



零件规格承认书

Approval Specification

正式 /条件

长虹物料名称: Part Name: R-射频天线/R-RF Antenna

长虹 R3 代码: R3 Code: 850292352

长虹图号: Part Number: TX-DM200BD113Y63M

发行日期 Issued Date: 2022-9-08

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核准 Approval by		撰写 repared by
刘都	刘都	符凤妹

长 虹 确 认

品质管理项目组 Quality Project Management Tea	广东技术研究所 Guangdong Institute of Technology		
会签 Signature	核 准 Approval by	审 查 Check by	承 认 Prepared by

地址: 深圳市宝安区航城街道三围社区三围航空路 30 号 A 栋409 423 425-426

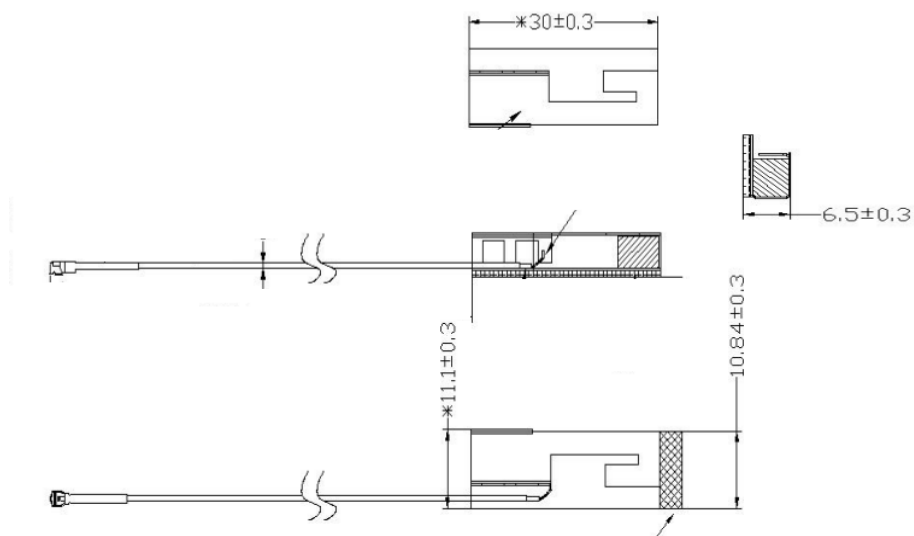
Address: 409, 423, 425-426, Building A, No. 30, Sanwei Aviation Road, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen City

