產 品 規 格 承 認 書

Specification For Approval

日 期： 2006 / 08 / 09
Date

編 號： KEN– 60809-1
File No.

承認廠商： 研華股份有限公司
Customer

製造廠商： 英碩科技股份有限公司
Manufacturer

型號品名： **R-AN2400-5701RS**
Part Number

Description 2.4GHz External Antenna

研華 P/N:1750000318

廠商審核：
Approved By

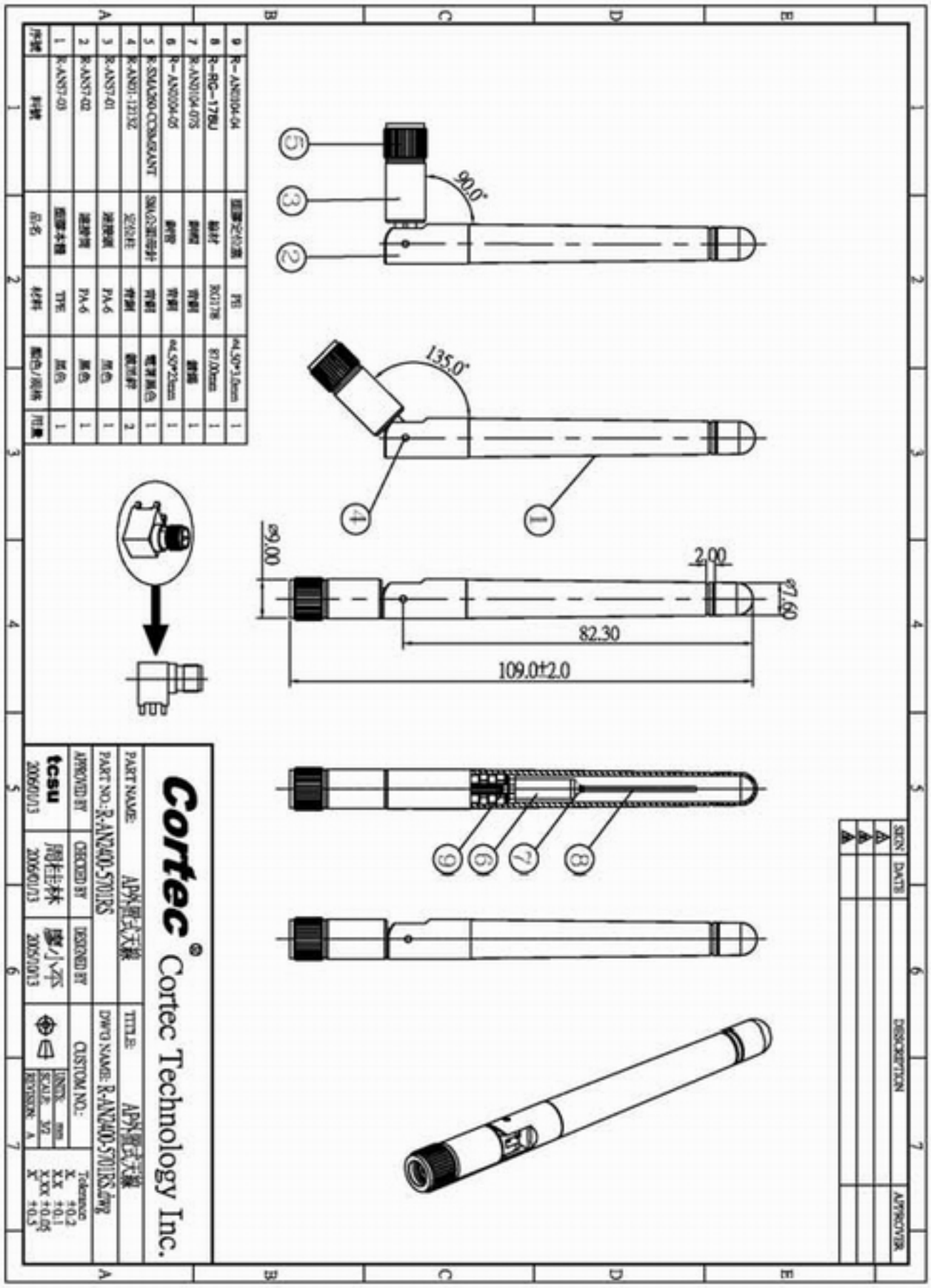
Invax 英碩科技股份有限公司
台北市忠孝東路五段 815 號 4 樓
Tel: (02)2788-5218 Fax: (02)2783-1658

Cortec 東莞康捷電子有限公司
廣東省東莞市長安鎮振安路
沙頭段咸西工業區
Tel: 86-769-5317599 Fax: 86-769-5317869

Index:

Product Number: R-AN2400-5701RS
Product Name: 2.4 GHz External Antenna

1. Mechanical Dimension Drawing



2. Feature and Application

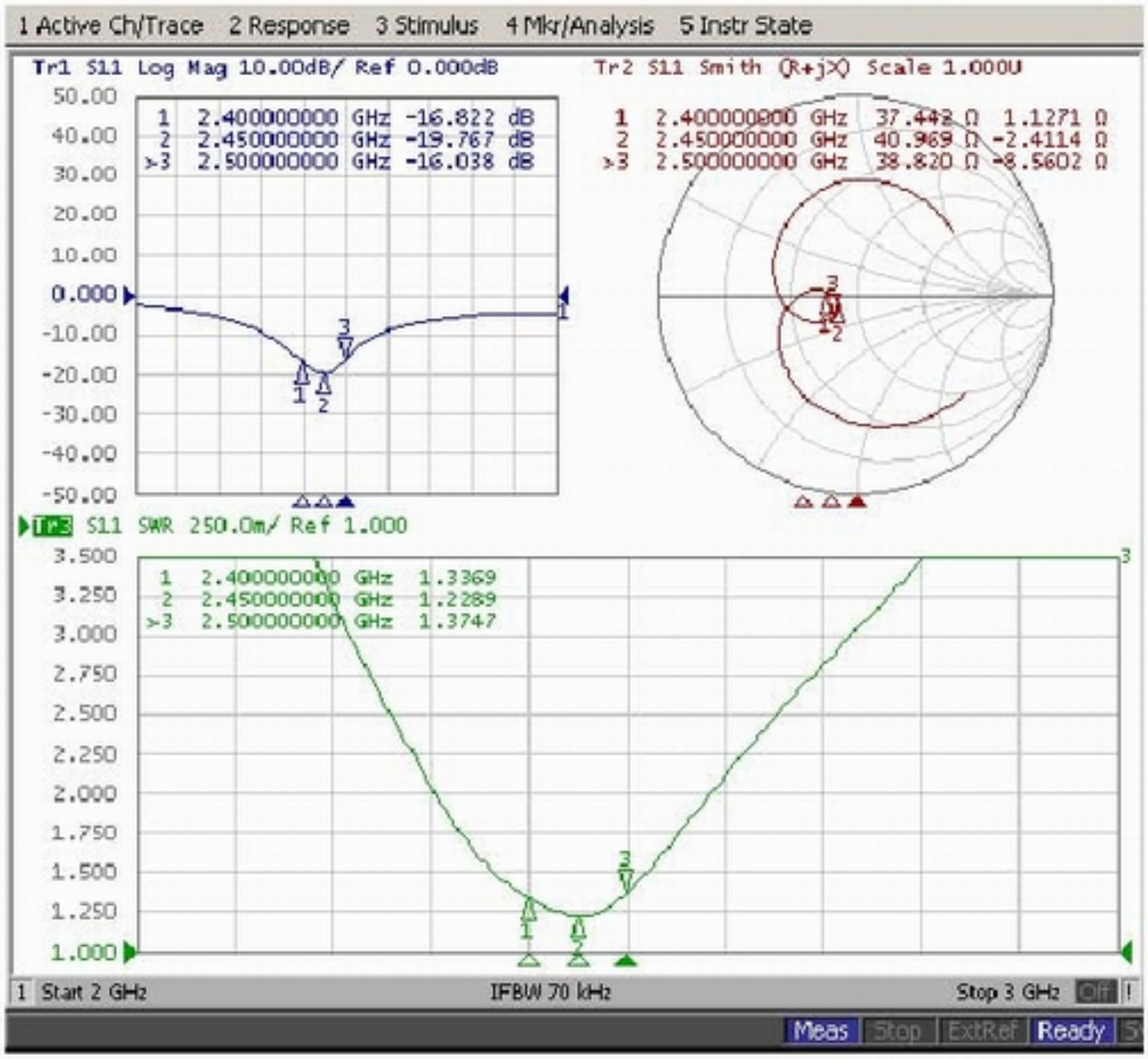
. dipole antenna design
. small size / high gain / omni-directional radiation pattern
. IEEE 802.11 b / g WLAN AP (Access Point) application
. Bluetooth / HomeRF / ISM Band and other 2.4 GHz wireless communication application

