PART NO. 28544948	SHT. 0 OF 10	**DELPHI ELECTRONICS AND SAFETY**

DATE	SYMBOL	REVISION - UPDATE DOCUMENTATION ONLY	AUTHORITY	DR.	AP.
18JA17	A	DELPHI-E&S INITIAL RELEASE	1080622798	LL	LL
09JN17	B	Drawing revise to latest datasheet per CR108200524	1080633841	MN	LL

REFERENCE INFORMATION

NON-STANDARD DRAWING IDENTIFIER: AMAN1003015ST06
NON-STANDARD DRAWING REVISION SYMBOL(S): 3.0
(Include revision for all sheets, if different)

NUMBER OF DELPHI-E&S COVER SHEETS: 1
NUMBER OF NON-DELPHI-E&S SHEETS: 9
NUMBER OF ATTACHED DELPHI-E&S SHEETS: 0
TOTAL NUMBER. OF SHEETS: 10

NON-DELPHI-E&S DRAWING SOURCE (IF CSD, ENTER CUSTOMER) AMOTECH

1. Pb Free (Less than 0.1% homogeneous material): Yes ☒ /No ☐
2. Compatibility to C-9012 Conditions: N/A ☐, A ☒, E ☐, M ☒, N ☐, ...
3. MSL Level @ __˚C (J-STD-020): N/A ☒, 1 ☐, 2 ☐, 2a ☐, 3 ☐, ... SnPb process
4. MSL Level @ __˚C (J-STD-020): N/A ☒, 1 ☐, 2 ☐, 2a ☐, 3 ☐, ... Pb-free process

ADDITIONAL INFORMATION:

1. This part is based on AMOTECH P/N AMAN1003015ST06
2. This part shall be packaged in tape & reel per Delphi C-9003, and part label shall meet DELPHI C-9023 specification.

☒ UG MODEL

KEY CHARACTERISTICS	DISTRIBUTION:		DR LILIAN LI	DATE 13JA17
YES ☐ NO ☒	N/A	N/A	Appv LILIAN LI	DATE 18JA17
			Appv SUNSHINE YAN	DATE 18JA17
			Appv	DATE

DELPHI
ELECTRONICS AND SAFETY

DOCUMENT DATA STORAGE:	DOC. MAN.

FIRST USED: 28540355

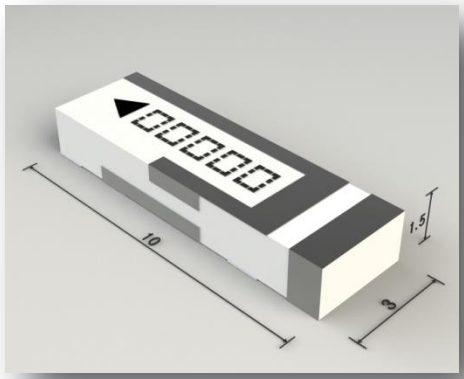
DWG NAME: ANTENNA-CHIP,2.4/5GHz,DUAL BAND

PART NO: 28544948

SHT 0 OF 10

Document	Datasheet
Type	Dielectric Chip Antenna
Application	2.4GHz/5GHz
Part No.	AMAN1003015ST06
Revision	3.0

DATASHEET



Application

WLAN Dual-band(2.4GHz/5GHz)

Features

PIFA structure
Size (10.0*3.0*1.5mm^3)
Performance optimizing
with tuning the conductive pattern on the ceramic body
SMT available under Pb-free condition
RoHS compliant
AEC-Q200 Qualified

AMOTECH

Notes

The contents of this datasheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

Revision History

Rev. No	Date	Title	Contents	Page
0.0	2013. 09. 23		New Published	
1.0	2013. 11. 18		Changed PCB Pin Number	4
			AEC-Q200 Qualified	1
2.0	2014. 02. 07		Added Antenna Land Pattern & Length	3, 4
3.0	2017. 04. 06		Revised Electrical Specification (Jig Condition Measurement Specification Added)	3

Table of Content

1. Specifications

1.1 Electrical Specifications

No	Item	Spec.		Remark
1	Frequency Range [GHz]	2.400 ~2.485 / 5.150~5.850		
2	VSWR	Max 3.0 : 1		
3	Avg. Gain [dBi]	2.442GHz	typ. -0.3	2.400 ~ 2.485GHz
		5.500GHz	typ. -1.2	5.150 ~ 5.850GHz
4	Efficiency [%]	2.442GHz	typ. 94	2.400 ~ 2.485GHz
		5.500GHz	typ. 76	5.150 ~ 5.850GHz
5	Polarization	Linear		
6	Impedance [Ω]	Nominal 50		

