中国认可
国际互认
检测
TESTING
CNAS L6478

# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** | : | WTF17F1093792C |
| **Applicant** | : | Mid Ocean Brands B.V. |
| **Address** | : | Unit 201 2/F., Laford Centre, 838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hong Kong. |
| **Manufacturer** | : | 109979 |
| **Sample Name** | : | 3 in 1 Spinner charging cable |
| **Model No.** | : | MO9313 |
| **Test Requested** | : | In accordance with the RoHS Directive 2011/65/EU |
| **Test Method** | : | 1) With Reference to IEC 62321-2:2013, disassembly, disjointment and mechanical sample preparation<br>2) With Reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry<br>3) With reference to IEC62321-4:2013, determination of Mercury by ICP-OES<br>4) With reference to IEC62321-5:2013, determination of Lead and Cadmium by ICP-OES<br>5) With reference to IEC 62321: 2008 and IEC 62321-7-1:2015, determination of Hexavalent Chromium by UV-Vis<br>6) With reference to IEC62321-6:2015, determination of PBBs and PBDEs by GC-MS |
| **Test Conclusion** | : | Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU |
| **Date of Receipt sample** | : | 2017-10-30 |
| **Date of Test** | : | 2017-10-30 to 2017-11-03 |
| **Date of Issue** | : | 2017-11-06 |
| **Test Result** | : | Please refer to next page (s) |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.


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Compiled by:

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**Test Results:**

| Part No. | Part Description | Result of XRF | | Result of Wet Chemical Testing (mg/kg) | Conclusion on RoHS |
|---|---|---|---|---|---|
| 1 | White plastic cover | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 2 | Black plastic shell | Cd | BL | PBBs :ND<br>PBDEs :51 | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | IN | | |
| 3 | Silvery metal sleeve of bearing | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 4 | Brown plastic ring of bearing | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 5 | Silvery metal bead of bearing | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 6 | Black plastic wire covering | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 7 | Solder | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 8 | Blue metal wire | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |

| Part No. | Part Description | Result of XRF | | Result of Wet Chemical Testing (mg/kg) | Conclusion on RoHS |
|---|---|---|---|---|---|
| 9 | White fibre thread | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 10 | Green metal wire | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 11 | Black plastic cord anchorage | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 12 | Red metal wire | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 13 | Coppery metal wire | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 14 | Silvery metal shell of USB plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 15 | White plastic sheet of USB plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 16 | Black plastic jacket of USB plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |

| Part No. | Part Description | Result of XRF | | Result of Wet Chemical Testing (mg/kg) | Conclusion on RoHS |
|---|---|---|---|---|---|
| 17 | Silvery metal pin of plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 18 | Solder of plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 19 | Black plastic jacket of plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 20 | Silvery metal shell of plug | Cd | BL | $Cr^{6+}$ :Negative | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | IN | | |
| | | Br | BL | | |
| 21 | Dark grey plastic sheet of plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 22 | Silvery metal pin of plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 23 | Solder of plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 24 | Black plastic jacket of type-c plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |

| Part No. | Part Description | Result of XRF | | Result of Wet Chemical Testing (mg/kg) | Conclusion on RoHS |
|---|---|---|---|---|---|
| 25 | Silvery metal shell of type-c plug | Cd | BL | $Cr^{6+}$ :Negative | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | IN | | |
| | | Br | BL | | |
| 26 | Silvery metal sheet of type-c plug | Cd | BL | $Cr^{6+}$ :Negative | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | IN | | |
| | | Br | BL | | |
| 27 | Off-white plastic sheet of type-c plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 28 | Dark grey plastic sheet of type-c plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 29 | Silvery-golden metal pin of type-c plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 30 | Silvery metal sheet of type-c plug | Cd | BL | $Cr^{6+}$ :Negative | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | IN | | |
| | | Br | BL | | |
| 31 | Chip resistor of type-c plug | Cd | BL | Pb :379 | Comply |
| | | Pb | IN | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 32 | Chip capacitor of type-c plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |

