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

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

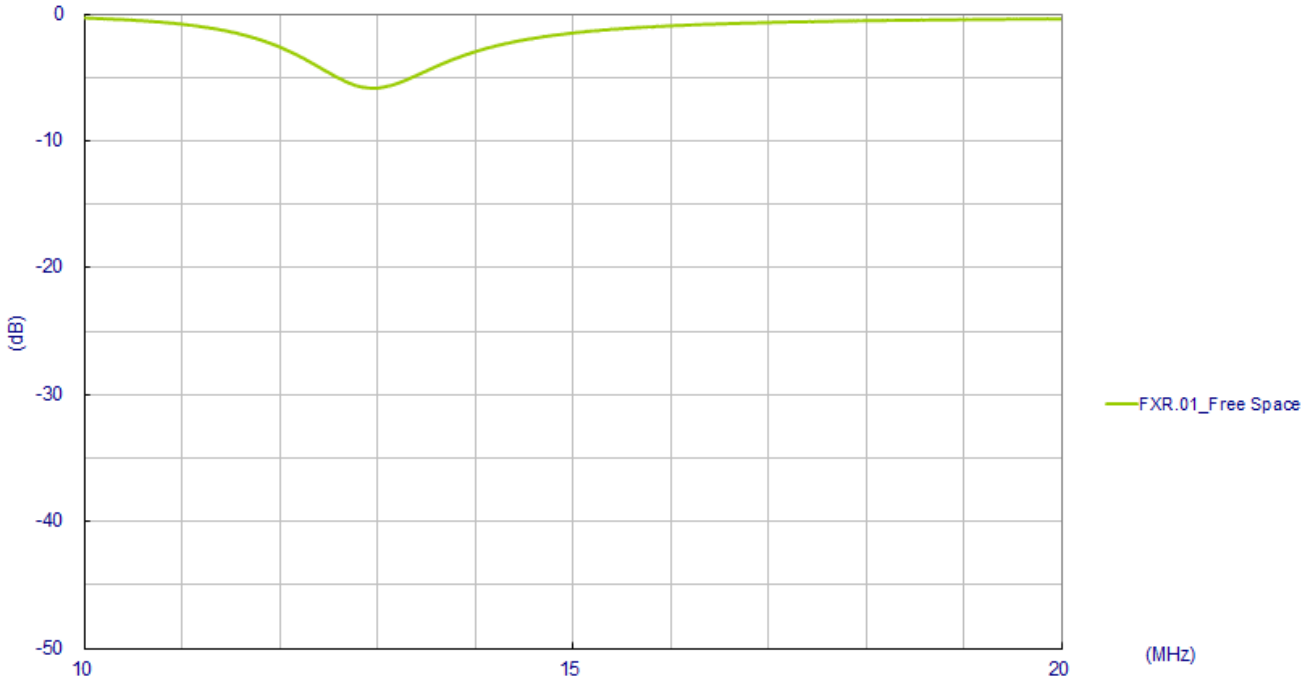
Electrical	
Frequency	13.56MHz
Return Loss	>10dB (on 1mm ABS holder)
Impedance	50Ω
Self-Resonance Frequency	96MHz
Q Factor	16
Ls	1.54uH
Rs	8.12

* 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

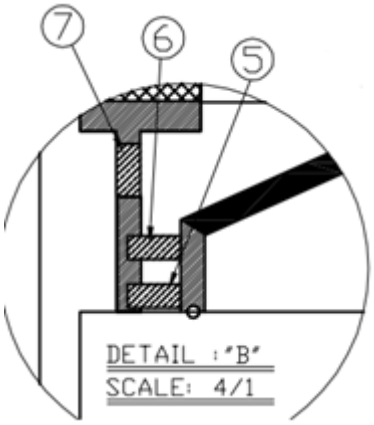
3. Antenna Characteristics in Free Space

