SPECIFICATION
PATENT PENDING

Part No. : **TG.30.8112**

Product Name : Apex Black Right Angle TG.30
Ultra-Wideband 4G LTE Antenna

Feature : LTE / GSM / CDMA /DCS /PCS / WCDMA / UMTS /
HSDPA / GPRS / EDGE /GPS /Wi-Fi
698MHz to 960MHz, 1575.42MHz,
1710MHz to 2700Mhz
Patent Pending
Typical 70%+ Efficiency and 3dBi+ Peak Gain
Dipole Swivel Terminal Antenna
90° termination with SMA(M) Connector
RoHS Compliant

1. Introduction

The Apex Black Right Angle TG.30 Dipole LTE Antenna – is primarily designed for use with 4G LTE modules and devices that require the highest possible efficiency and peak gain to deliver best in class throughput on all major cellular (2g/3g/4g) bands worldwide for access points, terminals and routers. The antenna is a ground plane independent antenna with a SMA (M) connector and swivel mechanism that allows the antenna part to be rotated. The Apex exhibits high efficiency across the ultra wide band and is backward compatible with 2G and 3G cellular applications such as GSM, LTE, UMTS, WI-FI and even has GPS included for Assisted GPS and/or E911 applications. With very high efficiency on every cellular band globally it is an ideal solution for any device requiring high, reliable performance. It is also guaranteed to meet any type approval or carrier certification requirements from a RF standpoint. It is an omni-directional antenna and the radiation patterns display this and are stable across all bands.

It has a quality robust IP67 UV resistant housing (SMA connector is IP65) for use with wireless terminals. The swivel mechanism allows the antenna part itself to be orientated in different directions and can help avoid touching off other antennas or objects close by as well as helping with isolation by orientating the antenna in different directions in MIMO systems for when other TG.30 antennas are present on the same device.

This patent pending antenna is also available in White and straight and right angle configurations.

2. Specification

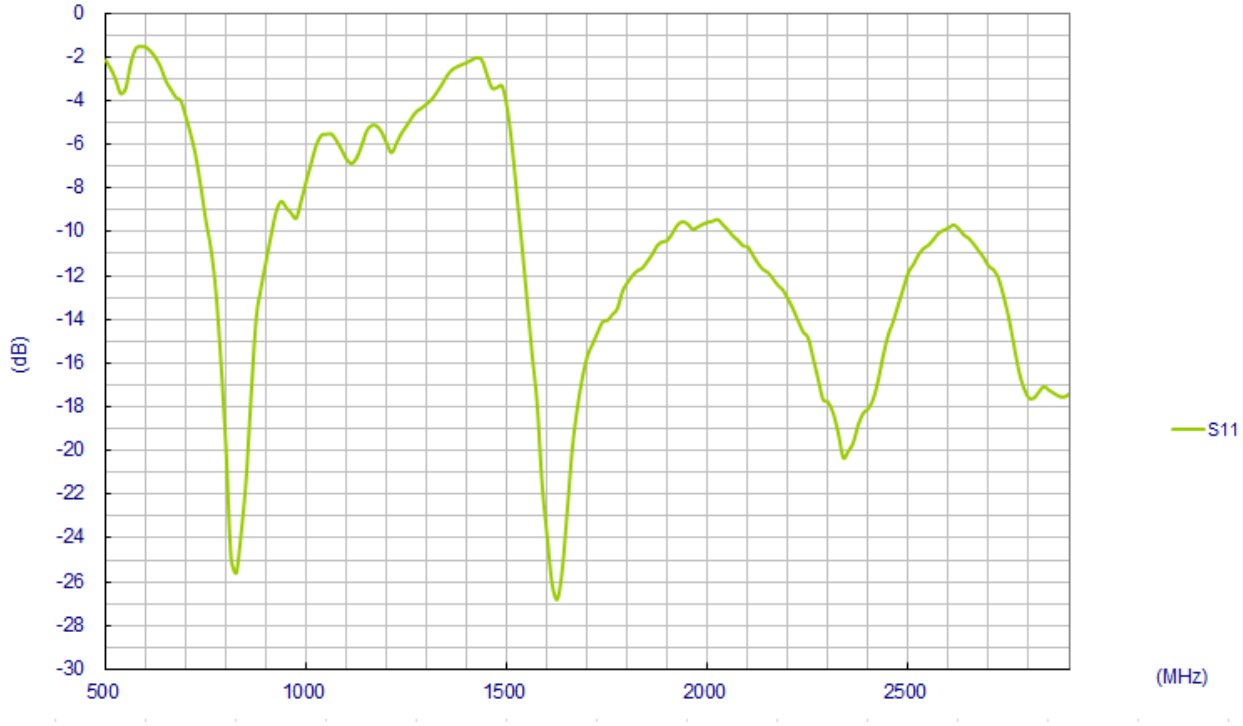
ELECTRICAL							
Frequency (MHz)	700~800	824~960	1575.42	1710 ~ 1880	1850 ~ 1990	1710 ~ 2170	2400~2700
Peak Gain (dBi)							
Free Space	2.7	2.1	0.3	3.5	3.6	3.6	5.3
30x30cm GP center	4.3	5.3	5.3	6.7	6.8	7.5	8.1
30x30cm GP edge	4.4	2.4	0.5	1.9	2.0	2.5	3.2
PCB edge	3.2	1.9	2.4	3.2	3.3	3.6	4.7
Average Gain							
Free Space	-0.7	-1.2	-1.2	-0.4	-0.4	-0.2	-0.6
30x30cm GP center	-2.8	-1.0	-2.4	-1.6	-1.8	-1.3	-1.2
30x30cm GP edge	-0.1	-4.3	-2.5	-2.0	-2.0	-2.0	-2.2
PCB edge	0.8	-1.9	-0.9	-0.6	-0.6	-0.6	-0.8
Efficiency							
Free Space	85%	75%	76%	90%	90%	90%	87%
30x30cm GP center	52%	39%	57%	70%	65%	74%	75%
30x30cm GP edge	91%	64%	56%	62%	62%	63%	60%
PCB edge	86%	87%	81%	86%	86%	86%	84%
Impedance	50Ω						
Polarization	Linear						
Radiation Pattern	Omni						
Input Power	10 W						

MECHANICAL	
Casing	UV Resistant PC/ABS
Connector	SMA Male

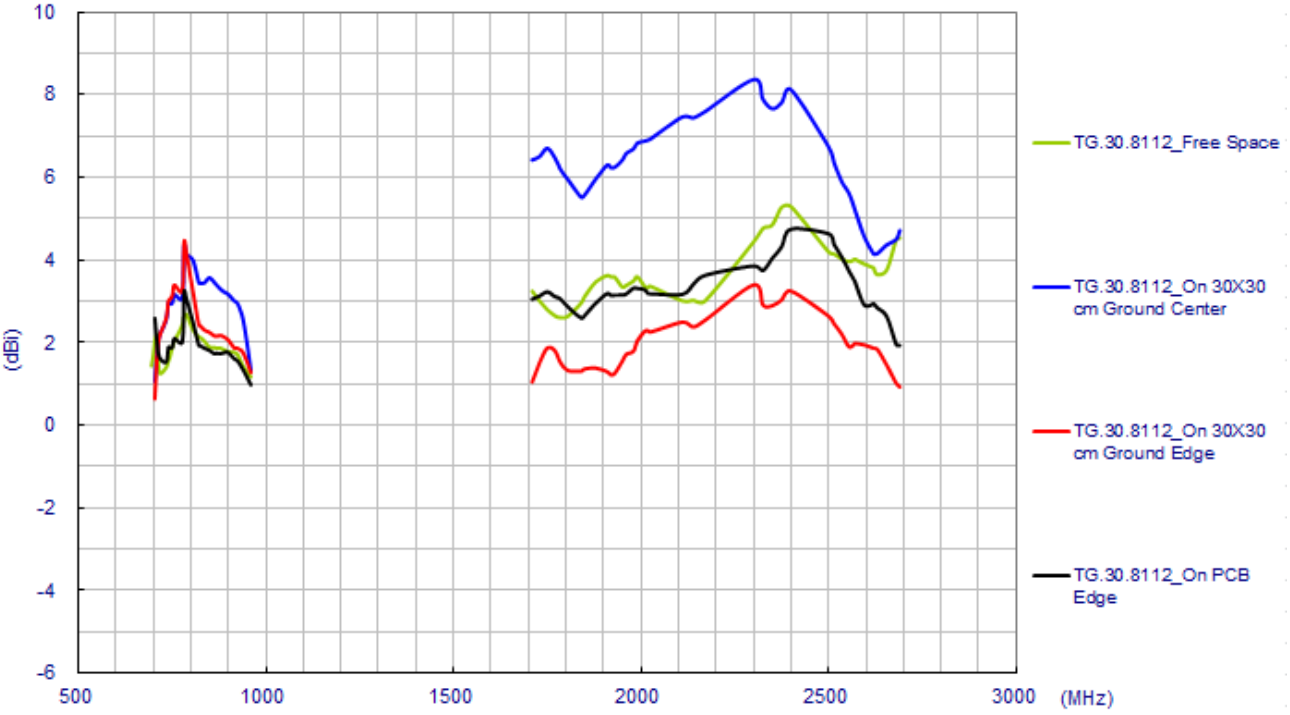
ENVIRONMENTAL	
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3. Antenna Characteristics

