

# Bentoni GNSS Antenna

Part No. SRFG017

flexiiANT<sup>®</sup>

Product Specification

## 1. Features

- Antenna for 1559 – 1609 MHz applications
- Solution for all global public constellations: GPS, GLONASS, Beidou and GALILEO
- Maintains high performance within device: DFI (Designed For Integration)
- 1.13mm diameter RF cable with IPEX MHF connector
- Self-Adhesive mounted
- Quick integration minimizes design cycle
- High performance
- Available 3 standard cable lengths

## 2. Description

Bentoni is intended for use with all positioning applications. A flexible antenna with cable enables direct connection to the host PCB. Simple integration with plug and play simplicity. This product specification shows the performance of the antenna to cover a typical GNSS reception: 1559 – 1609 MHz.

## 3. Applications

- Trackers
- Portable devices
- Drones
- Network devices
- Wearable devices



## 4. Part Number

**Bentoni: SRFG017-xxx**



Note. -xxx refers to cable length option:

| Part Number | Cable Length |
|-------------|--------------|
| SRFG017-50  | 50mm         |
| SRFG017-100 | 100mm        |
| SRFG017-150 | 150mm        |

## 5. General Data

|                         |                            |
|-------------------------|----------------------------|
| Product name            | Bentoni                    |
| Part Number             | SRFG017                    |
| Frequency               | 1559 – 1609MHz             |
| Polarization            | Linear                     |
| Operating temperature   | -40°C to +85°C             |
| Impedance with matching | 50 Ω                       |
| Weight                  | < 0.5 g                    |
| Antenna Assembly type   | FPC Self-adhesive 3M 468MP |
| Dimensions (Antenna)    | 40.0 x 14.0 x 0.15 (mm)    |
| Cable length            | 50 /100 / 150              |
| Connection              | MHF IPEX                   |

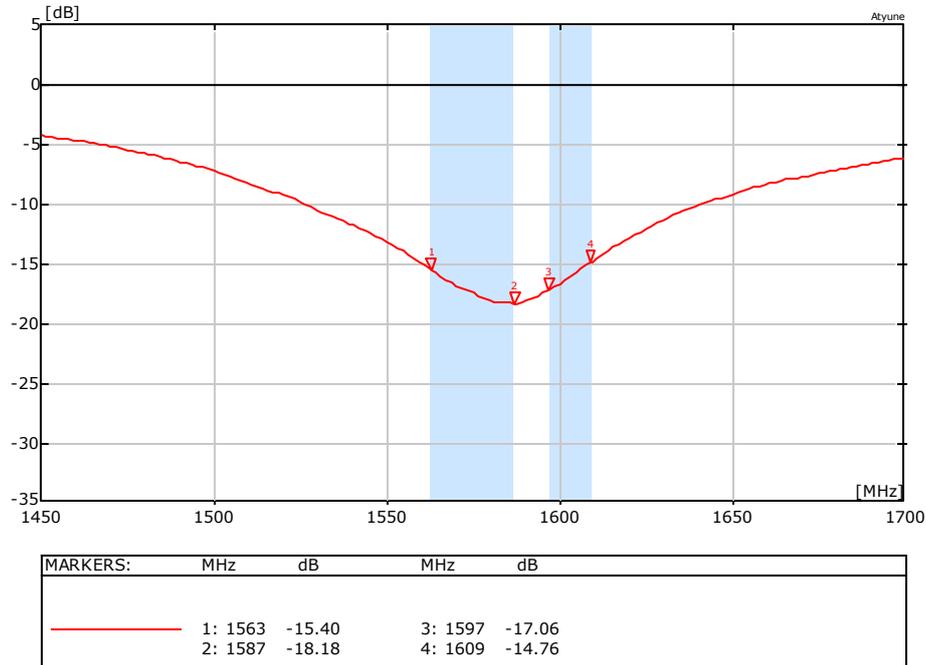
## 6. RF Characteristics

|                     | 1559 – 1609 MHz | Conditions   |
|---------------------|-----------------|--|
| Peak gain           | 4.0dBi          | All data measured in a loaded condition adhered to a plastic carrier free space. |
| Average gain        | -1.2dBi         |  |
| Average efficiency  | >75%            |  |
| Maximum return loss | -14dB           |  |
| Maximum VSWR        | 1.45:1          |  |

