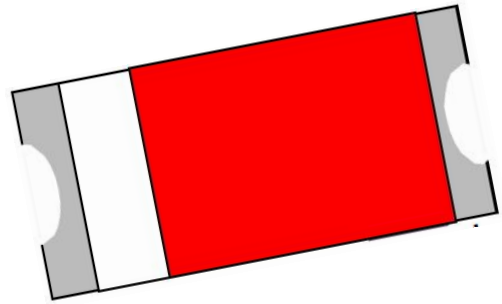


## 2.4GHz 5221 Chip Antenna: RANT5221F245M02

### 1. Applications

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



### 2. Features

SMD, high reliability, ultra Impact, Omni-directional...

### 3. Part Number Information

RANT   5221   F   245   M   02  
(A)   (B)   (C)   (D)   (E)   (F)

(A)Product Type	Chip Antenna
(B) Size Code	5.0x2.0mm(±0.2mm)
(C) Material	High K material
(D) Frequency	2.4 ~ 2.5GHz
(E) Feeding mode	PIFA & Single Feeding
(F) Antenna type	Type=02

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TEL:0755-27925109  
FAX:0755-27925109

#### 4. 产品尺寸

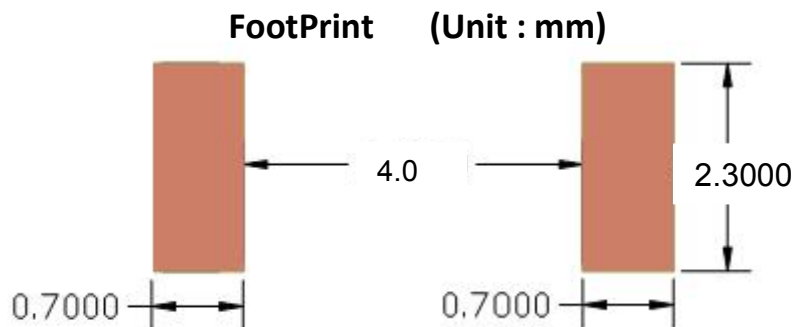
monopole antenna

Figure	Symbol	Dimension (mm)
	L (长)	5.00 ± 0.20
	W (宽)	2.00 ± 0.30
	T (厚度)	1.0 ± 0.30
	A (电极宽度)	0.50 ± 0.20

#### 5. Electrical Specification

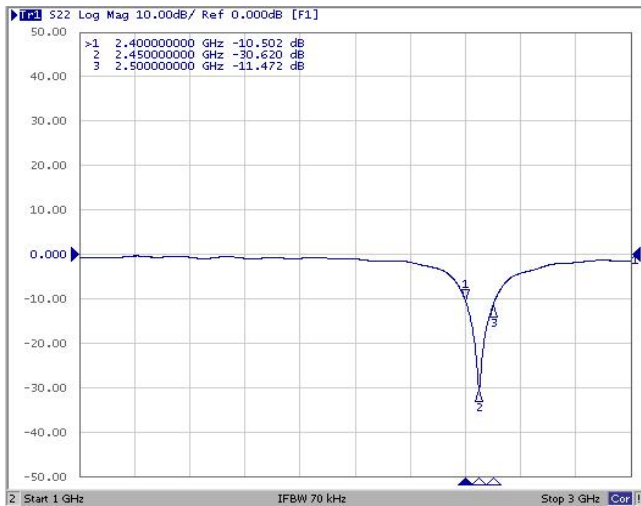
Specification		
Part Number	RANT 5221 F245 M02	
Central Frequency	2450	MHz
Bandwidth	120 (Min.)	MHz
Return Loss	-10 (Max)	dB
Peak Gain	3.59	dBi
Impedance	50	Ohm
Operating Temperature	-40 ~ +85	°C
Maximum Power	4	W
Resistance to Soldering Heats	10 ( @ 260°C )	sec.
Polarization	Linear	
Azimuth Beamwidth	Omni-directional	
Termination	Sn (Leadless)	

