



# TAOGLAS®



# Datasheet

## Flexible NFC Antenna

**Part No:**  
FXR.01.07.0100C.A

### Description:

Flexible Near-Field Communications Reader Antenna  
With 100mm 1.37 cable and I-PEX MHF® I U.FL compatible

### Features:

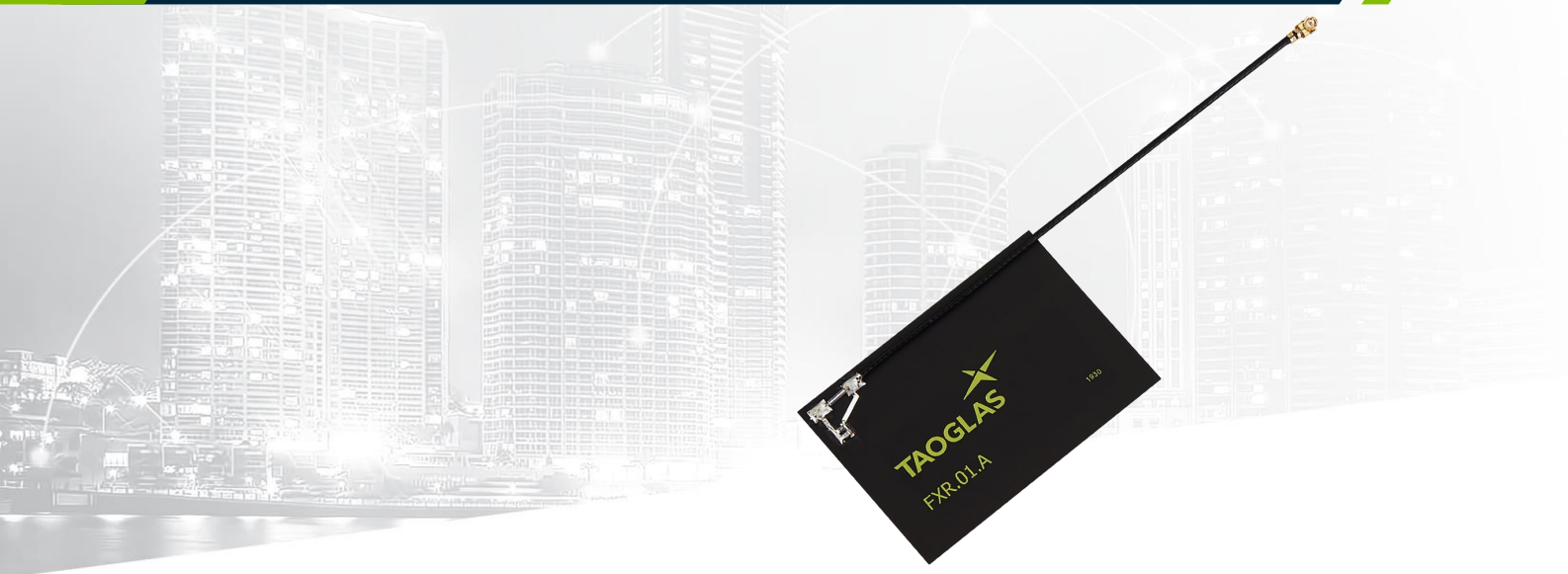
13.56MHz  
Peel and Stick Antenna  
Cable: 100mm 1.37 microcoax  
Connector: I-PEX MHF® I U.FL compatible  
Read distance out to 5 cm  
Adheres directly to product inner housing  
Dimensions: 53.3\*36.8mm  
RoHS & Reach Compliant

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# 1. Introduction



Taoglas has developed an NFC (Near Field Communications) antenna for use with NFC readers. This standard design is matched to a 50 Ohm system and provides a well-matched solution for NFC readers. The antenna is dimensioned to provide the capability of interrogating typical size NFC tags out to a 5 cm. distance. This standard antenna is delivered with a coaxial cable connected to the antenna element to ease use and integration into customer devices.

