Cable and Antenna Testing

OneAdvisor 800

Table of Contents

1. Scope

This document describes how to configure the OneAdvisor for cable and antenna testing, including:

- Reflection tests: Return loss and VSWR
- Distance to Fault
- Cable Loss

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

Description	Diagram
OneAdvisor with the following functions: - ONA-800 mainframe equipped with the following module: ○ CA006MA: Cable and antenna analysis 6GHz	 ONA Front View.  ONA Side View
OSL calibration Kit either Electronic (Manual or EZcal) - JD78050509: Manual OSL calibration kit Type-N(m) - JD70050509: EZcal, electronic OSL calibration kit Type-N(m)	 OSL Manual  OSL EZcal
RF Cables - G700050531: RF Cable DC to 8 GHz Type-N M to Type-N (F) 1.5 m	 RF Cable

2. OneAdvisor Overview

The OneAdvisor is a portable instrument for Cell Site installation and maintenance, the main test functions of OneDvisor for cell site installation include:

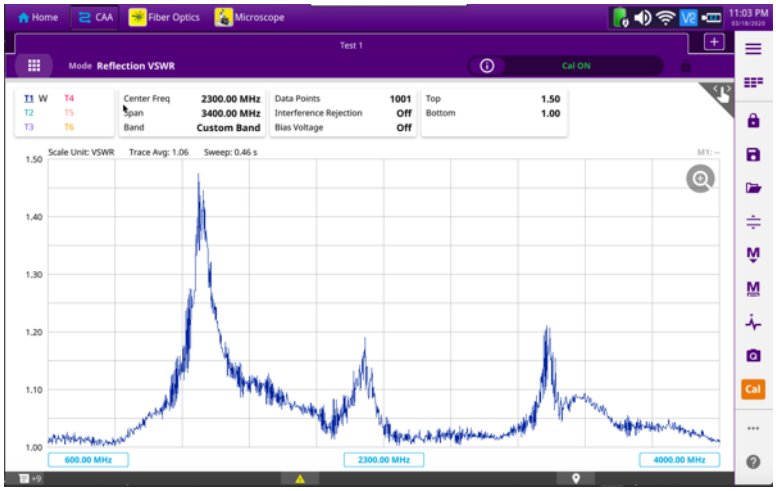
- Cable and antenna analysis up to 6GHz
- Fiber Inspection verification
- Fiber validation (OTDR)

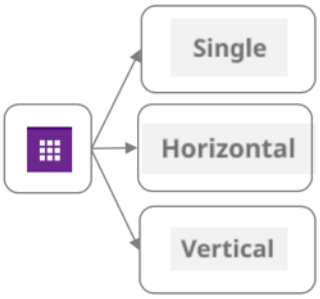
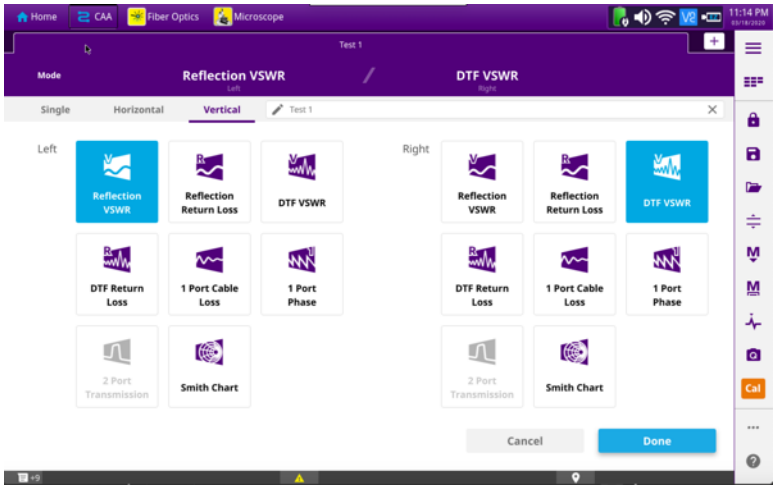
2.1 Cable and Antenna Analysis

The following procedure describes the steps to perform cable and antenna analysis with OneAdvisor.

2.1.1 Initial Setup

The following procedure describes the initial setup of cable and antenna analysis, including turn-up and connectivity.

