



# 验证报告

## Verification Report

报告编号 A2230112228102E  
Report No. A2230112228102E

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### CENTRE TESTING INTERNATIONAL



报告抬头公司名称 捷捷半导体有限公司  
Company Name JIEJIE SEMICONDUCTOR CO.,LTD.  
shown on Report  
地 址 江苏省南通市苏通科技产业园井冈山路 6 号  
Address NO.6,JINGGANGSHAN ROAD,SU TONG INDUSTRIAL PARK,NANTONG CITY,JIANGSU PROVINCE

#### 结论 Conclusion

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

杨启良

日 期

Date

2023.03.31

杨启良

实验室经理 Lab Manager

No. R219925334

宁波高新区菁华路 76 号厂区东首第一、二层

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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 Product Name T2  
样品接收日期 2023.03.16  
Sample Received Date Mar. 16, 2023  
样品检测日期 2023.03.16-2023.03.31  
Testing Period Mar. 16, 2023 to Mar. 31, 2023

### 检测要求

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。

### Test 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.

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检测依据 Test 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)                   | $BL \leq 600 < X$                      |
| 邻苯二甲酸丁基苄酯 Benzylbutyl phthalate(BBP)               | $BL \leq 600 < X$                      |
| 邻苯二甲酸二(2-乙基己基)酯<br>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<br>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<br>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<br>Refer to IEC 62321-4:2013+AMD1:2017 CSV |                            | 10 mg/kg                      |                                      |
| 六价铬<br>Hexavalent Chromium (Cr(VI))             | IEC 62321-7-1:2015                                                           | UV-Vis                     | 0.10 µg/cm <sup>2</sup> (LOQ) | 1000 mg/kg                           |
|                                                 | IEC 62321-7-2:2017                                                           |                            | 20 mg/kg                      |                                      |
| 多溴联苯<br>Polybrominated Biphenyls (PBBs)         | IEC 62321-6:2015                                                             | GC-MS                      | 100mg/kg                      | 1000 mg/kg                           |
| 多溴二苯醚<br>Polybrominated Diphenyl Ethers (PBDEs) | IEC 62321-6:2015                                                             | GC-MS                      | 100mg/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<br>1000 mg/kg for each |

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### 备注 Remark:

- BL = 低于筛选限值 Under the screening limit
- OL = 高于筛选限值 Above the screening limit
- X = 需要做进一步测试的范围 The range of needing to do further testing
- $3\sigma$  = 表明分析仪器的重现性 The reproducibility of analytical instruments
- N/A = 不适用 Not applicable
- LOD = 方法检出限 Detection limit
- LOQ = 定量限，六价铬的定量限为  $0.10 \mu\text{g}/\text{cm}^2$  Limit of Quantification, The LOQ of Hexavalent chromium is  $0.10 \mu\text{g}/\text{cm}^2$

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检测结果 Test Result(s)

| CTI<br>样品 ID<br>CTI<br>Sample<br>ID | 同材质<br>序号<br>Same<br>material<br>No. | 样品描述<br>Sample<br>Description                        | 测试项目<br>Tested Items | XRF 扫描<br>结果<br>XRF<br>Screening<br>Test | 邻苯二甲酸<br>酯筛选结果<br>Phthalates<br>Screening<br>Test | 化学测试<br>结果<br>Chemical<br>Test<br>(mg/kg) | 结论<br>Conclusion | 样品提交/再<br>次提交日期<br>Sample<br>Received/<br>Resubmitted<br>Date |
|-------------------------------------|--------------------------------------|------------------------------------------------------|----------------------|------------------------------------------|---------------------------------------------------|-------------------------------------------|------------------|---------------------------------------------------------------|
| 2.5                                 | -                                    | 有淡蓝色镀<br>层的金属<br>Metal with<br>light blue<br>plating | Pb                   | BL                                       | /                                                 | /                                         | 符合 PASS          | 2023.03.16<br>Mar. 16, 2023                                   |
|                                     |                                      |                                                      | Cd                   | BL                                       | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | Hg                   | BL                                       | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | Cr(Cr(VI))           | BL                                       | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | Br(PBBs&PBDEs)       | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | DBP                  | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | BBP                  | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | DEHP                 | N/A                                      | /                                                 | /                                         |                  |                                                               |
| 2.11                                | -                                    | 铜色金属<br>Cupreous<br>metal                            | Pb                   | BL                                       | /                                                 | /                                         | 符合 PASS          | 2023.03.16<br>Mar. 16, 2023                                   |
|                                     |                                      |                                                      | Cd                   | BL                                       | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | Hg                   | BL                                       | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | Cr(Cr(VI))           | BL                                       | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | Br(PBBs&PBDEs)       | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | DBP                  | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | BBP                  | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | DEHP                 | N/A                                      | /                                                 | /                                         |                  |                                                               |
|                                     |                                      |                                                      | DIBP                 | N/A                                      | /                                                 | /                                         |                  |                                                               |

