

新规格物料■认可书/□取消认可书

编制日期:

序号:

物料编号: _____ 适用机型: 日立 roku UX38 49D1800	
物料名称: wifi 天线 (属于: ☐ 战略部品 ☒ 方案部品 ☐ 通用部品)	
供 应 商: 惠州高盛达有限公司 供应商物料编号: WC0D-400MM 无红磷	
供应商代码: _____ 送样部门: 采购部 送样人员: _____ 送样日期: _____	
认可原因: ☒ 新物料 ☐ 降低成本 ☐ 技术指标改善 ☐ 更换供应商 ☐ 试产用途 (试产时间: _____ 试产数量: _____)	供应商确认状态: ☐ 已确认 ☐ 未确认 (供应商未确认时, 应填写下列各项:) 供 应 商 评 审 人 员: _____ 评 审 时 间: _____ 确认供应商批准人员: _____ 批 准 时 间: _____
认可意见及资料: 1) 该物料: ① ☒ 认可 ② ☐ 有条件认可, 数量为 _____ 件 ③ ☐ 不认可 2) 有效日期: _____ 2) 有效日期: _____ 3) 附送资料: ☐ 说明书 ☐ 纸质图纸 ☒ 电子版图纸 (yfzls@tcl.com) ☒ 用于环保产品, 附部品原材料清单, 禁用物质检测报告 4) 附送样板: ☒ 有样板 ☐ 无样板, 到货后补样板	取消认可意见及资料: 1) 产品升级, 向下兼容, 则原有物料编号消; 2) 新品淘汰, 不再使用; 3) 降低成本, 不再使用; 4) 供应商停产; 5) 不符合标准化要求取消。
测试内容及说明: 日立 UX38 49D1800 项目, WIFI 天线, 在 07-ANT300-MA0G 基础上更改材质为不含红磷, 长度 400mm, 正式认可	取消说明: 1) 现有库存: 2) 所应用的产品型号 (个数): 3) 物料编码作废时间:
认证次数: 1 测试: 李清 日期: 2017-07-06 审核 (各产品所所长): _____ 日期: _____ 确认 (部品部): _____ 日期: _____ 商务确认 (商务企划部□采购部□ 显示器件采购部□): _____ 日期: _____ 批准: _____ 日期: _____	取消认可审批: 拟制: _____ 日期: _____ 审核 (各产品所所长): _____ 日期: _____ 确认 (部品部): _____ 日期: _____ 批准: _____ 日期: _____

SPECIFICATION

SHEET FOR APPROVAL

(Revision : R : A1)

CUSTOMER(客户名称)	TCL
CS P/N(客户机种)	
PART NAME(品名)	WiFi Antenna
FREQUENCY(频率)	2400-2500MHz 5150-5850 MHz
GSD NO.(物料编号)	WC0D/PIFA/2.4G+5G/外拉/400mm/ 不含红磷
DATE(日期)	2017-07-05

CUSTOMER	
CHECK	APPROVAL

Remark(备注)：

Sign(客户确认签字盖章)：

DESIGN	CHECK	APPROVAL
唐红君	陈宇科	熊运自
20170705	20170705	20170705

惠州高盛达科技有限公司

HUIZHOU GAOSHENGDA TECHNOLOGY CO.,LTD

中国惠州仲恺高新技术开发区华宇路 75 号

HUA YU RD., NO.75, ZHONGKAI HIGH-TECH DEVELOPMENT AREA, HUIZHOU, CHINA

ANTENNA SPECIFICATION

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ANTENNA SPECIFICATION

1. 概述

1.1 名词解释

dBi	Decibel relative isotropic antenna
Tx	Transmit frequency
Rx	Receive frequency
TRP	Total Radiated Power
TIS	Total Isotropic Sensitivity
VSWR	Voltage Standing Wave Ratio
GSM	Global Service for Mobile communication
DCS	Digital Communication System
PCS	Personal Communication System
PHS	Personal Handy-phone System
SAR	Specific Absorption Rate
PCB	Printed Circuit Board
CDMA	Code Division Multiple Access
WCDMA	Wideband Code Division Multiple Access
LTE	Long Term Evolution

2. 测试状态

2.2.1 VSWR

VSWR 是通过天线测试治具连接到矢量网络分析仪 (E5071D) 上测试的, 测试状态为自由空间;

2.2.2 TRP&TIS&Gain&Efficiency

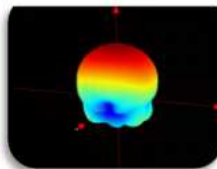
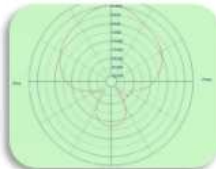
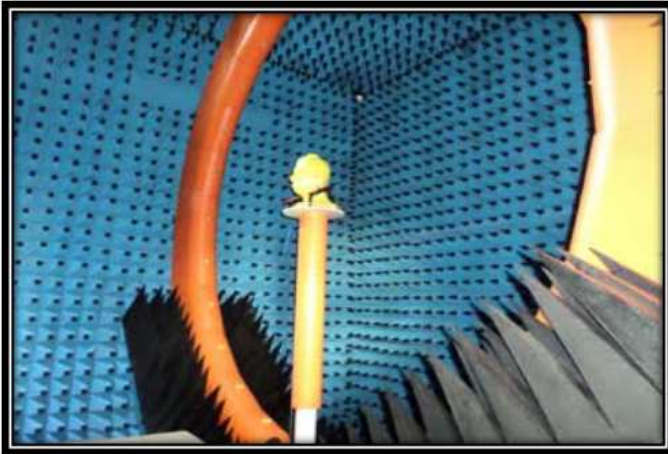
TRP&TIS&Gain&Efficiency 是在测试系统为 8m*4m*4m 标准 ETS 高性能无反射屏蔽暗室测试的, 测试终端水平放置于转台; 标准喇叭天线测试极化为水平极化; 深圳市中天迅科技测试系统可完成各制式 CTIA Active&Passive 测试要求;



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2.2.3 测试设备

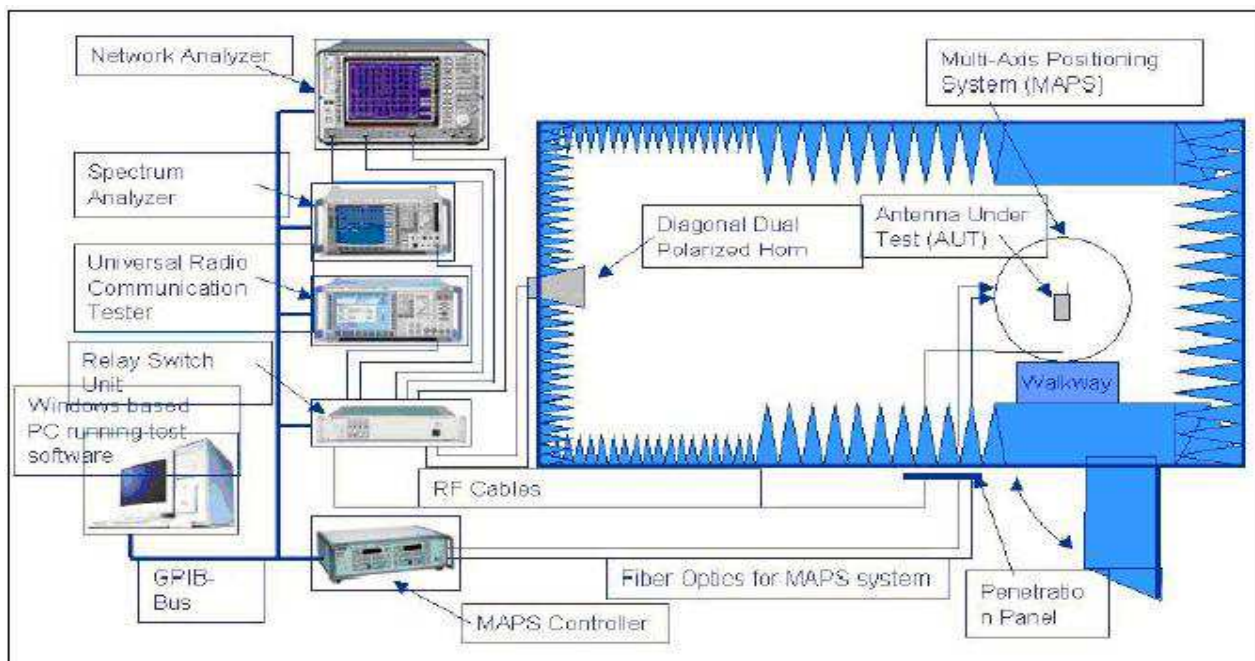
1



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.



