taoglas
antenna solutions

Underside of TL.10.1HH11W
with NMO (M) connector

Shockwave

TL.10.1HH11W

Specification

Part No.	**TL.10.1HH11W**
Product Name	**Shockwave** Ultra-Wideband Direct Mount antenna Covers all common 2G/3G/4G Cellular - ISM- Wi-Fi Bands
Feature	LTE / GSM / CDMA /DCS /PCS / WCDMA / UMTS / HSDPA / GPRS / EDGE /GPS /Wi-Fi 698MHz to 960MHz, 1575.42MHz, 1710MHz to 2700Mhz, Highest Efficiency and Peak Gain –up to 90% White UV resistant housing (applied Dupont Imron 2.8HG coating) IP67 Waterproof and IP69K NMO (M) Connector RoHS Compliant

1. Introduction

The Shockwave TL.10 NMO series is a new generation of antenna, one part number that is a highly efficient, high gain omni-directional permanent mount antenna designed for all common Cellular, Wi-Fi and ISM bands worldwide. It is specially designed for easy and cost effective vandal-proof and waterproof mounting requirements on meters, terminal boxes, and heavy equipment and vehicles.

In installation the antenna connects to a NMO Mount connector jutting out from a metal panel. A unique indent tab on the base itself on the antenna allows a wrench to be used to solidly lock the antenna on top of its mounting location, thus preventing removal by hand later by vandals, but crucially allowing for replacement antenna to be installed by qualified personnel in the future without the need to open the device or box it is mounted on itself. A waterproof O-ring around the bottom outer edge prevents water leaking under the antenna.

The antenna is IP67 waterproof and IP69K resistant against high pressure water jets in commercial cleaning environments, incorporating highest quality stainless steel mounting base ensuring corrosion resistance.

It also has UV resistant housing (applied Dupont Imron 2.8HG coating).

The Shockwave TL.10 has been tested on a variety of mounting conditions as below specification, with excellent efficiency and gain measured in all typical common mounting conditions. Radiation patterns are consistent, and show very good stability in the azimuth on lower and upper bands.

Housing, frequency application, mounting type and connector are customizable, subject to minimum order quantities. Please contact your local Taoglas sales office for more information. The antenna also comes in Black as standard.

TL.10.1HH11W
with Direct Mount Assembly

TL.10.1HH11W
with Magnetic Mount Assembly

2. Specification

Electrical

Frequency (MHz)	698~800	824~960	1575.42	1710 ~ 1880	1850 ~ 1990	1710 ~ 2170	2400~2700
Peak Gain (dBi)							
Free Space	-1.7	-0.9	0.8	1.3	1.3	1.7	3.5
10x10cm GP center	-1.3	0.1	0.3	0.1	0.4	0.5	2.3
30x30cm GP center	2.7	2.5	1.0	2.2	2.1	2.2	3.1
50x50cm GP center	2.6	2.5	1.2	3.1	3.2	3.1	2.8
Average Gain (dBi)							
Free Space	-6.6	-5.1	-1.8	-1.5	-1.5	-1.3	-0.9
10x10cm GP center	-3.1	-1.9	-1.9	-2.1	-2.0	-1.9	-1.4
30x30cm GP center	-0.4	-1.1	-1.6	-1.7	-1.3	-1.3	-1.6
50x50cm GP center	-0.3	-1.0	-1.6	-1.2	-0.8	-0.9	-1.6
Efficiency							
Free Space	22%	31%	64%	69%	69%	72%	80%
10x10cm GP center	48%	63%	63%	60%	63%	63%	71%
30x30cm GP center	90%	76%	67%	67%	73%	73%	69%
50x50cm GP center	91%	78%	68%	75%	83%	81%	68%

Impedance	50Ω
Polarization	Vertical
Radiation Pattern	Omni

Mechanical

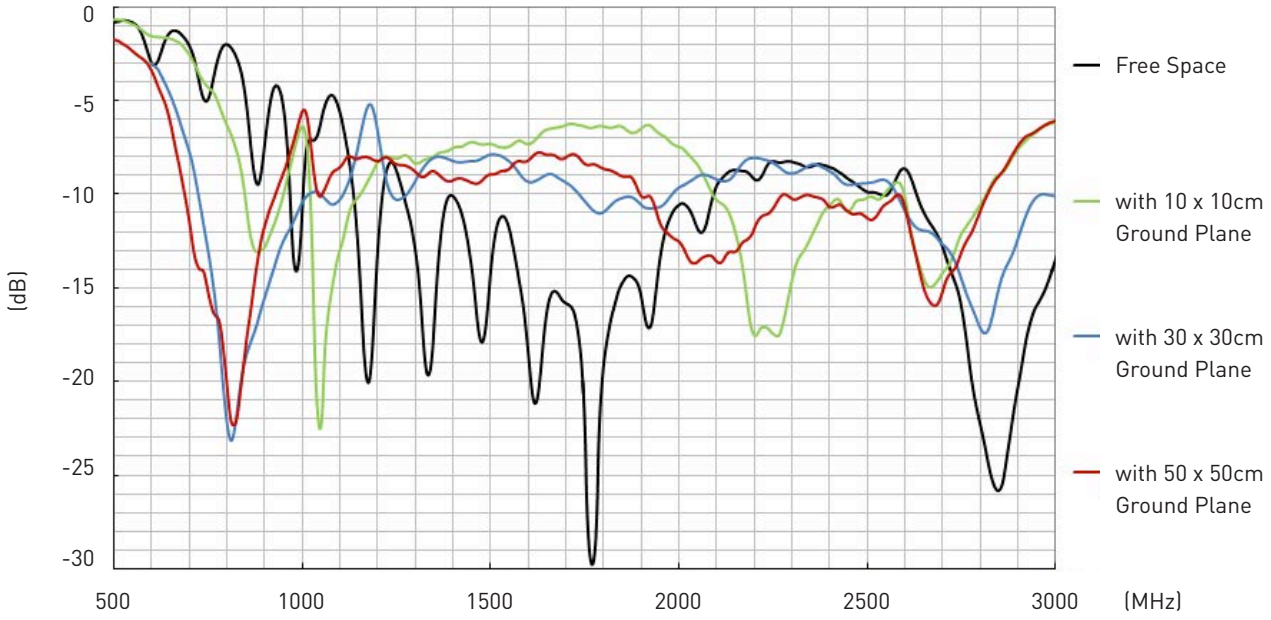
Casing	PC+PBT
Connector	NMO
Base	Stainless Steel

Environmental

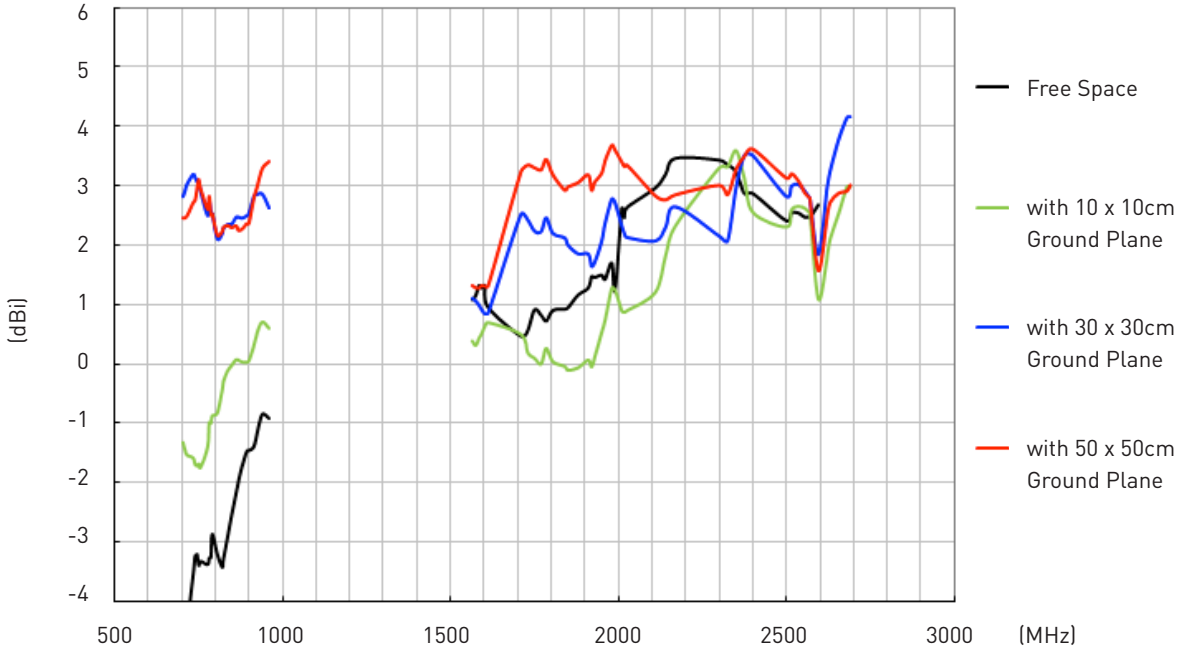
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3. Antenna Characteristics

