



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Reference No.** ..... : WTF17F1194899A2R1C  
**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** ..... : 114889  
**Sample Name** ..... : 5000mAh power bank  
**Model No.** ..... : MO9209  
**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  
 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 IEC62321-4:2013, determination of Mercury by ICP-OES  
 4) With reference to IEC62321-5:2013, 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 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** .... : 2017-11-10 & 2017-11-20 & 2017-12-08 & 2017-12-19  
**Date of Test** ..... : 2017-12-19 to 2017-12-20  
**Date of Issue** ..... : 2017-12-21  
**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.

**Prepared By:**

**Waltek Services (Foshan) Co., Ltd.**

Address: No. 13-19, 2/F, 2nd Building, Sunlink International Machinery City, Chencun Town, Shunde District, Foshan, Guangdong, China

Tel :+86-757-23811398

Fax:+86-757-23811381

Compiled by:

*April Chen*

April.Chen / Project Engineer

Approved by:



*Dino Zhang*

Dino Zhang / Lab Manager

**Test Results:**

Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
1	Black coating	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
2	Transparent plastic shell without black coating	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
3	Black rubber sucker	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
4	White adhesive plastic tape	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
5	Transparent plastic sheet without black coating	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
6	Transparent plastic ring without black coating	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
7	Black plastic button	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
8	Silvery metal screw with black coating	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	Transparent plastic sheet of display	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
10	White plastic sheet of display	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
11	White plastic sheet of display	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
12	Silvery plastic film of display	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
13	Yellow plastic tape of display	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
14	Chip LED	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
15	Solder	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
16	White PCB	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
17	Transparent glue	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
18	Solder	Cd	BL	Pb :254	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		
19	Black plastic wire covering	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
20	Silvery metal wire	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
21	Red plastic wire covering	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
22	Silvery metal shell of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
23	Dark grey plastic core of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
24	Silvery metal pin of socket	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 socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
26	Dark grey plastic core of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
27	Chip IC	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
28	Silvery metal cover of switch	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
29	Dark grey plastic keystroke of switch	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
30	Silvery metal sheet of switch	Cd	BL	Cr <sup>6+</sup> : Negative	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		
31	White plastic shell of switch	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
32	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
33	Chip audion	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
34	Dark grey magnet of inductor	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
35	Coppery metal winding of inductor	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
36	Chip IC	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
37	Chip resistor	Cd	BL	Pb :178	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		
38	Green PCB	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
39	Chip capacitor	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
40	Solder	Cd	BL	Pb :259	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
41	Solder	Cd	BL	Pb :588	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		
42	Chip LED	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
43	White sponge sheet	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
44	Red plastic wire covering	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
45	Silvery metal wire	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
46	Black plastic wire covering	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	Silvery metal sheet	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
49	Yellow plastic tape	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
50	Silvery metal shell of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
51	White plastic core of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
52	Silvery metal pin of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
53	Black plastic jacket of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
54	Solder of plug	Cd	BL	Pb :353	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		
55	Silvery metal shell of plug	Cd	BL	Cr <sup>6+</sup> : Negative	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		
56	Dark grey plastic core of plug	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
57	Silvery metal pin of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
58	Black plastic jacket of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
59	Solder of plug	Cd	BL	Pb :325	Comply
		Pb	IN		
		Hg	BL		
		Cr	BL		
		Br	BL		
60	White plastic core of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
61	Coppery metal wire	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
62	Black plastic wire jacket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
63	Pink plastic wire covering	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
64	Black sponge sheet	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
65	Silvery metal pin of socket	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
66	Black plastic shell of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
67	Silvery metal shell of plug	Cd	BL	Cr <sup>6+</sup> : Negative	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		
68	Dark grey plastic sheet of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
69	Silvery metal pin of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
70	Dark grey plastic sheet of plug	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
71	Blue PCB	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
72	Chip resistor	Cd	BL	Cr <sup>6+</sup> : ND	Comply
		Pb	*OL		
		Hg	BL		
		Cr	IN		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
73	Solder	Cd	BL	NA	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



# WALTEK

**Remark:**

- (1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr<sup>6+</sup>) 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) 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

