



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Reference No. : WTF19F03017753C
Applicant : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer : 114538
Sample Name : Wireless power bank
Model No. : MO9238
Test Requested : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.
Test Method : 1) With Reference to IEC 62321-2:2013, disassembly, disjointment and mechanical sample preparation
 2) With Reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry
 3) With reference to IEC 62321-4:2013+AMD1:2017 CSV, determination of Mercury by ICP-OES
 4) With reference to IEC 62321-5:2013, determination of Lead and Cadmium by ICP-OES
 5) With reference to IEC 62321-7-2: 2017 and IEC 62321-7-1: 2015, determination of Hexavalent Chromium by UV-Vis
 6) With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS
 7) With reference to IEC 62321-8:2017, determination of Phthalates content by GC-MS.
Test Conclusion : Pass (Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863)
Date of Receipt sample ... : 2019-03-26
Date of Test : 2019-03-26 to 2019-04-02
Date of Issue : 2019-04-02
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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**Test Results:****1. Lead, Mercury, Cadmium, Hexavalent Chromium, PBBs and PBDEs**

Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
1	Grey plastic shell	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
2	Dark grey rubber adhesive gasket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
3	Transparent plastic adhesive sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
4	White fibrous wire	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
5	Coppery metal wire	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
6	Yellow transparent plastic adhesive sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
7	Black sponge adhesive sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
8	Dark grey magnetic sheet	Cd	BL	Cr ⁶⁺ : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
9	Dark green paper	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
10	White paper sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
11	Black plastic adhesive sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
12	Silvery metal shell of switch	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
13	Black plastic button of switch	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
14	White plastic shell of switch	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
15	Silvery metal sheet of switch	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
16	Silvery metal pin of switch	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	Chip IC	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
18	Silvery metal shell of USB socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
19	Black plastic sheet of USB socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
20	Silvery metal pin of USB socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
21	Silvery metal sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
22	Solder	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
23	Red plastic wire covering	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
24	Silvery 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
25	Dark grey magnetic core of inductor	Cd	BL	Cr ⁶⁺ : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		
26	Coppery metal winding of inductor	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
27	Chip audion	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
28	Black plastic wire covering	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
29	Silvery metal shell of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
30	Black plastic sheet of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
31	Silvery metal pin of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
32	Chip capacitor	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	Chip diode	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
34	Chip LED	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
35	Chip IC	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
36	Chip resistor	Cd	BL	Pb :494	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		
37	Solder	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
38	Chip IC	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
39	Chip resistor	Cd	BL	Pb :147 Cr ⁶⁺ : ND	Comply
		Pb	IN		
		Hg	BL		
		Cr	IN		
		Br	BL		
40	Chip resistor	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
41	Chip diode	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
42	Chip IC	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
43	Green PCB	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
44	Silvery metal shell of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
45	Black plastic sheet of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
46	Silvery metal pin of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
47	Solder	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
48	Dark grey plastic shell of capacitor	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
49	Dark grey epoxy resin of capacitor	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
50	Silvery metal foil of capacitor	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
51	Silvery metal pin of capacitor	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
52	Grey plastic cover with white printing	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
53	Transparent plastic sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
54	Silvery metal screw	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	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$LOD < IN < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < IN < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < IN < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < IN$	$BL \leq (700-3\sigma) < IN$	$BL \leq (500-3\sigma) < IN$
Br	$BL \leq (300-3\sigma) < IN$	--	$BL \leq (250-3\sigma) < IN$

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) mg / kg =milligram per kilogram=ppm, 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	µg/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 Cr⁶⁺ for polymer and composite sample is 2mg/kg and MDL of Cr⁶⁺ for metal sample is 0.1µg/cm².

- (8) According to IEC 62321-7-1:2015, determined of Cr⁶⁺ on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is less than 0.10ug/cm².

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm².

Information on storage conditions and production date of the tested sample is unavailable and thus Cr⁶⁺ results represent status of the sample at the time of testing.



