



Test & Inspection

ROGUE™ | **aEROS™**

Test Workflow and Data Management Solution

ROGUE TURBO™ OLTS/CERT

**Insertion Loss and Return Loss Test Set
User's Guide**

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Safety Information

WARNING! Use of procedures or adjustments other than those specified herein may result in hazardous radiation exposure.

850/1300 nm, multimode light source test port	LED output
1310/1550 nm, single-mode light source test port	CLASS I LASER output
650 nm (red) laser, visual fault locator (VFL) port	CLASS II LASER output Do not stare into beam!

NOTE! ROGUE testers contain Bluetooth / WiFi Transceiver

FCC ID: TFB-TIWI1-01

IC ID: 5969A-TIWI101

CAUTION! To avoid serious eye injury, never look directly into the optical outputs of fiber optic network equipment, test equipment, patch cords, or test jumpers. Refer to your company's safety procedures when working with optical systems.

WARNING! Use only the specified AC adapter. Use of another type of AC adapter can damage the instrument and create the danger of fire and electrical shock.

AC adapter should be 90-240VAC input, 15Vdc @ 2.4A, with center positive connector

WARNING! To avoid the danger of fire and electrical shock:

- Never use a voltage that is different from that for which the AC adapter is rated.
- Do not plug the device into a power outlet that is shared by other devices.
- Never modify the power cord or excessively bend, twist, or pull it.
- Do not allow the power cord to become damaged. Do not place heavy objects on the power cord or expose it to heat.
- Never touch the AC adapter while your hands are wet.
- Should the power cord become seriously damaged (internal wiring exposed or shorted), contact the manufacturer to request servicing.

CAUTION! Do not run any tests or perform functions that activate an LED/LASER output port unless fiber cable is attached to the corresponding output port.

NOTICE! ROGUE Testers contain no user serviceable parts. Except for changing batteries and cleaning optical ports, this instrument must be returned to AFL or authorized agents for repair and calibration.

IMPORTANT! Proper care in handling should be taken when using any precision optical test equipment. Scratched or contaminated optical connectors can impact the performance of the instrument.

IMPORTANT! It is important to keep connector end-faces on the launch and receive cables and those on the Fiber Under Test (FUT) clean, to ensure accurate measurements and operation.

aeRos™ | Rogue™ Solution Overview

AFL's ROGUE™ | aeRos™ Test Workflow and Data Management Solution is a suite of products built completely around your company's specific testing requirements.

aeRos — Test Workflow and Data Management Solution

aeRos is an open, cloud-based, workflow management platform that facilitates two-way communication and data exchange from engineering to project management to technicians in the field. aeRos allows project managers to send jobs directly to technicians, defining tests and configurations as needed. This reduces both setup time and mistakes in the field creating real OPEX savings. Throughout the job, managers can monitor technicians' progress and help to solve problems as they arise avoiding expensive retesting and unnecessary truck rolls. aeRos solution is available in two options: aeRos BASIC and aeRos PRO:

aeRos BASIC — Data Management Solution

aeRos BASIC allows users to save their test data in the aeRos cloud and then retrieve it from anywhere at any time with a standard Internet browser such as Chrome or Safari. aeRos BASIC is free to all owners of AFL's ROGUE modular test equipment.

aeRos PRO — Workflow Management Solution

aeRos PRO allows users to manage their entire testing workflow and enables seamless and efficient communications and data management. aeRos PRO is available in multiple License configurations.

ROGUE — Modular Platform

ROGUE is the modular hardware platform that works seamlessly with aeRos. Like aeRos, it is an open system built around you, for both CAPEX and OPEX savings. By unbundling software and hardware, the ROGUE platform allows you to invest in the application-specific tests you really need. Because ROGUE works with iOS or Android, you can leverage your investment in your existing smart devices. Your technicians will use equipment and capabilities they are familiar with, further increasing their overall efficiency and your OPEX savings.

TURBO™ OLTS/CERT Module

TURBO OLTS/CERT module uses state-of-the-art technology to produce the most accurate results in the shortest amount of time. Depending on a model, TURBO module contains one or two Bi-directional test ports (single-mode or/and multimode), an optical power meter (OPM) port, and a visual fault locator (VFL) port. All multimode test ports are Encircled Flux compliant as required by ANSI/TIA and ISO/IEC. Invest in the application-specific tests you really need:

- Start with a simple OLTS test kit that supports single fiber loss testing.
- Add a second OLTS module to test two fibers simultaneously.
- Choose Dual Engine models to test two fibers in both directions on 2 wavelengths.
- Turn the TURBO OLTS solution into a full tier 1 certifier through a separate ROGUE Tier I Certification License.
- Add AFL's Multi-fiber Switch to the ROGUE kits for testing multi-fiber cables with MPO connectors.

aeRos™ | Rogue™ Solution Overview

MPO — Multi-fiber Switch Accessory

Multi-fiber switch enables testing of 12-fiber cables without the need to use a breakout cable. The switch utilizes a single piece of test equipment to seamlessly cycle through all of the fibers in a connector regardless of polarity without a need to disconnect and reconnect test equipment. MFS switch features one SC port for connection to test equipment and one 12F MPO port for connection to MPO cable under test. Used with ROGUE platform to make testing automatic.

TURBO™ OLTS/CERT App



By pairing ROGUE Carrier equipped with the TURBO module with the TURBO app, users are enabled to control their test hardware directly from their Android or iOS smart devices. Test configurations and instructions are pushed from the aeRos cloud to the smart device app to simplify the test process for technicians. Technicians receive a notification on their smart device and can perform required testing. When the testing is complete, test results automatically and seamlessly synchronized with the cloud for instant access, analysis, and reporting. Apps available via Google play or App Store.

“Made for iPad” — Legal Notice



Made for iPad mini 3 — “Made for iPad” mean that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

- iPad, and Retina are trademarks of Apple Inc., registered in the U.S. and other countries.
- iPad mini is a trademark of Apple Inc., registered in the U.S. and other countries.
- Android is a trademark of Google Inc.

Minimum Smart Device Requirements

Min RAM	1 GB
Min Memory	1 GB required; 8 GB recommended
Recommended Chip Architecture	ARMv7-A (or newer)
Recommended Processor	ARM Cortex-A9
Min Android Version	v4.4/KitKat (API level 19)
Bluetooth	4.0
WiFi	802.11 b/g/n
Min Screen Size	Phone: 5.1 inches Tablet: 7.0 inches
Min Screen Resolution	Phone: 1080 x 1920 pixels (approx. 432 ppi pixel density) Tablet: 800 x 1280 pixels (approx. 216 ppi pixel density)
Capacitive/Multi-touch	Yes
Camera Required	2 MP min
GPS	Recommended

ROGUE Carrier Overview

The Rogue Carrier is designed to mate with one of various test Modules. A test Module mounts in and interfaces with the Carrier, with the Carrier providing control/data interfacing and power to the test Module. The Rogue Carrier is ruggedly built to withstand testing in the field. It is lightweight, portable, and comes with options for carrying and/or placing it on a surface, with a convenient carrying strap and a "kickstand".

ROGUE Key Carrier Features

- Wi-Fi/Bluetooth Connectivity
- Touch Screen
- "Mini-Apps" - Pairing, Power Manager, Module Information
- USB Connections
- Power Connections/Removable Battery
- Ergonomics - stands on its own, Kickstand, Anchor Points/Strap

Contents of ROGUE Carrier Kit

Each ROGUE Carrier kit includes one of each:

- ROGUE Carrier
- Battery
- Power supply
- Adjustable carry strap

Recommended Accessories

Depending on your testing requirements, AFL recommends the following accessories:

- ROGUE Carrier Kickstand
- AC Adapter
- Adapters (LC, SC)
- Multi-fiber Switch: enables the testing of 12 fiber cables without the need to use a breakout cable. Multi-fiber Switch is also available in Certification Add-on kits.
- FOCIS Flex Fiber Optic Connector Inspection System
- AFL's cleaning supplies
- AFL's Fiber Rings
- SM, MM Reference Jumper Cables
- MPO reference Jumper Cables

ROGUE Carrier

Hardware Overview

Controls, Display, Interfaces



Ref	Feature	Description
1	Strap Eyelet	Used to attach an adjustable carry strap supplied with your Carrier.
2	Mini-USB Function Port	This port may be used to connect the Carrier to a PC for downloading and managing test data, updating User Interface software or for remote control of the device.
3	USB Host Port	This USB port allows connection to USB devices (keyboard, USB flash drive, or other USB devices)
4	Key Slot	Used to mount a Kickstand accessory on the ROGUE Carrier.
5	Touch Screen Display	Contains on-screen controls and menus, allowing the user to select parameters and functions and control the operation of the Carrier.
6	Function Buttons	Used to perform specific tasks. The functionality of these buttons depends on the active test mode/screen.
7	Power Button	Press and hold (~2 seconds) to turn power on or off.
8	AC/Charger Indicator	When ON, indicates that an AC adapter is connected to the Carrier. - Red light - rechargeable battery is charging. - Green light - rechargeable battery is fully charged.
9	Guide Rails	Used to mount a Module on the ROGUE Carrier.
10	Slot for Module	This slot accepts one of the ROGUE Modules.
11	Module Interface Connector	This connector interfaces with a test module, providing power and passing control and data signals between the carrier and module. It is located inside the case, at the bottom of the slot that holds the module.
12	Battery Compartment	Holds removable/rechargeable Li-ion battery.
13	AC/Charger Port	This is the connector for the AC power adapter/charger.

ROGUE Carrier Overview

Battery Charging



Rogue device can simultaneously operate and charge the internal battery while connected to the provided AC adapter. To connect the AC adapter:

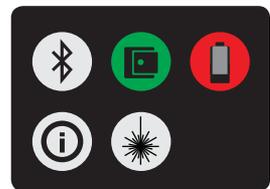
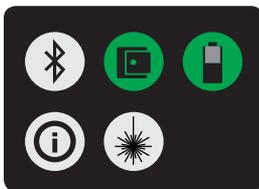
- Plug the AC adapter/charger into a standard wall outlet.
- Connect the AC adapter/charger to the power port located on the Rogue side panel (A).
 - The AC/Charger indicator (B) turns RED while battery is charging.
 - The AC/Charger indicator turns GREEN when battery is fully charged.

Checking the Battery Status

The battery icon on the ROGUE Carrier device display indicates the battery status and shows percentage of the remaining battery charge.

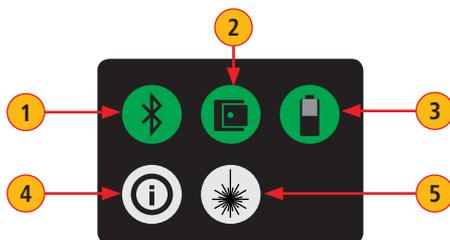
Battery/Power Level icon will indicate current charge level as follows:

- Green = >50%
- Yellow = Between 20% and 50%
- Red = <20%



ROGUE Carrier Overview

Touch Screen Display Features

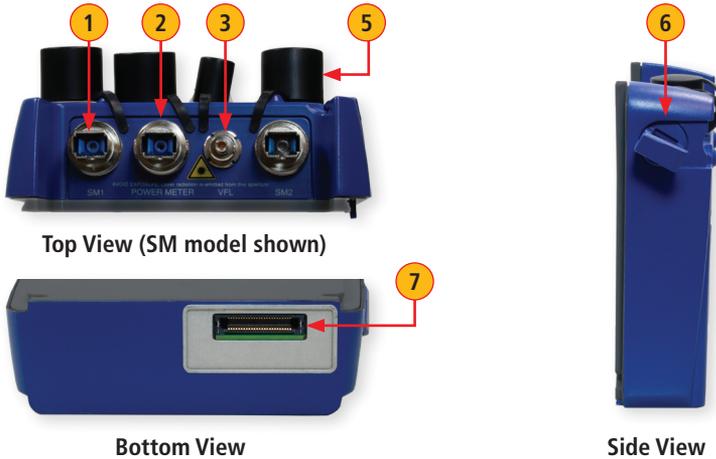


Ref	Icon	Function
1	 	<p>Bluetooth Connectivity. Pressing this icon will display the Bluetooth pairing screen.</p> <ul style="list-style-type: none"> If your ROGUE device is not already paired, the Bluetooth connectivity screen will display a QR code that can be used to pair with a Smart Device. See "Bluetooth Pairing – Connecting to a ROGUE™ Device" on page 15. If your ROGUE device is already paired, the Bluetooth pairing screen will display an option to disconnect. <p>Color code will indicate pairing status as follows: Red = Bluetooth off Red Pulsating = Paired with Smart Device; waiting for connection to App. Green = Paired with Smart Device and TURBO™ App is running</p>
2	 	<p>Module Connection. Pressing this icon will provide information on the serial number and description of the installed module.</p> <p>Color code: Red = Module is not connected Green = Module is connected</p>
3	  	<p>Battery/Power Level. This icon will indicate current charge level.</p> <p>Color code: Green = >50% Yellow = Between 20% and 50% Red = <20%</p>
4		<p>Carrier Information Pressing this icon provides options to display the following information: Module Version (if a Module installed), Carrier Version, Legal Information.</p>
5	 	<p>VFL port. Present only when the installed module has a VFL port.</p> <p>Color code: White = VFL port is Off Green = VFL port is On</p>

TURBO™ OLTS/CERT Module Overview

Dual Engine Single-mode Model: Ports and Features

Mated with the Carrier, the TURBO OLTS/CERT Single-mode Module is capable of measuring uni-directional or bi-directional loss on each test port, fiber span length, and optical return loss.

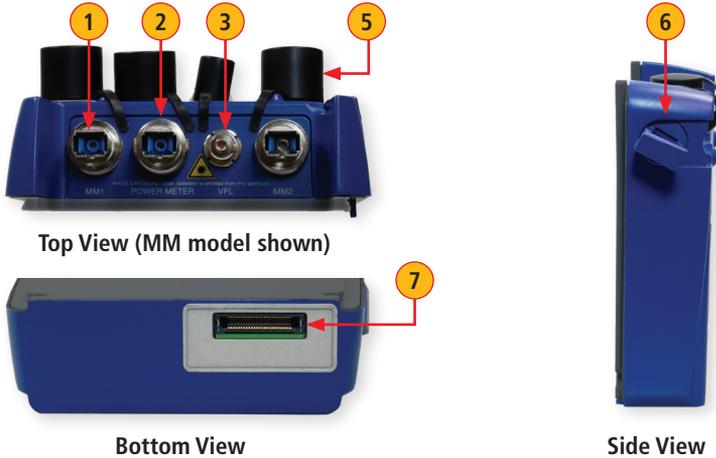


Ref	Feature	Description
1	SM1 Port	This is a CLASS I LASER output. Do not stare into beam. 1310/1550 nm single-mode Engine 1. This port accepts one of four UCI (Universal Connector Interface) connector adapters (FC, SC, ST, LC), which screws onto the UCI base. Used for of measuring uni-directional or bi-directional loss, fiber span length, and optical return loss (ORL).
2	OPM Port	Optical Power Meter port. Used for power (dBm, W) or loss (dB) measurements.
3	VFL Port	This is a CLASS II LASER output. Do not stare into beam. The VFL (visual fault locator) port is a 650 nm (red) laser. This port accepts 1.25 and 2.5 mm universal adapter, which couples the VFL laser output into the fiber under test. Used for locating faults on shorter fiber spans.
4	SM2 Port	This is a CLASS I LASER output. Do not stare into beam. 1310/1550 nm single-mode Engine 2. This port accepts one of four UCI (Universal Connector Interface) connector adapters (FC, SC, ST, LC), which screws onto the UCI base. Used for of measuring uni-directional or bi-directional loss, fiber span length, and optical return loss (ORL).
5	Dust Cap	Protects optical ports from dust/damage.
6	Latch Mechanism	Provides a secure engagement between Carrier and installed Module.
7	Carrier Interface Socket	This connector interfaces with the matching plug on the Carrier unit, providing connection to the Carrier and allowing data transfer between the installed test Module and Carrier.

TURBO™ OLTS/CERT Module Overview

Dual Engine Multimode Model: Ports and Features

Mated with the Carrier, the TURBO OLTS/CERT Multimode Module is capable of measuring uni-directional or bi-directional loss on each test port and fiber span length.

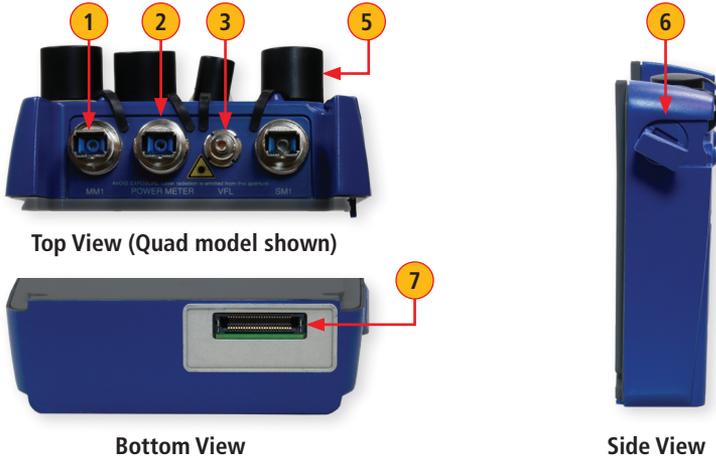


Ref	Feature	Description
1	MM1 Port	850/1300 nm multimode Engine 1. This port accepts one of four UCI (Universal Connector Interface) connector adapters (FC, SC, ST, LC), which screws onto the UCI base. Used for of measuring uni-directional or bi-directional loss, fiber span length.
2	OPM Port	Optical Power Meter port. Used for power (dBm, W) or loss (dB) measurements.
3	VFL Port	This is a CLASS II LASER output. Do not stare into beam. The VFL (visual fault locator) port is a 650 nm (red) laser. This port accepts 1.25 and 2.5 mm universal adapter, which couples the VFL laser output into the fiber under test. Used for locating faults on shorter fiber spans.
4	MM2 Port	850/1300 nm multimode Engine 2. This port accepts one of four UCI (Universal Connector Interface) connector adapters (FC, SC, ST, LC), which screws onto the UCI base. Used for of measuring uni-directional or bi-directional loss, fiber span length.
5	Dust Cap	Protects optical ports from dust/damage.
6	Latch Mechanism	Provides a secure engagement between Carrier and installed Module.
7	Carrier Interface Socket	This connector interfaces with the matching plug on the Carrier unit, providing connection to the Carrier and allowing data transfer between the installed test Module and Carrier.

