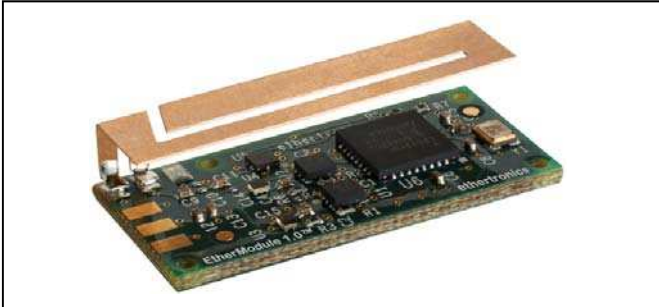


## EtherModule 1.0™

700 MHz to 2700 MHz



Ethertronics' EtherModule 1.0™ plug-and-play active antenna system module addresses the challenges facing today's M2M product designers. Using EtherChip 1.0™ tunable capacitor with AIRFDC™ (Air InterFace Digital Conditioning™) technology, EtherModule 1.0™ allows characteristics of the antenna and RF performance to be adapted to the environment experienced by the antenna; providing optimal connectivity in a less than ideal RF environment.

EtherModule 1.0™ can be used in a variety of applications including:

- WiFi
- M2M
- ISM 2.4GHz, 868MHz, 915MHz
- Smart Meters / Smart grid Systems
- Other Wireless Devices

### TECHNOLOGY ADVANTAGES

Ethertronics' EtherModule 1.0™ product includes EtherChip 1.0™ utilizing AIRFDC™ (Air InterFace Digital Conditioning) technology, employing active impedance matching techniques to provide tuning capacitance for the antenna system. EtherModule 1.0 active antenna system module can seamlessly adjust the characteristics of a cellular antenna for its dynamic requirements including:

- Making a wideband antenna by correcting the impedance mismatch.
- Retuning the antenna for frequency shifts.
- Offsetting hand, head and environmental effects.

Antenna performance can be significantly improved by applying these techniques or other applications using AIRFDC™

Preliminary—specifications subject to change and are dependent upon actual implementation.



### KEY BENEFITS

#### Features

##### Operation Frequency

- Operation Frequency is 700MHz ~ 2700MHz.

##### Compact Package

- Typical package size is 33x15x10mm.

#### END USER ADVANTAGES

##### Low Minimum RF power

- RF Tx transmission power from the radio to the module can be as low as -5dBm.

##### Burst Detection

- EtherModule 1.0 detects Tx power bursts from the radio system it is connected to and optimizes the overall link quality when data is transmitted.

##### Improved Connectivity

- Utilizes EtherChip 1.0 tunable capacitor's ability to dynamically re-tune the antenna for frequency shifts or loading effects (hand/ head/ environmental).

##### Patented IMD Antenna Technology

- Provides superior RF field containment resulting in less interaction with surrounding components—improves RF performance and simplifies and shortens design-in time.

##### RoHS Compliant

- Ethertronics' antennas are fully compliant with the European RoHS Directive 2002/ 95/ EC.

#### SERVICE AND SUPPORT

##### Extensive RF Experience

- EtherModule 1.0™ is supported by documentation, and when needed, by the expertise of RF engineers who have integrated hundreds of antenna and RF system designs into wireless devices.

##### Global Operations & Design Support

- Ethertronics' global operations encompass an integrated network of design centers that provide local customer support.

**Ethertronics' Module Specifications**  
Below are the typical specs for a product application.

**Operating Ranges**

Parameter	Symbol	Min	Typ.	Max	Unit
Supply Voltage	VDD	2.5	2.8	3.1	V
Power Supply Current	IDD		32		mA
Minimum RF input Power			-5		dBm
Maximum RF input Power			33		dBm
Operating Temperature	TOP	-40		85	°C
Storage Temperature	TST	-65		150	°C

**Operational Characteristics \***

Typical Characteristics

Protocols*	Supported
WiFi 802.11a,b,g,n	Yes
ISM	Yes
ZigBee	Yes

\*Contact Ethertronics for additional protocols.

