



Underside View  
(this side faces the passenger)



Top View  
(this side faces the sky)



MA204.A.LB.002

Specification

Part No.	MA204.A.LB.002
Product Name	<b>Stingray</b> MA204 Stingray 2in1 - GPS/GLONASS - Cellular Adhesive Antenna
Feature	GPS/GLONASS - High gain LNA up to 28dB  Penta-band Cellular – 800MHz to 2200MHz GSM/CDMA/PCS/DCS/UMTS/GPRS/EDGE/HSPA  Height 10.8mm Diameter 55.1mm RoHS Compliant

## 1. Introduction

This is a 2in1 combination high performance GPS/GLONASS and Penta-band Cellular (GSM / CDMA/PCS/DCS/ / UMTS / GPRS / EDGE / HSPA) antenna to simplify AVL or Fleet management antenna 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 leading edge pentaband cellular 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 standard version has 3 metres RG174 cable and SMA(M) connector on both GPS/GLONASS and Cellular.

The cables and connectors are completely customizable according to customer request.

### 1.1 Features

#### GPS/GLONASS

---

High LNA Gain up to 28 dB

Antenna Gain  $28 \pm 2$  dB

Miniaturized to 55\*11.8mm

Low Noise 2.2 dB max

#### Cellular

---

Advanced penta-band cellular antenna

(GSM/CDMA/PCS/DCS/UMTS/GPRS/EDGE/HSPA)

#### Other

---

Water Resistant IP 65 (IP 67 "W" version also available on request)

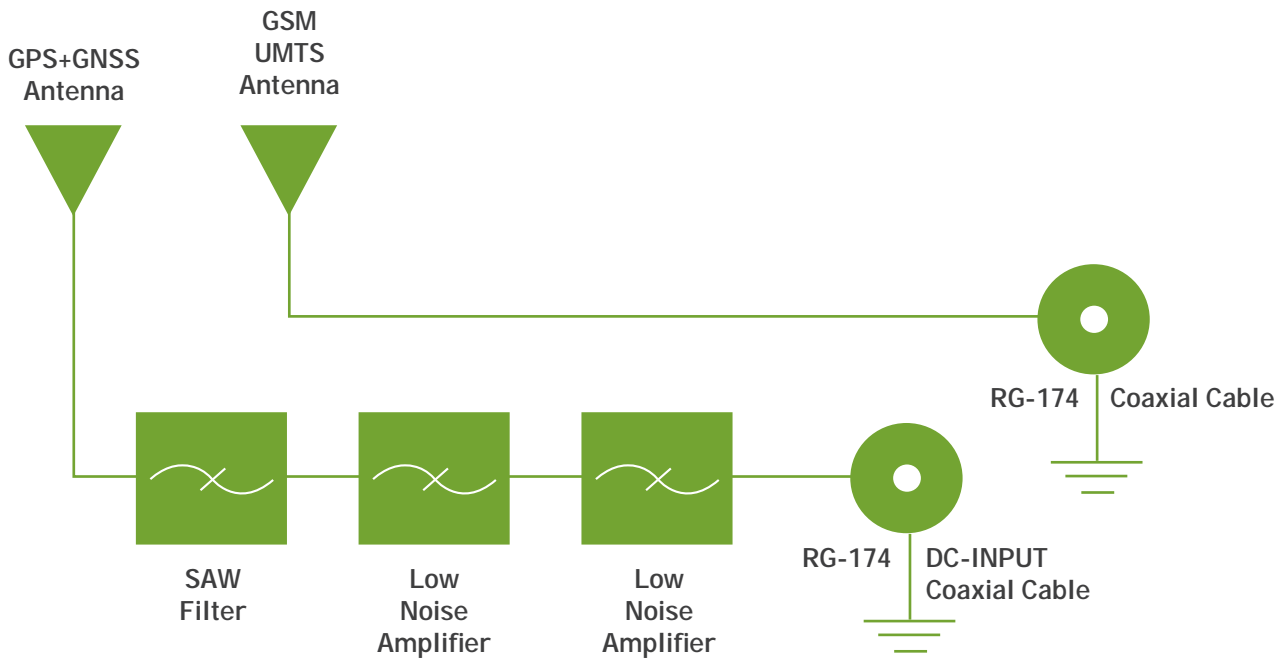
Quality textured covert design. Low profile

UV resistant ABS housing

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

Customizable cables and connectors

## 2. Antenna Block Diagram



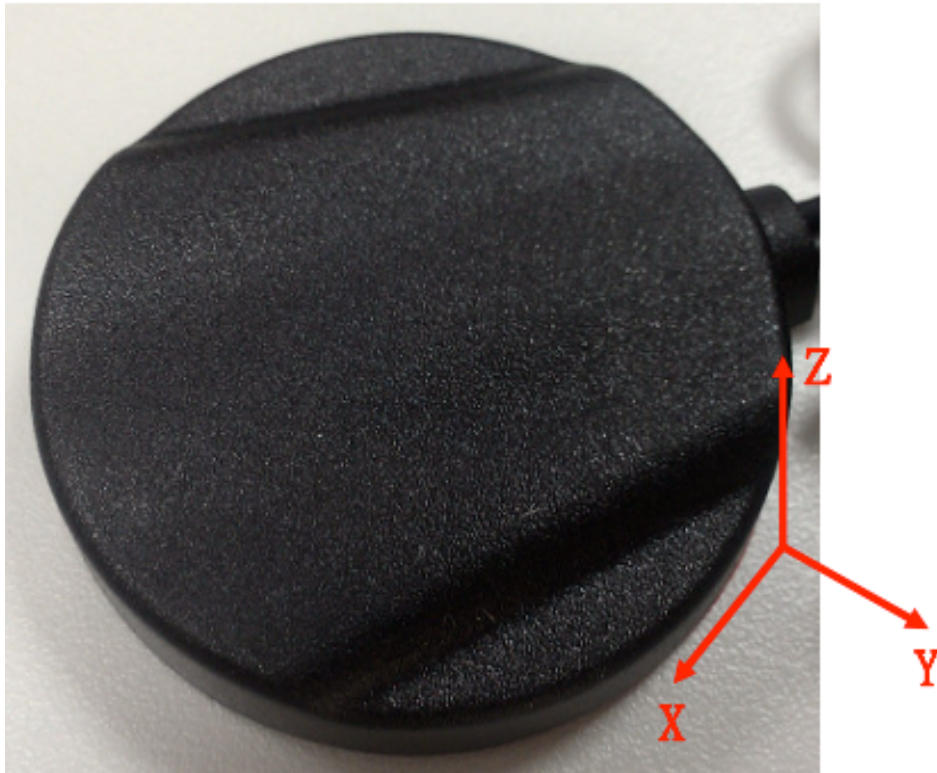
### 3. Specification

#### 3.1 Performance Specifications

Items	GPS/GLONASS Antenna	Cellular Antenna
Features	High performance GPS/GLONASS ceramic patch antenna with cutting edge low noise amplifier	800MHz to 2200MHz
Frequency	1575.42 MHz ± 3MHz 1602 MHz ± 0.5MHz	As above
Gain	28 dB typ.	As patterns
VSWR	2.0:1	2.5:1
Impedance	50Ω	50Ω
DC Power Input	3.3V	
Power Consumption	10mA Typ.	
Noise Figure	2.2 dB Max	
Cable / Connector	Standard 1/2/3/5m RG-174 Cables and Connectors Fully Customizable	Standard 1/2/3/5m RG-174 Cables and Connectors Fully Customizable
Operating Temperature	-40°C ~ +85°C	-40°C ~ +85°C
Storage Temperature	-40°C ~ +95°C	-40°C ~ +95°C
Size	55mm * 10.8mm	
Housing	UV resistant ABS	