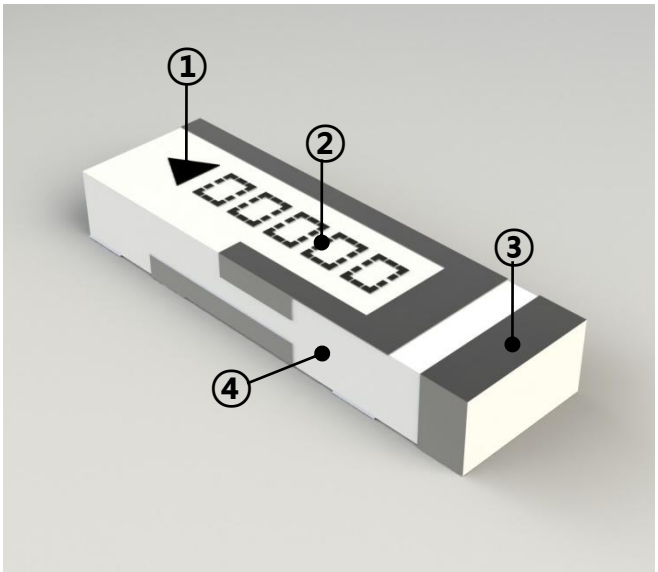
✓ The results are measured on the 100x50mm^2 evaluation board(EVB).
✓ See Page 6. for more detail gain parameter

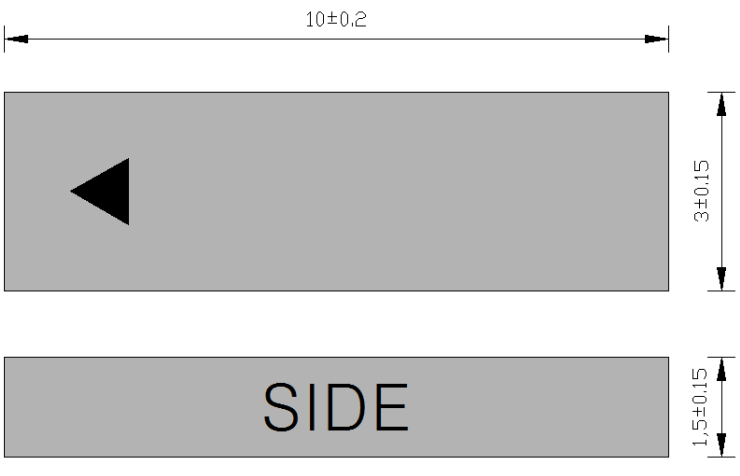
1.2 Mechanical Specifications

No	Item	Spec.	Remark
1	Dimensions (LxWxH)	10.0x3.0x1.5 mm^3	
2	Unit Weight	typ. 110mg	
3	Operating Temperature	-40 ~ +85 ℃	

1.3 Appearance & Material

No	Item	Function	Material
①	Marking	Feeding Index	Ink
②	Marking	Week number	Ink
③	Electrode	Radiation Element	Ag
④	Ceramic Body	-	Ceramic

