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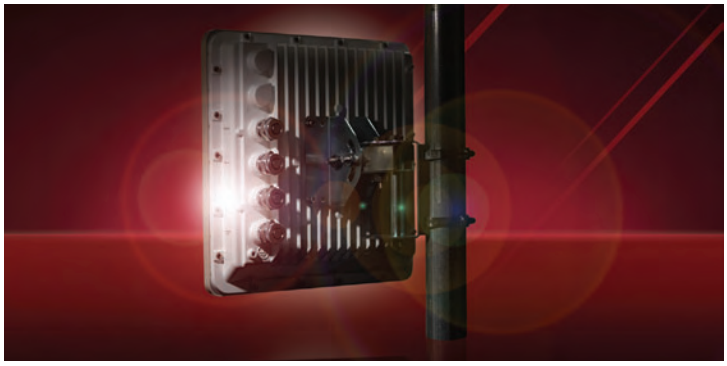

EX-4.9r Series

All-Outdoor, Carrier-Class 4.9 GHz TDD Radio Systems for Emergency Response, Public Safety and Government Agencies

The EX-4.9r series of all-outdoor digital microwave radios is the highest capacity family of carrier-class, TDD radios operating in the 4.9 GHz public safety band. The EX-4.9r line delivers up to 55 Mbps of aggregate user throughput and up to four T1/E1s at 99.999% availability. The EX-4.9r series radios are the first all-outdoor radios to include native TDM and native Ethernet transport. Featuring full software configurability and upgradeability, the EX-4.9r series was designed to meet demanding deployment and security requirements of emergency response, public safety and government organizations seeking the performance benefits of an all-outdoor configuration.

Carrier-class TDD. The EX-4.9r series combines native TDM and native Ethernet transport with low, fixed latency to deliver guaranteed throughput and service quality. Capacity can be allocated variably between TDM and Ethernet via software, while the selectable throughput symmetry control feature enables radio capacity to efficiently match asymmetric traffic requirements, such as those associated with video surveillance systems.

Security, Management and Data Networking. The EX-4.9r radios deliver the highest data and management security available with included 96-bit encryption, optional 128- and 256-bit AES encryption and secure SNMP v3 management, together with enhanced fault management and diagnostic features. The 802.1Q VLAN option provides built-in network administration and security flexibility.

Synchronization. The Sync technology embedded in the EX-4.9r series radios allows multiple radio systems to be collocated in close proximity without self-interference, minimizing antenna separation and ensuring reuse of scarce spectrum across all collocated systems.

Industry-leading Spectrum Management. The EX-4.9r radios provide unparalleled transmission resiliency and spectral efficiency. Selectable modulation, selectable channel bandwidth and frequency reuse capabilities facilitate inter-agency frequency coordination and collaboration. A built-in spectrum analyzer is even included, helping to accelerate deployment and simplify troubleshooting.

EX-4.9r series radios are available in both integrated antenna and external antenna (connectorized) versions.

Primary Specifications		EX-4.9r v2 / EX-4.9r-c v2
Maximum Capacity[1]	TDM	4xT1/E1
	Ethernet (Aggregate)	55 Mbps
Frequency (GHz)		4.940-4.990
Range[2]		> 10 miles at 99.999% throughput availability

[2] Distance based upon FCC regulations, averages climate and terrain, 6' dish antennas, 3 dB transmissions system, losses at each end. Longer or shorter distances will apply for alternative antennas, country regulations, transmission system losses, path topologies and radio configurations

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Specifications	EX-4.9r Series
System	
Frequency Band (GHz)	4.940-4.990
Output Power (full power)	
QPSK 10 MHz	+22 dBm
QPSK 20 MHz	+24 dBm
16QAM 10 MHz	+21 dBm
16QAM 20 MHz	+21 dBm
Output Power (min power)	+4 dBm
Power Control Step Size	0.5 dB
Receiver Threshold (BER=10^{-6})	
QPSK 10 MHz channel	-86 dBm
QPSK 20 MHz channel	-83 dBm
Receiver Threshold (BER=10^{-6})	
16QAM 10 MHz channel	-78 dBm
16QAM 20 MHz channel	-75 dBm
Non-overlapping Channels	
10 MHz channel	5
20 MHz channel	2
Maximum RSL (QPSK)	-25 dBm error-free 0 dBm no damage
Error Floor	10^{-12}
Latency (T1/E1)	1ms, typical
Maximum Packet Size	1916 bytes
Link Security	96-bit proprietary encryption 128-bit and 256-bit AES encryption[1]
VLAN	802.1Q
Management	HTTP GUI CLI/Telnet SNMP v1,v2c, and v3
Compliance	FCC Part 90 IC RSS-111
System Components	
Complete Link	Two terminals, each with AC adapter & accessory kit
Single Terminal	One terminal with AC adapter & accessory kit
Accessory Kit	DC power connector, rack and grounding hardware (spare)
AC Adapter	AC adapter (spare)
Mounting Kits	EX-4.9r and 4.9r-c mounting hardware (spare)
GPS Sync Kit	GPS antenna and mounting bracket (optional)

[1] Software license key upgrade

Specifications	EX-4.9r v2	EX-4.9r-c v2
Physical		
Form Factor	Outdoor	Outdoor
Dimensions	14 x 14 x 3.8 in	14 x 14 x 2.5 in
(H x W x D)	35.6 x 35.6 x 9.7 cm	35.6 x 35.6 x 6.4 cm
Weight	14 lbs; 6.4 kg	12 lbs; 5.5 kg
Antenna	Integrated Gain 24 dBi 3 dB beamwidth 9°	External Type-N F Connector
Operating Temperature	-40 to +65 °C -40 to +149 °F	
Full Spec Temperature	-40 to +60 °C -40 to +140 °F	
Environmental	NEMA 4/IP56	
Altitude	15,000 ft; 4.6 km	
Humidity	100% condensing	
Interfaces		
RF	-	2x N-type female, impedance 50 ohms
TDM T1/E1 Interfaces	RJ48C/RJ45 (F) (x4)	
T1 Impedance	120 ohms, balanced	
T1 Line Code	HDB3	
T1 Data Rate	1.544 Mbps	
T1 Compliance	CEPT-1; G.703; ITU-T-G.703	
E1 Impedance	120 ohms, balanced	
E1 Line Code	HDB3	
E1 Data Rate	2.048 Mbps	
E1 Compliance	CEPT-1; 6703; ITU-T-6.70	
Loopback Modes	Remote Internal; Remote External; Local line	
Ethernet	1x RJ45 (F), auto-MDIX	
Interface Speed	10/100BaseT	
Duplex	Half, Full, Auto	
Compliance	802.3	
Sync Synchronization	RJ45 (F) 1pps (GPS)	
AC Power Adapter	E1C to NEMA 5-15	
Input	100-240VAC, 1.5A	
Output	48v @ 1.6A	