

產品規格承認書

Specification For Approval

日期: 2006 / 11 / 17

Date

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承認廠商: 海華科技股份有限公司

Customer

製造廠商: 英碩科技股份有限公司

Manufacturer

型號品名: 2.4 GHz Antenna

Part Number

Description

INVAX P/N: R-AN2400-0202RS

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: 886-2-2788-5218 Fax: 886-2-2783-1658

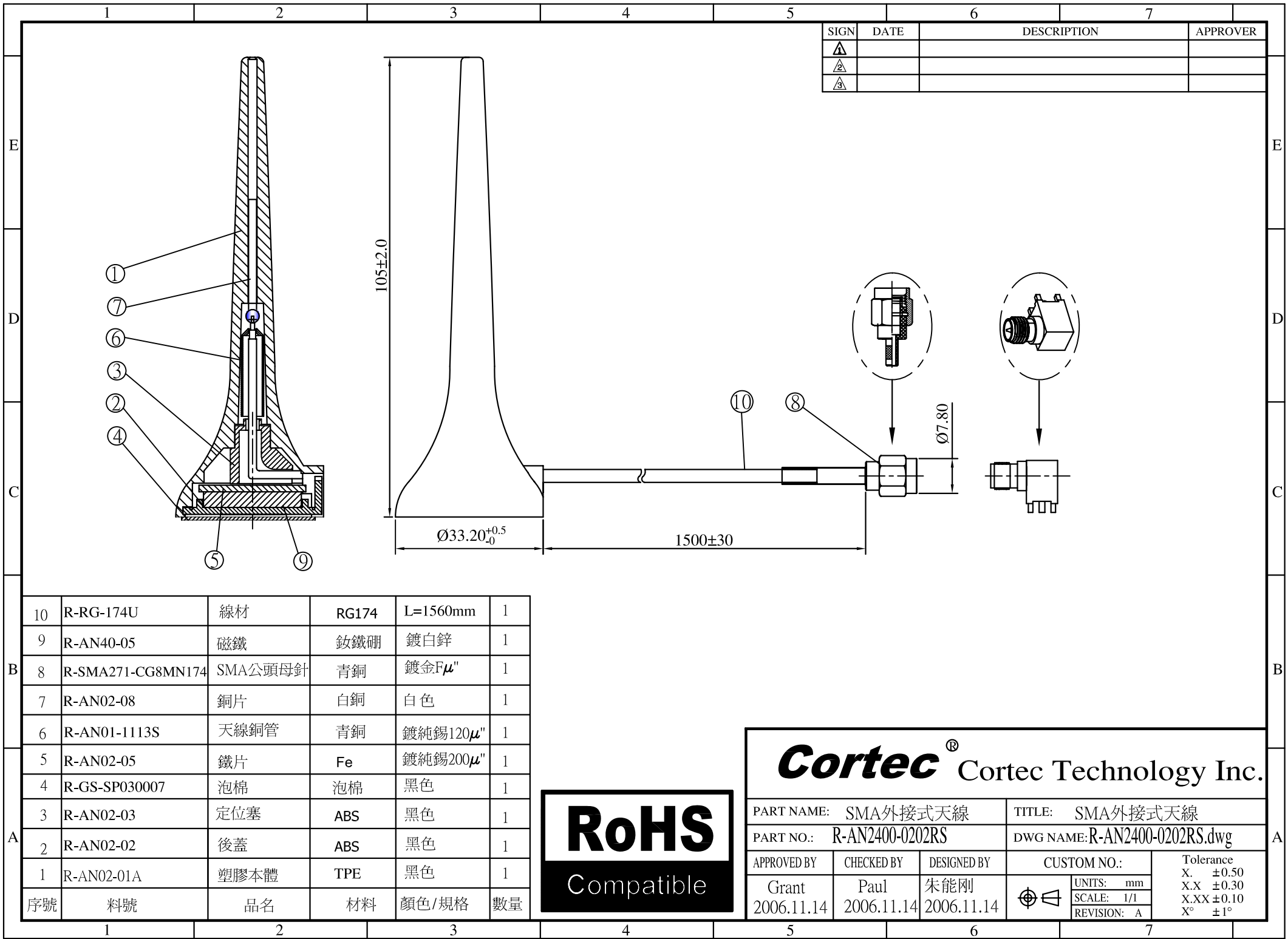
Cortec

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: 86-769-85388261 Fax: 86-769-85397133

