



Underside View  
(this side faces the passenger)



Top View  
(this side faces the sky)

### Stingray

**MA203.A.AB.045**

## Specification

<b>Part No.</b>	<b>MA203.A.AB.045</b>
<b>Product Name</b>	<b>Stingray</b> GPS/Penta-band Cellular Adhesive Antenna
<b>Feature</b>	High gain LNA up to 32dB (GSM/CDMA/PCS/DCS/UMTS/GPRS/EDGE/ HSPA) Height 10.8mm Diameter 55.1mm IP65 Waterproof Fakra Connector ROHS Compliant

## 1. Introduction

This is a combination high performance GPS 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 antenna and a leading edge Penta band

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.

### 1.1 Features

#### GPS

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High LNA Gain up to 32 dB

Antenna Gain  $30 \pm 2$  dB

Miniaturized to 55.15x12mm

Low Noise 1.5 dB max

#### Cellular

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Advanced Penta-Band Cellular Antenna  
(GSM/CDMA/PCS/DCS/UMTS/GPRS/EDGE/HSPA)

#### Other

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Water Resistant IP 65 (IP 67 MA.203 version also available)

Quality textured covert design. Low profile

UV resistant ABS housing

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

Fakra code C (blue) on GPS and code D (violet) on GSM

Optional cables and connectors

## 2. Specification

### 2.1 GPS Antenna

#### GPS

<b>Centre Frequency</b>	1575.42MHz
<b>Bandwidth</b>	10MHz
<b>Average Gain</b>	28dBic typ. (@DC 3V)
<b>Radiation Efficiency</b>	50%
<b>Gain @ Zenith</b>	4.0dBic typ.
<b>Axial Ratio</b>	3.0dB max.
<b>Polarization</b>	Right Hand Circular
<b>VSWR</b>	≤2.0
<b>Impedance</b>	50Ω
<b>DC Power Input Range</b>	3 ~ 5 V
<b>DC input</b>	3V
<b>LNA Gain(Typ.)</b>	28dB
<b>Noise Figure(Typ.)</b>	1.5dB
<b>Power Consumption</b>	7~9mA
<b>Band Attenuation</b>	±50MHz 40dB
<b>Cable</b>	1M RG174 standard, fully customizable
<b>Connector</b>	SMA(M) standard, standard, fully customizable

### 2.2 Cellular Antenna

#### Cellular

<b>Frequency (MHz)</b>	824~894	880~960	1710~1880	1850~1990	2110~2170
<b>Peak gain (dBi)</b>	>2.5	>0.0	>1.5	>2.5	>0.5
<b>Efficiency</b>	>60%	>45%	>40%	>45%	>50%
<b>Impedance</b>	50Ω				
<b>Polarization</b>	Linear				
<b>VSWR</b>	3 max.				
<b>Cable</b>	1M RG-174 standard, fully customizable				
<b>Connector</b>	SMA(M) standard, fully customizable				

### 3. Test Setup

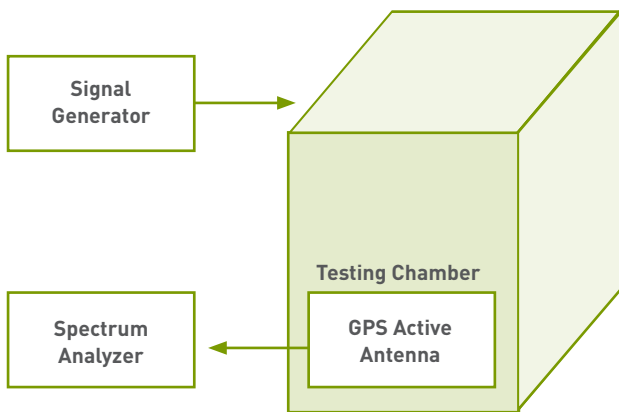
#### 3.1 Configuration of SATIMO



Agilent E5071B Network Analyzer



Anritsu 68147C Signal Generator



Testing Chamber



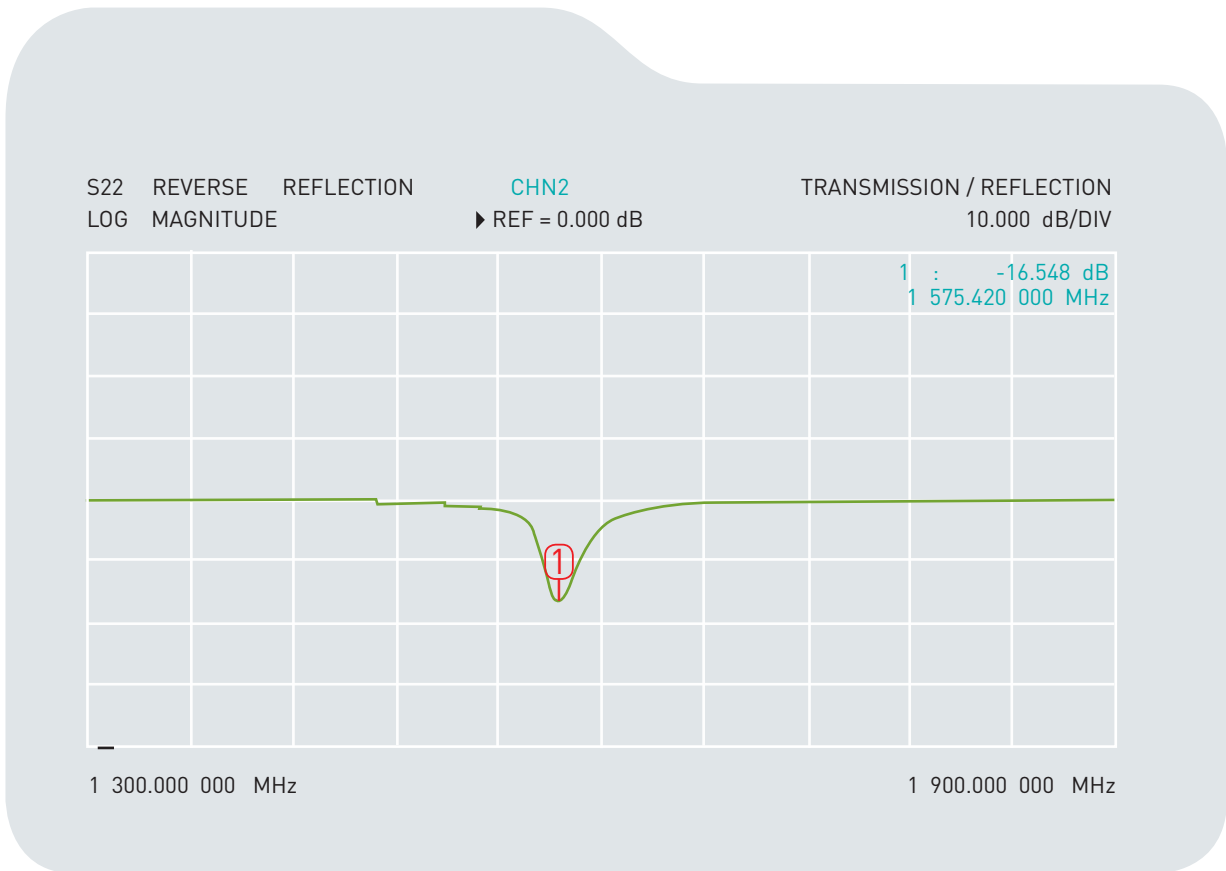
Anritsu MS2721A Spectrum

#### Cable attenuation (dB/100mm)

GHz	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
<b>RG-174</b>	67	100	127	153	138	183	207	229	252	272	291	311
<b>CFD-200</b>	26	39	49	58	66	73		86		98		109

