



RFM Integrated Device, Inc.

## PRODUCT SPECIFICATION

Part Number: ANT1005

Antenna, External WIFI  
RG174/3M/SMA,  
2450 MHz  $\pm$  50 MHz, 100 MHz min  
(@ -10dB)  
Gain at Zenith -5.0 dBi

## 1. SCOPE

This specification covers the ISM Band.

## 2. Name of the product

This product is named "EWA2450M".



## 3. Electrical characteristics

### 3-1 Electrical characteristics of antenna

The antenna has the electrical characteristics given in Table 1 under the manufacturer's standard installation conditions shown in the figure.

Table 1

No	Parameter	Specification	
1	Center Frequency	2450MHz $\pm$ 50MHz	
2	Bandwidth	100MHz min (@-10dB)	
3	Dimension	40.5x38.0x12.3mm	
4	VSWR	2.0 max (@center frequency)	
5	Gain at Zenith	-5.0 dBi typ.(with 3M RG-174 coaxial cable)	
6	Polarization	Linear	
7	Impedance	50 Ohm	
8	Temperature	Operation Temperature	-30°C to +80°C
		Storage Temperatur	-40°C to +100°C
		Relative Humidity	40% to 95%
9	Termination	Ag (Environmentally-Friendly Pb Free)	
10	Connector	RG174/3M/SMA	

※ Please follow the Golden Sample characteristics and compensation the instrument measurement value when IQC Inspection.

## 4. Environmental conditions

### 4-1 Operating conditions

The antenna has the electrical characteristics given in Tables 1 in the temperature range of -40°C to +105°C and under the environmental conditions of +40°C and 0-95% r.h..

#### 4-2 Storage temperature range

The storage temperature range of product is  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ .

#### 4-3 Feed pin temperature range

Maximum temperature for soldering of feed pin is  $+290^{\circ}\text{C}$  for 3 second.

### 5. Reliability tests

#### 5-1 Low-temperature test

Expose the specimen to  $-40^{\circ}\text{C}$  for 400 hours and then to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions.

#### 5-2 High-temperature test

Expose the specimen to  $+105^{\circ}\text{C}$  for 400 hours and then to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions.

#### 5-3 High-temperature/high-humidity test

Subject the object to the environmental conditions of  $+60^{\circ}\text{C}$  and 90-95% r.h. for 96 hours, then expose to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions.

#### 5-4 Thermal shock test

Subject the object to cyclic temperature change ( $-40^{\circ}\text{C}$ , 2 hours  $\leftrightarrow$   $+85^{\circ}\text{C}$ , 2 hours) for 100 cycles, the expose to normal temperature/humidity for 24 hours or more.

#### 5-5 Vibration test

##### 5-5-1 Sinusoidal vibration test

Subject the object to vibrations of 5 to 200 to 5Hz swept in 10 minutes, 4.5G at maximum (2mm amplitude), in X and Y directions for two hours each and in Z direction for four hours. After this test, examine its appearance functions.

##### 5-5-2 Vibration test in packaged condition

Subject the object, which is packaged as illustrated, to vibrations of 15 to 60 to 15Hz swept in 6 minutes, 4G at maximum (2mm amplitude at maximum), applied in X, Y and Z directions for two hours each, i.e. six hours in total. After this test, examine its appearance and functions.

#### 5-6 Free fall test in packaged condition

Drop the object, which is packaged as illustrated, to a concrete surface from the height of 90 cm, on one comer, three edges and six faces once each, i.e. 10 times in total. After this test, examine its appearance and functions.

#### 5-7 Soldering heat resistance test

The lead pins of the unit are soaked in solder bath at  $260 \pm 5^{\circ}\text{C}$  for 10 seconds. After this test, examine its appearance and functions.

#### 5-8 Adhesion test

The device is subjected to be soldered on test PCB. Then apply 0.5Kg (5N) of force for  $5\pm 1$  seconds in the direction parallel to the substrate. (The soldering should be done by reflow and be conducted with care so that the soldering is uniform and free of defect by stress such as heat shock).

### 6. Inspection

As for the examination during mass production, we place the antenna in the production fixture individually, using the network analyzer to compare its central frequency, bandwidth, and return loss with that of the golden sample.

