FN-LINK TECHNOLOGY Ltd.

Acknowledgment Letter

CUSTOMER APPROVED BY		
Approved by	Checked by	Prepared by
SUPPLIER APPROVED BY		
Approved by	Checked by	Prepared by

Supplier Name: FN-LINK TECHNOLOGY Ltd.

Supplier Address: Office Address: 14th Floor, Block B, Phoenix Zhigu, No.50 Tiezai Road, Gongle Community, Xixiang Street, Baoan District, Shenzhen, China 518000

Supplier Factory: Factory address:No.8, Litong Road, Liuyang Economic & Technical Development Zone, Changsha, Hunan, China 41032

Phone number:86-755-2955-8186
website:www.fn-link.com

複製禁止

天线测试报告

antenna testing

Customer	Ruiyunlian
Project Name	C456
Customer NO.	
specification	FPC antenna black and dark grey with white characters; 40X18.5MM; wire length 230MM, wire diameter 1.13mm; with 1st generation IPEX. ROHS
Supplier NO.	0233010062
Specification NO.	
Write by	Wei Yuanji
REV.	Ver.1
Date	2025-8-5
Note	

複製禁止

Version change log				
Change date	Change content	version	Change person	Approved by

複製禁止

1. Recognition Letter Project Table (Index)

Number	content	Page number
–	Acknowledgment Letter Cover	one
–	Antenna test report	two
–	Version change record	three
one	Confirmation Letter Project Table	four
two	Test equipment and conditions	five
three	Prototype structure specification	six
four	Finished antenna diagram	seven
five	S11	eight
six	Gain/Efficiency/3D Graph	nine -ten
seven	packing	eleven

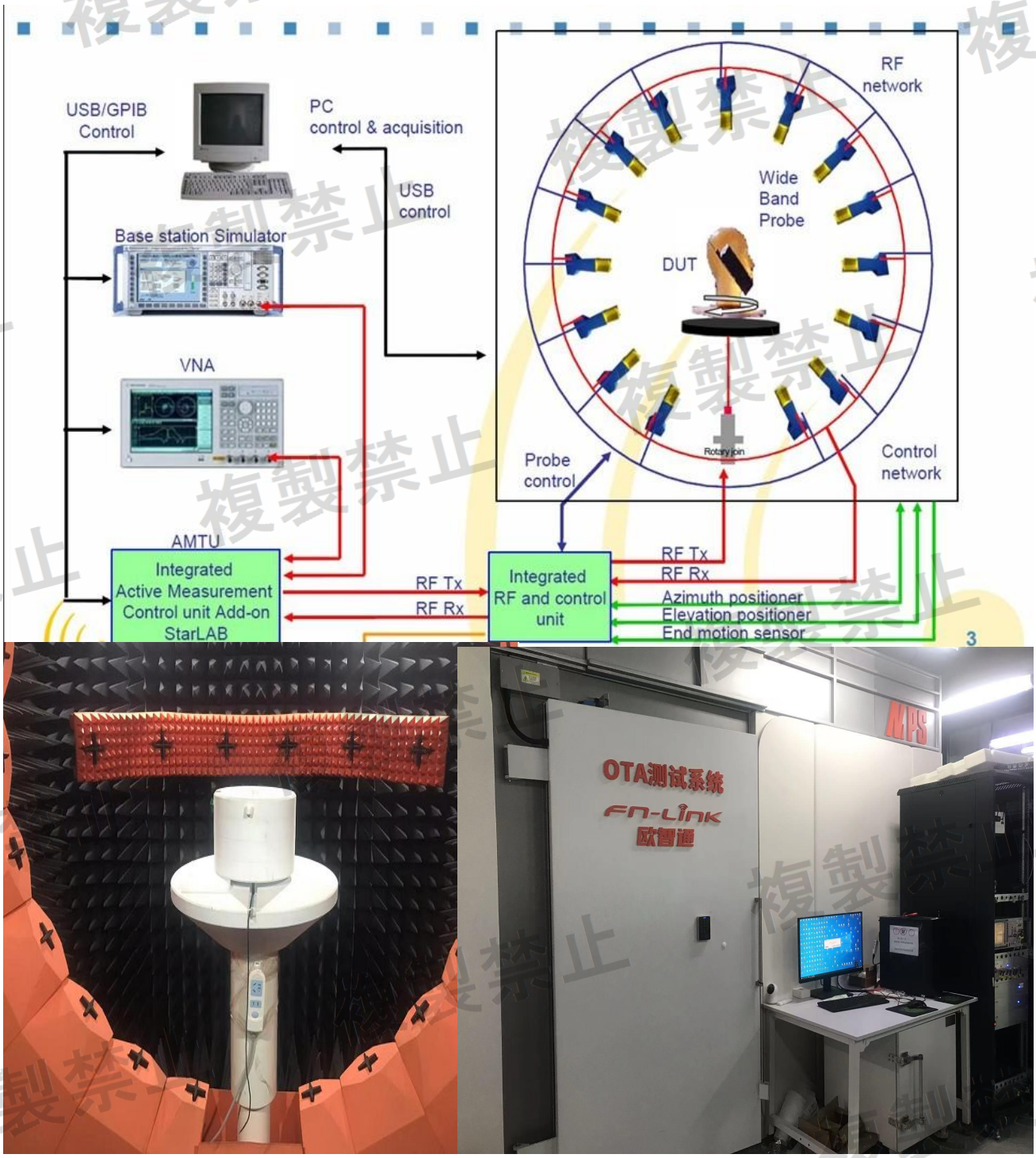
1. 试验设备和条件(Test Equipment & Conditions)

1.1 . Network Analyzers：KEYSIGHT P5002A

1.2 . Communications Test Set: R&S CMW 500

1.3 . 3D Chamber Test System: 24探头测试系统

1. 微波暗室的测试原理图



2. 说明。

这份报告总结了该项目天线的电气性能结果，包括天线的S11 参数,Gain和Efficiency.

产品实物图片 Product picture

複製禁止

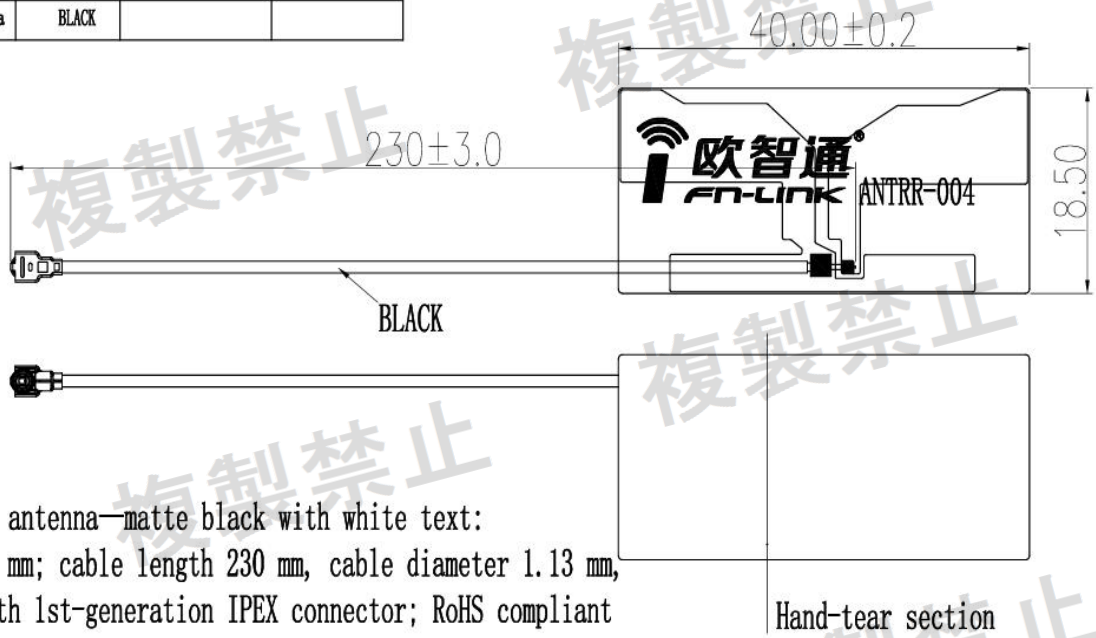
规格表Specification

A.Electrical Properties	
Frequency Rang频段范围	2.4~2.5G**Hz**5.15~5.85GHz
Impedance特性阻抗	**50Ω Nominal**
VSWR电压驻波比	2.0 Max.（带机壳）
VSWR电压驻波比	4.0 4.5（自由空间下）
Gain(peak)增益（峰值）	2.4~2.5G**Hz**(3.83) 5.15~5.85GHz (3.49)
Out of roundness不圆度	3.0 dBi（**Max.**）
Radiation辐射方式	**Omni-Directional/**全向
Polarization极化方式	**Linear Vertical/**垂直
B.Physical Properties	
ConnectorType连接方式	IPEX一代
Cable线材	OD:1.13mm
Antenna Body天线本体	FPC 电解铜
C.Environmental	
Operating Temp工作环境	-40℃~+65℃
Storage Temp存储环境	-40℃~+65℃

複製禁止

Finished antenna diagram

Product Name	Color	Dimensions	Notes
1.CABLE	BLACK	Φ1.13 X 230	
2.WIFI Antenna	BLACK		



Note: FPC antenna—matte black with white text:
40 x 18.5 mm; cable length 230 mm, cable diameter 1.13 mm,
black: with 1st-generation IPEX connector; RoHS compliant

欧智通科技股份有限公司 FN-LINK TECHNOLOGY Ltd.

