high power ULTRALINK-FX80

UltraLink™-FX80 High Power (with parabolic antenna 30cm)

All-Outdoor Gigabit Packet Radio

Overview

UltraLink™-FX80 High Power is a compact all-outdoor Ethernet radio operating in the entire 70/80 GHz frequency band (E-Band) that is ideally suited for use in macro, micro, and small-cell backhaul and fronthaul applications requiring extended reach. It achieves throughputs of up to 3Gbit/s, while offering a complete set of networking and packet synchronization features necessary for 4G/4G+ RAN backhaul. The radio unit features two electrical Gigabit Ethernet ports and an additional SFP Combo port, which can be used either as a GbE or CPRI traffic interface up to CPRI Option 3. UltraLink™-FX80 is designed to be easily mounted on poles and lamp posts, while its installation and provisioning features, such as "zero-touch" provisioning (via Bluetooth - connected LCT), enable convenience and speed of installation in telco, as well as, street-level environments. Additional applications that can benefit from the use of UltraLink™-FX80 are: delivery of broadband service to enterprises and Multi-Dwelling Units (MDUs), connectivity for government / public service buildings, utilities & industrial complexes.

Radio Specifications

Operating Frequencies, MHz	71,000 to 76,000 / 81,000 to 86,000
Channel Sizes, MHz	250 / 500
Duplexing Scheme	FDD
Ethernet Throughput, Gbit/s	up to 3
Modulation (adaptive)	4-QAM to 256-QAM
Link Adaptation	Hitless 7 state ACM mechanism based on link quality metrics
Forward Error Correction	Reed Solomon / LDPC
Antenna Options	• Flat 43 dBi (Compliant with ETSI EN 302 217 Class 2) • Direct-mount, Low-profile 30 cm / 43 dBi • Parabolic 30 cm / 45 dBi and 60 cm / 50 dBi (Compliant with ETSI EN 302 217 Class 3)

Mechanical & Environmental Specifications

Dimensions (H x W x D), mm	290 x 290 x 108
Weight, kg	4 (excluding the mounting kit)
Power Supply Options	• Direct DC: Nominal -48 V • Direct AC: Nominal 110 V to 240 V, 50 Hz to 60 Hz • Power over Ethernet (PoE)
Power Consumption, W	53
Operating Temperature	-33 °C to +55 °C (normal) / -50 °C to +55 °C (extended)

Radio Performance

Modulation	L1 Throughput (Mbit/s)[1]		Max Tx Power, dBm		ATPC Range, dB		Rx Thresholds @ BER 10^{-6}, Typ., dBm		System Gain @ BER 10^{-6}, Typ., dB (without antennas)	
	250 MHz	500 MHz	250 MHz	500 MHz	250 MHz	500 MHz	250 MHz	500 MHz	250 MHz	500 MHz
256-QAM	1,593	3,000	15	15	15	15	-58.7	-55.7	73.7	70.7
128-QAM	1,363	2,727	15	15	15	15	-62.3	-59.3	77.3	74.3
64-QAM	1,133	2,267	16	16	16	16	-65.6	-62.6	81.6	78.6
32-QAM	843	1,686	16	16	16	16	-69.0	-66.0	85.0	82.0
16-QAM	674	1,349	16	16	16	16	-72.4	-69.4	88.4	85.4
4-QAM	336	674	20	20	20	20	-79.3	-76.3	99.3	96.3
4-QAM 1/2	222	444	20	20	20	20	-81.7	-78.7	101.7	98.7

Features & Networking Specifications

- **Interfaces**
  - 2 x 100/1000 Base-T (RJ45)
  - 1 x SFP Combo (1000 Base-X or CPRI)
    CPRI line bit rate options supported: up to 2,457.6 Mbits/s
- **Networking Features**
  - IEEE 802.1Q (VLAN)
  - IEEE 802.1p
  - IEEE 802.1ad (Provider Bridge (Q-in-Q))
  - IEEE 802.1w (RSTP)
  - IEEE 802.3ad (Static LAG)
  - ITU-T G.8032 (ERP)
  - MEF Carrier Ethernet (CE) EPL & EVPL, E-LAN & EV-LAN
  - Jumbo Frames: 9,600 bytes
  - Mac Learning enable / disable per VLAN
- **Bridge Security**
  - MAC Anti-Spoofing
  - Port Flooding Protection
  - Broadcast Storm Control
- **Quality of Service (QoS)**
  - Eight QoS classes (8 queues)
  - Packet Classification per Interface / VLAN ID / P-Bits / DSCP / IPv6 TC / MPLS EXP
  - Service Policing: two rate, three-color (MEF compliant)
  - Queue Management:
    - Tail drop
    - WRED
  - Egress shaping
  - Queuing Schemes:
    - Strict Priority (SP)
    - Weighted Round Robin (WRR)
    - Weighted Fair Queuing (WFQ)
    - Hybrid: 1 or 2 queues SP plus 7 or 6 queues WRR or WFQ
  - H-QoS
- **Ethernet OAM**
  - IEEE 802.1ag (Service OAM (CFM))
  - ITU-T Y.1731 (Performance Monitoring)
  - IEEE 802.3ah (Link OAM (EFM))
- **Synchronization**
  - ITU-T G.8261 / G.8262 / G.8264 (Synchronous Ethernet)
  - IEEE 1588v2 TC, BC
- **Management**
  - Intracom Telecom NMS (uni|MS™)
  - Through Android tablet application over Bluetooth interface
  - Embedded Web Server (WebUI)
  - File Transfer (FTP)
  - SNMPv2, v2c, v3
  - Command Line Interface (CLI)
  - IPv4, IPv6
  - Syslog
  - LLDP (Link Layer Discovery Protocol)
  - Historical Performance in the Element
  - Radio Link Quality Monitoring
- **CE**
  - CE Marked
- **Spectrum**
  - ETSI EN 302 217-2-2
- **EMC / EMI**
  - ETSI EN 301 489-1
  - ETSI EN 301 489-4
  - EN 55032
- **Electrical Safety**
  - EN 60950-1
  - EN 60950-22
  - EN 50385 (RF Exposure)
- **Environmental**
  - ETSI EN 300019-2-4, Class 4.1/4M5 (Operation)
  - ETSI EN 300 019-2-1, Class 1.2 (Storage)
  - ETSI EN 300 019-2-2, Class 2.3 (Transportation)
  - IEC 60529, Class IP67 (Protection against dust and water)

[1] 256-Byte frame with MHS.

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