

## Specification

Part No.	:	<b>WLA.01</b>
Model	:	2.4GHz High Efficiency Loop Antenna
Description	:	2.5dBi 2400MHz to 2500MHz WLAN/WIFI/Bluetooth/Zigbee
Features	:	3.2*1.6*0.5mm Low Profile Peak gain 2.5dBi 50 Ohm Impedance  RoHS ✓



# 1. Introduction

The WLA.01 2.4GHz Loop antenna is a high efficiency miniature SMD edge mounted ceramic antenna for very small space requirements for Wi-Fi, WLAN, Zigbee, Bluetooth and 802.11 applications. The WLA.01 uses the main PCB as its ground plane, thereby increasing Antenna Efficiency. It is tuned for different PCB sizes by simply changing the value of the matching circuit. At 3.2mm\*1.6mm\*0.5mm, the WLA.01 is one of the smallest antennas available worldwide. This antenna is delivered on tape and Reel.

## 1.1 Applications

- \*Bluetooth earphone systems
- \*Hand-held devices when Bluetooth/Wi-Fi functions are needed, e.g., Smart phone.
- \*IEEE802.11 b/g
- \*ZigBee
- \*Wireless PCMCIA cards or USB dongle

## 2. Specification - Table

WLA.01 is designed to mount at the centre point of the edge of an evaluation board of 80 x 40mm. The antenna performance was measured with the WLA.01 mounted on the evaluation board with SMA(F) connector.

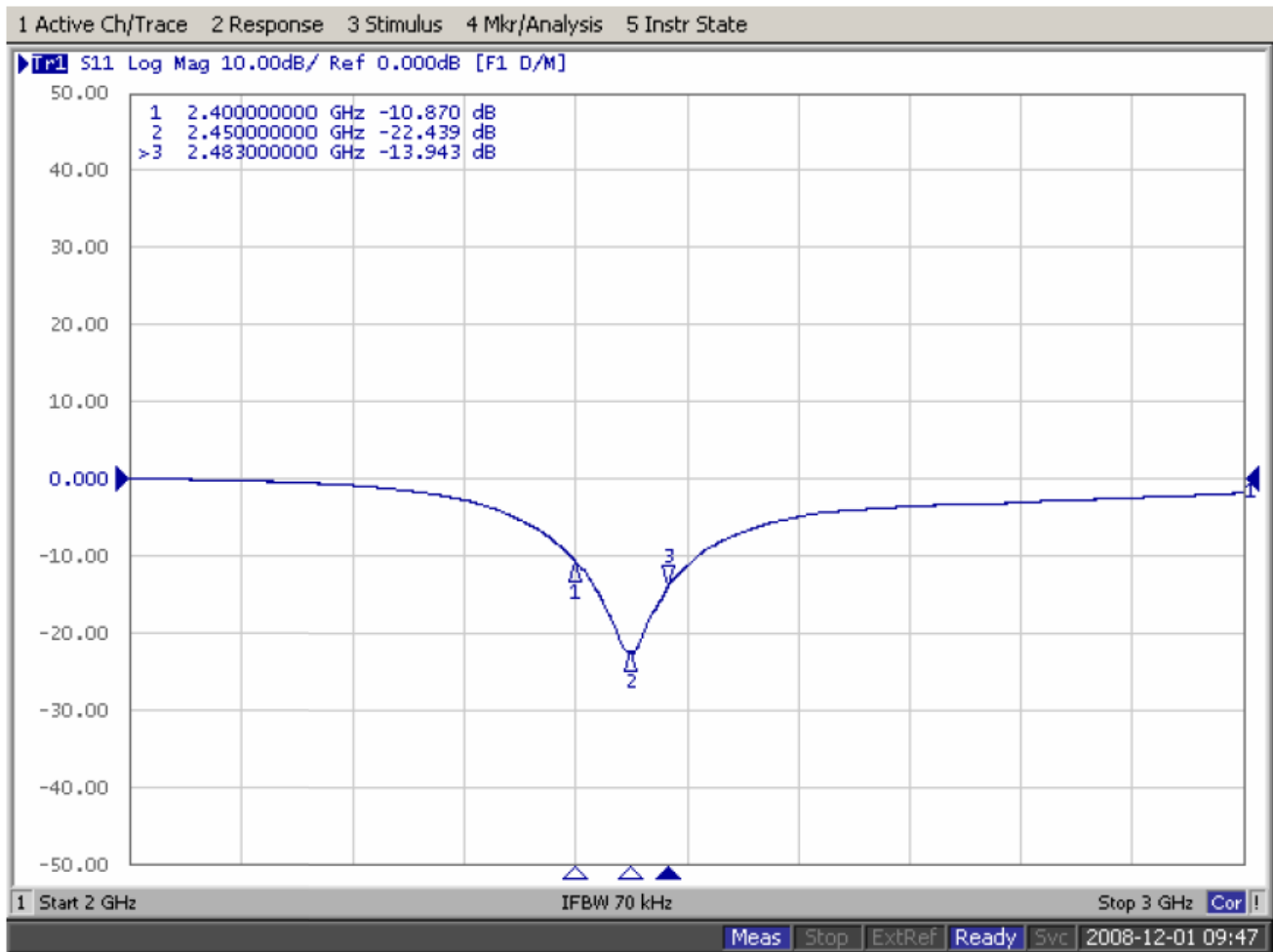
No	Parameter	Specification
1	Center Frequency	2450MHz
2	Dimensions	3.2*1.6*0.5mm
3	VSWR	2 max (depends on the special environment)
4	Polarization	Linear
5	Bandwidth	100MHz min. (under -10dB return Loss)
6	Peak Gain	2.5dBi typ.
7	Efficiency	84% typ.
8	Impedance	50 Ω
9	Operating Temperature	-40°C~+85°C
10	Temperature Coefficient (τf)	0 ± 20 ppm @-20°C to +80°C

\* Center frequency will be offset to working frequency according to the conditions of user's Ground plane and radome.

