



## 2. Features

- \*Stable and reliable in performances
- \*Low temperature coefficient of frequency
- \*Miniature size
- \*RoHS compliance
- \*SMD type

## 3. Applications

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

## 4. Description

Unictron's chip antenna series are specially designed for Bluetooth/WiFi applications. Based on Unictron's proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

## 5. Electrical Specifications (On 100x55 mm Ground Plane)

| Characteristics                     |         | Specifications | Unit |
|-------------------------------------|---------|----------------|------|
| Outline Dimensions                  |         | 5x2.2x1.6      | mm   |
| Ground Plane                        |         | 100x55         | mm   |
| Center Frequency*                   |         | 2450           | MHz  |
| Bandwidth (under -10dB return loss) |         | 100 min.       | MHz  |
| VSWR                                |         | 2 max.         |      |
| Impedance                           |         | 50             | Ω    |
| Polarization                        |         | Linear         |      |
| Gain                                | Peak    | 3.1(typical)   | dBi  |
|                                     | Average | -2.5(typical)  |      |
| Pattern                             |         | Omni           |      |
| Operating Temperature               |         | -40 ~ +85      | °C   |

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

### Tolerances (Unless otherwise specified)

X : ± 1      X.X : ± 0.1      X.XX : ± 0.01

Angle : ±      Hole Dia. : ±



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Website: www.unictron.com

Scale :      Unit : mm

Prepared By : Gilespi      Checked By : Jason

Designed By : Wilson      Approved By : Jaixing

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**TITLE : 5x2.2x1.6 Bluetooth/Wi-Fi Chip Antenna (Standard)**

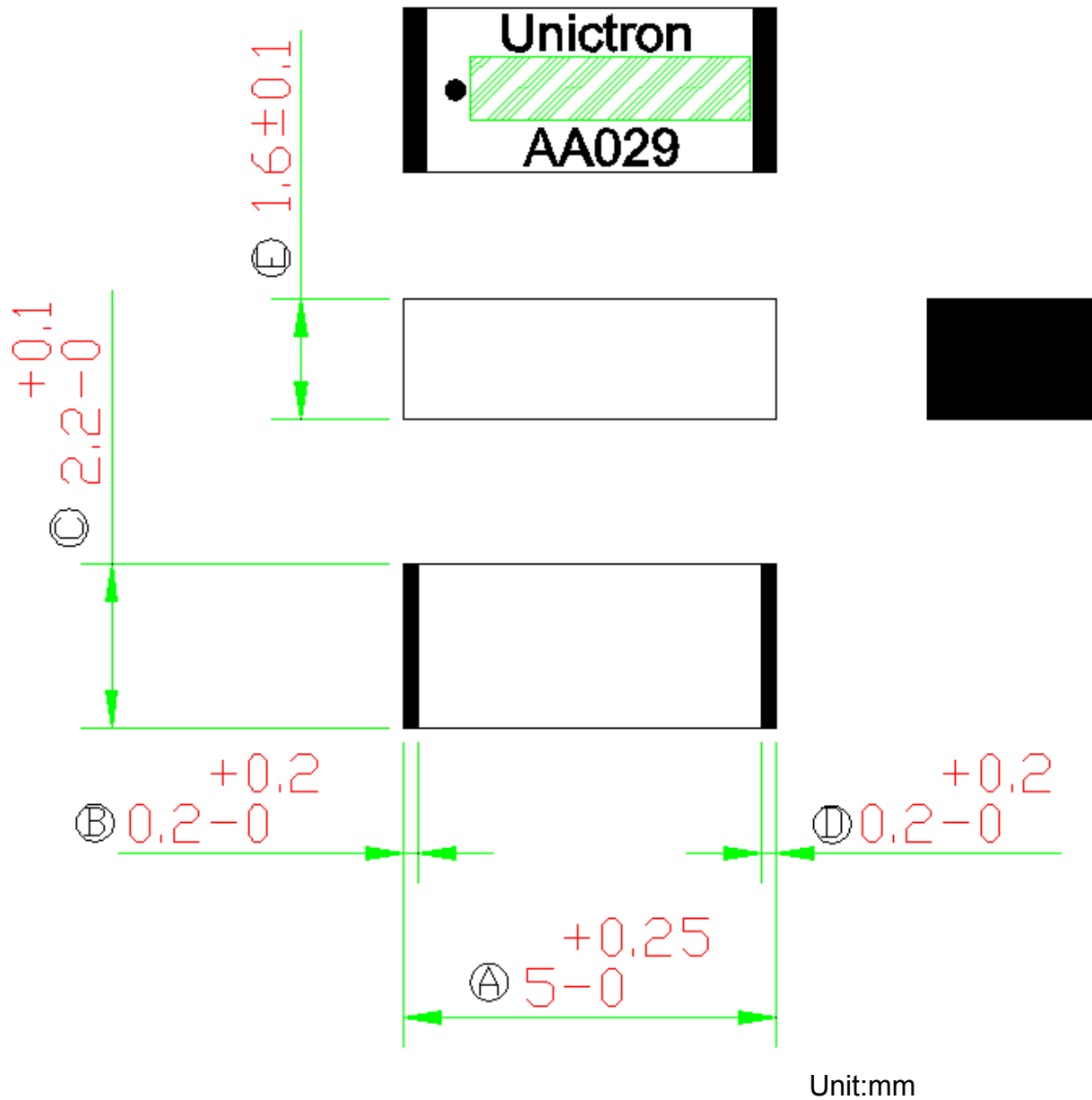
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## 6. Antenna Dimensions & Test Board

