



Applicant: Zhejiang Shuangyang Group Co.,Ltd.

Address: No.444, Sanbei West Road, Shiye Village, Guanhaiwei Town, Cixi City, Ningbo,Zhejiang Province, China

Attn: Cen Yu Hang

Sample Description: Electronic plug-in time switch, Direct plug-in power meter

Model No.: TS-ED204, TS-ED1-2, TS-ED201-16, TS-JD01

Sample Received Date: 2025-05-20

Test Period: 2025-05-20 ~ 2025-06-06

Purpose of examination: Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples

Test Results: Refer to following page(s)

Remark:

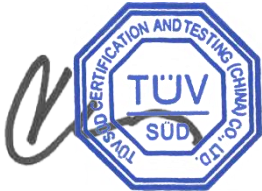
- The result relates only to the items tested.
- The reference model(s) was declared by client.
- The test sample(s) and item(s) was specified by client.

TEC_WUX_F_25.05E - Rev. 00 2021-06-24

TÜV SÜD Certification and Testing (China) Co., Ltd.

TÜV SÜD Group

Prepared by:



Yongfeng Du
Project Handler

Reviewed by:



Feng Zhang
Designated Reviewer

Disclaimer Measurement Uncertainty: Unless otherwise agreed upon, Pass or Fail verdicts are given base on the measured values without any considerations of measurement uncertainties. Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO/IEC 17025 requirements. By taking measurement uncertainties into account it might happen that measured values can neither be assessed as Pass nor as Fail.

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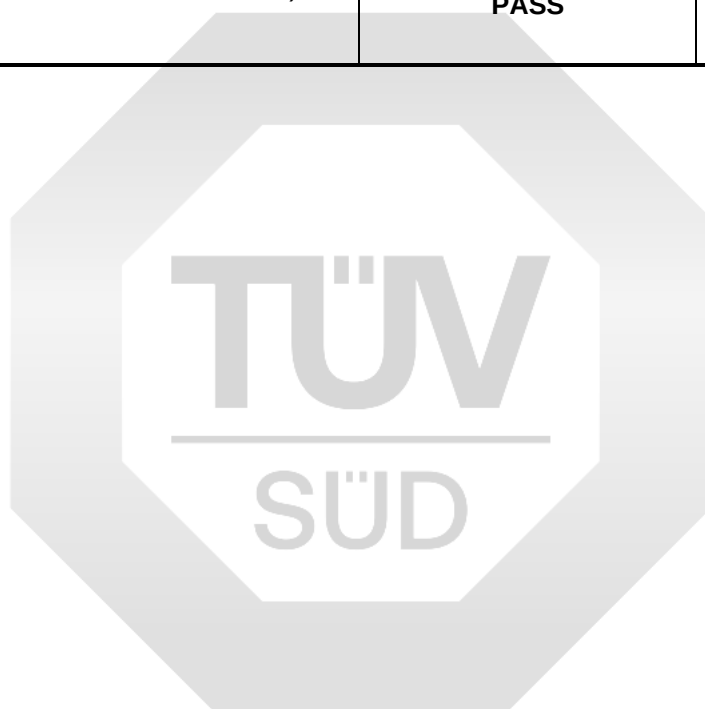
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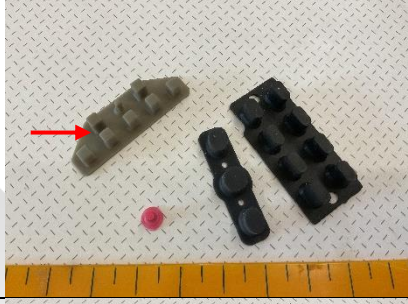
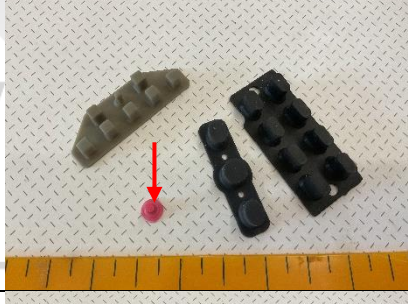
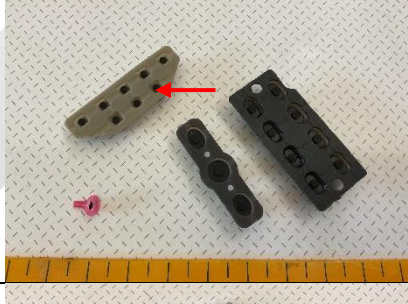
SUMMARY OF TEST RESULTS

