

Product Number: K212-10045-A

Product Name: FPC Antenna(FPC天线)

Version: A1

SPECIFICATION FOR APPROVAL

CUSTOMER (客户名称)	Hunan Ouzhitong Technology Co., Ltd. (湖南欧智通科技有限公司)	
CS P/N (客户机种)		
PART NAME (品名)	FPC Antenna 40*8MM 2.4~2.5GHz L=260MM IPEX ROHS	
FREQUENCY (频率)	2.4-2.5GHz	
RTANT NO. (物料编号)	K212-10045-A	
DATE (日期)	2021.07.23	
Sample signature (出样签章)		
APPROVED BY 核准	CHECKED BY 确认	DRAWN BY 制作
DRAGON	LIU	JOHN
Remark (备注):		
The client acknowledges the signature (客户承认签章)		
APPROVED BY 核准	CHECKED BY 确认	TESTED BY 检测
Sign(客户确认签字盖章): _____		

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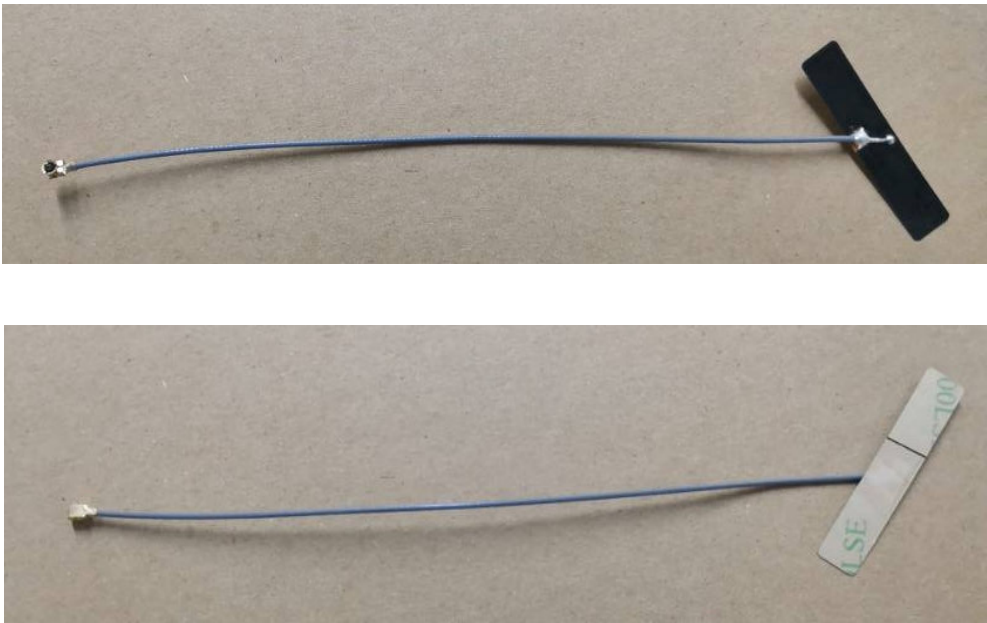
1. Contents项目表

No.	content内容	Pages页数
0	The cover of the confession(承认书封面)	1
1	List of items(项目表)	2
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9	2D illustration/packaging(2D图/包装)	Appendices (附件)

2. Revision history变更履历

Revision版本	Date日期	Change the content变更内容
A0	21. 06. 24	New Edition(新版)
A1	21. 07. 23	Change Line length(变更线长度)

