SPECIFICATION

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

Product Name : Flexible Near-Field Communications Reader Antenna

Feature : 13.56MHz
Peel and Stick Antenna
1.37 micro coax cable, IPEX MHFI(U.FL)
Read distance out to 5 cm
Adheres directly to product inner housing
53.3*36.8mm
RoHS 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:

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

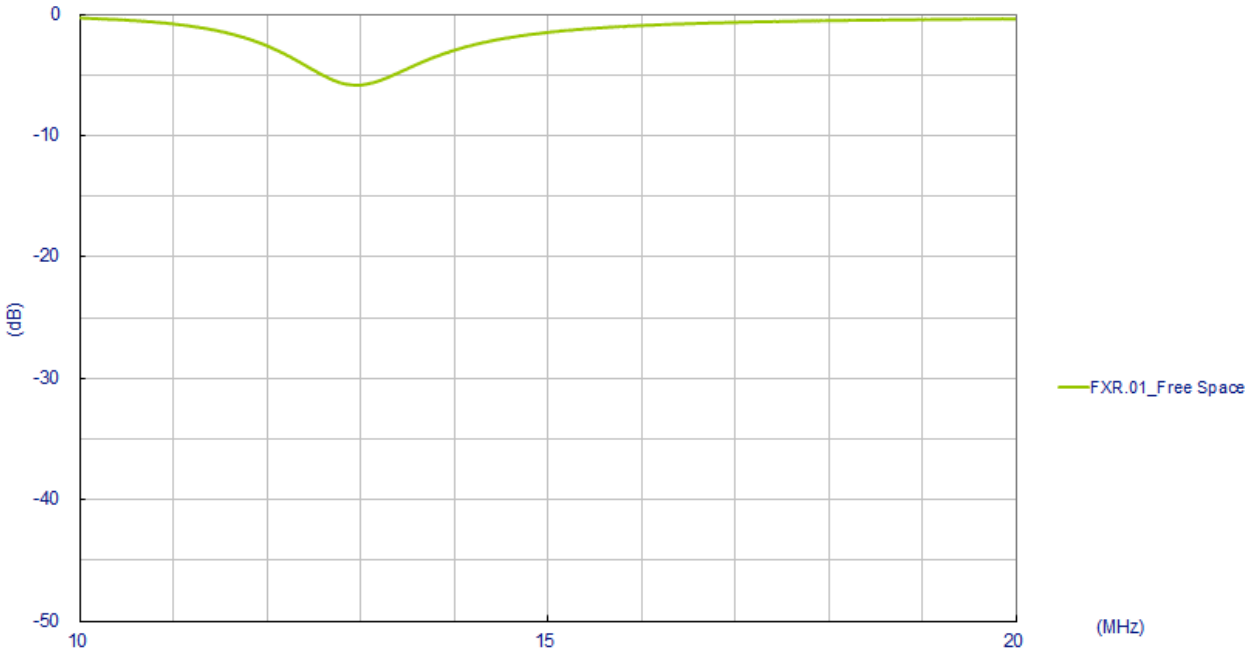
2. Specification Table

Flexible PCB Near-Field Communications Reader Antenna		
Frequency	13.56	MHz
Return Loss	≥ 10	dB
Polarization	Linear	
Impedance	50	Ohm

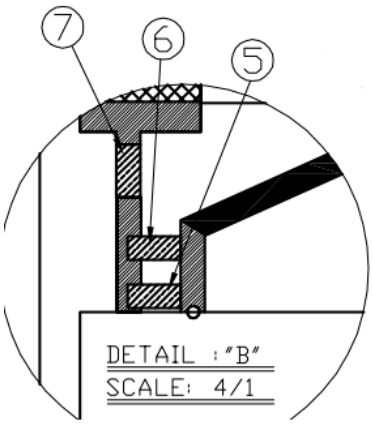
MECHANICAL	
Antenna Dimensions	53.3mm x 36.8mm
Connector	MHFI (U.FL Compatible)
Standard Cable	Mini-Coax. 1.37mm
RoHS Compliant	Yes
Adhesive	3M 467
ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3. Antenna Characteristics (Free Space)

