



FR1 (Sub 6GHz) RF Spectrum Analysis  
OneAdvisor-800  
Rev. 1

## Table of Contents




1. Scope.....	3
2. ONA-800 Overview .....	4
2.1 Realtime Spectrum Analysis .....	4
2.2 Adding Markers to the Realtime Spectrum .....	7
2.3 Realtime Spectrogram Analysis .....	11
3. Technical Support .....	17

# 1. Scope

This document describes how to configure the ONA-800 for spectrum analysis, including:

- Realtime Spectrum Analyzer
- Interference Analyzer
- Gated Sweep Mode

The required products and parts to complete this procedure are as follows:

Description	Diagram																						
<p>OneAdvisor-800 with the following functions:</p> <ul style="list-style-type: none"> <li>- ONA-800-MF: Mainframe</li> <li>- ONA-800A-DISPL: Display</li> <li>- SPA06MA-O: Spectrum Analyzer Module</li> <li>- ONA-SP-GNSS: GPS Connectivity and GPS Antenna</li> <li>- ONA-SP-RT100: Realtime Spectrum Analysis 100MHz</li> <li>- ONA-SP-INTAN: Interference Analysis</li> <li>- ONA-SP-GSS: Gated Sweep Spectrum</li> <li>- ONA-SP-RM: Route Map</li> </ul>	 <p style="text-align: center;">OneAdvisor-800</p>																						
<p>FR1 Antennas</p> <table border="1" data-bbox="167 926 984 1377"> <tbody> <tr> <td>G700050350</td> <td>RF omni antenna Type-Nm; 3300 to 3800 MHz</td> </tr> <tr> <td>G700050353</td> <td>RF omni antenna Type-N(m), 806 to 896 MHz</td> </tr> <tr> <td>G700050354</td> <td>RF omni antenna Type-N(m), 870 to 960 MHz</td> </tr> <tr> <td>G700050355</td> <td>RF omni antenna Type-N(m), 1710 to 2170 MHz</td> </tr> <tr> <td>G700050356</td> <td>RF omni antenna Type-N(m), 720 to 800 MHz</td> </tr> <tr> <td>G700050357</td> <td>RF omni antenna Type-N(m), 2300 to 2700 MHz</td> </tr> <tr> <td>G700050363</td> <td>RF yagi antenna Type-N(f), 1750 to 2390 MHz</td> </tr> <tr> <td>G700050364</td> <td>RF yagi antenna Type-N(f), 806 to 896 MHz</td> </tr> <tr> <td>G700050365</td> <td>RF yagi antenna Type-N(f), 866 to 960 MHz</td> </tr> <tr> <td>G700050366</td> <td>RF yagi antenna SMA(f), 700 to 4000 MHz</td> </tr> <tr> <td>G700050367</td> <td>RF yagi antenna SMA(f), 700 to 6000 MHz</td> </tr> </tbody> </table>	G700050350	RF omni antenna Type-Nm; 3300 to 3800 MHz	G700050353	RF omni antenna Type-N(m), 806 to 896 MHz	G700050354	RF omni antenna Type-N(m), 870 to 960 MHz	G700050355	RF omni antenna Type-N(m), 1710 to 2170 MHz	G700050356	RF omni antenna Type-N(m), 720 to 800 MHz	G700050357	RF omni antenna Type-N(m), 2300 to 2700 MHz	G700050363	RF yagi antenna Type-N(f), 1750 to 2390 MHz	G700050364	RF yagi antenna Type-N(f), 806 to 896 MHz	G700050365	RF yagi antenna Type-N(f), 866 to 960 MHz	G700050366	RF yagi antenna SMA(f), 700 to 4000 MHz	G700050367	RF yagi antenna SMA(f), 700 to 6000 MHz	 <p style="text-align: center;">Omni-Antennas</p>  <p style="text-align: center;">Log Periodic Antenna</p>
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## 2. ONA-800 Overview