The flex design provides a flexible antenna that can be adhered to the plastic enclosure of the customer device. At only 0.1mm thickness it allows antenna placement in small devices and takes minimum footprint.

The standard NFC antenna has an integrated matching circuit to provide a well-matched antenna. The Q of the antenna/matching circuit combination has been selected to provide a solution where the bandwidth and read performance have been optimized for best tag interrogation performance. Along with the integrated coaxial cable, this antenna is read to connect to the reader for quick installation and operation.

This standard antenna design can be modified to provide a customized solution where the antenna area is maximized for a specific application to enhance interrogation distance. With the NFC protocol being based on magnetic coupling between the reader antenna and the NFC tag antenna, antenna area will directly relate to interrogation distance. Three areas of modification that can be undertaken are:

- Optimize area of the antenna design for a specific application
- Customize matching circuit for a specific application
- Apply ferrite material to improve interrogation distance

The cable and connector are fully customizable, for further information please contact your regional Taoglas customer support team.

## 2. Specifications

| Electrical                |          |
|---------------------------|----------|
| Frequency                 | 13.56MHz |
| Return Loss               | >10 dB   |
| Polarization              | Linear   |
| Impedance                 | 50Ω      |
| Self Resistance Frequency | 96       |
| Q Factor                  | 21       |
| Ls                        | 1.54uH   |
| Rs                        | 8.12     |

\* All Testing was done using a Agilent 4285A LCR Meter calibrated at 13.56MHz.

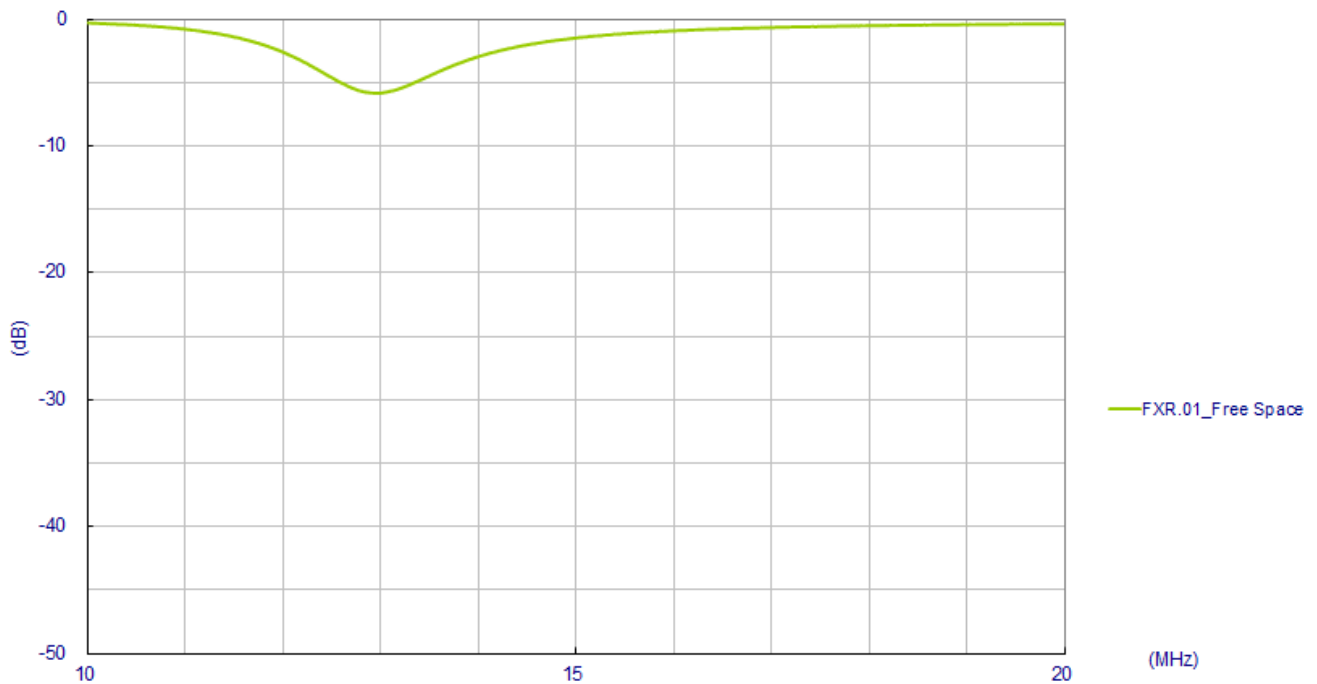
\*\* Testing was completed using series mode, but were was conducted using parallel method as well.

