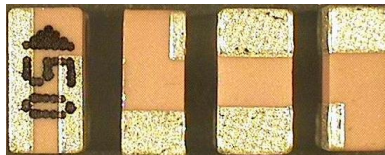


Approval Sheet

Product : Dielectric Chip Antenna

Part No. : AMAN301512ST01

DS GLOBAL	Plan	Evaluation	Decision
Date	/	/	/



AMOTECH	Written	Checked		Approved
Date	05/22	05/22	05/22	05/22

2020.05.22

AMOTECH Co., Ltd

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1. Revision

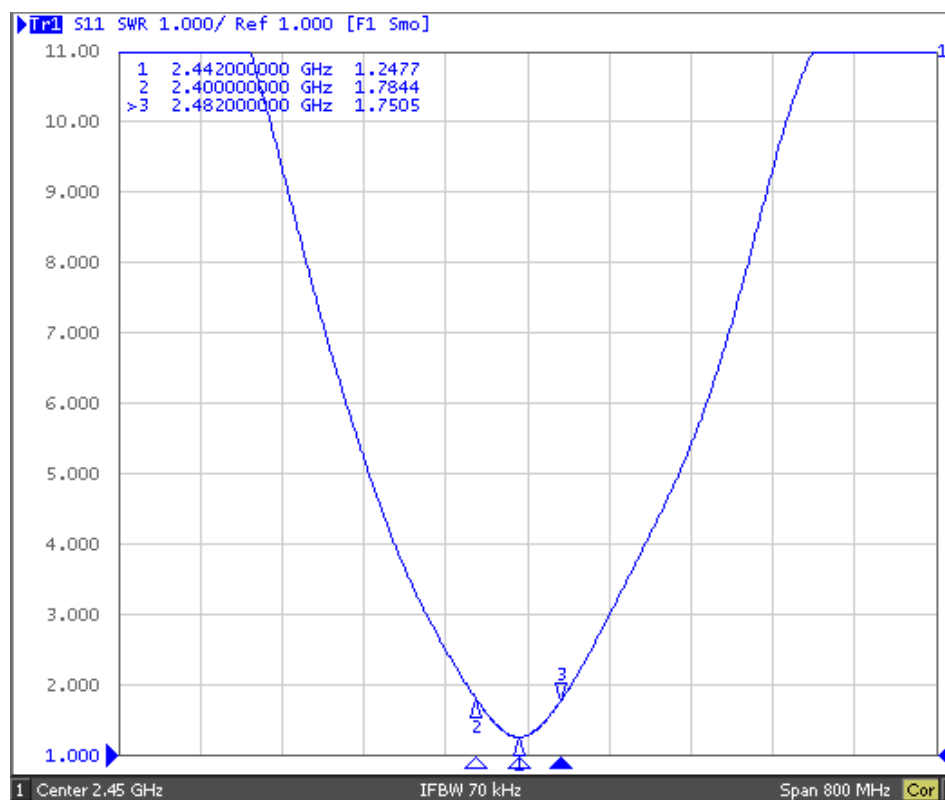
Rev No	Date	Content	Page
0	2020.05.22	New published	