0~10	±0.10	○	0.02
10~20	±0.12	◎	ø0.03
20~40	±0.15	⊥	0.02
40~50	±0.20	▱	0.04
		⌓	0.02

Location

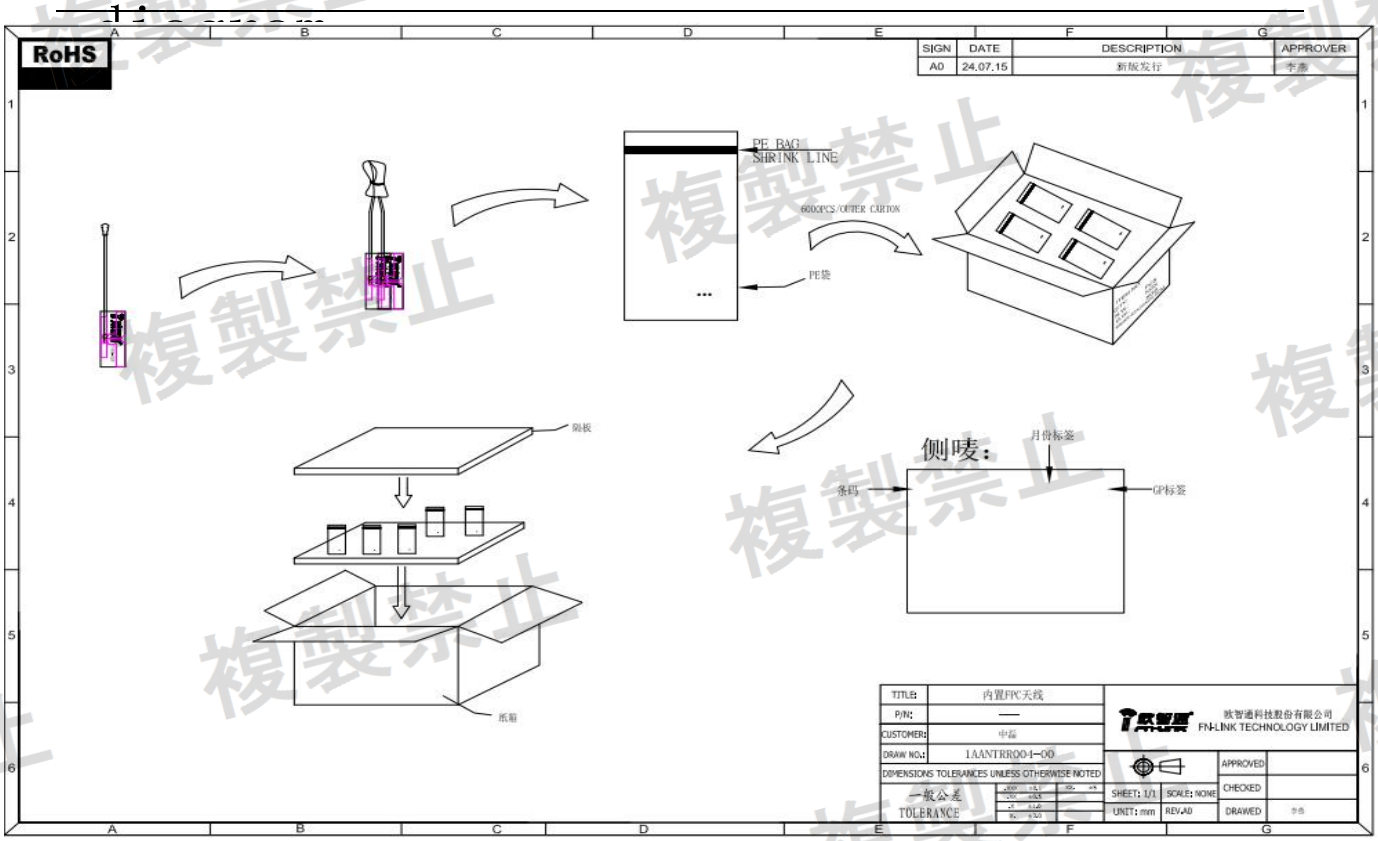
Product Name C456 BLACK
Part Number 0233010062
Material
Surface treatment