联系电话: 0755-23731203

Tel.: 0755-237312

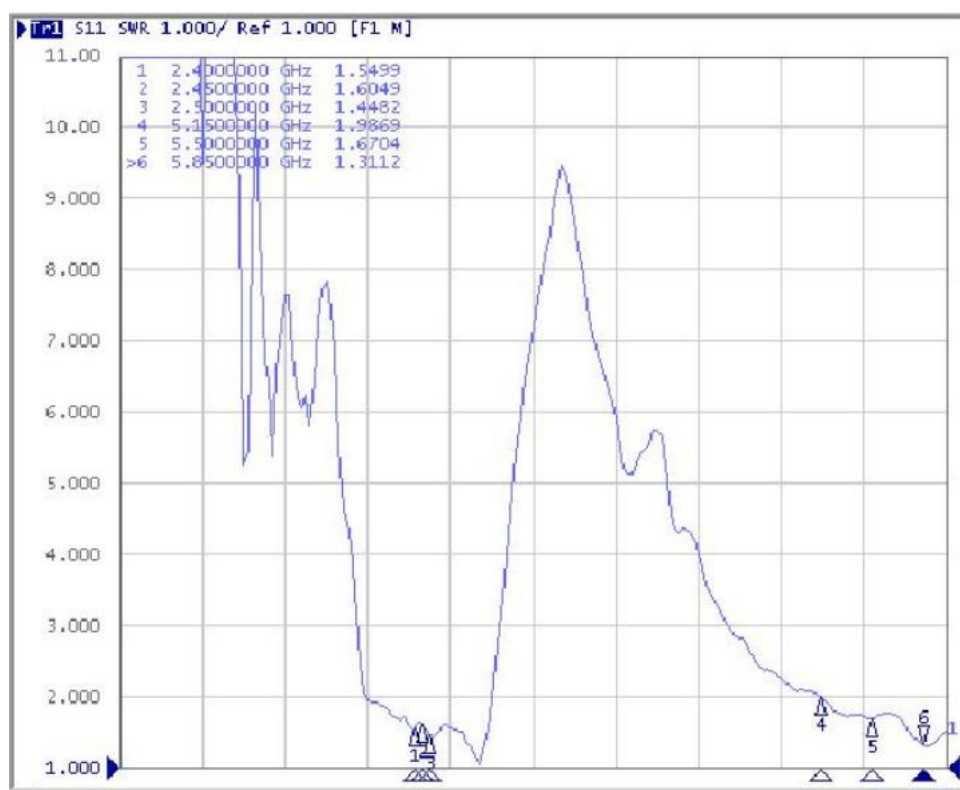
2 产品规格

无源电性能指标 Passive Electrical Specifications	
频率范围 Frequency Range (MHz)	2400-2500MHz, 5150-5850MHz
输入阻抗 Input Impedence (Ω)	50 Ω
电压驻波比 VSWR	≤ 2.0
增益 Gain (dBi)	≤ 4.0 dBi
极化形式 Polarization Type	线性 Linear
机械指标 Mechanical Specifications	
天线尺寸 Antenna Size (mm)	30 \times 11 \times 6.5
外壳 Casing	不锈钢 304 镀镍
馈线长度 Cable Length (mm)	200
连接器型号 Connect Type	一代端
工作温度 Working Temperature ($^{\circ}$ C)	-40 ~ +85
颜色 Radome Color	镀镍色



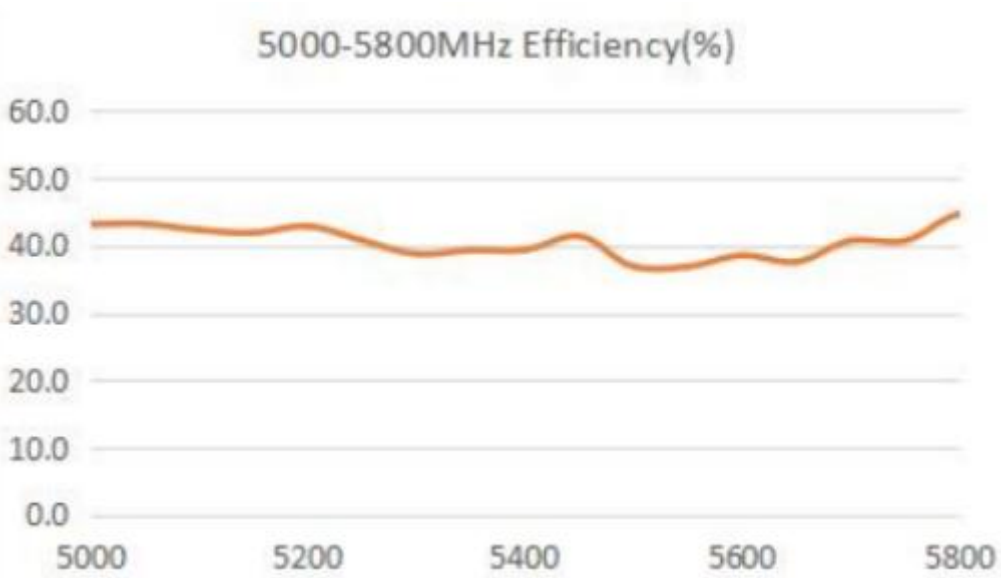
3 测试数据

3.1 驻波比



Frequency (MHz)	2400	2450	2500	5150	5500	5850
VSWR	1.54	1.6	1.44	1.98	1.67	1.31

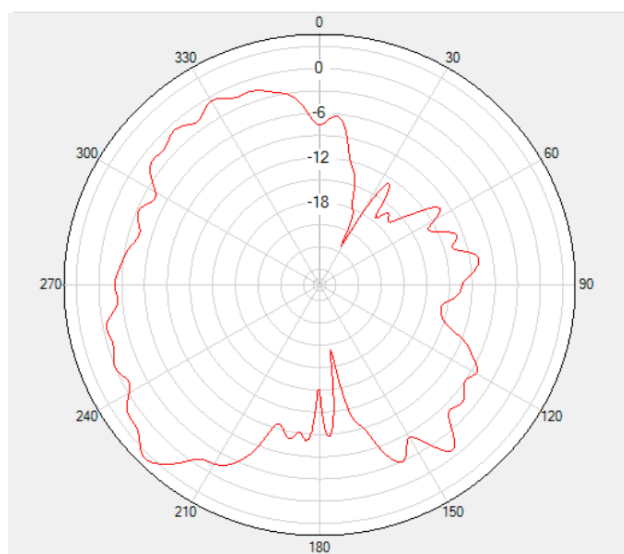
3.2 效率



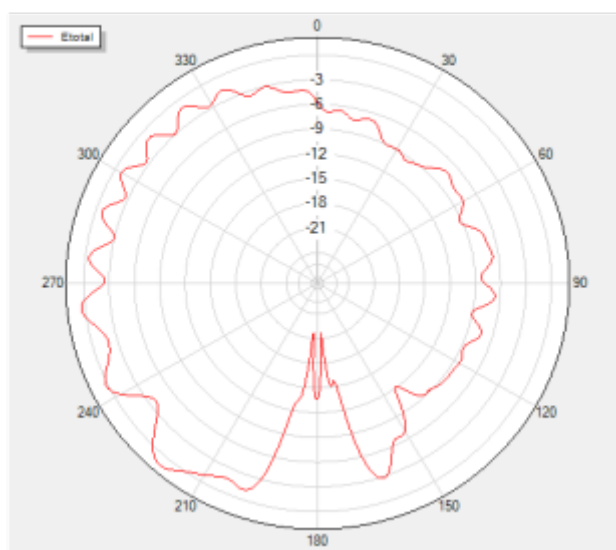
Frequency (MHz)	2400	2450	2500	5150	5500	5850
Efficiency (%)	50.31	48.09	52.3	41.94	36.94	44.75

