

Document	Datasheet
Type	Dielectric Chip Antenna
Application	2.4GHz
Part No.	AMAN301512ST01
Revision	2.2

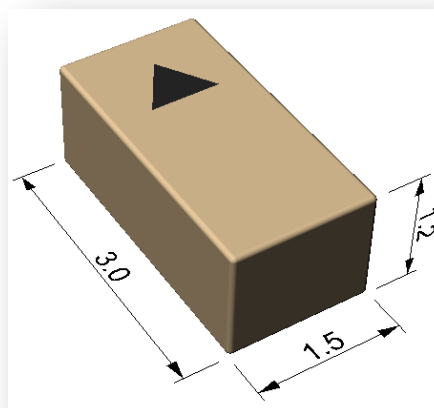
DATASHEET

Application

Bluetooth
Zigbee
WLAN (IEEE 802.11 b/g)
ISM 2.4GHz Wireless Devices

Features

PIFA Structure
Small Size ($3.0 \times 1.5 \times 1.2 \text{mm}^3$)
Easy Optimizing
with external lumped matching components
SMT Available under Pb-free Condition
RoHS Compliant



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	08.09.30		New published	
1	09.03.24	Data	Added Efficiency data	8
			Changed carrier tape width (W16mm → W12mm)	12
1.1	09.04.07	Format	Changed document format	
1.2	14.08.06		Corrected the miswritten values	3
2	14.09.26	Data	Changed Antenna Specification & Parameter	3,5,6
2.1	15.08.01	Data	Added Peak gain	3, 6
2.2	15.12.23	Data	Added Cautions (Recommendations)	7

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1. Specifications

1.1 Electrical Specifications

No	Item	Spec.	Remark
1	Frequency Range [MHz]	2400 ~ 2485	
2	VSWR	Max 3.0:1	
3	Avg. Gain [dBi]	Typical -2.6	
4	Peak Gain [dBi]	Typical 0.5	
5	Efficiency [%]	Typical 55	
6	Polarization	Linear	
7	Impedance [Ω]	Nominal 50	

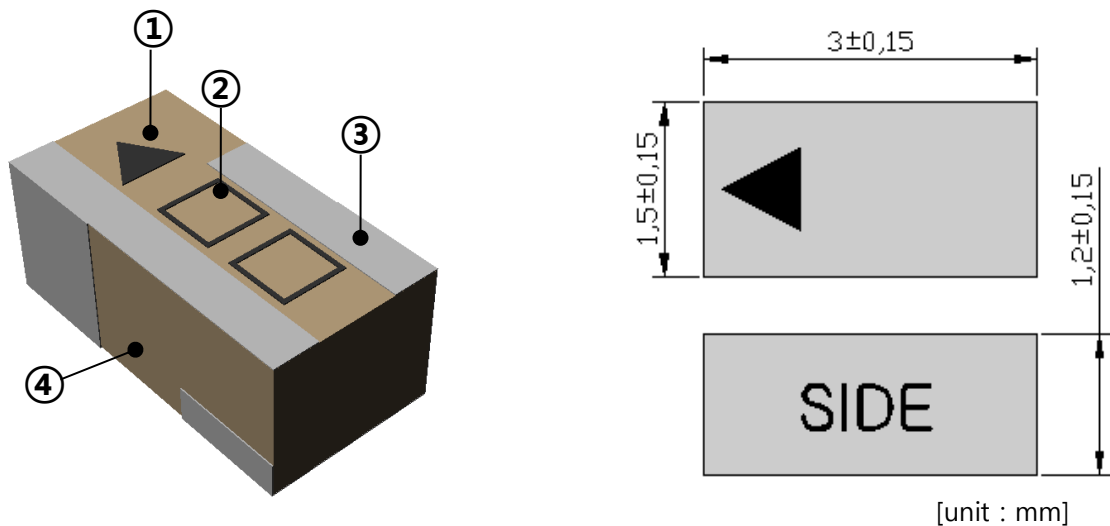
- ✓ The results are measured on the 50x50mm² evaluation board(EVB).
- ✓ See Page 6. for more detail gain parameter

1.2 Mechanical Specifications

No	Item	Spec.	Remark
1	Dimensions (LxWxH)	3.0x1.5x1.2 mm ³	
2	Unit Weight	typ. 20 mg	
3	Operating Temperature	-40 ~ +85 °C	