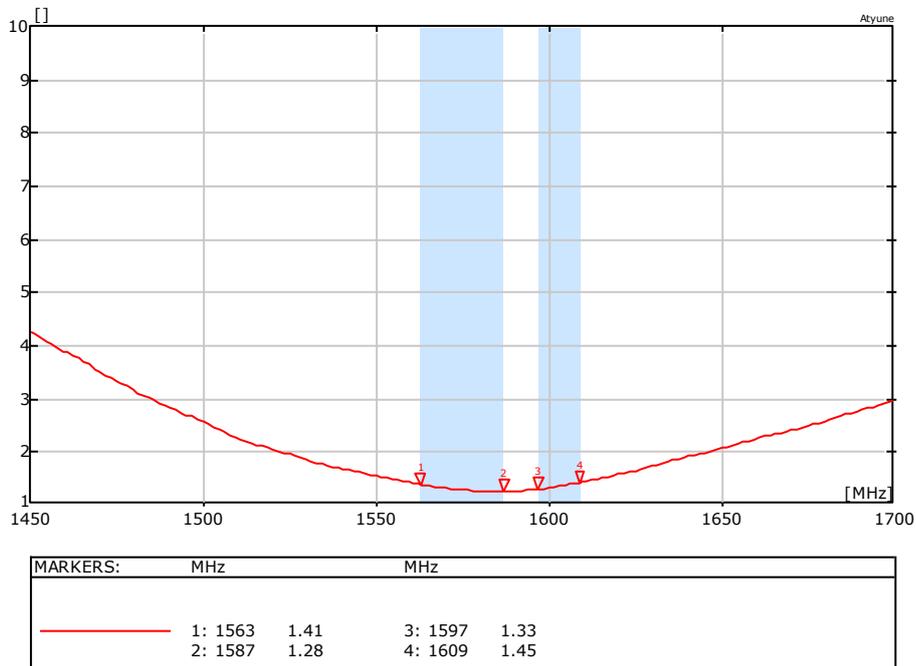
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## 7. RF Performance