DATE 2025/07/31
DESIGN
Review ME RF
Confirm
unit mm ratio FIT Version R:A

DATE	Edit Content	Version	Notes	Revision

複製禁止

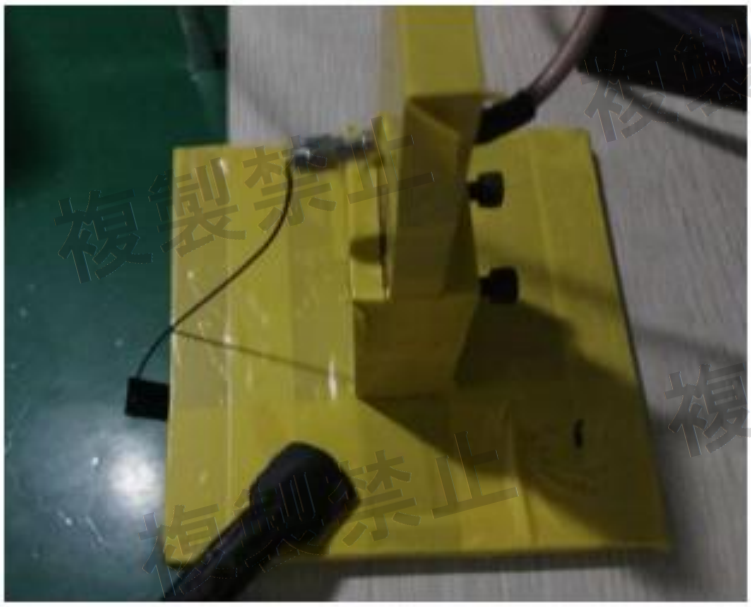
Antenna packaging diagram



4. 自由空间下天线测试数据（VSWR）：

（供客户进料检查用）

自由空间下天线测试图片：

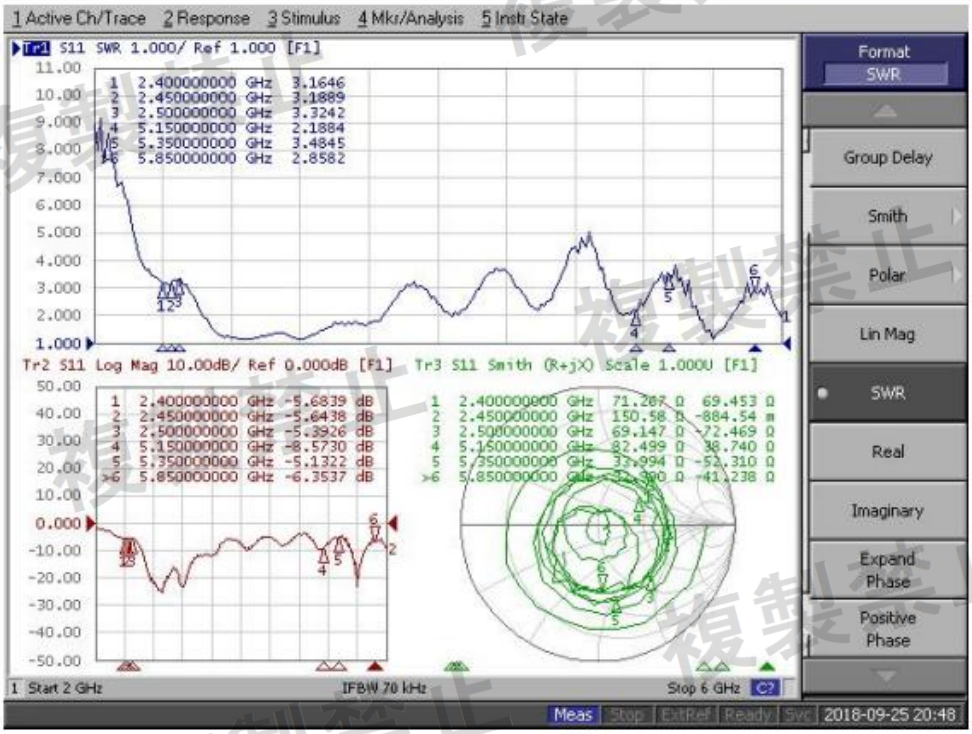


自由空间下天线测试标准（VSWR）：

VSWR 电压驻波比	4.0 Max.@2.4~2.5GHz

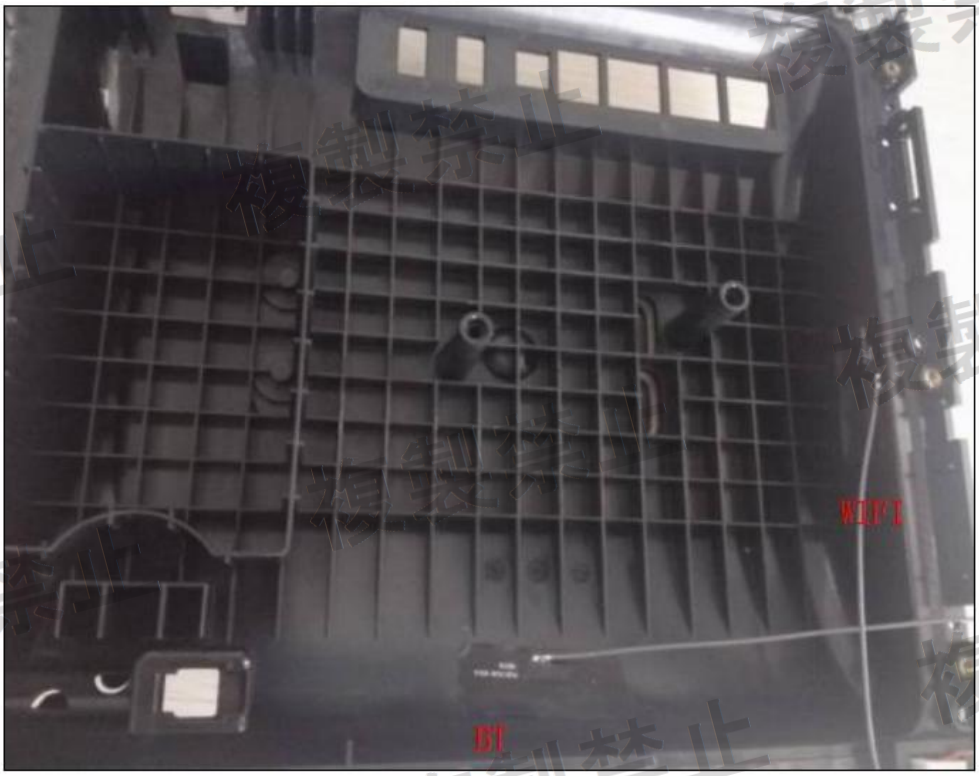
	4.5 Max.@5.15~5.85GHz

自 由空间下天线样品测试结果（VSWR）：



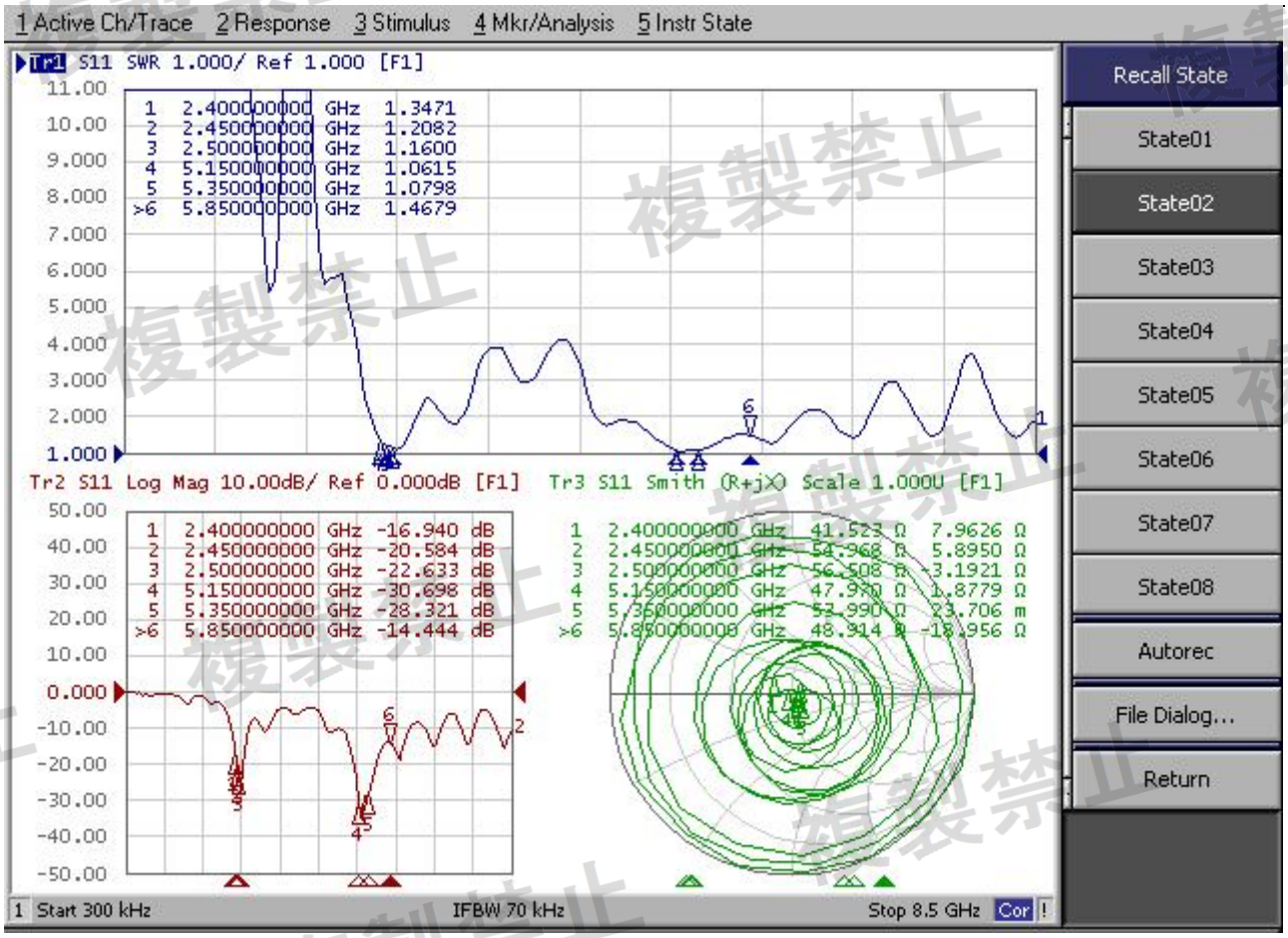
5. 电性测试报告 Electrical Test Report

天线实物与粘贴位置：



複製禁止

WIFI2.4-5G天线S11(Black antenna S11)

