APPLICATIONS

Carriers, Operators, Service Providers and businesses share a growing need for high-capacity, reliable and secure network connectivity alternatives to leased line fiber circuits and lower frequency licensed and unlicensed radio solutions. BridgeWave's family of high capacity point-to-point wireless solutions is the perfect alternative to meet these challenges and accommodate your wireless backhaul needs today and into the future.

To review real life business and service provider examples where BridgeWave's products provide high capacity connectivity for mission critical applications, go to www.bridgewave.com/solutions/casestudies.cfm

Mobile Backhaul
Future-proof high-capacity backhaul for next generation 4G/WiMAX/LTE services.

Fixed Networks
High-capacity business services, cellular/Wi-Fi/WiMAX backhaul, fiber backbone extensions, redundant fiber overlays, mesh backbone, temporary connections.

Healthcare
Secure (HIPAA-compliant) campus connectivity, off-site medical office & lab network access, real-time imaging application connectivity, redundant fiber overlays and disaster recovery.

Education
High-performance campus & off-site location connectivity, Wi-Fi & security camera backhaul and connectivity to service provider fiber.

Government/Military
Highly-secure inter-building connections, redundant fiber overlay, disaster recovery and temporary connections.

Municipalities
High-performance backbone connectivity for municipal networks, video surveillance systems, traffic control & monitoring, backhaul for 4.9 GHz mesh nodes, homeland security, E911 deployments.

Enterprise
Inter-building LAN extensions, server centralization, remote data storage & backup, redundant fiber overlays and disaster recovery.

ABOUT

Founded in 1999, BridgeWave Communications is the leading supplier of high capacity 4G backhaul and gigabit wireless connectivity solutions. BridgeWave's point-to-point wireless bridges are widely deployed in mainstream enterprise and service provider network applications, while its carrier-grade FlexPort® solutions provide a future-proof mobile backhaul solution for carriers and mobile operators migrating to 4G/LTE/WiMAX or greenfield next generation network deployments.

Utilizing the spectrum in both microwave (11 – 38 GHz) and millimeter wave (60 – 90 GHz), the company's solutions offer up to ten times the bandwidth of comparably-priced lower-frequency license-free and licensed-band wireless links, while providing superior interference immunity and data security. BridgeWave's solutions provide fiber-comparable performance without the delay and cost associated with leased-lines.

Setting the standard for product quality, BridgeWave employs Highly Accelerated Life Testing (HALT) during design and Highly Accelerated Stress Screening (HASS) during production to ensure the highest levels of product reliability and customer satisfaction. BridgeWave is an ISO9001 registered company.

BridgeWave is a U.S.-based company headquartered in Santa Clara, California. The company has strong global presence with thousands of radios deployed in more than 50 countries. BridgeWave has a network of experienced distributors and resellers worldwide, making it today's primary vendor of high capacity, high frequency solutions. For more information, visit www.bridgewave.com

BridgeWave
COMMUNICATIONS

BridgeWave Communications, Inc.
3350 Thomas Road • Santa Clara, CA. 95054
Ph: 1-866-577-6908 | 1-408-567-6900 | Fax: 1-408-567-0775

