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A.41.A.301111

## Specification

<b>Part No.</b>	A.41.A.301111
<b>Product Name</b>	Hercules GEN II Straight Screw mount GPS-GLONASS-BeiDou 3M SMA(M) RG-174
<b>Feature</b>	2 stage high gain LNA ( 28dB ) GPS/GLONASS/BeiDou fully supported IP67 & IP69K compliant housing with PC material Heavy duty screw mount 3M RG174 with SMA(M) connector Height 29mm Diameter 49mm Cable and connectors are customizable ROHS Compliant



## 1. Introduction

The A.41 Hercules, a high gain GPS-GLONASS-BeiDou antenna with IP67, UV resistant and robust housing, is the latest generation of Hercules GNSS antennas, capable of receiving signals from the next generation receivers for all the main operating global satellite navigation systems in operation today, helping delivering much improved location accuracy and quicker re-acquisition time over older systems and antennas.

Focusing on the heavy duty automotive, industrial and agricultural markets, A.41 provides a dust-tight, waterproof antenna by a one-piece CNC machined nickel-steel base plate and threads, enabling A.41 to be the ideal antenna in the urban canyons of cities in factory and field environment. It is often used such on city bus, agricultural and industrial vehicles and heavy equipment.

This high gain GPS-GLONASS-BeiDou antenna, utilizing a 2 stage LNA, uses a unique front end SAW filter topology which reduces the possibility of LNA compression and burn-out from other nearby radio transmitters. This front end SAW filter will smooth your device certification by reducing possibility of radiated spurious emission test failures.

Its durable UV resistant PC housing is resistant to vandalism and direct attack. At only 29mm high it complies with the latest EU directives for height restrictions, whilst also enabling covert operation with a diameter of 49mm.

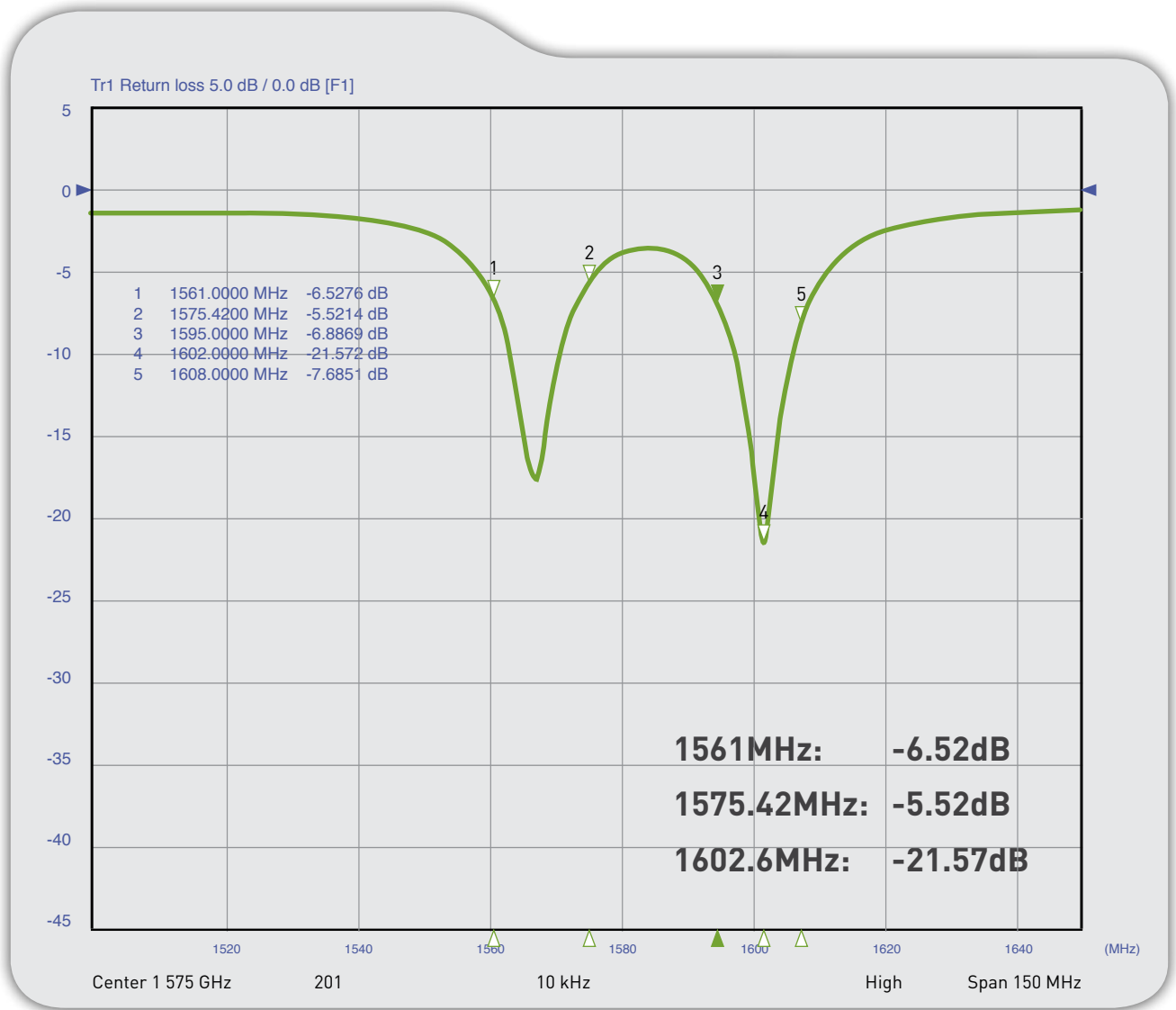
Cable lengths, types, and connectors are fully customisable. Contact your regional Taoglas sales office for support.

