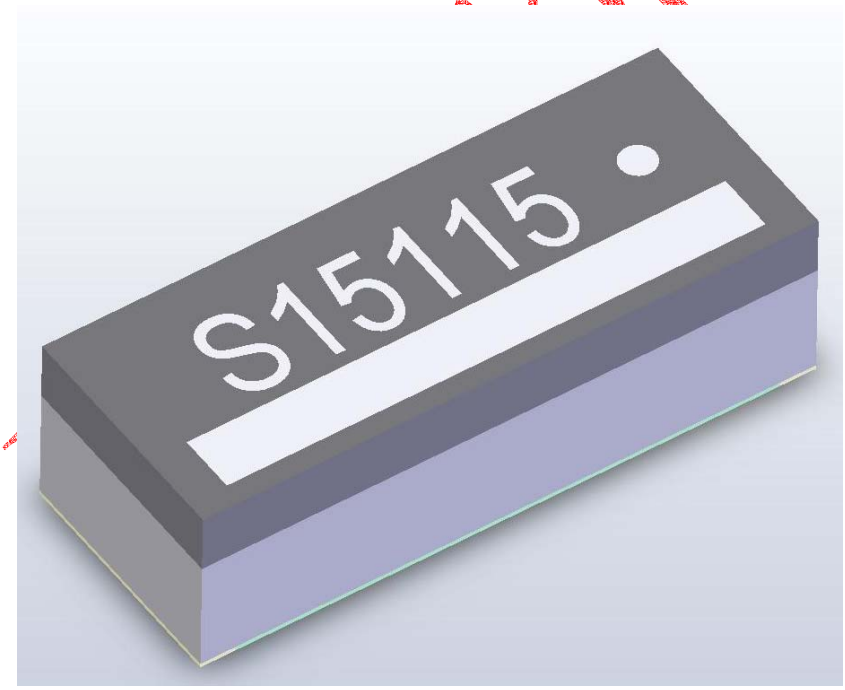
ISM Band Planar Chip Antenna
Bluetooth, WLAN IEEE802.11b/g
2.4GHz ISM Band
<Patent Protection>

Approval Sheet

2.4 GHz ISM Band Chip Antenna



920D07E15XXX013

Ver. 1.03

2006/06/07

CHANT SINCERE CO.,LTD.

DESCRIPTIONS

The exciting **920D07E15XXX013** is one of the world's high-performance 2.4GHz small chip antennas. It is for all 2.4GHz applications, including Bluetooth, IEEE802.11b/g, home RF, ZigBee and other popular and emerging standards. This chip antenna comprises a radiating structure of multiple meandered conducting strips, which are developed on a tiny piece of Printed Circuit Board (PCB) and packed with a Liquid Crystal Polymer (LCP) dielectric composite material to achieve size, performance characteristics and cost effectiveness superior to other designs. The incredibly compact surface mountable package measures a merely 5.2mm (L) × 2.0mm (W) × 1.5mm (H) in dimensions and is fully compatible with handmade and reflow attachment processes. The antenna's favorable electrical specifications, stability and cost-effectiveness make it the logical choice for a wide variety of applications in the 2.4GHz ISM band.

FEATURES

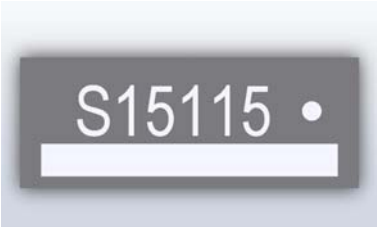
- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size **(5.2×2.0×1.5 mm^3)**
- Omni-Directional Antenna Patterns
- Low Loss **(Average Gain = 0 dBi)**
- 50Ω Characteristic Impedance
- Impedance-Matching Free
- Wide Bandwidth
- Favorable Linear Polarization
- Fully Manual and Surface Mount Compatible
- Incredibly Compact SMD Package
- Highly Stable with Variations in Temperature and Humidity
- LCP Insert Molding Technology
- Cost-Effective

