

AD-103AG

Antenna Approval Sheet

Part Number	R3410110203
Product Number	AD-103AG
Description	Dipole Antenna, 2.02dBi 2.4GHz/2.03dBi 5GHz, RP-SMA(M) connector
DOC NO	AS-1905003

Ver. 1.4

Revised History

Version	Purpose	Date	Responsible
1.0	Initial Doc	2019/06/13	Aaron
1.1	Added Antenna picture (Page 12)	2019/08/06	kamoro
1.2	Revised Operating Temperature (Page 3)	2019/08/21	Aaron
1.3	Added Ant Gain in 5895 GHz(Page 3)	2022/10/04	Christina
1.4	Added M'tl Data(Page 13~16)	2025/01/07	Christina

SparkLAN		Customer
Sales	PM	Approval by
	Aaron	

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SPECIFICATION

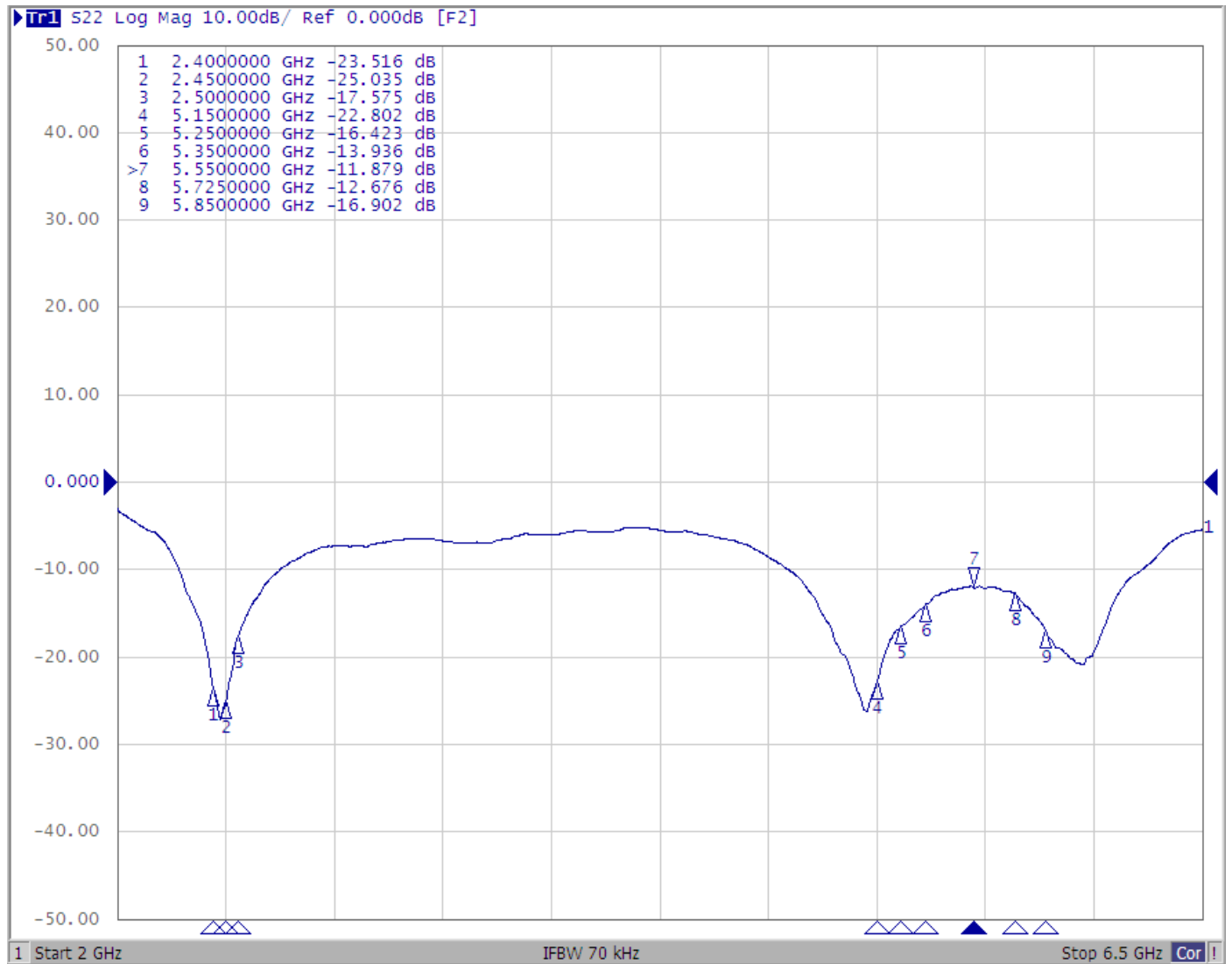
1. Description : Dual Band Dipole Antenna
with RP-SMA(M)(Black)
2. Model No. : AD-103AG
3. Part No. : R3410110203
4. Standard : IEEE 802.11a/b/g Wireless LAN
5. Antenna Profile : 157 mm (see Drawing)
6. Color : Black
7. Electrical Characteristics
 - Operating Frequency : 2.4~2.5 & 5.15~5.895GHz
 - Antenna Type : Dipole
 - Polarization Type : Linear
 - Type of Radiation : Toroidal
 - Peak Gain : 2.0±1 dBi Typical
 - Impedance : 50 Ohm nominal
 - V.S.W.R. : 2.0:1 Max.
8. Mechanical Characteristics
 - Connector : RP-SMA(M)
 - Core : N/A
9. Raw Material
 - Coaxial Cable : RG-178
 - Housing : TPU
 - Hinge : PC+ALLOY
10. Operating Temperature : - 40°C~+85°C
11. Manufacturer company name: SparkLAN Communications, Inc.
12. Manufacturer company address: 5F, No. 199, Ruihu St., Neihu Dist.,
Taipei City 114067, Taiwan

