

## 承认书

Approval Sheet

客户(Customer): /

客户料号 (Cus . P/N): /

华联威料号 (HLW P/N): U318-0721-G67018

品名规格 (PronameSpec): USB 3.0 AM90 度蓝铁

送样日期 (Delivery Date):2021/11/25

承认日期 (Acknowledge Date):2021/11/25

Approved No:	客	户									
Customer											
采 购 部	品 质 部	工程部	确认								
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SHEN ZHEN S	HI HUA LIAN WEI EI	LECTRONICS TECHNOLOG	Y CO; LTD.								
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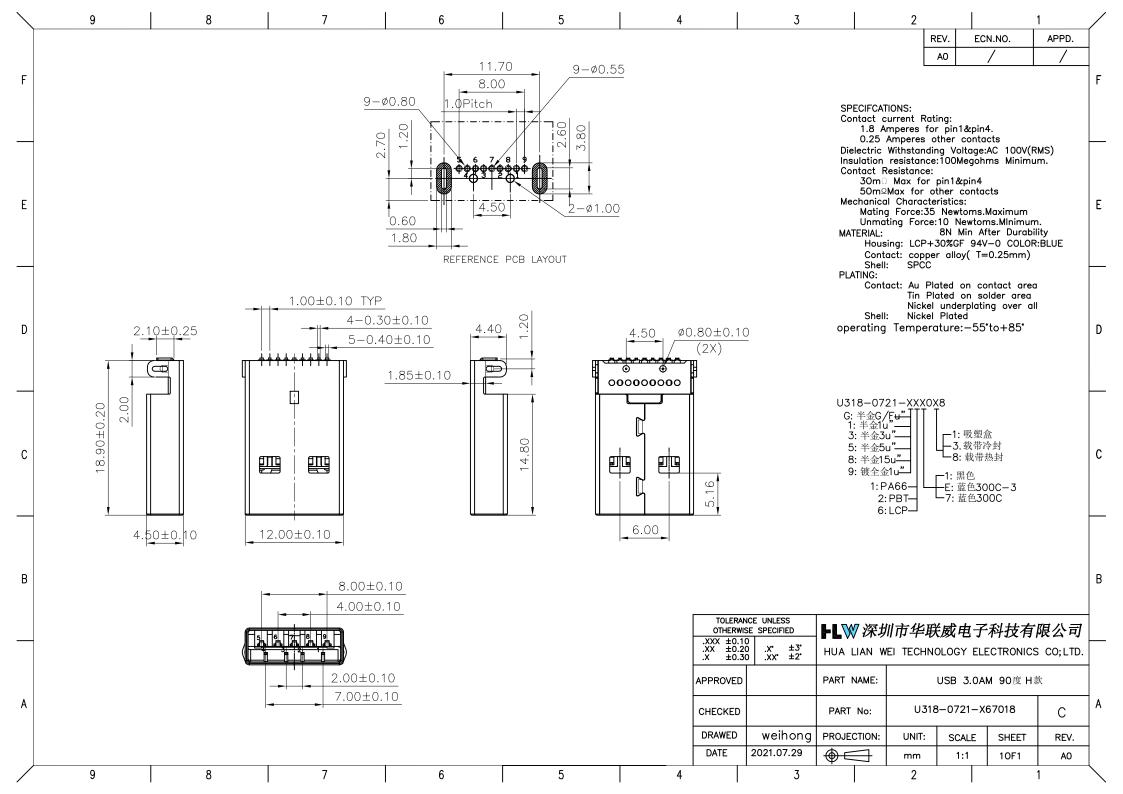


## **FLWCONN**®

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## **FLWCONN®**

## 深圳市华联威电子科技有限公司

## HUA LIAN WEI TECHNOLOGY ELECTRONICS CO., LTD

## USB3.0系列产品SPEC

版本版次: C 制定日期 20200707 适用范围 通用

- 1. Scope (范围)
- 1.1 Contents(内容)

This specification covers the performance, tests and quality requirements for the Electronics USB3.0 Connector. (此份产品规格适用于USB3.0连接器的产品功能,测试方法及质量要求)

- 2. Requirements (要求):
- 2.1 Rating(额定条件)
- A. Voltage rating(额定电压):30V AC
- B. Current rating(额定电流):1.5A
- C. Operation Temperature Range(操作温度范围):-25℃ to +85℃
- 3. Test Condition(测试条件):
- 3.1 Temperature range(温度范围):-+15℃ to +45℃
- 3.2 Humidity range (湿度范围):25% to 85%
- 4. Test Methods and Requirements:(测试方法及要求)

4.1 Examination o	f product (	产品外观)
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	•		
4.1.1	Examination of Product	Visual 目视	No peeling off the plating deformation of the base or damage. 不得有电镀层
	产品外观		剥落,塑料变形或破损
4.2. El	ectrical Performar	nce(电气性能)	
4.2.1	Contact Resistance 接触阻抗	(EIA-364-06B) Mated connectors, Contact: measure by dry circuit, 30 m Volts maximum,20 mA	Initial Contact resistance Excluding conductor Resistance:30 mΩ max (Target design value)接触电阻初始值最大不能超过30 mΩ
		配对的连接器,端子:测试端子在回路中施加直流最大30mV; 20mA的电流再测端子的电阻值	(目标设计值)
4.2.2	Dielectric Withstanding Voltage (耐高压)	(EIA-364-20C) Unmated connectors, apply 500V AC (RMS.) for 1 minute between adjacent terminals of ground. 配对的连接器在相邻的端子或接地之间通上500V的 交流电压1分钟	1. No Breakdown or flashover 2. Leakage current:0.5mA Max 1. 不能有损坏或跳火花 2. 漏电流<0.5mA
4.2.3	nsulation Resistance 绝缘阻抗	(EIA-364-21C) Unmated connectors, apply 500V DC for 1 minute between adjacent terminals of ground. 配对的连接器在相邻的端子或接地之间通上500V的 直流电压1分钟	100MΩ min(unmated) 需大于100 MΩ(插拔配合)
4.3Me	chanical Performa	ance(机械性能)	
4.3.1	Insertion/Withdr	(EIA-364-13)	Maximum insertion force35N;

4.3.1	Insertion/Withdr	(EIA-364-13)	Maximum insertion force35N;
	awal	Insertion and withdrawal speed:	插入力不超过35N(3.57kg);
	Force	25mm/minute.	Withdrawal force 10N Min;
	插入力/拔出力	插入和拔出的速度为25mm/分	拔出力最小10N (1.02kg);
			<b>笠1百,廿5百</b>

