

## DRAFT SPECIFICATION

- Part No. : **MA204.A.LB.002**
- Product Name : MA204 Stingray 2in1  
GPS/GLONASS  
Cellular  
Adhesive Antenna
- Features : 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 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.

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.

### 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

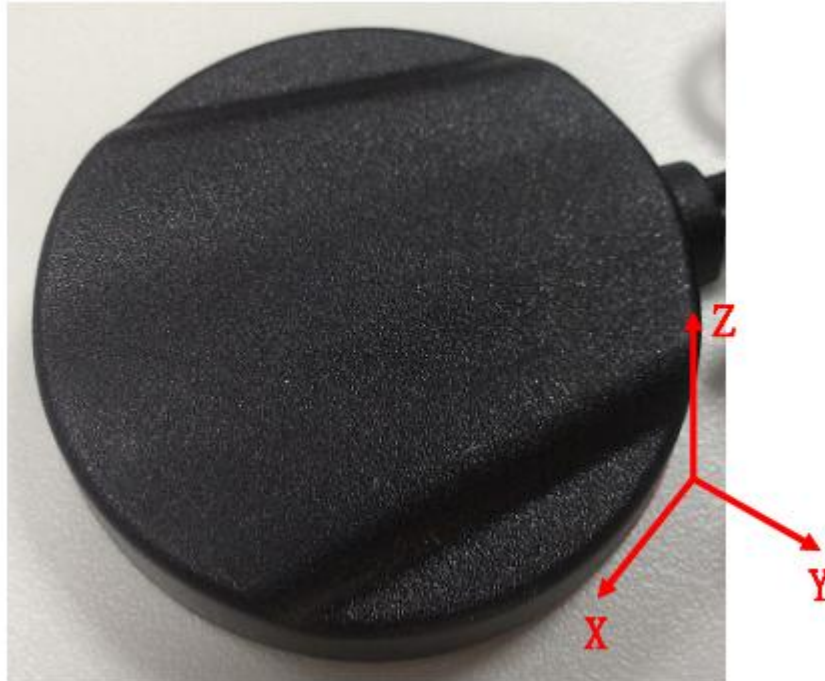
- Water Resistant IP 65
- Quality textured covert design. Low profile
- UV resistant ABS housing
- Comes with high grade 3M double sided tape for quick and easy mounting
- Customizable cables and connectors

## 2. Specification

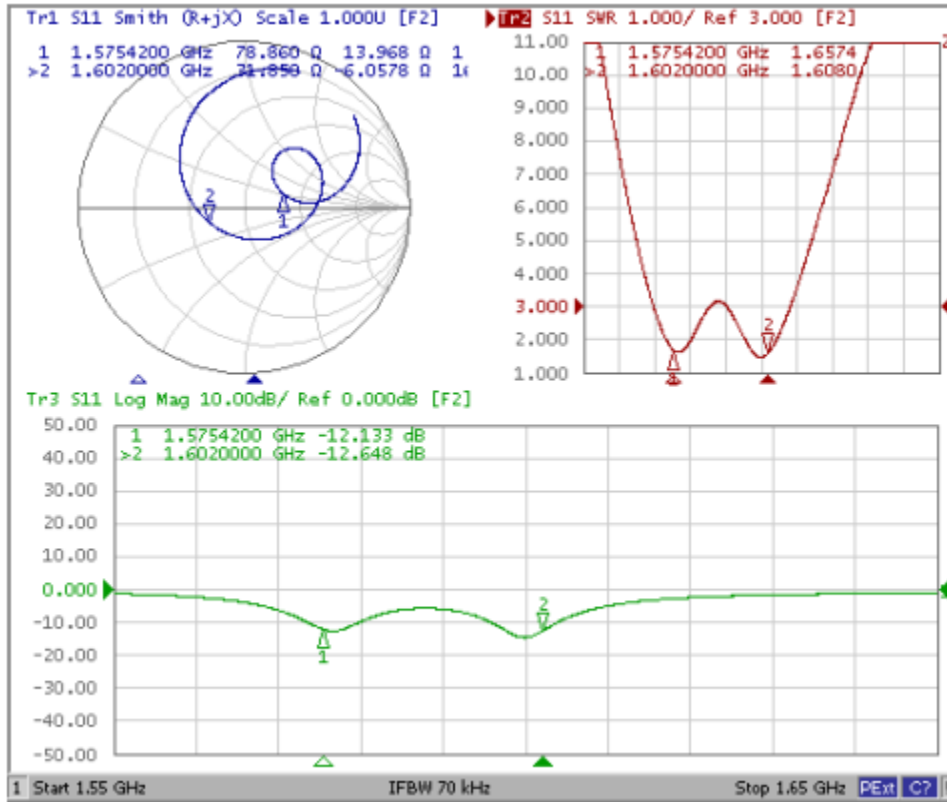
Performance Specifications		
Items	GPS/GLONASS Antenna	Cellular Antenna
Features	High performance GPS/GLONASS ceramic patch antenna with cutting edge low noise amplifier	800MHz to 2200MHz
Frequency	1575.42 MHz ± 3MHz 1602 MHz ± 0.5MHz	As above
Gain	28 dB typ.	As patterns
VSWR	2.0:1	2.5:1
Polarization	Linear	-
Impedance	50Ω	50Ω
DC Power Input	3.3V	-
Power Consumption	10mA Typ.	
Noise Figure	2.2 dB Max	-
Cable / Connector	Standard 1/2/3/5/10m RG-174 Cables and Connectors Fully Customizable	Standard 1/2/3/5/10m 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**