### 7.1 Return Loss

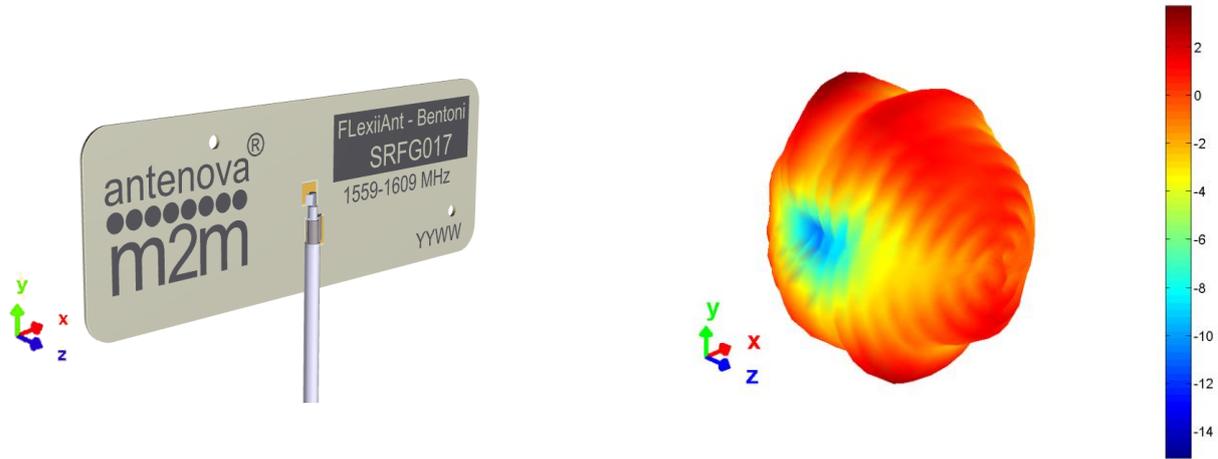


### 7.2 VSWR

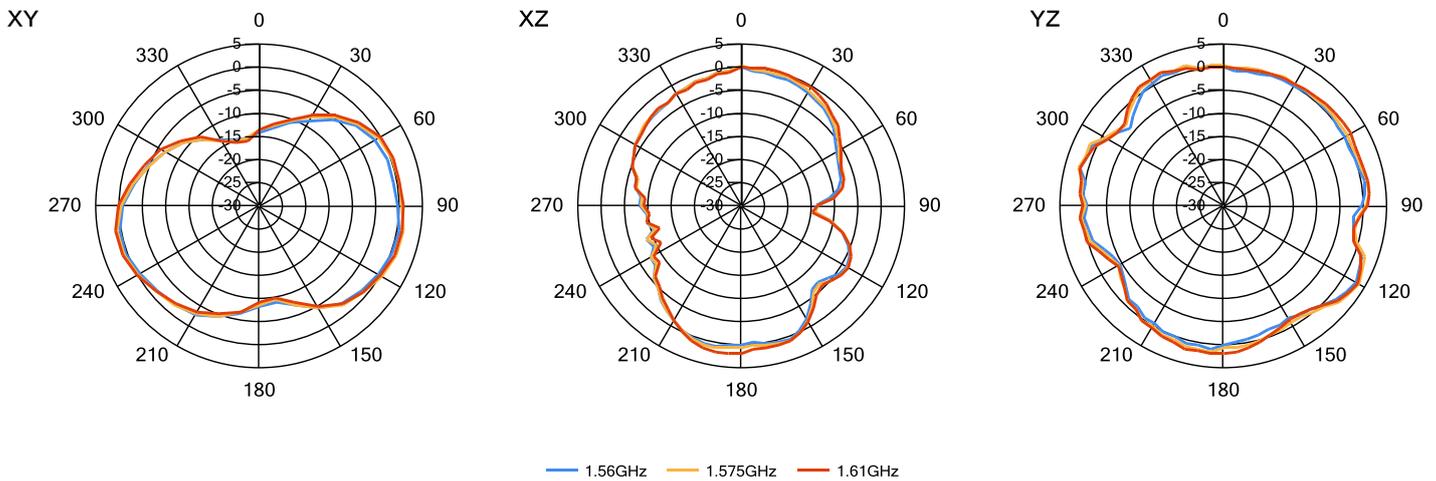


## 7.3 Antenna patterns

### 7.3.1 1575 MHz

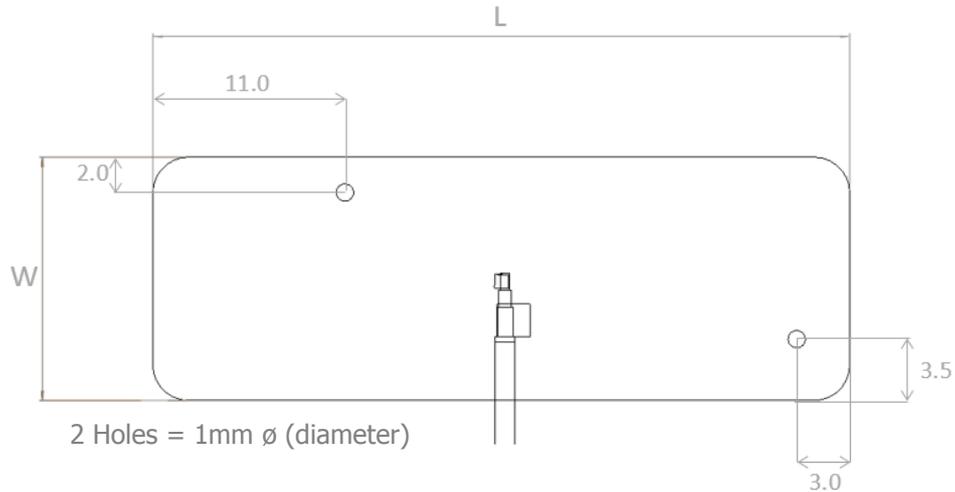


**3D pattern at 1575MHz**  
*Drag to rotate pattern and PCB by using Adobe Reader  
(Click to Activate)*



