



深圳市世纪联合创新科技有限公司

零件承认书

厂 商: 东莞市松汇实业有限公司

代理商:

品 名: Wi Fi 双频天线

规 格: 2.4G-5.8G/金属支架天线/2dB/50Ω/L220/OD1.13灰色线/MHF一代端子/3M胶垫L29.5*W10.5*T1.0 (2条)

机 种:

ERP 料号: 104.044.00771

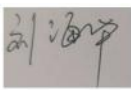
编 号:

版 本: V1.0

送样承认原因: ☒ 新零件 ☐ 设计变更 ☐ 降低成本
☐ 新厂商 ☐ 改善质量 ☐ 其他

是否试投: ☐ 不需试投
☒ 试投OK, 可承认

承认章:

批准	审核	承办
		

地址: 深圳市南山区西丽镇留仙大道创智云城A2栋8-10楼

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文件编号: LH-QR-E-005 A0

规格承认书

SPECIFICATION FOR APPROVAL

编号: 2022060801

File No. _____

版本: 1.0

Revision _____

客 户 深圳市世纪联合创新科技有限公司

CUSTOMER: _____

客 户 料 号 104.044.00771

CUSTOMER NO: _____

品 名 2.4-5.8GHz 天线 L=220mm

PART NAME: _____

供 方 料 号 SL212P.300042.P01

SUPPLIER NO: _____

送样日期 Date: 送样数量 Q'TY: PCS

客户确认 CUSTOMER APPROVED BY		
APPROVAL	CHIEF	SUPERVISOR

供方确认 SUPPLIER SIGNATURE		
APPROVAL	CHECK	DESIGN
sunny	ZouJie	LuoYi

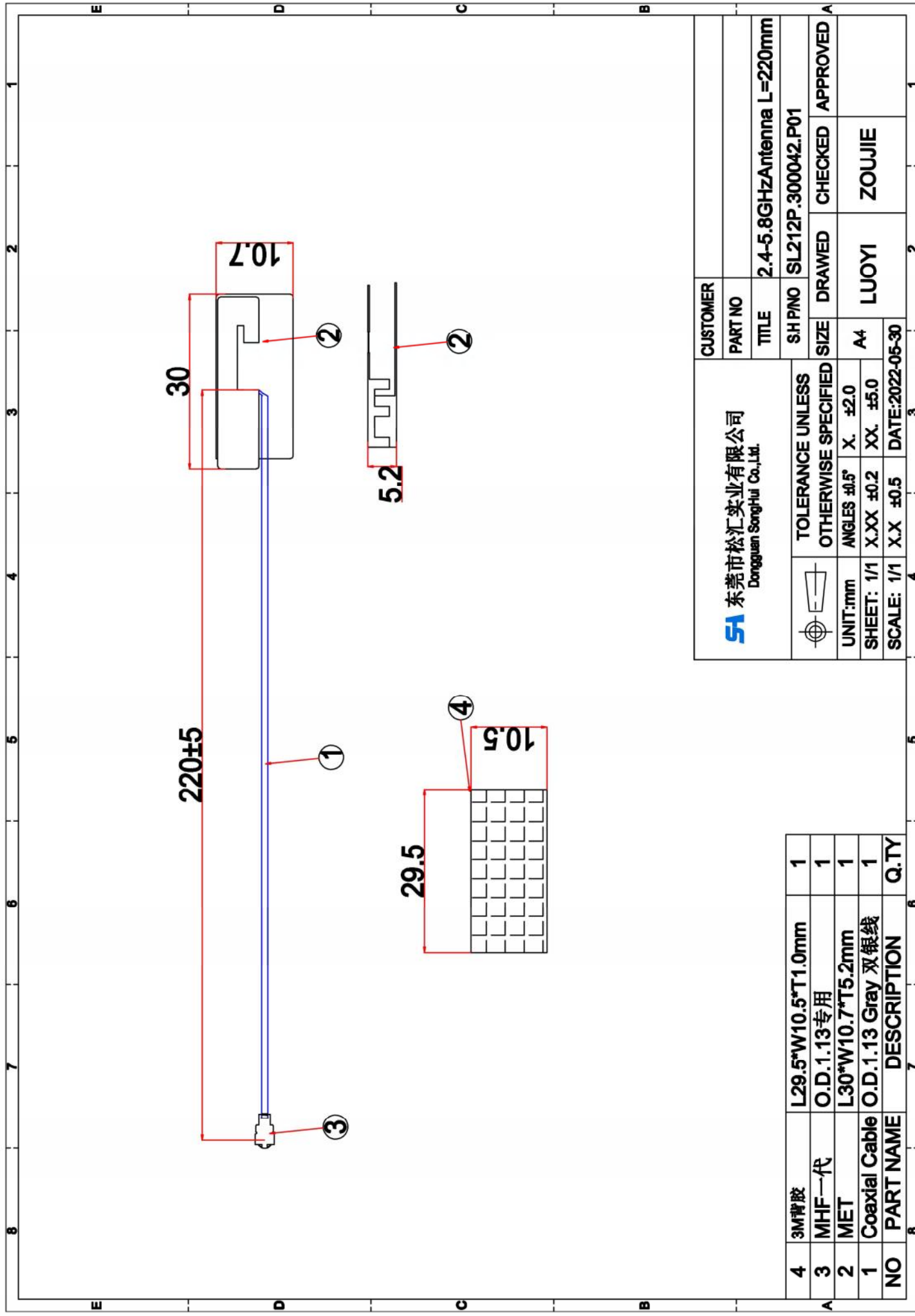
add: 东莞市大朗镇佛新聚祥三路26号 电话: 0769-82226176 传真: 0769-82226175

SH-RD-F04-A



承认书项目表

NO.	内 容 (Contents)	页 数 (Number of Page)	页 码 (Page Code)
1	承认书封面 (Spec Cover)	1	1
2	承认书项目表 (Spec Item)	1	2
3	工程成品图 (Drawing)	1	3
4	电性测试报告 (Test Reports)	1	4
5	S参数测试 (S Parameter)	1	5
6	增益测试 (Gain Test)	1	6
7	测试报告	1	7
8			
9			
10	-	-	-
11	-	-	-
12	-	-	-



4	3M背胶	L29.5*W10.5*T1.0mm	1
3	MHF一代	O.D.1.13专用	1
2	MET	L30*W10.7*T5.2mm	1
1	Coaxial Cable	O.D.1.13 Gray 双银线	1
NO	PART NAME	DESCRIPTION	Q.TY



电 性 测 试 报 告

Test Reports

Electrical Properties	
Frequency	2.4-5.8GHz
Impedance	50 Ohm Nominal
V.S.W.R	1.92 : 1 Max
Return Loss	-10 dB Max
Radiation	Omni-directional
Gain (Peak)	2.4GHz (2dBi) 5.8GHz(2 dBi)
Cable Loss	3.2 dB / m Max @ 2450 MHz
Polarization	Linear, Vertical
Admitted Power	1 W
Connector	MHF一代
Physical Properties	
Antenna Material	MET
Cable Type	O.D. 1.13mm // L= 220mm
Operating Temp.	-10 ~ +80 °C
Storage Temp.	-10 ~ +80 °C
Cable Color	GRAY

