

SPECIFICATION

- Part No. : **ASGP.1575.10B.4.A.01**
- Product Name : 10mm SMT 28dB Active GPS Patch Antenna
- Features : Unique patent pending SMT GPS active patch
High performance 28dB LNA
Ultra low power consumption
RoHS compliant
- Photo :



1.0 Introduction

The patent pending revolutionary tiny but powerful active SMD GPS patch antenna allows for optimal performing GPS by combining the ceramic patch, SAW, LNA, and feed pad in one integral package. Horizontally mounted on a board as any other components, GPS device designers no longer need to compromise in performance. This antenna takes up less footprint and volume than even the smallest poorly performing metal, ceramic and pcb linear antennas, which have an automatic drop of 3dB gain (half the GPS signal strength) compared to this antenna. Nothing works better at this size.

The right hand circular polarized patch is ideally matched to the GPS signal, tuned for maximum gain, minimal axial ratio. The SAW is placed in front of the LNA, helping prevent saturation due to nearby radio transmitters, and the possibility of radiated spurious emissions through other radio systems.

The LNA placed directly underneath the patch feed ensures the signal is boosted before ambient noise can enter the transmission lines between the antenna and the GPS receiver module on the board, a unique advantage over all other on-board antenna technology. It has a wide-band input voltage between 1.8V to 5.5V to cater for all electrical systems.

The unique SMD structure enables pick and place and reflow soldering onto boards in high volumes, with highest reliability, compared to traditional cabled solutions. All that is needed is to run a 50 Ohm co-planar waveguide to the SMD GPS receiver module.

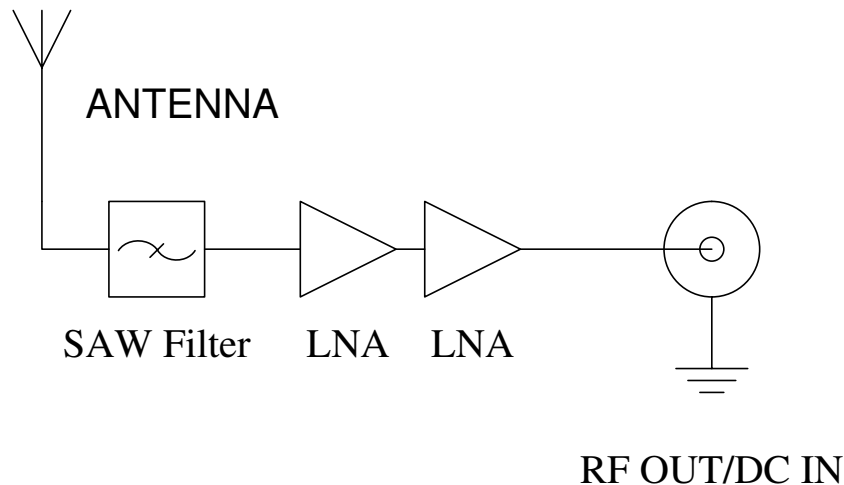
The patch antenna can be tuned for each device environment if necessary.

Patented 10mm Vertically mounted SMD active GPS AP.10 series antennas are also available from Taoglas.

2.0 Performance Measurement

2.1 Block Diagram

This antenna system consists of two functional blocks, the LNA portion and the patch antenna.



3.0 Specification

3.1 Rated Environmental Conditions

No	Parameter	Specification
3.1.1	Operation Temperature	-40°C to + 85°C
3.1.2	Storage Temperature	-40°C to + 85°C
3.1.3	Relative Humidity	40% to 95%