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1. Mechanical Dimension Drawing



2. Technical Specification

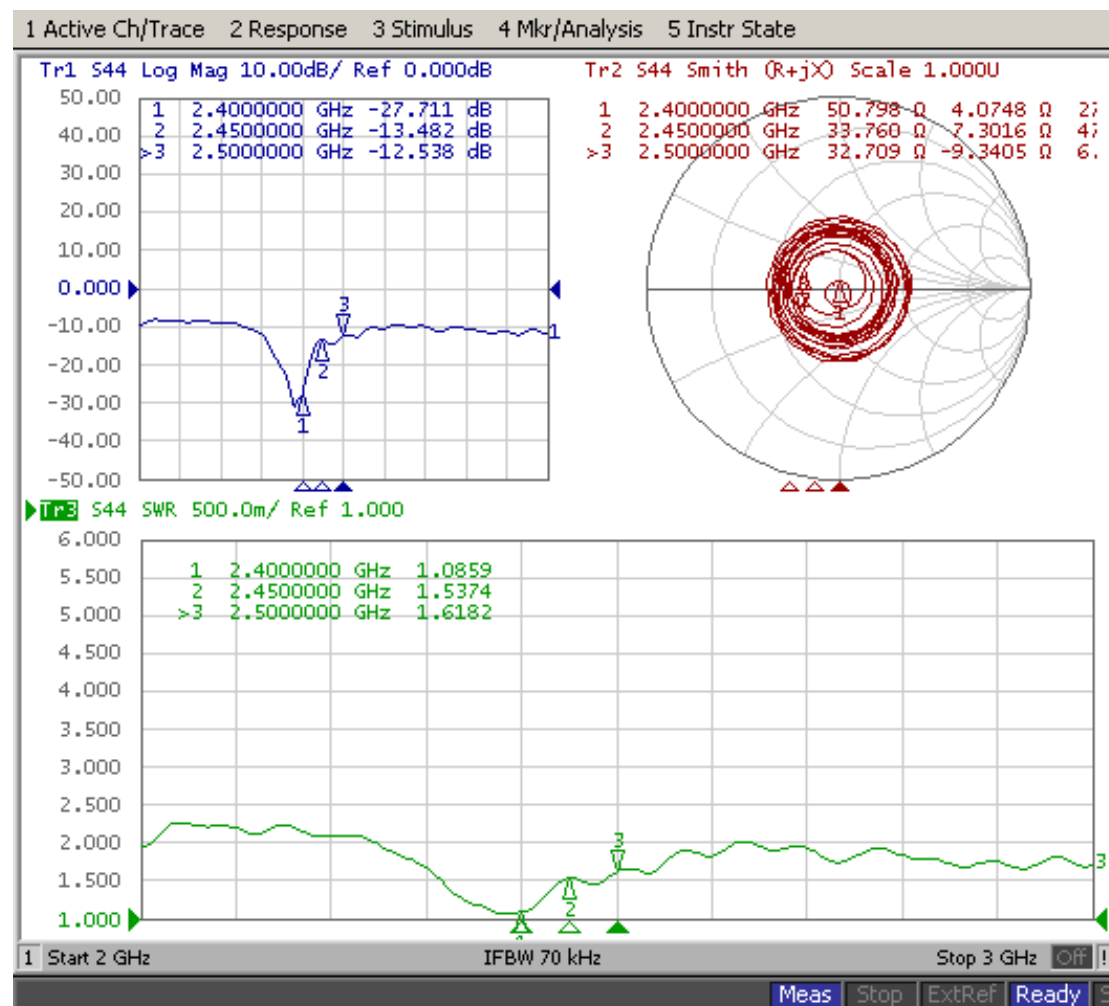
A. Electrical Characteristics	
Working Frequency Range	2400 ~ 2500 MHz
S.W.R.	≤ 2.0
Antenna Gain	+0.1 $\pm$ 0.5 dBi @ 2400 MHz +1.0 $\pm$ 0.5 dBi @ 2450 MHz +1.5 $\pm$ 0.5 dBi @ 2500 MHz
Antenna Radiation Pattern	Omni-directional
Impedance	50 ohm
B. Material	
Color of Outer Cover	Black
Material of Outer Cover	TPE
Material of Hinge	ABS
Material of Base	ABS
Connector Type	50 Ohm SMA Male Reverse for RG-174 Au Plated
Coaxial Cable	RG-174 // 1500 mm
Tube	Copper // Sn Plated
C. Environmental	
Operation Temperature	- 30 °C ~ + 85 °C
Storage Temperature	- 30 °C ~ + 85 °C

