

Test Report

No.SZR160625006001- 3

Date: Jul. 06, 2016

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Applicant

:

Address

:

The submitted sample and sample information was/were submitted and identified by/on the behalf of the client

Sample name

:

Type-C power bank

Type /model

:

P324.962

Manufacturer

:

/

Sample received date

:

Jun. 28, 2016

Testing period

:

Jun. 28, 2016 to Jul. 06, 2016

Test requested

:

1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.
2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1:2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples.

According to the RoHS Directive 2011/65/EU

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

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

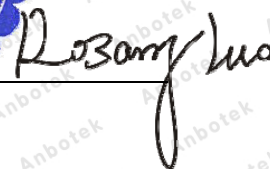
Tested by



Inspected by



Approved by



Shenzhen Anbotek Compliance Laboratory Limited

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Test Method:

A. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013.

| Element | Limit of IEC 62321-3-1:2013. Unit (mg/kg) | | MDL | |
|---------|---|---|----------|----------------|
| | Polymers and metals | Composite material | Polymers | Other material |
| Pb | $BL \leq (700-3\sigma) < X < (1300+3\sigma)$ $\leq OL$ | $BL \leq (500-3\sigma) < X < (1500+3\sigma)$ $\leq OL$ | 10 mg/kg | 50 mg/kg |
| Cd | $BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$ | $LOD \leq (50-3\sigma) < X < (150+3\sigma)$ $\leq OL$ | 10 mg/kg | 50 mg/kg |
| Hg | $BL \leq (700-3\sigma) < X < (1300+3\sigma)$ $\leq OL$ | $BL \leq (500-3\sigma) < X < (1500+3\sigma)$ $\leq OL$ | 10 mg/kg | 50 mg/kg |
| Cr | $BL \leq (700-3\sigma) < X$ | $BL \leq (500-3\sigma) < X$ | 10 mg/kg | 50 mg/kg |
| Br | $BL \leq (300-3\sigma) < X$ | $BL \leq (250-3\sigma) < X$ | 10 mg/kg | 50 mg/kg |

Note:

- BL = Under the XRF screening limit
- OL = Further chemical test will be conducted while result is above the screening limit
- X= The symbol "X" marks the region where further investigation is necessary
- 3σ= The reproducibility of analytical instruments
- LOD= Detection limit

B. Chemical Test

| Test Item(s) | Test Method | Measured Equipment(s) | MDL | Limit |
|--|-----------------------------|-----------------------|---------|------------|
| Lead (Pb) | IEC 62321-5:2013 Ed.1.0 | ICP-OES | 2 mg/kg | 1000 mg/kg |
| Cadmium (Cd) | IEC 62321-5:2013 Ed.1.0 | ICP-OES | 2 mg/kg | 100 mg/kg |
| Mercury (Hg) | IEC 62321-4:2013 Ed.1.0 | ICP-OES | 2 mg/kg | 1000 mg/kg |
| Hexavalent Chromium Cr(VI) | IEC 62321-7-1:2015 Ed.1.0 | UV-VIS | / | 1000 mg/kg |
| | IEC 62321:2008 Ed.1 Annex C | UV-VIS | 2 mg/kg | 1000 mg/kg |
| Polybrominated Biphenyls (PBBs) | IEC 62321-6:2015 Ed.1.0 | GC-MS | 5 mg/kg | 1000 mg/kg |
| Polybrominated Diphenyl Ethers (PBDEs) | IEC 62321-6:2015 Ed.1.0 | GC-MS | 5 mg/kg | 1000 mg/kg |

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Test Results:

| Sample No. | Sample Description | Tested Items | XRF Screening Test Unit (mg/kg) | Chemical Test Unit (mg/kg) | Conclusion |
|------------|---------------------|----------------|---------------------------------|----------------------------|------------|
| 1 | Silver metal shell | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 2 | Silver metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 3 | Black plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 4 | Black collodion | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 5 | USB metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 6 | Beige white plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |

