

3.2 x 1.6 x 0.5(mm) WiFi/Bluetooth Ceramic Chip Antenna (YF300K) Engineering Specification

1. Product Number

YF	3216	F8	R	2G4502
1	2	3	4	5



(1)Product Type	Chip Antenna
(2)Size Code	3.6x1.2x0.5mm
(3)Type Code	F8
(4)Packing	Paper bag packaging
(5)Frequency	2.45GHz

2. Features

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



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Prepared by : **harry** Designed by : **andy** Checked by : **andy** Approved by : **oliver**

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3. Applications

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

4. Description

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

5. Electrical Specifications (40 x 40 mm² ground plane)

5-1. Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		3.2x1.6x0.5	mm
Working Frequency		2400~2500	MHz
VSWR		2 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	5.29 (typical)	dBi
	Efficiency	73 (typical)	%



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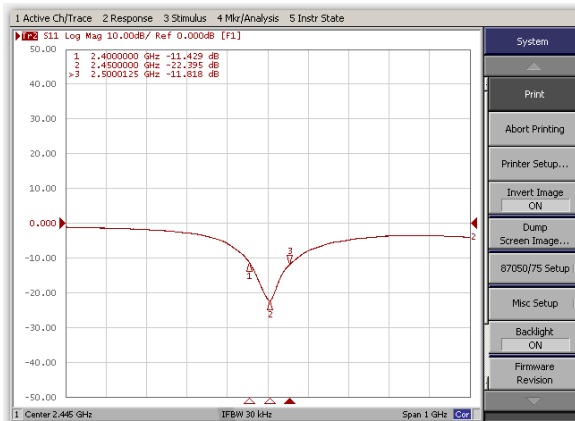
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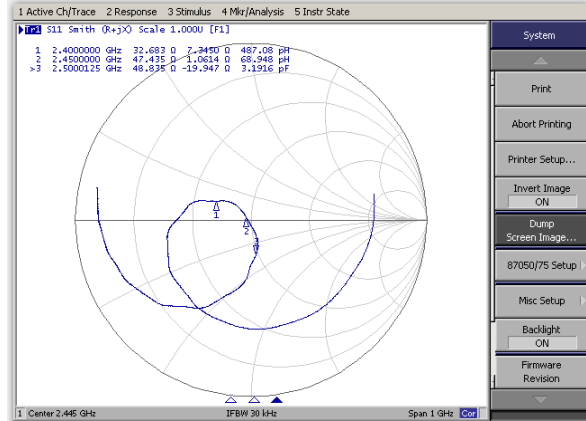
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5-2. Return Loss & VSWR

Return Loss (S₁₁)



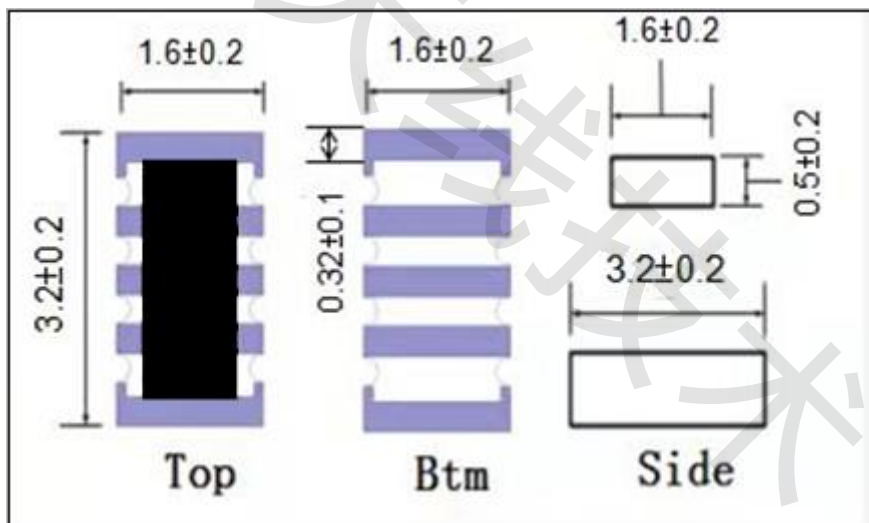
Smith Chart(S₁₁)



6 Outline Dimensions of Antenna & Evaluation Board (unit: mm)

6-1. Antenna Dimensions

Configuration and Dimensions:



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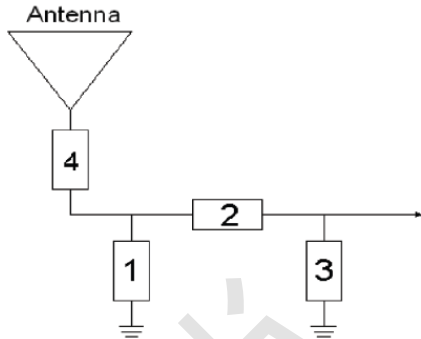
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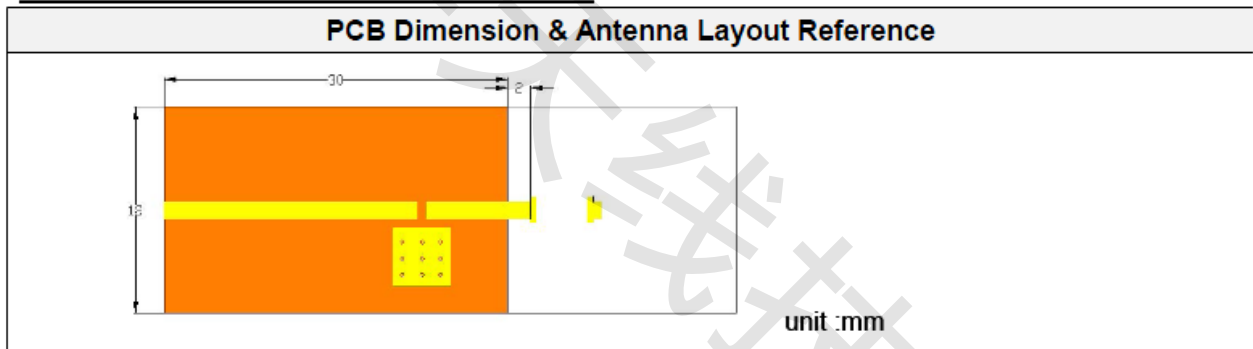
6-2-2. Matching Circuit:

With the following recommended values of matching and tuning components, the center frequencies will be about 2450 MHz at our standard 40x40 mm² evaluation board. However, these are reference values, may need to be changed when the circuit boards or part vendors are different.



System Matching Circuit Component		
Location	Description	Vendor
1	N/A*	-
2	3.3nH, (0402)	DARFON
3	1.5pF, (0402)	MURATA
4	0Ω, (0402)	-

Evaluation Board Reference



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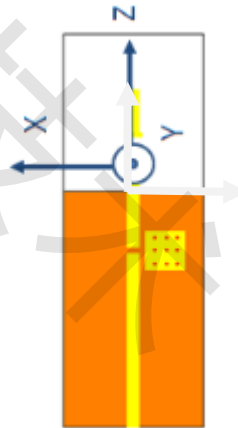
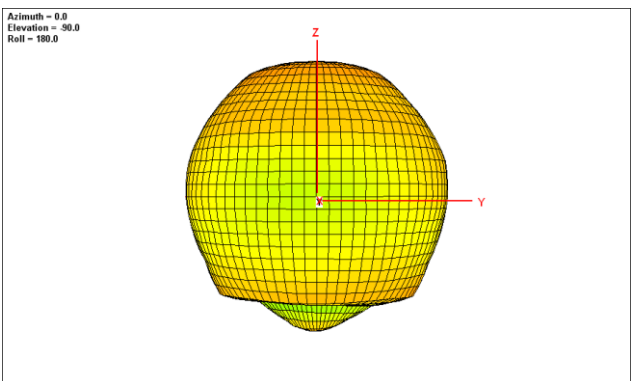
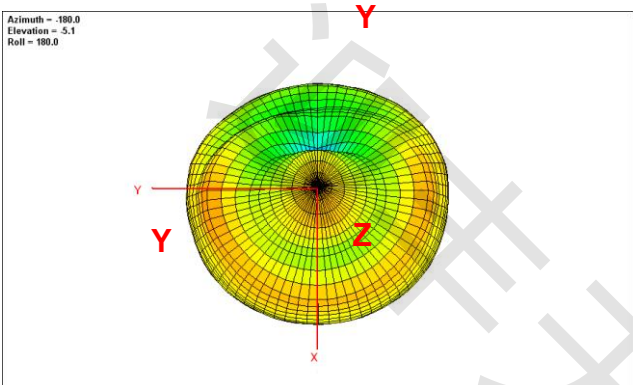
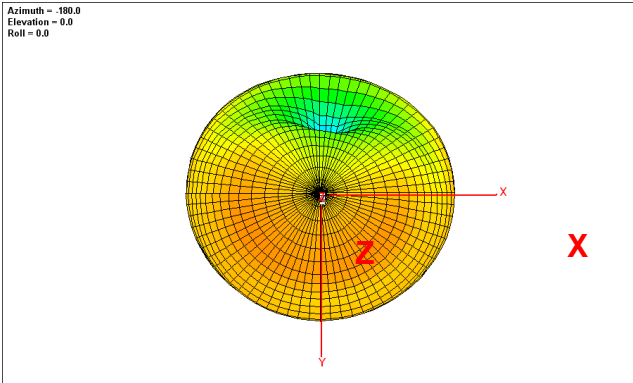
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7.Radiation Pattern (40x 40 mm² ground plane)

