



# Test Report

Report No : TST20231202011-3RR

Date: Dec.14,2023

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**Applicant:** Mid Ocean Brands B.V.  
**Address:** 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.  
**Manufacturer:** Mid Ocean Brands B.V.  
**Address:** 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

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

**Sample Name:** Wireless Charger  
**Main Model:** MO2242  
**Sample Received Date:** Dec.11,2023  
**Testing Period:** Dec.11,2023 To Dec.14,2023  
**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 IEC62321:2013 Edition 1.0,further use of wet chemical methods are required to test Lead(Pb),Cadmium(Cd),Mercury(Hg),Hexavalent Chromium(Cr(VI)),Polybrominated Biphenyls(PBBs),Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutylphthalate (DBP) , and Diisobutyl phthalate (DIBP) in the submitted sample(s).  
**Test Method:** Please refer to next page(s).  
**Test Result:** Please refer to next page(s).  
**Test Conclusion:** The test results comply with the limits of RoHS 2.0 Directive (EU) 2015/863 and (EU)2017/2102 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of:

Andy Zheng

Andy Zheng  
Technical Director



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1. Pb, Cd, Cr(VI), Hg, PBBs&PBDEs

Test Method:

A. Disassembly, disjointment and mechanical sample preparation

—Ref. to IEC 62321-2:2021, Disassembly, disjointment and mechanical sample preparation.

B. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report.

(1) Screening – Lead, mercury, cadmium, total chromium and total bromine

—Ref. to IEC 62321-3-1:2013, Screening for Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry.

(2) Wet chemical test method

| Test Item(s)      | Test Method                | Test Equipment | Unit   | MDL | Limit |
|-------------------|----------------------------|----------------|--------|-----|-------|
| Pb                | IEC62321-5:2013            | ICP-OES        | mg/kg  | 10  | 1000  |
| Cd                | IEC62321-5:2013            | ICP-OES        | mg/kg  | 10  | 100   |
| Hg                | IEC 62321-4:2013/AMD1:2017 | ICP-OES        | mg/kg  | 10  | 1000  |
| Cr(VI) (Metal)    | IEC62321-7-1:2015          | UV-Vis         | µg/cm2 | 0.1 | 0.13  |
| Cr(VI) (Nonmetal) | IEC62321-7-2:2017          | UV-Vis         | mg/kg  | 10  | 1000  |
| PBBs              | IEC62321-6:2015            | GC-MS          | mg/kg  | 10  | 1000  |
| PBDEs             | IEC62321-6:2015            | GC-MS          | mg/kg  | 10  | 1000  |

| PBBs               |                    | PBDEs                    |                          |
|--------------------|--------------------|--------------------------|--------------------------|
| Monobromobiphenyl  | Hexabromobiphenyl  | Monobromodiphenyl ether  | Hexabromodiphenyl ether  |
| Dibromobiphenyl    | Heptabromobiphenyl | Dibromodiphenyl ether    | Heptabromodiphenyl ether |
| Tribromobiphenyl   | Octabromobiphenyl  | Tribromodiphenyl ether   | Octabromodiphenyl ether  |
| Tetrabromobiphenyl | Nonabromobiphenyl  | Tetrabromodiphenyl ether | Nonabromodiphenyl ether  |
| Pentabromobiphenyl | Decabromobiphenyl  | Pentabromodiphenyl ether | Decabromodiphenyl ether  |

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## Test result(s):

| No. | Sample Description     | Results of XRF |    |    |    |     | Chemical confirmation results (mg/kg) | Conclusion |
|-----|------------------------|----------------|----|----|----|-----|---------------------------------------|------------|
|     |                        | Pb             | Cd | Hg | Cr | Br  |                                       |            |
| 1.  | Black plastic shell    | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 2.  | Black plastic baffle   | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 3.  | Wood                   | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 4.  | USB                    | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 5.  | Type-c                 | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 6.  | PCB                    | BL             | BL | BL | BL | X   | PBBs:N.D.<br>PBDEs:N.D.               | Pass       |
| 7.  | IC                     | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 8.  | LED                    | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 9.  | Resistance             | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 10. | Inductance             | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 11. | PIN                    | BL             | BL | BL | BL | --- | ---                                   | Pass       |
| 12. | Screw                  | BL             | BL | BL | BL | --- | ---                                   | Pass       |
| 13. | Wire core              | BL             | BL | BL | BL | --- | ---                                   | Pass       |
| 14. | Yellow adhesive tape   | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 15. | White wire             | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 16. | Red wire               | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 17. | Black wire             | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 18. | Black plastic terminal | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 19. | Black wire             | BL             | BL | BL | BL | BL  | ---                                   | Pass       |
| 20. | Solder                 | BL             | BL | BL | BL | --- | ---                                   | Pass       |

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**Remark:**

- a. It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).
- b. The XRF screening test for RoHS elements-The reading may be different to the actual content in the sample be of non-uniformity composition.
- c. Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Pb, Cd, Hg), UV-VIS for Cr(VI) 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.