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| Sample No. | Sample Description | Tested Items | XRF Screening Test Unit (mg/kg) | Chemical Test Unit (mg/kg) | Conclusion |
|------------|--------------------------|----------------|---------------------------------|----------------------------|------------|
| 7 | Plug silver metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 8 | Black inner plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 9 | Small USB metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 10 | Black inner plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 11 | Screw with black plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 12 | Silver screw | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |

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|------------|-----------------------|----------------|---------------------------------|----------------------------|------------|
| 13 | PCB board | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | X | N.D. | |
| 14 | Chip winding inductor | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 15 | IC | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 16 | Chip diode | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | X | N.D. | |
| 17 | Chip triode | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 18 | Chip resistor | Pb | OL | 1988* | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |

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| Sample No. | Sample Description | Tested Items | XRF Screening Test Unit (mg/kg) | Chemical Test Unit (mg/kg) | Conclusion |
|------------|-------------------------|----------------|---------------------------------|----------------------------|------------|
| 19 | Chip capacitor | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 20 | Button black plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | X | N.D. | |
| 21 | Button plastic pedestal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 22 | Button metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 23 | Soldering tin | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 24 | Glass diode | Pb | OL | 156100** | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |

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| Sample No. | Sample Description | Tested Items | XRF Screening Test Unit (mg/kg) | Chemical Test Unit (mg/kg) | Conclusion |
|------------|--------------------------|----------------|---------------------------------|----------------------------|------------|
| 25 | Ai Chip resistor | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | X | N.D. | |
| 26 | Chip LED | Pb | BL | / | PASS |
| | | Cd | LOD | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 27 | Battery silver scarfskin | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 28 | Yellow gummed paper | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 29 | Black jacket | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 30 | Red jacket | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |

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| Sample No. | Sample Description | Tested Items | XRF Screening Test Unit (mg/kg) | Chemical Test Unit (mg/kg) | Conclusion |
|------------|----------------------|----------------|---------------------------------|----------------------------|------------|
| 31 | White thread plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |
| 32 | USB metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 33 | White inner plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | X | N.D. | |
| 34 | PIN | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 35 | Small USB metal | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | / | / | |
| 36 | Inner black plastic | Pb | BL | / | PASS |
| | | Cd | BL | / | |
| | | Hg | BL | / | |
| | | Cr(Cr(VI)) | BL | / | |
| | | Br(PBBs&PBDEs) | BL | / | |

Note:

- MDL = Method Detection Limit
- N.D. = Not Detected (<MDL)
- mg/kg = ppm = parts per million

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-Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

-Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than 0.02 mg/kg with 50cm² sample surface area used.

-1988*= According to the customer statement, samples to the EU RoHS directive 2011/65/EU and 2011/534/EU exemption No. 7(c)-I: Containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.

-1516100**= According to the customer statement, samples to the EU RoHS directive 2011/65/EU and 2011/534/EU exemption No. 25: Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring.

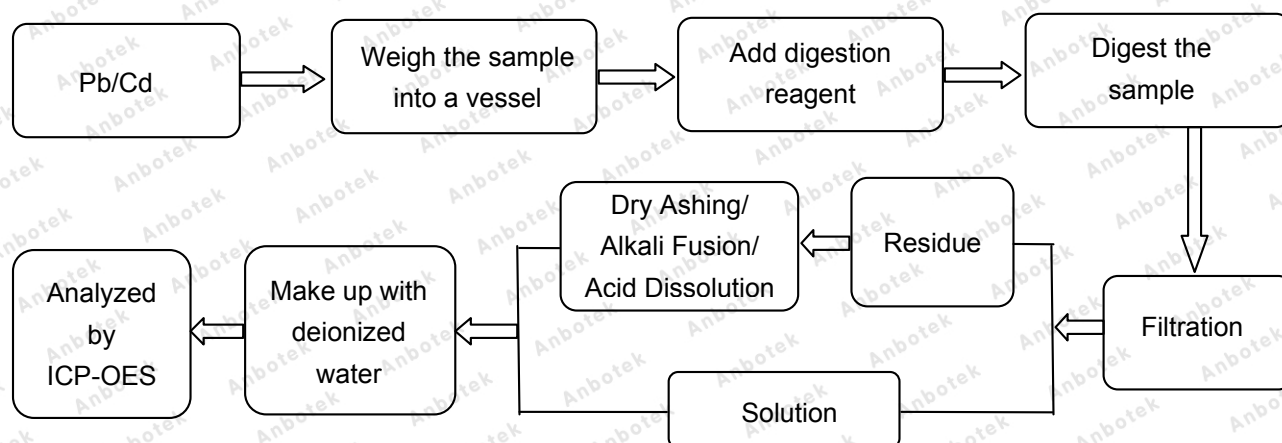
Remark:

- The screening results are only used for reference.
- 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.

Test Process:

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

◆ IEC 62321-5:2013 Ed.1.0



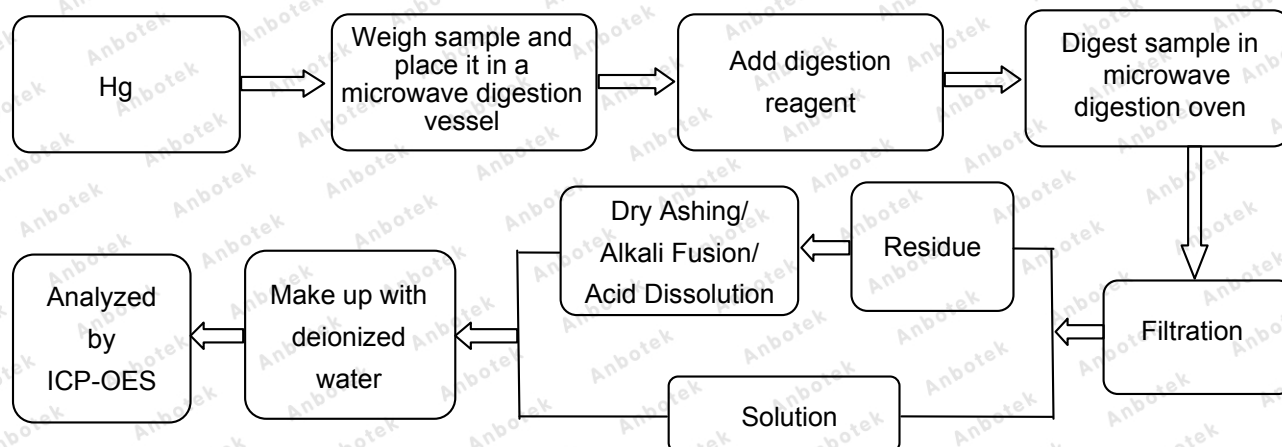
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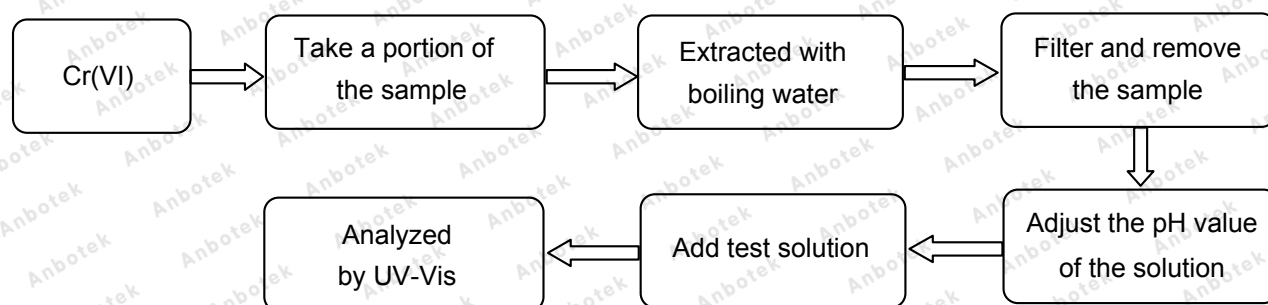
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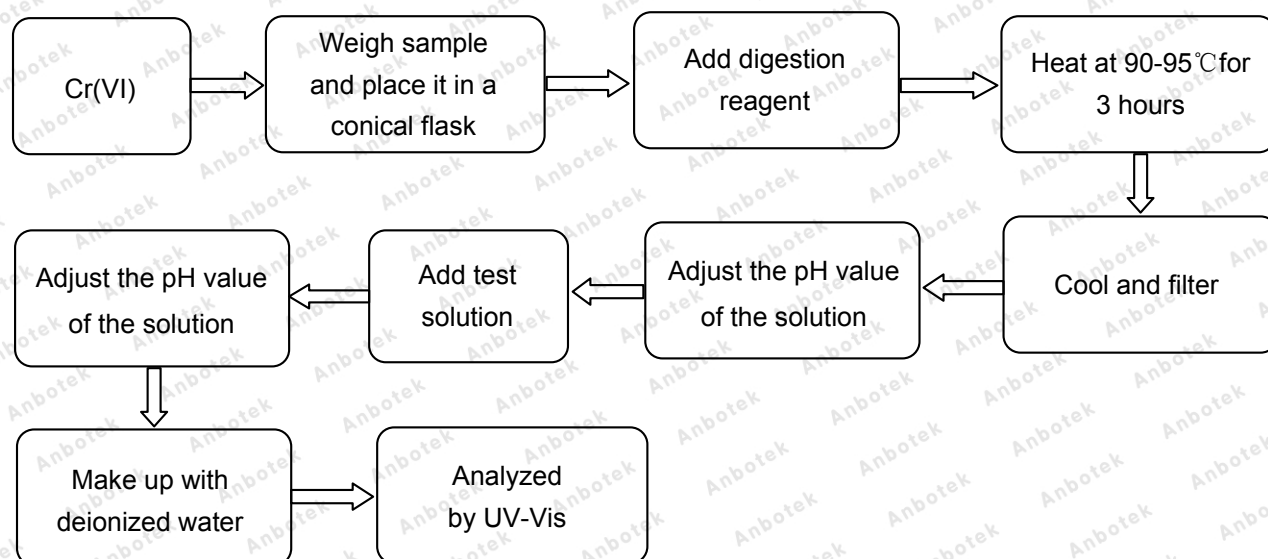
◆ IEC 62321-4:2013 Ed.1.0