3. 产品实物图片Product picture

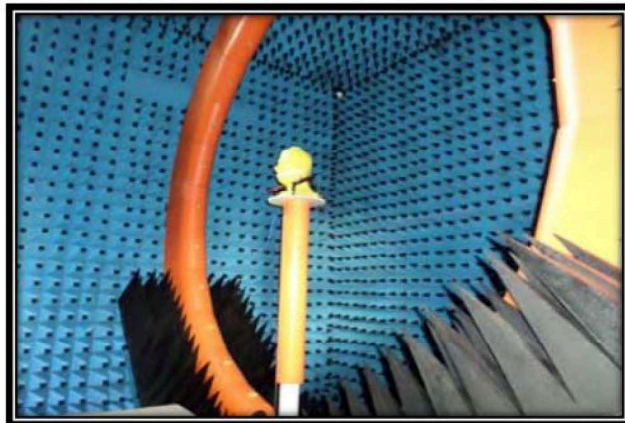


4. 规格表Specification

A. Electrical Properties	
Frequency Rang频段范围	2.4~2.5GHz
Impedance特性阻抗	50Ω Nominal
VSWR电压驻波比	2.0Max.
Gain(peak)增益（峰值）	1.95dBi
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	
Connector Type连接方式	IPEX
Cable线材	Φ1.13mm Gray
Antenna Radiator天线振子体	FPC
C. Environmental	
Storage Temp存储环境范围	-10℃~+60℃
Operating Temp工作环境	-40℃~+65℃
Storage humidity存储湿度	95%
Working humidity工作湿度	5%~95%