4.3.2	Durability test	(EIA-364-09)	Contact Resistance 接触阻抗
	耐久测试	Measure contact and shell resistance after the Following. Automatic cycling:1500 cycles at 100±5 Cycles per hour.	Contact: Change from initial Value: 50 milliohms maximum. 端子:从初始值开始变化量小于50m Ω
		以每小时100±5插拔次数测试1500循环后测量端子和外壳的接触阻抗 Measure contact and shell resistance after the Following. Automatic cycling:200 cycles at 100±5 Cycles per hour. 以每小时100±5插拔次数测试200循环后测量端子和外壳的接触阻抗	Maximum insertion force 35N 插入力不超过35N(3.57kg) EXTRACTION FORCE(200 TEST):10N MIN 拔出力(200次后测试后):10N最小 EXTRACTION FORCE(1500 TEST):8N MIN 拔出力(1500次后测试后):8N最小
4.3.3	Stawn rewef test 吊重测试	After 20 times of good product insertion, the weight of the product was lifted to 10N (1.02kg F) Min. The time is 3 seconds 良品插拔20次后,产品吊重10N(1.02KG f)Min的砝码;时间为3秒	Meet the lifting weight USB AM PLUG within 3 seconds weight does not drop. 满足吊重 USB AM PLUG 3秒内砝码不掉落
4.3.4	Vibration 振动	(EIA-364-28条件3) Amplitude:1.52mm P-P or 147m/s^2 {15G} Sweep time: 50-2000-50Hz in 20 minutes. Duration: 12 times in each (total of 36 times) X, Y, Z, axes. Electrical load DC 100mA current shall be flowed during the test.(ANSI/EIA-364-28 Condition Ⅲ) 在直流100毫安通电状态下测试,在X,Y,Z垂直3方向上,频率50-2000-50赫兹(加速度往复20分钟),全振幅1.52mm P-P或147 m/s^2 {15G},每轴12回计36回	Appearance: No damage 外观:无损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value:30mΩ Max. 端子:从初始值开始变化量小于30m Ω 间断性:不超过1微秒
4.3.5	Physical shock 冲击性	(EIA-364-27条件A) Pulse width: 11msec Waveform: Half-sine 490m/s²(50G)3 strokes in each X, Y, Z axes. (ANSI/EIA-364-27 condition A) 周期: 11msec 冲击波形: 正弦半波490m/s²(50G)3 循环在X, Y, Z	Appearance: No damage 外观: 无损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max 端子: 从初始值开始变化量小于30m Ω Discontinuity: 1μ sec Max. 间断性: 不超过1微秒
4.4 En	vironmental Perfo	ormance	
4.41	Thermal shock test 冷热冲击	EIA-364-32C条件1) 10 cycles of:10个循环, a)-25±3℃ for 30 minutes b) +85±3℃ for 30 minutes	Appearance: No Damage. 外观:没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max 端子:从初始值开始变化量小于30m Ω
4.42	Solder ability 焊锡性	(EIA-364-52) To be sipped in the solder bath 245±5℃ Coverage for 3 seconds. 将焊锡脚浸在245±5℃的锡炉中<3秒	The inspected area of each lead must have 90% solder coverage minimum 表面粘锡面积不少于90%

4.43	Humidity 恒温恒湿	(EIA-364-31B) (A) Mate connectors together and perform the test as follows配对的连接器测试条件 Temperature: +25℃ to +85℃(温度: +25℃到+85℃) Relative Humidity: 90% to 95%(相对湿度: 90%到95%) Duration:4 cycles(96 hours) (持续时间: 4个循环共168小时) Upon completion of the test, specimens shall be conditioned ambient room conditions for 24 hours, after which the specified measurements shall be performed.试验完成后,样品放置于室温条件中24小时后再进行测试	Appearance: No Damage 外观,没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max 端子: 从初始值开始变化量小于30m Ω
4.44	Humidity- Temperature cycle 温湿度循环	EIA 364-31 Expose mated connectors to a temperature of $40\pm2$ °C with RH of 90-95% for 96 hrs. Remove surface moisture and air dry for 24 hrs. Prior to measurement 将配对连接器暴露在温度为40±2°C、RH为90-95%的环境中96小时。去除表面水分,风干24小时。测量之前	Appearance: No damage 外观:无损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value:30mΩ Max. 端子:从初始值开始变化量小于30m Ω 间断性:不超过1微秒
4.44	Salt Spray 盐水喷雾	EIA-364-26B) Mated connector expose to 5% salt concentration for 12 hours at temperature 35+2 ℃.Only the Terminal salt spray for 24 hours35+2 ℃. After the test specimens shall be washed with running water and dried naturally; 产品连接器暴露在5%盐浓度,温度35+2 ℃下12小时。仅终端盐雾35+2 ℃24小时。试验后用自来水冲洗,自然晾	No detrimental corrosion( Solder end solder foot is not required and the case is not bent) 产品无氧化,锈蚀(端子焊脚镀锡处不作要求及外壳折弯) Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子: 从初始值开始变化量小于30mΩ
4.45	Cold resistance (Unmated) 冷阻抗	(EIA-364-17B) Unmated connectors and expose to -25±3℃ for 168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 没配对的连接器放置于-25±3℃温度中168小时,当完成实验后,样品放置一般环境中1到2小时后,在进行测试	Appearance: No Damage. 外观: 没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子: 从初始值开始变化量小于30m Ω 外壳: 从初始值开始变化量小于50m

4.46	Heat resistance	(EIA-364-17B)	Appearance: No Damage.
	(Unmated) 热阻抗	Mated connectors and expose to 85±2℃ for 168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.  配对的连接器放置于85±2℃温度中168小时,当完成	外观:没有损坏 Contact Resistance接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max
		实验后,样品放置一般环境中1到2小时后,在进行测试	<b>Ω</b> 外壳: 从初始值开始变化量小于50m <b>Ω</b>
4.47	Thermal Aging 高温老化	(EIA-364-31B,Condition 4,Method A) Unmated connectors and expose to +85±2℃ for 168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 没配对的连接器放置于+85±2℃温度中168小时,当 完成实验后,样品放置一般环境中1到2小时后,在 进行测试	Appearance: No Damage. 外观:没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子:从初始值开始变化量小于30m Ω 外壳:从初始值开始变化量小于50m Ω
4.4.8	Resistance to Soldering Heat	for wave soldering: mil-std-202f,method 210 A,test condition B 波峰焊: mil-std-202f, method 210 A, 试验条件B Pre-heat: 80℃, 60 Seconds 预热:80℃, 60秒 Temperature: 260±5℃ 温度:260±5℃ Immersion duration: 10±1 sec. 浸泡时间:10±1秒。 for manual soldering:手动焊接: mil-std-202f,method 210 A,test condition A Pre-heat: No预热:没有	No physical damage shall occur. 不可有损坏 Reflow welding is not applicable to PBT 回流焊不适用于PBT
		Temperature : 350 ± 10 ℃温度:350±10℃ Immersion duration :3.5±0.5 sec.浸泡时间:3.5±0.5秒 for reflow soldering eiajrcx 0101/102: 用于回流焊eiajrcx 0101/102: Pre-heat : 150(Min)~200(Max)℃, 预热 60~180 Seconds Temperature : 260 ± 5 ℃ 温度:260±5℃ Immersion duration : 10~40 sec.浸泡时间:10~40秒。	

Note 1: Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

说明1: 测试要求不能有物理损坏,测试依据表格二的顺序进行

3.Product Qualification And Requalification Test:产品测试顺序表 Figure 2

Test or Examination							Te	st Group						
	Α	В	С	D	Е	F	G	Н	I	J	K	L	М	N
		-		•	Test	Seque	ence	-		-	-		-	+
4.1.1.Examination of Product 产品外观	1,9	1,3	1,5	1	1,5	1,5	1,5	1,3	1,5	1,5	1,5	1,5	1,5	1
4.2.1.Contact Resistance 接触阻抗	2,8		2,4		2,4	2,4	2,4		2,4	2,4	2,4	2,4	2,4	
4.2.2.Dielectric Withstanding Voltage	3,7													
4.2.3.Insulation Resistance 绝缘阻抗	4,6													
4.3.1.Insertion/Withdra wal force 插拔力		2												
4.3.2.Durability 寿命测试			3											
4.3.3.Vibration 振动性					3									
4.3.4.Physical shock 冲 击性						3								
4.4.1.Thermal shock test 冷热冲击							3							
4.4.2.Solderability 焊锡 性								2						
4.4.3.Humidity 恒温恒 湿	5								3					
4.4.4.Salt Spray 盐水喷 雾										3				
4.4.5.Cold resistance 冷 阻抗											3			
4.4.6.Heat resistance 热 阻抗												3		
4.4.7.Thermal Aging 高 温老化													3	
4.4.8.for wave soldering 波峰焊测试														2
NO. of Test samples(Min.) 测试样	5	5	5	5	5	5	5	5	5	5	5	5	5	5

NOTE 2: (a) Numbers indicate sequence in which tests are performed.

