

# Amoris Dual-band Wi-Fi Antenna

Part No. SRF2W021

flexiiANT<sup>®</sup>

Product Specification

## 1. Features

- Antenna for 2.4 – 2.5 GHz and 4.9 – 5.9 GHz applications: Wi-Fi<sup>®</sup> 802.11a/b/g/j/n/ac
- 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

Amoris is intended for use with all Wi-Fi 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 dual band Wi-Fi reception: 2.4-2.5 GHz / 4.9-5.9GHz.

## 3. Applications

- Access Points
- Portable Devices
- PC-cards
- Game Consoles
- Set-Top-Box
- Network Devices
- Wearable devices
- MIMO Systems



## 4. Part Number

**Amoris: SRF2W021-xxx**



Note. -xxx refers to cable length option:

| Part Number  | Cable Length |
|--------------|--------------|
| SRF2W021-050 | 50mm         |
| SRF2W021-100 | 100mm        |
| SRF2W021-150 | 150mm        |

## 5. General Data

|                              |   |
|------------------------------|---|
| Product name                 | Amoris  |
| Part Number                  | SRF2W021  |
| Frequency                    | 2.4-2.5GHz;4.9-6.0GHz                           |
| Polarization                 | Linear  |
| Operating temperature        | -40°C to +85°C                                  |
| Environmental condition test | ISO16750-4 5.1.2 / 5.1.1                        |
| Impedance with matching      | 50 $\Omega$                                     |
| Weight                       | < 0.5 g   |
| Antenna Assembly type        | FPC Self-adhesive FPC<br>Self-adhesive 3M 468MP |
| Dimensions (Antenna)         | 27.0 x 14.0 x 0.15 (mm)                         |
| Cable length                 | 50 / 100 / 150 (mm)                             |
| Connection                   | MHF IPEX  |

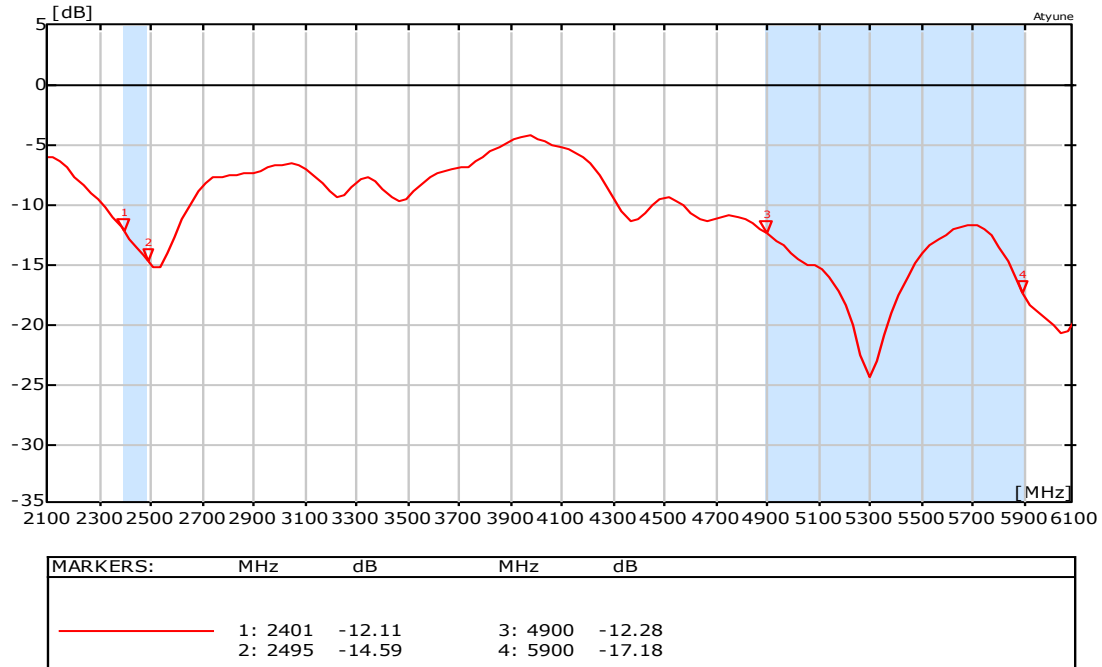
## 6. RF Characteristics

|                     | 2.4 – 2.5 GHz | 4.9 – 5.9 GHz | Conditions   |
|---------------------|---------------|---------------|--|
| Peak gain           | 2.8dBi        | 5.1dBi        | All data measured in a loaded condition adhered to a plastic carrier free space. |
| Average gain        | -1.30dBi      | -1.20dBi      |  |
| Average efficiency  | >67%          | >70%          |  |
| Maximum return loss | -14dB         | -10dB         |  |
| Maximum VSWR        | 1.7:1         | 1.7:1         |  |

