



# Specification

- Part No. : **WLA.01**
- Model : 2.4GHz High Efficiency Loop Antenna
- Description : 2.5dBi 2400MHz to 2500MHz  
WLAN/WIFI/Bluetooth/Zigbee
- Features : 3.2\*1.6\*0.6mm  
Low Profile  
Peak gain 2.5dBi  
50 Ohm Impedance

**RoHS** ✓



## REVISION STATUS

Version	Date	Page	Revision Description	Prepared	Approved
03	Nov. 11, 2008	All	Updated	TW PDC	Ronan Quinlan



## Specification

### 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\*0.6mm, 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

### 2.0 Key Performance Indicators

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*0.6mm
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~+105°C
10	Temperature Coefficient ( $\tau_f$ )	0 ± 20 ppm @ -20°C to +80°C

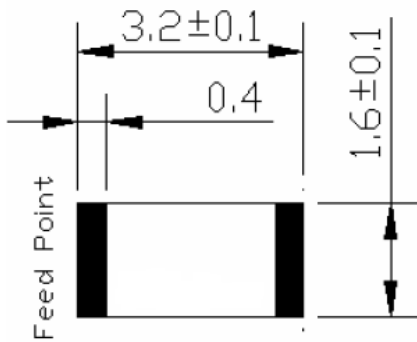
\* Center frequency will be offset to working frequency according to the conditions of user's Ground plane and radome.

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

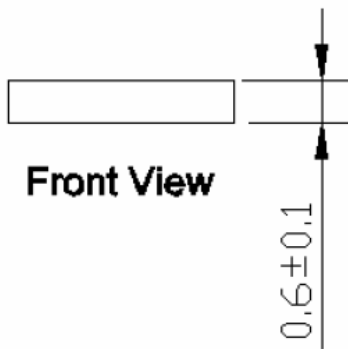


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3.0 Antenna Dimensions & Test Board (unit:mm)



