

## Advanced OFDM Radio ICR - 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.

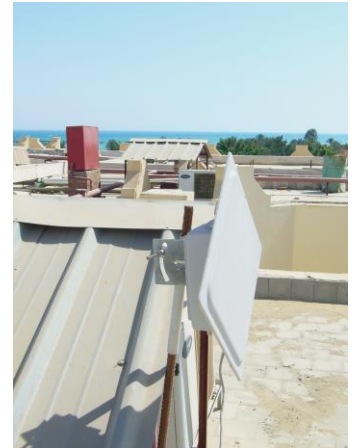
## System Features

- Advanced OFDM Radio Solution
- Integrated Client Radio (ICR) ideal as CPE
- Raw data rates up to 108Mbps
- Versions for either 2.3-2.5 or 5.1-5.8GHz ISM band
- Optional 5.4GHz band support
- Range up to 15km\*
- Data Throughput up to 30Mbps
- 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

\*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

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, 400MHz MIPS 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 QoS & 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 2 radio cards – ‘mix and match’ 2.4 or 5.3/5.8GHz
- 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 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

## Specifications

System Variant	W2GICRO (2.4GHz) and W5GICRO (5.3/5.8GHz)
<b>Performance</b>	
Range	Up to 15km (depends on base station antennas)
Bandwidth	Up to 54Mbps (108Mbps Turbo mode)
Power Consumption	10W; 48V fed from Power-over-Ethernet injector; 115/230Vac; optional Uninterruptible Power Supply (UPS)
Operating Temp	-20...+60 deg C
<b>Wireless</b>	
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	2.4GHz: CCK (11, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps); OFDM for data rate >20 Mbps, 5GHz: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Operation Channels	13
RF Output Power	18dBm (125mW) – TPC (Transmit Power Control), 1dB steps 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	2GHz & 5GHz (Normal mode): 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback 2GHz & 5GHz (Turbo mode): 108, 96, 72, 48, 36, 24, 18, 12 Mbps, auto-fallback
Compatibility	Proprietary modes plus back compatibility fully interoperable with IEEE 802.11a/b/g compliant products
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
<b>Integrated Antenna</b>	
Type	2.4GHz 19dBi, Linear H/V Polarisation, 20degree beamwidth 5GHz 23dBi, Linear H/V Polarisation, 10.5degree beamwidth
<b>Router Platform</b>	
CPU	MIPS 400MHz; 8MB SRAM; 8-64MB 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 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
<b>Mechanical</b>	
Dimensions (mm)	305x305x15mm (diamond shape for 5GHz, square shape for 2.4GHz)
Connectors	Internal: RS232 console: DB9 External: 10/100 Ethernet with auto MDI/MDIX: Waterproof RJ45
Environmental	IP66
Weight	3kg

## Part Numbers

Product Code	Description
ICR-U-1-2S	P2P ICR Unit, 2.3-2.5GHz, Single Unit, 30Mbps, 10/100 Interface, integrated antenna
ICR-U-1-5S	P2P ICR Unit, 4.9-6.0GHz, Single Unit, 30Mbps, 10/100 Interface, integrated antenna
CCR-U-1-2/5S	P2P CCN Unit, 2.3-2.5GHz, 4.9-6.0GHz, Single Unit, 30Mbps, 10/100 Interface, N connector +

+ note that external antennas are required. For integrated antenna model use ICR

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