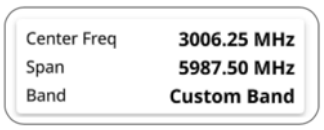
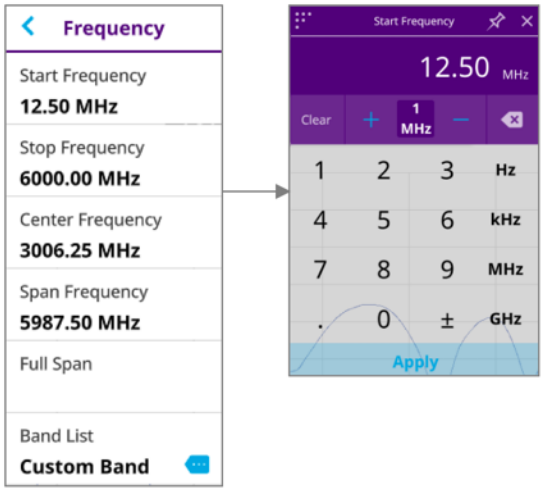
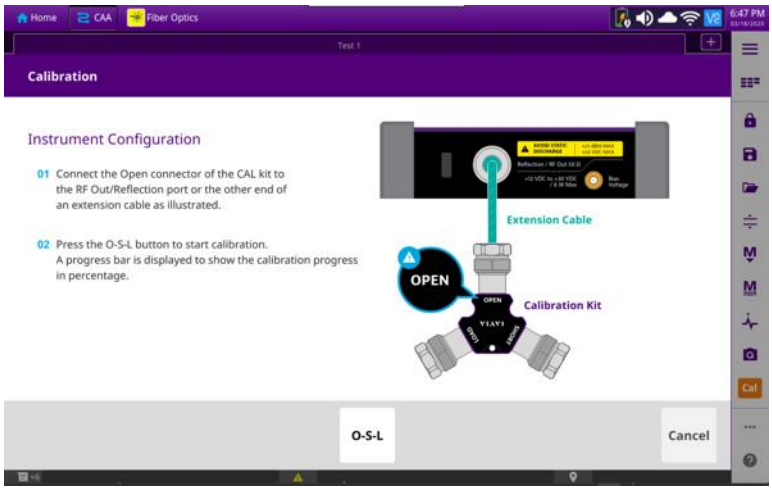
Step	Action	Description
1	Power ON OneAdvisor	Press and hold the ON/OFF button for 3 seconds to power on the OneAdviosr 
2	Connectivity: connect the RF cable (cable under test or extension cable) into the CAA Module Reflection / RF Output port.	 ONA Front View. ONA Back View
3	Cable and Antenna Analysis mode: - Select {Home}, {Tests}, {CAA}, {CAA} - To select a measurement type, select the multi-grid icon - Choose either single or dual testing selecting the corresponding layout: o Single o Horizontal o Vertical - Select the desired measurement type: o Reflection VSWR o Reflection Return Loss o DTF VSWR o DTF Return Loss o 1 Port Cable Loss o 1 Port Phase	 Cable and Antenna Analyzer Measurement Mode  Real-time Spectrum Measurement Screen

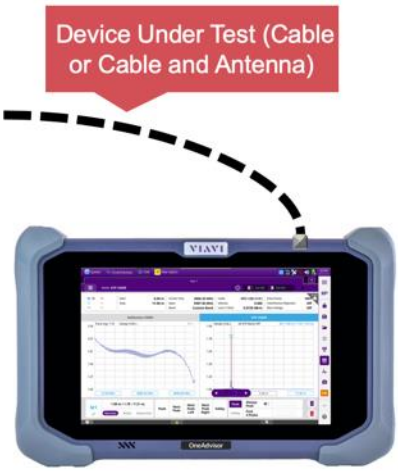
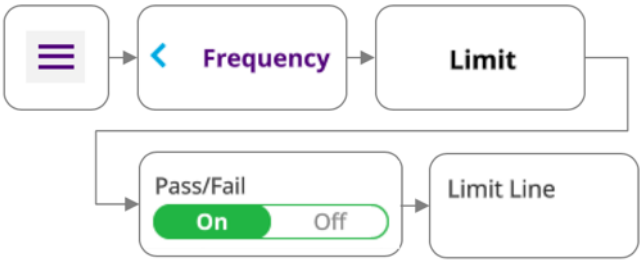
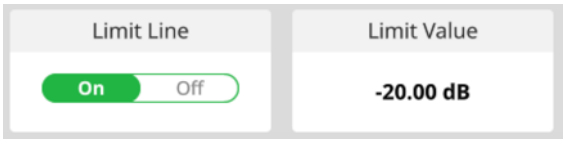
Step	Action	Description
	○ RF Source ○ Smith Chart	 Measurement Types Layout  Cable and Antenna Measurement Types

