

3.2 x 1.6 x 0.5 WiFi/Bluetooth Ceramic Chip Antenna (AA055)

1. Explanation of Product Number

<u>H</u>	<u>2</u>	<u>U</u>	<u>3</u>	<u>4</u>	<u>W</u>	<u>G</u>	<u>T</u>	<u>Q</u>	<u>W</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
				(1)	(2)		(3)			(4)			



Product Code:

(1) Product Categories:

4: ceramic substrate chip antenna

(2) Dimensions and Polarization:

WG: 3.2x1.6x0.5(mm) / linear polarization

(3) Material / Working Frequency / Ground Plane Dimensions:

TQW: AS 6 / 2400~2500MHz / 80 x 40(mm)

(4) Antenna Series:

01: serial number



Tolerances (Unless otherwise specified) X : ± 1 X.X : ± 0.1 X.XX : ± 0.01 Angle : $\pm$ Hole Dia. : $\pm$		 Unictron Technologies Corporation Website: www.unictron.com	
Scale :	Unit : mm	THIS SPECIFICATION IS THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION	
Prepared By : Meiping	Checked By : Chinling		
Designed By : Andrew	Approved By : Herbert		
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2. Features

- *Stable and reliable in performances
- *Low temperature coefficient of frequency
- *Low profile, compact size
- *RoHS compliance
- *SMT processes compatible

3. Applications

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

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 (80x40(mm) ground plane)

5-1.

Characteristics		Specifications	Unit
Outline Dimensions		3.2x1.6x0.5	mm
Ground Plane		80x40	mm
Center Frequency*		2442	MHz
Bandwidth (under -10dB return loss)		100 min.	MHz
VSWR		2 max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain**	Peak	2.5 (typical)	dBi
	Efficiency	84 (typical)	%
Temperature Coefficient of Frequency		0 $\pm$ 20 max (@ -40°C ~85°C)	ppm/°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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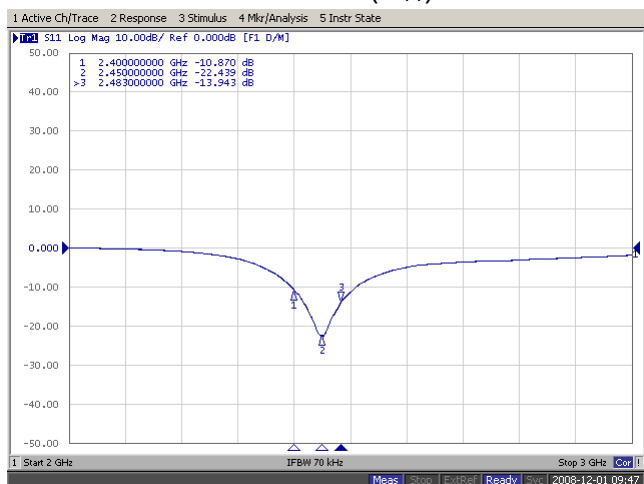
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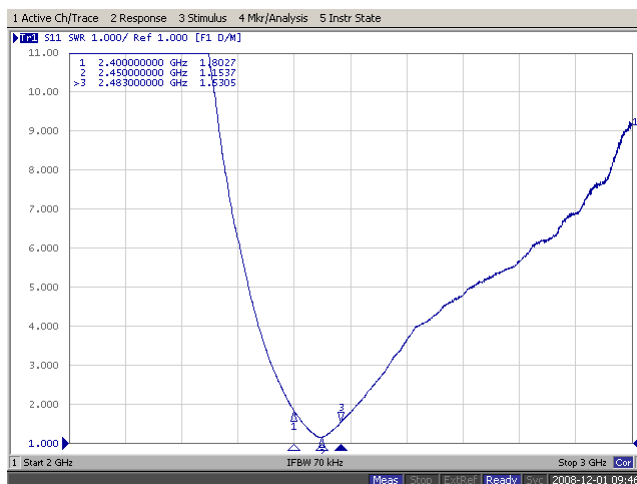
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5-2.

