LYNwave

產 品 規 格 書

Specification for Approval

客戶 (Customer): 正文科技股份有限公司

Customer Part No.: 180-100-1432R

Product Description: WSMK-163GN

Lynwave Part No.: AOX22X-021010-00

客戶簽核 (Customer Approval)

客戶承認 Customer Approval	核准 (Authorized)	檢驗 (Approved)
	日期： 年 月 日	

內部簽核 (Signature)	日期： 2022 年 07 月 20 日	
Approved by	**Checked by**	**Tested by**
YungMing	*Lisa Wei*	*Zero Chen*

綠億科技股份有限公司

Lynwave Technology Ltd.

Taiwan: 新北市樹林區學成路 655 號 5 樓

5F., No.655, Xuecheng Rd., Shulin Dist., New Taipei City 238701,

Taiwan Tel: 02-35018700 Fax: 02-35019833

E-mail: service@lynwave.com

Contents

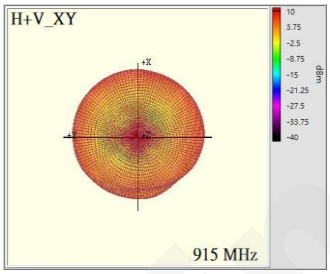
AOX22X-021010-00

Features

- LoRa external omni-directional antenna
- High efficiency and quick integration with SMA compatible connector mounting
- Available in customized cable lengths and connectors

Applications

- AP

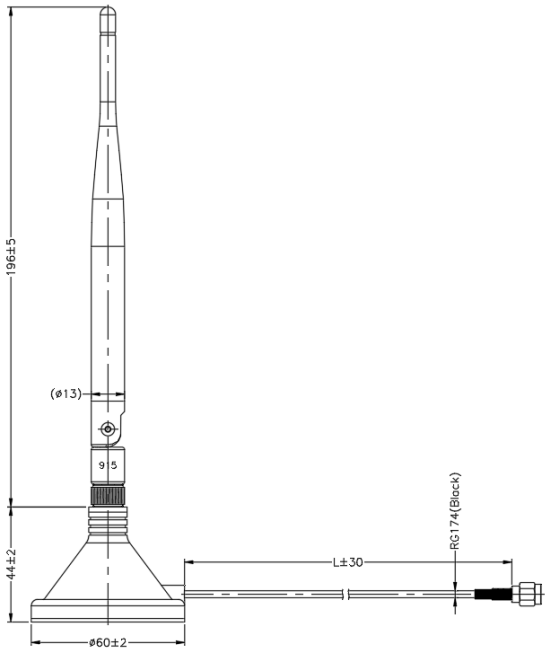


Electrical Specification

Category	Specification
Frequency (MHz)	900 - 930
Peak Gain (dBi)	1.45
VSWR	2.0 : 1
Power (Watts)	1
Impedance (Ohms)	50
Polarization	Linear
Type	Dipole

Mechanical Specification

Category	Specification
Dimension (mm)	According to the drawing
Weight (g)	TBD
Connector	RP-SMA Plug
Cable	RG174
Cable Length (mm)	1500
Material (Radome)	TPEE
Weatherproof Level	N/A
Operating Temp (°C)	-40°C ~ +85°C
Storage Temp (°C)	23 ± 5°C
Storage Humidity (%)	30% ~ 70%



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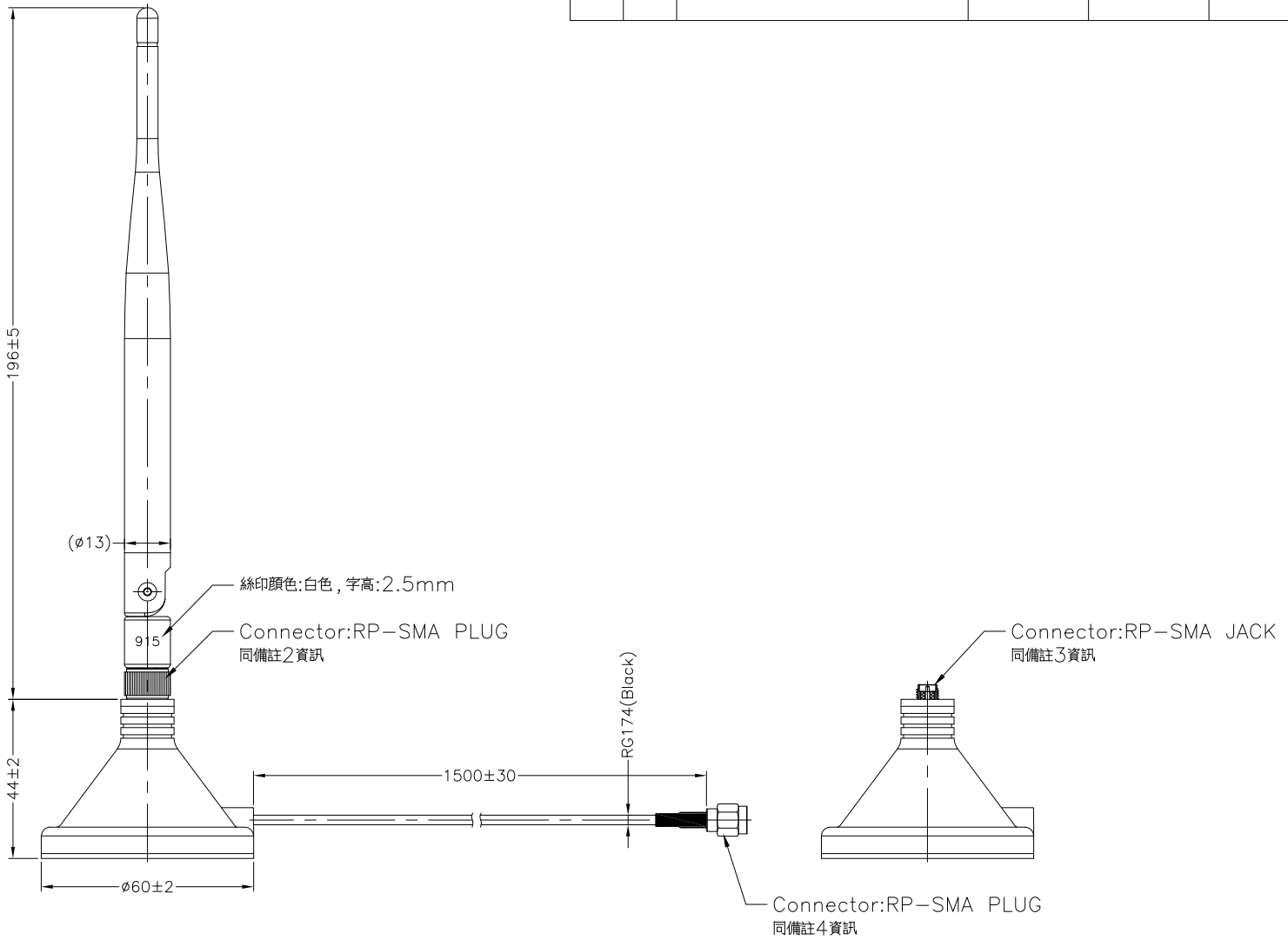
Website: www.lynwave.com
Tel: +886 2 3501 8700
Email: service@lynwave.com