ANTENNA SPECIFICATION

3. 测试信息

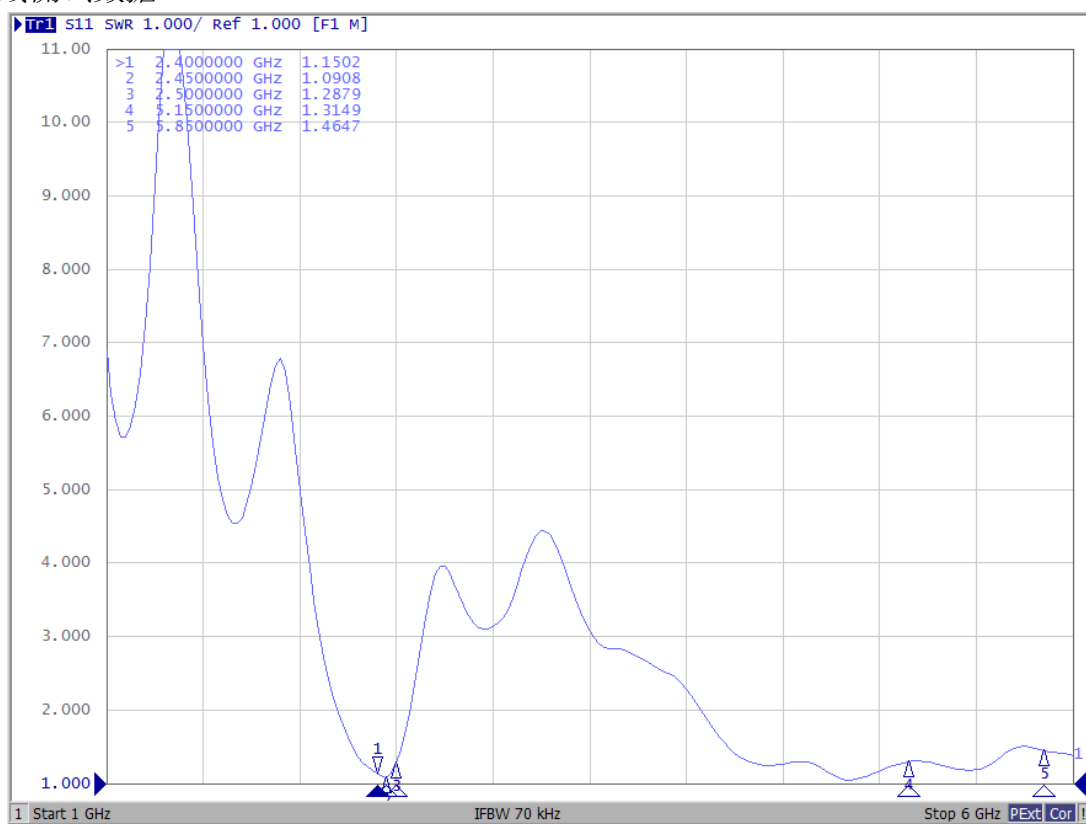
3.1 项目描述

本项目为电视 WIFI 项目，2400-2500MHz;5150-5850 MHz

- 1.WIFI 天线采用钢片形式设计在电视显示器底部；
- 2.通过同轴线引到 WIFI 模块

4. 测试数据

4.1 天线测试数据 VSWR



4.2 VSWR AND GAIN

VSWR		GAIN	
Freq. Band	OPEN SPEC	Band Freq.	OPEN SPEC
2400MHz	≤ 2.0	2400MHz	$\geq -1.0\text{dBi}$
2500MHz	≤ 2.0	2500MHz	$\geq -1.0\text{dBi}$
5150MHz	≤ 2.0	5150MHz	$\geq -1.0\text{dBi}$
5850MHz	≤ 2.0	5850MHz	$\geq -1.0\text{dBi}$

※Measuring a 50 Ω test jig is connected to a network analyzer to measure the VSWR.

※※All test value is done in customer approval fixture.

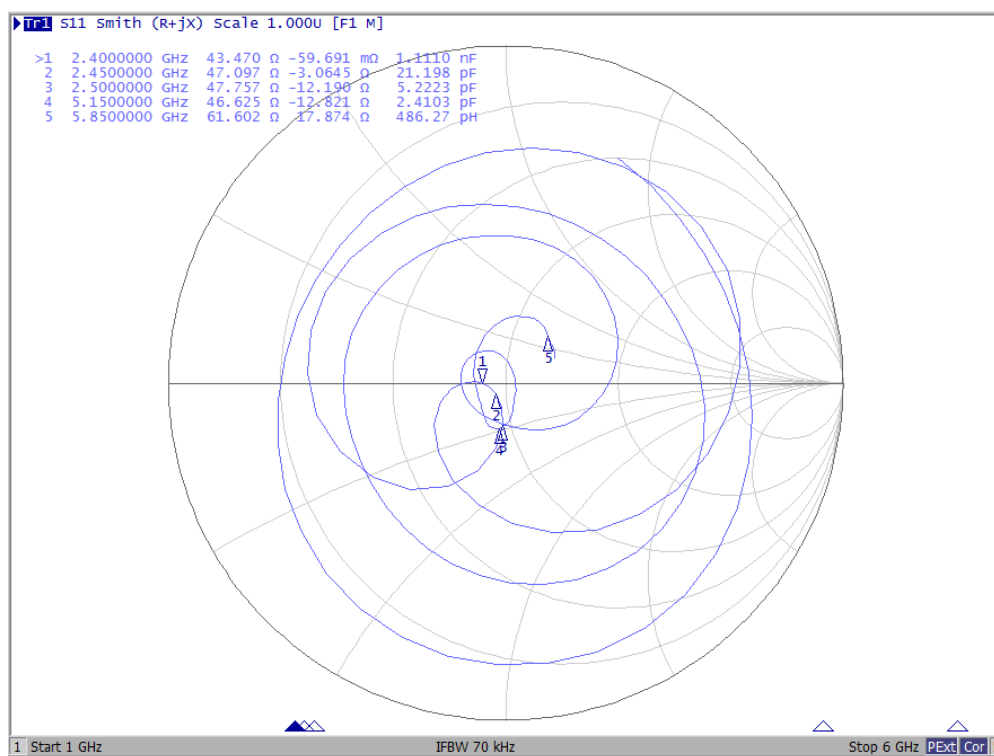


ANTENNA SPECIFICATION

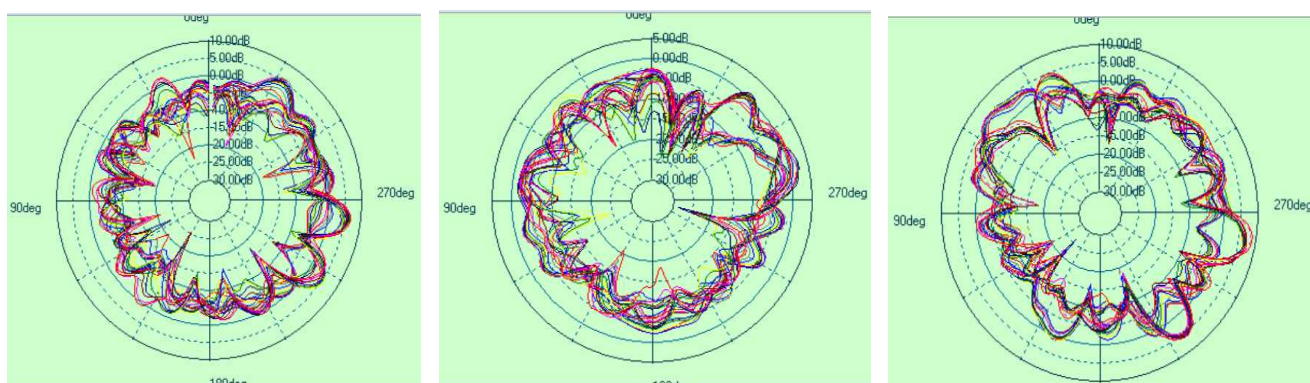
4.3 GAIN Efficiency

Frequency (MHz)	2400	2450	2500	5150	5850
Average Gain Efficiency (dB)	1.42 (44%)	1.72 (48%)	1.65 (45%)	2.34 (61%)	2.57 (66%)

4.4 Smith Chart

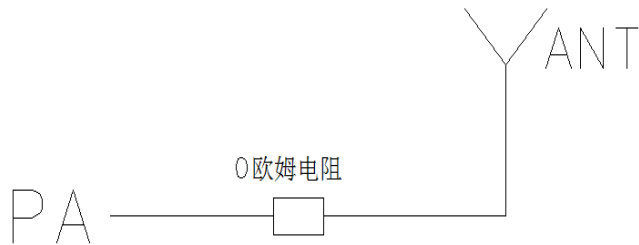


4.5 Directional drawing of horizontal plane of



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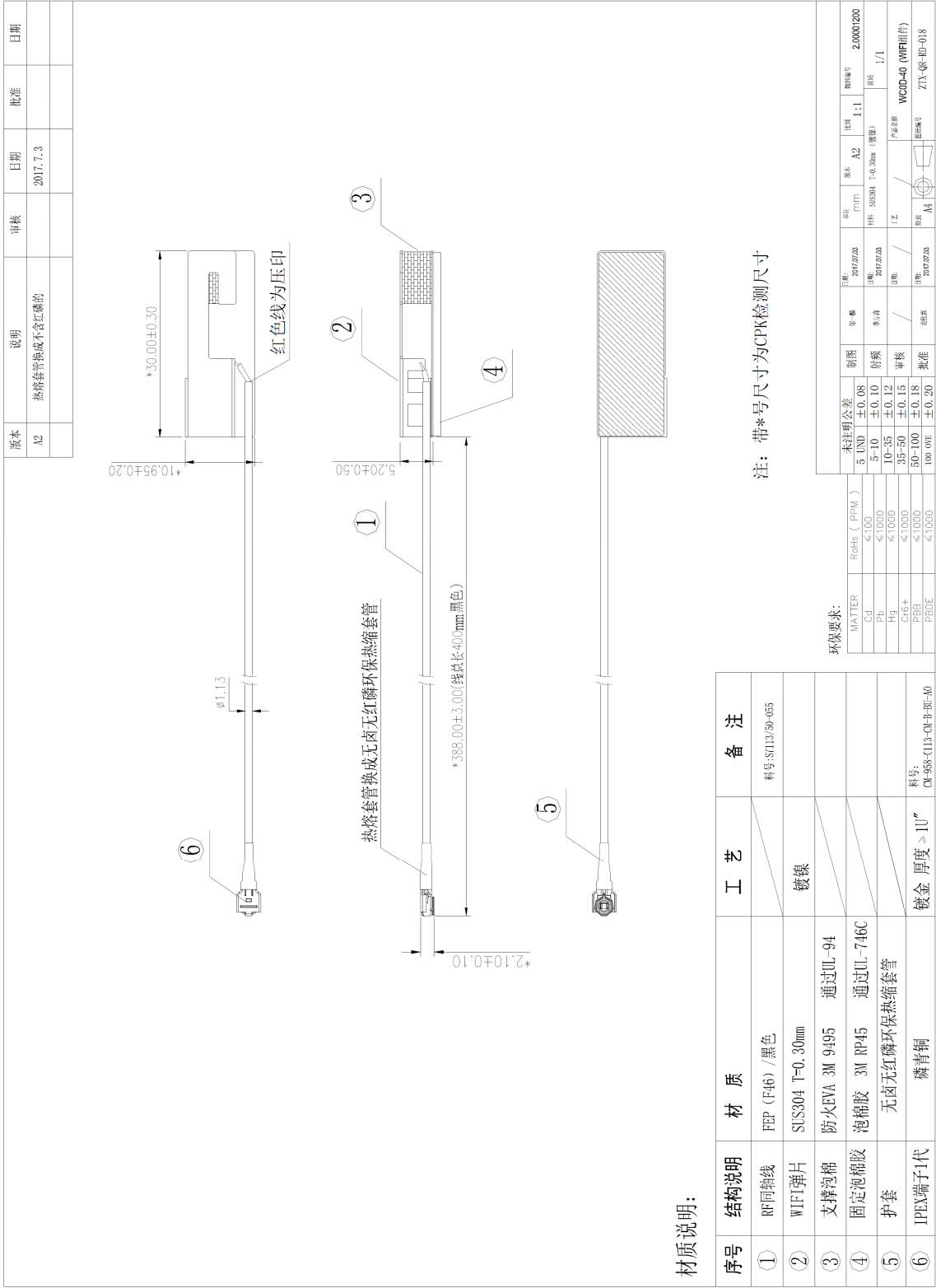
4.6 Matching circuit