XRF Screening limits for different matrices :

| Materials           | Concentration (mg/kg) |          |                  |                  |          |
|---------------------|-----------------------|----------|------------------|------------------|----------|
|                     | Cd                    | Cr       | Pb               | Hg               | Br       |
| Polymeric           | BL≤60<X<140≤OL        | BL≤640<X | BL≤670<X<1330≤OL | BL≤660<X<1340≤OL | BL≤290<X |
| Metallic            | BL≤60<X<140≤OL        | BL≤640<X | BL≤670<X<1330≤OL | BL≤660<X<1340≤OL | ---      |
| Composite materials | BL≤40<X<160≤OL        | BL≤440<X | BL≤470<X<1530≤OL | BL≤460<X<1540≤OL | BL≤240<X |

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**Note:**

-BL= Below Limit

-OL=Over Limit

-X = inconclusive, the region where need further chemical testing by ICP-OES (for Pb, Cd, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs).

- --- = Not Applicable

- mg/kg=0.0001%

- N.D.=Not Detected(<MDL)

- MDL= Method Detection Limit

-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm<sup>2</sup> sample surface area used.

-\*=According to 2011/65/EU Annex,point \*Lead as an alloying element is steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy, containing up to 4% lead by weight can be exempted.

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## 2. Phthalates—DBP, BBP, DEHP & DIBP

| Test Item(s)                      | Test Method     | Test Equipment | Unit  | MDL | Limit |
|-----------------------------------|-----------------|----------------|-------|-----|-------|
| Dibutyl Phthalate(DBP)            | IEC62321-8:2017 | GC-MS          | mg/kg | 30  | 1000  |
| Benzylbutyl Phthalate (BBP)       | IEC62321-8:2017 | GC-MS          | mg/kg | 30  | 1000  |
| Di-(2-ethylhexyl)Phthalate (DEHP) | IEC62321-8:2017 | GC-MS          | mg/kg | 30  | 1000  |
| Diisobutyl phthalate(DIBP)        | IEC62321-8:2017 | GC-MS          | mg/kg | 30  | 1000  |

### Test result(s):

| Part No. | Test Item (mg/kg) |      |      |      | Conclusion |
|----------|-------------------|------|------|------|------------|
|          | DBP               | BBP  | DEHP | DIBP |            |
| 1+2      | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 3        | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 4+5      | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 6+7      | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 8        | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 9+10     | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 14       | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 15+16+17 | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 18       | N.D.              | N.D. | N.D. | N.D. | Pass       |
| 19       | N.D.              | N.D. | N.D. | N.D. | Pass       |

**Note:** - mg/kg=0.0001%  
-N.D.=Not Detected(<MDL)

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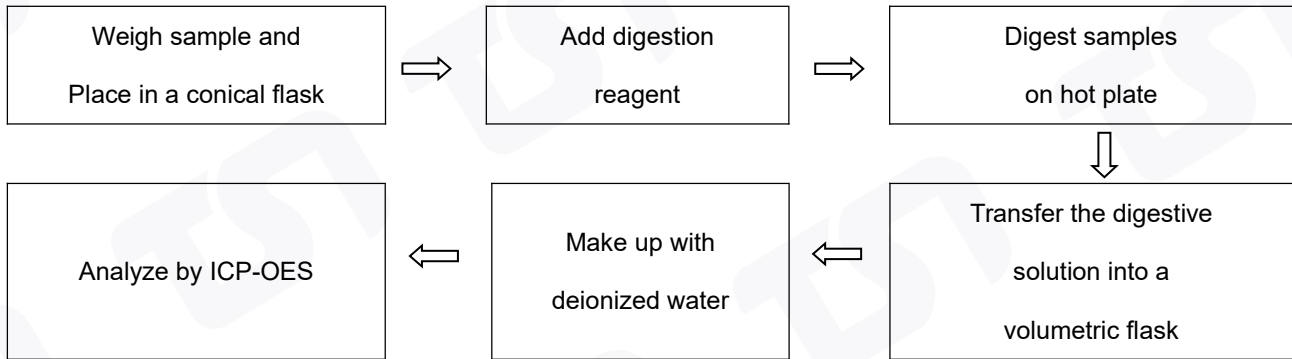
Report No : TST20231202011-3RR

