

Specification

Part No.	:	MA120.A.QP.001
Product Name	:	Hercules GENII Screw mount 2in1 450MHz and 868MHz (Separate cable and connectors)
Features	:	Permanent Mount For smart meters and mesh networks 450MHz and 868MHz Combo Antenna Peak Gain 3dBi for 450MHz Band 1dBi for 868MHz Band Cable and Connector 1m RG-316 SMA (M) IP65 Rated Enclosure Height 29mm* Diameter 49mm RoHS & REACH Compliant



1. Introduction

The MA120 antenna is a high performance 450MHz and 868MHz combination thread mount antenna for external use with smart meters, gateways, mesh networks, vehicles and outdoor and indoor assets. It is designed for heavy duty work with extra thick threads. The UV resistant polycarbonate housing is IP65 rated, resistant to vandalism and direct attack. At only 29mm high and a diameter of 49mm this unique antenna is the lowest profile and smallest worldwide.

The antenna has been tested in free space and on varying sizes of ground-planes, showing good frequency stability, allowing its use in many different mounting environments.

The standard cable and connector is 1 meter RG316. High quality FEP (Teflon) jacket is used for the cable. This makes the cable very flexible and able to operate in high temperature environments, corrosion resistant.

Note this antenna is designed for short range communication in the range of meters to hundreds of meters. For cable lengths longer than 2 meters or where very long communication ranges are desired, apart from needing a higher transmit power from the transmitter, it is recommended to go with much larger high gain stand-alone whip or fiberglass Omni type antennas, to counteract losses in the cables.

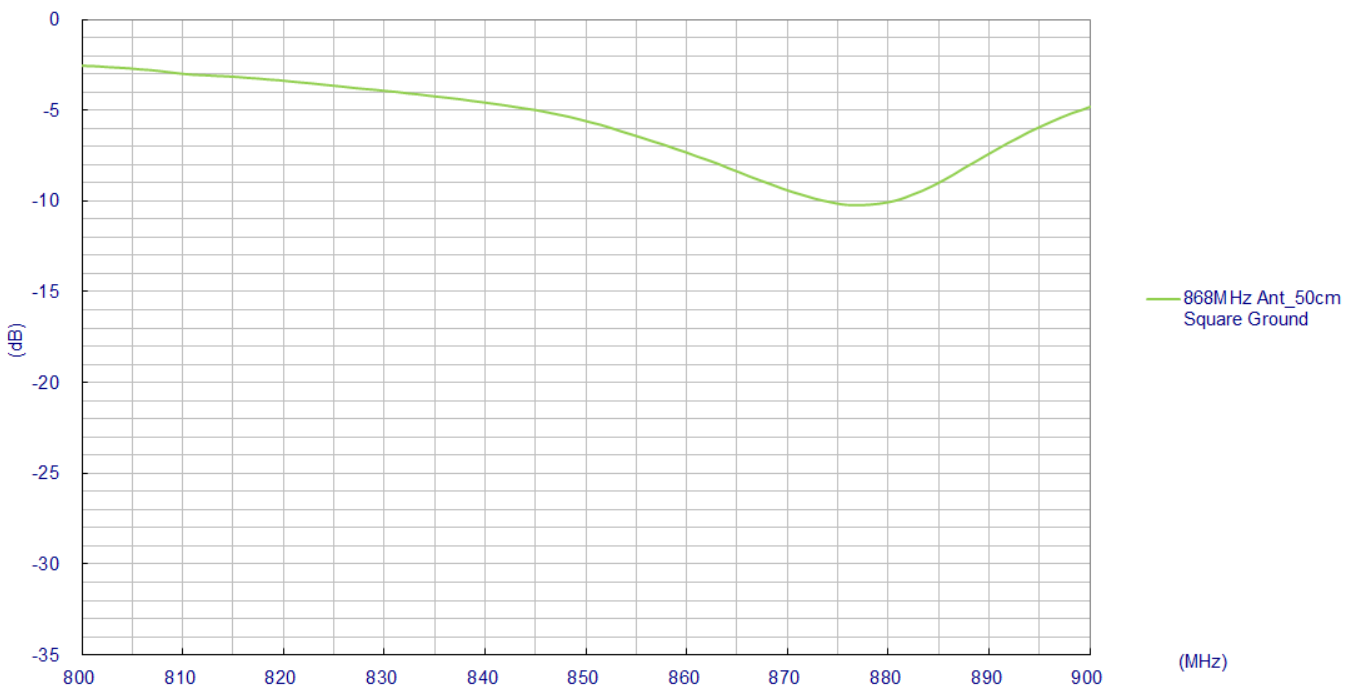
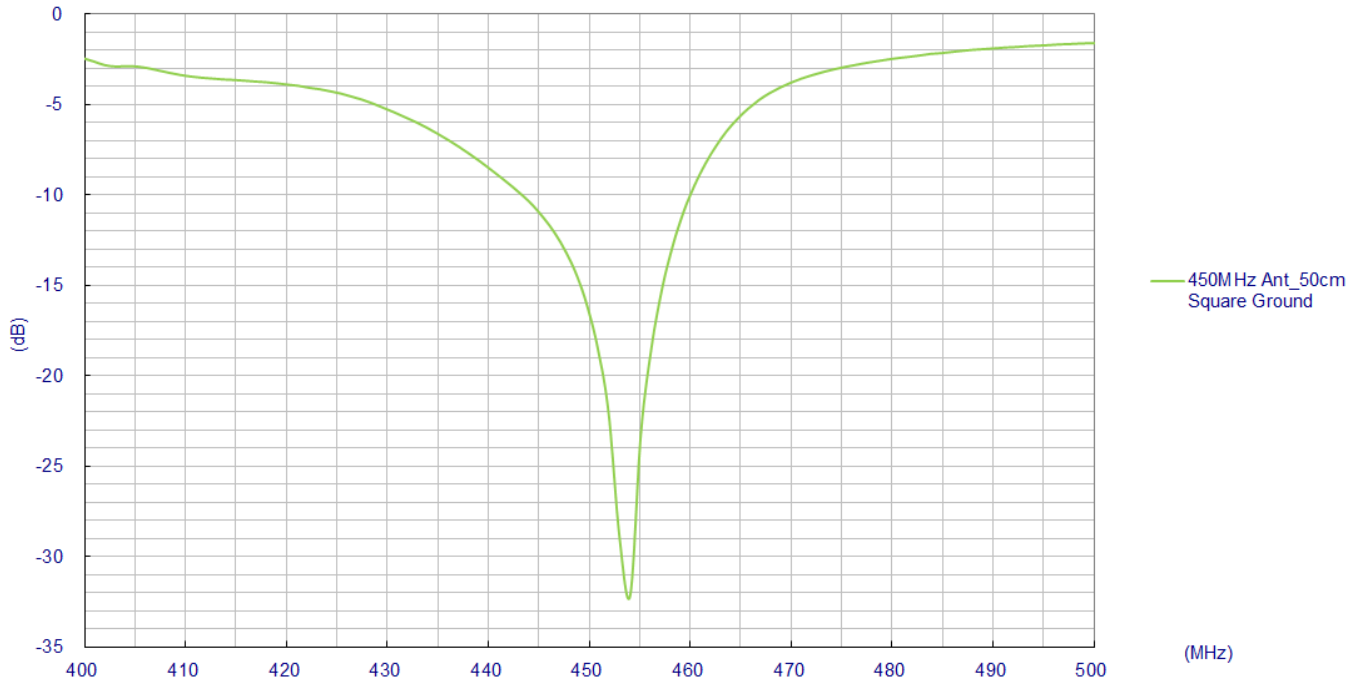
2. Specification

