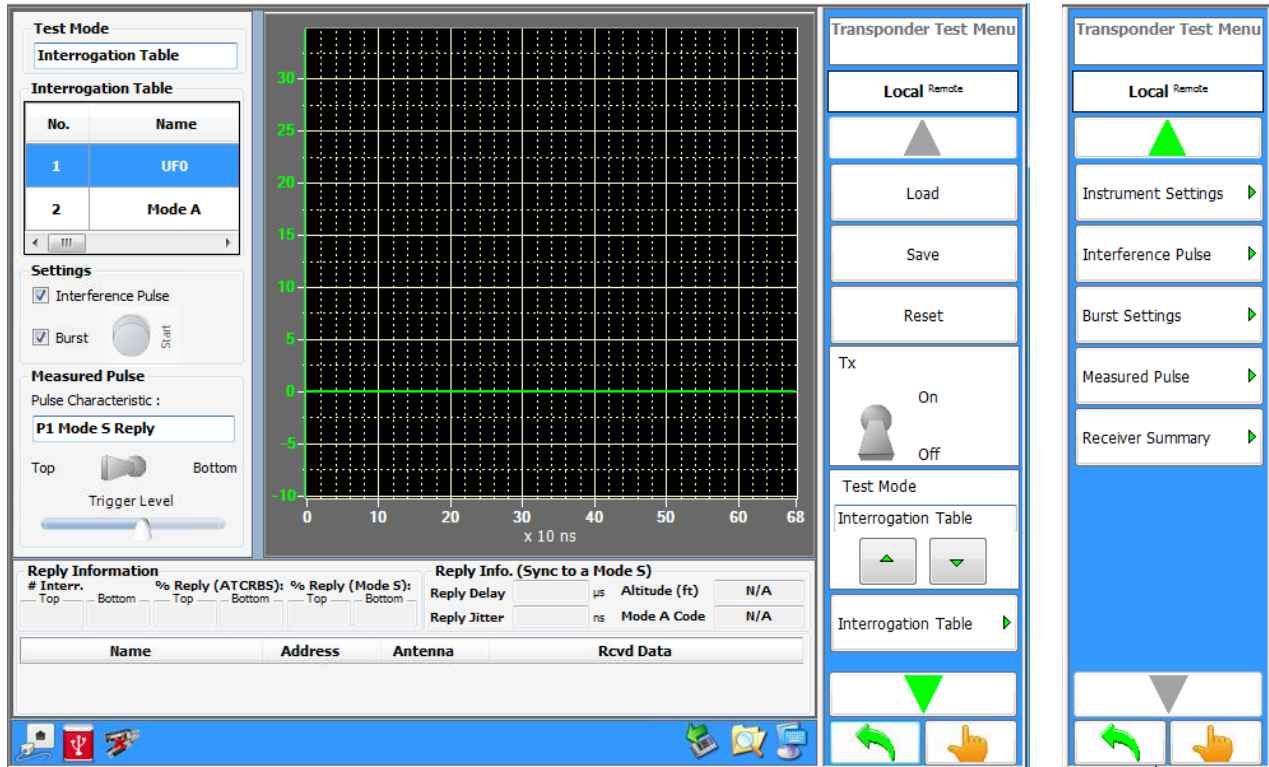
Allow the use to enter the Transponder Mode S Address.

**Frame Details**

Allows the user to select the Mode S parameters to be modified.

### 3.5.6 TRANSPONDER TEST MENU - INTERROGATION TABLE

The Transponder Test Menu allow the user to set the Test Set to transmit interrogation in continuous or burst mode.



#### Screen Components

##### Test Mode

#### Description

Allows the user to select the Test Mode.

##### Interrogation Table

Displays the Interrogation Table.

##### Settings

Allows the users to select Burst and Interference Pulse.

##### Pulse Characteristics

Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit.

##### Antenna Selection

Allows the user to select the Antenna.

##### Trigger Level

Allows the user to select the scope trigger level.

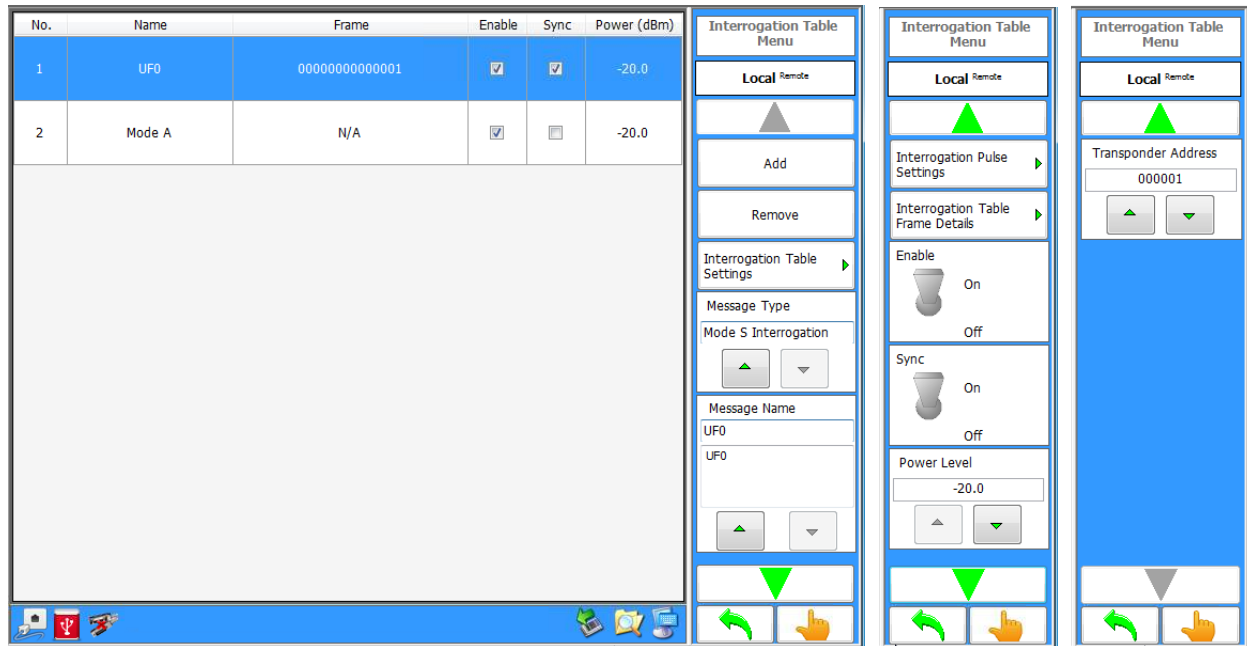
---

|                            |  |
|----------------------------|--|
| <b>Reply Information</b>   | <p>Displays percent reply. In single burst mode, percent reply is calculated using all interrogation/reply pairs of the burst.</p> <p>Sample size for calculation of percent reply is dependent on PRF for non-single burst modes:<br/>PRF&gt;200, samples taken over 1 sec window<br/>PRF&lt;200, 200 samples<br/>maximum sample window = 10 sec</p> <p>If any interrogation type is a non-standard All-Call format, Percent Reply measurements may be invalid.</p> |
| <b>Reply Info.</b>         | <p>Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.</p>   |
| <b>Load</b>                | <p>Allows the user to load a saved transponder test.</p>   |
| <b>Save</b>                | <p>Allows the user to save the current test setup to a file.</p>   |
| <b>Reset</b>               | <p>Allows the user to reset the current screen to default values.</p>  |
| <b>Tx (switch)</b>         | <p>Allows the user to Start (On) or Stop (Off) transmissions.</p>  |
| <b>Interrogation Table</b> | <p>Opens the Interrogation Table Menu which allows the user to modify, add or remove interrogation types from table and their associated interrogation parameters (i.e., pulse spacing, pulse width, etc.).</p>  |
| <b>Instrument Settings</b> | <p>Opens the Instrument Settings Menu (See Single Interrogation, Instrument Settings Menu).</p>  |
| <b>Interference Pulse</b>  | <p>Allows the user to select reset, P1 or P1-P2, pulse spacing, pulse width, and pulse level (Power Dev) (See Single Interrogation Interference Pulse Menu).</p>   |
| <b>Burst Settings</b>      | <p>Opens the Burst Settings Menu (See description in Burst Settings Men section.).</p>   |
| <b>Measured Pulse</b>      | <p>Allows the user to select the reply pulse to measure, antenna source and trigger level.</p>   |
| <b>Receiver Summary</b>    | <p>Displays squitter rates and data for common Transponder squitters.</p>  |

---

### 3.5.6.1 Transponder Test Menu - Interrogation Table Menu

Figure 1.2.3 - 46 Transponder Test Menu - Interrogation Table Menu

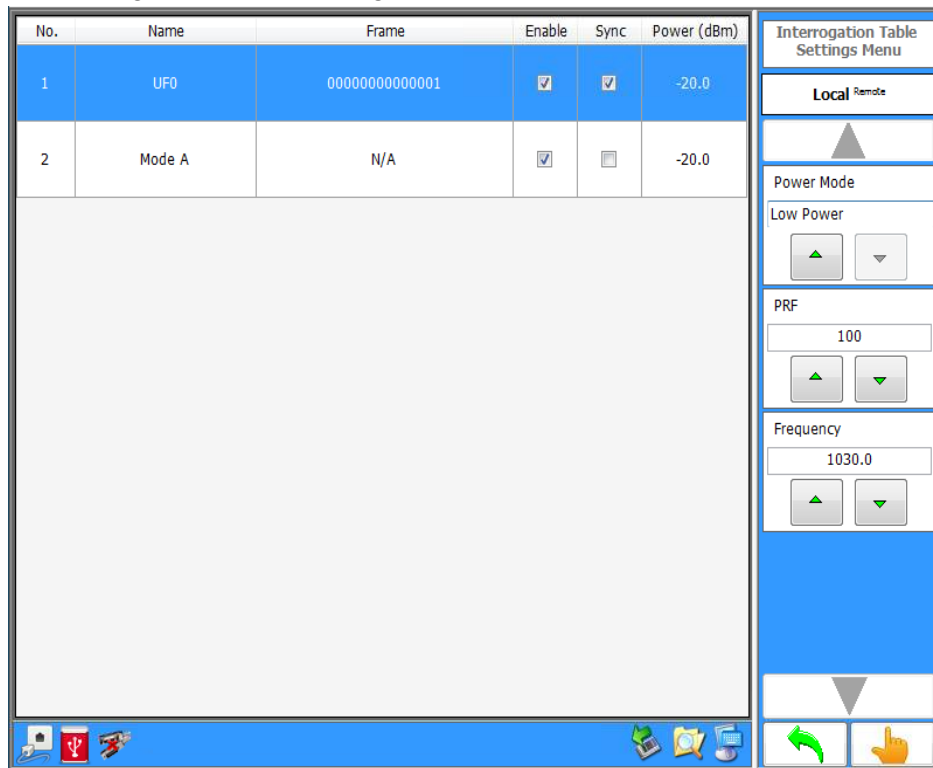


| Screen Components                       | Description  |
|---|--|
| <b>Add</b>                              | Allows the user to add an interrogation to the table.  |
| <b>Remove</b>                           | Allows the user to delete an interrogation from the table.   |
| <b>Interrogation Table Settings</b>     | Allows the user to enter the Power Mode (Low Power, High Power, or Very Low Power), PRF rate and Transmitter Frequency.  |
| <b>Message Type</b>                     | Allows the user to select either an ATCRBS or Mode S Interrogation type.   |
| <b>Message Name</b>                     | Allows the user to select the Interrogation Type.  |
| <b>Interrogation Pulse Settings</b>     | Displays the selected Interrogation which allows the user to modify the interrogation parameters (i.e. pulse spacing, pulse width, pulse level, bottom power dev., and bottom time). |
| <b>Interrogation Table Frame Detail</b> | This parameter is only displayed when Mode S Interrogation is selected.<br>Allows the user to select the Mode S parameters to be modified.   |
| <b>Enable (switch)</b>                  | Allows the user to Enable (On) or Disable (Off) the selected interrogation.  |
| <b>Sync (switch)</b>                    | Allows the user to select the specific interrogation whose reply measurement values will be derived from.  |

| Screen Components          | Description   |
|----------------------------|---|
| <b>Power Level</b>         | Allows the user to enter the Power Level on the selected interrogation.   |
| <b>Transponder Address</b> | This parameter is only displayed when Mode S Interrogation is selected.<br>Allows the user to enter the Transponder Mode S address. |

### 3.5.6.2 Interrogation Table Settings

Figure 1.2.3 - 47 Interrogation Table Settings

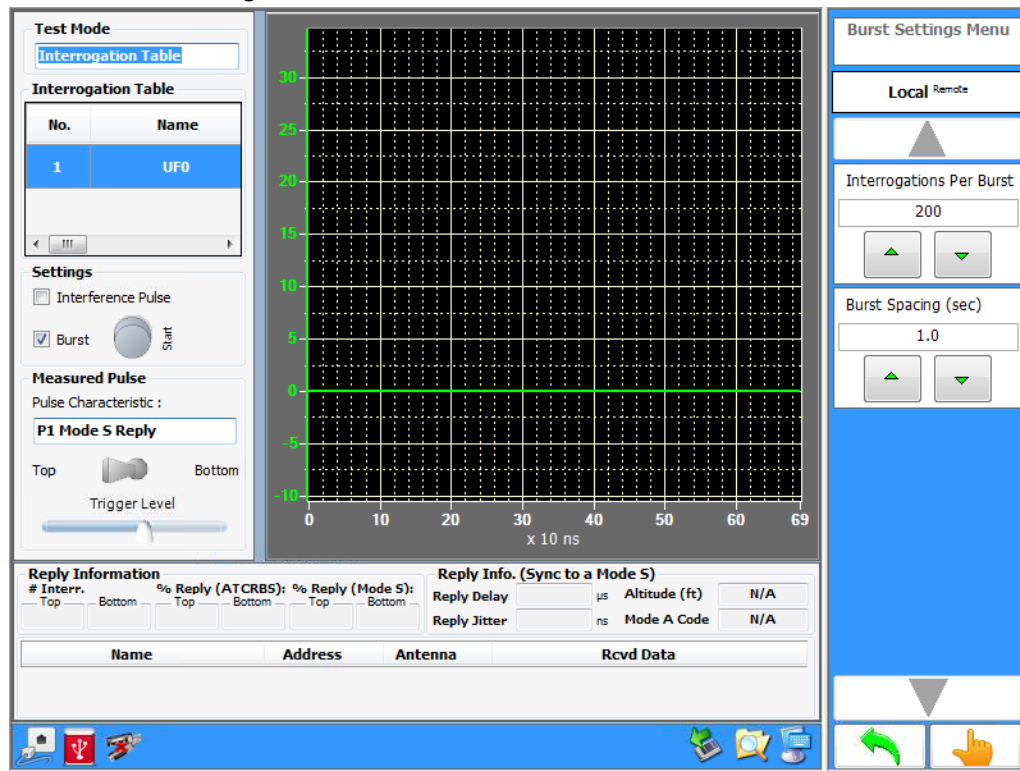


| Screen Components | Description   |
|-------------------|---|
| <b>Power Mode</b> | Allows the use to select the power mode ranges of Low Power, High Power, or Very Low Power. |
| <b>PRF</b>        | Allows the user to enter the PRF (Pulse Repetition Frequency).                              |
| <b>Frequency</b>  | Allows the user to enter the Transmitter frequency.   |



### 3.5.6.3 Burst Settings Menu

Figure 1.2.3 - 48 Burst Settings Menu



#### Screen Components

#### Interrogations Per Burst

#### Description

Allows the user to enter the number of interrogations per burst cycle.

#### Burst Spacing

Allows the user to set the time between bursts. Entering a value of 0 configures the test set for single burst mode.

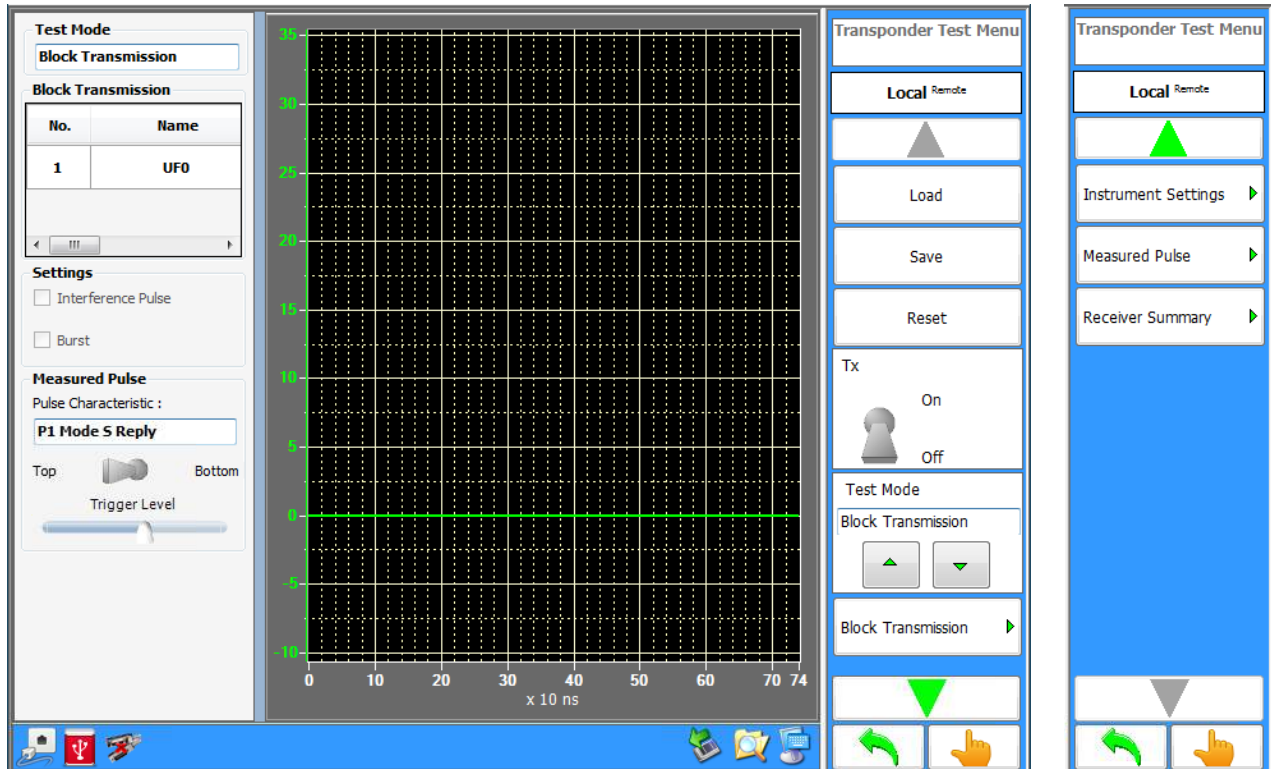
#### Start (button)

Starts the burst interrogation cycle. Tx must be ON before pressing Burst Start button

### 3.5.7 TRANSPONDER TEST MENU - BLOCK TRANSMISSION

The Transponder Block Transmission Menu allows the user to set up the ATC-5000NG to transmit a block of 1030 interrogations.

**Figure 1.2.3 - 49** Transponder Test Menu - Block Transmission



| Screen Components           | Description  |
|-----------------------------|--|
| <b>Test Mode</b>            | Allows the user to select the Test Mode.   |
| <b>Interrogation Type</b>   | Displays transmissions listed in the Block Transmission Menu (see Block Transmission Menu).  |
| <b>Pulse Characteristic</b> | Allows the user to select the reply pulse to measure. If pulse measurement option “DF Frame Data” is selected the user can further refine measurement down to the Mode S, reply, data bit. |
| <b>Antenna Selection</b>    | Allows the user to select the antenna port from which reply measurements will be derived.  |
| <b>Trigger Level</b>        | Allows the user to select the scope trigger level.   |
| <b>Load</b>                 | Allows the user to load a saved transponder test.  |
| <b>Save</b>                 | Allows the user to save the current test setup to a file.  |
| <b>Reset</b>                | Allows the user to reset the current screen to default values.   |
| <b>Tx (switch)</b>          | Allows the user to Start (On) or Stop (Off) transmissions.   |

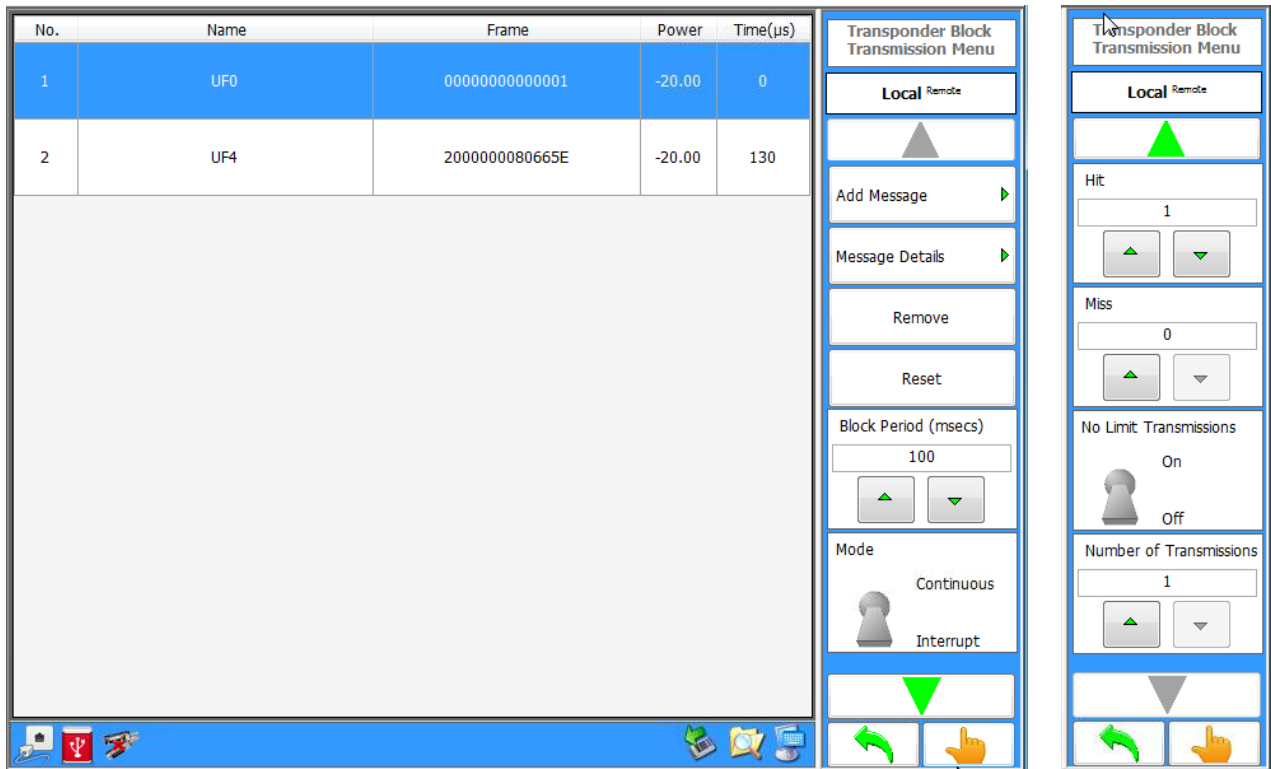
---

| Screen Components          | Description  |
|----------------------------|--|
| <b>Block Transmission</b>  | Opens the Transponder Block Transmission Menu allowing the user to define the block transmissions. |
| <b>Instrument Settings</b> | Opens the Instrument Settings Menu (See Single Interrogation, Instrument Settings Menu).           |
| <b>Measured Pulse</b>      | Allows the user to select the reply pulse to measure, antenna source and trigger level.            |
| <b>Receiver Summary</b>    | Displays squitter rates and data for common Transponder squitters.                                 |

---

### 3.5.7.1 Transponder Block Transmission Menu

Figure 1.2.3 - 50 Transponder Block Transmission Menu



| Screen Components          | Description   |
|----------------------------|---|
| <b>Add Message</b>         | Opens the Add Message Menu where transmissions can be defined and added to the transmission table.                |
| <b>Message Details</b>     | Allows the user to edit transmissions listed in the transmission table.   |
| <b>Remove</b>              | Allows the user to delete a transmission from the transmission table.   |
| <b>Reset</b>               | Allows the user to clear the entire transmission table.   |
| <b>Block Period (msec)</b> | Allows the user to enter the time between the first transmissions of each block.                                  |
| <b>Mode (switch)</b>       | Allows the user to select Continuous transmission of block or interrupt block transmission.                       |
| <b>Hit</b>                 | Only displayed when Mode is set to Interrupt.<br>Allows the use to set the number of blocks that will be sent.    |
| <b>Miss</b>                | Only displayed when Mode is set to Interrupt.<br>Allows the use to set the number of blocks that will be skipped. |

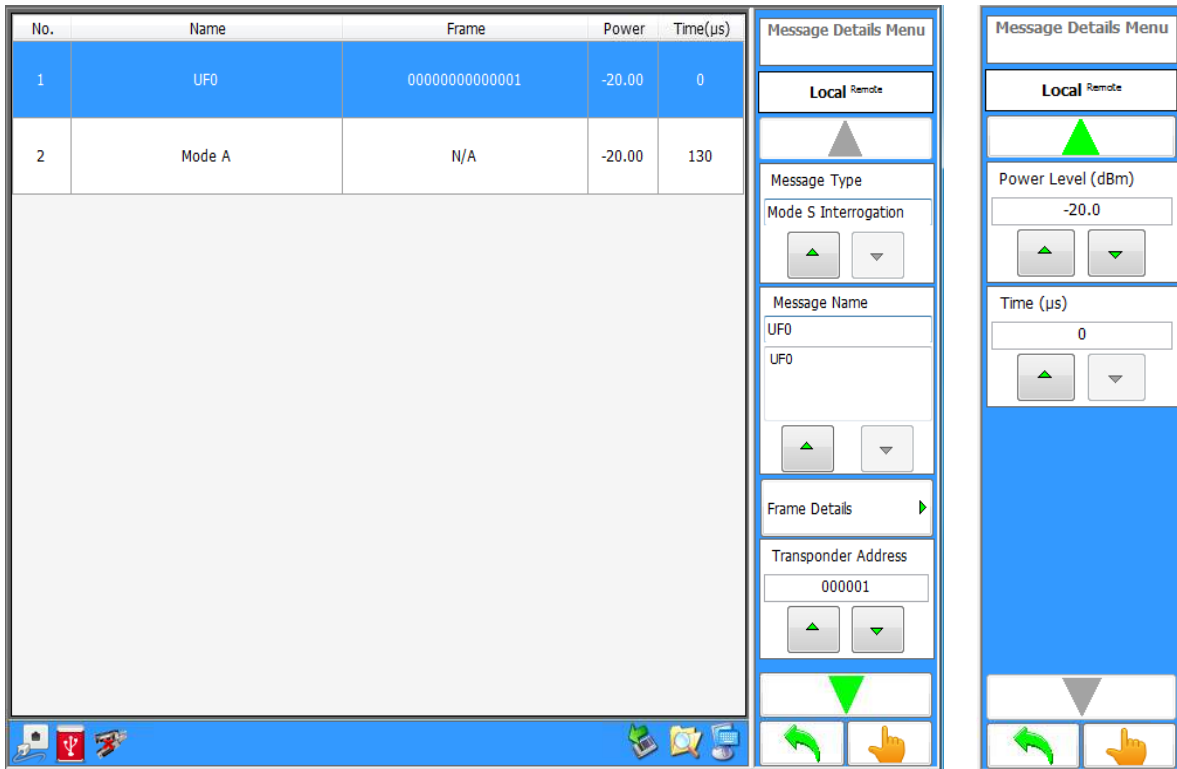
---

| <b>Screen Components</b>               | <b>Description</b>   |
|--|--|
| <b>No Limit Transmissions (switch)</b> | Allows the user to Enable (On) or Disable (Off) the number of transmissions to be sent.                                    |
| <b>Number of Transmissions</b>         | Only displayed when No Limit Transmissions is set to Off)<br>Allows the use to set the number of blocks that will be sent. |

---

### 3.5.7.2 Message Details Menu

Figure 1.2.3 - 51 Message Details Menu



| Screen Components          | Description  |
|----------------------------|--|
| <b>Message Type</b>        | Allows the use to select ATCRBS, Mode S or P1-P2 message types.  |
| <b>Message Name</b>        | Only displayed when ATCRBS or Mode S Interrogation is selected.<br>Allows the user to select the Interrogation Type.     |
| <b>Frame Details</b>       | Only displayed when Mode S Interrogation is selected.<br>Allows the user to select the Mode S parameters to be modified. |
| <b>Transponder Address</b> | Only displayed when Mode S Interrogation is selected.<br>Allows the user to enter the Transponder Mode S address.        |
| <b>Power Level (dBm)</b>   | Allows the user to enter the Power Level on the selected interrogation.  |
| <b>Time (μs)</b>           | Allows the user to set the time interval between messages.   |

### 3.5.7.3 Frame Details Menu

**Figure 1.2.3 - 52 Frame Details Menu**

| Name                | Value | Units | LSB | Description | Low | High | Invalid |
|---------------------|-------|-------|-----|-------------|-----|------|---------|
| UF                  | 0     | N/A   | 0   |             | 0   | 0    | False   |
| Spare               | 0     | N/A   | 0   |             | 0   | 0    | False   |
| Reply Length        | 0     | N/A   | 0   |             | 0   | 1    | False   |
| Spare               | 0     | N/A   | 0   |             | 0   | 0    | False   |
| Acquisition Special | 0     | N/A   | 0   |             | 0   | 1    | False   |
| BD                  | 00    | N/A   | 0   |             | 00  | 255  | False   |
| Spare               | 0     | N/A   | 0   |             | 0   | 0    | False   |

**Frame Details Menu**

Local Remote

▲

UF

0

▲ ▼

Spare

0

▲ ▼

Reply Length

0

▲ ▼

▼

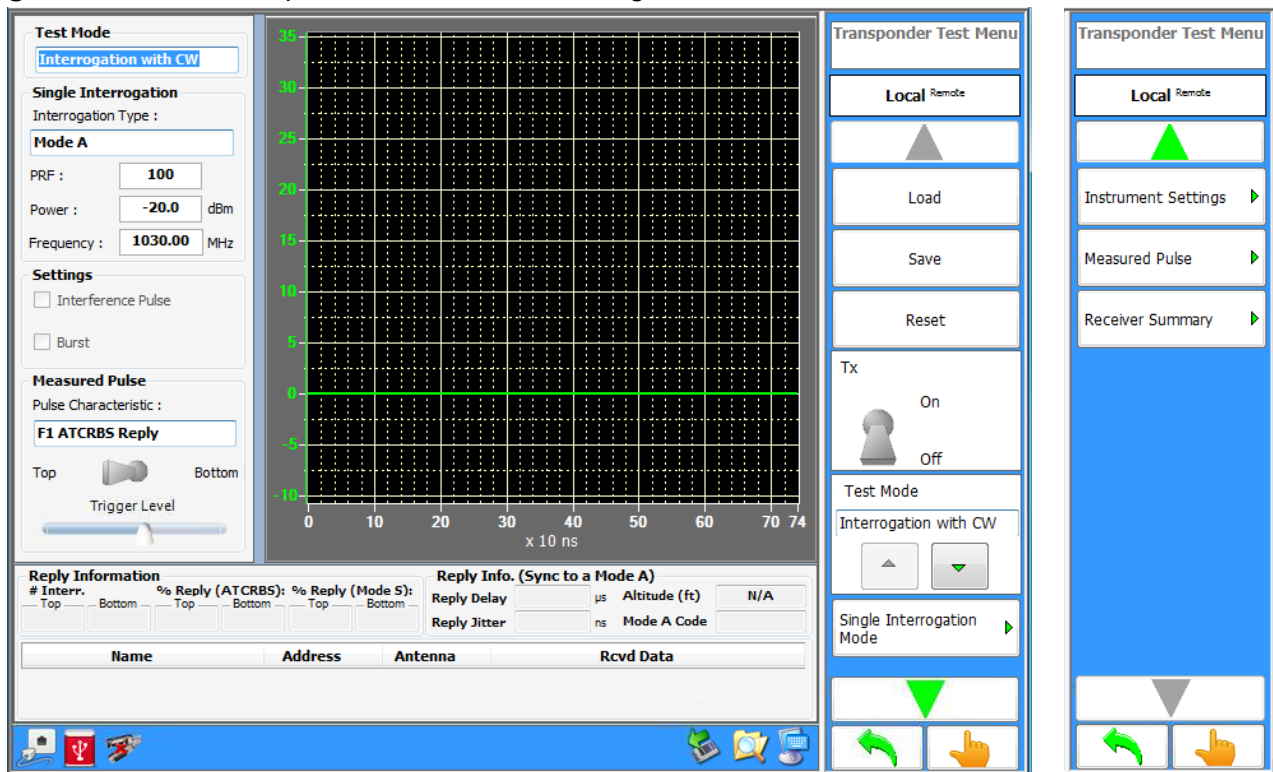
↶ ↷

### 3.5.8 TRANSPONDER TEST MENU - INTERROGATION WITH CW

The Transponder Test Menu in Single Interrogation Mode allows the user to set up the Test Set to transmit a Mode A, Mode C, Mode A All-Call, Mode C All-Call, Mode A/Mode S All-Call, Mode C/Mode S All-Call, Mode S, P1-P2, Pulse, DME pulse pair, or Alternate Mode A/Mode C with a CW component added to the Interrogation.

The Interrogation with CW mode allows the user to add a CW component to the interrogation transmission signal. The CW signal amplitude tracks that of the interrogation power level. Test set generator E or F can be configured to provide the CW signal. From the "Settings Menu", either of these two generators can be set to CW mode and the desired TX frequency entered.

**Figure 1.2.3 - 53** Transponder Test Menu - Interrogation with CW



**NOTE**

The Tx switch on the "Transponder Test Menu" must be in the Off position prior to configuring the CW generator in the "Settings Menu". If controlling the test set via RCI commands, the settings commands must be sent prior to the START of transmission command.

| Screen Component   | Description                                       |
|--------------------|---|
| Test Mode          | Allows the user to select the Test Mode.          |
| Interrogation Type | Allows the user to select the Interrogation Type. |



| <b>Screen Component</b>          | <b>Description</b>   |
|----------------------------------|--|
| <b>PRF</b>                       | Allows the user to enter the PRF (Pulse Repetition Frequency).   |
| <b>Power</b>                     | Allows the user to enter transmit Power.   |
| <b>Frequency</b>                 | Allows the user to enter the Transmitter Frequency.  |
| <b>Pulse Characteristic</b>      | Allows the user to select the reply pulse to measure. If pulse measurement option "DF Frame Data" is selected the user can further refine measurement down to the Mode S, reply, data bit. |
| <b>Antenna Selection</b>         | Allows the user to select the antenna port from which reply measurements will be derived.  |
| <b>Trigger Level</b>             | Allows the user to select the scope trigger level.   |
| <b>Reply Information</b>         | Displays ATCRBS and Mode S% reply.   |
| <b>Reply Info.</b>               | Displays Reply Delay and Jitter. If Sync'd to Mode A, will display Mode A code. If sync'd to Mode C, will display altitude.  |
| <b>Load</b>                      | Allows the user to load a saved transponder test.  |
| <b>Save</b>                      | Allows the user to save the current test setup to a file.  |
| <b>Reset</b>                     | Allows the user to reset the current screen to default values.   |
| <b>Tx (switch)</b>               | Allows the user to Start (On) or Stop (Off) transmissions.   |
| <b>Test Mode</b>                 | Allows the user to select the Test Mode.   |
| <b>Single Interrogation Mode</b> | Open Single Mode Interrogation Menu (See Single Interrogation Instrument Settings Menu)  |
| <b>Instrument Settings</b>       | Opens the Instrument Settings Menu (See Instrument Setting Menu).  |
| <b>Measured Pulse</b>            | Allows the user to select the reply pulse to measure, antenna source and trigger level.  |
| <b>Receiver Summary</b>          | Opens the Receiver Summary Menu. Displays squitter rates and data for common Transponder squitters.  |

### 3.6 DME MENU

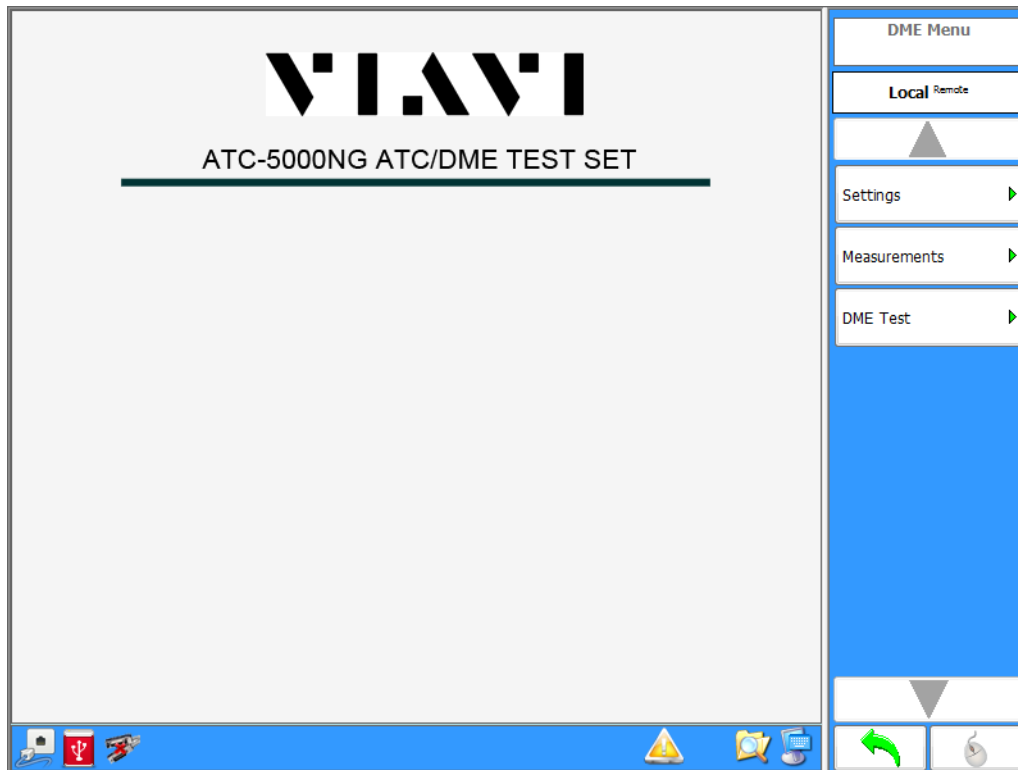
The DME Menu allows the user to select between the Settings, Measurements or DME Test Menu for DME testing.



**NOTE**

The DME Menu is an Optional Function in the ATC-5000NG.

**Figure 1.2.3 - 54** ATC-5000NG Transponder Menu

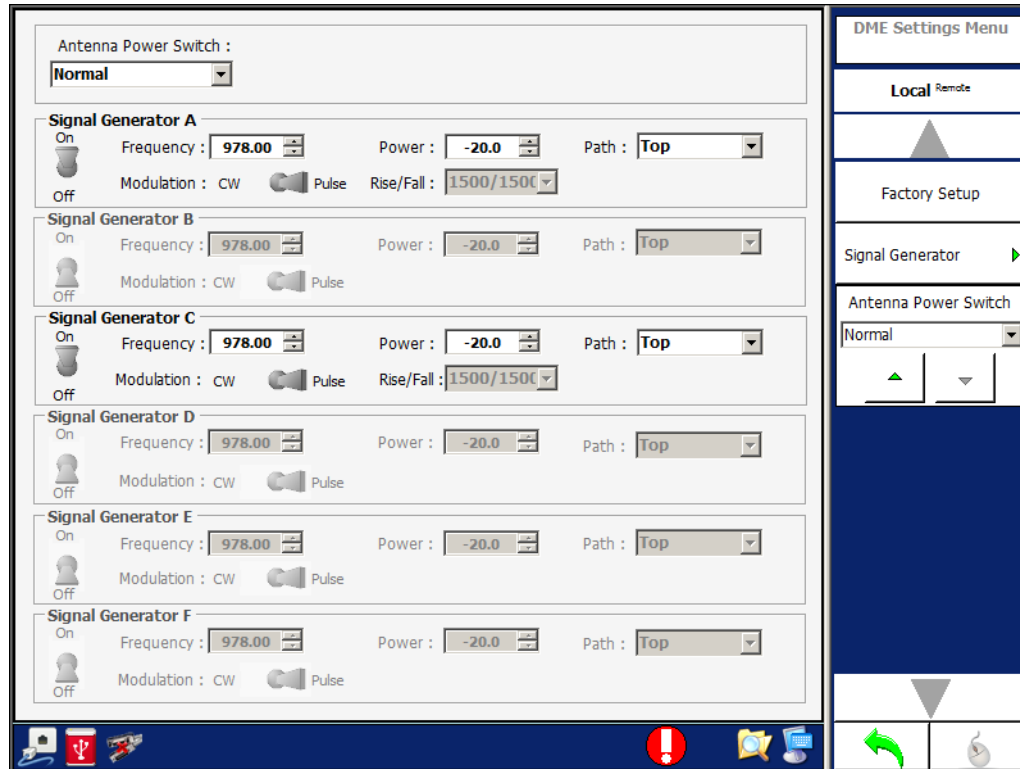


| Screen Component            | Description                         |
|-----------------------------|-------------------------------------|
| <b>Setting Softkey</b>      | Displays the DME Settings Menu.     |
| <b>Measurements Softkey</b> | Displays the DME Measurements Menu. |
| <b>DME Test Softkey</b>     | Displays the DME Test Menu.         |

### 3.6.1 DME SETTINGS MENU

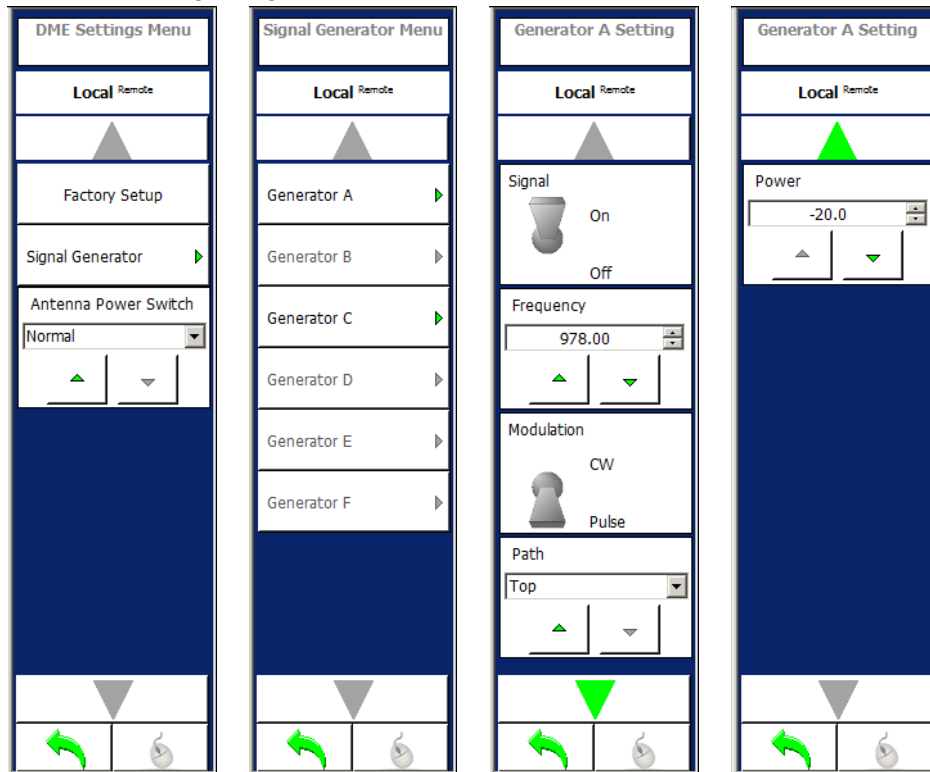
Allows the user to configure modules in the Test Set for DME tests. The DME Settings Menu is used for testing and troubleshooting of the Test Set.

Figure 1.2.3 - 55 DME Settings Menu



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Antenna Power Switch</b> | Allows the user to select one of three transmit power ranges (Normal, 20 dB Amplifier or 20 dB Attenuator). |
| <b>ON/OFF</b>               | Allows the user to enable/disable the Signal Generator.   |
| <b>Frequency</b>            | Allows the user to select the Transmitter frequency.  |
| <b>Power</b>                | Allows the user to set the Transmitter power.   |
| <b>Path</b>                 | Allows the user to select the Transmit Path (Top or Bottom Antenna port).                                   |
| <b>Modulation</b>           | Allows the user to select CW or Pulse Modulation.   |

**Figure 1.2.3 - 56 DME Settings, Signal Generator Menu**



| Screen Component                | Description  |
|---------------------------------|--|
| <b>Factory Setup Softkey</b>    | Allows the user to set all hardware to the Factory default settings. |
| <b>Signal Generator Softkey</b> | Allows the user to select Signal Generator A or C Setting Menu.      |

### 3.6.2 DME MEASUREMENTS MENU

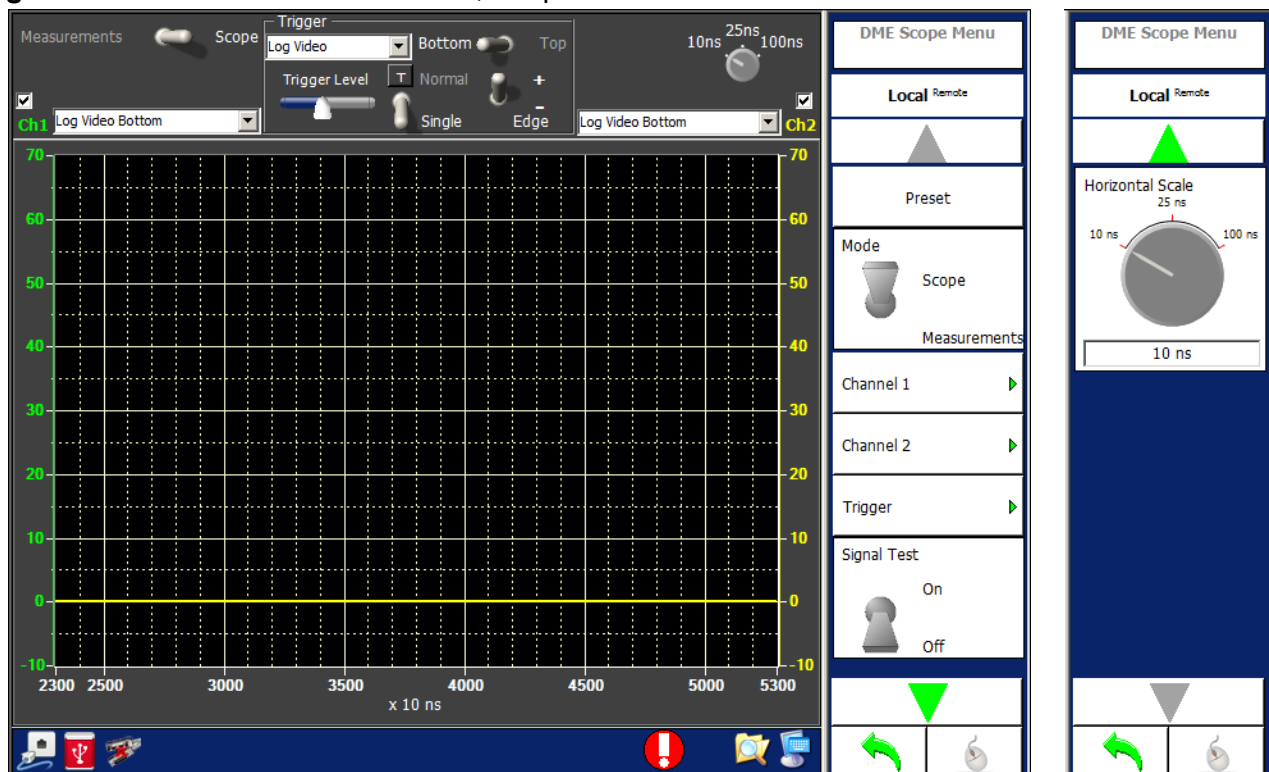
Allows the user to view the pulses from the DME. The DME Measurements Menu allows the user to make measurements for power, pulse width, rise time, fall time, spacing and frequency.

Dragging the mouse or finger on the Touch Screen over the axis and graph can change the horizontal/vertical scales and horizontal/vertical positions.

For pulse timing and power measurement the minimum acquisition time is 250 ms for interrogation rates between 10 and 25 Hz. For interrogation rates above 25 Hz the minimum acquisition time is 150 ms. Frequency measurement requires significantly more time for the test set to achieve reliable results and will vary based on factors such as interrogation rate and frequency.

#### 3.6.2.1 Scope Mode

Figure 1.2.3 - 57 DME Measurements, Scope Mode Menu

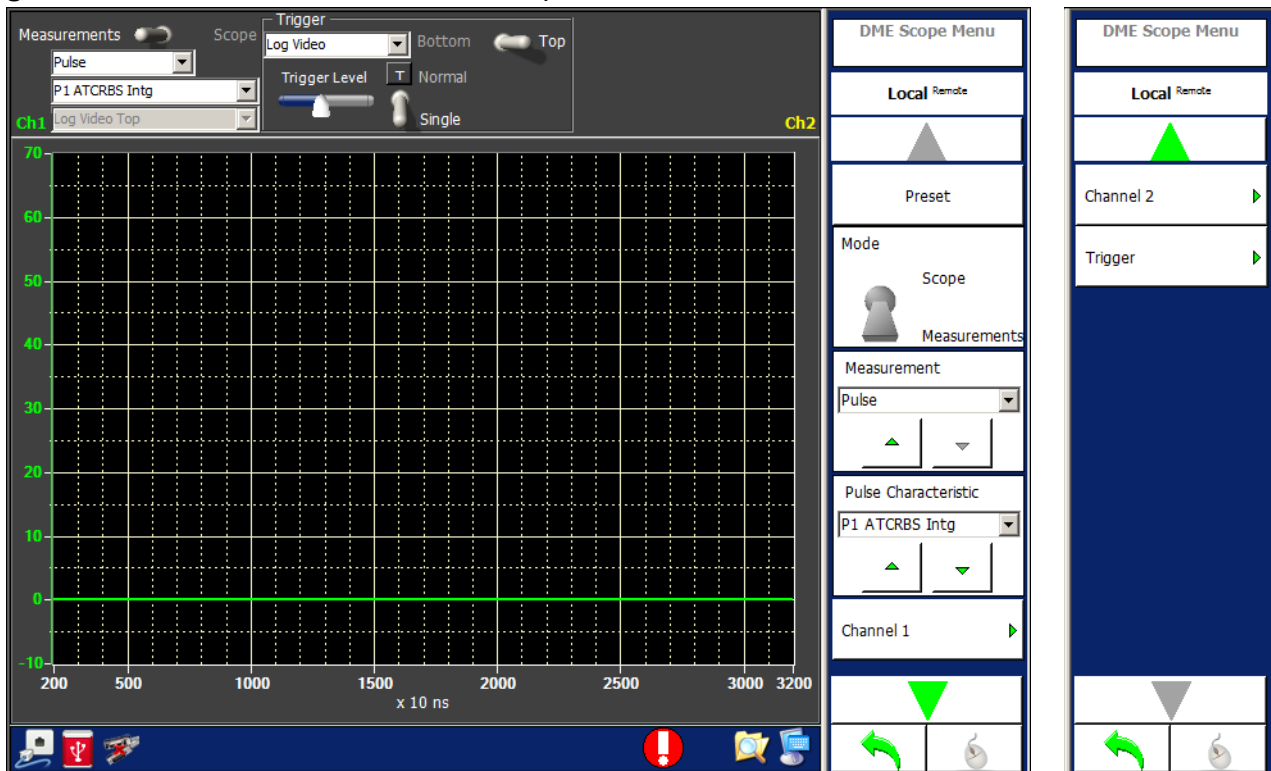


| Screen Components | Description  |
|-------------------|--|
| Measurement/Scope | Allows the user to perform a measurement or set the scope to view a received waveform. |
| Ch1               | Allows the user to select the Channel 1 selection.                                     |
| Ch2               | Allows the user to select the Channel 2 selection.                                     |

| <b>Screen Components</b>   | <b>Description</b>  |
|----------------------------|---|
| <b>Trigger Source</b>      | Allows the user to select the Trigger Source.   |
| <b>Trigger Level</b>       | If Log Video is selected for the Trigger Source, a slider for the power level is displayed. |
| <b>Trigger Mode</b>        | Allows the user to select the Trigger Mode.   |
| <b>Trigger Edge</b>        | Allows the user to select the Trigger Edge.   |
| <b>Trigger Antenna</b>     | Allows the user to select the Trigger Antenna.  |
| <b>Horizontal Scale</b>    | Allows the user to select the Horizontal Scale.   |
| <b>Preset Softkey</b>      | Allows the user to set the fields to preset levels and selections.                          |
| <b>Channel 1 Softkey</b>   | Allows the user to select the Channel 1 selection.  |
| <b>Enable</b>              | Allows the user to enable the Channel 1 selection.  |
| <b>Source</b>              | Same as Screen Components.  |
| <b>Clear</b>               | Allows the user to clear the Channel 1 selection.   |
| <b>Channel 2 Softkey</b>   | Allows the user to select the Channel 2 selection.  |
| <b>Enable</b>              | Allows the user to enable the Channel 2 selection.  |
| <b>Source</b>              | Same as Screen Components.  |
| <b>Clear</b>               | Allows the user to clear the Channel 2 selection.   |
| <b>Signal Test Softkey</b> | Allows the user to enable/disable the Signal Test.  |

### 3.6.2.2 Measurement Mode

Figure 1.2.3 - 58 DME Measurements, Scope Measurement Mode



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Measurements/Scope</b>   | Allows the user to perform a measurement or set the scope to view a received waveform.                              |
| <b>Measurement Type</b>     | Allows the user to select the Measurement Type. Pulse Measurement is the only Measurement Type supported.           |
| <b>Pulse Characteristic</b> | Allows the user to select the Pulse to be measured.   |
| <b>Ch1</b>                  | Allows the user to select the Channel 1 selection.  |
| <b>Trigger Source</b>       | Allows the user to select the Trigger Source. Log Video is the only Trigger Source available in the DME instrument. |
| <b>Trigger Level</b>        | A slider bar allows the user to select the Log Video Trigger level.   |
| <b>Trigger Mode</b>         | Allows the user to set the Trigger Mode to Normal or Single Trigger.  |
| <b>Trigger Antenna</b>      | Allows the user to select the Trigger Antenna.  |
| <b>Preset Softkey</b>       | Allows the user to set the fields to preset levels and selections.  |

---

| <b>Screen Components</b> | <b>Description</b>                                 |
|--------------------------|--|
| <b>Channel 1 Softkey</b> | Allows the user to select the Channel 1 selection. |
| <b>Enable</b>            | Allows the user to enable the Channel 1 selection. |
| <b>Source</b>            | Same as Screen Components.                         |
| <b>Clear</b>             | Allows the user to clear the Channel 1 selection.  |

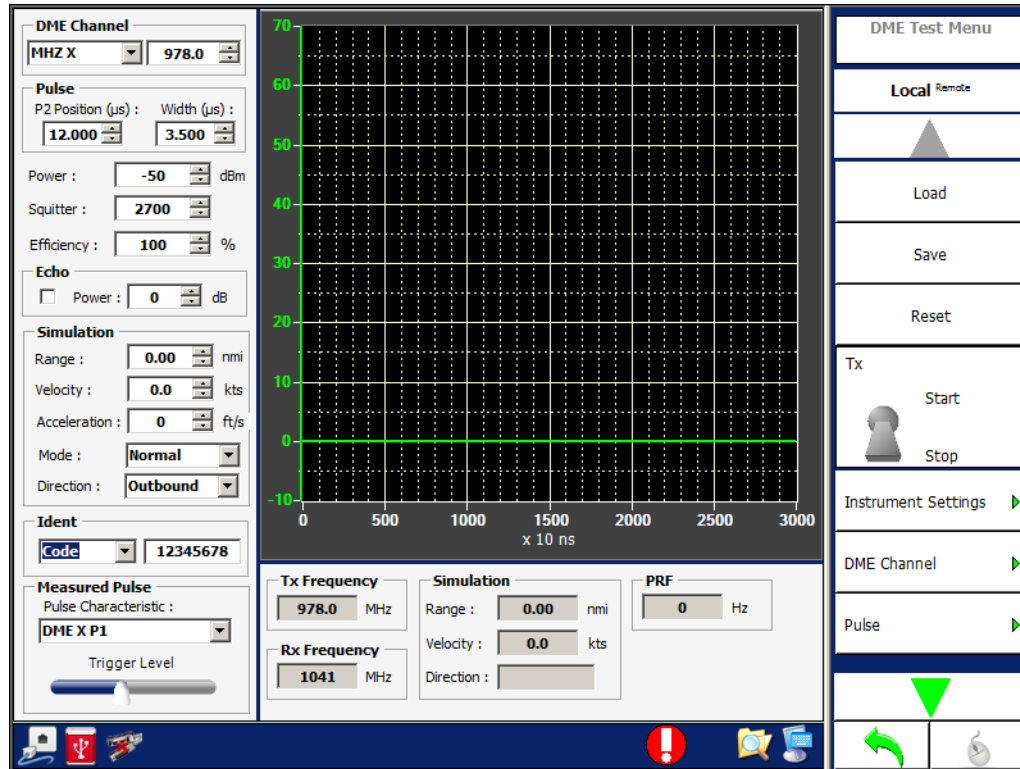
---



### 3.6.3 DME TEST MENU

The DME Test Menu allows the user to define the DME Test scenario.

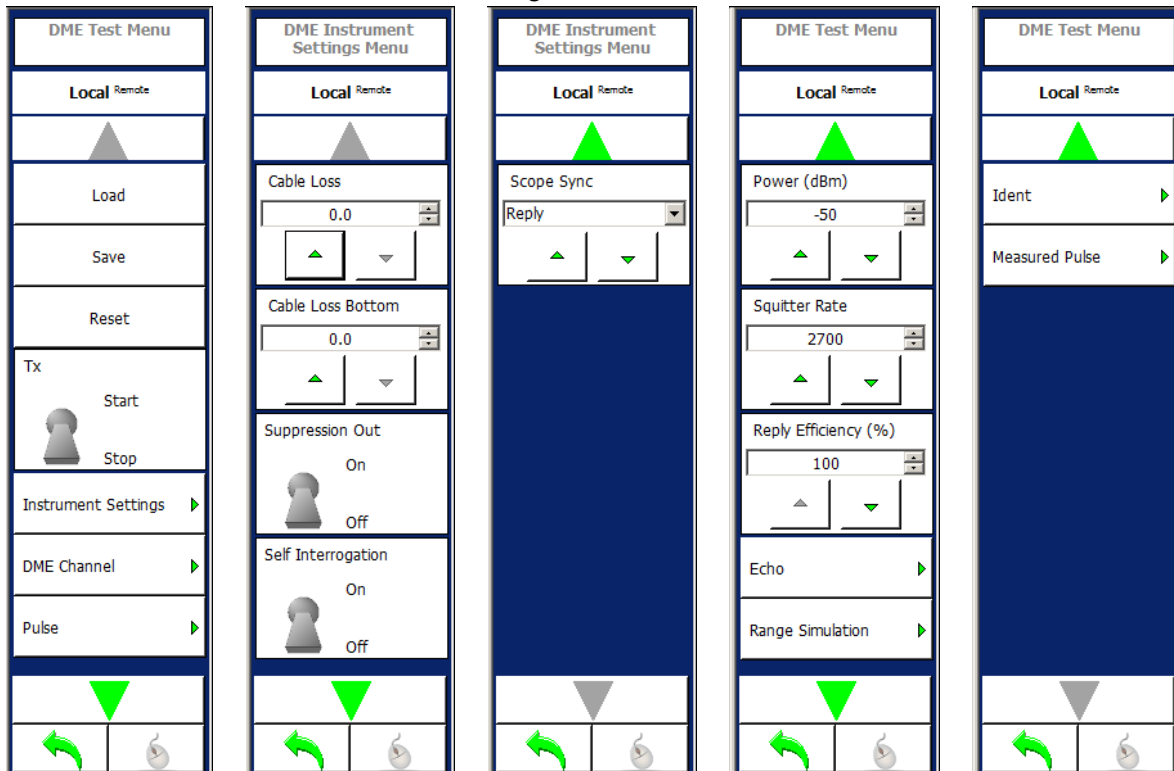
Figure 1.2.3 - 59 DME Test Menu



| Screen Components                | Description  |
|----------------------------------|--|
| <b>DME Channel</b>               | Allows the user to select the DME Channel.             |
| <b>Pulse - P2 Position</b>       | Allows the user to select the Pulse P2 Position.       |
| <b>Pulse - Width</b>             | Allows the user to select the Pulse Width.             |
| <b>Power</b>                     | Allows the user to select the Power.                   |
| <b>Squitter (Rate)</b>           | Allows the user to select the Squitter rate.           |
| <b>Efficiency (Reply)</b>        | Allows the user to select the Reply Efficiency.        |
| <b>Echo</b>                      | Allows the user to enable/disable the Echo.            |
| <b>Echo - Power</b>              | Allows the user to select the Echo Power.              |
| <b>Simulation - Range</b>        | Allows the user to select the Simulation Range.        |
| <b>Simulation - Velocity</b>     | Allows the user to select the Simulation Velocity.     |
| <b>Simulation - Acceleration</b> | Allows the user to select the Simulation Acceleration. |
| <b>Simulation - Mode</b>         | Allows the user to select the Simulation Mode.         |

| Screen Components                            | Description   |
|--|---|
| <b>Simulation - Direction</b>                | Allows the user to select the Simulation Direction.   |
| <b>Ident</b>                                 | Allows the user to enable/disable the Ident and, when Code is selected, select the Code settings. |
| <b>Measured Pulse - Pulse Characteristic</b> | Allows the user to select the Interrogation Pulse to be measured.                                 |
| <b>Measured Pulse - Trigger Level</b>        | Allows the user to select the Measured Pulse Trigger Level.                                       |

Figure 1.2.3 - 60 DME Test, Instrument Settings Menu



| Screen Component                   | Description   |
|------------------------------------|---|
| <b>Load Softkey</b>                | Allows the user to select a stored DME Test.                      |
| <b>Save Softkey</b>                | Allows the user to save the current DME Test.                     |
| <b>Reset Softkey</b>               | Allows the user to reset the test settings to the default values. |
| <b>TX Softkey</b>                  | Allows the user to enable/disable the Transmitter.                |
| <b>Instrument Settings Softkey</b> |   |
| <b>Cable Loss</b>                  | Allows the user to set the Cable Loss for the Top Antenna.        |
| <b>Cable Loss Bottom</b>           | Allows the user to set the Cable Loss for the Bottom Antenna.     |

| <b>Screen Component</b>           | <b>Description</b>  |
|-----------------------------------|---|
| <b>Suppression Out</b>            | Allows the user to enable/disable the Suppression and to set the Suppression %. |
| <b>Self Interrogation</b>         | Allows the user to enable/disable the Self Interrogation Mode.                  |
| <b>Scope Sync</b>                 | Allows the user to set the Scope Sync.  |
| <b>DME Channel Softkey</b>        | Allows the user to select the DME Channel settings.                             |
| <b>Pulse Softkey</b>              | Allows the user to select the Pulse settings.                                   |
| <b>Power Softkey</b>              | Allows the user to select the Power.  |
| <b>Squitter (Rate) Softkey</b>    | Allows the user to select the Squitter rate.                                    |
| <b>Efficiency (Reply) Softkey</b> | Allows the user to select the Reply Efficiency.                                 |
| <b>Echo Softkey</b>               | Allows the user to select the Echo settings.                                    |
| <b>Range Simulation Softkey</b>   | Allows the user to select the Range Simulation settings.                        |
| <b>Ident Softkey</b>              | Allows the user to select the Ident settings.                                   |
| <b>Measured Pulse Softkey</b>     | Allows the user to select the Measured Pulse settings.                          |

### 3.7 UAT MENU

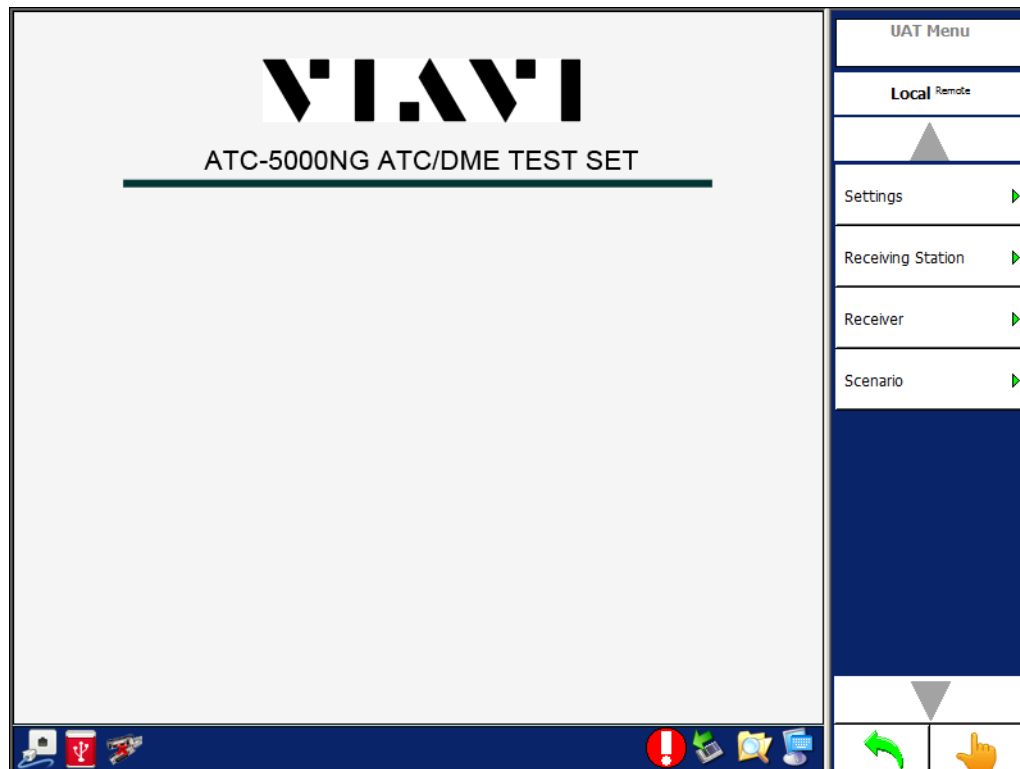
The UAT Menu allows the user to select between the Settings, Receiving Station, Receiver or Scenario Menu for UAT testing.



**NOTE**

The UAT Menu is an Optional Function in the ATC-5000NG.

**Figure 1.2.3 - 61 UAT Menu**

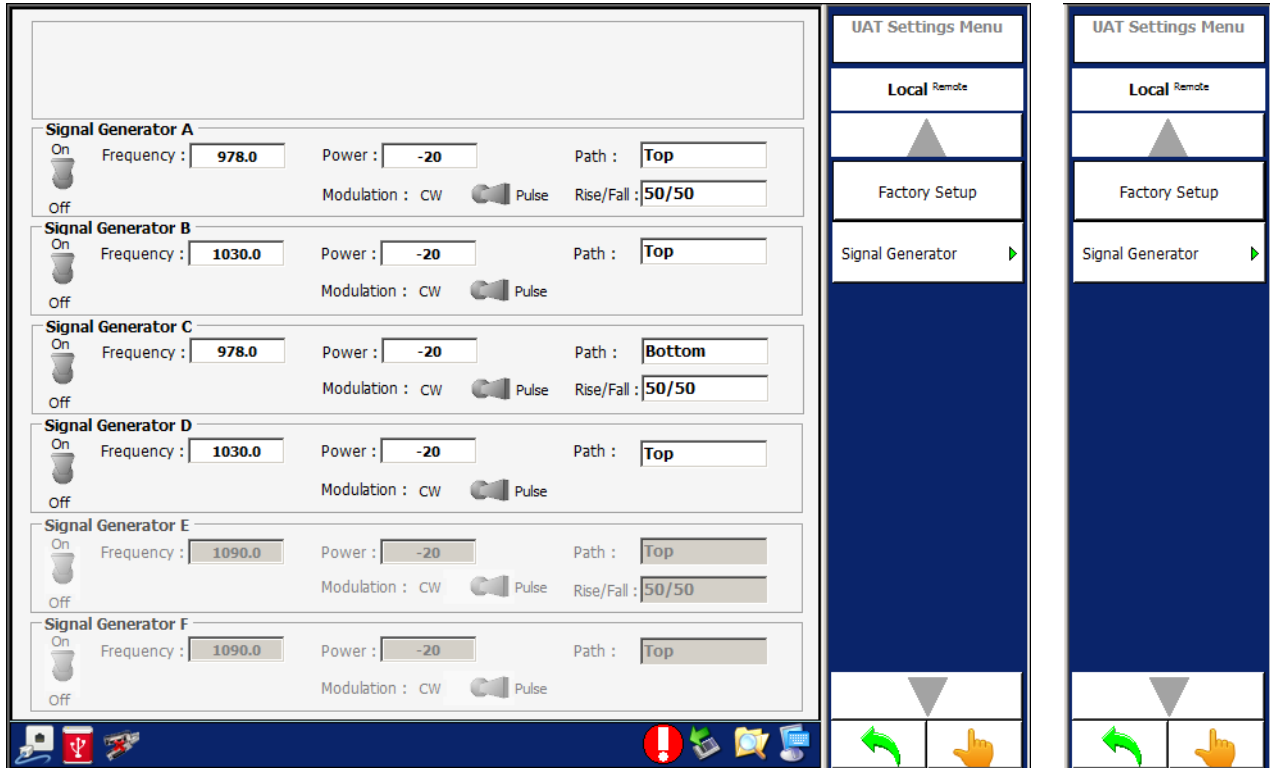


| Screen Component                 | Description                          |
|----------------------------------|--------------------------------------|
| <b>Setting Softkey</b>           | Displays the UAT Settings Menu.      |
| <b>Receiving Station Softkey</b> | Displays the Receiving Station Menu. |
| <b>Receiver Softkey</b>          | Displays the UAT Receiver Menu.      |
| <b>Scenario Softkey</b>          | Displays the UAT Scenario Menu.      |

### 3.7.1 UAT SETTINGS MENU

Allows the user to configure the Transmitter, Receiver and Antenna Simulator modules in the Test Set for UAT tests. The UAT Settings Menu is used for testing and troubleshooting of the Test Set. For UAT Unit testing, the UAT Settings Menu should only be used to set the individual RF Generator frequencies.

Figure 1.2.3 - 62 UAT Settings Menu

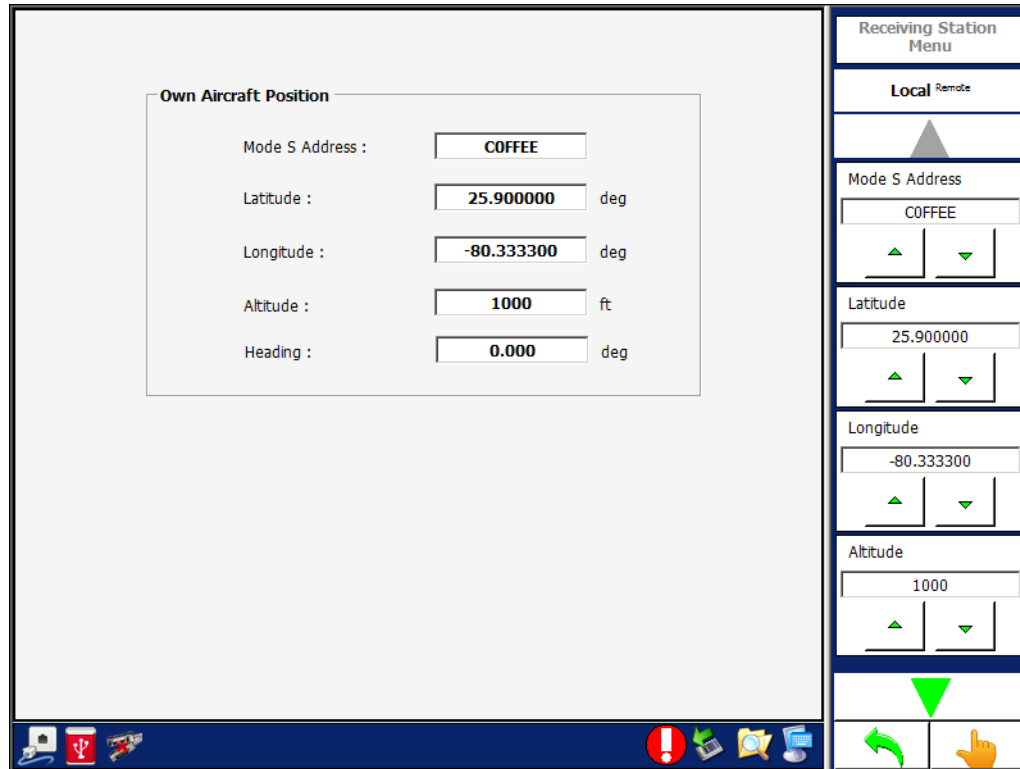


| Screen Components            | Description  |
|------------------------------|--|
| <b>ON/OFF</b>                | Allows the user to enable/disable the Generator.                     |
| <b>Frequency</b>             | Allows the user to select the Transmitter frequency.                 |
| <b>Power</b>                 | Allows the user to set the Transmitter power.                        |
| <b>Path</b>                  | Allows the user to select the Transmitter Path (Antenna Port).       |
| <b>Modulation</b>            | Allows the user to select the Modulation.                            |
| <b>Rise/Fall</b>             | Allows the user to select the Rise/Fall.<br>Generator A and C only.  |
| <b>Factory Setup Softkey</b> | Allows the user to set all hardware to the Factory default settings. |

### 3.7.2 UAT RECEIVING STATION MENU

The UAT Receiving Station allows the user to select the Receiving Station position information.

**Figure 1.2.3 - 63 UAT Receiving Station Menu**



| Screen Components     | Description   |
|-----------------------|---|
| <b>Mode S Address</b> | Allows the user to select the Mode S Address (Hexadecimal). |
| <b>Latitude</b>       | Allows the user to select the Latitude.                     |
| <b>Longitude</b>      | Allows the user to select the Longitude.                    |
| <b>Altitude</b>       | Allows the user to select the Altitude.                     |
| <b>Heading</b>        | Allows the user to select the Heading.                      |

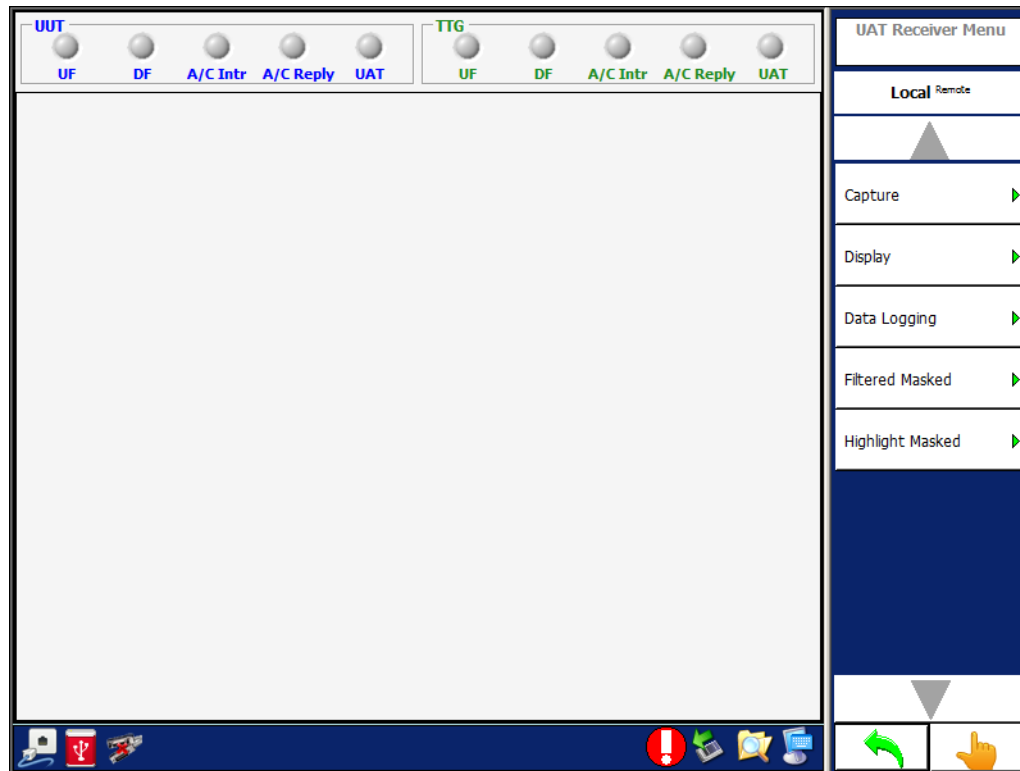
### 3.7.3 UAT RECEIVER MENU

Allows the user to view the transmissions from the UUT and transmissions from the Test Set.

The last 8 receptions are displayed. Blue lines are receptions from the UUT and green lines are receptions from the Test Set.

When performing an export, the Test Set generates a SDF (Compact Database File) and exports the file to the selected file location. All the DF17 position, velocity and identification messages are decoded.

