Ceramic Patch Antenna

AMOTECH

Approval Sheet

Type : Ceramic Patch Antenna
Amotech Part No : N25-4102920-GNS1
Customer Part No : GPS&GLONASS

	Designed	Checked		Approved
-				
Date	/	/	/	/

Revision no	Content	Page	Date	Name
0	First, documented	-	2013.05.14	S.O Kim

RoHS

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Designed	Checked		Approved
/	/	/	/

1. Specification

1.1 Electrical characteristic

No	Item	Specification	Unit	Remarks
1	Frequency(Fc)	1575~1610 (GPS : 1575, GLONASS : 1592~1610)	MHz	Notes : 1)
		1594.67 ±7	MHz	Notes : 2)
2	Return-Loss @ Fc	Min. 10@1575~1610MHz	dB	Notes : 1)
		Min. 15	dB	Notes : 2)
3	Axial Ratio	Typ. 3.0	dB	Notes : 1)
4	Gain @ Fc	Typ. 3.0 @ Zenith	dBic	Notes : 1)
5	Polarization	RHCP	-	-
6	Impedance	50	Ω	-
7	Operating Temperature	-40 / +90	℃	

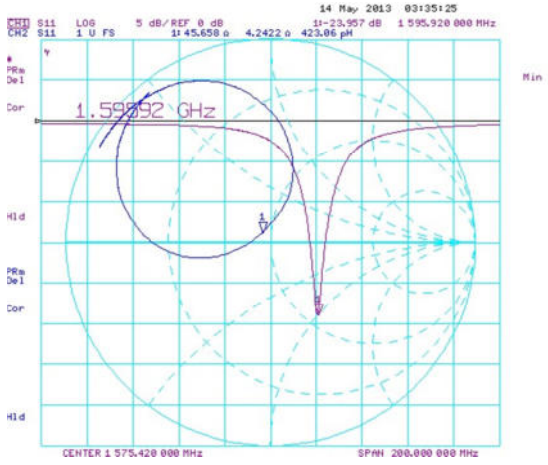
- fc is mid point of loop/cusp in smith chart.

※ Notes: 1) Measured on 70x70mm FR4 ground plane with adhesive tape.

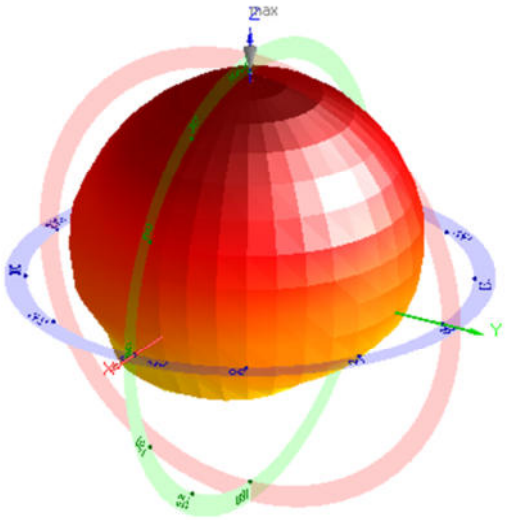
Notes: 2) Measured on 70x70mm FR4 ground plane with adhesive tape and release liner.

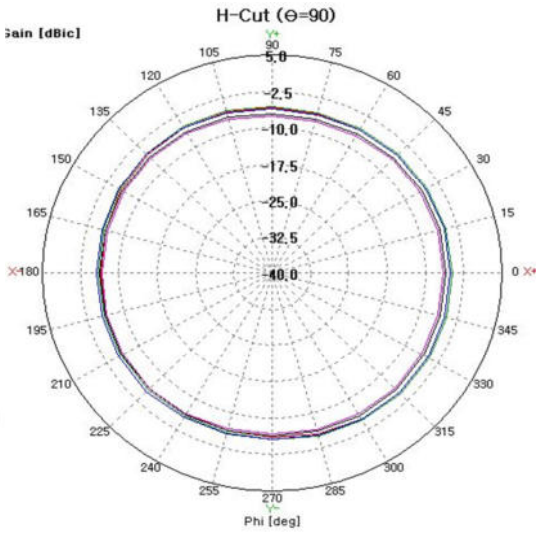
1.2 Typical S11 (Log mag & Smith chart)

