

Document	Datasheet
Type	Chip Antenna
Application	ISM 868/915MHz
Part No.	2JE05
Revision	4.0

2JE05

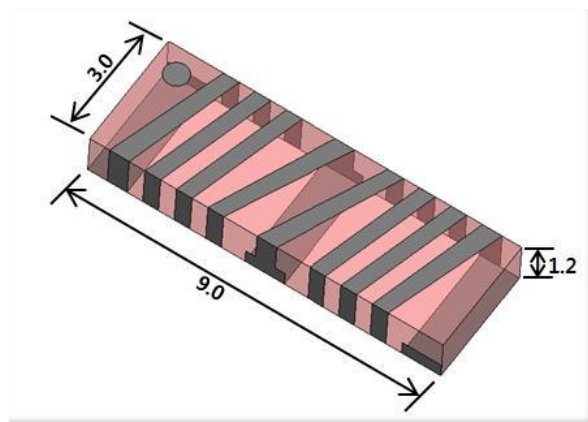
(Datasheet)

Application

ISM 868/915 MHz

Features

Monopole Structure
Size (9.0*3.0*1.2mm³)
Performance Optimizing
with external lumped matching components
SMT Available under Pb-free Condition
RoHS Compliant



Revision History

Rev. No	Date	Title	Contents	Page
0.0	'08.12.03		New Published	
1.0	'09.05.15		Mark the antenna location on drawing	
2.0	'10.08.16		Added identification mark	
3.0	'10.08.16		Changed format	
3.1	'12.07.26		Changed packing quantity	
4.0	'13.03.28		1) Removed application for 433MHz 2) Added stub line for 868/915MHz, changed matching value	

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1. Specifications

1.1 Electrical Specifications

No	Item	Spec.	Remark
1	Frequency Range [MHz]	868 / 915	
2	VSWR	Max 3.0:1	
3	Polarization	Linear	
4	Impedance [Ω]	Nominal 50	

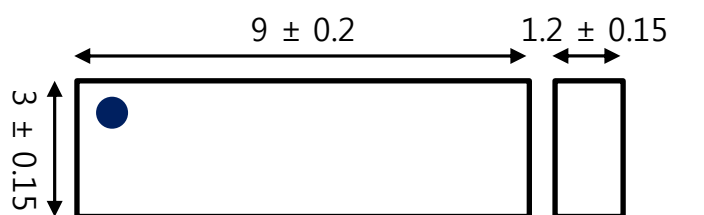
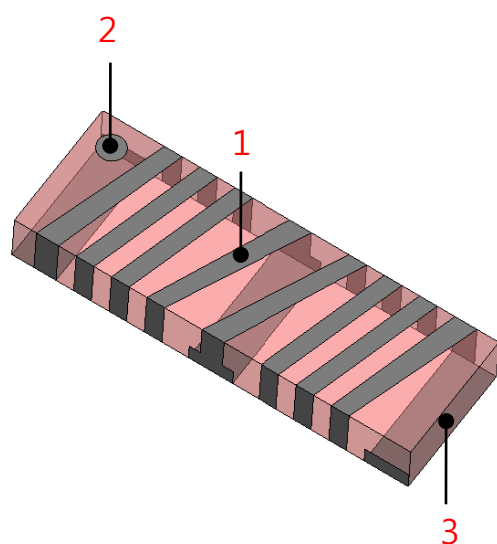
- ✓ The results are measured on the 100x50mm² evaluation board(EVB).
- ✓ Refer to page 5~6 for matching value of each frequency

1.2 Mechanical Specifications

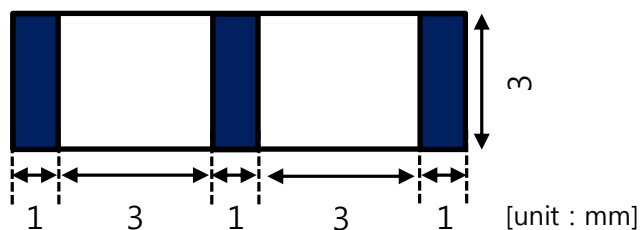
No	Item	Spec.	Remark
1	Dimensions (LxWxH)	9.0 x 3.0 x 1.2 mm ³	
2	Unit Weight	typ. 170 mg	
3	Operating Temperature	-35 ~ +85 °C	

1.3 Appearance & Material

No	Name	Function	Material
1	Electrode	Radiation Element	Ag
2	Electrode	Identification Mark	Ag
3	Ceramic Body	-	Ceramic



