



3D View
(This side faces the sky)



Underside View
(Magnet)

MA301.A.AB.001

Specification

| | |
|---------------------|--|
| Part No. | MA301.A.AB.001 |
| Product Name | MA.301 GPS/Penta-band Cellular Magnetic Antenna |
| Feature | <p>IP67 - Waterproof GPS - High gain LNA up to 32dB Penta-band 850/900/1800/1900/2100 MHz GSM/GPRS/CDMA/PCS/DCS/UMTS/HSPA Low Profile Height 10.8mm Diameter 55.1mm RoHS Compliant</p> |

1. Introduction

The MA.301 is a combination small form factor high performance GPS and Penta-band Cellular (GSM/GPRS/CDMA/PCS/DCS/ WCDMA/UMTS) antenna to simplify AVL or Fleet management antenna systems worldwide.

It comes with magnet mount as standard. An internal O-ring meets stringent IP-67 waterproof standards. With the strongest GPS and Cellular antenna design team in the industry and rigorous testing Taoglas offers guaranteed performance with your system and your environment.

The standard version comes with 3 metres RG174 cable and SMA(M) connectors for both GPS and Cellular feeds. Cables and connectors are customizable upon request.

2. Features

GPS

High LNA Gain up to 32 dB

Antenna Gain 28 ± 2 dB

Miniaturized to 56.3 x 17.3 mm

Low Noise 1.5 dB max

Ultra-Low Power Consumption 6mA typ (at 2.7V~3.3V dc)

Cellular

Advanced penta-band cellular antenna

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

CDMA: 824~896 MHz, GSM: 880~960 MHz,

PCS: 850~1990, MHzDCS: 1710~1880

UMTS/WCDMA/HSPA: 2110~2170

Other

IP67 Water Resistant due to Internal O-Ring Structure

Quality textured covert design. Low profile

UV resistant ABS housing

Optional - high grade 3M double sided tape for quick and easy mounting

Optional cables and connectors

ROHS Compliant

3. Performance Specification

| Parameter | GPS Antenna | Cellular Antenna |
|------------------------------|--|--|
| Features | High performance GPS ceramic patch antenna with cutting edge low noise amplifier | CDMA: 824~896 MHz GSM: 880~960 MHz PCS: 850~1990 MHz DCS: 1710~1880 MHz UMTS/WCDMA/HSPA: 2110~2170 MHz |
| Frequency | 1575.42 MHz ± 2MHz | As above |
| Gain | 28 dB typ. Gain at Zenith: -3 dBi min Axial Ratio: 3.0 dB max | As patterns --- --- |
| Noise Figure | 1.5 dB max | --- |
| Polarization | RHCP | Linear |
| Bandwidth | 10 MHz min @ -10 dB | As S11 |
| VSWR | 1.92 max | <=2.5 |
| Impedance | 50Ω | 50Ω |
| Power Consumption | 6mA (at 2.7 ~ 3.3V dc) | --- |
| Cable / Connector | Standard 2/3/5m RG-174 Cables and Connectors Fully Customisable | Standard 2/3/5m RG-174 Cables and Connectors Fully Customisable |
| Operating Temperature | -40°C ~ +85°C | -40°C ~ +85°C |
| Storage Temperature | -40°C ~ +90°C | -40°C ~ +90°C |
| Size | 56.3mm * 17.3mm | |
| O-Ring | Embedded | |
| Housing | UV resistant ABS | |

*Note: specifications may be subject to change

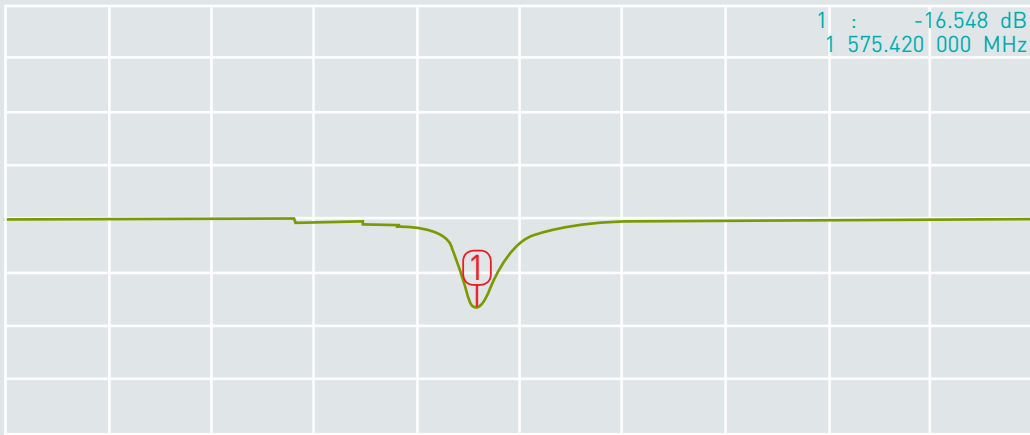
Note

1. The antenna is measured mounted on a 39 (L) × 34.5 (W) cm metal ground
2. All data are measured with RG-174 cable (length = 3M), excluding the LNA data
3. RG-174 cable attenuation (dB/100mm)

| | | | | | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| GHz | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 |
| RG-174 | 67 | 110 | 127 | 153 | 168 | 183 | 207 | 229 | 252 | 272 | 291 | 311 |