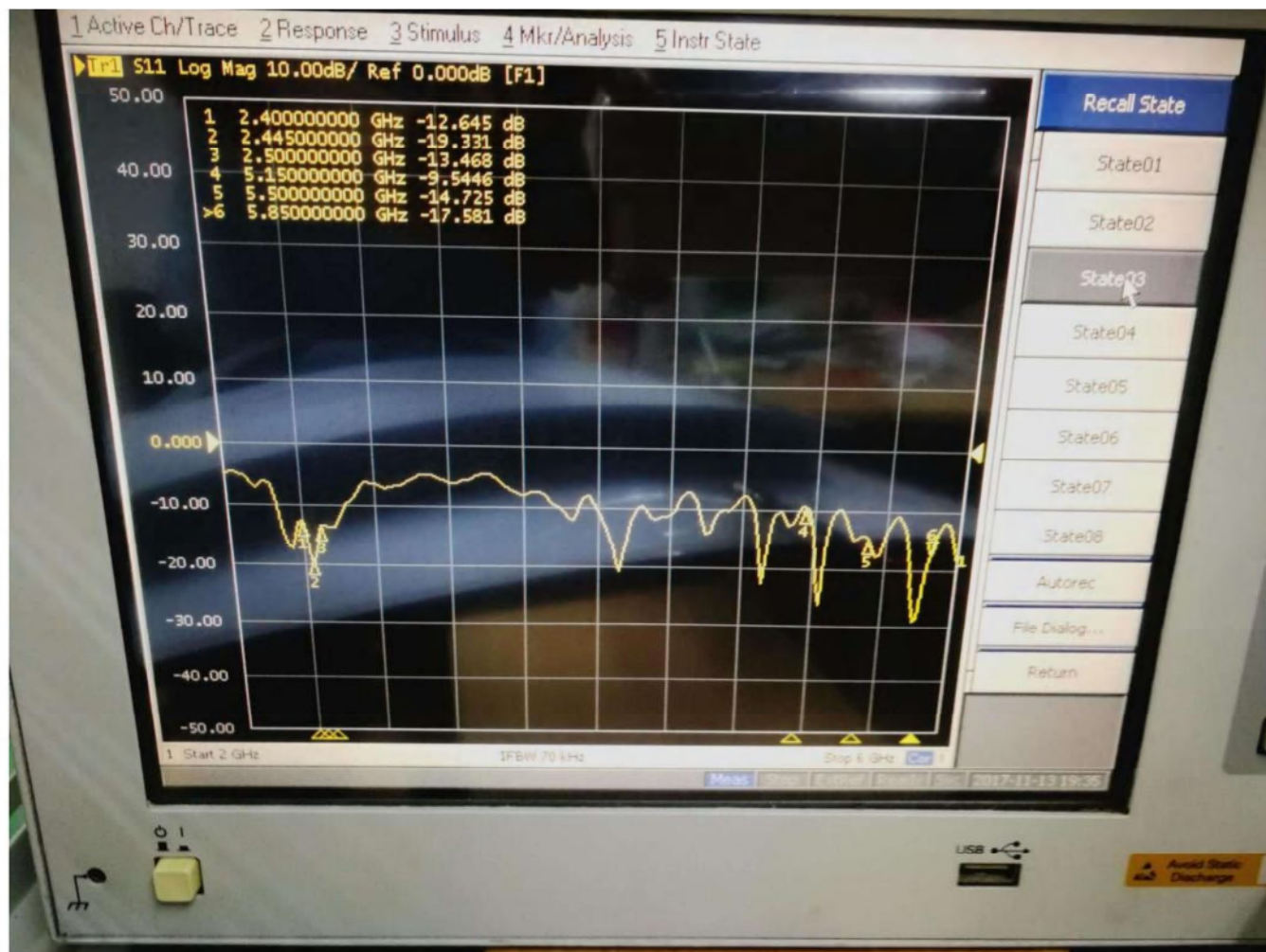
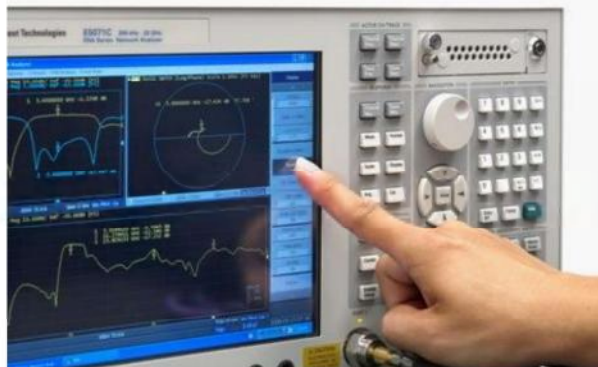
add: 东莞市大朗镇佛新聚祥二路26号 电话: 0769-82226176 传真: 0769-82226175



S 参数测试

S Parameter Test

Agilent E5071C



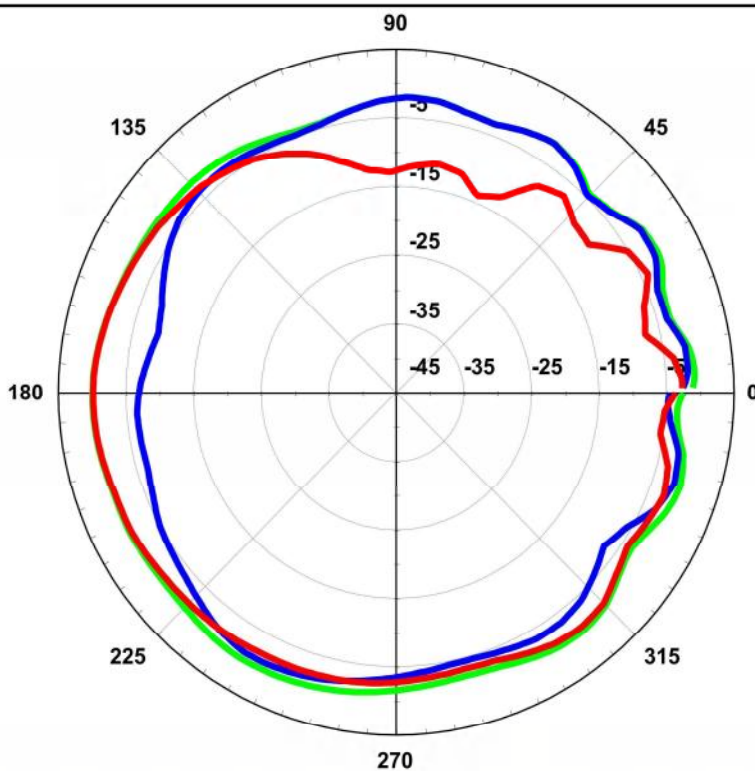
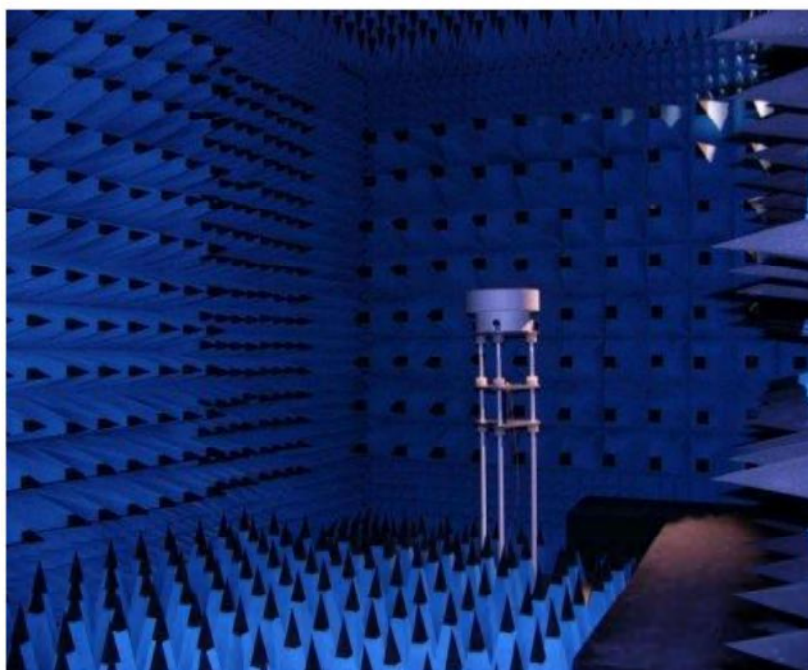
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增益测试

Gain Test

*Antenna
Radiation
Pattern
VS
Gain*

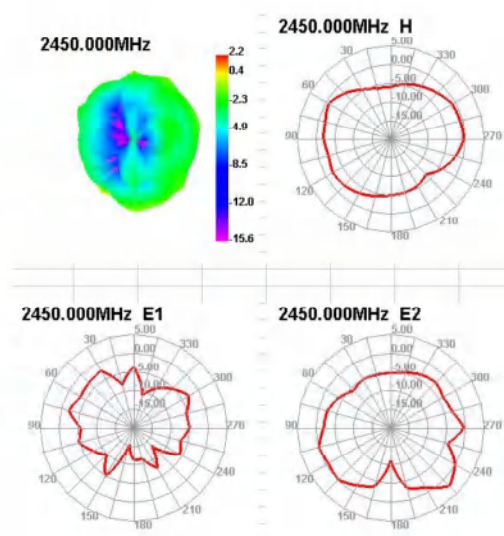


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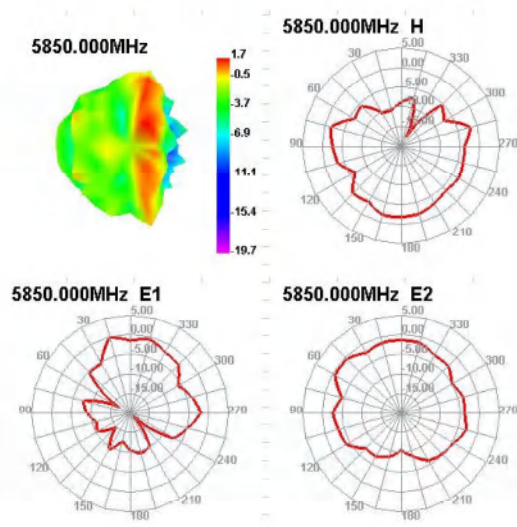
5-3.WIFI +BT Antenna Gain/Efficiency/Radiation Pattern of 3D