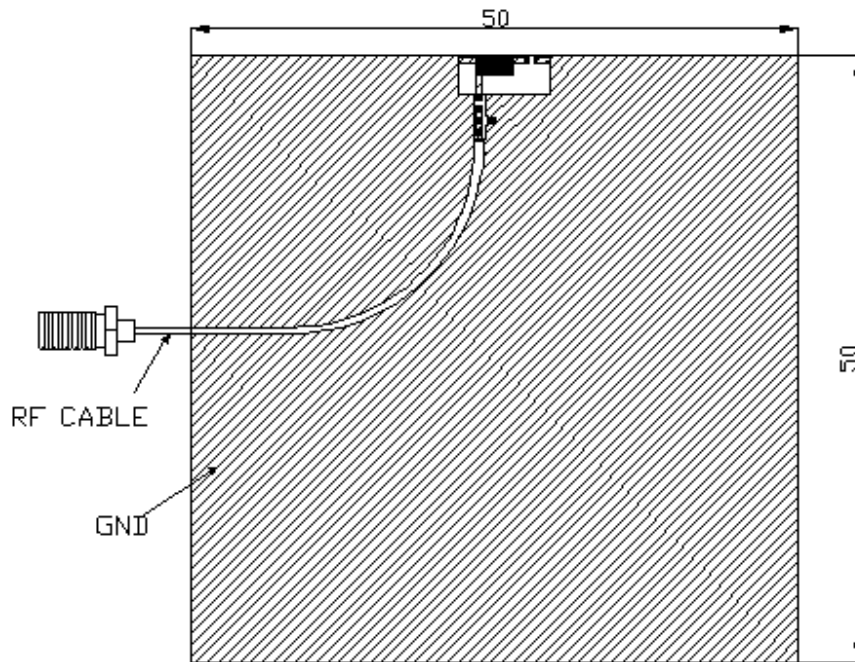
1.3 Appearance & Material

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



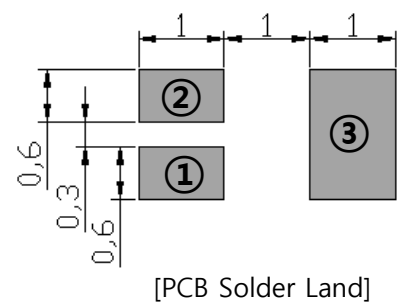
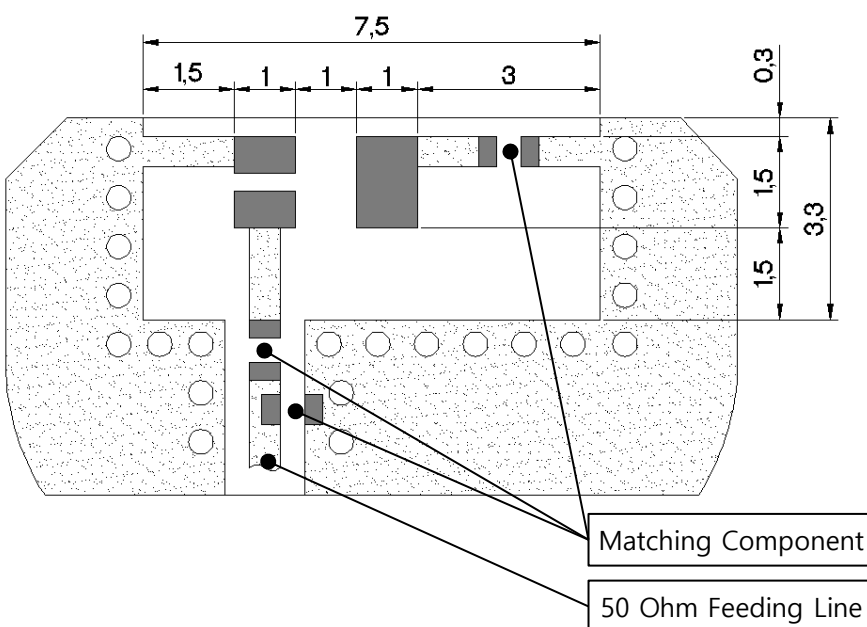
2. PCB Design for Test

2.1 Evaluation Board Dimension



- ✓ Evaluation board size ~ 50x50
- ✓ Fill Cut Area (GND Clearance) ~ 7.5x3.3

2.2 PCB Design Guide



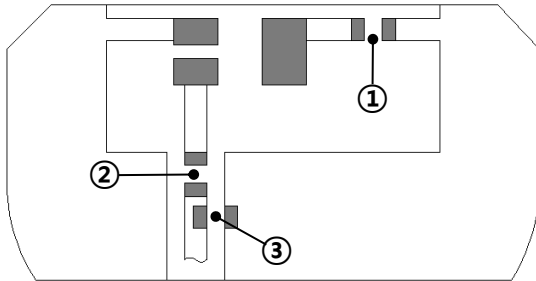
[PCB Solder Land]