◆ IEC 62321-7-1:2015 Ed.1.0



◆ IEC 62321:2008 Ed.1 Annex C



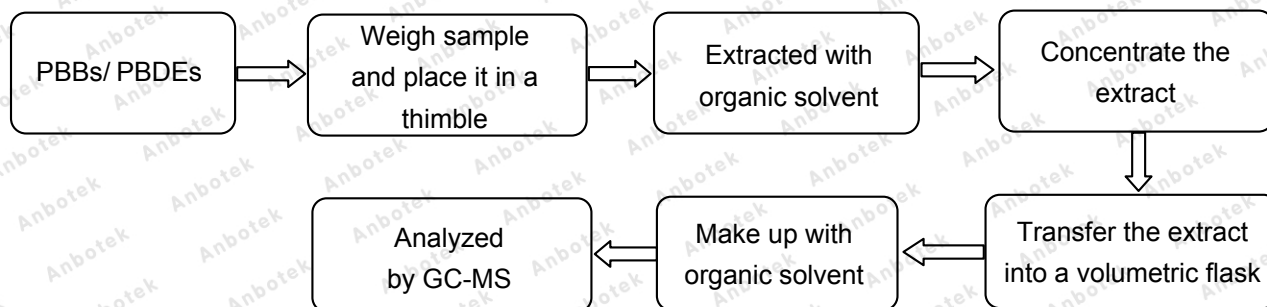
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◆ IEC 62321-6:2015 Ed.1.0



Photograph of Sample



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Photo(s) of the tested component(s)

