PTP 600 SERIES

POINT-TO-POINT COMMUNICATIONS IN VIRTUALLY ANY ENVIRONMENT

Reliable, fast, secure, durable and spectrally efficient all are terms that describe Cambium Point-to-Point (PTP) 600 Series wireless connectivity and backhaul solutions. Built on the time-tested and proven Orthogon technology, PTP 600 solutions communicate steadfastly in some of the most challenging environments on the planet.

ADAPTABLE AND POWERFUL

Our industry-leading PTP 600 radios operate in the 5.4, 5.8 and 5.9 GHz license-exempt radio frequency (RF) bands and the 2.5, 4.5, 4.8 and 4.9 GHz defined-use licensed bands. With aggregate throughput to 300 Mbps, PTP 600 links can deliver up to 99.999% availability in virtually any environment, including non-line-of-sight, long-distance line-of-sight, high interference, water and desert.

Whether your organization is a business enterprise, government agency or service provider, PTP 600 systems have the speed, reliability and reach you want for today's multi-service networks. They are ideal solutions for a wide array of applications such as T1/E1 replacement, high-capacity voice and video backhaul, building-to-building and campus connectivity, disaster recovery, network redundancy, distance learning and telemedicine.

TESTED AND CERTIFIED

PTP 600 radios have obtained a number of authorizations and certifications to affirm their compliance with key regulatory agencies, including:

- Federal Information Processing Standards (FIPS) 140 Level 2 validation for cryptographic algorithms, key security and tamper evidence
- Unified Capabilities, Approved Products List (UC-APL) certification for interoperability and information assurance
- MEF9 certified as compliant with the Metro Ethernet Forum's (MEF's) essential specifications for interoperability
- Ingress Protection rated (IP66) protective aluminum radio enclosures
- Compliance with ATEX (Atmospheres EXplosibles) and HAZLOC (Hazardous Locations) directives for equipment operations in hazardous locations

RADIO TECHNOLOGY

RF bands[1]	Defined-Use Licensed Band:	
	25600:	2.496 – 2.690 GHz (Education)
	45600:	4.400 – 4.600 GHz (Federal and NTIA)
	48600:	4.700 – 4.940 GHz (NTIA)
		4.710 – 4.940 GHz (Federal)
		4.710 – 5.000 GHz (Federal Extended)
		4.940 – 4.990 GHz (Public Safety as appropriate)
	49600:	4.940 – 4.990 GHz (Public Safety)
	License-Exempt Bands:	
	54600:	5.470 – 5.725 GHz
	58600:	5.725 – 5.850 GHz
	59600:	5.825 – 5.925 GHz
Channel size	In all cases, channel sizes depend on region code.	
	25600:	Configurable to 5, 10, 15 or 30 MHz; 10, 15 and 30 MHz channel sizes are unlocked via purchase of a license key (30 MHz is not FCC compliant)
	45600:	Configurable to 5, 10, 15, 20 or 30 MHz
	48600:	Configurable to 5, 10 or 20 MHz
	49600:	Configurable to 5, 10 or 20 MHz; 10 and 20 MHz channel sizes are unlocked via purchase of a license key
	54600, 58600:	Configurable to 5, 10, 15 or 30 MHz
	59600:	Configurable to 5, 10, 15 or 30 MHz; 10, 15 and 30 MHz channel sizes are unlocked via purchase of a license key
Channel selection	25600:	Fixed Frequency (US BRS/EBS Band Plan) Lower Band – 2496 MHz to 2568 MHz Middle Band – 2572 MHz to 2614 MHz Upper Band – 2618 MHz to 2690 MHz
	All other 600 models:	
	By *intelligent* Dynamic Frequency Selection (*i*-DFS) or manual intervention; automatic selection on start-up and continual adaptation to avoid interference	
Transmit power[2]	Varies with modulation mode and settings:	
	25600:	Up to 23 dBm
	45600, 48600:	Up to 27 dBm
	49600:	Up to 24 dBm
	54600, 58600, 59600:	Up to 25 dBm
System gain[2]	Integrated:	Varies with modulation mode
	25600:	Up to 154 dB with 18 dBi antenna
	45600:	Up to 168 dB with 21.5 dBi antenna
	48600:	Up to 169 dB with 22 dBi antenna
	49600:	Up to 166 dB with 22 dBi antenna
	54600, 58600, 59600:	Up to 168 dB with 23 dBi antenna
	Connectorized:	Varies with modulation mode and antenna type
Receiver sensitivity	Varies with Adaptive Modulation and bandwidth between:	
	25600:	-95 and -59 dBm
	45600, 48600:	-98 and -60 dBm
	49600:	-98 and -59 dBm
	54600, 58600, 59600:	-98 and -58 dBm
Modulation	Dynamic; adapting between BPSK and 256 QAM	
Error correction	FEC	
Duplex scheme	Time Division Duplex (TDD) and Half Duplex Frequency Division Duplex (HD-FDD); Dynamic or Fixed ratio Each TDD-synchronized link requires a Cambium PTP-SYNC synchronization unit to provide an accurate timing reference signal	

Antenna	Integrated flat plate: 25600: 18 dBi, 18° 45600: 21.5 dBi / 11° 48600, 49600: 22 dBi / 11° 54600, 58600, 59600: 23 dBi / 8°	
	Connectorized: Can operate with a selection of separately-purchased single and dual polar antennas through 2 x N-type female connectors (local regulations should be checked prior to purchase)	
Range	Up to 124 miles (200 km)	
Security and encryption	Optional FIPS-197 compliant 128/256-bit AES Encryption; optional FIPS 140-2[3] Level 2; FIPS 140-2 validation, certificate #1515, may be confirmed at: http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/140val-all.htm#1515	
	UC-APL certified for interoperability and information assurance; the listing may be confirmed at: https://aplits.disa.mil/processAPList.do	