2.1.2 RF Reflection Test

The following procedure describes the steps to perform reflection tests (Return Loss or VSWR) with OneAdvisor.

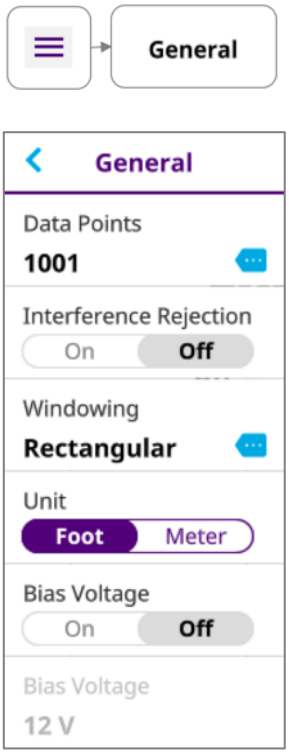
Step	Action	Description
1	Reflection measurement mode: - Select the desired measurement layout. - Select the corresponding reflection measurement icon (Return Loss or VSWR). *Note: Refer to the "Initial Setup" section for initial configuration and connectivity with OneAdvisor*	 Reflection Test Measurement Types

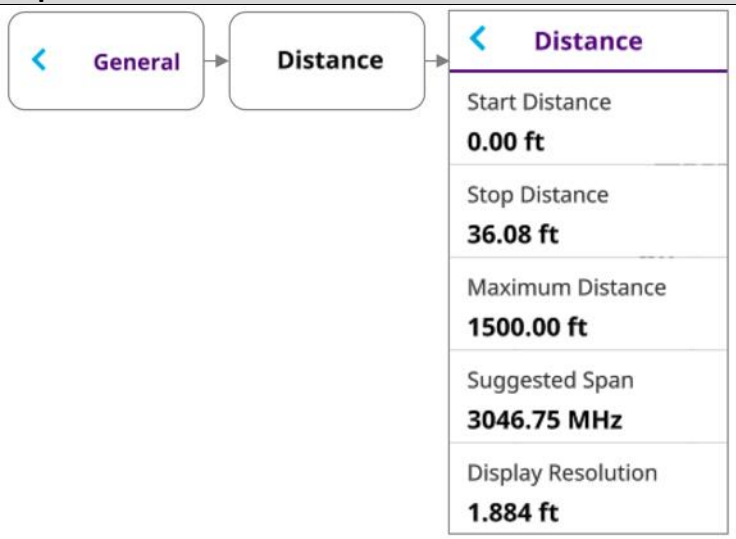
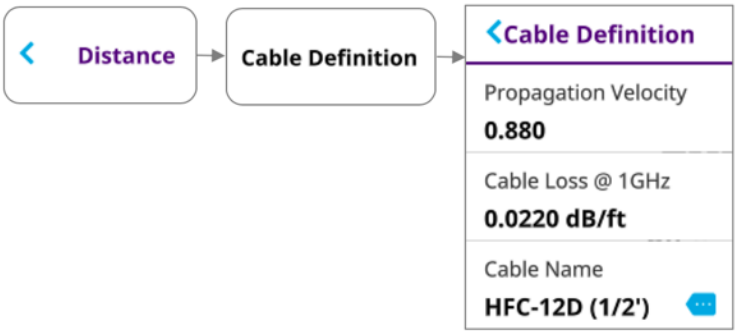
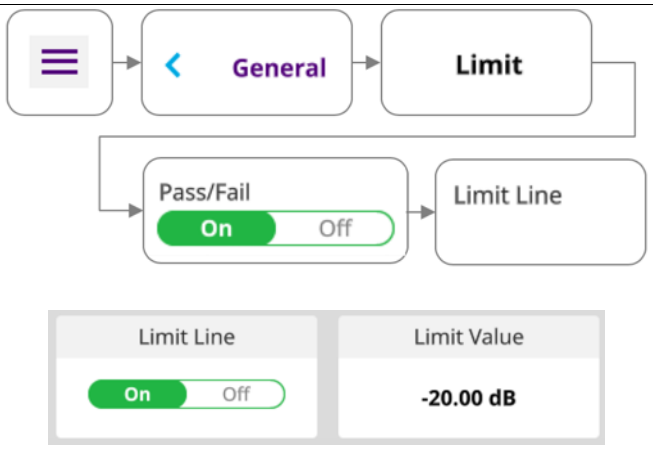
Step	Action	Description
2	Set the frequency band or range to perform reflection test: - Select the frequency group of the top-bar navigation or the configuration icon from the side-bar navigation - Set the required frequency range by selecting, the desired field, enter the frequency value and select {Apply} *Note: Frequency is set by either {Start Frequency} and {Stop Frequency} or by {Center Frequency} and {Span Frequency}*	 Top bar frequency group  Side-bar configuration icon  Setting Frequency Range
3	Calibrate the instrument: - Select {Cal} icon from the side-bar navigation and follow the on-screen instructions. *Note: If an RF extension cable is required, connect the RF extension cable into the CAA Module Reflection / RF Output port and on the other end of the RF extension cable connect the calibration kit.*	  Calibration Process

