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Taoglas Limited
MA301.A.AB.010

For any questions, you can email us directly:
sales@integrated-circuit.com

3D View
(This side faces the sky)

Underside View
(Magnet)

MA301.A.AB.010

Specification

Part No.	**MA301.A.AB.010**
Product Name	MA.301 GPS/Penta-band Cellular Magnetic Antenna
Feature	IP65 - Waterproof GPS - High gain LNA up to 32dB Penta-band 850/900/1800/1900/2100 MHz GSM/CDMA/PCS/DCS/UMTS/HSPA Low Profile Height 10.8mm Diameter 55.1mm RoHS Compliant

1. Introduction

The MA.301 is a combination small form factor high performance GPS and Penta-band Cellular (GSM/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-65 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 Fakra 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/CDMA/PCS/DCS/WCDMA/UMTS)

Other

IP65 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: 1850~1990 MHz DCS: 1710~1880 MHz UMTS/WCDMA
Frequency	1575.42 MHz ± 2MHz	As above
Gain	28 dB typ.	As patterns
	Gain at Zenith: -3 dBi min	---
	Axial Ratio: 3.0 dB max	---
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

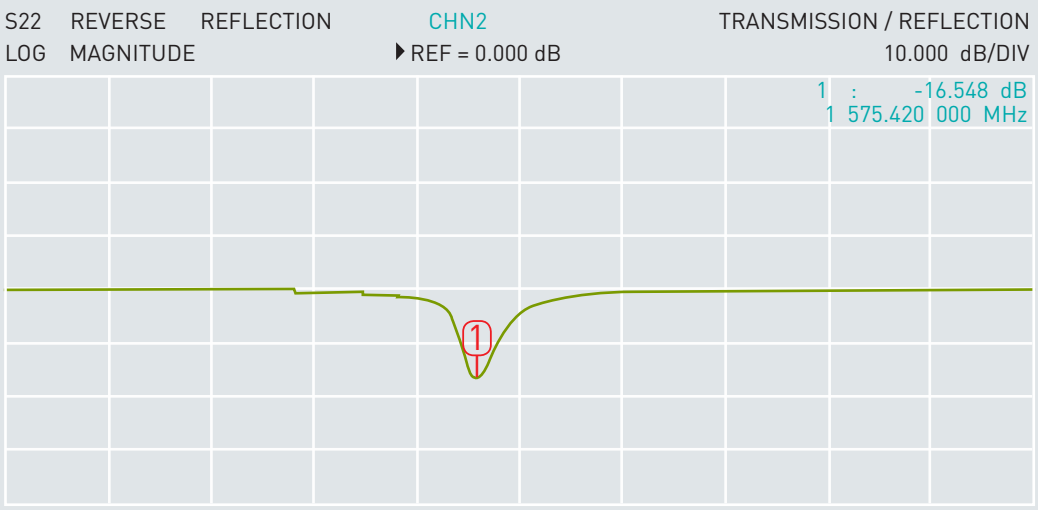
1. The antenna is measured mounted on a 39 (L) × 34.5 (W) cm metal ground

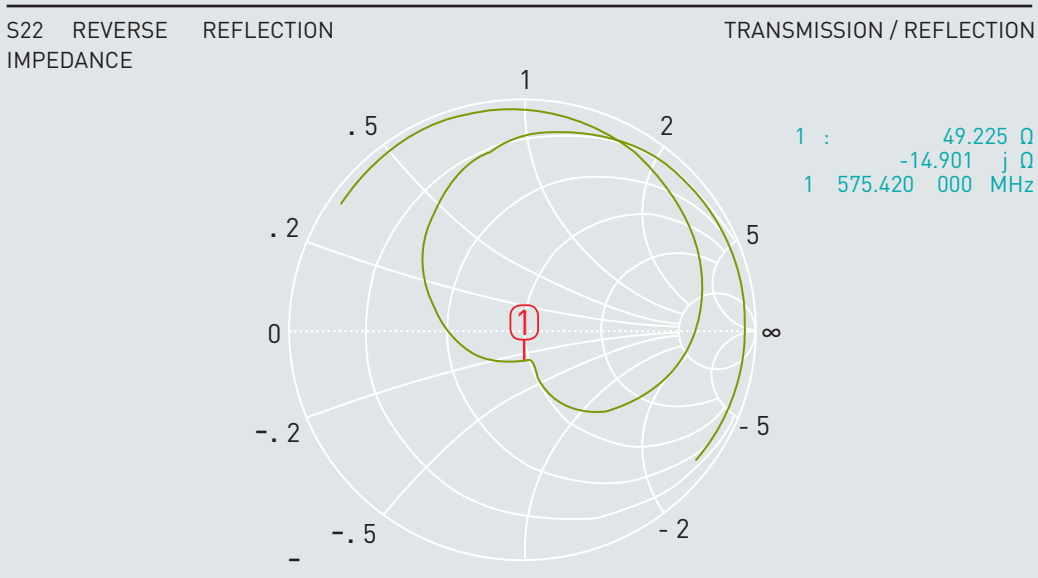
2. All data are measured with RG-174 cable (length = 3M), excluding the LNA data