APPLICATIONS

- Bluetooth
- IEEE802.11b/g
- Wireless PCMCIA Cards
- Telemetry
- Data Collection
- Industrial Process Monitoring
- Compact Wireless Products
- External Antenna Elimination
- ZigBee

SPECIFICATIONS

- **920D07E15XXX013**



KEY FEATURES:

- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size ($5.2\times2.0\times1.5mm^3$)
- Impedance-Matching Free
- SMD Type
- Cost-Effective

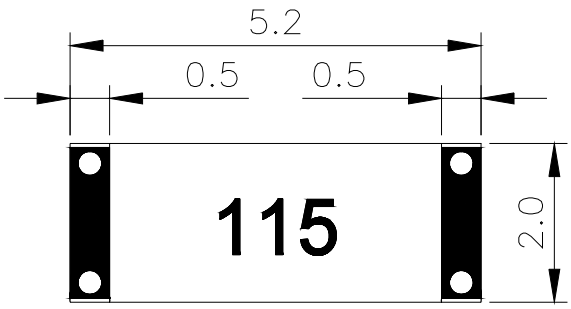
MAIN APPLICATIONS:

- Wireless communications in 2.4GHz ISM Band

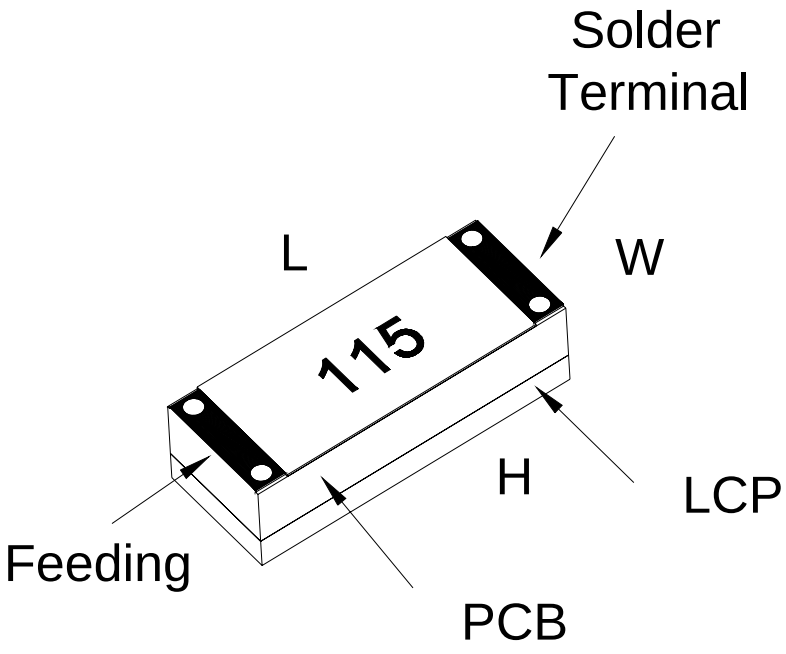
	Single-Band Planar Chip Antenna
Dimension (mm^3)	5.2×2.0×1.5
Central Frequency (GHz)	2.45
Bandwidth (MHz)	>100
Gain (dBi) (Typical)	2
VSWR	2.0 (max.)
Return Loss (dB)	-10 (max.)
Polarization	Linear
Pattern	Omni-Directional
Impedance (Ω)	50
Operating Temperature (℃)	-25 ~ +85
Construction	LCP Insert Molding

CHARACTERISTICS

Pad Layout (unit: mm)



Construction



Antenna size: 5.2mm (L) × 2.0mm (W) × 1.5mm (H)

Land Pattern (unit: mm)

For best results, the chip antenna 920D07E15XXX013 should be mounted on one corner of 0.8mm thick FR4 PCB with 5.2×9.0mm^2 empty area and 50 Ω microstrip-line input.

For another condition, the chip antenna 920D07E15XXX013 also could be mounted on one corner of 0.8 mm thick FR4 PCB with 5.2×5 mm^2 empty area and 50Ω microstrip-line input but it must be utilized series winding 1pF capacitor as matching circuit component in order to improve the return loss of chip antenna at 2.45 GHz central frequency. Consequently, we can use the method of Pi circuit to tune central frequency of chip antenna. As regard, it can achieve excellent performance and desire different customer demands.

