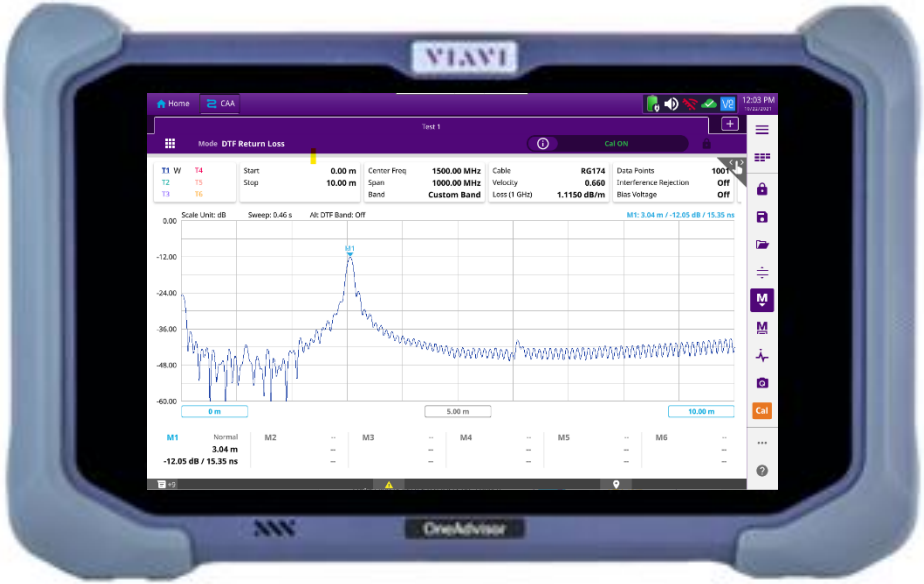


# GPS Cable Delay Measurement Procedure VIAVI OneAdvisor 800 (ONA-800)



OneAdvisor 800

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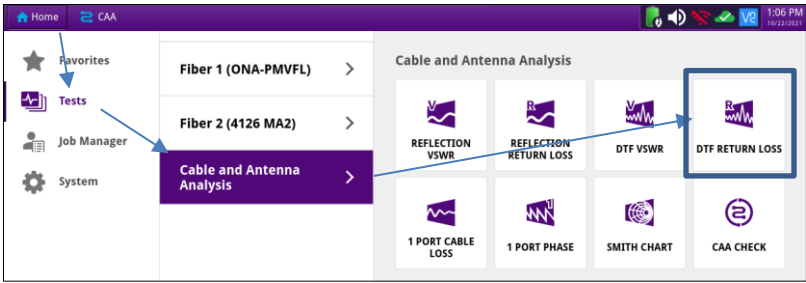
## Scope and Purpose

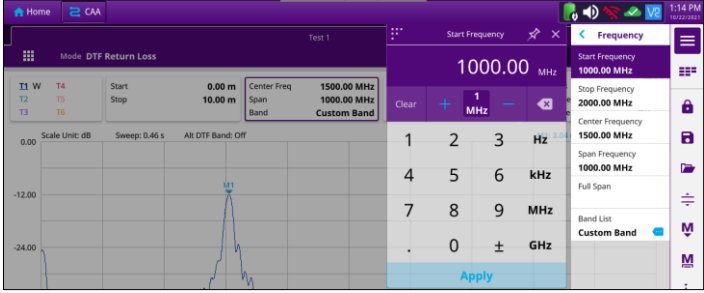
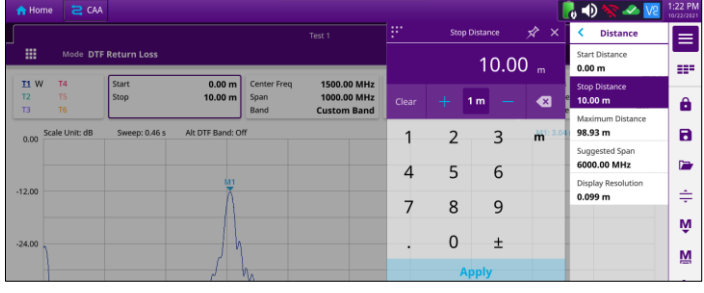
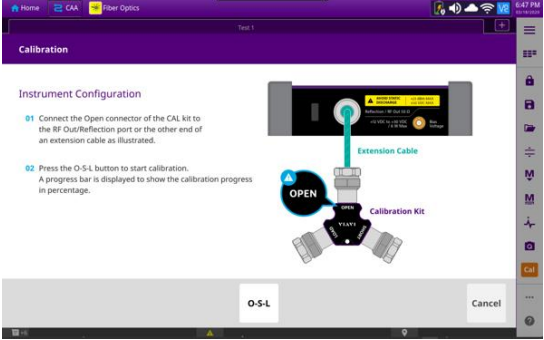
This document describes how to configure the OneAdvisor for a Distance to Fault (DTF) measurement of a GNSS (GPS) Cable and antenna system. The purpose is not to locate any fault, but rather to understand the time delay of the RF signal through this cabling system so that this delay may be entered into the Grand Master or Edge Grand Master clock.



