

承 認 書
SPECIFICATION FOR APPROVAL

客 戶
CUSTOMER

Ettus Research LLC

日 期
DATE

2011/4/26

品 名
DESCRIPTION

WSS007 Dual Band Antenna
With SMA(M)(Black)

客 戶 料 號
CUSTOMER P/N

VERT2450

成 品 編 號
Part NO.

RU1WFI0001A



萬旭電業股份有限公司

WANSHIH ELECTRONIC CO., LTD.

台北縣五股鄉五工六路 72 號 3 樓

3F 72 WU KONG 6TH RD., WU KU INDUSTRIAL DISTRICT

TAIPEI HSIEN, TAIWAN, R.O.C.

TEL : (02) 22988066 (5 LINE) FAX : (02)22981102

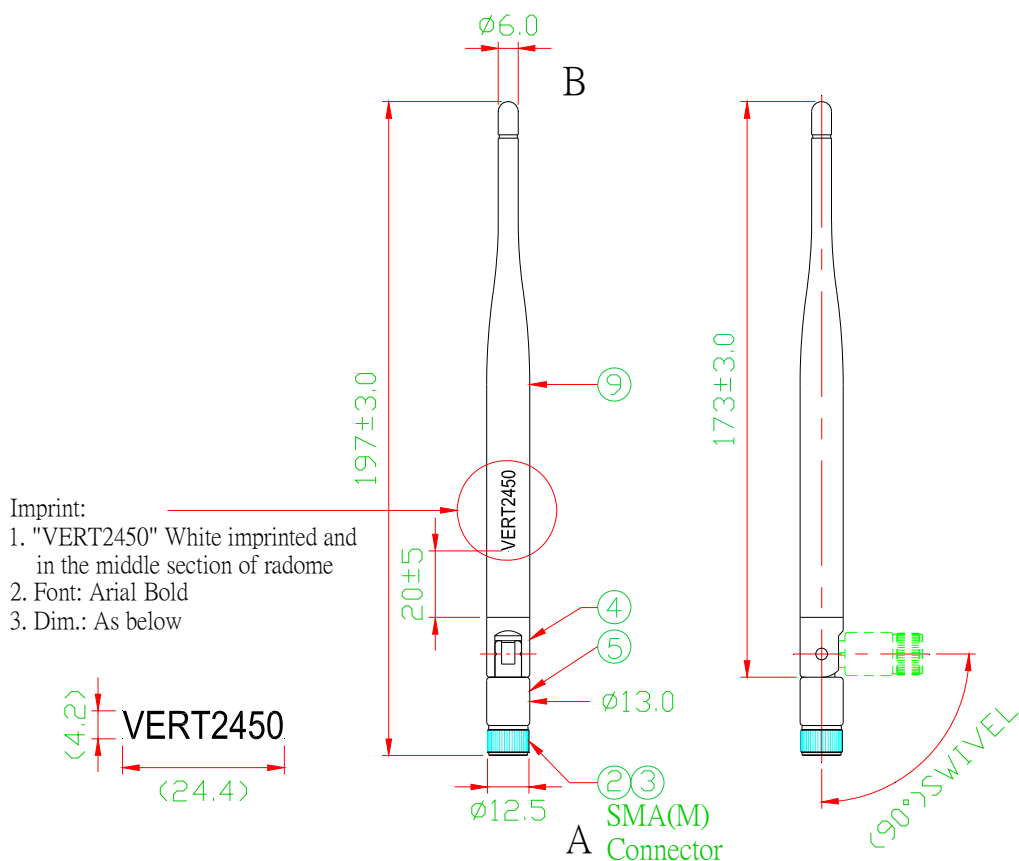
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SPECIFICATION

- | | |
|-------------------------------|---|
| 1. Description | : WSS007 Dual Band Antenna
With SMA(M) |
| 2. Customer | : Ettus Research LLC |
| 3. Model No. | : WSS007 |
| 4. Part No. | : RU1WFI0001A |
| 5. Standard | : IEEE 802.11a+b/g Wireless LAN |
| 6. Antenna Profile | : 197 mm (see Drawing) |
| 7. Color | : Black |
| 8. Electrical Characteristics | |
| Operating Frequency | : 2.4~2.5/5.15~5.35/5.725~5.85 GHz |
| 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 | |
| Swivel | : 90 degrees |
| Connector | : SMA(M) |
| Core | : N/A |
| 10. Raw Material | |
| Coaxial Cable | : RG-178 |
| Housing | : TPU |
| Hinge | : PC+ALLOY |