Vertical View

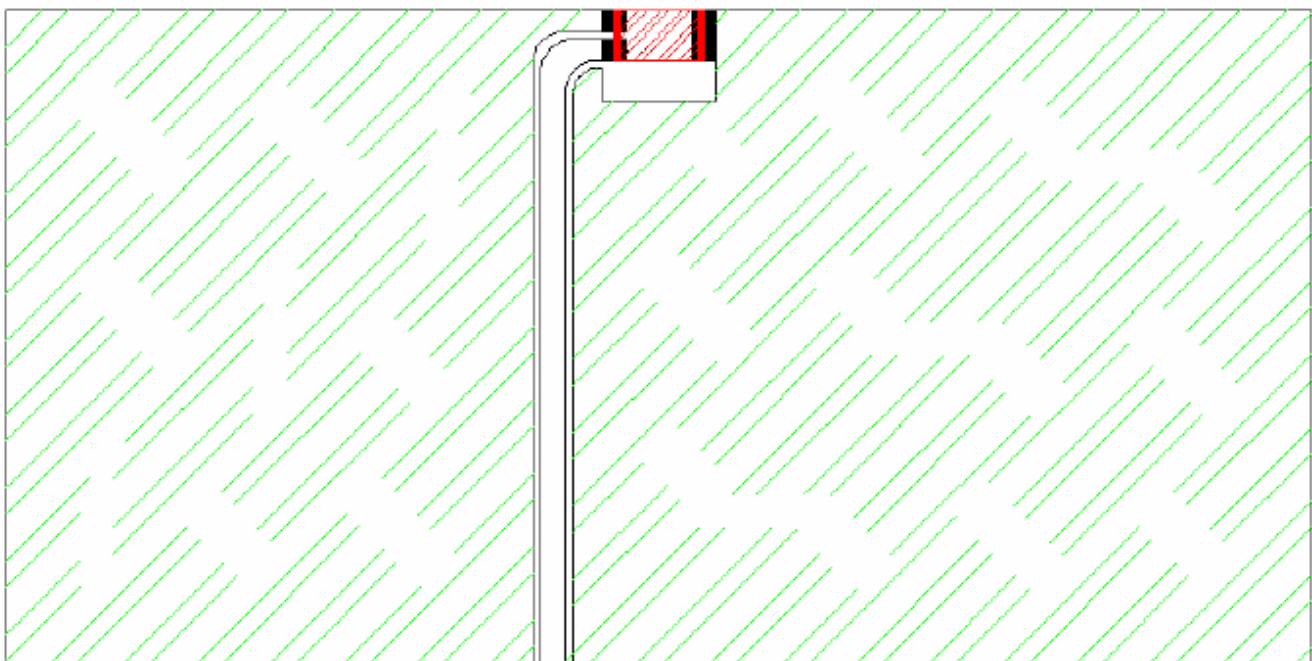


Front View

Side View

Unit : mm

3.1 Test board with Antenna



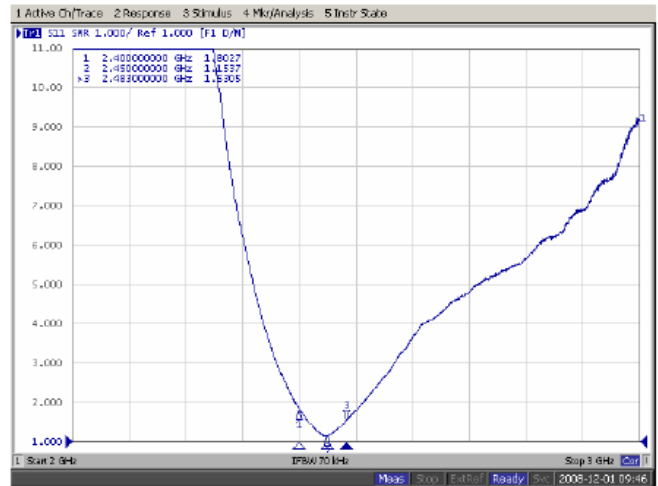
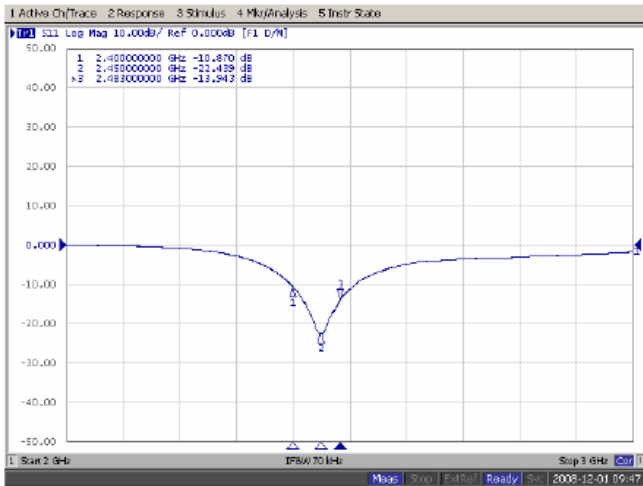