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

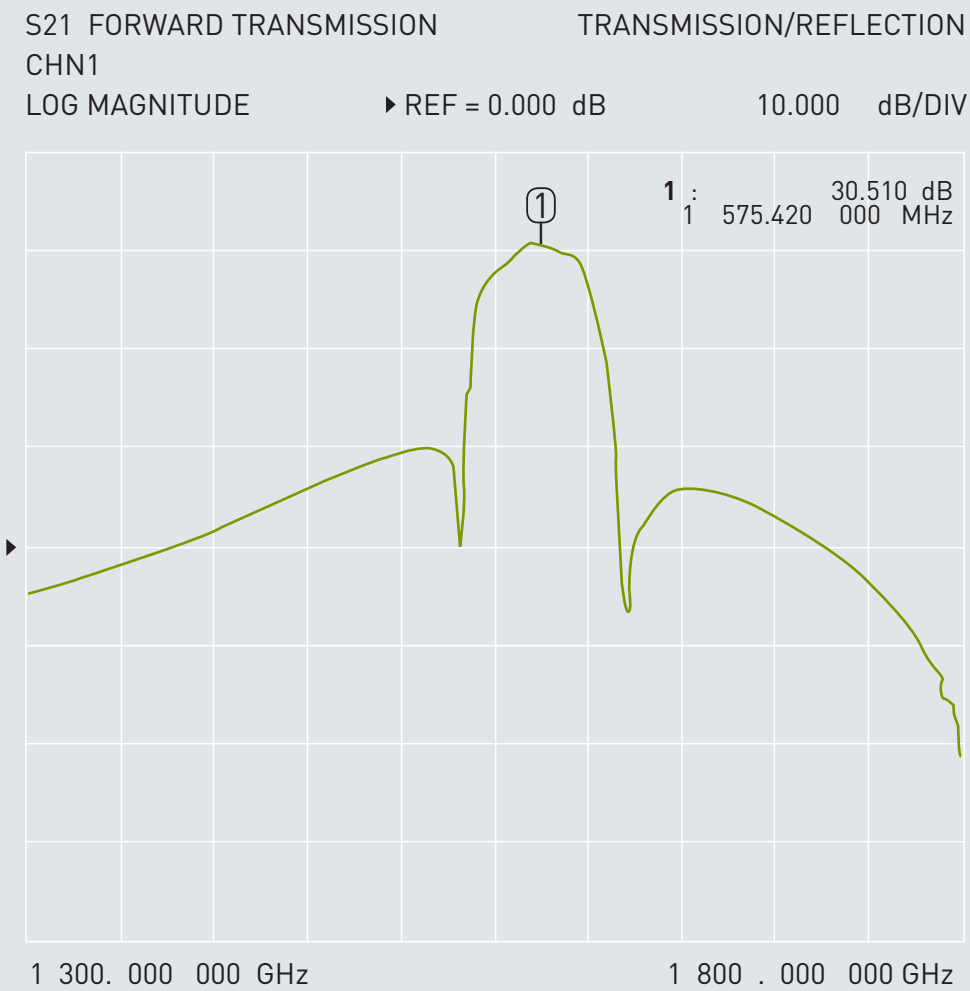
4. GPS Ceramic Antenna



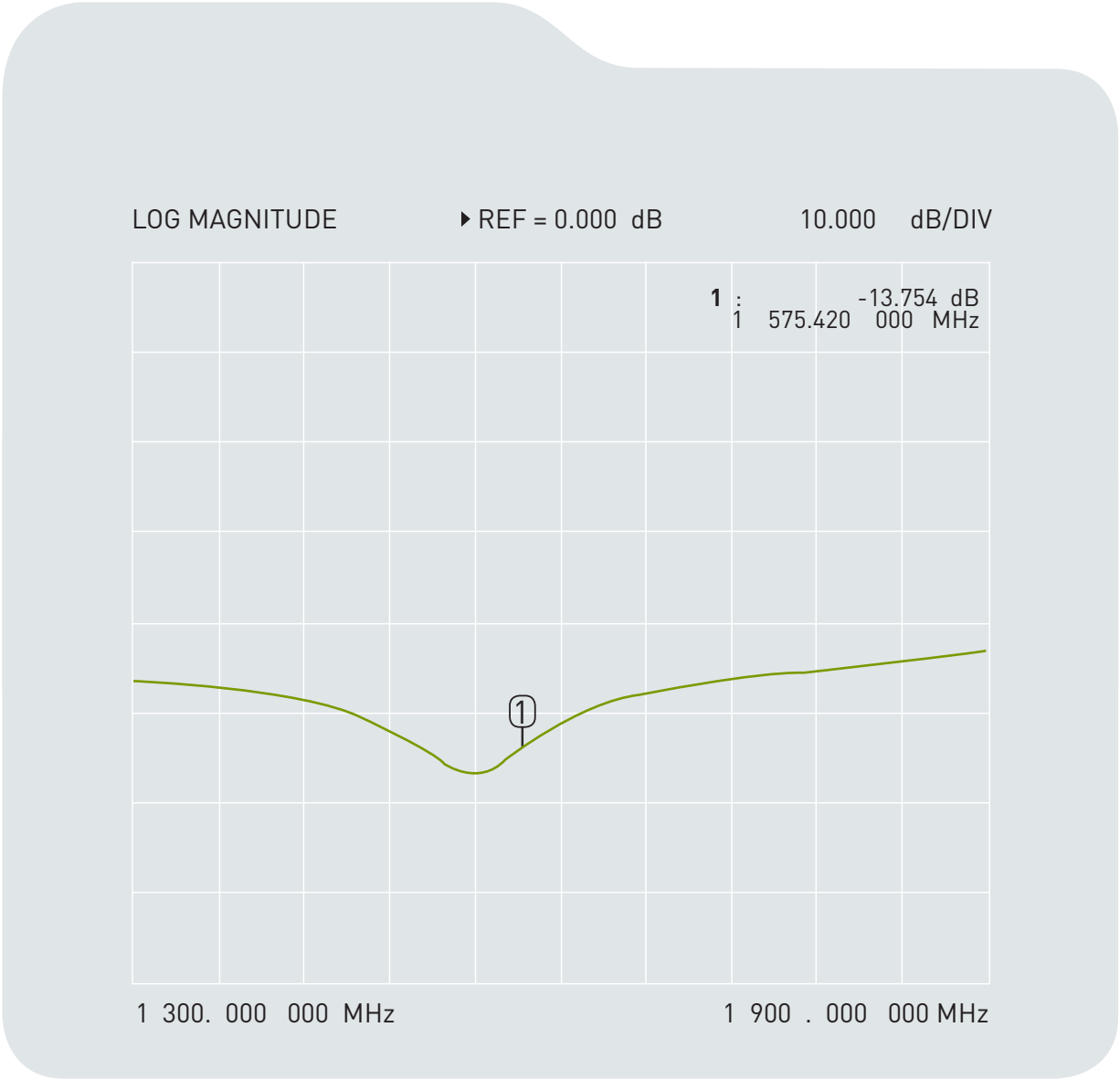


5. GSM Antenna

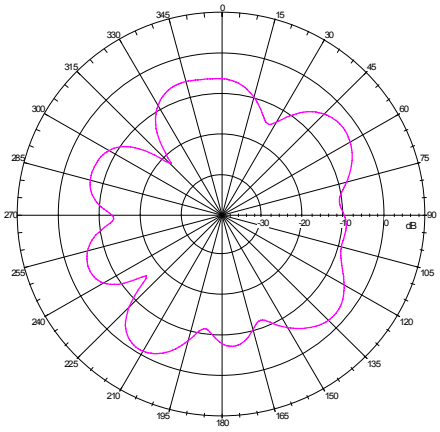