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### 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 Uncertain, Further chemical test
- N/A = 不适用 Not applicable
- BL = 低于筛选限值 Under the screening 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 above the screening limit
- ▼六价铬浓度小于  $0.10 \mu\text{g}/\text{cm}^2$ , 样品未检出六价铬。The sample is negative for Cr(VI) – The Cr(VI) concentration is below  $0.10 \mu\text{g}/\text{cm}^2$ . The coating is considered a non-Cr(VI) based coating.
- 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.
- 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>
- 下表格涉及到引用的样品本次未测试。根据客户声明, “引用报告编号-CTI 样品 ID”列与“CTI 样品 ID”列对应的样品为同材质。The samples with the reference information in the table below are non-tested in this report. According to the client's statement, the material of the samples in the column "Reference Report No.-CTI Sample ID " in the table above are the same as the "CTI Sample ID".

| CTI 样品 ID<br>CTI Sample ID | 引用报告编号-CTI 样品 ID<br>Reference Report No.-CTI Sample ID |
|----------------------------|--------------------------------------------------------|
| 2.1                        | A2230112228101E-1.1                                    |
| 2.2                        | A2230112228101E-1.1                                    |
| 2.3                        | A2230112228101E-1.3                                    |
| 2.4                        | A2230112228101E-1.8                                    |
| 2.6                        | A2230112228101E-1.3                                    |
| 2.7                        | A2230112228101E-1.3                                    |
| 2.8                        | A2230112228101E-1.3                                    |
| 2.9                        | A2230112228101E-1.6                                    |
| 2.10                       | A2230112228101E-1.10                                   |
| 2.12                       | A2230112228101E-1.12                                   |
| 2.13                       | A2230112228101E-1.12                                   |

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| CTI 样品 ID<br>CTI Sample ID | 引用报告编号-CTI 样品 ID<br>Reference Report No.-CTI Sample ID |
|----------------------------|--------------------------------------------------------|
| 2.14                       | A2230112228101E-1.13                                   |
| 2.15                       | A2230112228101E-1.14                                   |
| 2.16                       | A2230112228101E-1.15.1                                 |
| 2.17                       | A2230112228101E-1.15.2                                 |
| 2.18                       | A2230112228101E-1.17                                   |
| 2.19                       | A2230112228101E-1.16                                   |

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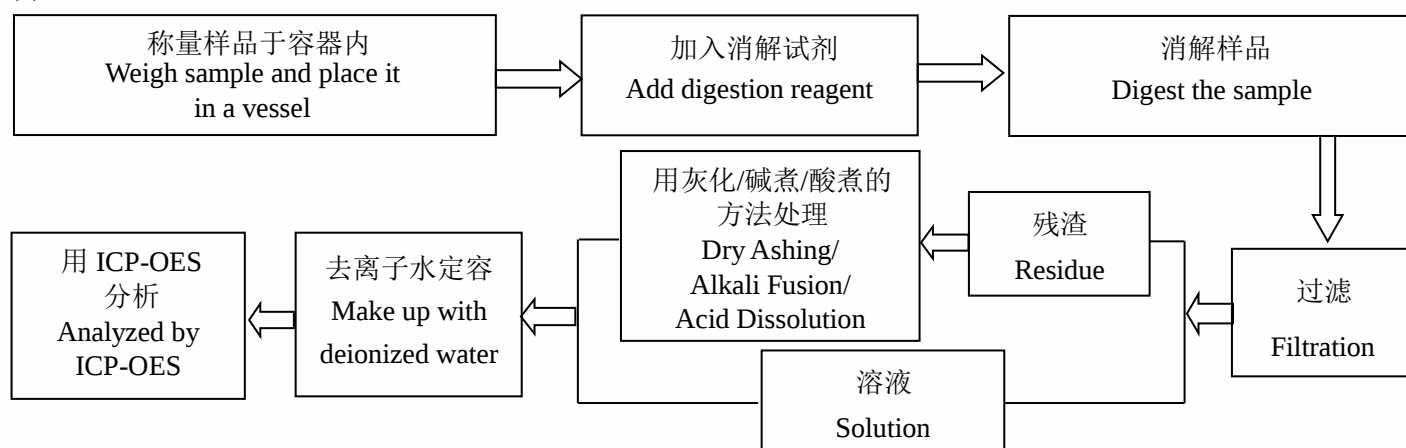
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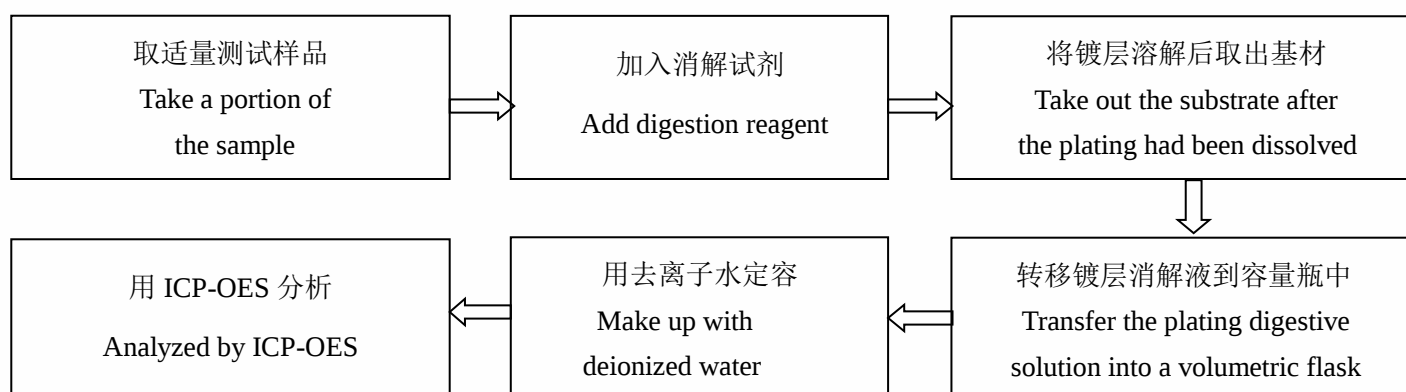
## 检测流程 Test Process