ELECTRICAL			
	ISM450	ISM868	
Frequency	450	868	MHz
Return Loss(min.)	10	10	dB
Peak Gain	3.91	1.11	dBi
Average Gain	-3.27	-4.52	dBi
Impedance	50Ω		
Polarization	Linear		
Radiation Properties	Omni-directional		
Max Input Power	5W		
MECHANICAL			
Dimensions (mm)	Height=29mm x Diameter=49mm		
Cable	1M RG316 coax- Fully Customizable		
Casing	PC Housing		
Base and Thread	Nickel plated steel		
Weather proof gasket	CR4305 foam with 3M9448HK double-side adhesive		
Connector	SMA Male - Fully Customizable		
Thread Diameter	18 mm		
Sealant	Rubber Stopper		
ENVIRONMENTAL RATINGS			
Corrosion	5% NACI for 48hrs- Nickel plated steel base and thread		
Temperature Range	40°C to +85°C		
Thermal Shock	100 cycles -40 C to +85 C		
Humidity	Non-condensing 65 C 95% RH		
Shock (Drop Test)	1m drop on concrete 6 axes		
Cable Pull	8Kgf		
Ingress Protection	IP65		

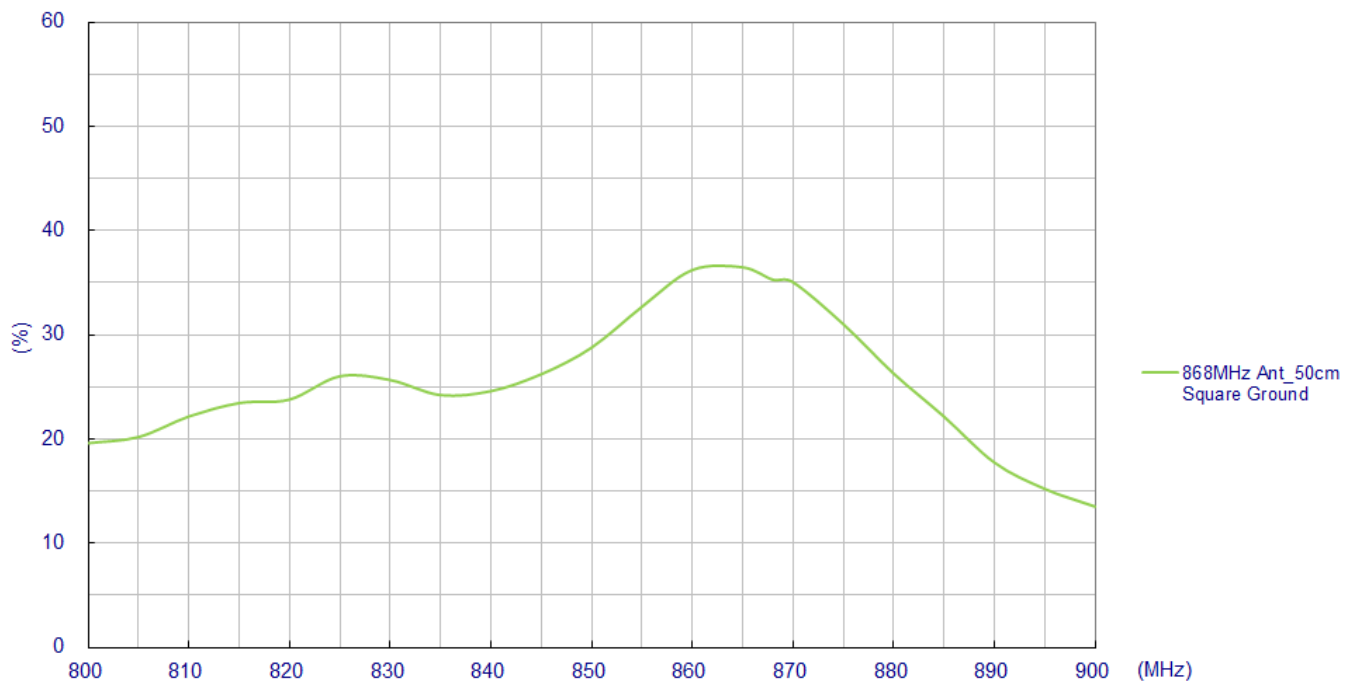
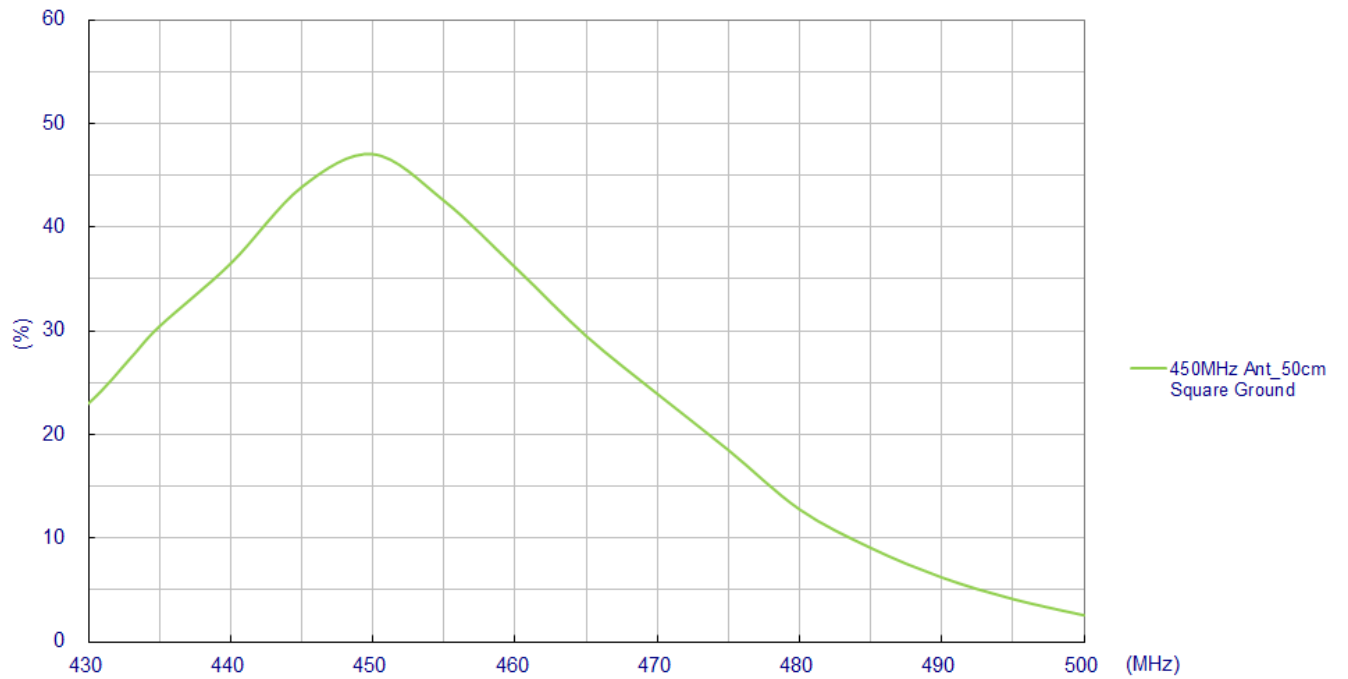
*Results from mounting on 50*50cm ground plane