2. Specification

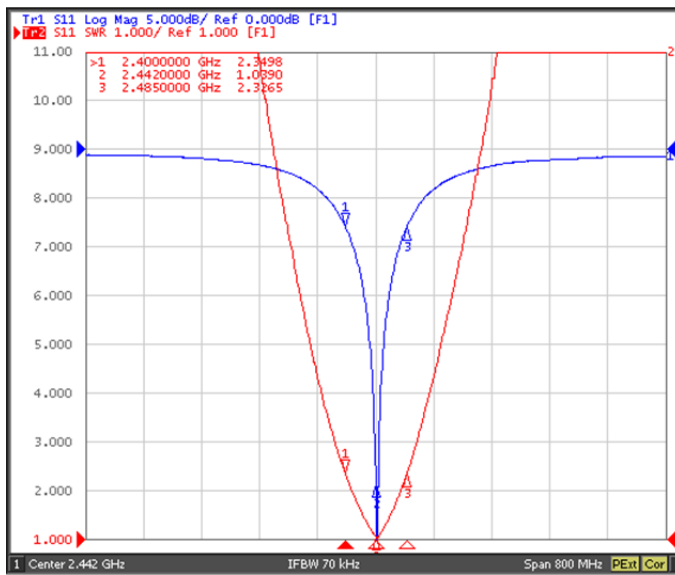
2.1 Electrical specification

Division	Item	Specification			Remark
1	Operating Freq.	2400 ~ 2484 MHz			
2	CTF VSWR	Max 3.0:1 @ 2442 ± 42 MHz			JIG
3	Radiation gain	Avg.	2440 MHz	-2.7 dBi	EVB
			2442 MHz	-1.5 dBi	
			2485 MHz	-2.5 dBi	
		Peak	2440 MHz	0.4 dBi	
			2442 MHz	0.5 dBi	
			2485 MHz	0.3 dBi	
4	Radiation pattern	Omni-directional			
5	Impedance	Nominal 50 Ω			

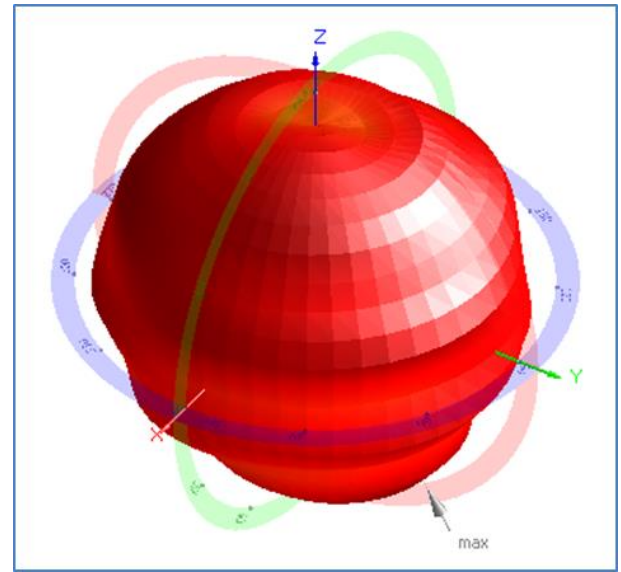
※ Antenna gain would be measured on EVB contain matching circuit.



[VSWR on the jig]

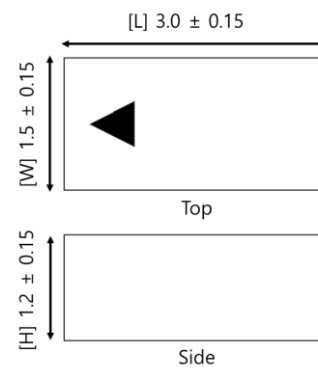
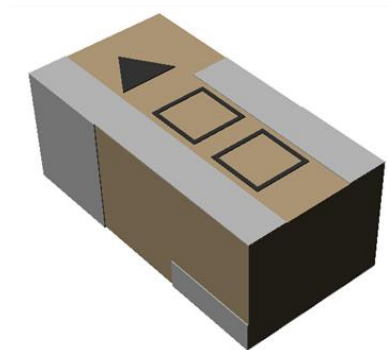


[VSWR on the EVB]



[2442MHz radiation pattern on the EVB]

2.2 Mechanical specification



Division	Item	Dimension [mm]
Body	L	3.0 ± 0.15
	W	1.5 ± 0.15
	H	1.2 ± 0.15

2.3 Part No. & Lot No.

Model	<u>AMAN</u>	<u>301512</u>	<u>ST</u>	<u>01</u>
	(1)	(2)	(3)	(4)
(1) :	AMOTECH ANTENNA			
(2) :	Chip size (L X W X H)			
(3) :	Standard			
(4) :	Version			

Lot	<u>XX</u>	<u>XX</u>	<u>X</u>	<u>X</u>	<u>XX</u>
	(1)	(2)	(3)	(4)	(5)
(1) :	Year of forming corpuscle				
(2) :	Month of forming corpuscle				
(3) :	Dielectric constant ex) 1 → 9.5, 2 → 20.5				
(4) :	Body size ex) A → 542012, B → 542015, C → 903012, D → 903015, E → 903040,				
(5) :	Production number of month				

