

## 2.4GHz PCB Antenna

### Application:

WLAN, 802.11b/g, Bluetooth, WLAN, etc...

### Part number Information

RANT 3216 F 245 C 03  
(A) (B) (C) (D) (E) (F)

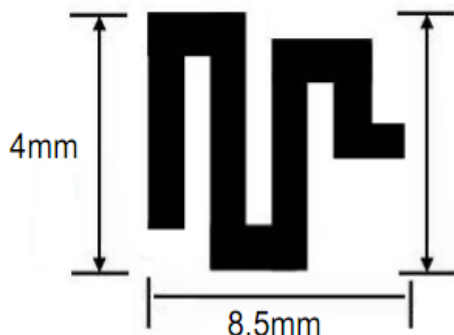
(A) Product Type	PCB Antenna
(B) Size Code	3.2x1.6mm(±0.2mm)
(C) Material	High K material
(D) Frequency	2.4 ~ 2.5GHz
(E) Feeding mode	PIFA & Single Feeding
(F) Antenna type	Type=03

### Electrical Specification

Working Frequency Range	2400 ~2500 MHz
Bandwidth	120 MHz (Min.)
Peak Gain	2.25 dBi (Typ.)
Impedance	50 Ohm
Return loss	10 dB ( Min)
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Operation Temperature(°C)	-40 ~85 °C
Resistance to Soldering Heats	10sec. ( @ 280°C)
Termination	Ni / Au (Leadless)

The specification is defined on EVB.

### Dimension and Terminal Configuration



咏成國際科技有限公司

RAIN International Technology Co., Ltd.

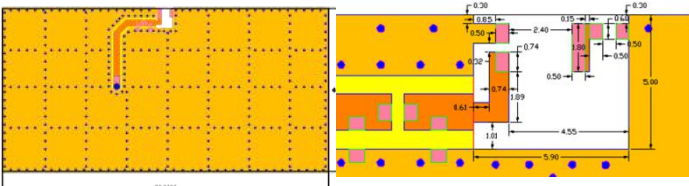
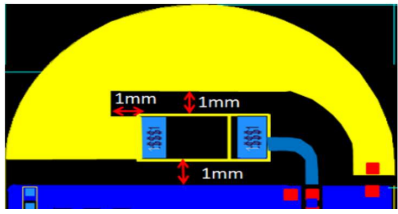
709, Building F, Yuxing Science and Technology Industrial Park, Nanchang Third Industrial Zone, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen

電話: 13530576606

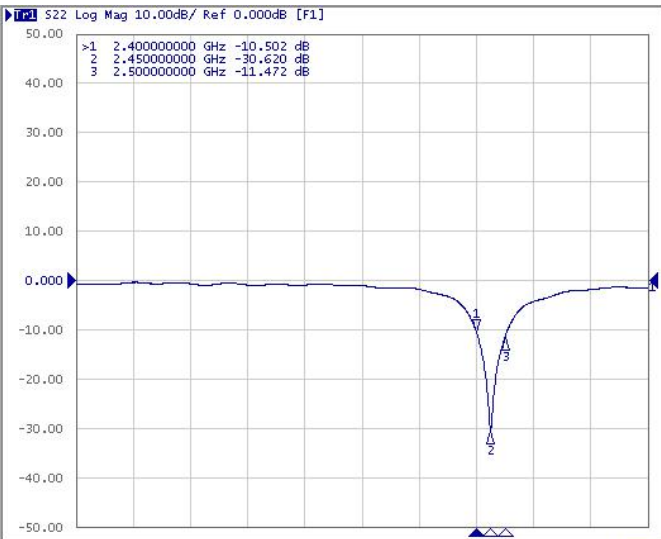
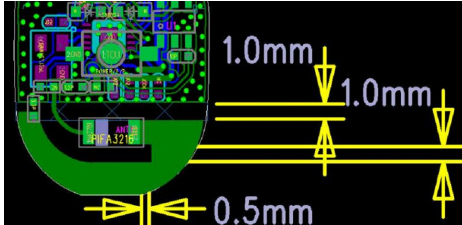
TEL: 13530576606