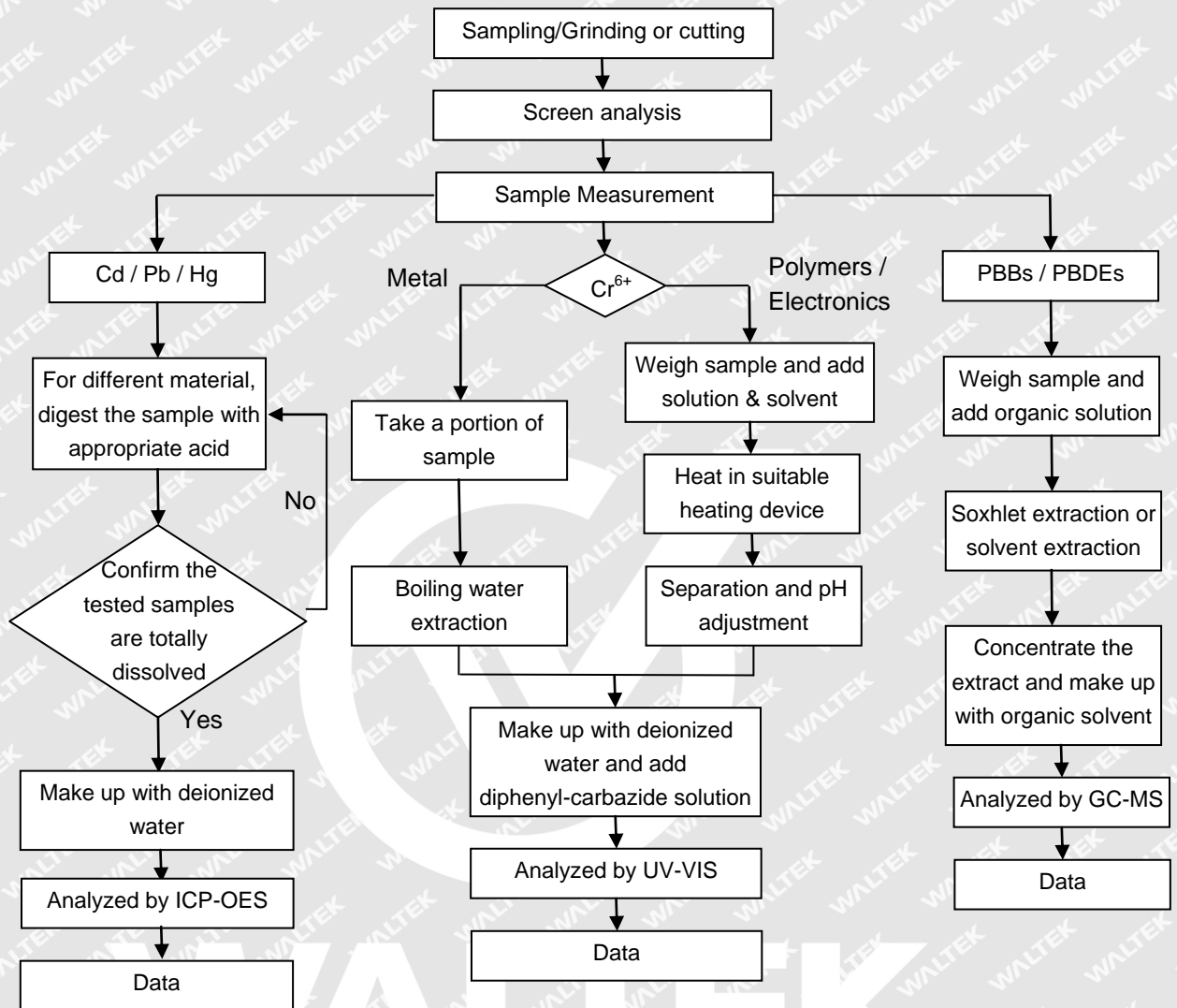
Test Items	Pb	Cd	Hg	Cr <sup>6+</sup>	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	2	2	2	0.1	5	5

The MDL for single compound of PBBs and PBDEs is 5mg/kg, MDL of Cr<sup>6+</sup> for polymer and composite sample is 2mg/kg and MDL of Cr<sup>6+</sup> for metal sample is 0.1µg/cm<sup>2</sup>.

- (8) According to IEC 62321-7-1:2015, determined of Cr<sup>6+</sup> on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.
- Boiling water extraction:  
 Negative = Absence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is less than 0.10ug/cm<sup>2</sup>.  
 Positive = Presence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm<sup>2</sup>.  
 Information on storage conditions and production date of the tested sample is unavailable and thus Cr<sup>6+</sup> results represent status of the sample at the time of testing.
- (9) \* = According to the declaration from client, the source of lead in test sample could be from the glass or ceramic material of that electronic component which is exempted by Directive 2011/65/EU.
- (10) The testing standard "IEC62321-7-2:2017" does not been accredited by CNAS.
- (11) As per client's requirement, results of specimen from 1 to 52, 54 to 57, 59 to 61 , 63 to 73 are extracted from report No. WTF17F1194899A2C.