### 3. GPS/GLONASS Antenna -Setup

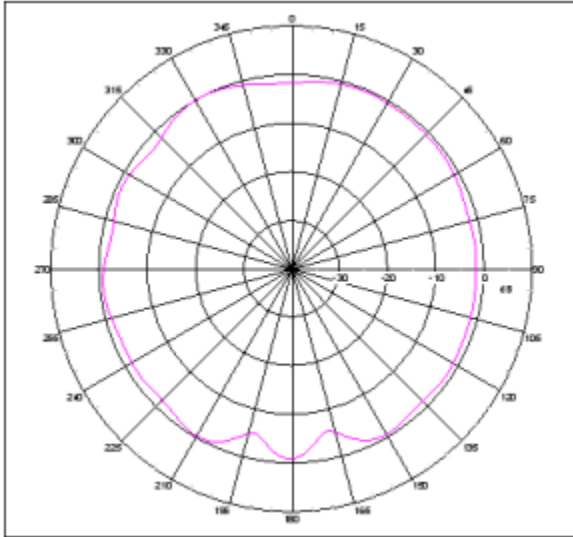


### 3.1 GPS/GLONASS Antenna S11 Parameters

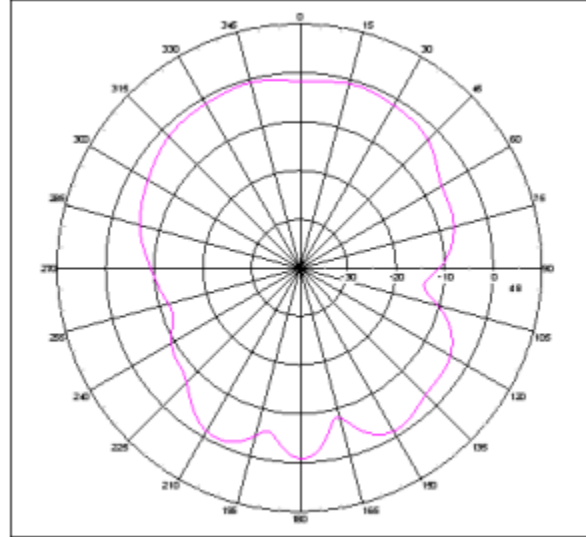


### 3.2 GPS/GLONASS Antenna Radiation Patterns 1575MHz

XZ Plane

