



# FlexPort $\mu$ Wave

18 GHz, 23 GHz and 24 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 FlexPort  $\mu$ Wave family of 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. FlexPort  $\mu$ Wave accomplishes 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 end customer 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

### 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

### Ease of Use:

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





# Specifications

	FlexPort 18	FlexPort 23	FlexPort 24
Frequency Range	17.7 – 19.7 GHz	21.2 – 23.6 GHz	24.25 – 25.25 GHz
T/R Spacing	1,560 MHz	1,200 MHz	800 MHz
Data Rates & Modulation* QPSK	40/50/80/100/150 MHz RF Channel Bandwidth: 62/83/125/166/250 Mbps	50/100/150 MHz RF Channel Bandwidth: 83/166/250 Mbps	40/80/160 MHz RF Channel Bandwidth: 62/125/250 Mbps
16QAM	125/166/250/333/500 Mbps	166/333/500 Mbps	125/250/500 Mbps
64QAM	187/250/375/500/750 Mbps	250/500/750 Mbps	188/375/750 Mbps
256QAM	250/333/500/667/1000 Mbps	333/667/1000 Mbps	250/500/1000 Mbps
TX Power Output			
QPSK	+26 dBm	+25 dBm	+25 dBm
16QAM	+24 dBm	+24 dBm	+24 dBm
64QAM	+20.5 dBm	+20.5 dBm	+20.5 dBm
256QAM	+17 dBm	+17 dBm	+17 dBm
RX Sensitivity for 1x10 <sup>-6</sup> B.E.R.* QPSK	40/50/80/100/150 MHz RF Channel Bandwidth: -80/-79/-77/-76/-74 dBm	50/100/150 MHz RF Channel Bandwidth: -79/-76/-74 dBm	40/80/160 MHz RF Channel Bandwidth: -80/-77/-74 dBm
16QAM	-74/-73/-71/-70/-68 dBm	-73/-70/-68 dBm	-74/-71/-68 dBm
64QAM	-68/-67/-65/-64/-62 dBm	-67/-64/-62 dBm	-68/-65/-62 dBm
256QAM	-62/-61/-59/-58/-56 dBm	-61/-58/-56 dBm	-62/-59/-56 dBm
F.E.C.	Reed Solomon RS(204, 188) Forward Error Correction		
Mitigation	Optional Adaptive Rate and Modulation (ARM) adjusts modulation to overcome link impairments. User settable switch points.		
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 110 µSec		
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" deep (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		

\*Notes: 80 MHz refers to 2 x 40 MHz channels      100 MHz refers to 2 x 50 MHz channels  
150 MHz refers to 3 x 50 MHz channels      160 MHz refers to 4 x 40 MHz channels