



验证报告 Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 1 页 共 19 页
Page 1 of 19

CENTRE TESTING INTERNATIONAL



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Company Name JIEJIE SEMICONDUCTOR CO.,LTD.
shown on Report
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结论 Conclusion

测试样品 Tested Sample	依据标准/指令 According to standard/directive	结果 Result
提交样品 Submitted Sample	欧盟 RoHS 指令 2011/65/EU 及其修订指令(EU) 2015/863 RoHS Directive 2011/65/EU with amendment (EU) 2015/863	符合 PASS

符合表示检测结果满足欧盟RoHS指令2011/65/EU及其修订指令(EU) 2015/863要求的限值。

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.



批准
Approved by
袁辉龙

袁辉龙
授权签字人 Lab Authorized Signatory

日期
Date

2024.03.12

宁波市华测检测技术有限公司

Centre Testing International (Ningbo) Co.,Ltd.

No. R465021521

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验证报告 Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 2 页 共 19 页
Page 2 of 19

报告内容 Report Content

样品信息 Sample Information	3
验证要求 Verification Requested	3
验证依据 Verification Method.....	4
验证结果 Verification Result(s).....	6
检测流程 Test Process	12
样品图片 Photo(s) of the sample(s).....	15

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 3 页 共 19 页
Page 3 of 19

以下测试之样品及样品信息由申请者提供并确认 The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant

产品名称	T1
Product Name	T1
样品接收日期	2024.02.27
Sample Received Date	Feb. 27, 2024
样品验证日期	2024.02.27-2024.03.12
Verification Period	Feb. 27, 2024 to Mar. 12, 2024

验证要求

参考欧盟 RoHS 指令 2011/65/EU 及其修订指令(EU) 2015/863, 对所提交样品中的铅(Pb)、镉(Cd)、汞(Hg)、六价铬(Cr(VI))、多溴联苯(PBBs)、多溴二苯醚(PBDEs)和邻苯二甲酸酯【邻苯二甲酸二正丁酯(DBP)、邻苯二甲酸丁基苄酯(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)】进行验证测试。

Verification Requested

With reference to RoHS Directive 2011/65/EU with amendment (EU) 2015/863, to conduct verification test for Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) and Phthalates (Dibutyl phthalate(DBP), Benzylbutyl phthalate(BBP), Di-2-ethylhexyl phthalate(DEHP), Diisobutyl phthalate(DIBP)) in the submitted samples.

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 4 页 共 19 页
Page 4 of 19

验证依据 Verification Method

A. IEC 62321-3-1:2013 对管控元素的筛选限值

Screening limits for regulated elements according to IEC 62321-3-1:2013 (单位 Unit: mg/kg)

测试元素 Element(s)	聚合物 Polymers	金属 Metals	合成材料 Composite material
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
Br	$BL \leq (300-3\sigma) < X$	N/A	$BL \leq (250-3\sigma) < X$

B. 邻苯二甲酸酯的筛选限值 Screening limits for Phthalates

测试项目 Test Item(s)	筛选限值 Screening limits(单位 Unit: mg/kg)
邻苯二甲酸二正丁酯 Dibutyl phthalate(DBP)	$BL \leq 600 < X$
邻苯二甲酸丁基苯酯 Benzylbutyl phthalate(BBP)	$BL \leq 600 < X$
邻苯二甲酸二(2-乙基己基)酯 Di-2-ethylhexyl phthalate(DEHP)	$BL \leq 600 < X$
邻苯二甲酸二异丁酯 Diisobutyl phthalate(DIBP)	$BL \leq 600 < X$

C. 化学测试 Chemical Test

测试项目 Tested Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)	方法检出限 MDL	限值 Limit
铅 Lead (Pb)	IEC 62321-5:2013	ICP-OES	10 mg/kg	1000 mg/kg
	参考 IEC 62321-5:2013 Refer to IEC 62321-5:2013		10 mg/kg	
镉 Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	10 mg/kg	100 mg/kg
	参考 IEC 62321-5:2013 Refer to IEC 62321-5:2013		10 mg/kg	
汞 Mercury (Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES	10 mg/kg	1000 mg/kg
	参考 IEC 62321-4:2013+AMD1:2017 CSV Refer to IEC 62321-4:2013+AMD1:2017 CSV		10 mg/kg	
六价铬 Hexavalent Chromium (Cr(VI))	IEC 62321-7-1:2015	UV-Vis	0.10 $\mu\text{g}/\text{cm}^2$ (LOQ)	1000 mg/kg
	IEC 62321-7-2:2017		20 mg/kg	
多溴联苯 Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	100 mg/kg	1000 mg/kg
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS	100 mg/kg	1000 mg/kg
邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS	50 mg/kg	单项 1000 mg/kg 1000 mg/kg for each

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 5 页 共 19 页
Page 5 of 19

备注 Remark:

- BL = 低于筛选限值 Below limit
- OL = 高于筛选限值 Over limit
- X = 需要做进一步测试的范围 Theregionwhere further investigation is necessary
- 3σ = 分析仪器的重复性 The reproducibility of analytical instruments
- N/A=不适用 Not applicable
- LOD = 方法检出限 Limit of Detection
- LOQ = 定量限，六价格的定量限为 $0.10 \mu\text{g}/\text{cm}^2$ Limit of Quantification, The LOQ of Hexavalent chromium is $0.10 \mu\text{g}/\text{cm}^2$