5. 电性测试报告Electrical Test Report

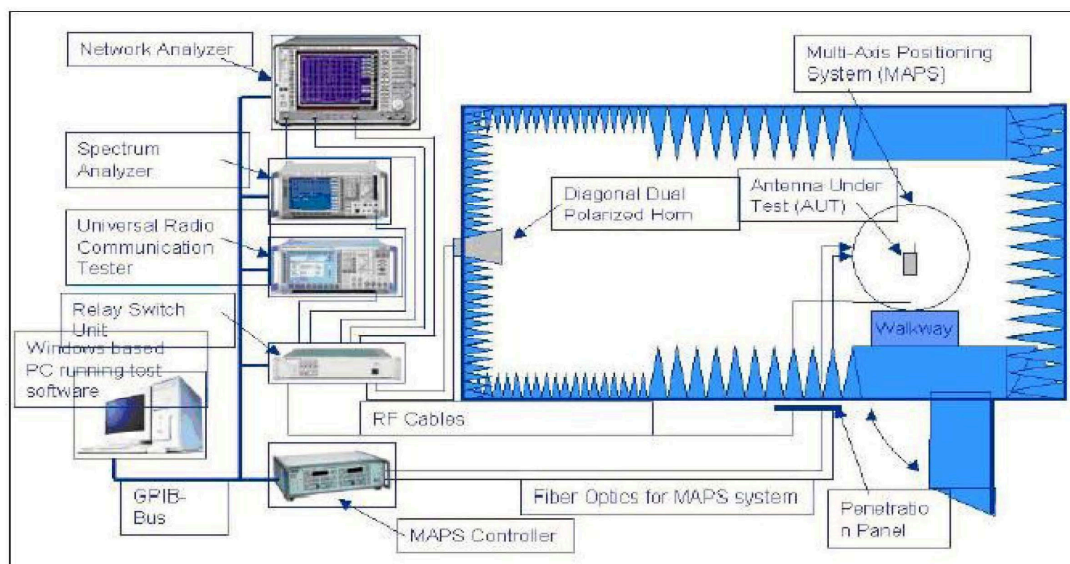
5.1 Test equipment



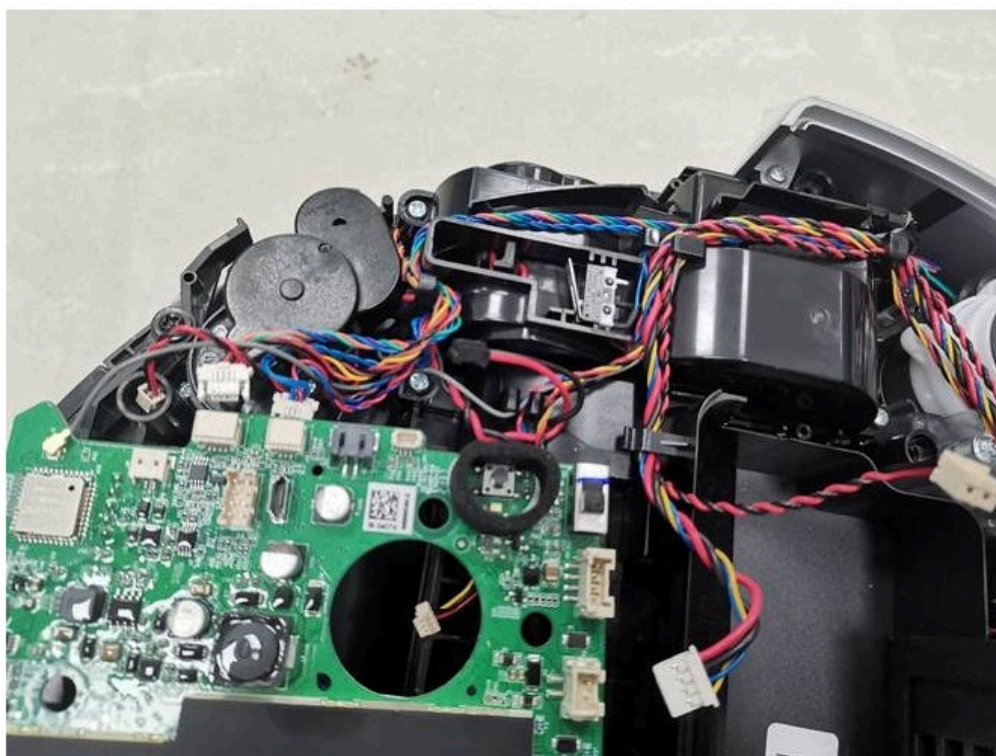
Owned 6 microwave dark room, equipped 2 sets world leading France Satimo SG24 OTA certification test systems (one in SHENZHEN, another one in Shanghai), ETS OTA Standard test system, Blue test reverberation test system which is High repeatability, high accuracy and high resolution. It can quickly provide accurate test reports, fully meet the CITA standards.

Testing range:

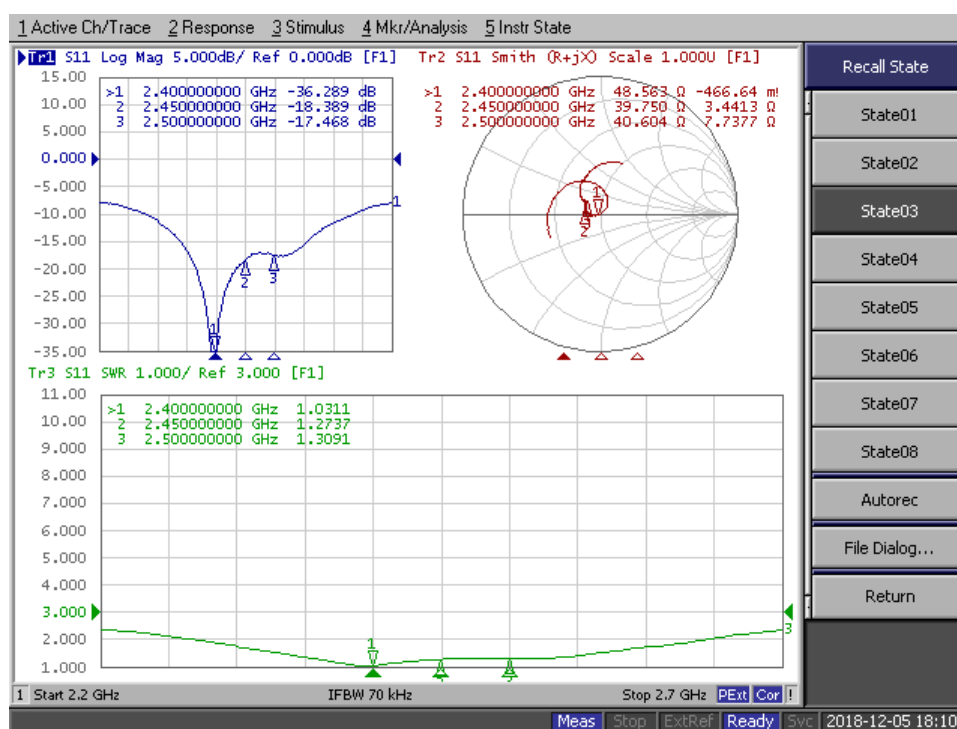
Support active, passive testing of
GSM/CDMA/WCDMA/TD-
SCDMA/LTE/WIFI/WLAN/WiMax/BT
/GPS/MIMO/UWB within 0.4-6G.



