Spectrum Analysis and Realtime Spectrum Analysis Guide

OneAdvisor 800

Table of Contents

1. Scope

This document describes how to configure the OneAdvisor 800 for spectrum analysis and realtime spectrum analysis, including:

- Spectrum Analysis
  - Swept Tune Spectrum
  - Gated Sweep Spectrum
  - Spectrum Route Map
- Interference Analysis
  - Spectrum
  - RSSI
  - Interference Finder
  - Radar Chart
  - Spectrum Replayer
- Real-time Spectrum Analysis
  - Persistent Spectrum
  - Persistent Spectrogram
  - Persistent RSSI
  - Persistent Interference Finder
  - Persistent Radar Chart
  - Real-time Spectrum Replayer

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

Description	Diagram

CellAdvisor 5G or OneAdvisor-800 with the following functions:
- OneAdvisor-800 platform equipped with the following modules and options:
  ○ SPA06MA or SPA06MA-O: Spectrum Analyzer 9KHz to 6GHz or 9KHz to 6GHz with Optical HW
  ○ ONA-SP-GNSS: GPS connectivity with GPS antenna
  ○ ONA-SP-GSS: Gated Sweep Spectrum
  ○ ONA-SP- ONA-SP-RT100: Realtime Spectrum Analysis 100MHz
  ○ ONA-SP-RM: Spectrum Route Map
  ○ ONA-SP-INTAN: Interference Analysis
	
	OneAdvisor-800

RF Antennas:
- Either of the following broadband omni-antennas:
  ○ G700050350: RF omni antenna Type-N(m); 3300 to 3800 MHz
  ○ G700050345: Mag mount RF omni antenna Type-N(m) 600 MHz to 6 GHz
- Either of the following broadband directional antennas:
  ○ G700050366: RF Log Periodic Antenna SMA-f 650 to 4000 MHz 1.85 dBd
	
	Omni-Antenna
	 
	Mag-Mount Antenna

○ G700050367: RF Log Periodic Antenna SMA-f 650 to 6000 MHz 2.85 dBd ○ JD70050007: AntennaAdvisor Handle	 AntennaAdvisor and Directional Antenna

2. OneAdvisor 800 Overview

The OneAdvisor 800 is a portable instrument for radio access installation, maintenance, and optimization. Their main test functions include:

RF Testing
- Realtime Spectrum Analysis
- Interference Analysis
- LTE-TDD and LTE-FDD Signal Analysis
- 5GNR Signal Analysis
- NSA Signal Analysis (multi-carrier LTE and 5G)
- DSS Signal Analysis (co-channel LTE and 5G)
- Blind Scanner (DSS, LTE and 5G)
- RFoCPRI Interference Analysis

Cable Testing
- Reflection (Return Loss, VSWR)
- Distance to Fault (Return Loss, VSWR)
- Cable Loss
- Insertion Gain Loss

x-Haul Testing
- Ethernet Test (1G, 10G, 25G, 100G)
- Sync and Timing (PTP/1588)
- 5G NR Discovery
- Network Devices: Throughput, Latency, Frame Loss (RFC 1544 / 5180)
- Ethernet Service Activation (Y.1564)

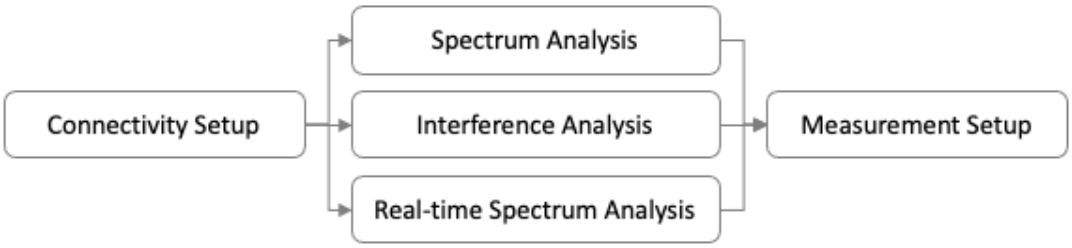
Fiber Testing
- Fiber inspection (Fiber Scope P5000i or FiberCheck)
- Fiber Characterization (OTDR)

