

承 認 書
SPECIFICATION FOR APPROVAL

客 戶
CUSTOMER

SparkLAN

日 期
DATE

2017/08/25

品 名
DESCRIPTION

WSS003 Dual Band Dipole Antenna
with RP-SMA(M)(Black)

客 戶 料 號
CUSTOMER P/N

R3410110203

成 品 編 號
Part NO.

AD-103AG(UHW0935A4)

承認書 revision LIST

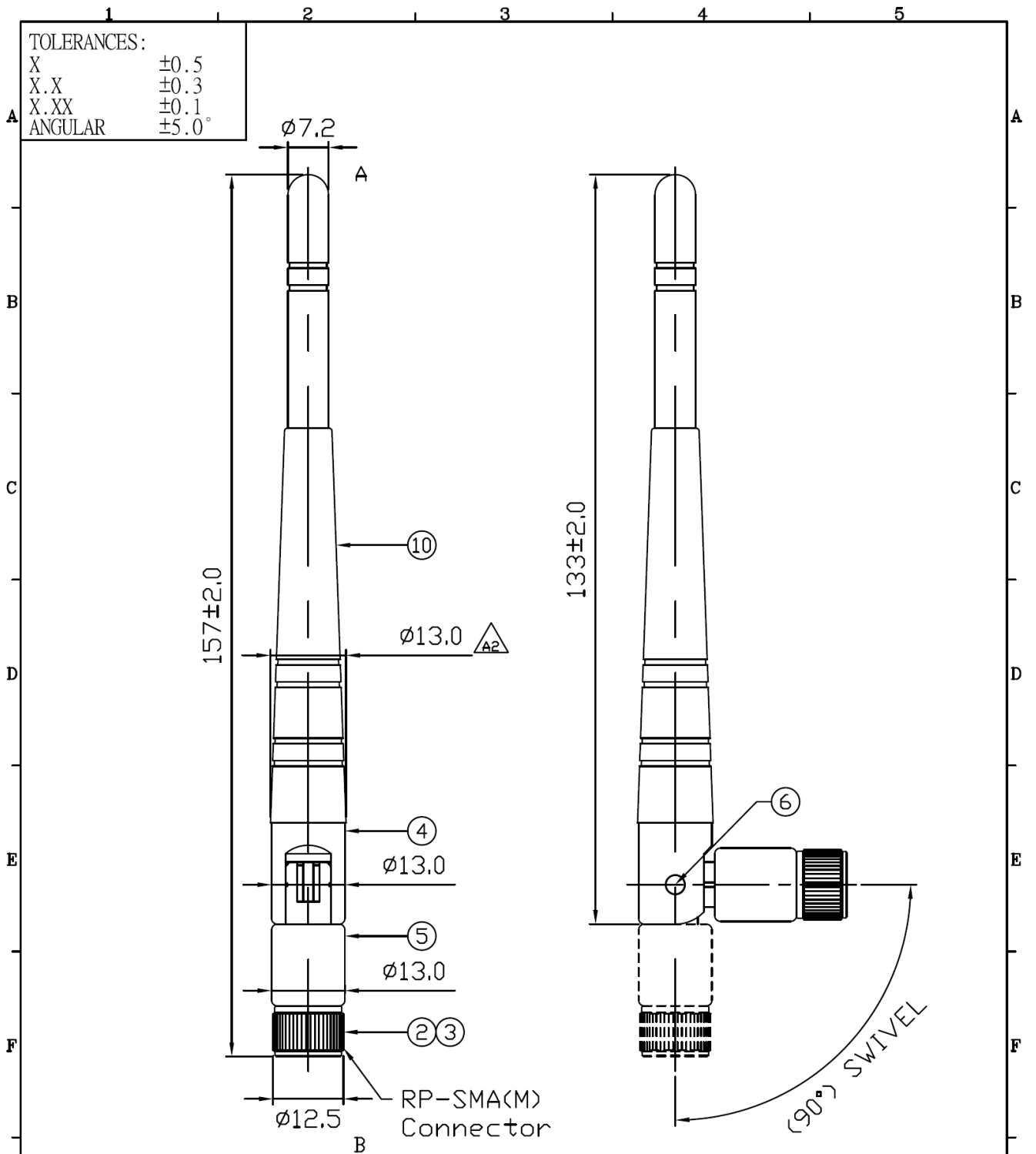
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SPECIFICATION