### 1. 铅 Lead (Pb), 镉 Cadmium (Cd)

#### (1) IEC 62321-5:2013

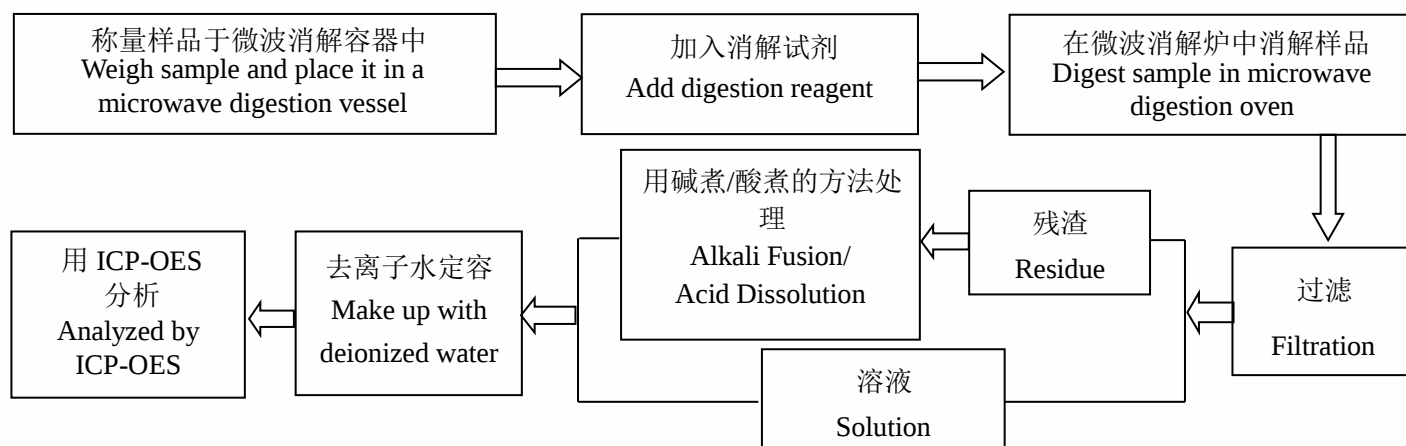


#### (2) 参考 Refer to IEC 62321-5:2013



### 2. 汞 Mercury(Hg)

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



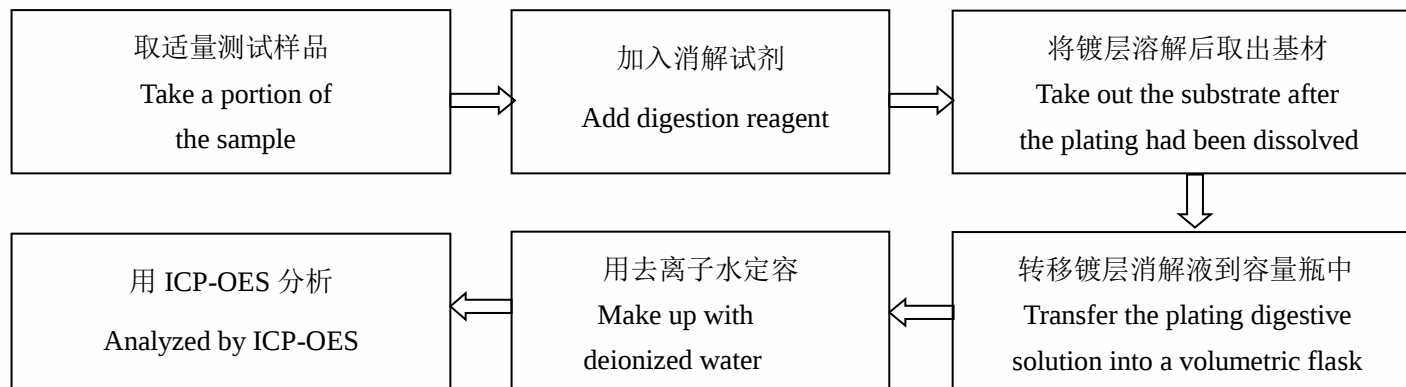
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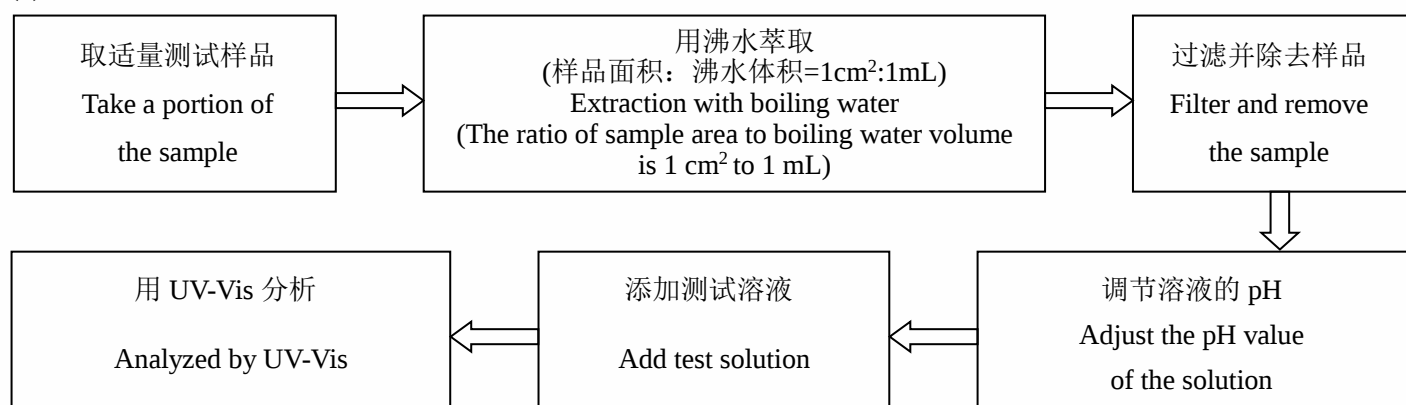
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### (2) 参考 Refer to IEC 62321-4:2013+AMD1:2017 CSV