3. Technical Specification

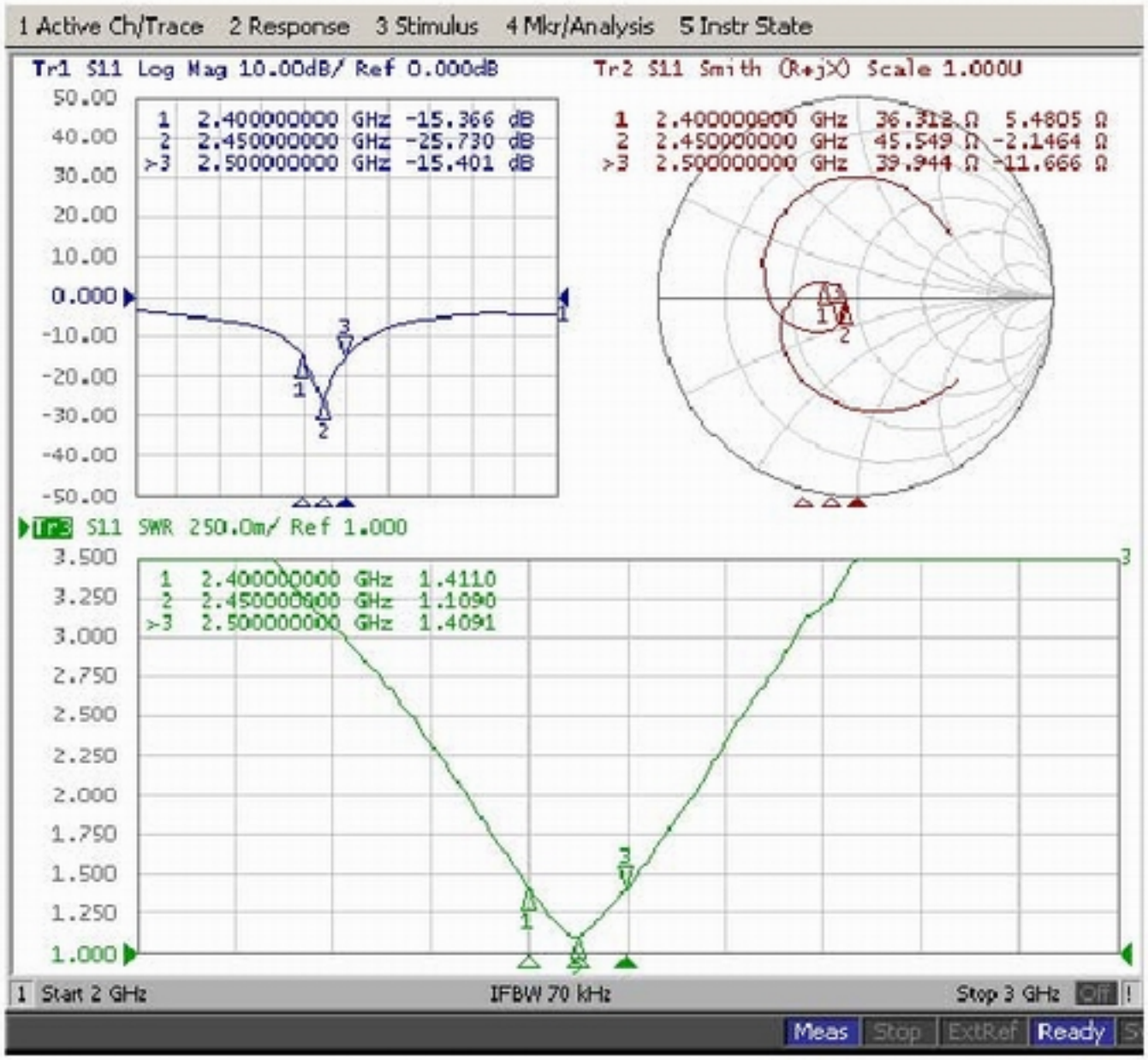
A. Electrical Characteristics	
Working Frequency Range	2400 ~ 2500 MHz
S.W.R.	< 2.0
Antenna Gain	2.0 dBi ± 0.5dBi
Antenna Radiation Pattern	Omni-directional
Impedance	50 ohm
B. Material	
Color of Outer Cover	Black
Material of Outer Cover	TPE
Material of Hinge	PA-6
Material of Base	PA-6
Connector Type	50 Ohm SMA Male Reverse
Tube	Copper , Sn Plated
Total Length	109 mm
C. Environmental	
Operation Temperature	-30°C ~ + 85 °C
Storage Temperature	-30°C ~ + 85°C