(b) Discontinuities shall not take place in this test group, during tests.

说明 2: (a)测试依照矩阵要求数量进行。

(b)在测试中, 群组测试不能间断

核准: 唐竹君

制作人: 魏红



## 深圳市华联威电子科技有限公司 SHENZHENHUALIANWEIELECTRONICS CO., LTD.

## 測試報告

## TEST REPORT

	産品名稱 Part Name	USB 3.0AM 90 度蓝铁	測試日期 Date of Testing	2021.11.24 2021.1 1.25		報告編號 tep ort NO		MD20211125-01				
	産品型號 Part Name	U318-0721-G67018	樣品數量 Quantity	5PCS		測試環境 ring Envir	_	.,,,,,,,,,	emp:18~2 R.H.:49%			
_	· 電性測試 ELECT	RICAL TEST										
						測試記	錄 Testir	ng Result			判定 Judge	
序號 NO.	測試項目 Testing Item	測試條件 Testing Conditions	測試設備 Testing Equipment	規格 SPEC	1	2	3	4	5	Pass	Fail	
1	Contact resis tance	Test current:100mA max	DIGITAL MICROOHMMETER	30mΩ Max	15.85 m Ω	15.15 m Ω	14.27 m Ω	15.61 m Ω	15.20 m Ω	Р		
2	In sula tion resis tance	Test voltage:500VAC Operation stated:1min	ULTRA HIGH RESISTANCE METER	100 m Ω Min	Pass	Pass	Pass	Pass	Pass	Р		
3	Dielec trie withstand voltage	Test voltage:100VAC Cut-off current:0.5mA Operation stated:1 min	BREAKDOWN TESTER	No discharge or flashover occur	Pass	Pass	Pass	Pass	Pass	Р		
二. 機	械特性測試 MEC	HANICAL TEST				1	ı	1	1			
序號	測試項目	測試條件	測試設備	規格		測試記	錄 Testir	ng Result		判定 Judge		
NO.	Testing Item	Tes ting Con di tions	Testing Equipment	SPEC		2	3	4	5	Pass	Fail	
1	Durab ilitytest	Rat e:200cycles/hour Tot al: 1500cycles	LIFE TESTER FOR CONNECTOR	No physical damage	Pass	Pass Pass Pass		Pass	Pass	Р		
2	Mating Force	35 Newtons maximum at a maximum rare of 12.5mm(0.492") per mi nute	Insertion force testing machine	No physical damage	Pass Pass Pass		Pass	Pass	Pass	Р		
3	Un-Mating Force	10 Newtons minimum at a maximum rare of 12.5mm(0.492") per mi nute	Insertion force testing machine	No physical damage	Pass	Pass	Pass	Pass	Pass	Р		
三. 環	提境特性測試 ENVI	RONMENTAL TEST										
序號 NO.	測試項目 Testing Item	測試條件 Testing Conditions	測試設備 Testing Equipment	規格 SPEC			則試記錄 sting <b>R</b> e		判 <b>J</b> u	定 Ige		
	3	. coming contained	. com.g Equipment			2	3	4	5	Pass	Fail	
1	Humidi ty- Tempera ture cycle	Tempera ture:40±2°C Humidity: 90—95% Dura tion:168H	PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER	No physical damage	Pass	Pass	Pass	Pass	Pass	Р		
2	Heattest	Temperature: 70±2°C Dura tion:168H	OVEN	No physical damage	Pass	Pass	Pass	Pass	Pass	Р		
3	Cold test	Temperature: -25±3°C Dura ti on:168H	PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER	No physical damage	Pass Pass Pass		Pass	Pass	Р			
					•	•		•				

4	Tempera ture cycling test	Temperature: 7025°C Duration:5 cycle	PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER	No physical damage	Pass	Pass	Pass	Pass	Pass	Р		
四. 物	四. 物理測試 PHYSICAL TEST											
序號	測試項目	測試條件	測試設備	規格 SPEC	測試記錄 Testing Result						定 ge	
NO.	Testing Item	Testing Conditions	Testing Equipment			2	3	4	5	Pass	Fail	
1	Sa It spray test	Temperature: 35±2°C Concentrat io n: 5±1 % Dura tion:12H	SALT SPRAY TESTER	No Oxidation	Pass	Pass	Pass	Pass	Pass	Р		
2	Resistance to soldering heat test	Temperature: 260±5C Dura tio n:10±1sec	OVEN	No physical damage	Pass	Pass	Pass	Pass	Pass	Р		
3	Solder ability test	Temperature: 265±5°C Duration:3 sec	CONTROLLED CONSTANT-TEMP SOLDER POT	Soldering area 295%	Pass	Pass	Pass	Pass	Pass	Р		
	判定 Result	■合格 (ACCE	EPT)		□不	合格 (F	REJEC	T)				

核准(Approver): 欠必锋

測試(Tester): 但芬

## FLWCONN® 深圳市华联威电子科技有限公司 檢驗報告

■首件檢驗 □入庫檢驗 □出貨檢驗 □客退檢驗 □退料檢驗 □其他									<b>2021</b> 년	F <b>11</b> 月	25日 版	次:A1	
料號	U318-0721-G67	018	制令国	單號	,	/	送檢	單位	-	工程部	首件	製作者	裝配
品名	3.0AM 90度蓝色	<b></b>	客戶個	半蛙	,	/	批	量		1	送檢時間		1
μμ-Г	0. 01m 30)×mi.		<del>4</del> ) 1	(J))/L	, '		數	量	ļ	5PCS	確語	忍時間	1
	抽樣標準			單次	Z [	]雙次		抽样	数	AQL	CRI:0	MAJ:0.40	MIN:0.65
M	IIL-STD-105E(II)		正	常	□加膚	<b>曼</b> □	減量	( 5PC	CS)	ACC/REJ	0	/	/
不良数:		CRI (	/	)	MAJ	( /	)	MIN	1 (	/ )	不良	臭率(%)	/
NO.	檢驗項目	檢測		檢	驗 記	錄		品管料	判定	CRI	MAJ	MIN	備注
NO.	單位:MM/G	儀器	1	2	3	4	5	AC	RE	CKI	MAJ	IVIIIN	
	$2.00\pm0.20$	D	2.03	2.01	2.02	2.03	2.00	√					
	18.90±0.20	D	18.88	18.90	18.86	18.87	18.86	√					
	2.10±0.25	D	2.18	2.15	2.16	2.17	2.14	√					
尺	4.50±0.10	D	4.46	4.48	4.50	4.49	4.47	√					
r	12.00±0.10	D	11.97	11.95	11.93	11.94	11.96	√					
寸	4.40±0.20	D	4.27	4.25	4.30	4.27	4.26	√					
測	1.85±0.10	D	1.89	1.90	1.87	1.86	1.88	√					
77.13	14.80±0.20	D	14.67	14.68	14.70	14.69	14.68	√					
量	4.50±0.20	D	4.49	4.50	4.48	4.49	4.50	√					
	5.16±0.20	D	5.19	5.16	5.17	5.16	5.15	√					
檢驗依據:	<<工程圖紙>>	□<<	檢驗規算	節>>	□<< <u>7</u>	承認書	>> [	1樣品	$\Box$	其它			
檢測儀器:	A游標卡尺 B千分尺	C厚薄	儀 D投影	杉鏡 E	放大鏡 F顯微鏡 G			易爐 H扌	臿拔,	力器 I間位	文尺 J	其它	
品保判定:			合格Ac	cept	□退	貨Reje	ect	□特分	₽Wa	aive [	挑選	<u></u> §Sort	