3.1 Return Loss

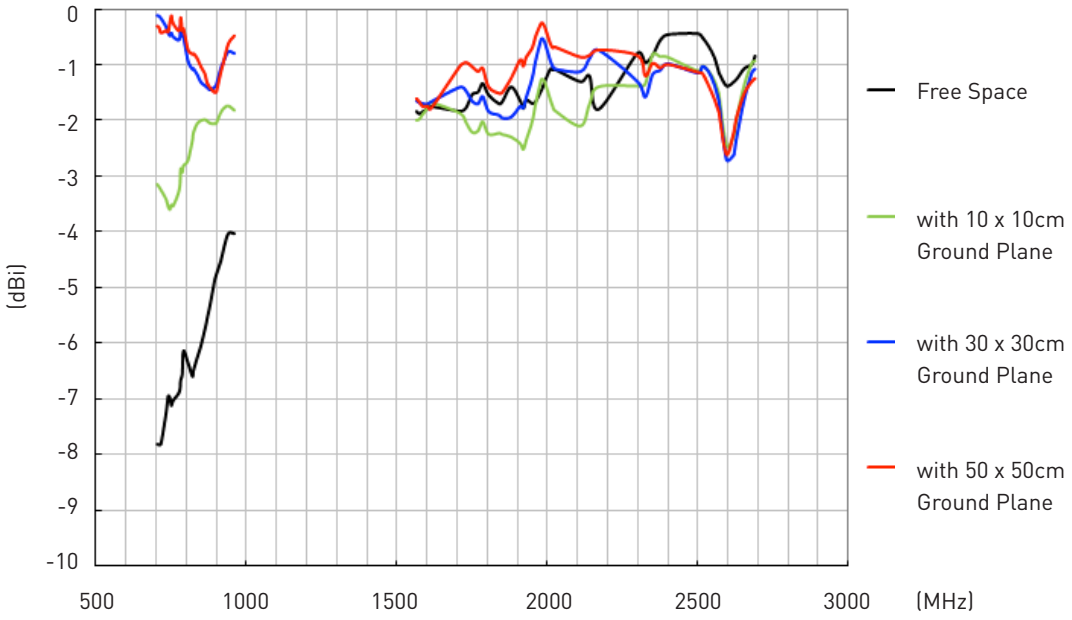


3.2 Maximum Gain

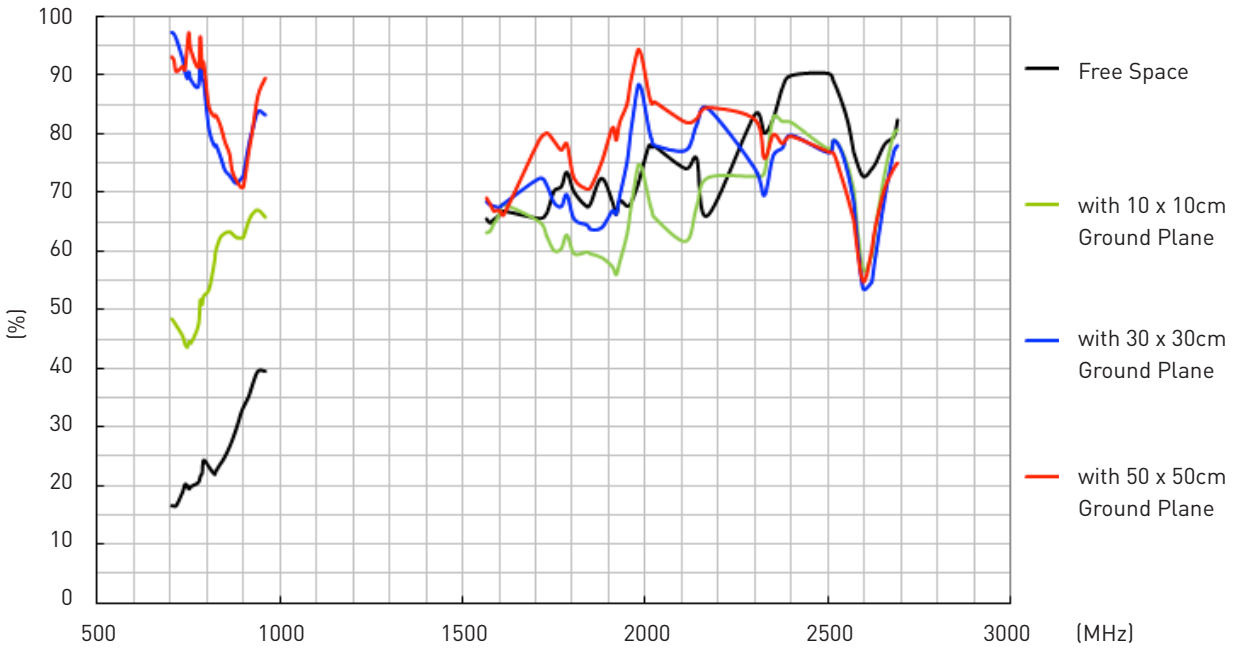


3. Antenna Characteristics

3.3 Average Gain

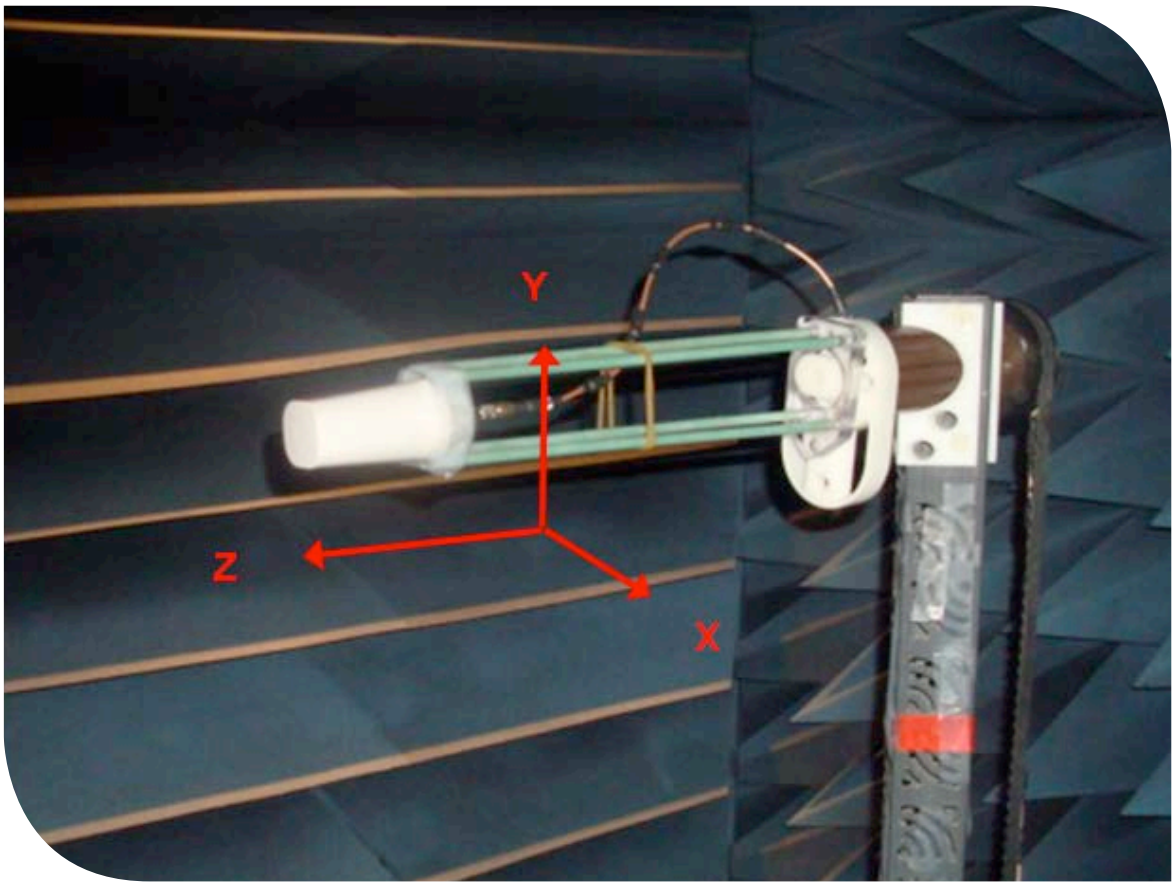


3.4 Efficiency

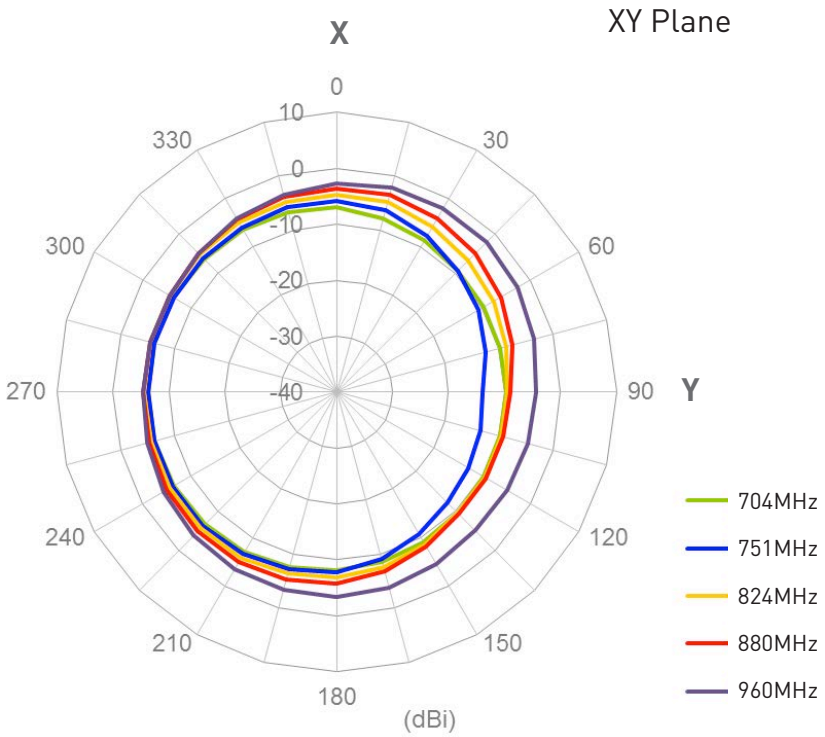


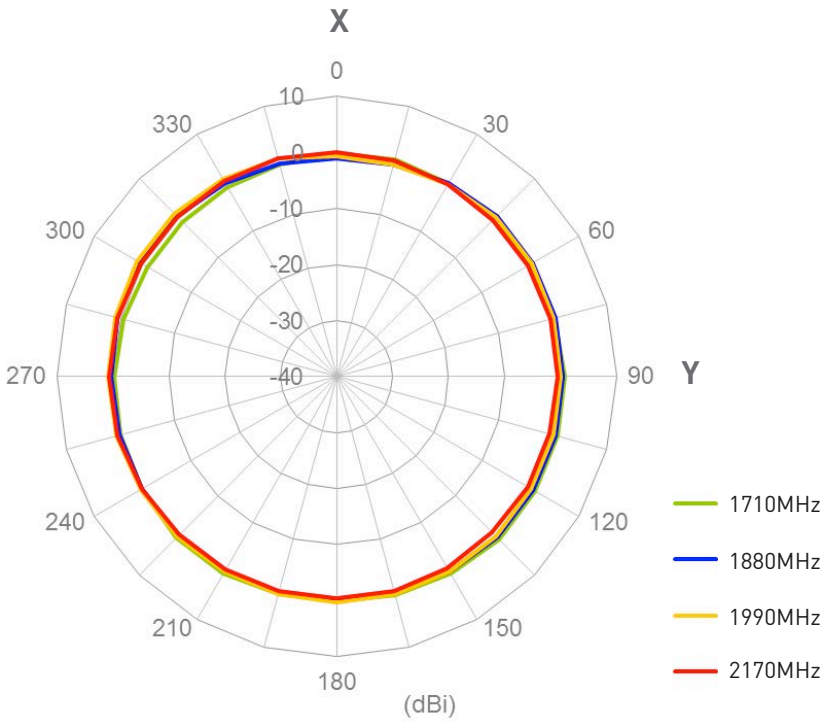
4. Antenna Radiation Patterns