### a. Antenna Dimensions



Unit:mm

#### Tolerances (Unless otherwise specified)

X :  $\pm 1$     X.X :  $\pm 0.1$     X.XX :  $\pm 0.01$

Angle :  $\pm$     Hole Dia. :  $\pm$



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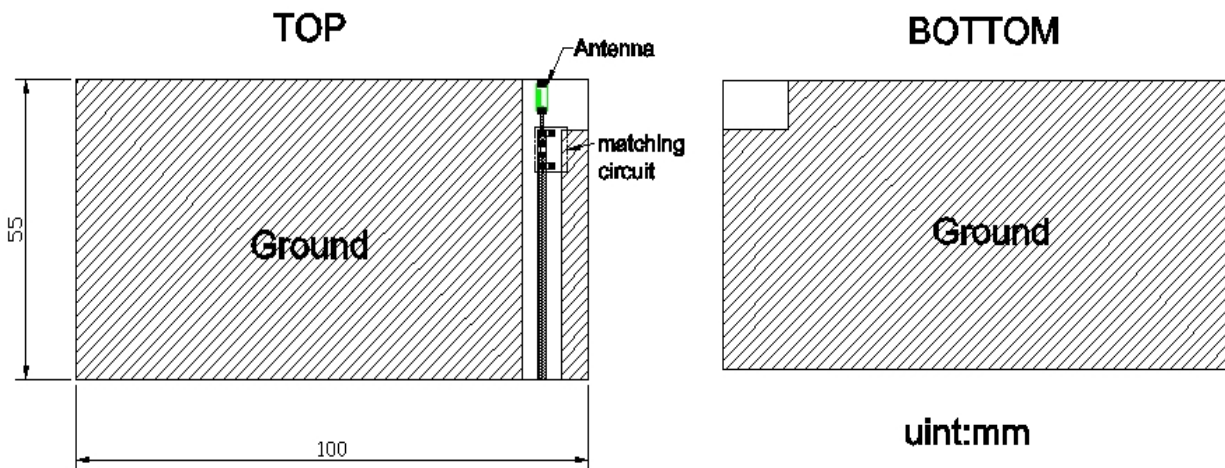
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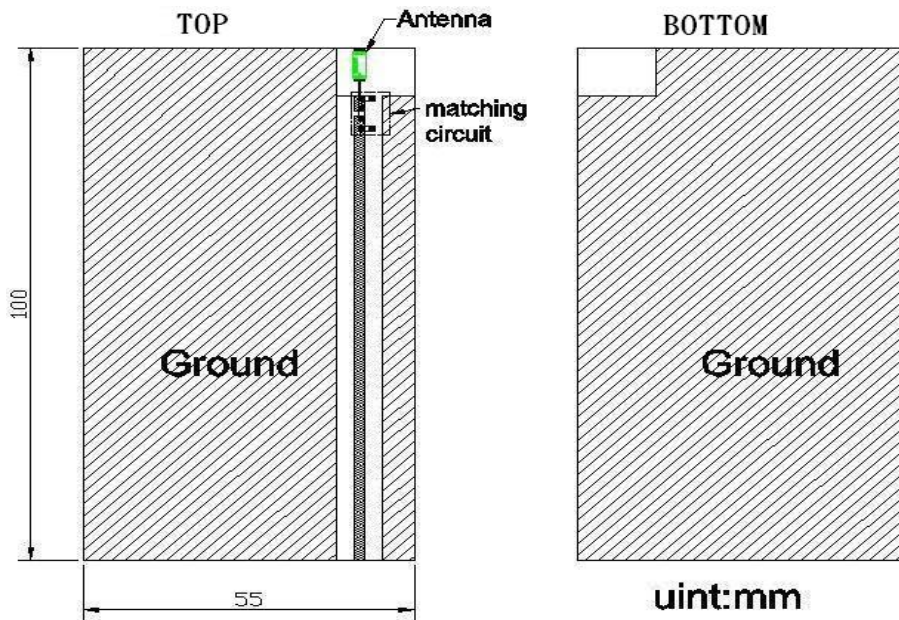
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b. Test Board with Antenna

