Inca 433MHz Antenna

Part No. SRFI028 flexiiANT ® Product Specification

1. Features

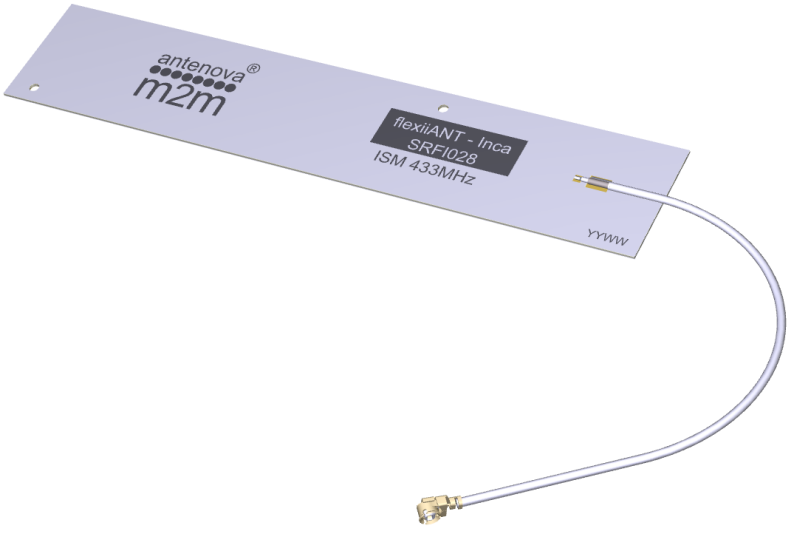
- Antenna for 433MHz ISM applications
- Maintains high performance within device: DFI (Designed For Integration)
- 1.13mm diameter RF cable with IPEX MHF connector
- Self-adhesive mounted
- Quick integration minimizes design cycle
- High performance
- Available in three standard cable lengths

2. Description

Inca is intended for use with all ISM 433MHz applications. A flexible antenna with cable enables direct connection to the host PCB. Simple integration with plug and play simplicity.

3. Applications

- Remote monitoring
- Robot control
- 433 MHz ISM band systems
- Smart meters
- Home automation
- Medical devices



Antennas for Wireless M2M Applications

4. Part Number

Inca: SRFI028-xxx

Note. -xxx refers to cable length option:

Part Number	Cable Length
SRFI028-100	100mm
SRFI028-150	150mm
SRFI028-200	200mm

5. General Data

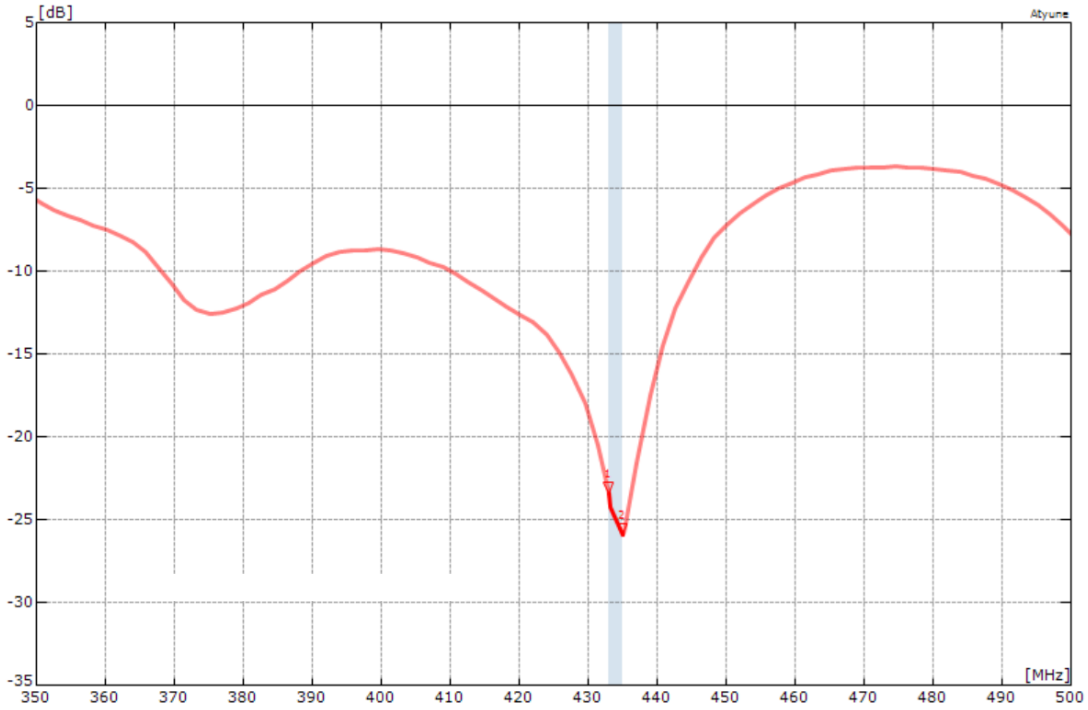
Product name	Inca
Part Number	SRFI028
Frequency	433MHz
Polarization	Linear
Operating temperature	-40°C to +85°C
Impedance with matching	50 Ω
Weight	< 0.5 g
Antenna Assembly type	FPC Self-adhesive FPC Self-adhesive 3M 468MP
Dimensions (Antenna)	101.0 x 20.0 x 0.15 (mm)
Cable length	100 / 150 / 200 (mm)
Connection	MHF IPEX

