Specification

Part No.	:	**NFR.02**
Product Name	:	Radius External Bracket NFC Antenna with ACH Connector
Features	:	For use with NFC readers Frequency: 13.56MHz IP67 Waterproof Cable: 1M AWG28 Connector: ACH(F) Dimensions: 75*75*27.9mm RoHS Compliant

1.Introduction

The Radius, NFR.02, is an external bracket mount NFC (Near Field Communication) antenna for use with NFC readers.

This enables your device to execute point-to-point data transmission without contact. This design is matched for optimal performance with typical NFC chipsets.

The IP67 waterproof enclosure ensures that it can be used for both indoor and outdoor environments. With its own mounting bracket, the NFR.01 can be easily installed on a wall or metal panel. To strengthen robustness in outdoor applications, the NFR.02 antenna and mounting bracket are protected by a heat-resistant, high-impact resistant UV stabilized ASA enclosure.

A 1m 28AWG Twisted Pair cable with ACH(F) connector is connected to the housing.

Custom cable lengths or a version with an embedded RJ45 Jack for ethernet cables is also available. Contact your regional Taoglas sales office for any product support.

2.Specifications

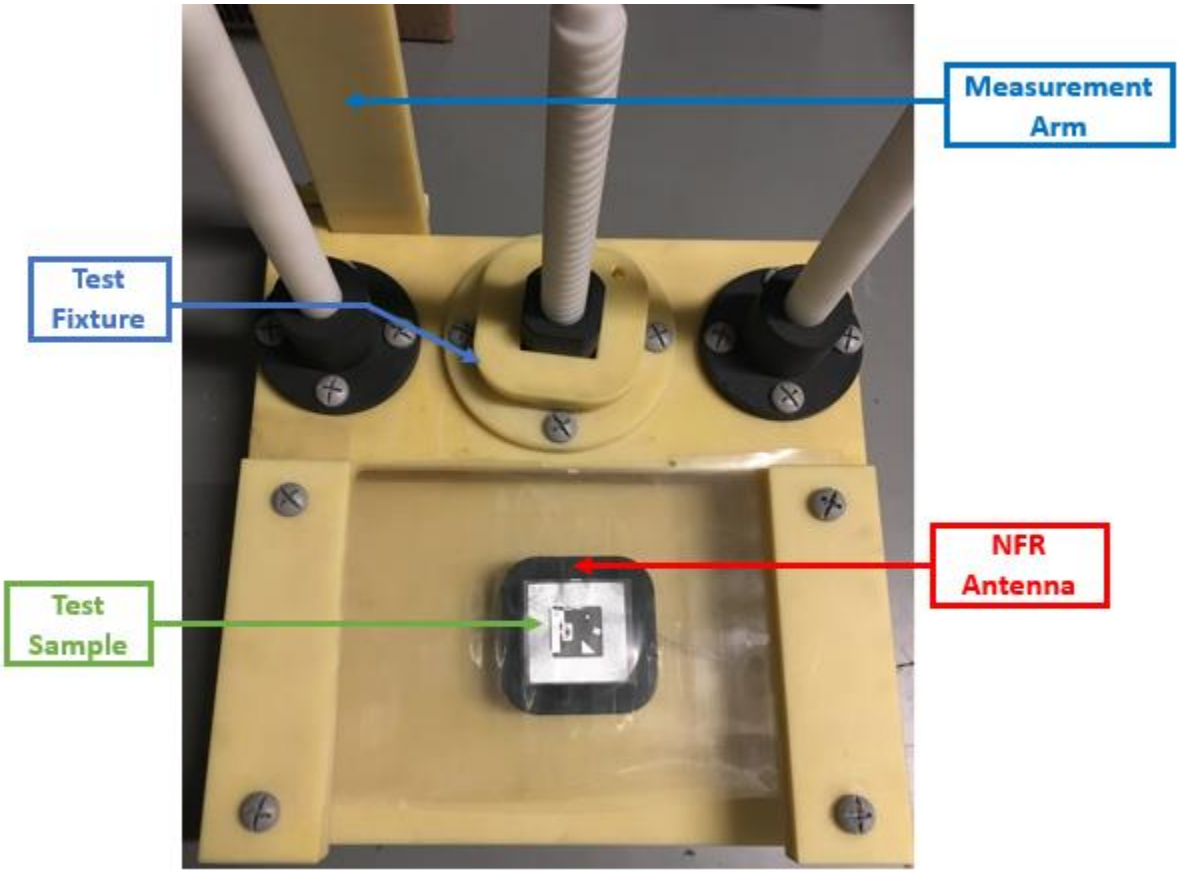
Flexible PCB Near-Field Communications Reader Antenna	
Frequency	13.56 MHz