**\*Note:** specifications may be subject to change

#### 4. GPS/GLONASS Antenna - Setup

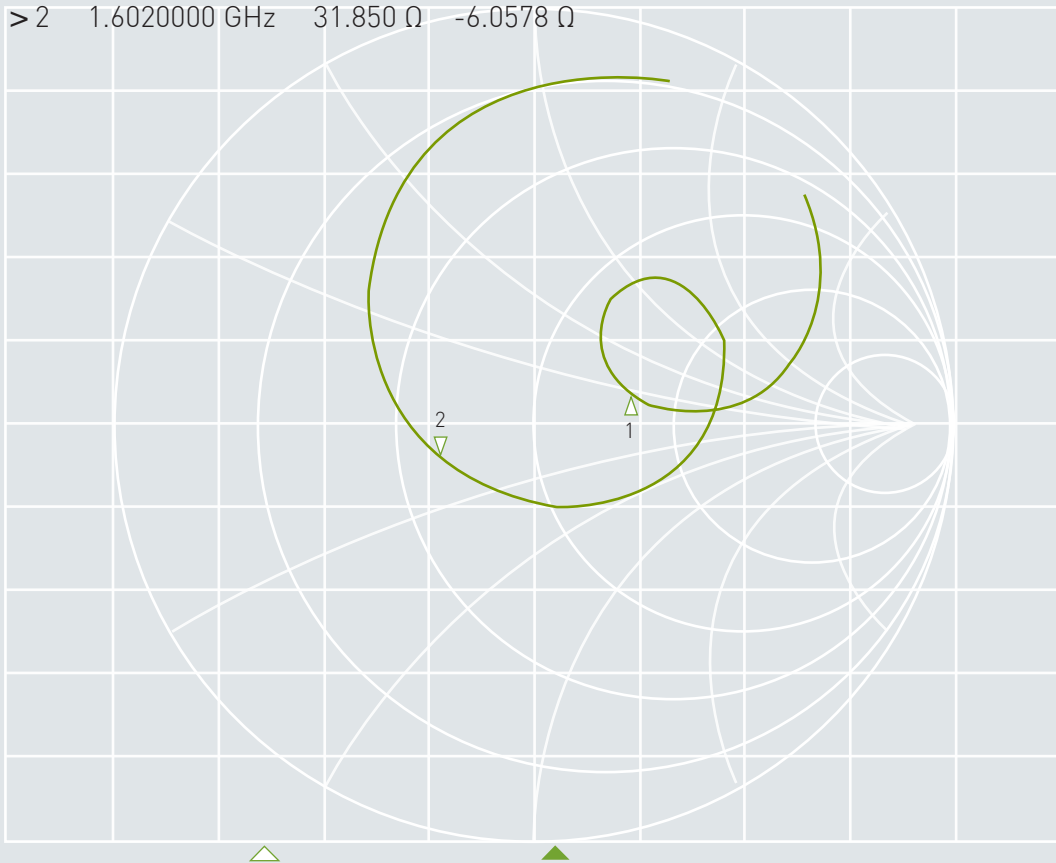


## 4.1 GPS/GLONASS Antenna

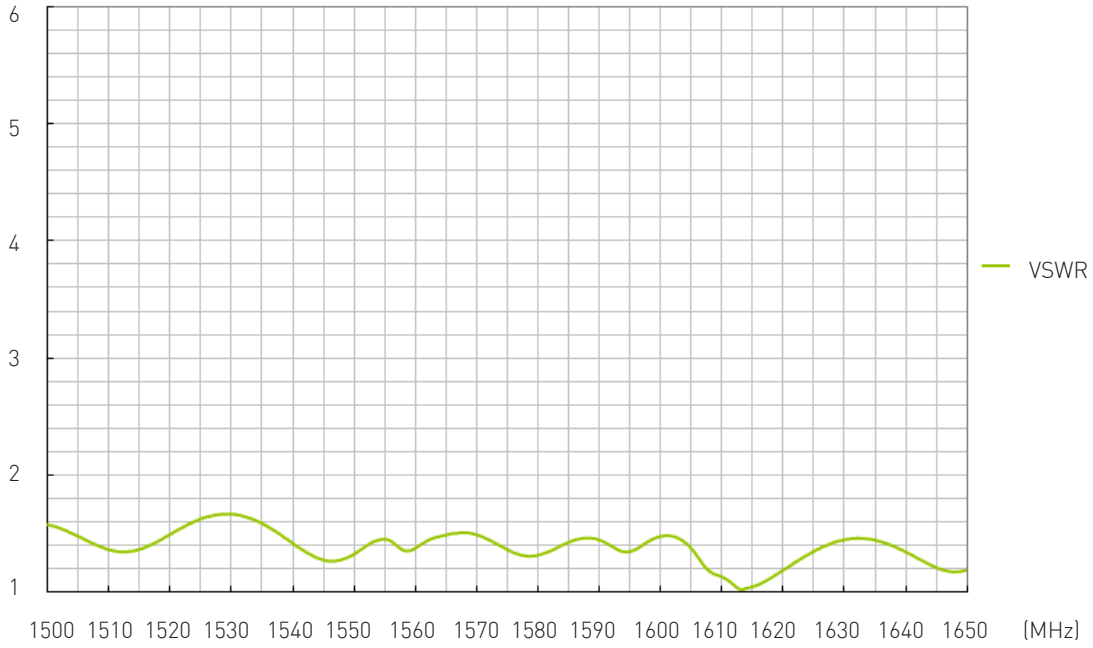
### 4.1.1 Smith Chart - Impedance

Tr1 S11 Smith (R+j)( $\Omega$ ) Scale 1.000U [F2]

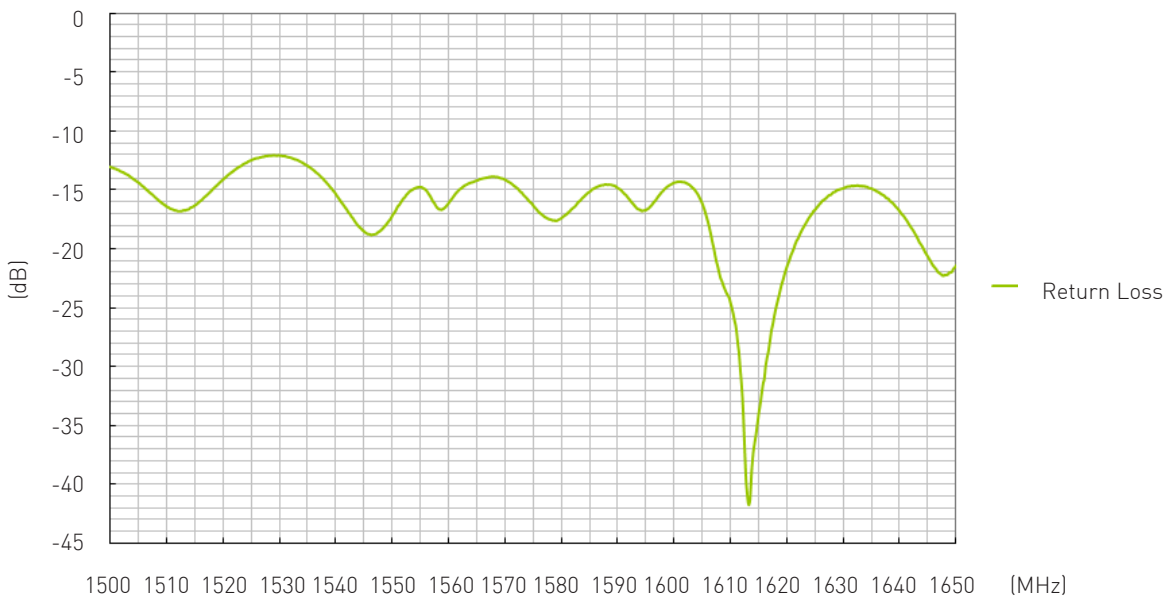
1	1.5754200 GHz	78.860 $\Omega$	13.968 $\Omega$
>2	1.6020000 GHz	31.850 $\Omega$	-6.0578 $\Omega$