6. RF Characteristics

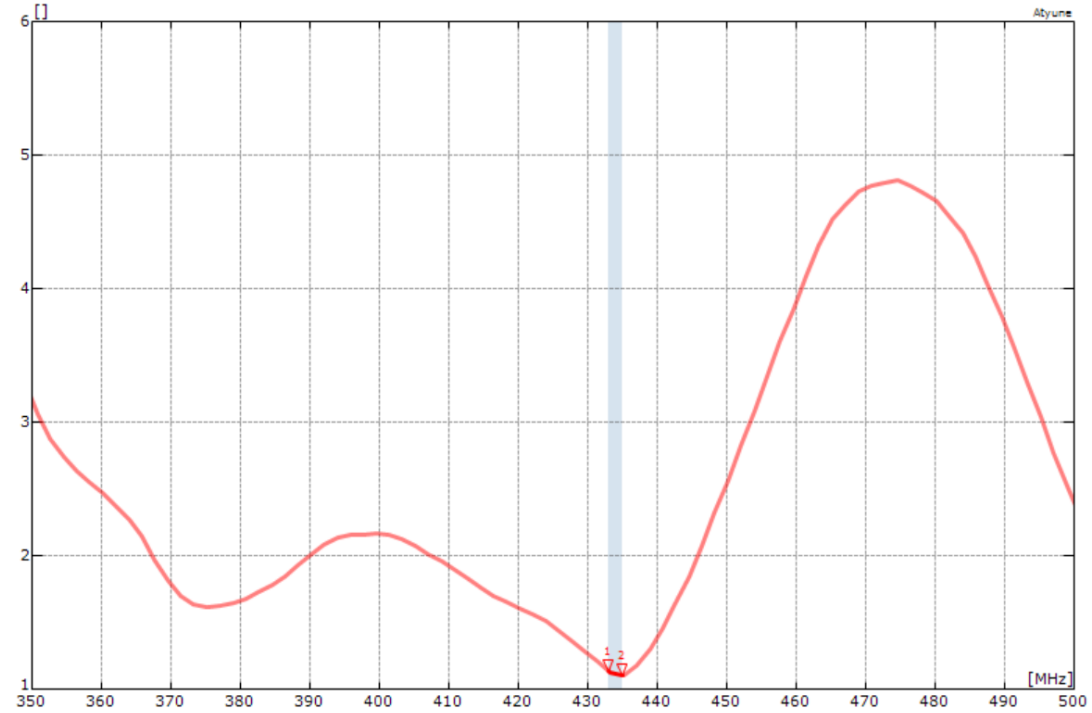
	432 – 434 MHz	Conditions
Peak gain	2.80dBi	All data measured in a loaded condition adhered to a plastic carrier free space.
Average gain	-2.70dBi	
Average efficiency	>45%	
Maximum return loss	-11dB	
Maximum VSWR	1.6:1	