4.1 Antenna Setup (Free Space)

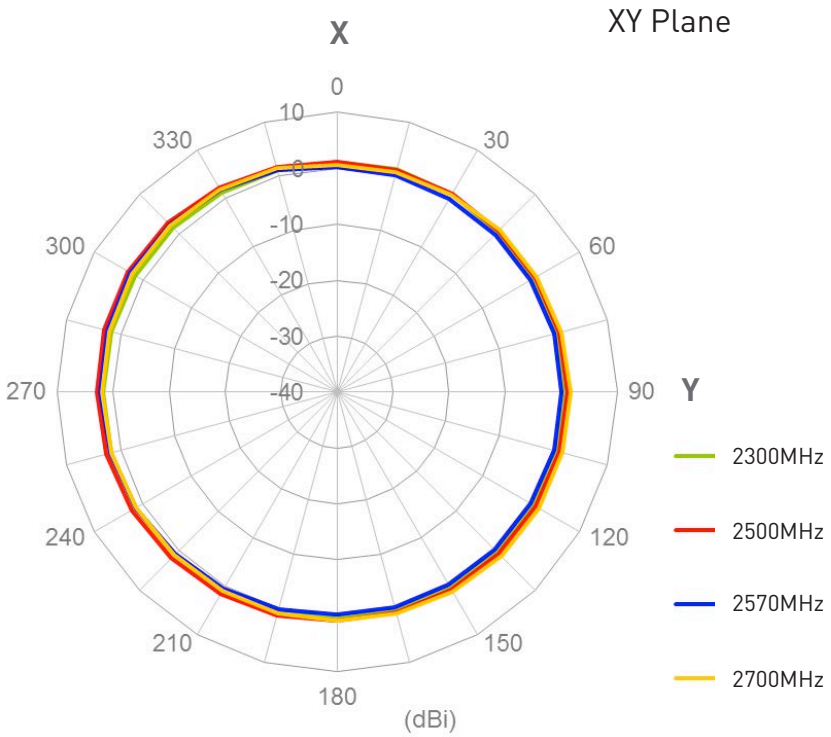


4.1.1 Radiation Patterns

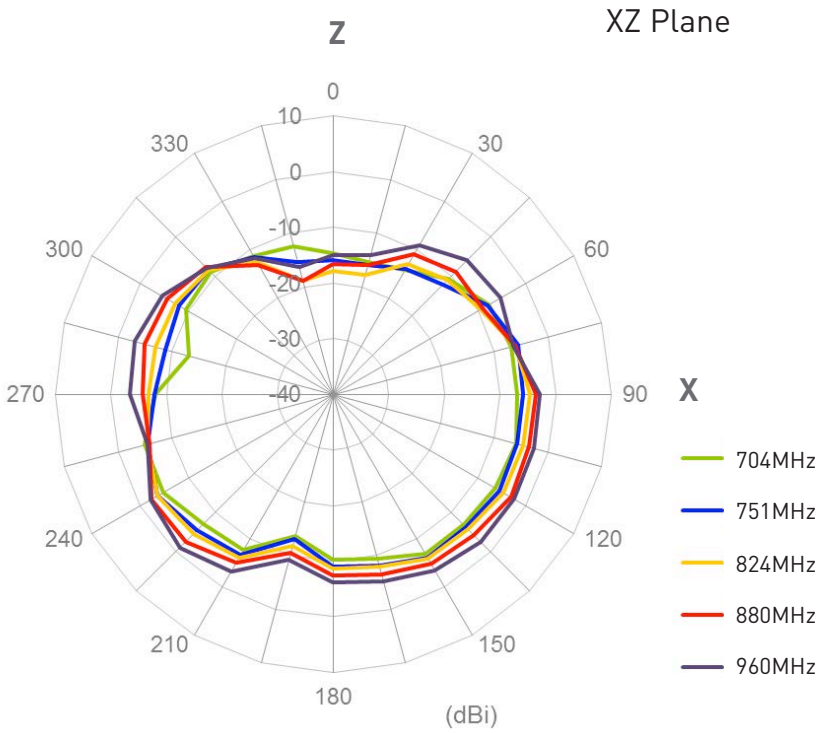


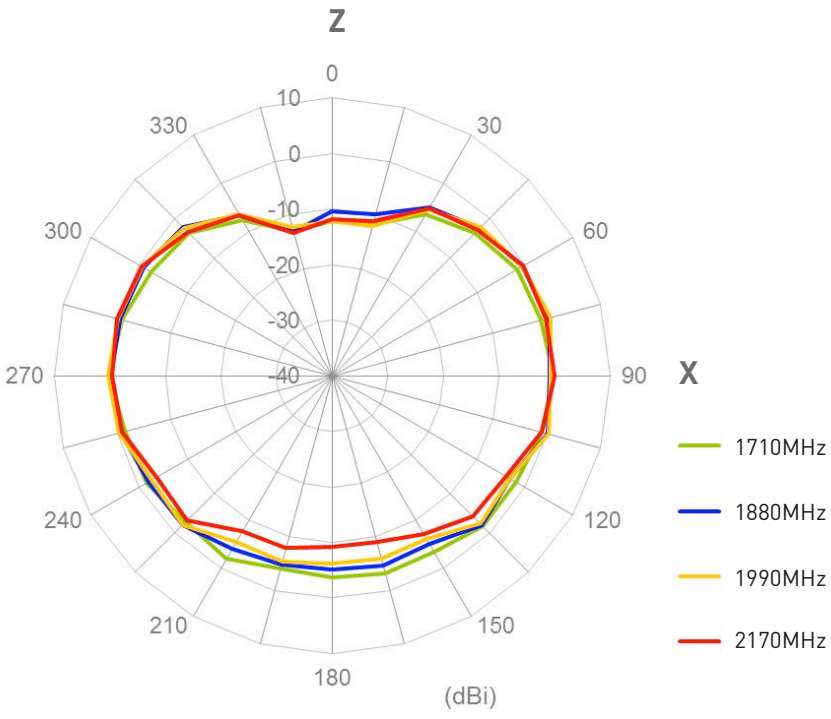


4.1.1 Radiation Patterns

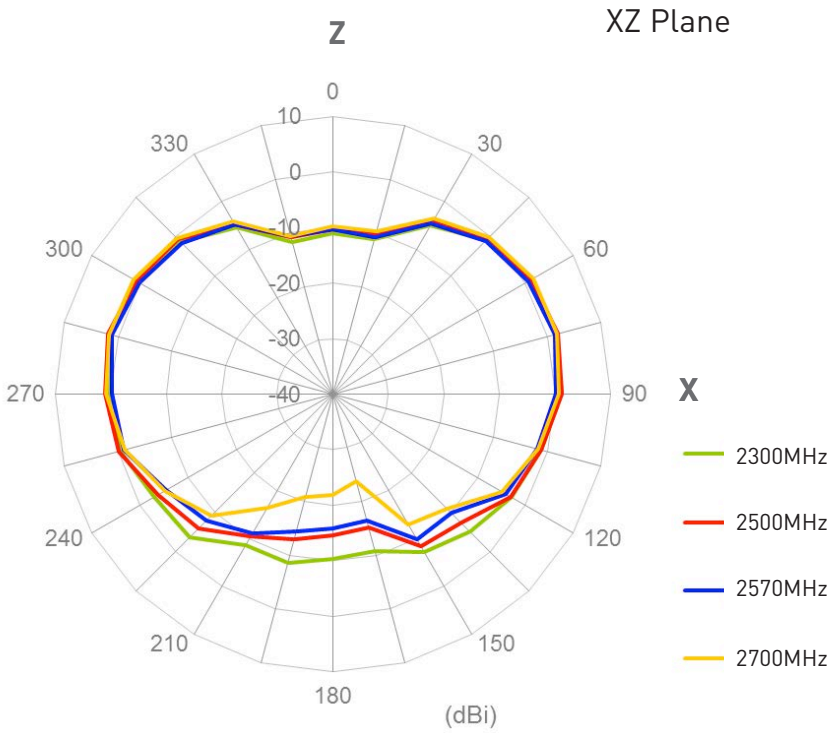


4.1.1 Radiation Patterns

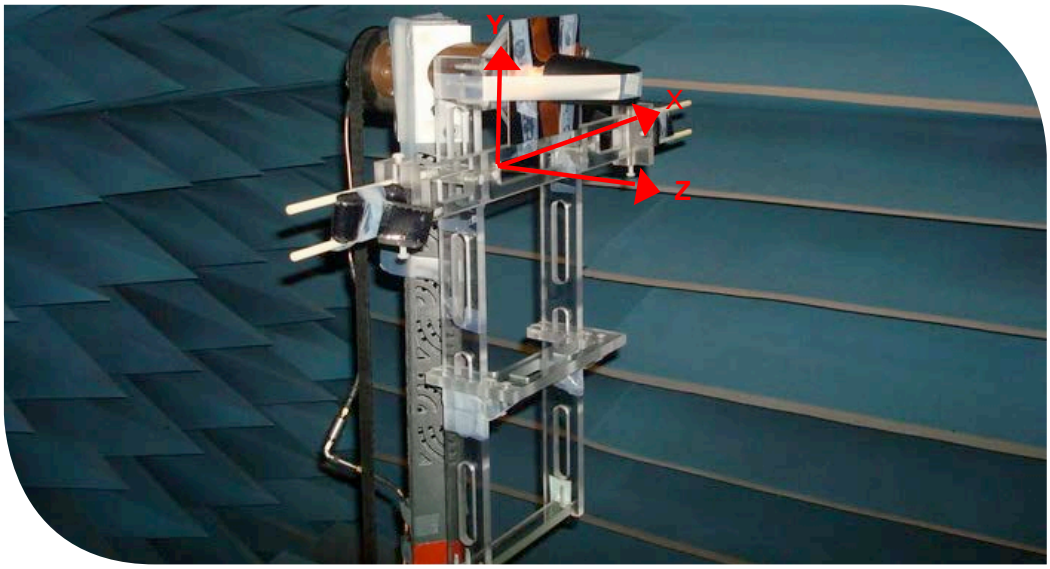




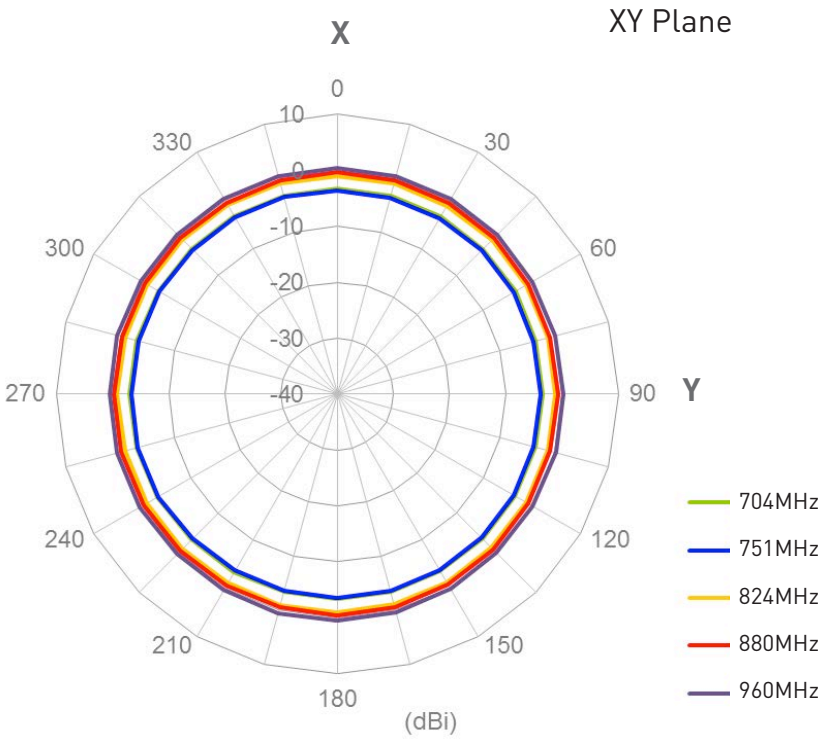