## 8. Antenna Dimensions

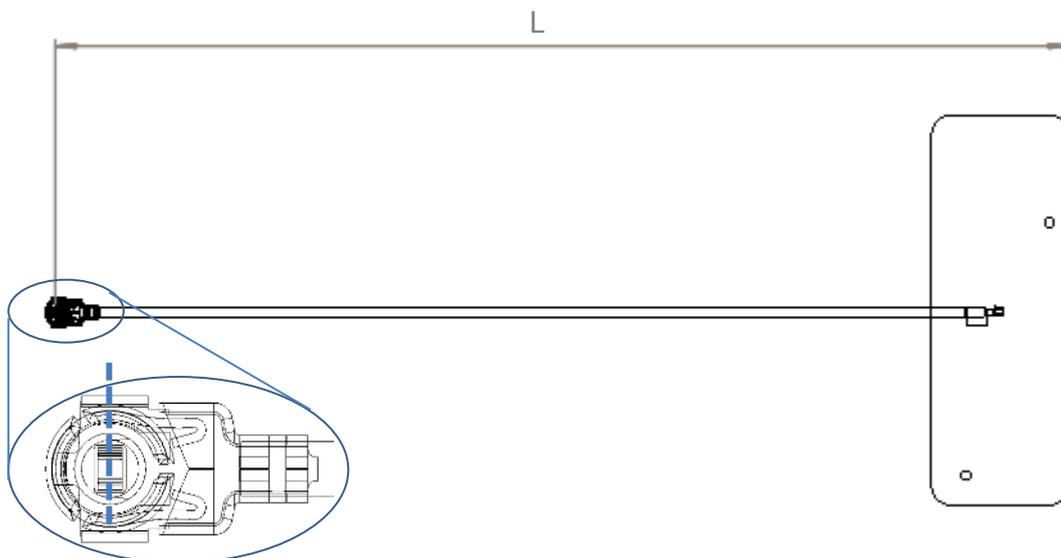
### 8.1 Dimensions FPC section



| L              | W              | T                 |
|----------------|----------------|-------------------|
| Length         | Width          | Thickness         |
| 40.0 ±0.2 (mm) | 14.0 ±0.2 (mm) | 0.15 (mm) nominal |