### 4.1.2 VSWR

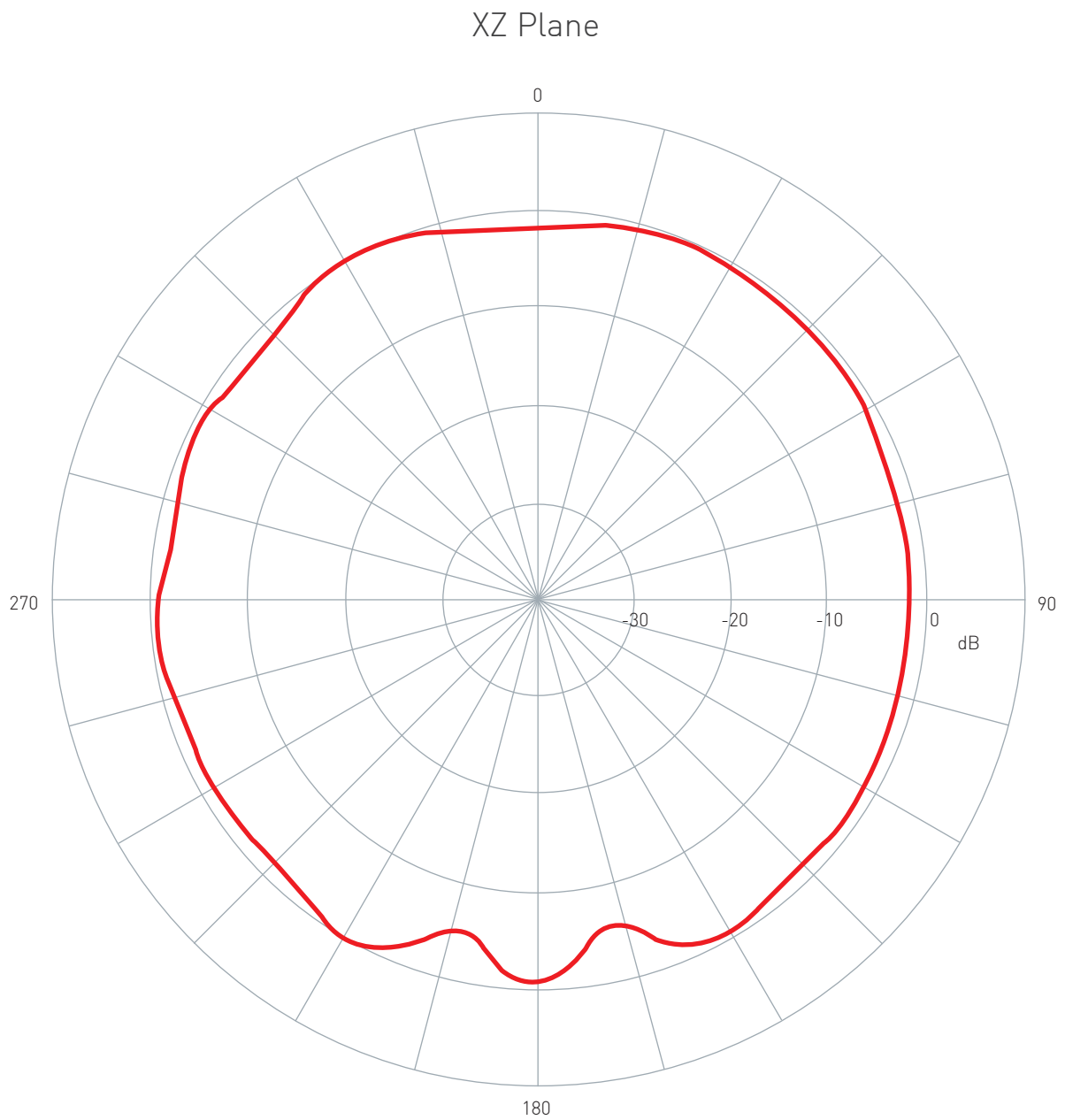


### 4.1.3 Return Loss



## 4.2 GPS/GLONASS Antenna Radiation Patterns

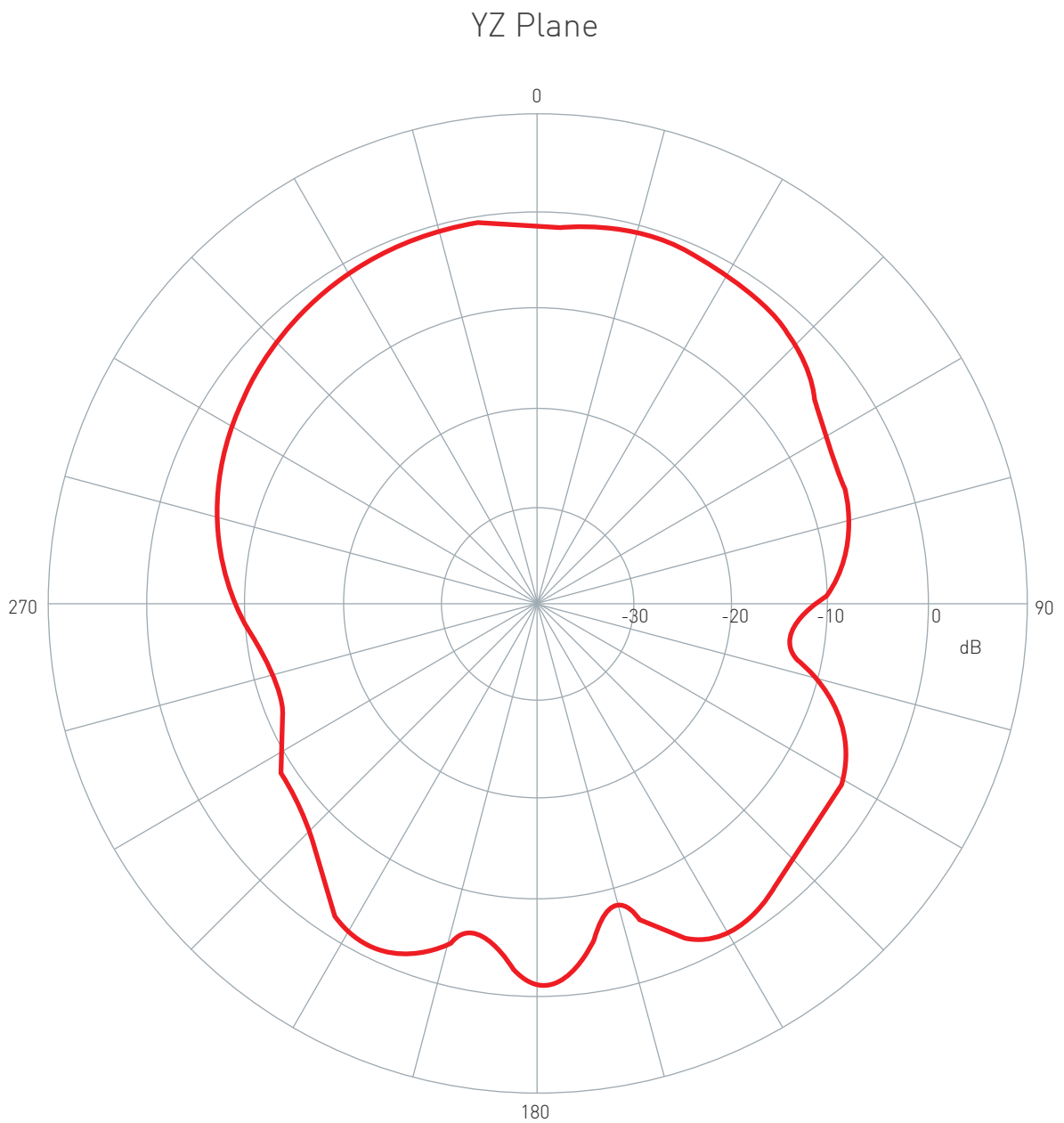
1575MHz