2.4 Marking

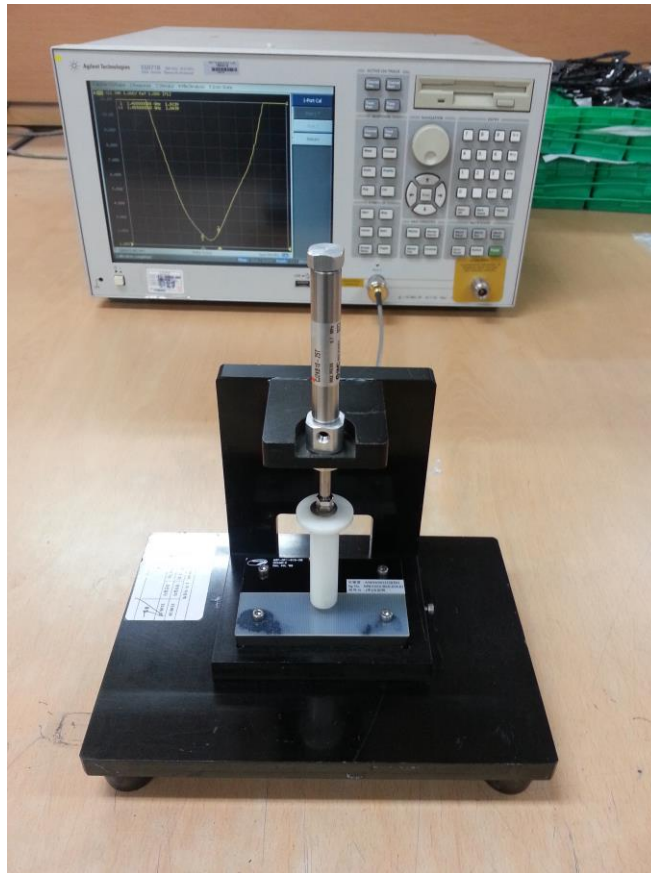


- (1) : Identifies the direction display
 (2) : Manufacturing week display ex) 1 week → 01, 52 week → 52

2.5 Manufacture factory information

Product	Manufacture Factory	Remark
AMAN301512ST01	AMOTECH Co., Ltd	

3. Test Methods



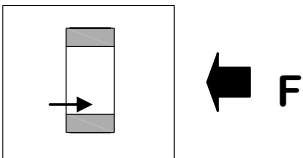
3.1 VSWR

- Product specification reference

3.2 Measurement methods

- RF cable calibration
- Connect measurement jig to the network analyzer through RF cable.
- Setting the display
 - Center frequency : 2442 MHz
 - Span : 800 MHz
 - Number of point : 801
 - Format : VSWR
 - Setting the markers : 2400MHz(marker1), 2442MHz(marker2), 2485MHz(marker3)
- Check the value of markers which is satisfied with specification.

4. Reliability Test Condition

Division	Item	Test Condition	Requirements
1	Adhesion strength	1. Increase force until the antenna on SMT PCB is fell.  SMD PAD	1. No mechanical damage on chip within applied force (F) $\leq$ 3 kgf. 2. Force (F) > 3kgf should be applied till the chip is detached or damaged.
2	Thermal shock	1. Cycle 1-Step : -40 ± 3 °C, 30 min 2-Step : $+125 \pm 3$ °C, 30 min 2. Cycle number : 1,000 3. Please wait at least 48 hours at room temperature after the measurement.	1. No damage on appearance 2. Meet the specification (VSWR)
3	High temp. resistance	1. Temperature: $+125 \pm 5$ °C 2. Time: 1000 ± 24 hours 3. Wait at least 24 hours at room temperature after the measurement.	1. No damage on appearance 2. Meet the specification (VSWR)
4	High temp. & humidity :Steady Condition	1. Humidity: 85 % RH 2. Temperature: $+85 \pm 3$ °C 3. Time: 1000 ± 24 hours 4. Wait at least 48 hours at room temperature after the measurement.	1. No damage on appearance 2. Meet the specification (VSWR)
5	ESD	1. ESD Level : 8 KV 2. Mode : Contact discharge 3. Test Count: : 100	1. No damage on appearance 2. Meet the specification (VSWR)