4. S11 Return Loss / S.W.R. / Impedance Testing Result

Antenna Hinge is 90 degree



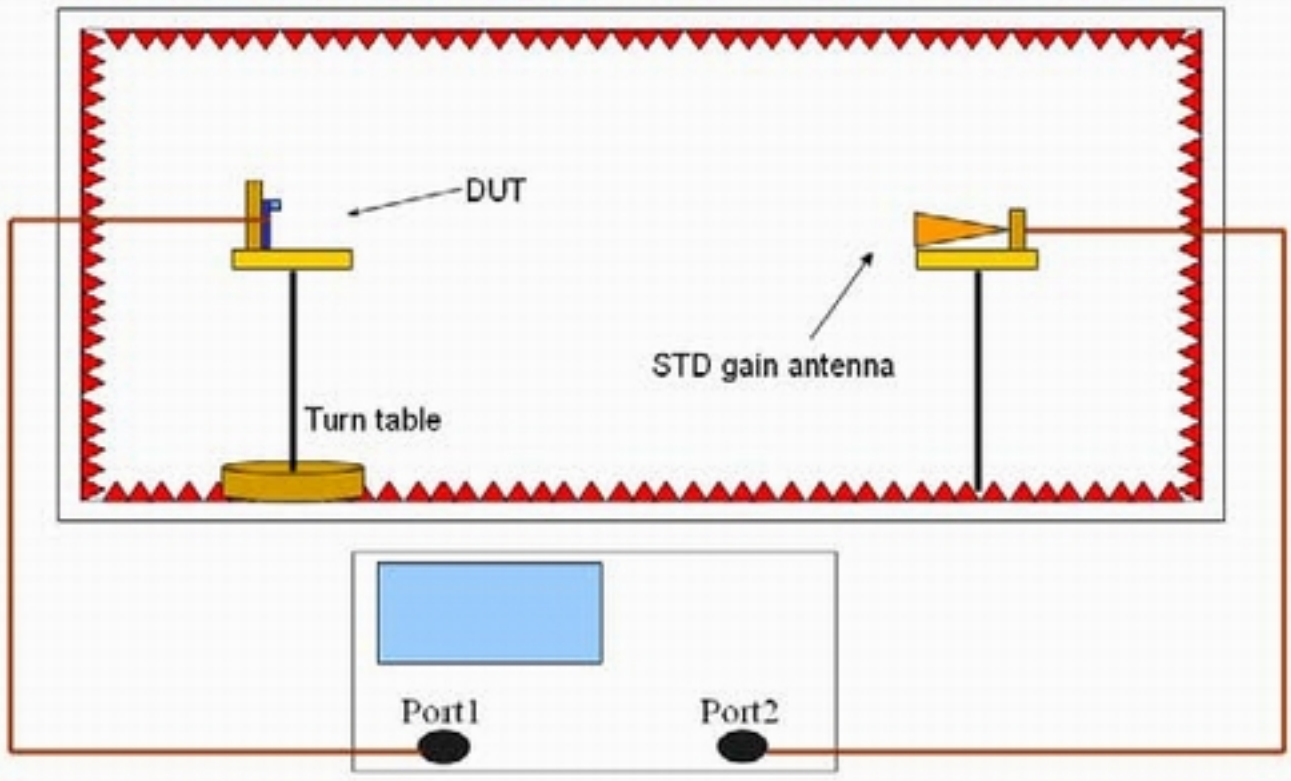
Antenna Hinge is 180 degree



5. Antenna Radiation Pattern

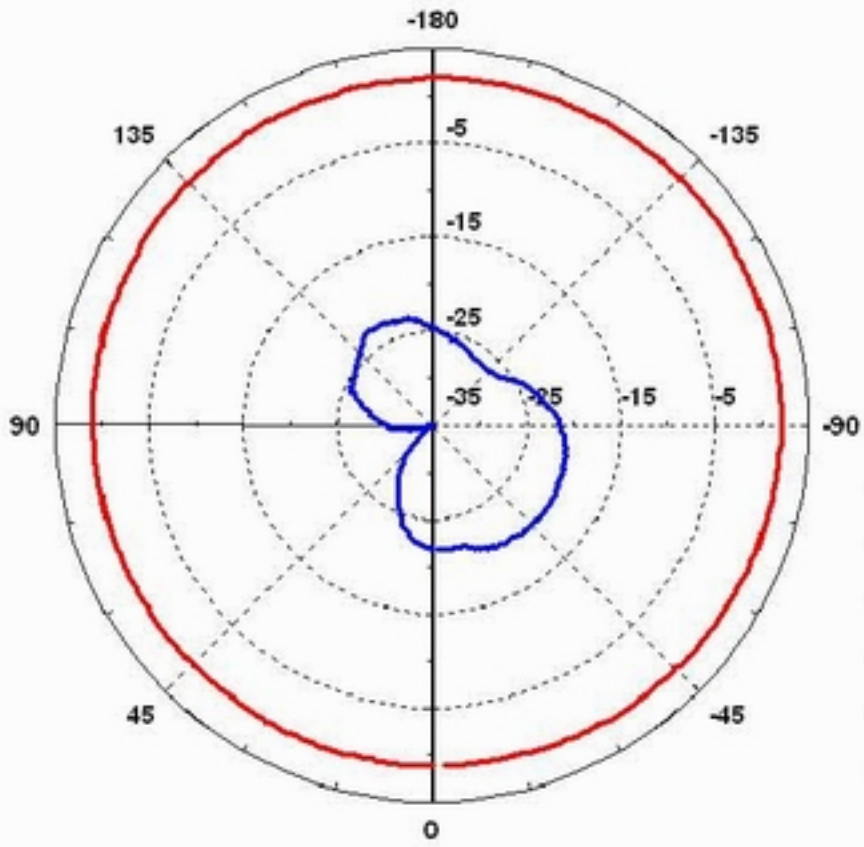
Testing Equipment Specification:

Antenna Anechoic Chamber Dimension: 8 x 4 x 4 m
Quite Zone: 600mm @1 GHz
Isolation: >100dB @ 1 MHz ~ 10 GHz
Testing Equipment: Agilent 8720D
Received Antenna: 0.7~6.0 GHz for Gain Calibration
Double Ridged Horn Antenna



5-1. H-Plane

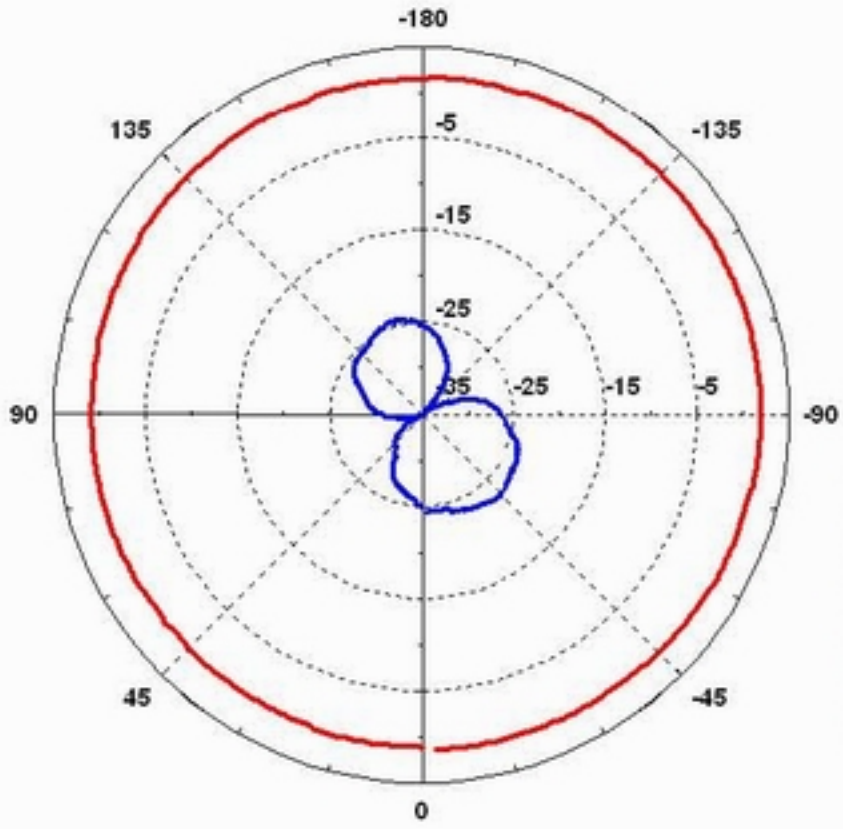
2400MHz Radiation Pattern



Ver. Pol. (max.)=	2.2
Ver. Pol. (avg.)=	1.6
Hor. Pol. (max.)=	-19.9
Hor. Pol. (avg.)=	-23.7
Tol. Gain (max.)=	2.2
Tol. Gain (avg.)=	1.6