	1	2	3	4	5	6	7										
A	TOLERANCES: (mm)				Signature / Stamp		Customer Approved										
	X	±1.0															
	X.X	±0.5															
	X.XX	±0.3															
	ANGULAR	±5.0°															
* DIMENSIONS																	
B									B								
C									C								
D									D								
E									E								
F									F								
G									G								
H									H								
I									I								
J									J								
3rd VIEW									<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; font-size: 0.8em;">DRAWING</td> <td style="width: 15%; font-size: 0.8em;">CHECK</td> <td style="width: 15%; font-size: 0.8em;">CONFIRM</td> <td style="width: 15%; font-size: 0.8em;">APPROVED</td> </tr> <tr> <td style="text-align: center;">Jacky</td> <td style="text-align: center;">Jacky</td> <td style="text-align: center;">Tim</td> <td style="text-align: center;">Eric</td> </tr> </table>				DRAWING	CHECK	CONFIRM	APPROVED	Jacky
DRAWING	CHECK	CONFIRM	APPROVED														
Jacky	Jacky	Tim	Eric														
UNIT: mm		PART NAME		WSS003 Dual Band Dipole Antenna with RP-SMA(M)(Black)													
SCALE: FREE		CATEGORY		☒ A:Product ☐ B:Semi-Production													
2022/10/05		PART NO.		UHW0935		VERSION	A6										
				file NO.:RD-4-037D													
				Page: 1/2													

	1		2		3		4		5		6		7
A													A
B													B
C													C
D													D
E													E
F													F
G													G
H	10	Housing	WSL003 13.4*115L Housing(Black)					Black		1	H		
	9	Heat Shrink Tube	UL/CSA 5.0 Black					Black	20	1			
	8	Sleeve	4.8 φ *24L Sleeve					silver		1			
	7	Sleeve	5.2 φ *22L FOR 178 Sleeve					silver		1			
	6	Rivet	028922001-6 4.80*1.95 φ Rivet(Black)					Black		2			
I	5	Hinge-Base	13 φ *25.5L Hinge-Base(Black)					Black		1	I		
	4	Hinge-Holder	13 φ *28L Hinge-Holder 15.2*7.25(Black)					Black		1			
	3	Shaft	0249A-B Connector RP-SMA(M) φ 12.5					silver		1			
	2	SMA Body	0249A-A Body RP-SMA(M) φ 12.5 Connector					Black		1			
J	1	RG-178 Coaxial Cable	RG-178<TIN> CABLE 105SV					Orange	54	1	J		
	NO	Material	Description					Color	Dim	Qt'y			
K	3rd VIEW						MODEL NO.	R3410110203					K
	UNIT: mm		DRAWING	CHECK	CONFIRM	APPROVED	PART NAME	WSS003 Dual Band Dipole Antenna with RP-SMA(M)(Black)					
	SCALE: FREE		Jacky	Jacky	Tim	Eric	CATEGORY	☒ A:Product		☐ B:Semi-Production			
	2022/10/05						UHW0935			VERSION	A6		
						file NO.:RD-4-037D			Page: 2/2				