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 6 页 共 19 页
Page 6 of 19

验证结果 Verification Result(s)

CTI 样品 ID CTI Sample ID	同材质 ID Same material ID	样品描述 Sample Description	测试项目 Tested Items	XRF 扫描结果 XRF Screening Test	邻苯二甲酸酯 筛选结果 Phthalates Screening Test	化学测试结果 Chemical Test (mg/kg)	结论 Conclusion	样品提交/再次提交日期 Sample Received/ Resubmitted Date
1.1	-	白色塑料 White plastic	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	IN	/	N.D.		
			Br(PBDEs)	IN	/	N.D.		
			DBP	N/A	BL	/		
			BBP	N/A	BL	/		
			DEHP	N/A	BL	/		
			DIBP	N/A	BL	/		
1.2	-	黑色固封胶 Black solid sealant	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	BL	/	/		
			Br(PBDEs)	BL	/	/		
			DBP	N/A	BL	/		
			BBP	N/A	BL	/		
			DEHP	N/A	BL	/		
			DIBP	N/A	BL	/		
1.3	1.4, 1.5, 1.7	有银色镀层的金属 Metal with silvery plating	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
			DIBP	N/A	/	/		

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 7 页 共 19 页
Page 7 of 19

CTI 样品 ID CTI Sample ID	同材质 ID Same material ID	样品描述 Sample Description	测试项目 Tested Items	XRF 扫描结果 XRF Screening Test	邻苯二甲酸酯 筛选结果 Phthalates Screening Test	化学测试结果 Chemical Test (mg/kg)	结论 Conclusion	样品提交/再次提交日期 Sample Received/ Resubmitted Date
1.6	-	无色透明胶 Colorless transparent adhesive	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	IN	/	N.D.		
			Br(PBDEs)	IN	/	N.D.		
			DBP	N/A	BL	/		
			BBP	N/A	BL	/		
			DEHP	N/A	BL	/		
1.8	-	有银色镀层的金属 Metal with silvery plating	Pb	OL	/	23649 ^{#1}	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
1.9	-	有银色镀层的金属 Metal with silvery plating	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
DIBP	N/A	/	/					

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 8 页 共 19 页
Page 8 of 19

CTI 样品 ID CTI Sample ID	同材质 ID Same material ID	样品描述 Sample Description	测试项目 Tested Items	XRF 扫描结果 XRF Screening Test	邻苯二甲酸酯 筛选结果 Phthalates Screening Test	化学测试结果 Chemical Test (mg/kg)	结论 Conclusion	样品提交/再次提交日期 Sample Received/ Resubmitted Date
1.10	-	银色金属引脚 Silvery metal pin	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
			DIBP	N/A	/	/		
1.11	1.12	铜色金属 Cupreous metal	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
			DIBP	N/A	/	/		
1.13	-	铜色金属 Cupreous metal	Pb	OL	/	5807 ^{#1}	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
			DIBP	N/A	/	/		

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 9 页 共 19 页
Page 9 of 19

CTI 样品 ID CTI Sample ID	同材质 ID Same material ID	样品描述 Sample Description	测试项目 Tested Items	XRF 扫描结果 XRF Screening Test	邻苯二甲酸酯 筛选结果 Phthalates Screening Test	化学测试结果 Chemical Test (mg/kg)	结论 Conclusion	样品提交/再次提交日期 Sample Received/ Resubmitted Date
1.14	-	银色主体 (整体测试) Silvery body (Tested as a whole)	Pb	OL ^{#2}	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	BL	/	/		
			Br(PBDEs)	BL	/	/		
			DBP	N/A	BL	/		
			BBP	N/A	BL	/		
			DEHP	N/A	BL	/		
1.15	-	铜色金属 Cupreous metal	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
1.16	-	白色陶瓷 White ceramic	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
DIBP	N/A	/	/					

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 10 页 共 19 页
Page 10 of 19

CTI 样品 ID CTI Sample ID	同材质 ID Same material ID	样品描述 Sample Description	测试项目 Tested Items	XRF 扫描结果 XRF Screening Test	邻苯二甲酸酯 筛选结果 Phthalates Screening Test	化学测试结果 Chemical Test (mg/kg)	结论 Conclusion	样品提交/再次提交日期 Sample Received/ Resubmitted Date
1.17	-	有银色镀层的金属 Metal with silvery plating	Pb	BL	/	/	符合 PASS	2024.02.27 Feb. 27, 2024
			Cd	BL	/	/		
			Hg	BL	/	/		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
			DIBP	N/A	/	/		
1.18-A	-	焊锡 Soldering tin	Pb	OL	/	908439#2	符合 PASS	2024.02.27 Feb. 27, 2024/ 2024.03.07 Mar. 7, 2024
			Cd	OL	/	N.D.		
			Hg	IN	/	N.D.		
			Cr(Cr(VI))	BL	/	/		
			Br(PBBs)	N/A	/	/		
			Br(PBDEs)	N/A	/	/		
			DBP	N/A	/	/		
			BBP	N/A	/	/		
			DEHP	N/A	/	/		
			DIBP	N/A	/	/		

验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 11 页 共 19 页
Page 11 of 19

备注 Remark:

- N.D. = 未检出 (小于方法检出限或定量限) Not Detected (<MDL or LOQ)
- MDL = Method Detection Limit
- mg/kg = ppm = 百万分之一 parts per million
- 1000 mg/kg = 0.1%
- / = 未检测 Not tested
- IN = 不确定, 需要进一步化学测试确认 Inconclusive, need further chemical test
- N/A = 不适用 Not applicable
- BL = 低于筛选限值 Below limit
- OL = 高于筛选限值, 需进一步化学测试确认 Further chemical test will be conducted while the result is over limit
- 对于多溴联苯 (PBBs) 和多溴二苯醚 (PBDEs), XRF 筛选时其结果显示的是总溴含量; 对于六价铬, XRF 筛选时其结果显示的是总铬含量。When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.
- #1 根据客户声明, 样品涉及欧盟 RoHS 指令 2011/65/EU 豁免项第 6(c) 条: 铜合金中的铅含量不应该超过 4% (Wt)。According to the client's statement, the material of the sample(s) fall into exemption items 6(c) according to EU Directive 2011/65/EU: Copper alloy containing up to 4 % lead by weight.
- #2 根据客户声明, 样品中的铅来自于高温熔化焊料。高温熔融焊料中的铅 (即: 铅基合金中铅含量 $\geq 85\%$ (Wt)), 根据欧盟指令 2011/65/EU 附录 III 豁免项第 7(a) 条, 是符合豁免的。According to the client's statement, lead mainly comes from the high melting temperature type solders. Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead) is exempted from the restriction, with reference to EU Directive 2011/65/EU annex III Exemption Applications 7(a).
- CTI 样品 ID 中带 "A" 的样品, 为原提交样品的整改样。
The sample with A in 'CTI Sample ID' is the improved one instead of the original submitted sample.
- 豁免清单请见官网 <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32011L0065>
Exemption list please see the official website
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32011L0065>
- 根据客户声明, "同材质 ID" 列样品与 "CTI 样品 ID" 列样品为同材质。
According to the client's statement, the samples in the column "Same material ID" and the column "CTI Sample ID" are same material.

验证报告 Verification Report

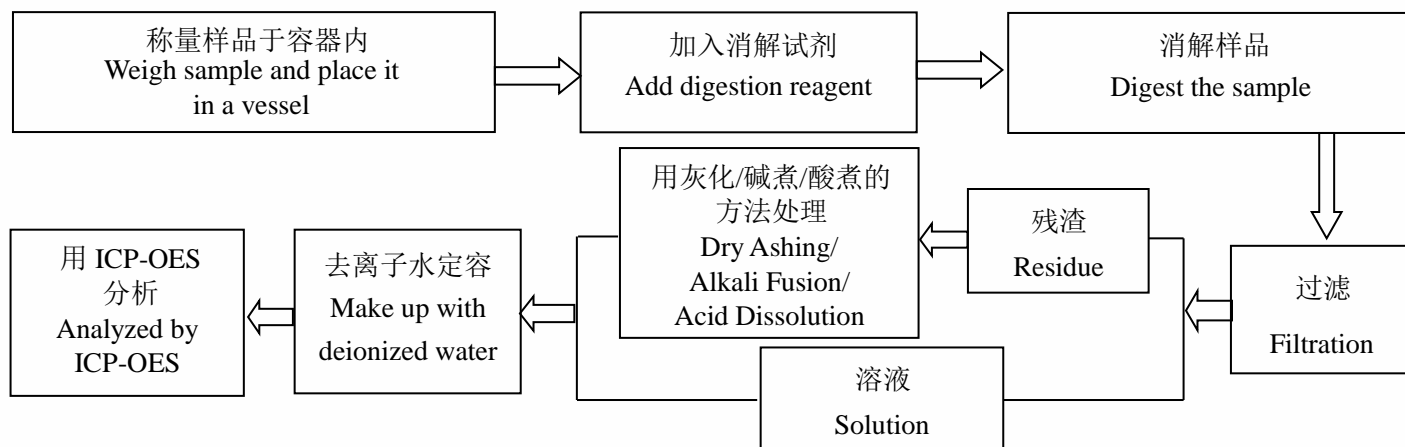
报告编号 A2240084810101E
Report No. A2240084810101E

第 12 页 共 19 页
Page 12 of 19

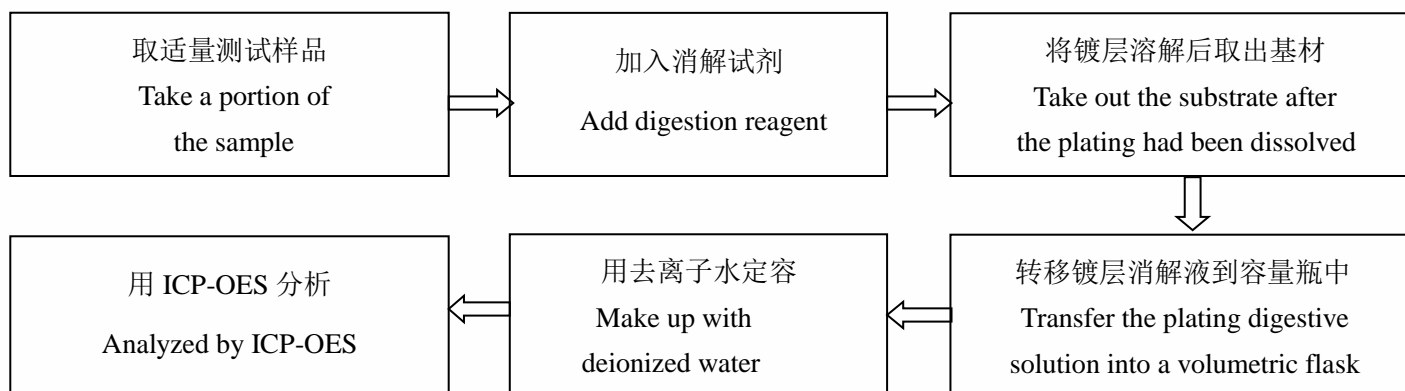
检测流程 Test Process

1. 铅 Lead (Pb), 镉 Cadmium (Cd)