(a). Type A



(b). Type B



**Tolerances (Unless otherwise specified)**

X : ± 1      X.X : ± 0.1      X.XX : ± 0.01

Angle : ±      Hole Dia. : ±



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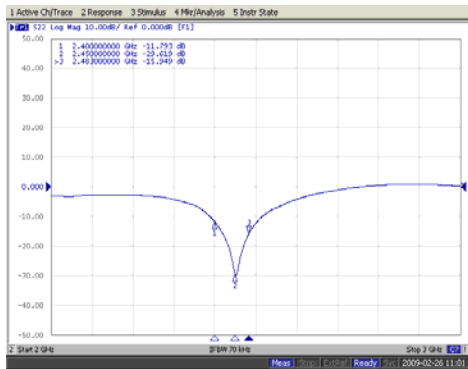
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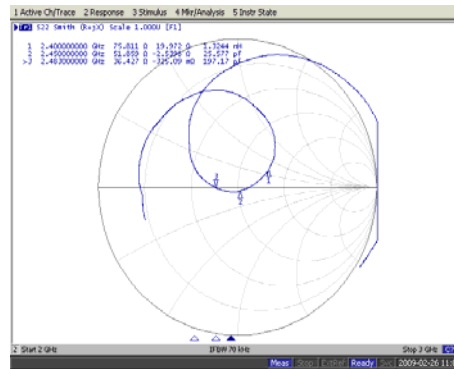
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# 7. Electrical Characteristics (On 100x55 mm ground plane)

## a. Type A

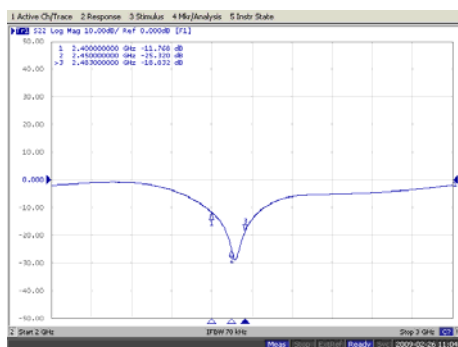


Return Loss( $S_{11}$ )

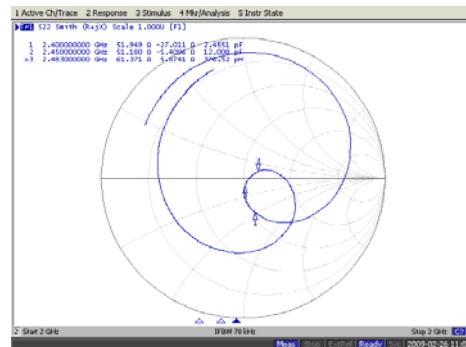


Smith Chart

## b. Type B



Return Loss( $S_{11}$ )