7. RF Performance

7.1 Return Loss

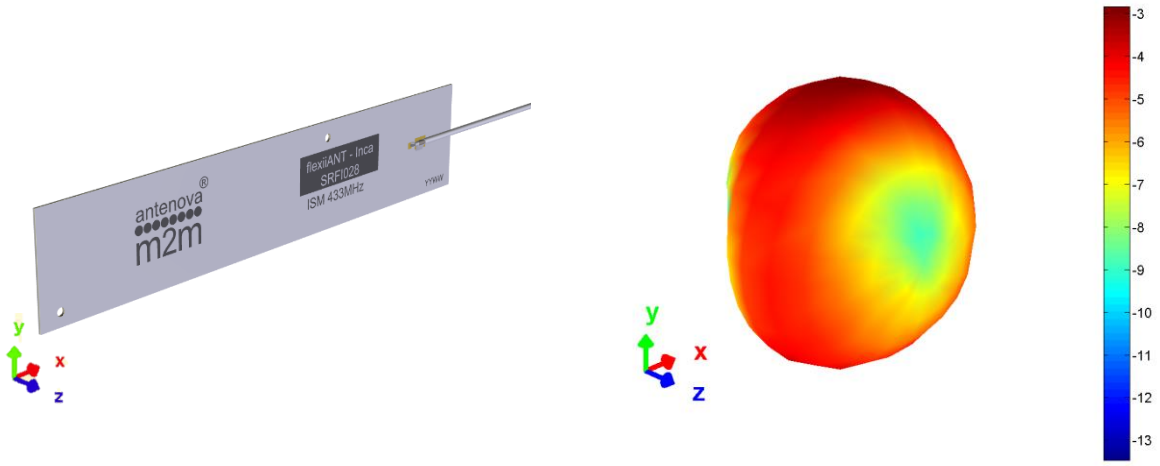


7.2 VSWR

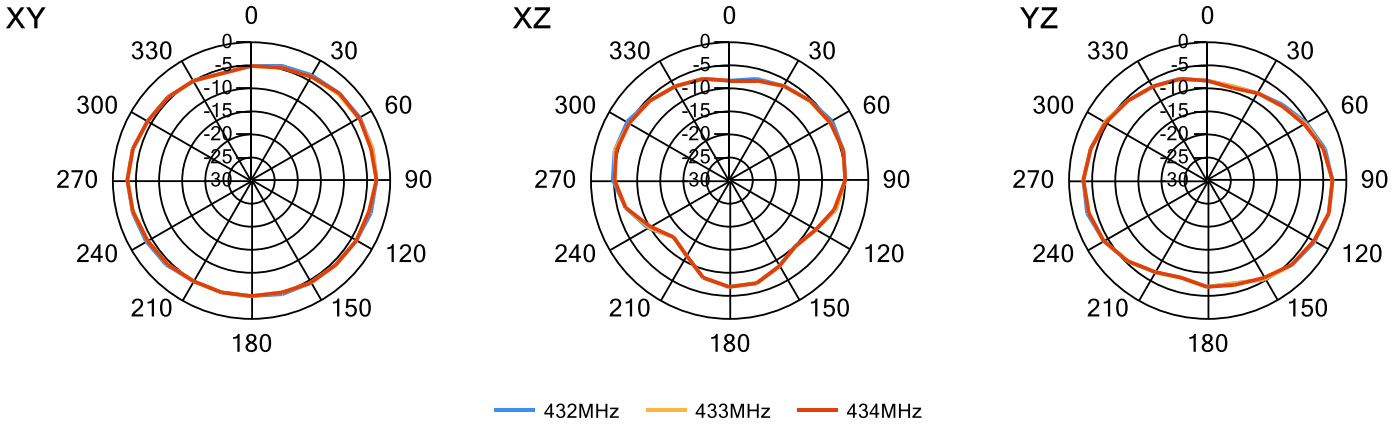


7.3 Antenna patterns

7.3.1 432 MHz – 434 MHz

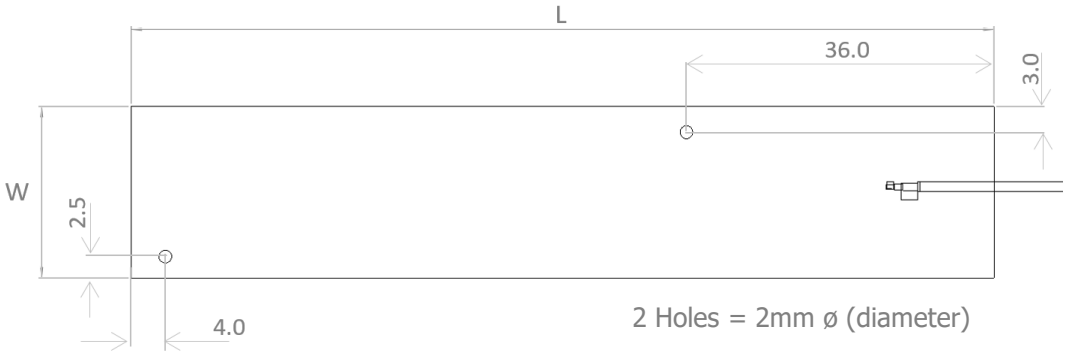


3D pattern at 433MHz