All dimensions in mm

### 8.2 Dimensions assembled

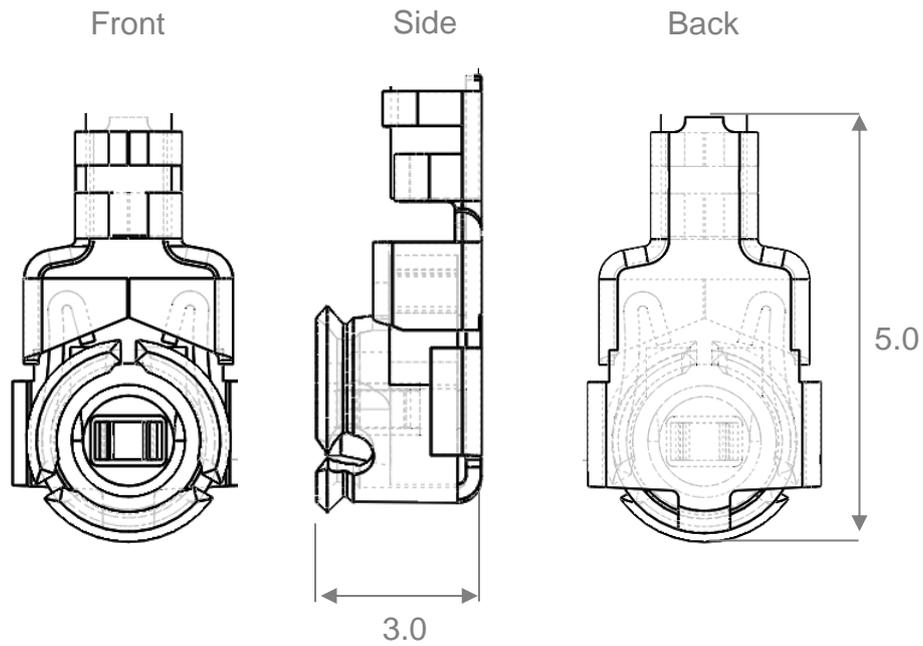


| SRF2W012-50  | SRF2W012-100  | SRF2W012-150  |
|--------------|---------------|---------------|
| L            | L             | L             |
| 57 ±2.0 (mm) | 107 ±2.0 (mm) | 157 ±2.0 (mm) |

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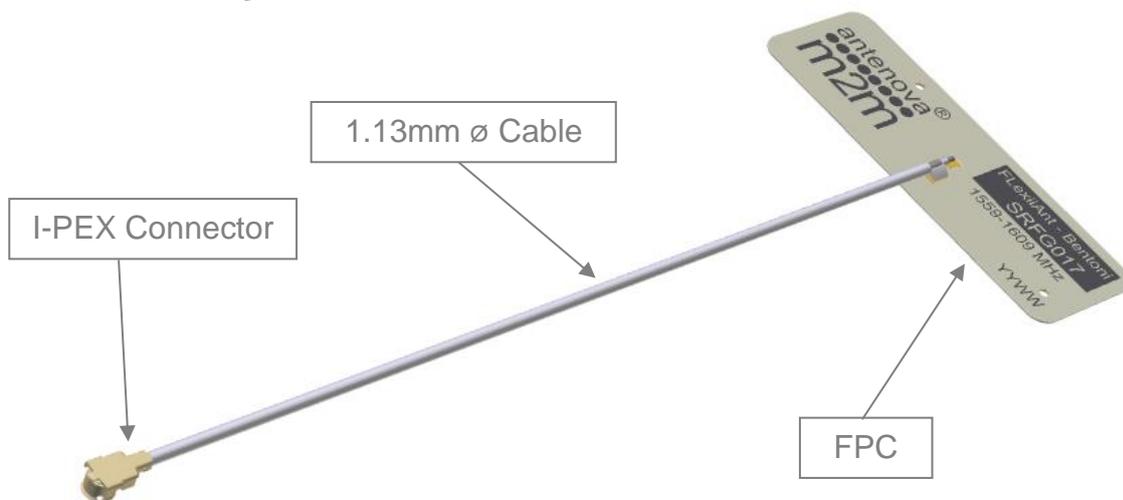
### 8.3 IPEX Connector

| I-PEX    |              |
|----------|--------------|
| Material | Copper Alloy |
| Plating  | Ag           |



All dimensions in mm

### 8.4 Assembly



## 9. Electrical Interface

### 9.1 Host Interface

The host PCB requires the mating connector which is IPEX MHF (UFL) receptacle. The location should be close to the chip/modules pin for the RF. Any feed from this receptacle should be maintained at 50Ω impedance.

### 9.2 Transmission Line

All transmission lines should be designed to have a characteristic impedance of 50Ω.