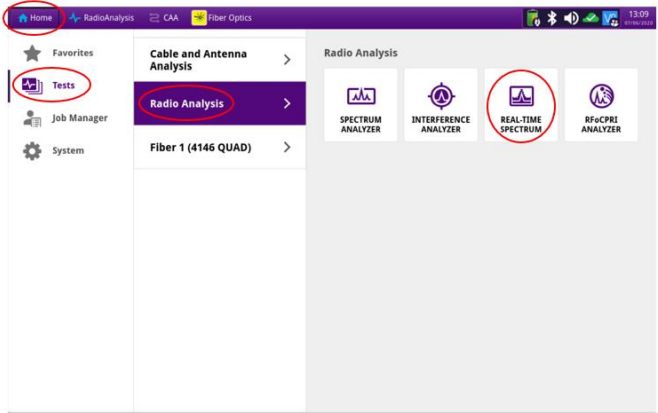

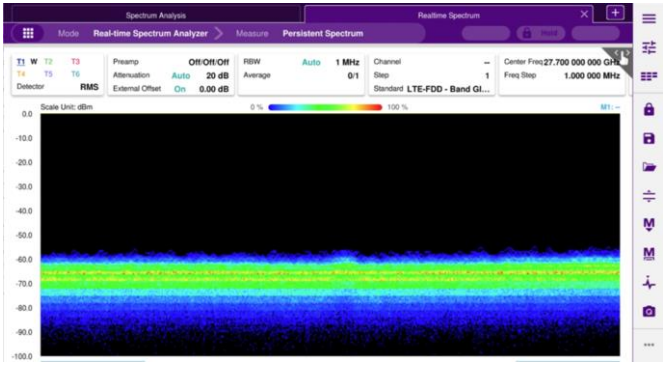
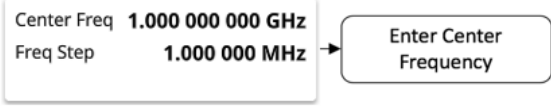
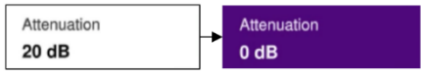

The ONA-800 is a portable instrument for spectrum analysis on all frequencies between 50 MHz and 6 GHz . The main test functions of the ONA-800:

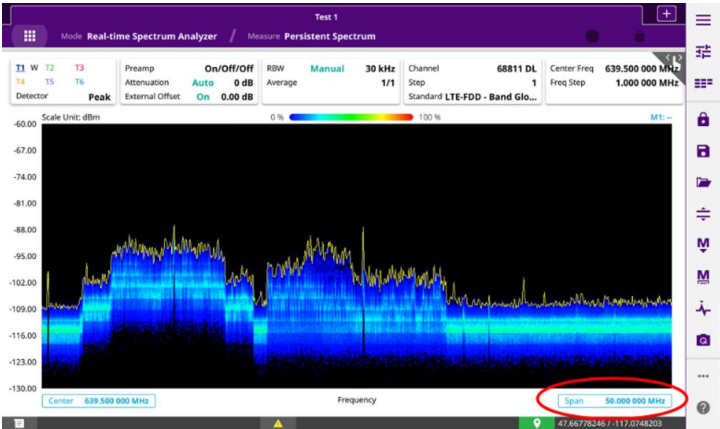
- Realtime Persistence Spectrum and Spectrogram Analysis
- Gated Sweep Spectrum Analysis
- Interference Analysis
- RF over CPRI for Interference Analysis

### 2.1 Realtime Spectrum Analysis

The following procedure describes the steps to perform real-time spectrum analysis with the ONA-800.



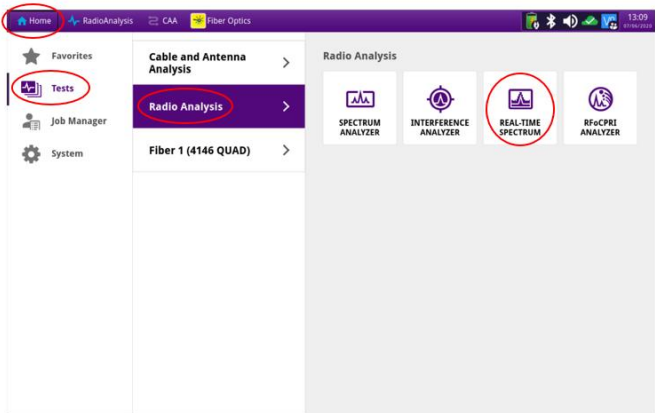
Step	Action	Description
1	Power ON ONA-800	<p>Press the ON/OFF button for to power on the ONA-800</p>  <p style="text-align: center;">ONA-800</p>
2	Connect the Omni or a Directional Antenna into the ONA-800 RF-In spectrum analyzer port	

