

New breed of all-indoor  
5GHz radio

Spectrum efficient

Software expandable  
from 4 to 16 T1/E1

Highest IP and TDM  
capacity

Carrier class

Resilient transmission

Lowest cost per  
megabit-mile

### Tri-band 5GHz:

- 5250 to 5350 MHz
- 5470 to 5725 MHz
- 5725 to 5850 MHz
- 4 to 16 x T1/E1 + 10/100BaseT Ethernet
- Over 200Mbps user capacity
- 54 non-overlapping channels (4xT1/E1)
- 1MHz tuning resolution
- 1.5 RU rack-mount
- 20-60 VDC power supply
- >30 miles @ 99.999%\*
- 2-year standard warranty\*\*

\*Distance based on FCC regulations, average climate & terrain, 6' dish antennas, 3dB transmission system losses at each end with ~100Mbps throughput. Longer or shorter distances will apply for alternative antennas, country regulations, transmission system losses, path topologies and radio configurations.

\*\*Terms and conditions apply. See your Exalt Communications representative for details.

- ✓ **Eliminate** leased line expenses
- ✓ **Connect** locations in days, not weeks
- ✓ **Upgrade** capacity of existing systems
- ✓ **Carry** voice and Ethernet simultaneously
- ✓ **Avoid** interference
- ✓ **Improve** manageability
- ✓ **Reduce** installation and maintenance
- ✓ **Secure** wireless backhaul links
- ✓ **Future-proof** connections
- ✓ **Expand** capacity of existing systems

### Telecommunications Carriers

- Extend networks
- Expand capacity
- Expand TDM capacity from 4xT1/E1 to 8, 12, or 16xT1/E1 via software
- Add Ethernet connectivity
- Provide management capability
- Improve interference avoidance flexibility

### Education, Medical & Business Users

- Connect campus locations securely
- Eliminate leased line costs
- Install connections instantly
- Interconnect PBX trunk lines
- Carry voice and data connections seamlessly
- Provide high IP traffic bandwidth

### Government Agencies

- Create secure inter-building networks rapidly
- Backhaul video monitoring systems
- Implement backbones for private/public access networks
- Interconnect PBX trunk lines

### Industrial

- Create high-speed inter-facility connections
- Backhaul high-capacity video monitoring systems along with telemetry data
- Connect oil drilling platforms, power stations and utility centers



As the only tri-band 5GHz with software expandability from 4 to 16 T1/E1 plus 100BaseT, the EX-5i-16 wireless backhaul microwave radio extends the advantages of the license-exempt 5GHz band to provide maximum TDM capacity, IP functionality, and minimal latency for the most demanding carrier-class backhaul applications.

Using very efficient proprietary modulation techniques, resulting in a very narrow occupied RF bandwidth and utilizing all three license-exempt bands from 5250 to 5850 MHz, the EX-5i-16 uniquely provides up to **54 non-overlapping frequency channels**. It also provides **fine-tuning capability across all of the frequency bands**, with up to **415 center frequencies of operation** and no hardware changes required for retuning. This results in unprecedented system densities and interference avoidance capability compared to all other carrier-class systems in this band.

Developed specifically to meet the demanding and changing requirements of the carrier-class user, the EX-5i-16 provides **software expandability from 4 to 16 T1/E1 and a smooth upgrade path to higher capacity Ethernet services**. TDM capacity may be conveniently expanded in groups of four ports via firmware option. In addition, the EX-5i-16 offers excellent radio system performance and the **lowest cost per megabit-mile in its class**.