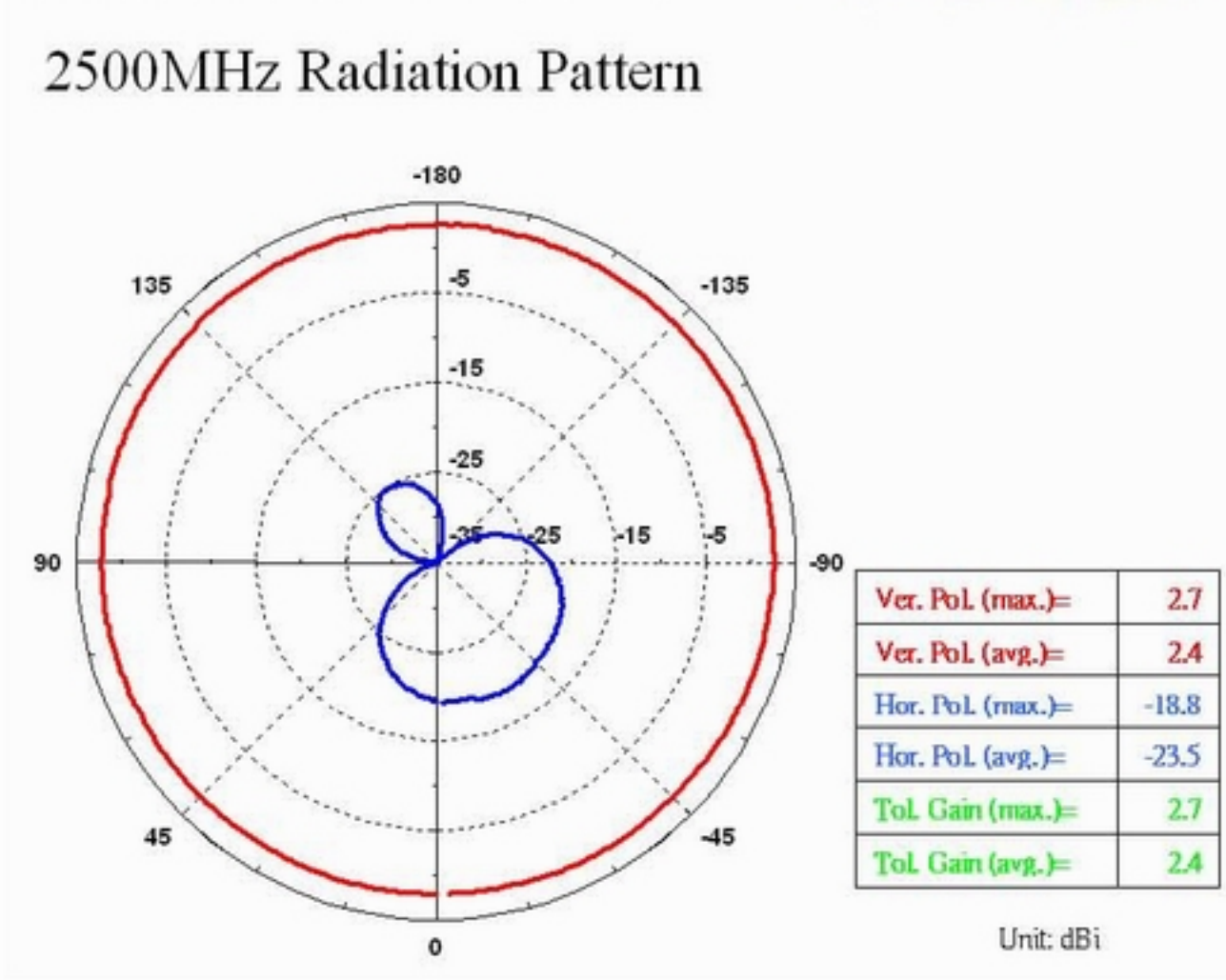
Unit: dBi

2450MHz Radiation Pattern

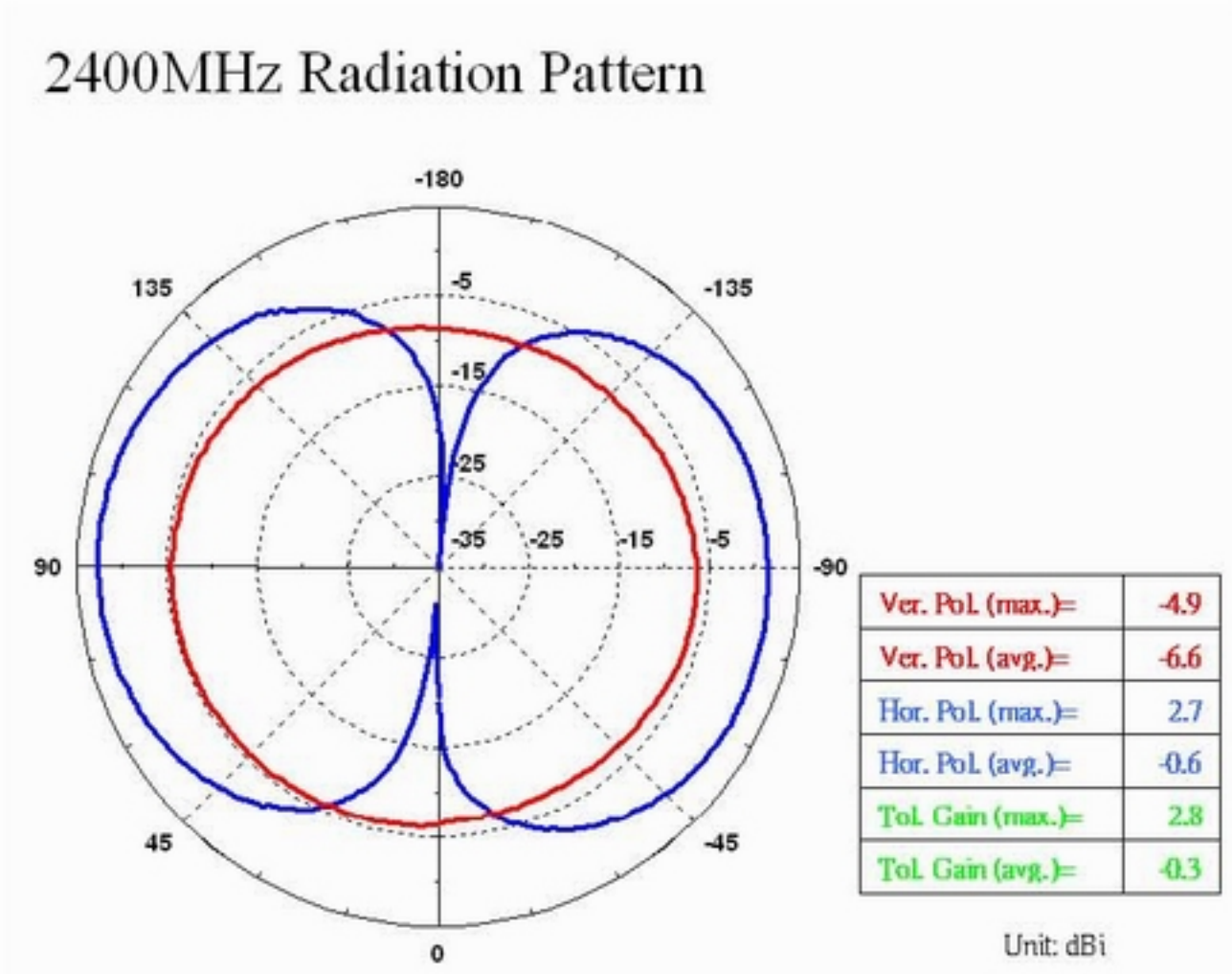


Ver. Pol. (max.)=	1.9
Ver. Pol. (avg.)=	1.4
Hor. Pol. (max.)=	-22.8
Hor. Pol. (avg.)=	-26.4
Tol. Gain (max.)=	1.9
Tol. Gain (avg.)=	1.4