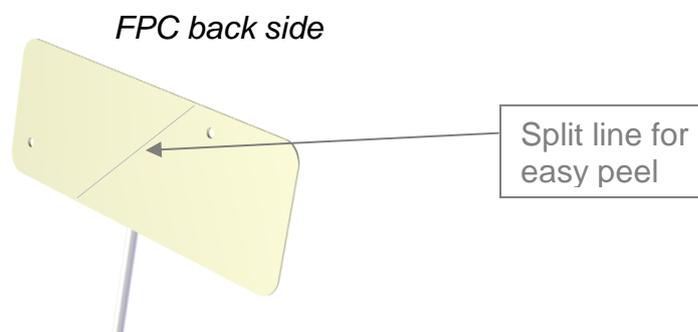
- The length of the transmission lines should be kept to a minimum
- Any other parts of the RF system like transceivers, power amplifiers, etc, should also be designed to have an impedance of 50 Ω

Once the material for the PCB has been chosen (PCB thickness and dielectric constant), a coplanar transmission line can easily be designed using any of the commercial software packages for transmission line design. For the chosen PCB thickness, copper thickness and substrate dielectric constant, the program will calculate the appropriate transmission line width and gaps on either side of the feed.

A DC blocking capacitor should be placed in line to protect the RF front end.

## 10. Mechanical Fixing

The antenna uses 3M 468MP adhesive on the reverse side of the FPC. The antenna has an easy access split line to peel off to reveal the adhesive side. It is designed for a one time fix to a clean smooth surface.



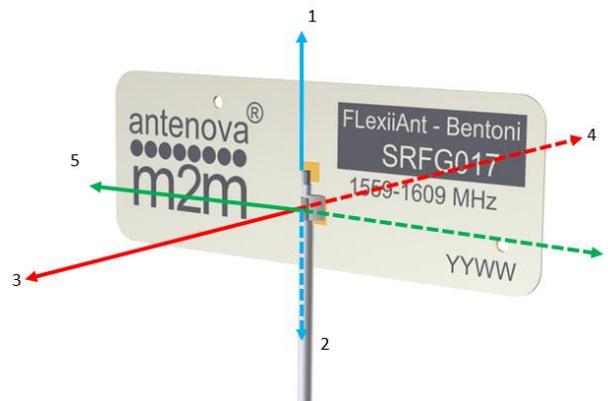
## 10.0 Antenna Integration Guide

### 10.1 Placement

For placing the FPC antenna within a device, the host PCB size is not a factor like PCB mounted antennas. However placement still needs to follow some basic rules, as any antenna is sensitive to its environment.

Using six spatial directions shown below as a guide. The antenna FPC section should try to maintain a minimum of three directions free from obstructions to be able to operate effectively. The other directions will have obstacles in its path, these directions still require a minimum clearance.

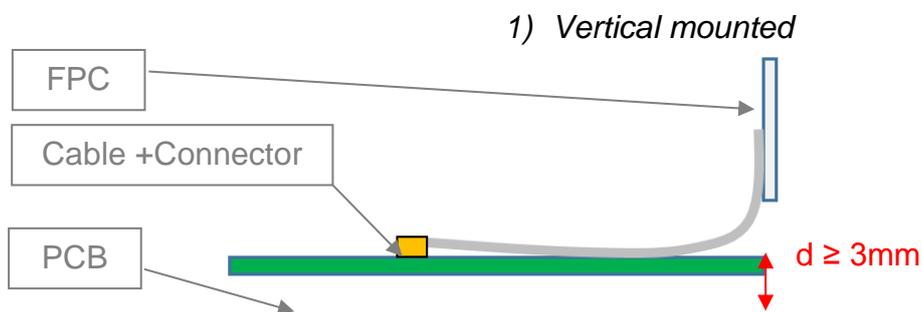
*Six spatial directions relative to FPC*



## 10.2 Orientation of FPC

The orientation of the FPC with respect to the host PCB should be defined depending on the unit. The proximity of the GND will have an influence on the antenna so the PCB location relative to the antenna should be considered.

The FPC will normally be placed in one of the three following options for orientation. In each option a distance (d) is the critical dimension to consider. Below shows the minimum value of (d) for each. Other obstructions may increase this dimension.



