

With potential

Specification

Part No.	:	AA.180.301111
Product Name	:	Compact Low Axial Ratio GPS/GLONASS/Galileo/BeiDou Magnetic Mount Antenna
Features	:	Dual-Pin Patch for Lowest Axial Ratio Magnetic Mount IP67 Rated 3000mm RG-174 SMA(M) Connector Cable and Connector Customizable Dimensions: 35 x 35 x 15mm RoHS Compliant



1. Introduction

The compact AA.180 magnetic mount external antenna is ideal for robust, covert installations where durability and small size is paramount. This low-profile antenna is tuned for stable operation over GPS-GLONASS-Galileo-BeiDou L1 frequency bands and is used in the following typical applications. At only 35mm square and 15mm in height, it is the most compact high accuracy antenna in the market for L1 operation.

- Advanced telematics and M2M applications
- Fleet management
- High accuracy positioning systems

Integration of a Taoglas Dual-pin patch enables the axial ratio to be 3 at the centre of the band, delivering good right hand circular polarization, which increases location accuracy and speed of time to first fix in the GNSS system. A front-end SAW reduces out-of-band interference from any nearby wireless transmitters, helping prevent LNA compression and burnout.

Cable length and connector type are customizable upon request.

2. Specification

BeiDou-GPS-GLONASS				
Center Frequency	BeiDou: 1561.098±2.046 MHz GPS: 1575.42±1.023 MHz GLONASS: 1602±8 MHz			
Passive Antenna Efficiency	BeiDou: 59.4% GPS: 51.4% GLONASS: 35.1%			
Passive Antenna Average Gain	BeiDou: -2.26dBi GPS: -2.88dBi GLONASS: -4.54dBi			
Passive Antenna Peak Gain	BeiDou: 3.31dBi GPS: 2.71dBi GLONASS: 1.08dBi			
VSWR	2.0 Max			
Impedance	50Ω			
Axial Ratio	BeiDou: 6.18 dB(typ) @zenith GPS: 2.19 dB(typ) @zenith GLONASS: 2.22 dB(typ) @zenith			
Polarization	RHCP			
Cable	3 meter RG174 standard, fully customizable			
Connector	SMA(M), standard, fully customizable			
LNA and Filter Electrical Properties				
Center Frequency	BeiDou: 1561.098±2.046 MHz GPS: 1575.42±1.023 MHz GLONASS: 1602±8 MHz			
Pout 1dB gain Compression point	-6dBm Min. -2 dbm Typ. (1561MHz,1575.42MHz,1602MHz)			
Output Impedance	50Ω			
VSWR	2.0 MAX			
Return Loss	10 dB Min.			
LNA Gain, Current Draw, and Noise Figure@GPS	Voltage	Frequency	LNA Gain(Typ)	Noise Figure(Typ)
	1.8V	1561 MHz	31.3 dB	3.1 dB
		1575.42 MHz	30.2 dB	2.7 dB
		1602 MHz	29.8 dB	3.1 dB
	Typ 3.0V	1561 MHz	33.1 dB	3.3 dB
		1575.42 MHz	32.5 dB	2.9 dB
		1602 MHz	32.0 dB	3.3 dB
	5V	1561 MHz	33.5 dB	3.3 dB
		1575.42 MHz	33.0 dB	2.9 dB
		1602 MHz	33.1 dB	3.2 dB

MECHANICAL	
Antenna Dimensions	35.74 x 35.75 x 15mm
Casing	ASA
Cable	3000mm RG174 (fully customizable)
Connector	SMA(M) (fully customizable)
Weight	92g
Ingress Protection Rating	IP67
Magnetic Pull Force	Pull horizontal max pull force(kgf) : 0.52 Pull vertical max pull force(kgf) : 0.48
ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Humidity	Non-condensing 40°C 95% RH

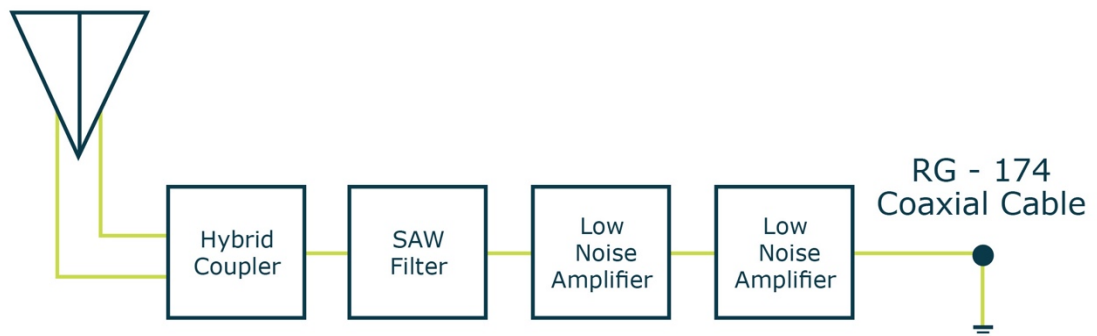
*Antenna measured on 70x70mm ground plane