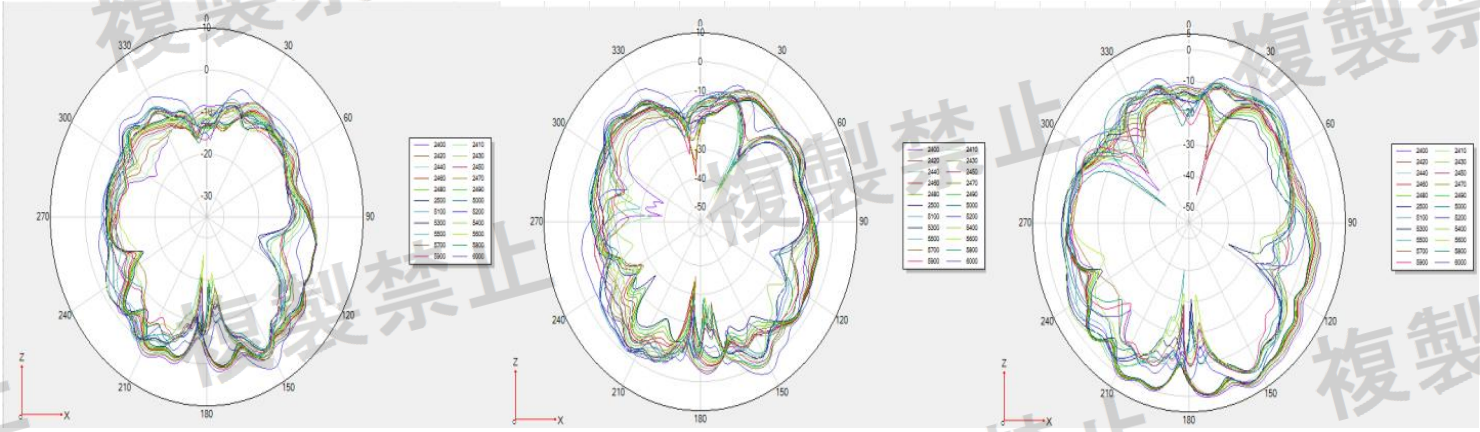


WIFI天线2.4-5G数据

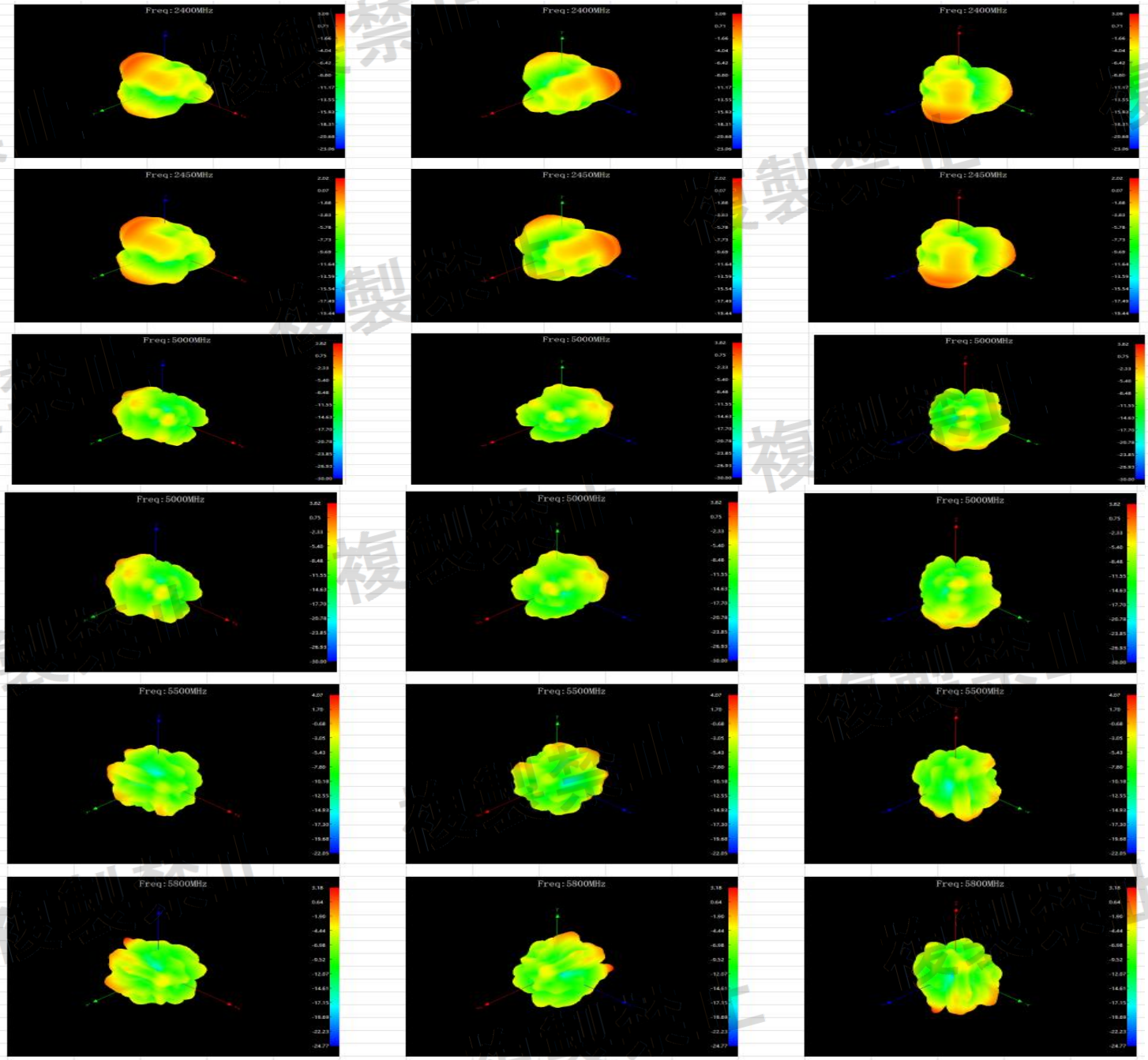
Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	3.09	59.26
2410	2.52	61.4
2420	2.37	64.16
2430	2.02	66.13
2440	2.12	68.19
2450	2.02	67.97
2460	2.13	66.67
2470	2.17	65.81
2480	2.13	64.87
2490	2.1	63.25
2500	3.82	61.11
5000	2.99	59.44
5100	3.44	60.55
5200	2.87	60.48
5300	3.49	61.5
5400	3.42	62.66
5500	3.07	64.57
5600	2.77	63.35
5700	3.44	58.99
5800	3.18	58.87

複製禁止

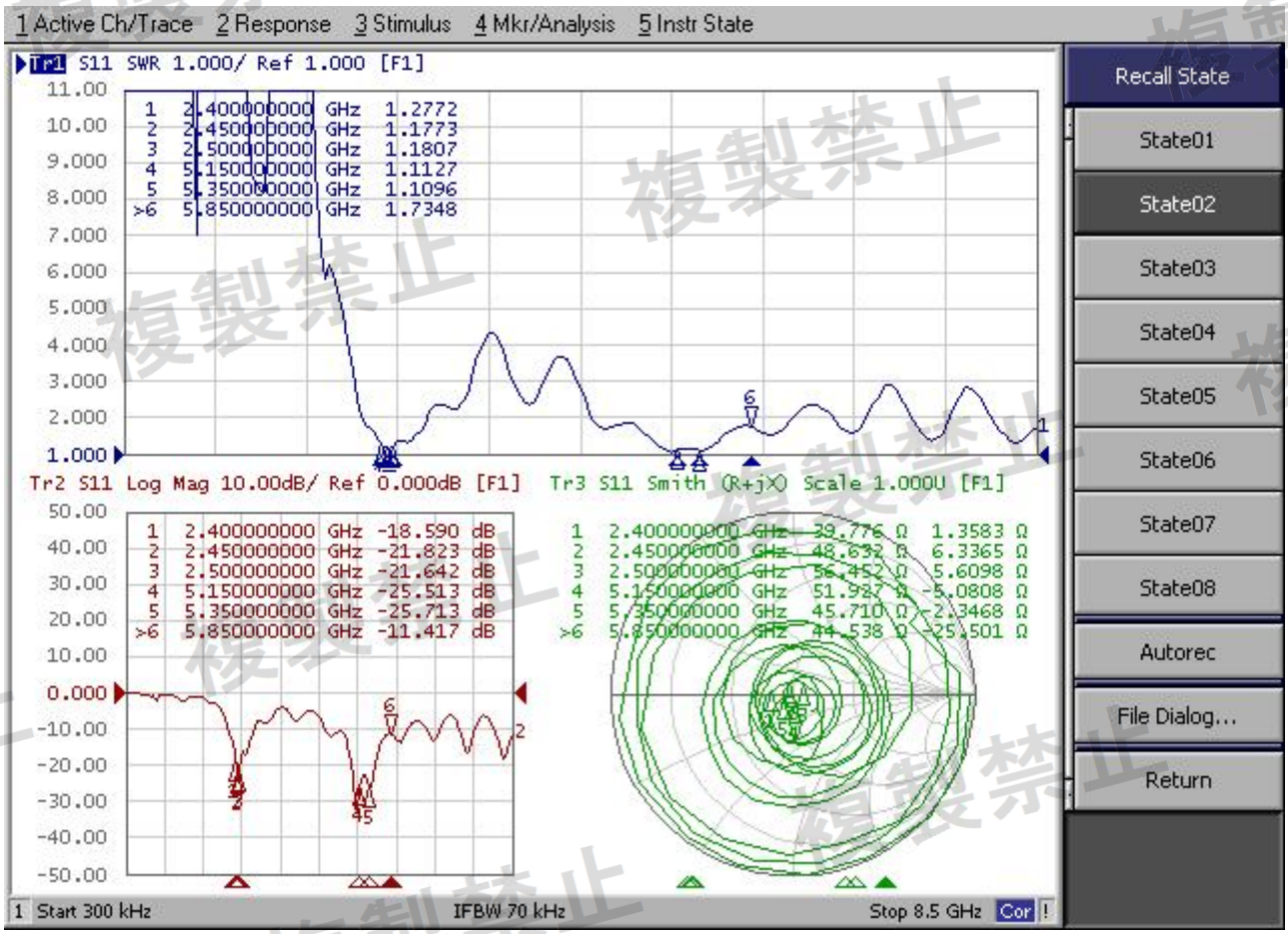
WIFI2.4-5G天线苹果图方向图
(Black antenna)3DPattern@2400-2500MHz 5150-5850MHz



Z-X　　Z-Y　　X-Y



BT2.4-5G天线S11(Black antenna S11)



环境与可靠性实验Environmental and reliability experiment

Test Items 测试项目	Test Condition and Procedure测试方法	Requirements要求	Test equipment 试验设备
Vibration震动	GB / T2423.48-2008Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz3 directions; 2 hours for each direction振幅1.5mm；频率20~80~20Hz；3个方向各2H	1. No Visual Damage2. Frequency Tol.≤5%无明显外观不良;频率偏移≤5%	NA
Random Drop跌落	GB / T2423.8-1995Single：Height: 1.0 Meter; 3 directions; 1 time for each direction 单支天线，高1m；3个方向各1次	1. No parts separated、fracture2. Frequency Tol.≤5%产品无脱落、断裂;频率偏移≤5%	NA
	Packing：Height: 0.76 Meter; 1 corner, 3 edges, 6 surface包装：高0.76m，一角、三棱、六面各一次		
	Antenna+Machine:Height: 0.76 Meter; 1 corner, 3 edges, 6 surface.整机：高0.76m，一角、三棱、六面各一次		
Solderability可焊性	GB / T2423.28-2005Temp: 260±5°C;Duration: 5 seconds 温度260±5°C;持续5秒	Tin evenly on full上锡均匀饱满	NA
Pull Test拉力	Holding with individual specification; force applied to axis of terminal .单独定义产品端子拉力	1. Directive DUT specification2. Frequency Tol.≤5%符合待测物规范;频率偏移≤5%	拉力计
Torque Test扭力	Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal单独定义产品端子之顺时针及逆时针扭力	1. Directive DUT specification2. Frequency Tol.≤ 5%符合待测物规范;频率偏移≤5%	扭力计
Salt Spray 盐雾	GB / T 2423.17-2008Temp: 35°C; RH: ≥ 95%; NaCl solution: ≥ 5%;Time: 8H温度35°C;湿度≥95%;盐水浓度≥5%；测试48H	1. No Visual Damage2. Frequency Tol.≤5%无明显外观不良;频率偏移≤5%	盐雾试验机
Temperature and Humidity Chamber恒温恒湿	GB / T 2423.3-2006Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H温度80°C测试12H转-40°C测试12H；湿度≥ 90%；时间24H	After 2 Hours Recovery1. No Visual Damage2. Frequency Tol.≤5%恢复2H后，无明显外观不良;频率偏移≤5%	恒温恒湿试验机