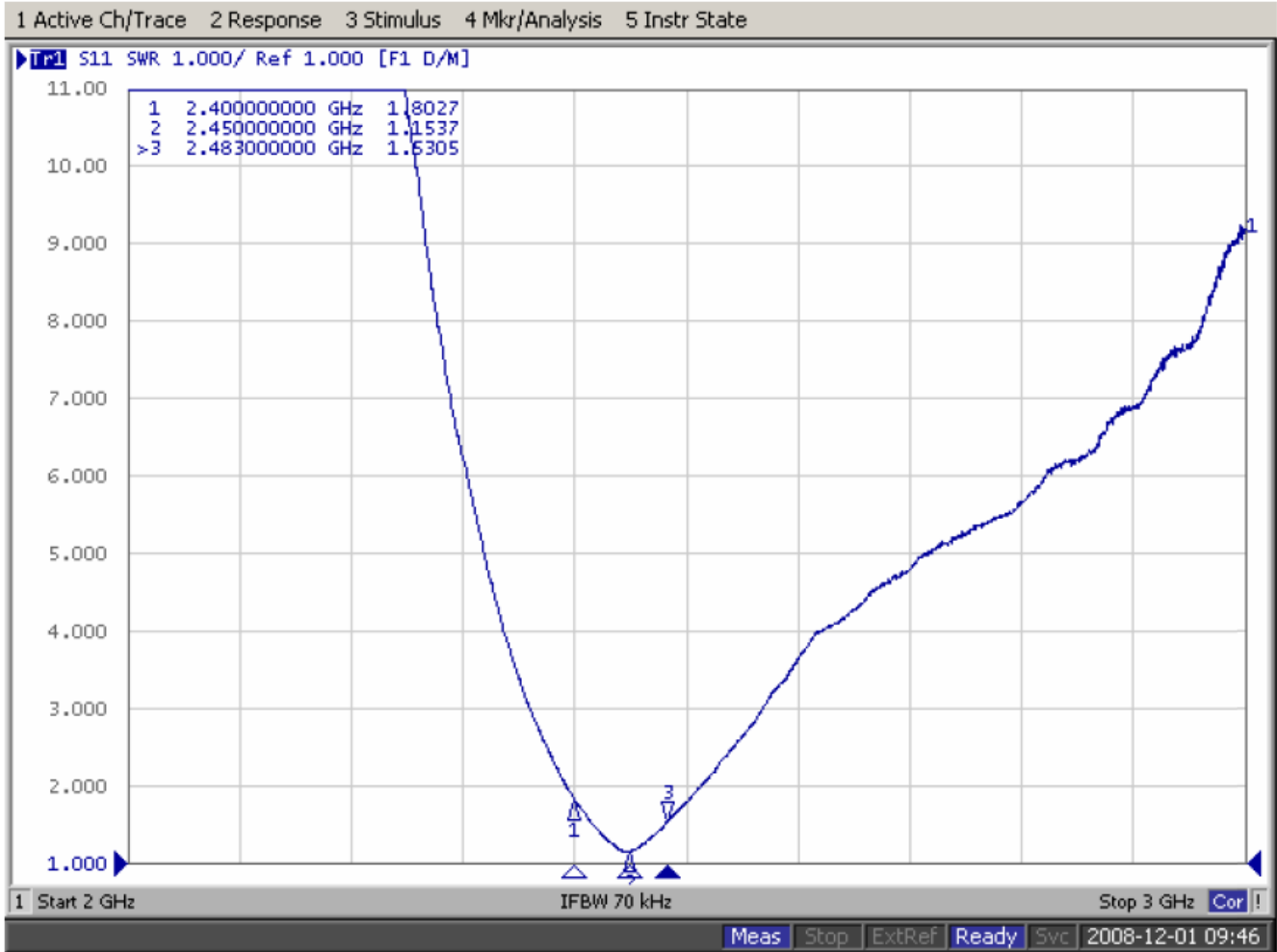
\*\*The data was measured by A Test Lab Techno Corp. (CTIA Authorized Test Lab).