Antenna Top & Side

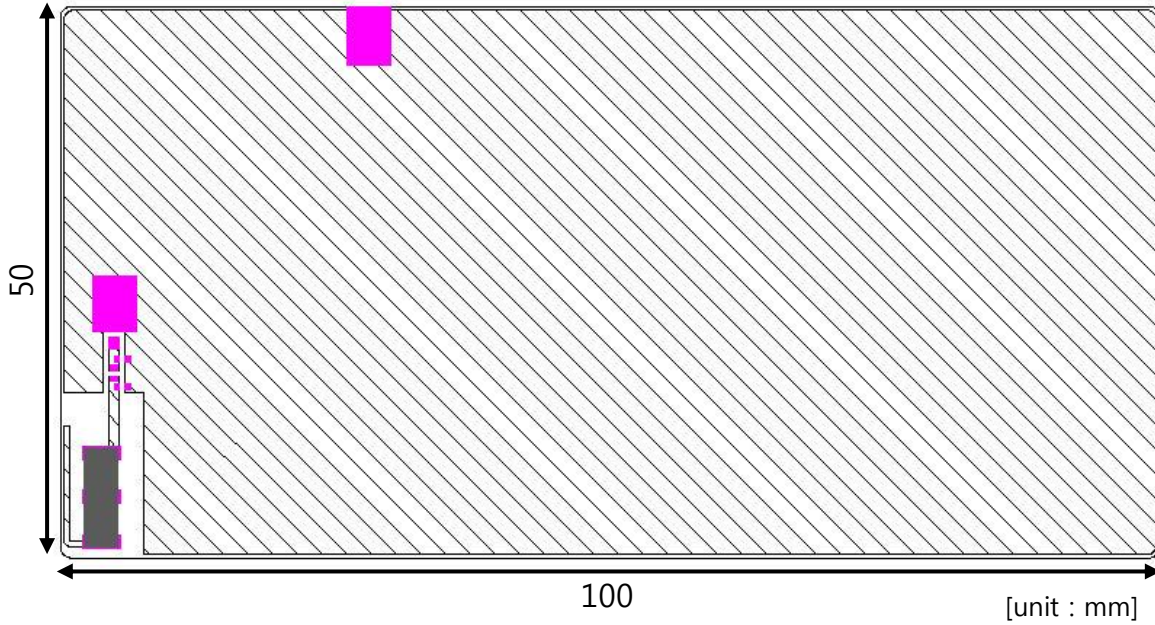


Antenna Bottom

[unit : mm]