TURBO™ OLTS/CERT Module Overview

Quad, Single-mode and Multimode Model: Ports and Features

Mated with the Carrier, the TURBO OLTS/CERT Single-mode and Multimode Module is capable of measuring uni-directional or bi-directional loss on each test port, fiber span length, and optical return loss (single-mode only).

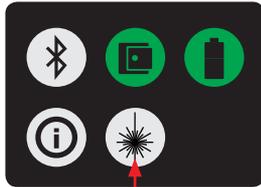


#	Feature	Description
1	MM1 Port	850/1300 nm multimode Engine 1. This port accepts one of four UCI (Universal Connector Interface) connector adapters (FC, SC, ST, LC), which screws onto the UCI base. Used for of measuring uni-directional or bi-directional loss, fiber span length.
2	OPM Port	Optical Power Meter port. Used for power (dBm, W) or loss (dB) measurements.
3	VFL Port	This is a CLASS II LASER output. Do not stare into beam. The VFL (visual fault locator) port is a 650 nm (red) laser. This port accepts 1.25 and 2.5 mm universal adapter, which couples the VFL laser output into the fiber under test. Used for locating faults on shorter fiber spans.
4	SM1 Port	This is a CLASS I LASER output. Do not stare into beam. 1310/1550 nm single-mode Engine 1. This port accepts one of four UCI (Universal Connector Interface) connector adapters (FC, SC, ST, LC), which screws onto the UCI base. Used for of measuring uni-directional or bi-directional loss, fiber span length, and optical return loss (ORL).
5	Dust Cap	Protects optical ports from dust/damage.
6	Latch Mechanism	Provides a secure engagement between Carrier and installed Module.
7	Carrier Interface Socket	This connector interfaces with the matching plug on the Carrier unit, providing connection to the Carrier and allowing data transfer between the installed test Module and Carrier.

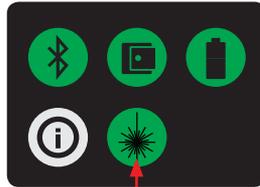
TURBO™ OLTS/CERT Module Overview

VFL port - Turning On/Off

The VFL icon on the Carrier touch screen display is the VFL port on/off button. To enable/disable the VFL port, touch the VFL icon.



VFL port icon
WHITE indicates that laser is disabled
Tap to enable the VFL port



VFL port icon
GREEN indicates that laser is enabled
Tap to disable the VFL port

Installing a Module

- 1 On the Module: make sure, the latch is open and turned counter clockwise, as shown in **(A)**.
- 2 Starting from the Carrier top, align bottom of the Module guiding tracks with top of the Carrier guiding tracks.
- 3 Slide module into Carrier until it is completely inserted in the Module Slot.
- 4 Turn the latch clockwise and close it as shown in **(B)**.

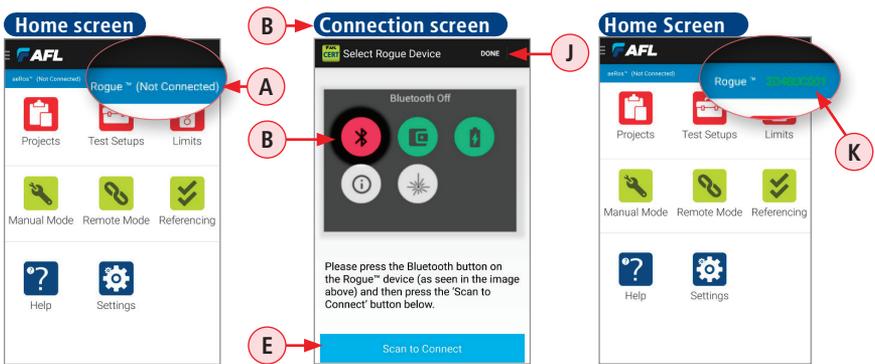


TURBO™ OLTS/CERT App Overview

Bluetooth Pairing – Connecting to a ROGUE™ Device

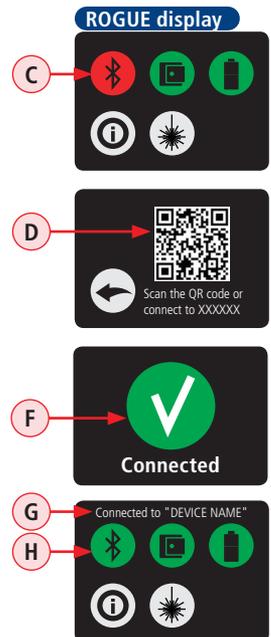
Pairing to a smart device is necessary to perform testing with the ROGUE device.

1. On your smart device, enable the TURBO app.
2. Home screen is the first screen you see on the app startup. If your smart device is not paired to the ROGUE device, notice how the connection status **A** 'Not Connected'.
3. Tapping on the connection status field **A** will display the Connection screen **B**. Alternatively, the Connection screen **B** may be accessed from the Main menu by selecting the 'Connect to ROGUE' option.



To pair, complete the following steps:

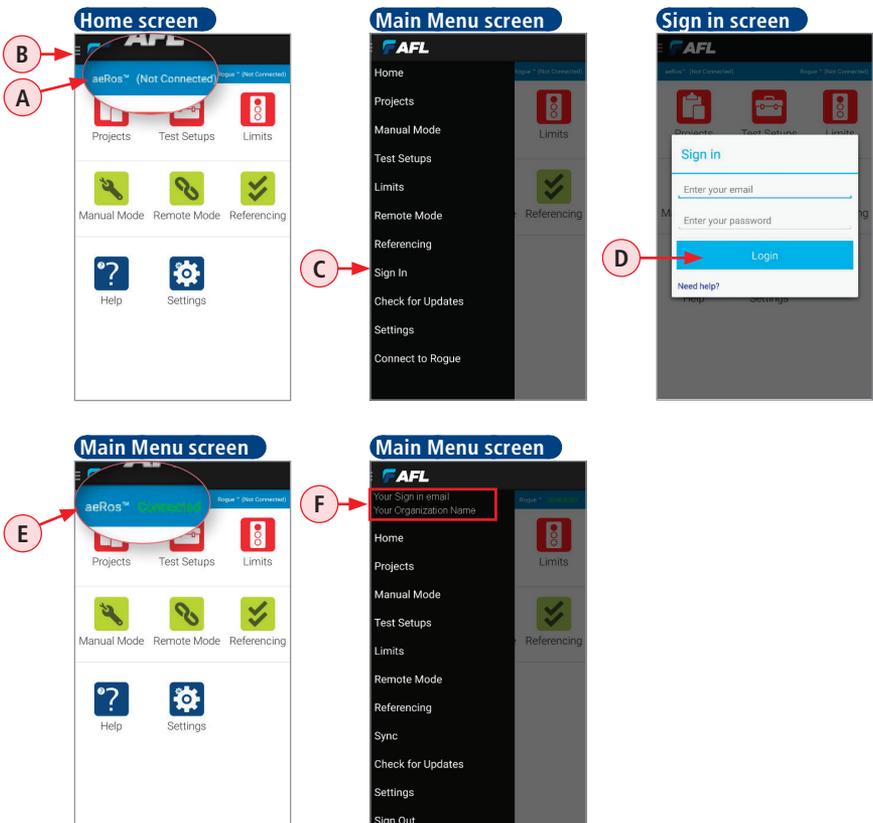
4. **On your ROGUE device:** Notice that the Bluetooth icon **C** displayed in Red (not connected).
 - Tap the Bluetooth icon.
 - You should see that a QR code **D** appears on the display.
5. **On your smart device:** tap on the Scan to Connect **E**.
6. Align your smart device camera over the ROGUE display to scan the QR code.
7. **On your ROGUE device:**
 - You should see the 'Connected' confirmation **F**, and then display changes to show the Home screen.
 - After successful pairing, the Home screen will indicate the name of the device that is currently paired **G** and display the Bluetooth icon **H** in Green (connected).
8. **On your smart device:** Tap Done **J**. When back in the Home screen, notice that connection status **K** now indicates that you are connected to the ROGUE device.



TURBO™ OLTS/CERT App Overview

Signing in to aeRos User Account

1. On your smart device, enable the TURBO app.
2. Home screen is the first screen you see on the ROGUE TURBO app startup. If you haven't logged in to aeRos, notice that connection status **(A)** indicates 'Not Connected'. Perform the following steps.
3. From the Home screen, display the Main menu by touching the Menu icon **(B)**.
4. From the Main menu, tap the 'Sign In' option **(C)**.
5. When prompted, enter your email and password, and then tap Login **(D)**.
6. When back in the Home screen, notice that connection status **(E)** now indicates that you are connected to the aeRos cloud.
7. Also once connected, notice that Main menu screen will display your Sign in credentials and your organization name **(F)**.



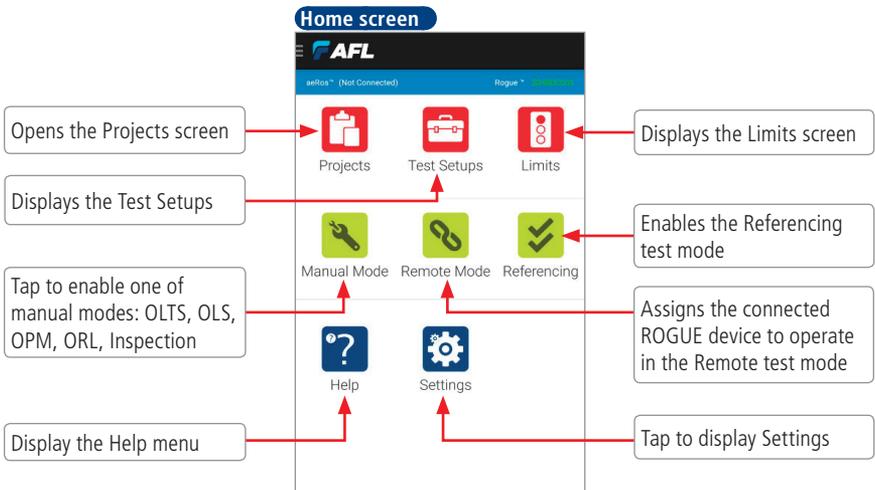
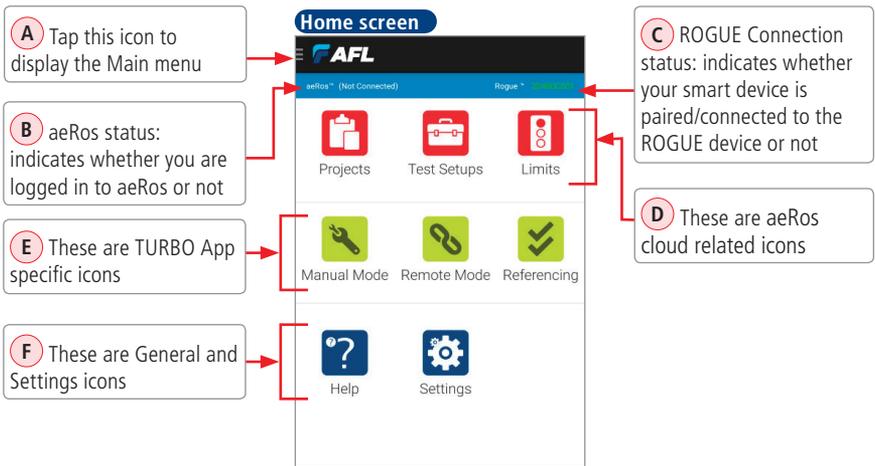
TURBO™ OLTS/CERT App Overview

User Interface Overview

Home Screen

Home screen is the first screen you see on OLTS/CERT app startup. It features several groups of icons, displays connection status to the ROGUE device and aeRos cloud, and provides access to the Main menu.

- A** – Main menu icon, **B** – Connection status to the aeRos cloud,
- C** – Connection status to the ROGUE device, **D** – aeRos cloud related icons,
- E** – OLTS/CERT App specific icons, **F** – General and Settings icons,

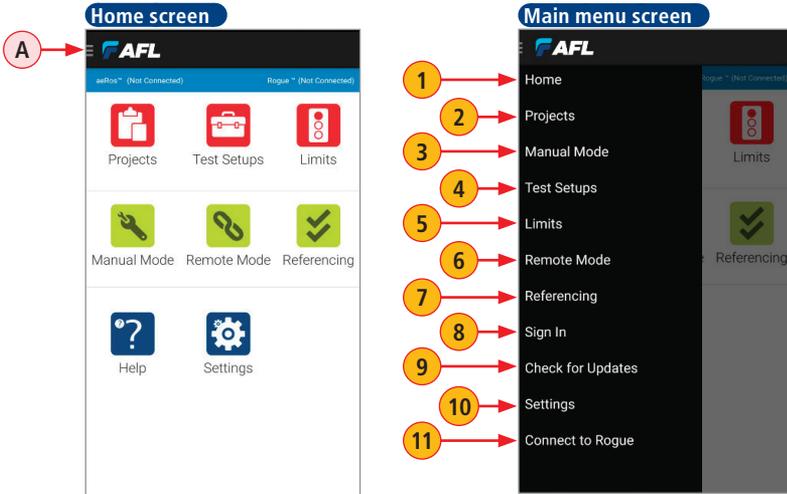


TURBO™ OLTS/CERT App Overview

User Interface Overview

Main Menu

The Main menu is accessed from the Home screen by touching the Main menu icon **(A)**. In addition to the same functions that are available from the Home screen, the Main menu provide access to several general functions.



Ref	Menu Item	Function
1	Home	Provides access to the Home screen
2	Projects	Displays the Projects screen
3	Manual Mode	Selecting this option displays the Manual mode screen, which allows the user to enable one of the manual modes (OLTS, ORL, OLS, OPM, or Inspection)
4	Test Setups	Displays the Test Setups screen
5	Limits	Displays the Limits screen
6	Remote Mode	Selecting this option enables paired/connected ROGUE device to operate in the Remote mode
7	Referencing	Enables the Referencing mode
8	Sign In	Displays the Sign In screen, which allows the user to log in to aeRos
9	Check for Updates	When connected to ROGUE, selecting this option will enable the Device Update mode, which allows the user to see, select and perform updates to the connected ROGUE device
10	Settings	Displays the Settings screen
11	Connect to ROGUE	Displays 'help tips' and assists to pair user's smart device to the ROGUE device

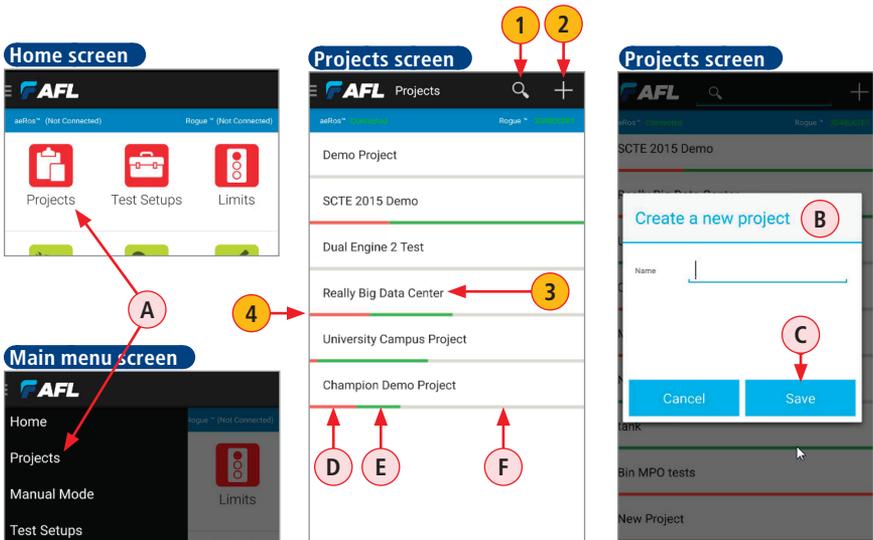
TURBO™ OLTS/CERT App Overview

User Interface Overview

Projects Screen

The Projects screen may be accessed from either Home screen or from the Main menu screen by selecting Projects **(A)**.

When signed in to aeRos, the Projects screen displays all Projects for the organization and allows the user to select a project and perform tests created and assigned to the user in aeRos. The user may also create new Projects as needed. Projects created within the TURBO app are synchronized and saved to aeRos in real time.