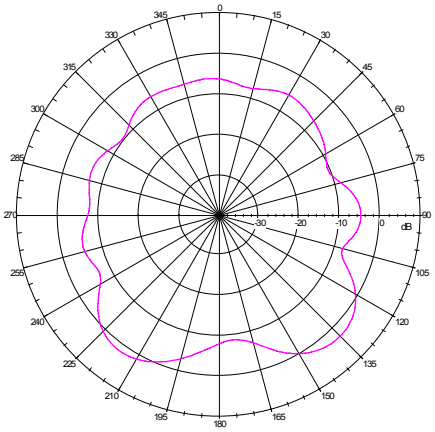
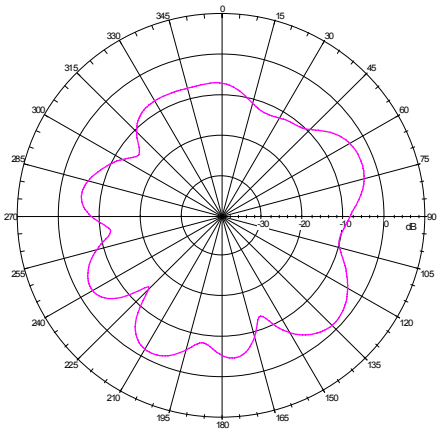
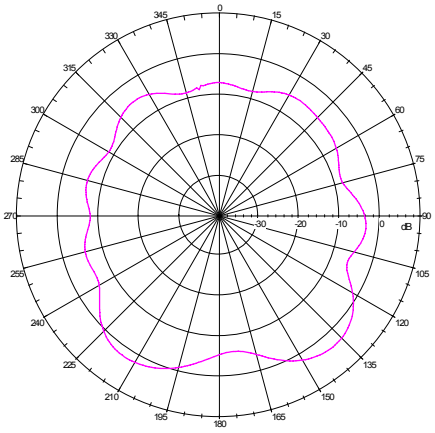
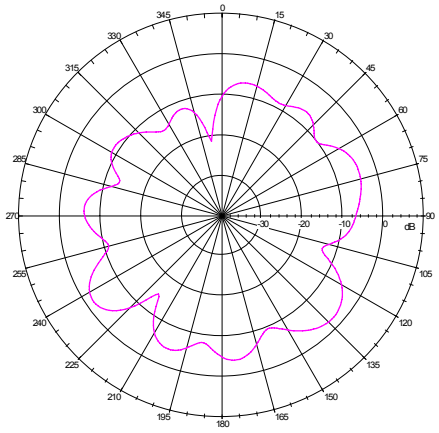
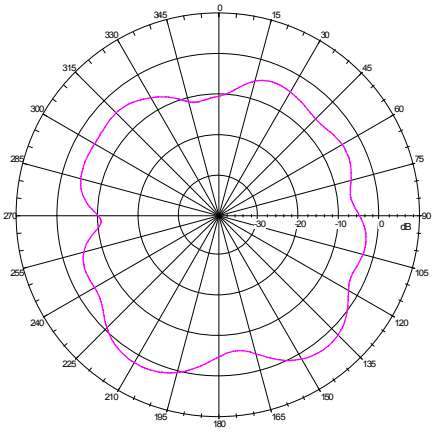
6. LNA gain


S21 FORWARD TRANSMISSION
TRANSMISSION/REFLECTION
CHN1
LOG MAGNITUDE
REF = 0.000 dB
10.000 dB/DIV
1 : 30.510 dB
1 575.420 000 MHz
1 300. 000 000 GHz
1 800 . 000 000 GHz