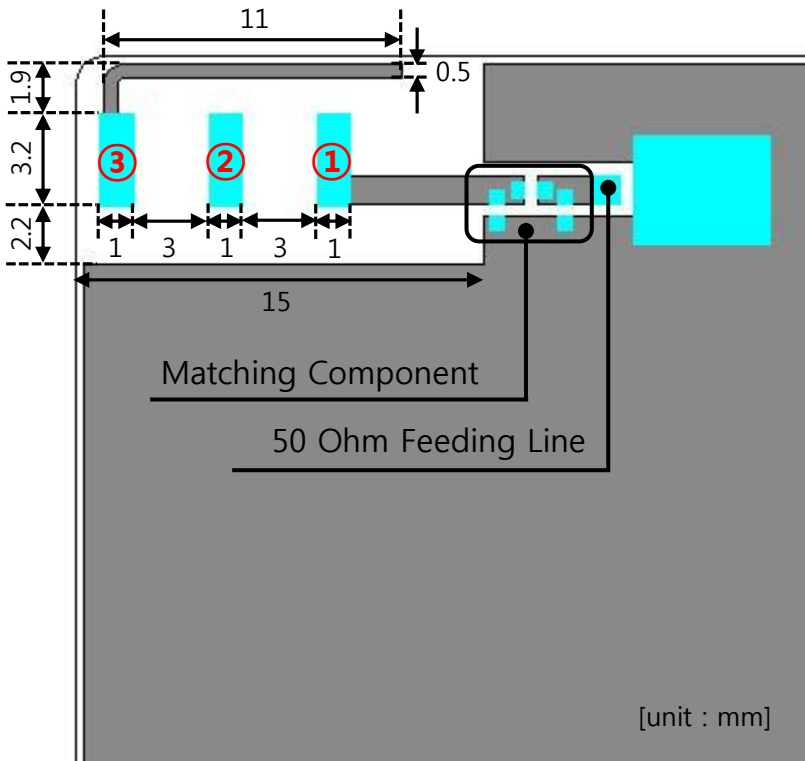
2. PCB Design for Test

2.1 Evaluation Board Dimension



- ✓ Evaluation board size ~ 100x50
- ✓ Fill Cut Area (GND Clearance) ~ 15.0x7.6

2.2 PCB Design Guide



Antenna Top

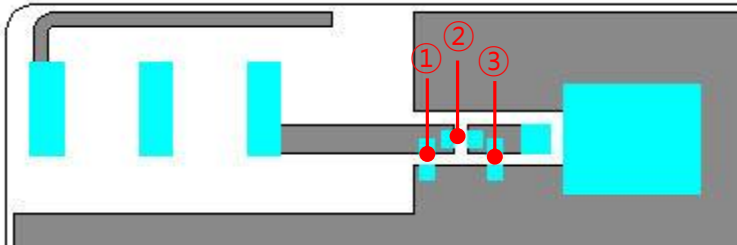


Antenna Bottom

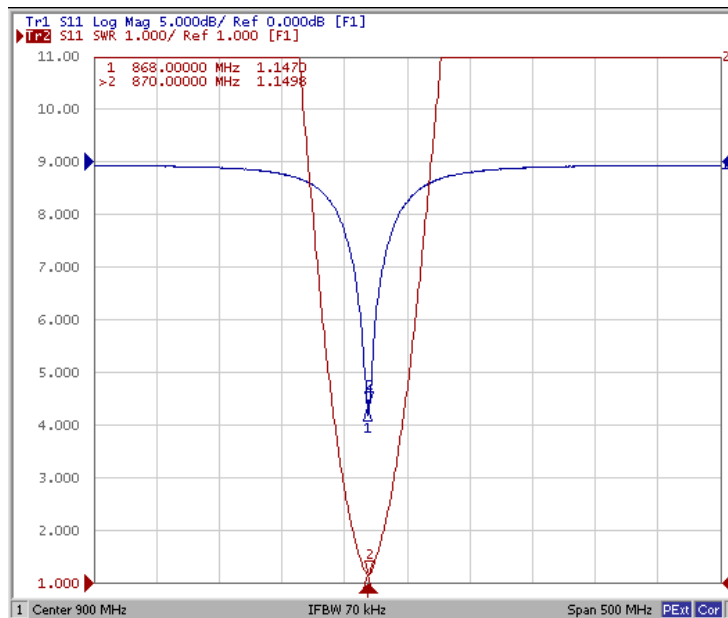
No	Pin Assignment
①	Feeding
②	N/C
③	N/C (Connected Stub line)

3. Measurement Result

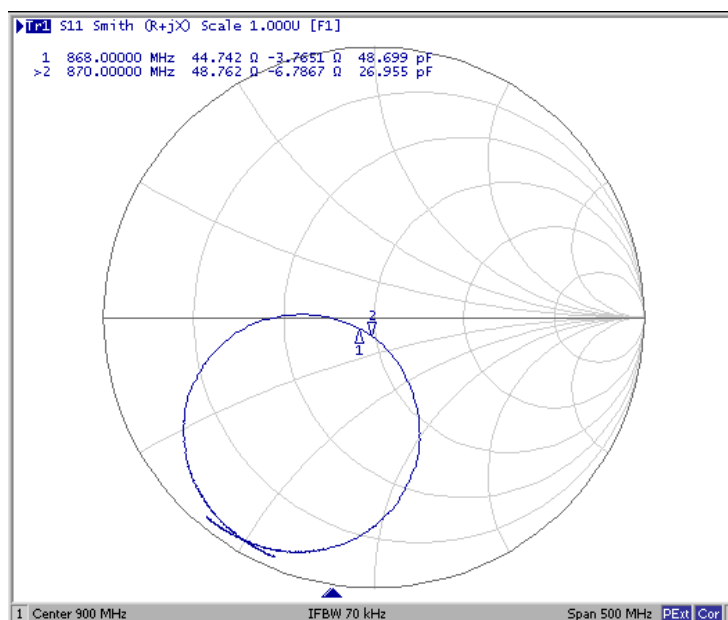
3.1 Typical Measurement Result (VSWR, RL & Smith Chart) @ 868MHz