Ref	Feature	Description
1	Search Tool	The 'Search' feature allows you to search for projects in your Organization by entering keywords into the search box field.
2	New Project Tool	This feature allows you to create a new project within TURBO app: <ul style="list-style-type: none"> • Tap on '+'. • In the displayed window (B), add a name • Tap Save (C).
3	Project Row	By clicking on a project row you can display an individual project and associated with this project screens (Test, Referencing, Results).
4	Project Progress Bar	A Project progress bar may contain up to three color-coded sections to indicate the status of a Project by fibers failed (red) (D) , passed (green) (E) or incomplete (gray) (F) .

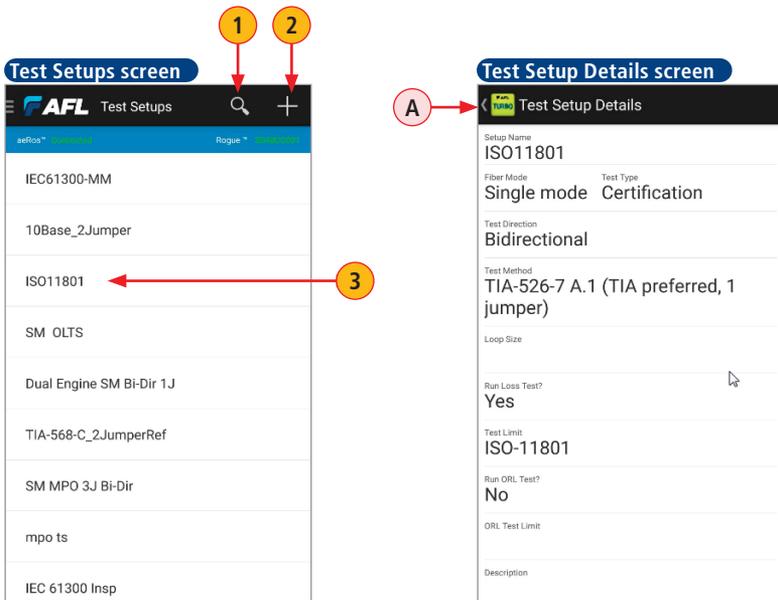
TURBO™ OLTS/CERT App Overview

User Interface Overview

Test Setups Screen

The Test Setups screen is accessed from either Home screen or from the Main menu by selecting the Test Setups icon (option).

When signed in to aeRos, this screen allows the user to view test setups created and assigned in aeRos. The user may also create new Test Setups as needed. Test Setups created within the TURBO app are synchronized and saved to aeRos in real time.



Ref	Feature	Description
1	Search Tool	The 'Search' feature allows you to search for test setups in your Organization by entering keywords into the search box field.
2	New Test Setup Tool	This feature allows you to create a new Test Setups within TURBO app and sync it to aeRos.
3	Test Setup Row	By clicking on a test setup row you can view the Test Setup Details screen (A).

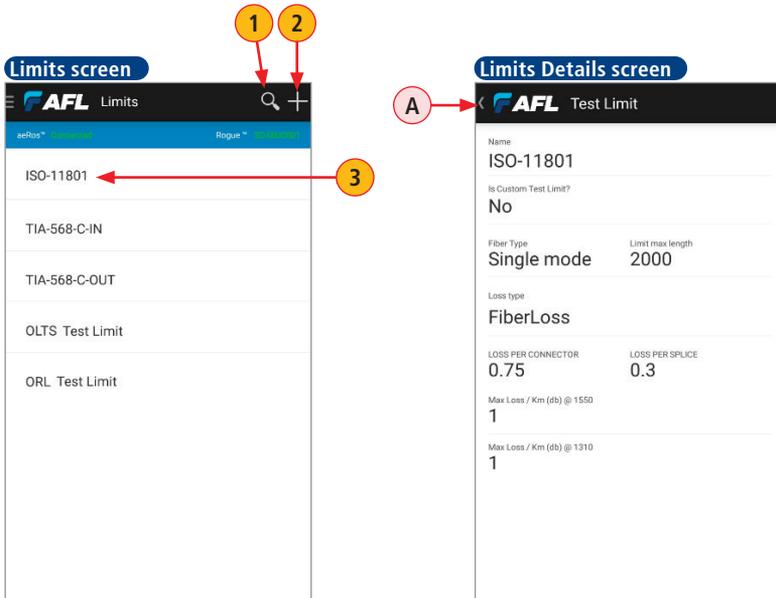
TURBO™ OLTS/CERT App Overview

User Interface Overview

Limits Screen

The Limits screen is accessed from either Home screen or from the Main menu by selecting the Test Setups icon (option).

When signed in to aeRos, this screen allows the user to view test limits created and assigned in aeRos. The user may also create new Limits as needed. Limits created within the TURBO app are synchronized and saved to aeRos in real time.



Ref	Feature	Description
1	Search Tool	The 'Search' feature allows you to search for test setups in your Organization by entering keywords into the search box field.
2	New Limit Tool	This feature allows you to create a new Test Setups within TURBO app and sync it to aeRos.
3	Limit Row	By clicking on a limit row you can view the Limit Details screen (A).

Getting Started

Workflow Steps

aeRos simplifies coordination between the main office and field technicians by providing remote project setup, automatic data collection and reporting, as well as the real-time job monitoring that is independent of technology or location.

- With aeRos PRO, projects can be defined remotely with a variety of test activities, configurations, custom or industry pass/fail limits for single fiber or MPO multi-fiber links.
 - Projects can be assigned to a single user or to multiple technicians.
- Once created, projects are pushed from aeRos cloud solution to the smart device app to simplify the process for technicians.
- Technicians receive a notification on their smart device and can perform required tests.
 - Changes to a project can be made remotely while in progress, and updates to all users can be assigned simultaneously through their smart devices.
- When the testing is complete, the test results automatically and seamlessly synchronize with the aeRos cloud.
- Reports creation is simplified with aeRos customizable, easy to use reporting templates that include “what-if” analysis against different industry standards.
 - If there is a need to re-test a project against a new or different industry standard, simply enter a new pass/fail limit and aeRos provides the new status.

ROGUE Main and Remote Testers

A set of units that is referred to as 'ROGUE tester' consists of the following items:

- ROGUE Carrier equipped with TURBO™ OLTS/CERT Module
- User's smart device equipped with TURBO™ OLTS/CERT app
- Both devices should be paired/connected via Bluetooth

Two ROGUE testers are required to run Auto Tests. One tester will need to operate as 'Main' and another as 'Remote'.

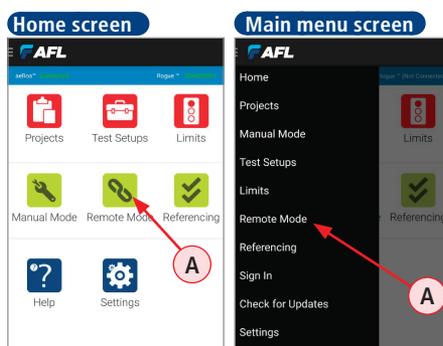
- Pair/connect one ROGUE device to one smart device and another ROGUE device to another smart device. See "[Bluetooth Pairing – Connecting to a ROGUE™ Device](#)" on page 15.
- Designate which tester will operate as Main and another as Remote.

The Main tester controls all Auto Test steps and synchronizes and saves test results to aeRos cloud. The Remote tester assists in performing OLTS Auto Tests and allows the user to view certain screens during tests.

Remote Tester Configuration

On your smart device paired to the Remote device perform the following:

- From either Home screen (or Main menu), touch the 'Remote Mode' option (A) - this will set your paired ROGUE device to operate as Remote tester. You'll see the Remote mode screen similar to the example below.
- Wait for the Main tester.



Notification indicates connection status to the aeRos cloud: 'Connected'

Animation indicates test port that needs to be used for referencing/testing

Indicates that you are testing using Single Engine mode

Notification indicates connection status to the ROGUE device; when connected, it displays the ROGUE device serial number

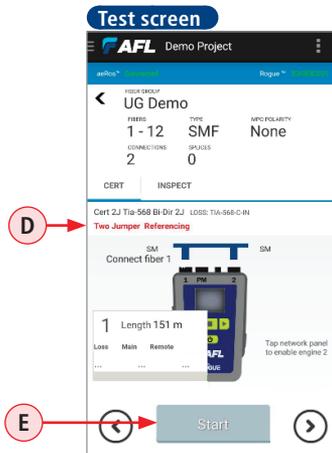
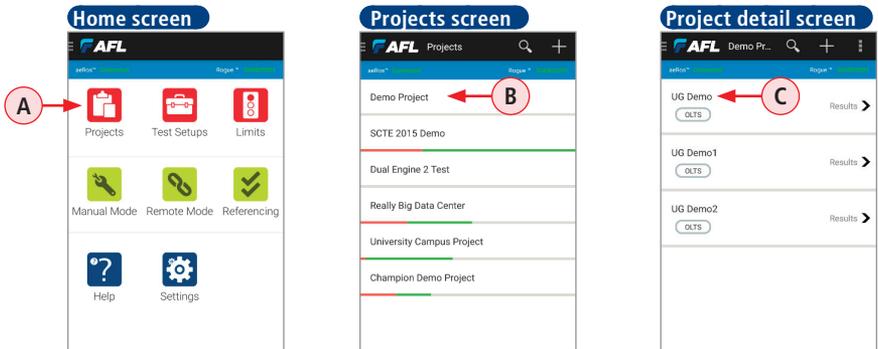
You may tap the network panel to enable/disable the Dual Engine mode

Help tips field: displays help messages

Main and Remote Testers

Main Tester Configuration

- On your smart device paired to the Main device, perform the following steps:
 - From the Home screen (or Main menu), tap Projects **A** to display Projects screen and see all projects in your Organization.
 - Select the desired Project and open it by tapping on its row, e.g. Demo Project **B**.
 - Then, tap on the desired Fiber Group, e.g. UG Demo **C**.
 - The next screen you see, is your Test screen. This screen displays various test parameters and requirements predefined for a Project in aeRos. At this point, the Main tester is ready.
 - Depending on the test requirements you may either proceed to referencing by tapping on Referencing label **D** or start testing by tapping on Start **E**.



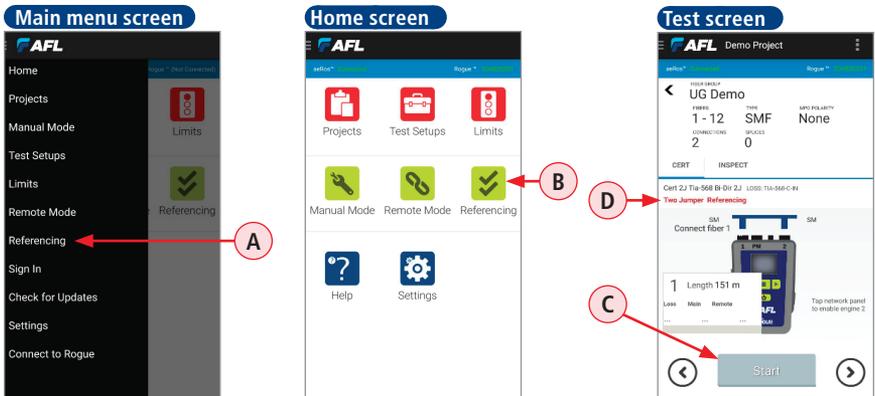
Auto Test — TURBO™ OLTS /CERT

Setting OLTS /CERT References

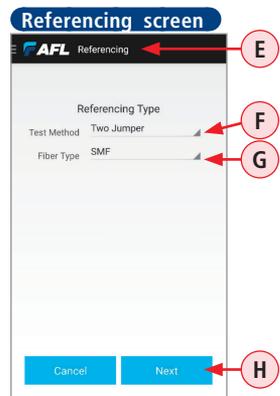
Setting references is recommended on a daily basis before testing and when changing test jumpers. There are several ways to access the Referencing mode:

- From Main menu, tap the Referencing option **(A)**.
- From the Home screen, tap the Referencing icon **(B)**.
- From Test screen, tap the Start **(C)** button.
- From Test screen, tap the Referencing label **(D)**.
In the example screen below: '2 Jumper Referencing' label **(D)**.

Note: If the Referencing label **(D)** is shown in **red and bold**, a valid reference is needed. If **black**, no reference needed.



- Once in the Referencing mode screen **(E)**, observe the Referencing method **(F)** and Fiber Type **(G)** that are already predefined for a Project in aeRos cloud. However, if needed, you may modify (assuming you have proper account and license) both parameters by tapping on the desired parameter and selecting a different Referencing Method or Fiber Type. There are several Referencing Methods to select from.
- Tap Next **(H)** and follow on-screen instructions/animations for guidance on proper connections and referencing steps.



See ["Example Procedure of Setting OLTS and ORL Reference"](#) on page 26 for a detailed description on how to perform referencing - example is provided for Two Jumper Referencing Method.

Setting OLTS /CERT References

Example Procedure of Setting OLTS and ORL Reference

Example below describes OLTS Referencing (2 Jumper Method) followed by ORL Referencing performed on a single-mode jumper for a Single Engine bi-directional testing.

OLTS Insertion Loss Reference - 2 Jumper Method

Insertion Loss referencing allows the user to reference the laser output for accurate loss measurement of a fiber link. OLTS referencing is performed on both, ROGUE Main and ROGUE Remote testers, located at a common site.

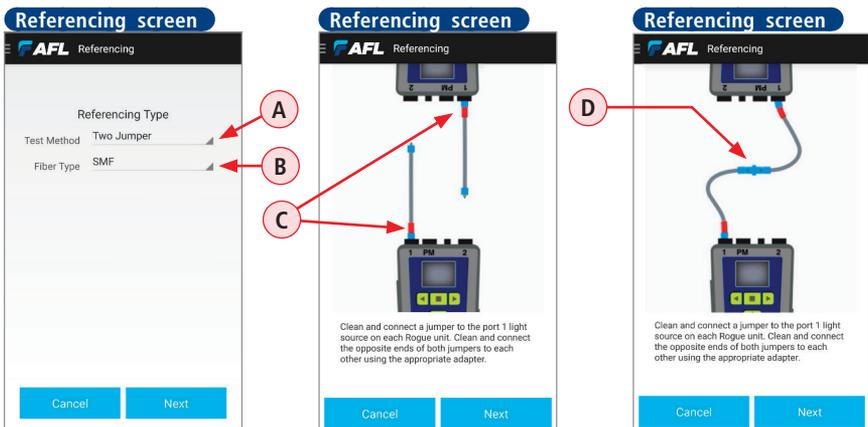
Important: Clean all fiber optic connectors and optical ports before performing test procedures described below!

On your smart device paired to the ROGUE Main device, perform the following:

- Access the Referencing screen.
- When in the Referencing screen, observe the Referencing method **(A)** and Fiber Type **(B)**, which are already predefined for a Project in aeRos. However, if needed, you may modify both parameters by tapping on the desired parameter and selecting a different Referencing method or Fiber Type.
- When done, tap Next.

Follow the on-screen animated instructions:

- Connect a reference jumper to the OLS port on each device **(C)**, ROGUE Main and Remote.
- Note that animation instructions show jumper end connected to the OLS test port on Main and Remote labeled with RED indicator warning the user: 'Do NOT Disturb this connection'.
- Clean and connect the opposite end of both reference jumpers to each other using the appropriate adapter **(D)**.



Setting OLTS /CERT References

- Tap Next.
- Wait for Main and Remote to establish a link and perform referencing measurements.
- When prompted, disconnect the reference jumpers at the adapter **(E)**.

Important! Do not Disconnect either jumper from the OLS test port. Disconnecting jumpers will invalidate the reference values.

- Tap Done.
- When the referencing results displayed **(F)**, observe the reference values - these are OLTS references at Main and Remote.
- If the reference values are not acceptable, tap Reference **(G)** to re-test.
- If the reference values within expected norms, you may proceed to ORL referencing by tapping Reference **(G)**. (If ORL testing is not required, you may proceed to OLTS testing by tapping Done **(H)**.)

Important! Do not disconnect either jumper from the OLS test port.

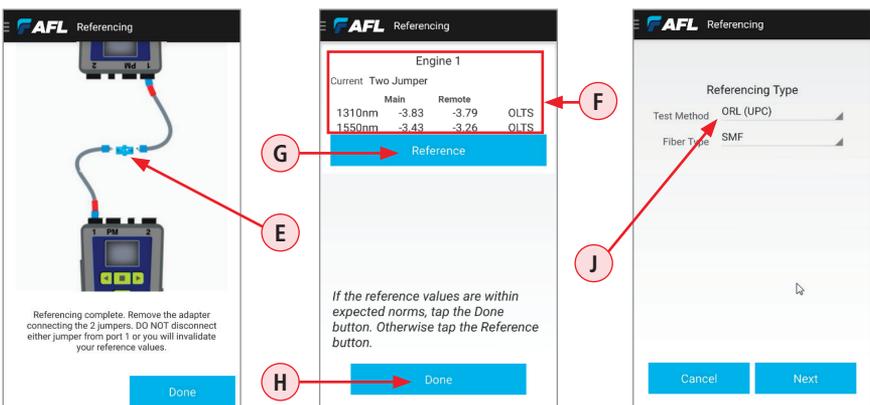
ORL Referencing - ORL (Not applicable for MM)

ORL referencing calibrates the upper and lower back-reflection limits. If you are performing bi-directional test, ORL referencing is required on both, ROGUE Main and ROGUE Remote testers.

Important: Clean all fiber optic connectors and optical ports before performing test procedures described below!

Important: Test jumpers must be SMF-28e or SMF-28e+. BIF jumpers must not be used or the ORL Min reference will not be able to be set or will be incorrect.

