

TO: 台灣肯懋電腦股份有限公司

SPECIFICATION FOR APPROVAL

DESCRIPTION : GPS Antenna With mcx RG174 5M

CUSTOMER DWG. NO. /PART NO : DGPS-320-5M

KINSUN PROD. NO : 6690112041-50M

DATE : 2008/12/30

PLEASE RETURN TO US ONE COPY OF “ SPECIFICATION FOR APPROVAL ” WITH YOUR APPROVED SIGNATURES

APPROVED SIGNATURES			



慶陞工業股份有限公司
KINSUN INDUSTRIES INC.

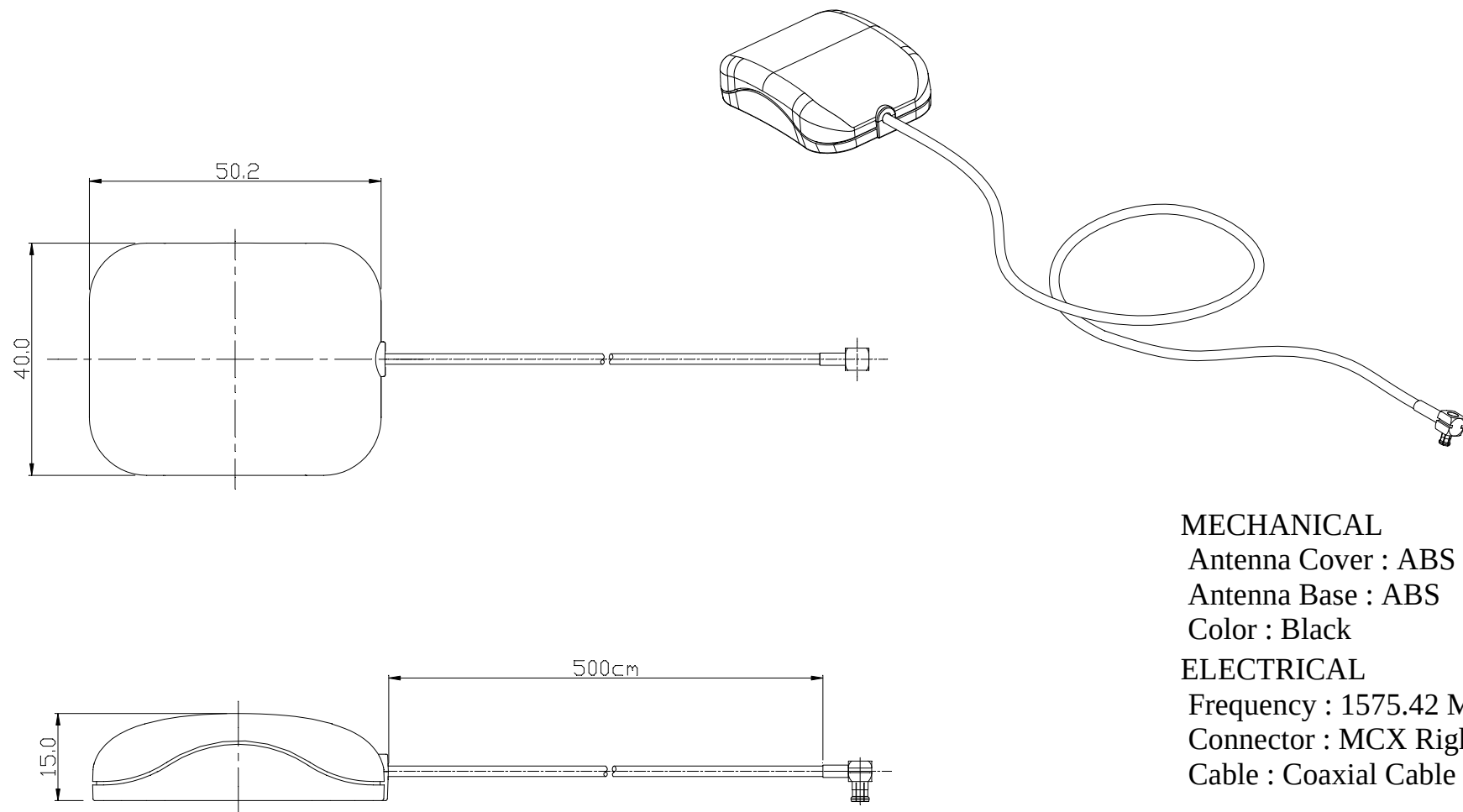
桃園縣中壢市普忠路 211 巷 20 號

TEL : 886-3-4353551

<http://www.kinsun.com>

FAX : 886-3-4353951

e-mail: terry@kinsun.com



MECHANICAL

Antenna Cover : ABS

Antenna Base : ABS

Color : Black

ELECTRICAL

Frequency : 1575.42 MHz

Connector : MCX Right Angle

Cable : Coaxial Cable RG-174

設計 DR. Marco 95/08/07	核准 APPD. Jerry 95/08/07	容許公差 .XXX ±0.05 .XX ±0.10 .X ±0.25 X ±0.38 ANG ±3°	TOLERANCE	品名 ARTICLE GPS Antenna
版本說明 -----	REVISION NOTE			圖號 DWG NO. 6690112041-50M
KINSUN 慶陞				單位 UNIT mm
				比例 SCALE 1.25
				張數 SHEET 1/1
				版本 REV. A