| Mechanical         |                              |
|--------------------|------------------------------|
| Antenna Dimensions | 53.3mm x 36.8mm              |
| Connector          | I-PEX MHF® I U.FL compatible |
| Standard Cable     | 100mm Mini-Coax. 1.37mm      |
| Adhesive           | 3M 467                       |
| RoHS Compliant     | Yes                          |
| REACH Compliant    | Yes                          |

| Environmental     |               |
|-------------------|---------------|
| Temperature Range | -40°C to 85°C |

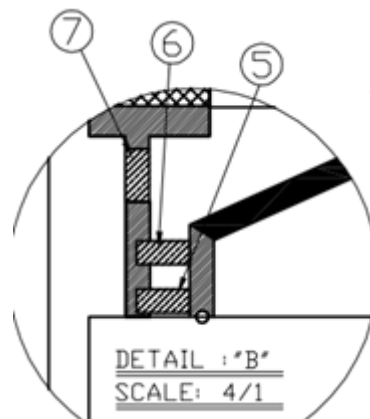
### 3. Antenna Characteristics in Free Space

#### 3.1 Return Loss



#### 3.2 Matching

|   |                       |                |         |       |   |
|---|-----------------------|----------------|---------|-------|---|
| ⑤ | 82 pF 0603 Components | 001511L0100XXA | Ceramic | White | 1 |
| ⑥ | 680 Ohm 0603 Resistor | 001512A0100XXA | Ceramic | White | 1 |
| ⑦ | 39 pF 0603 Components | 001512A0200XXA | Ceramic | White | 1 |