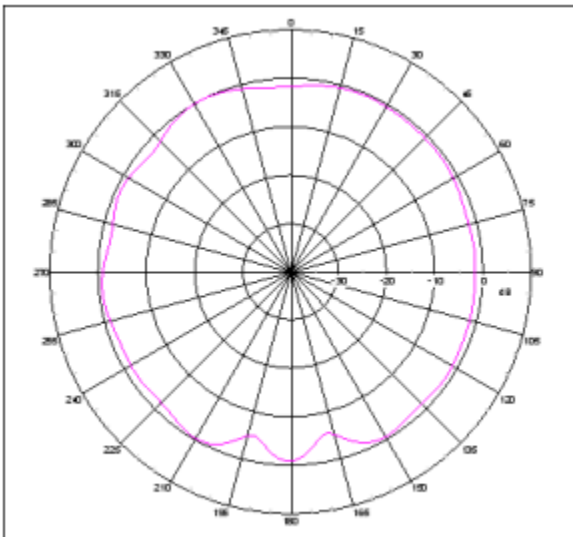


YZ Plane

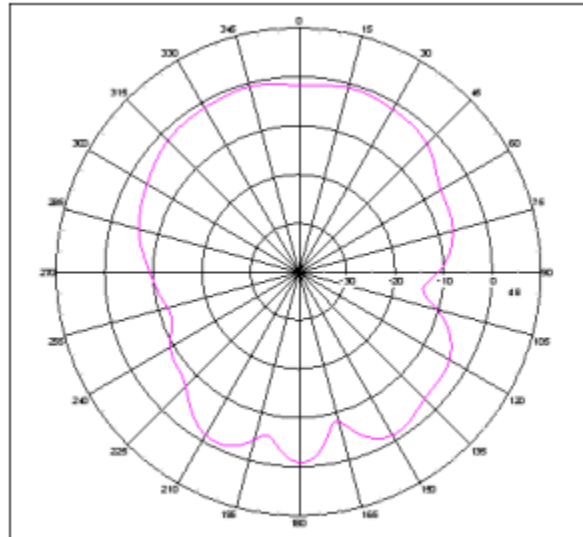


### 1602MHz

XZ Plane



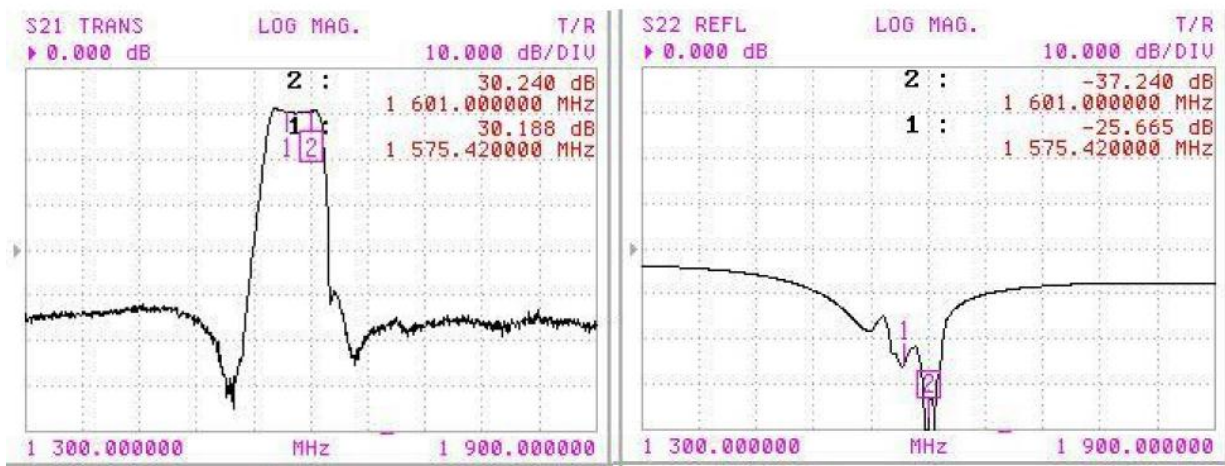
YZ Plane



### 3.3 GPS/GLONASS Antenna Gain Chart