3.3 增益 Gain

Phi=0 Freq=2400MHz



Phi=0 Freq=5850MHz



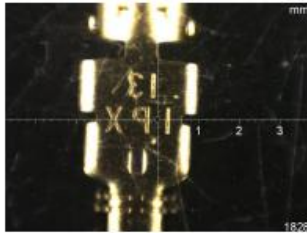
Frequency (MHz)	2400	2450	2500	5150	5500	5850
Gain	3.92	1.9	2.64	1.51	2.41	2.66

4.5 端子镀层报告

彩美伟业精密电子（昆山）有限公司

膜厚测试报告

Fischerscope? XRAY XULM 240
Product: 11 / Au/Ni/CuSn Dir.: Fischer Block: 1
Application: 11 / Au/Ni/CuSn



n = 1	Au = 1.36 μ "	Ni = 57.5 μ "
n = 2	Au = 1.27 μ "	Ni = 60.4 μ "
n = 3	Au = 1.34 μ "	Ni = 56.4 μ "
n = 4	Au = 1.26 μ "	Ni = 62.2 μ "
n = 5	Au = 1.26 μ "	Ni = 66.2 μ "
n = 6	Au = 1.39 μ "	Ni = 55.3 μ "
n = 7	Au = 1.25 μ "	Ni = 58.2 μ "
n = 8	Au = 1.26 μ "	Ni = 61.6 μ "
n = 9	Au = 1.14 μ "	Ni = 57.8 μ "
n = 10	Au = 1.44 μ "	Ni = 61.8 μ "
n = 11	Au = 1.14 μ "	Ni = 67.1 μ "
n = 12	Au = 1.43 μ "	Ni = 64.3 μ "
n = 13	Au = 1.37 μ "	Ni = 59.7 μ "
n = 14	Au = 1.39 μ "	Ni = 60.2 μ "
n = 15	Au = 1.17 μ "	Ni = 54.5 μ "

平均值 Mean	1.297 μ "	60.20 μ "
标准偏差 Standard deviation	0.100 μ "	3.751 μ "
变动范围 Range	0.305 μ "	12.6 μ "
读数数量 Number of readings	15	15
最小读数 Min. reading	1.14 μ "	54.5 μ "
最大读数 Max. reading	1.44 μ "	67.1 μ "
测量时间 Measuring time	10 sec	
测量人 Operator:		
测试日期 Date: 2022-9-8	Time: 14:59:25	

膜厚测试报告

Fischerscope? XRAY XULM 240
 Product: 11 / Au/Ni/CuSn Dir.: Fischer Block: 17
 Application: 11 / Au/Ni/CuSn




n= 1	Au 1 =	1.58 μ"	Ni 2 =	68.6 μ"
n= 2	Au 1 =	1.61 μ"	Ni 2 =	66.3 μ"
n= 3	Au 1 =	1.42 μ"	Ni 2 =	63.7 μ"
n= 4	Au 1 =	1.36 μ"	Ni 2 =	72.5 μ"
n= 5	Au 1 =	1.23 μ"	Ni 2 =	65.5 μ"
n= 6	Au 1 =	1.46 μ"	Ni 2 =	64.2 μ"
n= 7	Au 1 =	1.52 μ"	Ni 2 =	66.1 μ"
n= 8	Au 1 =	1.38 μ"	Ni 2 =	66.9 μ"
n= 9	Au 1 =	1.47 μ"	Ni 2 =	69.4 μ"
n= 10	Au 1 =	1.58 μ"	Ni 2 =	67.5 μ"
n= 11	Au 1 =	1.61 μ"	Ni 2 =	63.6 μ"
n= 12	Au 1 =	1.66 μ"	Ni 2 =	67.3 μ"
n= 13	Au 1 =	1.56 μ"	Ni 2 =	71.6 μ"
n= 14	Au 1 =	1.43 μ"	Ni 2 =	63.4 μ"
n= 15	Au 1 =	1.16 μ"	Ni 2 =	67.2 μ"

平均值 Mean	1.468 μ"	66.92 μ"
标准偏差 Standard deviation	0.296 μ"	14.01 μ"
变动率 C. O. V. (%)	21.41	29.10
Range	0.717 μ"	34.3 μ"
读数数量 Number of readings	15	15
最小读数 Min. reading	1.23 μ"	63.4 μ"
最大读数 Max. reading	1.66 μ"	72.5 μ"
测量时间 Measuring time	15 sec	

操作员 Operator:

测试日期 Date: 2022/9/8 Time: 13:29:44

5.1 线材

产品规格 Product Type		RF113-F 双锡		
结构图 Structure Drawing				
结构特性 Structure Characteristics				
结构 Structure	项目 Item	标准值 Standard Value		
内导体 Inner Conductor	材质 Material	镀锡铜线 Tinned Copper Wire		
	结构 Construction(mm)	7/0.085		
	标称外径 Nom.Dia(mm)	0.255±0.02		
绝缘层 Insulation	材质 Material	聚全氟乙丙烯 FEP		
	标称外径 Nom.Dia(mm)	0.70±0.03		
外导体 Outer Conductor	材质 Material	镀锡铜线 Tinned Copper Wire 16/4*0.05		
	标称外径 Nom.Dia(mm)	0.92±0.05		
	编织覆盖率 Coverage Ratio(%)	90±5		
护套 Jacket	材质 Material	聚全氟乙丙烯 FEP		
	标称外径 Nom.Dia(mm)	1.13±0.05		
电气性能 Electrical Characteristics				
项目 Item	标准值 Standard Value	项目 Item	频率 Frequency	标准值 Standard Value
阻抗 Impedanc (Ω)	50±2	衰减 Attenuation@20°C (dB/m)	1GHz	2.20
电容 Capacitance(pF/m)	98		2GHz	3.10
速率 Velocity(%)	70		3GHz	3.80
驻波比 VSWR	≤1.30@DC-6GHz		4GHz	4.40
最大工作电压 Max.Operating Voltage(V)	1000		5GHz	4.90
最大工作频率 Max.Operating Frequency(GHz)	6		6GHz	5.40
可靠性 Dependability				
最小弯曲半径(单次) Min.Bending Radius/Single		mm	5	
最小弯曲半径(重复) Min.Bending Radius/Repeated		mm	10	
工作温度范围 Operating Temperature		°C	-55-+200	
包装 Packing				
包装方式 Packing Mode	纸盘 Papery Reel			
包装长度 The Length of Each Reel(m)	1000			
每盘段数 The Joints of Each Reel	≤4			
最小段长 Min. Segment Length(m)	≥20			
使用提示 Trips for Use				
存储环境 Storage Environment	温度: 30°C以下, 湿度: 20-65%			
最佳保存周期 The Best Save Cycle	2个月, 2个月以上上锡效果变差, 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	可短时承受 260°C 的高温, 300°C 以上易发生分解, 400°C 以上发生显著的热分解			
铁氟龙收缩 Teflon Shrink	材料的固有属性, 绝缘 0.2mm 以下, 护套 0.3mm 以下			
护套窜动 Jacket Taaverse	加工长度(护套残留长度) 低于 5CM 时易发生			

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

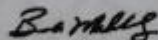
Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted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


Bruce Mahrenholz, Director North American Certification Program
UL LLC

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5.2 线端

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:		
Product specification	1.13mm RF connector	R-164 版本: B0		
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	核准 App.	审核 Chk.	制作 Pre.	Issued By: 杨 琴
By	陆奇卿	李慧	杨 琴	
Date	2020.03.30	2020.03.30	2020.03.30	

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:			
Product specification	1.13mm RF connector	R-164 版本: B0			
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1. 范围 Scope:

本产品规范规定了同轴电缆用 1.13 连接器的测试条件和性能

This Product Specification defines the test conditions and the performances of the 1.13 Connector

2. 产品名称及产品型号 Product Name and Parts No

2.1 产品名称 Product Name: 1.13 Plug

2.2 产品型号 Parts No: 958-C113-**-B-*U-A0

连接器的结构、材料和表面覆盖在每张图纸上

Construction, material and finish of the connector are covered as each drawing

3. 要求 Requirements

额定电压	AC 60V rms
特性阻抗	50Ω
频率范围	DC~9GHz
驻波比	0.1~3GHz 1.3 以下, 3-6GHz 1.5 以下, 6-9GHz 1.9 以下
使用温度	233K~363K (-40℃~90℃)
存储条件	温度: 248K~333K(-25℃~+60℃) 湿度: 85% 以下(未凝结)

Rated voltage	AC 60V rms
Nominal characteristic impedance	50Ω
Frequency	DC~9GHz
VSWR	1.3Max at 0.1~3GHz, 1.5Max at 3-6GHz, 6-9GHz 1.9 以下
Service Temperature	233K~363K (-40℃~90℃)
Storage condition	Temperature: 248K~333K(-25℃~+60℃) Humidity: 85% MAX.(No condensation)

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:		
Product specification	1.13mm RF connector	R-164 版本: B0		
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4. 测试和性能 Test and Performance

试验条件 Test Condition

除非另有说明，所有测试和测量均应按照 MIL-STD-202G 在下列条件下进行。

温度：288K~308K(15℃~35℃)

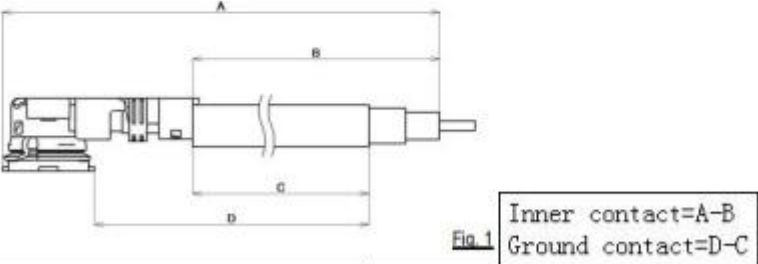
湿度：45~75%R.H.

Unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202G.

Temperature : 288K~308K(15℃~35℃)

Humidity : 45~75%R.H.

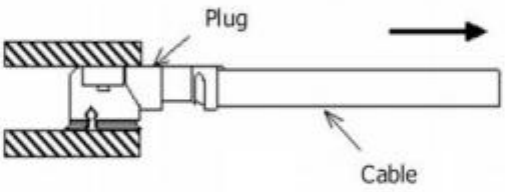
4.1 电气的性能 Electrical Performance

NO	项目/Items	试验条件/Test Conditions	规格/Specifications
1	接触阻抗	公母端连接器配合后使用 20mV 开路电压，以最大 10mA 电流进行测试。参考测试标准：MIL-STD-202 方法 307。 中心导体 (A-B 之间的电气阻抗) 外部导体 (D-C 之间的电气阻抗)	中心导体 初期: 20 mΩ 以下 试验后: 25 mΩ 以下 外部导体 初期: 10 mΩ 以下 试验后: 15 mΩ 以下。
	Contact Resistance	Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in Fig. 1 by the four terminal method. Apply the low level condition in accordance with MIL-STD-202, Method 307. Open circuit voltage: 20mV Max Circuit current: 10mV Max	Inner contact Initial: 20mΩ Max After testing: 25mΩ Max Ground contact Initial: 10mΩ Max After testing: 15mΩ Max
			
NO	项目/Items	试验条件/Test Conditions	规格/Specifications
	绝缘阻抗	公母端连接器配合后，测试中心导体与外部导体之	初期: 500 MΩ 以上

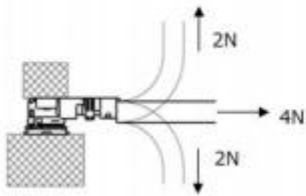
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2	Insulation Resistance	Mate the plug and receptacle connector together, then apply DC100V between the inner contact and the ground contact in accordance with MIL-STD-202, Method 302.	试验后:100 MΩ 以上 Initial: 500MΩ Min After testing: 100MΩ Min
	耐电压	公母端连接器配合后, 使用 AC 200V 对中心导体与外部导体进行耐压测试 1 分钟。参考测试标准: MIL-STD-202 Method 301	无沿面放电、空中放电、绝缘破坏等异常
3	Dielectric Strength	Mate the receptacle and plug connector together, then apply AC 200 Vrms between the inner contact and the ground contact for a minute in accordance with MIL-STD-202, Method 301.	No creeping discharge, flashover, nor insulator Breakdown shall occur.
	驻波比	如图 2 所示, 通以网络分析仪测试驻波比。	Plug
4	VSWR	Measure the VSWR as shown in Fig.2 by the network analyzer.	0.1~3GHZ 1.3Max 3~6GHZ 1.5Max 6~9GHZ 1.9Max
4.2 机械的性能 Mechanical Performance			

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NO	项目/Items	试验条件/Test Conditions	规格/Specifications
1	拔去力	拆下插座连接器(焊接在测试板上), 用插拔力试验机以每分钟 25mm±3mm 的速度插拔母端连接器	综合拔去力 初次: 5N MIN 30 次后: 3N MIN 中心导体 初次: 0.15N min 30 次后: 0.10N min
	Unmating force	Unmate the receptacle connector (soldered to the test board) and plug at a speed 25±3mm/minutes along the mating by the push-on/pull-off machine.	Total unmating force Initial: 5N min .After 30 cycles: 3N min Unmating force of inner contact Initial: 0.15N min .After 30 cycles: 0.10N min
2	引张强度	用材料试验机以每分钟 25mm±3mm 的速度拉线材部分, 测定引张强度。如图 3 所示	10N 以上
	Crimp strength	Pull the cable as shown in Fig.3 at a speed 25±3mm/minutes by tensile strength machine.	10N Min
 <p>Fig. 3</p>			
NO	项目/Items	试验条件/Test Conditions	规格/Specifications