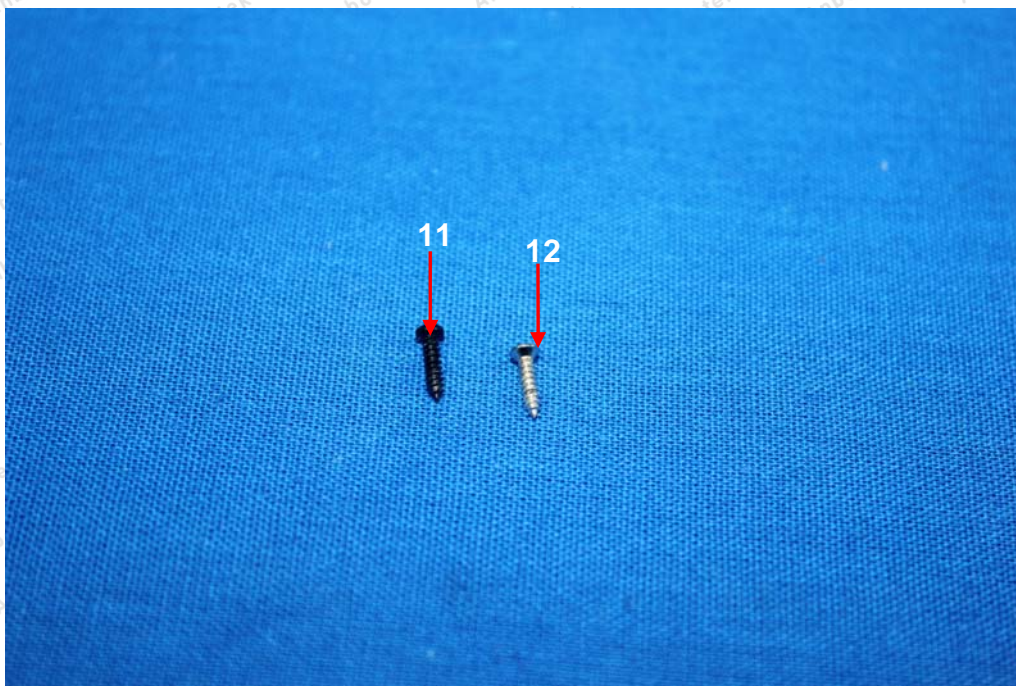
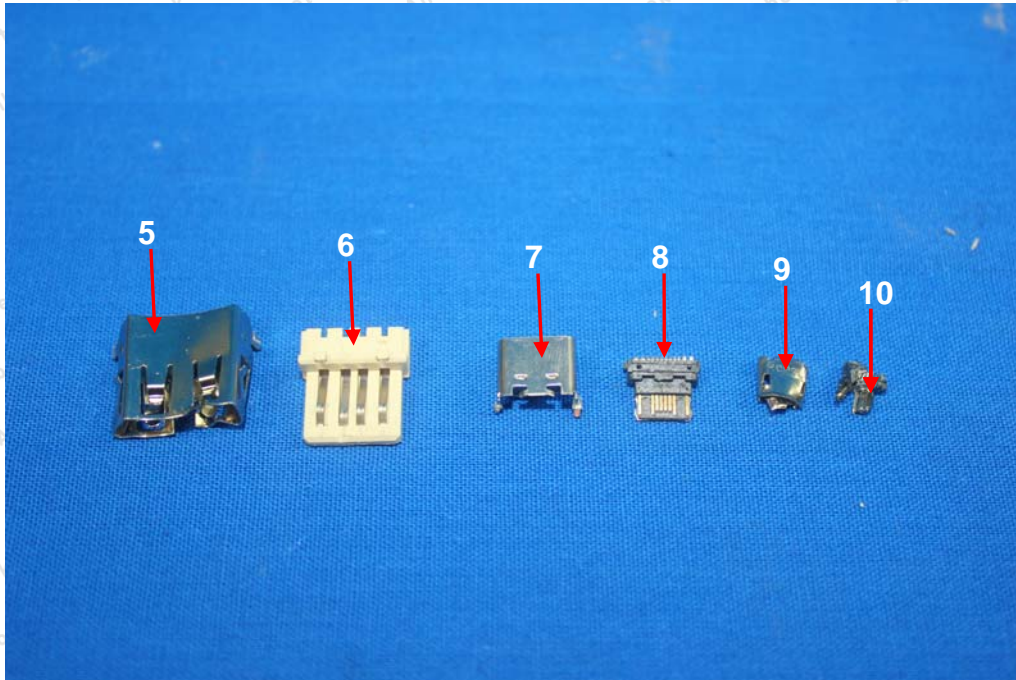


