

# FlexPort $\mu$ Wave

18 GHz and 23 GHz Full-Rate Gigabit Capacity Wireless Links

## ULTRA-HIGH CAPACITY WIRELESS LINKS FOR HIGH BANDWIDTH APPLICATIONS

The FlexPort® family of high capacity millimeter wave radios offers carriers, service providers, government and enterprise users the ultimate flexibility in an access and aggregation/backhaul solution for today's networks.

The FP18 and FP23 microwave radio systems have been designed specifically to meet the requirements of operators, carriers, and service providers requiring full-rate gigabit connectivity in a single, compact, all-outdoor enclosure. FP18 and FP23 accomplish this through an innovative approach in aggregating multiple RF channels without the need for additional hardware as with other lower licensed frequency band products. This helps ease installation and maintenance costs on the network by offering only one device to install and manage, providing the user with a highly-reliable, fully integrated backhaul solution.

BridgeWave is the market leader in providing highly reliable high capacity wireless solutions for next generation 4G networks. The FlexPort family of products leverages our expertise in designing and bringing to market carrier-class millimeter wave and microwave solutions that have been accepted and used in thousands of installations worldwide.



**FlexPort  $\mu$ Wave**

## WIRELESS VIRTUAL FIBER SOLUTIONS FOR:



### Mobile Backhaul

Future-proof full-rate gigabit backhaul for next generation 4G/LTE/WiMAX backhaul.



### Service Provider

High-capacity business services, fiber extensions, cellular/Wi-Fi/WiMAX backhaul, redundant fiber overlays, mesh.



### Education

High-performance campus connectivity, Wi-Fi and security camera backbone.



### Enterprise

Server centralization, remote data storage and backup, leased line replacement.



### Government/Municipalities

Video surveillance systems, traffic control and monitoring, Wi-Fi/4.9GHz backhaul.



### Healthcare

Secure, HIPAA-compliant connectivity, medical office, lab network access, real-time imaging & records, application connectivity.

## FEATURES

### Performance:

- Full-rate, full-duplex gigabit Ethernet transmission
- Internal 5-port gigabit Ethernet switch
- Low latency for fiber-equivalent performance
- Innovative RF channel aggregation yields true GigE throughput
- QPSK – 256QAM modem design allows flexibility in link planning
- Optional FIPS-Certified 256-bit AES Encryption

### Ease of Use:

- All-outdoor design
- Field-pluggable SFPs available with multi-mode, single mode, or copper interfaces
- Web based & SNMP management



### Proven Reliability:

- Based on proven design – thousands of full-rate GigE millimeter wave terminals installed
- Rigorous HALT/HASS testing
- Up to 99.999% carrier-grade availability

### Simple GigE Implementation:

- Less hardware to install than other microwave systems
- Lower dollar per megabit total cost of ownership
- Smaller & lighter than solutions requiring two ODUs and combiners
- No tower climb for upgrades



# Specifications

<b>FlexPort <math>\mu</math>Wave</b>		
Frequency Range	17.7 – 19.7 GHz	21.2 – 23.6 GHz
	T/R Spacing: 1,560 MHz	T/R Spacing: 1,200 MHz
Data Rates & Modulation*	40/50/80/100/150 MHz RF Channel Bandwidth:	
	QPSK: 62/83/131/166/250	64QAM: 188/250/403/500/750
	16QAM: 125/166/262/333/500	128QAM: 219/291/473/583/875
	32QAM: 156/208/328/417/625	256QAM: 250/333/544/667/1000
Transmitter Power Output	QPSK: +25 dBm	64QAM: +21 dBm
	16QAM: +24 dBm	128QAM: +19 dBm
	32QAM: +23 dBm	256QAM: +17 dBm
Receiver Sensitivity for $1 \times 10^{-6}$ B.E.R.*	40/50/80/100/150 MHz RF Channel Bandwidth:	
	QPSK: -80/-79/-77/-76/-74 dBm	64QAM: -68/-67/-65/-64/-62 dBm
	16QAM: -74/-73/-71/-70/-68 dBm	128QAM: -65/-64/-62/-61/-59 dBm
	32QAM: -71/-70/-68/-67/-65 dBm	256QAM: -62/-61/-59/-58/-56 dBm
Ethernet Interface	Fast Ethernet & Gigabit Ethernet per IEEE 802.3. One RJ-45 (CAT5e) 10/100/1000 Base-T supports line rate speeds up to gigabit Ethernet Up to 4 field pluggable SFPs supporting multimode (-SX), single mode (-LX) or copper (-T) interfaces	
Latency	Dependent on configuration, as low as 65 $\mu$ Sec	
Networking	Quality of Service per 802.1p, VLAN Support: up to 4092 VLANs	
	Scheduling: 8 queues allowing user configurable Strict Priority or Shaped Deficit Weighted Round Robin (SDWRR)	
	Maximum Ethernet frame length: supports Jumbo packets up to 10,000 bytes	
	Per-port Rate Limiting	
Management	Web-based (HTTP) embedded management agent, HTTPS secure management available	
	SNMP Support: MIB-II And BridgeWave enterprise MIB	
	SysLog (RFC 3164, RFC 3195) event support, RADIUS client support	
	Ethernet OAM per 802.3ah (Link OAM), 802.1ag (Configuration Fault Management), Y.1731 (Performance Monitoring)	
Security	Option: FIPS certified 256-bit AES Encryption (export controlled)	
Power	-48 VDC input, -37.5v to -70v range, 60 watts power consumption. Supports redundant "A" and "B" power feeds	
Size & Weight	11.9" dia x 7.25" d (30.2 cm x 184 cm); 14 lbs (6.3 kg)	
Environmental	Operating temperature: -33°C to +55°C (-27°F to +131°F) per EN 300 019 Class 4.1	
	Operating Altitude: 4,500 m (14,764 ft)	
	Water Ingress: IP66	
Regulatory	Safety: UL Listed, meets FCC 1.3.10 general population RF MPE limits	
	RF Certifications, U.S. FCC Part 101	

\*Note: 100 MHz refers to 2x50 MHz RF channels  
150 MHz refers to 3x50 MHz RF channels