11.0 ANTENNA PATTERN

11.1 H-Plan

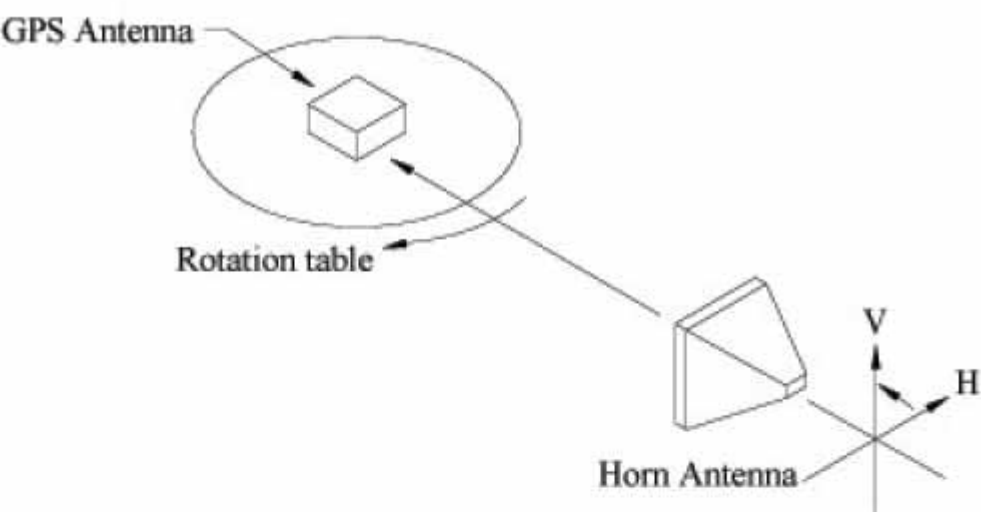
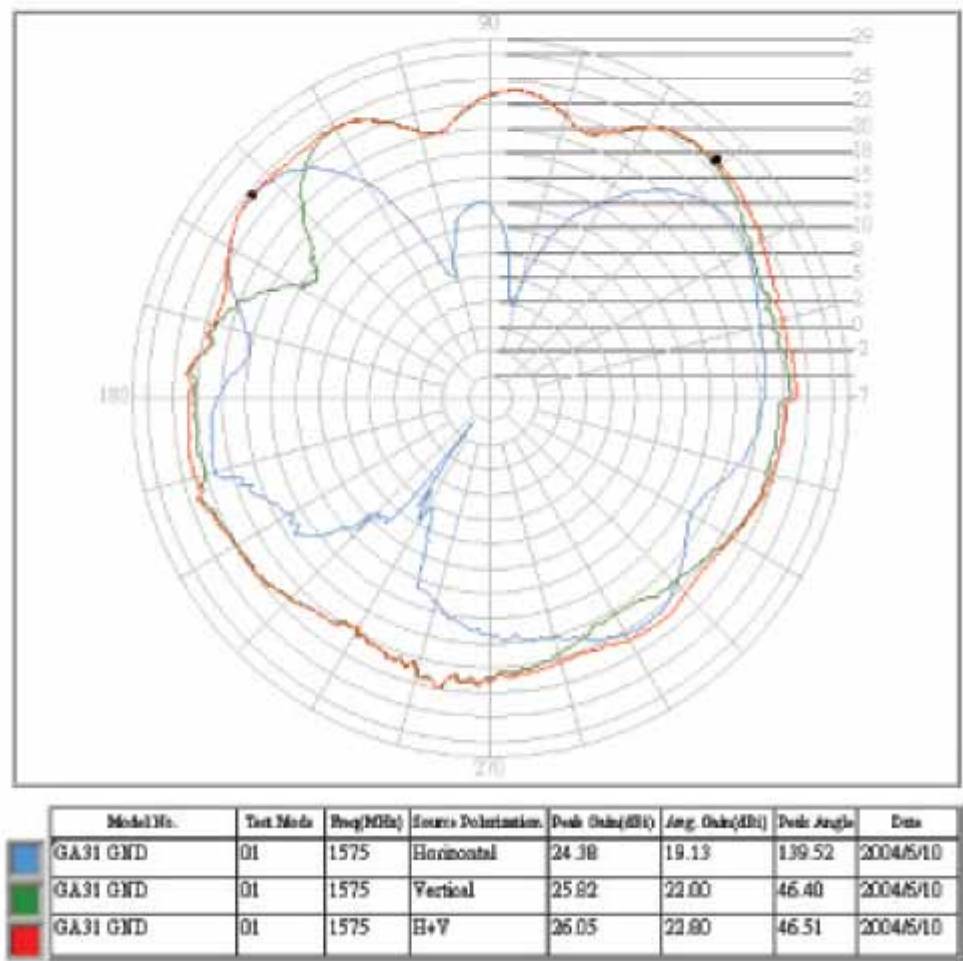


Fig. 3. 5m cable antenna 180°.(at 3.0V)