(1) IEC 62321-5:2013

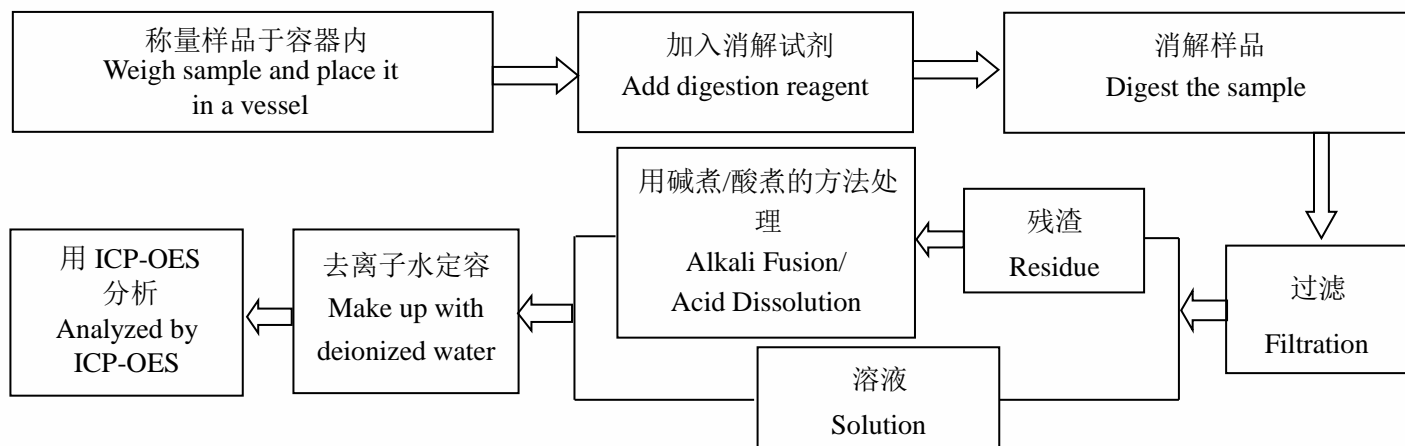


(2) 参考 Refer to IEC 62321-5:2013



2. 汞 Mercury(Hg)