4.1.1 Radiation Patterns

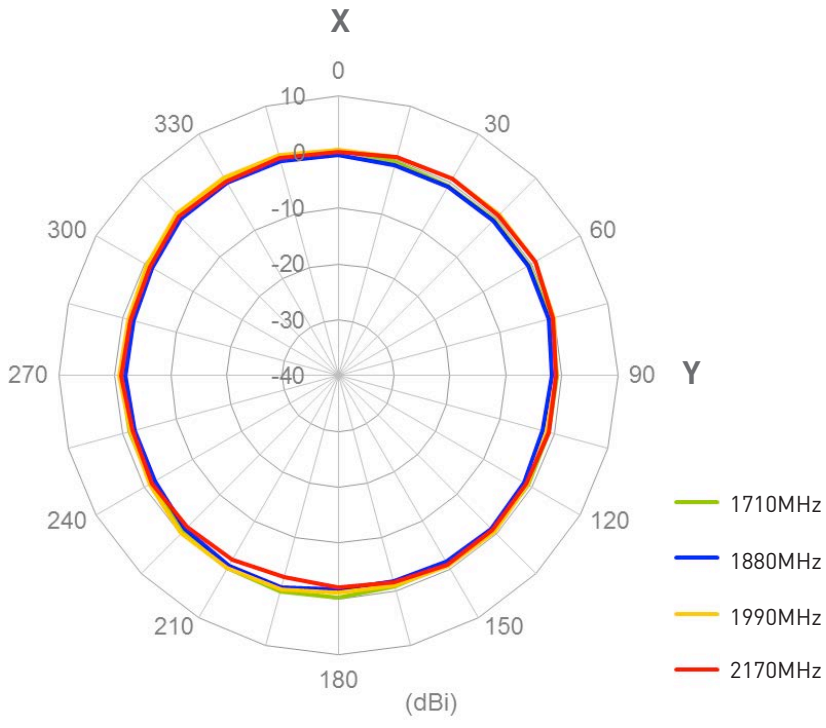


4.2 Antenna Setup (10 x 10cm Metal Ground Plane)



4.2.1 Radiation Patterns





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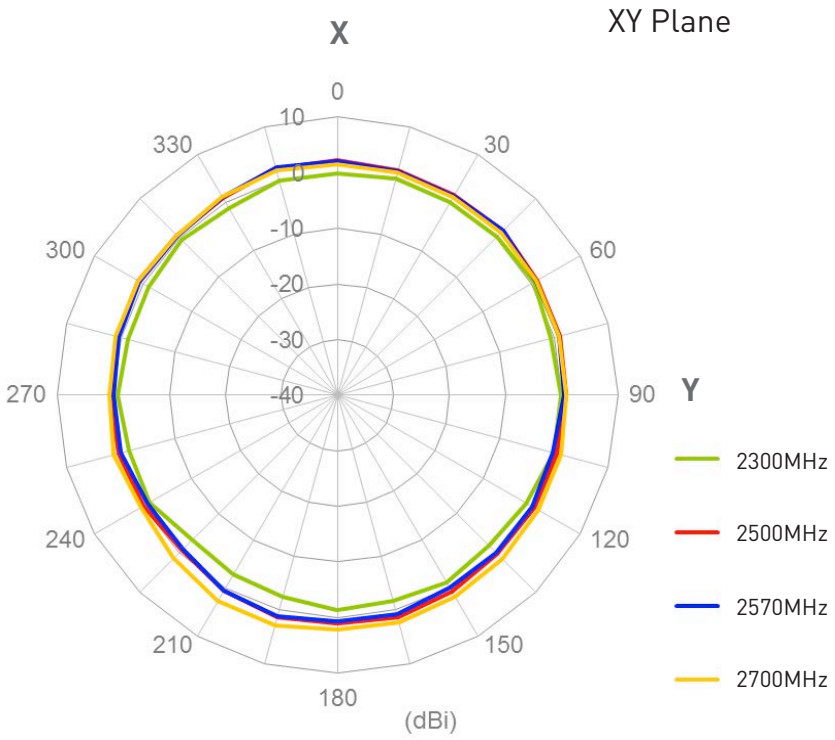

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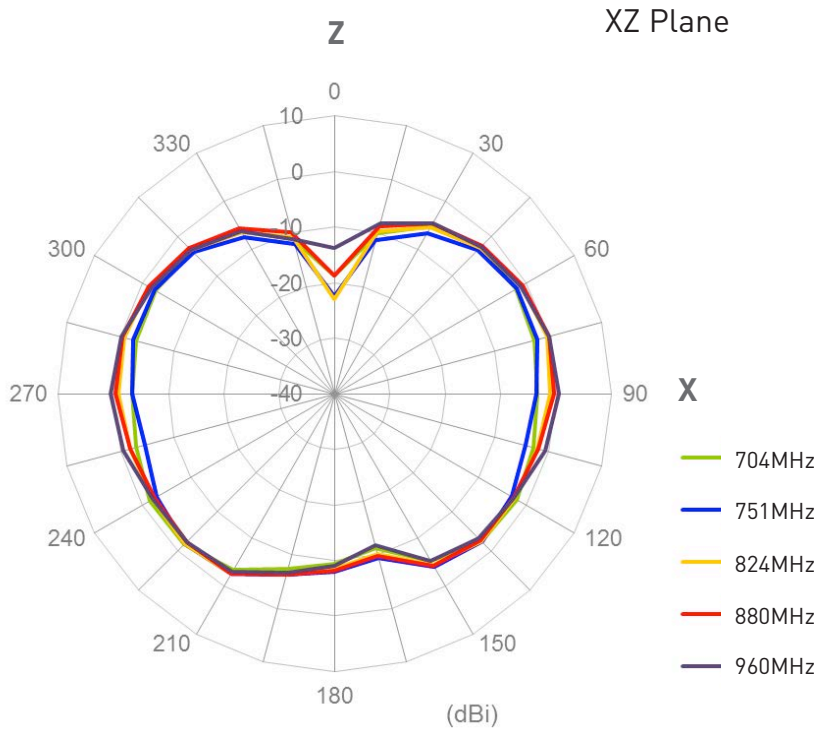