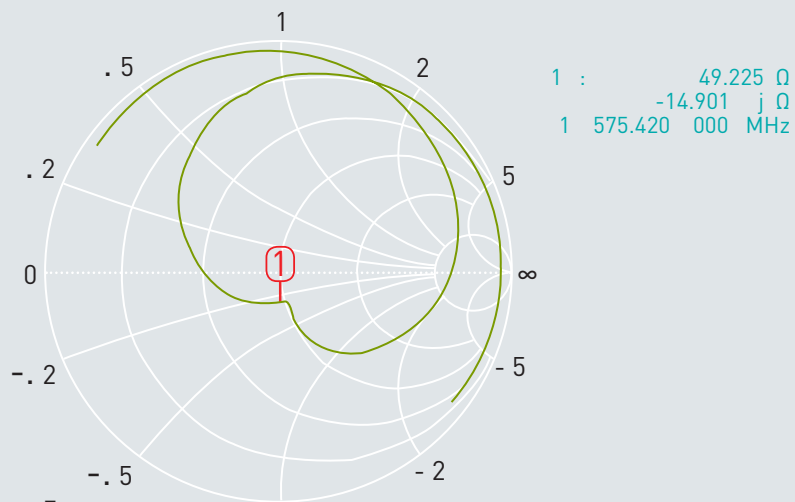
4. GPS Ceramic Antenna

S22 REVERSE REFLECTION CHN2 TRANSMISSION / REFLECTION
 LOG MAGNITUDE ▶ REF = 0.000 dB 10.000 dB/DIV



1 300.000 000 MHz 1 900.000 000 MHz

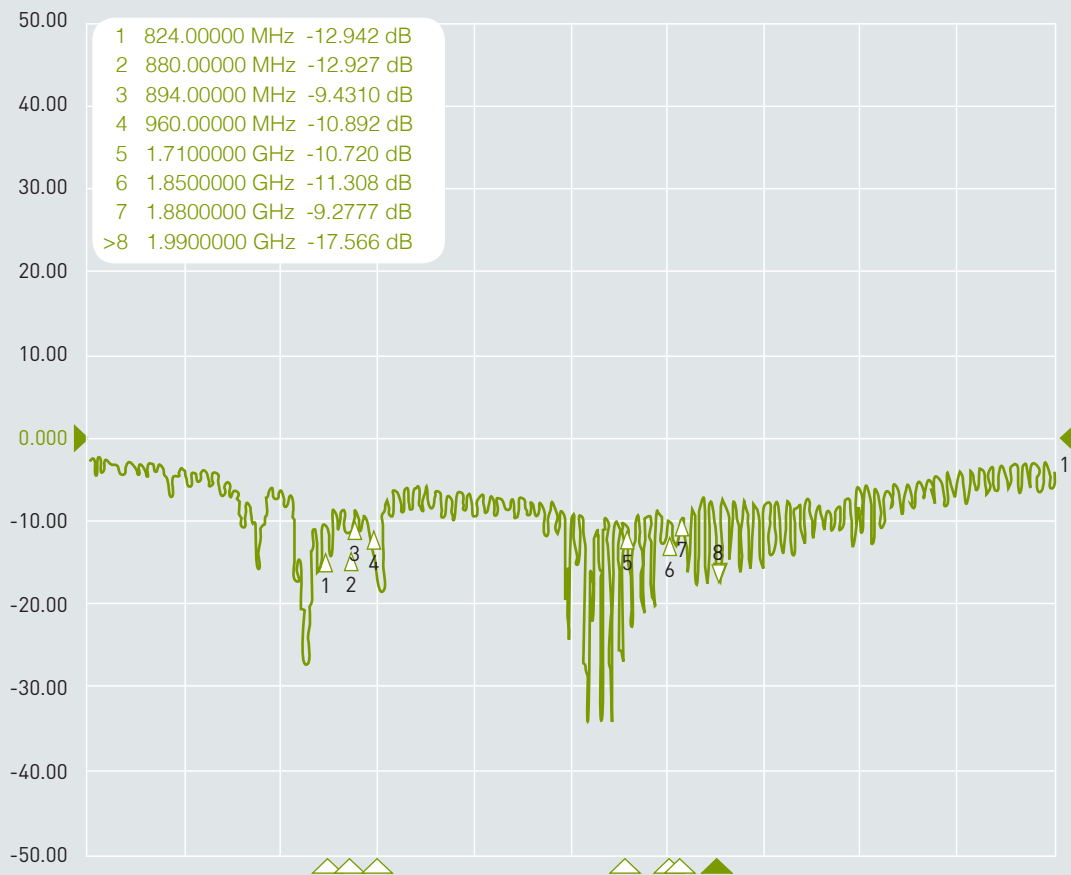
S22 REVERSE REFLECTION TRANSMISSION / REFLECTION
 IMPEDANCE