3.1. Return Loss



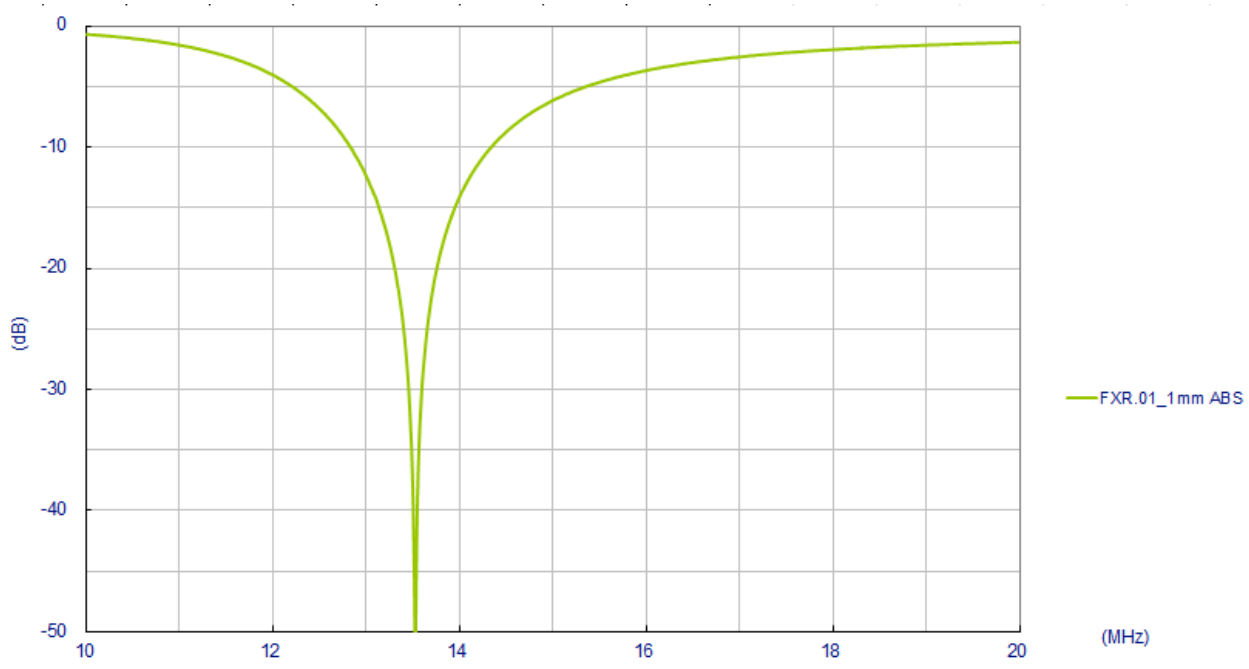
3.2. Matching



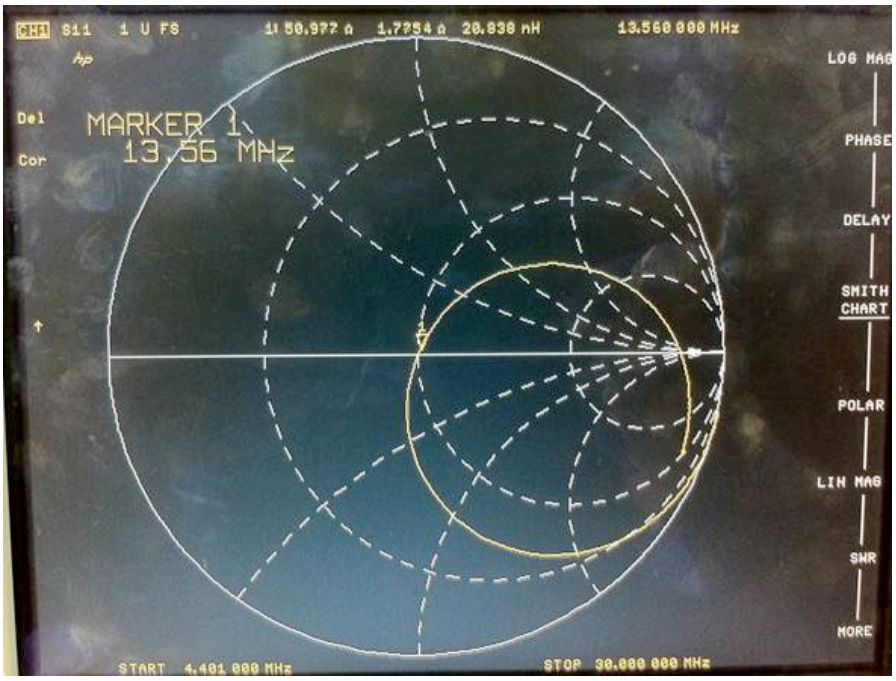
⑤	82 pF 0603 Components	001511L0100XXA	Ceramic	White	1
⑥	680 Ohm 0603 Resistor	001512A0100XXA	Ceramic	White	1
⑦	39 pF 0603 Components	001512A0200XXA	Ceramic	White	1