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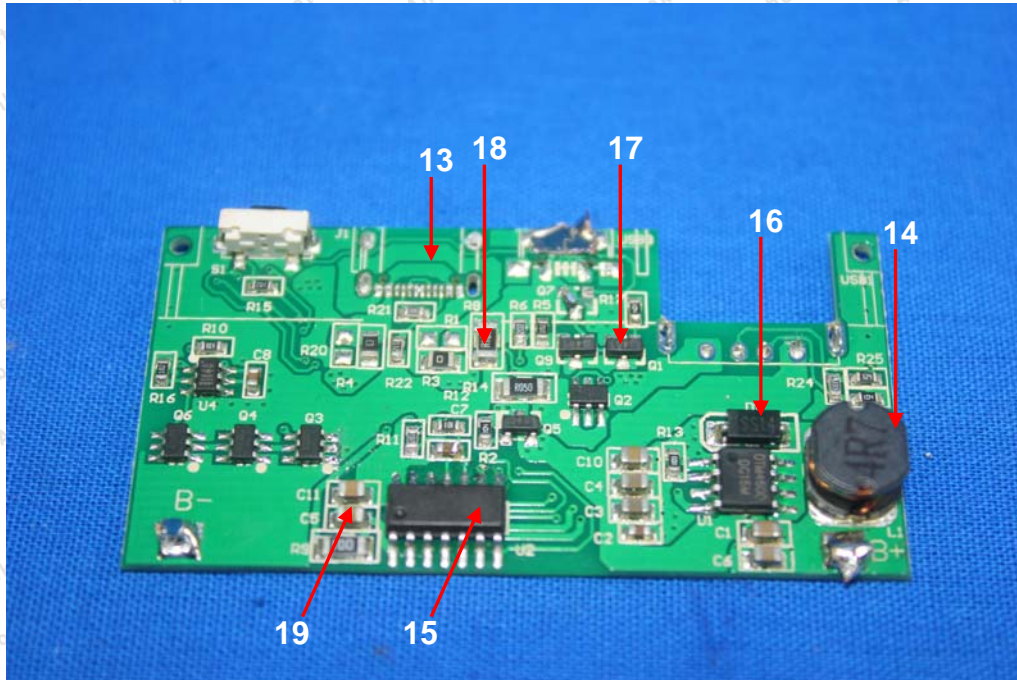


