



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF23F09203330A1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer..... : 114628
Sample Name..... : 20W EU plug with Type-C
Sample Model..... : MO2155
Date of Receipt sample..... : 2023-09-15 & 2023-10-17
Testing period..... : 2023-09-15 to 2023-09-22 & 2023-10-17 to 2023-10-24
Date of Issue..... : 2023-10-25
Test Result..... : Refer to next page (s)

Prepared By:

Waltek Testing Group (Foshan) Co., Ltd.

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

Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

Signed for and on behalf of
Waltek Testing Group (Foshan) Co., Ltd.

Swing Liang

Swing.Liang



Report No.: WTF23F09203330A1C

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 62321-2:2021, disassembly, disjunction 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.

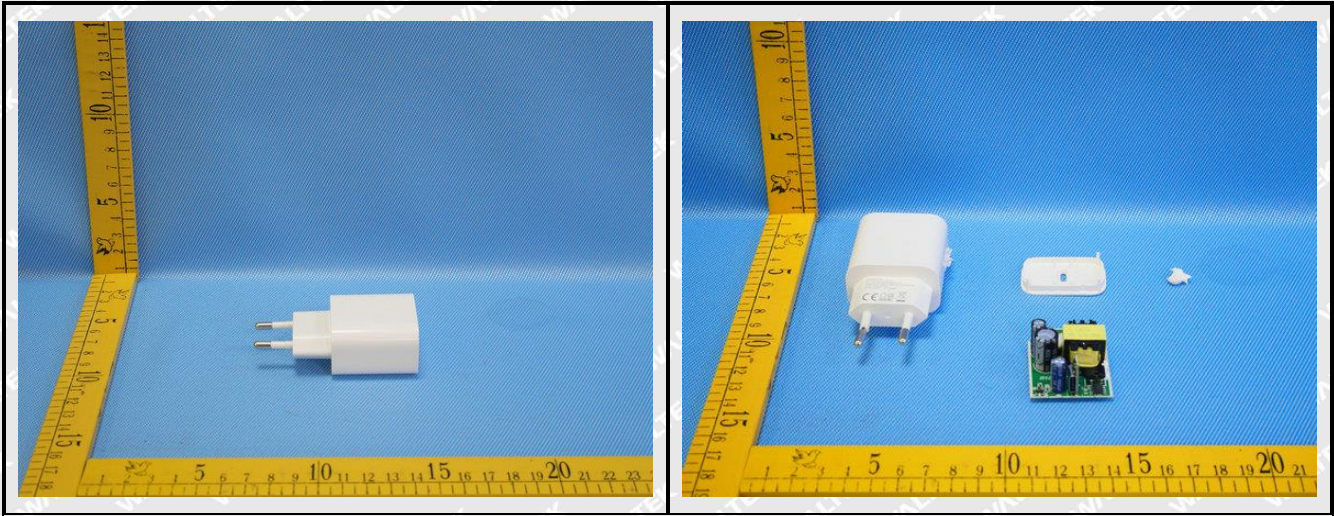
Test Conclusion : **Pass** (Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863)

WALTEK



Report No.: WTF23F09203330A1C

Sample Photo(s):



WALTEK

**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)
		Cd	Pb	Hg	Cr	Br	
1	Silvery metal pin	BL	BL	BL	BL	--	NA
2	White plastic shell	BL	BL	BL	BL	BL	NA
3	White dry glue	BL	BL	BL	BL	BL	NA
4	Silvery metal sheet	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
5	Chip glass diode	BL	*OL	BL	BL	BL	NA
6	Chip capacitor	BL	BL	BL	BL	BL	NA
7	Solder	BL	BL	BL	BL	--	NA
8	Chip IC	BL	BL	BL	BL	BL	NA
9	Chip diode	BL	BL	BL	BL	BL	NA
10	Chip rectifier	BL	BL	BL	BL	BL	NA
11	Chip resistor	BL	IN	BL	BL	BL	Pb :283
12	Chip IC	BL	BL	BL	BL	BL	NA
13	Chip diode	BL	BL	BL	BL	BL	NA
14	Yellow plastic adhesive tape (transformer)	BL	BL	BL	BL	BL	NA
15	Black magnetic core (transformer)	BL	BL	BL	BL	--	NA
16	Black plastic bobbin (transformer)	BL	BL	BL	BL	BL	NA
17	Copperly varnished wire (transformer)	BL	BL	BL	BL	BL	NA
18	Black-grey plastic film (electrolytic capacitor)	BL	BL	BL	BL	BL	NA
19	Silvery metal shell (electrolytic capacitor)	BL	BL	BL	BL	--	NA