TOLERANCES:		Signature / Stamp	<input checked="" type="checkbox"/> Customer Approved <input type="checkbox"/> Unofficial Drawing	機構 (技術分類) :
X	±0.5			應用 (業務分類) :
X.X	±0.3			材質 (生管分類) :
X.XX	±0.1			
ANGULAR	±5.0°			



9	Housing	√	13 φ * L155 Housing	Black		1	or Equivalent
8	Heat Shrink Tube	√	H-2(CB) φ 5.0	Black	20	1	or Equivalent
7	Sleeve	√	5.2 φ * 24L * 0.2T Sleeve	silver		2	or Equivalent
6	Rivet	√	028922001-6 4.80*1.95 φ Rivet	Black		2	or Equivalent
5	Hinge-Base	√	13 φ Hinge-Base * 25.5L	Black		1	or Equivalent
4	Hinge-Holder	√	13 φ Hinge-Holder 28L	Black		1	or Equivalent
3	RP-SMA φ 12.5 Shaft	√	0249A-B Connector RP-SMA(M) φ 12.5	silver		1	or Equivalent
2	SMA φ 12.5 Body	√	0526A SMA(M)12.5D 19.4L Connector	Black		1	or Equivalent
1	RG-178 Coaxial Cable	√	RG-178 CABLE 105SV	Orange	95	1	or Equivalent
NO	Material	GM	Description	Color	Dim	Qt'y	Remark

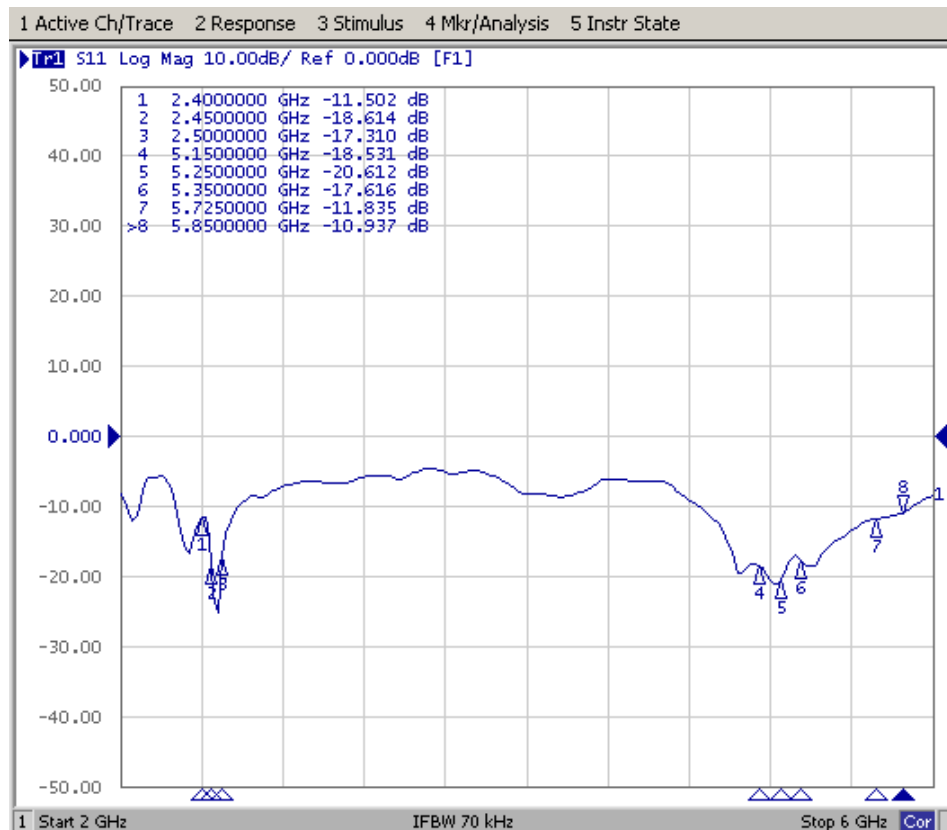
Revise Date:		Edit Date: 2011/04/26			PART NUMBER	VERT2450	
3rd VIEW	APPROVED	CONFIRM	CHECK	DRAWING	PART NAME	WSS007 Dual Band Antenna with SMA(M)(Black)	
UNIT: mm	Jason	C.S.LIU	Emily	Mandy	CATEGORY	<input checked="" type="checkbox"/> A:Product <input type="checkbox"/> B:Semi-Production <input type="checkbox"/> C:Sample	
SCALE:FREE					Engineering NO.	RU1WFI0001A	VERSION 01
衛星廠成品編號：					文件編號：FMT-0513-H5		頁次：1/1

