

# 產品規格承認書

## Specification For Approval

日期： 2007 / 12 / 22

Date

編號： 071222001

File No.

版本： 1.0

Revision

承認廠商： 友旺科技股份有限公司

Manufacturer

製造廠商： 英碩科技股份有限公司

Manufacturer

型號品名： **2.4 GHz External Antenna**

Part Number

Description

**INVAX P/N: AN2400-0310RS**

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

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### **Cortec**

東莞康捷電子有限公司

廣東省東莞市長安鎮振安路

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**Index:**

- 1. Reliability Testing**
- 2. Specification**
- 3. S Parameter Test Data**
- 4. Antenna Radiation Pattern**
- 5. Mechanical Drawing**
- 6. MSDS & SGS Report**

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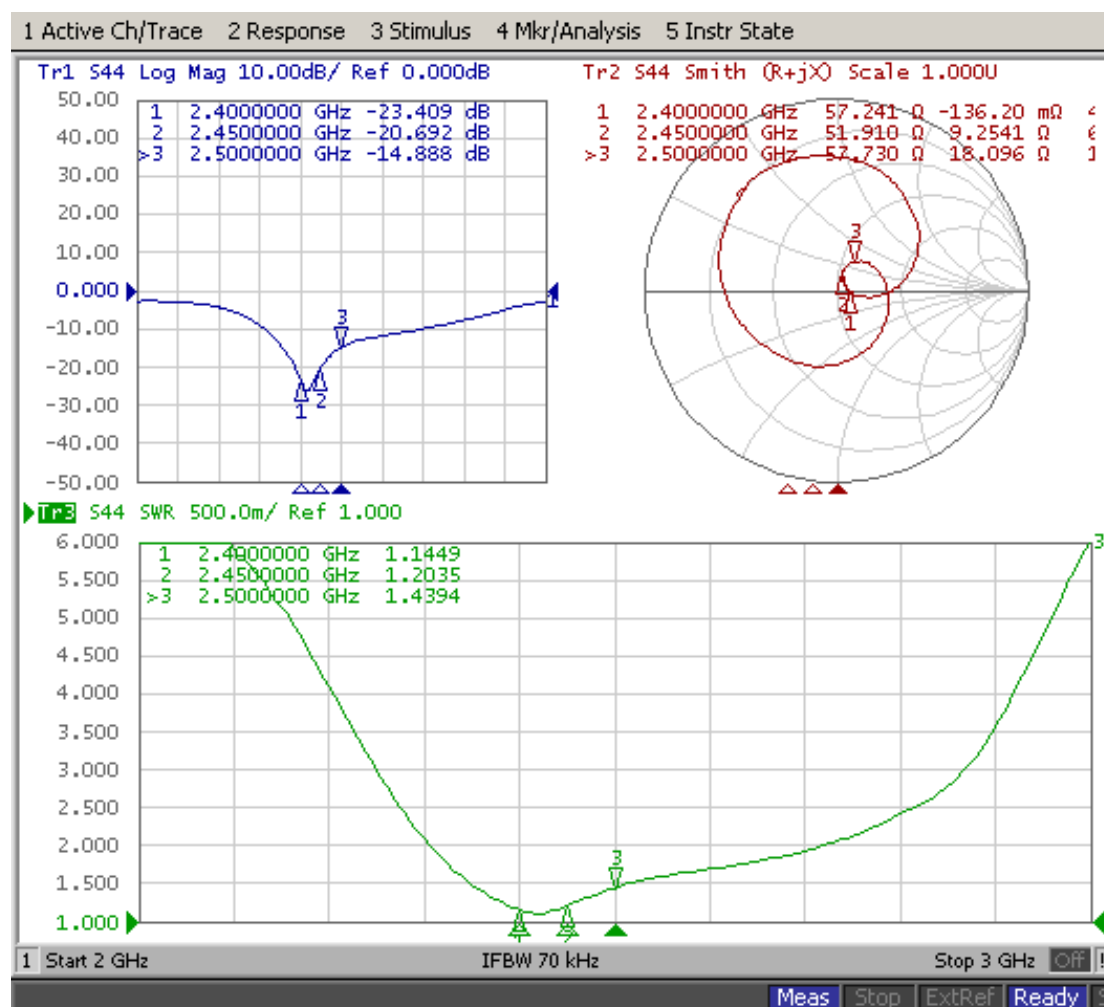
**1. Reliability Testing**