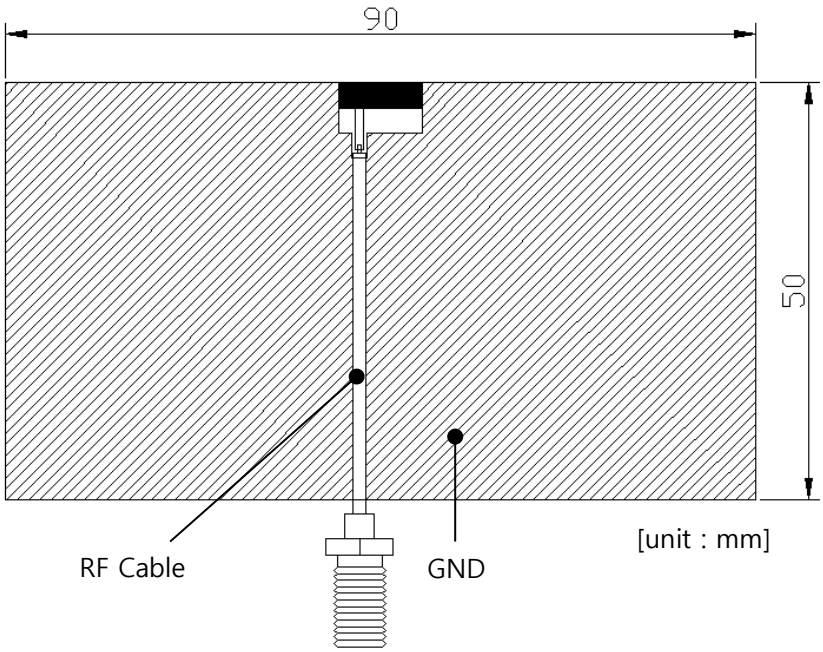




[unit : mm]

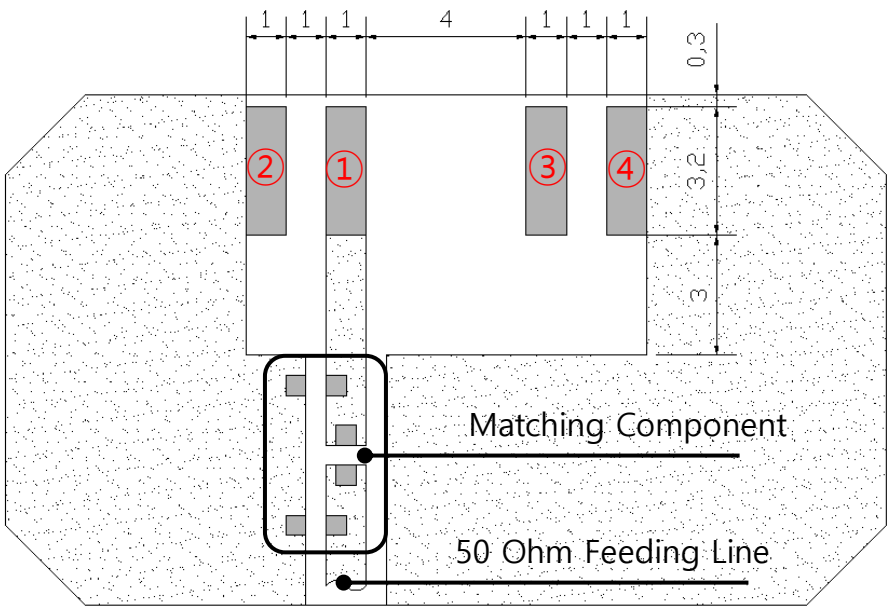
2. PCB Design for Test

2.1 Evaluation Board Dimension



✓ Evaluation board size ~ 90x50
✓ Fill Cut Area (GND Clearance) ~ 10.0x5.5

2.2 PCB Design Guide



[unit : mm]

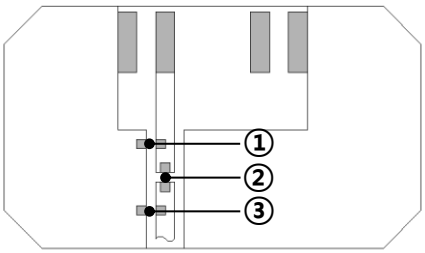
Antenna Top

Antenna Bottom

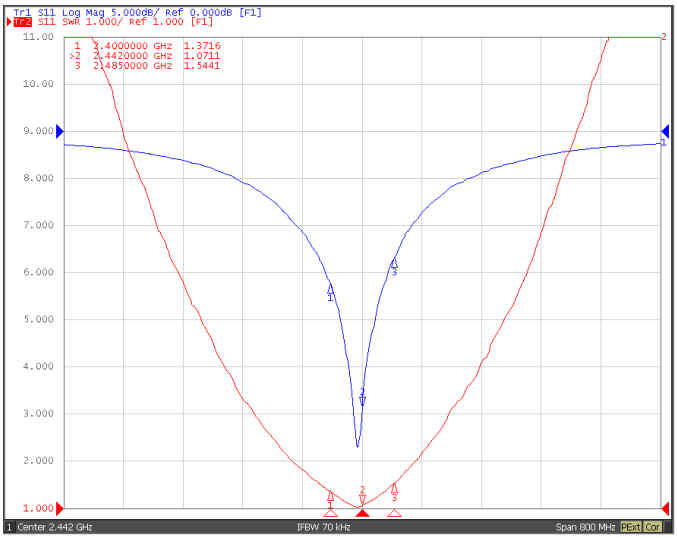
No	Pin Assignment
①	Feeding
②	GND
③	N/C
④	GND

