

RADIO FREQUENCY (RF) SPECTRUM ANALYSIS OVER CPRI

Most of today's modern cellular installations interconnect baseband units (BBUs) and far-end remote radio heads (RRHs) with fiber optic cables. This new network configuration, known as Fronthaul, provides many advantages. RRHs can now be physically separated from BBUs. The BBUs can be kilometers away at more convenient locations, such as in a centralized radio access network (C-RAN) architecture. Moreover, with a remote radio system, the RF power amplifier is installed in the tower-mounted RRU and cooled by ambient air flow.

This decreases or removes the need for active cooling in the base station and improves energy efficiency. However, with this new cellular installation, analog RF signals can only be accessed at RRHs, which are often placed in hard-to-reach locations, such as tower tops or rooftops. Field technicians are therefore required to climb these places in order to measure and troubleshoot RF interference issues. End result? Increased operational expenses and added safety concerns.

OpticalRF™: the most powerful and comprehensive RF interference measuring solution on the market.

Supported on the compact and powerful FTB-1 Pro platform, the OpticalRF application eliminates dangerous and difficult climbs by providing access to RF signals through the digital CPRI link available at the BBU site (at the bottom of the tower or at the BBU hotel located kilometers away). The digital link uses the CPRI protocol to carry RF signals in digital format (IQ data). By accessing the RF signal at the BBU location, the costs associated with truck rolls and tower climbs are reduced. In addition, time to resolution of complex RF issues is accelerated by multiple user collaboration via remote access capabilities to EXFO's OpticalRF™ solution from any smart device or laptop.



Key Benefits

- Provides industry's most powerful real-time high-resolution RF spectrum analysis over CPRI
- Integrated into the all-in-one FTB-700G V2 Series, which also includes Ethernet service validation, connector endface inspection, fiber characterization testing and CPRI link validation
- Easy-to-use solution to quickly identify issues such as external RF interference, Internal PIM and External PIM
- Allows multiple users to connect, collaborate and troubleshoot from any smart device or laptop
- Decreases the costs of RF interference troubleshooting by minimizing truck rolls and tower climbs (RF signals are accessed at the BBU's location either at the bottom of the tower or at the BBU hotel via the CPRI link)
- Hardware-ready for CPRI rate option 9 (12.1 Gbit/s)

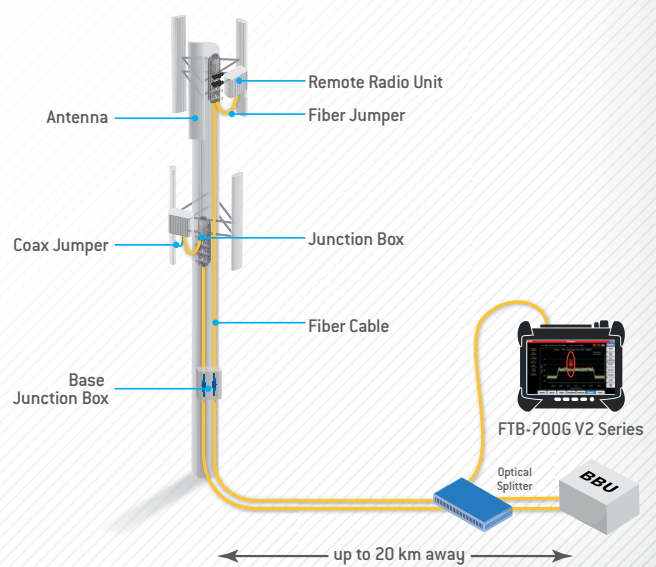


Figure 1. BBUs are placed at the bottom of the tower or centralized in BBU hotels located up to 20 km away.

Remote Radio Installation and Diagnostic Testing

CAPTURE/REPLAY RF SPECTRUM WITH IQ RECORDING CAPABILITY

- Recorded IQ data provides complete information for comprehensive analysis before or after the event
- Saves several seconds of I/Q data depending on CPRI data rate
- Record triggers (e.g., limit line violations)

REMOTE CONTROL ACCESS

- Multiple connectivity interfaces: Ethernet, Wi-Fi or 3G/4G USB dongle

- Remotely view RF spectrum and interference from anywhere and on any device (smartphone, laptop, tablet)
- Collaborate remotely with RF performance engineers anywhere, anytime

HIGHEST RF SPECTRUM RESOLUTION OVER CPRI

- Real-time IQ data processing for best in the industry resolution
- Lab quality resolution in a portable field equipment
- Quickly identifies issues such as external RF interference, Internal PIM and External PIM

EXFO OpticalRF™: RF Spectrum Measurements over CPRI

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| Application | Real-time RF spectrum analysis using digitized RF data (IQ data) in the CPRI link |
| CPRI rate support | <ul style="list-style-type: none"> CPRI rate options from 2 to 7 (1.2 Gbit/s to 9.8 Gbit/s) Hardware-ready for CPRI rate option 9 (12.1 Gbit/s) |
| Air technology support | LTE, W-CDMA, CDMA, UMTS |
| Viewer options | <ul style="list-style-type: none"> Power spectrum Waterfall Power spectrum persistence |
| RF spectrum settings | <ul style="list-style-type: none"> Antenna carrier (AxC) selection Resolution bandwidth (59 Hz to 30 KHz) Video bandwidth (170 KHz to 8 MHz) Persistence delay Min./max./average hold Decay adjustments for all traces Zoom for all views Center frequency and frequency span adjustments Reference level adjustment Up to five markers, with table for power, frequency, delta power and delta frequency Snapshot and video recording capability dB, dB/m, and dBFS adjustments |
| Graph settings | <ul style="list-style-type: none"> Crosshair or normal cursor Channel bandwidth barriers Grid on/off |
| Interface support | Optical (CWDM, DWDM) SFP interface for both multimode and singlemode fibers |
| Protocol support | CPRI version 7.0 and lower |
| Recording | Up to 270 seconds of real-time RF recording available, depending upon channel bandwidth setting. Saved file is playable on any EXFO OpticalRF-enabled test solution. |
| Remote control and collaboration | The unit can be remotely controlled via a wired or wireless Internet connection. |
| Test solutions supported | FTB-870v2, FTB-880v2, FTB-870Q, FTB-880Q, FTB-720Gv2, FTB-730Gv2 and FTB-890NGE |
| Ordering information SW option | CPRI-SPECTRUM |