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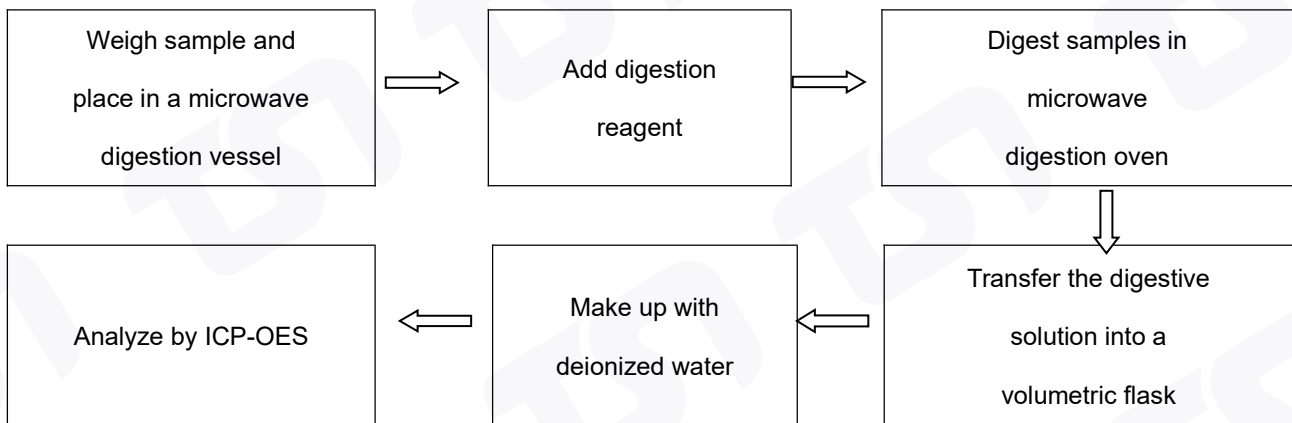
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## Chemical Test Process:

### 1. Test for Cd/Pb Content



### 2. Test for Hg Content



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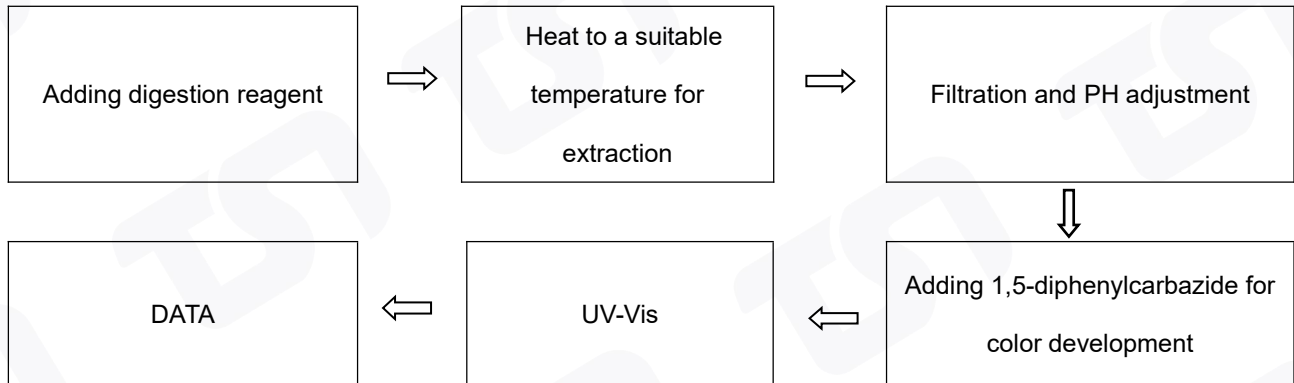
Report No : TST20231202011-3RR

