Integris 3000: RF Spectrum Measurements over CPRI

Most modern cell tower network configurations place the Remote Radio Head (RRH) at the top of the tower and the baseband unit (BBU) at the bottom of the tower. While this configuration is advantageous for both computational efficiency and mitigation of RF loss across the cable, it means the only place analog RF can be accessed is at the top of the tower. This forces field technicians to have to climb the tower to measure and debug RF noise problems.

Integris eliminates the tower climb by accessing the RF through the digital CPRI link available at the bottom of the tower. This digital link uses the CPRI protocol to carry the RF data in digital IQ form to the bottom of the tower. By accessing the data here, not only are the costs for truck rolls and tower climbs reduced, but time to resolution is also accelerated due to the ability to use software analysis and collaboration tools to analyze the noise signatures.

Key Benefits

· Offers a high resolution real-time analysis of RF Spectrum
· Lowers the cost of noise troubleshooting by reducing truck rolls and tower climbs since RF signal is accessed at the bottom of the tower via the CPRI link
· Decreases time to problem resolution by using signal analysis software to isolate problems quickly
· Digitized RF data can be captured for in-depth offline analysis.
· Remote internet connection allows both control and collaboration remotely
· Supports CPRI V5.0

Test Applications

· Measurement of RF signals at the base of cell towers utilizing the CPRI link for noise and interference debugging
· No tower climb necessary to access RF signal
· Full RF spectrum analysis via software analysis tools
· Interface with field signal analyzer equipment used for drive tests

Remote Radio Installation 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 before with a user-specified trigger event system
· Record Triggers (e.g. limit line violations)
· Future: Record based on conditional analysis (IF/THEN/ELSE type statements)

REMOTE CONTROL + GROUP VIEWING
· Via standard 3G/4G USB modem
· Collaborate with Principal RF Engineers
· View RF interference in an RRH/RRU on smartphone when away from the tower

HIGHEST RF SPECTRUM RESOLUTION OVER CPRI
· Lab quality resolution in a hardened field instrument
· Fast RAM data buffer stores I/Q data

Fiber Optics Cables From RRH to Baseband Unit

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Application	Real-time RF Spectrum analysis using RF data from the CPRI link
Air Technology Support	LTE, W-CDMA, CDMA, UMTS
Viewer Options	· Power Spectrum · Waterfall · Power spectrum persistence
Power Spectrum Adjustments	· Resolution bandwidth (468 Hz to 60 Khz) · Video bandwidth (341 KHz to 15 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 3 markers, with table for power, frequency, delta power, and delta frequency · Snapshot and video recording capable · dB, dB/m, and dBFS adjustments
Graph Adjustments	· Crosshair or normal cursor · Channel bandwidth barriers · Grid on/off · Frames per second (5 to 50)
CPRI Parameter Adjustments	· Link rate. · Radio (AxC) number · Customizable configurations for changing CPRI and air technology configurations
Interface support	Optical (CWDM, DWDM) SFP interface for both multi-mode and single-mode fiber.
Speed Support	Up to 10 Gbps. (CPRI rates 1 to 8)
Protocol Support	CPRI Version 5.0 and lower
Recording	Up to 10 seconds of recording available, depending upon the link rate. Saved file is playable on any Integris 3000 machine for collaboration or reference.
Remote Control and Collaboration	Input 100—240V, 50—6 The unit can be remote controlled from a distance via a wired or wireless internet connection and collaboration software (not included).
Ordering Information	Part number: AA-Integris3000-RL