3.2 Electrical Specifications

No	Parameter	Specification
3.2.1	Input Voltage	Min:1.8V Typ.: 3.0V Max: 5.5V

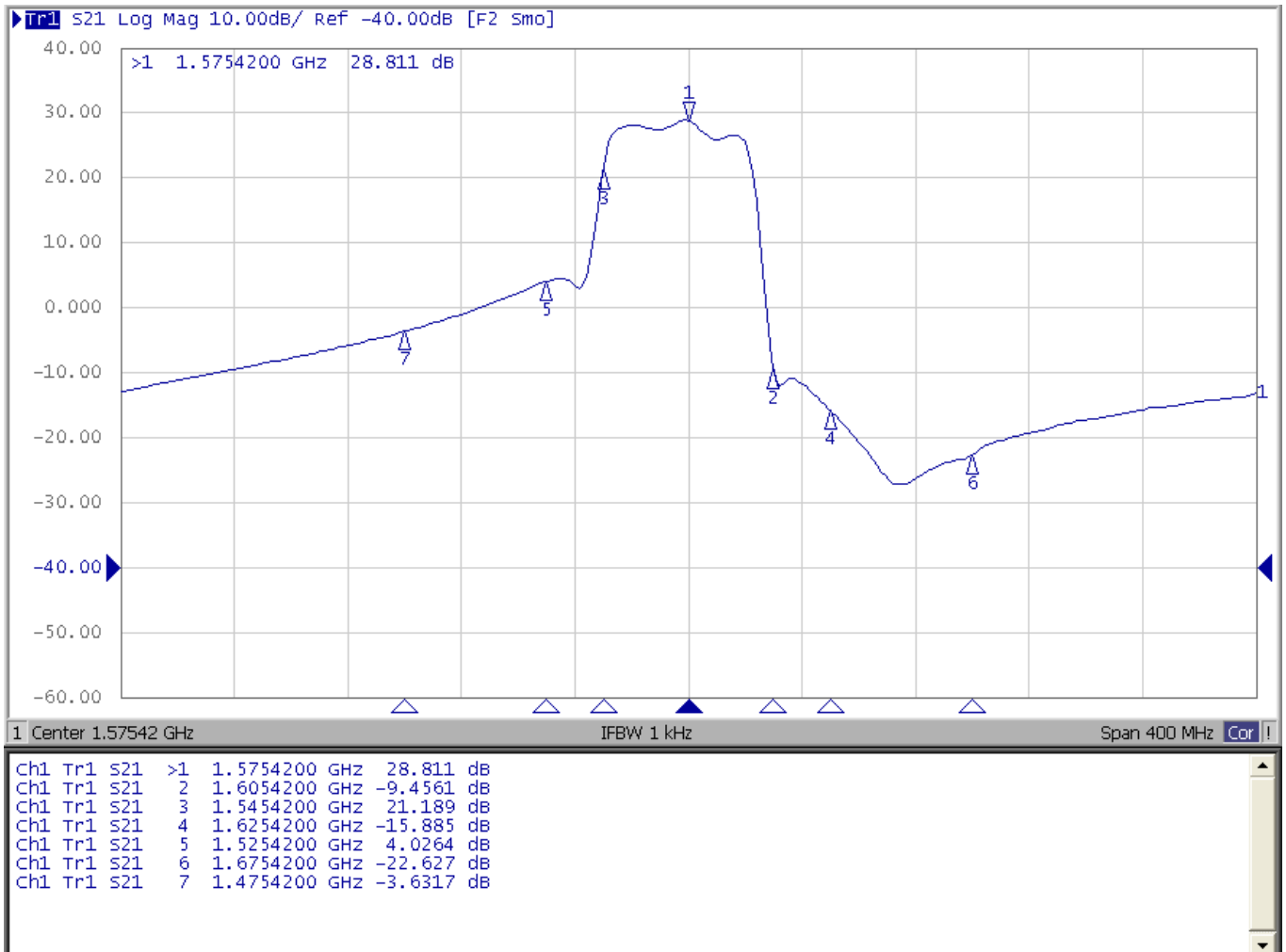
3.3 Electrical Specifications- Antenna

No	Parameter	Specification
3.3.1	Frequency Range	1575.42MHz +/- 1.023 MHz
3.3.2	Gain	Typ. -7dBic @ Zenith
3.3.3	Polarization	RHCP
3.3.4	Axial ratio	Max 4.0dB@zenith