#### 6. PCB

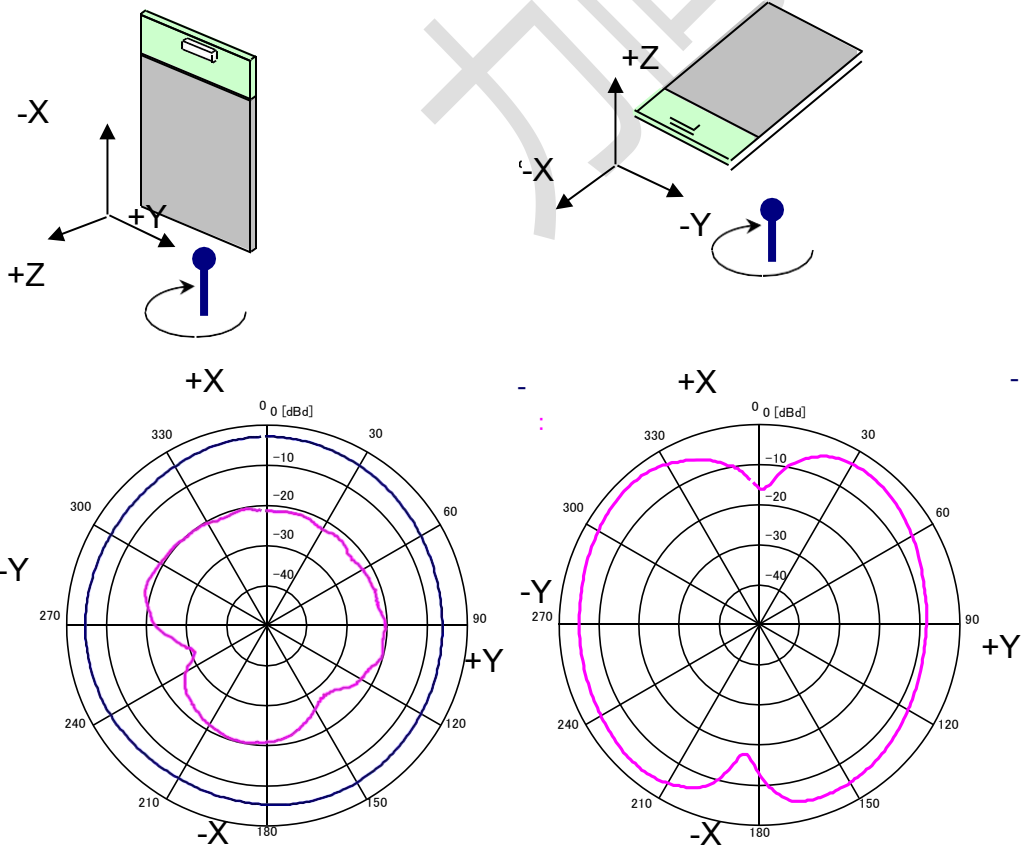


# 7. Measurement Results

## Return Loss



### 7.2 Radiation Pattern



Passive Test For BT2.4												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	49.2	-3.08	0.36	-1.79	0	0	0.36	-11.39	3.44		47.36	46.86
2410	45.04	-3.46	-0.07	-2.22	0	0	-0.07	-11.98	3.39		47.4	46.9
2420	43.96	-3.57	-0.11	-2.26	0	0	-0.11	-11.86	3.46		47.28	46.76
2430	45.06	-3.46	-0.05	-2.2	0	0	-0.05	-11.52	3.41		47.35	46.78
2440	43.38	-3.63	-0.21	-2.36	0	0	-0.21	-11.7	3.42		47.15	46.65
2450	49.31	-3.07	0.47	-1.68	0	0	0.47	-10.94	3.54		47.33	46.85
2460	44.51	-3.52	-0.05	-2.2	0	0	-0.05	-11.32	3.47		47.72	47.22
2470	41.58	-3.81	-0.33	-2.48	0	0	-0.33	-11.55	3.48		47.36	46.93
2480	44.81	-3.49	-0.03	-2.18	0	0	-0.03	-11.3	3.46		47.56	47.1
2490	38.19	-4.18	-0.64	-2.79	0	0	-0.64	-12.25	3.54		47.05	46.67
2500	36.05	-4.43	-0.91	-3.06	0	0	-0.91	-12.69	3.52		47.01	46.63

Application Information	
04Version	5.245.351
TotalTime	4m 46s 391ms
AdditionalInfor	NULL