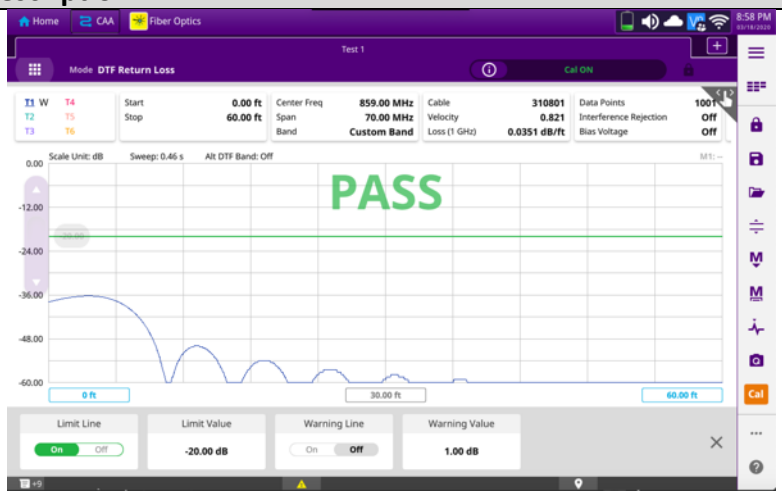
Step	Action	Description
4	Perform the reflection test: - Connect the cable or cable and antenna system to be tested at the calibration point (CAA module RF port, or RF extension cable).	
5	Enable a PASS/FAIL indicator by setting a limit line: - Select the configuration icon from the side-bar navigation - Select the configuration title (the default is “Frequency”) - Select {Limit} - Select {Pass/Fail} to turn it ON - Select {Limit Line} - Set the limit line value from the bottom-bar navigation (e.g. -20) - Select {Limit Line} to turn it ON	   Reflection Loss with PASS/FAIL indicator

2.1.3 RF Distance to Fault (DTF)

The following procedure describes the steps to perform distance to fault tests (Return Loss or VSWR) with OneAdvisor.

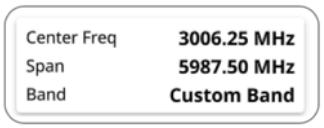
Step	Action	Description
1	DTF measurement mode: - Select the desired measurement layout. - Select the corresponding DTF measurement icon (RTF in Return Loss or DTF in VSWR). *Note: Refer to the "Initial Setup" and "RF Reflection Test" sections for initial configuration, connectivity and reflection test.*	 DTF Measurement Types
2	Configure the DTF measurement: - Select the configuration icon and select {General} - Set the desired Data Points, Interference Rejection, Windowing, Units, and Bias.	 General Cable and Antenna Settings
3	Configure the DTF distance measurement: - Select the measurement title {General} - Select {Distance} - Set the desired Start Distance, and Stop Distance.	

