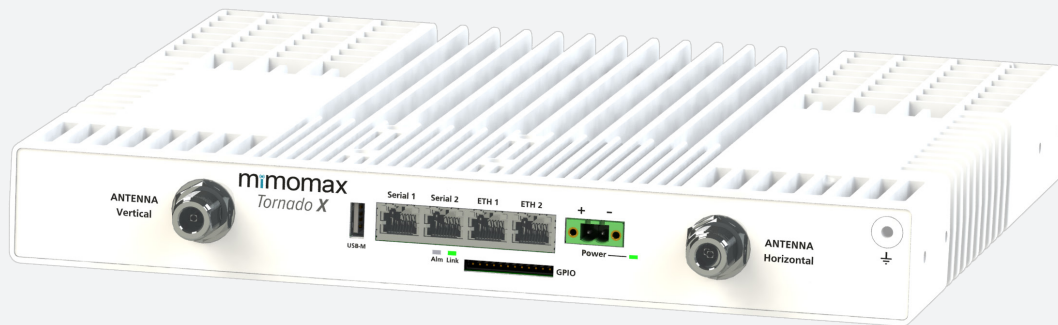


UBIIK MIMOMAX TORNADO X

700MHz Radio Spec Sheet



Tornado X is a high Tx power addition to our full duplex, MIMO product range. Offering a Tx power which remains stable across all modulations, full compatibility with the Tornado radio allows for a mix of radios in the network to suit terrain or meet network requirements.

Software flexible, ultra-spectrally efficient and offering extremely low latency to provide near real-time communications and visibility across critical infrastructure.

Tornado X is ideally suited as:

- a base radio for coverage limited multipoint systems or networks where traffic is uplink predominant
- a point-to-point linking radio for longer links and obstructed paths.

Available in 700MHz and in 12.5kHz, 25kHz or 50kHz channel sizes.

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*
- ▶ *Capacity to Simultaneously Operate in Poll and Interrupt Modes*
- ▶ *700MHz Licensed Spectrum*
- ▶ *Ethernet, Serial & USB Interface*
- ▶ *IP Data Encryption & Firewall Security*
- ▶ *Advance Software Features*
- ▶ *User Settable Frequency*
- ▶ *User Programmable Power*
- ▶ *Indoor & Outdoor Mountable*

700MHz UBIK MIMOMAX TORNADO X SPECIFICATIONS

General		
Gross Aggregate Data Rates	50 kHz	320/640/960/1280kbps <i>Full-duplex</i>
	25 kHz	148/297/446/594kbps <i>Full-duplex (Part 24)</i>
	12.5 kHz	71/143/214/286kbps <i>Full-duplex (Part 24)</i>
Configuration	2 x 2 Full Duplex MIMO	
Supply Voltage	10.5V DC to 60V DC	
Power Consumption	Peak	100W
	100% duty cycle	67.5W
Standby Power Consumption	<7.75W typical	
Ambient Temperature Range	-30°C (-40°C) ⁽¹⁾ to +60°C (+70°C) ⁽²⁾	
Mounting	1U High Rack Mount	
Dimensions (L x W x H)	330 x 480 x 45mm	
Weight	6 kg <i>radio unit only, excl. mounts</i>	

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 ⁽³⁾ Sensitivity ⁽⁴⁾ for 10 ⁻⁴ BER	50 kHz	<-110.5/-104/-98/-92dBm
	25 kHz	<-113.5/-107/-101/-94.5dBm
	12.5 kHz	<-116.5/-110/-104/-97dBm
Modulation ⁽³⁾ Sensitivity ⁽⁴⁾ for 10 ⁻⁶ BER	50 kHz	<-109.5/-103/-97/-90.5dBm
	25 kHz	<-112.5/-106/-100/-93dBm
	12.5 kHz	<-115.5/-109/-103/-95.5dBm
<i>Measurements via duplexer at antenna port</i>		
Frequency Range	757-758 & 787-788 MHz other frequencies available on request	
Frequency Step Size	5 kHz & 6.25 kHz selectable	
Frequency Accuracy and 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 (50 kHz)	
	2x20k symbols/sec (25kHz)	
	2x10k symbols/sec (12.5kHz)	
RF Power Output ⁽⁵⁾	Avg. before duplexer 2x36dBm Avg. after duplexer 2x34dBm Peak before duplexer 2x44dBm Peak after duplexer 2x42dBm	
RF Power Control Range	>20 dB	
Frequency Range	757-758 & 787-788 MHz	
Frequency Step Size	5 kHz & 6.25 kHz selectable	

Duplexer (Internal)	
Type	Bandpass
Tx / Rx Split	30 MHz
Frequency Range	757-758 to 787-788 MHz other frequencies available on request
Stop Band Attenuation	>75 dB
Pass Band Bandwidth ⁽⁶⁾	3 MHz (-0.5dB)

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	High speed USB 2.0
Connectors	Type A and mini B
ALARM	1 set of volt-free change over contacts
GPIO <i>Analogue/Digital</i>	4 x s/w configurable I/O ports
FREQUENCY REFERENCE <i>Input/Output</i>	isolated differential pair

Compliances	
Radio Performance	FCC 47CFR part 27
EMC	FCC 47CFR part 1
Environmental	60950-22 Outdoor Safety ⁽⁹⁾
Safety	EN 62368-1: 2014 + A11: 2017

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) Available via external media converter.
(8) Designed to meet