

The versatile, high performance **Jupiter Radio** is capable of operating all Ondas Radio Software Applications including the IEEE 802.16s and 802.16e air interface protocols and to operate as a Base Station, Fixed Remote or Mobile Remote Radio.

The transmit (TX) power of Jupiter is up to 2 x 36 dBm with an equivalent TX power in STC mode of 39 dBm. The TX power in spatial multiplexing mode is 36 dBm supports MIMO 2x2 capabilities, and offers the network operator many advantages including greater range and capacity and improved performance under multi-path conditions.

The Jupiter Radio includes three state-of-the-art circuit boards including a powerful **Communications Baseband Board (CBB)**, a wide-ranging DC **Power Supply Unit (PSU)** board and a **Radio Frequency Module (RFM)** board, all contained in an anodized aluminum enclosure which is available with optional 19" rack mounting brackets.



Tx power 4 Watts per antenna port
MIMO 2x2 Diversity option for NLoS and
multipath resiliency security includes
AES 256 VLAN AAA Radius

The Jupiter Radio supports transmit power up to 4 Watts (36 dBm) per antenna port with exceptional receiver sensitivity as low as -117 dBm. The combination of transmit power, excellent receiver sensitivity, flexible channel sizes and frequency agility, provide for exceptional range within a point-to-multipoint wireless topology with the capability of 30+ mile non-line-of-sight of connectivity.

The passive cooling heatsink design supports operation in environments from -40°C to +70°C without the need for cooling fans. The radio is designed for a 15-year life cycle and is designed to operate in conditions of high electromagnetic interference (EMI). Jupiter is IEEE 1613 standard compliant for operation in electric power substation and is compliant with Class 1, Division 2 for hazardous locations. Combined with a variety of application software and frequency and channel size independence, the Jupiter radio ensures performance capability today with the flexibility to meet tomorrow's requirements.

When incorporated in an Ondas MC-IoT Point to Multipoint (PtMP) network, the **Jupiter Sector Base Station** radio can host both **Venus** and **Mercury** remote radios, each serving as Ethernet bridges aggregating many PLMR channels. As shown below, Mercury endpoint radios servicing low data rate intelligent devices on individual narrow subchannels can be used in harmony with the Venus radios and are capable of combining multiple subchannels into a wider aggregated channels which ultimately provides greater range and data throughput capability.

Key characteristics of the Ondas MC-IoT architecture:

Sector Bandwidth

The bandwidth available in the sector may consist of a contiguous band or an aggregation of multiple nonadjacent channels, including Private Land Mobile Radio (PLMR).

Sub-channels

The sector bandwidth is partitioned into multiple sub-channels. When the sector bandwidth consists of multiple adjacent or nonadjacent PLMR channels, the individual PLMR channels will be configured as sub-channels.

Aggregate

The Jupiter Base Station will operate over the entire channel while Mercury will operate over a single sub-channel. Venus Remote Radio may operate over multiple sub-channels.

