



FTTA and RRH—The New Wireless Network Extension

To expand their networks to other hard-to-reach locations, wireless providers are turning to the deployment of alternative infrastructures, such as fiber-to-the-antenna (FTTA), remote radio heads (RRH), and other small-cell alternatives, most of which are fiber-based.

› **Existing cell-tower upgrades**

Replace old coax cable with fiber running from the basestation to the RRH.

› **New cell-tower deployment**

Run fiber from basestation to the RRH at the top of the antenna.

› **Common public radio interface (CPRI)**

A standard that defines a communication link between a basestation and RRH.

› The basestation can be connected to the backhaul via fiber, or wirelessly via radio frequency (RF) signals.

KEY CONSIDERATIONS AND CHALLENGES

› **Operational expenditures (OPEX) challenges**

Dispatching tower-climber technicians for repairs can be very expensive, rendering repeat jobs unfeasible.

› **Technology gap**

Tower-climber technicians usually have a background in copper or RF, but only limited fiber-testing knowledge. Lack of training can lead to basic errors, incorrect results interpretation, and other problems.

› **Guarding against weather**

When installing next-generation tower networks, wireless operators must address new weatherproofing challenges. Proper weatherproofing can help safeguard against expensive service interruptions and ensure network reliability.

Key Test Applications in an FTFA Environment

Installation, turn-up and troubleshooting of cell towers fitted with fiber-optic cabling

CONSTRUCTION PHASE

Physical-layer installation and troubleshooting

- 1 Fiber connector inspection and maintenance (at each connection point)
- 2 Installation of a fiber loop (Rx to Tx) for loopback testing (at the RRH)
- 3 Characterize end-to-end fiber link, validate loss budget and identify faults (from basestation)
- 4 Connect fiber to SFP (at the RRH)

Troubleshooting steps: validate connector cleanliness, test fiber continuity, perform fault-finding tasks/distance to fault (from basestation)

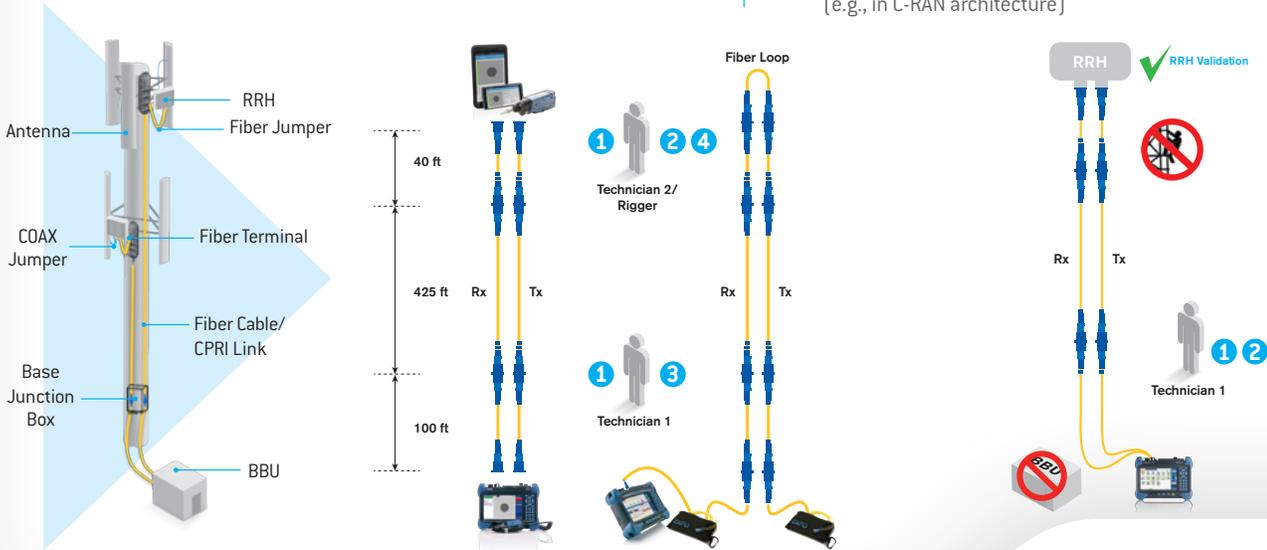
ACTIVATION/TURN-UP PHASE

Service validation and troubleshooting

- 1 Validate CPRI protocol at the specified interface rates (from basestation)
- 2 Activate CPRI protocol (from basestation)