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

### 3.4 GPS/GLONASS LNA S21 & S22 Parameter Results



## 4. Cellular Antenna

### 4.1 Return Loss

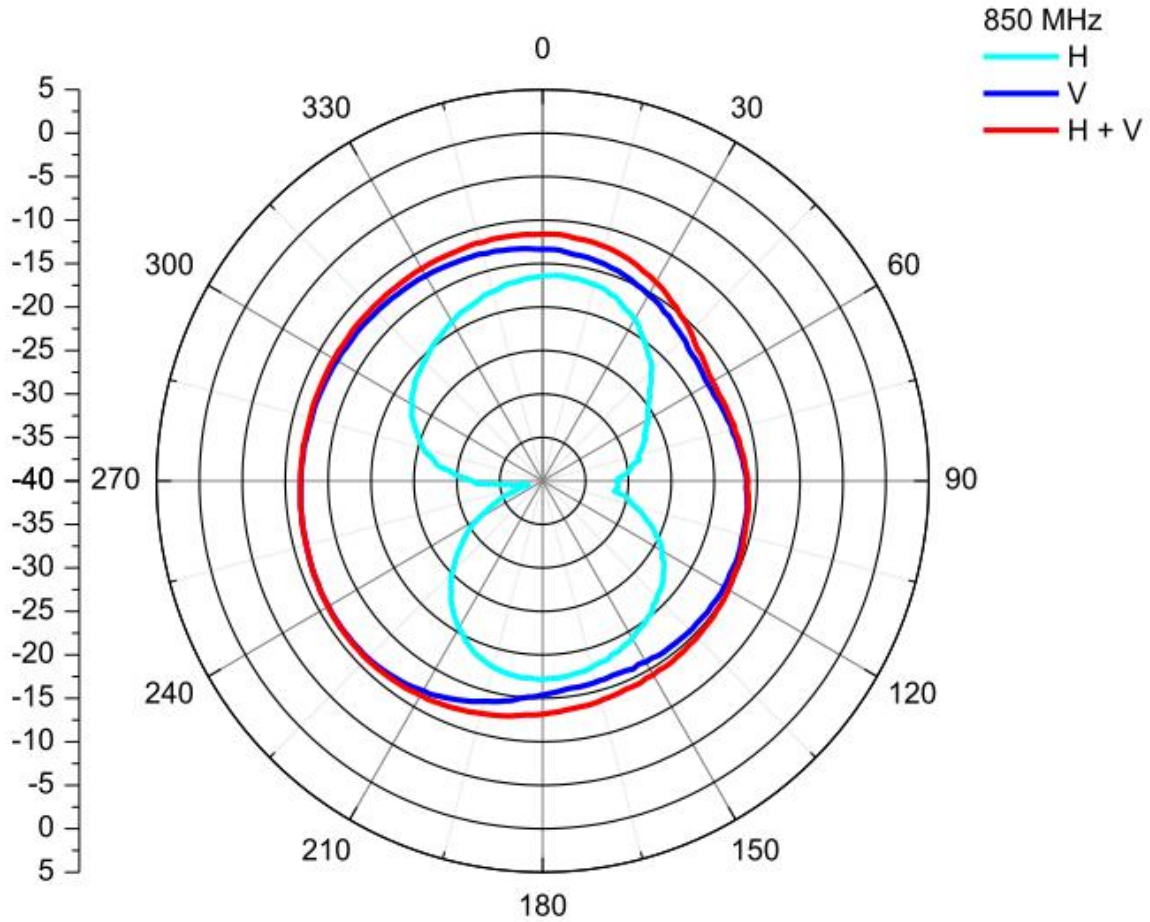
With Housing, Glass Mount (RG-174, length = 1M)