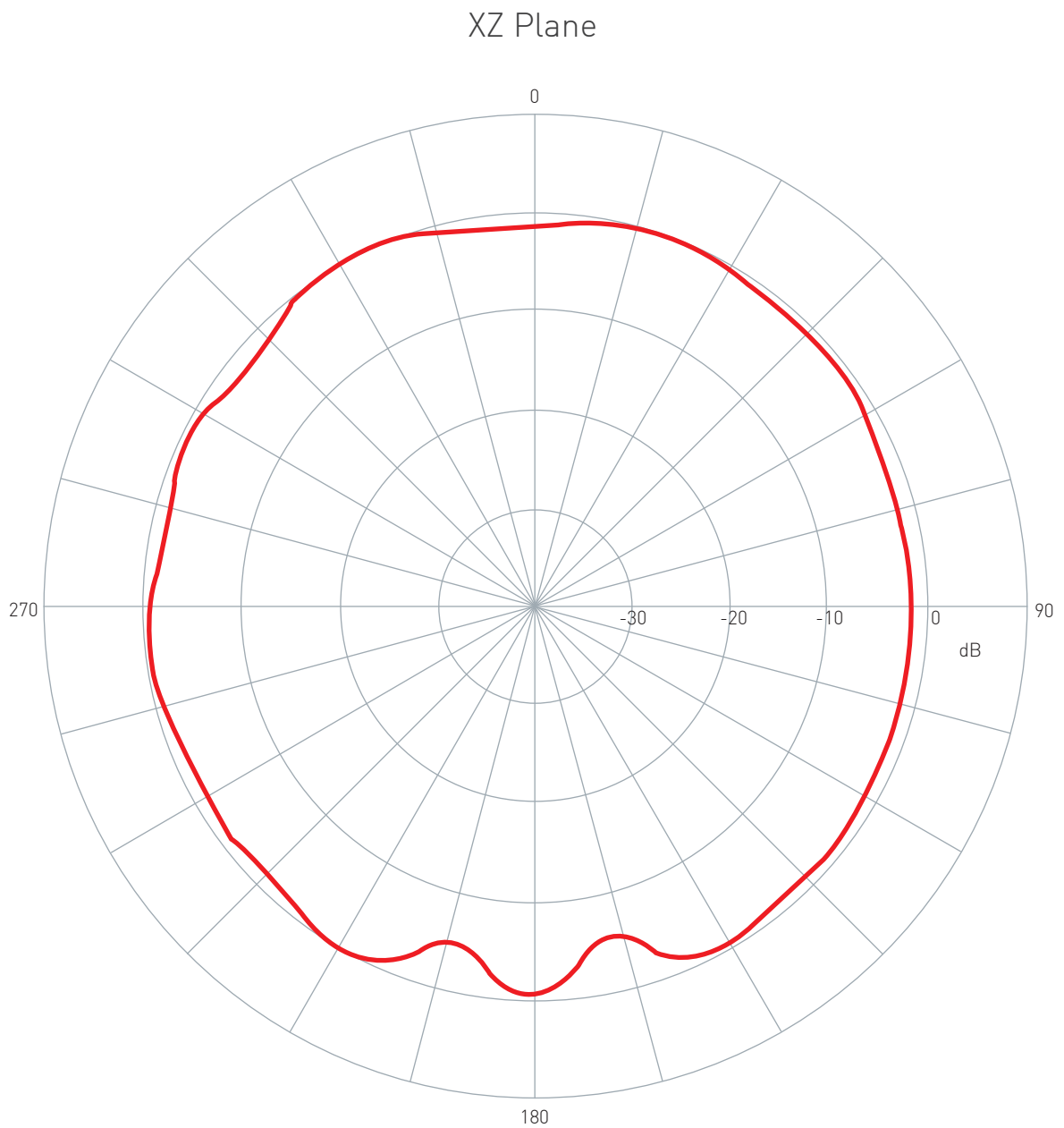
## 4.2 GPS/GLONASS Antenna Radiation Patterns

1575MHz



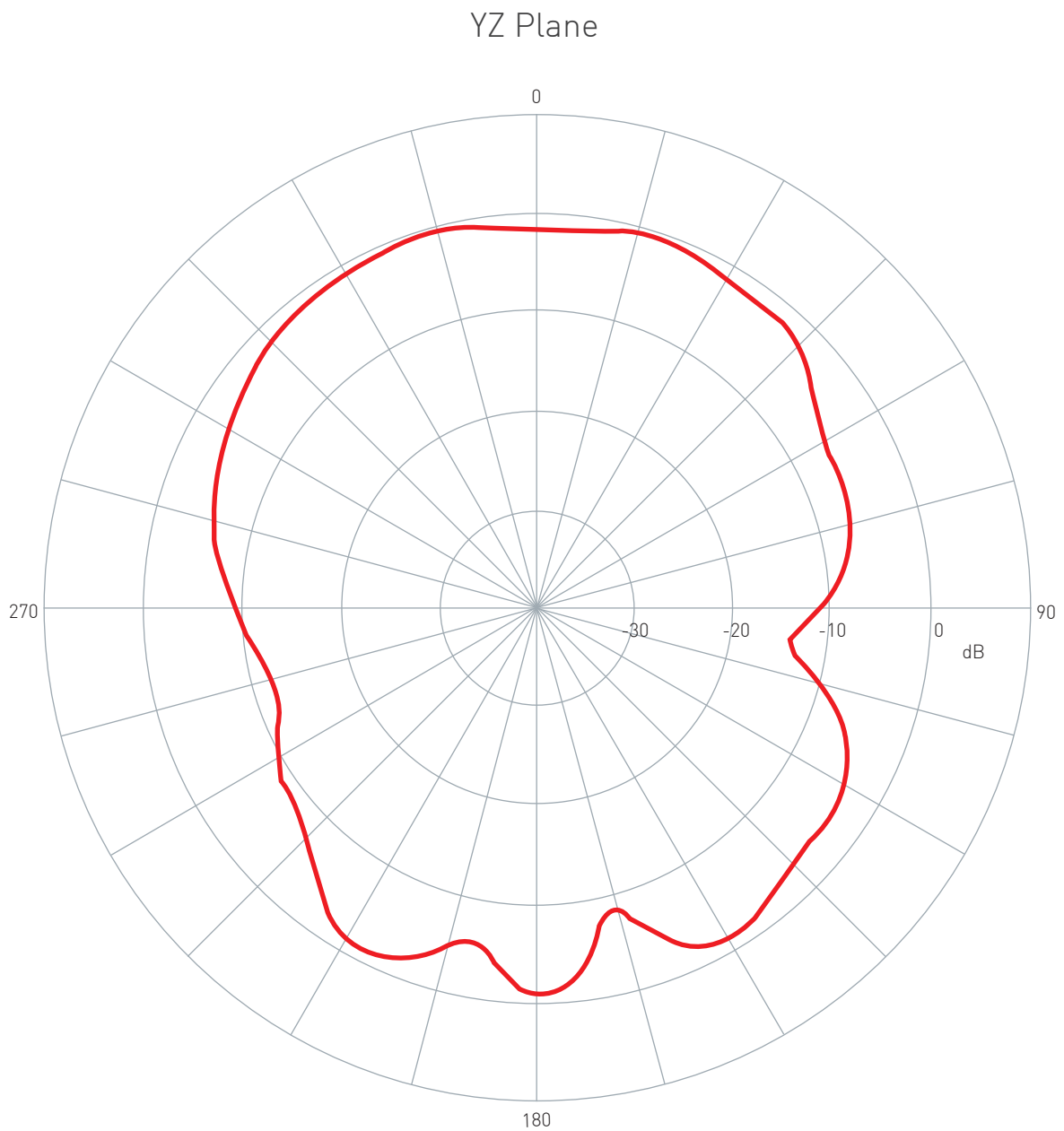
## 4.2 GPS/GLONASS Antenna Radiation Patterns

