Optimus

MA220.LB.001

Specification

Part No.	**MA220.LB.001**
Product Name	**Optimus** MA220 2in1 - GPS-GLONASS - LTE External Adhesive Antenna for Glass and Plastic Mount
Feature	GPS-GLONASS - High gain LNA up to 32dB 4G LTE band – 698 MHz to 27000MHz Covers legacy worldwide 2G and 3G bands LTE/GSM/CDMA/PCS/DCS/UMTS/GPRS/EDGE/HSPA IP67 Height 12mm Diameter 62.8mm RoHS Compliant

1. Introduction

The Optimus MA220 is a combination high performance GPS-GLONASS and 2G/3G/4G LTE (plus GSM /CDMA/PCS/ DCS/UMTS/GPRS/EDGE/HSPA) antenna to simplify Automotive Telematic and Fleet management systems worldwide. Its high quality low profile covert housing can be attached onto the glass or even out of sight under the dashboard. This combination of a high gain GPS/Glonass antenna and a LTE antenna is ideal for those applications that require durability, small size and covert installation, and reliable reception and transmission crossing through different mobile networks.

The LTE cellular antenna function covers all main LTE and 2G/3G cellular bands worldwide. It has been designed to work equally well when mounted on glass or on plastic. It is not suitable for mounting on metal.

The GPS/Glonass function means increased accuracy and reliability of location. A front-end SAW protects the LNA from burnout by nearby out of band cellular transmissions and also significantly reduces any compression and consequent reduction of sensitivity.

The standard version has 3 metres RG174 cable and SMA(M) connector on both GPS/ Glonass and LTE. For even higher gain and efficiency we recommend if you can to use shorter cable lengths, as shown in the charts below.

The cable lengths and connector types are completely customizable according to customer request, subject to a minimum order quantity.

The slim housing is fully IP67 waterproof. A separate automotive approved 3M adhesive pad is provided, allowing the antenna to be mounted correctly facing through glass, or directly onto a plastic surface like the dashboard of a vehicle.

Note if US LTE network certification is required contact Taoglas for advice on correct antenna choice.

1.1 Features

GPS/GLONASS

High LNA Gain up to 32 dB

Antenna Gain 30 ± 2 dB

Low Noise 1.5 dB max

LTE

Advanced 4G LTE antenna with 2G/3G application bands included

LTE/GSM/CDMA/PCS/DCS/UMTS/GPRS/EDGE/ HSPA

Other

Ultrasonically Welded - Water Resistant IP 67

UV Resistant

Quality textured covert design. Low profile

Comes with automotive approved high grade 3M double sided tape for quick and easy mounting

Customizable cables and connectors

2. Specification

2G/3G/4G Antenna

	LTE	LTE Band 20	GSM850	GSM900	DCS	PCS	WCDMA I / UMTS	WiFi	LTE
Frequency (MHz)	698~798	791~862	824~894	880~960	1710~1880	1850~1990	1920~2170	2400~2500	2570~2690
					Free Space				
Peak Gain (dBi)*	-1.54	-0.53	-0.53	-1.07	-0.10	0.72	0.89	-2.40	-1.59
Average Gain (dBi)*	-7.21	-6.02	-5.71	-8.20	-6.46	-6.10	-5.99	-7.39	-7.40
Efficiency (%)*	19.12	25.29	27.38	16.20	22.62	24.62	25.22	18.27	18.21
					On 2mm Thickness ABS				
Peak Gain (dBi)*	-1.13	-0.05	-0.05	-1.91	2.21	1.68	1.63	-3.36	-0.63
Average Gain (dBi)*	-6.72	-4.78	-5.01	-7.96	-6.01	-4.99	-5.73	-9.07	-7.64
Efficiency (%)*	21.66	33.32	31.52	16.59	25.37	31.75	28.06	12.36	17.21
					On Glass				
Peak Gain (dBi)*	-0.71	-0.35	-0.35	-2.03	1.76	1.71	1.48	-2.94	-1.31
Average Gain (dBi)*	-6.44	-4.99	-5.36	-8.37	-5.76	-5.29	-6.18	-9.21	-8.04
Efficiency (%)*	23.01	31.79	29.03	14.93	26.78	29.61	25.07	11.97	15.70

Return loss (dB) *	< -5
Polarization	Linear
Impedance	50Ω
Cable	3m RG174 standard, fully customizable
Connector	SMA(M), standard, fully customizable
Maximum Input Power	5W

* **Note:** includes 3 metre RG174 cable loss

2. Specification

GPS-GLONASS	
Center Frequency	GPS:1575.42±3 MHz GLONASS:1602±0.5 MHz
Gain	3 ±1 dBic typ.
VSWR	1.92:1 Max
Impedance	50Ω
Antenna Patch Size	25x25x4mm
Cable	3m RG174 standard, fully customizable
Connector	SMA(M), standard, fully customizable

LNA Electrical Properties	
Center Frequency fc	GPS:1575.42±3 MHz GLONASS:1602±0.5 MHz
Impedance	50 Ω Nominal
VSWR	< 1.92:1
Return Loss	10 dB Min.
Gain	31 dB Min. @3.3V
DC Power Input	3.3V
Noise Figure @3.3V	1.5dB
Power Consumption	12mA

Mechanical	
Antenna Dimensions	62.8mm x 68mm x 12mm
Casing	ABS
Waterproof	IP67

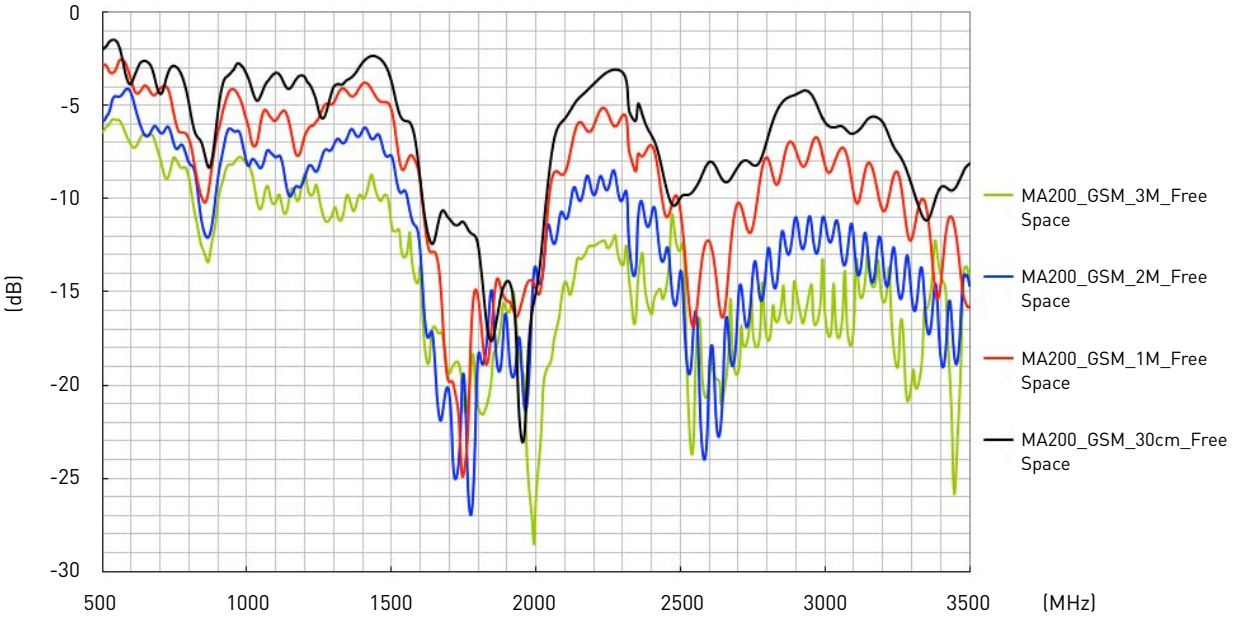
Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 90°C
Humidity	Non-condensing 65°C 95% RH

* **Note:** includes 3 metre RG174 cable loss

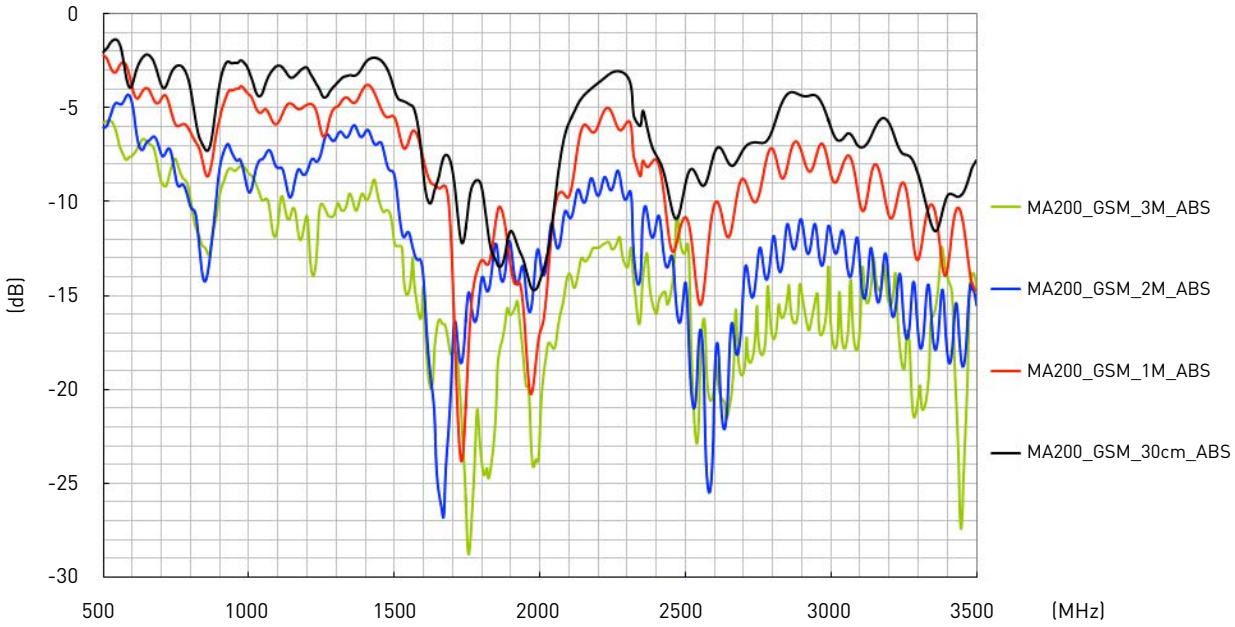
3. LTE Antenna Characteristics

3.1 Return Loss

Free Space with RG174 Coaxial Cable



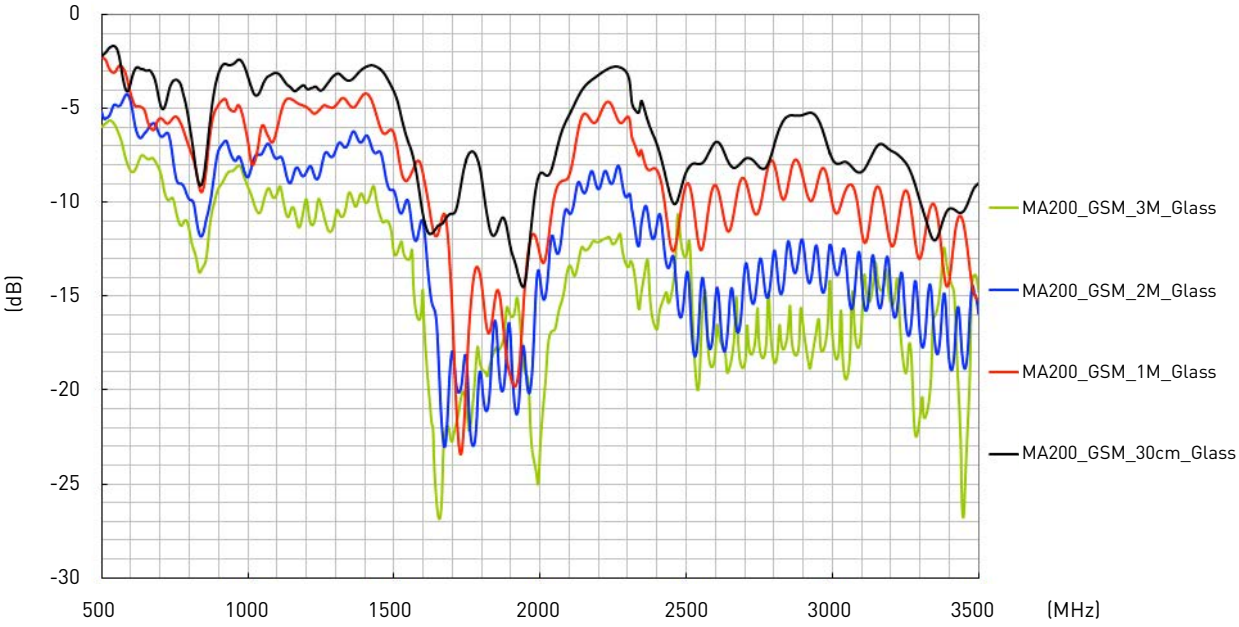
On 2mm thickness ABS Base with RG174 Coaxial Cable