5. Cellular Antenna

1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State

Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB (F2)

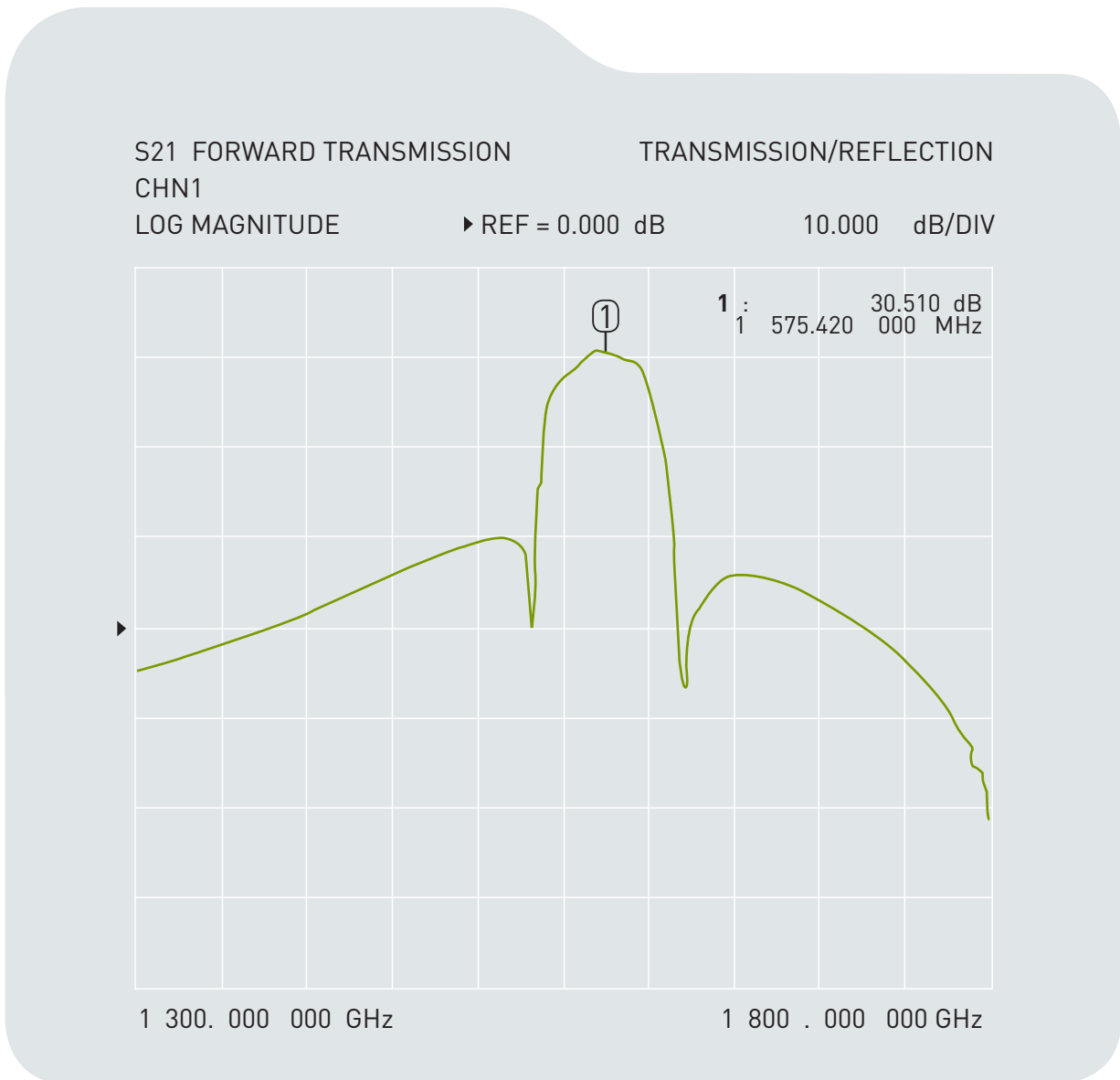


1 Start 100 MHz

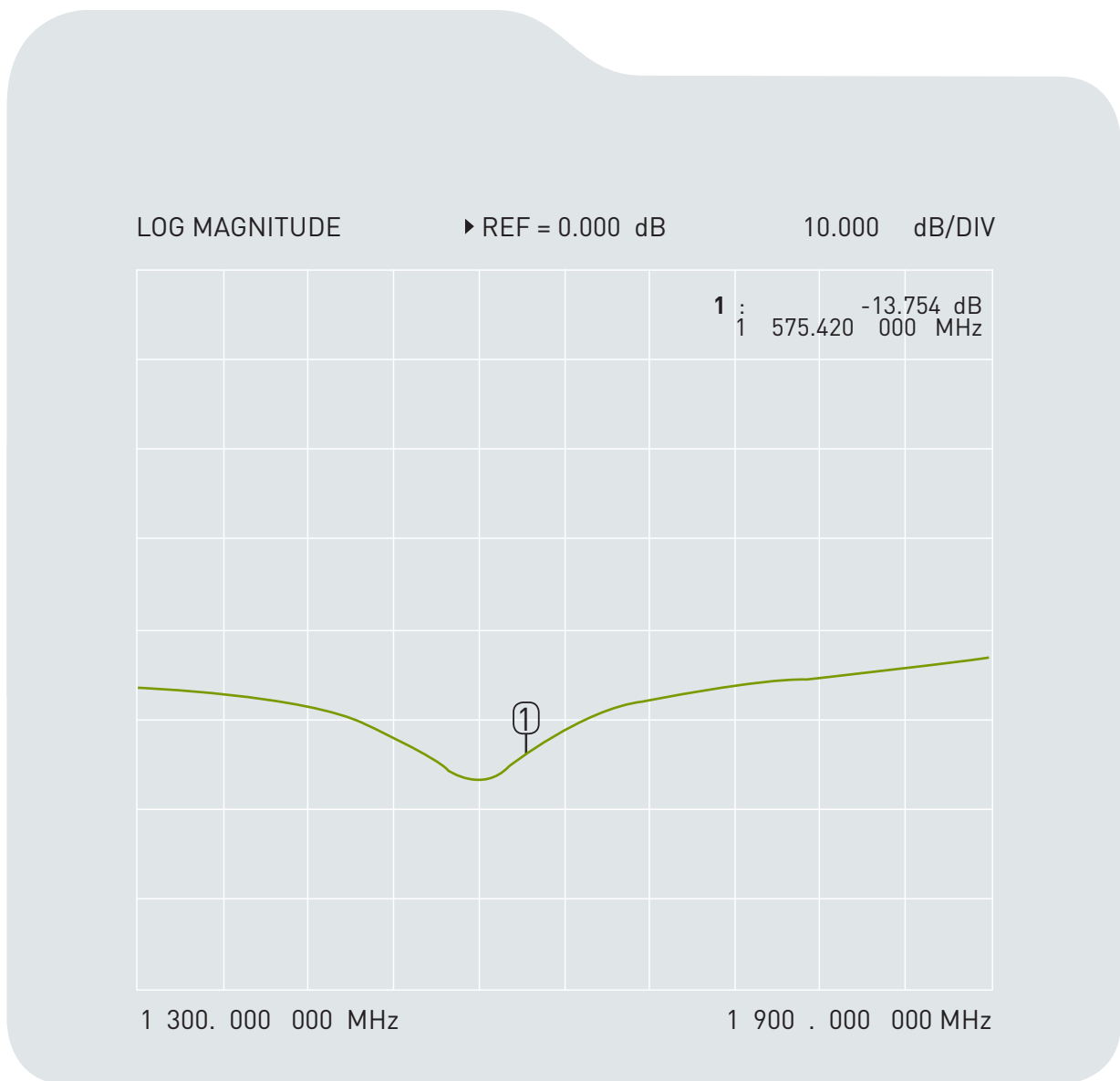
IFBW 30 kHz

Stop 3 GHz Cor !

