



# HORIZON QUANTUM

## HIGH CAPACITY PACKET MICROWAVE

**THE HORIZON QUANTUM ALLOWS SERVICE PROVIDERS AND ENTERPRISES TO SATISFY RAPIDLY INCREASING CAPACITY NEEDS IN A SIMPLE, COST EFFECTIVE AND TIMELY FASHION.**

Delivering from 2 to 4 Gbps per link, Horizon Quantum represents the next generation in packet microwave technology and sets a new benchmark for performance. With dual-channel capability, this split-mount system is a step change in spectral efficiency, capacity, nodal intelligence, and operational simplicity; all while occupying only half a rack unit and consuming the lowest power per bit of any solution today. In addition, the Horizon Quantum's integrated switching means that it can provide aggregation and restoration in a single unit.

With this level of performance – in a packet microwave system that is remarkably simple to install and operate – operators can now avoid the high cost and long delays associated with fiber deployments, yet achieve the capacity and reliability they require for all of their future applications and services.

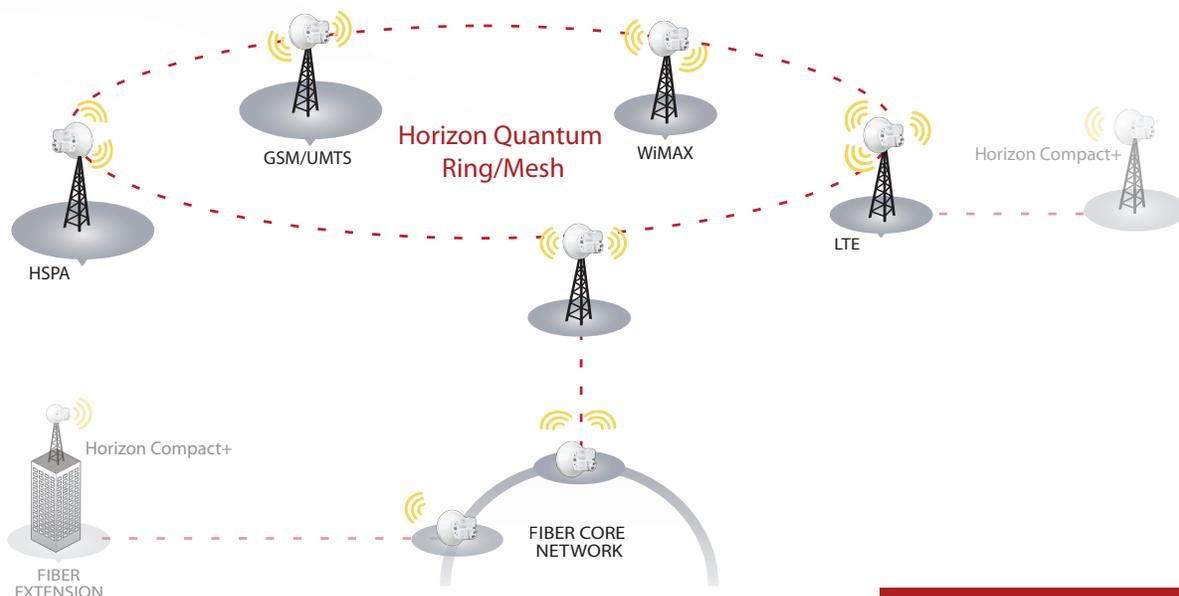
This Horizon Quantum, carrier-grade packet microwave system operates in licensed spectrum from 6 to 38 GHz.

### SOLUTION HIGHLIGHTS

- 2 to 4 Gbps capacity with DragonWave's Bandwidth Accelerator
- 8 GbE ports with intelligent nodal ring and mesh switching for carrier-grade reliability
- Highest spectral efficiency
- Advanced radio features including service aware Hitless Automatic Adaptive Modulation (HAAM) and XPIC
- SyncE support and optimized transport of 1588v2
- Pay-as-you-grow with automatic remote scalability
- Advanced security with integrated 256-bit AES encryption
- Comprehensive Ethernet OAM support (802.3ah, 802.1ag, Y.1731)
- Advanced QoS support with 8 levels of prioritization
- Comprehensive management and provisioning with DragonVision NMS
- Lowest total cost of ownership solution

### KEY APPLICATIONS

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



# HORIZON QUANTUM

## Product Specifications

### FREQUENCIES

6 GHz	FCC/IC/ETSI/ITU
7 GHz	ETSI/ITU/MX
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 UL	FCC/IC/ETSI
24 GHz DEMS	FCC/IC
26 GHz	ETSI
28 GHz	FCC/ETSI
38 GHz	FCC/ETSI/AUS/NZ/MX