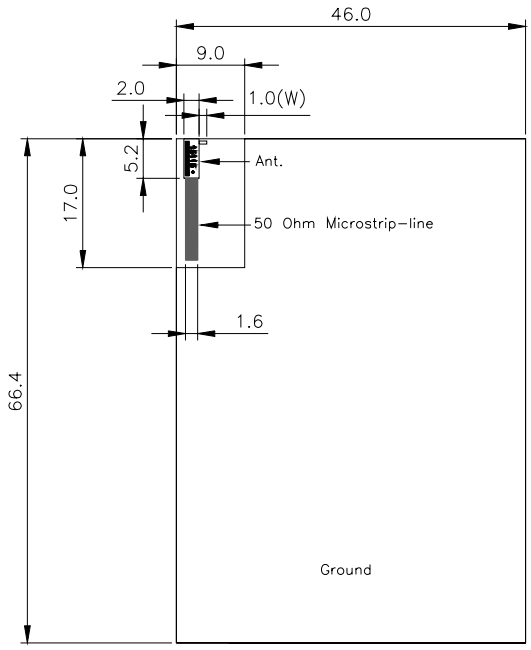
Summary ：

We can utilize different circuit length to tune the return loss of chip antenna for diverse product requirements. It was indicated that the central frequency shifted to high frequency with decrease in line length (see symbol "(W)" in land pattern). Such a results, when the length decreases 1 mm, the central frequency shifts about 100 MHz besides the bandwidth also still achieves previous purpose.

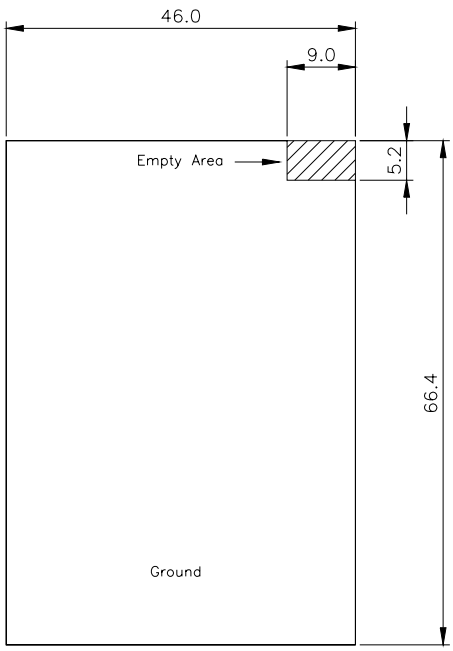
About above the results are mentioned as shown belows：