Drag to rotate pattern and PCB by using Adobe Reader
(Click to Activate)



8. Antenna Dimensions

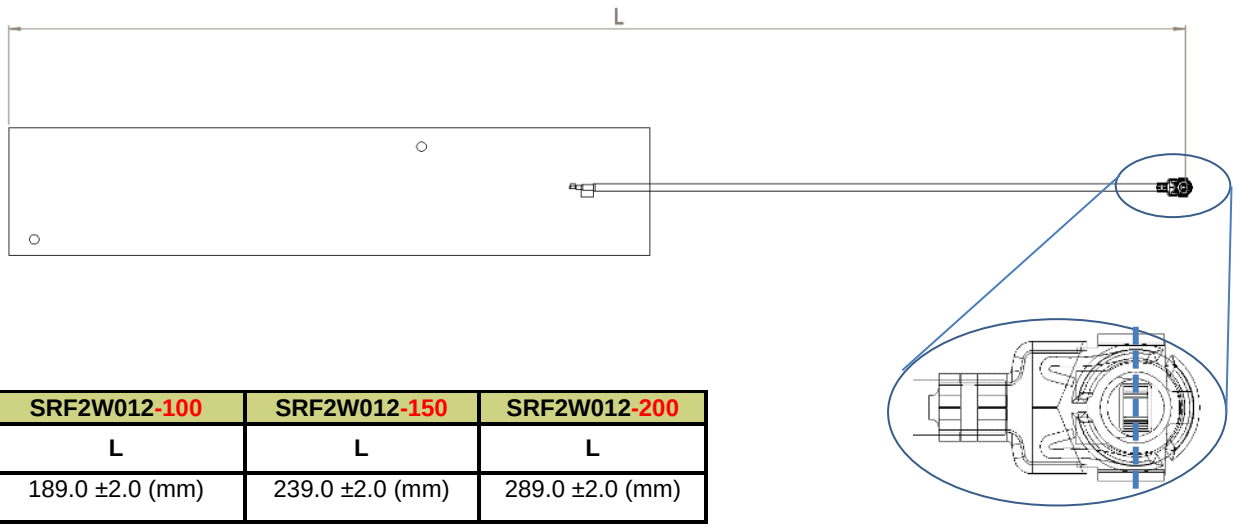
8.1 Dimensions FPC section



L	W	T
Length	**Width**	**Thickness**
101.0 ±0.2 (mm)	20.0 ±0.2 (mm)	0.15 (mm) nominal