No	Pin Assignment
①	Feeding
②	GND
③	GND

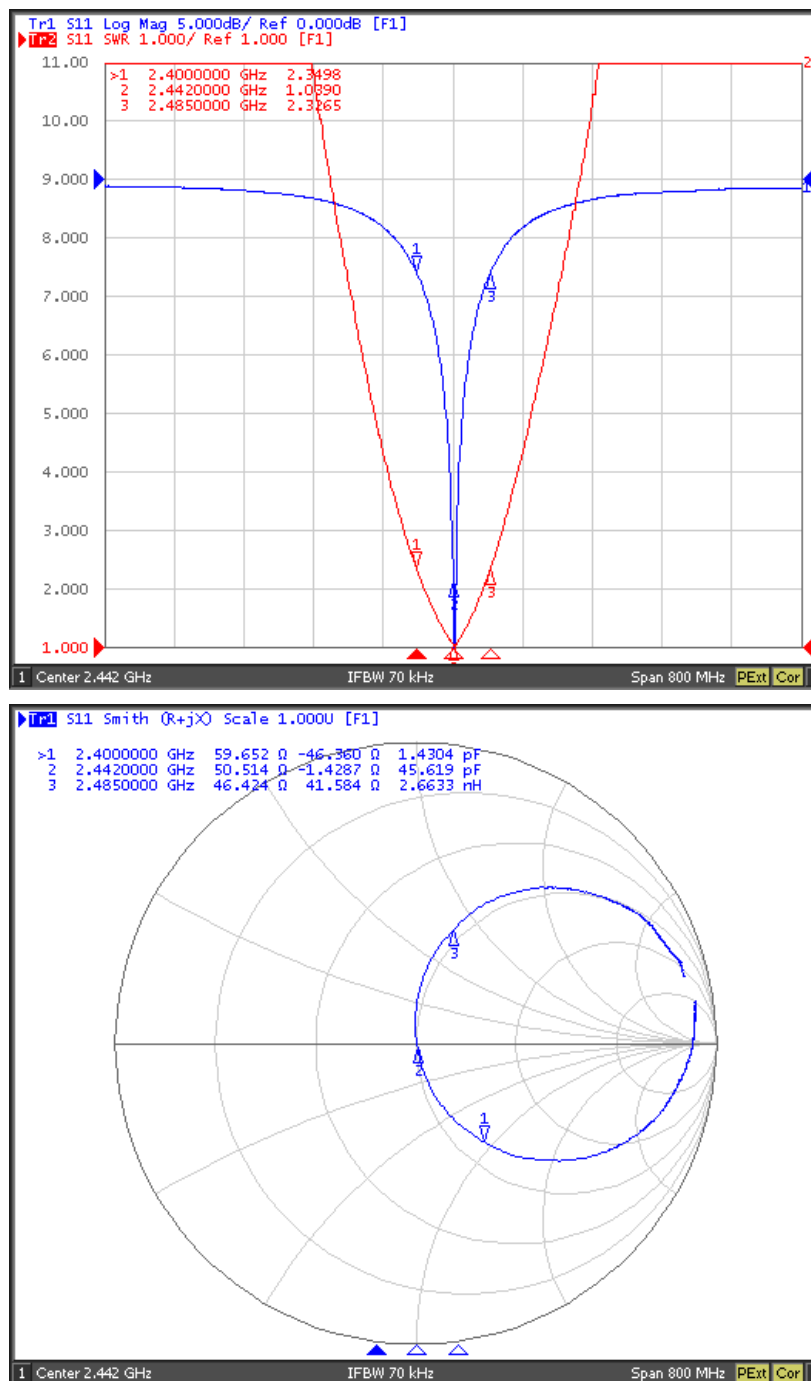
[unit : mm]

3. Measurement Result

3.1 Typical Measurement Result (VSWR/RL, Smithchart)



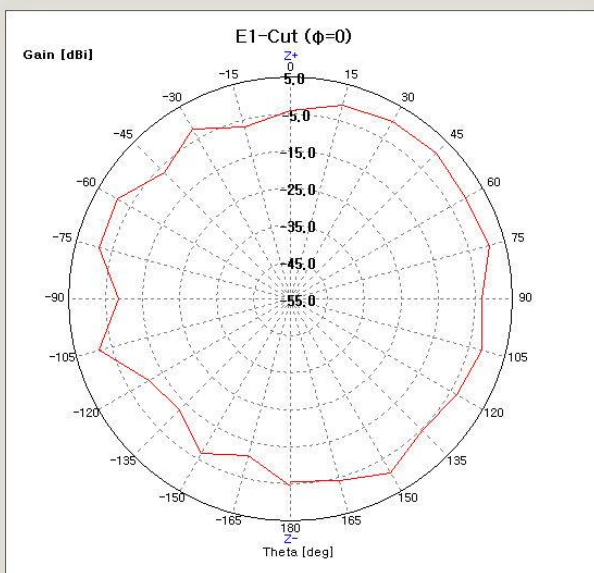
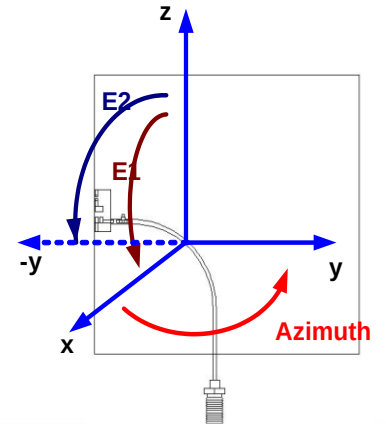
No	Matching Value
①	1.0 nH
②	4.7 nH
③	1.2 pF



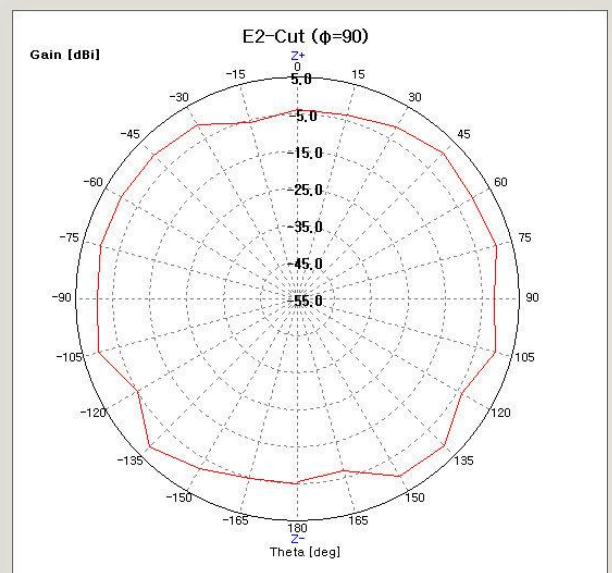
✓ The results are measured on the 50x50mm² evaluation board(EVB).