## System

Frequency Bands <sup>1</sup>	5250-5350MHz 5470-5725MHz 5725-5850MHz 1MHz		
Tuning Resolution	1MHz		
Output Power (at full power)	+24dBm, Mode 1 +21dBm, Mode 2		
5725-5850MHz band	+13dBm		
5250- 5350MHz band	+13dBm		
5470-5725MHz band	Full power minus 20dB		
Output Power (at min power)	0.5dB		
Power Control Step Size			
Receiver Threshold (guaranteed over temperature @BER=10 <sup>-6</sup> )	<b>Mode 1</b>	<b>Mode 2</b>	
8MHz channel	-86dBm	-78dBm	
16MHz channel	-83dBm	-75dBm	
32MHz channel	-80dBm	-72dBm	
64MHz channel <sup>2</sup>	-77dBm	-69dBm	
Receiver Threshold (typical)	2 dB better		
Maximum RSL (Mode 1)	-25dBm error-free 0 dBm no damage		
Non-overlapping channels	<b>5.3GHz</b>	<b>5.4GHz</b>	<b>5.8GHz</b>
8MHz channel	10	29	15
16MHz channel	5	14	7
32MHz channel	2	7	3
64MHz channel <sup>2</sup>	1	3	1
Aggregate User Capacity <sup>3</sup>	<b>Mode 1</b>	<b>Mode 2</b>	
8MHz channel	13Mbps	27Mbps	
16MHz channel	27Mbps	55Mbps	
32MHz channel	55Mbps	110Mbps	
64MHz channel <sup>2</sup>	110Mbps	216Mbps	
Supported T1/E1 ports	<b>Mode 1</b>	<b>Mode 2</b>	
8MHz channel	4/3	8/6	
16MHz channel	8/6	16/12	
32MHz channel	16/12	16/16	
64MHz channel <sup>2</sup>	16/16	16/16	
Error Floor	10 <sup>-12</sup>		
Maximum packet size	1916 bytes		
Latency (T1/E1)	1ms typical		
Link Security	96-bit proprietary AES encryption <sup>2</sup>		
Management	HTTP GUI CLI/Telnet SNMPv3 <sup>4</sup>		
VLAN	802.1Q <sup>4</sup>		
regulatory Compliance	FCC 15.247 FCC 15.407 IC RSS-210		

## Physical

Physical Configuration	Single-piece Indoor Unit (IDU)
Dimensions (H x W x D)	1.5 RU 2.63 x 17 x 14 inches 6.7 x 43.2 x 35.6 cm

<sup>1</sup> Not all frequency bands are authorized or available for use in all countries. Consult your Exalt Communications representative for details.

<sup>2</sup> Firmware option required

<sup>3</sup> The figure listed is the actual aggregate user throughput, maximum, as measured at layer 2. T1 or E1 circuits may be enabled one at a time, as needed, and subtract 3.1Mbps (1.544Mbps full-duplex) or 4.1Mbps (2.048Mbps full-duplex), respectively, from the aggregate user throughput. Some combinations of frame size, link distance, T1/E1 enabling, bandwidth, mode and desired latency will result in reduced maximum aggregate throughput. See your Exalt Communications representative for details.

<sup>4</sup> Firmware upgrade required

## Physical (continued)

Operating Temperature	-40 to +65 degrees C -40 to +149 degrees F
Full Spec Temperature	-25 to +60 degrees C -13 to +140 degrees F
Weight	12 pounds; 5.5 kg
Environmental	GR-1089-CORE intra-building
Altitude	15,000 feet; 4.6 km
Humidity	95% non-condensing

## Interfaces

RF	N-type (F)
Impedance	50 ohms
T1/E1 (x16) <sup>5</sup>	RJ48C/RJ45 (F)
T1 Impedance	100 ohms, balanced
T1 Line Codes	AMI, B8ZS, selectable per channel
T1 Clocking Speed	1.544Mbps
T1 Compliance	ANSI T1.102-1987 GR-499-CORE
E1 Impedance	120 ohms, balanced
E1 Line Codes	HDB3
E1 Clocking Speed	2.048Mbps
E1 Compliance	CEPT-1; G.823 ITU-T-G703
Loopback Modes	Remote Internal Remote External Local Line
Ethernet (x2)	RJ45 (F), auto-MDIX
Interface Speed	10/100BaseT
Duplex	Half, Full, Auto
Compliance	802.3
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)
Sync (In and Out)	RJ45 (F)
Signaling	Internal Sync 1pps (GPS) <sup>4</sup>
DC Power	6-pin barrier strip
Input Voltage	±20-60VDC
Consumption	<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

## System Components

Complete link <sup>6</sup>	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)
GPS sync kit <sup>4</sup>	GPS antenna and mounting bracket

<sup>5</sup> Capacity may be increased in groups of 4T1/E1 from 4 to 16 via separately purchased software option.

<sup>6</sup> Two complete links (4 terminals) required for hot-standby protection along with protection kit and firmware option.