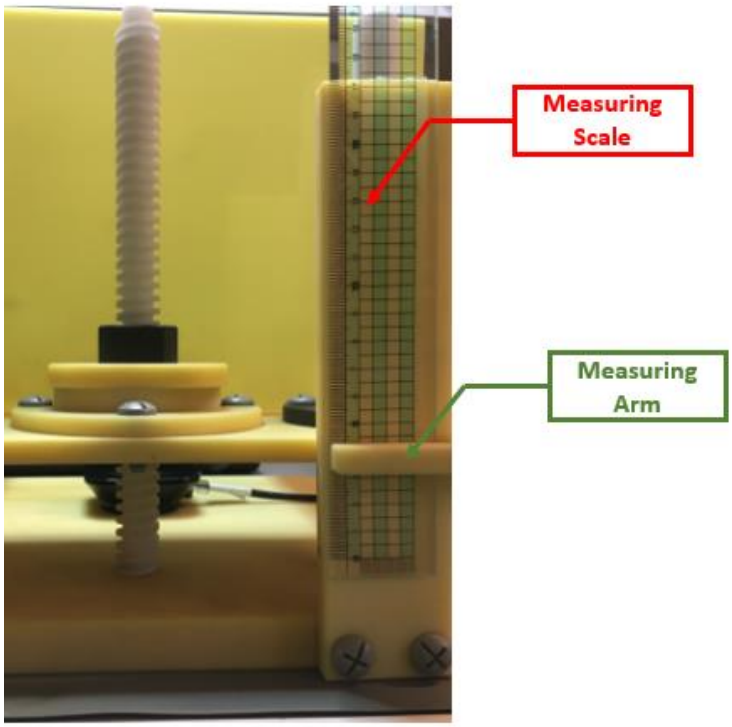
MECHANICAL	
Antenna Dimensions	75x75x27.9mm
IP Rating	IP67
Weight	32g
ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3.Antenna Application

3.1. Test Setup

A test fixture is used to measure the maximum interrogation distance. The NFR.02 antenna is connected to a NFC evaluation board and then placed on the fixed part of the fixture.





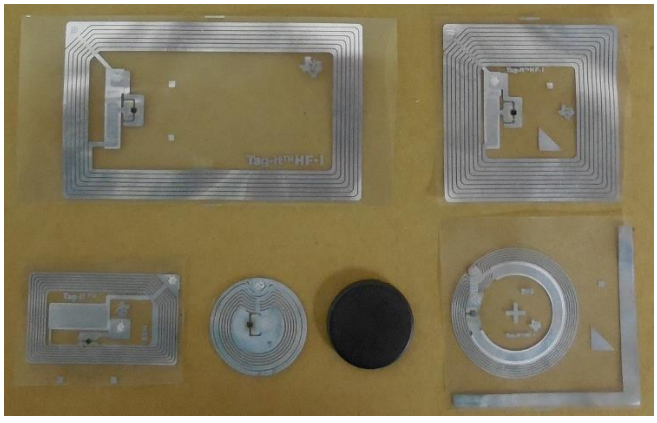
The test sample is placed on a thin sheet of plastic connected to the moveable part of the fixture. Then the distance is carefully adjusted until the reader can no longer read the sample, thus the maximum interrogation distance is displayed in the ruler.

3.2. RFID tags used for test

A total of 10 RFID tags were used to measure the interrogation distances. The next picture shows type 1, type 2 and type 4 tags, respectively.

Type 1 tag is based on ISO/IEC 14443A standard and has 512 bytes of memory.
Type 2 tag is based on ISO/IEC 14443A standard and has 192 bytes of memory.
Type 4 is based on ISO / IEC 14443A 1-4 compliant and has 2K of memory.

The next picture shows the Tag-it HF-I RFID tags from Texas Instruments: RI-102-112, RI-I11-112, RI-I03-112, RI-I16-112, Button and RI-I17-112.



The Tag-it HF-I Plus Transponder Inlay family of Texas Instruments RFID is based on the ISO/IEC 15693 standard for contactless integrated circuit cards (vicinity cards) and ISO/IEC 18000-3 standard for item management.