3. LTE Antenna Characteristics

3.1 Return Loss

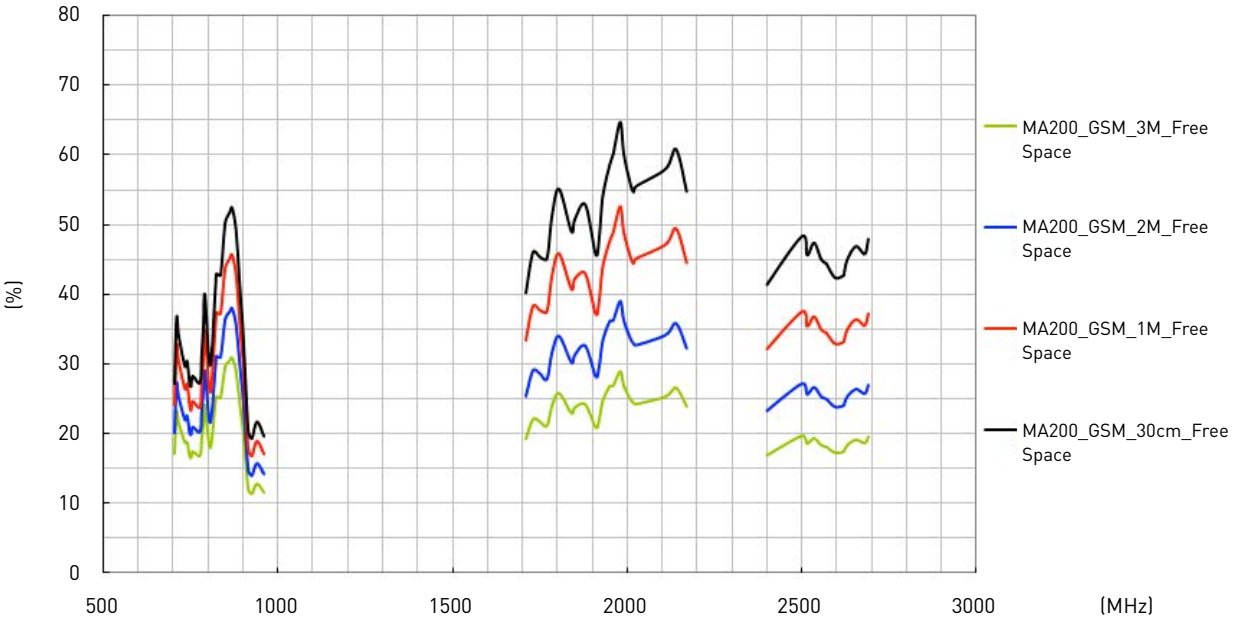
On Glass Base with RG174 Coaxial Cable



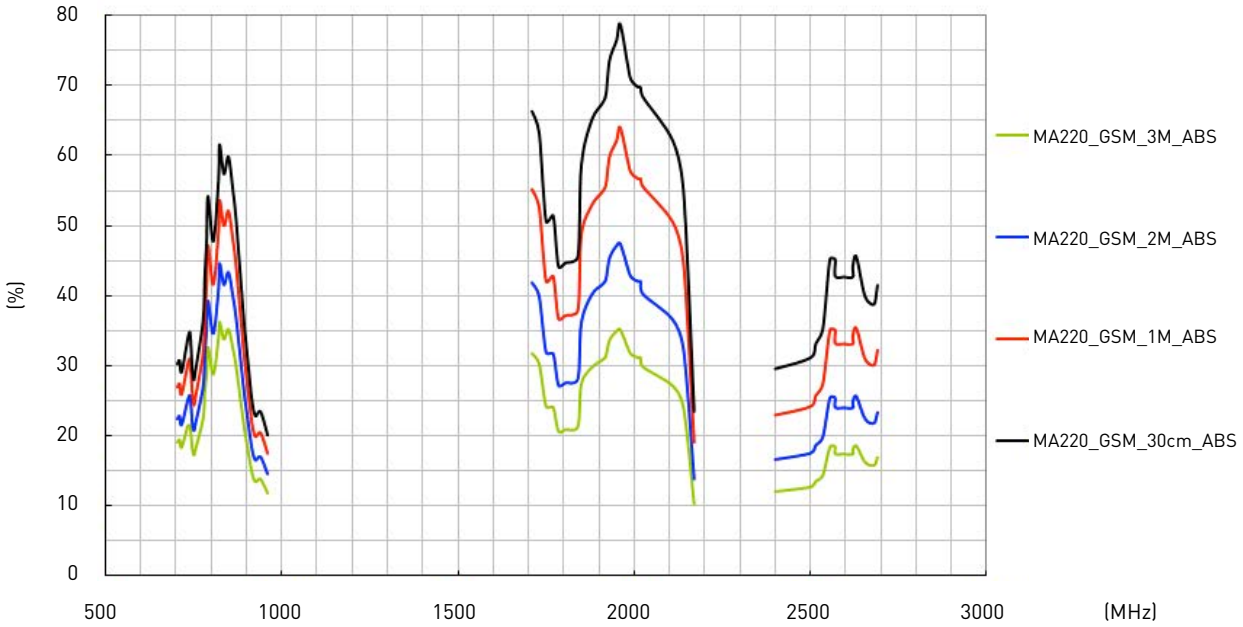
3. LTE Antenna Characteristics

3.2 Efficiency

Free Space with RG174 Coaxial Cable



On 2mm thickness ABS Base with RG174 Coaxial Cable



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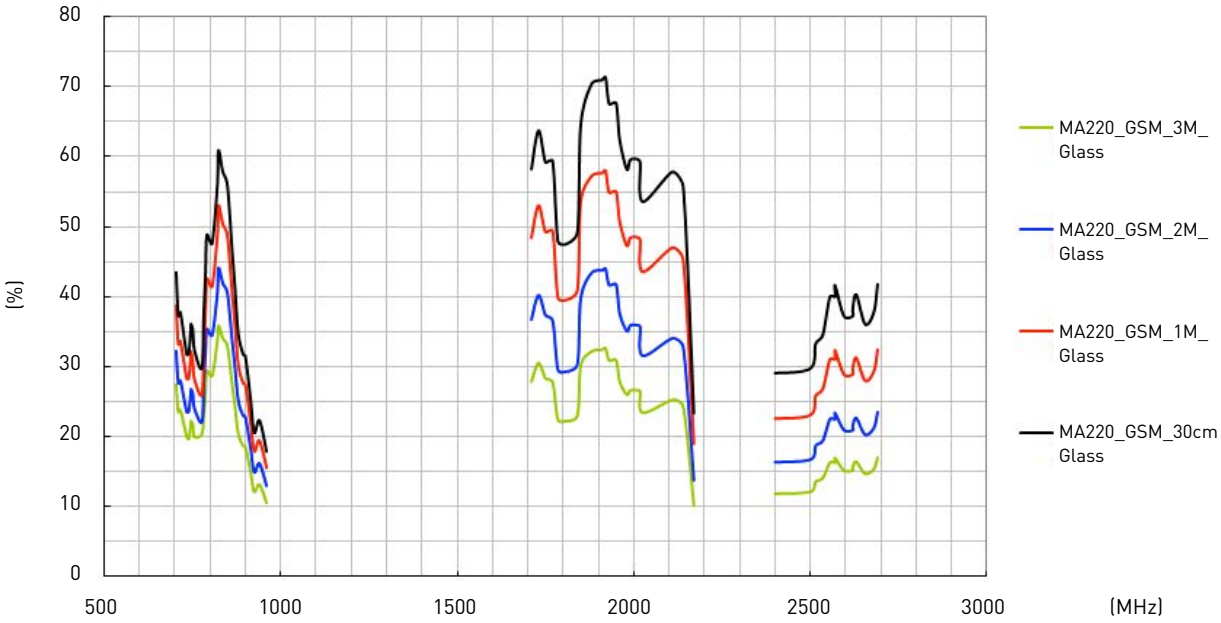
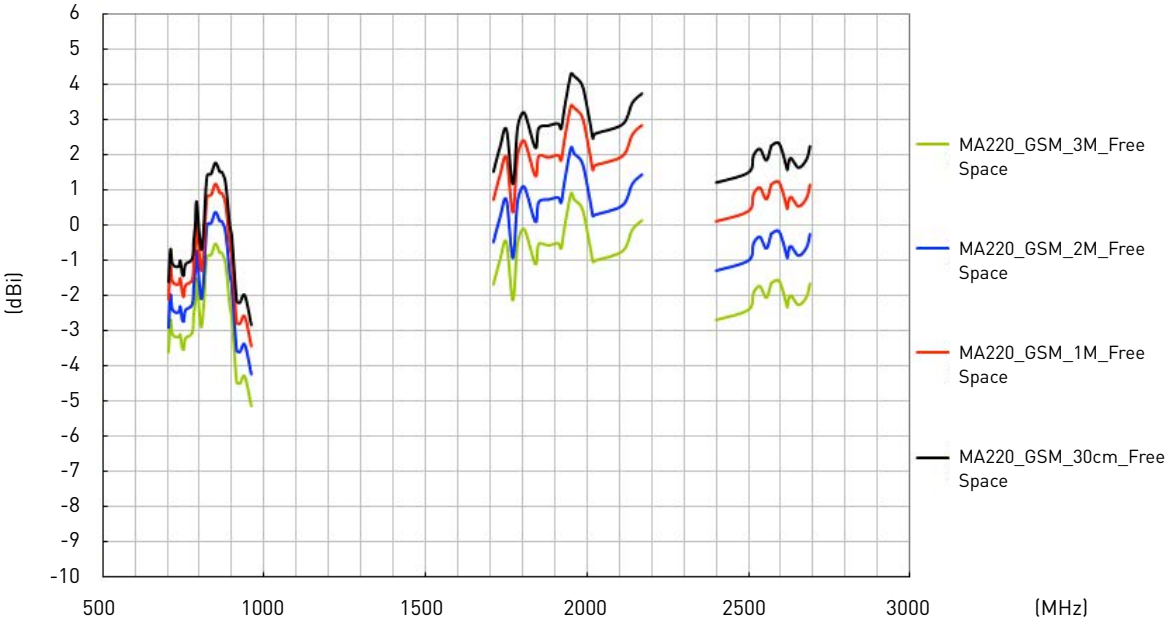
On Glass Base with RG174 Coaxial Cable



3. LTE Antenna Characteristics

3.3 Peak Gain

Free Space with RG174 Coaxial Cable



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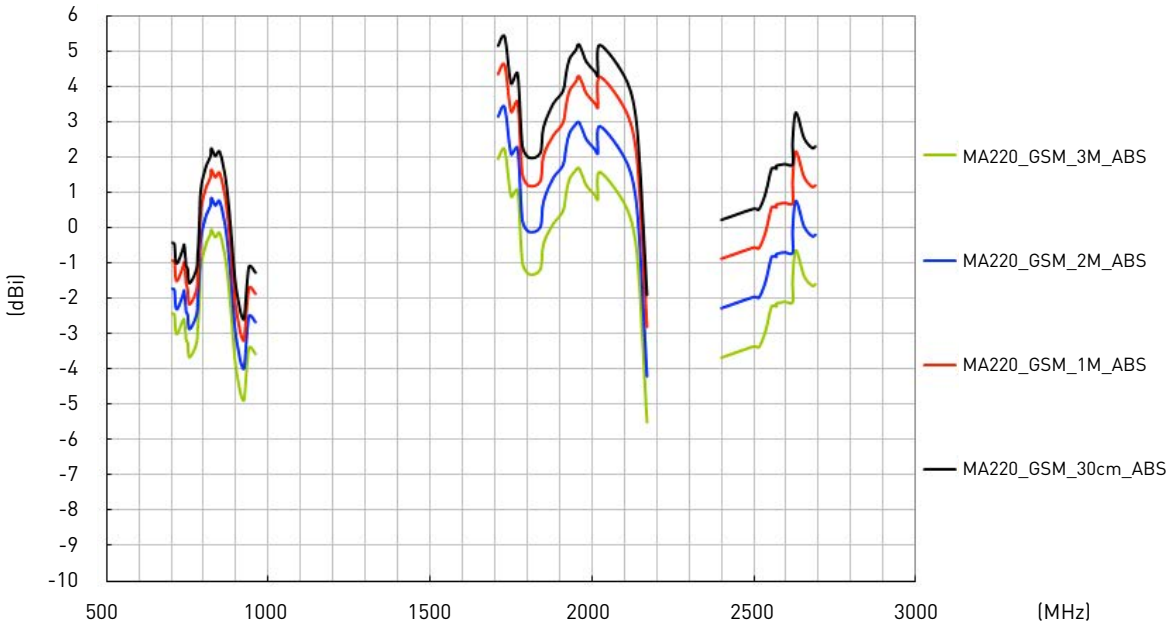

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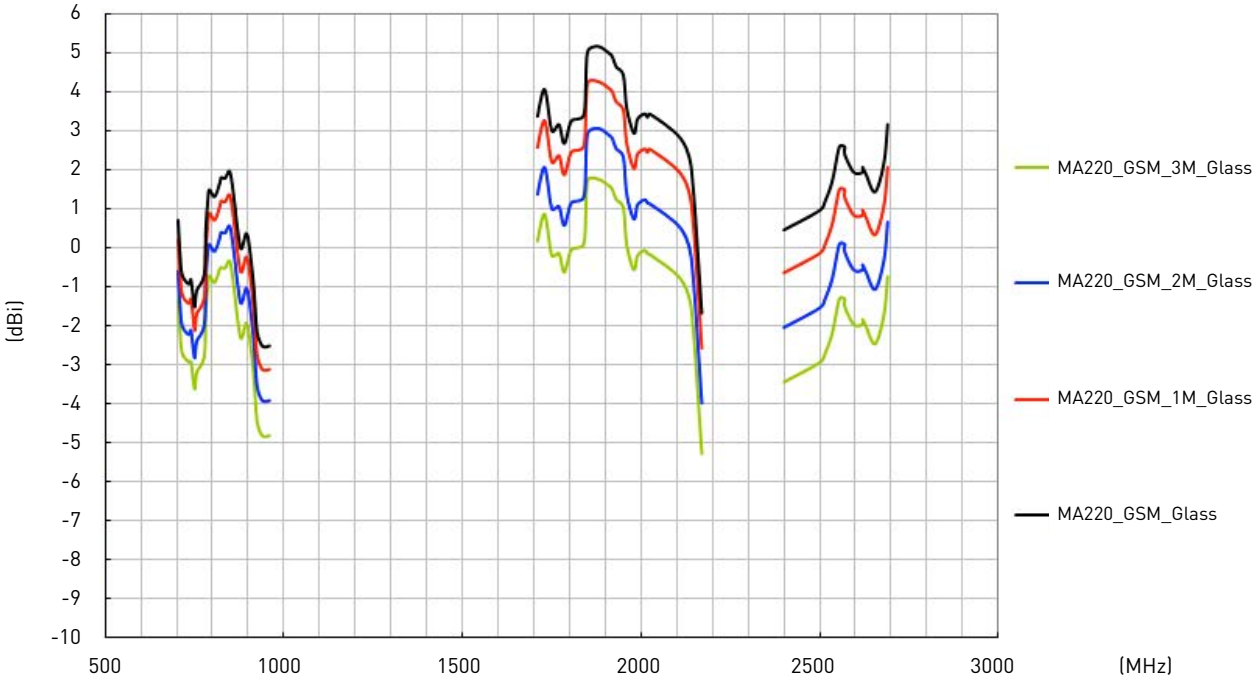
3.3 Peak Gain

