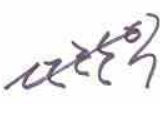

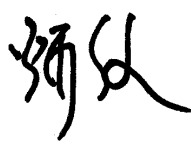


Approval Sheet

Products	Dielectric Chip Antenna		
Customer	PANTECH&CURITEL		
Customer CODE			
Supplier	PARTRON		
Supplier CODE	ACS2450GBAPN33		
PANTECH & CURITEL	By designed	By checked	By approved
PARTRON	By designed	By checked	By approved
			
	05/09	05/09	05/09

2006 . 05. 09

P A R T R O N

**33, BANWOL-DONG, HWASEONG-SI,
KYOUNGKI-DO, KOREA**



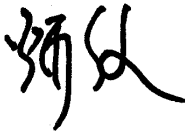
SPECIFICATION

MODEL : ACS2450GBAPN33

DIELECTRIC CHIP ANTENNA

PARTRON

33,Banwol-Dong,Hwaseong-Si,
Gyeonggi-Do,Korea,445-973

By designed	By checked	By approved
		
05/09	05/09	05/09

- Contents -

1. Revision History	1p
2. Electrical Characteristics	2p
3. Mechanical Characteristics	8p
4. Measurement Process	9p
5. Reliability Condition	10p
6. Reliability Test Result	11p
7. Soldering Condition	11p
8. Structure and Material	12p
9. Attention	12p
10. Packing	13p
11. Process Control	15p

2. Electrical Characteristics

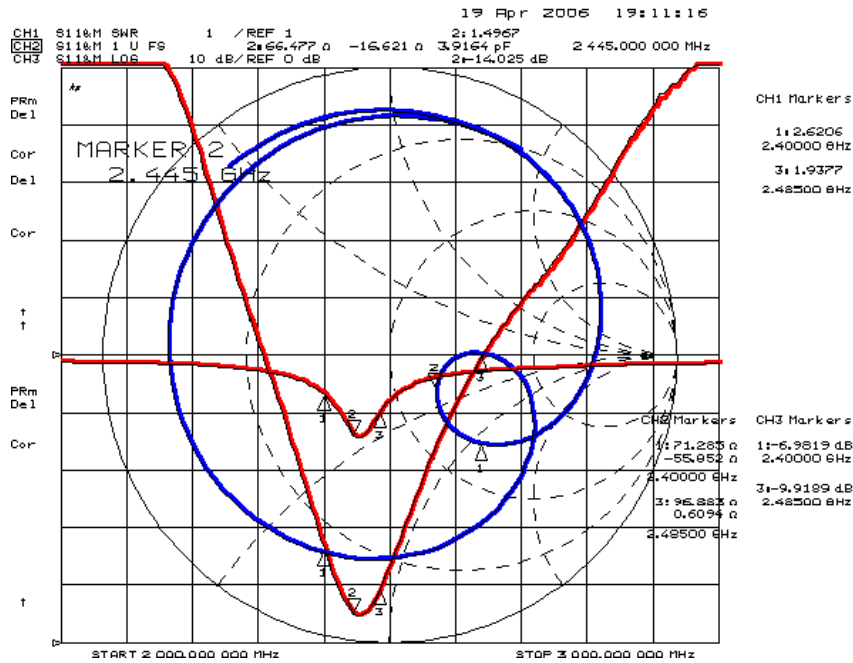
2.1 Set Condition

ITEM				SPEC
Frequency Range [MHz]				2400 ~ 2485
VSWR [Max]				3 : 1
Bandwidth [MHz]				85
Polarization				Linear
Gain[dBi]	Azimuth	Theta	Peak	-4.19
			Average	-8.15
		Phi	Peak	-10.72
			Average	-16.10
	Elevation 1	Theta	Peak	-6.73
			Average	-11.20
		Phi	Peak	-6.24
			Average	-11.87
	Elevation 2	Theta	Peak	-6.85
			Average	-13.63
		Phi	Peak	-7.15
			Average	-12.75

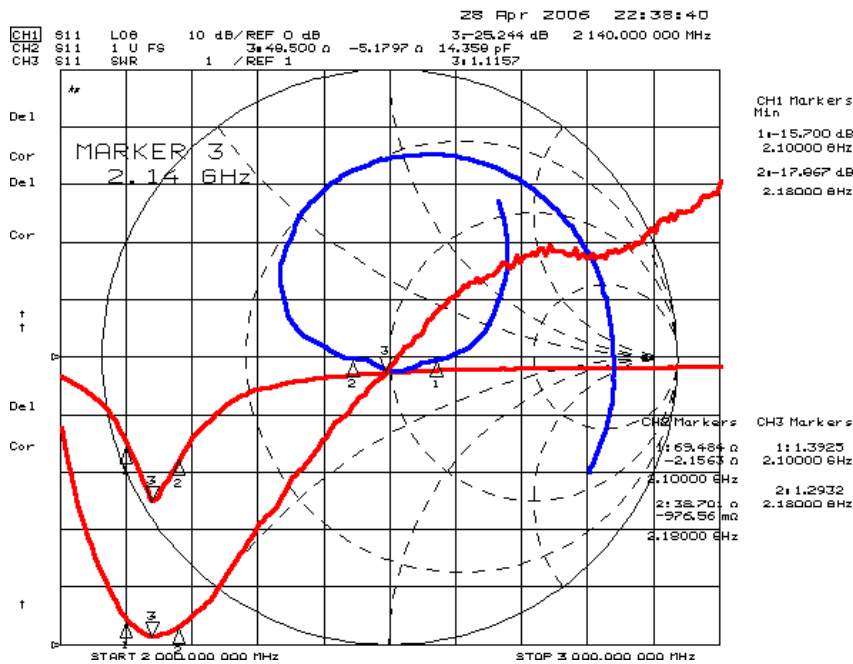
2.2 Test Fixture Condition

ITEM		SPEC
Frequency Range [MHz]		2100 ~ 2180
SWR [Max]		3 : 1
Bandwidth [MHz]		80