Rev	Zone	Description	ENG	Approved	Date



備註:

1.外觀:黑色

2.Dipole天線端子:RP-SMA PLUG

3.磁吸座本體端子:RP-SMA JACK

4.磁吸座Cable端子:RP-SMA PLUG

TOLERANCE		CUSTOMER	PART NO.	DESCRIPTION:	DWG NO.	REV.
XXX.	±1.0	----	----	Antenna	AOX22X-021010-00	A0
XX.	±0.5	PROJECTION	UNIT	SCALE	SIZE	SHEET
X.	±0.3		mm	1:1	A2	1/1
.X	±0.1	APPROVED: Alex Lee	DESIGNED: Yungming	DRAWN: Anna		
.XX	±0.05					

No.	Description	Specification	Qty
1			

LYNwave
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LYNwave Technology

Antenna & Thermal solution provider

2022

www.lynwave.com

Antenna Test Report

Project Name: 915Mhz Dipole Antenna (Base)

Model Name:

Feature: 900~930MHz

Application:

Antenna Type: LoRa Dipole

Date	Owner	Revision
04/08	Ken	V1

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Table of Contents

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Antenna Placement

Antenna	Description	Frequency
Ant.1	With base	900 MHz ~ 930 MHz
Ant.2	No base	900 MHz ~ 930 MHz

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S-Parameters

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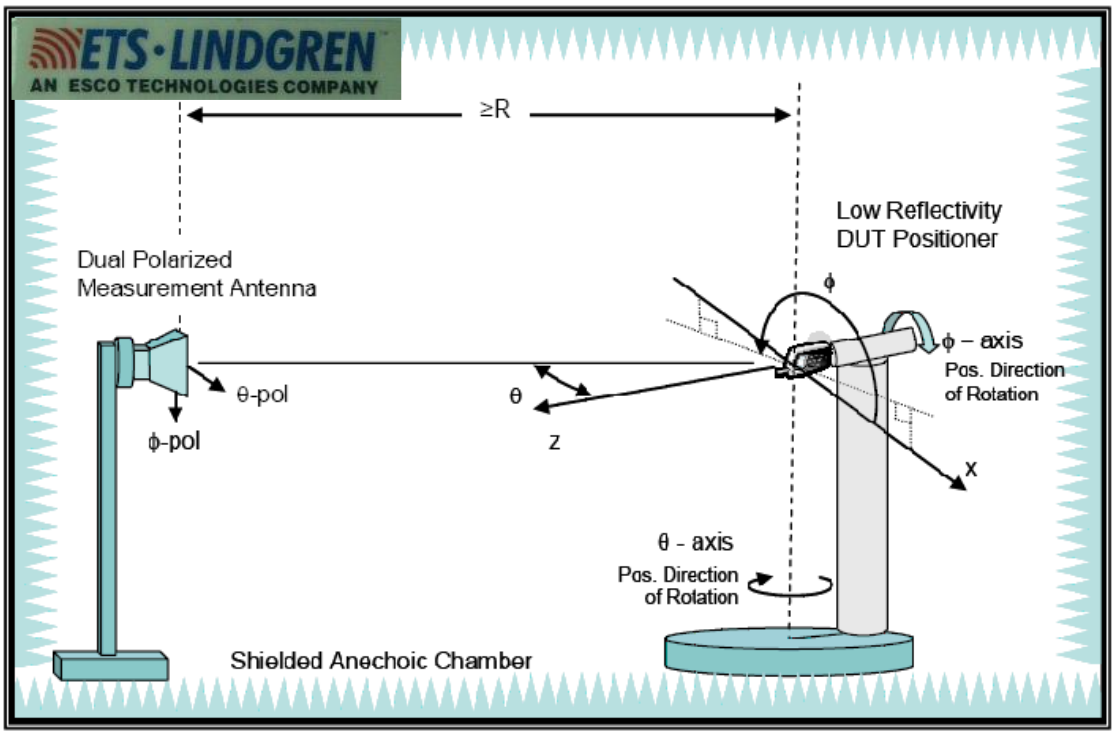
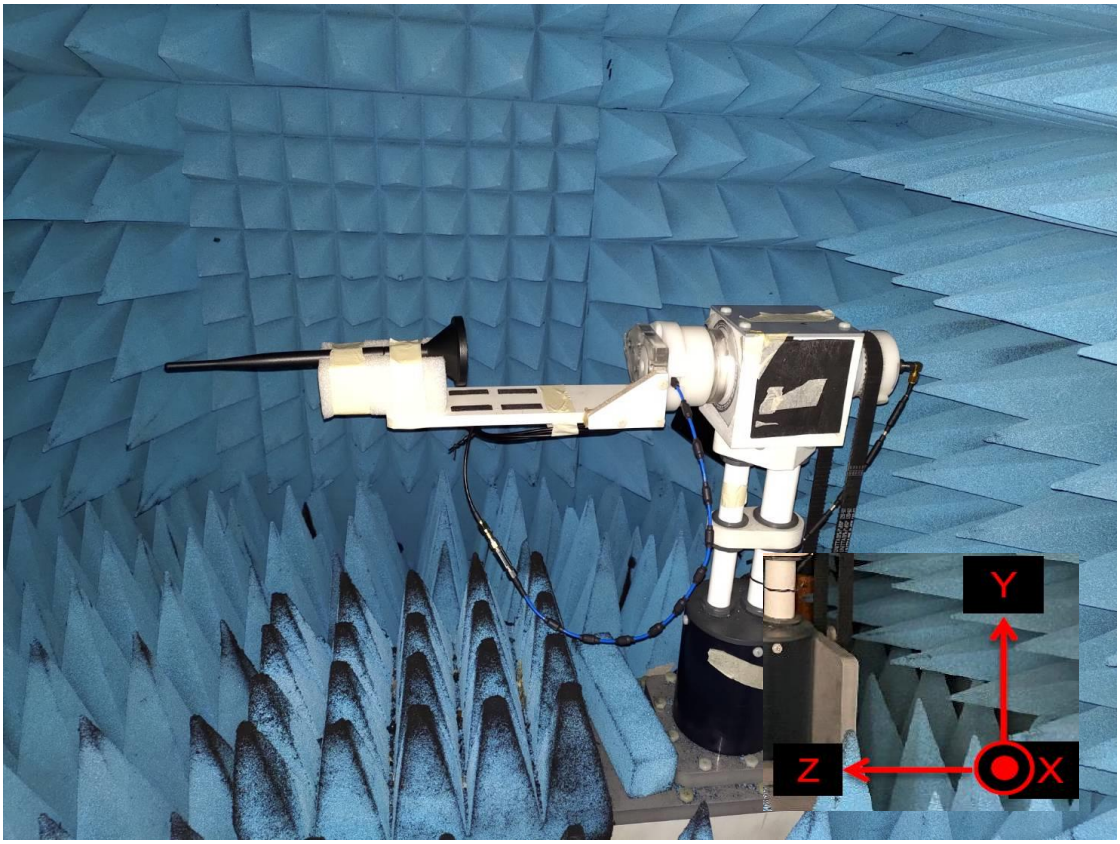
Equipment :
ETS Chamber