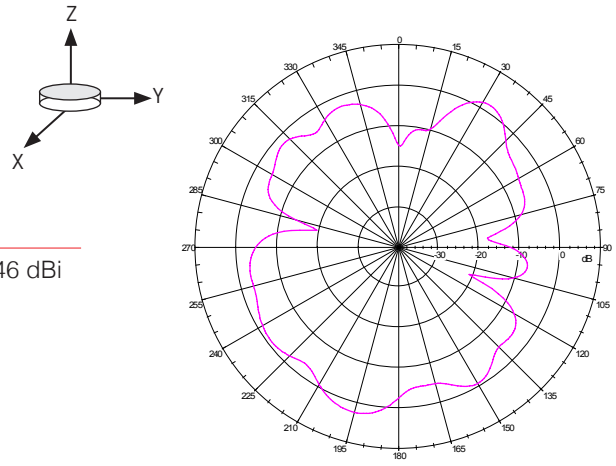
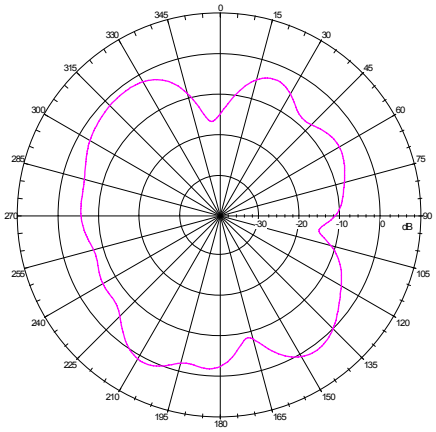
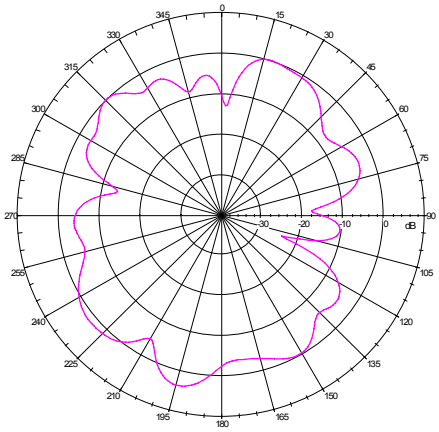
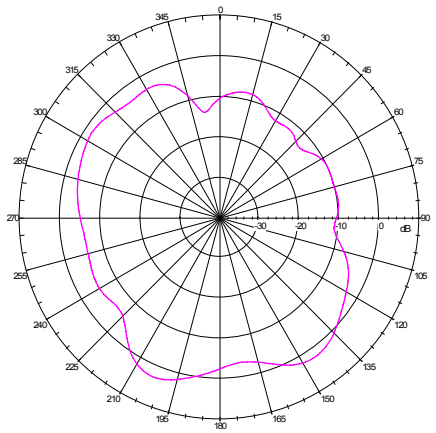
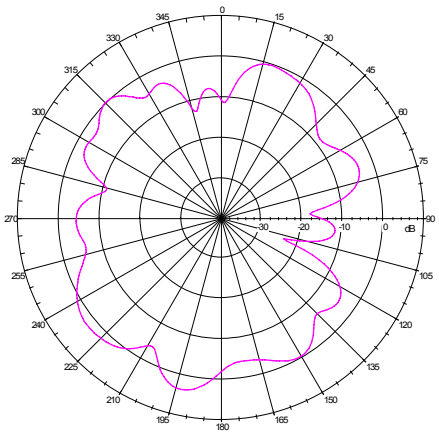
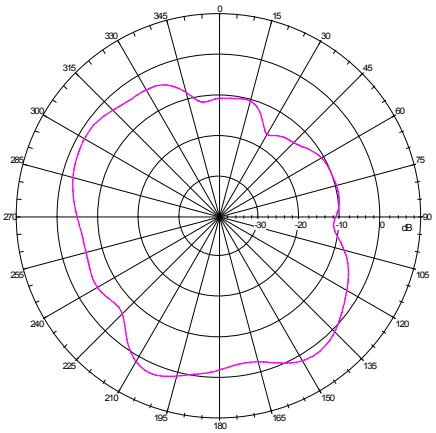
7. LNA S22