核准: 欠必锋 审核: 刘联英 检验员: 但芬



## **FLWCOND®** 深圳市华联威电子科技有限公司

## 电镀报告表

品名:3.0AM 90度(端子) 版次:A.0 电镀规格:Ni40u", Sn40u", Au G/Fu" 日期:2021-08-25 页次:1/1

厂商:同华

测试设备:CMI X-射线膜厚测试仪

1、底层电镀测试(Ni)

数据	测试标准	实测值	判定	测试日期	测试时间
1	40u"MIN	60. 5u"	OK	2021/8/25	10:20:15
2	40u"MIN	58. 3u"	OK	2021/8/25	10:20:17
3	40u"MIN	67. 5u"	OK	2021/8/25	10:20:19
4	40u″MIN	62. 4u"	OK	2021/8/25	10:20:21

## 2、表层电镀测试(Sn)

数据	测试标准	实测值	判定	测试日期	测试时间
1	40u"MIN	115. 3u"	OK	2021/8/25	10:25:10
2	40u″MIN	124. 7u"	OK	2021/8/25	10:25:12
3	40u″MIN	118. 9u"	OK	2021/8/25	10:25:14
4	40u″MIN	112. 4u"	OK	2021/8/25	10:25:16

## 3、表层电镀测试(Au)

数据	测试标准	实测值	判定	测试日期	测试时间
1	0.5u"MIN	0.55u"	OK	2021/8/25	10:30:32
2	0.5u"MIN	0. 53u"	OK	2021/8/25	10:30:34
3	0.5u"MIN	0. 58u"	OK	2021/8/25	10:30:36
4	0.5u"MIN	0.59u"	OK	2021/8/25	10:30:38

核准: 欠必锋 审核: 刘联英 检验员: 但芬

## FLWCONN® 深圳市华联威电子科技有限公司 电镀报告表

品名:3.0 AM90度外壳版次:A.0电镀规格:Cu:40u", NI:50u"2021/9/28页次:1/1

厂商:金和源

测试设备:CMI X-射线膜厚测试仪

1、底层电镀测试(Cu)

数据	测试标准	实测值	判定	测试日期	测试时间
1	40u"min	62. 5u"	OK	2021/9/28	14:00:12
2	40u"min	66. 3u″	OK	2021/9/28	14:01:23
3	40u"min	69. 7u″	OK	2021/9/28	14:02:35
4	40u"min	64. 8u″	OK	2021/9/28	14:03:51

## 2、表层电镀测试(NI)

数据	测试标准	实测值	判定	测试日期	测试时间
1	50u"min	53. 2u"	OK	2021/9/28	14:00:12
2	50u"min	51.6u″	OK	2021/9/28	14:01:23
3	50u"min	52. 1u″	OK	2021/9/28	14:02:35
4	50u"min	55. 3u″	OK	2021/9/28	14:03:51

核准: 欠必锋 审核: 刘联英 检验员: 但芬



## 深圳市华联威电子科技有限公司

## 盐水喷雾实验报告

试验方法	盐水喷雾腐蚀试验法	参考资料	MIL-STD-1216
METHOD	NEUTRL SALT SPRAY CORROSION TEST	REF	MIL OID 1210
客户	/	试验起始日期	2021年11月24日 20:00 时起
谷厂	/	DATE	2021年11月25日 08:00 时止
样品名称	USB 3.0AM90度蓝铁	试验数量	5PCS
P/N	U318-0721-G67018		

试验条件 (TEST CONDDITION)

- 1、盐水溶解(SALT SOLUTION:浓度50±10g/L,PH值6.5-7.2.
- 2、试验室温度 (TEMP. IT THE SPRAY DHAMBR):35±1℃.
- 3、盐水桶温度 (TEMP. OF SALE SOL'N TANK): 35±1℃.
- 4、 压力桶温度 (TEMP.OF SAR SUPPLIERY): 47±1℃.
- 5、 试验室相对湿度(R.H IN THE CHAMBER ) 85%.
- 6、 压缩空气压力(COMPRESSED AIR PRESSURE): 1.00±0.01Kg/cm².
- 7、 样品放置位置(SPECIMEN SUPPORTED ANGLE ): 尼龙绳吊挂70°-90°.
- 8、 喷雾收集量 (COLLECT RATE OF SALT SOL′N) 1-2mL/(8 cm²hr).
- 9、盐雾测试时间: 12小时 (H)

判定方法(ADFUSGD METHOD )

试验后以20倍放大镜观察、无蓝、绿色腐蚀物之现象(不包含折弯处),即判定合格.(Inspext the ecimen at 20 xmagnification no blue or green corrosion products are acceptable)

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样品序号	试验后现象	判定
件加力亏	PHENOMENON AFTER TEST	COMMENT
1	无蓝、绿色腐蚀物之现象	OK
2	无蓝、绿色腐蚀物之现象	OK
3	无蓝、绿色腐蚀物之现象	OK
4	无蓝、绿色腐蚀物之现象	OK
5	无蓝、绿色腐蚀物之现象	OK

核准:欠必锋 审核:刘联英 试验员:但芬

# 钜鼎銅材廠檢驗報告單

公司名稱 Customer	22 10	钜鼎銅材廠	檢驗報告單		重量 Weight(kg)	1078		日期 ate	2021/11/23			
品名	N 15 15 15 15 15 15 15 15 15 15 15 15 15	標	漢准			寸·		態	銅卷	<b>E編號</b>		
Article		Stand	ard No		Dime	ension	Tei	nper	Coil No			
C2680	v	JISH31	00:2017		0.18	*400	E	EH	1021	-C-08		
	化學成分Chemical Compositions(%)											
元素 Element	Cu %	Zn%	Pb%	Fe%	\	\		\	化學成分	雜質		
規範 Spec	64.0-68.0	餘量	<0.05	<0.05	\	1	\	\	合格	合格		
實測 Actual	64.32	餘量	0.0036	0.0136	\	1	١	\	合格	合格		
				機械性	質子Mechanical	Properties						
項目	結晶粒度	硬度	抗拉強度	伸長度	導電率	彎曲試驗	表面	粗度	彎	曲度		
Item	Grain Size	Hardness	TensionStrength	Elongation	Electrical Conduc	Bending Test	Surface F	Roughness		nber		
	Mm	Hv	Mpa	%	%IACS	180	Ra(	u m)	m	m\n		
規範MAX Spec	\	170-190	490-610	\	\	\	\			1.		
實測 Actual	\	178	574	5	\	\	\			\ - ·		

品質部

聯系電話:0755-28111847 傳真: 0755-28110077 送货专用量

## 宝山钢铁股份有限公司

## 产品质量证明书 INSPECTION CERTIFICATE

江苏省南京市中华门外新建 邮编 210039 Xinjian, Zhonghuamen 210039 Nanjin, Jiangsu, China

210039 Nanjin, Jiangsu, China TEL (025)86365266

FAX (025)86365266

制造单元: 上海梅山钢铁股份有限公司

Manufacturer: SHANCHAI MEISHAN IRON &STEEL Co., LTD.