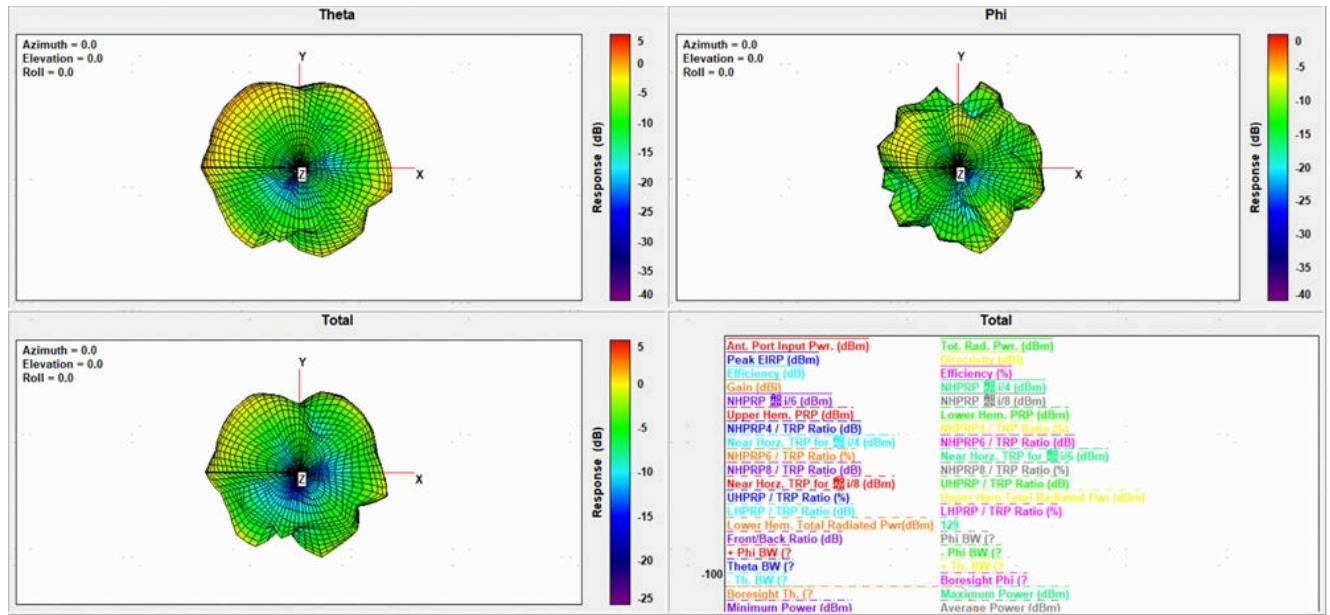
5.2 Antenna pasting position (天线粘贴位置)