3. Measurement Result

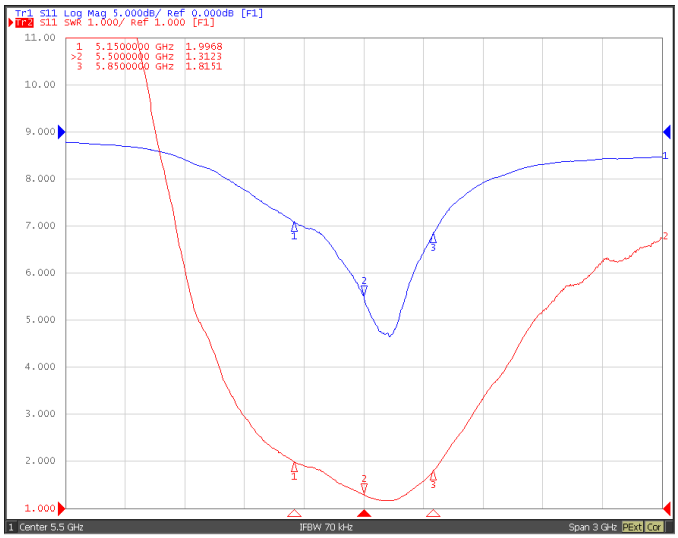
3.1 Typical Measurement Result (VSWR/RL, Smithchart)



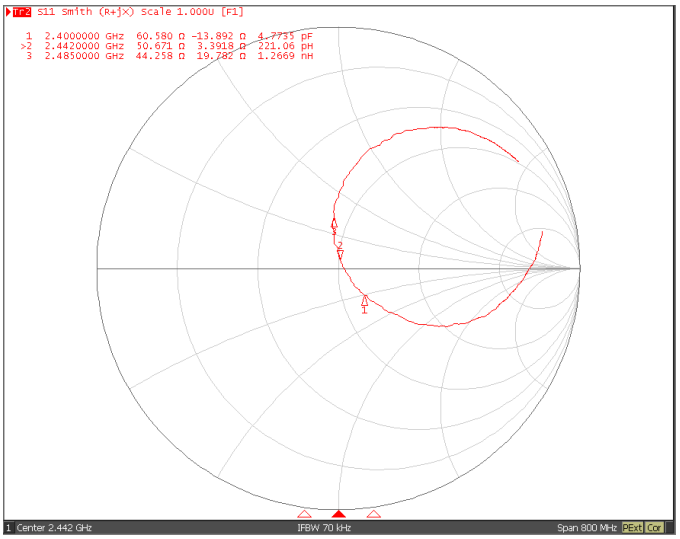
No	Matching Value
①	N/C
②	0Ω (100pF)
③	N/C



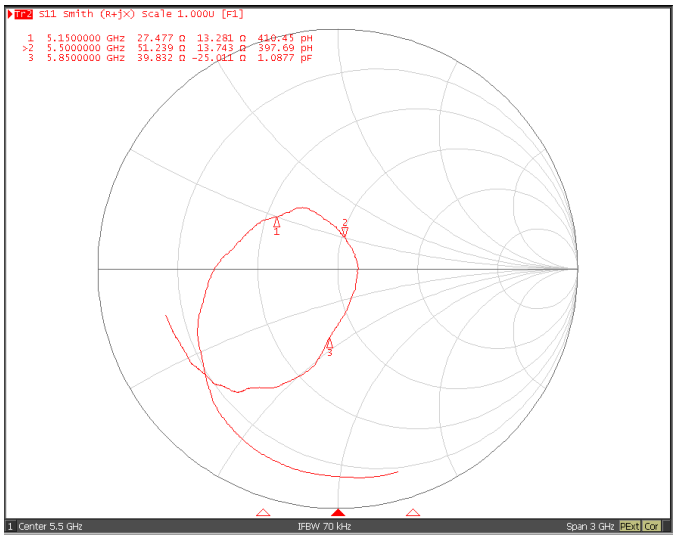
VSWR (2.442GHz)



VSWR (5.500GHz)



Smith Chart (2.442GHz)