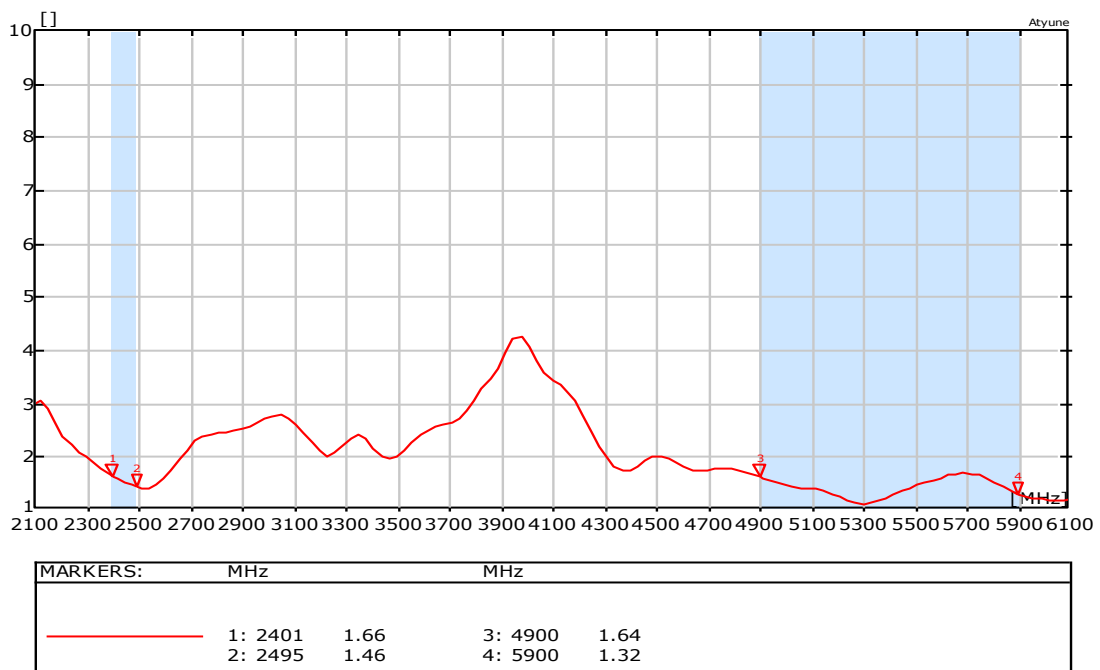
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## 7. RF Performance