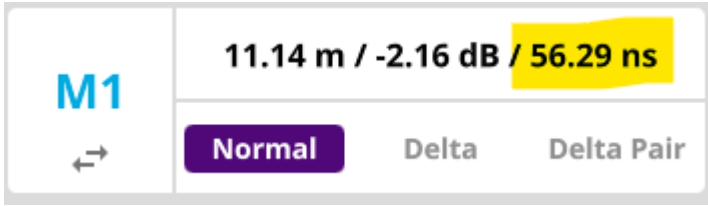
The required products and parts to complete this procedure are as follows:

Description	Diagram
OneAdvisor with the following functions: <ul style="list-style-type: none"> <li>- ONA-800 mainframe equipped with the following module:               <ul style="list-style-type: none"> <li>o CA006MA: Cable and antenna analysis 6GHz</li> </ul> </li> </ul>	 <p>ONA Front View. CAA Module</p>
OSL calibration Kit (Manual or EZcal) <ul style="list-style-type: none"> <li>- JD78050509: Manual OSL calibration kit Type-N(m)</li> </ul>	 <p>Open, Short, Load</p>
RF Cables <ul style="list-style-type: none"> <li>- G700050531: RF Cable DC to 8 GHz Type-N M to Type-N (F) 1.5 m</li> </ul>	 <p>RF Cable</p>
RF Adapters <ul style="list-style-type: none"> <li>- Depending on the cable termination adapters or gender changes may be required</li> </ul>	

# DTF (Cable Delay) Measurement Setup

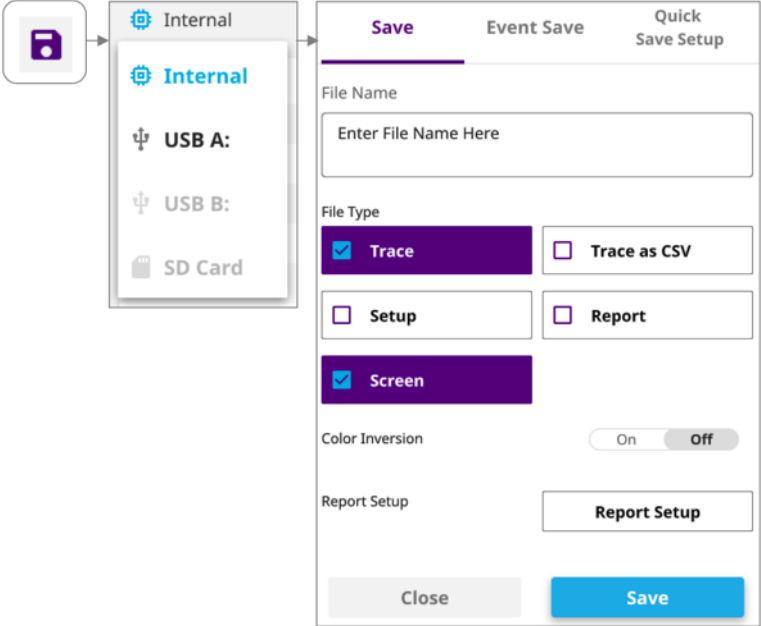
Step	Action	Description
1	Power ON the OneAdvisor	<p>Press and hold the ON/OFF button for 3 seconds to power on the OneAdvisor</p> 
2	<p>The ONA-800 supports CAA and fiber testing Modules</p> <p>Connectivity: Connect the RF extension cable into the CAA Module Reflection / RF Output port.</p>	 <p>ONA Front View.                      ONA Back View</p>
3	<p>Cable and Antenna Analysis mode:</p> <ul style="list-style-type: none"> <li>- Select {Home}, {Tests}, {CAA}, {CAA}</li> <li>- To select a measurement type, select the multi-grid icon</li> </ul>	 <p>Cable and Antenna Analyzer DTF Measurement Mode</p>