6. LNA gain



7. LNA S22

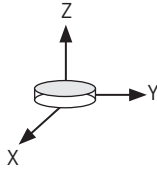


8.1 Cellular Antenna Radiation Pattern

Frequency

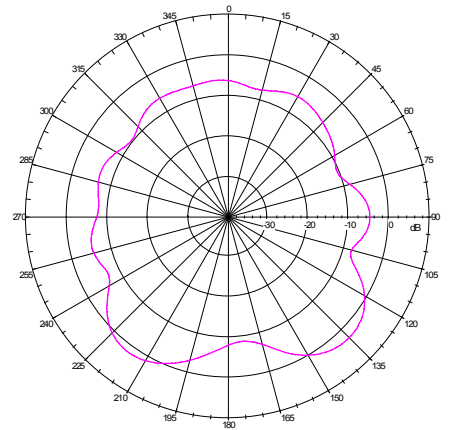
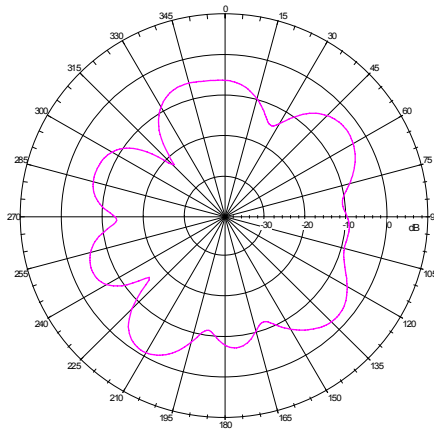
XZ Plane

YZ Plane



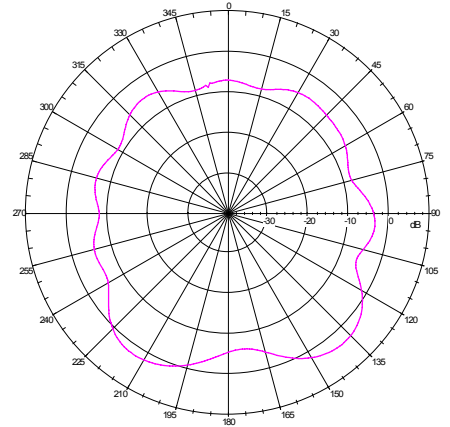
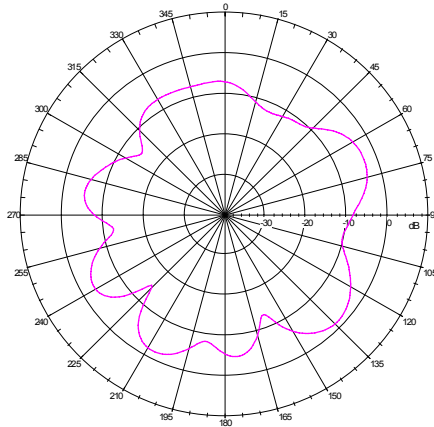
824 MHz

Peak Gain: 1.526 dBi



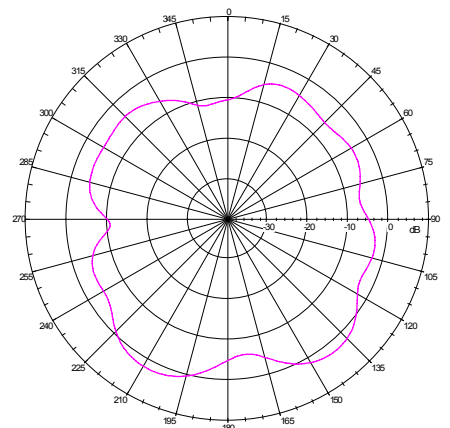
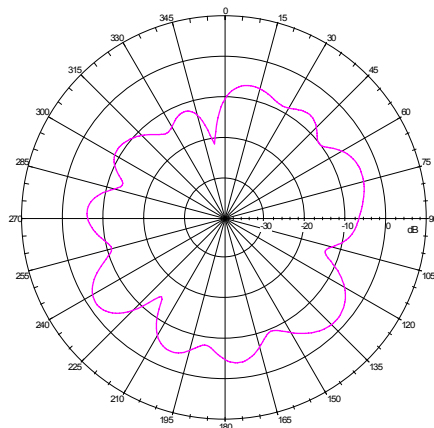
880 MHz

Peak Gain: 1.996 dBi



960 MHz

Peak Gain: 1.133 dBi

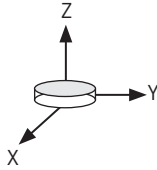


8.2 Cellular Antenna Radiation Pattern

Frequency

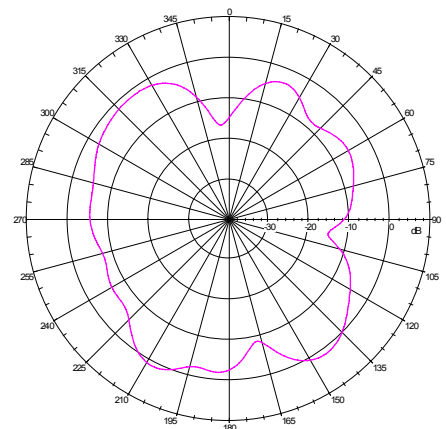
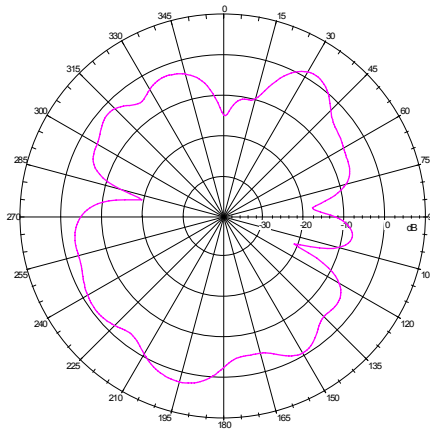
XZ Plane