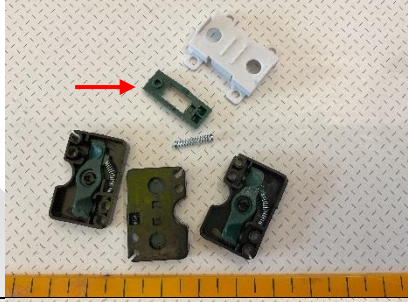
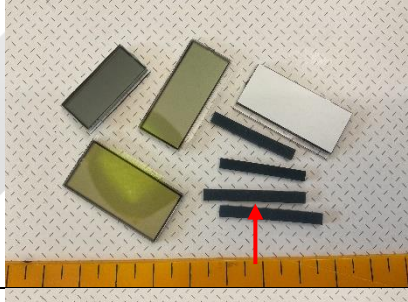
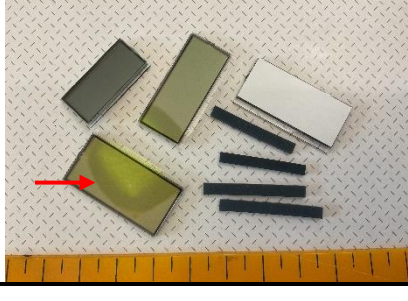
No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	/
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	/
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	/

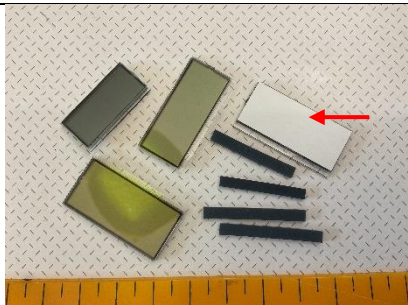
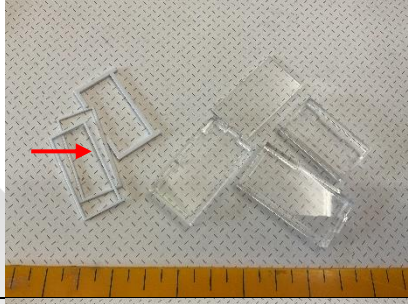
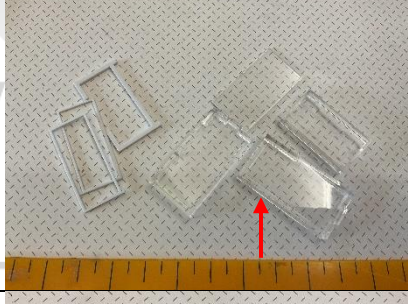
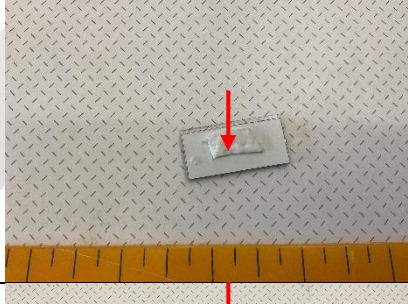
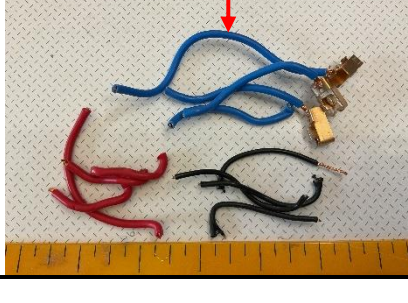