Antenna Pattern Measurement



11.2 E-plan

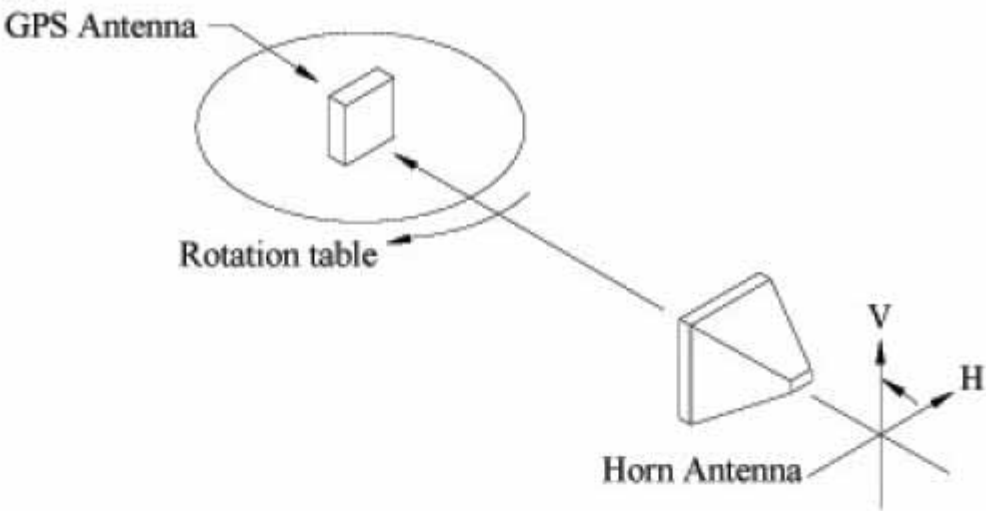
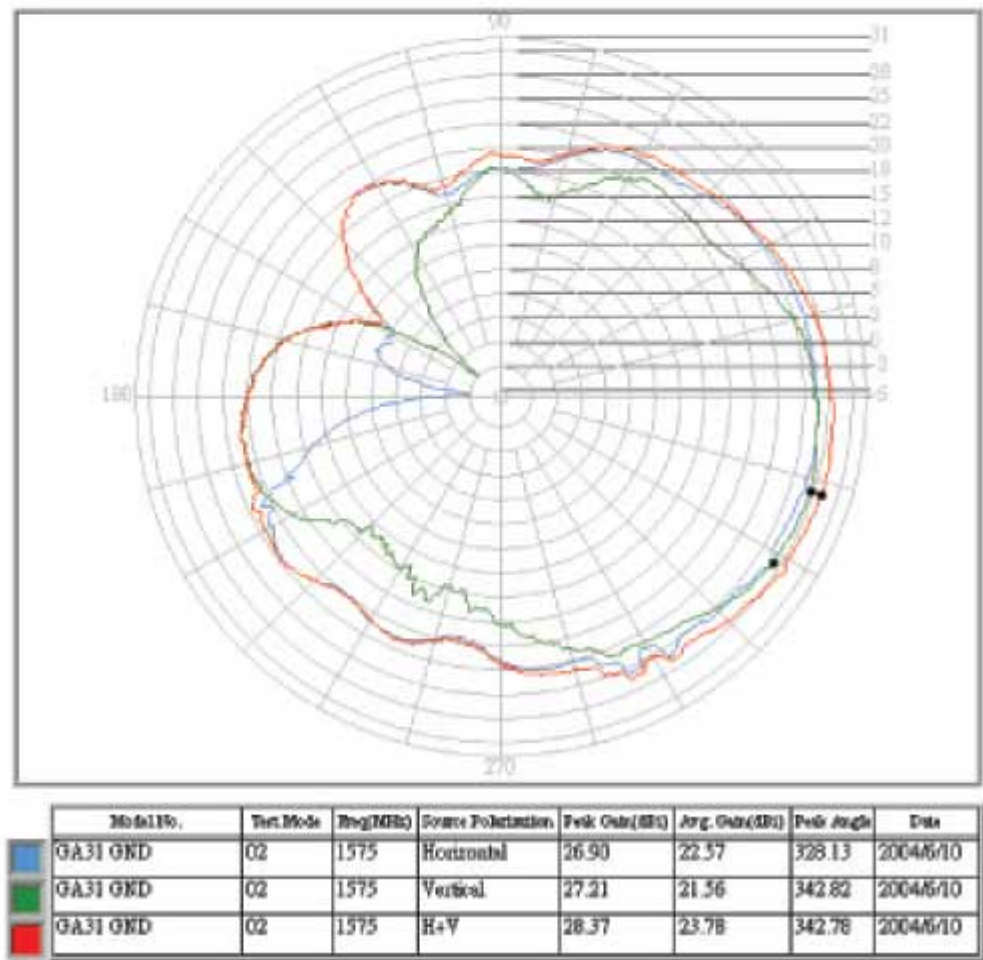


Fig. 4 5m cable antenna 90° (at 3.0V)

Antenna Pattern Measurement

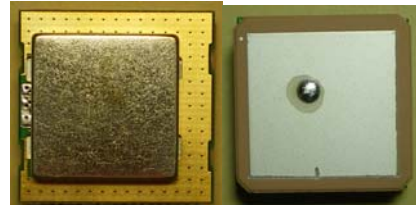


Model No. DGA-A21

GPS ACTIVE ANTENNA

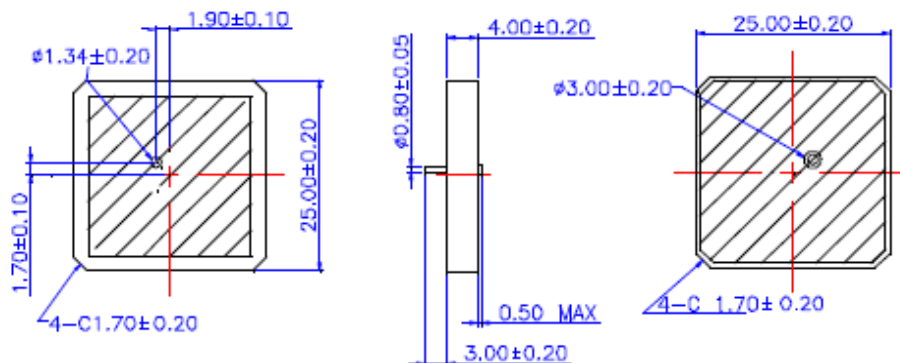
Feature

- ◆ High Gain (26dB Typical)
- ◆ Low Voltage & Low Current Consumption
- ◆ Extra Low Noise Figure
- ◆ Resist More Out-Band Noise
- ◆ Easy to Fix the Product Mechanism