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5 Mechanical Specification

5.1 Mechanical Configuration(L=400mm)



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6. The packing way

作业指导书					
	版本	工序序号/名称	工序工时	日产量	
	A1	装箱	/	/	
作业方法（自该工序作业合格后,方能流入下一道工序）			注意事项		
1. 每40pcs产品采用泡棉整齐、橡皮筋包扎，每（40pcs）产品用PE封口胶袋包装,贴小标签，填写产品名称、物料号、数量、周期等信息；			注意标签有无贴错，漏贴；箱子有无破损		
2. 将独立包装好的产品。每9袋装入（36*28*0.05cm）PE封口胶袋装好（360PCS）的PE装袋,贴小标签，填写产品名称、物料号、数量、周期等信息；					
4. 装箱，纸箱规格（38*26*9cm）每小箱装2袋（720pcs），					
5. 装箱，纸箱规格（45*32.5*42cm）每大箱装5小箱（3600pcs）尾数除外；					
6. 标签贴于外箱的右上角，标签内容包括（生产厂家，型号，产品名称，客户编码，数量，订单号，日期，QA检验，客户所提月份标RoHS等）不可有漏写，写错现象					
			用量	使用工具	
			PE袋开口袋	240*160mm	
			PE封口袋	360*280mm	
			泡棉		
			橡皮筋		
			纸箱	38*26*9cm	
			纸箱	45*32.5*42cm	
修订内容			修订日期	修订人	
版本					
制订	邹一麟	审核	易爱玲	品质确认	胡春梅
				批准	刘玉威



图1：确认数量/贴内标签

图2：装箱



图4：贴外箱标签/封箱

图3：装箱



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7. Salt-Spray test

35℃, 85%RH, 48Hours(According to MIL-STD-810E)The salt-spray is generated from a 5% salt solution., The VSWR, Gain, Radiation Pattern must be met specifications after the salt-spray test.

8. Environment Characteristic

NO.	ITEM	TEST CONDITION	SPECIFICATION
7-1	High Temperature/Humidity Storage Test(non operating)	1.Temperature: +70 ±2℃ 2.Humidity: 90~95%RH 3.Time: 48hrs	No material deformation is allowed.
7-2	Low Temperature/Humidity Storage Test(non operating)	1.Temperature: -30±2℃ 2.Humidity: 0%RH 3.Time:48hrs	The VSWR, Gain, Radiation Pattern must be met specifications after these test.

9.MSDS

材质成份表

序号	材料（原料） 名称	第三方公证化学报 告测试编号	第三方公证化学报 告测试单位	第三方公证化学 报告测试日期	状态	文档
1	SUS304	SZXEC1700370001	SGS	2017/04/28	有效	PDF
2	泡棉	SZC16071880182-1	SGS	2016/7/19	有效	PDF
3	3M 背胶	SHAEC1711933801	SGS	2017/6/13	有效	PDF
4	I-PEX	CANML1617049802	SGS	2016/09/01	有效	PDF
5	镀锡铜线	ECL01I042029	CTI	2016/07/27	有效	PDF
6	热缩套管	SCL01J029488017	CTI	2017/05/16	有效	PDF



ANTENNA SPECIFICATION

GSD P/N : WC0D/PIFA/2.4G+5G/外拉/400mm/不含红磷

Editor:唐红君

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测试报告

No. SZXEC1700370001

日期: 2017年04月28日 第1页,共5页

深圳市金信通金属有限公司
深圳市龙岗区平湖街道凤凰大道454号

以下测试之样品是由申请者所提供及确认: 不锈钢 304

SGS工作编号: RP17-003404 - SZ
样品接收日期: 2017年04月25日
测试周期: 2017年04月25日 - 2017年04月28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)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

Tire Li李伦立
批准签署人

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Shenzhen, China

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ANTENNA SPECIFICATION

GSD P/N : WC0D/PIFA/2.4G+5G/外拉/400mm/不含红磷

Editor:唐红君

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测试报告

No. SZXEC1700370001

日期: 2017年04月28日 第2页,共5页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	SZX17-003700.001	银灰色金属

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:
- (1)参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
 - (2)参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
 - (3)参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
 - (4)参考IEC 62321-7-1:2015, 用紫外-可见分光光度计比色法测定六价铬的含量
 - (5)参考IEC 62321-6:2015, 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚)的含量

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	ND
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))*	-	µg/cm²	0.10	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND



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TOIETEC GAOSIENGA TECHNOLOGY CO., LTD

ANTENNA SPECIFICATION



测试报告

No. SZXEC1700370001

日期: 2017年04月28日 第3页,共5页

测试项目	限值	单位	MDL	001
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

备注:

(1) 最大允许限值引用自RoHS指令(EU) 2015/863。

IEC 62321系列等同于 EN 62321系列

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

(2) a. 当六价格的浓度高于0.13 µg/cm²时, 样品为阳性, 即含有六价格;

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

c. 当六价格的浓度介于0.10 µg/cm²与0.13 µg/cm²之间时, 无法直接判定是否检测到六价格,

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, 样品的六价格测试结果仅能代表测试时样品含六价格的状态。



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GSD P/N : WC0D/PIFA/2.4G+5G/外拉/400mm/不含红磷

Editor:唐红君

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测试报告

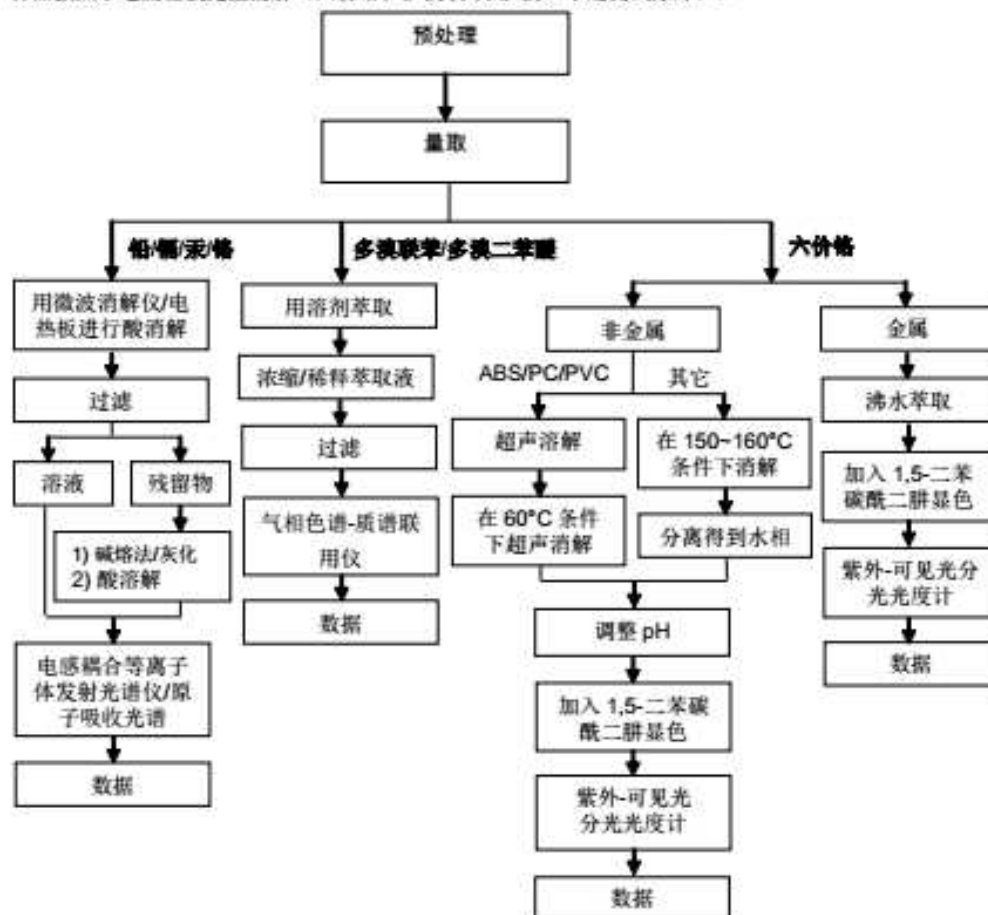
No. SZXEC1700370001

日期: 2017年04月28日 第4页,共5页

附件

RoHS 测试流程图

- 1) 分析人员: 邓焕梁 / 麦康志 / 任秋美
- 2) 项目负责人: 罗敏仪 / 周文凯 / 童妙琦
- 3) 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)。



SGS-CTI (Shenzhen) Technical Service Co., Ltd.
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测试报告

No. SZXEC1700370001

日期: 2017年04月28日 第5页,共5页

样品照片:



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*** 报告完 ***



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检测报告(Test Report)

检测报告编号(Report No.): SZC16071880182-1 日期(Date): 2016/7/19 页数(Page): 1 of 6

委托单位: 东莞市鼎达包装材料有限公司
Applicant: Dongguan City Dingda Packaging Materials Co. Ltd.
单位地址: 东莞市长安镇沙头社区大井街 11 号慧丰工业园 A 栋 2 楼
Address: 2 F, Building A, Huifeng Industrial Park, No. 11, Dajin Street, Shatou Community, Chang'an Town, Dongguan City.

