





UltraLink™-GX80 (with parabolic antenna 30 cm)

All-Outdoor 10 Gbit/s E-Band Radio

Overview

UltraLink™-GX80 is a high-performance, high-capacity E-Band (71-76 / 81-86 GHz) radio designed for use in demanding wireless transport cases. Its cutting edge modem and RF transceiver technology deliver market-leading E-Band link ranges at 10 Gbit/s full-duplex capacity. Furthermore, in 2+0 XPIC operation, it achieves throughputs of up to 20 Gbit/s (full duplex). UltraLink™-GX80 is a uniquely-versatile fully-outdoor radio suitable for wide variety of applications. It supports Ethernet/IP, eCPRI or CPRI traffic transport, while offering a rich set of L2 and L3 networking features for the delivery of Carrier Ethernet and IP/MPLS-based services. Additionally, it offers frequency and phase synchronization functionality that fully addresses the stringent timing requirements of 4G/5G networks. Its unique integrated Radio Link Quality Monitoring and Diagnostics functionality expedites link diagnostics and troubleshooting. Being an easy to install and manage compact all-outdoor radio, it enables minimization of deployment footprint and total cost of ownership. As a result, UltraLink™-GX80 is ideally suited for 4G/4G+/5G RAN backhaul, midhaul and fronthaul or any transport application in Ethernet/IP-based networks as an alternative to optical fiber.

Radio Specifications

Operating Frequencies, MHz	71,000 to 76,000 / 81,000 to 86,000					
Channel Sizes, MHz	125 / 250 / 500 / 750 / 1,000 / 1,500 / 2,000					
Duplexing Scheme	FDD					
Ethernet Throughput, Gbit/s	Up to 10					
Modulation (adaptive)	4-QAM to 1024-QAM					
Link Adaptation	Hitless ACM mechanism up to 9 states					
Forward Error Correction	LDPC / Reed Solomon					
Configurations	1+0, 2+0 XPIC / RLA $^{(1)}$, Dual Band (BCA) 2+0 & 3+0 $^{(1)}$					
Antenna size options / Gain (Midband)	 Single and Dual-Polarization parabolic 30 cm / 45.5 dBi and 60 cm / 50.5 dBi. Dual-band 60 cm with 23 / 18 / 15 / 13 GHz. 					

Mechanical & Environmental Specifications

Dimensions (H x W x D), mm	335 x 238 x 120
Weight, kg	6.5 (excluding antenna & mounting kit)
Power Supply, nominal	-48 V DC (delivered directly or through PoE)
Power Consumption (typ.), W	85
Operating Temperature	-33 °C to +55 °C ⁽²⁾

Radio Performance

Modulation	L1 Throughput (Mbit/s) ⁽³⁾						System Gain @ BER 10 ⁻⁶ , Typ., dB (without antennas) ⁽⁴⁾							
	2000 MHz	1500 MHz	1000 MHz	750 MHz	500 MHz	250 MHz	125 MHz	2000 MHz	1500 MHz	1000 MHz	750 MHz	500 MHz	250 MHz	125 MHz
1024-QAM	-	-	-	-	4558	2279	1107	-	-	-	-	66.0	69.5	71.7
512-QAM	-	9999	8144	6108	4072	2036	987	-	60.4	63.0	65.5	69.8	74.0	75.1
256-QAM	9999	9999	7171	5378	3585	1793	867	65.6	66.5	68.6	70.9	74.0	77.1	78.1
128-QAM	9999	9371	6198	4649	3099	1550	746	70.6	71.4	73.3	74.6	78.3	80.3	81.4
64-QAM	9218	7901	5226	3919	2613	1306	626	74.7	75.5	77.3	78.6	82.5	83.5	84.5
32-QAM	6159	5279	3493	2619	1746	873	432	78.8	79.4	81.2	82.5	86.0	87.0	88.0
16-QAM	5787	4960	3281	2460	1640	820	386	82.4	83.1	84.9	86.1	89.2	90.2	91.2
4-QAM	2893	2480	1640	1230	820	410	193	93.3	93.9	95.7	96.9	98.5	97.0	98.0
4-QAM Lo	1607	1377	911	683	455	228	113	95.4	96.0	97.8	99.0	101.2	99.7	100.7