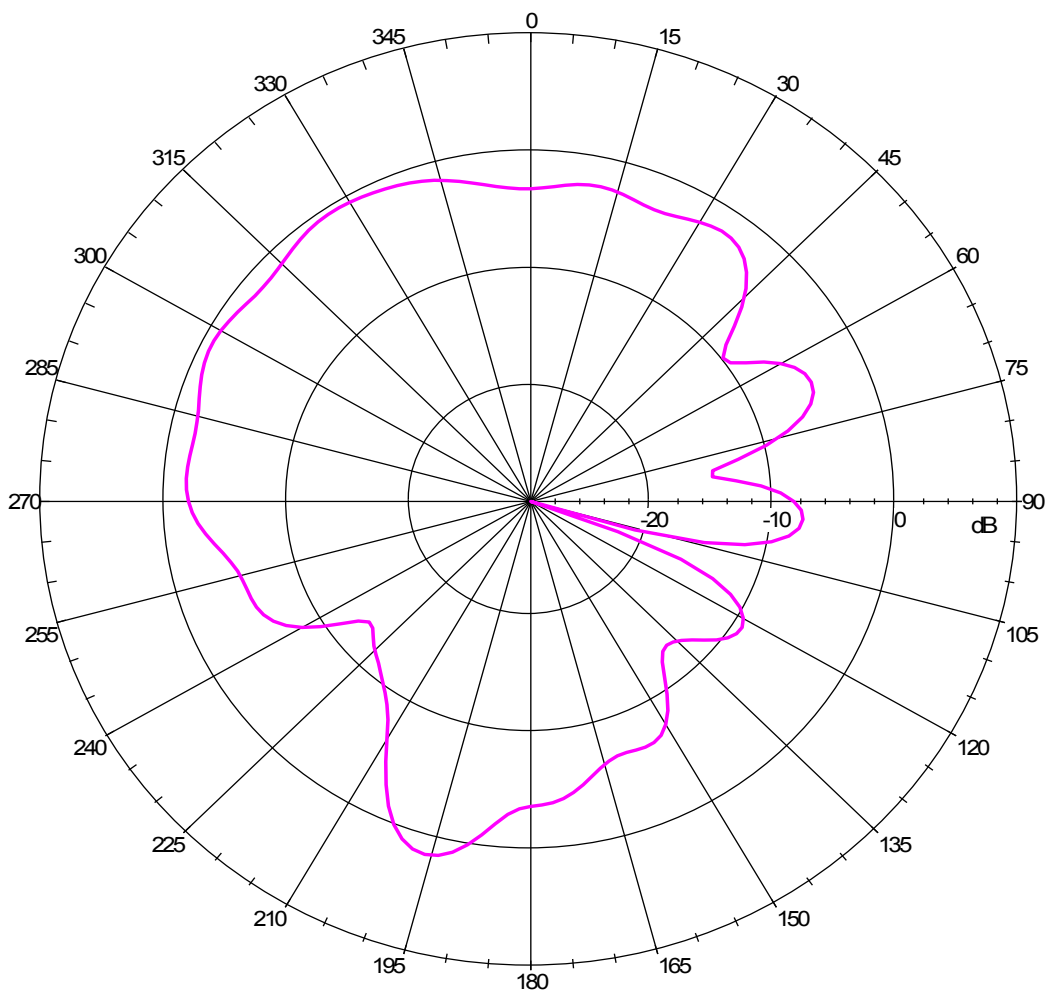
## 4. GPS Antenna Characteristics

### 4.1 Patch Antenna S11



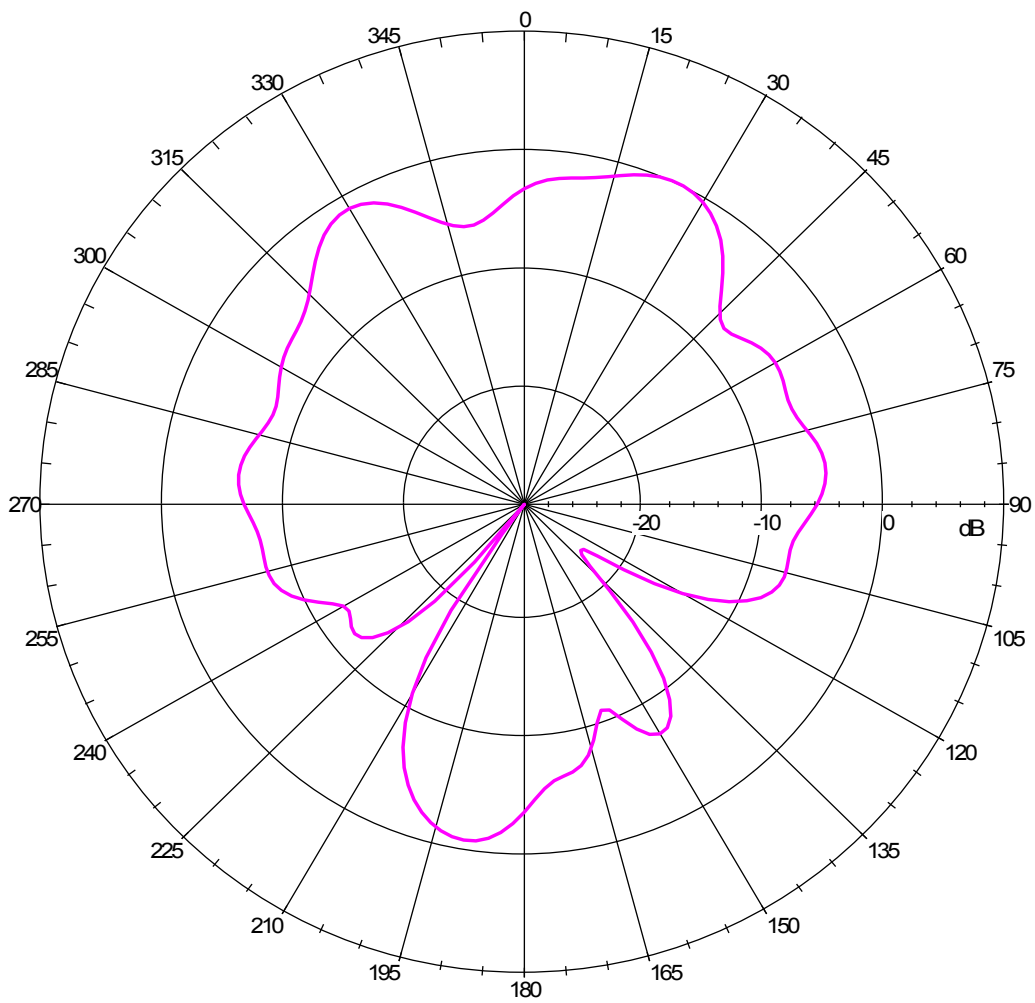
## 4.2 GPS Antenna Pattern (XZ Plane)

