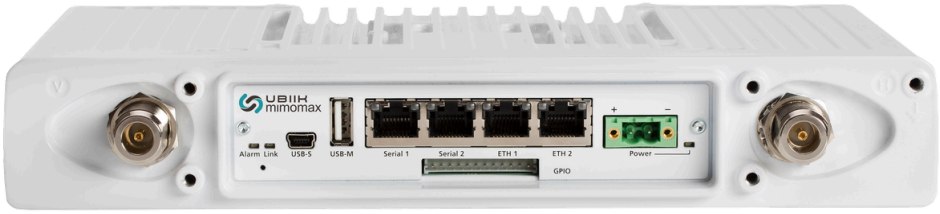
UBIIK MIMOMAX TORNADO

440-470MHz Radio Spec Sheet



The Ubiik Mimomax Tornado is a full-duplex, software flexible, ultra spectrally efficient, long range point-to-multipoint remote radio unit with built-in intelligent network features for Critical Network Infrastructure. With scalable data rates and an efficient random access protocol, it can provide near real-time access to a large number of remote sites with very high reliability and low latency. The Ubiik Mimomax Tornado is fully compatible with all Ubiik Mimomax products and provides economical SCADA and Telemetry solutions to remote sites in the Power, Gas and Water acquisition and distribution industries.

KEY FEATURES

- *Point-to-Point, Point-to-Multipoint*
- *Linux Applications Engine*
- *Ultra Spectrally Efficient*
- *Scalable Data Throughput Rates*
- *SCADA, Telemetry & Data Solutions*
- *Software Flexible & Intelligent*
- *Very Low Latency*
- *Very Low Power Consumption*
- *Full-duplex*
- *Simultaneously Operate in Poll and Interrupt Modes*
- *UHF Licensed Spectrum*
- *Ethernet, Serial & USB Interface*
- *IP Data Encryption & Firewall Security*
- *Advanced Software Features*
- *User Settable Frequency*
- *User Programmable Power*
- *Indoor & Outdoor Mountable*

440-470MHz UBIIK MIMOMAX TORNADO SPECIFICATIONS

General

Gross Data Rates	50 kHz	320/640/960/1280kb/s *Full-duplex (AU/NZ/EU)*
	25 kHz	160/320/480/640kb/s *Full-duplex (USA/AU/NZ/EU/CAN)*
	12.5 kHz	80/160/240/320kb/s Full-duplex (USA/CAN)
Configuration		2 x 2 Full Duplex MIMO
Supply Voltage		10.5v DC to 60V DC
Maximum Power Consumption		26W (at 13.8V) 20W typical
Standby Power Consumption		<6W typical
Ambient Temperature Range		-30°C (-40°C) [1] to +60°C (+70°C) [2]
Mounting		1U High Rack Mount
		Pole Mount
		Wall Mount
		DIN Rail Mount
Dimensions (L x W x H)		173 x 266 x 43mm

Receiver

Modulation		QPSK/16/64/256QAM
Number of MIMO receivers		2
Symbol Rate		2x40k symbols/sec (50 kHz)
		2x20k symbols/sec (25kHz)
		2x10k symbols/sec (12.5kHz)
Modulation Sensitivity for 10-4 BER [3] [4]	50kHz	<-109.5/-103/-97/-91dBm
	25kHz	<-112.5/-106/-100/-93.5dBm
	12.5kHz	<-115.5/-109/-104/-96dBm
Modulation Sensitivity for 10-6 BER [3] [4]	50kHz	<-108.5/-102/-96/-89.5dBm
	25kHz	<-111.5/-105/-99/-92dBm
	12.5kHz	<-114.5/-108/-102/-94.5dBm
	Measurements via duplexer at antenna port	
Frequency Range		440 to 470 MHz other frequencies available on request
Frequency Step Size		5 kHz & 6.25 kHz selectable
Frequency Accuracy & Stability		Better than +/- 1ppm
Nominal Channel Bandwidth		12.5 kHz, 25 kHz, 50kHz

Transmitter

Number of MIMO transmitters		2
Modulation		QPSK/16/64/256QAM
Symbol Rate		2x40k symbols/sec (50kHz)
		2x20k symbols/sec (25kHz)
		2x10k symbols/sec (12.5kHz)
RF Power Output [5]		Avg. before duplexer 2 x 27dBm Avg. after duplexer 2 x 24dBm Peak before duplexer 2 x 35dBm
RF Power Control Range		>20 dB
Frequency Range		440 to 470 MHz
Frequency Step Size		5 kHz & 6.25 kHz selectable

Duplexer (Internal)

Type	Bandpass
Tx / Rx Split	5 MHz minimum
Frequency Range	440 to 470 MHz
Duplexer Sub Bands	440-470 MHz
Stop Band Attenuation	>60 dB @ >5 MHz from centre
Pass Band Bandwidth [6]	1 MHz

Duplexer (External)

Type	Bandpass
Tx / Rx Split	4.5 MHz
Frequency Range	440 - 470 MHz
Insertion Loss	<1.75 dB
Stop Band Attenuation	>70 dB
Pass Band Bandwidth [6]	2 MHz
Mounting	2U High Rack Mount

Interfaces (Digital & Analogue)

Ethernet	Dual 10BaseT/100BaseT
Connectors	2 x RJ45
Asynchronous Serial	(Other data interfaces available via external media converters) [7]
Format	Dual RS232
Connectors	2 x RJ45
Baud Rate	300 - 115,200 baud
USB Connectors	High speed USB 2.0
Alarm	Type A and mini B
	1 set of volt-free change over contacts
GPIO *Analogue/Digital*	4 x s/w configurable I/O ports
Frequency Reference *Input/Output*	Isolated differential pair

Compliances

Radio Performance	AS/NZS 4768.3:2018 [8]
	FCC 47CFR part 90
	IC Canada *RSS-119*
	ETSI EN 302-561 V2.1.1 (2016-03) [8]
EMC	EN 301 489 *EN 301 489-1 V1.9.2 (2011-09) EN301 489-4 V2.1.1 (2012-11)*
	FCC 47CFR part 15
Environmental	60950-22 Outdoor Safety [9]
Safety	IEC 60950-1: 2005, Am 1 : 2009

***Important**: Specifications are subject to change without prior notice*

(1) -40°C for continuous operation. (2) +70°C for RRU-T with 25% duty cycle. (3) Systems employing modulation swapping will automatically reduce the modulation order at a signal level higher than the specified sensitivity level. (4) Sensitivity as specified includes forward error correction and internal duplexer loss. (5) Tornado RF output remains constant at all modulations. (6) The maximum acceptable frequency shift without retuning the duplexer is also subject to the stop band performance. (7) Contact MiMOMax Wireless for more information (8) Tested up to receiver modulation of 64 QAM and transmitter modulation of 256 QAM for 25kHz and 50kHz channel (9) Designed to meet