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Gain Table

Ant.1					
Frequency (MHz)	900	910	915	920	930
Efficiency(%)	42.03	45.73	47.58	45.2	40.55
Peak Gain(dBi)	0.54	1.12	1.31	1.45	1.44
Ant.2					
Frequency (MHz)	900	910	915	920	930
Efficiency(%)	52.86	54.56	55.4	55.18	54.75
Peak Gain(dBi)	-0.28	0.12	0.24	0.41	0.56

The antenna characteristics

- VSER < 1.6 in operating band
- Efficiency
  - With Base Band ≥ 40%
  - NO Base Band ≥ 50%
- Gain
  - Antenna1 with the base (Max.): 1.45 dBi
  - Antenna2 without the base (Max.): 0.56 dBi

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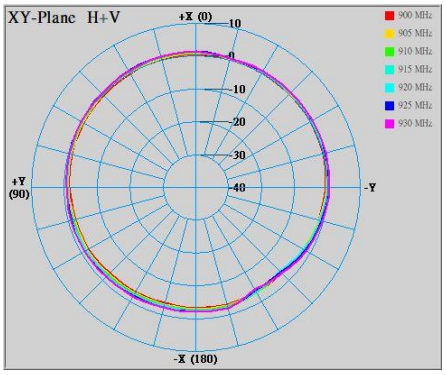
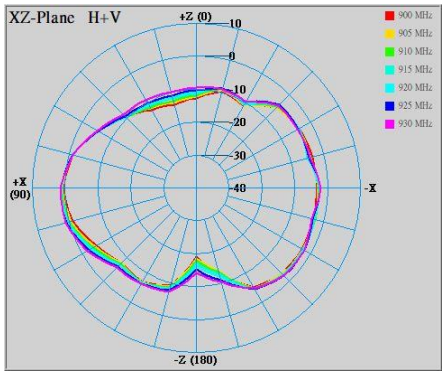
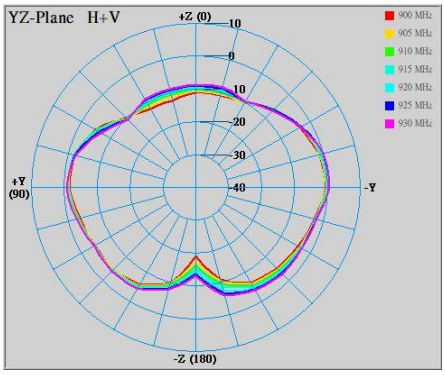
Ant.1_With base 2D.3D Radiation Pattern
Frequency(MHz) : 2D. 900~930
3D. 915

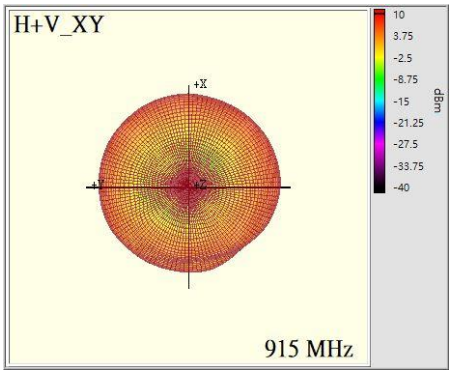
Radiation Pattern :

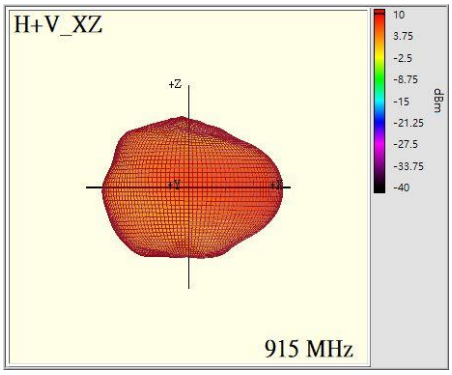
Azimuth Plane	Elevation Plane phi = 0	Elevation Plane phi = 90

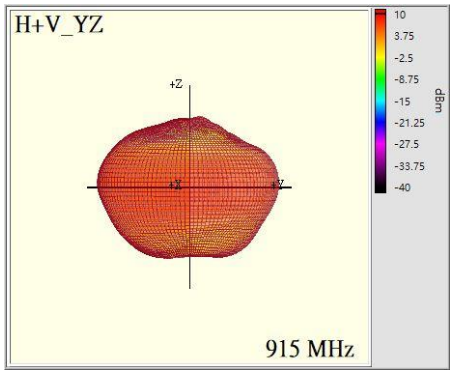




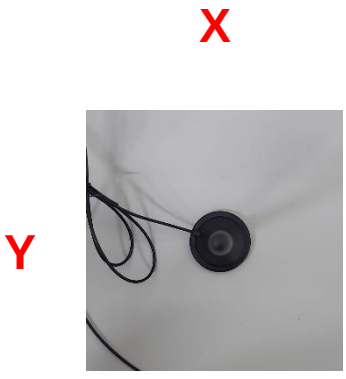








Setup :



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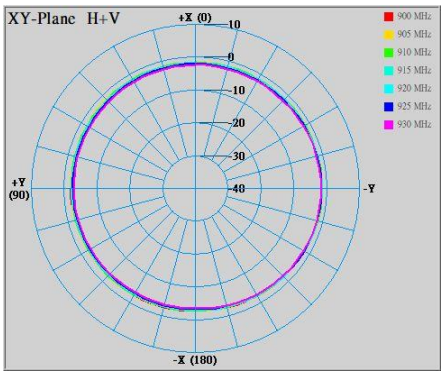
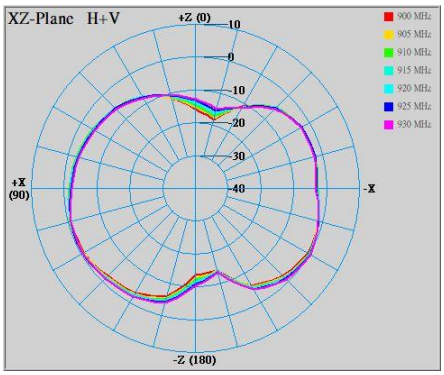
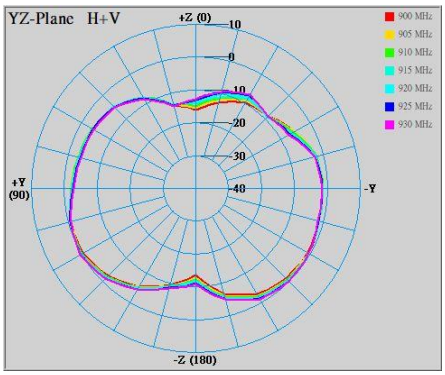
Ant.2_No base 2D.3D Radiation Pattern
Frequency(MHz) : 2D. 900~930
3D. 915