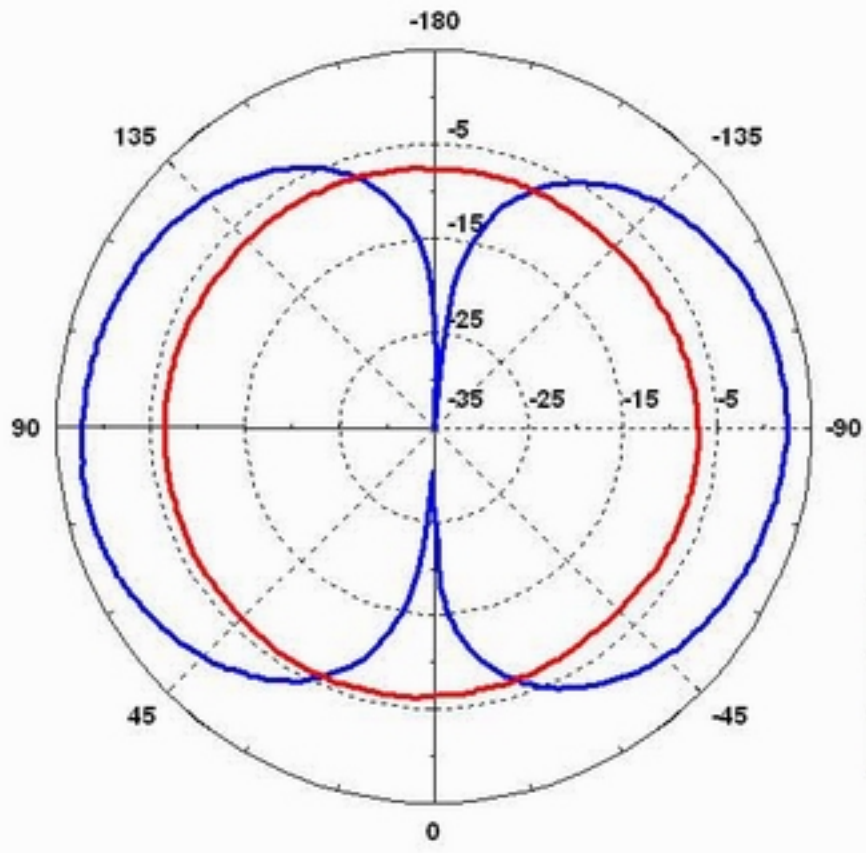
Unit: dBi


2500MHz Radiation Pattern
-180
135
-135
90
-90
45
-45
0
-5
-15
-25
-35
Ver. Pol. (max.)= 2.7
Ver. Pol. (avg.)= 2.4
Hor. Pol. (max.)= -18.8
Hor. Pol. (avg.)= -23.5
Tol. Gain (max.)= 2.7
Tol. Gain (avg.)= 2.4
Unit: dBi

5-2. E-Plane


2400MHz Radiation Pattern
-180
135
-135
90
-90
45
-45
0
-5
-15
-25
-35
Ver. Pol. (max.)= -4.9
Ver. Pol. (avg.)= -6.6
Hor. Pol. (max.)= 2.7
Hor. Pol. (avg.)= -0.6
Tol. Gain (max.)= 2.8
Tol. Gain (avg.)= -0.3
Unit: dBi

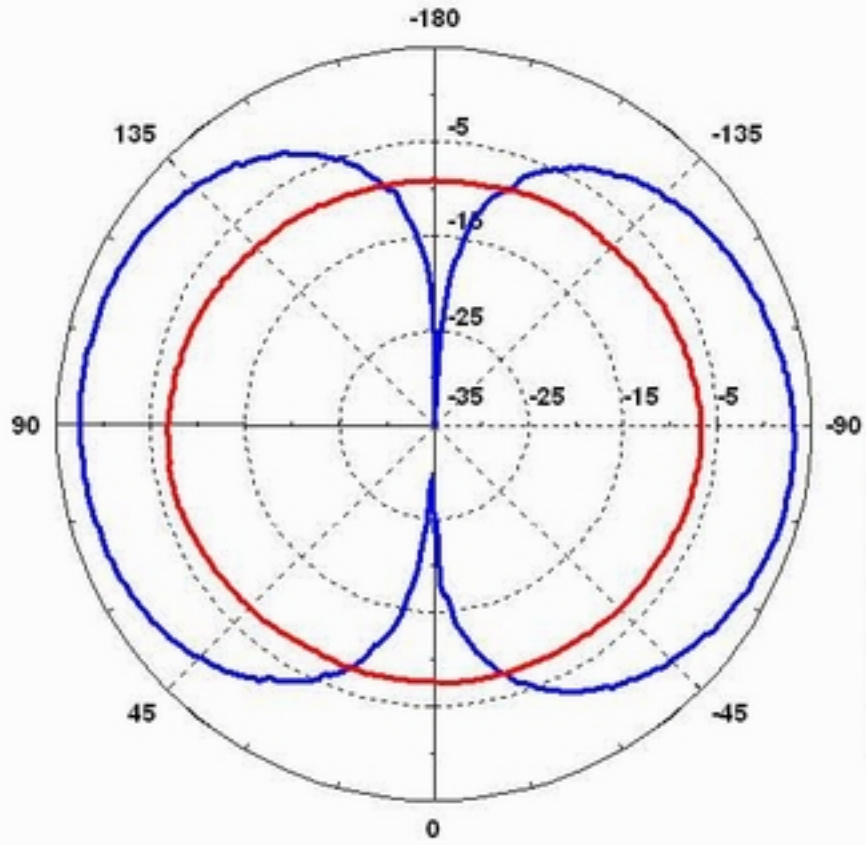
2450MHz Radiation Pattern



Ver. Pol. (max.)=	-4.9
Ver. Pol. (avg.)=	-6.8
Hor. Pol. (max.)=	2.6
Hor. Pol. (avg.)=	-0.8
Tol. Gain (max.)=	2.6
Tol. Gain (avg.)=	-0.5

Unit: dBi

2500MHz Radiation Pattern



Ver. Pol. (max.)=	-4.9
Ver. Pol. (avg.)=	-7.5
Hor. Pol. (max.)=	3.2
Hor. Pol. (avg.)=	-0.1
Tol. Gain (max.)=	3.3
Tol. Gain (avg.)=	0.1

Unit: dBi

6. Plastic Parts Material Datasheet

TEIJIN POLYCARBONATE SINGAPORE PTE. LTD.