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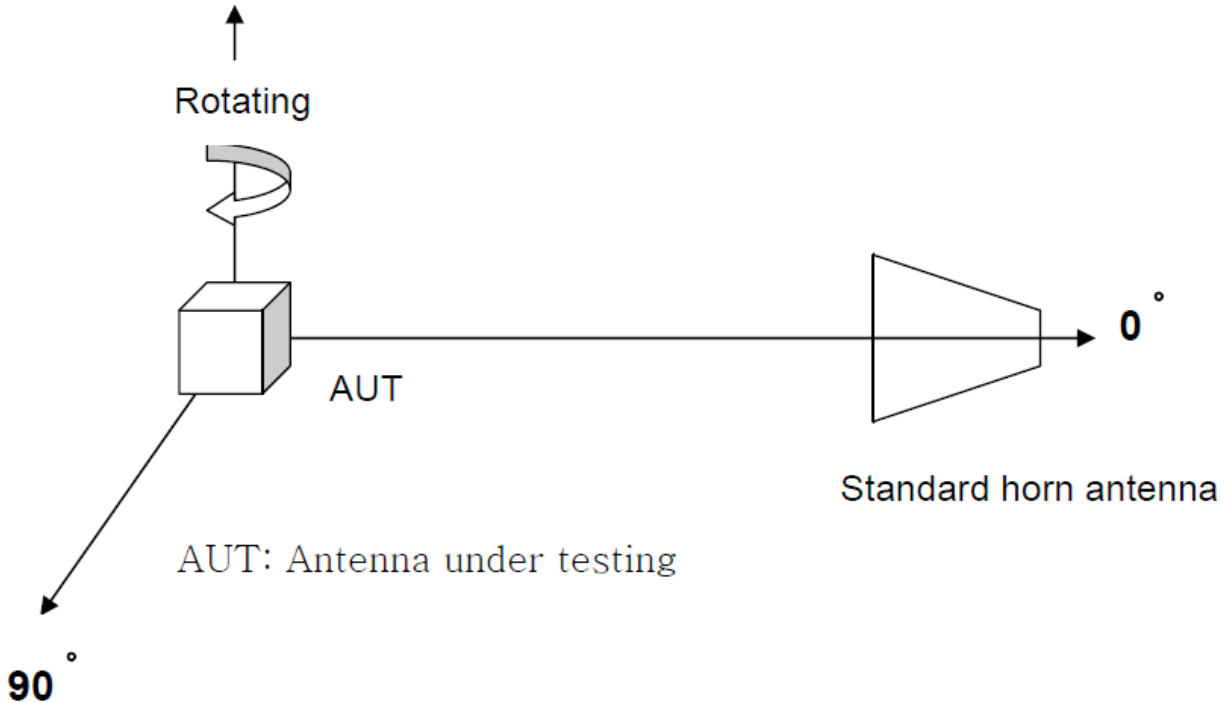
4.0 Electrical Characteristics (80\*40mm ground plane)

Return Loss( $S_{11}$ )