OneAdvisor 800

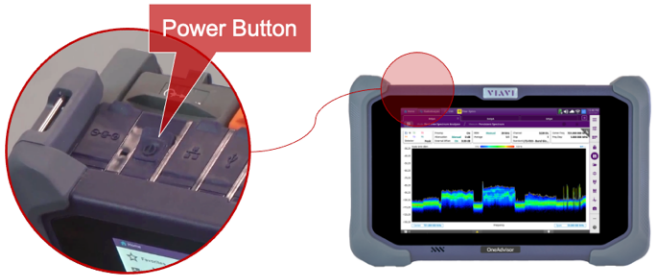
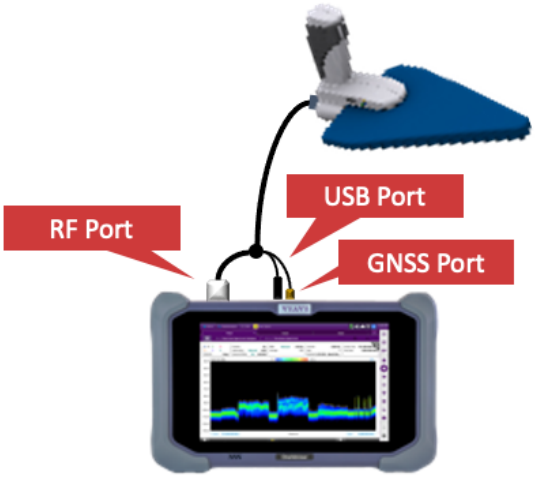
3. Test Setup

The following procedure describes the test setup for over-the-air measurements including:

- Spectrum Analysis
- Interference Analysis
- Real-time Spectrum Analysis



3.1 Connectivity Setup

Step	Action	Description
1	Power ON OneAdvisor-800	Press and hold the ON/OFF button for 3 seconds  OneAdvisor-800
2	For 5G radio verification, connect the following antennas into the OneAdvisor 800: - Antenna Advisor with directional antenna: ○ RF connection into Spectrum Analyzer RF In port. ○ GPS connection into the GNSS port ○ USB connection into the USB port	 OneAdvisor 800 with RF antennas (Directional and GPS)

4. Spectrum Analysis

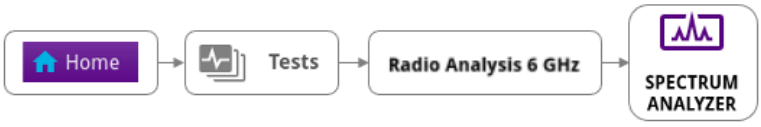
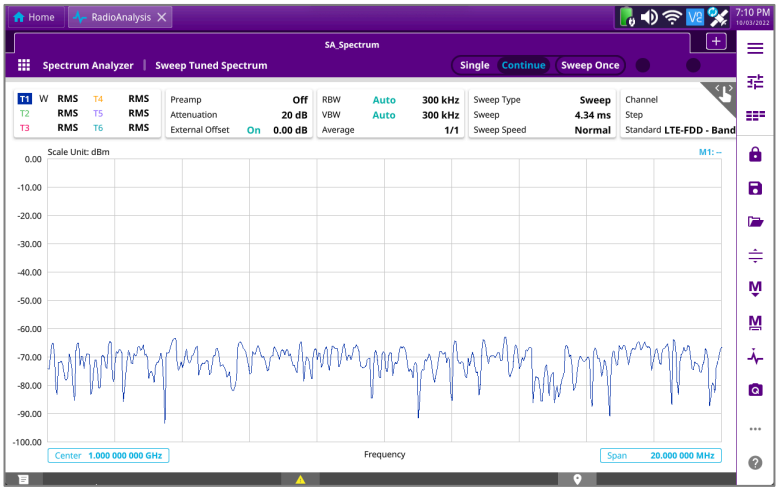
The following procedure describes the steps to perform Spectrum Analysis with the OneAdvisor 800.