3.2 Typical Measurement Result (Gain, Radiation Pattern)

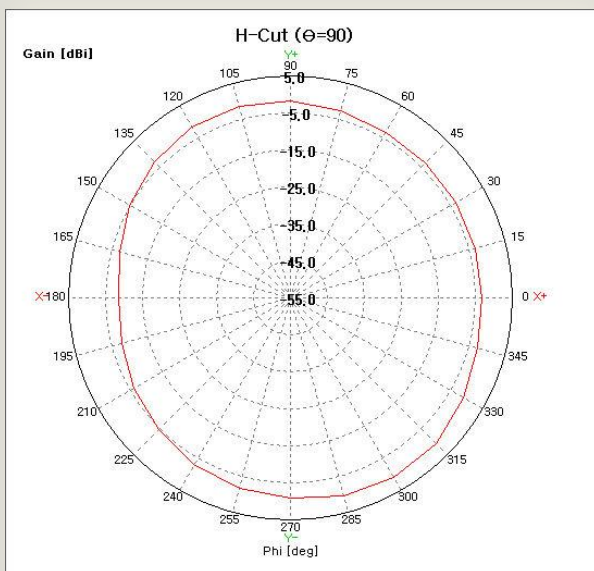
Freq. [MHz]	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
2400	54.2	-2.7	1.0
2442	71.5	-1.5	1.8
2485	56.5	-2.5	0.5



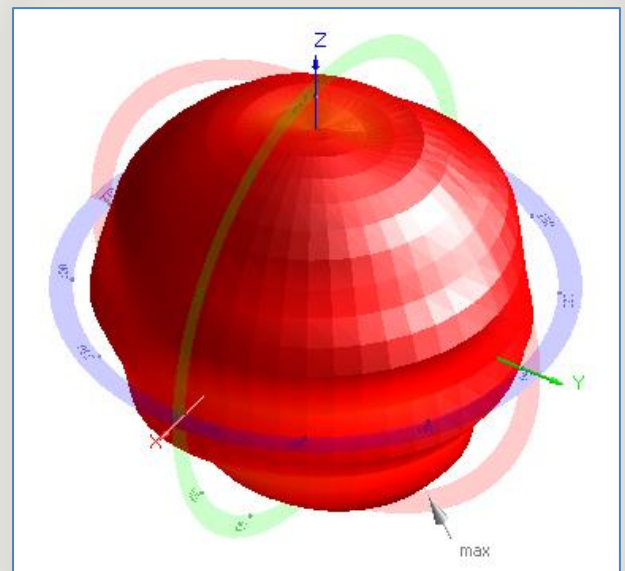
[Elevation1 plane @2.442GHz]



[Elevation2 plane @2.442GHz]

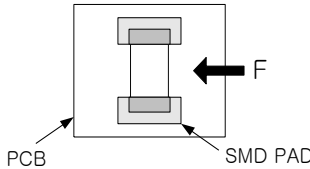


[Azimuth plane @2.442GHz]



[3D Radiation Pattern]

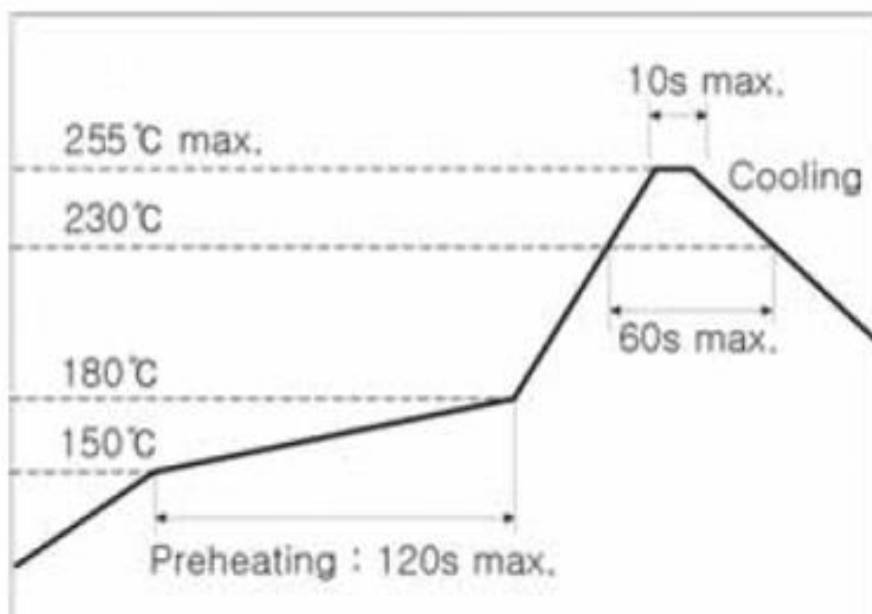
4. Reliability

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 applied force 2. Strength (F) > 3 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. Cautions (Recommendations)