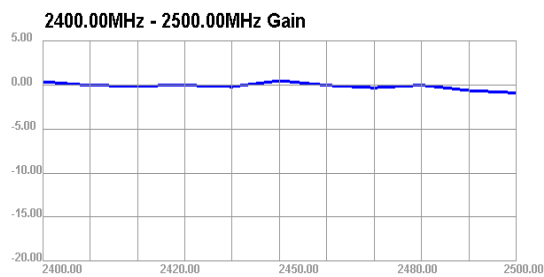
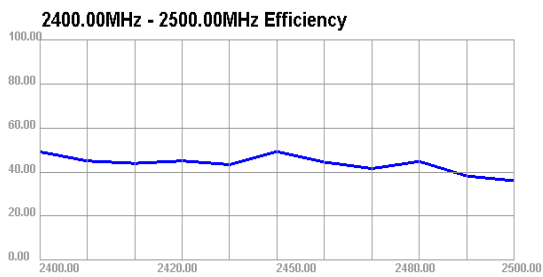
Gain= Efficiency \* Directivity

Efficiency= Gain/Directivity

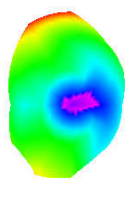
Efficiency(-3.08) (db) = Gain(0.36)/(-)Directivity(3.44)

对数的乘法除法就是加法减法

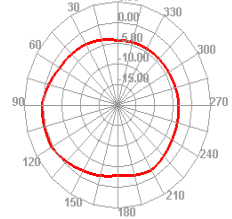
Efficiency(%)={10 ^(-3.08/10)}\*100={10 ^(-0.308)}\*100=0.492\*100=49.20%