Features & Networking Specifications

Interfaces

- 3 x SFP/SFP+ (optical), 1 x RJ45, 1 x USB
- Depending on the operating mode the traffic interfaces are:
 - > Ethernet Mode / eCPRI (IEEE 802.3)
 - Up to 2 x 10GBase-SR/LR/ER/ZR (SFP+)
 - Up to 3 x 1000Base-X (SFP)
 - Up to 2 x 2.5G Base-X (SFP+)(5)
 - 1 x 100/1000 BASE-T (RJ45)
 - CPRI Mode(5)
 - 3 x CPRI Options 2 to 7 (SFP/SFP+)
 - 1 x 100/1000BASE-T (RJ45) for management only

• Layer 2 Networking Features

- IEEE 802.1Q (VLAN), IEEE 802.1p
- IEEE 802.1ad (Provider Bridge (Q-in-Q))
- IEEE 802.1w (RSTP) / IEEE 802.1s (MSTP)(5)
- IEEE 802.1AX (LAG/LACP)(5)
- ITU-T G.8032v2 (ERP)(5)
- Carrier Ethernet E-Line, E-LAN services
- Jumbo Frames: 9,600 bytes
- MAC Learning enable / disable per VLAN
- eCPRI, IEEE 802.1CM Profile A
- Bridge Security (MAC Anti-Spoofing, Port Flooding, BC/MC Storm protection)
- Ethernet OAM
 - > IEEE 802.1ag(CFM), ITU-T Y.1731 (Performance Monitoring)(5)
- > ITU-T G.8013/ Y.1731 Bandwidth Notification (ETH-BN)(5)
- > ITU-T G.8013/ Y.1731 Client Signal Fail (ETH-CSF)(5)
- > IEEE 802.3ah (Link OAM (EFM))(5)

• L3 and IP/MPLS Networking Features(6)

- IPv4 L3 Routing (OSPF, IS-IS, BGP, RIPv1/RIPv2 and static routing)
- MPLS LDP, RSVP
- L3VPN and MP-BGP
- L2VPN VPWS and VPLS (raw and tagged mode) with LDP signaling
- BFD (static route, OSPF, IS-IS) and MPLS-OAM
- Network slicing tools (L3 sub-interface, VRF, RSVP-TE, MS-PW, advanced QoS Ingress/Egress)
- Hybrid Layer 2 and Layer 3 operation

• Quality of Service (QoS)

- Eight QoS classes (8 queues)
- Traffic Classification per VLAN ID / P-Bits / DSCP / IPv6 TC / MPLS EXP
- Ingress Policing per traffic flow, Egress Shaping per port
- Queue Management: Tail drop, WRED
- Queuing Schemes: SP, WRR, WFQ, Hybrid
- Egress Hierarchical QoS (per traffic class, per service)

Synchronization

- ITU-T G.8261 / G.8262 / G.8264 (Synchronous Ethernet)
- IEEE 1588-2008 TC (E2E), ITU-T G.8273.3 Class B(5)
- IEEE 1588-2008/ITU-T G.8275.1 T-BC, ITU-T G.8273.2 Class B⁽⁵⁾

• Management & Monitoring

- Embedded Web Server (WebUI)
- Command Line Interface (CLI)
- Management over IPv4 and IPv6, SNMP v2c, v3
- Access authentication: Local and remote (TACACS+)
- Support of strong passwords, HTTPS, SSHv2
- Support of File Transfer (FTP), Syslog server, NTP
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- Statistics: Radio, Modem, G.826, Interface
- Historical Performance in the element
- DOM / DDM for SFP modules
- Radio Link Quality Monitoring and Diagnostics(5)
- Intracom Telecom NMS (uni|MS™)
- NETCONF / YANG (for Radio and System)(6)

Spectrum

- FCC 47 CFR Part 101
- **ETSI EN 302 217-2**

EMC / EMI

- FCC 47 CFR Part 15, Subpart B, Class A
- ETSI EN 301 489-1
- ETSI EN 301 489-4
- ETSI EN 301 489-17
- **EN 55032**
- EN 61000-3-2
- EN 61000-3-3

Electrical Safety

- EN 60950-1
- EN 60950-22
- EN 50385
- = EN 60215

Environmental

- ETSI EN 300019-2-4, Class 4.1/4M5
- **ETSI EN 300 019-2-1, Class 1.2**
- **ETSI EN 300 019-2-2, Class 2.3**
- IEC 60529 Class IP67

⁽³⁾ Legacy L2 software platform, Optimum Capacity modem profile, 256 Bytes frame.
⁽⁴⁾ Legacy L2 software platform, Optimum System gain Modem profile.
⁽⁵⁾ Supported by the legacy L2 software platform. To be supported by the new Hybrid L2 & L3 software platform only.
⁽⁶⁾ Supported by the new Hybrid L2 & L3 Software platform only.