複製禁止

Temperature and Humidity Chamber恒温恒湿	GB / T 2423.3-2006Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H温度80°C测试12H转-40°C测试12H；湿度≥ 90%；时间24H	After 2 Hours Recovery1. No Visual Damage2. Frequency Tol.≤5%恢复2H后，无明显外观不良；频率偏移≤5%	恒温恒湿试验机
Thermal Shock冷热冲击	GB / T 2423.22 - 2008- 40°C (30 minutes) to + 80°C (30 minutes)；Cycles: 24- 40°C测试30分转80°C测试30分为一个周期；共24周期	After 2 Hours Recovery1. No Visual Damage2. Frequency Tol.≤5%恢复2H后，无明显外观不良；频率偏移≤5%	冷热冲击试验机
Aging test 老化	GB /T 2423.2 - 2008Temp: 80°C; Time: 24 hours温度50°C，测试8H	After 2 Hours Recovery1. No Visual Damage2. Frequency Tol.≤5%恢复2H后，无明显外观不良；频率偏移≤5%	老化试验机

複製禁止

盐雾试验报告

客户/供应商		试验时间	2021.11.28~2021.11.30
品名规格	内置FPC天线	料 号	
试验报告: ■新产品开发试验 □设计变更试验 □量产追踪试验 □其他特殊需求试验 参考标准：ASTMG85-98，ASTMB117-97，GB/T10125-1997,GB/T9798-1997.		设备名称: 盐务实验试验机 试验条件:1、5%浓度盐水 2、实验箱温度45℃ 3、压力桶温度47℃ 4、时间：48H	
试验判定标准:	试验后外观有无影响		

一.试验结果：

料号	规格	数量	开始日期	结束日期	不良数	判定
	内置FPC天线(FPC+CABLE+IPEX)	2PCS	2021.11.28	2021.11.30	0	OK

二.结果描述与判定:

1.经48小时测试后，无氧化、生锈等现象。

判定： ■合格□不合格

备注：

複製禁止

高低温试验报告

客户	欧智通	试验时间	2021.11.26~2021.11.28
品名	FPC天线	料号	1A185XX2G4-00

试验报告: ■新产品开发试验 □设计变更试验

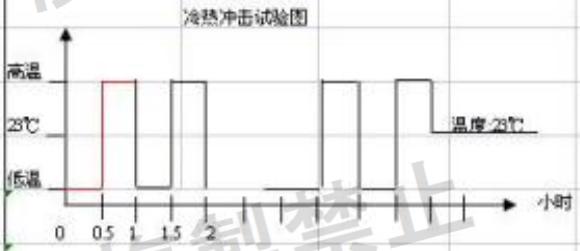
□量产追踪试验 □其他特殊需求试验

设备名称: 冷热冲击试验机

试验条件: 高温: 70 ℃、低温: -40 ℃

相对湿度为95%RH

试验时间: 48 Hrs、48 循环



注:* *表示一个cycle曲线

试验判定标准: 试验后外观及功能测试无影响
泡棉双面胶是否脱落塑胶壳及天线

试验前图片	试验后图片

一.试验结果:

料号	规格	数量	开始日期	结束日期	不良数	判定
1A185XX2G4-00	FPC天线 1.13黑色镀锡线L=185mm 2.4/5G WIFI天线 带IPEX扣 ROHS	2PCS	2021.11.26	2021.11.28	0	OK

二.结果描述与判定:

1.经48小时测试后，外观及功能测试均OK。

2.泡棉双面胶无脱落现象。

判定OK!

核准:DRAGON 审核:JOHN 制表:张超超

複製禁止

送检数量		5PCS	合格数量		5PCS			
检验项目		检验标准及说明	检验结果					判定
			No.1	No.2	No.3	No.4	No.5	
外观	FPC	无脏污、无破损，无刮伤	OK	OK	OK	OK	OK	■OK □NG
	CABLE	对比无色差、无脏污、无破损，无刮伤	OK	OK	OK	OK	OK	■OK □NG
	IPEX	对比无脏污、无破损，无刮伤	OK	OK	OK	OK	OK	■OK □NG
	焊锡	饱满，光滑	OK	OK	OK	OK	OK	■OK □NG
主要尺寸	1	185±5mm	185	185	185	185	185	■OK □NG
	2	40±0.3mm	40.21	40.21	40.22	40.23	40.21	■OK □NG
	3	18.5±0.2mm	18.56	18.57	18.56	18.58	18.55	■OK □NG
电气及功能测试	Frequency Rang	2.4~2.5GHz5.15~5.85GHz						
	VSWR	<5.0	pass	pass	pass	pass	pass	■OK □NG
机械性能	Cable与IPEX拉力	大于1.5kg	1.73	1.68	1.72	1.65	1.78	■OK □NG
备注								
最终判定		■ 合格						

複製禁止

零件规格&材质证明Part spec.&Material certificate

1. 适用范围:

Scope

本规格书制定了 50Ω FEP 绝缘射频电缆 YD113 系列的结构和电气特性.

This specification covers the construction and the electrical properties of YD113 series of 50Ω FEP Insulation Coaxial Cable.

2. 结构/Construction: 单位/Unit:mm

项目/Item		详细资料/Details
导体/Conductor	材料/Material	镀锡铜线/Tinned Copper Wire
	构成(根/mm) Composition(No./mm)	7/0.083
	标称直径/NOM.O.D	0. 24±0.03
绝缘层 /Insulation	材料/Material	聚全氟乙丙烯(自然色) /FEP(Natural)
	标称绝缘厚度/Nom.Thick. (mm)	0.23
	标称外径/NOM.O.D	0.695±0.03
屏蔽层/Shield	材料/Material	镀锡铜线/Tinned annealed copper wire
	构成/Composition	0.05单线编织/Single Braid of 0.05
护套/Jacket	材料/Material	聚全氟乙丙烯/FEP
	标称护套厚度/ Nom.Thick (mm)	0.10
	标称外径/Nom.O.D (mm)	1.13±0.05
	颜色/Color	按与客户确认的颜色/According to corresponding have approved by the suppliers and customers

3. 电气特性(20℃时)/Electrical Properties(at 20℃)

项目/Item	单位/Unit	详细资料/Details
导体电阻/Conductor Resistance	Ω/km	Max. 560
绝缘电阻/Insulation Resistance	MΩ. km	Min. 200
耐压强度/Dielectric Strength	V(AC)/min	1000
静电容/Capacitance	pF/m	98
特性阻抗/Characteristic Impedance	Ω	50±2.0

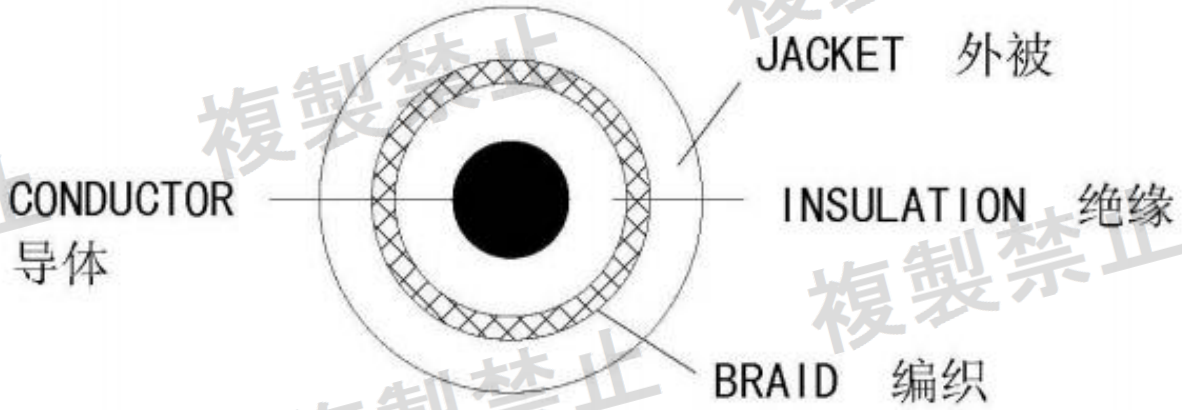
複製禁止

衰减/Attenuation	dB/m	1GHz	2.20
		2GHz	3.15
		3GHz	3.90
		4GHz	4.60
		5GHz	5.20
		6GHz	5.70
驻波比/Standing wave(0-6GHz)	/	≤1.35	

4. 包装 Packing

标准单位包装长度为 1000 米/盘，每盘最多允许 5 个接头，接头最短长度 20 米，在搬运过程中不能损坏包装.

Standard unit length of finished cable shall be 1000m on reel, frequency of joint max.5/reel, the mini length is 20m. The finished cable shall be packed not be damaged during transportation



****

本产品有时不适合车载用途的情况也有,所以使用前请先和本公司业务部门进行商谈.

This product is not suitable for automobile application in some cases.Please contact with our sales department before you use this product.