Step	Action	Description
3	<p>ONA-800 Home Screen:</p> <ul style="list-style-type: none"> <li>- Tests</li> <li>- Radio Analysis</li> <li>- Real-Time Spectrum</li> </ul>	
3	<p>If Needed, select Spectrum Analysis Mode Configuration sequence:</p> <ul style="list-style-type: none"> <li>- Measurement Mode</li> <li>- Realtime Spectrum Analyzer</li> <li>- Persistence Spectrum</li> </ul>	<div style="text-align: center;">  <p>Real-time Spectrum Analyzer Measurement Mode</p> </div>  <p style="text-align: center;">Real-time Spectrum Measurement Screen</p>
4	<p>Frequency Settings:</p> <ul style="list-style-type: none"> <li>- Select Frequency Top Slide Bar</li> <li>- Set Frequency, to the Center Frequency of the carrier or enter the ARFCN Channel number.</li> </ul> <p>Amplitude Settings:</p> <ul style="list-style-type: none"> <li>- Select Amplitude Top Slide Bar</li> <li>- For over the air measurements, remove the attenuation value of 20dB to 0dB</li> </ul>	<div style="text-align: center;">  <p>Frequency Adjustment</p> </div> <div style="text-align: center;">  <p>Adjust Attenuation Setting if Needed</p> </div> <div style="text-align: center;">  <p>Amplitude Top Slide Bar</p> </div>

Step	Action	Description
	<ul style="list-style-type: none"> <li>- Enable the Preamps</li> <li>- Adjust Power Reference Level to center the measurement trace</li> </ul> <p>Resolution Bandwidth Settings:</p> <ul style="list-style-type: none"> <li>- Select the Resolution Bandwidth (RBW) Top Slide Bar</li> <li>- Select RBW of 30KHz</li> </ul> <p>Span Settings:</p> <ul style="list-style-type: none"> <li>- Select Span (Bottom Right of Screen)</li> <li>- Enter Bandwidth e.g. 50 MHz</li> </ul>	<p>Preamp 1  <input checked="" type="checkbox"/> On <input type="checkbox"/> Off</p> <p>Enable the Preamp as Needed</p> <p>Reference Level          0.0 dBm → Reference Level          -40.0 dBm</p> <p>RBW Auto 1 MHz          Average 1/1</p> <p>Resolution Bandwidth (RBW) Top Slide Bar</p> <p>RBW 1 MHz → RBW 30 kHz</p> <p>Resolution Bandwidth (RBW)</p> <p>Span 100.000 000 MHz → Span 50.000 000 MHz</p>  <p>Real-time Spectrum Measurement Screen – Span 50 MHz</p>

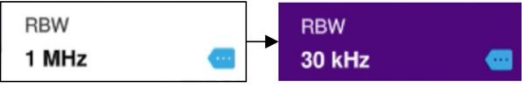

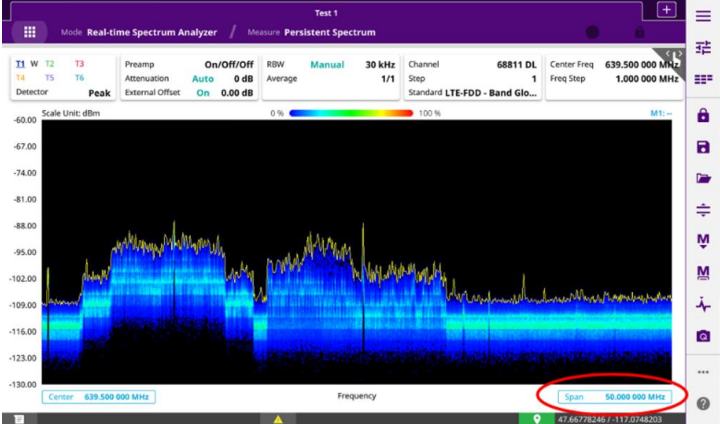
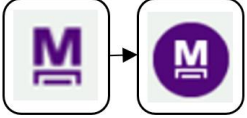
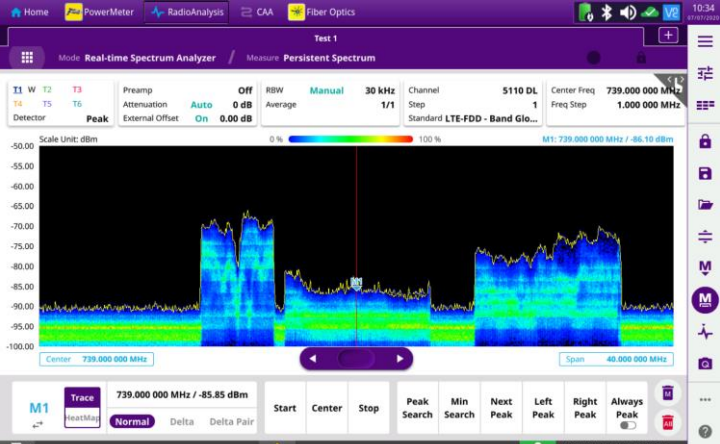
## 2.2 Adding Markers to the Realtime Spectrum