Report No.: WTF23F09203330A1C

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
20	Brown paper sheet (electrolytic capacitor)	BL	BL	BL	BL	BL	NA
21	Grey metal foil (electrolytic capacitor)	BL	BL	BL	BL	--	NA
22	Silvery-grey metal foil (electrolytic capacitor)	BL	BL	BL	BL	--	NA
23	Black rubber stopper (electrolytic capacitor)	BL	BL	BL	BL	BL	NA
24	Silvery metal pin (electrolytic capacitor)	BL	BL	BL	BL	--	NA
25	Blue-grey plastic film (electrolytic capacitor)	BL	BL	BL	BL	BL	NA
26	Silvery metal shell (socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
27	Black plastic core (socket)	BL	BL	BL	BL	BL	NA
28	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
29	Chip IC	BL	BL	BL	BL	BL	NA
30	Green-golden plastic film (electrolytic capacitor)	BL	BL	BL	BL	BL	NA
31	Chip fuse	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
32	Yellow-green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
33	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND



Report No.: WTF23F09203330A1C

Remark:

- (1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr^{6+}) 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	$\text{BL} \leq (70-3\sigma) < \text{IN} < (130+3\sigma) \leq \text{OL}$	$\text{BL} \leq (70-3\sigma) < \text{IN} < (130+3\sigma) \leq \text{OL}$	$\text{LOD} < \text{IN} < (150+3\sigma) \leq \text{OL}$
Pb	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (500-3\sigma) < \text{IN} < (1500+3\sigma) \leq \text{OL}$
Hg	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (500-3\sigma) < \text{IN} < (1500+3\sigma) \leq \text{OL}$
Cr	$\text{BL} \leq (700-3\sigma) < \text{IN}$	$\text{BL} \leq (700-3\sigma) < \text{IN}$	$\text{BL} \leq (500-3\sigma) < \text{IN}$
Br	$\text{BL} \leq (300-3\sigma) < \text{IN}$	--	$\text{BL} \leq (250-3\sigma) < \text{IN}$

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, $\mu\text{g}/\text{cm}^2$ = Micrograms per square centimetre.
- (5) ND = Not Detected or lower than limit of quantitation.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit or as the XRF screening directly determine that test result was over the limit, it was not need to conduct the wet chemical testing.
- (7) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr^{6+}		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	$\mu\text{g}/\text{cm}^2$	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5

The LOQ for single compound of PBBs and PBDEs is 5 mg/kg, LOQ of Cr^{6+} for polymer and composite sample is 8 mg/kg and LOQ of Cr^{6+} for metal sample is 0.1 $\mu\text{g}/\text{cm}^2$.

- (8) RoHS Requirement

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)



Report No.: WTF23F09203330A1C

- (9) 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 0.10 ug/cm^2 .

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

- (10) Abbreviation:

"Pb" denotes Lead, "Cd" denotes Cadmium, "Hg" denotes Mercury, "Cr" denotes Chromium, "Cr (VI)" denotes Hexavalent Chromium, "Br" denotes Bromine, "PBBs" denotes Total Polybrominated Biphenyls, "PBDEs" denotes Total Polybrominated Diphenyl Ethers.

- (11)* = According to the declaration from client, the source of lead in test sample is from the glass or ceramic material of that electronic component which is exempted by Directive 2011/65/EU ANNEX III.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	--	--	--	--
T02	2	ND	ND	ND	ND
T03	3	ND	ND	ND	ND
T04	4	--	--	--	--
T05	5+6+8+9+10 [△]	ND	ND	ND	ND
T06	7	--	--	--	--
T07	11+12+13+29 [△]	ND	ND	ND	ND
T08	14	ND	ND	ND	ND
T09	15	--	--	--	--
T10	16+27 [△]	ND	ND	ND	ND
T11	17	ND	ND	ND	ND
T12	18	ND	ND	ND	ND
T13	19	--	--	--	--
T14	20	ND	ND	ND	ND
T15	21	--	--	--	--
T16	22	--	--	--	--
T17	23	ND	ND	ND	ND
T18	24	--	--	--	--
T19	25	ND	ND	ND	ND
T20	26	--	--	--	--
T21	28	--	--	--	--
T22	30	ND	ND	ND	ND
T23	31	ND	ND	ND	ND
T24	32+33 [△]	ND	ND	ND	ND



Report No.: WTF23F09203330A1C

Note:

- (1) mg/kg = milligram per kilogram= ppm
- (2) ND = Not Detected or lower than limit of quantitation.
- (3) -- = Not Regulated.
- (4) LOQ = Limit of quantitation.