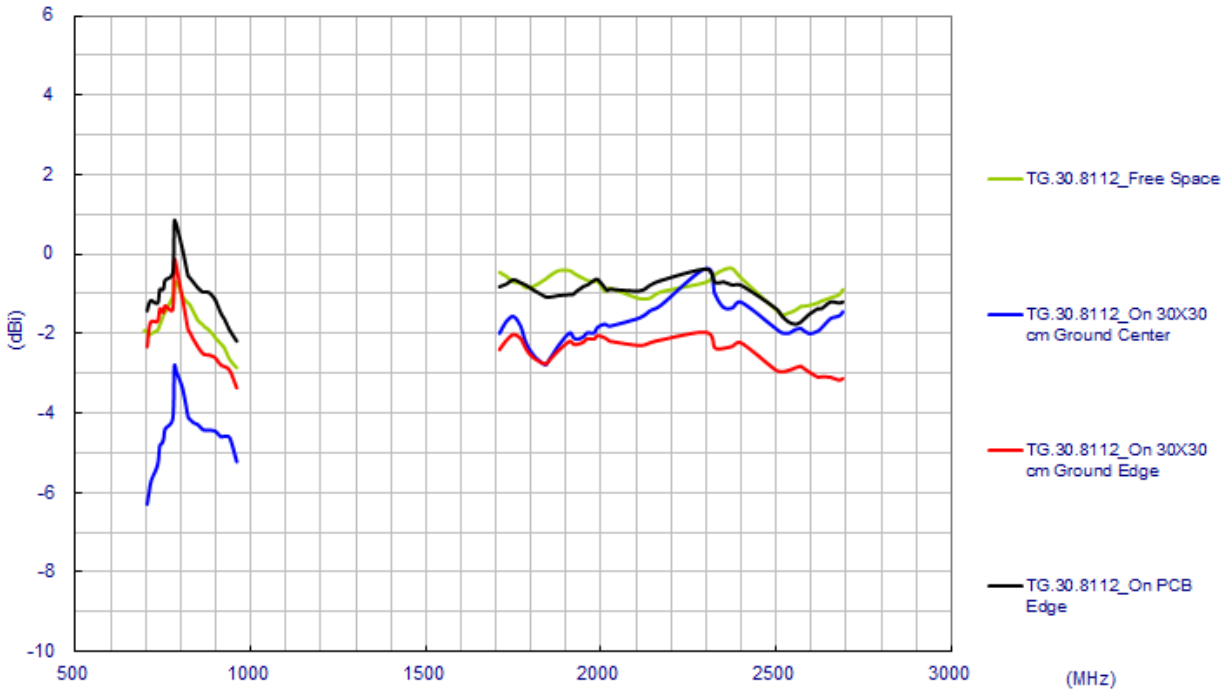
3.1 Return Loss



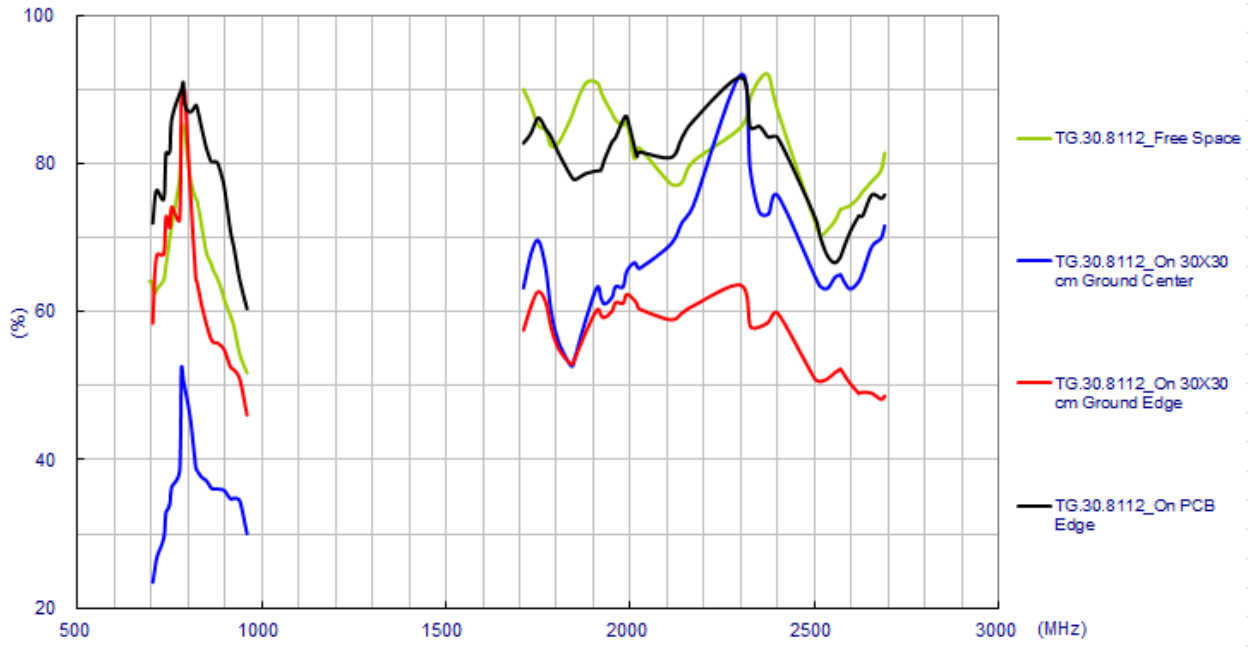
3.2 Peak Gain



3.3 Average Gain

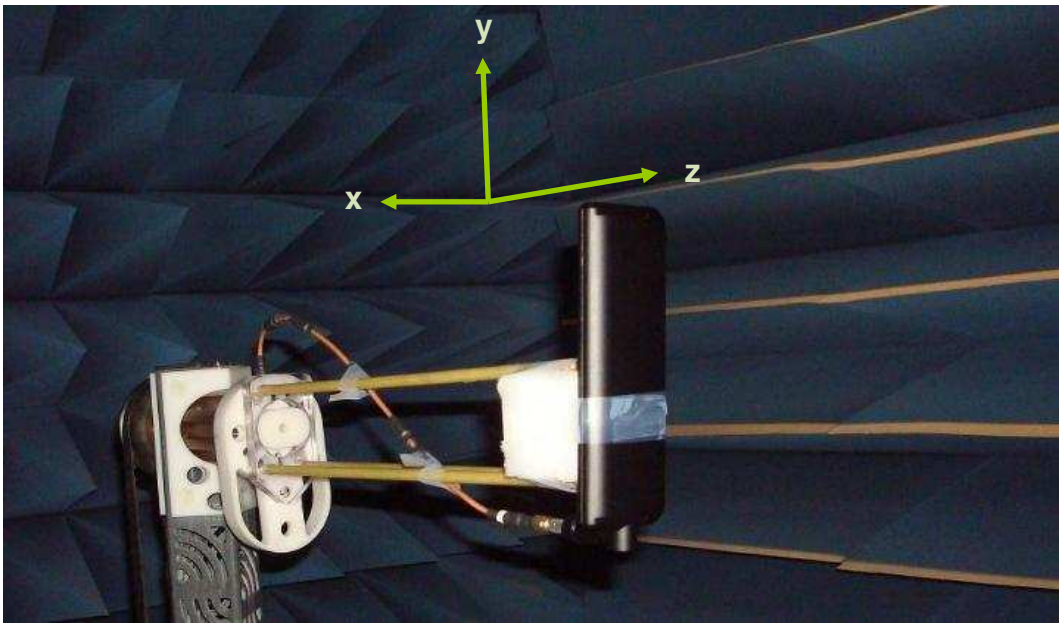


3.4 Efficiency



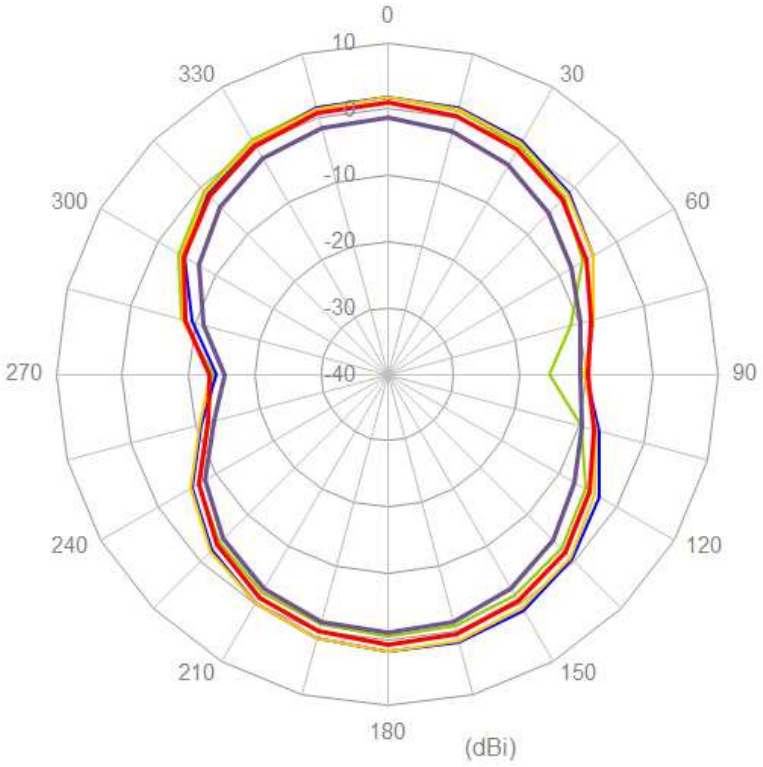
4. Antenna Radiation Patterns

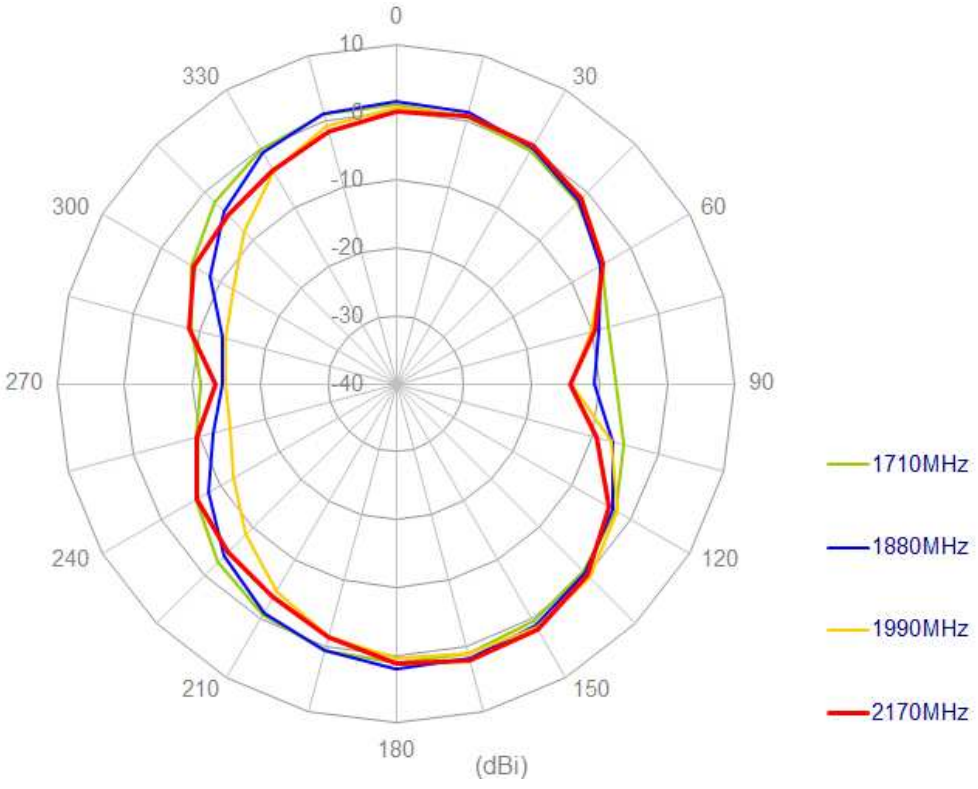
4.1 Antenna setup (Free Space)