YZ Plane



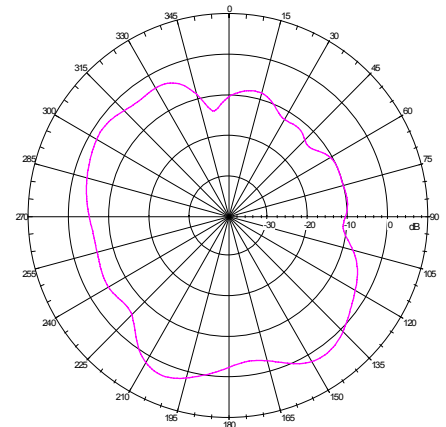
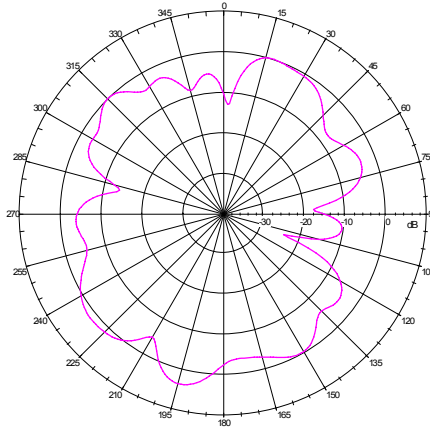
1710 MHz

Peak Gain: 1.946 dBi



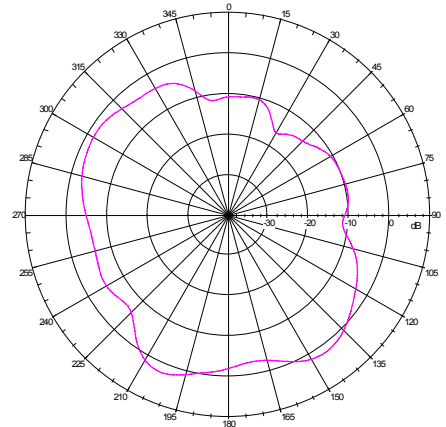
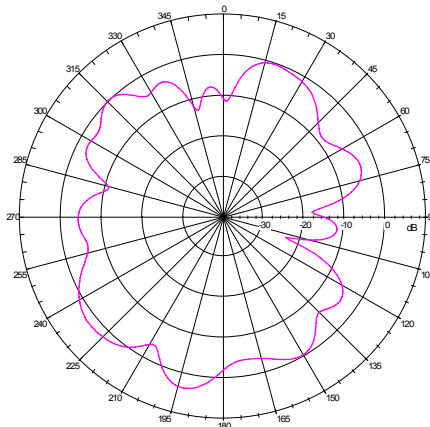
1850 MHz

Peak Gain: 3.0 dBi



1880 MHz

Peak Gain: 3 dBi

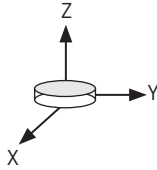


8.3 Cellular Antenna Radiation Pattern

Frequency

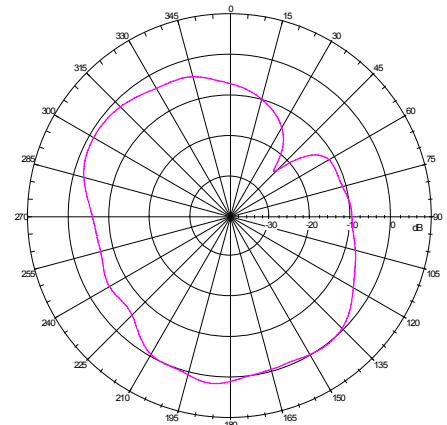
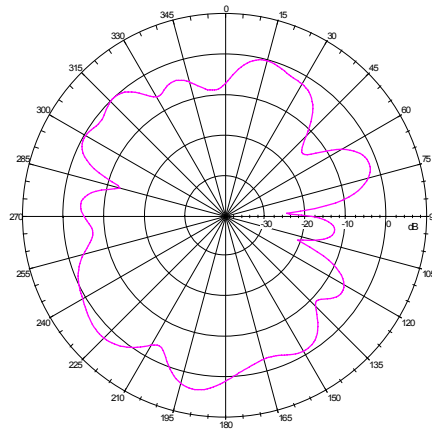
XZ Plane