2. Phthalates (DEHP, BBP, DBP, DIBP)

Test items	Result (mg/kg)		Limit (mg/kg)
	No.1+No.19+No.52 [△]	No.2	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.3	No.4	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.6	No.7	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	210	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.8+No.17+No.25 [△]	No.9	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000



Test items	Result (mg/kg)		Limit (mg/kg)
	No.10	No.11	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.13	No.14	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.23	No.27+No.32+No.33 [△]	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	126	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.28	No.30	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	112	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.34+No.35+No.36 [△]	No.38+No.39+No.40 [△]	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000



Test items	Result (mg/kg)		Limit (mg/kg)
	No.41+No.42+No.43 [△]	No.45	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)		Limit (mg/kg)
	No.48	No.49	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg)	Limit (mg/kg)
	No.53	
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	1000
Dibutyl phthalate (DBP)	<50	1000
Benzylbutyl phthalate (BBP)	<50	1000
Diisobutyl phthalate (DIBP)	<50	1000

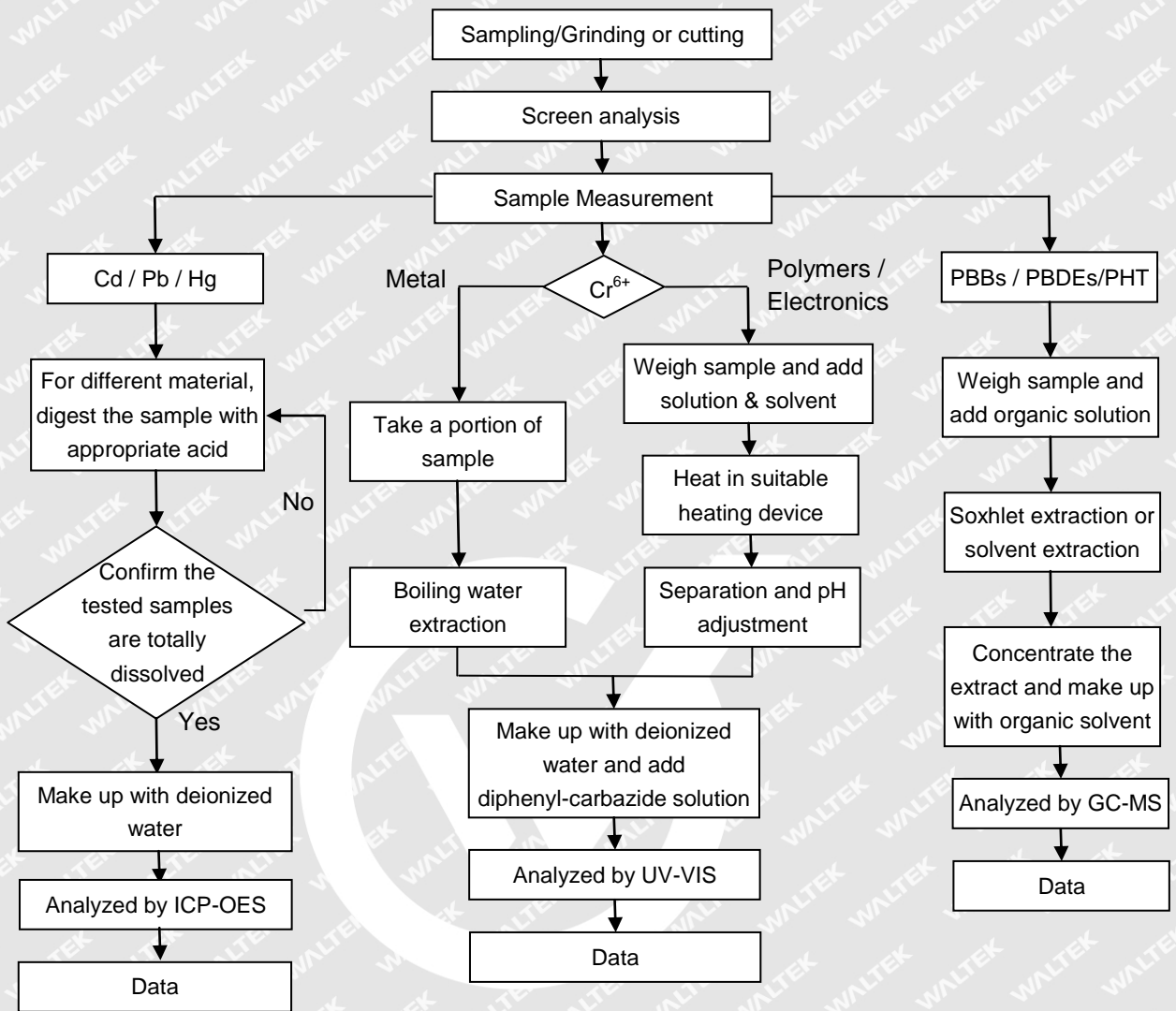
Note:

- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) "△" = As client's requirement, the testing was conducted based on mixed components, the test result is for reference only.