- | | |
|-------------------------------|---|
| 1. Description | : WSS003 Dual Band Dipole Antenna |
| 2. Customer | : SparkLAN |
| 3. Model No. | : WSS003 |
| 4. Part No. | : UHW0935A4 |
| 5. Standard | : IEEE 802.11a/b/g Wireless LAN : |
| 6. Antenna Profile | 157 mm (see Drawing) |
| 7. Color | : Black |
| 8. Electrical Characteristics | |
| Operating Frequency | : 2.4~2.5 & 5.15~5.85GHz |
| Antenna Type | : Dipole |
| Polarization Type | : Linear |
| Type of Radiation | : Toroidal |
| Peak Gain | : 2.0 dBi Typical |
| Impedance | : 50 Ohm nominal |
| V.S.W.R. | : 2.0:1 Max. |
| 9. Mechanical Characteristics | |
| Connector | : RP-SMA(M) |
| Core | : N/A |
| 10. Raw Material | |
| Coaxial Cable | : RG-178 |
| Housing | : TPU |
| Hinge | : PC+ALLOY |
| 11. Manufacture | : Wanshih Electronic Co., Ltd |
| 12. Manufacturer address | : 4F 72 Wu Kong 6th Rd., Wugu Dist.,
New Taipei Industrial Park,
New Taipei City 24891,
Taiwan(R.O.C.) |