样品信息(Sample information)

样品名称(Sample Name): 防火 EVA
样品描述(Sample Description): 深灰色泡沫(Dark gray foam)
样品型号(Sample Model): 防火 EVA
样品编号(Sample No.): QT1607188018201
委托日期(Sample Received Date): 2016/7/18
检测日期(Testing Period): 2016/7/18 - 2016/7/19

检测要求(Test Requested):

根据客户要求, 检测其送检样品中的铅、镉、汞、六价铬、多溴联苯、多溴二苯醚、DBP、BBP、DEHP、DIBP 的含量(As specified by client, to determine the Pb, Cd, Hg, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP content in the submitted sample.).

检测方法(Test Method):

请参见后续页(Please refer to following page(s)).

检测结果(Test Result):

请参见后续页(Please refer to following page(s)).

结论(Conclusion):

基于所送样品进行的检测, 铅、镉、汞、六价铬、多溴联苯、多溴二苯醚、DBP、BBP、DEHP、DIBP 的检测结果显示符合欧盟 RoHS 指令 2011/65/EU 及其修订指令 EU 2015/863 的限值要求(Based on the performed tests on submitted samples, the results of Pb, Cd, Hg, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863.).

审核人
Checked by

Angela
Angela

授权签字人
Signed for and on behalf of HCT

Michael
Michael
实验室经理 东莞市慧丰检测有限公司
Laboratory Manager
报告专用章



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检测报告(Test Report)

检测报告编号(Report No.): SZC16071880182-1

日期(Date): 2016/7/19

页数(Page): 2 of 6

检测结果(Test Result(s)):

单位(Unit): mg/kg

检测项目 (Test Items)	检测方法/仪器 (Test Method/ Equipment)	方法检出限 (MDL)	含量 (Content)	EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863
铅 Lead(Pb)	参考(Refer to) IEC 62321-5:2013, ICP-OES/AAS	2	N.D.	1000
镉 Cadmium(Cd)		2	N.D.	100
汞 Mercury(Hg)	参考(Refer to) IEC 62321-4:2013, ICP-OES	2	N.D.	1000
六价铬 Hexavalent Chromium(Cr(VI)) 通过碱液萃取 by Alkaline extraction	参考(Refer to) IEC 62321:2008, UV-VIS	2	N.D.	1000
一溴联苯 Mono-bromobiphenyl		5	N.D.	—
二溴联苯 Di-bromobiphenyl		5	N.D.	
三溴联苯 Tri-bromobiphenyl		5	N.D.	
四溴联苯 Tetra-bromobiphenyl		5	N.D.	
五溴联苯 Penta-bromobiphenyl		5	N.D.	
六溴联苯 Hexa-bromobiphenyl		5	N.D.	
七溴联苯 Hepta-bromobiphenyl		5	N.D.	
八溴联苯 Octa-bromobiphenyl		5	N.D.	
九溴联苯 Nona-bromobiphenyl		5	N.D.	
十溴联苯 Deca-bromobiphenyl		5	N.D.	
多溴联苯 Polybrominated Biphenyls(PBBs)	参考(Refer to) IEC 62321-6:2015, GC-MS	—	N.D.	1000
一溴二苯醚 Mono-bromodiphenyl ether		5	N.D.	—
二溴二苯醚 Di-bromodiphenyl ether		5	N.D.	
三溴二苯醚 Tri-bromodiphenyl ether		5	N.D.	
四溴二苯醚 Tetra-bromodiphenyl ether		5	N.D.	
五溴二苯醚 Penta-bromodiphenyl ether		5	N.D.	
六溴二苯醚 Hexa-bromodiphenyl ether		5	N.D.	
七溴二苯醚 Hepta-bromodiphenyl ether		5	N.D.	
八溴二苯醚 Octa-bromodiphenyl ether		5	N.D.	
九溴二苯醚 Nona-bromodiphenyl ether		5	N.D.	
十溴二苯醚 Deca-bromodiphenyl ether		5	N.D.	
多溴二苯醚 Polybrominated Diphenyl Ethers(PBDEs)		—	N.D.	



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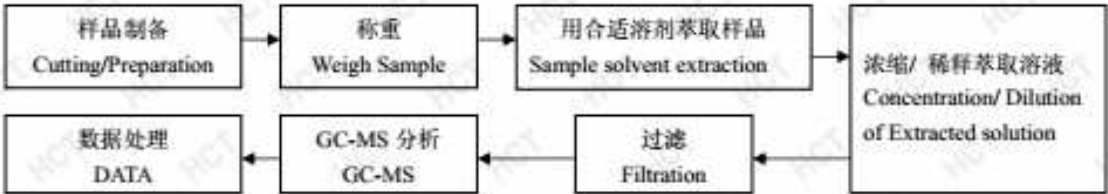
检测报告(Test Report)

检测报告编号(Report No.): SZC16071880182-1 日期(Date): 2016/7/19 页数(Page): 3 of 6

检测项目 (Test Items)	检测方法/仪器 (Test Method/ Equipment)	方法检出限 (MDL)	含量 (Content)	EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863
邻苯二甲酸二正丁酯 Dibutyl phthalate (DBP)	参考(Refer to) BS EN 14372:2004, GC-MS	30	N.D.	1000
邻苯二甲酸丁苄酯 Butylbenzyl phthalate (BBP)		30	N.D.	1000
邻苯二甲酸二(2-乙基己基)酯 Di-(2-ethylhexyl) Phthalate (DEHP)		30	N.D.	1000
邻苯二甲酸二异丁酯 Di-iso-butyl phthalate (DIBP)		30	N.D.	1000

备注(Note): mg/kg = ppm=parts per million
MDL=Method Detection Limit 方法检出限
N.D.=Not Detected(less than method detection limit), 未检出 (小于方法检出限)
"—"=Not regulated 无规定

DBP, BBP, DEHP, DIBP 的检测流程图
(Test Flow Chart for DBP, BBP, DEHP, DIBP)



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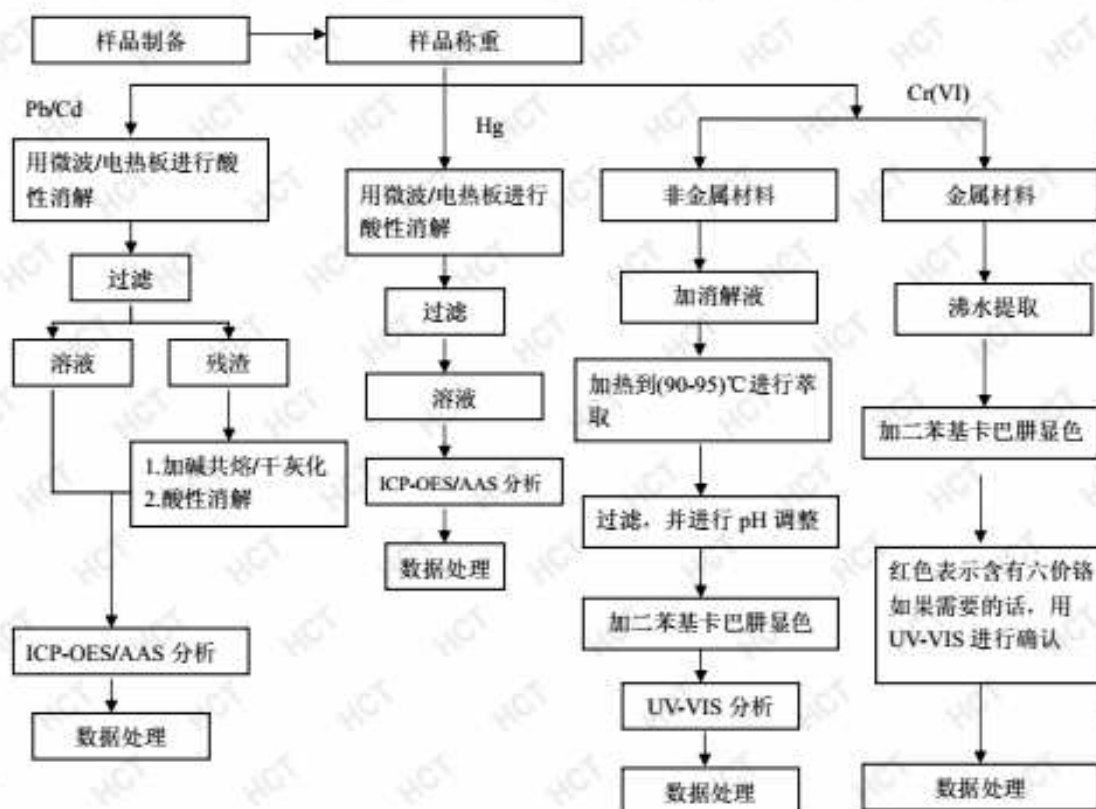
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铅、镉、汞、六价铬、多溴联苯、多溴二苯醚的检测流程图