EtherModule 1.0 Versions	Typical Application	Frequency Tuning Range			
		Min	Typ.	Max	Unit
Part No.: EM10102	WiFi, Bluetooth® & ISM 2.4 GHz applications	2200		2900	MHz
Part No.: EM10203	ISM 868 MHz applications	800		950	MHz

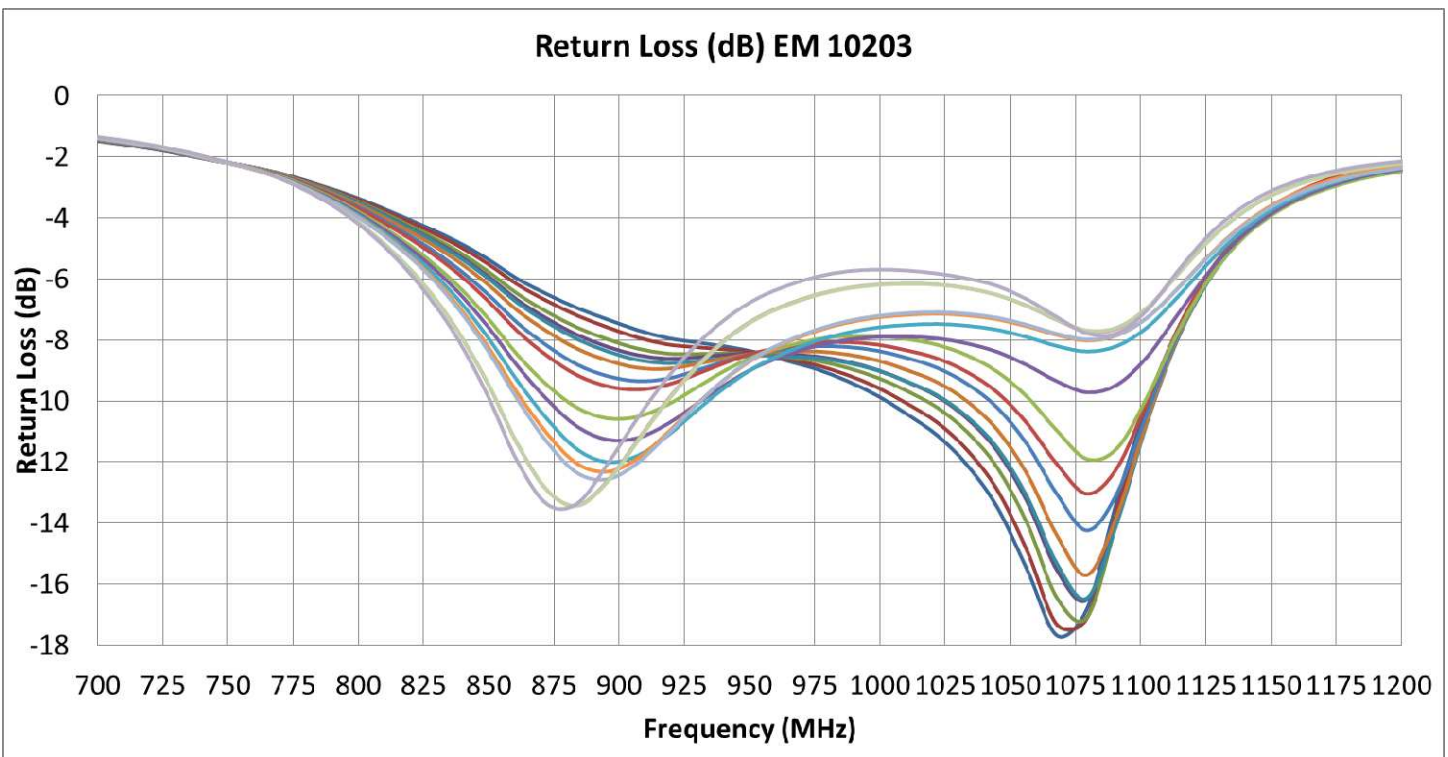
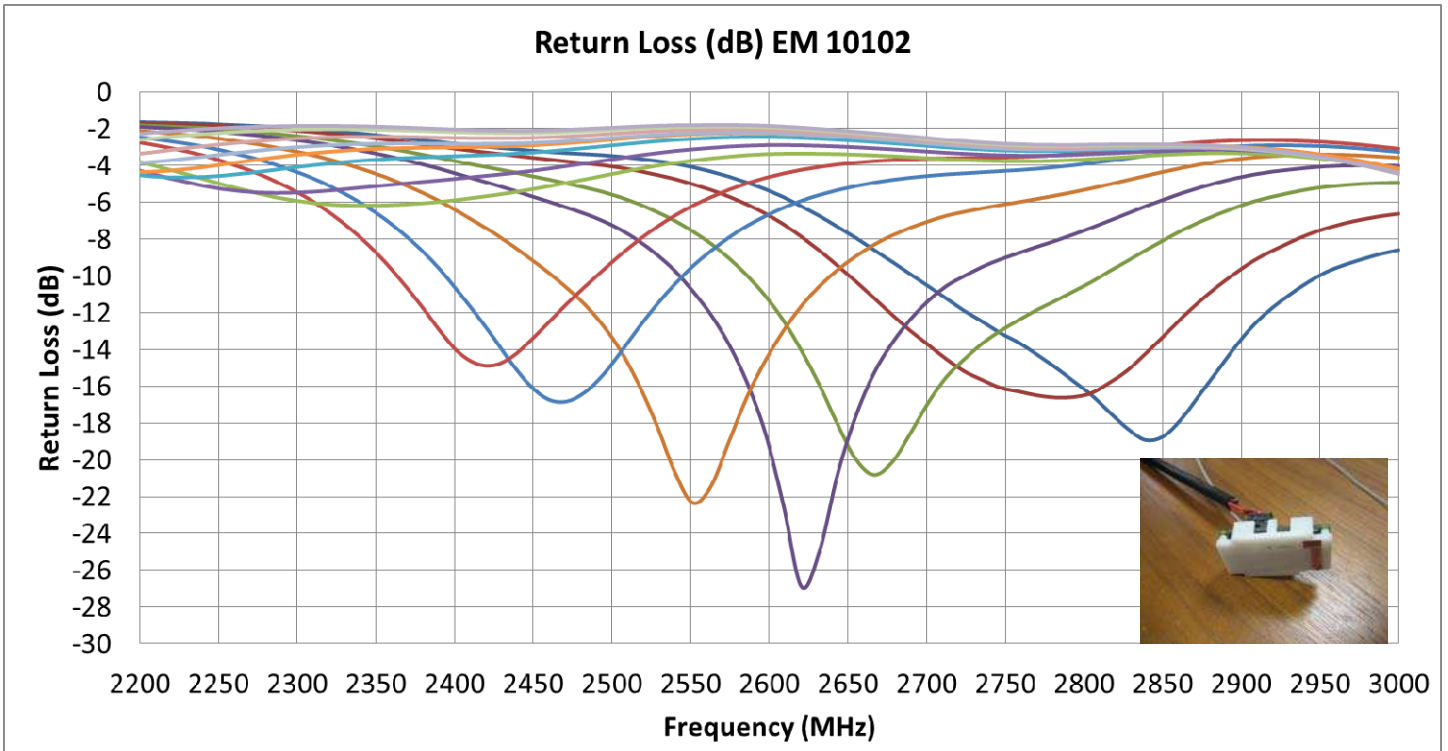
**Mechanical Specifications**