| Part No. | Part Description | Result of XRF | | Result of Wet Chemical Testing (mg/kg) | Conclusion on RoHS |
|---|---|---|---|---|---|
| 33 | Blue PCB of type-c plug | Cd | BL | PBBs :ND<br>PBDEs :ND | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | IN | | |
| 34 | Solder of type-c plug | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 35 | Blue plastic shell | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 36 | White plastic shell | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |
| 37 | Green plastic shell | Cd | BL | NA | Comply |
| | | Pb | BL | | |
| | | Hg | BL | | |
| | | Cr | BL | | |
| | | Br | BL | | |

**Remark:**

(1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for $Cr6^{+}$) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1: 2013 (unit: mg/kg)

| Element | Polymer | Metal | Composite Materials |
|---|---|---|---|
| Cd | BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL | BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL | LOD < IN < (150+3σ) ≤ OL |
| Pb | BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL | BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL | BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL |
| Hg | BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL | BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL | BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL |
| Cr | BL ≤ (700-3σ) < IN | BL ≤ (700-3σ) <IN | BL ≤ (500-3σ) < IN |
| Br | BL ≤ (300-3σ) < IN | -- | BL ≤ (250-3σ) < IN |

BL= Below Limit OL= Over Limit LOD = Limit of Detection -- = Not Regulated

(2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.

(3) The XRF screening test for RoHS elements – the reading may be different to the actual content in the sample be of non-uniformity composition.

(4) ppm = mg / kg, based on the dry weight of tested sample.

(5) ND = Not Detected, less than the value of Method Detection Limit.

(6) NA = Not Applicable, as the XRF screening test result was below the limit, it was not need to conduct the wet chemical testing.

(7) MDL= Method Detection Limit in wet chemical test

| Test Items | Pb | Cd | Hg | $Cr^{6+}$ | | PBB | PBDE |
|---|---|---|---|---|---|---|---|
| Units | mg/kg | mg/kg | mg/kg | mg/kg | $\mu g/cm^2$ | mg/kg | mg/kg |
| MDL | 2 | 2 | 2 | 2 | 0.1 | 5 | 5 |

The MDL for single compound of PBBs and PBDEs is 5mg/kg, MDL of $Cr^{6+}$ for polymer and composite sample is 2mg/kg and MDL of $Cr^{6+}$ for metal sample is $0.1\mu g/cm^2$.

(8) According to IEC 62321-7-1:2015, determined of $Cr^{6+}$ on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