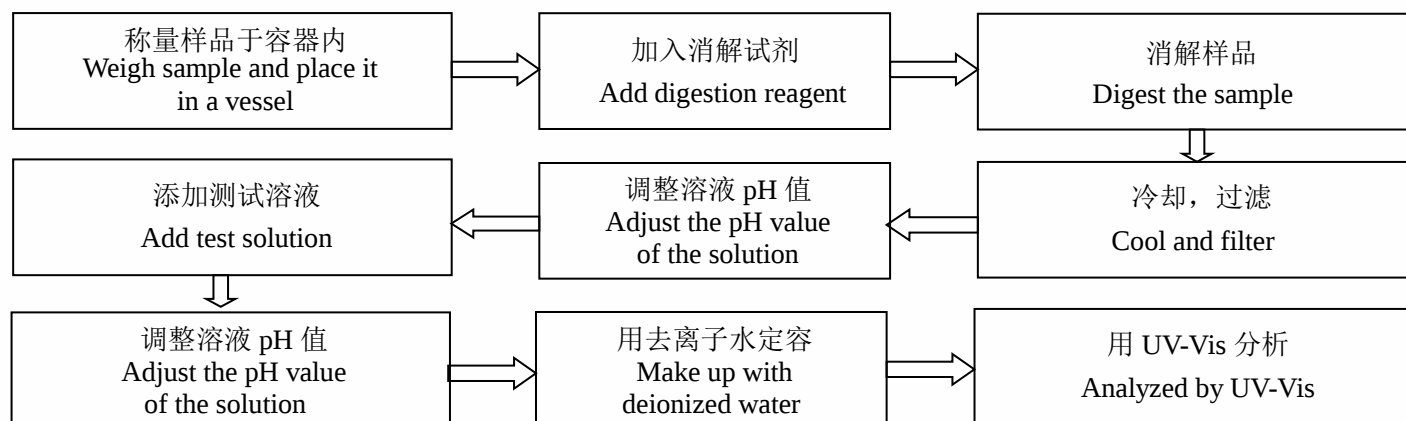


### 3. 六价铬 Hexavalent Chromium (Cr(VI))

#### (1) IEC 62321-7-1:2015



#### (2) IEC62321-7-2:2017

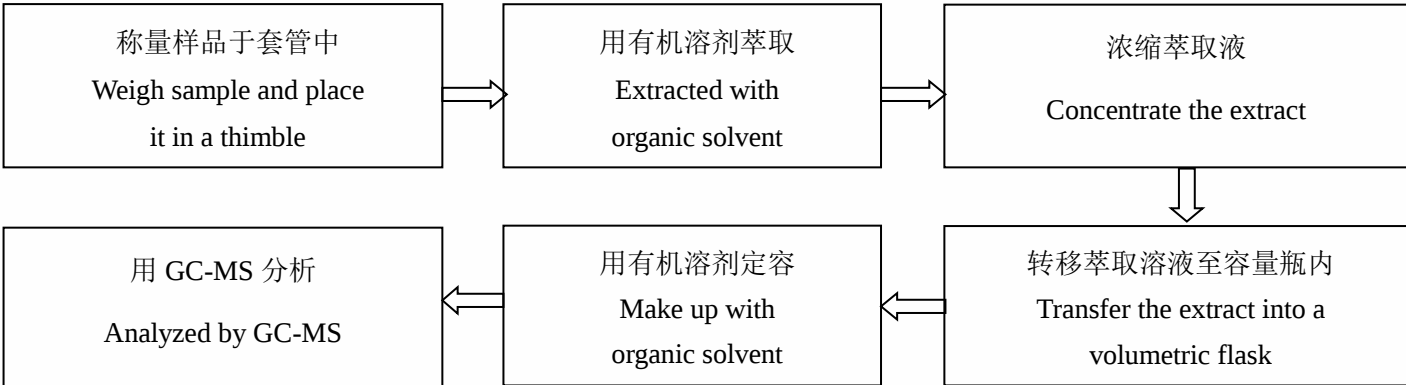


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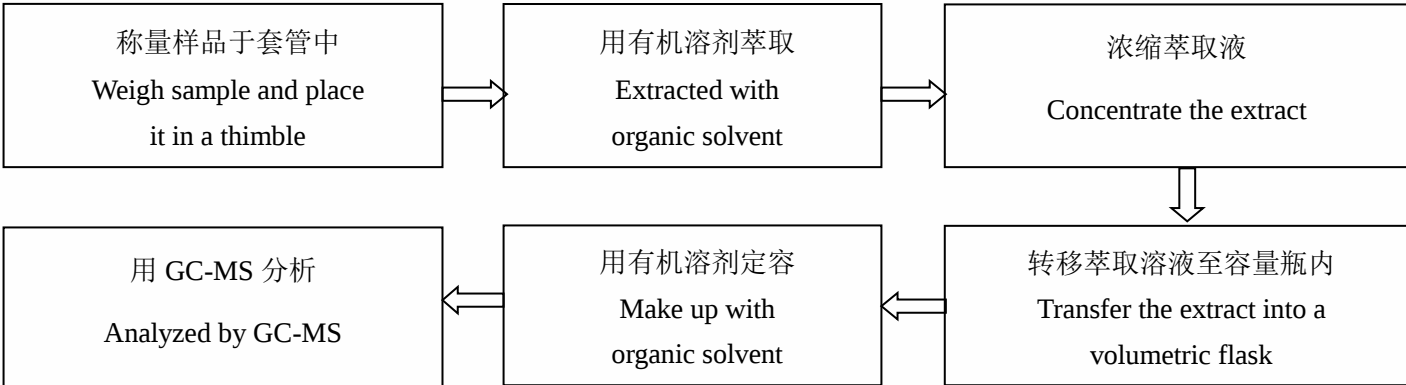
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4. 