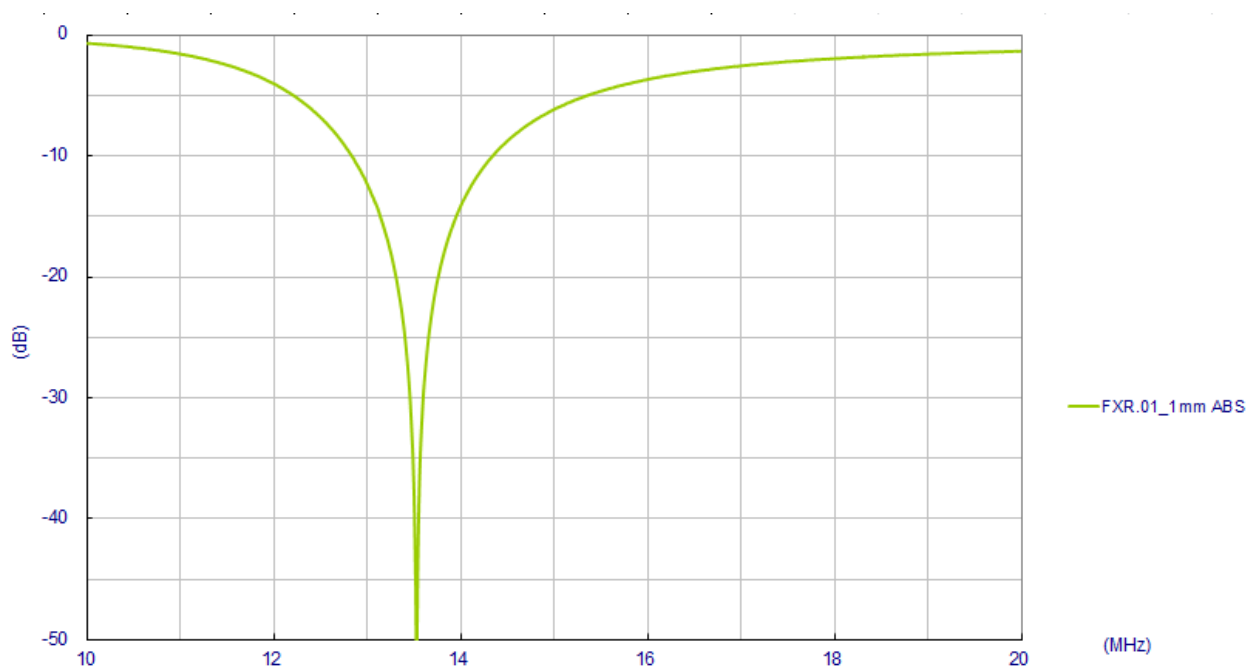


## 4. Antenna Characteristics on 1mm ABS

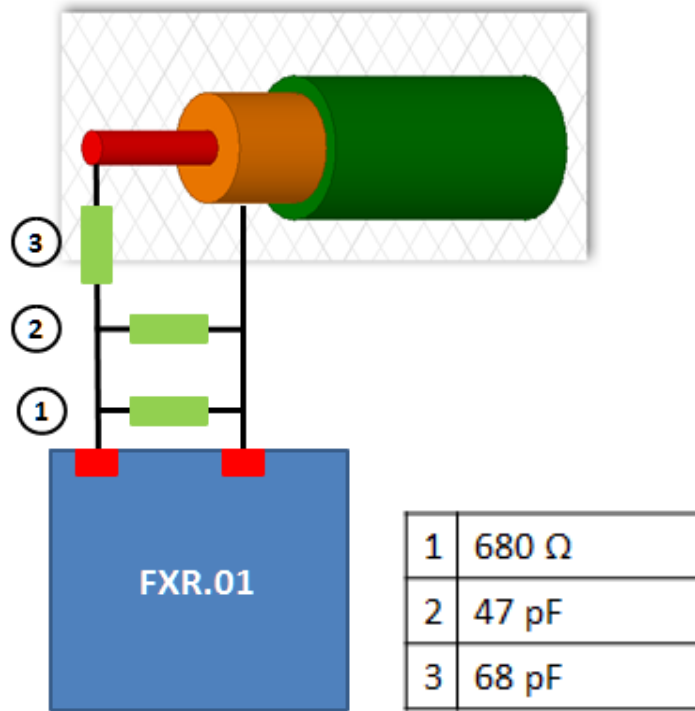
### 4.1 Test Setup



### 4.2 Return Loss



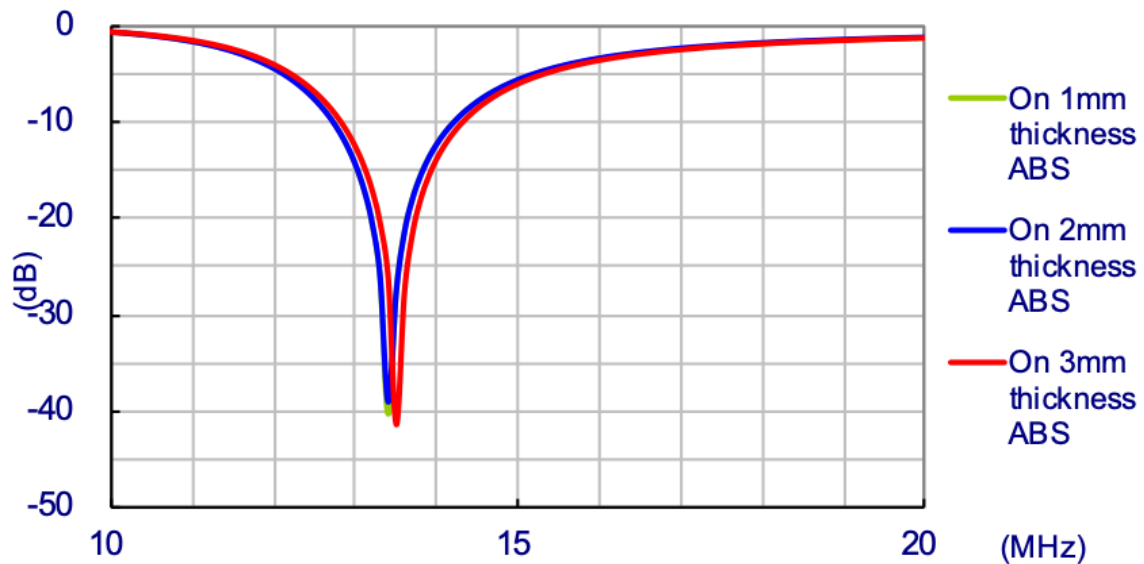