3. Antenna Characteristics

3.1 Return Loss

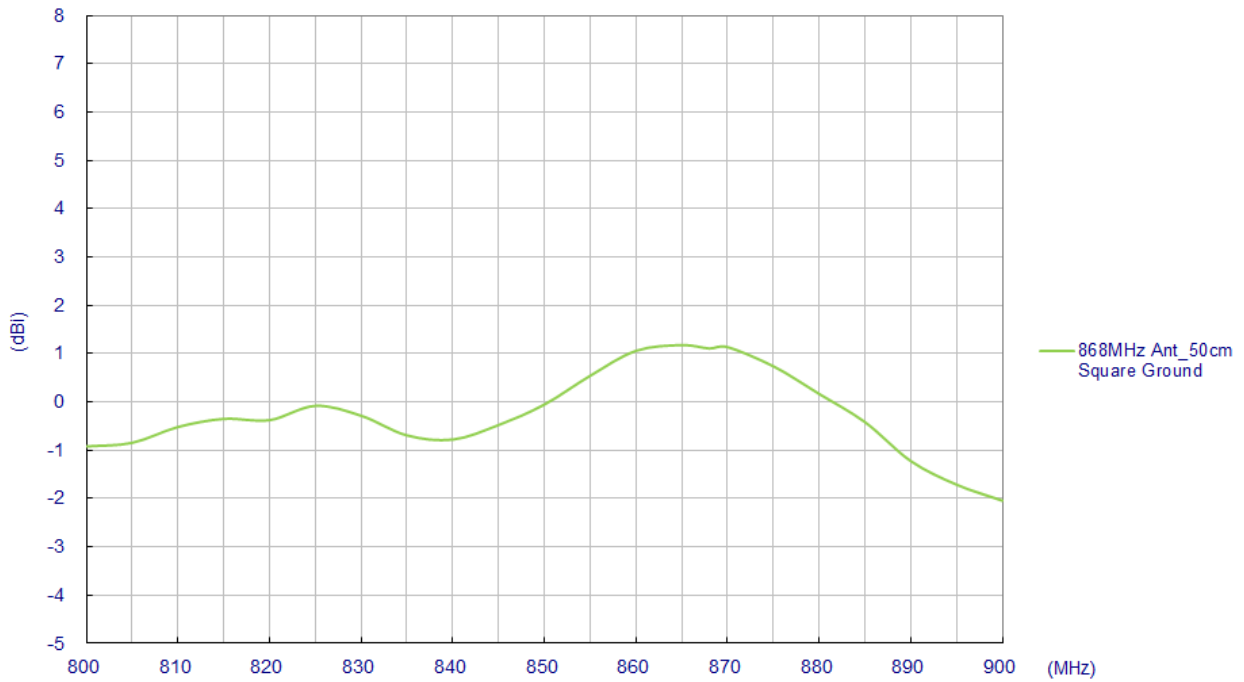
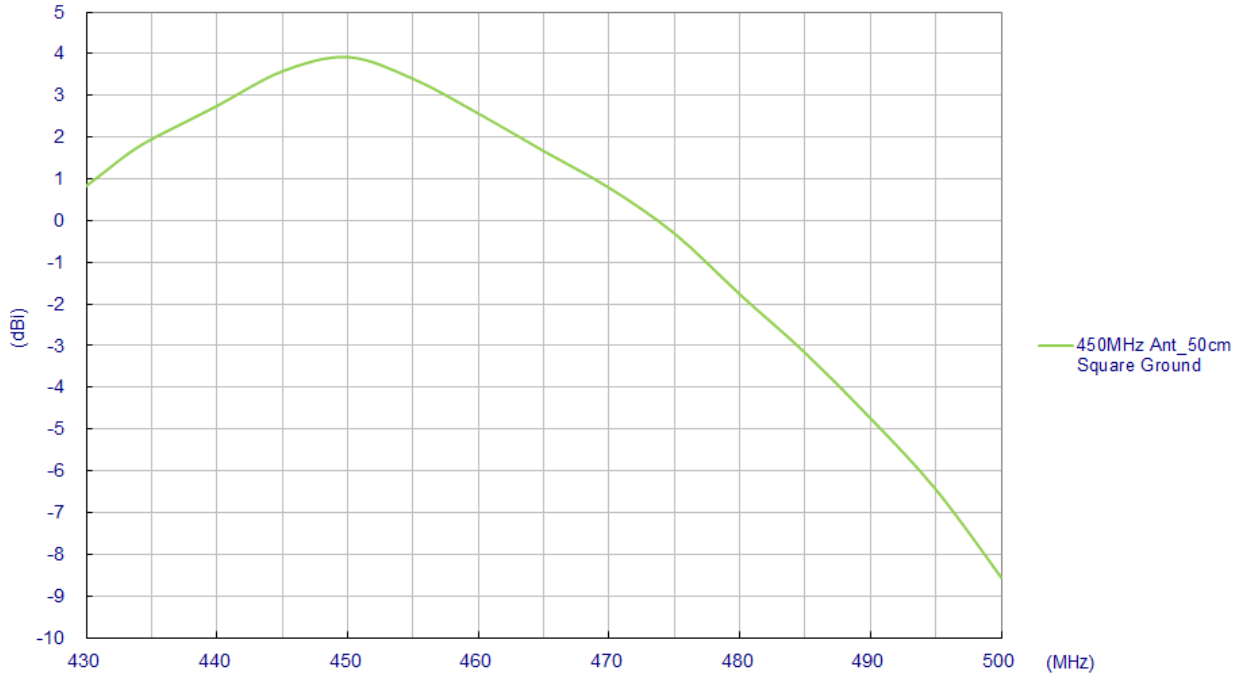