## 4.2 Radiation Patterns

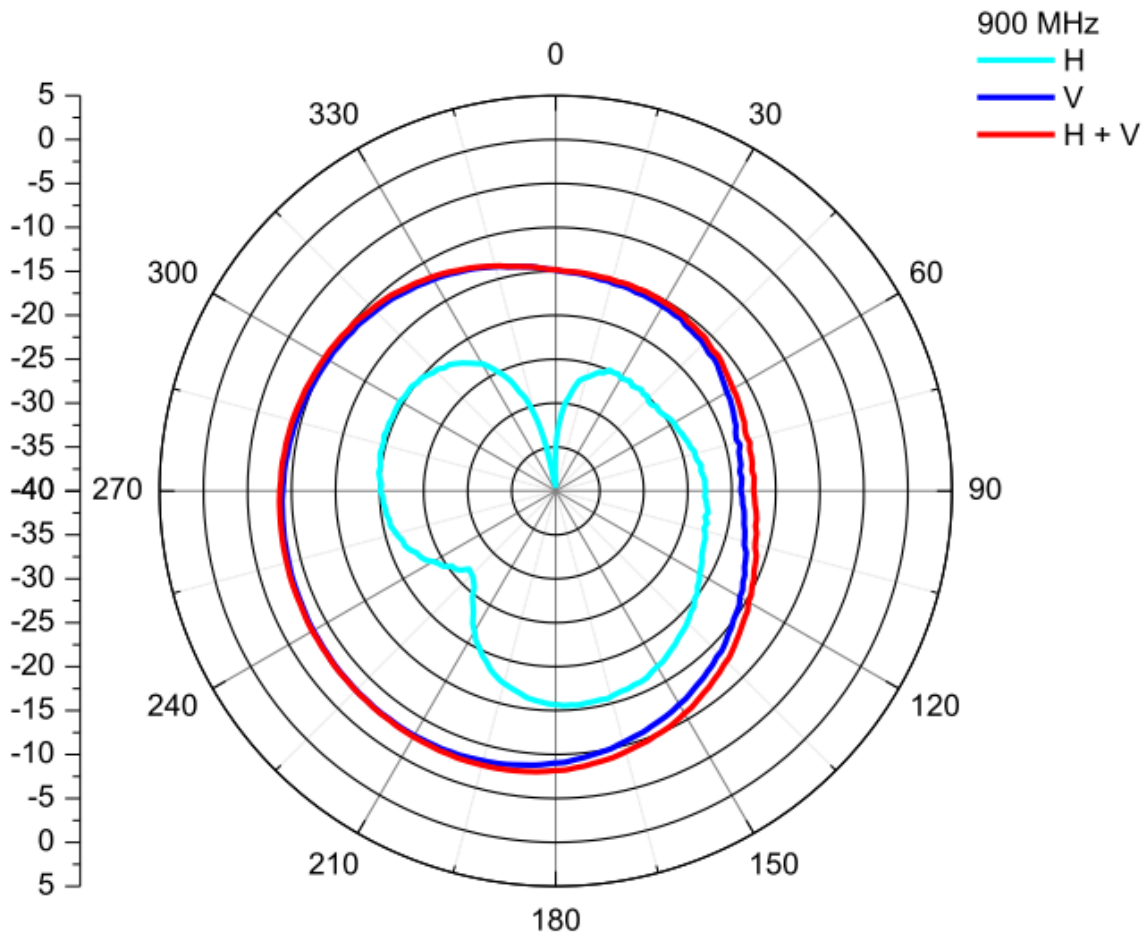
### 4.2.1 850 MHz



Center Frequency	850 MHz
Horizontal (dBi) peak	-16.30
Vertical (dBi) peak	-11.10
Horiz.+ Vert. (dBi) peak	-10.99

Center Frequency	850 MHz
Horizontal (dBi) average	-20.60
Vertical (dBi) average	-13.68
Horiz.+ Vert. (dBi)	-12.88