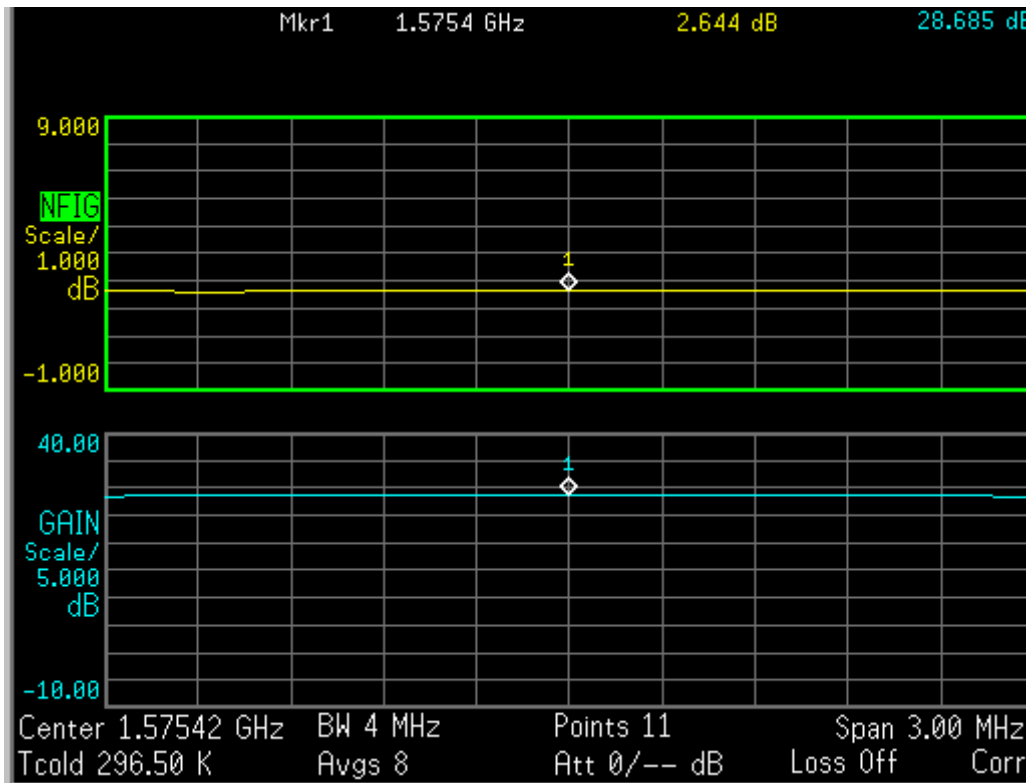
3.4 Electrical Specifications- LNA

No	Parameter	Specification		
3.4.1	Frequency Range	1575.42 ± 1.023 MHz		
3.4.2	Output Impedance	50Ω		
3.4.3	Outer Band Attenuation	F0=1575.42MHz		
		F0±30MHz 5dB min		
		F0±50MHz 20dB min		
		F0±100MHz 28dB min		
3.4.4	Pout at 1dB Gain Compression point	-6 dBm Typ.		
3.4.5	Output VSWR	2.0 Max		
3.4.6	LNA Gain, Power Consumption and Noise Figure			
	Voltage	LNA Gain(Typ)	Power Consumption(mA) Typ	Noise Figure(Typ)
	Min 1.8V	20dB	4.5mA	2.8dB
	Typ 3.0V	28dB	9mA	2.8dB
	Max 5.5V	30dB	18mA	3.0dB

