

The **Xeta1 Debian** Ethernet radio is an extremely capable and flexible industrial software defined radio covering the 150 to 174 MHz frequency band. The **Xeta1** is based on the XetaWave patented **Dual Decode Digital Architecture™** that offers significant receiver performance.

The **Xeta1** supports multiple modulation schemes and features that selectively switch to achieve optimal data throughput given the available channel size and environmental noise.

**MultiSpeed MultiPoint™** mode enables Endpoints operating at different over-the-air data rates to communicate with a single Access Point. The **Enhanced MultiPoint, XetaEMP**, mode provides an increase in throughput and decrease in latency over our standard modes and against competitive products.

All **Xeta1** radios from the uTasker, Linux, and Debian series are over-the-air compatible and the **Xeta1 Debian** also supports **compatibility with MDS 1710 and SD1** master and repeater radios.



## Key Features

**High Speed** Over-the-air data transfer rates from 5 to 88 kbps plus higher throughput with payload compression and XetaEMP.

**Selective Modulation** Multiple MSK, PSK, and QAM modulations.

**Dual Mode** Duplex and single channel operations.

**Network Types** Point to Point, Point to MultiPoint, CSMA peer to peer, Enhanced MultiPoint (XetaEMP).

**Adjustable RF Output** 10 mW to 5 Watts (+10 to +37 dBm) RF output.

**Secure** Over-the-air data encryption using 128-bit and 256-bit AES.

**MultiSpeed Multipoint** Access Points communicate with Endpoints operating at different RF Data Rates.

**XetaEMP** An enhanced Point to MultiPoint protocol with increased throughput and decreased latency.

# Xeta1 Debian Specifications

Transmitter	FCC	IC
Frequency Range	150.8 to 173.4 MHz	150.05 to 174 MHz
Output Power	10 to 5000 mW (10 to 37 dBm)	
Modulation	MSK, QSPK, 8PSK, 16QAM, 32QAM, 64QAM	
Data Rate	5 to 88 kbps	
Channel Bandwidth	6.25, 12.5 & 25 kHz	
Frequency Stability	1.0 ppm	
Range	70+ miles	

Receive sensitivity numbers below are with FEC disabled. With FEC enabled, these typically improve by 3 dBm.

Receiver	6.25 kHz Channel		12.5 kHz Channel		25 kHz Channel	
	Sensitivity	Data Rate	Sensitivity	Data Rate	Sensitivity	Data Rate
MSK		5 kbps	-113 dBm	10 kbps	-113 dBm	17 kbps
QPSK			-103 dBm	18 kbps	-109 dBm	29 kbps
8PSK			-97 dBm	27 kbps	-103 dBm	41 kbps
16QAM			-94 dBm	37 kbps	-100 dBm	56 kbps
32QAM			-91 dBm	45 kbps	-96 dBm	72 kbps
64QAM			-86 dBm	54 kbps	-90 dBm	88 kbps

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## Processing

CPU	ARM Cortex-A8
OS	Debian
RAM / Flash	256 MB / 4 GB

## Interfaces

Power	2-pin Phoenix / +12 to +32 Vdc
Ethernet	2 x RJ45 / 10/100 Mbps Base-T
Serial	2 x RJ45 / up to 1Mbps / RS232/422/485
Micro USB	On-the-Go; +5 Vdc @ 500 mA
RF	TNC / 50 Ohms
Standard I/O	1 x MMS input/output & 2 x DI

## Power

Transmit	945 mA @ +12 Vdc
Receive	300 mA @ +12 Vdc
Idle	176 mA @ +12 Vdc

## Environmental/Physical

Op. Temperature	-40°C to +75°C
Humidity	95% @ +40°C non-condensing
Safety	UL Class 1 Div 2
Dimensions (LxWxH)	6.62" x 3.45" x 1.83"
Weight	700 grams

## Functionality

Operating Modes	Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer
Roles	Access Point, Endpoint, Repeater
Compatibility Modes	As an Endpoint compatible with MDS 1710 and SD1
Networking	Static IP Routing, Net Filtering, Port Forwarding, Network Address Translation, Modbus Bridging
Protocols	IEEE 802.3, TCP, UDP, ARP, DHCP, NTP, FTP, ICMP, HTTP, HTTPS, SSH, Telnet, Multicast SNMP
Management	Web GUI, SNMP v1, v2, & v3
VLANs	802.1q VLANs and Trunks, QoS
Quality of Service	Four Levels of VLAN QoS
Serial Services	TCP/UDP Terminal Server, TCP Terminal Client, Modbus RTU Server
Error Handling	CRC, FEC, Retransmit on error
Error Correction	Golay, Reed-Solomon
Data Encryption	128 & 256-bit AES Payload Data Encryption
RF Encryption	128-bit AES RF Overhead Encryption
Compression	Decompress Only, Low, High
Repeater	Store-and-forward
MultiMaster	Synchronization of Collocated Access Points or Multiple Access Points within a Network
MultiSpeed	Up to 4 Data Rates within the Same Channel Bandwidth
Diagnostics	Neighbor List, RF Ping, RF Throughput, RF Statistics, IP Ping, Traceroute, IPERF, TCP Dump, DNS Lookup, Serial Statistics, Modbus Bridging Statistics
Programmable I/O	Option for 8 programmable input/output signals (4 independently programmed analog inputs, analog outputs, or digital inputs and 4 independently programmed digital inputs or digital outputs)
Dual Radio	Option for dual radio that has the same or different frequency band

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## Ordering

XETA1-22MMDFA	Metal Enclosed, 2 Ethernet & 2 Serial
XETA1-22MMDFA-IO	Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O
XETA1X1-22MMDFA	Metal Enclosed, Dual Radio, 2 Ethernet & 2 Serial