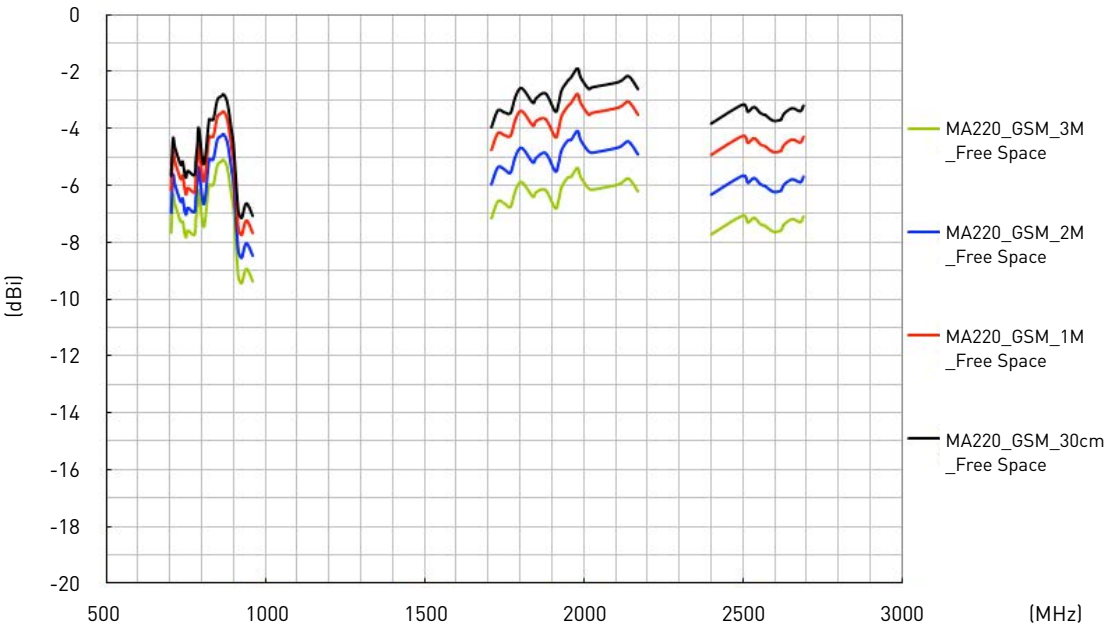
On Glass Base with RG174 Coaxial Cable



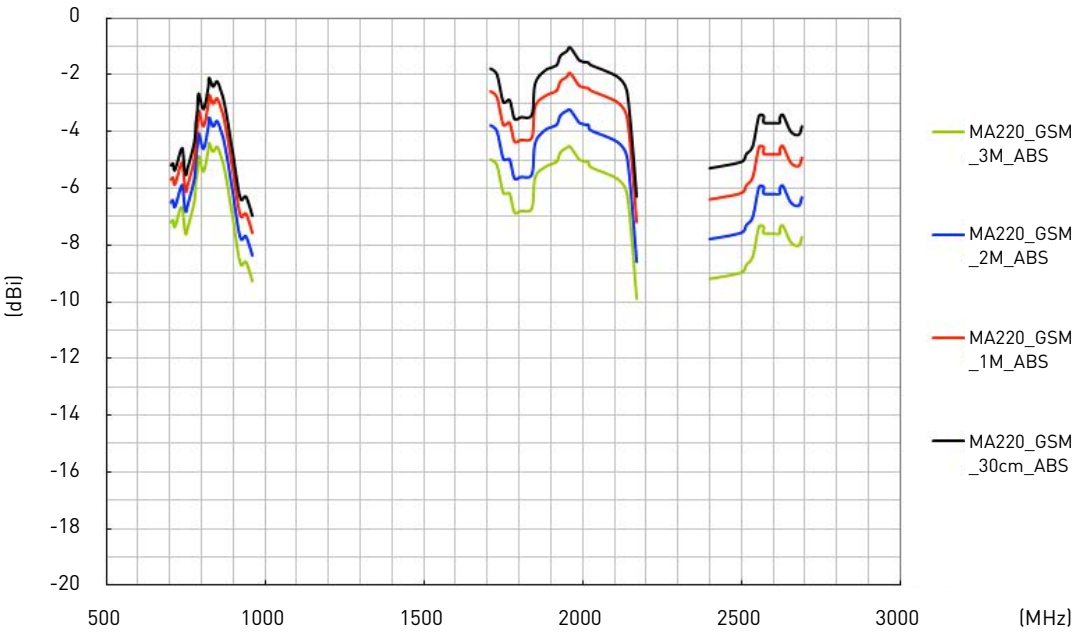
3. LTE Antenna Characteristics

3.4 Average Gain

Free Space with RG174 Coaxial Cable



On 2mm thickness ABS Base with RG174 Coaxial Cable



3. LTE Antenna Characteristics

3.4 Average Gain

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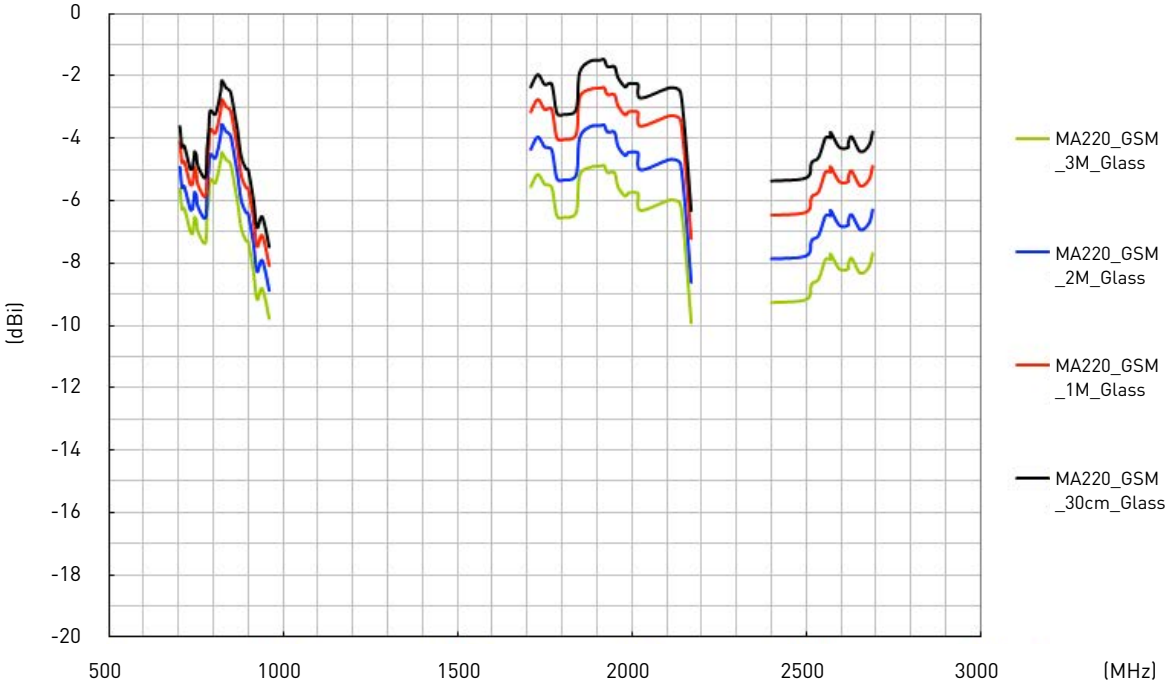
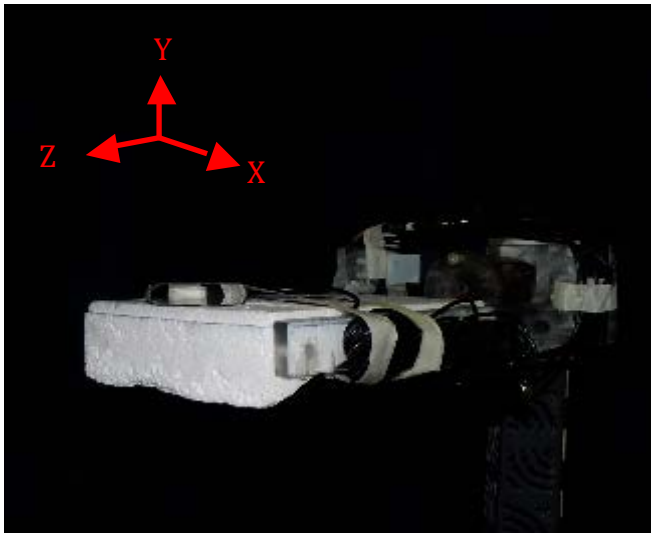
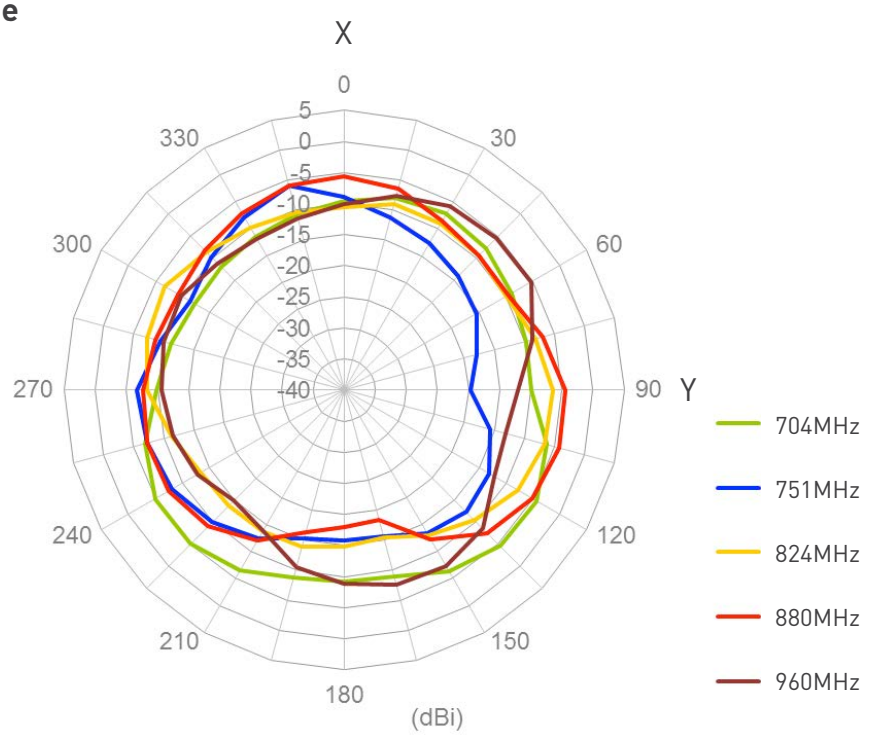


3. LTE Antenna Characteristics

3.5 Free Space Radiation Pattern - 3 meter length cable



XY plane



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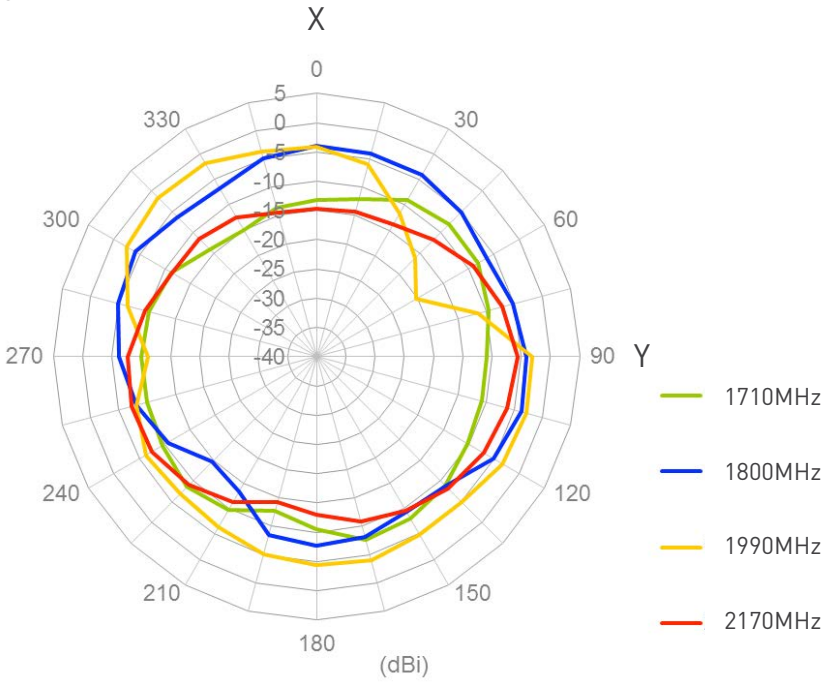

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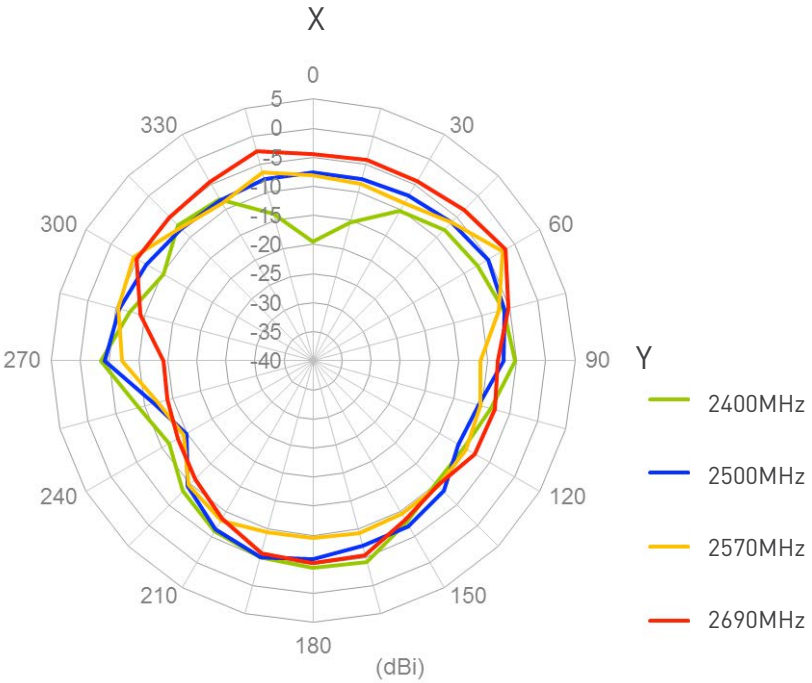