3.2 Efficiency



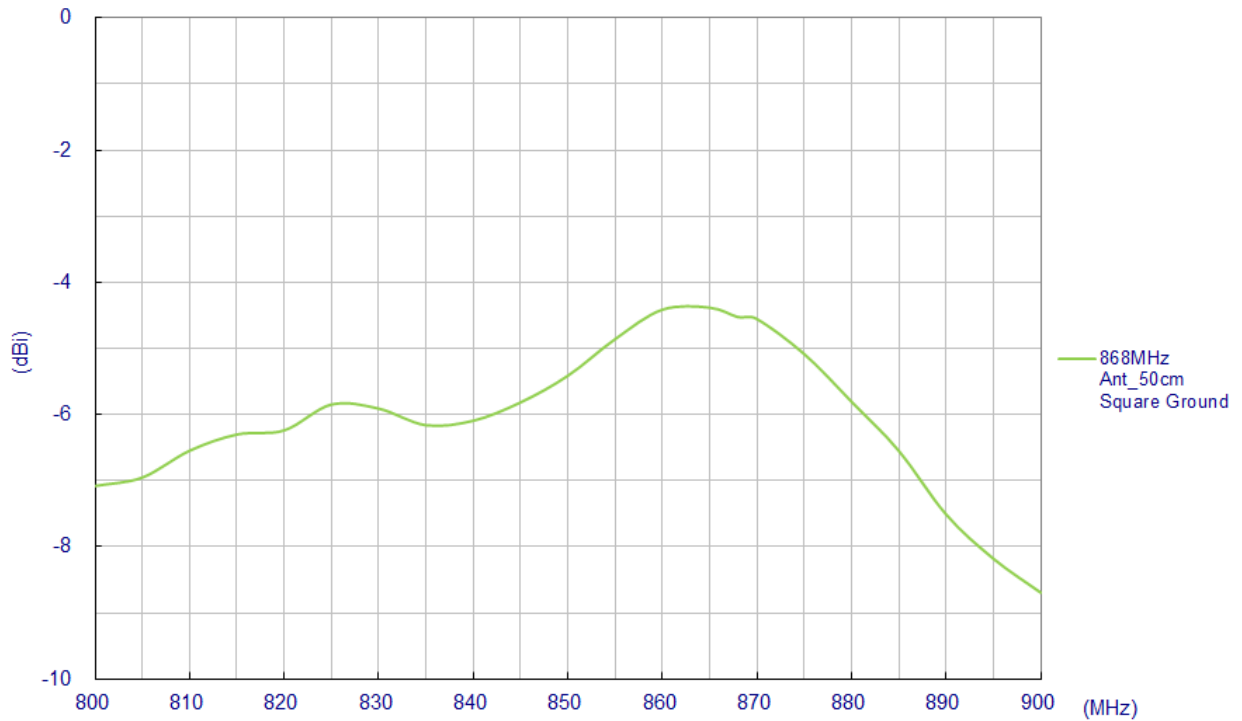
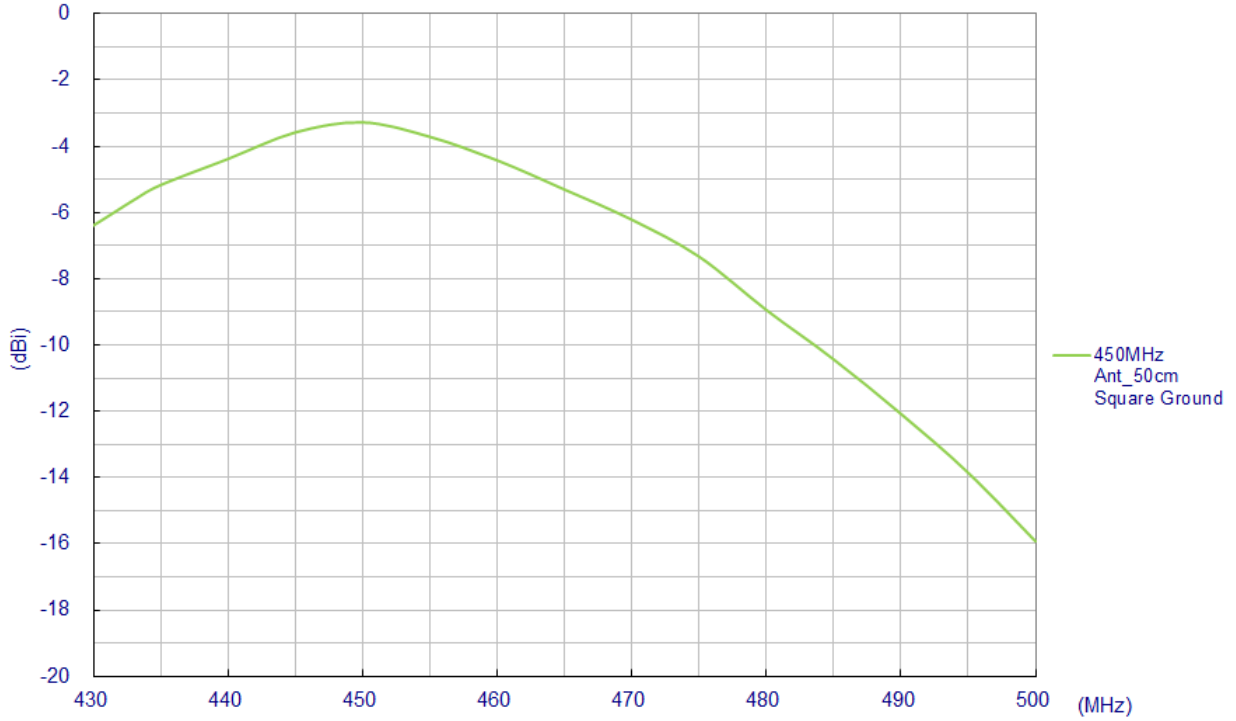