4.1 Overview

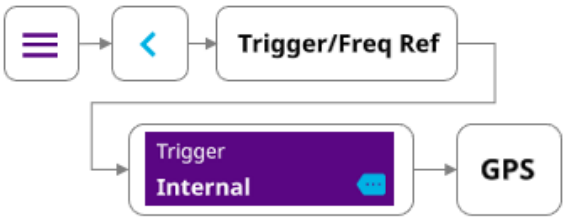
The following procedure describes the steps to perform Spectrum Analysis, including:

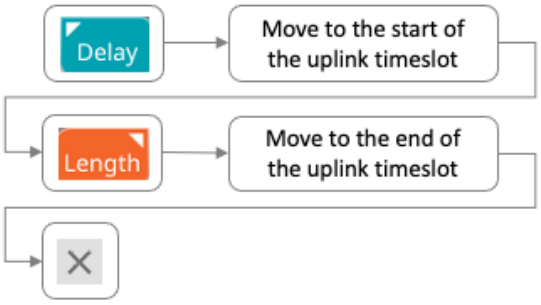
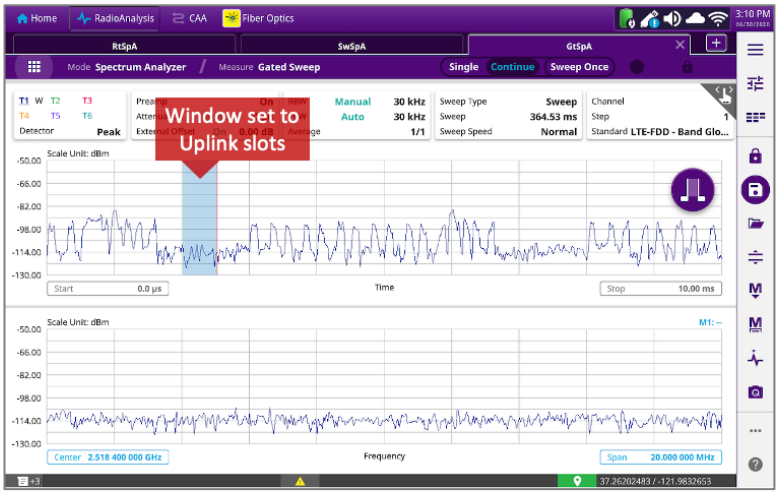
- Swept Tune Spectrum
- Gated Sweep Spectrum

4.1.1 Swept Tune Spectrum Measurement Mode

Step	Action	Description
1	To set the swept tune spectrum measurement mode from the Home page select: - Test - Radio Analysis 6GHz - Spectrum Analyzer Perform the **Measurement Setup** to configure: - Frequency Setup - Amplitude Setup	 Spectrum Analyzer Measurement Setup  Swept Spectrum Measurement Mode

4.1.2 Gated Sweep Spectrum

Step	Action	Description
1	To set the gated sweep spectrum measurement mode from the Swept Tuned Spectrum select: - Measurements - Gated Sweep - Done Set the trigger to GPS selecting: - Setting - Back Arrow - Trigger/Freq Ref	 Gated Sweep Measurement Setup 

Step	Action	Description
	- Trigger - GPS Perform the **Measurement Setup** to configure: - Frequency Setup - Amplitude Setup Set the gate to the uplink timeslot: - Drag the delay to the start of the uplink timeslot - Drag the length to the end of the uplink timeslot - Close	Trigger Setting  Gate Setting  Gated Sweep Measurement Mode