All dimensions in mm

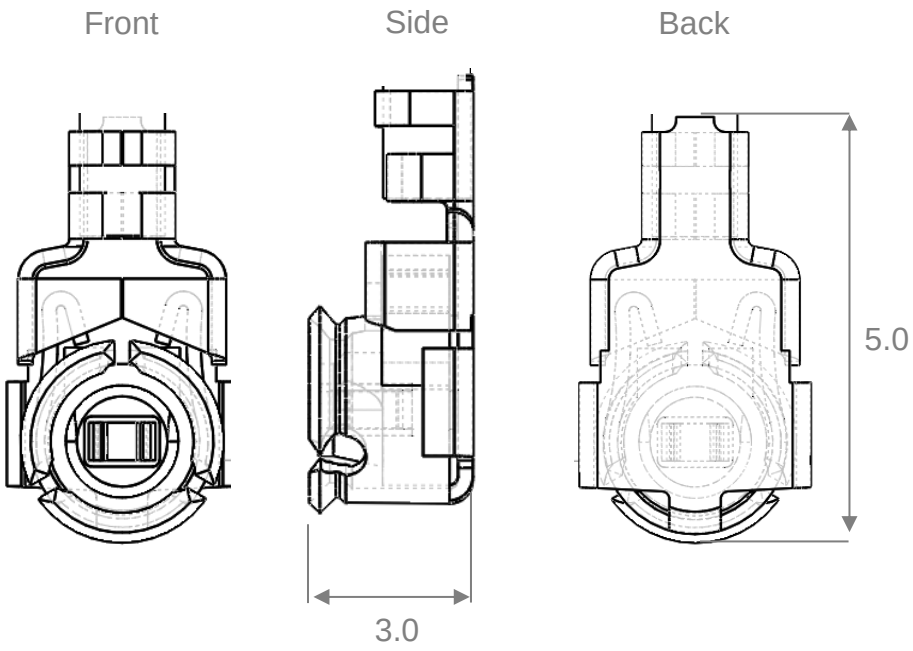
8.2 Dimensions assembled



SRF2W012-100	SRF2W012-150	SRF2W012-200
L	**L**	**L**
189.0 ±2.0 (mm)	239.0 ±2.0 (mm)	289.0 ±2.0 (mm)

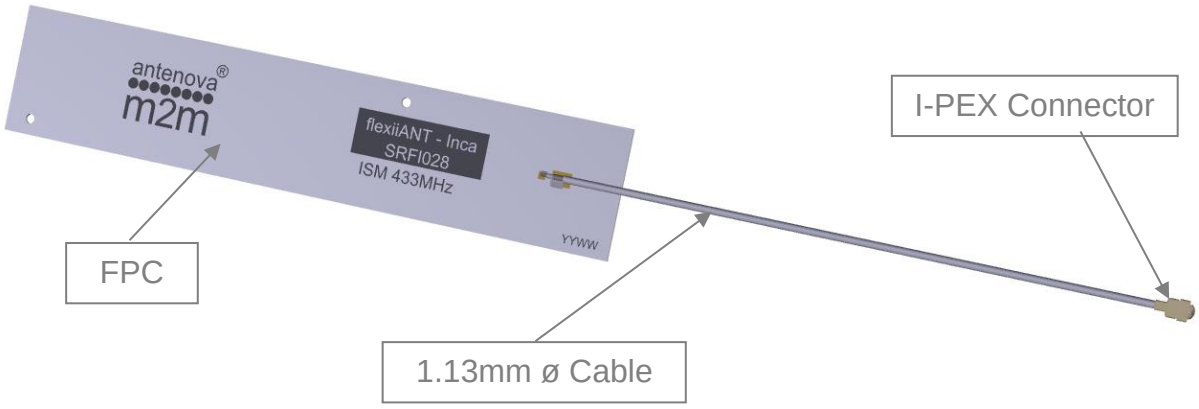
8.3 IPEX Connector

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.

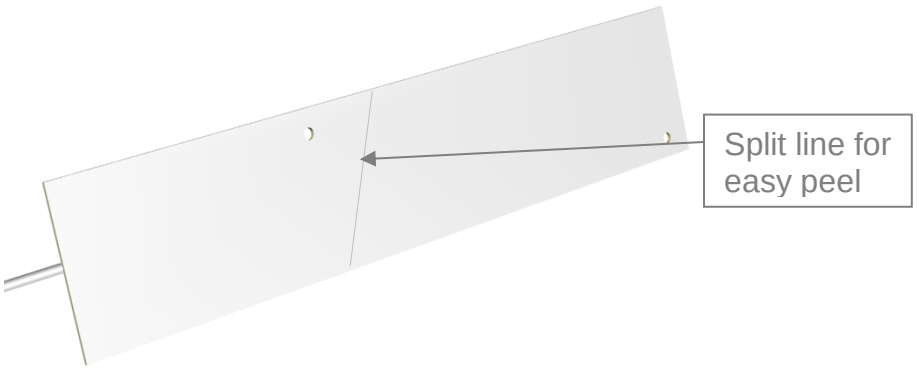
Once the material for the PCB has been chosen (PCB thickness and dielectric constant), a coplanar transmission line can easily be designed using any of the commercial software packages for transmission line design. For the chosen PCB thickness, copper thickness and substrate dielectric constant, the 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 back 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.