## 2. Specification

ELECTRICAL GPS / GLONASS / BeiDou	
Ceramic Antenna Specification	
Frequency(MHz)	1561.098± 2.046 MHz   1575.42 ± 1.023 MHz   1602± 5 MHz
Impedance(Ohm)	50Ω
Antenna Passive Gain	1561MHz:-4dBi @zenith   1575.42MHz:-2.5dBi Typ. @zenith   1602MHz:-0.5dBi Typ. @zenith
VSWR	2.0 max
LNA Circuits Specification	
Out Band Rejection	1584 ± 50MHz 13dB Min   1584 ± 100MHz 20dB Min
Input Voltage(V)	Min:1.8V Typ:3.0V Max:5.5V
LNA Total Gain	28dB typical at 3.0V
Current consumption(mA)	10mA typical at 3.0V
Noise figure	2.8dB typical
MECHANICAL	
Dimensions	ø49mm , Height 29mm
Cable type	RG174
Cable length	3 meters
Casing	PC
Connector	SMA Male
Weight	157g
Recommended Torque	24.5 N·m
Max. Torque	29.4 N·m
ENVIRONMENTAL	
Temperature Range	-40°C to 85°C
Waterproof	IP-67 & IP69K
Thermal Shock	100 cycles -40°C to +80°C
Shock (drop test)	1m drop on concrete 6 axes
Humidity	Non-condensing 65°C 95% RH