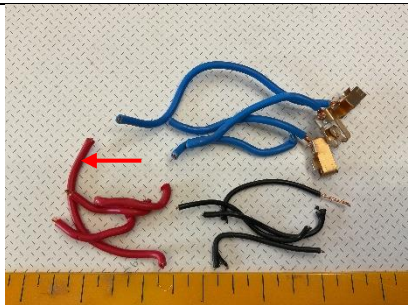
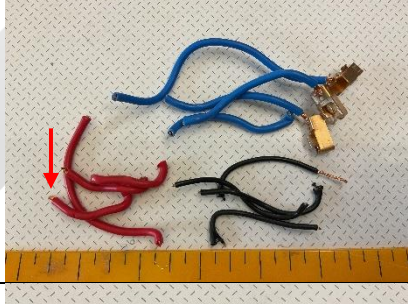
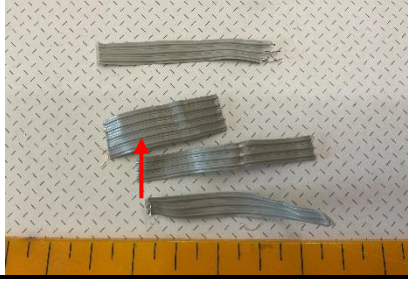
1. TESTED SUBJECT DESCRIPTION

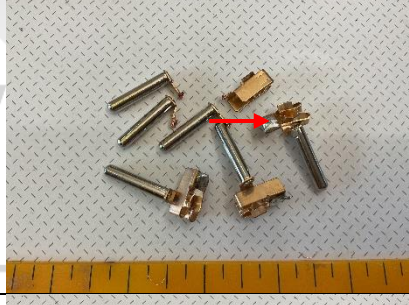
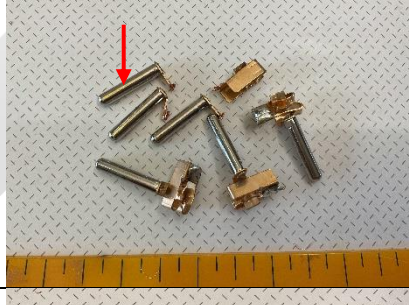
Sample Number	Tested Material Description	Photo
001	Silvery grey plastic label	
002	White plastic component	
003	Green plastic component	
004	Black soft polymer ring	
005	Transparent plastic component	

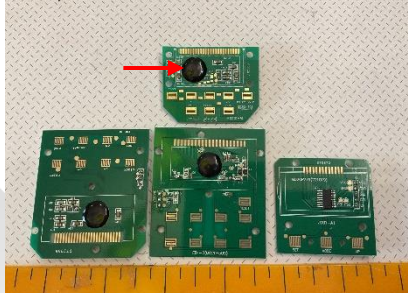
Sample Number	Tested Material Description	Photo
006	Black silicon button	
007	Grey silicon button	
008	Red silicon button	
009	Black silicon button	
010	White plastic component	

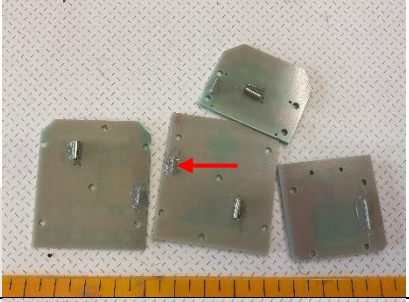
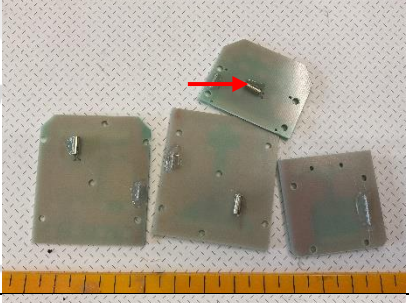
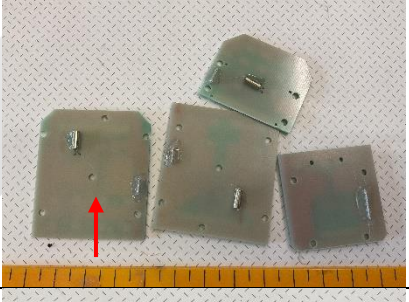
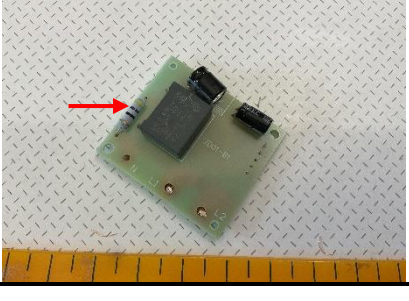
Sample Number	Tested Material Description	Photo
011	Black plastic component	
012	Green plastic component	
013	Silvery grey metal spring	
014	Black silicon bar	
015	LED panel	