Product Number: R-AN2400-0202RS

Product Name: 2.4 GHz Antenna



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



Product Number: R-AN2400-0202RS

Product Name: 2.4 GHz Antenna



4. Antenna Radiation Pattern

Testing Equipment Specification:

Antenna Anechoic Chamber Dimension: 8 x 4 x 4 m

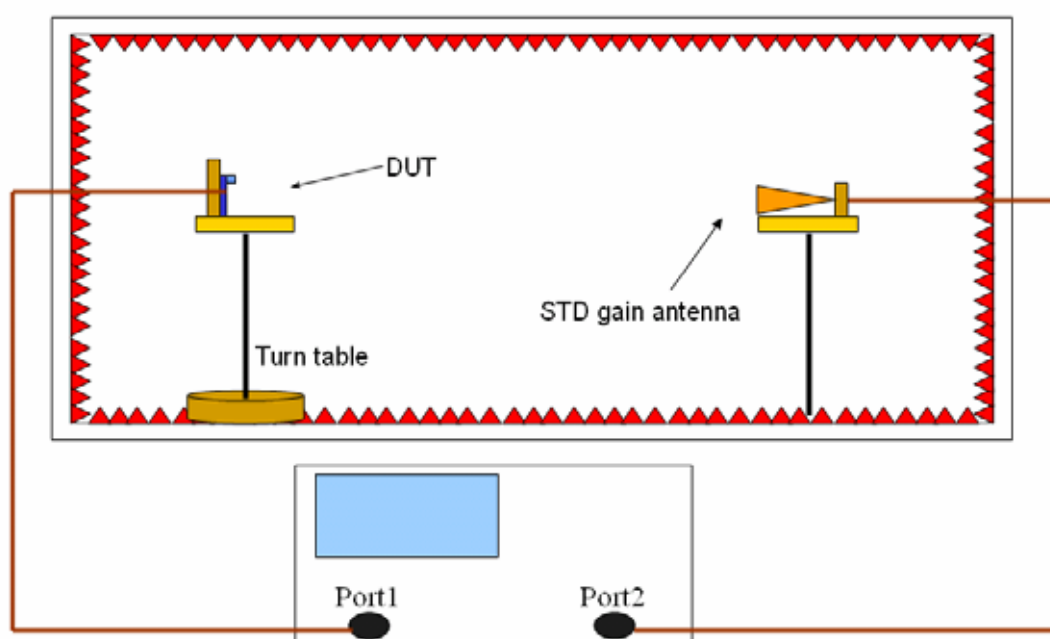
Quiet Zone: 600mm @1 GHz

Isolation: >100dB @ 1 MHz ~ 10 GHz

Testing Equipment: Agilent 8720D

Received Antenna: 0.7~6.0 GHz for Gain Calibration

Double Ridged Horn Antenna





Cortec Technology Inc.