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3.5 Free Space Radiation Pattern - 3 meter length cable

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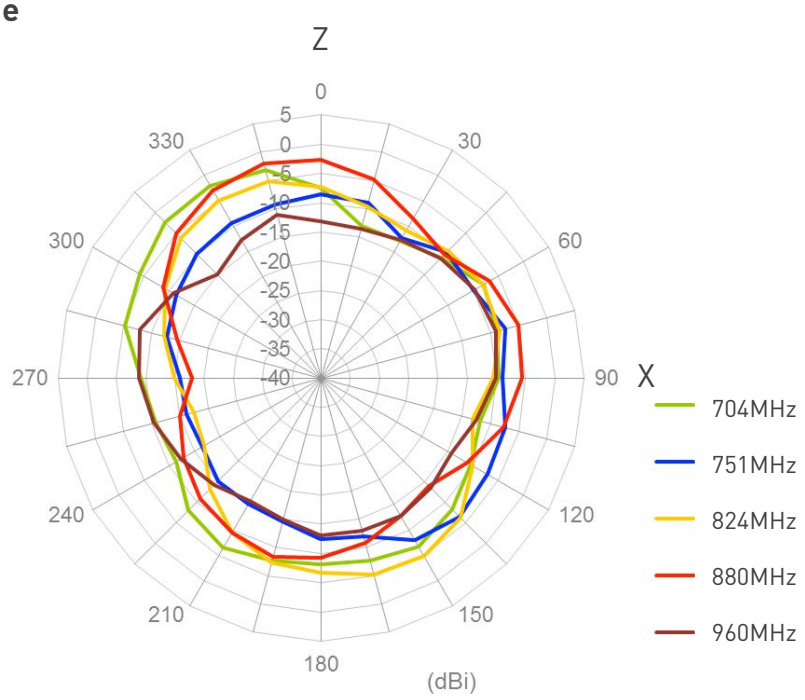

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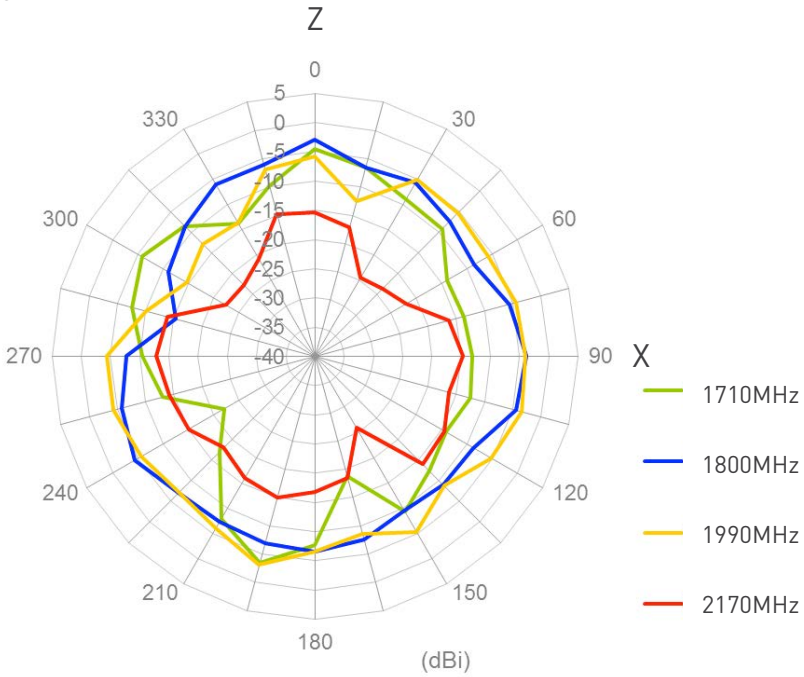
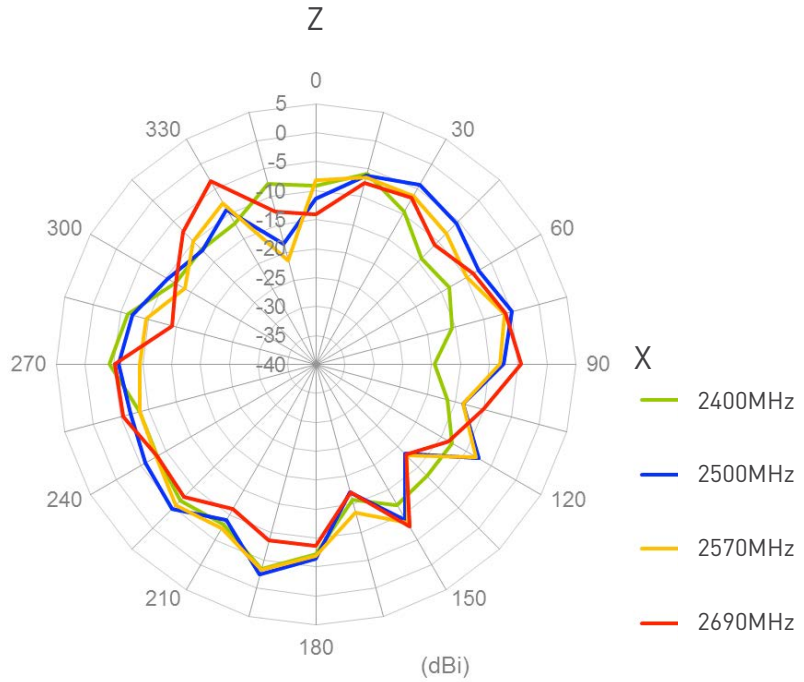


XZ plane



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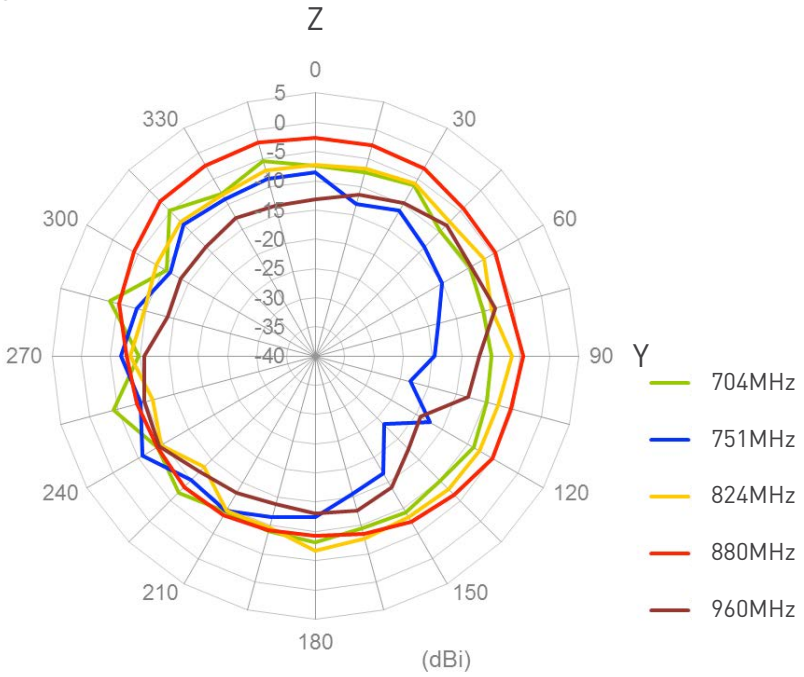
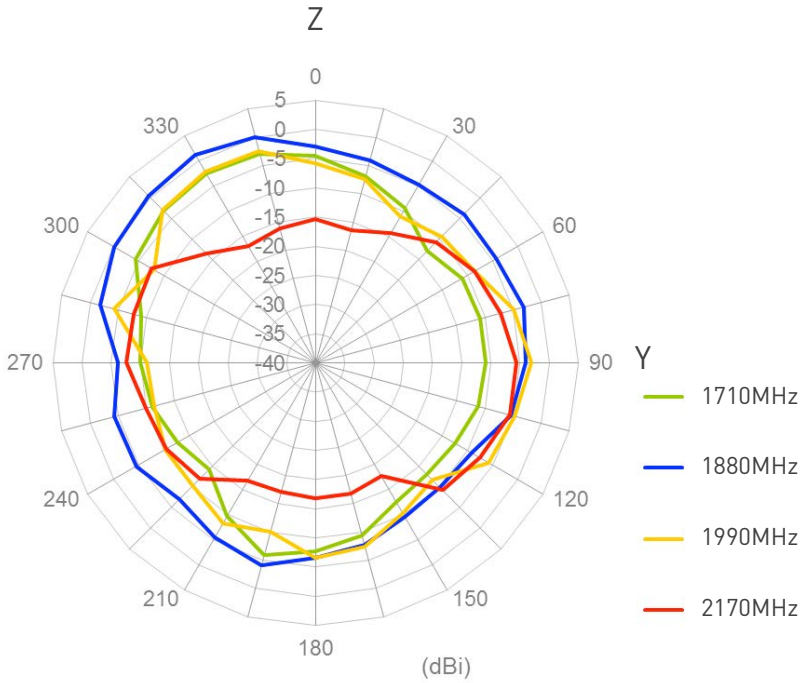


YZ plane



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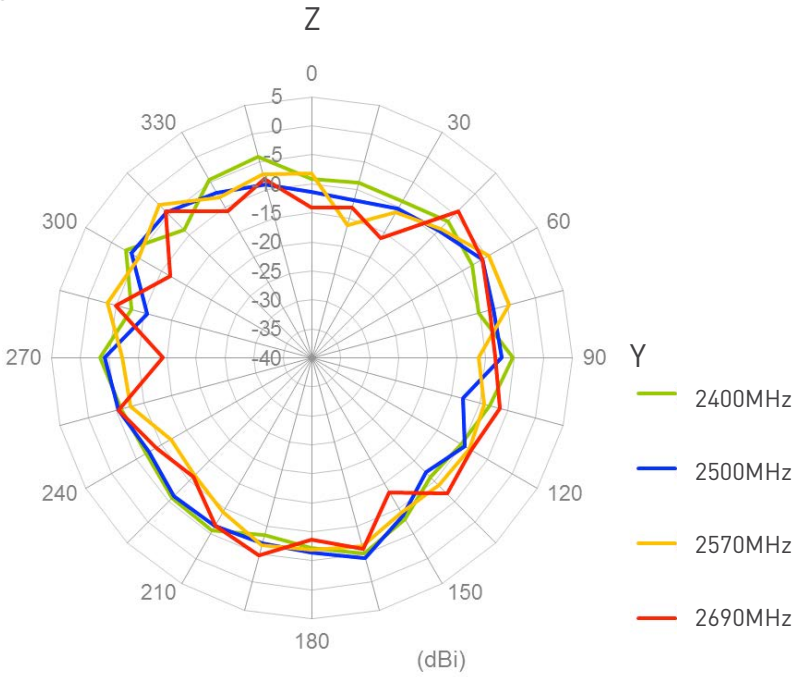
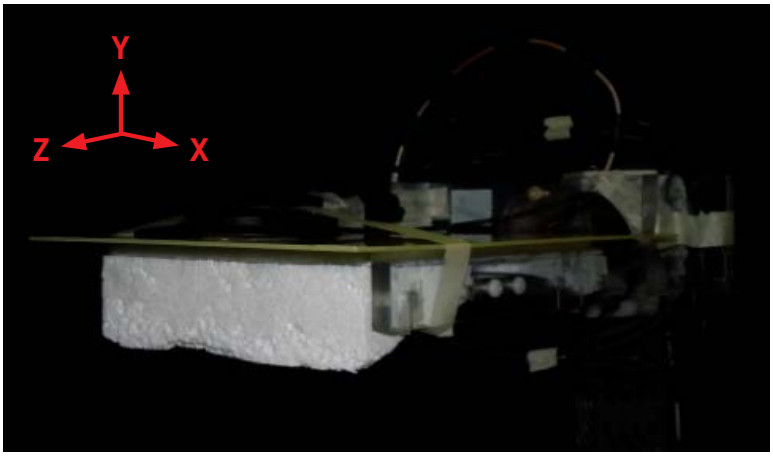
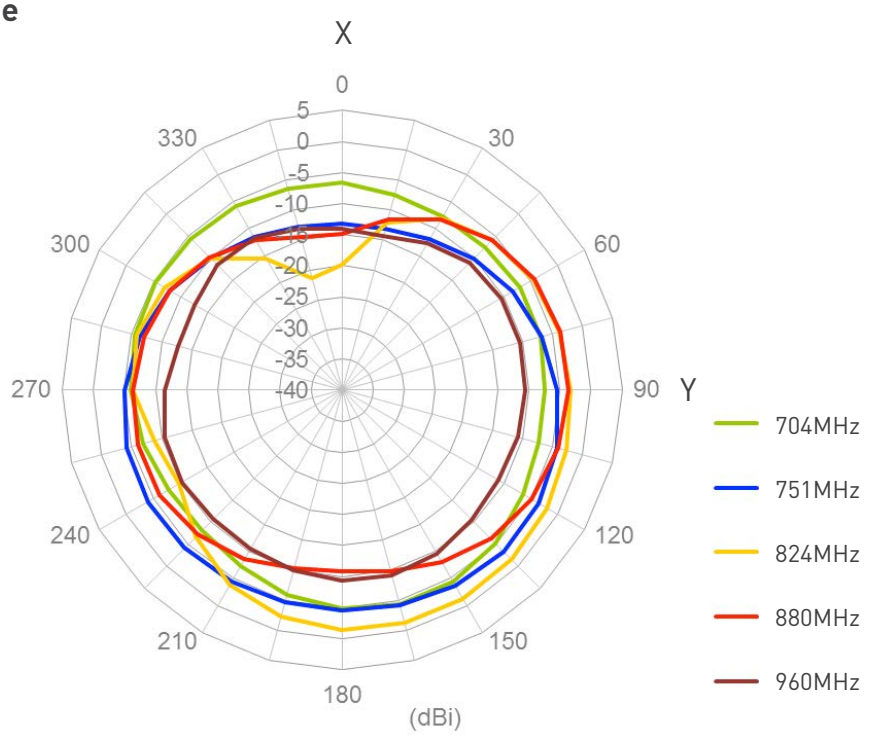