### 3. Antenna Parameters

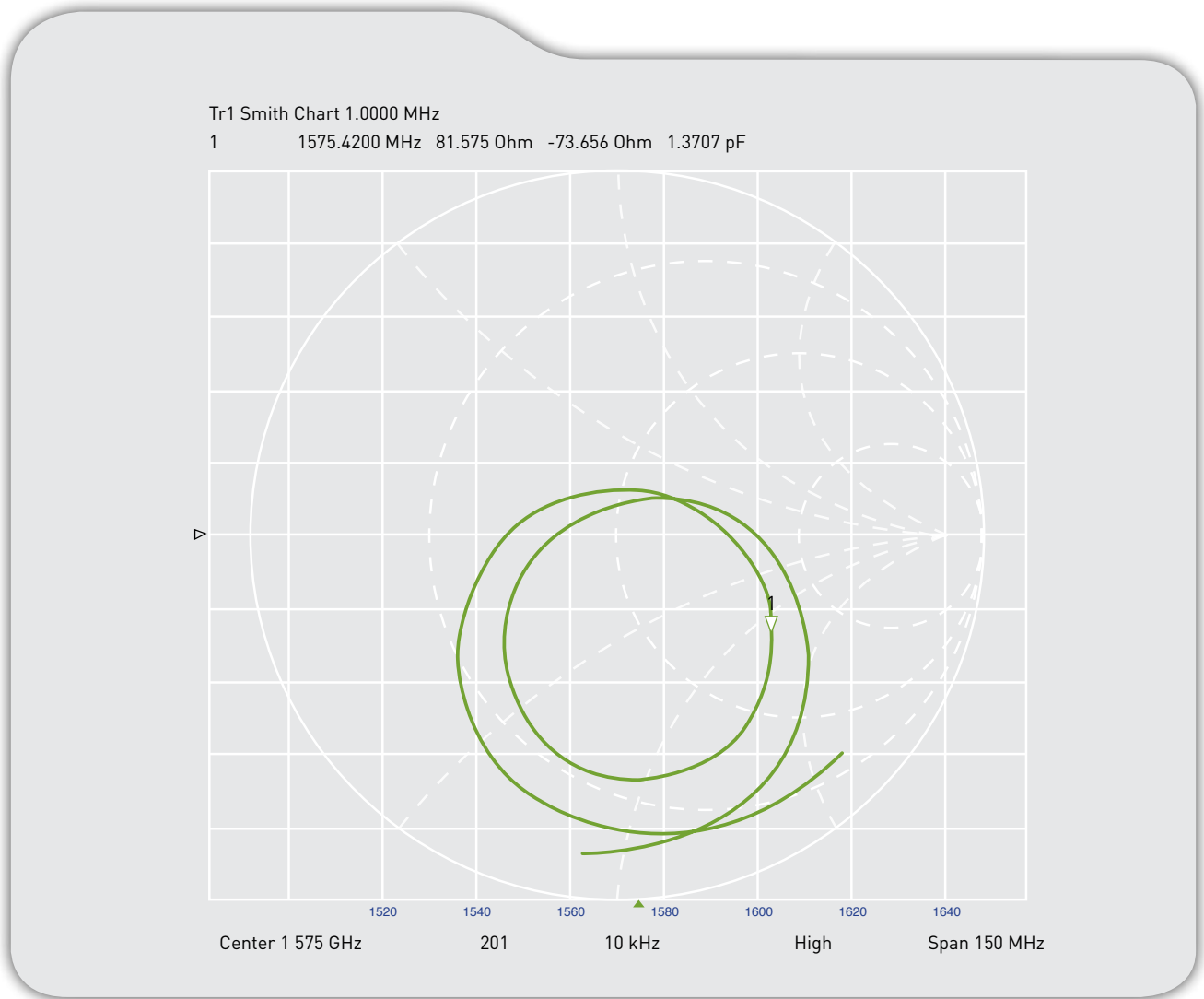
#### 3.1 Return Loss





### 3. Antenna Parameters

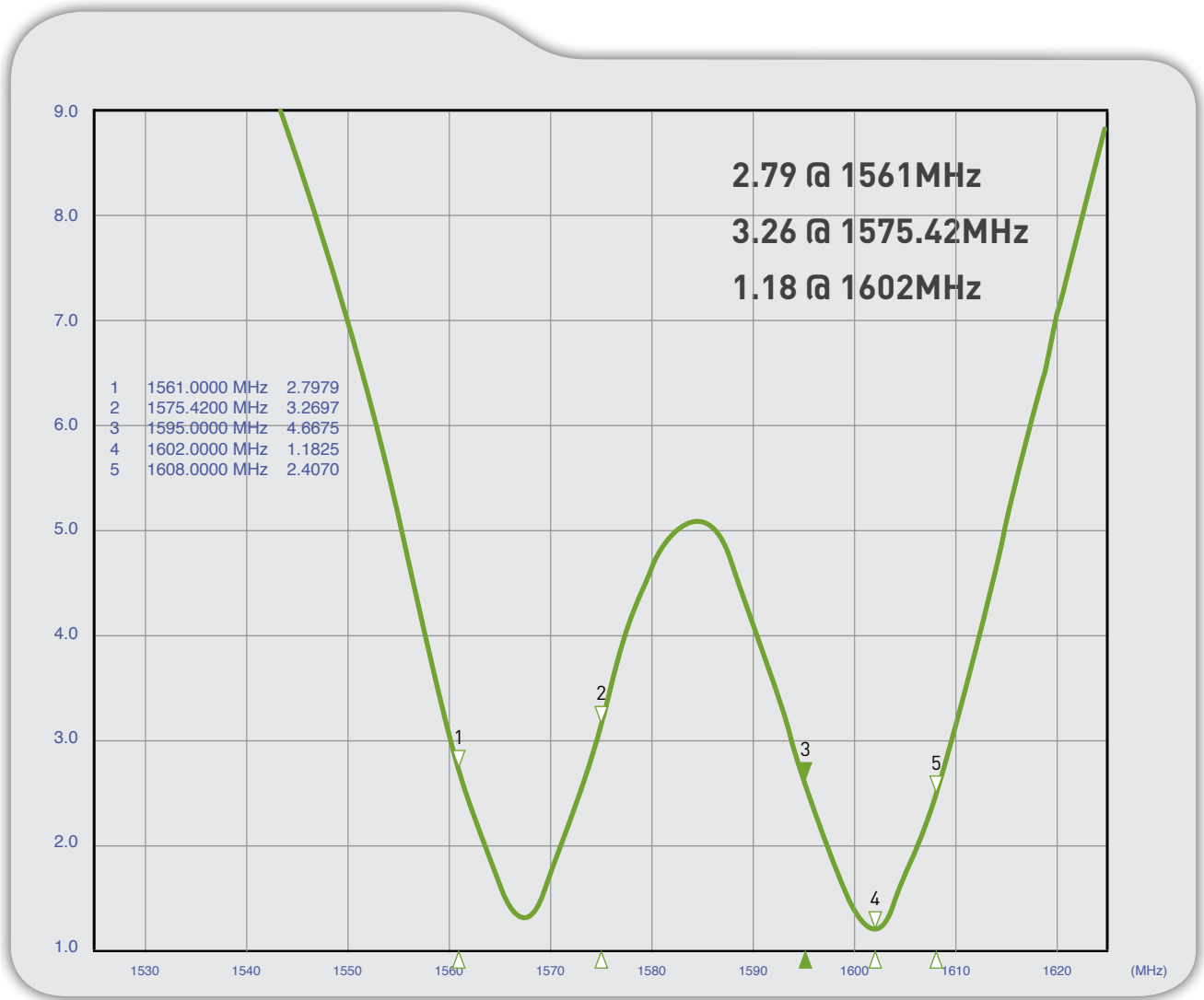
#### 3.2 Smith Chart – Impedance



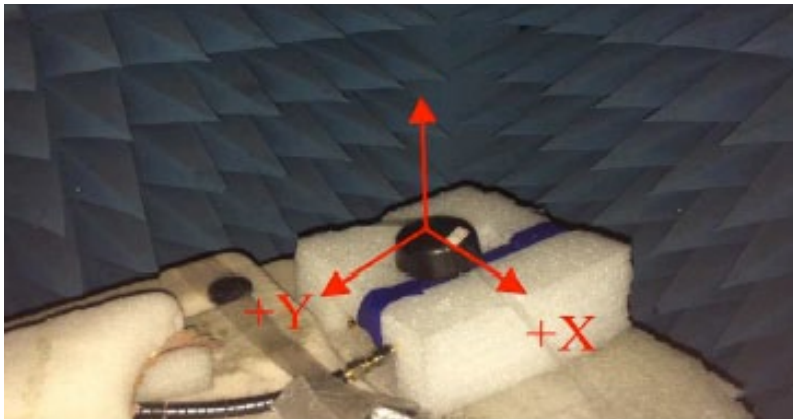
**Impedance: 81.57-j0.73 Ohm**

### 3. Antenna Parameters

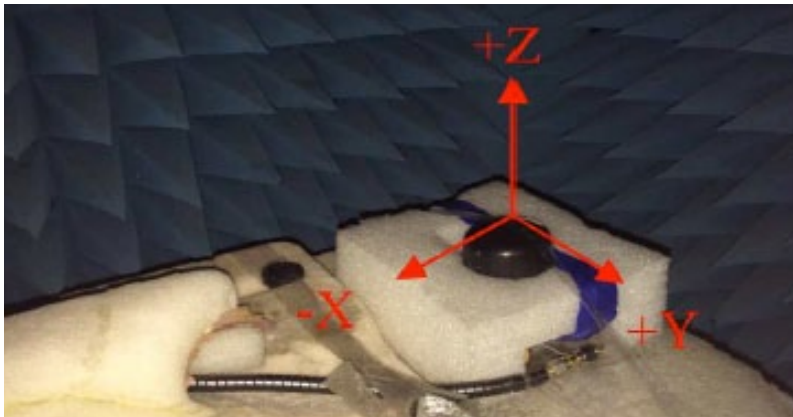