### POWER

Input	-36 VDC to -60 VDC
Optional Adapter	110/240 VAC
Consumption	
Single Channel, Single Radio	<105 Watts
Dual Channel, Single Radio	< 122 Watts
Dual Channel, Dual Radio	< 171 Watts

### FEATURES

Capacity w/Accelerator	Variable from 10 to 2000 Mbps full duplex CIR 2x capacity up to 4 Gbps with Dual Pole Radio Mount (DPRM)
Base Capacity	Variable from 10 to 800 Mbps full duplex CIR 2x capacity up to 1.6 Gbps with DPRM
Interface	6X 10/100/1000bT + 2 SFP Ports
Latency GigE	120µs @ 256QAM, 50 MHz
Packet Size	64 to 9600 Bytes
Flow Control	Yes
Prioritization	8 levels served by 4 queues, based on 802.1p/q, MPLS, DSCP ToS Bits
Modulation Shifting	Yes, Hitless
Loopback	Yes, IF, Modem, Microwave loopback
XPIC	Yes, enables Co-Channel Cross Polarization
Synchronization	SynchE support and optimized transport of 1588v2

### CONNECTIONS IDU

Power	Dual Feed 48V
Data	6xRJ45 (100/1000bT) + 2XSFP
IF Cable	N-Type female connector
CTL Port	RJ45 (RS232)

### CONNECTIONS ODU

IF Cable	N-Type female connector
Alignment Port	BNC female connector

### NETWORK MANAGEMENT

Management Access	In or out of band
Alarm Management	SNMP Traps, Enterprise MIB
NMS Compatibility	DragonVision NMS; any SNMP based network manager; SNMP v1, v2c and v3
Security	3 Level Authentication, Radius, SSL, SSH
EMS	Web based management system
Ethernet OAM Support	802.3ah, 802.1ag, Y.1731
Logging	Syslog, alarms logging, bandwidth logging and performance logging

### MECHANICAL

Modem (IDU)	4.3 cm x 32 cm x 22 cm; 2.4 kg 1.7 in x 12.75 in x 8.6 in; 5.3 lbs
Radio (without antenna)	20 cm x 20 cm x 9 cm; 3.2 kg 7.8 in x 7.8 in x 3.6 in; 7 lbs
Antenna Wind Loading	110 kph (70 mph) Operational 200 kph (125 mph) Survival
Antenna Mount Adjustment	+/- 45° Azimuth; +/- 22° Elevation

### ENVIRONMENTAL

Radio Operating Temperature	
Standard Power + Solar Shield	-40°C to +60°C (-40°F to +140° F)
IDU Operating Temperature	0°C to +50°C (32°F to +122° F)
Extended IDU Operating Temp	-40°C to +60°C (-40°F to +140° F)
ODU Humidity	100 % Condensing
IDU Humidity	95% Non-Condensing
Altitude	4500 m (14,760 ft)
NEB-3 Compliant	Yes

Channel Bandwidth	Modulation Schemes	Rx Sensitivity	Single Channel				Dual Channel			
			Base Throughput	With Bandwidth Accelerator Typical Mobile Traffic Mix	Maximum Throughput	Tx Power	Base Throughput	With Bandwidth Accelerator Typical Mobile Traffic Mix	Maximum Throughput	Tx Power
56 MHz	QPSK/32QAM/256QAM	-80/-70/-59	65/216/385	90/305/540	150/550/1000	27/21/19.5	130/432/770	180/610/1080	300/1100/2000	23/17/15.5
50 MHz	QPSK/64QAM /256QAM	-81/-68/-59	67/215/364	95/300/510	150/550/1000	27/22.5/19.5	134/430/728	190/600/1020	300/1100/2000	23/18.5/15.5
40 MHz	QPSK/64QAM/256QAM	-81/-69/-60	57/181/277	80/250/390	140/450/700	27/20.5/19.5	114/362/554	160/500/780	280/900/1400	23/16.5/15.5
30 MHz	32QAM/128QAM/256QAM	-75/-65/-62	107/165/212	150/230/300	250/400/550	23/20/19.5	214/330/424	300/460/600	500/800/1100	19/16/15.5
28 MHz	QPSK/32QAM/256QAM	-84/-75/-64	48/100/190	70/140/265	120/250/500	23.5/21/19.5	96/200/380	140/280/530	240/500/1000	19.5/17/15.5
14 MHz	QPSK/32QAM/256QAM	-87/-80/-68	23/47/95	30/65/130	60/120/250	23.5/23/19.5	46/94/190	60/130/260	120/240/500	19.5/19/15.5
7 MHz	QPSK/64QAM/128QAM	-88/-78/-74	11/33/39	15/45/55	30/80/100	27/20.5/20	22/66/78	30/90/110	60/160/200	23/16.5/16