No	Matching Value
①	N/C
②	15 nH
③	5.0 pF

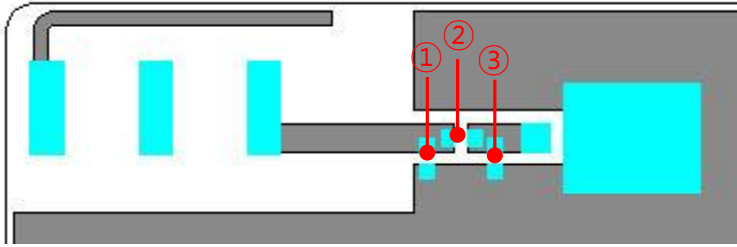


✓ Measured VSWR & Return-loss @868MHz

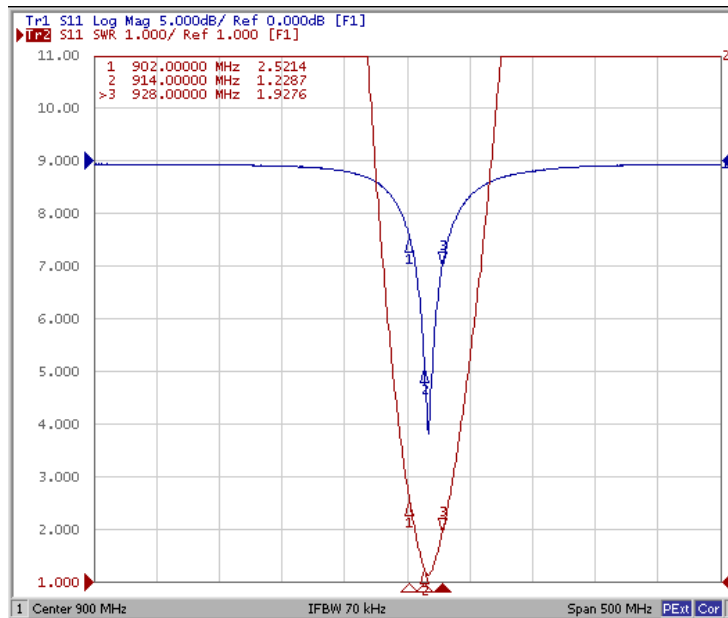


✓ Measured Smith Chart @868MHz

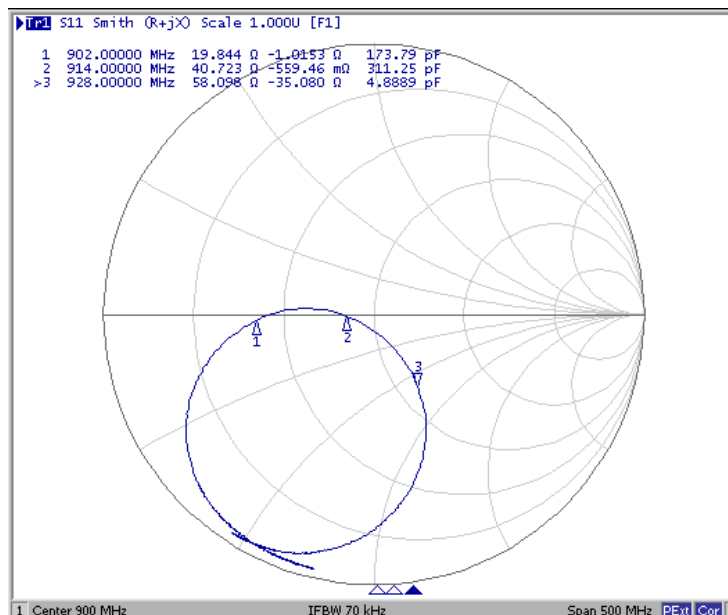
3.2 Typical Measurement Result (VSWR, RL & Smith Chart) @ 915MHz