#### 3.3 VSWR



#### 4. Antenna Radiation Pattern



XZ Plane



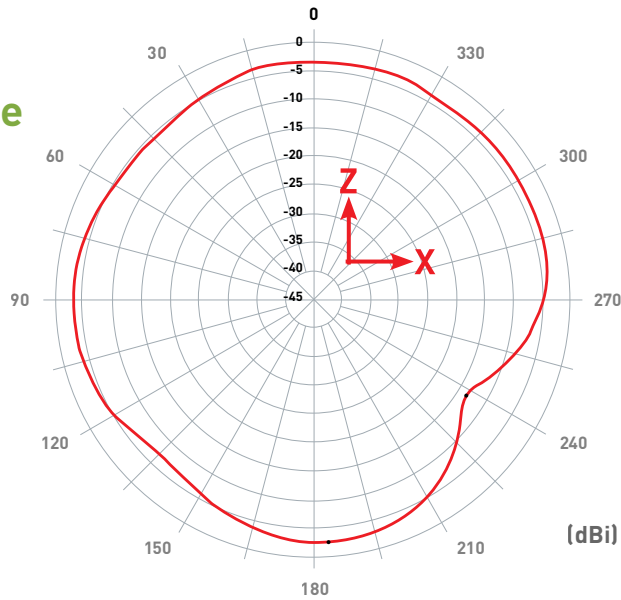
YZ Plane



## 4. Antenna Radiation Pattern

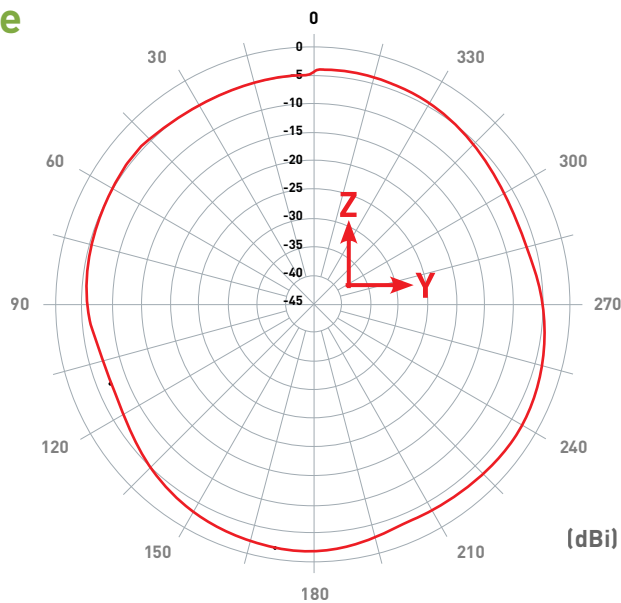
### 4.1 1561.00MHz

#### XZ Plane



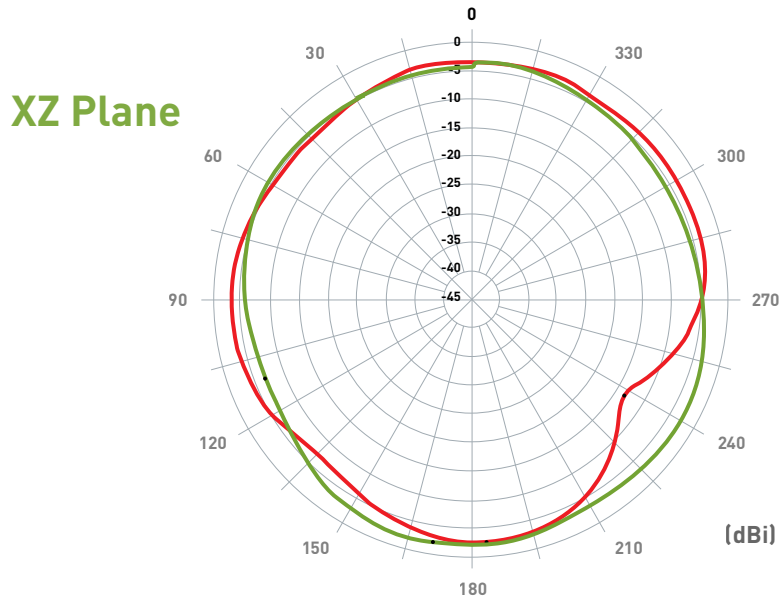
Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	XZ	1561.00	-3.05 / 184.00	-13.38 / 238.00	-4.76	V&H	2014/5/7