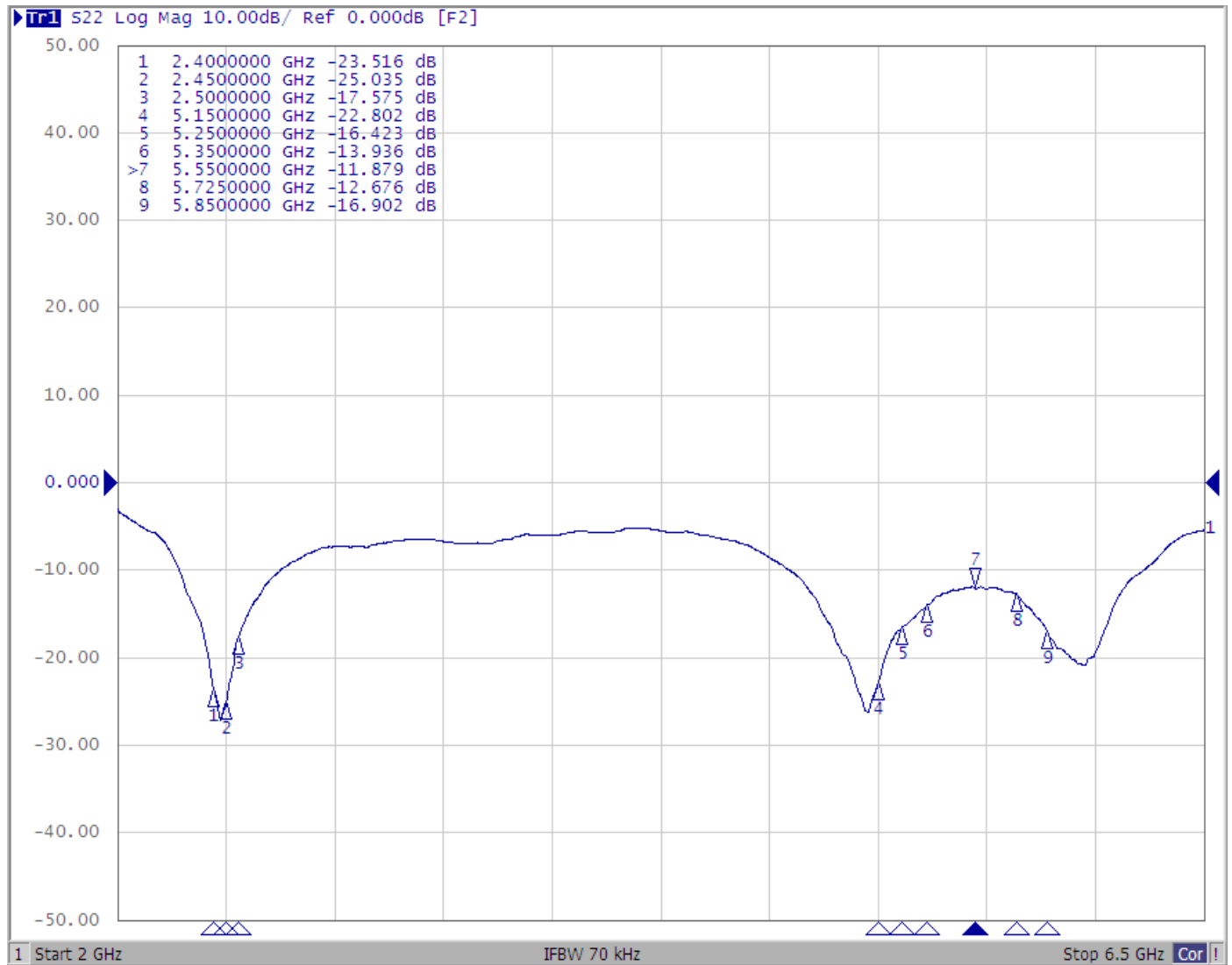
作業說明：

1. 天線本體，WSW0005A、WSW0055A 天線作業標準指導書規定製作。
依據 QA-0005A、QA-0055A QC管理工程圖，執行品質管制。

修訂日期：2017/08/25 制訂日期：2007/12/24				承認圖號	R3410110203		
頁數：1/2	核准	審查	作成	品名	WSS003 Dual Band Dipole Antenna with RP-SMA(M)		
第三角法	吳欣總	郭雅珍	徐晨瑄	成品編號	UHW0935	REV A	VERSION 4
單位：mm							
比例：FREE							