FPC back side



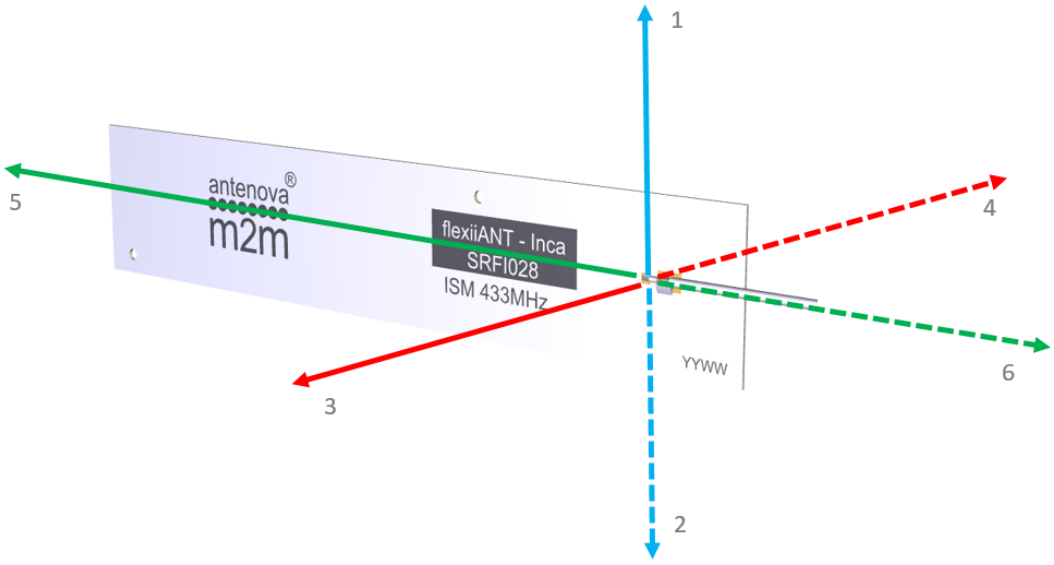
11.0 Antenna Integration Guide

11.1 Placement

For placing the FPC antenna within a device, the host PCB size is not a factor like with PCB mounted antennas. 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. 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

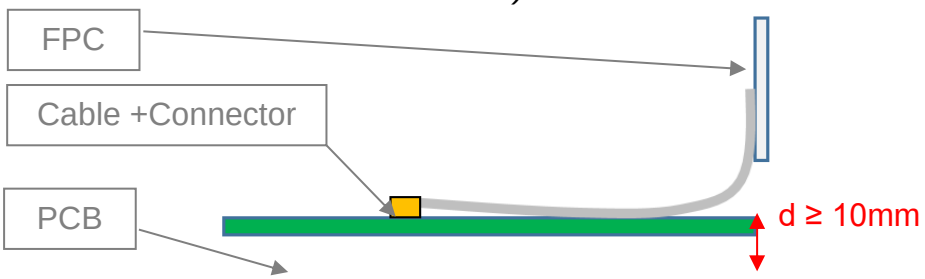


11.2 Orientation of FPC

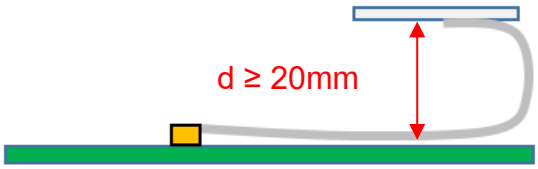
The orientation of the FPC with respect to the host PCB should be defined depending on the unit. The proximity of the GND will have an influence on the antenna so the PCB location relative to the antenna should be considered.

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.