Smith Chart

**Tolerances (Unless otherwise specified)**

X : ± 1      X.X : ± 0.1      X.XX : ± 0.01

Angle : ±      Hole Dia. : ±

Scale :      Unit : mm

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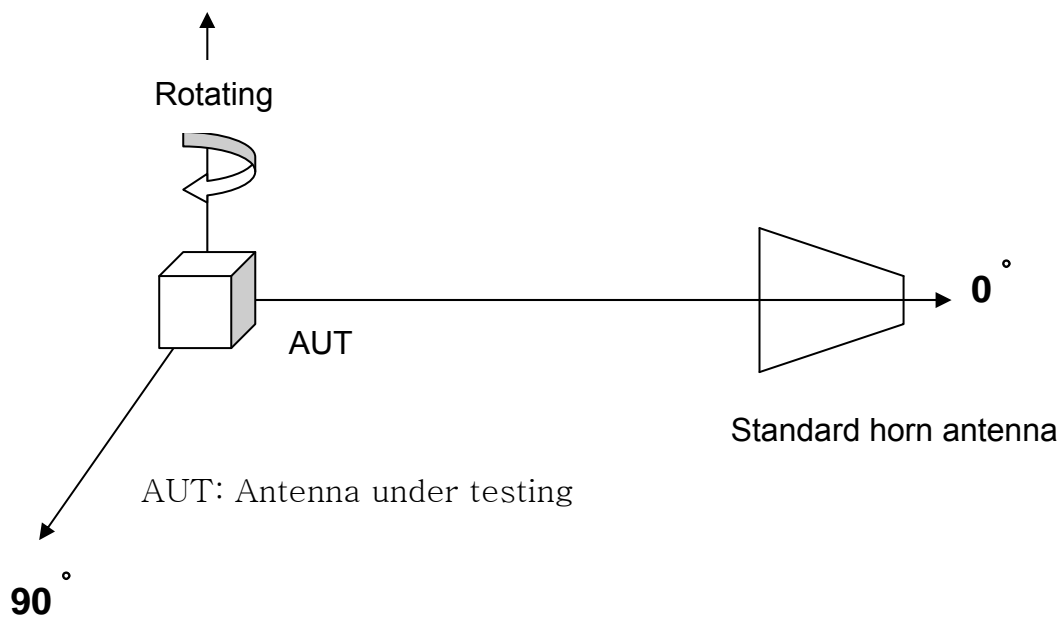
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**DOCUMENT NO.**

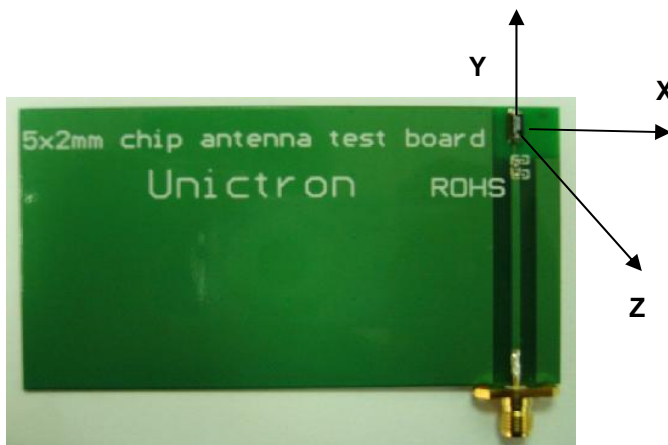
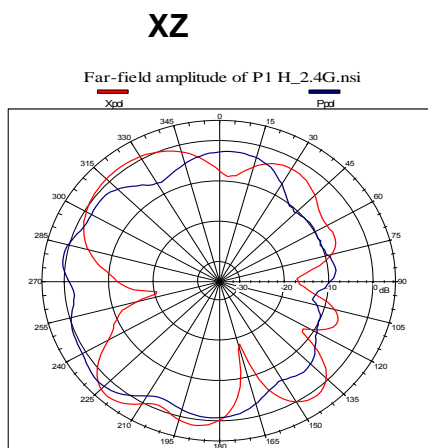
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## 8. Radiation Pattern (On 100x55 mm ground plane)



### a. Type A



(Peak Gain =5.29 dBi, Average Gain -1.1dBi )

#### Tolerances (Unless otherwise specified)

X : ± 1      X.X : ± 0.1      X.XX : ± 0.01

Angle : ±      Hole Dia. : ±

Scale :      Unit : mm

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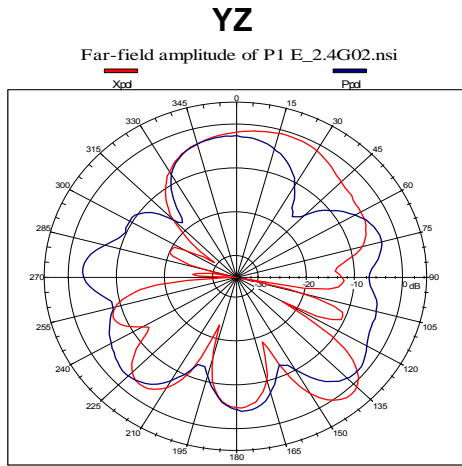
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**DOCUMENT NO.**

