

HARMONY RADIO

HYBRID/PACKET MICROWAVE

THIS COMPACT, ALL-OUTDOOR UNIT DELIVERS HIGH PERFORMANCE BACKHAUL WITH SIMPLE MIGRATION OPTIONS FROM HYBRID TO FULL-PACKET.

Offering the industry's only software-selectable evolution from hybrid to all-IP packet networks, Harmony is the intelligent solution for operators looking to future-proof their network investment.

This unique platform can operate in both hybrid and full-packet traffic modes, enabling a simple migration path from TDM to All-IP backhaul with true "zero-touch" on the existing hardware. This results in simplified operations, reduced capital cost and significant savings in total cost of ownership, while meeting the most stringent network requirements for highly time-sensitive applications.

With the ability to operate either standalone or with the Harmony First Mile or Hub indoor units, the Harmony Radio can be optimized for each site, saving on capital and operations by reducing the number of elements in the network.

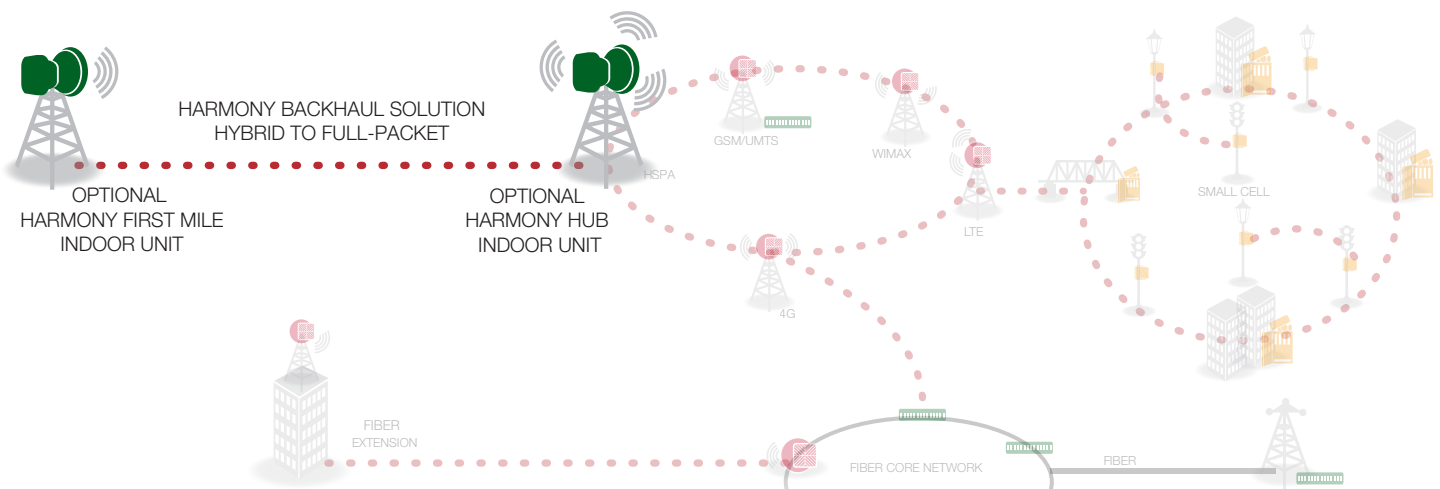
Designed to meet the advanced requirements of mobile, fixed, and private transport network operators, this reliable and flexible microwave radio unit provides broad frequency coverage from 3.5 to 42 GHz.

SOLUTION HIGHLIGHTS

- Software-selectable hybrid and/or full packet air interface
- Pay-as-you-grow scalability with software-programmable capacity up to 1 Gbps in 56 MHz channel
- Supports 3.5 to 56 MHz channel bandwidths
- IEEE 1588-2008 (ToP) and Synchronous Ethernet support
- XPIC for double capacity in the same channel bandwidth
- Standard electrical Ethernet interface enabling interoperability with bridges, routers and BTS or NodeB
- Service-aware radio to support differentiated QoS with up to 8 hardware queues
- Space and frequency diversity with multiple protection options
- RSTP/MSTP, G.8031, G.8032 Ethernet ring protection
- 3.5 to 42 GHz frequency coverage

KEY APPLICATIONS

- Mobile Backhaul with Mixed TDM/Packet Traffic
- Leased Line Replacement
- Last Mile Fiber Extension
- Private and Enterprise Networks



FREQUENCIES

3.5 GHz	ETSI
6 GHz	ETSI/FCC/IC
7 GHz	ETSI
8 GHz	ETSI
10 GHz	ETSI
11 GHz	ETSI/FCC/IC/ARIB
13 GHz	ETSI
15 GHz	ETSI/ARIB
18 GHz	ETSI/FCC/IC/ARIB
23 GHz	ETSI/FCC/IC
26 GHz	ETSI
28 GHz	ETSI
32 GHz	ETSI
38 GHz	ETSI
42 GHz	ETSI

FEATURES

Capacity	Variable up to 1 Gbps full duplex
Data Compression	Overhead/header compression
Interfaces	1xGE ODU-ODU RSSI Antenna IF Power supply
Packet Size	64 to 10240 Bytes
Flow Control	Yes
Prioritization	8 queues based on MAC Address, EtherType, VLAN ID, 802.1p, ToS/DSCP, MPLS
Adaptive Modulation	Yes: from maximum modulation to configurable minimum modulation
Modulation Shifting	Errorless & hitless
Loopback	PHY loopback & RF loopback
Synchronization	Synchronous Ethernet (ITU-T G.8261)
Modulations Supported	QPSK to 256QAM (all frequencies)
Bandwidth supported (MHz)	7, 14, 28, 40, 56 (ETSI); 10, 20, 30, 40 50 MHz (NAM/JAPAN)
System Gain	Up to 123 dBm
ATPC	Range: 25dB Speed: 100 dB/sec

POWER

Input	-48 VDC + 20%
Consumption (per end)	35 to 40 W (depending on RF band)
Connection	Power on Ethernet or power supply interface

MECHANICAL

Radio/Modem (without antenna)	23.8 cm x 23.8 cm x 16.8 cm; 5 kg 9.4" x 9.4" x 6.6"; 11 lbs
Wind Loading	<200 kph (70 mph) Operational 200 kph (125 mph) Survival

NETWORK MANAGEMENT (NMS)

NMS Compatibility	DragonView 5.0, SNMPv2, SNMPv3
Ethernet OAM Support	Y.1731 (PM), 802.1ag (connectivity FM)
EMS	WebLCT, SSL HTTP, FTP, Telnet

ENVIRONMENTAL

Operating Temperature	-40°C to +55°C (-40°F to +131° F)
Humidity	8 to 100 %
Altitude	Up to 3000m (9843 feet) ASL
Water Tightness	IP65
Operational Shock	EN 60068-2-27
Operational Vibration	EN 60068-2-27
Earthquake	EN 60068-2-27

IDU OPTIONS

Harmony Hub
Harmony First Mile

ENVIRONMENTAL

1 + 0
1 + 1 Space Diversity / Frequency Diversity
1 + 1 HSBY (with/without IDU support)
2 + 0 FD/XPIC (with load sharing; with/without IDU support)
2 + 0 Drop/Insert and Forwarding
2 + 2 FD/XPIC
4 + 0 FD/XPIC (with load sharing)