

## Advanced MIMO OFDM Radio

### CableFree 3.5GHz ICR-MIMO Integrated Client 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 Solution
- Integrated Client Radio (ICR) ideal as CPE
- Raw data rates up to 300Mbps
- Product covers 3.35-3.75GHz band
- Range up to 15km\*
- Versions with inbuilt 19dBi 2x2 MIMO antenna
- Data Throughput up to 100Mbps Half Duplex
- Carrier-class OS with NAT, filtering, full management features
- Power-over-Ethernet technology
- No RF cables – single Cat 5 carries power + network data
- Rugged environmental IP66 waterproof enclosure
- Optional Fibre Optic SFP Interface with SingleMode (SM), MultiMode (MM), CWDM & DWDM fibre options

\*Depends on radio environment and choice of base-station antennas

## Applications

- Ideal CPE for Wireless ISP deployments
- Point-to-Point or Point-to-Multipoint Data network segments
- Wireless ISP
- Fast Roll-out & Temporary Deployment

## Embedded Router Platform

Wireless Excellence ICR 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 Integrated Client radios offer major advantages over competing radio products. Examples are:

- Highly configurable – use any allowed channel in 3.5GHz band
- 802.11an radio chipset
- Software-selectable 5, 10, 20, 40MHz channel widths.
- OFDM and DSSS Software-defined radio – ‘state-of-the art’ radio using powerful DSP technology
- Optional proprietary ‘Nstreme’ wireless protocol - improves P2P and P2MP wireless links beyond the WiFi 802.11x standard through packet optimisation. No protocol/speed degradation for long link distances. Added security layer.
- Sophisticated RadioOS software platform

## Specifications

System Variant	W3GICRN19 (3.35 – 3.75GHz)
<b>Performance</b>	
Range	Up to 15km (depends on base station antennas)
Bandwidth	Up to 300Mbps (raw modulation rate)
Power Consumption	10W; 18V fed from proprietary Power-over-Ethernet injector; 115/230Vac; optional Uninterruptible Power Supply (UPS)
Operating Temperature	-20...+60 deg C
<b>Wireless</b>	
Frequency	3.5GHz: 3.35-3.75 (5 MHz step).
Radio Type	OFDM, MIMO, Direct Sequence Spread Spectrum (DSSS)
Modulation	3.5GHz: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Operation Channels	13
RF Output Power	Up to 28dBm – 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 (N mode): 150, 135, 72.2 65Mbps, auto-fallback
Compatibility	Proprietary modes only
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; Proprietary mode
<b>Integrated Antenna</b>	
3.5GHz 19dBi version:	3.35-3.75GHz, 19dBi, VSWR 1.5:1, 2x2 MIMO, Linear H/V Polarisation, 14x11degree beamwidth (vertical/horizontal), 19dB cross-polarisation, 6W power handling, 35dB Front-to-Back ratio.
<b>Router Platform</b>	
CPU	MIPS 400MHz; 32MB SRAM; 64MB FLASH
System Software Management	RadioOS 8.1; Choice of license levels 1-6; Remotely Upgradeable via TFTP Local and Remote configuration, control and administration via 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
<b>Mechanical</b>	
Dimensions (mm)	305x305x15mm (square shape)
Connectors	External: 10/100 Ethernet with auto MDI/MDIX: Waterproof RJ45
Environmental	IP66
Weight	3kg

## Part Numbers

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

T: +44 (0)870 495 9169  
E: sales@cablefree.net  
W: www.cablefree.net

Wireless Excellence Limited  
The Oxford Science Park,  
G6, Magdalen Centre  
Robert Robinson Avenue,  
Oxford OX4 4GA