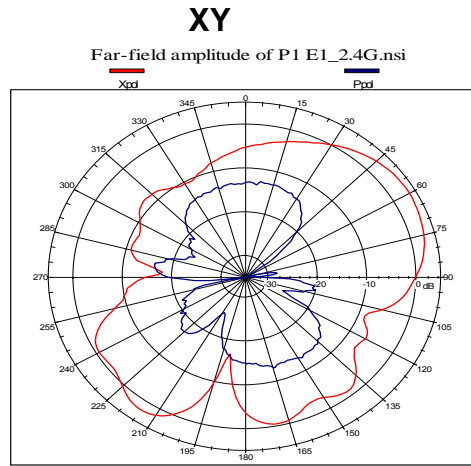
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(Peak Gain =2.29 dBi, Average Gain -3.97dBi )



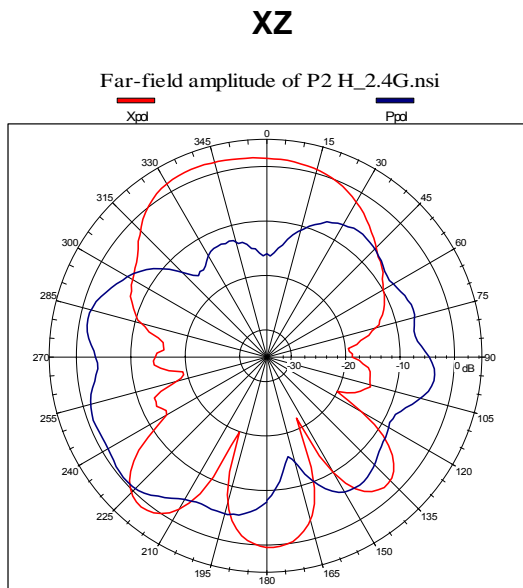
(Peak Gain =3.35 dBi, Average Gain -4.11dBi )

Source signal: Linearly polarized signal  $f_0 = 2450$  MHz

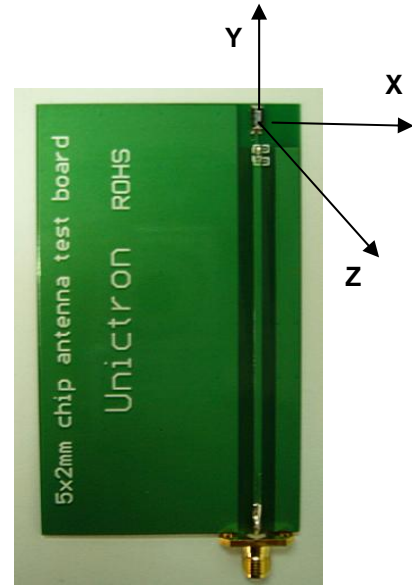
Gain Table: Total power=Xpol +Ppol

| Plane             | XZ   | YZ    | XY    |
|-------------------|------|-------|-------|
| Peak Gain(dBi)    | 5.29 | 2.29  | 3.35  |
| Average Gain(dBi) | -1.1 | -3.97 | -4.11 |

**b. Type B**



(Peak Gain =2.28 dBi, Average Gain -2.16dBi )