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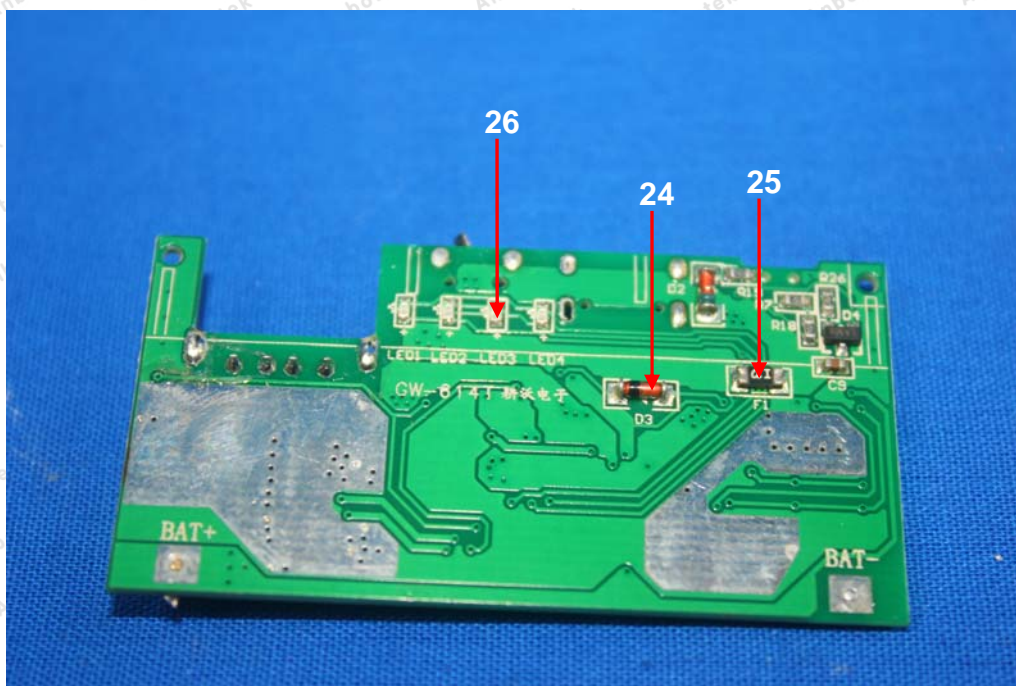
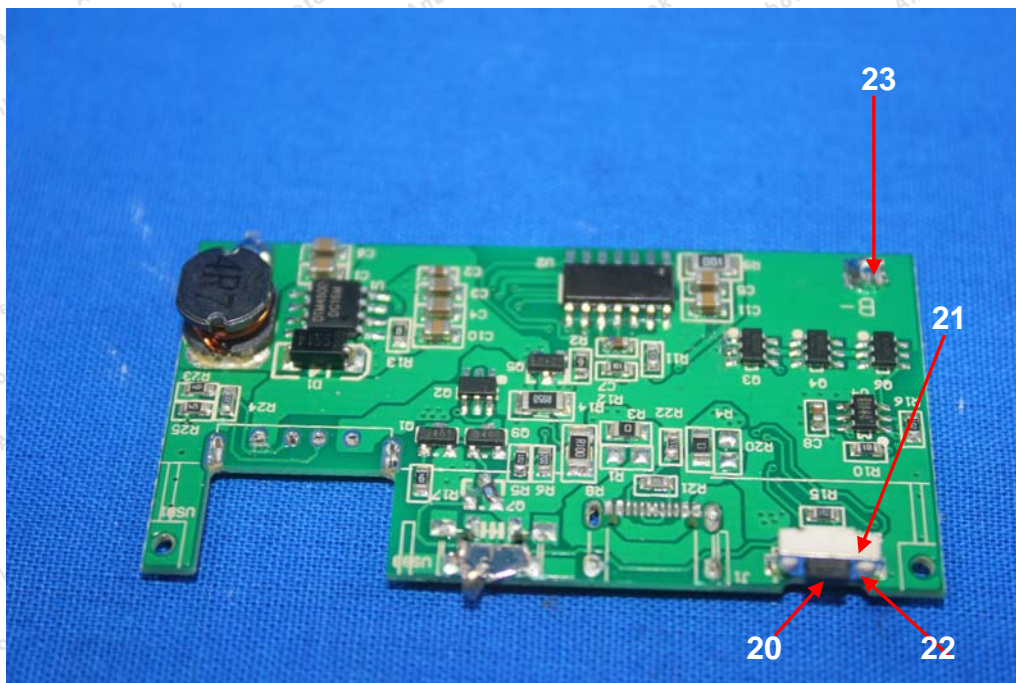