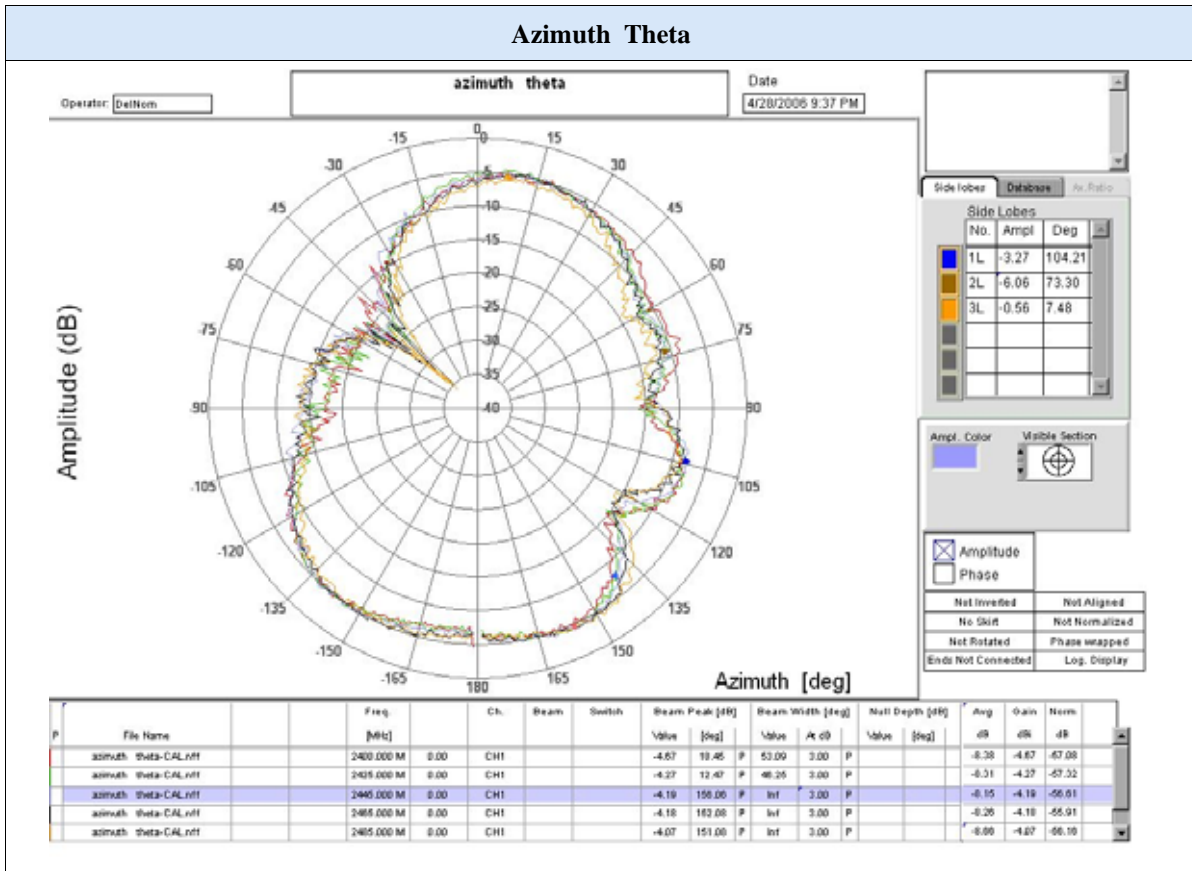
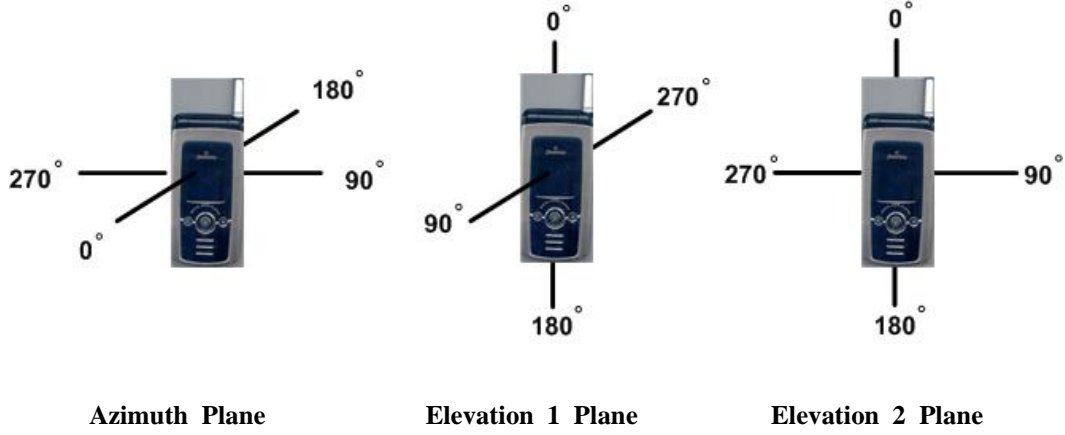
2.3 Graph of Set Condition