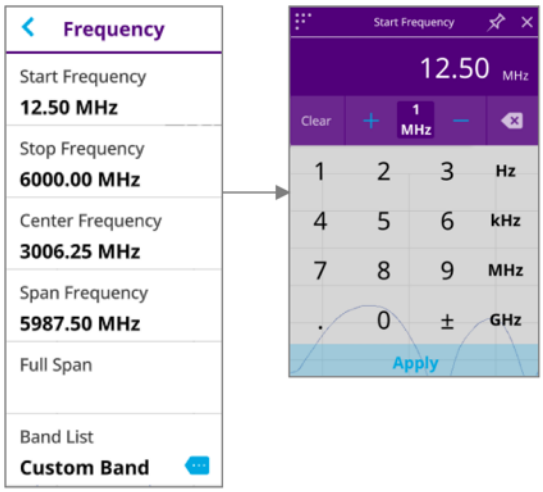
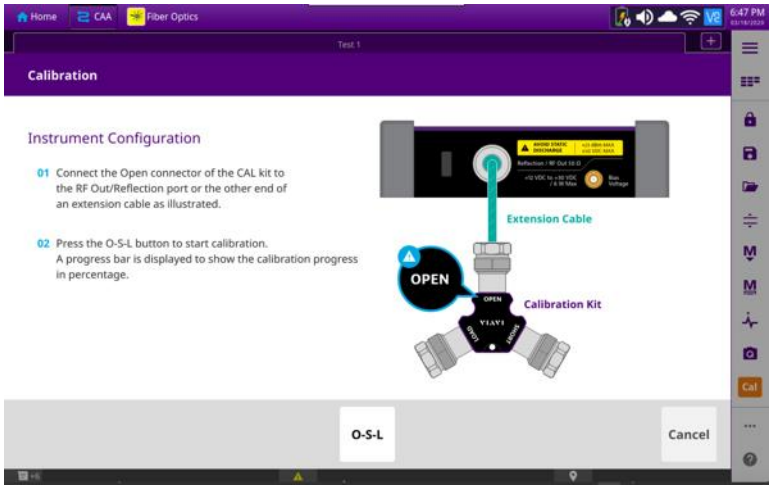
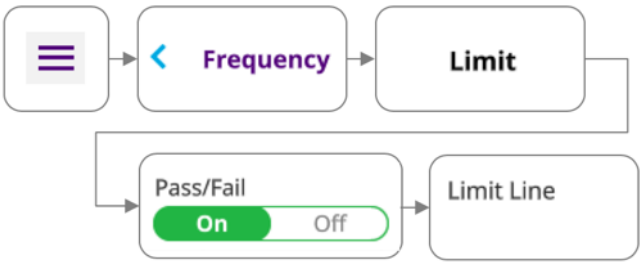
Step	Action	Description
		 Distance Setting
4	Configure the cable type: - Select the measurement title {Distance} - Select {Cable Definition} - Select the cable from the instruments data-base {Cable Name} or enter the corresponding propagation velocity and cable loss at 1GHz of the cable under test.	 Cable Type Setting
5	Enable a PASS/FAIL indicator by setting a limit line: - Select the configuration icon from the side-bar navigation - Select the configuration title (the default is “General”) - Select {Limit} - Select {Pass/Fail} to turn it ON - Select {Limit Line} - Set the limit line value from the bottom-bar navigation (e.g. -20) - Select {Limit Line} to turn it ON	