ANT0

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	40.3	-3.95	1.59
2410	45.32	-3.44	2
2420	42.76	-3.69	1.69
2430	45.89	-3.38	2.06
2440	44.37	-3.53	1.9
2450	47.75	-3.21	2.16
2460	44.96	-3.47	1.92
2470	47.86	-3.2	1.95
2480	47.4	-3.24	1.68
2490	46.06	-3.37	1.37
2500	48.54	-3.14	1.61
5150	38.79	-4.11	0.94
5350	40.28	-3.95	2.25
5550	40.28	-3.95	2.35
5750	40.63	-3.91	2.62
5850	40.02	-3.98	1.69



WIFI 有缘测试



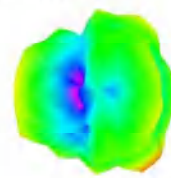
频段	1	6	11
B-TRP-11MBps	13.66	13.24	13.15
B-TIS-11MBps	-84.24	-84.84	-84.8
G-TRP-54MBps	12.48	12.28	12.74
G-TIS-54MBps	-72.31	-71.92	-70.91
N-TRP-MCS7	12.2	12.04	12.47
N-TIS-MCS7	-67.67	-66.15	-65.63
频段	36	149	165
A-TRP-54MBps	10.89	10.05	10.82
A-TIS-54MBps	-73.7	-74.87	-75.34

5-3.WIFI Antenna Gain/Efficiency/Radiation Pattern of 3D

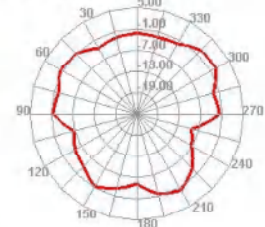
ANT1

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	44.73	-3.49	1.9
2410	42.7	-3.7	1.59
2420	43.03	-3.66	1.81
2430	45.23	-3.45	1.83
2440	45.19	-3.45	1.73
2450	45.98	-3.37	1.6
2460	46	-3.37	1.41
2470	45.73	-3.4	1.33
2480	46.17	-3.36	1.47
2490	44.75	-3.49	1.41
2500	41.82	-3.79	1.2
5150	40.15	-3.96	1.19
5250	39.16	-4.07	1.33
5350	36.95	-4.32	0.02
5550	39.54	-4.03	1.39
5750	39.79	-4	1.22
5850	40.66	-3.91	1.99

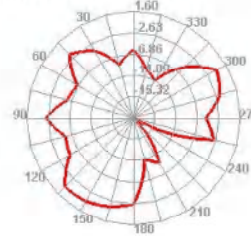
2450.000MHz



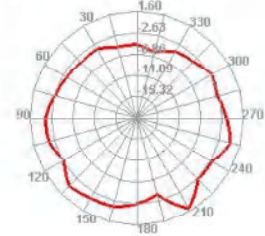
2450.000MHz H



2450.000MHz E1



2450.000MHz E2



WIFI 有缘测试

频段

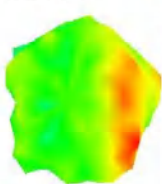
1

6

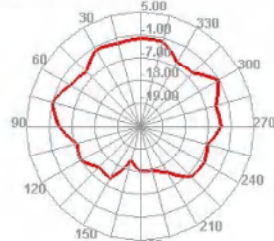
11

频段	1	6	11
B-TRP-11MBps	13.66	13.24	13.15
B-TIS-11MBps	-84.24	-84.84	-84.8
G-TRP-54MBps	12.48	12.28	12.74
G-TIS-54MBps	-72.31	-71.92	-70.91
N-TRP-MCS7	12.2	12.04	12.47
N-TIS-MCS7	-67.67	-66.15	-65.63
频段	36	149	165
A-TRP-54MBps	10.89	10.05	10.82
A-TIS-54MBps	-73.7	-74.87	-75.34

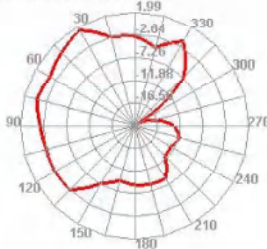
5850.000MHz



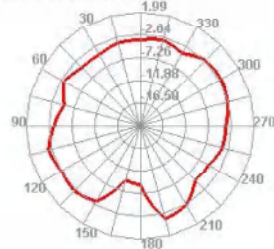
5850.000MHz H



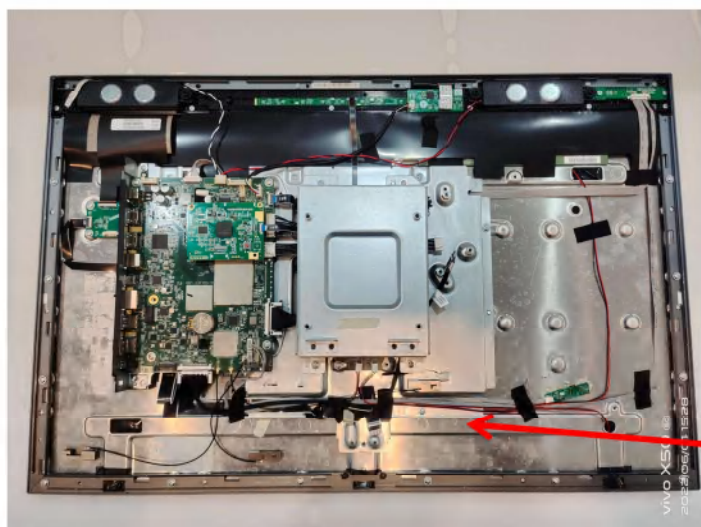
5850.000MHz E1



5850.000MHz E2

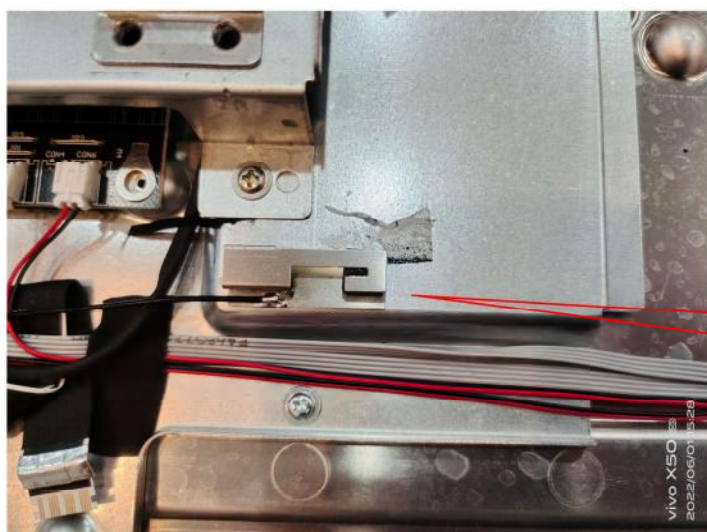
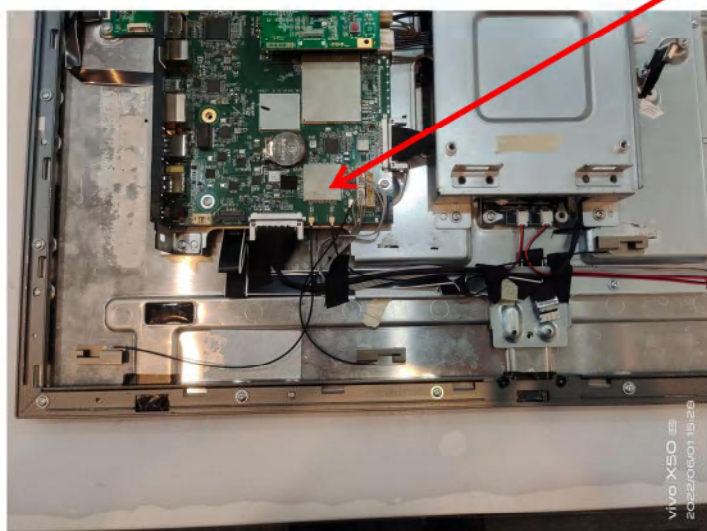