Return Loss(S_{11})

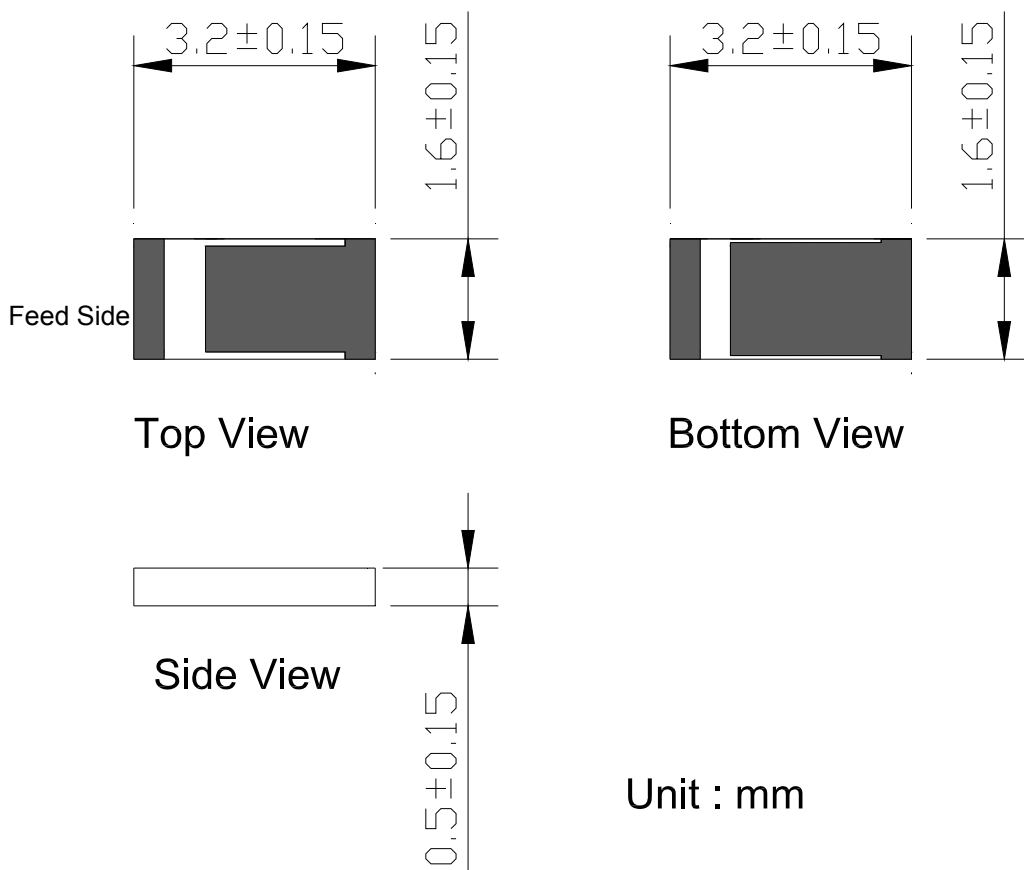


VSWR



6. Antenna Dimensions & Test Board (unit: mm)

a. Antenna Dimensions



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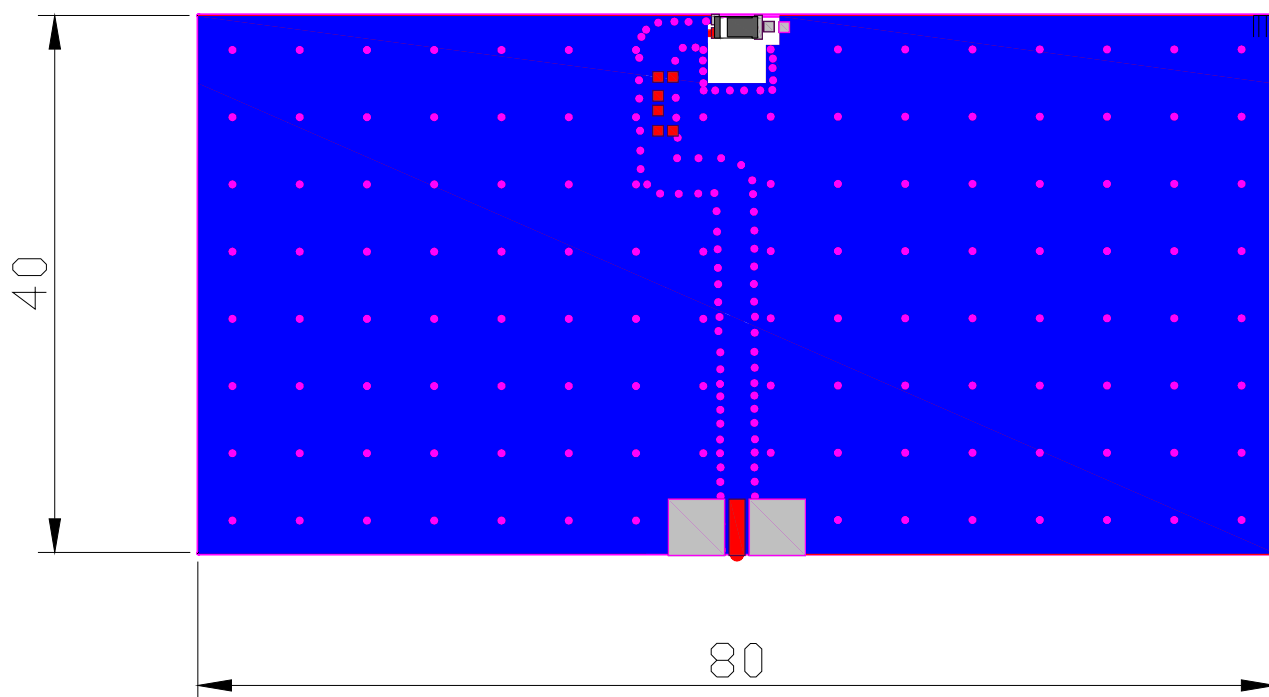
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b. Test Board with Antenna



