

Advanced MIMO OFDM Radio

CableFree HPR MIMO 2x2 & MIMO 2x2 GigE

Overview



About Wireless Excellence

Founded in 1996 and with headquarters in Oxford UK, Wireless Excellence Limited is a leading designer and supplier of outdoor and indoor Broadband Wireless communication products.

With a complete range of solutions including Radio, Microwave, Millimeter-Wave, Free Space Optics, WiFi and 4G/5G/LTE, customers in over 80 countries have chosen Wireless Excellence as the “one stop shop” solution of choice for dependable wireless networking.

About Our OFDM Range

CableFree OFDM Radio solutions deliver the performance, reliable connectivity, and cost-effectiveness that are crucial to modern wireless broadband networks. Our scalable wireless platform delivers superior performance even in demanding conditions, with the flexibility and features to enable a wide range of applications. CableFree OFDM Radio technology combines the best hardware and software technology to ensure best possible network performance.

System Features

- Advanced MIMO OFDM Radio Platform
- Raw data rates up to 300Mbps using 2x2 MIMO OFDM
- Operates in 2.3-2.5 or 5.1-5.8GHz ISM bands
- Supports extended 4.9-6.0GHz licensed bands
- Range up to 60km* with external antennas
- DFS and TPC features for regulatory regional compliance
- Data Throughput up to 250Mbps*
- Carrier-class OS and resiliency features
- Power-over-Ethernet technology
- Rugged environmental IP67 waterproof enclosure
- 200Km/h Wind Resistance
- Near & Non- LOS Operation
- 2 x 2 MIMO Support
- Interface Options including 1x 10/100 Port & 1x 10/100 + 1 x GigE**.
- Optional Fibre Optic SFP Interface with SingleMode (SM), MultiMode (MM), CWDM & DWDM fibre options

*Depends on radio environment, EIRP and external antenna limitations

Embedded Router Platform

CableFree OFDM radios from Wireless Excellence are high-performance carrier-grade Radio Solutions. They embody state-of-the-art software-defined-radio hardware, coupled with a powerful carrier-class router operating software with advanced Layer 2 Bridging and Layer 3 Routing features:

- High performance CPU, 500MHz x86 architecture
- IP Bridging
- Layer3 IP Routing
- Advanced Networking: RSTP, BGP, OSPF & MPLS
- VPN and Ethernet-over-IP (EoIP) tunnels
- Virtual Router Redundancy Protocol (VRRP)
- WISP & hotspot –specific features including Walled Garden, Cookies, RADIUS authentication, accounting, control of connection time
- Advanced, feature-rich OoS & traffic prioritisation
- Uplink and downlink bandwidth control on a per-user basis
- Firewall, NAT, DHCP Client and Server

Enhanced Wireless Performance

CableFree OFDM radios from Wireless Excellence offer major advantages over competing radio products. Examples are:

- Highly configurable – up to 4 radio cards
- 300Mbps raw data rate using 2x2 MIMO features offers up to 250Mbps throughput
- OFDM Software-defined radio – ‘state-of-the art’ radio using powerful DSP technology
- Software Selectable 5, 10, 20, 40MHz; also custom channel widths available
- Optional proprietary TDMA wireless protocol - improves P2P and P2MP wireless links through packet optimisation. No protocol/speed degradation for long links. Added security layer. Full duplex option using dual wireless cards
- Sophisticated RadioOS software platform
- Hotspot features including Radius authentication and per-user bandwidth controls

Applications

- Point-to-Point or Point-to-Multipoint Data network segments
- Wireless ISP or Hotspots
- Resilience for FSO or Fibre links
- Fast Roll-out & Temporary Deployment