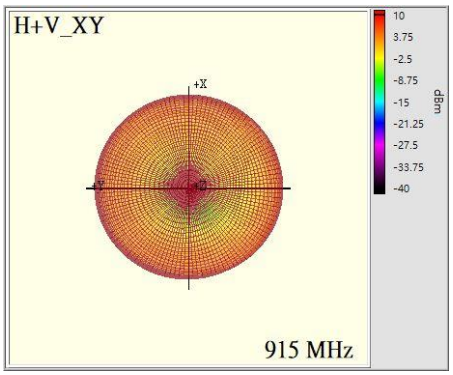
Radiation Pattern :

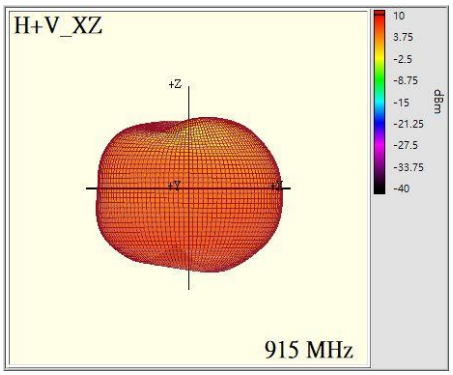
Azimuth Plane	Elevation Plane phi = 0	Elevation Plane phi = 90

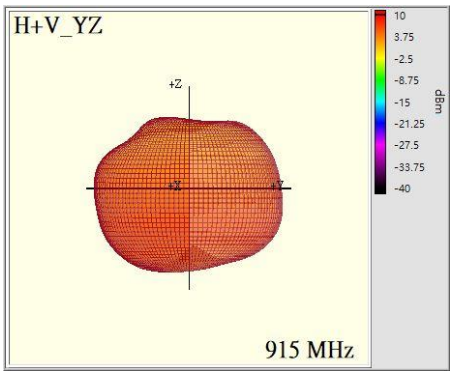












Setup :

X

Y

Z

X

Z

Y

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A3 级覆铜箔板质量技术指标

试验项目	试样处理	标准值	典型值
1.抗剥强度 磅/英寸，最小值			
A 1/2 盎司铜箔			
接收状态	A	≥6.0	6.0-8.0
热应力	A	≥6.0	6.0-8.0
提高温度下	125℃	≥4.0	7.0
暴露于工艺溶液后	125℃	≥4.5	7.0
B 1 盎司铜箔			
接收状态	A	≥8.0	8.0-10.0
热应力	A	≥8.0	8.0-10.0
提高温度下	125℃	≥6.0	9.0
暴露于工艺溶液后	125℃	≥7.0	9.0
2.体积电阻，最小值，MΩ.CM 在提高温度下	E-24/125	$\geq 10^3$	10^6
3.表面电阻，最小值，MΩ 在提高温度下	E-24/125	$\geq 10^3$	10^6
4.吸水性,最大值(%)	E-1/105+des	≤0.80	0.18-0.35
5.击穿电压,最小值(KV),步进(厚度≥0.50 mm)	D-48/50 D-0.5/23	≥35	38
6.抗弯强度，最小值(N/mm^2) (厚度≥0.50 mm)			
经向	A	≥415	495
纬向	A	≥345	405
7.抗电弧性,最小值，秒	D-48/50 D-0.5/23	≥60	75
8.阻燃性	A	UL94V0	UL94V0
9.可焊性	A	可焊	可焊
10.介电常数,1MHZ 下	A	≤ 5.4	4.7-4.9
11.损耗角正切,1MHZ 下	A	≤0.045	0.020-0.035
12.弯曲和翘曲,最大(%)			
双面（厚度大于 0.78mm；尺寸 300mm×300mm）	A	≤1.0	0.20-0.50
单面（厚度大于 0.78mm；尺寸 300mm×300mm）	A	≤1.5	0.30-0.70
双面（厚度 0.5~0.78 mm；尺寸 300mm×300mm）	A	≤1.5	0.30-0.50
单面（厚度 0.5~0.78 mm；尺寸 300mm×300mm）	A	≤2.0	0.35-0.70
13.热应力,288℃,漂锡 10 秒 未蚀刻试样	A	NO DEFECT	55-80 Sec
14.玻璃化转变温度,TG(DSC，℃)	A	≥125	135
15.适用范围：家电行业、电脑周边产品、普通电子产品。不适用于计量用仪表。			
16.适用线路：最小孔径＞0.3mm，最小孔间距＞0.8mm。			

备注:1、处理方法中字母及数值的含义

A-板材交货阶段

D-恒温水浴 E-高温烘培 数 1/数 2：1-时间(小时) 2-温度(℃) des-干燥 10 分钟以上或干燥状态下冷却至室温。

2、上表所定翘曲度标准仅适用于覆铜箔板交货验收。若以成品 PCB 板作为检验样品，一般要求 PCB 两面布线基本均匀，最大尺寸不大于 12″，且在 140℃热风循环烤箱中，保持承载板水平，烘烤 2 小时，自然冷却至室温的试验测试值为准。

LYNwave

綠億科技股份有限公司

Lynwave Technology Limited

Material BOM List

Customer Name: 正文
Customer P/N: 180-100-1432R
Lynwave P/N.: AOX22X-021010-00

NO	零件料號	零件名稱	供應商	規格描述
1	RP-SMA PLUG	快削黃銅棒	寧波杭橋銅業有限公司	黃銅鍍鎳鍍金(金色)+PTFE(本色)+POM(黑色)
2	PC+PBT	PC/PBT	東莞市宇邦塑膠有限公司	PC+PBT(黑色)+印字(白色)
3	TPEE	TPEE	東莞市宇邦塑膠有限公司	TPEE(黑色)
4	PCB	FR-4	金安國際科技(珠海)有限公司	防焊漆(綠色)
5	RG178 CABLE	RG178	江陽凱博通信科技有限公司	棕色
6	SOLDER	無鉛錫線	深圳市寶達錫業有限公司	銀色
7	ABS	PA-757	奇美實業股份有限公司	ABS(黑色)
8	矽橡膠	ZY-850A	東莞新東方科技有限公司	黑色
9	RG174 CABLE	RG174	江蘇艾力升電纜有限公司	黑色
10	RP-SMA JACK	快削黃銅棒	寧波杭橋銅業有限公司	黃銅鍍鎳鍍金(金色)+PTFE(本色)

ONLINE CERTIFICATIONS DIRECTORY

QMTS2.E330731
Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

For enhanced search functionality, please visit UL's iQ™ Family of Databases.
Click on a product designation for complete information.