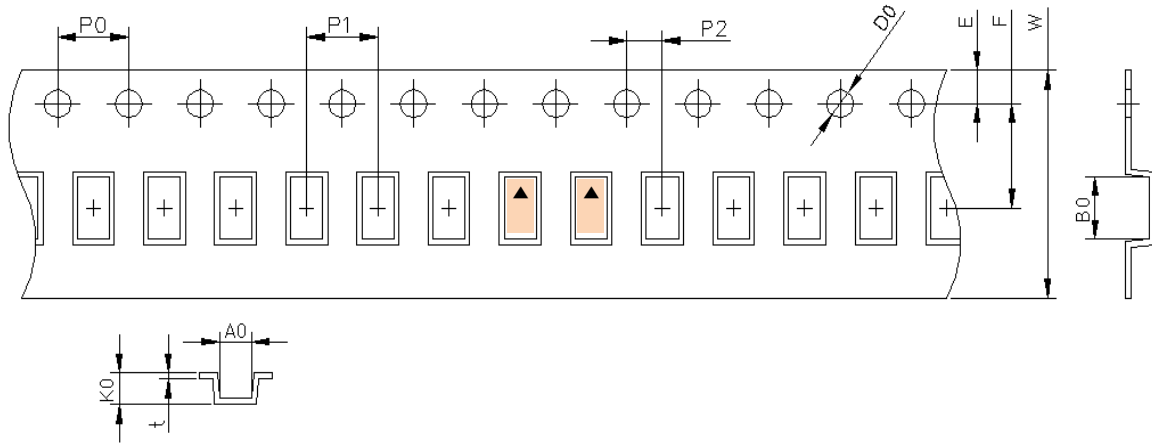
- ✓ Storage environment of parts must be at ambient temperatures of 5 to 40°C and maximum 60%RH humidity
- ✓ The parts should be used within 6 months from the time of delivery. If stored for over 6 months, check for solder ability before use.

6. Soldering Reflow Profile



7. Packaging

7.1 Carrier Tape Dimension



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

7.2 Packaging Quantity

Item	Quantity	Dimension
Reel	2,500ea	Φ7" * 12mm
Inner Box	7,500 ea (3 reel)	185 * 185 * 68 (mm ³)
Outer Box1	37,500 ea (5 Inner Box)	365 * 200 * 200 (mm ³)
Outer Box2	105,000 ea (14 Inner Box)	390 * 390 * 280 (mm ³)

7.3 Packaging Label

AMOTECH Co., Ltd.

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

Dielectric Chip Antenna

P/N : AMAN301512ST01

Lot No :

Quantity : 2,500 pcs Date : 2009/04/09

Measurement Report

Customer : VC

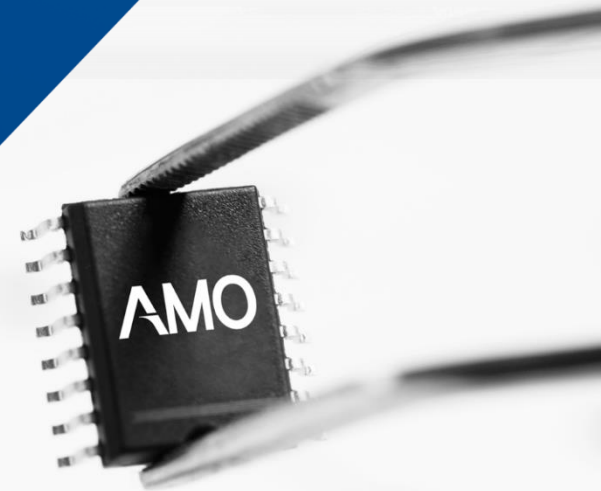
Model : T11

Application :GPS

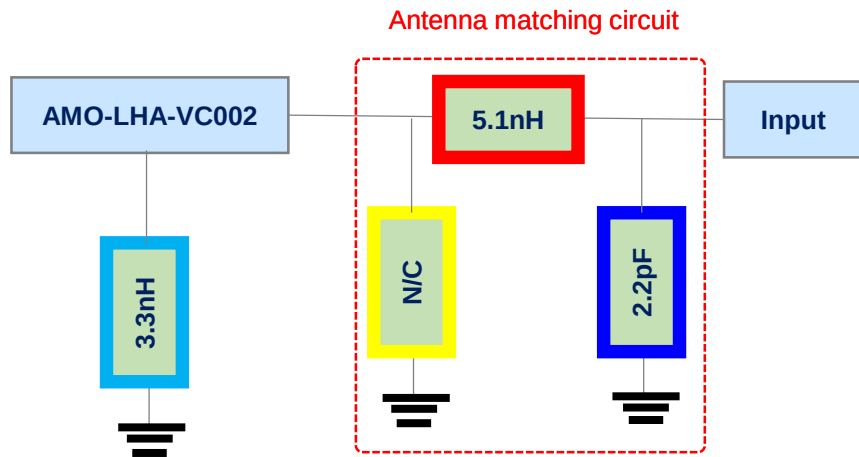
Antenna P/N :AMO-LHA-VC002

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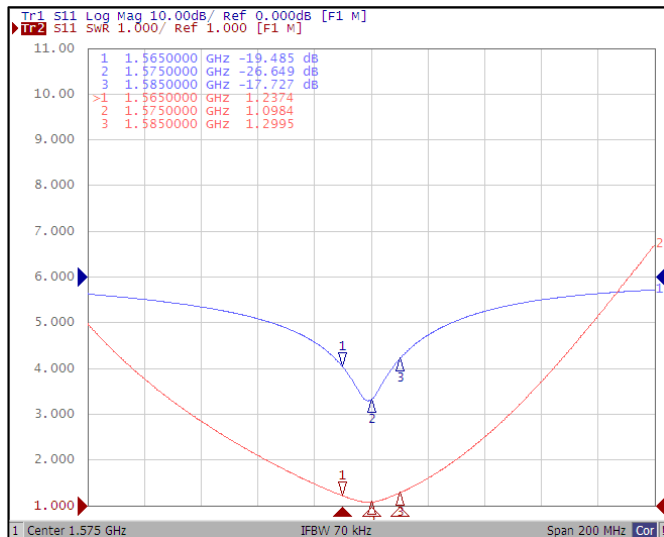
AMO
A M O T E C H