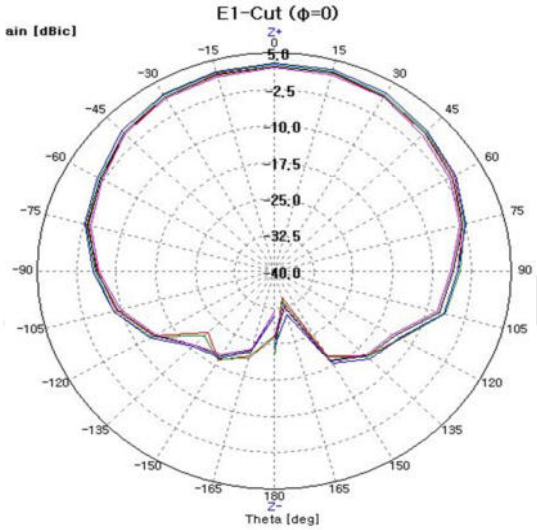
※ Measured on 70x70mm FR4 ground plane with adhesive tape and release liner.

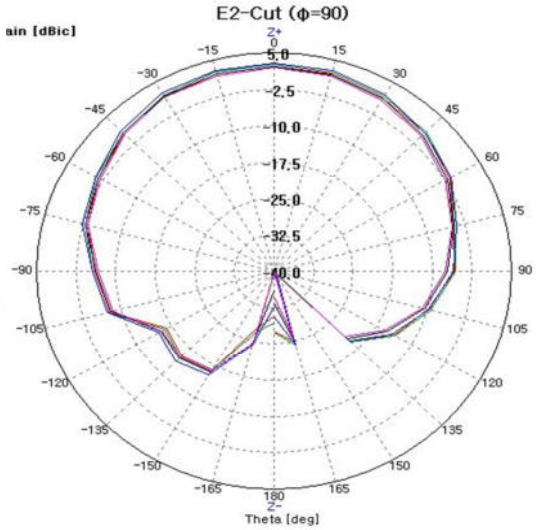


1.3 Radiation Pattern





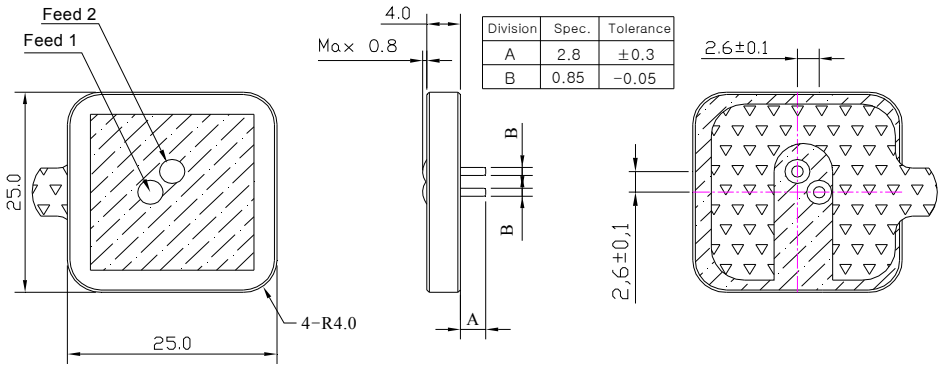




	θ-Pol(H)					φ-Pol(V)					RHCP					LHCP					(-)A.R.
Freq.[GHz]	Eff.[%]	Avg.[dBi]	Peak[dBi]	θ[deg]	φ[deg]	Eff.[%]	Avg.[dBi]	Peak[dBi]	θ[deg]	φ[deg]	Eff.[%]	Av.[dBic]	Pk.[dBic]	θ[deg]	φ[deg]	Eff.[%]	Av.[dBic]	Pk.[dBic]	θ[deg]	φ[deg]	Peak[dB]
1.573	23.16	-6.35	-0.65	15.00	15.00	27.13	-5.67	-0.18	0.00	300.00	45.11	-3.46	2.28	0.00	30.00	5.18	-12.86	-2.93	180.00	120.00	-0.07
1.577	25.12	-6.00	-0.27	15.00	15.00	29.07	-5.37	0.11	0.00	300.00	48.72	-3.12	2.59	15.00	0.00	5.47	-12.62	-2.58	180.00	150.00	-0.48
1.598	27.34	-5.63	0.32	15.00	15.00	29.60	-5.29	0.35	0.00	300.00	51.40	-2.89	3.00	15.00	345.00	5.53	-12.57	-2.29	180.00	210.00	-0.49
1.606	23.30	-6.33	-0.35	15.00	15.00	25.02	-6.02	-0.28	0.00	300.00	43.56	-3.61	2.30	15.00	345.00	4.75	-13.23	-2.98	180.00	195.00	-0.54
1.610	21.52	-6.67	-0.65	0.00	210.00	23.08	-6.37	-0.61	0.00	300.00	40.17	-3.96	1.98	0.00	0.00	4.43	-13.54	-3.31	180.00	195.00	-0.92