- Access the Referencing screen.
- Tap the Referencing Method and select one of the ORL referencing, ORL (APC) or ORL (UPC). In our example, the ORL (UPC) **(J)** method is selected.



Auto Test — TURBO™ OLTS /CERT

Setting OLTS /CERT References

- Tap Next.
- Use a dust cap to cover the connector on the reference jumper free end (K) to block ambient light.
- Tap Next.
- Wait for the ROGUE tester to perform measurements setting the upper ORL limit - ORL Max.
- When prompted, remove the dust cap.
- Tap Next.
- Terminate the reference jumper by slowly wrapping it 10 times around a mandrel (L).
- Tap Next.
- The ROGUE tester will perform measurements setting the lower ORL limit - ORL Min.
- Tap Next.
- When the referencing results displayed (M), observe the reference values - these are ORL Min and Max limits.
- If the reference values are not acceptable, tap Reference (N) to re-test.
- If the reference values within expected norms, you may proceed to OLTS and ORL testing by tapping Done (O).

Important! Do not disconnect either jumper from the test port. Transport the ROGUE Main and Remote tester to opposite ends of the link to be tested.

The figure consists of three screenshots of the AFL Referencing interface, illustrating the steps for setting OLTS /CERT references.

Step 1: The interface shows a "Referencing" screen with a "Cancel" button and a "Next" button. A red arrow labeled 'K' points to a dust cap being placed over a connector. Below the image, the text reads: "Step 1: If you are testing for loss and have not performed loss referencing, click 'Cancel' and perform loss referencing first. Be sure to leave the single mode reference jumper attached to PORT 1. If you are performing ORL referencing only, clean and connect a single mode".

Step 3: The interface shows the "Referencing" screen with a "Cancel" button and a "Next" button. A red arrow labeled 'L' points to a reference jumper being wrapped around a mandrel. Below the image, the text reads: "Step 3: Terminate the single mode reference jumper by slowly wrapping it around the supplied mandrel about 10 times".

Results: The interface shows the "Referencing" screen with a "Reference" button and a "Done" button. A red box highlights the results table. A red arrow labeled 'M' points to the table, and a red arrow labeled 'N' points to the "Reference" button. A red arrow labeled 'O' points to the "Done" button. Below the table, the text reads: "If the reference values are within expected norms, tap the Done button. Otherwise tap the Reference button."

Engine 1			
Current ORL (UPC)	Main	Remote	
1310nm	-58.50	-21.57	ORLMin ORLMax
1550nm	-59.76	-21.02	ORLMin ORLMax

Auto Test — TURBO™ OLTS /CERT

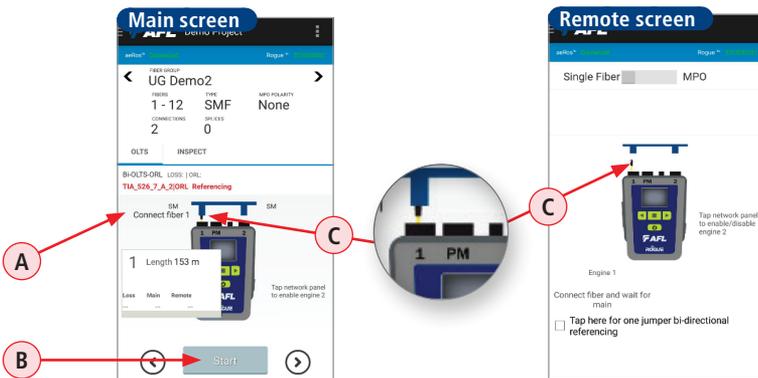
Performing TURBO Auto Tests

Use the following procedures on both ROGUE testers to simultaneously perform bi-directional insertion and return loss tests on a single fiber optic link. For the following setup procedure, two ROGUE testers will be differentiated as ROGUE Main and ROGUE Remote.

Single Fiber Bi-directional OLTS and ORL Testing

Tips:

- Clean all fiber optic connectors before performing test procedures described below.
- Setting references is recommended on a daily basis before testing and when changing test jumpers. If references haven't been set for over 24 hours, you will be prompted to set references. Once OLTS | ORL references have been set, you may proceed to testing.
- Transport Main and Remote to opposite ends of the link to be tested.
- Follow animated instructions displayed on your smart device paired to ROGUE device
- Start testing the first fiber in the fiber group; connect each ROGUE device to the link to be tested - Fiber #1 **A**.
- Press Start **B** on a smart device paired to ROGUE Main.
- The ROGUE Main attempts to establish a data link with the ROGUE Remote.
- When a link is established, animation on both smart devices paired to ROGUE Main and ROGUE Remote will display the fiber from Engine 1 as 'connected' **C** to OLS port.
- Once connected, testers exchange reference information and (depending on the assigned Test Setups) measure the following:
 - Link length
 - Insertion loss from Main to unit Remote
 - Insertion loss from Remote to Main
 - Return loss from Main to unit Remote
 - Return loss from Remote to Main

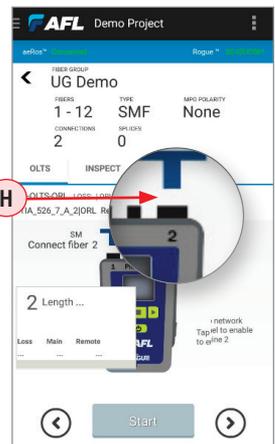
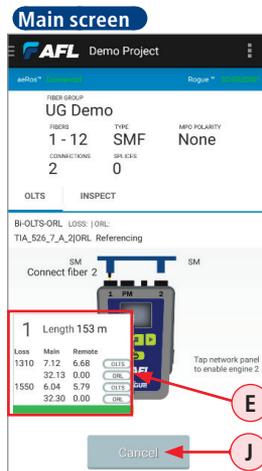
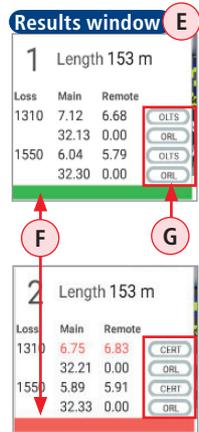


Auto Test — TURBO™ OLTS /CERT

Performing TURBO Auto Tests

On your smart device paired to ROGUE Main device:

- While testing in progress, you should see a progress bar displayed in the results window **(D)**
 - When testing is complete, you will hear an audible clicking sound indicating that measurements are done. Following an audible click, you should see test results displayed in the results window **(E)**.
 - Observe the displayed test results: link length, insertion and return loss at Main and Remote at both wavelengths.
 - Color-coder bar **(F)** at the bottom of the Results window indicates Pass (Green)/Fail (Red) results
 - Label **(G)** next to each result indicates test type (OLTS, ORL, CERT)
 - Failed test results values are displayed in RED
 - Disconnect test jumpers from the fiber under test - Fiber 1.
 - Notice how animation shows a fiber being disconnected from the OLS port **(H)** and prompts you to connect to the next fiber -Fiber 2.
 - Notice that Fiber Number **(J)** is auto-increments to the next number.
 - Connect the ROGUE Main and Remote testers to the next fiber to be tested - Fiber 2.
 - Once the Main and Remote testers are connected to Fiber 2, testing starts automatically.
 - You may proceed to all fiber in the Fiber Group, or stop testing by pressing Cancel **(J)**.
- Test results are automatically uploaded to aeROS cloud in real time.



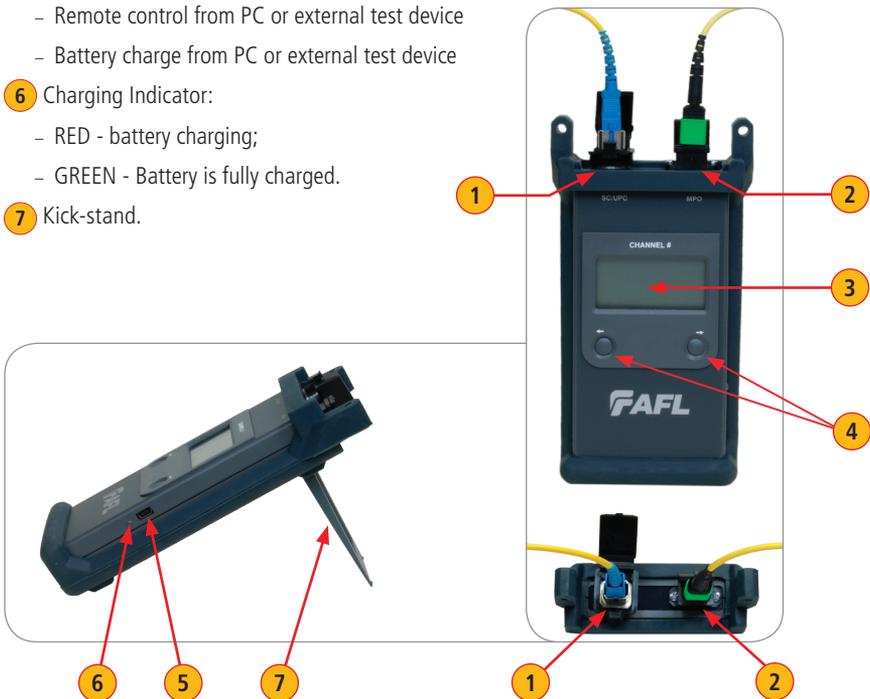
Auto Test — Multi-fiber MPO

AFL's ROGUE test solution equipped with the TURBO™ app and Multi-fiber switch accessory enables users to test multi-fiber cables with MTP/MPO connectors accurately and quickly.

The Multi-fiber switch allows the user to utilize a single piece of test equipment to seamlessly cycle through all of the fibers in a connector regardless of polarity without having to disconnect and reconnect your test equipment making the testing of your network more efficient.

Multi-fiber Switch Accessory Overview

- 1 SC Port.
- 2 MPO Port.
- 3 LCD Display.
- 4 ← → Arrow Keys — use to decrement/increment a fiber number from the SC connector port to the individual fibers within the MPO connector.
- 5 USB Data & Charging Port supports several functions:
 - Remote control from PC or external test device
 - Battery charge from PC or external test device
- 6 Charging Indicator:
 - RED - battery charging;
 - GREEN - Battery is fully charged.
- 7 Kick-stand.



Auto Test — Multi-fiber MPO

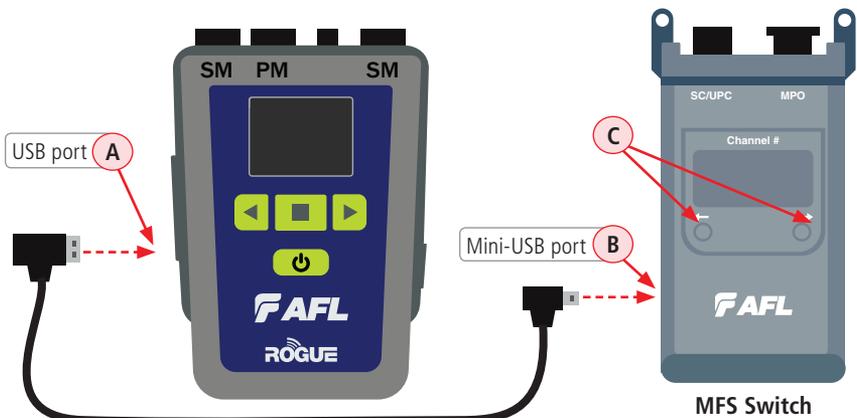
Equipment Setup

Two ROGUE testers are required to run MPO Auto Tests. One tester will need to operate as 'Main' and another as 'Remote'. Refer to section "[ROGUE Main and Remote Testers](#)" on page 23.

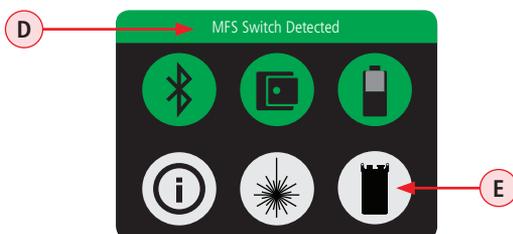
Important! The MFS switch is controlled by the ROGUE carrier. In order to activate and operate the MFS switch accessory, connect it to the ROGUE carrier via USB ports on both devices.

Perform the following steps on both, Main and Remote test sets

- Using the USB to mini-USB cable included with your MFS switch, connect the MFS switch accessory to the ROGUE carrier.
 - Plug the USB connector into the USB port **(A)** on the ROGUE carrier.
 - Plug the mini-USB connector into the mini-USB port **(B)** on the MFS switch.
- Press either right or left **← →** arrow key **(C)** on the MFS switch to activate it.



- **On the ROGUE device:** Notice how the ROGUE display changes to indicate that MFS switch is connected:
 - The 'MFS Switch Detected' **(D)** notification is briefly displayed
 - The MFS switch icon **(E)** appears on the display



Auto Test — Multi-fiber MPO

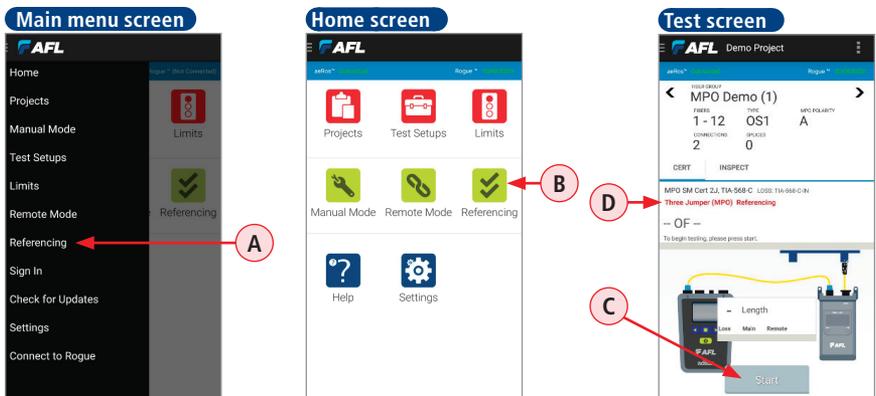
Setting MPO References

Setting references is recommended on a daily basis before testing and when changing test jumpers. There are several ways to access the Referencing mode within Turbo app:

- From Main menu, tap the Referencing option **(A)**.
- From the Home screen, tap the Referencing icon **(B)**.
- From Test screen, tap the Start **(C)** button.
- From Test screen, tap the Referencing label **(D)**.

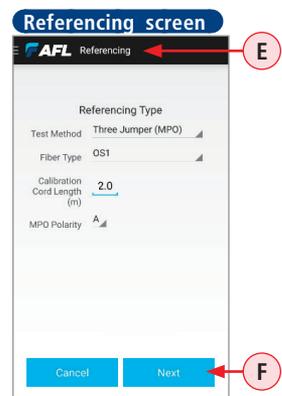
In the example screen below: 'Three Jumper (MPO) Referencing' label **(D)**.

Note: If the Referencing label **(D)** is shown in **red and bold**, a valid reference is needed. If **black**, no reference needed.



- Once in the Referencing mode screen **(E)**, observe the Referencing parameters that are already predefined for a Project in aeROS cloud. However, if needed, you may modify (assuming you have proper account and license) parameters by tapping on the desired parameter and selecting a different option.
- Tap Next **(F)** and follow on-screen instructions/animations for guidance on proper connections and referencing steps.

See ["Example Procedure of Setting Three Jumper MPO Reference"](#) on page 34 for a detailed description on how to perform referencing.



Auto Test — Multi-fiber MPO

Example Procedure of Setting Three Jumper MPO Reference

Insertion Loss referencing allows the user to reference the laser output for accurate loss measurement of a fiber link. Referencing is performed on both, ROGUE Main and ROGUE Remote testers, located at a common site.

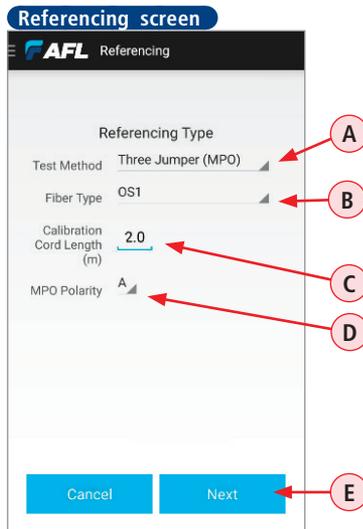
Important: Clean all fiber optic connectors and optical ports before performing test procedures described below!

On a smart device paired to the ROGUE Main device, perform the following:

- Within Turbo app, access the Referencing screen.
- When in the Referencing screen, observe referencing parameters predefined for a Project in aeRos.
 - Referencing Method **(A)**,
 - Fiber Type **(B)**,
 - Calibration Cord Length **(C)**,
 - MPO Polarity **(D)**,

If needed, you may modify parameters/values by tapping on the desired parameter/value and selecting a different Referencing Method, Fiber Type, MPO Polarity, or change the Cord Length value.

- When done, tap Next **(E)**.