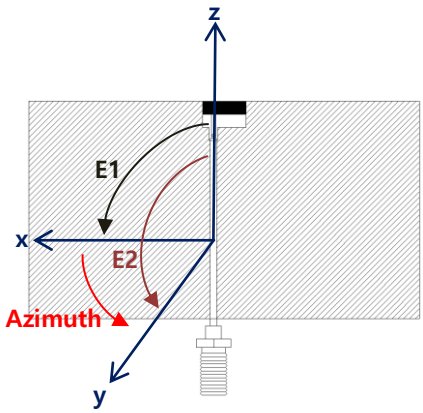


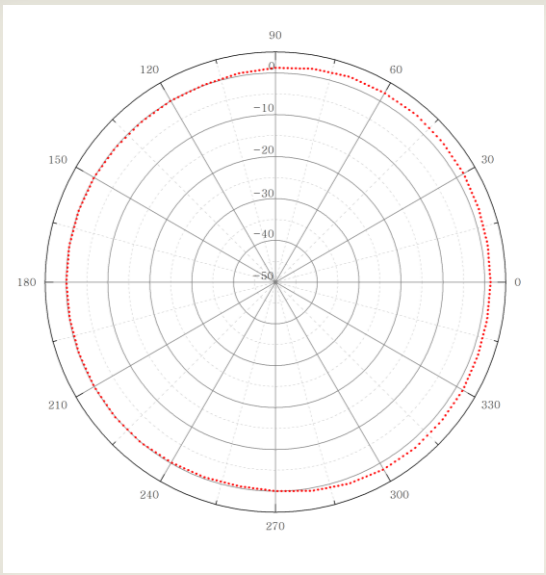
Smith Chart (5.500GHz)

✓ The results are measured on the 90x50mm^2 evaluation board(EVB).

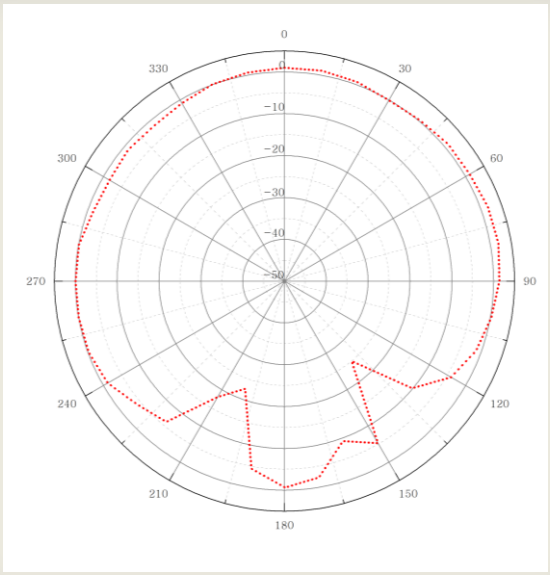
3.2 Typical Measurement Result (Gain, Radiation Pattern)

	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency(%)
Azimuth	2.23	0.89	94
Elevation 1	1.94	-1.04	
Elevation 2	1.66	0.01	