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:		
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3	耐久力	母端连接器焊在板上，用插拔力实验机以每分钟 25mm±3mm 的速度插拔 30 次。	中心导体 初期:20 mΩ 以下 试验后:25 mΩ 以下 外部导体 初期:10 mΩ 以下 试验后:15 mΩ 以下
	Durability (Repeated Mating/ Unmating)	Mate and umate the receptacle connector (soldered to the test board) and plug 30 cycles at a speed 25±3mm/minutes along the mating by the push-on/pull-off machine.	Contact resistance of inner contact Initial: 20mΩ Max After testing: 25mΩ Max Contact resistance of ground contact Initial: 10mΩ Max After testing: 15mΩ Max
4	将线材施加于力后的产品接触阻抗	如图 4 制定方向施力，测试期间工作电流 100mA DC，检查瞬间电流中断。	外观无异常，瞬断小于 1μs 接触阻抗满足要求
	Contact resistance with force on the cable	Apply force on the cable as shown in Fig.4. During the testing, run 100mA DC to check electrical discontinuity.	Appearance Looseness between the parts, chipping, breakage or other abnormality shall not occur. Electrical discontinuity No electrical discontinuity greater than 1 μs shall occur. Contact impedance meets the requirement
 <p>Fig. 4</p>			
NO	项目/Items	试验条件/Test Conditions	规格/Specifications

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:			
Product specification	1.13mm RF connector	R-164 版本: B0			
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5	振动	公母端连接器配合固定在震动台上, 15 分钟内振动频率为 10-100-10Hz, 半振幅, 加速度峰值 1.5 振 mm 或 59m / s ² (6g)方向, 三个相互垂直的方向进行震动, 各方向振动 5 次 (共 75 分钟), 测试过程中加 DC 100mA 直流电。	外观无异常, 瞬断小于 1 μ s 接触阻抗满足要求
	Vibration Sinusoidal Low Frequency	Apply the following vibration to the mating connector.During the testing, run 100mA DC to check electrical discontinuity. Frequency 10Hz→100Hz→10Hz/approx 15 minutes. Half amplitude, Peak value of acceleration 1.5mm or 59m/s ² (6G) Directions, cycle 3 mutually perpendicular direction 5 cycles (approx 75min) about each direction	Appearance Looseness between the parts, chipping, breakage or other abnormality shall not occur. Electrical discontinuity No electrical discontinuity grater than 1 μ s shall occur. Contact impedance meets the requirement
6	冲击	公母端连接器配合固定在冲击实验机上, 以 735m/s ² (75g) 的加速、半正弦冲击波的波形和 11ms 的冲击时间进行测试。周期 6 相互垂直的方向 3 周期。测试过程中加载 100mA 直流电。参考测试标准: MIL-STD-202 Method 213 条件 B	外观无异常, 瞬断小于 1 μ s 接触阻抗满足要求
	shock	Apply the following vibration to the mating connector in accordance with MIL-STD-202,Method 213, Condition B. During the testing, run 100mA DC to check electrical discontinuity Peak value of acceleration: 735m/s ² (75G) Duration:11msec Wave Form:half sinusoidal Directions, cycle 6 mutually perpendicular direction 3 cycles about each direction	Appearance Looseness between the parts, chipping, breakage or other abnormality shall not occur. Electrical discontinuity No electrical discontinuity grater than 1 μ s shall occur. Contact impedance meets the requirement
4.3 环境的性能 Environmental Performance			

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:		
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NO	项目/Items	试验条件/Test Conditions	规格/Specifications
1	热冲击	公母端配合后, 将样品放入试验箱内, 测试 5 循环。 一个循环条件如下: -40℃/30 分钟→(5-35)℃/5 分钟以下→90℃/30 分钟→(5-35)℃/5 分钟以下, 转换时间不超过 30 秒	外观无异常 接触阻抗满足要求 绝缘阻抗满足要求
	Thermal shock	Apply the following environment to the mating connector. Temperature,duration 233K(-40℃)/30 minutes→278~308K(5~35℃) /5 minutes Max.→363K(90℃) /30 minutes→278~308K(5~35℃) /5 minutes Max No. of cycles :5 cycles	Appearance Looseness between the parts, chipping, breakage or other abnormality shall not occur. Contact impedance meets the requirement Insulation resistance meets the requirement
2	恒温恒湿	公母端配合后, 将样品放入试验箱内 温度: 40±2℃ 相对湿度: 90-95% 时间: 96 小时; 测试标准: MIL-STD-202, 方法 103,条件 B	外观无异常 接触阻抗满足要求 绝缘阻抗满足要求
	Humidity (Steady State)	Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 103,Condition B. Temperature:33±2K(40±2℃) Humidity :90~95%RH Duration :96 hours	Appearance Looseness between the parts, chipping, breakage or other abnormality shall not occur. Contact impedance meets the requirement Insulation resistance meets the requirement
NO	项目/Items	试验条件/Test Conditions	规格/Specifications