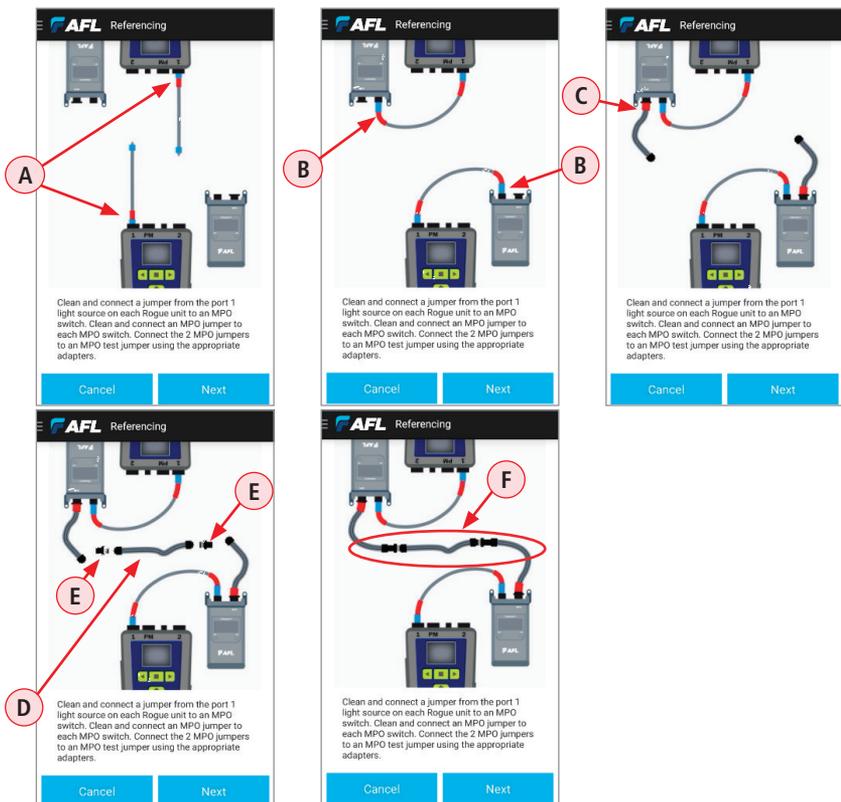


Auto Test — Multi-fiber MPO

Example Procedure of Setting Three Jumper MPO Reference

Following the on-screen animated instructions perform the referencing set-up steps on both, Main and Remote test sets:

- Establish connection between the ROGUE and MFS switch. In our example below, the connection from the ROGUE carrier to the MFS switch is a standard SC connection.
 - Plug one end of the supplied SC-SC jumper into Engine 1 **(A)** on the ROGUE device (SM1 port on SM models or MM1 port on MM or Quad models).
 - Plug another end of the supplied SC-SC jumper into SC/UPC port **(B)** on the MFS switch.
 - **Important! !** Note that animation shows both jumper ends connected to the ROGUE and MFS switch labeled with RED indicator warning the user: 'Do NOT Disturb this connection'.
- Using the supplied MPO test jumper, connect it to the MPO port **(C)** on the MFS switch.
 - **Important! !** Do not disconnect either jumper from the MPO port.
- Using the supplied MPO reference jumper **(D)** and appropriate adapters **(E)**, connect free ends of the MPO test jumper **(F)**.



Auto Test — Multi-fiber MPO

Example Procedure of Setting Three Jumper MPO Reference

On your smart device - Main:

- Tap Next **(G)**.

On a smart device - Remote:

- Using 'Single Fiber/ MPO' slider **(H)**, make sure that MPO option is selected.
- Tap Begin **(J)**.
- Both MFS switches will show channel #1 on the display, and then begin measuring.
- Each MFS switch will cycle through each channel to measure and set reference values for all 12 channels.
- When referencing for all 12 channels is complete, follow on-screen instructions to disconnect the reference jumper **(K)**.

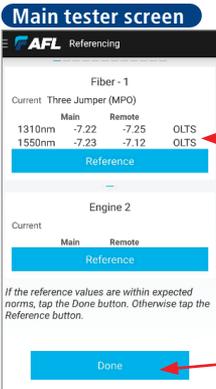
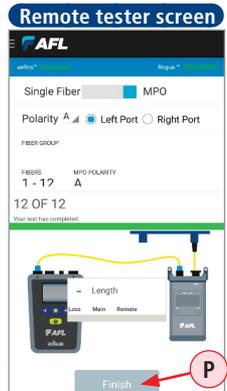
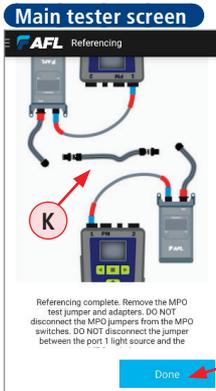
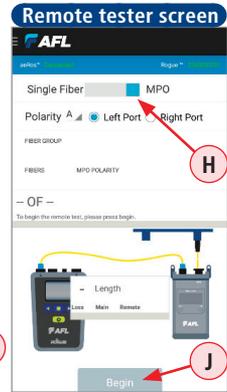
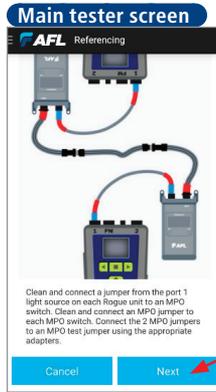
Important! ! Do not disconnect any test jumpers from either MFS switch or ROGUE device. Note that animation shows both jumper ends connected to the ROGUE and MFS switch labeled with RED indicator warning the user: 'Do NOT Disturb this connection'.

On a smart device - Main:

- Tap Done **(L)**.
- When results screen is displayed, observe referencing results **(M)**.
- If acceptable, tap Done **(N)**.

On a smart device - Remote:

- Tap Finish **(P)**.
- Transport the Main and Remote test sets to opposite ends of the link to be tested.



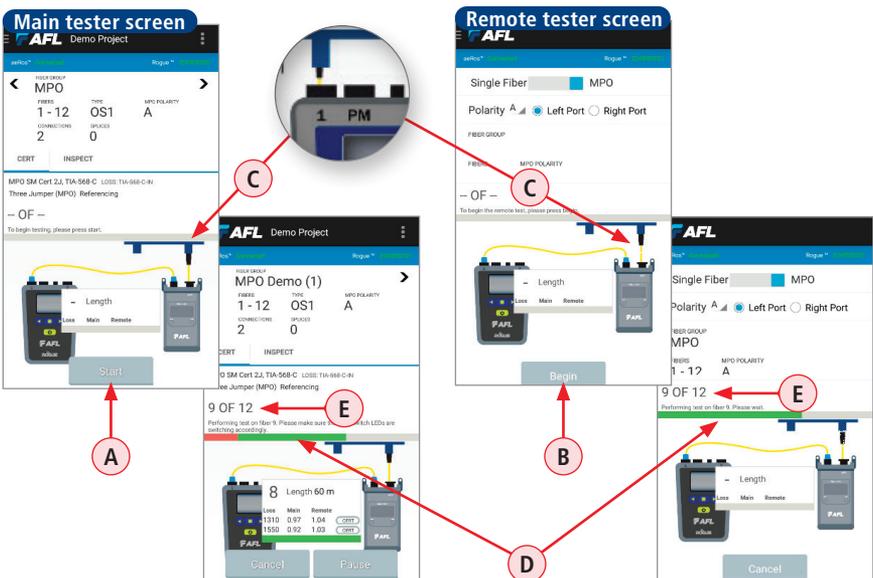
Auto Test — Multi-fiber MPO

Performing MPO Auto Tests

Use the following procedures on both ROGUE testers to perform insertion loss tests on a multi-fiber link with MPO connectors. For the following setup procedure, two ROGUE testers will be differentiated as ROGUE Main and ROGUE Remote.

Tips:

- Clean all fiber optic connectors before performing test procedures described below.
- Setting references is recommended on a daily basis before testing and when changing test jumpers. If references haven't been set for over 24 hours, you will be prompted to set references. Once MPO references have been set, you may proceed to testing.
- Transport Main and Remote testers to opposite ends of the link to be tested.
- Start testing the first fiber in the fiber group, connect each MPO to the link to be tested.
- Tap Start **(A)** on a smart device paired to ROGUE Main.
- Tap Begin **(B)** on a smart device paired to ROGUE Remote.
- The ROGUE Main attempts to establish a data link with the ROGUE Remote.
- When a link is established, animation on both smart devices paired to ROGUE Main and ROGUE Remote will display the fiber from Engine 1 as 'connected' **(C)**.
- Once connected, each MFS switch will cycle through each channel to measure insertion loss for all 12 channels.
- While test in progress, you should see a progress bar **(D)** and the currently tested channel number **(E)** displayed above animation on both testers.

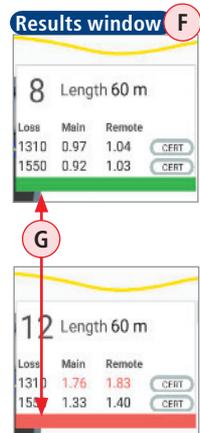


Auto Test — Multi-fiber MPO

Performing MPO Auto Tests

- When testing of each channel is complete, you will hear an audible clicking sound indicating that measurements are done.
- **On your smart device paired to ROGUE Main device:** Following an audible click, you should see test results displayed in the results window **F**.
 - Observe the displayed test results: link length, insertion loss at Main and Remote at both wavelengths.
 - Color-coded bar **G** at the bottom of the Results window indicates Pass (Green)/Fail (Red) results
 - Failed test results values are displayed in RED
- If results are acceptable, tap Finish **H**.
- Disconnect test jumpers from the fiber under test.
- Move testers to the next fiber in the Fiber Group.

Test results are automatically uploaded to aeRos cloud in real time.



Main tester screen



Remote tester screen



H

Auto Test — Inspection

Paired with AFL's FOCIS Flex Fiber Optic Connector Inspection System, AFL's TURBO™ app features a complete fiber inspection solution.

FOCIS Flex auto-focuses, captures and centers the inspected fiber end-face image, applies pass/fail rules, displays image and pass/fail results, and wirelessly transfers image and results to a paired smart device as well as to aeRos cloud.

FOCIS Flex Brief Overview

For detailed instructions on how to operate FOCIS Flex, please refer to the FOCIS Flex User's Guide (available on www.AFLglobal.com) or the FOCIS Flex Quick Reference Guide (provided with your FOCIS Flex device).

Controls

- 1 Power button.
- 2 Power On/Off indicator (GREEN when On).
- 3 Image Capture button.
- 4 F1 soft key (typically Back function).
- 5 F2 soft key (typically Select function).
- 6 Navigation and Edit functional keys.

Display (2-inch Color LCD [320 x 240])

- 7 Screen title.
- 8 Battery status icon.
- 9 Image and information display area.
- 10 F1 and F2 soft key labels area.

Interfaces

- 11 Optical inspection port.
- 12 Adapter tip.
- 13 Dust cover.
- 14 Micro-USB port.
- 15 6 VDC input jack.
- 16 Charging indicator.



Inspecting Fibers with FOCIS Flex and TURBO™ App

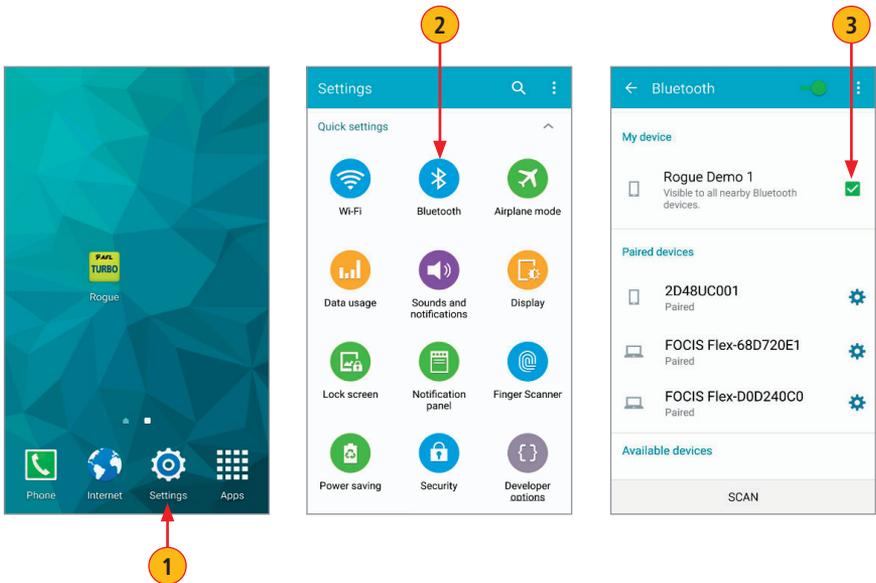
Pairing FOCIS Flex with a Smart Device

To transfer images from the FOCIS Flex and display the results on a smart device equipped with the TURBO app as well as transfer results to the aeROS cloud, you need to pair your FOCIS Flex device with a smart device.

Configuring Bluetooth on a Smart Device

Depending on how your smart device is configured, perform the following steps:

- 1 Navigate to the Settings menu.
- 2 Once in the Settings screen, select Bluetooth Settings.
- 3 In the Bluetooth Settings screen, locate your smart device and make it visible to all nearby Bluetooth devices.



Once your smart device is ready, proceed to configuring Bluetooth on your FOCIS Flex device.

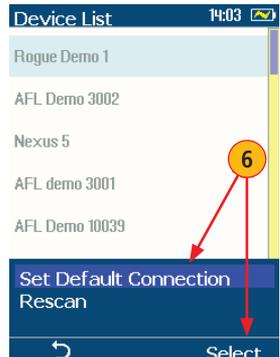
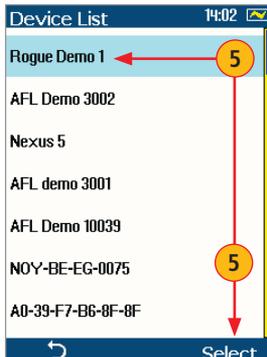
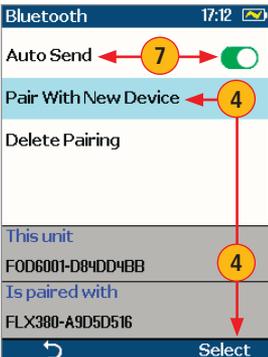
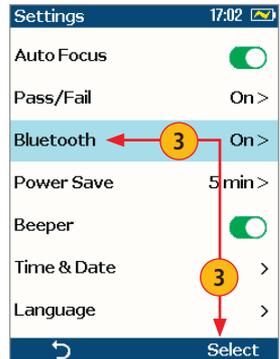
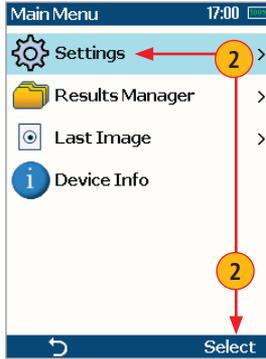
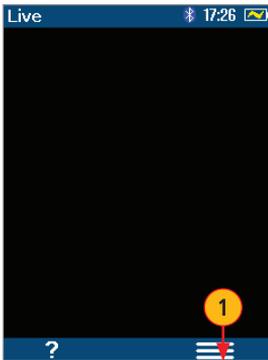
Inspecting Fibers with FOCIS Flex and TURBO™ App

Configuring Bluetooth on the FOCIS Flex

Bluetooth menu is accessed from the Live Image mode > Main Menu > Settings.

- 1 Pressing the Menu key will display the Main Menu.
- 2 From the Main Menu, navigate/highlight the Settings option and press Select.
- 3 When in the Setting menu, Navigate to Bluetooth and press Select.
- 4 From the Bluetooth screen, highlight Pair With New Device. Press Select to scan for all visible nearby Bluetooth devices. An hourglass is displayed while FOCIS Flex scans and builds a list of available devices. The hourglass disappears when scanning is complete.
- 5 Once a list of available devices is displayed, use Up/Down $\blacktriangle/\blacktriangledown$ arrow keys to select the desired device to pair with. Press Select.
- 6 Next, use Up/Down $\blacktriangle/\blacktriangledown$ arrow keys to highlight the Set Default Connection, and then press Select to complete pairing.
- 7 When back in the Bluetooth screen, make sure the Auto Send feature is enabled:
 - Highlight Auto Send. Use Left/Right $\blacktriangleleft/\blacktriangleright$ arrow keys to enable/disable the Auto Send option.

Now your FOCIS Flex is paired with a smart device, which operates in the TURBO app.

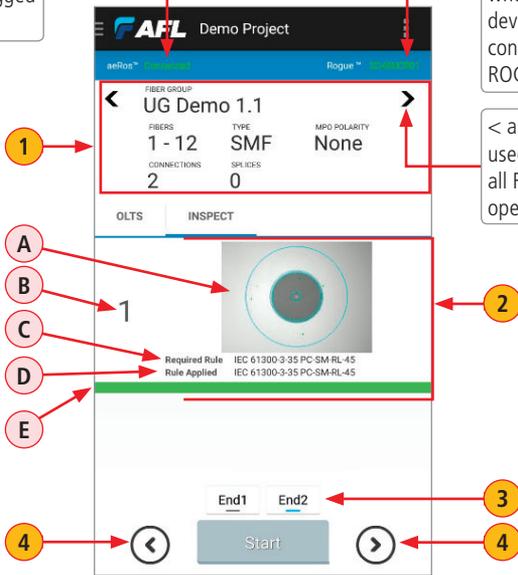


Inspecting Fibers with FOCIS Flex and TURBO™ App

TURBO app — Inspection Mode User Interface Overview

aeRos connection status: indicates whether you are logged in to aeRos or not

ROGUE connection status: indicates whether your smart device is paired/connected to the ROGUE device or not



< and > arrows may be used to scroll through all Fiber Groups in the open Project

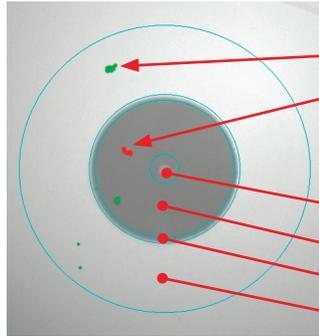
Ref	Feature	Description
	Project Info	This field displays details of the currently selected Project: Fiber Group name, fiber type, number of fibers/connections/splices, MPO polarity.
1	Image Viewer	Displays various information: <ul style="list-style-type: none"> • A Transferred from FOCIS Flex, captured and analyzed fiber image. • B Number of the fiber that is currently being inspected. • C Rule Required by Test Setup assigned to a Fiber Group in aeRos. • D Rule Applied during image analysis performed by FOCIS Flex. • E Color-coder bar at the bottom of the Image Viewer window indicates Pass (Green) or Fail (Red).
3	Cable End Tabs	The user may save captured images of both ends of a fiber cable by alternating between End1 or End2 tabs. Tapping on the desired tab will make it currently active.
4	Left/Right Arrows	These arrows allow the user to increase/decrease fiber number.