3. Antenna Characteristics

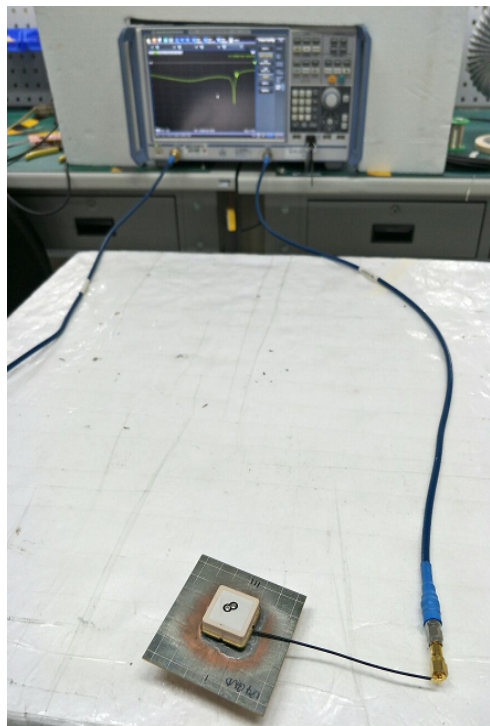
3.1 GPS-GLONASS-Beidou Antenna

3.1.1 Block Diagram (Active Antenna)

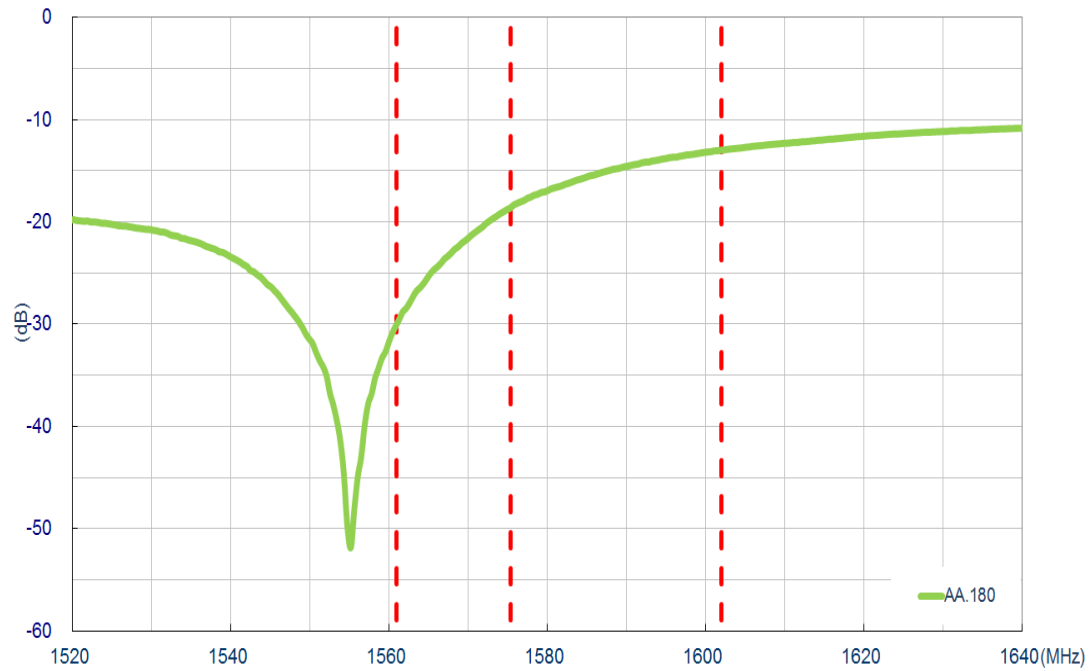
GPS + GLONASS + Beidou
Antenna
(Dual Pin Patch)