Specifications

System Variant	WHPR-MIMO
Performance	
Range	Up to 60km, depending on external antennas used, regional EIRP limits
Bandwidth	bandwidth up to 250Mbps (300Mbps raw speed) in 2x2 MIMO mode Antenna
Power Consumption	10W; 48V fed from Power-over-Ethernet injector; 115/230Vac; optional Uninterruptible Power Supply (UPS)
Operating Temp	-40...+60 deg C
Wireless	
Frequency	5GHz: 5.150-5.350 (5 MHz step) 5.725-5.825 (5 MHz step) 5.47-5.725 GHz, 4.90-6.00GHz 2GHz: 2.192 - 2.539GHz (5 MHz step) DFS (Dynamic Frequency Select) feature for regions requiring DFS enabled
Radio Type	Direct Sequence Spread Spectrum (DSSS)
Modulation	2 & 5GHz: OFDM (BPSK, QPSK, 16-QAM, 64-QAM); Dynamic (Adaptable to Conditions)
RF Channels	Software Selectable 5, 10, 20, 40MHz; also custom channel widths available
Latency	<3ms
RF Output Power	18dBm (63mW, standard power) or 28dBm (630mW, high power version). – TPC (Transmit Power Control), 1dB steps under software control. Minimum power 0dBm
Sensitivity @FER=0.08:	54 Mbps OFDM -73 dBm; 48 Mbps OFDM -76 dBm; 36 Mbps OFDM -82 dBm; 24 Mbps OFDM -85 dBm; 18 Mbps OFDM -88 dBm; 12 Mbps OFDM -89 dBm; 1 Mbps OFDM -91 dBm; 9 Mbps OFDM -90 dBm; 6 Mbps OFDM -91 dBm; 5.5Mbps OFDM -92 dBm; 2 Mbps OFDM -93 dBm; 1 Mbps OFDM -94 dBm
Radio Data Rate	2GHz & 5GHz (Normal mode): 300, 270, 240, 180, 120, 90, 60, 30, 150, 135, 120, 90, 60, 45, 30, 15, 108, 96, 72 48, 36, 24, 18, 12 Mbps, 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback
Compatibility	Proprietary modes plus back compatibility fully interoperable modes
Radio Architecture	Support ad-hoc, peer-to-peer networks and infrastructure communication to wired Ethernet networks via Access Point
Security	64/128-bit WEP data encryption; WPA, WPA2, TKIP, CCMP, AES; Proprietary modes
Antenna	
Type	External Dual Polarised high gain antennas are required
Gain	See relevant antenna datasheet
Router Platform	
CPU	AMD x86-class or MIPS 400MHz up to 720MHz; 128MB SRAM; 4GB FLASH
System Software Management	RadioOS 8.1; Choice of license levels 1-6; Remotely Upgradable via TFTP Local and Remote configuration, control and administration via RS232, Telnet, HTTP, SNMP and Proprietary protocols
Resilience Features	Virtual Router Redundancy Protocol (VRRP) allows two complete radio ODUs to be configured with one in 'hot standby' for high-availability applications
Mechanical	
Dimensions (mm)	180x130x60mm
Connectors	External: 10/100 Ethernet: RJ45, optional 10/100/1000Mbps additional RJ45 connector ; Optional Fibre Optic Interfaces; 2x N connectors for connection to antenna Internal: RS232 console: DB9
Environmental	IP66
Weight	2kg

Part Numbers

Product Code	Description
HPR-MIMO-B-1-2/5S	P2P HPR 2x2 MIMO Bundle, 4.9-6.0GHz, Complete Link, 250Mbps, 10/100 Interface, N connectors+
HPR-MIMO-G-B-1-2/5S	P2P HPR 2x2 MIMO Bundle, 4.9-6.0GHz, Complete Link, 250Mbps, 10/100+GigE I/F, N connectors* +
HPR-MIMO-U-1-2/5S	HPR 2x2 MIMO Unit, 4.9-6.0GHz, Single Unit, 250Mbps, 10/100 Interface, N connectors* +
HPR-MIMO-G-U-1-2/5S	HPR 2x2 MIMO Unit, 4.9-6.0GHz, Single Unit, 250Mbps, 10/100+GigE I/F, N connectors* +

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+ note that external antennas are required. For integrated antenna model see IHPR-MIMO