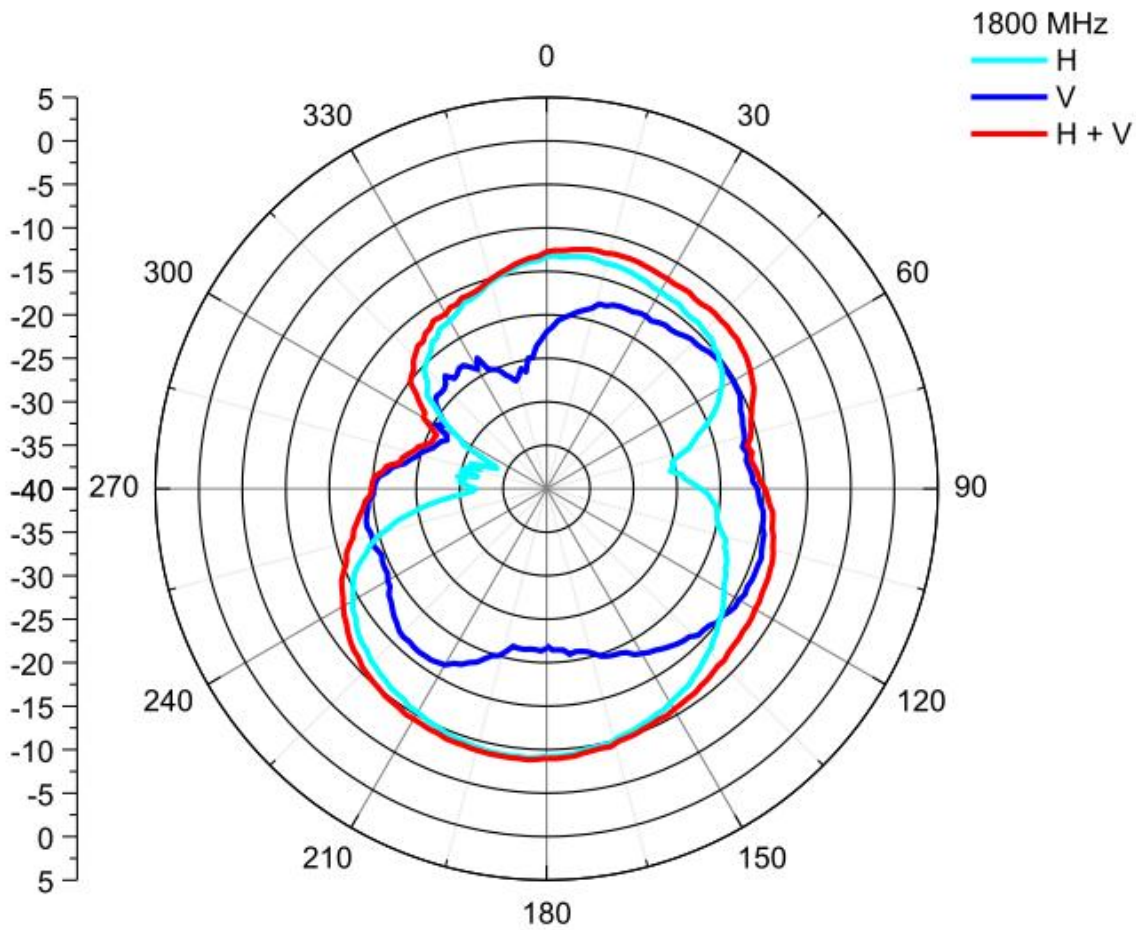
### 4.2.2 900 MHz



Center Frequency	900 MHz
Horizontal (dBi) peak	-15.51
Vertical (dBi) peak	-7.85
Horiz.+ Vert. (dBi) peak	-7.61

Center Frequency	900 MHz
Horizontal (dBi) average	-20.63
Vertical (dBi) average	-11.23
Horiz.+ Vert. (dBi) average	-10.75