1602MHz



## 4.2 GPS/GLONASS Antenna Radiation Patterns

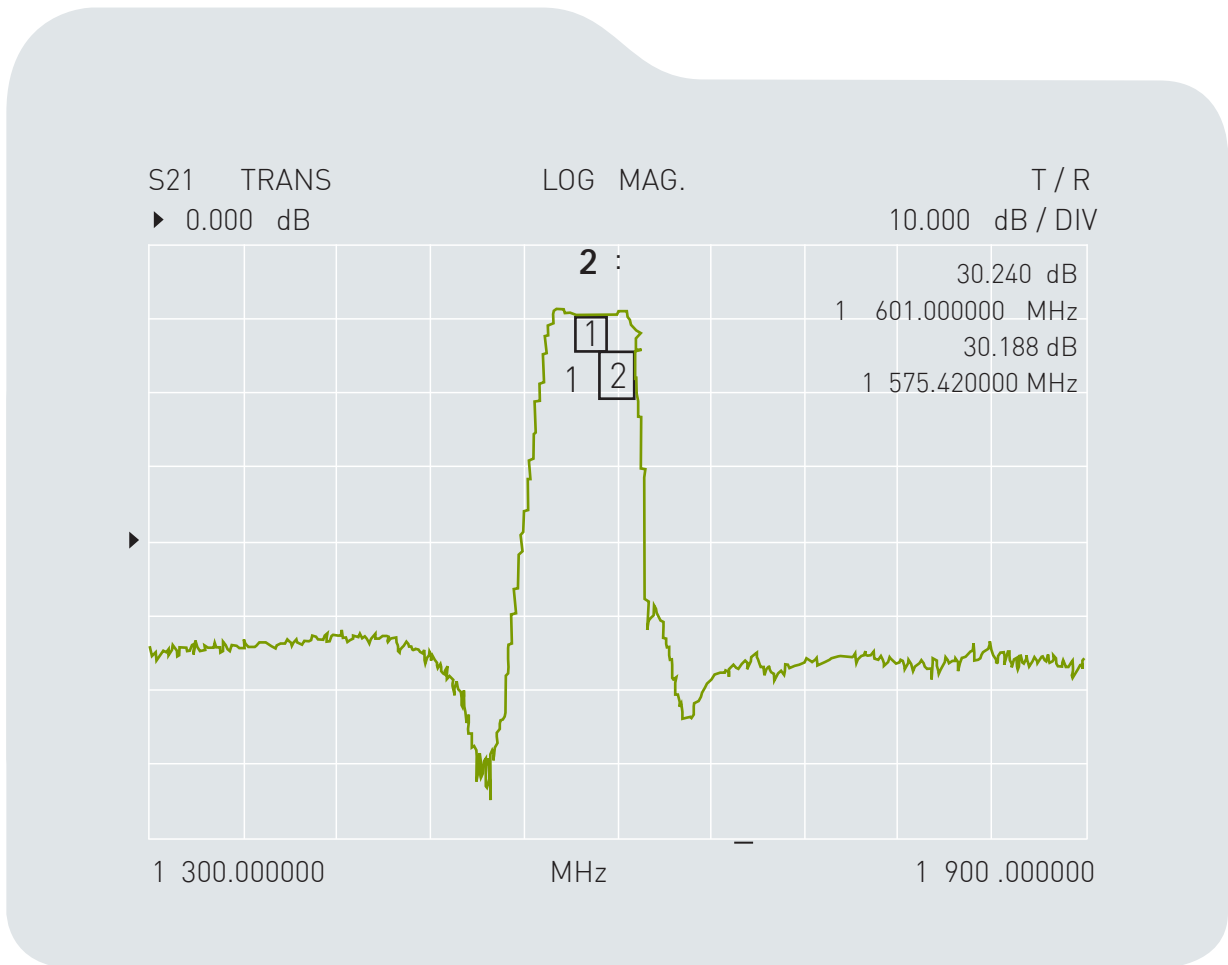
1602MHz



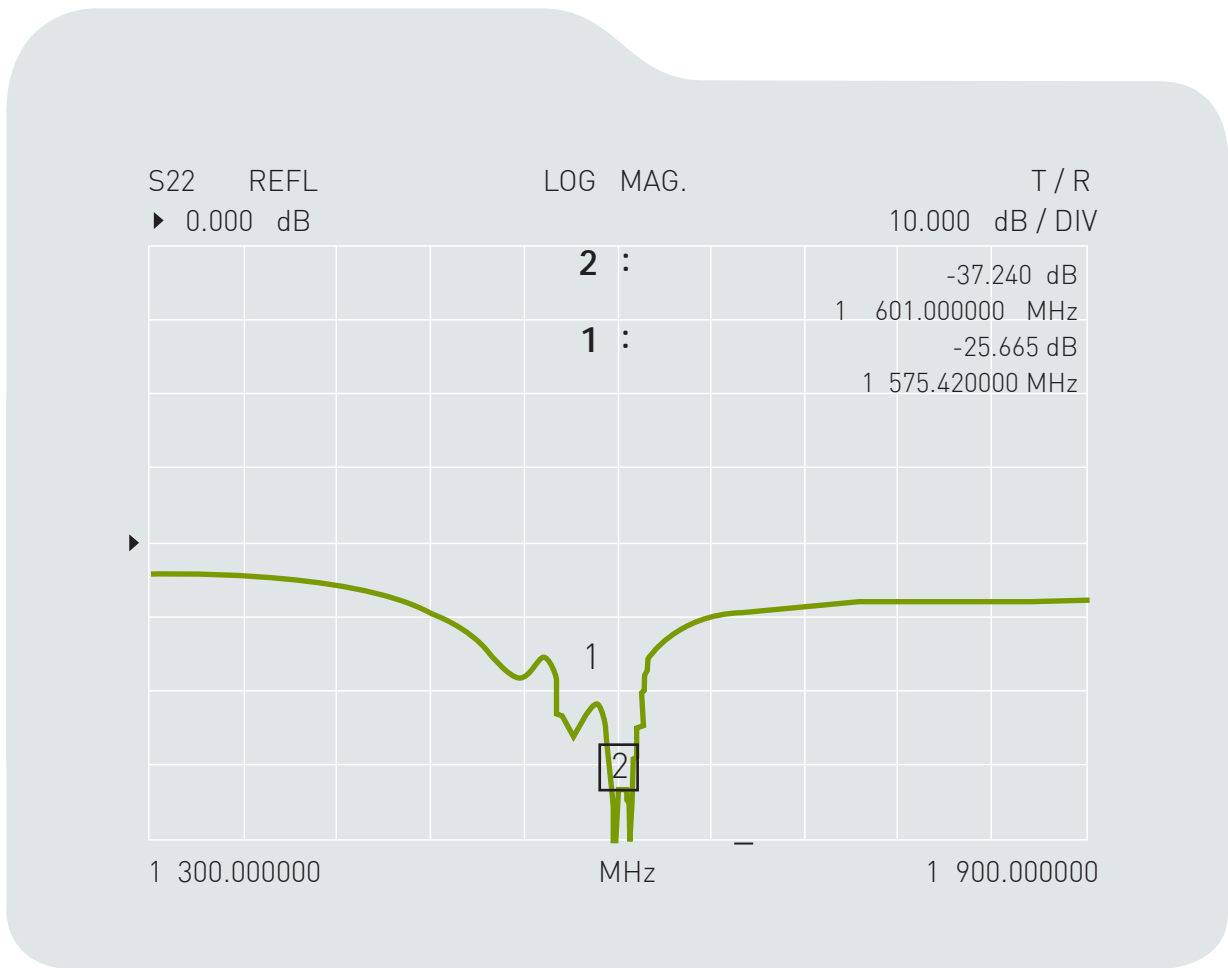
### 4.3 GPS/GLONASS Antenna Gain Chart

Frequency(MHz)	Peak Gain(dBi)	Efficiency(%)
1575	1.36	50.13
1602	0.09	52.64

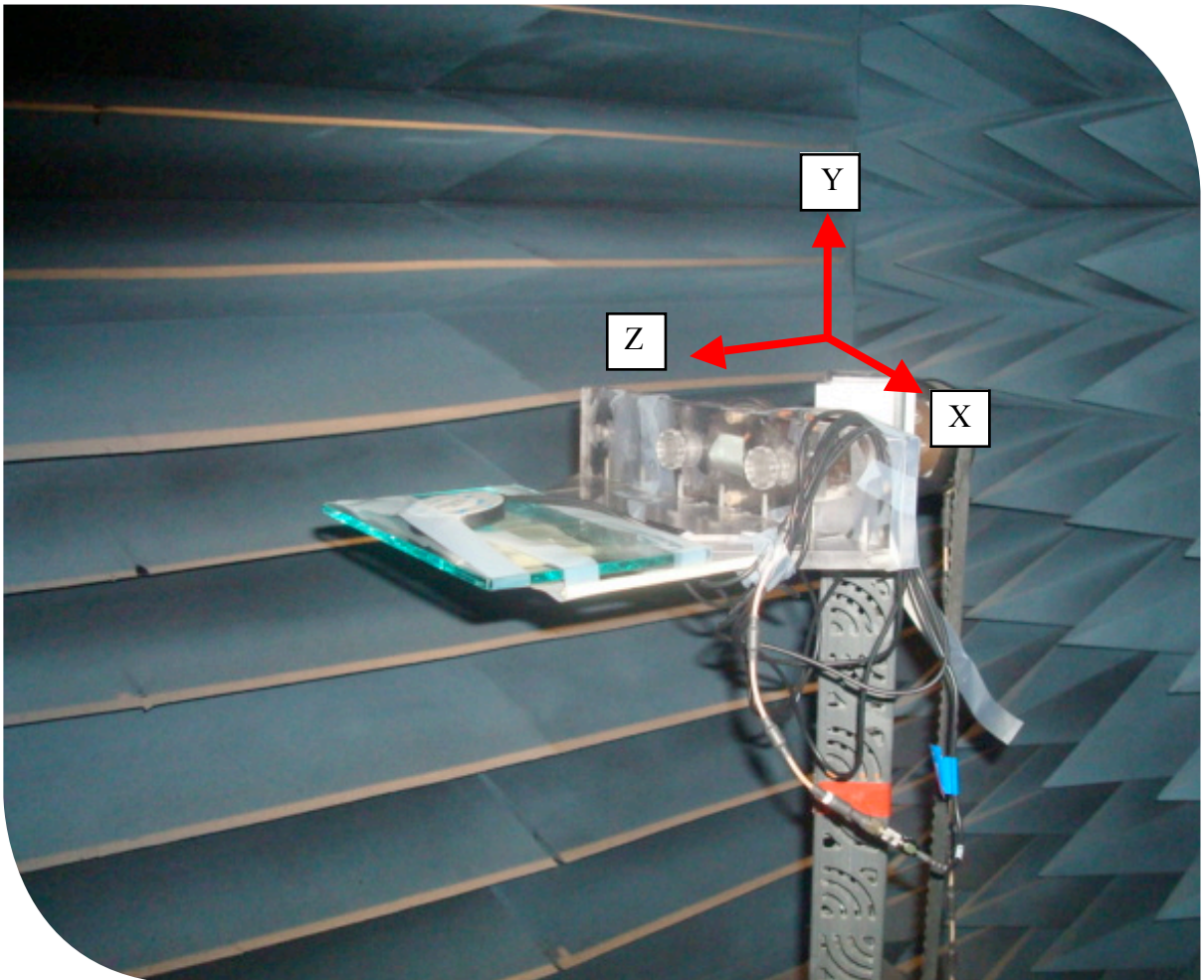
### 4.4 GPS/GLONASS LNA Gain



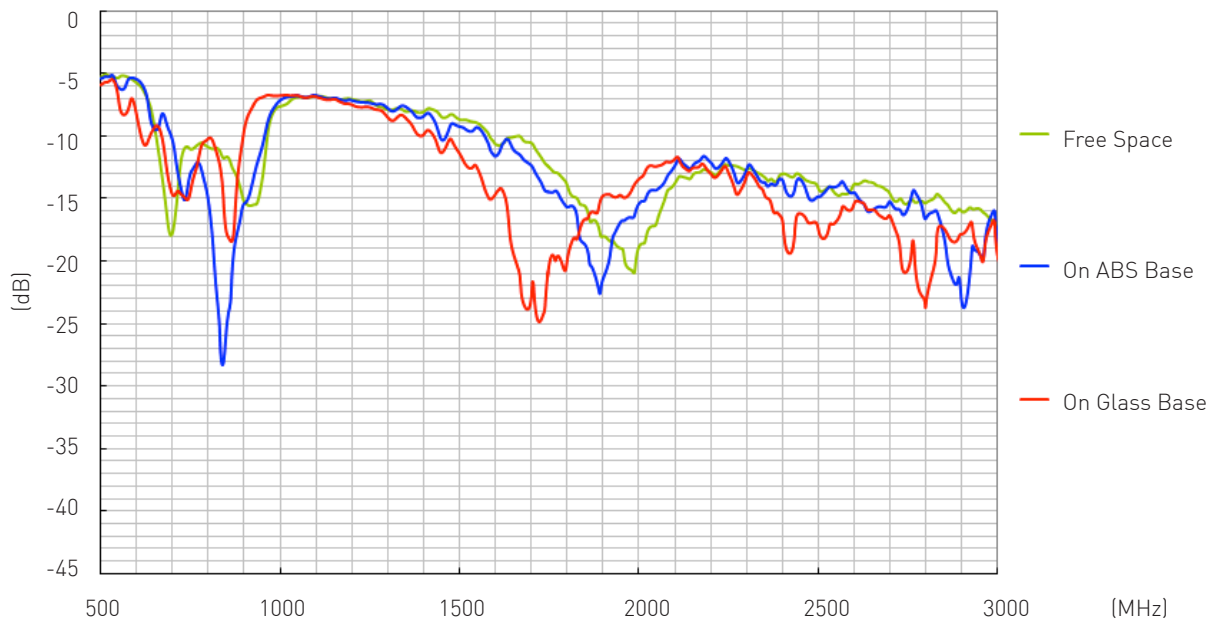
### 4.5 GPS/GLONASS LNA Output Return Loss