ETHERNET BRIDGING

Protocol	IEEE 802.3	
User data throughput	25600, 59600:	Dynamically variable up to 300 Mbps at the Ethernet layer (aggregate): 5 MHz Channel: Up to 40 Mbps 10 MHz Channel: Up to 84 Mbps 15 MHz Channel: Up to 126 Mbps 30 MHz Channel: Up to 300 Mbps
	45600:	Dynamically variable up to 300 Mbps at the Ethernet layer (aggregate): 5 MHz Channel: Up to 40 Mbps 10 MHz Channel: Up to 84 Mbps 15 MHz Channel: Up to 126 Mbps 20 MHz Channel: Up to 168 Mbps 30 MHz Channel: Up to 300 Mbps
	48600, 49600:	Dynamically variable up to 200 Mbps at the Ethernet layer (aggregate): 5 MHz Channel: Up to 48 Mbps 10 MHz Channel: Up to 100 Mbps 20 MHz Channel: Up to 200 Mbps
	54600, 58600 Full:	Dynamically variable up to 300 Mbps at the Ethernet layer (aggregate): 5 MHz Channel: Up to 40 Mbps 10 MHz Channel: Up to 84 Mbps 15 MHz Channel: Up to 126 Mbps 30 MHz Channel: Up to 300 Mbps
	54600, 58600 Lite:	Dynamically variable up to 150 Mbps at the Ethernet layer (aggregate): 10 MHz Channel – Up to 42 Mbps 15 MHz Channel – Up to 63 Mbps 30 MHz Channel – Up to 150 Mbps
QoS	8 Queues	
Packet Prioritization	IEEE 802.1p	
Ethernet Interface	10 / 100 / 1000 Base T (RJ-45), auto MDI/MDIX, optional 1000 Base SX	
T1/E1 Interface	ITU-T G.823 / G.824 Supports up to two T1/E1 ports	
Protection and power cross	GR1089, EN60950	
T1/E1 Latency (one way)	As low as 1.7 ms depending on model, range, bandwidth, modulation mode and number of T1/E1 ports; accurate T1/E1 latency figures can be determined for any given configuration using the Cambium PTP LINKPlanner	

MANAGEMENT & INSTALLATION

LED indicators	Power status, Ethernet link status and activity
Network management	In-band and out-of-band[4]
System management	Web access via browser using HTTP or HTTPS/TLS[5] SNMP v1, v2c and v3, MIB-II and proprietary PTP MIB; Cambium Wireless Manager, version 3.0 or higher Remote authentication using RADIUS and syslog
Installation	Built-in audio and graphical assistance for link optimization
Connection	Distance between outdoor unit and primary network connection: up to 330 feet (100 meters)
Interoperability	MEF9 (Metro Ethernet Forum) certified UC-APL certified for interoperability and information assurance

PHYSICAL

Dimensions	Integrated Outdoor Unit (ODU): Width 14.5" (370 mm), Height 14.5" (370 mm), Depth 3.75" (95 mm)
	Connectorized ODU: Width 12.2" (309 mm), Height 12.2" (309 mm), Depth 4.1" (105 mm)
	Powered Indoor Unit (PIDU Plus): Width 9.75" (250 mm), Height 1.5" (40 mm), Depth 3" (80 mm)
Weight	Integrated ODU: 12.1 lbs (5.5 kg) including bracket
	Connectorized ODU: 9.1 lbs (4.3 kg) including bracket
	PIDU Plus: 1.9 lbs (0.86 kg)
Operating temperature	-40° to +140°F (-40° to +60°C), including solar radiation
Wind speed survival	202 mph (325 kph)
Power supply	Integrated with Indoor Unit
Power source	90–240 VAC, 50–60 Hz / 36-60V DC; redundant powering configurations supported
Power consumption	55 W max

ENVIRONMENTAL & REGULATORY

Protection and safety	25600:	UL60950-1
	45600, 48600:	UL60950-1; IEC60950-1; CB Approval for Global
	49600:	UL60950-1, CB Approval for Global
	54600, 58600	UL60950-1; IEC60950-1; EN60950-1; CSA-C22.2 No. 60950-1; CB Approval for Global
Radio	25600:	FCC Part 27
	45600, 48600:	FCC Part 90Y, NTIA
	49600:	FCC Part 90Y, RSS-111
	54600, 58600:	FCC Part 15, sub-part C 15.247; RSS 210 Issue 7; EN 302 502, Eire ComReg 02/71R1, UK Approval to IR2007
EMC	25600:	FCC Part 15 Class B
	45600, 48600:	USA CFR 47 Part 15 Class B
	49600:	FCC Part 15 Class B
	54600, 58600:	USA–FCC Part 15, Class B; Canada–CSA Std C108.8, 1993 Class B; Europe–EN 301 489 1-4, EN55022, CISPR 22

[1] Regulatory conditions for RF bands should be confirmed prior to system purchase.
[2] Gain, maximum transmit power and effective radiated power may vary based on regulatory domain.
[3] While FIPS 140-2 is compatible with existing systems, certain hardware limitations may apply.
[4] Out-of-band management is available on PTP 45600, 54600 and 58600 systems.
[5] Web access via HTTPS/TLS is available on AES-enabled radios.

Cambium Networks™ www.cambiumnetworks.com

CN PTP 600 10-00 SS 012412