**Figure 1.2.3 - 64 UAT Receiver Menu**

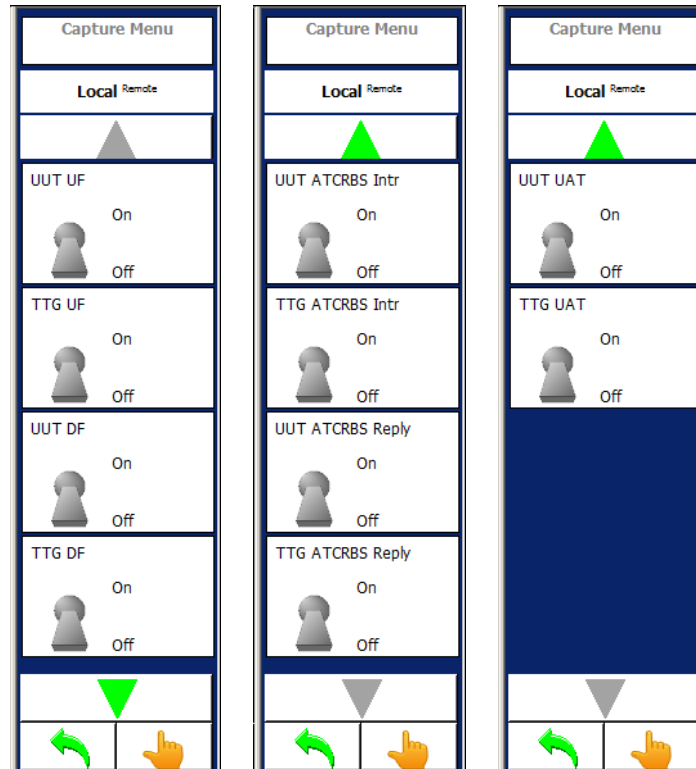


| Screen Components | Description  |
|-------------------|--|
| <b>LEDs</b>       | Displays the status of reception from the UUT or Test Set. |
| LED               | UF UF Interrogation  |
|                   | DF DF Reply  |
|                   | A/C Intr ATCRBS Interrogation                              |
|                   | A/C Reply ATCRBS Reply                                     |
|                   | UAT UAT  |

### 3.7.3.1 UAT Receiver Capture Menu

The Capture Softkey accesses additional softkeys which are used to select which interrogation messages are captured.

**Figure 1.2.3 - 65 UAT Receiver, Capture Menu**



| Screen Components       | Description  |
|-------------------------|--|
| <b>UUT UF</b>           | Allows the user to enable/disable capture of TCAS UF messages.               |
| <b>ATC UF</b>           | Allows the user to enable/disable capture of Test Set UF messages.           |
| <b>UUT DF</b>           | Allows the user to enable/disable capture of Transponder DF messages.        |
| <b>ATC DF</b>           | Allows the user to enable/disable capture of Test Set DF messages.           |
| <b>UUT ATCRBS Intr</b>  | Allows the user to enable/disable capture of TCAS ATCRBS interrogations.     |
| <b>ATC ATCRBS Intr</b>  | Allows the user to enable/disable capture of Test Set ATCRBS interrogations. |
| <b>UUT ATCRBS Reply</b> | Allows the user to enable/disable capture of Transponder ATCRBS replies.     |
| <b>ATC ATCRBS Reply</b> | Allows the user to enable/disable capture of Test Set ATCRBS replies.        |
| <b>UUT UAT</b>          | Allows the user to enable/disable capture of UAT messages.                   |



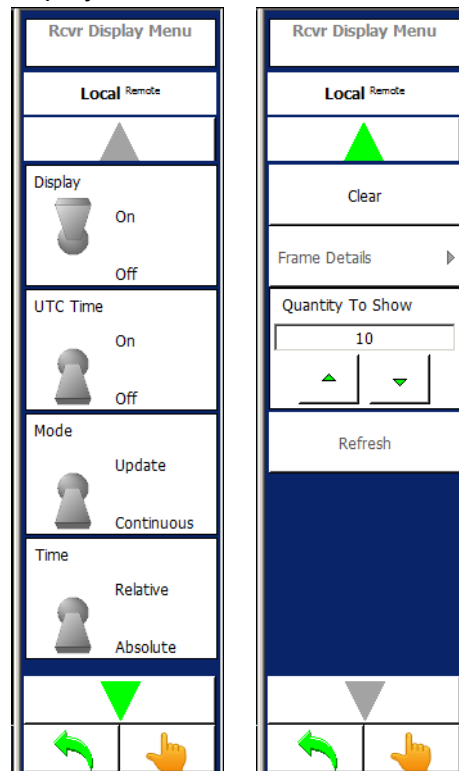
---

| Screen Components | Description   |
|-------------------|---|
| ATC UAT           | Allows the user to enable/disable capture of UAT messages from Test Set |

---

### 3.7.3.2 UAT Receiver Display Menu

Figure 1.2.3 - 66 UAT Receiver, Display Menu

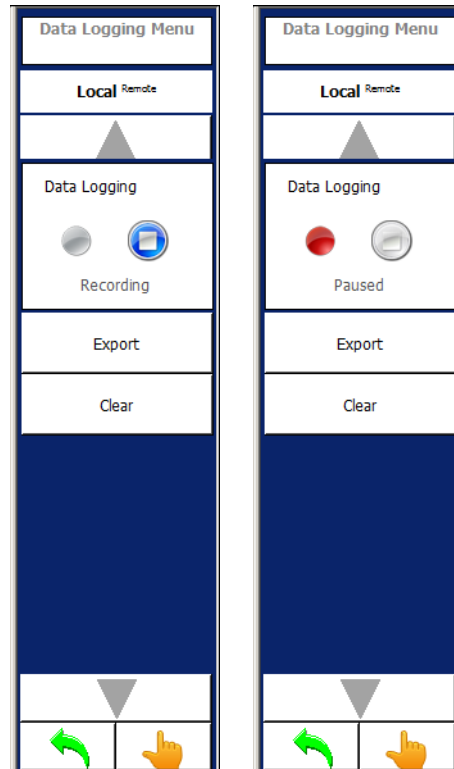


| Screen Components       | Description   |
|-------------------------|---|
| <b>Display Softkey</b>  | Allows the user to set the parameters for the status of reception from the UUT or Test Set:   |
| <b>Display</b>          | Allows the user to display new receptions (ON or OFF)   |
| <b>UTC Time</b>         | Allows the user to display the UTC Time (ON or OFF).  |
| <b>Mode</b>             | Allows the user to display the data received by updating a message style with the latest reception (Update) or display all data received in a continuous order (Continuous) |
| <b>Time</b>             | Allows the user to display the time relative to the previous message (Relative) or display the time received (Absolute).  |
| <b>Clear</b>            | Allows the user to clear all messages in the UAT Receiver Menu.   |
| <b>Frame Details</b>    | Allows the user to display the digital breakdown of a selected reception.   |
| <b>Quantity to Show</b> | Allows the user to select how many messages to display (100 messages maximum).  |
| <b>Refresh</b>          | Allows the user to refresh the UAT Receiver Menu with the selected quantity of messages.  |

### 3.7.3.3 UAT Receiver Data Logging Menu

The Data Logging Softkey Menu allows the user to set the parameters for the status of reception from the UUT or Test Set.

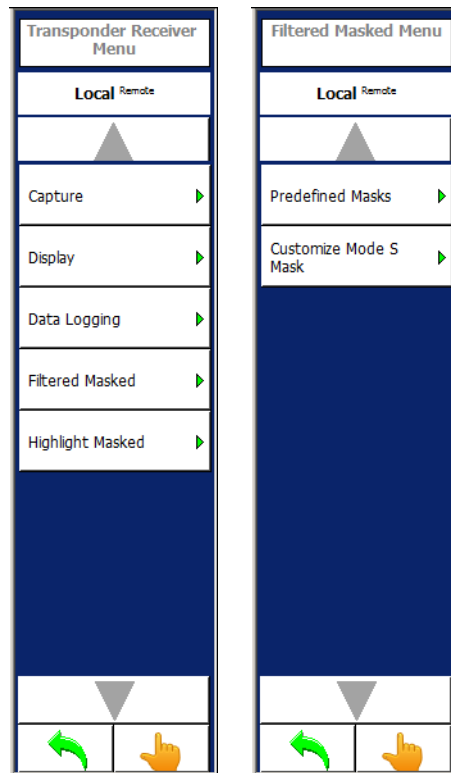
**Figure 1.2.3 - 67** UAT Receiver, Display Menu



| Screen Components         | Description   |
|---------------------------|---|
| <b>Recording / Paused</b> | Allows the user to start (Recording) or stop (Paused) the data logging of the receive messages. |
| <b>Export</b>             | Allows the user to export the receive messages to a file.                                       |
| <b>Clear</b>              | Allows the user to clear all recorded messages.   |

### 3.7.3.4 UAT Receiver Filtered Masked Menu

**Figure 1.2.3 - 68** UAT Receiver Filtered Masked Menu

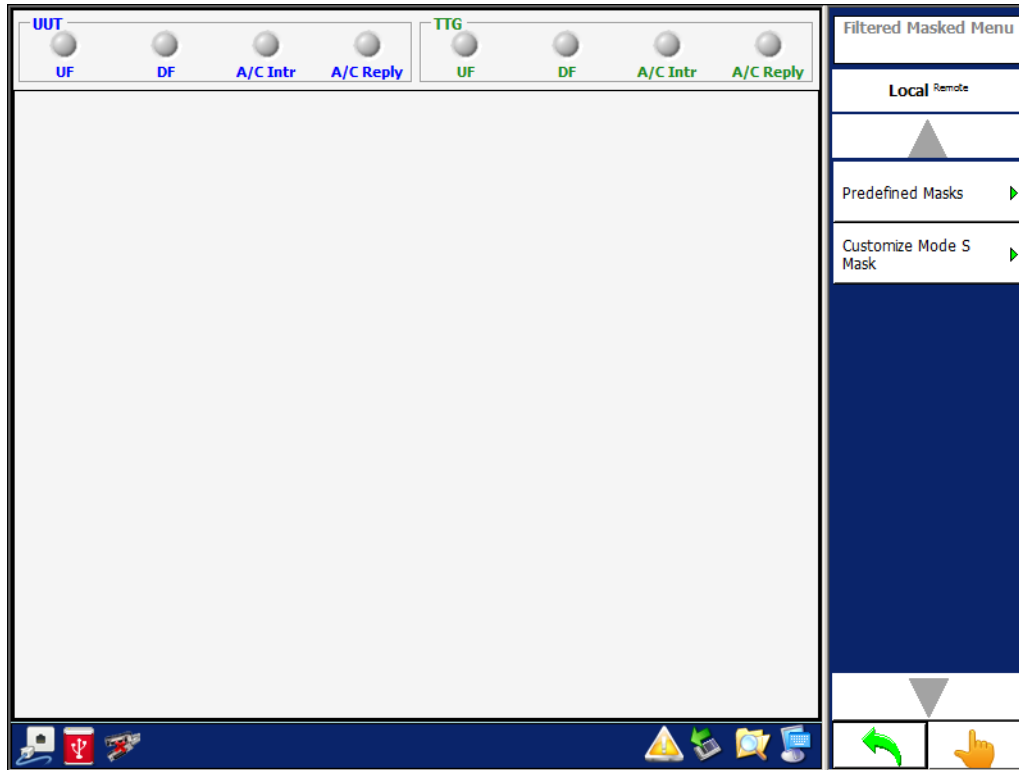


| Screen Components              | Description  |
|--------------------------------|--|
| <b>Filtered Masked Softkey</b> | Accessed the following:<br>Displays the Predefined Masks Menu.<br>Displays the Customize Mode S Mask Menu. |
| <b>Highlight Masked</b>        | Displays the Highlight Masked Menu.  |

### 3.7.3.5 Filtered Masked Menu

Allows the user to select the messages to filter and display in the Transponder Receiver Menu.

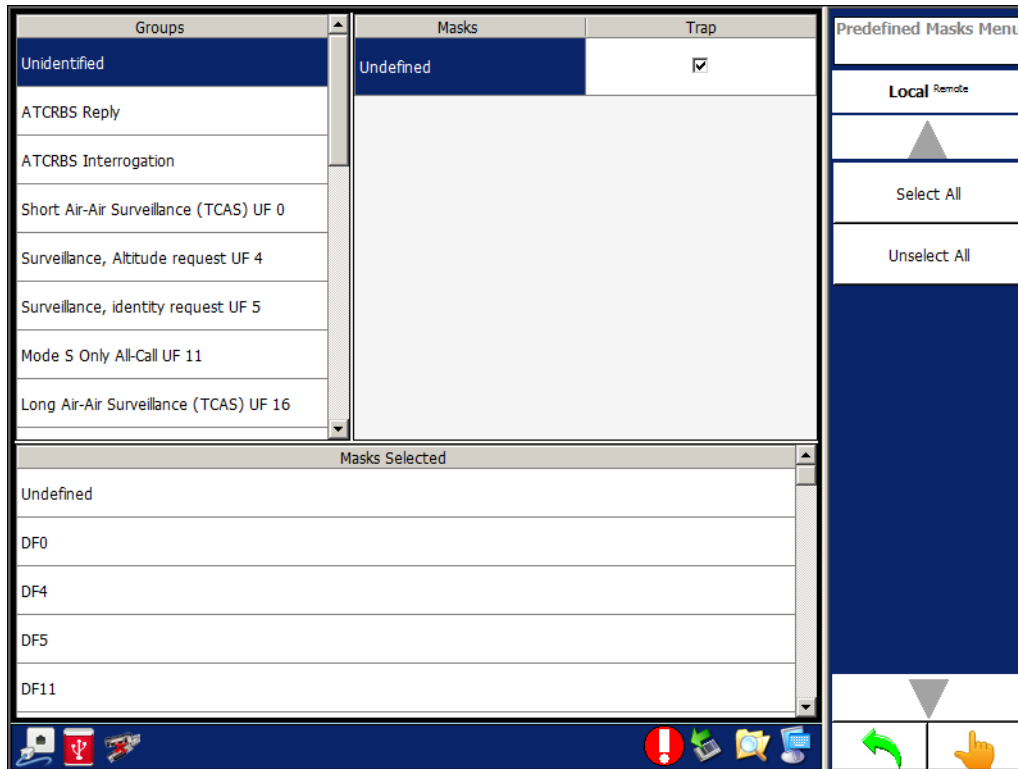
**Figure 1.2.3 - 69** UAT Receiver, Filtered Masked Menu



| Screen Components                    | Description                              |
|--------------------------------------|--|
| <b>Predefined Masks Softkey</b>      | Displays the Predefined Masks Menu.      |
| <b>Customize Mode S Mask Softkey</b> | Displays the Customize Mode S Mask Menu. |

### 3.7.3.6 Predefined Masks Menu

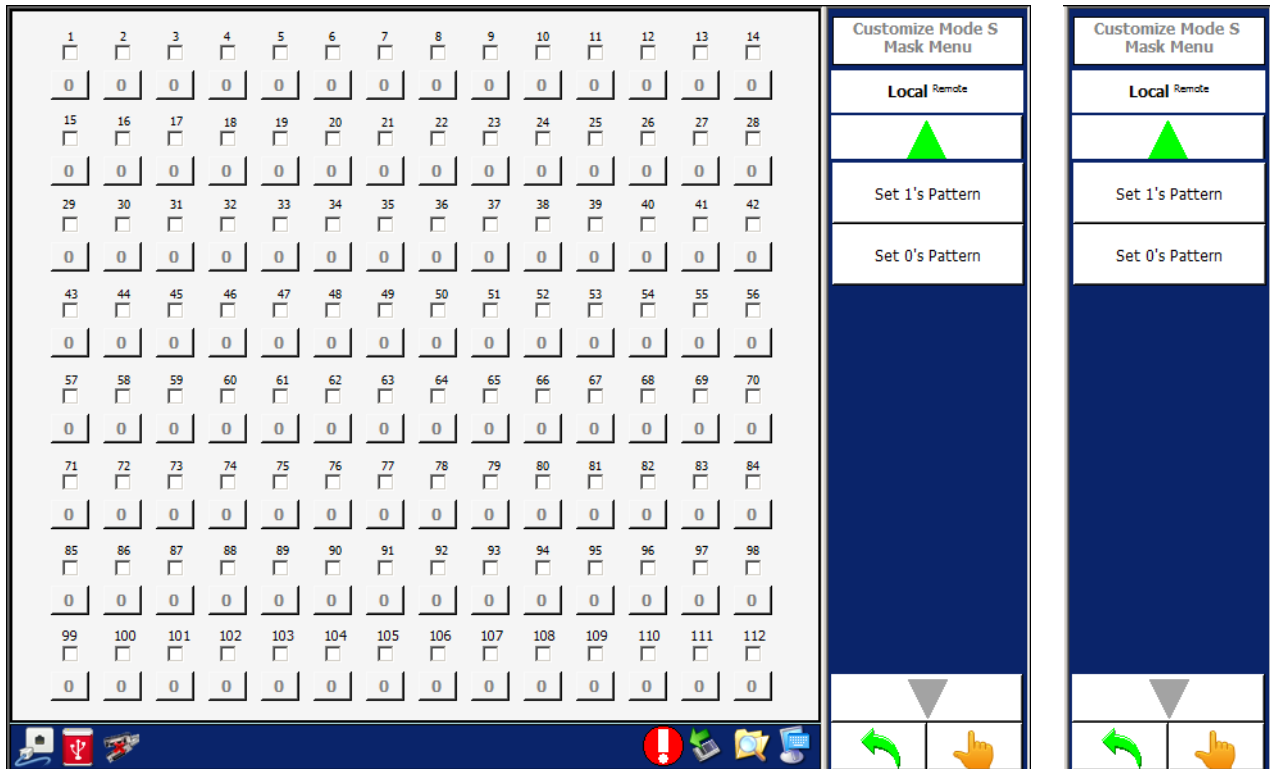
Figure 1.2.3 - 70 UAT Receiver, Predefined Masks Menu



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Groups</b>               | Allows the user to select groups of UF and DF messages.                       |
| <b>Masks</b>                | Displays the sub-messages of the selected group.                              |
| <b>Trap</b>                 | Allows the user to enable/disable the sub-messages.                           |
| <b>Masks Selected</b>       | Displays the messages selected to perform the filter.                         |
| <b>Select All Softkey</b>   | Allows the user to select all messages to be displayed. No filter is applied. |
| <b>Unselect All Softkey</b> | Allows the user to de-select all messages. No messages are displayed.         |

### 3.7.3.7 Customize Mode S Mask Menu

Figure 1.2.3 - 71 UAT Receiver, Customize Mode S Mask Menu

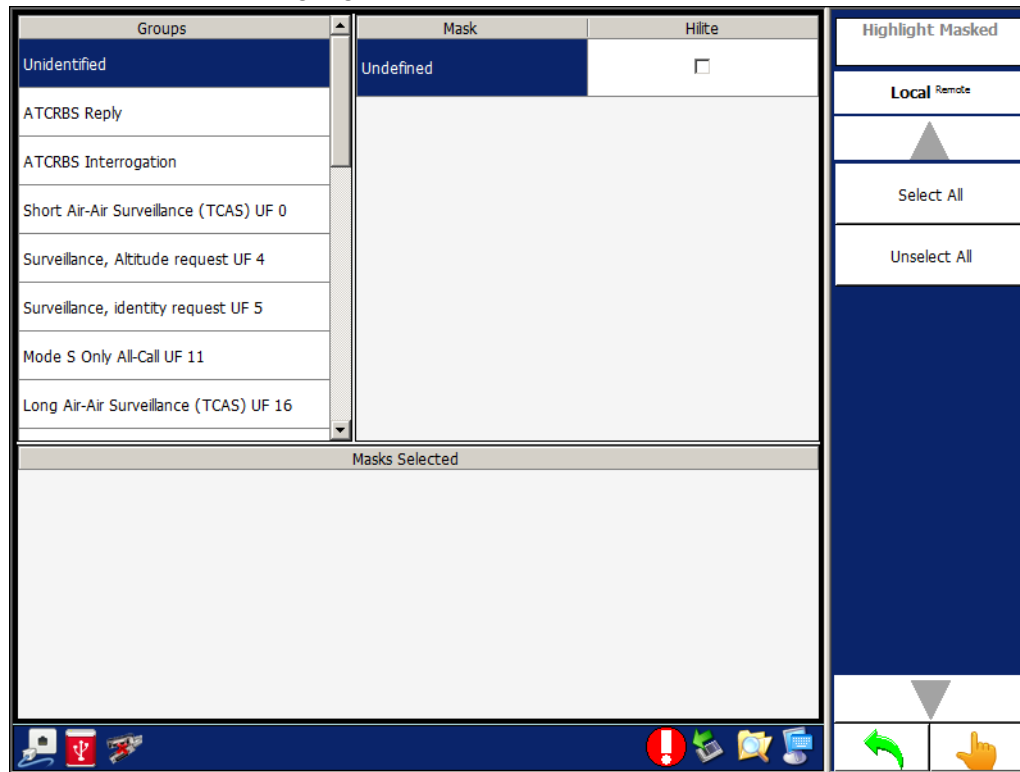


| Screen Components                  | Description   |
|------------------------------------|---|
| <b>Number</b>                      | Allows the user to enable/disable the selected pattern bit. |
| <b>Bit</b>                         | Allows the user to pattern bit.                             |
| <b>Number of Bits Softkey</b>      | Allows the user to select the number of bits.               |
| <b>Mask Softkey</b>                | Allows the user to Mask.                                    |
| <b>Pattern Softkey</b>             | Allows the user to Pattern.                                 |
| <b>Set All Bits Mask Softkey</b>   | Allows the user to select all bits.                         |
| <b>Clear All Bits Mask Softkey</b> | Allows the user to clear all bits.                          |
| <b>Set 1's Pattern Softkey</b>     | Allows the user to select "1" for all patterns.             |
| <b>Set 0's Pattern Softkey</b>     | Allows the user to select "0" for all patterns.             |

### 3.7.3.8 Highlight Masked Menu

Allows the user to select the messages to highlight during the display of messages in the Receiver Menu.

**Figure 1.2.3 - 72 UA Receiver, Highlight Masked Menu**



| Screen Components           | Description   |
|-----------------------------|---|
| <b>Groups</b>               | Allows the user to select groups of UF and DF messages.                       |
| <b>Masks</b>                | Displays the sub-messages of the selected group.                              |
| <b>Hilite</b>               | Allows the user to enable/disable the sub-messages.                           |
| <b>Masks Selected</b>       | Displays the messages selected to perform the highlight.                      |
| <b>Select All Softkey</b>   | Allows the user to select all messages to be displayed. No filter is applied. |
| <b>Unselect All Softkey</b> | Allows the user to de-select all messages. No messages are displayed.         |



### 3.7.4 UAT SCENARIO MENU - NORMAL MODE

The UAT Scenario allows the user to define UAT scenario with static and dynamic targets.

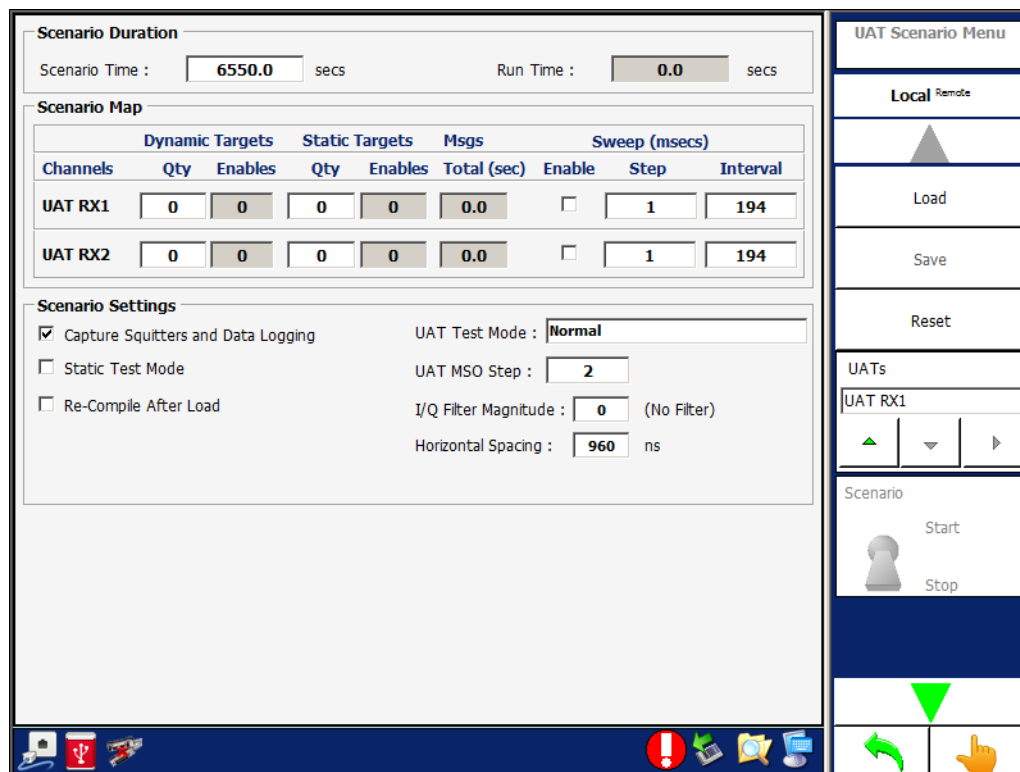


**NOTE**

When defining targets automatically the Touch Screen software starts at MSO 752 and spaces the targets at the specified MSO steps.

In order to transmit UAT messages and the runtime to function after a start of scenario, the Test Set needs the PPS signal from the GPS on external I/O #1 or a 1 Hz signal on external I/O #1 to function.

**Figure 1.2.3 - 73 UAT Scenario Menu - Normal Mode**



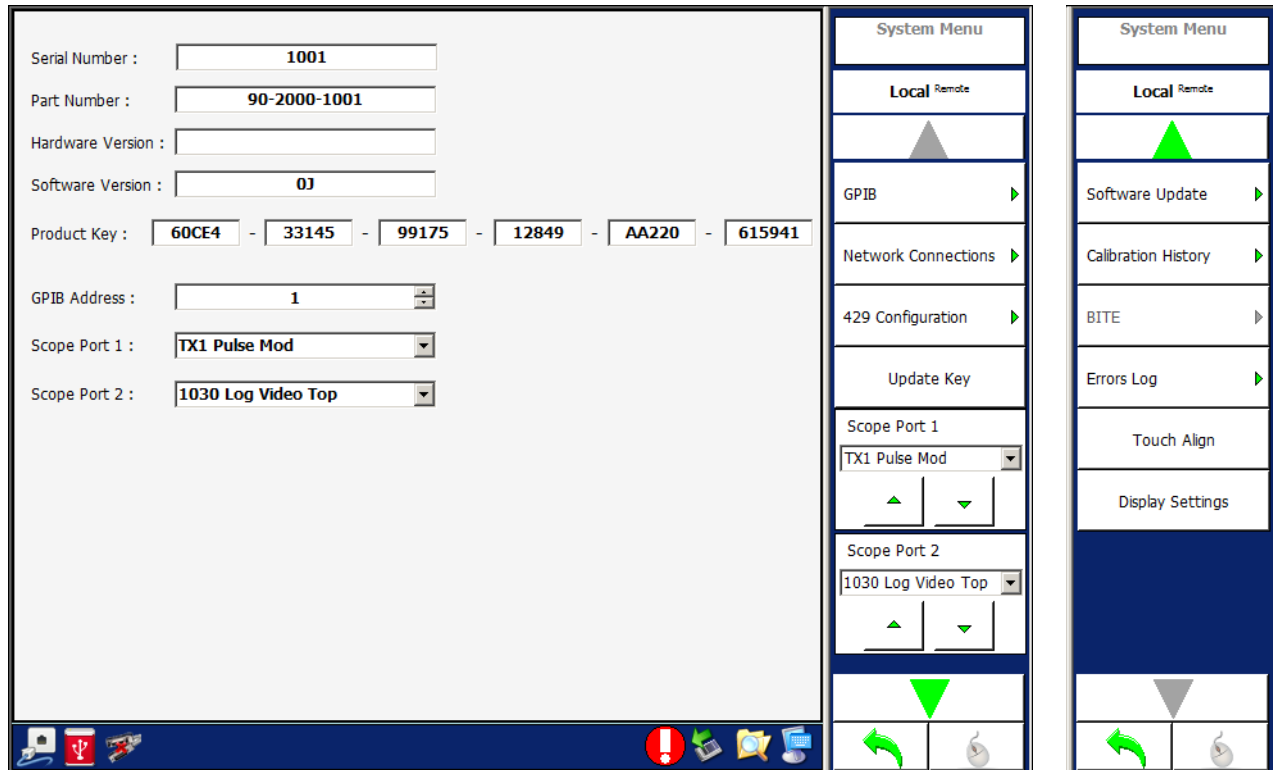
| Screen Components | Description                                  |
|-------------------|--|
| Scenario Time     | Allows the user to select the Scenario Time. |
| Run Time          | Allows the user to select the Run Time.      |

| Screen Components                         | Description  |
|---|--|
| <b>Dynamic Targets</b>                    | Allows the user to select the following parameters for the Dynamic Targets for UAT#1 and UAT#2:<br>Quantity<br>Enables<br>Total Messages (sec)<br>Enable<br>Step (Sweep)<br>Interval (Sweep)                                   |
| <b>Static Targets</b>                     | Allows the user to select the following parameters for the Dynamic Targets for UAT#1 and UAT#2:<br>Quantity (Static Targets)<br>Enables (Static Targets)<br>Total Messages (sec)<br>Enable<br>Step (Sweep)<br>Interval (Sweep) |
| <b>Capture Squitters and Data Logging</b> | Allows the user to enable/disable the Capture Squitters and Data Logging. If enabled, the log file is cleared when the scenario starts and the log file starts capturing new messages.   |
| <b>Static Test Mode</b>                   | Allows the user to enable/disable the Static Test Mode. Targets are active at the end of the scenario time at the target's last position.  |
| <b>Re-Compile After Load</b>              | Allows the user to enable/disable the Re-Compile After Load. If enabled, compiles all messages for the different targets after loading a saved file.   |
| <b>UAT Test Mode</b>                      | Allows the user to select the UAT Test Mode.   |
| <b>UAT MSO Step</b>                       | Allows the user to select the UAT MSO Step, the separation between UAT messages.   |
| <b>I/Q Filter Magnitude</b>               | Allows the user to select the I/Q Filter Magnitude.  |
| <b>Horizontal Spacing</b>                 | Allows the user to select the Horizontal Spacing.  |
| <b>Load Softkey</b>                       | Allows the user to select a stored UAT Test.   |
| <b>Save Softkey</b>                       | Allows the user to save the current UAT Test.  |
| <b>Reset Softkey</b>                      | Allows the user to reset the test settings to the default values.  |
| <b>Scenario Softkey</b>                   | Allows the user to enable/disable the Scenario.  |

### 3.8 SYSTEM MENU

The System Menu allows the user to set different system parameters (i.e., GPIB address, Product Key, Scope Port Outputs, etc.).

**Figure 1.2.3 - 74 ATC-5000NG System Menu**



| Screen Components       | Description   |
|-------------------------|---|
| <b>Serial Number</b>    | Allows the user to select the Unit Serial Number.   |
| <b>Part Number</b>      | Allows the user to select the Unit Part Number.   |
| <b>Hardware Version</b> | Allows the user to select the Unit Hardware Version.  |
| <b>Software Version</b> | Allows the user to select the Unit Software Version.  |
| <b>Product Key</b>      | Allows the user to select the Product Key.<br>The Product Key enables/disables Options in the Test Set.<br>VIAMI provides the Product Key for the Test Set.   |
| <b>GPIB Address</b>     | Allows the user to select the GPIB Address.<br>Once the GPIB address is set, the GPIB address on all future power-up cycles is the same.<br>If a software update is performed, the GPIB address may need reset. |

| <b>Screen Components</b>           | <b>Description</b>   |
|------------------------------------|--|
| <b>Scope Port 1</b>                | Allows the user to select the Scope Port 1 signal from multiple Test Set signal lines (i.e., Log Video, DPSK Modulation, Transmitter Modulation, etc.).<br>The user selection is saved and the same selection is used on future power-up cycles. |
| <b>Scope Port 2</b>                | Allows the user to select the Scope Port 2 signal from multiple Test Set signal lines (i.e., Log Video, DPSK Modulation, Transmitter Modulation, etc.).<br>The user selection is saved and the same selection is used on future power-up cycles. |
| <b>GPIB Softkey</b>                | Allows the user to select the GPIB address.  |
| <b>GPIB Address</b>                | Same as Screen Components.   |
| <b>Reset</b>                       | Allows the user to reset the GPIB interface.   |
| <b>Network Connections Softkey</b> | Displays the Network Connections Menu.   |
| <b>429 Connections Softkey</b>     | Displays the 429 Connections Menu.   |
| <b>Update Key Softkey</b>          | Allows the user to validate the Product Key entered.   |
| <b>Software Update Softkey</b>     | Displays the Software Update Menu.   |
| <b>Calibration History Softkey</b> | Displays the Calibration Menu.   |
| <b>Errors Log Softkey</b>          | Displays the Errors Log Menu.  |
| <b>Touch Align Softkey</b>         | Executes the Touch Screen Alignment Program.   |
| <b>Display Settings Softkey</b>    | Opens the Windows Display Settings.  |

### 3.8.1 SOFTWARE UPDATE MENU

Allows the user to update the DSP software or the FPGA firmware.

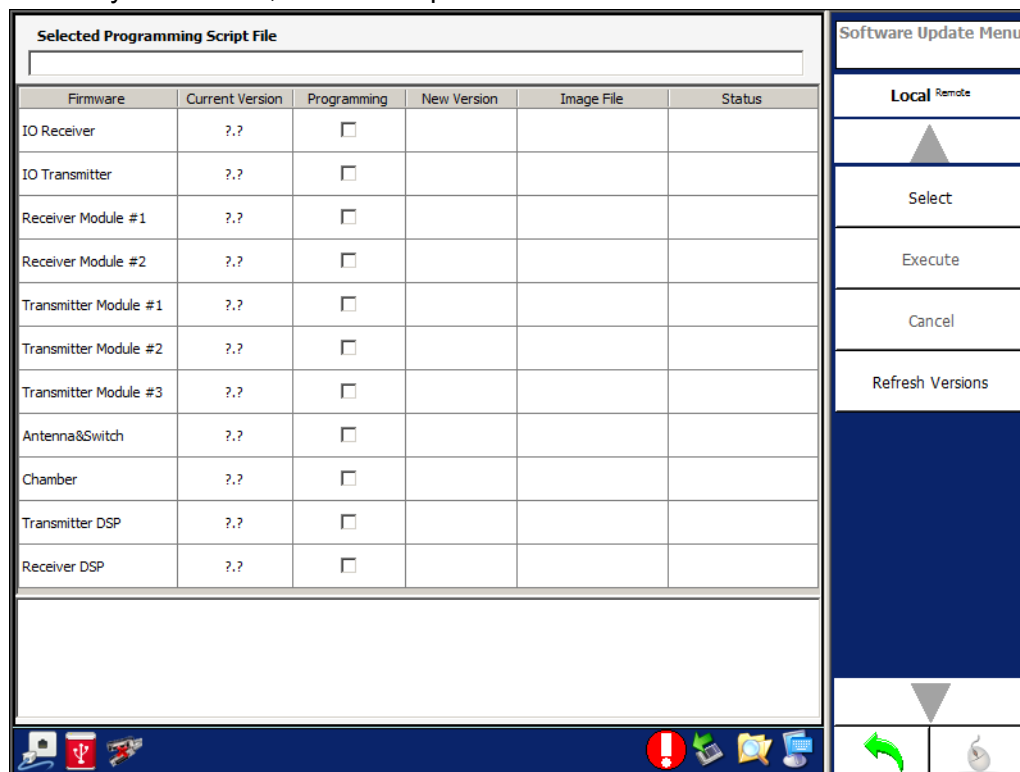
#### Software Update Process:

Kernel and Touch Screen software are updated.

Kernel and Touch Screen software are executed.

Touch Screen software automatically starts in the Software Update Menu and programs all necessary DSP software and FPGA firmware for the updated software. If update fails because of an update failure, place the cursor in the Selected Programming Script File textbox on the top of the screen and press Alt S. The Touch Screen software reads the last valid configuration file and displays all the valid FPGA and DSP versions.

Figure 1.2.3 - 75 System Menu, Software Update Menu



| Screen Components      | Description   |
|------------------------|---|
| <b>Firmware</b>        | Displays the Firmware Device Name.  |
| <b>Current Version</b> | Displays the Current Version Number.  |
| <b>Programming</b>     | Allows the user to enable/disable the programming of a specific DSP or FPGA device. |
| <b>New Version</b>     | Displays the New Version Number.  |

---

| <b>Screen Components</b>        | <b>Description</b>   |
|---------------------------------|--|
| <b>Image File</b>               | Displays the Image File Name.                                      |
| <b>Status</b>                   | Displays the Status of the device.                                 |
| <b>Select Softkey</b>           | Opens a file dialog to select the programming configuration file.  |
| <b>Execute Softkey</b>          | Programs all the FPGAs and DSPs that have the programming enabled. |
| <b>Cancel Softkey</b>           | Cancels the programming sequence.                                  |
| <b>Refresh Versions Softkey</b> | Refreshes the software and firmware versions.                      |

---

### 3.8.2 NETWORK CONNECTIONS MENU

The Network Connections Menu displays the current network settings and allows changing the network settings. There should be three connections: 1) Front LAN; 2) Rear LAN; 3) DSP Connection. (Names could be different.)

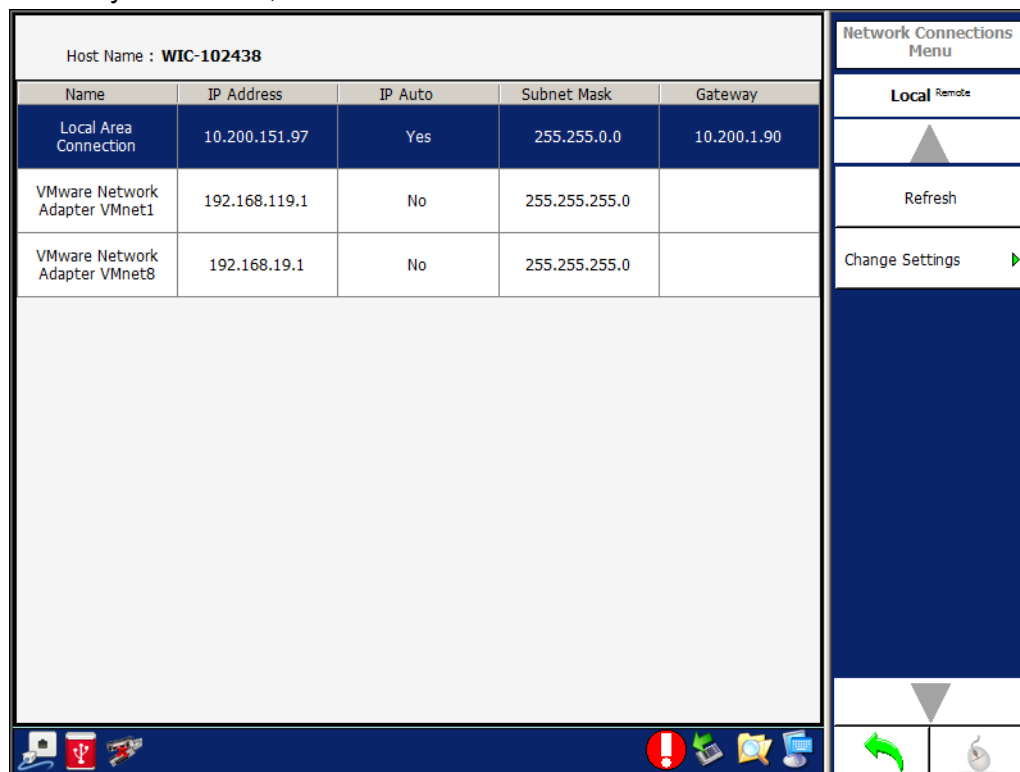
The screen displays the current settings, whether the IP is static or dynamic and if connected what is the current IP address. The internal connection is at IP Address 192.168.0.1 (Factory Setting). The IP Address should not be changed unless required to use this address for the external connections. All Ethernet communications to the ATC-5000NG are on port 2001.



#### Example

Select the Rear LAN line on the grid of the current menu and press the Change Settings Softkey to change the IP of the Rear LAN from dynamic to static.

Figure 1.2.3 - 76 System Menu, Network Connections Menu



| Screen Components  | Description                                       |
|--------------------|---|
| <b>Name</b>        | Displays the Name of the Ethernet Adapter.        |
| <b>IP Address</b>  | Displays the IP Address of the Ethernet Adapter.  |
| <b>IP Auto</b>     | Displays the IP Auto of the Ethernet Adapter.     |
| <b>Subnet Mask</b> | Displays the Subnet Mask of the Ethernet Adapter. |

| Screen Components              | Description  |
|--------------------------------|--|
| <b>Gateway</b>                 | Displays the Gateway of the Ethernet Adapter.  |
| <b>Refresh Softkey</b>         | Refreshes the Network Connections Menu with the network settings of all the Ethernet adapters. |
| <b>Change Settings Softkey</b> | Displays the Network Connection Change Settings Menu.  |

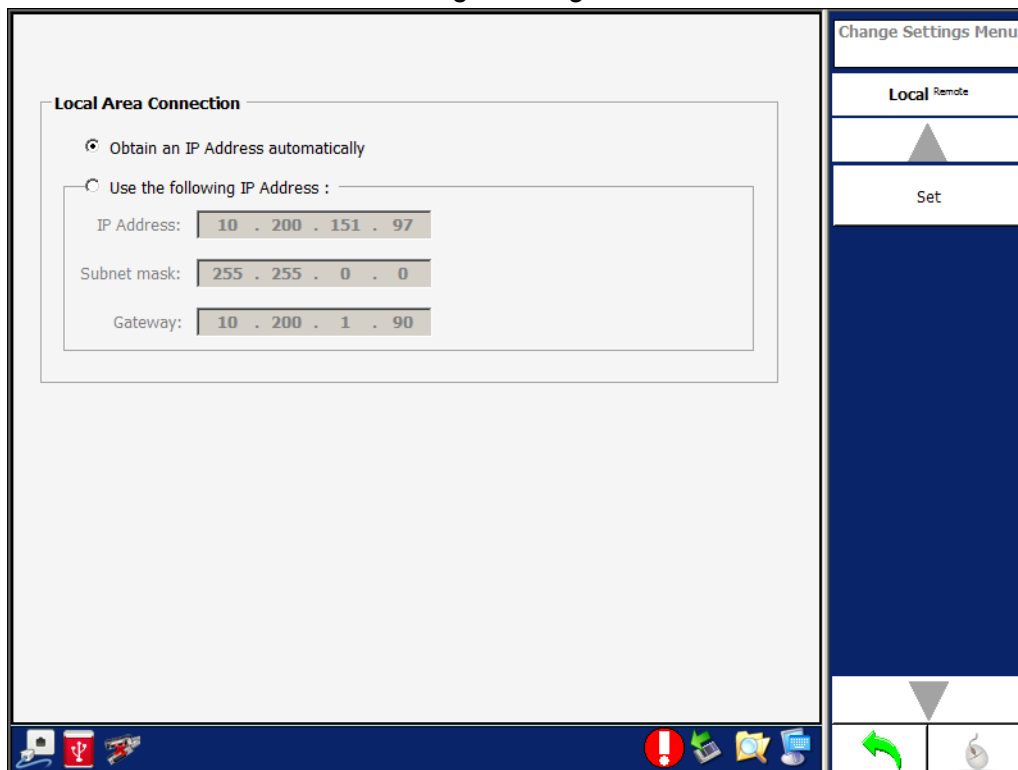
The internal DSP IP address can be changed from the factory default of 192.168.0.1. The internal DSP IP address should only be changed if the IP address is needed by the external LAN connections. On the Network Connections Menu select the DSP connection row on the grid and press the Change Settings Softkey.

To change the IP address to a dynamic IP:

- 1 Select the Obtain an IP Address automatically group box.
- 2 Press the Set Softkey.

### 3.8.2.1 Change Settings Menu - Obtain an IP Address Automatically

**Figure 1.2.3 - 77 Network Connections, Change Settings Menu - Auto IP Address**



To change the IP address to a static IP:

- 1 Select the Use the following IP Address group box.
- 2 Enter the IP address desired for the internal DSP connection.



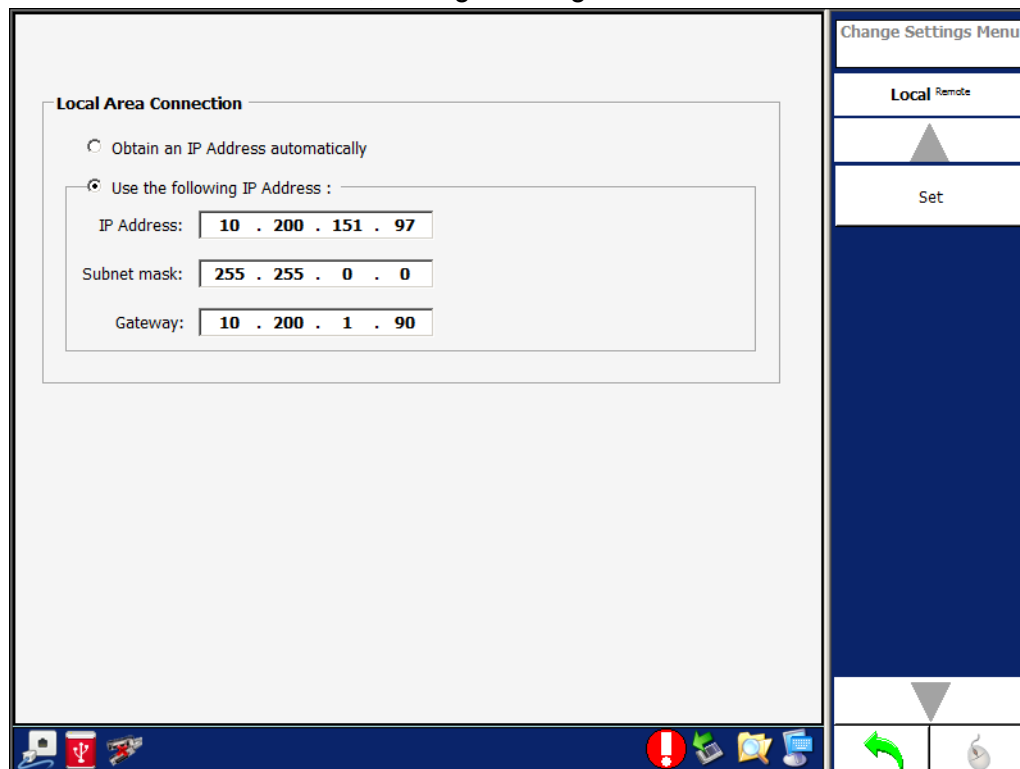
The ATC-5000NG sets the gateway address to the same IP Address and internally, sets the DSP IP address and communicates the address to the DSP module when the user presses the Set Softkey. The application software communicates the new address to the DSP, resets the connection and reboots the DSP. This process takes a few minutes. At the end of the process the application software re-establishes communications with the DSP using the new IP Address. On all future reboots the current IP address is used.

### Restore Factory Setup

To return to the factory setup, enter the same screen and press the Factory Setup Softkey. The application software starts the change process again with the IP address set to 192.168.0.1.

### 3.8.2.2 Change Settings Menu - Use the Following IP Address

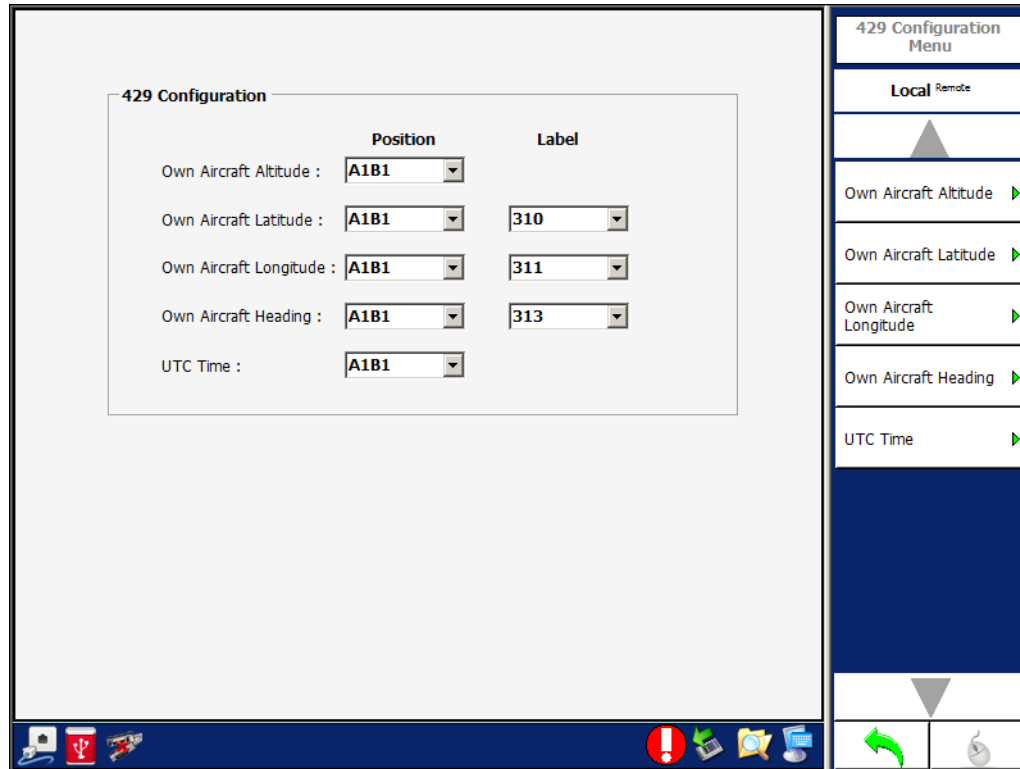
Figure 1.2.3 - 78 Network Connections, Change Settings Menu - Manual IP Address



### 3.8.3 CONFIGURATION MENU

Allows the user to select the 429 input channel position and label.

**Figure 1.2.3 - 79 System, Configuration Menu**

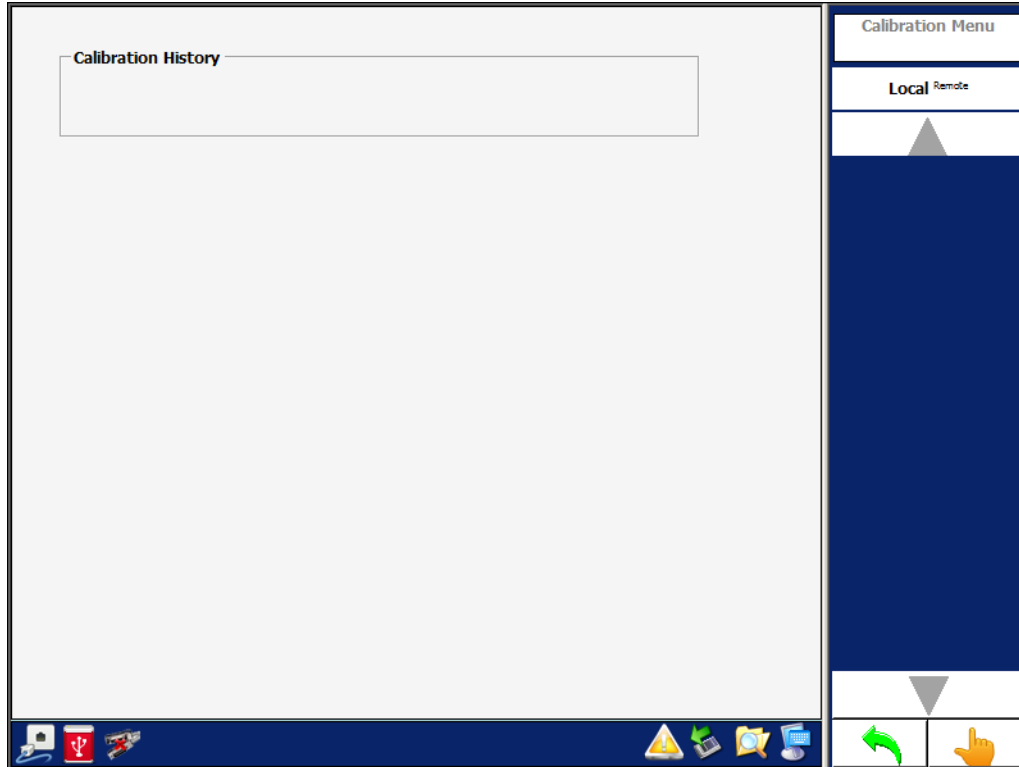


| Screen Components       | Description   |
|-------------------------|---|
| <b>Position Softkey</b> | Allows the user to select the position of the:<br>Own Aircraft Altitude<br>Own Aircraft Latitude<br>Own Aircraft Longitude<br>Own Aircraft Heading<br>UTC Time. |
| <b>Label Softkey</b>    | Allows the user to select the 429 label of the:<br>Own Aircraft Latitude<br>Own Aircraft Longitude<br>Own Aircraft Heading                                      |

### 3.8.4 CALIBRATION MENU

Allows the user to view the last calibration date and result.

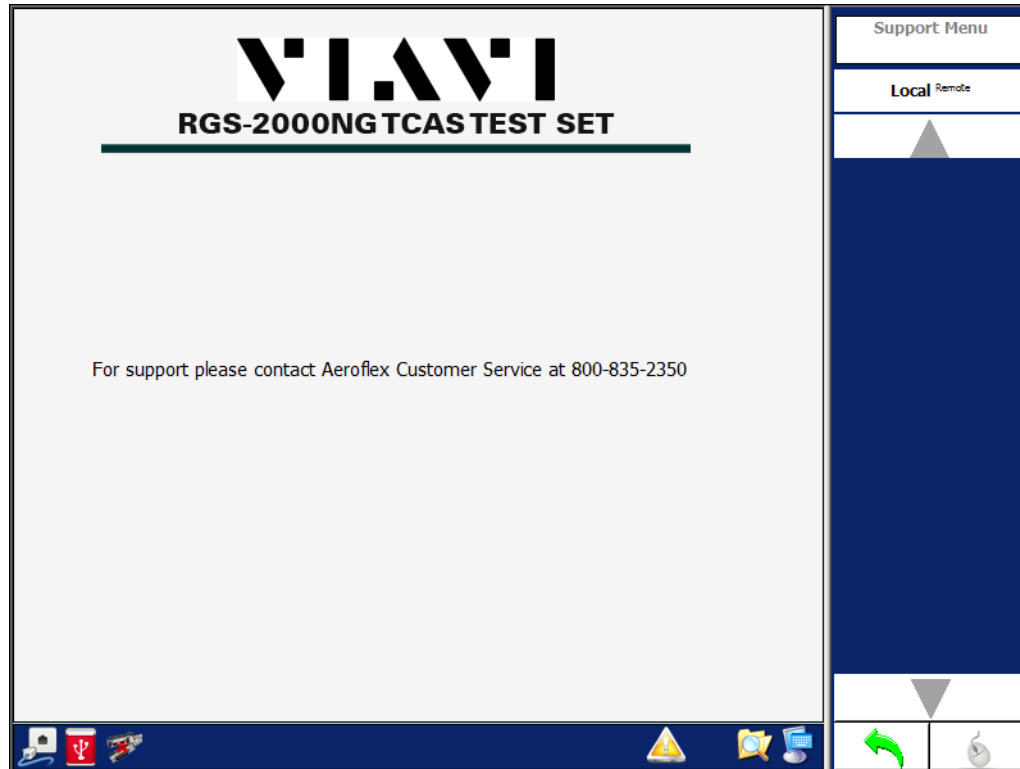
**Figure 1.2.3 - 80 System, Calibration Menu**



### 3.9 SUPPORT MENU

The Support Menu displays the VIAVI Customer Service contact information.

**Figure 1.2.3 - 81** ATC-5000NG Support Menu



This page intentionally left blank.

## 4. OPERATING PROCEDURES AND TEST CONFIGURATIONS

### 4.1 OPERATING PROCEDURES

#### 4.1.1 HOW TO CHANGE THE GPIB ADDRESS

- 1 Go to the Main Menu.
- 2 Press the *System Menu* Softkey to display the System Menu.
- 3 Change the GPIB address using the *GPIB Address* combobox or select the *GPIB Menu* Softkey. Select the *GPIB Address* Softkey. Once the address is changed, the new address is stored and is used until changed again.

#### 4.1.2 HOW TO CHANGE THE TRANSMITTER FREQUENCY

- 1 Go to the Main Menu
- 2 Press the *TCAS* Softkey to display the TCAS Main Menu.
- 3 Press the *Settings* Softkey to display the TCAS Settings Menu.
- 4 Change the frequency of the appropriate transmitter generator using the *Frequency* combobox or select the *Signal Generator* Softkey, appropriate transmitter generator Softkey and use the *Frequency* Softkey.

#### 4.1.3 HOW TO SET A SCOPE OUTPUT

- 1 Go to the Main Menu
- 2 Select the *System Menu* Softkey to display the System Menu.
- 3 Change the output by using the *Scope 1 or Scope 2* combobox or using *Scope 1 or Scope 2* Softkey. The test set contains six RF generators (A-F). The tables below identify the generator assignments for many test conditions.

**Table 1.2.4 - 1** Transponder Generator Assignments - Single Test Mode<sup>1</sup>

| Default Antenna Port            | Top             | Top                 | Bottom          | Bottom              | Top         | Top         |
|---------------------------------|-----------------|---------------------|-----------------|---------------------|-------------|-------------|
| Interrogation Type              | Generator A     | Generator B         | Generator C     | Generator D         | Generator E | Generator F |
| All SIF Modes (Cal & Var)       | P1 and P3       | P2 and P4           | P1 and P3       | P2 and P4           | -           | -           |
| P1 - P2                         | P1              | P2                  | -               | -                   | -           | -           |
| P1                              | P1              | -                   | -               | -                   | -           | -           |
| Alternate Mode A & Mode C       | P1 and P3       | P2                  | P1 and P3       | P2                  |             |             |
| DME                             | P1              | P2                  | -               | -                   | -           | -           |
| Mode S (All Pulses Cal & No P5) | -               | P1, P2 and P6       | -               | P1, P2 and P6       | -           | -           |
| Mode S (P2 Var Only)            | P2 (Var)        | P1 and P6 (Cal)     | P2 (Var)        | P1 and P6 (Cal)     | -           | -           |
| Mode S (P6 Var Only)            | P1 and P2 (Cal) | P6 (Var)            | P1 and P2 (Cal) | P6 (Var)            | -           | -           |
| Mode S (P5 Cal & Var)           | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | -           | -           |
| Interference Pulses (Cal & Var) | -               | -                   | -               | -                   | P1, P2      | -           |

<sup>1</sup> For Mode S Interrogations only P2 or P6 can be selected for variable pulse amplitude, not both. If P2 or P6 is selected as variable P5 is disabled.

**Table 1.2.4 - 2** Transponder Generator Assignments - Double Test Mode

| Default Antenna Port            | Top             | Top                 | Top             | Top                 | Top         | Top         |
|---------------------------------|-----------------|---------------------|-----------------|---------------------|-------------|-------------|
| Interrogation Type              | Generator A     | Generator B         | Generator C     | Generator D         | Generator E | Generator F |
| All SIF Modes (Cal & Var)       | P1 and P3       | P2 and P4           | P1 and P3       | P2 and P4           | -           | -           |
| P1 - P2                         | P1              | P2                  | -               | -                   | -           | -           |
| P1                              | P1              | -                   | -               | -                   | -           | -           |
| Alternate Mode A & Mode C       | P1 and P3       | P2                  | P1 and P3       | P2                  |             |             |
| DME                             | P1              | P2                  | -               | -                   | -           | -           |
| Mode S (All Pulses Cal & No P5) | -               | P1, P2 and P6       | -               | P1, P2 and P6       | -           | -           |
| Mode S (P2 Var Only)            | P2 (Var)        | P1 and P6 (Cal)     | P2 (Var)        | P1 and P6 (Cal)     | -           | -           |
| Mode S (P6 Var Only)            | P1 and P2 (Cal) | P6 (Var)            | P1 and P2 (Cal) | P6 (Var)            | -           | -           |
| Mode S (P5 Cal & Var)           | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | -           | -           |
| Interference Pulses (Cal & Var) | -               | -                   | -               | -                   | P1, P2      | -           |



**Table 1.2.4 - 3** Transponder Generator Assignments - Interrogation Table Test Mode

| Default Antenna Port            | Top             | Top                 | Bottom          | Bottom              | Top         | Top         |
|---------------------------------|-----------------|---------------------|-----------------|---------------------|-------------|-------------|
| Interrogation Type              | Generator A     | Generator B         | Generator C     | Generator D         | Generator E | Generator F |
| All SIF Modes (Cal & Var)       | P1 and P3       | P2 and P4           | P1 and P3       | P2 and P4           | -           | -           |
| Mode S (All Pulses Cal & No P5) | -               | P1, P2 and P6       | -               | P1, P2 and P6       | -           | -           |
| Mode S (P2 Var Only)            | P2 (Var)        | P1 and P6 (Cal)     | P2 (Var)        | P1 and P6 (Cal)     | -           | -           |
| Mode S (P6 Var Only)            | P1 and P2 (Cal) | P6 (Var)            | P1 and P2 (Cal) | P6 (Var)            | -           | -           |
| Mode S (P5 Cal & Var)           | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | -           | -           |
| Interference Pulses (Cal & Var) | -               | -                   | -               | -                   | P1, P2      | -           |

**Table 1.2.4 - 4** Transponder Generator Assignments - Block Test Mode

Block Test Mode

| Top         | Top           | Top         | Top         | Top         | Top         |
|-------------|---------------|-------------|-------------|-------------|-------------|
| Generator A | Generator B   | Generator C | Generator D | Generator E | Generator F |
| -           | P1, P3 and P4 | -           | -           | -           | -           |
| -           | P1, P2 and P6 | -           | -           | -           | -           |

**Table 1.2.4 - 5** Transponder Generator Assignments - Interrogation with CW

| Default Antenna Port            | Top             | Top                 | Bottom          | Bottom              | Top         | Top         |
|---------------------------------|-----------------|---------------------|-----------------|---------------------|-------------|-------------|
| Interrogation Type              | Generator A     | Generator B         | Generator C     | Generator D         | Generator E | Generator F |
| All SIF Modes (Cal & Var)       | P1 and P3       | P2 and P4           | P1 and P3       | P2 and P4           | -           | -           |
| P1 - P2                         | P1              | P2                  | -               | -                   | -           | -           |
| P1                              | P1              | -                   | -               | -                   | -           | -           |
| Alternate Mode A & Mode C       | P1 and P3       | P2                  | P1 and P3       | P2                  |             |             |
| DME                             | P1              | P2                  | -               | -                   | -           | -           |
| Mode S (All Pulses Cal & No P5) | -               | P1, P2 and P6       | -               | P1, P2 and P6       | -           | -           |
| Mode S (P2 Var Only)            | P2 (Var)        | P1 and P6 (Cal)     | P2 (Var)        | P1 and P6 (Cal)     | -           | -           |
| Mode S (P6 Var Only)            | P1 and P2 (Cal) | P6 (Var)            | P1 and P2 (Cal) | P6 (Var)            | -           | -           |
| Mode S (P5 Cal & Var)           | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | P5 (Cal & Var)  | P1, P2 and P6 (Cal) | -           | -           |
| Interference Pulses (Cal & Var) | -               | -                   | -               | -                   | P1, P2      | -           |

**Table 1.2.4 - 6** Transponder Generator Assignments - UAT Generator Assignments for ADS\_B, TIS-B and FIS-B Payload

| Default Antenna Port | Top         | Top         | Bottom      | Bottom      | OFF         | OFF         |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| UAT                  | Generator A | Generator B | Generator C | Generator D | Generator E | Generator F |
| UAT RX 1             | 978 MHz     | -           | -           | -           | -           | -           |
| UAT RX 2             | -           | -           | 978 MHz     | -           | -           | -           |

**Table 1.2.4 - 7 DME Generator Assignments**

| Default Antenna Port | Top         | OFF         | Top         | OFF         | OFF         | OFF         |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Mode Selection       | Generator A | Generator B | Generator C | Generator D | Generator E | Generator F |
| Mode X               | P1, P2      | -           | -           | -           | -           | -           |
| Mode Y               | P1, P2      | -           | -           | -           | -           | -           |
| Tone                 | P1, P2      | -           | -           | -           | -           | -           |
| Code                 | P1, P2      | -           | -           | -           | -           | -           |
| P2 Position          | P2          | -           | -           | -           | -           | -           |
| Width                | P2          | -           | -           | -           | -           | -           |
| Squitter             | P1, P2      | -           | -           | -           | -           | -           |
| Echo                 | -           | -           | P1, P2      | -           | -           | -           |

**Table 1.2.4 - 8 Multi-Receiver Generator Assignments - Scenario Test Mode**

| Default Antenna Port    | Top         | Top         | Bottom      | Bottom      | Top or Bottom | Top or Bottom |
|-------------------------|-------------|-------------|-------------|-------------|---------------|---------------|
| Gen Setup Configuration | Generator A | Generator B | Generator C | Generator D | Generator E   | Generator F   |
| UAT                     | 978 MHz     | -           | 978 MHz     | -           | -             | -             |
| 1090 Targets            | -           | 1090 MHz    | -           | 1090 MHz    | -             | -             |
| 1030 Messages           | -           | -           | -           | -           | -             | 1030 MHz      |

**Table 1.2.4 - 9 Multi-Receiver Generator Assignments - Block Test Mode**

| Default Antenna Port    | Top         | Top         | Bottom      | Bottom      | Top or Bottom | Top or Bottom |
|-------------------------|-------------|-------------|-------------|-------------|---------------|---------------|
| Default Antenna Port    | Top         | Top         | Bottom      | Bottom      | Top           | Top           |
| Gen Setup Configuration | Generator A | Generator B | Generator C | Generator D | Generator E   | Generator F   |
| SIF Modes Reply         | 1090 MHz    | -           | 1090 MHz    | -           | -             | -             |
| Mode S Reply            | 1090 MHz    | -           | 1090 MHz    | -           | -             | -             |

**Table 1.2.4 - 10 Multi-Receiver Generator Assignments - DO-260 Test Mode**

| Default Antenna Port    | Top or Bottom | Top or Bottom | Top or Bottom | Top or Bottom | Top or Bottom | Top or Bottom |
|-------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Gen Setup Configuration | Generator A   | Generator B   | Generator C   | Generator D   | Generator E   | Generator F   |
| Normal (User Defined)   | 1090 MHz      | 1090 MHz      | 1090 MHz      | 1090 MHz      | 1090 MHz      | 1090 MHz      |
| Altered Preamble        | 1090 MHz      | -             | 1090 MHz      | -             | -             | -             |
| Bit Failures            | 1090 MHz      | -             | 1090 MHz      | -             | -             | -             |
| Overlapping Pulses      | 1090 MHz      | -             | 1090 MHz      | -             | -             | -             |
| Preamble Validation     | 1090 MHz      | -             | 1090 MHz      | -             | -             | -             |
| Confidence Test         | 1090 MHz      | -             | 1090 MHz      | -             | -             | -             |

**4.1.4 HOW TO PROGRAM THE DSP SOFTWARE OR FPGA FIRMWARE**

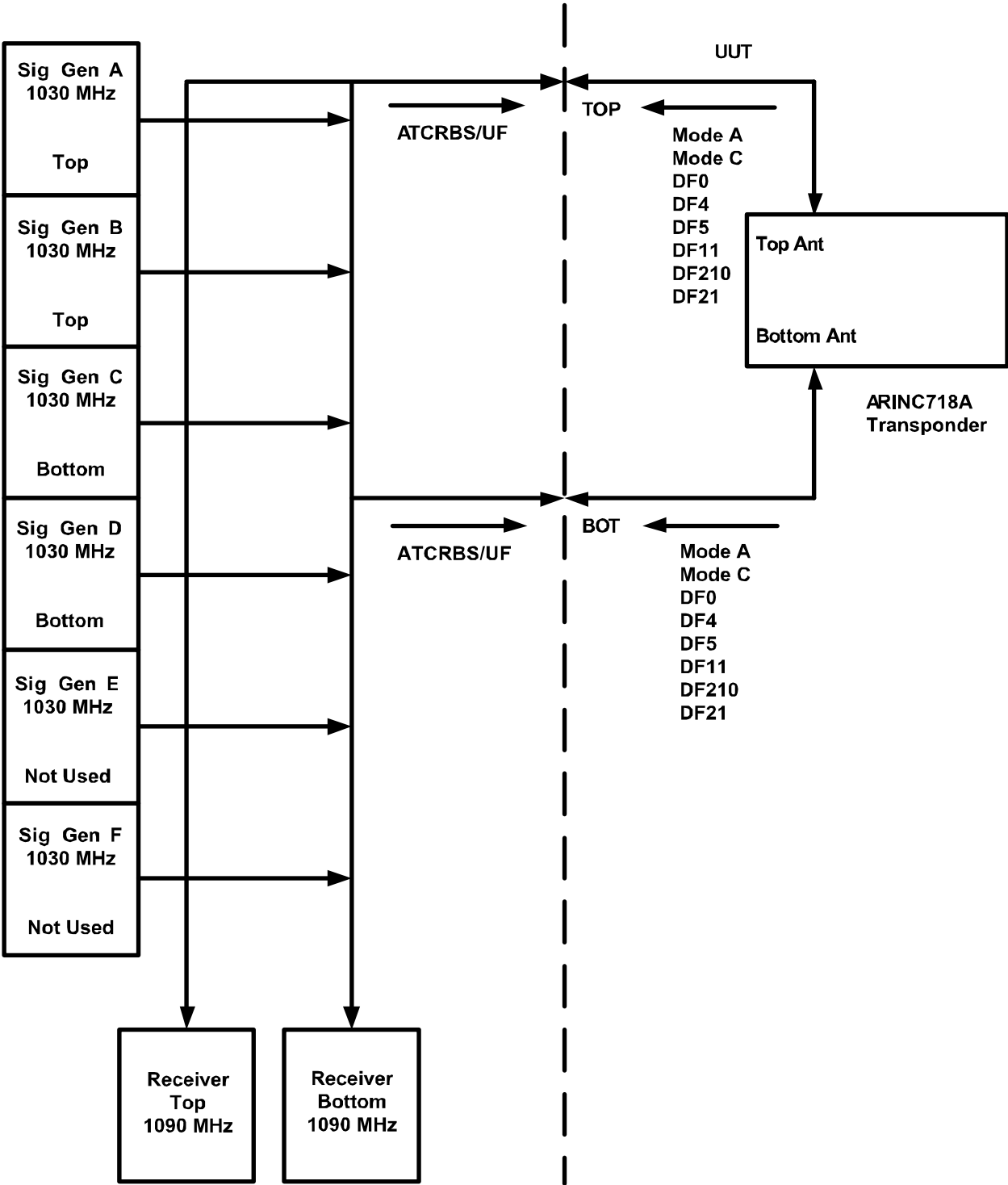
- 1 Go to the Main Menu
- 2 Press the *System Menu* Softkey to display the System Menu.
- 3 Press the *Software Update* Softkey to display the Software Update Menu.
- 4 Press the *Select* Softkey to display the file dialog to select the configuration file that is used for programming.
- 5 If all devices enabled in the configuration file are to be programmed, press the *Execute* Softkey to start programming. If some devices do not require reprogramming, deselect the device under the Programming column and press the *Execute* Softkey to start programming.
- 6 During the programming sequence the device being programmed is highlighted in the table and a progress bar is displayed in the lower section of the menu.
- 7 After programming is completed, restart the system. To restart the system, press the Power Switch (Front Panel) and allow power to turn OFF. Press the Power Switch (Front Panel) again to power up the Test Set.

**4.1.5 HOW TO ENTER THE OWN AIRCRAFT INFORMATION**

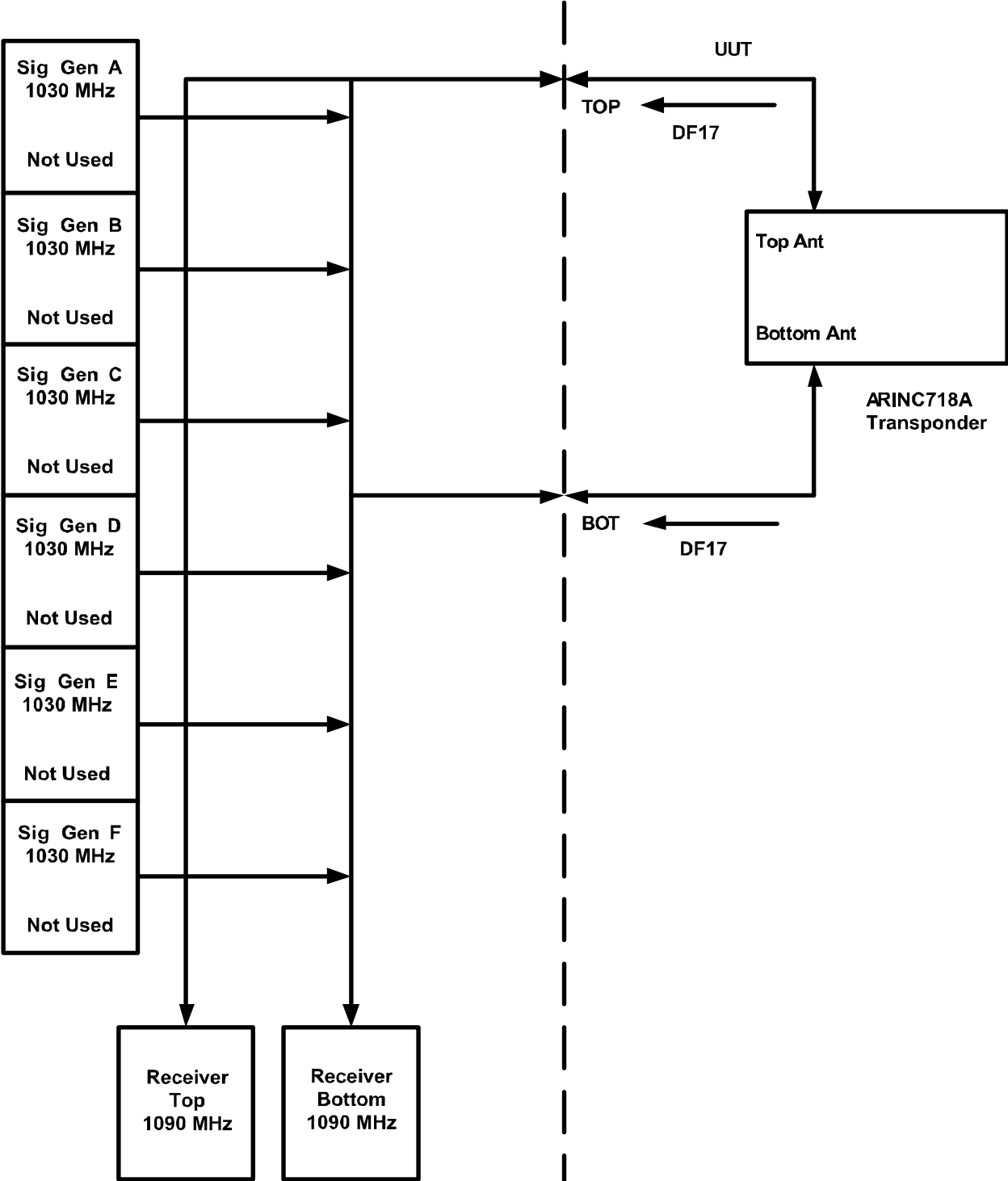
- 1 Go to the Main Menu
- 2 Press the *UAT* Softkey to display the UAT Main Menu.
- 3 Press the *Own Aircraft* Softkey to display the UAT Receiving Station Menu.
- 4 Use the comboboxes or Softkeys on the UAT Receiving Station Menu to enter the appropriate information.

### 4.2 TEST CONFIGURATIONS

#### 4.2.1 TRANSPONDER ATC/MODE S/ELS/EHS TEST CONFIGURATION



4.2.2 TRANSPONDER ADS-B OUT (1090ES) TEST CONFIGURATION



This page intentionally left blank.