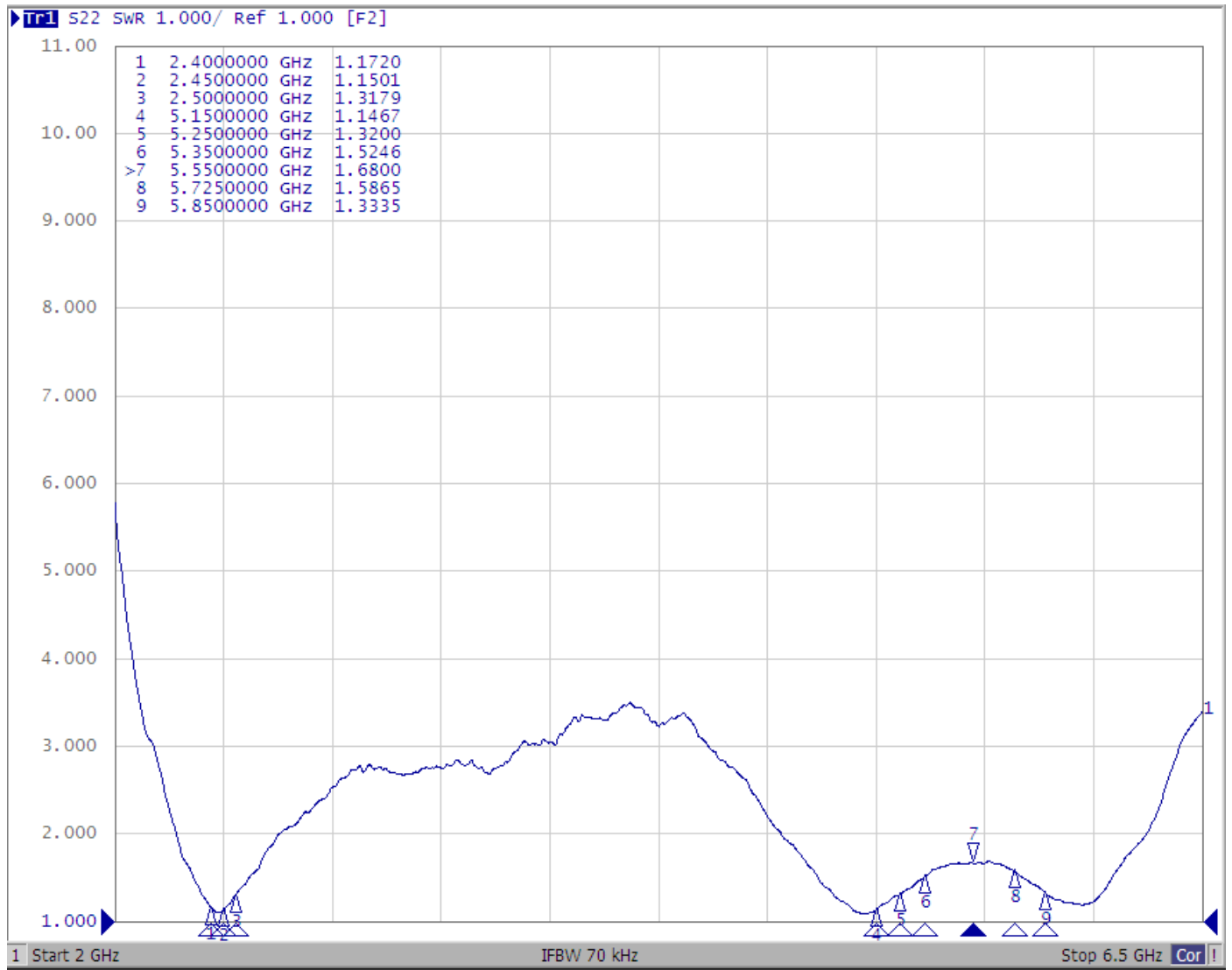
Electrical Properties

Return Loss



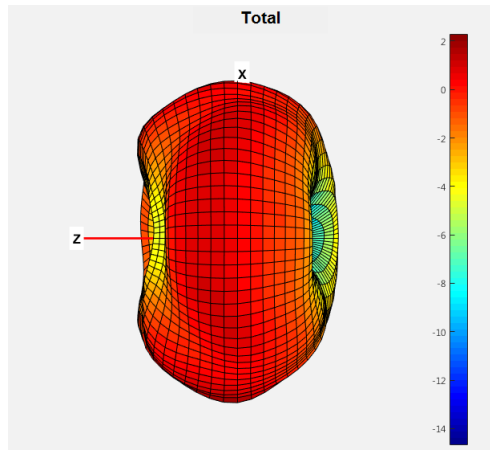
Electrical Properties

V.S.W.R

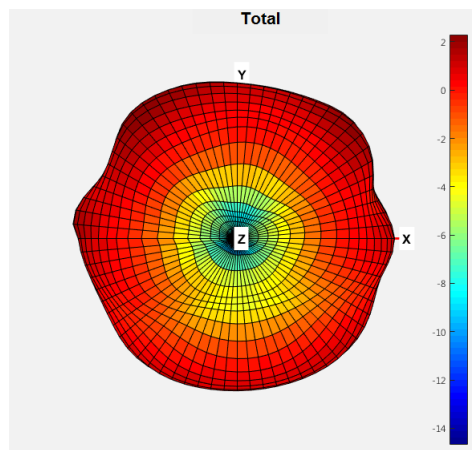


3D Pattern

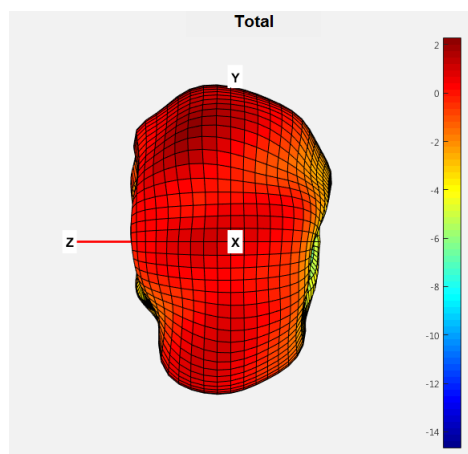
2.45GHz_X-Z Plane



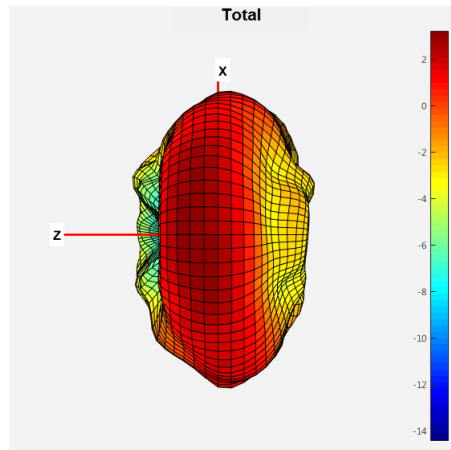
2.45GHz_X-Y Plane



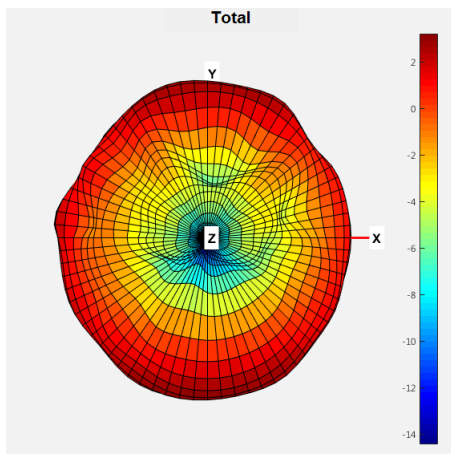
2.45GHz_Y-Z Plane



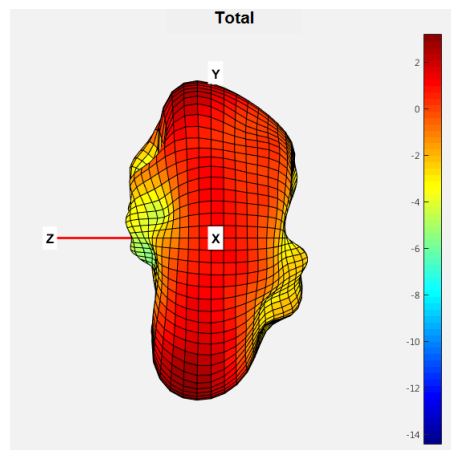
5.15GHz_X-Z Plane



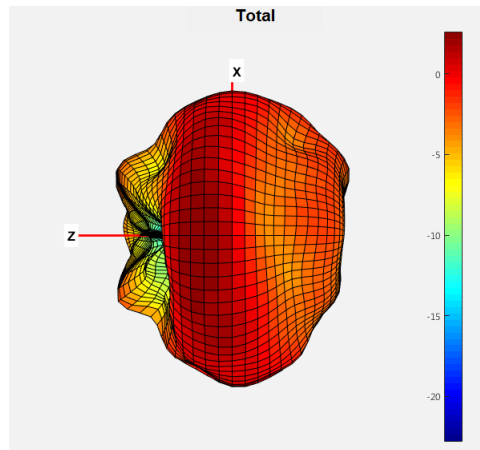
5.15GHz_X-Y Plane



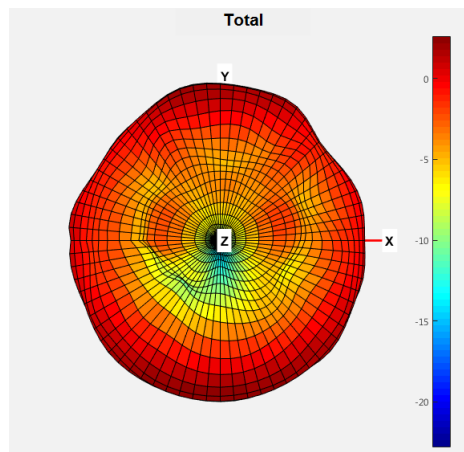
5.15GHz_Y-Z Plane



