



ExtendAir® eMIMO™



High Performance Point-to-Point Wireless Bridge for Mission Critical Applications

With the ability to support quad-band operation and utilizing 2x2 MIMO and OFDM technologies, ExtendAir eMIMO (enhanced Multiple Input, Multiple Output) brings a new level of performance and reliability level to value priced wireless backhaul products that exceeds other carrier class license-exempt radio systems. All-outdoor ExtendAir eMIMO wireless bridges provide high throughput at extended ranges while OFDM allows for operation in Line of Sight (LOS), near Line of Sight (nLOS) and Non-Line of Sight (NLOS) modes. Standard 128-AES Encryption yields exceptional link security for data transmission. ExtendAir eMIMO utilizes Dynamic Frequency Selection (DFS) to automatically choose frequencies with minimal interference while providing radar detection and avoidance per FCC and European regulations. ExtendAir eMIMO delivers the lowest cost per Mbps, with the durability and ease of use that users have come to expect from Exalt.

ExtendAir® eMIMO™ Benefits:

At-a-Glance:

- 2x2 MIMO with OFDM
- LOS, nLOS, NLOS operation
- Quad-band support
- High Throughput
- High Transmit Power with STBC
- Pay-as-you-grow upgrades
- Automatic Adaptive Modulation
- Local Synchronization
- Automatic throughput and symmetry control
- Dynamic Frequency Selection
- AES Encryption standard
- Standard 802.3af PoE
- Carrier-grade IP67 c

Applications:

- Small Cell Backhaul
- WISP/Service Providers
- Government (Public Safety)
- Campus (Education, Healthcare, B2B)
- Utilities (Oil & Gas, Energy, Transportation)
- Enterprise (Private Networks)

LOS, nLOS and NLOS operation. ExtendAir eMIMO utilizes Orthogonal Frequency Division Multiplexing (OFDM) technologies along with 2x2 Multiple In Multiple Out (MIMO) for virtually any operating environment.

Quad-band frequency support. ExtendAir eMIMO operates in the 4.9 GHz, 5.3 GHz, 5.4 GHz and 5.8 GHz frequency bands. Web-based GUI software interface makes it easy to select the desired band.

Exceptional link resilience. ExtendAir eMIMO can automatically perform fast rate adaption by adjusting the modulation level and coding strength as well as seamlessly switch between MIMO and STBC diversity modes.

Automatic resource optimization. Predicting bandwidth allocation needs for each direction of a network as conditions change is often only a guess. With ExtendAir eMIMO, the system automatically adjusts the up/down ratio in real time to dynamically optimize the available bandwidth resources.

Longer range with smaller antennas. With Space Time Block Coding (STBC), Exalt provides the highest system gain advantage with higher transmit power while sustaining higher throughput levels compared to competitors who must lower modulation levels to maintain the link.

Highest co-location density. ExaltSync™ synchronization allows multiple units to be

co-located without the risk of interference. ExaltSync ensures that all transmitters operate simultaneously, to eliminate interference between co-located devices.

Pay as you grow capacity expansion. Exalt's ExtendAir eMIMO systems can be remotely upgraded to allow for capacity enhancements and optional features using software license keys. Buy the capacity and features you need, with a simple, cost effective upgrade path for the future without having to change out radio hardware.

Low power consumption using standard Power-Over-Ethernet (PoE) devices. ExtendAir eMIMO's low power consumption enables operation from standard 802.3af compliant POE devices or switches.

Ruggedized construction. Unlike other low-cost license-free solutions that utilize plastic components for the outdoor enclosure, ExtendAir eMIMO is built using IP67 rated aluminum construction for durable, long-term, worry-free operation.

Ease of Installation. ExtendAir eMIMO has a built-in tone generator that increases pitch as the antenna is adjusted for perfect alignment. And when you need a little help, it's comforting to know the user manual is accessed by simply browsing into the radio.

Primary Specifications	ExtendAir r5050	ExtendAir rc5050
Ethernet Capacity (Layer 1/Layer 2)	270 / 216 Mbps	
Frequency (GHz) ¹	Quad Band: 4.940-4.990 GHz, 5.250-5.350 GHz, 5.470-5.725 GHz, 5.725-5.875 GHz	
RF Interface	Integral 23 dBi antenna	2 x N Type female connector