LOG MAGNITUDE
REF = 0.000 dB
10.000 dB/DIV
1 : -13.754 dB
1 575.420 000 MHz
1
1 300. 000 000 MHz
1 900 . 000 000 MHz

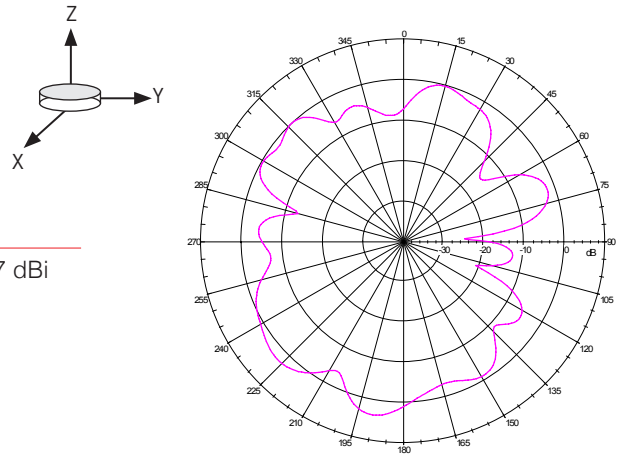
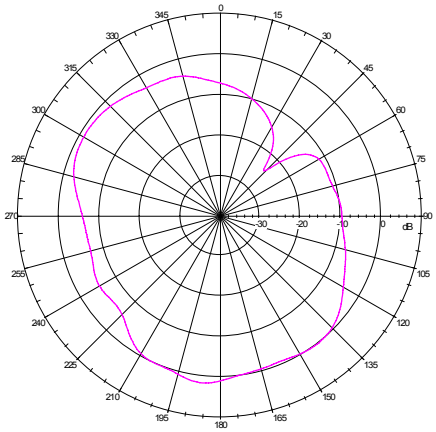
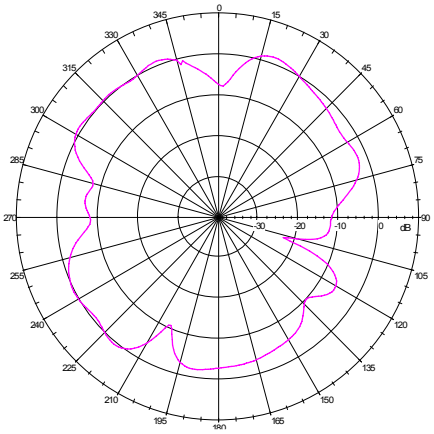
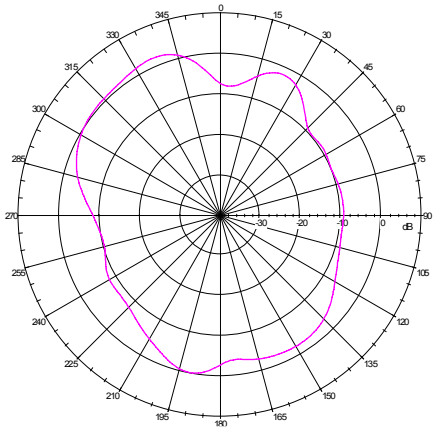
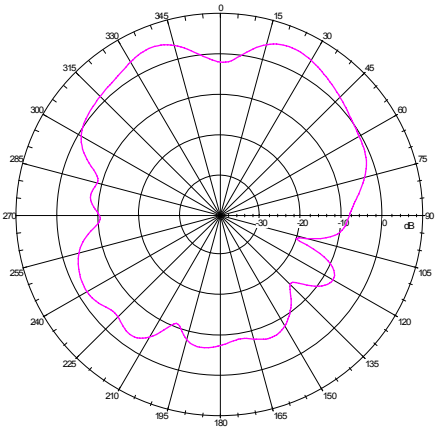
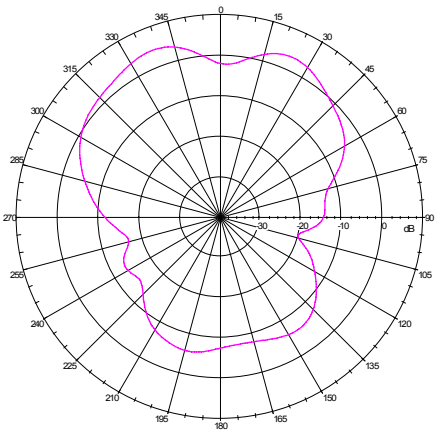
8.1 GSM Antenna Radiation Pattern