#### YZ Plane



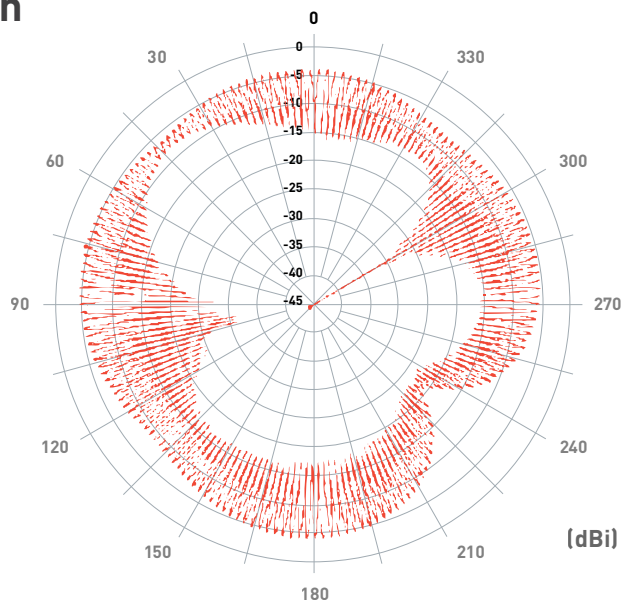
Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	YZ	1575.42	-2.01 / 349.00	-1.95 / 171.00	-4.15	V&H	2014/5/7

## Gain Pattern Value



Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	XZ	1561.00	-3.05 / 184.00	-13.38 / 238.00	-4.76	V&H	2014/5/7
2	A.41.A	XZ	1561.00	-1.95 / 171.00	-6.75 / 111.00	-4.15	V&H	2014/5/7

## Axial Ratio Pattern (Spin Dipole Method)

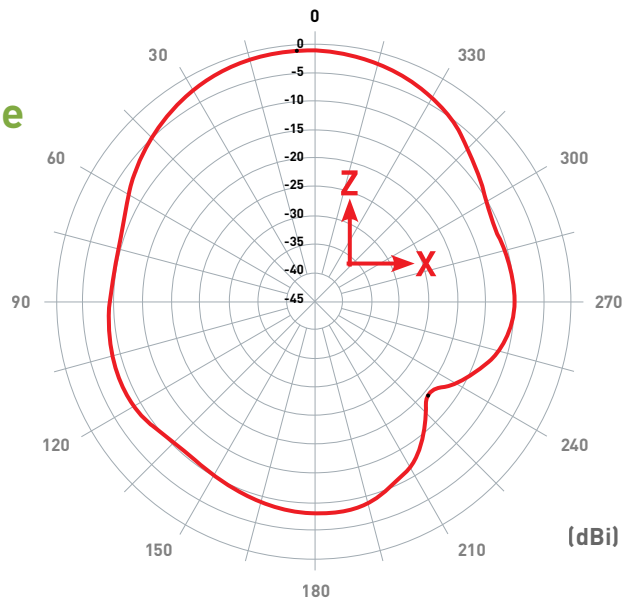


Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	Axial Ratio	1561.00	-3.44 / 75.01	-46.00 / 300.84	-8.04	CP	2014/5/6

## 4. Antenna Radiation Pattern

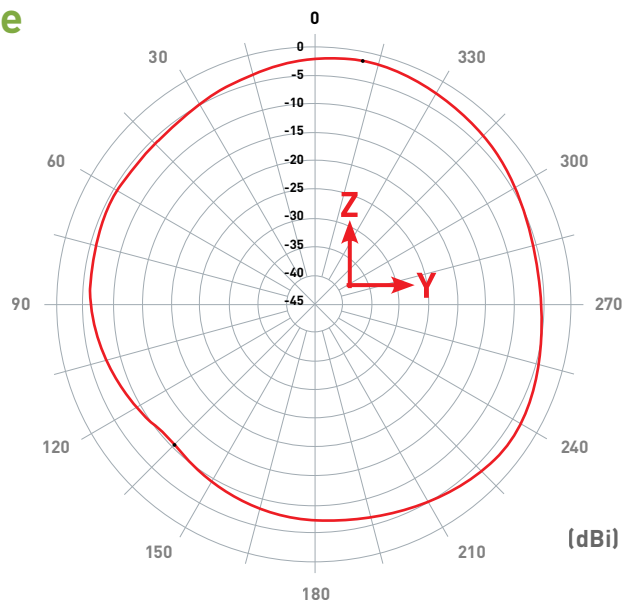
### 4.2 1602.6MHz

#### XZ Plane



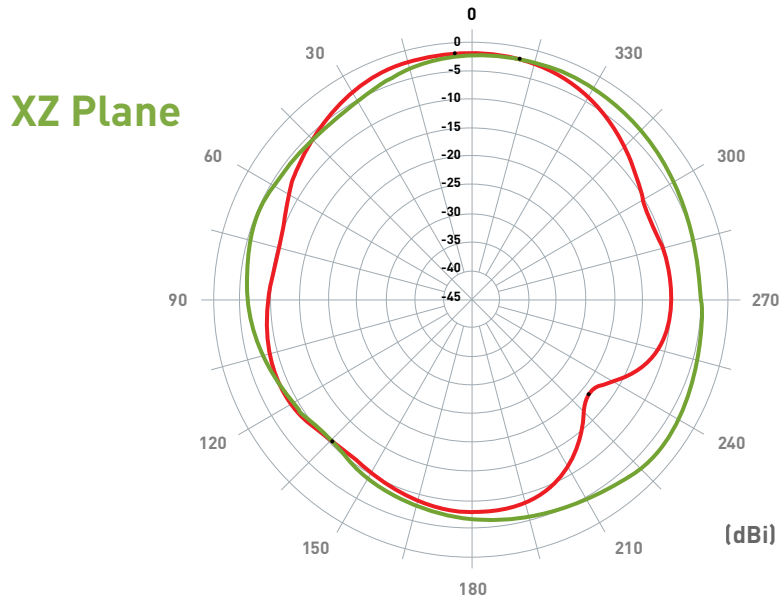
Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	XZ	1575.42	-1.65 / 4.00	-19.25 / 231.00	-5.87	V&H	2014/5/7