3. LTE Antenna Characteristics

3.6 On 2mm thickness ABS Base Radiation Pattern - 3meter length cable



XY plane



3. LTE Antenna Characteristics

3.5 Free Space Radiation Pattern - 3 meter length cable

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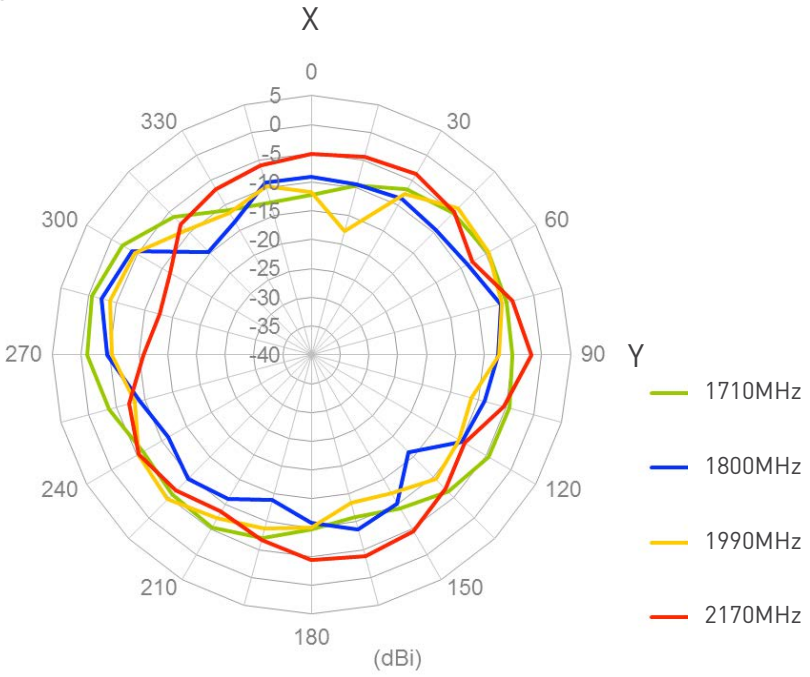

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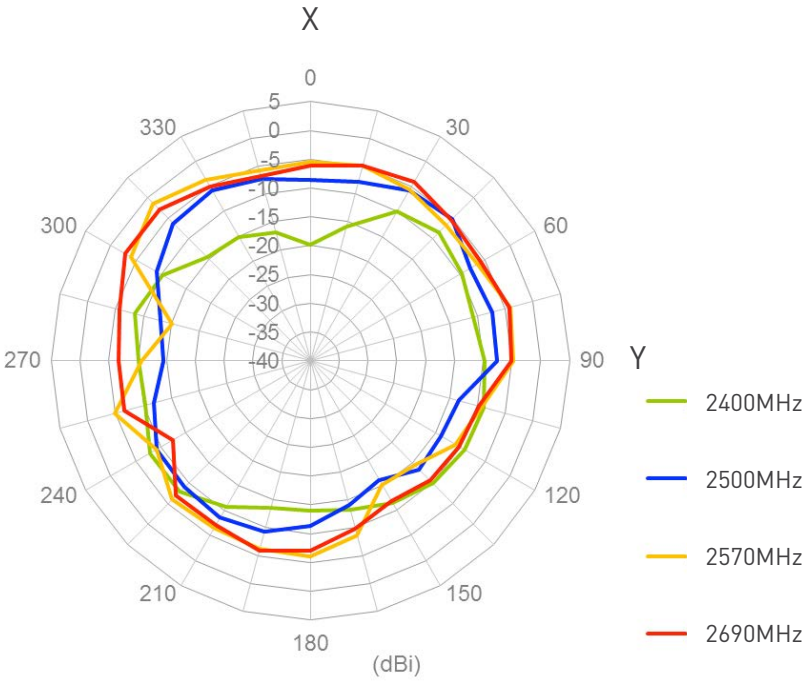

3. LTE Antenna Characteristics

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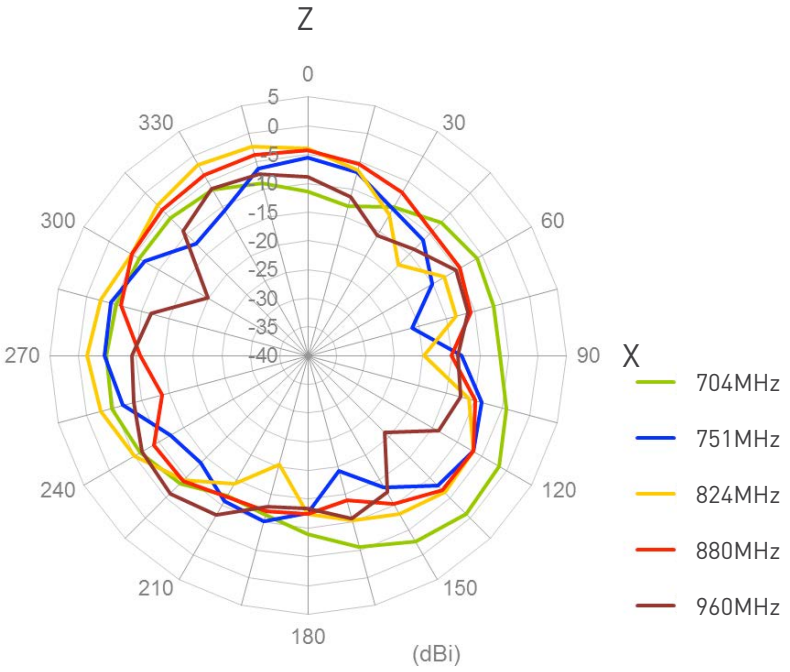
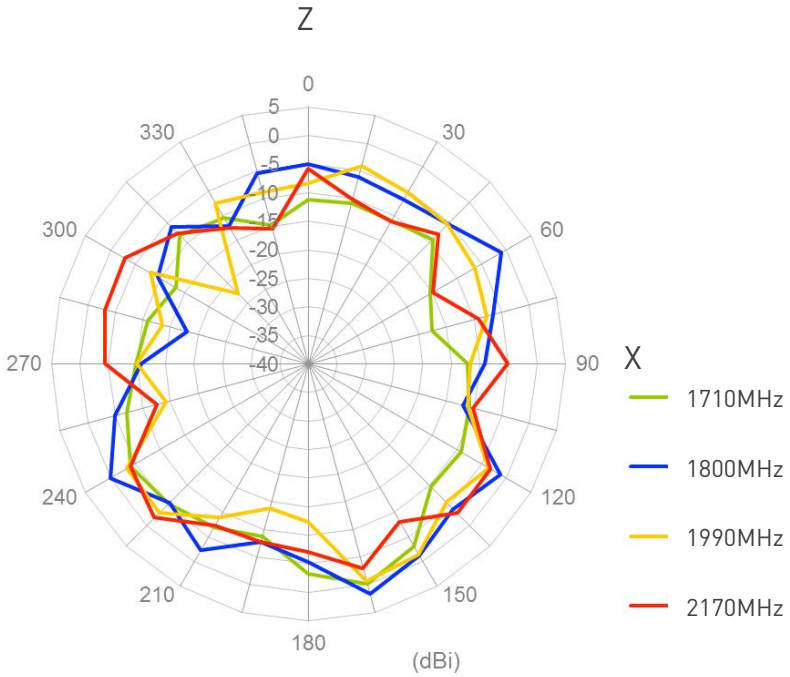


XZ plane



3. LTE Antenna Characteristics

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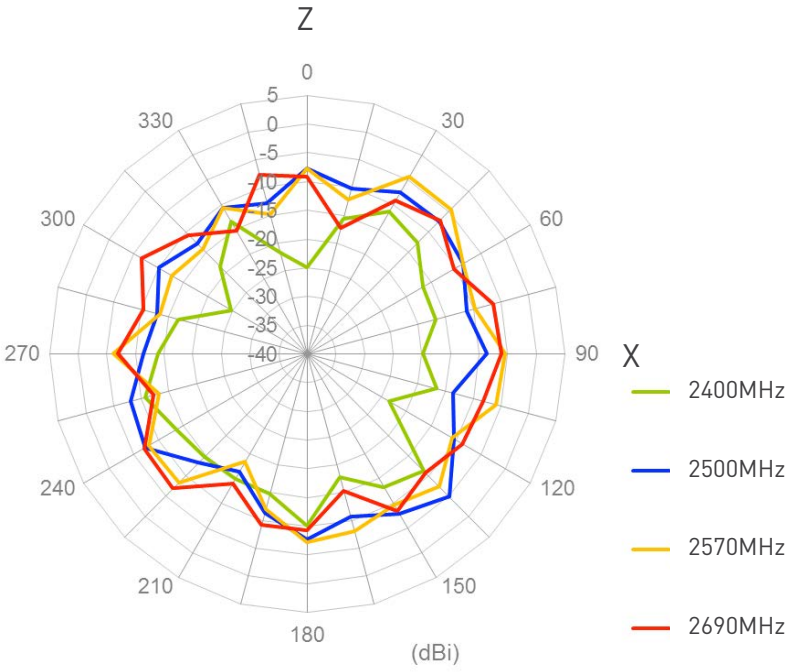
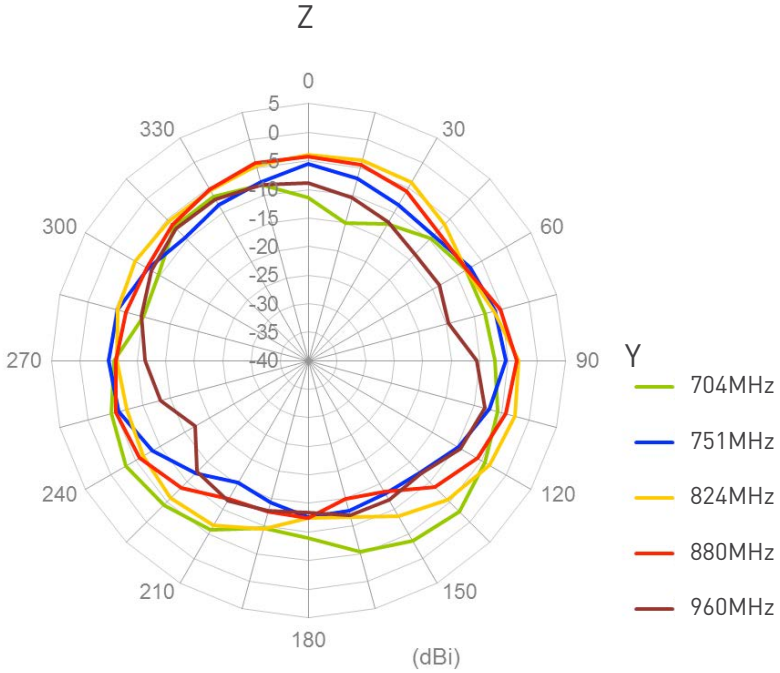


YZ plane



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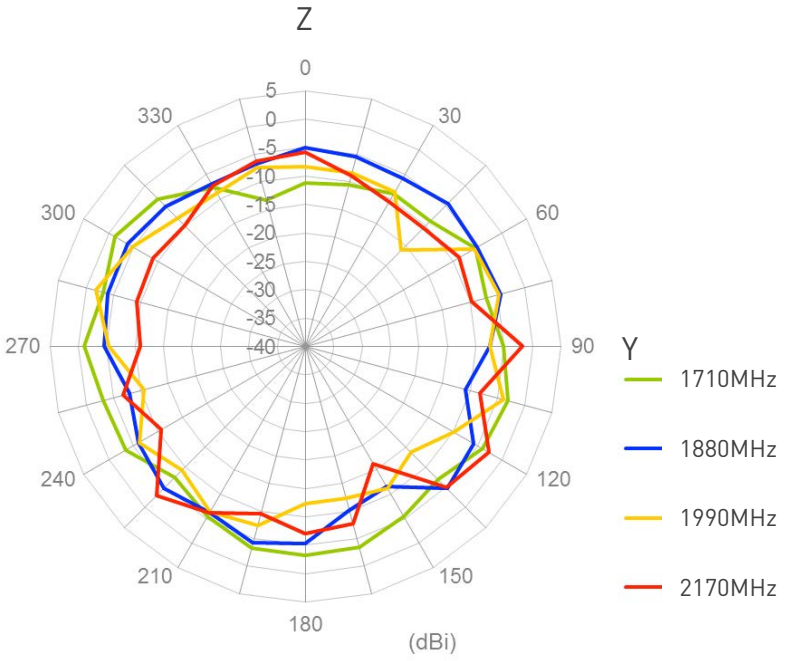