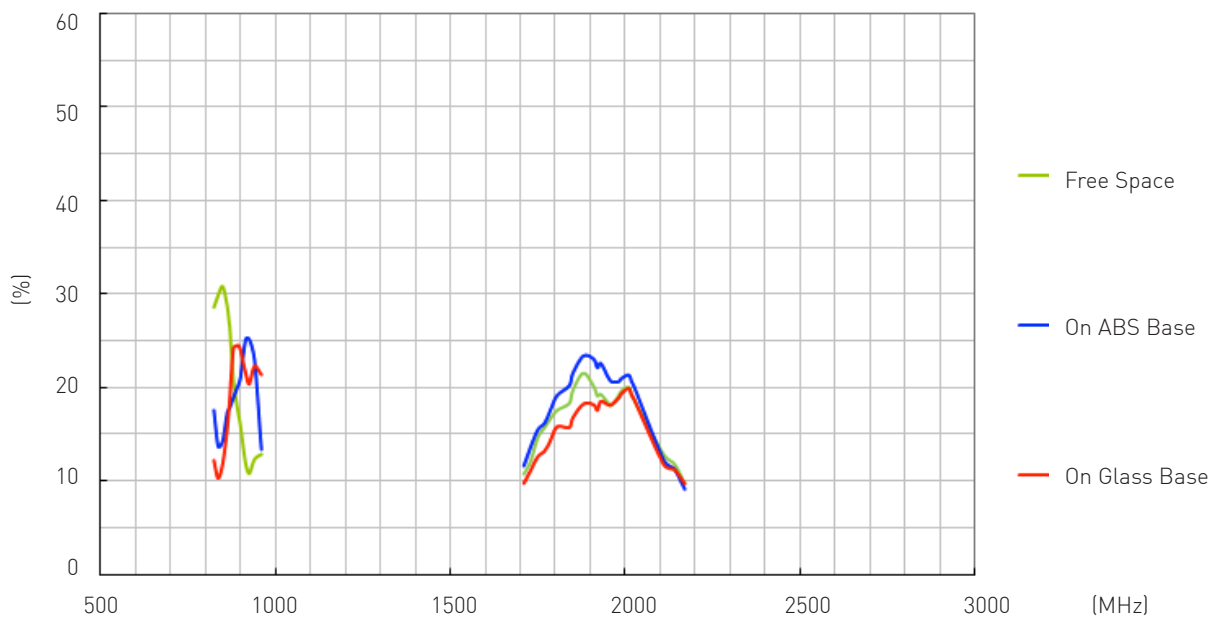
## 5. Cellular Antenna



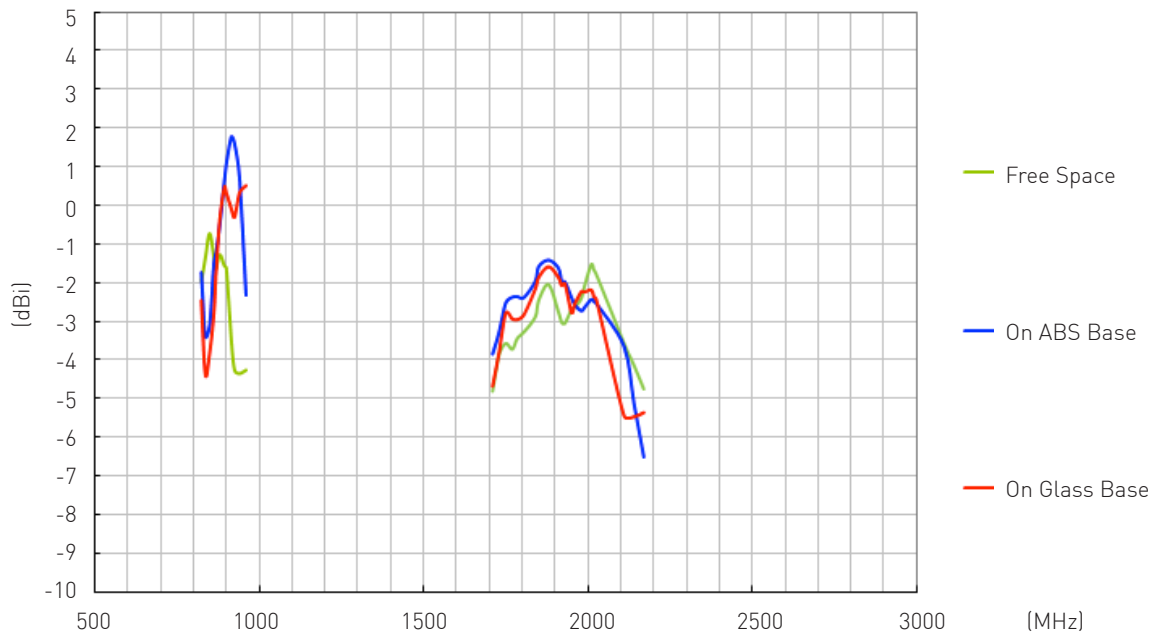
## 5.1 Return Loss



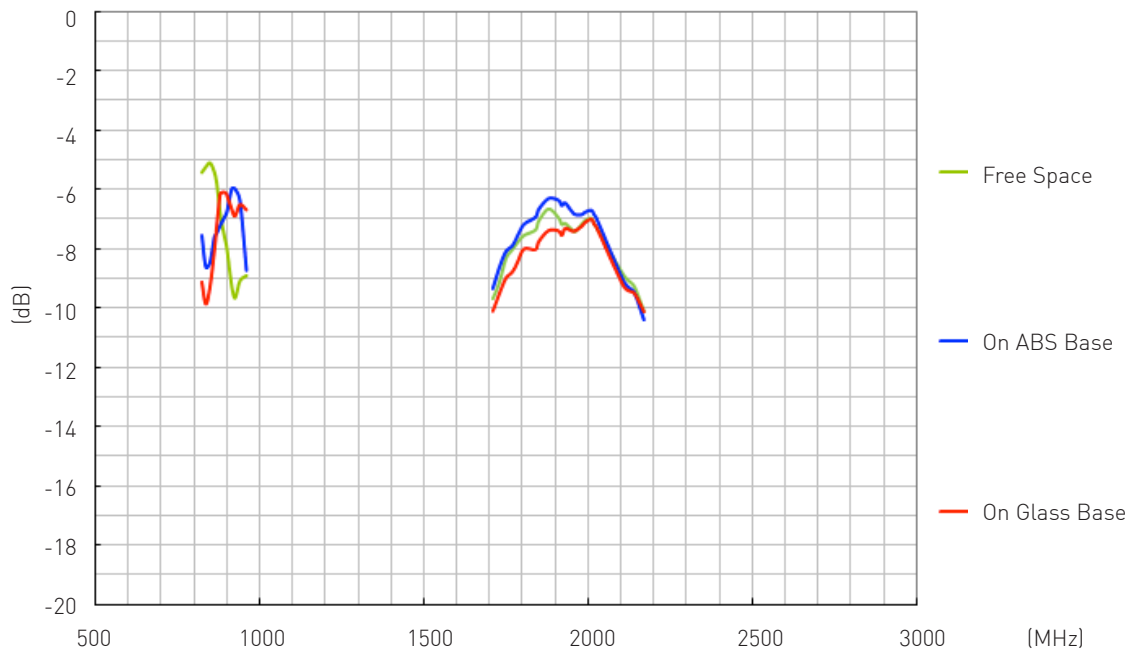
## 5.2 Efficiency



### 5.3 Peak Gain



### 5.4 Average Gain

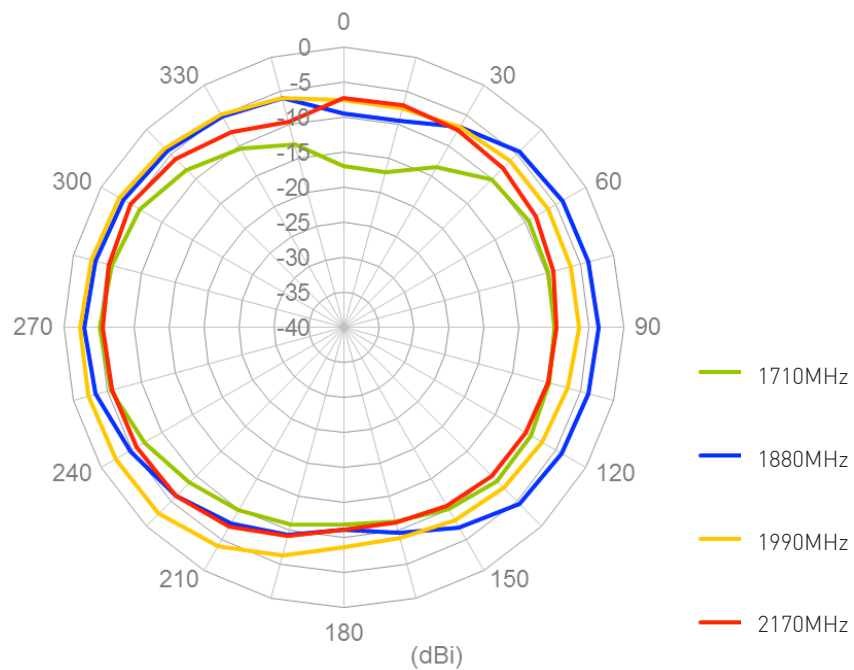
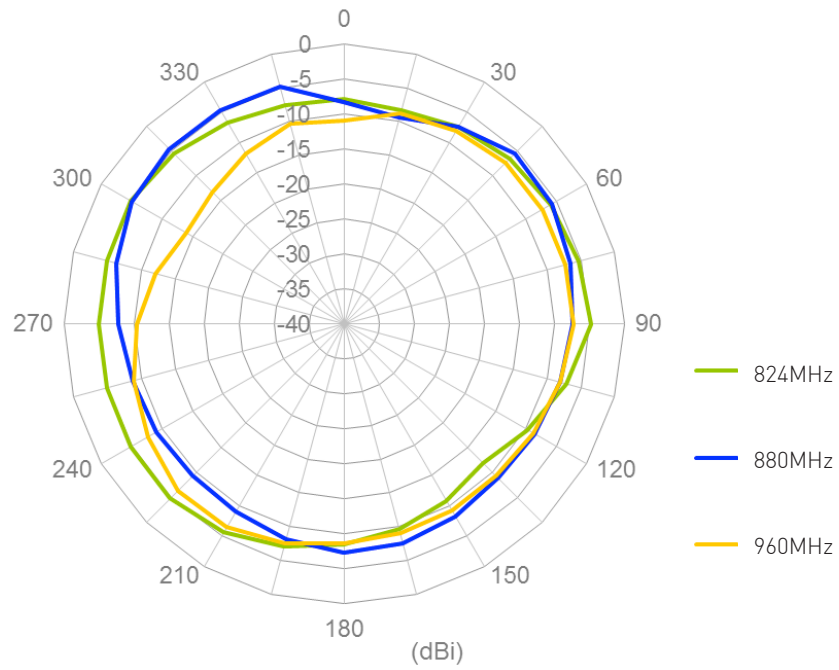




## 5.5 Radiation Patterns

### 5.5.1 Free Space

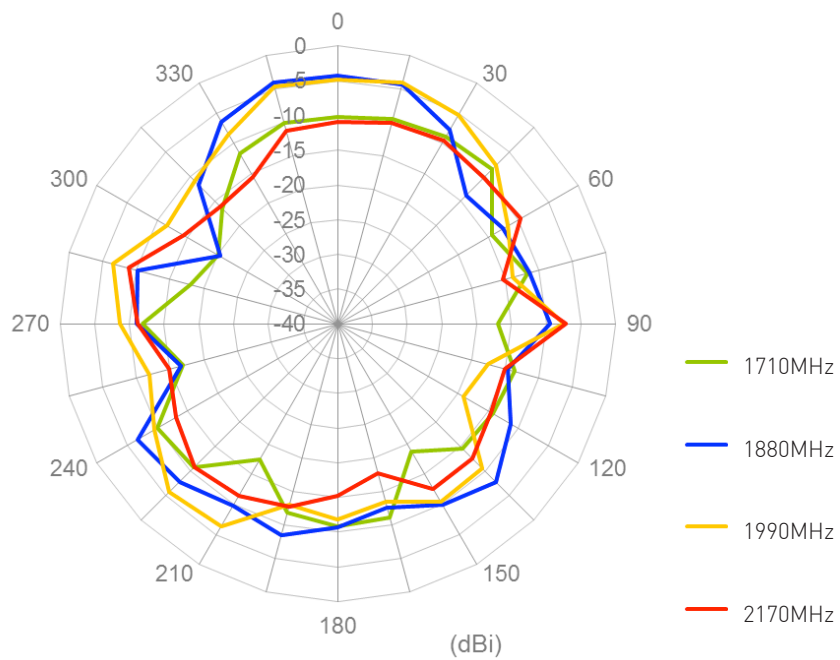
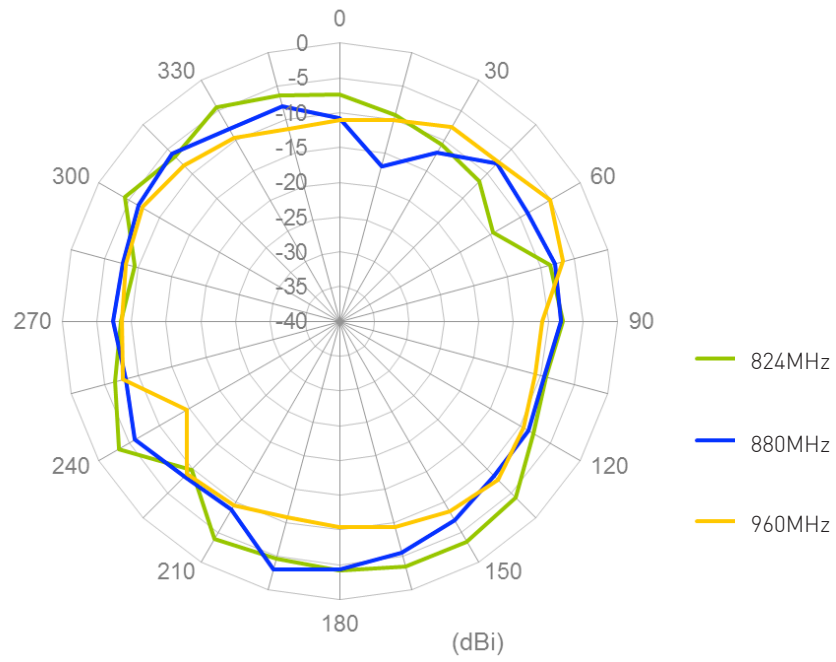
XY Plane