3.5 LNA Gain and Out Band Rejection @3.0V



3.6 LNA Noise Figure @3.0V



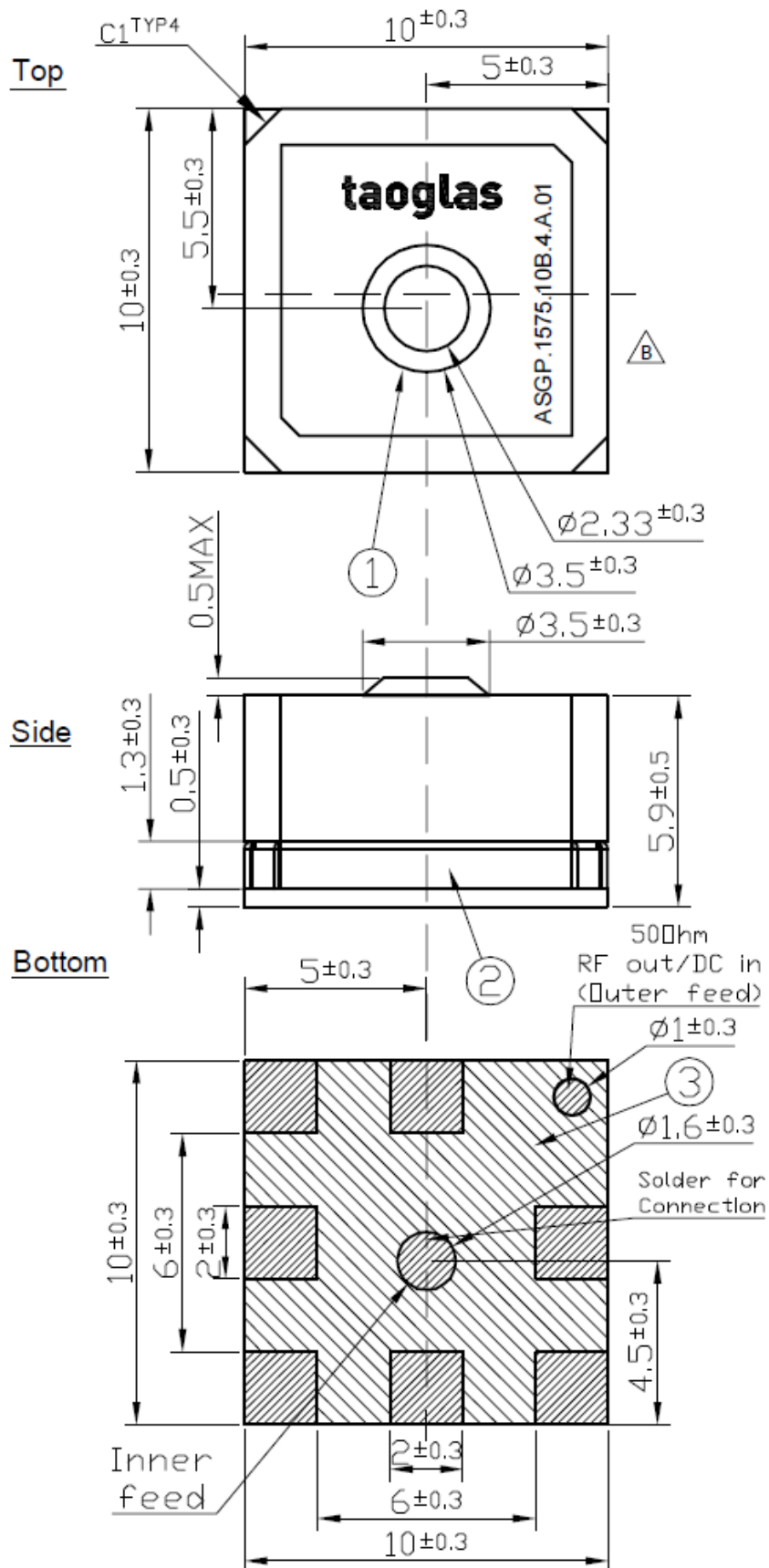
3.7 Connection

No	Parameter	Specification
3.5.1	Connection	SMT via solder pads

3.8 Electrical Specifications- Overall

No	Parameter	Specification
3.6.1	Frequency Range	1575.42MHz +/- 1.023 MHz
3.6.2	Gain	At 90° at 3.0V 21±4dBic
3.6.3	Output Impedance	50Ω
3.6.4	VSWR	2.0 Max.