3.3 Peak Gain





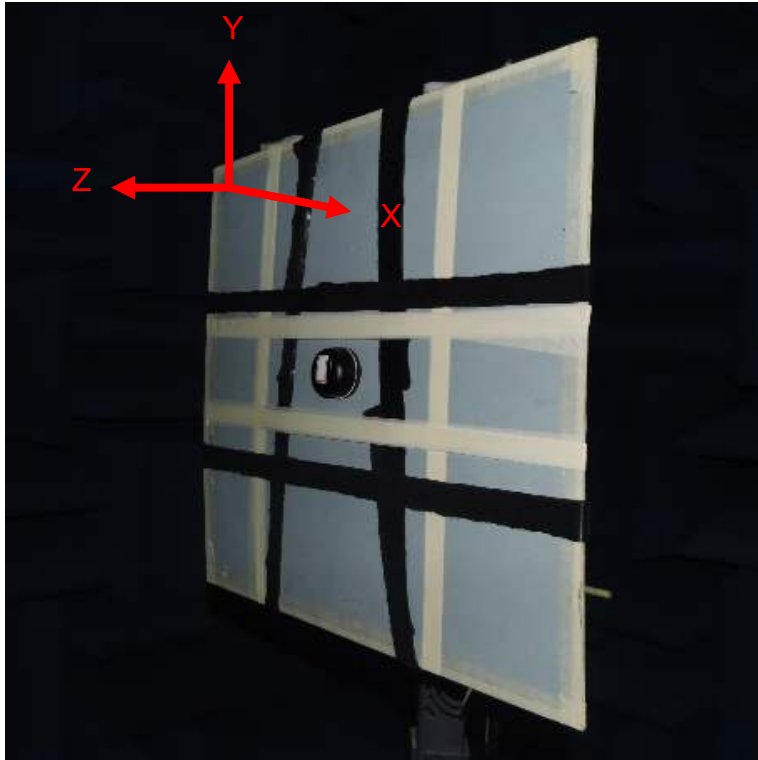
3.4 Average Gain



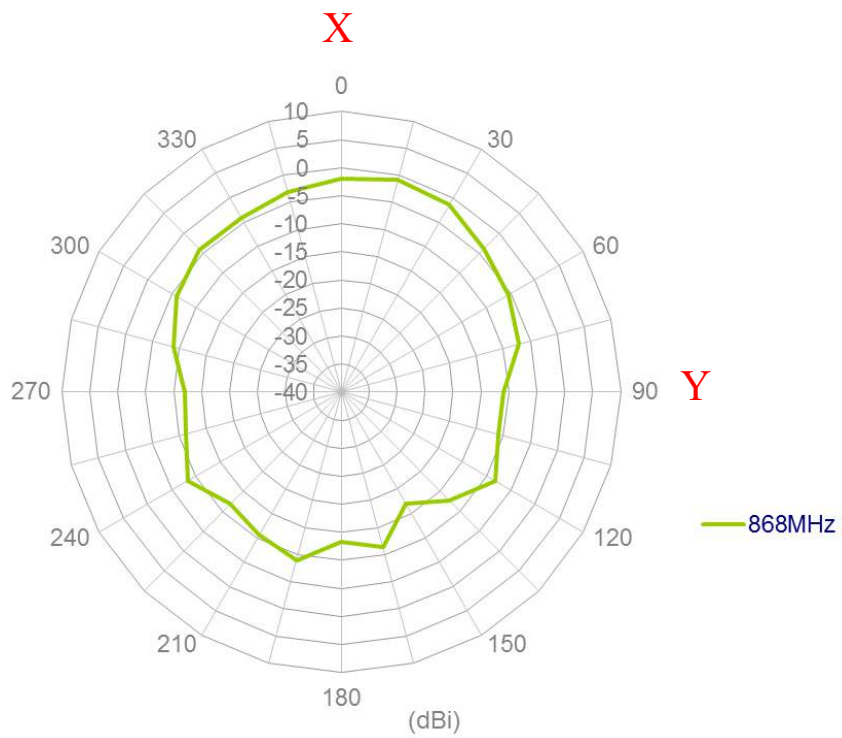
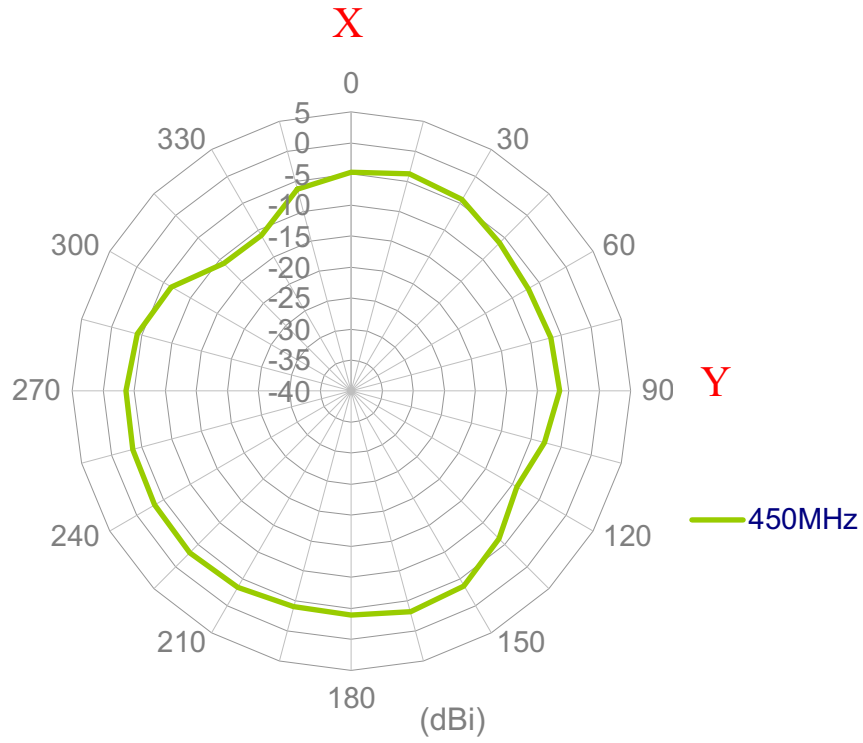
4. Antenna Radiation Patterns