## 5.5 Radiation Patterns

### 5.5.2 Free Space

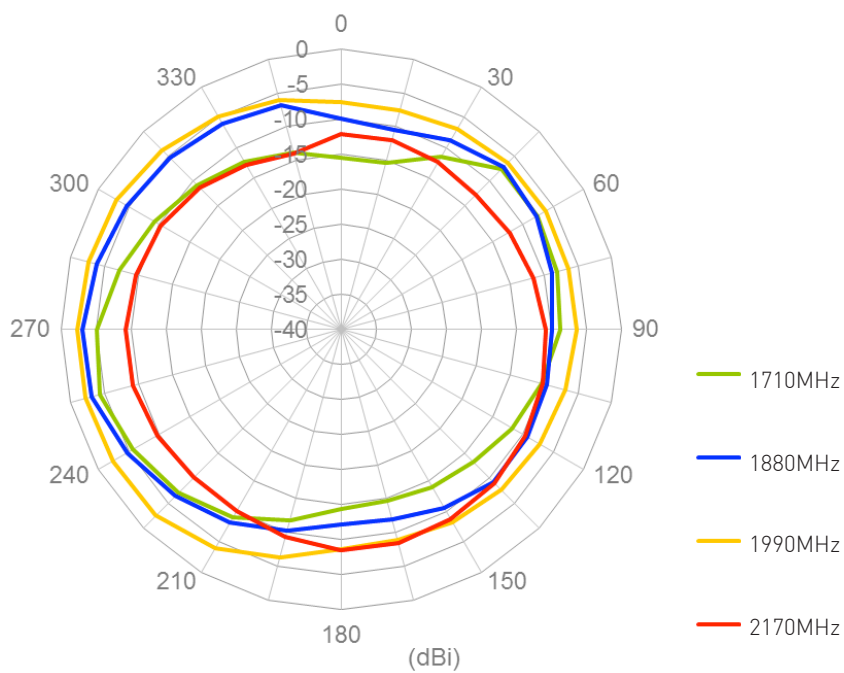
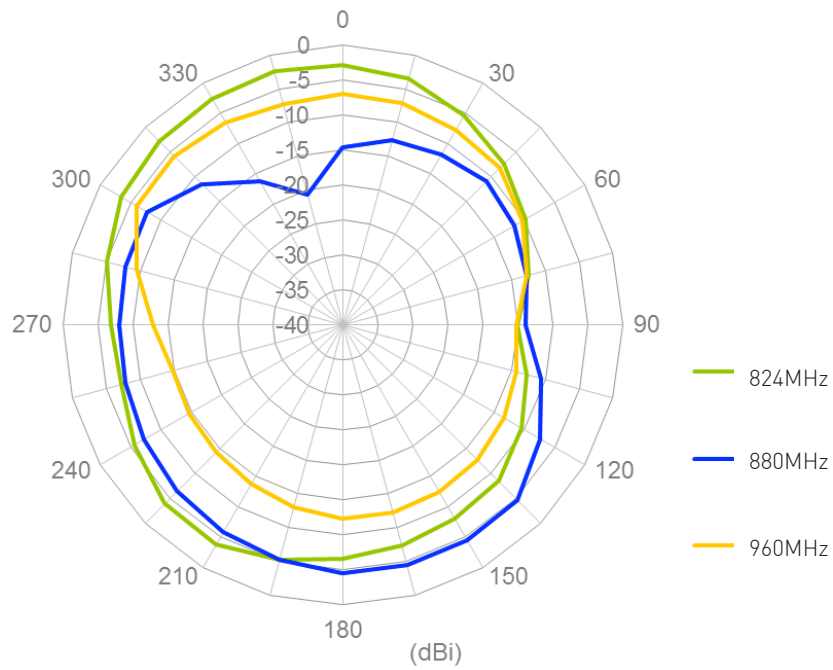
XZ Plane



## 5.5 Radiation Patterns

### 5.5.3 On ABS Base

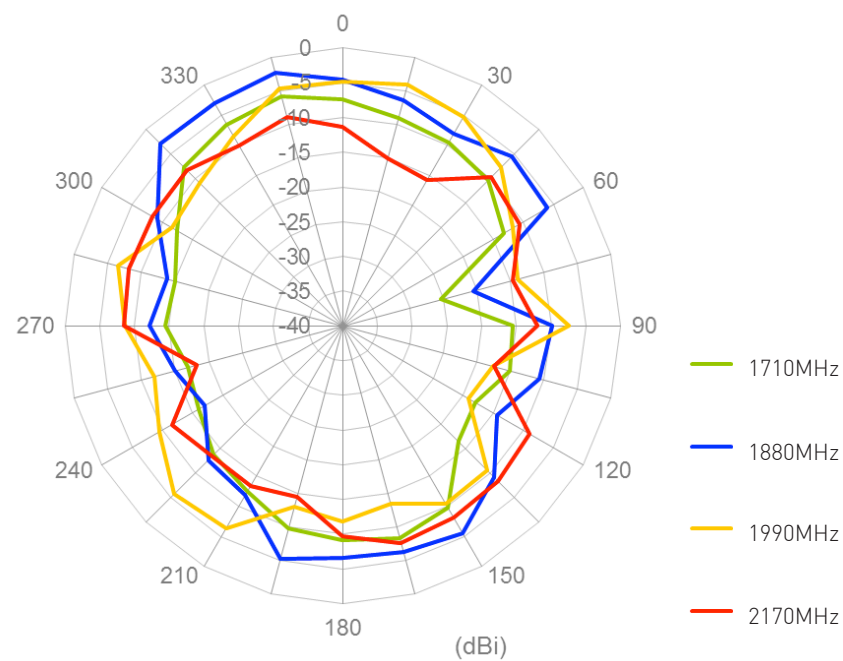
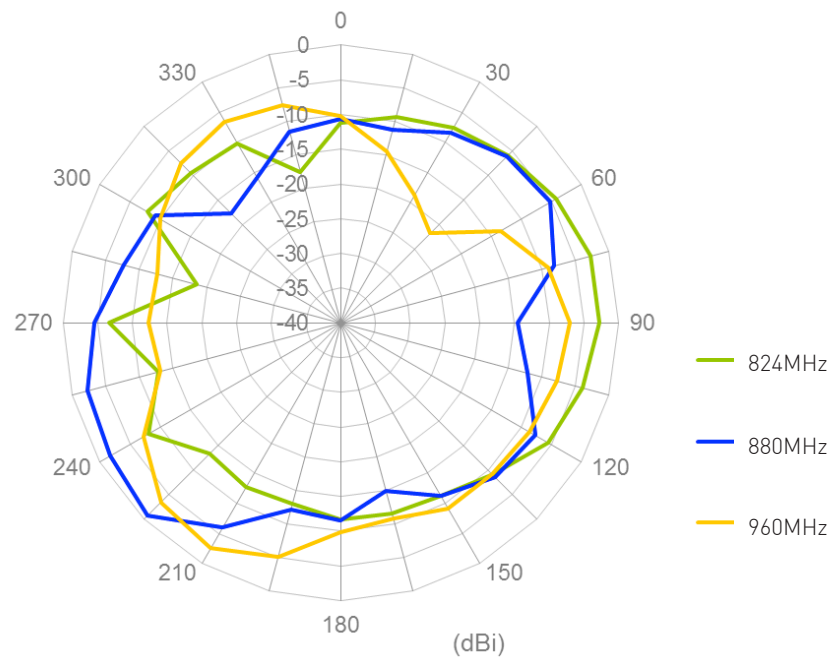
XY Plane



## 5.5 Radiation Patterns

### 5.5.4 On ABS Base

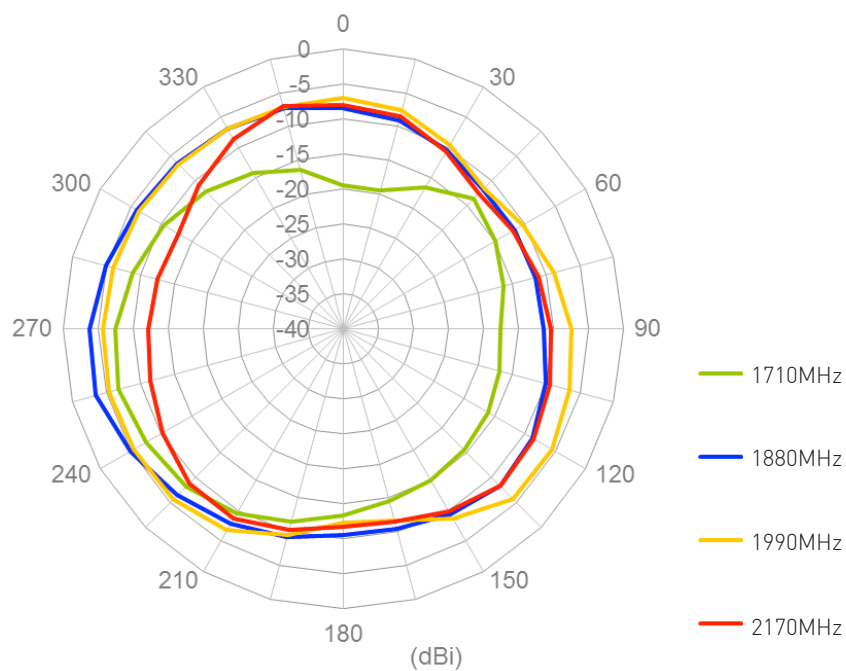
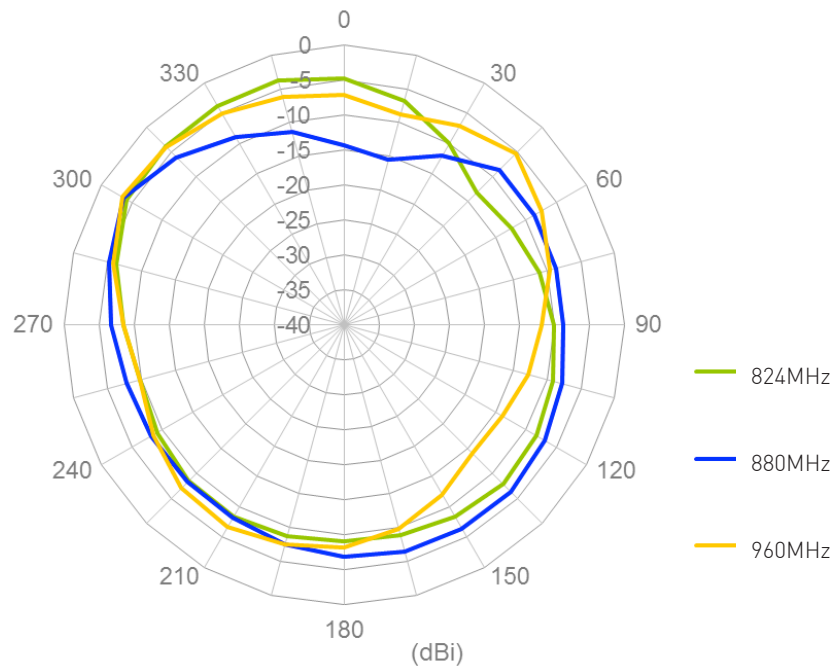
XZ Plane