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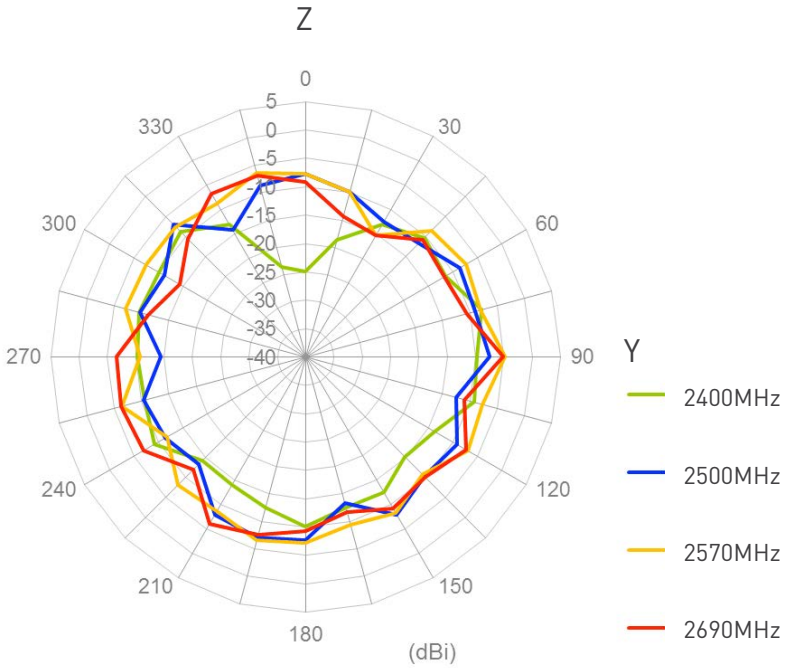
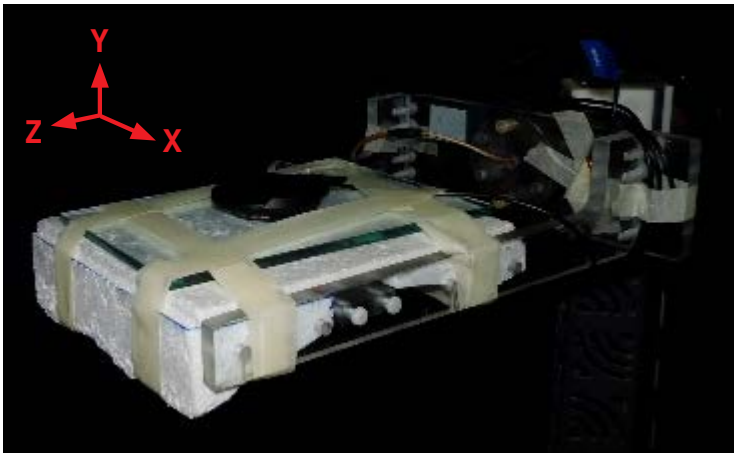
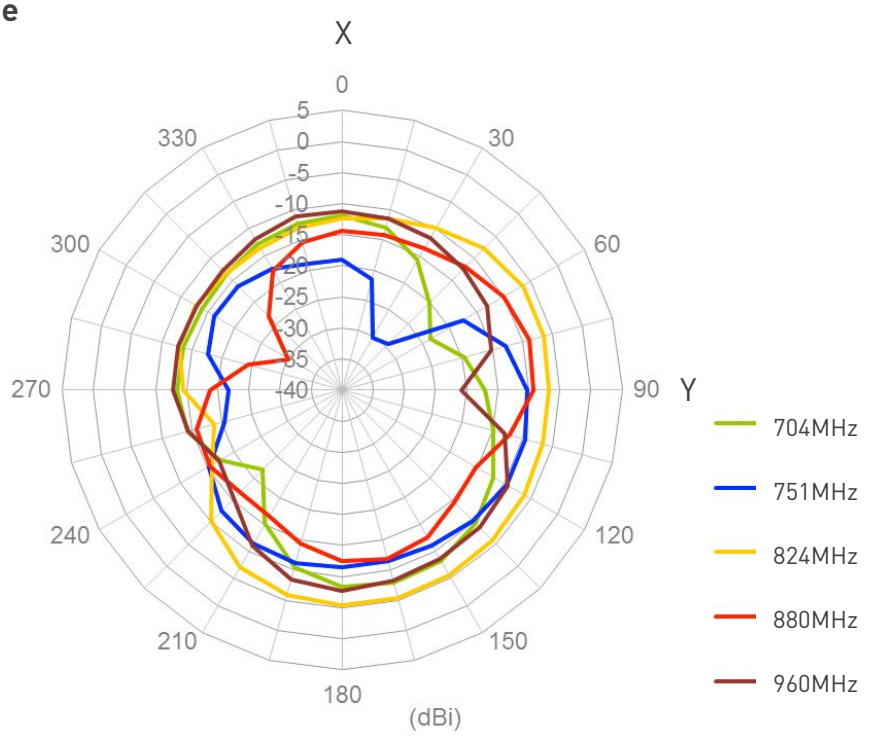


3. LTE Antenna Characteristics

3.7 On Glass Base Radiation Pattern - 3 meter length cable



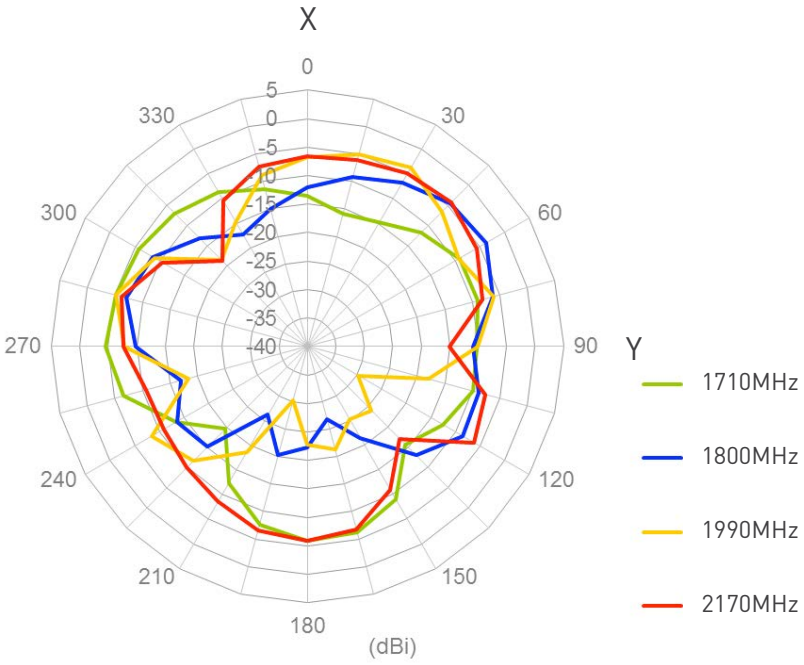
XY plane



3. LTE Antenna Characteristics

3.7 On Glass Base Radiation Pattern - 3meter length cable

XY plane



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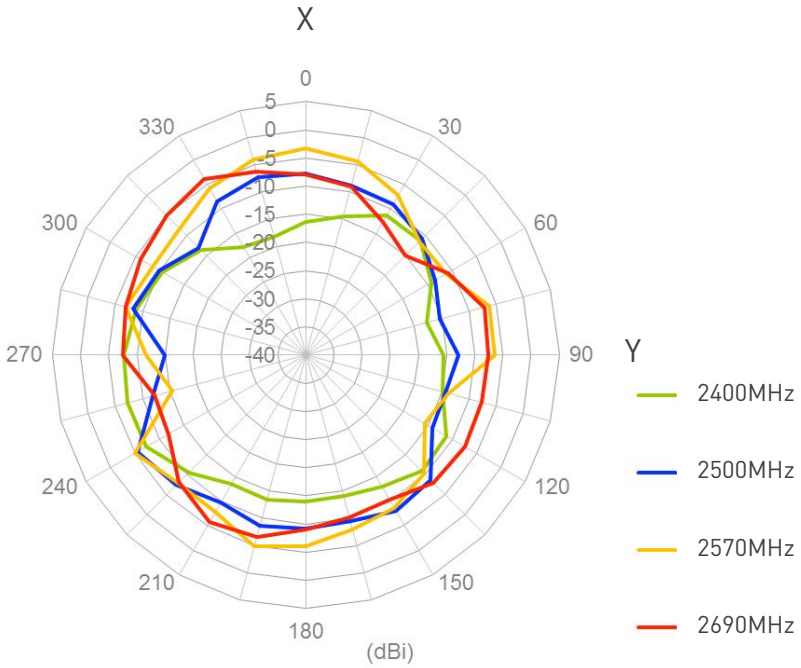
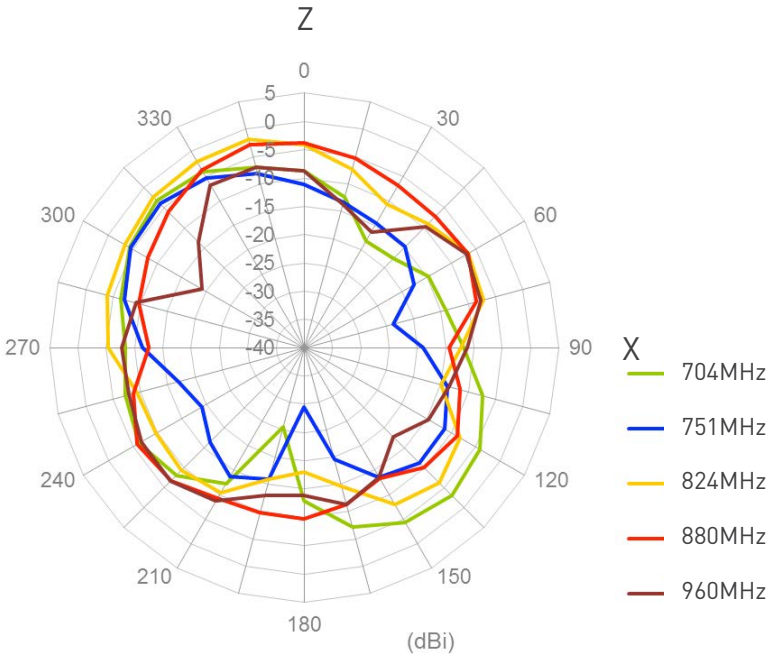


3. LTE Antenna Characteristics

3.7 On Glass Base Radiation Pattern - 3meter length cable

XZ plane



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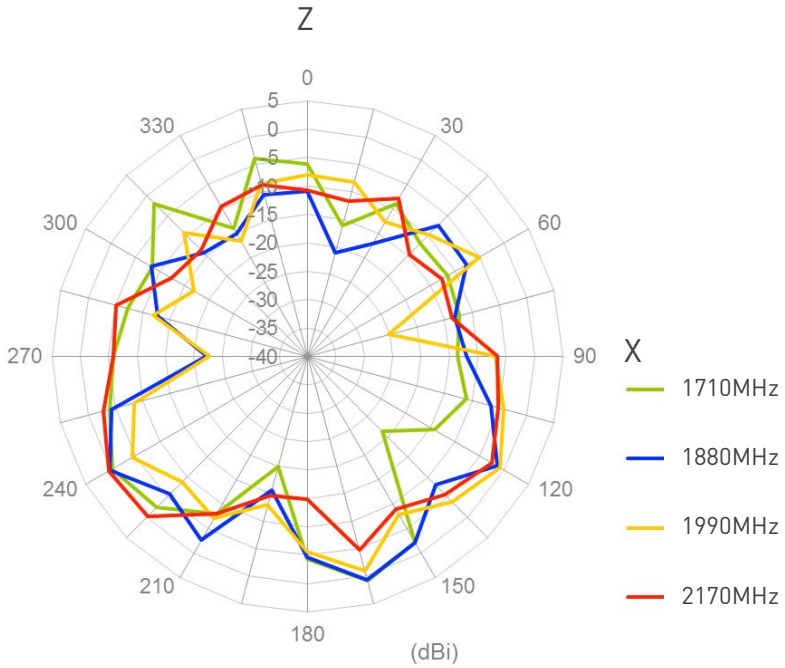
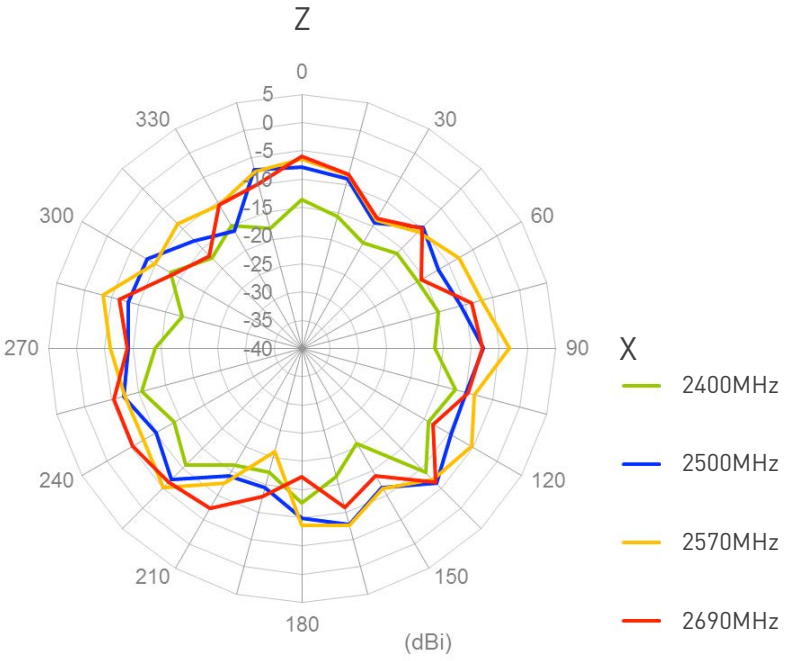