### 3. Electrical Specification (80\*40mm ground plane)

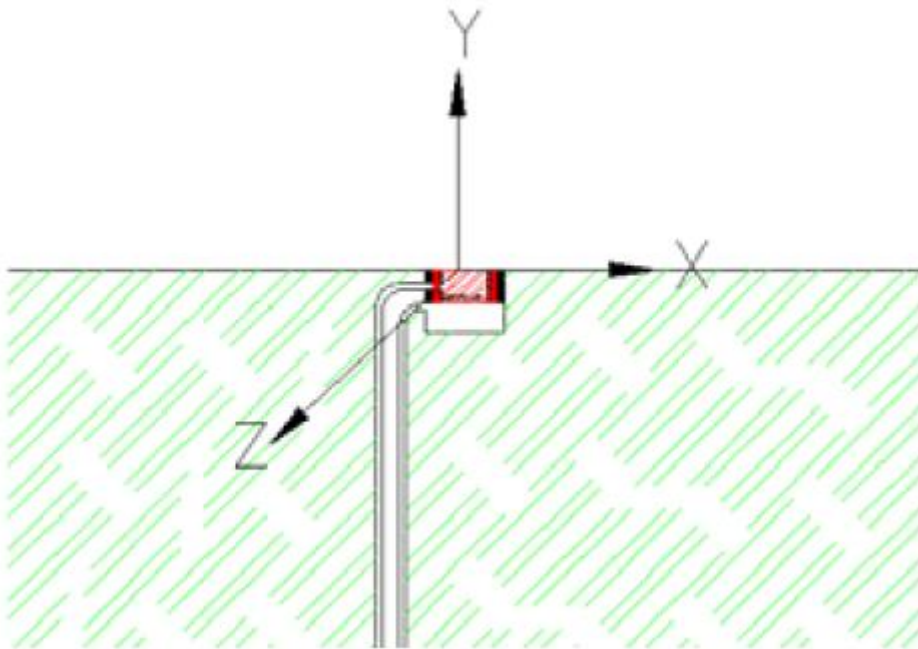
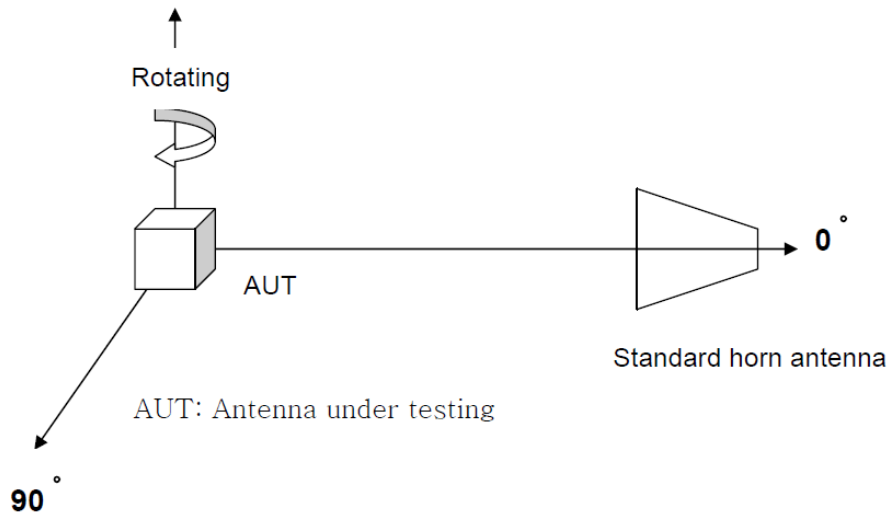
#### 3.1 Return Loss



