

# 1. Specifications

## 1.1. Electrical Characteristics

Parameter		Value	Unit	Notes
Center Frequency ( $f_c$ )		$1575 \pm 3$	MHz	12mm x 12mm GP
Return Loss ( $S_{11}$ )		-20 (min)	dB	@ $f_c$
Bandwidth (BW)		10 (min)	MHz	@ $f(S_{11}=-9\text{dB})$
VSWR		1.5 (max)		
Impedance ( $Z_A$ )		50	$\Omega$	
Axial Ratio (AR)		3.0 (max)	dB	
Gain @ $f_c$	@ zenith	-1.3 (typ.)	dBic	12mm x 12mm GP
Polarization		R.H.C.P		
Temperature Factor (tF)		$0 \pm 20$	ppm/ $^{\circ}\text{C}$	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$

Table 1: Electrical Specifications

## 1.2. Typical $S_{11}$

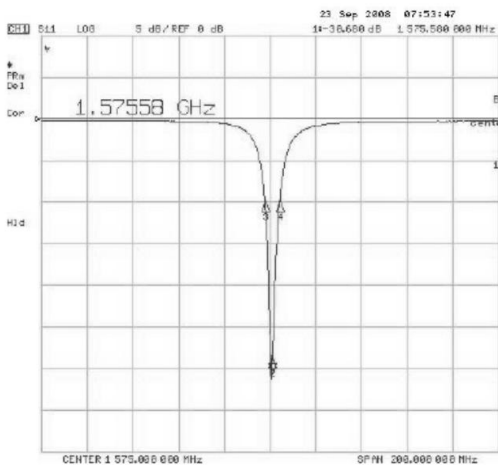


Figure 1-1: Return Loss ( $S_{11}$ )

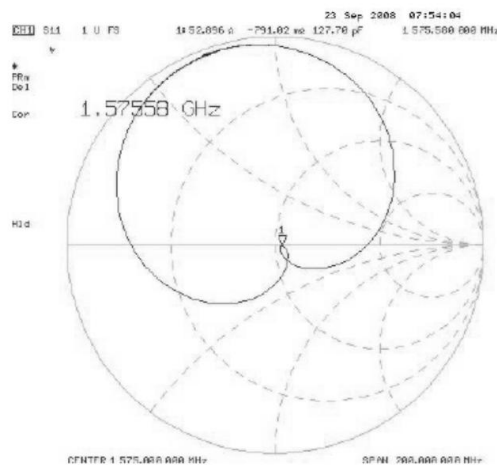


Figure 1-2: Smith Chart

Note: Measured on 12x12mm Ground Plane of copper poured FR4 with adhesive tape.