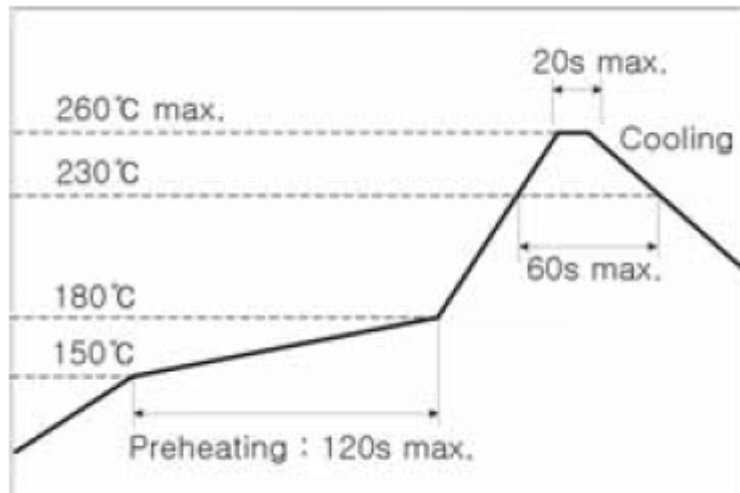
※ Please check more detail about items and results through published test report.

※ Test conditions of reliability measurement are based on "AEC-Q200" qualification requirements.

5. Recommendations Soldering Conditions (Recommendations)

5.1 Unleaded soldering temperature conditions

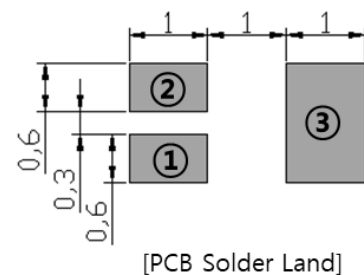
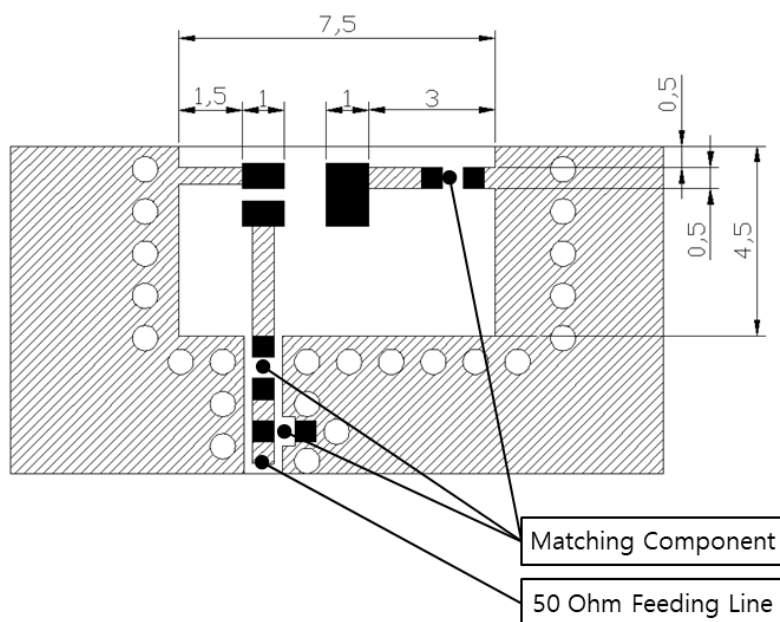
Solder paste : Ag/Sn/Cu:3.0/96.0/0.5



Soldering temperature conditions

- This product is designed for reflow soldering only. Do not use flow (wave) soldering.
- Use non-activated flux (Cl content 0.2% max.)
- Reflow-cycle is max 3 times.