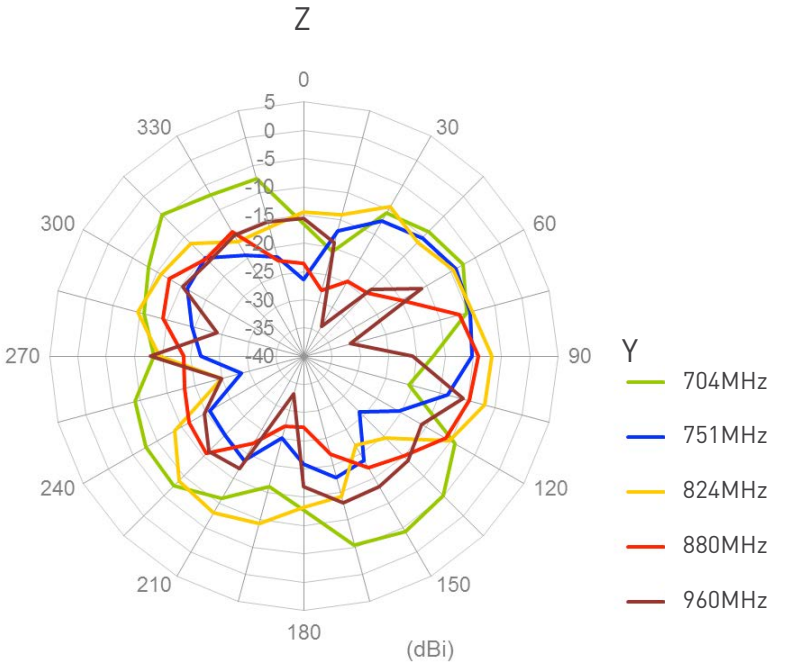
3. LTE Antenna Characteristics

3.7 On Glass Base Radiation Pattern - 3meter length cable

XZ plane



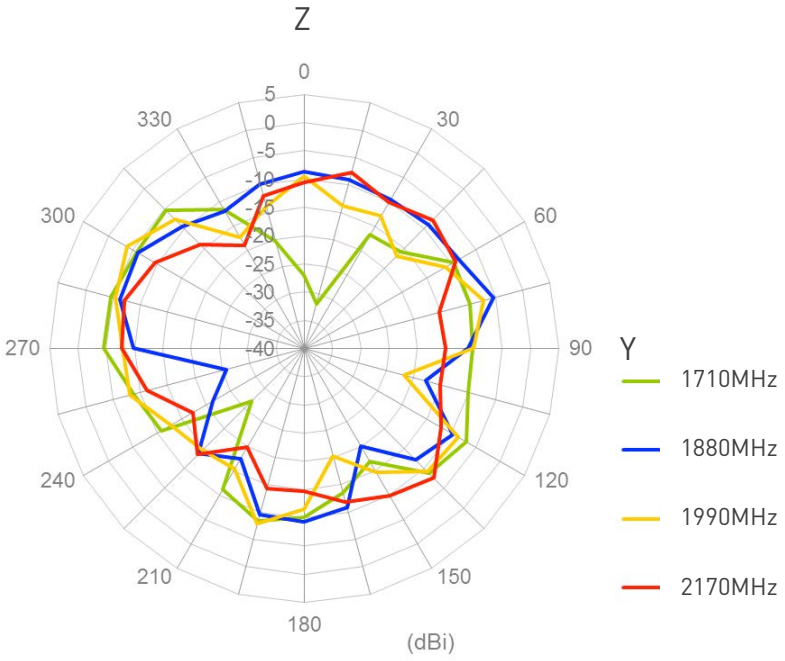
YZ plane



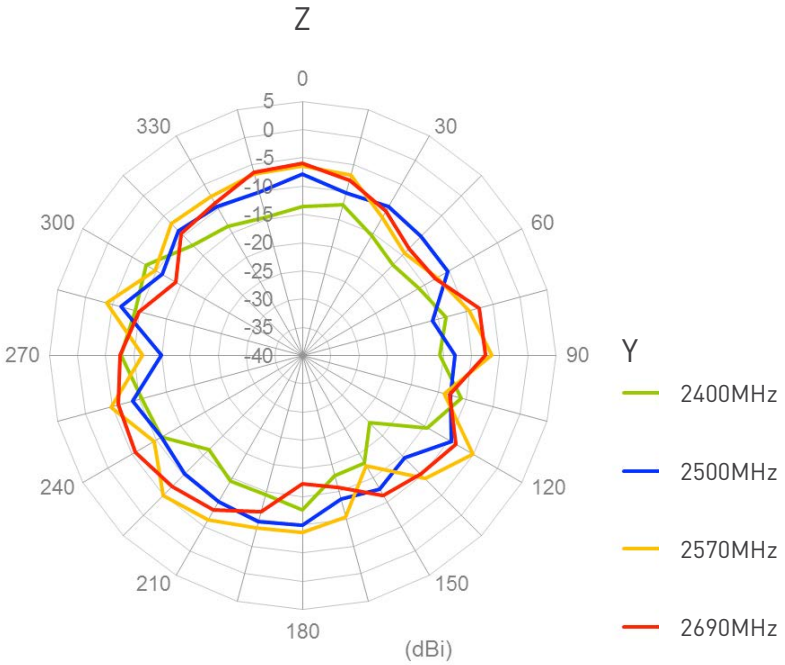
3. LTE Antenna Characteristics

3.7 On Glass Base Radiation Pattern - 3meter length cable

YZ plane



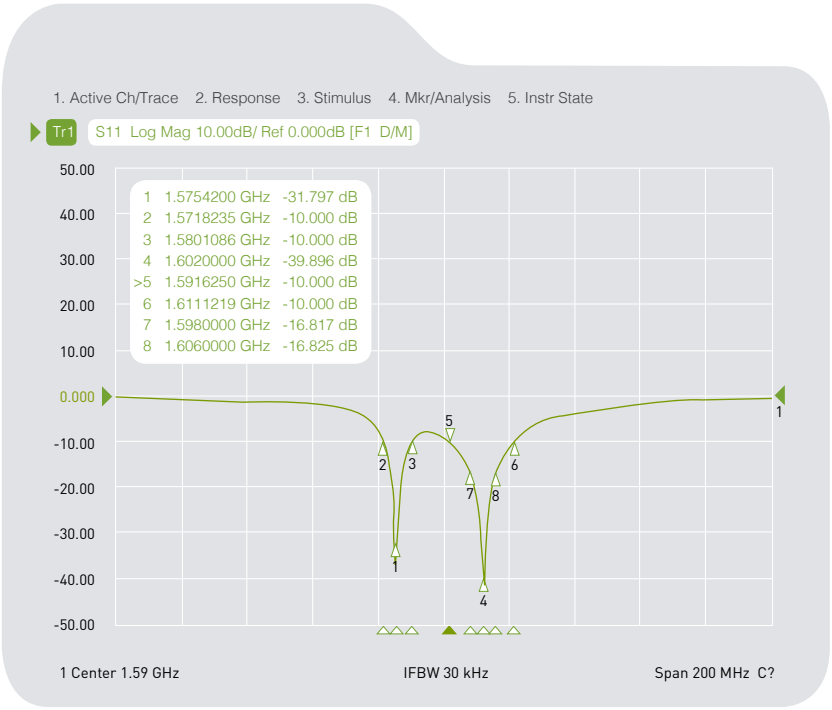
YZ plane



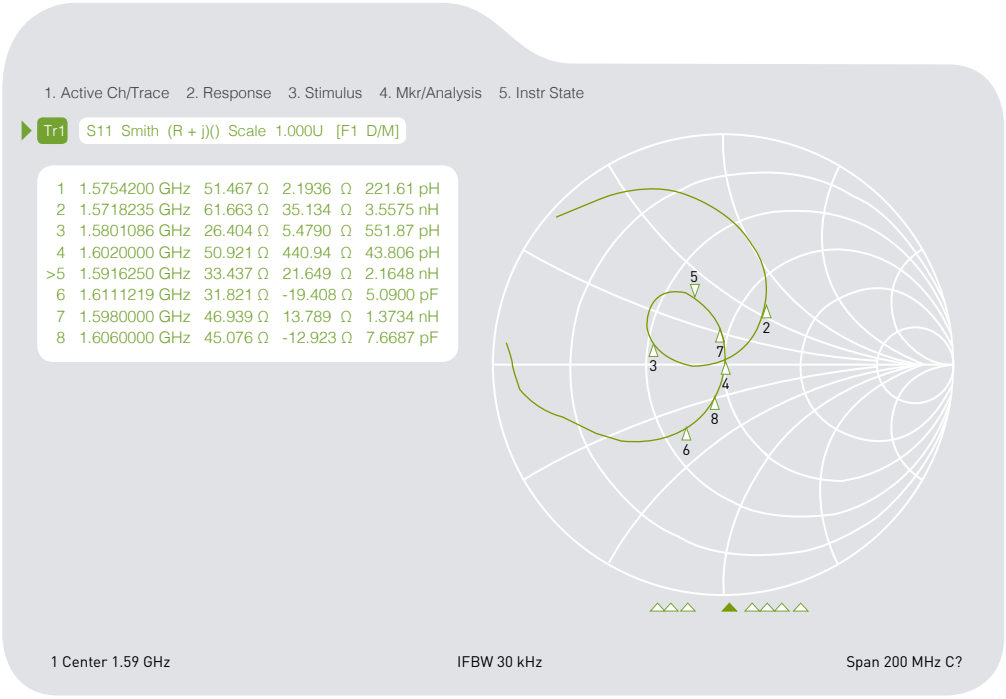
4. GPS-GLONASS Antenna Characteristics

4.1 Antenna Characteristics

Return Loss



Smith Chart



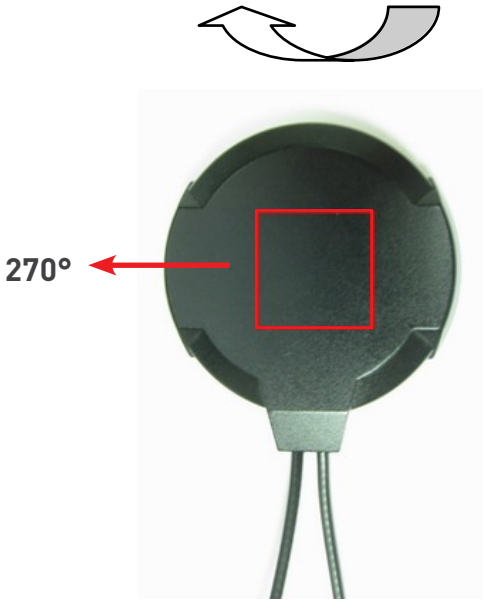
4. GPS-GLONASS Antenna Characteristics

4.1 Antenna Characteristics

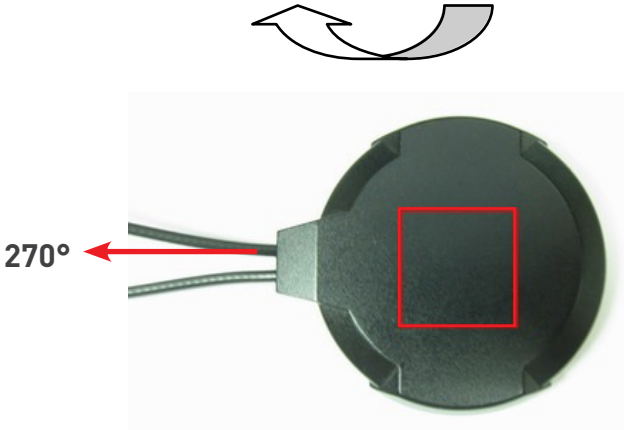
Experiment Results

Dimension (mm)	Fo (MHz)	Return Loss (dB)	Impedance (Ω)	Gain 0° H-Plane (dBic)	Gain 0° E-Plane (dBic)
25.0 x 25.0 x 4.0mm	1575.42	-31.7	51.4 + j 2.1	-0.08	0.00
	1598	-16.8	46.9 + j 13.7	-3.86	-3.62
	1602	-39.8	50.9 + j 0.4	-4.17	-4.32
	1606	-16.8	45.0 - j 12.9	-4.74	-5.16