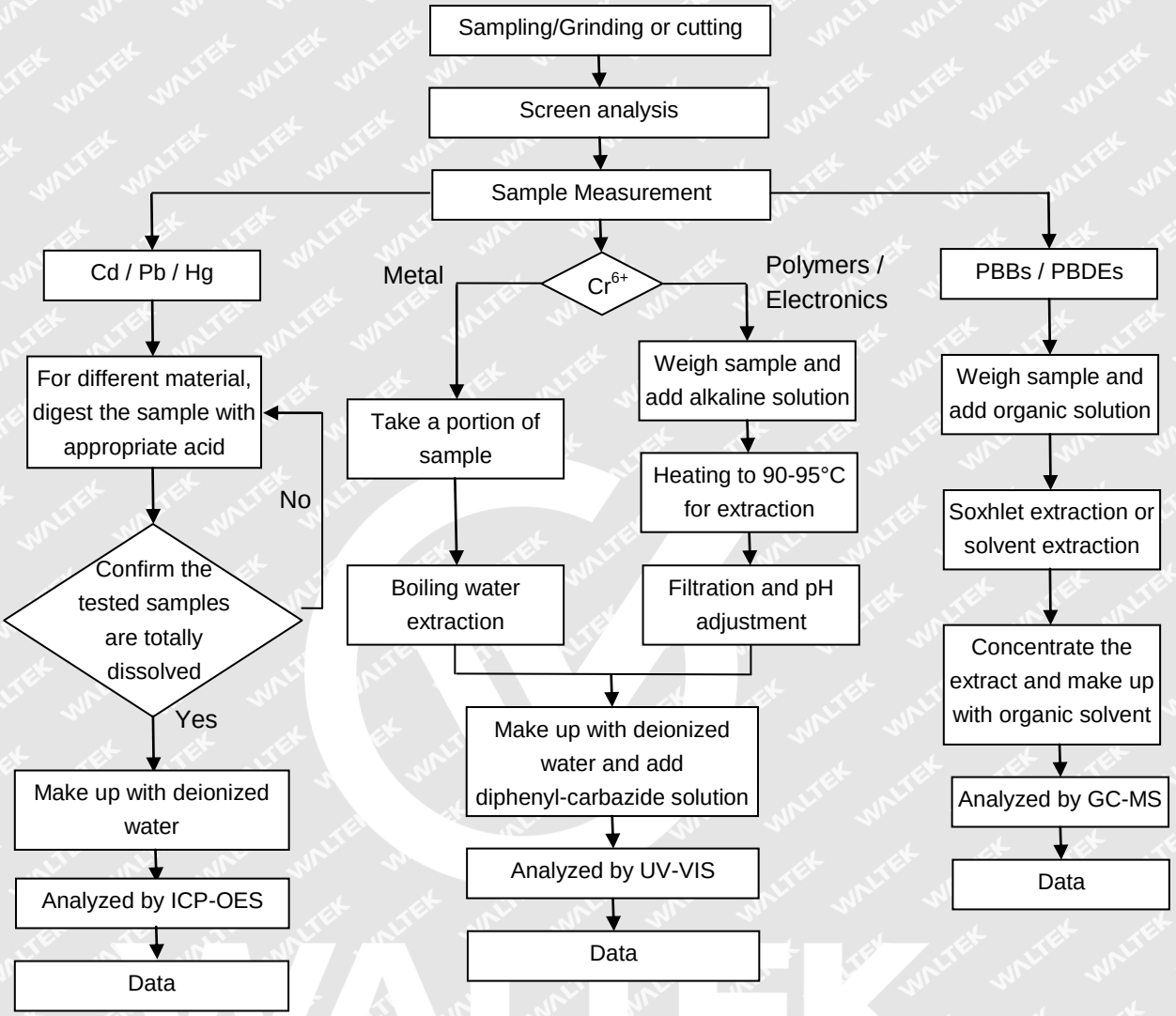
Boiling water extraction:

Negative = Absence of $Cr^{6+}$ coating, the detected concentration in boiling water extraction solution is less than $0.10ug/cm^2$.

Positive = Presence of $Cr^{6+}$ coating, the detected concentration in boiling water extraction solution is greater than $0.13ug/cm^2$.

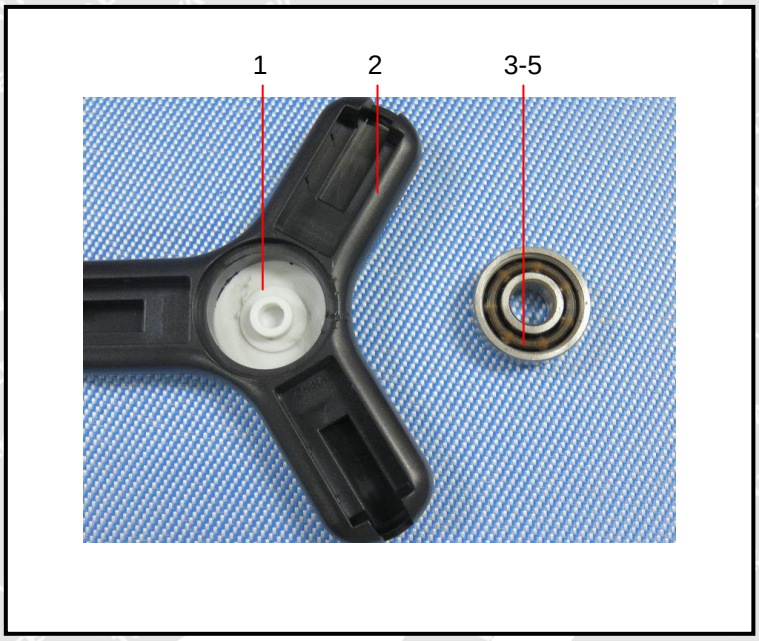
Information on storage conditions and production date of the tested sample is unavailable and thus $Cr^{6+}$ results represent status of the sample at the time of testing.