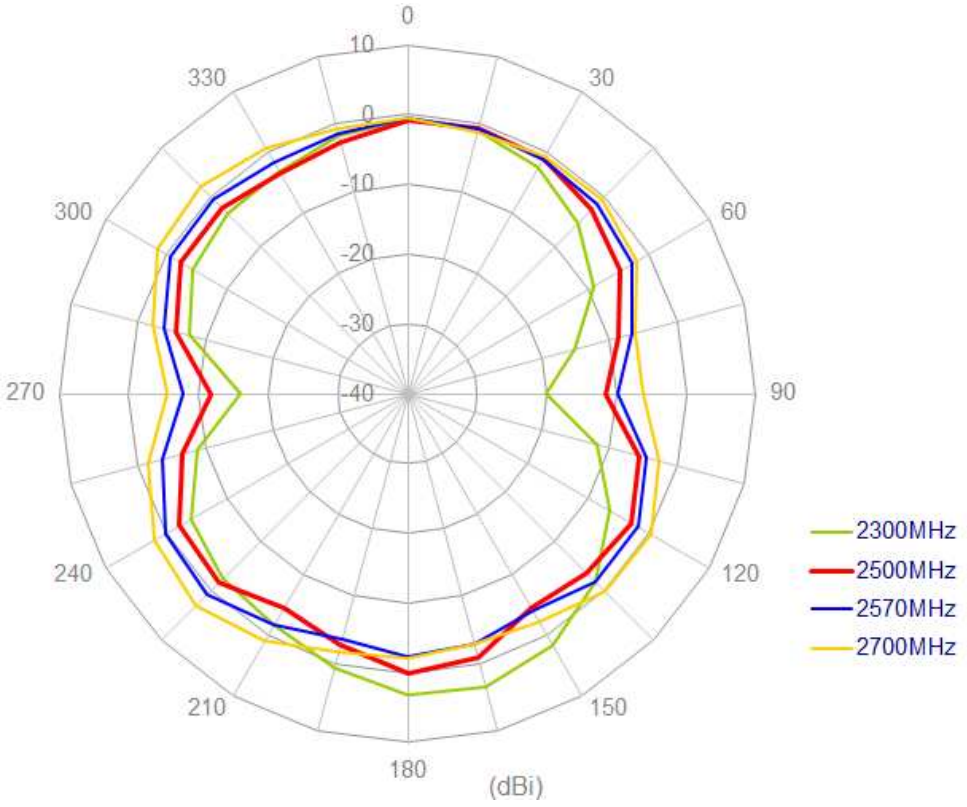


4.2 Radiation Patterns (Free Space)

XY plane



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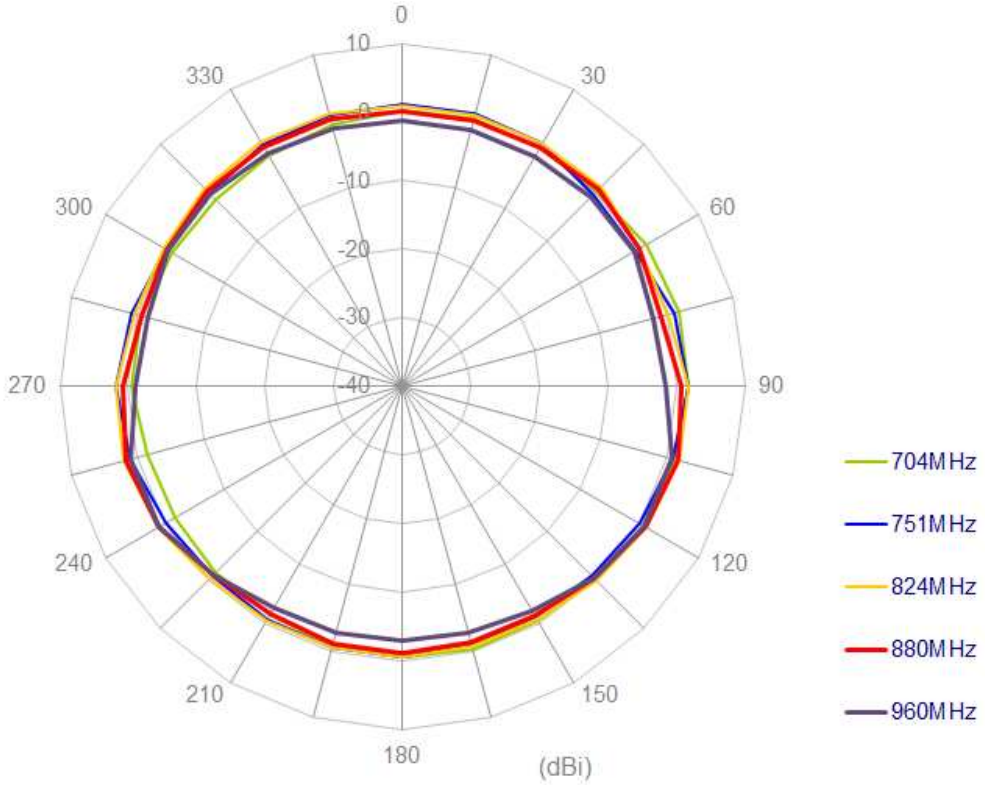
(dBi)
2300MHz
2500MHz
2570MHz
2700MHz

XZ plane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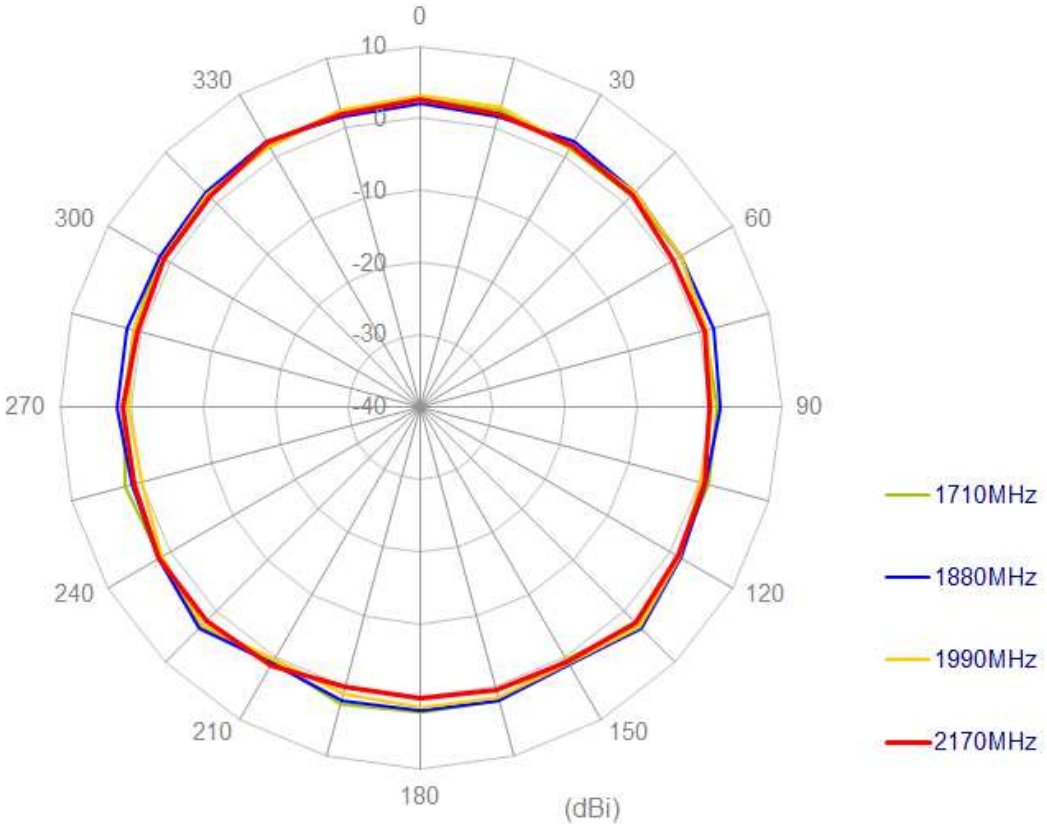
(dBi)
704MHz
751MHz
824MHz
880MHz
960MHz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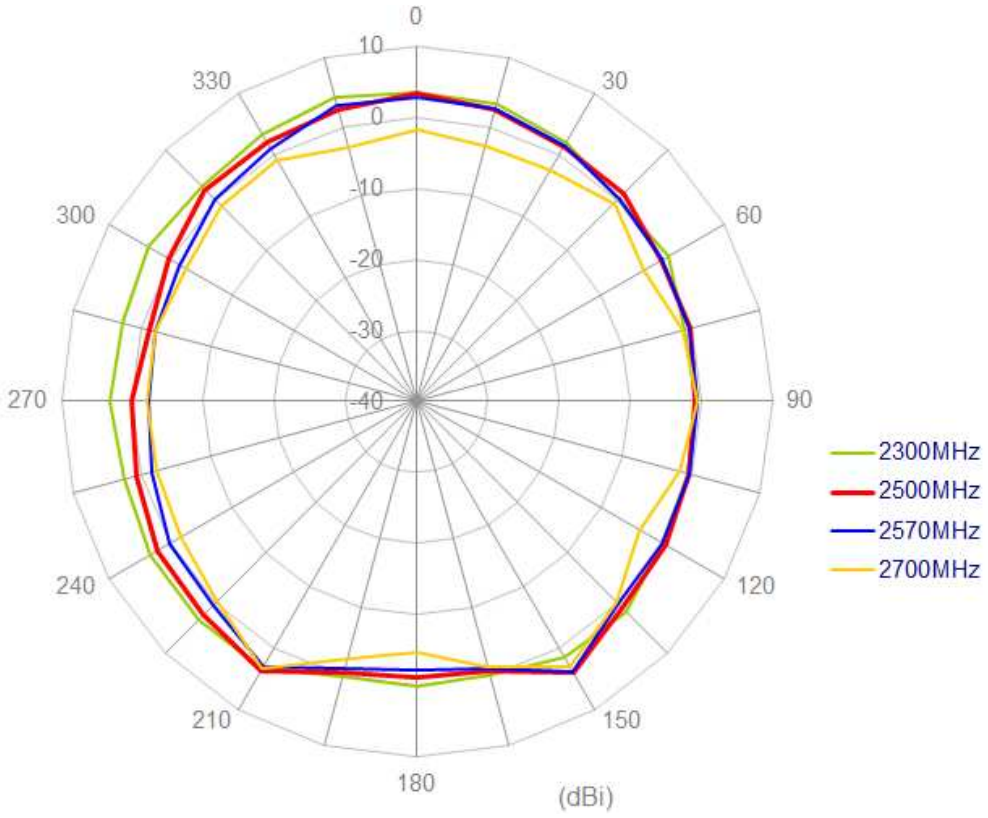
(dBi)
1710MHz
1880MHz
1990MHz
2170MHz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(dBi)
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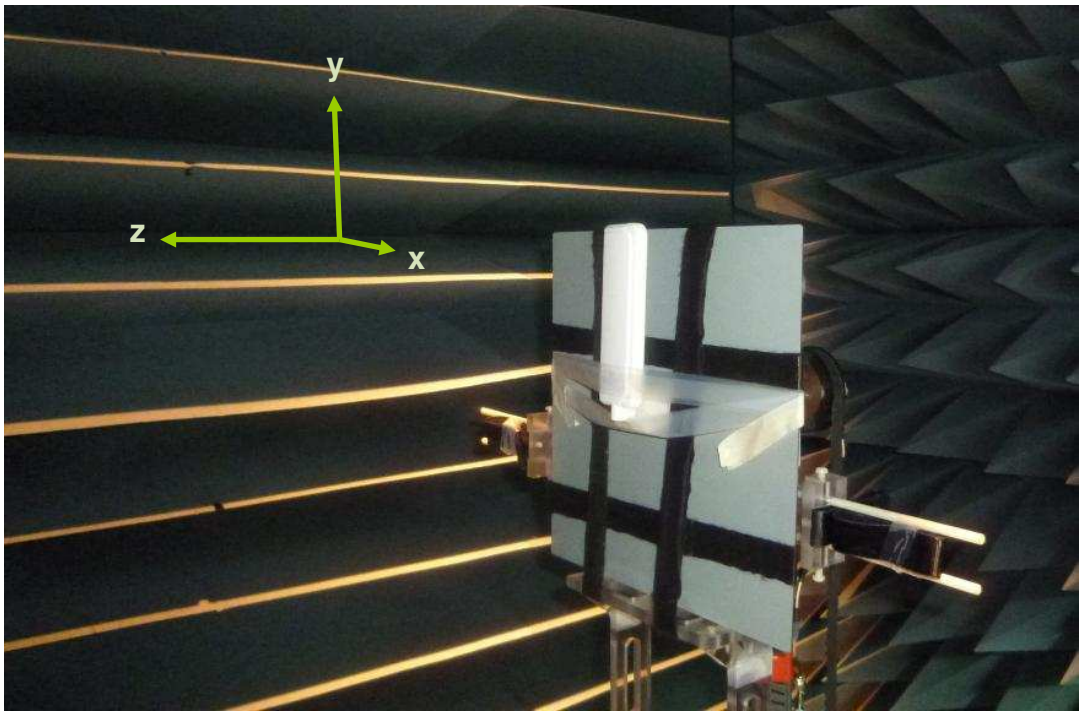
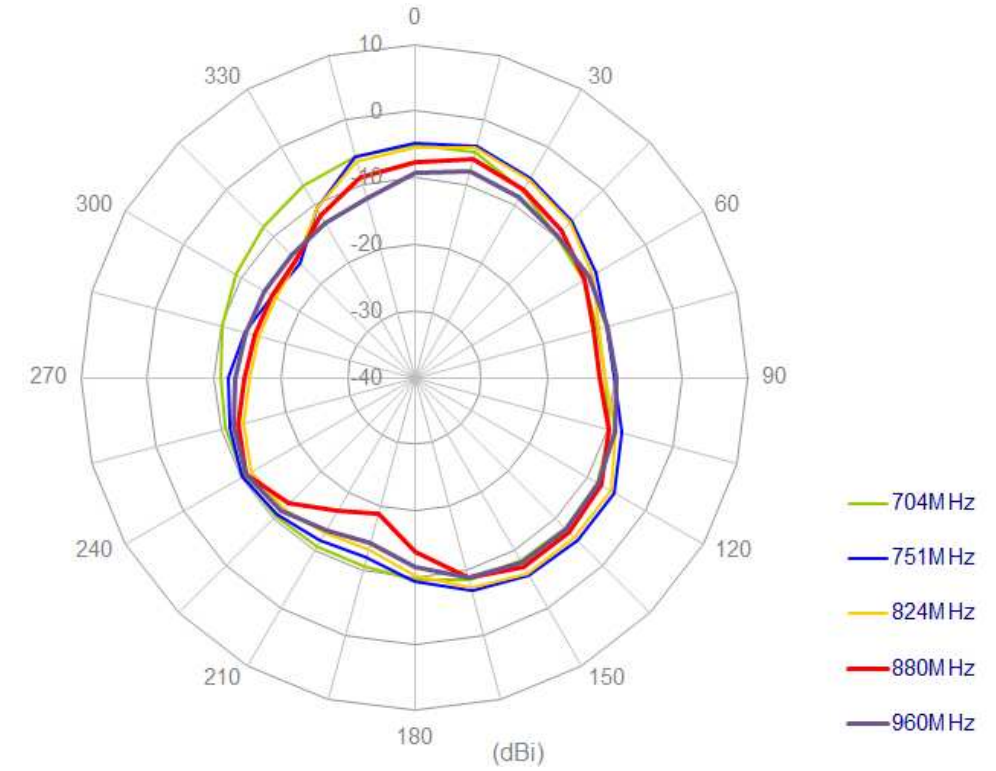
2500MHz
2570MHz
2700MHz