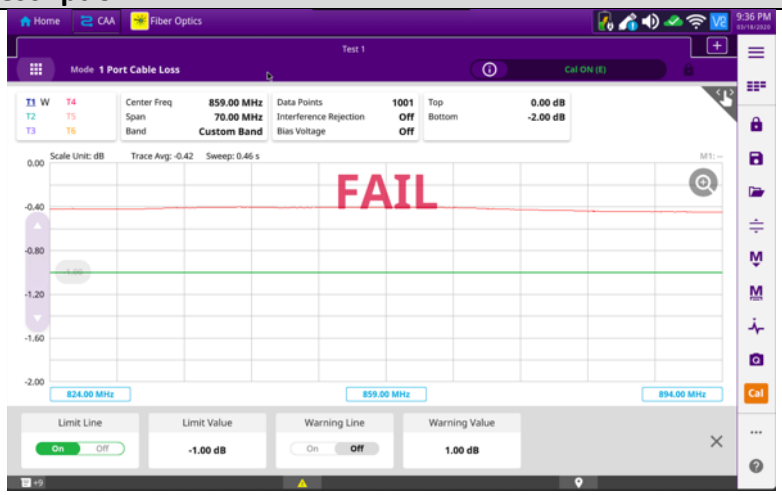
Step	Action	Description
		 DTF test with PASS/FAIL indicator

2.1.4 RF Cable Loss

The following procedure describes the steps to perform cable loss tests with OneAdvisor.

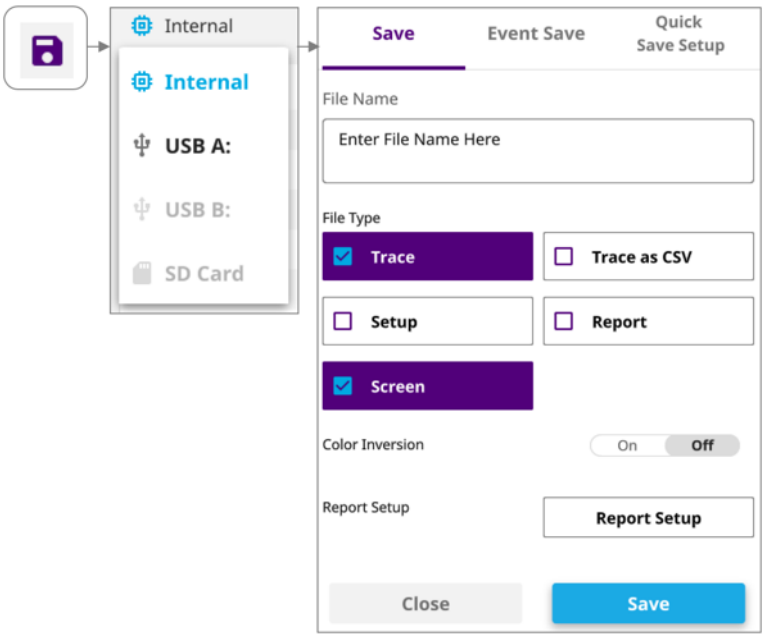
Step	Action	Description
1	Cable Loss measurement mode: - Select the desired measurement layout. - Select the {Cable Loss} icon. *Note: Refer to the "Initial Setup" section for initial configuration and connectivity.*	 Cable Loss Measurement
2	Set the frequency band or range to perform reflection test: - Select the frequency group of the top-bar navigation or the configuration icon from the side-bar navigation - Set the required frequency range by selecting, the desired field, enter the frequency value and select {Apply} *Note: Frequency is set by either {Start Frequency} and {Stop Frequency} or by {Center Frequency} and {Span Frequency}*	 Top bar frequency group  Side-bar configuration icon

Step	Action	Description
		 Setting Frequency Range
3	Calibrate the instrument: - Select {Cal} icon from the side-bar navigation and follow the on-screen instructions. *Note: If an RF extension cable is required, connect the RF extension cable into the CAA Module Reflection / RF Output port and on the other end of the RF extension cable connect the calibration kit.*	  Calibration Process
5	Enable a PASS/FAIL indicator by setting a limit line: - Select the configuration icon from the side-bar navigation - Select the configuration title (the default is “Frequency”) - Select {Limit} - Select {Pass/Fail} to turn it ON - Select {Limit Line}	 Reflection Loss with PASS/FAIL indicator

Step	Action	Description
	- Set the limit line value from the bottom-bar navigation (e.g. -5) Select {Limit Line} to turn it ON	 Cable Loss test with PASS/FAIL indicator

2.2 Save Measurement Results

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

Step	Action	Description
1	Saving measurement results: - Select the {Save} icon from the side-bar navigation. - Select {Internal} memory icon to set the file destination. - Select the destination memory - Enter the desired file name in the {File Name} field - Select the measurement file type - Select {Save}	 Save Measurement Results

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

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