#01-01 111 SAKRA AVE. SINGAPORE 627881 SINGAPORE

Material Designation: L-1250#(f2), L-1250U#, L-1250V#, L-1250Z#
Product Description: Polycarbonate (PC)

Color	Min. thick. (mm)	Flame Class	HWI	HAI	RTI. Elec.	RTI. Imp.	RTI. Str.
ALL	0.40	V-2	4	3	80	80	80
	0.84	V-2	4	3	80	80	80
	1.5	HB	4	0	125	115	125
	3.0	HB	1	0	125	115	125
	6.0	HB	1	0	125	115	125
CXT:2, HVTR:2, D495:5							

 # Material designation may be suffixed with any one or two letters.

Subjected to one or more of the following tests; Ultraviolet Light, Water Exposure in accordance with UL 746C, where the acceptability for outdoor use is to be determined by UL Inc.

Report Date: 1999-07-29

物性項目 Property	單位 Unit	ASTM 試驗法 Test Method	TPE
比重 Specific Gravity	---	D792	0.88
模具收縮率 Shrinkage	%	D955	0.8-2.5
斷裂拉伸強度 Tensile Strength	Kg/ cm³	D638	3.1
扭曲強度 Flexural Strength	Kg/ cm³	D790	---
衝擊強度缺口 23°C Impact Strength	Kg om/om	D256	---
硬度 Hardness	A Shore	---	13
熱變形溫度 0.45 MPa Heat Deflection Temp.	°C	D648	80
熔融指數 Melt Flow Index	G/ min²	D1238	10
燃燒性 Flammability	---	UL94	HB

Testing Data from

東莞市合春塑料有限公司 Tel:86-0769-2774772

台灣大雅國際股份有限公司 Tel:886-02-27775232

台灣台達化學工業股份有限公司
ABS 通用級(一般用)規格性質一覽表

性質 Properties			試驗方法 ASTM	通用級（一般用）General Purpose						
				3000H	3000D	3000	6000	1000	5000	5000s
MECHANICAL	機械質	ZOD 沖擊強度 (IZOD Impact Strength)	D256	34 50	30 38	25 33	23 30	21 27	17 21	13 16
		抗張強度-降伏點 (Tensile Strength at Yield) 抗張強度－斷裂點 (Tensile Strength at Break)	D638	400 340	410 360	380 310	400 340	430 340	460 360	480 380
		伸張率-斷裂點 (Elongation at Break)	D638	60	40	40	30	30	20	20
		抗折強度 (Flexural Yield)	D790	620	600	580	640	700	750	800
		抗折系數 (Flexural Modulus)	D790	21,000	21,000	20,000	22,000	24,000	26,000	30,000
THERMAL	熱性質	熱變形溫度 (Heat Distortion Temp)	D648	87	86	85	86	87	88	89
		Vicat 軟化溫度 (Vicat Softening Temp)	D1525	102	101	100	101	102	103	104
		流動指數 (Melt Flow index)	D1238	0.5 6.0	1.0 10.0	1.2 12.0	1.6 16.0	1.8 18.0	2.2 20.0	2.1 19.0
		燃燒性 (Flammability)	UL-94	94HB	94HB	94HB	94HB	94HB	94HB	94HB
ELECTRICAL	電氣性	相對溫度指數 (Relative Temp index)	UL-746B	-	-	60	60	60	60	60
		抗熱線燃燒性 (High Current Arc ignition)	UL-746A	-	-	15	13	17	18	15
		抗電弧性 (High Current Arc ignition)	UL-746A	-	-	200	200	200	200	15
		電弧產生速率 (Arc Tracking Rate)	UL-746A	-	-	0	0	0	0	0
OTHERS	其他	比重 (Specific Gravity)	D792	1.03	1.03	1.03	1.03	1.03	1.03	1.04
		硬度 (Rockwell Hardness)	D785	103	102	100	107	110	115	119
		成型收縮 (Mold shrinkage)	D955	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		吸水率 (Water Absorption)	D570	0.3	0.3	0.3	0.3	0.3	0.3	0.3

7. Metal Parts Material Datasheet

Copper Datasheet

合金編號 Copper Alloy CN & JIS No.	化學成分 Composition (%)									
	銅 Cu	鉛 Pb	鐵 Fe	錫 Sn	鋅 Zn	鋁 Al	錳 Mn	鎳 Ni	磷 P	銅+鋁+鐵+錳+鎳 Cu+Al+Fe+Mn+Ni
C3501	60.0~64.0	0.7~1.7	0.2以下 0.2max	Fe+Sn 0.4以下 0.4max	殘余 Rem					
C3601	59.0~63.0	1.8~3.7	0.3以下 0.3max	Fe+Sn 0.5以下 0.5max	殘余 Rem					
C3602	59.0~63.0	1.8~3.7	0.5以下 0.5max	Fe+Sn 1.2以下 1.2max	殘余 Rem					
C3603	57.0~61.0	1.8~3.7	0.35以下 0.35max	Fe+Sn 0.6以下 0.6max	殘余 Rem					
C3604	57.0~61.0	1.8~3.7	0.5以下 0.5max	Fe+Sn 1.2以下 1.2max	殘余 Rem					
C3605	57.0~60.0	3.5~4.5	0.5以下 0.5max	Fe+Sn 1.2以下 1.2max	殘余 Rem					
C3712	58.0~62.0	0.26~1.2	Fe+Sn 0.8以下 0.8max		殘余 Rem					
C3771	57.0~61.0	1.0~2.5	Fe+Sn 1.0以下 1.0max		殘余 Rem					

合金種類 Alloy CN & JIS No.	符號 Symbol	別類 Name	特性用途 Speciality and Utilities
C3501	線(B)	Nipple 用黃銅 Nipple Using Brass	切削性、冷間鍛造性良好 機車、腳踏車、腳踏車用接頭螺帽 Excellent Cold Forging and Good Machine-ability Use Motorcycle and Bicycle Join Nut...
C3601	(B)	快削黃銅 Free Cutting Blass	切削性良好，C3601,C3602 延展性也良好，電腦、電子、釣具、筆、燈飾、螺絲、小螺帽、齒輪、凡而、照相機各種五金零件 Excellent Machine-ability and C3601, C3602 Good Excellent to Use Computer, Electronic ,Clock, Pen, Light and Fishing, Nut, Gear, Valve Camera Parts, Hardware Parts...
C3602	(A)		
	(B)		
C3603	(B)		
C3604	(A)		
	(B)		
C3605	(A)		
	(B)		
C3712	(A)	Forging Brass	熱間性良好，精密鍛造亦適合機械零組件， 熱間鍛造性和切削性均佳，凡而，表殼，機械零件等 Excellent Hot Forging Uses Precision Forging, Machine Parts, Excellent Hot Forging and Good Machine-ability . Using Value, Watch, Machine Parts...
	(B)		
C3771	(A)		
	(B)		

8. Coaxial Cable Datasheet

RG-178 Coaxial Cable Specification		
1. Cable Type	MIL – C – 17 / RG-178	
2. Impedance	50 ± 3 ohm	
3. Inner Conductor	Material	silver-coated cooper
	Conductor Numbers	7
	Conductor Size	0.102 mm
	Outer Diameter	0.3 mm
4. Dielectric Layer	Material	FEP
	Color	Clear
	Average Thickness	0.28 mm
	Diameter	0.86 mm
5. Braid (Shielding)	Material	silver-coated cooper
	Construction	16-3-0.1 mm
	Coverage	95 %
6. Outer Cover	Material	FEP
	Color	Brown
	Average Thickness	0.25 mm
	Diameter	1.80 ± 0.05 mm
7. V.S.W.R Testing (DC ~ 6GHz)	< 1.3	
8. Attenuation (dB / 100 meter)	100 MHz	46
	900 MHz	155
	1800 MHz	295
	2400 MHz	340
	5200 MHz	505
	6000 MHz	550
9. Capacitance	97 ± 3 (pF / meter)	
10. Maximum Power	30 dBm	
11. Spark Test	2.0 KV	
12. Rating Temp. and Voltage	200°C / 30V	
13. Conductor Resistance	335 ohm / KM / 20°C max.	