根据以上的流程图之条件, 样品已经完全溶解(六价铬检测方法除外)。

PBBs/PBDEs



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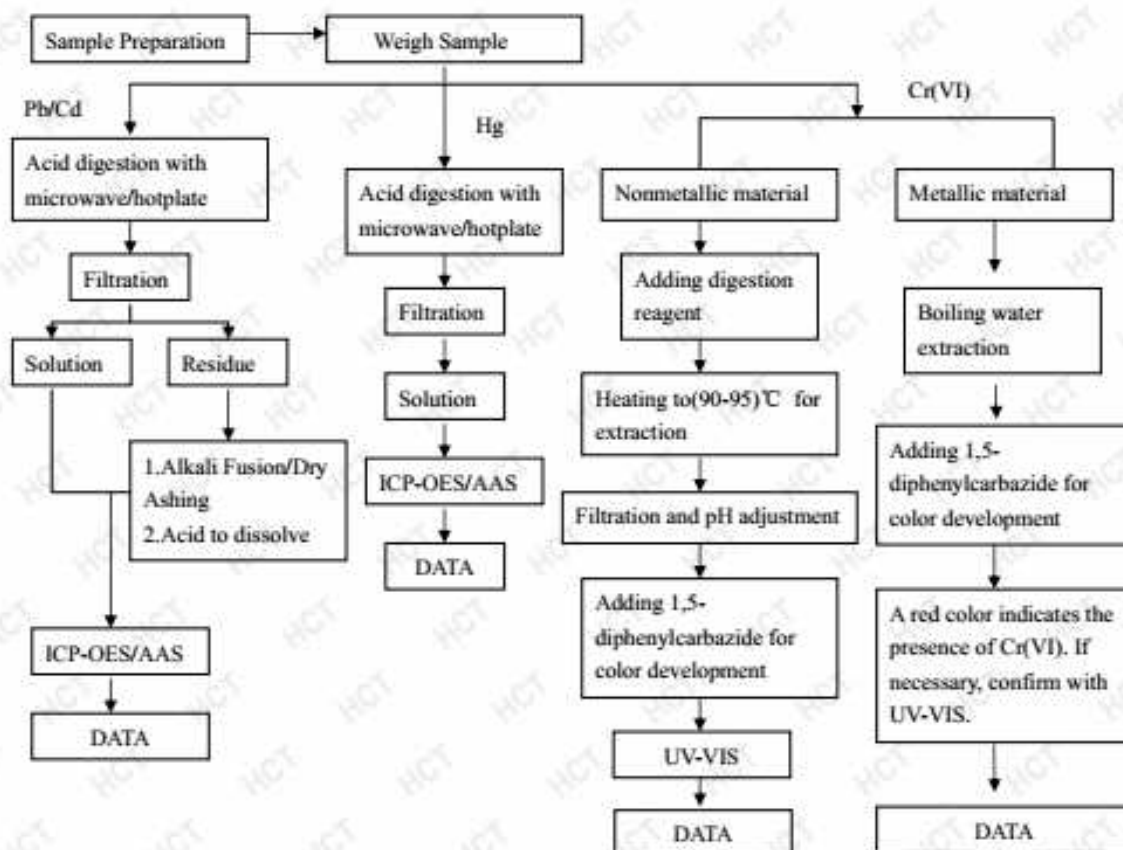
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日期(Date): 2016/7/19

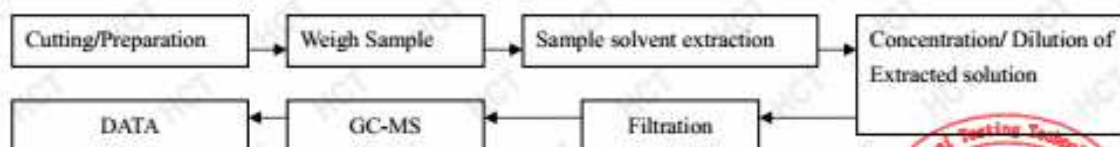
页数(Page): 5 of 6

Test Flow Chart for Pb, Cd, Hg, Cr(VI), PBBs, PBDEs



These sample were dissolved totally by pre-conditioning method according to above flow chart(Cr(VI) test method excluded)

PBBs/PBDEs



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样品附图(The photo of the sample)



报告结束(End)

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Test Report

No. SHAEC1711933801

Date: 13 Jun 2017

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3M CHINA LIMITED

222# TIAN LIN ROAD, SHANGHAI (200233)

The following sample(s) was/were submitted and identified on behalf of the clients as : 3M RP62

SGS Job No. : SP17-020252 - SH

Model No. : RP62

Client Ref. Information : RP16, RP20, RP25, RP32, RP45

Date of Sample Received : 08 Jun 2017

Testing Period : 08 Jun 2017 - 13 Jun 2017

Test Requested : Selected test(s) as requested by client.

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

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

Conclusion : Based on the performed tests on submitted sample(s), the results of Cadmium, Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Marry Ma

Marry Ma
Approved Signatory



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Test Report

No. SHAEC1711933801

Date: 13 Jun 2017

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	SHA17-119338.001	Grey adhesive soft solid sheet

Remarks :

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

- Test Method :
- (1) With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
 - (2) With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
 - (3) With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
 - (4) With reference to IEC 62321-7-2:2017, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis and/or with reference to IEC 62321-5:2013, determination of Chromium by ICP-OES.
 - (5) With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.
 - (6) With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.

Test Item(s)	Limit	Unit	MDL	Q01
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Sum of PBBs	1000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND



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Test Report

No. SHAEC1711933801

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Test Item(s)	Limit	Unit	MDL	001
Sum of PBDEs	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) The result of Hexavalent Chromium (Cr(VI)) is deemed to be "ND" since the result of total chromium content is "ND", so testing of Hexavalent Chromium (Cr(VI)) is not required.
- (3) If the Chromium (Cr) content is greater than the MDL of Hexavalent Chromium (Cr(VI)), confirmation test of Hexavalent Chromium (Cr(VI)) is required.
- (4) On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into ANNEX II of the RoHS Recast Directive. The new law restricts each phthalate to no more than 0.1% in each homogeneous material of an electrical product.
- (5) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.
- (6) The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the market before 22 July 2019, and of medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, placed on the market before 22 July 2021.
- (7) The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.



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ANTENNA SPECIFICATION

GSD P/N : WC0D/PIFA/2.4G+5G/外拉/400mm/不含红磷

Editor:唐红君

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Test Report

No. SHAEC1711933801

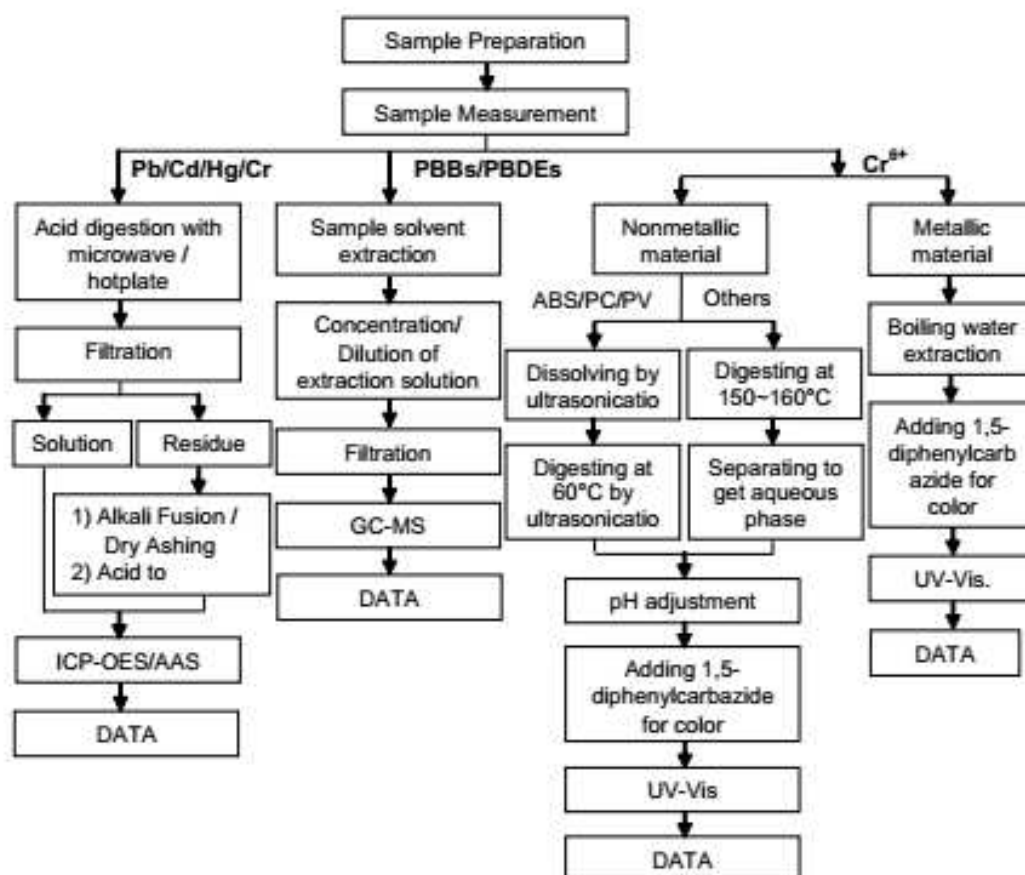
Date: 13 Jun 2017

Page 4 of 6

ATTACHMENTS

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

- 1) Name of the person who made testing: Meria Jin/Gary Xu/Sean Li/Sielina Song
- 2) Name of the person in charge of testing: Jan Shi/Jessy Huang/Luna Xu/Shara Wang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)



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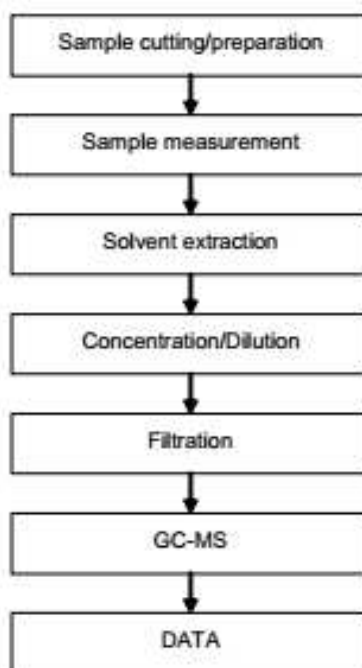
Date: 13 Jun 2017

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ATTACHMENTS

Phthalates Testing Flow Chart

- 1) Name of the person who made testing: Sherlock Gao
- 2) Name of the person in charge of testing: Jessy Huang



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Date: 13 Jun 2017

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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***