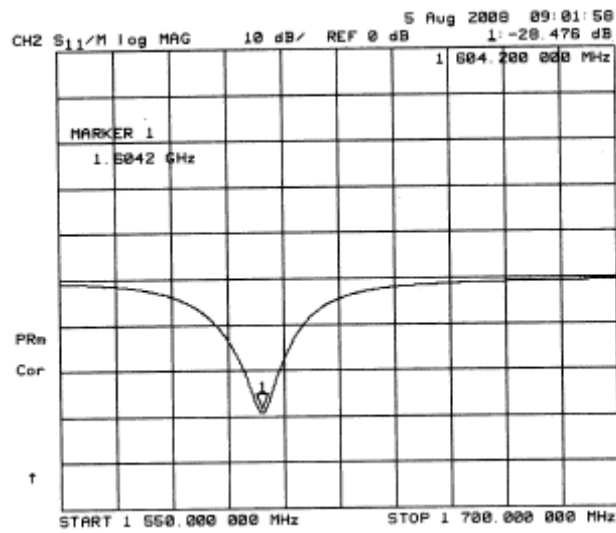


Antenna Specification

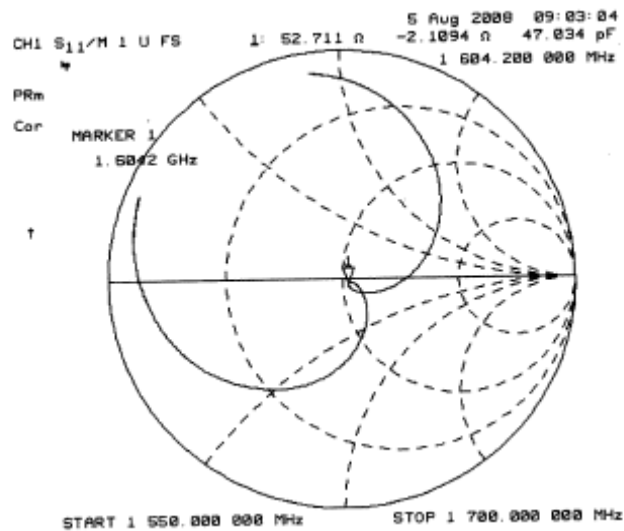
Characteristics	Specification	Units
Center Frequency	1604.0±3.0	MHz
Bandwidth	9.0 min.	MHz
Gain at Zenith	+5.0 typ.	dBi
Gain at 10° elevation	-1.0 typ.	dBi
Impedance	50	Ω
Frequency Temperature Coefficient	0±20	ppm/°C
Axial Ratio	3.0 max	dB