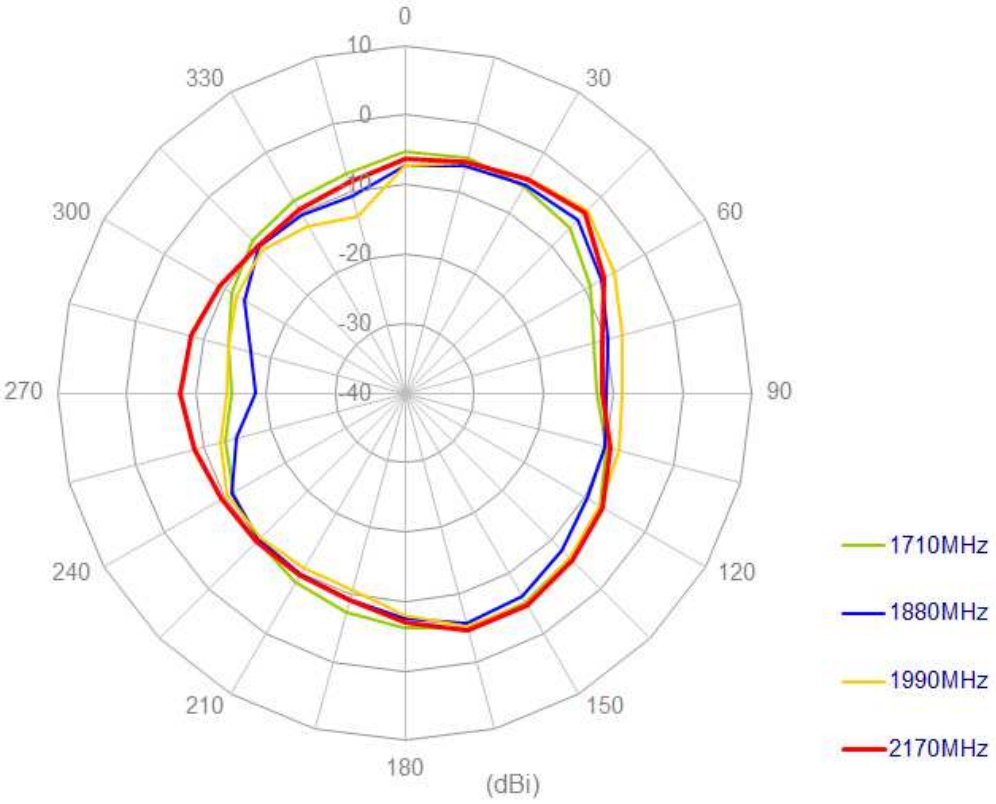
4.3 Antenna setup (On 300x300mm ground center)

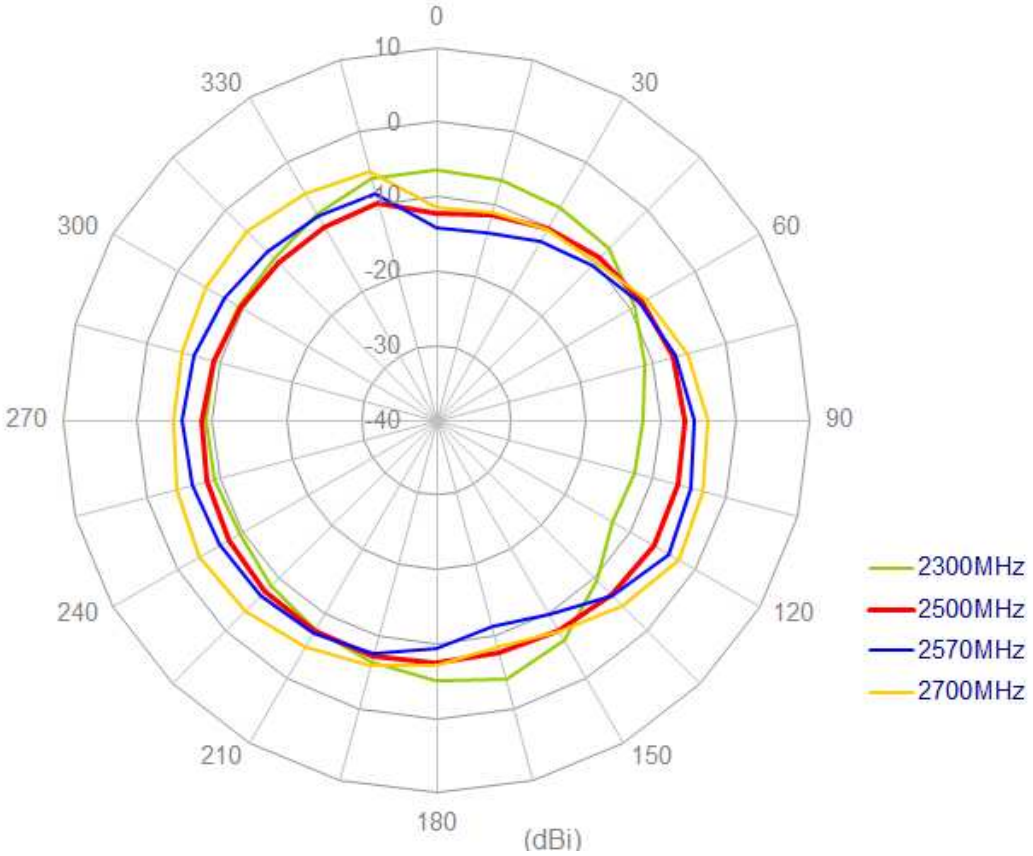


4.4 Radiation Patterns (On 300x300mm ground center)

XY plane



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(dBi)
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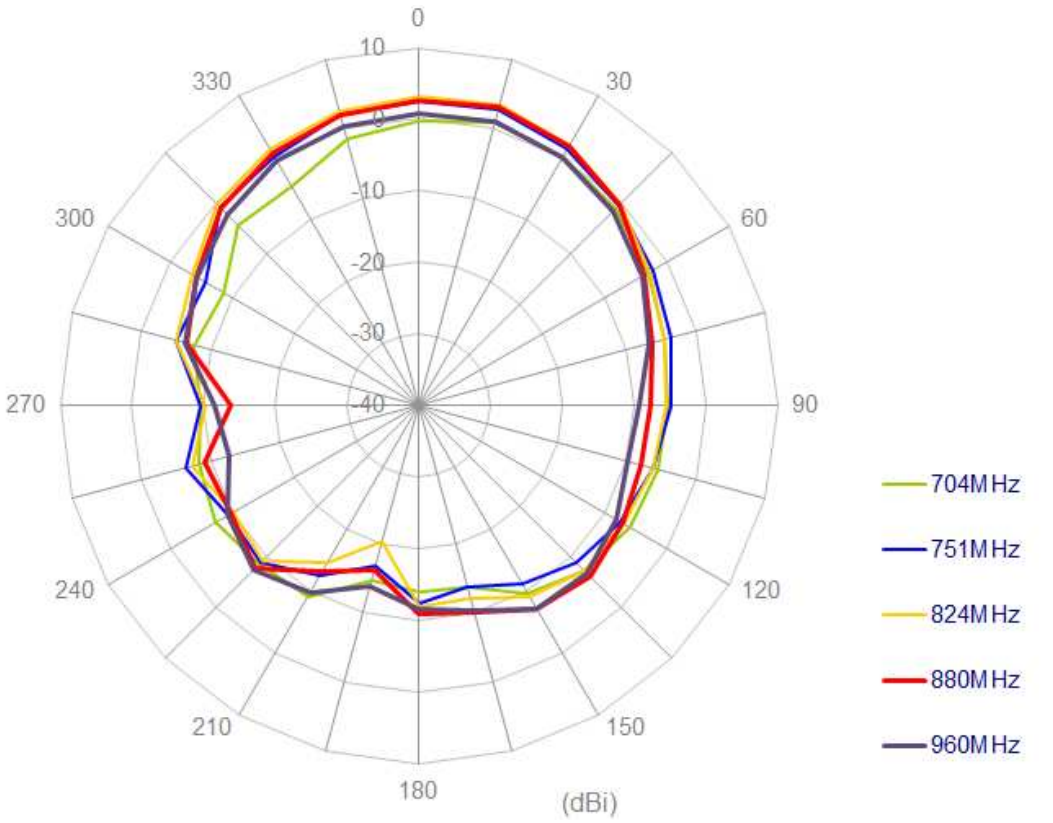
2570MHz
2700MHz

