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MANN eMIMO™

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

MANN eMIMO is a new and innovative high performance wireless bridge, from a leader in Wireless Ethernet Backhaul products. The eMIMO (Enhanced Multiple Input, Multiple Output) series brings a new performance and reliability level to value priced wireless backhaul products that exceeds other carrier class license exempt radio systems.

eMIMO optimizes spectral efficiency using eMIMO / 64QAM OFDM while delivering the lowest cost per Mbps, with the durability and ease of use

At a Glance

- High Throughput–250 Mbps
- High Transmit power–28 dBm with STBC
- Standard 802.11af POE compliant
- Pay-as-you-grow upgrades
- Automatic Adaptive Modulation
- Local synchronization
- Automatic throughput and symmetry control

Applications

- Public Safety
- B2B
- WISP
- Campus Networks
- Small Cell Backhaul
- Enterprise (Oil/Gas, Energy, Utilities, and Transportation)

eMIMO Benefits

Longer range with smaller antennas. provides the highest system gain advantage with higher transmit power while sustaining higher throughput levels when competitors must lower modulation levels to maintain the link.

Low power consumption using standard Power-Over-Ethernet (POE) devices. MANN eMIMO's low power consumption enables operation from standard 802.3af compliant POE devices. Many enterprise class switches already have built-in 802.3af capability, thus eliminating the need and associated cost, power and space required with separate POE injectors.

Pay as you grow capacity expansion. 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.

Exceptional link resilience. Using Zero-touch dynamic path adjustment, MANN eMIMO automatically adapts its modulation and throughput to maintain the link during difficult path conditions.

Highest co-location density. Synchronization allows many more units to be co-located without the risk of interference. Sync ensures that all transmitters operate simultaneously, to eliminate interference between co-located devices.

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

Ease of Installation. MANN 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,

Primary Specifications		
Maximum Capacity	Ethernet (Full Capacity)	270 Mbps
Frequency (GHz)[1]		Quad-band 5 GHz: 4.940–4.990, 5.250–5.350, 5.470–5.725, 5.725–5.875
RF Interface	Integral 23 dBi antenna	2 x Type N female connector

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Specifications

System				
Outdoor Unit (ODU) Models	(Integral 23 dBi antenna) 1x10/100/1000BaseT PoE + 2x10/100BaseT			
	(Connectorized) 1x10/100/1000BaseT PoE + 2x10/100BaseT			
Frequency Bands (GHz)[1]	4.940–4.990, 5.250–5.350, 5.470–5.725, 5.725–5.875			
Tuning Resolution	5 MHz			
Max Output Power (full power with STBC)[2]	4.940–4.990 GHz	5.250–5.350 GHz	5.470–5.725 GHz	5.725–5.875 GHz
	20 dBm	21 dBm	21 dBm	28 dBm
Min Output Power (Power Control Step Size)	0 dBm (1.0 dB)			
Maximum Radio Throughput[3] (at max Coding Rate) (Mbps)				
Channel Bandwidth	5 MHz (1x1 MIMO)	10 MHz (1x1 MIMO)	20 MHz (2x2 MIMO)	40 MHz (2x2 MIMO)
BPSK	2	4.5	13	27
QPSK	4.5	9	39	81
16QAM	9	18	78	162
64QAM	13.5	27	130	270
Receiver Threshold (dBm)				
Channel Bandwidth	5 MHz (1x1 MIMO)	10 MHz (1x1 MIMO)	20 MHz (1x1 MIMO)	40 MHz (1x1 MIMO)
BPSK	-99	-96	-93	-90
QPSK	-94	-91	-88	-85
16QAM	-89	-86	-83	-80
64QAM	-83	-80	-77	-74
Non-overlapping Channels[1]				
4.940–4.990 GHz	10	5	2	na
5.250–5.350 GHz	20	10	5	2
5.470–5.725 GHz	51	29	14	7
5.725–5.875 GHz	26	18	9	4

Maximum RSL	0 dBm no damage
BPSK	-25 dBm error-free
64QAM	-30 dBm error-free
Throughput Symmetry Control	Automatic
Client Access Control	MAC Filtering
MAC	Proprietary
Line of Sight	LOS, nLOS, NLOS
Antenna Alignment	Yes, Audio
Modulation	2x2 MIMO/OFDM
Rate Adaptation	Supported, 64QAM to QPSK
Latency	<3 ms, typical
Data Security	128-bit AES encryption
Spectrum Analyzer	Embedded
Management	In-band management
	Out-of-band Management
Security	SSL/SSH and secure SNMPv3
HTTP	Embedded web server GUI
SNMP	v1, v2c, and v3
MIB support	MIB I, MIB II,
Installation and Management Manual	Embedded in radio GUI
Certifications	
Radio	FCC 47CFR Part 15/90, IC RSS-210 issue 8, RSS-111 issue 4, EN 301 893 v1.5.1, EN 302 502 v1.7.1
Safety	UL 60950-1 2nd Edition, CSA C22.2 No. 60950-1, EN 60950-1 2006 Am1: 2010, IEC 60950-1 2005 Am1: 2009,
EMC	FCC 47CFR class B, EN 301 489-1 v1.5.1

Interfaces		
Ethernet	RJ48C/RJ45 Female x3	
Compliance	802.3	
VLAN	802.1Q/P	
QoS	4 Queues, 802.1p, Diffserv	
Maximum Packet Size	2048 bytes	
ExaltSync Synchronization[4]	RJ45 Female (x1)	
Power	802.3af compliant (<13W), 802.3at compatible	
Physical	Integrated Antenna	Connectorized
Dimensions (H x W x D)	12.00" x 12.00" x 4.70"	9.40" x 9.40" x 5.25"
Antenna	Integrated 23 dBi	Type N Female Connector
Weight	7 lb	6 lb
Operating Temperature	-40 to +65 °C	-40 to +65 °C
	-40 to +149 °F	-40 to +149 °F
Environmental	IP-67	
Altitude	4600 m / 15,000 ft.	
Humidity	100% condensing	
Future Releases		
Spectrum Analyzer	Q2/13	
SNMP	Q2/13	
Security (management)	Q2/13	
Warranty	Two years	

Preliminary datasheet, specifications subject to change.