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:		
Product specification	1.13mm RF connector	R-164 版本: B0		
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3	盐水喷雾	公母端配合后, 将样品放入试验箱内 温度: $35 \pm 2^{\circ}\text{C}$ 盐水浓度: $5 \pm 1\%$ 时间: 48 小时 测试标准: MIL-STD-202, 方法 101, 条件 B	外观无明显腐蚀
	Salt Water Spray	Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 101, Condition B. Temperature: $308 \pm 2\text{K}(35 \pm 2^{\circ}\text{C})$ Salt water density by weight: $5 \pm 1\%$ Duration: 48 hours	Appearance No abnormality adversely affecting the performance shall occur.
4	高温	公母端配合后, 将样品放入试验箱内 温度: $90 \pm 2^{\circ}\text{C}$ 时间: 96 小时	外观无异常 接触阻抗满足要求
	High Temperature	Apply the following environment to the mating connector Temperature: $363 \pm 2\text{K}(90 \pm 2^{\circ}\text{C})$ Duration: 96 hours	Appearance Looseness between the parts, chipping, breakage or other abnormality shall not occur. Contact impedance meets the requirement

4.4 焊接的性能 Soldering

NO	项目/Items	试验条件/Test Conditions	规格/Specifications
1	可焊性	将端子沉入 $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 的焊液中 5 ± 0.5 秒。 测试标准: MIL-STD-202, 方法 208	焊锡表面浸渍超过 95%
	Solder ability	Dip the solder line of the contacts in the solder bath at $518 \pm 5\text{K}(245 \pm 5^{\circ}\text{C})$ for 5 ± 0.5 seconds after immersing the line in the flux of RMA type for 5 to 10 seconds . MIL-STD-202, Method 208.	More than 95% of the dipped surface shall be evenly wet.

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:			
Product specification	1.13mm RF connector	R-164 版本: B0			
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NO	项目/Items	试验条件/Test Conditions	规格/Specifications
2	耐焊接热	将连接器焊接在 PCB 板上, 如图 5 所示加热 2 次循环	外观无明显变形
	Soldering heat resistance	Put on the receptacle connector to PCB, apply the heat 2 cycles as shown in Fig.5	Appearance No abnormality adversely affecting the performance shall occur.
<p>Temperature</p> <p>Time</p> <p>Fig.5</p> <p>Gradient 勾配 1~4 K/sec.</p> <p>433~473K (160~200°C) 1~2 minutes</p> <p>533K (260°C) 10±0.5 sec.</p> <p>Gradient 勾配 -3~-6 K/sec.</p>			

文件名称 System Name:	产品品名 Description:	文件编号 Document No.:			
Product specification	1.13mm RF connector	R-164 版本: B0			
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4. 测试顺序和数量 Test Sequence and Sample Quantity

	Test Item 测试项目	Test Group 测试群组													
		A	B	C	D	E	F	G	H	J	K	L	M	N	P
(1)	Contact resistance 接触阻抗					1 3	1 3	1 3	1 3	1 4	1 4	1 3	1 3		
(2)	Insulation resistance 绝缘阻抗									2 5	2 5				
(3)	Dielectric strength 耐电压	1													
(4)	VSWR 驻波比		1												
(5)	Un-mating force 拔去力			1											
(6)	Crimp strength 引张强度				1										
(7)	Durability 耐久力					2									
(8)	Contact resistance with force on the cable 将线材施加于力后的产品接触阻抗						2								
(9)	Vibration 振动							2							
(10)	Shock 冲击								2						
(11)	Thermal shock 热冲击									3					
(12)	Humidity (Steady State) 恒温恒湿										3				
(13)	Salt waterspray 盐水喷雾											2			
(14)	High temperature 高温												2		
(15)	Solder ability 可焊性													1	
(16)	Soldering heat resistance 耐焊接热														1
	Sample pcs 样品数量	10	5	10	10	10	10	10	10	10	10	10	10	10	10

3M™ VHB™ Acrylic Foam Tapes

RP16 • RP25 • RP32 • RP45 • RP62

Application Guidelines For maximum bond strength the surfaces should be thoroughly cleaned with a 50:50 mixture of isopropyl alcohol* and water. Ideal tape application is accomplished when temperature is between 70°F and 100°F (21°C and 38°C) and the bond is allowed to dwell 72 hours. Initial tape application to surfaces at temperatures below 50°F (10°C) is not recommended.

*Consult manufacturer's directions for use and precautions when using cleaning solvents. This cleaning recommendation may not be compliant with the rules of certain Air Quality Management Districts in California; consult applicable rules before use.

Storage Store in original cartons at 70°F (21°C) and 50% relative humidity.

Shelf Life When stored under proper conditions, product retains its performance and properties for 24 months from date of manufacture.

Technical Information The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Limited Warranty 3M warrants for 24 months from the date of manufacture that 3M™ VHB™ Tape will be free of defects in material and manufacture. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. This limited warranty does not cover damage resulting from the use or inability to use 3M™ VHB™ Tape due to misuse, workmanship in application, or application or storage not in accordance with 3M recommended procedures. AN APPLICATION WARRANTY EXPRESSLY APPROVED AND ISSUED BY 3M IS AN EXCEPTION. THE CUSTOMER MUST APPLY FOR A SPECIFIC APPLICATION WARRANTY AND MEET ALL WARRANTY AND PROCESS REQUIREMENTS TO OBTAIN AN APPLICATION WARRANTY. CONTACT 3M FOR MORE INFORMATION ON APPLICATION WARRANTY TERMS AND CONDITIONS.