### 7.1 Return Loss

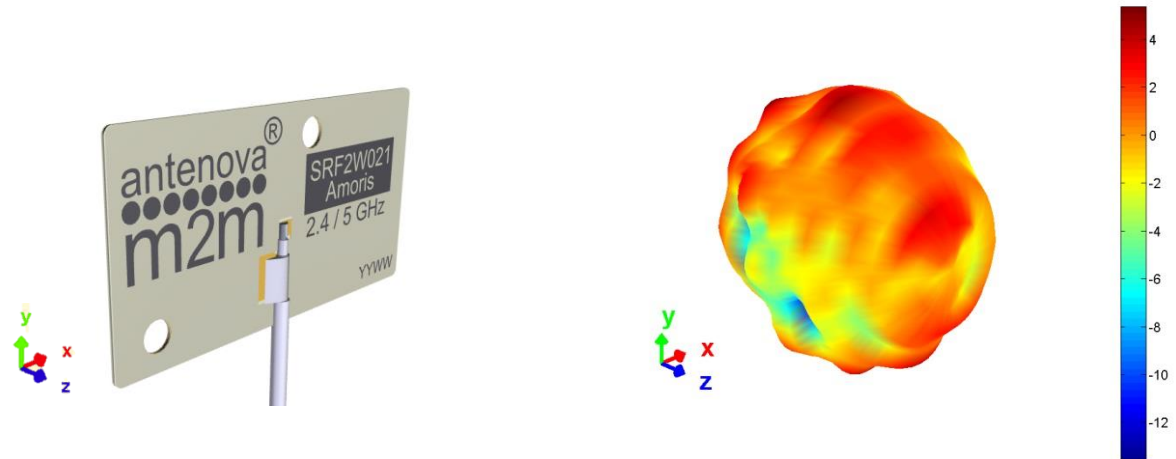


### 7.2 VSWR



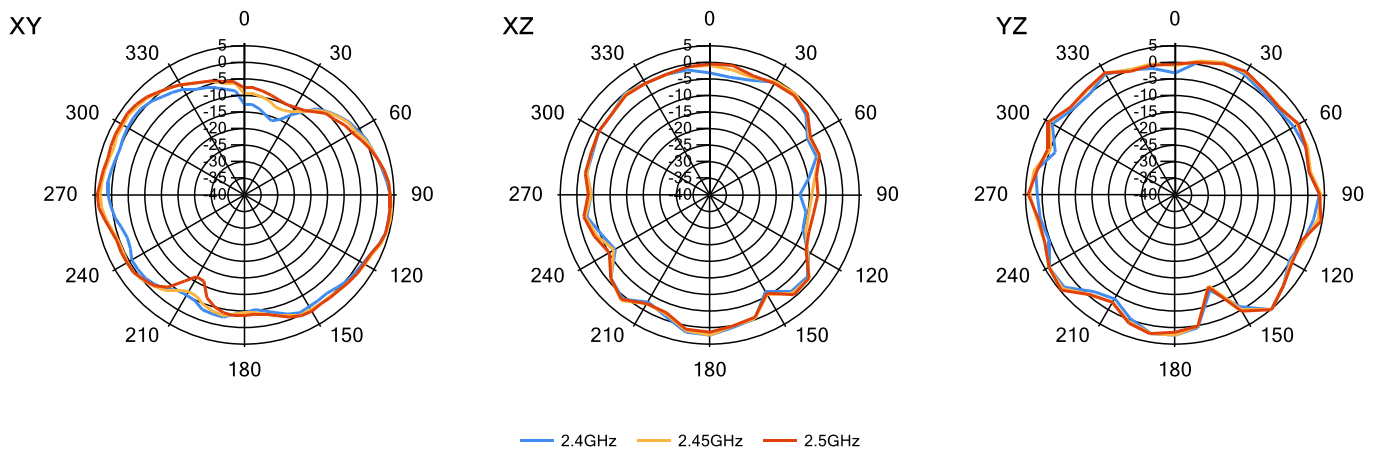
## 7.3 Antenna patterns

### 7.3.1 2400 MHz – 2500 MHz

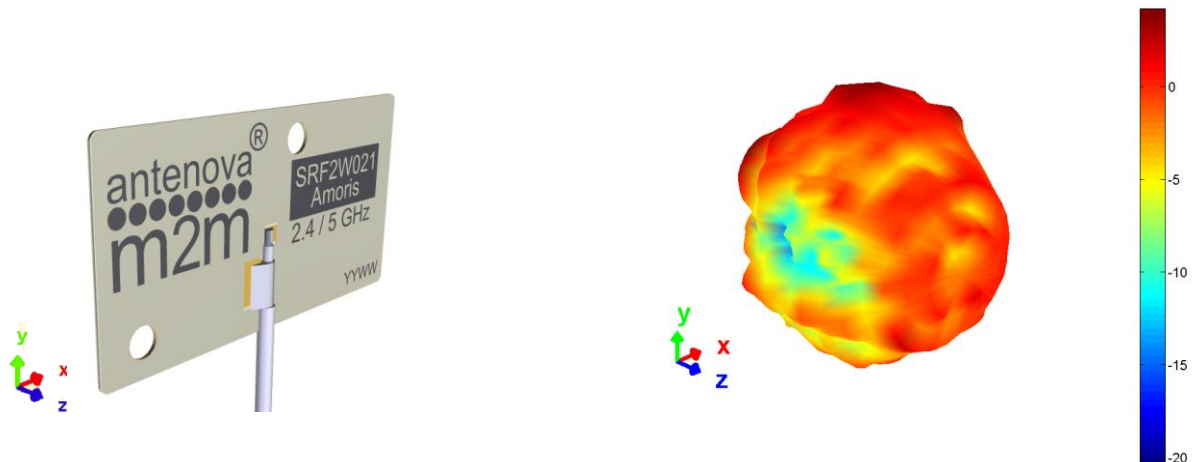


#### 3D pattern at 2.45GHz

*Drag to rotate pattern and PCB by using Adobe Reader  
(Click to Activate)*

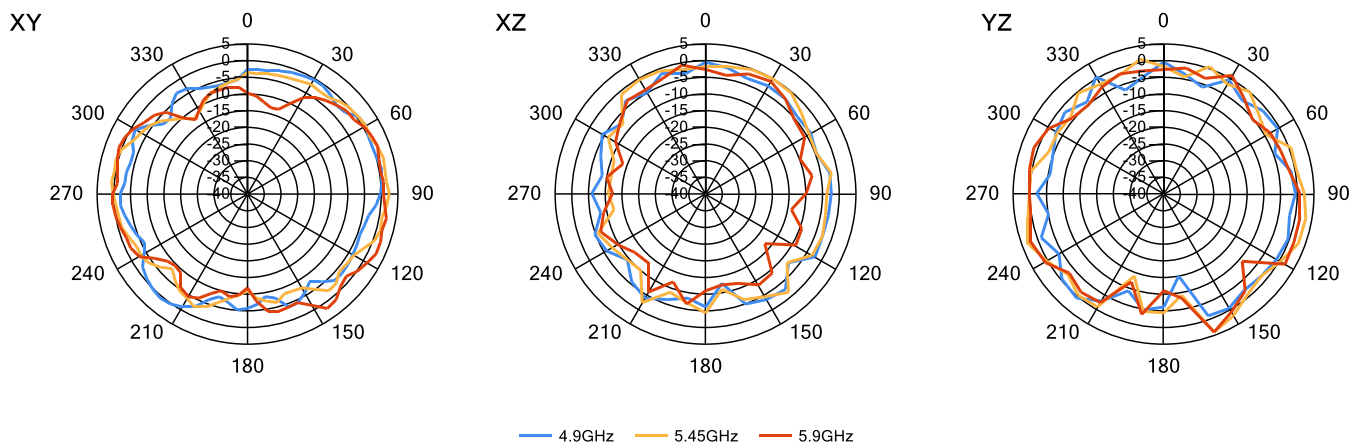