XZ plane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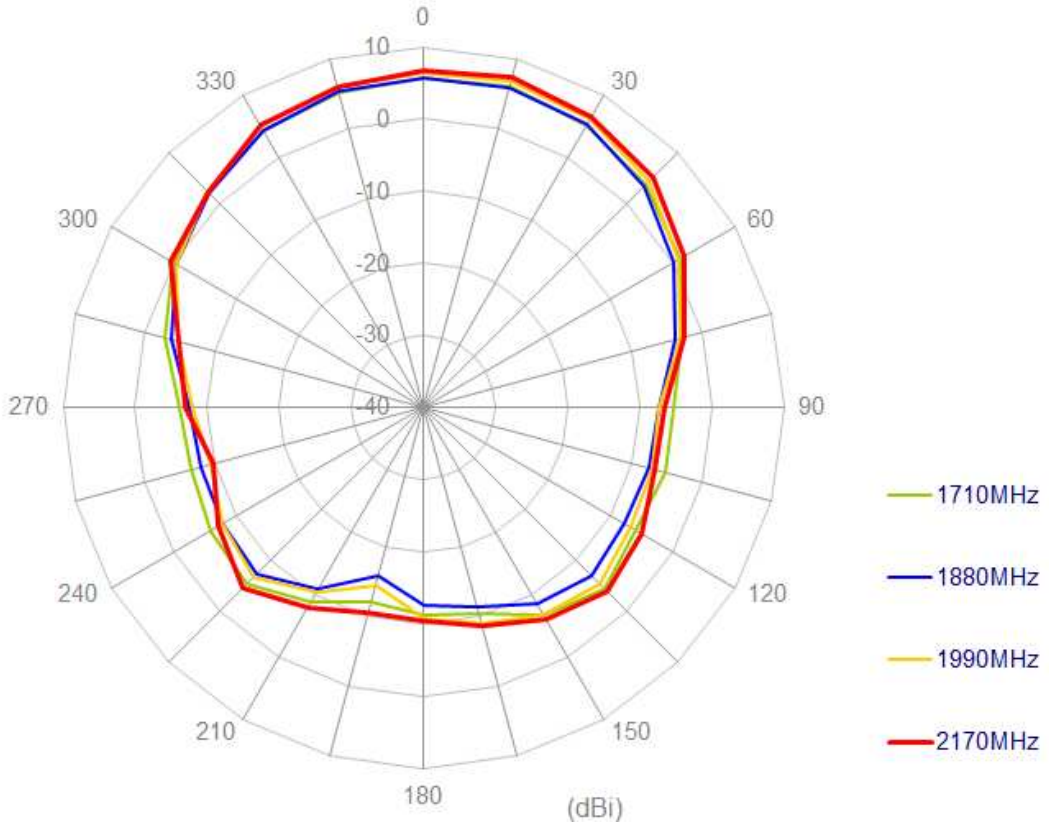
824MHz
880MHz
960MHz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1990MHz
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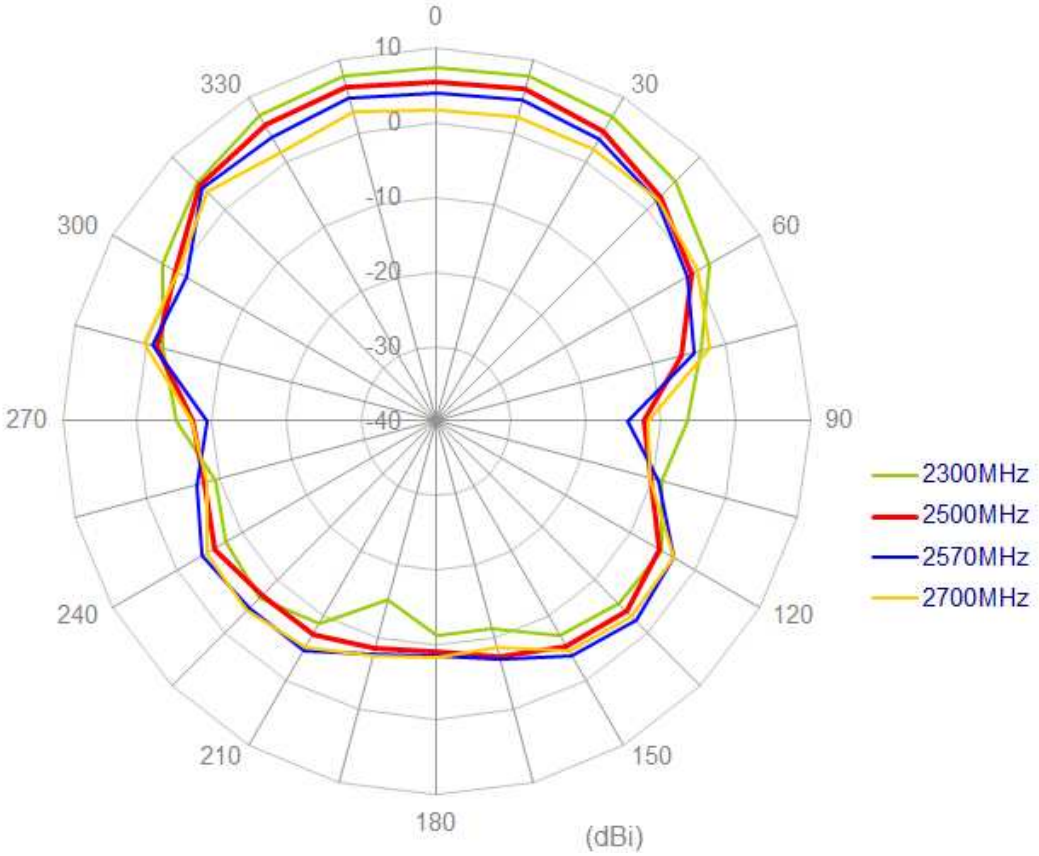
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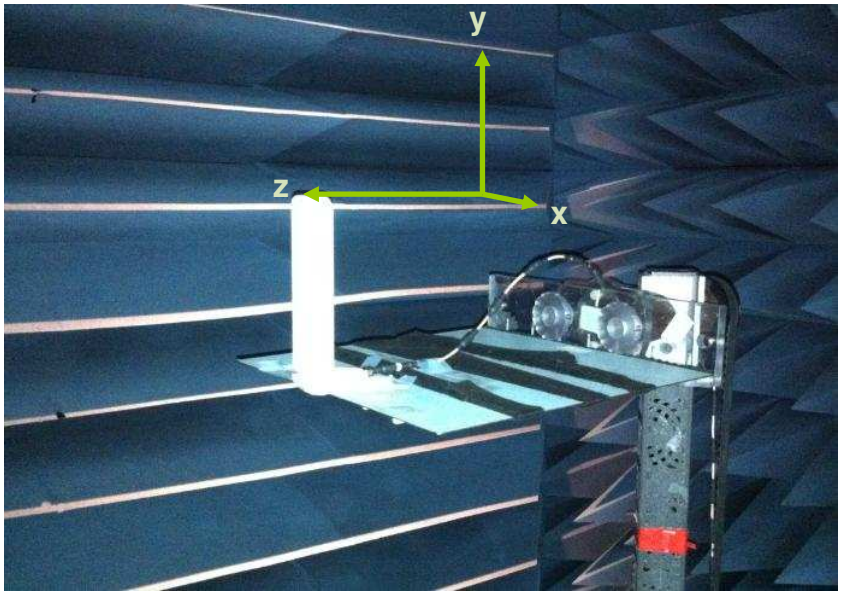
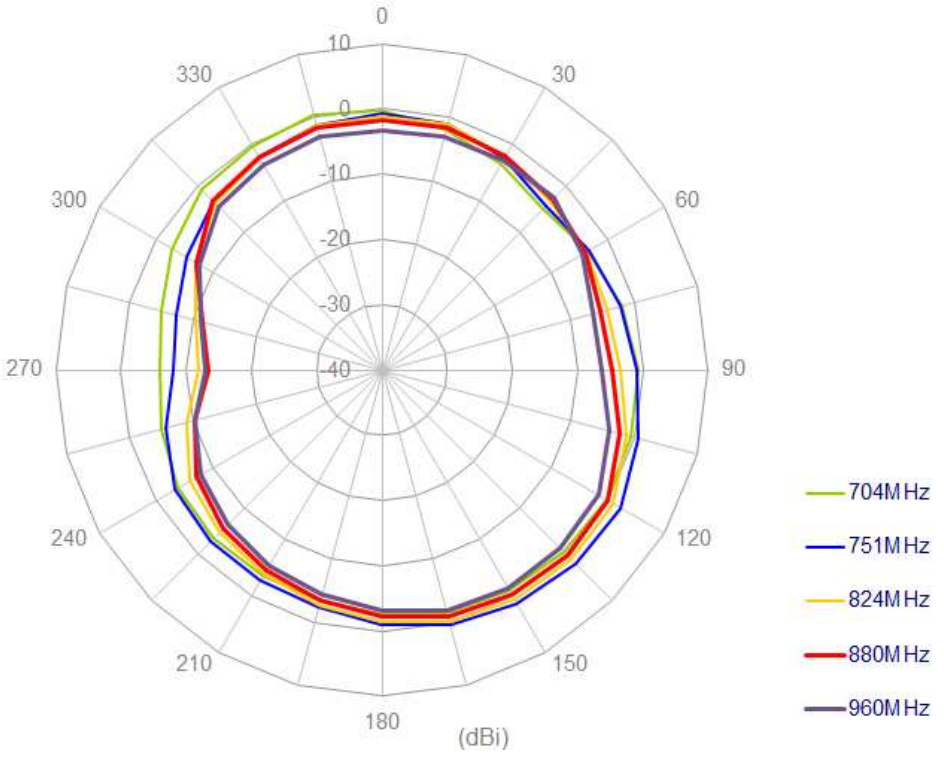
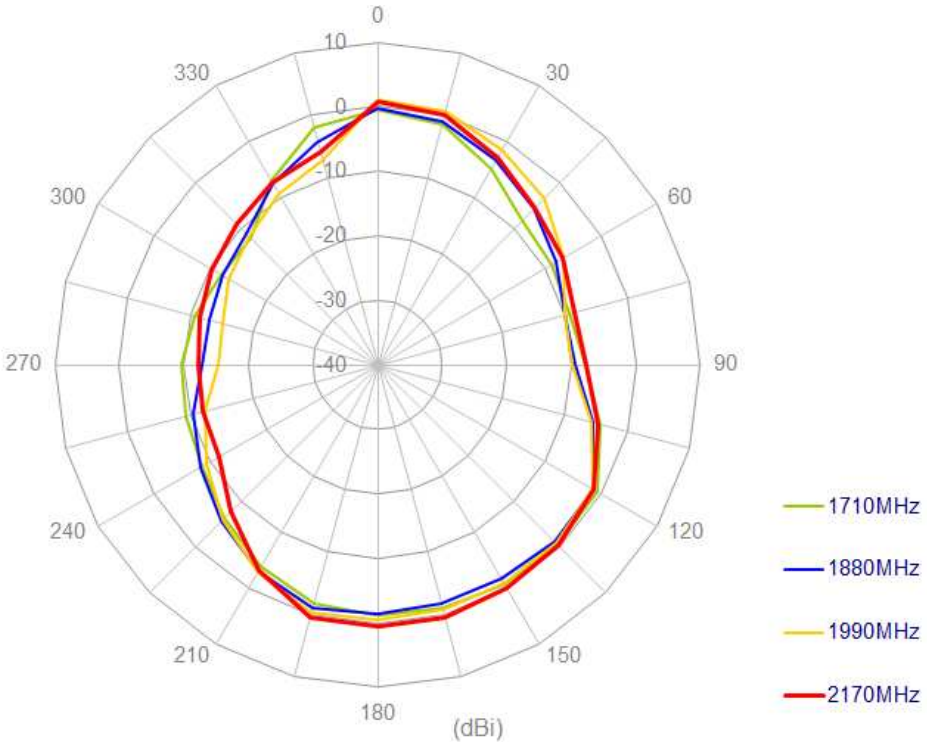
4.5 Antenna setup (On 300x300mm ground edge)