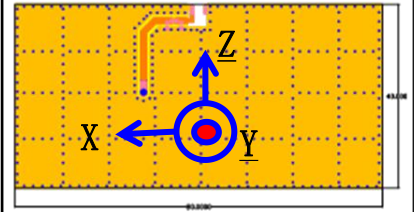
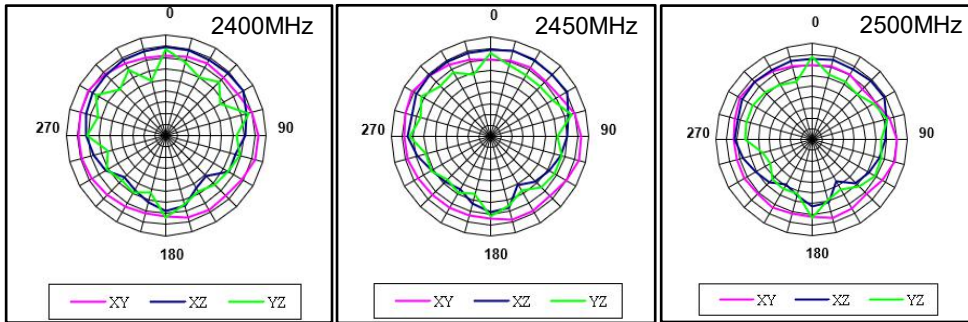
# Evaluation Board Reference

PCB Dimension	Antenna Layout Reference
	 <p style="text-align: right;">Unit :mm</p>

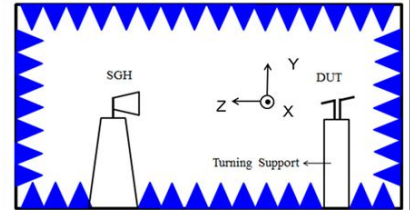
# Electrical Characteristics

Return Loss & Radiation									
<h3>Return Loss</h3>  <p>             &gt;1 2.400000000 GHz -10.502 dB              2 2.450000000 GHz -30.620 dB              3 2.500000000 GHz -11.472 dB         </p>	 <table border="1" data-bbox="1061 1142 1484 1310"> <thead> <tr> <th>Frequency(MHz)</th> <th>S11 (dB)</th> </tr> </thead> <tbody> <tr> <td>2400</td> <td>-10.50</td> </tr> <tr> <td>2450</td> <td>-30.62</td> </tr> <tr> <td>2500</td> <td>-11.47</td> </tr> </tbody> </table>	Frequency(MHz)	S11 (dB)	2400	-10.50	2450	-30.62	2500	-11.47
Frequency(MHz)	S11 (dB)								
2400	-10.50								
2450	-30.62								
2500	-11.47								

# Radiation



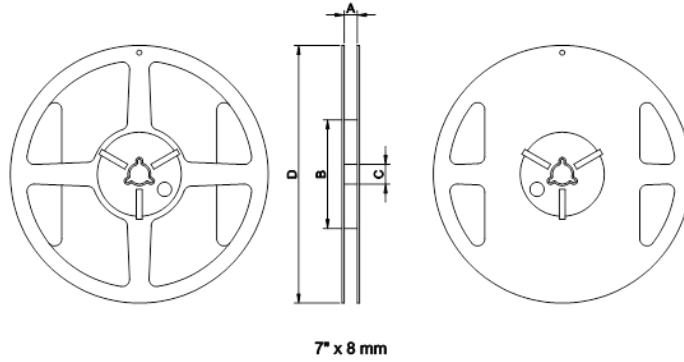
	2400MHz	2450MHz	2500MHz
Efficiency	82.52%	85.26%	83.01%
Peak Gain	1.15 dBi	2.25 dBi	1.19 dBi
Directivity	1.89 dBi	1.97 dBi	1.91 dBi