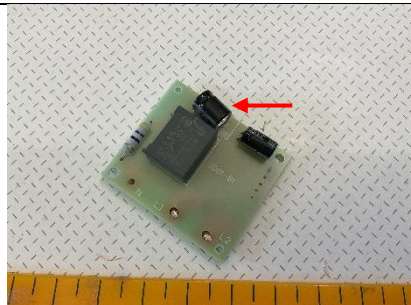
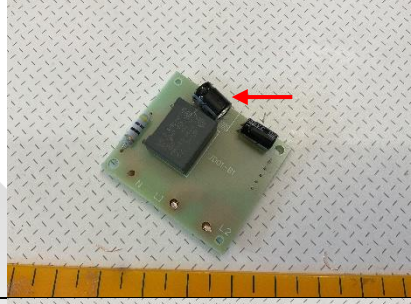
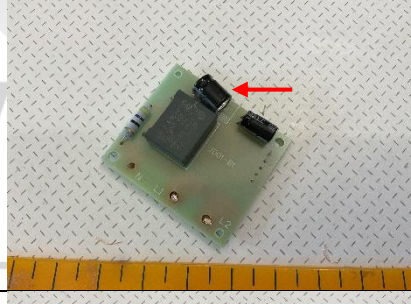
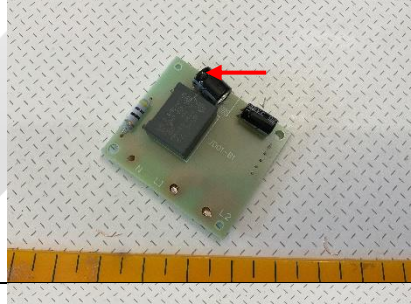
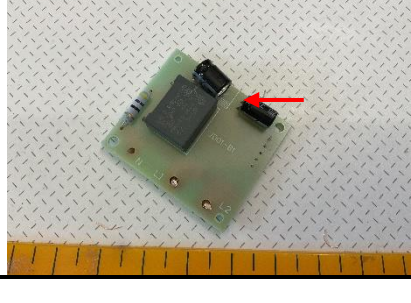
Sample Number	Tested Material Description	Photo
016	White LED panel rear	
017	White plastic component	
018	Transparent plastic component	
019	White sticker tape	
020	Blue wire jacket	

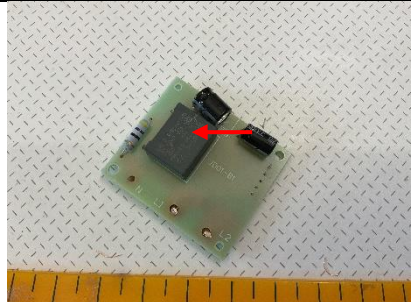
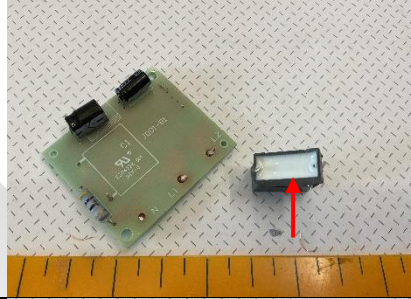
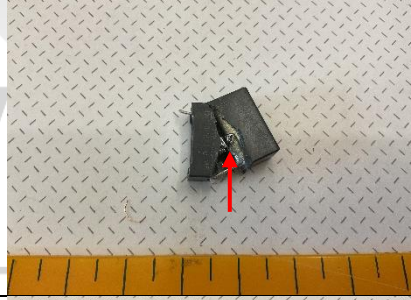
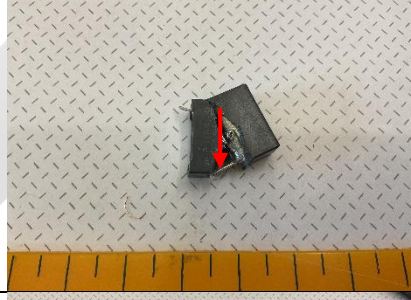
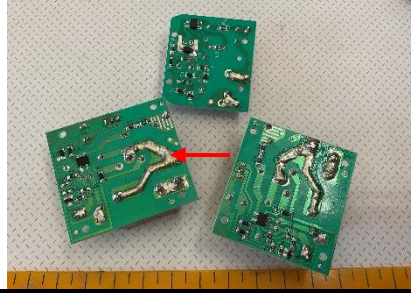
Sample Number	Tested Material Description	Photo
021	Red wire jacket	
022	Black wire jacket	
023	Copper cord of black wire	
024	Copper cord of red and blue wire	
025	Grey wire panel	