(1) IEC 62321-4:2013+AMD1:2017 CSV

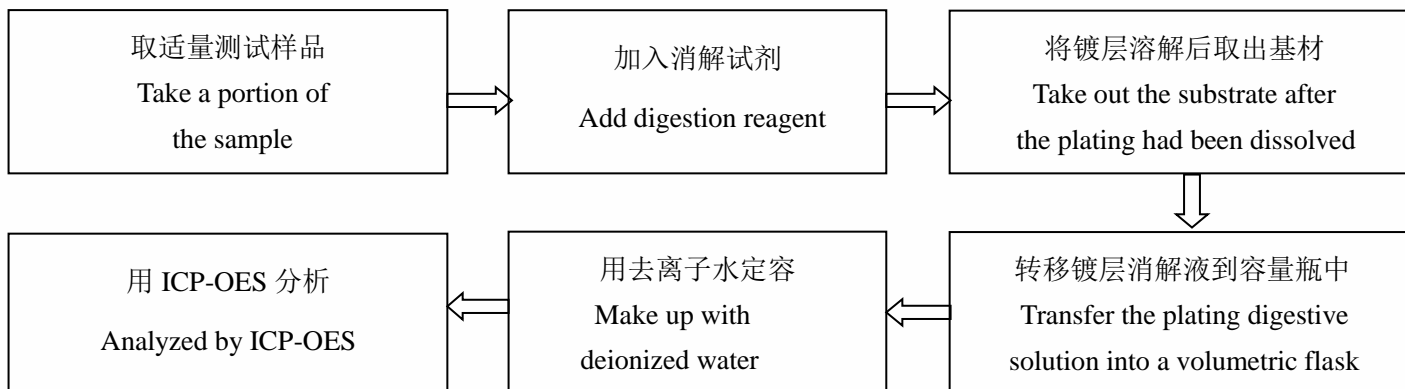


验证报告 Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

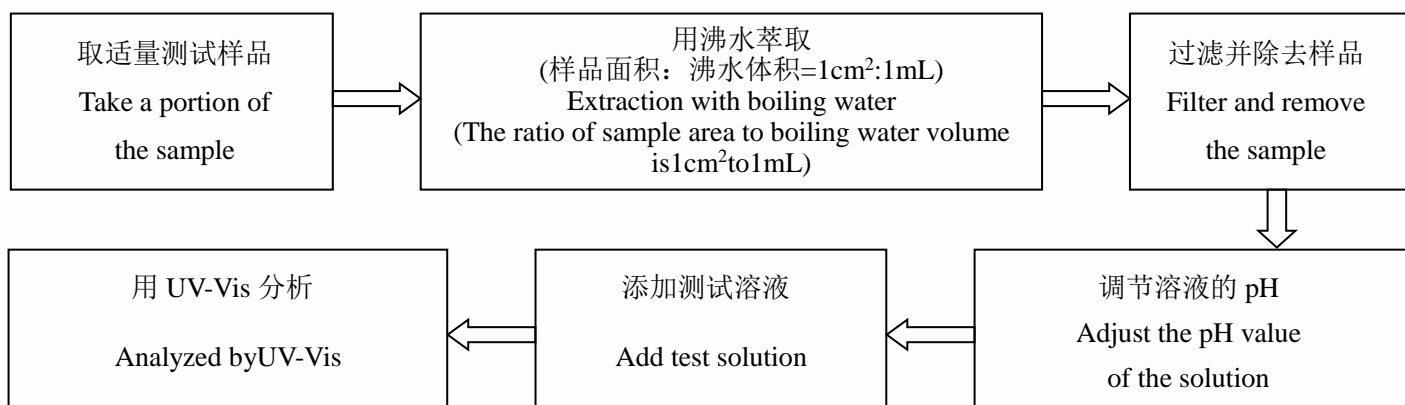
第 13 页 共 19 页
Page 13 of 19

(2) 参考 Refer to IEC 62321-4:2013+AMD1:2017 CSV

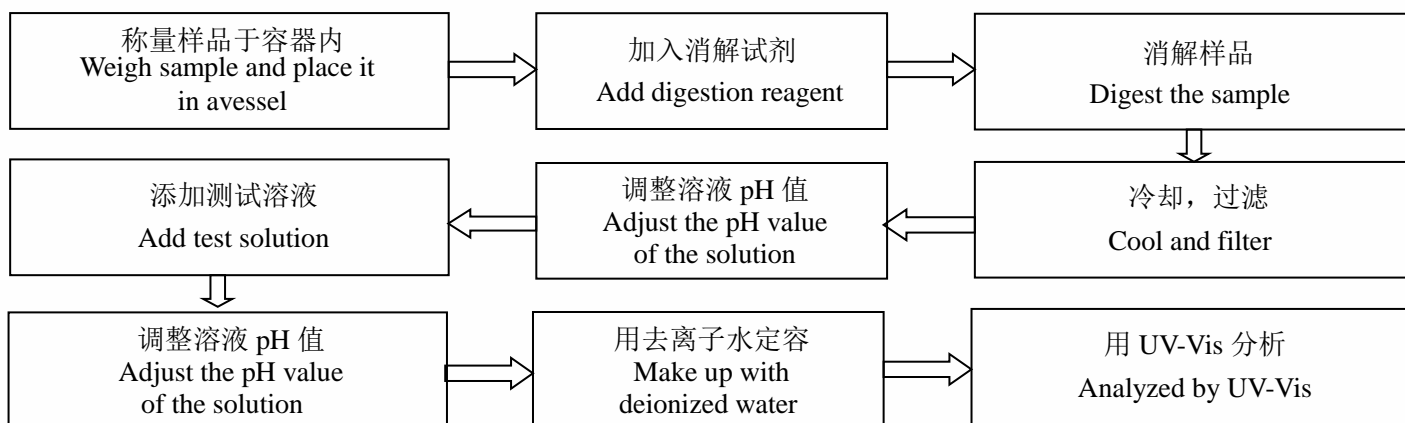


3.六价铬 Hexavalent Chromium (Cr(VI))