### 3.2 VSWR



## 4. 2D Radiation Pattern (80\*40mm Ground Plane)




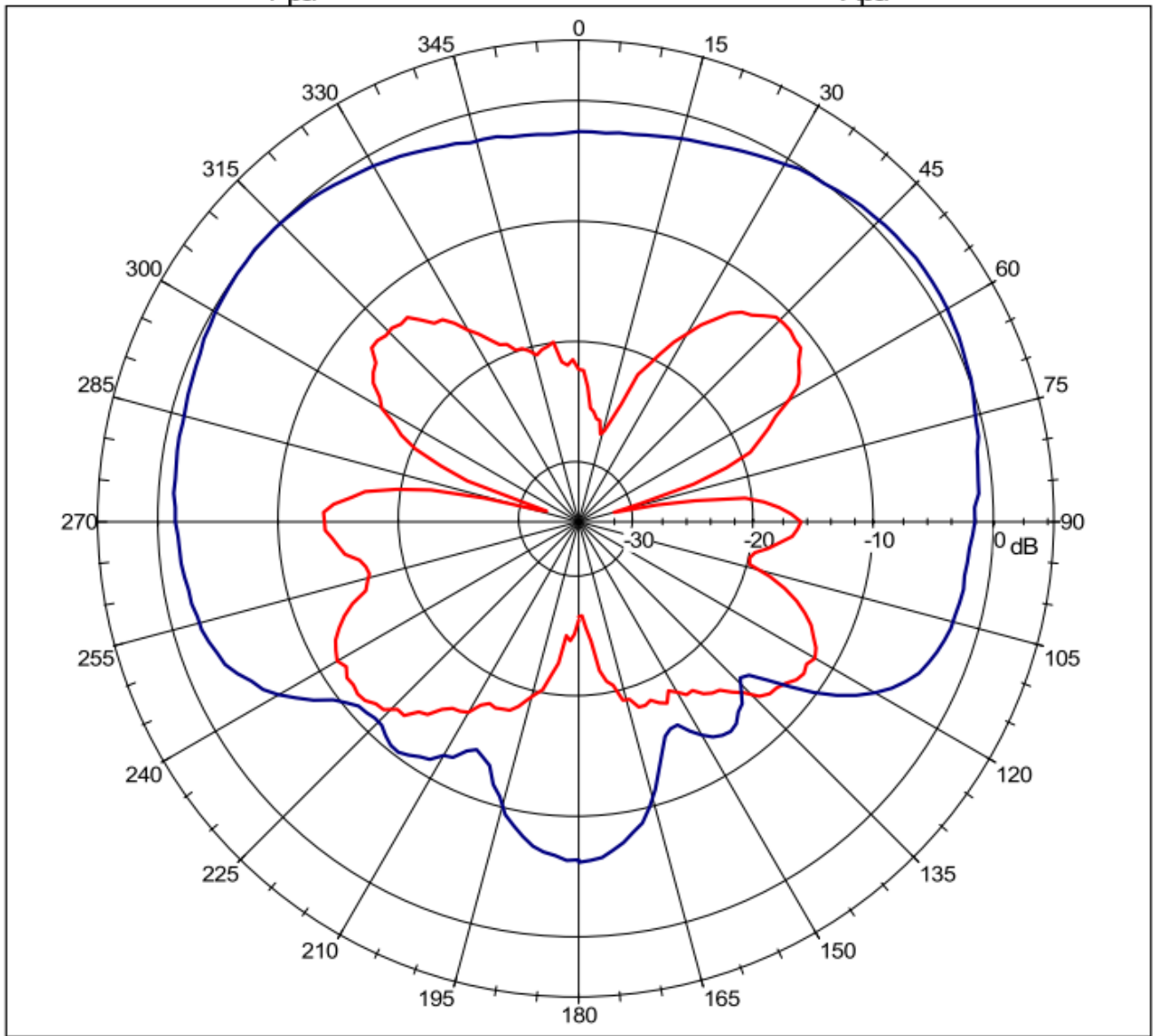
### 4.1 XY Plane Radiation

# XY

Far-field amplitude of E2 plane.nsi

 Ppd

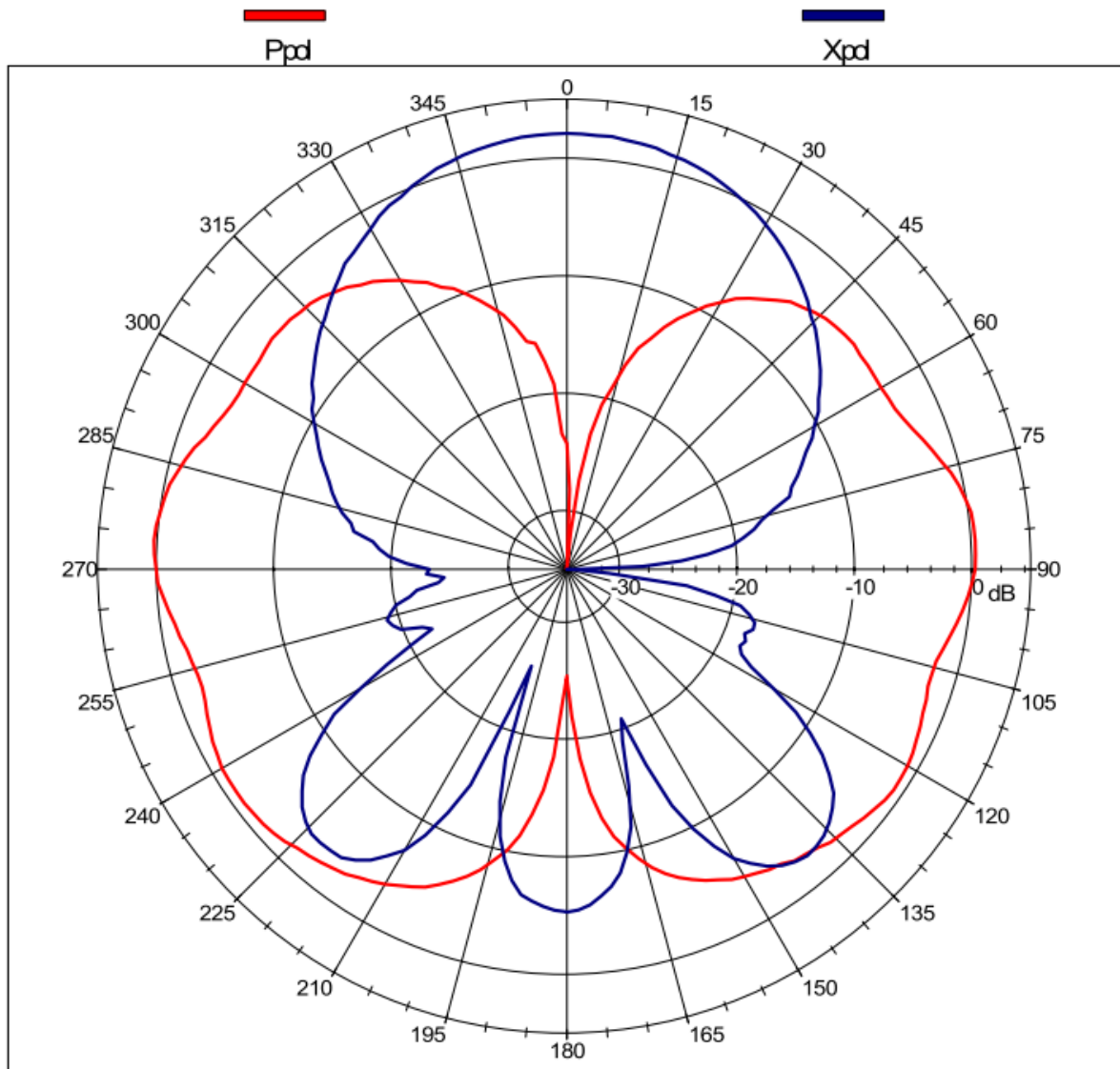
 Xpd



## 4.2 XZ Plane Radiation

# XZ

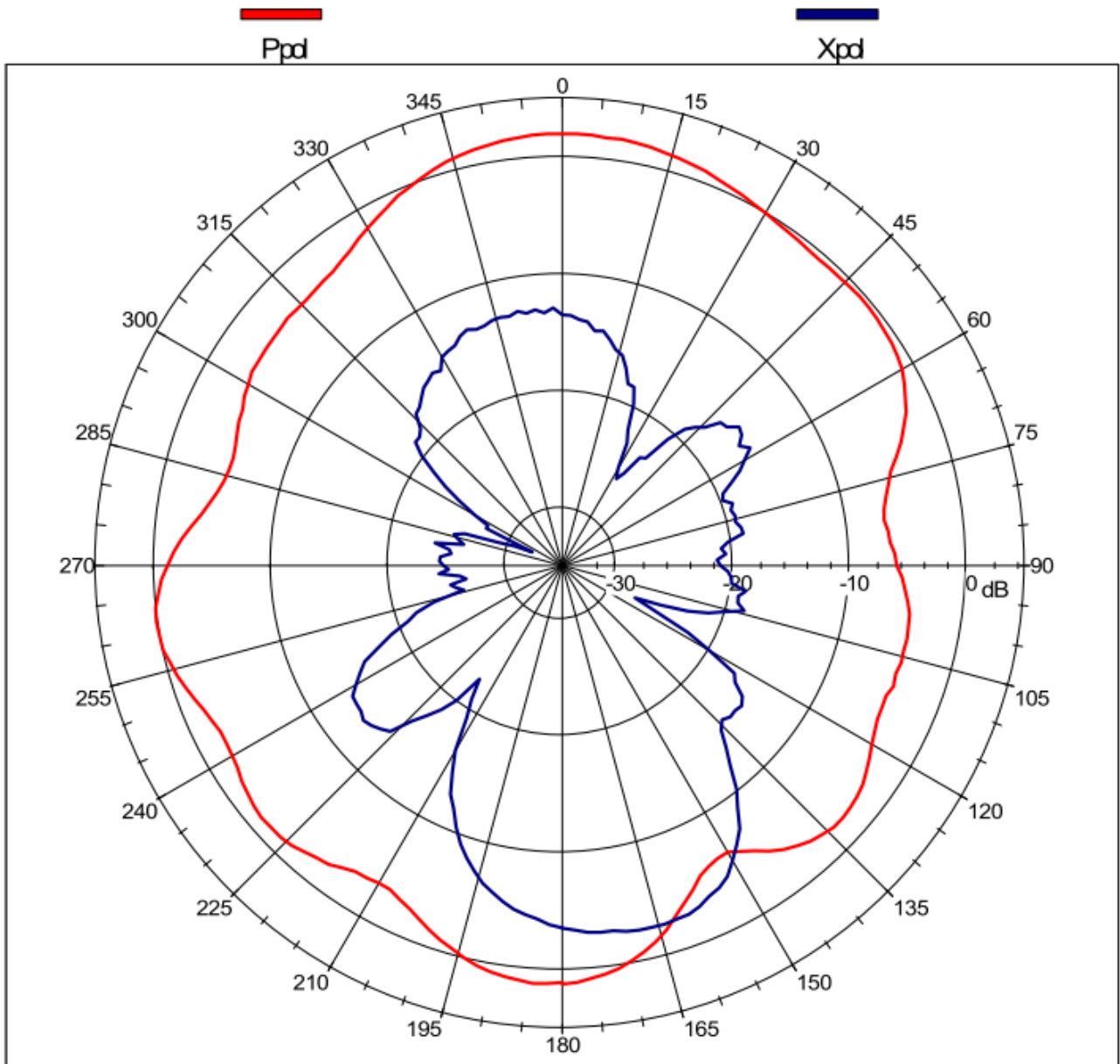