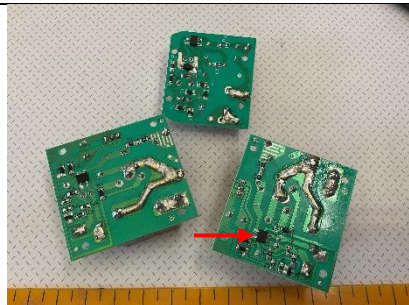
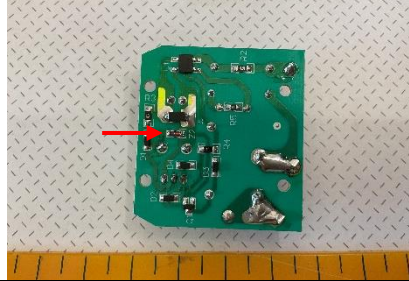
Sample Number	Tested Material Description	Photo
026	Silvery grey metal	
027	Copper piece	
028	Silvery grey solder points	
029	Silvery grey metal plug pin	
030	Silvery grey metal screws	

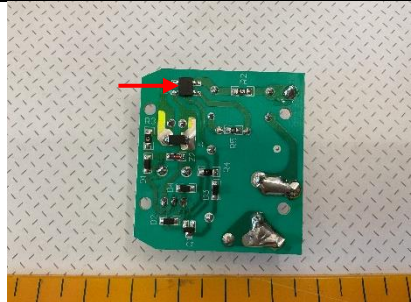
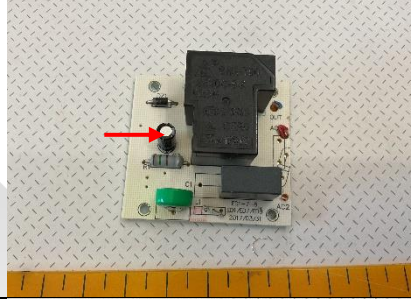
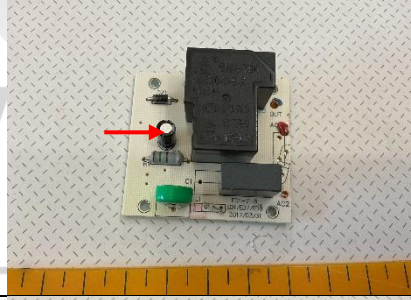
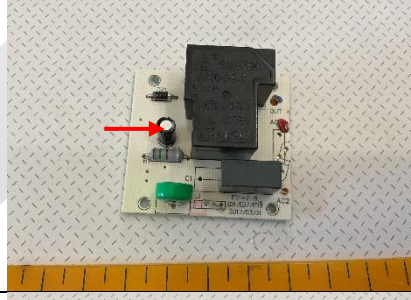
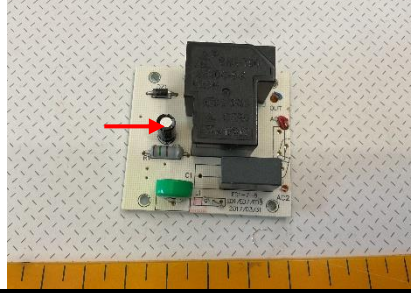
Sample Number	Tested Material Description	Photo
031	Silvery grey metal screws	
032	Black IC body	
033	Black SMD of PCB	
034	SMD components of PCB	
035	SMD components of PCB	