Condition (1) ：

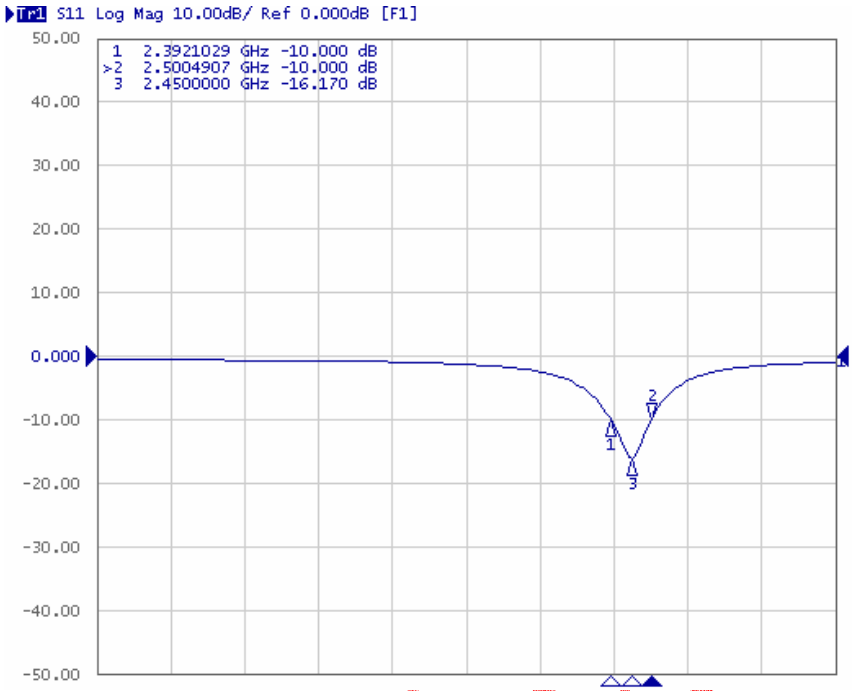
Top view



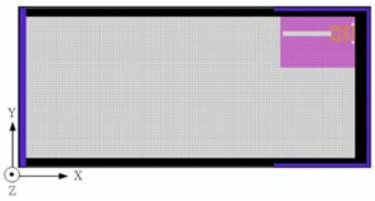
Bottom view

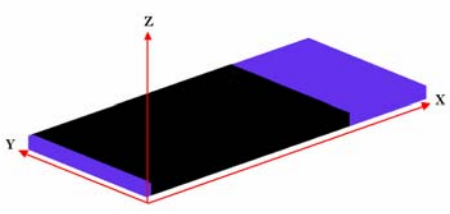


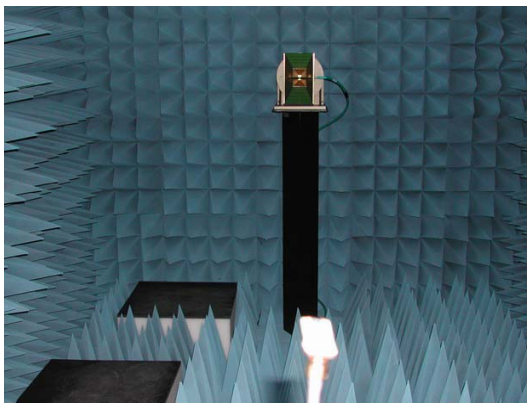
Return Loss and Bandwidth

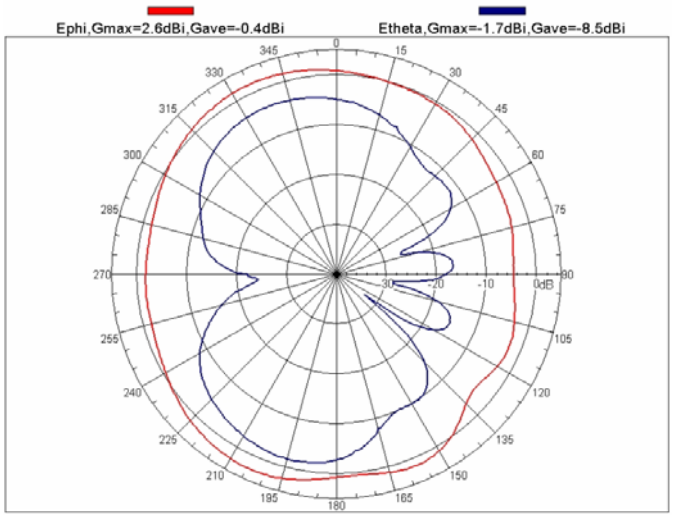


Radiation Pattern (unit: dBi)

