Cambium Networks™

PTP 820G All Indoor, Multi-Carrier Licensed Microwave

Specifications

RADIO

- 6, 11 GHz
- 1+0, 1+1 HSB, 2+0 (E/W), 2+0 XPIC, 2+0 MC-ABC

Radio Features

- Multi-Carrier Adaptive Bandwidth Control (up to 2+0)
- Protection: 1+1 HSB
- High spectral utilization: QPSK to 2048 QAM w/ACM
- 10-40 MHz Channel
- XPIC
- AES 256-bit Encryption
- FIPS-140-2 **

ETHERNET

Ethernet Interfaces

- Traffic Interfaces – 4 x 10/100/1000Base-T (RJ-45) and 2x1000base-X (SFP), 16 x E1/T1 (Optional MDR 69-pin)
- Management Interface - 2 x 10/100 Base-T (RJ-45)
- External Alarm Interface – 1 x DB9
- SFP Types - Optical 1000Base-LX (1310 nm) or SX (850nm)
  Note: SFP devices must be of industrial grade (-40°C to +85°C)

Ethernet Features

- MTU – 9600 Bytes
- Quality of Service
  - Multiple Classification criteria (VLAN ID, p-bits, IPv4, DSCP, IPv6 TC, MPLS EXP)
  - 8 priority queues
  - Deep buffering (configurable up to 64 Mbit per queue)
  - WRED
  - Hierarchical QoS – high service granularity*
  - P-bit marking/remarking
- 4K VLANs
- VLAN add/remove/translate
- Frame Cut Through – controlled latency and PDV for delay sensitive applications
- Header De-Duplication – Capacity boosting by eliminating inefficiency in all layers (L2, MPLS, L3, L4, Tunneling – GTP for LTE, GRE)
- Network Resiliency - G.8032 and Multiple Spanning Tree Protocol (MSTP)*
- Ethernet OAM – EFM (IEEE 802.3ah), CFM (IEEE 802.1ag), ITU-T Y.1731*

SYNCHRONIZATION

Synchronization Distribution

- Sync Distribution over any traffic interface (GE/FE)
- Sync-E (ITU-T G.8261, G.8262)
- SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)
- Sync-E Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications.

IEEE-1588

- Optimized Transport for reduced PDV
- IEEE-1588 TC

STANDARD

MEF

- Carrier Ethernet 2.0 (CE 2.0)**

Supported Ethernet Standards

- 10/100/1000base-T/X (IEEE 802.3)
- Ethernet VLANs (IEEE 802.3ac)
- Virtual LAN (VLAN, IEEE 802.1Q)
- Class of service (IEEE 802.1p)
- Provider bridges (QinQ – IEEE 802.1ad)
- Link aggregation (IEEE 802.3ad)
- Auto MDI/MDIX for 1000baseT
- RFC 1349: IPv4 TOS
- RFC 2474: IPv4 DSCP
- RFC 2460: IPv6 Traffic Classes

Standards Compliance

- EMC: EN 301 489-4, EN 301 489-1, FCC 47 CFR, Part15, Class B
- Safety: IEC 60950, EN60950-1, IEC 60950-1, UL60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSA C22.2.60950-22
- Ingress Protection: IEC 60529 IP56
- Operation: ETSI EN 300 019-1-3 class 3.2
- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2.3

TECHNICAL SPECIFICATION

Mechanical Specifications

- IDU Dimensions – 44mm(H), 426mm(W), 180mm(D), 2.5kg
- RFU-A Dimensions – 46mm (H), 483mm (W), 335mm(D), 12kg

Environmental Specifications

- -5°C to +55°C (-25°C to +65°C extended)

Power Input Specifications

- Standard Input: -48 VDC
- DC Input range: -40 to -60 VDC

Power Consumption Specifications

- IDU Eth-only with single modem: 23.5W, addition for second modem, 2.9W, additional for 16 E1/DS1, 11w
- RFU-A
  - 1+0:
    High Level: 77W
    Medium Level: 53 W
    Low Level: 43W
    Mute: 24W
  - 1+1 HSB/SD BBS:
    High Level: 101W
    Medium Level: 77W
    Low Level: 67W
    Mute: 48W

* Planned for future release.
** Certification pending.