Unit:mm



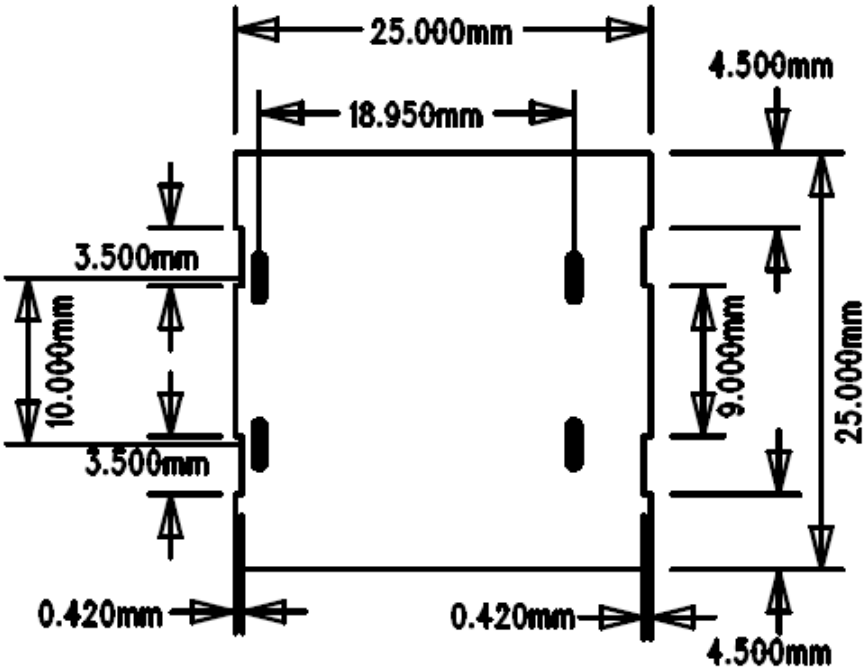
Reflection Coefficient



Input Impedance on a smith chart

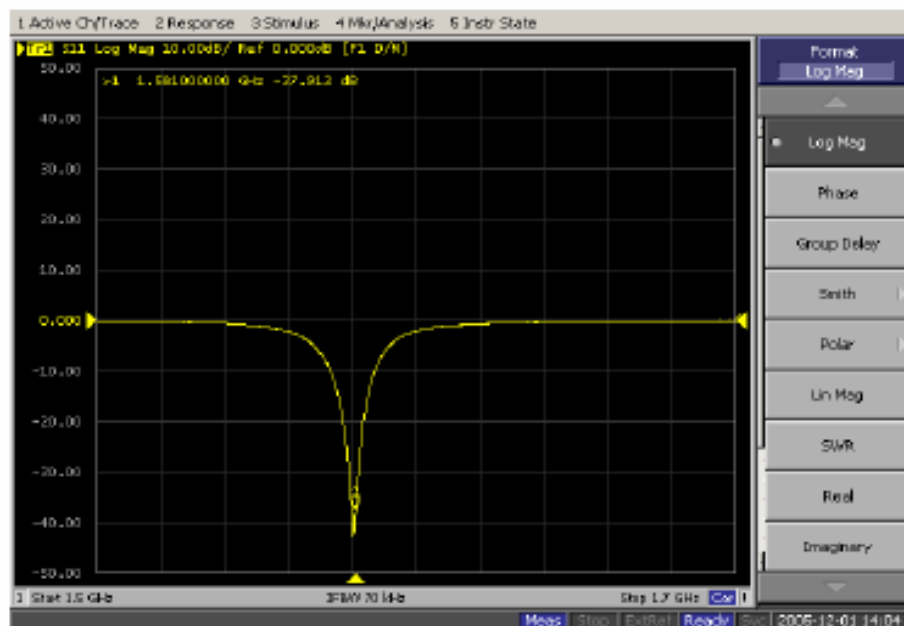
Amplifier Specification

Parameter	Typ.	Units
Voltage	3.0	V
Current	10	mA
LNA Gain	26	dB
Output VSWR	1.5	dB
Noise Figure (with SAW Filter)	1.4	dB
Impedance	50	Ω

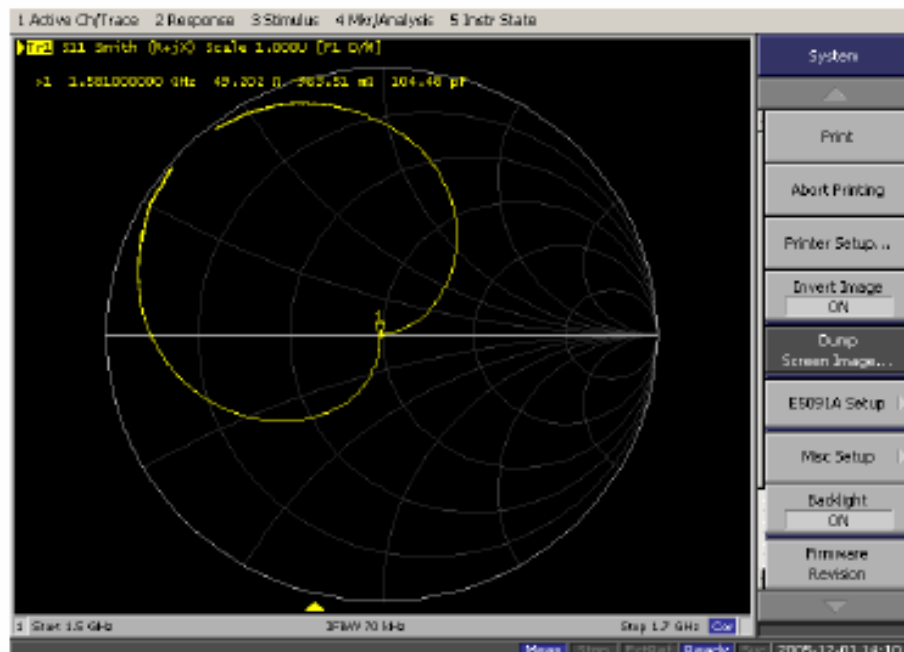


7. Electrical Characteristics:(70x70mm ground plane)

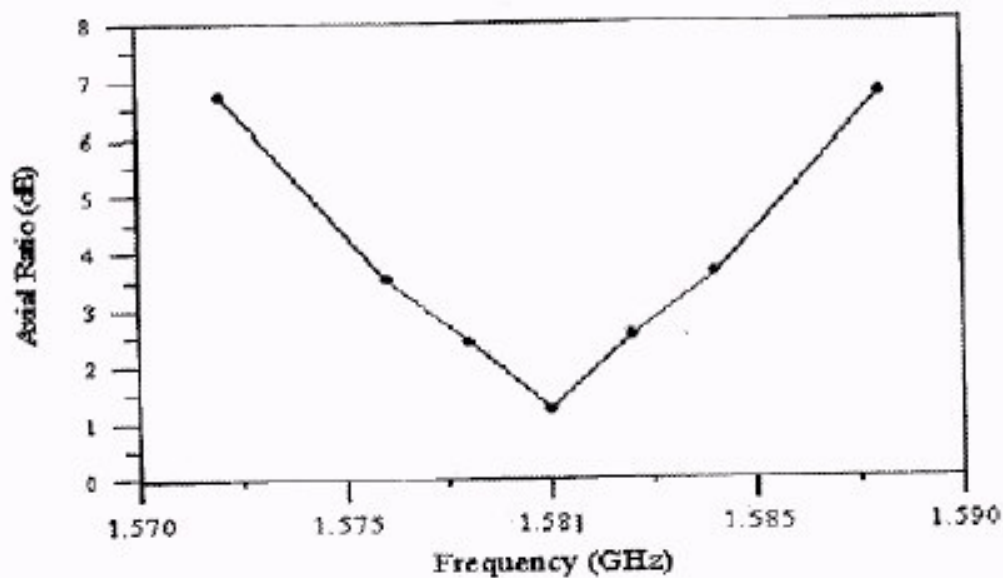
Return Loss(S11):