**1.3. Radiation Pattern**

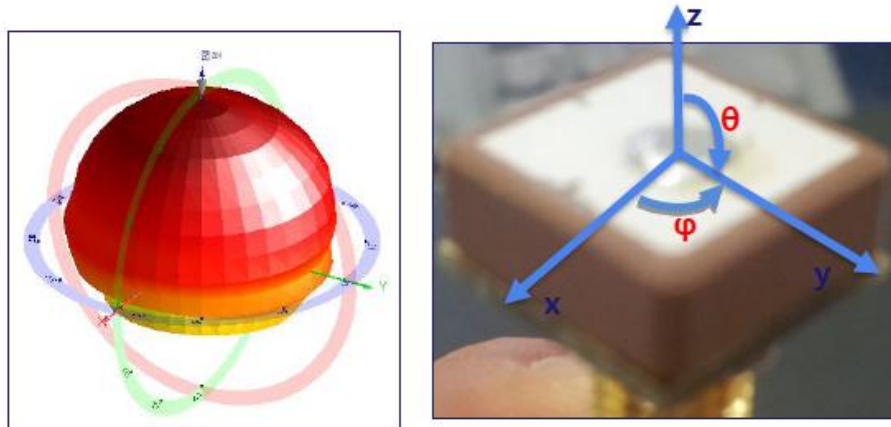


Figure 1-3-1: 3D EIRP

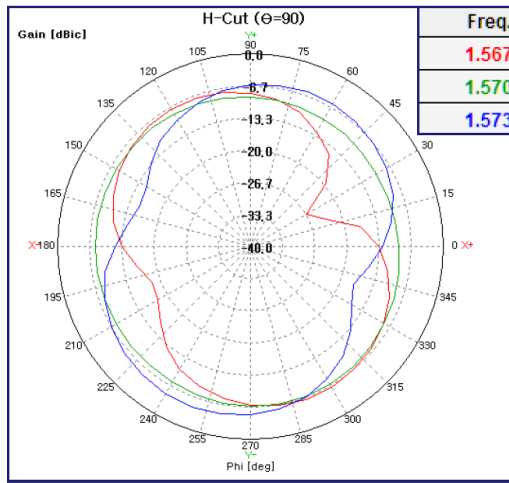


Figure 1-3-2: H-Cut

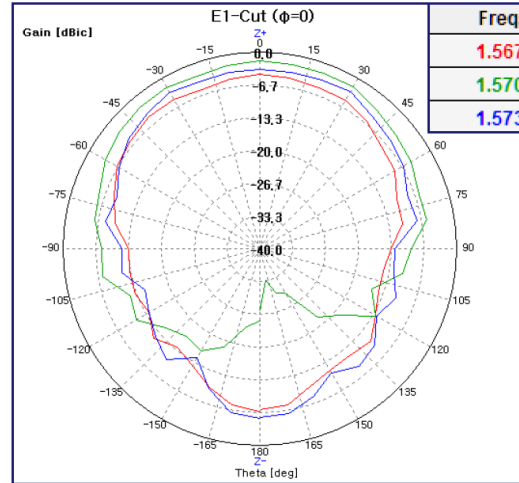


Figure 1-3-3: E1-Cut

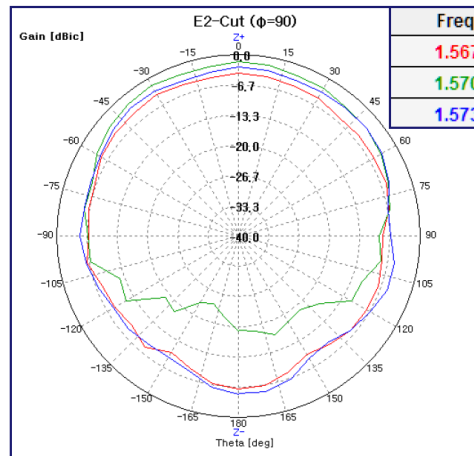


Figure 1-3-4: E2-Cut

## 2. Mechanical Specifications

### 2.1. Dimensions

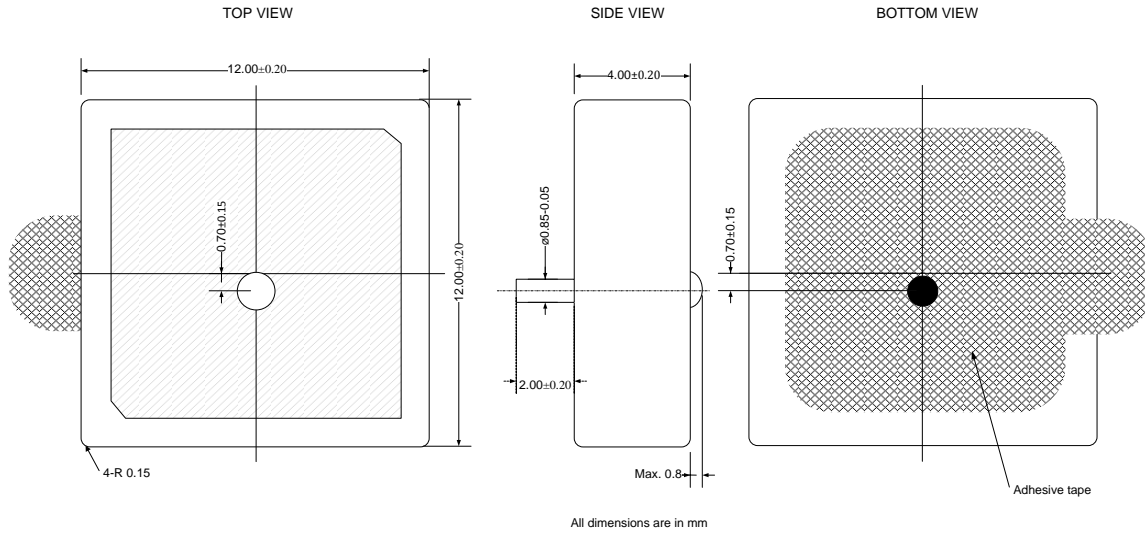


Figure 2-1: Mechanical outline

Dimensions	Length	Width	Thickness	Weight	
				gr	oz
mm	12.0 ± 0.2	12.0 ± 0.2	4.0 ± 0.2	3.4	
inch	0.472 ± 0.008	0.472 ± 0.008	0.157 ± 0.008	0.1	

Table 2-1: Mechanical information

### 2.2. Materials

Item	Material
Electrode (Top and Bottom)	Silver
Probe	Silver Plated Brass
Probe pin solder material	Stannum
Dielectric constant	
Adhesive tape thickness	0.125mm (typ.)

Table 2-2: Materials

### **3. Soldering Condition**

Wetability to IEC 68-2-58:  $\geq 75\%$  (after aging)

Manual iron soldering (Solder Sn/Ag/Cu 96.5/3.0/0.5)

Soldering must comply with above soldering conditions to prevent degradation of antenna performance

### **4. Storage**

Electrode metallization is unprotected silver and will tarnish after opening.

Elevated temperature and humidity will accelerate this process.

Typical floor life should not exceed 6 months after package has been opened.

Bulk antennas older than 6 months should be tested for solderability before use.