Limitation of Remedies and Liability If the 3M™ VHB™ Tape is proved to be defective within the warranty period stated above. THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M™ VHB™ TAPE. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

ISO 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.

3M

Industrial Adhesives and Tapes Division

3M Center, Building 225-3S-06
St. Paul, MN 55144-1000
800-362-3550 • 877-369-2923 (Fax)
www.3M.com/VHB



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10% post-consumer

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VHB™ Acrylic Foam Tapes

RP16 • RP25 • RP32 • RP45 • RP62

Technical Data

June, 2010

Product Description 3M™ VHB™ Acrylic Foam Tapes RP16, RP25, RP32, RP45 and RP62 are double-sided pressure sensitive adhesive tapes for bonding a variety of substrates including many metal, plastic and painted materials.

Product Construction	Adhesive:	Multi-Purpose Acrylic										
	Adhesive Carrier:	Conformable Acrylic Foam (closed cell)										
	Thickness:	<table border="0"> <tr> <td>3M™ VHB™ Tape RP16</td> <td>0.016 in. (0.4 mm)</td> </tr> <tr> <td>3M™ VHB™ Tape RP25</td> <td>0.025 in. (0.6 mm)</td> </tr> <tr> <td>3M™ VHB™ Tape RP32</td> <td>0.032 in. (0.8 mm)</td> </tr> <tr> <td>3M™ VHB™ Tape RP45</td> <td>0.045 in. (1.1 mm)</td> </tr> <tr> <td>3M™ VHB™ Tape RP62</td> <td>0.062 in. (1.55 mm)</td> </tr> </table>	3M™ VHB™ Tape RP16	0.016 in. (0.4 mm)	3M™ VHB™ Tape RP25	0.025 in. (0.6 mm)	3M™ VHB™ Tape RP32	0.032 in. (0.8 mm)	3M™ VHB™ Tape RP45	0.045 in. (1.1 mm)	3M™ VHB™ Tape RP62	0.062 in. (1.55 mm)
	3M™ VHB™ Tape RP16	0.016 in. (0.4 mm)										
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	3M™ VHB™ Tape RP32	0.032 in. (0.8 mm)										
	3M™ VHB™ Tape RP45	0.045 in. (1.1 mm)										
3M™ VHB™ Tape RP62	0.062 in. (1.55 mm)											
Density:	45 lb./ft. ³ (720 kg/m ³)											
Liner:	White DK paper (black 3M™ VHB™ print)											
Tape Color:	Gray											

Typical Physical Properties and Performance Characteristics

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

Peel Adhesion: (stainless steel)	3M™ VHB™ Tape RP16	12 lb./in. width (210 N/100 mm)
	3M™ VHB™ Tape RP25	16 lb./in. width (280 N/100 mm)
	3M™ VHB™ Tape RP32	18 lb./in. width (315 N/100 mm)
	3M™ VHB™ Tape RP45	20 lb./in. width (350 N/100 mm)
	3M™ VHB™ Tape RP62	20 lb./in. width (350 N/100 mm)
Normal Tensile: (alum T-block)	3M™ VHB™ Tape RP16	95 lb./in. ² (655 kPa)
	3M™ VHB™ Tape RP25	90 lb./in. ² (620 kPa)
	3M™ VHB™ Tape RP32	85 lb./in. ² (585 kPa)
	3M™ VHB™ Tape RP45	85 lb./in. ² (585 kPa)
	3M™ VHB™ Tape RP62	80 lb./in. ² (550 kPa)
Dynamic Shear: (stainless steel)	3M™ VHB™ Tape RP16	90 lb./in. ² (620 kPa)
	3M™ VHB™ Tape RP25	80 lb./in. ² (550 kPa)
	3M™ VHB™ Tape RP32	75 lb./in. ² (515 kPa)
	3M™ VHB™ Tape RP45	70 lb./in. ² (480 kPa)
	3M™ VHB™ Tape RP62	70 lb./in. ² (480 kPa)
Static Shear: (stainless steel)	72°F (22°C)	1000 g/0.5 sq. in. (holds 10,000 min.)
	158°F (70°C)	500 g/0.5 sq. in. (holds 10,000 min.)
	200°F (93°C)	500 g/0.5 sq. in. (holds 10,000 min.)
Solvent Resistance:	High	
Temperature Resistance:	Short Term (minutes, hours):	250°F (121°C)
	Long Term (days, weeks):	200°F (93°C)

Available Sizes	Standard Length:	3M™ VHB™ Tapes RP16, RP25, RP32	72 yds. (65.8 m)
		3M™ VHB™ Tapes RP45, RP62	36 yds. (32.9 m)
	Minimum Width:	1/4 in. (6.4 mm)	
	Slitting Tolerance:	± 1/32 in. (0.8 mm)	
	Core Diameter (ID):	3.0 in. (76.2 mm)	