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		

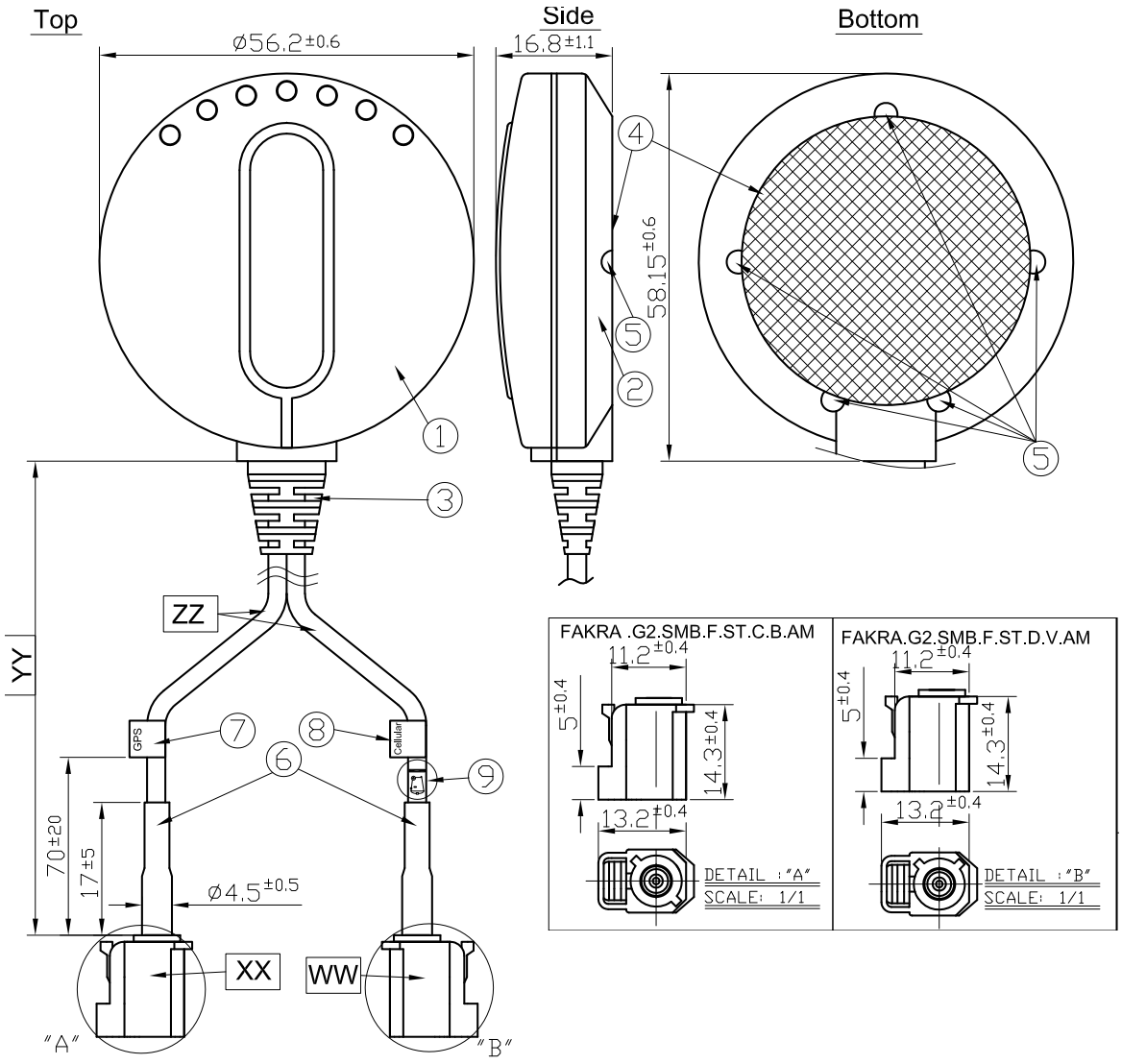
8.2 Cellular Antenna Radiation Pattern

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



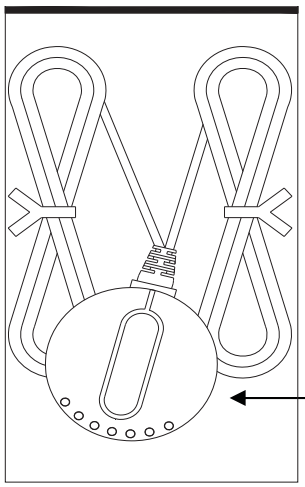
	Name	Material	Finish	QTY
1	Top Housing	ABS	Black	1
2	Bottom Housing	ABS	Black	1
3	SR	PVC	Black	1
4	Sticker	Matte Silver PET	Silver	1
5	2.6L Screw	Stainless Steel	Clear	5
6	Heat Shrink Tube	PE	Black	2
7	GPS Label	Coated Paper	Orange	1
8	Cellular Label	Coated Paper	Blue	1
9	WEEEE Label	Coated Paper	White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

	Name	Material	Finish	QTY
WW	Connector Type	Fakra Code D	Violet	1
XX	Connector Type	Fakra Code C	Blue	1
YY	Cable Length	3000+/-60mm		
ZZ	Cable Type	RG-174		

10. Packaging

1pcs antenna per small PE bag

80 small PE bag per box



Unit : mm