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Measurement Flowchart:





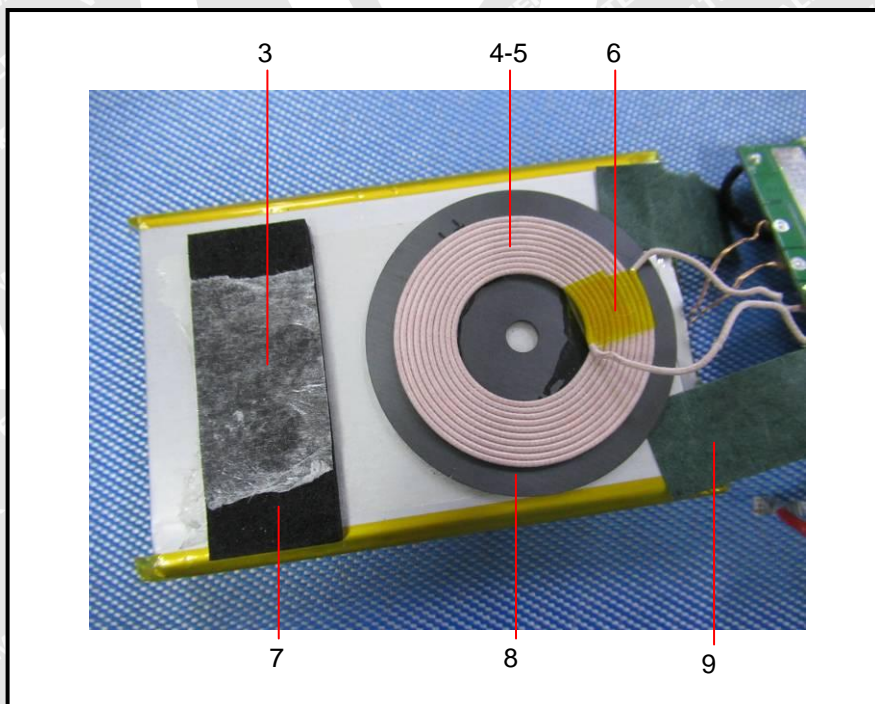
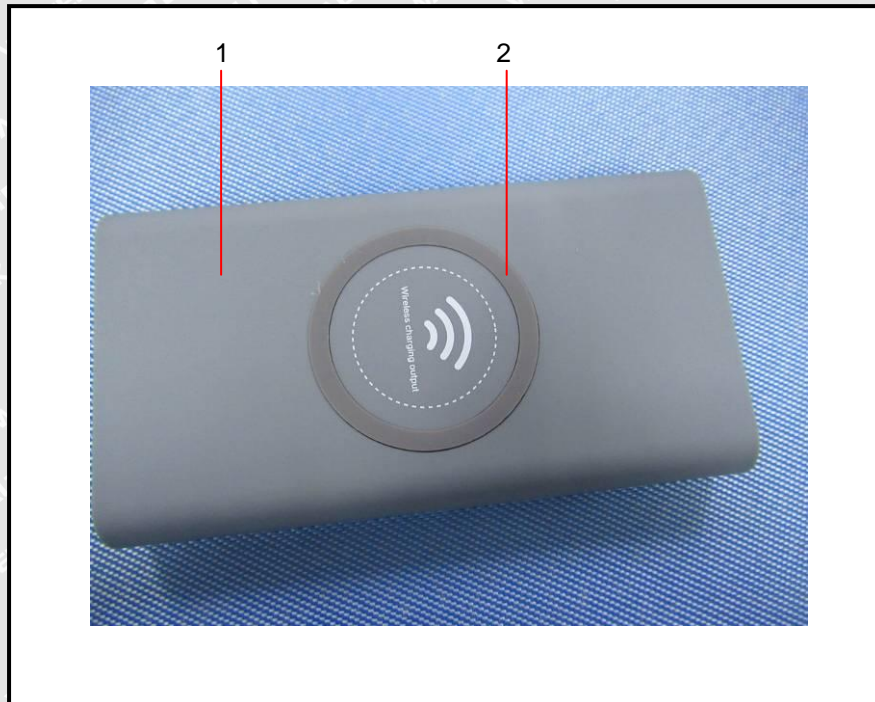