1) *Co-planar to PCB*



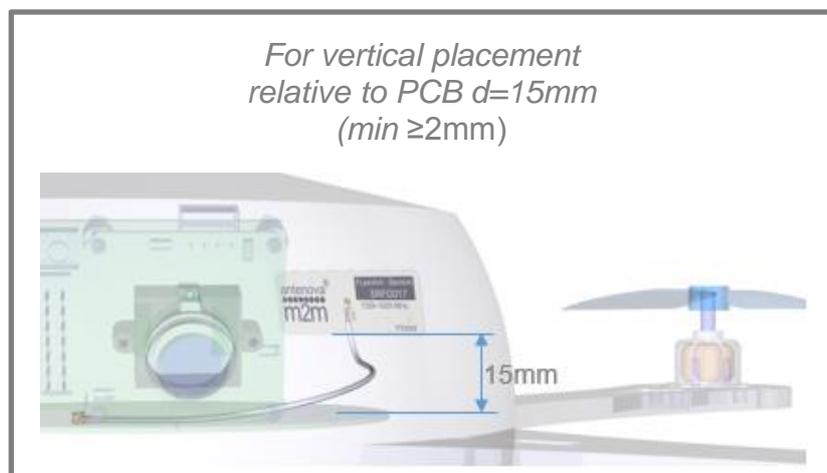
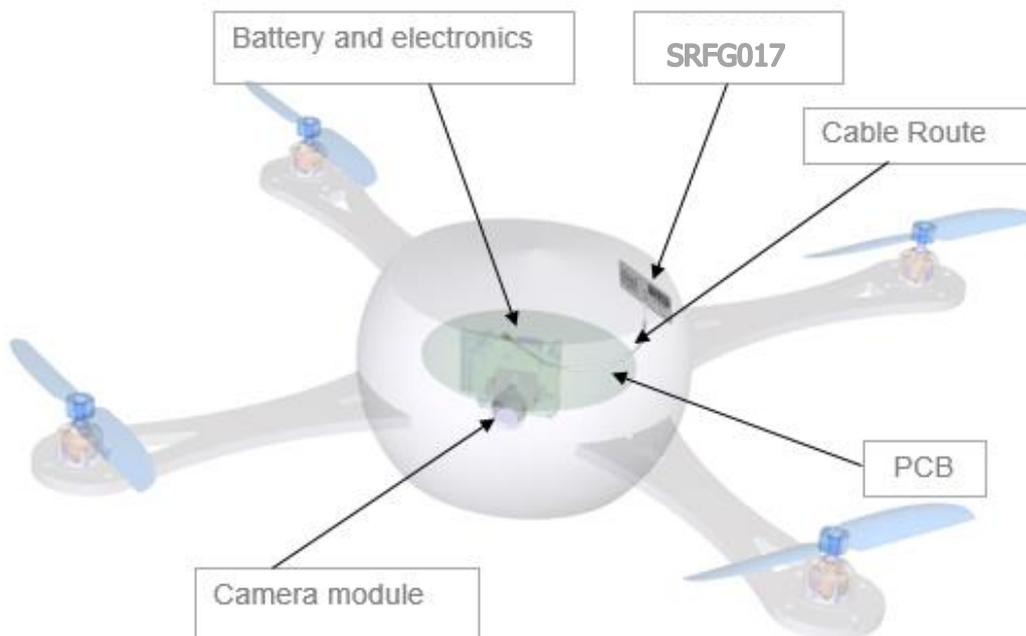
2) *Planar to PCB (Same plane)*



### 10.3 Device Integration example

An example of integration within a drone is shown below. The device contains the major components along with the device outer case. The FPC is shown adhered to the inside of the device's plastic housing. The length of the cable should be chosen to be sufficient to allow ease of assembly when produced (SRFG017-100 in example).

The FPC was placed vertically relative to the PCB. The FPC is kept at maximised height above the PCB to ensure it is above the minimum clearance of  $\geq 2\text{mm}$ . This example shows the FPC 5mm above the PCB. For this type of device it is advisable to keep the antenna away from the electric motor cables and motors themselves that may interfere.



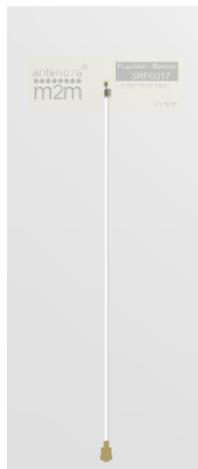
## 11. Hazardous Material Regulation Conformance

The antenna has been tested to conform to RoHS requirements. A certificate of conformance is available from Antenova M2M's website.