Page Bottom

Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

See General Information for Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

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8 QINSHI RD QINSHI INDUSTRIAL PARK
SANZAO TOWN
JINWAN DIST
ZHUHAI, GUANGDONG 519040 CHINA

Industrial laminates:

			Build up		R.T.I.				H		
Mtl Dsg	**ANSI Type**	**Color**	**Min Thk (mm)**	**Flame Class**	**Elec (°C)**	**Mech (°C)**	**HWI**	**HAI**	**VTR**	**CTI**	**Meets 746E DSR**
Industrial laminates, furnished as sheets, rods or tubes.											
GDM-C3, ILM-C3											
	CEM-3	NC (WT)	0.63	V-0	130	140	0	2	4	-	Yes
			1.6	V-0	130	140	0	2	4	3	Yes
GDM-R1, ILM-R1											
	FR-4	NC,YL	0.38	V-0	130	130	0	3	4	-	Yes
			0.63	V-0	130	140	0	3	4	-	Yes
			1.40	V-0	130	140	0	2	4	3	Yes
Industrial laminates.											
GF432	FR-4	NC (YL)	0.38	V-0	130	130	0	0	-	-	Yes
			0.63	V-0	130	140	0	0	-	-	Yes
			1.40	V-0	130	140	0	0	-	3	Yes

Ultrathin build ups:

Build Up					Laminate			Prepreg		
Mtl Dsg	**ANSI Type**	**Min Thk (mm)**	**TI Elec**	**TI Mech**	**Mtl Dsg**	**Thk (mic)**	**TI Elec**	**Mtl Dsg**	**Thk (mic)**	**TI Elec**
Ultrathin industrial laminates and bonding layers, furnished in sheet form, for use in multilayer printed wiring boards where the thickness is built up to the minimum specified.										
GDM-U1, ILM-U1	FR-4	0.38	130	130	GDM-U1, ILM-U1	100	120	GDM-P1, ILM-P1	100	120

		0.63	130	140	GDM-U1, ILM-U1	100	120	GDM-P1, ILM-P1	100	120
GF432	FR-4	0.38	130	130	GF432	155	120	GF432-PP	75	90
		0.63	130	140	GF432	155	120	GF432-PP	75	90

Metal clad industrial laminates:

				Bld up	Clad Cond Thk			Max		Max	Solder Lts	
Metal Clad Dsg	**Lam-inate Dsg**	**Pre-preg Dsg**	**ANSI Type**	**Min Thk (mm)**	**Min Ext (mic)**	**Max Ext (mic)**	**Max Int (mic)**	**Area Dia (mm)**	**Flame Class**	**Oper Temp (°C)**	**Temp (°C)**	**Time (sec)**
Metal clad multilayer package (mass laminate) with internal circuitry and solid copper on outside surfaces, furnished as sheets.												
GDM-ML1, ILM-ML1												
	GDM-U1, ILM-U1	GDM-P1, ILM-P1	FR-4	0.38	17	102	68	50.8	V-0	130	288	20
Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides, furnished as sheets.												
GDM-U1, ILM-U1												
	GDM-U1, ILM-U1	GDM-P1-ILM-P1	FR-4	0.38	17	102	68	50.8	V-0	130	288	20
Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides.												
GF432	GF432	GF432-PP	FR-4	0.38	17	102	68	50.8	V-0	130	288	20
Metal clad industrial laminates for use in single layer printed wiring boards with copper on one or both sides, furnished as sheets.												
GDM-C3, ILM-C3												
	GDM-C3, ILM-C3	-	CEM-3	0.63	17	102	-	12.7	V-0	130	288	10
GDM-R1, ILM-R1												
	GDM-R1, ILM-R1	-	FR-4	0.38	17	102	-	50.8	V-0	130	288	20
Metal clad industrial laminates for use in single layer printed wiring boards with copper on one or both sides.												
GF432	GF432	-	FR-4	0.38	17	102	-	50.8	V-0	130	288	20

Marking: Company name or trademark GDM , ILM and material designation on container or wrapper.
Last Updated on 2013-10-31

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UL Product iQ™

Style 1354 - APPLIANCE WIRING MATERIAL

APPLIANCE WIRING MATERIAL

Subj.758
Section 1
Page 1354

Issued: 1964-02-19
Revised: 2012-04-26

Style 1354 Coaxial Cable.

RATING	60, 80 deg C, 30 Vac, Horizontal flame.
CONDUCTOR	44 AWG min., material not specified.
INSULATION	2 mils minimum at any point, 125 mils maximum. The insulation may be: Extruded solid or cellular PE, FRPE, PP, PFA, FEP, ECTFE, PTFE, ETFE, or combination thereof with or without irradiation; or tape wrapped solid or cellular PTFE, PFA, or FEP. Applied as a spiral wrapped thread (5 mils minimum, 40 mils maximum) and enclosed in a tube of insulation.
ASSEMBLY	Insulated conductor with optional inner covering, optional inner shield, optional middle covering, required outer shield and required outer covering.
SHIELD	Optional. Outer Shield required.
COVERING	

	Optional Inner Covering - Extruded PVC, PFA, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. Optional Middle Covering - Extruded PVC, PFA, PP, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. Required Outer Covering - Extruded Irradiated PE, Irradiated PVC, Polyurethane, PVC, PFA, PP, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PVC, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified.
STANDARD	Appliance Wiring Material UL 758.
MARKING	General.
USE	Internal wiring of Class 2 circuits of electronic equipment or as insulated single in jacketed multiconductor cables.

规　格　书

Specification

系列
Series　RG178（50Ω）

1.结构图/Configuration

2.结构/Construction:

项目/Item		详细资料/Details
①内导体 Inner conductor	材料/Material	镀银铜线 Cu-silver plated
	构成(根/mm)/Composition(No./mm)	7/0.102±0.005
	标称直径/NOM.O.D	0.306±0.02
②绝缘层 Insulation	材料/Material	聚全氟乙丙烯/FEP
	标称外径/NOM.O.D	0.865±0.03
	颜色/Color	Natural
③外导体 Outer conductor	材料/Material	镀锡铜线 Tinned copper
	形式 Type	编织/Weaving
	构成/Composition	16/3/0.1±0.005
	标称直径/NOM.O.D	1.32±0.05
④护套层 Jacket	材料/Material	聚全氟乙丙烯/FEP
	标称外径/NOM.O.D	1.78±0.1
	颜色/Color	按客户要求