5.3 Network Analyzer(网络分析仪测试报告)



5.4 暗室2D、3DRaditation Pattern



5.5 暗室无源测试数据

Point Values	Ant. Port Input Pwr. (dBm)	Tot. Rad. Pwr. (dBm)	Peak EIRP (dBm)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
Frequency (MHz)							
2400	0	-3.40835	1.55135	4.9597	-3.40835	45.621	1.55135
2410	0	-3.5627	1.54624	5.10894	-3.5627	44.0281	1.54624
2420	0	-3.49865	1.53085	5.0295	-3.49865	44.6823	1.53085
2430	0	-3.45368	1.35992	4.8136	-3.45368	45.1473	1.35992
2440	0	-3.64862	1.09644	4.74506	-3.64862	43.1656	1.09644
2450	0	-3.81942	1.03087	4.8503	-3.81942	41.5009	1.03087
2460	0	-4.03207	1.1503	5.18237	-4.03207	39.5178	1.1503
2470	0	-4.01	1.51959	5.52959	-4.01	39.7191	1.51959
2480	0	-3.90399	1.95949	5.86348	-3.90399	40.7006	1.95949
2490	0	-3.89281	2.13234	6.02516	-3.89281	40.8055	2.13234
2500	0	-3.66327	2.59145	6.25473	-3.66327	43.0202	2.59145

6. 特性和可靠性测试Characteristics and Reliability Test

Test Items 测试项目	Test Condition and Procedure 测试方法	Requirements 要求	Result 结果
V. S. W. R. 电压驻波比	Set DUT on Network Analyzer; make individual calibration to test 设置网络分析仪参数进行测试	Directive DUT specification 符合待测物规范	PASS
Insertion Loss 插入损失	Set DUT on Network Analyzer; make individual calibration to test 设置网络分析仪参数进行测试	Directive DUT specification 符合待测物规范	N/A
Antenna Gain 天线增益	Set DUT on Antenna Chamber; make individual calibration to test 设置天线暗室参数进行测试	Directive DUT specification 符合待测物规范	PASS
Voltage Breakdown 耐电压	Test voltage should be applied between insulated portions, or between ground as specified. 在绝缘部分测试电压, 或指定接地面之间	Max Voltage ≥ 500 V or directive material specification 最大电压 ≥ 500 V 或符合材料规范	N/A
Insulation Resistance 绝缘阻抗	Set Voltage: 500 ± 50 V; between the insulated portions, or between ground as specified. 设置电压 500 ± 50 V, 在绝缘部份测试或指定接地面之间	Resistance ≥ 500 M ohm or directive material specification 阻抗 ≥ 500 M ohm 或符合材料规范	N/A
Contact Resistance 接触阻抗	Air Temp: 26° C; measured with test equipment 室温 26° C, 指定量测设备	Directive material specification 符合材料规范	N/A
Vibration 震动	GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction 振幅1.5mm; 频率20~80~20Hz; 3个方向各2H	1. No Visual Damage 2. Frequency Tol. $\leq 5\%$ 无明显外观不良; 频率偏移 $\leq 5\%$	PASS
Random Drop 跌落	GB / T2423.8-1995 Single: 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, fracture 2. Frequency Tol. $\leq 5\%$ 产品无脱落、断裂; 频率偏移 $\leq 5\%$	PASS
	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		PASS

	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		N/A
Solderability 可焊性	GB / T2423.28-2005 Temp: 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	N/A
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 specification 2. Frequency Tol. ≤5% 符合待测物规范;频率偏移 ≤5%	PASS
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 specification 2. Frequency Tol. ≤ 5% 符合待测物规范;频率偏移 ≤5%	N/A
Dimension 尺寸	Inspection of dimension, color, material, package, surface process. 检查尺寸, 颜色, 材料, 包装, 表面处理	Directive DUT specification 符合待测物规范	PASS
Waterproof 防水	With Reference to IEC 60529 // IP Code Definition 参考IEC60529 IP定义	Directive DUT specification 符合待测物规范	N/A
Salt Spray盐雾	GB / T 2423.17-2008 Temp: 35° C; RH: ≥ 95%; NaCl solution: ≥ 5%;Time: 24H 温度35° C; 湿度≥95%;盐水浓度≥5%; 测试24H	1. No Visual Damage 2. Frequency Tol. ≤5% 无明显外观不良;频率偏移 ≤5%	PASS
Temperature and Humidity Chamber 恒温恒湿	GB / T 2423.3-2006 Temp: 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 Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复2H后, 无明显外观不良;频率偏移 ≤5%	PASS
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 Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复2H后, 无明显外观不良;频率偏移 ≤5%	PASS
Aging test 老化	GB /T 2423.2 - 2008 Temp: 80° C; Time: 24 hours 温度80° C, 测试24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复2H后, 无明显外观不	PASS