Step	Action	Description
4	<p>Set-up Frequency</p> <ul style="list-style-type: none"> <li>Select the Frequency hot-key</li> </ul> <div data-bbox="358 302 623 390" style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Center Freq    <b>1500.00 MHz</b>  Span            <b>1000.00 MHz</b>  Band            <b>Custom Band</b></p> </div> <ul style="list-style-type: none"> <li>Set the start frequency to 1000 MHz and the stop to 2000 MHz</li> </ul>	
5	<p>Set-up the Distance</p> <ul style="list-style-type: none"> <li>Estimate the length of the cable under test</li> <li>Select the Distance hot-key</li> </ul> <div data-bbox="358 741 602 821" style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Start            <b>0.00 m</b>  Stop             <b>10.00 m</b></p> </div> <ul style="list-style-type: none"> <li>Set the stop distance 20 or 25% beyond your estimate</li> </ul>	
6	<p>Calibrate the instrument:</p> <ul style="list-style-type: none"> <li>Select {Cal} icon from the side-bar navigation and follow the on-screen instructions.</li> </ul> <p><i>Note: Connect the RF extension cable onto the CAA Module Reflection / RF Output port and on the other end of the RF extension cable connect the calibration kit.</i></p>	<div data-bbox="695 1171 818 1297" style="border: 1px solid gray; border-radius: 15px; width: 60px; height: 60px; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> <div style="background-color: orange; color: white; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> <span style="font-weight: bold; font-size: 24px;">Cal</span> </div> </div>  <p style="text-align: center; margin-top: 10px;"><b>Calibration Process</b></p>

Step	Action	Description
7	<p>Connect extension cable to the cable/system under test.</p> <ul style="list-style-type: none"> <li>- The test result will appear immediately. There is no “start” button.</li> <li>- Select the Marker Edit button  and then Peak</li> <li>- M1 will go to the peak event. This will be the end of the cable or the antenna if the antenna is attached.</li> </ul>	
8	<p>Extract Results</p> <ul style="list-style-type: none"> <li>- The example in step 7 and on the right shows a system with 3 distinct sections of cable coupled together. The marker M1 is positioned at the end (or antenna).</li> <li>- Note the information provided for M1. There is distance (meters), rel. power (dB) and time to that event (ns).</li> </ul>	 <p>The DTF measurement is typically used to measure <u>distance</u> to an event or fault. It does so by measuring the time to reflective events and multiplying by the velocity of RF in that type of cable. In this case, we are not concerned with distance. In fact, there may be multiple cables, splitters, etc. with different velocity/delay factors which would impact the distance results. What we need is the raw <u>delay</u> value in ns. This, added to the Group Delay specification of the antenna itself are what should be entered as the GNSS cable delay setting for the Edge/Grand Master clock.</p>

# Save Measurement Results

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

Step	Action	Description
1	Saving measurement results: <ul style="list-style-type: none"> <li>- Select the {Save} icon from the side-bar navigation.</li> <li>- Select {Internal} memory icon to set the file destination.</li> <li>- Select the destination memory</li> <li>- Enter the desired file name in the {File Name} field</li> <li>- Select the measurement file type</li> <li>- Select {Save}</li> </ul>	 <p style="text-align: center;">Save Measurement Results</p>

## Resources (SW, FW, Tech Support, Job Manager, StrataSync)

**JD VIEWER SOFTWARE:** Off-line analysis and reporting for ONA-800 traces can be performed with JD Viewer. That software is available for free at the following location:

- <http://celladvisor.updatemyunit.net/>

**FIRMWARE:** Regularly new firmware updates for the ONA-800 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://ona-800.updatemyunit.net/>
- For additional information of cell site test go to: <http://www.viavisolutions.com/en/products/network-test-and-certification/cell-site-test>

**TECHNICAL SUPPORT:** Technical support is available by contacting VIAVI in one of two ways:

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

**JOB MANAGER:** Job Manager is a web-based test sequence builder that allows an organization to standardize any test process and push those standards across all their instruments:

- <https://jobmanager.stratasync.viavisolutions.com/>
- Overview Video: <https://www.viavisolutions.com/en-us/how-videos-oneadvisor-800>

**STRATASYNC:** A hosted service from VIAVI that can be used to track test set inventory, push firmware, share licenses, distribute test configurations/jobs, collect and distribute test results. If you own a supported VIAVI test set, you are eligible to utilize StrataSync. Contact your VIAVI representative.

- Phone: 1-844-GO-VIAVI (1-844-468-4284)