Inspecting Fibers with FOCIS Flex and TURBO™ App

IEC Pass/Fail Analysis

IEC 61300-3-35 defines connector inspection pass/fail criteria, which depends on the several factors as follows

- Fiber type (SMF or MMF)
- Connector end face regions
 - A region: Core
 - B region: Cladding
 - C region: Adhesive (between cladding and ferrule)
 - D region: Physical contact area
- Type of end face flaw:
 - Scratches
 - Defects (contamination, particles, chips)
- Size of flaw



Defect
Passing
Failing

Region
A: Core
B: Cladding
C: Adhesive
D: Contact

Example IEC Rule

Shown below is the display when the IEC rule for single-mode PC connector with return loss ≥ 45 dB is selected. The table identifies the number of scratches or defects of a certain size, which may be allowed in each of the core, cladding, and contact regions.

Region	Scratch	Defect
A: Core	>0 μm : 0 No scratches >0 μm allowed	>0 μm : 0 No defects >0 μm allowed
B: Cladding	>3 μm : 0 No scratches >3 μm allowed	2-5 μm : 5 Up to 5 defects 2-5 μm diameter allowed
		>5 μm : 0 No defects >3 μm allowed
D: Contact	Blank No limitations on scratches	0 $\geq 10 \mu\text{m}$ No defects $\geq 10 \mu\text{m}$ allowed

IEC Rules		10:45	
Rule		IEC 61300-3-35	
		PC, SM, ORL ≥ 45 dB	
A B C	///	•••	
A	>0 μm : 0	>0 μm : 0	
B		2-5 μm : 5	
	>3 μm : 0	>5 μm : 0	
D		$\geq 10 \mu\text{m}$: 0	

Inspecting Fibers with FOCIS Flex and TURBO™ App

Inspecting Fibers

Important: Always clean fiber optic connectors and optical ports before connection and testing. Keeping fiber optic end-faces clean is extremely important and one of the most critical requirements for ensuring accurate measurements and operation. Damaged or contaminated end-faces have a direct impact on optical performance.

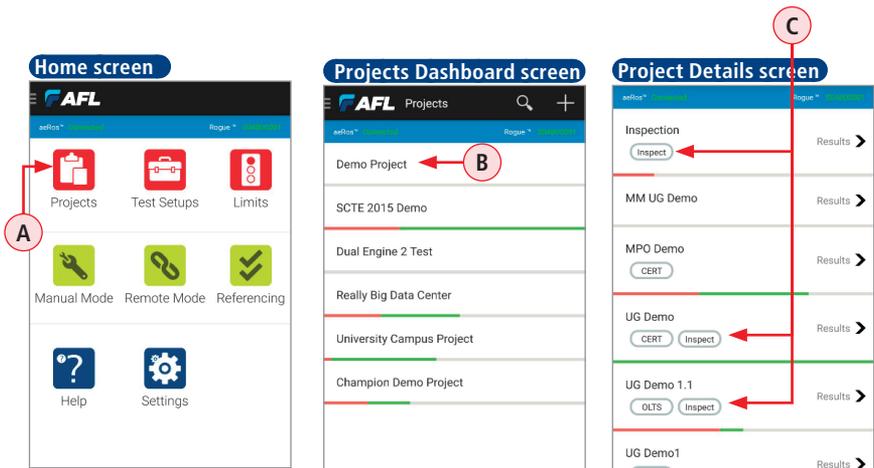
Important: Inspect optical connectors after cleaning to ensure cleaning was successful and to verify the end-face is not damaged (cracked, pitted).

The following instructions assume that:

- FOCIS Flex is configured with the appropriate adapter tip installed.
- FOCIS Flex is paired with a smart device, which operates in the TURBO app. Refer to section ["Pairing FOCIS Flex with a Smart Device" on page 40](#).
- FOCIS Flex Bluetooth Auto Sent feature is turned ON.

On your Smart Device:

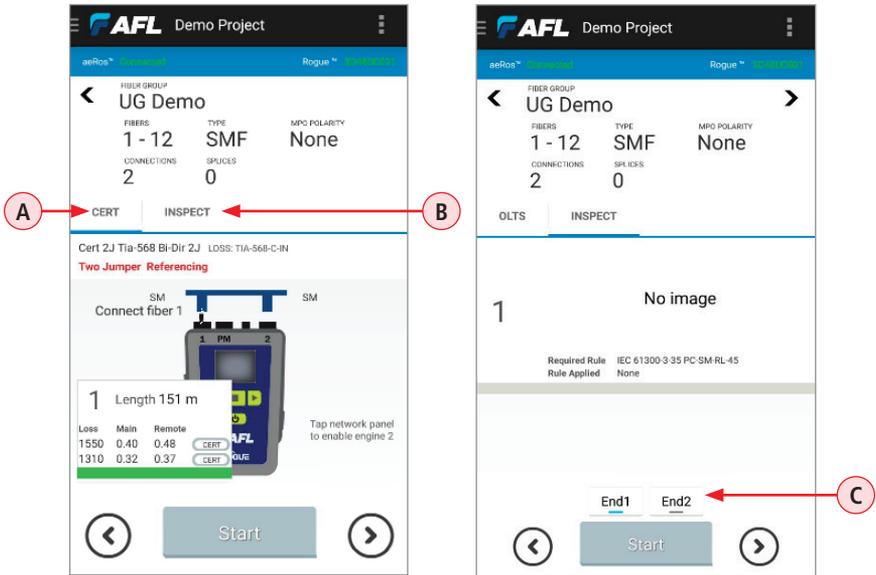
1. Launch the TURBO app.
2. From the Home screen (or Main menu), tap Projects **A** to display the Projects screen and see all projects in your Organization.
3. Select the desired Project and open it by tapping on its row, e.g. Demo Project **B**.
4. Next screen will display a list of Fiber Groups in the currently open project. Notice how the Fiber Groups that require Inspection are indicated by the 'Inspect' label **C**.



Inspecting Fibers with FOCIS Flex and TURBO™ App

Inspecting Fibers

5. Tap on the desired Fiber Group that requires Inspection.
6. The next screen you see, is your Test screen. By default it opens in the TURBO test screen.
 - There are two tabs right below Project Info field:
 - Either OLTS or CERT tab **A** (this depends on a Test Setup applied to a Fiber Group).
 - Inspection tab **B**.
 - Tap on the Inspection tab to display the Inspection mode screen. (Refer to section "[TURBO app — Inspection Mode User Interface Overview](#)" on page 42).
 - Once in the Inspection mode, select the desired fiber end (END1 or END2) **C**.
 - Wait for FOCIS Flex.



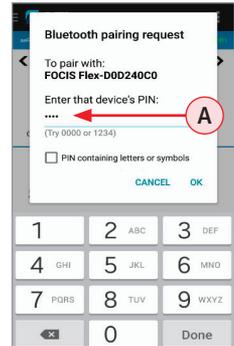
FOCIS Flex:

7. If testing an optical fiber connector, slide the ferrule of the optical fiber into the adapter tip installed on the FOCIS Flex inspection port. Use caution not to contaminate the end-face of the fiber connector.
8. If testing an optical fiber connector mounted in a bulkhead adapter, slide the adapter tip into the bulkhead adapter.
9. You will see a Live fiber-end image appears on the FOCIS Flex display.
10. Capture the displayed image by pressing the Capture button. (Refer to section "[FOCIS Flex Brief Overview](#)" on page 39).

Inspecting Fibers with FOCIS Flex and TURBO™ App

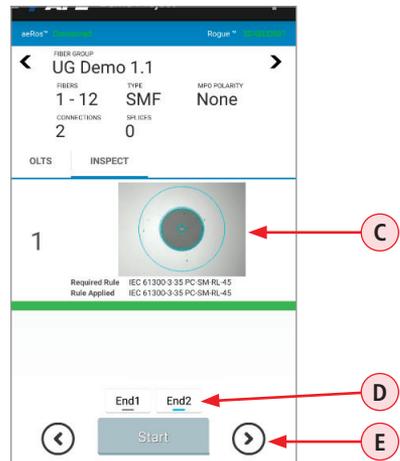
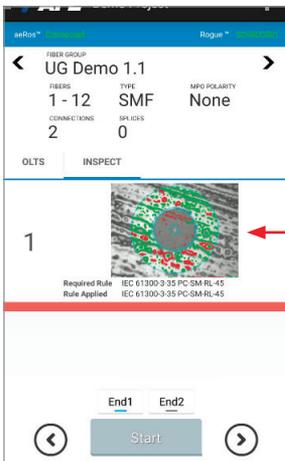
Inspecting Fiber End-faces

- Once captured, the fiber end-face image gets analyzed by the FOCIS Flex.
- Once analysis is done, inspection results will appear on the FOCIS Flex display. Simultaneously, FOCIS Flex will be sending results to the smart device paired to it.
 - The first time you connect to the TURBO app and depending on your smart device, you may be asked for a pin for your device.
 - For FOCIS Flex the default pin is 0000.
 - Enter pin **A**, then tap OK.
 - Now your smart device will accept images from FOCIS Flex.



Smart Device:

- Once image is transferred, you will get an audio indication and see inspection results displayed in the results window.
 - Observe the displayed results: a static image of the inspected fiber end-face and Pass/Fail status.
 - If the displayed image - **Failing result B**:
 - Clean the failing connector.
 - Re-inspect by repeating steps 7 - 10.
 - If the displayed image - **Passing result C**, you may do one of the following:
 - Proceed to inspection of another end for a cable by tapping End2 tab **D**.
 - Proceed to inspection of the next fiber in the Fiber Group by tapping > arrow **E**.
- Test results are automatically uploaded to aeRos cloud in real time.



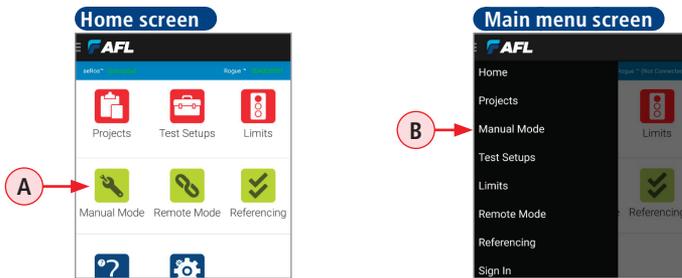
Testing in Manual Mode

Available Modes

Manual Modes do not require the user to create a Project prior to testing. These modes are intended for performing verification or troubleshooting tests.

There are two ways to access the Manual Mode:

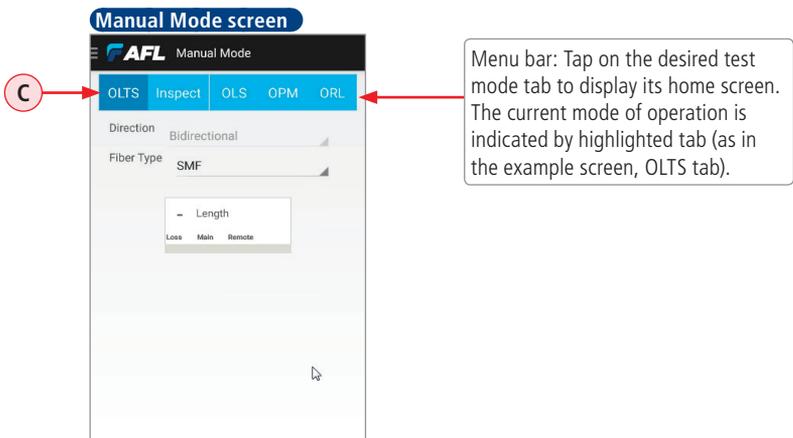
- From the Home screen by touching the Manual Mode icon **(A)**.
- From the Main menu by selecting the Manual Mode option **(B)**.



Once in the Manual Mode screen, you'll see five manual modes to select from:

- **OLTS** mode - used for measuring bi-directional Insertion Loss
- **Inspect** mode - used for inspecting fiber optic end-faces
- **OLS** mode - used for performing Optical Light Source functions
- **OPM** mode - used for measuring Optical Power
- **ORL** mode - used for measuring Optical Return Loss (Not applicable for MM)

You may select the desired mode by tapping its tab from the top menu **(C)**.



Testing in Manual Mode

OLTS Mode - Measuring Bi-directional Insertion Loss

In this User's Guide, a set of units is referred to as 'ROGUE tester' consists of the following items:

- ROGUE Carrier equipped with TURBO™ OLTS/CERT Module
- User's smart device equipped with TURBO™ OLTS/CERT app
- Both devices should be paired/connected via Bluetooth

Two ROGUE testers are required to perform bi-directional insertion loss tests. One tester will need to operate as 'Main' and another as 'Remote'.

- Pair/connect one ROGUE device to one smart device and another ROGUE device to another smart device. See "[Bluetooth Pairing – Connecting to a ROGUE™ Device](#)" on page 15.
- Designate which tester will operate as Main and another as Remote.

Remote Tester

On a smart device paired to the Remote device perform the following:

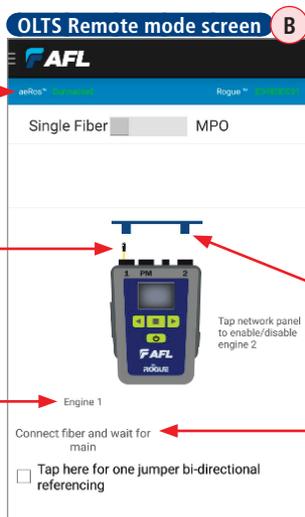
- From either Home screen or Main menu, touch the 'Remote Mode' option (A) - this will set your paired ROGUE device to operate as Remote tester. You'll see the Remote mode screen similar to the example screen (B)
- Wait for the Main tester.



This notification indicates connection status to the aeRos cloud: 'Not connected'

Animation indicates test port that you need to use for referencing

Indicates that you are testing using Single Engine mode



This notification indicates connection status to the ROGUE device. When connected, displays the ROGUE device serial number.

You may tap the network panel to enable/disable the Dual Engine mode

Help tips field: displays help messages

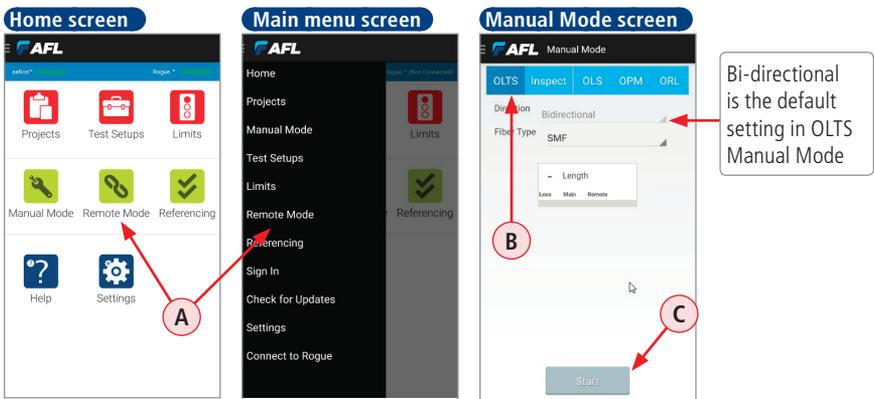
Testing in Manual Mode

OLTS Manual Mode- Measuring Bi-directional Insertion Loss

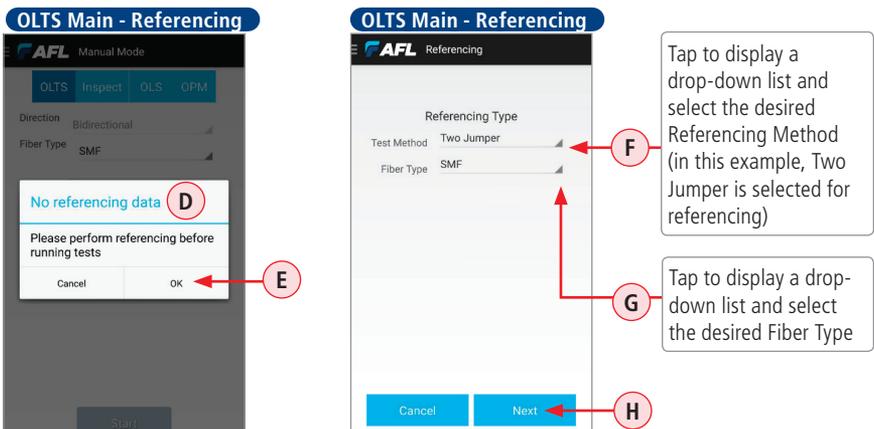
Main Tester

On a smart device paired to the Remote device perform the following:

- From either Home screen or Main menu, select the Manual Mode **(A)**.
- If the Manual Mode opens in any other test mode, touch the OLTS tab **(B)** to display the OLTS mode screen.