Dimensions (Module Only)	Part No. EM10001: 33mm x 15mm x 3mm
Dimensions (Module with Antenna)	Part No. EM10102: 33mm x 15mm x 7mm (2.4 GHz applications) Part No. EM10203: 33mm x 15mm x 11mm (868 MHz applications)
Cable/ connector	U.FL compatible connector. Contact Ethertronics for details. Cable diameter 1.13mm
Cable Length	Dependent upon implementation.
Packaging	Tray
Power Connector	Option 1: 2 pin connector Option 2: DC bias Tee RF connector. Contact Ethertronics for details
Weight	2g

Preliminary—specifications subject to change and are dependent upon actual implementation.

**PRODUCT: EtherModule 1.0™**

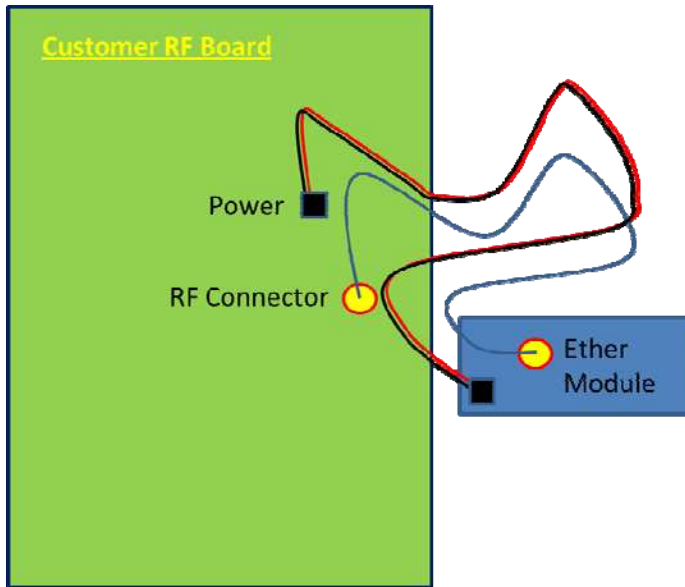
EtherModule 1.0™ typically provides a very wide tunable frequency band, allowing the module to withstand very large detuning effects from the environment.



Preliminary—specifications subject to change and are dependent upon actual implementation.

## Application for Tunable Antenna

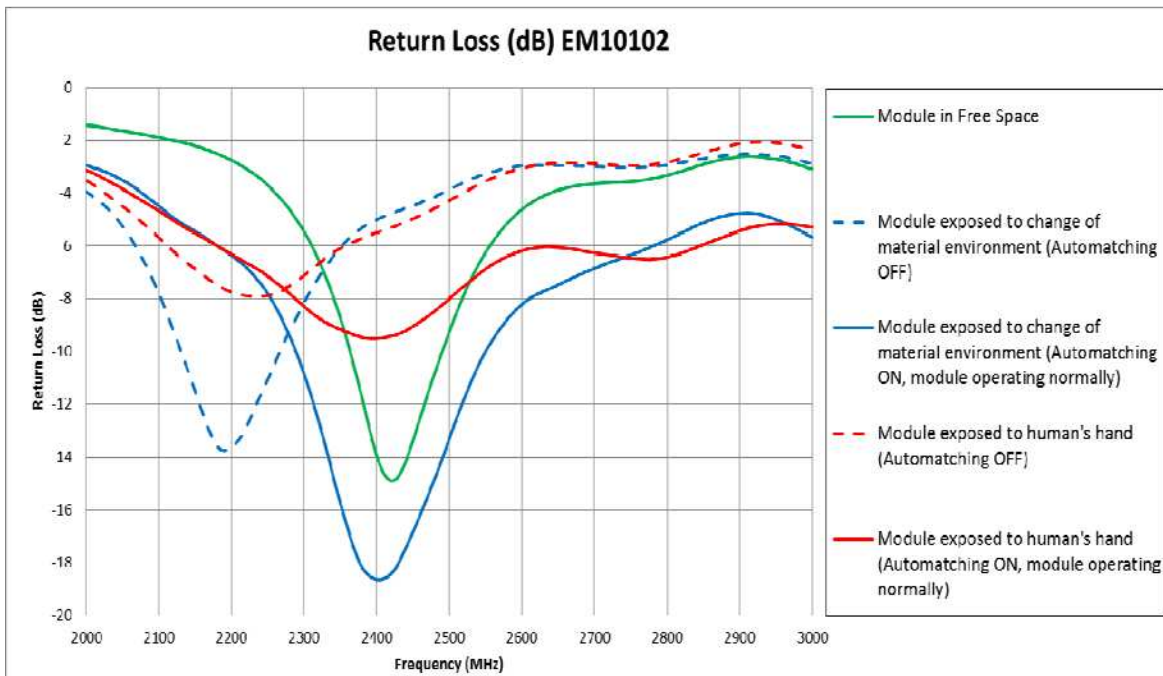
### EtherModule 1.0™



EtherModule 1.0™ is designed as a plug-and-play tunable antenna solution connected with a U.FL compatible connector, to be used in place of a standard passive antenna.

The 3.3V DC power can be provided either via the RF cable or via an independent power cable.

## Typical Behavior and Benefits



Preliminary—specifications subject to change and are dependent upon actual implementation.