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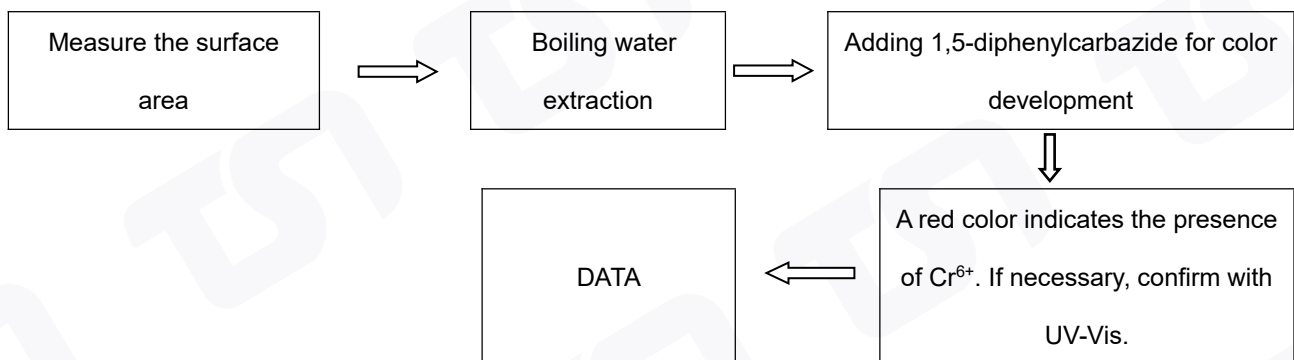
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## 3. Test for Chromium (VI) Content