No	Matching Value
①	N/C
②	8.2 nH
③	4.3 pF

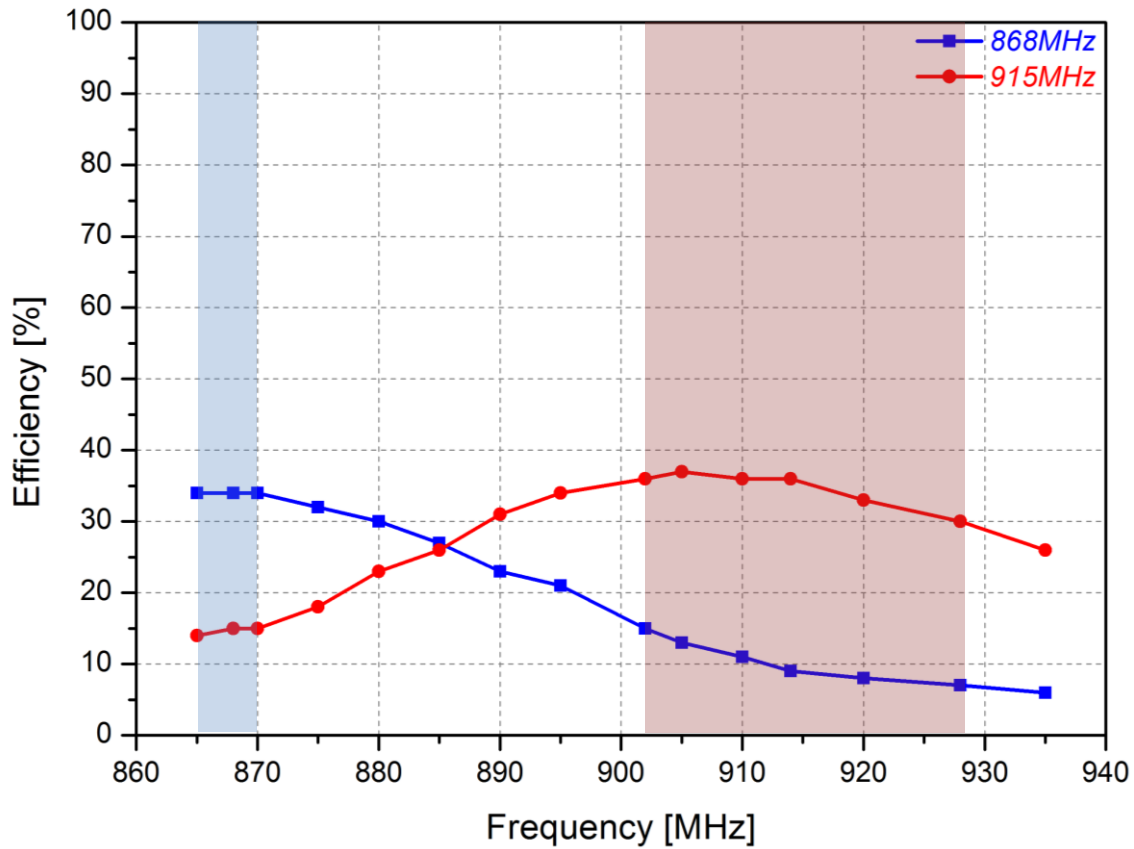


✓ Measured VSWR & Return-loss @868MHz

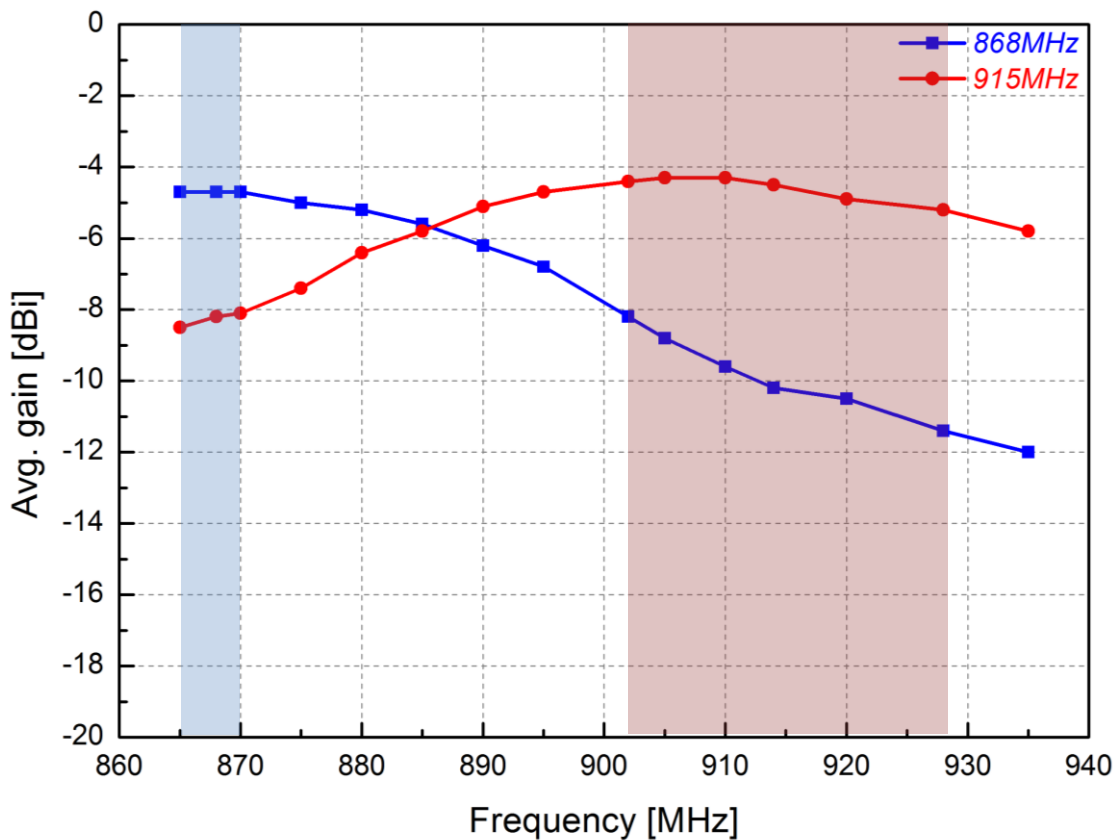


✓ Measured Smith Chart @868MHz

3.3 Measured Antenna Efficiency