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		良;频率偏移 $\leq 5\%$	
High Temp. 高温	Temp. $270 \pm 10^{\circ} \text{C}$; Times: 120 seconds 温度 $270 \pm 10^{\circ} \text{C}$, 测试时间120秒	No Visual Damage 无明显外观不良	N/A
RoHS	With Reference to IEC 62321:2008 with flow chart 参考IEC 62321测试流程	Directive RoHS 2011/65/EU 符合RoHS 2011/65/EU标准	PASS
PFOS	With Reference to USA EPA 3550C:1996 by LC/MS 参考USA EPA 3550C测试流程	Directive RoHS 2006/122/EC 符合RoHS 2011/65/EU标准	PASS

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7. 样品检验报告Sample inspection report

日期: 2021.07.23

送检数量		SPCS	合格数量		SPCS				
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	pass	pass	pass	pass	pass	pass	☒ OK ☐ NG
	CABLE	对比无色差、无脏污、无破损, 无刮伤	pass	pass	pass	pass	pass	pass	☒ OK ☐ NG
	IPEX	对比无脏污、无破损, 无刮伤	pass	pass	pass	pass	pass	pass	☒ OK ☐ NG
	焊锡	饱满, 光滑	pass	pass	pass	pass	pass	pass	☒ OK ☐ NG
	其他								☐ OK ☐ NG
主要尺寸	1	260.5mm	260	260	260	260	260	260	☒ OK ☐ NG
电气及功能测试	Frequency Range	2.4~2.5GHz							
	VSWR	<2.0	pass	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	1.78	☒ OK ☐ NG
备注									
最终判定		☒ 合格 ☐ 不合格 ☐ 条件认可							

8. 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 50 Ω 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 50 Ω 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 $\pm$ 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 $\pm$ 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 $\pm$ 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℃)

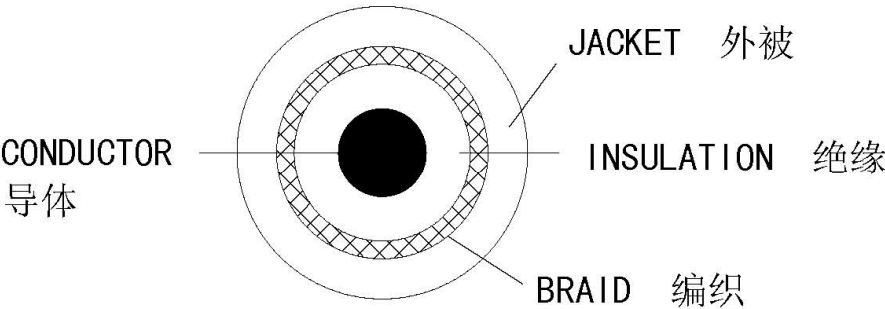
项目/Item	单位/Unit	详细资料/Details
导体电阻/Conductor Resistance	Ω /km	Max. 560
绝缘电阻/Insulation Resistance	M Ω . km	Min. 200
耐压强度/Dielectric Strength	V(AC)/min	1000
静电容/Capacitance	pF/m	98
特性阻抗 /Characteristic Impedance	Ω	50 $\pm$ 2.0

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.