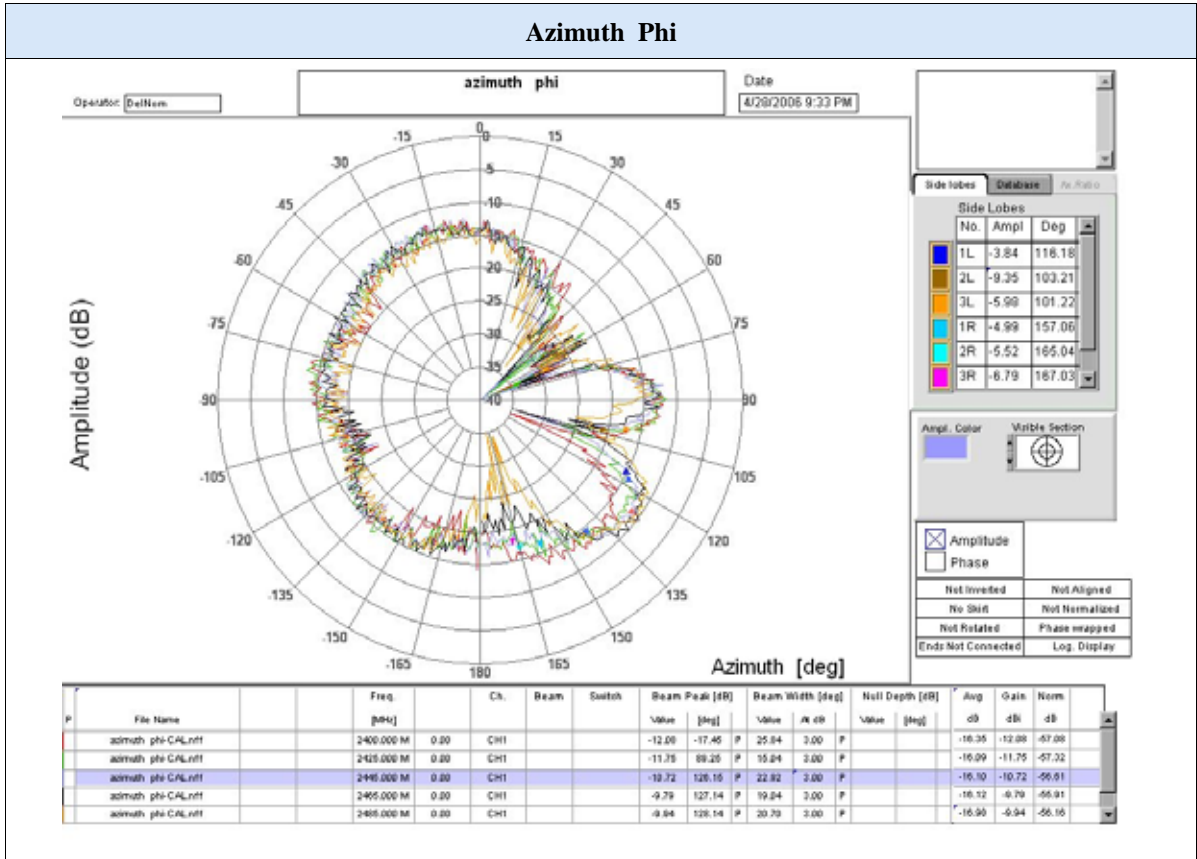
2.4 Graph of Test Fixture Condition



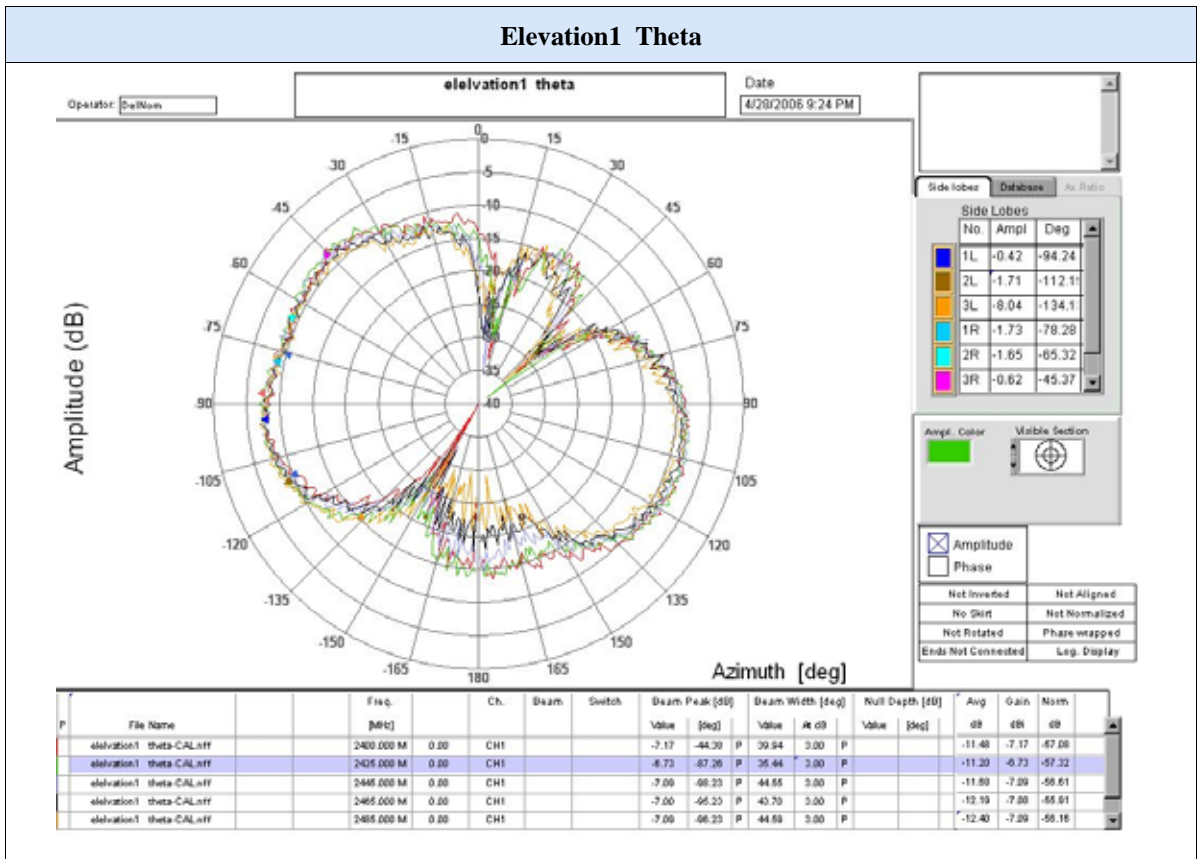
2.5 Radiation Pattern



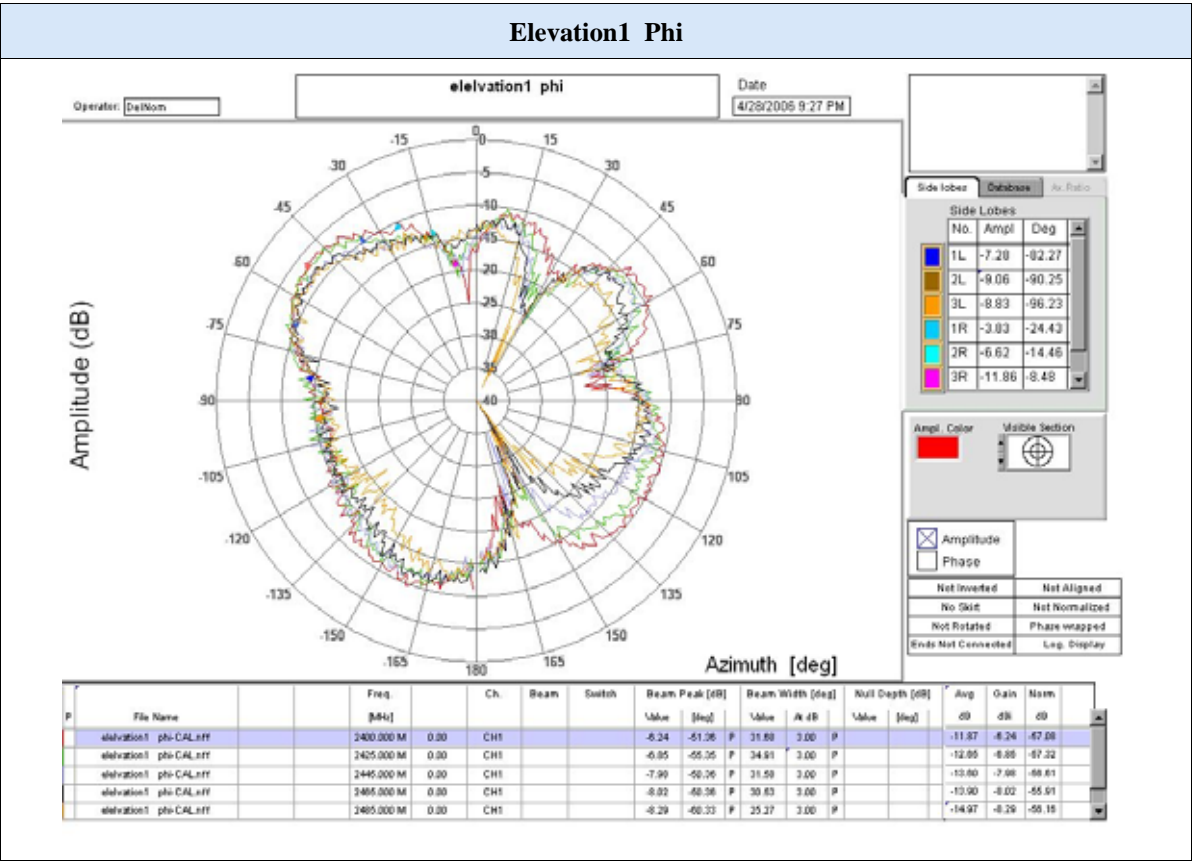
Azimuth Phi



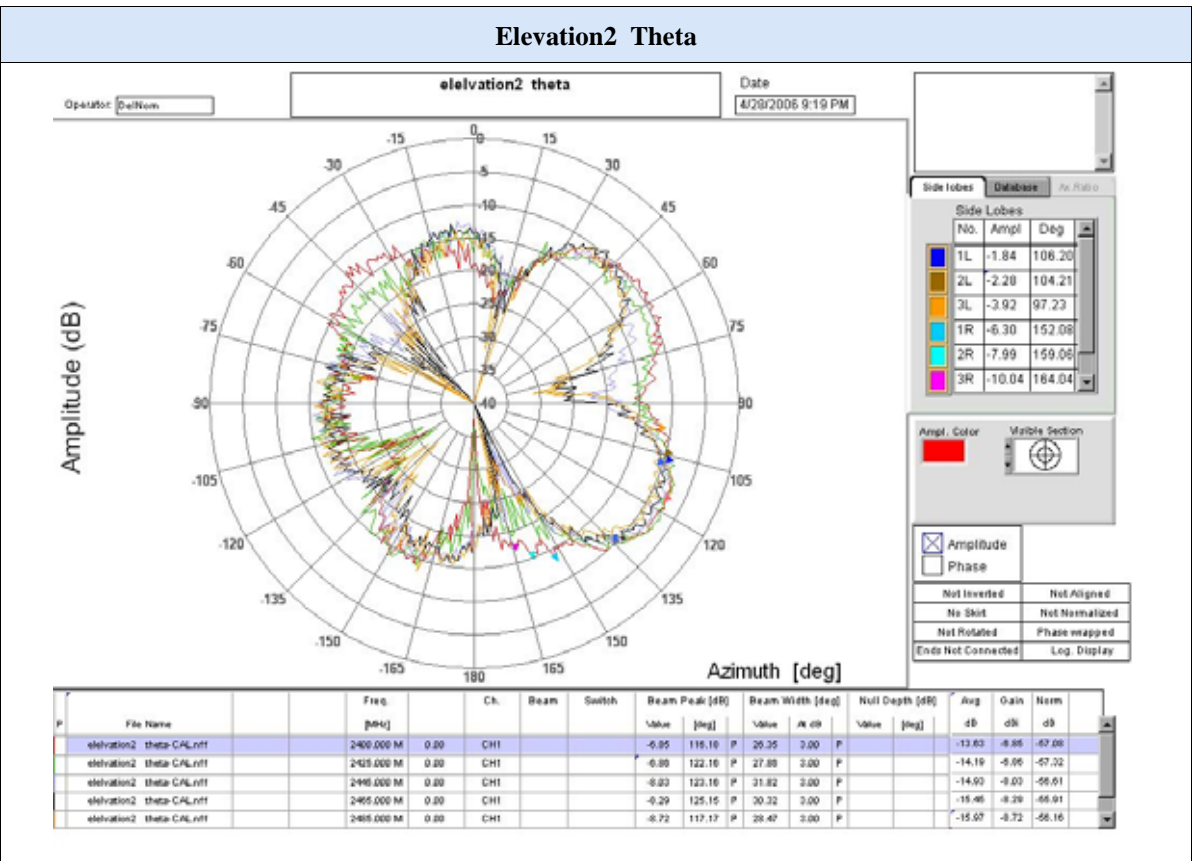
Elevation1 Theta

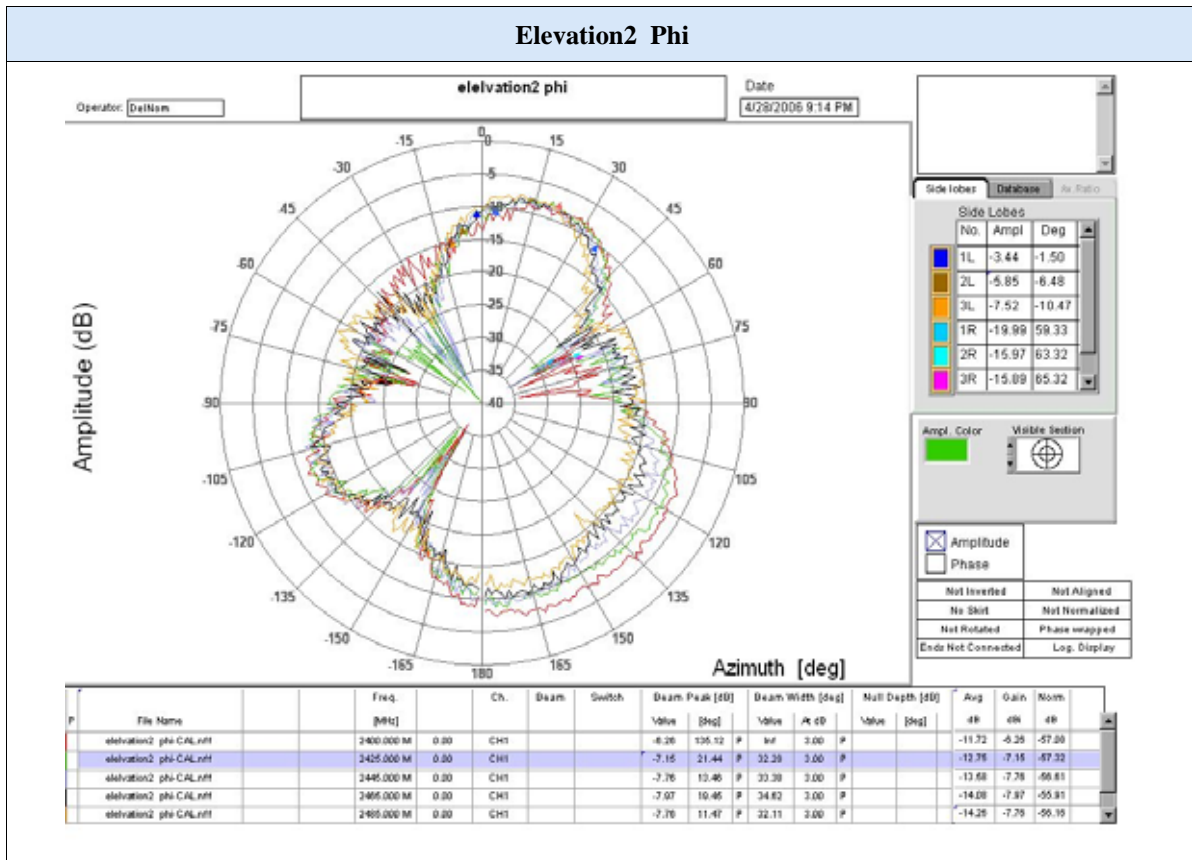


Elevation1 Phi



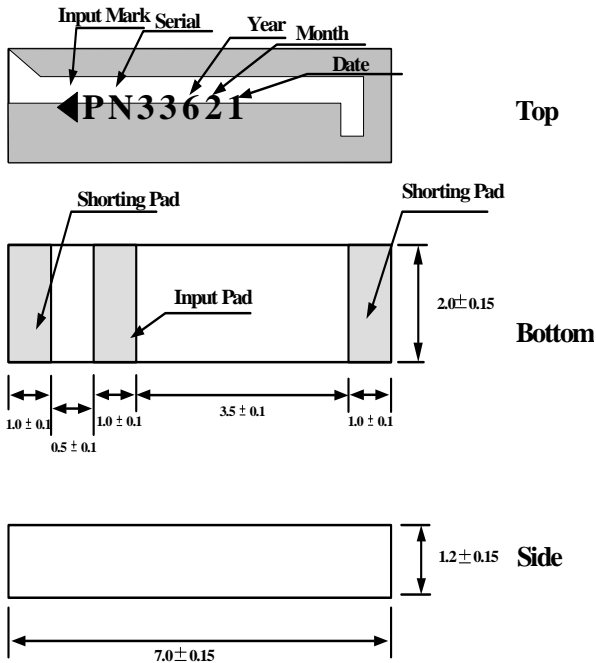
Elevation2 Theta