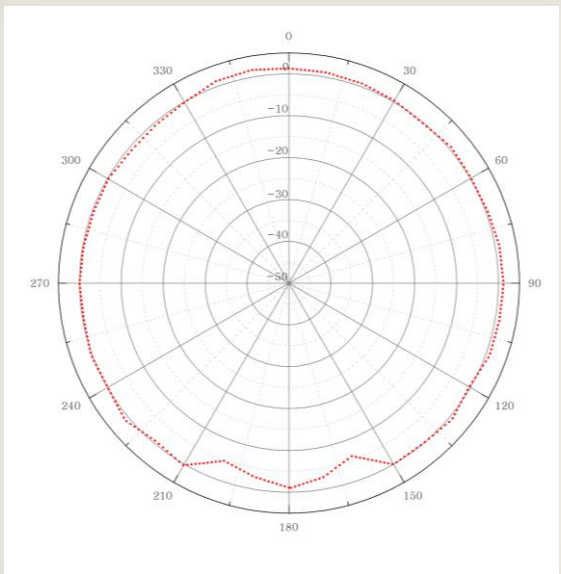




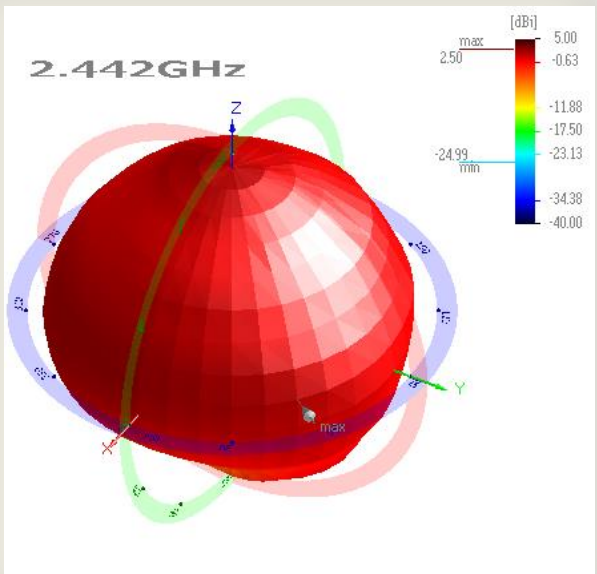
[Azimuth plane @2.442GHz]



[Elevation1 plane @2.442GHz]



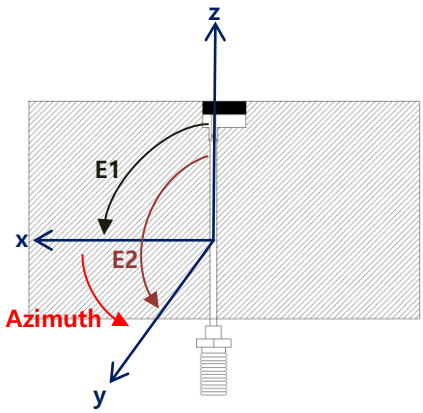
[Elevation2 plane @2.442GHz]

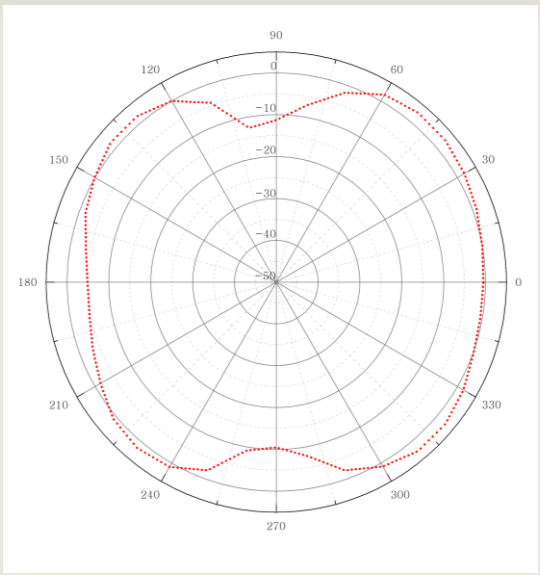


[3D Radiation Pattern]

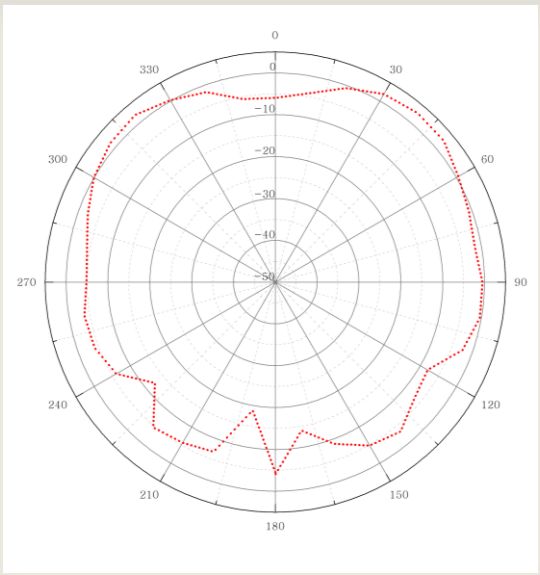
3.2 Typical Measurement Result (Gain, Radiation Pattern)

	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency(%)
Azimuth	2.79	-0.37	76
Elevation 1	2.76	-2.01	
Elevation 2	-3.54	-7.31	