1. GPS measurement data _ Matching Debugging

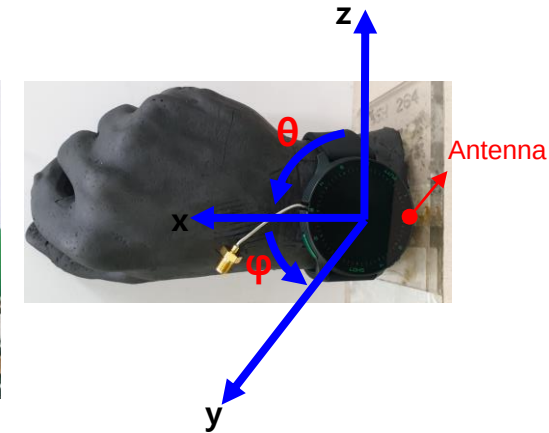
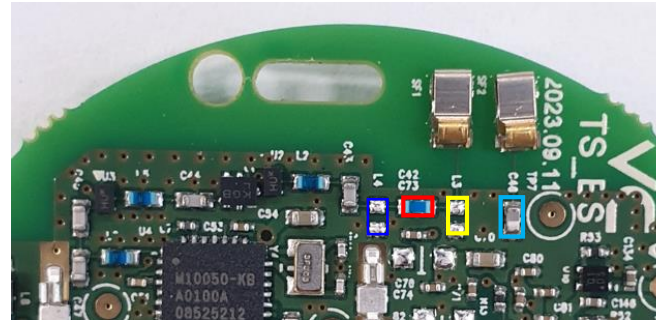


→ L3:NC, C42:5.1nH, L4:2.2F, C46:3.3nH



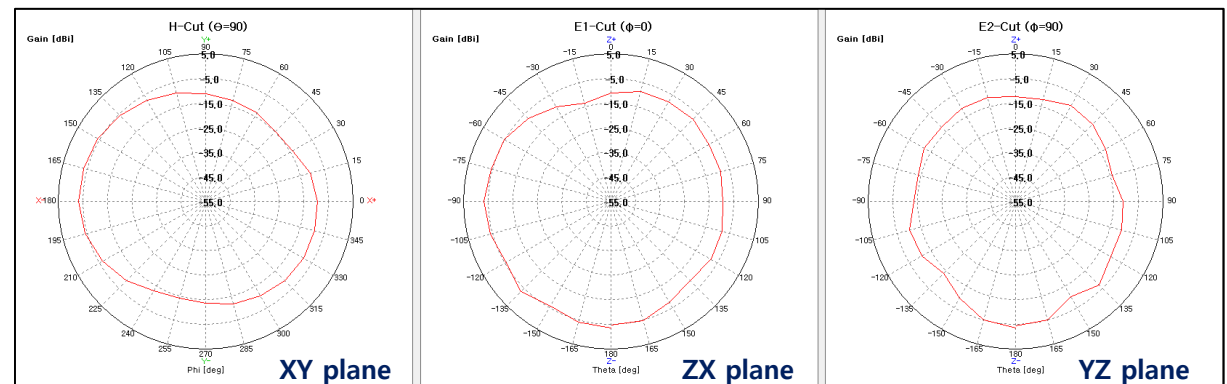
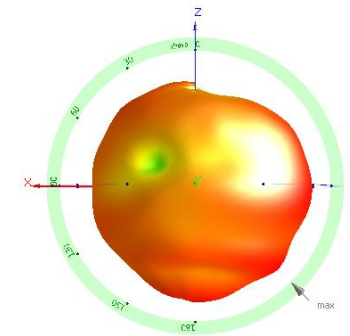
Measured VSWR

Set condition



Gain table & Radiation pattern @1575MHz

Frequency [MHz]	Efficiency [%]	Average gain [dBi]	Peak gain [dBi]
1565	15.42	-8.12	-2.14
1575	16.07	-7.94	-2.05
1585	15.18	-8.19	-2.17