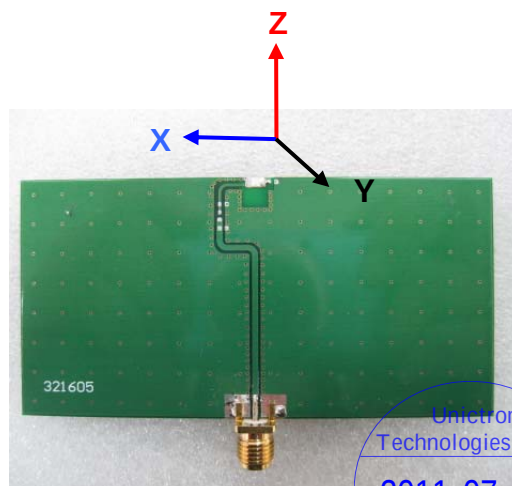
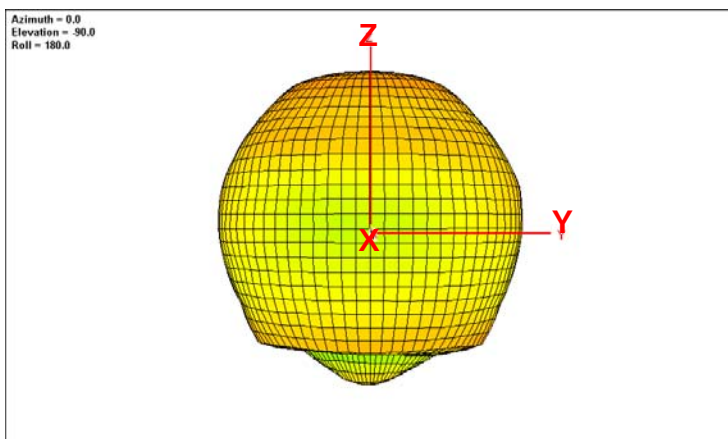
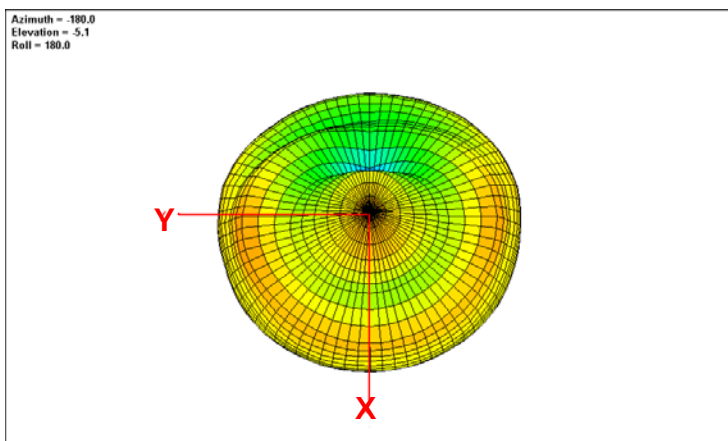
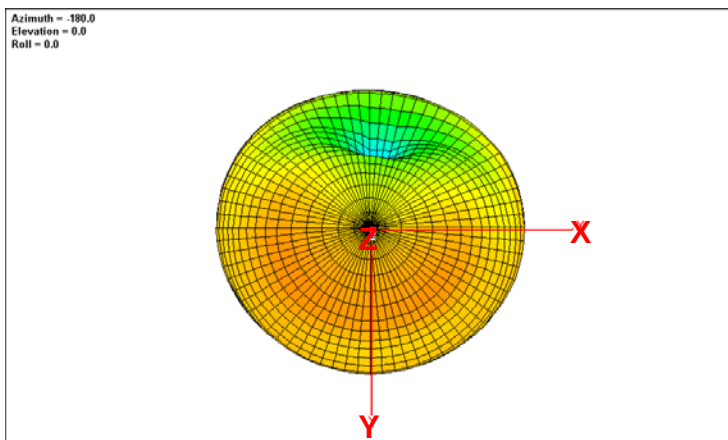
Unit : mm