### 7.3.2 4900 MHz – 5900 MHz



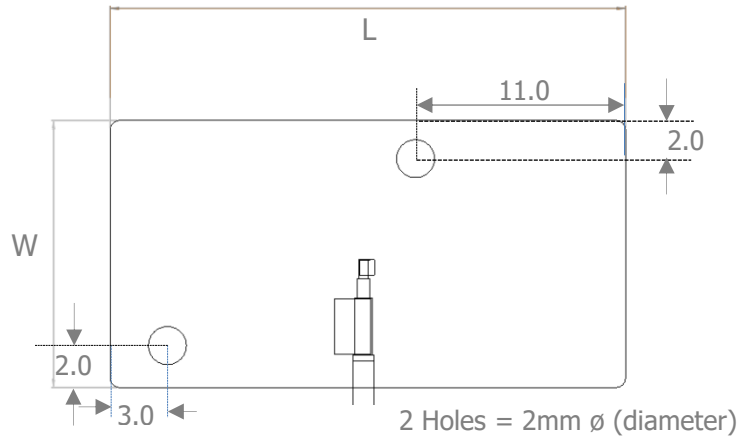
#### 3D pattern at 5.45GHz

*Drag to rotate pattern and PCB by using Adobe Reader  
(Click to Activate)*



## 8. Antenna Dimensions

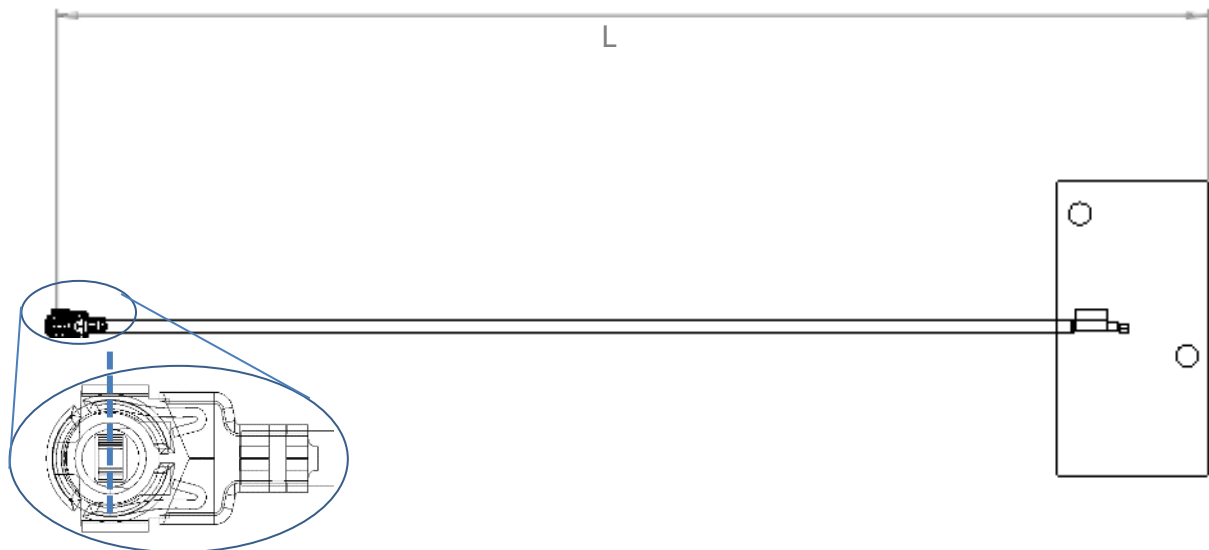
### 8.1 Dimensions FPC section



| L              | W              | T                 |
|----------------|----------------|-------------------|
