SPECIFICATION

SPEC NO. DA1580E

PART NO. GP-1580-25-A-02

PRODUCT NAME 25mm*25mm, 4mm thick,1580mhz GPS Patch Antenna

REVISION STATUS

VERSION	DATE	PAGE	REVISION DESCRIPTION	PREPARED	DESIGNED	APPROVED
01	09/14/04	Whole	New Issue	TW Product Development Centre		Ronan Quinlan

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1 Scope

This specification covers the dielectric antenna for GPS applications.

2 Name of the product

This product is named “GPS Patch Antenna”.

3 Electrical characteristics

3-1 Electrical characteristics of antenna

The antenna has the electrical characteristics given in Table 1 under the Taoglas standard installation conditions shown in the figure in Appendix

No	Parameter	Specification	Notes
1	Center Frequency	1580MHz +/- 3MHz	70mm2 Ground Plane
2	Bandwidth	15 MHz min（VSWR 2：1）	Return Loss -10dB
3	VSWR	1.5 max	Centre Frequency
4	Antenna Gain (Toward Zenith)	+5 dBi (typ.)	
5	Gain at 10° Elevation	-1 dBi (typ.)	
6	Axial Ratio	3dB Max.	
7	Polarization	RHCP	Right Hand Circular Polarization
8	Impedance	50 Ohms	
9	Frequency Temperature Coefficient（δf）	0 ± 20ppm / _	-40°C ~ 85°C
10	Operating Temperature		-40°C ~ 105°C

Table 1

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4 Environmental conditions

4-1 Operating conditions

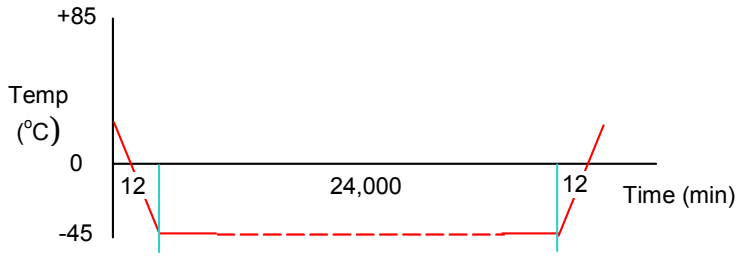
The antenna has the electrical characteristics given in Tables 1 in the temperature range of -30 °C to +85 °C and under the environmental conditions of +40 °C 0-95 % r.h.

4-2 Storage temperature range

The storage temperature range of product is -40 °C to +100 °C

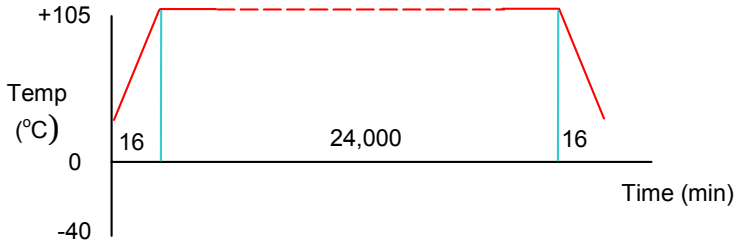
5 Reliability tests

5-1. Low-temperature test



Cooling rate: 5 °C/min
Test temperature: -45 °C ± 2°C
Dwell time 400h
Heating rate: 5 oC/min to room temperature
Settle time: 24h
Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

5-2 High-temperature test



Heating rate: 5 °C/min
Test temperature: +105 °C ± 2°C
Dwell time 400h

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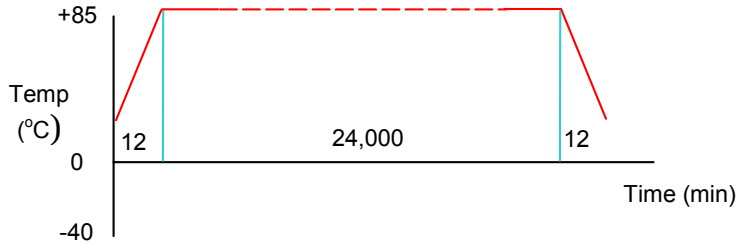
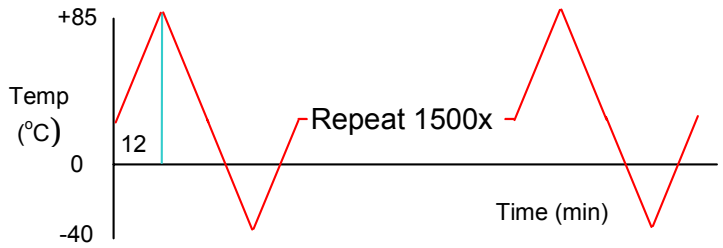
Cooling rate: 5 °C/min to room temperature
Settle time: 24h
Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