3.3. Matching

The interrogation distances presented here were taken with the antenna connected directly to the evaluation boards with the default matching circuit. This is not necessarily the optimal matching circuit that could be designed for a particular antenna. We kept the default matching of each evaluation board to minimize the number of variables in testing and keep integration as simple as possible.

As with any matching network the exact circuit and values for an optimal network depend on the combination of antenna, NFC circuit, any intervening transmission line and the environment presented to the antenna. These factors are specific to the particular end product.

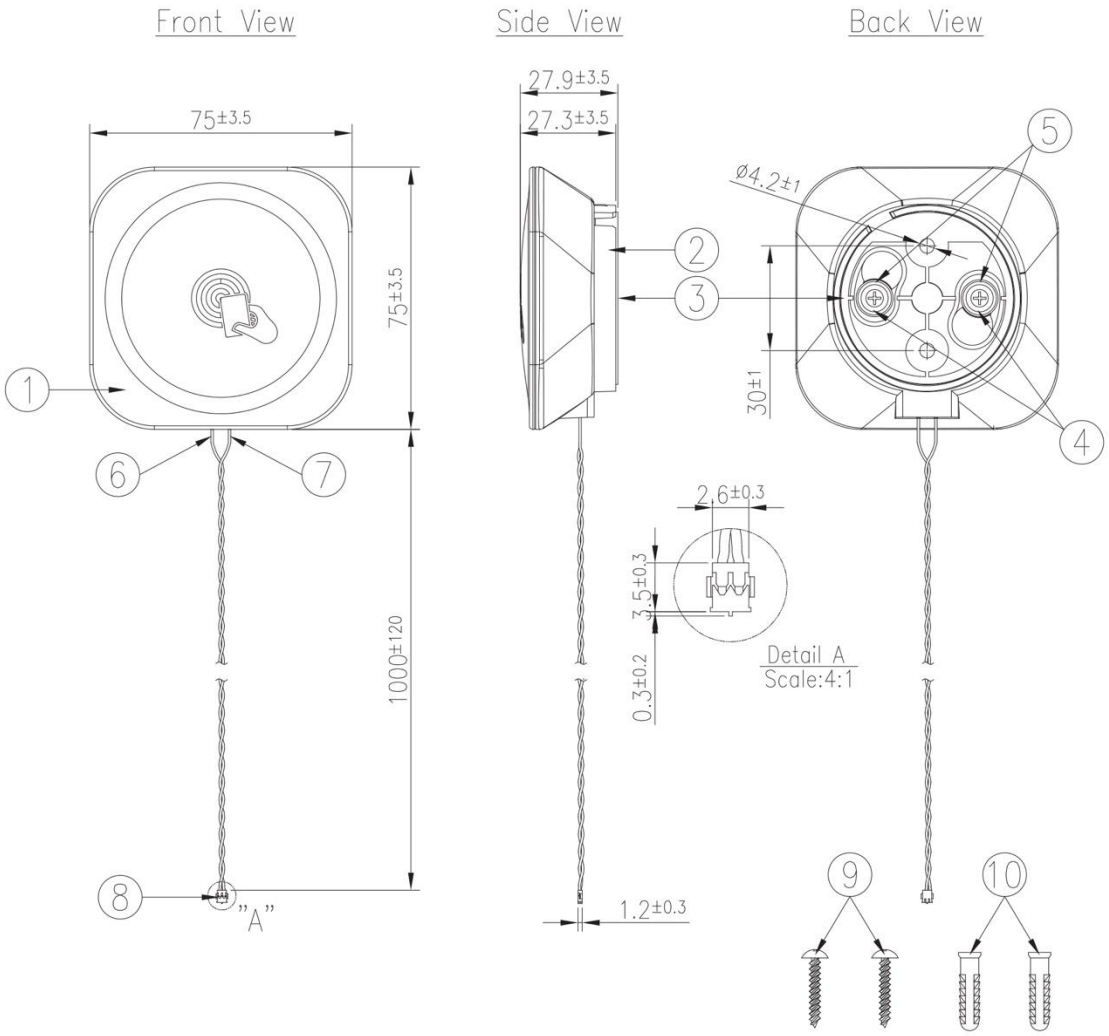
As a starting point, to achieve the read range results presented here, use the matching network detailed in the schematic of the evaluation board for your particular NFC chip and keep the antenna free of any obstruction. Once you can demonstrate successful reads you can then optimize performance as desired.