7. Antenna Picture

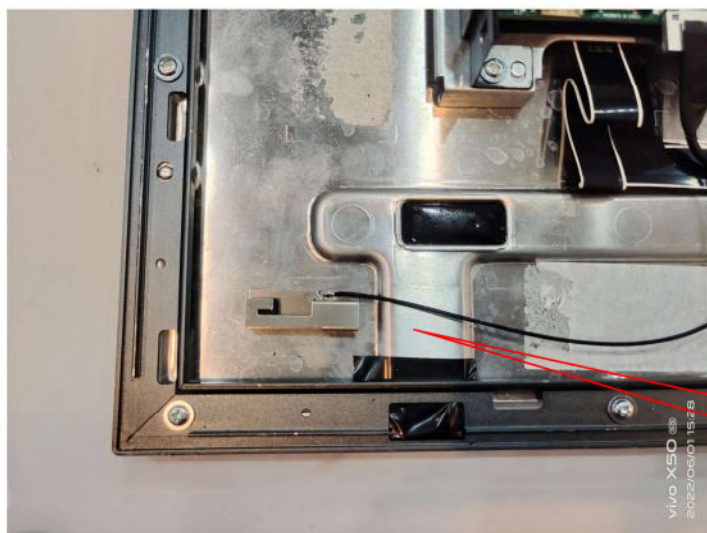


如图所示:

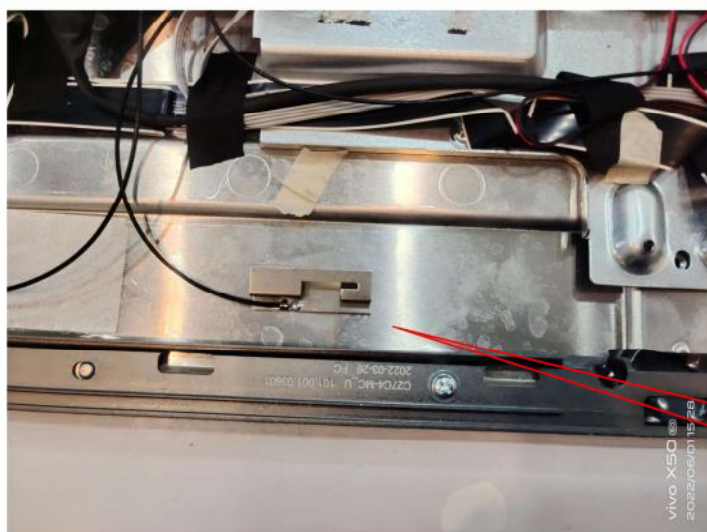
整机天线分布图，以及天线装配



WIFI 0 天线



WIFI 1 天线



蓝牙天线

测试报告

No. SZXEC2102641804

日期: 2021年08月23日 第1页,共8页

深圳市天迈通信技术有限公司

深圳市光明区公明街道下村第三工业区顺泰和科技园

以下测试之样品是由申请者所提供及确认: 微同轴电缆

SGS工作编号: RP21-020328 - SZ

型号: RF1.13

客户参考信息: RF0.48, RF0.50, RF0.64, RF0.81, RF0.98, RF1.32, RF1.37, RF1.60, RF1.80, RF0.81L, RF1.13L, RF1.37L

样品接收日期: 2021年08月18日

测试周期: 2021年08月18日 - 2021年08月23日

测试要求: 根据客户要求测试

测试方法: 请参见下一页

测试结果: 请参见下一页

结论: 基于所送样品进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯(如邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP))的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务有限公司深圳分公司
授权签名

倪磊

Andy Ni 倪磊

批准签署人

scan to see the report



SZXEC2102641804



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测试报告

No. SZXEC2102641804

日期: 2021年08月23日 第2页,共8页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	SZX21-026418.005	黑色塑胶线皮 5#
SN2	SZX21-026418.006	无色透明塑胶 6#
SN3	SZX21-026418.007	银色金属线 7#
SN4	SZX21-026418.008	银色金属线 8#

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015和IEC 62321-8:2017, 采用ICP-OES,UV-Vis和GC-MS进行分析。

测试项目	限值	单位	MDL	005	006
镉 (Cd)	100	mg/kg	2	ND	ND
铅 (Pb)	1,000	mg/kg	2	ND	ND
汞 (Hg)	1,000	mg/kg	2	ND	ND
六价铬 (Cr(VI))	1,000	mg/kg	8	ND	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND	ND
一溴联苯	-	mg/kg	5	ND	ND
二溴联苯	-	mg/kg	5	ND	ND
三溴联苯	-	mg/kg	5	ND	ND
四溴联苯	-	mg/kg	5	ND	ND
五溴联苯	-	mg/kg	5	ND	ND
六溴联苯	-	mg/kg	5	ND	ND
七溴联苯	-	mg/kg	5	ND	ND
八溴联苯	-	mg/kg	5	ND	ND
九溴联苯	-	mg/kg	5	ND	ND
十溴联苯	-	mg/kg	5	ND	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND	ND
一溴二苯醚	-	mg/kg	5	ND	ND



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测试报告

No. SZXEC2102641804

日期: 2021年08月23日 第3页,共8页

测试项目	限值	单位	MDL	005	006
二溴二苯醚	-	mg/kg	5	ND	ND
三溴二苯醚	-	mg/kg	5	ND	ND
四溴二苯醚	-	mg/kg	5	ND	ND
五溴二苯醚	-	mg/kg	5	ND	ND
六溴二苯醚	-	mg/kg	5	ND	ND
七溴二苯醚	-	mg/kg	5	ND	ND
八溴二苯醚	-	mg/kg	5	ND	ND
九溴二苯醚	-	mg/kg	5	ND	ND
十溴二苯醚	-	mg/kg	5	ND	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND	ND
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND	ND
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	ND	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。

(2) IEC 62321 系列等同于 EN 62321 系列

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25。

(3) 2021年7月22号开始, DEHP, BBP, DBP 和 DIBP 的限制适用于医疗器械, 包括体外医疗器械, 监控仪表, 包括工业监测和控制仪器。

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 和IEC 62321-7-1:2015, 采用ICP-OES和UV-Vis 进行分析。

测试项目	限值	单位	MDL	007	008
镉 (Cd)	100	mg/kg	2	ND	ND
铅 (Pb)	1,000	mg/kg	2	ND	ND
汞 (Hg)	1,000	mg/kg	2	ND	ND
六价铬(Cr(VI))▼	-	µg/cm ²	0.10	ND	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。

(2) IEC 62321 系列等同于 EN 62321 系列

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(3) ▼ = a. 当六价铬的浓度高于0.13 µg/cm²时, 样品为阳性, 即含有六价铬;

b. 当六价铬的浓度为ND(低于0.10 µg/cm²)时, 样品为阴性, 即未检测到六价铬;



测试报告

No. SZXEC2102641804

日期: 2021年08月23日 第4页,共8页

c. 当六价铬的浓度介于 $0.10 \mu\text{g}/\text{cm}^2$ 与 $0.13 \mu\text{g}/\text{cm}^2$ 之间时, 无法直接判定是否检测到六价铬, 因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。除非另有说明, 此报告结果仅对测试的样品负责。本报告未经本公司书面许可, 不可部分复制。检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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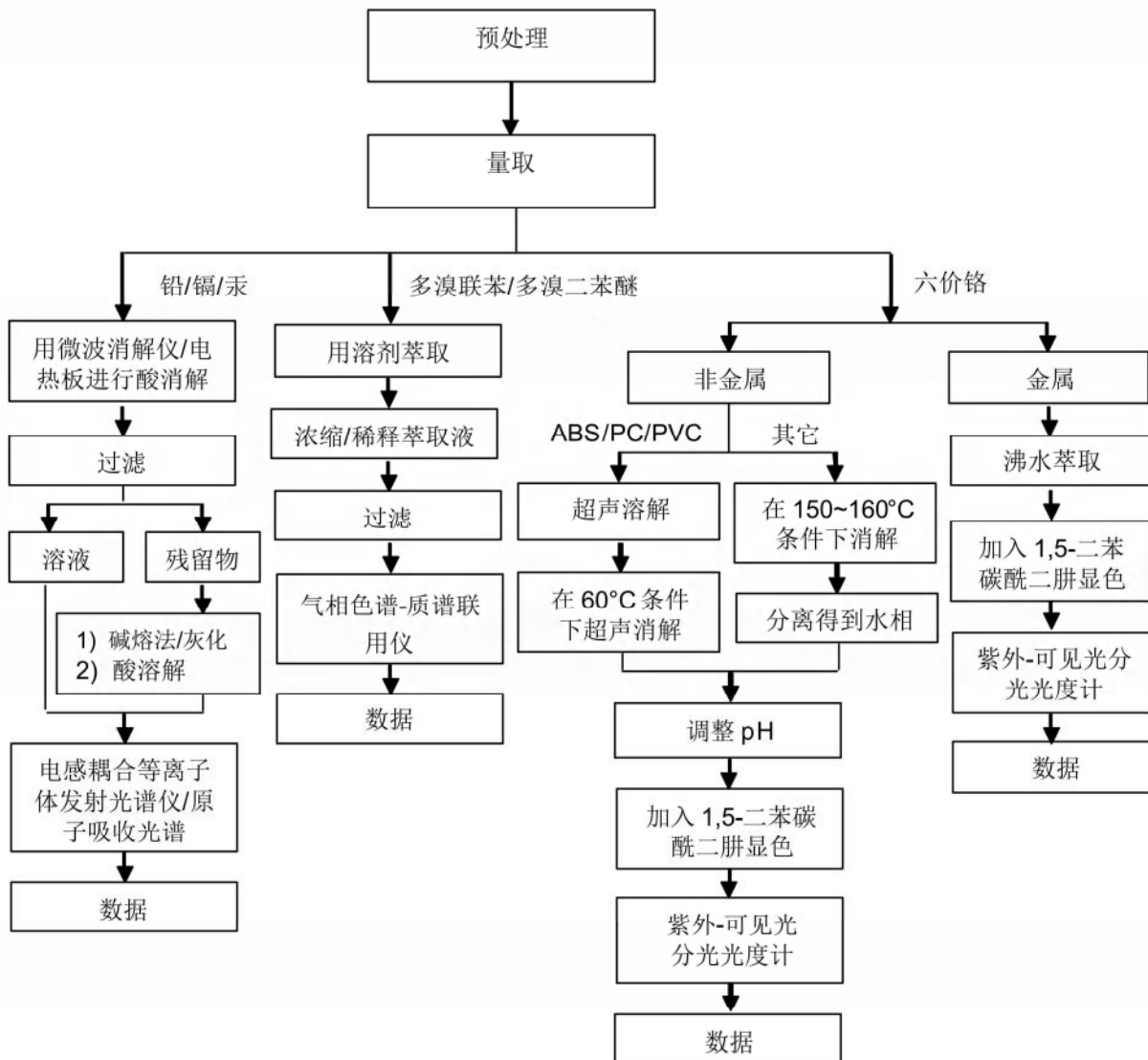
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 83071443, or email: CN.Doccheck@sgs.com