	订货单位 CUSTOMER																				产品4 ROD		75	轧钢带							
	教货单位 PURCHASER																				f€ TOME	号 R'S NO	).3	000	107		证 =	5号 CATE NO	BG.	BGTML17031400003	
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	SPECIFICATION																		-		を发 TE OF	)射 ISSUE		2017/03	/14	200				Int	ertek
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序	钢卷/捆包号	件	炉			格及重 IAL DESC		N			J	化学				AL CO		SITION	N %				<b>设仲</b> 战 (G.L-1	验 TENSI	LE TE	ST )	弯	硬度 HARD	*01 杯	ВН	
号	COILIPACK NO.	数	号 HEAT		宽度 WIDTH	长度 LENGTH	张数	重量 MASS	С	St	Mn	P	5	Alt	N. C.	95						屈服 Y.S.	抗找 T.S.	伸长 EL			E BEND	NESS	奖	倍	
10.		QTY	NO.	C-41,5.31	mm	CALL PROPERTY	SHEETS	(kg)	x10 <sup>2</sup>	x10 <sup>2</sup>	x10 <sup>2</sup>	x10	x10 <sup>3</sup>	x10	x10	x10	x10	x10	x10	x10	x10	N	IPa .	%	值	值	TEST	HR30T	mm	MPa	
1	10707183401	1	544780	0.30	1000	COIL		9360	4	0	16	12	5	36						1	100	217	335	41	0		1	-	-		8)
2	10707186901	1	544648	0.30	1000	COIL		9340	4	0	16	14	9	33						1		204	337	45			1				
3	10707186902	1	544648	0.30	1000	COIL		8940	4	0	16	14	9	33						1		204	337	45			1				
4	10707190001	1	544648	0.30	1000	COIL		7310	4	0	16	14	9	33						1		249	368	39			1				
5	10707190002	1	544648	0.30	1000	COIL		7370	4	0	16	14	9	33						1		249	368	39			1				
6	10707192701	1	544648	0.30	1000	COIL		9600	4	0	16	14	9	33						1		213	339	34.5			1				
7	10707192702	1	544648	0.30	1000	COIL		8900	4	0	16	14	9	33								213	339	34.5							
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	NOTES																														
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	会验者 SURVEYOR TO	,						BOVE MAT																			质量负			护	依私

## 东莞市煜春塑料科技有限公司

## 材质证明

÷ + W	含量	备》
主成份	LCP E130i 蓝色	H (
LCP 树脂	69%±5%	
玻纤	30%±5%	
抗氧剂	₩ 0.3% ===	
润滑剂	0.3%	
蓝色粉	0. 4%	



**Test Report** No. CANEC2119174201 Date: 22 Oct 2021 Page 1 of 4

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as: C2680 Terminal

SGS Job No. : CP21-055214 - GZ

Model No.: C2680 terminal after plating

Client Ref. Info.: Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI

series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK

series

Date of Sample Received: 18 Oct 2021

Testing Period: 18 Oct 2021 - 22 Oct 2021

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 Lead,

Mercury, Cadmium, Hexavalent chromium 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 Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen
Approved Signatory





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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@gss.com"

198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 中国・广州・经济技术开发区科学城科珠路198号 邮编: 510663

0663 t (86–20) 82155555 0663 t (86–20) 82155555



#### **Test Report** No. CANEC2119174201 Date: 22 Oct 2021 Page 2 of 4

Test Results:

### Test Part Description:

Specimen No. SGS Sample ID Description

CAN21-191742.001 SN<sub>1</sub> Silver-grey/brassy metal

### 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

With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, Test Method: analyzed by ICP-OES and UV-Vis.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	44
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	_	µg/cm²	0.10	ND

### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG\_ID:12586

- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
  - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating
  - c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.



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No. CANEC2119174201

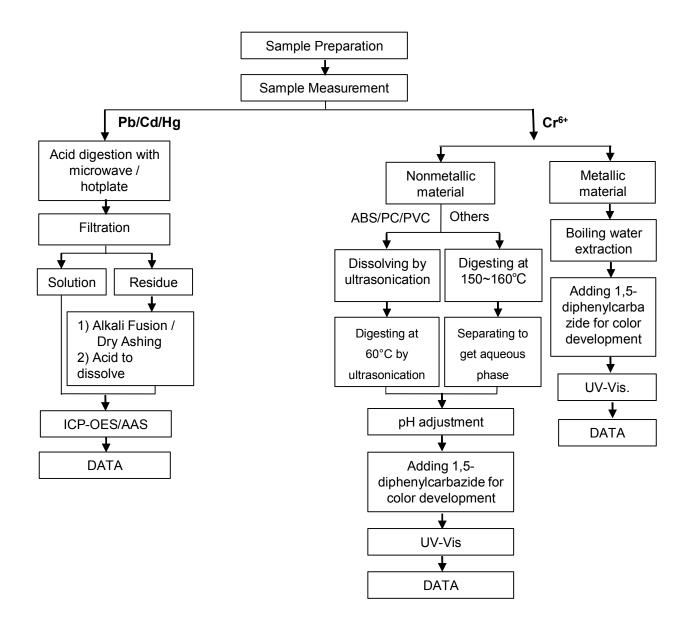
Date: 22 Oct 2021

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### **ATTACHMENTS**

## Pb/Cd/Hg/Cr6+ Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded).





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No. CANEC2119174201

Page 4 of 4

Date: 22 Oct 2021

Sample photo:



SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*



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Test Report No. CANEC2119174206 Date: 22 Oct 2021 Page 1 of 4

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

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

shell

CP21-055214 - GZ SGS Job No.:

Model No.: Iron shell after plating

Client Ref. Info.: Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI

series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK

series

Date of Sample Received: 18 Oct 2021

Testing Period: 18 Oct 2021 - 22 Oct 2021

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).

Based on the performed tests on submitted sample(s), the results of Lead, Conclusion:

Mercury, Cadmium, Hexavalent chromium 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 Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen Approved Signatory





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#### **Test Report** Date: 22 Oct 2021 No. CANEC2119174206 Page 2 of 4

Test Results:

### Test Part Description:

Specimen No. SGS Sample ID Description

CAN21-191742.006 SN<sub>1</sub> Silver-grey plated metal

### 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

With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, Test Method: analyzed by ICP-OES and UV-Vis.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>006</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	μg/cm²	0.10	ND

### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG\_ID:12586

- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
  - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating
  - c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.