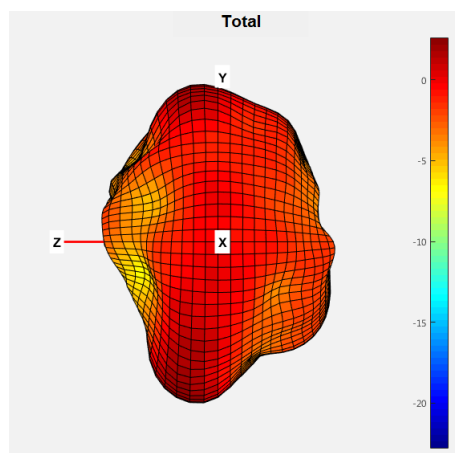
5.55GHz_X-Z Plane



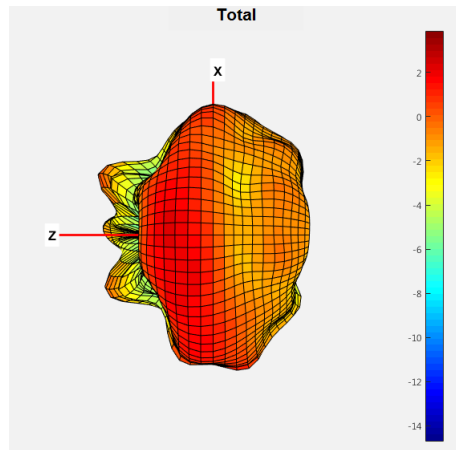
5.55GHz_X-Y Plane



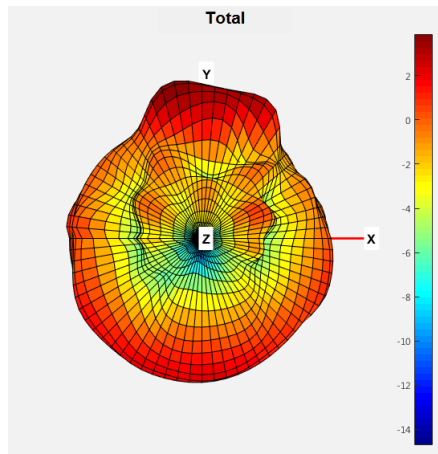
5.55GHz_Y-Z Plane



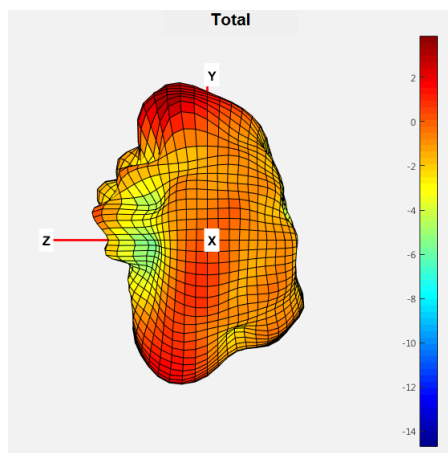
5.85GHz_X-Z Plane



5.85GHz_X-Y Plane



5.85GHz_Y-Z Plane



Frequency	2.4GHz	2.45GHz	2.5GHz
Avg. Gain (dBi)	-1.92	-2.39	-2.32
Peak Gain (dBi)	2.02	1.83	1.96
Efficiency (%)	64.27	57.68	58.61

Frequency	5.15GHz	5.25GHz	5.35GHz	5.47GHz	5.5GHz	5.55GHz	5.6GHz	5.725GHz	5.85GHz	5.875GHz
Avg. Gain (dBi)	-1.18	-1.87	-2.35	-1.8	-1.8	-1.8	-1.75	-1.7	-1.84	-2.08
Peak Gain (dBi)	1.63	1.93	1.37	1.71	1.6	1.49	1.76	2.03	1.9	1.5
Efficiency (%)	76.21	65.01	58.21	66.07	66.07	66.07	66.84	67.61	65.46	61.94

Material Data Sheet

RG-178 Coaxial Cable

SPECIFICATION FOR APPROVAL

DOCUMENT: A30178B001

STYLE : 105°C 30V
RG-178B/U

SIZE: 7/0.102 SCCS

RECOGNIZED: UL 1979



WONDERFUL HI-TECH CO.,LTD

OFFICE : 72WU KONG 6TH ROAD,
WU KU IND. DISTRICT
TAIPEI HSIEN, TAIWAN

TEL : (02)22988033
FAX : (02)22988031-2

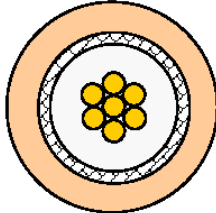
FACTORY : 17 PEI YUAN ROAD,
CHUNG-LI IND. PARK
TAIWAN, R.O.C.