WANSIH ELECTRONIC CO., LTD.



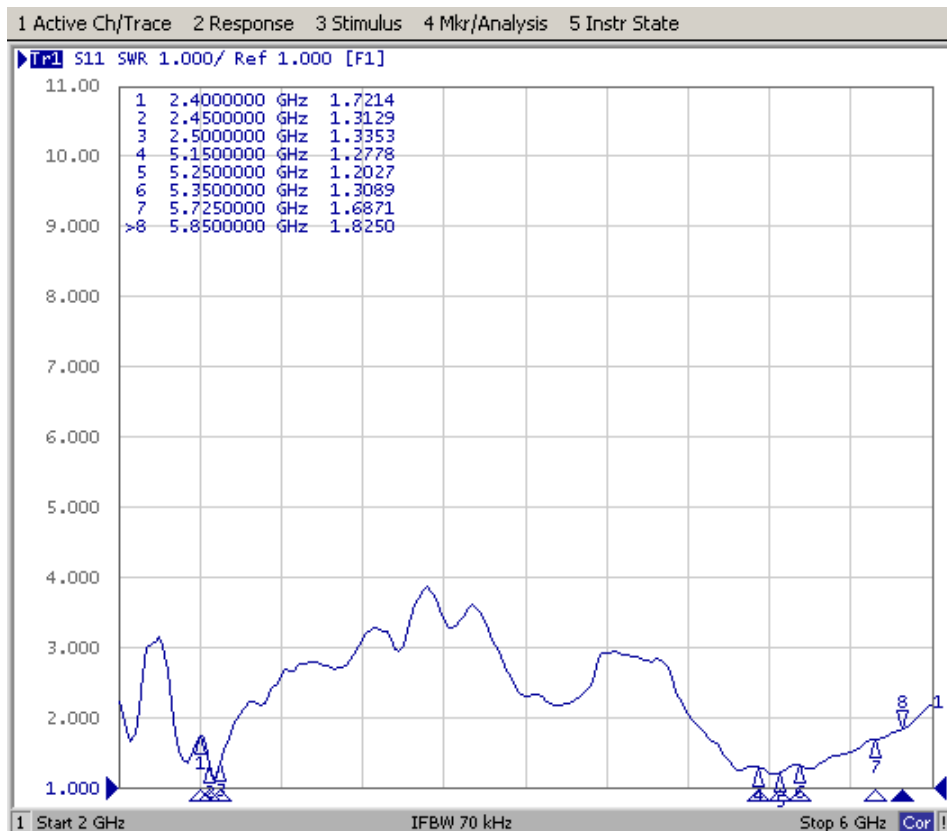
Electrical Properties

Return Loss



Electrical Properties

V.S.W.R



Electrical Properties

Radiation Pattern – H Plane

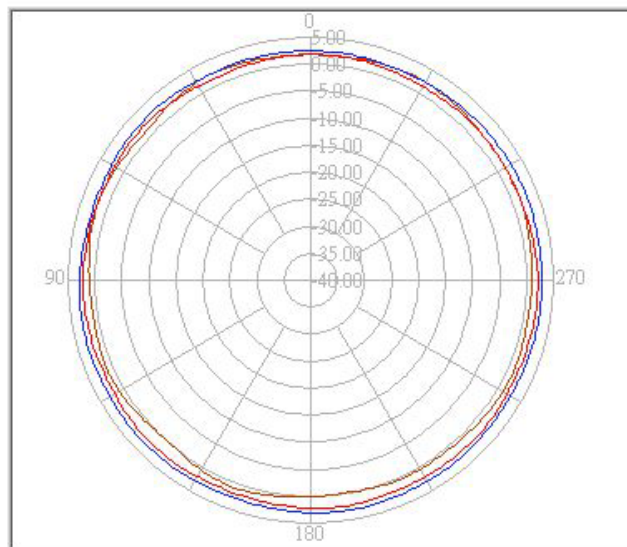


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Model No: 802.11abg(bg)

Antenna Position: Vertical

Test Mode: H-Plane



Freq (MHz)	peak(dBi)	Angle(o)	Avg(dBi)
2400.00	2.46	334.20	1.28
2450.00	2.35	222.39	1.96
2500.00	3.27	168.33	2.81

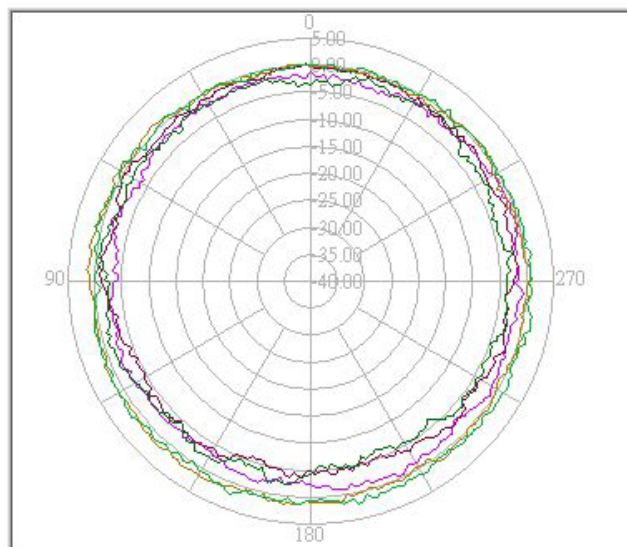


萬旭電業股份有限公司

Model No: 802.11abg(ag)

Antenna Position: Vertical

Test Mode: H-Plane