4.1 Antenna setup

The antenna radiation pattern measured setup as shown the below,

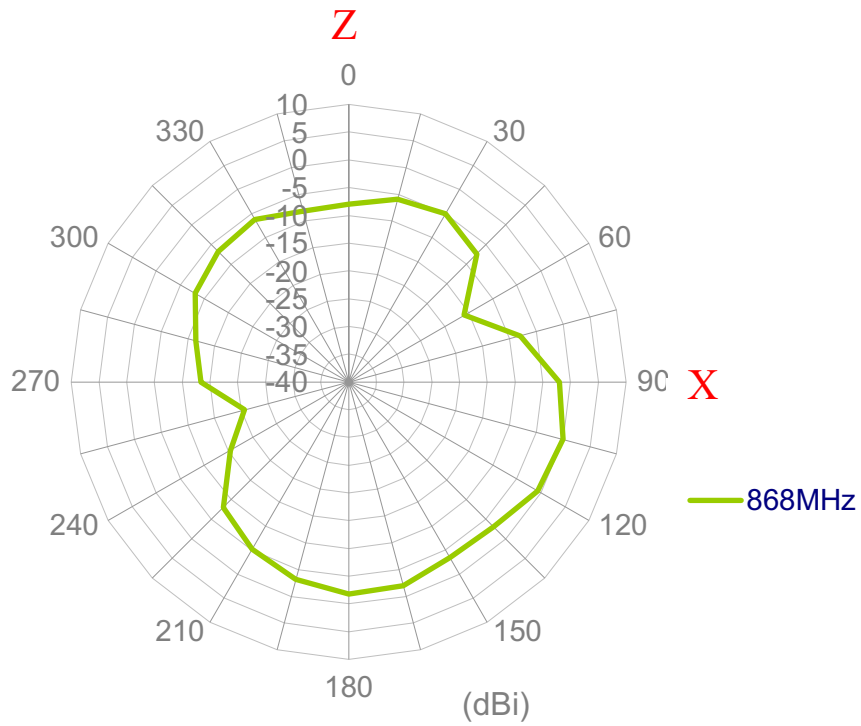
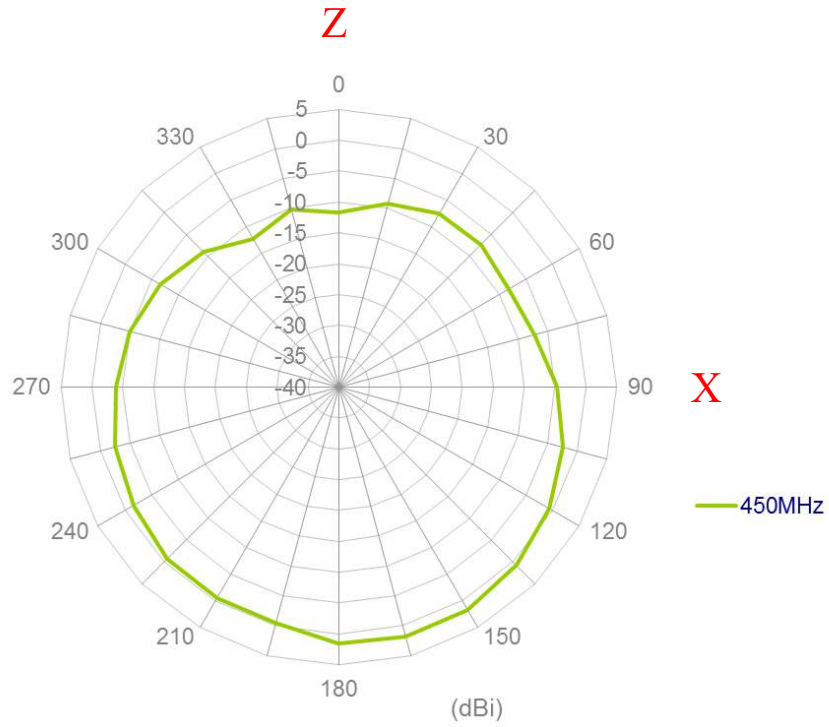


4.2 Antenna radiation patterns XY-Plane



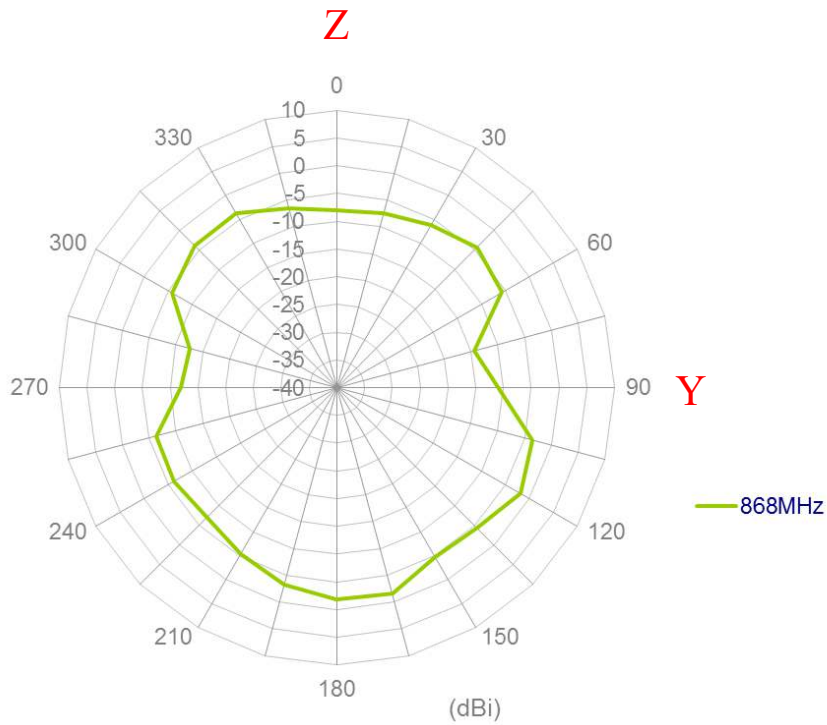
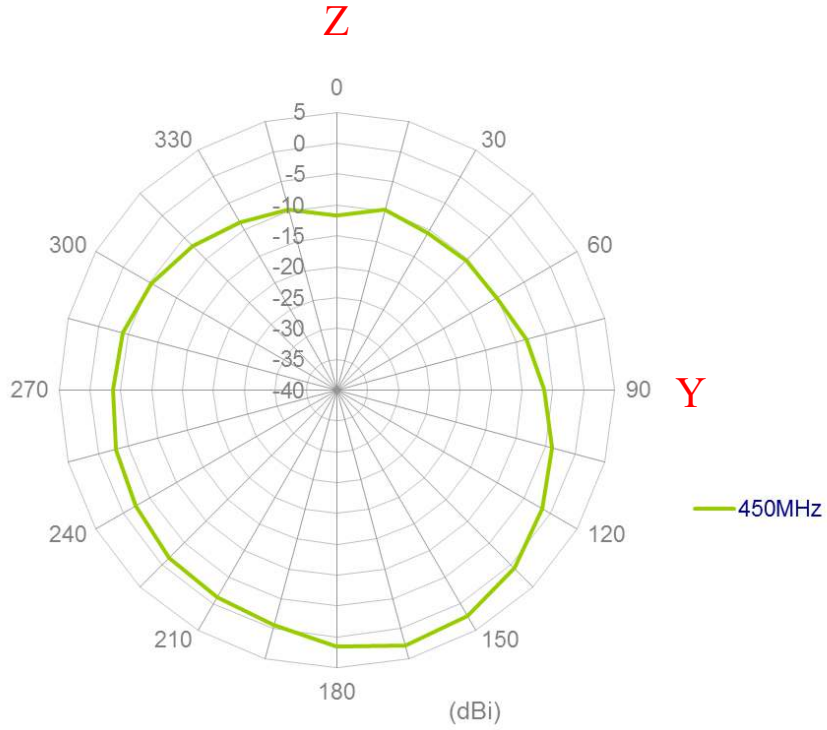