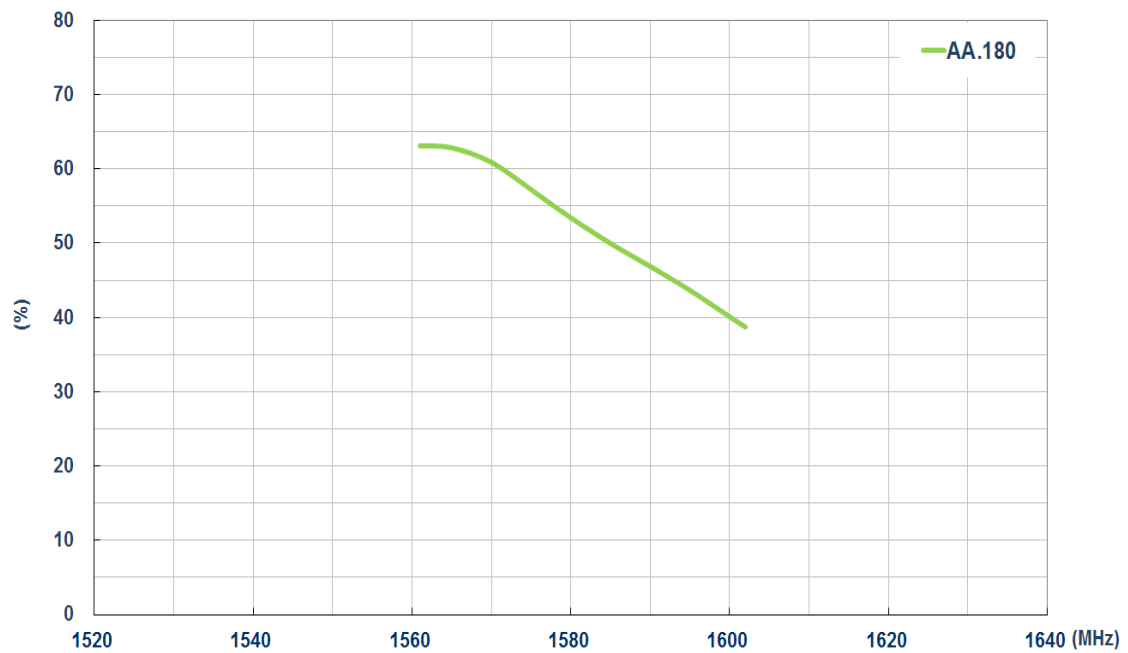
3.1.2 Test Setup



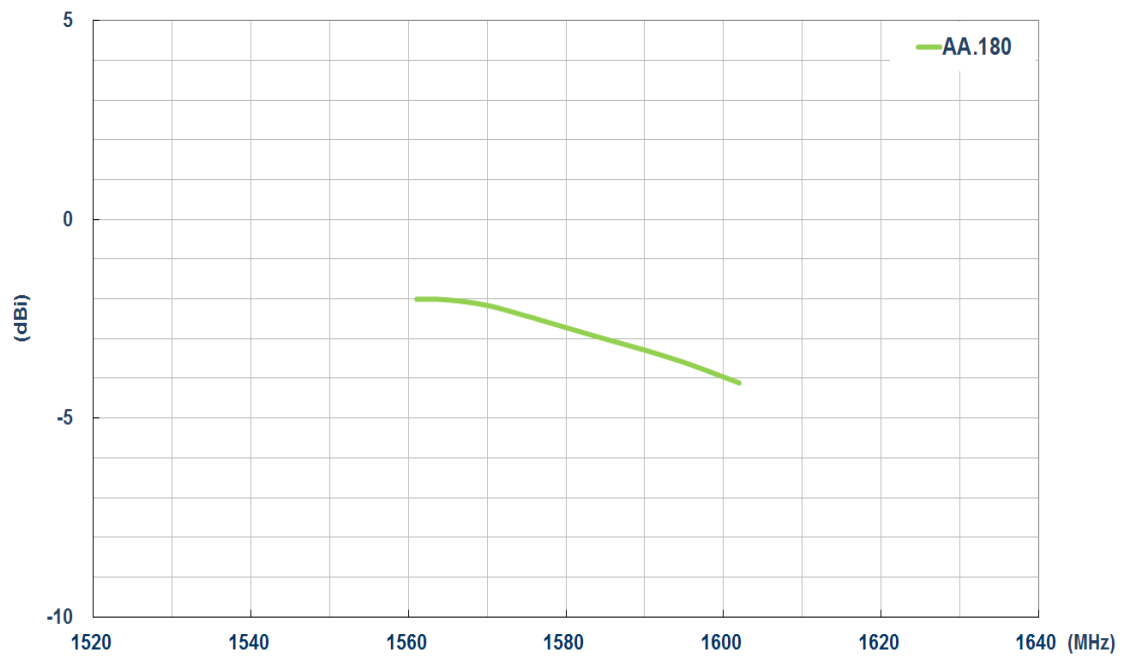
3.1.3 Return Loss (Passive Antenna)



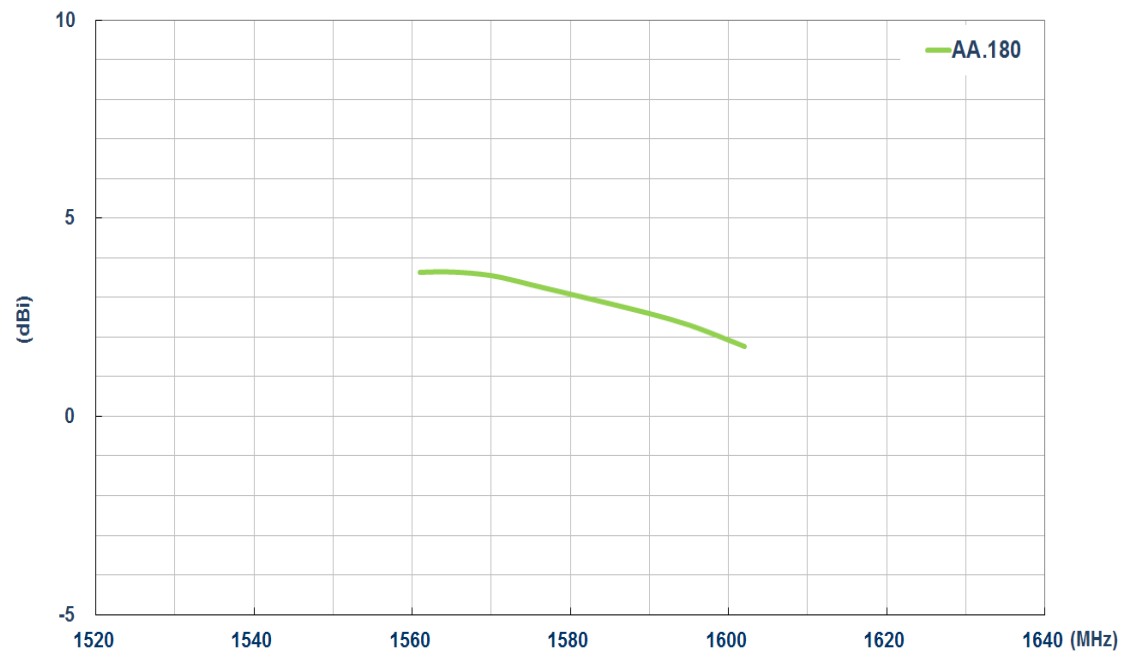
3.1.4 Efficiency (Passive Antenna)



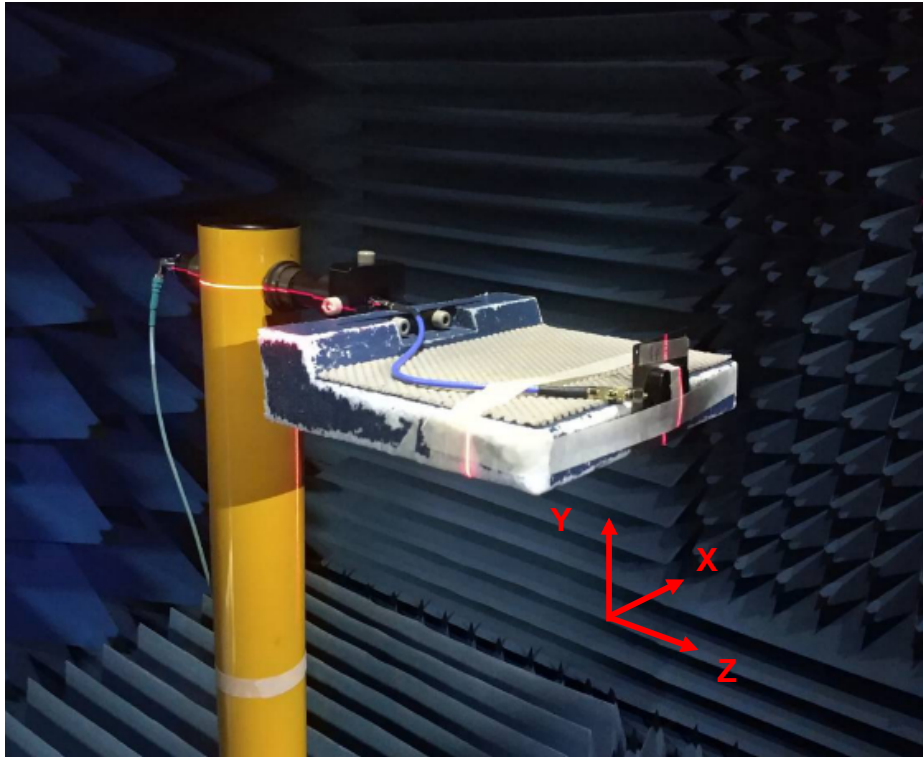
3.1.5 Average Gain (Passive Antenna)



