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# MM2 Series\*\*

## Military 1.3 GHz Radio

FreeWave Technologies military products are designed to meet the rigorous demands of military and government users worldwide. This user-configurable 1.3 GHz product is available as an OEM board level radio. It is used in applications ranging from UAVs to UGVs, and more. FreeWave military products share the same features as our other radios that assure accurate data transmission, such as 32 bit CRC error detection with automatic retransmission and more.

The FreeWave MM2 Series of radios has been designed to provide the performance, reliability, and quality that our customers have come to know and expect in our products. The MM2 combines high performance with a small size making it ideal for applications where space is at a premium.

All radios are designed, manufactured and tested in Boulder, CO.

***The MM2 is a "Mega-Mini" radio with BIG FreeWave performance and reliability.***

### Features

- High Speed: 115.2 Kbps maximum throughput.
- Long Range: 40 mile range with clear line of sight.
- Error-free Communications: 32 bit CRC with automatic retransmission.
- Input voltage range is 5 VDC or 8-30 VDC at full RF output power. Receive current is less than 75 mA @ 12VDC. Sleep mode only consumes 5 mA @ 12VDC.
- Diagnostic port allows real-time local diagnostics and setup menu access.
- Diagnostics include signal level in dBm and transmit current.
- RS232/485 or TTL interface.
- Superior performance in noise congested environments.
- Industrial Grade Specifications: Tested for RF performance from -40°C to +75°C.

***All specifications are tested and guaranteed.***



# MM2 Series\*\*

## Military 1.3 GHz Radio Specifications

Transmitter				
Frequency Range	1350 to 1390 MHz			
Output Power	5mW to 1W			
Range - Line of Sight	40 Miles			
Modulation	2 level GFSK			
RF Data Rate	153.6 Kbps			
Occupied Bandwidth	230 kHz			
Hopping Patterns	15 Per Band, 105 Total, User Selectable			
Hopping Channels	1 to 112 (out of 172), User Selectable			
Hopping Bands	7, User Selectable			
RF Connector	MMCX			
Receiver				
Sensitivity	-106 dBm @ BER 10 <sup>-4</sup>			
Selectivity	-20 dB at fc ± 230 kHz			
System Gain	136 dB			
Data Transmission				
Error Correction	32 bit CRC, Retransmit on Error			
Data Encryption	Proprietary Spread Spectrum Technology			
Link Throughput	115.2 Kbps			
Protocol	RS232/485 or TTL			
Data Connector	Dual Row 14 pin Header, 2mm pin spacing			
Power Requirements				
Operating Voltage	8-30 VDC or 5 VDC			
	<b>Mode</b>	<b>5 VDC</b>	<b>12 VDC</b>	<b>30 VDC</b>
	<b>Transmit</b>	1000 mA	500 mA	200 mA
	<b>Receive</b>	120 mA	75 mA	40 mA
	<b>Idle</b>	30 mA	20 mA	9 mA
	<b>Sleep</b>	8 mA	5 mA	2 mA
General Information				
Operating Temperature Range	-40° C to +75° C (-40° F to +175° F)			
Dimensions	2" L x 2" W x 0.3" H in (50.8 mm x 50.8 mm x 7.6 mm)			
Weight	0.74 oz (21 g)			
Humidity	0 to 95% non-condensing			

\*\*Some of these products are regulated under the U.S. International Traffic in Arms Regulation (ITAR). These regulations control the Export and Import of defense articles. These products may only be sold or transferred to a non-U.S. person (in the U.S. or abroad) after authorization is obtained from the U.S. Department of State. Customer (a) agrees to comply with ITAR regulations and (b) shall be responsible for obtaining all necessary U.S. Government authorizations required to ensure compliance with these and other applicable U.S. Laws. Please contact FreeWave for export control information for specific products.

FreeWave Radios Require Professional Installation. Specifications may change at any time without notice. ©2010 FreeWave Technologies, Inc.

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