4.0 Technical drawing

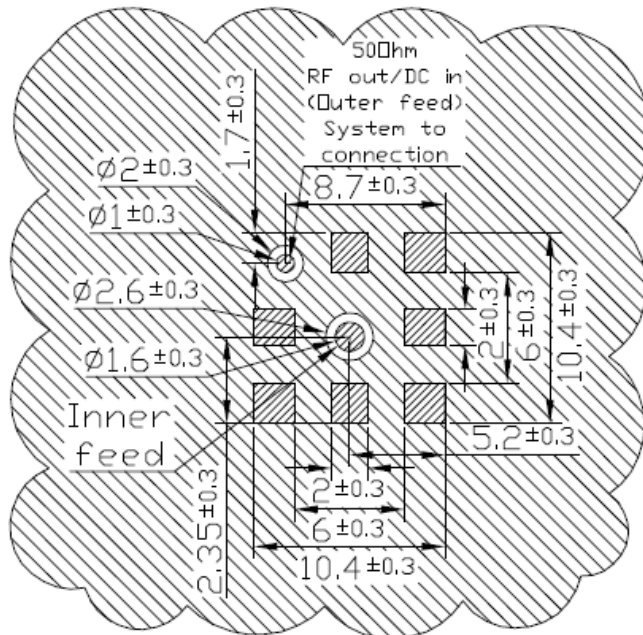


4.1 Suggested Layout

PCB Footprint

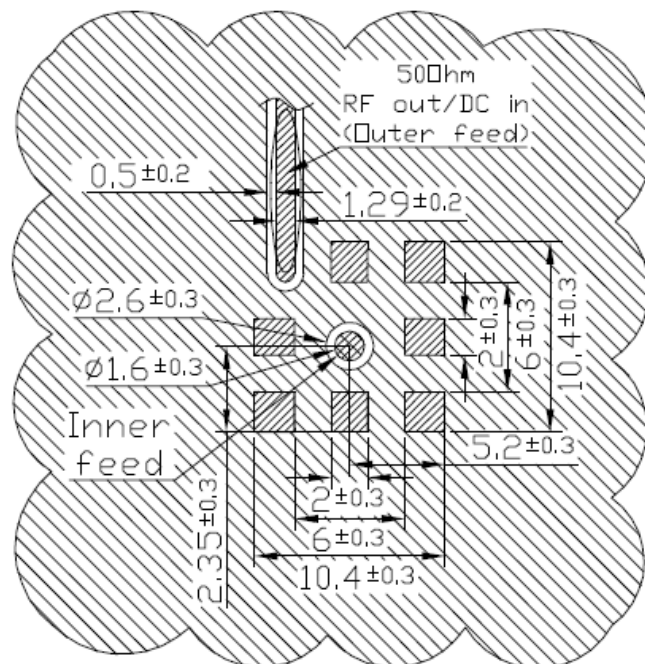
Case A-

GPS Receiver Module On Opposite Side



Case B-

GPS Receiver Module On Same Side



SCALE: 2/1