www.bridgewave.com @BridgeWave

BridgeWave
COMMUNICATIONS

AFFORDABLE
& RELIABLE

High Capacity Wireless Solutions

Backhaul Evolved®

BridgeWave Products-At-A-Glance

60 GHz

	FE60U	GE60	AR60/AR60X
Data Rate (full-duplex)	100 Mbps	1000 Mbps	100 Mbps (FE mode) 1000 Mbps (GE mode) 1000/100 Mbps AdaptRate
Latency	<220µSec	<40µSec	<40µSec (GE mode) <220µSec (FE mode)
Link Budget @ 10^{-12} BER	161.5 dB	150.5 dB	150.5 dB/163.5 (GE mode) 161.5 dB/174.5 (FE mode)
RF Interface	58.1/62.9 GHz (FDD), digitally modulated (BFSK) with forward error correction RS(204,188)		
Antennas	Integrated 10" (25cm), H or V, 40 dBi, 1.4° beam (FE60U, GE60, AR60) External 24" (60cm), H or V, 46 dBi, 0.6° beam (AR60X)		
Ethernet Interfaces	1000Base-SX with LC connectors, up to 270m 62.5/125µm MMF or 500m 50/125µm MMF, 100Base-Tx with RJ45 connector, up to 100m CAT5 cable, internal surge suppression on CAT5 copper interface.		
Management	Web based HTML embedded management agent: setup, security, status, statistics, Secure Management Access, RADIUS, Syslog support, SNMP support: MIB-II and BridgeWave enterprise MIB		
Power	100-240 VAC input/+24 VDC output, indoor 0 – 40°C power supply, 45 watts max consumption. Max cable length 650 ft (200m) with 12 AWG, 400 ft (125m) with 14AWG, 24 VDC surge suppressor recommended		
Size & Weight (radio + antenna)	FE60U, GE60, AR60: 12" w x 12" h x 6" d (30 cm x 30 cm x 15 cm), 22 lbs (10 kg) AR60X: 24" w x 24" h x 20" d (62 cm x 62 cm x 50 cm), 38.5 lbs (17.5 kg)		
Environmental	Operating Temperature: -33°C to +55°C (-27.4°F to +131°F) Operating Altitude: 14,764 ft (4,500m) maximum		

AR60X (AES)	Up to 1.5 Miles (2.5 km)
FE60U	Up to 1 Mile (1.6 km)
AR60 (AES)	Up to 1 Mile (1.6 km)
GE60	Up to .75 Mile (1.2 km)

A complete list of product specifications can be found at www.bridgewave.com/products

80 GHz

	FE80U/FE80XU	GE80/GE80X	BW80/BW80X	AR80/AR80X
Data Rate (full-duplex)	100 Mbps	1000 Mbps	125 Mbps upgradeable to 250/500/1000 Mbps via software key	100 Mbps (FE mode) 1000 Mbps (GE mode) 1000/100 Mbps AdaptRate
Latency	<220µSec	<40µSec	< 40 µSec	<40µSec (GE mode) <220µSec (FE mode)
Link Budget @ 10^{-12} BER	183 dB (FE80U) 197 dB (FE80XU)	172 dB (GE80) 186 dB (GE80X)	172 dB (BW80) 186 dB (BW80X)	172 dB/186 dB (GE mode) 183 dB/197 dB (FE mode)
RF Interface	72.5/82.5 GHz (FDD), digitally modulated (BFSK) with forward error correction RS(204,188)			
Antennas	External 12" (30cm), H or V, 44 dBi, 0.8° beam (FE80U, GE80, AR80, BW80) External 24" (60cm), H or V, 51 dBi, 0.4° beam (FE80XU, GE80X, AR80X, BW80X)			
Ethernet Interfaces	1000Base-SX with LC connectors, up to 270m 62.5/125µm MMF or 500m 50/125 µm MMF, 100Base-Tx with RJ45 connector, up to 100m CAT5 cable, internal surge suppression on CAT5 copper interface.			
Management	Web-based HTML embedded management agent: setup, security, status, statistics; Secure Management Access, RADIUS; Syslog support SNMP support: MIB-II and BridgeWave enterprise MIB			
Power	100-240 VAC input/+24 VDC output, indoor 0 – 40°C power supply (-48 VDC input option), 45 watts max consumption. Max cable length 650 ft (200m) with 12 AWG, 400 ft (125m) with 14AWG, surge suppressor recommended			
Size & Weight (radio + antenna)	FE80U, GE80, BW80, AR80: 20" w x 14" h x 10" d (50cm x 36cm x 25cm); 22 lbs (10kg) FE80XU, GE80X, BW80X, AR80X: 24" w x 24" h x 20"d (62 cm x 62cm x 50cm); 38.5 lbs (17.5kg)			
Environmental	Operating Temperature: -33°C to +55°C (-27.4°F to +131°F) Operating Altitude: 14,764 ft (4,500m) maximum			