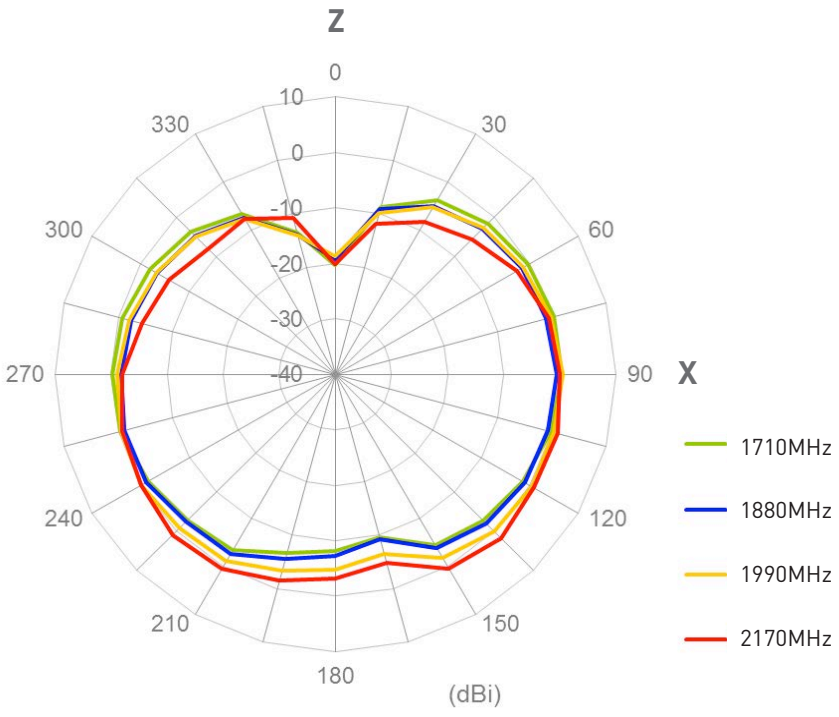

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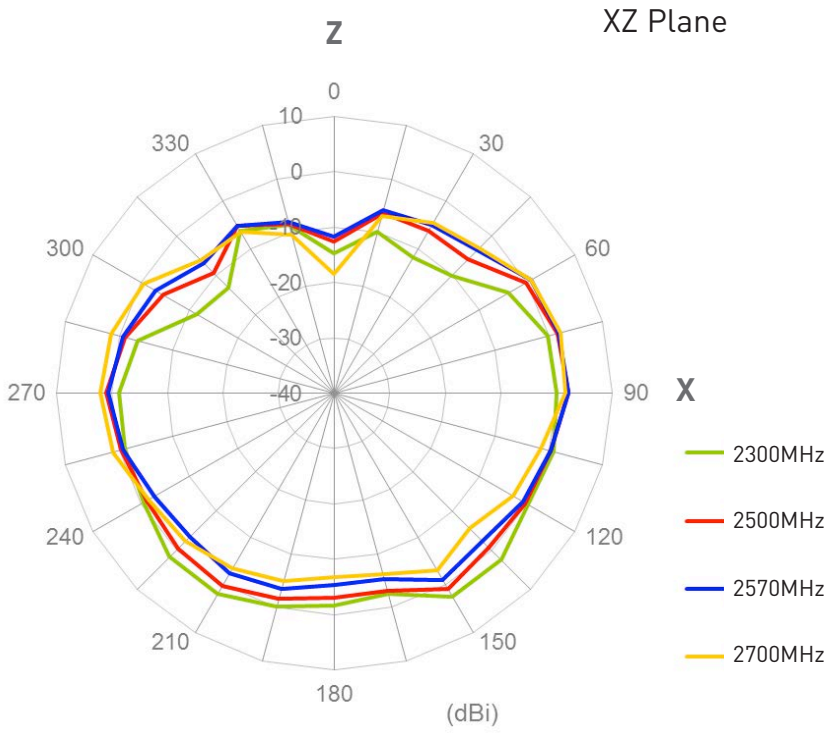
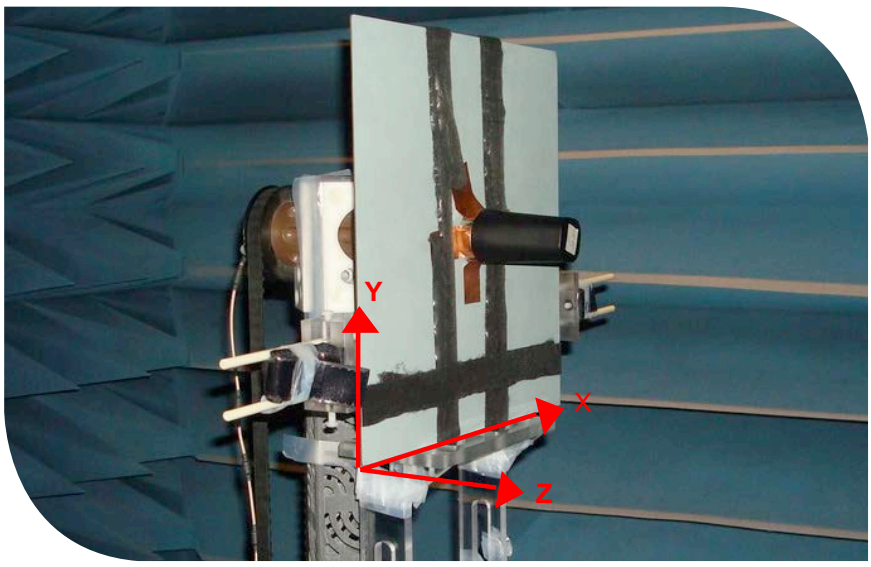


4.3 Antenna Setup (30 x 30cm Metal Ground Plane)



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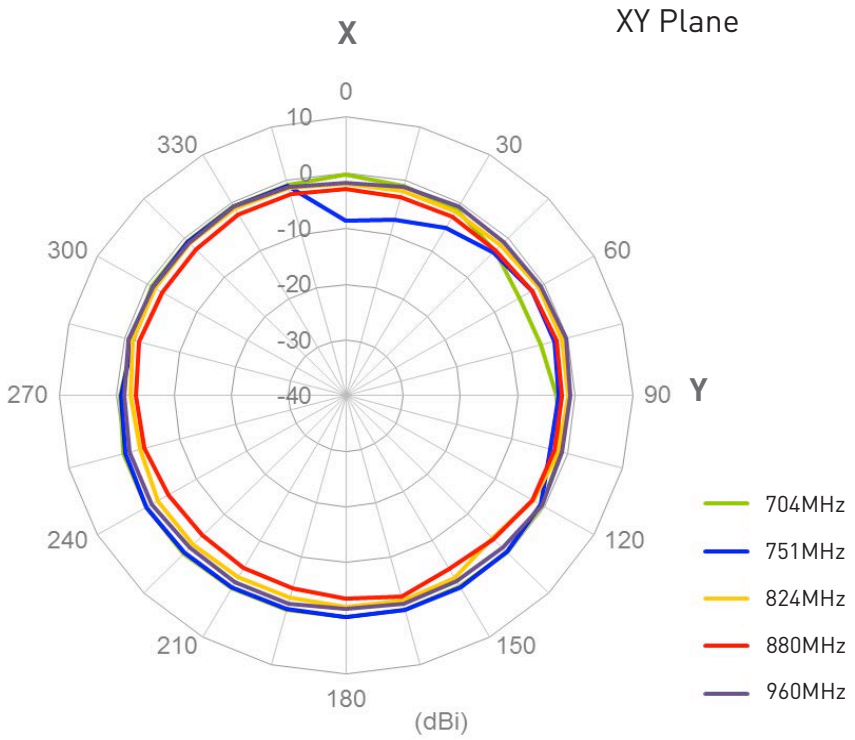

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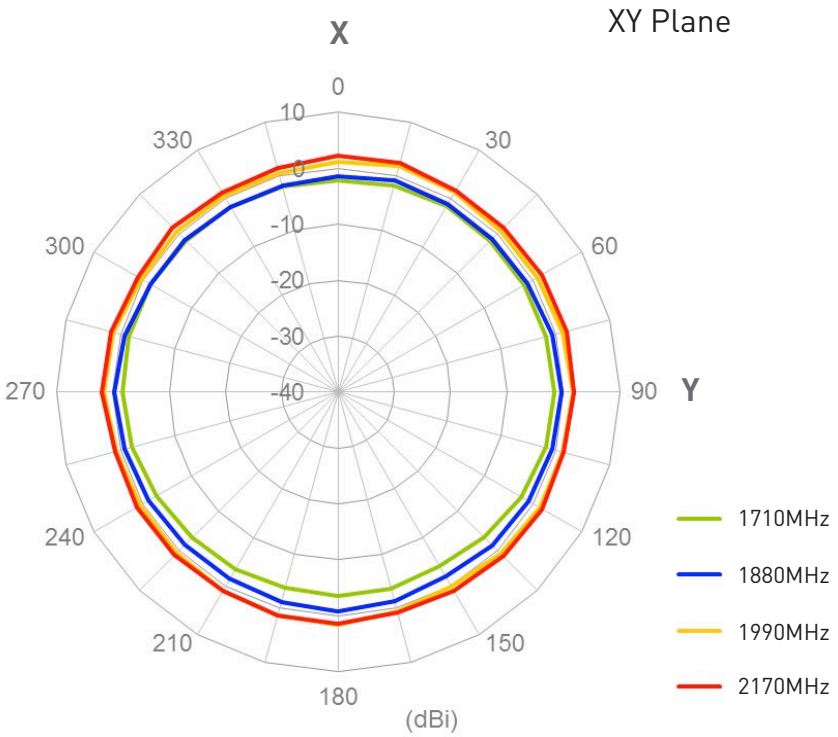