(1) IEC 62321-7-1:2015



(2) IEC 62321-7-2:2017

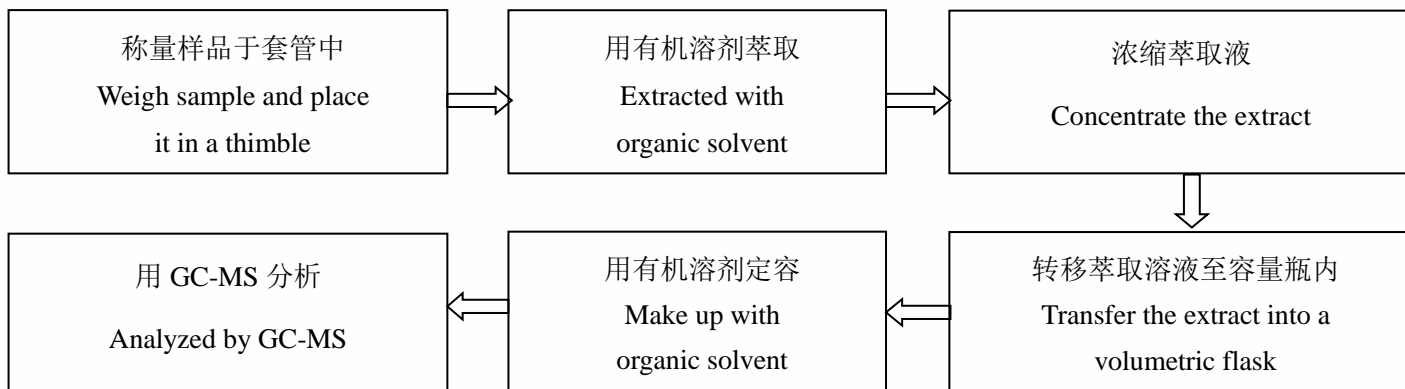


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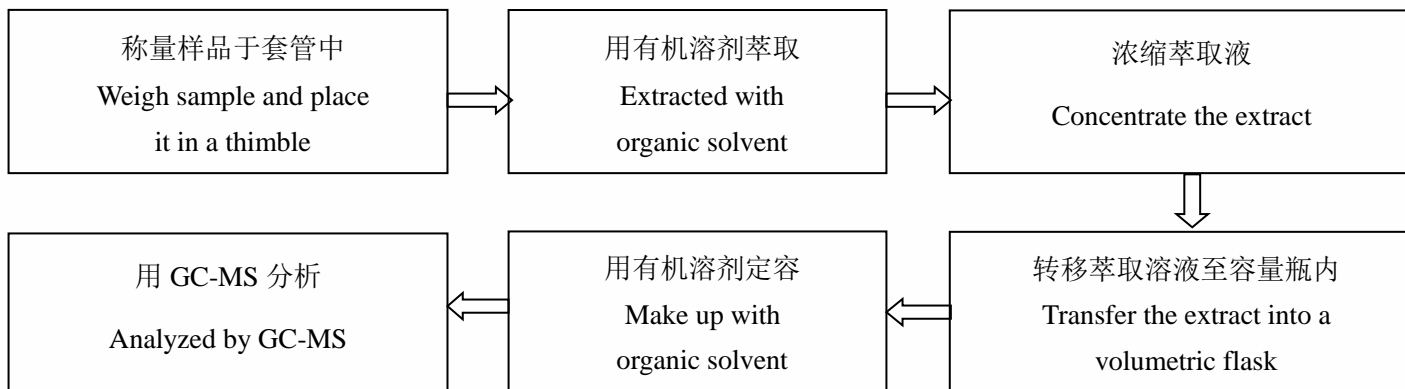
报告编号 A2240084810101E
Report No. A2240084810101E

第 14 页 共 19 页
Page 14 of 19

4. 多溴联苯 Polybrominated Biphenyls (PBBs),多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



5. 邻苯二甲酸酯 Phthalates(DBP, BBP, DEHP, DIBP)



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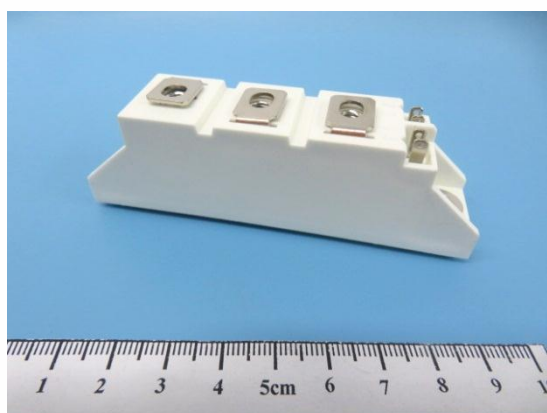
报告编号 A2240084810101E
Report No. A2240084810101E

第 15 页 共 19 页
Page 15 of 19

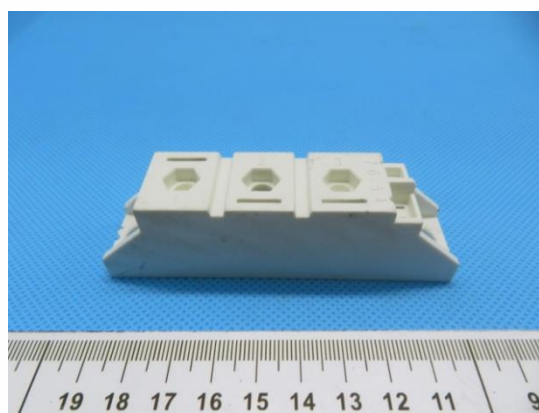
样品图片 Photo(s) of the sample(s)