SGS Bldg, No.4, Jianghao Industrial Park, No.430, Jihua Road, Bantian, Longgang District, Shenzhen, China 518129 t (86-755) 25328888 f (86-755) 83106190 www.sgsgroup.com.cn
中国·深圳·龙岗区坂田吉华路430号江灏工业园4栋SGS大楼 邮编: 518129 t (86-755) 25328888 f (86-755) 83106190 e sgs.china@sgs.com

附件

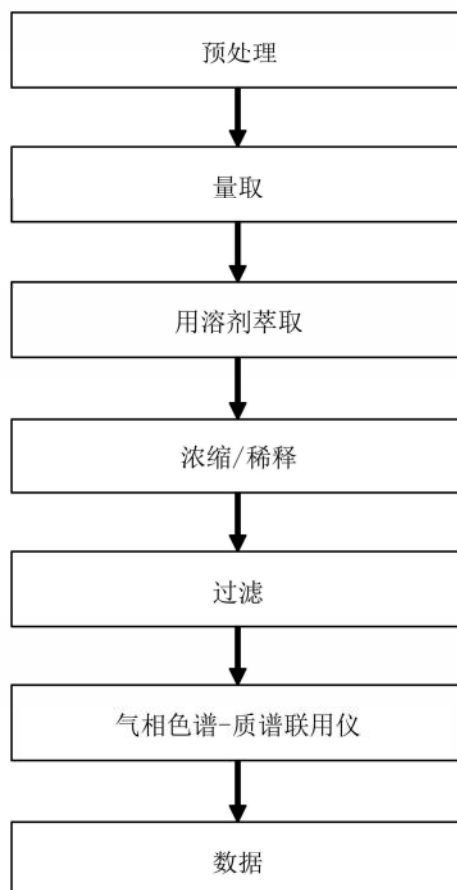
Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

1) 样品按照下述流程被完全消解(六价铬和多溴联苯/多溴二苯醚测试除外)。



附件

Phthalates 测试流程图



测试报告

No. SZXEC2102641804

日期: 2021年08月23日 第7页,共8页

样品照片:





此照片仅限于随SGS正本报告使用

*** 报告完 ***

物质安全资料表 Material Safety Data Sheet (MSDS)

电镀金层

Gold Plating

一、 外观：表面金黄色，无污染物。

Appearance: Golden surface & no contaminants.

二、 标 示：参照欧盟 ROHS无铅规格之规范提示。

Symbol: Refer to EU ROHS Lead-free Specification

三、 特性：光亮均匀。

Characteristic: bright & uniform.

四、 用途：提高基材焊接性能、防护性、耐磨性，降低接触阻抗。

Purpose: Improve the weldability, protection and wear resistance of the base metal, and reduce the contact impedance.

五、 规格：符合欧盟ROHS要求。

SPEC: Conform to EU ROHS requirements

六、 物理性质PHYSICAL PROPERTIES:

(1) 液相温度：约1064℃。

LIQUIDUS TEMPERATURE: About 1064℃

(2) 比重：17.6 g/cm³(25℃)。

SPECIFIC GRAVITY: 17.6 g/cm³(25℃)

七、 合金组成 (单 位： Wt%):

ALLOY COMPOSITION (Unit: Wt%)

成分 COMPOSITION	Au	Co	其它 Remaining
含量(%) Content (%)	>99.7	0.15-0.25	< 0.15
备注 Remarks			

物质安全资料表 Material Safety Data Sheet (MSDS)

1、 物品与厂商资料 Items and Manufacturer information

物品名称：无铅电镀金层 Item Name: Lead-free gold plating			
物品编号：KSYTAu-001 Item No:			
制造厂商： 翊腾电子科技（昆山）有限公司 Manufacturer: YTOP Electronic Technology (Kunshan) Co.,Ltd.			
制作部门：PBU工程部 Prepared Dept.: Engineering Dept PBU	制作日期：2013.05.14 Prepared Date:	版本 Revision No.	V1.4
文件编号：YT-MSDS-AU File No.:	修改日期：2019.08.26 Revised Date:	有效期 Validity period	3年 3 years
联络电话： Tel: +86-512-55101900 Fax: +86-512-55101905			

2、 主要成份资料 Main Composition:

中（英）文名称 Chinese (English) Name	化学式 Chemical formula	含量(WT%) Content(WT%)	化学文摘社登记号码 (CAS NO)
金 (Gold)	Au	>99.7	7440-57-5
钴 (Cobalt)	Co	0.15-0.25	7440-48-4

3、 危害性资料 Harmfulness Information:

本产品是根据在欧盟立法之WEEE及ROHS要求、美国环保局（ENA）禁止使用铅和镉（及其衍生物）之相关规定而开发之环保产品，电镀层合金成份中含铅量（其产品关键之两个参数之一,Wt%） ≤ 90 PPM。此项要求能保证不对人体及环保产生直接性危害，故其危害性并无更深入之资料。

This green product is developed in accordance with the requirements of WEEE and ROHS in EU legislation and the relevant regulations of ENA prohibiting the use of lead and cadmium (and its derivatives). Lead content (Wt%) of electroplated alloy composition, one of two key parameters of this product, is ≤ 90 PPM. This requirement can ensure that there is no direct

物质安全资料表 Material Safety Data Sheet (MSDS)

harm to human and environmental protection. Therefore, there is no more in-depth information on its harmfulness..

4、 急救措施 First-aid Measures

使用过程中如遇下列情况，请根据相应之指引进行处理：

If you encounter the following situations in the course of use, please deal with them according to the corresponding guidelines:

*吸入：将患者移至有清新空气处；如果患者已停止呼吸，则施以人工呼吸，送急诊。

Inhalation: Move the patient to a place with fresh air.If the patient has stopped breathing, apply artificial breathing and send to the emergency department.

*皮肤接触： /

Skin Contact

*眼睛接触：以大量的清水冲洗15 分钟或者直到刺激感消失。如果刺激感仍存在，则去医院救治。

Eye Contact: Rinse with plenty of water for 15 minutes or until irritation disappears. If irritation still exists, go to the hospital for treatment.

*食入：不催吐（除非医疗人员指示）；如果患者仍有意识且清醒，立即送诊。

Ingestion: Do not use emetic method (unless directed by a medical worker).If the patient is still conscious and awake, see the doctor immediately.

最重要症状及急害效应：人体吸入金属粉末而超标导致神志不清。

Most Important Symptoms and Emergency Effects: Excessive inhalation of metal powder leads to unconsciousness.