| Length         | Width          | Thickness         |
| 27.0 ±0.2 (mm) | 14.0 ±0.2 (mm) | 0.15 (mm) nominal |

All dimensions in mm

### 8.2 Dimensions assembled

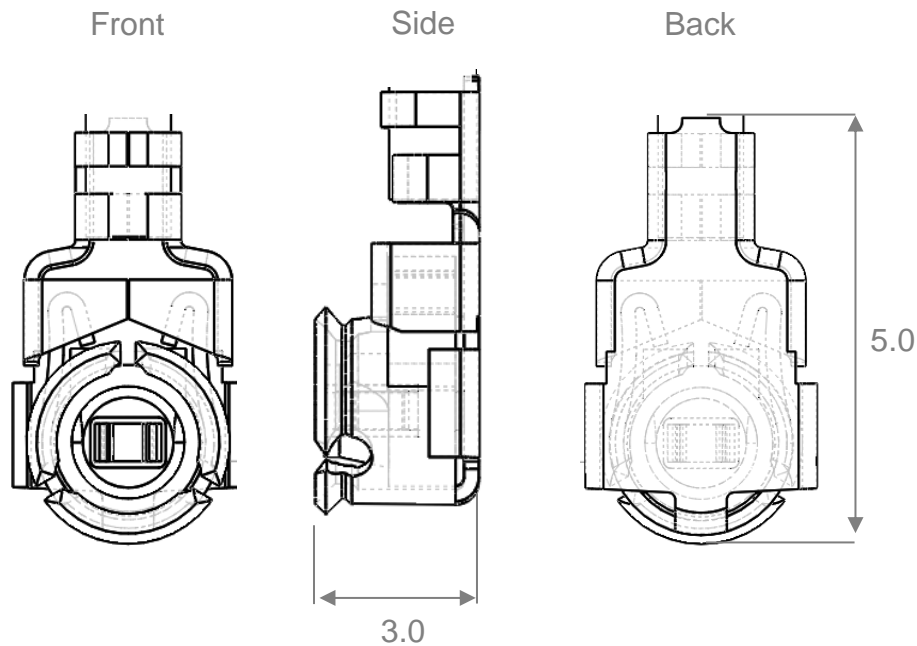


| SRF2W021-50  | SRF2W021-100  | SRF2W021-150  |
|--------------|---------------|---------------|
| L            | L             | L             |
| 51 ±2.0 (mm) | 101 ±2.0 (mm) | 151 ±2.0 (mm) |

