



# EX-5i Series



## All-Indoor, Carrier-Class, Tri-Band 5 GHz TDD Radio Systems for Low, Medium and High Capacity Ethernet and TDM Applications

The EX-5i series of all-indoor digital microwave radios is the first family of carrier-class, tri-band TDD radios available in the 5.2 – 5.8 GHz license-exempt bands. The EX-5i line delivers up to 216 Mbps of aggregate user throughput and up to sixteen T1/E1s plus one DS3. Featuring native TDM and native Ethernet transport and full software configurability and upgradeability, the EX-5i series was designed to meet demanding backhaul requirements of enterprise organizations and service providers seeking the accessibility benefits of an all-indoor configuration.

**Carrier-class TDD.** The EX-5i series radios combine 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. Optional 1+1 monitored hot standby (MHS) protection provides full hardware redundancy.

**Industry-leading Spectrum Management.** The EX-5i radios include selectable channel bandwidth and 1 MHz tuning resolution, yielding up to 54 non-overlapping frequency channels and up to 415 center frequencies of operation. These capabilities, combined with selectable modulation and superior system gain, provide unparalleled interference avoidance and transmission resiliency. A built-in spectrum analyzer is even included to accelerate deployment and simplify troubleshooting.

**ExaltSync™ Synchronization.** The ExaltSync technology embedded in the EX-5i 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.

**Security, Management and Data Networking.** The EX-5i radios deliver the highest data and management security available with 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.



Primary Specifications		EX-5i Lite	EX-5i	EX-5i-16	EX-5i-DS3
Maximum Capacity <sup>1</sup>	TDM	4xT1/E1		16xT1/E1	16xT1/E1; 1xDS3
	Ethernet (Aggregate)	100 Mbps		200 Mbps	
Frequency (GHz)		Tri-band: 5.250-5.350, 5.470-5.725, 5.725-5.850			
Range <sup>2</sup>		> 30 miles at 99.999% throughput availability			

<sup>1</sup> Please refer to the Exalt Throughput and Range Specification document for detailed capacity information.

<sup>2</sup> Distance based upon FCC regulations, average climate and terrain, 6' dish antennas, 3 dB transmission system losses at each end. Longer or shorter distances will apply for alternative antennas, country regulations, transmission system losses, path topologies and radio configurations. See Exalt's path planning tool to model your scenario.

Specifications	EX-5i Series	Specifications	EX-5i Lite	EX-5i	EX-5i-16	EX-5i-DS3
<b>System</b>		<b>Physical</b>				
Frequency Bands <sup>1</sup> (GHz)	5.250-5.350 5.470-5.725 5.725-5.850	Dimensions (H x W x D)	1RU 1.75 x 17 x 14 in 4.5 x 43.2 x 35.6 cm		1.5RU 2.63 x 17 x 14 in 6.7 x 43.2 x 35.6 cm	
Tuning Resolution	1 MHz	Physical Configuration	Single-piece Indoor Unit (IDU)			
Output Power (full power)	+24 dBm QPSK; +21 dBm 16QAM	Operating Temperature	-40 to +65 °C -40 to +149 °F			
5725-5850 MHz band	+13 dBm	Full Spec Temperature	-25 to +60 °C -13 to +140 °F			
5250-5350 MHz band <sup>2</sup>	+13 dBm	Weight	9.5 lbs / 4.3 kg		12 lbs / 5.5 kg	
5470-5725 MHz band <sup>2</sup>	+13 dBm	Environmental	GR-1089-CORE intra-building			
Output Power (min power)	Full power minus 20 dB	Altitude	15,000 ft; 4.6 km			
Power Control Step Size	0.5 dB	Humidity	95% non-condensing			
Receiver Threshold (BER=10 <sup>-6</sup> )	8 MHz : 16 MHz : 32 MHz : 64 MHz <sup>3</sup>	<b>Interfaces</b>				
QPSK	-86 : -83 : -80 : -77	RF	N-type(F), impedance 50 ohm			
16QAM	-78 : -75 : -72 : -69	TDM T1/E1 Interfaces	RJ48C/RJ45 (F) (x4)		RJ48C/RJ45 (F) (x16)	
Non-overlapping Channels		T1 Impedance	100 ohms, balanced			
5.250-5.350 GHz	10 : 5 : 2 : 1	T1 Line Code	AMI, B8ZS, selectable per channel			
5.470-5.725 GHz	29 : 14 : 7 : 3	T1 Data Rate	1.544 Mbps			
5.725-5.850 GHz	15 : 7 : 3 : 1	T1 Compliance	ANSI T1.102-1987; ITU-T; G.823; GR-499-CORE			
Maximum RSL (QPSK)	-25 dBm error-free 0 dBm no damage	E1 Impedance	120 ohms, balanced			
Throughput Symmetry Control	5 modes 20/80, 80/20, 35/65, 65/35, 50/50	E1 Line Code	HDB3			
Error Floor	10 <sup>-12</sup>	E1 Data Rate	2.048 Mbps			
Latency (T1/E1)	1ms, typical	E1 Compliance	CEPT-1; G.703; ITU-T-G.703			
Link Security	96-bit proprietary encryption 128-bit and 256-bit AES encryption <sup>3</sup>	DS3 Impedance	- BNC (F) (2x) 75 ohms, unbalanced			
VLAN	802.1Q	DS3 Line Code	- B3ZS			
Management	HTTP GUI CLI/Telnet SNMP v1, 2c, v3	DS3 Data Rate	- 44.736 Mbps			
Compliance	FCC 15.247, FCC 15.407 EN 301-893, EN 302-502 EN 60-950, EN 301-489, IC RSS-210	DS3 Compliance	-ANSI T1.102-1993; GR-499-CORE			
<b>System Components</b>		Loopback Modes	Remote Internal; Remote External; Local Line			
Complete Link <sup>4</sup>	Two terminals, each with AC adapter and accessory kit	Ethernet	RJ45 (F) (x2), auto-MDIX			
Single terminal	One terminal with AC adapter and accessory kit	Interface Speed	10/100BaseT			
Accessory Kit	DC power connector, rack and grounding hardware (spare)	Duplex	Half, Full, Auto			
AC Adapter	AC adapter (spare)	Compliance	802.3			
Exalt Capacity Expansion Kit	For 6 GHz Part 101 links (optional accessory kit)	Console (Serial)	9-pin Sub-D (F)			
		Interface Speed	9600 bps			
		Compliance	EIA-574 (RS-232)			
		Alarm	9-pin Sub-D (F)			
		Inputs (2)	TTL/Closure			
		Outputs (2)	Relay (Form C)			
		ExaltSync	RJ45 (F)			
		Synchronization	Internal Sync 1pps (GPS)			
		DC Power	6-pin barrier strip		6-pin barrier strip	
		Input Voltage	±20-60VDC		±20-60VDC	
		Consumption	<38.5W (48V:<0.8A, 24V:<1.6A)		<45W (48V:<0.9A, 24V: 1.8A)	
		AC Power Adapter	EIC to NEMA 5-15			
		Input	100-240VAC, 1.5A			
		Output	48VDC, 1.5A, 72W			

<sup>1</sup> Not all frequency bands are authorized or available for use in all countries.

<sup>2</sup> +24 dBm output power. Consult Exalt for availability.

<sup>3</sup> Software license key upgrade.

<sup>4</sup> Two complete links (4 terminals) required for MHS protection along with Exalt MHS kit and protection cabling. Consult your Exalt Sales representatives for MHS availability. (MHS is not available on EX-5i or EX-5i lite).



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