

# 產品規格承認書

## Specification For Approval

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Date

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承認廠商：俊華電子企業股份有限公司  
Customer

製造廠商：英碩科技股份有限公司  
Manufacturer

型號品名：315-433MHz External Antenna  
Part Number  
Description P/N: R-AN3143-5709SM

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

Product Number: R-AN3143-5709SM  
Product Name: 315~433 MHz External Antenna



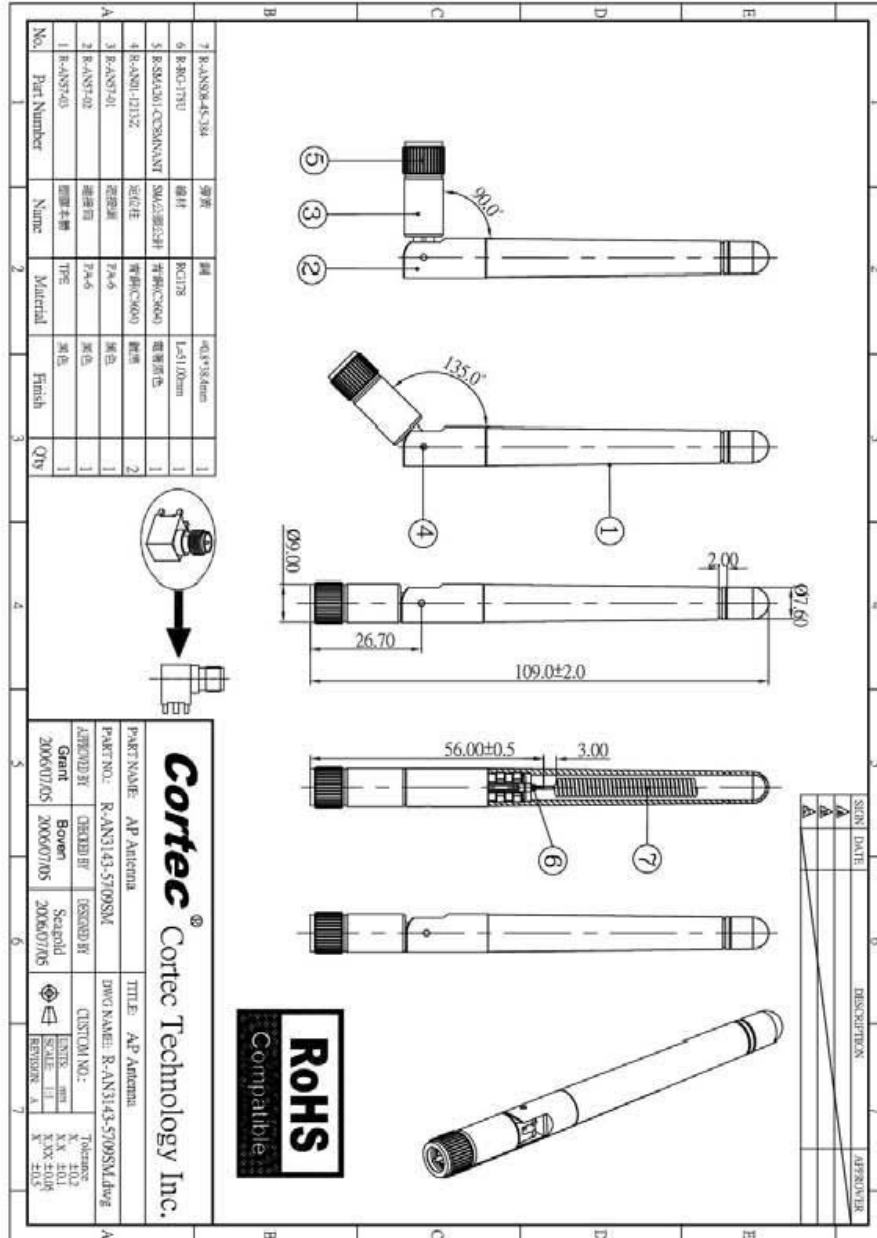
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1. Mechanical Dimension Drawing