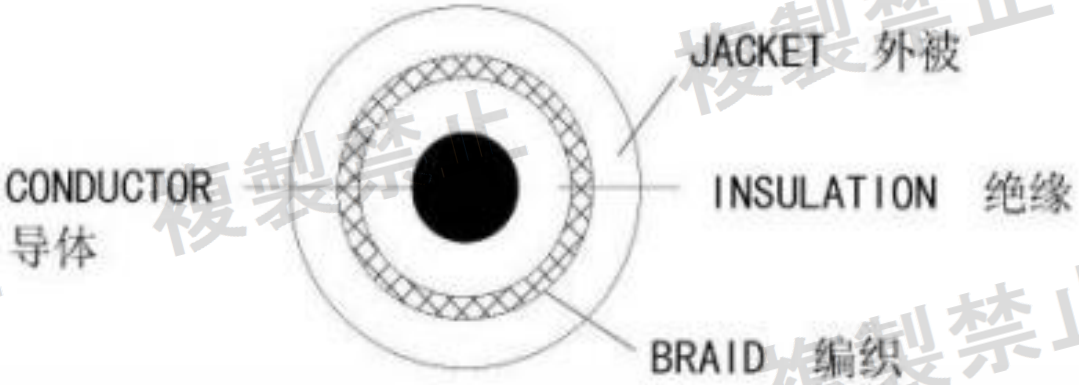
****

衰减/Attenuation	dB/m	1GHz	2.20
		2GHz	3.15
		3GHz	3.90
		4GHz	4.60
		5GHz	5.20
		6GHz	5.70
驻波比/Standing wave(0-6GHz)	/	≤1.35	

4. 包装 Packing

标准单位包装长度为 1000 米/盘，每盘最多允许 5 个接头，接头最短长度 20 米，在搬运过程中不能损坏包装.

Standard unit length of finished cable shall be 1000m on reel, frequency of joint max.5/reel, the mini length is 20m. The finished cable shall be packed not be damaged during transportation



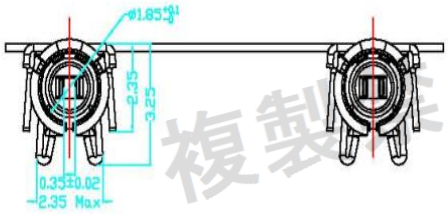
****

本产品有时不适合车载用途的情况也有,所以使用前请先和本公司业务部门进行商谈.

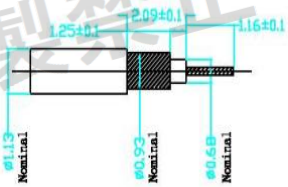
This product is not suitable for automobile application in some cases.Please contact with our sales department before you use this product.

****

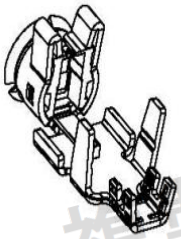
複製禁止

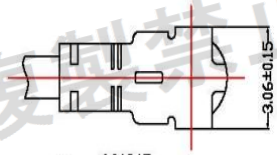


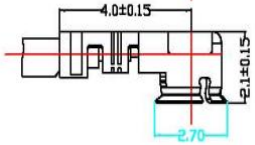
Mark Position

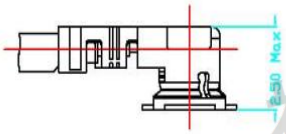


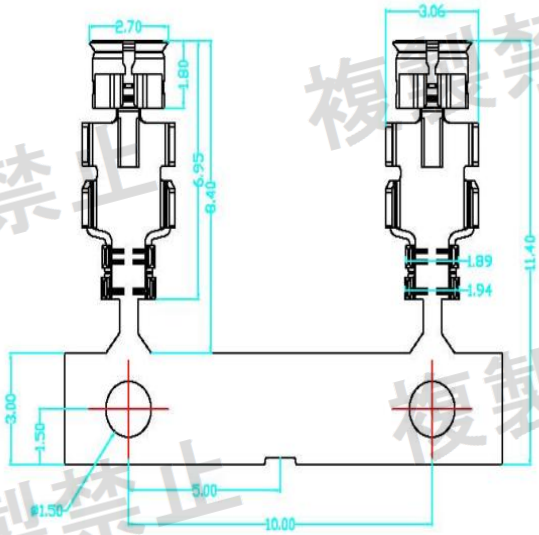
Applicable Cable Nominal Dimension

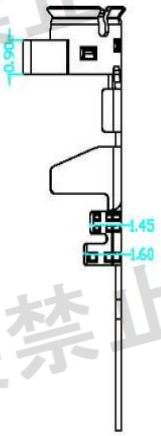












NOTE:

1. MATERIAL:
   Housing:THERMOPLASTIC, Color:Black, UL 94V-0
   Contact:Copper Alloy, T=0.1MM
   0.127~0.20um Gold Plating on Contact area Over Nickel Plated;
   Shell:Copper Alloy, T=0.2mm
   0.0508~0.127um Gold Plating on Contact area Over Nickel Plated;
2. PRODUCT PERFORMANCE:
   Termination Resistance:20MΩ Max
   Dielectric Withstanding Voltage:200V AC, 1 Minute
   Insulation Resistance:500MΩ Min
   DurabilitY:30 Cycles Min

複製禁止

coaxial cable UL certificate

CERTIFICATE OF COMPLIANCE

Certificate Number E513658
Report Reference E513658-20200508
Issue Date 2020-MAY-01

Issued to: Fujian WBT Communication Technology Co Ltd
Nangang Industrial Zone, Shanghang County
Longyan Fujian 364200 CHINA

This certificate confirms that representative samples of COMPONENT - APPLIANCE WIRING MATERIAL SINGLE-CONDUCTOR THERMOPLASTIC-INSULATED WIRE STYLES 10007, 10050, 10064, 11863

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: UL 758 Standard for Appliance Wiring Material
Additional Information: See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This Certificate of Compliance does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Page 1 of 1

複製禁止

10. 3M 背膠 UL certificate

UL Product iQ™

QOQW2.MH17478 - POLYMERIC ADHESIVE SYSTEMS, ELECTRICAL EQUIPMENT - COMPONENT

Polymeric Adhesive Systems, Electrical Equipment - Component

See General Information for Polymeric Adhesive Systems, Electrical Equipment - Component

3M COMPANY INDUSTRIAL ADHESIVES & TAPES DIV
3M CENTER
BLDG 230-3G-07
SAINT PAUL, MN 55144-1001 USA

MH17478

Product Dsg	Surface [+]	Min Temp (°C)	Max Temp (°C)	Indoor Use	Outdoor Use
3M ™ Electrical Insulating Polyester Film Tape					
1350FB-1, 1350FW-1	Aluminum	0	60	Yes	-
	Galvanized steel	0	60	Yes	-
	Polycarbonate	0	60	Yes	-
3M™ Adhesive Transfer Tapes with 3M™ Adhesive 100HT					
9082	Epoxy Glass Laminate (G-10, G-11, FR-4, FR-5)	-35	120	Yes	Yes
	Inorganic Flame Barrier sheet (FRB-NT, FRB-WT)	-35	120	Yes	Yes
	Polyester powder paint	-35	120	Yes	Yes
	Inorganic Flame Barrier sheet (FRB-BK)	-35	110	Yes	Yes
	Solder Mask	-35	110	Yes	Yes
3M™ Adhesive Transfer Tapes with 3M™ Adhesive 100MP					
9437, 9460PC, F-9460PC, 9473PC, F-9473PC, 9469PC, 9469FL, F-9469PC					
	Aluminum	-35	110	Yes	Yes

複製禁止

	Ceramic	-35	110	Yes	Yes
	Enameled steel	-35	110	Yes	Yes
	Epoxy Glass Laminate (FR-4, G-10)	-35	110	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	110	Yes	Yes
	Stainless steel	-35	110	Yes	Yes
	Acrylonitrile butadiene styrene	-35	90	Yes	Yes
	Galvanized steel	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Rigid Polyvinyl chloride	-35	75	Yes	Yes
9469PC, F-9469PC	Nickel plated iron	-35	110	Yes	Yes
3M™ Adhesive Transfer Tapes with 3M™ Adhesive 200MP					
467MP, 467MPF, 467MPL, 468MP, 468MPF, 468MPL, 7952MP, 7952MPL, 7955MP, 7955MPL, 7962MP, 7962MPL, 7965MP, 9172MP, 9172PT, 9185MP, 9667MP, 9668MP, 9679MP					
	Acrylic/Urethane coated Polycarbonate	-35	85	Yes	Yes
	Polycarbonate	-35	85	Yes	Yes
	Polyvinyl chloride	-35	75	Yes	Yes
467MP, 467MPF, 467MPL, 7952MP, 7952MPL, 7962MP, 7962MPL, 9172MP, 9172PT, 9667MP, 9679MP					
	Epoxy Glass Laminate (FR-4, FR-5, G-10, G-11)	-35	100	Yes	Yes
	Inorgainc Flame Barrier Sheet	-35	100	Yes	Yes
	Polyester powder paint	-35	100	Yes	Yes
	Solder Mask	-35	100	Yes	Yes
	TGIC Powder Coat	-35	100	Yes	Yes
	Aluminum	-35	85	Yes	Yes
	Aluminum coated Steel	-35	85	Yes	Yes
	Galvanized steel	-35	85	Yes	Yes
	PET film	-35	85	Yes	Yes
	PPE+PS	-35	85	Yes	Yes
	Stainless steel	-35	85	Yes	Yes