The following procedure describes the steps to add markers to the real-time spectrum analyzer.

Step	Action	Description
1	Power ON ONA-800	<p>Press the ON/OFF button for to power on the ONA-800</p>  <p style="text-align: right;">ONA-800</p>
2	Connect the Omni or a Directional Antenna into the ONA-800 RF-In spectrum analyzer port	
3	<p>ONA-800 Home Screen:</p> <ul style="list-style-type: none"> <li>- Tests</li> <li>- Radio Analysis</li> <li>- Real-Time Spectrum</li> </ul>	

Step	Action	Description
3	<p>If Needed, select Spectrum Analysis Mode Configuration sequence:</p> <ul style="list-style-type: none"> <li>- Measurement Mode</li> <li>- Realtime Spectrum Analyzer</li> <li>- Persistence Spectrum</li> </ul>	<div data-bbox="792 237 1409 296" style="text-align: center;"> </div> <p style="text-align: center;">Real-time Spectrum Analyzer Measurement Mode</p> <div data-bbox="773 369 1430 726" style="text-align: center;"> </div> <p style="text-align: center;">Real-time Spectrum Measurement Screen</p>
4	<p>Frequency Settings:</p> <ul style="list-style-type: none"> <li>- Select Frequency Top Slide Bar</li> <li>- Set Frequency, to the Center Frequency of the carrier or enter the ARFCN Channel number.</li> </ul> <p>Amplitude Settings:</p> <ul style="list-style-type: none"> <li>- Select Amplitude Top Slide Bar</li> <li>- For over the air measurements, remove the attenuation value of 20dB to 0dB</li> <li>- Enable the Preamps</li> <li>- Adjust Power Reference Level to center the measurement trace</li> </ul> <p>Resolution Bandwidth Settings:</p> <ul style="list-style-type: none"> <li>- Select the Resolution Bandwidth (RBW) Top Slide Bar</li> <li>- Select RBW of 30KHz</li> </ul>	<div data-bbox="824 842 1373 940" style="text-align: center;"> </div> <p style="text-align: center;">Frequency Adjustment</p> <div data-bbox="889 1024 1308 1087" style="text-align: center;"> </div> <p style="text-align: center;">Adjust Attenuation Setting if Needed</p> <div data-bbox="964 1167 1240 1262" style="text-align: center;"> </div> <p style="text-align: center;">Amplitude Top Slide Bar</p> <div data-bbox="987 1346 1208 1409" style="text-align: center;"> </div> <p style="text-align: center;">Enable the Preamp as Needed</p> <div data-bbox="841 1451 1360 1535" style="text-align: center;"> </div> <div data-bbox="932 1619 1273 1734" style="text-align: center;"> </div> <p style="text-align: center;">Resolution Bandwidth (RBW) Top Slide Bar</p>