3. Mechanical Characteristics

3.1 Dimension

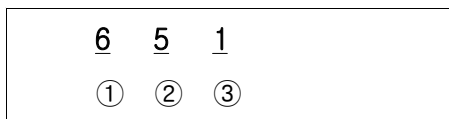


Items	Contents
Dimension[mm]	W = 2.0 ± 0.15
	L = 7.0 ± 0.15
	T = 1.2 ± 0.15
Material	Dielectric (MMS-08)
Temperature [°C]	-40 ~ +80
Humidity[%]	at normal temperature, RH 100

Unit ; mm

Unless specified tolerances are ±0.15

3.2 LOT Notation

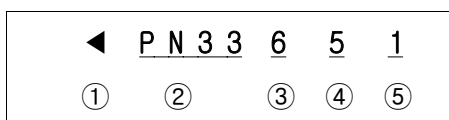


① Year : 1 - 2001, 2 - 2002, ... 6 - 2006 ...

② Month ; 1 - January, 2 - February ... 9 - September, A - October, B - November ..

③ Date ; 1 - 1st day, 2 - 2nd day ... A - 10th Day, B - 11th Day,

3.3 Marking



① Input Signal

② Serial

③ Year ; 1 - 2001, 2 - 2002, ... 6 - 2006 ...

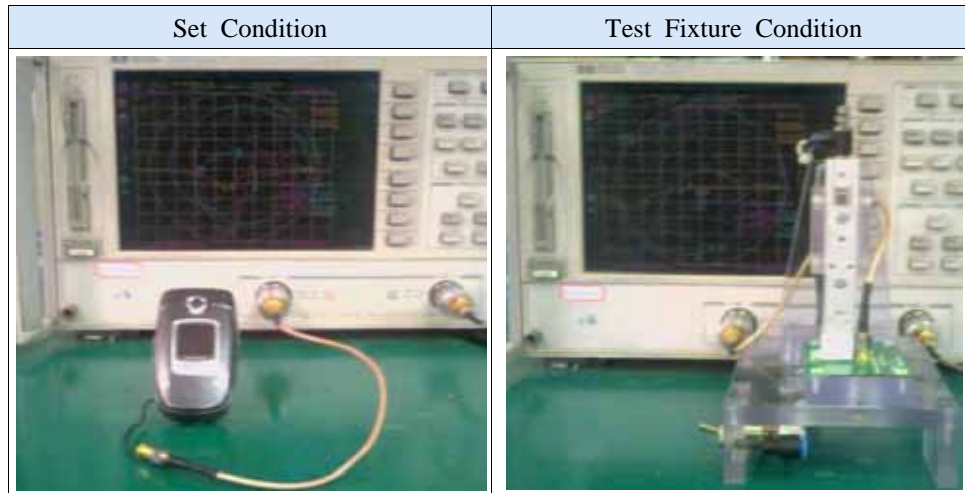
④ Month ; 1 - January, 2 - February ... 9 - September, A - October, B - November ...