複製禁止

468MP, 468MPF, 7965MP, 9185MP, 9668MP, 9668MPL	Acrylic paint	-35	60	Yes	Yes
	Polyester paint	-35	60	Yes	Yes
	Urethane paint	-35	60	Yes	Yes
3M™ Adhesive Transfer Tapes with 3M™ Adhesive 300LSE					
8132LE, 9471LE, 9671LE	Polycarbonate	-35	80	Yes	Yes
	Polyester powder paint	-35	80	Yes	Yes
8153LE	Acrylic paint	-35	60	Yes	Yes
	Polyester paint	-35	60	Yes	Yes
	Urethane paint	-35	60	Yes	Yes
3M™ Adhesive Transfer Tapes with 3M™ Adhesive 300MP					
7951, 9772WL, 9773WL, 9774WL, 9775WL, 9784	Polyethylene terephthalate	-35	85	Yes	Yes
	Acrylic powder coating	-35	80	Yes	Yes
	Acrylonitrile butadiene styrene	-35	80	Yes	Yes
	Epoxy powder coating	-35	80	Yes	Yes
	Polyester-Epoxy hybrid powder coating	-35	80	Yes	Yes
	Polyvinyl chloride	-35	80	Yes	Yes
	Stainless steel	-35	80	Yes	Yes
	TGIC Polyester powder coating	-35	80	Yes	Yes
	Urethane polyester powder coating	-35	80	Yes	Yes
3M™ Adhesive Transfer Tapes with 3M™ Adhesive 350					
926, 9442, 9445, 9482PC, 9485EK, 9485PC, 9675	Aluminum	-35	90	Yes	Yes
	Ceramic	-35	90	Yes	Yes
	Enameled steel	-35	90	Yes	Yes
	Epoxy Glass Laminate (FR-4, G-10)	-35	90	Yes	Yes

	Galvanized steel	-35	90	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Rigid Polyvinyl chloride	-35	75	Yes	Yes
3M™ Double Coated Polyethylene Foam Tapes					
4492B, 4492W, 4496B, 4496W	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Aluminum	-35	75	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	75	Yes	Yes
	Polyamide	-35	75	Yes	Yes
	Polyvinyl chloride	-35	75	Yes	Yes
	Stainless steel	-35	75	Yes	Yes
	Steel	-35	75	Yes	Yes
3M™ Double Coated Tapes with 3M™ Adhesive 200MP					
7945MP, 7953MP, 7956MP, 7956MWS, 7956WDL, 7957MP, 7959MP, 7961MP, 9045MP, 9056MP, 9057MP, 9057MPW, 9059MP, 9061MP, EAD217					
	Acrylic/Urethane coated Polycarbonate	-35	85	Yes	Yes
	Aluminum	-35	85	Yes	Yes
	Aluminum coated steel	-35	85	Yes	Yes
	Galvanized steel	-35	85	Yes	Yes
	Polycarbonate	-35	85	Yes	Yes
	Stainless steel	-35	85	Yes	Yes
	Polyvinyl chloride	-35	75	Yes	Yes
7966MWS, 7966WDL	Acrylic/Urethane coated Polycarbonate	-35	85	Yes	Yes
	Polycarbonate	-35	85	Yes	Yes
	Polyvinyl chloride	-35	75	Yes	Yes
3M™ Double Coated Tapes with 3M™ Adhesive 300LSE					

複製禁止

93004LE, 93005LE, 93010LE, 93015LE, 93020LE	Aluminum	-35	75	Yes	Yes
	Aluminum (flexible) to Stainless steel (rigid)	-35	75	Yes	Yes
	Polypropylene (flexible) to Polyvinyl chloride (rigid)	-35	75	Yes	Yes
	Stainless steel	-35	75	Yes	Yes
	Polypropylene	-35	60	Yes	Yes
	Polyvinyl chloride	-35	60	Yes	Yes
93020LE	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Polycarbonate	-35	75	Yes	Yes
	Polyester	-35	75	Yes	Yes
3M™ Scotch-Weld™ Two-Part Acrylic Adhesive					
DP8407NS	Aluminum	-35	90	Yes	Yes
	Cold rolled steel	-35	90	Yes	Yes
	Copper	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
DP8805NS, DP8810NS green, DP8810NS gray, DP8825NS, DP8405NS, DP8410NS, DP8425NS					
	Aluminum	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
3M™ Scotch-Weld™ Two-Part Acrylic Adhesives					
DP810 (a), DP810 Black (a)	Acrylonitrile butadiene styrene	-35	60	Yes	Yes
	Aluminum	-35	60	Yes	Yes
	Magnesium	-35	60	Yes	Yes
	Polycarbonate	-35	60	Yes	Yes
	Stainless steel	-35	60	Yes	Yes
3M™ Solar Acrylic Foam Tape					
2204(b), 2304(b)	Aluminum	-35	120	Yes	Yes
	Galvanized steel	-35	120	Yes	Yes

	Glass	-35	120	Yes	Yes
3230	Acrylic/Polyurethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
4063, 4080, 4110	Acrylic	-35	90	Yes	Yes
4063, 4080, 4110, 4155	Acrylic/Polyurethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Coated Polycarbonate ((Polycarbonate coating limited to 3M Tape Primer 94 or 3M Adhesion Promoter 4298UV))	-35	90	Yes	Yes
	Enameled Steel	-35	90	Yes	Yes
	Epoxy Polyester paint	-35	90	Yes	Yes
	Epoxy paint	-35	90	Yes	Yes
	Galvanized steel	-35	90	Yes	Yes
	Glass Epoxy	-35	90	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
	Polyphenylene ether	-35	90	Yes	Yes
	Silane coated Glass	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
	Uncoated Glass	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Rigid Polyvinyl Chloride	-35	75	Yes	Yes
4110	Cellulose acetate butyrate	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
4155	Polycarbonate	-35	90	Yes	Yes
	Acrylic	-35	80	Yes	Yes

6050	Acylic / Polyurethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
FB80, FB80LW, 2080, 4433E, 4434E	Aluminum	-35	90	Yes	Yes
	Brass	-35	90	Yes	Yes
	Copper	-35	90	Yes	Yes
	Glass	-35	90	Yes	Yes
	Nickel	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
3M™ Solar Acrylic Foam Tapes					
2063, 2110, 2155	Aluminum	-35	110	Yes	Yes
	Epoxy Glasss Laminate (FR-4)	-35	110	Yes	Yes
	Galvanized steel	-35	110	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	110	Yes	Yes
	Stainless steel	-35	110	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Rigid Polyvinyl Chloride	-35	75	Yes	Yes
3M™ Thermally Conductive Adhesive Transfer Tapes					
8805, 8810, 8815	Anodized aluminum	-35	100	Yes	Yes
	Epoxy Glass Laminate (FR-4, G-10)	-35	100	Yes	Yes
9882, 9885, 9890	Epoxy Glass Laminate (FR-4, G-10)	-35	110	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
3M™ VHB Tapes					
5915, 5915P, 5915WF, 5925, 5925P, 5925WF, 5930, 5930P, 5930WF, 5952, 5952P, 5952WF					

	Acrylic	-35	90	Yes	Yes
5915, 5915P, 5915WF, 5952, 5952P, 5952WF, 5962, 5962P, 5962WF					
	Polycarbonate	-35	90	Yes	Yes
3M™ VHB™ Tapes					
4611, 4646, 4655	Aluminum	-35	110	Yes	Yes
	Epoxy Glass Laminate (FR-4)	-35	110	Yes	Yes
	Galvanized steel	-35	110	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	110	Yes	Yes
	Stainless steel	-35	110	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Rigid polyvinyl chloride	-35	75	Yes	Yes
4615	Aluminum	-35	110	Yes	Yes
	Enameled steel	-35	110	Yes	Yes
	Epoxy Glass Laminate (FR-4, G-10)	-35	110	Yes	Yes
	Galvanized steel	-35	110	Yes	Yes
	Stainless steel	-35	110	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Polyvinyl chloride	-35	75	Yes	Yes
4905, 4910	Acrylic/Polyurethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
4912 (b), 4912F (b), 4955 (b), 4955F (b), 4959 (b), 4959F (b)					
	Aluminum	-35	120	Yes	Yes
	Galvanized steel	-35	120	Yes	Yes
	Glass	-35	120	Yes	Yes

4914, 4920, 4930, 4950	Aluminum	-35	110	Yes	Yes
	Ceramic	-35	110	Yes	Yes
	Enameled steel	-35	110	Yes	Yes
	Epoxy Glass Laminate (FR-4, G-10)	-35	110	Yes	Yes
	Galvanized steel	-35	110	Yes	Yes
	Stainless steel	-35	110	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Polycarbonate	-35	75	Yes	Yes
	Rigid Polyvinyl chloride	-35	75	Yes	Yes
4919F, 4919P, 4926, 4936, 4936F, 4941, 4941F, 4956, 4956F, 4979, 4979F, 4946, 4947F, 4947P					
	Ceramic	-35	110	Yes	Yes
	Acrylic/Urethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Enameled steel	-35	90	Yes	Yes
	Galvanized steel	-35	90	Yes	Yes
	Glass (with and without silane coating)	-35	90	Yes	Yes
	Glass/Epoxy (Grade G-10, FR-4)	-35	90	Yes	Yes
	Nickel coated ABS	-35	90	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
	Rigid Polyvinyl Chloride (PVC)	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
4920, 4930, 4950	Acrylic	-35	90	Yes	Yes
4922	Aluminum	-35	110	Yes	Yes
	Enameled steel	-35	110	Yes	Yes

	Galvanized steel	-35	110	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	110	Yes	Yes
	Acrylonitrile butadiene styrene	-35	90	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Unplasticized polyvinyl chloride	-35	75	Yes	Yes
4945	Aluminum	-35	110	Yes	Yes
	Enameled steel	-35	110	Yes	Yes
	Galvanized steel	-35	110	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	110	Yes	Yes
	Acrylic/Polyurethane paint	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	90	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
	Unplasticized polyvinyl chloride	-35	75	Yes	Yes
4991	Acrylic/Polyurethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Polycarbonate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
5915, 5915P, 5915WF, 5925, 5925P, 5925WF, 5930, 5930P, 5930WF, 5952, 5952P, 5952WF, 5962, 5962P, 5962WF					
	Acrylic/Polyurethane paint	-35	90	Yes	Yes
	Aluminum	-35	90	Yes	Yes
	Coated Polycarbonate (Polycarbonate coating limited to 3M Tape Primer 94 or 3M Adhesion Promoter 4298UV.)	-35	90	Yes	Yes
	Enameled steel	-35	90	Yes	Yes
	Epoxy paint	-35	90	Yes	Yes