5. Interference Analysis

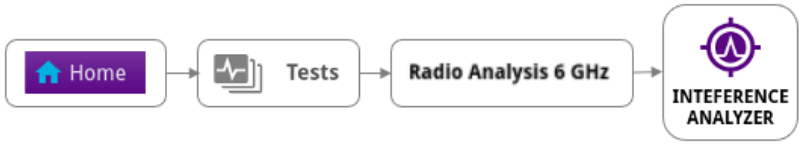
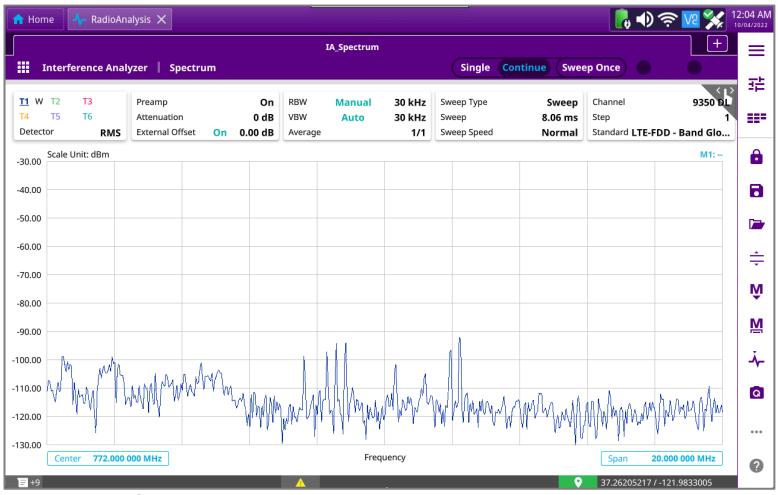
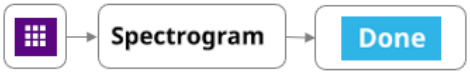
The following procedure describes the steps to perform Interference Analysis with the OneAdvisor 800.

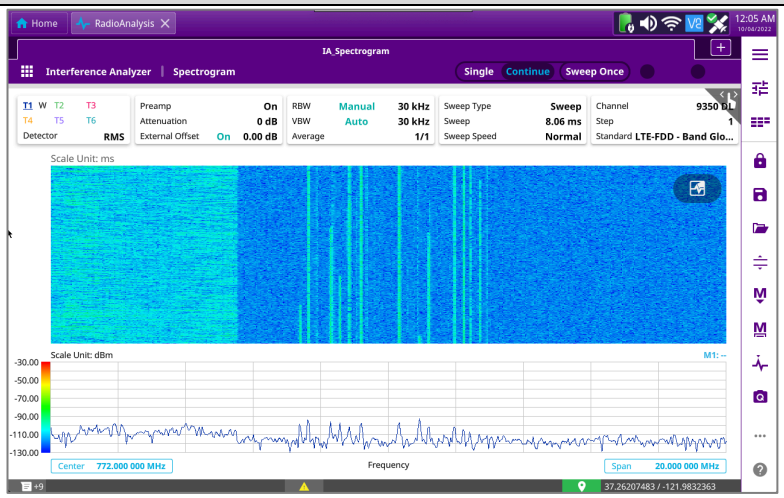
5.1 Overview

The following procedure describes the steps to perform Spectrum Analysis, including:

- Spectrum
- Spectrogram

5.1.1 Interference Analysis Measurement Mode

Step	Action	Description
1	To set the interference analysis spectrum measurement mode from the Home page select: - Test - Radio Analysis 6GHz - Interference Analyzer Perform the **Measurement Setup** to configure: - Frequency Setup - Amplitude Setup	 Interference Analyzer Measurement Setup  Interference Analysis Spectrum Measurement Mode
2	To set the interference analysis spectrogram measurement mode from the Interference Analysis page select: - Measurements - Spectrogram - Done Perform the **Measurement Setup** to configure: - Frequency Setup - Amplitude Setup	 Interference Analysis Spectrogram Measurement Mode