## 5. REMOTE OPERATION

|        |   |    |
|--------|---|----|
| 5.     | Remote Operation                        | 1  |
| 5.1    | Overview                                | 4  |
| 5.2    | Programming suggestions                 | 6  |
| 5.2.1  | *IDN?                                   | 6  |
| 5.2.2  | *CLS                                    | 6  |
| 5.2.3  | *ESR?                                   | 6  |
| 5.2.4  | SYSTem:ERRor?                           | 6  |
| 5.3    | Measurement Commands                    | 7  |
| 5.3.1  | DATA FORMAT                             | 7  |
| 5.3.2  | DF DATA FRAME BIT                       | 7  |
| 5.3.3  | MODE                                    | 7  |
| 5.3.4  | PULSE                                   | 8  |
| 5.3.5  | PULSE REQUEST                           | 9  |
| 5.3.6  | SPR                                     | 10 |
| 5.3.7  | TRIGGER PARAMETERS                      | 10 |
| 5.4    | Own Aircraft Commands                   | 12 |
| 5.4.1  | ALTITUDE                                | 12 |
| 5.4.2  | HEADING                                 | 12 |
| 5.4.3  | LATITUDE                                | 12 |
| 5.4.4  | LONGITUDE                               | 12 |
| 5.4.5  | MODE S ADDRESS                          | 13 |
| 5.5    | Receiver Commands                       | 13 |
| 5.5.1  | LOG PARAMETERS                          | 13 |
| 5.5.2  | MASK                                    | 16 |
| 5.5.3  | STATUS REQUEST                          | 17 |
| 5.5.4  | UTC TIME                                | 17 |
| 5.6    | RTCA/DO-260 Test Commands               | 18 |
| 5.6.1  | GENERATOR PARAMETERS                    | 18 |
| 5.6.2  | LOAD                                    | 23 |
| 5.6.3  | NUMBER OF TRANSMISSIONS                 | 23 |
| 5.6.4  | REPETITION INTERVAL                     | 23 |
| 5.6.5  | RESET                                   | 23 |
| 5.6.6  | SAVE                                    | 23 |
| 5.6.7  | SPECIAL TEST                            | 24 |
| 5.6.8  | START                                   | 29 |
| 5.6.9  | STOP                                    | 29 |
| 5.6.10 | TEST STATUS REQUEST                     | 29 |
| 5.6.11 | TRIGGER PARAMETERS                      | 29 |
| 5.6.12 | BLOCK TRANSMISSION                      | 30 |
| 5.7    | Scenario Commands                       | 33 |
| 5.7.1  | INDIVIDUAL 1030 MESSAGES                | 33 |
| 5.7.2  | INTRUDERS DEFINITION PARAMETERS         | 34 |
| 5.7.3  | SCENARIO PARAMETERS                     | 79 |
| 5.7.4  | UAT ADS-B DEFINITION PARAMETERS         | 85 |
| 5.7.5  | UAT GROUND UPLINK DEFINITION PARAMETERS | 95 |



|         |                                 |     |
|---------|---------------------------------|-----|
| 5.8     | Settings Commands               | 98  |
| 5.8.1   | Settings Menu Reset             | 98  |
| 5.8.2   | SCOPE PORT                      | 99  |
| 5.8.3   | TX GENERATOR PARAMETERS         | 99  |
| 5.9     | Transponder Commands            | 104 |
| 5.9.1   | CABLE LOSS                      | 104 |
| 5.9.2   | CABLE LOSS BOTTOM               | 104 |
| 5.9.3   | INTERFERENCE PULSE              | 104 |
| 5.9.4   | INTERROGATION FREQUENCY         | 106 |
| 5.9.5   | INTERROGATION ON/OFF            | 106 |
| 5.9.6   | INTERROGATION TEST TYPE         | 106 |
| 5.9.7   | INTERROGATION TOP ANTENNA POWER | 106 |
| 5.9.8   | LOAD TEST                       | 107 |
| 5.9.9   | RESET                           | 107 |
| 5.9.10  | SAVE TEST                       | 107 |
| 5.9.11  | SCOPE TRIGGER                   | 107 |
| 5.9.12  | SCOPE TRIGGER OFFSET            | 107 |
| 5.9.13  | START TRANSMISSION              | 107 |
| 5.9.14  | STOP TRANSMISSION               | 108 |
| 5.9.15  | SUPPRESSION OUTPUT              | 108 |
| 5.9.16  | SUPPRESSION PERCENTAGE          | 108 |
| 5.9.17  | TRANSMISSION MODES              | 108 |
| 5.10    | Unit Commands                   | 128 |
| 5.10.1  | HARDWARE VERSION REQUEST        | 128 |
| 5.10.2  | LAST CALIBRATION DATE REQUEST   | 128 |
| 5.10.3  | MODE OF OPERATION               | 128 |
| 5.10.4  | PART NUMBER REQUEST             | 128 |
| 5.10.5  | PRODUCT KEY REQUEST             | 128 |
| 5.10.6  | RESET                           | 129 |
| 5.10.7  | SERIAL NUMBER REQUEST           | 129 |
| 5.10.8  | SOFTWARE VERSION REQUEST        | 129 |
| 5.10.9  | UNIT NAME REQUEST               | 129 |
| 5.10.10 | VERSIONS REQUEST                | 130 |
| 5.11    | DME Commands                    | 130 |
| 5.11.1  | ACCELERATION                    | 130 |
| 5.11.2  | CABLE LOSS                      | 130 |
| 5.11.3  | CHANNEL                         | 130 |
| 5.11.4  | CHANNEL MODE                    | 131 |
| 5.11.5  | DIRECTION                       | 131 |
| 5.11.6  | ECHO                            | 131 |
| 5.11.7  | ECHO POWER                      | 131 |
| 5.11.8  | EFFICIENCY                      | 131 |
| 5.11.9  | IDENT CHARACTER                 | 132 |
| 5.11.10 | IDENT CODE                      | 132 |
| 5.11.11 | IDENT DASH                      | 132 |
| 5.11.12 | IDENT DOT                       | 132 |
| 5.11.13 | IDENT MODE                      | 132 |
| 5.11.14 | IDENT RATE                      | 133 |

|         |   |     |
|---------|---|-----|
| 5.11.15 | IDENT SPACE                                   | 133 |
| 5.11.16 | LOAD TEST                                     | 133 |
| 5.11.17 | P2 POSITION                                   | 133 |
| 5.11.18 | POWER   | 133 |
| 5.11.19 | PRF?  | 134 |
| 5.11.20 | PULSE   | 134 |
| 5.11.21 | RANGE   | 134 |
| 5.11.22 | RANGE MODE                                    | 134 |
| 5.11.23 | RESET   | 134 |
| 5.11.24 | SAVE TEST                                     | 134 |
| 5.11.25 | SQUITTER                                      | 135 |
| 5.11.26 | START   | 135 |
| 5.11.27 | STOP  | 135 |
| 5.11.28 | SUPPRESSION                                   | 135 |
| 5.11.29 | SUPPRESSION PERCENTAGE                        | 135 |
| 5.11.30 | VELOCITY                                      | 136 |
| 5.11.31 | WIDTH   | 136 |
| 5.11.32 | EQUALIZER                                     | 136 |
| 5.11.33 | TRIGGER                                       | 136 |
| 5.11.34 | SELF INTERROGATION                            | 136 |
| 5.12    | Examples                                      | 137 |
| 5.12.1  | SCENARIO TEST                                 | 137 |
| 5.12.2  | DO-260 Test Single ADS-B Example              | 139 |
| 5.12.3  | DO-260 Test Dual ADS-B Example                | 140 |
| 5.12.4  | DO-260 Special Test Overlapping Pulse Example | 141 |
| 5.12.5  | DO-260 Special Test Bit Failures Example      | 142 |
| 5.12.6  | DO-260 Special Test Altered Preamble Example  | 143 |
| 5.12.7  | Transponder Block Transmission Example        | 144 |
| 5.12.8  | UAT Scenario Definition Example               | 145 |
| 5.12.9  | Example Program                               | 147 |

## 5.1 OVERVIEW

Functional capabilities within the Unit for specific customers are provided by means of customer specific product keys (for instance UAT functionality although commands are defined, is only enabled for customers that have hardware and software UAT capability).

Command Language Nomenclature (not case sensitive):

|          |  |
|----------|--|
| :        | The “colon” is used to separate the different command categories.  |
| ;        | The “semicolon” is used as a sub-command separator within a command category.  |
| SP       | The “space” is used to separate the sub-commands from the actual sub-command values.   |
| CR(\r)   | The Carriage Return, “\r”, is used to terminate a command line.  |
| Keywords | Keywords are the names of the specific commands or sub-commands (either pre-defined abbreviations or complete command keywords can be used). |
| Values   | Values are the alphanumeric values associated with the specific sub-commands.  |
| //       | The “//” is used to add a comment line within the command structure.   |

Return values:

|   |   |
|---|---|
| # | The “#” is used to indicate a measurement value was unavailable.  |
| ? | The “?” is used to indicate the command did not complete correctly. The command will explicitly state if it will return a question mark.  |
| * | The “*” is used to indicate the command completed normally. The command will explicitly state if it will return an asterisk.  |
| ! | The “!” is placed in the output buffer when a command syntax error occurs. When using the GPIB you can query the status byte to see if the D4 bit is set notifying you that something is waiting in the unit’s output buffer. See next paragraph. |

When configuring the GPIB using NI-VISA you can set attributes to flush the output buffer before each write. This should clear any remaining data such as the “!” from the output buffer.

For proper GPIB operation enable EOI at the end of each write.

The Unit can be serial polled via GPIB to receive status of operation. The status byte received from a serial poll has the following representation. The value is returned in hex format. A 20 hex (32 decimal) has bit D5 set indicating "Command Complete/Unit Ready".

|    |  |
|----|--|
| D0 | Last Command Syntax Error  |
| D1 | Execution Error (Detectable Unit Function Failure), Bit reset by GPIB command *CLS |
| D2 | Not Used   |
| D3 | Not Used   |
| D4 | Transmitter Queue Not Empty (Data available for GPIB read)                         |
| D5 | Command Complete/Unit Ready  |
| D6 | Not Used   |
| D7 | Not Used   |

**:ATC:STATUS?** Command was added after version 17.03.3101 to check this status over Ethernet. This may be checked after each write to see if the previous command succeeded and the unit is ready for further commands.

Communication may be performed using different methods. For example, to set the own aircraft altitude, longitude and latitude, the following two methods could be used to send to commands to the Test Set (both are equivalent).

#### Method 1

```
:ATC5000NG:OWN:ALTITUDE 10000  
:ATC5000NG:OWN:LATITUDE 25.8333  
:ATC5000NG:OWN:LONGITUDE -80.33333
```

#### Method 2 (Example shown uses complete and abbreviated commands.)

```
:ATC5000NG:OWN:ALTITUDE 10000;:LATITUDE 25.8333;:LONGITUDE -80.33333  
:ATC:OWN:ALT 10000;:LAT 25.8333;LONG -80.33333  
:ATC5000NG:OWN:ALTITUDE 10000;:LAT 25.8333; :LONGITUDE -80.33333
```

The Unit also accepts commands from different subcommand categories by using the ";" and adding the subcommand structure for the other command. For example, using the previous example, we can also add a factory setting at the end of the command string.

```
:ATC5000NG:OWN:ALTITUDE 10000;:LATITUDE 25.8333;:LONGITUDE -80.33333
```

## 5.2 PROGRAMMING SUGGESTIONS

After sending the first command that changes the unit to a new instrument mode it is recommended to allow 3 to 5 seconds for the unit to apply the initial settings before sending any further commands. A 30 millisecond delay between commands is recommended.

It is also wise to send the factory reset command (:ATC:SET:FACT UAT, MULTI or XPDR) before sending other commands to setup the instrument. This will ensure the generators are configured properly for that mode of operation. Example: Send “:ATC:SCE:TYPE XPDR\r” to set the unit for transponder scenario, then send “:ATC:SET:FACT XPDR\r” to reset the generator to the default for that mode of operation.

The ATC-5000NG accepts the following GPIB commands:

### 5.2.1 \*IDN?

This command returns manufacturer, model name and material number in a data string.

Example: VIAVI;ATC-5000NG RF Test Set;138156

### 5.2.2 \*CLS

This command resets the status byte and the Touchscreen error log.

### 5.2.3 \*ESR?

This command returns a decimal value from 0 to 255, in accordance with the following table.

| Bit | Bit Weight | Bit Name                 | Condition                           |
|-----|------------|--------------------------|-------------------------------------|
| 7   | 128        | PON                      | Always 0                            |
| 6   | 64         | Not Used                 | Always 0                            |
| 5   | 32         | CME (Command Error)      | 0 = No Error; 1 = Error             |
| 4   | 16         | EXE (Execution Error)    | 0 = No Error; 1 = Error             |
| 3   | 8          | DDE                      | Always 0                            |
| 2   | 4          | QYE                      | Always 0                            |
| 1   | 2          | RQC                      | Always 0                            |
| 0   | 1          | OPC (Operation Complete) | 0 = Not Ready; 1 = Complete (Ready) |

### 5.2.4 SYSTEM:ERROR?

This command returns one line from the error log in the Touchscreen. Every time that the command is transmitted the next available error will be returned. If there is no more errors to return the following message will be returned: “Error Message Que Empty”

## 5.3 MEASUREMENT COMMANDS

This set of commands allows the user to query the ATC-5000NG to perform measurements on the received signal from the UUT. The ATC-5000NG can perform frequency, power and pulse characteristic measurements on both 1030 and 1090 MHz signals.

### 5.3.1 DATA FORMAT

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:DFORMAT}SP<numeric>CR`  
**Description:** This command sets the replies numeric format.  
**Numeric:** 0 to 2 (decimal ASCII)

| Value | Format                       |
|-------|------------------------------|
| 0     | Hexadecimal                  |
| 1     | Decimal (no fractional part) |
| 2     | Float (fractional part)      |

**Example:** `:ATC:MEA:DFORMAT 2\r`  
**Default:** 1  
**Query:** `:ATC:MEA:DFORMAT?\r`  
**Return:** 0

### 5.3.2 DF DATA FRAME BIT

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:DFBIT}SP<numeric>CR`  
**Description:** This command sets the measurement routine to sample the selected bit.  
**Numeric:** 1 to 112 (decimal ASCII)  
**Example:** `:ATC:MEA:SET:DFBIT 7\r`  
**Default:** 1  
**Query:** `:ATC:MEA:SET:DFBIT?\r`  
**Return:** 7

### 5.3.3 MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:MOD |:MODE}SP<numeric>CR`  
**Description:** This command sets the measurement mode. This command is ignored when the scenario type selected is XPDR.  
**Numeric:** 0 (decimal ASCII)

| Value | Measurement Mode |
|-------|------------------|
| 0     | Pulse            |

**Example:** `:ATC:MEA:SET:MOD 0\r`  
**Default:** Pulse  
**Query:** `:ATC:MEA:SET:MOD?\r`  
**Return:** 0

### 5.3.4 PULSE

**Command Syntax:** `{:ATC[:ATC5000NG]}{:MEA[:MEASURE]}{:SET[:SETTINGS]}{:PUL[:PULSE]}SP<value>CR`

**Description:** This command sets the measurement routine to sample the selected pulse. Pulse selected to sample interrogation is ignored when the scenario type selected is XPDR.

| Value     | Pulse                   |
|-----------|-------------------------|
| 0 F1      | F1 ATCRBS Reply         |
| 1 C1      | C1 ATCRBS Reply         |
| 2 A1      | A1 ATCRBS Reply         |
| 3 C2      | C2 ATCRBS Reply         |
| 4 A2      | A2 ATCRBS Reply         |
| 5 C4      | C4 ATCRBS Reply         |
| 6 A4      | A4 ATCRBS Reply         |
| 7 B1      | B1 ATCRBS Reply         |
| 8 D1      | D1 ATCRBS Reply         |
| 9 B2      | B2 ATCRBS Reply         |
| 10 D2     | D2 ATCRBS Reply         |
| 11 B4     | B4 ATCRBS Reply         |
| 12 D4     | D4 ATCRBS Reply         |
| 13 F2     | F2 ATCRBS Reply         |
| 14 P1MSR  | P1 Mode S Reply         |
| 15 P2MSR  | P2 Mode S Reply         |
| 16 P3MSR  | P3 Mode S Reply         |
| 17 P4MSR  | P4 Mode S Reply         |
| 18 S1MCI  | S1 ATCRBS Interrogation |
| 19 P1MCI  | P1 ATCRBS Interrogation |
| 20 P2MCI  | P2 ATCRBS Interrogation |
| 21 P3MCI  | P3 ATCRBS Interrogation |
| 22 P4MCI  | P4 ATCRBS Interrogation |
| 23 P1MSI  | P1 Mode S Interrogation |
| 24 P2MSI  | P2 Mode S Interrogation |
| 25 P6MSIR | P6 Start Interrogation  |
| 26 P6MSIF | P6 End Interrogation    |
| 27 P6MSI  | P6 Mode S Interrogation |
| 28 P6SPR  | P6 SPR                  |
| 29 MCSPi  | SPI ATCRBS Reply        |
| 30 DFDATA | DF Frame Data           |
| 31 DMEXP1 | DME X P1                |
| 32 DMEXP2 | DME X P2                |
| 33 DMEYP1 | DME Y P1                |
| 34 DMEYP2 | DME Y P2                |
| 35 MCXBIT | X ATCRBS Reply          |

**Example:** `:ATC:MEA:SET:PUL 18\r`

**Default:** Scenario Type  
XPDR MULTI (Multi-Receiver)  
0|F1 19|P1MCI

**Query:** `:ATC:MEA:SET:PUL?\r`

**Return:** 18

## 5.3.5 PULSE REQUEST

### 5.3.5.1 FREQUENCY REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:FREQ? |:FREQUENCY?} CR`  
**Description:** This command returns the frequency of the incoming signal.  
**Example:** `:ATC:MEA:FREQ?\r`  
**Return:** Value is in ASCII data format specified in MHz. In case of the Float data format, the Value is returned with three decimal points.  
 If no measurement Value is available, the Unit replies with not ready “#”.



### 5.3.5.2 PULSE FALLTIME REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:FALL?} CR`  
**Description:** This command returns the fall time of the selected pulse.  
**Example:** `:ATC:MEA:PUL:FALL?\r`  
**Return:** Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.  
 If no measurement Value is available, the Unit replies with not ready “#”.



### 5.3.5.3 PULSE RISETIME REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:RISE?} CR`  
**Description:** This command returns the rise time of the selected pulse.  
**Example:** `:ATC:MEA:PUL:RISE?\r`  
**Return:** Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.  
 If no measurement Value is available, the Unit replies with not ready “#”.



### 5.3.5.4 PULSE POSITION REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:POS?}:POSITION?} CR`  
**Description:** This command returns the position of the selected pulse.  
**Example:** `:ATC:MEA:PUL:POS?\r`  
**Return:** Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.  
 If no measurement Value is available, the Unit replies with not ready “#”.



### 5.3.5.5 PULSE POWER REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:POWER?} CR`  
**Description:** This command returns the power of the selected pulse.  
**Example:** `:ATC:MEA:PUL:POWER?\r`  
**Return:** Value is in ASCII data format specified in dBm. In case of the Float data format, the Value is returned with two decimal points.  
 If no measurement Value is available, the Unit replies with not ready “#”.





### 5.3.5.6 PULSE WIDTH REQUEST

**Command Syntax:** {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:PUL |:PULSE}{:WID? |:WIDTH?} CR  
**Description:** This command returns the pulse width of the selected pulse.  
**Example:** :ATC:MEA:PUL:WID?\r  
**Return:** Value is in ASCII data format specified in ns. In case of the Float data format, the Value is returned without fractional part.  
 If no measurement Value is available, the Unit replies with not ready “#”.



### 5.3.6 SPR

**Command Syntax:** {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:SPR}SP<numeric>CR  
**Description:** This command sets the measurement routine to sample the selected SPR.  
**Numeric:** 0 to 112 (decimal ASCII)  
 0 is the Sync Phase Reversal of the P6 pulse. 1 is the first bit of the interrogation.  
**Example:** :ATC:MEA:SET:SPR 27\r  
**Default:** 0  
**Query:** :ATC:MEA:SET:SPR?\r  
**Return:** 27  
 Measured pulse must be set to “P6 SPR” or the query will return “?”.



### 5.3.7 TRIGGER PARAMETERS

#### 5.3.7.1 ANTENNA

**Command Syntax:** {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:ANT |:ANTENNA}SP{TOP |BOTTOM}CR  
**Description:** This command sets the measurement routine to sample the Top or Bottom antenna.  
**Example:** :ATC:MEA:SET:TRIG:ANT TOP\r  
**Default:** Top  
**Query:** :ATC:MEA:SET:TRIG:ANT?\r  
**Return:** TOP

#### 5.3.7.2 DBM LEVEL

**Command Syntax:** {:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:LDBM}SP<numeric>CR  
**Description:** This command sets the trigger level in dBm if trigger source is set to log video.  
**Numeric:** 15 to 60 dBm (decimal ASCII)  
**Example:** :ATC:MEA:SET:TRIG:LDBM 20\r  
**Query:** :ATC:MEA:SET:TRIG:LDBM?\r  
**Return:** 20

### 5.3.7.3 EDGE

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:EDGE}SP{+ | -}CR`

**Description:** This command sets the trigger edge to + or -. This command is ignored when the scenario type selected is XPDR.

**Example:** `:ATC:MEA:SET:TRIG:EDGE -\r`

**Default:** +

**Query:** `:ATC:MEA:SET:TRIG:EDGE?\r`

**Return:** -

### 5.3.7.4 LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:LEV |:LEVEL}SP<numeric>CR`

**Description:** This command sets the trigger level in analog to digital converter counts if trigger source is set to log video.

**Numeric:** 0 to 1023 (decimal ASCII)

**Example:** `:ATC:MEA:SET:TRIG:LEV 400\r`

**Query:** `:ATC:MEA:SET:TRIG:LEV?\r`

**Return:** 400

### 5.3.7.5 MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:MODE}SP{NORMAL | SINGLE}CR`

**Description:** This command sets the trigger mode to normal or single. This command is ignored when the scenario type selected is XPDR.

**Example:** `:ATC:MEA:SET:TRIG:MODE NORMAL\r`

**Default:** Single

**Query:** `:ATC:MEA:SET:TRIG:MODE?\r`

**Return:** NORMAL

### 5.3.7.6 SOURCE

**Command Syntax:** `{:ATC |:ATC5000NG}{:MEA |:MEASURE}{:SET |:SETTINGS}{:TRIGGER |:TRIG}{:SOU |:SOURCE}SP<numeric>CR`

**Description:** This command sets the trigger source. This command is ignored when the scenario type selected is XPDR.

**Numeric:** 0 (decimal ASCII)

| Value | Trigger Source |
|-------|----------------|
| 0     | Log Video      |

**Example:** `:ATC:MEA:SET:TRIG:SOU 0\r`

**Default:** 0

**Query:** `:ATC:MEA:SET:TRIG:SOU?\r`

**Return:** 0

## 5.4 OWN AIRCRAFT COMMANDS

This set of commands allow the user to set the own aircraft information remotely.

### 5.4.1 ALTITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:OWN}{:ALT |:ALTITUDE}SP<numeric>CR`  
**Description:** This command sets the own aircraft (TCAS under test) altitude value. This command is valid only when the source of the own aircraft parameters is defined as "MANUAL.."  
**Numeric:** -1000 to 126700 feet (decimal ASCII)  
**Example:** `:ATC:OWN:ALT 2000\r`  
**Default:** Last altitude before power down.  
**Query:** `:ATC:OWN:ALT?\r`  
**Return:** 2000

### 5.4.2 HEADING

**Command Syntax:** `{:ATC |:ATC5000NG}{:OWN}{:HEAD |:HEADING}SP<numeric>CR`  
**Description:** This command sets the own aircraft (TCAS under test) heading value. This command is valid only when the source of the own aircraft parameters is defined as "MANUAL."  
**Numeric:** -180 to 180 degrees (decimal ASCII)  
 Or  
 0 to 360 degrees (decimal ASCII)  
**Example:** `:ATC:OWN:HEAD 90. 1\r`  
**Default:** Last heading before power down.  
**Query:** `:ATC:OWN:HEAD?\r`  
**Return:** 90. 1

### 5.4.3 LATITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:OWN}{:LAT |:LATITUDE}SP<numeric>CR`  
**Description:** This command sets the own aircraft (TCAS under test) latitude value. This command is valid only when the source of the own aircraft parameters is defined as "MANUAL."  
**Numeric:** -90 to 90 degrees (Double ASCII)  
**Example:** `:ATC:OWN:LAT 25.8333\r`  
**Default:** Last latitude before power down.  
**Query:** `:ATC:OWN:LAT?\r`  
**Return:** 25.833300

### 5.4.4 LONGITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:OWN}{:LONG |:LONGITUDE}SP<numeric>CR`  
**Description:** This command sets the own aircraft (TCAS under test) longitude value. This command is valid only when the source of the own aircraft parameters is defined as "MANUAL."  
**Numeric:** -180 to 180 degrees (double ASCII)  
**Example:** `:ATC:OWN:LONG -80.333331\r`  
**Default:** Last longitude before power down.  
**Query:** `:ATC:OWN:LONG?\r`  
**Return:** -80.333331

### 5.4.5 MODE S ADDRESS

|                        |   |
|------------------------|---|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:OWN}{:MSADDR}SP<numeric>CR  |
| <b>Description:</b>    | This command sets the own aircraft Mode S address. This command is valid for any source of the own aircraft parameters defined. |
| <b>Numeric:</b>        | 0 to FFFFFFF (hexadecimal ASCII)  |
| <b>Example:</b>        | :ATC:OWN:MSADDR 000004\r  |
| <b>Default:</b>        | Last Mode S Address before power down.  |
| <b>Query:</b>          | :ATC:OWN:MSADDR?\r  |
| <b>Return:</b>         | 000004  |

## 5.5 RECEIVER COMMANDS

This set of commands allows the user to set the ATC-5000NG to perform various receiver functions (select received messages, enable/disable data logging, read logged data, etc.).

### 5.5.1 LOG PARAMETERS

#### 5.5.1.1 CLEAR

|                        |  |
|------------------------|--|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:RCV  :RCVR}{:LOG}{:CLE  :CLEAR} CR   |
| <b>Description:</b>    | This command clears the log buffer of received messages. |
| <b>Example:</b>        | :ATC:RCV:LOG:CLE\r                                       |

#### 5.5.1.2 COUNT REQUEST

|                        |  |
|------------------------|--|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:RCV  :RCVR}{:CO  :COUNT}?CR  |
| <b>Description:</b>    | This command returns the count of messages available to read from the ATC-5000NG receiver log. |
| <b>Example:</b>        | :ATC:RCV:CO?\r   |
| <b>Return Value:</b>   | Decimal Value in ASCII   |

#### 5.5.1.3 MESSAGE TYPE COUNT REQUEST

|                        |  |
|------------------------|--|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:RCV  :RCVR}{:MTCO  :MTCOUNT}?CR  |
| <b>Description:</b>    | This command returns the amount per type of messages available to read from the ATC-5000NG receiver log.   |
| <b>Example:</b>        | :ATC:RCV:MTCO?\r   |
| <b>Return Value:</b>   | Decimal Value in ASCII separated by comma in the following order:<br>UUT DF messages count, UUT ATCRBS Reply messages count, UUT UF messages count, UUT ATCRBS Interrogation messages count, UUT UAT messages count, ATC DF messages count, ATC ATCRBS Reply messages count, ATC UF messages count, ATC ATCRBS Interrogation count and ATC UAT messages count. |
| <b>Example:</b>        | :ATC:RCV:MTCO?\r   |
| <b>Return:</b>         | 0,1439,0,0,0,0,0,0,2878,0  |
|                        | If the Unit is not ready to return an answer, “#” is returned, separated by a comma.   |



### 5.5.1.4 READ

**Command Syntax:**

{:ATC |:ATC5000NG}{:RCV |:RCVR}{:LOG:DL?}CR

**Description:**

If the ATC-5000NG Receiver Log is empty, the response is EMPTY (ASCII). If data is available, the ATC-5000NG responds with 25 bytes in hexadecimal format (50 ASCII bytes). The following is the description of each byte:

Byte 1: Type of Message

| Message                  | Code |
|--------------------------|------|
| Mode S Reply             | 1    |
| ATCRBS Reply             | 2    |
| Mode S Interrogation     | 3    |
| ATCRBS Interrogation     | 4    |
| ATC Mode S Reply         | 5    |
| ATC ATCRBS Reply         | 6    |
| ATC Mode S Interrogation | 7    |
| ATC ATCRBS Interrogation | 8    |

Byte2 to 15: Data

Mode S Short Replies (DF0 to DF15):

Byte 2 to 8: All 0s

Byte 9 to 15: Data (Byte 9, Bit 7 (MSB); hexadecimal)

Mode S Long Replies (DF16 to DF24):

Byte 2 to 15: Data (Byte2, Bit 7 (MSB); hexadecimal)

Mode S Short Interrogations(UF0 to UF15):

Byte 2 to 8: All 0s

Byte 9 to 15: Data (Byte 9, Bit 7 (MSB); hexadecimal)

Mode S Long Interrogations (UF16 to UF24):

Byte 2 to 15: Data (Byte2, Bit 7 (MSB); hexadecimal)

ATCRBS Replies:

SW VER. 17.08.1701 AND BELOW:

BYTE 2: HIGH NIBBLE BIT7-4 (ZERO); LOW NIBBLE BIT 3-0 (C1 A1 C2 A2)

BYTE 3: (C4 A4 B1 D1 B2 D2 B4 D4)

BYTE 4 TO 15: ALL 0'S

SW VER. 17.10.0601 AND ABOVE:

Byte 2: High Nibble: Reserved; Low Nibble (Zero)

Byte 3: High Nibble bit 7-6 (Zero); SPI bit 5; X bit 4; Low Nibble bit 3-0 (C1 A1 C2 A2)

Byte 4: (C4 A4 B1 D1 B2 D2 B4 D4)

Byte 5 – 15: All 0's

Byte2 to 15: Data

ATCRBS Interrogations:

Byte 2: High Nibble Bit 7-4 (Reserved); Low Nibble Bit 3-0 (Mode)

Mode:

| Interrogation Type             | Mode Code |
|--------------------------------|-----------|
| Mode C                         | 1         |
| Mode C Only All Call           | 2         |
| Mode C/Mode S All Call         | 3         |
| Mode C with S1                 | 4         |
| Mode C Only All Call with S1   | 5         |
| Mode C/Mode S All Call with S1 | 6         |
| Mode A                         | 7         |
| Mode A Only All Call           | 8         |
| Mode A/Mode S All Call         | 9         |
| Mode A with S1                 | A         |
| Mode A Only All Call with S1   | B         |
| Mode A/Mode S All Call with S1 | C         |

Byte 3: Reserved

Byte 4: Reserved

Byte 5 to 15: All 0s

Byte 16: Location Status

Mode S Replies/Interrogations:

Bit 7 (MSB): UUT: Top Receiver = 1, Bottom Receiver = 0; ATC: Always 0

Bit 6-4: UUT: Always 0; ATC: Transmitter

| Transmitter | Code |
|-------------|------|
| Generator A | 0    |
| Generator B | 1    |
| Generator C | 2    |
| Generator D | 3    |
| Generator E | 4    |
| Generator F | 5    |

Bit 3-0: Reserved

ATCRBS Replies/ Interrogations:

Bit 7 (MSB): UUT: Top Receiver = 1, Bottom Receiver = 0; ATC: Always 0

Bit 6-4: UUT: Always 0; ATC: Transmitter

| Transmitter | Code |
|-------------|------|
| Generator A | 0    |
| Generator B | 1    |
| Generator C | 2    |
| Generator D | 3    |
| Generator E | 4    |
| Generator F | 5    |

Bit 3-0: Reserved

Byte 17 to 19: Address

Mode S Replies/Interrogations:

Mode S Address (Byte 17, Bit 7-MSB)

ATCRBS Replies/Interrogations:

Reserved

Byte 20 to 25: Time Stamp

**6 bytes represent time from start of scenario. Bit resolution is equivalent to 25 ns.**

**Example:**

:ATC:RCV:LOG:DL?r

**Reply:**

02800E0900000000000000000000080800E090016D1FEA6AF

### 5.5.1.5 RECORD

**Command Syntax:** { :ATC [:ATC5000NG]{ :RCV [:RCVR]{ :REC [:RECORD)SP{ON | OFF}CR  
**Description:** This command enables or disables the ATC-5000NG from recording (logging) the messages being received by the receivers that are enabled to capture.  
**Example:** :ATC:RCV:REC ON\r  
**Default:** Off  
**Query:** :ATC:RCV:REC?\r  
**Retrun:** ON

### 5.5.2 MASK

**Command Syntax:** { :ATC [:ATC5000NG]{ :RCV [:RCVR]{ :MA [:MASK)SP<numeric>CR  
**Description:** This command enables/disables the capture of messages. A "1" for the receiver associated bit means that the receiver is enabled.  
**Numeric:** FFF(hexadecimal ASCII Byte)

| Bit   | Receiver   |
|-------|--|
| 0x01  | UUT DF Messages  |
| 0x02  | UUT ATCRBS Replies   |
| 0x04  | UUT UF Messages  |
| 0x08  | UUT ATCRBS Interrogations                                  |
| 0x300 | UUT UAT Messages (Requires ATC-5000NG UAT Hardware)        |
| 0x10  | ATC-5000NG DF Messages                                     |
| 0x20  | ATC-5000NG ATCRBS Replies                                  |
| 0x40  | ATC-5000NG UF Messages                                     |
| 0x80  | ATC-5000NG ATCRBS Interrogations                           |
| 0xC00 | ATC-5000NG UAT Messages (Requires ATC-5000NG UAT Hardware) |

**Example:** :ATC:RCV:MA 10\r Note: 0x is not sent. Hex value is assumed.  
**Default:** No mask (All receivers off)  
**Query:** :ATC:RCV:MA?\r  
**Retrun:** 010

### 5.5.3 STATUS REQUEST

**Command Syntax:** `{:ATC [:ATC5000NG]{:RCV [:RCVR]{:ST [:STATUS]?}CR`

**Description:** This command returns a byte with the status of all eight receivers within the ATC-5000NG (receivers in this context means any of the 8 defined functional “receivers” below - not physical RF Hardware receivers). A “1” for the receiver associated bit means that the receiver is receiving messages.

**Example:** `:ATC:RCV:ST?r`

**Return Value:** FF (hexadecimal ASCII Byte)

| Bit  | Receiver                         |
|------|----------------------------------|
| 0x01 | UUT DF Messages                  |
| 0x02 | UUT ATCRBS Replies               |
| 0x04 | UUT UF Messages                  |
| 0x08 | UUT ATCRBS Interrogations        |
| 0x10 | ATC-5000NG DF Messages           |
| 0x20 | ATC-5000NG ATCRBS Replies        |
| 0x40 | ATC-5000NG UF Messages           |
| 0x80 | ATC-5000NG ATCRBS Interrogations |

### 5.5.4 UTC TIME

**Command Syntax:** `{:ATC [:ATC5000NG]{:RCV [:RCVR]{:UTC }SP{ON[, {PC|GPS|429}] | OFF}CR`

**Description:** This command enables or disables the UTC time format for the received messages timestamp. When the UTC time is enabled, the UTC source definition is optional. By default, the UTC source is from the PC time. The GPS source is hardware dependent.

**Example:** `:ATC:RCV:UTC ON,PCr`

**Default:** Off

**Query:** `:ATC:RCV:UTC?r`

**Return:** ON,PC



## 5.6 RTCA/DO-260 TEST COMMANDS

These commands allow the definition of different RTCA/DO-260 tests. The ATC-5000NG has implemented the following test types: Normal Test, Bit Failures Special Test, Altered Preamble Special Test, Overlapping Pulse Special Test, Confidence Test and Preamble Validation Test.

The Normal Test is a test that allows the definition of one type of message (Mode S, Mode A/Mode C or none) for each generator available for the test. The generator available for the test depends on the power mode (Low Power or High Power). In Low Power Mode, all generators are available. In High Power Mode, only generators GENA, GENC and GENE are available.

For the special tests (Bit Failures, Altered Preamble, Overlapping Pulse, Confidence Test and Preamble Validation) only two generators are available (GENA and GENC). The generator GENA is used to define the reference (Mode S message) and generator GENC is used to define the special test.

### 5.6.1 GENERATOR PARAMETERS

#### 5.6.1.1 ANTENNA

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL} {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:PATH |:PA}SP{TOP | BOTTOM}CR  
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA} {:GENS}{:GENA |:GENC }{:PATH |:PA}SP{TOP | BOTTOM}CR`

**Description:** This command sets the selected generator path to the Top or Bottom antenna.

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:PA TOP\r`

**Example:** `:ATC:DO260:TYPE:BITF:GENS:GENA:PATH BOTTOM\r`

**Default:** Top

**Query:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:PA?\r`

**Return:** TOP

#### 5.6.1.2 ATCRBS DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL} {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:MODEC} {:DATA}SP<numeric>CR`

**Description:** This command defines the Mode A /Mode C Code to transmit using the selected generator. This command is valid only for the NORMAL test type.

**Numeric:** 0 to 7777 (octal ASCII)

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:DATA 1234\r`

**Default:** 0000

**Query:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:DATA?\r`

**Return:** 1234

#### 5.6.1.3 ATCRBS DATA RANDOM ON/OFF

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL} {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:MODEC}{:RANDOM}SP{ON | OFF}CR`

**Description:** This command enables or disables the random generation of Mode C Pulse to transmit using the selected generator. This command is valid only for the NORMAL test type.

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:RANDOM ON\r`

**Default:** Off

**Query:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODEC:RANDOM?\r`

**Return:** ON

## 5.6.1.4 ATCRBS PULSE PARAMETERS

### 5.6.1.4.1 DELTA PULSE POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:ATCRBS:CH:}{1 | 2 | 3 | 4 | 5 | 6}{:PF1 |:PC1 |:PA1 |:PC2 |:PA2 |:PC4 |:PA4 |:PB1 |:PD1 |:PB2 |:PD2 |:PB4 |:PD4 |:PF2}{:DPOS}SP<numeric>CR`

**Description:** This command sets the delta position of the selected ATCRBS pulse on the selected generator.

**Numeric:** -1000 to 1000 ns in 25 ns steps (decimal ASCII). Except for F1, the range is from 0 to 100.

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PF2:DPOS 100\r`

**Default:** 0

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PF2:DPOS?\r`

**Return:** 100

### 5.6.1.4.2 DELTA PULSEWIDTH

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:ATCRBS:CH:}{1 | 2 | 3 | 4 | 5 | 6}{:PF1 |:PC1 |:PA1 |:PC2 |:PA2 |:PC4 |:PA4 |:PB1 |:PD1 |:PB2 |:PD2 |:PB4 |:PD4 |:PF2}{:DWIDTH}SP<numeric>CR`

**Description:** This command sets the delta width of the selected ATCRBS pulse on the selected generator.

**Numeric:** -400 to 400 ns in 25 ns steps (decimal ASCII)

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PC1:DWIDTH -200\r`

**Default:** 0

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:1:PC1:DWIDTH?\r`

**Return:** -200

### 5.6.1.4.3 PULSE ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:ATCRBS:CH:}{1 | 2 | 3 | 4 | 5 | 6}{:PF1 |:PC1 |:PA1 |:PC2 |:PA2 |:PC4 |:PA4 |:PB1 |:PD1 |:PB2 |:PD2 |:PB4 |:PD4 |:PF2}{:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables (not visible) the selected ATCRBS pulse.

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:4:PD2:ENABLE OFF\r`

**Default:** On

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:PULSE:ATCRBS:CH:4:PD2:ENABLE?\r`

**Return:** OFF

### 5.6.1.5 COHERENCE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } { :GENS } { :GENA |:GENC |:GENE } { :COH } SP { ON | OFF } CR`  
`{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP | :ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA | :CONFIDENCE |:CONF } { :GENS } { :GENA |:GENC } { :COH } SP { ON | OFF } CR`

**Description:** This command sets pair Gen A/GenB, Gen C/ Gen D and Gen E/Gen F to use a single phase lock loop in the transmitter module. By default, the coherence is turned off.

**Example:** `:ATC:DO260:TYPE:BITFAILURES:GENS:GENA:COH ON\r`

**Default:** OFF

**Query:** `:ATC:DO260:TYPE:BITFAILURES:GENS:GENA:COH?\r`

**Return:** ON

### 5.6.1.6 DELAY

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:DELAY }SP<numeric>CR  
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA |:GENC } {:DELAY }SP<numeric>CR`

**Description:** This command sets the selected generator to relative delay in ns.

**Numeric:** 0 to 120000 ns (DECIMAL ASCII)  
Or -120000 to 120000 ns only valid for type "NORMAL" and the trigger mode selected "WALK".

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY 125\r`

**Example:** `:ATC:DO260:TYPE:OVERLAP:GENS:GENC:DELAY 50\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY?\r`

**Return:** 125

### 5.6.1.7 ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:SIGNAL |:SIG}SP{ON | OFF}CR`

**Description:** This command enables or disables the selected generator.

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL ON\r`

**Default:** Off

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL?\r`

**Return:** ON

### 5.6.1.8 FREQUENCY

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF} {:FREQUENCY |:FREQ}SP<numeric>CR  
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA |:GENC } {:FREQUENCY |:FREQ}SP<numeric>CR`

**Description:** This command sets the selected generator output frequency.

**Numeric:** 952 to 1223 MHz (decimal ASCII).

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:FREQ 1091\r`

**Example:** `:ATC:DO260:TYPE:OVERLAP:GENS:GENC:FREQ 1089\r`

**Default:** 1090

**Query:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:FREQ?\r`

**Return:** 1091.0

### 5.6.1.9 MODE S DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:MODES} {:DATA}SP<mode s hex data>CR  
{:ATC |:ATC5000NG}{:DO260}{:TYPE} {:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA } {:MODES} {:DATA}SP<mode s hex data>CR`

**Description:** This command defines the Mode S message to transmit through the selected generator. For long Mode S, the <mode s hex data> contains 28 hexadecimal figures. For short Mode S, the <mode s hex data> contains 14 hexadecimal figures. The last six hexadecimal figures are used to define the Mode S Address. By default, the Mode S data is 00000000000001.

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:DATA 8800000148000000000000000001\r`

**Example:** `:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:DATA F10008\r`

**Default:** 00000000000001

**Query:** `:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:DATA?\r`

**Return:** 000000FEFA0C0

### 5.6.1.10 MODE S PULSE PARAMETERS

#### 5.6.1.10.1 PREAMBLE DELTA PULSE POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:MODES:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:P2 |:P3 |:P4 }{:DPOS}SP<numeric>CR`

**Description:** This command sets the delta position of the selected Mode S pulse on the selected generator.

**Numeric:** -1000 to 1000 ns in 25 ns steps (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:3:P3:DPOS 25\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:3:P3:DPOS?\r`

**Return:** 25

#### 5.6.1.10.2 PREAMBLE DELTA PULSEWIDTH

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:MODES:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:P1 |:P2 |:P3 |:P4 }{:DWIDTH}SP<numeric>CR`

**Description:** This command sets the delta width of the selected Mode S pulse on the selected generator.

**Numeric:** -400 to 400 ns in 25 ns steps (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:2:P3:DWIDTH 200\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:2:P3:DWIDTH?\r`

**Return:** 200

#### 5.6.1.10.3 PREAMBLE PULSE ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL}{:PULSE}{:MODES:CH:}{ 1 | 2 | 3 | 4 | 5 | 6}{:P1 |:P2 |:P3 |:P4 }{:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables (not visible) the selected Mode S pulse.

**Example:** `:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:4:P4:ENABLE OFF\r`

**Default:** On

**Query:** `:ATC:DO260:TYPE:NORMAL:PULSE:MODES:CH:4:P4:ENABLE?\r`

**Return:** OFF

### 5.6.1.11 POWER LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:POWER |:POW}SP<numeric>CR  
{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP |:ALTEREDPREAMBLE |:ALT |:BITFAILURES |:BITF |:PREAMBLEVAL |:PREA } {:GENS}{:GENA |:GENC } {:POWER |:POW}SP<numeric>CR`

**Description:** This command sets the selected generator output power level.

**Numeric:** -20 to -90 dBm (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:NORMAL:GENS:GENC:POW -30\r`

**Example:** `:ATC5000NG:DO260:TYPE:ALTEREDPREAMBLE:GENS:GENA:POWER -30\r`

**Default:** -20 dBm

**Query:** `:ATC:DO260:TYPE:NORMAL:GENS:GENC:POW?\r`

**Return:** -30

### 5.6.1.12 RANDOM MODE S DATA ON/OFF

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:MODES } {:RANDOM}SP{ON | OFF}CR`

**Description:** This command enables or disables the random generation of Mode S Pulse to transmit using the selected generator.

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM ON\r`

**Default:** Off

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM?\r`

**Return:** ON

### 5.6.1.13 RANDOM STARTING POSITION ON/OFF

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:RSPOS}SP{ON | OFF}CR`

**Description:** This command enables or disables the random starting position generation of the pulse to transmit using the selected generator. For the generator trigger source, the random starting position is disabled. If the random starting position is disabled with trigger mode set to random, then the starting position is the trigger source position plus the delay Value for that specific generator.

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:RSPOS OFF\r`

**Default:** On

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:RSPOS?\r`

**Return:** OFF

### 5.6.1.14 WALK ON/OFF

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:NORMAL } {:GENS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF } {:WALK}SP{ON | OFF}CR`

**Description:** This command enables or disables the walk status of the transmission using the selected generator. For the generator trigger source, the walk status is disabled. If walk is disabled, the transmission begins the delay Value from the trigger source. If walk is enabled, the transmission initially begins at the delay Value and moves 50 ns every transmission until the end.

**Example:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:WALK OFF\r`

**Default:** On

**Query:** `:ATC5000NG:DO260:TYPE:NORMAL:GENS:GENA:WALK?\r`

**Return:** OFF

## 5.6.2 LOAD

**Command Syntax:** { :ATC |:ATC5000NG}{ :DO260}{ :LOAD}SP<filename>CR  
**Description:** This command loads a CSV scenario file (specified filename) from the internal storage area. A “\*” is returned upon completion of loading the file.  
**Example:** :ATC:DO260:LOAD test1.csv\r

## 5.6.3 NUMBER OF TRANSMISSIONS

**Command Syntax:** { :ATC |:ATC5000NG}{ :DO260}{ :TIMING}{ :TRANSMISSIONS |:TRANS}SP<numeric>CR  
**Description:** This command sets the number of transmissions.  
**Numeric:** { 0, 20, 40, 60, 100, 200, 400, 600, 945, 1000, 2000, 4000, 6000, 10000} (decimal ASCII)  
**Example:** :ATC5000NG:DO260:TIMING:TRANSMISSIONS 20\r  
**Default:** 0 (unlimited)  
**Query:** :ATC5000NG:DO260:TIMING:TRANSMISSIONS?\r  
**Return:** 20

## 5.6.4 REPETITION INTERVAL

**Command Syntax:** { :ATC |:ATC5000NG}{ :DO260}{ :TIMING}{ :PERIOD |:PER}SP<numeric>CR  
**Description:** This command sets the transmission interval in ms.  
**Numeric:** 10 to 2000 ms (decimal ASCII).  
**Example:** :ATC5000NG:DO260:TIMING:PERIOD 20\r  
**Default:** 10 ms (100 repetitions per second)  
**Query:** :ATC5000NG:DO260:TIMING:PERIOD?\r  
**Return:** 20

## 5.6.5 RESET

**Command Syntax:** { :ATC |:ATC5000NG}{ :DO260}{ :RESET}CR  
**Description:** This command initializes the DO-260 test to the default values.  
**Default:**

| Attribute               | Value         |
|-------------------------|---------------|
| Test Type               | Normal        |
| Trigger Source          | GENA          |
| Trigger Mode            | Delay+        |
| Period (ms)             | 10            |
| Number of Transmissions | 0 - Unlimited |
| Signal (All Generators) | OFF           |
| Power (All Generators)  | -20 dBm       |
| Phase (All Generators)  | 0 deg         |
| Path (All Generators)   | Top           |
| Delay (All Generators)  | 0 ns          |
| Message Type            | None          |

**Example:** :ATC:DO260:RESET\r

## 5.6.6 SAVE

**Command Syntax:** { :ATC |:ATC5000NG}{ :DO260}{ :SAVE}SP<filename>CR  
**Description:** This command saves the current scenario into the internal storage area with the specified filename.  
**Example:** :ATC:DO260:SAVE test1.csv\r

## 5.6.7 SPECIAL TEST

The follow set of commands allow the user to setup some specific tests in RTCA DO-260 document. The special tests provided by the ATC-5000NG are Altered Preamble, BIT Failure, Confidence Test, Overlapping and Preamble Validation.

### 5.6.7.1 ALTERED PREAMBLE PARAMETERS

#### 5.6.7.1.1 PULSE ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4}{:ENABLE }SP{ON | OFF}CR`

**Description:** This command enables or disables the selected pulse.

**Example:** `:ATC:DO260:TYPE:ALT:PULSE:P1:ENABLE ON\r`

**Default:** On

**Query:** `:ATC:DO260:TYPE:ALT:PULSE:P1:ENABLE?\r`

**Return:** ON

#### 5.6.7.1.2 PULSE POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4}{:POSITION |:POS}SP<numeric>CR`

**Description:** This command sets the selected pulse delay. By default, the delay is 0 ns.

| Numeric: | Pulse | Range          | Default Value |
|----------|-------|----------------|---------------|
|          | P1    | [ -5000, 675 ] | 0             |
|          | P2    | [ 675, 1425 ]  | 1000          |
|          | P3    | [ 3075, 3925 ] | 3500          |
|          | P4    | [ 4075, 4925 ] | 4500          |

**Example:** `:ATC:DO260:TYPE:ALT:PULSE:P2:POS 1000\r`

**Query:** `:ATC:DO260:TYPE:ALT:PULSE:P2:POS?\r`

**Return:** 1000

#### 5.6.7.1.3 PULSE POWER

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4}{:REFERENCE |:REF}SP{GENA | GENC }CR`

**Description:** This command sets the selected pulse reference power. Only generators GENA and GENC are available.

**Example:** `:ATC:DO260:TYPE:ALT:PULSE:P1:REF GENA\r`

**Default:** GENA power

**Query:** `:ATC:DO260:TYPE:ALT:PULSE:P1:REF?\r`

**Return:** GenA

#### 5.6.7.1.4 PULSE WIDTH

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:ALTEREDPREAMBLE |:ALT}{:PULSE}{:P1 | :P2 |:P3 |:P4} {:WIDTH |:WID}SP<numeric>CR`

**Description:** This command sets the selected pulse width.

**Numeric:** 0 to 4500 ns. (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:ALT:PULSE:P1:WID 200\r`

**Default:** 500 ns

**Query:** `:ATC:DO260:TYPE:ALT:PULSE:P1:WID?\r`

**Return:** 200

#### 5.6.7.2 BIT FAILURE PARAMETERS

##### 5.6.7.2.1 FIRST BAD CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF } {:CHIPS}{:BFIRST}SP<numeric>CR`

**Description:** This command sets the first bit of the bad chips pulse.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:BITF:CHIPS:BFIRST 33\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:BITF:CHIPS:BFIRST?\r`

**Return:** 33

##### 5.6.7.2.2 FIRST ENERGY CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF } {:CHIPS}{:FIRST}SP<numeric>CR`

**Description:** This command sets the first energy bit of the bad chips pulse.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:BITF:CHIPS:FIRST 33\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:BITF:CHIPS:FIRST?\r`

**Return:** 33

##### 5.6.7.2.3 LAST BAD CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF } {:CHIPS}{:BLAST}SP<numeric>CR`

**Description:** This command sets the last bit of the bad chips pulse.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:BITF:CHIPS:BLAST 39\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:BITF:CHIPS:BLAST?\r`

**Return:** 39



#### 5.6.7.2.4 LAST ENERGY CHIP

**Command Syntax:** { :ATC |:ATC5000NG}{:DO260}{:TYPE}{:BITFAILURES |:BITF }  
 {:CHIPS}{:LAST}SP<numeric>CR

**Description:** This command sets the last energy bit of the bad chips pulse.

**Numeric:** 0 for no bad chip (decimal ASCII)  
 1 to 112 if the reference is a long Mode S (decimal ASCII)  
 1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** :ATC:DO260:TYPE:BITF:CHIPS:LAST 39\r

**Default:** 0

**Query:** :ATC:DO260:TYPE:BITF:CHIPS:LAST?\r

**Return:** 39

#### 5.6.7.3 CONFIDENCE TEST PARAMETERS

##### 5.6.7.3.1 BAD CHIPS

**Command Syntax:** { :ATC |:ATC5000NG}{:DO260}{:TYPE}{:CONFIDENCE |:CONF }  
 {:BADP}{:CHIPS}SP<numeric>[,<numeric>[,<numeric>[,<numeric>[,<numeric>]]]]CR

**Description:** This command sets the list of bits with bad chip pulses. This command allows defining up to five different bad bits.

**Numeric:** 1 to 112 if the reference is a long Mode S (decimal ASCII)  
 1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** :ATC:DO260:TYPE:CONF:BADP:CHIPS 33\r

**Default:** No selection

**Query:** :ATC:DO260:TYPE:CONF:BADP:CHIPS?\r

**Return:** 33

##### 5.6.7.3.2 ENERGY CHIPS

**Command Syntax:** { :ATC |:ATC5000NG}{:DO260}{:TYPE}{:CONFIDENCE |:CONF }  
 {:ENERGY}{:CHIPS}SP<numeric>[,<numeric>[,<numeric>[,<numeric>[,<numeric>]]]]CR

**Description:** This command sets the list of bits with energy on both halves of the chip. This command allows defining up to five different energy bits.

**Numeric:** 1 to 112 if the reference is a long Mode S (decimal ASCII)  
 1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** :ATC:DO260:TYPE:CONF:ENERGY:CHIPS 33,36,45,56\r

**Default:** No selection

**Query:** :ATC:DO260:TYPE:CONF:ENERGY:CHIPS?\r

**Return:** 33,36,45,56

#### 5.6.7.4 OVERLAPPING PARAMETERS

##### 5.6.7.4.1 PULSE DELAY

**Command Syntax:** { :ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE  
 |:OVERLAP}{:PULSE}{:DELAY}SP<numeric>CR

**Description:** This command sets the pulse delay relative to P1. By default, the width is 0 ns.

**Numeric:** -20000 to 2000 ns (decimal ASCII)

**Example:** :ATC:DO260:TYPE:OVERLAP:PULSE:DELAY 2000\r

**Default:** 0 ns

**Query:** :ATC:DO260:TYPE:OVERLAP:PULSE:DELAY?\r

**Return:** 2000

#### 5.6.7.4.2 PULSE WIDTH

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:OVERLAPPINGPULSE |:OVERLAP}{:PULSE} {:WIDTH  
{:WID}SP<numeric>CR`

**Description:** This command sets the overlapping pulse width.

**Numeric:** 0 to 130000 ns (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:OVERLAP:PULSE:WIDTH 4500\r`

**Default:** 0 ns

**Query:** `:ATC:DO260:TYPE:OVERLAP:PULSE:WIDTH?\r`

**Return:** 4500

#### 5.6.7.5 PREAMBLE VALIDATION TEST PARAMETERS

##### 5.6.7.5.1 DELTA AMPLITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }  
{:CHIPS}{:DAMP}SP<numeric>CR`

**Description:** This command sets the delta amplitude in dB for energy bits of the pulse.

**Numeric:** -10 to 10 dB (decimal ASCII).

**Example:** `:ATC:DO260:TYPE:PREA:CHIPS:DAMP -6\r`

**Default:** 0 dB

**Query:** `:ATC:DO260:TYPE:PREA:CHIPS:DAMP?\r`

**Return:** -6

##### 5.6.7.5.2 FIRST ENERGY CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }  
{:CHIPS}{:EFIRST}SP<numeric>CR`

**Description:** This command sets the first energy bit of the message with amplitude.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:PREA:CHIPS:EFIRST 1\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:PREA:CHIPS:EFIRST?\r`

**Return:** 1

##### 5.6.7.5.3 FIRST NO ENERGY CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }  
{:CHIPS}{:NFIRST}SP<numeric>CR`

**Description:** This command sets the first no energy bit of the message.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:PREA:CHIPS:NFIRST 1\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:PREA:CHIPS:NFIRST?\r`

**Return:** 1

#### 5.6.7.5.4 INCLUDE DELTA AMPLITUDE (No Energy in Chips)

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }  
{:CHIPS}{:IDAMP}SP{ON|OFF}CR`

**Description:** This command enables or disables the delta amplitude for no energy bits.

**Example:** `:ATC:DO260:TYPE:PREA:CHIPS:IDAMP ON\r`

**Default:** Off

**Query:** `:ATC:DO260:TYPE:PREA:CHIPS:IDAMP?\r`

**Return:** ON

#### 5.6.7.5.5 LAST ENERGY CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }  
{:CHIPS}{:ELAST}SP<numeric>CR`

**Description:** This command sets the last energy bit of the message with amplitude.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:PREA:CHIPS:ELAST 5\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:PREA:CHIPS:ELAST?\r`

**Return:** 5

#### 5.6.7.5.6 LAST NO ENERGY CHIP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TYPE}{:PREAMBLEVAL |:PREA }  
{:CHIPS}{:NLAST}SP<numeric>CR`

**Description:** This command sets the last no energy bit of the message.

**Numeric:** 0 for no bad chip (decimal ASCII)  
1 to 112 if the reference is a long Mode S (decimal ASCII)  
1 to 56 if the reference is a short Mode S (decimal ASCII)

**Example:** `:ATC:DO260:TYPE:PREA:CHIPS:NLAST 5\r`

**Default:** 0

**Query:** `:ATC:DO260:TYPE:PREA:CHIPS:NLAST?\r`

**Return:** 5

### 5.6.8 START

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:START}CR`  
**Description:** This command begins the execution of the DO260 test. The system returns a “\*” if the start command is able to be performed. A “?” character is returned if the scenario is not able to be started.  
**Example:** `:ATC:DO260:START\r`

### 5.6.9 STOP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:STOP}CR`  
**Description:** This command stops the execution of the DO260 test.  
**Example:** `:ATC:DO260:STOP\r`

### 5.6.10 TEST STATUS REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TEST?} CR`  
**Description:** This command returns the test transmission status.  
**Example:** `:ATC:DO260:TEST?\r`  
**Return:** ON | OFF

### 5.6.11 TRIGGER PARAMETERS

#### 5.6.11.1 MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:MODE}SP<numeric>CR`  
**Description:** This command sets the trigger mode. Delay+ delays positively all the enabled generators according with each delay amount from the trigger source. Delay- delays all the enable generators negatively. Random alters the start of all the enable generators from transmission to transmission in the range specified. Walk moves the starting position of the enable generators from the initial delay by 50 ns every transmission.

|                 |        |        |
|-----------------|--------|--------|
| <b>Numeric:</b> | 0 to 3 |        |
|                 | Value  | Mode   |
|                 | 0      | Delay+ |
|                 | 1      | Delay- |
|                 | 2      | Random |
|                 | 3      | Walk   |

**Example:** `:ATC:DO260:TIMING:TRIG:MODE 0\r`  
**Default:** 0  
**Query:** `:ATC:DO260:TIMING:TRIG:MODE?\r`  
**Return:** 0

#### 5.6.11.2 SOURCE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:SOURCE}SP{GENA | GENB | GENC | GEND | GENE | GENF}CR`  
**Description:** This command sets the generator trigger source:  
 Low Power Mode - all generators are available.  
 High Power Mode - only generators GENA, GENC and GENE are available.  
**Example:** `:ATC:DO260:TIMING:TRIG:SOURCE GENA\r`  
**Default:** GENA  
**Query:** `:ATC:DO260:TIMING:TRIG:SOURCE?\r`  
**Return:** GENA

### 5.6.11.3 RANDOM POSITION WIDTH

**Command Syntax:** {:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:RANDOM}{:WIDTH |:WID}SP<numeric>CR

**Description:** This command sets the width of the random pulse in ns. This command is valid only if the trigger mode is Random.

**Numeric:** 0 to 120000 ns (decimal ASCII).

**Example:** :ATC:DO260:TIMING:TRIG:RANDOM:WID 120000r

**Default:** 120000 ns

**Query:** :ATC:DO260:TIMING:TRIG:RANDOM:WID?r

**Return:** 120000

### 5.6.11.4 RANDOM STARTING POSITION

**Command Syntax:** {:ATC |:ATC5000NG}{:DO260}{:TIMING}{:TRIGGER |:TRIG}{:RANDOM}{:POSITION |:POS}SP<numeric>CR

**Description:** This command sets the relative delay of the random pulse in ns. This command is valid only if the trigger mode is Random.

**Numeric:** -120000 to 120000 ns (decimal ASCII).

**Example:** :ATC:DO260:TIMING:TRIG:RANDOM:POSITION 0r

**Default:** 0

**Query:** :ATC:DO260:TIMING:TRIG:RANDOM:POSITION?r

**Return:** 0

## 5.6.12 BLOCK TRANSMISSION

This set of commands allows the user to define a transmission block of messages to periodically transmit to the unit under test. This set of commands is for block transmissions under the Multi-Receiver Menu. In order for these commands to work the Scenario Type must be set to Multi-Receiver.

### 5.6.12.1 BLOCK PARAMETERS

#### 5.6.12.1.1 FRAME PERIOD

**Command Syntax:** {:ATC |:ATC5000NG}{:TXBLOCK}{:PERIOD }SP<numeric>CR

**Description:** This command defines the block transmission period in ms.

**Numeric:** 10 to 90000 (decimal ASCII)

**Default:** 100

**Example:** :ATC:TXBLOCK:PERIOD 10r

#### 5.6.12.1.2 HIT

**Command Syntax:** {:ATC |:ATC5000NG}{ :TXBLOCK}{:HIT }SP<numeric>CR

**Description:** This command sets the number of consecutive blocks to transmit.

**Numeric:** 0 to 20 (decimal ASCII)

**Default:** 1

**Example:** :ATC:TXBLOCK:HIT 6r

### 5.6.12.1.3 MISS

**Command Syntax:** {:ATC |:ATC5000NG}{ :TXBLOCK}{:MISS }SP<numeric>CR  
**Description:** This command sets the number of consecutive non-transmitted blocks.  
**Numeric:** 0 to 20 (decimal ASCII)  
**Default:** 0  
**Example:** :ATC:TXBLOCK:MISS 4\r

### 5.6.12.1.4 MODE

**Command Syntax:** {:ATC |:ATC5000NG}{ :TXBLOCK}{:MODE }SP{CONTINUOUS|INTERRUPT}CR  
**Description:** This command sets the transmission mode.  
**Default:** CONTINUOUS  
**Example:** :ATC:TXBLOCK:MODE CONTINUOUS\r

### 5.6.12.1.5 TRANSMISSIONS

**Command Syntax:** {:ATC |:ATC5000NG}{ :TXBLOCK}{:TRANSMISSIONS|:TRANS}SP{NOLIMIT|<numeric>}CR  
**Description:** This command sets the total number of blocks transmission.  
**Numeric:** 1 to 50000 (decimal ASCII)  
**Default:** NOLIMIT  
**Example:** :ATC:TXBLOCK:TRANS NOLIMIT\r

### 5.6.12.2 LOAD

**Command Syntax:** {:ATC |:ATC5000NG}{ :TXBLOCK}{:LOAD}SP<filename>}CR  
**Description:** This command loads a CSV scenario file (specified filename) from the internal storage area. A "\*" will be returned upon completion of loading the file.  
**Default:** :ATC:TXBLOCK:LOAD Test1.csv\r  
**Example:** \*

### 5.6.12.3 MESSAGE PARAMETERS

#### 5.6.12.3.1 DATA

**Command Syntax:** {:ATC |:ATC5000NG}{:TXBLOCK:}<message number> {:MESS |:MESSAGE}SP<numeric>CR  
**Description:** This command sets the data message for the message selected.  
**Message Number:** 1 to 1000  
**Numeric:** Short message 0 to FFFFFFFF (14 hexadecimal ASCII)  
 Long message 0 to FFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII) (The last six characters are the Mode S Address).  
**Default:** 0000000000001 for Mode S Interrogation and Mode S Message.  
**Example:** :ATC:TXBLOCK:1:MESS 7ABA3259A66BBB\r

#### 5.6.12.3.2 POWER LEVEL

**Command Syntax:** {:ATC |:ATC5000NG}{:TXBLOCK:}<message number>{:POWER |:POW}SP<numeric>CR  
**Description:** This command sets the power level of the message selected.  
**Message Number:** 1 to 1000  
**Numeric:** High Power Mode: 1 to -69 dBm (decimal ASCII)  
 Low Power Mode: -20 to -90 dBm (decimal ASCII)  
**Default:** -20 dBm  
**Example:** :ATC:TXBLOCK:3:POW -31\r

### 5.6.12.3.3 TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK:}<message number>{:TIME}SP<numeric>CR`  
**Description:** This command sets the starting transmission time (in  $\mu$ s) within the block of the message selected.  
**Message Number:** 1 to 1000  
**Numeric:** 0 to 89999880 (decimal ASCII)  
**Default:** 0  $\mu$ s. Every additional message defaults 130  $\mu$ s after the previous. Maximum time depends on frame period value.  
**Example:** `:ATC:TXBLOCK:3:TIME 77\r`

### 5.6.12.3.4 TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK:}<message number>{:TYPE} SP<numeric>[,<numeric1>]CR`  
**Description:** This command sets the type of the message selected. The optional argument <numeric1> defines the ATCRBS Interrogation type.  
**Message Number:** 1 to 1000  
**Numeric:** 1-4 (decimal ASCII)  

|       |                |
|-------|----------------|
| Value | Type           |
| 3     | Mode S Message |
| 4     | ATCRBS Reply   |

**Default:** Mode S Message  
**Example:** `:ATC:TXBLOCK:4:TYPE 3\r`

### 5.6.12.4 MESSAGE QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK}{:NMESSAGES|:NMESS}SP<decimal>CR`  
**Description:** This command sets the number of the messages.  
**Numeric:** 0 to 1000 (decimal ASCII)  
**Example:** `:ATC:TXBLOCK:NMESS 45\r`

### 5.6.12.5 RESET

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK}{:RESET}CR`  
**Description:** This command clears the transmission block.  
**Example:** `:ATC:TXBLOCK:RESET\r`

### 5.6.12.6 RUN TIME REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK}{:TI |:TIME}?CR`  
**Description:** This command returns the current scenario run time.  
**Return Value:** decimal ASCII value. 100 ms resolution.  
**Example:** `:ATC:TXBLOCK:TI?\r`  
**Return:** 13.9

### 5.6.12.7 SAVE

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK}{:SAVE}SP<filename>CR`  
**Description:** This command saves the current scenario into the internal storage area with the specified filename.  
**Example:** `:ATC:TXBLOCK:SAVE test1.csv\r`

### 5.6.12.8 START

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK:START} CR`  
**Description:** This command begins the transmissions of block defined. The system will return a “\*” if the start command was able to be performed. A “?” character will be returned if the scenario was not able to be started.  
**Example:** `:ATC:TXBLOCK:START\r`  
**Return:** \*

### 5.6.12.9 STOP

**Command Syntax:** `{:ATC |:ATC5000NG}{:TXBLOCK:STOP} CR`  
**Description:** This command stops the transmission of the block.  
**Example:** `:ATC:TXBLOCK:STOP\r`  
**Return:** \*

## 5.7 SCENARIO COMMANDS

This set of commands allows the user to define dynamic and static intruders for Multi-Receiver, and UAT scenarios. The Multi-Receiver Menu and UAT Menu are options of the ATC-5000NG and require product key and calibration to enable.

### 5.7.1 INDIVIDUAL 1030 MESSAGES

The following set of commands allows the user to define a block of 1030 MHz interrogations. These commands are used in the Multi-Receiver Menu.

#### 5.7.1.1 1030 MESSAGE BLOCK REPETITION RATE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030}{:RATE }SP<numeric>CR`  
**Description:** This command sets the block repetition rate.  
**Numeric:** 1 to 2500 (decimal ASCII)  
**Example:** `:ATC:SCE:I1030:RATE 25\r`

#### 5.7.1.2 1030 MESSAGE BLOCK QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030} {:NMESS |:NMESSAGES}SP<numeric>CR`  
**Description:** This command sets the quantity of the 1030 messages in the block.  
**Numeric:** 0 to 1000 (decimal ASCII)  
**Example:** `:ATC:SCE:I1030:NMESS 2\r`

#### 5.7.1.3 1030 MESSAGES BLOCK MESSAGE POWER

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:I1030:}<message number>{:PWR }SP<numeric>CR`  
**Description:** This command sets the power level of the 1030 message selected.  
**Numeric:** High Power Mode: 5 to -65 dBm (decimal ASCII)  
 Low Power Mode: -20 to -90 dBm (decimal ASCII)  
 Very Low Power: -40 to -110 dBm (decimal ASCII)  
**Example:** `:ATC:SCE:I1030:1:PWR -21\r`



#### 5.7.1.4 1030 MESSAGES BLOCK MESSAGE TYPE

**Command Syntax:** {[:ATC |:ATC5000NG]{[:SCE |:SCENARIO]{[:1030:]<message number>{:TYPE }SP<numeric>CR

**Description:** This command sets the type of the 1030 message selected.

|                 |       |                      |
|-----------------|-------|----------------------|
| <b>Numeric:</b> | Value | Type                 |
|                 | 1     | Mode S Interrogation |
|                 | 2     | Mode A               |
|                 | 3     | Mode C               |
|                 | 4     | Mode A All Call      |
|                 | 5     | Mode C All Call      |
|                 | 6     | Mode A/Mode S All    |
|                 | 7     | Call                 |
|                 |       | Mode C/Mode S All    |
|                 |       | Call                 |

**Example:** :ATC:SCE:1030:2:TYPE 2r

#### 5.7.1.5 1030 MESSAGES BLOCK MESSAGE DATA

**Command Syntax:** {[:ATC |:ATC5000NG]{[:SCE |:SCENARIO]{[:1030:]<message number>{:MESS |:MESSAGE }SP<numeric>CR

**Description:** This command sets the data message for the selected 1030 message.

**Numeric:** Short interrogation: 0 to FFFFFFFF (14 hexadecimal ASCII)  
Long interrogation: 0 to FFFFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII)  
The last six characters are the Mode S Address.

**Example:** :ATC:SCE:1030:1:MESS 000404000F6705r

### 5.7.2 INTRUDERS DEFINITION PARAMETERS

#### 5.7.2.1 ALTITUDE MODE

**Command Syntax:** {[:ATC |:ATC5000NG]{[:SCE |:SCENARIO]{[:STAT: |:STATIC: |:DYN: |:DYNAMIC:]<intruder no>{:AMODE}SP{GILHAM | BINARY}CR

**Description:** This command sets the altitude data mode to either Gilham or Binary.  
Altitude Binary Mode: -1000 to 50175 feet in 25 feet resolution  
Altitude Gilham Mode: -1000 to 126700 feet in 100 feet resolution

**Example:** :ATC:SCE:STAT:1:AMODE GILHAMr

**Default:** Binary

## 5.7.2.2 AIRBORNE POSITION MESSAGE

This set of commands allows the user to define the Airborne Position Squitter for the specified intruder (target).

### 5.7.2.2.1 AIRBORNE POSITION MESSAGE PARAMETERS

#### 5.7.2.2.1.A CPR ENCODING FORMAT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:CPR}SP{ODDEVEN|ODD|EVEN}CR`

**Description:** This command sets the selected intruder airborne or surface position squitter compact position reporting format type to the specified value.

| Value   | Meaning  |
|---------|--|
| ODDEVEN | Alternate between “even” and “odd” CPR encoding.   |
| ODD     | Only “odd” CPR encoding. The transmission of the Position Even Squitter is turned off. Any <u>schedule definition for the Position Even Squitter</u> <XREF>is ignored during the scenario compilation. |
| EVEN    | Only “even” CPR encoding. The transmission of the Position Odd Squitter is turned off. Any <u>schedule definition for the Position Odd Squitter</u> <XREF>is ignored during the scenario compilation.  |

**Example:** `:ATC:SCE:STAT:1:CPR ODD\r`

**Default:** ODDEVEN

#### 5.7.2.2.1.B NIC SUPPLEMENT-B

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSNICB}SP<numeric>CR`

**Description:** This command sets the selected intruder airborne position squitter NIC supplement-b to the specified value, if the intruder is an extended Mode S or is a TIS-B with message type ADS-B (Valid only for DO260 B).

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:POSNICB 1\r`

**Default:** 0

#### 5.7.2.2.1.C SINGLE ANTENNA FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSSAF}SP<numeric>CR`

**Description:** This command sets the selected intruder airborne position squitter single antenna flag field to the specified value, if the intruder is an extended Mode S or is a TIS-B with message type ADS-B (Valid only for DO260 and DO260A).

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:POSSAF 1\r`

**Default:** 0

#### 5.7.2.2.1.D SURVEILLANCE STATUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSSS}SP<numeric>CR`

**Description:** This command sets the selected intruder airborne position squitter surveillance status to the specified code.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Surveillance Status                       |
|-------|---|
| 0     | No Condition Information                  |
| 1     | Permanent Alert Condition                 |
| 2     | Temporary Alert Condition                 |
| 3     | Special Position Identification Condition |

**Example:** `:ATC:SCE:STAT:1:POSSS 2\r`

**Default:** 0

#### 5.7.2.2.1.E TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSTIME}SP<numeric>CR`

**Description:** This command sets the selected intruder airborne position squitter time field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:POSTIME 1\r`

**Default:** 0

#### 5.7.2.2.1.F TYPE CODE

**Command Syntax:** Command Syntax:  
`{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:POSTYPE}SP<numeric>CR`

**Description:** This command sets the selected intruder airborne position squitter to the specified type code.

**Numeric:** 0 or 9 to 22 (decimal ASCII) (except 19)

**Example:** `:ATC:SCE:DYN:1:POSTYPE 11\r`

**Default:** 9

#### 5.7.2.2.2 AIRBORNE POSITION MESSAGE SCHEDULE

Airborne or Surface Position squitters are transmitted by the ATC-5000NG at a rate of 0.5 seconds. The CPR encoding is alternated every 0.5 second unless the user specifies to only transmit odd or even encoding.

Dynamic intruders (targets) allow definition of multiple time intervals where the Airborne or Surface Position odd and even squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Airborne or Surface Position squitter for the entire scenario.

#### 5.7.2.2.2.A DYNAMIC POSITION SCHEDULE

#### 5.7.2.2.2.A.1

#### INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the position even or odd squitter message of the specified intruder.

**Example:** `:ATC:SCE:DYN:2:SPOSEVEN:INT:2:ENA OFF\r`

**Default:** On

#### 5.7.2.2.2.A.2

#### INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of position even or odd squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can define the intervals where the message is transmitted**.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:SPOSODD:NINT 25\r`

#### 5.7.2.2.2.A.3

#### INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected position even or odd squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:2:SPOSEVEN:INT:3:BEGIN 99\r`

#### 5.7.2.2.2.A.4

#### INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected position even or odd squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:3:SPOSEVEN:INT:4:END 200\r`

#### 5.7.2.2.2.B

#### STATIC POSITION SCHEDULE

##### 5.7.2.2.2.B.1

#### INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SPOSEVEN |:SPOSODD}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the position even or odd squitter message of the specified intruder.

**Example:** `:ATC:SCE:STAT:3:SPOSODD:ENA ON\r`

**Default:** On

### 5.7.2.3 AIRCRAFT OPERATIONAL STATUS MESSAGE

This set of commands allows the user to define the Operational Status Squitter for the specified intruder (target).

#### 5.7.2.3.1 AIRCRAFT OPERATIONAL STATUS MESSAGE PARAMETERS

##### 5.7.2.3.1.A 1090 ES IN

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ESI}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter 1090 ES In field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning   |
|-------|---|
| 0     | No capability to receive 1090 MHz Extended Squitter Messages. |
| 1     | Receives 1090 MHz Extended Squitter Messages.                 |

**Example:** :ATC:SCE:DYN:3:SAOS:ESI 1r

**Default:** 0

##### 5.7.2.3.1.B AIR REFERENCED VELOCITY

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ARV}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter air referenced velocity field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                       |
|-------|---|
| 0     | No Air Referenced Velocity Report Capability. |
| 1     | Generates Air Referenced Velocity Report.     |

**Example:** :ATC:SCE:DYN:4:SAOS:ARV 1r

**Default:** 0

### 5.7.2.3.1.C AIRCRAFT/VEHICLE LENGTH AND WIDTH CODE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:AVSIZE}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter aircraft/vehicle length and width code field to the specified value.