广东省东莞市长安镇振安路沙头段咸西工业区

Model : R-AN2400-0202RS
Remark : H-Plane
Tested by : CORTEC Antenna 3D Lab

Location: Chamber

Date: 2006/11/14

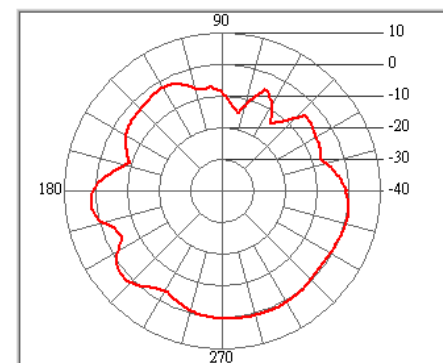
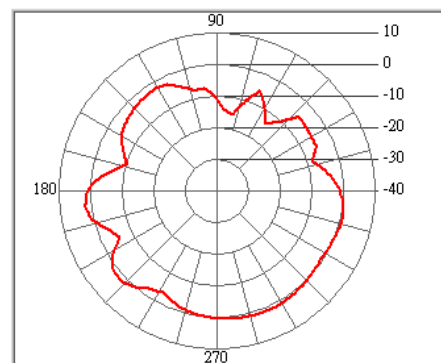
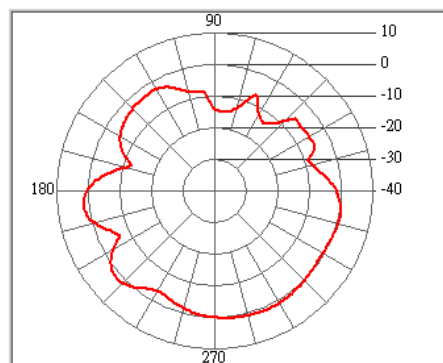
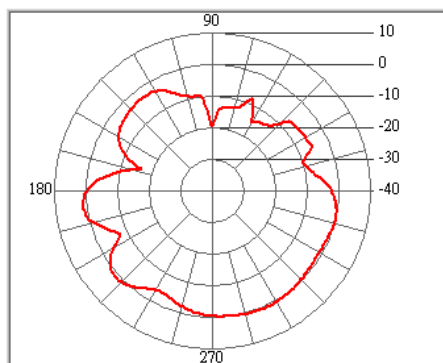
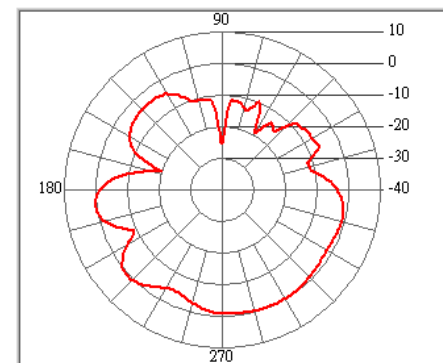
