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
- 802.11 an 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

<table>
<thead>
<tr>
<th>System Variant</th>
<th>W3GICRN19</th>
<th>3.35 – 3.75GHz</th>
</tr>
</thead>
</table>

**Performance**
- **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

**Wireless**
- **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

**Integrated Antenna**
- **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.

**Router Platform**
- **CPU**: MIPS 400MHz; 32MB SRAM; 64MB 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 Telnet, HTTP, SNMP and Proprietary protocols
- **Resilience Features**: Virtual Router Redundancy Protocol (VRRP) allows two complete radio ODUss to be configured with one in ‘hot standby’ for high-availability applications

**Mechanical**
- **Dimensions [mm]**: 305x305x15mm (square shape)
- **Connectors**: External: 10/100 Ethernet with auto MDI/MDIX; Waterproof RJ45
- **Environmental**: IP66
- **Weight**: 3kg

**Part Numbers**

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPR-ICRN-3.5-M/S-5S</td>
<td>Single ICRN-3.5 Master/Slave Unit, 3.5GHz</td>
</tr>
<tr>
<td>HPR-ICRN-3.5-B-5S</td>
<td>ICRN-3.5GHz Point to Point Bundle [complete link]</td>
</tr>
</tbody>
</table>