**Numeric:** 0 to 15 (decimal ASCII)

| Value | Meaning                              |
|-------|--------------------------------------|
| 0     | No Data or Unknown                   |
| 1     | Length <15 meters Width <23 meters   |
| 2     | Length <25 meters Width <28.5 meters |
| 3     | Length <25 meters Width <34 meters   |
| 4     | Length <35 meters Width <33 meters   |
| 5     | Length <35 meters Width <38 meters   |
| 6     | Length <45 meters Width <39.5 meters |
| 7     | Length <45 meters Width <45 meters   |
| 8     | Length <55 meters Width <45 meters   |
| 9     | Length <55 meters Width <52 meters   |
| 10    | Length <65 meters Width <59.5 meters |
| 11    | Length <65 meters Width <67 meters   |
| 12    | Length <75 meters Width <72.5 meters |
| 13    | Length <75 meters Width <80 meters   |
| 14    | Length <85 meters Width <80 meters   |
| 15    | Length <85 meters Width <90 meters   |

**Example:** :ATC:SCE:DYN:4:SAOS:AVSIZE 4r

**Default:** 0

### 5.7.2.3.1.D B2 LOW POWER

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:B2L}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter B2 low power field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Transmitter meets applicable class requirements.         |
| 1     | Transmitter meets Class B2 except output power is <70 W. |

**Example:** :ATC:SCE:DYN:5:SAOS:B2L 1r

**Default:** 0

### 5.7.2.3.1.E BAROMETRIC ALTITUDE INTEGRITY CODE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NICB}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter barometric altitude integrity code field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Gilham Altitude Source with no cross-checking.     |
| 1     | Cross-Checked Gilham or any other Altitude Source. |

**Example:** :ATC:SCE:DYN:6:SAOS:NICB 1r

**Default:** 0

### 5.7.2.3.1.F BAROMETRIC ALTITUDE QUALITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:BAQ}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter barometric altitude quality field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:3:SAOS:BAQ 1\r`

**Default:** 0

### 5.7.2.3.1.G CDTI TRAFFIC DISPLAY CAPABILITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:CDTI}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter CDTI traffic display capability field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | No Cockpit Display of Traffic Information (CDTI) capability. |
| 1     | CDTI Operational.  |

**Example:** `:ATC:SCE:STAT:1:SAOS:CDTI 0\r`

**Default:** 0

### 5.7.2.3.1.H DO-260 VERSION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:DO260}SP{- | A | B}CR`

**Description:** This command sets the selected intruder DO-260 squitters to the specified revision level of DO-260.

**Example:** `:ATC:SCE:STAT:2:DO260 A\r`

**Default:** -

### 5.7.2.3.1.I GEOMETRIC VELOCITY ACCURACY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GVA}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter geometric velocity accuracy field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                |
|-------|------------------------|
| 0     | Unknown or >150 meters |
| 1     | ≤150 meters            |
| 2     | ≤45 meters             |
| 3     | Reserved               |

**Example:** `:ATC:SCE:DYN:2:SAOS:GVA 1\r`

**Default:** 0

### 5.7.2.3.1.J HORIZONTAL REFERENCE DIRECTION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:HRD}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter horizontal reference direction field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning        |
|-------|----------------|
| 0     | True North     |
| 1     | Magnetic North |

**Example:** `:ATC:SCE:DYN:1:SAOS:HRD 1\r`

**Default:** 0

### 5.7.2.3.1.K IDENT SWITCH ACTIVE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:IDT}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter IDENT switch active field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | IDENT <u>not</u> active.                       |
| 1     | Set for 18 seconds after IDENT switch pressed. |

**Example:** `:ATC:SCE:STAT:1:SAOS:IDT 1\r`

**Default:** 0

### 5.7.2.3.1.L LATERAL AXIS GPS ANTENNA OFFSET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GPSLAT}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter lateral axis GPS Antenna offset field to the specified value.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Meaning        |
|-------|----------------|
| 0     | No Data        |
| 1     | 2 meters Left  |
| 2     | 4 meters Left  |
| 3     | 6 meters Left  |
| 4     | 0              |
| 5     | 2 meters Right |
| 6     | 4 meters Right |
| 7     | 6 meters Right |

**Example:** `:ATC:SCE:STAT:2:SAOS:GPSLAT 3\r`

**Default:** 0



### 5.7.2.3.1.M LONGITUDINAL AXIS GPS ANTENNA OFFSET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GPSLONG}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter longitudinal axis GPS Antenna offset field to the specified value.

**Numeric:** 0 to 31 (decimal ASCII)

| Value   | Meaning           |
|---------|-------------------|
| 0       | No Data           |
| 1       | Applied by sensor |
| 2       | 2 meters          |
| 3       | 4 meters          |
| 4 to 31 | 6 to 60 meters    |

**Example:** `:ATC:SCE:STAT:2:SAOS:GPSLONG 2\r`

**Default:** 0

### 5.7.2.3.1.N MODE SUBTYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:OM}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter operational mode subtype field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:SAOS:OM 2\r`

**Default:** 0

### 5.7.2.3.1.O NAVIGATION ACCURACY CATEGORY FOR POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:GPSLAT}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter navigation accuracy category for position field to the specified value.

**Numeric:** 0 to 15 (decimal ASCII)

| Value    | NAC <sub>p</sub>          | Comment          |
|----------|---------------------------|------------------|
| 0        | EPU ≥10 Nm                | Unknown Accuracy |
| 1        | EPU <10 Nm                | RNP-10           |
| 2        | EPU <4 Nm                 | RNP-4            |
| 3        | EPU <2 Nm                 | RNP-2            |
| 4        | EPU <1 Nm                 | RNP-1            |
| 5        | EPU <0.5 Nm               | RNP-0.5          |
| 6        | EPU <0.3 Nm               | RNP-0.3          |
| 7        | EPU <0.1 Nm               | RNP-0.1          |
| 8        | EPU <0.05 Nm              | GPS (SA on)      |
| 9        | EPU < 30 m and VEPU <45 m | GPS (SA off)     |
| 10       | EPU <10 m and VEPU <15 m  | WAAS             |
| 11       | EPU <3 m and VEPU <4m     | LAAS             |
| 12 to 15 | Reserved                  | Reserved         |

**Example:** `:ATC:SCE:STAT:2:SAOS:GPSLAT 1\r`

**Default:** 0

### 5.7.2.3.1.P NAVIGATION ACCURACY CATEGORY FOR VELOCITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NACV}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter navigation accuracy category for velocity field to the specified value.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Meaning            |
|-------|--------------------|
| 0     | Unknown or >10 m/s |
| 1     | <10 m/s            |
| 2     | <3 m/s             |
| 3     | <1 m/s             |
| 4     | <0.3 m/s           |

**Example:** `:ATC:SCE:STAT:1:SAOS:NACV 3\r`

**Default:** 0

### 5.7.2.3.1.Q NIC SUPPLEMENT-A

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NISA}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter NIC Supplement-A field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:2:SAOS:NISA 1\r`

**Default:** 0

### 5.7.2.3.1.R NIC SUPPLEMENT-B

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NISB}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter NIC Supplement-B field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:SAOS:NISB 1\r`

**Default:** 0

### 5.7.2.3.1.S NIC SUPPLEMENT-C

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NISC}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter NIC Supplement-C field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:SAOS:NISC 1\r`

**Default:** 0

### 5.7.2.3.1.T NOT TCAS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:NT}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter “Not TCAS” field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | TCAS Operational or Unknown.                         |
| 1     | TCAS <u>not</u> installed or <u>not</u> operational. |

**Example:** `:ATC:SCE:STAT:2:SAOS:NT 1r`

**Default:** 0

### 5.7.2.3.1.U POSITION OFFSET APPLIED

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:POA}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter position offset applied field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Position is antenna referenced.                                |
| 1     | Position is adjusted to Surveillance Position Reference Point. |

**Example:** `:ATC:SCE:DYN:2:SAOS:POA 1r`

**Default:** 0

### 5.7.2.3.1.V RECEIVING AIR TRAFFIC CONTROL SERVICES

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ATC}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter receiving air traffic control services field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning          |
|-------|------------------|
| 0     | Required Setting |
| 1     | Reserved         |

**Example:** `:ATC:SCE:DYN:2:SAOS:ATC 1r`

**Default:** 0

### 5.7.2.3.1.W RESERVED FOR ADS-R FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:ADR}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter reserved for ADS-R flag field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:2:SAOS:ADR 1r`

**Default:** 0

### 5.7.2.3.1.X SERVICE LEVEL MSB

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SLM}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter service level MSB field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:2:SAOS:SLM 3\r`

**Default:** 0

### 5.7.2.3.1.Y SERVICE LEVEL LSB

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SLL}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter service level LSB field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:SAOS:SLL 3\r`

**Default:** 0

### 5.7.2.3.1.Z SINGLE ANTENNA FIELD

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SAF}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter single antenna field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                        |
|-------|--------------------------------|
| 0     | Antenna Diversity Operational. |
| 1     | Single Antenna Operational.    |

**Example:** `:ATC:SCE:STAT:2:SAOS:SAF 1\r`

**Default:** 0

### 5.7.2.3.1.AA SOURCE INTEGRITY LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SIL}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter source integrity level field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Unknown  |
| 1     | $1 \times 10^{-3}$ per flight hour or per sample |
| 2     | $1 \times 10^{-5}$ per flight hour or per sample |
| 3     | $1 \times 10^{-7}$ per flight hour or per sample |

**Example:** `:ATC:SCE:STAT:2:SAOS:SIL 2\r`

**Default:** 0

### 5.7.2.3.1.AB SOURCE INTEGRITY LEVEL (SIL) SUPPLEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SILS}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter SIL supplement field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Probability of Exceeding NIC Radius of Containment "per Hour."   |
| 1     | Probability of Exceeding NIC Radius of Containment "per Sample." |

**Example:** `:ATC:SCE:DYN:2:SAOS:SILS 1r`

**Default:** 0

### 5.7.2.3.1.AC SYSTEM DESIGN ASSURANCE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:SDA}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter system design assurance field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:SAOS:SDA 3r`

**Default:** 0

### 5.7.2.3.1.AD TARGET STATE REPORT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:TS}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter target state report field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                            |
|-------|------------------------------------|
| 0     | No Target State Report Capability. |
| 1     | Generates Target State Report.     |

**Example:** `:ATC:SCE:DYN:1:SAOS:TS 1r`

**Default:** 0

### 5.7.2.3.1.AE TCAS RESOLUTION ADVISORY ACTIVE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:RA}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft operational status squitter TCAS resolution advisory active field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | TCAS Resolution Advisory is inactive or Unknown. |
| 1     | TCAS Resolution Advisory is Active.              |

**Example:** `:ATC:SCE:STAT:1:SAOS:RA 1r`

**Default:** 0

### 5.7.2.3.1.AF TRACK ANGLE/HEADING

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:TOH}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter track angle/heading field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning     |
|-------|-------------|
| 0     | Track Angle |
| 1     | Heading     |

**Example:** :ATC:SCE:DYN:1:SAOS:TOH 1r

**Default:** 0

### 5.7.2.3.1.AG TRAJECTORY CHANGE REPORT

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:TC}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter trajectory change report field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                                       |
|-------|---|
| 0     | No Trajectory Change Report Capability.       |
| 1     | Generates Trajectory Change +0 Report only.   |
| 2     | Generates multiple Trajectory Change Reports. |
| 3     | Reserved                                      |

**Example:** :ATC:SCE:STAT:1:SAOS:TC 3r

**Default:** 0

### 5.7.2.3.1.AH UAT IN

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAOS}{:UAT}SP<numeric>CR

**Description:** This command sets the selected intruder aircraft operational status squitter "UAT In" field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                      |
|-------|--|
| 0     | No Capability to Receive ADS-B UAT Messages. |
| 1     | Receives UAT ADS-B Messages.                 |

**Example:** :ATC:SCE:DYN:2:SAOS:UAT 1r

**Default:** 0

## 5.7.2.3.2 AIRCRAFT OPERATIONAL STATUS MESSAGE SCHEDULE

Airborne Operational Status squitter is transmitted by the ATC-5000NG at a rate of 2.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Airborne Operation Status squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Airborne Operational Status squitter for the entire scenario.

### 5.7.2.3.2.A DYNAMIC AOS SCHEDULE

#### 5.7.2.3.2.A.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:SAOS}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the aircraft operational status squitter message of the specified intruder.

**Example:** `:ATC:SCE:DYN:1:SAOS:INT:1:ENA ON\r`

**Default:** On

#### 5.7.2.3.2.A.2 INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:SAOS}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of aircraft operational status squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:SAOS:NINT 2\r`

#### 5.7.2.3.2.A.3 INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:SAOS}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected aircraft operational status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:SAOS:INT:2:BEGIN 25\r`

#### 5.7.2.3.2.A.4 INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:SAOS}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected aircraft operational status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:SAOS:INT:1:END 25\r`

### 5.7.2.3.2.B STATIC AOS SCHEDULE

#### 5.7.2.3.2.B.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SAOS}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the aircraft operational status squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:1:SAOS:ENA ON\r`

### 5.7.2.4 AIRCRAFT STATUS MESSAGE

This set of commands allows the user to define the Aircraft/Emergency Status Squitter for the specified intruder (target).

#### 5.7.2.4.1 AIRCRAFT STATUS MESSAGE PARAMETERS

##### 5.7.2.4.1.A ACTIVE RESOLUTION ADVISORIES

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:ARA}SP<numeric>CR`

**Description:** This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter ARA field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

**Numeric:** 0 to 3FFF (hexadecimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:SAS:ARA 12F\r`

##### 5.7.2.4.1.B EMERGENCY/PRIORITY STATUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:EPS}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft status squitter emergency/priority status field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is Emergency/Priority Status (1).

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Meaning                     |
|-------|-----------------------------|
| 0     | No emergency                |
| 1     | General Emergency           |
| 2     | Lifeguard/medical emergency |
| 3     | Minimum fuel                |
| 4     | No communications           |
| 5     | Unlawful interference       |
| 6     | Downed Aircraft             |
| 7     | Reserved                    |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:SAS:EPS 4\r`



#### 5.7.2.4.1.C MULTIPLE THREAT ENCOUNTER

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:MTE}SP<numeric>CR`

**Description:** This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter MTE field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:SAS:MTE 1r`

#### 5.7.2.4.1.D RA COMPLEMENTS RECORD

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:RAC}SP<numeric>CR`

**Description:** This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter RAC field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

**Numeric:** 0 to 15 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:SAS:RAC 6r`

#### 5.7.2.4.1.E RA TERMINATED INDICATOR

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:RAT}SP<numeric>CR`

**Description:** This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter RAT field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:SAS:RAT 1r`

#### 5.7.2.4.1.F SUBTYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:SUBTYPE}SP<numeric>CR`

**Description:** This command sets the selected intruder aircraft status squitter subtype field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 1 to 2 (decimal ASCII)

| Value | Meaning                       |
|-------|-------------------------------|
| 1     | Emergency/Priority Status     |
| 2     | TCAS Resolution Advisory (RA) |

**Default:** 1

**Example:** `:ATC:SCE:STAT:1:SAS:SUBTYPE 1r`

#### 5.7.2.4.1.G THREAT IDENTITY DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:TID}SP<numeric>CR`

**Description:** This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter TID field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

**Numeric:** 0 to 3FFFFFFF (hexadecimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:SAS:TID 435r`

#### 5.7.2.4.1.H THREAT TYPE INDICATOR

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT:|:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:TTI}SP<numeric>CR`

**Description:** This command sets the selected intruder Aircraft Status TCAS Resolution Advisory squitter TTI field to the specified value, if the intruder is an extended Mode S or an ADS-R and the aircraft status subtype selected is TCAS Resolution Advisory (2).

**Numeric:** 0 to 3 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:SAS:TTI 2r`

#### 5.7.2.4.2 AIRCRAFT STATUS MESSAGE SCHEDULE

Aircraft/Emergency Status squitter is transmitted by the ATC-5000NG at a rate of 1.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Aircraft/Emergency Status squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Aircraft/Emergency Status squitter for the entire scenario.

#### 5.7.2.4.2.A DYNAMIC AIRCRAFT STATUS SCHEDULE

##### 5.7.2.4.2.A.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the aircraft status squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:DYN:2:SAS:INT:1:ENA ONr`

##### 5.7.2.4.2.A.2 INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of aircraft status squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:SAS:NINT 3r`

#### 5.7.2.4.2.A.3 INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected aircraft status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:2:SAS:INT:2:BEGIN 6\r`

#### 5.7.2.4.2.A.4 INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SAS}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected aircraft status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:2:SAS:INT:2:END 120\r`

#### 5.7.2.4.2.B STATIC AIRCRAFT STATUS SCHEDULE

##### 5.7.2.4.2.B.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SAS}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the aircraft status squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:1:SAS:ENA OFF\r`

#### 5.7.2.5 ALTITUDE REPORTING

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ALTRPT}SP{ON | OFF}CR`

**Description:** This command sets the altitude reporting for the selected intruder on or off. If set to off, Mode S Extended, TIS-B or ADS-R altitude data is not available. (For example, DF0 contains all zero in Altitude Code.)

**Default:** On

**Example:** `:ATC:SCE:STAT:1:ALTRPT OFF\r`

#### 5.7.2.6 ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:1:ENA ON\r`

#### 5.7.2.7 GROUND STATUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:GRO |:GROUND}SP{ON | OFF}CR`

**Description:** This command sets the ground status of the intruder. If the intruder is an extended Mode S and ground status is enabled, the surface position squitters are transmitted.

**Default:** Off

**Example:** `:ATC:SCE:STAT:2:GRO ON\r`

### 5.7.2.8 ICAO/MODE A FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IMF}SP <numeric>CR`

**Description:** This command sets the type of identity associated with the aircraft data reported in the TIS-B message. IMF equal to zero indicates the TIS-B data is identified by an ICAO-24 bit aircraft address. IMF equal to one indicates the TIS-B data is identified by a Mode A Code.

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:IMF 1\r`

### 5.7.2.9 IDENTIFICATION MESSAGE

This set of commands allows the user to define the Identification Squitter for the specified intruder (target).

#### 5.7.2.9.1 IDENTIFICATION MESSAGE PARAMETERS

##### 5.7.2.9.1.A EMITTER CATEGORY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IDENTEC}SP <numeric>CR`

**Description:** This command sets the selected intruder emitter category for the Ident squitter.

**Numeric:** 0 to 7 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:IDENTEC 2\r`

##### 5.7.2.9.1.B IDENTIFICATION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IDENT}SP{<characters>|BLANK|NODATA}CR`

**Description:** This command sets the selected intruder identification characters for the Ident squitter. The maximum length is eight characters (blank characters are defined with the keyword "BLANK"). Default: Static intruders will be STAT001, STAT002, .... Dynamic intruders will be DYN01, DYN02,....

**Default:** Static intruders: STAT001, STAT002, ....  
Dynamic intruders: DYN01, DYN02,....

**Example:** `:ATC:SCE:STAT:1:IDENT RG4\r`

##### 5.7.2.9.1.C IDENTIFICATION TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:IDENTTYPE}SP <numeric>CR`

**Description:** This command sets the selected intruder identification type for the Ident squitter.

**Numeric:** 1 to 4 (decimal ASCII)

**Default:** 1

**Example:** `:ATC:SCE:DYN:1:IDENTTYPE 3\r`

## 5.7.2.9.2 IDENTIFICATION MESSAGE SCHEDULE

Identification squitter is transmitted by the ATC-5000NG at a rate of 5.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Identification squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Identification squitter for the entire scenario.

### 5.7.2.9.2.A DYNAMIC IDENTIFICATION SCHEDULE

#### 5.7.2.9.2.A.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC:}<intruder no>{:SIDENT}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the identification squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:DYN:2:SIDENT:INT:2:ENA ON\r`

#### 5.7.2.9.2.A.2 INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC:}<intruder no>{:SIDENT}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of identification squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:SIDENT:NINT 3\r`

#### 5.7.2.9.2.A.3 INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC:}<intruder no>{:SIDENT}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected identification squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:SIDENT:INT:2:BEGIN 45\r`

#### 5.7.2.9.2.A.4 INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC:}<intruder no>{:SIDENT}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected identification squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:SIDENT:INT:2:END 120\r`

## 5.7.2.9.2.B STATIC IDENTIFICATION SCHEDULE

### 5.7.2.9.2.B.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SIDENT}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the identification squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:2:SIDENT:ENA ON\r`

## 5.7.2.10 MODE A CODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ACODE}SP<numeric>CR`

**Description:** This command sets the Mode A code.

**Numeric:** 0 to 7777 (octal ASCII)

**Default:** 0000

**Example:** `:ATC:SCE:STAT:1:ACODE 1234\r`

## 5.7.2.11 MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MOD |:MODE}SP{ TIS-B | EXTENDED | ADS-R | UAT}CR`

**Description:** This command sets the selected intruder to a specific intruder type. The intruder types are TIS-B, Mode S Extended, ADS-R or UAT. When the intruder type is set to ADS-R, the Control Field (CF) is set with the Value6 automatically. To define the UAT intruder parameters, refer to **para 1-2-5.UAT ADS-B DEFINITION PARAMETERS, UAT ADS-B DEFINITION PARAMETERS**).

**Default:** EXTENDED

**Example:** `:ATC:SCE:STAT:1:MOD EXTENDED\r`

## 5.7.2.12 MODE-S ALL CALL REPLY (DF=11) MESSAGE

DF11 squitter is transmitted by the ATC-5000NG at a rate of 1.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the DF11 squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the DF11 squitter for the entire scenario.

## 5.7.2.12.1 MODE-S ALL CALL REPLY (DF=11) MESSAGE SCHEDULE

### 5.7.2.12.1.A DYNAMIC DF=11 SCHEDULE

#### 5.7.2.12.1.A.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the DF11 squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:DYN:2:SDF11:INT:3:ENA ON\r`

#### 5.7.2.12.1.A.2 INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of DF11 squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore **only** the user can **define the intervals where the message is transmitted**.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:SDF11:NINT 3\r`

#### 5.7.2.12.1.A.3 INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected DF11 squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore **only** the user can **define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:2:SDF11:INT:2:BEGIN 55\r`

#### 5.7.2.12.1.A.4 INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SDF11}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected DF11 squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore **only** the user can **define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:2:SDF11:INT:2:END 125\r`

#### 5.7.2.12.1.B STATIC DF=11 SCHEDULE - INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SDF11}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the DF11 squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:2:SDF11:ENA ON\r`

#### 5.7.2.13 MODE S DATA PARAMETERS

##### 5.7.2.13.1 CROSSLINK CAPABILITY (CC)

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:CC}SP{ON | OFF}CR`

**Description:** This command either enables or disables crosslink capability bit for the specified intruder.

**Default:** Off

**Example:** `:ATC:SCE:STAT:1:CC ON\r`

### 5.7.2.13.2 DOWNLINK REQUEST (DR)

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:DR}SP<numeric>CR

**Description:** This command sets the DR field for a Mode S intruder.

**Numeric:** 0 to 31 (decimal ASCII)

**Default:** 0

**Example:** :ATC:SCE:STAT:1:DR 4\r

### 5.7.2.13.3 FLIGHT STATUS (FS)

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:FS}SP<numeric>CR

**Description:** This command sets the FS field for a Mode S intruder.

**Numeric:** 0 to 7 (decimal ASCII)

**Default:** 0

**Example:** :ATC:SCE:STAT:1:FS 3\r

### 5.7.2.13.4 MODE S ADDRESS

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MSADDR}SP<numeric>CR

**Description:** This command sets the Mode S address.

**Numeric:** 0 to FFFFFFF (hexadecimal ASCII)

**Default:** Static starts at 0x000021  
Dynamic starts at 0x000001

**Example:** :ATC:SCE:DYN:1:MSADDR 501235\r

### 5.7.2.13.5 SENSITIVITY LEVEL (SL)

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SL}SP<numeric>CR

**Description:** This command sets the SL (sensitivity level) field for a Mode S intruder.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Sensitivity Level         |
|-------|---------------------------|
| 0     | No TCAS Sensitivity Level |
| 1     | Sensitivity Level 1       |
| 2     | Sensitivity Level 2       |
| 3     | Sensitivity Level 3       |
| 4     | Sensitivity Level 4       |
| 5     | Sensitivity Level 5       |
| 6     | Sensitivity Level 6       |
| 7     | Sensitivity Level 7       |

**Default:** 0

**Example:** :ATC:SCE:STAT:1:SL 1\r



### 5.7.2.13.6 REPLY INFORMATION (RI; AQ=0)

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RI:AQ0}SP<numeric>CR`

**Description:** This command sets the RI field for a Mode S intruder for an AQ=0 reply.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | RI                       |
|-------|--------------------------|
| 0     | No Onboard TCAS          |
| 1     | Not Assigned             |
| 2     | No Resolution            |
| 3     | Vertical Only Resolution |
| 4     | Vertical and Horizontal  |
| 5     | Not Assigned             |
| 6     | Not Assigned             |
| 7     | Not Assigned             |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:RI:AQ0 3\r`

### 5.7.2.13.7 REPLY INFORMATION (RI; AQ=1)

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RI:AQ1}SP<numeric>CR`

**Description:** This command sets the RI field for a Mode S intruder for an AQ=1 reply.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | RI                                      |
|-------|---|
| 0     | No Airspeed                             |
| 1     | Airspeed $\leq 75$ knots                |
| 2     | $75 < \text{Airspeed} \leq 150$ knots   |
| 3     | $150 < \text{Airspeed} \leq 300$ knots  |
| 4     | $300 < \text{Airspeed} \leq 600$ knots  |
| 5     | $600 < \text{Airspeed} \leq 1200$ knots |
| 6     | $1200 \text{ knots} < \text{Airspeed}$  |
| 7     | Not Assigned                            |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:RI:AQ1 2\r`

### 5.7.2.13.8 REPLY INFORMATION DF16 (RI)

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RI:DF16}SP<numeric>CR

**Description:** This command sets the RI field for an extended Mode S intruder for a DF16 reply.

**Numeric:** 0 to 15 (decimal ASCII)

| Value | RI                        |
|-------|---------------------------|
| 0     | No Onboard TCAS           |
| 1     | Not Assigned              |
| 2     | No Resolution             |
| 3     | Vertical Only Resolution  |
| 4     | Vertical and Horizontal   |
| 5     | Not Assigned              |
| 6     | Not Assigned              |
| 7     | Not Assigned              |
| 8     | No Airspeed               |
| 9     | Airspeed ≤75 knots        |
| 10    | 75 <Airspeed ≤150 knots   |
| 11    | 150 <Airspeed ≤300 knots  |
| 12    | 300 <Airspeed ≤600 knots  |
| 13    | 600 <Airspeed ≤1200 knots |
| 14    | 1200 knots <Airspeed      |
| 15    | Not Assigned              |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:RI:DF16 4r

### 5.7.2.13.9 TRANSPONDER CAPABILITY (CA)

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:CA}SP<numeric>CR

**Description:** This command sets the CA field for a Mode S intruder.

**Numeric:** 0 to 7 (decimal ASCII)

**Default:** 0

**Example:** :ATC:SCE:DYN:1:CA 6r

### 5.7.2.13.10 UTILITY MESSAGE (UM)

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC: }<intruder no>{:UM}SP<numeric>CR

**Description:** This command sets the UM field for a Mode S intruder.

**Numeric:** 0 to 63 (decimal ASCII)

**Default:** 0

**Example:** :ATC:SCE:DYN:1:UM 22r

## 5.7.2.14 POSITION PARAMETERS

The following set of commands allows the user to define the intruder (target) initial position and, if the intruder is dynamic, the movement direction of the intruder.

### 5.7.2.14.1 ALTITUDE

#### 5.7.2.14.2 BEARING

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:ALT |:ALTITUDE}SP{NODATA|<numeric>}CR`

**Description:** This command sets the selected intruder to the specified altitude. If altitude data is not available, use the "NODATA" keyword.

**Numeric:** Altitude Binary Mode: -1000 to 50175 feet in 25 feet resolution (decimal ASCII)  
Altitude Gilham Mode: -1000 to 126700 feet in 100 feet resolution (decimal ASCII)

**Default:** 1000 feet

**Example:** `:ATC:SCE:STAT:1:ALT 3000\r`

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC: }<intruder no>{:BEA |:BEARING}SP<numeric>CR`

**Description:** This command sets the selected intruder to the specified bearing from own aircraft.

**Numeric:** 0 to 359 degrees (decimal ASCII)  
0 True North

**NOTE:** The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:BEA 45\r`

### 5.7.2.14.3 LATITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:LAT |:LATITUDE}SP<numeric>CR`

**Description:** This command sets the selected intruder to the specified latitude.

**Numeric:** -90 to 90 degrees (double ASCII)

**NOTE:** The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

**Default:** Calculated using the range and bearing and the own aircraft position.

**Example:** `:ATC:SCE:DYN:1:LAT 89.9\r`

### 5.7.2.14.4 LONGITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:LONG |:LONGITUDE}SP<numeric>CR`

**Description:** This command sets the selected intruder to the specified longitude.

**Numeric:** -180 to 180 degrees (double ASCII)

**NOTE:** The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

**Default:** Calculated using the range and bearing and the own aircraft position.

**Example:** `:ATC:SCE:DYN:1:LONG -45.6123\r`

#### 5.7.2.14.5 RANGE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:RAN |:RANGE}SP<numeric>CR`

**Description:** This command sets the selected intruder to the specified range from own aircraft.

**Numeric:** 0 to 150 nmi (decimal ASCII)

**NOTE:** The intruder can be defined by range and bearing or latitude and longitude. If the intruder is defined using range and bearing, the ATC-5000NG calculates the latitude and longitude of the intruder. If the intruder is defined using latitude and longitude, the ATC-5000NG calculates the range and bearing.

**Default:** 0 nmi

**Example:** `:ATC:SCE:DYN:1:RAN 27.5\r`

#### 5.7.2.14.6 TRACK

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TRA |:TRACK}SP<numeric>CR`

**Description:** This command sets the selected intruder track angle.

**Numeric:** -180 to 180 degrees (decimal ASCII)  
0 to 360 degrees (decimal ASCII)

**NOTE:** The track information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TRA 150\r`

#### 5.7.2.14.7 VELOCITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VEL |:VELOCITY}SP{NODATA|<numeric>}CR`

**Description:** This command sets the selected intruder to the specified velocity. If velocity data is not available, then use the keyword "NODATA". If velocity data is not available then the E/W velocity, N/S velocity and Ground Speed information is not available.

**Numeric:** 0 to 5782 knots (decimal ASCII)

**NOTE:** The track information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VEL 250\r`

#### 5.7.2.15 START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the scenario time when the intruder becomes active.

**Numeric:** 0 to 6550 seconds (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:BEGIN 25\r`

### 5.7.2.16 STOP TIME

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:END}SP<numeric>CR

**Description:** This command sets the scenario time when the intruder becomes inactive.

**Numeric:** 0 to 6550 seconds (decimal ASCII)

**Default:** Scenario End Time

**Example:** :ATC:SCE:DYN:1:END 400\r

### 5.7.2.17 SQUITTER PARAMETERS

#### 5.7.2.17.1 ANTENNA

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SQANT}SP{TOP | BOTTOM | BOTH}CR

**Description:** This command sets if the squitter is transmitted on both antennas simultaneously, top only or bottom only.

**Default:** Both

**Example:** :ATC:SCE:DYN:1:SQANT TOP\r

#### 5.7.2.17.2 ENABLE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SQU |:SQUITTER}SP{ON | OFF}CR

**Description:** This command either enables or disables squitters for the specified intruder. When transmission of squitters is disabled, the squitter scheduled transmission is ignored and any subsequent definition of a waypoint for enabling transmission of squitters activates the definition of the squitter scheduled transmission.

**Default:** On

**Example:** :ATC:SCE:DYN:1:SQU OFF\r

#### 5.7.2.17.3 POWER

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SQPWR}SP<numeric>CR

**Description:** This command sets the power level of the squitter messages.

**Numeric:** Multi-Receiver  
High Power Mode: -65 to 5 dBm (decimal ASCII)  
Low Power Mode: -90 to -20 dBm (decimal ASCII)  
Very Low Power : -110 to -40 dBm (decimal ASCII)  
UAT  
-110 to 5 dBm (decimal ASCII)

**Default:** -50 dBm (Multi-Receiver)  
-20 dBm (UAT)

**Example:** :ATC:SCE:DYN:1:SQPWR -35\r

## 5.7.2.18 SURFACE POSITION MESSAGE PARAMETERS

The following set of commands allows the user to define the surface position information for any intruder (target).

### 5.7.2.18.1 MOVEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MOV |:MOVEMENT}SP{SPEED | MISC}CR`

**Description:** This command sets the type of movement for a ground intruder.

**Default:** Speed

**Example:** `:ATC:SCE:DYN:1:MOV SPEEDr`

### 5.7.2.18.2 MOVEMENT MISCELLANEOUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:MMISC }SP<numeric>CR`

**Description:** This command sets the selected intruder to the selected miscellaneous movement, if Movement has been set to miscellaneous.

**Numeric:** For DO-260 and DO-260A:  
0 to 5 (decimal ASCII)

| Value | Movement                  |
|-------|---------------------------|
| 0     | No Movement Information   |
| 1     | Aircraft Stopped          |
| 2     | Speed $\geq$ 175 kts      |
| 3     | Reserved for Decelerating |
| 4     | Reserved for Accelerating |
| 5     | Reserved for Backing-Up   |

For DO-260B:  
0 to 6 (decimal ASCII)

| Value | Movement                      |
|-------|-------------------------------|
| 0     | No Movement Information       |
| 1     | Aircraft Stopped              |
| 2     | Ground Speed $\leq$ 0.125 kts |
| 3     | Speed >175 kts                |
| 4     | Reserved for Decelerating     |
| 5     | Reserved for Accelerating     |
| 6     | Reserved for Backing-Up       |

**Example:** `:ATC:SCE:DYN:1:MMISC 2r`

### 5.7.2.18.3 SPEED

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:SPEED}SP<numeric>CR`

**Description:** This command sets the selected ground intruder to the specified ground speed, if the Movement has been set for speed.

**Numeric:** 0.125 to 176 knots (decimal ASCII)

**NOTE:** The velocity information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

**Default:** 0.125 kts

**Example:** `:ATC:SCE:DYN:1:SPEED 77r`

#### 5.7.2.18.4 TYPE CODE

**Command Syntax:** { :ATC |:ATC5000NG}{ :SCE |:SCENARIO}{ :STAT: |:STATIC: |:DYN: |:DYNAMIC: }<intruder no>{:SURFACETYPE}SP<numeric>CR

**Description:** This command sets the selected intruder surface position squitter to the specified type code, if the intruder is an extended Mode S.

**Numeric:** 0 or 5 to 8 (decimal ASCII)

**Default:** 5

**Example:** :ATC:SCE:DYN:1:SURFACETYPE 7r

#### 5.7.2.19 TARGET STATE AND STATUS MESSAGE

The following set of commands allows the user capability of defining for any intruder the Target State and Status squitter.

##### 5.7.2.19.1 TARGET STATE AND STATUS MESSAGE PARAMETERS

###### 5.7.2.19.1.A ALTITUDE HOLD MODE

###### 5.7.2.19.1.B ALTITUDE TYPE

**Command Syntax:** { :ATC |:ATC5000NG}{ :SCE |:SCENARIO}{ :STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{ :AHM}SP<numeric>CR

**Description:** This command sets the selected intruder target state and status squitter altitude hold mode field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                    |
|-------|--|
| 0     | Altitude Hold <u>not</u> Active or Unknown |
| 1     | Altitude Hold Active                       |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:TARGET:AHM 1r

**Command Syntax:** { :ATC |:ATC5000NG}{ :SCE |:SCENARIO}{ :STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{ :AT}SP<numeric>CR

**Description:** This command sets the selected intruder target state and status squitter altitude type field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning   |
|-------|---|
| 0     | DO-206A<br>Target Altitude referenced to Pressure Altitude (Flight Level)         |
| 1     | DO-260B<br>Target Altitude referenced to Baro-Corrected Altitude (Mean Sea level) |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:TARGET:AT 1r

### 5.7.2.19.1.C APPROACH MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:APP}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter approach mode field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                    |
|-------|--|
| 0     | Approach Mode <u>not</u> Active or Unknown |
| 1     | Approach Mode Active                       |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:APP 1\r`

### 5.7.2.19.1.D AUTOPILOT ENGAGED

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:AEG}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter autopilot engaged field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                         |
|-------|---------------------------------|
| 0     | Autopilot Disengaged or Unknown |
| 1     | Autopilot Engaged               |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:AEG 1\r`

### 5.7.2.19.1.E BACKWARD COMPATIBILITY FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:BCF}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter backward compatibility flag field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning         |
|-------|-----------------|
| 0     | Required value  |
| 1     | Invalid message |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:BCF 1\r`

### 5.7.2.19.1.F BAROMETRIC ALTITUDE INTEGRITY CODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:NICB}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter barometric altitude integrity code field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning   |
|-------|---|
| 0     | Gilham Altitude Source with no cross-checking     |
| 1     | Cross-Checked Gilham or any other Altitude Source |

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:TARGET:NICB 1\r`



### 5.7.2.19.1.G BAROMETRIC PRESSURE SETTING

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:BPS}SP{NODATA |<numeric>}CR`

**Description:** This command sets the selected intruder target state and status squitter barometric pressure setting field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 408 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:TARGET:BPS NODATA\r`

### 5.7.2.19.1.H CAPABILITY/MODE CODES

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:CMC}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter capability/mode codes field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                             |
|-------|-------------------------------------|
| 0     | TCAS Operational / No RA Active     |
| 1     | TCAS Operational / RA Active        |
| 2     | TCAS Not Operational / No RA Active |
| 3     | TCAS Not Operational / RA Active    |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:CMC 2\r`

### 5.7.2.19.1.I EMERGENCY/PRIORITY STATUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:EPS}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter emergency/priority status field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Meaning                     |
|-------|-----------------------------|
| 0     | No emergency                |
| 1     | General Emergency           |
| 2     | Lifeguard/medical emergency |
| 3     | Minimum fuel                |
| 4     | No communications           |
| 5     | Unlawful interference       |
| 6     | Downed Aircraft             |
| 7     | Reserved                    |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:EPS 3\r`

### 5.7.2.19.1.J HORIZONTAL DATA AVAILABLE/SOURCE INDICATOR

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:HDASI}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter horizontal data available/source indicator field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | No valid horizontal target state data is available         |
| 1     | Autopilot control panel selected value, such as MCP or FCU |
| 2     | Maintaining current heading or track angle                 |
| 3     | FMS/RNAV system  |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:HDASI 3\r`

### 5.7.2.19.1.K HORIZONTAL MODE INDICATOR

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:HMI}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter horizontal mode indicator field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                       |
|-------|-------------------------------|
| 0     | Unknown mode                  |
| 1     | Acquiring Mode                |
| 2     | Capturing or Maintaining Mode |
| 3     | Reserved                      |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:HMI 1\r`

### 5.7.2.19.1.L LNAV MODE ENGAGED

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:LMG}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter LNAV mode engaged field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                |
|-------|--|
| 0     | LNAV Mode <u>not</u> Active or Unknown |
| 1     | LNAV Mode Active                       |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:LMG 1\r`

### 5.7.2.19.1.M MCP/FCU MODE BITS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:SMD}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter status of MCP/FCU mode bits field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                    |
|-------|--|
| 0     | No Mode Information/Invalid                |
| 1     | Valid Mode Information in bits 80,81,82,84 |

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:TARGET:SMD 1\r`

### 5.7.2.19.1.N NAVIGATION ACCURACY CATEGORY FOR POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:NACP}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter navigation accuracy category for position field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 15 (decimal ASCII)

| Value    | NAC <sub>p</sub>         |
|----------|--------------------------|
| 0        | EPU ≥10 Nm               |
| 1        | EPU <10 Nm               |
| 2        | EPU <4 Nm                |
| 3        | EPU <2 Nm                |
| 4        | EPU <1 Nm                |
| 5        | EPU <0.5 Nm              |
| 6        | EPU <0.3 Nm              |
| 7        | EPU <0.1 Nm              |
| 8        | EPU <0.05 Nm             |
| 9        | EPU <30 m and VEPU <45 m |
| 10       | EPU <10 m and VEPU <15 m |
| 11       | EPU <3 m and VEPU <4m    |
| 12 to 15 | Reserved                 |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:NACP 4\r`

### 5.7.2.19.1.O RESERVED FOR ADS-R FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:ADR}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter reserved for ADS-R flag field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:ADR 1\r`

### 5.7.2.19.1.P SELECTED HEADING STATUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:SHS}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter selected heading status field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                  |
|-------|--------------------------|
| 0     | Selected Heading Invalid |
| 1     | Selected Heading Valid   |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:SHS 1\r`

### 5.7.2.19.1.Q SOURCE INTEGRITY LEVEL SUPPLEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:SILS}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter source integrity level supplement field to the specified value, if the intruder is an extended Mode S (DO-260B).

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning   |
|-------|---|
| 0     | Probability of exceeding NIC Radius of Containment "per hour"   |
| 1     | Probability of exceeding NIC Radius of Containment "per sample" |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:SILS 1\r`

### 5.7.2.19.1.R SUBTYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:SUBTYPE}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter subtype field to the specified value, if the intruder is an extended Mode S (DO-260B).

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:SUBTYPE 1\r`

### 5.7.2.19.1.S SURVEILLANCE INTEGRITY LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:SIL}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter surveillance integrity level field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                            |
|-------|------------------------------------|
| 0     | Unknown                            |
| 1     | $1 \times 10^{-3}$ per flight hour |
| 2     | $1 \times 10^{-5}$ per flight hour |
| 3     | $1 \times 10^{-7}$ per flight hour |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:SIL 2\r`

### 5.7.2.19.1.T TARGET ALTITUDE CAPABILITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:ACAP}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter target altitude capability flag field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Capability for reporting holding altitude only   |
| 1     | Capability for reporting either holding altitude or autopilot control panel selected altitude                                  |
| 2     | Capability for reporting either holding altitude, autopilot control panel selected altitude or any FMS/RNAV level-off altitude |
| 3     | Reserved   |

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:TARGET:ACAP 3\r`

### 5.7.2.19.1.U TARGET ALTITUDE/SELECTED ALTITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:TALT}SP{NODATA |<numeric>}CR`

**Description:** This command sets the selected intruder target state and status squitter target altitude or MCP/FMS selected altitude field to the specified value, if the intruder is an extended Mode S.

**Numeric:** -1000 to 100,000 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:STAT:1:TARGET:TALT 10\r`

### 5.7.2.19.1.V TARGET HEADING/TRACK INDICATOR

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:THTI}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter target heading/track indicator field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                             |
|-------|-------------------------------------|
| 0     | Target Heading Angle being reported |
| 1     | Target Track Angle being reported   |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:THTI 1\r`

### 5.7.2.19.1.W TCAS OPERATIONAL

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:TOP}SP<numeric>CR`

**Description:** This command sets the selected intruder target state and status squitter TCAS operational field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                   |
|-------|---|
| 0     | TCAS <u>not</u> Operational (RI ≠ 3 or 4) |
| 1     | Approach Mode Active (RI =3 or 4)         |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:TARGET:TOP 1\r`

### 5.7.2.19.1.X TRACK HEADING/TRACK ANGLE OR SELECTED HEADING

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:THTA}SP{NODATA |<numeric>}CR

**Description:** This command sets the selected intruder target state and status squitter track heading or selected heading field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 360 degrees (decimal ASCII)

**Default:** 0

**Example:** :ATC:SCE:DYN:1:TARGET:THTA NODATA\r

### 5.7.2.19.1.Y VERTICAL DATA AVAILABLE/SOURCE INDICATOR

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:VDASI}SP<numeric>CR

**Description:** This command sets the selected intruder target state and status squitter vertical data available or source indicator field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Vertical Data Available/Source Indicator         |
|-------|--|
| 0     | No valid vertical target state data is available |
| 1     | Autopilot control panel selected                 |
| 2     | Holding Altitude                                 |
| 3     | FMS/RNAV System                                  |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:TARGET:VDASI 3\r

### 5.7.2.19.1.Z VERTICAL MODE INDICATOR

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:VMI}SP<numeric>CR

**Description:** This command sets the selected intruder target state and status squitter vertical mode indicator field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                       |
|-------|-------------------------------|
| 0     | Unknown Mode                  |
| 1     | Acquiring Mode                |
| 2     | Capturing or Maintaining Mode |
| 3     | Reserved                      |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:TARGET:VMI 2\r

### 5.7.2.19.1.AA VNAV MODE ENGAGED

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TARGET}{:VEG}SP<numeric>CR

**Description:** This command sets the selected intruder target state and status squitter VNAV mode engaged field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning                                 |
|-------|---|
| 0     | VNAV Mode <u>not</u> Engaged or Unknown |
| 1     | VNAV Mode Engaged                       |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:TARGET:VEG 1\r

## 5.7.2.19.2 TARGET STATE AND STATUS MESSAGE SCHEDULE

Target State and Status squitter is transmitted by the ATC-5000NG at a rate of 1.0 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Target State and Status squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Target State and Status squitter for the entire scenario.

### 5.7.2.19.2.A DYNAMIC TARGET STATE AND STATUS SCHEDULE

#### 5.7.2.19.2.A.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:TARGET}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the target state and status squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:DYN:1:TARGET:INT:1:ENA ON\r`

#### 5.7.2.19.2.A.2 INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:TARGET}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of target state and status squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:TARGET:NINT 3\r`

#### 5.7.2.19.2.A.3 INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:TARGET}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected target state and status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:TARGET:INT:2:BEGIN 40\r`

#### 5.7.2.19.2.A.4 INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN |:DYNAMIC;}<intruder no>{:TARGET}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected target state and status squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user can define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:TARGET:INT:2:END 101\r`

## 5.7.2.19.2.B STATIC TARGET STATE AND STATUS SCHEDULE

### 5.7.2.19.2.B.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:TARGET}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the target state and status squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:1:TARGET:ENA ON\r`

## 5.7.2.20 TIS-B MESSAGE PARAMETERS

The following set of commands allows the user to define some parameters specific to a TIS-B intruder.

### 5.7.2.20.1 MESSAGE TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TISB}{:MTYPE}SP{ADS-B |FINE |COARSE}CR`

**Description:** This command sets the TIS-B message type of the intruder selected.

**Default:** ADSB

**Example:** `:ATC:SCE:DYN:1:TISB:MTYPE ADS-B\r`

### 5.7.2.20.2 TIS-B COARSE POSITION MESSAGE PARAMETERS

#### 5.7.2.20.2.A GROUND TRACK STATUS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:COARSE}{:GTS}SP<numeric>CR`

**Description:** This command sets the validity of the Ground Track Value of the intruder selected.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning   |
|-------|-----------|
| 0     | Not Valid |
| 1     | Valid     |

**Default:** 1

**Example:** `:ATC:SCE:DYN:1:COARSE:GTS 1\r`

#### 5.7.2.20.2.B SERVICE VOLUME ID

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:COARSE}{:SVID}SP<numeric>CR`

**Description:** This command sets the service volume identification of the intruder selected.

**Numeric:** 0 to 15 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:COARSE:SVID 3\r`



## 5.7.2.21 VELOCITY MESSAGE

The following set of commands allows the user to define the velocity squitter information for any intruder.

### 5.7.2.21.1 VELOCITY MESSAGE PARAMETERS

#### 5.7.2.21.1.A AIRSPEED INFORMATION AVAILABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:AIRSPEED}SP{NODATA|<numeric>}CR`

**Description:** This command sets the selected intruder to the specified airspeed. If airspeed data is not available, then use the "NODATA" keyword.

**Numeric:** 0 to 4088 knots (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:AIRSPEED 287\r`

#### 5.7.2.21.1.B AIRSPEED TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELAT}SP{IAS|TAS}CR`

**Description:** This command sets the selected intruder velocity squitter airspeed type field to the specified value, if the intruder is an extended Mode S and the velocity type is Airspeed and Heading.

**Default:** IAS

**Example:** `:ATC:SCE:DYN:1:VELAT TAS\r`

#### 5.7.2.21.1.C DIFFERENCE FROM BAROMETRIC ALTITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELDBA}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter difference from barometric altitude field to the specified value, if the intruder is an extended Mode S.

**Numeric:** -3150 to 3150 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VELDBA -30\r`

#### 5.7.2.21.1.D E/W VELOCITY INFORMATION AVAILABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:EWV}SP{ON | OFF}CR`

**Description:** This command enables or disables the east/west velocity information of the specified intruder. OFF setting means no east/west velocity information available.

**Default:** On

**Example:** `:ATC:SCE:DYN:1:EWV ON\r`

#### 5.7.2.21.1.E GNSS ALTITUDE SOURCE DATA DIFFERENCE INFORMATION AVAILABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:GNSS}SP{ON | OFF}CR`

**Description:** This command enables or disables the GNSS altitude source data difference information of the specified intruder. When set to OFF, no GNSS altitude source data difference information is available.

**Default:** On

**Example:** `:ATC:SCE:DYN:1:GNSS OFF\r`

#### 5.7.2.21.1.F IFR CAPABILITY FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELIFR}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter IFR capability flag field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VELIFR 1\r`

#### 5.7.2.21.1.G INTENT CHANGE FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELINTENT}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter intent change flag field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VELINTENT 1\r`

#### 5.7.2.21.1.H NAVIGATION ACCURACY CATEGORY FOR POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELNACP}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter navigation accuracy category for position field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 15 (decimal ASCII)

| Value    | NAC <sub>p</sub>          |
|----------|---------------------------|
| 0        | EPU ≥10 Nm                |
| 1        | EPU <10 Nm                |
| 2        | EPU <4 Nm                 |
| 3        | EPU <2 Nm                 |
| 4        | EPU <1 Nm                 |
| 5        | EPU <0.5 Nm               |
| 6        | EPU <0.3 Nm               |
| 7        | EPU <0.1 Nm               |
| 8        | EPU <0.05 Nm              |
| 9        | EPU < 30 m and VEPU <45 m |
| 10       | EPU <10 m and VEPU <15 m  |
| 11       | EPU <3 m and VEPU <4m     |
| 12 to 15 | Reserved                  |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VELNACP 9\r`

#### 5.7.2.21.1.I NAC-V

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELNACV}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter NACv field to the specified value, if the intruder is an extended Mode S.

**Numeric:** 0 to 7 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:VELNACV 6\r`

#### 5.7.2.21.1.J NIC SUPPLEMENT-A

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELNISA}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter NIC Supplement-A field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:VELNISA 1\r`

#### 5.7.2.21.1.K N/S VELOCITY INFORMATION AVAILABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:NSV}SP{ON | OFF}CR`

**Description:** This command enables or disables the north/south velocity information of the specified intruder. When set to OFF, no north/south velocity information is available.

**Default:** On

**Example:** `:ATC:SCE:DYN:2:NSV OFF\r`

#### 5.7.2.21.1.L SURVEILLANCE INTEGRITY LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELSIL}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter surveillance integrity level field to the specified value.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning                            |
|-------|------------------------------------|
| 0     | Unknown                            |
| 1     | $1 \times 10^{-3}$ per flight hour |
| 2     | $1 \times 10^{-5}$ per flight hour |
| 3     | $1 \times 10^{-7}$ per flight hour |

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:VELSIL 2\r`

#### 5.7.2.21.1.M SOURCE BIT FOR VERTICAL RATE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELVRS}SP{ BARO | GEO}CR`

**Description:** This command sets for the selected intruder the source bit for vertical rate.

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:VELVRS BARO\r`

#### 5.7.2.21.1.N STATUS BIT FOR HEADING/GROUND TRACK

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:HSGS}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter status bit for heading or ground track field to the specified value, if the intruder is an extended Mode S (applies when the velocity type is Airspeed and Heading or in the surface position squitter).

**Numeric:** 0 to 1 (decimal ASCII)

**Default:** 1

**Example:** `:ATC:SCE:DYN:1:HSGS 1\r`

### 5.7.2.21.1.O TRUE/MAGNETIC HEADING TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELHRD}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter true/magnetic heading type field to the specified value.

**Numeric:** 0 to 1 (decimal ASCII)

|       |                |
|-------|----------------|
| Value | Meaning        |
| 0     | True North     |
| 1     | Magnetic North |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VELHRD 1\r`

### 5.7.2.21.1.P VELOCITY TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VELTYPE}SP<numeric>CR`

**Description:** This command sets the selected intruder velocity squitter to the specified type, if the intruder is an extended Mode S.

**Numeric:** 0 to 7 (decimal ASCII)

|       |                             |
|-------|-----------------------------|
| Value | Velocity Type               |
| 0     | Subtype 0 - Reserved        |
| 1     | Ground Speed Normal         |
| 2     | Ground Speed Supersonic     |
| 3     | Airspeed Heading Normal     |
| 4     | Airspeed Heading Supersonic |
| 5     | Subtype 5 - Reserved        |
| 6     | Subtype 6 - Reserved        |
| 7     | Subtype 7 - Reserved        |

**Default:** 1

**Example:** `:ATC:SCE:DYN:2:VELTYPE 3\r`

### 5.7.2.21.1.Q VERTICAL RATE INFORMATION AVAILABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VRV}SP{ON | OFF}CR`

**Description:** This command enables or disables the vertical rate information of the specified intruder. When set to OFF, no vertical rate information is available.

**Default:** On

**Example:** `:ATC:SCE:DYN:2:VRV OFF\r`

### 5.7.2.21.1.R VERTICAL SPEED

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VERT |:VERTICAL}SP<numeric>CR`

**Description:** This command sets the selected intruder vertical speed.

**Numeric:** -32704 to 32704 feet per minute (decimal ASCII)

**NOTE:** The vertical speed information is only used for the velocity squitter of an extended Mode S when the intruder is a static intruder.

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VERT 50\r`

### 5.7.2.21.1.S VERTICAL VELOCITY SOURCE / GEO FLAG

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}< intruder no >{:VVSOURCE}SP<numeric>CR`

**Description:** This command sets the Vertical Velocity source or GEO flag of the specified intruder.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Vertical Rate information from Geometric Source  |
| 1     | Vertical Rate information from Barometric Source |

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:VVSOURCE 1r`

### 5.7.2.21.2 VELOCITY MESSAGE SCHEDULE

Velocity squitter is transmitted by the ATC-5000NG at a rate of 0.5 seconds.

Dynamic intruders (targets) allow definition of multiple time intervals where the Velocity squitter can be enabled or disabled.

Static intruders (targets) allow the user to enable or disable the Velocity squitter for the entire scenario.

#### 5.7.2.21.2.A DYNAMIC VELOCITY SCHEDULE

##### 5.7.2.21.2.A.1 INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the velocity squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:DYN:2:SVEL:INT:2:ENA ONr`

##### 5.7.2.21.2.A.2 INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of velocity squitter message intervals for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can** define the intervals where the message is transmitted.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:SVEL:NINT 3r`

##### 5.7.2.21.2.A.3 INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected velocity squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can** define the intervals where the message is transmitted.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:2:SVEL:INT:2:BEGIN 86r`

#### 5.7.2.21.2.A.4 INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:SVEL}{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected velocity squitter message interval for the selected intruder. The spaces not defined between intervals are considered off; therefore, **only** the user **can define the intervals where the message is transmitted**.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:SVEL:INT:2:END 205\r`

#### 5.7.2.21.2.B STATIC VELOCITY SCHEDULE - INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:SVEL}{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the velocity squitter message of the specified intruder.

**Default:** On

**Example:** `:ATC:SCE:STAT:1:SVEL:ENA ON\r`

### 5.7.3 SCENARIO PARAMETERS

The following set of commands allows the user to define some scenario parameters before executing the start of scenario.

#### 5.7.3.1 CHANNEL GROUPING

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:CH |:CHANNEL}SP{1090RX1 |UATR1|UATR2}CR`

**Description:** This command allows grouping by channel commands that are used to define UAT and Multi-Receiver scenarios. **This command must precede the commands used to define intruders that are transmitted by the specified channel.** According to the scenario type selected, the valid arguments are:

|               |                        |
|---------------|------------------------|
| Scenario Type |                        |
| UAT           | MULTI (Multi-Receiver) |
| UATR1         | 1090RX1                |
| UATR2         | UATR1                  |

**Default:** Scenario Type

|       |                        |
|-------|------------------------|
| UAT   | MULTI (Multi-Receiver) |
| UATR1 | 1090RX1                |

**Example:** `:ATC:SCE:CH 1090RX1\r`

#### 5.7.3.2 COMPILE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:COMP |:COMPILE}CR`

**Description:** This command must be sent before to the Scenario Start command. This command completes the definition of the Mode S Squitters for the intruders declared as Mode S Extended, ADS-R or TIS-B. A "\*" is returned when the compile function has been completed.

**Example:** `:ATC:SCE:COMP\r`

### 5.7.3.3 EXPORT DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:EXPORT |:EXP}SP<filename>CR`

**Description:** This command creates a "SDF" file in the internal storage area with the specified filename. If the command is received during the running of a scenario, the creation of the file finishes when the scenario finishes and all data for the scenario has been processed. If the command is received after the scenario stops, the file generation process starts and finishes as soon as all the data has been processed (the command can be sent before or after the completion of the scenario). The benefit of sending the command after the scenario has started is that file generation finishes sooner after the scenario stops. When the export process is finished, a "%" character is returned.

**Example:** `:ATC:SCE:EXPORT test1\r`

### 5.7.3.4 INTRUDERS QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}{:QUAN |:QUANTITY}SP<numeric1>[,<numeric2>]CR`

**Description:** This command sets the number of static or dynamic intruders depending on the scenario type selected. The field <numeric2> is optional. The absence means zero.

**Numeric:** 0 to 1500 (decimal ASCII)

According to the scenario type selected, the numeric fields have the following meaning:

|               |   |   |
|---------------|---|---|
| Scenario Type | UAT   | MULTI (Multi-Receiver)                        |
| <numeric1>    | The number of static or dynamic targets in the UAT RX1 channel. | The number of static or dynamic 1090 targets. |
| <numeric2>    | The number of static or dynamic targets in the UAT RX2 channel. | The number of static or dynamic UAT targets.  |

**Default:**

|               |      |                        |
|---------------|------|------------------------|
| Scenario Type | UAT  | MULTI (Multi-Receiver) |
|               | 1500 | 568                    |
|               | 32   | 32                     |

**Example:** `:ATC:SCE:DYN:QUAN 3,4\r`

### 5.7.3.5 LOAD

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:LOAD}SP<filename>CR`

**Description:** This command loads a CSV scenario file (specified filename) from the internal storage area. A "\*" is returned upon completion of loading the file. Must have previously saved a scenario.

**Example:** `:ATC:SCE:LOAD test1\r`

### 5.7.3.6 MODE S MESSAGE CAPTURE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:CAP |:CAPTURE}SP{ON | OFF}CR`

**Description:** This command turns on or off the capture of Mode S messages.

**Default:** Off

**Example:** `:ATC:SCE:CAP ON\r`

### 5.7.3.7 MSO STEP

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:MSOSTEP}SP<numeric>[,<numeric1>]CR`  
**Description:** This command sets the increment used to define the Message Start Opportunities for each UAT ADS-B message defined. If the scenario type selected is MULTI, the <numeric> and <numeric1> are used to define the MSO step for dynamic and static UAT respectively. This command requires ATC-5000NG UAT Hardware.  
**Numeric:** 1 to 100 (decimal ASCII)  
**Example:** `:ATC:SCE:MSOSTEP 20,25\r`

### 5.7.3.8 POWER MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:POW |:POWER}SP{HI | LO | VLO}CR`  
**Description:** This command sets the scenario for high, low or very low power mode. This command is ignored for the scenario type UAT and XPDR. A"\*" is returned if the command is able to complete successfully or "?" if a failure occurs.

|             | Power Mode |           |                |
|-------------|------------|-----------|----------------|
|             | High Power | Low Power | Very Low Power |
| Minimum dBm | -65 dBm    | -90 dBm   | -110 dBm       |
| Maximum dBm | 5 dBm      | -20 dBm   | -40 dBm        |

**Default:** Low power  
**Example:** `:ATC:SCE:POW VLO\r`

### 5.7.3.9 RESET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:RES |:RESET}CR`  
**Description:** This command resets the Scenario Menu to no active intruder, interrogator (ground station) and video data block.  
**Example:** `:ATC:SCE:RES\r`

### 5.7.3.10 RUN TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:TI |:TIME}SP<numeric>CR`  
**Description:** This command sets the total scenario time.  
**Numeric:** 1 to 6550 seconds (decimal ASCII)  
**Default:** 6550 seconds after power-up. After power-up the last set time is remembered.  
**Example:** `:ATC:SCE:TI 400\r`

### 5.7.3.11 RUN TIME REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:TI |:TIME}?CR`  
**Description:** This command returns the current scenario run time.  
**Return Value:** decimal ASCII value. 100 ms resolution.  
**Example:** `:ATC:SCE:TI?\r`  
**Return:** 13.9

### 5.7.3.12 SAVE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SAVE}SP<filename>CR`  
**Description:** This command saves the current scenario in the internal storage area with the specified filename.  
**Example:** `:ATC:SCE:SAVE test1\r`



### 5.7.3.13 SCENARIO TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:TYPE}SP{UAT |XPDR |MULTI |DME}CR`  
**Description:** This command sets the ATC-5000NG to interpret the scenario commands as UAT, XPDR, MULTI or DME mode. This command must precede all commands used to define the scenario. The UAT mode requires ATC-5000NG UAT Hardware.  
**Default:** MULTI  
**Example:** `:ATC:SCE:TYPE XPDR\r`  
**Query:** `:ATC:SCE:TYPE?\r`  
**Return:** XPDR

### 5.7.3.14 SCENARIO UTC TIME GPS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UTCGPS}SP{ON | OFF}CR`  
**Description:** This command turns on or off the UTC time from the GPS signal. When the UTC Time GPS is disabled, the UTC time is obtained from the ATC-5000NG clock.  
**Default:** On  
**Example:** `:ATC:SCE:UTCGPS OFF\r`

### 5.7.3.15 SLANT RANGE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SLA |:SLANT}SP{ON | OFF}CR`  
**Description:** This command sets the ATC-5000NG to generate targets with actual slant range or horizontal plane range. In slant range mode the altitude difference between the own aircraft and intruder is used for reply delay.  
**Default:** Off. Reset command turns off slant range.  
**Example:** `:ATC:SCE:SLA ON\r`

### 5.7.3.16 START

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STA |:START} CR`  
**Description:** This command starts a predefined scenario. The system returns a "\*" if the start command was able to be performed. A "?" character is returned if the scenario was not able to be started. **Note: It is recommended to send the COMPILE command prior to the start command.**  
**Example:** `:ATC:SCE:STA\r`

### 5.7.3.17 STATIC TEST MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STEST}SP{ON | OFF}CR`  
**Description:** This command turns on or off the Static Test Mode. The Static Test Mode allows running the scenario without taking into account the time duration of the scenario. When the Static Test Mode is enabled, the Mode S static and dynamic intruders maintain the position acquired when the maximum time duration is reached.  
**Default:** Off. Reset command turns off this parameter.  
**Example:** `:ATC:SCE:STEST ON\r`

### 5.7.3.18 STOP

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STO |:STOP}CR`  
**Description:** This command stops a scenario immediately and does not wait for scenario time to expire.  
**Example:** `:ATC:SCE:STO\r`

### 5.7.3.19 SWEEP MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SWEEP}SP{ON | OFF}CR`  
**Description:** This command turns on or off the sweeping UAT mode. This command is valid only for UAT scenario type.  
**Default:** Off  
**Example:** `:ATC:SCE:SWEEP ON\r`

### 5.7.3.20 SWEEP STEP

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SWEEP:STEP}SP<numeric>CR`  
**Description:** This command specifies the sweep step. This command is valid only for UAT scenario.  
**Numeric:** 50 to 200 ms (decimal ASCII)  
**Default:** 50 ms  
**Example:** `:ATC:SCE:SWEEP:STEP 2\r`

### 5.7.3.21 SWEEP INTERVAL

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:SWEEP:INTERVAL}SP<numeric>CR`  
**Description:** This command specifies the sweep interval. This command is valid only for UAT scenario.  
**Numeric:** 200 to 994 ms (decimal ASCII)  
**Default:** 200 ms  
**Example:** `:ATC:SCE:SWEEP:INTERVAL 200\r`

### 5.7.3.22 UAT TEST MODE DOPPLER FREQUENCY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:DOPPLER}SP<numeric>CR`  
**Description:** This command sets the carrier frequency for the Doppler Test. This command is valid only for UAT scenario.  
**Numeric:** 1.335 to 85.45 kHz (decimal ASCII)  
**Default:** 20.0 kHz  
**Example:** `:ATC:SCE:UAT:STEST:DOPPLER 10\r`

### 5.7.3.23 UAT TEST MODE DOPPLER SHIFT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:DSHIFT}SP{PLUS|+|MINUS|-}CR`  
**Description:** This command sets the shift for the Doppler Test. This command is valid only for UAT scenario.  
**Default:** PLUS  
**Example:** `:ATC:SCE:UAT:STEST:DSHIFT MINUS\r`

### 5.7.3.24 UAT TEST MODE FREQUENCY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:FREQUENCY|:FREQ}SP<numeric>CR`  
**Description:** This command sets the frequency for the UAT Test Mode selected. This command is valid only for UAT scenario. This command is valid for the UAT Test Mode (DME Fruit 12  $\mu$ s spacing and DME Fruit 30  $\mu$ s spacing).  
**Numeric:** 952 to 1223 MHz (decimal ASCII).  
**Default:** 978.0 MHz  
**Example:** `:ATC:SCE:UAT:STEST:FREQ 979\r`

### 5.7.3.25 UAT TEST MODE HORIZONTAL SPACING

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:HSPACING|:HSP}SP<numeric>CR`

**Description:** This command sets the horizontal spacing for the UAT test mode selected in 10 ns steps. This command is valid only for UAT scenarios. This command is valid for the UAT Test Mode (Modulation Frequency and Doppler Modulation Frequency).

**Numeric:** 600 to 960 ns (decimal ASCII).

**Default:** 960.

**Example:** `:ATC:SCE:UAT:STEST:HSP 600\r`

### 5.7.3.26 UAT TEST MODE I/Q FILTER MAGNITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:IQFILTER|:IQF}SP<numeric>CR`

**Description:** This command sets the I/Q filter magnitude for the UAT test mode selected. This command is valid only for UAT scenarios. This command is valid for the UAT Test Mode (Modulation Frequency and Doppler Modulation Frequency).

**Numeric:** 0 to 3 (decimal ASCII).

**Default:** 0 (No Filter).

**Example:** `:ATC:SCE:UAT:STEST:IQF 3\r`

### 5.7.3.27 UAT TEST MODE MODULATION FREQUENCY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:MODULATION|:MOD}SP<numeric>CR`

**Description:** This command sets the modulation frequency for the UAT test mode selected. This command is valid only for UAT scenario. This command is valid for the UAT Test Mode (Modulation Frequency and Doppler Modulation Frequency).

**Numeric:** 156.25 to 683.59 kHz (decimal ASCII).

**Default:** 312.5 kHz

**Example:** `:ATC:SCE:UAT:STEST:MOD 157.0\r`

### 5.7.3.28 UAT TEST MODE PULSE POWER

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:POWER|:POW}SP<numeric>CR`

**Description:** This command sets the power level for the UAT test mode selected. This command is valid only for UAT scenario. This command is valid for the UAT Test Mode (DME Fruit 12  $\mu$ s spacing, 1090 Pulse Interference and DME Fruit 30  $\mu$ s spacing).

**Numeric:** 1 to -98 dBm (decimal ASCII)

**Default:** -20 dBm

**Example:** `:ATC:SCE:UAT:STEST:POW -80\r`

### 5.7.3.29 UAT TEST MODE TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:TYPE}SP<numeric>CR`

**Description:** This command specifies the UAT test mode type. This command is valid only for UAT scenario.

**Numeric:** 1 to 13 (decimal ASCII)

| Value | Test Mode Type                     |
|-------|------------------------------------|
| 1     | Normal                             |
| 2     | Overlapping                        |
| 3     | DME Fruit 12 µs spacing            |
| 4     | Retrigger Long ADS-B Message       |
| 5     | Retrigger Long Ground Link Message |
| 6     | 1090 Pulse Interference            |
| 7     | Ground Link Message Invalid MSO    |
| 8     | Airborne Message Invalid MSO       |
| 9     | Doppler Test                       |
| 10    | Modulation Frequency               |
| 11    | DME Fruit 30 µs spacing            |
| 12    | Doppler and Modulation Frequency   |
| 13    | Receiver Selectivity               |

**Default:** 1 (Normal)

**Example:** `:ATC:SCE:UAT:STEST:TYPE 10\r`

### 5.7.3.30 UAT TEST MODE PULSE WIDTH

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:UAT}{:STEST}{:WIDTH|:WID}SP<numeric>CR`

**Description:** This command sets the power width for the UAT test mode selected. This command is valid only for UAT scenario. This command is valid for the 1090 Pulse Interference UAT test mode.

**Numeric:** 0 to 50 µs (decimal ASCII)

**Example:** `:ATC:SCE:UAT:STEST:WID 40\r`

## 5.7.4 UAT ADS-B DEFINITION PARAMETERS

The following set of commands allows the user to define ADS-B (airborne) UAT intruder.

### 5.7.4.1 ADDRESS QUALIFIER

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:ADDRQ}SP<numeric>CR`

**Description:** This command sets the address qualifier of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Address Type                                      |
|-------|---|
| 0     | ADS-B target with ICAO 24 bit address             |
| 1     | ADS-B target with self-assigned temporary address |
| 2     | TIS-B or ADS-R target with ICAO 24 bit address    |
| 3     | TIS-B target with track file identifier           |
| 4     | Surface Vehicle                                   |
| 5     | Fixed ADS-B Beacon                                |
| 6     | ADS-R target with non-ICAO address                |
| 7     | Reserved  |

**Example:** `:ATC:SCE:STAT:1:ADDRQ 5\r`

#### 5.7.4.2 AIRCRAFT SIZE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:AVSIZE}SP<numeric>CR

**Description:** This command sets the A/V size of the specified intruder. This command is valid only for intruders with AG state grounded. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 15 (decimal ASCII)

| Value | Meaning(Length meters/Width meters) |
|-------|-------------------------------------|
| 0     | No Data                             |
| 1     | 15/23                               |
| 2     | 25/28.5                             |
| 3     | 25/34                               |
| 4     | 35/33                               |
| 5     | 35/38                               |
| 6     | 45/39.5                             |
| 7     | 45/45                               |
| 8     | 55/45                               |
| 9     | 55/52                               |
| 10    | 65/59.5                             |
| 11    | 65/67                               |
| 12    | 75/72.5                             |
| 13    | 75/80                               |
| 14    | 85/80                               |
| 15    | 85/90                               |

**Example:** :ATC:SCE:DYN:1:AVSIZE 11r

#### 5.7.4.3 AIR/GROUND STATE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:AGSTATE}SP<numeric>CR

**Description:** This command sets the AG state of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | State      |
|-------|------------|
| 0     | Subsonic   |
| 1     | Supersonic |
| 2     | Grounded   |
| 3     | Reserved   |

**Example:** :ATC:SCE:DYN:2:AGSTATE 2r

#### 5.7.4.4 ALTITUDE TYPE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:ALTTYPE}SP<numeric>CR

**Description:** This command sets the altitude type of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Altitude Type      |
|-------|--------------------|
| 0     | Pressure Altitude  |
| 1     | Geometric Altitude |

**Default:** 0

**Example:** :ATC:SCE:DYN:1:ALTTYPE 1r

#### 5.7.4.5 LATERAL AXIS GPS ANTENNA OFFSET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:UAT}{:GPSLAT}SP<numeric>CR`

**Description:** This command sets the lateral axis GPS antenna offset of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Meaning        |
|-------|----------------|
| 0     | No Data        |
| 1     | 2 meters Left  |
| 2     | 4 meters Left  |
| 3     | 6 meters Left  |
| 4     | 0 meters       |
| 5     | 2 meters Right |
| 6     | 4 meters Right |
| 7     | 6 meters Right |

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:UAT:GPSLAT 2\r`

#### 5.7.4.6 LONGITUDINAL AXIS GPS ANTENNA OFFSET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:UAT}{:GPSLONG}SP<numeric>CR`

**Description:** This command sets the longitudinal axis GPS antenna offset of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 31 (decimal ASCII)

| Value   | Meaning           |
|---------|-------------------|
| 0       | No Data           |
| 1       | Applied by sensor |
| 2       | 2 meters          |
| 3       | 4 meters          |
| 4 to 31 | 6 to 60 meters    |

**Default:** 0

**Example:** `:ATC:SCE:DYN:2:UAT:GPSLONG 3\r`

#### 5.7.4.7 MSO

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:MSO}SP<numeric>CR`

**Description:** This command sets the MSO of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 3951 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:2:MSO 22\r`

#### 5.7.4.8 NAVIGATION INTEGRITY CATEGORY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:NIC}SP<numeric>CR`

**Description:** This command sets the NIC of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 15 (decimal ASCII)

| Value | Meaning           |
|-------|-------------------|
| 0     | Rc Unknown        |
| 1     | Rc <20 NM         |
| 2     | Rc <8 NM          |
| 3     | Rc <4 NM          |
| 4     | Rc <2 NM          |
| 5     | Rc <1 NM          |
| 6     | Rc <0.6 NM        |
| 7     | Rc <0.2 NM        |
| 8     | Rc <0.1 NM        |
| 9     | Rc < 75 m         |
| 10    | Rc <25 m          |
| 11    | Rc <7.5 m         |
| 12    | Reserved (NIC=12) |
| 13    | Reserved (NIC=13) |
| 14    | Reserved (NIC=14) |
| 15    | Reserved (NIC=15) |

**Example:** `:ATC:SCE:DYN:2:NIC 6\r`

#### 5.7.4.9 OFFSET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:OFFSET}SP<numeric>CR`

**Description:** This command sets the offset or delay of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 65500 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:OFFSET 99\r`

#### 5.7.4.10 OFFSET MANUAL OVERRIDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:} <intruder no>{:OFFMANUAL}SP{ON | OFF}CR`

**Description:** This command enables or disables the manual override of the offset for the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Example:** `:ATC:SCE:DYN:2:OFFMANUAL OFF\r`

#### 5.7.4.11 TRACK ANGLE/HEADING TYPE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:TAH}SP<numeric>CR

**Description:** This command sets the track and heading type of the specified intruder. This command is valid only for intruders with AG state grounded. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 3 (decimal ASCII)

| Value | Meaning          |
|-------|------------------|
| 0     | No Data          |
| 1     | True Track       |
| 2     | Magnetic Heading |
| 3     | True Heading     |

**Example:** :ATC:SCE:STAT:1:TAH 1\r

#### 5.7.4.12 VERTICAL VELOCITY SOURCE

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:VVSOURCE}SP<numeric>CR

**Description:** This command sets the VV source of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning  |
|-------|--|
| 0     | Vertical Rate information from Geometric Source  |
| 1     | Vertical Rate information from Barometric Source |

**Example:** :ATC:SCE:STAT:1:VVSOURCE 1\r

#### 5.7.4.13 UPLINK FEEDBACK

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:UPLINK}SP<numeric>CR

**Description:** This command sets the uplink feedback encoding of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 7 (decimal ASCII)

| Value | Score    |
|-------|----------|
| 0     | 0        |
| 1     | 1 to 13  |
| 2     | 14 to 21 |
| 3     | 22 to 25 |
| 4     | 26 to 28 |
| 5     | 29 to 30 |
| 6     | 31       |
| 7     | 32       |

**Example:** :ATC:SCE:STAT:1:UPLINK 2\r

#### 5.7.4.14 UTC COUPLED CONDITION

**Command Syntax:** {:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:UTC}SP{ON | OFF}CR

**Description:** This command enables or disables the UTC coupled condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Example:** :ATC:SCE:STAT:1:UTC ON\r



### 5.7.4.15 UAT DYNAMIC ADS-B PAYLOADS



#### NOTE

See the example in section “5.12.8, UAT Scenario Definition Example” on page 145 to aid in proper command order to setup the UAT scenario.

#### 5.7.4.15.1 GPS ANTENNA AXIS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:GPSAXIS}SP<numeric>CR`

**Description:** This command sets the GPS antenna axis of the ADS-B message of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning           |
|-------|-------------------|
| 0     | Lateral Axis      |
| 1     | Longitudinal Axis |

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:1:GPSAXIS 0\r`

#### 5.7.4.15.2 QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:NADSB}SP<numeric>CR`

**Description:** This command sets the number of ADS-B messages for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 255 (decimal ASCII)

**Default:** 0

**Example:** `:ATC:SCE:DYN:1:UAT:NADSB 5\r`

#### 5.7.4.15.3 PAYLOAD TYPE CODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLCODE}SP<numeric>CR`

**Description:** This command sets the payload type code of the ADS-B message of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 10 (decimal ASCII)

| Value | Type Code                          |
|-------|------------------------------------|
| 0     | ADS-B Message Payload Type Code 0  |
| 1     | ADS-B Message Payload Type Code 1  |
| 2     | ADS-B Message Payload Type Code 2  |
| 3     | ADS-B Message Payload Type Code 3  |
| 4     | ADS-B Message Payload Type Code 4  |
| 5     | ADS-B Message Payload Type Code 5  |
| 6     | ADS-B Message Payload Type Code 6  |
| 7     | ADS-B Message Payload Type Code 7  |
| 8     | ADS-B Message Payload Type Code 8  |
| 9     | ADS-B Message Payload Type Code 9  |
| 10    | ADS-B Message Payload Type Code 10 |

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:2:PLCODE 3\r`

#### 5.7.4.15.4 AUXILIARY STATE VECTOR PAYLOAD MESSAGE ELEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLASV}SP<numeric>CR`

**Description:** This command sets the auxiliary state vector payload message element of the ADS-B message of the specified intruder. This command applies to ADS-B Messages with payload type code of '1', '2', '5' and '6.' The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to FFFFFFFF (10 hexadecimal ASCII)

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:1:PLASV CCCCCC\r`

#### 5.7.4.15.5 MODE STATUS PAYLOAD MESSAGE ELEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLMS}SP<numeric>CR`

**Description:** This command sets the mode status payload message element of the ADS-B message of the specified intruder. This command applies to ADS-B Messages with payload type code of '1' and '3.' The data message is padded on the right with zeros for a length 24 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to FFFFFFFFFFFFFFFFFFFFFFFF (24 hexadecimal ASCII)

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:1:PLMS AAAAAAAAAAAAAAAAAAA\r`

#### 5.7.4.15.6 TARGET STATE PAYLOAD MESSAGE ELEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:PLTS}SP<numeric>CR`

**Description:** This command sets the intruder state payload message element of the ADS-B message of the specified intruder. This command applies to ADS-B Messages with payload type code of '3', '4' and '5.6.' The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to FFFFFFFF (10 hexadecimal ASCII)

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:3:PLTS EEEEEEE\r`

#### 5.7.4.15.7 PAYLOAD MESSAGE SCHEDULE INTERVAL ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:ENA |:ENABLE}SP{ON | OFF}CR`

**Description:** This command enables or disables the selected ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:2:INT:1:ENA ON\r`

#### 5.7.4.15.8 PAYLOAD MESSAGE SCHEDULE INTERVAL POWER

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:PWR }SP<numeric>CR`

**Description:** This command sets the power level of the ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** -110 to 5 dBm (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:1:INT:1:PWR -80\r`

#### 5.7.4.15.9 PAYLOAD MESSAGE SCHEDULE INTERVAL QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:NINT |:NINTERVALS}SP<numeric>CR`

**Description:** This command sets the number of ADS-B payload message intervals for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:1:NINT 4\r`

#### 5.7.4.15.10 PAYLOAD MESSAGE SCHEDULE INTERVAL START TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:BEGIN}SP<numeric>CR`

**Description:** This command sets the start time for the selected ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:2:INT:2:BEGIN 55\r`

#### 5.7.4.15.11 PAYLOAD MESSAGE SCHEDULE INTERVAL STOP TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:DYN: |:DYNAMIC:}<intruder no>{:UAT}{:ADSB:}<message number>{:INT: |:INTERVAL:}<interval number>{:END}SP<numeric>CR`

**Description:** This command sets the stop time for the selected ADS-B payload message interval for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 6550 seconds (decimal ASCII). Resolution is 0.1 seconds.