7-1. 3D Gain Pattern @ 2450 MHz



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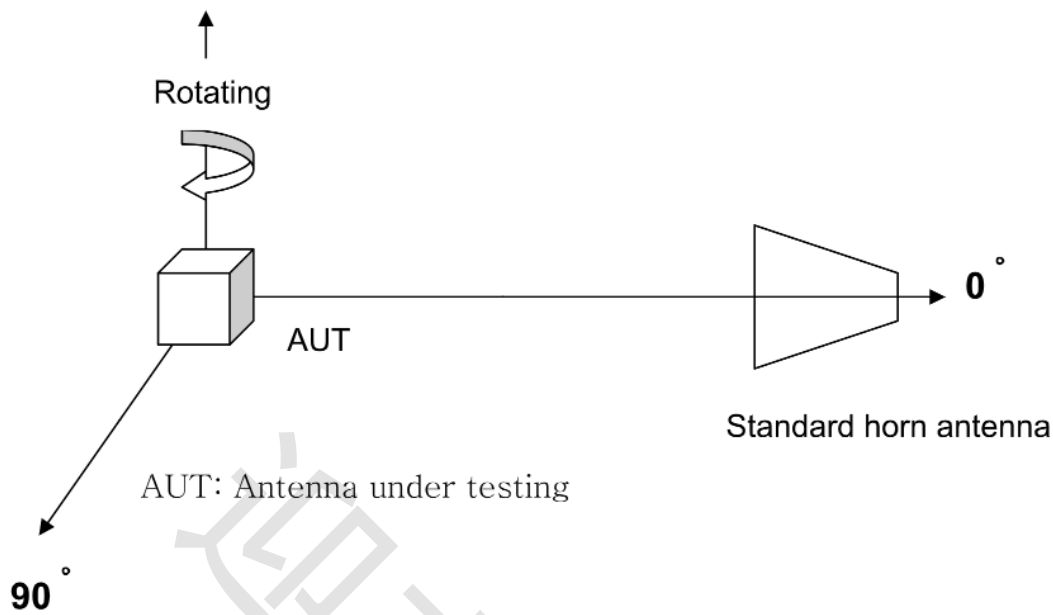
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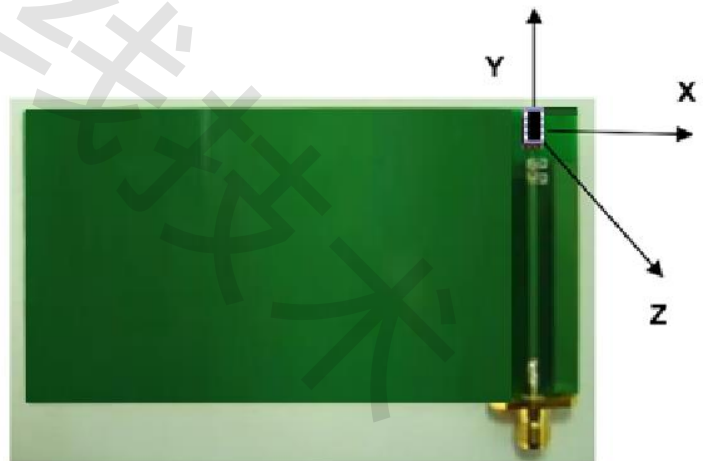
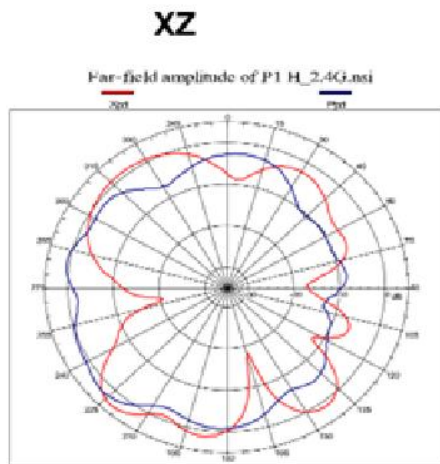
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8. Radiation Pattern (On 100x55 mm ground plane)