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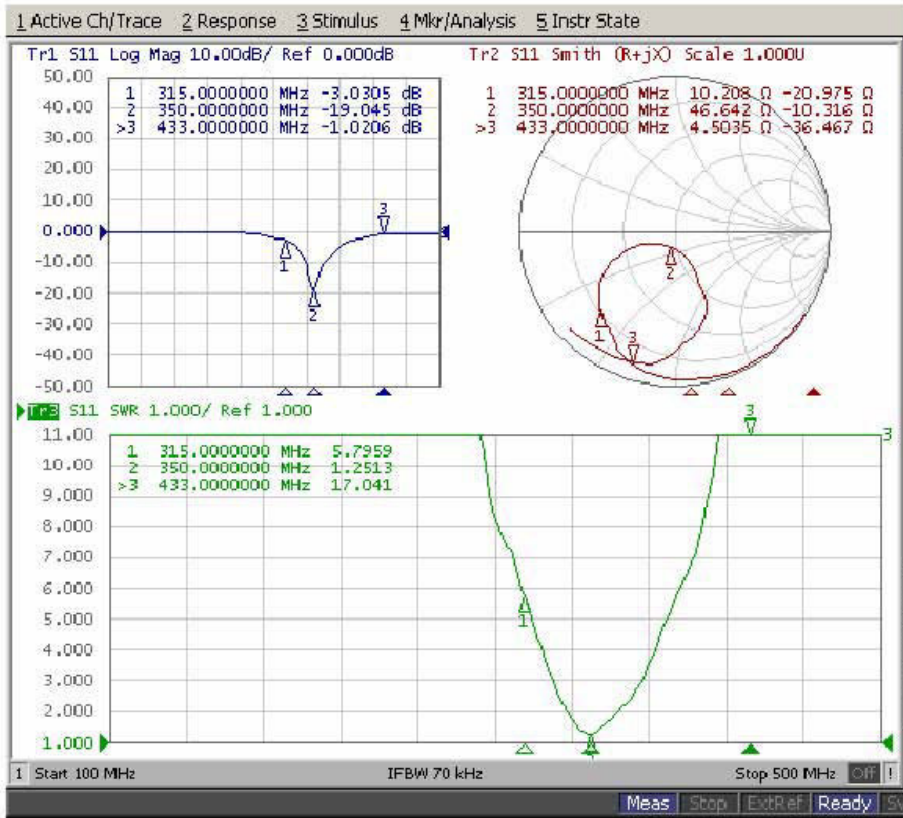
## 2. Technical Specification

<b>A. Electrical Characteristics</b>	
Working Frequency Range	315 ~ 433 MHz
S.W.R.	350MHz : < 2.0  (Test results may vary for different case.)
Antenna Gain	1.1 ± 0.5 dBi @ 315 MHz 0.1 ± 0.5 dBi @ 350 MHz 2.3 ± 0.5 dBi @ 433 MHz
Antenna Radiation Pattern	Omni-directional
Impedance	50 ohm
<b>B. Material</b>	
Color of Outer Cover	Black
Material of Outer Cover	TPE
Material of Hinge	PA-6
Material of Base	PA-6
Connector Type	50 Ohm Reversed SMA, Black Plated
Tube	Copper (C3604)
Total Length	109 mm
<b>C. Environmental</b>	
Operation Temperature	- 30 °C ~ + 85 °C
Storage Temperature	- 30 °C ~ + 85 °C

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



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#### 4. Antenna Radiation Pattern

Testing Equipment Specification:

Antenna Anechoic Chamber Dimension: 8 x 4 x 4 m

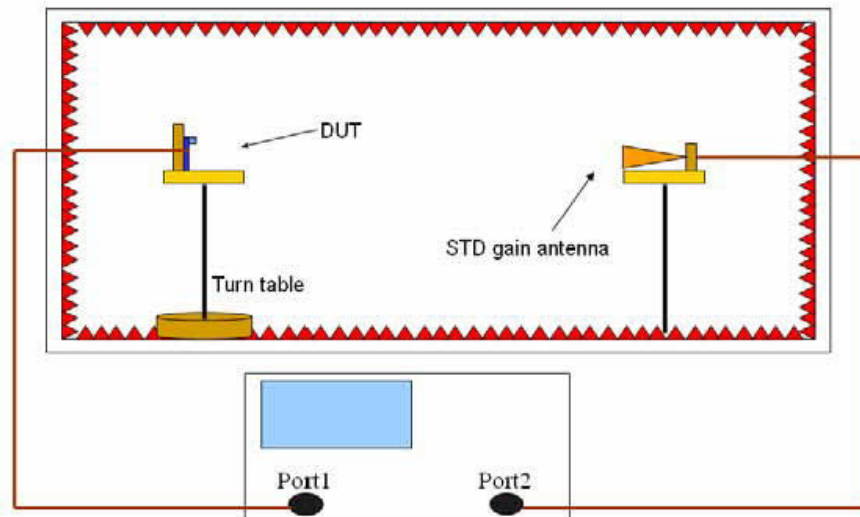
Quiet Zone: 600mm @1 GHz

Isolation: >100dB @ 1 MHz ~ 10 GHz

Testing Equipment: Agilent 8720D

Received Antenna: 0.7~6.0 GHz for Gain Calibration

Double Ridged Horn Antenna





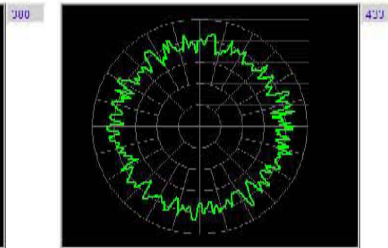
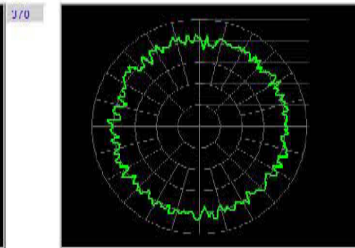
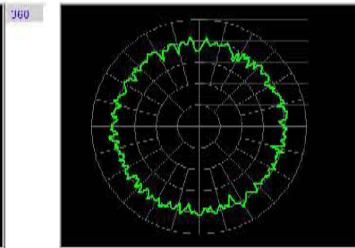
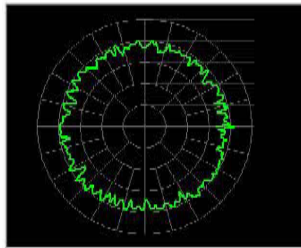
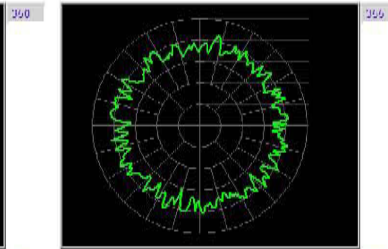
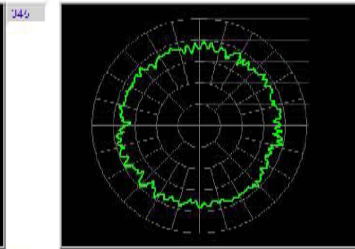
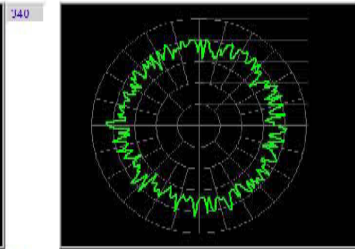
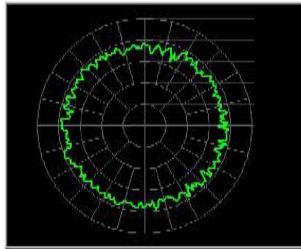
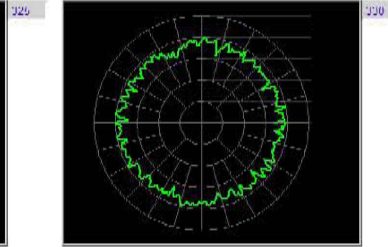
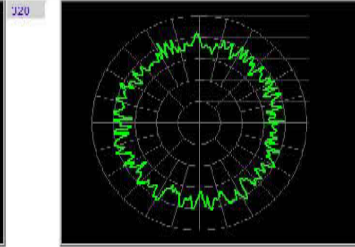
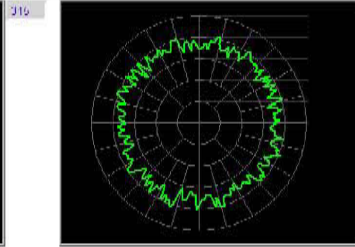
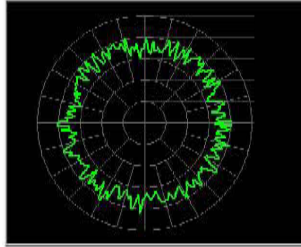
Model: 3434-5/09  
 Remark: J15C(60MHz)  
 Tested by: Xu Gu

Location: Cortec RF Chamber  
 Temperature (°C): 22.00

Date: 2006/7/13  
 Humidity (%): 55.00

Time: 上午 08:41:36  
 Approved by:

Freq. (MHz)	315	320	325	330	340	345	350	355	360	370	380	433
Peak Gain (dBi)	1.12	0.6	0.08	0	0.00	1.01	0.1	1.20	0.00	1.30	1.79	2.30
Peak Direct.	387	54	87	11	201	176	387	78	280	201	280	343
AV Gain (dB)	-1.87	-1.61	-1.57	-1.52	-1.5	-1.58	-1.50	-1.1	-1.04	-0.38	0.24	-0.47



Product Number: R-AN3143-5709SM  
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## 5. Plastic Parts Material Datasheet

### 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
<b>Testing Data from</b>  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			



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**PA-6 Datasheet**

納普工程塑料檢測報告單

QR-82401-04    A/1    NO : 06040401

品名	增韌增強尼龍	檢驗標準	QW-824-03	顏色	黑色
型號	PA6-EA	批號	----	數量	2T
檢驗項目	單位	檢驗標準	標準要求	實測數據	
拉伸強度	Mpa	GB/T1040-92	----	35.6	
拉伸模量	Mpa	GB/T1040-92	----	1363	
斷裂伸長率	%	GB/T1040-92	----	63.6	
簡支梁沖擊強度(缺口)	KJ/M2	GB/T1043-93	----	20.0	
簡支梁沖擊強度(非缺口)	KJ/M2	GB/T1043-93	----	NB	
結論: 以上數據均為實測數據					
檢驗員：李興華		日期：2006-05-07		審核：汪文      日期：2006-05-07	

Product Number: R-AN3143-5709SM  
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**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)									
	(B)									
C3603	(B)									
C3604	(A)									
	(B)									
C3605	(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...							
C3712	(A)									
	(B)									
C3771	(A)									
	(B)									

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## 7. 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.	

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## 8. Reliability Testing

Test Item	Procedure	Requirement
<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); 120 cycles	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < ±5%
<b>3. Damp Heat</b>	500 hours at 60°C; 90 ~ 95% RH	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < ±5%
<b>4. Endurance</b>	500 hours at 90°C	After 2 hours recovery: 1. no visible damage 2. bandwidth tolerance < ±5%

## 9. SGS Test Report