成品 Final Product

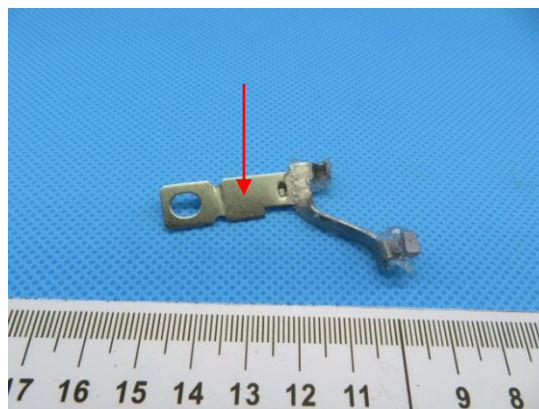
1.1



1.2



1.3

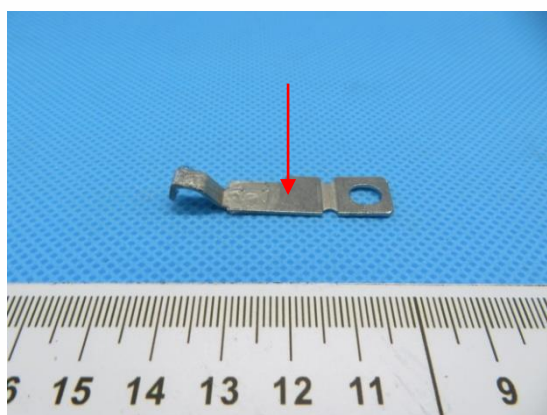


验证报告 Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

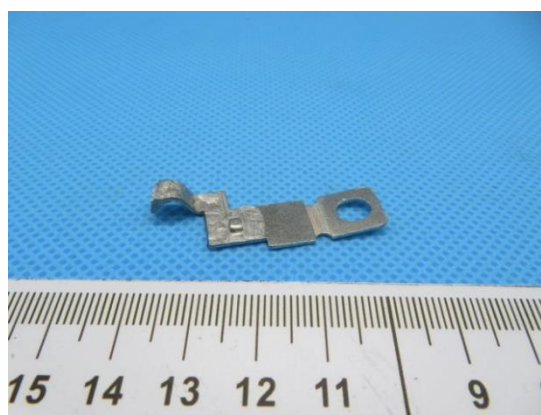
第 16 页 共 19 页
Page 16 of 19

1.4 (客户参考图片(非测试样品))
Client Reference Photo (Non-tested sample))

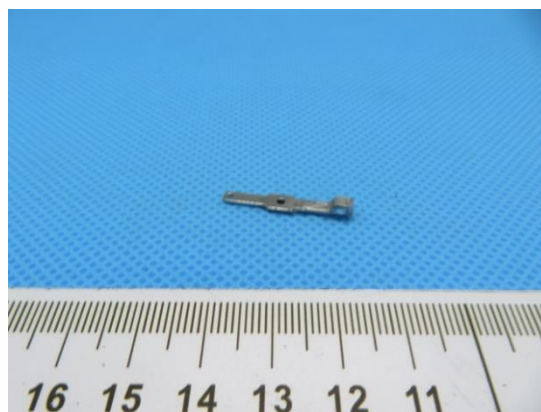


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1.5 (客户参考图片(非测试样品))
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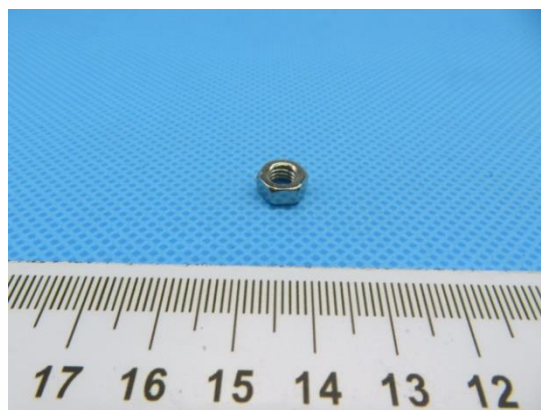
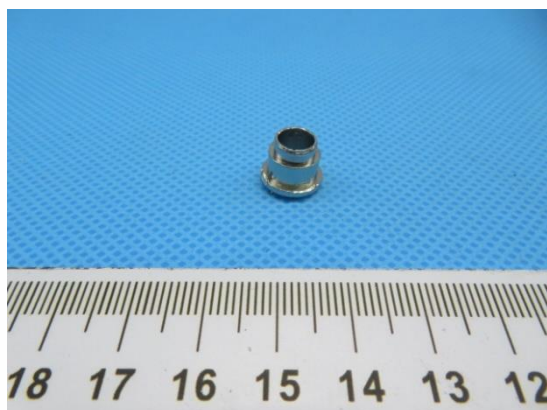
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1.9



1.8

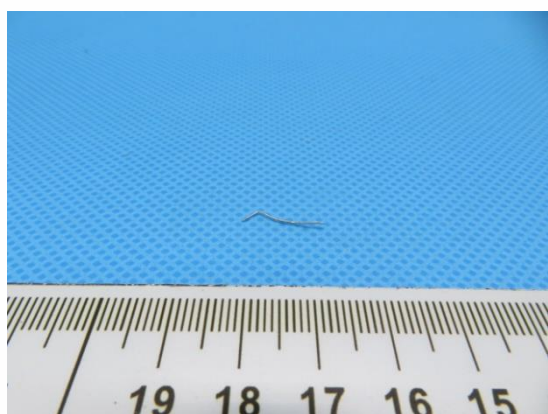


验证报告 Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

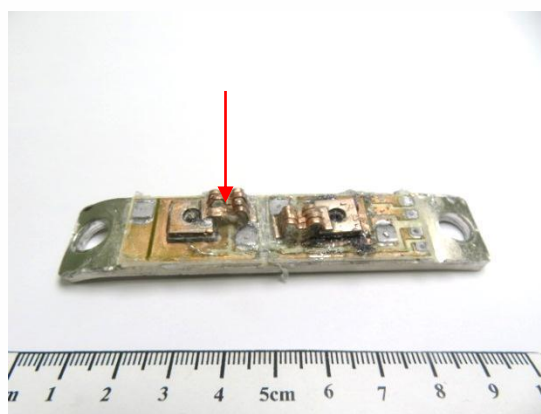
第 17 页 共 19 页
Page 17 of 19

1.10

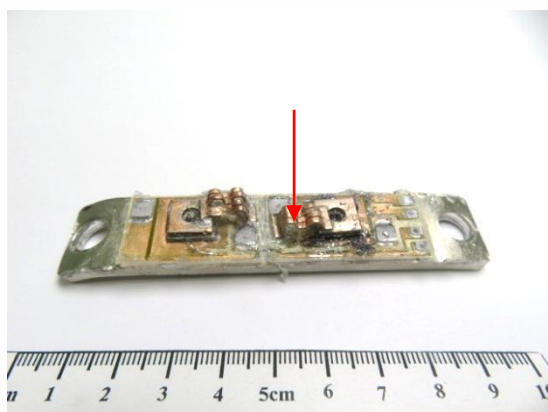


1.12 (客户参考图片(非测试样品)
Client Reference Photo (Non-tested sample))