### 7. Warranty

If any defect occurs from the product during proper use within a year after delivery, it will be repaired or replaced free of charge.

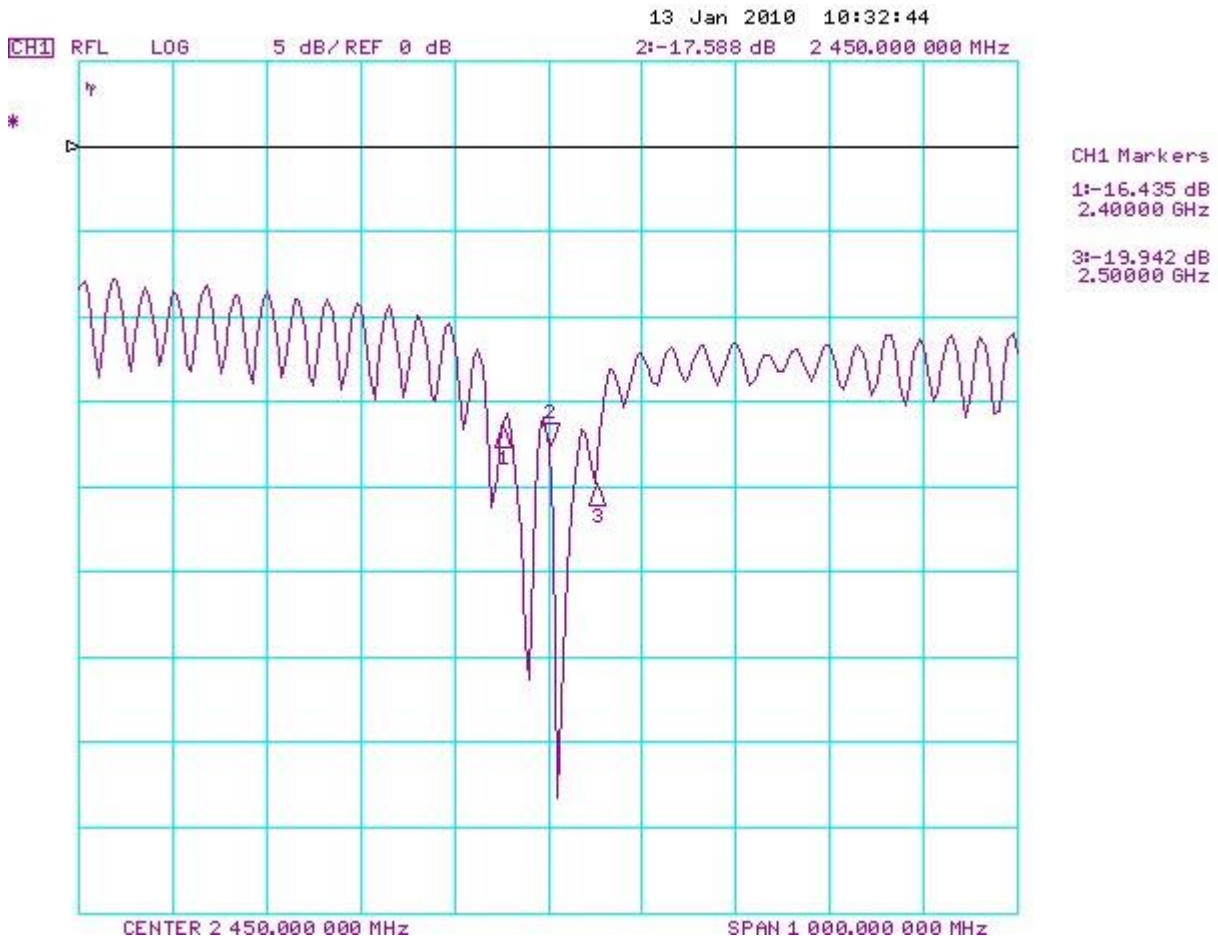
### 8. Others

Any question arising from this specification manual shall be solved by arrangement made by both parties.

### 9. Precautions for Use

- Antenna pattern use a silver electrode.
- Please don't use the corrosion gas (sulfur gas, chlorine gas) in the atmosphere.
- Please don't direct solder onto the silver electrode of Antenna pattern.