Step	Action	Description
		 Interference Analysis Spectrogram Measurement Mode

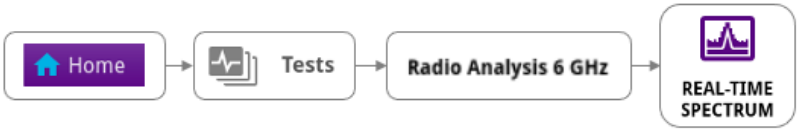
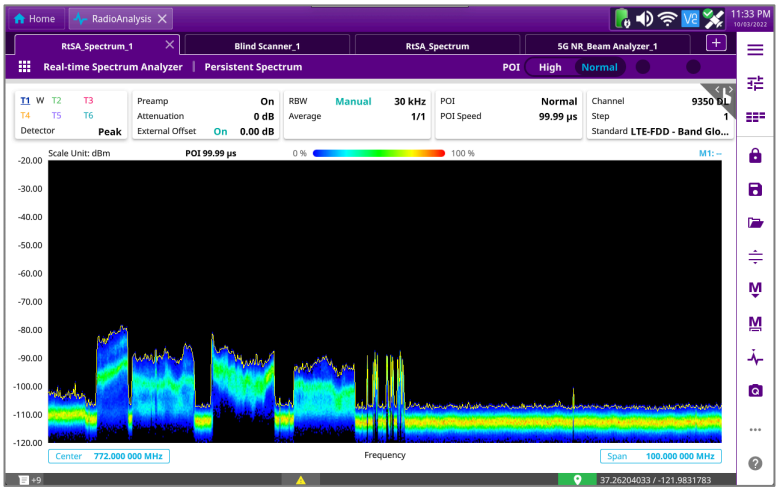
6. Real-time Spectrum Analysis

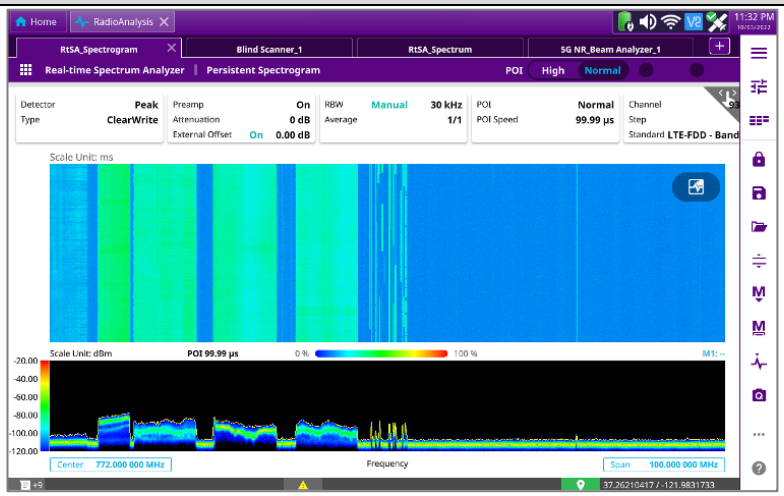
The following procedure describes the steps to perform Real-time Spectrum Analysis with the OneAdvisor 800.

6.1 Overview

The following procedure describes the steps to perform Real-time Spectrum Analysis, including:

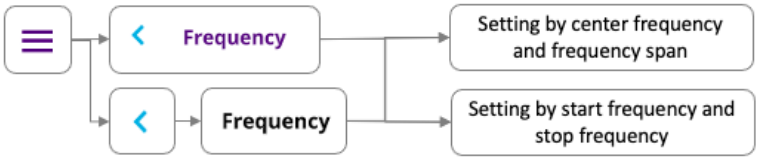
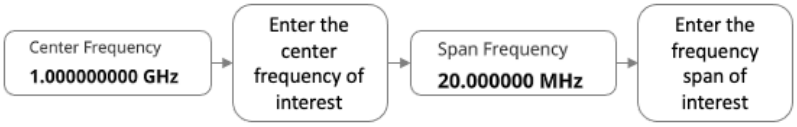
- Real-time Spectrum
- Real-time Spectrogram

Step	Action	Description
1	To set the interference analysis spectrum measurement mode from the Home page select: - Test - Radio Analysis 6GHz - Real-time Spectrum Analyzer Perform the **Measurement Setup** to configure: - Frequency Setup - Amplitude Setup	 Real-time Spectrum Measurement Setup  Real-time Spectrum Analysis Measurement Mode
2	To set the interference analysis spectrogram measurement mode from the Interference Analysis page select: - Measurements - Real-time Spectrogram - Done Perform the **Measurement Setup** to configure: - Frequency Setup - Amplitude Setup	 Persistent Spectrogram Measurement Mode