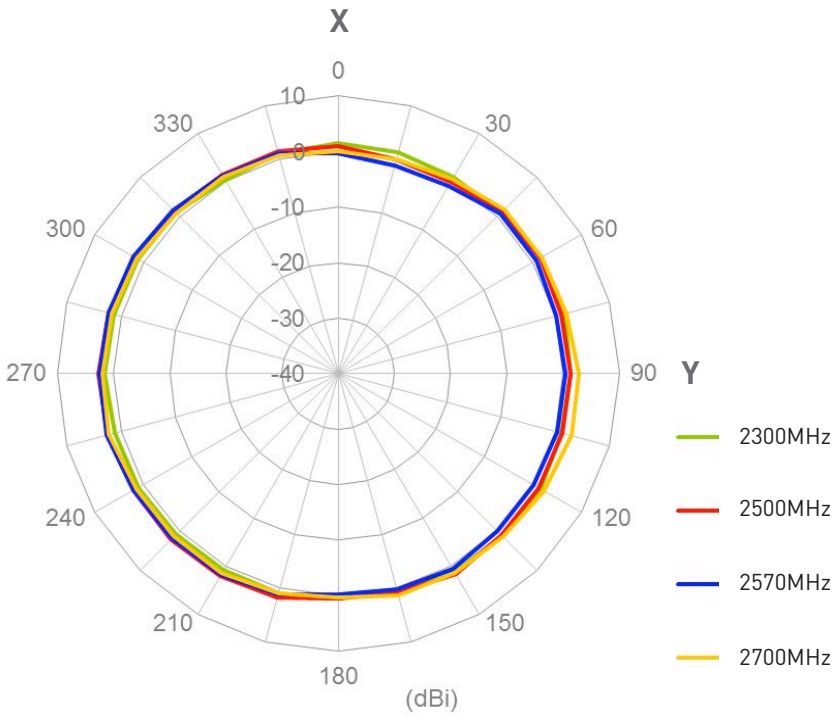

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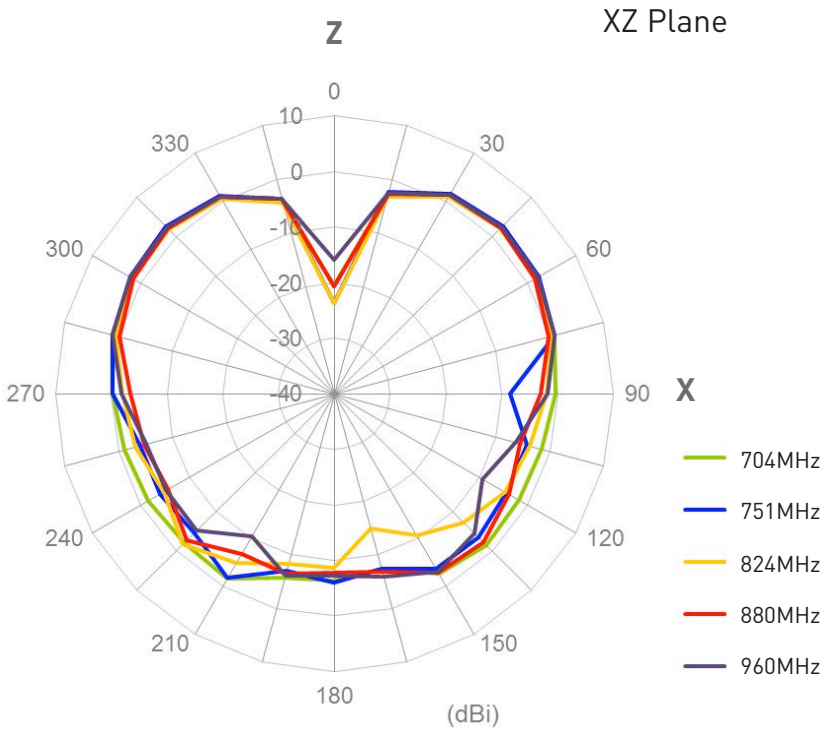

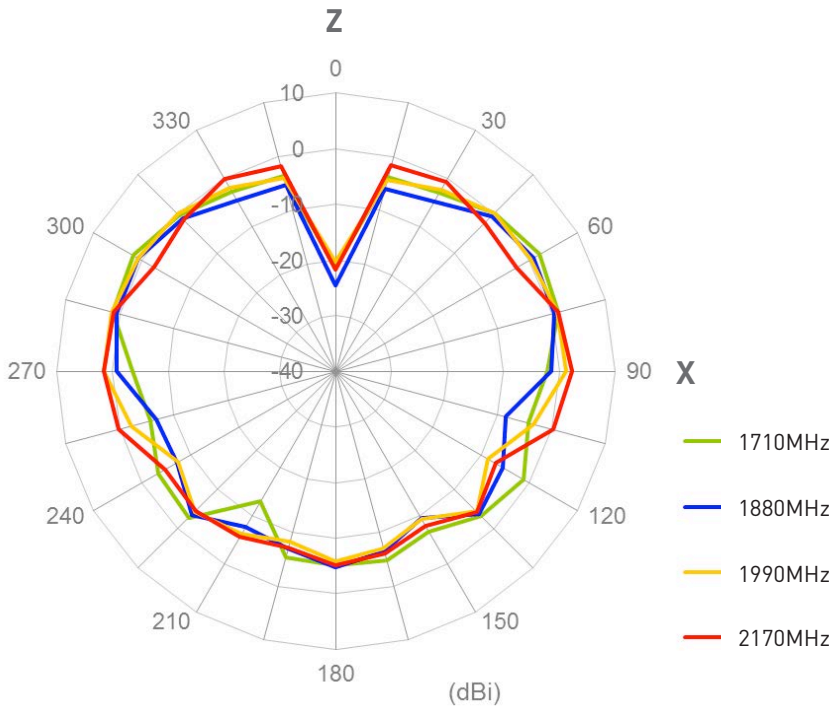

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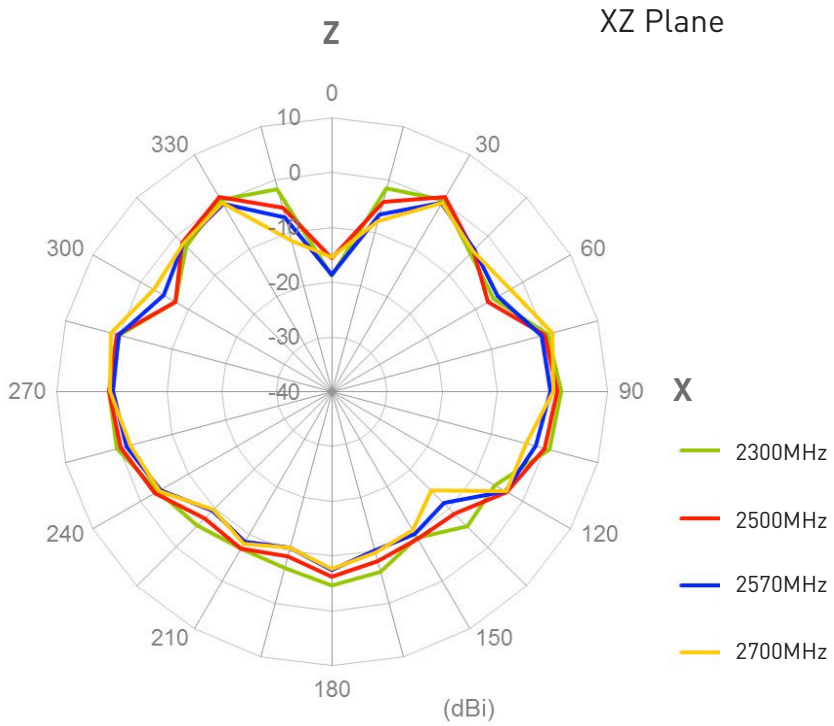
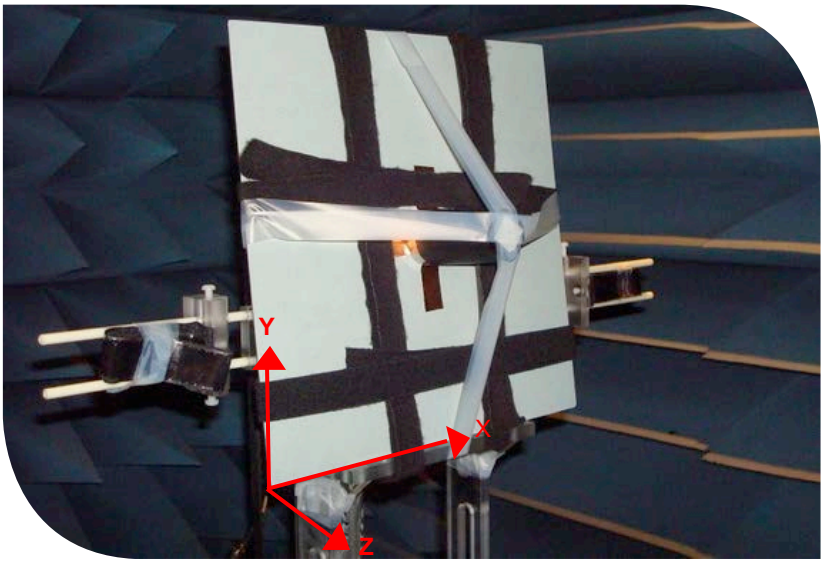
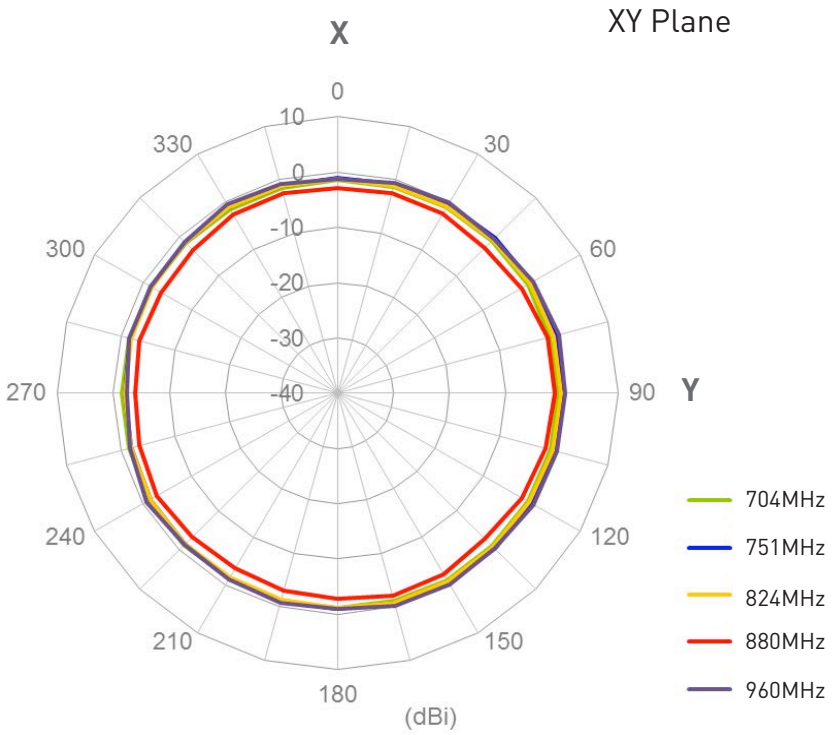
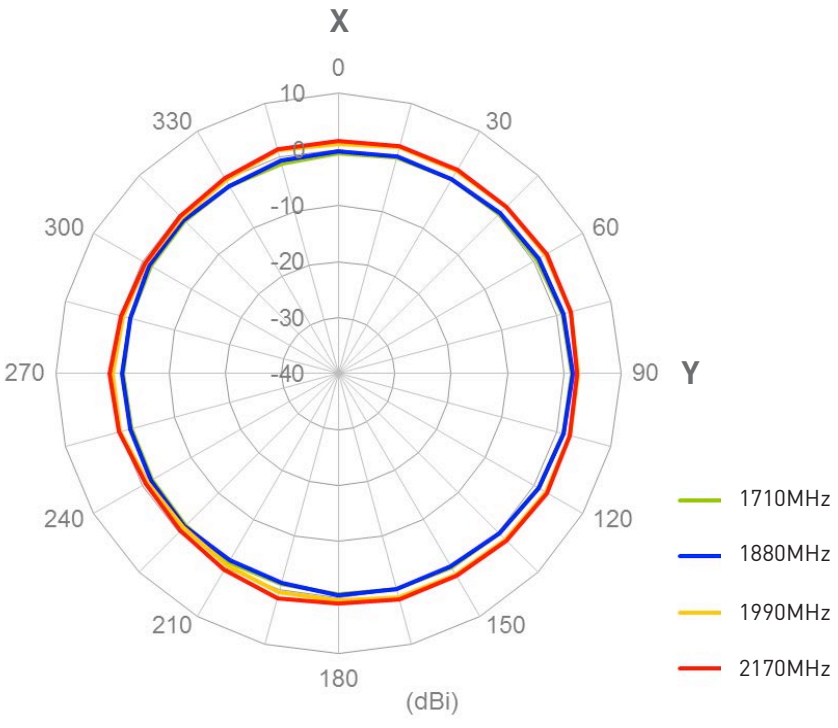