a. Type A

a. Type A



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



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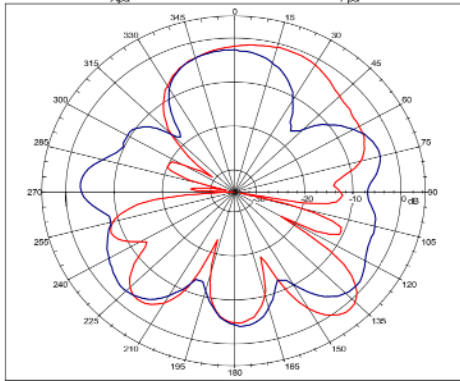
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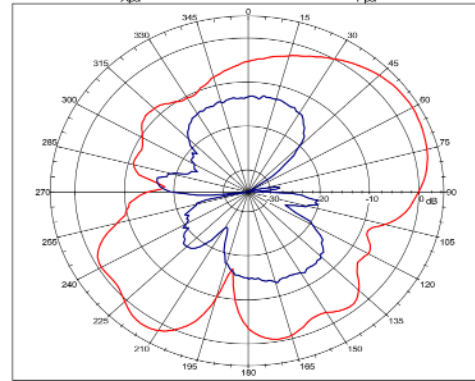
Far-field amplitude of P1 E_2.4G02.nsi



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

XY

Far-field amplitude of P1 E1_2.4G.nsi



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

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

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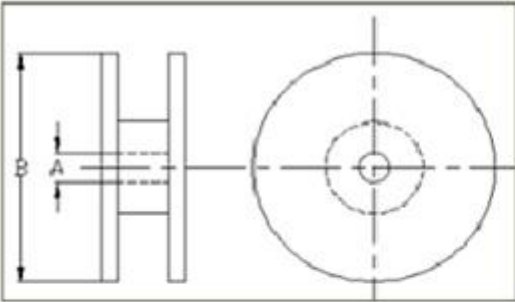
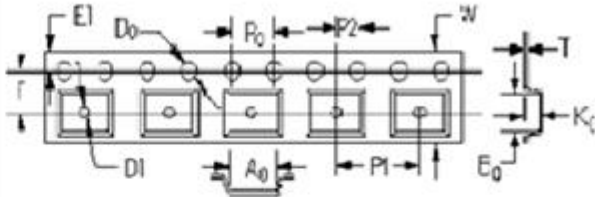
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Taping Specifications

Reel			Taping Blister Tape		
					
Checking note	Index	Spec (mm)	Checking note	Index	Spec (mm)
Internal diameter of reel	A	60.20 ± 0.50	Sprocket hole	D0	1.50 +0.10/-0.00
External diameter of reel	B	178 ± 1.00	Distance sprocket hole to outside	E1	1.75 ± 0.10
			Distance sprocket hole to pocket	F	5.50 ± 0.05
			Distance sprocket hole to sprocket hole	P0	4.00 ± 0.10
			Distance pocket to pocket	P1	4.00 ± 0.10
			Distance sprocket hole to pocket	P2	2.00 ± 0.05
			Tape width	W	12.00 +0.30/-0.10
			Pocket width nominal clearance	A0	2.28 ± 0.13
			Pocket length nominal clearance	B0	5.70 ± 0.13
			Pocket depth minimum clearance	K0	1.58 ± 0.10
			Thickness of tape	T	0.23 ± 0.02
Quantity/per reel	5000 pcs				
Tape material	Plastic (embossed)				