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7. Radiation Pattern (80x40(mm) ground plane)

7-1. 3D Gain Pattern (at 2442 MHz)



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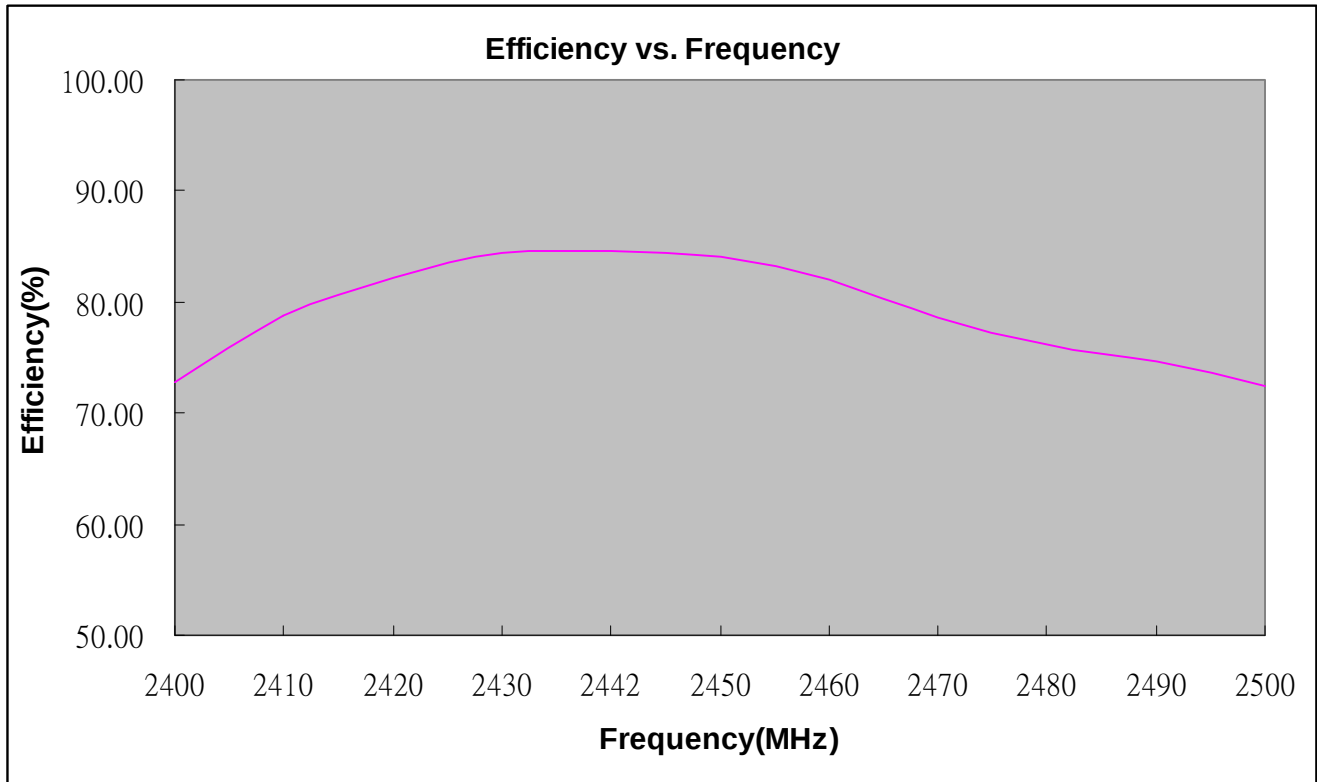
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7-2. Efficiency Table