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Editor:唐红君

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测试报告

No. CANML1617049802

日期: 2016年09月01日 第1页,共6页

嘉兴鸿磊金属制品有限公司

中国嘉兴市南湖区大桥镇十八里东街215号2幢2002号-5

以下测试之样品是由申请者所提供及确认: 镀金

SGS工作编号: GZIN1608039973PC - GZ

样品接收日期: 2016年08月29日

测试周期: 2016年08月29日 - 2016年09月01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: 基于所送样品的指定部位进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)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广州分公司
授权签名

梁康宁

Alkene Liang 梁康宁
批准签署人

备注: 本报告是编号为CANML1617049801 报告的中文版本。



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Guangzhou Branch, Guangzhou Chemical Laboratory

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Editor:唐红君

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测试报告

No. CANML1617049802

日期: 2016年09月01日 第2页,共6页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	CAN16-170498.001	带金色镀层的黄铜色金属

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 检测极限值
- (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:
- (1)参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
 - (2)参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
 - (3)参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
 - (4)参考IEC 62321-7-1:2015, 用紫外-可见分光光度计比色法测定六价铬的含量
 - (5)参考IEC 62321-6:2015, 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚)的含量

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	11
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))*	-	µg/cm²	0.10	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND



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测试报告

No. CANML1617049802

日期: 2016年09月01日 第3页,共6页

测试项目	限值	单位	MDL	001
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

备注:

- (1) 最大允许板限值引用自RoHS指令(EU) 2015/863。
- (2) $\forall$ a. 当六价格的浓度高于 $0.13 \mu\text{g}/\text{cm}^2$ 时, 样品为阳性, 即含有六价格;
b. 当六价格的浓度为ND(低于 $0.10 \mu\text{g}/\text{cm}^2$)时, 样品为阴性, 即未检测到六价格;
c. 当六价格的浓度介于 $0.10 \mu\text{g}/\text{cm}^2$ 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格, 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, 样品的六价格测试结果仅能代表测试时样品含六价格的状态。
IEC 62321 系列等同于 EN 62321 系列
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

附录

测试方法: 参照EN 14582:2007方法测定, 采用IC进行分析。

测试项目	单位	MDL	001
氟 (F)	mg/kg	50	ND
氯 (Cl)	mg/kg	50	ND
溴 (Br)	mg/kg	50	ND
碘 (I)	mg/kg	50	ND



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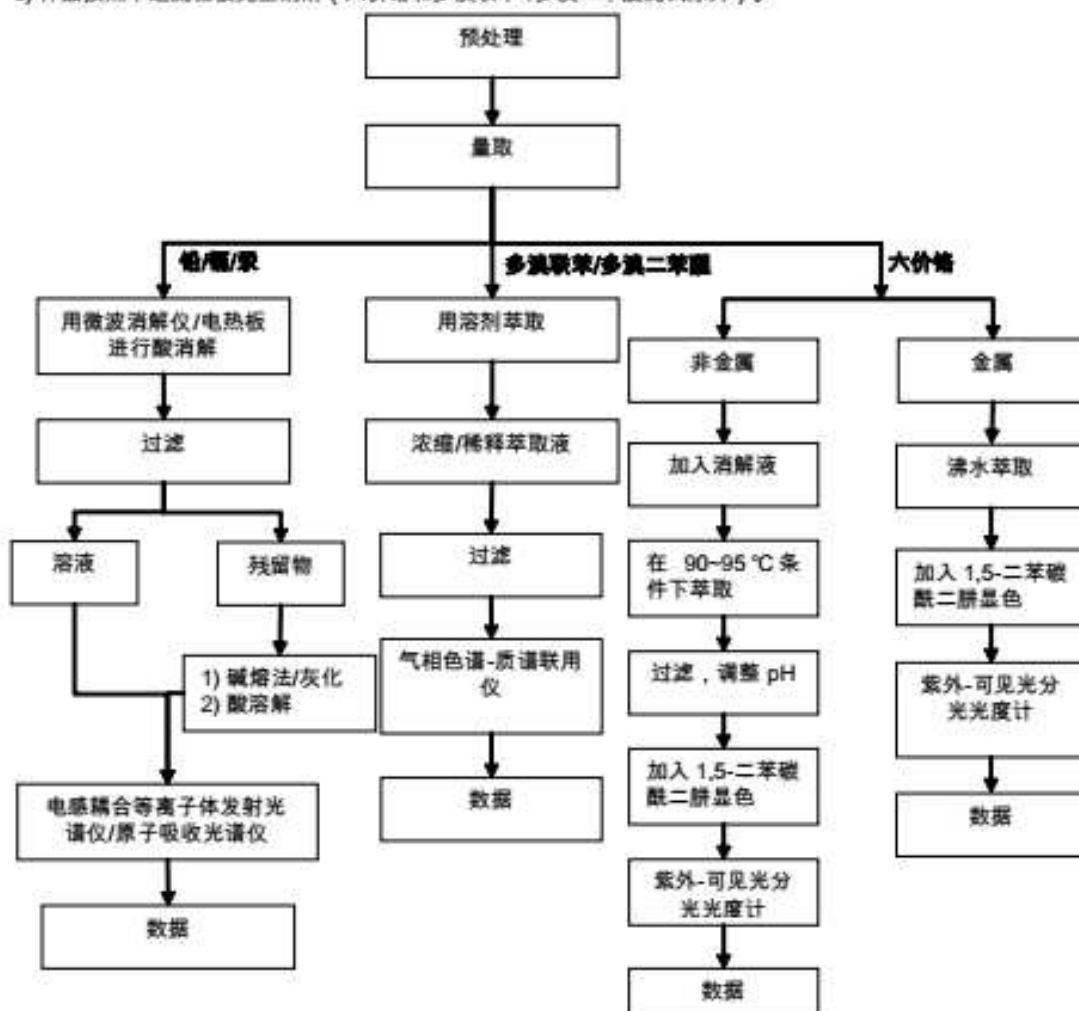
No. CANML1617049802

日期: 2016年09月01日 第4页,共6页

附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

- 1) 分析人员: 张梓路 / 胡香云
- 2) 项目负责人: 汪丹 / 刘琼
- 3) 样品按照下述流程被完全溶解 (六价铬和多溴联苯 / 多溴二苯醚测试除外)。



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测试报告

No. CANML1617049802

日期: 2016年09月01日 第5页,共6页

附件

Halogen 测试流程图

- 1) 分析人员: 肖戈
- 2) 项目负责人: 汪丹



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测试报告

No. CANML1617049802

日期: 2016年09月01日 第6页,共6页

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Test Report

Report No. ECL011042029

Page 1 of 8

Applicant ZHEJIANG ZHENGDAO OPTOELECTRONICS CO.,LTD

Address NO.8 ZHENGDAO ROAD LIANSI TOWN HUZHOU CITY ZHEJIANG PROVINCE

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

Sample Name Tin-coated copper wire
Material Copper, Tin
Sample Received Date Jul. 18, 2016
Testing Period Jul. 18, 2016 to Jul. 27, 2016

Test Requested As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA) in the submitted sample(s).

Test Method Please refer to the following page(s).

Test Result(s) Please refer to the following page(s).

Tested by

Ethan

Reviewed by

Taoying

Approved by

Su Hongwei

Date

Jul. 27, 2016

Su Hongwei

Senior Laboratory Manager

No. S201805947

Centre Testing International Pinbiao(Shanghai) Co., Ltd.

No.1996,Xinqiniao Road, Pudong New District, Shanghai, China



ANTENNA SPECIFICATION

GSD P/N : WC0D/PIFA/2.4G+5G/外拉/400mm/不含红磷

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Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead(Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
	Refer to IEC 62321-5:2013 Ed.1.0	
Cadmium(Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
	Refer to IEC 62321-5:2013 Ed.1.0	
Mercury(Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
	Refer to IEC 62321-4:2013 Ed.1.0	
Hexavalent Chromium(Cr(VI))	IEC 62321-7-1:2015	UV-Vis
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
Fluorine (F)	Refer to BS EN 14582:2007*	IC
Chlorine (Cl)	Refer to BS EN 14582:2007*	IC
Bromine (Br)	Refer to BS EN 14582:2007*	IC
Iodine (I)	Refer to BS EN 14582:2007*	IC
Perfluorooctane Sulfonates(PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctanoic Acid(PFOA)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS



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Test Result(s)

Tested Item(s)	Result		MDL
	1	2	
Lead(Pb)	N.D.	48 mg/kg	2 mg/kg
Cadmium(Cd)	N.D.	N.D.	2 mg/kg
Mercury(Hg)	N.D.	N.D.	2 mg/kg
Hexavalent Chromium(Cr(VI))	N.D.▼	N.D.▼	0.10µg/cm ² (LOQ)

Tested Item(s)	Result		MDL
	1	2	
Polybrominated Biphenyls(PBBs)			
Monobromobiphenyl	—	N.D.	5 mg/kg
Dibromobiphenyl	—	N.D.	5 mg/kg
Tribromobiphenyl	—	N.D.	5 mg/kg
Tetrabromobiphenyl	—	N.D.	5 mg/kg
Pentabromobiphenyl	—	N.D.	5 mg/kg
Hexabromobiphenyl	—	N.D.	5 mg/kg
Heptabromobiphenyl	—	N.D.	5 mg/kg
Octabromobiphenyl	—	N.D.	5 mg/kg
Nonabromobiphenyl	—	N.D.	5 mg/kg
Decabromobiphenyl	—	N.D.	5 mg/kg
Polybrominated Diphenyl Ethers(PBDEs)			
Monobromodiphenyl ether	—	N.D.	5 mg/kg
Dibromodiphenyl ether	—	N.D.	5 mg/kg
Tribromodiphenyl ether	—	N.D.	5 mg/kg
Tetrabromodiphenyl ether	—	N.D.	5 mg/kg
Pentabromodiphenyl ether	—	N.D.	5 mg/kg
Hexabromodiphenyl ether	—	N.D.	5 mg/kg
Heptabromodiphenyl ether	—	N.D.	5 mg/kg
Octabromodiphenyl ether	—	N.D.	5 mg/kg
Nonabromodiphenyl ether	—	N.D.	5 mg/kg
Decabromodiphenyl ether	—	N.D.	5 mg/kg



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Tested Item(s)	Result	MDL
	2	
Halogen		
Fluorine (F)	N.D.	1µg/cm ²
Chlorine (Cl)	N.D.	1µg/cm ²
Bromine (Br)	N.D.	1µg/cm ²
Iodine (I)	N.D.	1µg/cm ²

Tested Item(s)	Result	MDL
	2	
Perfluorooctane Sulfonates(PFOS)	N.D.	0.5 µg/m ²
Perfluorooctanoic Acid(PFOA)	N.D.	0.5 µg/m ²

Tested Sample/Part Description

1. Metal base
2. Silvery plating

Remark: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL or LOQ)

-mg/kg = ppm = parts per million

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm²

-▼ The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10µg/cm².