2. Mechanical Outline

1. Dimension



< Top > < Side > < Bottom >

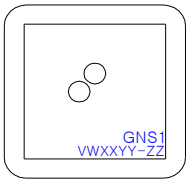
Note
1. Unit : mm
2. X.X : ±0.2
3. All Around Both Sides Typ. 0.3 Chamfer

2. Tuning: Top (According to Procedure of Amotech document)

3. Mechanical characteristic

No	Item	Specification	Unit	Remarks
1	Dielectric constant	20.5± 0.5	-	-
2	Electrode	Silver	-	-
3	Probe	brass	-	-
4	Tape	Double sided adhesive tape	-	3M-468MP

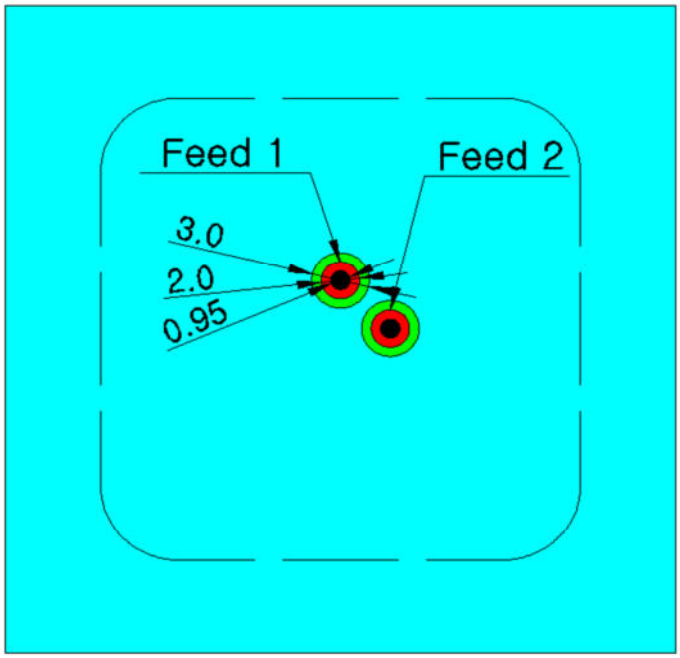
4. Marking

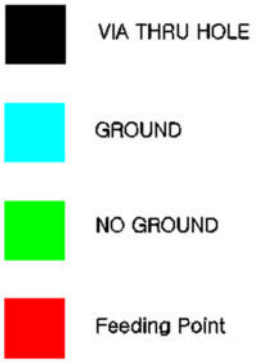


- V : Line section
- W : Year
- XX : Month
- YY : Day
- ZZ : Serial number of daily