Frequency(MHz)	2400	2410	2420	2430	2442	2450	2460	2470	2480	2490	2500
Efficiency(dB)	-1.38	-1.04	-0.85	-0.74	-0.73	-0.76	-0.86	-1.05	-1.18	-1.27	-1.40
Efficiency(%)	72.83	78.71	82.27	84.39	84.53	84.04	82.00	78.60	76.14	74.64	72.50
Gain(dBi)	1.47	1.81	2.10	2.40	2.50	2.50	2.37	2.10	1.90	1.87	1.75

7-3. Efficiency vs. Frequency



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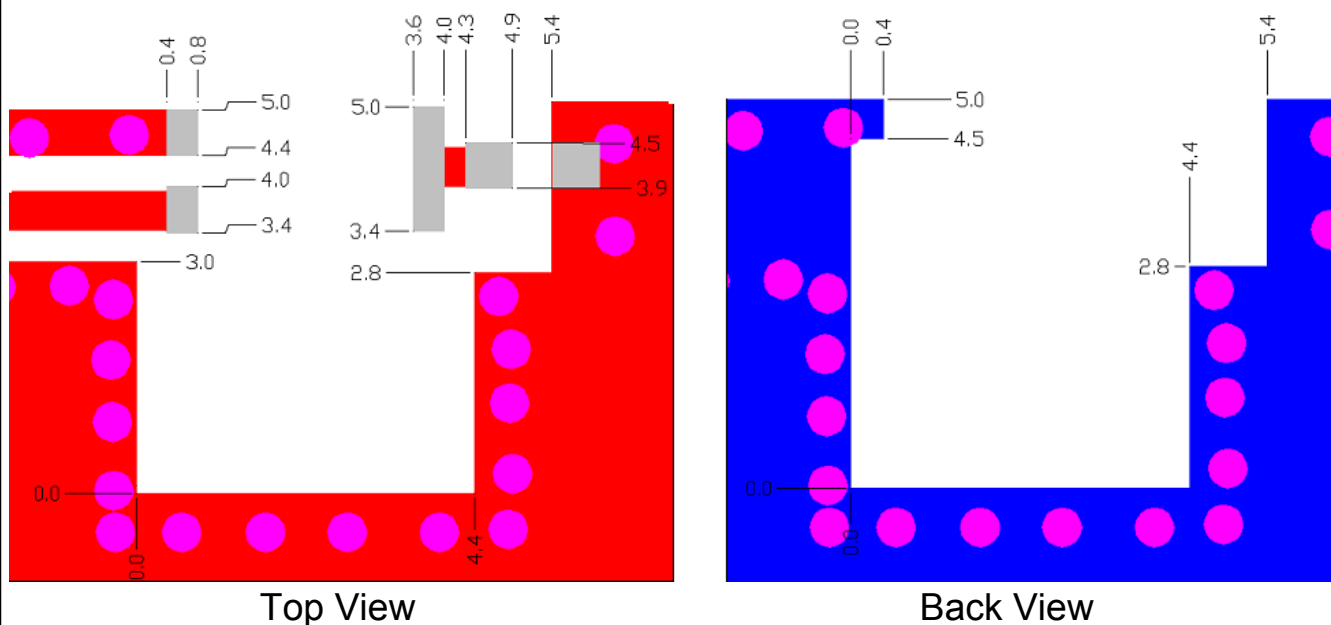
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8. Layout Guide:

a. Solder Land Pattern:

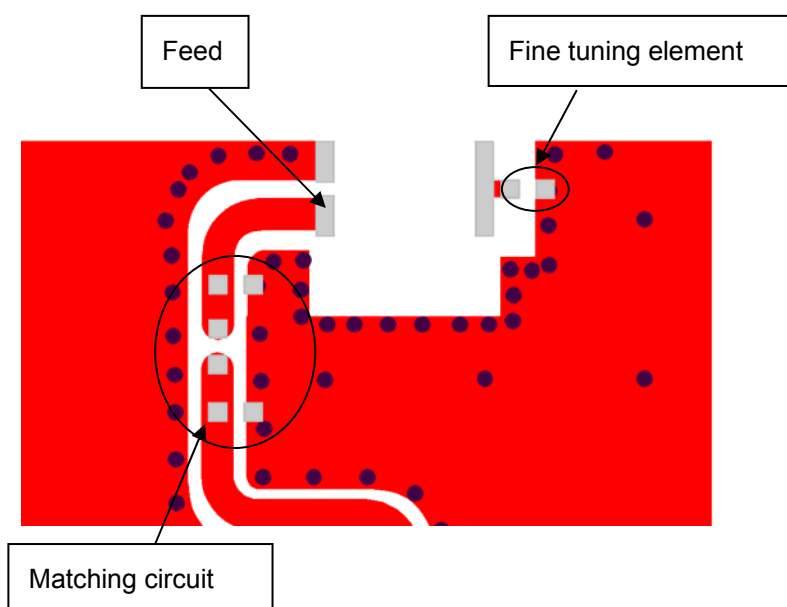
Land pattern for soldering (gray marking areas) is as shown below. Depending on Customer's requirement, matching circuit as shown below is also recommended .



Unit : mm

9. Frequency tuning:

a. Chip antenna tuning scenario :



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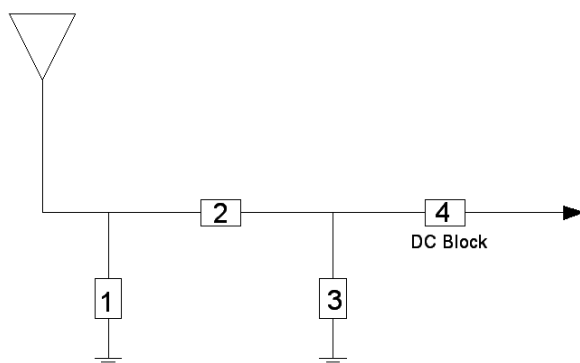
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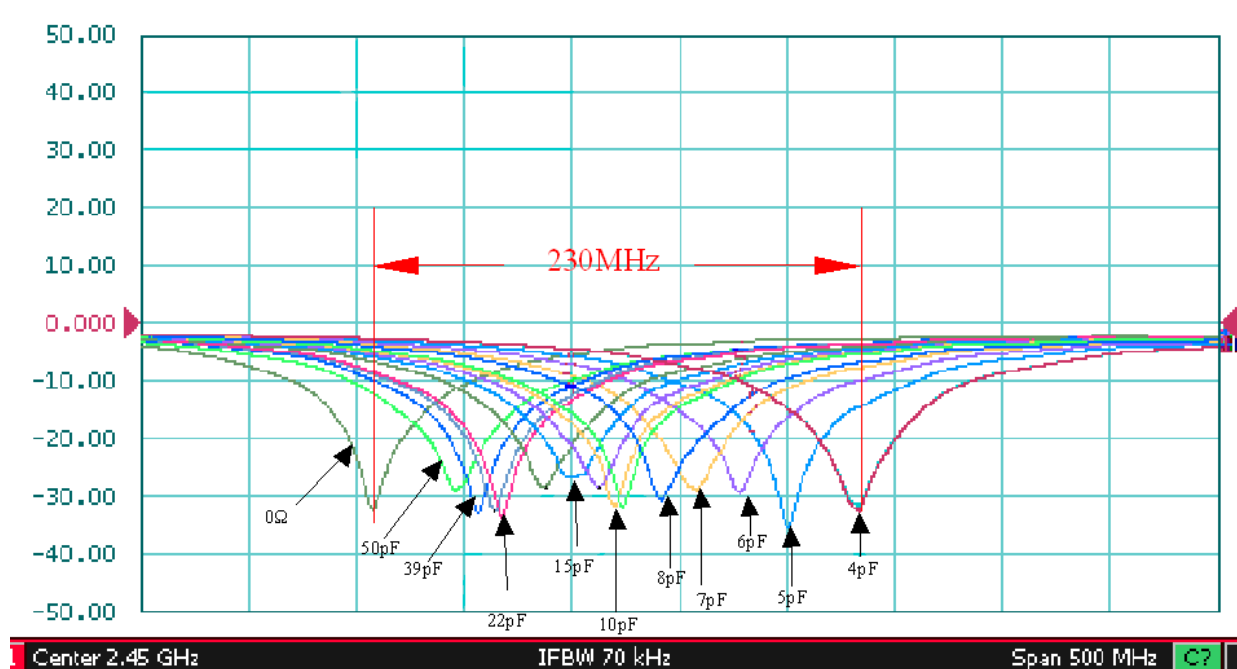
b. Matching circuit : (Center frequency is about 2442MHz at 80x40(mm) ground plane)