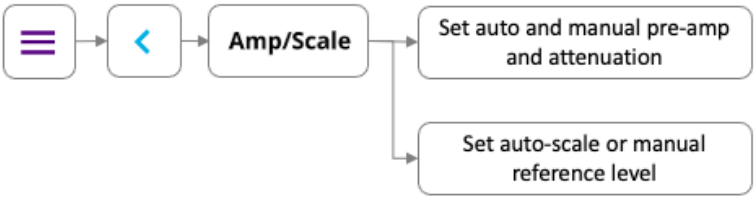
Step	Action	Description
		 Persistent Spectrogram Measurement Mode

7. Measurement Setup

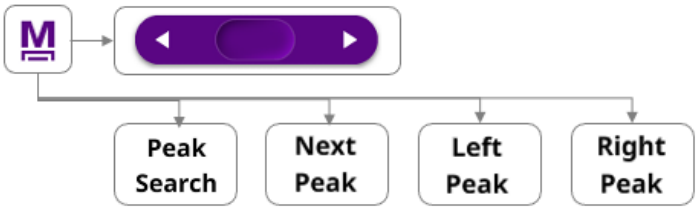
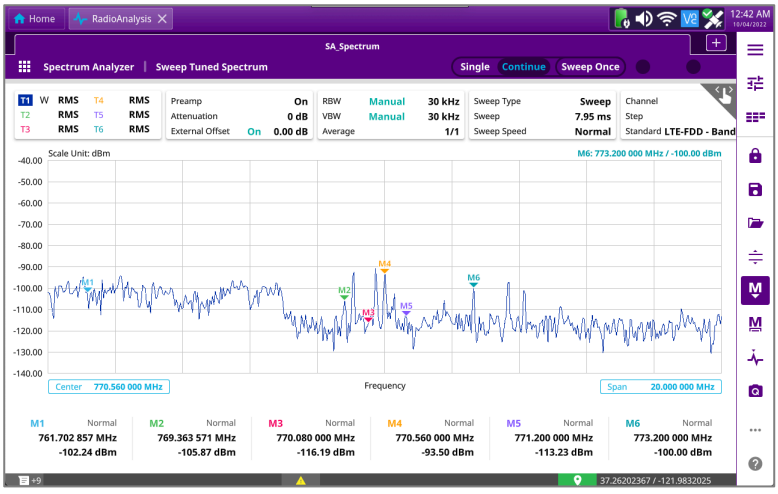
7.1 Frequency Setup

Step	Action	Description
1	To set the frequency of interest select: - Settings - Frequency: making sure the Frequency menu is shown, otherwise select the back arrow and Frequency - Set the center frequency and frequency span. - Set the start frequency and stop frequency	 Frequency Setting  Setting by Center Frequency and Frequency Span  Setting by Start Frequency and Stop Frequency

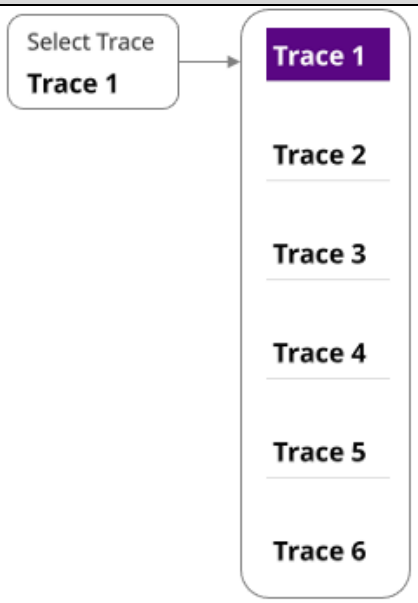
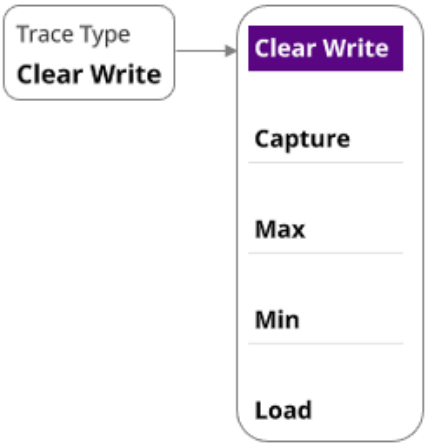
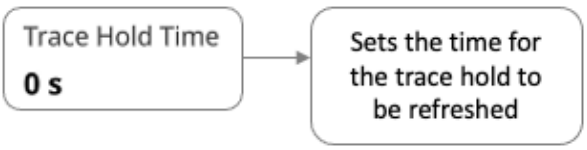
7.2 Amplitude Setup