**Tolerances (Unless otherwise specified)**

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit : mm

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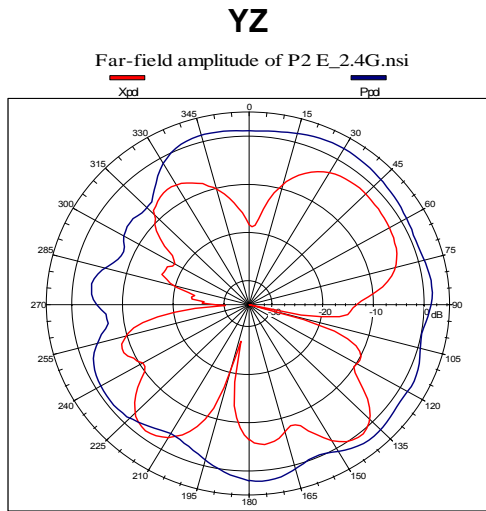
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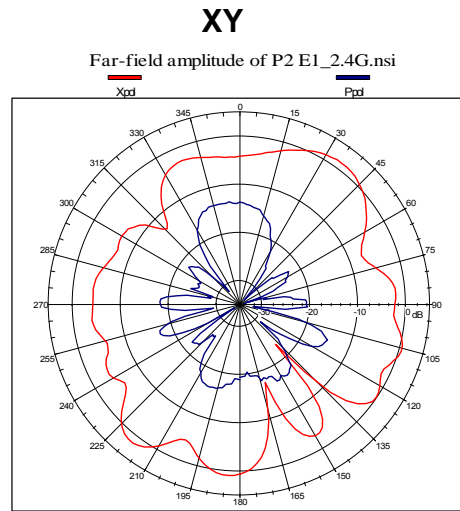
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(Peak Gain =3.98 dBi, Average Gain -0.02dBi )



(Peak Gain =1.42 dBi, Average Gain -3.8dBi )

Source signal: Linearly polarized signal  $f_0 = 2450$  MHz

Gain Table: Total power=Xpol +Ppol

| Plane             | XZ    | YZ    | XY   |
|-------------------|-------|-------|------|
| Peak Gain(dBi)    | 2.28  | 3.98  | 1.42 |
| Average Gain(dBi) | -2.16 | -0.02 | -3.8 |

**Tolerances (Unless otherwise specified)**

X : ± 1      X.X : ± 0.1      X.XX : ± 0.01

Angle : ±      Hole Dia. : ±

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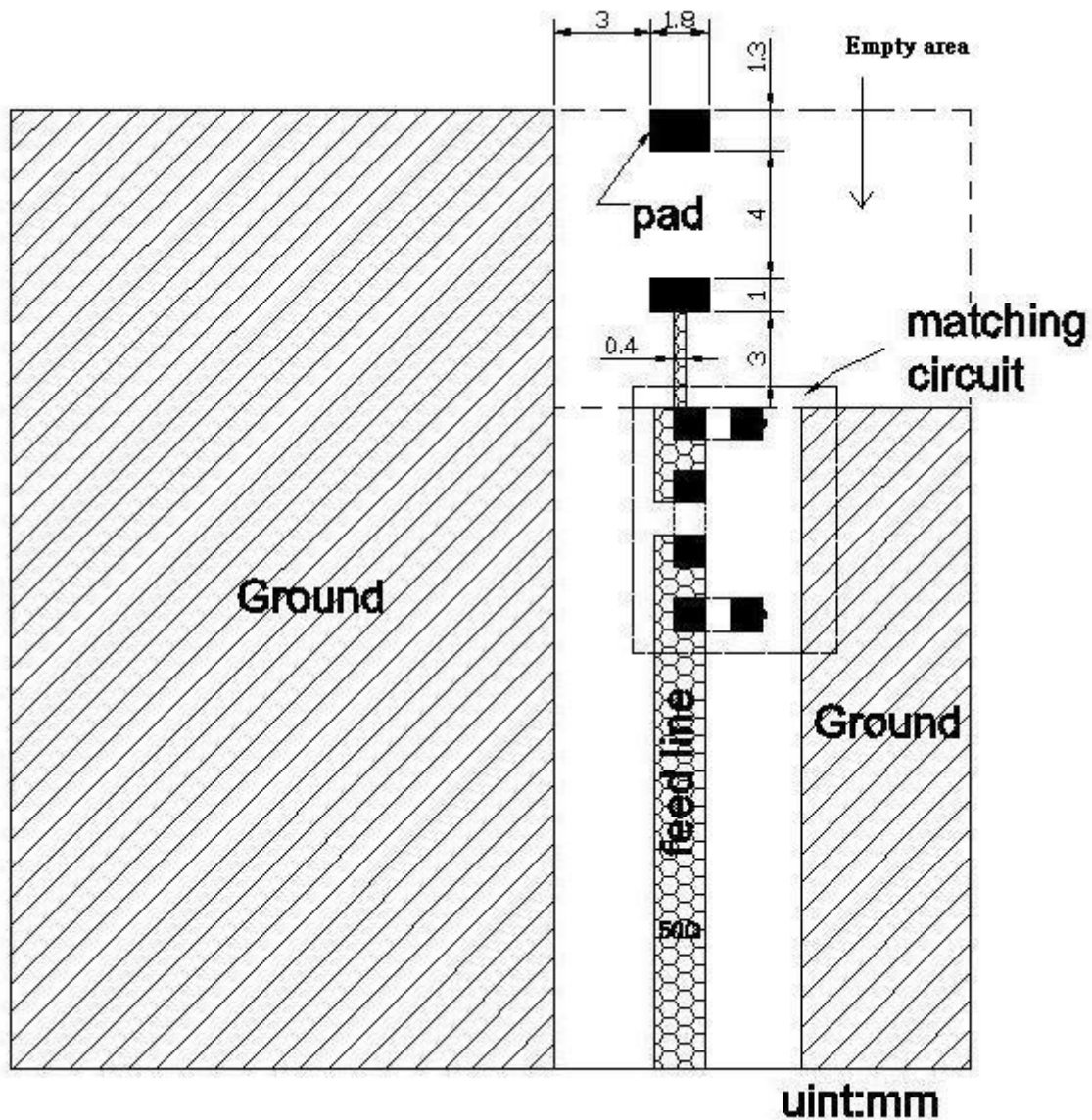
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## 9. Layout Guide:

### 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 .



#### Tolerances (Unless otherwise specified)

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$



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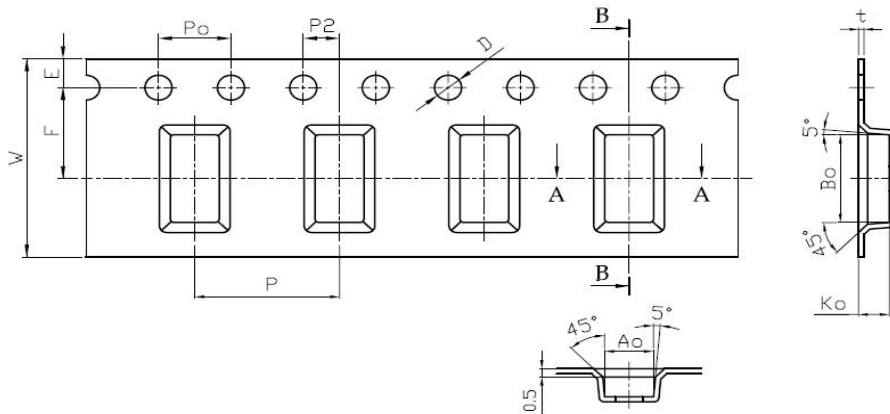
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## 10. Packing:

- (1) Quantity/Reel: 3000pcs/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. 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.

### 2.1 Tape Dimensions(unit: mm)


| Feature | Specifications | Tolerances     |
|---------|----------------|----------------|
| W       | 12.00          | $\pm 0.30$     |
| P       | 8.00           | $\pm 0.10$     |
| E       | 1.75           | $\pm 0.10$     |
| F       | 5.50           | $\pm 0.10$     |
| P2      | 2.00           | $\pm 0.10$     |
| D       | 1.50           | +0.10<br>-0.00 |
| Po      | 4.00           | $\pm 0.10$     |
| 10Po    | 40.00          | $\pm 0.20$     |

### 2.2 Pocket Dimensions(unit: mm)

| Feature | Specifications    | Tolerances |
|---------|-------------------|------------|
| Ao      | 2.70              | $\pm 0.10$ |
| Bo      | 5.30 <sup>g</sup> | $\pm 0.10$ |
| Ko      | 1.70              | $\pm 0.10$ |
| t       | 0.30              | $\pm 0.05$ |

## 11. Storage Conditions:

- (1) Temperature: 5°C to 40°C
- (2) Relative Humidity: 20% to 70%

|  |                       |   |                       |                  |
|--|-----------------------|---|-----------------------|------------------|
| <b>Tolerances (Unless otherwise specified)</b><br>X : $\pm 1$ X.X : $\pm 0.1$ X.XX : $\pm 0.01$<br>Angle : $\pm$ Hole Dia. : $\pm$ |                       |  Unictron Technologies Corporation<br>Website: www.unictron.com         |                       |                  |
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