The coating is considered a non-Cr(VI) based coating.

-* = The specified area sample is extracted by an ultrasonic bath in ultra-pure water, and then the extracted liquid is analyzed by IC.

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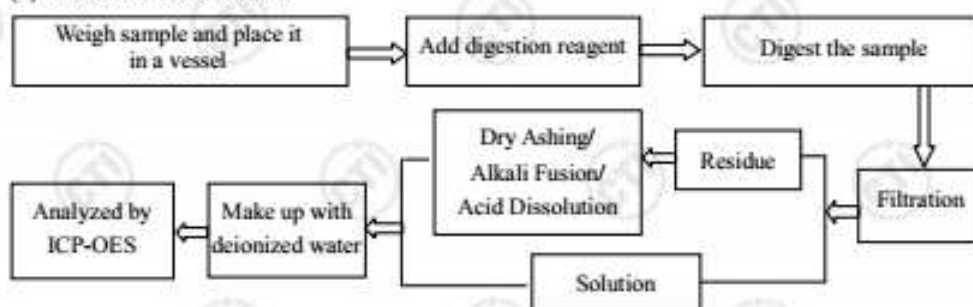
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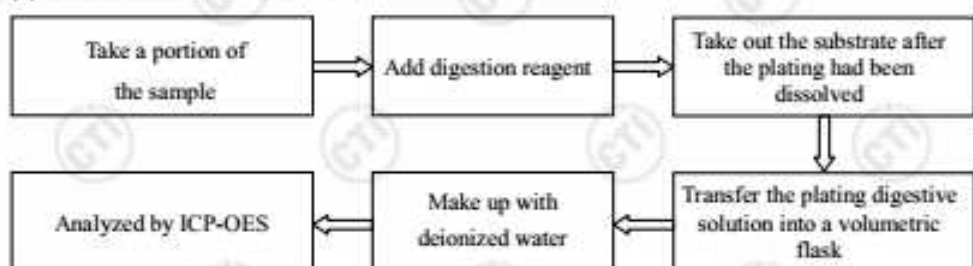
Test Process

1. Lead(Pb), Cadmium(Cd)

(1) IEC 62321-5:2013 Ed.1.0

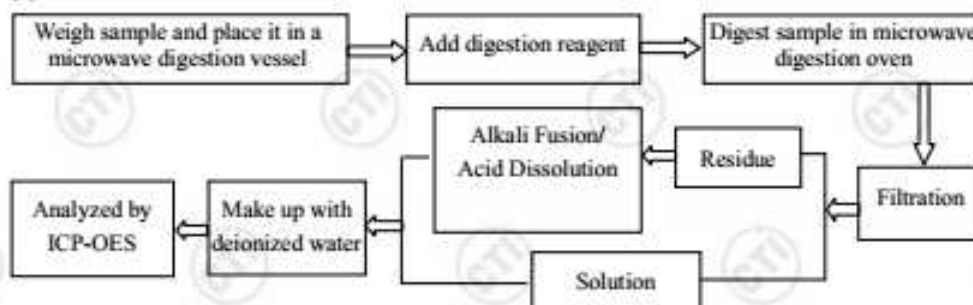


(2) Refer to IEC 62321-5:2013 Ed.1.0



2. Mercury(Hg)

(1) IEC 62321-4:2013 Ed.1.0



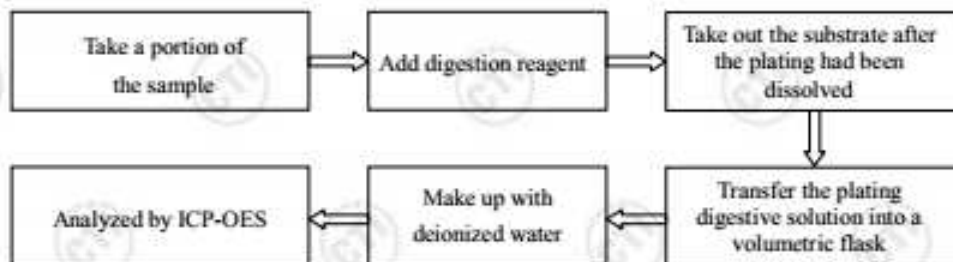
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Test Report

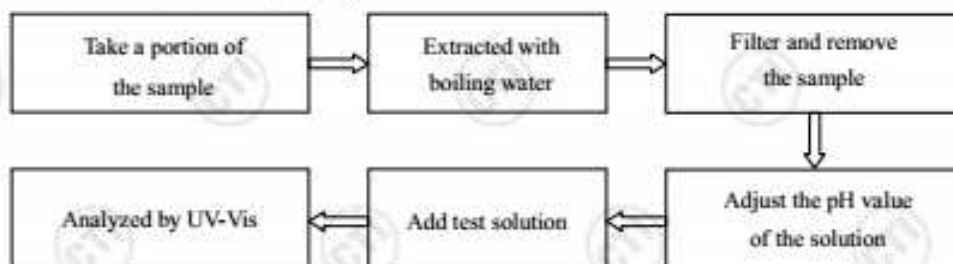
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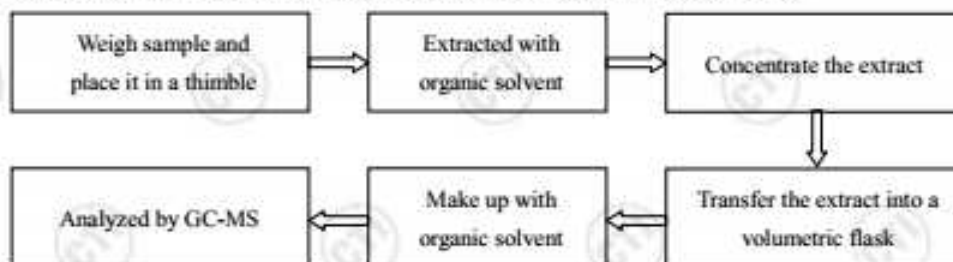
(2) Refer to IEC 62321-4:2013 Ed.1.0



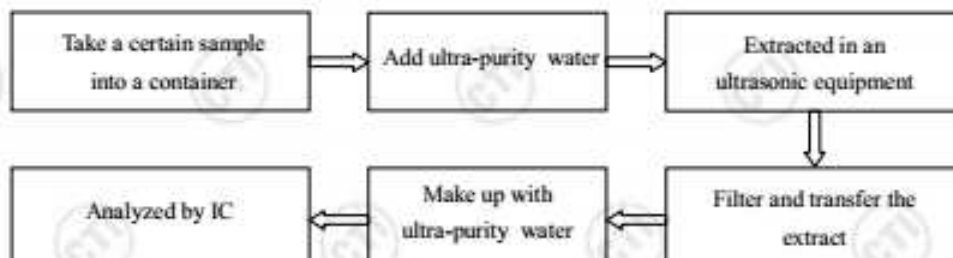
3. Hexavalent Chromium (Cr(VI))



4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



5. Fluorine(F), Chlorine(Cl) , Bromine(Br), Iodine(I)



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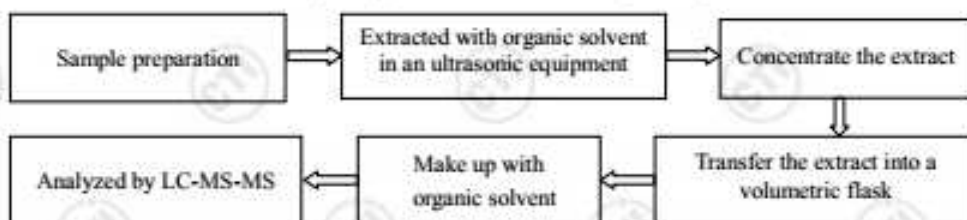


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6. Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)



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Photo(s) of the sample(s)



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Applicant SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO.,LTD

Address WOER MANSION,NORTH LANJING ROAD,PINGSHAN,SHENZHEN P.R.CHINA

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

Sample Name Halogen Free and Red Phosphorus Free Flame-retardant Heat Shrinkable Tube

Sample Received Date May 6, 2017

Testing Period May 6, 2017 to May 16, 2017

Test Requested

As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Phthalates(DBP, BBP, DEHP, DIBP), Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I), Red phosphorus in the submitted sample(s).

Test Method

Please refer to the following page(s).

Test Result(s)

Please refer to the following page(s).

Conclusion

Tested Sample	According to directive	Result
Submitted Sample	RoHS Directive 2011/65/EU with amendment (EU) 2015/863	Pass

Pass means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

Tested by

Approved by

Hill Zheng

Technical Manager

Centre Testing International Group Co.,Ltd.