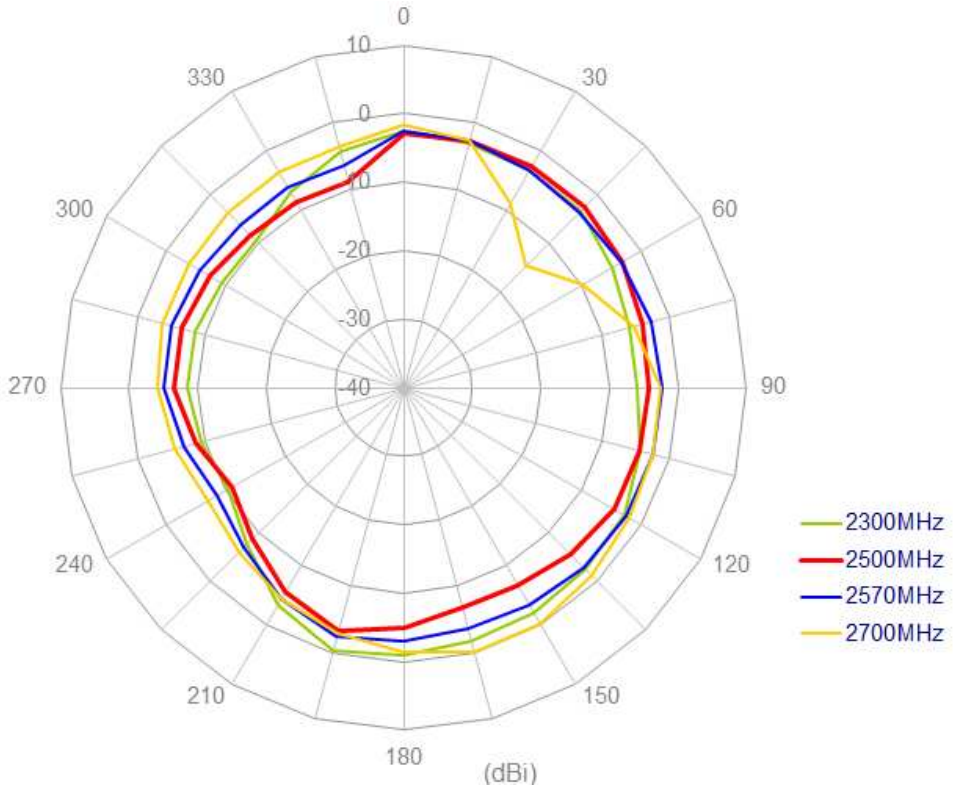


4.6 Radiation Patterns (On 300x300mm ground edge)

XY plane



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(dBi)
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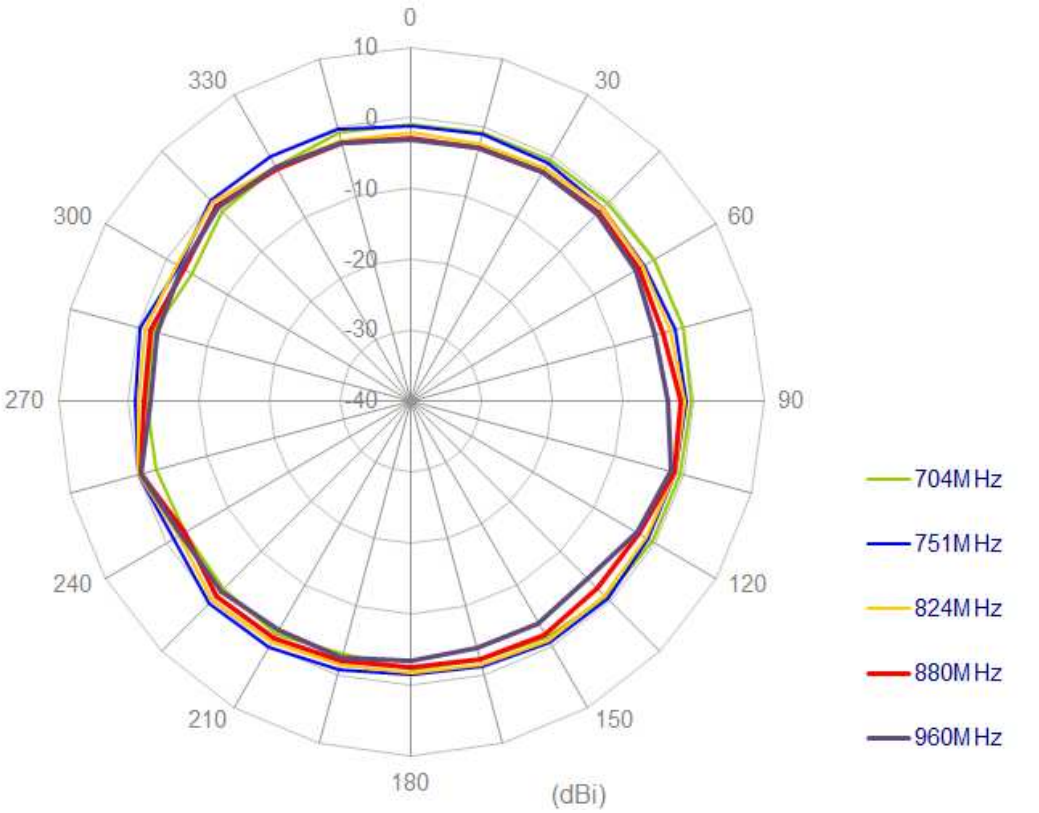
2500MHz
2570MHz
2700MHz

XZ plane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824MHz
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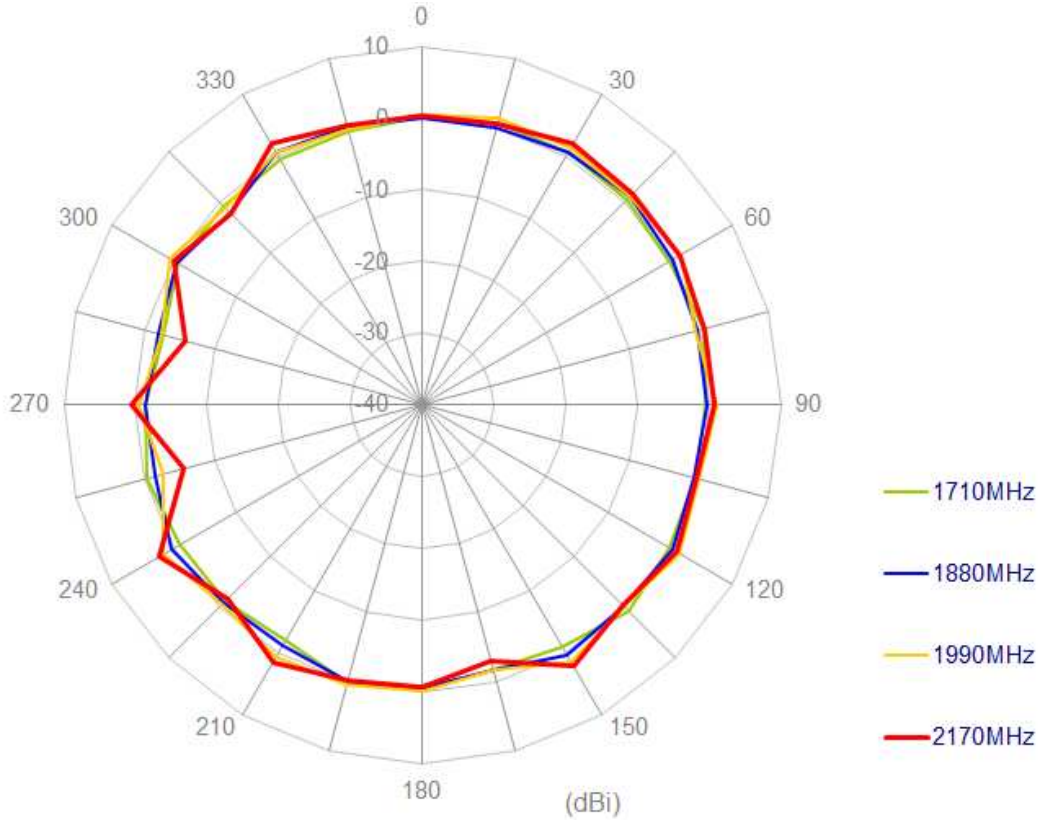
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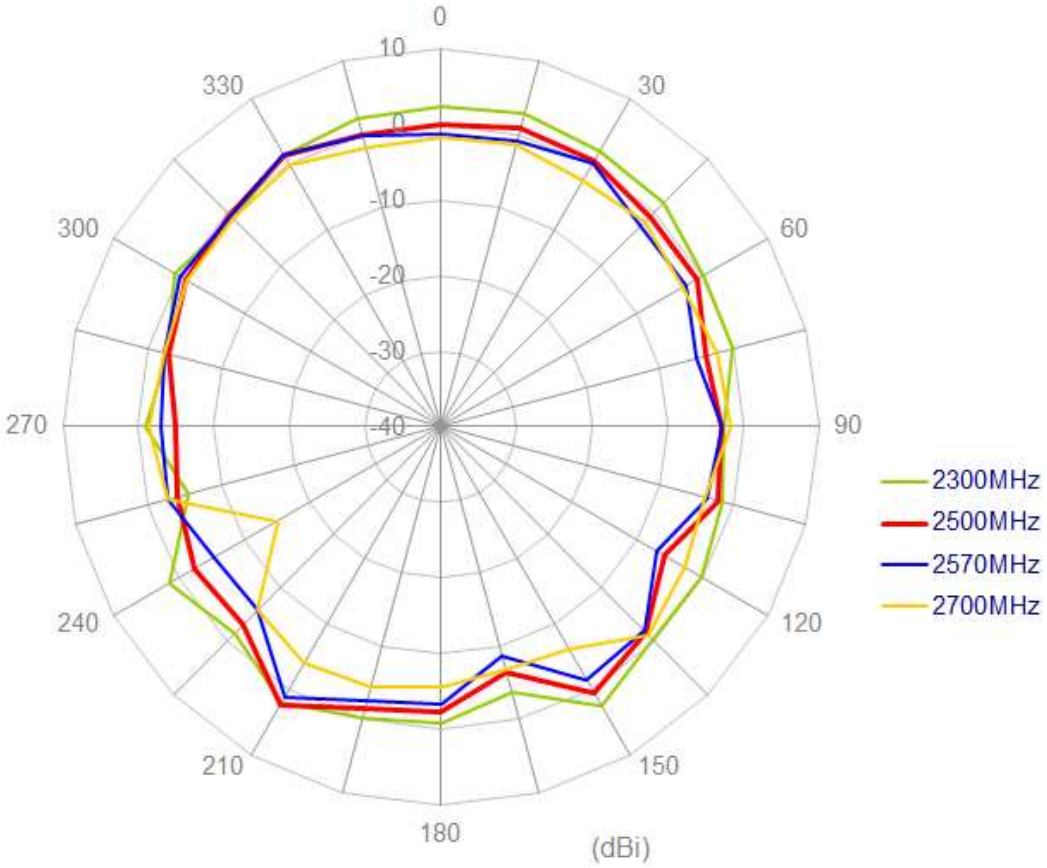
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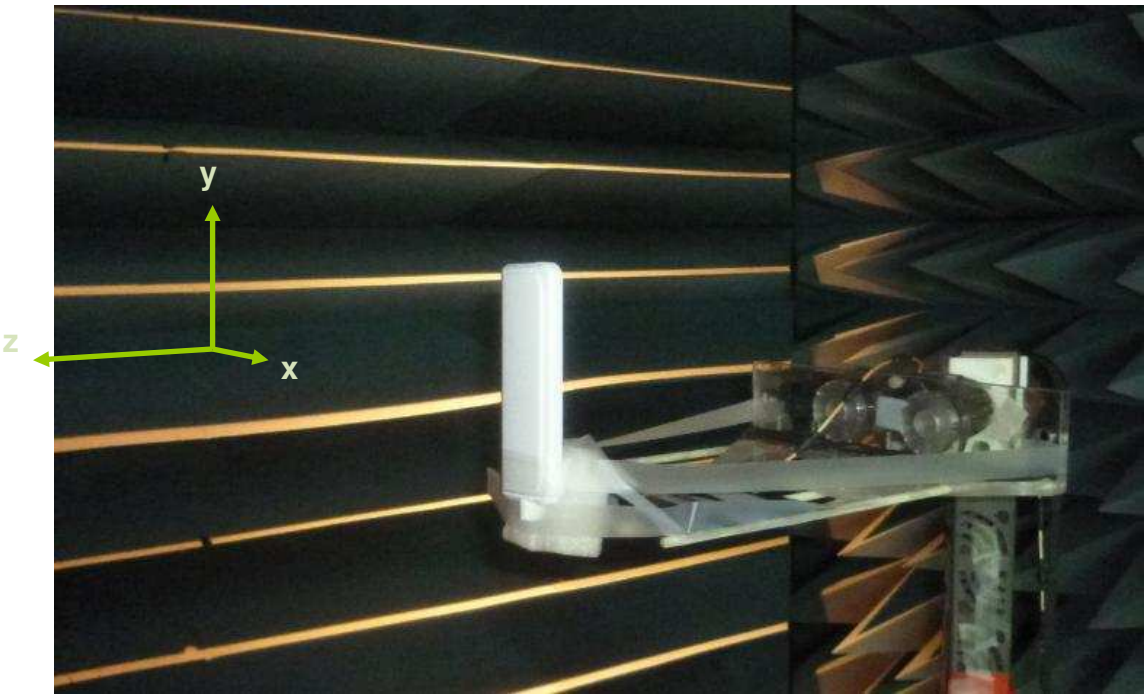
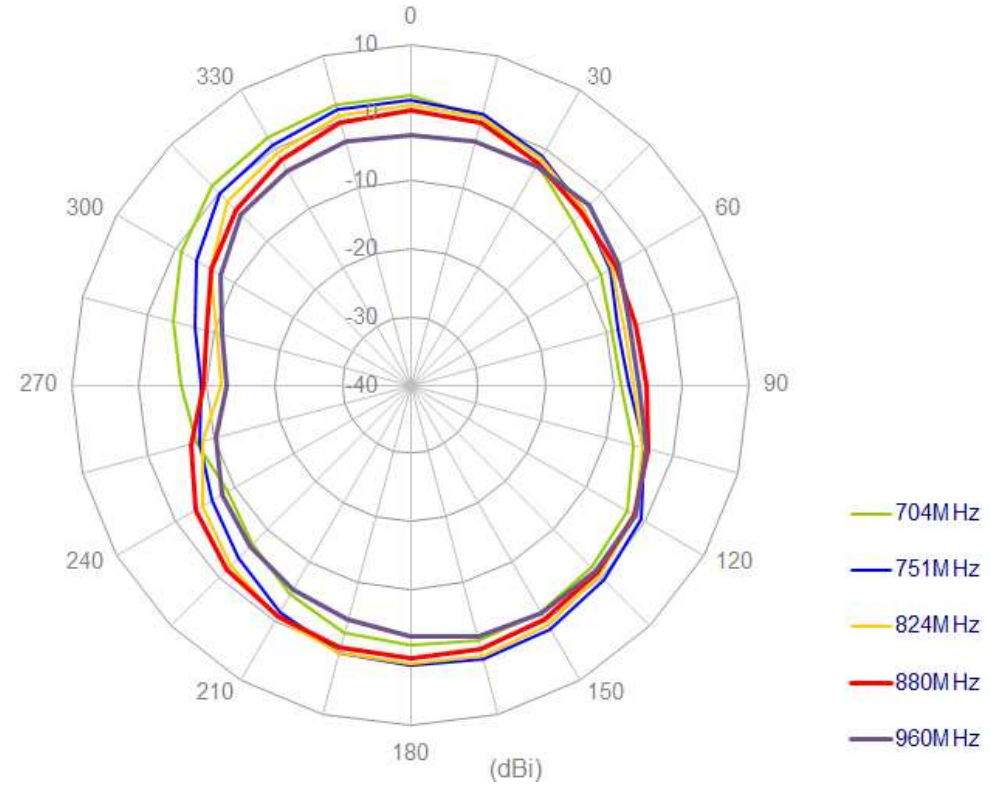
2570MHz
2700MHz