Far-Field amplitude of GPS\_1\_070108.nsi

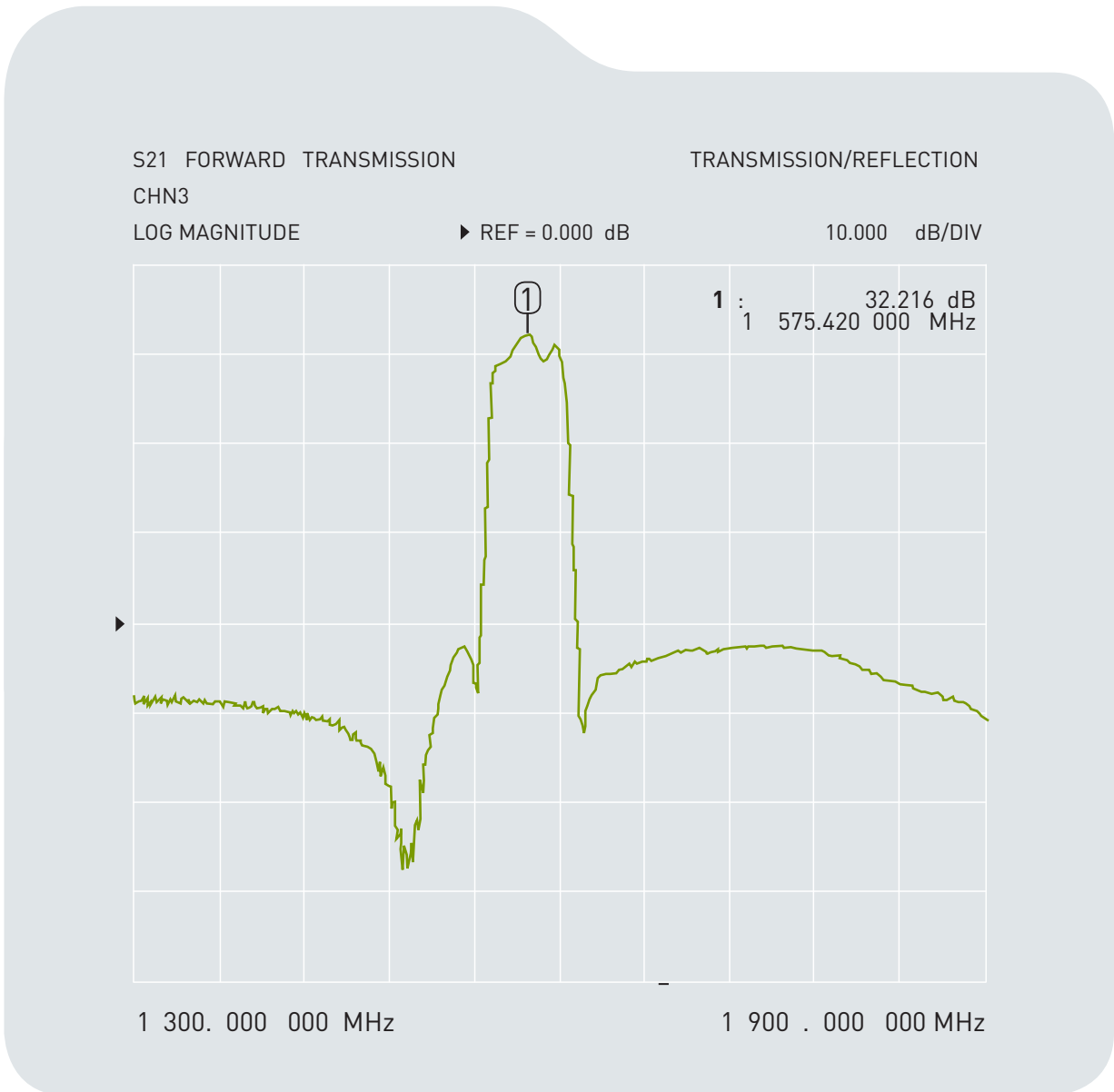


### 4.3 GPS Antenna Pattern (YZ Plane)

Far-Field amplitude of GPS\_1\_070108.nsi

