



AMC-ANTGPSCP12X2

Internal GPS Passive Patch Antenna

Release Information		
Originator	Date	Issue
Engineering	17 May 2012	1.0
Engineering	01 August 2014	2.0

1. Specification

1.1 Electrical characteristic

No	Item	Specification	Unit	Remarks
1	Center	1575.0	MHz	Notes : 1
2	Return-Loss @ fc	Min. 15	dB	Notes : 1
3	Axial Ratio	Max. 3	dB	Notes : 1
4	Gain @ fc	Typ. -4.5 @ Zenith	dBic	Notes : 1
5	Polarization	RHCP	-	-
6	Impedance	50	Ω	-

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

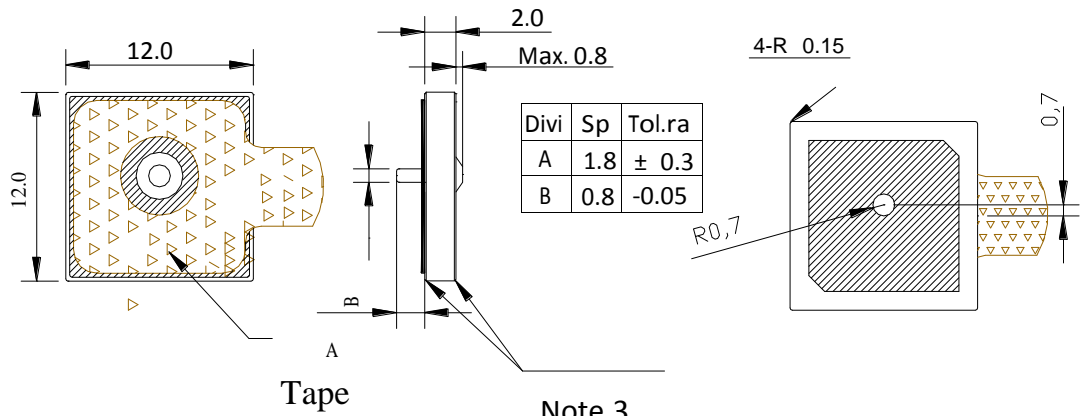
Notes: 1) Measured on 12 x 12mm FR4 ground plane with adhesive tape.

1.2 Typical S11 (Log mag & Smith chart)

Measured on 12x12mm FR4 ground plane with adhesive tape.

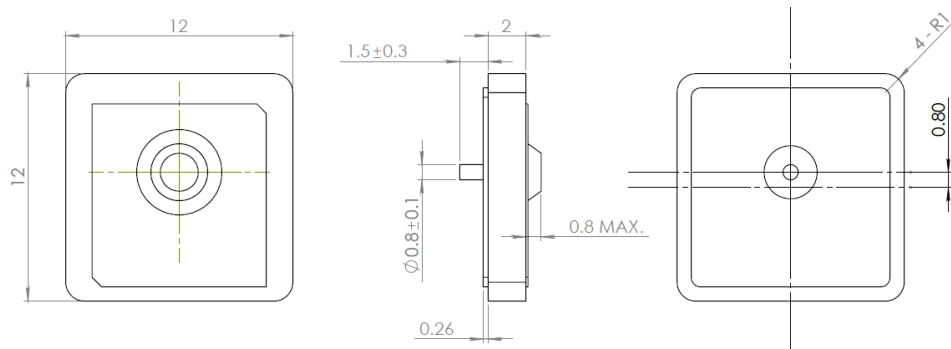
2. Mechanical Outline

2.1 Dimension



Note

1. Unit : mm
2. X.X: ± 0.2
3. All Around Both Sides: 0.1 Chamfer

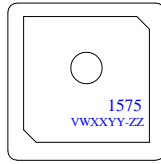


2.2 Tuning: Top & Bottom

2.3 Mechanical characteristic

No	Item	Specification	Unit	Remarks
1	Dielectric constant	90.5 ± 0.5	-	-
2	Electrode (Top and Bottom)	Silver	-	-
3	Probe	Silver plated brass	-	-
4	Probe pin solder material	Tin	-	-
5	Adhesive tape thickness	Typ. 0.125	mm	3M 468MP

2.4 Marking



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



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 ($f_c < 0.2 \%$)
2	Vibration Test	1. 5 - 55 - 5Hz, 1 Octave/min, Amp.=1.5mm, acceleration=2g, Crossover Freq.=18Hz, Hold time = 2H.R	1. No visible defect 2. S11 satisfy ($f_c < 0.2 \%$)
3	Humidity	1. 60 , 95%RH, 96 hours	1. No visible defect 2. S11 satisfy ($f_c < 0.2 \%$)
4	Thermal Shock	1. +80°C (30min) 5min - 40°C (30min) 2. 10 cycle	1. No visible defect 2. S11 satisfy ($f_c < 0.2 \%$)
5	High Temperature Resistance	1. +90°C, 96 hours	1. No visible defect 2. S11 satisfy ($f_c < 0.2 \%$)
6	Low Temperature Resistance	1. - 40°C, 96 hours	1. No visible defect 2. S11 satisfy ($f_c < 0.2 \%$)
7	Adhesion Strength of Soldering	1. Use of pull push gauge.	1. Spec (min. 5kgf)
8	IEC Climatic Category(IEC68-1)	- 40°C / + 90°C / 56 hours	-
9	Operating Temperature	- 40°C / + 90°C	-

☒ The sample must satisfy requirements after 24 hours of test

4. Soldering Condition

- Wettability to IEC 68-2-58 $\geq 75\%$ (After ageing)

4.1. Manual soldering(by iron) – Pb free

- Soldering temperature : 300°C \pm 5°C, 5 sec max. (Solder : Sn/Ag/Cu:96.5/3.0/0.5)

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

5. Caution and Warranty

1. Electrode metals 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 expected process, Alpha Micro Components accepts no warranty claims for tarnished products.
2. To prevent cracking of the antenna avoid shocks and drops.
3. Ceramic Patch Antennas should be used within 6 months after delivery, antennas older than 6 months should be checked for solderability before using.

Sample Measurement Data			
Part Number	AMC-ANTGPSCP12X2	Quantity	10
Date	20 November, 2008	Inspection Sample Quantity	5
Specification	Frequency (MHz)	Bandwidth (MHz)	Return Loss (- dB)
	1575.0 ± 3	3	15
Data			
No.	Frequency (MHz)	Bandwidth (MHz)	Return Loss (- dB)
1	1574.52	6.4	31.7
2	1574.98	6.7	22.6
3	1574.70	7.1	22.2
4	1574.84	6.4	38.7
5	1574.82	5.9	27.0
* Remark			
1) Inspected on 12x12mm FR4 ground plane with adhesive tape.			
2) All parameters are measured in the S11 reflection mode.			