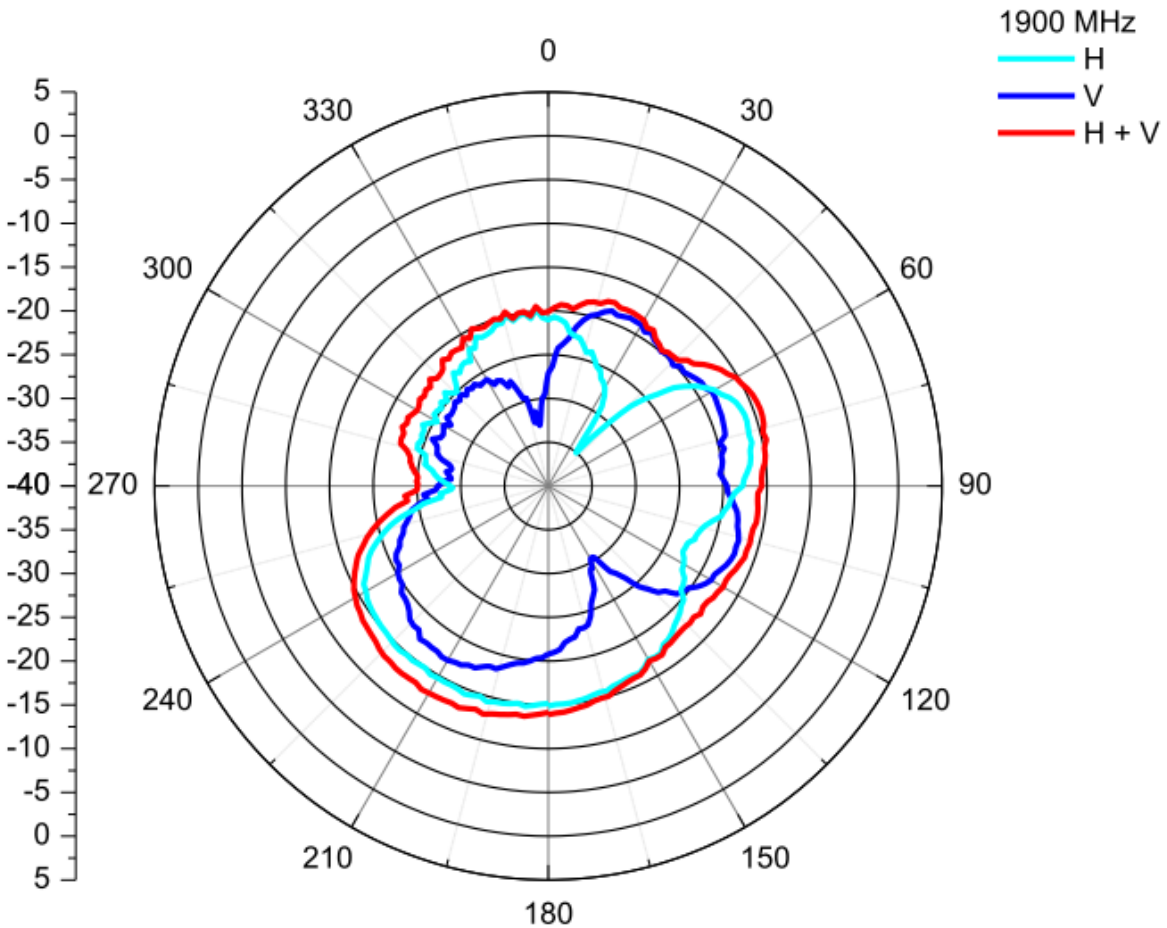
### 4.2.3 1800 MHz



<b>Center Frequency</b>	1800 MHz
<b>Horizontal (dBi) peak</b>	-9.00
<b>Vertical (dBi) peak</b>	-14.04
<b>Horiz.+ Vert. (dBi) peak</b>	-8.76

<b>Center Frequency</b>	1800 MHz
<b>Horizontal (dBi) average</b>	-13.95
<b>Vertical (dBi) average</b>	-18.04
<b>Horiz.+ Vert. (dBi)</b>	-12.52

