HARMONY ENHANCED

HIGH POWER HIGH CAPACITY PACKET MICROWAVE

DragonWave

SERVICE PROVIDERS CAN NOW DO MORE OUTDOORS WITH THE ZERO FOOTPRINT HARMONY ENHANCED FROM DRAGONWAVE.

This high capacity packet microwave system delivers big performance in a small package. Because the radio and modem are integrated into a single highly compact outdoor unit, Harmony Enhanced is a zero footprint solution – eliminating rack congestion and minimizing collocation space. Equipped with DragonWave's Bandwidth Accelerator+ technology, the Harmony Enhanced achieves the highest degree of spectral efficiency (through 4096 QAM, MIMO and wider channels), delivering more capacity per channel with a longer reach than any other all-outdoor microwave system. Harmony Enhanced delivers industry leading capacities up to 2Gbps in a single radio and 4Gbps in a single channel with MIMO or a single antenna with XPIC.

With unmatched capacity and system gain, simple installation and operation, as well as sophisticated remote management capability, the Harmony Enhanced delivers significant lifecycle cost savings for service providers and enterprises alike.
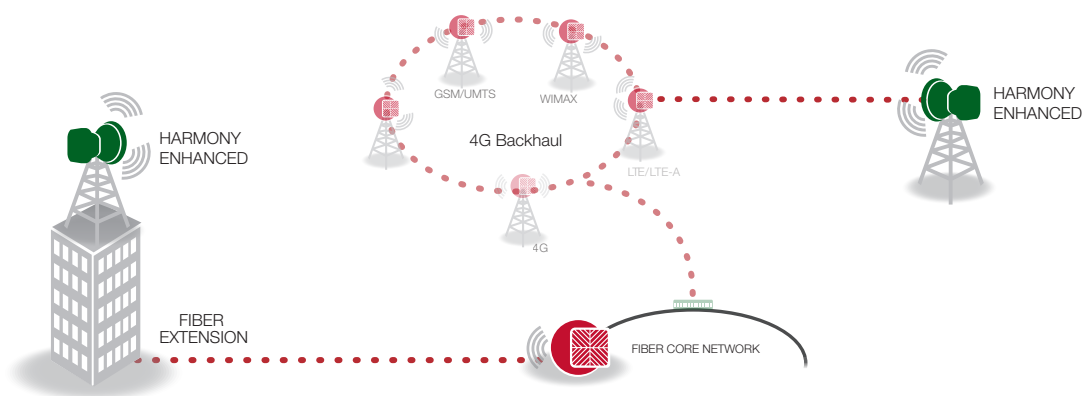
This innovative, carrier-grade packet microwave solution operates in licensed or unlicensed spectrum from 6 to 42 GHz.

SOLUTION HIGHLIGHTS

- Zero footprint, fully integrated all-outdoor unit
- Ultra high power radio option with up to 35dBm of transmit power
- MIMO ready hardware supporting up to 4 Gbps capacity with DragonWave's Bandwidth Accelerator+
- Wide channel support up to 112 MHz
- Up to 4096QAM modulation support
- Service aware Hitless Automatic Adaptive Modulation (HAAM)
- SyncE support and 1588v2 Transparent Clock
- Pay-as-you-grow with automatic remote scalability
- Comprehensive Ethernet OAM support (802.3ah, 802.1ag, Y.1731) and MEF services
- Advanced QoS support with 8 levels of prioritization
- Comprehensive management and provisioning with Netviewer NMS
- Intuitive EMS with Linkview
- Lowest total cost of ownership solution

KEY APPLICATIONS

- Mobile Backhaul
- Leased Line Replacement
- Last Mile Fiber Extension
- Private and Enterprise Networks

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GSM/UMTS

WIMAX

4G Backhaul

LTE/LTE-A

4G

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FIBER EXTENSION

FIBER CORE NETWORK

Netviewer Network Management

FREQUENCIES

6 GHz	FCC/IC/ETSI/ITU
7/8 GHz	ETSI/ITU
11 GHz	FCC/IC/ETSI/ITU
13 GHz	ETSI/AUS/NZ/ITU
15 GHz	IC/ETSI/AUS/NZ/MX/ITU
18 GHz	FCC/IC /ETSI/AUS/NZ/ITU
23 GHz	FCC/IC/ETSI/AUS/NZ/ITU/MX
24 GHz DEMS	FCC/IC
26 GHz	ETSI
28 GHz	FCC/ETSI
32 GHz	ETSI
38 GHz	FCC/ETSI/AUS/NZ/MX
42 GHz	ETSI

FEATURES

Base Capacity	Variable from 10 Mbps to 1 Gbps full duplex CIR 2x capacity up to 2 Gbps with DPRM*
Capacity w/Accelerator	Bandwidth Accelerator+ delivering up to 2x increase in base throughput
Latency GigE	<100µs @ 4096QAM, 56 MHz
Modulations	QPSK to 4096QAM
Bandwidth	3.5MHz - 112MHz
Maximum Tx Power	Up to 29dBm and up to 35dBm in the High Power variant.
Modulation Shifting	Yes, Hitless
Loopback	Yes, Radio loopback and Ethernet
Synchronization	Synchronous Ethernet (with ESMC) & 1588TC

MECHANICAL

Interface	2 x 10/100/1000bT + 2 x Optical SFP
Input	-40.5 VDC to -57.5 VDC or +40.5 VDC to +57.5 VDC
Radio/Modem (without antenna)	21.6 cm x 25.4 cm x 12.8 cm; 4.1 kg 8.5" x 10" x 5.05"; 9 lbs
Antenna Wind Loading	112 kph (70 mph) operational, 200 kph (125 mph) survival
Antenna Mount Adjustment	+/- 45° Azimuth; +/- 22° Elevation

*Assumes 112MHz bandwidth

ELEMENT MANAGEMENT

Alarm Management	SNMP Traps, Enterprise MIBs
NMS Support	DragonWave's NetViewer or any SNMP based network manager
EMS Support	Linkview
Management Access	Web based management, EMS,Telnet
Ethernet OAM Fault Management	802.1ag, Y.1731
Ethernet OAM Performance Management	Y.1731
Authentication, Authorization & Accounting	RADIUS, TACACs+
Management Interface	In band and out of band
Addressing	IPv4 / IPv6

ENVIRONMENTAL

Operating Temperature	-40°C to + 55°C (-40°F to +131° F)
Humidity	100 % Condensing
Altitude	4000 m (13,123 ft)
Water Tightness	Nema4X, IP66 (directed hose test)
Operational Shock	ETSI 300-019-1-4; 5g 11ms
Operational Vibration	ETSI 300-019-1-4 Class 4m5, NEBS GR-63
Earthquake	NEBS GR-63

ETHERNET

Packet Size	Up to 9600B
Congestion Avoidance	Flow control & WRED
Prioritization	8 levels served by 8 hardware queues, based on 802.1p/q, MPLS, DSCP
Ethernet Services	MEF 9/14 compliant

DragonWave

www.dragonwaveinc.com