**Example:** `:ATC:SCE:DYN:1:UAT:ADSB:2:INT:2:END 105\r`

#### 5.7.4.16 UAT STATIC ADS-B PAYLOAD



#### NOTE

See the example in section [“5.12.8, UAT Scenario Definition Example”](#) on page 145 to aid in proper command order to setup the UAT scenario.

#### 5.7.4.16.1 PAYLOAD GPS ANTENNA AXIS

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GPSAXIS}SP<numeric>CR`

**Description:** This command sets the GPS antenna axis of the ADS-B message of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 1 (decimal ASCII)

| Value | Meaning           |
|-------|-------------------|
| 0     | Lateral Axis      |
| 1     | Longitudinal Axis |

**Example:** `:ATC:SCE:STAT:1:UAT:GPSAXIS 0\r`

### 5.7.4.16.2 PAYLOAD TYPE CODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLCODE}SP<numeric>CR`

**Description:** This command sets the payload type code of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 14 (decimal ASCII)

| Value | Type Code                          |
|-------|------------------------------------|
| 0     | ADS-B Message Payload Type Code 0  |
| 1     | ADS-B Message Payload Type Code 1  |
| 2     | ADS-B Message Payload Type Code 2  |
| 3     | ADS-B Message Payload Type Code 3  |
| 4     | ADS-B Message Payload Type Code 4  |
| 5     | ADS-B Message Payload Type Code 5  |
| 6     | ADS-B Message Payload Type Code 6  |
| 7     | ADS-B Message Payload Type Code 7  |
| 8     | ADS-B Message Payload Type Code 8  |
| 9     | ADS-B Message Payload Type Code 9  |
| 10    | ADS-B Message Payload Type Code 10 |
| 11    | Basic ADS-B Message                |
| 12    | Long ADS-B Message                 |
| 13    | Ground Uplink Message              |
| 14    | Ground Uplink Matrix Message       |

**Example:** `:ATC:SCE:STAT:1:PLCODE 10\r`

### 5.7.4.16.3 BASIC/LONG ADS-B MESSAGE DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLMSG}SP<numeric>CR`

**Description:** This command sets the basic or long data message of the specified intruder. This command is valid only for Payload Type Code 11 (Basic ADS-B) and 12 (Long ADS-B). The data message is padded on the right with zeros for a length according to the payload type code code (36 hexadecimal ASCII for Basic ADS-B and 68 hexadecimal ASCII for Long ADS-B). This command always recalculates the FEC parity when setting the ADS-B basic or long data message. The <intruder no> specifies the number of the intruder in the channel grouping specified. This command is valid to define the ADS-B message data used in the UAT Special Test Mode (Retrigger Long ADS-B Message). The data message is padded on the right with zeros for a length according to the data set size identified by excess (for instance, if length € [96, 128] then length = 128). According with the length of the ADS-B message data will be calculated for the data set size.

**Numeric:** Basic ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF (36 hexadecimal ASCII)  
Long ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF (68 hexadecimal ASCII)  
Retrigger Long ADS-B Message (214 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:PLMSG FFFF\r`

#### 5.7.4.16.4 BASIC/LONG ADS-B MESSAGE FEC PARITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLFEC}SP<numeric>CR`

**Description:** This command sets the FEC parity of the specified intruder. This command applies to ADS-B Messages with payload type code '11' (Basic ADS-B) and '12' (Long ADS-B). The data message is padded on the right with zeros for a length according to the payload type code (24 hexadecimal ASCII for Basic ADS-B and 28 hexadecimal ASCII for Long ADS-B). The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** Basic ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFF (24 hexadecimal ASCII)  
Long ADS-B: 0 to FFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:PLFEC 0\r`

#### 5.7.4.16.5 GROUND UPLINK REED-SOLOMON BLOCK PAYLOAD

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:RSB:}<block number>{:PLMSG}SP<numeric>CR`

**Description:** This command sets the Reed-Solomon block payload data message of the specified intruder. This command is valid only for Payload Type Code 14 (Ground Uplink Matrix Message). The data message is padded on the right with zeros for a length according to the payload type code (144 hexadecimal ASCII). The <intruder no> specifies the number of the intruder in the channel grouping specified. The <block no> specifies the Reed-Solomon block number.

**Numeric:** <block no> 1 to 6 (decimal ASCII)  
<numeric> FFFFFFFF...FFFFFFF (144 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:RSB:1:PLMSG F\r`

#### 5.7.4.16.6 GROUND UPLINK REED-SOLOMON BLOCK FEC PARITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:RSB:}<block number>{:PLFEC }SP<numeric>CR`

**Description:** This command sets the Reed-Solomon block FEC parity of the specified intruder. This command is valid only for Payload Type Code 14 (Ground Uplink Matrix Message). The data message is padded on the right with zeros for a length according to the payload type code (40 hexadecimal ASCII). The <intruder no> specifies the number of the intruder in the channel grouping specified. The <block no> specifies the Reed-Solomon block number.

**Numeric:** <block no> 1 to 6 (decimal ASCII)  
<numeric> FFFFFFFFFFFFFFFFFFFFFFFF (40 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:RSB:2: PLFEC FF\r`

#### 5.7.4.16.7 MODE STATUS PAYLOAD MESSAGE ELEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLMS}SP<numeric>CR`

**Description:** This command sets the mode status payload message element of the specified intruder. This command applies to ADS-B Messages with payload type code of '1' and '3.' The data message is padded on the right with zeros for a length 24 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to FFFFFFFFFFFFFFFFFFFFFFFF (24 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:PLMS AF\r`

#### 5.7.4.16.8 AUXILIARY STATE VECTOR PAYLOAD MESSAGE ELEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLASV}SP<numeric>CR`

**Description:** This command sets the auxiliary state vector payload message element of the specified intruder. This command applies to ADS-B Messages with payload type code of '1', '2', '5' and '5.6.' The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to FFFFFFFF (10 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:PLASV B254r`

#### 5.7.4.16.9 TARGET STATE PAYLOAD MESSAGE ELEMENT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:PLTS}SP<numeric>CR`

**Description:** This command sets the intruder state payload message element of the specified intruder. This command applies to ADS-B Messages with payload type code of '3', '4' and '6.' The data message is padded on the right with zeros for a length 10 hexadecimal ASCII. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to FFFFFFFF (10 hexadecimal ASCII)

**Example:** `:ATC:SCE:STAT:1:PLTS C84397r`

#### 5.7.4.16.10 RETRIGGER LONG ADS-B MESSAGE DATASET SIZE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:DSSIZE}SP{48 |64 |80 |83 |107}CR`

**Description:** This command sets the dataset size for the ADS-N long message data used for UAT Special Test Mode (Retrigger Long ADS-B Message) of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Default:** 48

**Example:** `:ATC:SCE:STAT:1:DSSIZE 64r`

### 5.7.5 UAT GROUND UPLINK DEFINITION PARAMETERS

The following set of commands allows the user to define a ground uplink UAT message. See section 5.11.8. UAT Scenario Definition for an example.

#### 5.7.5.1 UAT-SPECIFIC HEADER

##### 5.7.5.1.1 APPLICATION DATA VALID

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:ADVALID}SP{ON | OFF}CR`

**Description:** This command enables or disables the Application data valid condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Default:** Off

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:ADVALID ONr`

##### 5.7.5.1.2 GROUND STATION LATITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:LAT}SP<numeric>CR`

**Description:** This command sets the latitude of the ground station. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** -90 to 90 degrees (double ASCII)

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:LAT 30r`

### 5.7.5.1.3 GROUND STATION LONGITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:LONG}SP<numeric>CR`

**Description:** This command sets the longitude of the ground station. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** -180 to 180 degrees (double ASCII)

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:LONG -45r`

### 5.7.5.1.4 POSITION VALID

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:POSVALID}SP{ON | OFF}CR`

**Description:** This command enables or disables the Position valid condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Default:** Off

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:POSVALID ONr`

### 5.7.5.1.5 SLOT ID

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:SLOTID}SP<numeric>CR`

**Description:** This command sets the time slot where the Ground Uplink Message transmission occurs. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 31 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:SLOTID 22r`

### 5.7.5.1.6 TIS-B SITE ID

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:TISBID}SP<numeric>CR`

**Description:** This command sets the TIS-B Site ID of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 31 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:TISBID 12r`

### 5.7.5.1.7 UTC COUPLED CONDITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC: |:DYN: |:DYNAMIC:}<intruder no>{:UTC}SP{ON | OFF}CR`

**Description:** This command enables or disables the UTC coupled condition of the specified intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Example:** `:ATC:SCE:STAT:1:UTC ONr`

## 5.7.5.2 GROUND UPLINK APPLICATION DATA

### 5.7.5.2.1 INFORMATION FRAMES QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:IFRAME}{:NIFRAMES}SP<numeric>CR`

**Description:** This command sets the quantity of information frames for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 255 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:IFRAME:NIFRAMES 7r`

### 5.7.5.2.2 INFORMATION FRAME DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:IFRAME:}<frame no>{:IFDATA} SP{{TEXT,<text>}}{HEX,<numeric>}}{FILE,<pathname>}}CR`

**Description:** This command sets the frame data content for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified. The <frame no> specifies the number of the information frame. The source of the frame data content is from an alphanumeric string (TEXT), a hexadecimal string (HEX) or a file (FILE).

`{TEXT,<text>}`

<text> text ASCII

`{HEX,<numeric>}`

<numeric> hexadecimal ASCII

`{FILE,<pathname>}`

<pathname> text ASCII. For a correct pathname replace the “:” character next to the driver letter with the “.” character.

**Example:** `:ATC:SCE:STAT:2:UAT:GUS:IFRAME:2:IFDATA HEX,4441544153414d504c45r`

### 5.7.5.2.3 INFORMATION FRAME TYPE

**Command Syntax:** `{:ATC |:ATC5000NG}{:SCE |:SCENARIO}{:STAT: |:STATIC:}<intruder no>{:UAT}{:GUS}{:IFRAME}<frame no>{:IFTYPE}SP<numeric>CR`

**Description:** This command sets the frame data format for the selected intruder. The <intruder no> specifies the number of the intruder in the channel grouping specified.

**Numeric:** 0 to 15 (decimal ASCII)

**Example:** `:ATC:SCE:STAT:1:UAT:GUS:IFRAME:2:IFTYPE 2r`



## 5.8 SETTINGS COMMANDS

The following set of commands allows the user to modify the Generator Frequency, Modulation (CW/Pulse), Factory Setting (Factory Reset), ATC-5000NG Scope Port and Generator Power.

These commands are used for troubleshooting the ATC-5000NG and for calibration and factory testing of the ATC-5000NG.

### 5.8.1 SETTINGS MENU RESET

**Command Syntax:** `{:ATC |:ATC5000NG}{:SET |:SETTINGS}{:FACT |:FACTORY}SP{DME |XPDR |MULTI |UAT} CR`

**Description:** This command sets the Unit to the factory default settings for the current scenario type. It resets all of the generators to factory default power level and frequency and modulation to pulse mode.A\*\* is returned if the command was able to complete successfully or “?” if a failure occurs. This command should always be executed immediately after changing from one instrument to another (DME to XPDR, XPDR to DME, etc.). A 10 second delay is recommended to allow this command to complete before reading the reply.

**Example:** `:ATC:SET:FACT XPDR\r`

**Return:** \*

## 5.8.2 SCOPE PORT

**Command Syntax:** `{:ATC |:ATC5000NG}{:SET |:SETTINGS}{:SCO |:SCOPE}{:CH1 | :CH2}SP<numeric>CR`

**Description:** This command sets the scope multiplexer for Scope 1 or Scope 2 to the signal represented by the numeric value.

**Numeric:** 0 to 31 (decimal ASCII)

| Value | Receiver                               |
|-------|--|
| 0     | 1090 Log Video Top                     |
| 1     | 1030 Log Video Top                     |
| 2     | 1090 Log Video Bottom                  |
| 3     | 1030 Log Video Bottom                  |
| 4     | DPSK 1030 Top (Delay) Not Used         |
| 5     | DPSK 1030 Bottom (Delay) Not Used      |
| 6     | Transmitter 1 (Gen A) Pulse Modulation |
| 7     | Transmitter 2 (Gen B) Pulse Modulation |
| 8     | Transmitter 3 (Gen C) Pulse Modulation |
| 9     | Transmitter 4 (Gen D) Pulse Modulation |
| 10    | Transmitter 5 (Gen E) Pulse Modulation |
| 11    | Transmitter 6 (Gen F) Pulse Modulation |
| 12    | Transmitter 2 (Gen B) DPSK Modulation  |
| 13    | Transmitter 4 (Gen D) DPSK Modulation  |
| 14    | Transmitter 6 (Gen F) DPSK Modulation  |
| 15    | I 1030 Top Receiver                    |
| 16    | I 1030 Bottom Receiver                 |
| 17    | Q 1030 Top Receiver                    |
| 18    | Q 1030 Bottom Receiver                 |
| 19    | I 1090 Top Receiver                    |
| 20    | I 1090 Bottom Receiver                 |
| 21    | Q 1090 Top Receiver                    |
| 22    | Q 1090 Bottom Receiver                 |
| 23    | Suppression In                         |
| 24    | Sync                                   |
| 25    | Sync (Transmitter FPGA Test Point)     |
| 26    | Log Video 1030 Digital AGC Video       |
| 27    | Log Video 1090 Digital AGC Video       |
| 28    | DPSK Demodulation                      |
| 29    | +3.3 V Monitor                         |
| 30    | +1.8 V Monitor                         |
| 31    | +1.2 V Monitor                         |

**Default:** Last state before power down.

**Example:** `:ATC:SET:SCO:CH1 24\r`

**Query:** `:ATC:SET:SCO:CH1?\r`

**Return:** 24

## 5.8.3 TX GENERATOR PARAMETERS



### NOTE

The Generator commands are for use in the RTCA/DO-260 Test mode and Factory calibration ONLY. To set power and frequency use commands listed under the specific test sections.

### 5.8.3.1 FREQUENCY

**Command Syntax:** `{:ATC[:ATC5000NG]{:SET[:SETTINGS]{:GENA[:GENB[:GENC[:GEND[:GENE[:GENF]{:FREQ[:FREQUENCY}SP<numeric>CR`

**Description:** This command sets the selected generator frequency. The frequency is set from 952 to 1223 MHz in 100 kHz steps. A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs.

**Default:** The default Value depends of the scenario type selected:

|      | <b>MULTI (Multi-Receiver)</b> | <b>XPDR (Transponder)</b> |
|------|-------------------------------|---------------------------|
| GenA | 978 MHz                       | 1030 MHz                  |
| GenB | 1090 MHz                      | 1030 MHz                  |
| GenC | 978 MHz                       | 1030 MHz                  |
| GenD | 1090 MHz                      | 1030 MHz                  |
| GenE | 1090 MHz                      | 1030 MHz                  |
| GenF | 1030 MHz                      | 1030 MHz                  |

For the scenario type UAT, the default settings depend of the UAT Test Mode. The generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

| <b>UAT Test Mode</b>               | <b>GenA</b> | <b>GenB</b> | <b>GenC</b> |
|------------------------------------|-------------|-------------|-------------|
| Normal                             | 978 MHz     | Disabled    | 978 MHz     |
| Overlapping                        | 978 MHz     | Disabled    | 978 MHz     |
| DME Fruit 12 µs spacing            | 978 MHz     | Disabled    | 978 MHz     |
| Retrigger Long ADS-B Message       | 978 MHz     | Disabled    | 978 MHz     |
| Retrigger Long Ground Link Message | 978 MHz     | Disabled    | 978 MHz     |
| 1090 Pulse Interference            | 978 MHz     | 978 MHz     | Disabled    |
| Ground Link Message Invalid MSO    | 978 MHz     | Disabled    | 978 MHz     |
| Airborne Message Invalid MSO       | 978 MHz     | Disabled    | 978 MHz     |
| Doppler Test                       | 978 MHz     | Disabled    | 978 MHz     |
| Modulation Frequency               | 978 MHz     | Disabled    | 978 MHz     |
| DME Fruit 30 µs spacing            | 978 MHz     | Disabled    | 978 MHz     |
| Doppler and Modulation Frequency   | 978 MHz     | Disabled    | 978 MHz     |

**Example:** `:ATC:SET:GENA:FREQ 1031\r`

**Query:** `:ATC:SET:GENA:FREQ?\r`

**Return:** 1031.0

### 5.8.3.2 MODULATION

**Command Syntax:** `{:ATC [:ATC5000NG]{:SET [:SETTINGS]{:GENA [:GENB [:GENC [:GEND [:GENE [:GENF]{:MOD [:MODE}SP<CW | PULSE>CR`

**Description:** This command sets the selected generator to CW, pulse modulation or off. A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs.

**Default:** Pulse

**Example:** `:ATC:SET:GENA:MOD CWr`

**Query:** `:ATC:SET:GENA:MOD?r`

**Return:** CW

### 5.8.3.3 PATH

**Command Syntax:** `{:ATC [:ATC5000NG]{:SET [:SETTINGS]{:GENA [:GENB [:GENC [:GEND [:GENE [:GENF]{:PATH}SP<TOP | BOTTOM>CR`

**Description:** This command sets the selected generator path to the top or bottom antenna. A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs.

**Default:** The default Value depends of the scenario type selected.

|      | <b>MULTI (Multi-Receiver)</b> | <b>XPDR (Transponder)</b> |
|------|-------------------------------|---------------------------|
| GenA | Top                           | Top                       |
| GenB | Top                           | Top                       |
| GenC | Bottom                        | Bottom                    |
| GenD | Bottom                        | Bottom                    |
| GenE | Top                           | Top                       |
| GenF | Top                           | Top                       |

For the scenario type UAT, the default settings depend of the UAT Test Mode. The generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

| <b>UAT Test Mode</b>               | <b>GenA</b> | <b>GenB</b> | <b>GenC</b> |
|------------------------------------|-------------|-------------|-------------|
| Normal                             | Top         | Disabled    | Bottom      |
| Overlapping                        | Top         | Disabled    | Bottom      |
| DME Fruit 12 $\mu$ s spacing       | Top         | Disabled    | Bottom      |
| Retrigger Long ADS-B Message       | Top         | Disabled    | Bottom      |
| Retrigger Long Ground Link Message | Top         | Disabled    | Bottom      |
| 1090 Pulse Interference            | Top         | Top         | Disabled    |
| Ground Link Message Invalid MSO    | Top         | Disabled    | Bottom      |
| Airborne Message Invalid MSO       | Top         | Disabled    | Bottom      |
| Doppler Test                       | Top         | Disabled    | Bottom      |
| Modulation Frequency               | Top         | Disabled    | Bottom      |
| DME Fruit 30 $\mu$ s spacing       | Top         | Disabled    | Bottom      |

Doppler and  
Modulation Top Disabled Bottom  
Frequency

**Example:** :ATC:SET:GENA:PATH BOTTOM\r  
**Query:** :ATC:SET:GENA:PATH?\r  
**Return:** BOTTOM

#### 5.8.3.4 POWER

**Command Syntax:** {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:POW |:POWER}SP<numeric>CR

**Description:** This command sets the selected generator output power level. . A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs.

**Numeric:** The default Value depends of the scenario type selected.

**MULTI (Multi-Receiver)** (depends on the Power Mode)

Low Power: -90 to -20 dBm (decimal ASCII)

High Power: -65 to 5 dBm (decimal ASCII)

Very Low Power: -110 to -40 dBm (decimal ASCII)

**UAT and XPDR (Transponder)** (depends on the Antenna Power Switch)

Normal: -90 to -20 dBm (decimal ASCII)

20 dB Amplifier: -65 to 5 dBm (decimal ASCII)

20 dB Attenuator: -110 to -40 dBm (decimal ASCII)

For the scenario type UAT, the generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

**Default:** -20 dBm | -40 dBm

**Example:** :ATC:SET:GENA:POW -20\r

**Query:** :ATC:SET:GENA:POW?\r

**Return:** -20.0

#### 5.8.3.5 ANTENNA POWER SWITCH

**Command Syntax:** {:ATC |:ATC5000NG}{:SET |:SETTINGS}{:APSW}SP{AMP|NOR|ATT}\r

**Description:** This command sets the Antenna Power Switch in either "DME Settings Menu" or "Transponder Settings Menu" to one of three output level ranges on all the active generators.

**Text:** [NOR - Normal Power Level \(-90 to -20 dBm\)](#)

[AMP - 20 dB Amplifier \(-65 to 5 dBm\)](#)

[ATT - 20 dB Attenuator \(-110 to -40 dBm\)](#)

**Example:** :ATC:SET:APSW AMP\r

### 5.8.3.6 RISE/FALL TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENC |:GENE }{:RISE |:RISEFALL}SP<numeric>CR`

**Description:** This command sets the selected generator pulse rise and fall time. A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs. This command is ignored if the scenario type selected is XPDR (Transponder).

**Numeric:** 0 to 5 (decimal ASCII)  
For the scenario type UAT, the generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

| Value | Rise/Fall       |
|-------|-----------------|
| 0     | Less than 50/50 |
| 1     | 100/200         |
| 2     | 230/230         |
| 3     | 600/600         |
| 4     | Nominal (75/75) |
| 5     | 1500/1500       |

**Default:** 50/50

**Example:** `:ATC:SET:GENA:RISE 2\r`

**Query:** `:ATC:SET:GENA:RISE?\r`

**Retrun:**  
2

### 5.8.3.7 SIGNAL

**Command Syntax:** `{:ATC |:ATC5000NG}{:SET |:SETTINGS}{:GENA |:GENB |:GENC |:GEND |:GENE |:GENF}{:SIGNAL |:SIG}SP<ON | OFF>CR`

**Description:** This command enables or disables the signal of the selected generator. A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs. For the scenario type UAT, the generators GenD, GenE and GenF are disabled. Any command sent to generator disabled is considered an invalid command.

**Default:** On

**Example:** `:ATC:SET:GENA:SIG OFF\r`

**Query:** `:ATC:SET:GENA:SIG?\r`

**Return:** OFF

## 5.9 TRANSPONDER COMMANDS

This set of commands allows the user to define the Unit to perform Transponder testing.

### 5.9.1 CABLE LOSS

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:CABLOS}SP<numeric>CR  
**Description:** This command sets the cable loss for the top antenna in 0.1 dB steps.  
**Numeric:** 0 to 2 dB (decimal ASCII)  
**Default:** 0 dB  
**Example:** :ATC:XPDR:CABLOS 0.1r  
**Query:** :ATC:XPDR:CABLOS?r  
**Return:** 0.1

### 5.9.2 CABLE LOSS BOTTOM

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:CABLOSBOT}SP<numeric>CR  
**Description:** This command sets the cable loss for the bottom antenna in 0.1 dB steps.  
**Numeric:** 0 to 2 dB (decimal ASCII)  
**Default:** 0 dB  
**Example:** :ATC:XPDR:CABLOSBOT 0.1r  
**Query:** :ATC:XPDR:CABLOSBOT?r  
**Return:** 0.1

### 5.9.3 INTERFERENCE PULSE

This set of commands allows the user to define an interference pulse. The first pulse is reference to the top P1 pulse in a single interrogation and the first interrogation in a double interrogation. The second interference pulse needs to be enabled to be transmitted.

#### 5.9.3.1 FIRST INTERFERENCE PULSE WIDTH

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:P1WIDTH|:P1W}SP<numeric>CR  
**Description:** This command sets the width of the first interference pulse.  
**Numeric:** 0 to 32  $\mu$ s (decimal ASCII)  
**Default:** 0.8  $\mu$ s  
**Example:** :ATC:XPDR:INTERF:P1W 0.9r  
**Query:** :ATC:XPDR:INTERF:P1W?r  
**Return:** 0.900

#### 5.9.3.2 INTERFERENCE POSITION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:POSITION |:POS}SP<numeric>CR  
**Description:** This command sets the first interference pulse position.  
**Numeric:** -17.5 to 400  $\mu$ s (decimal ASCII)  
**Default:** 2.0  
**Example:** :ATC:XPDR:INTERF:POS 3.9r  
**Query:** :ATC:XPDR:INTERF:POS?r  
**Return:** 3.900

### 5.9.3.3 INTERFERENCE PULSE AMPLITUDE

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:AMPLITUDE|:AMP}SP<value>CR`  
**Description:** This command sets the interference pulse amplitude. This affects both interference pulses if enabled.  
**Value:** -19 to 9 dB (decimal ASCII) or CAL or OFF  
**Default:** CAL  
**Example:** `:ATC:XPDR:INTERF:AMP 3.0\r`  
**Query:** `:ATC:XPDR:INTERF:AMP?\r`  
**Return:** 3.0

### 5.9.3.4 INTERFERENCE PULSE ENABLE

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}SP{ON |OFF}CR`  
**Description:** This command turns on or off the interference pulse. This command is valid only for single interrogation, double interrogation and interrogation table.  
**Default:** Off  
**Example:** `:ATC:XPDR:INTERF ON\r`  
**Query:** `:ATC:XPDR:INTERF?\r`  
**Return:** ON

### 5.9.3.5 SECOND INTERFERENCE PULSE POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:SPACING |:SPAC}SP<numeric>CR`  
**Description:** This command sets the spacing of the second interference pulse (P2) from the first.  
**Numeric:** 0 to 400  $\mu$ s (decimal ASCII)  
**Default:** 8.0  
**Example:** `:ATC:XPDR:INTERF:SPAC 7.0\r`  
**Query:** `:ATC:XPDR:INTERF:SPAC?\r`  
**Return:** 7.0

### 5.9.3.6 SECOND INTERFERENCE PULSE STATE

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:STATE}SP{ON |OFF}CR`  
**Description:** This command turns on or off the second interference pulse (P2).  
**Default:** Off  
**Example:** `:ATC:XPDR:INTERF:STATE ON\r`  
**Query:** `:ATC:XPDR:INTERF:STATE?\r`  
**Return:** On

### 5.9.3.7 SECOND INTERFERENCE PULSE WIDTH

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:INTERFERENCE |:INTERF}{:P2WIDTH|:P2W}SP<numeric>CR`  
**Description:** This command sets the width of the second interference pulse.  
**Numeric:** 0 to 32  $\mu$ s (decimal ASCII)  
**Default:** 0.8  $\mu$ s  
**Example:** `:ATC:XPDR:INTERF:P2W 0.9\r`  
**Query:** `:ATC:XPDR:INTERF:P2W?\r`  
**Return:** 0.900



#### 5.9.4 INTERROGATION FREQUENCY

**Command Syntax:** { :ATC |:ATC5000NG}{ :XPDR}{ :FREQ |:FREQUENCY}SP<numeric>CR  
**Description:** This command sets the transmission frequency of six generators.  
**Numeric:** 952 to 1223 MHz (decimal ASCII)  
**Default:** 1030 MHz  
**Example:** :ATC:XPDR:FREQ 1031.01\r  
**Query:** :ATC:XPDR:FREQ?\r  
**Return:** 1031.01

#### 5.9.5 INTERROGATION ON/OFF

**Command Syntax:** { :ATC |:ATC5000NG}{ :XPDR}{ :RF}SP{ON |OFF}CR  
**Description:** This command turns on or off the interrogations. This command is equivalent to start test.  
**Example:** :ATC:XPDR:RF ON\r  
**Query:** :ATC:XPDR:RF?\r  
**Return:** ON

#### 5.9.6 INTERROGATION TEST TYPE

**Command Syntax:** { :ATC |:ATC5000NG}{ :XPDR}{ :TYPE}SP<numeric>CR  
**Description:** This command sets the transponder interrogation test type. This command must be sent before to define the pulse parameters.  
**Numeric:** 0 to 3 (decimal ASCII)

| Value | Mode                           |
|-------|--------------------------------|
| 0     | Single Interrogation           |
| 1     | Double Interrogation           |
| 2     | Interrogation Table (Multiple) |
| 3     | Block Transmission             |
| 4     | Interrogation with CW          |

**Default:** 0  
**Example:** :ATC:XPDR:TYPE 1\r  
**Query:** :ATC:XPDR:TYPE?\r  
**Return:** 1

#### 5.9.7 INTERROGATION TOP ANTENNA POWER

**Command Syntax:** { :ATC |:ATC5000NG}{ :XPDR}{ :POW |:POWER}SP<numeric>CR  
**Description:** This command sets the antenna power for the top antenna. The bottom antenna power uses this value plus the antenna power deviation setting.  
**Numeric:** 5 to -110 dBm (decimal ASCII)  
**Default:** -20 dBm  
**Example:** :ATC:XPDR:POW -21\r  
**Query:** :ATC:XPDR:POW?\r  
**Return:** -21.0

### 5.9.8 LOAD TEST

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:LOAD}SP<filename>CR  
**Description:** This command loads a CSV test file (specified filename) from the internal storage area. A "\*" is returned if the command was able to complete successfully or "?" if a failure occurs.  
**Example:** :ATC:XPDR:LOAD Xpdr1.csv\r  
**NOTE:** Must have previously saved a test named Xpdr1.csv.

### 5.9.9 RESET

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:RES |:RESET}CR  
**Description:** This command resets the transponder test.  
**Example:** :ATC:XPDR:RES\r

### 5.9.10 SAVE TEST

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:SAVE}SP<filename>CR  
**Description:** This command saves the current test into the internal storage area with the specified filename.  
**Example:** :ATC:XPDR:SAVE Xpdr1.csv\r

### 5.9.11 SCOPE TRIGGER

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR:SCOPE}SP{INTERR |REPLY}CR  
**Description:** This command sets the scope trigger either to the interrogation or the reply.  
**Default:** Interrogation  
**Example:** :ATC:XPDR:SCOPE REPLY\r  
**Query:** :ATC:XPDR:SCOPE?\r  
**Return:** REPLY

### 5.9.12 SCOPE TRIGGER OFFSET

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR:SCOPE:INTERR:OFFSET}SP<numeric>CR  
**Description:** This command sets the scope trigger offset from P1 of the interrogation.  
**Numeric:** -1 to 600 usec (Decimal ASCII)  
**Default:** -1  
**Example:** :ATC:XPDR:SCOPE:INTERR:OFFSET 3\r  
**Query:** :ATC:XPDR:SCOPE:INTERR:OFFSET?\r  
**Return:** 3

### 5.9.13 START TRANSMISSION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:STA |:START} CR  
**Description:** This command starts a predefined test.  
**Example:** :ATC:XPDR:STA\r  
**Query:** No – See INTERROGATION ON/OFF

### 5.9.14 STOP TRANSMISSION

**Command Syntax:**     {:ATC |:ATC5000NG}{:XPDR}{:STO |:STOP}CR  
**Description:**         This command stops a test.  
**Example:**             :ATC:XPDR:STO\r  
**Query:**                No – See INTERROGATION ON/OFF

### 5.9.15 SUPPRESSION OUTPUT

**Command Syntax:**     {:ATC |:ATC5000NG}{:XPDR}{:SUP |:SUPPRESSION}SP{ON |OFF}CR  
**Description:**         This command turns on or off the suppression output of the unit.  
**Default:**             Off  
**Example:**             :ATC:XPDR:SUP ON\r  
**Query:**                ON  
**Return:**

### 5.9.16 SUPPRESSION PERCENTAGE

**Command Syntax:**     {:ATC |:ATC5000NG}{:XPDR}{:SUPPERC |:SUPP}SP<numeric>CR  
**Description:**         This command sets the suppression percentage.  
**Numeric:**             0 to 100 (Decimal ASCII)  
**Default:**             0  
**Example:**             :ATC:XPDR:SUPP 100\r  
**Query:**                :ATC:XPDR:SUPP?\r  
**Return:**               100

### 5.9.17 TRANSMISSION MODES

#### 5.9.17.1 BLOCK TRANSMISSION

This set of commands allows the user to define block of messages to be transmitted.

##### 5.9.17.1.1 BLOCK PARAMETERS

##### 5.9.17.1.1.A FRAME PERIOD

**Command Syntax:**     {:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK}{:PERIOD }SP<numeric>CR  
**Description:**         This command defines the block transmission period in ms.  
**Numeric:**             10 to 90000 (decimal ASCII)  
**Default:**             100  
**Example:**             :ATC:XPDR:TXBLOCK:PERIOD 10\r  
**Query:**                :ATC:XPDR:TXBLOCK:PERIOD?\r  
**Return:**               10

#### 5.9.17.1.1.B HIT

**Command Syntax:** {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:HIT }SP<numeric>CR  
**Description:** This command sets the number of consecutive blocks to transmit.  
**Numeric:** 0 to 20 (decimal ASCII)  
**Default:** 1  
**Example:** :ATC:XPDR:TXBLOCK:HIT 6\r  
**Query:** :ATC:XPDR:TXBLOCK:HIT?\r  
**Return:** 6

#### 5.9.17.1.1.C MISS

**Command Syntax:** {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:MISS }SP<numeric>CR  
**Description:** This command sets the number of consecutive non-transmitted blocks.  
**Numeric:** 0 to 20 (decimal ASCII)  
**Default:** 0  
**Example:** :ATC:XPDR:TXBLOCK:MISS 4\r  
**Query:** :ATC:XPDR:TXBLOCK:MISS?\r  
**Return:** 4

#### 5.9.17.1.1.D MODE

**Command Syntax:** {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:MODE }SP{CONTINUOUS|INTERRUPT}CR  
**Description:** This command sets the transmission mode.  
**Default:** CONTINUOUS  
**Example:** :ATC:XPDR:TXBLOCK:MODE CONTINUOUS\r  
**Query:** :ATC:XPDR:TXBLOCK:MODE?\r  
**Return:** CONTINUOUS

#### 5.9.17.1.1.E TRANSMISSIONS

**Command Syntax:** {:ATC |:ATC5000NG}{ :XPDR}{ :TXBLOCK}{:TRANSMISSIONS|:TRANS}SP{NOLIMIT|<numeric>}CR  
**Description:** This command sets the total number of blocks transmission.  
**Numeric:** 1 to 50000 (decimal ASCII)  
**Default:** NOLIMIT  
**Example:** :ATC:XPDR:TXBLOCK:TRANS NOLIMIT\r  
**Query:** :ATC:XPDR:TXBLOCK:TRANS?\r  
**Return:** NO LIMIT

## 5.9.17.1.2 MESSAGE PARAMETERS

### 5.9.17.1.2.A DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number> {:MESS |:MESSAGE}SP<numeric>CR`

**Description:** This command sets the data message for the message selected.

**Message Number:** 1 to 1000

**Numeric:** Short message 0 to FFFFFFFF (14 hexadecimal ASCII)  
Long message 0 to FFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII) (The last six characters are the Mode S Address).

**Default:** 0000000000001 for Mode S Interrogation and Mode S Message.

**Example:** `:ATC:XPDR:TXBLOCK:1:MESS 7ABA3259A66BBB\r`

**Query:** `:ATC:XPDR:TXBLOCK:1:MESS?\r`

**Return:** 7ABA3259A66BBB

### 5.9.17.1.2.B MESSAGE QUANTITY

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK}{:NMESSAGES|:NMESS}SP<decimal>CR`

**Description:** This command sets the number of the messages.

**Numeric:** 0 to 1000 (decimal ASCII)

**Default:**

**Example:** `:ATC:XPDR:TXBLOCK:NMESS 45\r`

**Query:** `:ATC:XPDR:TXBLOCK:NMESS?\r`

**Return:** 45

### 5.9.17.1.2.C POWER LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number>{:POWER |:POW}SP<numeric>CR`

**Description:** This command sets the power level of the message selected.

**Message Number:** 1 to 1000

**Numeric:** 5 to -110 dBm (decimal ASCII)

**Default:** -20 dBm

**Example:** `:ATC:XPDR:TXBLOCK:3:POW -31\r`

**Query:** `:ATC:XPDR:TXBLOCK:3:POW?\r`

**Return:** -31.0

### 5.9.17.1.2.D TIME

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number>{:TIME}SP<numeric>CR`

**Description:** This command sets the starting transmission time (in  $\mu$ s) within the block of the message selected.

**Message Number:** 1 to 1000

**Numeric:** 0 to 99880 (decimal ASCII)

**Default:** 0  $\mu$ s. Every additional message defaults 130  $\mu$ s after the previous. Maximum time depends on frame period value.

**Example:** `:ATC:XPDR:TXBLOCK:3:TIME 77\r`

**Query:** `:ATC:XPDR:TXBLOCK:3:TIME?\r`

**Return:** 77

**5.9.17.1.2.E TYPE**

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:TXBLOCK:}<message number>{:TYPE} SP<numeric>[,<numeric1>]CR`

**Description:** This command sets the type of the message selected. The optional argument <numeric1> defines the ATCRBS Interrogation type.

**Message Number:** 1 to 1000

**Numeric:** 1 to 2 (decimal ASCII)  
 If the scenario type selected was XPDR (Transponder), the valid values are 1 and 2.

| <b>Value</b> | <b>Type</b>          |
|--------------|----------------------|
| 1            | Mode S Interrogation |
| 2            | ATCRBS Interrogation |

**Default:** Mode S Message

**Numeric1:** 1 to 6 (decimal ASCII)  
 Valid only if the type of message defined in <Numeric> is ATCRBS Interrogation.

| <b>Value</b> | <b>Type</b>            |
|--------------|------------------------|
| 1            | Mode A                 |
| 2            | Mode C                 |
| 3            | Mode A Only All Call   |
| 4            | Mode C Only All Call   |
| 5            | Mode A/Mode S All Call |
| 6            | Mode C/Mode S All Call |

**Default:** Mode A

**Example:** `:ATC:XPDR:TXBLOCK:4:TYPE 2,2\r`

**Query:** `:ATC:XPDR:TXBLOCK:4:TYPE?\r`

**Return:** 2,2

**5.9.17.2 DOUBLE INTERROGATION**

This set of commands allows the user to setup double interrogations. In double interrogations, both interrogations are outputted on the top antenna port.

**5.9.17.2.1 FREQUENCY**

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:FREQ |:FREQUENCY}SP<numeric>CR`

**Description:** This command sets the transmission frequency of the selected double interrogation. <interrogation number> defines the double interrogation number.

**Numeric:** 952 to 1223 MHz (Decimal ASCII)

**Default:** 1030 MHz

**Example:** `:ATC:XPDR:DBL:1:FREQ 1031\r`

**Query:** `:ATC:XPDR:DBL:1:FREQ?\r`

**Return:** 1031.0

### 5.9.17.2.2 INTERLACED MODE

This set of commands allows the user to define an interlace mode. The illustration below demonstrates how the interlaced ratio operates.

#### 5.9.17.2.2.A INTERLACED MODE ON/OFF

**Command Syntax:** `{:ATC [:ATC5000NG]{:XPDR}{:DBL}{:INTERLACED|:INT}SP{ON |OFF}CR`  
**Description:** This command turns on or off the interlaced mode.  
**Default:** Off  
**Example:** `:ATC:XPDR:DBL:INT ON\r`  
**Query:** `:ATC:XPDR:DBL:INT?\r`  
**Return:** On

#### 5.9.17.2.2.B INTERLACED RATIO

**Command Syntax:** `{:ATC [:ATC5000NG]{:XPDR}{:DBL}{:IRATIO}SP<numeric>CR`  
**Description:** This command sets the interlace ratio between the first interrogation and the second. For example, if the user enters an interlaced ratio of 2, the second interrogation is transmitted every other interrogation period of the first.  
**Numeric:** 1 to 1000 (decimal ASCII)  
**Default:** 1  
**Example:** `:ATC:XPDR:DBL:IRATIO 11\r`  
**Query:** `:ATC:XPDR:DBL:IRATIO?\r`  
**Return:** 11

#### 5.9.17.2.3 MODE

**Command Syntax:** `{:ATC [:ATC5000NG]{:XPDR}{:DBL:}<interrogation number>{:MOD [:MODE]}SP<numeric>CR`  
**Description:** This command sets the transponder interrogation mode of the selected double interrogation. <interrogation number> defines the double interrogation number.  
**Interrogation:** 1 to 2 (decimal ASCII)  
**Numeric:** 0 to 11 (decimal ASCII)

| Value | Mode                    |
|-------|-------------------------|
| 0     | Mode A                  |
| 1     | Mode C                  |
| 2     | Mode A Only All Call    |
| 3     | Mode C Only All Call    |
| 4     | Mode A/Mode S All Call  |
| 5     | Mode C/Mode S All Call  |
| 6     | Mode S                  |
| 7     | P1 to P2                |
| 8     | Pulse                   |
| 9     | DME 12 $\mu$ s Spacing  |
| 10    | DME 30 $\mu$ s Spacing  |
| 11    | Alternate Mode A/Mode C |

**Default:** 0  
**Example:** `:ATC:XPDR:DBL:2:MOD 6\r`  
**Query:** `:ATC:XPDR:DBL:2:MOD?\r`  
**Return:** 6

#### 5.9.17.2.4 MODE S INTERROGATION MESSAGE DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:UF}SP<numeric>CR`  
**Description:** This command sets the data message for the Mode S Interrogation of the selected double interrogation. <interrogation number> defines the double interrogation number.  
**Interrogation:** 1 to 2 (decimal ASCII)  
**Number:** Short interrogation 0 to FFFFFFFF (14 hexadecimal ASCII)  
 Long interrogation 0 to FFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII). The last six characters are the Mode S Address.  
**Default:** 00000000000001  
**Example:** `:ATC:XPDR:DBL:2:UF 5AC4727338FF22\r`  
**Query:** `:ATC:XPDR:DBL:2:UF?\r`  
**Return:** 5AC4727338FF22

#### 5.9.17.2.5 P1 TO P1 SPACING

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:DBL:}{:P1TOP1}SP<numeric>CR`  
**Description:** This command sets the interrogations spacing from P1 of the first interrogation to P1 of the second interrogation.  
**Numeric:** 0 to 400  $\mu$ s (decimal ASCII)  
**Default:** 0  
**Example:** `:ATC:XPDR:DBL:P1TOP1 44\r`  
**Query:** `:ATC:XPDR:DBL:P1TOP1?\r`  
**Return:** 44

#### 5.9.17.2.6 POWER LEVEL RANGE

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:DBL:}{:PMODE}SP{HI |LOW |VLO}CR`  
**Description:** This command sets the power level range to the high, low, or very low mode.

|                 | Power Mode                            |           |                |
|-----------------|---------------------------------------|-----------|----------------|
|                 | High Power                            | Low Power | Very Low Power |
| Minimum         | -65 dBm                               | -90 dBm   | -110 dBm       |
| Maximum         | 5 dBm                                 | -20 dBm   | -40 dBm        |
| <b>Default:</b> | Low Power                             |           |                |
| <b>Example:</b> | <code>:ATC:XPDR:DBL:PMODE HI\r</code> |           |                |
| <b>Query:</b>   | <code>:ATC:XPDR:DBL:PMODE?\r</code>   |           |                |
| <b>Return:</b>  | HI                                    |           |                |

#### 5.9.17.2.7 PULSE POWER LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:POW |:POWER}SP<numeric>CR`  
**Description:** This command sets the antenna power for the top antenna of the selected double interrogation. <interrogation number> defines the double interrogation number. The power level range depends on the power mode selected using the previous command. The bottom antenna power uses this value plus the antenna power deviation setting.  
**Numeric:** -110 to 5 dBm (decimal ASCII)  
**Default:** -20  
**Example:** `:ATC:XPDR:DBL:1:POW -31\r`  
**Query:** `:ATC:XPDR:DBL:1:POW?\r`  
**Return:** -31.0



### 5.9.17.2.8 PULSE PARAMETER

|                        |  |   |
|------------------------|--|---|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:PUL:<br>{:PULSE:}<pulse>SP<value>[,<value1>] CR  |   |
| <b>Description:</b>    | This command sets the selected pulse parameter of the selected double interrogation. <interrogation number> defines the double interrogation number. The optional <value1> is ignored if the interrogation mode is not "Alternate Mode A/Mode C" for the selected double interrogation. For "Alternate Mode A/Mode C", the <value> is used to define the Mode A pulse and the <value1> is used to define the Mode C pulse. |   |
| <b>Interrogation:</b>  | 1 to 2 (decimal ASCII)   |   |
| <b>Pulse/Value</b>     | <pulse>  | <value> <value1>  |
|                        | :PALLWIDTH  :PALLW   | 0 to 1.95   |
|                        | :P1WIDTH  :P1W   | 0 to 1.95   |
|                        | :P2WIDTH  :P2W   | 0 to 1.95   |
|                        | :P3WIDTH  :P3W   | 0 to 1.95   |
|                        | :P4WIDTH  :P4W   | 0 to 1.95   |
|                        | :P5WIDTH  :P5W   | 0.2 to 1.95   |
|                        | :P6ENDWIDTH  :P6ENDW   | 0 to 1.95   |
|                        | :P1POWER  :P1P   | -19 to 9  CAL  OFF  |
|                        | :P2POWER  :P2P   | -19 to 9  CAL  OFF  |
|                        | :P3POWER  :P3P   | -19 to 9  CAL  OFF  |
|                        | :P4POWER  :P4P   | -19 to 9  CAL  OFF  |
|                        | :P5POWER  :P5P   | -19 to 9  CAL  OFF  |
|                        | :P12SPACING  :P12S   | All Call  Mode C  Mode C Only All Call  Mode C/<br>Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0<br>Mode A  Mode A Only All Call 7.0 to 9.0  Mode A/<br>Mode S All Call 6.05 to 9.95 Mode C  Mode C<br>Only All Call  Mode C/Mode S All Call 19.05 to<br>22.95.<br>Not Valid for Mode S. |
|                        | :P13SPACING  :P13S   | Mode A Only All Call  Mode A/Mode S All Call  <br>Mode C Only All Call  Mode C/Mode S All Call<br>0.05 to 3.95.<br>Not Valid for Mode A, Mode C and Mode S.   |
|                        | :P34SPACING  :P34S   | 1.55 to 5.45. Valid only for Mode S.  |
|                        | :P16SPACING  :P16S   | 3.75 to 5.75. Valid only for Mode S.  |
|                        | :P1SPRSPACING  :P1SPRS   | 2.4 to 6.3. Valid only for Mode S.  |
|                        | :P15SPACING  :P15S   |   |
| <b>Example:</b>        | :ATC:XPDR:DBL:1:PUL:P3W 1.1r   | (for mode A interrogation)  |
| <b>Example:</b>        | :ATC:XPDR:DBL:1:PUL:P3W 1.1,1.9r   | (for Alternate mode A/mode C interrogation)   |
| <b>Query:</b>          | :ATC:XPDR:DBL:1:PUL:P3W?r  | (Not applicable for PALLWIDTH)  |
| <b>Return:</b>         | 1.100  |   |

### 5.9.17.2.9 PULSE REPETITION FREQUENCY (PRF)

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:DBL:} <interrogation number>{:PRF }SP<numeric>CR

**Description:** This command sets the pulse repetition rate (PRF) of the selected double interrogation. <interrogation number> defines the double interrogation number.

**Interrogation:** 1 to 2 (decimal ASCII)

**Numeric:** 1 to 10000 (decimal ASCII)

| Mode                           | Numeric    |
|--------------------------------|------------|
| Mode A                         | 1 to 500   |
| Mode C                         | 1 to 500   |
| Mode A Only All Call           | 1 to 500   |
| Mode C Only All Call           | 1 to 500   |
| Mode A/Mode S All Call         | 1 to 500   |
| Mode C/Mode S All Call         | 1 to 500   |
| Mode S                         | 1 to 500   |
| P1 to P2                       | 1 to 10000 |
| Pulse                          | 1 to 10000 |
| DME 12 $\mu$ s Spacing DME 30  | 1 to 500   |
| $\mu$ s Spacing Alternate Mode | 1 to 500   |
| A/Mode C                       | 1 to 500   |

**Default:** 100

**Example:** :ATC:XPDR:DBL:2:PRF 50\r

**Query:** :ATC:XPDR:DBL:2:PRF?\r

**Return:** 50

### 5.9.17.2.10 PULSE WIDTH

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:PWIDTH |:PW}SP<numeric>CR

**Description:** This command sets the pulse width of the selected double interrogation. <interrogation number> defines the double interrogation number. **This command is valid only for the transponder interrogation mode Pulse.**

**Interrogation:** 1 to 2 (decimal ASCII)

**Numeric:** 0 to 5  $\mu$ s (decimal ASCII)

**Default:** 0

**Example:** :ATC:XPDR:DBL:1:PW 1.1\r

**Query:** :ATC:XPDR:DBL:1:PW?\r

**Return:** 1.100

### 5.9.17.2.11 PRF SYNCHRONIZATION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:PRFSYNC}SP{ON |OFF}CR  
**Description:** This command turns on or off the synchronization output of the selected double interrogation. <interrogation number> defines the double interrogation number. **This command is valid only for the following transponder interrogation modes: P1 to P2, Pulse, DME 12 µs Spacing and DME 30 µs Spacing.**  
**Interrogation:** 1 to 2 (decimal ASCII)  
**Default:** Off  
**Example:** :ATC:XPDR:DBL:1:PRFSYNC ON\r  
**Query:** :ATC:XPDR:DBL:1:PRFSYNC?\r  
**Return:** ON

### 5.9.17.2.12 SIDE LOBE SUPPRESSION (SLS)

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:DBL:}<interrogation number>{:SLS}SP{ON |OFF}{, {ON|OFF}}CR  
**Description:** This command turns on or off SLS (P2) pulse in an ATCRBS interrogation of the selected double interrogation. <interrogation number> defines the double interrogation number. The optional {ON|OFF} is ignored if the interrogation mode is not “Alternate Mode A/Mode C” for the selected double interrogation. For “Alternate Mode A/Mode C”, the first {ON|OFF} is used to define the Mode A pulse and the second ( or the optional) is used to define the Mode C pulse.  
**Interrogation:** 1 to 2 (decimal ASCII)  
**Default:** Off  
**Example:** :ATC:XPDR:DBL:1:SLS ON\r  
**Query:** :ATC:XPDR:DBL:1:SLS?\r  
**Return:** ON

### 5.9.17.2.13 SYNCHRONIZATION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:DBL:}{:SYNC}SP<numeric>CR  
**Description:** This command allows selecting the interrogation number for synchronization. The measured UUT values are obtained from the reply associated with the interrogation selected for synchronization.  
**Numeric:** 1 to 2 (decimal ASCII)  
**Default:** 1  
**Example:** :ATC:XPDR:DBL:SYNC 2\r  
**Query:** :ATC:XPDR:DBL:SYNC?\r  
**Return:** 2

### 5.9.17.3 INTERROGATION TABLE

This set of commands allows the user to define the Interrogation table. The table can have from 1 to 1000 interrogations. When the interrogations are enabled, the Unit transmits from the first entry on the table to the last entry. Each PRF cycle the Unit transmits one interrogation and advances to the next table entry. Once the last entry is transmitted the Unit starts with the first entry.

#### 5.9.17.3.1 BURST MODE

Burst Mode transmits the interrogations in the table. If the table only has for example three interrogations and the burst count is five, then the following sequence of interrogations are transmitted: Entry1, Entry2, Entry3, Entry1 and Entry2. If a burst spacing greater than 0 is defined, then the next burst sequence begins with Entry1 again. If for example the table has ten interrogations and burst count is five, then the first five interrogations are transmitted and on the next burst the same five are transmitted. If the burst count is 0, then every time a burst start command is received the number of interrogations in the burst count are transmitted.

##### 5.9.17.3.1.A BURST OPERATION ENABLE

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST}SP{ON |OFF}CR  
**Description:** This command enables or disables the burst operation.  
**Default:** Off  
**Example:** :ATC:XPDR:ITABLE:BURST ON\r  
**Query:** :ATC:XPDR:ITABLE:BURST?\r  
**Return:** ON

##### 5.9.17.3.1.B BURST COUNT

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST:COUNT}SP<numeric>CR  
**Description:** This command sets the burst count which is the number of interrogations that are transmitted within each burst.  
**Numeric:** 1 to 10,000 (decimal ASCII)  
**Default:** 200  
**Example:** :ATC:XPDR:ITABLE:BURST:COUNT 10\r  
**Query:** :ATC:XPDR:ITABLE:BURST:COUNT?\r  
**Return:** 10

##### 5.9.17.3.1.C BURST SPACING

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST:GAP}SP<numeric>CR  
**Description:** This command sets the burst repetition gap time which is the delay time after one set of burst interrogations. The gap time is defined in 0.1 second steps. For a single occurrence, set the burst spacing to zero. Note: This shows as Burst Spacing on Burst Setting menu.  
**Numeric:** 0 to 20 seconds (decimal ASCII)  
**Default:** 0  
**Example:** :ATC:XPDR:ITABLE:BURST:GAP 3\r  
**Query:** :ATC:XPDR:ITABLE:BURST:GAP?\r  
**Return:** 3.0

### 5.9.17.3.1.D BURST START/STOP

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST}{:START |:STOP}CR  
**Description:** This command turns on or off the burst operation.  
**Example:** :ATC:XPDR:ITABLE:BURST:START\r

### 5.9.17.3.1.E BURST STATUS, Version 19.04.2401 and above.

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:BURST?}CR  
**Description:** This command returns the status of the burst operation.  
Reply Burst Operation  
OFF Burst Setting is not selected.  
ON, OFF Burst Mode is selected, Burst Mode is not running.  
ON, ON Burst Mode is selected, Burst Mode is running.  
**Example:** :ATC:XPDR:ITABLE:BURST?\r  
**Reply:** OFF

### 5.9.17.3.2 NUMBER OF INTERROGATIONS

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:NINT}SP<numeric>CR  
**Description:** This command sets the number of interrogations of the interrogation table.  
**Numeric:** 1 to 1000 (decimal ASCII)  
**Default:** 1  
**Example:** :ATC:XPDR:ITABLE:NINT 3\r  
**Query:** :ATC:XPDR:ITABLE:NINT?\r  
**Return:** 3

### 5.9.17.3.3 POWER LEVEL RANGE

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}{:PMODE}SP{HI |LO |VLO}CR  
**Description:** This command sets the power level range to the high, low, or very low mode.

|         | Power Mode |           |                |
|---------|------------|-----------|----------------|
|         | High Power | Low Power | Very Low Power |
| Minimum | -65 dBm    | -90 dBm   | -110 dBm       |
| Maximum | 5 dBm      | -20 dBm   | -40 dBm        |

**Default:** Low power  
**Example:** :ATC:XPDR:ITABLE:PMODE HI\r  
**Query:** :ATC:XPDR:ITABLE:PMODE?\r  
**Return:** HI

### 5.9.17.3.4 PULSE REPETITION FREQUENCY (PRF)

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE}{:PRF }SP<numeric>CR  
**Description:** This command sets the pulse repetition rate (PRF) for all table entries.  
**Numeric:** 1 to 10 KHz (decimal ASCII)  
**Default:** 100  
**Example:** :ATC:XPDR:ITABLE:PRF 125\r  
**Query:** :ATC:XPDR:ITABLE:PRF?\r  
**Return:** 125

### 5.9.17.3.5 TABLE ENTRY ANTENNA POWER DEVIATION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:ANT |:ANTENNA}{:POW  
 |:POWER}SP<numeric>CR

**Description:** This command sets the antenna power deviation between the top and bottom antenna of the selected table entry.

**Table Entry:** 1 to 1000 (decimal ASCII)

**Numeric:** -20 to 20 dB (decimal ASCII)

**Default:** 0

**Example:** :ATC:XPDR:ITABLE:2:ANT:POW -19\r

**Query:** :ATC:XPDR:ITABLE:2:ANT:POW?\r

**Return:** -19.0

### 5.9.17.3.6 TABLE ENTRY ANTENNA TIME DEVIATION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:ANT |:ANTENNA}{:TIM  
 |:TIME}SP<numeric>CR

**Description:** This command sets the antenna time deviation between the top and bottom antenna of the selected table entry.

**Table Entry:** 1 to 1000 (decimal ASCII)

**Numeric:** -0.975 to 0.975  $\mu$ s (decimal ASCII)

**Default:** 0

**Example:** :ATC:XPDR:ITABLE:1:ANT:TIM 0.5\r

**Query:** :ATC:XPDR:ITABLE:1:ANT:TIM?\r

**Return:** 0.5

### 5.9.17.3.7 TABLE ENTRY ENABLE

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:ENABLE}SP{ON | OFF}CR

**Description:** This command turns on or off the interrogation of the selected table entry.

**Table Entry:** 1-1000 (Decimal ASCII)

**Default:** ON

**Example:** :ATC:XPDR:ITABLE:1:ENABLE OFF\r

**Query:** :ATC:XPDR:ITABLE:1:ENABLE?\r

**Return:** OFF

### 5.9.17.3.8 TABLE ENTRY INTERROGATION MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:MOD |:MODE}SP<numeric>CR`

**Description:** This command sets the transponder interrogation mode of the table entry selected. This command must be sent before defining the pulse parameters.

**Table Entry:** 1 to 1000 (decimal ASCII)

**Numeric:** 0 to 6 (decimal ASCII)

| Value | Mode                   |
|-------|------------------------|
| 0     | Mode A                 |
| 1     | Mode C                 |
| 2     | Mode A Only All Call   |
| 3     | Mode C Only All Call   |
| 4     | Mode A/Mode S All Call |
| 5     | Mode C/Mode S All Call |
| 6     | Mode S                 |

**Default:** 0

**Example:** `:ATC:XPDR:ITABLE:1:MOD 6\r`

**Query:** `:ATC:XPDR:ITABLE:1:MOD?\r`

**Return:** 6

### 5.9.17.3.9 TABLE ENTRY MODE S INTERROGATION MESSAGE DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:UF}SP<numeric>CR`

**Description:** This command sets the data message for the Mode S Interrogation of the selected table entry.

**Table Entry:** 1 to 1000 (decimal ASCII)

**Numeric:** Short interrogation 0 to FFFFFFFF (14 hexadecimal ASCII)  
 Long interrogation 0 to FFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII). The last six characters are the Mode S Address.

**Default:** 00000000000001

**Example:** `:ATC:XPDR:ITABLE:1:UF 123456789ABCDE\r`

**Query:** `:ATC:XPDR:ITABLE:1:UF?\r`

**Return:** 123456789ABCDE

### 5.9.17.3.10 TABLE ENTRY PULSE POWER LEVEL

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:POW |:POWER}SP<numeric>CR`

**Description:** This command sets the antenna power for the top antenna of the table entry selected. The power level range depends of the power mode selected using the previous command.

**Table Entry:** 1 to 1000 (decimal ASCII)

**Numeric:** -110 TO 5 dBm (decimal ASCII)

**Default:** -20 dBm

**Example:** `:ATC:XPDR:ITABLE:1:POW -31\r`

**Query:** `:ATC:XPDR:ITABLE:1:POW?\r`

**Return:** -31.0

### 5.9.17.3.11 TABLE ENTRY PULSE PARAMETER

|                        |  |   |
|------------------------|--|---|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:PUL:  :PULSE:}<pulse>SP<value>CR |   |
| <b>Description:</b>    | This command sets the selected pulse parameter of the selected table entry.        |   |
| <b>Table Entry:</b>    | 1 to 1000 (decimal ASCII)  |   |
| <b>Pulse/Value:</b>    | <b>&lt;pulse&gt;</b>   | <b>&lt;value&gt;</b>  |
|                        | :PALLWIDTH  :PALLW   | 0 to 1.95   |
|                        | :P1WIDTH  :P1W   | 0 to 1.95   |
|                        | :P2WIDTH  :P2W   | 0 to 1.95   |
|                        | :P3WIDTH  :P3W   | 0 to 1.95. Not Valid for Mode S.  |
|                        | :P4WIDTH  :P4W   | 0 to 1.95. Not Valid for Mode A, Mode C and Mode S.   |
|                        | :P5WIDTH  :P5W   | 0.2 to 1.95. Not Valid for Mode S.  |
|                        | :P6ENDWIDTH  :P6ENDW   | 0 to 1.95. Valid only for Mode S.   |
|                        | :P1POWER  :P1P   | -19 to 9  CAL  OFF. Not Valid for Mode S.   |
|                        | :P2POWER  :P2P   | -19 to 9  CAL  OFF. Not Valid for Mode S.   |
|                        | :P3POWER  :P3P   | -19 to 9  CAL  OFF. Not Valid for Mode S.   |
|                        | :P4POWER  :P4P   | -19 to 9  CAL  OFF. Not Valid for Mode A, Mode C and Mode S.  |
|                        | :P5POWER  :P5P   | -19 to 9  CAL  OFF. Valid only for Mode S.  |
|                        | :P12SPACING  :P12S   | Mode A  Mode A Only All Call  Mode A/Mode S All Call  Mode C  Mode C Only All Call  Mode C/ Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0        |
|                        | :P13SPACING  :P13S   | Mode A  Mode A Only All Call 7.0 to 9.0  Mode A/Mode S All Call 6.05 to 9.95 Mode C  Mode C Only All Call  Mode C/Mode S All Call 19.05 to 22.95. |
|                        | :P34SPACING  :P34S   | Not Valid for Mode S.<br>Mode A Only All Call  Mode A/Mode S All Call  Mode C Only All Call  Mode C/Mode S All Call 0.05 to 3.95.                 |
|                        | :P16SPACING  :P16S   | Not Valid for Mode A, Mode C and Mode S.<br>1.55 to 5.45. Valid only for Mode S.  |
|                        | :P1SPRSPACING  :P1SPS  | 3.75 to 5.75. Valid only for Mode S.  |
|                        | :P15SPACING P15S   | 2.4 to 6.3. Valid only for Mode S.  |
| <b>Example:</b>        | :ATC:XPDR:ITABLE:2:PUL:P1W 1.5r  |   |
| <b>Query:</b>          | :ATC:XPDR:ITABLE:2:PUL:P1W?r   |   |
| <b>Return:</b>         | 1.500  |   |

### 5.9.17.3.12 TABLE ENTRY SIDE LOBE SUPPRESSION (SLS)

|                        |  |  |
|------------------------|--|--|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:XPDR}{:ITABLE:}<table entry>{:SLS}SP{ON  OFF}CR                                |  |
| <b>Description:</b>    | This command turns on or off SLS (P2) pulse in an ATRBS interrogation of the selected table entry. |  |
| <b>Table Entry:</b>    | 1 to 1000 (decimal ASCII)  |  |
| <b>Default:</b>        | Off  |  |
| <b>Example:</b>        | :ATC:XPDR:ITABLE:1:SLS ONr   |  |
| <b>Query:</b>          | :ATC:XPDR:ITABLE:1:SLS?r   |  |
| <b>Return:</b>         | ON   |  |



### 5.9.17.3.13 TABLE ENTRY SYNCHRONIZATION

|                        |  |
|------------------------|--|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:XPDR}{:ITABLE}{:SYNC}SP<numeric>CR   |
| <b>Description:</b>    | This command allows selecting the table entry for synchronization. The measured UUT values will be obtained from the reply associated with the interrogation selected for synchronization. |
| <b>Table Entry:</b>    | 1-1000 (Decimal ASCII)   |
| <b>Default:</b>        | 1  |
| <b>Example:</b>        | :ATC:XPDR:ITABLE:SYNC 2\r  |
| <b>Query:</b>          | :ATC:XPDR:ITABLE:SYNC?\r   |
| <b>Return:</b>         | 2  |

### 5.9.17.4 SINGLE INTERROGATION

This set of commands allows the user to define single ATCRBS or Mode S interrogations.

#### 5.9.17.4.1 ANTENNA POWER DEVIATION

|                        |   |
|------------------------|---|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:XPDR}{:ANT  :ANTENNA}{:POW<br>[:POWER]SP<numeric>[,<numeric1>]CR  |
| <b>Description:</b>    | This command sets the antenna power deviation between the top and bottom antenna. The optional <numeric1> is ignored if the interrogation mode is not "Alternate Mode A/Mode C." For "Alternate Mode A/Mode C", the <numeric> is used to define the Mode A pulse and the <numeric1> is used to define the Mode C pulse. |
| <b>Numeric:</b>        | -20 to 20 dB (decimal ASCII)  |
| <b>Default:</b>        | 0   |
| <b>Example:</b>        | :ATC:XPDR:ANT:POW -3\r  |
| <b>Example:</b>        | :ATC:XPDR:ANT:POW -3,-4\r (for Alternate Mode A/Mode C)   |
| <b>Query:</b>          | :ATC:XPDR:ANT:POW?\r  |
| <b>Return:</b>         | 3.0 (or -3.0,-4.0 for Alternate Mode A/Mode C)  |

#### 5.9.17.4.2 ANTENNA TIME DEVIATION

|                        |  |
|------------------------|--|
| <b>Command Syntax:</b> | {:ATC  :ATC5000NG}{:XPDR}{:ANT  :ANTENNA}{:TIM  :TIME}SP<numeric>[,<numeric1>]CR   |
| <b>Description:</b>    | This command sets the antenna time deviation between the top and bottom antenna. The optional <numeric1> is ignored if the interrogation mode is not "Alternate Mode A/Mode C." For "Alternate Mode A/Mode C", the <numeric> is used to define the Mode A pulse and the <numeric1> is used to define the Mode C pulse. |
| <b>Numeric:</b>        | -1 to 1 $\mu$ s (decimal ASCII)  |
| <b>Default:</b>        | 0  |
| <b>Example:</b>        | :ATC:XPDR:ANT:TIM 0.8\r  |
| <b>Example:</b>        | :ATC:XPDR:ANT:TIM -0.5,0.5\r (for Alternate Mode A/Mode C)   |
| <b>Query:</b>          | :ATC:XPDR:ANT:TIM?\r   |
| <b>Return:</b>         | 0.8 (or -0.5,0.5 for Alternate Mode A/Mode C)  |

### 5.9.17.4.3 INTERROGATION MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:MOD |:MODE}SP<numeric>CR`

**Description:** This command sets the transponder interrogation mode for the Single Interrogation type. This command must be sent before defining the pulse parameters.

**Numeric:** 0 to 11 (decimal ASCII)

| <b>Value</b> | <b>Mode</b>             |
|--------------|-------------------------|
| 0            | Mode A                  |
| 1            | Mode C                  |
| 2            | Mode A Only All Call    |
| 3            | Mode C Only All Call    |
| 4            | Mode A/Mode S All Call  |
| 5            | Mode C/Mode S All Call  |
| 6            | Mode S                  |
| 7            | P1 to P2                |
| 8            | Pulse                   |
| 9            | DME 12 $\mu$ s Spacing  |
| 10           | DME 30 $\mu$ s Spacing  |
| 11           | Alternate Mode A/Mode C |

**Default:** 0

**Example:** `:ATC:XPDR:MOD 6\r`

**Query:** See Transponder Queries

### 5.9.17.4.4 MODE S INTERROGATION MESSAGE DATA

**Command Syntax:** `{:ATC |:ATC5000NG}{:XPDR}{:UF}SP<numeric>CR`

**Description:** This command sets the data message for the Mode S Interrogation.

**Numeric:** Short interrogation 0 to FFFFFFFF (14 hexadecimal ASCII)  
 Long interrogation 0 to FFFFFFFFFFFFFFFFFFFFFFFF (28 hexadecimal ASCII). The last six characters are the Mode S Address.

**Default:** 00000000000001

**Example:** `:ATC:XPDR:UF 123456789ABCDE\r`

**Query:** `:ATC:XPDR:UF?\r`

**Return:** 123456789ABCDE

### 5.9.17.4.5 PULSE PARAMETER

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:PUL: |:PULSE:}<pulse>SP<value>[,<value1>]CR

**Description:** This command sets the selected pulse parameter. The optional <value1> is ignored if the interrogation mode is not "Alternate Mode A/Mode C." For "Alternate Mode A/Mode C", the <value> is used to define the Mode A pulse and the <value1> is used to define the Mode C pulse.

|                     |                       |  |
|---------------------|-----------------------|--|
| <b>Pulse/Value:</b> | <pulse>               | <value>  <value1>  |
|                     | :PALLWIDTH   :PALLW   | 0 to 1.95  |
|                     | :P1WIDTH  :P1W        | 0 to 1.95  |
|                     | :P2WIDTH  :P2W        | 0 to 1.95  |
|                     | :P3WIDTH  :P3W        | 0 to 1.95. Not Valid for Mode S.   |
|                     | :P4WIDTH  :P4W        | 0 to 1.95. Not Valid for Mode A, Mode C and Mode S.  |
|                     | :P5WIDTH  :P5W        | 0.2 to 1.95. Valid only for Mode S.  |
|                     | :P6ENDWIDTH  :P6ENDW  | 0 to 1.95. Valid only for Mode S.  |
|                     | :P1POWER  :P1P        | -19 to 9  CAL  OFF. Not Valid for Mode S.  |
|                     | :P2POWER  :P2P        | -19 to 9  CAL  OFF. Not Valid for Mode S.  |
|                     | :P3POWER  :P3P        | -19 to 9  CAL  OFF. Not Valid for Mode S.  |
|                     | :P4POWER  :P4P        | -19 to 9  CAL  OFF. Not Valid for Mode A, Mode C and Mode S.   |
|                     | :P5POWER  :P5P        | -19 to 9  CAL  OFF. Valid only for Mode S.   |
|                     | :P12SPACING  :P12S    | Mode A  Mode A Only All Call  Mode A/Mode S All Call  Mode C  Mode C Only All Call  Mode S All Call 0.05 to 3.95<br>Mode S 1.0 to 3.0<br>Mode C/Mode S All Call 0.05 to 3.95 Mode S 1.0 to 3.0 |
|                     | :P13SPACING  :P13S    | Mode A  Mode A Only All Call 7.0 to 9.0  Mode A/Mode S All Call 6.05 to 9.95 Mode C  Mode C Only All Call  Mode C/Mode S All Call 19.05 to 22.95.<br>Not Valid for Mode S.                     |
|                     | :P34SPACING  :P34S    | Mode A Only All Call  Mode A/Mode S All Call  Mode C Only All Call  Mode C/Mode S All Call 0.05 to 3.95.<br>Not Valid for Mode A, Mode C and Mode S.   |
|                     | :P16SPACING  :P16S    | 1.55 to 5.45. Valid only for Mode S.   |
|                     | :P1SPRSPACING  :P1SPS | 3.75 to 5.75. Valid only for Mode S.   |
|                     | :P15SPACING P15S      | 2.4 to 6.3. Valid only for Mode S.   |

**Default:**

**Example:** :ATC:XPDR:PUL:P1P -9r

**Example:** :ATC:XPDR:PUL:P1P -9,-3r (for Alternate Mode A/Mode C)

**Query:** :ATC:XPDR:PUL:P1P?r

**Return:** -9.0 (or -9.0,-3.0 for Alternate Mode A/Mode C)

#### 5.9.17.4.6 PULSE REPETITION FREQUENCY (PRF)

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:PRF }SP<numeric>CR  
**Description:** This command sets the pulse repetition rate (PRF).  
**Numeric:** 1 to 10000 (decimal ASCII)  
**Default:** 100  
**Example:** :ATC:XPDR:PRF 150\r  
**Query:** :ATC:XPDR:PRF?\r  
**Return:** 150

#### 5.9.17.4.7 PULSE WIDTH

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:PWIDTH |:PW }SP<numeric>CR  
**Description:** This command sets the pulse width. This command is valid only for the transponder interrogation mode Pulse.  
**Numeric:** 0 to 10  $\mu$ s (decimal ASCII)  
**Default:** 0  
**Example:** :ATC:XPDR:PW 1\r  
**Query:** :ATC:XPDR:PW?\r  
**Return:** 1. 0

#### 5.9.17.4.8 PRF SYNCHRONIZATION

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:PRFSYNC}SP{ON |OFF}CR  
**Description:** This command turns on or off the synchronization output. This command is valid only for the following transponder interrogation modes: P1 to P2, Pulse, DME 12  $\mu$ s Spacing and DME 30  $\mu$ s Spacing. This synchronizes all of the PRF generator outputs to align with the master generator.  
**Default:** Off  
**Example:** :ATC:XPDR:PRFSYNC ON\r  
**Query:** :ATC:XPDR:PRFSYNC?\r  
**Return:** ON

#### 5.9.17.4.9 SIDE LOBE SUPPRESSION (SLS)

**Command Syntax:** {:ATC |:ATC5000NG}{:XPDR}{:SLS}SP{ON |OFF}{[,]{ON|OFF}}CR  
**Description:** This command turns on or off SLS (P2) pulse in an ATCRBS interrogation. The optional {ON|OFF} is ignored if the interrogation mode is not "Alternate Mode A/Mode C." For "Alternate Mode A/Mode C", the first {ON|OFF} is used to define the Mode A pulse and the second (or the optional) is used to define the Mode C pulse.  
**Default:** Off  
**Example:** :ATC:XPDR:SLS ON\r  
**Example:** :ATC:XPDR:SLS ON,ON\r (for Alternate Mode A/Mode C)  
**Query:** :ATC:XPDR:SLS?\r  
**Return:** ON (or ON,ON for Alternate Mode A/Mode C)

## 5.9.17.5 TRANSPONDER QUERIES

### 5.9.17.5.1 ALTITUDE REPLY REQUEST

**Command Syntax:** { :ATC [:ATC5000NG]{:XPDR}{:AREPLY? |:AREP? } CR  
**Description:** This command returns the reply altitude.  
**Return Value:** Decimal value in ASCII.  
 If the Unit is not ready to return an answer, “#” is returned.  
**Example:** :ATC:XPDR:AREP?\r  
**Return:** 28800

### 5.9.17.5.2 MODE A CODE REPLY REQUEST

**Command Syntax:** { :ATC [:ATC5000NG]{:XPDR}{:CREPLY? |:CREP? } CR  
**Description:** This command returns the reply code.  
**Return Value:** Decimal value in ASCII.  
 If the Unit is not ready to return an answer, “#” is returned.  
**Example:** :ATC:XPDR:CREP?\r  
**Return:** 1240

### 5.9.17.5.3 MODE REQUEST (CORRECTION)

**Command Syntax:** { :ATC [:ATC5000NG]{:XPDR}{:MOD? |:MODE?} CR  
**Description:** This command replies with the current transponder interrogation mode. Note: Interrogation with CW reports the same as Single mode.

| <b>Reply</b> | <b>Mode</b>  |
|--------------|--|
| A            | Single Interrogation - Mode A                        |
| C            | Single Interrogation - Mode C                        |
| AC           | Single Interrogation - Alternating Mode A/<br>Mode C |
| ACSA         | Single Interrogation - Mode A Only All Call          |
| ACSC         | Single Interrogation - Mode C Only All Call          |
| ACLA         | Single Interrogation - Mode A/Mode S All Call        |
| ACLC         | Single Interrogation - Mode C/Mode S All Call        |
| S            | Single Interrogation - Mode S                        |
| P1P2         | Single Interrogation - P1 to P2                      |
| PULSE        | Single Interrogation - Pulse                         |
| DME1         | Single Interrogation - DME 12 µs Spacing             |
| DME2         | Single Interrogation - DME 30 µs Spacing             |
| DBL          | Double Interrogation                                 |
| ITABLE       | Interrogation Table                                  |
| BLOCK        | Block Transmission                                   |

**Example:** :ATC:XPDR:MOD?\r  
**Return:** AC

#### 5.9.17.5.4 NUMBER OF INTERROGATION REQUEST

**Command Syntax:** { :ATC |:ATC5000NG}{:XPDR}{:NINTERR? } CR  
**Description:** This command returns the number of interrogations top and number interrogations bottom.  
**Return Value:** Decimal value in ASCII.  
**Example:** :ATC:XPDR:NINTERR?\r  
**Return:** 400, 0

#### 5.9.17.5.5 REPLY CLEAR, Version 19.04.2401 and above

**Command Syntax:** { :ATC |:ATC5000NG}{:XPDR}{:REPLY}{:CLEAR} CR  
**Description:** This command clears the transponder reply information for “# Interr”, “%Reply(ATCRBS):” and “% Reply (Mode S):” for the next burst.  
**Example:** :ATC:XPDR:REPLY:CLEAR\r

#### 5.9.17.5.6 PERCENT REPLY REQUEST

**Command Syntax:** { :ATC |:ATC5000NG}{:XPDR}{:PREPLY? |:PREP? } CR  
**Description:** This command returns the percent reply.  
If in Mode S, returns percent reply top and percent reply bottom separated by comma.  
If in ATCRBS, returns percent reply ATCRBS top, percent reply ATCRBS bottom, percent reply Mode S Top and percent reply Mode S Bottom separated by comma.  
**Return Value:** Decimal value in ASCII.  
If the Unit is not ready to return an answer, “#” is returned separated by comma.  
**Example:** :ATC:XPDR:PREP?\r  
**Return:**  
**Mode S:** 50.0,0.0  
**ATCRBS:** 50.0,0.0,0.0,0.0

#### 5.9.17.5.7 REPLY DELAY REQUEST

**Command Syntax:** { :ATC |:ATC5000NG}{:XPDR}{:DREPLY? |:DREP? } CR  
**Description:** This command returns the reply delay.  
**Return Value:** Decimal value in ASCII.  
If the Unit is not ready to return an answer, “#” is returned.  
**Example:** :ATC:XPDR:DREP?\r  
**Return:** 3.302

#### 5.9.17.5.8 REPLY JITTER REQUEST

**Command Syntax:** { :ATC |:ATC5000NG}{:XPDR}{:JREPLY? |:JREP? } CR  
**Description:** This command returns the reply jitter.  
**Return Value:** Decimal value in ASCII.  
If the Unit is not ready to return an answer, “#” is returned.  
**Example:** :ATC:XPDR:JREP?\r  
**Return:** 3

## 5.10 UNIT COMMANDS

### 5.10.1 HARDWARE VERSION REQUEST

**Command Syntax:**     {:ATC |:ATC5000NG}{:HW?}CR  
**Description:**         This command returns the hardware version of the Unit.  
**Return Value:**        ASCII value  
**Example:**             :ATC:HW?\r  
**Return:**              85

### 5.10.2 LAST CALIBRATION DATE REQUEST

**Command Syntax:**     {:ATC |:ATC5000NG}{:LASTCAL?}CR  
**Description:**         This command returns the last calibration date of the Unit.  
**Return Value:**        ASCII value  
**Example:**             :ATC:LASTCAL?\r  
**Return:**              10/11/2017 3:44:22 PM - Pass

### 5.10.3 MODE OF OPERATION

**Command Syntax:**     {:ATC |:ATC5000NG}{:ACCESS} SP{RMT | REMOTE | LCL | LOCAL}CR  
**Description:**         This command sets the mode of operation of the Unit.  
**Example:**             :ATC:ACCESS LCL\r

### 5.10.4 PART NUMBER REQUEST

**Command Syntax:**     {:ATC |:ATC5000NG}{:PN?}CR  
**Description:**         This command returns the part number of the Unit.  
**Return Value:**        ASCII value  
**Example:**             :ATC:PN?\r  
**Return:**              138156

### 5.10.5 PRODUCT KEY REQUEST

**Command Syntax:**     {:ATC |:ATC5000NG}{:PKEY?}CR  
**Description:**         This command returns the product key of the Unit.  
**Return Value:**        ASCII value  
**Example:**             :ATC:PKEY?\r  
**Return:**              4D24E-333FC-1112C-86711-AAA53-11105144

### 5.10.6 RESET

**Command Syntax:** `{:ATC |:ATC5000NG}{:RESET}CR`

**Description:** This command executes a global reset to the Unit. A 10 second delay is recommended to allow this command to complete before reading the reply. This global reset includes the following tasks:  
 Stop any execution.  
 Reset RTCA/DO-260 Test.  
 Reset Transponder Test.  
 Reset Own Aircraft Position. Set the Own Aircraft Latitude, Longitude, Heading and Altitude to zero. Set the Own Aircraft Mode S Address to 4.  
 Reset Scenario.  
 Set the ATC-5000NG to the factory default settings.