<b>Test Item</b>	<b>Procedure</b>	<b>Requirement</b>
<b>1. Visual inspection and Dimension Check</b>	Applicable methods using x5 magnification	follow specification
<b>2. Rapid Changing of Temperature</b>	-40°C (30minutes) to 90°C (30minutes); 24 cycles	After 2 hours recovery: 1. no visible damage 2. Freq. Tol.: < ±5%
<b>3. Damp Heat</b>	24 hours at 60°C; 90 ~ 95% RH	After 2 hours recovery: 1. no visible damage 2. Freq. Tol. : < ±5%
<b>4. Endurance</b>	24 hours at 90°C	After 2 hours recovery: 1. no visible damage 2. Freq Tol.: < ±5%

## 2. Specification

A. Electrical Characteristics	
S.W.R.	$\leq 2.0$ @ 2400 ~ 2500 MHz
Antenna Gain	$3.0 \pm 0.7\text{dBi}$ @ 2450MHz // H-Plane
Impedance	50 Ohm
B. Material	
Material of Radiator	Cu (Plated)
Material of Plastic	TPE / PA+ABS
C. Environmental	
Operation Temperature	- 30 °C ~ + 85 °C
Storage Temperature	- 30 °C ~ + 85 °C

## 3. S Parameter Test data



#### 4. Antenna Radiation Pattern

Testing Equipment Specification:

Antenna Anechoic Chamber Dimension: 8 x 4 x 4 m

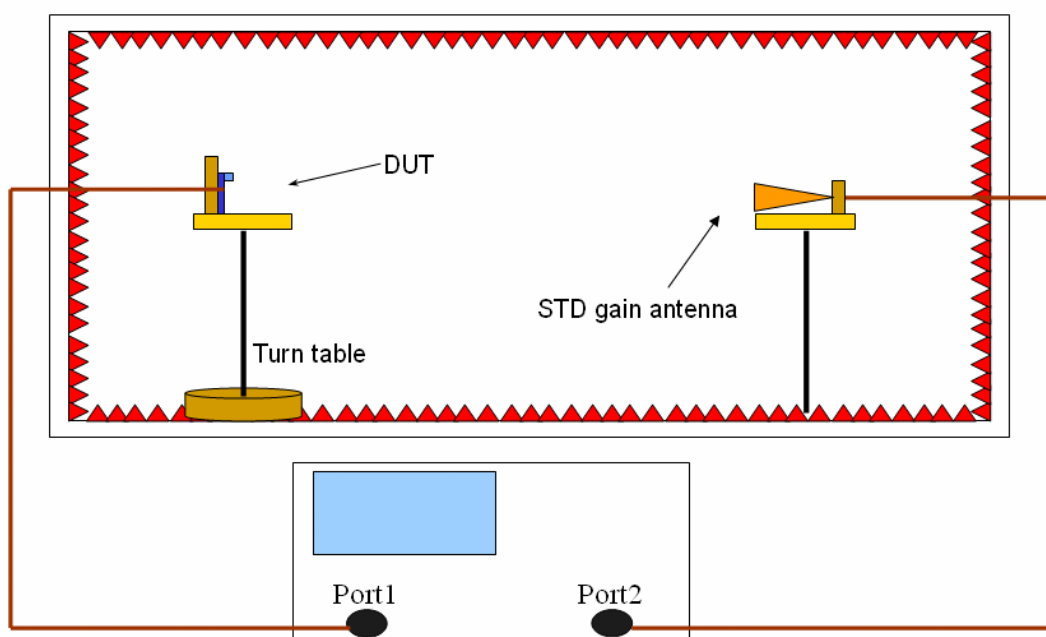
Quiet Zone: 600mm @1 GHz

Isolation: >100dB @ 1 MHz ~ 10 GHz

Testing Equipment: Agilent 5071B

Received Antenna: 0.7 ~ 6.0 GHz for Gain Calibration

Double Ridged Horn Antenna



#### 5. Mechanical Drawing

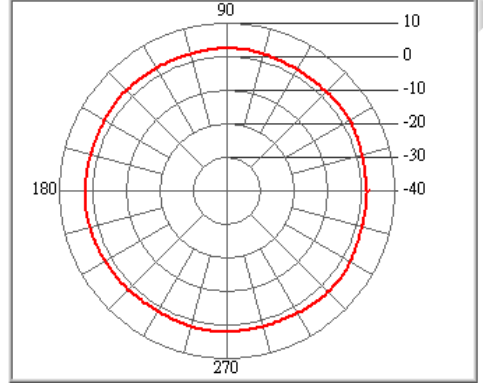
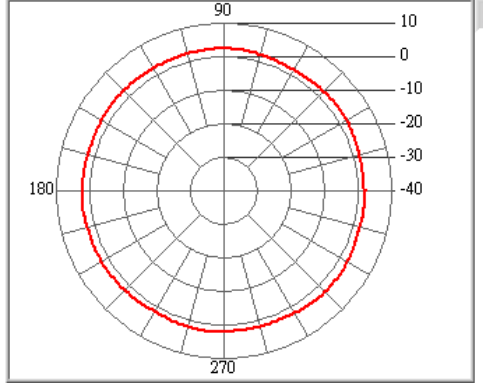
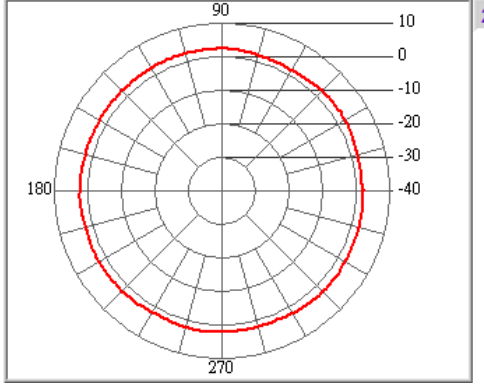