Specifications

TRANSMIT POWER

		Frequency (GHz)				Frequency (GHz)	
	Modulation	6L&6H	11		Modulation	6L&6H	11
RFU-Ae	QPSK	33	32	RFU-Aep	QPSK	35	32
	8 PSK	33	32		8 PSK	35	32
	16 QAM	33	32		16 QAM	35	32
	32 QAM	33	31		32 QAM	35	32
	64 QAM	33	31		64 QAM	35	32
	128 QAM	33	32		128 QAM	34	32
	256 QAM	32	31		256 QAM	34	32
	512 QAM	29	29		512 QAM	33	31
	1024 QAM	29	29		1024 QAM	32	30
	2048 QAM	27	27		2048 QAM	30	28

Note: The Transmit power is measured at the antenna port of the RFU-A Chassis, RFU-Aep on 11 GHz will be available in future release.

RECEIVE SENSITIVITY

Modulation	Channel Spacing	6L&6H GHz	11 GHz
QPSK	10 MHz	-92.5	-92.0
8 PSK		-87.5	-87.0
16 QAM		-86.5	-86.0
32 QAM		-83.0	-82.5
64 QAM		-79.5	-79.0
128 QAM		-76.5	-76.0
256 QAM		-73.5	-73.0
512 QAM		-71.0	-70.5
1024 QAM Strong		-68.0	-67.5
1024 QAM Light		-67.0	-66.5
QPSK	20 MHz	-89.5	-89.0
8 PSK		-84.5	-84.0
16 QAM		-83.0	-82.5
32 QAM		-79.5	-79.0
64 QAM		-76.5	-76.0
128 QAM		-73.5	-73.0
256 QAM		-70.5	-70.0
512 QAM		-68.0	-67.5
1024 QAM Strong		-65.0	-64.5
1024 QAM Light		-64.0	-63.5
2048 QAM		-60.5	-60.0
QPSK	30 MHz	-88.0	-87.5
8 PSK		-83.0	-82.5
16 QAM		-81.0	-80.5
32 QAM		-77.5	-77.0
64 QAM		-74.5	-74.0
128 QAM		-71.5	-71.0
256 QAM		-68.5	-68.0
512 QAM		-66.5	-66.0
1024 QAM Strong		-63.0	-62.5
1024 QAM Light		-62.5	-62.0
2048 QAM		-59.0	-58.5

Modulation	Channel Spacing	6L&6H GHz	11 GHz
QPSK	40 MHz	-86.5	-86.0
8 PSK		-81.5	-81.0
16 QAM		-80.0	-79.5
32 QAM		-76.5	-76.0
64 QAM		-73.5	-73.0
128 QAM		-70.5	-70.0
256 QAM		-68.0	-67.5
512 QAM		-65.5	-65.0
1024 QAM Strong		-62.0	-62.0
1024 QAM Light		-61.5	-61.0
2048 QAM		-58.0	-57.5

ETHERNET THROUGHPUT

		Ethernet Throughput (Mbps)				Ethernet Throughput (Mbps)		
Modulation	Channel Size	No Compression	L2 Compression	Multi-Layer Compression	Channel Size	No Compression	L2 Compression	Multi-Layer Compression
QPSK	10 MHz	12	14-Dec	13-40	20 MHz	27	28-31	29-88
8 PSK		19	19-21	20-61		41	41-47	43-132
16 QAM		26	26-30	27-83		56	57-64	59-180
32 QAM		34	35-39	36-111		74	75-85	78-238
64 QAM		42	43-48	45-137		91	92-104	96-293
128 QAM		51	51-58	53-164		110	111-126	116-354
256 QAM		58	59-67	61-188		125	126-142	131-401
512 QAM		64	65-73	67-206		136	137-156	143-438
1024 QAM Strong		67	68-77	71-216		145	146-165	152-466
1024 QAM Light		72	72-82	75-230		154	155-176	162-495
2048 QAM		NA	NA	NA		164	165-187	172-528
QPSK	30 MHz	41	41-47	43-132	40 MHz	57	57-65	60-183
8 PSK		61	62-70	65-197		85	86-97	89-273
16 QAM		84	85-96	88-270		116	117-132	121-372
32 QAM		111	111-126	116-355		152	154-174	160-490
64 QAM		136	137-155	143-437		187	189-214	197-602
128 QAM		164	166-188	173-528		226	228-258	238-728
256 QAM		188	190-215	198-604		243	245-278	256-782
512 QAM		209	211-238	220-672		267	269-304	280-833
1024 QAM Strong		222	224-253	233-714		302	305-345	318-833
1024 QAM Light		236	238-269	248-758		321	324-366	337-833
2048 QAM		256	258-292	268-821		347	350-396	365-833