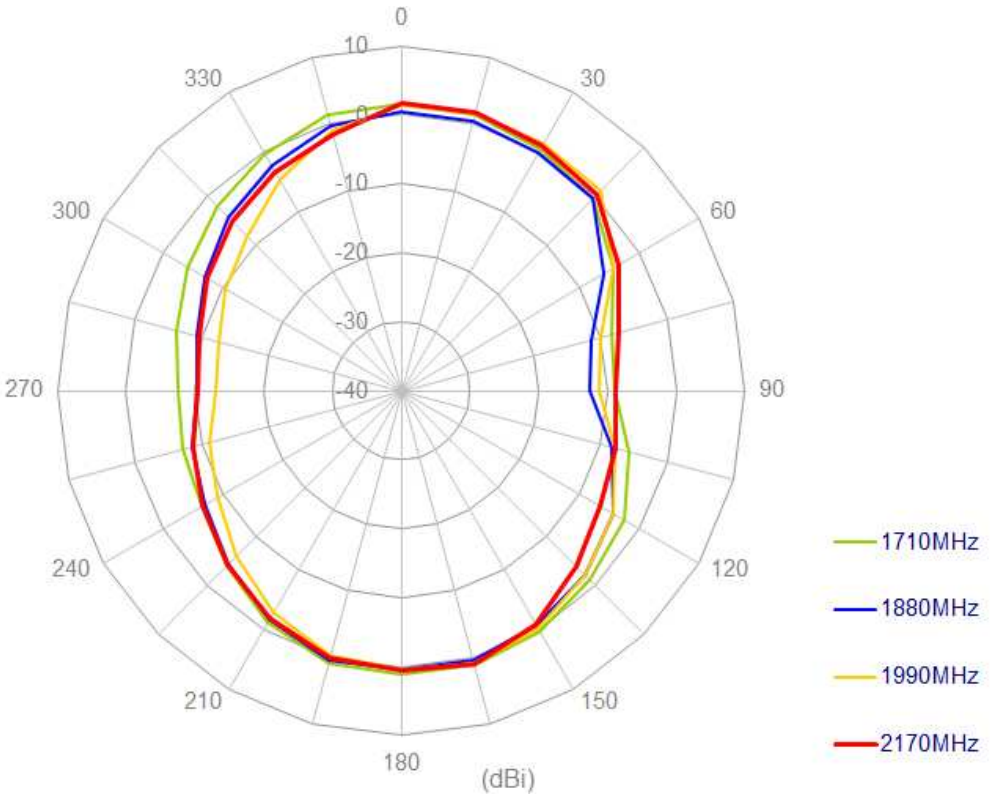
4.7 Antenna setup (On Ground Plane edge)

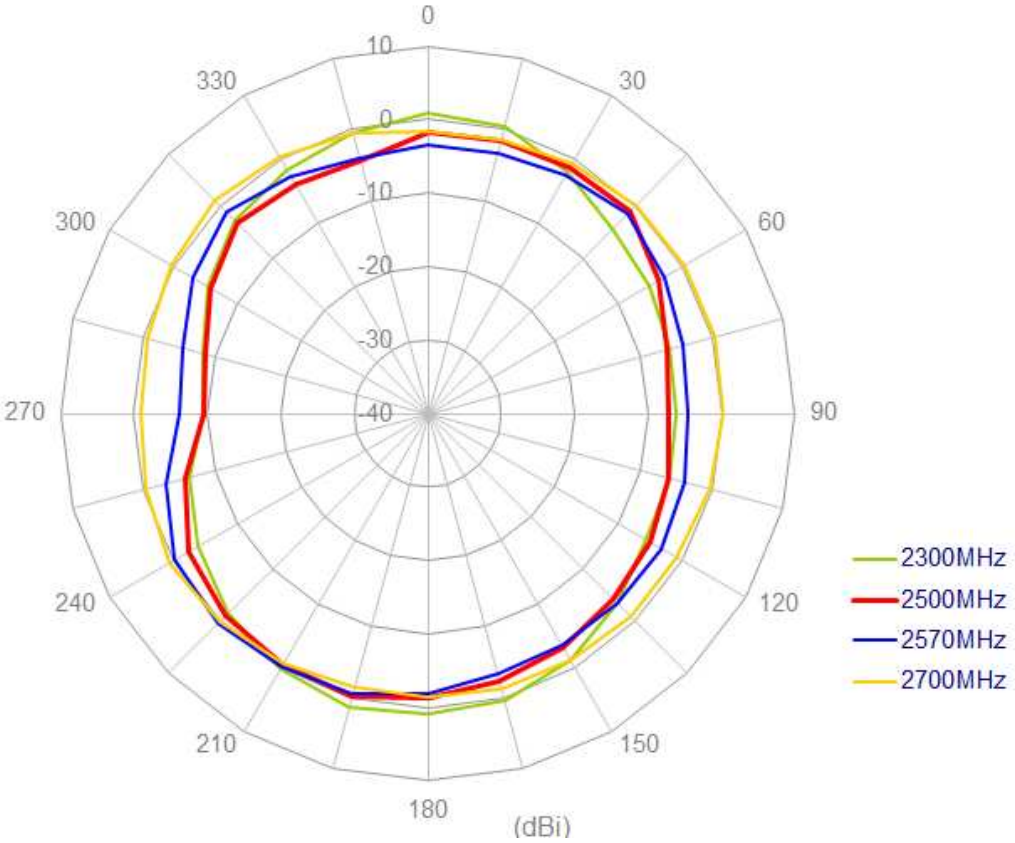


4.8 Radiation Patterns (On Ground Plane edge)

XY plane



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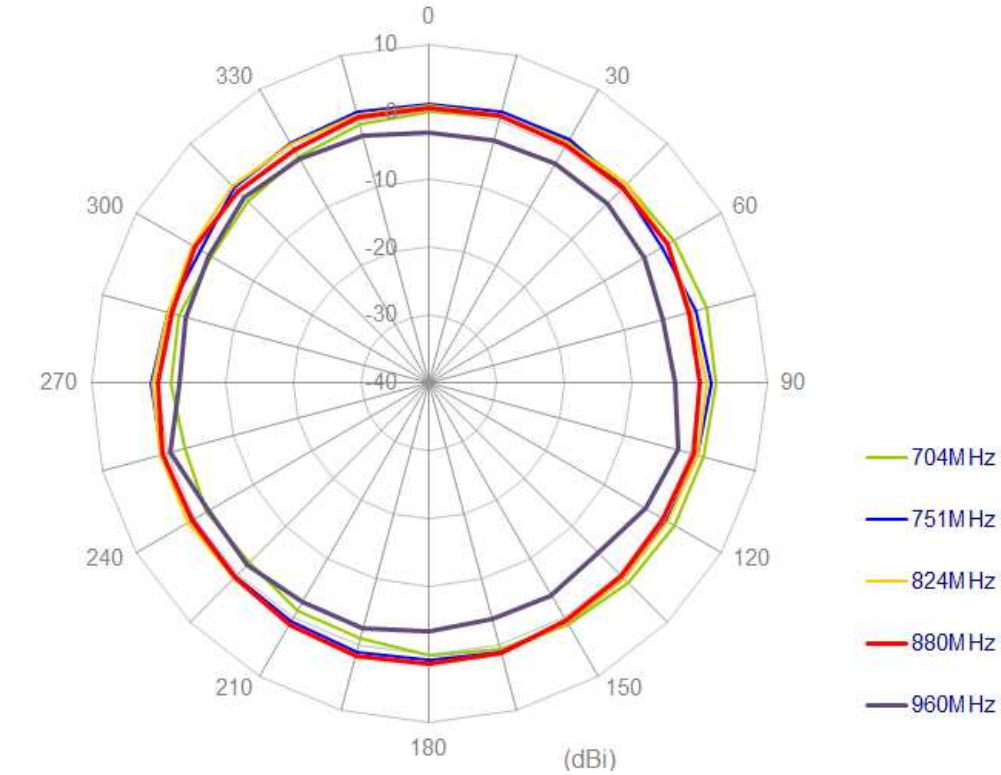
(dBi)
2300MHz
2500MHz
2570MHz
2700MHz