5.2 PCB pattern design terms (Recommendations)

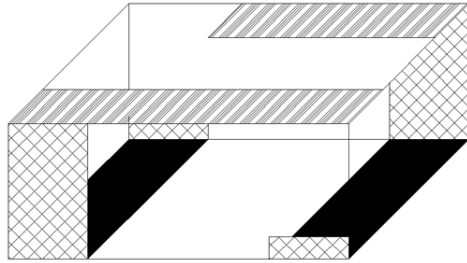


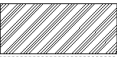
No	Pin Assignment
①	Feeding
②	GND
③	GND

[unit : mm]

6. Structure and material

6.1 Material



1	Ceramic body (Bulk)	Magnesium oxide series ceramic		
2	Electrode		Top	Ag
			Bottom	
			Side	

6.2 Equivalent circuit



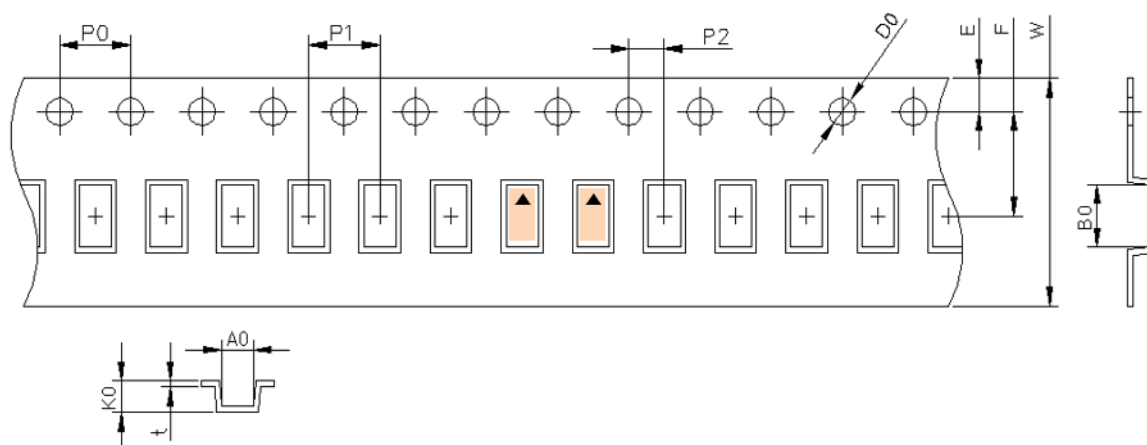
7. Notice (Recommendations)

1. Storage environment of parts must be ambient temperatures of 5 to 40 °C and maximum 60 % RH humidity
2. Chip antenna can experience degradation of termination solder ability when subjected to high temperature and humidity or exposed to sulfur and chlorine gases.
3. Avoid mechanical shock (ex. falling) to the chip antenna to prevent mechanical cracking inside of the ceramic dielectric due to its own weight.
4. 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.
5. The outer pattern of the product exposed to the atmosphere (Ag) fading is a natural phenomenon. Therefore, not affect the function or properties of the product to be regarded as normal product. (before/after SMT)

8. Packing

8.1 Carrier tape

8.1.1 Size



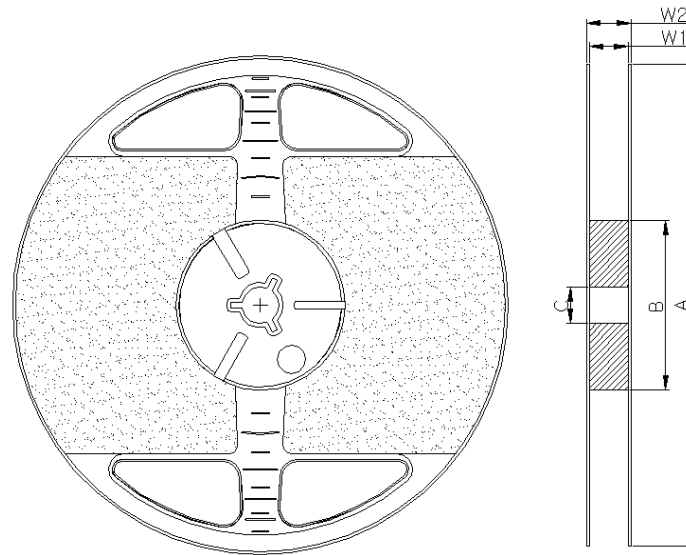
Item	Spec.	Item	Spec.	Item	Spec.
A0	1.80 ±0.10	P0	4.00 ±0.10	E	1.75 ±0.10
B0	3.30 ±0.10	P1	4.00 ±0.10	F	5.50 ±0.10
K0	1.35 ±0.10	P2	2.00 ±0.10	W	12.00 ±0.30
D0	1.55 ±0.05	-	-	t	0.30 ±0.05