Measurement Report

Customer : VC

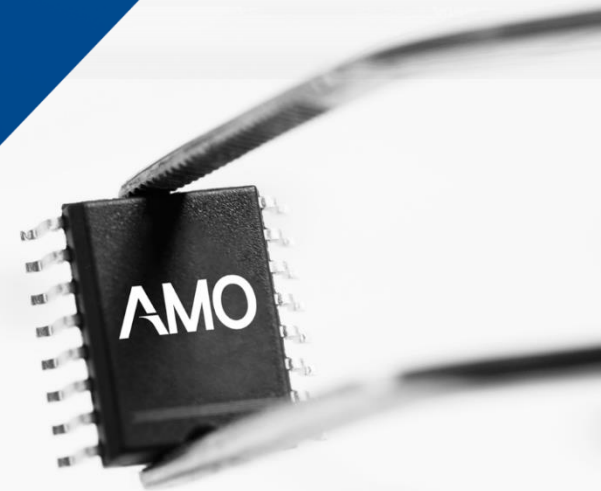
Model : T11 Pro

Application :GPS

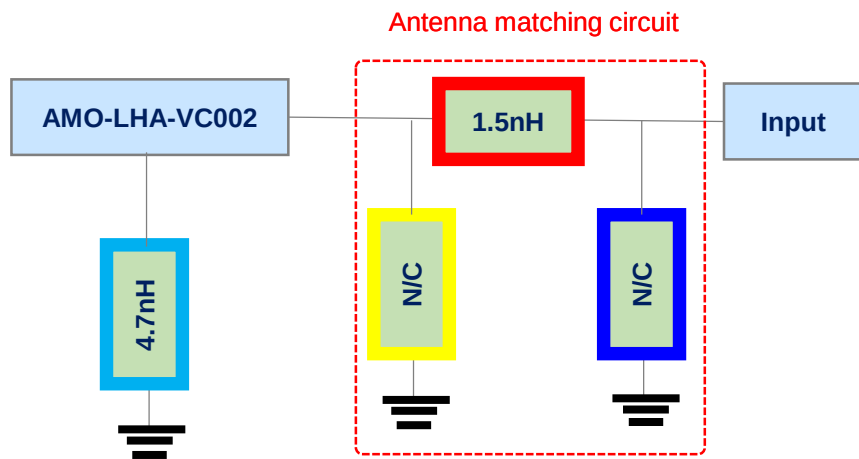
Antenna P/N :AMO-LHA-VC002

2023. 11. 06

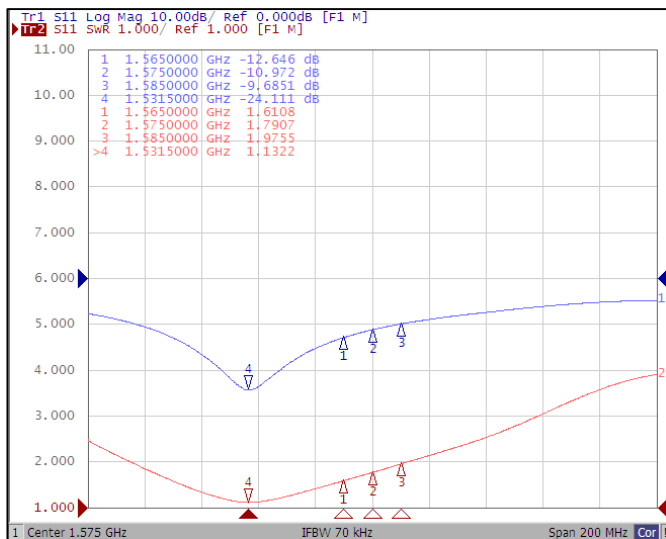
AMO
A M O T E C H



1. GPS measurement data _ Default

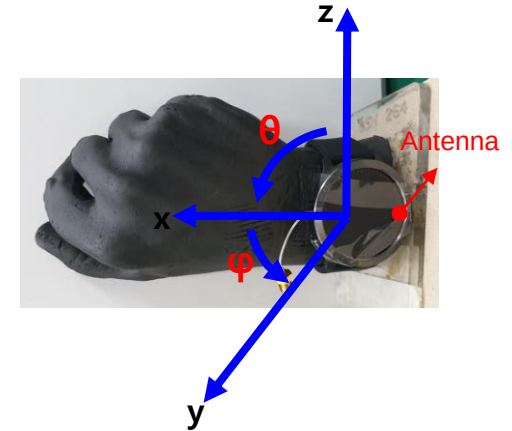
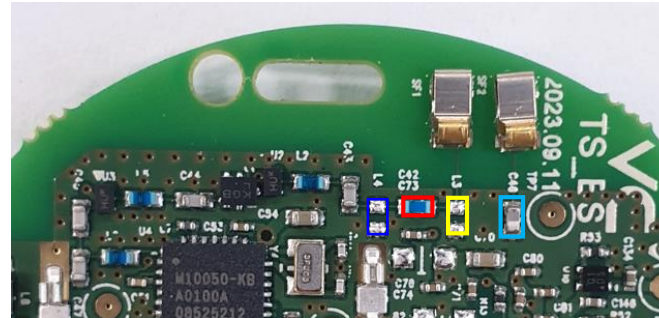


→ L3:NC, C42:1.5nH, L4:NC, C46:4.7nH



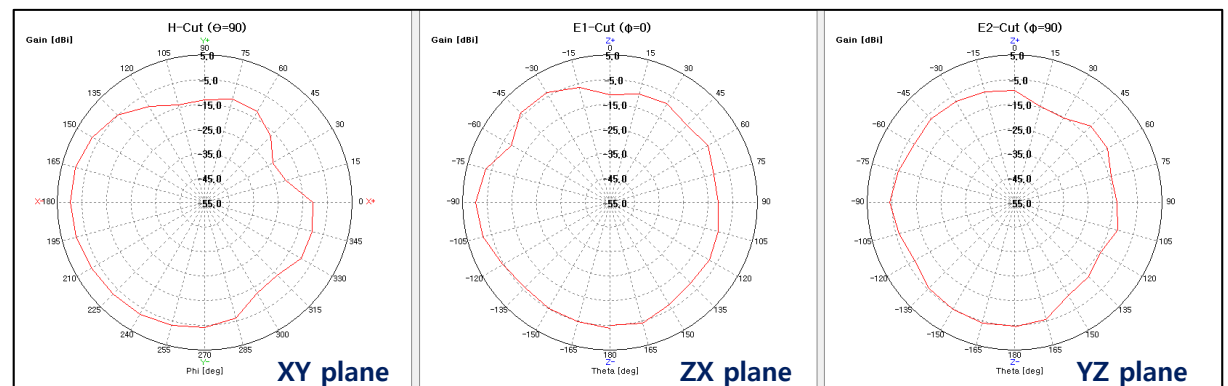
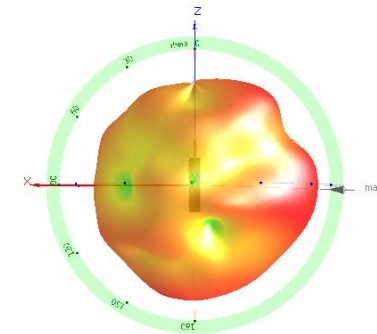
Measured VSWR