多溴联苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



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



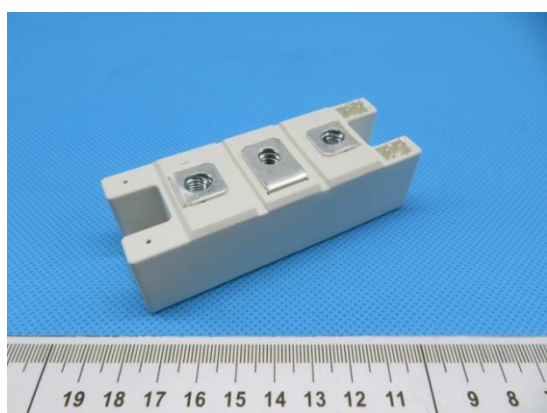
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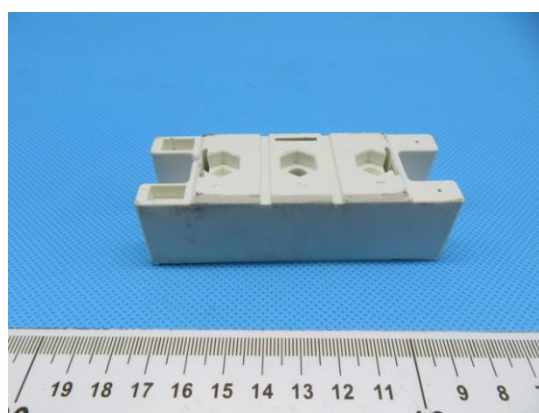
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## 样品图片 Photo(s) of the sample(s)