## 12. Packaging

The antennas are stored in individual plastic (PE) bags. Then stored within a second bag of 10pcs.

*Single antenna per bag*



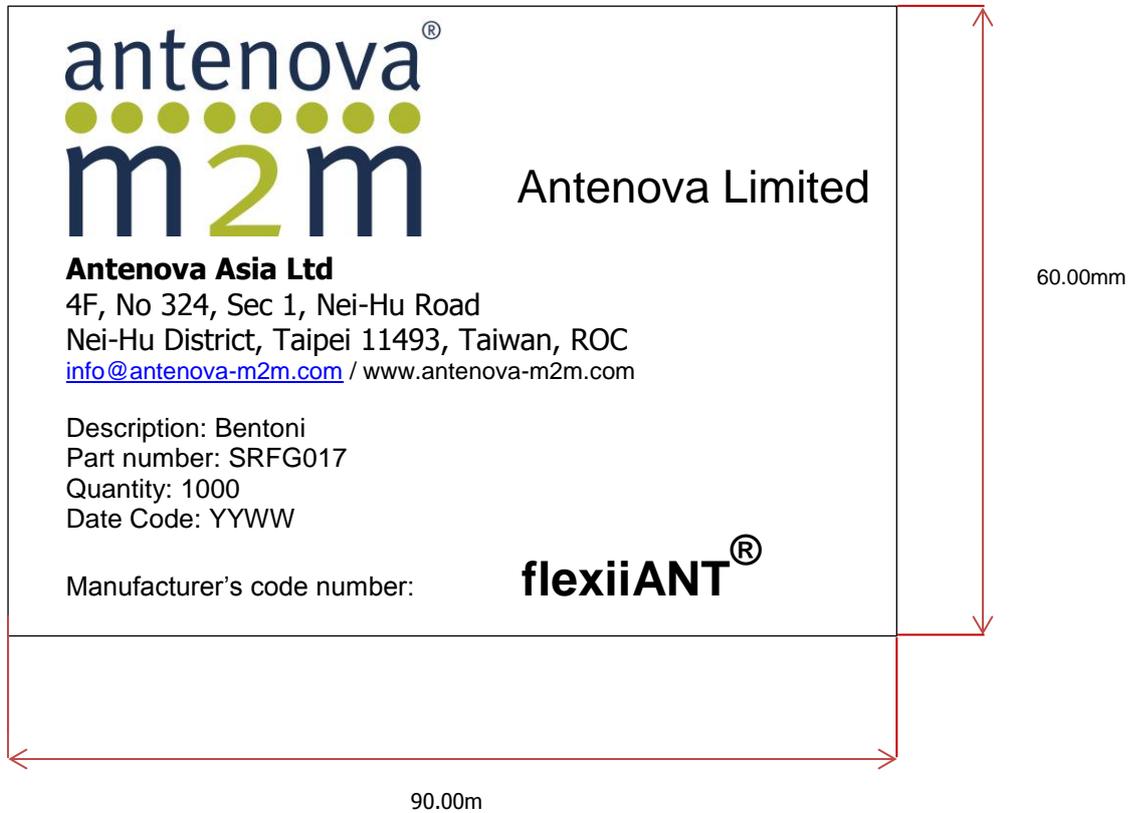
*10 units per second bag (Labelled)*



### 12.1 Optimal Storage Conditions

|               |  |
|---------------|--|
| Temperature   | -10°C to 40°C  |
| Humidity      | Less than 75% RH   |
| Shelf life    | 18 Months  |
| Storage place | Away from corrosive gas and direct sunlight                                    |
| Packaging     | Antennas should be stored in unopened sealed manufacturer's plastic packaging. |

## 12.2 Label Information





[www.antenova-m2m.com](http://www.antenova-m2m.com)

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