Avoid intentional shock or drop to prevent cracking of antenna.

### **5. Compliance**

Antennas are designed and being manufactured and handled to comply with and according to Pb-Free/RoHS Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Antennas are manufactured in ISO 9001:2000 accredited facilities.



### **6. Reliability**

Parameter	Description	Pass Criteria
Drop Test	1. Place antenna on set 2. 1.5m height 3. Drop 5 times	1. No visible damage 2. $S_{11}$ satisfy ( $\Delta f_c < 0.2\%$ )
Vibration Test	5 – 55 – 5 Hz, 1 Octave/min Amp.= 1.5mm, acceleration=2gr Crossover freq.= 18Hz, Hold time= 2H,R	1. No visible damage 2. $S_{11}$ satisfy ( $\Delta f_c < 0.2\%$ )
Humidity	60°C, 95% RH, 96Hr	1. No visible damage 2. $S_{11}$ satisfy ( $\Delta f_c < 0.2\%$ )
Thermal Shock	1. +80°C (30 min) → 5 min → -40°C (30 min) 2. 10 cycles	1. No visible damage 2. $S_{11}$ satisfy ( $\Delta f_c < 0.2\%$ )
High Temperature Resistance	+90°C, 96Hr	1. No visible damage 2. $S_{11}$ satisfy ( $\Delta f_c < 0.2\%$ )
Low Temperature Resistance	- 40°C, 96Hr	1. No visible damage 2. $S_{11}$ satisfy ( $\Delta f_c < 0.2\%$ )
Adhesion Strength of Soldering	Use of pull-push gauge	Spec (min. 5kgf)
IEC Climatic Category (IEC88-1)	-40°C / +90°C / 56h	

Table 6-1: Reliability data

Notes:

1. Sample must satisfy the requirement after 24 hours of test
2. Based on IEC climatic category (IEC68-1) -40°C / +85°C / 56Hr