VSWR



5.0 Radiation Pattern (Customize Design)

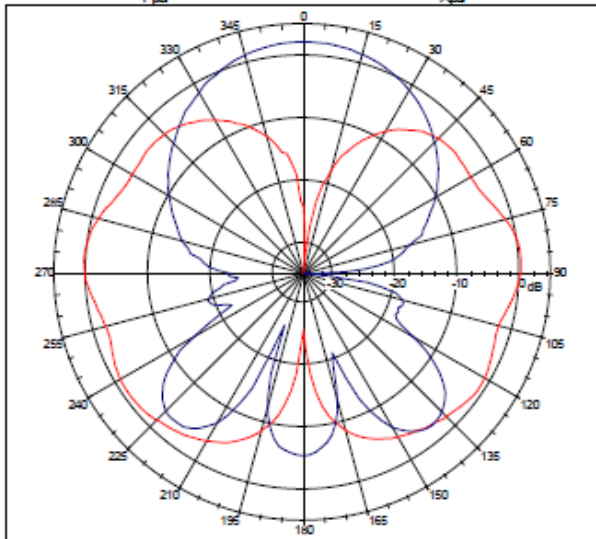




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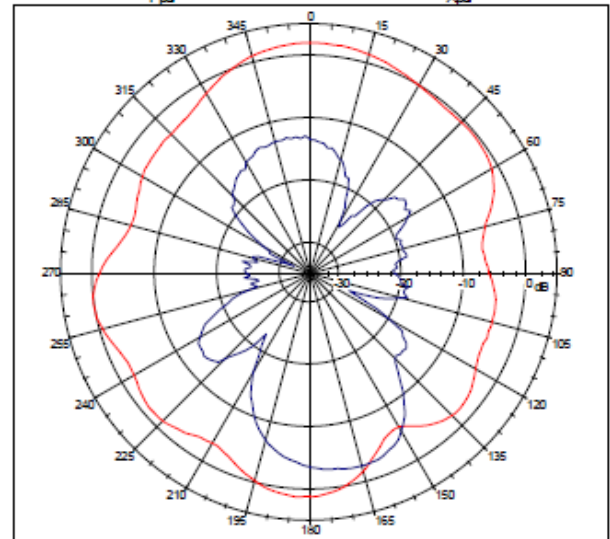
**XZ**

Far-field amplitude of H plane.nsi



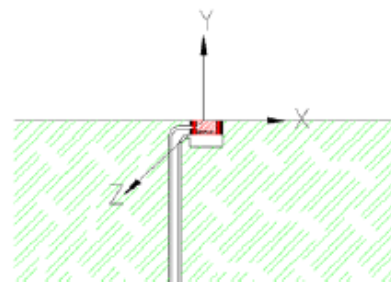
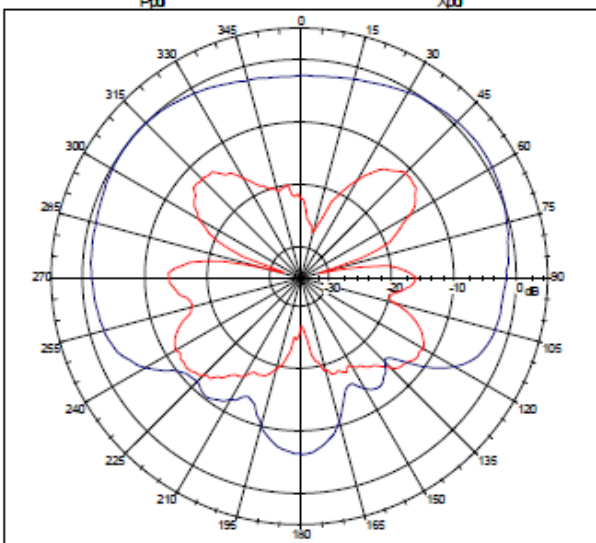
**YZ**