#### YZ Plane



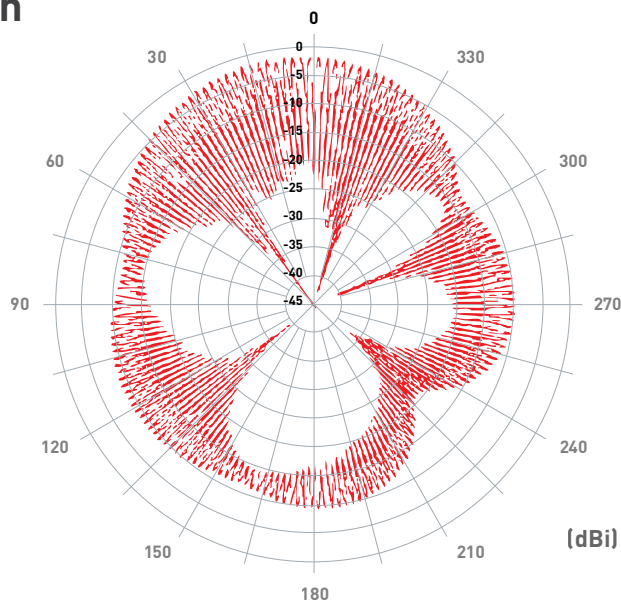
Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	YZ	1575.42	-2.01 / 349.00	-9.95 / 135.00	-4.84	V&H	2014/5/7

## Gain Pattern Value



Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	XZ	1575.42	-1.65 / 4.00	-19.25 / 231.00	-5.87	V&H	2014/5/7
2	A.41.A	XZ	1575.42	-2.01 / 349.00	-9.95 / 135.00	-4.84	V&H	2014/5/7

## Axial Ratio Pattern (Spin Dipole Method)

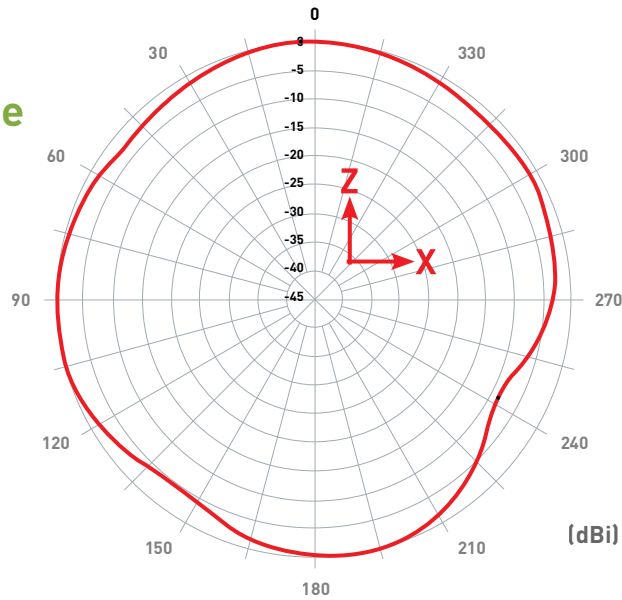


Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	Axial Ratio	1575.42	-1.56 / 8.92	-46.21 / 35.90	-9.92	CP	2014/5/7