⑤ Date ; 1 - 1st day, 2 - 2nd day ... A - 10th Day, B - 11th Day,

4. Measurement Process

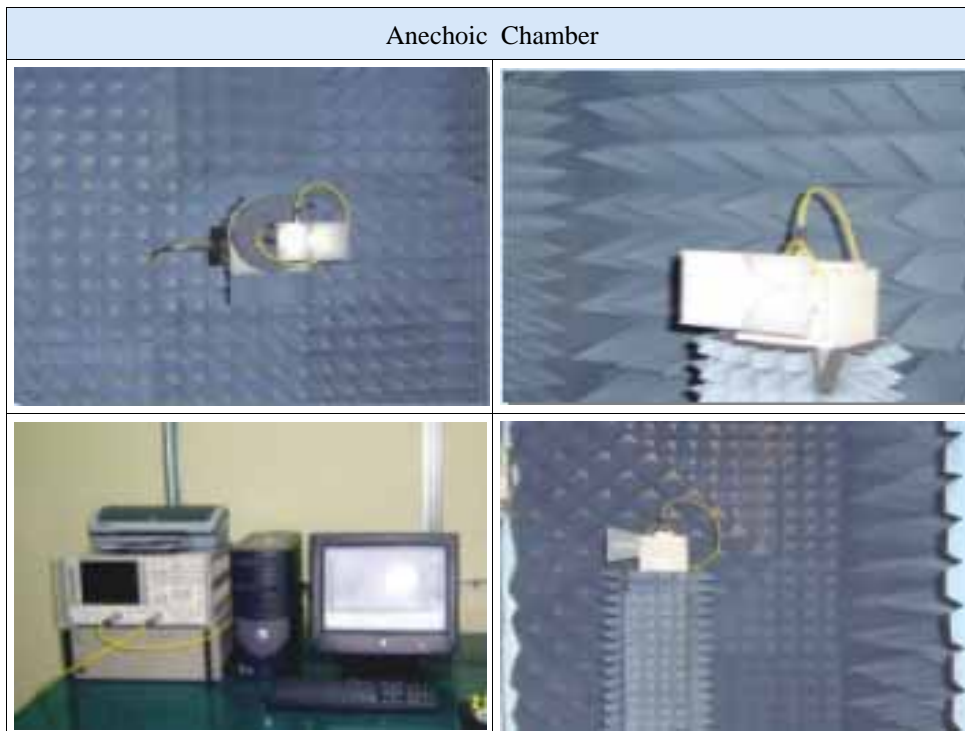
4.1 SWR/Returnloss

The SWR/Returnloss is measured by Network Analyzer



4.2 Gain

The Antenna Gain is measured using the set at Anechoic Chamber



5. Reliability Condition

5.1 ENVIRONMENT TEST

ITEM	TEST CONDITION	LIMIT
High Temperature Resistance	+85°C ± 3°C, 120hr ± 2hr	*After the test, specimen would be kept at 25°C ± 5°C for 1 hours *specimen sheet meet the electrical specification
Low Temperature Resistance	-40°C ± 3°C, 120hr ± 2hr	
Humidity Resistance	+60 ± 3°C, RH90~95%, 120hr ± 2hr	

5.2 Thermal Shock Test, Reflow Test

ITEM	TEST CONDITION	LIMIT
Thermal Shock	-40°C ± 3°C (2Hr) ↔ +85°C ± 3°C (2Hr) cycle : 15cycle recovery time : with in 5min	SAME as 5-1
Reflow	Pre Heating : 140 ± 10°C, 60~120 sec peak Heating : 240°C, 10sec Max	

5.3 Mechanical Test

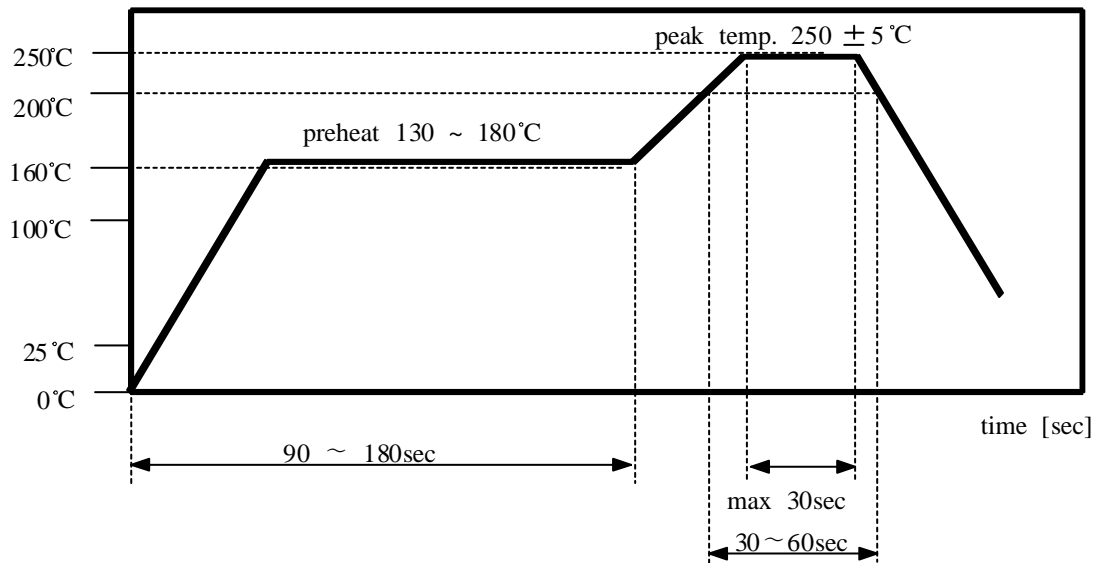
ITEM	TEST CONDITION	LIMIT
Random Vibration	Frequency 10~500Hz - 10 × 9.8m/s ² (G) Sweep time 15min, X.Y.Z each 5 times	*After the test, specimen sheet meet the electrical specification
Drop	Height 120cm, 12 times Height 152cm, 19 times	

6. Reliability Test Result

※ Appendix #1

7. Soldering Condion

7.1 Reflow Soldering



7.2 Manual Soldering

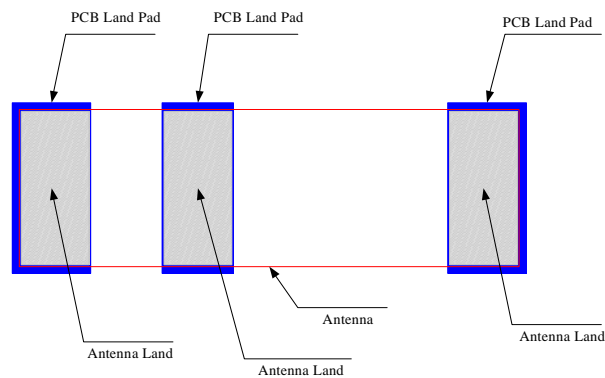
Pre-heating Temperature : 120°C , 60 ~ 300 sec.