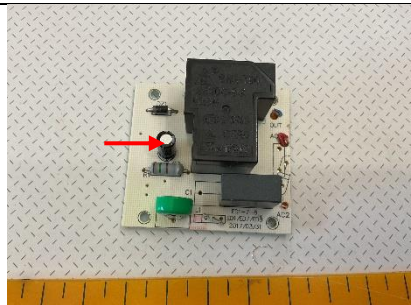
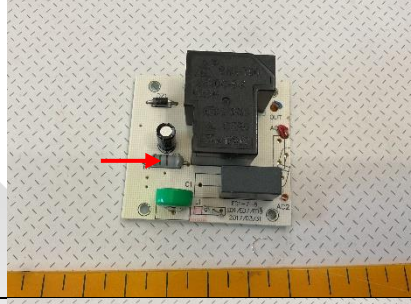
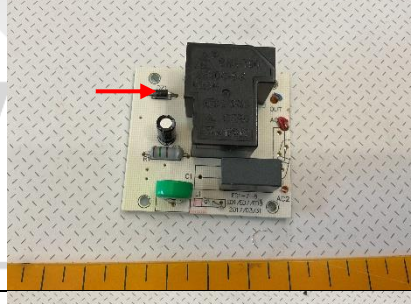
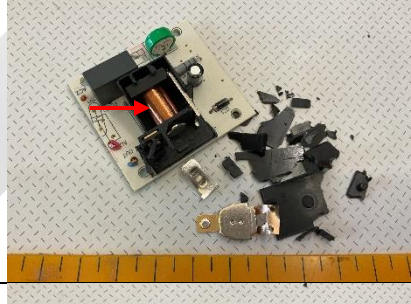
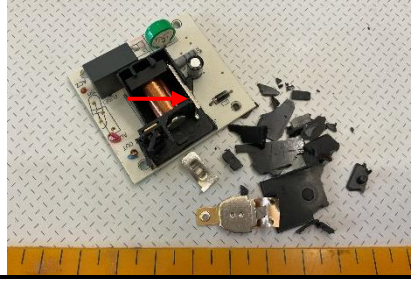
Sample Number	Tested Material Description	Photo
036	Yellow metal fin	
037	Transparent glue	
038	Silvery grey metal component on PCB	
039	Grey polymer resin of PCB	
040	Grey resistor body	

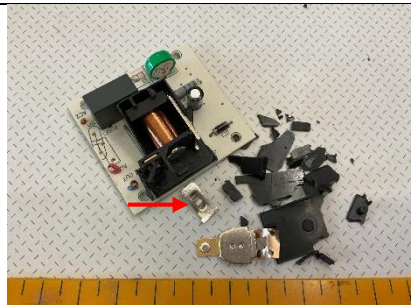
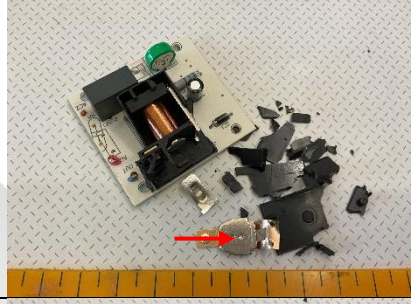
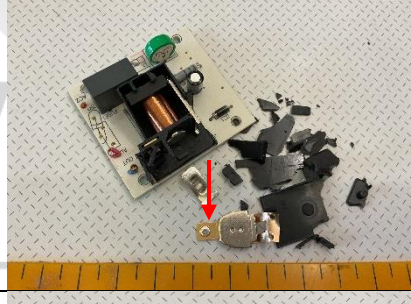
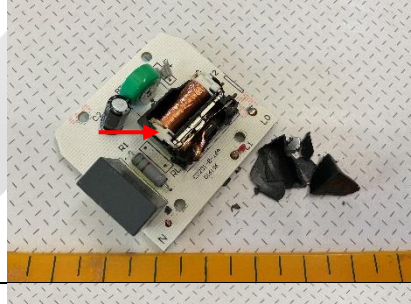
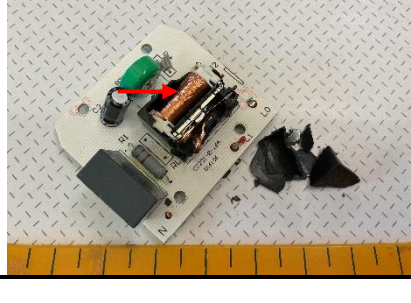
Sample Number	Tested Material Description	Photo
041	Black capacitor body	
042	Al alloy shell of capacitor	
043	Inner films of capacitor	
044	Black rubber block of capacitor	
045	Metal pin of capacitor	