Smith Chart:

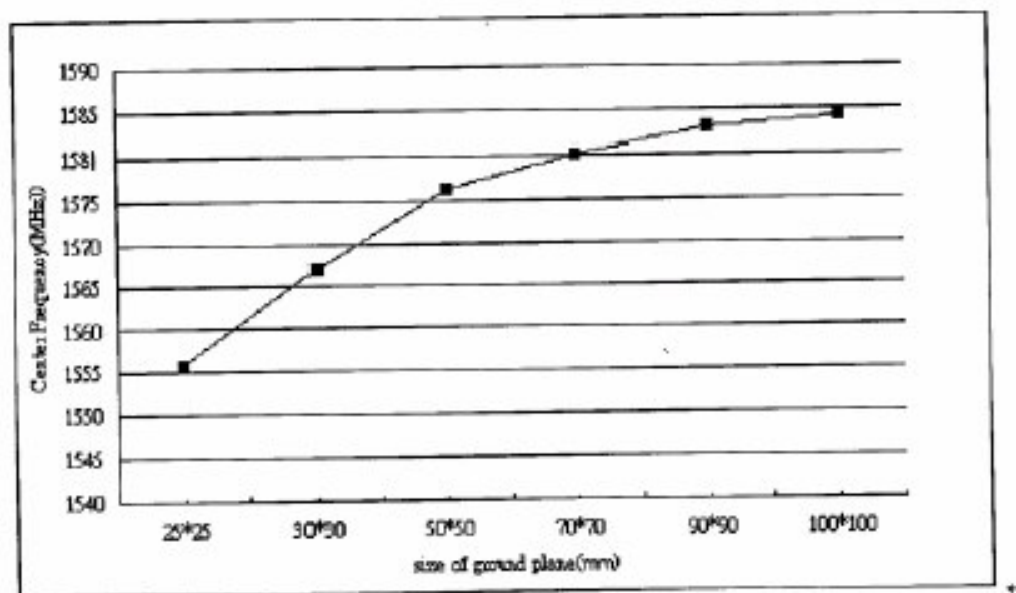


8. Measured Axial Ratio: (70x70mm ground plane)



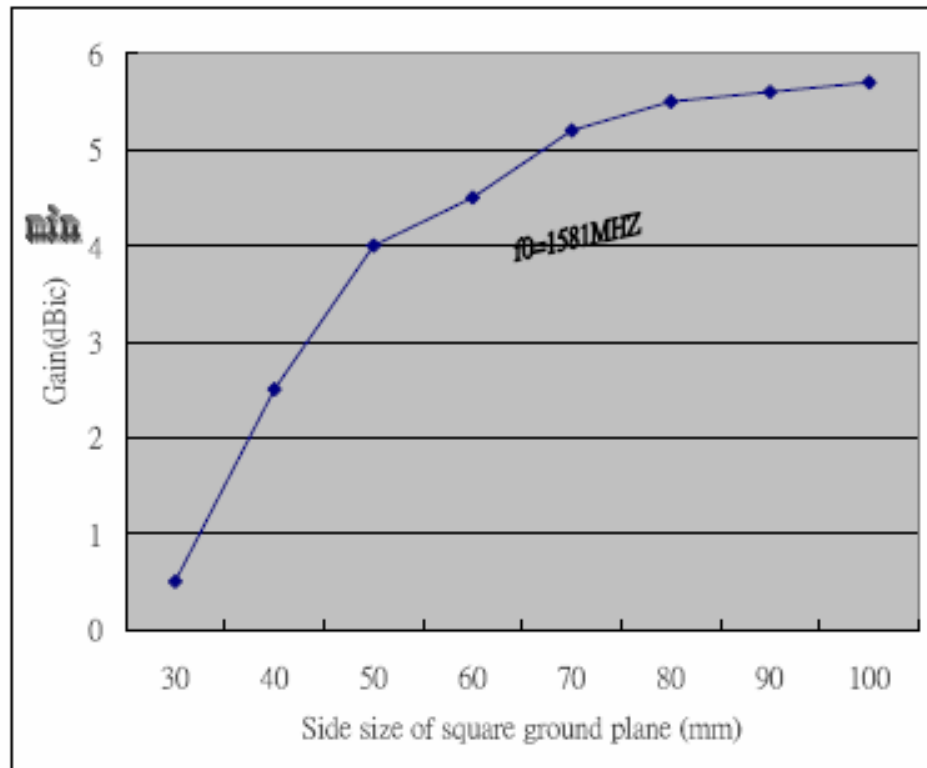
with 70 mm square ground plane

9. Center Frequency vs. Ground Plane

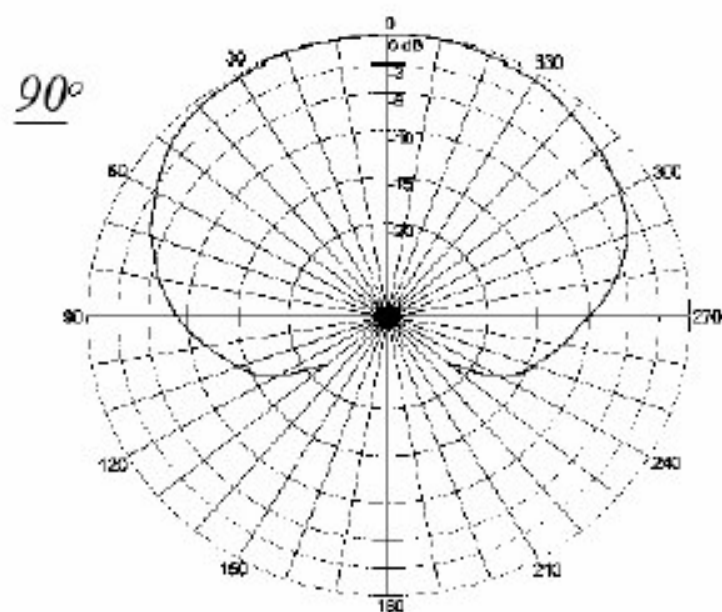
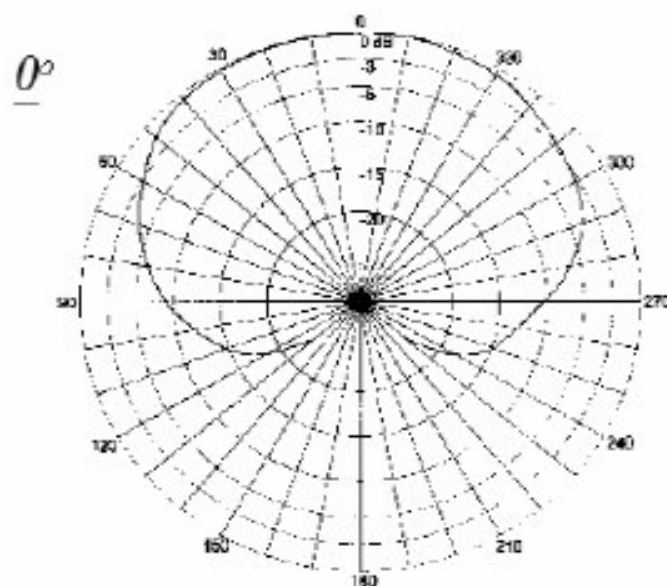


10. Gain/Ground Plane Size vs. Radiation Pattern

Gain vs Ground Plane Size:



11. Radiation Pattern:(with 70mm square ground plane)



Right hand circular polarized signal $f_0=1581\text{MHz}$

Test item list

ITEM	PAGE
High Temperature Storage Test	1
Low Temperature Storage Test	2
High Temperature Loading Test	3
Low Temperature Loading Test	4
Mating/unmating Test	5
Long Time Operating Test	6
CAP PIN 接著力試驗記錄表	7

High Temperature Storage Test

PRODUCT TYPE: DAA341H

Test Date: 95.06.15~95.06.19

Sample Size: 5 PCS

Judgement Criteria: 1.Current : 6.5±1mA
2.Gain : ≥-5dB(Distance is from lancer to receiver)

Procedure: 1.The specimens store at 90℃ for 96 hours
2.Coolihg down & Storing at standard measurement condition more than 2 hours

Equipment: Oven:Y502H076,Network Analyzer comparison Table:5071B

Result:

Item	Defect / Sample Size				Defect
Current	0 / 5				
Current Before Testing	1	6.7	4	6.5	Unit
	2	6.5	5	6.4	mA
	3	6.5	Avg	6.5	
Current After Testing	1	6.7	4	6.5	
	2	6.5	5	6.4	
	3	6.5	Avg	6.5	
Item	Defect / Sample Size				Defect
Gain	0 / 5				