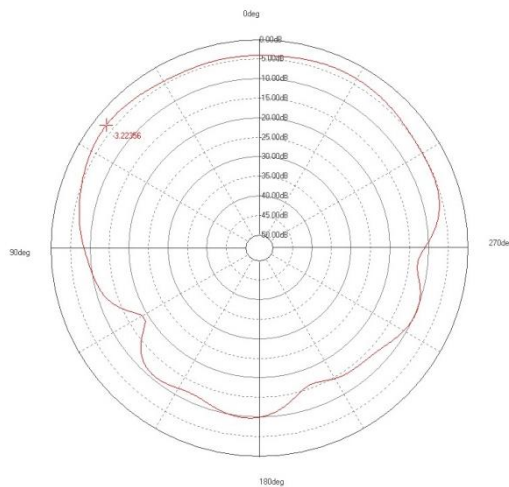
## 10. Typical Electrical Characteristics



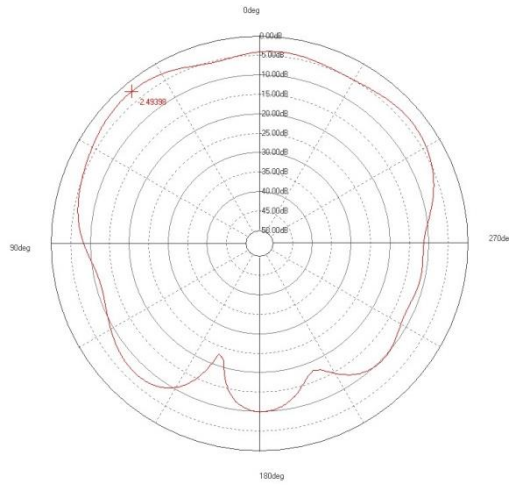
With 3M RG-174 coaxial cable

## 11. Cut plane pattern

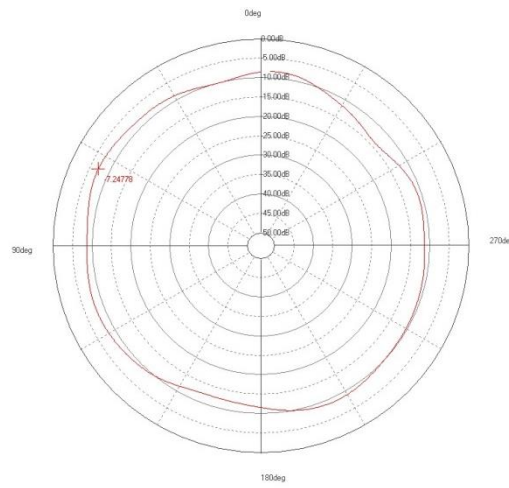
XZ-Plane



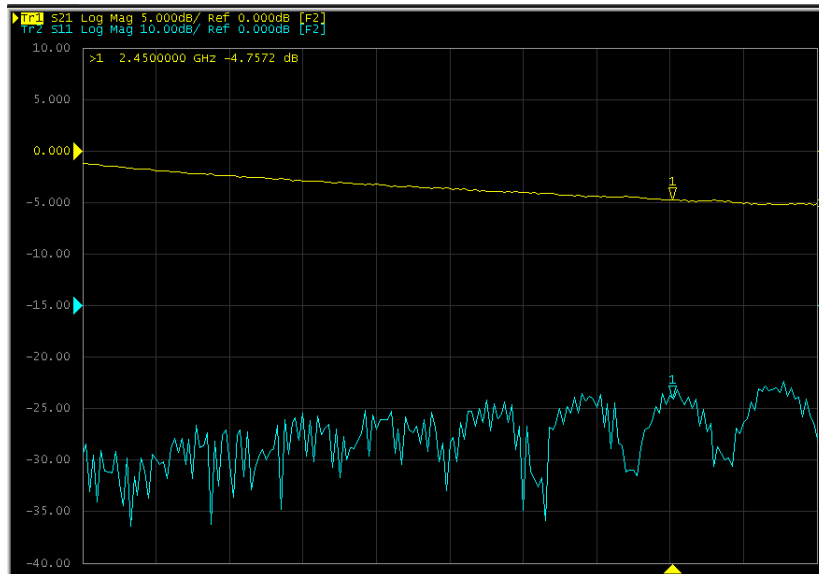
### YZ-Plane



### XY-Plane

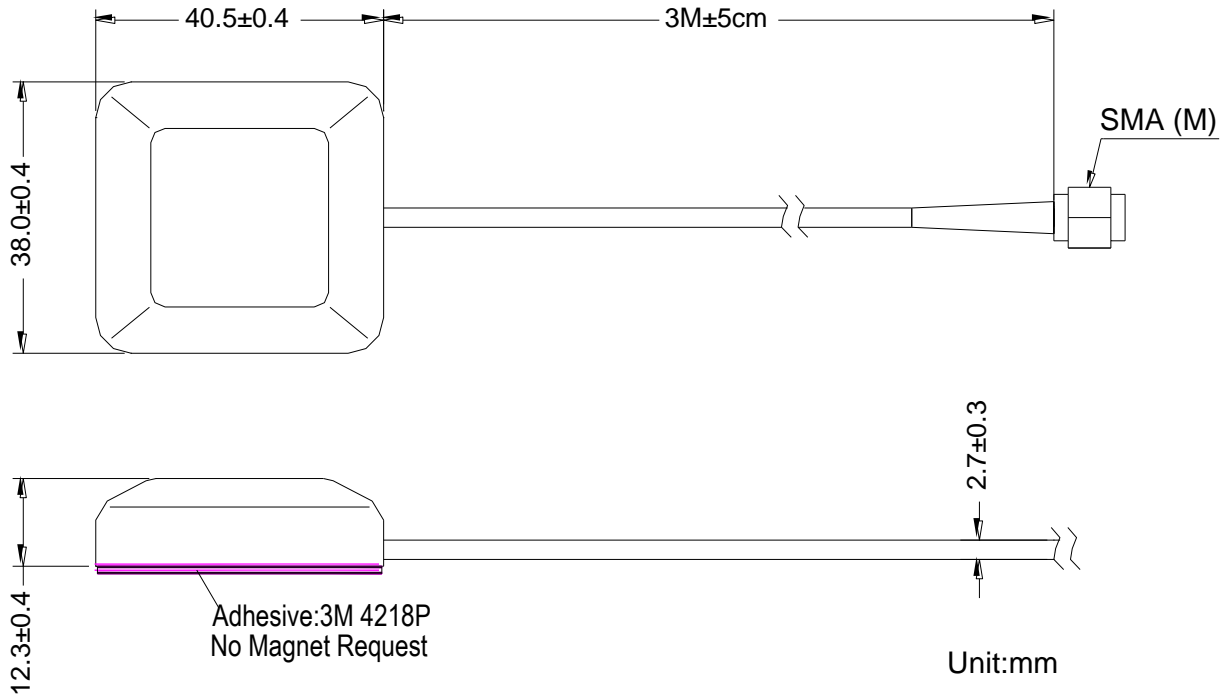


## 12. Cable loss



### 13. Drawings

#### Shape and Dimension







## CONFIGURATION

1	RF Cable	RG-174 , $\phi$ 2.7 $\pm$ 0.3mm , Black	
		Cable Length	3M $\pm$ 5cm
2	RF Connector	SMA(M)	
3	Cable loss	-4.75dB @ 2450MHz	

## MECHANICAL SPECIFICATIONS

11	Mounting	Magnet mount.
2	Horizontal Pulling Force of Magnet	1.5 Kg Min.
3	Water Proof	Deep into water 50cm, 30 Min.
4	Shock	10msec. Half sine wave.
5	Vibration	10~200Hz Log. Sweep 3.0G sweep time: 15 Minutes, 3 Axes.
6	Magnet Threshold	The antenna must stay attached to the vehicle, at a speed of 180 km/h.
7	Cable Pulling Off Force	Min At room temperature Min 7Kg /10sec. Apply 7Kg /10sec pulling force between the cable and the antenna unit, no visible damage shall appear on the cable and connector.
8	Bending Test	After bending 90° right and left for 1,000 cycles, no permanent damage were found.
9	Weight	70g Max.