YZ Plane



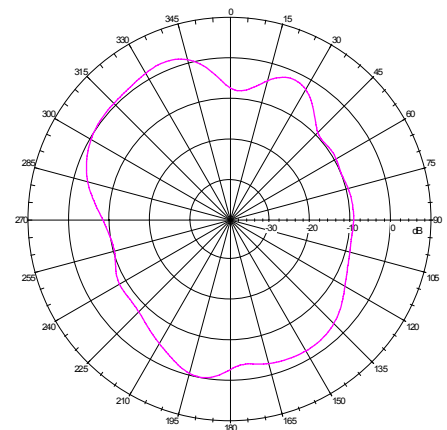
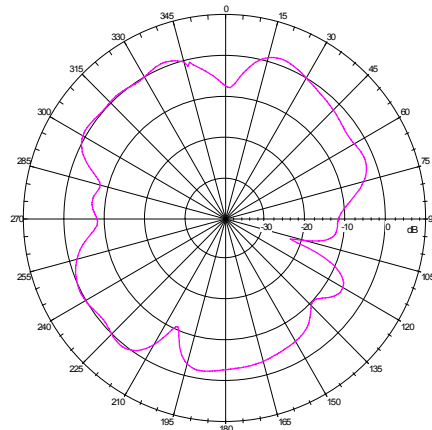
1990 MHz

Peak Gain: 3.27 dBi



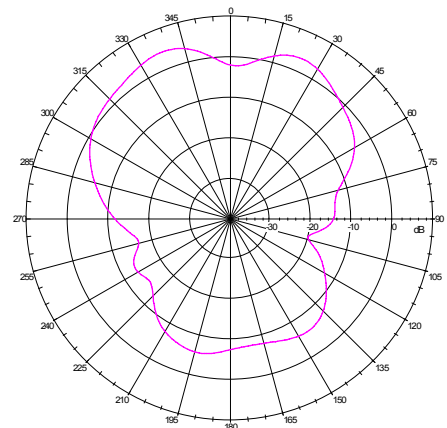
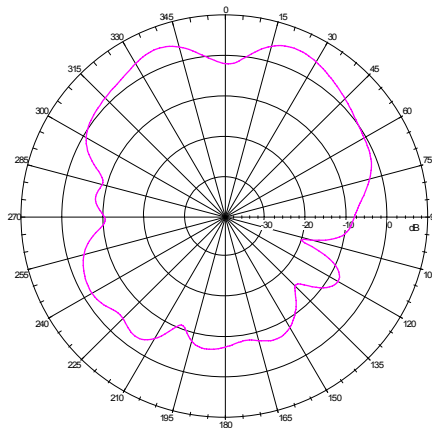
2110 MHz

