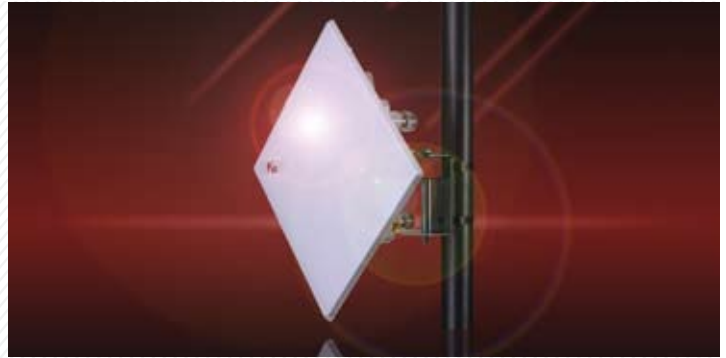




ExtendAir® r5005



High Performance Microwave Systems for Business Critical All-Outdoor Applications

ExtendAir r5005 is a first-of-its-kind high performance radio system designed to deliver guaranteed Ethernet throughput over long ranges. The ExtendAir r5005 radios are rugged, all-outdoor Ethernet bridges operating in the 5.4 GHz and 5.8 GHz license-exempt bands and delivering a best-in-class 162 Mbps of aggregate throughput. The ExtendAir r5005 is designed to meet the business-critical performance and flexibility requirements of enterprises, government organizations and service providers.

Uncompromised performance. Exalt’s unique high performance point-to-point technology allows the ExtendAir r5005 series to offer fiber-like performance, with the ability to deliver sustained throughput over long distances in high interference environments. Unlike Wi-Fi® systems that must rate adapt in the presence of interference in order to maintain a connection, with ExtendAir, you always know the throughput you’re going to get.

Multi-port flexibility. Unlike any other system in the class, ExtendAir r5005 includes three Fast Ethernet ports, providing unique application and management flexibility, while saving on deployment cost. The r5005 can be configured for repeater operation by directly connecting two systems, eliminating the need for a separate switch. For video surveillance applications, two IP cameras can be connected directly to the r5005. And with a ports available on the radio itself, technicians have easy management access at the radio location.

Best-in-class data networking and security. ExtendAir was designed to support complex IT environments, with support for Ethernet rate limiting and VLAN tagging (802.1Q) And ExtendAir offers the ultimate security with FIPS 197-compliant 128-bit AES and optional 256-bit AES encryption. Security for management traffic is provided by secure SNMP v3 and SSL/SSH.

Spectrum management flexibility. The ExtendAir r5005 puts spectrum control in the hands of the user, providing selectable channel bandwidth with the ability to tune channels with 1 MHz resolution. ExtendAir even includes a built-in spectrum analyzer, helping to accelerate deployment and simplify troubleshooting.

Throughput symmetry control. Network managers know from experience that not all IP traffic is symmetric. ExtendAir can allocate Ethernet throughput evenly or asymmetrically up to 80:20 between the two link directions, maximizing channel utilization for applications such as video surveillance, data backup and Internet services.

Co-location synchronization. The ExaltSync™ technology embedded in the ExtendAir r5005 allows multiple radio systems to be co-located in close proximity without self-interference, minimizing antenna separation and ensuring reuse of scarce spectrum.



Primary Specifications

ExtendAir r5005

Maximum Capacity	Ethernet (aggregate)	162 Mbps
Frequency	5 GHz: 5.470–5.725, 5.725–5.875 GHz	