Gain Before Testing	1	-1.0		1.7	Unit
	2	-1.7	5	-1.3	dB
	3	1.1	Avg	-0.2	
Gain After Testing	1	-1.3	4	-2.2	
	2	-1.4	5	1.2	
	3	-1.3	Avg	-1.12	

Judgement: Pass

Inspector: 

Approver: 

Low Temperature Storage Test

PRODUCT TYPE: DAA341H

Test Date: 95.06.19~95.06.23

Sample Size: 5 PCS

Judgement Criteria: 1.Current : 6.5±1mA
2.Gain : ≥-5dB(Distance is from lancer to receiver)

Procedure: 1.The specimens store at-40℃ for 96 hours
2.Coolihg down & Storing at standard measurement condition more than 2 hours

Equipment: Oven:Y502H076,Network Analyzer comparison Table:5071B

Result:

Item	Defect / Sample Size				Defect
Current	0 / 5				
Current Before Testing	1	6.3	4	6.5	Unit
	2	6.5	5	6.6	mA
	3	6.4	Avg	6.5	
Current After Testing	1	6.3	4	6.5	
	2	6.6	5	6.6	
	3	6.5	Avg	6.5	
Item	Defect / Sample Size				Defect
Gain	0 / 5				
Gain Before Testing	1	-1.7		-0.3	Unit
	2	-2.5	5	-10.	dB
	3	-0.4	Avg	-1.2	
Gain After Testing	1	-1.1	4	-2.0	
	2	-1.7	5	2.3	
	3	0.3	Avg	-0.6	

Judgement: Pass

Inspector: 

Approver 

High Temperature Loading Test

PRODUCT TYPE: DAA341H

Test Date: 95.06.30~95.07.05

Sample Size: 5 PCS

Judgement Criteria: 1.Current : 6.5±1mA
2.Gain : ≥-5dB(Distance is from lancer to receiver)

Procedure: 1.The specimens are applied DC 3.0V at 90°C for 96 hours
2.Coolihg down & Storing at standard measurement condition more than 2 hours