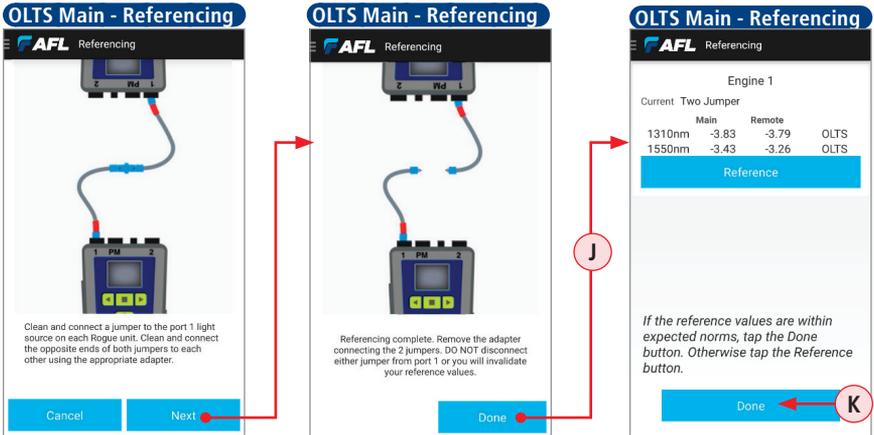
- On entry to the OLTS mode, tap Start **(C)**. If no reference data or the reference hasn't been set for over 24 hours, you will be suggested to reference; you'll message similar to **(D)**.
- Tap OK **(E)** to start referencing.
- In the Referencing screen, select the desired Referencing Method **(F)** and Fiber Type **(G)**.
- Click Next **(H)** to proceed.



Testing in Manual Mode

OLTS Manual Mode - Measuring Bi-directional Insertion Loss

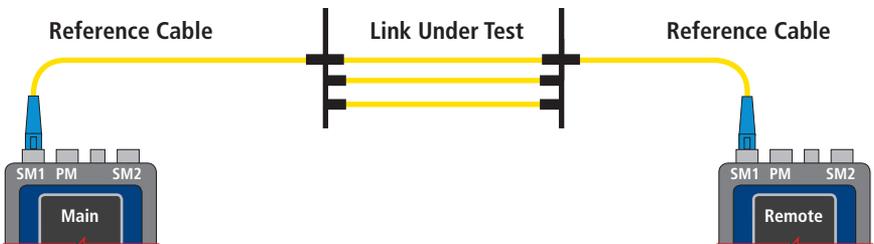
- Follow on-screen instructions to perform all steps, required for the selected referencing method. In our example below, Two Jumper method is shown.



- When done, touch Done **J** to display Reference results screen.
- Review reference values, if they are within expected norms, tap Done **K**.

Important! Once the references have been set, do not disconnect transmit jumpers from the Main and Remote device transmit ports!

- Transport Main and Remote testers to opposite ends of the link to be tested.
- Connect each tester to the link under test.



- Review test results displayed on the Main smart device screen.

Note: The OLTS manual mode is used to perform diagnostic and evaluation tests associated with fiber optic transmission systems.

Test Results Display:
 - Link Length
 - Loss at Main and Remote



Testing in Manual Mode

Manual Inspection Mode

Manual Inspection Mode do not require the user to create a Project prior to testing. This mode may be used to perform diagnostic fiber end-faces inspection. However, if needed thousands of inspection results may be saved on in the FOCIS Flex internally.

Paired with AFL's FOCIS Flex Fiber Optic Connector Inspection System, AFL's TURBO™ app features a complete fiber inspection solution.

FOCIS Flex auto-focuses, captures and centers the inspected fiber end-face image, applies pass/fail rules, displays image and pass/fail results, and wirelessly transfers image and results to a paired smart device. For details see section "[FOCIS Flex Brief Overview](#)" on [page 39](#).

Important: Always clean fiber optic connectors and optical ports before connection and testing. Keeping fiber optic end-faces clean is extremely important and one of the most critical requirements for ensuring accurate measurements and operation. Damaged or contaminated end-faces have a direct impact on optical performance.

Important: Inspect optical connectors after cleaning to ensure cleaning was successful and to verify the end-face is not damaged (cracked, pitted).

The following instructions assume that:

- FOCIS Flex is configured with the appropriate adapter tip installed.
- FOCIS Flex is paired with a smart device, which operates in the TURBO app. Refer to section "[Pairing FOCIS Flex with a Smart Device](#)" on [page 40](#).
- FOCIS Flex Bluetooth Auto Sent feature is turned ON.

To Inspect Fibers:

On your Smart Device:

1. Launch the TURBO app.
2. Enable the Manual Inspection Mode.

FOCIS Flex:

3. If testing an optical fiber connector, slide the ferrule of the optical fiber into the adapter tip installed on the FOCIS Flex inspection port. Use caution not to contaminate the end-face of the fiber connector.
4. If testing an optical fiber connector mounted in a bulkhead adapter, slide the adapter tip into the bulkhead adapter.
5. You will see a Live fiber-end image appears on the FOCIS Flex display.
6. Capture the displayed image by pressing the Capture button. (Refer to section "[FOCIS Flex Brief Overview](#)" on [page 39](#)).
7. Once captured, the fiber end-face image gets analyzed by the FOCIS Flex.
8. Once analysis is done, inspection results will appear on the FOCIS Flex display.

Testing in Manual Mode

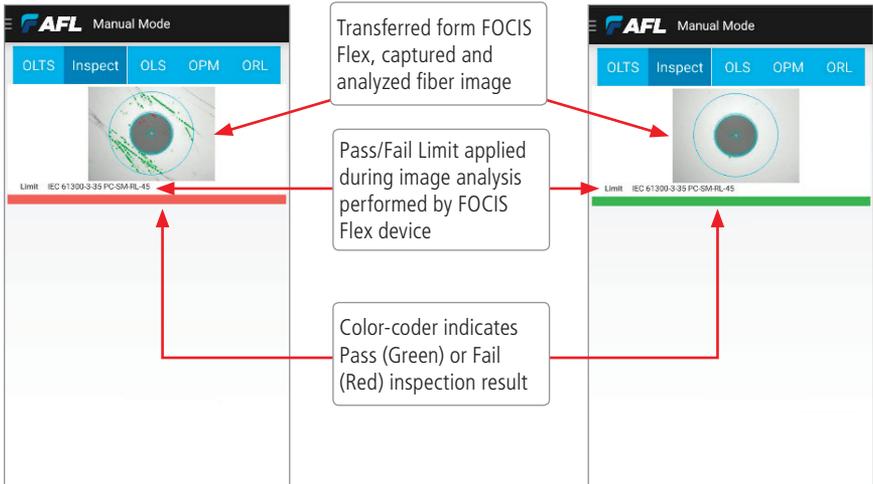
Manual Inspection Mode

9. Simultaneously, FOCIS Flex will be sending results to the smart device paired to it.

On your Smart Device:

10. Once image is transferred, you will get an audio indication and see inspection results displayed in the results window.

- Observe the displayed results: a static image of the inspected fiber end-face and Pass/Fail status.
- If the displayed image shows **Failing result (B)**:
 - Clean the failing connector.
 - Re-inspect by repeating steps 3 - 6.
- If the displayed image shows **Passing result (C)**, you may proceed to inspection of another fiber cable or connector.



Testing in Manual Mode

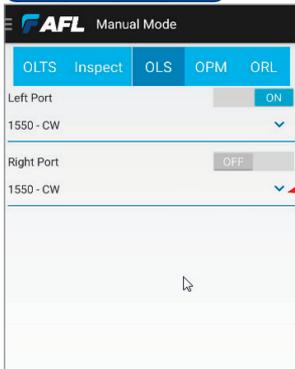
OLS Mode Settings

ROGUE testers may be used alone as a traditional power meter and/or light source to measure fiber loss or as a visual fault locator to find fiber breaks.

In the OLS mode, the user may perform the following functions:

- Enable/disable Left/Right Port by turning lasers on/off
- Modulate lasers output with a tone signal (270 Hz, 330 Hz, 1 kHz or 2 kHz),
- Enable the Wave ID operation - encode the wavelength identification onto the laser output

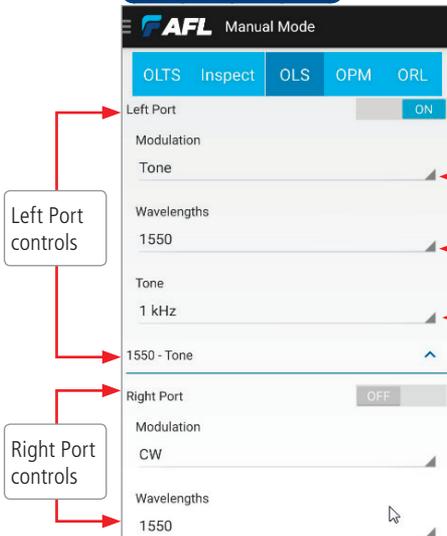
OLS test mode screen



On/Off control: Tap to turn the light source laser On or Off

Tap down arrow to expand Left/Right Port controls menu

OLS test mode screen



Left Port controls

Right Port controls

Tap to select the laser output modulation: CW, Tone, or Wave ID

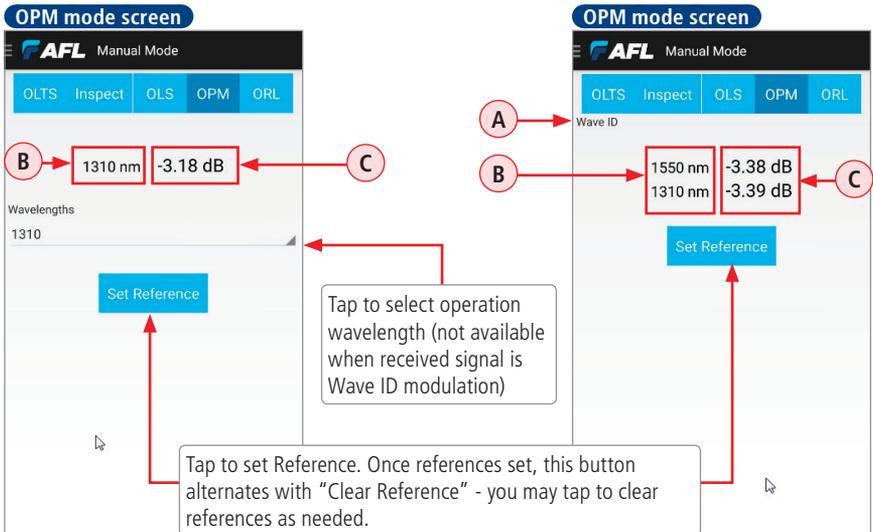
Tap to select the desired wavelength for light source operation: 1310, 1550, or 1310/1550 nm (Wave ID mode only)

Tap to select the desired Tone signal: 330 Hz, 1 kHz, 2 kHz

Testing in Manual Mode

OPM Mode Settings

In the OPM manual test mode, ROGUE tester can be used as a traditional power meter with any LED or laser source to measure insertion loss on multimode or single-mode links respectively.



- A** • **Modulation indicator field** - Power Meter automatically detects and reports modulation on the received optical signal, as follows:
- Wave ID:** Indicates single or multi-wavelength Wave ID signal received. The displayed wavelength(s) are determined from the received Wave ID signal.
 - Tone:** Indicates that received optical signal is a fiber-identifying tone.
 - Blank:** Received optical signal is continuous wave, CW.

- B** • **Wavelength**
- Displays Wave ID detected or user-selected Power Meter wavelength.
When Wave ID is detected, the user may not change the wavelength value.

- C** • **Power or Loss Measurement**
- Displays measured power in dBm or loss relative to the previously set reference level.
When the Power Meter detects multi-wavelength Wave ID, wavelength and measured power or loss is displayed simultaneously at each of the received wavelengths.

Testing in Manual Mode

Wave ID and Tone Signal Features

The ROGUE tester in the OLS manual mode allows the user to generate Tone or Wave ID in fiber cables as identification signals.

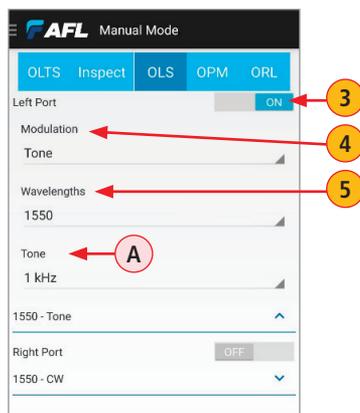
Tone: The Tone feature is primarily useful when using the ROGUE tester as a light source with a power meter other than the ROGUE tester.

Wave ID: Wave ID is a powerful feature, which cuts multi-wavelength insertion loss test time by 80% and eliminates user setup errors. When using one ROGUE tester as a light source and another ROGUE tester as a power meter, we recommend using the Wave ID mode for fiber identification.

- When ROGUE tester in the OLS mode is set to Wave ID and a single wavelength is selected, the wavelength is transmitted with a wavelength indicator. A ROGUE tester in the OPM mode (or any Wave ID-compatible power meter) will detect and synchronize its wavelength calibration factor to the transmitted wavelength, eliminating the need for light source and power meter users to coordinate their wavelength settings.
- When Wave ID is enabled with two wavelengths selected, the light source (OLS) alternately sends each wavelength with its wavelength indicator. A ROGUE tester in the OPM mode (or any Wave ID-compatible power meter) detects and synchronizes to each wavelength in turn, enabling simultaneous, multi-wavelength measurements, cutting test time in half or more. Wave ID eliminates the need for light source and power meter users to coordinate their wavelength settings, and avoiding measurement errors due to mismatched light source and power meter wavelength settings.
- On a ROGUE tester in the OPM mode (or any Wave ID-compatible power meter): When Set Reference option is enabled, references are set at each of the Wave ID wavelengths.

To generate Wave ID or Tone signal

1. **On the ROGUE OLS device:** attach the appropriate test jumper to the desired OLS port (Left or Right Port).
2. Attach the other end of the test jumper to the fiber to be traced.
3. **On a smart device paired to the ROGUE OLS device:** From the OLS mode screen, turn the OLS port On (the one that is used on ROGUE OLS for testing)
4. Tap the Modulation to select the desired control signal: Tone or Wave ID.
 - If modulation is set to Tone, tap Tone **A** to select one of the available options: 330 Hz, 1 kHz, 2 kHz.
5. Tap the Wavelength and select the desired wavelength.
6. Once set, the ROGUE OLS will generate the selected signal into the attached fiber.

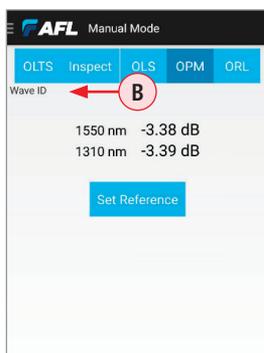


Smart Device OLS

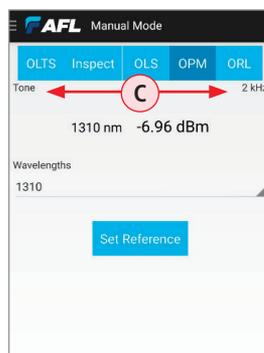
Testing in Manual Mode

7. At the far end, use the ROGUE tester set to the OPM mode or other optical power meter for fiber identification.

8. **On a smart device paired to the ROGUE OPM:** When the ROGUE OPM tester detects a signal, an appropriate signal indicator Wave ID **(B)** or Tone **(C)** will appear on the smart device display.



Smart Device OPM



Smart Device OPM

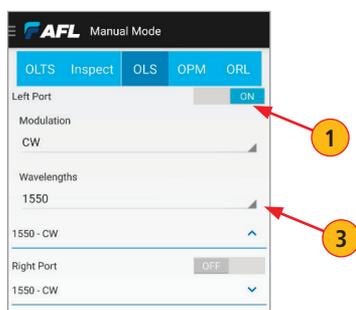
OLS and OPM Operation - Testing Fiber Links

A pair of ROGUE testers may be used to perform insertion loss measurements. One ROGUE tester will need to operate as a traditional optical light source in the OLS Manual mode and another as a traditional optical power meter in the OPM Manual mode

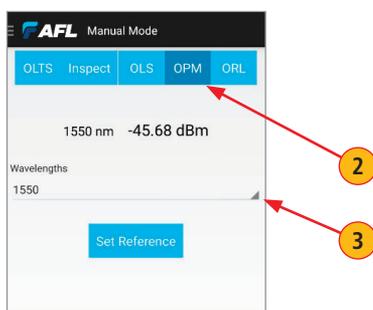
Important! Clean all fiber optic connectors and optical ports before performing test procedures described below!

Step I - Set the Reference (1 Jumper Method)

1. **On a smart device paired to ROGUE OLS:** enable the OLS port (Left or Right Port) and allow the light source to stabilize (minimum of 15 minutes).
2. **On a smart device paired to ROGUE OPM:** enable the OPM Manual mode.
3. When using one ROGUE tester as a light source and another ROGUE tester as a power meter, we recommend using the Wave ID mode for fiber identification. If not using the Wave ID feature, set both testers to the desired test wavelength.