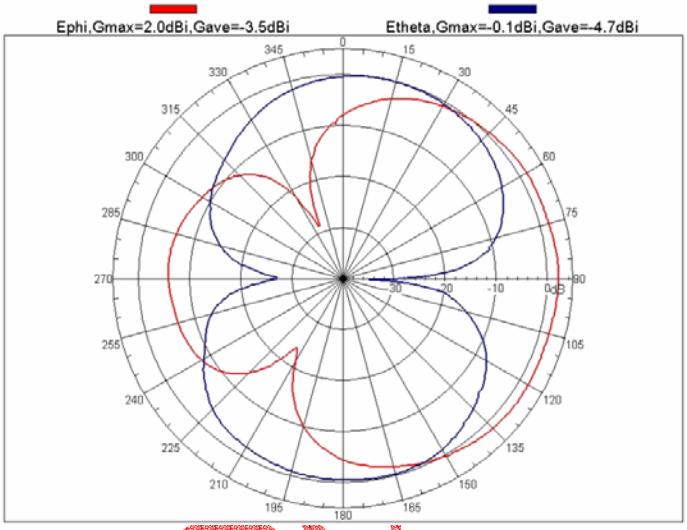


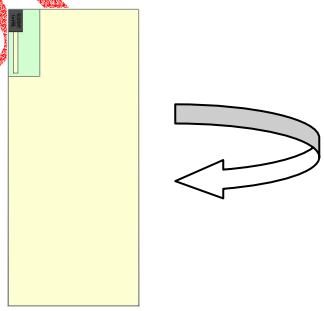




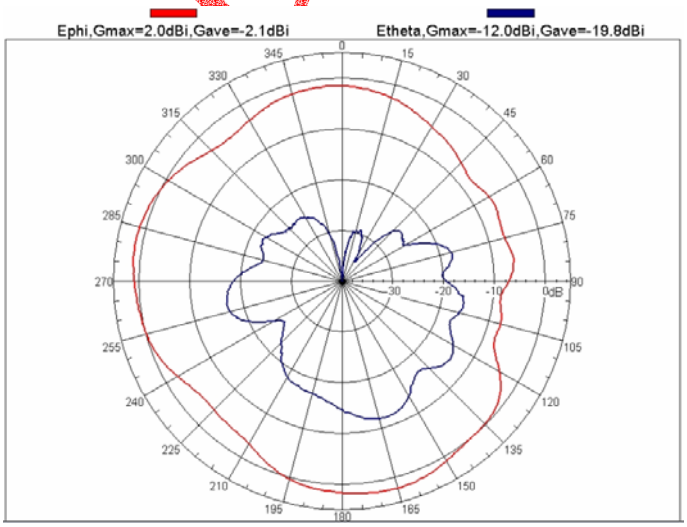


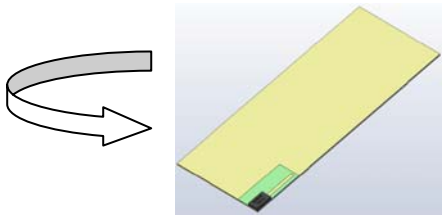
Phi=0˚ (X-Z plane) for 2.45 GHz





Phi=90˚ (Y-Z plane) for 2.45 GHz