4. Antenna Characteristics (on 1mm ABS)

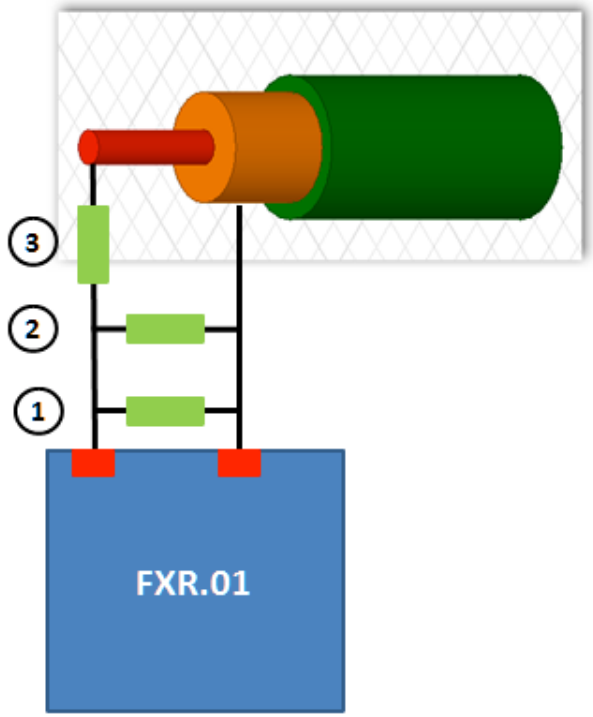
4.1. Return Loss



4.2. Smith Chart



4.3. Matching

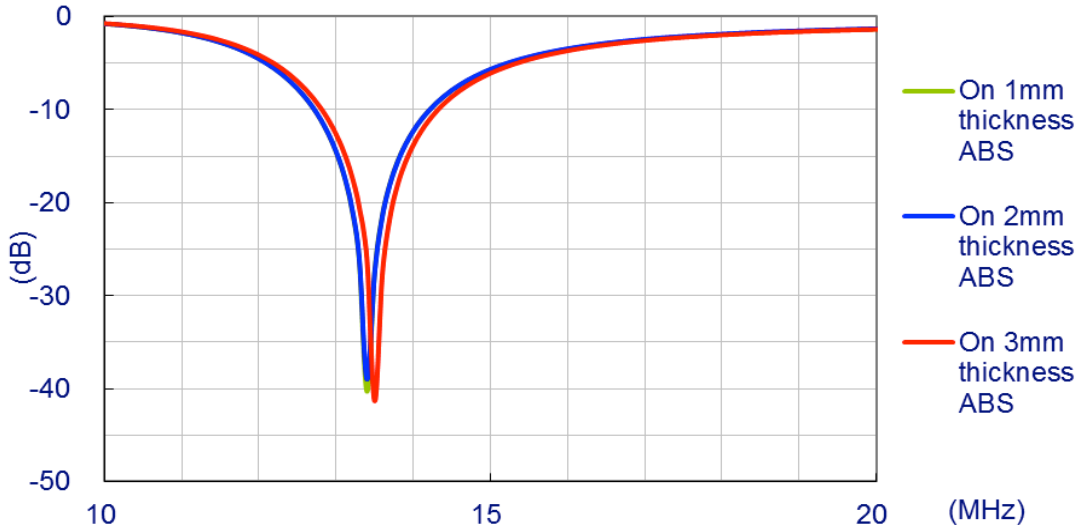


1	680 Ω
2	47 pF
3	68 pF

5. Antenna Applications

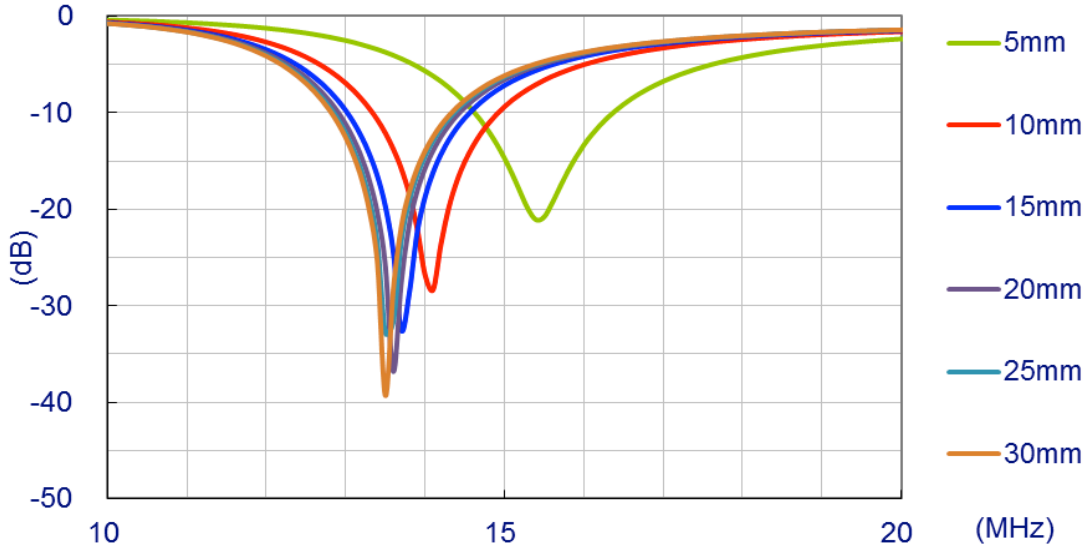
5.1. Thickness of ABS material

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



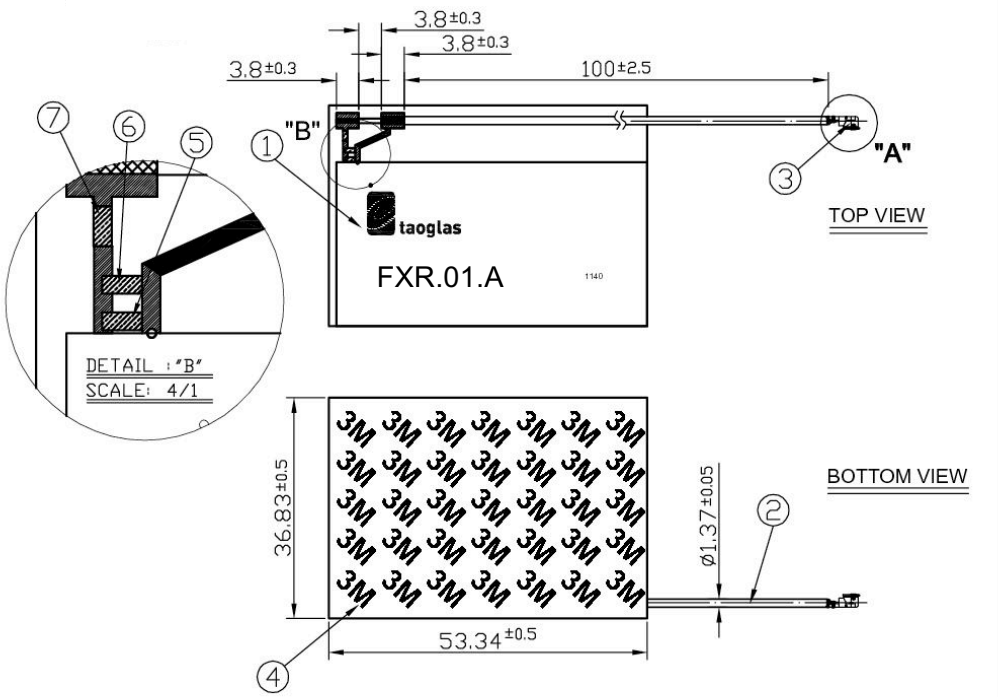
Following the results above, our customers can easily stick this antenna on their device enclosure.

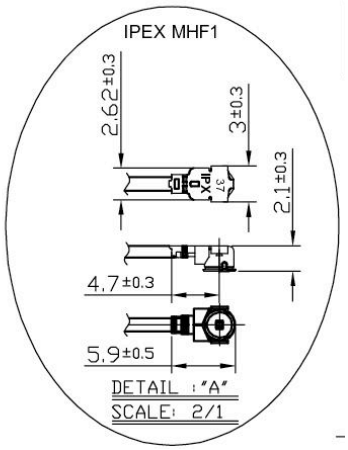
5.2. Proximities to Metal Ground



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

6. Mechanical Drawing





	Name	P/N	Material	Finish	QTY
1	FXN.01 PCB B	100211K020011A	FPCB 0.1t	Black	1
2	1.37 Coaxial Cable	OD.137.J	FEP	Black	1
3	IPEX MHF1	IPEX.MHFHT.137	Brass	Gold	1
4	Double-Sided Adhesive	See FPCB Spec	3M 467	Brown Liner	1
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