## 5.5 Radiation Patterns

### 5.5.5 On Glass Base

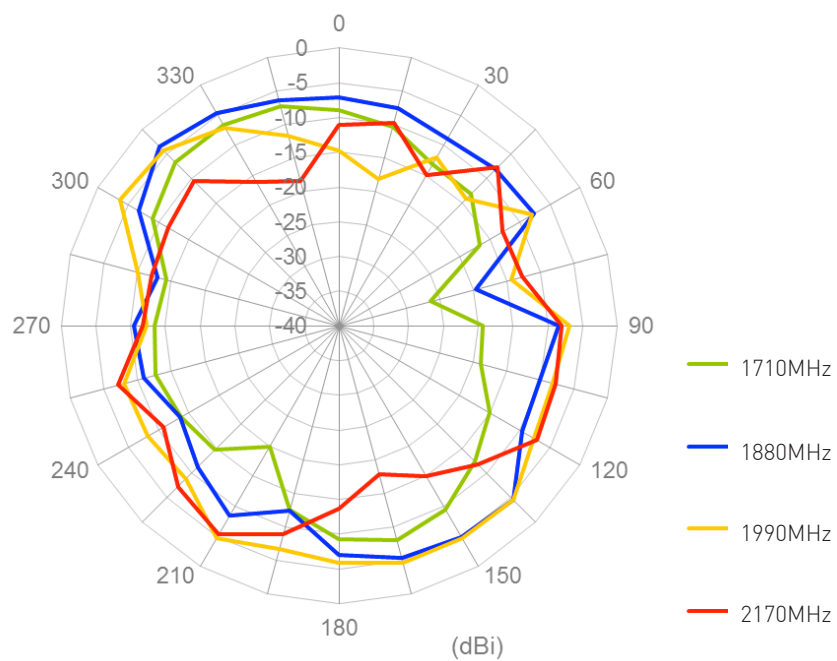
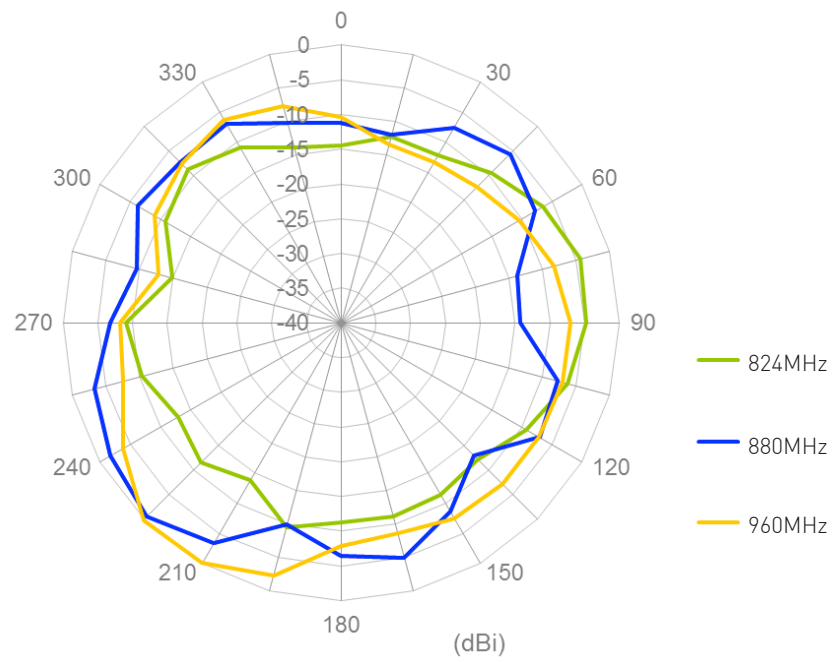
XY Plane



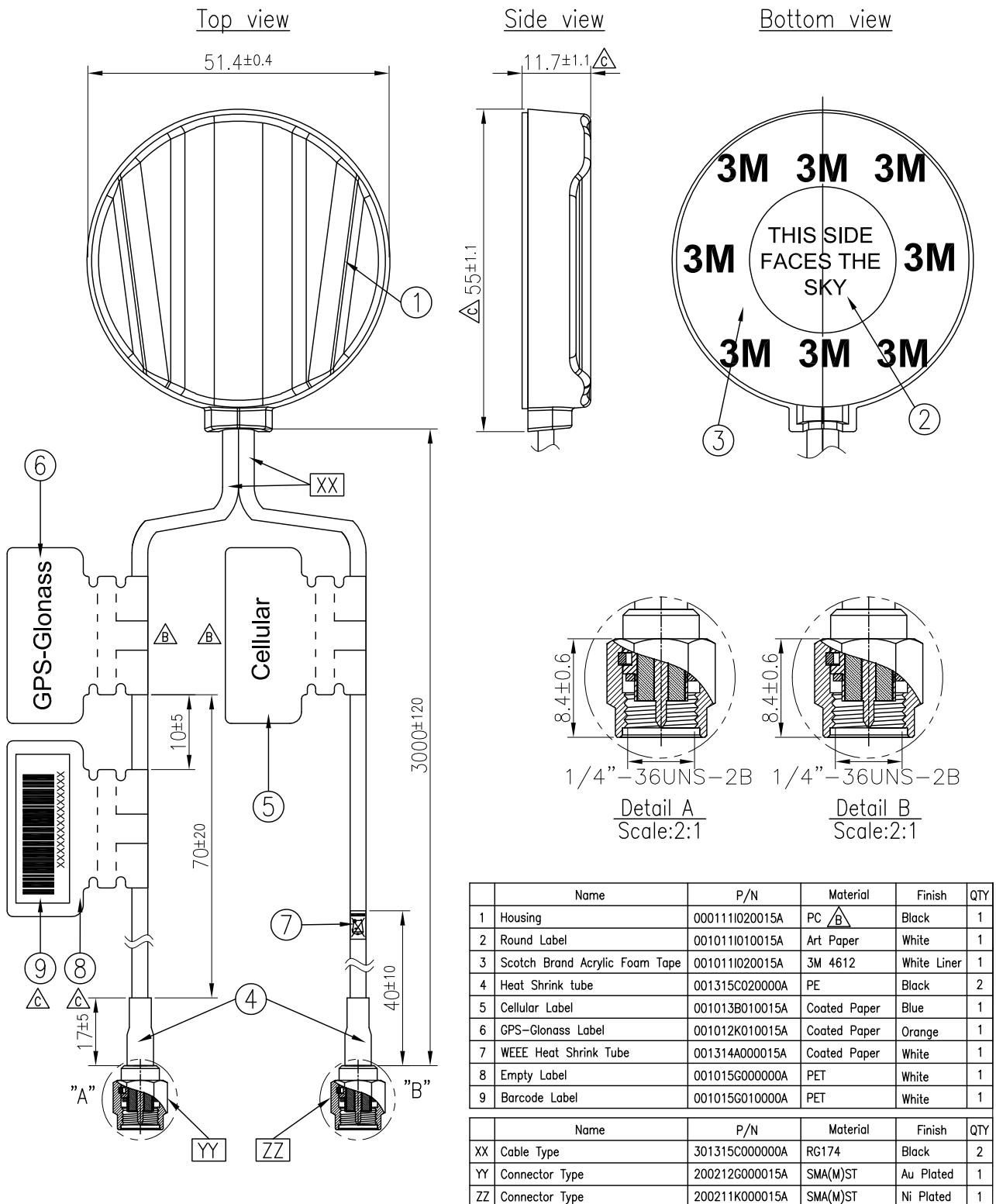
## 5.5 Radiation Patterns

### 5.5.6 On Glass Base

XZ Plane

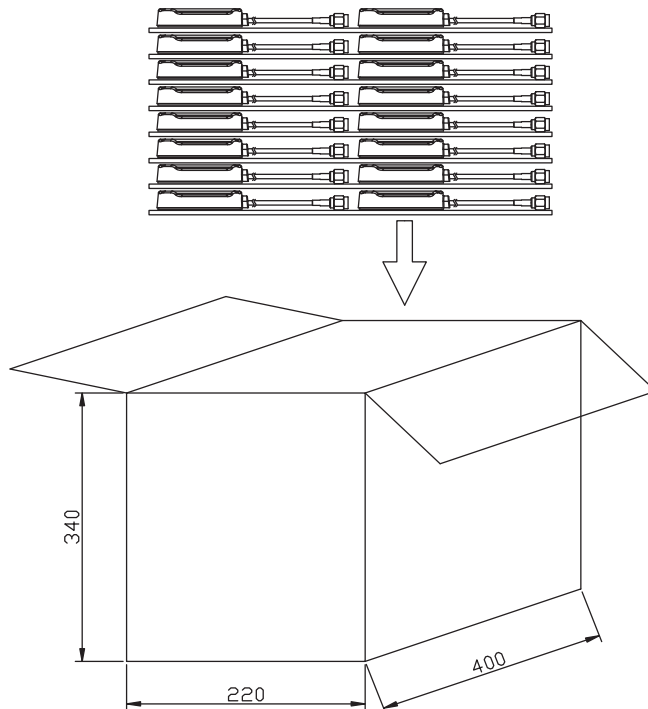
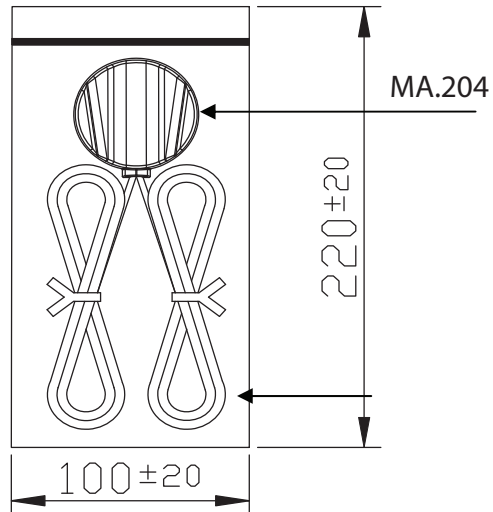


## 6. Drawing



## 7. Packaging

1 pcs antenna per small PE bag  
80 small PE bag per box



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.