3.1.6 Peak Gain (Passive Antenna)

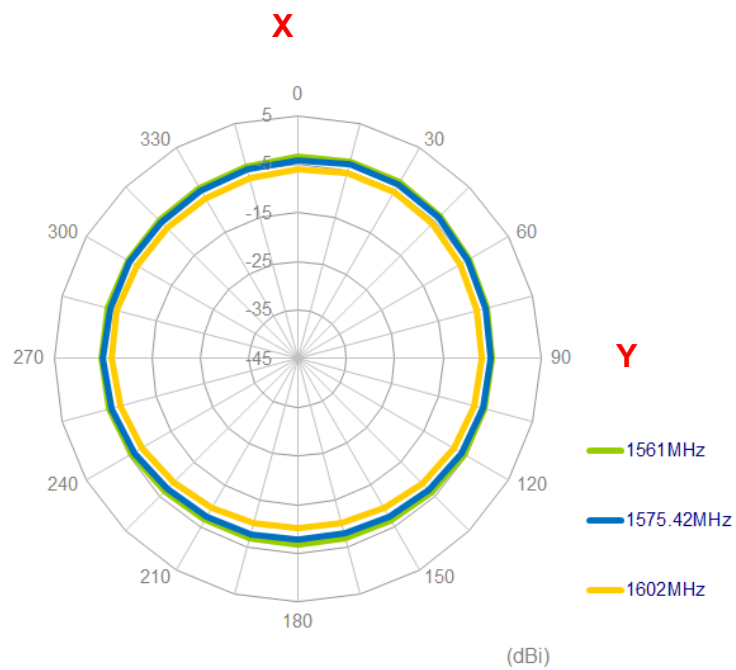


3.1.9 GPS-GLONASS Radiation Pattern (Passive Antenna) Test Setup

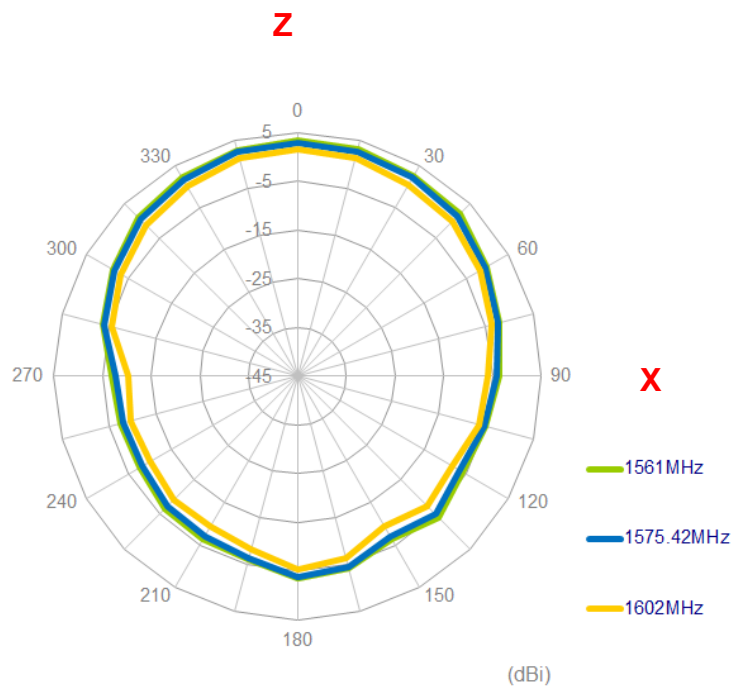


2D Radiation Pattern

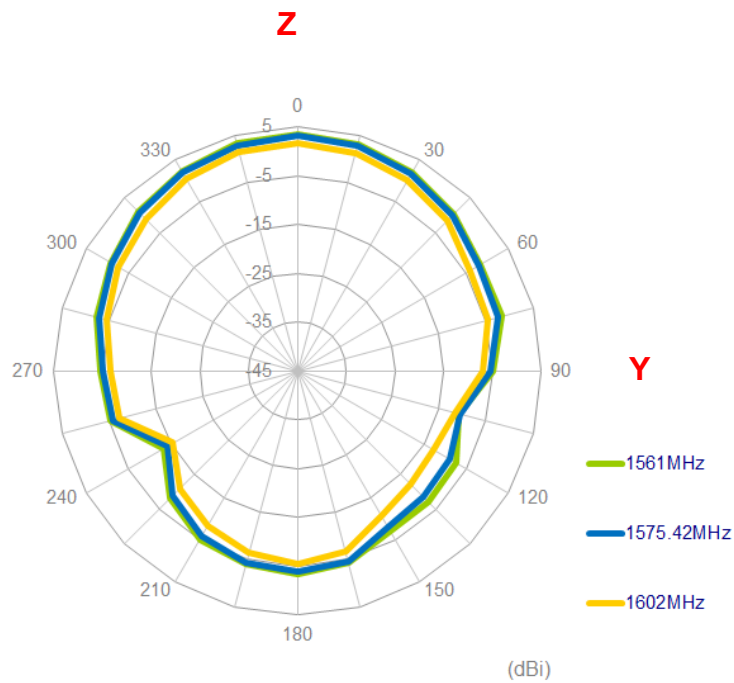
XY Plane



XZ Plane