Specifications

ExtendAir r5005

System

Outdoor Unit (ODU) Model	r5005: 1x10/100BaseT (PoE) + 2x10/100BaseT		
Frequency Bands ¹ (GHz)	5.470–5.725, 5.725–5.875		
Tuning Resolution	1 MHz		
Output Power (full power) ²	5.725–5.875 GHz		5.470–5.7253 GHz
QPSK	+22 dBm		+20 dBm
16QAM	+18 dBm		+18 dBm
64QAM	+16 dBm		+16 dBm
Output Power (min. power)	0 dBm		
Power Control Step Size	0.5 dB		
Aggregate Ethernet Throughput (Mbps) ³			
Channel Bandwidth ⁴	8/10 MHz Channel	16/20 MHz Channel	32/40 MHz Channel
QPSK	13	27	55
16QAM	26	55	109
64QAM	38	81	162
Receiver Threshold (BER=10 ⁻⁶) over temperature (dBm)			
QPSK	-86	-83	-80
16QAM	-79	-76	-73
64QAM	-73	-70	-67
System Gain (dB)			
QPSK	108	105	102
16QAM	97	94	91
64QAM	89	86	83
Non-overlapping Channels			
5.470–5.725 GHz	29	14	7
5.725–5.875 GHz	18	9	4
Range ⁵ (sustained user throughput)	99.95% availability	99.99% availability	99.999% availability
	18.6 mi / 29.8 km at 13 Mbps	13.5 mi / 21.7 km at 13 Mbps	8.5 mi / 21.7 km at 13 Mbps
	11.4 mi / 18.2 km at 55 Mbps	10.2 mi / 16.3 km at 55 Mbps	6.5 mi / 10.4 km at 55 Mbps
	5.1 mi / 8.2 km at 109 Mbps	5.1 mi / 8.2 km at 109 Mbps	4.7 mi / 7.5 km at 109 Mbps
	3.3 mi / 5.3 km at 162 Mbps	3.3 mi / 5.3 km at 162 Mbps	3.3 mi / 5.3 km at 162 Mbps
Maximum RSL	0 dBm no damage		
QPSK	-25 dBm error-free		
64QAM	-30 dBm error-free		
Throughput Symmetry Control	5 modes: 20/80, 80/20, 35/65, 65/35, 50/50		
Error Floor	10 ⁻¹²		
FEC	T=8		
Latency (T1/E1)	1ms, typical		
Data Security	NIST FIPS 197-compliant 128-bit AES and 256-bit AES ⁶ or 96-bit proprietary encryption		
Spectrum Analyzer	Embedded		
Management	In-band and out-of-band management (5005 models only)		
Security	SSL/SSH and secure, encrypted SNMPv3		
HTTP	Embedded web server GUI (Internet Explorer, Firefox)		
CLI/Telnet	via 10/100BaseT		
SNMP	v1, v2c, and secure v3		
MIB support	MIB I, MIB II, Exalt MIB		
Installation and Management Manual	Embedded in radio, accessible via HTTP GUI		
Antenna Alignment	Audible, RSL output, RSL graph in GUI		
Compliance	SNMP v1, v2c, v3		
	FCC 15.247, FCC 15.407		
	EN 301-893, EN 302-502		
	EN 60-950, EN 301-489		
	IC RSS-210		

¹ Not all frequency bands are authorized or available for use in all countries. Consult Cisco for country-specific ordering information and allowed configurations.

² Output power is specified per modulation to accurately show the corresponding system gain and throughput. Consult Cisco for country specific ordering information and allowed configurations.

³ Total aggregate user throughput, not over the air data rate.

⁴ FCC: 8, 16, 32 MHz; ITU/ETSI: 10, 20, 40 MHz. Consult Cisco for country-specific ordering information and allowed configurations.

⁵ FCC rules, 5.8 GHz ISM band, average climate & terrain and integrated antenna (23dBi). Distances vary depending on country regulations, path topologies, availability requirements and radio configurations. Refer to ExtendAir Link Budget Calculator tool.

⁶ 256-bit AES is a software license key option.



Specifications (Cont.)**ExtendAir r5005****Physical**

Physical Configuration	Outdoor Unit (ODU)
Dimensions (H x W x D)	33.8 cm x 33.8 cm x 11.4 cm 13.3" x 13.3" x 4.5"
Integrated Antenna (Gain/3 dB Beamwidth)	23 dBi / 10 degrees
Operating Temperature	-40 to +65 °C; -40 to +149 °F
Full Spec Temperature	-40 to +60 °C; -40 to +140 °F
Weight	3.18 kg / 7 lbs.
Environmental	NEMA 4 / IP66
Altitude	4600 m / 15,000 ft.
Humidity	100% condensing

Interfaces

Ethernet	RJ48C/RJ45 Female (x3)
Interface Speed	10/100BaseT (PoE +ETH1 +ETH2)
Duplex	Half, Full, Auto-MDIX
Compliance	802.3
VLAN	802.1q, transparent, trunk, and management only; over 4,000 VLAN IDs
Ethernet Rate Limiting	Configurable per port via software, 1 Kbps resolution
Maximum Packet Size	2048 bytes
ExaltSync Synchronization	RJ45 Female (x1)
Input	1pps (GPS)
Output	Sync out
DC Power	<25 W
AC/PoE Power Adapter	
Input	100–240 VAC, 0.5 A
Output	40 W, 56 VDC

Warranty	Two years ⁷
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System Components	ExtendAir r5005 terminal
	PoE/AC power injector
	Mounting kit
	Accessory kit (grounding hardware, RSL voltmeter cable)
	Getting started guide & product registration card

⁷ Terms and conditions apply. Consult your Cisco sales representative for details.



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