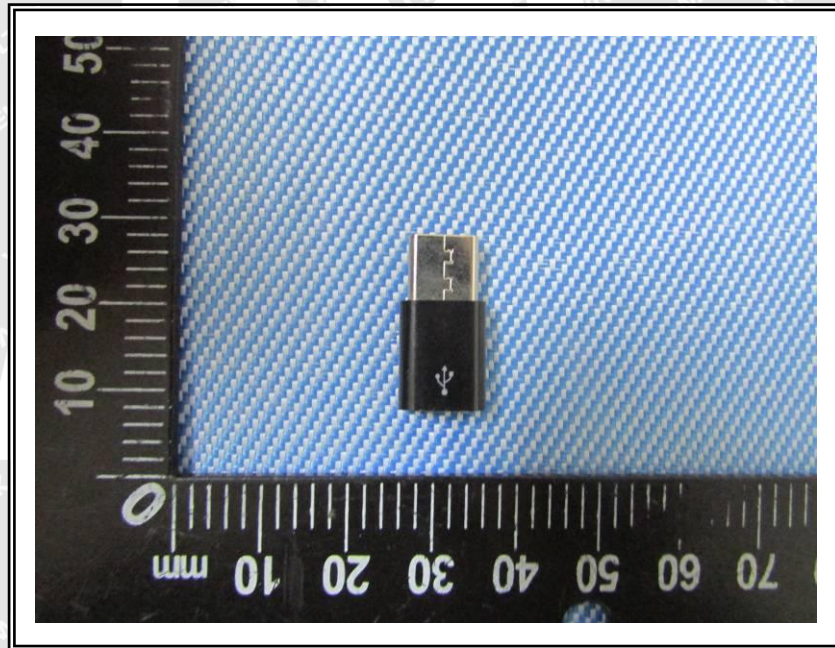


**Measurement Flowchart:**





**Sample Photo:**

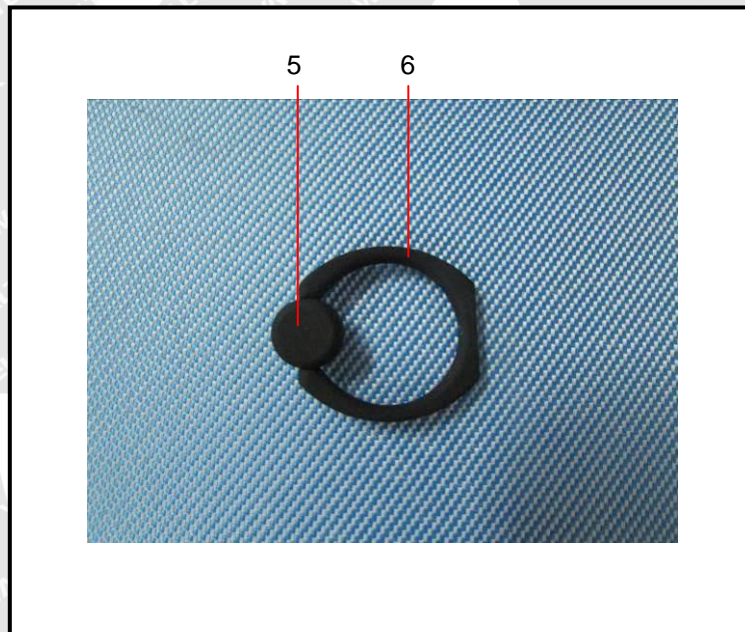
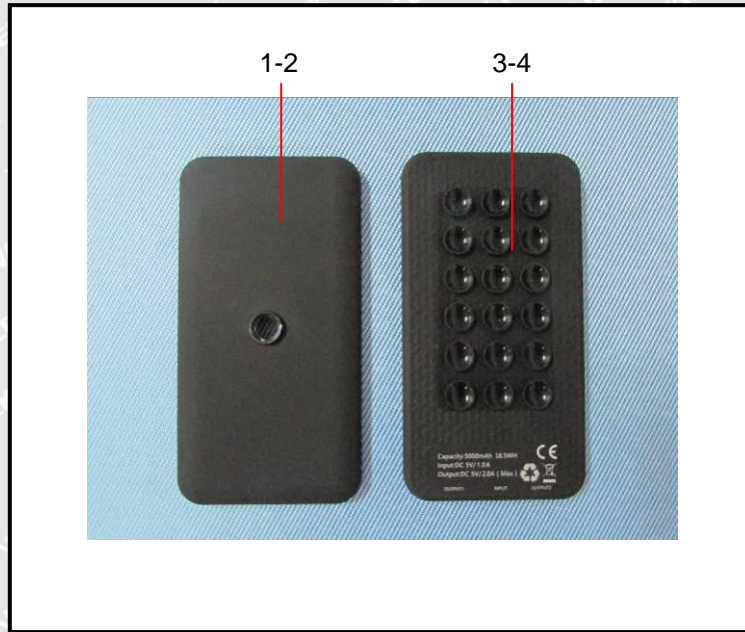