**Return Value:** A "\*" is returned if the factory settings are able to complete successfully or "?" if a failure occurs.

**Example:** `:ATC:RESET\r`

**Return:** \*

### 5.10.7 SERIAL NUMBER REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:SN?}CR`

**Description:** This command returns the serial number of the Unit.

**Return Value:** ASCII value

**Example:** `:ATC:SN?\r`

**Return:** 1000000003

### 5.10.8 SOFTWARE VERSION REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:SW?}CR`

**Description:** This command returns the software version of the Unit.

**Return Value:** ASCII value

**Example:** `:ATC:SW?\r`

**Return:** 26

### 5.10.9 UNIT NAME REQUEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:NAME?}CR`

**Description:** This command returns the Unit name.

**Return Value:** ASCII value

**Example:** `:ATC:NAME?\r`

**Return:** ATCSN1000000003



## 5.10.10 VERSIONS REQUEST

**Command Syntax:**     {:ATC |:ATC5000NG}{:VERSIONS?}CR  
**Description:**         This command returns the firmware versions.  
**Return Value:**         ASCII Value in the following format:  
                               <User Interface Version>,<Server Version>,<Receiver DSP Version>,<Receiver FPGA  
                               Version>,<Transmitter DSP Version>,<Transmitter FPGA Version>,<Receiver Module #1 FPGA  
                               Version>,<Receiver Module #2 FPGA Version>,<Transmitter Module #1 FPGA  
                               Version>,<Transmitter Module #2 FPGA Version>,<Transmitter Module #3 FPGA  
                               Version>,<Antenna Simulator/Switch Assembly FPGA Version>  
**Example:**                :ATC:VERSIONS?\r  
**Return:**                 17.10.2501,17.10.2501,A.R,A.Q,A.R,A.V,A.0,A.0,A.B,A.B,A.B,A.0

## 5.11 DME COMMANDS

### 5.11.1 ACCELERATION

**Command Syntax:**     {:ATC |:ATC5000NG}{:DME}{:ACC | ACCELERATION} SP<numeric>CR  
**Description:**         This command sets the acceleration parameter for range simulation.  
**Numeric**                 0 to 399 ft/s/s (decimal ASCII)  
**Default Value:**        0 ft/s/s  
**Example:**                :ATC:DME:ACC 125\r  
**Query:**                 :ATC:DME:ACC?\r  
**Return:**                 125

### 5.11.2 CABLE LOSS

**Command Syntax:**     {:ATC |:ATC5000NG}{:DME:CABLELOSS} SP<numeric>CR  
**Description:**         This command sets the cable loss for the top antenna.  
**Numeric**                 0 to 2 dB (decimal ASCII)  
**Default Value:**        0 dB  
**Example:**                :ATC:DME:CABLELOSS 0.2\r  
**Query:**                 :ATC:DME:CABLELOSS?\r  
**Return:**                 0.2

### 5.11.3 CHANNEL

**Command Syntax:**     {:ATC |:AYC5000NG}{:DME:CHANNEL} SP<numeric>CR  
**Description:**         This command sets the frequency for the select channel mode.  
**Numeric**                 1 to 126 for DME X and DME Y (decimal ASCII)  
                               108.0 to 135.9 for 0 VOR Pair and 5 VOR Pair (decimal ASCII)  
                               952 to 1223 for MHZ X and MHZ Y  
**Default Value:**        978  
**Example:**                :ATC:DME:CHANNEL 12\r  
**Query:**                 :ATC:DME:CHANNEL?\r  
**Return:**                 12

### 5.11.4 CHANNEL MODE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:CHANNEL:MODE} SP{DMEX | DMEY | 0VOR | 5VOR | MHZX |MHZY}CR`

**Description:** This command selects the style of the DME channel programming. Options are DME X, DME Y, 0 VOR Pair, 5 VOR Pair (50 kHz Offset), MHz X or MHz Y.

**Default Value:** MHZ X

**Example:** `:ATC:DME:CHANNEL:MODE DME Y\r`

**Query:** `:ATC:DME:CHANNEL:MODE?\r`

**Return:** DMEY

### 5.11.5 DIRECTION

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME}{:DIR | DIRECTION} SP{IN | OUT}CR`

**Description:** This command sets the direction parameter for range simulation to inbound or outbound.

**Default Value:** Outbound

**Example:** `:ATC:DME:DIR IN\r`

**Query:** `:ATC:DME:DIR?\r`

**Return:** IN

### 5.11.6 ECHO

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:ECHO } SP{ON | OFF}CR`

**Description:** This command enables or disables the DME echo pulses.

**Default Value:** Off

**Example:** `:ATC:DME:ECHO ON\r`

**Query:** `:ATC:DME:ECHO?\r`

**Return:** ON

### 5.11.7 ECHO POWER

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:ECHO:POWER} SP<numeric>CR`

**Description:** This command sets the offset from the DME power for the echo pulses.

**Numeric** +9 to -19 dBm (decimal ASCII)

**Default Value:** 0 dB

**Example:** `:ATC:DME:ECHO:POWER 2\r`

**Query:** `:ATC:DME:ECHO:POWER?\r`

**Return:** 2.0

### 5.11.8 EFFICIENCY

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME}{:EFF | EFFICIENCY} SP<numeric>CR`

**Description:** This command sets the reply percentage.

**Numeric** 0% to 100% (decimal ASCII)

**Default Value:** 100%

**Example:** `:ATC:DME:EFF 80\r`

**Query:** `:ATC:DME:EFF?\r`

**Return:** 80

### 5.11.9 IDENT CHARACTER

**Command Syntax:** { :ATC |:ATC5000NG}{:DME:IDENT{:CHAR | CHARACTER} SP<numeric>CR  
**Description:** This command sets the time associated with generating a character for Morse Code.  
**Numeric** 150 to 750 ms (decimal ASCII)  
**Default Value:** 450 ms  
**Example:** :ATC:DME:IDENT:CHAR 400\r  
**Query:** :ATC:DME:IDENT:CHAR?\r  
**Return:** 400

### 5.11.10 IDENT CODE

**Command Syntax:** { :ATC |:ATC5000NG}{:DME:IDENT:CODE } SP<characters>CR  
**Description:** This command selects the message that is generated in Morse Code.  
**Characters:** 1 to 8 Alphanumeric  
**Default Value:** 12345678  
**Example:** :ATC:DME:IDENT:CODE 2763\r  
**Query:** :ATC:DME:IDENT:CODE?\r  
**Return:** 2763

### 5.11.11 IDENT DASH

**Command Syntax:** { :ATC |:ATC5000NG}{:DME:IDENT:DASH} SP<numeric>CR  
**Description:** This command sets the time associated with generating a dash for Morse Code.  
**Numeric** 150 to 750 ms (decimal ASCII)  
**Default Value:** 450 ms  
**Example:** :ATC:DME:IDENT:DASH 500\r  
**Query:** :ATC:DME:IDENT:DASH?\r  
**Return:** 500

### 5.11.12 IDENT DOT

**Command Syntax:** { :ATC |:ATC5000NG}{:DME:IDENT:DOT} SP<numeric>CR  
**Description:** This command sets the time associated with generating a dot for Morse Code.  
**Numeric** 50 to 250 ms (Decimal ASCII)  
**Default Value:** 150 ms  
**Example:** :ATC:DME:IDENT:DOT 75\r  
**Query:** :ATC:DME:IDENT:DOT?\r  
**Return:** 75

### 5.11.13 IDENT MODE

**Command Syntax:** { :ATC |:ATC5000NG}{:DME:IDENT:MODE} SP{TONE | CODE | OFF}CR  
**Description:** This command selects the mode of operation for DME identification.  
**Default Value:** OFF  
**Example:** :ATC:DME:IDENT:MODE TONE\r  
**Query:** :ATC:DME:IDENT:MODE?\r  
**Return:** TONE

### 5.11.14 IDENT RATE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:IDENT:RATE} SP<numeric>CR`  
**Description:** This command sets the rate for the Morse Code.  
**Numeric** 10 to 65 seconds (decimal ASCII)  
**Default Value:** 30 seconds  
**Example:** `:ATC:DME:IDENT:RATE 15\r`  
**Query:** `:ATC:DME:IDENT:RATE?\r`  
**Return:** 15.0

### 5.11.15 IDENT SPACE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:IDENT:SPACE} SP<numeric>CR`  
**Description:** This command sets the time associated with generating a space for Morse Code.  
**Numeric** 50 to 250 ms (decimal ASCII)  
**Default Value:** 150 ms  
**Example:** `:ATC:DME:IDENT:SPACE 55\r`  
**Query:** `:ATC:DME:IDENT:SPACE?\r`  
**Retrun:** 55

### 5.11.16 LOAD TEST

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME}{:LOAD}SP<filename>CR`  
**Description:** This command loads a CSV test file (specified filename) from the internal storage area. A "\*" is returned if the command is able to complete successfully or "?" if a failure occurs.  
**Example:** `:ATC:DME:LOAD test1\r`

### 5.11.17 P2 POSITION

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME}{:P2POSITION |:P2POS } SP<numeric>CR`  
**Description:** This command sets the DME P1 to P2 offset spacing.  
**Numeric** 4.1 to 19.9  $\mu$ s (X Channels) (decimal ASCII)  
 22.1 to 37.9  $\mu$ s (Y Channels) (decimal ASCII)  
**Default Value:** 12  $\mu$ s (X Channels)  
 30  $\mu$ s (Y Channels)  
**Example:** `:ATC:DME:P2POS 5\r`  
**Query:** `:ATC:DME:P2POS?\r`  
**Return:** 5. 0

### 5.11.18 POWER

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:POWER} SP<numeric>CR`  
**Description:** This command sets the DME transmission power.  
**Numeric** +5 to -110 dBm (decimal ASCII)  
**Default Value:** -50 dBm  
**Example:** `:ATC:DME:POWER 5\r`  
**Query:** `:ATC:DME:POWER?\r`  
**Return:** 5.0

### 5.11.19 PRF?

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:PRF?}CR  
**Description:** This command returns the UUT transmission rate.  
**Return Value:** Decimal value in ASCII. (Number of transmissions in the last second.)  
**Example:** :ATC:DME:PRF?\r  
**Return:** 101

### 5.11.20 PULSE

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:PULSE} SP{P1 | P2}CR  
**Description:** This command sets which pulse to measure.  
**Default Value:** P1  
**Example:** :ATC:DME:PULSE P1\r  
**Query:** :ATC:DME:PULSE?\r  
**Return:** P1

### 5.11.21 RANGE

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:RANGE} SP<numeric>CR  
**Description:** This command sets the DME range.  
**Numeric** 0 to 400 nmi (decimal ASCII)  
**Default Value:** 0 nmi  
**Example:** :ATC:DME:RANGE 100\r  
**Query:** :ATC:DME:RANGE?\r  
**Return:** 100.

### 5.11.22 RANGE MODE

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:RANGE}{:OFF | OFFSET} SP{-1 | NORMAL}CR  
**Description:** This command selects the normal range simulation or -1 nmi range simulation.  
**Default Value:** Normal  
**Example:** :ATC:DME:RANGE:OFF -1\r  
**Query:** :ATC:DME:RANGE:OFF?\r  
**Return:** -1

### 5.11.23 RESET

**Command Syntax:** {:ATC |:ATC5000NG}{:DME}{:RES |:RESET}CR  
**Description:** This command resets the DME Test.  
**Example:** :ATC:DME:RES\r

### 5.11.24 SAVE TEST

**Command Syntax:** {:ATC |:ATC5000NG}{:DME}{:SAVE}SP<filename>CR  
**Description:** This command saves the current DME Test into the internal storage area with the specified filename.  
**Example:** :ATC:DME:SAVE test1\r

### 5.11.25 SQUITTER

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME}{:SQUIT |:SQUITTER} SP<numeric>CR`  
**Description:** This command sets the DME squitter rate.  
**Numeric** 0 to 8000 transmissions per second (decimal ASCII)  
**Default Value:** 2700  
**Example:** `:ATC:DME:SQUIT 500\r`  
**Query:** `:ATC:DME:SQUIT?\r`  
**Return:** 500

### 5.11.26 START

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:START} CR`  
**Description:** This command starts the DME transmissions of squitters and replies.  
**Example:** `:ATC:DME:START\r`

### 5.11.27 STOP

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:STOP}CR`  
**Description:** This command stops the DME transmissions of squitters and replies.  
**Example:** `:ATC:DME:STOP\r`

### 5.11.28 SUPPRESSION

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:}{SUPP | SUPPRESSION} SP{ON | OFF}CR`  
**Description:** This command enables or disables the suppression output.  
**Default Value:** Off  
**Example:** `:ATC:DME:SUPP ON\r`  
**Query:** `:ATC:DME:SUPP?\r`  
**Retrun:** ON

### 5.11.29 SUPPRESSION PERCENTAGE

**Command Syntax:** `{:ATC |:ATC5000NG}{:DME:}{SUPP | SUPPRESSION}{:PERCENT |:PERCENTAGE} SP<numeric>CR`  
**Description:** This command sets the percentage of suppression when suppression is activated.  
**Numeric** 0 to 100 (decimal ASCII)  
**Default Value:** 100  
**Example:** `:ATC:DME:SUPP:PERCENT 90\r`  
**Query:** `:ATC:DME:SUPP:PERCENT?\r`  
**Return:** 90

### 5.11.30 VELOCITY

**Command Syntax:** {:ATC |:ATC5000NG}{:DME}{:VEL |:VELOCITY} SP<numeric>CR  
**Description:** This command sets the velocity parameter for range simulation.  
**Numeric** 0 to 10000 ft/s(decimal ASCII)  
**Default Value:** 0  
**Example:** :ATC:DME:VEL 599\r  
**Query:** :ATC:DME:VEL?\r  
**Return:** 599.0

### 5.11.31 WIDTH

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:WIDTH} SP<numeric>CR  
**Description:** This command sets the DME reply pulse width.  
**Numeric** 3.5 to 9.0  $\mu$ s (decimal ASCII)  
**Default Value:** 3.5  $\mu$ s  
**Example:** :ATC:DME:WIDTH 4\r  
**Query:** :ATC:DME:WIDTH?\r  
**Return:** 4. 0

### 5.11.32 EQUALIZER

**Command Syntax:** {:ATC |:ATC5000NG}{:DME}{:EQUAL |:EQUALIZER } SP{ON | OFF}CR  
**Description:** This command enables or disables the equalizer pulses.  
**Default Value:** On  
**Example:** :ATC:DME:EQUAL OFF\r  
**Query:** :ATC:DME:EQUAL?\r  
**Return:** OFF

### 5.11.33 TRIGGER

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:TRIGGER } SP{SQUITTER | REPLY | ECHO | IDENT | INTERR}CR  
**Description:** This command sets the scope trigger to the specified message.  
**Default Value:** INTERR  
**Example:** :ATC:DME:TRIGGER ECHO\r  
**Query:** :ATC:DME:TRIGGER?\r  
**Return:** ECHO

### 5.11.34 SELF INTERROGATION

**Command Syntax:** {:ATC |:ATC5000NG}{:DME:SELF} SP{ON | OFF }CR  
**Description:** This command enables or disables the self- interrogation.  
**Default Value:** Off  
**Example:** :ATC:DME:SELF ON\r  
**Query:** :ATC:DME:SELF?\r  
**Return:** ON

## 5.12 EXAMPLES

### 5.12.1 SCENARIO TEST

The following example creates a scenario test with two static intruders and two dynamic intruders.

//Begin Scenario Test

#### Own Aircraft Definition Example

```
:ATC:OWN:LAT 25.91338
:ATC:OWN:LONG -80.3330058
:ATC:OWN:HEAD 0
:ATC:OWN:ALT 12000
:ATC:OWN:MSADDR 4
```

#### Scenario Definition Example

```
:ATC:SCE:TYPE MULTI
:ATC:SCE:RESET
:ATC:SCE:TIME 3000
:ATC:SCE:STATIC:QUANTITY 2
:ATC:SCE:DYNAMIC:QUANTITY 2
:ATC:SCE:INTERROGATOR:QUANTITY 2
:ATC:SCE:SLANT ON
:ATC:SCE:POWER LO
```

#### Static Intruder Definition Example #1

```
//Static Intruder Number 1
:ATC:SCE:STATIC:1:MODE EXTENDED
:ATC:SCE:STATIC:1:ENABLE ON
:ATC:SCE:STATIC:1:BEGIN 0
:ATC:SCE:STATIC:1:END 3000
:ATC:SCE:STATIC:1:MSADDR 2
:ATC:SCE:STATIC:1:GROUND OFF
:ATC:SCE:STATIC:1:ALTITUDE 12000
:ATC:SCE:STATIC:1:BEARING 135
:ATC:SCE:STATIC:1:RANGE 5
:ATC:SCE:STATIC:1:SQANT BOTH
:ATC:SCE:STATIC:1:SQPWR -50
:ATC:SCE:STATIC:1:VELOCITY 150
:ATC:SCE:STATIC:1:VERTICAL 0
:ATC:SCE:STATIC:1:TRACK 0
:ATC:SCE:STATIC:1:CC OFF
:ATC:SCE:STATIC:1:SL 0
:ATC:SCE:STATIC:1:RI:AQ0 0
:ATC:SCE:STATIC:1:RI:AQ1 0
:ATC:SCE:STATIC:1:RI:DF16 0
:ATC:SCE:STATIC:1:CA 0
:ATC:SCE:STATIC:1:UM 0
:ATC:SCE:STATIC:1:DR 0
:ATC:SCE:STATIC:1:FS 0
//0 By Default, 0 - Subtype 0 - Reserved, Valid only for Extended & TIS-B
//      1 - GroundSpeed Normal
//      2 - GroundSpeed Supersonic
//      3 - Airspeed Heading Normal
//      4 - Airspeed Heading Supersonic
//      5 - Subtype 5 - Reserved
//      6 - Subtype 6 - Reserved
//      7 - Subtype 7 - Reserved
:ATC:SCE:STATIC:1:VELTYPE 0
//STAT001 By Default, Alphanumeric digits
:ATC:SCE:STATIC:1:IDENT STAT001
//1 By Default, [1,4], valid only for Extended & TIS-B
:ATC:SCE:STATIC:1:IDENTTYPE 1
//- By Default, {-, A, B}, valid only for Extended
:ATC:SCE:STATIC:1:DO260 -
```



### Static Intruder Definition Example #2

```
:ATC:SCE:STATIC:2:MODE TIS-B
:ATC:SCE:STATIC:2:ENABLE ON
:ATC:SCE:STATIC:2:BEGIN 0
:ATC:SCE:STATIC:2:END 3000
:ATC:SCE:STATIC:2:MSADDR 2
:ATC:SCE:STATIC:2:GROUND OFF
:ATC:SCE:STATIC:2:ALTITUDE 12000
:ATC:SCE:STATIC:2:BEARING 135
:ATC:SCE:STATIC:2:RANGE 5
:ATC:SCE:STATIC:2:SQANT BOTH
:ATC:SCE:STATIC:2:SQPWR -50
:ATC:SCE:STATIC:2:VELOCITY 150
:ATC:SCE:STATIC:2:VERTICAL 0
:ATC:SCE:STATIC:2:TRACK 0
:ATC:SCE:STATIC:2:CA 0
:ATC:SCE:STATIC:2:UM 0
:ATC:SCE:STATIC:2:DR 0
:ATC:SCE:STATIC:2:FS 0
:ATC:SCE:STATIC:2:VELTYPE 0
:ATC:SCE:STATIC:2:IDENT STAT002
//1 By Default, [1,4], valid only for Extended & TIS-B
:ATC:SCE:STATIC:2:IDENTTYPE 1
//0 By Default [0,7], No Valid for ATCRBS (ignored)
:ATC:SCE:DYNAMIC:1:FS 0
```

### Dynamic Intruder Definition Example #1

```
//TCAS By Default
:ATC:SCE:DYNAMIC:1:MODE EXTENDED
:ATC:SCE:DYNAMIC:1:ENABLE ON
//0 By Default, [0, Scenario Time]
:ATC:SCE:DYNAMIC:1:BEGIN 0
//Scenario Time By Default, [0, Scenario Time], stop >= start
:ATC:SCE:DYNAMIC:1:END 3000
:ATC:SCE:DYNAMIC:1:MSADDR 1
//OFF by Default, No Valid for ATCRBS
:ATC:SCE:DYNAMIC:1:GROUND OFF
//1000 By Default
:ATC:SCE:DYNAMIC:1:ALTITUDE 12000
:ATC:SCE:DYNAMIC:1:BEARING 135
:ATC:SCE:DYNAMIC:1:RANGE 5
//BOTH By Default
:ATC:SCE:DYNAMIC:1:SQANT BOTH
//-50 dbm By Default
:ATC:SCE:DYNAMIC:1:SQPWR -50
//Binary By Default
:ATC:SCE:DYNAMIC:1:AMODE BINARY
//0000 By Default, Octal Digits, PadLeft(4, '0')
:ATC:SCE:DYNAMIC:1:ACODE 1234
:ATC:SCE:DYNAMIC:1:VELOCITY 150
:ATC:SCE:DYNAMIC:1:VERTICAL 0
:ATC:SCE:DYNAMIC:1:TRACK 0
:ATC:SCE:DYNAMIC:1:CC OFF
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:SL 0
//0 BY Default [0,7]
:ATC:SCE:DYNAMIC:1:RI:AQ0 0
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:RI:AQ1 0
//0 By Default [0,15]
:ATC:SCE:DYNAMIC:1:RI:DF16 0
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:CA 0
```

```
//0 By Default [0,63]
:ATC:SCE:DYNAMIC:1:UM 0
//0 By Default [0,31]
:ATC:SCE:DYNAMIC:1:DR 0
//0 By Default [0,7]
:ATC:SCE:DYNAMIC:1:FS 0
```

#### Dynamic Intruder Definition Example #2

```
//Dynamic Intruder Number 2
:ATC:SCE:DYNAMIC:2:MODE TIS-B
:ATC:SCE:DYNAMIC:2:ENABLE ON
:ATC:SCE:DYNAMIC:2:BEGIN 0
:ATC:SCE:DYNAMIC:2:END 3000
:ATC:SCE:DYNAMIC:2:ALTITUDE 12000
:ATC:SCE:DYNAMIC:2:BEARING 135
:ATC:SCE:DYNAMIC:2:RANGE 5
:ATC:SCE:DYNAMIC:2:VELOCITY 150
:ATC:SCE:DYNAMIC:2:VERTICAL 0
:ATC:SCE:DYNAMIC:2:TRACK 0
//ON By Default
:ATC:SCE:DYNAMIC:2:ALTRPT ON
//To complete the definition of the Mode S squitters.
:ATC:SCE:COMPILE
```

#### 5.12.2 DO-260 TEST SINGLE ADS-B EXAMPLE

The following example creates a normal test for a single ADS-B

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINITION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0

//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:NORMAL:GENS:GENA:POWER -20
:ATC:DO260:TYPE:NORMAL:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's
ATC-5000NG
:ATC:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL ON
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:DATA 880000014800000000000000000001
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM OFF
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

### 5.12.3 DO-260 TEST DUAL ADS-B EXAMPLE

The following example creates a test of type normal for a dual ADS-B.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINITION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:NORMAL:GENS:GENA:POWER -20
:ATC:DO260:TYPE:NORMAL:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:NORMAL:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's
ATC-5000NG
:ATC:DO260:TYPE:NORMAL:GENS:GENA:SIGNAL ON
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:DATA 880000014800000000000000000001
:ATC:DO260:TYPE:NORMAL:GENS:GENA:MODES:RANDOM OFF
:ATC:DO260:TYPE:NORMAL:GENS:GENB:POWER -30
:ATC:DO260:TYPE:NORMAL:GENS:GENB:PATH TOP
:ATC:DO260:TYPE:NORMAL:GENS:GENB:DELAY 0
:ATC:DO260:TYPE:NORMAL:GENS:GENB:SIGNAL ON
:ATC:DO260:TYPE:NORMAL:GENS:GENB:MODES:DATA 880000014800000000000000000001
:ATC:DO260:TYPE:NORMAL:GENS:GENB:MODES:RANDOM OFF

//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

## 5.12.4 DO-260 SPECIAL TEST OVERLAPPING PULSE EXAMPLE

The following example creates a special test for overlapping pulse.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINITION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:OVERLAPPINGPULSE:PULSE:WIDTH 4500
:ATC:DO260:TYPE:OVERLAP:PULSE:DELAY 0
:ATC:DO260:TYPE:OVERLAP:GENS:GENA:POWER -20
:ATC:DO260:TYPE:OVERLAP:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:OVERLAP:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's
ATC-5000NG
//:ATC:DO260:TYPE:OVERLAP:GENS:GENA:SIGNAL ON //No Available for Special Test. Bussines
Rule's ATC-5000NG
:ATC:DO260:TYPE:OVERLAP:GENS:GENA:MODES:DATA 88000001480000000000000000000001
//:ATC:DO260:TYPE:OVERLAP:GENS:GENA:MODES:RANDOM OFF //No Available for Special test.
Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:OVERLAPPINGPULSE:GENS:GENc:POWER -20
:ATC:DO260:TYPE:OVERLAPPINGPULSE:GENS:GENc:PATH TOP
:ATC:DO260:TYPE:OVERLAP:GENS:GENc:DELAY 0
//:ATC:DO260:TYPE:OVERLAPPINGPULSE:GENS:GENc:SIGNAL ON //No Available for Special test.
Bussines Rule's ATC-5000NG
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

### 5.12.5 DO-260 SPECIAL TEST BIT FAILURES EXAMPLE

The following example creates a special test for an ADS-B Bad Chips DF17 Energy in chips 33 thru 39.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINITION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:BITFAILURES:CHIPS:FIRST 33
:ATC:DO260:TYPE:BITF:CHIPS:LAST 39
:ATC:DO260:TYPE:BITF:GENS:GENA:POWER -20
:ATC:DO260:TYPE:BITF:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:BITF:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's ATC-5000NG
//:ATC:DO260:TYPE:BITF:GENS:GENA:SIGNAL ON //No Available for Special test. Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:BITF:GENS:GENA:MODES:DATA 880000014800000000000000000001
//:ATC:DO260:TYPE:BITF:GENS:GENA:MODES:RANDOM OFF //No Available for Special test. Business Rule's ATC-5000NG
:ATC:DO260:TYPE:BITF:GENS:GENC:POWER -20
:ATC:DO260:TYPE:BITF:GENS:GENC:PATH TOP
:ATC:DO260:TYPE:BITF:GENS:GENC:DELAY 0
//:ATC:DO260:TYPE:BITF:GENS:GENC:SIGNAL ON //No Available for Special test. Bussines Rule's ATC-5000NG
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

## 5.12.6 DO-260 SPECIAL TEST ALTERED PREAMBLE EXAMPLE

The following example creates a special test for an ADS-B altered preamble.

```
//BEGIN TEST
//RESET DO260 TEST
:ATC:DO260:RESET
//TEST DEFINITION
//TIMING DEFINITION
:ATC:DO260:TIMING:TRIGGER:SOURCE GENA
//0-DELAY+ 1-DELAY- 2-RANDOM
:ATC:DO260:TIMING:TRIGGER:MODE 0
:ATC:DO260:TIMING:PERIOD 10
//0-UNLIMITED
:ATC:DO260:TIMING:TRANSMISSIONS 0
//SPECIAL TYPE DEFINITION
:ATC:DO260:TYPE:ALTEREDPREAMBLE:PULSE:P1:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P1:POSITION 0
:ATC:DO260:TYPE:ALTEREDPREAMBLE:PULSE:P1:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P1:ENABLE ON
:ATC:DO260:TYPE:ALT:PULSE:P2:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P2:POSITION 1000
:ATC:DO260:TYPE:ALT:PULSE:P2:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P2:ENABLE ON
:ATC:DO260:TYPE:ALT:PULSE:P3:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P3:POSITION 3500
:ATC:DO260:TYPE:ALT:PULSE:P3:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P3:ENABLE ON
:ATC:DO260:TYPE:ALT:PULSE:P4:WIDTH 500
:ATC:DO260:TYPE:ALT:PULSE:P4:POSITION 4500
:ATC:DO260:TYPE:ALT:PULSE:P4:REFERENCE GENA
:ATC:DO260:TYPE:ALT:PULSE:P4:ENABLE ON
:ATC:DO260:TYPE:ALTEREDPREAMBLE:GENS:GENA:POWER -20
:ATC:DO260:TYPE:ALT:GENS:GENA:PATH TOP
//:ATC:DO260:TYPE:ALT:GENS:GENA:DELAY 0 //No Available for Gen A. Bussines Rule's ATC-5000NG
//:ATC:DO260:TYPE:ALT:GENS:GENA:SIGNAL ON //No Available for Special Test. Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:DATA 880000014800000000000000000001
//:ATC:DO260:TYPE:ALT:GENS:GENA:MODES:RANDOM OFF //No Available for Special test. Bussines Rule's ATC-5000NG
:ATC:DO260:TYPE:ALT:GENS:GENC:POWER -20
:ATC:DO260:TYPE:ALT:GENS:GENC:PATH TOP
:ATC:DO260:TYPE:ALT:GENS:GENC:DELAY 0
//:ATC:DO260:TYPE:ALT:GENS:GENC:SIGNAL ON //No Available for Special Test. Bussines Rule's ATC-5000NG
//BEGIN DO260 TEST
:ATC:DO260:START
//END OF TEST.
```

### 5.12.7 TRANSPONDER BLOCK TRANSMISSION EXAMPLE

The following example creates a block transmission:

```
//BEGIN TEST
:ATC:SCE:TYPE XPDR
//RESET BLOCK TRANSMISSION TEST
:ATC:XPDR:RESET
//BLOCK DEFINITION
// BLOCK TRANSMISSION PERIOD IN MILLISECONDS
:ATC:XPDR:TXBLOCK:PERIOD 100
//TRANSMISSION MODE CONTINUOUS OR INTERRUPT
:ATC:XPDR:TXBLOCK:MODE CONTINUOUS
//TOTAL NUMBER OF BLOCKS TRANSMISSION
:ATC:XPDR:TXBLOCK:TRANS 5
//DATA MESSAGE
:ATC:XPDR:TXBLOCK:1:MESS 00000000000001
//TYPE OF THE MESSAGE
:ATC:XPDR:TXBLOCK:1:TYPE 1
//THE STARTING TRANSMISSION TIME (in µs) WITHIN THE BLOCK OF THE MESSAGE
:ATC:XPDR:TXBLOCK:1:TIME 0
//THE POWER LEVEL OF THE MESSAGE
:ATC:XPDR:TXBLOCK:1:POWER -70
:ATC:XPDR:TXBLOCK:2:MESS 8D33333300000000000000000000; :XPDR:TXBLOCK:2:TYPE 1; :
XPDR:TXBLOCK:2:TIME 125; :XPDR:TXBLOCK:2:POWER -70
//BEGIN BLOCK TRANSMISSION
:ATC:XPDR:START // The system will return a ACK.
//END OF TEST.
```

## 5.12.8 UAT SCENARIO DEFINITION EXAMPLE

The following example creates a scenario test with two static intruders and two dynamic intruders by the channels UAT RX1 and UAT RX2. This capability requires ATC-5000NG specific UAT hardware.

```
//Begin Scenario Test
//Receiving Station Definition Example
:ATC:SCE:TYPE UAT // sets the ATC-5000NG to interpret the scenario commands as UAT mode
:ATC:OWN:LAT 25.91338
:ATC:OWN:LONG -80.3330058
:ATC:OWN:HEAD 0
:ATC:OWN:ALT 12000
:ATC:OWN:MSADDR 4

//Scenario Definition Example
:ATC:SCE:RESET
:ATC:SCE:TIME 3000
:ATC:SCE:STATIC:QUANTITY 2,2
:ATC:SCE:DYNAMIC:QUANTITY 2,2
:ATC:SCE:UTCGPS OFF
:ATC:SCE:CAPTURE ON
:ATC:RCV:MASK F00

:ATC:SCE:CHANNEL UATRX1
:ATC:SCE:STATIC:1:PLCODE 0 //payload type code 0..13. 0 by default.
:ATC:SCE:STATIC:1:ADDRQ 0 //Address qualifier 0..7
:ATC:SCE:STATIC:1:AVSIZE 0 //A/V Size 0..15
:ATC:SCE:STATIC:1:AGSTATE 0 //AG State 0..3
:ATC:SCE:STATIC:1:ALTTYPE 0 //Altitude Type 0..1
:ATC:SCE:STATIC:1:UAT:GPSLAT 0 //lateral axis GPS antenna offset 0..7. 0 by default. 0 - No
Data.
:ATC:SCE:STATIC:1:UAT:GPSLONG 0 //longitudinal axis GPS antenna offset 0..31. 0 by default
. 0 - No data
:ATC:SCE:STATIC:1:MSO 752 //MSO 752..3951
:ATC:SCE:STATIC:1:NIC 0 //NIC 0..15
:ATC:SCE:STATIC:1:OFFSET 0 //offset or delay 0..65500
:ATC:SCE:STATIC:1:OFFMANUAL OFF //enables or disables the manual override of the offset
:ATC:SCE:STATIC:1:TAH 0 //track and heading type 0..3. 0 - No Data
:ATC:SCE:STATIC:1:VVSOURCE 0 //VV Source 0..1. 0 - From Geo 1 - From Baro
:ATC:SCE:STATIC:1:UPLINK 0 //uplink feedback encoding 0..7
:ATC:SCE:STATIC:1:UTC ON //enables or disables the UTC coupled condition
:ATC:SCE:STATIC:1:UAT:GPSAXIS 0 //GPS antenna axis of the ADS-B message
:ATC:SCE:STATIC:1:ALTITUDE 12002;:BEARING 45;:RANGE 5

:ATC:SCE:STATIC:2:PLCODE 1 //payload type code 0..13
:ATC:SCE:STATIC:2:ADDRQ 1 //Address qualifier 0..7
:ATC:SCE:STATIC:2:AVSIZE 1 //A/V Size 0..15
:ATC:SCE:STATIC:2:AGSTATE 1 //AG State 0..3
:ATC:SCE:STATIC:2:ALTTYPE 1 //Altitude Type 0..1
:ATC:SCE:STATIC:2:UAT:GPSLAT 1 //lateral axis GPS antenna offset 0..7. 0 by default. 0 - No
Data.
:ATC:SCE:STATIC:2:UAT:GPSLONG 1 //longitudinal axis GPS antenna offset 0..31. 0 by default
. 0 - No data
:ATC:SCE:STATIC:2:MSO 754 //MSO 752..3951
:ATC:SCE:STATIC:2:NIC 1 //NIC 0..15
:ATC:SCE:STATIC:2:OFFSET 0 //offset or delay 0..65500
:ATC:SCE:STATIC:2:OFFMANUAL OFF //enables or disables the manual override of the offset
:ATC:SCE:STATIC:2:TAH 1 //track and heading type 0..3. 0 - No Data
:ATC:SCE:STATIC:2:VVSOURCE 1 //VV Source 0..1. 0 - From Geo 1 - From Baro
:ATC:SCE:STATIC:2:UPLINK 1 //uplink feedback encoding 0..7
:ATC:SCE:STATIC:1:UTC ON //enables or disables the UTC coupled condition
:ATC:SCE:STATIC:2:PLMS FFFF //mode status payload message element. Apply only for
payload type 1 and 3. 24 hexadecimal. pad on the right with zeros.
```



:ATC:SCE:STATIC:2:PLASV FFFF //the auxiliary state vector payload message element .  
Apply only for payload type 1,2,5 and 6. 10 hexadecimal. pad on the right with zeros.

Z

```
:ATC:SCE:DYNAMIC:1:UAT:NADSB 5
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:PLCODE 1
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:PLMS AAAAAAAAAAAAAAAAAA
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:PLASV CCCCCC
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:PLCODE 2
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:PLASV BBBB
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:PLCODE 3
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:PLTS EEEEE
:ATC:SCE:DYNAMIC:1:UAT:ADSB:4:PLCODE 6
:ATC:SCE:DYNAMIC:1:UAT:ADSB:4:PLTS FFFF
:ATC:SCE:DYNAMIC:1:UAT:ADSB:4:PLASV DDDDDDD
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:NINTERVALS 10
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:1:ENABLE off
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:10:BEGIN 100
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:10:END 150
:ATC:SCE:DYNAMIC:1:UAT:ADSB:1:INTERVAL:10:PWR -32
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:NINTERVALS 8
:ATC:SCE:DYNAMIC:1:UAT:ADSB:2:INTERVAL:11:ENABLE off
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:INTERVAL:5:ENABLE off
:ATC:SCE:DYNAMIC:1:UAT:ADSB:3:INTERVAL:5:PWR -55
```

```
:ATC:SCE:CHANNEL UATRX2
:ATC:SCE:STATIC:1:PLCODE 3
:ATC:SCE:STATIC:1:ADDRQ 0
:ATC:SCE:STATIC:1:AVSIZE 0
:ATC:SCE:STATIC:1:AGSTATE 0
:ATC:SCE:STATIC:1:ALTTYPE 0
:ATC:SCE:STATIC:1:UAT:GPSLAT 0
:ATC:SCE:STATIC:1:UAT:GPSLONG 0
:ATC:SCE:STATIC:1:MSO 752
:ATC:SCE:STATIC:1:NIC 0
:ATC:SCE:STATIC:1:OFFSET 0
:ATC:SCE:STATIC:1:OFFMANUAL OFF
:ATC:SCE:STATIC:1:TAH 0
:ATC:SCE:STATIC:1:VVSOURCE 0
:ATC:SCE:STATIC:1:UPLINK 0
:ATC:SCE:STATIC:1:UTC ON
:ATC:SCE:STATIC:1:PLMS FFFF
:ATC:SCE:STATIC:1:PLTS FFFF
```

```
:ATC:SCE:STATIC:2:PLCODE 13 //Ground Uplink
:ATC:SCE:STATIC:2:UTC on
:ATC:SCE:STATIC:2:UAT:GUS:POSVALID on
:ATC:SCE:STATIC:2:UAT:GUS:ADVALID on
:ATC:SCE:STATIC:2:UAT:GUS:LAT 5
:ATC:SCE:STATIC:2:UAT:GUS:LONG 6
:ATC:SCE:STATIC:2:UAT:GUS:SLOTID 7
:ATC:SCE:STATIC:2:UAT:GUS:TISBID 8
:ATC:SCE:STATIC:2:SQPWR -30
:ATC:SCE:STATIC:2:UAT:GUS:IFRAME:NIFRAMES 20
:ATC:SCE:STATIC:2:UAT:GUS:IFRAME:2:IFDATA FILE,C:\ATG\test_1.txt
:ATC:SCE:STATIC:2:UAT:GUS:IFRAME:20:IFDATA HEX,4441544153414d504c45
```

### 5.12.9 EXAMPLE PROGRAM

// This example program is provided to allow you to quickly get started communicating with the unit. It requires National Instruments LabWindows/CVI. Version 2010 or above is recommended.  
// This program shows how to communicate using GPIB and Ethernet. The following text can be copied and pasted into 4 files and compiled.

```
//
=====
// Title:      Main.h
// Purpose:    Main header file.
//
// Created on: 9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright:  VIAVI AvComm. All Rights Reserved.
//
=====

#ifndef __Main_H__
#define __Main_H__

#ifdef __cplusplus
extern "C" {
#endif

//
=====
// Include files

#include "cstddef.h"

#ifdef __cplusplus
}
#endif

#endif // ndef __Main_H__
//=====
//=== END MAIN HEADER FILE =====
//=====
// Title:      Main.c
// Purpose:    Main function to show how to communicate with the unit using
//             GPIB and Ethernet.
//             This example program was compiled and tested using
//             National Instruments LabWindows/CVI Ver 2010.
//
// Created on: 9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright:  VIAVI AvComm. All Rights Reserved.
//=====
//=====
// Include files
#include <ansi_c.h>
#include <userint.h>
#include <utility.h>
#include <formatio.h>
#include "ATC_Driver.h"
//=====
void main(void)
{
    ViStatus status = 0;
```

```

int bytes = 0;
ViChar readBuff[512] = {0};
ViChar Message[512] = {0};
ViReal64 cmdWait = 0.030;

// Initialize communication using GPIB or Ethernet.
// Uncomment the line for the method you desire and set the address.

// status = ATC_init (ATCGen1,"ATC-5000NG", "138156", "ETHERNET","10.170.170.52", "");

status = ATC_init (ATCGen1,"ATC-5000NG", "138156", "GPIB", "8", "");

if(status < 0)      // failed to initialize
{
    // Display error message
    Fmt(Message,"%s<The ATC-5000NG failed to initialize. \n  Terminating program.");
    status = MessagePopup ("Error", Message);
    exit(0);
}

// The carriage return is appended by the ATC_writeInstrData function.

// Get Unit Name
status = ATC_writeInstrData (ATCGen1, ":ATC:NAME?", cmdWait);
memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
// readBuffer = ATCSN1000000003

// Get Unit Serial Number
status = ATC_writeInstrData (ATCGen1, ":ATC:SN?", cmdWait);
memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
// readBuffer = 1000000003

// Get Unit Last Calibration Date
status = ATC_writeInstrData (ATCGen1, ":ATC:LASTCAL?", cmdWait);
memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
// readBuffer = 2/20/2017 3:25:43 PM - Pass

// Note the *IDN? is valid on all interfaces after version 17.03.3101
// before this version it is only valid on GPIB.
status = ATC_writeInstrData (ATCGen1, "*IDN?", cmdWait);
memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
// readBuffer = Aeroflex;ATC-5000NG RF Test Set;138156

// Get Unit Version Information
status = ATC_writeInstrData (ATCGen1, ":ATC:VERSIONS?", cmdWait);
memset (readBuff, 0x0, sizeof (readBuff) / sizeof (ViChar));
status = ATC_readInstrData (ATCGen1, 250, readBuff, &bytes);
// readBuffer = 17.03.2205,17.03.2205,A.P,A.L,A.N,A.M,A.0,A.0,3.E,3.E,3.E,A.0

// Block transmission example
status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:RESET", cmdWait);
// Delay three seconds to allow unit to switch to proper
// instrument and clear the transmission block.
Delay(3);
status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:PERIOD 100", cmdWait);
status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:MODE CONTINUOUS", cmdWait);
status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:TRANS 5 ", cmdWait);
status = ATC_writeInstrData (ATCGen1, ":ATC:TXBLOCK:1:TYPE 3", cmdWait);

```



```
#endif // __ATC_GLOBALS

/*****
/** Defined STRUCTURES
*****/
struct device /* DEVICE RESOURCE Description */
{
  char Type[20]; /* Device Name, Type Or Model */
  char Pn[15]; /* Device Part Number */
  char Opt[10]; /* Device Option Or MOD Level */
  char Bus[10]; /* Device Communications Bus Type */
  char PriAddr[41]; /* Device Primary Address */
  char SecAddr[41]; /* Device Secondary Address */
};

//=====
// Define Instrument Specific Error/Warning Codes Here =====
//=====
#define VI_ERROR_PARAMETER9 (_VI_ERROR+0x3FFC0009L)//0xBFFC0009
#define VI_ERROR_PARAMETER10 (_VI_ERROR+0x3FFC000AL)
#define VI_ERROR_PARAMETER11 (_VI_ERROR+0x3FFC000BL)
#define VI_ERROR_INSTR_FILE_OPEN (_VI_ERROR+0x3FFC0800L)//0xBFFC0800
#define VI_ERROR_INSTR_FILE_WRITE (_VI_ERROR+0x3FFC0801L)//0xBFFC0801
#define VI_ERROR_INSTR_INTERPRETING_RESPONSE (_VI_ERROR+0x3FFC0803L)//
0xBFFC0803

#define VI_INSTR_WARNING_OFFSET (0x3FFC0900L)
#define VI_INSTR_ERROR_OFFSET (_VI_ERROR+0x3FFC0900L)//0xBFFC0900

#define ATC_ERROR_INVALID_CONFIGURATION (VI_INSTR_ERROR_OFFSET + 0xF0L)//
0xBFFC09F0
#define ATC_ERROR_INVALID_COMMAND (VI_INSTR_ERROR_OFFSET + 0xF1L)//
0xBFFC09F1
#define ATC_ERROR_NAC (VI_INSTR_ERROR_OFFSET + 0xF2L)//0xBFFC09F2
#define ATC_ERROR_COMMAND_ERROR (VI_INSTR_ERROR_OFFSET + 0xF3L)//
0xBFFC09F3
#define ATC_ERROR_NO_DATA (VI_INSTR_ERROR_OFFSET + 0xF4L)//0xBFFC09F4
#define ATC_ERROR_CMD_WAIT (VI_INSTR_ERROR_OFFSET + 0xF5L)//0xBFFC09F5
#define ATC_ERROR_SESSION_ALREADY_EXITS (VI_INSTR_ERROR_OFFSET + 0xF6L)//
0xBFFC09F6
#define ATC_ERROR_TOO_MANY_SESSIONS (VI_INSTR_ERROR_OFFSET + 0xF7L)//
0xBFFC09F7

#define DEFAULT_BAUD 115200 // Default baud rate
#define DEFAULT_DBITS 8 // Default data bits
#define DEFAULT_SBIT 1 // Default stop bit
#define DEFAULT_PARITY 0 // Default parity

#define OFF 0
#define ON 1

#define ATCGen1 1
#define ATCGen2 2

typedef struct {
  ViInt32 baudrate;
  ViInt32 databits;
  ViInt32 parity;
  ViInt32 stopbits;
  ViInt16 connect; // ON or OFF
  ViInt32 resourcename; // 0-device name; 1-lan IP address
}
```

```

} typATCGenConfigs;

#ifdef __ATC_GLOBALS
    static typATCGenConfigs ATCGenConfig; // config parameters
#else // __ATCGEN_GLOBALS is not defined
    extern typATCGenConfigs ATCGenConfig; // config parameters
#endif // __ATCGEN_GLOBALS

//=====
//= GLOBAL USER-CALLABLE FUNCTION DECLARATIONS (Exportable Functions) =====
//=====
ATC_EXT ViStatus _VI_FUNC ATC_init (ViInt16 ATCGen, ViChar ATCGenType[],
                                   ViChar ATCGenPartNumber[], ViChar ATCGenBus[],
                                   ViChar primaryAddr[], ViChar secondaryAddr[]);

ATC_EXT ViStatus _VI_FUNC ATC_close (ViInt16 ATCGen);

ATC_EXT ViStatus _VI_FUNC ATC_reset (ViInt16 ATCGen);

ATC_EXT ViStatus _VI_FUNC ATC_writeInstrData (ViInt16 ATCGen,
                                             ViString writeBuffer,
                                             ViReal64 waitToNxtCmd);

ATC_EXT ViStatus _VI_FUNC ATC_readInstrData (ViInt16 ATCGen,
                                             ViInt32 numberBytesToRead,
                                             ViChar _VI_FAR readBuffer[],
                                             ViPInt32 numBytesRead);

ATC_EXT ViStatus _VI_FUNC ATC_errorQuery (ViInt16 ATCGen,
                                          ViInt32 *errorCode,
                                          ViChar _VI_FAR message[]);

#if defined(__cplusplus) || defined(__cplusplus__)
}
#endif

#endif

//=====
//=== END INCLUDE FILE =====
//=====

//=====
// Title:    ATC_Driver.c
// Purpose:  Driver functions to control the ATC-5000NG using
//           GPIB, Ethernet or Serial. Serial is not recommended.
//
// Created on: 9/11/2018 at 10:51 AM by VIAVI Test Solutions.
// Copyright: VIAVI AvComm. All Rights Reserved.
//=====
#include <utility.h>

#include <visa.h>
#include <formatio.h>
#include <toolbox.h>
#include "ATC_Driver.h"

#define WAITTIME0_01    0.01    // Seconds wait time
#define WAITTIME0_02    0.02    // Seconds wait time
#define WAITTIME0_03    0.03    // Seconds wait time

```

```

#define WAITTIME1_00    1.    // Seconds wait time
#define WAITTIME5_00    5.    // Seconds wait time
#define WAITTIME7_00    7.    // Seconds wait time
#define WAITTIME10_00   10.   // Seconds wait time

#define TIME_OUT_NORM_VAL 3000

#define MAX_SESSIONS 2

struct {
    ViSession session;
    ViReal64 startTime;
    ViReal64 curWaitTime;
    ViChar resourceName[40];
} sessionInfo[MAX_SESSIONS] = {{0,0,0,""},{0,0,0,""}};

#define BUFFER_SIZE      512L      // File I/O buffer size

//=====
//= Driver Specific Error/Warning Codes =====
//=====
#define NOT_AVAILABLE      0xFFFFFC18 // Function Not Available      (-1000)
#define INVALID_SELECTION  0xFFFFFC17 // Invalid device selected    (-1001)
#define NOT_INSTALLED      0xFFFFFC16 // Device Not installed       (-1002)
#define ABORT_FLAG_SET     0xFFFFFC15 // Test Exec. Abort Flag Set (-1003)
#define NOT_INITIALIZED    0x3FFFFC01 // Instrument Not Initailized Warning

#define ERR_PARAMETER1     0xFFFFFC13 // Parameter 1 Out-Of-Range. (-1005)
#define ERR_PARAMETER2     0xFFFFFC12 // Parameter 2 Out-Of-Range. (-1006)
#define ERR_PARAMETER3     0xFFFFFC11 // Parameter 3 Out-Of-Range. (-1007)
#define ERR_PARAMETER4     0xFFFFFC10 // Parameter 4 Out-Of-Range. (-1008)
#define ERR_PARAMETER5     0xFFFFFC0F // Parameter 5 Out-Of-Range. (-1009)
#define ERR_PARAMETER6     0xFFFFFC0E // Parameter 6 Out-Of-Range. (-1010)
#define ERR_PARAMETER7     0xFFFFFC0D // Parameter 7 Out-Of-Range. (-1011)
#define ERR_PARAMETER8     0xFFFFFC0C // Parameter 8 Out-Of-Range. (-1012)
#define ERR_PARAMETER9     0xFFFFFC0B // Parameter 9 Out-Of-Range. (-1013)
#define ERR_PARAMETER10    0xFFFFFC0A // Parameter 10 Out-Of-Range. (-1014)
#define ERR_PARAMETER11    0xFFFFFC09 // Parameter 11 Out-Of-Range. (-1015)

#define NOT_SUPPORTED      0xFFFFFC03 // Command Not Supported.    (-1021)
#define OPTION_MISSING     0xFFFFFC02 // Option Not Installed.     (-1022)
#define WRONG_INSTRUMENT   0xFFFFFC01 // Incorrect Instrument       (-1023)
#define INVAL_TERMINATION  0xFFFFFC00 // Invalid term character(s). (-1024)

ViSession    ATCGenSession[MAX_SESSIONS]; // session handle
struct device ATCGenDevice[MAX_SESSIONS]; // device parameters
ViInt16      ATCGenConnect[MAX_SESSIONS];

//=====
//= INSTRUMENT-DEPENDENT COMMAND ARRAYS =====
//=====
ViInt32 Equal[20];
ViInt32 Separator[20];
ViInt32 i;
ViInt32 j;
ViInt32 bytesRead;
ViChar Buffer[80];
ViChar Buffer1[80];
ViChar Buffer2[80];
ViChar Buffer3[80];

```

```

ViChar Buffer4[80];
ViChar Buffer5[80];
ViChar Buffer6[80];
ViChar Buffer7[80];
ViChar Buffer8[80];
ViChar Buffer9[80];
ViChar Buffer10[80];
ViChar Buffer11[80];
ViChar Buffer12[80];
ViChar Buffer13[80];
ViChar Buffer14[80];
ViChar Buffer15[80];
ViChar Buffer16[80];
ViChar Buffer17[80];
ViChar Buffer18[80];
ViChar Buffer19[80];
ViChar tmp_buffer[20][80];
ViChar OutBuffer[100];
ViChar InBuffer[1024];

static char saved_buffer[2][512];
static long is_buffer_occupied[2];

//=====
//===== Function Prototypes =====
//=====

ViStatus _VI_FUNC ATC_read_IDN (ViSession,ViChar mfg[],ViChar desc[],
                               ViChar pn[]);

ViStatus ATC_initialize (ViRsrc, ViBoolean,ViBoolean, ViPSession);
ViStatus ATC_initCleanUp (ViSession, ViPSession, ViStatus);
ViStatus ATC_sessionInfoOpen (ViSession, ViRsrc resourceName);
ViStatus ATC_sessionInfoClose (ViSession);

ViStatus ATC_sessionInfoResource (ViSession, ViChar resourceName[]);
ViStatus ATC_nxtCmdWait (ViSession);
ViStatus ATC_nxtCmdLog (ViSession, ViReal64 waitToNxtCmd);
ViBoolean ATC_invalidViBooleanRange (ViBoolean);

static void ClearStoredBuffer(ViSession);
static long ReadAndStoreIntoBuffer(ViSession);

//=====
//===== User Callable Functions =====
//=====

/*=====
This is a list of error codes that may be returned from the callable
functions below.

3FFF0005 The specified termination character was read.
3FFF0006 The specified number of bytes was read.
BFFF0000 Miscellaneous or system error occurred.
BFFF000E Invalid session handle.
BFFF0015 Timeout occurred before operation could complete.
FFFFFC16 Device not installed
FFFFFC17 Invalid device selected
FFFFFC18 Function not available
BFFF0034 Violation of raw write protocol occurred.
BFFF0035 Violation of raw read protocol occurred.
BFFF0036 Device reported an output protocol error.

```



```

BFFF0037 Device reported an input protocol error.
BFFF0038 Bus error occurred during transfer.
BFFF003A Invalid setup (attributes are not consistent).
BFFF005F No listeners condition was detected.
BFFF0060 This interface is not the controller in charge.
BFFF0067 Operation is not supported on this session.
=====*/

//=====
// Function: ATC_Init
// Purpose: This function initializes the ATCGen specified in the "Type"
//          input parameter to a known state.
// Parameter List: ATCGen - Generator number, ATCGen1 or ATCGen2
//                 ATCGenType[] - "ATC-5000NG" or "NOT INSTALLED"
//                 ATCGenPartNumber[] - 138156
//                 ATCGenBus[] - "GPIB", "RS232" or "ETHERNET"
//                 primaryAddr[] - This is the address used for the unit.
//                 GPIB: 0-32, RS232 1-256 for ethernet it
//                 it should be similar to 10.168.168.2
//                 secondary_Adress[] - usually not used set to ""
// Return Values: Zero on success, non-zero otherwise
//=====
ViStatus _VI_FUNC ATC_init (ViInt16 ATCGen,
                          ViChar ATCGenType[],
                          ViChar ATCGenPartNumber[],
                          ViChar ATCGenBus[],
                          ViChar primaryAddr[],
                          ViChar secondaryAddr[])
{
    ViStatus ATC_status = VI_SUCCESS; // reset error status code
    ViChar resource[50] = {NULL};

    if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
        ATC_status = ERR_PARAMETER1; // set error status code
    else
    {
        if (ATCGenSession[(ATCGen-1)] != 0)
        {
            if ((ATC_status = ATC_close (ATCGen)) < 0)
                ATCGenSession[(ATCGen-1)] = 0;
        }

        ATCGenSession[(ATCGen-1)] = 0; // Zero Session Handle

        strcpy (ATCGenDevice[(ATCGen-1)].Type, ATCGenType);
        strcpy (ATCGenDevice[(ATCGen-1)].Pn, ATCGenPartNumber);
        strcpy (ATCGenDevice[(ATCGen-1)].Bus, ATCGenBus);
        strcpy (ATCGenDevice[(ATCGen-1)].PriAddr, primaryAddr);
        strcpy (ATCGenDevice[(ATCGen-1)].SecAddr, secondaryAddr);

        // check for ATCGen 1 = ATC-5000NG and initialize
        if (strcmp(ATCGenDevice[(ATCGen-1)].Type, "SIMULATED") == 0)
        {
            ATC_status = 0;
        }
        else if (strcmp (ATCGenDevice[(ATCGen-1)].Type, "ATC-5000NG") == 0)
        {
            if (strncmp ("GPIB", ATCGenDevice[(ATCGen-1)].Bus, 4) == 0)
            {
                ViRsrc bus; // communication bus type of device
            }
        }
    }
}

```

```

ViChar busType[10]; // bus type such as GPIB, VXI or MXI
// ADD "GPIB::" TO address string for visa inst
strcpy(busType, ATCGenDevice[(ATCGen-1)].Bus);
bus = strcat(busType, "::");
strcpy(bus, busType);
strcat (bus, ATCGenDevice[(ATCGen-1)].PriAddr);
strcpy (resource, bus);

if ((ATC_status = ATC_initialize (resource, VI_OFF, VI_OFF,
                                &ATCGenSession[(ATCGen-1)])) < 0)
{
    ATCGenSession[(ATCGen-1)] = 0;
}
else {
    // Set variable so other driver calls won't bail out
    ATCGenConnect[(ATCGen-1)] = ON;
}
}
else if (strcmp ("RS232", ATCGenDevice[(ATCGen-1)].Bus) == 0)
{ // RS-232

    if((atoi(ATCGenDevice[(ATCGen-1)].PriAddr)> 0) &&
        (atoi(ATCGenDevice[(ATCGen-1)].PriAddr) <256))
    {
        Fmt (resource, "%s<ASRL%i::INSTR",
              atoi (ATCGenDevice[(ATCGen-1)].PriAddr));
        if ((ATC_status = ATC_initialize (resource, VI_OFF,
                                          VI_OFF, &ATCGenSession[(ATCGen-1)])) < 0)
        {
            ATCGenSession[(ATCGen-1)] = 0;
        }
        else {
            ATCGenConfig.baudrate = DEFAULT_BAUD;
            ATCGenConfig.databits = DEFAULT_DBITS;
            ATCGenConfig.parity = DEFAULT_PARITY;
            ATCGenConfig.stopbits = DEFAULT_SBIT;

            // Set resource baud rate
            if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                                              VI_ATTR_ASRL_BAUD, ATCGenConfig.baudrate)) < 0)
                return ATC_status;

            if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                                              VI_ATTR_ASRL_DATA_BITS, ATCGenConfig.databits)) < 0)
                return ATC_status;

            if (ATCGenConfig.parity == 0)
            {
                if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                                                  VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_NONE)) < 0)
                    return ATC_status;
            }
            else if (ATCGenConfig.parity == 1)
            {
                if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                                                  VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_ODD)) < 0)
                    return ATC_status;
            }
        }

        else if (ATCGenConfig.parity == 2)
        {
            if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
                                              VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_EVEN)) < 0)
                return ATC_status;
        }
    }
}
}

```

```

        VI_ATTR_ASRL_PARITY, VI_ASRL_PAR_EVEN)) < 0)
    return ATC_status;
}
else
    ATC_status = ERR_PARAMETER8;

if (ATCGenConfig.stopbits == 1)
{
    if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
        VI_ATTR_ASRL_STOP_BITS, VI_ASRL_STOP_ONE)) < 0)
        return ATC_status;
}
else if (ATCGenConfig.stopbits == 2)
{
    if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
        VI_ATTR_ASRL_STOP_BITS, VI_ASRL_STOP_TWO)) < 0)
        return ATC_status;
}
else
    ATC_status = ERR_PARAMETER8;

if ((ATC_status = viSetAttribute (ATCGenSession[(ATCGen-1)],
    VI_ATTR_ASRL_FLOW_CNTRL, VI_ASRL_FLOW_RTS_CTS)) < 0)
    return ATC_status;

// Set variable so other driver calls won't bail out
ATCGenConnect[(ATCGen-1)] = ON;
}
}
else
{
    ATC_status = ERR_PARAMETER6; // set error status code
}
}
else if (strcmp ("ETHERNET", ATCGenDevice[(ATCGen-1)].Bus) == 0)
{ // Ethernet
    Fmt (resource, "TCPIP::%s::2001::SOCKET",
        ATCGenDevice[(ATCGen-1)].PriAddr);

    if ((ATC_status = ATC_initialize (resource, VI_OFF,
        VI_OFF, &ATCGenSession[(ATCGen-1)])) < 0)
    {
        ATCGenSession[(ATCGen-1)] = 0;
    }
    else
    {
        // Set variable so other driver calls won't bail out
        ATCGenConnect[(ATCGen-1)] = ON;
    }
}
}
else
    ATC_status = ERR_PARAMETER5;
}
}

return ATC_status; // return error status code
}

//=====
// Function: Close
// Purpose: This function closes the instrument.
// Parameter List: ATCGen - Generator number
// Return Values: Zero on success, non-zero otherwise

```

```

//=====
ViStatus _VI_FUNC ATC_close (ViInt16 ATCGen)
{
    ViSession rmSession;
    ViSession *instPtr;
    ViStatus ATC_status = VI_SUCCESS;

    if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
        ATC_status = ERR_PARAMETER1; // set error status code
    else
    {
        if (ATCGenConnect[(ATCGen-1)] == OFF) // Disconnected
            { // do nothing
            }
        else if (strcmp(ATCGenDevice[(ATCGen-1)].Type, "ATC-5000NG") == 0)
            {
                if ((ATC_status = viGetAttribute (ATCGenSession[(ATCGen-1)],
                    VI_ATTR_RM_SESSION, &rmSession)) < 0)
                    return ATC_status;

                if ((ATC_status = viGetAttribute (ATCGenSession[(ATCGen-1)],
                    VI_ATTR_USER_DATA, &instPtr)) < 0)
                    return ATC_status;

                if ((ATC_status = viClose (ATCGenSession[(ATCGen-1)])) < 0)
                    return ATC_status;

                if ((ATC_status = viClose (rmSession)) < 0)
                    return ATC_status;

                ATC_status = ATC_sessionInfoClose (ATCGenSession[(ATCGen-1)]);

                if (instPtr != NULL)
                    free (instPtr);
            }
    }

    return ATC_status;
}

//=====
// Function: ATC_writeInstrData
// Purpose: This function writes a command string to the instrument.
// Parameter List: ATCGen - Generator number
//                writeBuffer - String to write
//                waitToNxtCmd - Delay to next command
// Return Values: Zero on success, non-zero otherwise
//=====
ViStatus _VI_FUNC ATC_writeInstrData (ViInt16 ATCGen,
    ViString writeBuffer,
    ViReal64 waitToNxtCmd)
{
    ViStatus ATC_status = VI_SUCCESS;
    ViChar WriteBuf[200] = "", Terminator[3] = "";
    ViInt32 bytes;
    ViInt16 retry;
    ViUInt16 statusbyte = 0;
    ViChar resourceName[50] = "";
    clock_t start_time;
    long device = 0;

    Terminator[0]=0x0d; // Add CR and null to end of string
}

```

```
Terminator[1]=0x00;
Fmt(WriteBuf,"%s<%s%s", writeBuffer, Terminator);
bytes = strlen (WriteBuf);

retry = 0;           // Initialize

if (strcmp (OutBuffer, writeBuffer) != 0)
{
    strcpy (OutBuffer, writeBuffer);
}

if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
    ATC_status = ERR_PARAMETER1; // set error status code

if ((ATC_status = ATC_sessionInfoResource (ATCGenSession[(ATCGen-1)],
                                           resourceName)) < 0)
    return ATC_status;

if (FindPattern (resourceName, 0, -1, "ASRL", 0, 0) != -1)
{
RETRY1:
    // Flush input and output buffer
    if ((ATC_status = viFlush (ATCGenSession[(ATCGen-1)],
                              VI_WRITE_BUF_DISCARD)) < 0)
        return ATC_status;

    if ((ATC_status = viFlush (ATCGenSession[(ATCGen-1)],
                              VI_READ_BUF_DISCARD)) < 0)
        return ATC_status;

    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
        return ATC_status;

    if ((ATC_status = viWrite (ATCGenSession[(ATCGen-1)],
                              (ViBuf)WriteBuf, bytes, VI_NULL)) < 0)
    {
        // Log this as the last command transmission time
        if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                       waitToNxtCmd)) < 0)
            return ATC_status;

        if (retry++ < 1)
            goto RETRY1;
        return ATC_status;
    }

    // Log this as the last command transmission time
    if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                    waitToNxtCmd)) < 0)
        return ATC_status;
}
else if (FindPattern (resourceName, 0, -1, "GPIB", 0, 0) != -1)
{
    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
        return ATC_status;

    if ((ATC_status = viWrite (ATCGenSession[(ATCGen-1)],
```

```

        (ViBuf)WriteBuf, bytes, VI_NULL)) < 0)
    return ATC_status;
// Log this as the last command transmission time
if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                waitToNxtCmd)) < 0)
    return ATC_status;

start_time = clock() ;
do{
    ATC_status = viReadSTB( ATCGenSession[(ATCGen-1)], &statusbyte ) ;
    if( (clock()-start_time) > 5000 )
        break ;
}while((statusbyte & 0x20) == 0 ); //Completion BIT not set

if( (statusbyte & 0x10) != 0 ) //Message Available
{
    ATC_status = ReadAndStoreIntoBuffer( ATCGenSession[(ATCGen-1)] ) ;

    if((saved_buffer[device][0] == '!') ||
        (saved_buffer[device][0] == '?')) // error
    {
        ClearStoredBuffer( ATCGenSession[(ATCGen-1)] ) ;
        return ATC_ERROR_COMMAND_ERROR ;
    }
    // normal return from some commands
    if( saved_buffer[device][0] == '*' )
    {
        //ClearStoredBuffer( ATCGenSession[(ATCGen-1)] ) ;
        return ATC_status ;
    }
}
}

else if (FindPattern (resourceName, 0, -1, "TCPIP", 0, 0) != -1)
{
    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
        return ATC_status;

    if ((ATC_status = viWrite (ATCGenSession[(ATCGen-1)],
                              (ViBuf)WriteBuf, bytes, VI_NULL)) < 0)
        return ATC_status;
    // Log this as the last command transmission time
    if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
                                    waitToNxtCmd)) < 0)
        return ATC_status;

    // If the command is a query
    if (FindPattern (WriteBuf, 0, -1, "?", 0, 0) == -1)
    {
        Delay (WAITTIME0_02);
    }
}
return ATC_status;
}

//=====
// Function: ATC_readInstrData
// Purpose: This function reads the output buffer of the instrument.
// Parameter List: ATCGen - Generator number
//                 numberBytesToRead - maximum bytes to read

```

```

//          readBuffer - String to write
//          numBytesRead - bytes actually read
// Return Values: Zero on success, non-zero otherwise
//=====
ViStatus _VI_FUNC ATC_readInstrData (ViInt16 ATCGen,
                                   ViInt32 numberBytesToRead,
                                   ViChar _VI_FAR readBuffer[],
                                   ViPInt32 numBytesRead)
{
    ViInt32 k, index;
    ViChar Buf[1024];
    ViStatus ATC_status = VI_SUCCESS;
    ViInt32 comma = 0, buffer_num = 0;
    long device = 0;
    ViChar resourceName[50] = "";

    *numBytesRead = 0L;

    memset (readBuffer, 0x0, sizeof (readBuffer));
    memset (tmp_buffer, 0x0, sizeof (tmp_buffer));
    memset (Buffer, 0x0, sizeof (Buffer));
    memset (Buffer1, 0x0, sizeof (Buffer1));
    memset (Buffer2, 0x0, sizeof (Buffer2));
    memset (Buffer3, 0x0, sizeof (Buffer3));
    memset (Buffer4, 0x0, sizeof (Buffer4));
    memset (Buffer5, 0x0, sizeof (Buffer5));
    memset (Buffer6, 0x0, sizeof (Buffer6));
    memset (Buffer7, 0x0, sizeof (Buffer7));
    memset (Buffer8, 0x0, sizeof (Buffer8));
    memset (Buffer9, 0x0, sizeof (Buffer9));
    memset (Buffer10, 0x0, sizeof (Buffer10));
    memset (Buffer11, 0x0, sizeof (Buffer11));
    memset (Buffer12, 0x0, sizeof (Buffer12));
    memset (Buffer13, 0x0, sizeof (Buffer13));
    memset (Buffer14, 0x0, sizeof (Buffer14));
    memset (Buffer15, 0x0, sizeof (Buffer15));
    memset (Buffer16, 0x0, sizeof (Buffer16));
    memset (Buffer17, 0x0, sizeof (Buffer17));
    memset (Buffer18, 0x0, sizeof (Buffer18));
    memset (Buffer19, 0x0, sizeof (Buffer19));

    if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
        ATC_status = ERR_PARAMETER1; // set error status code

    if ((ATC_status = ATC_sessionInfoResource (ATCGenSession[(ATCGen-1)],
                                             resourceName)) < 0)
        return ATC_status;

    // check for data in buffer
    if( is_buffer_occupied[device] != 0 )
    {
        strncpy( readBuffer, saved_buffer[device], numberBytesToRead-1 );
        readBuffer[numberBytesToRead-1] = 0;
        *numBytesRead = strlen( saved_buffer[device] );
        ClearStoredBuffer( ATCGenSession[(ATCGen-1)] );
        return 0;
    }

    // Make sure to wait the minimum amount of time between commands
    if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
        return ATC_status;
}

```

```

if ((ATC_status = viRead (ATCGenSession[(ATCGen-1)], (ViPBuf)readBuffer,
    numberBytesToRead, (ViPUInt32)numBytesRead)) < 0)
{ // Retry especially in case of timeout
  // Log this as the last command transmission time
  if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
    WAITTIME0_03)) < 0)
    return ATC_status;

  memset (readBuffer, 0x0, sizeof (readBuffer));

  if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
    return ATC_status;

  if ((ATC_status = ATC_writeInstrData(ATCGenSession[(ATCGen-1)],
    (ViString)OutBuffer, WAITTIME0_03)) < 0)
    return ATC_status;
  // Log this as the last command transmission time
  if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
    WAITTIME0_03)) < 0)
    return ATC_status;

  // Make sure to wait the minimum amount of time between commands
  if ((ATC_status = ATC_nxtCmdWait (ATCGenSession[(ATCGen-1)])) < 0)
    return ATC_status;

  if ((ATC_status = viRead (ATCGenSession[(ATCGen-1)], (ViPBuf)readBuffer,
    numberBytesToRead, (ViPUInt32)numBytesRead)) < 0)
    return ATC_status;
}
// Log this as the last command transmission time
if ((ATC_status = ATC_nxtCmdLog (ATCGenSession[(ATCGen-1)],
    WAITTIME0_03)) < 0)
  return ATC_status;

index = FindPattern (readBuffer, 0, -1, "\r", 0, 0); // Find CR
if (index != -1)
{ // Remove line feed
  readBuffer[index] = 0;
  *numBytesRead = strlen (readBuffer);
}
else
{
  if (FindPattern (resourceName, 0, -1, "GPIB", 0, 0) != -1)
  { // no carriage return on gpib return
  }
  else
  { // Incomplete read
    return ATC_ERROR_INVALID_COMMAND;
  }
}

j = 0;
memset (Equal, 0, sizeof (Equal));
memset (Separator, 0, sizeof (Separator));
for (i = 0; i <= *numBytesRead; ++i) // Separate parameters
{
  if (readBuffer[i] == 0x3d) // =
    Equal[j] = i; // Store index of = sign

  if (readBuffer[i] == 0x3b || // ;
    (readBuffer[i] == 0xd && Equal[0] != 0) || // CR

```



```
(readBuffer[i] == 0xa && Equal[0] != 0    // LF
&& readBuffer[i-1] != 0xd)
{
    Separator[j] = i;          // Store index of separator
    ++j;
}
Separator[j] = i - 1;        // set end of string

// Parse data with 'equal' separator
for (k = 0; k < j; ++k)      // extract parameters
{
    for (i = Equal[k] + 1; i < Separator[k]; ++i)
    {
        Buf[i-(Equal[k] + 1)] = readBuffer[i];
    }

    Buf[i-(Equal[k] + 1)] = 0;    // store values

    if (Equal[k] == 0) break;

    Fmt(tmp_buffer[k], "%s<%s", Buf);
}

// Parse data with 'comma' separator
buffer_num = 0;
for (index = 0; index < k; index++)
{
    comma = 0;
    do
    {
        if ((comma = FindPattern (tmp_buffer[index], 0, -1, ",", 0, 0)) != -1)
        { // Comma found
            switch (buffer_num)
            {
                case 0:
                    Fmt (Buffer, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 1:
                    Fmt (Buffer1, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 2:
                    Fmt (Buffer2, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 3:
                    Fmt (Buffer3, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 4:
                    Fmt (Buffer4, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 5:
                    Fmt (Buffer5, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 6:
                    Fmt (Buffer6, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 7:
                    Fmt (Buffer7, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 8:
                    Fmt (Buffer8, "%s<%s[i0w*]", comma, tmp_buffer[index]);
                    break;
                case 9:

```

```

        Fmt (Buffer9, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 10:
        Fmt (Buffer10, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 11:
        Fmt (Buffer11, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;

    case 12:
        Fmt (Buffer12, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 13:
        Fmt (Buffer13, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 14:
        Fmt (Buffer14, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 15:
        Fmt (Buffer15, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 16:
        Fmt (Buffer16, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 17:
        Fmt (Buffer17, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 18:
        Fmt (Buffer18, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    case 19:
        Fmt (Buffer19, "%s<%s[i0w*]", comma, tmp_buffer[index]);
        break;
    }

    Fmt (tmp_buffer[index], "%s<%s[i*w*]", comma+1,
        strlen(tmp_buffer[index])-comma-1, tmp_buffer[index]);
}
else
{
    switch (buffer_num)
    {
    case 0:
        strcpy (Buffer, tmp_buffer[index]);
        break;
    case 1:
        strcpy (Buffer1, tmp_buffer[index]);
        break;
    case 2:
        strcpy (Buffer2, tmp_buffer[index]);
        break;
    case 3:
        strcpy (Buffer3, tmp_buffer[index]);
        break;
    case 4:
        strcpy (Buffer4, tmp_buffer[index]);
        break;
    case 5:
        strcpy (Buffer5, tmp_buffer[index]);
        break;
    case 6:
        strcpy (Buffer6, tmp_buffer[index]);