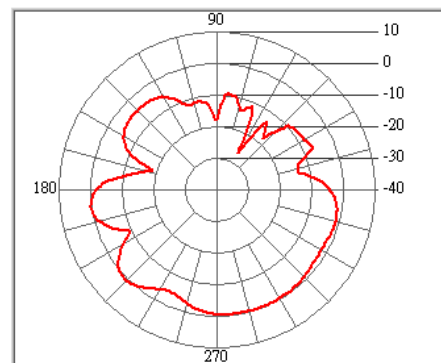
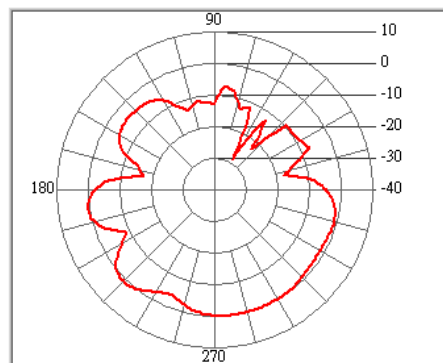
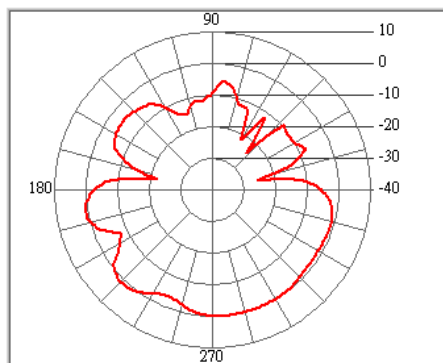
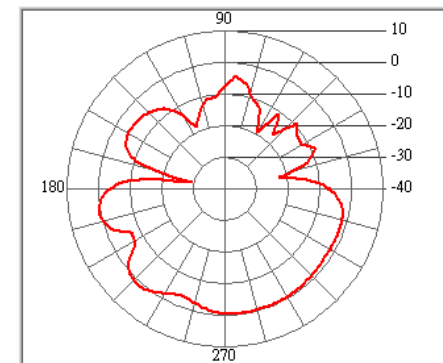
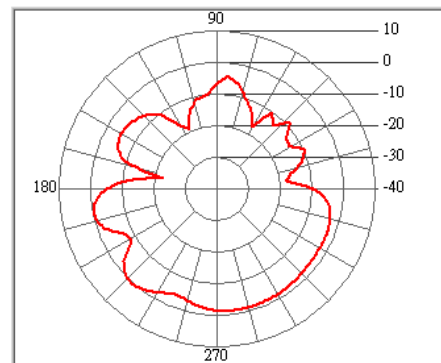
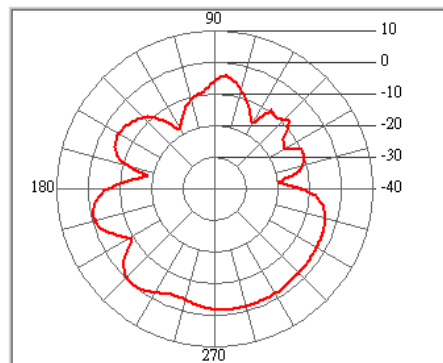
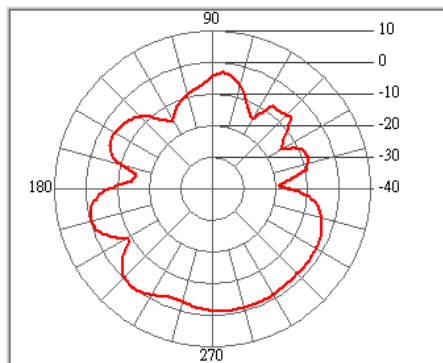
Time: 下午 05:00:07