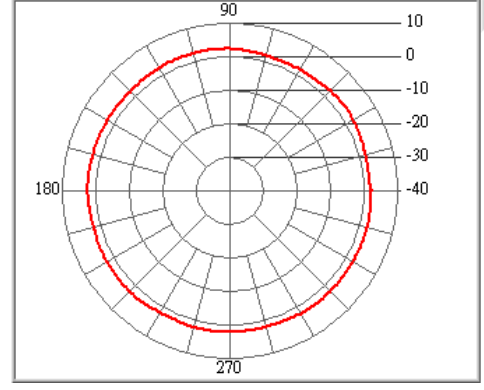
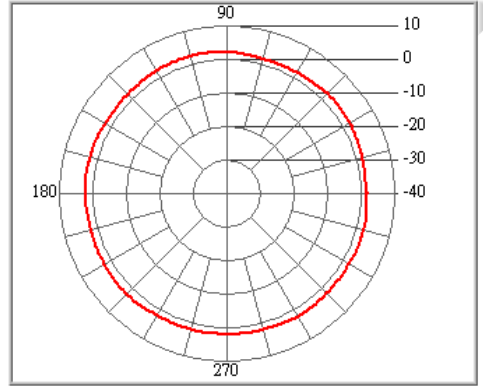
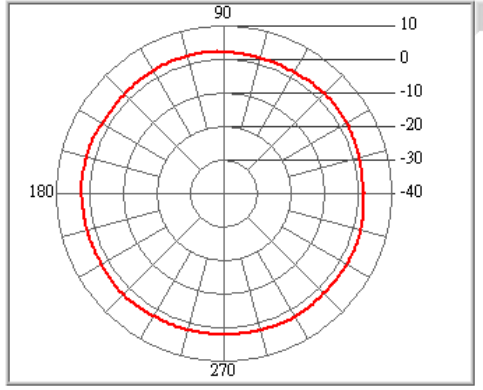
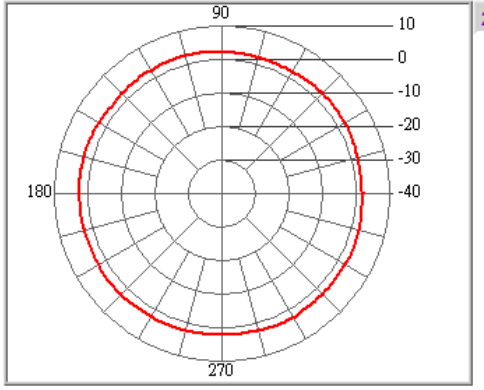
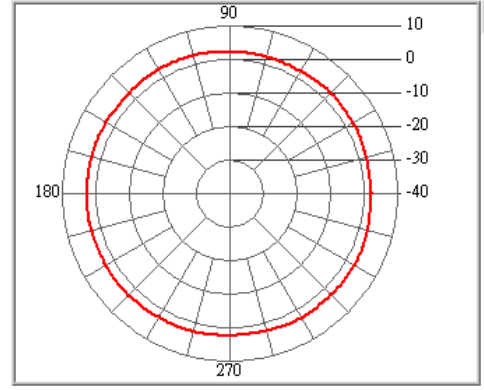
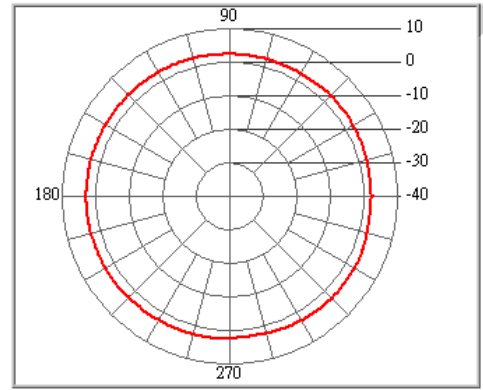
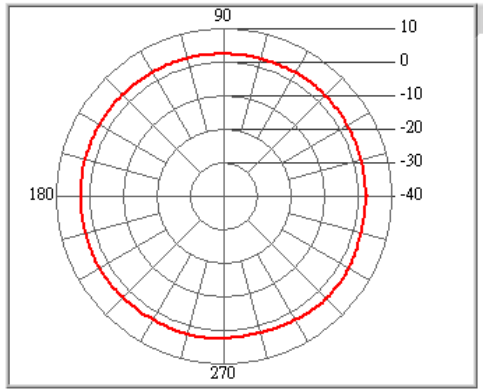
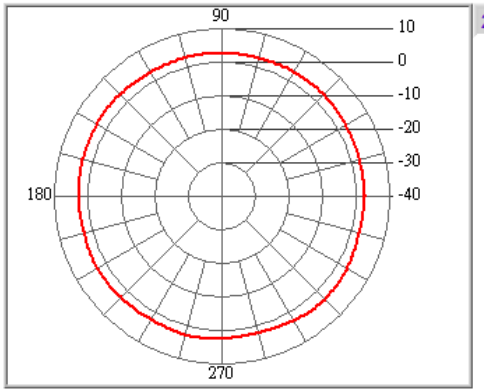
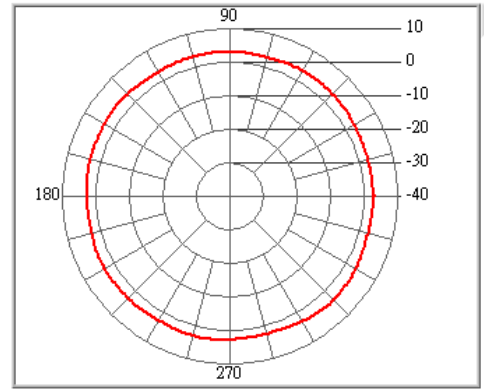
#### 6. MSDS & SGS Report