Troubleshooting steps:

- › RRH validation using baseband unit (BBU) emulation
- › Verification that small form-factor pluggable (SFP) transceivers are installed and connected correctly
- › Testing at the bottom of the basestation, or kilometers away (e.g., in C-RAN architecture)

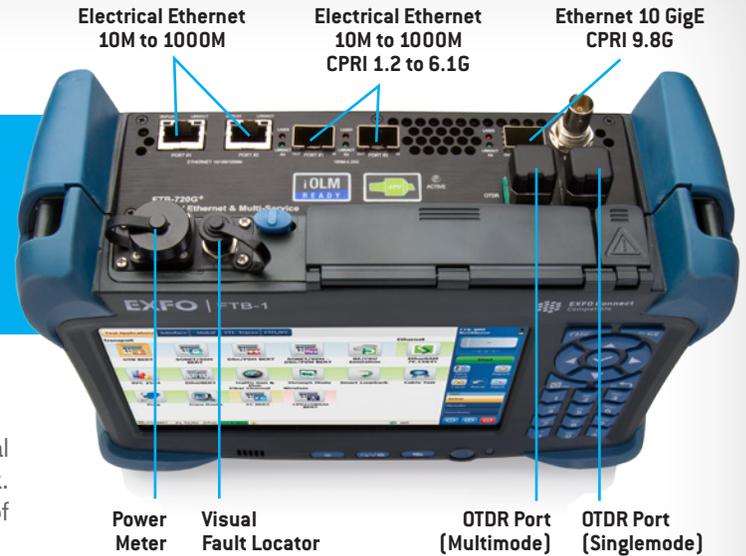


FTB-700G Series

A Truly Intelligent and Automated Test Tool that Certifies Complete FTTA/RRH Installation, Turn-Up and Service Assessment in **One Visit**

THERE'S MORE TO IT THAN JUST WIRELESS

Fiber is at the core of new mobile cell towers, but the physical and transport layers remain the foundation of the network. Having access to the **right test tool** is a critical component of **managing and optimizing network performance**.



Validate Connector Endface Cleanliness

- › Runs automated pass/fail connector endface analysis against industry standards (IEC, IPC or custom).
- › 100% automated, fast and easy one-step process: detect, center, focus, capture, analyze and save results automatically.
- › Removes any risk of false positives or misinterpretation of results.
- › Android™-based wireless model available for tower climbers; use of a smart device eliminates the need to have to carry a platform to the top of the tower.

Complete Fiber-Link Characterization

- › Eliminates the need to configure parameters, or analyze and interpret multiple complex OTDR traces.
- › Correlates multipulse widths on multiple wavelengths to identify and locate each event with maximum resolution.
- › Turns traditional OTDR testing into clear, automated first-time-right results for technicians of any skill level.
- › The iLOOP feature, based on the loopback test method, is used to test two fibers at once directly on-site from the ground or basestation, and without any post-processing.

Validate CPRI Transport Links

- › Eliminates unnecessary tower climbs by testing the health of the RRH from the bottom of the tower via BBU emulation.
- › Validates the proper CPRI start-up sequence and reports any issues between the BBU and RRH negotiation.
- › Validates that the RRH is properly connected to avoid unnecessary replacement of equipment.
- › Verifies that the right SFP transceivers are installed and connected correctly.
- › FTTA validation for CPRI from 1.2 Gbit/s to 9.8 Gbit/s via BER testing.

FIP-400B Series



iOLM | intelligent Optical Link Mapper



CPRI Protocol Testing



EXFO | Connect

- › Cloud-based equipment and test data management
- › Enables automation of the turn-up and troubleshooting workflow
- › Audits test results in real-time for faster job closing and payout
- › Supports coaching and training of remote technicians

FTB Anywhere™ Floating Test Licenses

- › Budget flexibility
- › Available anywhere, anytime and to anyone
- › Eliminating barrier to field-testing efficiency
- › Feature-rich solution

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