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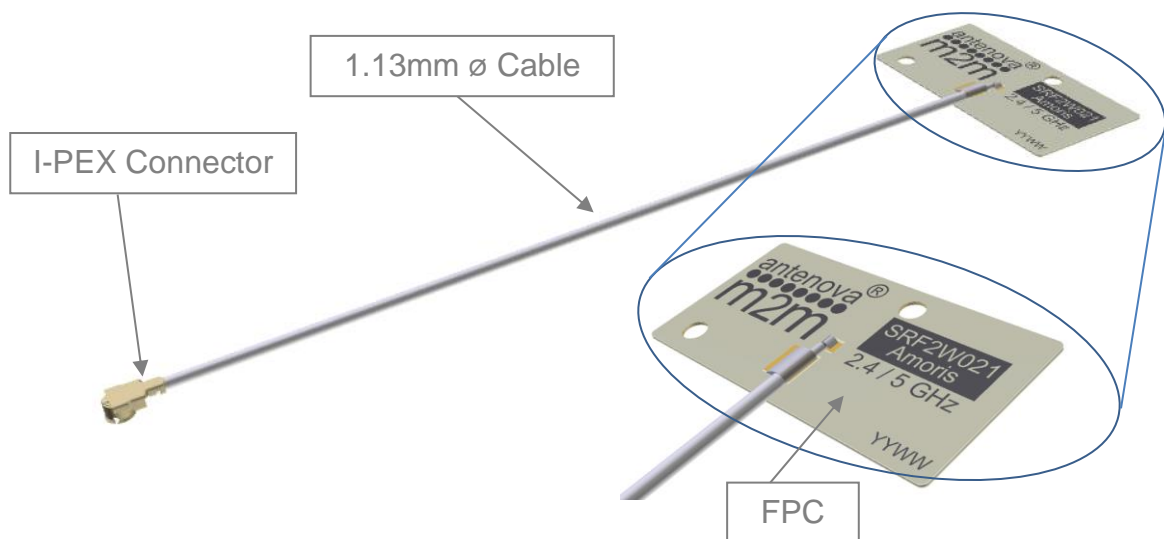
## 8.3 IPEX Connector

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



All dimensions in mm

## 8.4 Assembly



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## 9. Electrical Interface

### 9.1 Host Interface

The host PCB requires the mating connector which is the 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.

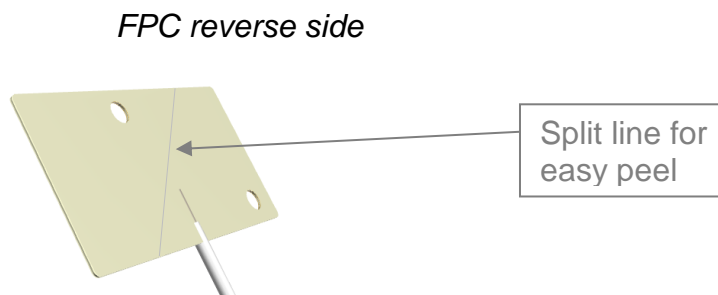
- The length of the transmission lines should be kept to a minimum
- Any other parts of the RF system like transceivers, power amplifiers, etc, should also be designed to have an impedance of 50 Ω

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 a 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.