对急救人员之防护：无

Protection for First-Aid Personal: No

对医师之提示：无

Tips to Doctors : No

5、 灭火措施 Fire Extinguishing Measures

适用灭火剂：水、泡沫、干粉及二氧化碳灭火剂。

Suitable extinguishing agent: Water, foam, dry powder and carbon dioxide fire extinguishing agent

灭火时可能遇到之特殊危害：无相关资料可看。

Special hazards that may be encountered when extinguishing fire: No relevant information available.

特殊灭火程序：不适用。

Special Fire Fighting Procedures: N/A

消防人员之特殊防护设备：氧气筒及防护衣。

Special protective equipment for firefighters: Oxygen cylinder and protective clothing

6、 泄露处理方法 Leakage Disposal Method

物质安全资料表 Material Safety Data Sheet (MSDS)

个人应注意事项：佩戴口罩并按规范要求进行作业（注意高温且有腐蚀性）。 Personal Attentions: Wear masks and work according to specifications (pay attention to high temperature and corrosiveness).
环境注意事项：勿使泄露面积扩大。 Environmental considerations: Do not widen the leak area.
清理方法：通风并清扫 Cleaning method: Ventilating and cleaning

7、安全处置与储存方法 Safe disposal and storage methods

处置 Disposal: *阅读所有的容器标示。 Read all container labels. *工作场所内禁吃东西、喝饮料、抽烟及化妆。 No eating, drinking, smoking and makeup is allowed in the workplace. *使用完毕，操作者应用肥皂清洁双手。 After use, the operator needs to clean hands with soap.
储存： 避免高温及接触氧化剂、酸与过氧化氢等化学品。 Storage: Avoid high temperature and avoid contact with chemicals such as oxidants, acids and hydrogen peroxide.

8、暴露预防措施 Exposure preventive measures

工程控制： 提供足够的机械式排气装置。 Engineering Controls: Provide enough mechanical exhaust devices.				
容许浓度Permissible concentration			生物指标Biological indicators	
时量平均容许浓度 (TWA)	短时间时量平均容许浓度 (STEL)	最高容许浓度 (Ceiling)	LD50 (测试动物、吸收途径)	LC50 (测试动物、吸收途径)
/	/	/	/.	/
个人防护设备Personal protective equipment: / 呼吸防护Respiratory protection: *一般使用：配戴口罩。 General use: Wear a mask. *紧急状态防护：粉尘或烟雾超过容许浓度时，应穿戴防粉尘、防烟雾的防毒面具。 Emergency protection : When dust or smoke exceeds the allowable concentration, gas masks should be worn to prevent dust and smoke. *眼睛防护：配戴安全眼镜及/或面罩（当有粉尘飘散或金属喷溅时）。 Eye protection: Wear safety glasses and/or masks (when dust or metal splashes are present).				

9、物理及化学资料 Physical and chemical data

物质安全资料表 Material Safety Data Sheet (MSDS)

物质状态：固体 Material state: Solid	PH 值：不适用 PH Value: N/A
形状：/ Shape: /	颜色：金黄色 Color: Golden
分子量：不适用 Molecular weight: N/A	熔点：1064 °C Melting point: 1064 °C
沸点：不适用 Boiling point: N/A	闪火点：不适用 Flash point: N/A
分解温度：/ Decomposition temperature: /	爆炸界限：不适用 Explosion boundaries: N/A
自然温度：不适用 Natural temperature: N/A	气味：无气味 Smell: Odorless
蒸气比重：（空气=1）：不适用 Vapor density: N/A	蒸汽压：不适用 Vapor pressure: N/A
密度：17.6 g/cm ³ Density: 17.6 g/cm ³	水中溶解度：不溶于水 Solubility in water: Insoluble in water

10、安定性及反应性 Stability and reactivity

安定性 Stability	安定Stable	适用 Applicable	特殊状况下可能之危害反应 Possible Harmful Reactions under Special Conditions	无 No
	不安定Unstable	不适用N/A		
危害分解物：无 Hazardous decomposition: None				
应避免之状况：高温。 Conditions to avoid: High temperature.				
应避免之物质：与酸、过氧化氢（H ₂ O ₂ ）等强酸性及强氧化性物质接触。 Substances that should be avoided: Contact with strong acidic and oxidizing substances such as acid and hydrogen peroxide（H ₂ O ₂ ）.				

11、毒性资料TOXICOLOGICAL INFORMATION:

（本项无法取得相关资料）--NIF (No Information Found)

急毒性Acute toxicity:
局部效应Partial effect:
致敏效应Sensitization effect:
慢毒性或长期毒性Chronic or long-term toxicity:
特殊效应Special effect:

物质安全资料表 Material Safety Data Sheet (MSDS)

12. 运送资料 Transport Information

国际运送规定 International Transport Regulations: INTERNATIONAL MATERIAL DANGEROUS GOODS CODE LABEL USA DOT SHIPPING LABEL: DOT SHIPPING NAME: NON-HAZARDOUS MATERIAL
联合国编号: 不适用 United Nations Number: N/A
国内运送规定: 除依据操作及保管上应注意事项外, 亦遵照有关铅中毒预防规则之注意事项。 Domestic transport regulations: In addition to matters needing attention in operation and storage, attention should also be paid to the regulations for the prevention of lead poisoning.
特殊运送方法及注意事项: 无 Special transportation methods and matters needing attention: No

13. 法规资料 Regulation Data

劳动安全卫生法、废弃物清理法相关无铅环保法规 Labor Safety and Health Law, Waste Cleaning Law and Lead-free Environmental Protection Regulations
--

14. 生态资料 Ecological data

可能之环境影响/环境分布: 不需特别注意。 Possible environmental impact/distribution: No special attention is required.
--

15. 废弃处置方法 Waste Disposal methods

废弃处置方法: 属无害事业废弃物, 在掩埋前先行固化 Waste disposal methods: It belongs to harmless industrial waste and solidifies before burying.
--

16. 其它资料 Other data :

无 No

物质安全资料表 Material Safety Data Sheet (MSDS)

电镀纯镍层

Nickel Plating

一、 外观：表面灰白光亮，无污染物。

Appearance: Surface is greyish white, bright & no contaminants.

二、 标 示：参照欧盟 ROHS无铅规格之规范提示。

Symbol: Refer to EU ROHS Lead-free Specification

三、 特性：光亮均匀。

Characteristic: Bright & uniform.

四、 用途：提高基材防护性。

Purpose: Improve the protection of the base metal.

五、 规格：符合欧盟ROHS要求。

SPEC: Conform to EU ROHS requirements

六、 物理性质PHYSICAL PROPERTIES:

(1) 液相温度：约1453℃。

LIQUIDUS TEMPERATURE: About 1453℃

(2) 比重：9.0 g/cm³(25℃)。

SPECIFIC GRAVITY: 9.0 g/cm³(25℃)

七、 合金组成 (单 位： Wt%):

ALLOY COMPOSITION (Unit: Wt%)

成份 Composition	Ni	S	C	Cu
含量 (%) Content	≥99.7	≤0.01	≤0.01	≤0.03
CAS NO	7440-02-0	63705-05-5	7440-44-0	7440-50-8
备注 Remarks				

物质安全资料表 Material Safety Data Sheet (MSDS)

1、 物品与厂商资料 Items and Manufacturer information

物品名称：无铅电镀镍层 Item Name: Lead-free Nickel plating			
物品编号： KSYTNi-001 Item No:			
制造厂商： 翊腾电子科技（昆山）有限公司 Manufacturer: YTOP Electronic Technology (Kunshan) Co.,Ltd.			
制作部门：PBU工程部 Prepared Dept.: Engineering Dept PBU	制作日期：2013.05.14 Prepared Date:	版本 Revision No.	V1.5
文件编号： YT-MSDS-NI File No.:	修改日期：2019.08.26 Revised Date:	有效期 Validity period	3年 3 years
联络电话： Tel: +86-512-55101900 Fax: +86-512-55101905			

2、 主要成份资料 Main Composition:

中（英）文名称 Chinese (English) Name	化学式 Chemical formula	含量(WT%) Content(WT%)	化学文摘社登记号码 (CAS NO)
镍 (Nickel)	Ni	99.7	7440-02-0

3、 危害性资料 Harmfulness Information:

本产品是根据在欧盟立法之WEEE及ROHS要求、美国环保局（ENA）禁止使用铅和镉（及其衍生物）之相关规定而开发之环保产品，电镀层合金成份中含铅量（其产品关键之两个参数之一,Wt%） $\leq 90\text{PPM}$ 。此项要求能保证不对人体及环保产生直接性危害，故其危害性并无更深入之资料。

This green product is developed in accordance with the requirements of WEEE and ROHS in EU legislation and the relevant regulations of ENA prohibiting the use of lead and cadmium (and its derivatives). Lead content (Wt%) of electroplated alloy composition, one of two key parameters of this product, is $\leq 90\text{PPM}$. This requirement can ensure that there is no direct harm

物质安全资料表 Material Safety Data Sheet (MSDS)

to human and environmental protection. Therefore, there is no more in-depth information on its harmfulness.