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No. CANEC2119174206

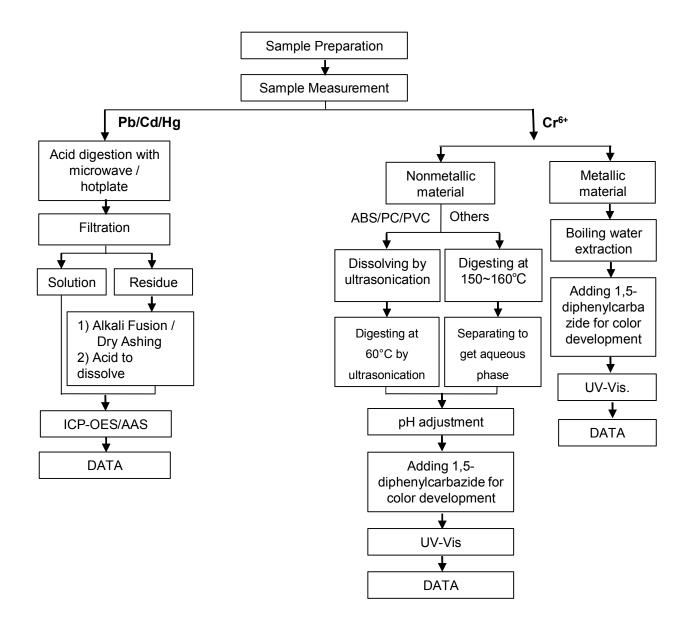
Date: 22 Oct 2021

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### **ATTACHMENTS**

## Pb/Cd/Hg/Cr6+ Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded).





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No. CANEC2119174206

Date: 22 Oct 2021 Page 4 of 4

Sample photo:



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**Test Report** No. CANEC2119174209 Date: 22 Oct 2021 Page 1 of 6

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

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

SGS Job No. : CP21-055214 - GZ

Model No.: LCP Plastic

Client Ref. Info.: Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI

series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK

series

Date of Sample Received: 18 Oct 2021

Testing Period : 18 Oct 2021 - 22 Oct 2021

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 selected part of submitted sample(s), the

results of Lead, Mercury, Cadmium, 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 Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen Approved Signatory





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#### **Test Report** No. CANEC2119174209 Date: 22 Oct 2021 Page 2 of 6

Test Results:

## Test Part Description:

Specimen No. SGS Sample ID Description SN<sub>1</sub> CAN21-191742.009 Blue plastic

### 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

With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC Test Method: 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>009</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	7
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	8	ND
Sum of PBBs	1,000	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
Sum of PBDEs	1,000	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



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Test Report	No. CANEC21191742	209	Date: 2	22 Oct 2021	Page 3 of 6
Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>009</u>	
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	
Dibutyl phthalate (DBP)	1,000	mg/kg	50	ND	
Butyl benzyl phthalate (BBP)	1,000	mg/kg	50	ND	
Bis (2-ethylhexyl) phthalate (DEHP)	1,000	mg/kg	50	ND	
Diisobutyl Phthalates (DIBP)	1,000	mg/kg	50	ND	

### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG\_ID:12586 37,25
- (3) 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.



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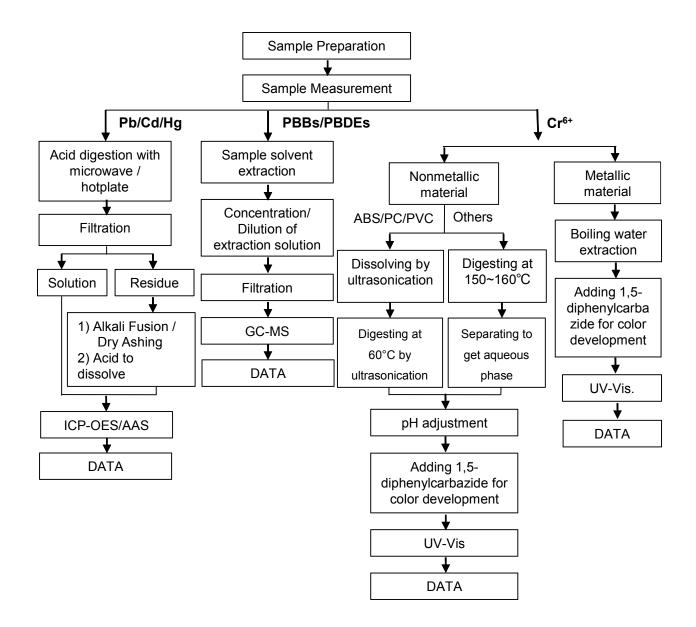
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### **ATTACHMENTS**

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

1) These samples were dissolved totally by pre -conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





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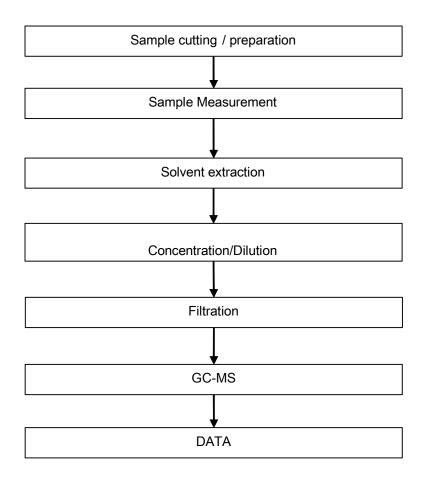
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### **ATTACHMENTS**

## **Phthalates Testing Flow Chart**





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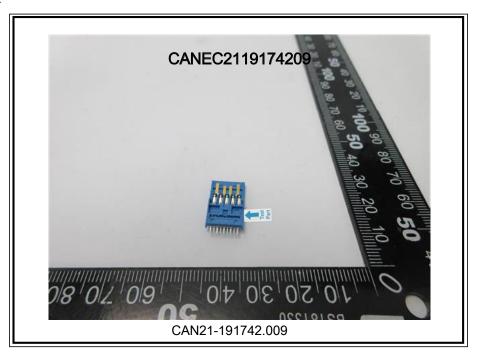


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Date: 22 Oct 2021

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**Test Report** No. CANEC2117633801 Date: 27 Sep 2021 Page 1 of 8

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD
TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. : CP21-051017 - SZ

Date of Sample Received: 18 Sep 2021

Testing Period: 18 Sep 2021 - 27 Sep 2021

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 Lead,

Mercury, Cadmium, 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 Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen Approved Signatory





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#### **Test Report** Page 2 of 8 No. CANEC2117633801 Date: 27 Sep 2021

Test Results:

## Test Part Description:

Specimen No. SGS Sample ID Description SN<sub>1</sub> CAN21-176338.001 Gold plated metal

### Remarks:

(1) 1 mg/kg = 1 ppm = 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

With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC Test Method: 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	73
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm²	0.10	ND
Sum of PBBs	1,000	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
Sum of PBDEs	1,000	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



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No. CANEC2117633801		Date: 27 Sep 2021		Page 3 of 8
<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
1000	mg/kg	50	ND	
1000	mg/kg	50	ND	
1000	mg/kg	50	ND	
1000	mg/kg	50	ND	
	Limit 1000 1000	Limit Unit - mg/kg - mg/kg - mg/kg - mg/kg - mg/kg - mg/kg 1000 mg/kg 1000 mg/kg	Limit         Unit         MDL           -         mg/kg         5           -         mg/kg         5           -         mg/kg         5           -         mg/kg         5           1000         mg/kg         50           1000         mg/kg         50           1000         mg/kg         50           1000         mg/kg         50	Limit         Unit         MDL         001           -         mg/kg         5         ND           -         mg/kg         5         ND           -         mg/kg         5         ND           -         mg/kg         5         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND

### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG\_ID:12586 37.25
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
  - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The coating is considered a non-CrVI based coating
  - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive unavoidable coating variations may influence the determination Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

## Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method: With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Perfluorooctanoic acid (PFOA) and its salts+	335-67-1	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide(MeFOSA)	31506-32-8	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido) -ethanol(MeFOSE)	24448-09-7	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido) -ethanol(EtFOSE)	1691-99-2	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND



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Notes:

(1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1); (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH<sub>4</sub> (CAS No.: 29081-56-9), PFOS-NH(OH)<sub>2</sub> (CAS No.: 70225-14-8), PFOS-N( $C_2H_5$ )<sub>4</sub> (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)



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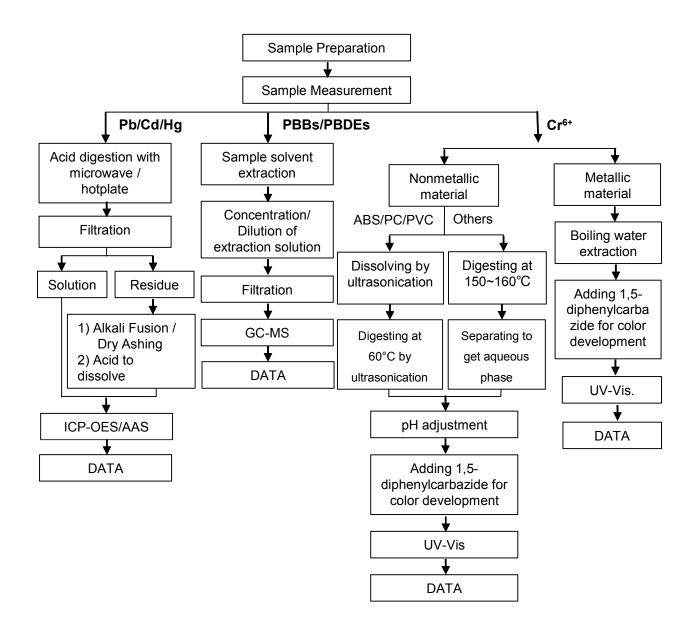
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### **ATTACHMENTS**

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

1) These samples were dissolved totally by pre -conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





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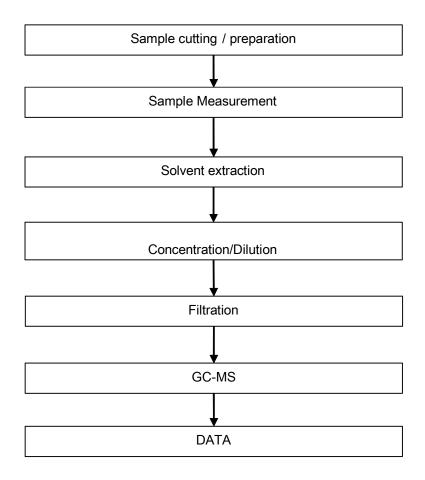
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## **ATTACHMENTS**

# **Phthalates Testing Flow Chart**





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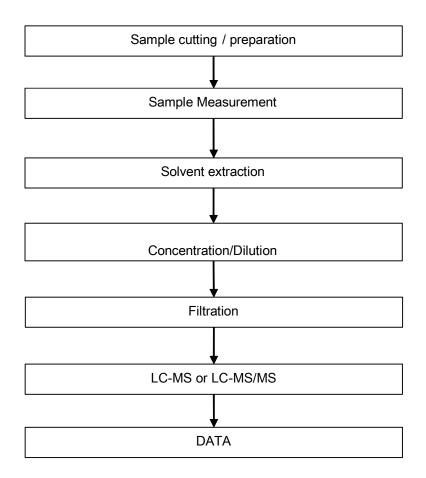
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## **ATTACHMENTS**

# PFOA / PFOS Testing Flow Chart





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No. CANEC2117633801

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Date: 27 Sep 2021

Sample photo:



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**Test Report** No. CANEC2117633803 Date: 27 Sep 2021 Page 1 of 8

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD
TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. : CP21-051017 - SZ

Date of Sample Received: 18 Sep 2021

Testing Period: 18 Sep 2021 - 27 Sep 2021

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 Lead,

Mercury, Cadmium, 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 Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen
Approved Signatory





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#### **Test Report** No. CANEC2117633803 Date: 27 Sep 2021 Page 2 of 8

Test Results:

## Test Part Description:

Specimen No. SGS Sample ID Description

> SN<sub>1</sub> CAN21-176338.003 Silver-gray plated metal

#### Remarks:

(1) 1 mg/kg = 1 ppm = 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

With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC Test Method: 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	37
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm²	0.10	ND
Sum of PBBs	1,000	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
Sum of PBDEs	1,000	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



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No. CANEC2117633803		Date: 2	27 Sep 2021	Page 3 of 8
<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
1000	mg/kg	50	ND	
1000	mg/kg	50	ND	
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	Limit 1000 1000	Limit Unit - mg/kg - mg/kg - mg/kg - mg/kg - mg/kg - mg/kg 1000 mg/kg 1000 mg/kg	Limit         Unit         MDL           -         mg/kg         5           -         mg/kg         5           -         mg/kg         5           -         mg/kg         5           1000         mg/kg         50           1000         mg/kg         50           1000         mg/kg         50           1000         mg/kg         50	Limit         Unit         MDL         003           -         mg/kg         5         ND           -         mg/kg         5         ND           -         mg/kg         5         ND           -         mg/kg         5         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND

#### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG\_ID:12586 37.25
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
  - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The coating is considered a non-CrVI based coating
  - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive unavoidable coating variations may influence the determination Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

## Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method: With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Perfluorooctanoic acid (PFOA) and its salts+	335-67-1	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide(MeFOSA)	31506-32-8	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido) -ethanol(MeFOSE)	24448-09-7	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido) -ethanol(EtFOSE)	1691-99-2	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND



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Notes:

(1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1); (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH<sub>4</sub> (CAS No.: 29081-56-9), PFOS-NH(OH)<sub>2</sub> (CAS No.: 70225-14-8), PFOS-N( $C_2H_5$ )<sub>4</sub> (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)



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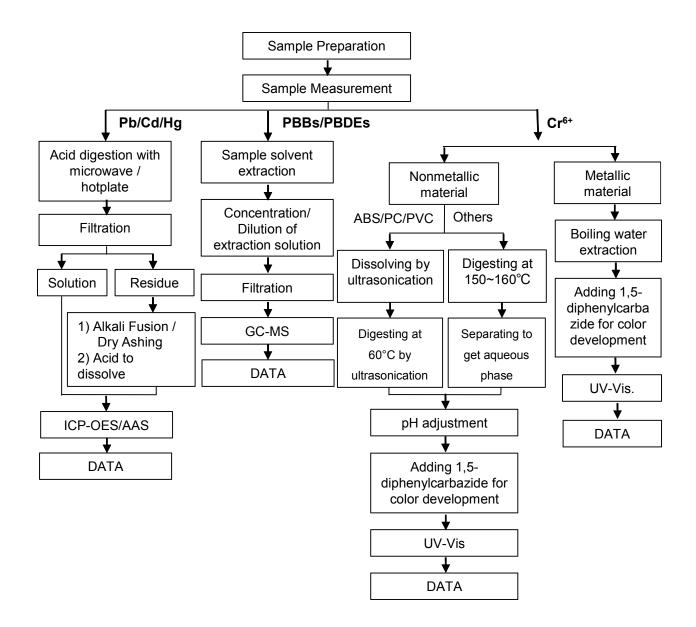
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### **ATTACHMENTS**