Antenna Radiation Pattern



H-Plane

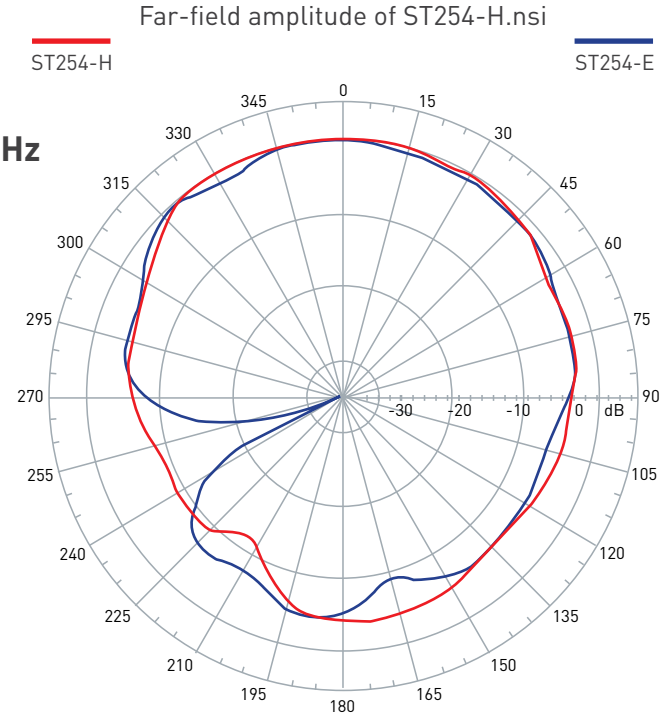


E-Plane

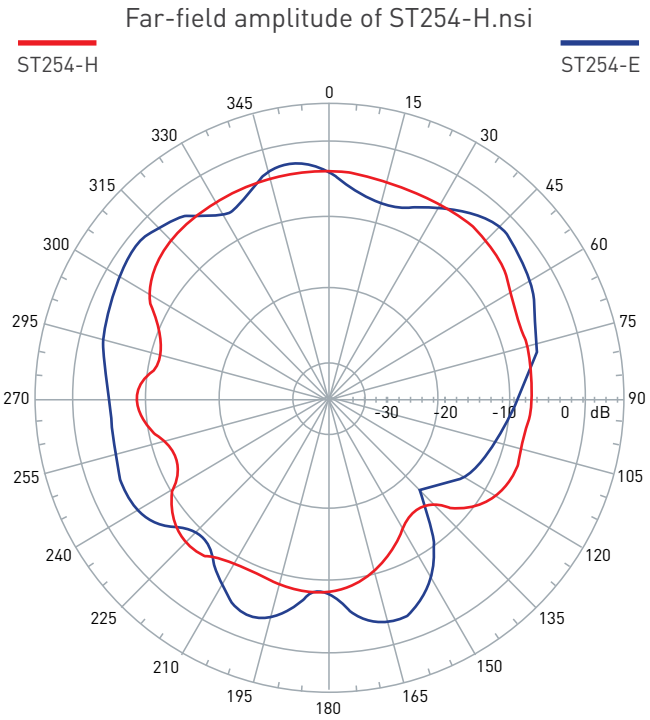
4. GPS-GLONASS Antenna Characteristics

4.1 Antenna Characteristics

1575.42 MHz



1602 MHz

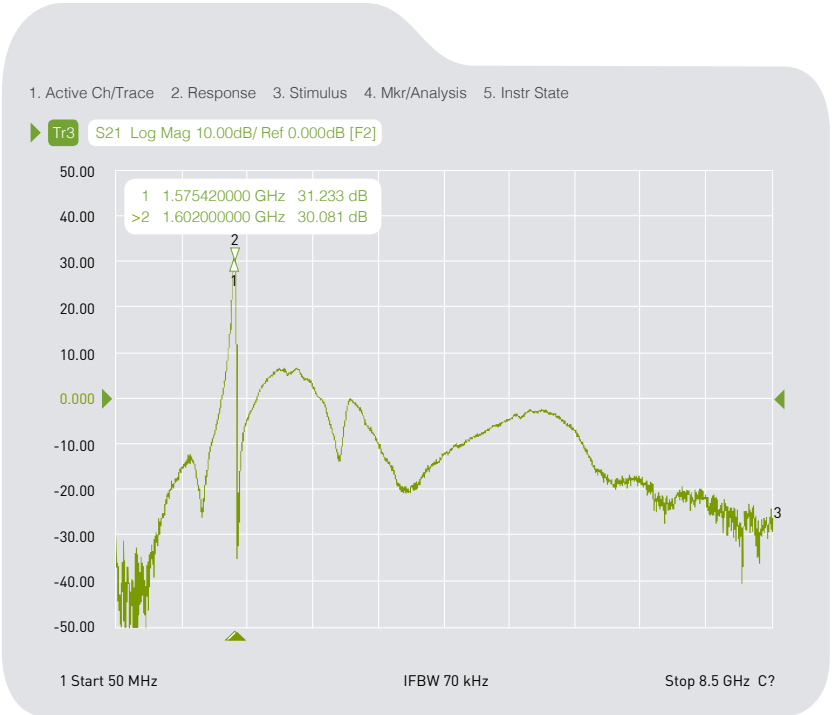


4. GPS-GLONASS Antenna Characteristics

4.2 LNA Characteristics

S11

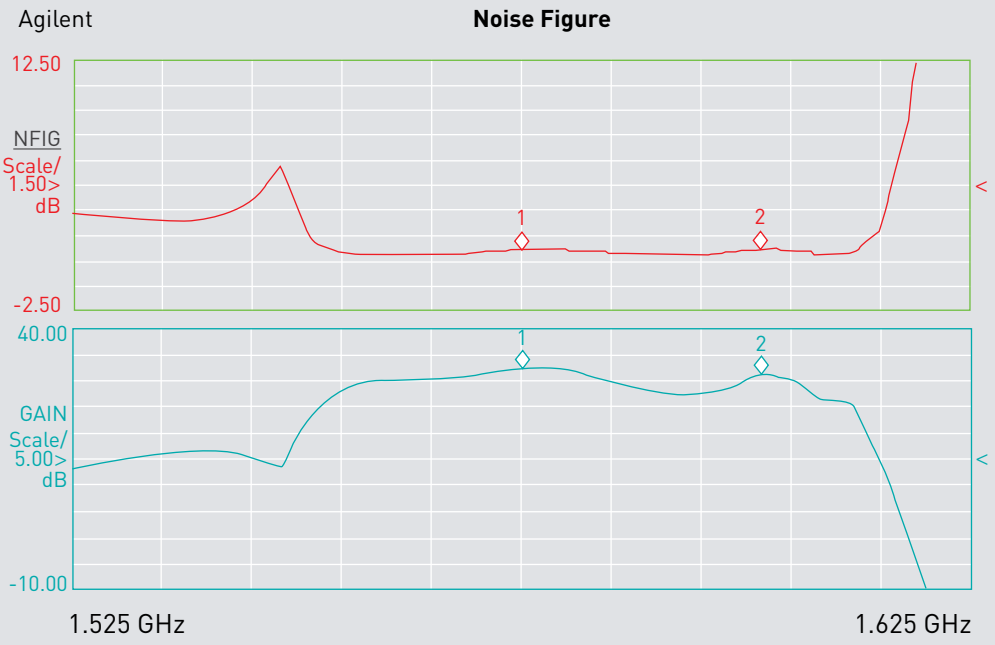
S12



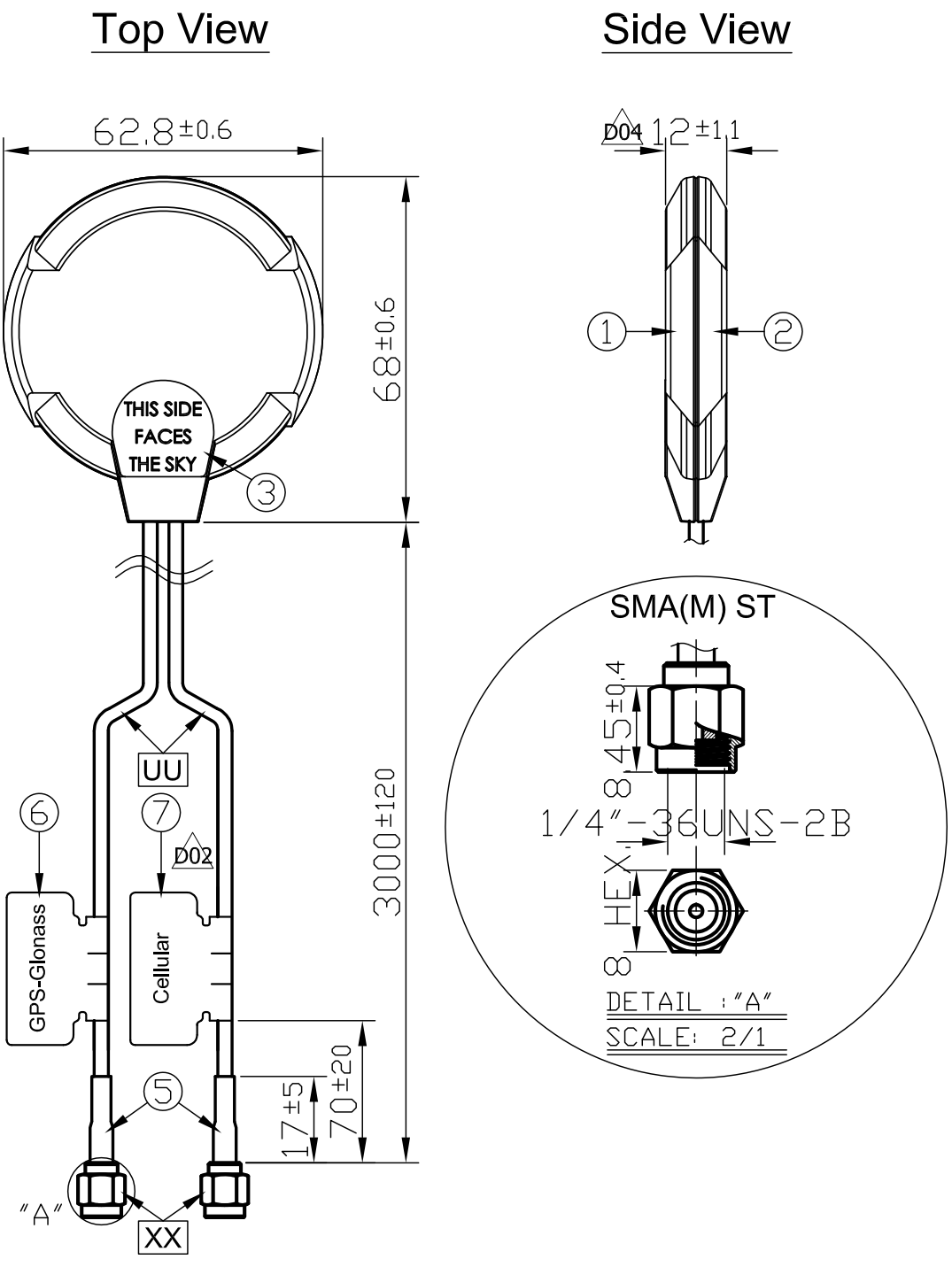
4. GPS-GLONASS Antenna Characteristics

4.2 LNA Characteristics

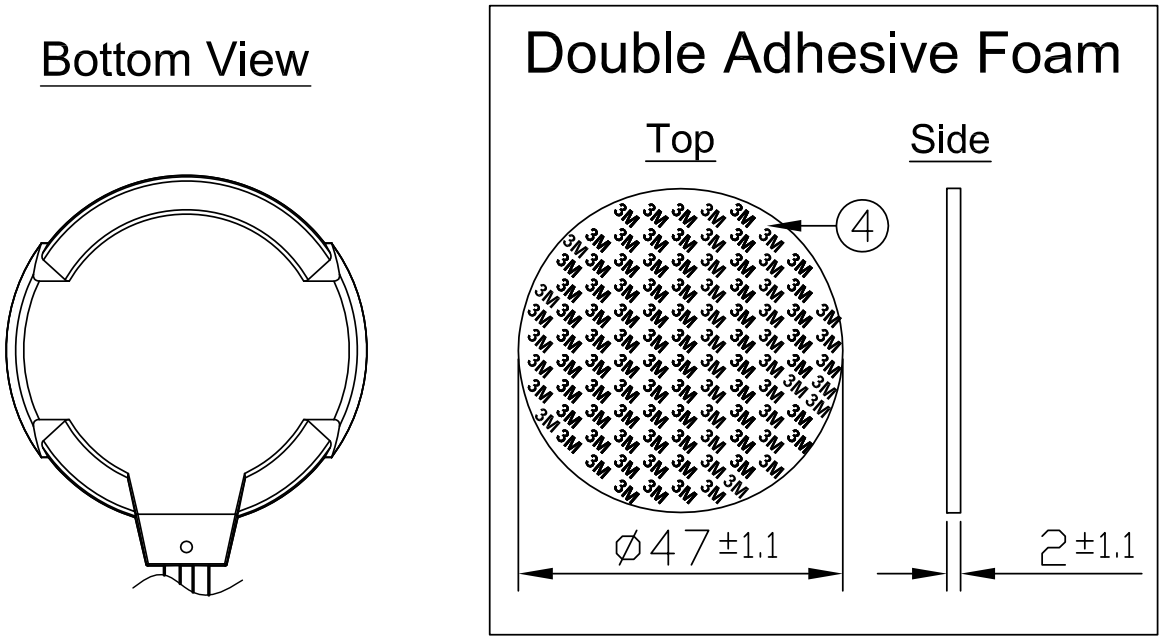
Noise Figure



5. Drawing


Top View
Side View
62.8±0.6
68±0.6
THIS SIDE FACES THE SKY
3
UU
6
7
D02
GPS-Glonass
Cellular
3000±120
5
17±5
70±20
"A"
XX
D04
12±1.1
1
2
SMA(M) ST
8
45±0.4
1/4"-36UNS-2B
HEX
8
DETAIL :"A"
SCALE: 2/1

5. Drawing

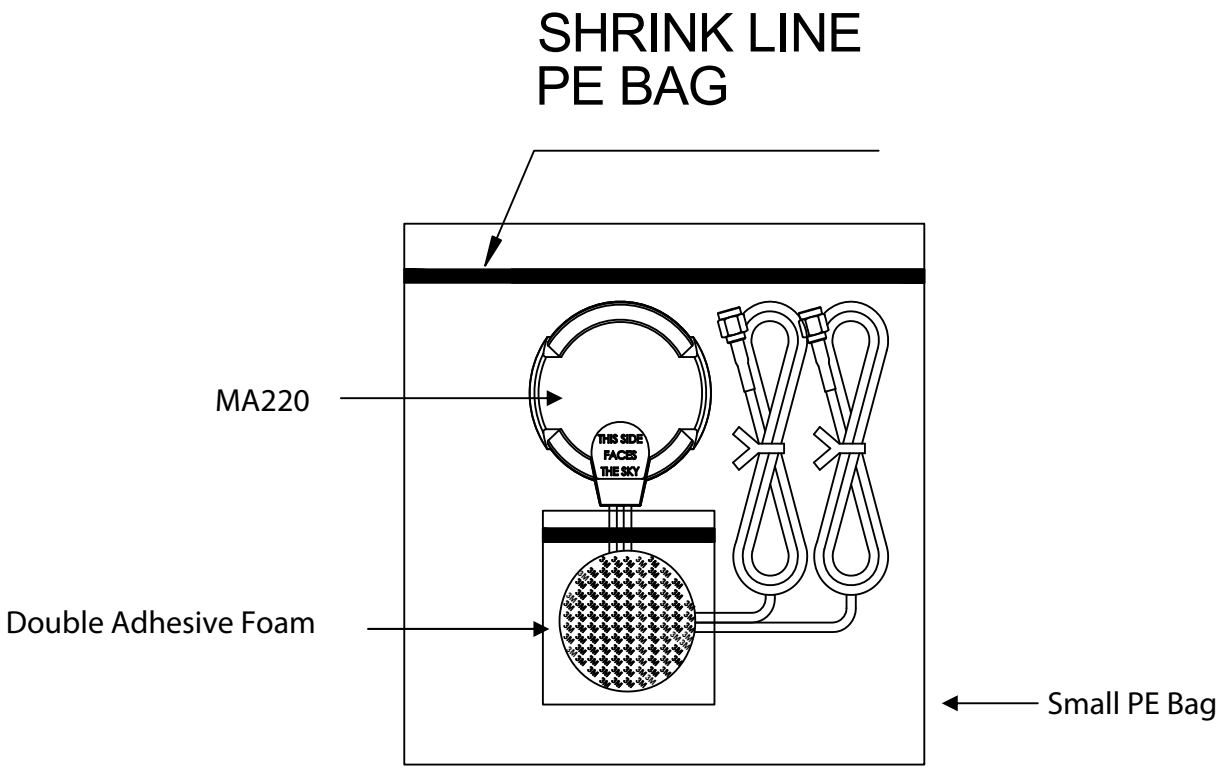


	Name	Material	Finish	QTY
1	Housing Top	ABS	Black	1
2	Housing Bottom	ABS	Black	1
3	Clear Label	PET	White	1
4	Double Adhesive Foam	3M 9448 + CR - 4305	Black	1
5	Heat Shrink Tube RG-174	PE	Black	2
6	GPS-GLONASS Label	Coated Paper	Orange	1
7	Celluar Label	Coated Paper	Blue	1

	Name	Material	Finish	QTY
UU	Cable Type	RG-174	Black	2
XX	Connector Type	SMA(M) ST	Gold	2

6. Packaging

1pcs antennas and 1 pcs double adhesive foam per small PE bag.



Packing:1set/bag

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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