4、 急救措施 First-aid Measures

使用过程中如遇下列情况，请根据相应之指引进行处理：

If you encounter the following situations in the course of use, please deal with them according to the corresponding guidelines:

*吸入：将患者移至有清新空气处；如果患者已停止呼吸，则施以人工呼吸，送急诊。

Inhalation: Move the patient to a place with fresh air. If the patient has stopped breathing, apply artificial breathing and send to the emergency department.

*皮肤接触： /

Skin Contact

*眼睛接触：以大量的清水冲洗15 分钟或者直到刺激感消失。如果刺激感仍存在，则去医院救治。

Eye Contact: Rinse with plenty of water for 15 minutes or until irritation disappears. If irritation still exists, go to the hospital for treatment.

*食入：不催吐（除非医疗人员指示）；如果患者仍有意识且清醒，立即送诊。

Ingestion: Do not use emetic method (unless directed by a medical worker). If the patient is still conscious and awake, see the doctor immediately.

最重要症状及急害效应：人体吸入金属粉末而超标导致神志不清。

Most Important Symptoms and Emergency Effects: Excessive inhalation of metal powder leads to unconsciousness.

对急救人员之防护：无

Protection for First-Aid Personal: No

对医师之提示：无

Tips to Doctors : No

5、 灭火措施 Fire Extinguishing Measures

适用灭火剂：水、泡沫、干粉及二氧化碳灭火剂。

Suitable extinguishing agent: Water, foam, dry powder and carbon dioxide fire extinguishing agent

灭火时可能遇到之特殊危害：无相关资料可看。

Special hazards that may be encountered when extinguishing fire: No relevant information available.

特殊灭火程序：不适用。

Special Fire Fighting Procedures: N/A

消防人员之特殊防护设备：氧气筒及防护衣。

Special protective equipment for firefighters: Oxygen cylinder and protective clothing

6、 泄露处理方法 Leakage Disposal Method

物质安全资料表 Material Safety Data Sheet (MSDS)

个人应注意事项：通风时作业，避免吸入灰尘，避免重复皮肤接触，穿合适的手套。 Personal Attentions: Work during ventilation, avoid inhaling dust, avoid repeated skin contact and wear appropriate gloves.
环境注意事项：含镍废料通常是收集恢复镍价值。废物处置应是必要时按照有关的政府规章。 Environmental considerations: Nickeliferous wastes are usually collected to restore nickel value. Waste disposal shall be in accordance with relevant government regulations when necessary..
清理方法： / Cleaning method: /

7、安全处置与储存方法 Safe disposal and storage methods

处置 Disposal: *阅读所有的容器标示。 Read all container labels. *工作场所内禁吃东西、喝饮料、抽烟及化妆。 No eating, drinking, smoking and makeup is allowed in the workplace. *使用完毕，操作者应用肥皂清洁双手。 After use, the operator needs to clean hands with soap.
储存：避免高温及接触氧化剂、酸与过氧化氢等化学品。 Storage: Avoid high temperature and avoid contact with chemicals such as oxidants, acids and hydrogen peroxide.

8、暴露预防措施 Exposure preventive measures

工程控制：提供足够的机械式排气装置。 Engineering Controls: Provide enough mechanical exhaust devices.				
容许浓度Permissible concentration			生物指标Biological indicators	
时量平均容许浓度 (TWA)	短时间时量平均容许浓度 (STEL)	最高容许浓度 (Ceiling)	LD50 (测试动物吸收途径)	LC50 (测试动物吸收途径)
/	/	/	/.	/
个人防护设备Personal protective equipment: / 呼吸防护Respiratory protection: *一般使用：配戴口罩。 General use: Wear a mask. *紧急状态防护：粉尘或烟雾超过容许浓度时，应穿戴防粉尘、防烟雾的防毒面具。 Emergency protection : When dust or smoke exceeds the allowable concentration, gas masks should be worn to prevent dust and smoke. *眼睛防护：配戴安全眼镜及/或面罩（当有粉尘飘散或金属喷溅时）。				

物质安全资料表 Material Safety Data Sheet (MSDS)

Eye protection: Wear safety glasses and/or masks (when dust or metal splashes are present).

9、 物理及化学资料 Physical and chemical data

物质状态: 固体 Material state: Solid	PH 值: 不适用 PH Value: N/A
形状: / Shape: /	颜色: 银白色 Color: Silvery white
分子量: 不适用 Molecular weight: N/A	熔点: 1453 °C Melting point: 232 °C
沸点: 不适用 Boiling point: N/A	闪火点: 不适用 Flash point: N/A
分解温度: 2732°C Decomposition temperature: 2732°C	爆炸界限: 不适用 Explosion boundaries: N/A, , but nickel can react with acid to release hydrogen and form explosive mixtures in the air.
自然温度: 不适用 Natural temperature: N/A	气味: 无气味 Smell: Odorless
蒸气比重: (空气=1): 不适用 Vapor density: N/A	蒸汽压: 不适用 Vapor pressure: N/A
密度: 9.0 g/cm ³ Density: 9.0 g/cm ³	水中溶解度: 不溶于水 Solubility in water: Insoluble in water

10、 安定性及反应性 Stability and reactivity

安定性 Stability	安定Stable	适用 Applicable	特殊状况下可能之危害反应 Possible Harmful Reactions under Special Conditions	无 No
	不安定Unstable	不适用N/A		

危害分解物: 无

Hazardous decomposition: None

应避免之状况: 高温。

Conditions to avoid: High temperature.

应避免之物质: 与酸、过氧化氢 (H₂O₂) 等强酸性及强氧化性物质接触, 镍能与酸反应释放氢气可在空气中形成爆炸性混合物。

Substances that should be avoided: Contact with strong acidic and oxidizing substances such as acid and hydrogen peroxide (H₂O₂). Nickel can react with acid to release hydrogen and form explosive mixtures in the air.

11、 毒性资料TOXICOLOGICAL INFORMATION:

物质安全资料表 Material Safety Data Sheet (MSDS)

*吸入Inhalation :

美国国家毒理学计划已把镍当作可致癌物质来注射部位肿瘤。国际癌症研究机构发现金属镍对人类致癌是证据不足的, 但因为没有任何的证据证明它不会致癌动物, 国际癌症研究机构得出结论认为, 金属镍可能致癌人类。

The US National Toxicology Program has used nickel as a carcinogen to study some tumors. The International Agency for Research on Cancer (IARC) found that nickel is not sufficiently evident to cause cancer in humans, but because there is insufficient evidence to prove that it does not cause cancer in animals, IARC concluded that nickel may cause cancer in humans.

1997 年, 镍元素 ACGIH 归类为: 第 5 条 “不涉嫌为人类致癌物质”。流行病学研究接触工人镍粉或尘埃和烟生产中产生的镍合金及不锈钢都没有表明存在显著呼吸癌症的危险。吸入镍可引起哮喘。

ACGIH classified nickel as “an element that can't cause cancer” (5th article) in 1997.

Epidemiologic study shows that nickel powder and dust, or nickel alloy and stainless steel which are employed to produce cigarette pose no obvious threats of respiratory tract cancer to workers. But nickel can cause asthma.

*皮肤接触Skin contact:

长期和亲密接触可能会导致金属镍刺激皮肤和镍敏感性, 可能导致过敏性皮疹。

Long-term and close contact with nickel may lead to irritation of skin and nickel sensitivity, and may lead to allergic rashes.

*眼睛接触Eye contact:

对于啮齿动物, 从含镍假肢研究发现并没有表明对人类的重大风险。

For rodents, studies of nickel-containing prostheses have found no significant risk to humans.

*食入Ingestion:

美国国立职业安全与健康 (NIOSH) 的结论, 没有证据表明镍及其无机化合物是致癌物质的。According to the conclusion of National Institute of Occupational Safety and Health (NIOSH), there is no evidence that nickel and its inorganic compounds are carcinogens.

12. 运送资料 Transport Information

国际运送规定International Transport Regulations:

INTERNATIONAL MATERIAL DANGEROUS GOODS CODE LABEL

USA DOT SHIPPING LABEL:

DOT SHIPPING NAME:NON-HAZARDOUS MATERIAL

联合国编号: 不适用

United Nations Number: N/A

国内运送规定: 除依据操作及保管上应注意事项外, 亦遵照有关铅中毒预防规则之注意事项。

Domestic transport regulations: In addition to matters needing attention in operation and storage, attention should also be paid to the regulations for the prevention of lead poisoning.