Model : 2.4G Antenna  
 Remark :H-Plane // Vertical Polarization  
 Tested by : CORTEC Antenna 3D Lab // Li Yu

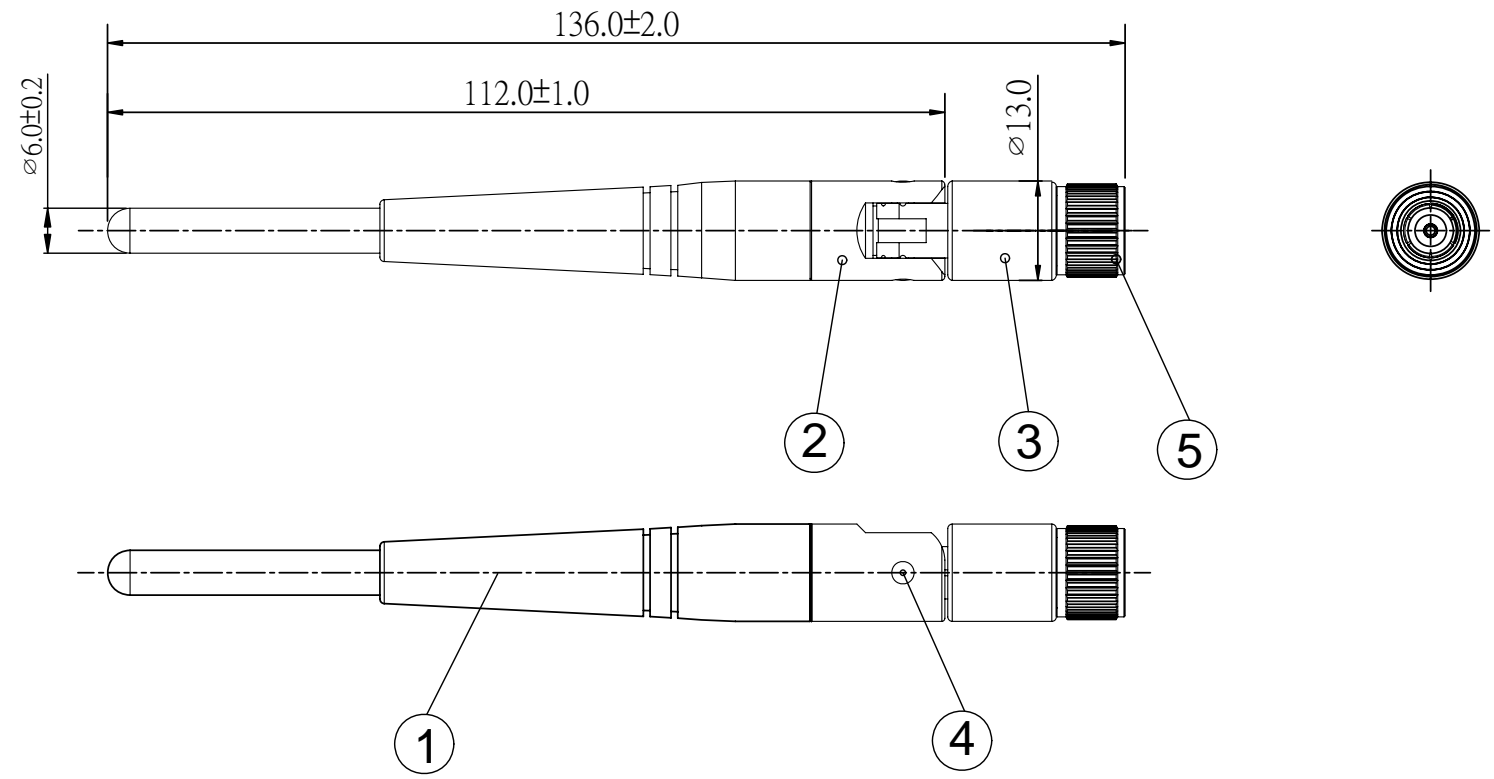
Location: **Chamber**      Date: 2006/11/22      Time: 下午 12:01:44  
 Temperatur (°C): 22.00      Humidity (%): 55.00      Approved by:

Freq. (MHz)	2390	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Peak Gain (dBi)	3.74	3.35	3.1	2.98	2.9	2.69	2.49	2.47	2.57	2.55	2.67	2.67
Peak Degree	312	312	317	330	215	221	112	39	34	324	324	324
AV Gain (dBi)	2.99	2.74	2.62	2.6	2.52	2.33	2.17	2.07	2.18	2.16	2.1	2.07



**RoHS**  
Compatible

SIGN	DATE	DESCRIPTION	APPROVER
△			
△			
△			



5	R-SMA324-ZC8MNANT	SMA Male Reverse	Metal	Gold Plated	1
4	R-AN03-514CN	Pin	Metal	Nickel Plated	2
3	R-AN03-T01W	Base	PA+ABS	White	1
2	R-AN03-T02W	Hinge	PA+ABS	White	1
1	R-AN03-T03W	Body	TPE	White	1
NO.	Part Number	Description	Material	Finished	Q'ty

*Invax System Group.*  
**Cortec**

**Cortec Technology Inc.**  
[Http://www.invaxsystem.com](http://www.invaxsystem.com)  
 E-mail: info@invax.com.tw  
 Tel :886-2-27885218  
 Fax:886-2-27831658

TITLE: 2.4GHz Antenna  
 PART NO.: AN2400-0310RS      DWG NAME: AN2400-0310RS.dwg

APPROVED BY	CHECKED BY	DESIGNED BY		Tolerance
Grant 2007.10.23	LiuKui 2007.10.23	Zhang yue xin 2007.10.23	UNITS: mm	X.X ±0.1
			SCALE: 1/1	X.XX ±0.05
			REVISION: A	X° ±1°