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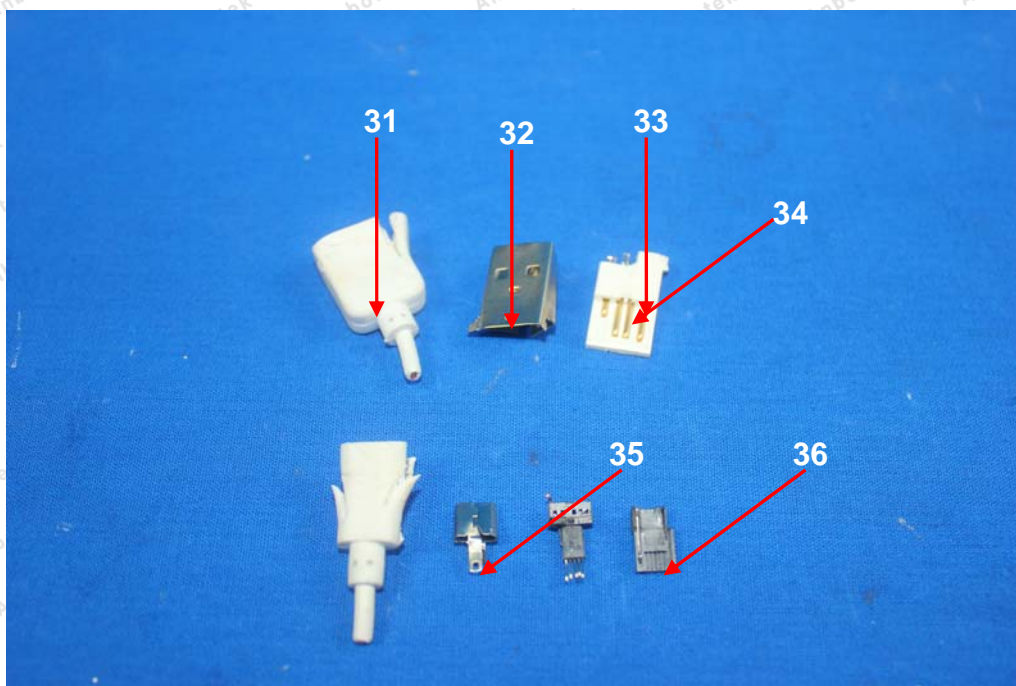
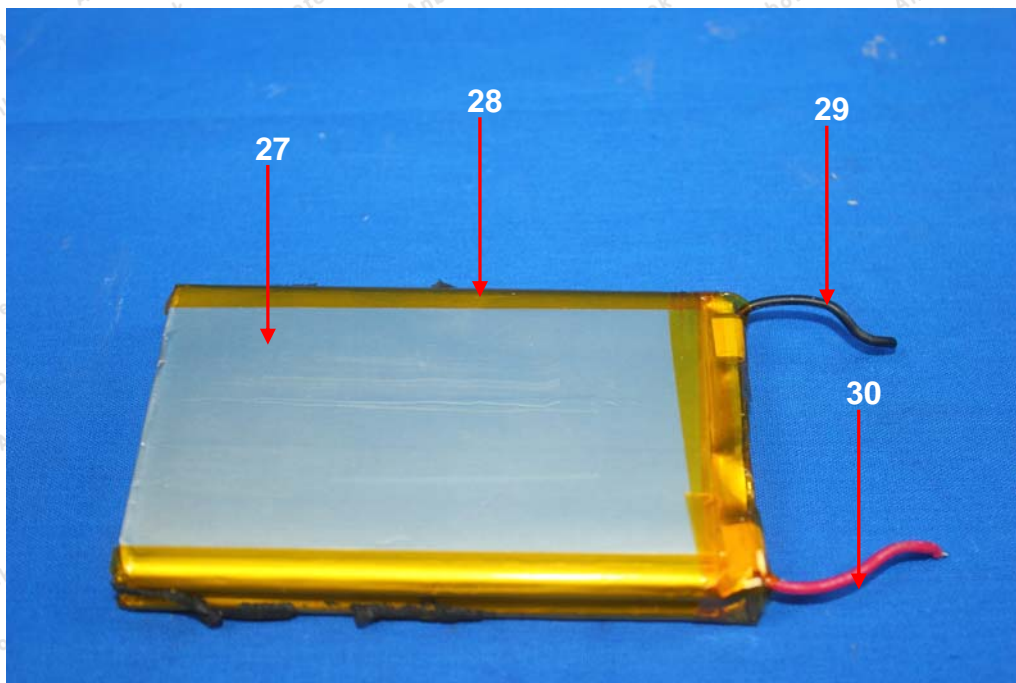


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***** End of Report *****

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