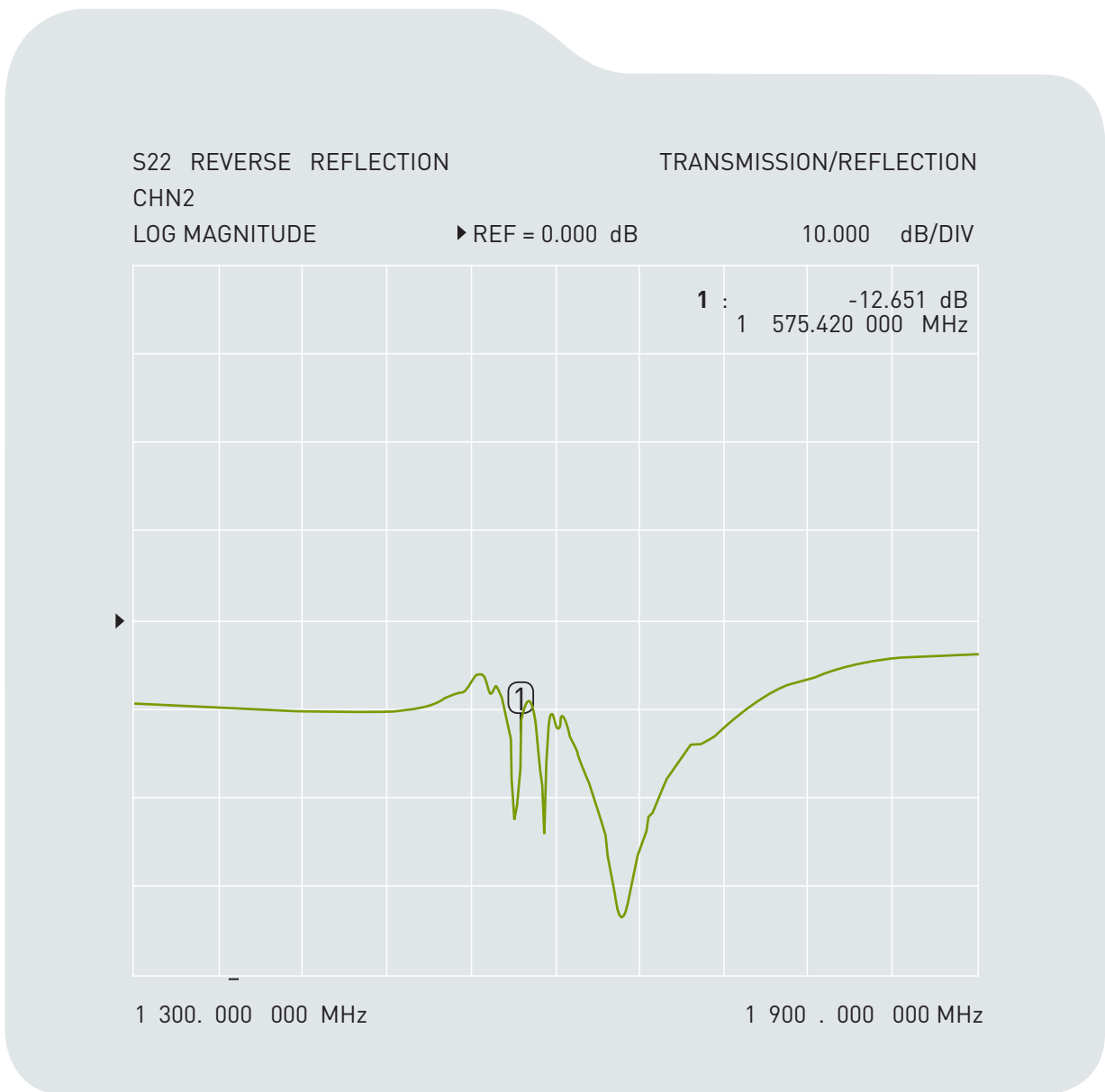


### 4.4 GPS Antenna Gain (with LNA)



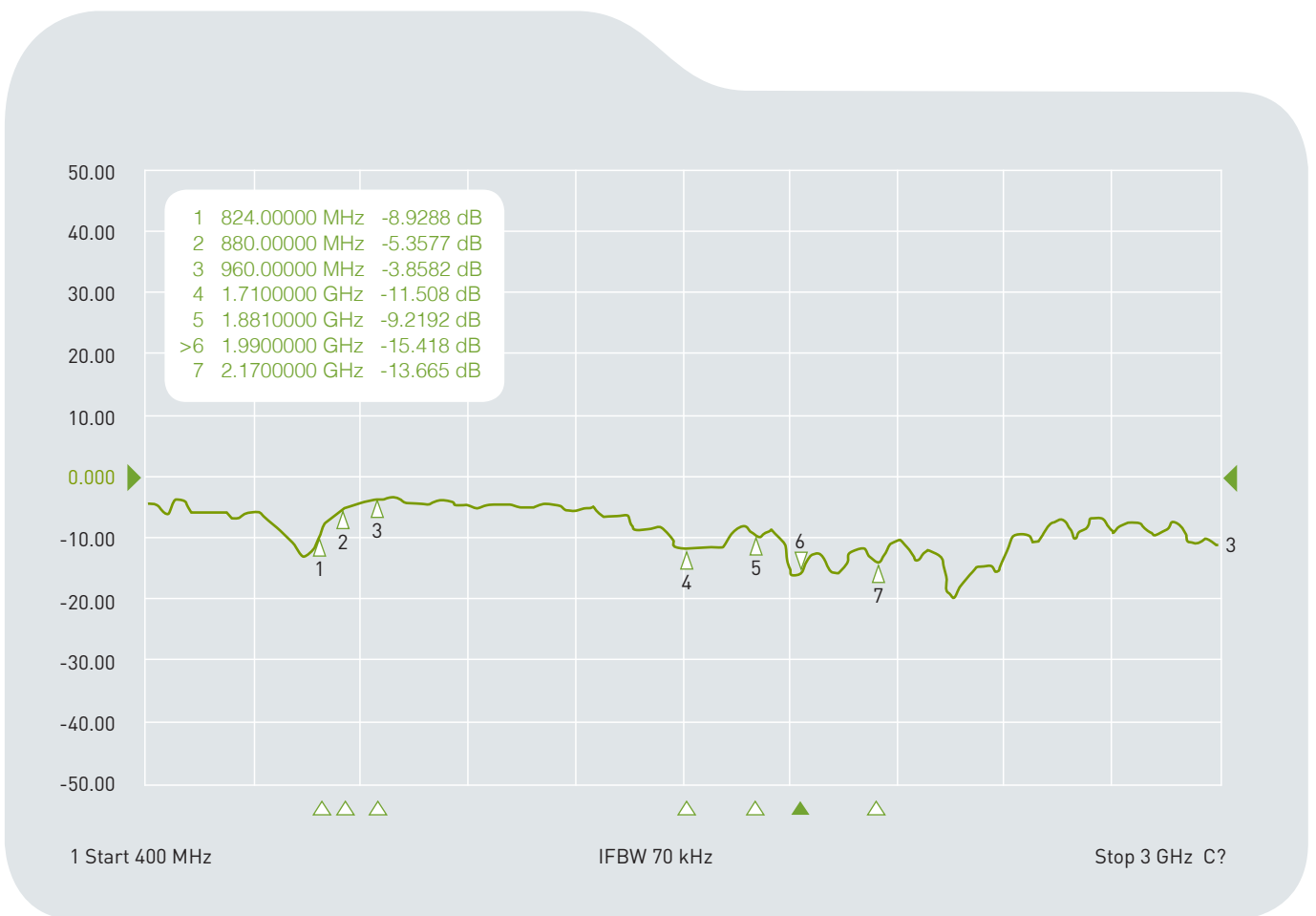


### 4.5 GPS Antenna Return Loss (with LNA)



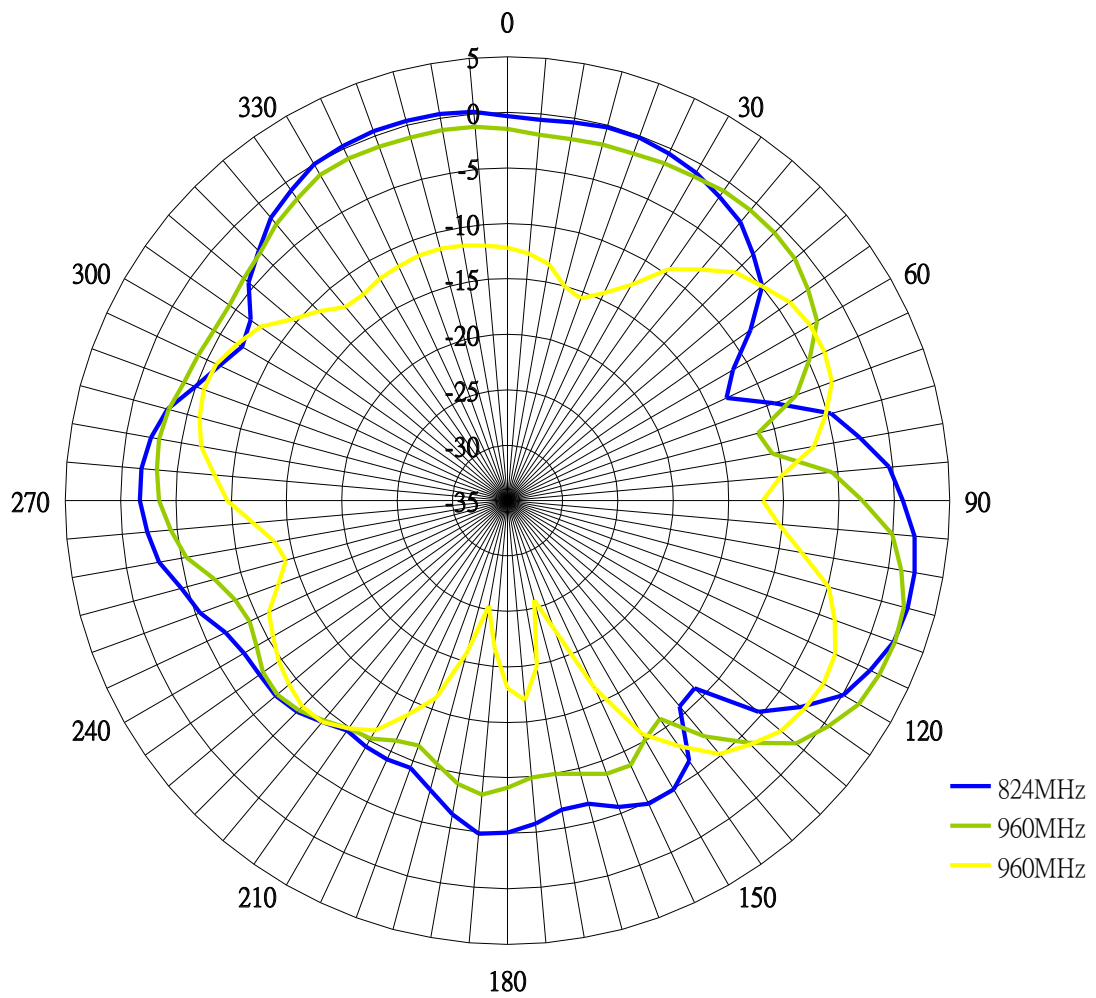
## 5. Cellular Antenna

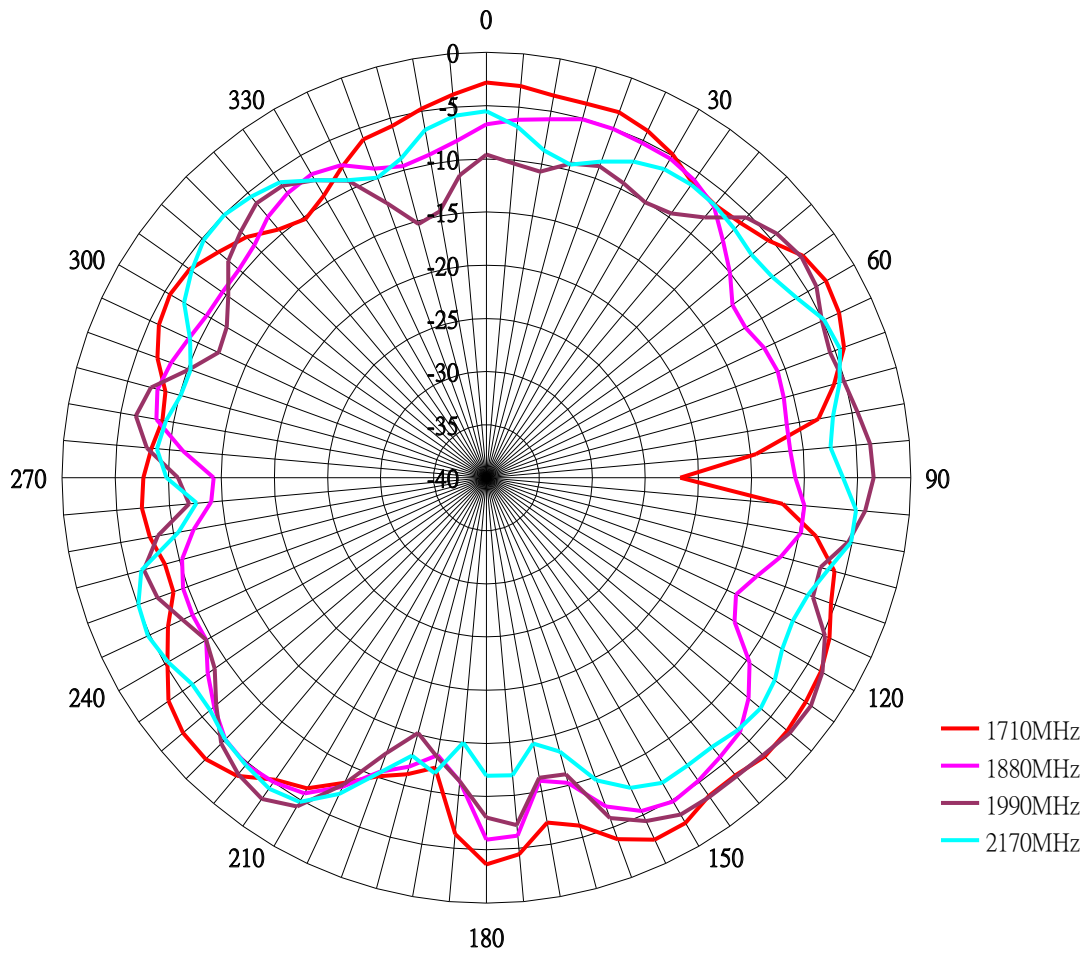
### 5.1 Return loss (with 1M RG-174 cable)