3.4. Test Results

A total of 10 NFC tags were selected to measure the interrogation distances using the Texas Instruments TRF7970AEVM evaluation board. The results are in the next table:

NFC Tag	Dimensions (mm.)	Interrogation Distance (mm.)
Mifare Ultralight C	80 x 50	9
Topaz512 (Type 1)	43 x 43	24
NTAG203 (Type 2)	Φ 42	25
Mifare DESFire (Type 4)	80 x 50	17
Tag-it HFI Plus RI-I11-112	45 x 45	44
Tag-it HFI Plus RI-I02-112	76 x 48	66
Tag-it HFI Plus RI-I03-112	38 x 22.5	18
Tag-it HFI Plus RI-I16-112	Φ 24.2	24
Tag-it HFI Plus RI-I17-112	Φ 32.5	33
Button type	Φ 22	23

4.Mechanical Drawing



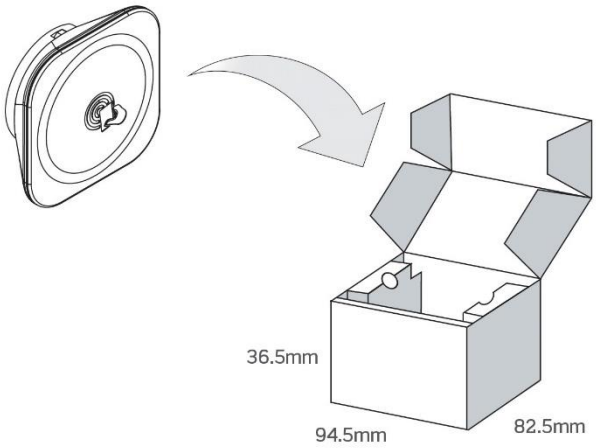
Notes:

1. All material must be RoHS compliant.
2. Color Codes: PANTONE Black / Plastics Color Q728-1-1.
3. Housing Finish: Mirror Polish / SPI A-3.
4. Deburring: Less than 0.02mm.
5. No gate, parting line and any other tooling marks on appearance of product.
6. Once product have any crack/break damage or any structural tooling issue, Molding supplier need to correct the issue unconditionally.
7. Use this drawing together with the corresponding 3D CAD database file to fully describe the part.
8. Long Part Number: NFR.02.A.10SSYY21

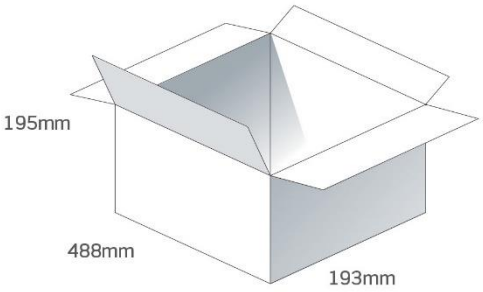
	Name	Material	Finish	QTY
1	NFR_Housing_Top	ASA	Black	1
2	NFR_Housing_Bottomx2Hole	ASA	Black	1
3	NFR_Bracket	ASA	Black	1
4	Fastening Washer	ABS+PC	Black	2
5	Screw TP1(3x8L)	Steel	Ni Plated	2
6	PVDF Cable (28AWG)	PVDF	Black	1
7	PVDF Cable (28AWG)	PVDF	Red	1
8	ACH Connector (F)	Engineering Plastics	Black	1
9	Screw TP4x25L	Steel	Ni Plated	2
10	Wall mount stud 6x24L	Nylon	White	2

5.Packaging

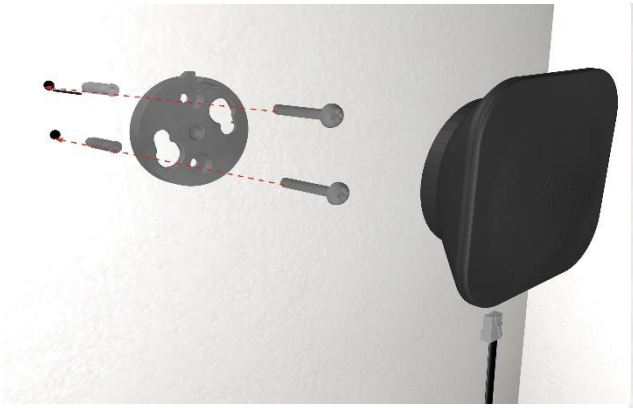
1 pc NFR.02 in box
Dimensions - 94.5*82.5*36.5mm
Weight - 70g