# Zn-Alloy

## 禧福工業股份有限公司 材質分析報告

### 化學成份 Chemical Composition

元素	Element	國際標準	ASTMB240
鋁	(Al)		3.804%
鎂	(Mg)		0.0327%
銅	(Cu)		0.384%
鐵	(Fe)		0.0015%
鉛	(Pb)		0.0091%
錫	(Sn)		0.0017%
鎘	(Cd)		0.0010%
錳	(Mn)		0.00071%
鎳	(Ni)		0.0057%
硒	(Si)		0.0056%
鉻	(Cr)		0.0011%
鉍	(Bi)		0.00040%
鋅	(Zn)		95.8%
<b>物理性能 Physical Properties</b>			
密度	Density(g/cm <sup>3</sup> @21°C)		6.60
溶點範圍	Melting Range		381-387°C
凝固收縮	Solidification Shrinkage		1.17%
熱膨脹率	Thermal Expansion(m/mm/°C @20-100°C)		274
比熱	Specific Heat Capacity(J/kg/°C @20-100°C)		418.7
導熱率	Thermal Conductivity(W/m <sup>2</sup> /br/m/°C @70-140°C)		1130
導電率	Electrical Conductivity(%IACS)		2.0*E7
電阻率	Electrical Resistivity (μohm-cm@20°C)		6.3694
<b>機械性能 Mechanical Properties</b>			
極限抗拉強度	Ultimate Tensile Strength		283MPa
延伸率	Elongation(% in 51mm)		10%
硬度	Hardness(Brinell 500 kg)		82
抗剪強度	Sheet Strength		214 MPa
抗壓屈服強度	Compressive Yield Strength		414 MPa
抗衝擊強度	Impact Energy(Un-notched Bar 6.35*6.35mm)		58
疲勞強度	Fatigue Strength(5*10 <sup>8</sup> Cycles)		48 MPa

SHIYANG (ZHONG SHAN) METAL PRODUCTS CO.,LTD

世扬金属制品有限公司

TEST CERTIFICATE

材质证明书



CLIENT 客户	天诚							certificate NO. 证明书号	070127-15	
name article 品名	Brass									
LOT NO.	SIZE(MM)	OUTW GT	DESIGNATION	Cu(%)	Pb(%)	Fe(%)	Fe+Sn(%)	Cd(%)	Zn(%)	REMARK
	STANDARD	(KG)	JISC3604	57~61	1.8~3.7	≤0.5	≤1.2	≤0.0075	REM	
7916	14.5 φ		JISC3604	58.92	2.986	0.446	0.971	0.0042	REM	
兹证明本表所列产品,均依材料规格制造及试验,并符合规格之要求。 WE HEREBY CERTIFY THAT MATERIAL DESCRIBED JERE IN MAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION.										

MANAGER: 曾敦義

PABLE: 李玉奎

DATE:2007/02/27

THE THREE INDUSTRIAL AREA NAN LANG TOWN ZHONG SHAN CITY  
中国广东省中山市南朗镇第三工业区

TEL:0760-5214770 FAX:0760-5214769  
E-Mail:sales@shiyangmetal.com



## TPE Datasheet

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/ cm <sup>3</sup>	D638	3.1
扭曲強度 Flexural Strength	Kg/ cm <sup>3</sup>	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/ min <sup>2</sup>	D1238	10
燃燒性 Flammability	---	UL94	HB
<p><b>Testing Data from</b></p> <p>東莞市合春塑料有限公司 Tel:86-0769-2774772</p> <p>台灣大雅國際股份有限公司 Tel:886-02-27775232</p>			