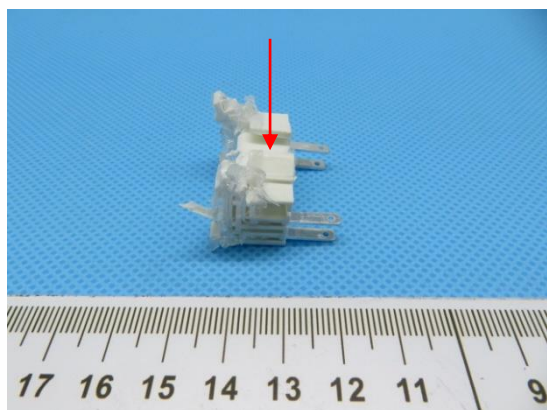
成品 Final Product



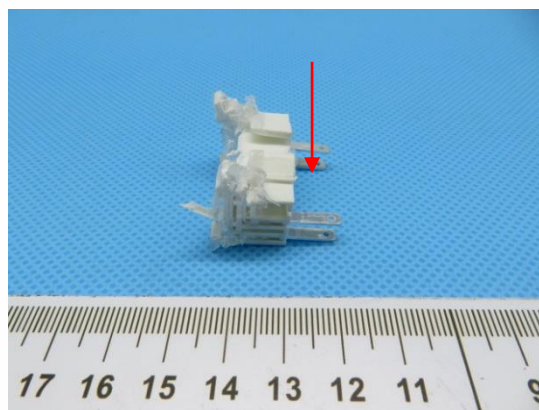
2.1(客户参考图片(非测试样品))  
Client Reference Photo (Non-tested sample))



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



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

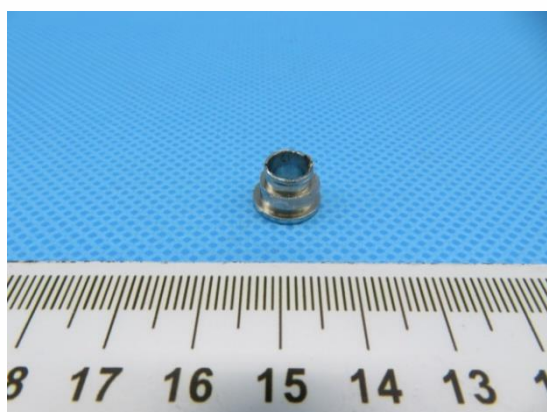


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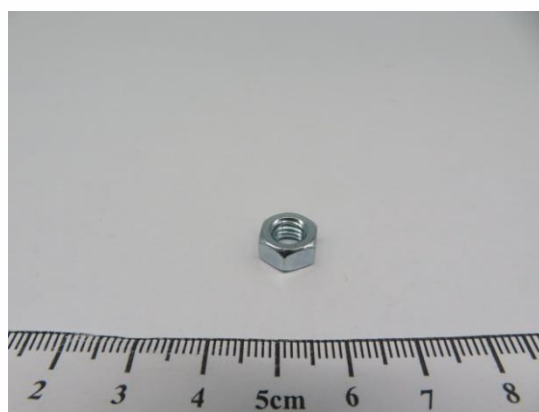
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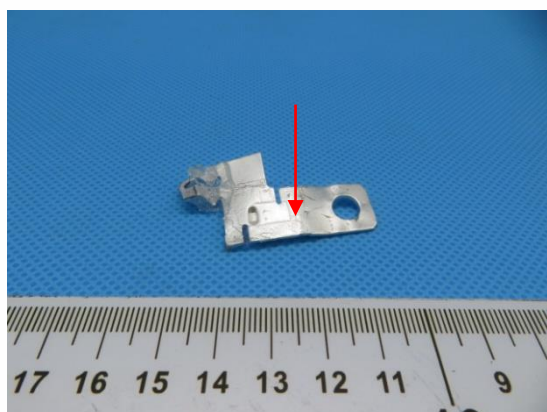
2.4(客户参考图片(非测试样品))  
Client Reference Photo (Non-tested sample))