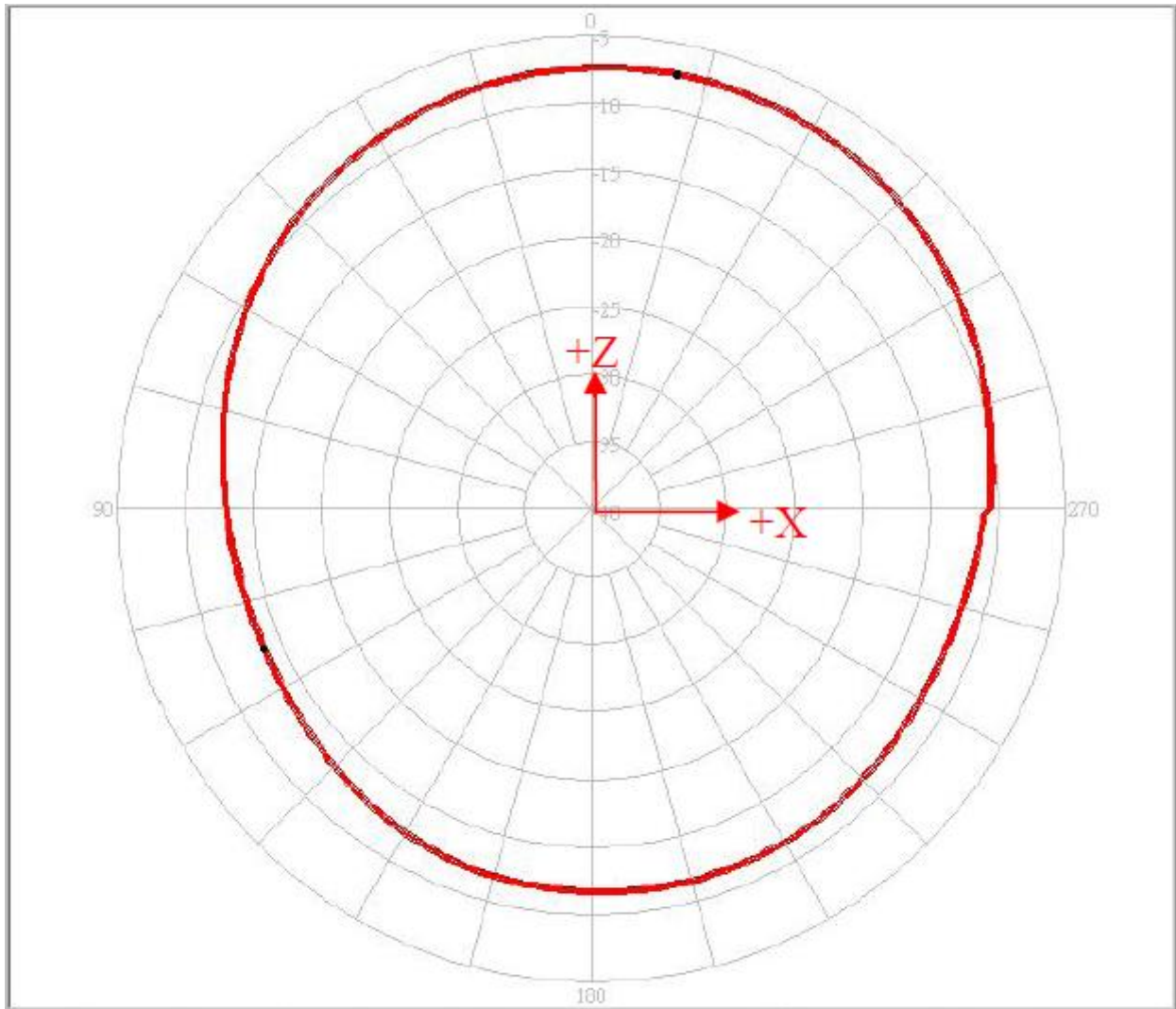
PCB Thickness 0.8mm

NOTES:

1. Soldered area.
- (Square pads for mechanical mounting purposes only)
2. Solder mask.
3. Clearance area.
4. Inner and outer feed must be soldered.
5. RF out / DC in to outer feed only.