Freq (MHz)	peak(dBi)	Angle(o)	Avg(dBi)
5150.00	-0.29	154.29	-1.98
5250.00	0.27	358.78	-2.23
5350.00	-0.28	276.73	-2.82
5725.00	1.78	222.86	0.39
5850.00	2.23	200.82	0.60

Electrical Properties

Radiation Pattern – E Plane

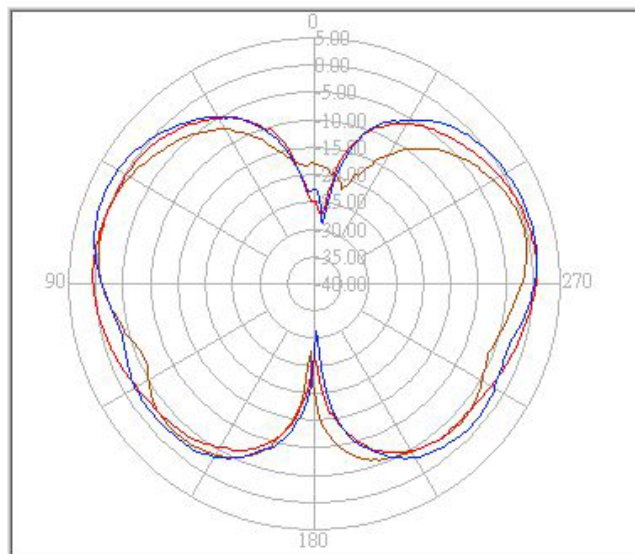


萬旭電業股份有限公司

Model No: 802.11abg(bg)

Antenna Position: Horizontal

Test Mode: E-Plane



Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
2400.00	0.15	286.78	-4.15
Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
2450.00	0.87	84.20	-2.79
Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
2500.00	1.83	292.88	-2.23