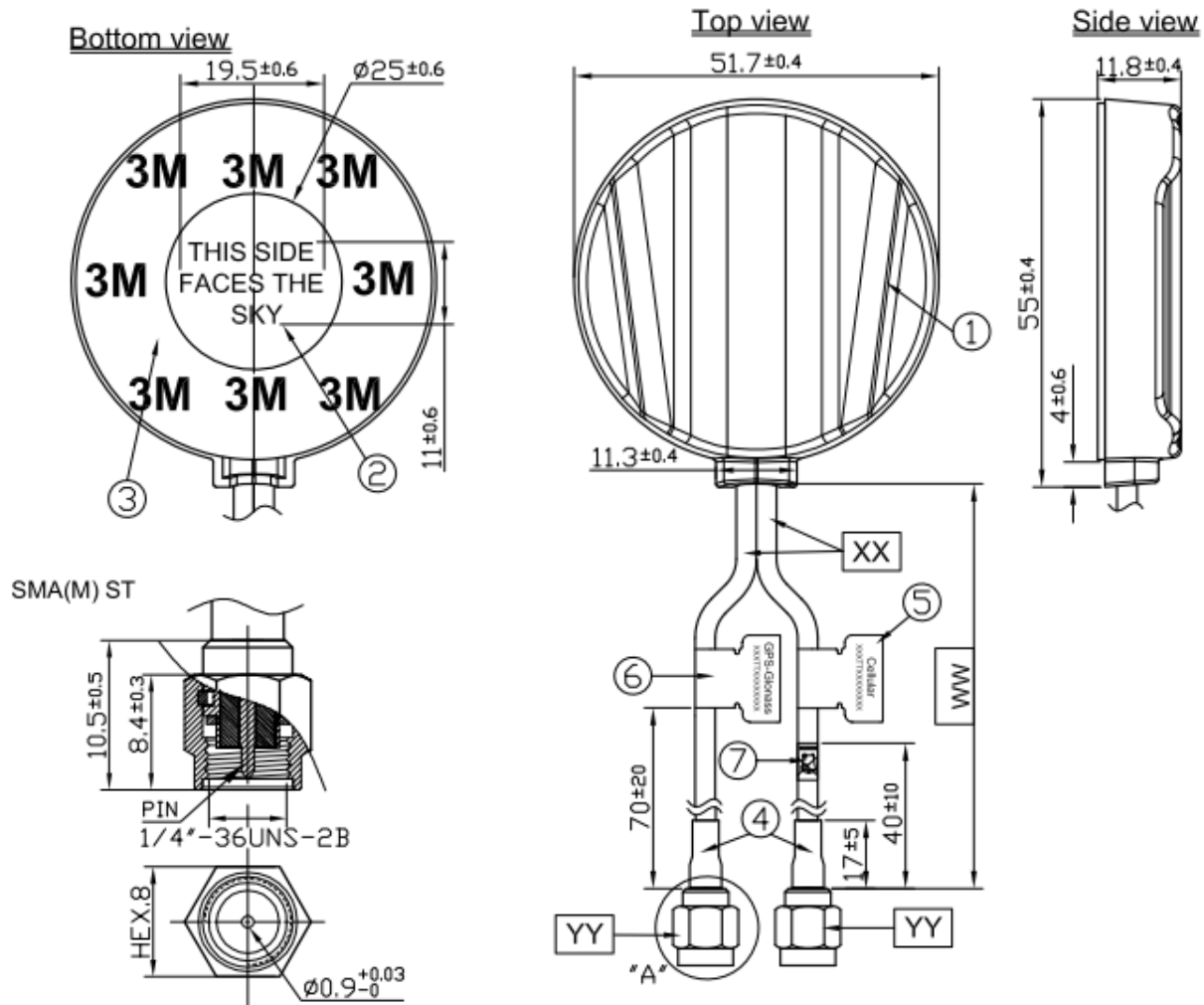
### 4.2.4 1900 MHz



Center Frequency	1900 MHz
Horizontal (dBi) peak	-14.38
Vertical (dBi) peak	-16.99
Horiz.+ Vert. (dBi) peak	-14.38

Center Frequency	1900 MHz
Horizontal (dBi) average	-18.49
Vertical (dBi) average	-20.86
Horiz.+ Vert. (dBi) average	-16.51

## 5. Drawings



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/GLONASS Label	Coated Paper	Orange	1
7 WEEE label	Coated Paper	White	1
Name	Material	Finish	Qty
WW Cable Length	3000mm $\pm 30$ mm		1
XX Cable Type	RG174	Black	2
YY Connector Type	SMA(M) ST	Gold	2

## 6. Packaging