XZ-Plane





YZ-Plane





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5. Drawing

6	5	4	3	2	1	
ISO NO: EDW-13-8-1000		REV ZONE		ENG	APPROVED	ISSUED DATE
<Release>		ALL		Bonnie	Paul	2018/10/16
		DESCRIPTION		Change Label to Print Heat Shrink Tube.(CX-10-8-00)		

Top View

Bottom Thread View

Front View

Side View

Name	P/N	Material	Finish	QTY
1 Housing	000113F000010A	PC	Black	1
2 Closed Cell Foam	001012G010038A	CR 4305	Black	1
3 3M Double Adhesive	001012G010038A	3M 9448 HK	White Liner	1
4 Metal Base	000311F010068A	Zinc Alloy	Ni Plated	1
5 Rubber Stopper	000711F040064A	Silicone Rubber	Black	1
6 Outer Nut Cover	000111F020008A	ASA	Black	1
7 M18 Inner Nut	000413F010061A	Steel Carbon	Zn Plated	1
8 Heat Shrink Tube (450MHz)	001318E050000A	PE	Yellow Tube /Black Tail	1
9 Heat Shrink Tube (868MHz)	001318E030000A	PE	Yellow Tube /Black Tail	1

Name	P/N	SPEC	Finish	QTY
XX Connector Type	200212G000002A	SMA(M)ST	Au Plated	2
YY Cable Type	301315C000000A	RG316	Brown	2

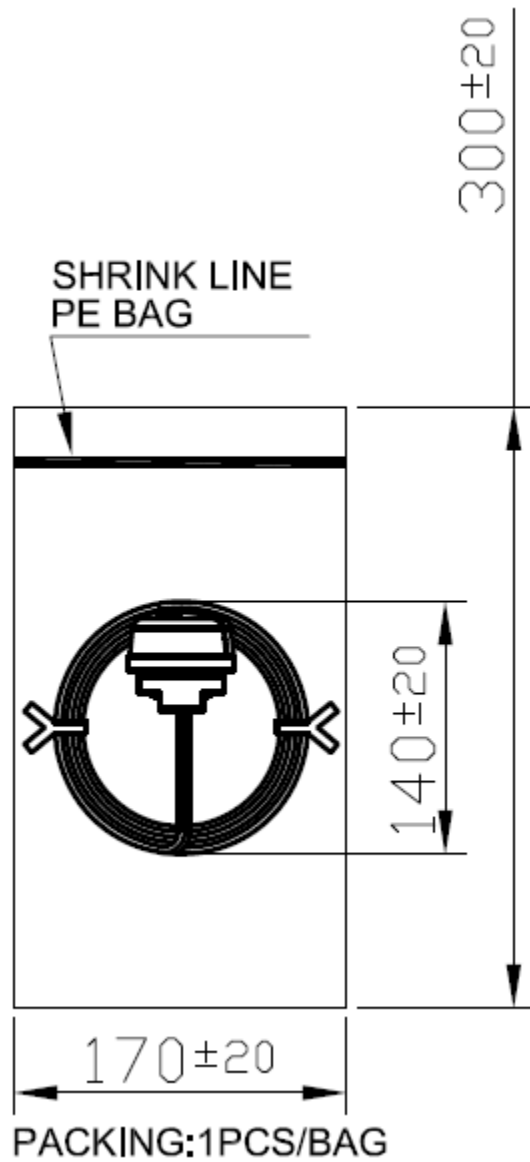
NOTES:
1. Part No.: MA.120.A.Q108111.P108111

A	UNLESS OTHERWISE SPECIFIED TOLERANCES ON: X ± 0.2 XX ± 0.5, XX ± 0.1 X ± 0.3, XXX ± 0.05	DATE: 2013/07/22	MAT'L:	 <small>TW Design Centre This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.</small>	REV
	UNIT: mm	FINISH:	D04		
	THIRD ANGLE PROJECTION	SCALE: 1/1.25	A		
	TITLE: Hercules GENII Screwmount 2in1 450MHz-1M RG-316 SMA(M)/868MHz-1M RG-316 SMA(M)				

APPROVED BY:	CHECKED BY:	DRAWN BY:	CUSTOMERS SIGNATURE / DATE		
Peter	Martin	Gabriel			