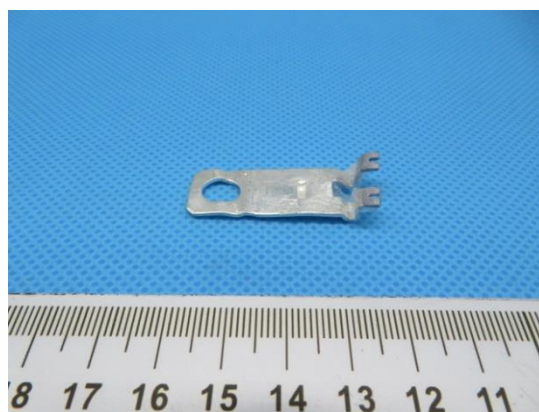
2.5



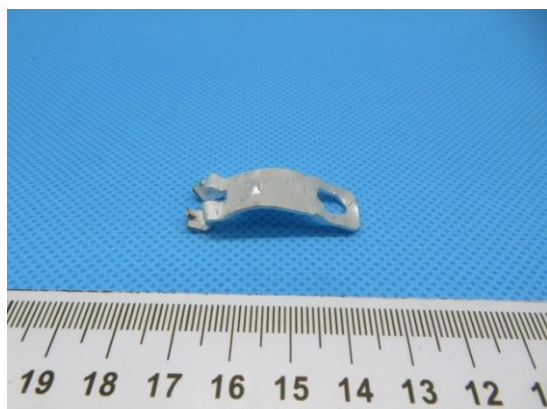
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Client Reference Photo (Non-tested sample))



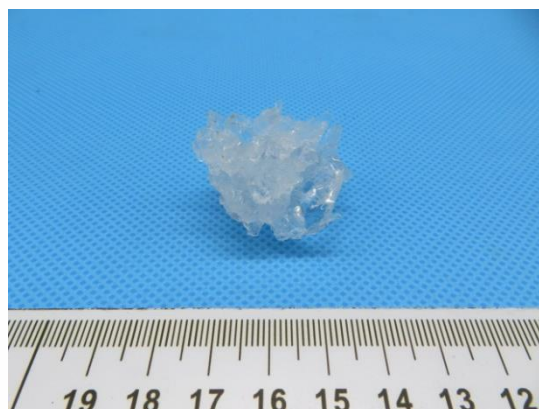
2.7(客户参考图片(非测试样品))  
Client Reference Photo (Non-tested sample))



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



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

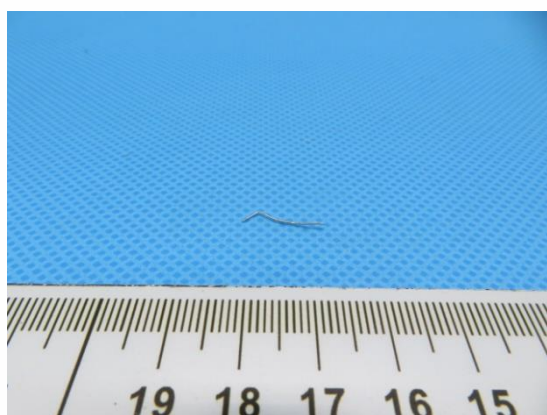


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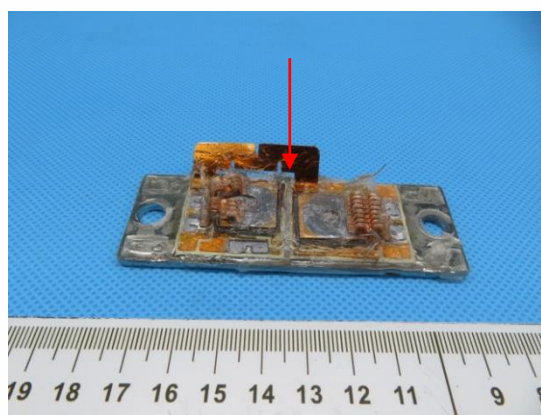
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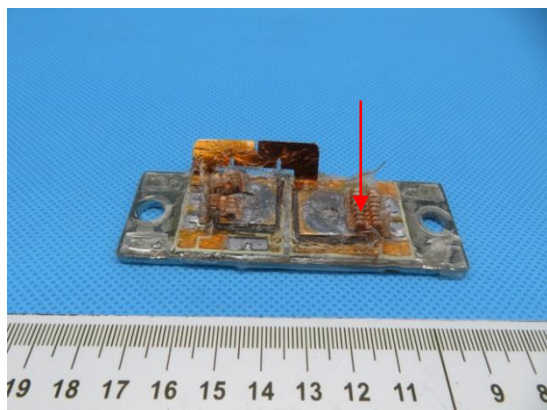
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Client Reference Photo (Non-tested sample))



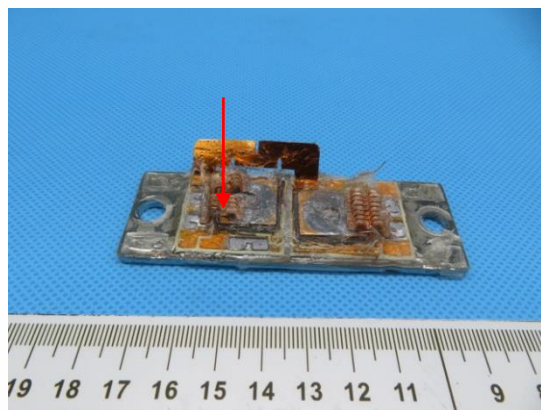
2.11



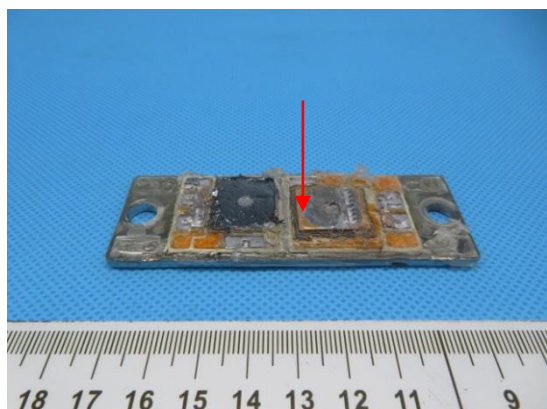
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Client Reference Photo (Non-tested sample))