14. Dielectric Resistance	3 G ohm / KM / 20°C min.

9. Reliability Testing

Test Item	Procedure	Requirement
1. Visual inspection and Dimension Check	Applicable methods using x5 magnification	follow specification
2. Rapid Changing of Temperature	-40°C (30minutes) to 90°C (30minutes); 120 cycles	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < ±5%
3. Damp Heat	500 hours at 60°C; 90 ~ 95% RH	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < ±5%
4. Endurance	500 hours at 90°C	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < ±5%

10. SGS Test Report

Test Report

INVAX SYSTEM & TRADING CORP.
CORTEC TECHNOLOGY INC.
4F. No.815, CHUNG HSAIO EAST RD. SEC.5,
TAIPEI, TAIWAN, R.O.C.

Report No. : CE/2004/C1640A
Date : 2004/12/16

The following merchandise was (were) submitted and identified by the client as :

Type of Product	:	ANTENNA
Style/Item No.	:	EM SERIES; IM SERIES; NB SERIES; AN SERIES
Sample Received	:	2004/01/05 & 2004/04/23 & 2004/06/11 & 2004/06/24 & 2004/12/09 & 2005/01/26 & 2005/02/17
Testing Date	:	2004/01/05 TO 2004/01/06 & 2004/04/23 TO 2004/04/28 & 2004/06/11 TO 2004/06/21 & 2004/06/24 TO 2004/07/01 & 2004/12/09 TO 2004/12/16 & 2005/01/26 TO 2005/01/28 & 2005/02/17 TO 2005/03/03

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Test Result : - Please see the next page -

This report is combined with reports of SZTYR050102512/LP & CE/2004/62767 & GZSCR040100230/LP & CE/2004/61520 & GZSCR040413274/LP & GZSCR050207531/LP

Daniel Yeh, M.R. / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

Test Report

INVAX SYSTEM & TRADING CORP.
CORTEC TECHNOLOGY INC.
4F. No.815, CHUNG HSAIO EAST RD. SEC.5,
TAIPEI, TAIWAN, R.O.C.

Report No. : CE/2004/C1640A
Date : 2004/12/16

Test Result

PART NAME NO.1 : BRASSY COLOR METAL BAR(SZTYR050102512/LP)
PART NAME NO.2 : BLACK PLASTIC SHEET(GZSCR040100230/LP)
PART NAME NO.3 : TAN TRANSPARENT LIQUID(GZSCR040413274/LP)
PART NAME NO.4 : BLACK PLASTIC JACKET(KHCX-32AWG-SB-TA)(CE/2004/61520)
PART NAME NO.5 : TRANSPARENT FEP JACKET(CE/2004/C1640)
PART NAME NO.6 : WHITE PALSTIC(CE/2004/62767)
PART NAME NO.7 : SILVER COLORED METAL WIRE(GZSCR050207531/LP NO. 1)
PART NAME NO.8 : TRANSPARENT LT. BROWN PLASTIC(GZSCR050207531/LP NO. 2)

Test Item (s):	Unit	Method	MDL	Result				
				No.1	No.2	No.3	No.4	No.5
PBBs(Polybrominated biphenyls)(CAS NO:059536-65-1)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	---	---	---	N.D.	N.D.
PBBEs(PBDEs)(Polybrominated biphenyl ethers)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	---	---	---	N.D.	N.D.

SGS

Test Report

INVAX SYSTEM & TRADING CORP.
CORTEC TECHNOLOGY INC.
4F. No.815, CHUNG HSAIO EAST RD. SEC.5,
TAIPEI, TAIWAN, R.O.C.

Report No. : CE/2004/C1640A
Date : 2004/12/16

Test Item (s):	Unit	Method	MDL	Result				
				No.1	No.2	No.3	No.4	No.5
Chromium VI (Cr+6)	ppm	As per US EPA 7196A and US EPA 3060A.	2	N.D.	---	N.D.	N.D.	N.D.
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	2	22.0	N.D.	N.D.	N.D.	N.D.
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	2	N.D.	---	N.D.	N.D.	N.D.
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	2	24600.0	6.0	N.D.	N.D.	N.D.

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
PBBs(Polybrominated biphenyls)(CAS NO:059536-65-1)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.	---	N.D.
PBBEs(PBDEs)(Polybrominated biphenyl ethers)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.	---	N.D.

SGS

Test Report

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CORTEC TECHNOLOGY INC.
4F. No.815, CHUNG HSAIO EAST RD. SEC.5,
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Report No. : CE/2004/C1640A
Date : 2004/12/16

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Chromium VI (Cr+6)	ppm	As per US EPA 7196A and US EPA 3060A.	2	---	N.D.	N.D.
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	2	N.D.	N.D.	---
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	2	---	N.D.	---
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	2	N.D.	N.D.	---
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	15	---	---	N.D.
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	50	---	---	N.D.
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	15	---	---	N.D.

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
AZO		As per LMBG 8202-2				
4-AMINODIPHENYL (CAS NO.92-67-1)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
BENZIDINE (CAS NO.92-87-5)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
4-CHLORO-O-TOLUIDINE (CAS NO.95-69-2)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
2-NAPHTHYLAMINE (CAS NO.91-59-8)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
O-AMINOAZOTOLUENE (CAS NO.97-56-3)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.

SGS

Test Report

INVAX SYSTEM & TRADING CORP.
CORTEC TECHNOLOGY INC.
4F. No.815, CHUNG HSAIO EAST RD. SEC.5,
TAIPEI, TAIWAN, R.O.C.

Report No. : CE/2004/C1640A
Date : 2004/12/16

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
2-AMINO-4-NITROTOLUENE (CAS	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
P-CHLOROANILINE (CAS NO.106-47-8)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
2,4-DIAMINOANISOLE (CAS NO.615-05-4)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
4,4-DIAMINODIPHENYLMETHANE (CAS NO.101-77-9)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
3,3-DICHLOROBENZIDINE (CAS NO.91-94-1)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
3,3-DIMETHOXYBENZIDINE (CAS NO.119-90-4)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
3,3-DIMETHYLBENZIDINE (CAS NO.119-93-7)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
3,3-DIMETHYL-4,4-DIAMINODIPHENYLMETHANE (CAS NO.838-88-0)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
P-CRESIDINE(2-METHOXY-5-METHYLANILINE) (CAS NO.120-71-8)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
4,4-METHYLENE-BIS-(2-CHLORANILINE) (CAS NO.101-14-4)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
4,4-OXYDIANILINE (CAS NO.101-80-4)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
4,4-THIODIANILINE (CAS NO.139-65-1)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
O-TOLUIDINE (CAS NO.95-53-4)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.

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Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
2,4-TOLUYLENDIAMINE (CAS NO.95-80-7)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
2,4,5-TRIMETHYLANILINE (CAS NO.137-17-7)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
O-ANISIDINE (CAS NO.90-04-0)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.
P-AMINOAZOBENZENE (CAS NO.60-09-3)	ppm	Analysis was performed by GC/MS.	3	N.D.	---	N.D.