```

```

        break;
    case 7:
        strcpy (Buffer7, tmp_buffer[index]);
        break;
    case 8:
        strcpy (Buffer8, tmp_buffer[index]);
        break;
    case 9:
        strcpy (Buffer9, tmp_buffer[index]);
        break;
    case 10:
        strcpy (Buffer10, tmp_buffer[index]);
        break;
    case 11:
        strcpy (Buffer11, tmp_buffer[index]);
        break;
    case 12:
        strcpy (Buffer12, tmp_buffer[index]);
        break;
    case 13:
        strcpy (Buffer13, tmp_buffer[index]);
        break;

    case 14:
        strcpy (Buffer14, tmp_buffer[index]);
        break;
    case 15:
        strcpy (Buffer15, tmp_buffer[index]);
        break;
    case 16:
        strcpy (Buffer16, tmp_buffer[index]);
        break;
    case 17:
        strcpy (Buffer17, tmp_buffer[index]);
        break;
    case 18:
        strcpy (Buffer18, tmp_buffer[index]);
        break;
    case 19:
        strcpy (Buffer19, tmp_buffer[index]);
        break;
    }
    }
    buffer_num++;           // Increment buffer counter
} while (comma != -1);
}

// Check to see if the command was read as a result. If so, there is
// an error.
if (strcmp (readBuffer, OutBuffer) == 0)
    return VI_ERROR_INV_RESPONSE;

return ATC_status;
}

//=====
//Function: ATC_read_IDN
//Purpose: This function performs the *IDN? query and returns the Manufacturer
//         Description and part number as strings.
//=====
ViStatus _VI_FUNC ATC_read_IDN (ViSession instrumentHandle,
                               ViChar mfg[],

```

```

                ViChar desc[],
                ViChar pn[])
{
    ViStatus ATC_status = VI_SUCCESS;
    ViInt32 pos = -1;
    ViChar tmpchar[100] = {0};

//----- Output to ATC -----
    Fmt (OutBuffer, "%s<*IDN?");

    // Change timeout
    if ((ATC_status = viSetAttribute (instrumentHandle, VI_ATTR_TMO_VALUE,
                                     TIME_OUT_NORM_VAL))<0)
        return ATC_status;

    if ((ATC_status = ATC_writeInstrData(instrumentHandle,
                                       (ViString)OutBuffer, WAITTIME0_02)) < 0)
        return ATC_status;

//----- Input Parameters -----
    if ((ATC_status = ATC_readInstrData (instrumentHandle, 150, InBuffer,
                                       &bytesRead)) < 0)
        return ATC_status;

    // Restore
    if ((ATC_status = viSetAttribute (instrumentHandle, VI_ATTR_TMO_VALUE,
                                     TIME_OUT_NORM_VAL))<0)
        return ATC_status;

    mfg[0] = NULL;
    desc[0] = NULL;
    pn[0] = NULL;

    // Manufacturer
    pos = FindPattern (InBuffer, 0, -1, ";", 0, 0);
    if (pos != -1)
    {
        Fmt (mfg, "%s<%s[i0w*]", pos, InBuffer);
        RemoveSurroundingWhiteSpace (mfg);

        strcpy (tmpchar, InBuffer);
        Fmt (InBuffer, "%s<%s[i*w*]", pos+1, (strlen(tmpchar)-pos)-1, tmpchar);
    }
    else
        return ATC_ERROR_INVALID_CONFIGURATION;

    // Instrument description
    pos = FindPattern (InBuffer, 0, -1, ";", 0, 0);
    if (pos != -1)
    {
        Fmt (desc, "%s<%s[i0w*]", pos, InBuffer);
        RemoveSurroundingWhiteSpace (desc);

        strcpy (tmpchar, InBuffer);
        Fmt (InBuffer, "%s<%s[i*w*]", pos+1, (strlen(tmpchar)-pos)-1, tmpchar);
    }
    else
        return ATC_ERROR_INVALID_CONFIGURATION;

    // PN number

```

```

pos = 0;
if (strlen(InBuffer)>0)
{
    Fmt (pn, "%s<%s[i0w*]", pos, InBuffer);
    RemoveSurroundingWhiteSpace (pn);
}
else
    return ATC_ERROR_INVALID_CONFIGURATION;

return ATC_status;
}

//=====================================================
// Function: Reset
// Purpose: This function resets the instrument. If the reset function
//          is not supported by the instrument, this function returns
//          the warning VI_WARN_NSUP_RESET.
//=====================================================
ViStatus _VI_FUNC ATC_reset (ViInt16 ATCGen)
{
    ViStatus ATC_status = VI_SUCCESS;

    if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
        ATC_status = ERR_PARAMETER1; // set error status code

    // Initialize the instrument to a known state
    if ((ATC_status = ATC_writeInstrData (ATCGen, ":ATC:RESET",
                                         WAITTIME0_02))< 0)
        return ATC_status;

    Delay (WAITTIME10_00);

    if ((ATC_status = ATC_readInstrData (ATCGen, 150, InBuffer,
                                         &bytesRead)) < 0)
        if (FindPattern (InBuffer, 0, -1, "*", 0, 0) == -1)
            return ATC_ERROR_COMMAND_ERROR;

    return ATC_status;
}

//=====================================================
// Function: errorQuery
// Purpose: This function requests the instrument status.
//          This is only valid on newer versions of the ATC system software
//          after 4/15/2017
//=====================================================
ViStatus _VI_FUNC ATC_errorQuery (ViInt16 ATCGen, ViInt32 *statusCode,
                                  ViChar _VI_FAR message[])
{
    ViStatus ATC_status = VI_SUCCESS;

    if ((ATCGen <= 0) || (ATCGen > MAX_SESSIONS))
        ATC_status = ERR_PARAMETER1; // set error status code

    // Request the status
    if ((ATC_status = ATC_writeInstrData (ATCGen, ":ATC:STATUS?\r",
                                         WAITTIME0_02))< 0)
        return ATC_status;
}

```

```

if ((ATC_status = ATC_readInstrData (ATCGen, 150, InBuffer,
                                     &bytesRead)) < 0)
    return ATC_status;

if((FindPattern (InBuffer, 0, -1, "?", 0, 0) >= 0) ||
   (FindPattern (InBuffer, 0, -1, "!", 0, 0) >= 0))
    return ATC_ERROR_COMMAND_ERROR;

*statusCode = (ViInt32)atoi(InBuffer);

Fmt(message,"%s<");

if( *statusCode & 1)
    Fmt(message,"%s[a]<%s", "Last Command Syntax Error, ");
if( *statusCode & 2)
    Fmt(message,"%s[a]<%s", "Execution Error, ");
if( *statusCode & 32)
    Fmt(message,"%s[a]<%s", "Command Complete/Unit Ready ");

// Status byte bit meaning
// D0 Last Command Syntax Error
// D1 Execution Error, Detectable Unit Function Failure.
//      Clear by GPIB command *CLS.
// D4 Transmitter Queue Not Empty (Data available for GPIB read),(GPIB Only)
// D5 Command Complete/Unit Ready

    return ATC_status;
}

//=====
//= UTILITY ROUTINES (Non-Exportable Functions) =====
//=====

//=====
// Function: Initialize
// Purpose: This function opens the instrument, queries the instrument
//          for its ID, and initializes the instrument to a known state.
//=====
ViStatus ATC_initialize (ViRsrc resourceName, ViBoolean IDQuery,
                       ViBoolean resetDevice, ViPSession instHandle)
{
    ViStatus ATC_status = VI_SUCCESS;
    ViSession rmSession = 0;

    //- Check input parameter ranges -----
    if (ATC_invalidViBooleanRange (IDQuery))
        return VI_ERROR_PARAMETER2;
    if (ATC_invalidViBooleanRange (resetDevice))
        return VI_ERROR_PARAMETER3;

    //- Open instrument session -----
    if ((ATC_status = viOpenDefaultRM (&rmSession)) < 0)
        return ATC_status;

    if ((ATC_status = viOpen (rmSession, resourceName, VI_NULL, VI_NULL,
                             instHandle)) < 0)
    {
        viClose (rmSession);
        return ATC_status;
    }
}

```

```

// Register this session in the command wait system
if ((ATC_status = ATC_sessionInfoOpen (*instHandle, resourceName)) < 0)
    return ATC_status;

if (FindPattern (resourceName, 0, -1, "GPIB", 0, 0) != -1)
{
    //- Configure VISA Formatted I/O -----
    if ((ATC_status = viSetAttribute(*instHandle,VI_ATTR_TMO_VALUE,
        TIME_OUT_NORM_VAL))<0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetBuf(*instHandle,VI_READ_BUF|VI_WRITE_BUF,4000))<0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_WR_BUF_OPER_MODE,
        VI_FLUSH_ON_ACCESS)) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_RD_BUF_OPER_MODE,
        VI_FLUSH_ON_ACCESS)) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    // Send EOI
    if ((ATC_status = viSetAttribute (*instHandle,
        VI_ATTR_SEND_END_EN, VI_TRUE))<0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);
}
else if (FindPattern (resourceName, 0, -1, "ASRL", 0, 0) != -1)
{
    //- Configure VISA Formatted I/O -----
    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_TMO_VALUE,
        TIME_OUT_NORM_VAL))<0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetBuf(*instHandle,
        VI_READ_BUF|VI_WRITE_BUF, 4000))<0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_WR_BUF_OPER_MODE,
        VI_FLUSH_WHEN_FULL)) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_RD_BUF_OPER_MODE,
        VI_FLUSH_DISABLE)) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_ASRL_END_IN,
        VI_ASRL_END_TERMCHAR)) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_TERMCHAR_EN,
        VI_TRUE))<0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);

    if ((ATC_status = viSetAttribute (*instHandle,
        VI_ATTR_TERMCHAR, '\n')) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);
}
else if (FindPattern (resourceName, 0, -1, "TCPIP", 0, 0) != -1)
{
    //- Configure VISA Formatted I/O -----

```

```

if ((ATC_status = viSetAttribute(*instHandle, VI_ATTR_TMO_VALUE,
                                TIME_OUT_NORM_VAL))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

if ((ATC_status = viSetBuf(*instHandle,
                           VI_READ_BUF|VI_WRITE_BUF, 4000))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_WR_BUF_OPER_MODE,
                                  VI_FLUSH_ON_ACCESS)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_RD_BUF_OPER_MODE,
                                  VI_FLUSH_ON_ACCESS)) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

if ((ATC_status = viSetAttribute (*instHandle, VI_ATTR_TERMCHAR_EN,
                                  VI_TRUE))<0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);

if ((ATC_status = viSetAttribute (*instHandle,
                                  VI_ATTR_TERMCHAR, '\n')) < 0)
    return ATC_initCleanUp (rmSession, instHandle, ATC_status);
}

if (IDQuery)
{
    ViChar mfg[50], desc[50], pn[50];
    if ((ATC_status = ATC_read_IDN (*instHandle, mfg, desc, pn)) < 0)
        return ATC_initCleanUp (rmSession, instHandle,
                                VI_ERROR_FAIL_ID_QUERY);
}

//- Reset instrument -----
if (resetDevice)
{
    if (IDQuery)
        Delay(WAITTIME0_02);
    if ((ATC_status = ATC_reset (*instHandle)) < 0)
        return ATC_initCleanUp (rmSession, instHandle, ATC_status);
}

return ATC_status;
}

//=====
// Function: Log session into wait list
// Purpose: This function adds the session to the open list
//=====
ViStatus ATC_sessionInfoOpen (ViSession instHandle, ViRsrc resourceName)
{
    int index;

    // Check to see if the session handle already exists
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }
    if (index < MAX_SESSIONS)
        return ATC_ERROR_SESSION_ALREADY_EXISTS;
}

```



```

// Check to see if there is room to open another session handle
for (index = 0; index < MAX_SESSIONS; index++)
{
    if (sessionInfo[index].session == 0)
    {
        strcpy (sessionInfo[index].resourceName, resourceName);
        sessionInfo[index].session = instHandle;
        sessionInfo[index].curWaitTime = WAITTIME0_02;
        sessionInfo[index].startTime = Timer();

        return VI_SUCCESS;
    }
}

// Return error
return ATC_ERROR_TOO_MANY_SESSIONS;
}

```

```

//=====
// Function: Remove session from wait list
// Purpose: This function removes the session from the open list
//=====
ViStatus ATC_sessionInfoClose (ViSession instHandle)
{
    int index;

    // find session index
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }
    // Session not open abort
    if (index >= MAX_SESSIONS)
        return ATC_ERROR_CMD_WAIT;

    sessionInfo[index].session = 0;
    sessionInfo[index].curWaitTime = 0;
    sessionInfo[index].startTime = 0;
    strcpy (sessionInfo[index].resourceName, "");

    return VI_SUCCESS;
}

```

```

//=====
// Function: Get session from wait list
// Purpose: This function gets the resource name from the open list
//=====
ViStatus ATC_sessionInfoResource (ViSession instHandle, ViChar resourceName[])
{
    int index;

    // find session index
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }
    // Session not open abort
    if (index >= MAX_SESSIONS)

```

```

    return ATC_ERROR_CMD_WAIT;

strcpy (resourceName, sessionInfo[index].resourceName);

return VI_SUCCESS;
}

//=====
// Function: Wait to commincate with instrument
// Purpose: This function waits for the previous mimium delay to have
//          occurred before proceeding.
//=====
ViStatus ATC_nxtCmdWait (ViSession instHandle)
{
    int index;
    double delay;

    // find session index
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }
    // Invalid Session abort
    if (index >= MAX_SESSIONS)
        return ATC_ERROR_CMD_WAIT;

    // Wait until the minimum delay has been achieved
    do {
        delay = Timer() - sessionInfo[index].startTime;
    } while (delay < sessionInfo[index].curWaitTime);

    return VI_SUCCESS;
}

//=====
// Function: Log last command transmission
// Purpose: This function stores the timer count when called to indicate
//          the time when the instrument was last communicated with.
//=====
ViStatus ATC_nxtCmdLog (ViSession instHandle, ViReal64 waitToNxtCmd)
{
    int index;

    // find session index
    for (index = 0; index < MAX_SESSIONS; index++)
    {
        if (sessionInfo[index].session == instHandle)
            break;
    }

    // Invalid Session abort
    if (index >= MAX_SESSIONS)
        return ATC_ERROR_CMD_WAIT;

    sessionInfo[index].startTime = Timer();
    sessionInfo[index].curWaitTime = waitToNxtCmd;

    return VI_SUCCESS;
}

//=====

```

```

// Function Name: ReadAndStoreIntoBuffer()
// Purpose: Reads over GPIB and stores the result into a buffer.
// Parameter List: instHandle - VISA session handle
// Return Values: Zero on success, non-zero otherwise
//=====
static long ReadAndStoreIntoBuffer( ViSession instHandle )
{
    long      device = 0 ;
    unsigned long  ret_count = 0 ;
    long      status ;

    if ((status = ATC_nxtCmdWait (instHandle)) < 0)
        return status;

    status = viRead( instHandle, (unsigned char*) saved_buffer[device],
                    511, &ret_count );
    // Log this as the last command transmission time
    if ((status = ATC_nxtCmdLog (instHandle, WAITTIME0_03)) < 0)
        return status;

    saved_buffer[device][ret_count] = 0 ;
    if( status < 0 )
        return status ;

    is_buffer_occupied[device] = (ret_count>0)?1:0 ;
    return status ;
}

//=====
// Function Name: ClearStoredBuffer()
// Purpose: Clears the buffer.
// Parameter List: instHandle - VISA session handle
// Return Values: Zero on success, non-zero otherwise
//=====
static void ClearStoredBuffer( ViSession instHandle )
{
    long  device = 0 ;

    saved_buffer[device][0] = 0 ;
    is_buffer_occupied[device] = 0 ;
}

//=====
// Function: Boolean Value Out Of Range - ViBoolean
// Purpose: This function checks a Boolean to see if it is equal to VI_TRUE
//          or VI_FALSE. If the value is out of range, the return value is
//          VI_TRUE, otherwise the return value is VI_FALSE.
//=====
ViBoolean ATC_invalidViBooleanRange (ViBoolean val)
{
    return ((val != VI_FALSE && val != VI_TRUE) ? VI_TRUE : VI_FALSE);
}

//=====
// Function: Initialize Clean Up
// Purpose: This function is used only by the ATC_init function. When
//          an error is detected this function is called to close the
//          open resource manager and instrument object sessions and to
//          set the instHandle that is returned from ATC_init to
//          VI_NULL.
//=====

```

```
ViStatus ATC_initCleanUp (ViSession openRMSession,  
                        VIPSession openinstHandle, ViStatus currentStatus)  
{  
    viClose (*openinstHandle);  
    viClose (openRMSession);  
    *openinstHandle = VI_NULL;  
  
    return currentStatus;  
}  
  
//=====   
//=== END DRIVER FILE =====   
//   
=====E  
nd of Example program
```

This page intentionally left blank.

## Section 3 - Specifications

### 1. ATC-5000NG PERFORMANCE SPECIFICATIONS

**NOTE**

A 60 minute (1 hour) warm-up period is required for all specifications.  
Specifications are subject to change without notice.

Please refer to these notes which are referenced throughout product specifications.

- 1 Absolute output power under any test condition is limited to that shown under "Power" in the "TRANSMITTER" specification section.
- 2 Pulse Width/Position Exception: Block Mode timing accuracy +/-20 ns.
- 3 Any test configuration which results in SPR to P5 falling edge spacing  $>0.5 \mu\text{s}$  is not permitted and may result in unpredictable P5 behavior.
- 4 All-Call Long interrogations are limited to a PRF range of 1 Hz to 1 kHz.
- 5 Pulse-timing, measurement-accuracy specifications applicable for input signals at amplitudes  $\geq +30 \text{ dBm}$ .

|        |   |    |
|--------|---|----|
| 1.1    | Transmitter                                   | 3  |
| 1.1.1  | Frequency                                     | 3  |
| 1.1.2  | Power   | 3  |
| 1.1.3  | Spectral Purity (Typical)                     | 4  |
| 1.1.4  | Channels                                      | 4  |
| 1.1.5  | Diversity                                     | 4  |
| 1.1.6  | Modulation                                    | 4  |
| 1.1.7  | Pulse Position <sup>2</sup>                   | 4  |
| 1.1.8  | Pulse Width <sup>2</sup>                      | 6  |
| 1.1.9  | Pulse Rise/Fall Time                          | 7  |
| 1.1.10 | Pulse Amplitude (relative to P1) <sup>1</sup> | 7  |
| 1.1.11 | Interrogation Table/Burst Mode                | 7  |
| 1.1.12 | Block Transmissions                           | 7  |
| 1.1.13 | PRF <sup>4</sup>                              | 8  |
| 1.1.14 | Interlace Ratio                               | 8  |
| 1.1.15 | Suppressor Pulse                              | 8  |
| 1.1.16 | DME Simulation                                | 8  |
| 1.2    | Receiver                                      | 10 |
| 1.2.1  | VSWR  | 10 |
| 1.2.2  | Maximum Input Power                           | 10 |
| 1.2.3  | Receiver Decoding Messages                    | 10 |
| 1.2.4  | Operating Range                               | 10 |
| 1.2.5  | Channels                                      | 10 |
| 1.2.6  | Measurement                                   | 10 |
| 1.2.7  | Scope Trigger Output (Scope 1 and Scope 2)    | 11 |
| 1.3    | Environmental                                 | 12 |
| 1.3.1  | Full Specified Performance                    | 12 |
| 1.3.2  | Operating                                     | 12 |
| 1.3.3  | Storage                                       | 12 |
| 1.3.4  | Relative Humidity                             | 12 |
| 1.3.5  | Degree of Protection                          | 12 |
| 1.3.6  | Physical                                      | 12 |
| 1.4    | AC Input Power                                | 12 |
| 1.4.1  | Voltage Range                                 | 12 |
| 1.4.2  | Power Consumption                             | 12 |
| 1.5    | Compliance/Standards                          | 13 |
| 1.5.1  | Directives                                    | 13 |
| 1.5.2  | EMC Compliance                                | 13 |
| 1.5.3  | Safety Standards                              | 13 |

## 1.1 TRANSMITTER

### 1.1.1 FREQUENCY

|             |                 |
|-------------|-----------------|
| Range:      | 952 to 1223 MHz |
| Resolution: | 100 kHz         |
| Accuracy:   | 2.5 ppm         |

### 1.1.2 POWER

|                                       |   |
|---------------------------------------|---|
| Range:                                |   |
| Transponder:                          | -110 to +5 dBm  |
| Resolution:                           | 0.1 dB  |
| Accuracy:                             | ±1 dB (-100 to +5 dBm)<br>±3 dB (<-100 dBm)<br>at 1030 MHz  |
| UAT (Top RF I/O (Antenna) Port only): | -110 to +5 dBm  |
| Resolution:                           | 0.1 dB  |
| Accuracy:                             | ±1 dB (-100 to +5 dBm)<br>±3 dB (<-100 dBm)<br>at 978 MHz   |
| Multi-Receiver:                       | -90 to -20 dBm (Low Power Mode)<br>-65 to +5 dBm (High Power Mode)<br>-110 to -40 dBm (Very Low Power Mode) |
| Resolution:                           | 1.0 dB  |
| Accuracy:                             | ±1 dB (-100 to +5 dBm)<br>±3 dB (<-100 dBm)<br>at 978, 1030 and 1090 MHz                                    |
| DO-260B:                              | -90 to -20 dBm (Low Power Mode)<br>-65 to +5 dBm (High Power Mode)<br>-110 to -40 dBm (Very Low Power Mode) |
| Resolution:                           | 1.0 dB  |
| Accuracy:                             | ±1 dB (-100 to +5 dBm)<br>±3 dB (<-100 dBm)<br>at 1090 MHz  |
| DME (Top RF I/O (Antenna) Port only): | -110 to +5 dBm  |
| Resolution:                           | 0.1 dB  |
| Accuracy:                             | ±1 dB (-100 to +5 dBm)<br>±3 dB (<-100 dBm)<br>at 952 to 1223 MHz   |



**1.1.3 SPECTRAL PURITY (TYPICAL)**

|                     |                                  |
|---------------------|----------------------------------|
| Harmonics:          | <-50 dBc                         |
| Spurious:           | <-55 dBc, 350 to 1800 MHz        |
| Residual FM:        | 250 Hz Peak                      |
| Phase Noise         | <80 dBc/Hz at 100 kHz            |
| DME Pulse Spectrum: | <-52 dBc at $\pm 800$ kHz Offset |

**1.1.4 CHANNELS**

|               |   |
|---------------|---|
| DME Option:   | 2 |
| XPDR/UAT:     | 4 |
| ADS-B Option: | 6 |

**1.1.5 DIVERSITY**

|                      |                 |
|----------------------|-----------------|
| Power <sup>1</sup> : | $\pm 20$ dB     |
| Resolution:          | 0.1 dB          |
| Accuracy:            | $\pm 1$ dB      |
| Timing:              | $\pm 1$ $\mu$ s |
| Accuracy:            | $\pm 10$ ns     |
| Resolution:          | 25 ns           |

**1.1.6 MODULATION**

|                     |        |
|---------------------|--------|
| Pulse ON/OFF Ratio: | >80 dB |
|---------------------|--------|

**1.1.7 PULSE POSITION<sup>2</sup>**

|                       |                    |
|-----------------------|--------------------|
| Mode A Interrogation: |                    |
| P1 to P3 Default:     | 8.0 $\mu$ s        |
| Accuracy:             | $\pm 10$ ns        |
| Mode C Interrogation: |                    |
| P1 to P3 Default:     | 21.0 $\mu$ s       |
| Accuracy:             | $\pm 10$ ns        |
| ATCRBS Interrogation: |                    |
| P1 to P2 Default:     | 2 $\mu$ s          |
| Accuracy:             | $\pm 15$ ns        |
| P3 to P4 Default:     | 2 $\mu$ s          |
| Accuracy:             | $\pm 15$ ns        |
| Variation:            |                    |
| Range:                | $\pm 1.95$ $\mu$ s |
| Resolution:           | 25 ns              |
| Accuracy:             |                    |
| P1 to P2:             | $\pm 15$ ns        |
| P1 to P3:             | $\pm 10$ ns        |
| P3 to P4:             | $\pm 15$ ns        |

|  |                      |
|--|----------------------|
| Mode S Interrogation:                      |                      |
| P1 to P2 Default:                          | 2.0 $\mu$ s          |
| Accuracy:                                  | $\pm 10$ ns          |
| P2 Variation:                              | $\pm 1.95$ $\mu$ s   |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 10$ ns          |
| P6 to SPR Default:                         | 1.25 $\mu$ s         |
| Accuracy:                                  | $\pm 15$ ns          |
| P6 Variation:                              | $\pm 1.95$ $\mu$ s   |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 15$ ns          |
| P2 to SPR Default:                         | 2.75 $\mu$ s         |
| Accuracy:                                  | $\pm 15$ ns          |
| SPR Variation <sup>3</sup> :               | $\pm 1.0$ $\mu$ s    |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 15$ ns          |
| P5 prior SPR Default:                      | 400 ns               |
| Accuracy:                                  | $\pm 15$ ns          |
| P5 Variation <sup>3</sup> :                | $\pm 1.95$ $\mu$ s   |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 15$ ns          |
| Interference Pulse:                        |                      |
| Signal 1 (relative to P1):                 | -17.5 to 400 $\mu$ s |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 20$ ns          |
| Signal 2 (relative to Signal 1):           | 0 to 400 $\mu$ s     |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 10$ ns          |
| Double/Interlace Interrogation (P1 to P1): | 0 to 400 $\mu$ s     |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 10$ ns          |
| DME:                                       |                      |
| P1 to P2 Default:                          | 12 or 30 $\mu$ s     |
| Accuracy:                                  | $\pm 50$ ns          |
| P1 to P2 Variable:                         |                      |
| DME X:                                     | -2.5 to +7.9 $\mu$ s |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 50$ ns          |
| DME Y:                                     | $\pm 7.9$ $\mu$ s    |
| Resolution:                                | 25 ns                |
| Accuracy:                                  | $\pm 50$ ns          |

### 1.1.8 PULSE WIDTH<sup>2</sup>

(Specified accuracies apply to pulses of width  $\geq 0.2 \mu\text{s}$ .)

#### ATCRBS Interrogation:

|                        |                         |
|------------------------|-------------------------|
| P1/P2/P3 Default:      | 0.8 $\mu\text{s}$       |
| Accuracy:              | $\pm 10 \text{ ns}$     |
| P4 Short Default:      | 0.8 $\mu\text{s}$       |
| Accuracy:              | $\pm 10 \text{ ns}$     |
| P4 Long Default:       | 1.6 $\mu\text{s}$       |
| Accuracy:              | $\pm 10 \text{ ns}$     |
| P1/P2/P3/P4 Variation: |                         |
| P1/P2/P3:              | 0 to 1.95 $\mu\text{s}$ |
| Resolution:            | 25 ns                   |
| Accuracy:              | $\pm 10 \text{ ns}$     |
| P4:                    | 0 to 2.75 $\mu\text{s}$ |
| Resolution:            | 25 ns                   |
| Accuracy:              | $\pm 10 \text{ ns}$     |

#### Mode S Interrogation:

|                             |                            |
|-----------------------------|----------------------------|
| P1/P2 Default:              | 0.8 $\mu\text{s}$          |
| Accuracy:                   | $\pm 10 \text{ ns}$        |
| P1/P2 Variation:            | 0 to 1.95 $\mu\text{s}$    |
| Resolution:                 | 25 ns                      |
| Accuracy:                   | $\pm 10 \text{ ns}$        |
| P6 Short Default:           | 16.25 $\mu\text{s}$        |
| Accuracy:                   | $\pm 10 \text{ ns}$        |
| P6 Long Default:            | 30.25 $\mu\text{s}$        |
| Accuracy:                   | $\pm 10 \text{ ns}$        |
| P6 Variation (offset):      | -0.5 to 1.45 $\mu\text{s}$ |
| Resolution:                 | 25 ns                      |
| Accuracy:                   | $\pm 10 \text{ ns}$        |
| P5 Default:                 | 0.8 $\mu\text{s}$          |
| Accuracy:                   | $\pm 10 \text{ ns}$        |
| P5 Variation <sup>3</sup> : | 0.2 to 1.95 $\mu\text{s}$  |
| Resolution:                 | 25 ns                      |
| Accuracy:                   | $\pm 10 \text{ ns}$        |

#### Interference Pulse:

|             |                        |
|-------------|------------------------|
|             | 0.2 to 8 $\mu\text{s}$ |
| Resolution: | 25 ns                  |
| Accuracy:   | $\pm 25 \text{ ns}$    |

#### DME:

|                  |                          |
|------------------|--------------------------|
| P1/P2 Default:   | 3.5 $\mu\text{s}$        |
| Accuracy:        | $\pm 250 \text{ ns}$     |
| P1/P2 Variation: | 3.5 to 9.0 $\mu\text{s}$ |
| Resolution:      | 25 ns                    |
| Accuracy:        | $\pm 250 \text{ ns}$     |

### 1.1.9 PULSE RISE/FALL TIME

|              |                     |
|--------------|---------------------|
| Transponder: | <50/<50 ns (<50 ns) |
| DME:         | 2.0/2.5 $\mu$ s     |
| Accuracy:    | $\pm$ 0.25 $\mu$ s  |

### 1.1.10 PULSE AMPLITUDE (RELATIVE TO P1)<sup>1</sup>

|   |               |
|---|---------------|
| ATCRBS Interrogation Variation (all pulses):        | -19 to +9 dB  |
| Resolution:   | 0.1 dB        |
| Accuracy:   | $\pm$ 0.5 dB  |
| Mode S Interrogation Variation P2, P6 and P5 (SLS): | -19 to +9 dB  |
| Resolution:   | 0.1 dB        |
| Accuracy:   | $\pm$ 0.5 dB  |
| Interference:                                       | -19 to +9 dB  |
| Resolution:   | 0.1 dB        |
| Accuracy:   | $\pm$ 0.25 dB |
| DME Echo:   | -15 to +6 dB  |
| Resolution:   | 1.0 dB        |
| Accuracy:   | $\pm$ 0.5 dB  |

### 1.1.11 INTERROGATION TABLE/BURST MODE

|                       |   |
|-----------------------|---|
| Unique Messages:      | 1 to 1000                                     |
| Interrogations/Burst: | 1 to 10,000                                   |
| Burst Spacing:        | 0 to 20 s (0 s for single burst transmission) |
| Resolution:           | 0.1 s   |
| Accuracy:             | $\pm$ 100 ms                                  |
| Bursts/Trigger:       | 1, continuous or until stop command received  |

### 1.1.12 BLOCK TRANSMISSIONS

|                                     |   |
|-------------------------------------|---|
| Unique Messages:                    | 1 to 2000 messages  |
| Number of Blocks:                   | 1 to 50000 (no limit transmissions OFF)<br>Infinite (no limit transmissions ON) |
| Interrogation Spacing within Block: | (User defined spacing between interrogations.)                                  |
| Minimum:                            | 10 $\mu$ s  |
| Maximum:                            | Block Period - 120 $\mu$ s  |
| Resolution:                         | 1 $\mu$ s   |
| Period:                             | 10 ms to 90 sec   |
| Resolution:                         | 1 ms  |
| Accuracy:                           | $\pm$ 1 ms  |

1.1.13 **PRF<sup>4</sup>**

|   |   |
|---|---|
| Single Interrogation:                             | 1 Hz to 10 kHz                                      |
| Resolution:                                       | 1 Hz  |
| Accuracy:   | 0.1% of setting                                     |
| Interrogation Table/Burst (Continuous and Burst): | 1 Hz to 10 kHz                                      |
| Resolution:                                       | 1 Hz  |
| Accuracy:   | 0.1% of setting                                     |
| Double Interrogation:                             | 1 to 10 kHz<br>(PRF of double message transmission) |
| Resolution:                                       | 1 Hz  |
| Accuracy:   | 0.1% of setting                                     |
| Interlace:  | 1 Hz to 10 kHz                                      |
| Resolution:                                       | 1 Hz  |
| Accuracy:   | 0.1% of setting                                     |

1.1.14 **INTERLACE RATIO**

1:1 to 1:1000

1.1.15 **SUPPRESSOR PULSE**

XPDR:

|           |   |
|-----------|---|
| Position: | 3.4 $\mu$ s ( $\pm$ 0.3 $\mu$ s) prior to P1 of interrogation |
| Width:    | Duration of transmission                                      |

DME:

|            |                                  |
|------------|----------------------------------|
| Position:  | 3.4 $\mu$ s prior to P1 of reply |
| Accuracy:  | $\pm$ 0.3 $\mu$ s                |
| Width:     | 36 $\mu$ s                       |
| Accuracy:  | $\pm$ 2 $\mu$ s                  |
| Amplitude: | >25 V (fixed)                    |

1.1.16 **DME SIMULATION**

|                        |                                    |
|------------------------|------------------------------------|
| Equalizing Pulse Pair: | 100 $\mu$ s after Ident pulse pair |
| Accuracy:              | $\pm$ 0.1 $\mu$ s                  |
| Ident Frequency:       | 1350 Hz                            |
| Accuracy:              | $\pm$ 0.02%                        |
| Dot Default:           | 120 ms                             |
| Accuracy:              | $\pm$ 1 ms                         |
| Dot Variation:         | 50 to 250 ms                       |
| Resolution:            | 10 ms                              |
| Accuracy:              | $\pm$ 1 ms                         |
| Dash Default:          | 360 ms                             |
| Accuracy:              | $\pm$ 1 ms                         |
| Dash Variation:        | 150 to 750 ms                      |
| Resolution:            | 10 ms                              |
| Accuracy:              | $\pm$ 1 ms                         |

|                      |   |
|----------------------|---|
| Space Default:       | 150 ms  |
| Accuracy:            | ±1 ms   |
| Space Variation:     | 50 to 250 ms  |
| Resolution:          | 10 ms   |
| Accuracy:            | ±1 ms   |
| Code Rate Default:   | 30 sec  |
| Accuracy:            | ±100 ms   |
| Code Rate Variation: | 10 to 65 sec  |
| Resolution:          | 0.1 sec   |
| Accuracy:            | ±100 ms   |
| Echo Range:          | 30 nmi  |
| Accuracy:            | ±0.02 nmi   |
| Range:               | -1 to 400 nmi   |
| Resolution:          | 0.01 nmi  |
| Accuracy:            | ±0.02 nmi   |
| Velocity:            | 0 to 10000 knots  |
| Resolution:          | 1 knot  |
| Accuracy:            | ±0.001% of setting  |
| Acceleration:        | 0 to 400 ft/s <sup>2</sup>  |
| Resolution:          | 1 ft/s <sup>2</sup>   |
| Accuracy:            | ±0.05% of setting   |
| Squitter:            | 0 to 8000 Hz  |
| Resolution:          | 1 Hz  |
| Accuracy:            | 10 Hz or 2% (whichever is greater),<br>distribution designed to comply with ARINC<br>709-5 at 2700 Hz |
| Reply Efficiency:    | 0% to 100%  |
| Resolution:          | 1%  |
| Accuracy:            | ±0.5%   |
| RNAV                 |   |
| X Channel Spacing    | 50 μs at 0 nmi  |
| Accuracy             | ±0.5 μs   |
| Y Channel Spacing    | 50 μs at 0 nmi  |
| Accuracy             | ±0.5 μs   |
| Width                | 7.0 μs  |
| Accuracy             | ±1.0 μs   |

## 1.2 RECEIVER

### 1.2.1 VSWR

<1.4 (952 to 1223 MHz)

### 1.2.2 MAXIMUM INPUT POWER

+60 dBm

### 1.2.3 RECEIVER DECODING MESSAGES

ATCRBS and Mode S Replies, UAT Ground and Airborne Messages, DME Interrogations

### 1.2.4 OPERATING RANGE

XPDR: +17 to +60 dBm (1090 MHz,  $\pm 3$  MHz)  
 UAT: +30 to +57 dBm (978 MHz,  $\pm 3$  MHz)  
 DME: +17 to +60 dBm (1020 to 1155 MHz)

### 1.2.5 CHANNELS

2 (Top/Bottom)

### 1.2.6 MEASUREMENT

#### Power:

XPDR: +17 to +60 dBm (1090 MHz,  $\pm 3$  MHz)  
 Resolution: 0.1 dB  
 Accuracy:  $\pm 0.5$  dB  
 DME: +17 to +60 dBm (1020 to 1155 MHz)  
 Resolution: 0.1 dB  
 Accuracy:  $\pm 0.5$  dB

#### Frequency:

XPDR: 1090 MHz ( $\pm 3$  MHz)  
 DME: 1020 to 1155 MHz (RX Channels,  $\pm 1$  MHz)  
 Resolution: 1 kHz  
 Accuracy:  $\pm 50$  kHz (XPDR)  
 $\pm 20$  kHz (DME)

#### Pulse Spacing<sup>5</sup>:

Resolution: 1 ns  
 Accuracy:  $\pm 10$  ns (XPDR)  
 $\pm 50$  ns (DME)

#### Pulse Width<sup>5</sup>:

Resolution: 1 ns  
 Accuracy:  $\pm 15$  ns (XPDR)  
 $\pm 50$  ns (DME)

#### Pulse Rise/Fall Time<sup>5</sup>:

Resolution: 1 ns  
 Accuracy:  $\pm 15$  ns (XPDR)  
 $\pm 100$  ns (DME)

|                           |  |
|---------------------------|--|
| ATCRBS Reply Delay:       |  |
| Resolution:               | 25 ns  |
| Accuracy:                 | ±50 ns   |
| Mode S Reply Delay:       |  |
| Resolution:               | 25 ns  |
| Accuracy:                 | ±50 ns   |
| Reply Jitter:             |  |
| Resolution:               | 1 ns   |
| Accuracy:                 | ±20 ns   |
| Percent Reply:            | 0% to 100% (Sample size equal to PRF or 200, whichever is greater) |
| Resolution:               | 0.1%   |
| Accuracy:                 | ±1%  |
| Mode S Squitter Rate:     |  |
| Range:                    |  |
| DF11:                     | 0.01 to 4.0 s  |
| DF17:                     |  |
| Airborne Position:        | 0.01 to 2.0 s  |
| Surface Position:         | 0.01 to 15.0 s   |
| A/C Identification:       | 0.01 to 25.0 s   |
| Airborne Velocity:        | 0.01 to 2.0 s  |
| Event Driven:             | 0.01 to 25.0 s   |
| Resolution:               | 1 ms   |
| Accuracy:                 | ±1 ms, ±2.5 ppm  |
| Interrogation Rate (DME): | 0 to 10 kHz  |
| Resolution:               | 1 Hz   |
| Accuracy:                 | ±1 Hz  |

### 1.2.7 SCOPE TRIGGER OUTPUT (SCOPE 1 AND SCOPE 2)

|                   |   |
|-------------------|---|
| Width:            | 1 µs (±0.5 µs)                              |
| XPDR Position:    |   |
| Interrogation:    | -1 to +600 µs prior to P1                   |
| Default Position: | -1.0 µs                                     |
| Resolution:       | 25 ns                                       |
| Accuracy:         | ±0.5 µs typical                             |
| Reply:            | -1 µs prior to first pulse of reply (F1/P1) |
| Resolution:       | 25 ns                                       |
| Accuracy:         | ±0.5 µs typical                             |



DME Position:

Squitter/Echo/Ident/Reply:

4.5  $\mu$ s prior to first pulse of any selected transmission

Accuracy:

$\pm 0.5 \mu$ s

Interrogation:

2.5  $\mu$ s following the rising edge of received interrogation pulse P1

Accuracy:

$\pm 0.5 \mu$ s typical

**1.3 ENVIRONMENTAL**

**1.3.1 FULL SPECIFIED PERFORMANCE**

23°C ( $\pm 5^\circ$ C)

Full specification performance requires a 1 hour warm-up from cold start.

**1.3.2 OPERATING**

0°C to 40°C

**1.3.3 STORAGE**

0°C to +71°C

**1.3.4 RELATIVE HUMIDITY**

0 to 95% non-condensing

**1.3.5 DEGREE OF PROTECTION**

IPX-0

**1.3.6 PHYSICAL**

Overall Dimensions:

10.5 in (H) x 19 in (W) x 24 in (D)  
(26.7 cm x 48.3 cm x 60.9 cm)

Weight:

41 lbs. (19 kg)

**1.4 AC INPUT POWER**

**1.4.1 VOLTAGE RANGE**

100 to 240 VAC, 50 to 60 Hz

**1.4.2 POWER CONSUMPTION**

100 W typical

## 1.5 COMPLIANCE/STANDARDS

The ATC-5000NG has been evaluated and meets the requirements of the following:

### 1.5.1 DIRECTIVES

Applicable requirements of the following directives:

EMC Directive (2014/30/EU) (CE Marking)

Low Voltage Directive (2014/35/EU)

### 1.5.2 EMC COMPLIANCE

EN 61326-1:2013

MIL-PRF-28800F (Class 3) Device Specifications

### 1.5.3 SAFETY STANDARDS

UL/EN 61010-1: 2010 3rd Edition

This page intentionally left blank.

## Section 4 – Shipping

### 1. SHIPPING TEST SETS

#### 1.1 INFORMATION

VIAVI Test Sets returned to factory for calibration, service or repair must be repackaged and shipped according to the following conditions:

##### 1.1.1 AUTHORIZATION

Do not return any products to factory without first receiving authorization from VIAVI Customer Service Department.

VIAVI Solutions

Customer Service Department

10200 West York Street

Wichita, KS 67215

Telephone: 800-835-2350

Fax: 316-529-5330

email: [AvComm.Service@viavisolutions.com](mailto:AvComm.Service@viavisolutions.com)

##### 1.1.2 TAGGING TEST SETS

All Test Sets must be tagged with:

- Identification and address of owner
- Nature of service or repair required
- Model Number
- Serial Number

##### 1.1.3 SHIPPING CONTAINERS

Test Sets must be repackaged in original shipping containers using VIAVI packing molds. If original shipping containers and materials are not available, contact VIAVI Customer Service for shipping instructions.

##### 1.1.4 FREIGHT COSTS

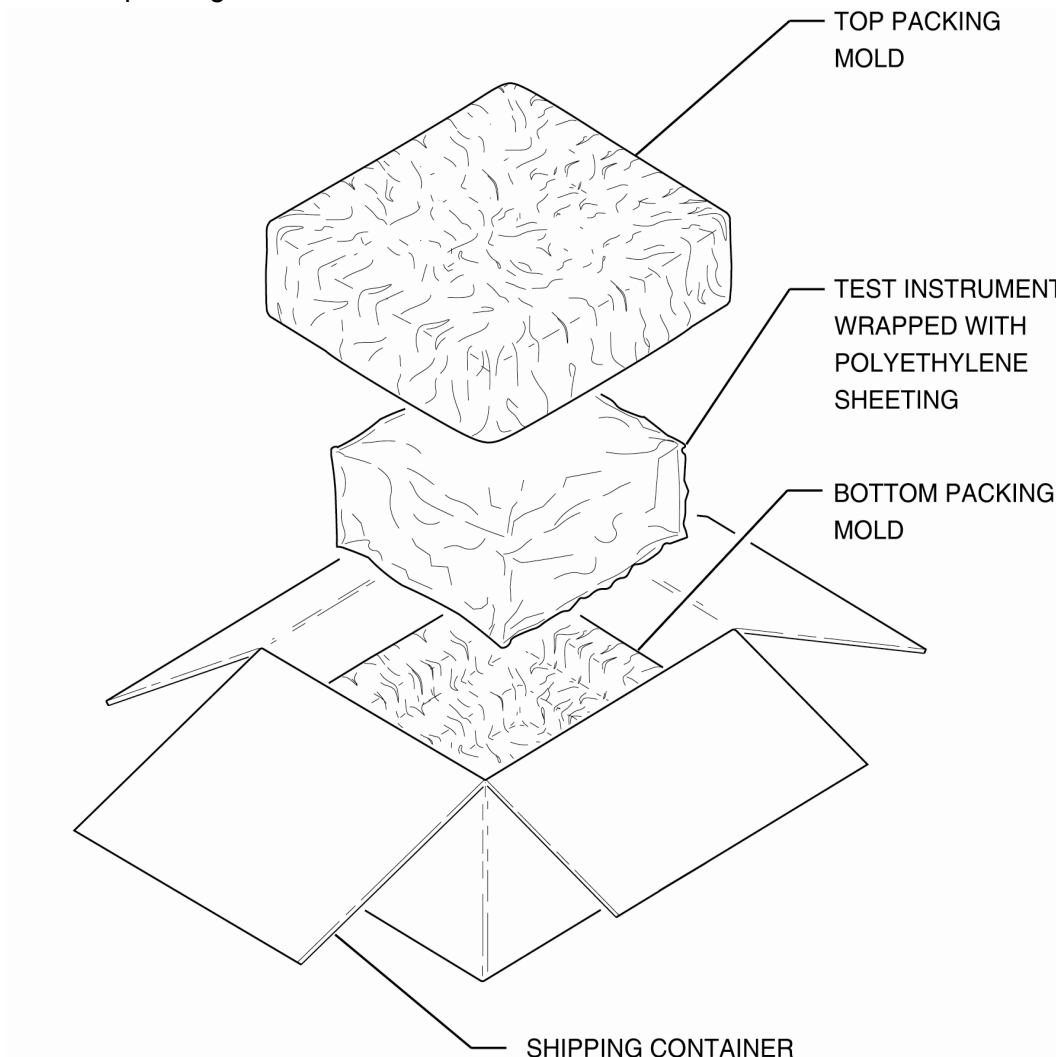
All freight costs on non-warranty shipments are assumed by the customer.

## 1.2 REPACKING PROCEDURE

Perform the following steps to repack the equipment for shipment (Figure 1.4.1 - 1 below):

- Make sure the bottom packing mold is seated on the floor of the shipping container.
- Carefully wrap the Test Set with polyethylene sheeting.
- Place the Test Set into the shipping container, making sure the Test Set is securely seated in the bottom packing mold.
- Place the top packing mold over the top of the Test Set and press down until the top packing mold rests solidly on the Test Set.
- Close the shipping container lids and seal with shipping tape or an industrial stapler. Tie all sides of the shipping container with break resistant rope, twine or equivalent.

**Figure 1.4.1 - 1** Repacking Procedure



---

## Section 5 – Storage

### 1. STORING TEST SET

Perform the following storage precautions whenever the Test Set is stored for extended periods of time (more than six months):

- Disconnect the Test Set from any electrical power source.
- Store the Test Set and other accessories together.

This page intentionally left blank.

## Appendix A – Connector Pin-Out Tables

### A.1. I/O CONNECTORS

#### A.1.1 FRONT PANEL I/O CONNECTORS

**Figure A.1 - 1** ATC-5000NG Front Panel Connectors



**Table A.1 - 1** Front Panel I/O Connectors

| CONNECTOR       | TYPE  | INPUT/OUTPUT |
|-----------------|---|--------------|
| LAN             | RJ45  | INPUT/OUTPUT |
|                 | Refer to Appendix A, Table 6 for LAN Connector description.     |              |
| RF I/O - TOP    | D-Type  | INPUT/OUTPUT |
| RF I/O - BOTTOM | D-Type  | INPUT/OUTPUT |
| SCOPE           | BNC   | INPUT/OUTPUT |
| SUPP            | BNC   | INPUT/OUTPUT |
| USB (A)         | USB 2.0 Type A  | INPUT/OUTPUT |
|                 | Refer to Appendix A, Table 7 for USB (A) Connector description. |              |
| USB (B)         | USB 2.0 Type B  | INPUT/OUTPUT |
|                 | Refer to Appendix A, Table 8 for USB (B) Connector description. |              |



## A.1.2 REAR PANEL I/O CONNECTORS

**Figure A.1 - 2** ATC-5000NG Rear Panel Connectors



**Table A.1 - 2** Rear Panel I/O Connectors

| CONNECTOR                 | TYPE   | INPUT/OUTPUT |
|---------------------------|--|--------------|
| EXTERNAL PULSE MODULATION | BNC  | INPUT/OUTPUT |
| SA BOTTOM                 | SMA  | INPUT/OUTPUT |
| SA TOP                    | SMA  | OUTPUT       |
| SCOPE                     | BNC  | INPUT/OUTPUT |
| SUPP                      | BNC  | INPUT/OUTPUT |
| ATE LINE                  | D-SUB (37 Pin)   | INPUT/OUTPUT |
|                           | Refer to Appendix A, Table 4 for ATE LINE Connector description. |              |
| AUX CONTROL (Future Use)  | N/A  | N/A          |
| GPIB BUS                  | Amphenol Type 57   | INPUT/OUTPUT |
|                           | Refer to Appendix A, Table 5 for GPIB BUS Connector description. |              |
| LAN                       | RJ45   | INPUT/OUTPUT |
|                           | Refer to Appendix A, Table 6 for LAN Connector description.      |              |

### A.1.3 EXTERNAL PULSE MODULATION I/O CONNECTOR

**Table A.1 - 3** External Pulse Modulation I/O Connector

| TEST MODE          | BNC #1   | BNC #2  | BNC #3                |
|--------------------|--|---|-----------------------|
| Transponder        | PPS (not used in this Test Mode)                 | GPS Time Message Input (RX UTC time from GPS) Trimble TSIP Protocol-Message 0x8F 0xAB | Scope Sync Output     |
| UAT/Multi-Receiver | PPS (pulse per second) Input Signal for GPS Sync | GPS Time Message Input (RX UTC time from GPS) Trimble TSIP Protocol-Message 0x8F 0xAB | Unused I/O            |
| DME (ATC Only)     | PPS (not used in this Test Mode)                 | GPS Time Message Input (not used in this Test Mode)                                   | RNAV Output (Planned) |

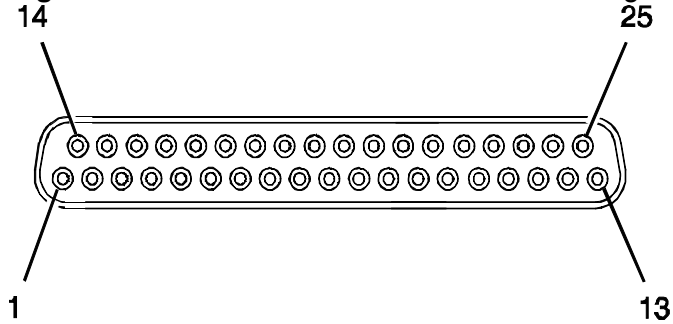
  

| TEST MODE          | BNC #4     | BNC #5  | BNC #6  |
|--------------------|------------|---|---|
| Transponder        | Unused I/O | Unused I/O  | Unused I/O  |
| UAT/Multi-Receiver | Unused I/O | Unused I/O  | PPS (pulse per second) Output simulating GPS sync                                     |
| DME (ATC Only)     | Unused I/O | Distance Marker Output, a pulse for every change of 10 nmi in distance (for test only). | Velocity Marker Output, a pulse for every change of 50 knts velocity (for test only). |

## A.2 PIN-OUT DIAGRAMS AND TABLES

### A.1.1 ATE LINE CONNECTOR PIN-OUT

**Figure A.1 - 3** ATE Line Connector Pin-Out Diagram

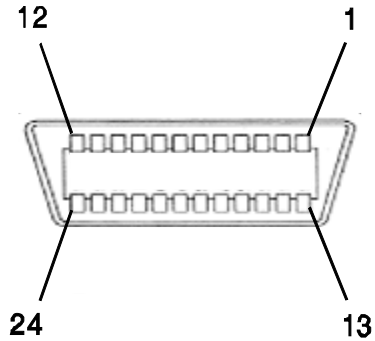


**Table A.1 - 4** ATE LINE Connector Pin-Out Table

| PIN NO. | SIGNAL NAME    | PIN NO. | SIGNAL NAME   |
|---------|----------------|---------|---------------|
| 1       | GND            | 20      | GND           |
| 2       | GND            | 21      | ATE_SPARE_IN1 |
| 3       | ATE_SPARE_OUT1 | 22      | ATE_SPARE_IN2 |
| 4       | ATE_SPARE_OUT2 | 23      | ATE_SPARE_IN3 |
| 5       | ATE_SPARE_OUT3 | 24      | ATE_SPARE_IN4 |
| 6       | ATE_SPARE_OUT4 | 25      | ATE_D0        |
| 7       | ATE_SPARE_OUT5 | 26      | ATE_D1        |
| 8       | ATE_SPARE_OUT6 | 27      | ATE_D2        |
| 9       | ATE_SPARE_OUT7 | 28      | ATE_D3        |
| 10      | ATE_SPARE_IN5  | 29      | ATE_D4        |
| 11      | ATE_SPARE_IN6  | 30      | ATE_D5        |
| 12      | ATE_SPARE_IN7  | 31      | ATE_D6        |
| 13      | ARINC_429_INA  | 32      | ATE_D7        |
| 14      | ARINC_429_INB  | 33      | ATE_CK        |
| 15      | ARINC_429_OUTA | 34      | ATE_A0        |
| 16      | ARINC_429_OUTB | 35      | ATE_A1        |
| 17      | ATE_SPARE_IN8  | 36      | ATE_A2        |
| 18      | +5.0V          | 37      | GND           |
| 19      | GND            |         |               |

### A.1.2 GPIB BUS CONNECTOR PIN-OUT

**Figure A.1 - 4** GPIB BUS Connector Pin-Out Diagram



**Table A.1 - 5** GPIB BUS Connector Pin-Out Table

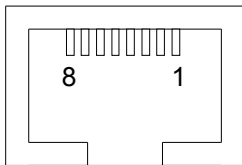
| PIN NO. | SIGNAL NAME |
|---------|-------------|
| 1       | D101        |
| 2       | D102        |
| 3       | D103        |
| 4       | D104        |
| 5       | EOI         |
| 6       | DAV         |
| 7       | NRFD        |
| 8       | NDAC        |
| 9       | IFC         |
| 10      | SRQ         |
| 11      | ATN         |
| 12      | SHIELD      |
| 13      | D105        |
| 14      | D106        |
| 15      | D107        |
| 16      | D108        |
| 17      | REN         |
| 18      | GND         |
| 19      | GND         |

**Table A.1 - 5 GPIB BUS Connector Pin-Out Table**

| PIN NO. | SIGNAL NAME |
|---------|-------------|
| 20      | GND         |
| 21      | GND         |
| 22      | GND         |
| 23      | GND         |
| 24      | GND         |

**A.1.3 LAN CONNECTOR PIN-OUT**

**Figure A.1 - 5 LAN Connector Pin-Out Diagram**

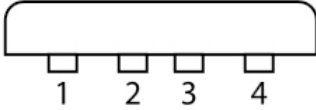


**Table A.1 - 6 LAN Connector Pin-Out Table**

| PIN NO. | SIGNAL NAME |
|---------|-------------|
| 1       | TX+         |
| 2       | TX-         |
| 3       | RX+         |
| 4       | NOT USED    |
| 5       | NOT USED    |
| 6       | RX-         |
| 7       | NOT USED    |
| 8       | NOT USED    |

#### A.1.4 USB (A) CONNECTOR PIN-OUT

**Figure A.1 - 6** USB (A) Connector Pin-Out Diagram

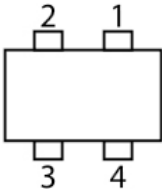


**Table A.1 - 7** USB (A) Connector Pin-Out Table

| PIN NO. | SIGNAL NAME |
|---------|-------------|
| 1       | VCC         |
| 2       | DATA-       |
| 3       | DATA+       |
| 4       | GND         |

#### A.1.5 USB (B) CONNECTOR PIN-OUT

**Figure A.1 - 7** USB (B) Connector Pin-Out Diagram



**Table A.1 - 8** USB (B) Connector Pin-Out Table

| PIN NO. | SIGNAL NAME |
|---------|-------------|
| 1       | VBUS (5 V)  |
| 2       | DATA-       |
| 3       | DATA+       |
| 4       | GND         |

---

This page intentionally left blank.

## Appendix B – Metric/British Imperial Conversion Table with Nautical Distance Conversions

**Table B.1 - 1** Metric/British Imperial Conversion Table

| <b>TO CONVERT:</b>  | <b>INTO:</b>        | <b>MULTIPLY BY:</b> | <b>TO CONVERT:</b> | <b>INTO:</b>       | <b>MULTIPLY BY:</b> |
|---------------------|---------------------|---------------------|--------------------|--------------------|---------------------|
| cm                  | feet                | 0.03281             | meters             | feet               | 3.281               |
| cm                  | inches              | 0.3937              | meters             | inches             | 39.37               |
| feet                | cm                  | 30.48               | m/sec              | ft/sec             | 3.281               |
| feet                | meters              | 0.3048              | m/sec              | km/hr              | 3.6                 |
| ft/sec              | km/hr               | 1.097               | m/sec              | miles/hr           | 2.237               |
| ft/sec              | knots               | 0.5921              | miles              | feet               | 5280                |
| ft/sec              | miles/hr            | 0.6818              | miles              | km                 | 1.609               |
| ft/sec <sup>2</sup> | cm/sec <sup>2</sup> | 30.48               | miles              | meters             | 1609                |
| ft/sec <sup>2</sup> | m/sec <sup>2</sup>  | 0.3048              | miles              | nmi                | 0.8684              |
| grams               | ounces              | 0.03527             | miles/hr           | ft/sec             | 1.467               |
| inches              | cm                  | 2.54                | miles/hr           | km/hr              | 1.609               |
| kg                  | pounds              | 2.205               | miles/hr           | knots              | 0.8684              |
| kg/cm <sup>2</sup>  | psi                 | 0.0703              | nmi                | feet               | 6080.27             |
| km                  | feet                | 3281                | nmi                | km                 | 1.8532              |
| km                  | miles               | 0.6214              | nmi                | meters             | 1853.2              |
| km                  | nmi                 | 0.5396              | nmi                | miles              | 1.1516              |
| km/hr               | ft/sec              | 0.9113              | ounces             | grams              | 28.34953            |
| km/hr               | knots               | 0.5396              | pounds             | kg                 | 0.4536              |
| km/hr               | miles/hr            | 0.6214              | psi                | kg/cm <sup>2</sup> | 0.0703              |
| knots               | ft/sec              | 1.689               | 100 ft             | km                 | 3.048               |
| knots               | km/hr               | 1.8532              | 100 ft             | miles              | 1.894               |
| knots               | miles/hr            | 1.1516              | 100 ft             | nmi                | 1.645               |



---

This page intentionally left blank.



|              |                                  |           |  |
|--------------|----------------------------------|-----------|--|
| <b>I</b>     |                                  | <b>P</b>  |  |
| IFR          | Instrument Flight Rules          | para      | Paragraph  |
| ILS          | Instrument Landing System        | PARAM     | Parameter  |
| Imf          | Interrupt Master Enable Flag     | ppm       | Parts per Million                                      |
| Intr, Interr | Interrogation                    | PREV      | Previous   |
| I/O          | Input/Output                     | psi       | Pounds per Square Inch                                 |
| IP           | Internet Protocol                | PWR       | Power  |
| <b>K</b>     |                                  | <b>R</b>  |  |
| kg           | Kilogram ( $10^3$ Grams)         | RAM       | Random Access Memory                                   |
| kHz          | Kilohertz ( $10^3$ Hertz)        | RES       | Resolution   |
| km           | Kilometer ( $10^3$ meters)       | RF        | Radio Frequency  |
| kt           | Knot / Knots (Velocity)          | RI        | Runway Incursion                                       |
| kts          | Knots (Velocity)                 | RL        | Reply Length   |
| <b>L</b>     |                                  | RMS       | Root Mean Square                                       |
| LAN          | Local Area Network               | ROM       | Read Only Memory                                       |
| LCD          | Liquid Crystal Display           | Rx, RX    | Receiver   |
| LED          | Light Emitting Diode             | <b>S</b>  |  |
| LOC          | Localizer                        | SA        | Spectrum Analyzer                                      |
| LRU          | Line Replaceable Unit            | SDF       | Software Development Folder<br>(Compact Database File) |
| LSB          | Least Significant Bit            | sec, secs | Seconds  |
| LVL          | Level                            | SELCAL    | Selective Calling                                      |
| <b>M</b>     |                                  | Sig Gen   | Signal Generator                                       |
| m            | Meters                           | SL        | Sensitivity Level                                      |
| MAX          | Maximum                          | SLS       | Side Lobe Suppression                                  |
| MB           | Message, COMM-B                  | SP        | Spacing  |
| MHz          | Megahertz ( $10^6$ Hertz)        | SPM       | Scans per Minute                                       |
| min          | Minutes                          | SPR       | Synchronous Phase Reversal                             |
| MOD          | Modulation                       | SQTR      | Squitter   |
| mm           | Millimeter ( $10^{-3}$ Meters)   | Sqtr      | Squitter   |
| M            | MOD Master Modulation            | SRQ       | Service Request  |
| ms           | Millisecond ( $10^{-3}$ Seconds) | SPR       | Sync Phase Reversal                                    |
| MSB          | Most Significant Bit             | SRS       | Segment Request Subfield                               |
| MSO          | Message Start Opportunity        | SSR       | Secondary Surveillance Radar                           |
| mV           | Milliwatt                        | STD       | Standard   |
| mW           | Millivolt                        | SUPP      | Suppressor / Suppression                               |
| <b>N - O</b> |                                  | SWP       | Sweep  |
| N/A          | Not Applicable                   | SWR       | Standing Wave Ratio                                    |
| NAV          | Navigation                       | SYNC      | Synchronous  |
| nmi          | Nautical Miles                   | <b>T</b>  |  |
| ns, nsecs    | Nanosecond ( $10^{-9}$ Seconds)  | TCAS      | Traffic Collision Avoidance System                     |
| OEM          | Original Equipment Manufacturer  | TCP/IP    | Transmission Control Protocol/<br>Internet Protocol    |
| OUT          | Output                           | Traf Proc | Traffic Protocol                                       |
|              |                                  | Tx, TX    | Transmit   |

**U**

|     |                              |
|-----|------------------------------|
| UAT | Universal Access Transceiver |
| UF  | Uplink Format                |
| UHF | Ultra High Frequency         |
| USB | Universal Serial Bus         |
| UM  | Utility Message              |
| UTC | Universal Time Coordinate    |
| UUT | Unit Under Test              |

**V**

|      |  |
|------|--|
| V    | Volt   |
| VAC  | Volts, Alternating Current                           |
| VAR  | Variable   |
| Vdc  | Volts, Direct Current                                |
| VHF  | Very High Frequency                                  |
| VOR  | Very High Frequency Omni-<br>Directional Radio Range |
| Vrms | Volts Root Mean Square                               |
| VSWR | Voltage Standing Wave Ratio                          |

**W**

|    |               |
|----|---------------|
| W  | Watt          |
| WS | Whisper Shout |

**W**

|      |             |
|------|-------------|
| XPDR | Transponder |
|------|-------------|

|                                  |              |
|----------------------------------|--------------|
| $\mu\text{A}$                    | Microamps    |
| $\mu\text{s}$ , $\mu\text{secs}$ | Microseconds |
| $\mu\text{W}$                    | Microwatts   |
| $\Omega$                         | Ohm          |

This page intentionally left blank.

## Appendix D - ATC-5000NG Compatibility Command Set

### D.1. SDX COMPATIBILITY COMMAND SET


**NOTE**

The ATC-5000NG returns the "#" character if the Unit cannot make a measurement. The SDX returns 0 if it cannot make a measurement.

The SDX provides a response for every command sent. The SDX responds with "OK\r\n" or an error message. The ATC-5000NG writes those errors to a table that is not accessible remotely and may or may not return "OK\r\n."

All SDX responses are terminated by \r\n. The ATC-5000NG may not use \r\n. (\r = Carriage Return, hex 0D) (\n= Line Feed, hex 0A).

| SDX Command            | Supported / Not Supported | Comments               | ATC-5000NG Equivalent (or Similar)  |
|------------------------|---------------------------|------------------------|---|
| Instrument Commands    |                           |                        |   |
| :INSTrument ATCRBS     | Supported                 |                        | :ATC5000:SCENARIO:TYPE XPDR<br>:ATC5000:XPDR:TYPE 0<br>:ATC5000:XPDR:MODE |
| :INSTrument MODES      | Supported                 |                        | :ATC5000:SCENARIO:TYPE XPDR<br>:ATC5000:XPDR:TYPE 2                       |
| :INSTrument DATALINK   | Not Supported             |                        | None  |
| :INSTrument DME        | Supported                 |                        | None  |
| :INSTrument IFF        | Not Supported             |                        | None  |
| :INSTrument TACAN      | Not Supported             |                        | None  |
| :INSTrument DATALINK2  | Not Supported             |                        | None  |
| :INSTrument?           | Supported                 | Formatting Differences | :ATC5000:XPDR:MODE?   |
| :INSTrument:SAVE       | Supported                 |                        | :ATC5000:XPDR:SAVE  |
| :INSTrument:REStore    | Supported                 |                        | :ATC5000:XPDR:LOAD  |
| :INSTrument:CABLOS     | Supported                 |                        | :ATC5000:XPDR:CABLOS  |
| :INSTrument:CABLOS?    | Supported                 | Formatting Differences | None  |
| :INSTrument:CABLOSBOT  | Supported                 |                        | :ATC5000:XPDR:CABLOSBOT   |
| :INSTrument:CABLOSBOT? | Supported                 | Formatting Differences | None  |
| :INSTrument:FORMAT     | Supported                 |                        | None  |
| :INSTrument:FORMAT?    | Supported                 |                        | None  |
| :INSTrument:COMTEST?   | Not Supported             |                        | None  |
| :INSTrument:STATE      | Supported                 |                        | :ATC5000:ACCESS   |

| SDX Command                 | Supported / Not Supported | Comments  | ATC-5000NG Equivalent (or Similar)              |
|-----------------------------|---------------------------|---|---|
| <b>ATCRBS Commands</b>      |                           |   |   |
| :ATCRBS:MODE                | Supported                 |   | :ATC5000:XPDR:MODE                              |
| :ATCRBS:MODE?               | Supported                 |   | :ATC5000:XPDR:MODE?                             |
| :ATCRBS:DOUBle              | Supported                 |   | :ATC5000:XPDR:TYPE 1                            |
| :ATCRBS:DOUBle:SPACing      | Supported                 | Use long form of command.   | :ATC5000:XPDR:DBL:P1TOP1                        |
| :ATCRBS:DOUBle?             | Supported                 | Formatting Differences  | None  |
| :ATCRBS:SUBmode             | Supported                 |   | Multiple Commands for each submode              |
| :ATCRBS:SUBmode?            | Supported                 |   | None  |
| <b>Mode S Commands</b>      |                           |   |   |
| :MODES:MODE                 | Supported                 |   | Multiple Commands for each submode              |
| :MODES:MODE?                | Supported                 |   | None  |
| :MODES:BURST                | Supported                 |   | :ATC5000:XPDR:ITABLE:BURST{:START  :STOP}       |
| :MODES:BURST:SQUITter       | Not Supported             |   | None  |
| :MODES:BURST:SQUITter:COUNT | Not Supported             |   | None  |
| :MODES:BURST:COUNT          | Supported                 |   | :ATC5000:XPDR:ITABLE:BURST:COUNT                |
| :MODES:BURST:GAP            | Supported                 |   | :ATC5000:XPDR:ITABLE:BURST:GAP                  |
| :MODES:BURST?               | Supported                 | Formatting Differences  | None  |
| :MODES:DOUBle:SPACing       | Supported                 |   | :ATC5000:XPDR:DBL:P1TOP1                        |
| :MODES:DOUBle:SPACing?      | Supported                 | Formatting Differences  | None  |
| :MODES:INTERLace:RATIO      | Supported                 |   | :ATC5000:XPDR:DBL:IRATIO                        |
| :MODES:INTERLace:RATIO?     | Supported                 |   | None  |
| :MODES:DIVersity            | Supported                 |   | :ATC5000:XPDR:ITABLE:<table entry>:ANTENNA:TIME |
| :MODES:DIVersity?           | Supported                 | Formatting Differences  | None  |
| :MODES:SUBmode              | Supported                 |   | Multiple Commands for each submode              |
| :MODES:SUBmode?             | Supported                 |   | None  |
| :MODES:TABLE                | Supported                 |   | :ATC5000:XPDR:ITABLE:NINT                       |
| :MODES:TABLE:STATE          | Supported                 |   | :ATC5000:XPDR:ITABLE:<table entry>:ENABLE       |
| :MODES:TABLE:TYPE           | Supported                 | Does not accept type UF0 - UF9.<br>Requires format UF00 - UF09 to work.<br>The power level of each table entry needs set individually.<br>SIF interrogation entries not supported at this time. | :ATC5000:XPDR:ITABLE:<table entry>:MODE         |

| <b>SDX Command</b>         | <b>Supported / Not Supported</b> | <b>Comments</b>        | <b>ATC-5000NG Equivalent (or Similar)</b> |
|----------------------------|----------------------------------|------------------------|---|
| :MODES:TABLE:DATA          | Supported                        |                        | :ATC5000:XPDR:ITABLE:<table entry>:UF     |
| :MODES:TABLE:ADDRess       | Supported                        |                        | None                                      |
| :MODES:TABLE:STYLE         | Not Supported                    |                        | None                                      |
| :MODES:TABLE?              | Supported                        | Formatting Differences | None                                      |
| :MODES:SYNC                | Supported                        |                        | :ATC5000:XPDR:ITABLE:SYNC                 |
| :MODES:SYNC?               | Supported                        |                        | None                                      |
| :MODES:PREPULSE:POSition   | Not Supported                    |                        | None                                      |
| :MODES:PREPULSE:POSition?  | Not Supported                    |                        | None                                      |
| :MODES:ADDRess             | Not Supported                    |                        | None                                      |
| :MODES:ADDRess?            | Not Supported                    |                        | None                                      |
| :MODES:EXTSQUITter         | Not Supported                    |                        | None                                      |
| :MODES:EXTSQUITter?        | Supported                        |                        | None                                      |
| <b>Datalink Commands</b>   |                                  |                        |   |
| :DATALINK:TABLE            | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE:STATE      | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE:TYPE       | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE:DATA       | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE:ADDRess    | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE:DELAY      | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE:STYLE      | Not Supported                    |                        | None                                      |
| :DATALINK:TABLE?           | Not Supported                    |                        | None                                      |
| :DATALINK:SYNC             | Not Supported                    |                        | None                                      |
| :DATALINK:SYNC?            | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage          | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage?         | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage:TYPE     | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage:STATE    | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage:SEGments | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage:MEASure  | Not Supported                    |                        | None                                      |
| :DATALINK:MESSage:TABLE    | Not Supported                    |                        | None                                      |



| SDX Command                     | Supported / Not Supported | Comments  | ATC-5000NG Equivalent (or Similar)             |
|---------------------------------|---------------------------|---|--|
| :DATALINK:MESSAge:TABLE?        | Not Supported             |   | None   |
| :DATALINK:MESSAge:TABLE:TYPE    | Not Supported             |   | None   |
| :DATALINK:MESSAge:TABLE:STATE   | Not Supported             |   | None   |
| :DATALINK:MESSAge:TABLE:DATA    | Not Supported             |   | None   |
| :DATALINK:MESSAge:TABLE:ADDRess | Not Supported             |   | None   |
| :DATALINK:MESSAge:TABLE:STYLE   | Not Supported             |   | None   |
| :DATALINK:MESSAge:COPIY         | Not Supported             |   | None   |
| :DATALINK:DELAY:INITial         | Not Supported             |   | None   |
| :DATALINK:DELAY:SEGMENT         | Not Supported             |   | None   |
| :DATALINK:DELAY:CLOSEout        | Not Supported             |   | None   |
| :DATALINK:DELAY:MESSAge         | Not Supported             |   | None   |
| :DATALINK:DELAY?                | Not Supported             |   | None   |
| :DATALINK:GLOADDR               | Not Supported             |   | None   |
| Pulse Commands                  |                           |   |  |
| :PULSE:VARiable                 | Supported                 | Use short form of the command.  | :ATC5000:XPDR:PULSE                            |
| :PULSE:VAR:AMPlitude            | Supported                 | Use short form of the command.  | :ATC5000:XPDR:PULSE                            |
| :PULSE:VAR:POSition             | Supported                 | Use short form of the command.  | :ATC5000:XPDR:PULSE                            |
| :PULSE:VAR:WIDth                | Supported                 | Use short form of the command.  | :ATC5000:XPDR:PULSE                            |
| :PULSE:VAR?                     | Supported                 | Use short form of the command.  | None   |
| :PULSE:INTERFerece:AMPlitude    | Supported                 |   | :ATC5000:XPDR:INTERFERENCE:AMPLITUDE           |
| :PULSE:INTERFerece:WIDth        | Supported                 |   | :ATC5000:XPDR:INTERFERENCE:{P1WIDTH   P2WIDTH} |
| :PULSE:INTERFerece:POSition     | Supported                 |   | :ATC5000:XPDR:INTERFERENCE:POSITION            |
| :PULSE:INTERFerece:SPACing      | Supported                 | Not working at this time.   | :ATC5000:XPDR:INTERFERENCE:SPACING             |
| :PULSE:INTERFerece:STATE        | Supported                 |   | :ATC5000:XPDR:INTERFERENCE:STATE               |
| :PULSE:INTERFerece?             | Supported                 | Formatting Differences<br>The SDX returns the offset from the default width.<br>The ATC-5000NG returns the total pulse width. | None   |
| :PULSE:SLS:AMPlitude            | Supported                 |   | :ATC5000:XPDR:PULSE                            |
| :PULSE:SLS:POSition             | Supported                 |   | :ATC5000:XPDR:PULSE                            |
| :PULSE:SLS:WIDth                | Supported                 |   | :ATC5000:XPDR:PULSE                            |

| SDX Command              | Supported / Not Supported | Comments   | ATC-5000NG Equivalent (or Similar)  |
|--------------------------|---------------------------|--|---|
| :PULSE:SLS?              | Supported                 | Not working in a MODE S instrument.<br>SIF Formatting Differences                  | None  |
| :PULSE:IFFBIT            | Not Supported             |  | None  |
| :PULSE:IFFBIT:CONTRol    | Not Supported             |  | None  |
| :PULSE:IFFBIT?           | Not Supported             |  | None  |
| :PULSE:VAR:STATE         | Support Planned           |  | :ATC5000:XPDR:PULSE   |
| Generator Commands       |                           |  |   |
| :GEN:FREQUency           | Supported                 | Formatting Differences   | :ATC5000:XPDR:FREQUENCY   |
| :GEN:FREQUency?          | Supported                 | Formatting Differences   | None  |
| :GEN:FREQUency:OFFset    | Supported                 | Not working in DME Instrument.<br>Transponder Formatting Differences               | None  |
| :GEN:POWER:TOP           | Supported                 |  | :ATC5000:XPDR:POWER   |
| :GEN:POWER:TOP:CONTRol   | Supported                 | In DME the OFF and CW control settings don't work.                                 | :ATC5000:SETTINGS:GENx:SIGNAL<br>:ATC5000:SETTINGS:GENx:MODE                    |
| :GEN:POWER:BOTtom        | Supported                 |  | :ATC5000:XPDR:ITABLE:<table entry>:ANTENNA:POWER<br>:ATC5000:XPDR:ANTENNA:POWER |
| :GEN:POWER:TOP:OFFset    | Supported                 |  | :ATC5000:XPDR:POWER   |
| :GEN:POWER?              | Supported                 | When control is set to CW the top and bottom powers are returned in reverse order. | None  |
| :GEN:PRF                 | Supported                 | Cannot set PRF value to 0.   | :ATC5000:XPDR:PRF   |
| :GEN:PRF?                | Supported                 |  | None  |
| :GEN:TRIGger             | Supported                 | Scope trigger positions are different.   | :ATC5000:XPDR:SCOPE   |
| :GEN:TRIGger:POSition    | Supported                 |  | :ATC5000:XPDR:SCOPE:INTERR:OFFSET   |
| :GEN:TRIGger:DME         | Supported                 |  | :ATC5000:DME:TRIGGER  |
| :GEN:TRIGger:TACAN       | Not Supported             |  | None  |
| :GEN:TRIGger?            | Supported                 | Formatting Differences   | None  |
| :GEN:TRIGger:DME?        | Supported                 | Formatting Differences   | None  |
| :GEN:TRIGger:TACAN?      | Not Supported             |  | None  |
| :GEN:SUPPessor           | Supported                 |  | :ATC5000:XPDR:SUPPRESSION   |
| :GEN:SUPPessor:AMPlitude | Not Supported             |  | None  |
| :GEN:SUPPessor?          | Supported                 | Formatting Differences   | None  |
| :GEN:SUPPessor:POSition  | Not Supported             |  | None  |

| SDX Command                    | Supported / Not Supported | Comments                              | ATC-5000NG Equivalent (or Similar) |
|--------------------------------|---------------------------|---------------------------------------|------------------------------------|
| :GEN:SUPPessor:WIDth           | Not Supported             |                                       | None                               |
| :GEN:EXTSYNC                   | Not Supported             |                                       | None                               |
| :GEN:EXTSYNC?                  | Not Supported             |                                       | None                               |
| :GEN:SETUP:REFerence           | Not Supported             |                                       | None                               |
| :GEN:SETUP:REFerence?          | Supported                 |                                       | None                               |
| :GEN:SETUP:PRF                 | Not Supported             |                                       | None                               |
| :GEN:SETUP:PRF?                | Supported                 |                                       | None                               |
| :GEN:SETUP:MODulation          | Not Supported             |                                       | None                               |
| :GEN:SETUP:MODulation?         | Supported                 |                                       | None                               |
| :GEN:SETUP:GATE                | Not Supported             |                                       | None                               |
| :GEN:SETUP:GATE?               | Supported                 |                                       | None                               |
| :GEN:SETUP:VIDeo               | Not Supported             |                                       | None                               |
| :GEN:SETUP:VIDeo?              | Supported                 |                                       | None                               |
| :GEN:SETUP:BOTtom              | Not Supported             |                                       | None                               |
| :GEN:SETUP:BOTtom?             | Supported                 |                                       | None                               |
| <b>Measurement Commands</b>    |                           |                                       |                                    |
| :MEASure:TABLE                 | Support Planned           |                                       | :ATC5000:XPDR:ITABLE:SYNC          |
| :MEASure:PULSE                 | Supported                 | Cannot select pulses SPI, X, S1-S112. | :ATC5000:MEASURE:SETTINGS:PULSE    |
| :MEASure:PULSE?                | Supported                 |                                       | None                               |
| :MEASure:FREQuency?            | Supported                 | Formatting Differences                | :ATC5000:MEASURE:FREQUENCY?        |
| :MEASure:POWER?                | Supported                 | Formatting Differences                | None                               |
| :MEASure:POWERDBM?             | Supported                 | Formatting Differences                | :ATC5000:MEASURE:PULSE:POWER?      |
| :MEASure:REPLY:DF?             | Supported                 |                                       | None                               |
| :MEASure:REPLY:DATA?           | Support Planned           |                                       | None                               |
| :MEASure:REPLY:ADDRes?         | Support Planned           |                                       | None                               |
| :MEASure:PREPLY:TOP:ATCRBS?    | Supported                 | Formatting Differences                | :ATC5000:XPDR:PREPLY?              |
| :MEASure:PREPLY:BOTtom:ATCRBS? | Supported                 | Formatting Differences                | :ATC5000:XPDR:PREPLY?              |
| :MEASure:PREPLY:TOP:MODES      | Supported                 | Formatting Differences                | :ATC5000:XPDR:PREPLY?              |
| :MEASure:PREPLY:TOP:FIRST?     | Supported                 |                                       | None                               |
| :MEASure:PREPLY:TOP:SECOND?    | Supported                 |                                       | None                               |

| <b>SDX Command</b>                   | <b>Supported / Not Supported</b> | <b>Comments</b>        | <b>ATC-5000NG Equivalent (or Similar)</b> |
|--------------------------------------|----------------------------------|------------------------|---|
| :MEASure:PREPLY:BOTtom:MODES?        | Supported                        | Formatting Differences | :ATC5000:XPDR:PREPLY?                     |
| :MEASure:SQUITter:DF?                | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:DATA?              | Supported                        |                        | None                                      |
| :MEASure:SQUITter:INTerval?          | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:REPLY?             | Support Planned                  |                        | None                                      |
| :MEASure:SQUITter:II?                | Not Supported                    |                        | None                                      |
| :MEASure:DELAY?                      | Supported                        |                        | :ATC5000:XPDR:DREPLY?                     |
| :MEASure:JITTER?                     | Supported                        | Formatting Differences | :ATC5000:XPDR:JREPLY?                     |
| :MEASure:WIDTH?                      | Supported                        | Formatting Differences | :ATC5000:MEASURE:PULSE:WIDTH?             |
| :MEASure:SPACing?                    | Supported                        | Formatting Differences | :ATC5000:MEASURE:PULSE:POSITION?          |
| :MEASure:CODE?                       | Support Planned                  |                        | :ATC5000:XPDR:CREPLY?                     |
| :MEASure:GREY?                       | Supported                        | Formatting Differences | None                                      |
| :MEASure:ALTitude?                   | Supported                        |                        | :ATC5000:XPDR:AREPLY?                     |
| :MEASure:DMEPRF?                     | Not Supported                    |                        | :ATC5000:DME:PRF?                         |
| :MEASure:RANGE?                      | Not Supported                    |                        | None                                      |
| :MEASure:IFFPULSE                    | Not Supported                    |                        | None                                      |
| :MEASure:IFFPULSE?                   | Not Supported                    |                        | None                                      |
| :MEASure:PRF?                        | Not Supported                    |                        | None                                      |
| :MEASure:STABility?                  | Not Supported                    |                        | None                                      |
| :MEASure:RXCONF                      | Not Supported                    |                        | None                                      |
| :MEASure:SQUITter:AIRPOS:DATA?       | Support Planned                  |                        | None                                      |
| :MEASure:SQUITter:AIRPOS:INTerval?   | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:SURPOS:DATA?       | Support Planned                  |                        | None                                      |
| :MEASure:SQUITter:SURPOS:INTerval?   | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:ACIDENT:DATA?      | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:ACIDENT:INTerval?  | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:AIRVEL:DATA?       | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:AIRVEL:INTerval?   | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:EVNTDRIV:DATA?     | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:EVNTDRIV:INTerval? | Supported                        | Formatting Differences | None                                      |

| <b>SDX Command</b>                      | <b>Supported / Not Supported</b> | <b>Comments</b>        | <b>ATC-5000NG Equivalent (or Similar)</b> |
|---|----------------------------------|------------------------|---|
| :MEASure:SQUITter:ACQuisition:DATA?     | Supported                        | Formatting Differences | None                                      |
| :MEASure:SQUITter:ACQuisition:INTerval? | Supported                        | Formatting Differences | None                                      |
| :MEASure:AVGOFF                         | Supported                        |                        | None                                      |
| :MEASure:AVGON                          | Supported                        |                        | None                                      |
| :MEASure:AVG?                           | Supported                        |                        | None                                      |
| :MEASure:MINMAXREset                    | Supported                        | Formatting Differences | None                                      |
| :MEASure:AVGPARAMeter                   | Supported                        |                        | None                                      |
| :MEASure:AVGPARAMeter?                  | Supported                        | Formatting Differences | None                                      |
| :MEASure:AVGPARAMeter:SAMPLES           | Supported                        |                        | None                                      |
| :MEASure:MINDELAY?                      | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXDELAY?                      | Supported                        | Formatting Differences | None                                      |
| :MEASure:MINJITTER?                     | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXJITTER?                     | Supported                        | Formatting Differences | None                                      |
| :MEASure:MINWIDTH?                      | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXWIDTH?                      | Supported                        | Formatting Differences | None                                      |
| :MEASure:MINSPACing?                    | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXSPACing?                    | Supported                        | Formatting Differences | None                                      |
| :MEASure:MINFREQuency?                  | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXFREQuency?                  | Supported                        | Formatting Differences | None                                      |
| :MEASure:MINPOWER?                      | Supported                        | Formatting Differences | None                                      |
| :MEASure:MINPOWERDBM?                   | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXPOWER?                      | Supported                        | Formatting Differences | None                                      |
| :MEASure:MAXPOWERDBM?                   | Supported                        | Formatting Differences | None                                      |
| :MEASure:PATH                           | Supported                        |                        | :ATC5000:MEASURE:SETTING:TRIGGER:ANTENNA  |
| DME Commands                            |                                  |                        |   |
| :DME:MODE                               | Supported                        |                        | None                                      |
| :DME:MODE?                              | Supported                        |                        | None                                      |
| :DME:EFFiciency                         | Supported                        |                        | :ATC5000:DME:EFFICIENCY                   |
| :DME:EFFiciency?                        | Supported                        |                        | None                                      |
| :DME:SQUITter                           | Supported                        |                        | :ATC5000:DME:SQUITTER                     |

| <b>SDX Command</b>      | <b>Supported / Not Supported</b> | <b>Comments</b>                | <b>ATC-5000NG Equivalent (or Similar)</b> |
|-------------------------|----------------------------------|--------------------------------|---|
| :DME:SQUITter?          | Supported                        |                                | None                                      |
| :DME:RANGE              | Supported                        |                                | :ATC5000:DME:RANGE                        |
| :DME:RANGE:OFFset       | Supported                        |                                | :ATC5000:DME:RANGE:OFFSET                 |
| :DME:RANGE?             | Supported                        | Formatting Differences         | None                                      |
| :DME:VELOCITY           | Supported                        |                                | :ATC5000:DME:VELOCITY                     |
| :DME:VELOCITY:DIRection | Supported                        |                                | :ATC5000:DME:DIRECTION                    |
| :DME:VELOCITY?          | Supported                        | Formatting Differences         | None                                      |
| :DME:ACceleration       | Supported                        | Use short form of the command. | :ATC5000:DME:ACCELERATION                 |
| :DME:ACceleration?      | Supported                        | Use short form of the command. | None                                      |
| :DME:IDENT:MODE         | Supported                        |                                | :ATC5000:DME:IDENT:MODE                   |
| :DME:IDENT:CODE         | Supported                        |                                | :ATC5000:DME:IDENT:CODE                   |
| :DME:IDENT:DOT          | Supported                        |                                | :ATC5000:DME:IDENT:DOT                    |
| :DME:IDENT:DASH         | Support Planned                  |                                | :ATC5000:DME:IDENT:DASH                   |
| :DME:IDENT:SPACE        | Supported                        |                                | :ATC5000:DME:IDENT:SPACE                  |
| :DME:IDENT:CHARacter    | Supported                        |                                | :ATC5000:DME:IDENT:CHARACTER              |
| :DME:IDENT:RATE         | Supported                        |                                | :ATC5000:DME:IDENT:RATE                   |
| :DME:IDENT?             | Supported                        | Formatting Differences         | None                                      |
| :DME:WINDow             | Not Supported                    |                                | None                                      |
| :DME:WINDow?            | Not Supported                    |                                | None                                      |
| :DME:ECHO:CONTRol       | Supported                        |                                | :ATC5000:DME:ECHO                         |
| :DME:ECHO:AMPLitude     | Supported                        |                                | :ATC5000:DME:ECHO:POWER                   |
| :DME:ECHO?              | Supported                        | Formatting Differences         | None                                      |
| :DME:EQUALizer          | Supported                        |                                | :ATC5000:DME:EQUALIZER                    |
| :DME:EQUALizer?         | Supported                        | Use long form of the command.  | None                                      |
| :DME:TACAN              | Not Supported                    |                                | None                                      |
| :DME:TACAN?             | Not Supported                    |                                | None                                      |
| :DME:568:CONTRol        | Not Supported                    |                                | None                                      |
| :DME:568:CONTRol?       | Not Supported                    |                                | None                                      |
| :DME:568:DISTance       | Not Supported                    |                                | None                                      |
| :DME:568:DISTance?      | Not Supported                    |                                | None                                      |

| <b>SDX Command</b> | <b>Supported / Not Supported</b> | <b>Comments</b>               | <b>ATC-5000NG Equivalent (or Similar)</b> |
|--------------------|----------------------------------|-------------------------------|---|
| :DME:568:STATus?   | Not Supported                    |                               | None                                      |
| :DME:WIDth         | Supported                        | Use long form of the command. | :ATC5000:DME:WIDTH                        |
| :DME:WIDth?        | Supported                        | Formatting Differences        | None                                      |
| :DME:CHANX         | Support Planned                  |                               | :ATC5000:DME:CHANNEL:MODE                 |
| :DME:CHANY         | Support Planned                  |                               | :ATC5000:DME:CHANNEL:MODE                 |
| :DME:CHANX?        | Support Planned                  |                               | None                                      |
| :DME:CHANY?        | Support Planned                  |                               | None                                      |

## D.2 ATC-1400A/S-1403D Compatibility Command Set



### NOTE

Due to operational differences in ATC-1400A/S-1403DL and the ATC-5000NG units, tests written for the ATC-1400A/S-1403DL may not run on the ATC-5000NG without code modification. For best results it is recommended to rewrite the tests to use ATC-5000NG native commands.