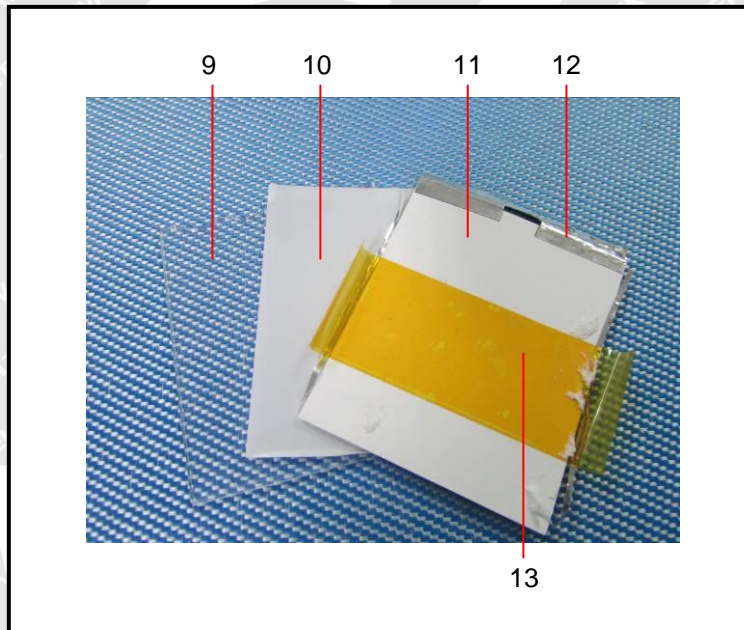
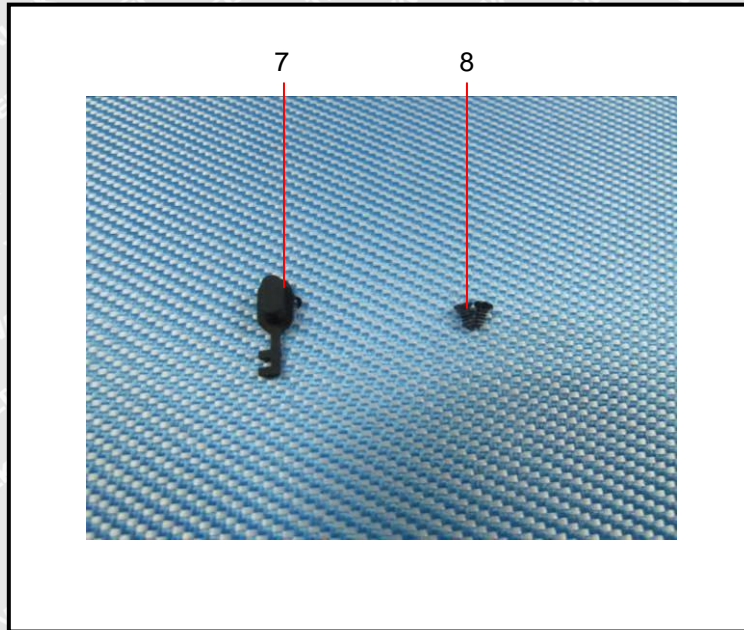
**WALTEK**

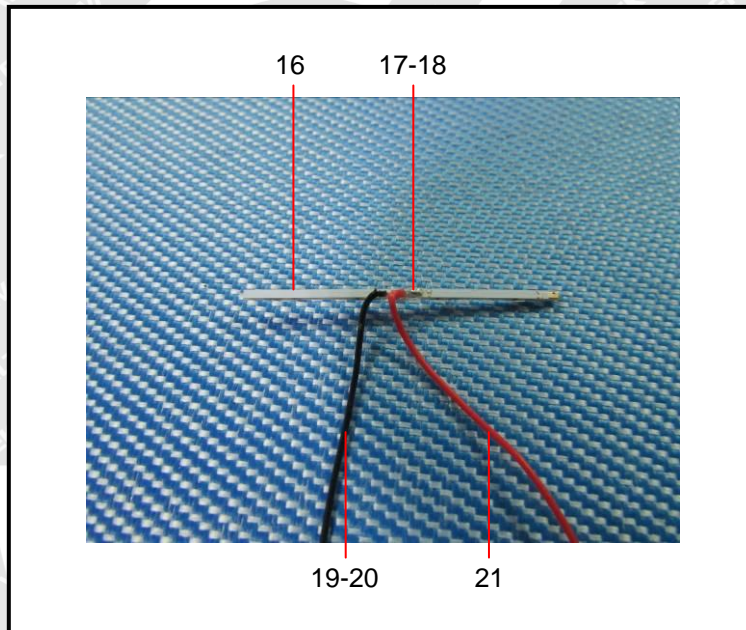
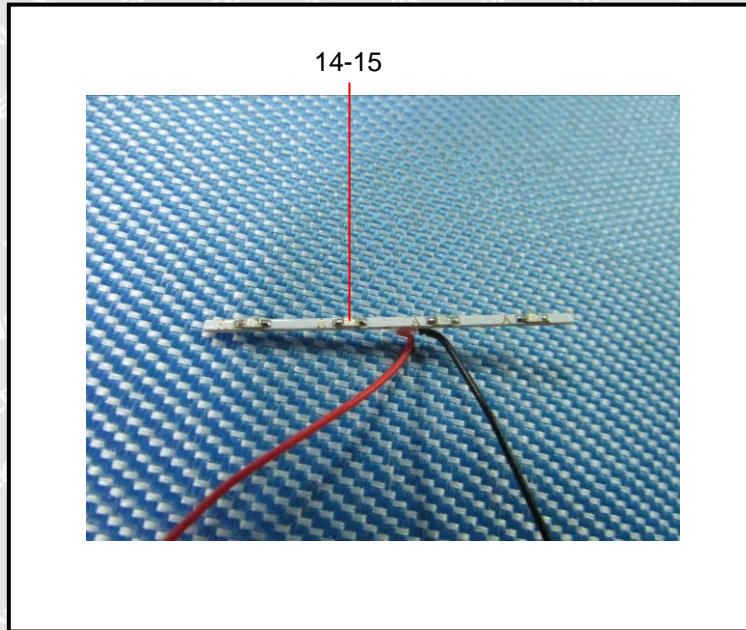