3.1 Return Loss



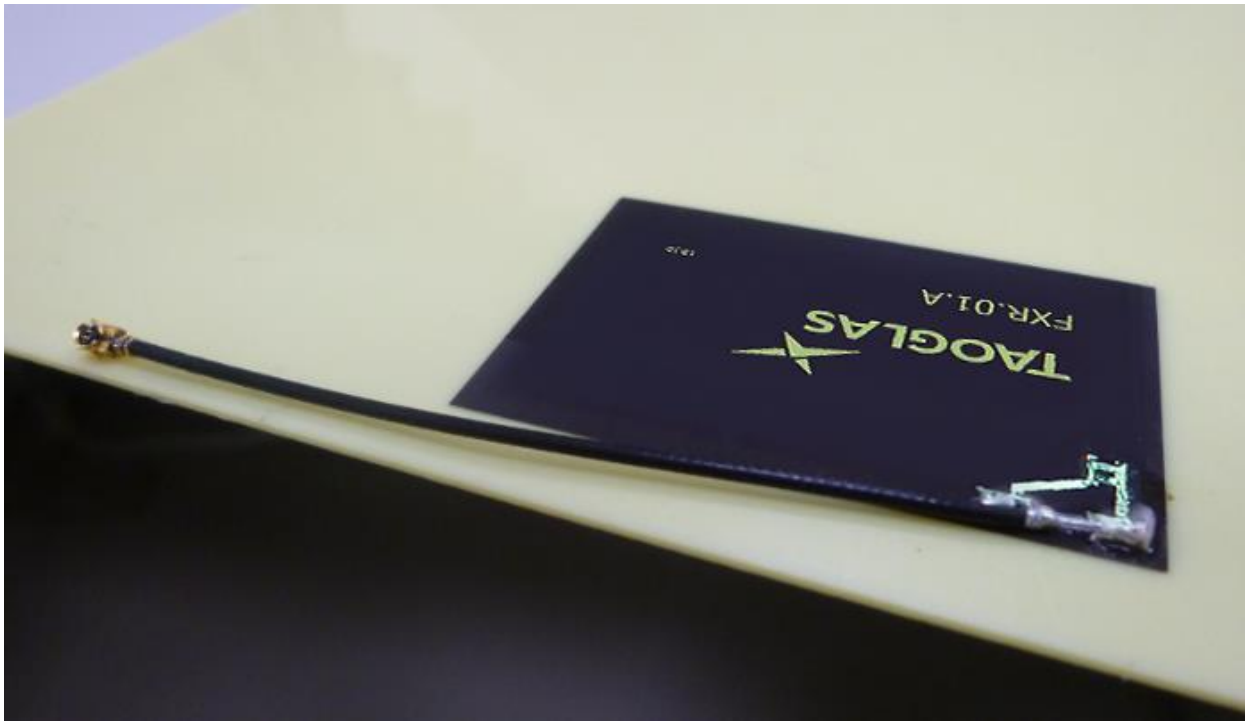
3.2 Matching

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

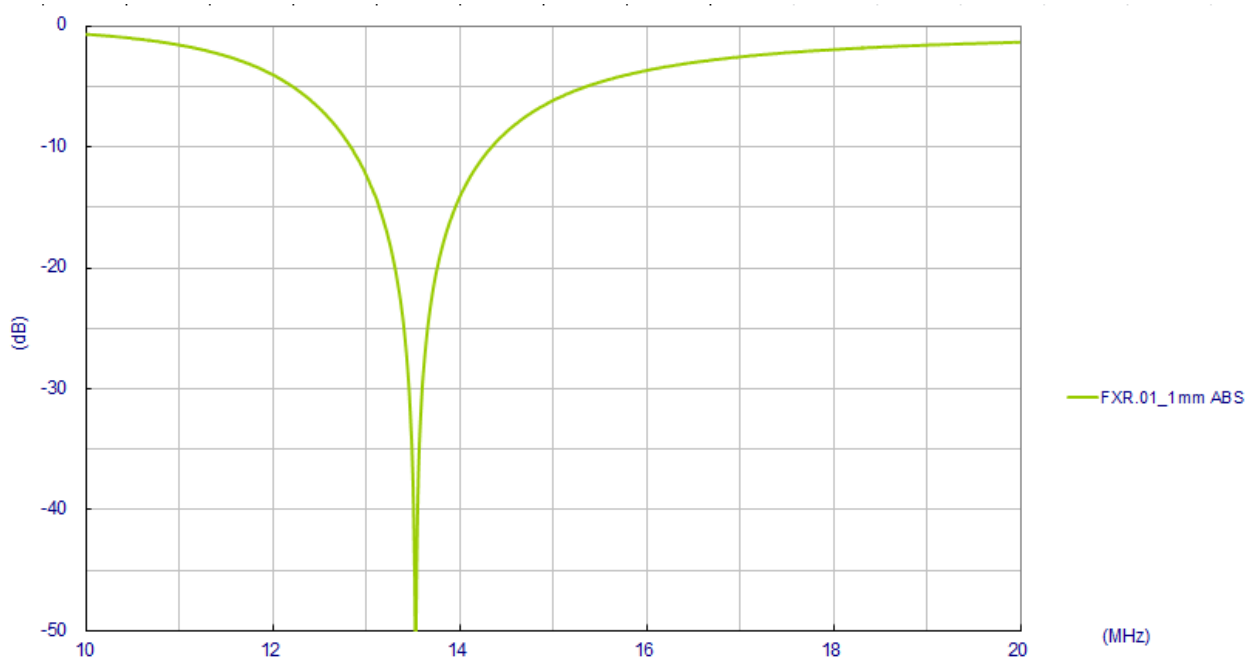


4. Antenna Characteristics on 1mm ABS

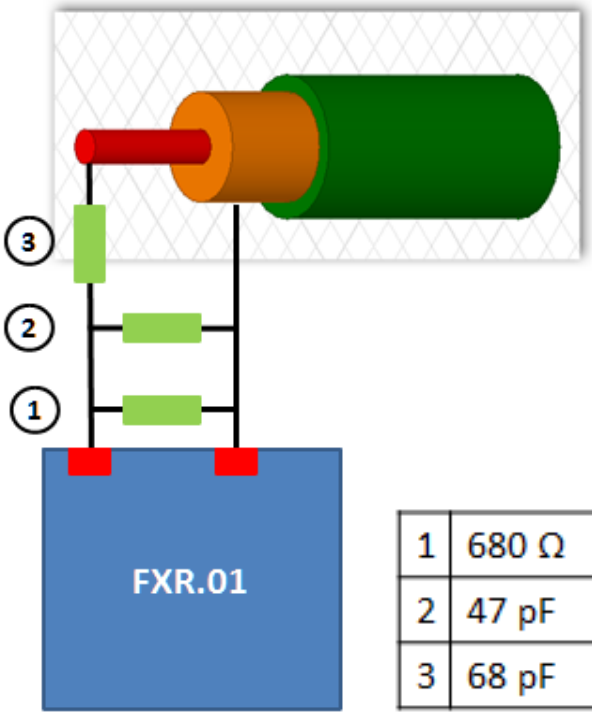
4.1 Test Setup