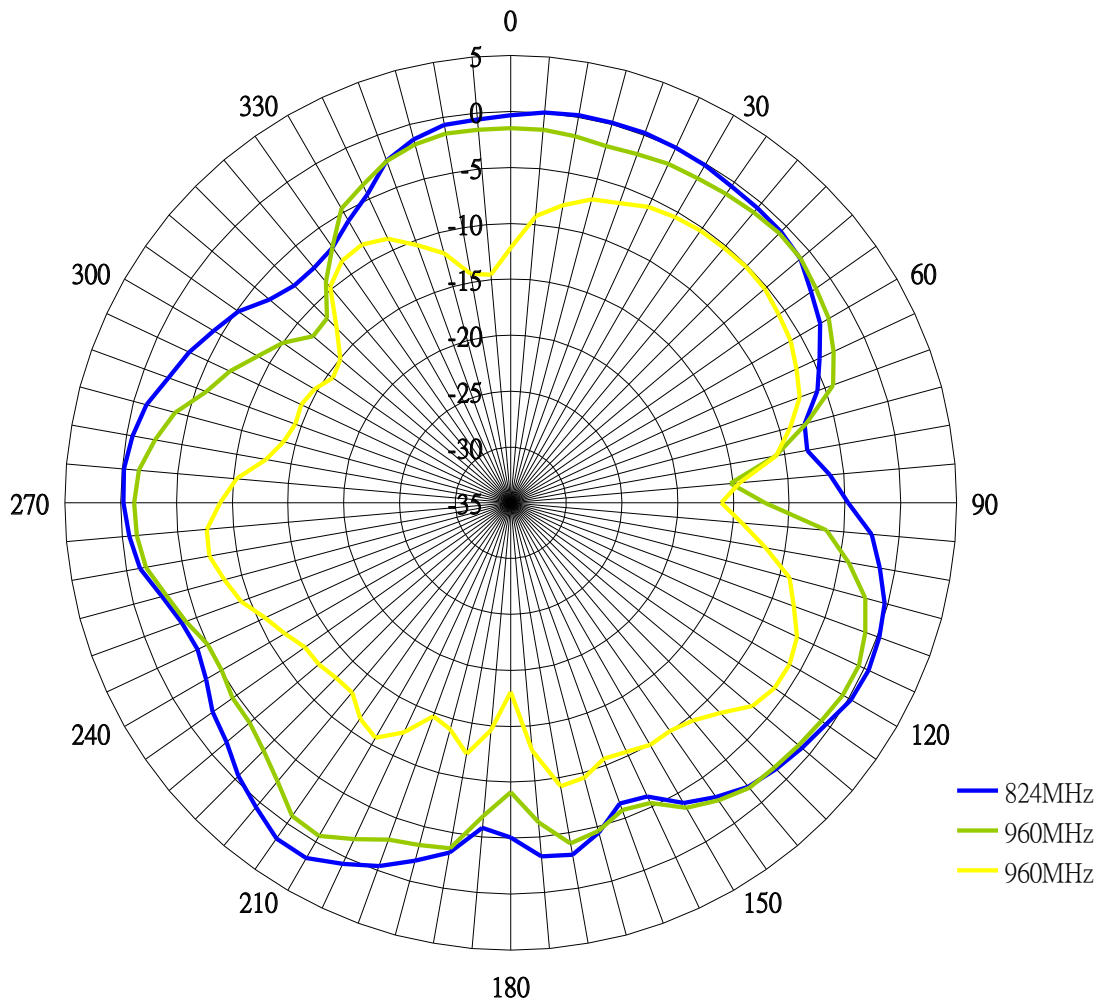
## 5.2 Radiation Pattern

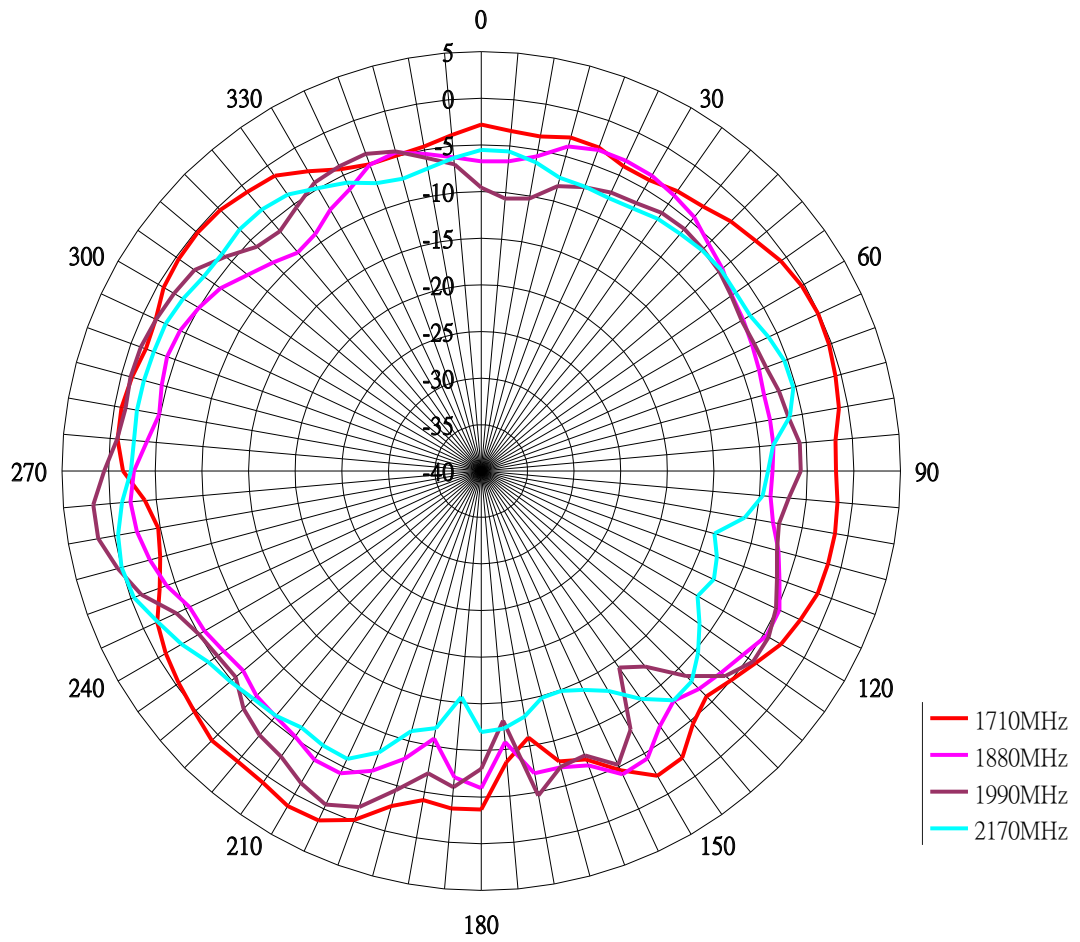
### 5.2.1 XZ Plane



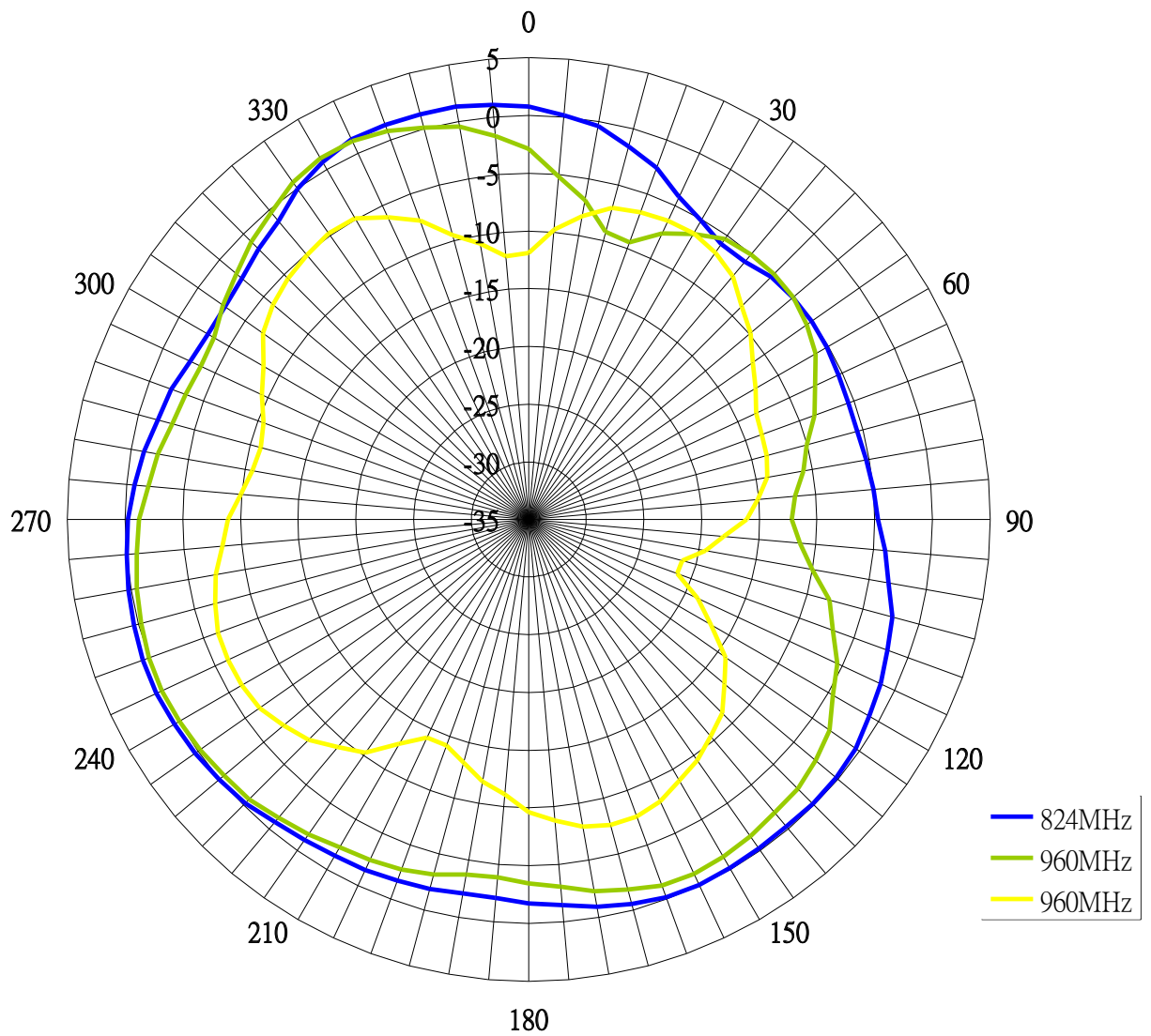


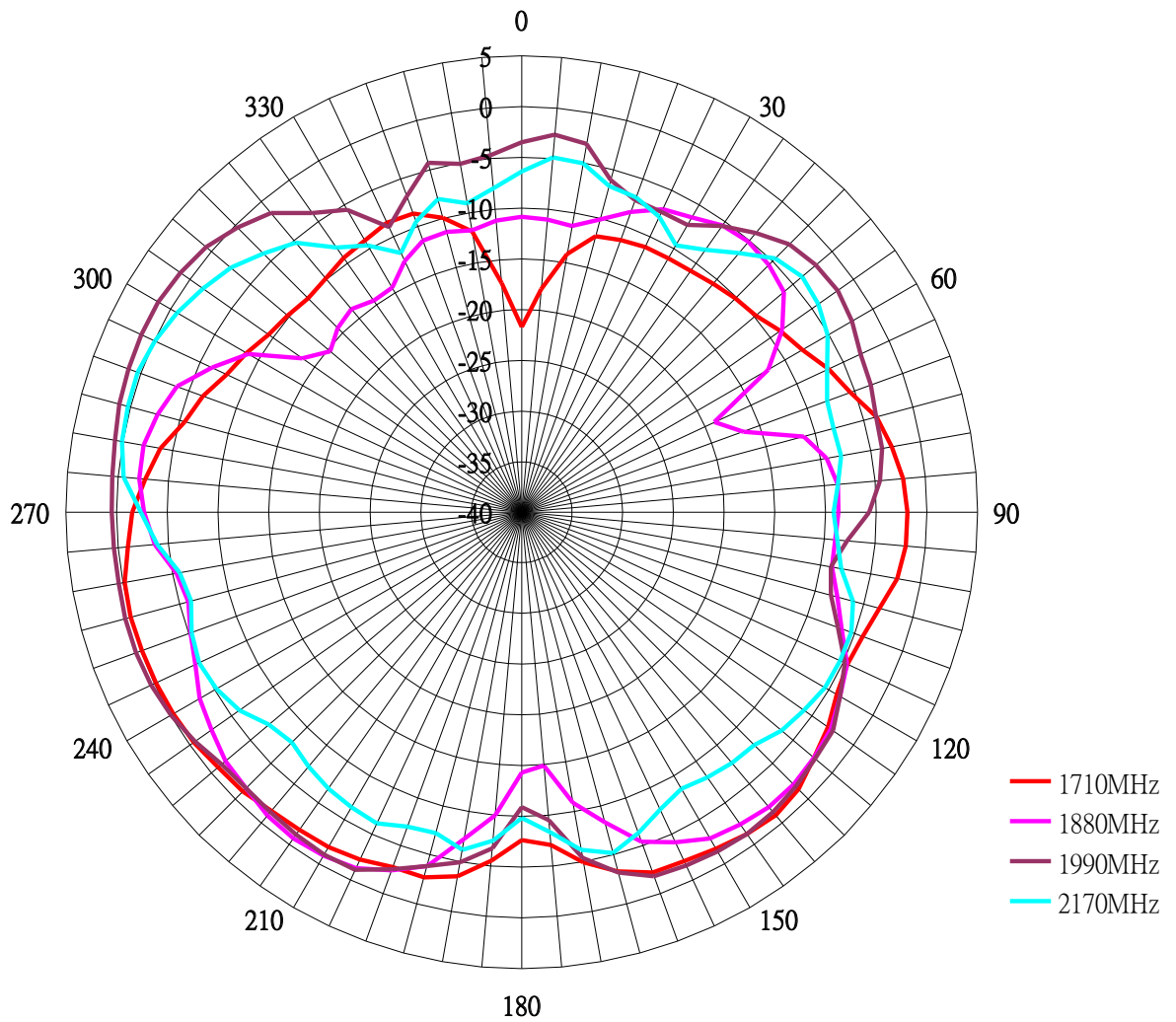
### 5.2.2 YZ Plane





### 5.2.3 XY Plane

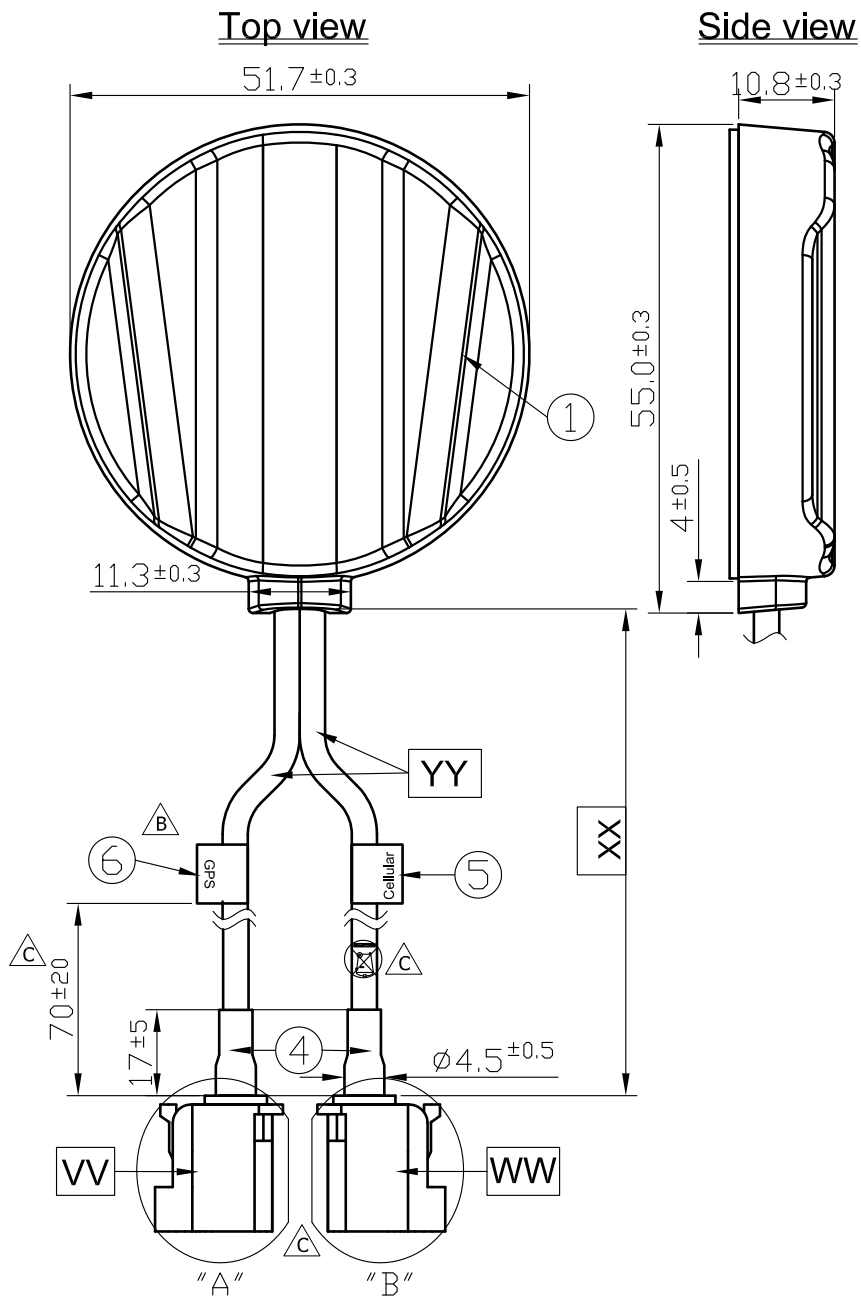






## 6. Mechanical Drawings

### 6.1 Unit

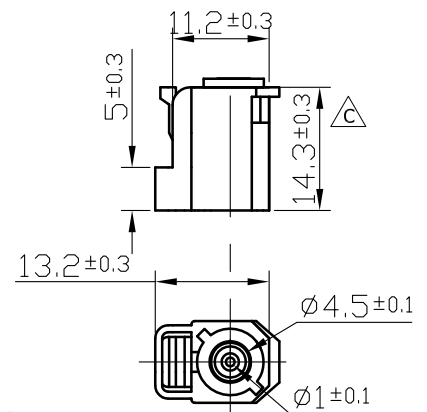


## 6. Mechanical Drawings

### 6.1 Unit

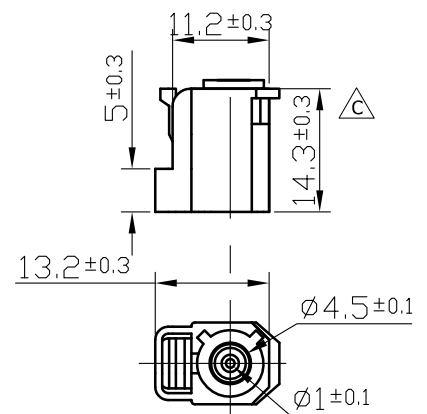