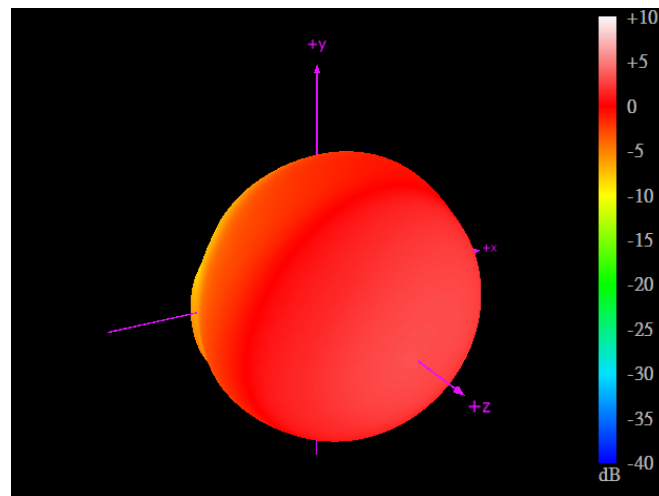


YZ Plane

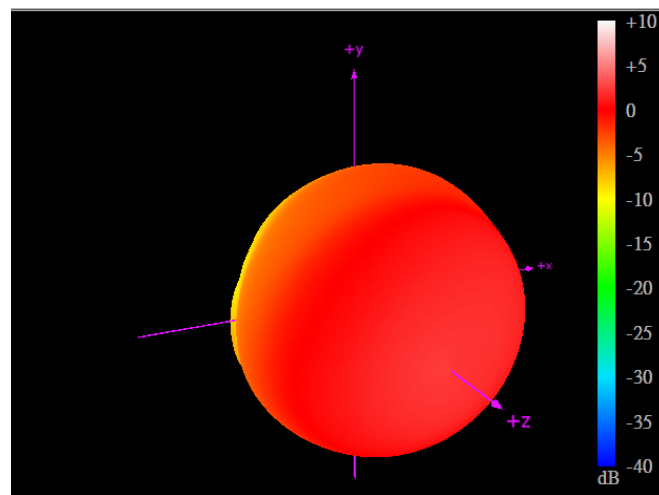


3D Radiation Pattern

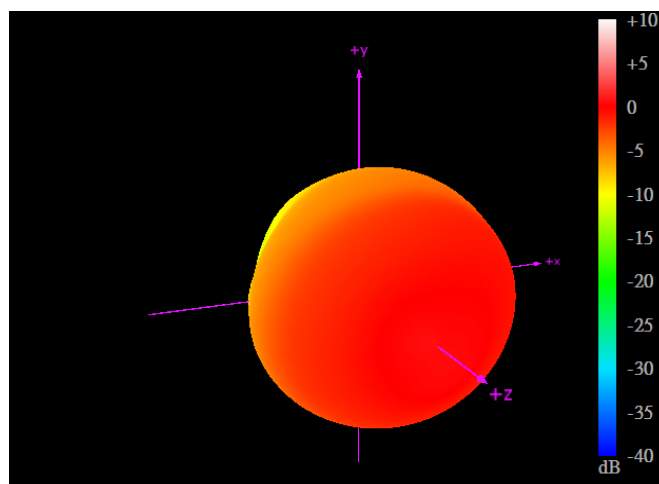
1561MHz



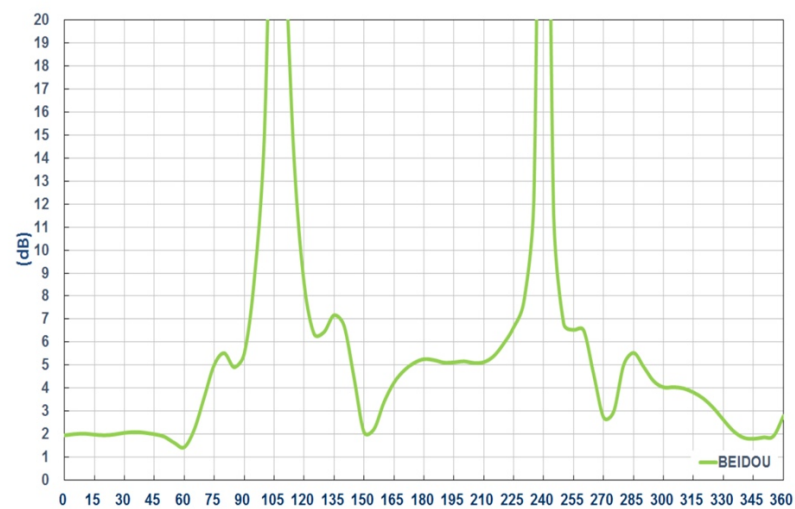
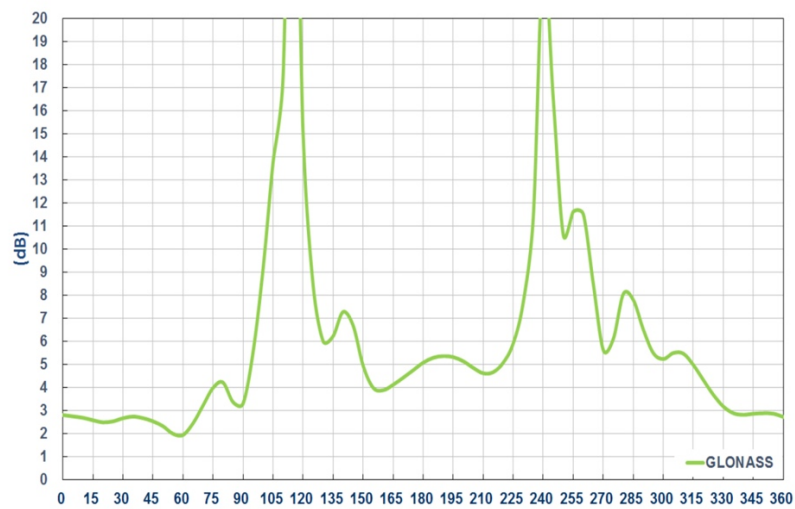
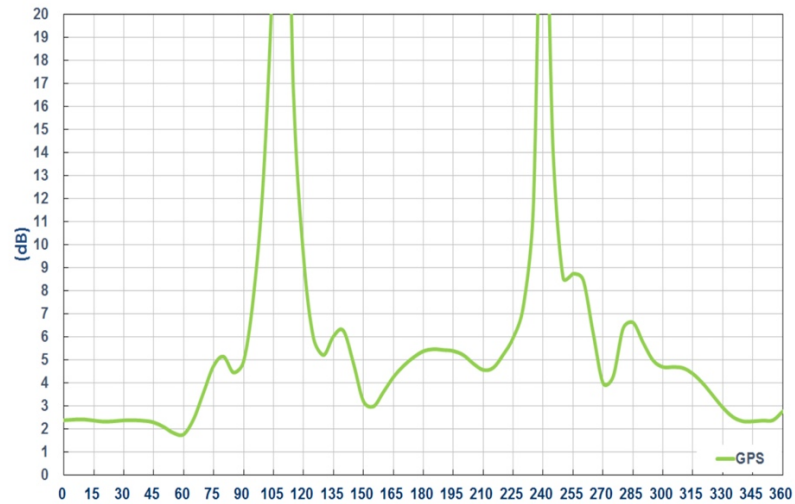
1575.42MHz