Test Items	DBP	BBP	DEHP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg
LOQ	50	50	50	50

- (5) Abbreviation:
"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

- (6) RoHS requirement

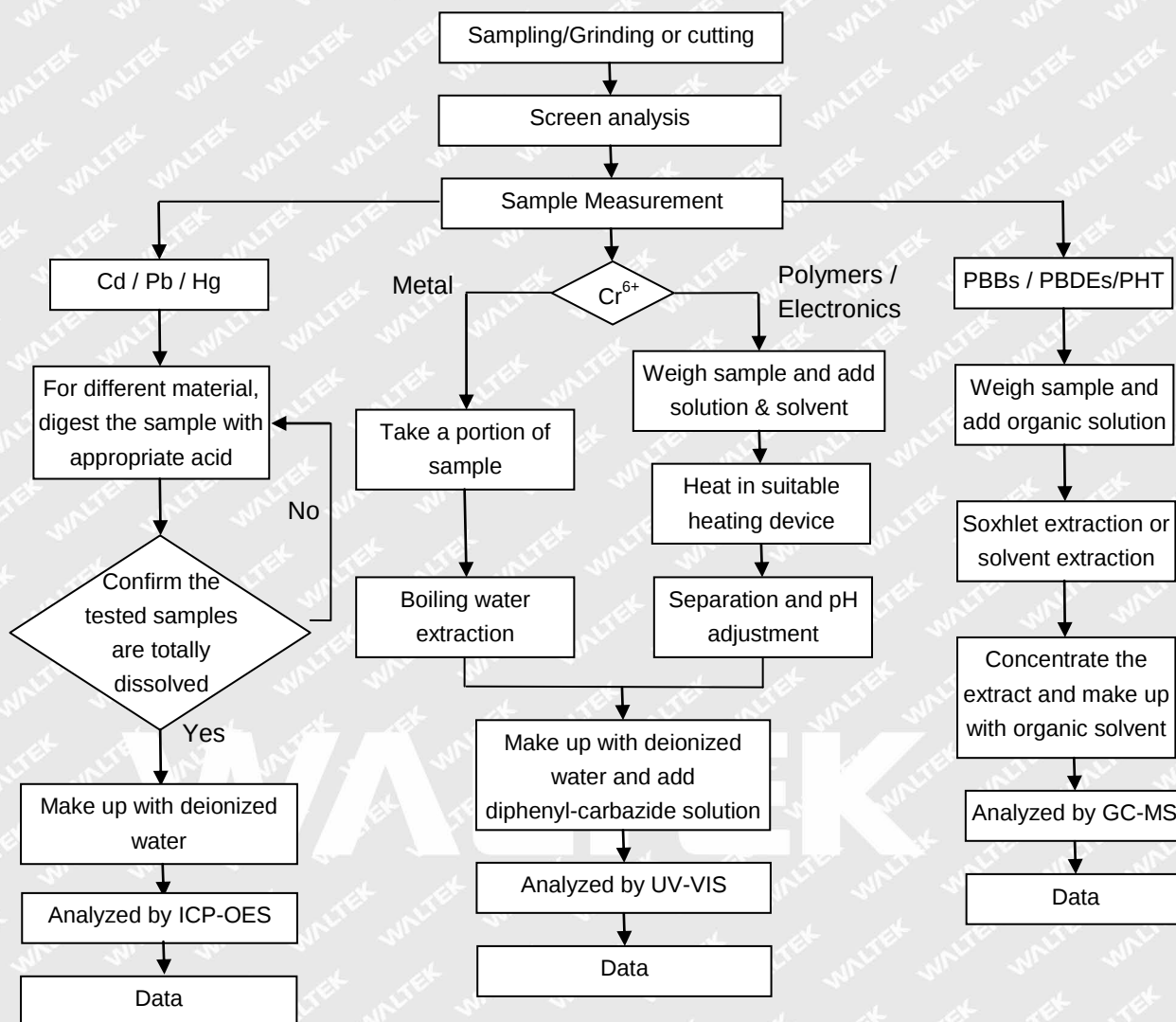
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