FAKRA .G2.SMB.F.ST.C.B.AM



DETAIL : "A"  
SCALE: 1/1

FAKRA.G2.SMB.F.ST.D.V.AM



DETAIL : "B"  
SCALE: 1/1

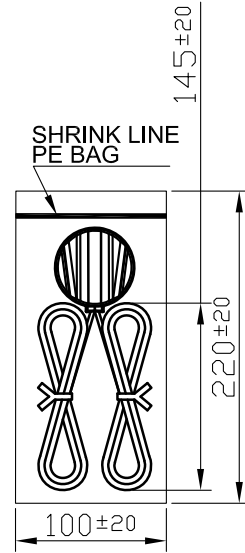
	Name	Material	Finish	QTY
1	Housing	ABS	Black	1
2	Round Label	Art Paper	White	1
3	Scotch Brand Acrylic Foam Tape	3M 4612	White Liner	1
4	Heat Shrink Tube	PE	Black	2
5	Cellular Label	Coated Paper	Blue	1
6	GPS Label	Coated Paper	Orange	1

	Name	Spec	Finish	QTY
VV	Connector Type	FAKRA Code C GEN2	Blue	1
WW	Connector Type	FAKRA Code D GEN2	Violet	1
XX	Cable Length	3000mm ± 30mm	Black	1
YY	Cable Type	RG174	Black	2

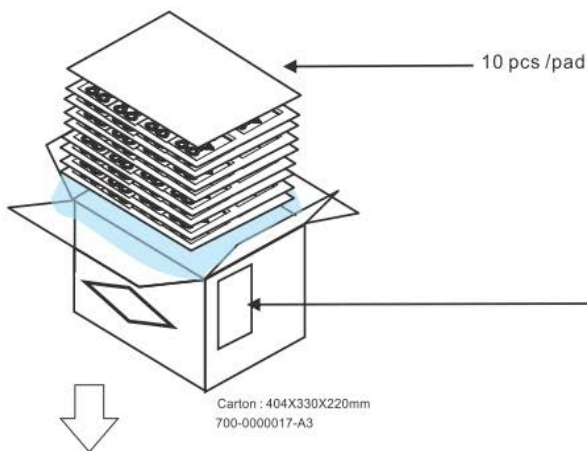
## 7. Packaging

1pcs antenna per small PE bag

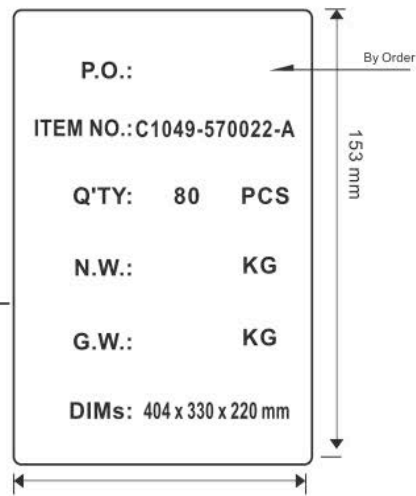
80 small PE bag per box



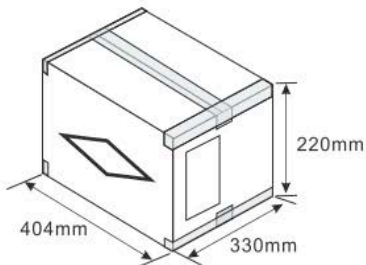
PACKING:1PCS/BAG



Carton : 404X330X220mm  
700-0000017-A3



Carton Label 706-0000280-A2 X2  
(153X103 mm)



80 pcs / Carton

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