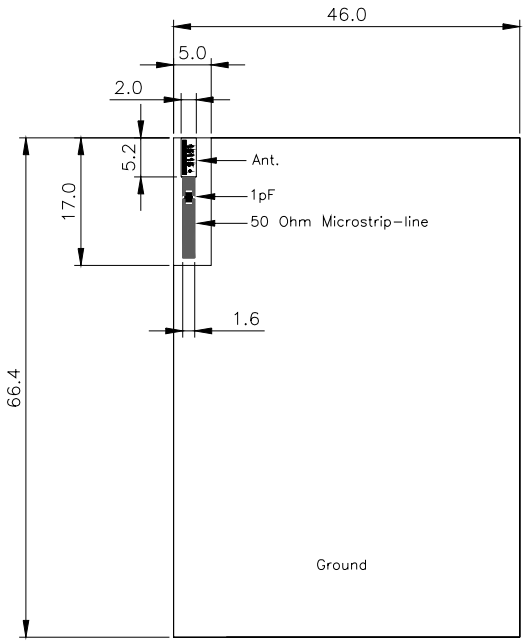




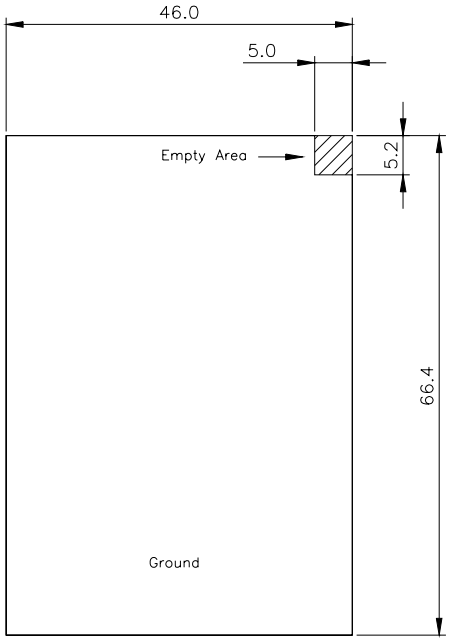
Theta=90˚ (X-Y plane) for 2.45 GHz

Condition (2)：

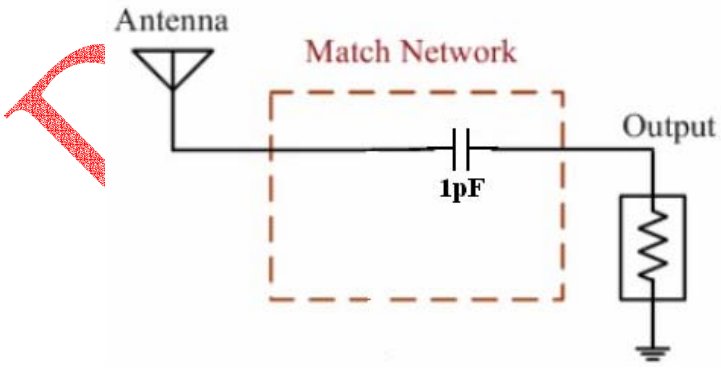
Top view



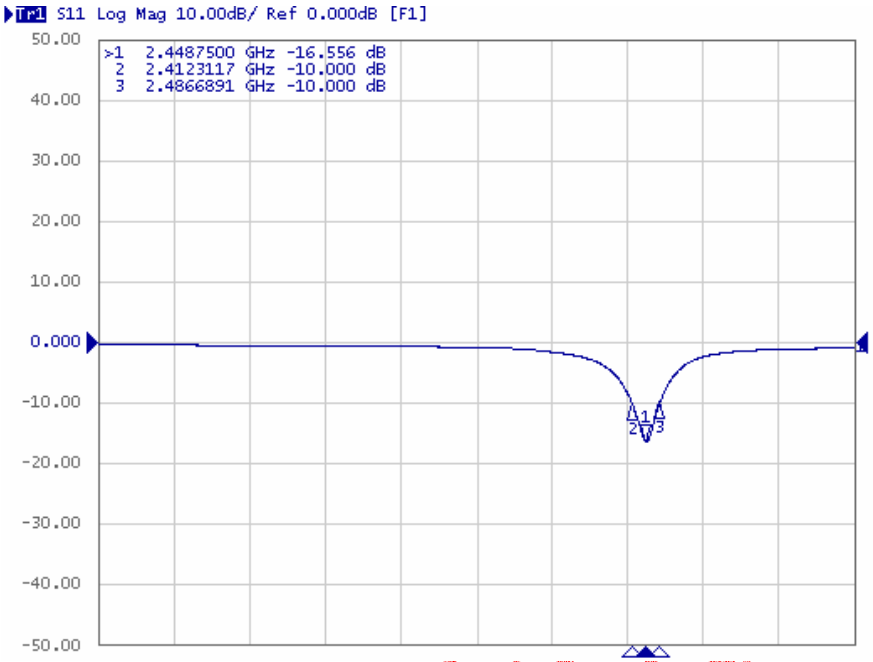