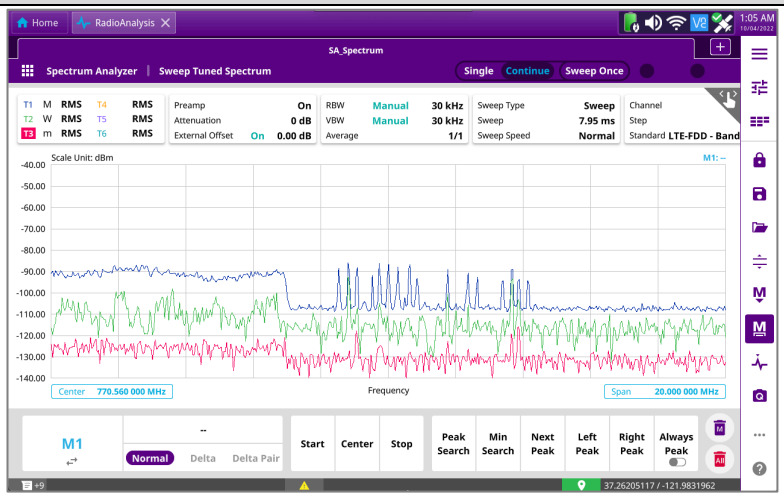
Step	Action	Description
1	To set the amplitude and scale select: - Settings - Back arrow - Amp/Scale menu - Set auto and manual pre-amp and attenuation - Set auto-scale or manual reference level	 Amplitude and Scale Setting   Setting Auto or Manual Pre-Amp and Attenuation  Setting Auto-Scale or manual Reference Level

7.3 Marker Setup

Step	Action	Description
1	To set the Marker select: - Marker - Move the bar to the desired frequency location - Select any of the marker functions (Peak Search, Next Peak, Left Peak, Right Peak) To enable another marker, select: - M1 - Select another marker (M2, M3, M4, M5, M6) To disable markers, select: - M: disables the Active marker - All: disable All the markers	 Marker Function  Enable Markers  Disable Markers (Active, All)  Marker Information  Spectrum Analysis with Markers

7.4 Trace Setup

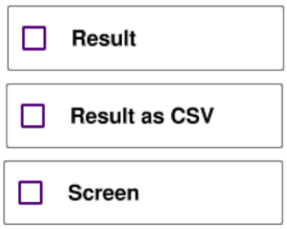
Step	Action	Description
1	To set the Trace select: - Select Trace: Enables any of the 6 available traces - Trace Type: Sets the marker type (Clear Write, Capture, Max, Min, Load) - Trace Hold Time, configure the time for the trace hold to be refreshed	 Enable Markers  Marker Types  Trace Hold Time