TEL : (03)4527777
FAX : (03)4517214



WONDERFUL HI-TECH CO., LTD

SPECIFICATION

STYLE	105°C 30V UL1979	DOCUMENT NO : A30178B001
SIZE	RG-178B/U	ESTABLISHED DATE: 2004/03/22
STANDARD : MIL-C-17		
Conductor	Size	AWG 30
	Material	---- Silver-Coated Copper Clad Steel
	Conductors No.	---- 7
	Conductors Size	mm 0.102
	O.D.	mm 0.30
Insulation	Average Thickness	mm 0.28
	Diameter	mm 0.86 ±0.03
	Material	---- FEP
	Color	---- Clear
Braid	Material	---- Silver-Coated Copper
	Construction	mm 16 / 3 / 0.10
	Coverage	% 95
Jacket	Average Thickness	mm 0.25
	Diameter	mm 1.80 ±0.05
	Material	---- FEP
	Color	---- Brown
Marking		
Drawing		



WONDERFUL HI-TECH CO., LTD. SPECIFICATION

Electrical & Physical Properties							
Item				RG-178B/U			
Rating Temp Voltage				105°C 30V			
Conductor Resistance				838 OHM/KM/20°C MAX.			
Insulation Resistance				3000 MEGA OHM/KM MIN.			
Dielectric Strength				AC 500V/Minute			
Spark Test				2.5 KV			
Insulation	Unaged	Tensile Strength	2500 PSI MIN.(1.76 Kg / m m ²)				
		Elongation	200% MIN.				
	Aged	Tensile Strength	UNAGED MIN 75%(168HRS×232°C)				
		Elongation	UNAGED MIN 75%(168HRS×232°C)				
Jacket	Unaged	Tensile Strength	2500 PSI MIN.(1.76 Kg / m m ²)				
		Elongation	200% MIN.				
	Aged	Tensile Strength	UNAGED MIN.75%(168HRS×232°C)				
		Elongation	UNAGED MIN.75%(168HRS×232°C)				
Nom. Impedance				50 Ohms			
Nom. Capacitance				95.8 pF/m			
Nom. Vel. of Prop.				69.5%			
VSWR (0 – 6 GHZ)				UNDER 1.3			
Attenuation (dB/100m)	100MHz	1GHz	1.8GHz	2.4GHz	5.2GHz	6GHz	
	46	155	295	340	505	550	