Bottom view



Matching Circuit：

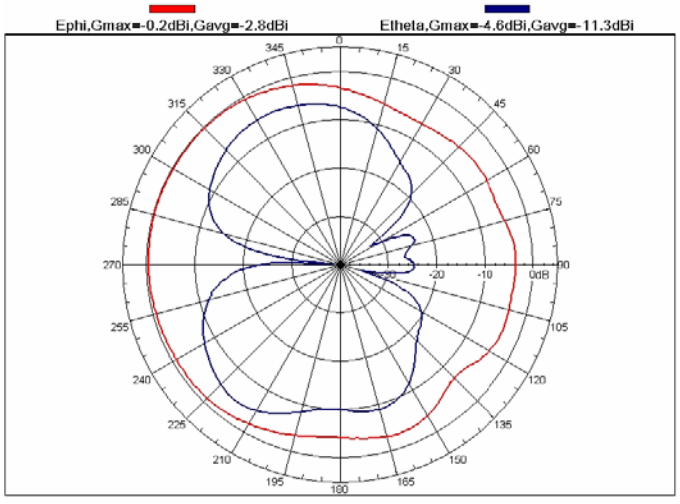


Return loss and Bandwidth

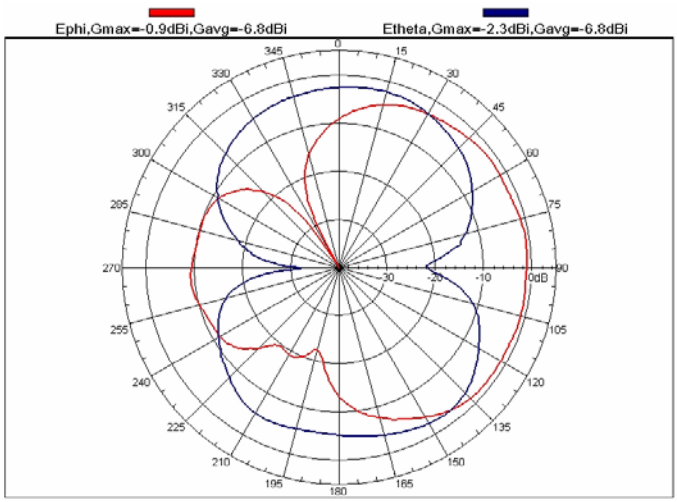


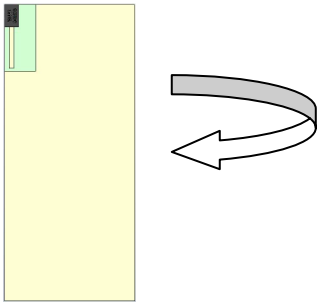
Radiation Pattern

(unit：dBi)