Soldering Temperature : 340°C ± 5°C , 5sec max per each terminal

7.3 PCB Pattern Design

The soldering pad of PCB is about 0.1 mm larger than land pattern of antenna.

This figure shows the shape of PCB pad

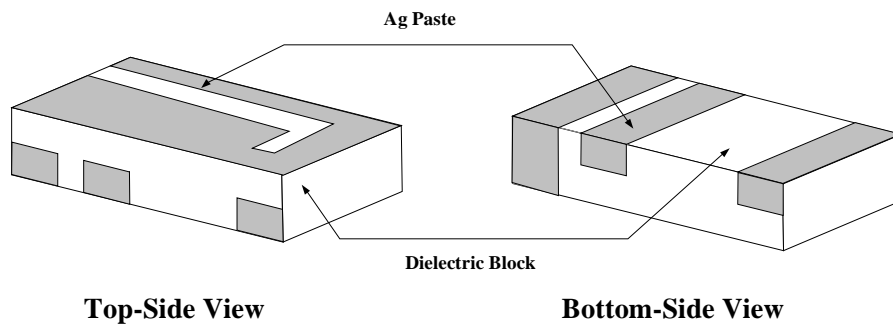


8. Structure and Material

8.1 Materialization

The structure is materialized printing Ag paste at the dielectric block

8.2 Structure



8.3 Material

Items	Material	The manufacturer
Dielectric Block	POWDER	Fuji
PATTERN	Ag Paste	METECH

9. Attention

9.1 Temperature Condition

	Range of Temperature	unit
Application	-40 ~ +85	°C
Keeping	-40 ~ +85	°C

9.2 MSL LEVEL 1 (JEDEC J-STD-020C)

	Floor Life		Soak Requirements	
	Time	Conditions	Time	Conditions
1	Unlimited	= < 30°C/85%RH	168+5/-0	= < 85°C/85%RH

10. Packing

10.1 Carrier/Reel

Material	Surface Resistance	Method
A-PET	Typical $10^8 \Omega$	Heat Press

Input Marking

Feeding Direction

1. 10 sprocket hole pitch cumulative tolerance ± 0.2
 2. Camber not to exceed 1mm in 100mm.
 3. Ao and Do measured on a plane 0.1mm above the bottom of the pocket
 4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.

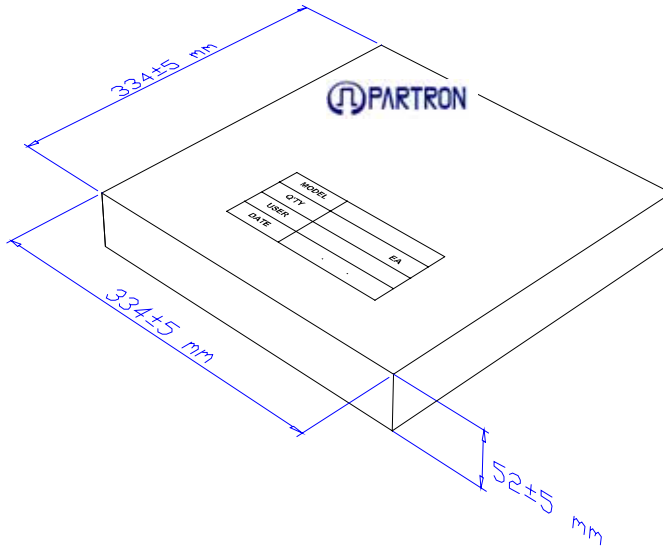
DKC DVG. No.	D-1608-028
DIMENSIONAL UNIT	MM
UNTOLERANCED DIMENSION	± 0.1
CAD FILE NAME	050617
DESIGNED BY	K. M. J
SCALE	1/1
TITLE	2.0 * 7.0 * 1.4P
PART.	CARRIER TAPE
MATERIAL	A-PET
LENGTH	48.4M
COUNT	6,050P
NAME	SPEC.
W	16.0\pm0.2
E	1.75\pm0.1
F	7.5\pm0.1
Do	1.5\pm0.1
P	8.0\pm0.1
Po	4.0\pm0.1
P2	2.0\pm0.1
Ao	2.3\pm0.1
Bo	7.3\pm0.1
Ko	1.4\pm0.1
T	0.3\pm0.05

rn201, dkc Bldg,
366-340 shindong2-dong,
Jung-gu, seoul.100-452, korea <http://www.dkcworld.com>
Tel. 822-2234-5890
Fax. 822-2238-8182

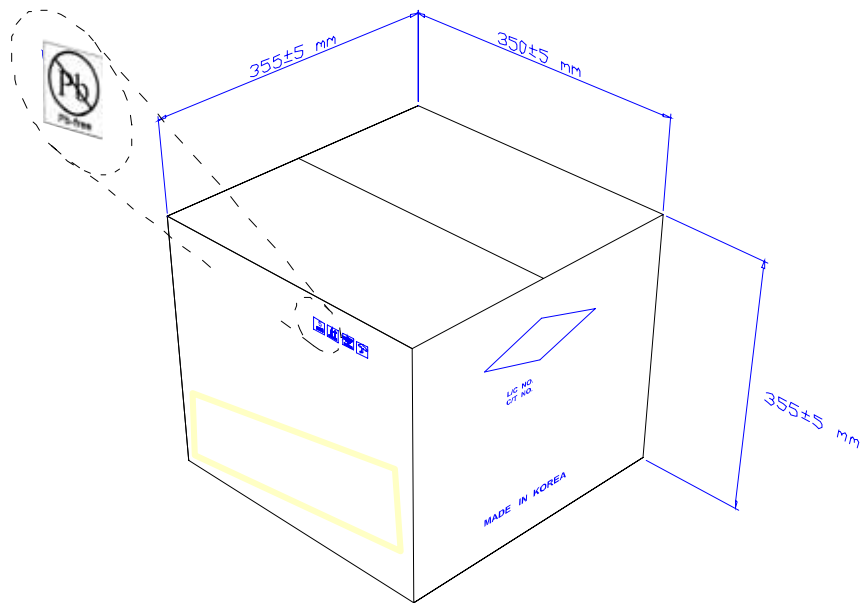
DKC DVG. No.	D-REEL	
DIMENSIONAL UNIT	MM	
CAD FILE NAME	050114	
DESIGNED BY	K. K. J	
TITLE	CARRIER TAPE REEL	
Color	8-44MM Blue/Black 56MM White	
MATERIAL	PS	
SPEC.	12 Inch	
CARRIER	V1	V2
8mm	9.5	13.5
12mm	13.5	17.5
16mm	17.5	21.5
24mm	23.5	29.5
32mm	33.5	37.5
44mm	45.5	49.5
56mm	57.5	61.5