1) Vertical mounted



1) Co-planar to PCB



2) Planar to PCB (Same plane)

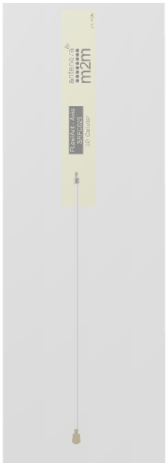
12. Hazardous Material Regulation Conformance

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

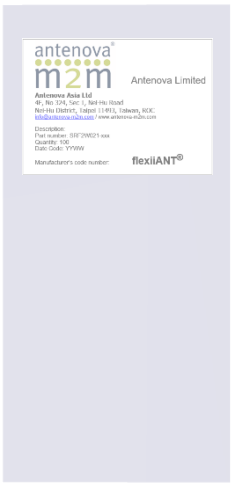
13. Packaging

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

Single antenna per bag



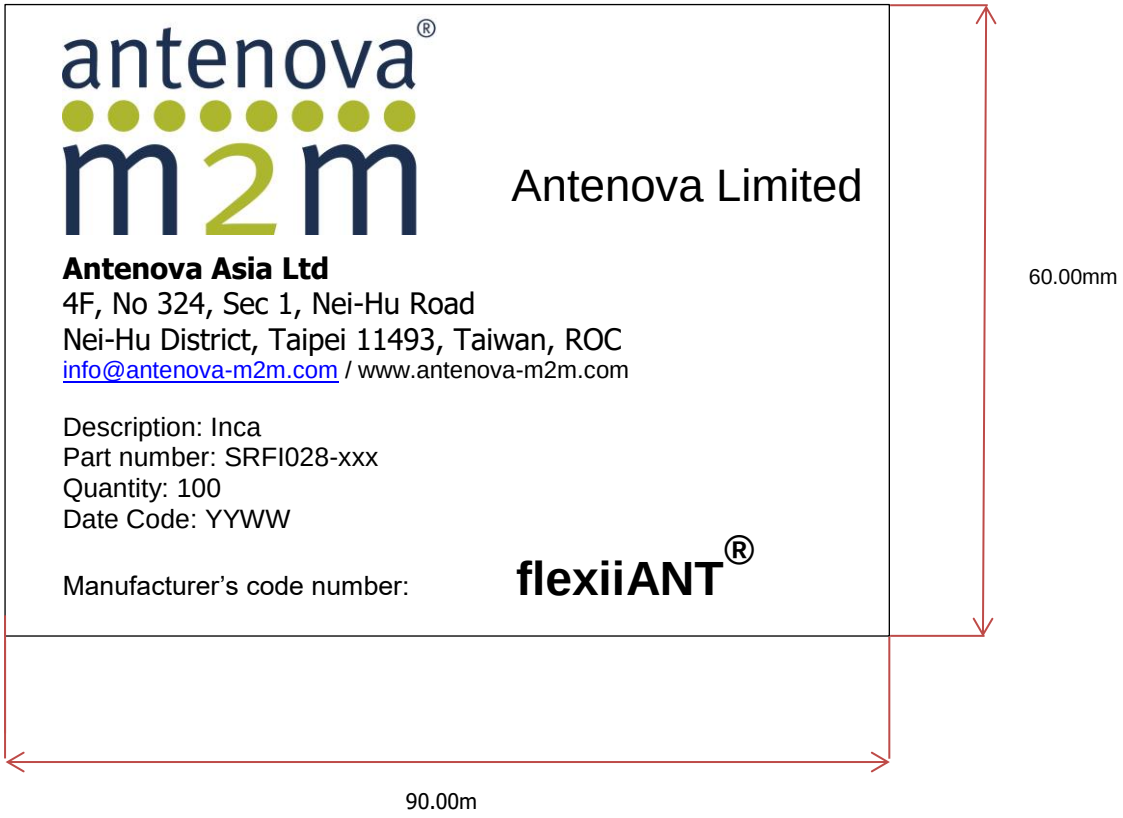
10 units per second bag (Labelled)



13.1 Optimal Storage Conditions

Temperature	-10ºC to 40ºC
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.

13.2 Label Information



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Certificate No: 4598

Antennas for Wireless M2M Applications