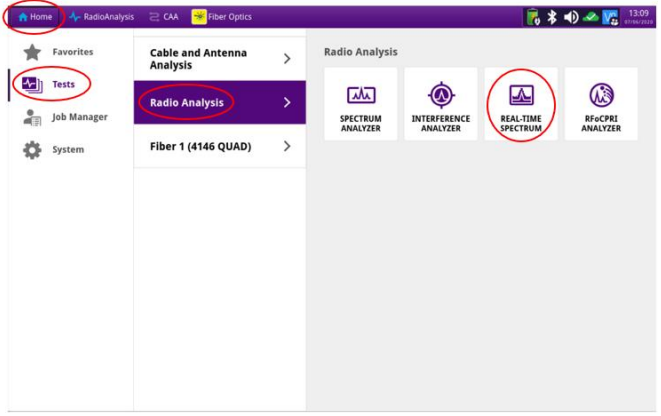



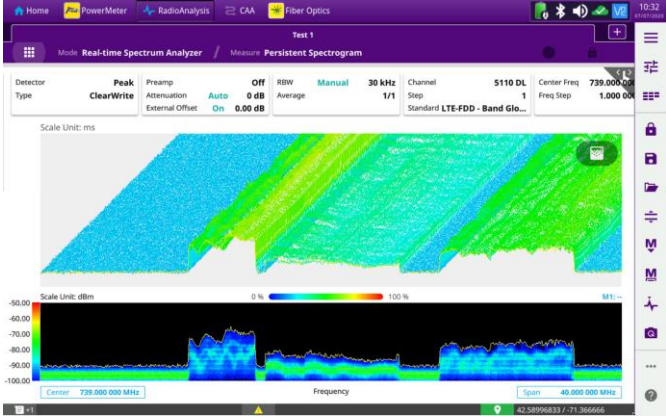




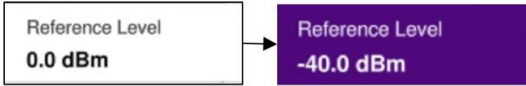
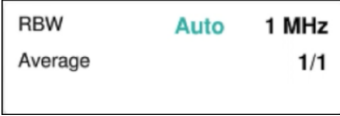
Step	Action	Description
	<p>Span Settings:</p> <ul style="list-style-type: none"> <li>- Select Span (Bottom Right of Screen)</li> <li>- Enter Bandwidth e.g. 50 MHz</li> </ul>	<div style="text-align: center;">  <p>Resolution Bandwidth (RBW)</p> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>Real-time Spectrum Measurement Screen – Span 50 MHz</p> </div>
5	<p>Markers:</p> <ul style="list-style-type: none"> <li>- Select the marker icon</li> </ul>	<div style="text-align: center;">  <p>Markers Off and On</p> </div> <div style="text-align: center;">  <p>Real-time Spectrum Measurement Screen with Markers</p> </div>

Step	Action	Description
6	Use the Slide bar or enter the marker frequency or Use Peak Search to find the strongest signal	 <p style="text-align: center;">Marker Slide Bar</p> <p style="text-align: center;"><b>739.000 000 MHz / -85.85 dBm</b></p> <p style="text-align: center;">Marker Frequency</p>  <p style="text-align: center;">Marker to Peak buttons</p>
7	Multiple Markers: - Select M1 - Select M2  Use the Slide bar or enter the marker frequency or Use Peak Search to find the strongest signal	<p style="text-align: center; color: green; font-size: 24px;"><b>M1 M2</b></p> <p style="text-align: center;">Up to 6 Markers</p> 

## 2.3 Realtime Spectrogram Analysis

The following procedure describes the steps to perform real-time spectrogram analysis with the ONA-800

Step	Action	Description
1	Power ON ONA-800	Press the ON/OFF button for to power on the ONA-800    ONA-800
2	Connect the Omni or a Directional Antenna into the ONA-800 RF-In spectrum analyzer port	
3	ONA-800 Home Screen: <ul style="list-style-type: none"> <li>- Tests</li> <li>- Radio Analysis</li> <li>- Real-Time Spectrum</li> </ul>	