Reviewed by

Date

May 16, 2017

No. R179759109

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

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Test Method

Test Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium(Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers(PBDEs)	IEC 62321-6:2015	GC-MS
Phthalates(DBP, BBP, DEHP, DIBP)	Refer to IEC 62321-8 CDV	GC-MS
Fluorine(F)	Refer to EN 14582:2016	IC
Chlorine(Cl)	Refer to EN 14582:2016	IC
Bromine(Br)	Refer to EN 14582:2016	IC
Iodine(I)	Refer to EN 14582:2016	IC
Red phosphorus	GB/T 6040-2002, GB/T 17359-2012, GB/T 9722-2006, EPA 6010C-2007	FTIR, SEM/EDS, PY-GC-MS, ICP-OES



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Test Result(s)

Tested Item(s)	Result	MDL	Limit
Lead (Pb)	N.D.	2 mg/kg	1000 mg/kg
Cadmium (Cd)	N.D.	2 mg/kg	100 mg/kg
Mercury (Hg)	N.D.	2 mg/kg	1000 mg/kg
Hexavalent Chromium (Cr(VI))	N.D.	2 mg/kg	1000 mg/kg

Tested Item(s)	Result	MDL	Limit
Polybrominated Biphenyls(PBBs)			
Monobromobiphenyl	N.D.	5 mg/kg	1000 mg/kg
Dibromobiphenyl	N.D.	5 mg/kg	
Tribromobiphenyl	N.D.	5 mg/kg	
Tetrabromobiphenyl	N.D.	5 mg/kg	
Pentabromobiphenyl	N.D.	5 mg/kg	
Hexabromobiphenyl	N.D.	5 mg/kg	
Heptabromobiphenyl	N.D.	5 mg/kg	
Octabromobiphenyl	N.D.	5 mg/kg	
Nonabromobiphenyl	N.D.	5 mg/kg	
Decabromobiphenyl	N.D.	5 mg/kg	

Tested Item(s)	Result	MDL	Limit
Polybrominated Diphenyl Ethers(PBDEs)			
Monobromodiphenyl ether	N.D.	5 mg/kg	1000 mg/kg
Dibromodiphenyl ether	N.D.	5 mg/kg	
Tribromodiphenyl ether	N.D.	5 mg/kg	
Tetrabromodiphenyl ether	N.D.	5 mg/kg	
Pentabromodiphenyl ether	N.D.	5 mg/kg	
Hexabromodiphenyl ether	N.D.	5 mg/kg	
Heptabromodiphenyl ether	N.D.	5 mg/kg	
Octabromodiphenyl ether	N.D.	5 mg/kg	
Nonabromodiphenyl ether	N.D.	5 mg/kg	
Decabromodiphenyl ether	N.D.	5 mg/kg	



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Tested Item(s)	Result	MDL	Limit
Phthalates			
Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg	1000 mg/kg
Butylbenzyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg	1000 mg/kg
Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7	N.D.	50 mg/kg	1000 mg/kg
Diisobutyl phthalate(DIBP) CAS#:84-69-5	N.D.	50 mg/kg	1000 mg/kg

Tested Item(s)	Result	MDL
Halogen(s)		
Fluorine(F)	N.D.	10 mg/kg
Chlorine(Cl)	N.D.	10 mg/kg
Bromine(Br)	N.D.	10 mg/kg
Iodine(I)	N.D.	10 mg/kg

Tested Item(s)	Result	MDL
Red phosphorus	N.D.	500 mg/kg

Tested Sample/Part Description Black plastic tube with printing

Remark: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million



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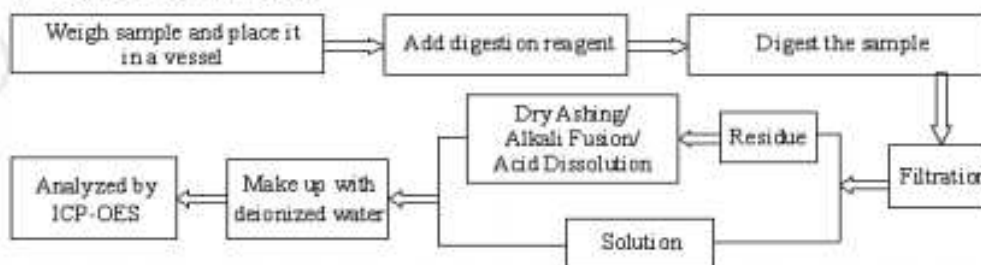
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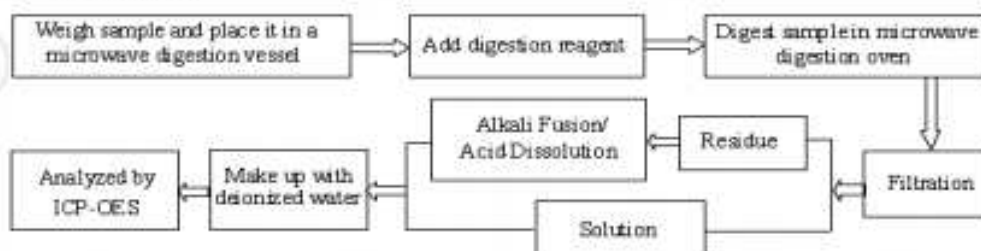
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Test Process

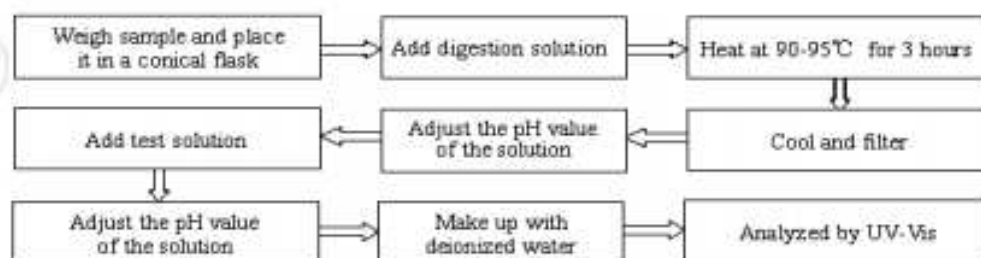
1. Lead (Pb), Cadmium (Cd)



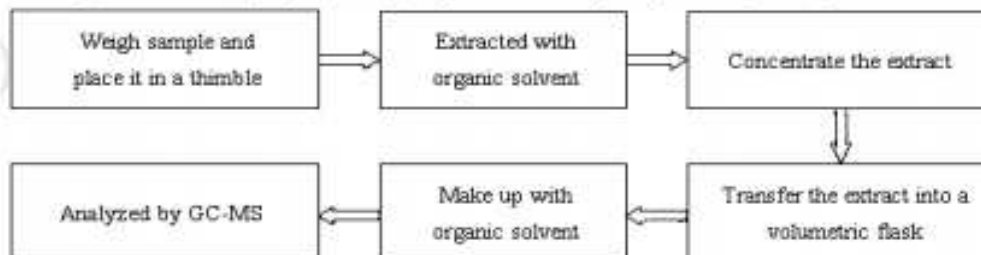
2. Mercury (Hg)



3. Hexavalent Chromium(Cr(VI))



4. Polybrominated Biphenyls(PBBs) , Polybrominated Diphenyl Ethers(PBDEs)



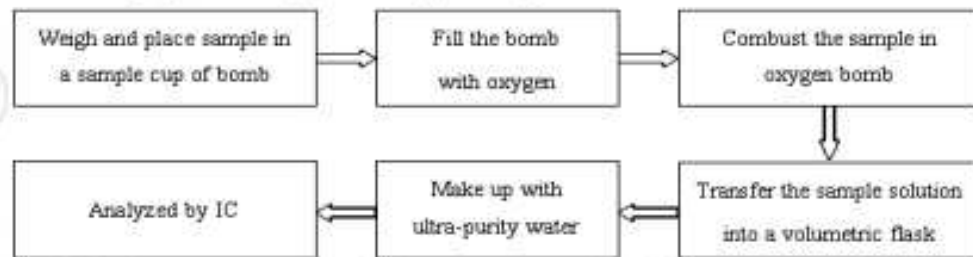
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Test Report

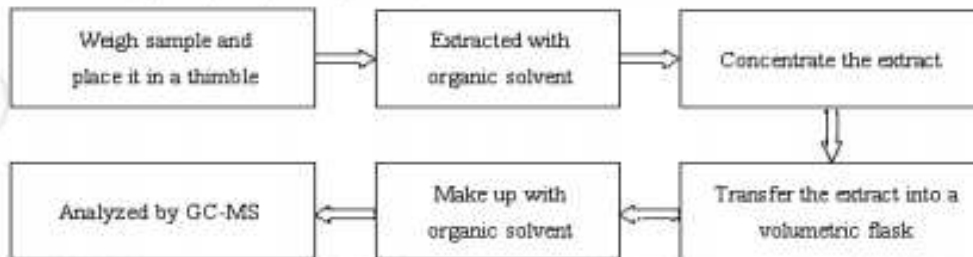
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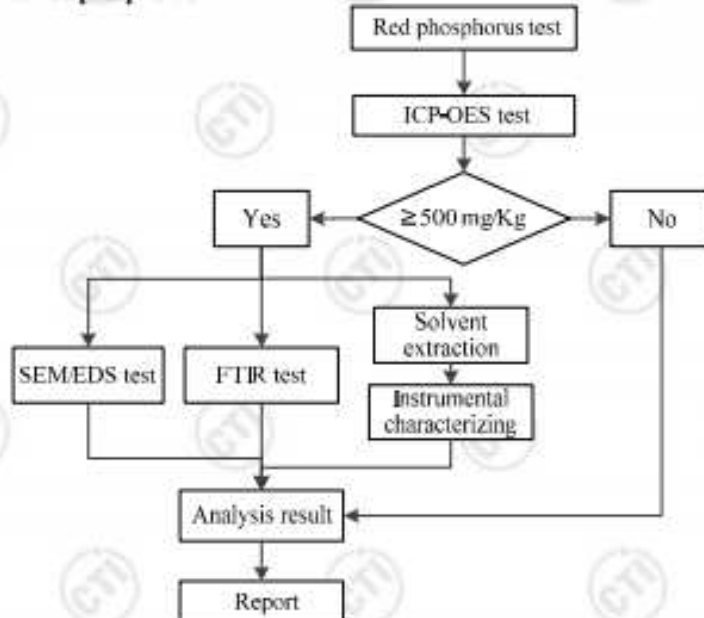
5. Bromine(Br), Chlorine(Cl), Fluorine(F), Iodine(I)



6. Phthalates(DBP, BBP, DEHP, DIBP)



7. Red phosphorus



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Photo(s) of the sample(s)



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