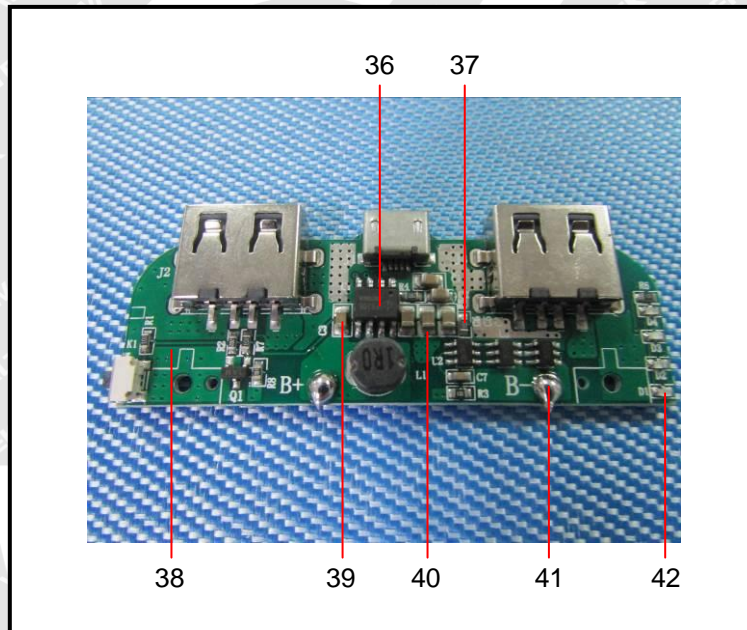
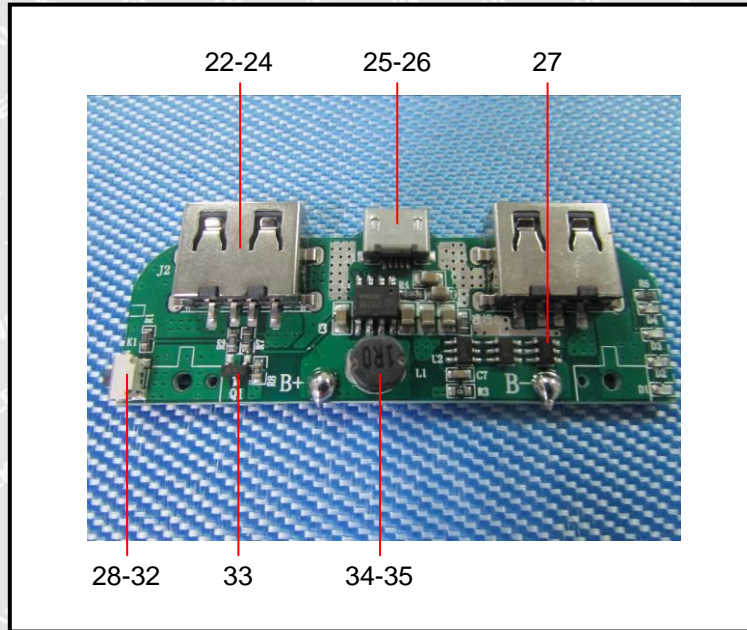
**Photograph of parts tested:**