8.1.2 Material and surface resistance

- 1) Carrier tape : Max $10^{11}\Omega/\square$
- 2) Cover tape : Max $10^{11}\Omega/\square$
- 3) Reel : Max $10^{11}\Omega/\square$

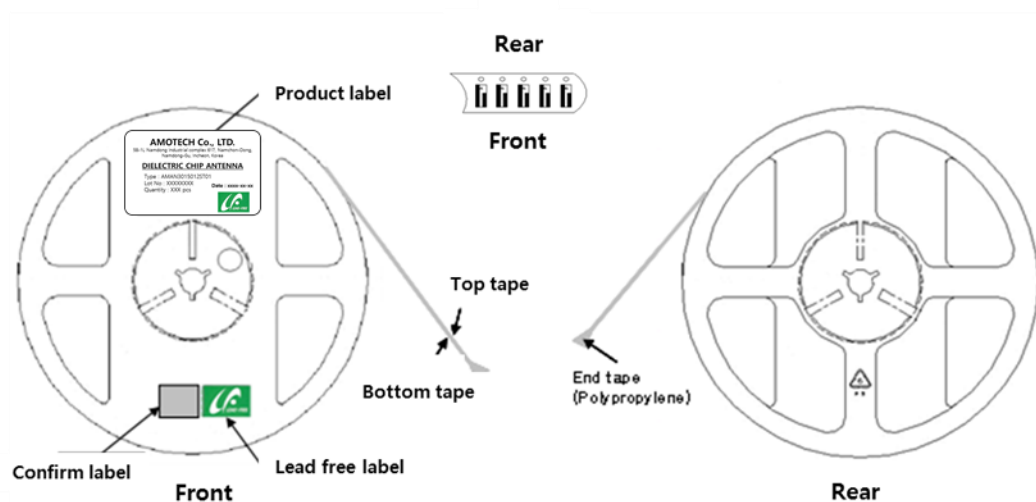
8.2 Reel

8.2.1 Size



Item	Spec (mm)	Item	Spec (mm)
A	180.00 +0.00/-3.00	W1	13.00±0.50
B	60.00 +1.00/-0.00	W2	15.40±1.00
C	13.20±0.20	-	-

8.2.2 Labeling and winding way



8.2.3 Material

- 1) Plastic reel : GPPS (General Purpose Poly Styrene) resin

8.3 Box packaging specification

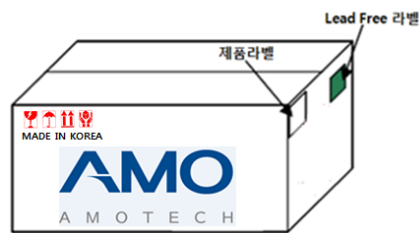
8.3.1 Small box

- 1) Size : 183 (W) x 70 (D) x 185 (H) (mm)
- 2) Quantities : 3 reel (2,500 ea/reel × 3 reel = 7,500 ea)



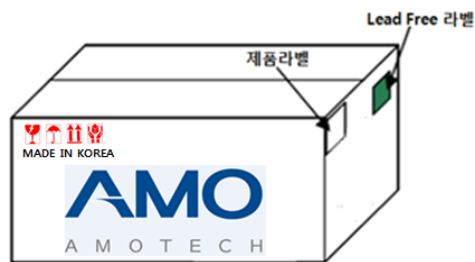
8.3.2 Medium box

- 1) Size : 365 (W) x 200 (D) x 200 (H) (mm)
- 2) Quantities : 5 small box (7,500 ea/small box × 5small box = 37,500 ea)



8.3.3 Large box

- 1) Size : 390 (W) x 390 (D) x 280 (H) (mm)
- 2) Quantities : 14 small box (7,500 ea/small box × 14small box = 105,000 ea)



8.3.4 Packing label