The ATC-5000NG GPIB bus will time out if you read from the unit without first sending a query command. The ATC1400A can be read at any time and will return a " ?" If there is nothing in the buffer to return.

In Transponder Mode the ATC-5000NG defaults to measurements on the bottom channel. Use command ":ATC:MEA:SET:TRIG:ANT TOP" to make measurements on the top channel.

The ATC-1400A/S-1403DL measures both top and bottom channels simultaneously. The ATC-5000NG does not. You must adjust your code accordingly.

The ATC-5000NG will not parse a string of multiple 1400 commands. For example "XAF1030DF0RT0PS=100". All of the commands in the quotes may be accepted individually but are not accepted when combined.

### D.1.1 ATC-1400A COMPATIBILITY COMMAND SET

| ATC-1400A | Supported | Comments  | ATC5000NG Equivalent (or Similar)                      | Command description   |
|-----------|-----------|---|--|---|
| !         | Yes       |   | :ATC:ACCESS LCL  | Set ATC-1400A-2 in Local Mode   |
| A         | Yes       |   | :ATC:DME:ACC   | Set Acceleration (000 to 399 ft/sec <sup>2</sup> )                                |
| AXn       | Partial   | See individual Axn commands below for more details.   |  | X10, Auxiliary Unit Instructions (n = 1 to 4) for the 1403 n is expected to be 3. |
| C?        | Yes       | The ATC-5000NG does not indicate improper F2 spacing. For example: With code set to 7654 and F2 spacing wide by 120ns, received " 007654" expected " F07654". | :ATC:XPDR:AREP?<br>:ATC:XPDR:CREP?<br>:ATC:RCV:LOG:DL? | Get XPDR Code/Altitude  |
| C.        | Yes       | Command accepted. No action is taken because the value is displayed on main screen.   |  | Display XPDR Code   |
| CM0       | Partial   | Command accepted. No action is taken. This function is not available.   |  | Select 1.45 μs CAL MARKS  |
| CM1       | Partial   | Command accepted. No action is taken. This function is not available.   |  | Select 1.0 μs CAL MARKS   |
| D?        | Yes       |   |  | Get DME Distance (-1 to 399. NMI )  |
| DC        | Partial   | Command accepted. No action is taken. This function is not available.   |  | Display Message (1 to 6 Hex Characters)   |
| DCL.      | Yes       | Command accepted. No action is taken. Use reset shown to the right.   | #REF!  | Device Clear (Return to Front Panel Setup)  |
| DF        | Yes       |   |  | Set Delta Frequency Value (0. to 9.99 MHz)  |
| DF0       | Yes       |   |  | Cancel Delta Frequency  |
| DF+       | Yes       | Limited to 100 KHz Resolution   |  | Add Delta Frequency to RF   |
| DF-       | Yes       | Limited to 100 KHz Resolution   |  | Subtract Delta Frequency  |
| D.        | Partial   | Command accepted. No action is taken. This function is not available.   |  | Display DME Distance  |



| ATC-1400A | Supported | Comments  | ATC5000NG Equivalent (or Similar)   | Command description   |
|-----------|-----------|---|---|---|
| DI        | Yes       |   | :ATC:XPDR:DBL:P1TOP1  | Enables Double Interr P1 t o P1 Spacing (20.5 + Mode Spacing to 399.0 μs) |
| DMEX      | Yes       |   | :ATC:DME:CHANNEL:MODE<br>:ATC:DME:CHANNEL   | Set DME Funct ion to X Channel  |
| DMEY      | Yes       |   | :ATC:DME:CHANNEL:MODE<br>:ATC:DME:CHANNEL   | Set DME Funct ion to Y Channel  |
| DV2       | Yes       |   | :ATC:DME:P2POS  | Set DME P2 Pulse Spacing  |
| DV20      | Yes       |   | :ATC:DME:P2POS  | Set DME P2 to CAL   |
| DV2+      | Yes       |   | :ATC:DME:P2POS  | Deviate DME P2 Posi t ive (-19 to 9 dB)                                   |
| DV2-      | Yes       |   | :ATC:DME:P2POS  | Deviate DME P2 Negative   |
| EQ0       | Yes       |   | :ATC:DME:EQUAL  | Disable Equalizer Pulses  |
| EQ1       | Yes       |   | :ATC:DME:EQUAL  | Enable Equalizer Pulses   |
| ES=       | Yes       |   | :ATC:DME:ECHO:POWER<br>:ATC:XPDR:DBL:1:SLS or<br>:ATC:XPDR:ITABLE:1:SLS or<br>:ATC:XPDR:SLS | Set ECHO/SLS Pulse Ampli tude   |
| E0        | Yes       |   | :ATC:DME:ECHO   | Disable ECHO Pulses   |
| E1        | Yes       |   | :ATC:DME:ECHO   | Enable ECHO Pulses  |
| E%        | Yes       |   | :ATC:DME:EFF  | Set DME Reply Eff iciency (0% to 100%)                                    |
| F         | Yes       |   | :ATC:DME:CHANNEL<br>:ATC:XPDR:FREQ  | Set RF Output (962 to 1213 MHz)   |
| F?        | Yes       |   | :ATC:DME:CHANNEL?<br>:ATC:XPDR:FREQ ?   | Get RF Output (962 to 1213 MHz + DF)                                      |
| F.        | Partial   | Command accepted. No action is taken because the value is displayed on main screen. |   | Display RF Output   |
| FP1       | Yes       |   | :ATC:DME:PULSE<br>:ATC:MEA:SET:PUL  | Sample and Measure UUT's 1st Pulse  |
| FP2       | Yes       |   | :ATC:DME:PULSE<br>:ATC:MEA:SET:PUL  | Sample and Measure UUT's 2nd Pulse  |
| ID0       | Yes       |   | :ATC:DME:IDENT:MODE   | Disable IDENT Tone  |
| ID1       | Yes       |   | :ATC:DME:IDENT:MODE   | Enable IDENT Tone   |
| ID2       | Yes       |   | :ATC:DME:IDENT:MODE   | Enable CODE Message   |

| ATC-1400A | Supported | Comments   | ATC5000NG Equivalent (or Similar)  | Command description                                     |
|-----------|-----------|--|--|---|
| ID3       | Yes       |  | :ATC:DME:IDENT:CODE  | Set CODE Message  |
| IDD       | Yes       |  | :ATC:DME:IDENT:DOT   | Set CODE Dot Time in ms (100, 125 or 160)               |
| IDP       | Yes       |  | :ATC:DME:IDENT:RATE  | Set Number of Dot Times for Period (1 to 999)           |
| IP        | Yes       |  | :ATC:XPDR:INTERF ON<br>:ATC:XPDR:INTERF:POS  | Enable and Deviate INTRF Pulse (-17.5 to 399.9 $\mu$ s) |
| IP0       | Yes       |  | :ATC:XPDR:INTERF OFF   | Disable INTRF Pulse and Double INTERR Pulse             |
| NM0       | Yes       |  | :ATC:DME:RANGE:OFF   | Disable -1 NMi Range                                    |
| NM1       | Yes       |  | :ATC:DME:RANGE:ON  | Enable -1 NMi Range                                     |
| P?        | Yes       |  | :ATC:DME:PRF?<br>:ATC:XPDR:PREP?   | Get PRF   |
| P.        | Partial   | Command accepted. No action is taken because the value is displayed on main screen.  |  | Display PRF   |
| PS=       | Partial   | In DME with squitter off this command will not set the self interrogation rate as the 1400 does. The self interrogation rate is fixed at 100 Hz. | :ATC:DME:SQUIT<br>:ATC:XPDR:DBL:2:PRF or<br>:ATC:XPDR:ITABLE:PRF or<br>:ATC:XPDR:PRF     | Set XPDR PRF or DME Squitter Rate                       |
| P0        | Yes       |  | :ATC:XPDR:STOP   | Disable XPDR PRF  |
| P1        | Yes       |  | :ATC:XPDR:START  | Enable XPDR PRF   |
| R         | Yes       |  | :ATC:DME:RANGE   | Set DME Range Delay (0 to 399. NMi )                    |
| R?        | Yes       |  | :ATC:DME:RANGE?  | Get DME Range Delay ( - 1 to 399. NMi )                 |
| R.        | Partial   | Command accepted. No action is taken because the value is displayed on main screen.  |  | Display DME Range Delay                                 |
| RF        | Yes       |  | :ATC:DME:POWER<br>:ATC:XPDR:POWER or<br>:ATC:XPDR:DBL:1:POW or<br>:ATC:XPDR:ITABLE:1:POW | Set RF Output Level (0 to -127 dBm)                     |
| RI        | Yes       |  | :ATC:DME:DIR   | Set Range Delay Inbound                                 |
| RO        | Yes       |  | :ATC:DME:DIR   | Set Range Delay Outbound                                |
| RT0       | Yes       |  | :ATC:DME:START<br>:ATC:XPDR:START  | Set RF Output to Normal                                 |
| RT1       | Yes       |  | :ATC:DME:STOP<br>:ATC:XPDR:STOP  | Set RF Output to OFF                                    |
| RT2       | Yes       |  |  | Set RF Output to CW                                     |

| ATC-1400A | Supported | Comments   | ATC5000NG Equivalent (or Similar)  | Command description                    |
|-----------|-----------|--|--|--|
| S0        | Yes       |  | :ATC:XPDR:DBL:1:SLS OFF or<br>:ATC:XPDR:ITABLE:1:SLS OFF or<br>:ATC:XPDR:SLS OFF | Disable XPDR SLS Pulse                 |
| S1        | Yes       |  | :ATC:XPDR:DBL:1:SLS ON or<br>:ATC:XPDR:ITABLE:1:SLS OFF or<br>:ATC:XPDR:SLS OFF  | Enable XPDR SLS Pulse                  |
| SI0       | Yes       |  | :ATC:DME:SELF  | Disable Self - Interrogation           |
| SI1       | Yes       |  | :ATC:DME:SELF  | Enable Self - Interrogation            |
| SP0       | Yes       |  | :ATC:DME:SUPP  | Disable Suppressor Pulse (Front Panel) |
| SP1       | Yes       |  | :ATC:DME:SUPP  | Enable Suppressor Pulse (Front Panel)  |
| SQ0       | Yes       |  | :ATC:DME:SQUIT   | Disable DME Squit ter                  |
| SQ1       | Yes       |  | :ATC:DME:SQUIT   | Enable DME Squit ter                   |
| SRM       | No        |  |  | Set SRQ Mask for Desired SRQ Signal    |
| TC0       | No        |  |  | Disable TACAN Modulation               |
| TC1       | No        |  |  | Enable TACAN Modulation                |
| T0        | Partial   | The command works but you must also set the SCOPE 1 or 2 to SYNC using command ":ATC:SET:SCO:CH2 25".<br>NOTE: The ATC-1400A has a negative sync pulse. When self-interrogate is on a single positive sync pulse is available on Scope 2.                              | :ATC:DME:TRIGGER<br>:ATC:XPDR:SCOPE INTERR                                       | Set SYNC to Interrogation              |
| TD        | Partial   | The command works but you must also set the SCOPE 1 or 2 to SYNC using command ":ATC:SET:SCO:CH2 25".<br>NOTE: The ATC-1400A has a negative sync pulse. It also provides a pulse for each reply pulse. The 5000 provides a single positive sync pulse aligned with P1. | :ATC:DME:TRIGGER<br>:ATC:XPDR:SCOPE REPLY  | Set SYNC to Reply                      |
| TT        | No        |  |  | Set SYNC to 15 Hz TACAN Modulation     |
| UF?       | Yes       |  | :ATC:MEA:FREQ?   | Get UUT Frequency (1020 to 1155 MHz)   |
| UP?       | Yes       | Will not display the "F" when P1 to P2 spacing is out of tolerance. Use :ATC:MEA:PUL:POS? to measure spacing.  | :ATC:DME:PRF?  | Get UUT DME PRF                        |
| UW?       | Yes       |  | :ATC:MEA:PUL:POWER?  | Get UUT Power in Watts (0.0 to 3999 W) |
| U%?       | Yes       |  | :ATC:XPDR:PREP?  | Get UUT XPDR % Reply (0% to 159%)      |
| V         | Yes       |  | :ATC:DME:VEL   | Set DME Velocity ( 0 to 9990 KTS)      |
| V?        | Yes       |  | :ATC:DME:VEL?  | Get DME Velocity ( 0 to 9990 KTS)      |
| V.        | Partial   | Command accepted. No action is taken because the value is displayed on main screen.  |  | Display DME Velocity                   |

| ATC-1400A | Supported | Comments   | ATC5000NG Equivalent (or Similar)   | Command description   |
|-----------|-----------|--|---|---|
| WN        | Partial   | Command is accepted. No action is taken.<br>Use :ATC:MEAS:PUL:POS? for spacing measurement.  | :ATC:MEAS:PUL:POS?  | Set Narrow Tolerance Window                                       |
| WW        | Partial   | Command is accepted. No action is taken.<br>Use :ATC:MEAS:PUL:POS? for spacing measurement.  | :ATC:MEAS:PUL:POS?  | Set Wide Tolerance Window   |
| X1        | No        |  |   | Set XPDR Mode 1   |
| X2        | No        |  |   | Set XPDR Mode 2   |
| XA        | Yes       |  | :ATC:XPDR:DBL:2:MOD 0 or<br>:ATC:XPDR:ITABLE:1:MOD 0 or<br>:ATC:XPDR:MOD 0    | Set XPDR Mode A   |
| XB        | No        |  |   | Set XPDR Mode B   |
| XC        | Yes       |  | :ATC:XPDR:DBL:2:MOD 1 or<br>:ATC:XPDR:ITABLE:1:MOD 1 or<br>:ATC:XPDR:MOD 1    | Set XPDR Mode C   |
| XD        | No        |  |   | Set XPDR Mode D   |
| XT        | No        |  |   | Set XPDR Mode T   |
| XA1       | Yes       |  | See double mode   | Set XPDR Mode AC1   |
| XA2       | Yes       |  | See double mode   | Set XPDR Mode AC2   |
| XP        | Yes       |  | :ATC:XPDR:PUL:P1W<br>:ATC:XPDR:DBL:1:PUL:P1W<br>:ATC:XPDR:ITABLE:1:PUL:P1W    | Set XPDR Pulse Width (0.10 to 1.95 $\mu$ s in 0.05 $\mu$ s steps) |
| XP0       | Yes       |  | :ATC:XPDR:PUL:P1W<br>:ATC:XPDR:DBL:1:PUL:P1W<br>:ATC:XPDR:ITABLE:1:PUL:P1W    | Set XPDR Pulse Width to CAL                                       |
| XP1       | Yes       |  | :ATC:XPDR:PUL:P1W<br>:ATC:XPDR:DBL:1:PUL:P1W<br>:ATC:XPDR:ITABLE:1:PUL:P1W    | Set XPDR Pulse Width (0.10 to 1.95 $\mu$ s)                       |
| XV        | Yes       | On the 1400A pulses will merge and create a single pulse when P2 set to -1.8 $\mu$ s.<br>On the 5000 the pulses do not merge completely. | :ATC:XPDR:PUL:P12S<br>:ATC:XPDR:DBL:1:PUL:P12S<br>:ATC:XPDR:ITABLE:1:PUL:P12S | Set P2/P3 Deviation (0. to 1.95 $\mu$ s in 0.05 $\mu$ s steps)    |
| XV20      | Yes       |  | :ATC:XPDR:PUL:P12S<br>:ATC:XPDR:DBL:1:PUL:P12S<br>:ATC:XPDR:ITABLE:1:PUL:P12S | Set P2 Pulse Spacing to CAL                                       |

| ATC-1400A | Supported | Comments | ATC5000NG Equivalent (or Similar)   | Command description                                 |
|-----------|-----------|----------|---|---|
| XV2+      | Yes       |          | :ATC:XPDR:PUL:P12S<br>:ATC:XPDR:DBL:1:PUL:P12S<br>:ATC:XPDR:ITABLE:1:PUL:P12S | Increase P2 Pulse Spacing by Value set in "XV=X.XX" |
| XV2-      | Yes       |          | :ATC:XPDR:PUL:P12S<br>:ATC:XPDR:DBL:1:PUL:P12S<br>:ATC:XPDR:ITABLE:1:PUL:P12S | Decrease P2 Pulse Spacing by Value set in "XV=X.XX" |
| XV30      | Yes       |          | :ATC:XPDR:PUL:P13S<br>:ATC:XPDR:DBL:1:PUL:P13S<br>:ATC:XPDR:ITABLE:1:PUL:P13S | Set P3 Pulse Spacing to CAL                         |
| XV3+      | Yes       |          | :ATC:XPDR:PUL:P13S<br>:ATC:XPDR:DBL:1:PUL:P13S<br>:ATC:XPDR:ITABLE:1:PUL:P13S | Increase P3 Pulse Spacing by Value set in "XV=X.XX" |
| XV3-      | Yes       |          | :ATC:XPDR:PUL:P13S<br>:ATC:XPDR:DBL:1:PUL:P13S<br>:ATC:XPDR:ITABLE:1:PUL:P13S | Decrease P3 Pulse Spacing by Value set in "XV=X.XX" |

## D.2 1403DL Compatibility Command Set

### D.1.1 AXN COMMANDS S-1403DL

| AXN COMMANDS S-1403DL | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT<br>(OR SIMILAR)   | COMMAND DESCRIPTION            |
|-----------------------|-----------|---|--|--------------------------------|
| AX3=MODE?             | Yes       |   | See Old Style Commands in Section E.3. | See command descriptions below |
| AX3=ON                | No        | Use AX3=S1403C Instead.   |  |                                |
| AX3=S1403C            | Yes       |   |  |                                |
| AX3=ANTB=             | Yes       | AX3=ANTB=0.95 reports invalid arguments and caused GPIB bus to hang. Have to press the GPIB reset button to continue. |  |                                |
| AX3=ANTB=OFF          | Yes       |   |  |                                |
| AX3=ANTB=0.           | Yes       | AX3=ANTB=0. reports invalid arguments and caused GPIB bus to hang. Have to press the GPIB reset button to continue.   |  |                                |
| AX3=ANTB?             | Yes       |   |  |                                |
| AX3=PPMG=             | Yes       |   |  |                                |
| AX3=PPMG?             | Yes       | AX3=PPMG=OFF, Returned 3:8, Expected 3:OFF  |  |                                |
| AX3=BURST=ACS         | Yes       |   |  |                                |
| AX3=BURST=ACL         | Yes       |   |  |                                |
| AX3=BURST=ATC         | Yes       |   |  |                                |
| AX3=BURST=SEQ         | Yes       |   |  |                                |
| AX3=BURST             | Yes       |   |  |                                |
| AX3=RFLV=             | Yes       |   |  |                                |
| AX3=RFLV?             | Yes       |   |  |                                |
| AX3=PPULSE=OFF        | No        |   |  |                                |
| AX3=DI=SEQ;SEQ        | Partial   | The sequence is one interrogation in length.  |  |                                |
| AX3=DI=ATC;SEQ        | Yes       | All parameters must be present  |  |                                |
| AX3=EXMOD=OFF         | No        |   |  |                                |
| AX3=EXMOD=ON          | No        |   |  |                                |
| AX3=EXSYN=;0.         | No        |   |  |                                |
| AX3=EXSYN=;;OFF       | No        |   |  |                                |
| AX3=EXSYN=OFF         | No        |   |  |                                |

| AXN COMMANDS S-1403DL            | SUPPORTED | COMMENTS                       | ATC5000NG EQUIVALENT<br>(OR SIMILAR) | COMMAND DESCRIPTION |
|----------------------------------|-----------|--------------------------------|--------------------------------------|---------------------|
| AX3=P3=CAL                       | Yes       |                                |                                      |                     |
| AX3=P3?                          | Yes       |                                |                                      |                     |
| AX3=P4=CAL;CAL;CAL               | Yes       |                                |                                      |                     |
| AX3=P4?                          | Yes       |                                |                                      |                     |
| AX3=P6=CAL;CAL;CAL               | Yes       |                                |                                      |                     |
| AX3=P6?                          | Yes       |                                |                                      |                     |
| AX3=P6=;;                        | Yes       | All parameters must be present |                                      |                     |
| AX3=SPR=ON;CAL                   | Yes       |                                |                                      |                     |
| AX3=SPR?                         | Yes       |                                |                                      |                     |
| AX3=P2=CAL                       | Yes       |                                |                                      |                     |
| AX3=P2?                          | Yes       |                                |                                      |                     |
| AX3=P4=VAR                       | Yes       |                                |                                      |                     |
| AX3=P4=CAL;; (-1.95 TO<br>+1.95) | Yes       | All parameters must be present |                                      |                     |
| AX3=P4=CAL; (0.20 TO<br>3.20)    | Yes       | All parameters must be present |                                      |                     |
| AX3=SEQ                          | Yes       |                                |                                      |                     |
| AX3=SQn=;;;                      | Yes       | All parameters must be present |                                      |                     |
| AX3=SQn?                         | Yes       |                                |                                      |                     |
| AX3=SPR=ON;                      | Yes       |                                |                                      |                     |
| SMR=101                          | No        |                                |                                      |                     |

## D.1.2 S-1403DL COMPATIBILITY COMMAND SET

| S-1403DL COMMAND              | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT (OR SIMILAR)  | COMMAND DESCRIPTION   |
|-------------------------------|-----------|---|--|---|
| <b>C10/C20 COMMANDS</b>       |           |   |  |   |
| Format                        | Yes       | ASCII only  | :ATC:MEA:DIFORMAT  | Sets format for numerical data returns.   |
| S1403C                        | Yes       |   |  | Switches to old-style command interpreter.  |
| SCPI                          | Yes       |   |  | Switches to new SCPI command interpreter.   |
| SYSTEM:LANGUAGE S1403c        | Yes       |   |  | Switches to old-style command interpreter.  |
| INTERROGATION:TRIGGER:BURST   | Yes       |   | :ATC:XPDR:ITABLE:BURST:START   | Activates the BURST Function if enabled.  |
| HCOPY                         | No        |   |  | Performs screen dump out RS-232 Connector.  |
| HCOPY:SDUMP                   | No        |   |  | Performs screen dump out RS-232 Connector.  |
| PSCREEN                       | No        |   |  | Performs screen dump out RS-232 Connector.  |
| <b>C10/C20 COMMANDS</b>       |           |   |  |   |
| GENERATOR:STATE               | Yes       |   | :ATC:XPDR:START<br>:ATC:XPDR:STOP  | Enables/disables interrogation for specified antenna.                             |
| GENERATOR:STATE?              | Yes       |   | :ATC:XPDR:RF?  | Returns the interrogation signal status for the specified antenna.                |
| GENERATOR:LEVEL:OFFSET        | Yes       |   | :ATC:XPDR:ANTENNA:POWER<br>:ATC:XPDR:ITABLE:1:POW<br>:ATC:XPDR:DBL:1:POW | Sets or returns the RF vernier for the specified antenna                          |
| GENERATOR:LEVEL:OFFSET?       | Yes       | Minimal format differences<br>For example: For a set value of -2.9 the unit returns -2.9 as expected.<br>For a set value of -3 the unit returns -3.0, Expected -3 | :ATC:XPDR:POW?<br>:ATC:XPDR:ITABLE:1:POW?<br>:ATC:XPDR:DBL:1:POW?        | Sets or returns the RF vernier for the specified antenna                          |
| GENERATOR:TIME:OFFSET         | Yes       |   | :ATC:XPDR:ANT:TIM<br>:ATC:XPDR:ITABLE:1:ANT:TIM                          | Sets or returns the ANT B interrogation signal position in $\mu$ s from the ANT A |
| GENERATOR:TIME:OFFSET?        | Yes       |   | :ATC:XPDR:ANT:TIM?<br>:ATC:XPDR:ITABLE:1:ANT:TIM?                        | Sets or returns the ANT B interrogation signal position in $\mu$ s from the ANT A |
| GENERATOR:LEVEL               | Yes       |   | :ATC:XPDR:POW<br>:ATC:XPDR:ANT:POW<br>:ATC:XPDR:ITABLE:2:ANT:POW         | Sets or returns the ANTB output level   |
| GENERATOR:LEVEL?              | Yes       |   | :ATC:XPDR:POW?<br>:ATC:XPDR:ANT:POW<br>:ATC:XPDR:ITABLE:2:ANT:POW?       | Sets or returns the ANTB output level   |
| INTERROGATION:FUNCTION:ATCRBS | Yes       |   | :ATC:XPDR:MOD 0  | Starts ATC function.  |



| S-1403DL COMMAND                         | SUPPORTED | COMMENTS                             | ATC5000NG EQUIVALENT (OR SIMILAR)  | COMMAND DESCRIPTION   |
|--|-----------|--------------------------------------|--|---|
| INTERROGATION:FUNCTION:ACS               | Yes       |                                      | :ATC:XPDR:MOD 2  | Starts ACS function.  |
| INTERROGATION:FUNCTION:ACL               | Yes       |                                      | :ATC:XPDR:MOD 4  | Starts ACL function.  |
| INTERROGATION:FUNCTION:SEQUENCE          | Yes       |                                      | :ATC:XPDR:ITABLE:1:MOD 6   | Starts SEQ function.  |
| INTERROGATION:FUNCTION:INTERLACE         | No        | Candidate for future implementation. | :ATC:XPDR:DBL:IRATIO<br>:ATC:XPDR:DBL:1:MOD                                      | Starts Interlace/Sets ATCRBS to Mode S interrogation ratio. |
| INTERROGATION:FUNCTION:INTERLACE?        | Yes       |                                      | :ATC:XPDR:DBL:IRATIO?  | Returns ATCRBS to Mode S interrogation ratio setting.       |
| INTERROGATION:FUNCTION:DI                | Yes       |                                      | :ATC:XPDR:DBL:1:MOD<br>:ATC:XPDR:DBL:2:MOD                                       | Starts DI/Sets both interrogation types.                    |
| INTERROGATION:FUNCTION:DI?               | Yes       |                                      | :ATC:XPDR:DBL:1:MOD?<br>:ATC:XPDR:DBL:2:MOD?                                     | Returns DI interrogation types.                             |
| INTERROGATION:FUNCTION:BURST             | Partial   | Burst count limited to max of 1000.  | :ATC:XPDR:ITABLE:BURST<br>:ATC:XPDR:ITABLE:BURST:COUNT                           | Starts Burst/Sets interrogation type and number.            |
| INTERROGATION:FUNCTION:BURST?            | Yes       |                                      | :ATC:XPDR:ITABLE:BURST?  | Returns Burst interrogation type and number setting.        |
| INTERROGATION:FUNCTION:BURST:CONDITION ? | Yes       |                                      | :ATC:XPDR:ITABLE:BURST?  | Returns Burst function status.                              |
| INTERROGATION:FUNCTION:ATCMONITOR        | Yes       |                                      | :ATC:XPDR:TYPE 0 or<br>:ATC:XPDR:TYPE 1  | Starts ATC Monitor pulse function.                          |
| INTERROGATION:FUNCTION?                  | Yes       |                                      | :ATC:XPDR:TYPE?  | Returns active interrogation function with parameters.      |
| INTERROGATION:P3                         | Yes       |                                      | :ATC:XPDR:PUL:P13S<br>:ATC:XPDR:DBL:1:PUL:P13S<br>:ATC:XPDR:ITABLE:1:PUL:P13S    | Sets P3 pulse level.  |
| INTERROGATION:P3?                        | Yes       |                                      | :ATC:XPDR:PUL:P13S?<br>:ATC:XPDR:DBL:1:PUL:P13S?<br>:ATC:XPDR:ITABLE:1:PUL:P13S? | Returns P3 pulse level setting.                             |
| INTERROGATION:P2                         | Yes       |                                      | :ATC:XPDR:PUL:P12S<br>:ATC:XPDR:DBL:1:PUL:P12S<br>:ATC:XPDR:ITABLE:1:PUL:P12S    | Sets P2 pulse level.  |
| INTERROGATION:P2?                        | Yes       |                                      | :ATC:XPDR:PUL:P12S?<br>:ATC:XPDR:DBL:1:PUL:P12S?<br>:ATC:XPDR:ITABLE:1:PUL:P12S? | Returns P2 pulse level setting.                             |

| S-1403DL COMMAND      | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT (OR SIMILAR)   | COMMAND DESCRIPTION   |
|-----------------------|-----------|---|---|---|
| INTERROGATION:P4      | Partial   | Allows input of width up to 3.55, but maximum transmitted P4 pulse width is 2.75.                                   | :ATC:XPDR:PUL:P145<br>:ATC:XPDR:DBL:1:PUL:P145<br>:ATC:XPDR:ITABLE:1:PUL:P145       | Sets P4 pulse level, width and position (deviation).                                  |
| INTERROGATION:P4?     | Yes       |   | :ATC:XPDR:PUL:P145?<br>:ATC:XPDR:DBL:1:PUL:P145?<br>:ATC:XPDR:ITABLE:1:PUL:P145?    | Returns P4 pulse level, width and position settings.                                  |
| INTERROGATION:P6      | Partial   | The pulse width range is limited to -0.5 and +1.45.   | :ATC:XPDR:PUL:P165<br>:ATC:XPDR:DBL:1:PUL:P165<br>:ATC:XPDR:ITABLE:1:PUL:P165       | Sets P6 pulse status (level), width and position (deviation).                         |
| INTERROGATION:P6?     | Yes       |   | :ATC:XPDR:PUL:P165?<br>:ATC:XPDR:DBL:1:PUL:P165?<br>:ATC:XPDR:ITABLE:1:PUL:P165?    | Returns P6 pulse level, width and position setting.                                   |
| INTERROGATION:P6:SPR  | Partial   | ATC5000NG will not disable SPR.   | :ATC:XPDR:PUL:P1SPS<br>:ATC:XPDR:DBL:1:PUL:P1SPS<br>:ATC:XPDR:ITABLE:1:PUL:P1SPS    | Sets SPR control and position.  |
| INTERROGATION:P6:SPR? | Yes       |   | :ATC:XPDR:PUL:P1SPS?<br>:ATC:XPDR:DBL:1:PUL:P1SPS?<br>:ATC:XPDR:ITABLE:1:PUL:P1SPS? | Returns SPR control and position setting.   |
| REPLY:ATCRBS?         | Partial   | X pulse and Ident are not reported.   | :ATC:XPDR:AREP? or<br>:ATC:XPDR:CREP?   | Returns Mode C reply altitude or Mode A reply identification.                         |
| REPLY:DELAY:FIRST?    | Yes       |   | :ATC:XPDR:DREP?   | Returns reply delay for current function.   |
| REPLY:JITTER?         | Yes       |   | :ATC:XPDR:JREP?   | Returns Mode S format and data received in replies to ATC, ACS or ACL interrogations. |
| REPLY:MODES?          | Yes       |   | :ATC:RCV:LOG:DL?  | Returns Mode S format and data received in replies to ATC, ACS or ACL interrogations. |
| REPLY:SPACING?        | Partial   | Must select F2 to get the spacing measurement.  | :ATC:MEA:PUL:POS?   | Returns reply pulse spacing in $\mu$ s.   |
| REPLY:TIMEOUT         | Yes       |   |   | Sets time limit for getting no reply in seconds.                                      |
| REPLY:WIDTH?          | Partial   | REPLY:WIDTH? "ATC" functions properly.<br>REPLY:WIDTH? "MODES" returns all zeros even with width displayed on unit. | :ATC:MEA:PUL:WID?   | Returns width of reply pulses in $\mu$ s.   |
| <b>C30 COMMANDS</b>   |           |   |   |   |
| REPLY:PERCENT?        | Yes       |   | :ATC:XPDR:PREP?   | Sets percent reply through selected antenna for set type.                             |
| REPLY:PERCENT:CLEAR   | Yes       |   |   | Clears percent reply readings.  |
| <b>C40 COMMANDS</b>   |           |   |   |   |

| S-1403DL COMMAND        | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT (OR SIMILAR) | COMMAND DESCRIPTION   |
|-------------------------|-----------|---|-----------------------------------|---|
| REPLY:DELAY?            | Partial   | REPLY:DELAY? "ATC" returns all zero if replies are from Mode S, and REPLY:DELAY? "MODES" returns all zero if replies are ATCRBS.  | :ATC:XPDR:DREP?                   | Returns reply delay in $\mu$ s.   |
| REPLY:DELAY:CLEAR       | Yes       |   |                                   | Clears reply data (delay, jitter and pulse measurements).               |
| <b>C50/C60 COMMANDS</b> |           |   |                                   |   |
| SQTR:ADDRESS?           | Yes       |   | :ATC:RCV:LOG:DL?                  | Returns squitter address.   |
| SQTR:TAIL?              | Yes       |   | :ATC:RCV:LOG:DL?                  | Returns squitter tail number and country.                               |
| SQTR:COUNT:PERIOD       | Yes       |   |                                   | Sets period in seconds for counting squitters.                          |
| SQTR:COUNT:PERIOD?      | Yes       |   |                                   | Returns period setting in seconds for counting squitters.               |
| SQTR:COUNT?             | No        |   | :ATC:RCV:LOG:DL?                  | Returns squitter count during set period for selected type.             |
| SQTR:COUNT:CLEAR        | Yes       |   |                                   | Clears squitter count readings.   |
| SQTR:TIME?              | No        |   | :ATC:RCV:LOG:DL?                  | Returns squitter time intervals in seconds and data in selected format. |
| SQTR:TIME:CLEAR         | Yes       |   |                                   | Clears squitter time readings.  |
| SQTR:CAPTURE:CLEAR      | Yes       |   |                                   | Clears all squitter buffer entries.                                     |
| SQTR:CAPTURE:CONDITION? | No        |   |                                   | Returns capture buffer status.  |
| SQTR:CAPTURE:STATE      | Yes       |   |                                   | Sets squitter capture state.  |
| SQTR:CAPTURE:STATE?     | Yes       |   |                                   | Returns squitter capture status.  |
| SQTR:CAPTURE:COUNT?     | No        |   |                                   | Returns number of entries in capture buffer and capacity.               |
| SQTR:CAPTURE:FILTER     | Yes       |   |                                   | Sets squitter capture filter.   |
| SQTR:CAPTURE:FILTER?    | Yes       |   |                                   | Returns squitter capture filter setting.                                |
| SQTR:CAPTURE:GET?       | Partial   | When setup to capture a specific squitter category the unit fails to return the data even if it is shown in the receiver summary. | :ATC:RCV:LOG:DL?                  | Returns squitter capture buffer data.                                   |
| SQTR:CAPTURE:MODE       | Yes       |   |                                   | Sets capture buffer operation mode.                                     |
| SQTR:CAPTURE:MODE?      | Yes       |   |                                   | Returns capture buffer operation mode.                                  |
| SQTR:GROUPING:DF17      | Yes       |   |                                   |   |
| SQTR:TIME:TIMEOUT       | No        | Candidate for future implementation.  |                                   | Sets time limits in seconds for looking at squitter periods.            |

| S-1403DL COMMAND                  | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT (OR SIMILAR)                                | COMMAND DESCRIPTION                                       |
|-----------------------------------|-----------|---|--|---|
| SQTR:TIME:TIMEOUT:DEFAULT         | Yes       |   |  | Sets default time limits for looking at squitter periods. |
| <b>C71 COMMANDS</b>               |           |   |  |   |
| INTERROGATION:TRIGGER:SOURCE      | Partial   | Only supports TRIGGEN option  |  | Sets interrogation trigger source.                        |
| INTERROGATION:TRIGGER:SOURCE?     | Yes       |   |  | Returns interrogation trigger source setting.             |
| INTERROGATION:TRIGGER:GENERATOR   | Partial   | Sending a value in seconds is not supported it must be set in Hz.   | :ATC:XPDR:DBL:1:PRF<br>:ATC:XPDR:ITABLE:PRF<br>:ATC:XPDR:PRF     | Sets internal trigger generator.                          |
| INTERROGATION:TRIGGER:GENERATOR?  | Yes       |   | :ATC:XPDR:DBL:1:PRF?<br>:ATC:XPDR:ITABLE:PRF?<br>:ATC:XPDR:PRF ? | Returns internal trigger generator setting.               |
| <b>C72 COMMANDS</b>               |           |   |  |   |
| INTERROGATION:SCOPE               | Partial   | Scope out cannot be turned off. Scope out is set to interrogation for any interrogation. If the command state is on, the value is set in the scope interrogation offset. If the command is off the command is discarded. Also there is only one scope interrogation offset. | :ATC:XPDR:SCOPE INTERR<br>:ATC:XPDR:SCOPE:INTERR:OFFS<br>ET      | Sets SCOPE TRIG OUT Connector pulse.                      |
| INTERROGATION:SCOPE?              | Yes       |   | :ATC:XPDR:SCOPE INTERR?<br>:ATC:XPDR:SCOPE:INTERR:OFFS<br>ET?    | Returns SCOPE TRIG OUT Connector pulse settings.          |
| <b>C73 COMMANDS</b>               |           |   |  |   |
| INTERROGATION:SYNC:OUT            | No        |   |  | Sets EXT SYNC OUT Connector output.                       |
| INTERROGATION:SYNC:OUT?           | No        |   |  | Returns EXT SYNC OUT Connector output setting.            |
| INTERROGATION:SYNC:OUT:DEVIATION  | No        |   |  | Sets EXT SYNC OUT Connector pulse in $\mu$ s from P1.     |
| INTERROGATION:SYNC:OUT:DEVIATION? | No        |   |  | Returns set EXT SYNC OUT Connector pulse position.        |
| <b>C74 COMMANDS</b>               |           |   |  |   |
| INTERROGATION:PPMG                | Partial   | Cannot set PPMG to off state. Sent INT:PPMG "MODES",1,4, Expected "1,4", Received "1,2".  | :ATC:MEA:SET:PUL   | Sets PPMG control for specified pulse.                    |
| INTERROGATION:PPMG?               | Yes       |   | :ATC:MEA:SET:PUL?  | Returns PPMG control pulse setting for specified type.    |
| <b>C75 COMMANDS</b>               |           |   |  |   |

| S-1403DL COMMAND                    | SUPPORTED | COMMENTS   | ATC5000NG EQUIVALENT (OR SIMILAR)                              | COMMAND DESCRIPTION                                      |
|-------------------------------------|-----------|--|--|--|
| INTERROGATION:MODULATION            | No        |  |  | Specifies Mode S modulation for selected antenna.        |
| INTERROGATION:MODULATION?           | No        |  |  | Returns Mode S modulation setting for selected antenna.  |
| INTERROGATION:PPULS                 | No        |  |  | Sets prepulse status and position.                       |
| INTERROGATION:PPULS?                | No        |  |  | Returns prepulse status and position settings.           |
| <b>C76 COMMANDS</b>                 |           |  |  |  |
| INTERROGATION:SMENU:FORMAT          | Yes       |  | :ATC:XPDR:DBL:2:UF<br>:ATC:XPDR:ITABLE:1:UF<br>:ATC:XPDR:UF    | Sets numerical format for sequence menu data.            |
| INTERROGATION:SMENU:FORMAT?         | Yes       |  | :ATC:XPDR:DBL:2:UF?<br>:ATC:XPDR:ITABLE:1:UF?<br>:ATC:XPDR:UF? | Returns numerical format setting for sequence menu data. |
| INTERROGATION:SMENU:SET:ALL         | Partial   | INterrogation:SMENU:SET:ALL "ZERO" worked as expected with the exception that 1 interrogation will remain on.            |  | Modifies all sequence menus.                             |
| INTERROGATION:SMENU:GLOBAL:ADDRESS  | Yes       |  |  | Sets global transponder address.                         |
| INTERROGATION:SMENU:GLOBAL:ADDRESS? | Yes       |  |  | Returns global transponder address setting.              |
| INTERROGATION:SMENU:GLOBAL:APXOR    | Yes       |  |  | Sets global XOR mask.                                    |
| INTERROGATION:SMENU:GLOBAL:APXOR?   | Yes       |  |  | Returns global XOR mask setting.                         |
| <b>C79 COMMANDS</b>                 |           |  |  |  |
| ATC1400A:ATCRBS                     | Partial   | Supports Mode A and C only.  | :ATC:XPDR:MOD  | Specifies ATCRBS mode.                                   |
| ATC1400A:ATCRBS?                    | Yes       |  | :ATC:XPDR:MOD?   | Returns ATCRBS mode setting.                             |
| ATC1400A:RF                         | Yes       |  | :ATC:XPDR:RF   | Specifies RF output control.                             |
| ATC1400A:RF?                        | Yes       |  | :ATC:XPDR:RF?  | Returns RF output control setting.                       |
| ATC1400A:SCOPE                      | Yes       | With Scope port 2 set to SYNC and 5000 set to sync on reply(TD), the 5000 has a pulse 2us after P3 of the interrogation. | :ATC:XPDR:SCOPE  | Specifies scope sync position.                           |
| ATC1400A:SCOPE?                     | Yes       | OK   | :ATC:XPDR:SCOPE?   | Returns scope sync position setting.                     |
| ATC1400A:MODE                       | Partial   | Works with the exception that Double interrogation power range is limited to -20 to -90 dBm.                             | :ATC:XPDR:TYPE 1<br>:ATC:XPDR:DBL:1:MOD<br>:ATC:XPDR:DBL:2:MOD | Specifies DI spacing in $\mu$ s.                         |

| S-1403DL COMMAND                | SUPPORTED | COMMENTS | ATC5000NG EQUIVALENT (OR SIMILAR)  | COMMAND DESCRIPTION                                |
|---------------------------------|-----------|----------|--|--|
| ATC1400A:MODE?                  | Yes       |          | :ATC:XPDR:TYPE?<br>:ATC:XPDR:DBL:1:MOD?<br>:ATC:XPDR:DBL:2:MOD?                  | Returns DI spacing setting.                        |
| ATC1400A:P123:WIDTH             | Yes       |          | :ATC:XPDR:PUL:PxW<br>:ATC:XPDR:DBL:1:PUL:PxW<br>:ATC:XPDR:ITABLE:2:PUL:PxW       | Specifies pulse width in $\mu$ s.                  |
| ATC1400A:P123:WIDTH?            | Yes       |          | :ATC:XPDR:PUL:PxW?<br>:ATC:XPDR:DBL:1:PUL:PxW?<br>:ATC:XPDR:ITABLE:2:PUL:PxW?    | Returns pulse width setting.                       |
| ATC1400A:P2:DEVIATION           | Yes       |          | :ATC:XPDR:PUL:P125<br>:ATC:XPDR:DBL:1:PUL:P125<br>:ATC:XPDR:ITABLE:2:PUL:P125    | Specifies P2 deviation in $\mu$ s.                 |
| ATC1400A:P2:DEVIATION?          | Yes       |          | :ATC:XPDR:PUL:P125?<br>:ATC:XPDR:DBL:1:PUL:P125?<br>:ATC:XPDR:ITABLE:2:PUL:P125? | Returns P2 deviation setting.                      |
| ATC1400A:P3:DEVIATION           | Yes       |          | :ATC:XPDR:PUL:P135<br>:ATC:XPDR:DBL:1:PUL:P135<br>:ATC:XPDR:ITABLE:2:PUL:P135    | Specifies P3 deviation in $\mu$ s.                 |
| ATC1400A:P3:DEVIATION?          | Yes       |          | :ATC:XPDR:PUL:P135?<br>:ATC:XPDR:DBL:1:PUL:P135?<br>:ATC:XPDR:ITABLE:2:PUL:P135? | Returns P3 deviation setting.                      |
| <b>C81 COMMANDS</b>             |           |          |  |  |
| SYSTEM:COMMUNICATE:SERIAL:RCI   | No        |          |  | Enables/Disables control through RS-232 Connector. |
| SYSTEM:COMMUNICATE:SERIAL:RCI?  | No        |          |  | Returns control status through RS-232 Connector.   |
| SYSTEM:COMMUNICATE:SERIAL:ECHO  | No        |          |  | Enables/Disables RS-232 RCI echo.                  |
| SYSTEM:COMMUNICATE:SERIAL:ECHO? | No        |          |  | Returns RS-232 RCI echo status.                    |
| SYSTEM:COMMUNICATE:SERIAL:DUMP  | No        |          |  | Sets RS-232 screen dump parameters.                |
| SYSTEM:COMMUNICATE:SERIAL:DUMP? | No        |          |  | Returns RS-232 screen dump parameter settings.     |
| <b>C82 COMMANDS</b>             |           |          |  |  |
| SYSTEM:COMMUNICATE:SERIAL:BAUD  | No        |          |  | Sets RS-232 baud rate.                             |
| SYSTEM:COMMUNICATE:SERIAL:BAUD? | No        |          |  | Returns RS-232 baud rate setting.                  |

| S-1403DL COMMAND                            | SUPPORTED | COMMENTS       | ATC5000NG EQUIVALENT (OR SIMILAR) | COMMAND DESCRIPTION  |
|---|-----------|----------------|-----------------------------------|--|
| SYSTEM:COMMUNICATE:SERIAL:BITS              | No        |                |                                   | Sets number of RS-232 data bits per word.                  |
| SYSTEM:COMMUNICATE:SERIAL:BITS?             | No        |                |                                   | Returns RS-232 bits per word setting.                      |
| SYSTEM:COMMUNICATE:SERIAL:SBITS             | No        |                |                                   | Sets RS-232 number of stop bits per word.                  |
| SYSTEM:COMMUNICATE:SERIAL:SBITS?            | No        |                |                                   | Returns RS-232 number of stop bits per word setting.       |
| SYSTEM:COMMUNICATE:SERIAL:PARITY            | No        |                |                                   | Sets RS-232 parity check.                                  |
| SYSTEM:COMMUNICATE:SERIAL:PARITY?           | No        |                |                                   | Returns RS-232 parity check setting.                       |
| SYSTEM:COMMUNICATE:SERIAL:PACE              | No        |                |                                   | Sets RS-232 software handshake mode.                       |
| SYSTEM:COMMUNICATE:SERIAL:PACE?             | No        |                |                                   | Returns RS-232 software handshake mode setting.            |
| SYSTEM:COMMUNICATE:SERIAL:CONTROL:RTS       | No        |                |                                   | Sets RS-232 hardware handshaking (pacing) mode.            |
| SYSTEM:COMMUNICATE:SERIAL:CONTROL:RTS?      | No        |                |                                   | Returns RS-232 hardware handshaking mode setting.          |
| <b>C83 COMMANDS</b>                         |           |                |                                   |  |
| SYSTEM:COMMUNICATE:GPIB:RCI                 | No        | Always Enabled |                                   | Enables remote control through S-1403DL GPIB.              |
| SYSTEM:COMMUNICATE:GPIB:RCI?                | Yes       |                |                                   | Returns S-1403DL GPIB remote control status.               |
| SYSTEM:COMMUNICATE:GPIB:ADDRESS             | Yes       |                |                                   | Sets S-1403DL GPIB address.                                |
| SYSTEM:COMMUNICATE:GPIB:ADDRESS?            | Yes       |                |                                   | Returns S-1403DL GPIB address.                             |
| <b>C84 COMMANDS</b>                         |           |                |                                   |  |
| SYSTEM:COMMUNICATION:ATC1400:CONTROL        | No        |                |                                   | Sets S-1403DL control relationship with ATC-1400A.         |
| SYSTEM:COMMUNICATION:ATC1400:CONTROL?       | No        |                |                                   | Returns S-1403DL control relationship with ATC-1400A.      |
| SYSTEM:COMMUNICATION:ATC1400:S1403:ADDRESS  | No        |                |                                   | Sets S-1403DL IFR BUS address.                             |
| SYSTEM:COMMUNICATION:ATC1400:S1403:ADDRESS? | No        |                |                                   | Returns S-1403DL IFR BUS address setting.                  |
| <b>C85 COMMANDS</b>                         |           |                |                                   |  |
| SYSTEM:KEY:REPEAT                           | No        |                |                                   | Sets S-1403DL keyboard control parameters, delay and rate. |
| SYSTEM:KEY:REPEAT?                          | No        |                |                                   | Returns S-1403DL keyboard control settings.                |
| <b>C86 COMMANDS</b>                         |           |                |                                   |  |



| S-1403DL COMMAND             | SUPPORTED | COMMENTS   | ATC5000NG EQUIVALENT (OR SIMILAR)                              | COMMAND DESCRIPTION  |
|------------------------------|-----------|--|--|--|
| SYSTEM:DATE                  | No        |  |  | Sets current date (year, month, day).  |
| SYSTEM:DATE?                 | No        |  |  | Returns current date setting.  |
| SYSTEM:TIME                  | No        |  |  | Sets current time (hours, minutes, seconds).                                     |
| SYSTEM:TIME?                 | No        |  |  | Returns current time setting.  |
| <b>C89 COMMANDS</b>          |           |  |  |  |
| *IDN?                        | Yes       |  | *IDN?  | Returns identification, serial number and firmware versions.                     |
| *OPT?                        | No        |  | *OPT?  | Returns option code.   |
| *RST                         | No        |  | :ATC:RESET   | Resets S-1403DL to default settings.   |
| <b>S000 TO S999 COMMANDS</b> |           |  |  |  |
| INTERROGATION:SMENU          | Yes       |  | :ATC:XPDR:UF<br>:ATC:XPDR:DBL:2:UF<br>:ATC:XPDR:ITABLE:1:UF    | Sets interrogation data for specific sequence menu.                              |
| INTERROGATION:SMENU?         | Partial   | When user address is specified, query returns actual address instead of "USER".<br>For example:<br>Sent: INT:SMEN 3,ON,"S",5,"#H2A345670123654","USER"<br>Then INT:SMEN? 3,"N"<br>Received 1,N,5,#H2971211,#H123456<br>Expected 1,S,5,#H2971211,USER<br><br>Sent INT:SMEN? 3,"A"<br>Received 1,A,#H2A971211123456<br>Expected 1,A,#H2A971211000000 | :ATC:XPDR:UF?<br>:ATC:XPDR:DBL:2:UF?<br>:ATC:XPDR:ITABLE:1:UF? | Returns specific sequence menu interrogation data settings.                      |
| INTERROGATION:SMENU:BITS     | Partial   | Sent "INTerrogation:SMENU:BITS 0,1,16,"#HF581"" then "INTerrogation:SMENU:BITS? 0,1,64"" Received "#HF581000012345600" expected "#HF581000000000000"   |  | Sets selected interrogation data for specific sequence menu.                     |
| INTERROGATION:SMENU:BITS?    | Yes       |  |  | Returns selected data bits value for specific sequence menu.                     |
| INTERROGATION:SCOPE:SMENU    | No        |  |  | Activates/deactivates SCOPE TRIG OUT Connector pulse for selected sequence menu. |
| INTERROGATION:SCOPE:SMENU?   | No        |  |  | Returns SCOPE TRIG OUT Connector pulse status for selected sequence menu.        |



| S-1403DL COMMAND                  | SUPPORTED | COMMENTS   | ATC5000NG EQUIVALENT (OR SIMILAR) | COMMAND DESCRIPTION                                      |
|-----------------------------------|-----------|--|-----------------------------------|--|
| REPLY:SMENU?                      | Yes       | Sent "REPLY:SMENU? 1,"N"<br>Received "N,16,#H080123456065432165432,#H5A5A5A"<br>Expected "N,16,#H01234560654321654321"<br>With 17.10.0601 software, the table sync is not set by default so you must set the sync by sending command :ATC:XPDR:ITABLE:SYNC (smenu_index+1) |                                   | Returns selected sequence menu reply data in set format. |
| REPLY:SMENU:BITS?                 | Yes       | With 17.10.0601 software, the table sync is not set by default so you must set the sync by sending command :ATC:XPDR:ITABLE:SYNC (smenu_index+1)   |                                   | Returns selected sequence menu reply data.               |
| <b>T23 COMMANDS</b>               |           |  |                                   |  |
| TEST:MTL:ANTENNA                  | No        |  |                                   |  |
| TEST:MTL:ANTENNA?                 | No        |  |                                   |  |
| TEST:MTL:START                    | No        |  |                                   |  |
| TEST:MTL:TIME?                    | No        |  |                                   |  |
| TEST:MTL?                         | No        |  |                                   |  |
| TEST:MTL:LEVEL?                   | No        |  |                                   |  |
| <b>T31 COMMANDS</b>               |           |  |                                   |  |
| TEST:ELM:SETUP:RESERVATION:DELAY  | No        |  |                                   |  |
| TEST:ELM:SETUP:RESERVATION:DELAY? | No        |  |                                   |  |
| TEST:ELM:SETUP:CLOSEOUT:DELAY     | No        |  |                                   |  |
| TEST:ELM:SETUP:CLOSEOUT:DELAY?    | No        |  |                                   |  |
| TEST:ELM:SETUP:UELM:SPACING       | No        |  |                                   |  |
| TEST:ELM:SETUP:UELM:SPACING?      | No        |  |                                   |  |
| <b>T32/T33 COMMANDS</b>           |           |  |                                   |  |
| TEST:ELM:UP:SMENU                 | No        |  |                                   |  |
| TEST:ELM:UP:SMENU?                | No        |  |                                   |  |
| TEST:ELM:UP:START                 | No        |  |                                   |  |
| TEST:ELM:UP?                      | No        |  |                                   |  |
| <b>T34/T35 COMMANDS</b>           |           |  |                                   |  |
| TEST:ELM:DOWN:SMENU               | No        |  |                                   |  |
| TEST:ELM:DOWN:SMENU?              | No        |  |                                   |  |
| TEST:ELM:DOWN:START               | No        |  |                                   |  |

| S-1403DL COMMAND                  | SUPPORTED | COMMENTS                      | ATC5000NG EQUIVALENT (OR SIMILAR)         | COMMAND DESCRIPTION                             |
|-----------------------------------|-----------|-------------------------------|---|---|
| TEST:ELM:DOWN:ELM:RECEIVED?       | No        |                               |   |   |
| TEST:ELM:DOWN?                    | No        |                               |   |   |
| <b>GENERAL TEST MENU COMMANDS</b> |           |                               |   |   |
| TEST:RUNNING                      | No        |                               |   |   |
| TEST:STOP                         | No        |                               |   |   |
| <b>MS/MR COMMANDS</b>             |           |                               |   |   |
| MEMORY:STORE                      | No        |                               | :ATC:XPDR:SAVE                            | Saves current settings in selected memory slot. |
| MEMORY:CATALOG?                   | No        |                               |   |   |
| MEMORY:LOAD                       | No        |                               | :ATC:XPDR:LOAD                            | Recalls settings from selected memory slot.     |
| MEMORY:NAME                       | No        |                               |   |   |
| MEMORY:CLEAR                      | No        |                               |   |   |
| MEMORY:CLEAR:ALL                  | No        |                               |   |   |
| <b>MENU DISPLAY COMMANDS</b>      |           |                               |   |   |
| DISPLAY:CMENU                     | No        |                               |   |   |
| DISPLAY:CURRENT?                  | No        |                               |   |   |
| DISPLAY:SMENU                     | No        |                               |   |   |
| DISPLAY:TMENU                     | No        |                               |   |   |
| <b>OLD STYLE COMMANDS</b>         |           |                               |   |   |
| VER?                              | No        |                               |   |   |
| NEWPB?                            | No        |                               |   |   |
| MLDECL?                           | No        |                               |   | Returns MLD option status.                      |
| SCPI                              | Yes       |                               |   | Switches to new SCPI command interpreter.       |
| S1403C                            | Yes       |                               |   | Switches to old-style command interpreter.      |
| ATC.                              | Yes       |                               | :ATC:XPDR:TYPE 0<br>:ATC:XPDR:MOD 0       | Enables ATC function.                           |
| SEQ.                              | Partial   | Will not turn off Burst mode. | :ATC:XPDR:TYPE 2<br>:ATC:XPDR:DBL:2:MOD 6 | Enables SEQ function.                           |
| ACS.                              | Yes       |                               | :ATC:XPDR:TYPE 0<br>:ATC:XPDR:MOD 2       | Enables ACS function.                           |
| ACL.                              | Yes       |                               | :ATC:XPDR:TYPE 0<br>:ATC:XPDR:MOD 4       | Enables ACL function.                           |

| S-1403DL COMMAND | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT (OR SIMILAR)  | COMMAND DESCRIPTION  |
|------------------|-----------|---|--|--|
| INTLCE=          | Yes       |   | :ATC:XPDR:TYPE 1<br>:ATC:XPDR:DBL:IRATIO   | Enables INTLCE function/Sets Mode S to ATCRBS ratio.         |
| DI=              | Partial   | "DI=ACL,ACS" reports "Bad parameter string". It can be sent with the AX3= prefix, "AX3=DI=ACL,ACS". | :ATC:XPDR:TYPE 1<br>:ATC:XPDR:MOD  | Enables DI function/Sets types of interrogations.            |
| BURST=           | Partial   | Burst is limited to 1000.   | :ATC:XPDR:TYPE 1<br>:ATC:XPDR:ITABLE:BURST:COUNT                                 | Enables BURST function/Sets interrogation type-number.       |
| BURST.           | Yes       |   | :ATC:XPDR:ITABLE:BURST:START   | Activates BURST function.                                    |
| MODE?            | Yes       |   | :ATC:XPDR:MOD?   | Returns current test function and settings if applicable.    |
| RFLV=            | Yes       |   | :ATC:XPDR:POW<br>:ATC:XPDR:ITABLE:1:POW  | Sets ANT A RF vernier level (dB).                            |
| RFLV?            | Yes       |   | :ATC:XPDR:POW?<br>:ATC:XPDR:ITABLE:1:POW?  | Returns ANT A RF vernier level (dB).                         |
| P4=              | Yes       |   | :ATC:XPDR:PUL:P145<br>:ATC:XPDR:DBL:1:PUL:P145<br>:ATC:XPDR:ITABLE:1:PUL:P145    | Sets P4 (ACS/ACL) pulse level control, width and position.   |
| P4?              | Yes       |   | :ATC:XPDR:PUL:P145?<br>:ATC:XPDR:DBL:1:PUL:P145?<br>:ATC:XPDR:ITABLE:1:PUL:P145? | Returns status of P4 pulse.                                  |
| P6=              | Partial   | The pulse width range is limited to -0.5 and +1.45.   | :ATC:XPDR:PUL:P165<br>:ATC:XPDR:DBL:1:PUL:P165<br>:ATC:XPDR:ITABLE:1:PUL:P165    | Activates and sets P6 (SEQ) pulse level, width and position. |
| P6?              | Yes       |   | :ATC:XPDR:PUL:P165?<br>:ATC:XPDR:DBL:1:PUL:P165?<br>:ATC:XPDR:ITABLE:1:PUL:P165? | Returns status of P6 pulse.                                  |
| P2=              | Yes       |   | :ATC:XPDR:PUL:P125<br>:ATC:XPDR:DBL:1:PUL:P125<br>:ATC:XPDR:ITABLE:1:PUL:P125    | Sets P2 level control.                                       |
| P2?              | Yes       |   | :ATC:XPDR:PUL:P125?<br>:ATC:XPDR:DBL:1:PUL:P125?<br>:ATC:XPDR:ITABLE:1:PUL:P125? | Returns P2 level control status.                             |
| P3=              | Yes       |   | :ATC:XPDR:PUL:P135<br>:ATC:XPDR:DBL:1:PUL:P135<br>:ATC:XPDR:ITABLE:1:PUL:P135    | Sets P3 level control.                                       |

| S-1403DL COMMAND | SUPPORTED | COMMENTS   | ATC5000NG EQUIVALENT (OR SIMILAR)   | COMMAND DESCRIPTION   |
|------------------|-----------|--|---|---|
| P3?              | Yes       |  | :ATC:XPDR:PUL:P135?<br>:ATC:XPDR:DBL:1:PUL:P135?<br>:ATC:XPDR:ITABLE:1:PUL:P135?    | Returns P3 level control status.  |
| SPR=             | Partial   | ATC5000NG will not disable SPR.                                | :ATC:XPDR:PUL:P1SPS<br>:ATC:XPDR:DBL:1:PUL:P1SPS<br>:ATC:XPDR:ITABLE:1:PUL:P1SPS    | Activates and sets SPR position.  |
| SPR?             | Yes       |  | :ATC:XPDR:PUL:P1SPS?<br>:ATC:XPDR:DBL:1:PUL:P1SPS?<br>:ATC:XPDR:ITABLE:1:PUL:P1SPS? | Returns SPR status.   |
| RPDLY?           | Yes       |  | :ATC:XPDR:DREP?   | Returns UUT reply delay ( $\mu$ s).   |
| SQTR?            | Yes       |  | :ATC:RCV:LOG:DL?  | Returns UUT squitter period (seconds).  |
| SQTR<type>?      | Yes       |  | :ATC:RCV:LOG:DL?  | Returns Sequence Menu (1 to 16) status.   |
| PRPLY?           | Yes       |  | :ATC:XPDR:PREP?   | Returns UUT % reply (ANT A ATC, ANT A Mode S, ANT B).   |
| APER?            | Yes       |  | :ATC:XPDR:PREP?   | Returns UUT ANT A ATCRBS % reply.   |
| SPER?            | Yes       |  | :ATC:XPDR:PREP?   | Returns UUT ANT A Mode S % reply.   |
| BPER?            | Yes       |  | :ATC:XPDR:PREP?   | Returns UUT ANT B % reply.  |
| ANTB=            | No        | The bottom channel is always enabled. See equivalent commands. | :ATC:XPDR:ANT:TIM<br>:ATC:XPDR:ITABLE:1:ANT:TIM                                     | Activates ANT B ( $\mu$ s from ANT A P1).   |
| ANTB?            | Yes       |  | :ATC:XPDR:ANT:TIM?<br>:ATC:XPDR:ITABLE:1:ANT:TIM?                                   | Returns ANT B status.   |
| SQADD?           | Yes       |  | :ATC:RCV:LOG:DL?  | Returns squitter address.   |
| PPULSE=          | No        |  |   | Activates prepulse ( $\mu$ s prior to P1).  |
| PPULSE?          | No        |  |   | Returns prepulse status.  |
| EXSYN=           | No        |  |   | Activates Ext Sync output and sets Ext Sync output position ( $\mu$ s from P1) or activates Ext Sync Input. |
| EXSYN?           | No        |  |   | Returns Ext Sync output and input status.   |
| PPMG=            | Partial   | PPMG cannot be disabled.                                       | :ATC:MEA:SET:PUL  | Sets PPMG control for any reply pulse.  |
| PPMG?            | Yes       |  | :ATC:MEA:SET:PUL?   | Returns PPMG control status.  |
| EXMOD=           | No        |  |   | Sets ANT A for Ext Mod input only.  |
| EXMOD?           | No        |  |   | Returns Ext Mod input only status.  |

| S-1403DL COMMAND | SUPPORTED | COMMENTS  | ATC5000NG EQUIVALENT (OR SIMILAR)                           | COMMAND DESCRIPTION                                   |
|------------------|-----------|---|---|---|
| BRF=             | Yes       |   | :ATC:XPDR:ANT:POW<br>:ATC:XPDR:ITABLE:2:ANT:POW             | Sets ANT B output (-dBm).                             |
| BRF?             | Yes       |   | :ATC:XPDR:ANT:POW?<br>:ATC:XPDR:ITABLE:2:ANT:POW?           | Returns ANT B output (-dBm).                          |
| BRFLV=           | Yes       |   | :ATC:XPDR:ANT:POW<br>:ATC:XPDR:ITABLE:2:ANT:POW             | Sets ANT B RF vernier level (dB).                     |
| BRFLV?           | Partial   | Minimal format differences<br>For example: For a set value of -2.9 the unit returns -2.9 as expected.<br>For a set value of -3 the unit returns -3.0, Expected -3 | :ATC:XPDR:ANT:POW?<br>:ATC:XPDR:ITABLE:2:ANT:POW?           | Returns ANT B RF vernier level (dB).                  |
| SQ<nn>=          | Partial   | This command currently takes approximately 1 minute to complete.  | :ATC:XPDR:UF<br>:ATC:XPDR:DBL:2:UF<br>:ATC:XPDR:ITABLE:1:UF | Programs Sequence Menu (0 to 999).                    |
| SQ<nn>?          | Partial   | Does not report the short long indication correctly   | :ATC:XPDR:UF<br>:ATC:XPDR:DBL:2:UF<br>:ATC:XPDR:ITABLE:1:UF | Returns Sequence Menu (1 to 16) status.               |
| DFSQ<nn>?        | Partial   | The 1403 and 5000 do not return the same number of characters.<br>For example: The 1403 returns 3:S;0;41441;26455132<br>The 5000 returns 3:S;0;000041441;26455132 | :ATC:RCV:LOG:DL?  | Returns DF data for Sequence Menu (0 to 999).         |
| DFSQT<nn>?       | Partial   | Does not report the short long indication correctly<br>For example: DFSQT2? Returns "3:S" Expected "3:L".   | :ATC:RCV:LOG:DL?  | Returns DF type for Sequence Menu (0 to 999).         |
| DFSQF<nn>?       | Yes       |   | :ATC:RCV:LOG:DL?  | Returns DF number for Sequence Menu (0 to 999).       |
| DFSQD<nn>?       | Partial   | The 1403 does not return the complete data for a long.<br>For example:<br>The 1403 returns 3:004432126<br>The 5000 returns 3:22150530062503102625031020           | :ATC:RCV:LOG:DL?  | Returns DF data for Sequence Menu (0 to 999).         |
| DFSQA<nn>?       | Yes       |   | :ATC:RCV:LOG:DL?  | Returns DF address for Sequence Menu (0 to 999).      |
| SAVE             | No        |   | :ATC:XPDR:SAVE  | Stores current settings in selected memory slot.      |
| RECALL           | No        |   | :ATC:XPDR:LOAD  | Recall selected memory slot stored settings.          |
| SEQN=            | No        |   |   | Activates MENU Display with Sequence Menu (0 to 999). |
| CMENU            | No        |   |   | Activates MENU Display with C10 or C20 Control Menu.  |

---

| <b>S-1403DL COMMAND</b> | <b>SUPPORTED</b> | <b>COMMENTS</b> | <b>ATC5000NG EQUIVALENT (OR SIMILAR)</b> | <b>COMMAND DESCRIPTION</b> |
|-------------------------|------------------|-----------------|--|----------------------------|
| ERRM?                   | No               |                 |  | Returns error status.      |
| MTL=                    | No               |                 |  | Starts MTL test.           |
| STATMTL?                | No               |                 |  | Returns MTL test status.   |
| MTL?                    | No               |                 |  | Returns UUT MTL (-dBm).    |

---





**139188**  
**Rev. L0, February 2020**  
**English**

**VIAVI Solutions**

|                           |  |
|---------------------------|--|
| <b>North America:</b>     | <b>1.844.GO VIAVI / 1.844.468.4284</b>   |
| <b>Latin America</b>      | <b>+52 55 5543 6644</b>  |
| <b>EMEA</b>               | <b>+49 7121 862273</b>   |
| <b>APAC</b>               | <b>+1 512 201 6534</b>   |
| <b>All Other Regions:</b> | <b><a href="https://viavisolutions.com/contacts">viavisolutions.com/contacts</a></b> |