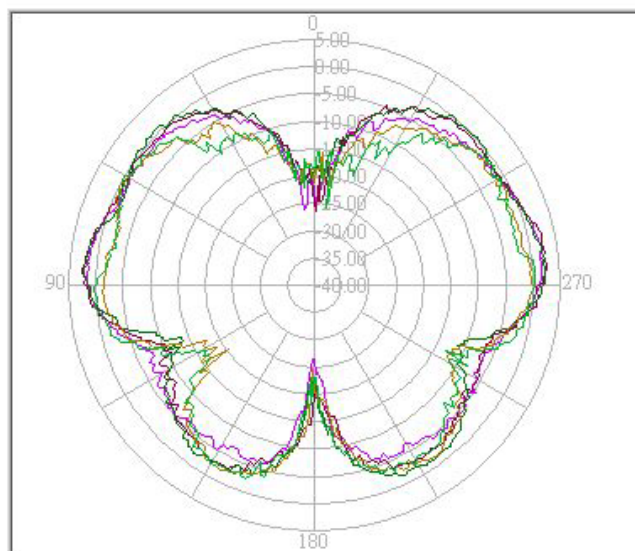


萬旭電業股份有限公司

Model No: 802.11abg(ag)

Antenna Position: Horizontal

Test Mode: E-Plane



Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
5150.00	1.99	79.59	-3.14
Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
5250.00	2.67	273.06	-2.46
Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
5350.00	2.53	83.27	-2.35
Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
5725.00	0.24	90.61	-4.17
Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
5850.00	0.57	264.49	-4.11

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

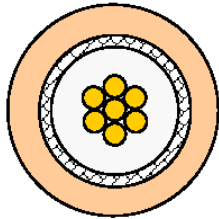
FACTORY : 17 PEI YUAN ROAD,
CHUNG-LI IND. PARK
TAIWAN, R.O.C.

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	

AK001/210X297/1.0

PAGE : 2

EDITION : 1.2

MAKER : C.Y.CHEN

CONFIRM : S.N.WONG

APPROVAL : W.J.WANG

Housing Material Data Sheet

• Housing(外套)- TPU



HONSANE

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用心 專業 獨特

東莞宏德化學工業有限公司檢驗報告

DONG GUAN HONTEX CHEMICAL CO.,LTD. TEST REPORT

廣東省東莞市長安鎮霄邊工業區 Postcode:523850

Tel:(0769)85533620 Fax:(0769)85533635

http://www.dghontex.com.cn E-mail:hontex@pub.dgnet.gd.cn

品名 Product Name	TU56DG	制 造 批 號 Lot No.	R80398005
送 驗 日 期 Sample Received	2008/3/13	檢 驗 日 期 Sample Tested	2008/3/14
檢 驗 項 目 Test Items	標準值/測試條件 Spec./Test Method	檢 驗 結 果 Test Results	
外 觀 Appearance	/	霧狀	
拉伸強度(kg/cm ²) Tensile Strength	>300	496	
延伸率(%) Elongation	>380	603	
100%模量(kg/cm ²) 100% modulus	>90	131	
硬 度(ShoreD) Hardness	56±2D	55D	
熔融指數(g/10min) Melt Index	10kg/210°C	16.2	
熔融粘度(Pa.s) Melt Viscosity	10kg/210°C	3195	
色 差 Color Index	/	11.1	
耐磨耗(mm3) Abrasion:DIN	/	59	
耐寒耐曲折性 Flexibility@-10°C	-10°C/4萬次	完好	
透明性 Transparency	/	不透明	
INSPECTION RESULT		PASS	

主管:
Supervisor:



檢驗員:
(Inspector):

王文忠

2008年4月9日

• 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 886-2-2507-1251(30Lines) 886-3-4932131-1730

Fax : 886-2-2506-8047 886-3-491-5763

Technical Data

工塑營業處

李文桂 分機 7548 行動：0935627706

台北市南京東路二段123號8樓

電話：02-25071251 FAX：02-25068047

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
Rockwell Hardness	洛氏硬度	R	ASTM D785 115
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	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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