Far-field amplitude of H plane.nsi



### 4.3 YZ Plane Radiation

# YZ

Far-field amplitude of E1 plane.nsi

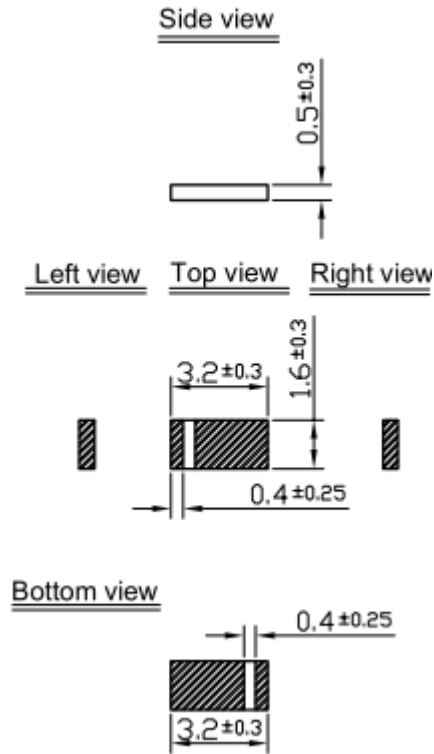


### Efficiency & Peak Gain vs. Frequency

Plane	XZ(dBi)	YZ(dBi)	XY(dBi)
Peak gain	2.09	2.05	0.38
Average Gain	-1.68	-1.83	-4.23