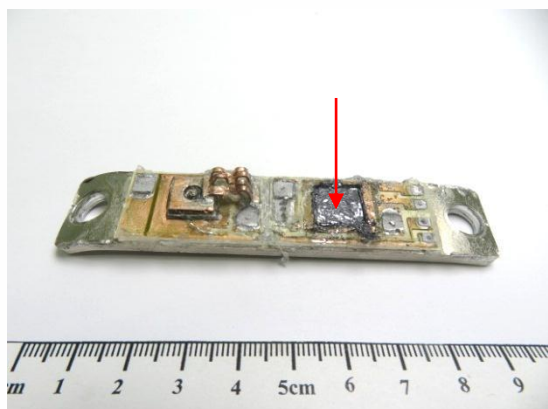
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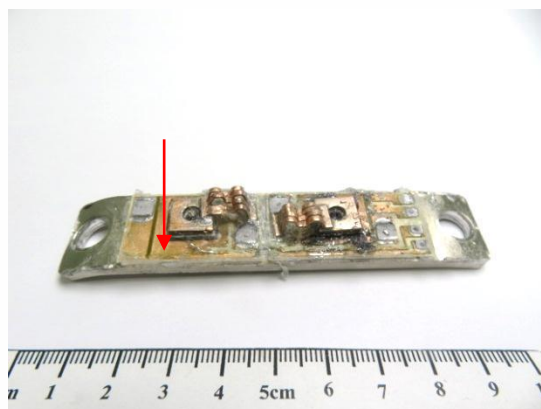
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1.14



1.15

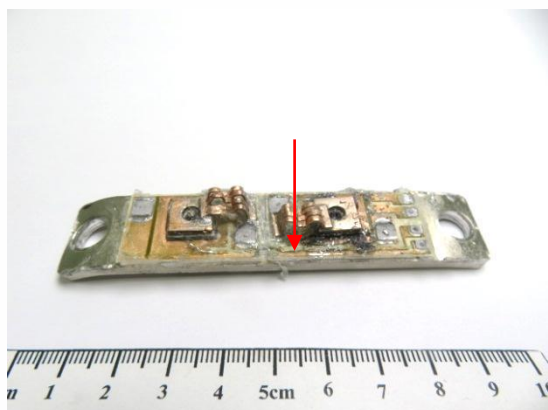


验证报告 Verification Report

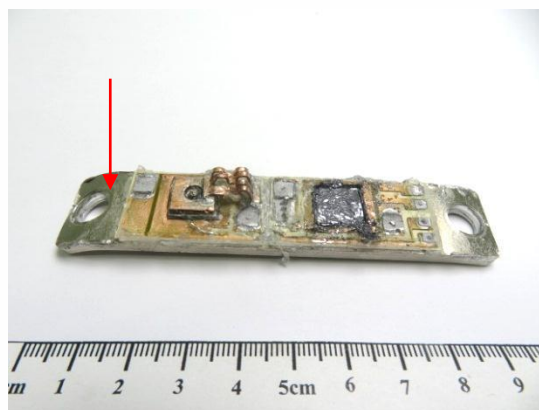
报告编号 A2240084810101E
Report No. A2240084810101E

第 18 页 共 19 页
Page 18 of 19

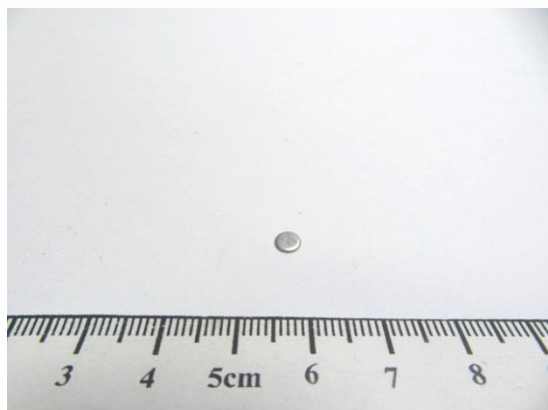
1.16



1.17



1.18-A



验证报告

Verification Report

报告编号 A2240084810101E
Report No. A2240084810101E

第 19 页 共 19 页
Page 19 of 19

声明 Statement:

1. 检测报告无批准人签字、“专用章”及报告骑缝章无效;
This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. 报告抬头公司名称及地址、样品及样品信息由申请者提供, 申请者应对其真实性负责, CTI 未核实其真实性;
The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;
3. 本报告检测结果仅对受测样品负责;
The result(s) shown in this report refer(s) only to the sample(s) tested;
4. 除非另有说明, 报告参照 ILAC-G8:09/2019 / CNAS-GL015:2022 使用简单接受 (w=0) 二元判定规则进行符合性判定;
Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019 / CNAS-GL015:2022;
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In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

*** 报告结束 ***
*** End of Report ***