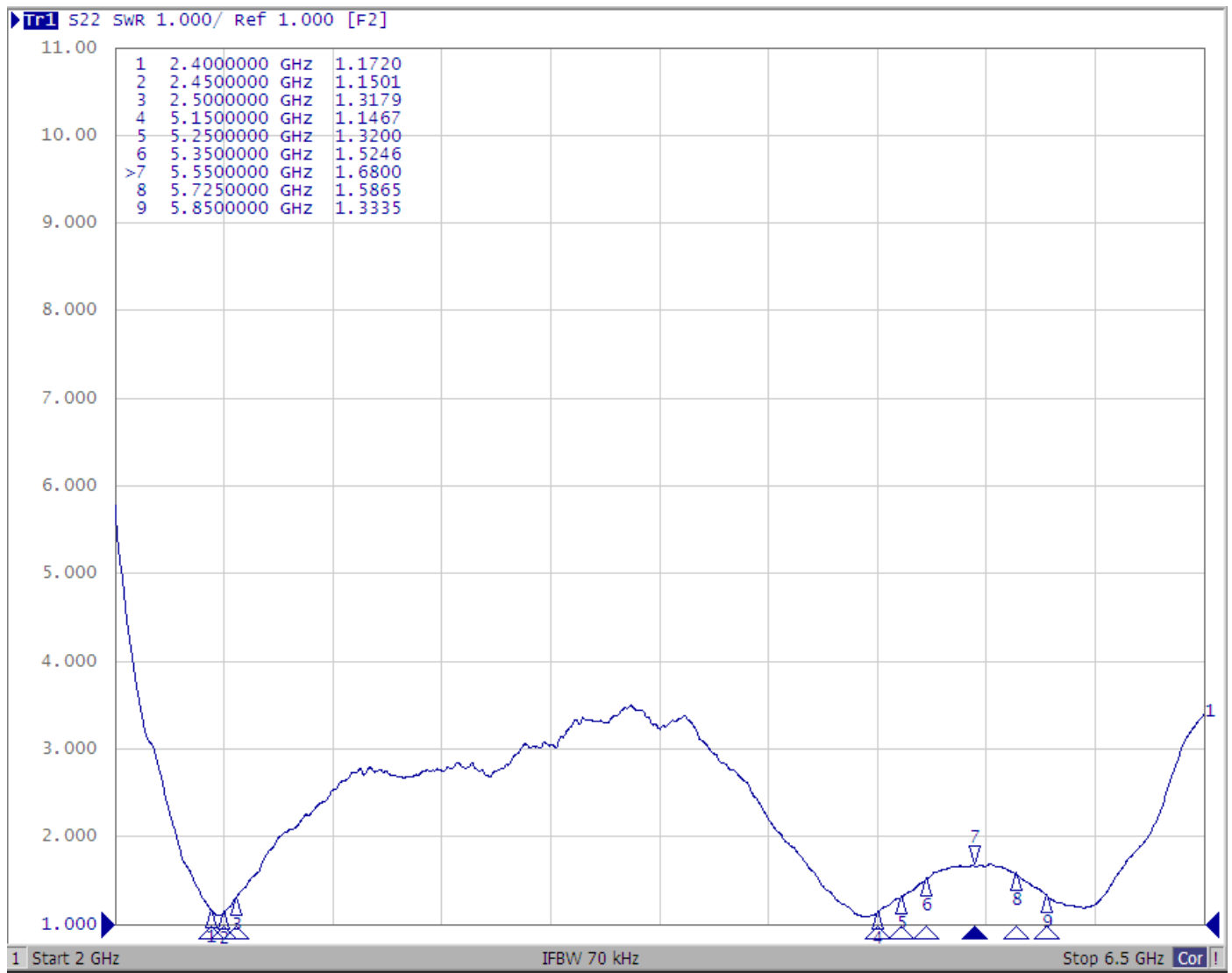
Electrical Properties

Return Loss



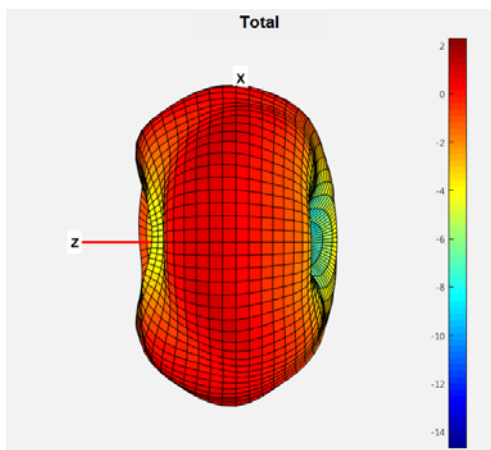
Electrical Properties

V.S.W.R

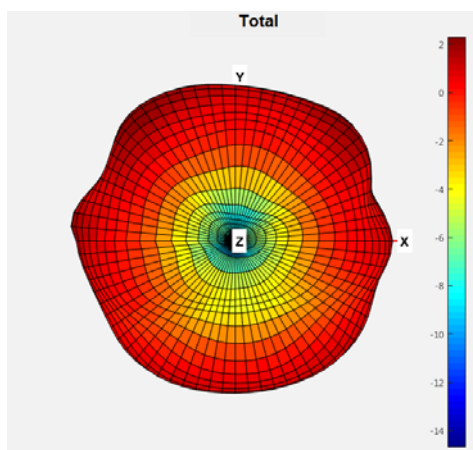


3D Pattern

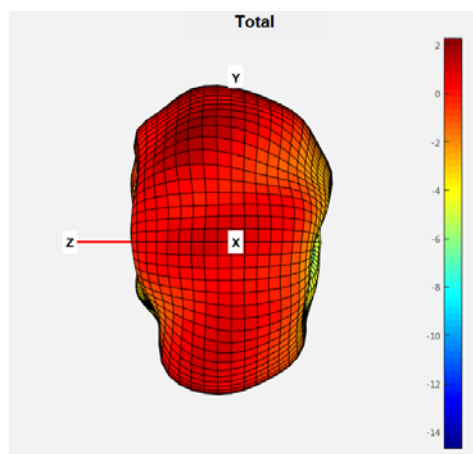
2.45GHz_X-Z Plane



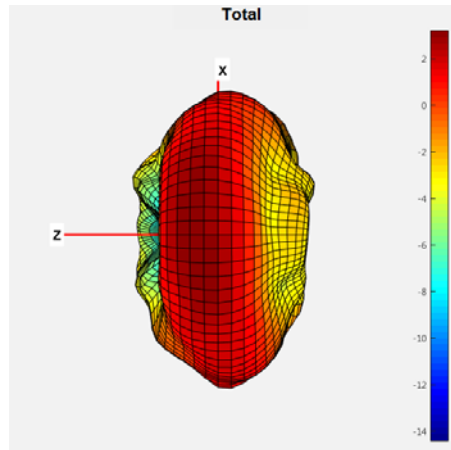
2.45GHz_X-Y Plane



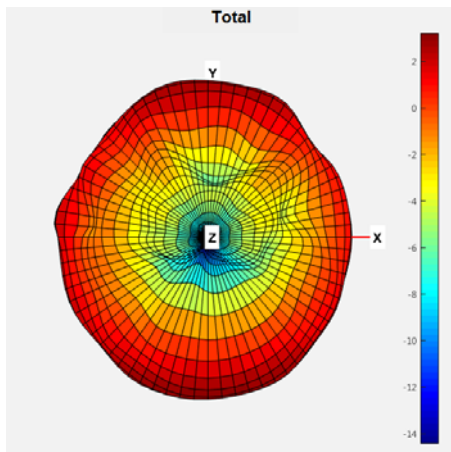
2.45GHz_Y-Z Plane



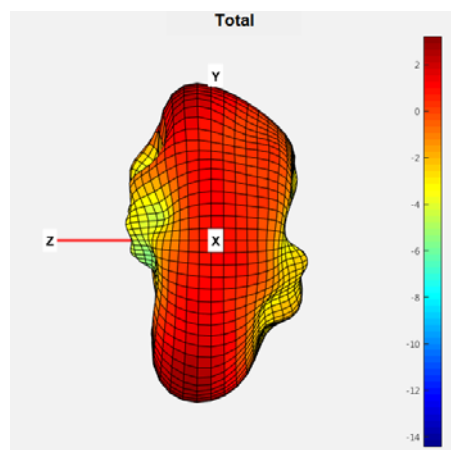
5.15GHz_X-Z Plane



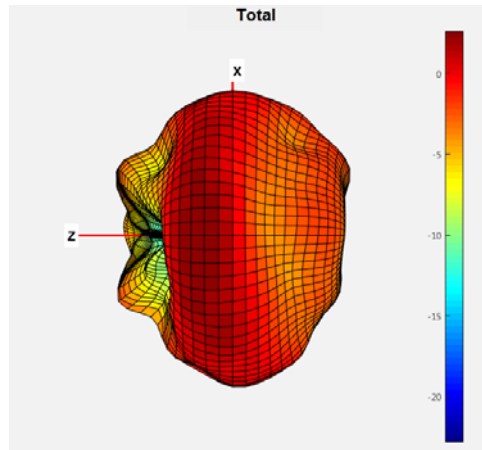
5.15GHz_X-Y Plane



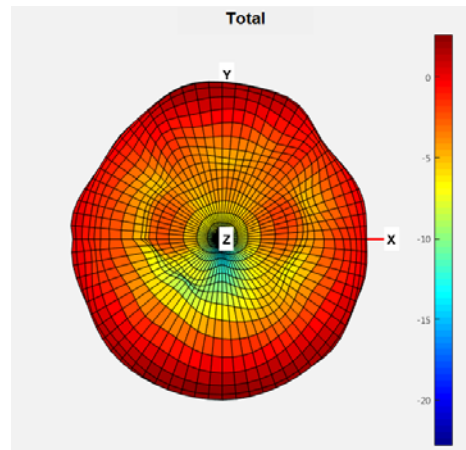
5.15GHz_Y-Z Plane



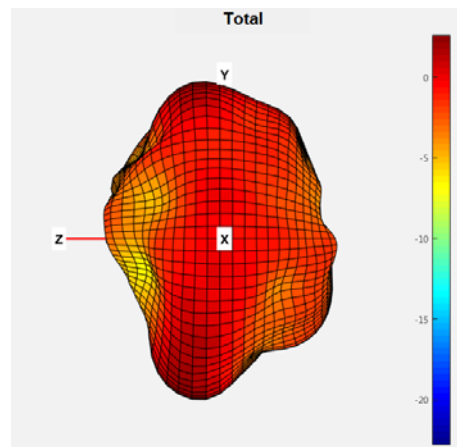
5.55GHz_X-Z Plane



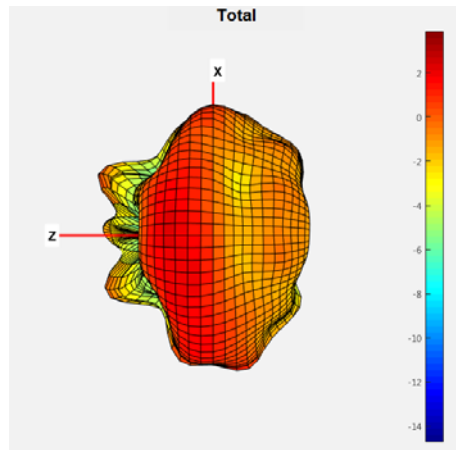
5.55GHz_X-Y Plane