Smart Device OLS



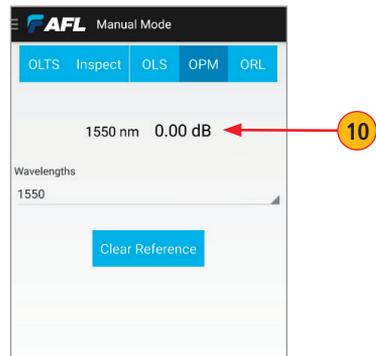
Smart Device OPM

OLS and OPM Operation - Testing Fiber Links

- Smart device - OPM:** Tap the Set Reference soft key to set the reference level at the current wavelength
- The Reference value will be displayed - typically 0.00 dB.



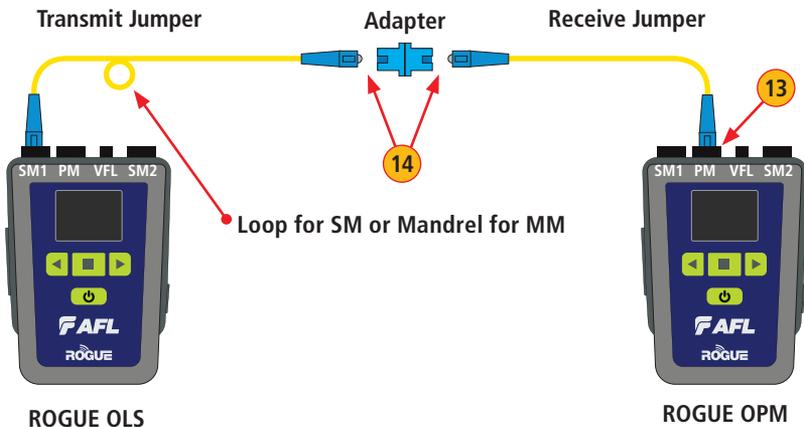
Smart Device OPM



Smart Device OPM

Step II - Verify Test Jumpers

- ROGUE device - OPM:** Disconnect the transmit jumper from the OPM test port.
 - ROGUE device - OLS:** Do not disturb the transmit jumper at the OLS end!
- Important!** Clean both ends of the receive jumper!
- ROGUE device - OPM:** Connect the receive jumper to the OPM test port.
 - Mate the free ends of the transmit and receive jumpers using an appropriate adapter.



OLS and OPM Operation - Testing Fiber Links

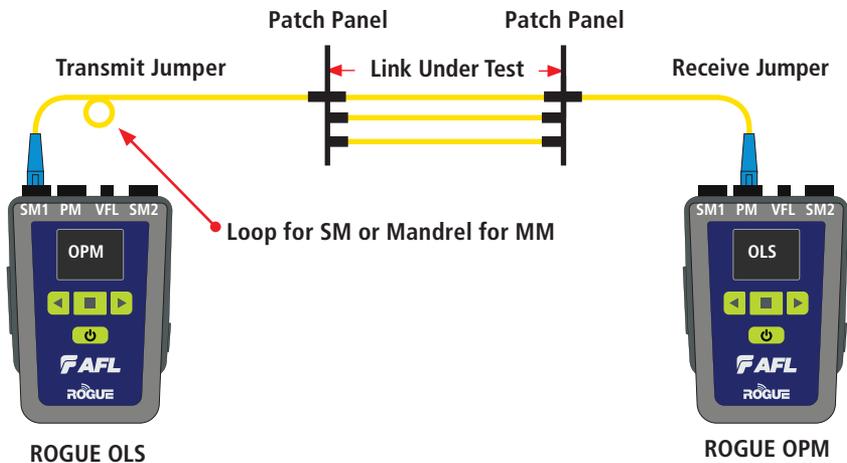
15. Verify that the insertion loss of this mated connector pair is under 0.75 dB, the maximum allowed by the TIA and ISO (AFL recommends 0.4 - 0.5 dB typical), as follows:
 - Observe the displayed loss level. This is the mated connector pair insertion loss of the test jumpers in dB.
 - If the insertion loss is not acceptable, disconnect the transmit and receive jumpers at the adapter, clean the free ends of both test jumpers and repeat steps 14 and 15.
 - If the insertion loss is still not acceptable, replace both test jumpers and repeat steps 1-15.
16. If the insertion loss is acceptable, disconnect the transmit and receive jumpers at the adapter.
17. Move the ROGUE OPM and ROGUE OLS to opposite ends of the link to be tested.

Step III - Measure Multimode Link Insertion Loss

18. Connect the free ends of the transmit and receive jumpers to the link under test.

Important! Clean jumper end that connects to patch panel prior to every test.

19. On **Smart device - OPM**: observe the measured and displayed insertion loss of the link under test.
20. Disconnect the transmit and receive jumpers to the tested link and move to the next link.
21. Repeat steps 18-20 for all links to be tested at the current wavelength(s).



Testing in Manual Mode

ORL Mode – Measuring Optical Return Loss (SM only!)

The ROGUE tester in the ORL manual mode allows the user to perform an optical return loss measurements. Setting ORL references prior to ORL testing is recommended on a daily basis before testing and when changing test jumpers. ORL referencing calibrates the upper and lower back-reflection limits. Perform the following steps:

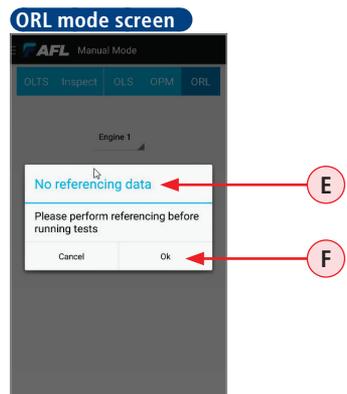
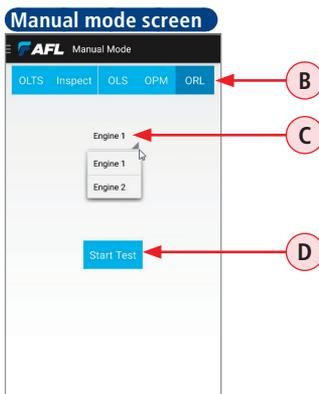
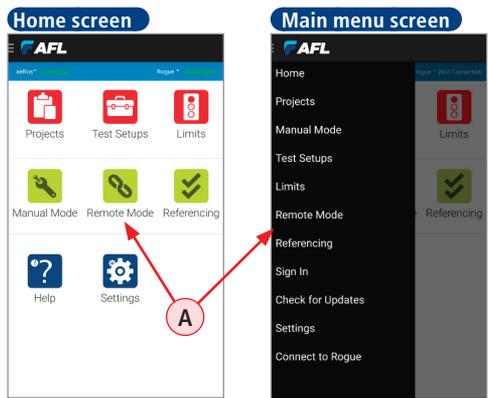
Important: Clean all fiber optic connectors and optical ports before performing test procedures described below!

ROGUE device:

- Connect the appropriate reference test jumper to the test port (Engine 1 or Engine 2) on your ROGUE device

On a smart device paired to the Remote device perform the following:

- From either Home screen or Main menu, select the Manual Mode (A).
- If the Manual Mode opens in any other test mode, touch the ORL tab (B) to display the ORL mode screen.
- On entry to the ORL mode, tap on the Engine field (C) to select the appropriate Engine (test port on your ROGUE device) that is used for ORL testing.
- Tap Start Test (D)
- If no reference data or the reference hasn't been set for over 24 hours, you will be suggested to reference; you'll message similar to (E).
- Tap OK (F) to proceed to referencing.

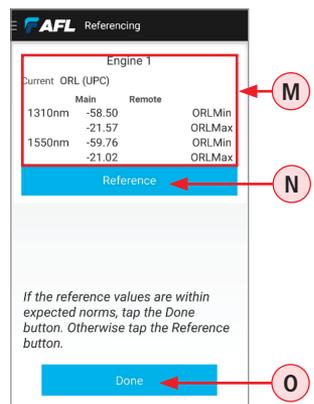
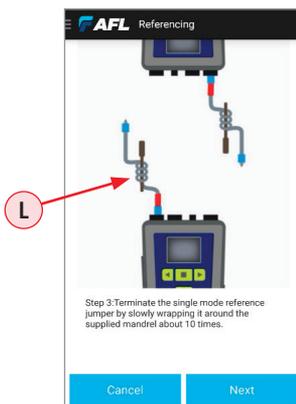
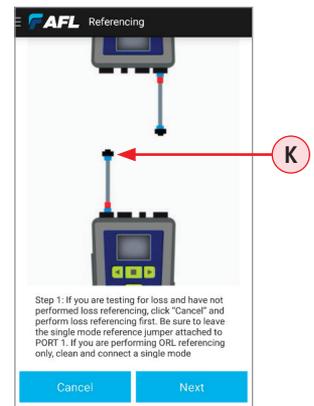
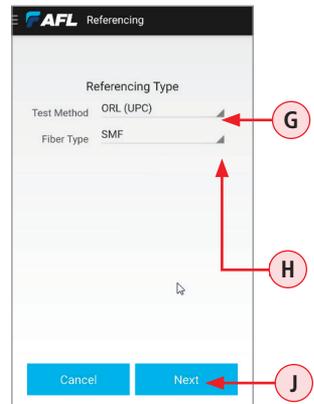


Testing in Manual Mode

ORL Mode – Measuring Optical Return Loss (SM only!)

- In the Referencing screen, select the desired ORL Referencing Method **(G)** and Fiber Type **(H)**. In our example, the ORL (UPC) method is selected.
- Tap Next **(J)**.
- Use a dust cap to cover the connector on the reference jumper free end **(K)** to block ambient light. Tap Next.
- Wait for the ROGUE tester to perform measurements setting the upper ORL limit - ORL Max.
- When prompted, remove the dust cap. Tap Next.
- Terminate the reference jumper by slowly wrapping it 10 times around a mandrel **(L)**. Tap Next.
- The ROGUE tester will perform measurements setting the lower ORL limit - ORL Min. Tap Next.
- When the referencing results displayed **(M)**, observe the reference values - these are ORL Min and Max limits.
- If the reference values are not acceptable, tap Reference **(N)** to re-test.
- If the reference values within expected norms, you may proceed to ORL testing by tapping Done **(O)**.

Important! Do not disconnect reference jumper from the test port.



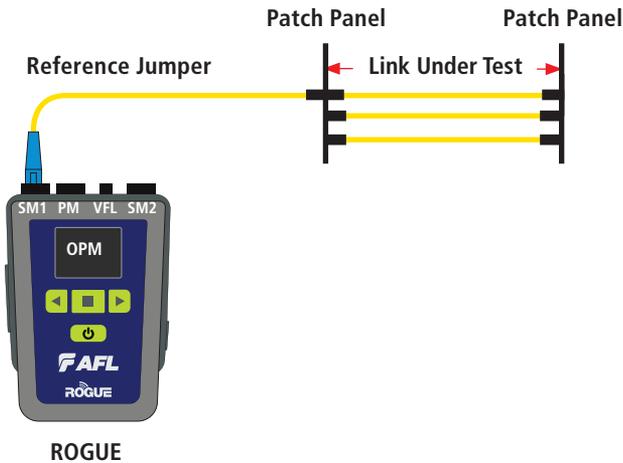
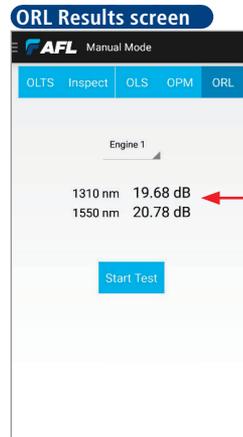
Testing in Manual Mode

ORL Mode – Measuring Optical Return Loss (SM only!)

Performing a Link Test

Use the following procedures to perform return loss tests on a jumper cable connector.

- Attach the connector on the reference cable to the fiber under test at the patch panel.
- Once connected, the ROGUE device will automatically measure and display the return loss measurements (P) on a smart device paired to ROGUE.
- **Note:** The ORL manual mode is used to perform diagnostic and evaluation tests associated with fiber optic transmission systems.



General

Recommended Accessories

Fiber optic test cables are necessary to connect ROGUE Tester to the fiber under test (FUT). Test cables must have the same core and cladding size as the FUT. The connector at one end of the test cable must mate with the appropriate optical port on the ROGUE Tester. The connector on the other end must mate with the fiber optic link under test.

Launch and Receive cables are required for OTDR testing to measure the insertion loss and reflectance of the near-end and far-end connectors respectively, of the fiber link being tested. AFL Fiber Rings may be used as Launch and Receive cables. Fiber Rings with a variety of lengths and connector styles are available from AFL.

Cleaning Tips

Cleaning Connectors on Test Cables and Fiber Under Test

It is important to keep connector end-faces on test cables and on the fiber under test clean, to ensure accurate measurements and operation.

IMPORTANT! Inspect optical connectors after cleaning to ensure cleaning was successful and to verify the end-face is not damaged (cracked, pitted, etc.).

CAUTION! Never view a live fiber. Laser radiation is harmful to eyes.

Follow your company's approved cleaning procedures.

AFL recommends cleaning test cables using a Cletop cassette cleaner or a One-Click Cleaner.

Cleaning the Optical Ports

CAUTION! Before conducting the following procedures be sure to have the OTDR turned OFF.

Cleaning the OTDR and VFL optical ports without removing the adapters

AFL One-Click Cleaner method

- Remove the protective dust cover from the tip of the One-Click Cleaner.
- Insert the tip of the One-Click Cleaner into the optical port adapter and gently press the body of the One-Click Cleaner until an audible "click" is heard.
- Remove the One-Click Cleaner.

AFL FCC2 fluid and CCT stick method

- Lean a can of FCC2 back (30°), press the button on FCC2 to fill the well.
- Dip a CCT stick into the well of the FCC2 to dampen the tip with optical cleaning fluid.
- Place the damp tip over the ferrule to be cleaned.
- Rotate the tip clockwise 10 revolutions while applying varying pressure to create a gentle pumping action where the tip contacts the ferrule.
- Discard the CCT stick after using both tips.

Cleaning Tips

Cleaning the optical ports with adapters removed

Removing connector adapters for cleaning and inspection

To access the OTDR Port

- Rotate the adapter base counterclockwise approximately four times.
- Pull the adapter directly out away from the universal adapter mount to expose the ferrule.

To access the VFL Port

- Unscrew the adapter counterclockwise and pull the adapter straight out to expose the ferrule.

To access the OPM Port

- Unscrew the adapter cap from the adapter cap mount.

Cleaning the Exposed Ferrule or the OPM port

Use lint-free optical cleaning wipes such as AFL FiberWipes and optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid.

Note: If using isopropyl alcohol (IPA), be sure to use 99% pure IPA that has not been contaminated.

- Dampen a portion of the wipe with the cleaning fluid.
- Gently wipe the exposed ferrule (OPM port) starting with the wet section of the wipe and pulling it to the dry section.
 - **Note:** Starting with the wet cleaning and finishing in the dry improves cleaning action, reduces static buildup, and finishes with the end-face dry.

Cleaning the adapters

Method 1:

- Insert a Cletop adapter cleaning stick into the sleeve of the adapter and rotate 10 times.
- Remove when cleaning complete.
- Replace the adapter over the ferrule; centering it onto the alignment pin.
- Tighten the adapter base.

Method 2:

- Use a can of filtered compressed air (held vertically) to blow out any contaminants from the adapter.
- After cleaning, replace the adapter over the ferrule; centering it onto the alignment pin.
- Tighten the adapter base.

Recharging Batteries

The batteries may be charged while the ROGUE Carrier is switched on or off by attaching an AC power adapter.

- Plug the AC adapter/charger into a standard wall outlet.
- Connect the AC adapter/charger to the Power port located on the ROGUE Carrier side panel.
- The AC/Charger indicator on the front panel will turn on Red.
- Charge batteries until the AC/Charger indicator turns Green.

Repair and Calibration

AFL has an authorized calibration/repair facility for AFL products in the USA, Europe and Asia Pacific. Please contact customer service for a return authorization number prior to sending your AFL test equipment in for repair or calibration.

Fujikura Europe LTD is an Authorized European Repair and Calibration facility for AFL Test and Inspection products and should be contacted directly for service.

Fujikura Asia LTD is an Authorized Asia Pacific Calibration facility for AFL Test and Inspection products and should be contacted directly for product calibrations.

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Saudi Arabia BrightWires Qaatan Plaza 1st Floor PO Box 56219 Sulimaniya Riyadh 11554 SA +966-11-2176265	Turkey BS Telekom Ltd. Erenkoy Mah. Iglidere Cad. 1494. Sok. No. 12 38050 Melikgazi- Kayseri /TURKEY +90 352 222 8202 (03-04)

General Information

Standards Compliance Information

ROGUE Carrier and Modules have been designed and tested to comply with the relevant sections of any applicable specifications including full compliance with all essential requirements of all applicable EU Directives.

Contacting Customer Service

You may call AFL Customer Service between 8 AM and 5 PM, United States Eastern Time.

Phone 800-321-5298

Phone +1 (800) 321-5298

+1 (603) 528-7780

Fax +1 (603) 528-2025

Email AFLTestTechSupport@AFLglobal.com

Warranty Terms and Conditions

ROGUE Carrier and Modules are warranted against defective material and workmanship for a period of (1) one year from the date of delivery to the end user.

Any product that is found defective within the warranty period will, at the discretion of AFL, be repaired or replaced. Warranty will be voided if the product has been repaired or altered by other than an authorized AFL product repair facility, if the void sticker has been compromised, or which have been subject to misuse, negligence, or accident. In no case shall AFL liabilities exceed the original purchase price.

Repair Services

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Thank you for choosing AFL Test & Inspection!

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