Advanced MIMO OFDM Radio
CableFree 3.5GHz IHPR radio
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 108Mbps using OFDM
- 3.4-3.7GHz band
- Optional modules for 2.4 and 5.xGHz bands
- Range up to 15km*
- Data Throughput up to 80Mbps
- Carrier-class OS and resiliency features
- Power-over-Ethernet technology
- Rugged environmental IP67 waterproof enclosure

*Depends on radio environment

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

Embedded Router Platform

Wireless Excellence IHPR radios 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:

- Carrier-Class Operating System
- 500MHz CPU
- Layer 2 IP Bridging
- Layer3 IP Routing
- Border Gateway Protocol (BGP), OSPF and MPLS
- Ethernet-over-IP (EoIP) interfaces
- Virtual Router Redundancy Protocol (VRRP)

- WISP & hotspot –specific features including Walled Garden, Cookies, RADIUS authentication, accounting, control of connection time
- Uplink and downlink bandwidth control on a per-user basis
- Advanced QoS for VOIP, Video, Real-time protocols
- DHCP Client and Server
- Multiple Security Features, including VPN tunnels

Enhanced Wireless Performance

Wireless Excellence OFDM radios offer major advantages over 'off-the-shelf' WiFi products. Examples are:

- Highly configurable – up to 2 radio cards - 'mix and match' 3.5, 2.4, 5.xGHz
- 108Mbps raw data rate using 'turbo mode' offers 80Mbps throughput.
- OFDM Software-defined radio – 'state-of-the art' radio using powerful DSP technology
- 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

Accessories

Radio Cards	2nd radio card for resilience, high throughput, backhaul or hotspot applications
O/S Software	Higher level functions for Public Wireless LAN, Hotspot, etc
Mounting Brackets	Wall, Pole, Tower or Tripod mount options available
Alignment kit	Display of Local & Remote signal levels*
Management Suite	Full range of solutions including SNMP, Web GUI, Windows GUI, ClusterManager

Specifications

System Variant	WIHPR-3.5

Performance

Range	Up to 15km
Bandwidth	Up to 80Mbps (108Mbps Turbo mode)
Power Consumption	10W; 48V fed from Power-over-Ethernet injector; 115/230Vac; optional Uninterruptible Power Supply (UPS)
Operating Temperature	-40...+60 deg C

Wireless

Frequency	3.5GHz: 3.4-3.7GHz (5 MHz step). Optional: 5GHz: 5.150-5.350, 5.725-5.825, 5.47-5.725 GHz (5 MHz step)
Radio Type	OFDM (Orthogonal Frequency Division Multiplexing)
Modulation	3.5GHz: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) Optional 5GHz: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Operation Channels	13
RF Output Power	18dBm (63mW, standard power) or 28dBm (630mW, high power version) – under software control
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; 11 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	3.5GHz (Normal mode): 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback 3.5GHz (Turbo mode): 108, 96, 72 48, 36, 24, 18, 12 Mbps, auto-fallback Optional 5GHz (Normal mode): 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback Optional 5GHz (Turbo mode): 108, 96, 72 48, 36, 24, 18, 12 Mbps, auto-fallback
Radio Architecture	Support ad-hoc, peer-to-peer networks and infrastructure communication to wired Ethernet networks via Access Point
Security	VPN Tunnels, Proprietary Tunnels, 64/128-bit WPA, WPA-2; Proprietary modes

Integrated Antenna

3.5GHz 19dBi version:	3.35-3.75GHz, 19dBi, VSWR 1.5:1, 2x2 MIMO, Linear H/V Polarisation, 18x18degree beamwidth (vertical/horizontal), 19dB cross-polarisation, 50W power handling, 28dB Front-to-Back ratio.

Router Platform

CPU	MIPS or x86-class CPU, Up to 500MHz; 8MB SRAM; 64MB up to 1GB FLASH
System Software	RadioOS 8.1; Choice of license levels 1-6; Remotely Upgradeable via TFTP
Management	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)	338x388x70mm
Connectors	External: 10/100 Ethernet: RJ45 ; Optional N connector for optional second radio card Internal: RS232 console: DB9
Environmental	IP67
Weight	2kg

Part Numbers

Product Code	Description
IHPR-3.5-M/S-5S	Single IHPR-3.5 Master/Slave Unit, 3.5GHz
IHPR-3.5-B-5S	IHPR-3.5GHz Point to Point Bundle (complete link)