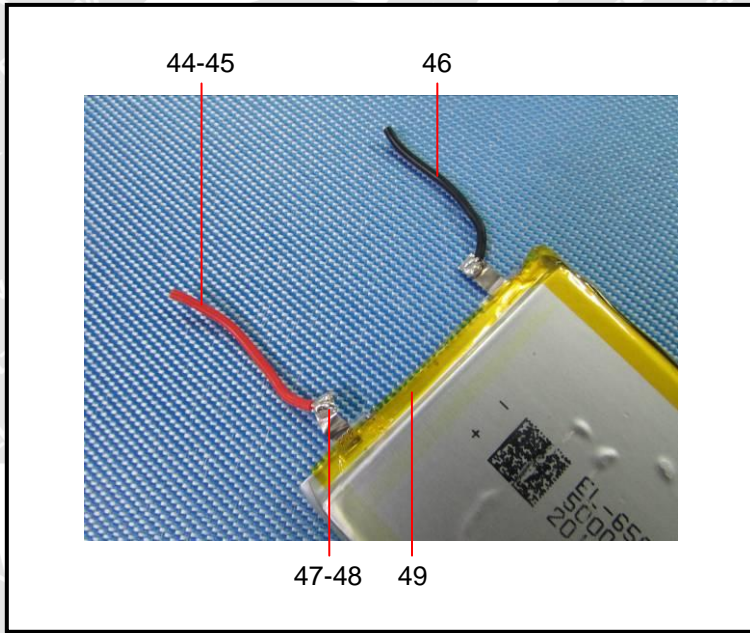
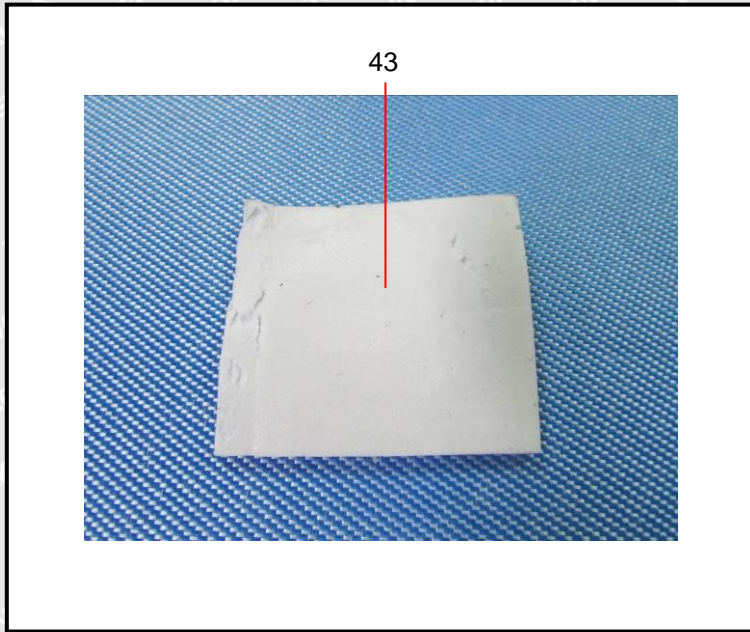


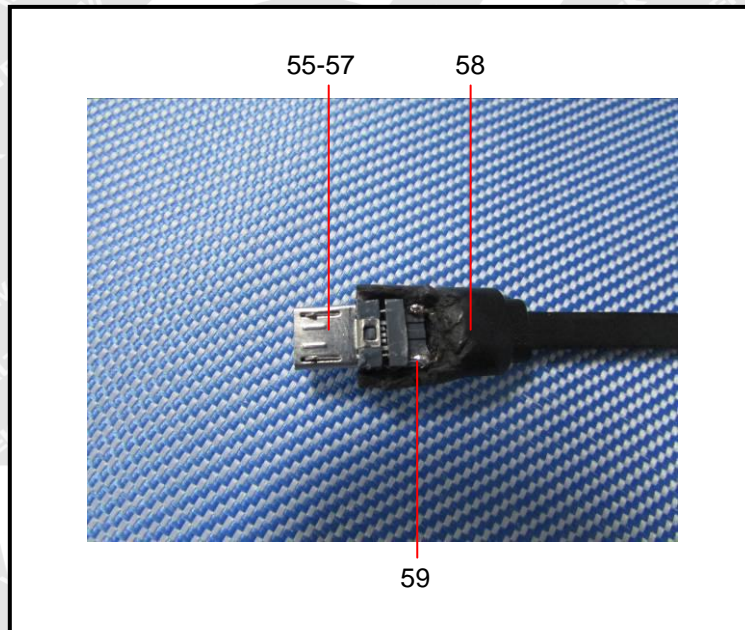
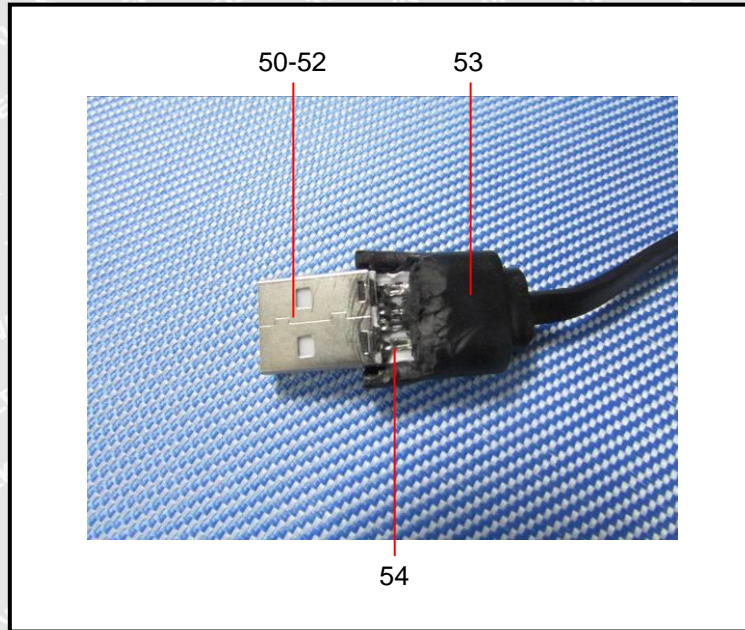