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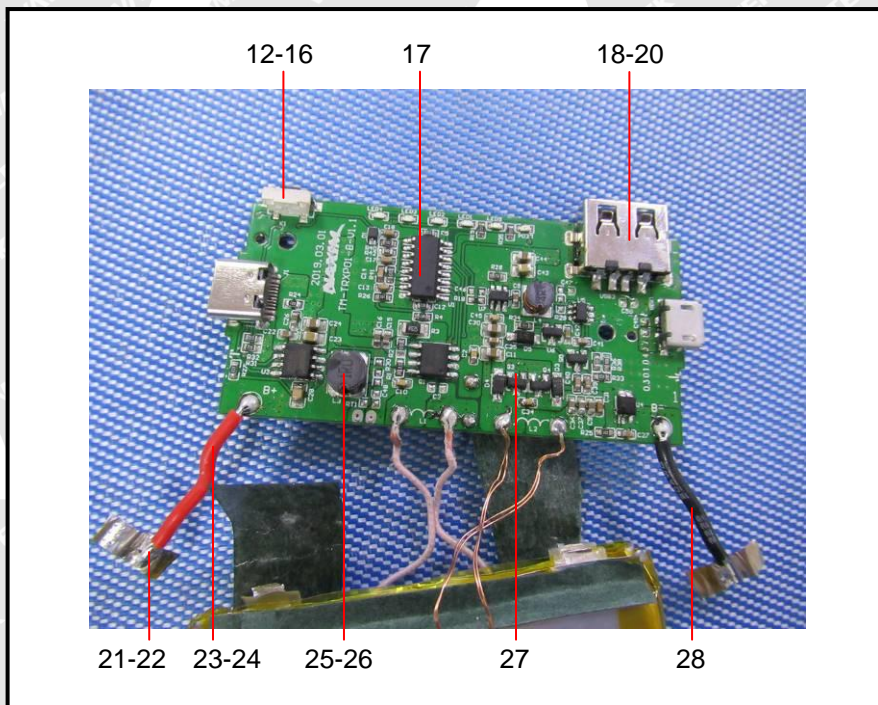
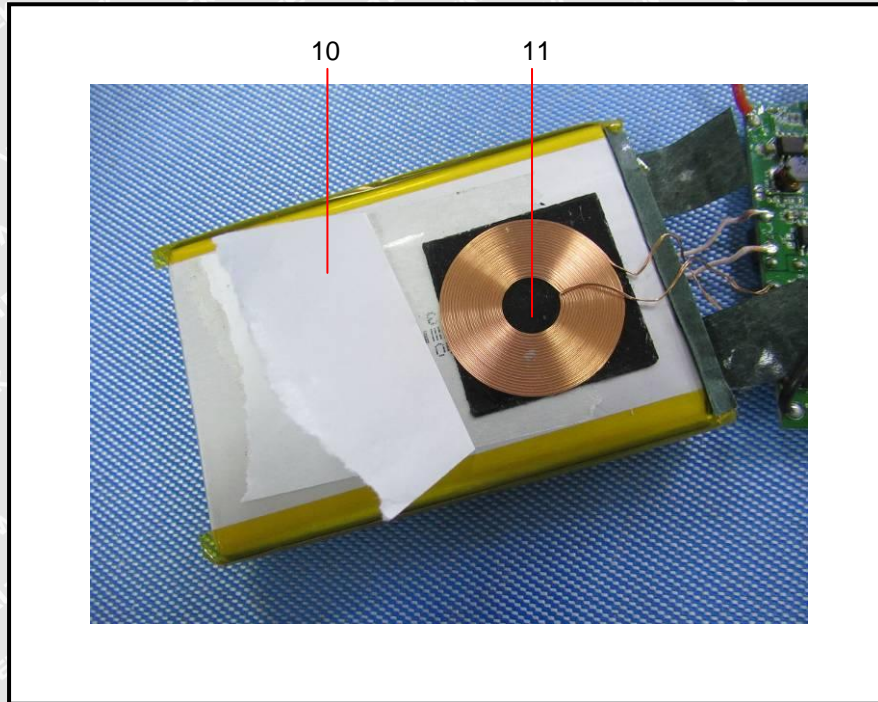