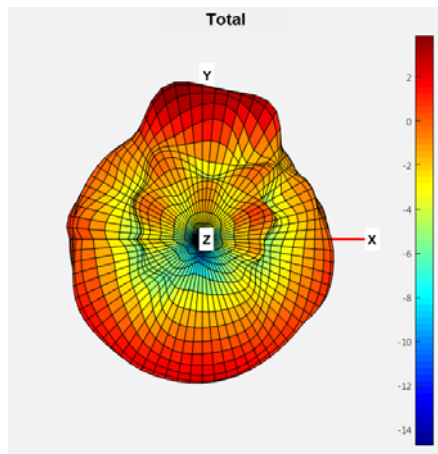
5.55GHz_Y-Z Plane



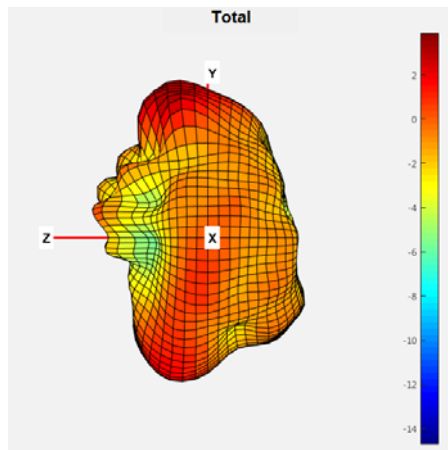
5.85GHz_X-Z Plane



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

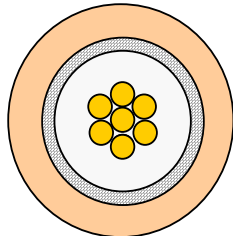
Frequency	5.15GHz	5.25GHz	5.35GHz
Avg. Gain (dBi)	-1.18	-1.87	-2.35
Peak Gain (dBi)	1.63	1.93	1.37
Efficiency (%)	76.21	65.01	58.21

Frequency	5.47GHz	5.5GHz	5.55GHz	5.6GHz	5.725GHz	5.85GHz	5.875GHz	5.895GHz
Avg. Gain (dBi)	-1.8	-1.8	-1.8	-1.75	-1.7	-1.84	-2.08	-2.14
Peak Gain (dBi)	1.71	1.6	1.49	1.76	2.03	1.9	1.5	1.86
Efficiency (%)	66.07	66.07	66.07	66.84	67.61	65.46	61.94	61.09

Antenna picture



Specification:HIGH FREQUENCY COAXIAL CABLE		
Style	105℃ 30V Coaxial Cable	