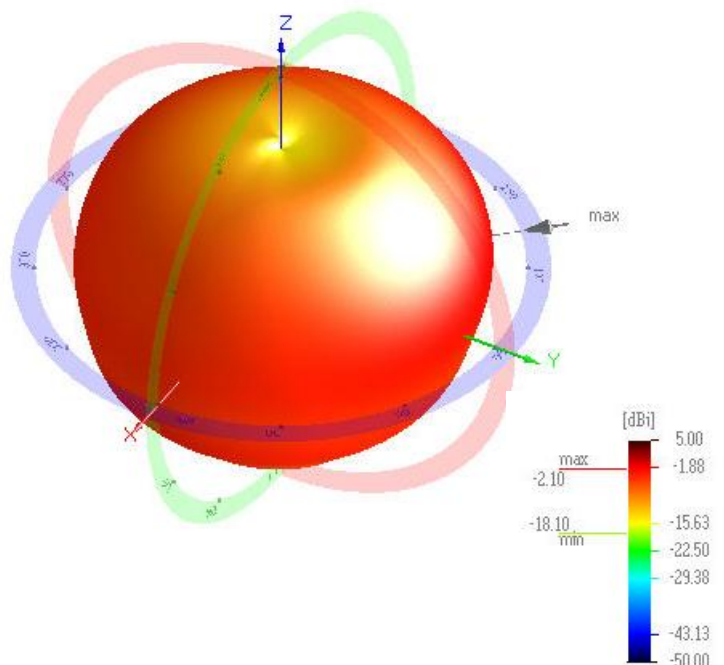
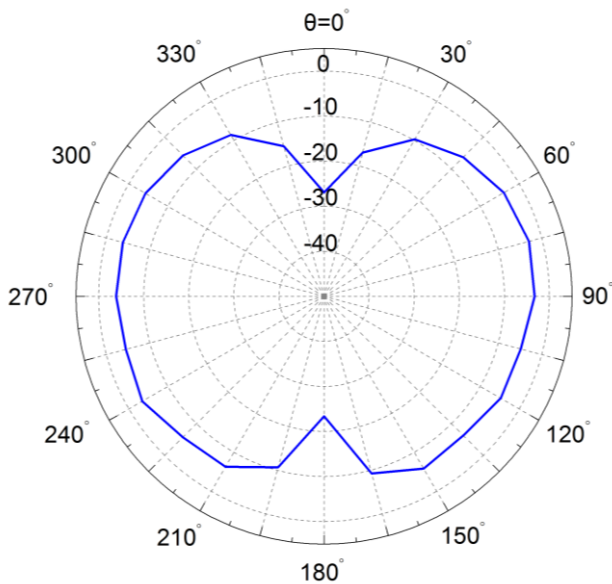
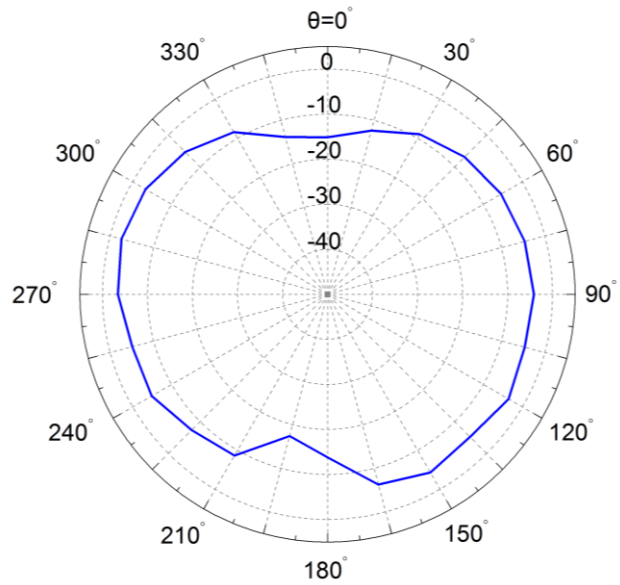
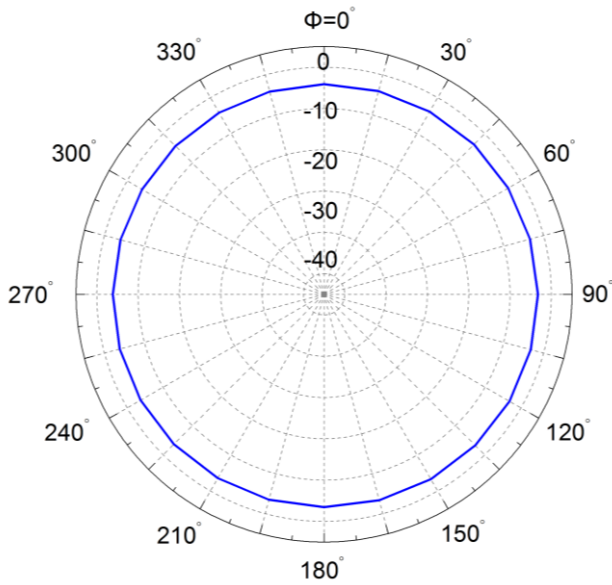
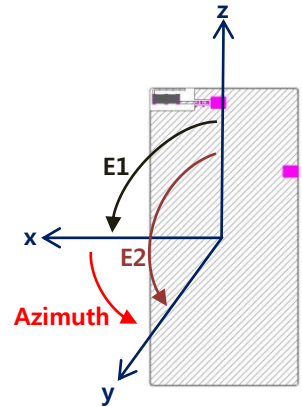