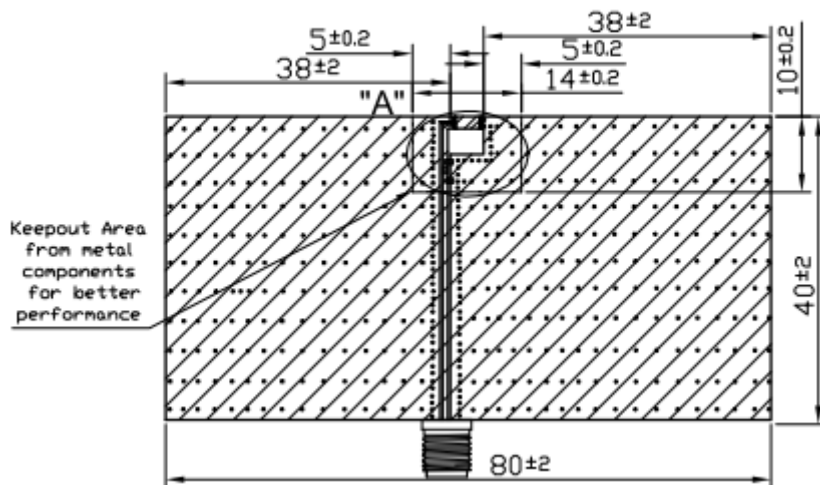


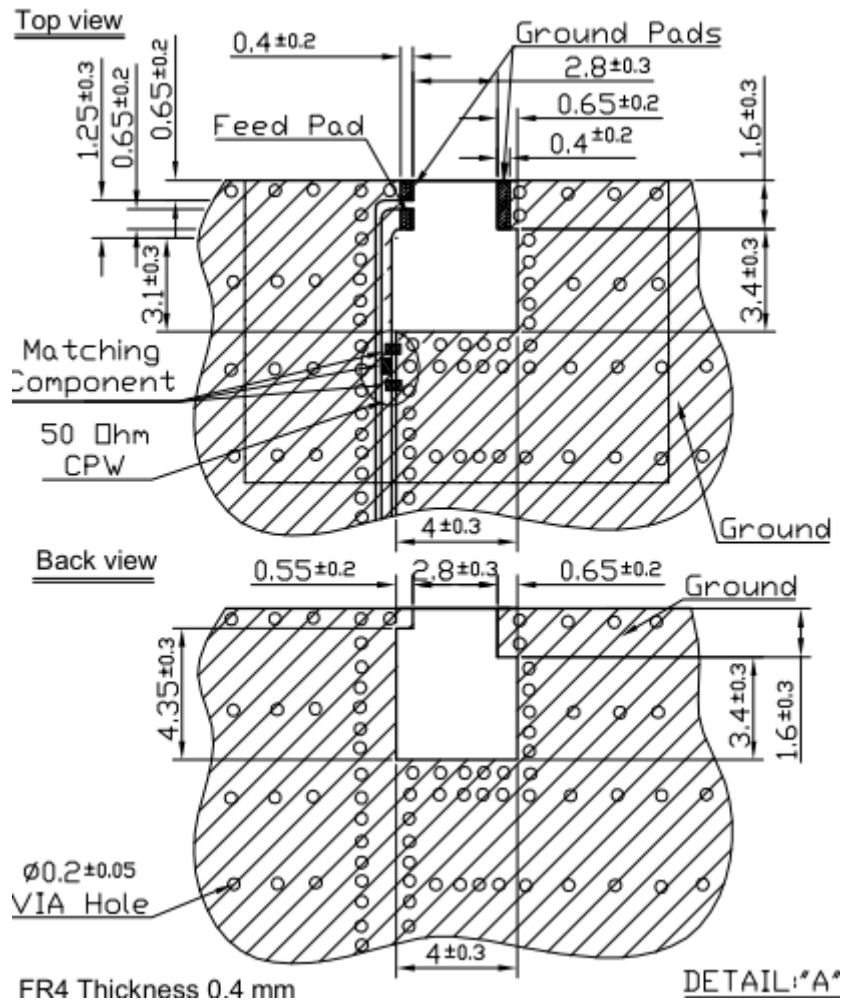
## 5. Drawing (unit:mm)







### 5.1 Test board with Antenna

Reference Footprint as Evaluation Board (WLAD.01)  
 (Actual Depends On Specific Customer Board Environment)