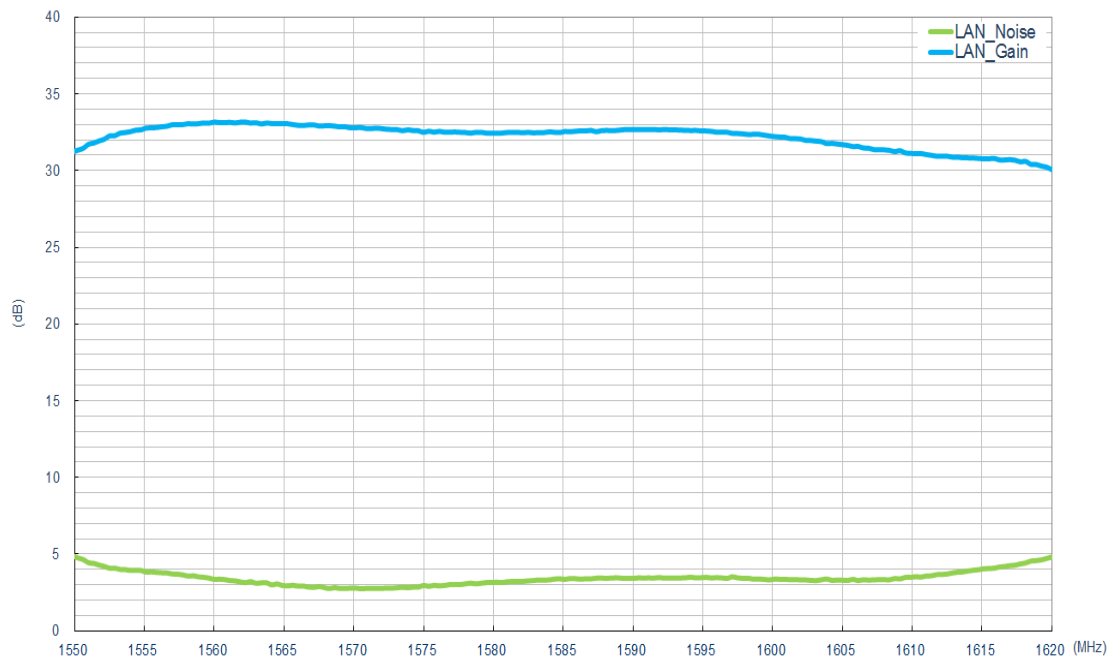
1602 MHz



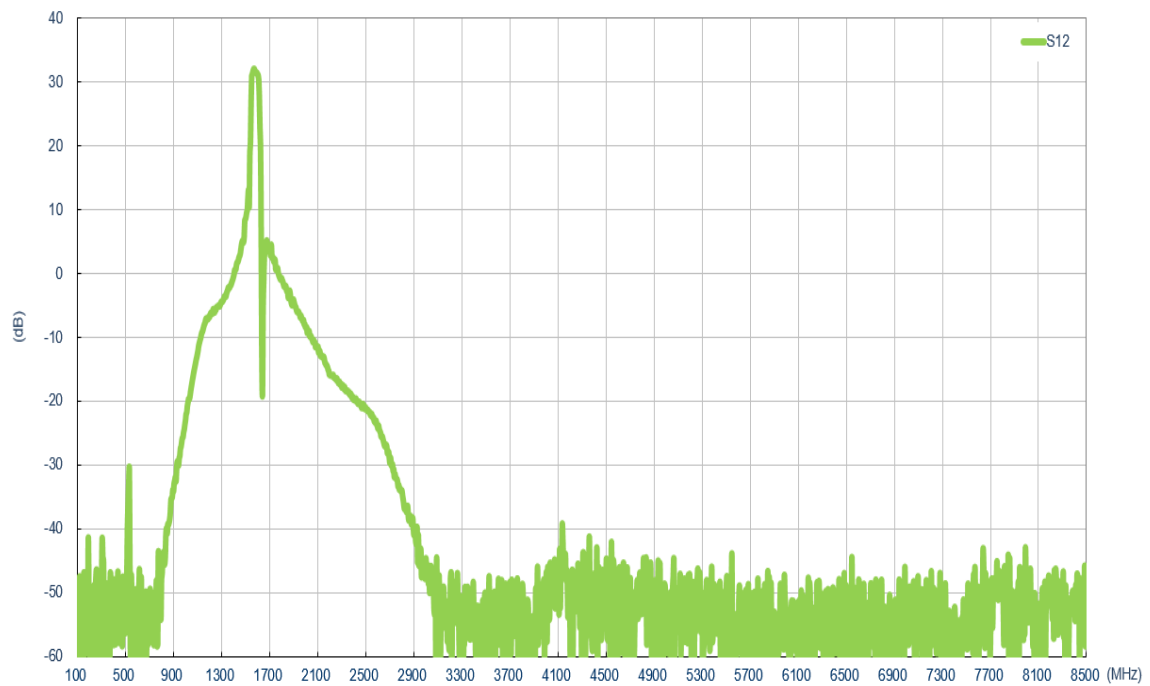
3.1.10 Axial Ratio Pattern (Passive Antenna)