	Epoxy/Polyester paint	-35	90	Yes	Yes
	Galvanized steel	-35	90	Yes	Yes
	Glass epoxy	-35	90	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
	Polyphenylene ether	-35	90	Yes	Yes
	Silane coated glass	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes
	Uncoated glass	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Rigid polyvinyl chloride	-35	75	Yes	Yes
5952, 5952P, 5952WF	Cellulose acetate butyrate	-35	90	Yes	Yes
5962, 5962P, 5962WF	Acrylic	-35	80	Yes	Yes
RP16, RP16F	Aluminum	-35	90	Yes	Yes
	Silane coated glass	-35	90	Yes	Yes
RP16, RP16F, RP25, RP25F, RP32, RP32F, RP45, RP45F, RP62, RP62F					
	Acrylic urethane paint	-35	90	Yes	Yes
	Coated epoxy paint (Coating is 3M Adhesive Promoter 111.)	-35	90	Yes	Yes
	Coated polyester paint (Coating is 3M Adhesive Promoter 111.)	-35	90	Yes	Yes
	Enameled steel	-35	90	Yes	Yes
	Epoxy paint	-35	90	Yes	Yes
	Epoxy/Polyester paint	-35	90	Yes	Yes
	Galvanized steel	-35	90	Yes	Yes
	Glass Epoxy	-35	90	Yes	Yes
	Nylon - Polyamide	-35	90	Yes	Yes
	Phenolic - Phenol Formaldehyde	-35	90	Yes	Yes
	Polybutylene terephthalate	-35	90	Yes	Yes

	Polycarbonate	-35	90	Yes	Yes
	Polyester paint	-35	90	Yes	Yes
	Polyphenylene ether/Polystyrene blend	-35	90	Yes	Yes
	Acrylonitrile butadiene styrene	-35	75	Yes	Yes
	Polyvinyl chloride	-35	75	Yes	Yes
RP62, RP62F	Acrylic	-35	90	Yes	Yes
	Glass	-35	90	Yes	Yes
	Stainless steel	-35	90	Yes	Yes

[+] - The adhesive systems may be used for securement of any combination of the surfaces listed with that system.The lowest maximum temperature of the individual surface applies to the combination.

(a) - Cured Adhesive thickness 0.003" to 0.010".

(b) - Substrates can be used with or without primer(s)/Coating. 3M Silane Coating, 3M Adhesion Promoter 4298UV and 3M Tape Primer 94 are used with glass substrate. 3M Primer AP111, 3M Adhesion Promoter 4298UV and 3M Tape Primer 94 are used with aluminum and galvanized steel substrates.

Marking: Company name and model designation on the product or on the smallest unit container in which the product is packaged.

Last Updated on 2019-07-12

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from UL" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "© 2020 UL LLC"

11. 3M 背膠 Datasheet

Technical Data **September, 1999**

Product Description:

- 3M™ High-strength Acrylic Adhesive 300LSE provides very high bond strength to most surfaces.
- Excellent bond to low surface energy plastics, such as polypropylene and powder coatings.
- Excellent adhesion to lightly oiled surfaces typical of machine parts.
- Thickness range of 2.0 mils, 3.5 mils and 5.0 mils for use on smooth, rough and textured surfaces.
- Extremely smooth adhesive for excellent graphics appearance.
- Polycoated kraft liner for die-cutting end tabs and waste removed nameplates on a common carrier.

Product Construction:

Product	Adhesive 9453LE	Adhesive 9471LE	Adhesive 9472LE
Adhesive: (Solvent Free)	3.5 mils (88 microns) 3M High-strength Acrylic Adhesive 300LSE	2.0 mils (51 microns) 3M High-strength Acrylic Adhesive 300LSE	5.0 mils (127 microns) 3M High-strength Acrylic Adhesive 300LSE
Liner:	4.0 mils (100 microns) 58# Polycoated kraft	4.0 mils (100 microns) 58# Polycoated kraft	4.0 mils (100 microns) 58# Polycoated kraft

複製禁止

欧智通 FN-LINK

Laminating Adhesives

9453LE • 9471LE • 9472LE

Typical Physical Properties and Performance Characteristics:

Typical Adhesion Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Peel Adhesion - ounces/inch (Newtons/100 mm) ASTM D3330, modified: 90° peel, 2 mil aluminum backing.

Typical Adhesion Chart

	3M™ Laminating Adhesive	15 Minute Room Temperature Oz./In.	15 Minute Room Temperature N/100 mm	72 Hour Room Temperature Oz./In.	72 Hour Room Temperature N/100 mm
Stainless Steel	9453LE	90	98	100	109
	9471LE	71	78	75	82
	9472LE	109	119	140	153
ABS	9453LE	80	88	113	124
	9471LE	70	77	79	86
	9472LE	102	112	128	140
Polypropylene	9453LE	89	97	103	113
	9471LE	69	75	74	81
	9472LE	115	126	136	149

The properties defined are based on the attachment of impervious faceplate materials (such as aluminum) to a stainless steel test surface.

Bond Build-up: The bond strength of 3M™ High-strength Acrylic Adhesive 300LSE increased as a function of time and temperature, and has very high initial adhesion.

Humidity Resistance: High humidity has minimal effect on adhesive performance. No significant reduction in bond strength is observed after exposure for 7 days at 90°F (32°C) and 90% relative humidity.

U.V. Resistance: When properly applied, nameplates and decorative trim parts are not adversely affected by exposure.

Water Resistance: Immersion in water has no appreciable effect on the bond strength. After 100 hours at room temperature, the high bond strength is maintained.

Temperature Cycling Resistance: High bond strength is maintained after cycling four times through:

4 hours at 158°F (70°C)
4 hours at -20°F (-29°C)
4 hours at 73°F (22°C)

Chemical Resistance: When properly applied, nameplate and decorative trim parts will hold securely after exposure to numerous chemicals including oil, mild acids and alkalis.

Temperature Resistance: The 3M high-strength acrylic adhesive 300LSE is usable for short periods (minutes, hours) at room temperatures up to 300°F (148°C) and for intermittent longer periods of time (days, weeks) up to 200°F (93°C).

Lower Service Temperature: -40°F (-40°C).

Shelf Life: Product retains its performance and properties for two years from date of manufacture if properly stored at room temperature conditions of 72°F (22°C) and 50% relative humidity. Storage in plastic bag is recommended.

複製禁止

欧智通 FN-LINK

Laminating Adhesives

9453LE • 9471LE • 9472LE

Available Sizes:

Width and Length (subject to minimum order requirements):	
Limitations:	1/2 in. to 63/64 in.: Maximum 180 yards 1 in. to 54 in.: Maximum 360 yards
Minimum Slit Width:	1/2 in.
Maximum Slit Width:	54 in.
Normal Slitting Tolerance:	± 1/32 in.
Core	3.0 in.

Application Techniques:

For maximum bond strength, the surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane or isopropyl alcohol. Carefully read and follow manufacturer's precautions and directions for use when using cleaning solvents.

Bond strength can also be improved with firm application pressure and moderate heat, from 100°F (38°C) to 130°F (54°C), causing the adhesive to develop intimate contact with the bonding surface.

Ideal tape application temperature range is 70°F to 100°F (21°C to 38°C). Initial tape application to surfaces at temperatures below 50°F (10°C) is not recommended for most pressure-sensitive adhesives because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

General Information:

- Plastic nameplates or graphic overlays for use on low surface energy plastics.
- Waste removed nameplates on a common sheet for ease of application.
- Attaching membrane switch assemblies to powder coated surfaces and low surface energy plastics.
- Graphic overlays with end tabs for easy liner removal.
- Graphic application to surfaces such as wood, fabric, plastic, where very high bond strength is required.
- Attaching identification material to lightly oily surfaces typical of machine parts.

Application Ideas:

Processing:

Slitting and die-cutting: This adhesive is very aggressive and may be difficult to convert depending on your application requirements. Chilling the adhesive between 35°F and 50°F will improve the processability. In addition, dies can be lubricated with Laminoleum evaporative stamping oil, which is available from Metal Lubricants Company (708-333-8900), or with Lubri-Blade 907 from Ceramic Technologies Inc. (800-258-8495). You may also refer to our Technical Bulletin on 300LSE converting.

Roll Laminating: A combination of metal and rubber rollers with moderate pressure is recommended.

Note: Please refer to the **3M Slitting/Die-cutting Technical Bulletin** for further details.

FN-LINK TECHNOLOGY LIMITED

Laminating Adhesives

9453LE • 9471LE • 9472LE

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550. Address correspondence to: 3M Bonding Systems Division, 3M Center, Building 220-7E-01, St. Paul, MN 55144-1000. Our fax number is 612-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-809-750-3000. In Mexico, phone: 5-728-2180.

Important Notice

3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Limitation of Remedies and Liability

If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.

ISO 9002

This Bonding Systems Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

Recycled Paper
40% pre-consumer
10% post-consumer

FN-LINK TECHNOLOGY LIMITED