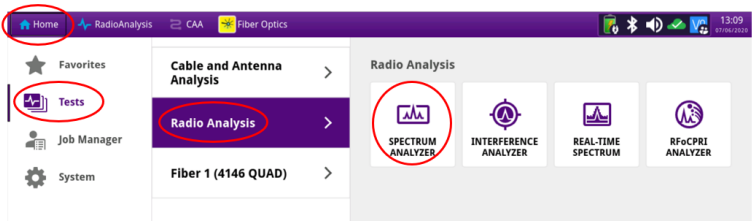

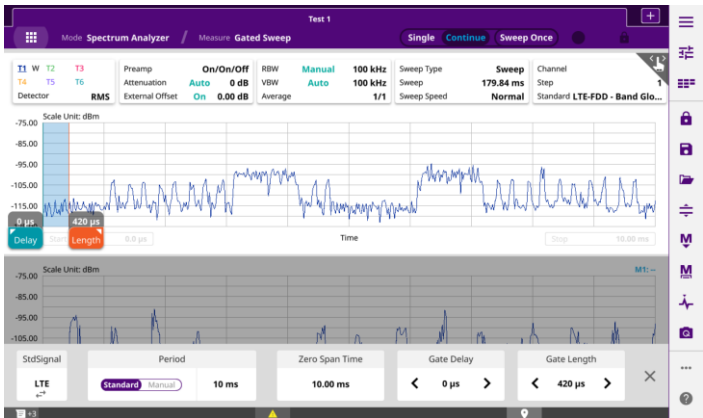
Step	Action	Description
3	<p>Select Spectrogram Mode</p> <p>Configuration sequence:</p> <ul style="list-style-type: none"> <li>- Measurement Mode</li> <li>- Realtime Spectrum Analyzer</li> <li>- Persistence Spectrum</li> </ul>	<div style="text-align: center;">  <p>Real-time Spectrogram Measurement Mode</p> </div> <div style="text-align: center;">  <p>Real-time Spectrogram Measurement Screen</p> </div>
4	<p>Frequency Settings:</p> <ul style="list-style-type: none"> <li>- Select Frequency Top Slide Bar</li> <li>- Set Frequency, to the Center Frequency of the carrier or enter the ARFCN Channel number.</li> </ul> <p>Amplitude Settings:</p> <ul style="list-style-type: none"> <li>- Select Amplitude Top Slide Bar</li> <li>- For over the air measurements, remove the attenuation value of 20dB to 0dB</li> <li>- Enable the Preamps</li> <li>- Adjust Power Reference Level to center the measurement trace</li> </ul> <p>Resolution Bandwidth Settings:</p> <ul style="list-style-type: none"> <li>- Select the Resolution Bandwidth (RBW) Top Slide Bar</li> </ul>	<div style="text-align: center;">  <p>Frequency Adjustment</p> </div> <div style="text-align: center;">  <p>Adjust Attenuation Setting if Needed</p> </div> <div style="text-align: center;">  <p>Amplitude Top Slide Bar</p> </div> <div style="text-align: center;">  <p>Enable the Preamp as Needed</p> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>Resolution Bandwidth (RBW) Top Slide Bar</p> </div>


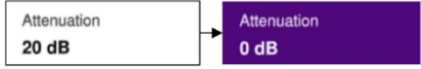


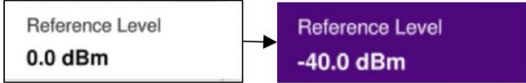
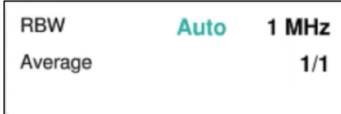






Step	Action	Description
	<ul style="list-style-type: none"> <li>- Select RBW of 30KHz</li> </ul> <p>Span Settings:</p> <ul style="list-style-type: none"> <li>- Select Span (Bottom Right of Screen)</li> <li>- Enter Bandwidth e.g. 50 MHz</li> </ul>	<p>Resolution Bandwidth (RBW)</p> <p>Span 100.000 000 MHz → Span 50.000 000 MHz</p> <p>Real-time Spectrogram Measurement Screen – Span 50 MHz</p>

## 2.4 TDD Spectrum Analysis for Uplink Interference

The following procedure describes the steps for a Gated Sweep spectrum analyzer for uplink interference on a TDD signal.