Housing Material Data Sheet

• Housing(外套)- TPU

TPU

熱塑性聚胺酯

BAYER

拜耳

Desmopan®

Items 項目	Test Methods 試驗方法		Unit 單位	192	385	588	KU 2-8600
	DIN	ISO		8092	8085		
Mechanical Properties 機械特性							
Tensile Yield Strength 拉伸屈服強度	53504	37	MPa	45	40	30	40
Elongation at Break 延伸率	53504	37	%	450	450	500	500
Compression Set 壓縮變形 70 hr st 22°C	53517	-	%	25	30	30	25
	53517	-	%	60	55	65	42
Physical Properties 物理特性							
Shore A Hardness 硬度	53505	868	-	94	85	88	82
Shire D Hardness 硬度	53505	868	-	42	32	33	31
Modulus of Elasticity	53455	-	MPa	45	15	30	12
Abrasion Resistance(Loss)	53516	4649	mm³	30	30	60	20
Rebound Resilience	53512	4662	%	30	42	36	45
Tear Propagation Resistance	53515	-	kN/m	90	70	55	50
Density 密度	53479	1183	g/cm³	1.23	1.20	1.15	1.11
Electrical Properties 電氣特性							
Dielectric Strength 耐電率 (50Hz,0.5kV/s) 1. Dry 2. 4 days at 80% r.h. 3. 24 h immersion in water	EC 243. VDE 0303/part 2		kV/mm				
	95mm Ø=1mm			14.8	17.5	20.2	NA
				13.7	17.6	20.0	NA
				13.9	17.7	20.1	NA
Surface Resistivity 1,000V, 1-minute Value 1. Dry 2. 2.4 days at 80% r.h. 3. 24 h immersion in water	IEC 93. VDE 0303/part 3		Ohm				
	Standard test piece			1•10 ¹²	5•10 ¹¹	6•10 ¹¹	NA
				2•10 ¹¹	8•10 ¹¹	7•10 ¹⁰	NA
				2•10 ¹¹	5•10 ¹¹	7•10 ¹⁰	NA
Insulation Between Plug Electrodes 1,000V, 1-minute Value 1. Dry 2. 4 days at 80% r.h. 3. 24 h immersion in water	IEC 167. VDE 0303/part 3		Ohm				
	Standard test piece			5•10 ¹²	4•10 ¹¹	1•10 ¹²	NA
				1•10 ¹²	7•10 ¹⁰	1•10 ¹¹	NA
				2•10 ¹¹	7•10 ¹⁰	1•10 ¹⁰	NA
Volume Resistivity 1,000V, 1-minute Value 1. Dry 2. 4 days at 80% r.h. 3. 24 h immersion in water	IEC 93. VDE 0303/part 3		Ohm•cm				
	95mm Ø=1mm			5•10 ¹²	8•10 ¹¹	3•10 ¹²	NA
				7•10 ¹²	2•10 ¹¹	2•10 ¹¹	NA
				2•10 ¹¹	1•10 ¹¹	8•10 ¹⁰	NA
Dielectric Constant 1. At 50Hz 2. At 1kHz 3. At 1MHz 4. At 1GHz	IEC 250. VDE 0303/part 4						
	95mm and 50mmØ=1mm			6.6	6.5	6.3	NA
				6.3	6.4	6.1	NA
				5.1	5.6	5.0	NA
Dissipation factor tan 1. At 50Hz 2. At 1kHz 3. At 1MHz 4. At 1GHz	IEC 250. VDE 0303/part 4						
	95mm and 50mmØ=1mm			0.025	0.029	0.024	NA
				0.034	0.018	0.025	NA
				0.075	0.060	0.084	NA
Comparative Tracking Index(CTI) (test solution A)	IEC 112. VDE 0303/part 1		Grading				
	20mm•15mm•4mm			600	600	600	NA
Raw Material Groups 原料分類				Ester		Special Ether	Ether

UL File No.:E41613(M)

The data are intended as a general guide only, makes no guarantee of results and assumes no obligation or liability. 上列數據僅供參考，並不為此承擔任何責任和保證。

• Hinge(上座/下座)- PC +ALLOY

SHINBLEND® ALLOY ENGINEERING PLASTIC DIVISION	SHINKONG SYNTHETIC FIBERS CORPORATION 新光合成纖維股份有限公司 8th Fl., 123, Sec.2, Nanking East Road, Taipei, Taiwan Tel: 886-2-2507-0131 886-2-2507-1233 (Lines) 886-3-4932131-1730 Fax: 886-2-2506-8047 886-3-491-5763
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Technical Data

SHINBLEND® A724NA High Impact Grade / 超韌級 AD4011					
		Unit	Test Method		Values
Mechanical properties		機械性質			
Izod Impact(Notched) 23°C	衝擊強度	Kg-cm/cm	ASTM	D256	85
-20°C	衝擊強度	Kg-cm/cm	ASTM	D256	70
-40°C	衝擊強度	Kg-cm/cm	ASTM	D256	65
Tensile Strength	拉伸強度	Kg/cm ²	ASTM	D638	540
Elongation	拉伸率	%	ASTM	D638	100
Flexural Strength	彎曲強度	Kg/cm ²	ASTM	D790	800
Flexural Modulus	彎曲模數	Kg/cm ²	ASTM	D790	20000
Thermal properties		熱 性 質			
Heat Deflection Temperature	熱變形溫度		ASTM	D648	
66psi		°C			-
264psi		°C			100
Flammability	防火性	-	UL94		-
Melting Point	熔點	°C	DSC		223
Electrical properties		電氣性質			
Dielectric Strength	介電強度	KV/MM	ASTM	D149	-
Dielectric Constant	介電常數	...	ASTM	D150	-
Volume Resistivity	體積電阻	Ω-CM	ASTM	D257	-
Other properties		其它性質			
Specific Gravity	比重	-	ASTM	D792	1.19
Water Absorption	吸水率	%	ASTM	D570	0.14
Mold Shrinkage	成形收縮率		ASTM	D955	
Flow	流動方向	%			0.4~0.6
Cross Flow	垂直方向	%			0.5~0.7

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