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Mirex(CAS NO:002385-85-5)	ppm	Analysis was performed by GC/MS.	4	N.D.	---	---

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
PCBs(Polychlorinated Biphenyls)(CAS NO:001336-36-3)	ppm	With reference to USEPA 8082A. Analysis was performed by GC/ECD/MS.	0.5	N.D.	---	---

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Organic-tin coumpounds						
Triphenyl Tin(TPT)(CAS NO:000668-34-8)	ppm	With reference to 83/677/EEC & DIN 38407. Analysis was performed by GC/FPD.	0.03	---	---	N.D.
Tributyl Tin(TBT)	ppm	With reference to 83/677/EEC & DIN 38407. Analysis was performed by GC/FPD.	0.03	---	---	N.D.

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Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Asbestos						
Anthrophyllite(CAS NO.017068-78-9)	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	---	---	Negative
Crocodolite(CAS NO.012001-28-4)	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	---	---	Negative
Amosite(CAS NO.012172-73-5)	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	---	---	Negative
Tremolite(CAS NO.014567-73-8)	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	---	---	Negative
Chrysotile(CAS NO.012001-29-5)	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	---	---	Negative
Actinolite(CAS NO.013768-00-8)	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	---	---	Negative

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
PCBs(Polychlorinated Biphenyls)(CAS NO:001336-36-3)	ppm	With reference to USEPA 8082A. Analysis was performed by GC/ECD/MS.	0.5	---	---	N.D.

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Polychlorinated Naphthalene	ppm	With reference to USEPA 8081B. Analysis was performed by GC/MS.	5	---	---	N.D.

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Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
PVC (CAS No:9002-86-2)	**	Analysis was performed by FTIR/ATR and Pyro-GC/MS.	-	---	---	N.D.

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Chlorinated Paraffin (C10-C13) (CAS NO:010871-26-2)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by GC/MS or GC/ECD.	0.01	---	---	N.D.

Test Item (s):	Unit	Method	MDL	Result		
				No.6	No.7	No.8
Formaldehyde(CAS No:000050-00-0)	ppm	With reference to DIN 53315 & USEPA 8315A method. Analysis was performed by HPLC/DAD/MS	0.2	---	---	N.D.

NOTE: (1) N.D. = Not detected (<MDL)
(2) ppm = mg/kg
(3) MDL = Method Detection Limit
(4) " --- " = Not Applicable
(5) " - " = No Regulation
(6) * = Results shown are of the adjusted analytical results
(7) ** = Qualitative analysis (No Unit)
(8) Negative = Undetectable / Positive = Detectable
(9) The MDL is 5ppm for the single compound of CP

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RoHS 管制外之項目

✧ 鎘 (Cadmium) :

- 電接點(electrical contacts)的鎘及鎘化合物以及 91/338/EEC 指令限制範圍以外的鎘鍍層中的鎘。(2005/747/EC)
- 光學玻璃及濾光玻璃(optical and filter glass)中所用的鎘。(2005/747/EC)

✧ 六價鉻 (Hexavalent - Chromium) :

- 電冰箱中作為碳鋼冷卻系統防腐劑的六價鉻。(2002/95/EC)

✧ 鉛 (Lead) :

- 陰極射線管(cathode ray tubes)、電子部件(electronic components)和發光管(fluorescent tubes)等玻璃內的鉛含量。(2002/95/EC)
- 鋼合金中的鉛含量不超過 0.35%、鋁合金中的鉛含量不超過 0.4%、銅合金中的鉛含量不超過 4%。(2002/95/EC)
- 高熔點銲錫中的鉛 (例如鉛含量 ≧85 % 的合金中的鉛)。(2005/747/EC)
- 用於伺服器(servers)、記憶體(storage)和存儲系統(storage array systems)和交換、信號和傳輸，以及電信網路管理的網路基礎設施設備(network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications)中焊料的鉛。(2005/747/EC)
- 電子陶瓷產品中的鉛。(2005/747/EC)
- 用於鉛青銅軸承外殼(lead-bronze bearing shells and bushes)的鉛。(2005/717/EC)
- 光學玻璃及濾光玻璃(optical and filter glass)中所用的鉛。(2005/747/EC)
- 順應針連接系統(compliant pin connector systems)中使用的鉛。(2005/747/EC)
- 熱導橡釘模組(thermal conduction module c-ring)塗層中所用的鉛。(2005/747/EC)
- 微處理器針腳及封裝連接所使用含鉛量佔 80%-85%的焊接劑(含有超過兩種成份)中的鉛。(2005/747/EC)
- 用於焊接半導體終端和集成電路板載體的焊料中含鉛量。(2005/747/EC)
- 管狀白熾燈硅酸鹽塗層燈管(linear incandescent lamps with silicate coated tubes)中的鉛。(2006/310/EC)
- 專業複印設備用的高強度放電燈中作為發光劑的鹵化鉛。(Lead halide as radiant agent in High Intensity Discharge (HED) lamps used for professional reprography applications)(2006/310/EC)
- 當放電燈被用作含磷仿日曬燈(例如 BSP)、或二氧化合物列印、平版印刷、捕蟲器，以及含磷化學和含磷食物加工過程的專業燈時(例如 SMS)，放電燈中的螢光粉觸媒劑的鉛(鉛含量 1%以下) (Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi2O5:Pb) as well as when used as specialty lamps for diazo-printing reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr, Ba) 2MgSi2O7:Pb)) (2006/310/EC)

- 緊緻節能燈中作為汞的特定成分中 PbBiSn-Hg 及 PbInSn-Hg 中的鉛以及作為輔助汞合金中 PbSn-Hg 中的鉛。(Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact Energy Saving Lamps (ESL)) (2006/310/EC)
- 液晶顯示器中焊接前後平版螢光燈基質的玻璃中的氧化鉛。(Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCD)) (2006/310/EC)

✧ 汞 (Mercury)：

- 小型日光燈中不超過 5 mg / 燈管者。(2002/95/EC)
- 一般用途的直管日光燈管不超過(2002/95/EC)：
  -- Halophosphate < 10 mg。
  -- Triphosphate with normal lifetime < 5 mg。
  -- Triphosphate with long lifetime < 8 mg。
- 特殊用途的直管日光燈管。(2002/95/EC)
- 附件中未特別提及用於其他照明燈具的含汞量。(2002/95/EC)

✧ 十溴聯苯醚 (Deca-BDE)

- 應用於高分子類(Polymeric)之十溴聯苯醚之含量。(2005/717/EC)

註:以上翻譯若有誤差，應以原文法規為準。*(請參考 2002/95/EC, 2005/717/EC, 2005/747/EC, 2006/310/EC)*

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【符合RoHS 2002/95/EC指令所規定的六項禁用物質】

1. **鉛及其化合物 ＜1000 ppm**
2. **鎘及其化合物 ＜100 ppm**
3. **汞及其化合物 ＜1000 ppm**
4. **六價鉻 ＜1000 ppm**
5. **多氯聯苯（PBB）＜1000 ppm**
6. **多溴二苯醚（PBDE）＜1000 ppm**

公司名稱：＿＿＿＿＿＿＿＿（印）

負 責 人：＿＿＿＿＿＿＿＿（印）

聲 明 日 期：95年 5月 20日