Step	Action	Description
1	Power ON ONA-800	<p>Press the ON/OFF button for to power on the ONA-800</p> <p>ONA-800</p>

Step	Action	Description
2	Connect the Omni or a Directional Antenna into the ONA-800 RF-In spectrum analyzer port	 <p>The image shows the ONA-800 RF-In spectrum analyzer with two antenna options: an Omni Antenna and a Directional Antenna. The Omni Antenna is a small, cylindrical antenna with a coiled cable, and the Directional Antenna is a larger, purple, horn-shaped antenna. Both are shown with arrows pointing to their respective labels.</p>
3	ONA-800 Home Screen: - Tests - Radio Analysis - Spectrum Analyzer	 <p>The image shows the ONA-800 Home Screen. The 'Home' button is circled in red. The 'Tests' button is also circled in red. The 'Radio Analysis' button is circled in red. The 'SPECTRUM ANALYZER' button is circled in red.</p>
4	If Needed, select Spectrum Analysis Mode Configuration sequence: - Measurement Mode - Spectrum Analyzer - Gated Sweep	 <p>The diagram shows the configuration sequence: <b>Spectrum Analyzer</b> → <b>Gated Sweep</b>.</p> <p><b>Gated Sweep Spectrum Analyzer Measurement Mode</b></p>  <p>The image shows the ONA-800 Gated Sweep Spectrum Measurement Screen. The screen displays the 'Gated Sweep' mode configuration. The 'Scale Unit' is set to 'dBm'. The 'Sweep' is set to 'Normal'. The 'Channel' is set to 'Standard LTE-FDD - Band Gio...'. The 'StdSignal' is set to 'LTE'. The 'Period' is set to '10 ms'. The 'Zero Span Time' is set to '10.00 ms'. The 'Gate Delay' is set to '&lt; 0 μs &gt;'. The 'Gate Length' is set to '&lt; 420 μs &gt;'. The screen also shows a spectrum plot with a gate applied to the signal.</p> <p><b>Gated Sweep Spectrum Measurement Screen</b></p>

Step	Action	Description
5	<p>Frequency Settings:</p> <ul style="list-style-type: none"> <li>- Select Frequency Top Slide Bar</li> <li>- Set Frequency, to the Center Frequency of the carrier or enter the ARFCN Channel number.</li> </ul> <p>Amplitude Settings:</p> <ul style="list-style-type: none"> <li>- Select Amplitude Top Slide Bar</li> <li>- For over the air measurements, remove the attenuation value of 20dB to 0dB</li> <li>- Enable the Preamps</li> <li>- Adjust Power Reference Level to center the measurement trace</li> </ul> <p>Resolution Bandwidth Settings:</p> <ul style="list-style-type: none"> <li>- Select the Resolution Bandwidth (RBW) Top Slide Bar</li> <li>- Select RBW of 100KHz</li> </ul> <p>Span Settings:</p> <ul style="list-style-type: none"> <li>- Select Span (Bottom Right of Screen)</li> <li>- Enter Bandwidth e.g. 12 MHz</li> </ul>	 <p>Frequency Adjustment</p>  <p>Adjust Attenuation Setting if Needed</p>  <p>Amplitude Top Slide Bar</p>  <p>Enable the Preamp as Needed</p>  <p>Reference Level</p>  <p>Resolution Bandwidth (RBW) Top Slide Bar</p>  <p>Resolution Bandwidth (RBW)</p>  <p>Span</p>  <p>TDD Downlink TDD Uplink</p> <p>3.32 ms Delay 800 μs Length</p> <p>Move Delay as needed</p>  <p>Time setup Close icon</p>
6	<p>Setting the Delay for Uplink:</p> <ul style="list-style-type: none"> <li>- Drag the “Delay” icon to the uplink</li> <li>- Close the setup window</li> </ul>	 <p>TDD Downlink TDD Uplink</p> <p>3.32 ms Delay 800 μs Length</p> <p>Move Delay as needed</p>  <p>Time setup Close icon</p>

Step	Action	Description





### 3. Technical Support

Technical support is provided by:

- Phone: 1-844-GO-VIAVI (1-844-468-4284) options 3-2-3
- Email: [diagnostics.tac@viavisolutions.com](mailto:diagnostics.tac@viavisolutions.com)

Regularly new firmware updates for the CellAdvisor 5G are released and it is recommended to keep the instrument in the latest firmware to provide all the enhancements and bug fixes.

- For firmware updates go to: <http://celladvisor.updatemyunit.net/>
- For additional information of cell site test go to: <http://www.viavisolutions.com/en/products/network-test-and-certification/cell-site-test>