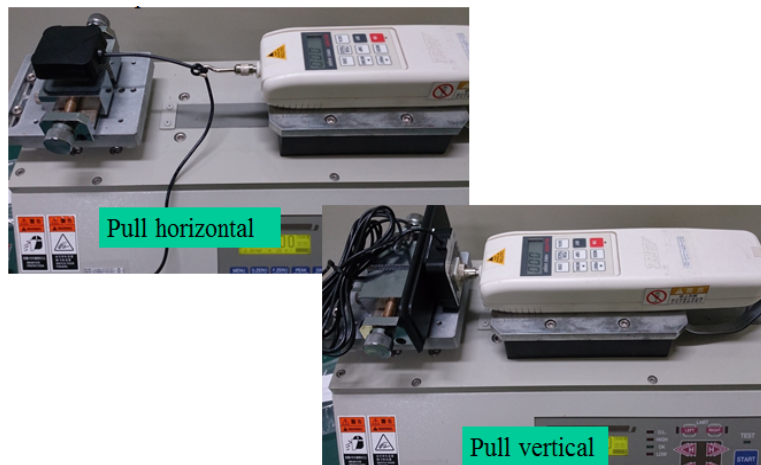
3.1.11 LNA Gain and Noise Figure (Active Antenna)



3.1.12 Out-of-band Rejection

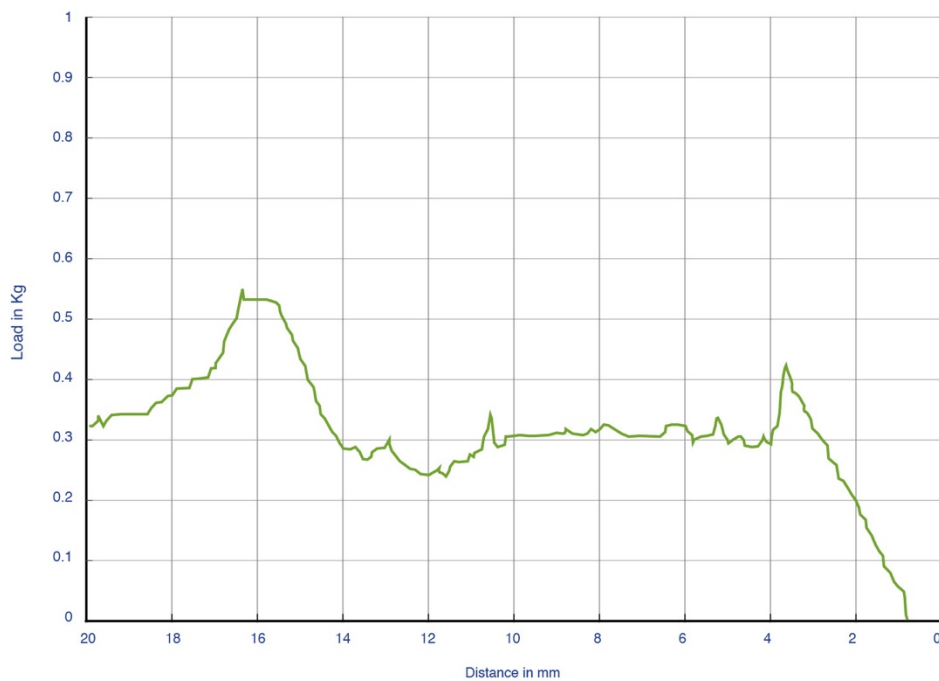


4. Magnetic Pull Force (Kgf)



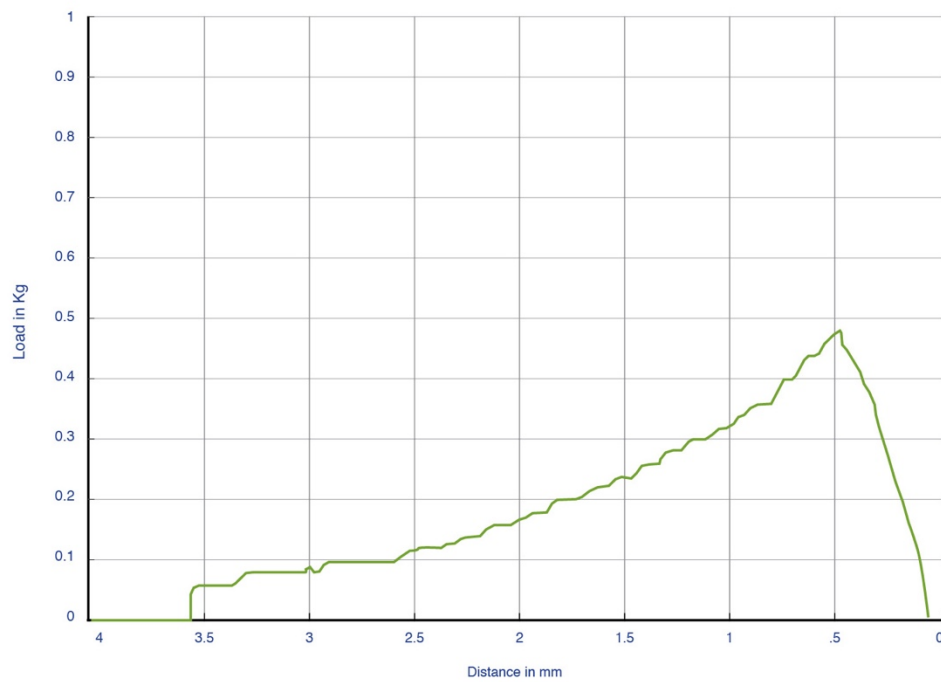
Horizontal Pulling Force: 0.52kgf

Distance (mm)	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
Pulling Force (Kgf)	0	0	0.18	0.31	0.3	0.3	0.3	0.3	0.3	0.3
Distance (mm)	10.0	11.0	12.0	13.0	14.0	15.0	16.0	16.3	17.0	18.0
Pulling Force (Kgf)	0.3	0.27	0.24	0.29	0.3	0.44	0.52	0.54	0.42	0.37