AR80X (AES)	Up to 7 Miles (11.5 km)
FE80XU	Up to 7 Miles (11.5 km)
GE80X/BW80X	Up to 5 Miles (8 km)
AR80 (AES)	Up to 5 Miles (8 km)
FE80U	Up to 5 Miles (8 km)
GE80/BW80	Up to 4 Miles (6.5 km)

FlexPort®

	FP18	FP23	FP80	FP80-3000
Data Rate (full-duplex)	330 Mbps, software upgradeable to 1 Gbps	330 Mbps, software upgradeable to 1Gbps	240 Mbps, software upgradeable to 1.2 Gbps	3 Gbps over-the-air 2.4 Gbps user throughput
Latency	As low as <110 µSec, depending on configuration	As low as <110 µSec, depending on configuration	As low as <50 µSec, depending on configuration	<50µSec
Tx Power BPSK QPSK 16QAM 64QAM 256QAM	 N/A +26 dBm +24 dBm +20.5 dBm +17 dBm	 N/A +25 dBm +24 dBm +20.5 dBm +17 dBm	 +19 dBm +19 dBm N/A N/A N/A	 N/A +17 dBm N/A N/A N/A
Rx Sensitivity for 10-6 B.E.R. BPSK QPSK 16QAM 64QAM 256QAM	50/100/150 MHz N/A -79/-76/-74 dBm -73/-70/-68 dBm -67/-64/-62 dBm -61/-58/-56 dBm	50/100/150 MHz N/A -79/-76/-74 dBm -73/-70/-68 dBm -67/-64/-62 dBm -61/-58/-56 dBm	250/1000 MHz -74/-67 dBm -71/-64 dBm N/A N/A N/A	1000 MHz N/A -62 dBm N/A N/A N/A
RF Interface	17.7 – 19.7 GHz	21.2 – 23.6 GHz	71-76/81-86 GHz	71-76/81-86 GHz
F.E.C.	Reed Solomon (204,188) Forward Error Correction coding			
Ethernet Interfaces	Fast Ethernet & Gigabit Ethernet per IEEE 802.3. Up to four (4) field pluggable SFPs supporting multimode (-SX), single mode (-LX), or copper (-T) interface. One RJ-45 (CAT5e) 10/100/1000 Base-T supports line rate speeds up to gigabit Ethernet			
TDM Interfaces	N/A	N/A	STM-1/OC-3 155 Mbps STM-4/OC-12 622 Mbps Up to four (4) field pluggable SFPs for single mode fiber	N/A
Management	Web based HTTP embedded management agent: setup, security, status, statistics, Secure Management Access, RADIUS, Syslog support, SNMP support: MIB-II and BridgeWave enterprise MIB, Ethernet OAM/CFM per 802.3ah, 802.1ag, and Y.1731 (Ethernet OAM available on FP80)			
Power	-48 VDC input (-37.5v to -70v range). 60 watts maximum power consumption. Supports redundant "A" and "B" power feeds.			
Size & Weight (radio only)	11.9" dia x 7.25" deep 30.2cm x 18.4cm 14 lbs/6.3 kg	11.9" dia x 7.25" deep 30.2cm x 18.4cm 14 lbs/6.3 kg	11.5" x 11.5" x 5" WHD 29.2cm x 29.2cm x 12.7cm 14 lbs/6.3kg	11.5" x 11.5" x 12" WHD 29.2cm x 29.2cm x 30.5cm 33 lbs/15kg
Environmental	Operating Temperature: -33°C to +55°C (-27.4°F to +131°F) Operating Altitude: 14,764 ft (4,500m) maximum			
Antennas	Antennas for FPµWave are available from selected distribution partners		Refer to 80 GHz product specifications	