3.性能特性 Performance characteristics

项目/Item	单位/Unit	详细资料/Details	
电容/Capacitance	pF/m	98	
特性阻抗/Conductor Resistance	Ω	50±3.0	
耐压强度/Dielectric Strength	A.C V/1min	1000	
最大工作频率/Max.oper. frequency	MHz	6000	
抗拉强度/Tensile strength	kgf/mm²	1.76	
衰减/Attenuation	/	频率/Frequency	dB/1m
		1GHz	≤1.7
		2GHz	≤2.42
		3GHz	≤3.08
		4GHz	≤3.63
		5GHz	≤4.15
		6GHz	≤4.8
驻波比/Standing wave(0-6GHz)	/	≤1.4	

4.机械性能特性 Mechanical characteristics

项目 Item	单位 Unit	详细资料/Details
最小弯曲半径(一次) Min.bending radius static	mm	8
工作温度范围 Operating temperature	℃	-50to200

5.使用提示 Use tips

存储环境 Storage environment	温度：30℃以下；湿度：20%~65%
最佳保存周期 The best save cycle	2 个月，2 个月以上锡效果变差,但电性能不受影响，夏季高温高湿环境开剥后需尽快流转
加工温度 Processing temperature	250℃~260℃的情况下，可短时间承受；300℃以上会出现热分解现象
铁氟龙收缩 Teflon Shrink	绝缘层收缩≦0.2mm；护套层收缩≦0.3mm

6.包装 Packing

标准单位包装长度为 500 米/盘,每盘最多允许 3 个接头,接头最短长度 10 米,在搬运过程中不能损坏包装。

Standard unit for the 500m/reel length of packaging, each set up to allow 3 joints,the joint shortest length of 10m,The finished cable shall be packed not be damaged during transportation。

7.其他 Other

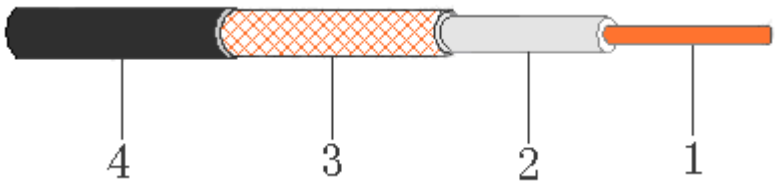
特殊加工工艺，请与供方协商后使用。

Special processing technology, please use after consultation with the supplier。

产品技术数据 Technical data of product

电缆名称Name of cable	实芯聚乙烯绝缘同轴电缆Solid polyethylene insulated coaxial cables		
电缆型号Type of cable	RG174	执行标准Standar	MIL-C-17

一、产品结构图Structure diagram of product



二、产品规格尺寸Size of product

序号No.	项目 Item	结构Structure	材质Material	颜色Color
1	内导体Inner conductor	7/0.16±0.01 mm	裸铜丝Bare copper	黄色Yellow
2	绝缘层Insulation	1.52±0.10mm	聚乙烯PE	白色White
3	编织Wire braid	80*0.10±0.01 mm	裸铜丝Bare copper	黄色Yellow
4	外护层Jacket	2.80±0.10 mm	聚氯乙烯PVC	黑色Black
5	标志Making	RG174 ROHS		

三、产品物理电气性能Electrical physical and properties of product

项目 Item		单位Unit	典型值Value
电容Capacitance		pF/m	100±5
阻抗 Impedance		Ω	50±2
速率Velocity ratio		%	66
弯曲半径 Bent radius		mm	14
最大工作电压 Max voltage		VMS	1500
最大工作频率 Max Frequency		MHz	3000
温度范围 Temperature scope		℃	-20 ~ +80
20℃时**最大衰减** Attenuation constant at 20℃（Max.）	200MHz	dB/100m	39
	400MHz	dB/100m	58
	900MHz	dB/100m	90
	1500MHz	dB/100m	117
	1800MHz	dB/100m	128
	2000MHz	dB/100m	139
	2500MHz	dB/100m	156

CYG长园
长 园 电 子 （集 团）有 限 公 司
CHANGYUAN ELECTRONICS GROUP CO.,L TD
长 园 电 子 （东 莞）有 限 公 司
CHANGYUAN ELECTRONICS (DONGGUAN) CO.,LTD
地址：广东省深圳市南山区科技工业园科技路 30-4 栋 邮编：518057
地址：广东省东莞大朗镇富民工业二园宝陂工业区 邮编：523770
电话：0769-89619666-8068 传真：0769-89388002

材 质 证 明 CERTIFICATE

1 环保材质 CB-HFT 热缩套管成分表（黑色）CB-HFT HEAT-SHRINKABLE TUBING（BLACK）

原料名称 MATERIAL NAME			使 用 目的 USE AIM	含量 content	供应商 RAW MATERIAL MANUFACTURER NAME	CAS No.	产 地 Place of origin
品名 NAME	简称 abbreviation	分子式 molecular formula					
乙烯醋酸乙烯酯共聚物	EVA	$(CH_2-CH_2)_m$ $-(CH_2-CH-COOCH_3)_n$	主剂 MAIN RESIN	≥ 49%	扬巴 BASF-YPC	24937-78-8	南京 NANJING
氢氧化镁	MDH	$Mg(OH)_2$	阻燃剂 FLAME TETARDANT	40%	华昇 HUASHENG	1309-42-8	湖南益阳 YIYANG
红磷	Red Phosphorus	P	阻燃剂 FLAME TETARDANT	5%	宏泰基 HONGTAIJI	7723-14-0	深圳 SHENZHEN
四（3,5-二叔丁基-4-羟基）苯丙酸季戊四醇酯	抗氧剂 1010	$C_{73}H_{108}O_{12}$	抗氧剂 ANTIOXIDANT	1%	盛世达 SHENGSHIDA	6683-19-8	深圳 SHENZHEN
碳黑	pigment	C	着色剂 COLORANT	4%	恒彩 HENGCAI	1333-86-4	东莞 DONGGUAN
油墨	INK	---	印字 INKER	≤1%	信达 XINDA	--	上海 SHANGHAI

2 环保材质 CB-HFT 热收缩套管成分表（彩色管）CB-HFT HEAT-SHRINKABLE TUBING（Multicolor）：

原料名称 MATERIAL NAME			使 用 目的 USE AIM	含量 content	供应商 RAW MATERIAL MANUFACTURER NAME	CAS No.	产地 Place of origin
品名 NAME	简称 abbreviation	分子式 molecular formula					
乙烯醋酸乙烯酯共聚物	EVA	$(CH_2-CH_2)_m$ $-(CH_2-CH-COOCH_3)_n$	主剂 MAIN RESIN	≥49%	扬巴 BASF-YPC	24937-78-8	南京 NANJING
氢氧化铝	ATH	$Al(OH)_3$	阻燃剂 FLAME TETARDANT	30%	华昇 HUASHENG	21645-51-2	湖南益阳 YIYANG
氮系阻燃剂	NM	$N_mH_xO_y$	阻燃剂 FLAME TETARDANT	15%	宏泰基 HONGTAIJI	--	深圳 SHENZHEN
四（3,5-二叔丁基-4-羟基）苯丙酸季戊四醇酯	抗氧剂 1010	$C_{73}H_{108}O_{12}$	抗氧剂 ANTIOXIDANT	1%	盛世达 SHENGSHIDA	6683-19-8	深圳 SHENZHEN
色母	pigment	色粉+EVA+填充剂	着色剂 COLORANT	4%	恒彩 HENGCAI	--	东莞 DONGGUAN
油墨	--	---	印字 INKER	≤1%	信达 XINDA	--	上海 SHANGHAI