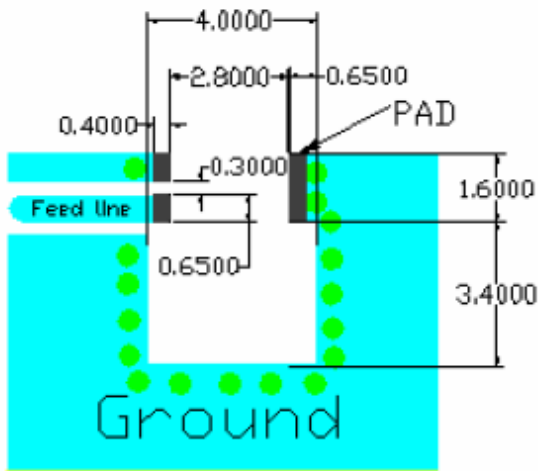
NOTES:

- 1. Silver Area 
- 2. Copper Area 
- 3. Clearance Area 
- 4. Soldered Area 
- 5. Antenna Can Be Soldered On Top Or Bottom Side Without Effect On Performance.
- 6. Matching Component Values Depend On Specific Board Environment.

## 6 Layout Guide

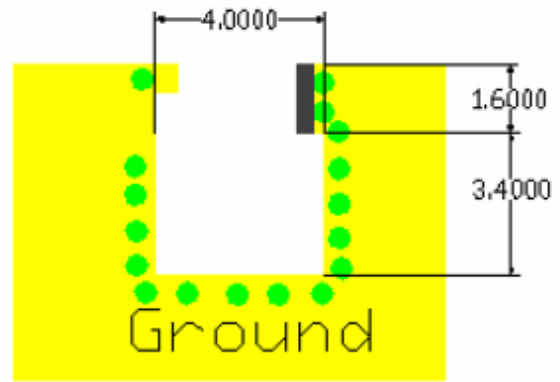
### 6.1 Solder Land Pattern:

Land pattern for soldering (black marking areas) is as shown below. Depending on Customer's requirement, matching circuit as shown below is also recommended. Clearance areas must be followed, footprint size 4.0\*5.0mm.