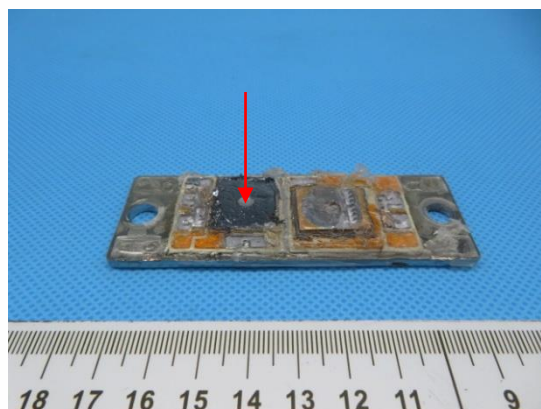
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Client Reference Photo (Non-tested sample))



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



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

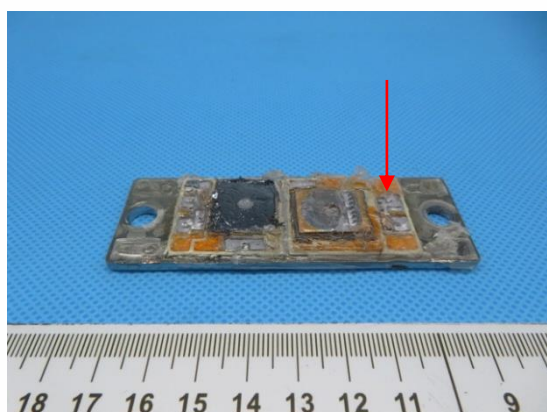


# 验证报告 Verification Report

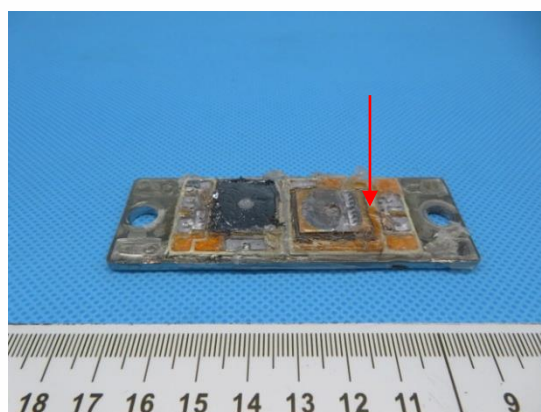
报告编号 A2230112228102E  
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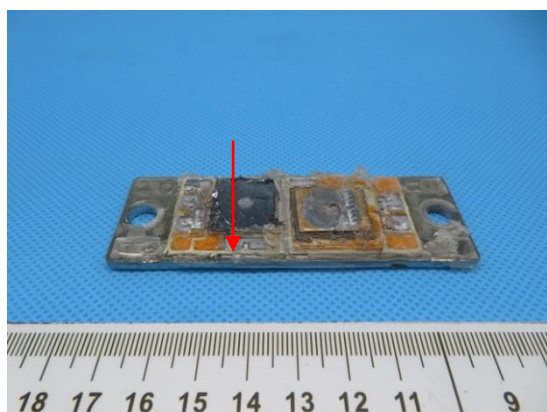
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Client Reference Photo (Non-tested sample))



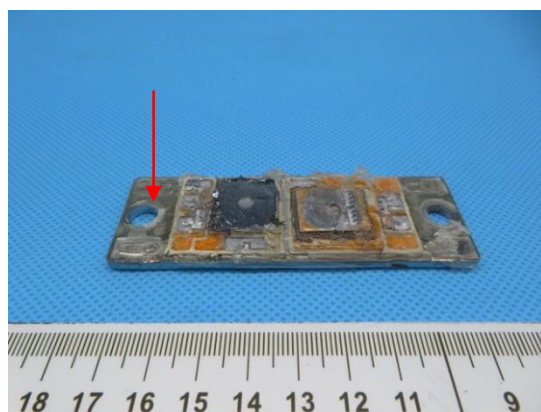
2.17(客户参考图片(非测试样品))  
Client Reference Photo (Non-tested sample))



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



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



# 验证报告

## Verification Report

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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;
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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;
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\*\*\* 报告结束 \*\*\*

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