Step	Action	Description
		 Spectrum Analysis with Traces

8. Annex

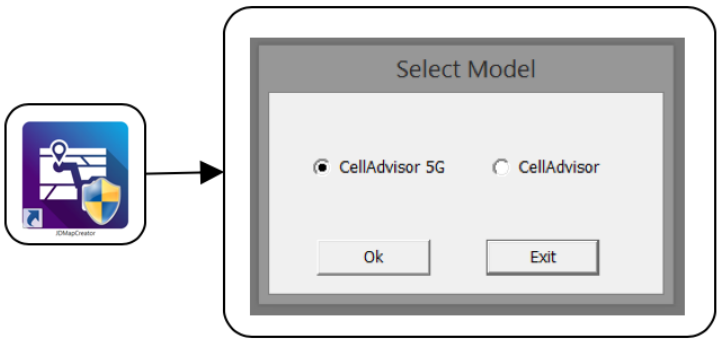
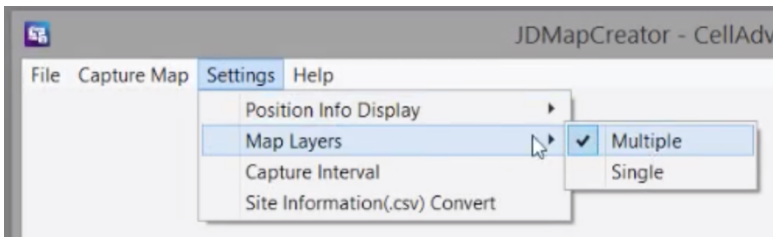
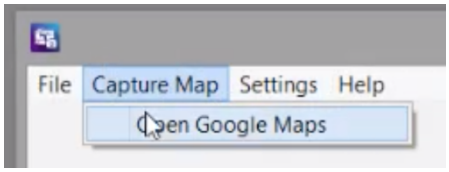
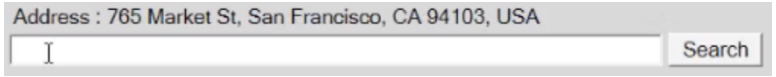
8.1 Save Measurement Results

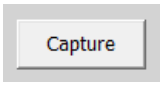
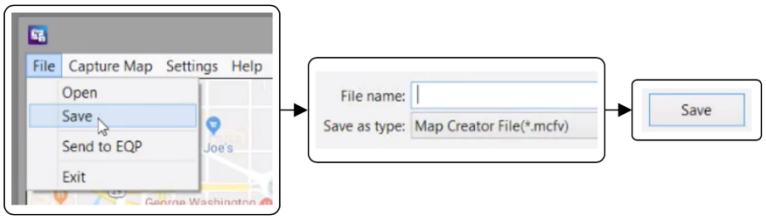
The following procedure describes the steps to save measurement results with OneAdvisor-800

Step	Action	Description
1	Saving measurements - Select the save icon and enter file name - Select the type of file to save: ○ Result (to be replayed or post-processed by the CellAdvisor 5G) ○ Result as CSV, to be post-processed by a PC application ○ Screen, as a picture - Select the destination to save the file - Select “Save”	 Save and File Name Sequence  File Type as Result, Result as CSV or Screen  Select the destination either Internal or USB  Select Save

8.2 Creating Maps for OneAdvisor-800

Step	Action	Description
1	Open JDMapCreator application	Run the application software JDMapCreator* and select the CellAdvisor platform type, for example, [CellAdvisor 5G]:

Step	Action	Description
		 JDMapCreator > CellAdvisor 5G **Note*: *JDMapCreator is a free application software of Viavi Solutions' CellAdvisor instruments that can be downloaded at http://celladvisor.updatemyunit.net/ on the section CellAdvisor AppSW*
2	Set the number of map layers to be created: - Select Settings - Select Map Layers - Select Single or Multiple	Configure the number of layers to be created on the map: a. Single, creates 1-layer map (no zooming) b. Multiple, creates 3-layer mar (zooming available)  Multiple Map Layers
3	Create a geo-coordinates map. - Select Capture Map - Select Open Google Maps - Enter the Address of interest - Select Search - Select Capture	To set a map with geo-coordinates select [Capture Map], [Open Google Maps], as follows:  Capture Map > Open Google Maps Search the location of the interest test area by entering the address in the [Address] field, as follows:  Search Address

Step	Action	Description
		Once the test area has been located, select [Capture] to create the single or multi-layer map, as follows:  Map Capture
4	Save the created map into a USB memory: - Select File - Select Save - Enter the file name - Select Save button ***Note:*** *Make sure the map file (*.mcfv) is saved on a USB memory drive.*	Save the map into a USB memory device:  File > Save > File Name > Save

9. 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

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