Specifications

ExtendAir r5050/rc5050

System				
Outdoor Unit (ODU) Models	r5050 (Integral 23 dBi antenna) 1x10/100/1000BaseT PoE + 2x10/100BaseT			
	rc5050 (Connectorized) 1x10/100/1000BaseT PoE + 2x10/100BaseT			
Frequency Bands (GHz) ¹	4.940–4.990 GHz, 5.250–5.350 GHz, 5.470–5.725 GHz, 5.725–5.875 GHz			
Tuning Resolution	5 MHz			
Max Output Power (with STBC, dBm) ²	4.940–4.990 GHz	5.250–5.350 GHz	5.470–5.725 GHz	5.725–5.875 GHz
40 MHz / 20 MHz / 10 MHz / 5 MHz	N/A / 21.5 / 21.5 / 21.5	23.5 / 21.5 / 21.5 / 21.5	23.5 / 21.5 / 21.5 / 21.5	28 / 28 / 28 / 28
Min Output Power (Power Control Step Size)	0 dBm (1.0 dB)			

Throughput (at max coding rate, Mbps Max system Layer 1 / Max Ethernet Layer 2) ³				
Channel Bandwidth	5 MHz (2x2 MIMO)	10 MHz (2x2 MIMO)	20 MHz (2x2 MIMO)	40 MHz (2x2 MIMO)
BPSK	4 / 3	7 / 5	13 / 10	27 / 22
QPSK	10 / 8	20 / 16	39 / 31	81 / 65
16QAM	20 / 16	39 / 31	78 / 62	162 / 130
64QAM	33 / 26	65 / 52	130 / 104	270 / 216

Receiver Threshold (dBm)				
Modulation	5 MHz (2x2 MIMO)	10 MHz (2x2 MIMO)	20 MHz (2x2 MIMO)	40 MHz (2x2 MIMO)
BPSK	-96	-93	-90	-87
QPSK	-93	-90	-87	-84
16QAM	-88	-85	-82	-79
64QAM	-80	-77	-74	-71

Non-overlapping Channels ¹				
Frequency Band	5 MHz	10 MHz	20 MHz	40 MHz
4.9 GHz (4.940–4.999 GHz)	10	9	2	N/A
5.3 GHz (5.250–5.350 GHz)	13	7	4	2
5.4 GHz (5.470–5.725 GHz)	41	21	12	5
5.8 GHz (5.725–5.875 GHz)	17	14	7	3

Maximum RSL	0 dBm no damage
BPSK, QPSK, 16QAM	-25 dBm error-free
64QAM	-30 dBm error-free
Supported Channel Types	LOS, nLOS, NLOS
Modulation	2x2 MIMO/OFDM BPSK, QPSK, 16QAM, 64QAM
Rate Adaptation	Automatic
TDMA Frame Size ⁴	2ms, 4ms, 5ms
Throughput Symmetry Control	Automatic Manual: 50/50, 65/35, 80/20 ⁴
Client Access Control	MAC filtering
MAC	Proprietary
Maximum Packet Size	1522 bytes, 2048 bytes ⁴
Latency	<3 mSec
Data Security	128-bit AES Encryption (standard)
Management	In-band
Security	SSL/SSH and secure SNMPv3 ⁴
HTTP	Embedded web server GUI
SNMP	v1, v2c and v3 ⁴
MIB support	MIB I, MIB II, Exalt MIB ⁴
Antenna Alignment	Yes, Audio
Spectrum Analyzer	Embedded ⁴
Installation Manual	Embedded in radio GUI
Interfaces	
Ethernet	RJ48C/RJ45 Female (x3)
Compliance	802.3
VLAN	VLAN Transparent
QoS	802.1p, 4 queues, Diffserv
Exalt Synchronization	RJ45 Female (x1)
Power	48VDC, <13W, 802.3af compliant, (802.3at compatible)

Physical		
Dimensions	Integrated Antenna	Connectorized
	12" x 12" x 4.5"	9.3" x 9.3" x 5.25"
	30cm x 30cm x 12cm	24cm x 24cm x 13cm
Weight	6 lbs (2.8 kg)	5 lbs (2.3 kg)
Operating Temperature	-40° to +65°C -40° to +149°F	
Humidity	100% condensing	
Altitude	15,000 ft (4,600 m)	
Environmental	IP67	
Integrated Antenna		
Gain	23 dBi	
3 dB Beamwidth	10°	
Polarization	Vertical and Horizontal	
Certifications		
Radio	FCC 47CFR Part 15/90 IC RSS-210 issue 8, RSS-111 EN 301 893 EN302 502	
Safety	UL 60950-1 2nd Edition CSA C22.2 No. 60950-1 EN 60950-1 2006 IEC 60950-1 2005	
EMC	FCC 47CFR Class B EN 301 489-1	
Warranty	Two Years ⁵	

- Not all frequencies and channel bandwidths are available in all regions.
- STBC Space Time Block Coding results in additional 3 dB total output power. Output power may be limited by local regulations.
- Bi-directional Ethernet throughput with 1518 byte packets including overhead @ 1.6 km distance. Actual user throughput will vary depending on modulation, channel bandwidth, packet size and distance.
- Software upgrade required.
- Terms and conditions apply. Consult your Exalt Sales representative for more information.



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