XZ plane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824MHz
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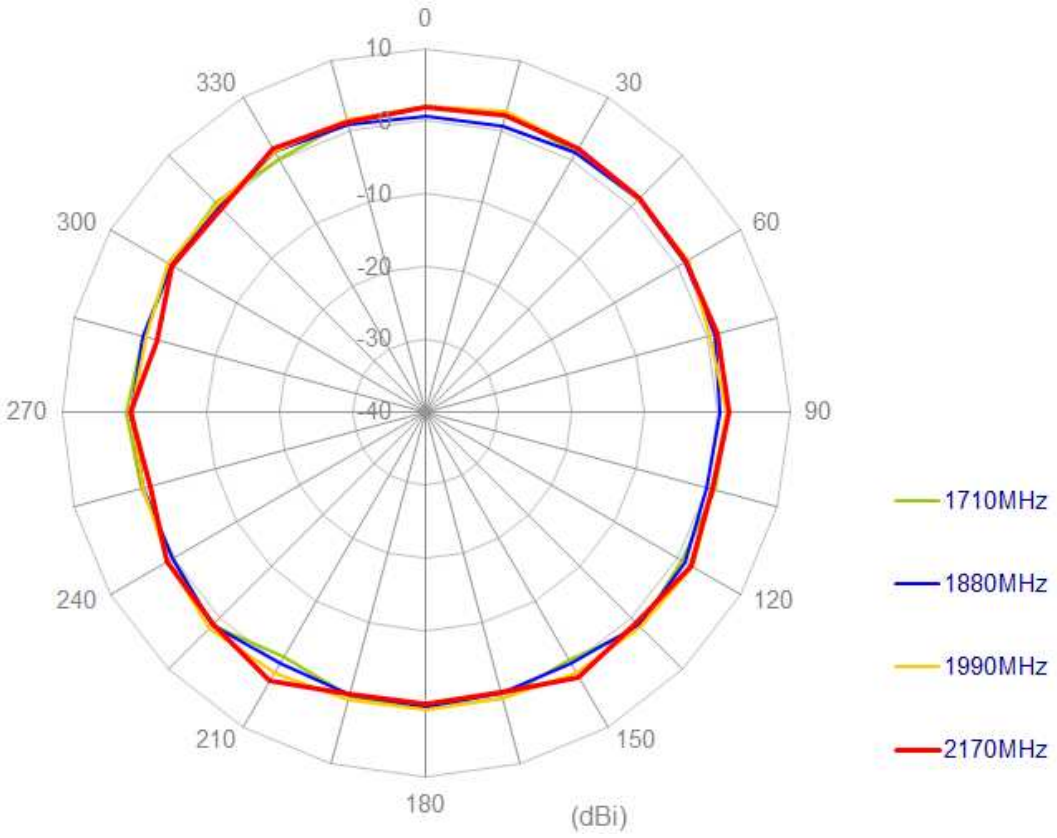
960MHz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(dBi)
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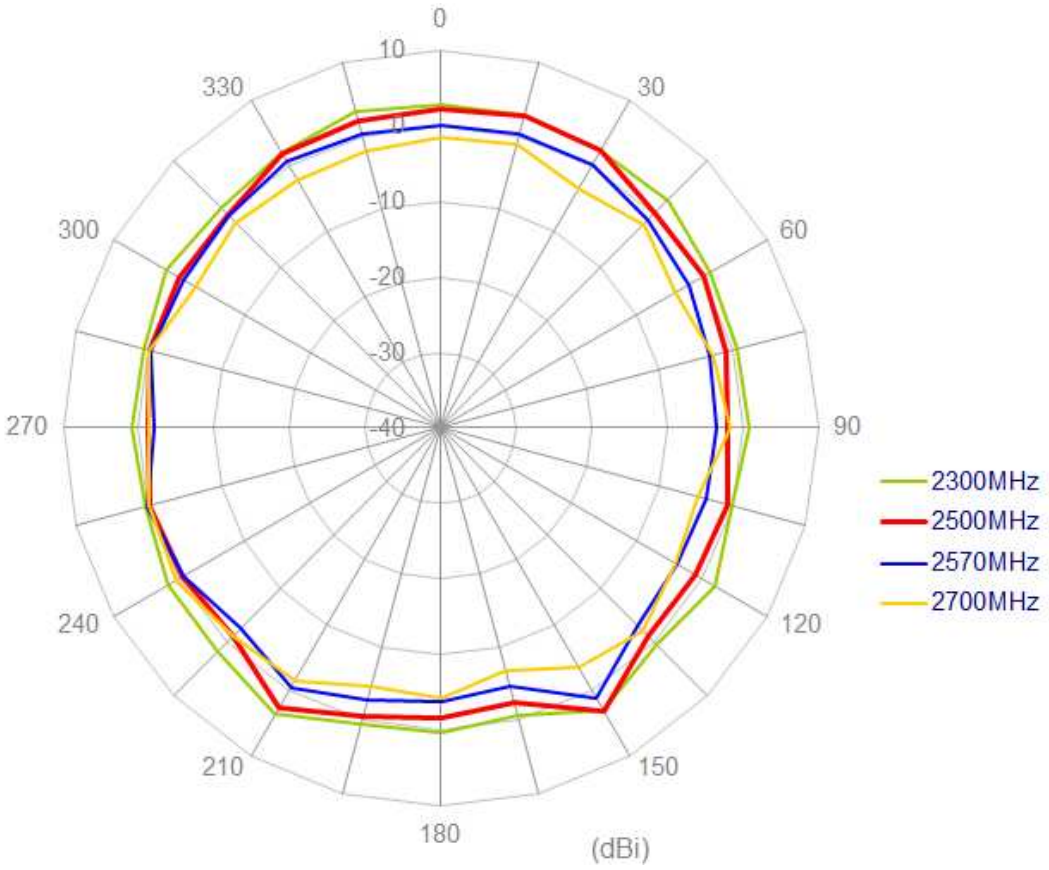
1880MHz
1990MHz
2170MHz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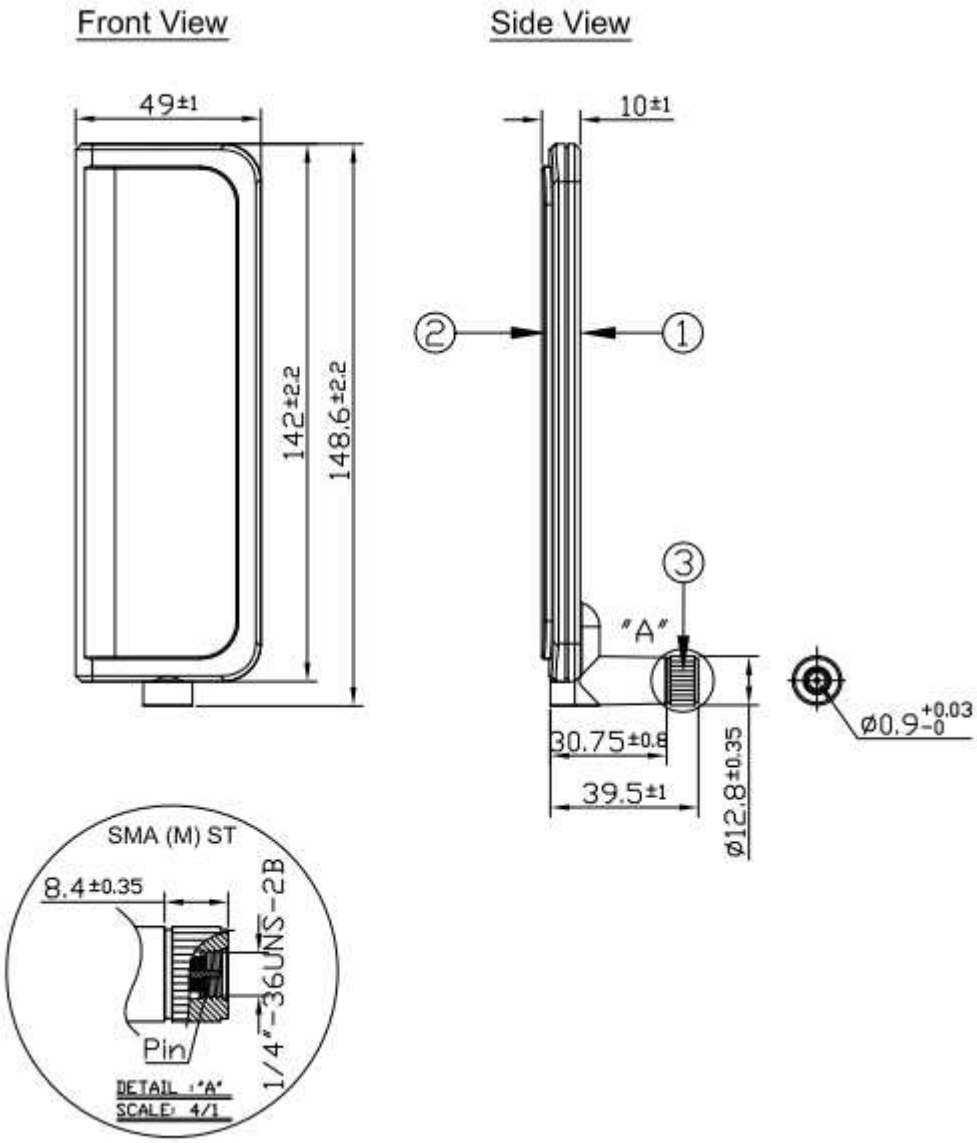
(dBi)
2300MHz
2500MHz
2570MHz
2700MHz

5. Drawing


Front View
Side View
49±1
142±2.2
148.6±2.2
10±1
①
②
③
"A"
30.75±0.8
39.5±1
ø12.8±0.35
ø0.9 +0.03 -0
SMA (M) ST
8.4±0.35
1/4"-36UNS-2B
Pin
DETAIL : "A"
SCALE: 4/1

6. Packaging