## Coaxial Cable Datasheet

<b>RG-178 Coaxial Cable Specification</b>		
<b>1. Cable Type</b>	MIL – C – 17 / RG-178	
<b>2. Impedance</b>	50 ± 3 ohm	
<b>3. Inner Conductor</b>	<b>Material</b>	silver-coated copper
	<b>Conductor Numbers</b>	7
	<b>Conductor Size</b>	0.102 mm
	<b>Outer Diameter</b>	0.3 mm
<b>4. Dielectric Layer</b>	<b>Material</b>	FEP
	<b>Color</b>	Clear
	<b>Average Thickness</b>	0.28 mm
	<b>Diameter</b>	0.86 mm
<b>5. Braid (Shielding)</b>	<b>Material</b>	silver-coated copper
	<b>Construction</b>	16-3-0.1 mm
	<b>Coverage</b>	95 %
<b>6. Outer Cover</b>	<b>Material</b>	FEP
	<b>Color</b>	Brown
	<b>Average Thickness</b>	0.25 mm
	<b>Diameter</b>	1.80 ± 0.05 mm
<b>7. V.S.W.R Testing</b>	< 1.3 (DC ~ 6.0 GHz)	
<b>8. Attenuation (dB / 100 meter )</b>	<b>100 MHz</b>	46
	<b>900 MHz</b>	155
	<b>1800 MHz</b>	295
	<b>2400 MHz</b>	340
	<b>5200 MHz</b>	505
	<b>6000 MHz</b>	550
<b>9. Capacitance</b>	97 ± 3 ( pF / meter)	
<b>10. Maximum Power</b>	30 dBm	
<b>11. Spark Test</b>	2.0 KV	
<b>12. Rating Temp. and Volt.</b>	200°C / 30V	
<b>13. Conductor Resistance</b>	335 ohm / KM / 20°C max.	
<b>14. Dielectric Resistance</b>	3 G ohm / KM / 20°C min.	

## 物料中RoHS对象物质含量调查表

填表说明：

1. 根据测试报告如实填写铅、镉、汞、六价铬、PBBs和PBDEs六项禁用物质的含量
2. 对构成物料及制造工艺相同的系列产品,可以系列描述
3. 物料各构成名称需根据提供的测试报告来填写,如测试报告未区分则不填写,只填写整体测试
4. 各构成物料的材质根据物料各构成来填写,特别是合金类和塑胶类
5. 请在“备注”栏里注明是否有豁免项或者对有颜色区别请注明适用我司的颜色

序号	物料名称	报告适用的规格型号	物料各构成名称	各构成物料的材质	测试报告里RoHS对应物质测试结果						检测报告编号	测试日期	测试机构名称	备注
					Cd	Pb	Hg	Cr(VI)	PBBs	PBDEs				
1	AN2400-0310RS	SAM324-ZG8MRANT	SMA Male Reverse	锌合金	9	30	N.D.	Negative	N.D.	N.D.	GZ0701003806/CHEM	2007/1/16	SGS	12~15
				鍍金	N.D.	N.D.	N.D.	Negative	—	—	CE/2007/B7915	2007/12/6	SGS	16~19
2	AN2400-0310RS	R-AN03-T01W	Base	PA+ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2007/B2671A	2007/11/21	SGS	20~23
3	AN2400-0310RS	R-AN03-514CN	Rivet	銅	21	29238	N.D.	Negative	—	—	GZ0702022704/CHEM	2007/2/25	SGS	24~26
				鍍銀	20	N.D.	N.D.	Negative	—	—	SZTYR070204116/LP	2007/2/12	SGS	27~29
4	AN2400-0310RS	A-AN03-T02W	Hinge	PA+ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2007/B2671A	2007/11/21	SGS	20~23
5	AN2400-0310RS	A-AN03-T03W	Body	TPE	N.D.	5	N.D.	N.D.	N.D.	N.D.	GZ0703028310/CHEM	2007/3/13	SGS	30~33
6	AN2400-0310RS	R-RG-178U	Calbe	RG-178	N.D.	N.D.	N.D.	Negative	N.D.	N.D.	SH7082518/CHEM	2007/8/1	SGS	34~38
7	AN2400-0310RS	R-AN94-02S	Tube	銅管	N.D.	72	N.D.	Negative	—	—	GZ0701012001/CHEM	2007/1/29	SGS	39~41
8	AN2400-0310RS	R-AN12160	Cu Stick	銅	21	29238	N.D.	Negative	—	—	GZ0702022704/CHEM	2007/2/25	SGS	24~26

注1: 对于电源适配器、分离器、RJ45网线、电话线等成品其包装材料中铅、铬(VI)、汞和镉总含量不超过100ppm, 镉的允许浓度为5ppm

注2: 贵公司必须对此6种物质含量进行检测,且物质含量值都需提供第三方的检测报告支持,并将测量值填入调查表

注3: 填写表格时请勿手写,当填写行不够时,可适当追加后填写

注4: 请在公司名称上加盖公司公章

公司名称: 東莞康捷電子有限公司      填表人姓名: 廖梅      所属部门: 研發部      职务: 文員      联系电话: 0769-85388261