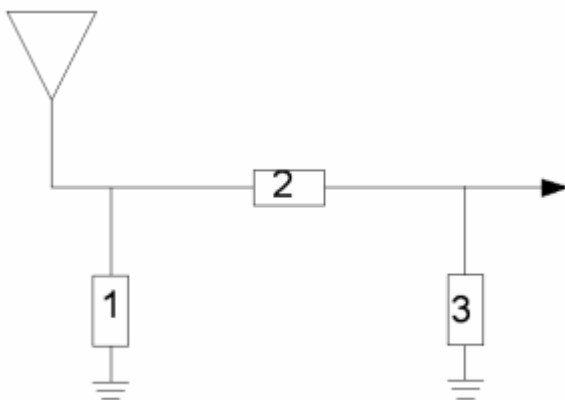
Top view

Unit mm



Back view

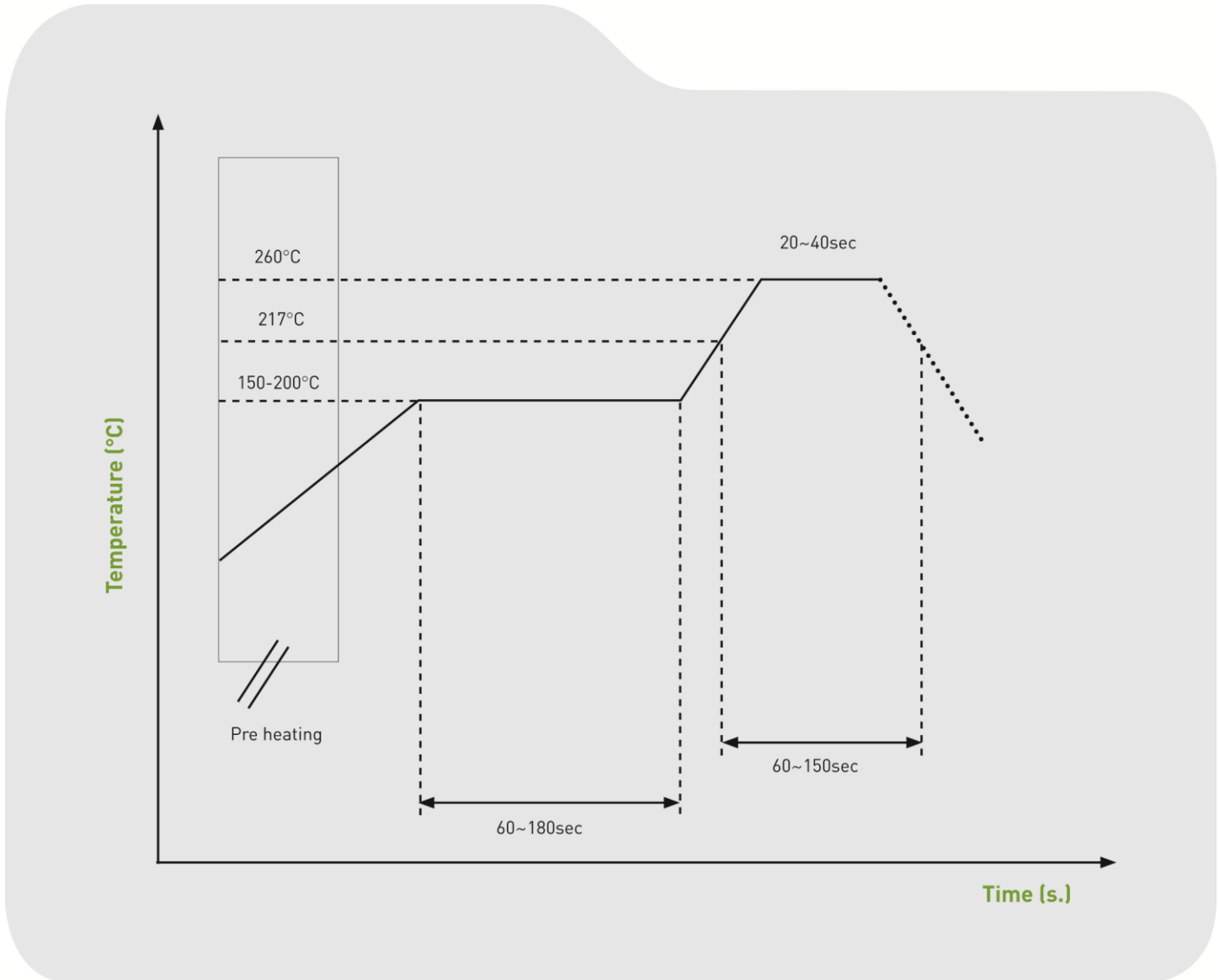
### 6.2 Matching Circuit



System Matching Circuit Component		
Location	Description	Vendor
1	N/A	-
2	N/A	-
3	N/A	-

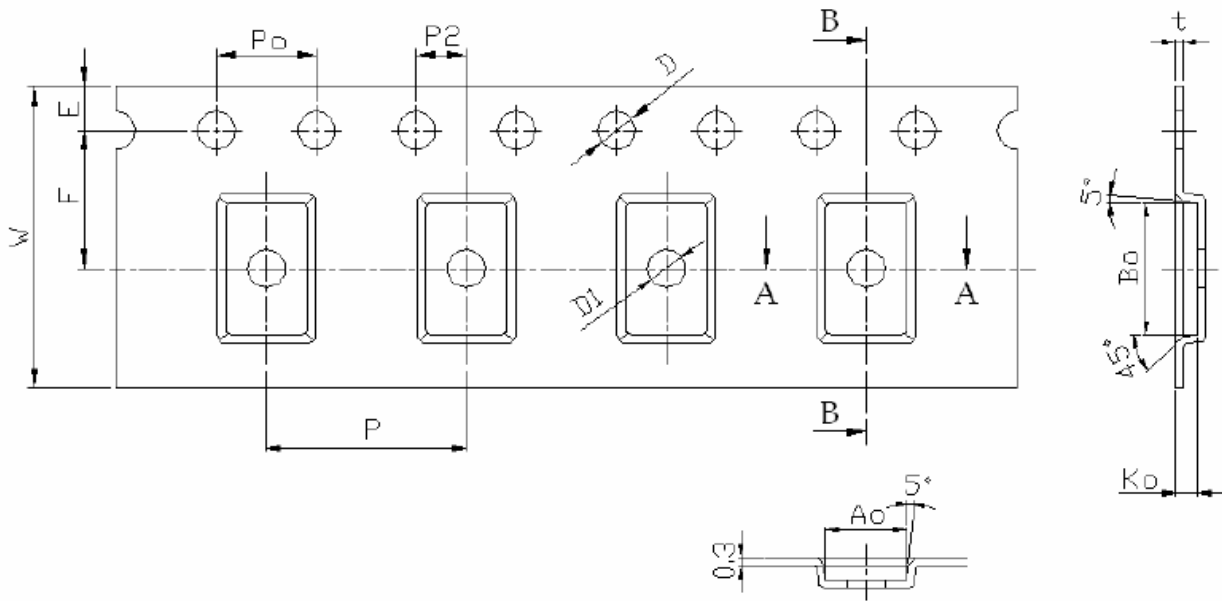
## 7. Recommended Reflow Temp Profile

The WLA.01 Loop Antenna can be assembled following either Sn-Pb or Pb-Free assembly processes. The recommended soldering temperatures are as follows:



## 8. Packing

- (1) Quantity/Reel: 6000pcs/Reel
- (2) Plastic Tape



1. Cumulative tolerance of 10 sprocket hole pitch:  $\pm 0.20\text{mm}$
2. Carrier camber not to exceed 1mm in 250mm
3.  $A_0$  and  $B_0$  measured on a plane 0.3mm above the bottom of the pocket.
4.  $K_0$  measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. All dimensions meet EIA-481-B requirements.
6. Material:  Clear Non Anti-Static Polystyrene.  
 Black Conductive Polystyrene.

### 7.1 Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
W	12	±0.30
P	8	±0.10
E	1.75	±0.10
F	5.5	±0.10
P2	2	±0.10
D	1.5	±0.10
Po	4	±0.10
10Po	40	±0.20

### 7.2 Pocket Dimensions (unit: mm)

Feature	Specifications	Tolerances
Ao	1.9	±0.10
Bo	3.5	±0.10
Ko	0.8	±0.10
t	0.3	±0.05