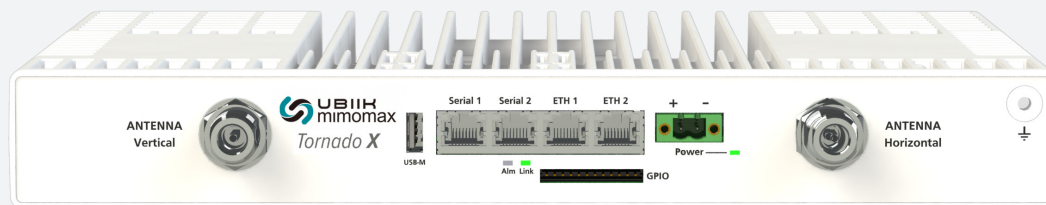


UBIIK MIMOMAX TORNADO X

900MHz 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 900MHz and in 12.5kHz, 25kHz, 50kHz, 75kHz, 100kHz, 150kHz or 200kHz channel sizes.

KEY FEATURES

- | | |
|---------------------------------------|--|
| ▶ Point-to-Point, Point-to-Multipoint | ▶ Capacity to Simultaneously Operate in Poll and Interrupt Modes |
| ▶ Linux Applications Engine | ▶ 900MHz Licensed Spectrum |
| ▶ Ultra Spectrally Efficient | ▶ Ethernet, Serial & USB Interface |
| ▶ Scalable Data Throughput Rates | ▶ IP Data Encryption & Firewall Security |
| ▶ SCADA, Telemetry & Data Solutions | ▶ Advance Software Features |
| ▶ Software Flexible & Intelligent | ▶ User Settable Frequency |
| ▶ Very Low Latency | ▶ User Programmable Power |
| ▶ Very Low Power Consumption | ▶ Indoor & Outdoor Mountable |
| ▶ Full-duplex | |