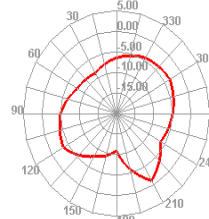
2400.000MHz



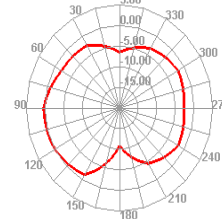
2400.000MHz H



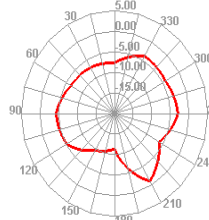
2450.000MHz E1



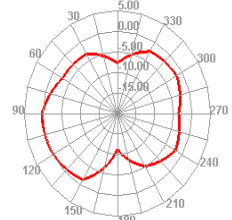
2450.000MHz E2



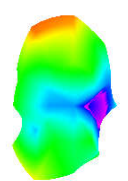
2400.000MHz E1



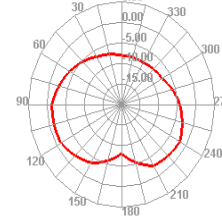
2400.000MHz E2



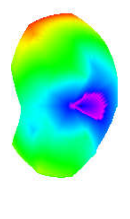
2500.000MHz



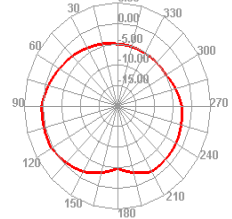
2500.000MHz H



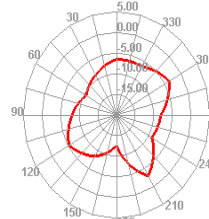
2450.000MHz



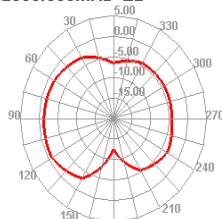
2450.000MHz H



2500.000MHz E1



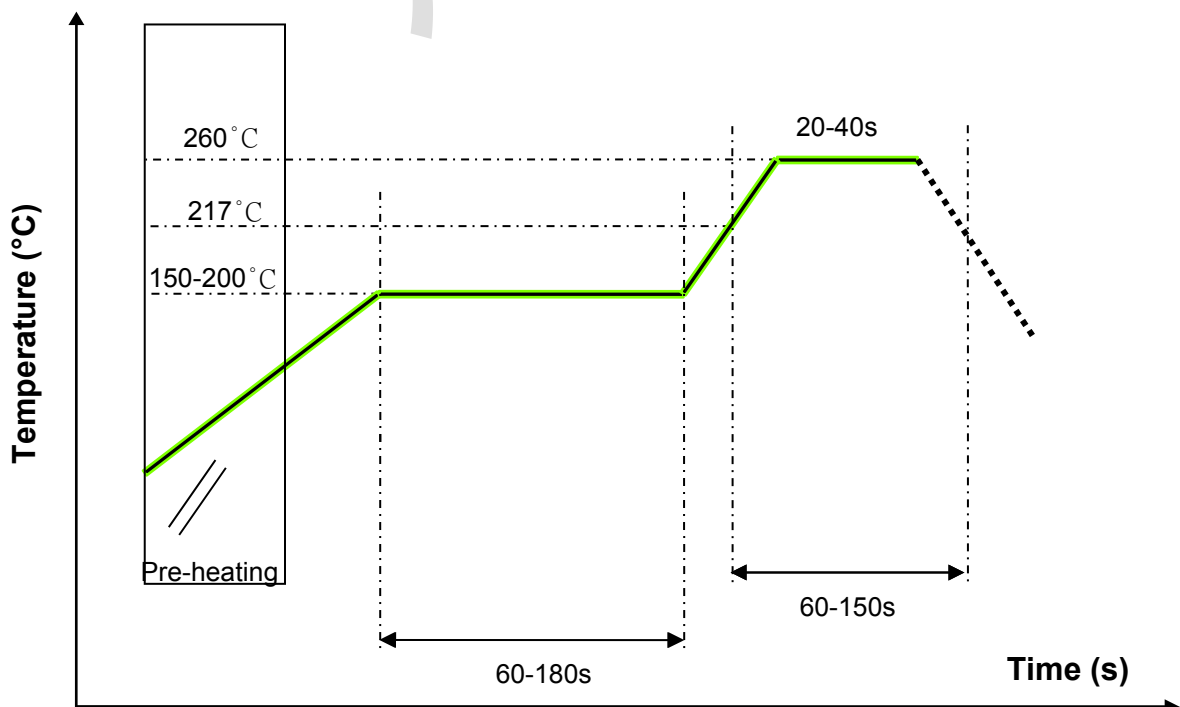
2500.000MHz E2



## 8. Reliability and Test Conditions

Test item	Test condition / Test method	Specification
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature: $235 \pm 5^{\circ}\text{C}$ *Immersion time : $2 \pm 0.5$ sec Solder : Sn3Ag0.5Cu for lead-free	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
Leaching (Resistance to dissolution of metallization) IEC 60068-2-58	*Solder bath temperature: $260 \pm 5^{\circ}\text{C}$ *Leaching immersion time: $30 \pm 0.5$ sec Solder : SN63A	Loss of metallization on the edges of each electrode shall not exceed 25%.
Bending test JIS C 0051- 7.4.1	The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for $5 \pm 1$ sec. Measurement to be made after keeping at room temperature for $24 \pm 2$ hours	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^{\circ}\text{C}$ .
Resistance to soldering heat JIS C 0050-5.4	*Preheating temperature : $120 \sim 150^{\circ}\text{C}$ , 1 minute. *Solder temperature: $270 \pm 5^{\circ}\text{C}$ *Immersion time : $10 \pm 1$ sec Solder : Sn3Ag0.5Cu for lead-free Measurement to be made after keeping at room temperature for $24 \pm 2$ hrs	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^{\circ}\text{C}$ . Loss of metallization on the edges of each electrode shall not exceed 25%.

## 9. Soldering and Mounting



## 10. Storage and Transportation Information

### Storage Conditions

To maintain the solderability of terminal electrodes:

1. Temperature and humidity conditions: -10~ 40°C and 30~70% RH.
2. Recommended products should be used within 6 months from the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

### Transportation Conditions

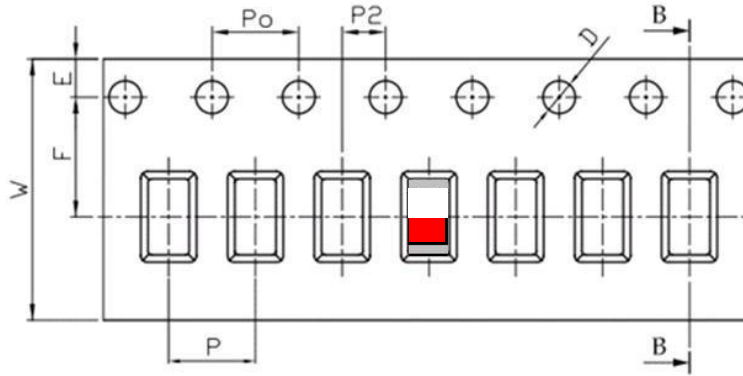
1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

## 11. Packing

(1) Quantity/Reel: 2000 pcs/Reel

(2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
W	12.00	±0.30
P	4.00	±0.10
E	1.75	±0.10
F	5.50	±0.10
P2	2.00	±0.10
D	1.50	+0.10 -0.00
P0	4.00	±0.10
10P0	40.00	±0.20

c. Reel Drawing