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

1) These samples were dissolved totally by pre -conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





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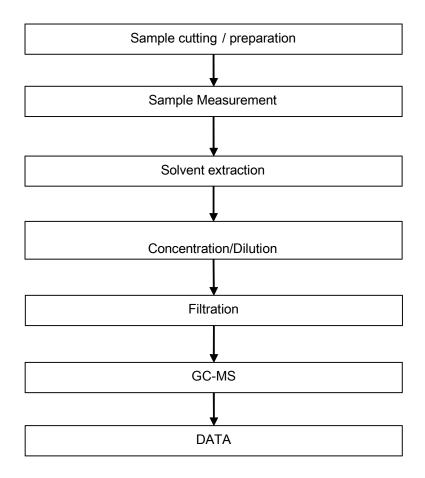
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## **ATTACHMENTS**

# **Phthalates Testing Flow Chart**





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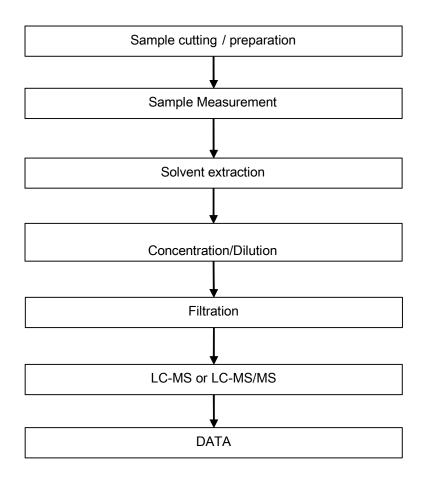
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## **ATTACHMENTS**

# PFOA / PFOS Testing Flow Chart





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**Test Report** No. CANEC2117633802 Date: 27 Sep 2021 Page 1 of 8

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD
TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. : CP21-051017 - SZ

Date of Sample Received: 18 Sep 2021

Testing Period: 18 Sep 2021 - 27 Sep 2021

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 Lead,

Mercury, Cadmium, 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 Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen Approved Signatory





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#### **Test Report** No. CANEC2117633802 Date: 27 Sep 2021 Page 2 of 8

Test Results:

## Test Part Description:

Specimen No. SGS Sample ID Description

SN<sub>1</sub> CAN21-176338.002 Silver-gray plated metal

#### Remarks:

(1) 1 mg/kg = 1 ppm = 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

With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC Test Method: 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	29
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm²	0.10	ND
Sum of PBBs	1,000	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
Sum of PBDEs	1,000	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



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<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
-	mg/kg	5	ND	
1000	mg/kg	50	ND	
1000	mg/kg	50	ND	
1000	mg/kg	50	ND	
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	Limit 1000 1000	Limit Unit - mg/kg - mg/kg - mg/kg - mg/kg - mg/kg - mg/kg 1000 mg/kg 1000 mg/kg	Limit         Unit         MDL           -         mg/kg         5           -         mg/kg         5           -         mg/kg         5           -         mg/kg         5           1000         mg/kg         50           1000         mg/kg         50           1000         mg/kg         50           1000         mg/kg         50	Limit         Unit         MDL         002           -         mg/kg         5         ND           -         mg/kg         5         ND           -         mg/kg         5         ND           -         mg/kg         5         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND           1000         mg/kg         50         ND

#### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG\_ID:12586 37.25
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
  - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The coating is considered a non-CrVI based coating
  - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive unavoidable coating variations may influence the determination Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

## Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method: With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Perfluorooctanoic acid (PFOA) and its salts+	335-67-1	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide(MeFOSA)	31506-32-8	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido) -ethanol(MeFOSE)	24448-09-7	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido) -ethanol(EtFOSE)	1691-99-2	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND



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Notes:

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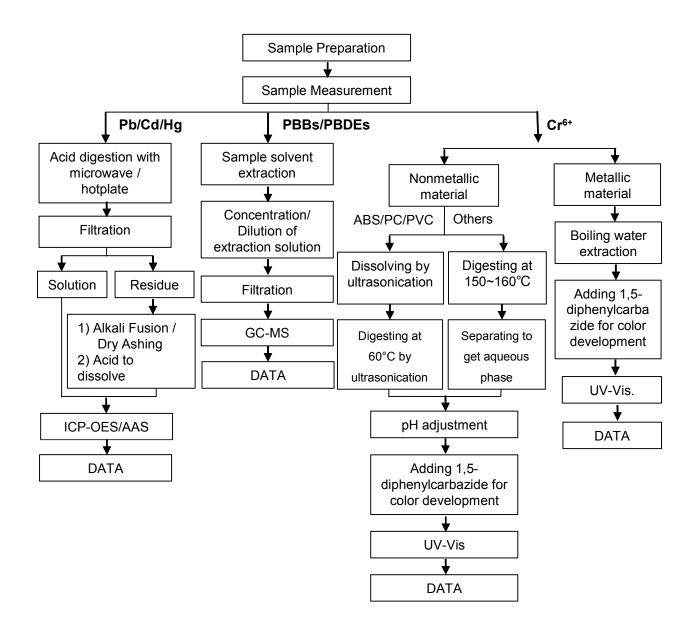
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### **ATTACHMENTS**

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

1) 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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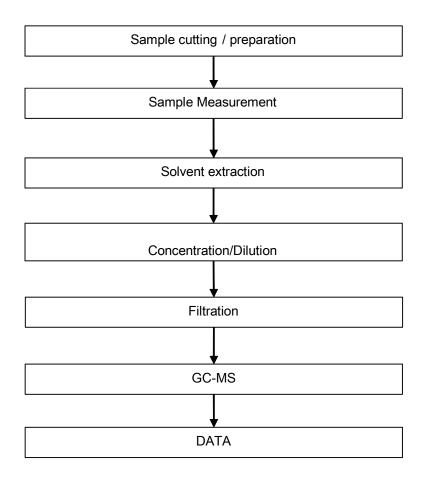
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## **ATTACHMENTS**

## **Phthalates Testing Flow Chart**





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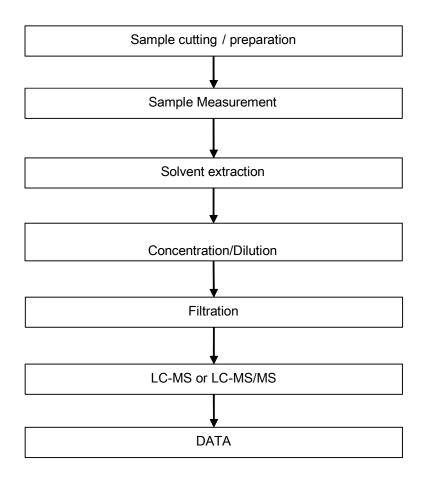
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## PFOA / PFOS Testing Flow Chart





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