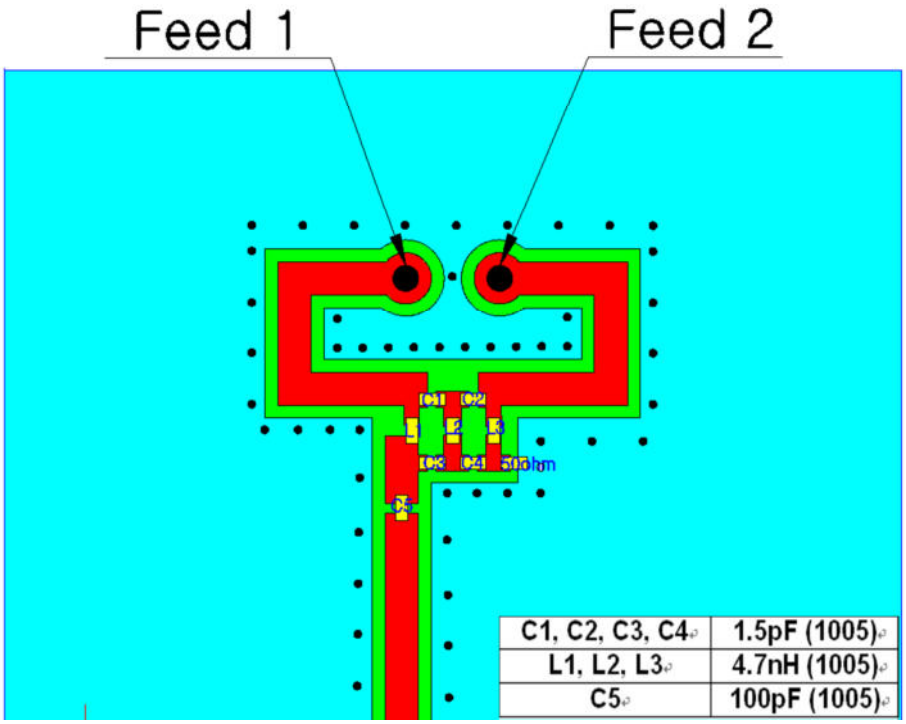
5. Recommended Land Pattern

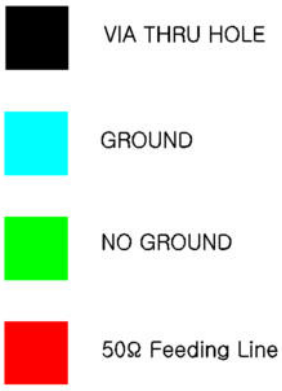
5.1 Top





5.2 Bottom





3. Reliability Test

No	Item	Test condition	Requirement
1	Drop Test	1. Place antenna on set 2. 1.5m height 3. Drop 5 times	1. No Visible defect 2. S11 satisfy
2	Vibration Test	1. 5-55-5 ㎐, 1 Octave/min, Amp.=1.5mm, acceleration=2g, Crossover Freq.=18 ㎐, Hold time = 2H.R	1. No Visible defect 2. S11 satisfy
3	Humidity	1. 60℃, 95%RH, 96Hr	1. No Visible defect 2. S11 satisfy
4	Thermal Shock	1. +80℃(30min)→5mim →-40℃ (30min) 2. 10 cycle	1. No Visible defect 2. S11 satisfy
5	High Temperature Resistance	1. +90℃, 96Hr	1. No Visible defect 2. S11 satisfy
6	Low Temperature Resistance	1. -40℃, 96Hr	1. No Visible defect 2. S11 satisfy
7	Adhesion Strength of Soldering	1. Used of pull push gauge.	1. Spec(min. 5kgf)

※ The sample must satisfy Requirement after 24 hours of test

※ Be base on IEC Climatic category (IEC68-1) -40℃ / +90℃ / 56h

4. Soldering Condition

Wettability to IEC 68-2-58 :≥75%(After Aging)

1. Manual Soldering(By Iron) – Pb free

Soldering Temperature : 360℃ ± 5℃, 5sec max.
(Solder : Sn/Ag/Cu:96.5/3.0/0.5)

- Must comply with above soldering condition to prevent from degradation of antenna performance.

5. Caution and Warranty

1. Electrode metallizations are unprotected silver and will tarnish during storage due to sulphuric compounds (namely H2S) in the atmosphere. Elevated temperature and humidity will accelerate this process. Human skin contact, wool etc. also cause tarnishing. This has no effect whatsoever on the electrical performance of the patches. Tarnishing of the silver plated feed pins may affect solderability. Because of this normal and to be expected process, AMOTECH accepts no warranty claims for tarnished products.

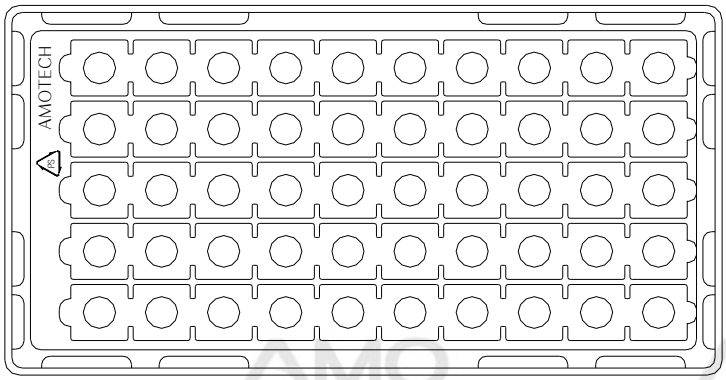
   AMOTECH uses vacuum packaging to reduce atmospheric influence and to extend shelf life.

2. Ceramic Patch Antennas must avoid shock and drop, to prevent cracking of the antenna.
3. Ceramic Patch Antennas should be used within 6 months after delivery, antennas older than 6 months should be checked for solderability before using.

6. Package

6.1 Tray

- Quantity



- 50ea/tray

6.2 Inner box

- Dimension: 370 (W) x 195 (D) x 130 (T) (mm)
- Quantity : 10 tray (50ea / tray × 10 tray＝500 ea)

6.3 Outer box

- Dimension : 390 (W) x 620 (D) x 150 (T) (mm)
- Quantity : 3 inner box (500ea / inner box × 3 inner box = 1,500 ea)