## 4. Antenna Radiation Pattern

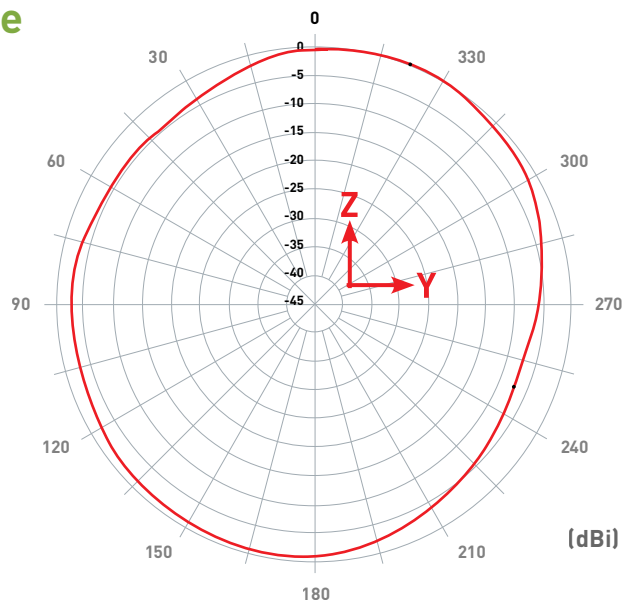
### 4.3 1602.6MHz

XZ Plane



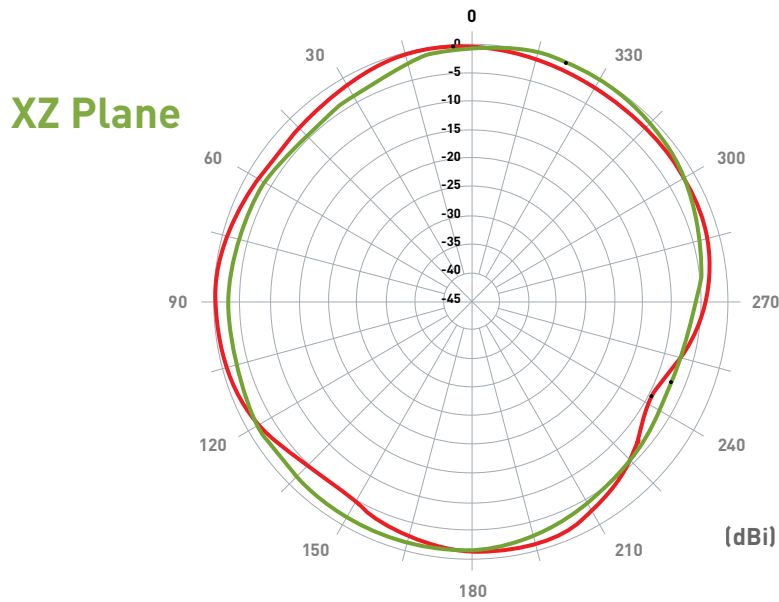
Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	XZ	1602.60	-0.36 / 3.00	-9.03 / 242.00	-2.17	V&H	2014/5/7

YZ Plane



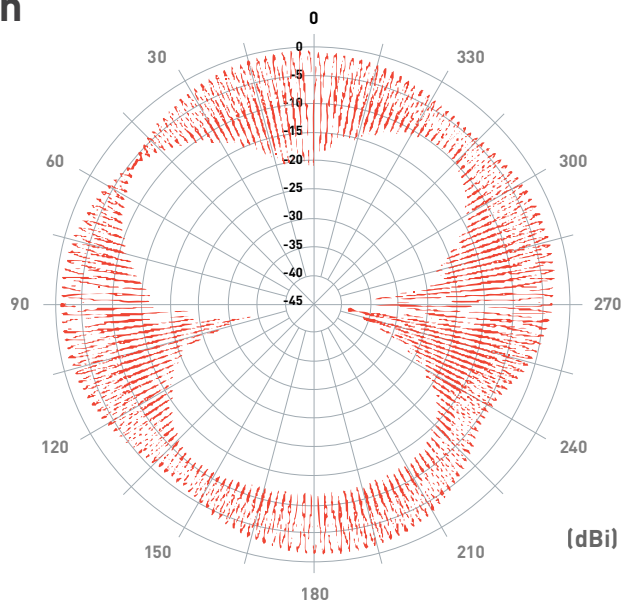
Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	YZ	1602.60	-0.09 / 338.00	-7.21 / 248.00	-2.45	V&H	2014/5/7

## Gain Pattern Value



Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	XZ	1602.60	-0.36 / 3.00	-9.03 / 242.00	-2.17	V&H	2014/5/7
2	A.41.A	XZ	1602.60	-0.09 / 338.00	-7.21 / 248.00	-4.84	V&H	2014/5/7

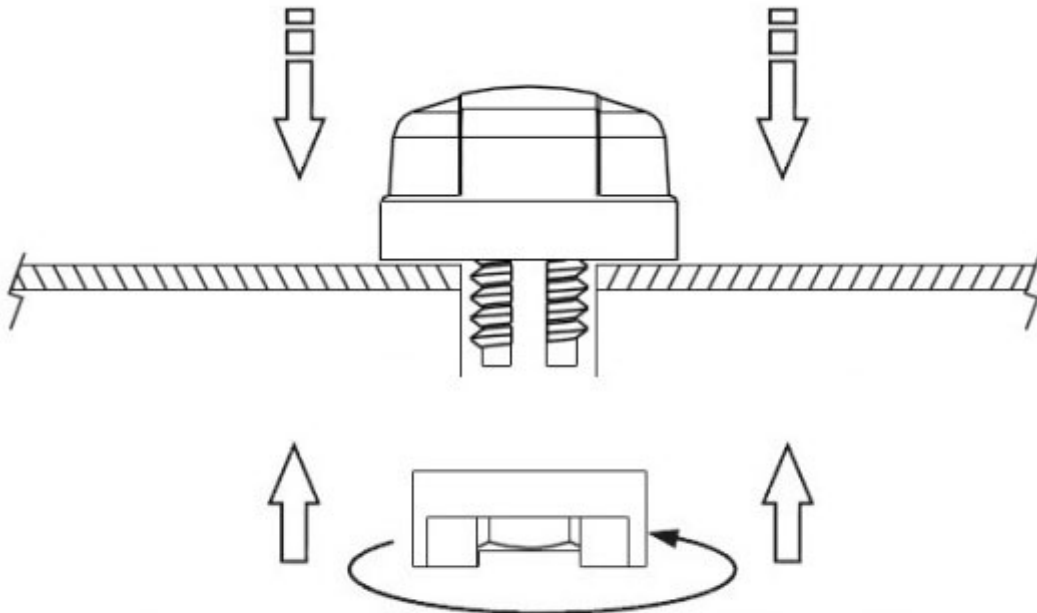
## Axial Ratio Pattern (Spin Dipole Method)



Pattern	Model No.	Test Mode	Freq (Mhz)	Max Gain (dBi)	Min Gain (dBi)	Avg. Gain (dBi)	Source Polar	Date
1	A.41.A	Axial Ratio	1602.60	-0.49 / 90.15	-38.67 / 261.03	-5.23	CP	2014/5/7