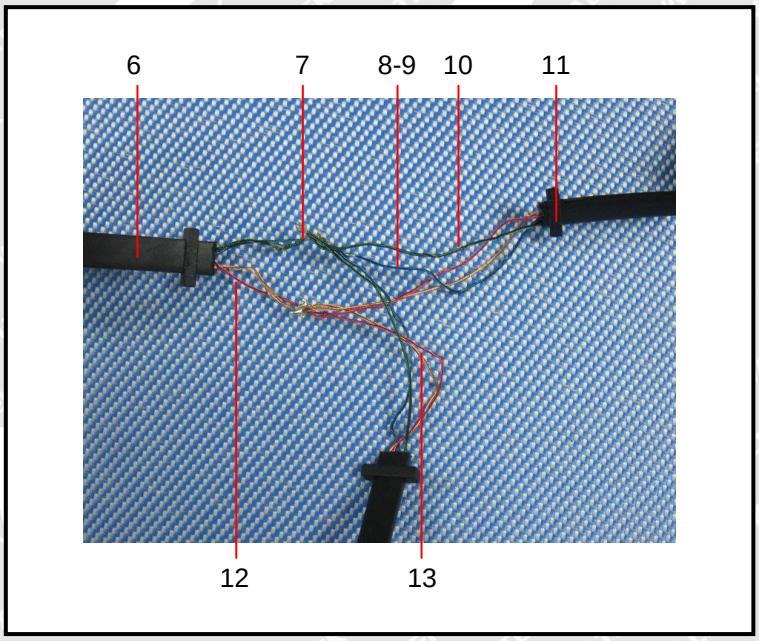
**Measurement Flowchart:**

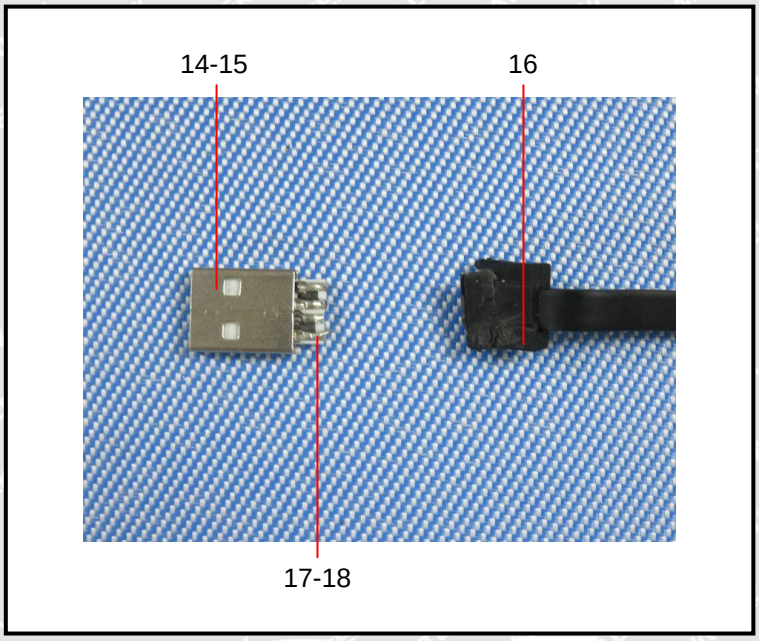


**Sample Photo:**

**Photograph of parts tested:**

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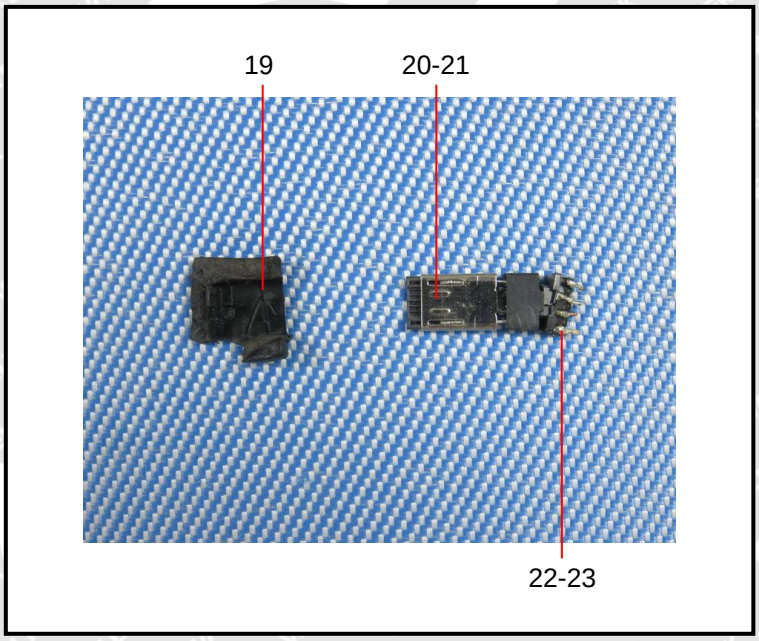