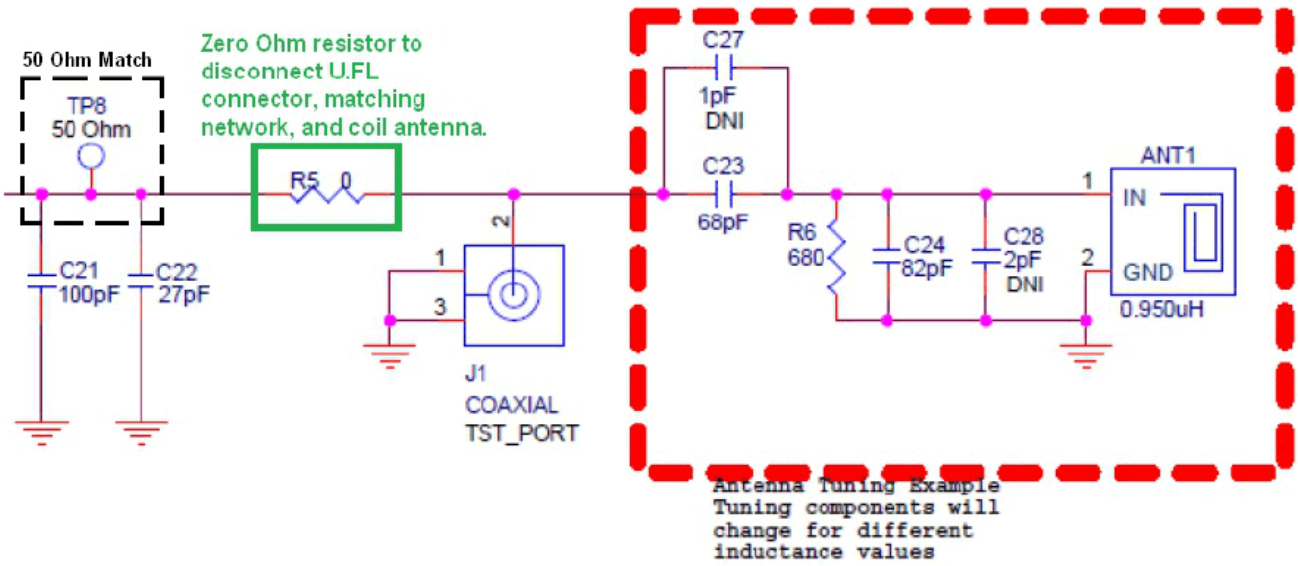
4.2 Return Loss



4.3 Matching



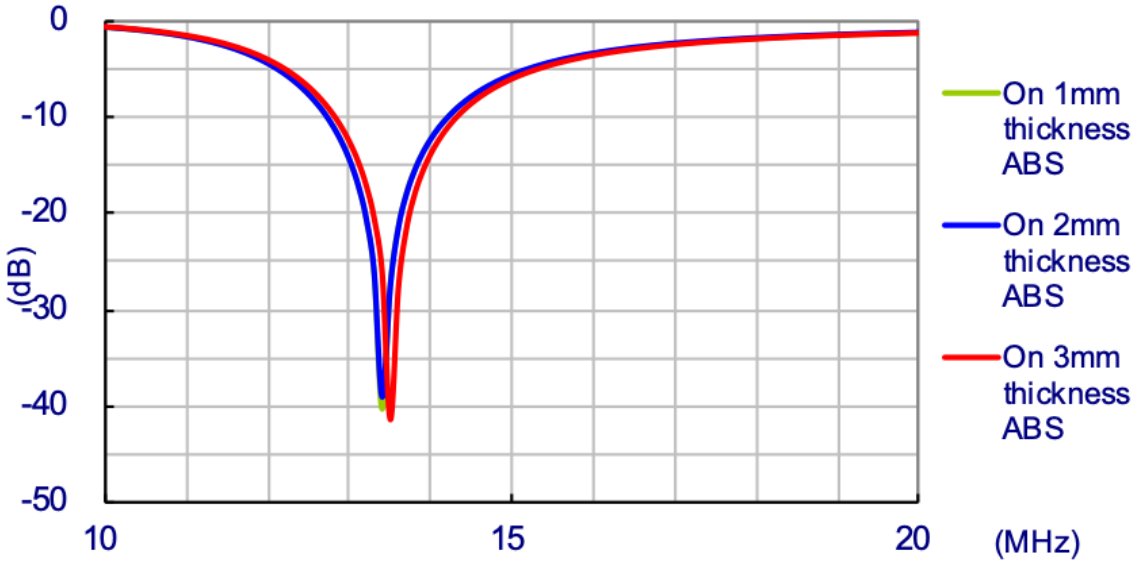
1	680 Ω
2	47 pF
3	68 pF



5. Antenna Applications

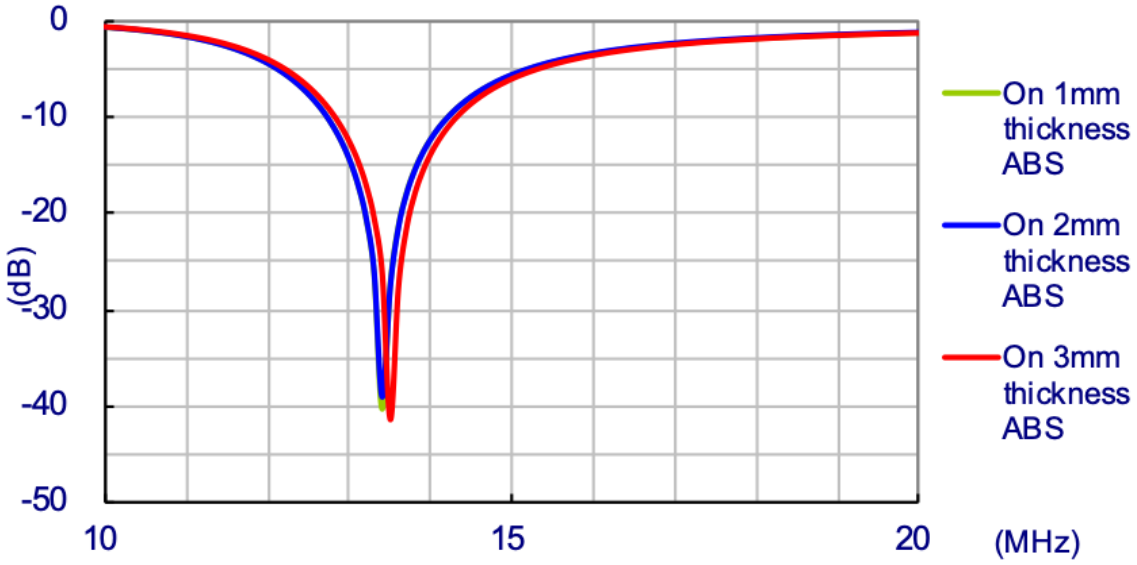
5.1 ABS Thickness

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

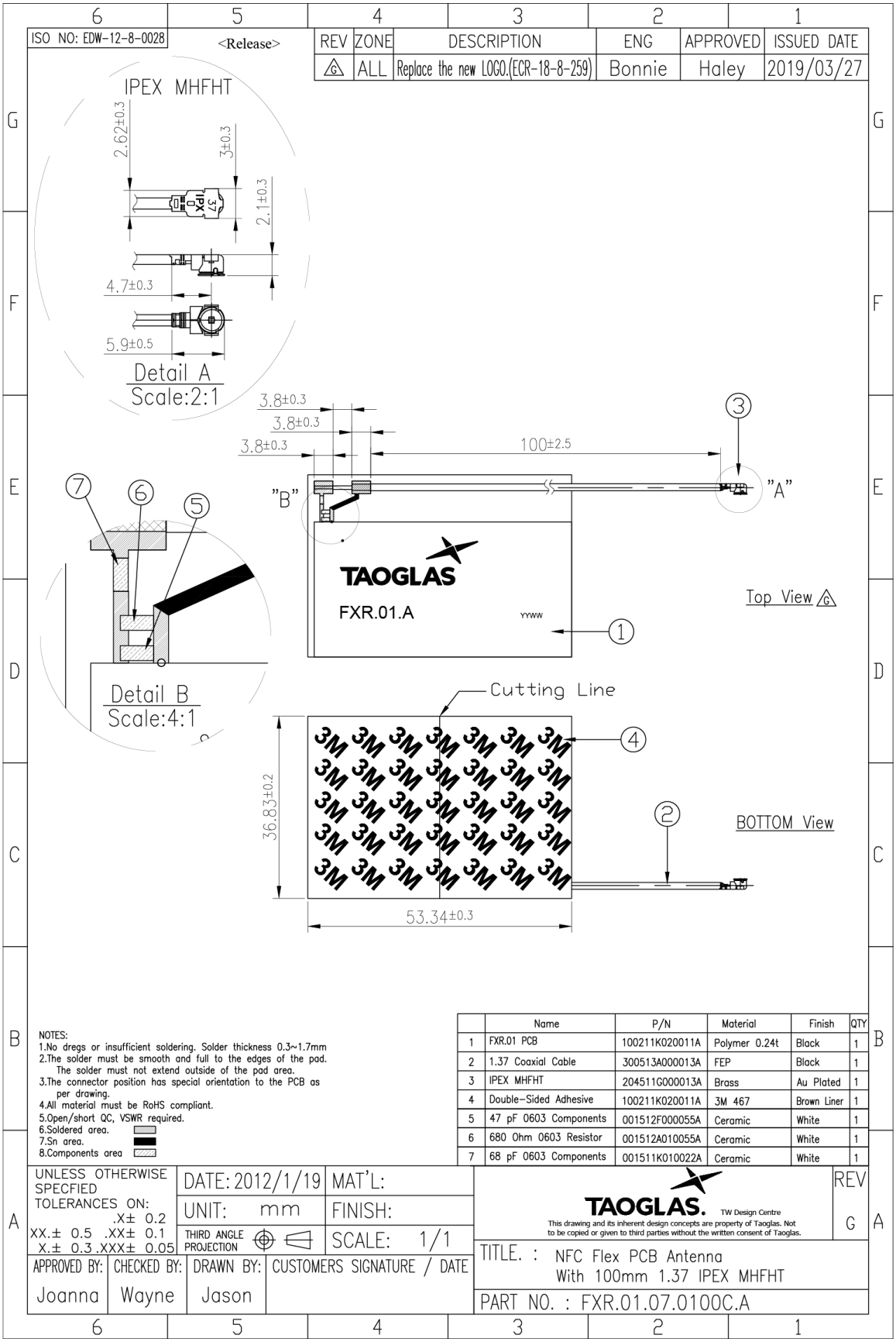