4.3 Matching



## 5. Antenna Applications

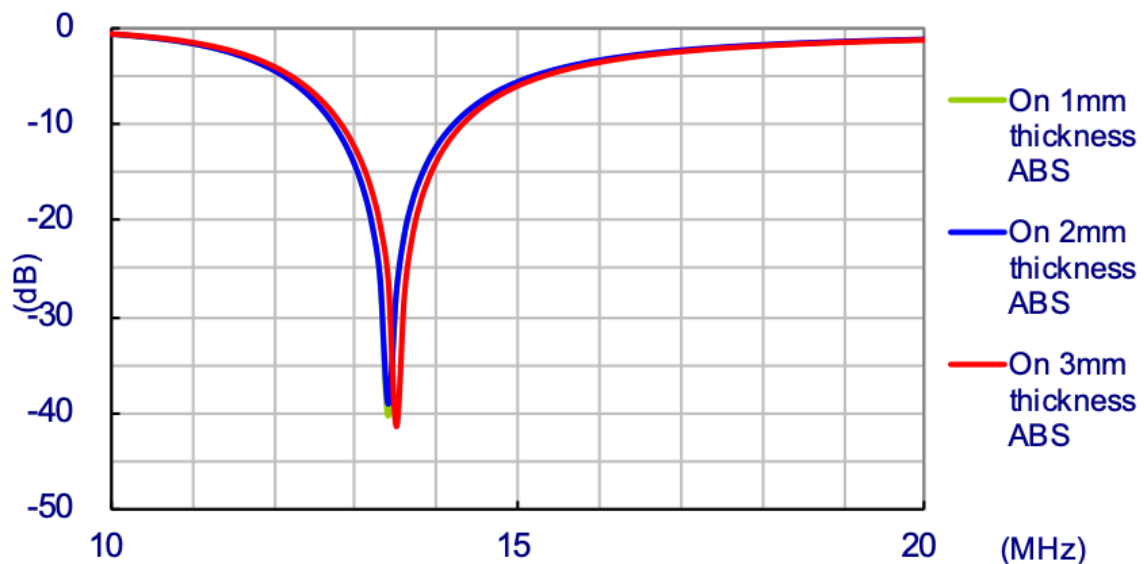
### 5.1 ABS Thickness

For customization reference, we place Taoglas FXR.01 antenna on ABS material boards with different thickness.