Far-field amplitude of E1 plane.nsi



**XY**

Far-field amplitude of E2 plane.nsi



Source signal: Linearly polarized signal  $f_0=2450\text{MHz}$

**5.1 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

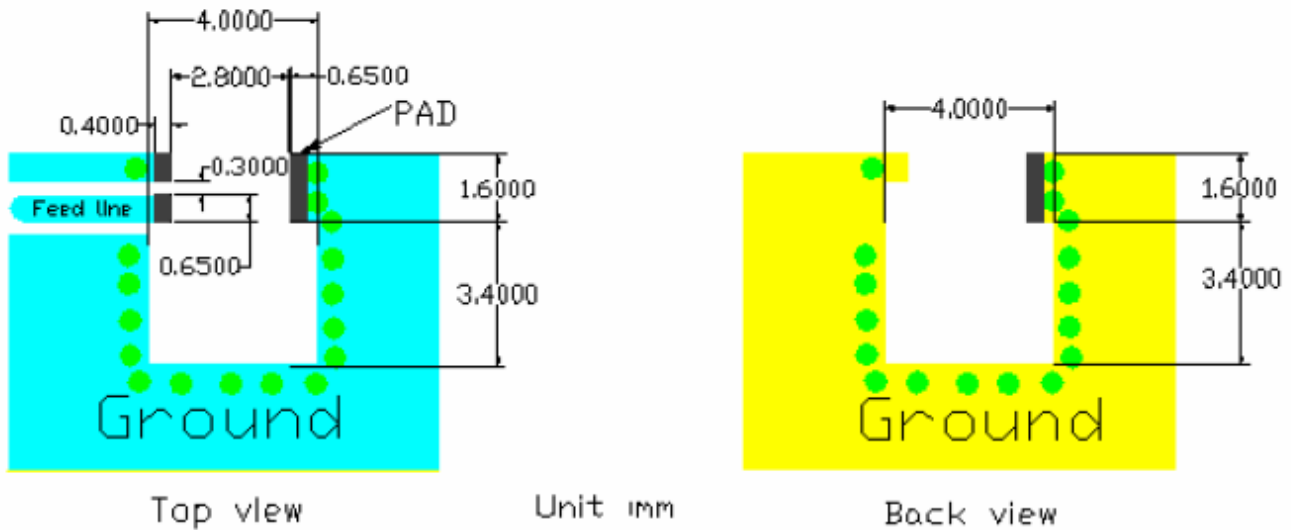


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6.0 Layout Guide

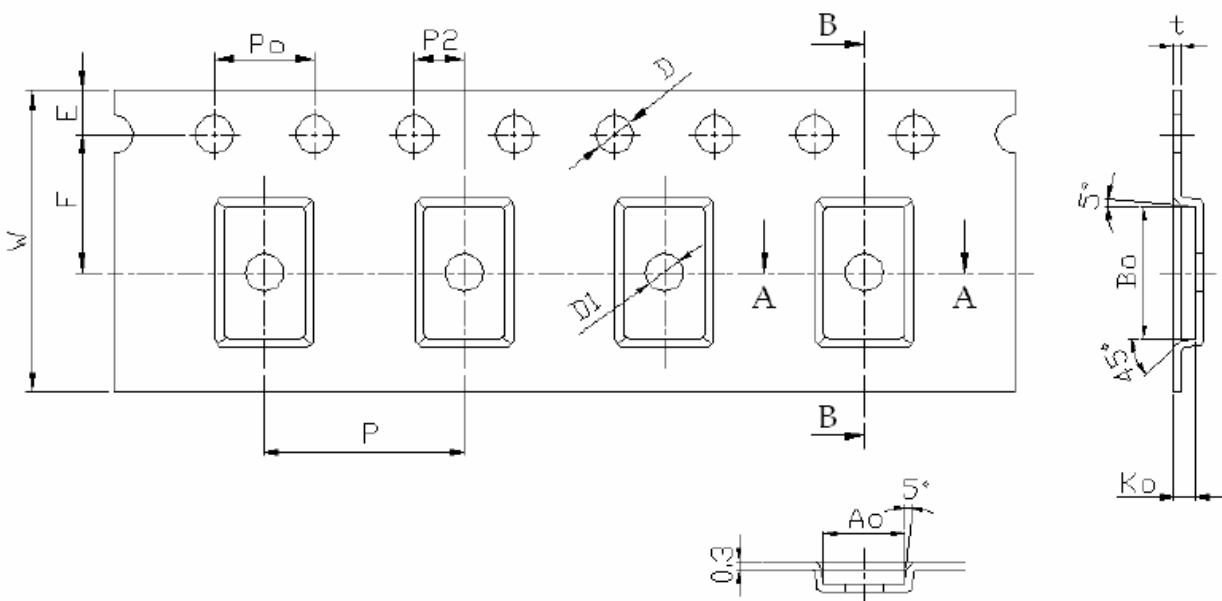
a. Solder Land Pattern:

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.



7.0 Packing

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





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1. Cumulative tolerance of 10 sprocket hole pitch:  $\pm 0.20\text{mm}$
2. Carrier camber not to exceed 1mm in 250mm
3. Ao and Bo measured on a plane 0.3mm above the bottom of the pocket.
4. Ko 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.

**6.1 Tape Dimensions (unit: mm)**

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

**6.2 Pocket Dimensions (unit: mm)**

Feature	Specifications	Tolerances
Ao	1.9	$\pm 0.10$
Bo	3.5	$\pm 0.10$
Ko	0.8	$\pm 0.10$
t	0.3	$\pm 0.05$