3.2.2 Measured Average Gain



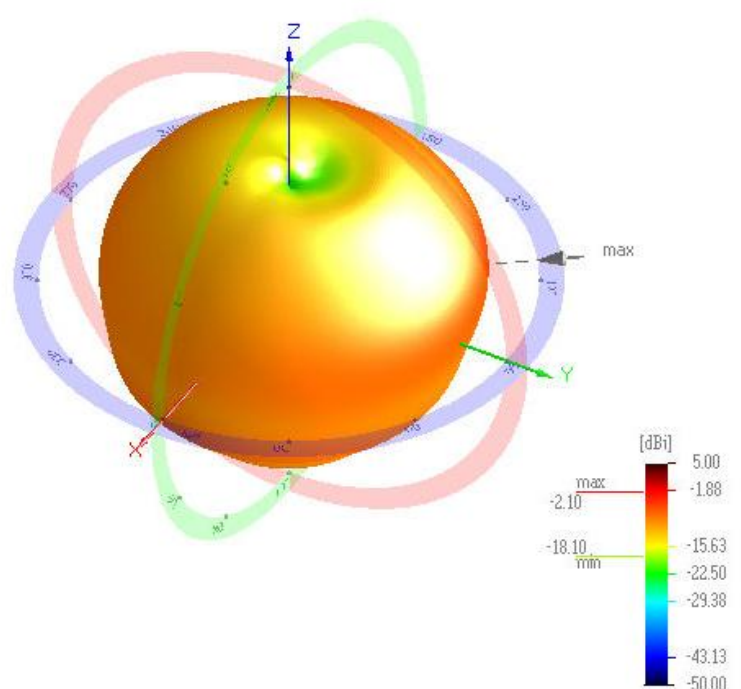
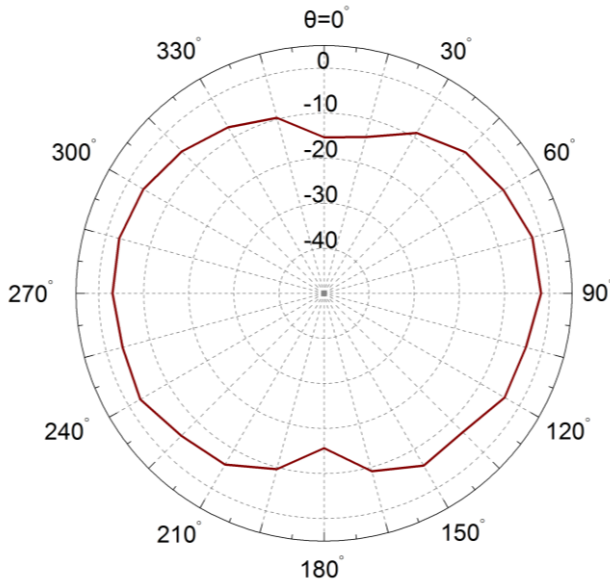
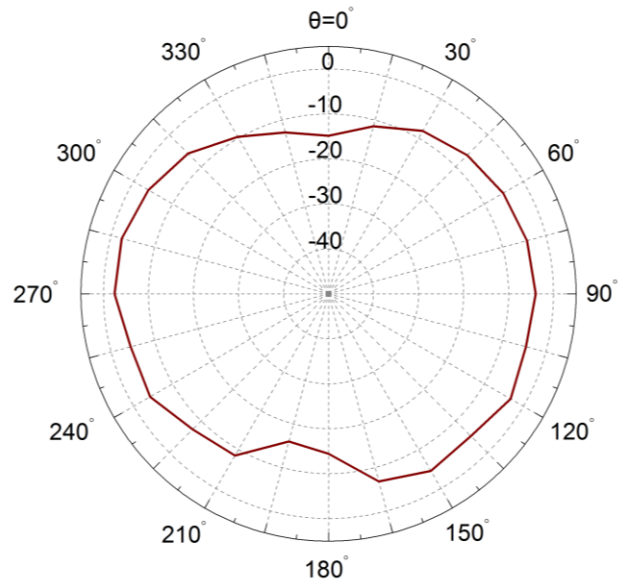
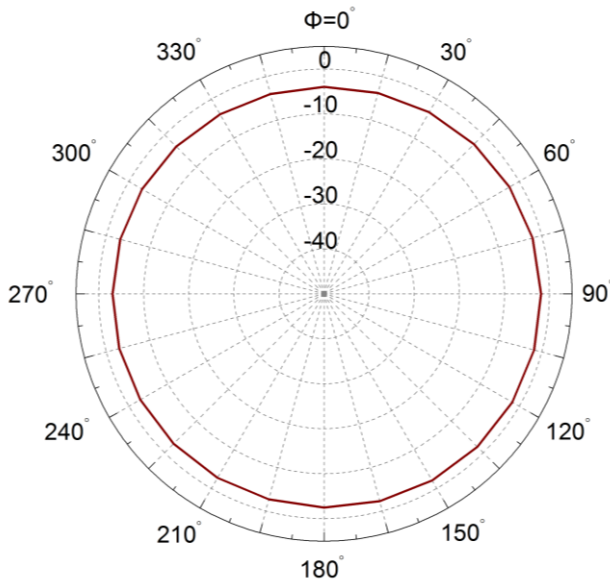
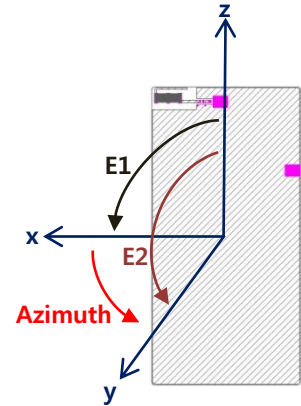
3.4 Measured Radiation Pattern @868MHz

	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency(%)
Azimuth	-2.7	-3.4	34
Elevation 1	-2.6	-7.4	
Elevation 2	-2.5	-6.9	