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Reliability Table

Test Item	Procedure	Requirements Ceramic Type	Remark (Reference)
Electrical Characterization		Fulfill the electrical specification	User Spec.
Thermal Shock	1. Preconditioning: $50 \pm 10^{\circ}\text{C}$ / 1 hr, then keep for 24 ± 1 hrs at room temp. 2. Initial measure: Spec: refer Initial spec. 3. Rapid change of temperature test: -30°C to $+85^{\circ}\text{C}$; 100 cycles; 15 minutes at Lower category temperature; 15 minutes at Upper category temperature.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 107
Temperature Cycling	1. Initial measure: Spec: refer Initial spec. 2. 100 Cycles (-30°C to $+85^{\circ}\text{C}$), Soak Mode=1 (2 Cycle/hours). 3. Measurement at 24 ± 2 Hours after test condition.	No Visible Damage. Fulfill the electrical specification.	JESD22 JA104
High Temperature Exposure	1. Initial measure: Spec: refer Initial spec. 2. Unpowered; 500hours @ $T=+85^{\circ}\text{C}$. 3. Measurement at 24 ± 2 hours after test.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 108
Low Temperature Storage	1. Initial measure: Spec: refer Initial spec. 2. Unpowered: 500hours @ $T= -30^{\circ}\text{C}$. 3. Measurement at 24 ± 2 hours after test.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 108
Solderability (SMD Bottom Side)	Dipping method: a. Temperature: $235 \pm 5^{\circ}\text{C}$ b. Dipping time: $3 \pm 0.5\text{s}$	The solder should cover over 95% of the critical area of bottom side.	IEC 60384-21/22 4.10
Soldering Heat Resistance (RSH)	Preheating temperature: $150 \pm 10^{\circ}\text{C}$. Preheating time: 1~2 min. Solder temperature: $260 \pm 5^{\circ}\text{C}$. Dipping time: $5 \pm 0.5\text{s}$	No Visible Damage.	IEC 60384-21/22 4.10
Vibration	5g's for 20 min., 12 cycles each of 3 orientations Note: Use 8"X5" PCB .031" thick 7 secure points on, one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz	No Visible Damage.	MIL-STD-202 Method 204
Mechanical Shock	Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks) Peak value: 1,500g's Duration: 0.5ms Velocity change: 15.4 ft/s Waveform: Half-sine	No Visible Damage.	MIL-STD-202 Method 213
Humidity Bias	1. Humidity: 85% R.H., Temperature: $85 \pm 2^{\circ}\text{C}$. 2. Time: 500 \pm 24 hours. 3. Measurement at 24 ± 2 hrs after test condition.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 Method 106



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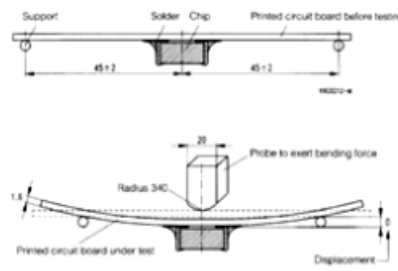
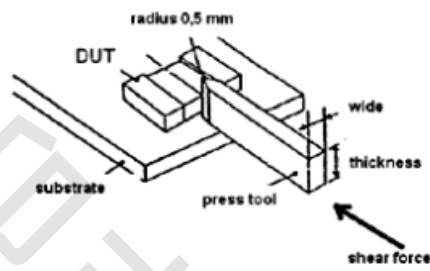
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Board Flex (SMD)	<p>1. Mounting method: IR-Reflow. PCB Size (L:100 × W:40 × T:1.6mm)</p> <p>2. Apply the load in direction of the arrow until bending reaches 2 mm.</p> 	No Visible Damage.	AEC-Q200 005
Adhesion	<p>Force of 1.8Kg for 60 seconds.</p> 	No Visible Damage Magnification of 20X or greater may be employed for inspection of the mechanical integrity of the device body terminals and body/terminal junction.	AEC-Q200 006
Physical Dimension	<p>Any applicable method using x10 magnification, micrometers, calipers, gauges, contour projectors, or other measuring equipment, capable of determining the actual specimen dimensions.</p>	In accordance with specification.	JESD22 JB100



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