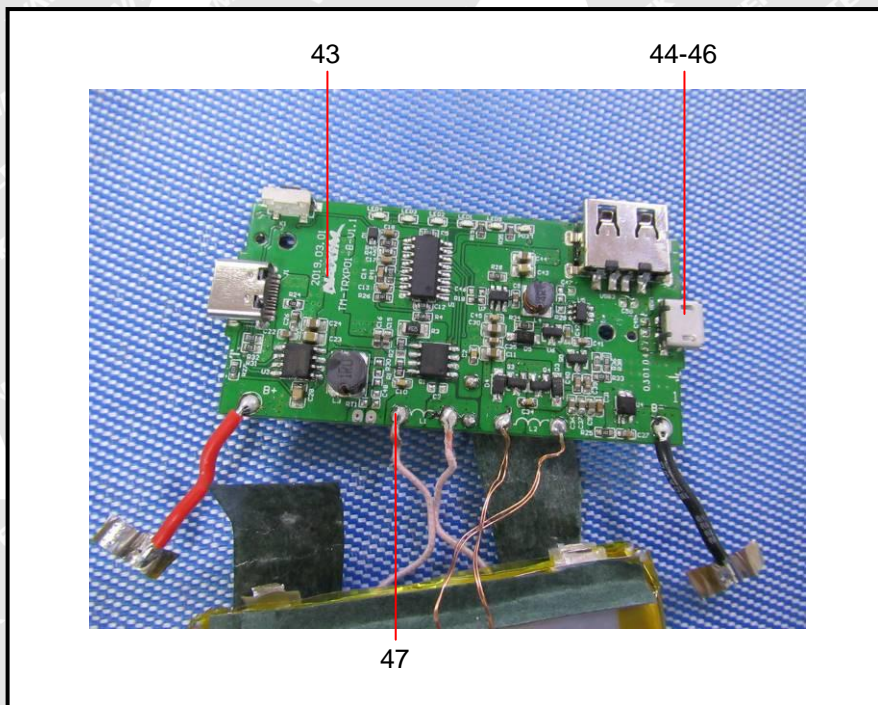
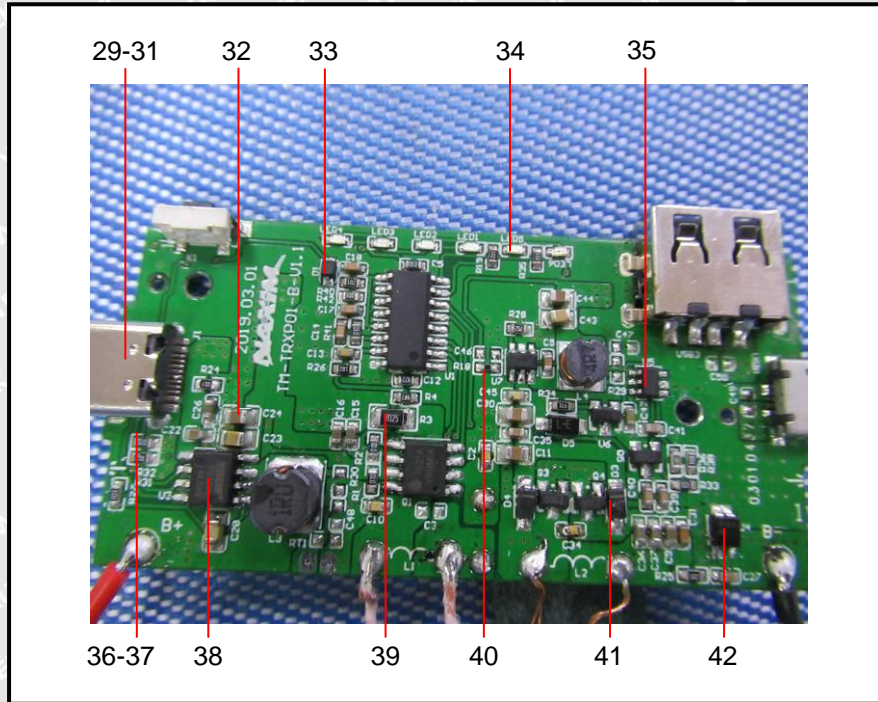
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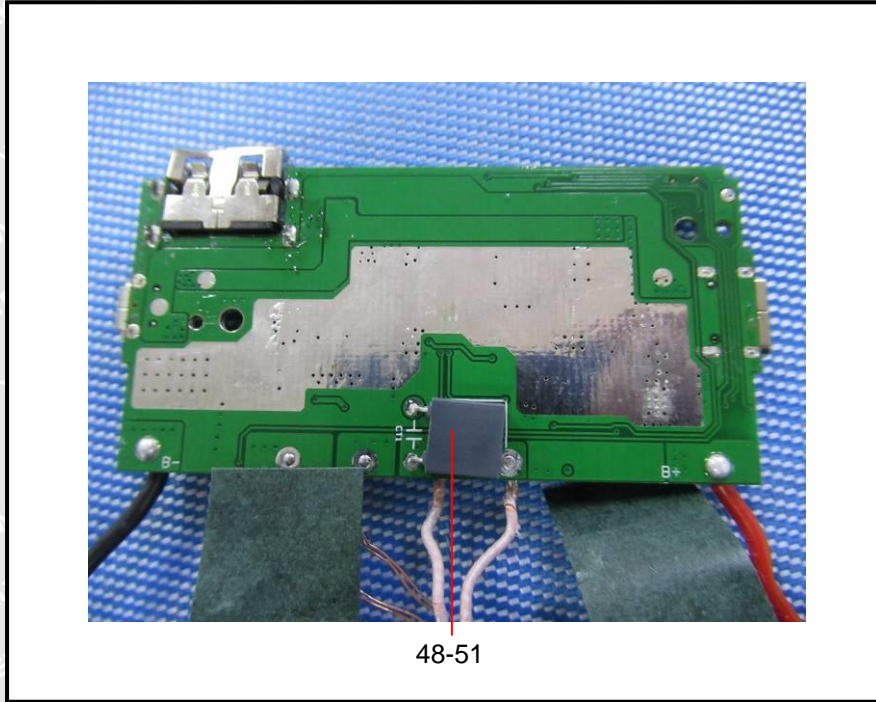