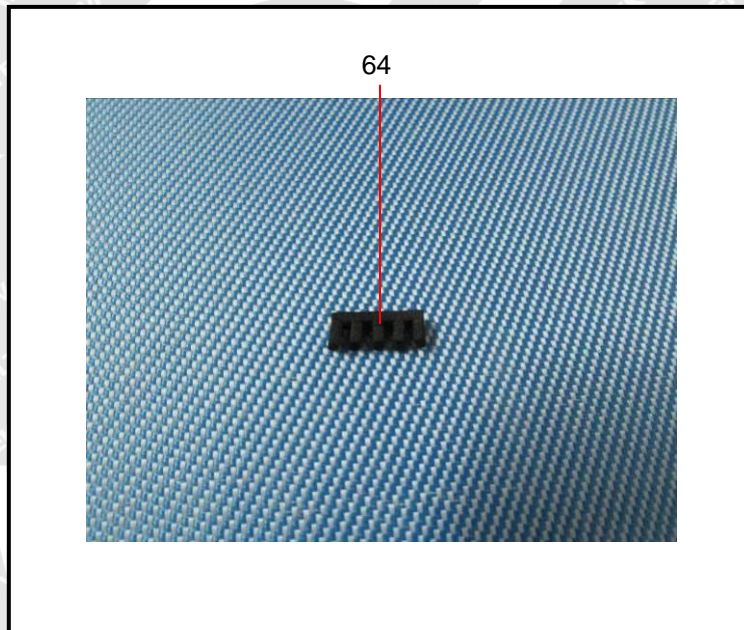
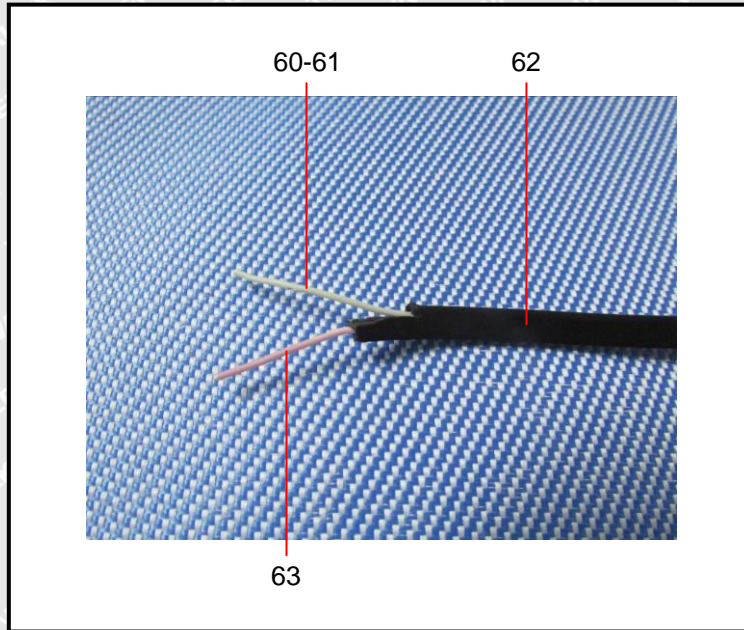