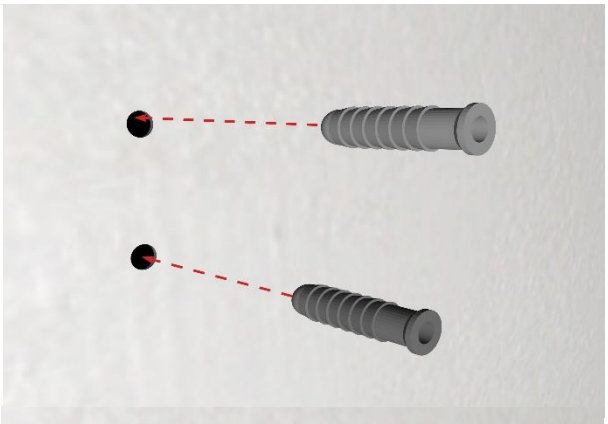


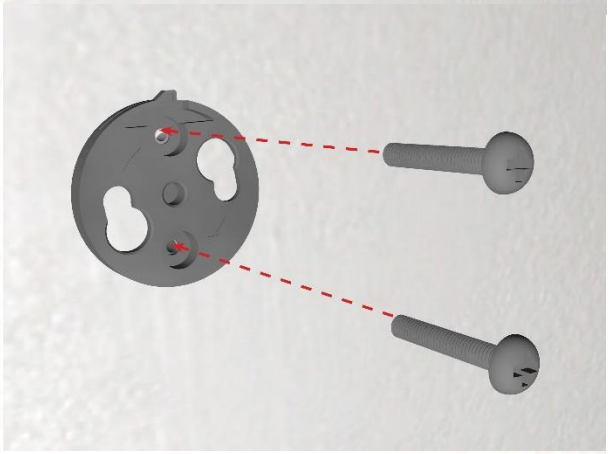
50 pcs NFR.02 in one carton
Carton Dimensions - 488*193*195mm
Weight - 4.11Kg

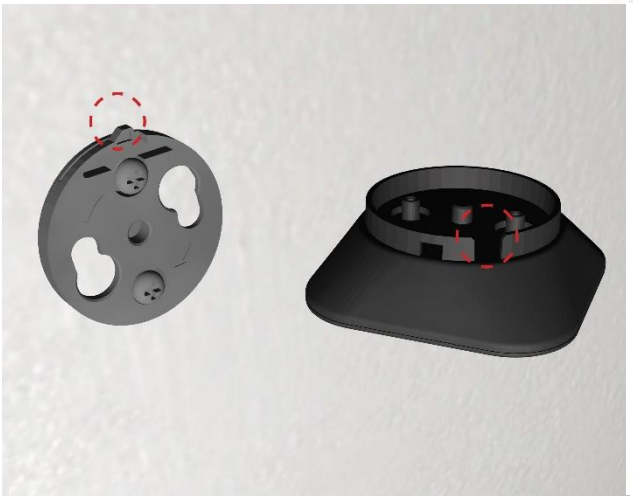


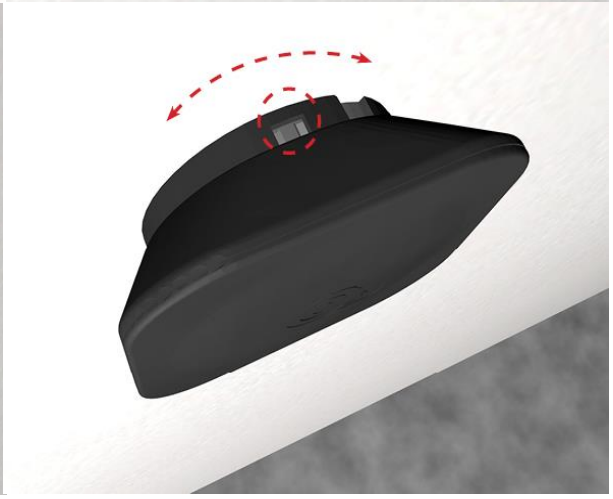
3. Installation Instructions











Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited.

Copyright © Taoglas Ltd.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Taoglas:
NFR.02