Equipment: Oven:Y502H076,Network Analyzer comparison Table:5071B

Result:

Item	Defect / Sample Size				Defect
Current	0 / 5				
Current Before Testing	1	6.3	4	6.4	Unit
	2	6.4	5	6.6	mA
	3	6.4	Avg	6.4	
Current After Testing	1	6.3	4	6.4	
	2	6.5	5	6.5	
	3	6.4	Avg	6.4	
Item	Defect / Sample Size				Defect
Gain	0 / 5				
Gain Before Testing	1	-1.9	4	-2.1	Unit
	2	-1.7	5	-1.4	dB
	3	-2.7	Avg	-2.0	
Gain After Testing	1	-3.1	4	-3.3	
	2	-2.0	5	-2.9	
	3	-1.4	Avg	-2.5	

Judgement: Pass

Inspector: 

Approver: 

Low Temperature Loading Test

PRODUCT TYPE: DAA341H

Test Date: 95.06.26~95.07.30

Sample Size: 5 PCS

Judgement Criteria: 1.Current : 6.5±1mA
2.Gain : ≥-5dB(Distance is from lancer to receiver)

Procedure: 1.The specimens are applied DC 3.0V at -40℃ for 96 hours
2.Coolihg down & Storing at standard measurement condition more than 2 hours

Equipment: Oven:Y502H076,Network Analyzer comparison Table:5071B

Result:

Item	Defect / Sample Size				Defect
Current	0 / 5				
Current Before Testing	1	6.5	4	6.6	Unit
	2	6.1	5	6.8	mA
	3	6.7	Avg	6.5	
Current After Testing	1	6.5	4	6.6	
	2	6.2	5	6.8	
	3	6.8	Avg	6.6	
Item	Defect / Sample Size				Defect
Gain	0 / 5				
Gain Before Testing	1	-2.3		1.2	Unit
	2	-0.4	5	-2.6	dB
	3	-2.0	Avg	-1.2	
Gain After Testing	1	-0.4	4	-0.1	
	2	2.0	5	-1.1	
	3	-0.7	Avg	-0.1	

Judgement: Pass

Inspector: 

Approver: 

Mating/unmating Test

PRODUCT TYPE: DAA341H

Test Date: 95.06.19

Sample Size: 5 PCS

Judgement Criteria: 1.Current : $6.5 \pm 1\text{mA}$
2.Gain : $\geq -5\text{dB}$ (Distance is from lancer to receiver)

Procedure: 1. Mating/unmating 50 times

Equipment: Network Analyzer comparison Table:5071B

Result:

Item	Defect / Sample Size				Defect
Current	0 / 5				
Current Before Testing	1	6.3	4	6.5	Unit
	2	6.4	5	6.3	mA
	3	6.6	Avg	6.4	
Current After Testing	1	6.4	4	6.5	
	2	6.4	5	6.3	
	3	6.6	Avg	6.4	
Item	Defect / Sample Size				Defect
Gain	0 / 5				
Gain Before Testing	1	1.0		-2.9	Unit
	2	-0.6	5	-1.8	dB
	3	-2.7	Avg	-1.4	
Gain After Testing	1	-0.2	4	-3.4	
	2	-0.6	5	0.5	
	3	0.3	Avg	-0.7	

Judgement: Pass

Inspector: 

Approver: 

Long Time Operating Test

PRODUCT TYPE: DAA341H

Test Date: 95.07.03~95.09.05

Sample Size: 5 PCS

Judgement Criteria: 1.Current : 6.5±1mA
2.Gain : ≥-5dB(Distance is from lancer to receiver)

Procedure: 1.The specimens are applied DC 3.0V for 1500 hours
2. Storing at standard measurement condition more than 2 hours

Equipment: Power Supply,Network Analyzer comparison Table:5071B

Result:

Item	Defect / Sample Size				Defect
Current	0 / 5				
Current Before Testing	1	6.8	4	6.5	Unit
	2	6.5	5	6.2	mA
	3	6.7	Avg	6.5	
Current After Testing	1	6.7	4	6.5	
	2	6.5	5	6.2	
	3	6.7	Avg	6.5	
Item	Defect / Sample Size				Defect
Gain	0 / 5				
Gain Before Testing	1	-3.4		-2.4	Unit
	2	-1.4	5	-0.4	dB
	3	1.1	Avg	-1.3	
Gain After Testing	1	-1.2	4	-0.2	
	2	-2.6	5	-1.7	
	3	-2.0	Avg	-1.5	

Judgement: Pass

Inspector: 

Approver: 

CAP PIN 接著力試驗記錄表

(CAP PIN Soldering Strength Test)

料號： 9118C221575A5000
測試日期： 96.02.06
測試條件： 使用推力計在 25℃ 常溫下測試
規範： $\geq 4 \text{ Kg}\cdot\text{f}$

N0	$\geq 4 \text{ Kg}\cdot\text{f}$	N0	$\geq 4 \text{ Kg}\cdot\text{f}$	N0	$\geq 4 \text{ Kg}\cdot\text{f}$	N0	$\geq 4 \text{ Kg}\cdot\text{f}$
1	8.6	6	8.9	11	8.8	16	8.3
2	8.2	7	8.6	12	8.7	17	7.8
3	7.7	8	7.5	13	7.9	18	8.3
4	7.9	9	7.9	14	7.6	19	7.8
5	9.0	10	8.7	15	8.9	20	8.7

審核人員：


測試人員：


判定： PASS