Antenna



System Matching Circuit Component		
Location	Description	Vendor
1	N/A	-
2	0Ω	(0402)
3	N/A	-
4	22pF	TDK(0402)
Fine tuning element	8pF	TDK(0402)

c. Fine tuning element vs. Center frequency



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10. Reliability test :

Test item	Test condition / Test method	Specification
Solderability	*Solder bath temperature : $260 \pm 5^{\circ}\text{C}$ *Immersion time : 2 ± 0.5 sec	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
Resistance to dissolution of metallization)	*Solder bath temperature : $260 \pm 5^{\circ}\text{C}$ *Leaching immersion time : 30 ± 0.5 sec	Loss of metallization on the edges of each electrode shall not exceed 25%.
Drop Test	*1.8m drop on concrete with 150g weight *XYZ each 30 times	No mechanical damage. Samples shall satisfy electrical specification after test.
Bending test	Warp:2mm	No mechanical damage. Samples shall satisfy electrical specification after test.
Temperature cycle	$-55^{\circ}\text{C}/30\text{min} \sim 125^{\circ}\text{C}/30\text{min}$ Total 1000 cycles	No mechanical damage. Samples shall satisfy electrical specification after test
High temperature	*Temperature : 125°C *Test duration : 1000 hours	No mechanical damage. Samples shall satisfy electrical specification after test.
Low temperature	*Temperature : -55°C *Test duration : 1000 hours	No mechanical damage. Samples shall satisfy electrical specification after test.
Adhesive Strength of Termination	*Pressure:5N *Duration : 10 ± 1 sec	No remarkable damage or removal of the termination.
Vibration	*Applied Frequency : 10-55-10Hz(1min) *1.5 p-p amplitude for XYZ each direction of 120min	No mechanical damage. Samples shall satisfy electrical specification after test
Damp heat	*Humidity:85% *Temperature:85°C *Time : 1000 hours	No mechanical damage. Samples shall satisfy electrical specification after test