4.4 Antenna Setup (50 x 50cm Metal Ground Plane)

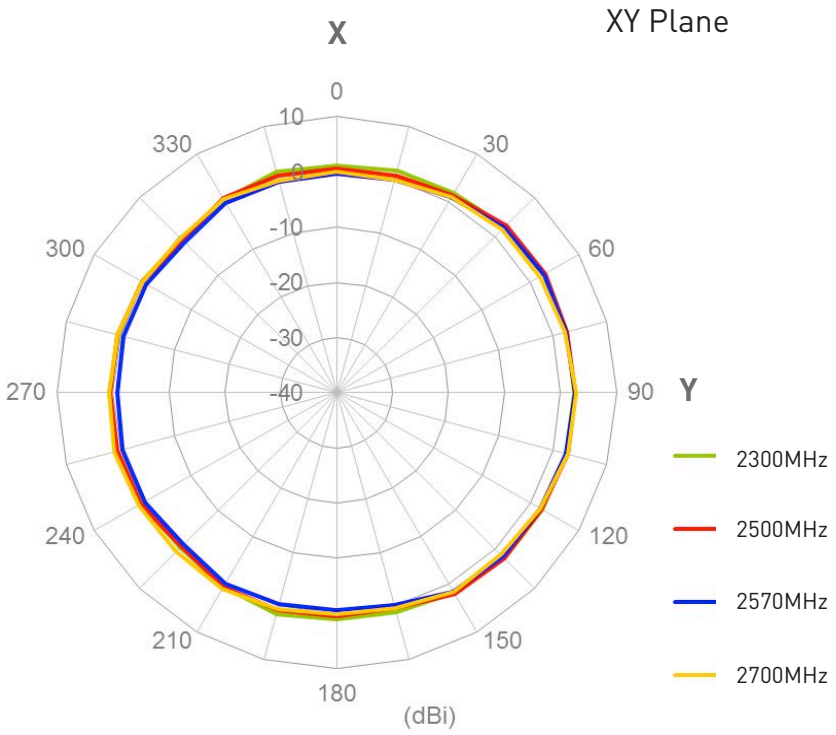


4.4.1 Radiation Patterns





4.4.1 Radiation Patterns



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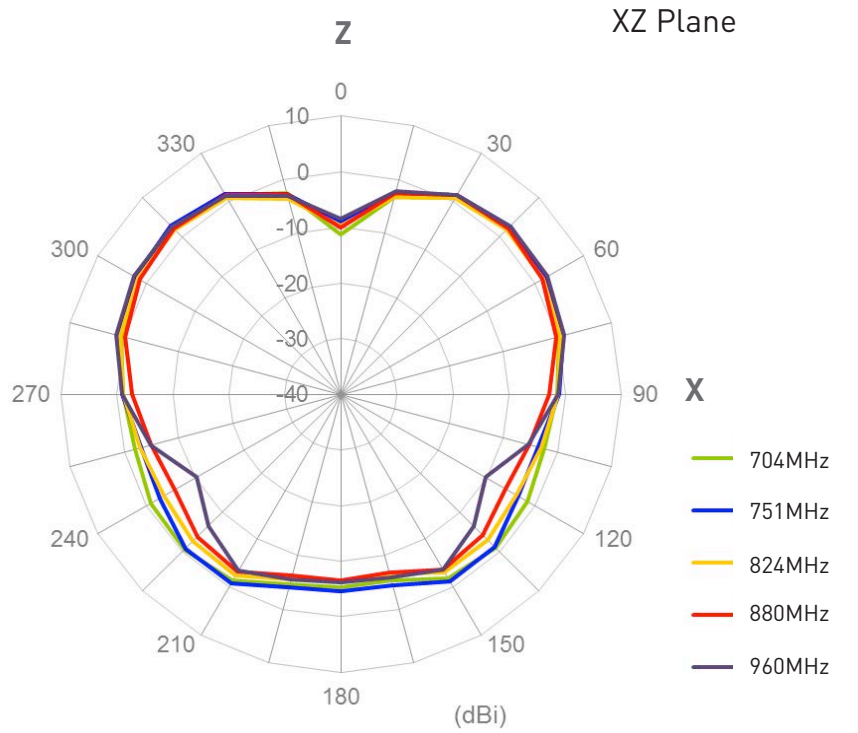