Peak Gain: 3.78 dBi

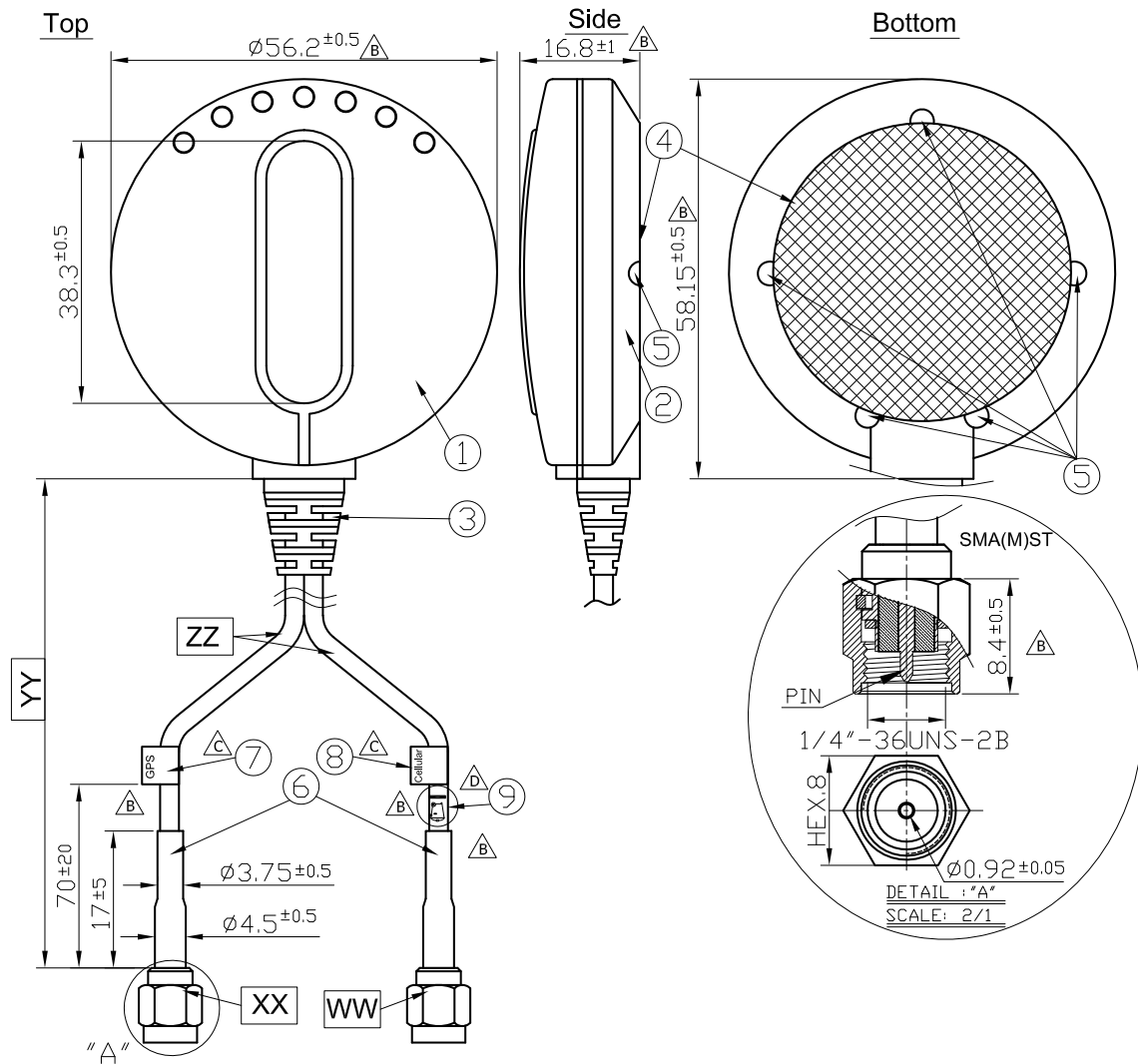


2170 MHz

Peak Gain: 5.82 dBi



9. Drawing

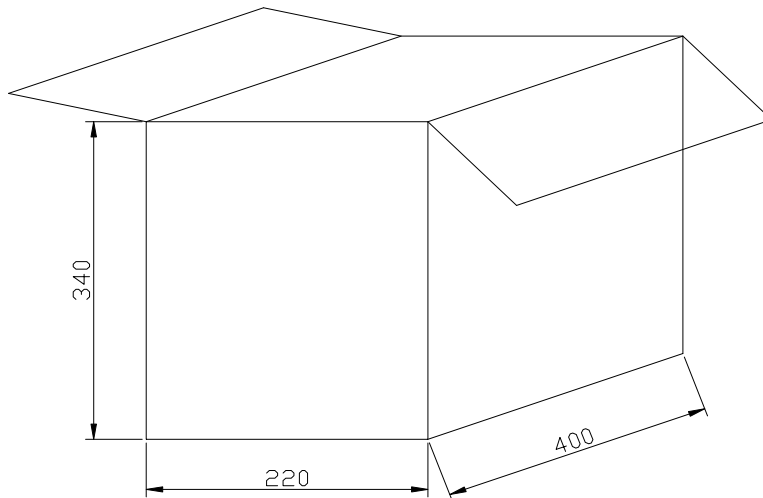
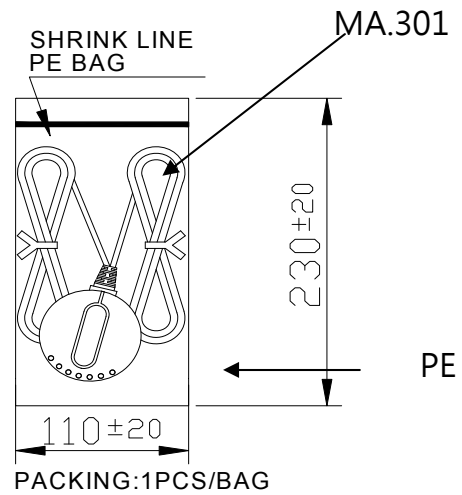


| | Name | Material | Finish | QTY |
|---|------------------|------------------|--------|-----|
| 1 | Top Housing | ABS | Black | 1 |
| 2 | Bottom Housing | ABS | Black | 1 |
| 3 | SR | PVC | Black | 1 |
| 4 | Sticker | Matte Silver PET | Silver | 1 |
| 5 | 2.6L Screw | Stainless Steel | Clear | 5 |
| 6 | Heat Shrink Tube | PE | Black | 2 |
| 7 | GPS Label | Coated Paper | Orange | 1 |
| 8 | Cellular Label | Coated Paper | Blue | 1 |
| 9 | WEEEE Label | Coated Paper | White | 1 |

5. Packaging

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

Unit : mm



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