Temperatuer (°C): 22.00

Humidity (%): 55.00

Approved by:

Freq. (MHz)	2390	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Peak Gain (dBi)	0.33	-0.08	0.27	1.02	1.09	0.98	0.64	0.6	1.27	1.72	1.79	1.61
Peak Degree	230	230	229	229	224	224	224	223	187	187	187	187
AV Gain (dBi)	-4.18	-4.73	-4.46	-3.66	-3.34	-3.4	-3.66	-3.53	-2.73	-2.18	-1.94	-1.96



Product Number: R-AN2400-0202RS

Product Name: 2.4 GHz Antenna



5. Plastic Parts Material Datasheet

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
M E C H A N I C A L	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)	D638	400	410	380	400	430	460	480
		抗張強度-斷裂點 (Tensile Strength at Break)		340	360	310	340	340	360	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
T H E R M A L	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
E L E C T R I C A L	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
O T H E R S	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

Product Number: R-AN2400-0202RS

Product Name: 2.4 GHz Antenna



6. 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 Brass	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)									
C3603	(B)									
C3604	(A)									
C3605	(B)									
C3605	(A)									
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)									

7. 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 < $\pm 5\%$
3. Damp Heat	500 hours at 60°C; 90 ~ 95% RH	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < $\pm 5\%$
4. Endurance	500 hours at 90°C	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < $\pm 5\%$

8. SGS Test Report



測試報告

報告號碼：CE/2006/96197

日期：2006/09/29

頁數：1 of 4

英碩科技股份有限公司

康捷電子有限公司

台北市忠孝東路五段815號4樓

以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下：

樣品名稱：磁吸盤天線
樣品型號：AN-02, AN-19, AN-25, AN-29, AN-40, AN-98 SERIES
收件日期：2006/9/22
測試期間：2006/9/22 TO 2006/09/29

測試需求：參照 RoHS 2002/95/EC 及其修定指令要求

測試方法：
(1) 參考BS EN 1122方法B:2001，用感應耦合電漿原子發射光譜儀(ICP-AES)檢測鎘含量。
(2) 參考US EPA 3050B方法，用感應耦合電漿原子發射光譜儀(ICP-AES)檢測鉛含量。
(3) 參考US EPA 3052方法，用感應耦合電漿原子發射光譜儀(ICP-AES)檢測汞含量。
(4) 參考IEC 62321 Ed. 1 (111/54/CDV)方法，用UV-VIS檢測六價鉻含量。
(5) 參考US EPA 3550C方法萃取，以高效液相層析儀/二極體陣列偵測器/質譜儀(HPLC/DAD/MS)初篩，再進一步參考US EPA 3540C方法，以氣相層析儀/質譜儀(GC/MS)檢測多溴聯苯和多溴聯苯醚含量。

測試結果：- 請見下一頁 -


Daniel Yen, M.P., Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

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SGS TAIWAN LIMITED

NO. 136-1, Wu Kung Road, Wujiao Industrial Zone, Taipai county, Taiwan.
(886-2) 22663939 / (886-2) 22663937 www.sgs.com.tw



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英碩科技股份有限公司

康捷電子有限公司

台北市忠孝東路五段815號4樓

測試結果 (單位: mg/kg)

測試項目	測試方法 (請參考)	結果 NO.1	方法偵測 極限值
鎘	(1)	4.3	2
鉛	(2)	4379.5	2
汞	(3)	n.d.	2
六價鉻	(4)	n.d.	2
總多溴聯苯(PBBs)	(5)	n.d.	-
一溴聯苯		n.d.	5
二溴聯苯		n.d.	5
三溴聯苯		n.d.	5
四溴聯苯		n.d.	5
五溴聯苯		n.d.	5
六溴聯苯		n.d.	5
七溴聯苯		n.d.	5
八溴聯苯		n.d.	5
九溴聯苯		n.d.	5
十溴聯苯		n.d.	5
總多溴聯苯醚(PBDEs/PBDEs)		n.d.	-
一溴聯苯醚		n.d.	5
二溴聯苯醚		n.d.	5
三溴聯苯醚		n.d.	5
四溴聯苯醚		n.d.	5
五溴聯苯醚		n.d.	5
六溴聯苯醚		n.d.	5
七溴聯苯醚		n.d.	5
八溴聯苯醚		n.d.	5
九溴聯苯醚		n.d.	5
十溴聯苯醚		n.d.	5
一至九溴聯苯醚總和 (備註 5)		n.d.	-

測試部位描述

測試部位 NO.1

整體泥測

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台北市忠孝東路五段815號4樓



- 備註：(1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)
(2) n.d. = N.D. = ND = Not Detected / 未檢出(低於方法偵測極限值)
(3) MDL = Method Detection Limit / 方法偵測極限值
(4) 對於鉛鎘汞測項，樣品是完全消化
(5) 根據2005年10月13日歐盟會議公佈2005/717/EC，修訂2002/95/EC內容
高分子材質中十溴聯苯醚之使用限制。
(6) "-" = Not Regulated / 無規格值

測試報告

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英碩科技股份有限公司
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** 報告結尾 **