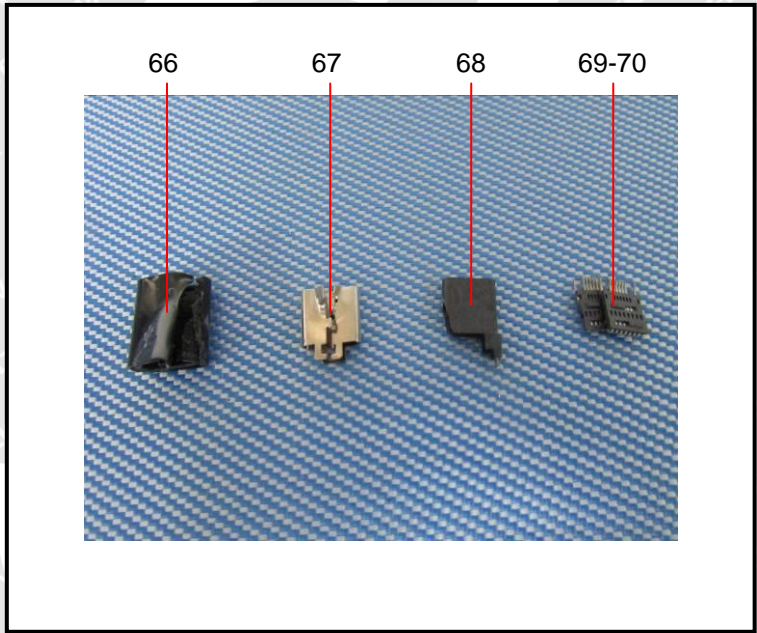
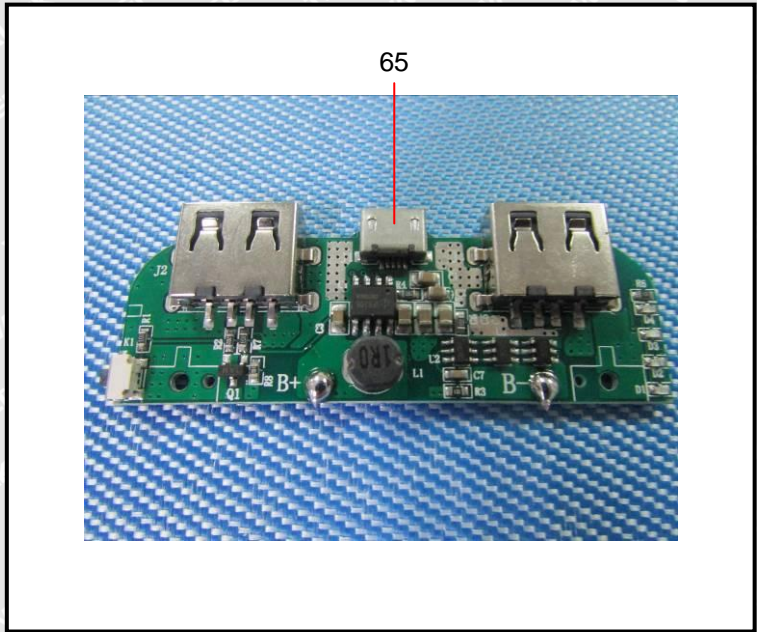


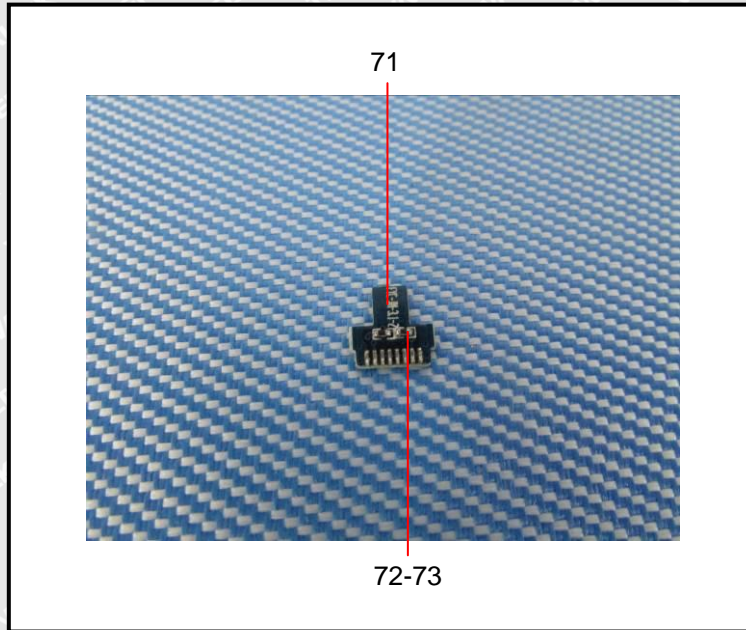












==== End of Report ====

# WALTEK