长园电子（东莞）有限公司
CHANGYUANELECTRONICS(DONGGUAN)CO.,LTD
2019-04-03

UL Product iQ™

YDPU2.E180908 - Tubing, Extruded Insulating - Component

Tubing, Extruded Insulating - Component

See General Information for Tubing, Extruded Insulating - Component

CHANGYUAN ELECTRONICS GROUP CO LTD
WOER MANSION 101 ZHUKENG COMMUNITY
LONGTIAN STREET
PINGSHAN DISTRICT
SHENZHEN, GUANGDONG 518118 CHINA

E180908

Cat. No.	Max V rms	Max Oper Temp, °C	Color Recognized	Oil-resistance Class[a]	VW-1 Rated[b]
Flexible heat shrinkable radiation cross-linked Polyolefin tubing					
CB-1000	600	125	All except clear	-	Yes
Not-heat-shrinkable PVC tubing					
CB-300	300	105	BK or CL	-	Yes
CB-600	600	105	BK or CL	-	Yes
Flexible heat shrinkable Polyolefin tubing with liner					
CB-DWT, CB-DWT(XY)	600	125	All except clear	-	Yes
Shrinkable Polyolefin - Flexible					
CB-HFT(TM)	600	125	All except clear	-	No
CB-HFT*, CB-HFT(XY)*, CYG-MT*	300	125	All except clear	-	Yes
CB-HFT, CB-HFT(XY), CYG-MT	600	125	All except clear	-	Yes
Not heat-shrinkable silicone					
CB-SRT	600	150	All except clear	-	Yes (ID size 6.5 to 25 mm only)
Not-heat-shrinkable Polytetrafluoroethylene (PTFE) tubing					
CB-TT-L	150	200	All including clear	-	Yes
CB-TT-S	600	200	All including clear	-	Yes

CB-TT-T	300	200	All including clear	-	Yes
Heat Shrinkable FEP (fluorinated ethylene propylene) Tubing					
CYG-FEP-L	150	200	Clear	-	Yes
CYG-FEP-S	600	200	Clear	-	Yes
CYG-FEP-T	300	200	Clear	-	Yes
Flexible heat-shrinkable modified Fluoropolymer tubing					
CYG-KT	600	150	All including CL	-	Yes
CYG-KYNAR	600	150	CL	-	Yes
Shrinkable Polyolefin - Flexible					
CYG-ZHP	600	125	All except clear	-	Yes
CYG-ZHP *	300	125	All except clear	-	Yes

[a] - Tubing is considered to comply with the optional Oil Resistance requirements only if authorized in the above table and marked "Oil Resistant" (or "Oil Res"), followed by the class (01, 02 or 03).

[b] - Tubing is considered to comply with the optional VW-1 flammability requirements only if authorized in the above table and if so marked.

* - Designation is same for 300V and 600V. Tubing shall be marked accordingly.

Marking: Company name or tradename "E180908" or trademark CYGC, KTG, CYE,  , catalog designation, inside diameter (before and after recovery for heat-shrinkable tubing), voltage rating, temperature rating in degrees celsius and date of manufacture (or traceable code) printed on tags attached to both ends of the tubing or printed on the shipping spool label or smallest unit container in which the product is packaged.

Last Updated on 2020-11-11

POLYLAC®
ABS
PA-757

CHIMEI

产品描述	
制造商	奇美实业股份有限公司
材料标示	>ABS<
颜色	本色
UL档案号	E56070
其他证书	REACH
用途	电视机前壳，复印机外壳，电话机壳，化妆品盒，轮胎盖
材料特性	高刚性，高光泽性，中冲击强度
材料形状	颗粒状
加工方式	注射成型

ISO

物理性能	条件	测试标准	数据	单位
比重		ISO 1183	1.05	g/cm³
收缩率	MD	ISO 294-4	0.40	%
收缩率	TD	ISO 294-4	0.70	%
熔融流动指数	220°C / 10Kg	ISO 1133	18	cm³/10min
机械性能	**条件**	**测试标准**	**数据**	**单位**
拉伸强度	屈服，23°C	ISO 527-2	47	MPa
拉伸强度	23°C	ISO 527-2	34	MPa
断裂伸长率	23°C	ISO 527-2	30	%
弯曲强度	23°C	ISO 178	76	MPa
弯曲模量	23°C	ISO 178	2200	MPa
简支梁缺口冲击强度	23°C	ISO 179/1eA	21	kJ/m²
简支梁缺口冲击强度	-30°C	ISO 179/1eA	10	kJ/m²
悬臂梁缺口冲击强度	23°C	ISO 180/1A	19	kJ/m²
悬臂梁缺口冲击强度	-30°C	ISO 180/1A	9	kJ/m²
热性能	**条件**	**测试标准**	**数据**	**单位**
热变形温度	1.80MPa 退火	ISO 75-2/A	98	°C
热变形温度	1.80MPa 未退火	ISO 75-2/Af	83	°C
维卡软化温度	1kg，50°C/hr	ISO 306/A50	104	°C
维卡软化温度	5Kg,50 °C/hr	ISO 306/B50	100	°C
线膨胀系数	MD	ISO 11359-2	8.60E-5	cm/cm/°C
阻燃性	**条件**	**测试标准**	**数据**	**单位**
防火等级	全色	UL-94	HB	1.50mm
防火等级	全色	UL-94	HB	3.00mm

注射成型条件	建议值	单位
干燥温度	60-80	°C
干燥时间	2.0-3.0	hr
建议水份含量	<=0.20	%
料筒后部温度	180-220	°C
料筒中部温度	190-230	°C
料筒前部温度	210-240	°C
喷嘴温度	200-240	°C
模具温度	40-80	°C

东莞市昶博电子材料有限公司

DONGGUAN CHANGBO ELECTRONIC MATERIAL CO.,LTD

承 认 书

CERTIFICATION

客户名称： **Customer Name:**			
产品名称：铁氟龙棒条/车削件 **Products Name: PTFE ROD**			
产品规格：**AWG∮4.0-∮20.0** **Products Size: AWG∮4.0-∮20.0**			
产品型号：**∮4.0-∮20.0(200℃，300V)** **Products Type:**			
客 户 签 名 **CUSTOMER**		公 司 签 名 **CHANGJIE**	
核 准 **Approved by**	签 收 **Sign For**	核 准 **Approved by**	主 办 **Charged by**
		廖琴	蒋旭
日 期 **Date**	日 期 **Date**	日 期 **Date**	日 期 **Date**
		2020.10.16	**2020.10.16**