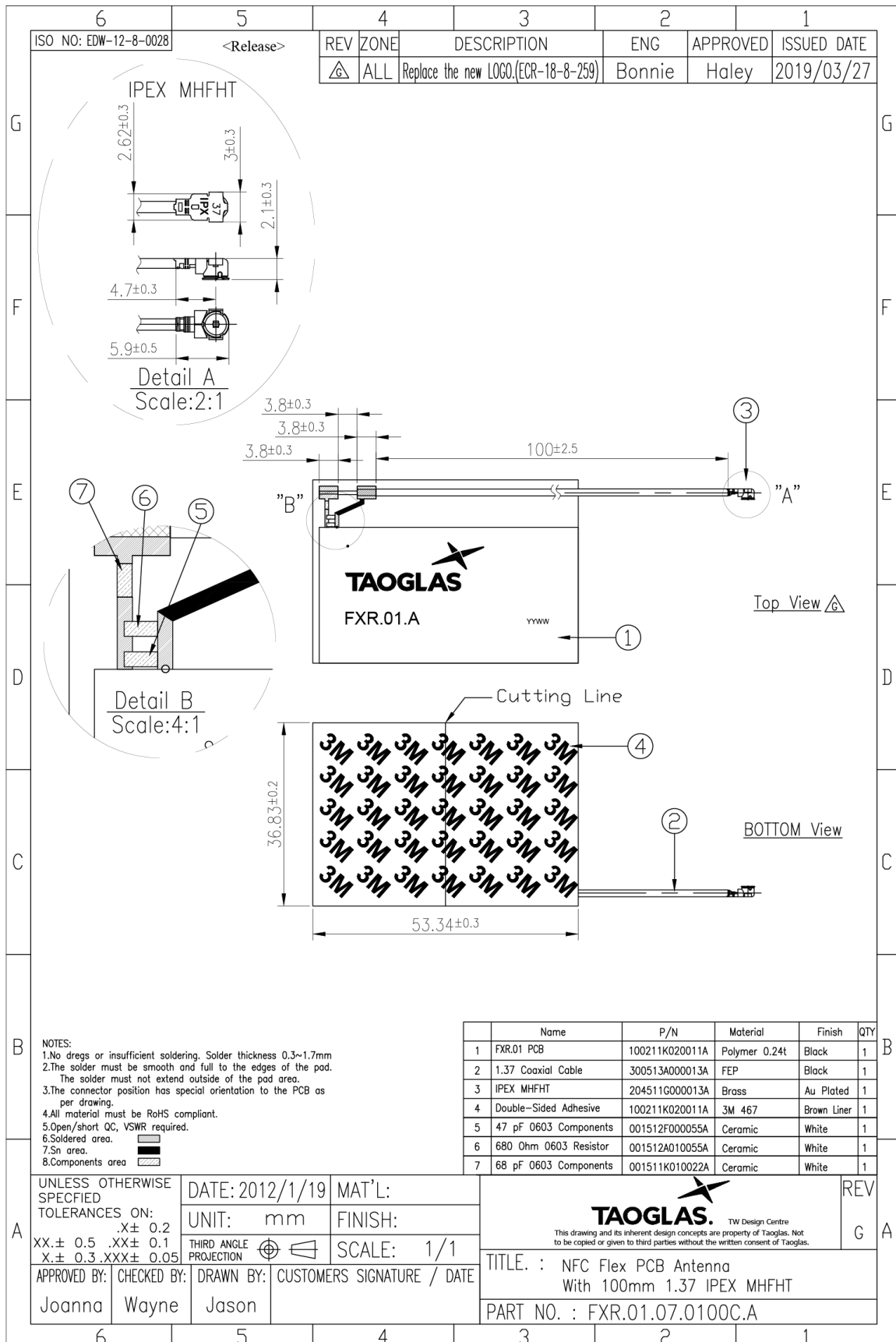
### 5.2 Proximity to Metal Ground

The minimum distance of the antenna placement away from metal is 15mm recommended.