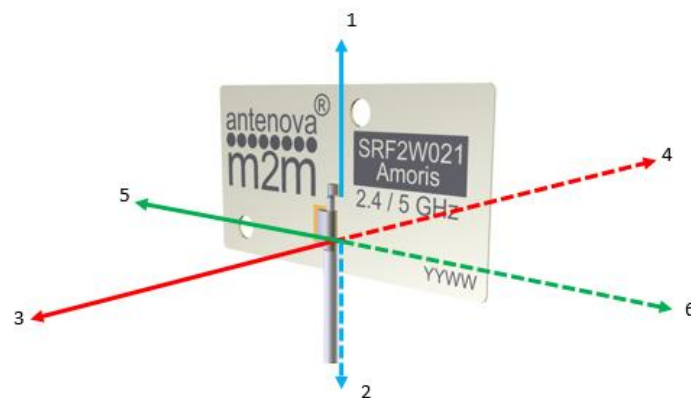
## 11.0 Antenna Integration Guide

### 11.1 Placement

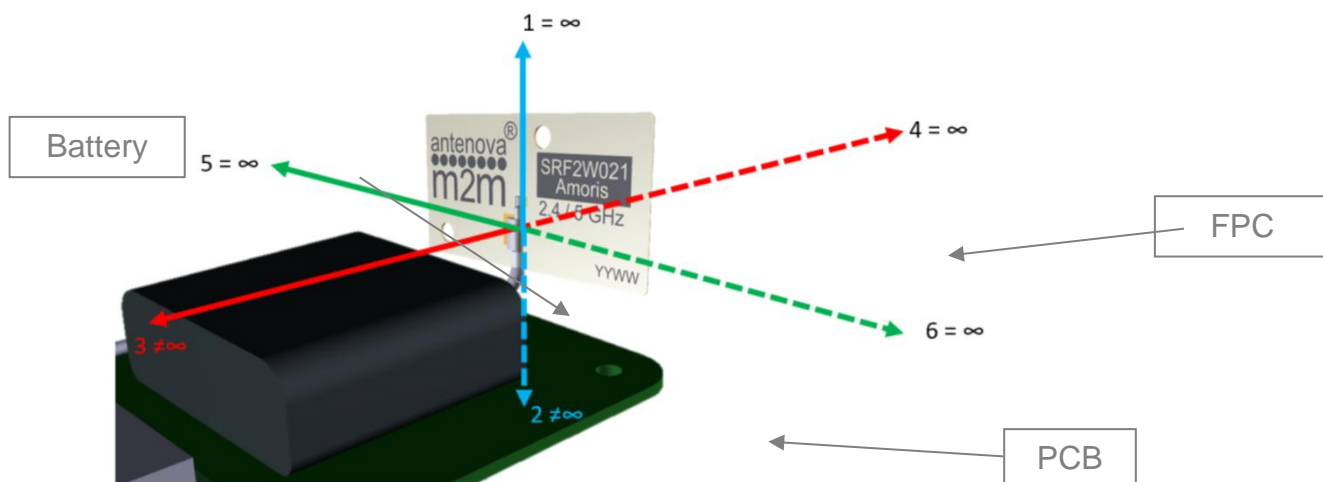
For placing the FPC antenna within a device, the host PCB size is not a factor as with PCB mounted antennas. However, placement still needs to follow some basic rules, as any antenna is sensitive to its environment.

Six spatial directions are shown below. The antenna FPC section should ideally have minimum of three directions free from obstructions to be able to operate effectively. The other directions will have obstacles in their paths, these directions still require a minimum clearance. These minimum clearances are further defined in this section. The plastic case is not included in this, only metal objects/components that will obstruct or come in close proximity to the antenna.

*Six spatial directions relative to FPC*



*Example with 4 spatial directions clear*

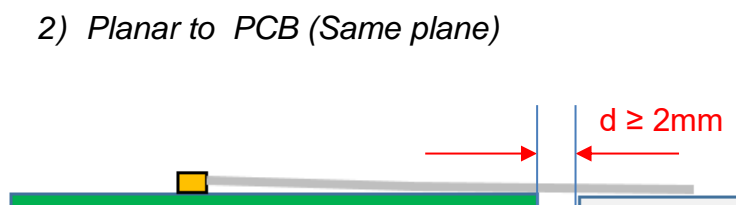
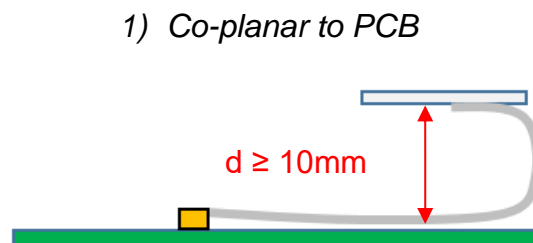
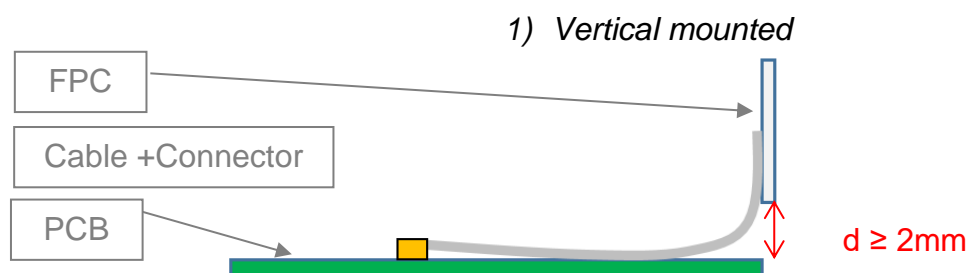


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## 11.2 Orientation of FPC

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.