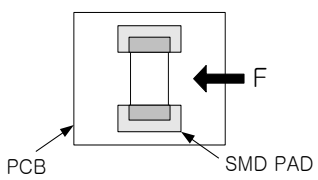


3.5 Measured Radiation Pattern @915MHz

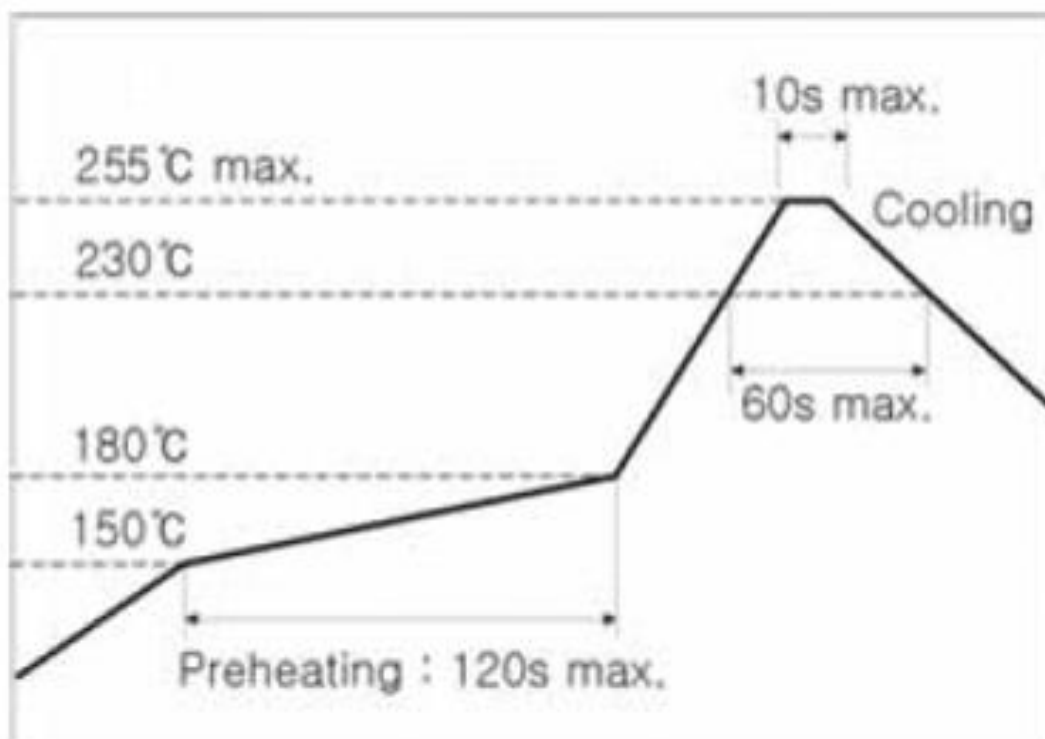
	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency(%)
Azimuth	-1.7	-2.7	37
Elevation 1	-2.4	-7.4	
Elevation 2	-1.8	-6.8	



4. Reliability

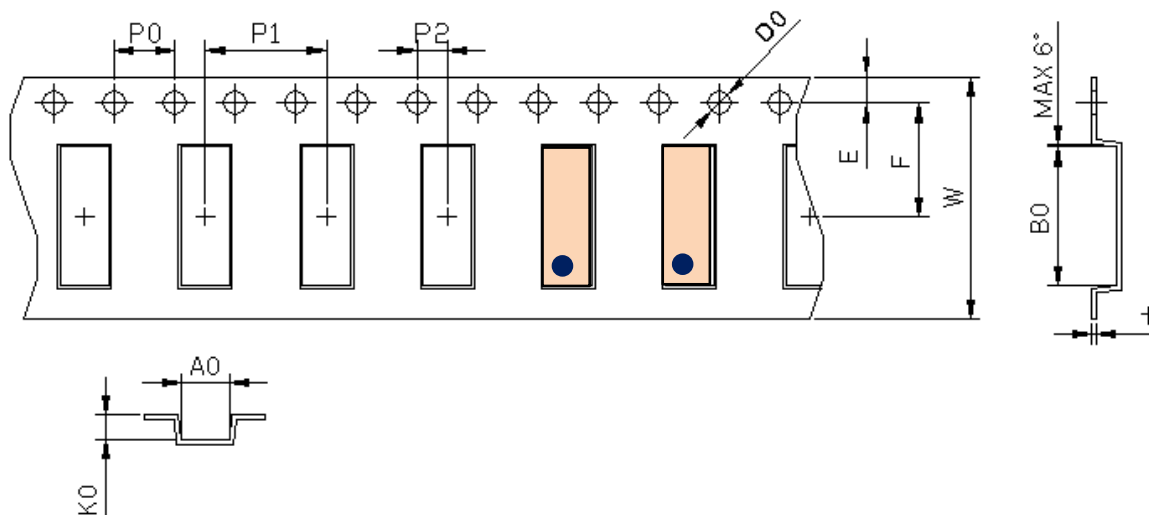
No	Item	Test Condition	Test Requirements
1	Adhesive Strength of Termination	1. Applied force on SMT chip till detached point from PCB. 	1. No mechanical damage by forces applied on the right. 2. Strength (F) > 5 kgf
2	Thermal Shock (Cycle)	1. Step 1 : $-40 \pm 3^\circ\text{C}$, 30 min Step 2 : $+125 \pm 3^\circ\text{C}$, 30 min 2. Number of cycle : 30	1. No visual damage 2. Within electric spec (VSWR)
3	High Temperature Resistance	1. Temperature : $+125 \pm 5^\circ\text{C}$ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)
4	Low Temperature Resistance	1. Temperature : $-40 \pm 5^\circ\text{C}$ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)
5	Humidity	1. Humidity : 85 % RH Temperature : $+85 \pm 3^\circ\text{C}$ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)

5. Soldering Reflow Profile



6. Packing

6.1 Carrier Tape Dimension



Item	Spec.	Item	Spec.	Item	Spec.
A0	3.20 ±0.10	P0	4.00 ±0.10	E	1.75 ±0.10
B0	9.20 ±0.10	P1	8.00 ±0.10	F	7.50 ±0.10
K0	1.65 ±0.10	P2	2.00 ±0.10	W	16.00 ±0.30
D0	1.55 ±0.05	-	-	t	0.30 ±0.05

6.2 Packing Quantity

Item	Quantity	Dimension
Reel	1,000 ea	Φ7" * 16mm
Inner	3,000 ea (3 Reel)	183 * 70 * 185
Outer Box	Small	15,000 ea (5 Inner Box) 365 * 200 * 200 (mm ³)
	Large	30,000 ea (10 Inner Box) 390 * 375 * 205 (mm ³)