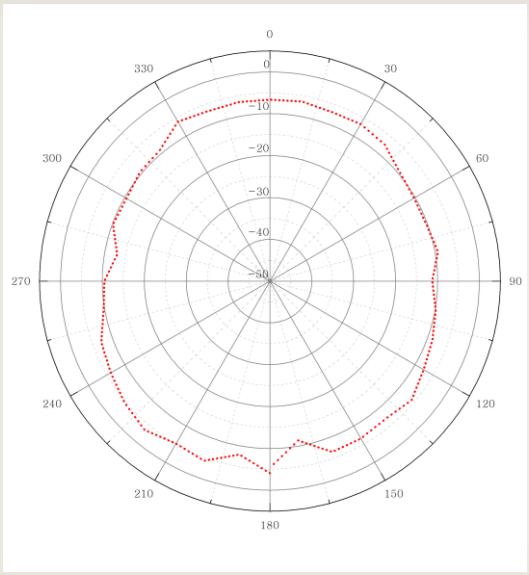




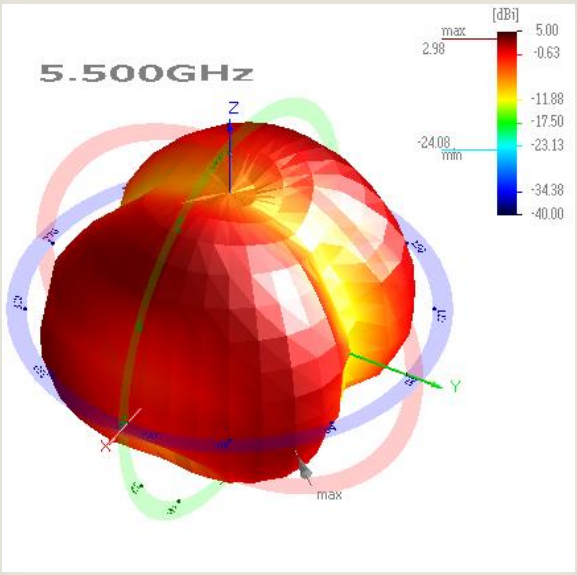
[Azimuth plane @5.5GHz]



[Elevation1 plane @5.5GHz]

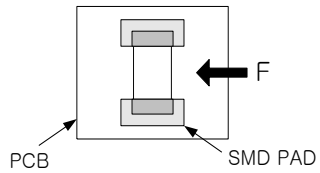


[Elevation2 plane @5.5GHz]



[3D Radiation Pattern]