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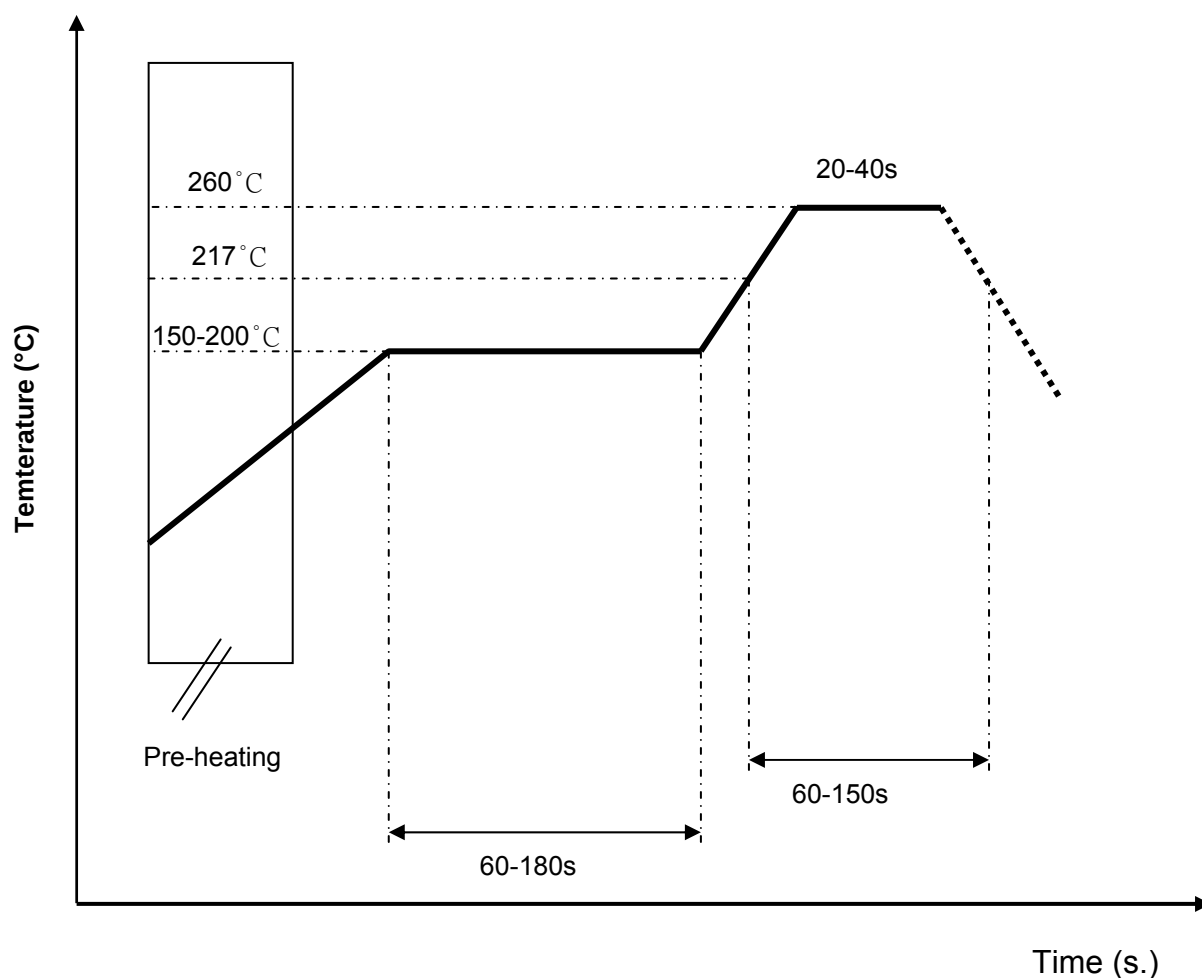
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11. Soldering Conditions:

a. Typical Soldering Profile for Lead-free Process



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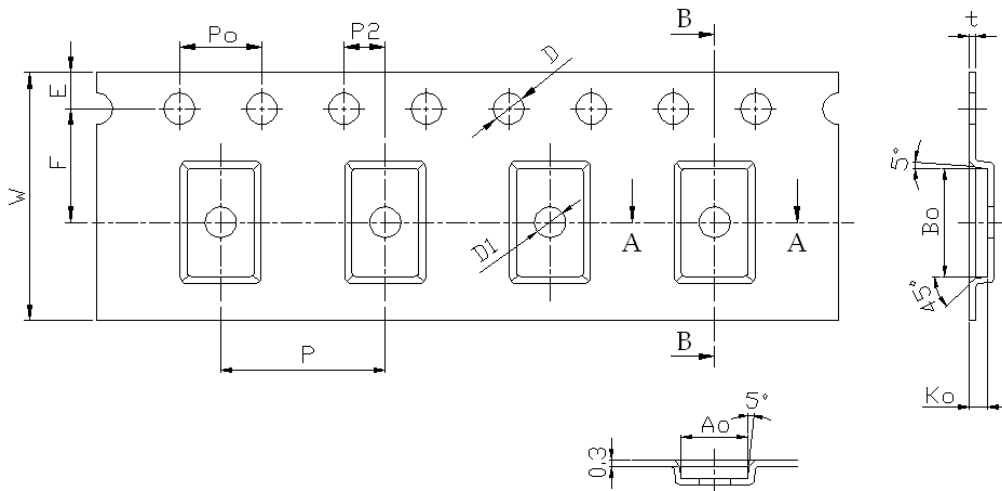
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12. Packing:

- (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. Ao and Bo measured on a plane above the inside 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	± 0.30
P	8.00	± 0.10
E	1.75	± 0.10
F	5.50	± 0.10
P2	2.00	± 0.10
D	1.50	+0.10 -0.00
Po	4.00	± 0.10
10Po	40.00	± 0.20

2.2 Pocket Dimensions(unit: mm)

Feature	Specifications	Tolerances
Ao	1.90	+0.20
Bo	3.50	-0.10
Ko	0.60	± 0.10
t	0.30	± 0.05

13. Storage Conditions:

- (1) Temperature: -25°C to 85°C
- (2) Relative Humidity: 20% to 70%



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