Model : ACS2450GBAPN33
 Quantity ;
 Lot No

10.2 Box Specification









Material : SK/S/K-B
Cardboard box



11. Process Control

Product		Issued/Revision		Process Control					Record	By designed	By checked	By approved		
CHIP ANTENNA		Issued	04.04.06						Revised	05.04.03	PRCP-C001			
Input Materials	FLOW CHART		Process name	Management of Factors				Management of quality						
	preparation	Main Process		Equipment Name	Checked	Condition	Cycle of management	Record	Checked Item	Margin	Method of Inspection	Cycle of management	Record	Action
Ceramic POWDER		◇	Import Inspection						shrinking rate permittivity	refer to Guide Sheet	Micrometer Network	10ea/LOT	C/sheet	Return
POWDER lubricant	○		powder	Mixer					mixing	POWDER lubricant	Scale	PER MIXING	-	Exhaust
		○	Shaping	Press	pressure Mold Condition	refer to Guide Sheet	Per LOT 1/day	parameter C/SHEET	dimension weight density aspect	refer to Guide Sheet	Micrometer scale Calculated Visual	5/100EA 10ea/lot	LOT CARD	Exhaust
		○	Plasticity	Plasticity Hole	SETTER Outside Temperature PROFILE	refer to Guide Sheet	all 2/day 1/month	C/sheet						
		◇	Block						wide length shape	refer to Guide Sheet	Micrometer Calipers Visual Inspection	20ea/LOT 20ea/LOT all	C/sheet	Exhaust
AG PASTE		○	SIDE1 PAD Printing	Printer screen	Squeeze velocity/pressure SNAP	refer to Guide Sheet	1/day	-	PATTERN Dimension aspect	refer to Guide Sheet	Microscope	10ea/3Jig	c/sheet	Rework
		○	Dry	Dryer Dry Jig	Temperature Belt speed	refer to Guide Sheet	1/week	Parameter	Dry Condition Printed condition breakage	refer to Guide Sheet	Visual Inspection	all	Lot card	Rework

Doc - No ACS2450GBAPN33

Product		Issued/Revision		Process Control					Record	By designed	By checked	By approved		
CHIP ANTENNA		Issued	04.04.06						Record					
		Revised	05.04.03						PRCP-C001					
Input Materials	FLOW CHART		Process name	Management of Factors					Management of quality					
	preparation	Main Process		Equipment Name	Checked	Condition	Cycle of management	Record	Checked Item	Margin	Method of Inspection	Cycle of management	Record	Action
AG PASTE			SIDE 2 PAD Printing	Printer screen	Squeeze velocity/pressure SNAP	refer to Guide Sheet	1/day	-	PATTERN Dimension aspect	refer to Guide Sheet	Microscope	10ea/3Jig	c/sheet	Rework
			Dry	Dryer Dry Jig	Temperature Belt speed	refer to Guide Sheet	1/week	Parameter	Dry Condition Printed condition breakage	refer to Guide Sheet	Visual Inspection	all	Lot card	Rework
			Baking	Baking Hole mesh net	Temperature Belt speed	refer to Guide Sheet	1/week	Parameter C/Sheet	Breakage Pollution	refer to Guide Sheet	Visual Inspection	all	Lot card	Exhaust Rework
AG PASTE			TOP printing	Printer screen	Squeeze velocity/pressure SNAP	refer to Guide Sheet	1/day	-	PATTERN dimension	refer to Guide Sheet	measure	10ea/3Jig	c/sheet	Rework
			Dry	Dryer Dry Jig	Temperature Belt speed	refer to Guide Sheet	1/week	Parameter	Dry Condition Printed condition breakage	refer to Guide Sheet	Visual Inspection	all	Lot card	Rework
AG PASTE			BOTTOM PAD Printing CTQ	printer screen	Squeeze velocity/pressure SNAP	refer to Guide Sheet	1/day	-	PATTERN dimension aspect	refer to Guide Sheet	measure Microscope	10ea/3Jig	c/sheet	Rework

Doc - No ACS2450GBAPN33

Product		Issued/Revision		Process Control					Record	By designed	By checked	By approved		
CHIP ANTENNA		Issued	04.04.06						Revised	05.04.03	PRCP-C001			
Input Materials	FLOW CHART		Process name	Management of Factors					Management of quality					
	preparation	Main Process		Equipment Name	Checked	Condition	Cycle of management	Record	Checked Item	Margin	Method of Inspection	Cycle of management	Record	Action
		○	Dry	Dryer Dry Jig	Temperature Belt speed	refer to Guide Sheet	1/week	Parameter	Dry Condition Printed condition breakage	refer to Guide Sheet	Visual Inspection	all	Lot card	Rework
		○	Baking	Baking Hole mesh net	Temperature Belt speed	refer to Guide Sheet	1/week	Parameter C/Sheet	Breakage Pollution	refer to Guide Sheet	Visual Inspection	all	Lot card	Exhaust Rework
		◇	aspect inspection						aspect	Reference SPL refer to Guide Sheet	Visual Inspection microscope	all	Lot card production diary	Exhaust repair
		○	MARKING	Marking Machine					marking	Reference SPL	Visual Inspection	all	Lot card production diary	Rework Exhaust
		◇	Electrical Characteristic	NETWORK Inspection Jig	proofreading Condition	refer to Guide Sheet	1/2hour	C/sheet	Electrical Characteristic	refer to Guide Sheet	Network	all	Lot card production diary	Exhaust repair
		◇	aspect inspection						aspect dimension	Reference SPL refer to Guide Sheet	Visual Inspection microscope	all	Lot card production diary	Exhaust repair
Carrier cover reel		○	Taping						Quantity Direction aspect	refer to Guide Sheet	Manual	all	Lot card production diary	Rework
		◇	shipper inspection	NETWORK Inspection Jig	proofreading Condition	refer to Guide Sheet	1/person	C/sheet	Electrical Characteristic aspect packing	refer to Guide Sheet	Network microscope Visual Inspection	refer to Guide Sheet	Result Paper	return Exhaust
packing box label		○	packing	bar code printer					packing P/N Quantity	refer to Guide Sheet	Visual Inspection	all	-	Rework
		◇	packing inspection						packing P/N Quantity	refer to Guide Sheet	Visual Inspection	all	-	return