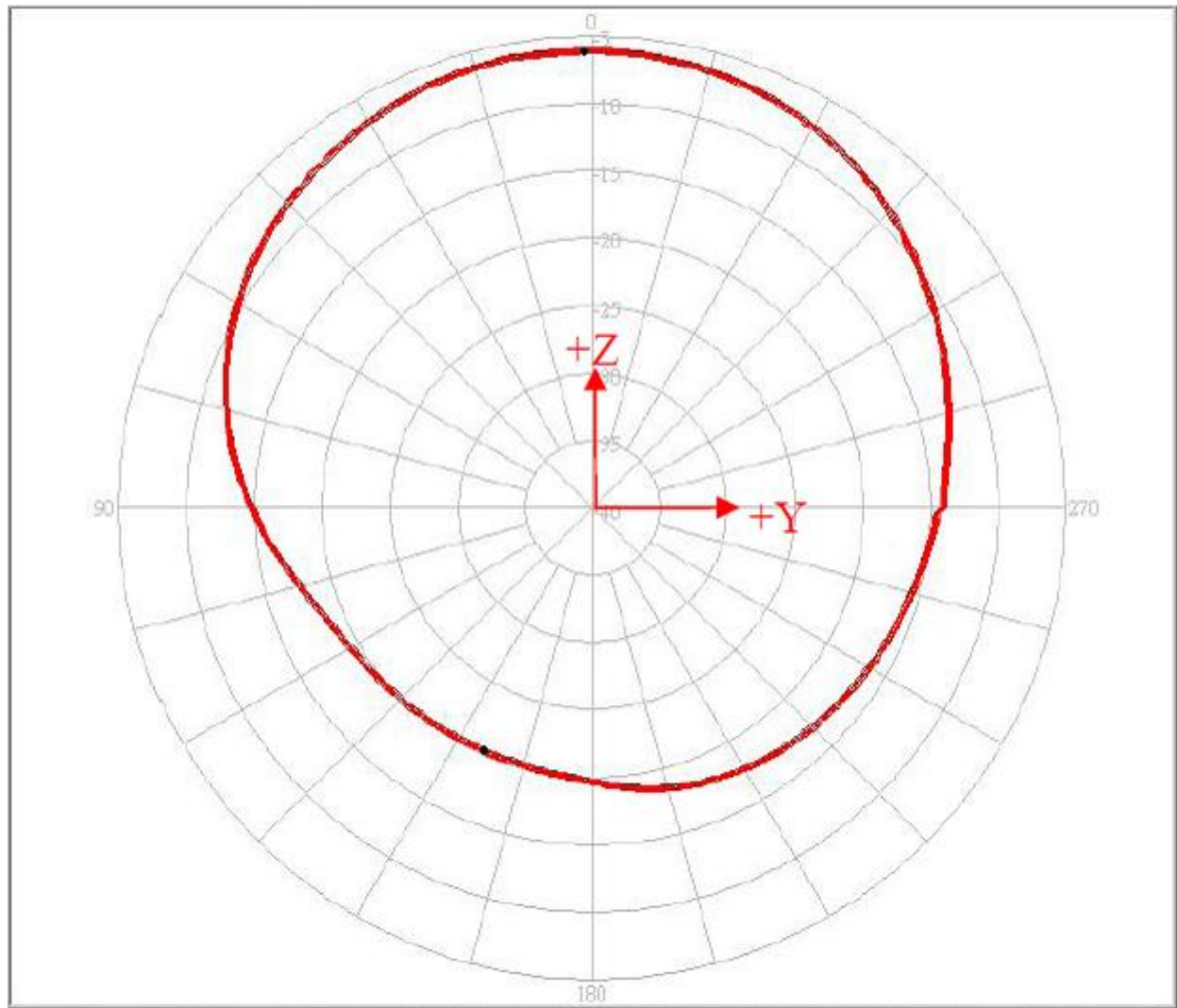
5.0 Radiation Patterns

XZ Plane



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	DA10-4.0	XZ	1575.42	-7.29 / 349.00	-13.67 / 113.00	-10.13	RHCP	2011/8/15

YZ-Plane



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	DA10-4.0	YZ	1575.42	-6.12 / 1.00	-20.28 / 156.00	-10.96	RHCP	2011/8/15

XY-Plane