# Taping Specifications

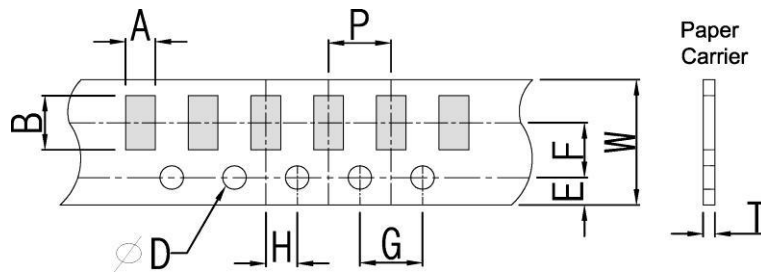
## Reel and Taping Specification

### Reel Specification



TYPE	SIZE		A	B	C	D
3216	7"	5K/Reel	9.0±0.5	60±2	13.5±0.5	178±2

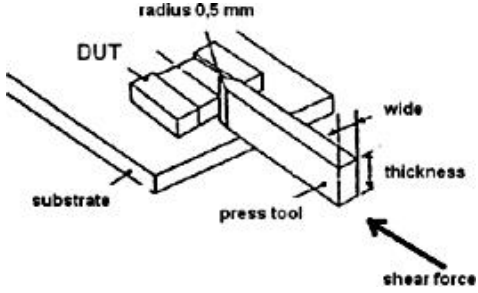
### Tapping Specification



Packaging	Type	A	B	W	E	F	G	H	T	$\psi D$	P
Paper Type	3216	1.90±0.2 0	3.50±0.2 0	8.0±0.2 0	1.75±0.1 0	3.5±0.05	4.0±0.10	2.0±0.05	0.75±0.1 0	1.50±0.1 0	4.0±0.1

## Reliability Table

Test Item	Procedure	Requirements Ceramic Type	Remark (Reference)
<b>Electrical Characterization</b>		Fulfill the electrical specification	User Spec.
<b>Thermal Shock</b>	1. Preconditioning: $50 \pm 10^{\circ}\text{C}$ / 1 hr , then keep for $24 \pm 1$ hrs at room temp. 2. Initial measure: Spec: refer Initialspec. 3. Rapid change of temperature test: $-30^{\circ}\text{C}$ 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
<b>Temperature Cycling</b>	1. Initial measure: Spec: refer Initialspec. 2. 100 Cycles ( $-30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ ), Soak Mode=1 (2 Cycle/hours). 3. Measurement at $24 \pm 2$ Hours after test condition.	No Visible Damage. Fulfill the electrical specification.	JESD22 JA104
<b>High Temperature Exposure</b>	1. Initial measure: Spec: refer Initialspec. 2. Unpowered; 500hours @ $T=+85^{\circ}\text{C}$ . 3. Measurement at $24 \pm 2$ hours aftertest.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 108
<b>Low Temperature Storage</b>	1. Initial measure: Spec: refer Initialspec. 2. Unpowered; 500hours @ $T=-30^{\circ}\text{C}$ . 3. Measurement at $24 \pm 2$ hours aftertest.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 108
<b>Solderability (SMD Bottom Side)</b>	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
<b>Soldering Heat Resistance (RSH)</b>	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
<b>Vibration</b>	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
<b>Mechanical Shock</b>	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
<b>Humidity Bias</b>	1. Humidity: 85% R.H., Temperature: $85 \pm 2^{\circ}\text{C}$ . 2. Time: $500 \pm 24$ hours. 3. Measurement at $24 \pm 2$ hrs after test condition.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 Method 106

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

## Revision History

Revision	Date	Content
1	2019/03/01	New Datasheet
2	2020/02/22	Add 2D radiation characteristic