17-18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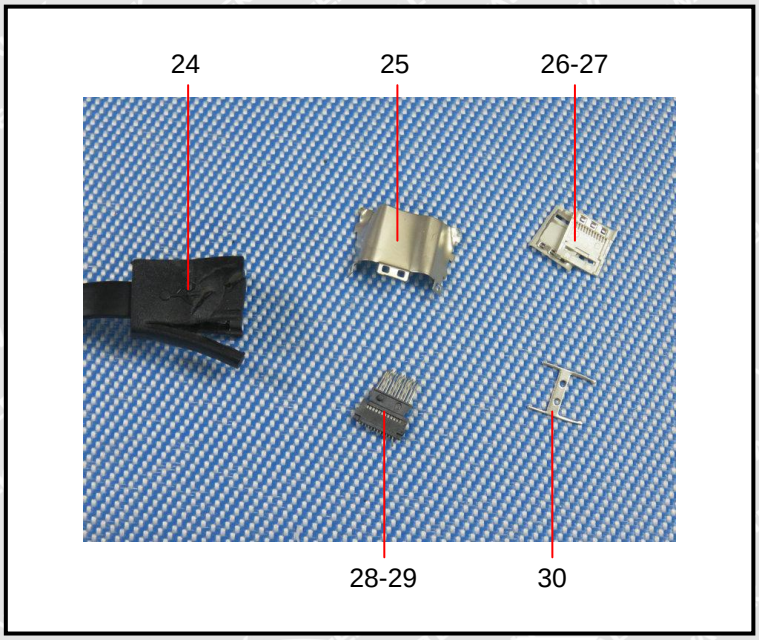
20-21
22-23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26-27