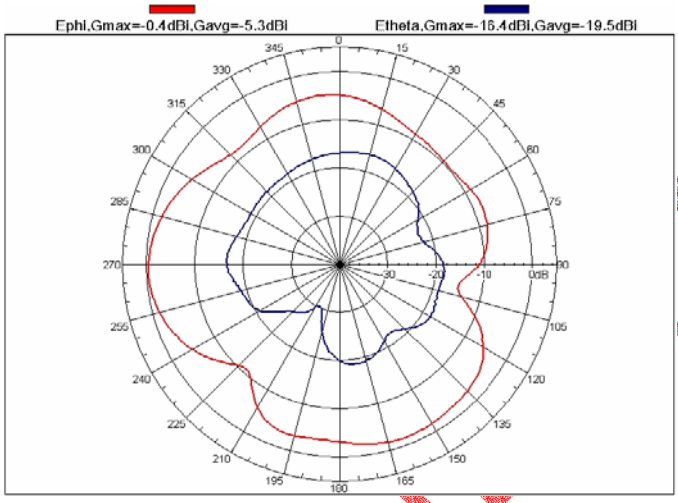


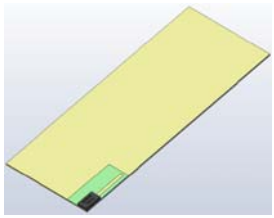
Phi=0° (X-Z plane) for 2.45 GHz





Phi=90˚ (Y-Z plane) for 2.45 GHz

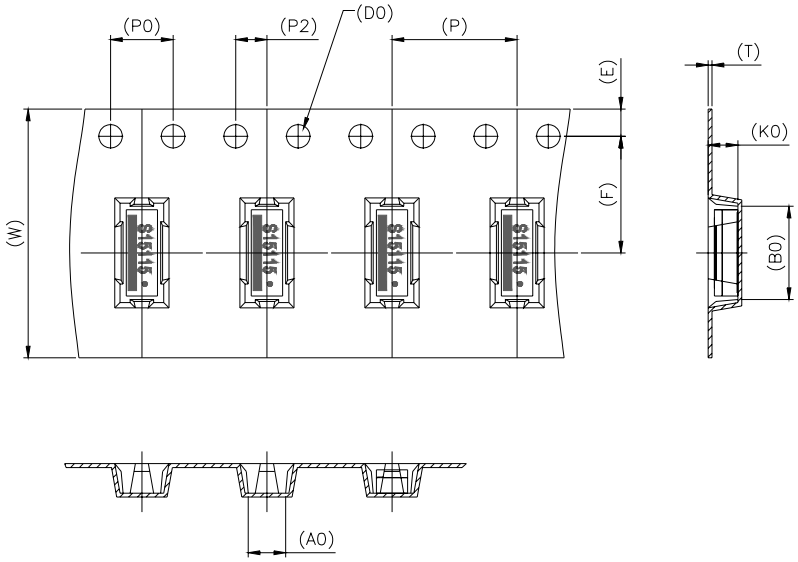




Theta=90˚ (X-Y plane) for 2.45 GHz

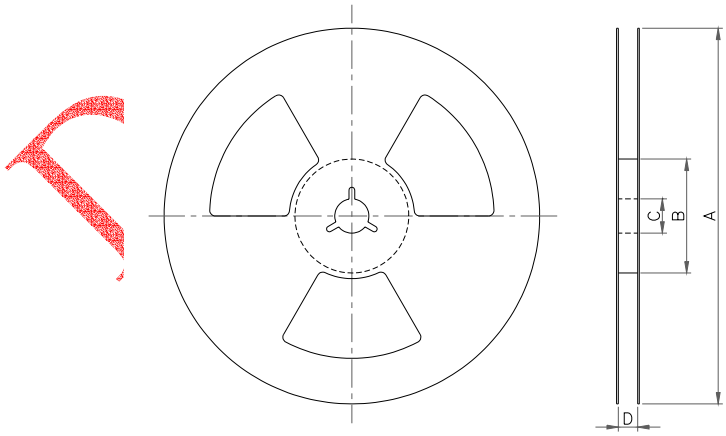
PACKING

Plastic Tape Specification (unit: mm)



Index	W	E	F	T	P	K0
Dimension(mm)	16.00 ± 0.30	1.75 ± 0.10	7.50 ± 0.10	0.25 ± 0.05	8.00 ± 0.10	1.90± 0.10
Index	P0	P2	D0	A0	B0	
Dimension(mm)	4.00 ± 0.10	2.00 ± 0.10	Φ1.50	2.40 ± 0.10	6.00 ± 0.10	

REEL DIMENSIONS (unit: mm)



Index	A	B	C	D
Dimension(mm)	Φ330	Φ100	Φ13.5	17.0 ± 0.5

Taping Quantity: MOQ=2K pieces per 13” reel.

HOW TO ORDER

920 D07 E 15 XXX 0 1 3

1 2 3 4 5

1. SERIES NO.

920=Chip Antenna

2. TYPE:

D07=2×5.2mm^2 (Gain=2 dBi)

3. ENVIRONMENT PROTECTION MATERIAL:

E=RoHS

4. THICKNESS:

15=1.5mm

5. CENTRE FREQUENCY:

015 = < 2.4GHz

115 = 2.4 GHz

215 = > 2.4GHz (Type 1)

225 = > 2.4GHz (Type 2)

235 = > 2.4GHz (Type3)

Change：

1. Revised Feed Direction of construction.

CHANT SINCERE CO., LTD.
7F.-2, No.188, Datong Rd., Sec. 3
Sijhih City, Taipei County 221, Taiwan
TEL：886-2-8647-1251
FAX：886-2-8647-1872, 886-2-8647-2962
E-MAIL：aaron.hu@coxoc.com.tw
www.coxoc.com.tw
www.co-linkwireless.com