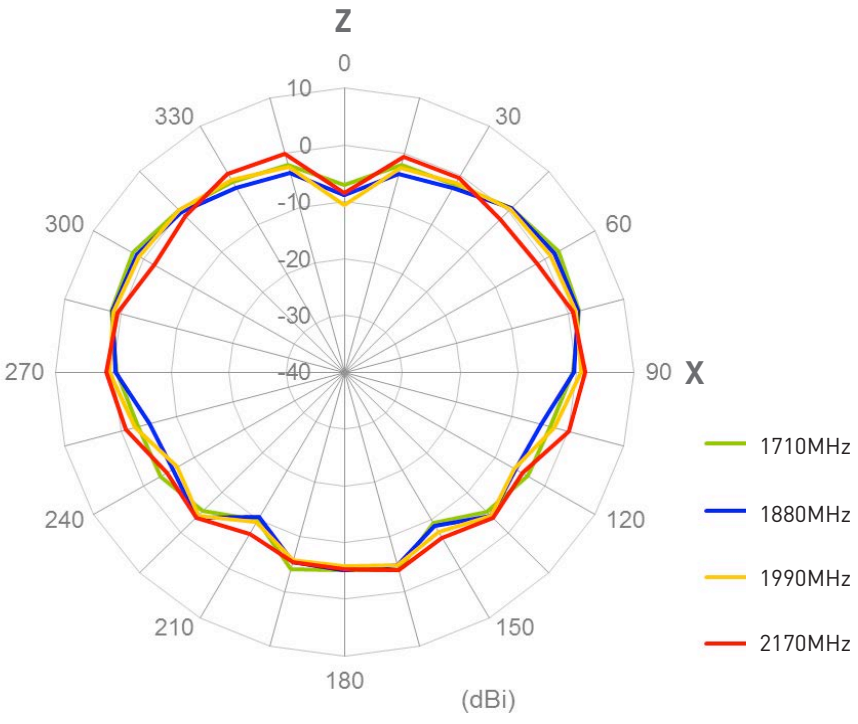

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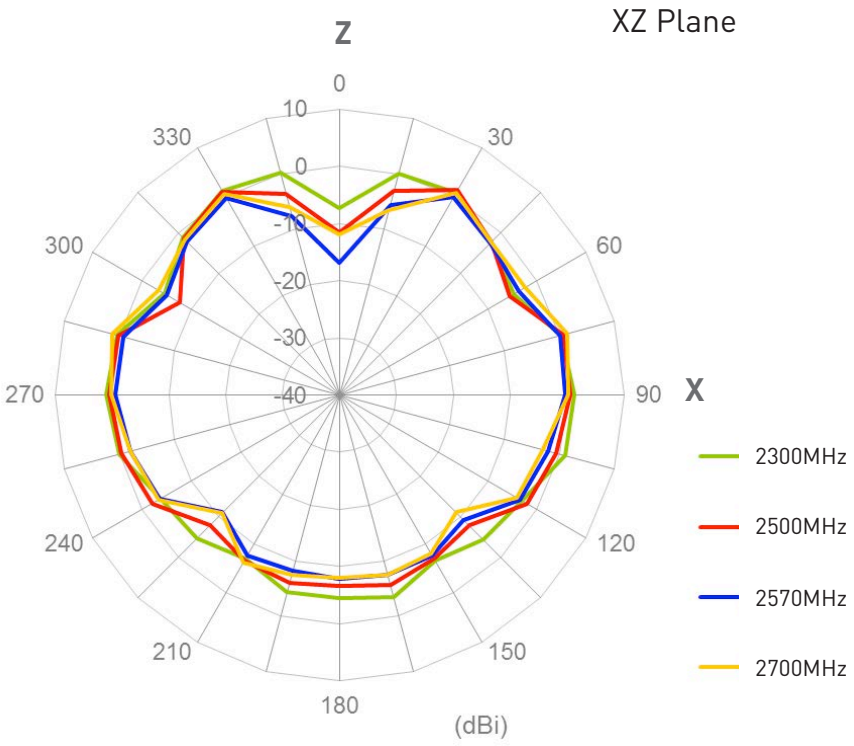
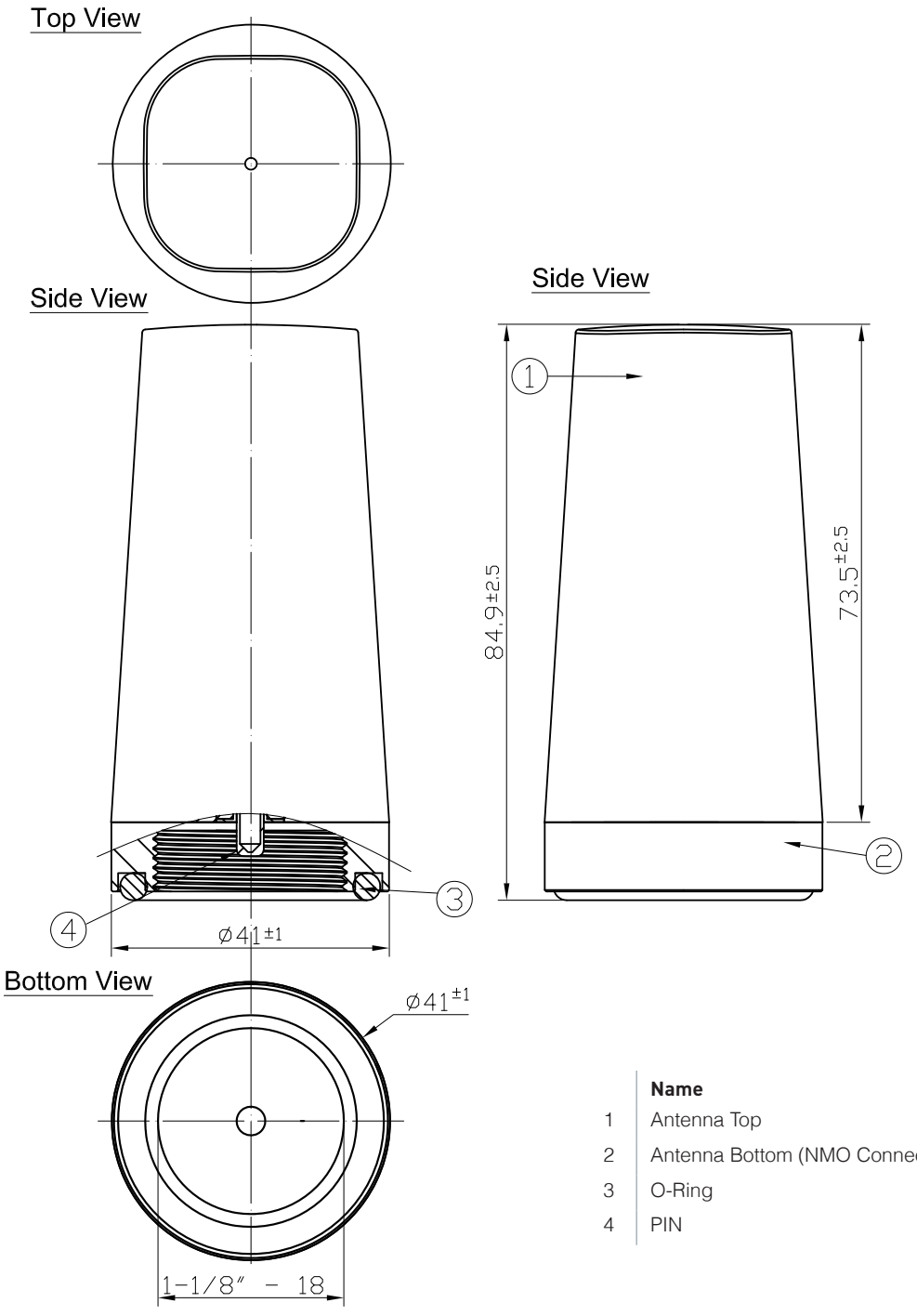
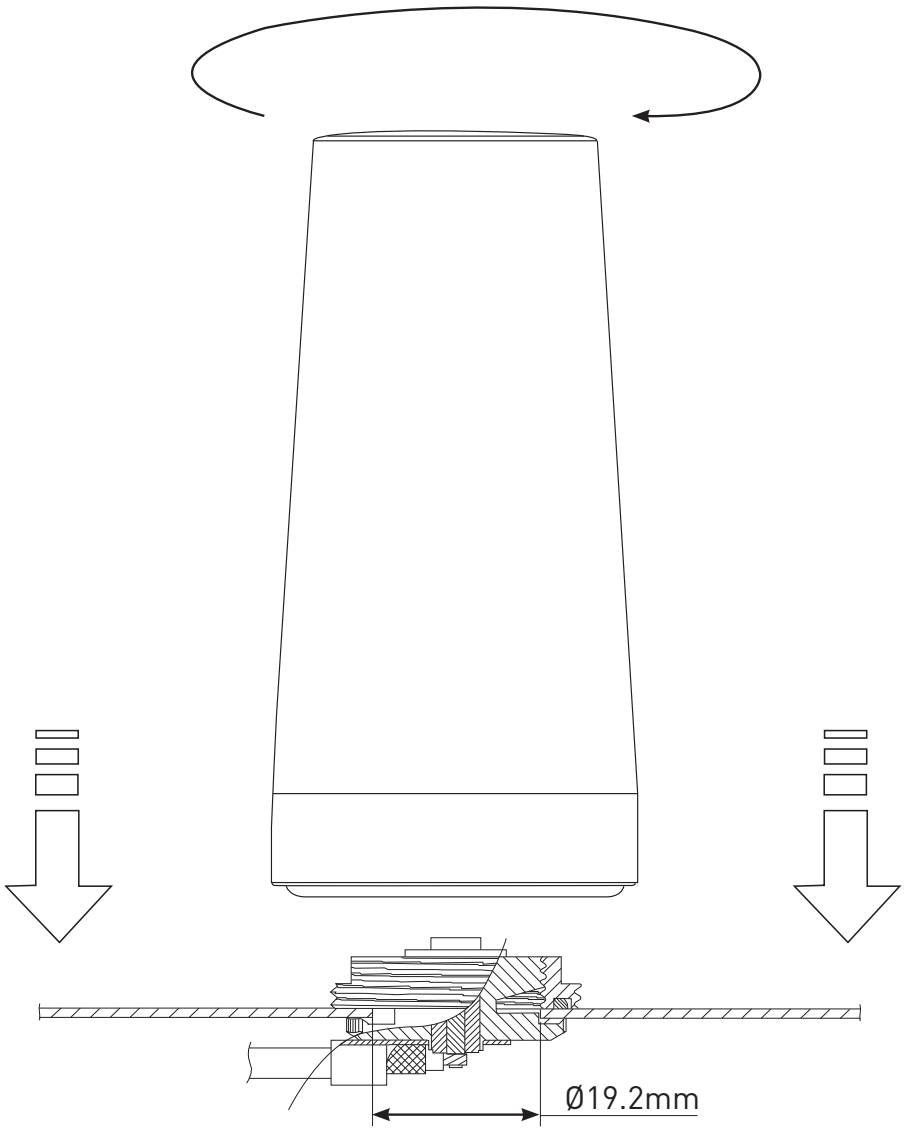


5. Drawing



	Name	Material	Finish	QTY
1	Antenna Top	PC+PBT	White	1
2	Antenna Bottom (NMO Connector)	SUS	N/A	1
3	O-Ring	NBR	Red	1
4	PIN	Brass	Gold	1

6. Installation



Recommended torque for mounting is 95Nm or 70ft lbs
Maximum torque for mounting is 135.6Nm or 100ft lbs

7. Packaging

1 pcs antenna per PE bag

2 pcs EPE foam on top and bottom

1 pcs antenna per box