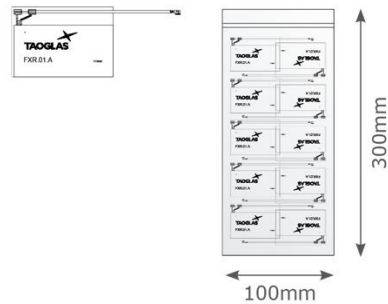


# 6. Mechanical Drawing (Units: mm)

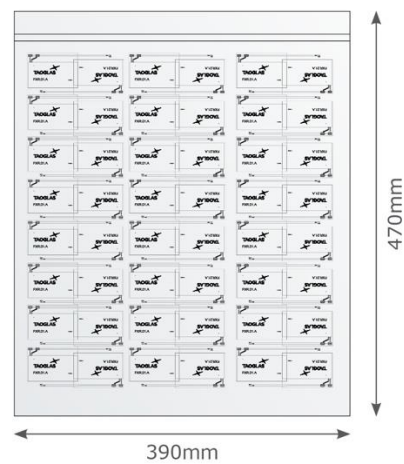


## 7. Packaging

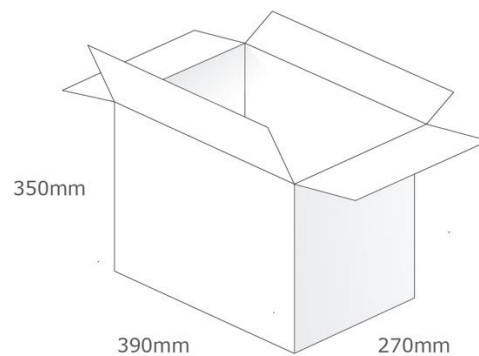
10pcs FXR.01.07.0100C.A per PE Bag  
 Bag Dimensions: 300\*100mm  
 Weight: 120g



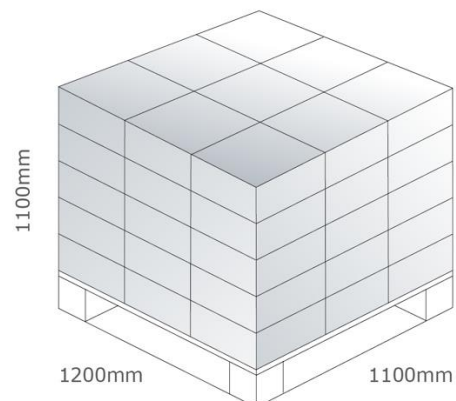
1,000pcs FXR.01.07.0100C.A per Large PE Bag  
 Carton: 390\*470mm  
 Weight: 1.4Kg



4,000pcs FXR.01.07.0100C.A per carton  
 Carton: 390\*270\*350mm  
 Weight: 6Kg



Pallet Dimensions:  
 1200\*1100\*1100mm  
 45 Cartons per Pallet  
 9 Cartons per layer, 5 Layers



Changelog for the datasheet

**SPE-14-8-109 - OMB.868.B12F21**

**Revision: F (Current Version)**

|                  |                  |
|------------------|------------------|
| Date:            | 2021-02-17       |
| Changes:         | New Values Added |
| Changes Made by: | Jack Conroy      |

**Previous Revisions**

**Revision: E**

|                  |                |
|------------------|----------------|
| Date:            | 2019-11-15     |
| Changes:         | Images Updated |
| Changes Made by: | Russell Meyler |

**Revision: D**

|                  |                      |
|------------------|----------------------|
| Date:            | 2017-05-07           |
| Changes:         | Updated Based on PCN |
| Changes Made by: | Andy Mahoney         |

**Revision: C**

|                  |                           |
|------------------|---------------------------|
| Date:            | 2016-11-15                |
| Changes:         | Packaging Details Updated |
| Changes Made by: | Jack Conroy               |

**Revision: B**

|                  |                      |
|------------------|----------------------|
| Date:            | 2015-01-13           |
| Changes:         | Updated Introduction |
| Changes Made by: | Aine Doyle           |

**Revision: A (Original First Release)**

|         |                  |
|---------|------------------|
| Date:   | 2014-10-24       |
| Notes:  |                  |
| Author: | Technical Writer |



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