Size	RG 178B/U 30AWG	Part No.:A30178B002
Standard: MIL-C-17		
Conductor	Size	30AWG
	Construction	7/0.102mm
	Diameter	0.31 mm
	Material	Silver-Coated Copper Clad Steel (SCCS)
Insulation	Material	FEP
	Average Thickness	0.28 mm
	Diameter	0.86 ±0.05 mm
	Color	Clear
Braid	Material	Tinned Copper
	Construction	16/3/0.100 mm
	Coverage rate	95.3 %
Jacket	Material	FEP
	Average Thickness	0.25 mm
	Diameter	1.80 ±0.05 mm
	Color	According To Custom
	Marking: No Marking	

Electrical & Physical Properties				Part No : A30178B002	
Item Size			RG 178B/U		
Rating Temp Voltage			105℃ 30V		
Conductor Resistance			828 OHM/KM/20℃ Max.		
Insulation Resistance			3000 MEGA OHM.KM Min.		
Dielectric Strength			1000V AC For 1 Minute		
Spark Test			2500 V		
Insulation	Unaged	Tensile Strength	2500 PSI Min. (1.76Kg/mm ²)		
		Elongation	200% MIN.		
	Aged	Tensile Strength	Unaged 75% Unaged (232 ±1.0℃ ×168 H) Min		
		Elongation	Unaged 75% Unaged (232 ±1.0℃ ×168 H) Min.		
Jacket	Unaged	Tensile Strength	2500PSI Min.		
		Elongation	200% Min.		
	Aged	Tensile Strength	Unaged 75% Unaged (232 ±1.0℃ ×168 H) Min.		
		Elongation	Unaged 75% Unaged (232 ±1.0℃ ×168 H) Min.		
Flame Test			VW-1 OK		
Nom. Impedance			50 ±5 Ohms		
Nom. Capacitance			95.8 ±3 Pf/m		
Nom. Vel. Of Prop			69.5%		
VSWR (0-6GHz)			Under 1.3		
Attenuation	1.0 GHZ	1.8 GHZ	2.4 GHZ	5.2 GHZ	6.0 GHZ
(dB/100m)	180	260	290	450	490
Drawing :					
					