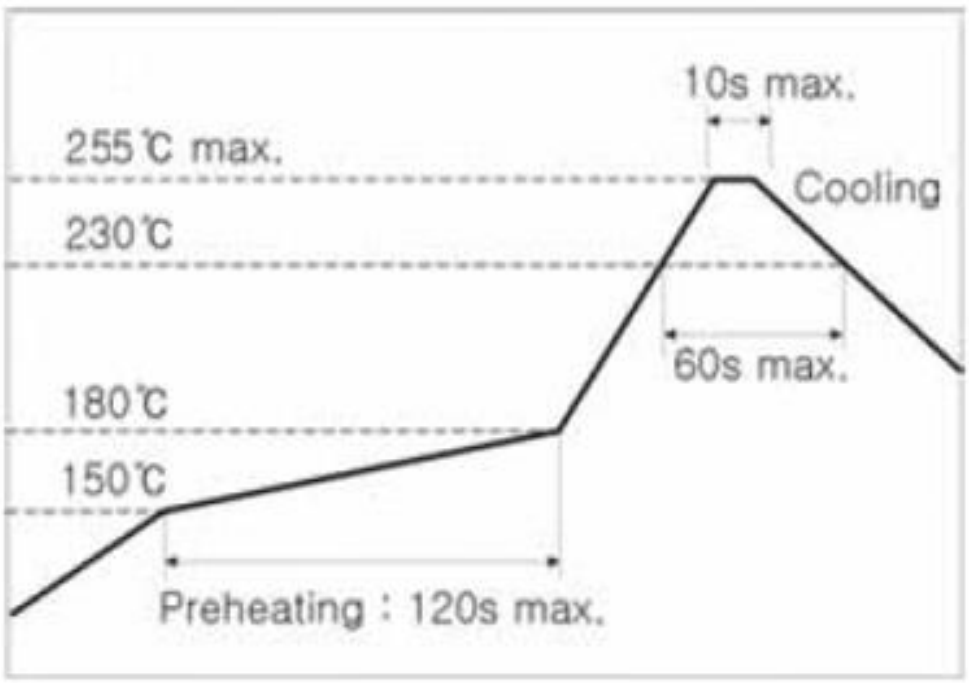
4. Reliability

No	Item	Test Condition	Test Requirements
1	Adhesive Strength of Termination	Apply force on SMT chip till detached from PCB. 	1. No mechanical damage on chip within applied force (F). 2. Force (F) ≤ 5 kgf
2	Thermal Shock (Cycle)	1. Step 1 : -40 ± 3℃, 30 min Step 2 : +85 ± 3℃, 30 min 2. Number of cycle : 1000	1. No visual damage 2. Within electric specification (VSWR)
3	High Temperature Resistance	1. Temperature : +125 ± 5℃ 2. Time : 1000 ± hrs.	1. No visual damage 2. Within electric specification (VSWR)
4	Humidity	1. Humidity : 85 % RH Temperature : +85 ± 3℃ 2. Time : 1000 ± hrs.	1. No visual damage 2. Within electric specification (VSWR)
5	ESD	1. ESD level : 8KV 2. Mode : contact discharge 3. Count : 10	1. No visual damage 2. Within electric specification (VSWR)

5. Cautions (Recommendations)

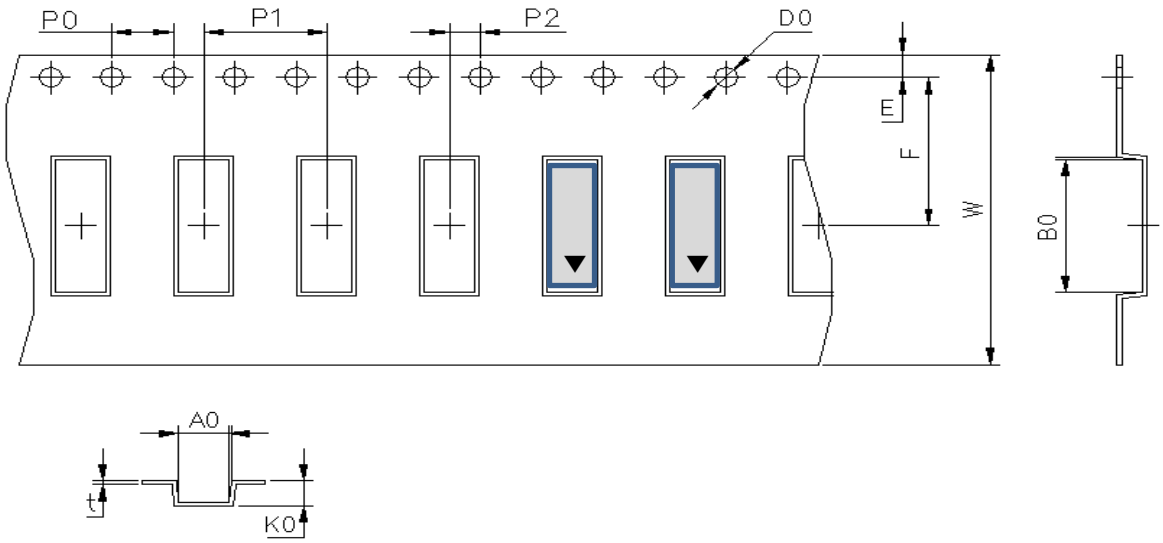
- ✓ Storage environment of parts must be at ambient temperatures of 5 to 40℃ and maximum 60%RH humidity
- ✓ The parts should be used within 6 months from the time of delivery. If stored for over 6 months, check for solder ability before use.

6. Soldering Reflow Profile



6. Packaging

6.1 Carrier Tape Dimension



Item	Spec.	Item	Spec.	Item	Spec.
A0	3.30 ±0.10	P0	4.00 ±0.10	E	1.75 ±0.10
B0	10.30 ±0.10	P1	8.00 ±0.10	F	11.50 ±0.10
K0	1.65 ±0.10	P2	2.00 ±0.10	W	24.00 ±0.30
D0	1.55 ±0.05	-	-	t	0.30 ±0.05

6.2 Packaging Quantity

Item	Quantity	Dimension
Reel	4,000 ea	Φ13" * 24mm
Inner	8,000 ea (2 Reel)	350 * 350 * 90 (mm3)
Outer Box	24,000 ea (3 Inner Box)	390 * 390 * 280 (mm3)

6.3 Packaging Label

AMOTECH Co., Ltd.

5BL-1Lot, 617, Namchon-Dong, Namdong-Gu, Incheon, Korea

Dielectric Chip Antenna

P/N : AMAN1003015ST06

Lot No :

Quantity : 4,000 pcs Date : 2013/09/23