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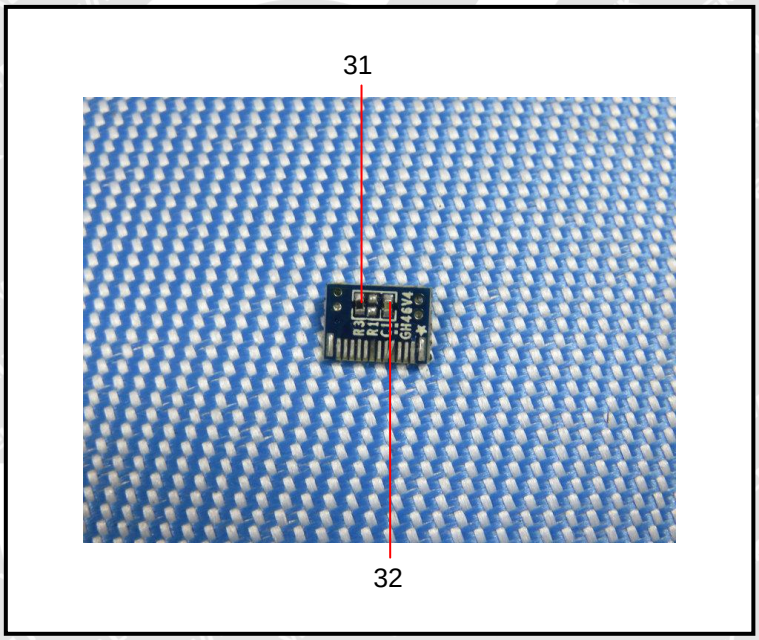
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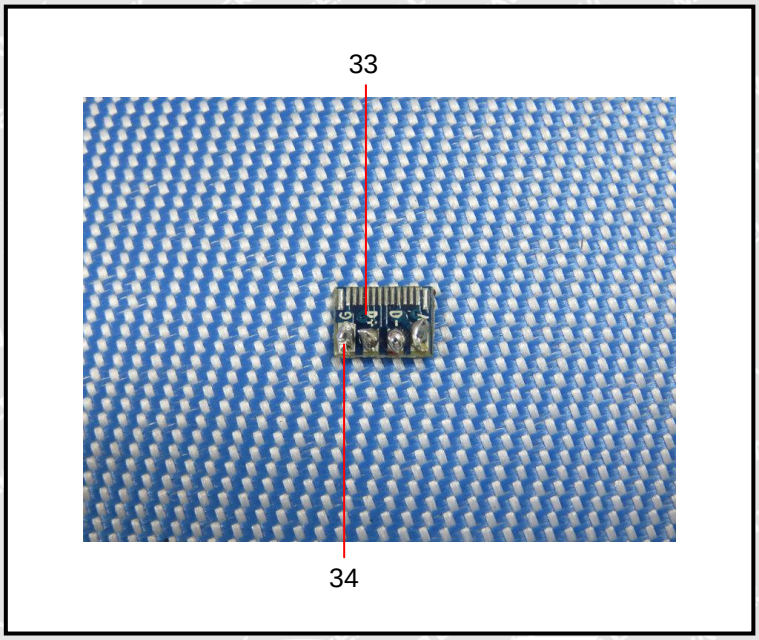
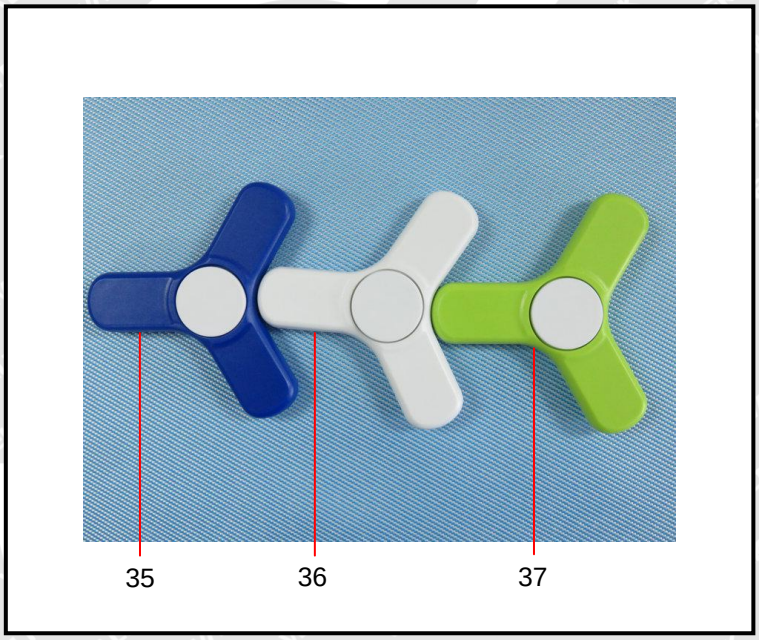
32




====== End of Report ======