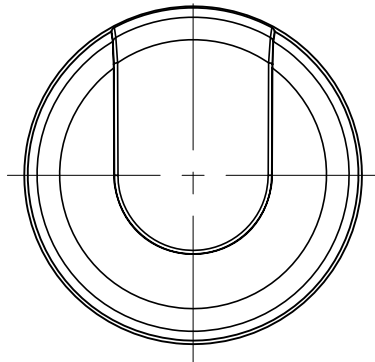
## 5. Installation



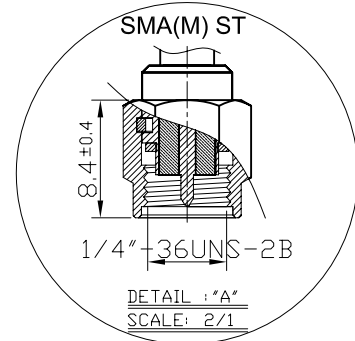
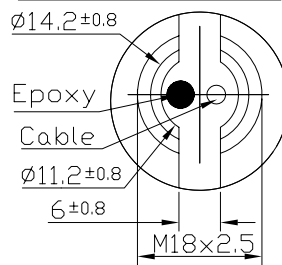
Recommended torque for mounting is 24.5 N·m  
Maximum torque for mounting 29.4 N·m

## 6. Drawing

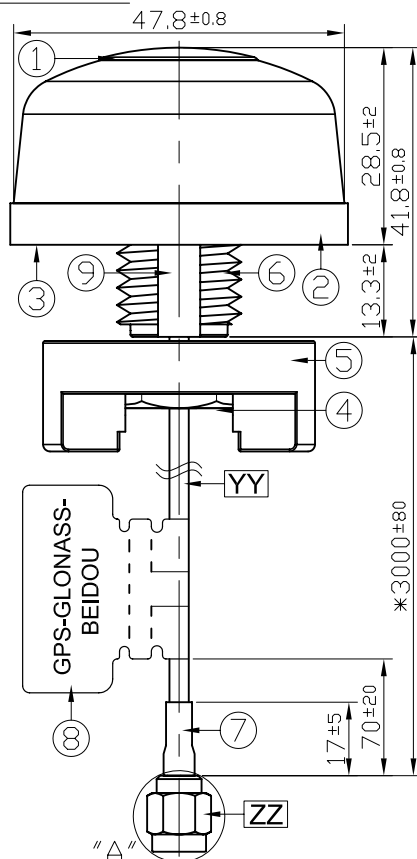
### Top View



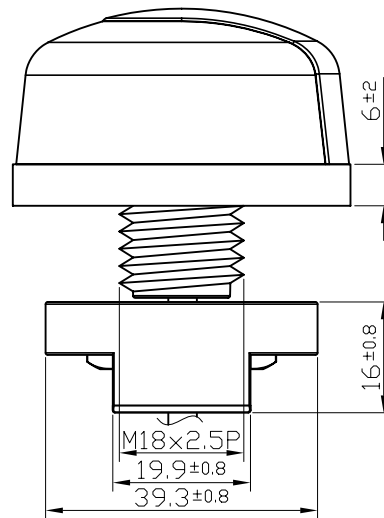
### Bottom Thread View



### Front View



### Side View

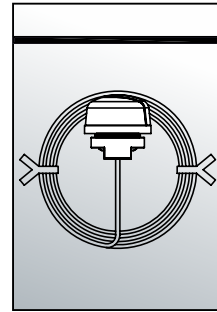


	Name	Material	Finish	QTY
1	Housing	PC	Black	1
2	Closed Cell Foam	CR 4305	Black	1
3	3M Double Adhesive	3M 9448 HK	White Liner	1
4	M18 Inner Nut	Steel Carbon	Ni Plated	1
5	Outer Nut Cover	ABS	Black	1
6	Metal Base	Zinc Alloy	Ni Plated	1
7	Heat Shrink Tube	PE	Black	1
8	GPS-GLONASS-BEIDOU Label	Coated Paper	Orange	1
9	Rubber Stopper	Silicon Rubber	Black	1

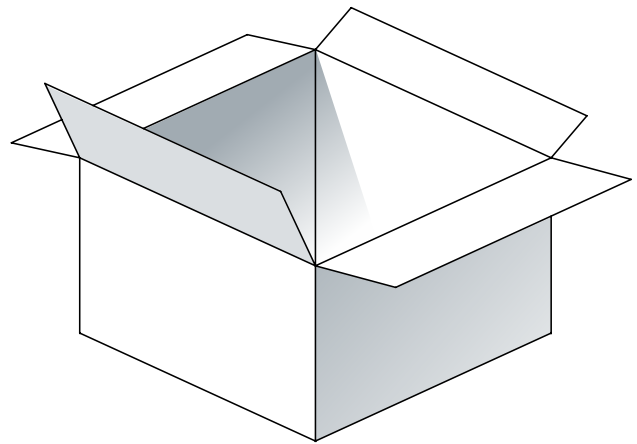
	Name	Spec	Finish	QTY
YY	Cable Type	RG174	Black	1
ZZ	Connector Type	SMA(M) ST	Gold	1

## 7. Packaging

1 pc A.41 per PE Bag  
Bag Dimensions - 170\*300mm  
Weight - 157g



50 pcs per carton  
Carton Dimensions - 250\*320\*300mm  
Weight - 8.1Kg



Pallet Dimensions 1100\*1100mm  
60 Cartons per Pallet  
12 Cartons per layer x 5 Layers  
3000 Pieces