特殊运送方法及注意事项: 无

物质安全资料表 Material Safety Data Sheet (MSDS)

Special transportation methods and matters needing attention: No

13. 法规资料 Regulation Data

劳动安全卫生法、废弃物清理法相关无铅环保法规

Labor Safety and Health Law, Waste Cleaning Law and Lead-free Environmental Protection Regulations

14. 生态资料 Ecological data

可能之环境影响/环境分布: 不需特别注意。

Possible environmental impact/distribution: No special attention is required.

15. 废弃处置方法 Waste Disposal methods

废弃处置方法: 属无害事业废弃物, 在掩埋前先行固化

Waste disposal methods: It belongs to harmless industrial waste and solidifies before burying.

16. 其它资料 Other data :

参考文献 Reference Documents	1、危害化学物质中中文资料库, 环保署 Chinese database of hazardous chemicals, EPD
	2、 RTECS 资料库, TOMESPLUS 光碟, V01.34,1997 RTECS database, TOMESPLUS videodisc, V01.34,1997
	3、 HSDB 资料库, TOMESPLUS 光碟, V01.34,1997 HSDB database, TOMESPLUS videodisc, V01.34,1997
	4、 IRIS 资料库, 美国环境保护署 IRIS database, USEPA

SHINKONG SYNTHETIC FIBERS CORPORATION
CHUNGLI TECHNICAL CENTER
TAIWAN

Subject : Certification of Product Safety



Dear Sir :

This is to certify that our products:

SHINITE[®] PBT (Polybutylene Terephthalate) , PET, **NYLON**, PP and SHINBLEND[®] ALLOY comply with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC and in proposed new Directive (RoHS 2.0), and none of the following substances are intentionally used in these products.

- Arsenic and compounds
- Asbestos
- Azo compounds
- Benzene
- Beryllium and compounds (other than BeO)
- Beryllium Oxide
- Cadmium (Cd) and its compounds
- Chromium VI(Cr+6) and its compounds
- Chlorinated paraffins (CP)
- Cobalt and compounds
- Formaldehyde
- Isocyanates
- Lead (Pb) and its compounds
- Mercury (Hg) and its compounds
- Nickel and compounds
- Nonylphenols (NP) and Nonylphenol Ethoxylates (NPE)
- Ozone depleting chemicals(CFC's & HCFC's)
- Perfluorooctanic acids (**PFOAs**)
- Perfluorooctane sulfonates (**PFOs**)
- Phthalates
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ethers (PBDE)
- Polychlorinated biphenyls (PCB)
- Polychlorinated naphthalenes (PCN)
- Polychlorinated terphenyls(PCT)
- Polyvinyl chloride(PVC) and PVC blends
- Polyaromatic Hydrocarbons(PAHs)
- REACH Substances of Very High Concern (SVHC)
- Tetrabromobisphenol-A-bis-(2,3-dibromopropylether) (TBBP-A-bis)
- Tetrabromobisphenol-A (TBBP-A)
- Tributyltin (TBT), Tributyltin Oxide (TBTO) and Triphenyltin (TPT)
- Substances depleting the ozone layer (Hydrofluorocarbon[HFC], Perfluorocarbon[PFC])
- 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylthyl)-phenol(UV320 , CAS No.3848-71-7)

2009/10/15

Should you have any questions, please feel free to contact me. Thanks.

Yours truly,

J. K. Liew

ENPLA division, QA Section Chief



8th Floor, 123 Nanking East Road, Section 2, Taipei, Taiwan
FAX : +886-3-491 5763; TEL : +886-3-493 2131, Technical Center

Test Report (SVHC)

No. SHAEC2110479002

Date: 01 Jun 2021

Page 1 of 19

SHINKONG APPLIED MATERIALS(JIANGSU)CO.,LTD
NO.1 HUAFA ROAD,HANJIANG DISTRICT,YANGZHOU CITY,JIANGSU PROVINCE

The following sample(s) was/were submitted and identified on behalf of the clients as :

E202G0-30BK+D202G0-30BK+D201G0-30BK

SGS Job No. : SP21-016228 - SH

Date of Sample Received : 26 May 2021

Testing Period : 26 May 2021 - 01 Jun 2021

Test Requested : As requested by client, SVHC screening is performed according to:

- (i) Two hundred and eleven (211) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Jan 19, 2021 regarding Regulation (EC) No 1907/2006 concerning the REACH.
- (ii) Eight (8) substances in the Public Consultation List of potential Substances of Very High Concern (SVHC) published by European Chemicals Agency (ECHA) on and before Mar 9, 2021 regarding Regulation (EC) No 1907/2006 concerning the REACH.

Test Results : Please refer to next page(s).

Summary :

According to the specified scope and evaluation screening, the test results of SVHC are $\leq 0.1\%$ (w/w) in the submitted sample.	PASS
---	------

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Jenny Lan

Jenny Lan

Approved Signatory

scan to see the report



SHAEC2110479002



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Test Report (SVHC)

No. SHAEC2110479002

Date: 01 Jun 2021

Page 2 of 19

Remark :

1. The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:
<http://echa.europa.eu/web/guest/candidate-list-table>
These lists are under evaluation by ECHA and may subject to change in the future.

2. REACH obligation:

2.1 Concerning article(s):

Communication:

Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance in the Candidate List.

Notification:

In accordance with Regulation (EC) No 1907/2006, any EU producer or importer of articles shall notify ECHA, in accordance with paragraph 4 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance in the Candidate List is present in those articles above a concentration of 0.1% weight by weight (w/w).

SGS adopts the ruling of the Court of Justice of the European Union on the definition of an article under REACH unless indicated otherwise. Detail explanation is available at the following link:

<http://www.sgs.com/-/media/global/documents/technical-documents/technical-bulletins/sgs-crs-position-statement-on-svhc-in-articles-a4-en-16-06.pdf?la=en>

2.2 Concerning material(s):

Test results in this report are based on the tested sample. This report refers to testing result of tested sample submitted as homogenous material(s). In case such material is being used to compose an article, the results indicated in this report may not represent SVHC concentration in such article. If this report refers to testing result of composite material group by equal weight proportion, the material in each composite test group may come from more than one article.

If the sample is a substance or mixture, and it directly exports to EU, client has the obligation to comply with the supply chain communication obligation under Article 31 of Regulation (EC) No. 1907/2006 and the conditions of Authorization of substance of very high concern included in the Annex XIV of the Regulation (EC) No. 1907/2006.

2.3 Concerning substance and preparation:

If a SVHC is found over 0.1% (w/w) and/or the specific concentration limit which is set in Regulation (EC) No 1272/2008 and its amendments, client is suggested to prepare a Safety



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Test Report (SVHC)

No. SHAEC2110479002

Date: 01 Jun 2021

Page 3 of 19

Data Sheet (SDS) against the SVHC to comply with the supply chain communication obligation under Regulation (EC) No 1907/2006, in which:

- a substance that is classified as hazardous under the CLP Regulation (EC) No 1272/2008.
- a mixture that is classified as hazardous under the CLP Regulation (EC) No 1272/2008, when it contains a substance with concentration equal to, or greater than the classification limit as set in Regulation (EC) No. 1272/2008; or
- a mixture is not classified as hazardous under the CLP Regulation (EC) No 1272/2008, but contains either:
 - (a) a substance posing human health or environmental hazards in an individual concentration of $\geq 1\%$ by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures) or $\geq 0.2\%$ by volume for gaseous mixtures; or
 - (b) a substance that is PBT, or vPvB in an individual concentration of $\geq 0.1\%$ by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures); or
 - (c) a substance on the SVHC candidate list (for reasons other than those listed above), in an individual concentration of $\geq 0.1\%$ by weight for non-gaseous mixtures; or
 - (d) a substance for which there are Europe-wide workplace exposure limits.

3. If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

Test Sample :

Sample Description :

Specimen No.	SGS Sample ID	Description
SN1	SHA21-104790.008	Black solid pellet+black solid pellet+black solid pellet

Test Method :

SGS In-House method-SHTC-CHEM-SOP-97-T, SHTC-CHEM-SOP-302-T, Analyzed by ICP-OES, UV-VIS, GC-MS, HPLC-DAD/MS and Colorimetric Method.



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Test Report (SVHC)

No. SHAEC2110479002

Date: 01 Jun 2021

Page 4 of 19

Test Result: (Substances in the Candidate List of SVHC)

Batch	Substance Name	CAS No.	008 Concentration (%)	RL (%)
-	All tested SVHC in candidate list	-	ND	-

Test Result: (Substances in the Consultation List of potential SVHC)

Batch	Substance Name	CAS No.	008 Concentration (%)	RL (%)
-	All tested SVHC in consultation list	-	ND	-



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