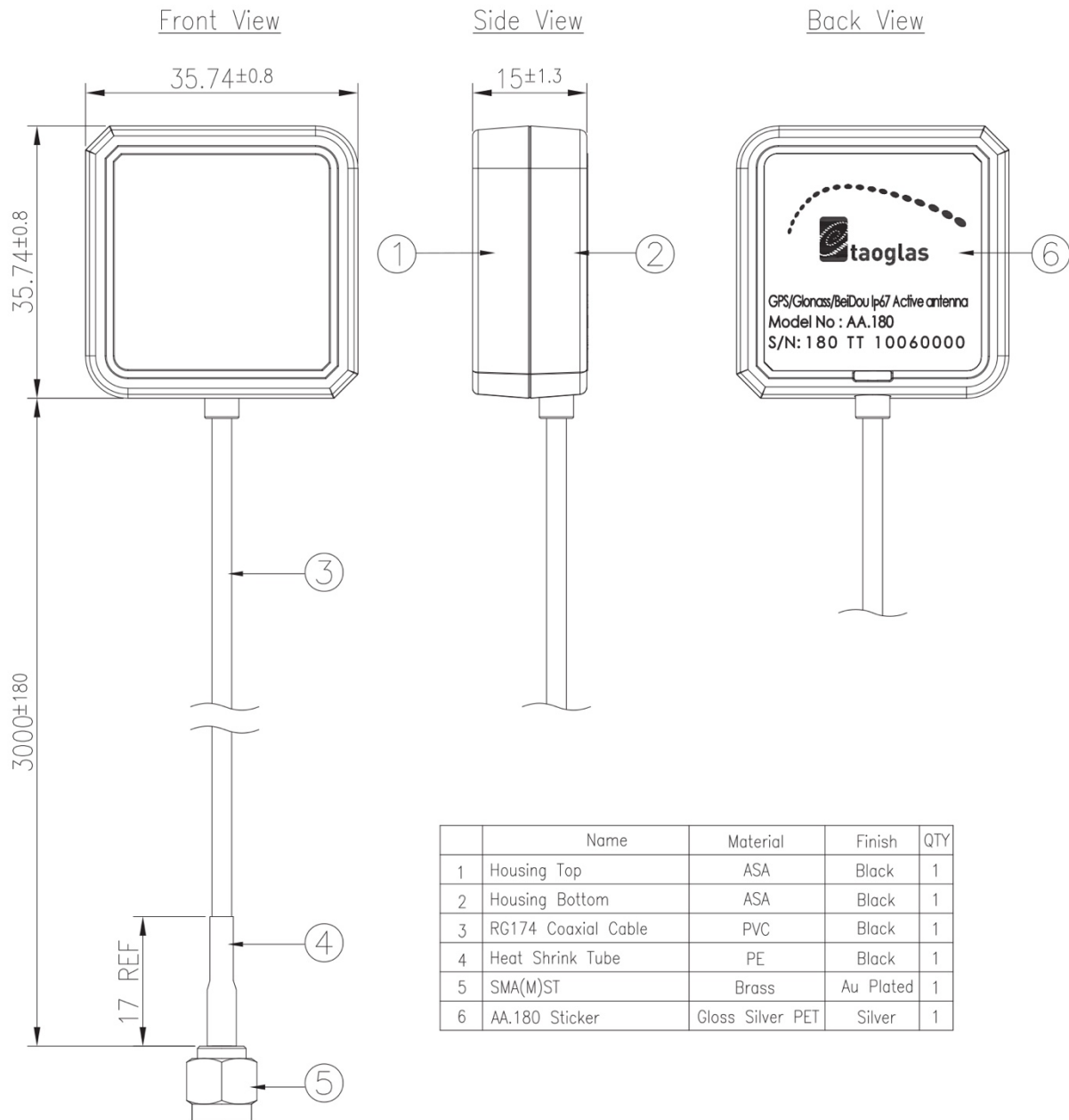


Vertical Pulling Force: 0.48kgf

Distance (mm)	0.52	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Pulling Force (Kgf)	0.48	0.33	0.24	0.17	0.12	0.08	0.06	0

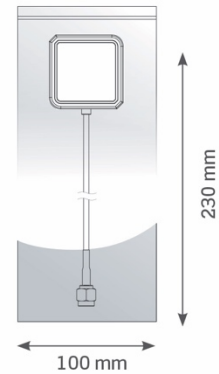


5. Mechanical Drawing (Unit:mm)

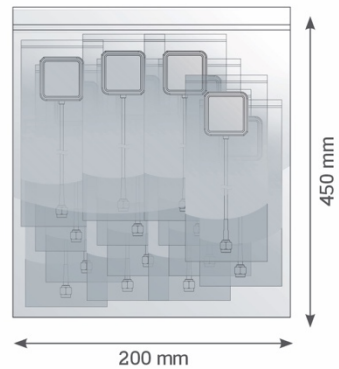


6. Packaging

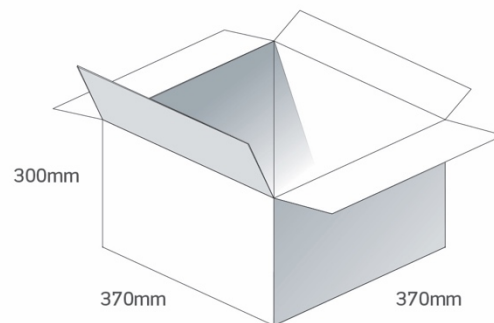
1 pcs AA.180.301111 per PE Bag
Bag Dimensions - 100 x 230 mm
Weight - 72g



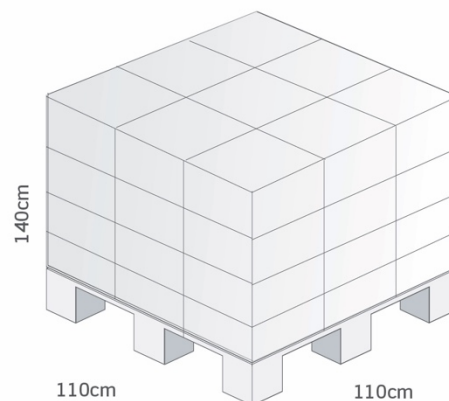
10 pcs AA.180.301111 per PE Large Bag
Bag Dimensions - 200x 450mm
Weight - 0.72kg



100 pcs AA.180.301111 per carton
Carton - 370 x 370 x 300mm
Weight - 8.23Kg



Pallet Dimensions 110x 110 x 140cm
36 Cartons per Pallet
9 Cartons per layer
4 Layers



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