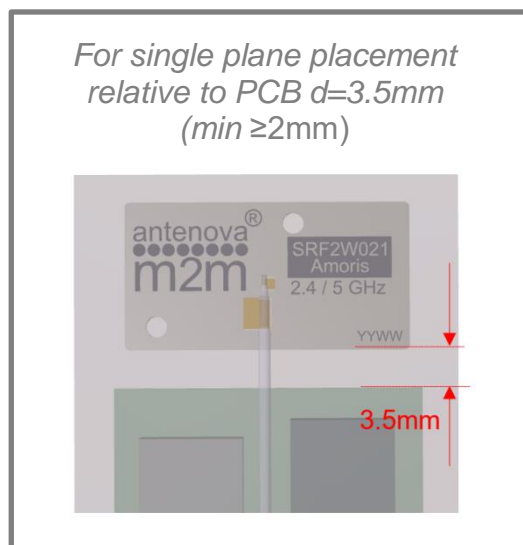
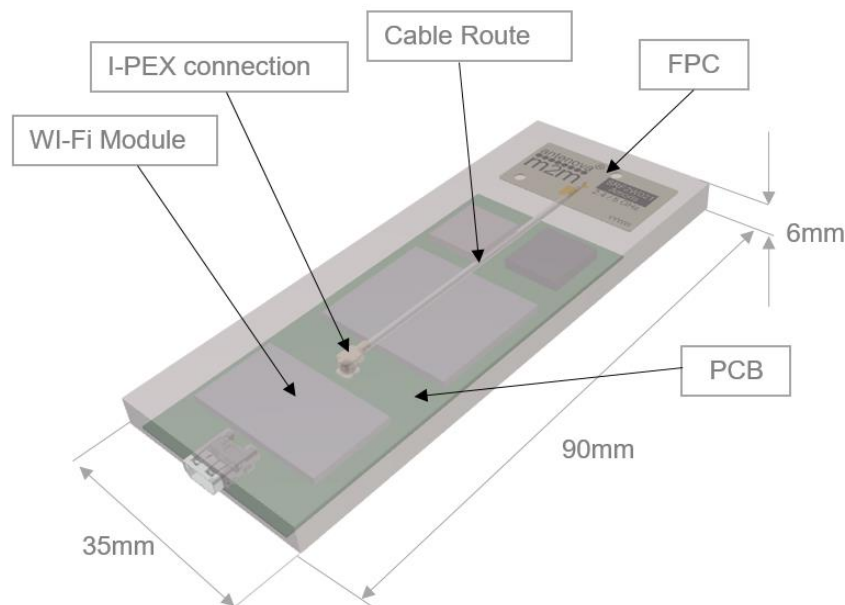
The orientation the FPC will normally be placed in one of three of the following options for orientation. In each option a distance (d) is the critical dimension to consider. Below shows the minimum value of (d) for each. Other obstructions may increase this dimension.



## 11.3 Device Integration example

An example of integration within a device 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 plastic housing. The cable routing is along the PCB so as not to interfere with any other component. The length of the cable is sufficient to allow ease of assembly when produced (SRF2W021-050)

The FPC was placed on the same plane relative to the PCB, Due to the thin design of the device, this was the optimal location.



## 12. 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.

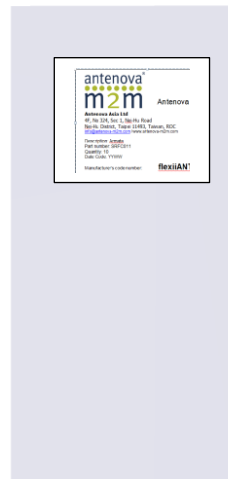
## 13. Packaging

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)*



### 13.1 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. |

The shelf life of the antenna is 18 months, provided the bag of 10 pieces remains factory sealed.

## 13.2 Label Information





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

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Certificate No: 4598

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