5-3 High-temperature/high-humidity test



Heating rate: 5 °C/min
Test temperature: +85 °C ± 2°C
Humidity 90-95 RH
Dwell time 400h
Cooling rate: 5 oC/min to room temperature
Settle time: 24h
Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

5-4 Thermal shock test



Heating rate: 5 °C/min
Maximum temp: +85 °C ± 2°C
Cooling rate: 5 °C/min
Minimum temp : -40 °C ± 2°C
Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

5-5 Vibration test

5-5-1 Sinusoidal vibration test

Subject the object to vibrations of 5 to 200 to 5Hz swept in 10 minutes, 4.5G at maximum (2mm amplitude), in X and Y directions for two hours each and in Z direction for four hours.

Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

5-5-2 Vibration test in packaged condition

Subject the object, which is packaged as illustrated, to vibrations of 15 to 60 to 15Hz swept in 6 minutes, 4G at maximum (2mm amplitude at maximum), applied in X, Y and Z directions for two hours each.

Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

5-6 Free fall test in packaged condition

Drop the object, which is packaged as illustrated, to a concrete surface from the height of 90 cm, on one comer, three edges and six faces once each, i.e. 10 times in total.

Pass Criteria: Gain, bandwidth and centre frequency to remain unchanged after test

6 Inspection

Inspection is done in mass production, the receiving character of the ratio wave sent in a shield box from the standard antenna and VSWR are confirmed by sampling inspection.

7 Test Record

A copy of the test record filled with the following contents shall be provided at time of delivery.

7-1 Quantity of delivery

7-2 Measurement of electrical characteristics

following data at normal temperature obtained by the method described in section 8.

Overall Gain (toward zenith)

Output VSWR

7-3 Temperature and humidity of test

Quantity for sampling inspection shall be n=5 for any lot. In case quantity per lot is less than 5, the whole lot shall be inspected.

8 Warranty

If any defect occurs with the product during normal use within a year of delivery, it will be repaired or replaced free of charge.

9 Other

Any question arising from this specification manual shall be solved by arrangement made by both parties.

10 Precautions for use

A silver electrode is used for the antenna pattern.

Please refrain from use of corrosive elements (sulfur gas, chlorine gas) in the atmosphere.

Please don’t direct solder onto the silver electrode antenna pattern.

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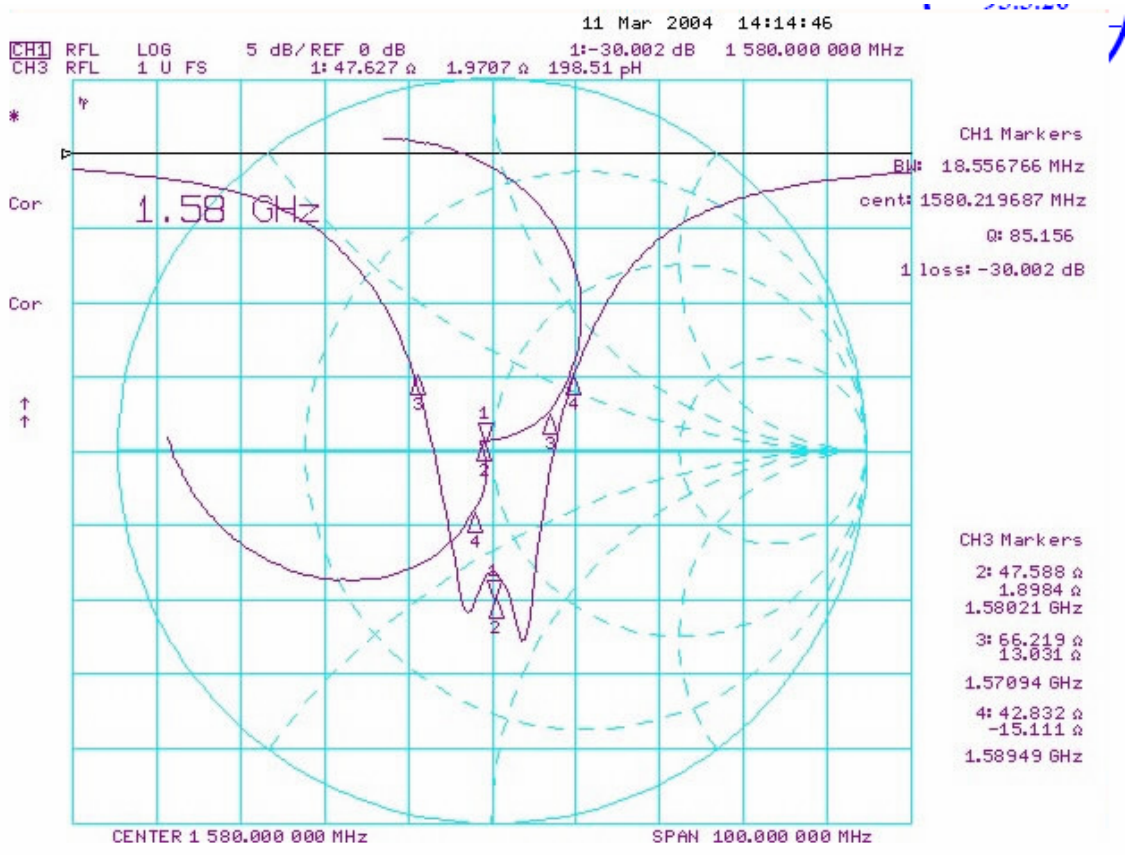
Appendix:

Performance Measurement



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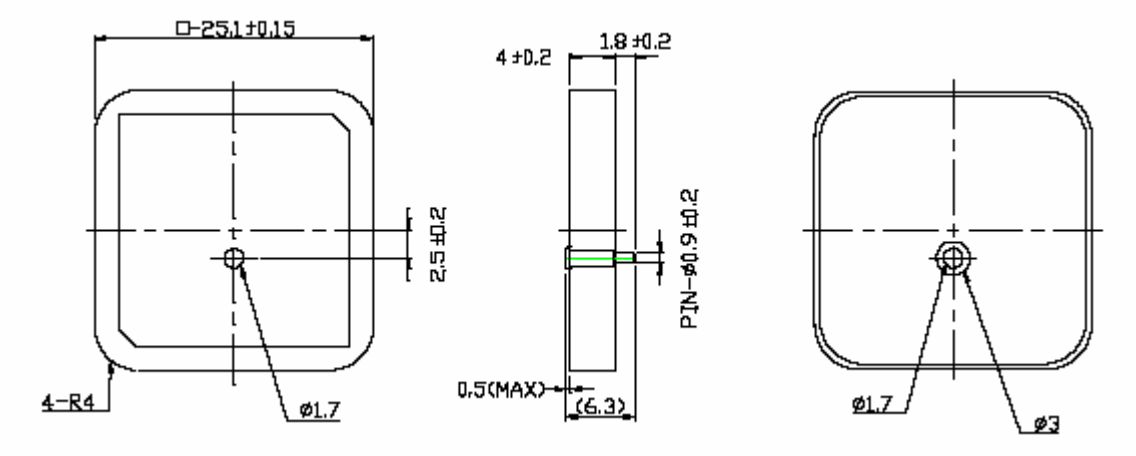
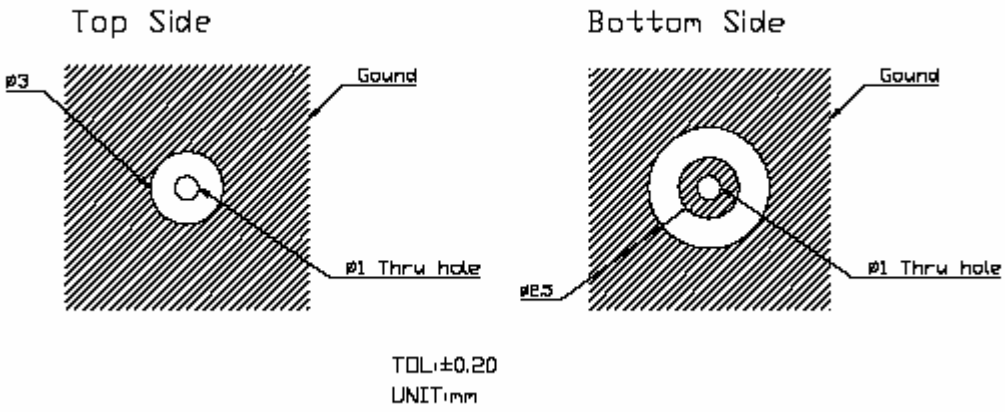
Shape and Dimension