Set condition

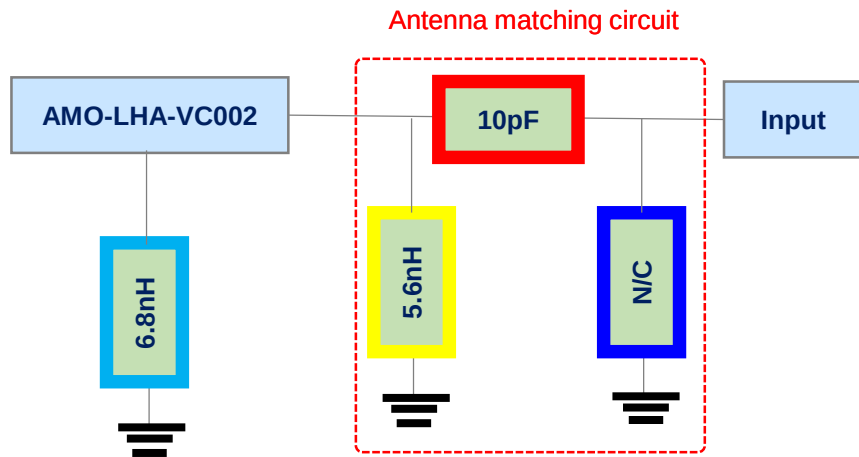


Gain table & Radiation pattern @1575MHz

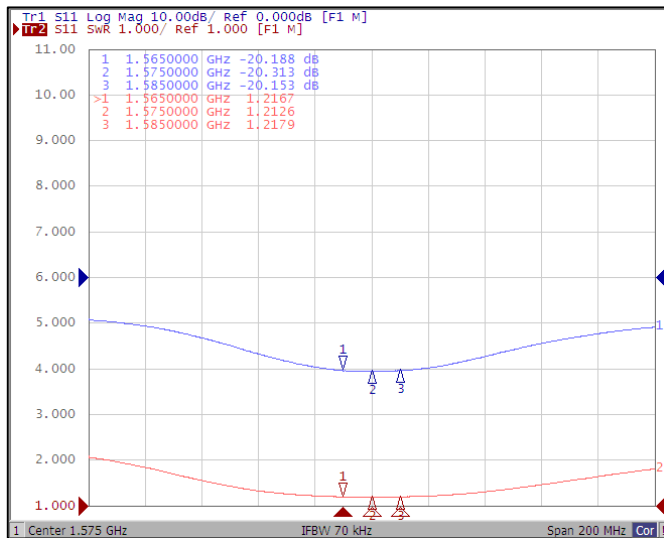
Frequency [MHz]	Efficiency [%]	Average gain [dBi]	Peak gain [dBi]
1565	19.01	-7.21	-0.97
1575	18.32	-7.37	-1.04
1585	18.24	-7.39	-1.07



2. GPS measurement data _ Matching Debugging

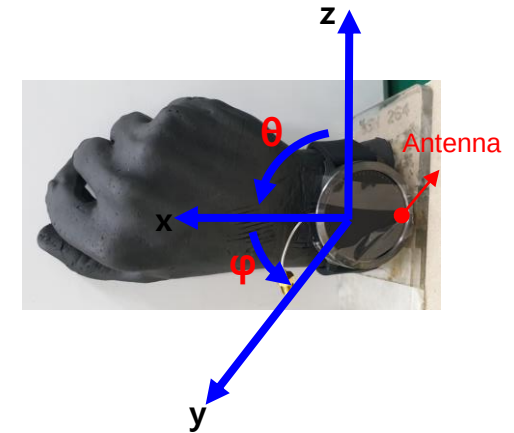
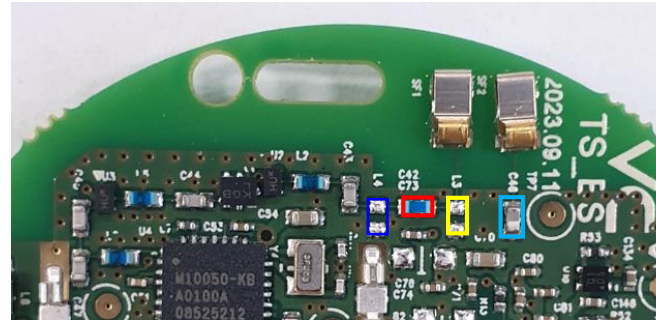


→ L3:5.6nH, C42:10pF, L4:NC, C46:6.8nH



Measured VSWR

Set condition



Gain table & Radiation pattern @1575MHz

Frequency [MHz]	Efficiency [%]	Average gain [dBi]	Peak gain [dBi]
1565	19.10	-7.19	-0.51
1575	21.04	-6.77	-0.47
1585	20.51	-6.88	-0.38