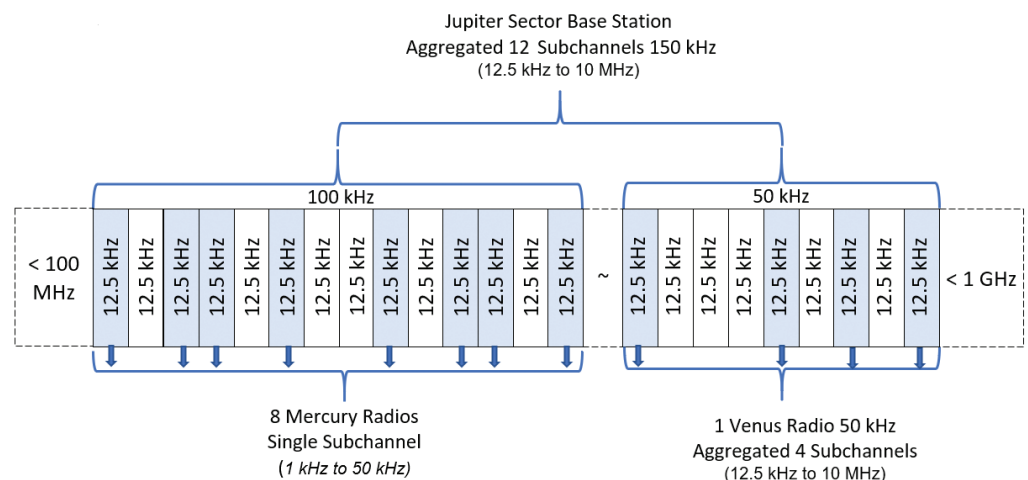


Diagram 1: Ondas MC-IoT Architecture

RADIO SPECIFICATIONS	
Frequency Range	70 MHz to 6 GHz
Channel Sizes	12.5 kHz to 10 MHz
Throughput	Up to 30 Mb/s
TX Power	2X 36 dBm @ Antenna Port
Rx Sensitivity	As low as -117 dBm
Waveform	OFDMA
Modulation	QPSK, 16-QAM, 64-QAM
FEC in downlink direction	Convolutional Coding (CC) with rates 1/2, 2/3, & 3/4
FEC in uplink direction	Convolutional Turbo Coding (CTC) with rates 1/2, 2/3, 3/4, 5/6
Duplex Method	TDD
Topology	Point to MultiPoint, Point to Point
Air interface protocol	Band AMC 1x6 as per IEEE 802.16s for Channel bandwidth > 12.5 kHz
Modulation Coding Scheme selection	Dynamically Adjusted
QOS	Best effort, Real time polling service

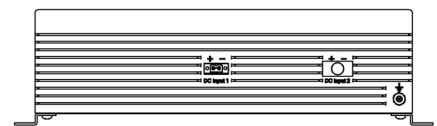
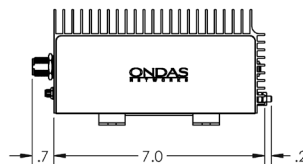
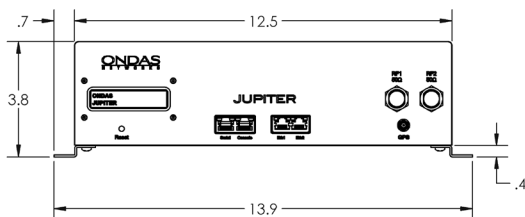
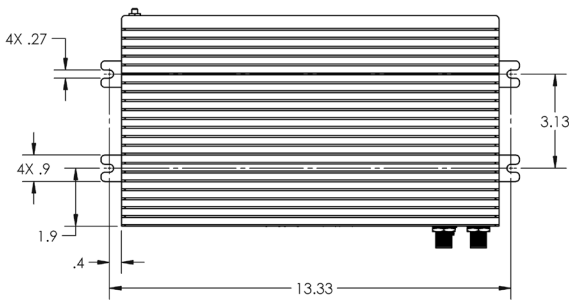
CONNECTORS / INTERFACES	
DC Input	Phoenix 1778508
Grounding Terminal	10-32 Thread Post
Serial Data	RJ45 8/8 Jack - Cisco Serial
Console CLI	RJ45 8/8 Jack - Cisco Serial
Ethernet (2X)	RJ45 8/8 Jack
Antenna Port RF1	Type N Female Connector
Antenna Port RF2	Type N Female Connector
GPS	SMA Jack Female Connector
LCD Display	16x2 Backlit

PHYSICAL CHARACTERISTICS	
RF Antenna (2X)	50Ω
GPS	Active 5VDC
Power Input	9 to 60 VDC
Data interface	100 Base T, RS232
Power Consumption	No Load: 15 watts @ 48 VDC Peak Load: 30 watts @ 48 VDC
Indicators	LCD Panel, Power
Dimensions	12" x 5.5" x 3.5" (305mm x 165mm x 89mm)
Weight	6 lbs. 8 oz (2.9 kg)
Enclosure Protection Rating	IP 50 Standard
Operating Temperature	-40° C to +70° degree C

SECURITY FEATURES	
AES-256 Traffic Encryption	
Three-way Handshake Over the Air Rekeying (OTAR)	
EAP-TLS Based Authentication with X.509 Certificate and RSA-4096 Public Key Encryption	
Hardware Based Secure Boot at the Root of the "Chain of Trust"	
NIST Certified Hardware Random Number Generator	
Memory Protection and Access Rights Limitation for Security Robustness	
Trusted Updates: Authenticated and Validated Upgrades and Configuration Changes	
Security Patch Management	
Secured SNMPv3 Remote Management	
SSHv2 Local Management	
Security Events Monitoring, Audit Ready	

COMPLIANCE	
IEEE 802.16s, IEEE 1613, Class 1 Division 2	

Physical Dimensions



DIMENSIONS ARE IN INCHES
THIRD ANGLE PROJECTION

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