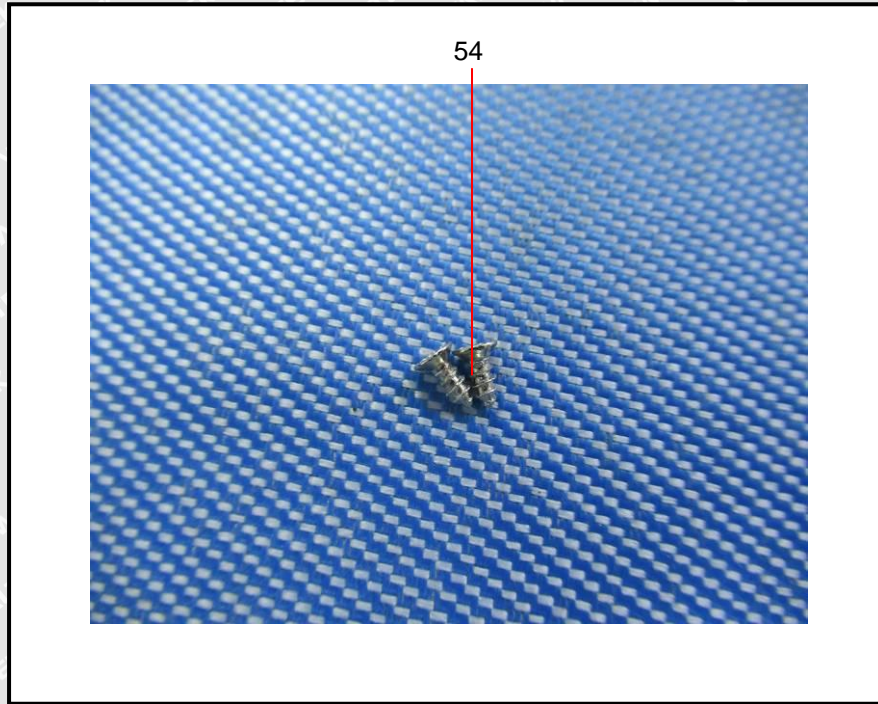
Photograph of parts tested:











==== End of Report ====

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