Layout Dimension



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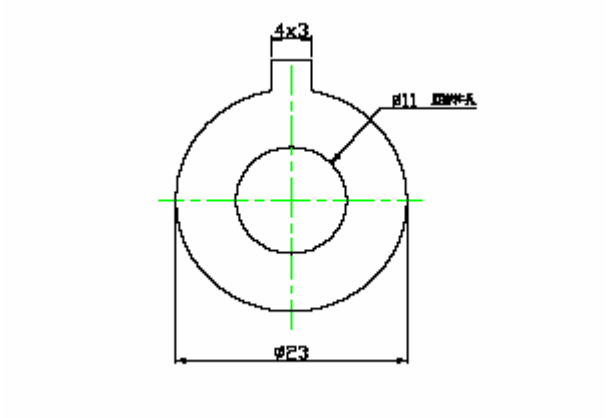
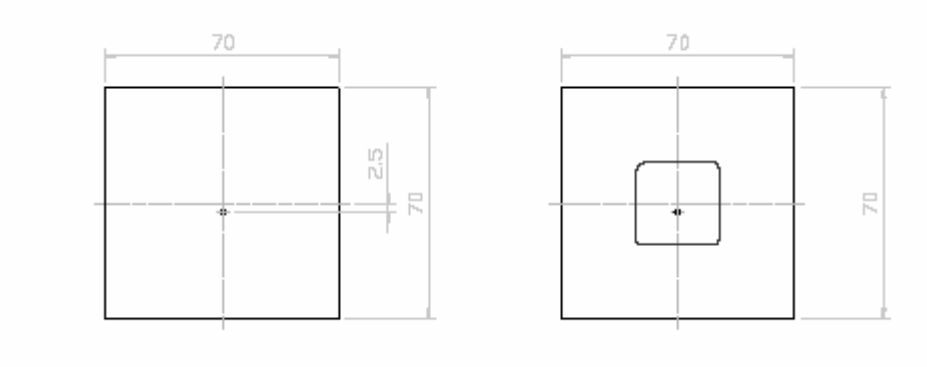
Tape Dimension



Test Jig and Dimension



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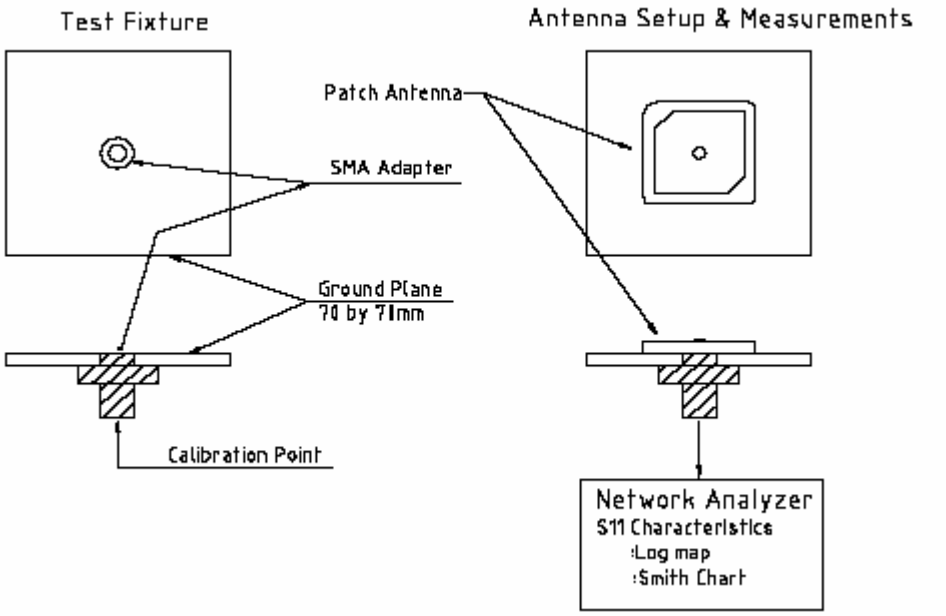
Test Fixture Antenna Setup & Measurements



Mark

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