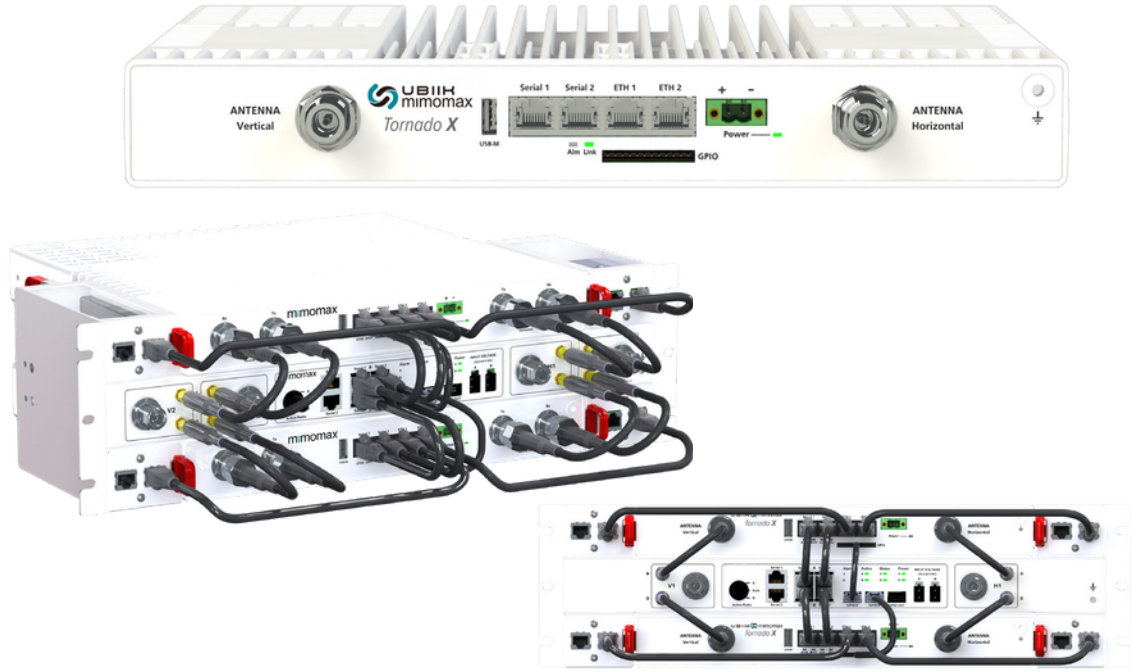
UBIIK MIMOMAX TORNADO X 1+1 SYSTEM

Radio Spec Sheet



The Tornado X 1+1 is a full-duplex, software flexible, ultra spectrally-efficient, long range, point-to-multipoint and point-to-point radio with built-in intelligent network features for Critical Network Infrastructure. With scalable data rates and an efficient access protocol, it can provide near real-time access to a large number of remote sites with very high reliability and low latency. The Tornado X is fully compatible with all Tornado radios and provides economical SCADA and Telemetry solutions to remote sites in the Power, Gas and Water acquisition and distribution industries.

This 1+1 system provides automated support for both a warm and hot standby system where if one radio fails a second standby radio is automatically switched in to take over. The faulty radio can to be replaced without impacting the operating radio, enabling the system to operate without loss of data. The Tornado X 1+1 system offers multiple configurations with the ability to switch over Serial, GPIO, alarm and antenna ports. The design also provides the flexibility of an optional two-antenna solution, where each radio has its own antenna to provide a redundant antenna solution.

Operating in the licensed frequency bands between 896-960MHz and 700MHz Upper A-Block, the solution also has a wide temperature operating range. The Tornado X enables unrivalled performance while maintaining Ubiik Mimomax's renowned reputation for reliability and operational efficiency.

UBIIK MIMOMAX TORNADO X 1+1 SYSTEM SPECIFICATIONS

1+1 available across Tornado X range. For the detailed specification of the radio units see the Tornado X radio unit specification sheet.

Electrical Specification

Power Supply

Rated Input Voltage	Normal Operation		13-50 V
Extreme Input Voltage	Normal Operation		10-60 V
	Idle, Tx	Warm Standby	16-20 W 1
Total Power Consumption	Off	Hot Standby	6-20 W
	Tx	Warm Standby	80-110 W
	Active	Hot Standby	144-204 W

Ethernet

Tx Peak Differential Voltage	100Base-Tx, 100 Ohm termination	1.00-1.05 V
Tx Voltage Imbalance	100Base-Tx, 100 Ohm termination	2%
Tx Rise/Fall Time	100Base-Tx	3-5 ns
Tx Rise/Fall Imbalance	100Base-Tx	0-0.5 ns
Tx Duty Cycle Distortion	100Base-Tx	+/- 0.5 ns
Tx Overshoot	100Base-Tx	5%
Tx Output Jitter	100Base-Tx, Peak to Peak	0.7-1.4 ns
Tx Peak Differential Voltage	10Base-T, 100 Ohm termination	2.4 V
Tx Output Jitter	10Base-T, Peak to Peak	1.4-11 ns
Rx Squelch Threshold	10Base-T, 5MHz square wave	400 mV

Serial

Output Voltage Swing	Loaded with 3kOhms to ground	+/- 5 to +/-5.4 V
Output Short Circuit Current		-60 to +60 mA
Input Voltage		25 to +25 V
Input Low Threshold	Temperature ambient = +25	0.8-1.5 V
Input High Threshold	Temperature ambient = +25	1.8-2.4 V
5VDC Output Current		200 mA

GPIO

		0.8-1.5 V
Input Voltage	Input Output	-0.3-60 V
Current Sinking Capability	driving low	100 mA
Input Impedance		109 kOhms

Electrical Specifications

Alarm	Input Current (max)	300 mA
	Switching Voltage (max)	33 VDC
Reference Input	Level	-5 to +20 dBm
	Frequency	10 MHz
Reference Output	Level	0 dBm
	Frequency	10 MHz

1+1 Specific

Radio Switch Over Time	< 1 S
IP Configuration Switch Over Time (1)	7 S
RF Switch Loss	1.2dB

Physical Specifications

Dimensions (L x W x H)	18.94 x 12.91 x 5.19 in (481 x 328 x 132 mm) 3U standard size 19 inch rack
Weight	14.7kg / 32.4 lb
Minimum Operating Temperature	22°F (-30°C)
Maximum Operating Temperature	+140°F (+60°C)
Maximum Operating Humidity	95%RH Non-Condensing
Minimum Storage Temperature	-40°F (-40°C)
Maximum Storage Temperature	+176°F (+80°C)
Maximum Storage Humidity	95%RH Non-Condensing

Compliances

RF Bands	757-758 and 787-788 MHz	896-960 MHz
Radio Performance	FCC 47CFR part 27	FCC 47CFR part 101 & part 24 IC Canada (RSS-119)
EMC	FCC 47CFR part 15	FCC 47CFR part 15
		AS/NZS/ CISPR22

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

(1) -40°C for continuous operation.