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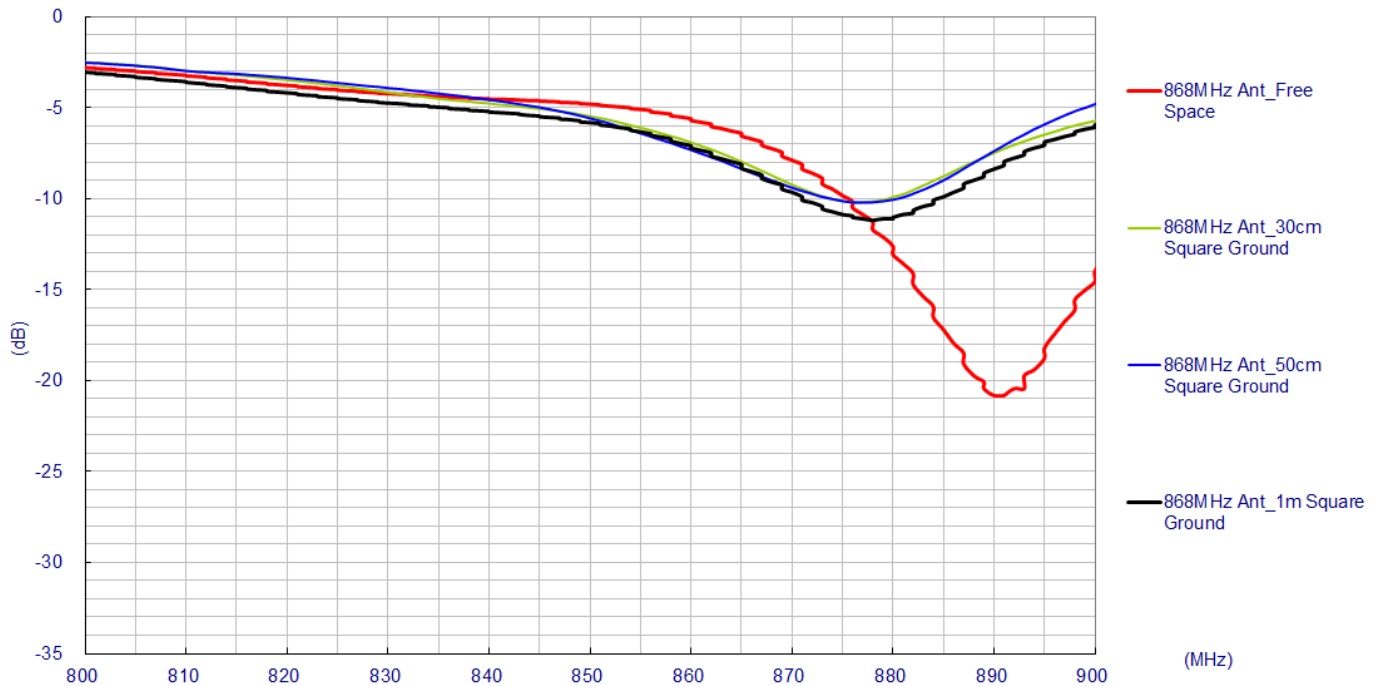
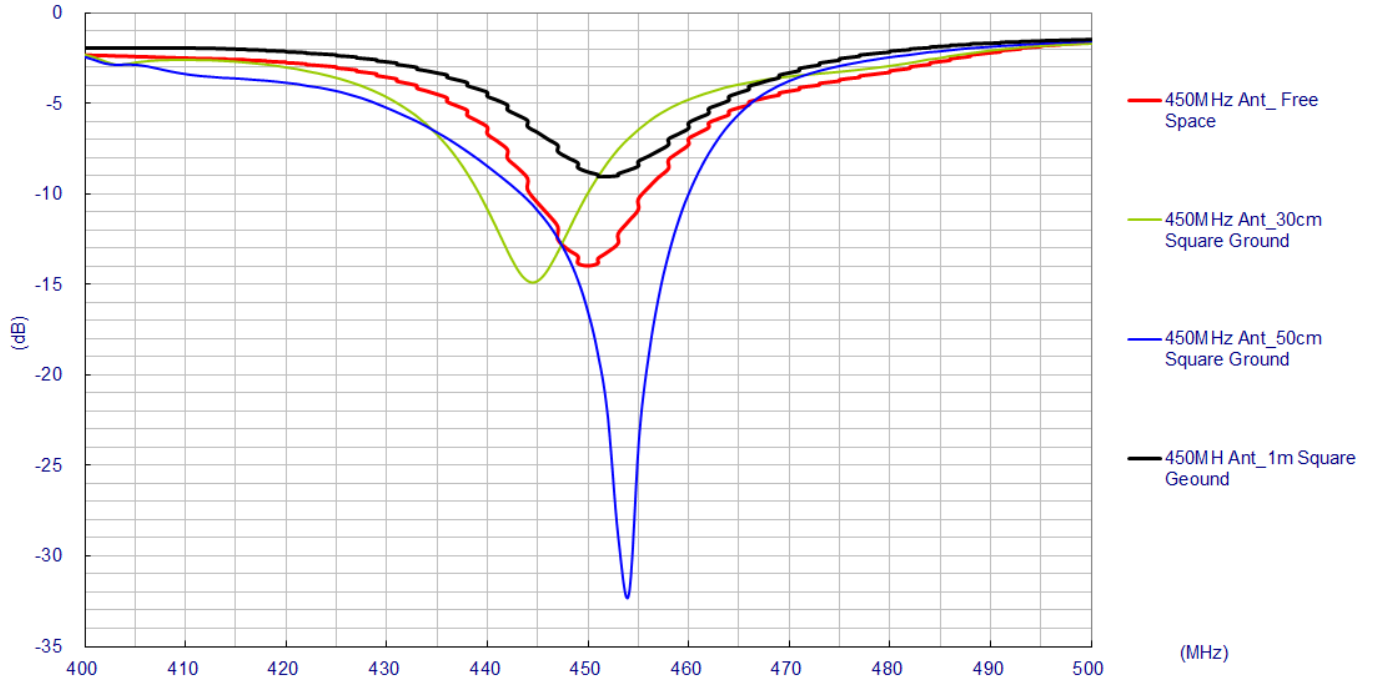
6. Packaging



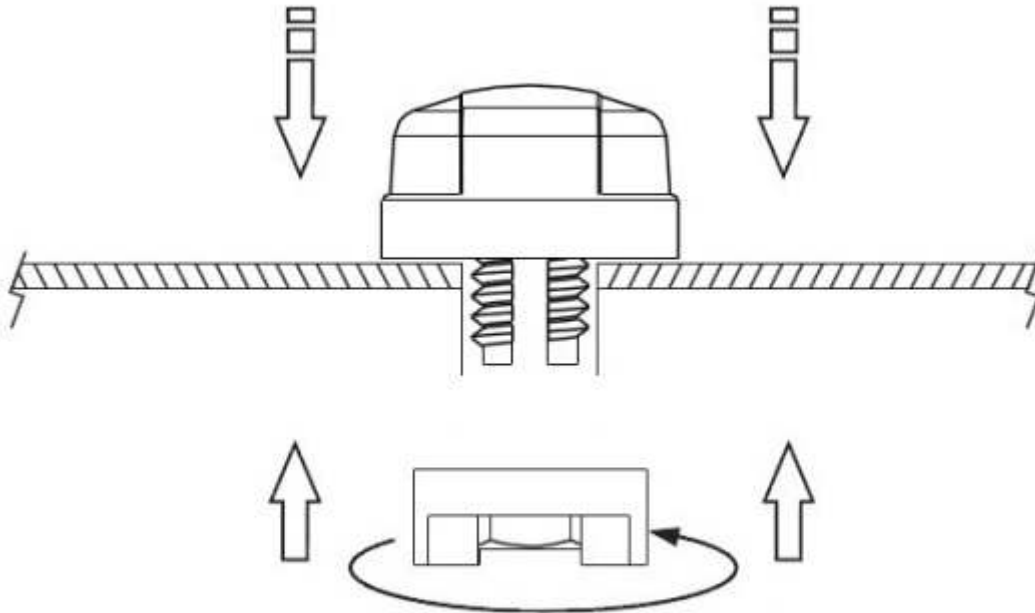


7. Application Note

Taoglas provides this antenna return loss results with different ground conditions. Detail, please observe below.



8. Installation



Recommended torque for Mounting is 24.5N·m
Maximum torque for mounting is 29.4 N·m

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