- (7) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

WALTEK

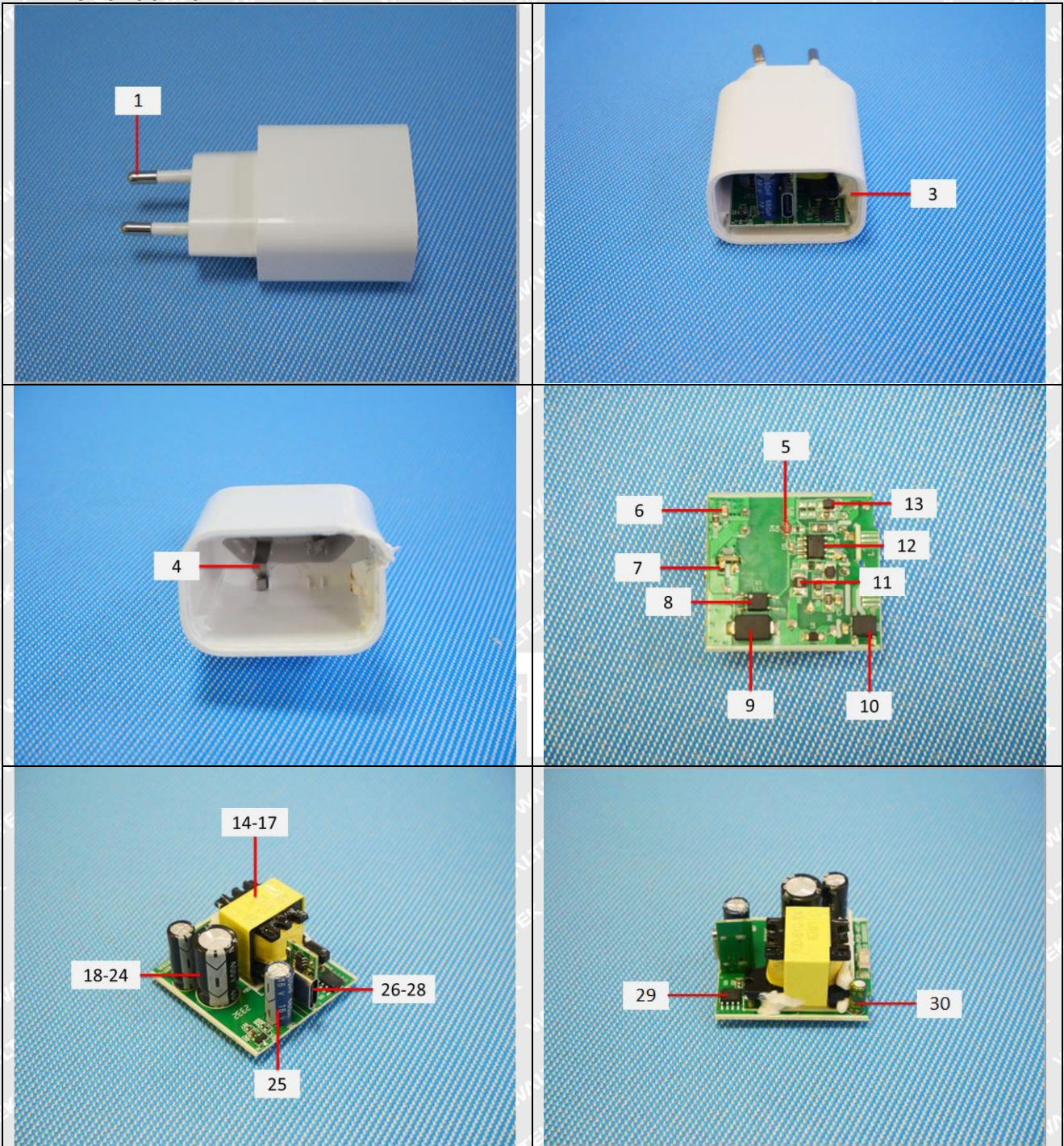


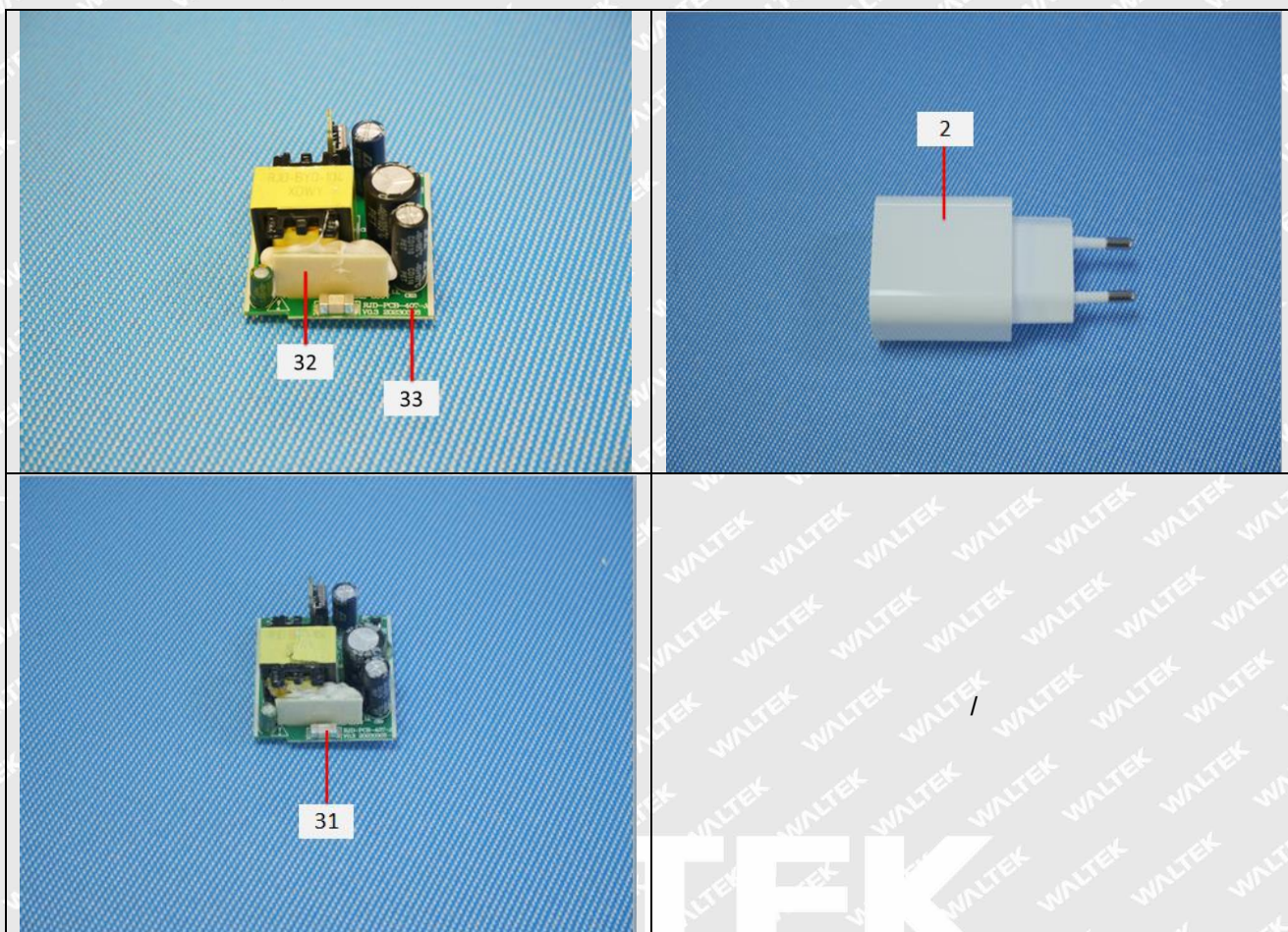
Measurement Flowchart:





Photograph(s) of parts tested:





Remarks:

1. The results shown in this test report refer only to the sample(s) tested;
2. This test report cannot be reproduced, except in full, without prior written permission of the company;
3. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver;
4. The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which Waltek hasn't verified;
5. If the report is not stamped with the accreditation recognized seal, it will only be used for scientific research, education, and internal quality control activities, and is not used for the purpose of issuing supporting data to the society.
6. The sample material information (Model No. information) is provided by client, not verified by test laboratory. The samples of reference Model No. are not tested. Test laboratory not responsible for the accuracy, appropriateness, completeness and authenticity of the information provided by client.

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