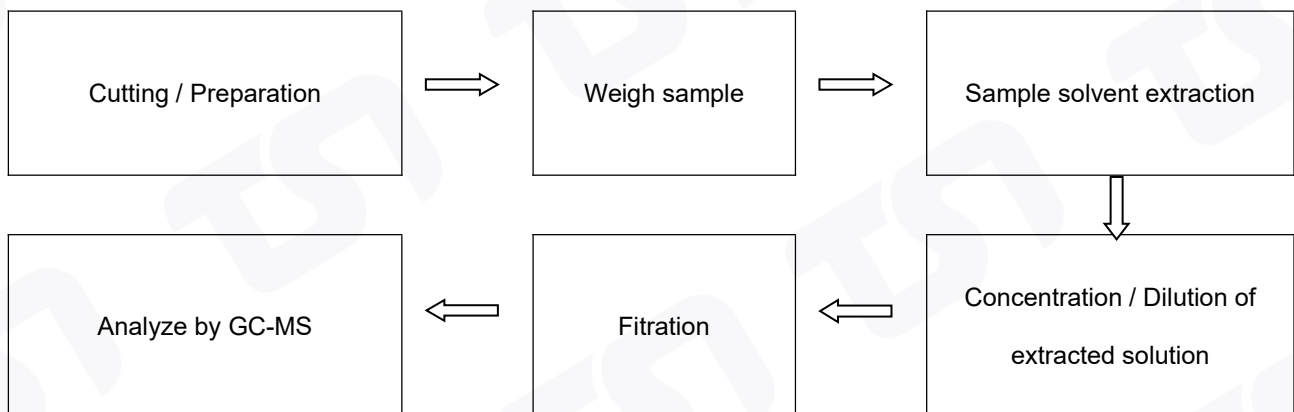
Nonmetal material



Metal material



## 4. Test for DBP, BBP, DEHP, DIBP, PBB, PBDE Content



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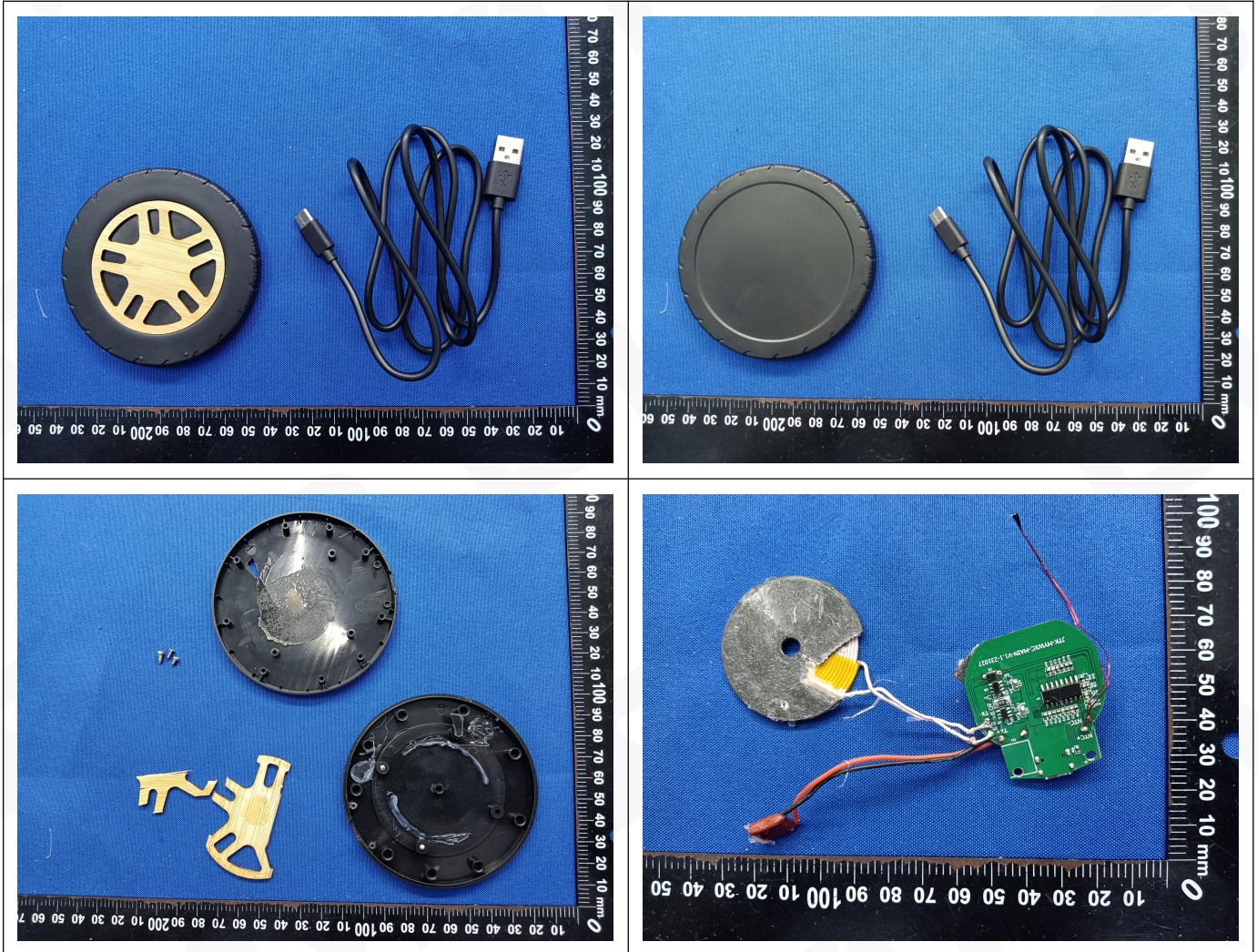
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## Sample Photo:



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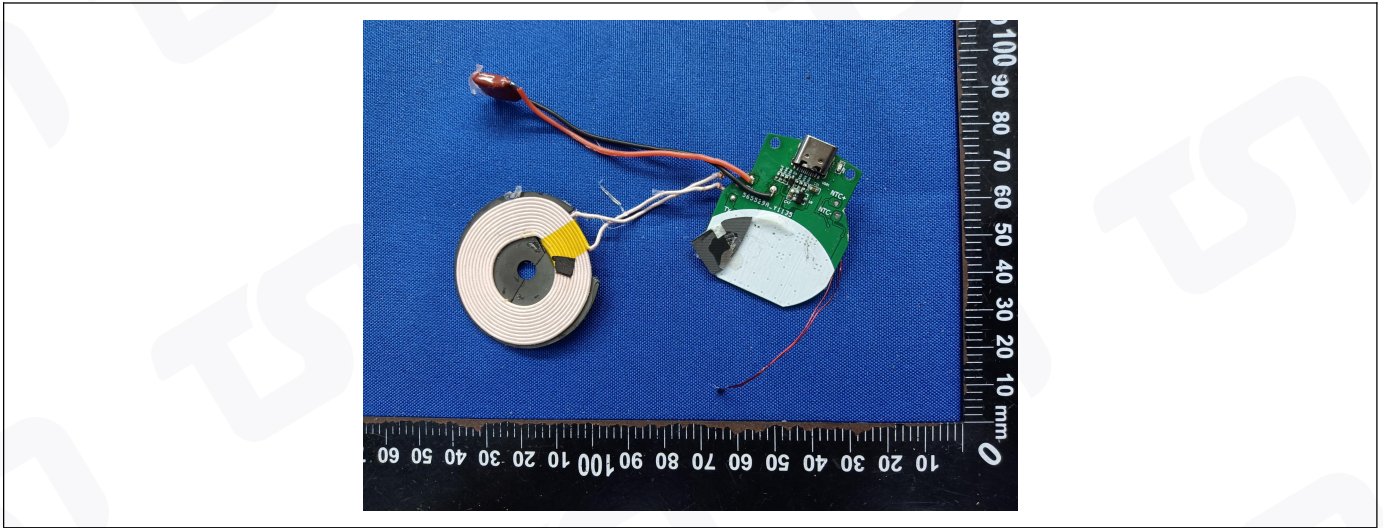


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