

IEEE 802.16s for Utility Field Area Networks

FullMAX Cobalt-Plus S1G

All Frequency Radio 50 MHz to 1 GHz



Product Highlights

- » IEEE 802.16s
- » Point-to-Multipoint, Point-to-Point
- » OFDMA with 128 FFT
- » Time Division Duplexing (TDD), Half Duplex FDD
- » Band AMC 2x3 and Band AMC 1x6 Subcarrier Allocation
- » Broadband Data Rates
- » Configurable Channels from 50 kHz to 5 MHz
- » Mobile and Fixed Application Support
- » 36 dBm transmit power with High Receiver Selectivity
- » All Aluminum Compact Enclosure
- » DC Input Range 42 to 60 VDC

FullMAX Remote Radio Specifications



PHY Layer	Description
IEEE Standard	802.16s
Multicarrier Waveform	OFDMA with 128 FFT variant of the IEEE 802.16 standard.
Frequency Range	50 MHz to 1 GHz
Channel Size (s)	Programmable from 50 kHz to 5 MHz.
Duplex Method	TDD, Half Duplex FDD
MIMO	STC
TX Power	Up to 4 Watts (36 dBm), optional external 30 Watts
Sub-Channelization	Band AMC 2x3: 6 sub-channels per channel in both downlink and uplink Band AMC 1x6: 12 sub-channels per channel in both uplink and downlink
Adaptive Modulation & Coding	Convolutional Coding (CC): QPSK 1/2 to 64QAM 3/4 Convolutional Turbo Coding (CTC): QPSK 1/2 to 64QAM 5/6
End User Data Throughput	Supports full channel throughput for all packet sizes
Adaptive Repetitions	1 or 2 code word repetitions
TDD Frame Synchronization for multi-sector /multi base station operation	Base Station GPS synchronization provided by an internal GPS synchronized clock source
Rx Sensitivity (dBm)	As low as -116 dBm for single band AMC 1 x 6 sub-channel and QPSK 1/2 modulation.
Minimum Required CINR (dB)	QPSK with CTC Rate 1 / 2: 3 QPSK with CC Rate 1 / 2: 5 QPSK with CC Rate 3 / 4: 8 16QAM with CC Rate 1 / 2: 11 16QAM with CC Rate 3 / 4: 15 64QAM with CC Rate 2 / 3: 18 64QAM with CC Rate 3 / 4: 20 64QAM with CTC Rate 5 / 6: 22
Frame Structure Configuration	Configurable frame duration: 5 ms, 10 ms, 12.5 ms, 20 ms, 25 ms and 50 ms Configurable number of downlink and uplink symbols Configurable duration of TDD frame gaps

MAC Layer	Description
Scheduling Modes	Best Effort (BE), Real time polling service (rtPS), Unsolicited Grant Service (UGS)
Classification	Traffic is classified in the uplink and in the downlink direction into multiple service flows. Classification is based on layer 2 and layer 3 header fields.
Uplink & Downlink QoS	Each Class of Service is a set of QoS parameter values (e.g., scheduling type, traffic priority, etc.). A Class of Service is configured for each uplink and downlink service flow
Traffic Priority	Each service flow can take a priority level 1 to 7
Minimum and Maximum Sustained Rates	Each service flow can be configured with a minimum and maximum sustained rate
ARQ	Retransmission can be configured per Service Class
Advanced Packet Header Suppression (PHS)	Fields in the header and the data portion of the packet can be suppressed on an individual service flow basis. The values of the fields are learned automatically. Multiple values can be stored for each field.
Unicast and Multicast Service	Each service flow can be unicast (i.e., intended for a specific remote) or multicast (i.e., intended for all remotes).
Security	Authentication and Encryption as per IEEE 802.16 NERC/FERC/CIP Compliance
Mechanical / Electrical / Environmental	Description
User Interfaces	(2) 10/100 Base T, RS232, Console All RJ45 Connectors
RF Interfaces	GPS – SMA Connector RF – N Type 50 Ohm
Voltage	42 to 60 VDC
Power Consumption	No Load: 13.1 watts @ 48 VDC Peak Load: 23.4 watts @ 48 VDC
Dimensions	8.5" x 4.85" x 2.95" (216mm x 123mm x 75mm)
Weight	4 lbs 2 oz (1.9 kg)
Temperature	-40°C to +70°C
Compliance	IEEE1613