900MHz UBIK MIMOMAX TORNADO X SPECIFICATIONS

| General | | | Transmitter | |
|---|--|--|---|--|
| Gross Aggregate Data Rates | 200 kHz | 1333/2667/4000/5333kbps <i>Full-duplex</i> | Number of MIMO transmitters | 2 |
| | 150 kHz | 985/1969/2954/3938kbps <i>Full-duplex</i> | Modulation | QPSK/16/64/256QAM |
| | 100 kHz | 655/1309/1964/2618kbps <i>Full-duplex</i> | Symbol Rate | 2x166.667k symbols/sec (200 kHz) 2x123.077k symbols/sec (150 kHz) 2x81.818k symbols/sec (100 kHz) 2x60k symbols/sec (75 kHz) 2x40k symbols/sec (50 kHz) 2x18.576k symbols/sec (25kHz) |
| | 75 kHz | 480/960/1440/1920kbps <i>Full-duplex</i> | | |
| | 50 kHz | 320/640/960/1280kbps <i>Full-duplex</i> | | |
| | 25 kHz | 160/320/480/640kbps <i>Full-duplex</i> | | |
| | 12.5 kHz (FCC Part 101 and ISSED RSS-119) | 80/160/240/320kbps <i>Full-duplex</i> | | |
| | 12.5 kHz (FCC Part 24) | 71/143/214/286bps <i>Full-duplex</i> | | 2x10k symbols/sec (12.5kHz) (FCC Part 101 and ISSED RSS-119) 2x8.929k symbols/sec (12.5kHz)(FCC Part 24) |
| Configuration | 2 x 2 Full Duplex MIMO | | RF Power Output ⁽⁵⁾ | Avg. before duplexer 2x36dBm Avg. after duplexer 2x34dBm Peak before duplexer 2x44dBm Peak after duplexer 2x42dBm |
| Supply Voltage | 10.5v DC to 60V DC | | RF Power Control Range | >20 dB |
| Maximum Power Consumption (100% duty cycle) | 73.5W (at 13.8V) 67.5W typical | | Frequency Range | 896-960 MHz |
| Standby Power Consumption | <7.75W typical | | Frequency Step Size | 5 kHz & 6.25 kHz selectable |
| Ambient Temperature Range | -30°C (-40°C) ⁽¹⁾ to +60°C (+70°C) ⁽²⁾ | | Frequency Accuracy and Stability | better than +/- 1ppm |
| Mounting | 1U High Rack Mount | | Duplexer (Internal) | |
| Dimensions (L x W x H) | 330 x 480 x 45mm | | Type | Bandpass |
| Weight | 6 kg <i>radio unit only, excl. mounts</i> | | Tx / Rx Split | 9 MHz |
| Receiver | | | Frequency Range | 896-960 MHz other frequencies available on request |
| Modulation | QPSK/16/64/256QAM | | Stop Band Attenuation | >70 dB |
| Number of MIMO receivers | 2 | | Pass Band Bandwidth ⁽⁶⁾ | 1 MHz |
| Symbol Rate | 2x166.667k symbols/sec (200 kHz) | | Duplexer (External) | |
| | 2x123.077k symbols/sec (150 kHz) | | Type | Bandpass |
| | 2x81.818k symbols/sec (100 kHz) | | Tx / Rx Split | 3.6 MHz minimum |
| | 2x60k symbols/sec (75 kHz) | | Frequency Range | 806 to 960 MHz |
| | 2x40k symbols/sec (50 kHz) | | Insertion Loss | <1.5 dB |
| | 2x18.576k symbols/sec (25kHz) | | Stop Band Attenuation | >70 dB |
| | 2x10k symbols/sec (12.5kHz)(FCC Part 101 and ISSED RSS-199) | | Pass Band Bandwidth ⁽⁶⁾ | 2 MHz |
| | 2x8.929k symbols/sec (12.5kHz)(FCC Part 24) | | Mounting | To be confirmed |
| Modulation ⁽³⁾ Sensitivity ⁽⁴⁾ for 10 ⁻⁴ BER | 200 kHz | <-105/-97/-91/-85dBm | Interfaces (Digital & Analogue) | |
| | 150 kHz | <-106/-99/-92/-86dBm | ETHERNET | Dual 10BaseT/100BaseT |
| | 100 kHz | <-107/-100/-93/-88dBm | Connectors | 2 x RJ45 |
| | 75 kHz | <-107/-102/-94/-89dBm | ASYNCHRONOUS SERIAL | (Other data interfaces available via external media converters ⁽⁷⁾) |
| | 50 kHz | <-109.5/-103/-97/-91dBm | Format | Dual RS232 |
| | 25 kHz | <-112.5/-106/-100/-93.5dBm | Connectors | 2 x RJ45 |
| | 12.5 kHz | <-115.5/-109/-103/-96dBm | Baud Rate | 300 - 115,200 baud |
| | | | USB | High speed USB 2.0 |
| Modulation ⁽³⁾ Sensitivity ⁽⁴⁾ for 10 ⁻⁶ BER | 200 kHz | <-103/-96/-90/-83dBm | Connectors | Type A |
| | 150 kHz | <-105/-97/-91/-84dBm | ALARM | 1 set of volt-free change over contacts |
| | 100 kHz | <-106/-99/-92/-86dBm | GPIO <i>Analogue/Digital</i> | 4 x s/w configurable I/O ports |
| | 75 kHz | <-107/-100/-93/-87dBm | FREQUENCY REFERENCE <i>Input/Output</i> | isolated differential pair |
| | 50 kHz | <-108.5/-102/-96/-89.5dBm | | |
| | 25 kHz | <-111.5/-105/-99/-92dBm | | |
| | 12.5 kHz | <-114.5/-108/-102/-94.5dBm | | |
| | | <i>Measurements via duplexer at antenna port</i> | | |
| Frequency Range | 896-960 MHz other frequencies available on request | | | |
| Frequency Step Size | 5 kHz & 6.25 kHz selectable | | | |
| Frequency Accuracy and Stability | better than +/- 1ppm | | | |
| Compliances | | | Important: Specifications are subject to change without prior notice | |
| Radio Performance | US: FCC 47CFR part 101 (pending) and part 24 Canada: IC RSS-119 pending | | (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. | |
| EMC | US: FCC 47CFR part 15 Canada: IC RSS-GEN | | | |
| Safety | IEC 62368-1: 2014 + A11: 2017 | | | |