地址：广东省东莞市石龙镇王屋洲工业区A座

ADD: BUILDING A STANDARD FACTORY WANGWUZHOU INDUSTRIAL AREA SHILONG TOWN DONGGUAN

电话：(0769)81812351/81732180 传真：(0769)81812352/88783177

Tel: (0769)81812351/81732180 Fax: (0769)81812352/88783177

一．特性参数 Specifications

MECHANICAL PROPERTIES	项目	测试值	单位	试验方法
Tensile Strength (Moulding Direction)	*拉伸强度	12~34	Mpa	ASTM D638
Elongation at Break(Moulding Direction)	*伸长度	100以上	%	ASTM D638
Specific gravity	*比重	2.13~2.25	—	ASTM D792
Hardness	*硬度	50~65	Shore D	ASTM D2240
Flexural Yield Strength@0.2% Offset,23℃	弯曲强度	不断	Mpa	ASTM D790
Flexural Modulus@23℃	弯曲模量	350~550	Mpa	ASTM D790
Compressive Strength@0.2%Offset,23℃	压缩强度	7.7~11.8	Mpa	ASTM D695
ELECTRICAL PROPERTIES	项目	测试值	单位	试验方法
Dielectric Strength@Air(Tape)@Oil(Extrusion/Mouding)	绝缘强度	19.2	KV/mm	ASTM D149
Dielectric Constant	介电常数	1.95~2.1	—	ASTM D150
Dissipation Factor@60HZ@10^6 HZ	介质损耗	<0.0002	(60HZ)	ASTM D150
		<0.0002	(10^6 HZ)	
Resistivity@Surface	表面电阻	$>10^{17}$	Ω	ASTM D257
@Volume	体积电阻	$>10^{18}$	ΩCM	
THERMAL PROPERTIES	项目	测试值	单位	试验方法
Point of Fusion DSC	*熔点	327±10	℃	ASTM D4591
Max.Working Temperature	耐热温度	260	℃	—
Thermal Conductivity@Moulding Direction(MD)	导热系数	0.12	W/m.k	ASTM D177
WEAR PROPERTIES	项目	测试值	单位	试验方法
Coefficient of Dynamic Friction	动摩擦系数	0.129	u k	ASTM D1894

三. 铁氟龙棒尺寸规格表（PTFE ROD Size Specifications)

品名	规格	单位	包装方式
铁氟龙棒条	Ø4.0-4.2	米	1米一支
铁氟龙棒条	Ø4.5	米	1米一支
铁氟龙棒条	Ø5.0-5.2	米	1米一支
铁氟龙棒条	Ø5.5	米	1米一支
铁氟龙棒条	Ø6.0-6.2	米	1米一支
铁氟龙棒条	Ø7.0-7.2	米	1米一支
铁氟龙棒条	Ø8.0-8.2	米	1米一支
铁氟龙棒条	Ø9.0-9.2	米	1米一支
铁氟龙棒条	Ø10.0-10.2	米	1米一支
铁氟龙棒条	Ø11.0-11.2	米	1米一支
铁氟龙棒条	Ø12.0-12.2	米	1米一支
铁氟龙棒条	Ø13.0-13.2	米	1米一支
铁氟龙棒条	Ø14.0-14.2	米	1米一支
铁氟龙棒条	Ø15.0-15.2	米	1米一支
铁氟龙棒条	Ø16.0-16.2	米	1米一支
铁氟龙棒条	Ø17.0-17.2	米	1米一支
铁氟龙棒条	Ø18.0-18.2	米	1米一支
铁氟龙棒条	Ø19.0-19.2	米	1米一支
铁氟龙棒条	Ø20.0-20.2	米	1米一支

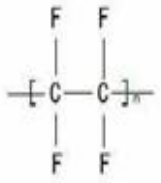
材 质 成 份 证 明 表

MATERIAL FORMULATION of CONFIDENTIAL REPORT

公司名称 Supplier	东莞市昶博电子材料有限公司
住　　址 Address	东莞市石龙镇王屋洲工业区 A 座
电　　话 Telephone	0769-81732181/81732183
物品名称 Name of Product	铁氟龙棒
材质名称 Type of Mterial	Teflon PTFE
规　　格 Specification	**¢4.0-¢20.0**
密度 Density	2.1-2.3
阻燃等级 Flame retardant grade	VW-1
原物料供货商 The supplier of raw material	东岳

复合材料成分表

Chemical Composition of Compound

项次 No.	组成 Chemical Composition	分子式 Molecular Formula	CAS/CE 号码 CAS/CE Number	含量（%） Content（%）
	碳+氟+		9004-84-0	100%
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ONLINE CERTIFICATIONS DIRECTORY

QMFZ2.E252343
Plastics - Component

For enhanced search functionality, please visit UL's iQ™ Family of Databases.
Click on a product designation for complete information.

Page Bottom

Plastics - Component

See General Information for Plastics - Component

DAIKIN FLUOROCHEMICALS (CHINA) CO LTD E252343
CHANGSHU INTERNATIONAL
CHEMICAL INDUSTRIAL PARK
HAIYU TOWN
CHANGSHU, JIANGSU 215522 CHINA

									H	D	
		Min.		H	H	RTI			V	4	C
		Thk	Flame	W	A	Elec	Mech		T	9	T
Material Dsg	Color	mm	Class	I	I		Imp	Str	R	5	I
Polytetrafluoroethylene (PTFE), furnished as pellets.											
F-208H	NC	0.81	V-0	-	-	180	180	180	-	-	-
		1.6-1.76	V-0	-	-	180	180	180			
M-139	NC	0.81	V-0	-	-	180	180	180	-	-	-
		1.40-1.54	V-0	-	-	180	180	180			
Polytetrafluoroethylene (PTFE), furnished as powder.											
F-201	NC	0.81	V-0	-	-	180	180	180	-	-	-
		1.6	V-0	-	-	180	180	180			
M-18	NC	0.81	V-0	-	-	180	180	180	-	-	-
		1.6	V-0	-	-	180	180	180			
M-18F	NC	0.81	V-0	-	-	180	180	180	-	-	-
		1.6	V-0	-	-	180	180	180			
RMS574	NC	0.81	V-0	-	-	180	180	180	-	-	-
		1.6	V-0	-	-	180	180	180			
Polytetrafluoroethylene (PTFE).											
F-104	NC	0.81-1.8	V-0	-	-	180	180	180	-	-	-
F-108	NC	0.81-1.8	V-0	-	-	180	180	180	-	-	-
F-208	NC	0.81-1.8	V-0	-	-	180	180	180	-	-	-
F-303	NC	0.81-1.8	V-0	-	-	180	180	180	-	-	-

Marking: Company name and material designation on container, wrapper or finished part.
Last Updated on 2015-07-30