5.2 Proximity to Metal Ground

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

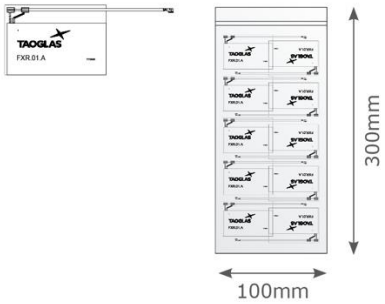


6. Mechanical Drawing (Units: mm)

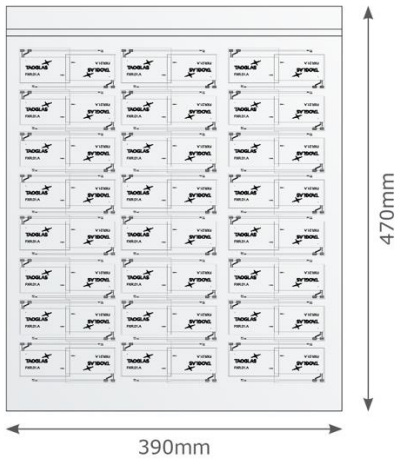


7. Packaging

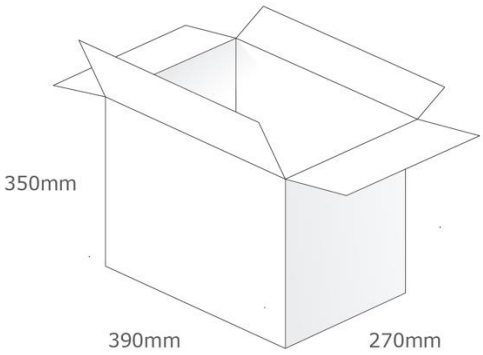
10pcs FXR.01.07.0100C.A per PE Bag
Bag Dimensions: 300*100mm
Weight: 120g



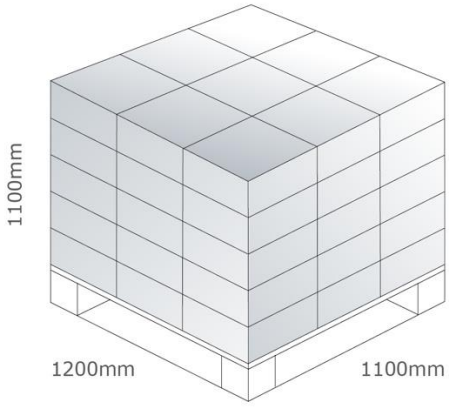
1,000pcs FXR.01.07.0100C.A per Large PE Bag
Carton: 390*470mm
Weight: 1.4Kg



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 – FXR.01.07.0100C.A

Revision: H (Current Version)	
Date:	2022-05-30
Changes:	Updated spec table
Changes Made by:	Cesar Sousa

Previous Revisions

Revision: G	
Date:	2022-03-07
Changes:	Updated spec table
Changes Made by:	Gary West

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

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