Housing Material Data Sheet

• Housing(外套)- TPU

TPU

熱塑性聚胺脂

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
24 hr st 70°C	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)	EC 243. VDE 0303/part 2		kV/mm				
1. Dry	95mm Ø•1mm			14.8	17.5	20.2	NA
2. 4 days at 80% r.h.				13.7	17.6	20.0	NA
3. 24 h immersion in water				13.9	17.7	20.1	NA
Surface Resistivity 1,000V, 1-minute Value	IEC 93. VDE 0303/part 3		Ohm				
1. Dry	Standard test piece			1•10 ¹²	5•10 ¹¹	6•10 ¹¹	NA
2. 2.4 days at 80% r.h.				2•10 ¹¹	8•10 ¹¹	7•10 ¹⁰	NA
3. 24 h immersion in water				2•10 ¹¹	5•10 ¹¹	7•10 ¹⁰	NA
Insulation Between Plug Electrodes 1,000V, 1-minute Value	IEC 167. VDE 0303/part 3		Ohm				
1. Dry	Standard test piece			5•10 ¹²	4•10 ¹¹	1•10 ¹²	NA
2. 4 days at 80% r.h.				1•10 ¹²	7•10 ¹⁰	1•10 ¹¹	NA
3. 24 h immersion in water				2•10 ¹¹	7•10 ¹⁰	1•10 ¹⁰	NA
Volume Resistivity 1,000V, 1-minute Value	IEC 93. VDE 0303/part 3		Ohm•cm				
1. Dry	95mm Ø•1mm			5•10 ¹²	8•10 ¹¹	3•10 ¹²	NA
2. 4 days at 80% r.h.				7•10 ¹²	2•10 ¹¹	2•10 ¹¹	NA
3. 24 h immersion in water				2•10 ¹¹	1•10 ¹¹	8•10 ¹⁰	NA
Dielectric Constant	IEC 250. VDE 0303/part 4						
1. At 50Hz				6.6	6.5	6.3	NA
2. At 1kHz				6.3	6.4	6.1	NA
3. At 1MHz	95mm and 50mmØ•1mm			5.1	5.6	5.0	NA
4. At 1GHz				3.6	3.8	3.4	NA
Dissipation factor tan	IEC 250. VDE 0303/part 4						
1. At 50Hz				0.025	0.029	0.024	NA
2. At 1kHz				0.034	0.018	0.025	NA
3. At 1MHz	95mm and 50mmØ•1mm			0.075	0.060	0.084	NA
4. At 1GHz				0.022	0.032	0.024	NA
Comparative Tracking Index(CTI) (test solution A)	IEC 112. VDE 0303/part 1		Grading	600	600	600	NA
		20mm•15mm•4mm					
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。

011-7

• 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 886-2-2507-1234 (4 Lines) 886-3-4932131-1730 Fax: 886-2-2506-8047 886-3-491-5563

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	Kg-cm/cm	ASTM D256	85
-20°C	Kg-cm/cm	ASTM D256	70
-40°C	Kg-cm/cm	ASTM D256	65
Tensile Strength	Kg/cm ²	ASTM D638	540
Elongation	%	ASTM D638	100
Flexural Strength	Kg/cm ²	ASTM D790	800
Flexural Modulus	Kg/cm ²	ASTM D790	20000
Thermal properties 熱性質			
Heat Deflection Temperature		ASTM D648	
66psi	°C		-
264psi	°C		100
Flammability	-	UL94	-
Melting Point	°C	DSC	223
Electrical properties 電氣性質			
Dielectric Strength	KV/MM	ASTM D149	-
Dielectric Constant	...	ASTM D150	-
Volume Resistivity	Ω-CM	ASTM D257	-
Other properties 其它性質			
Specific Gravity	-	ASTM D792	1.19
Water Absorption	%	ASTM D570	0.14
Mold Shrinkage		ASTM D955	
Flow	%		0.4~0.6
Cross Flow	%		0.5~0.7

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2002/6