Sample Number	Tested Material Description	Photo
046	Grey capacitor body	
047	White glue	
048	Grey polymer films of capacitor	
049	Silvery grey meta pin	
050	Grey solder points	

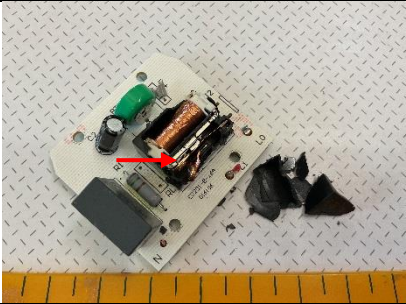
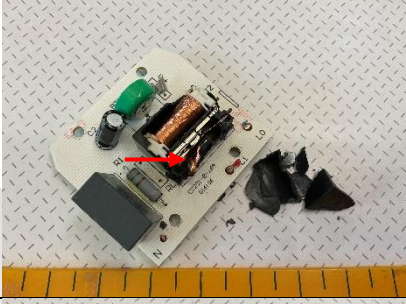
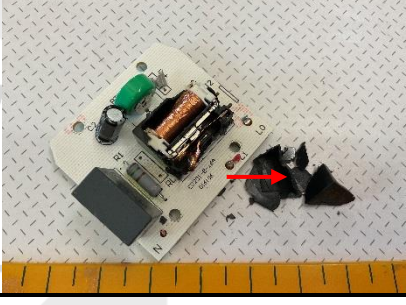
Sample Number	Tested Material Description	Photo
051	Black SMD of PCB	
052	Black SMD of PCB	
053	Black SMD of PCB	
054	Brown SMD of PCB	
055	Red SMD glass diode of PCB	

Sample Number	Tested Material Description	Photo
056	Black SMD of PCB	
057	Black plastic jacket of capacitor	
058	Silvery grey metal shell of capacitor	
059	Inner films of capacitor	
060	Black polymer block of capacitor	

Sample Number	Tested Material Description	Photo
061	Metal pin of capacitor	
062	Grey resistor body	
063	Black diode body	
064	Copper wire	
065	Silvery grey meta piece	

Sample Number	Tested Material Description	Photo
066	Silvery grey meta piece	
067	Silvery grey meta piece	
068	Copper fin	
069	White plastic piece	
070	Coiled metal wire	



Sample Number	Tested Material Description	Photo
071	Silvery grey metal pin	
072	Copper piece	
073	Black plastic shell	

2. TEST RESULT(S)

2.1 SCREENING TEST

Test method: With reference to EN 62321-1:2013, BS EN IEC 62321-2:2021, EN 62321-3-1:2014 and EN 62321-8:2017. For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometer (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometer (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
001	BL	BL	BL	BL	BL	BL	BL	BL	BL
002	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
003	BL	BL	BL	BL	BL	BL	BL	BL	BL
004	BL	BL	BL	BL	BL	BL	BL	BL	BL
005	BL	BL	BL	BL	BL	BL	BL	BL	BL
006	BL	BL	BL	BL	BL	BL	BL	BL	BL
007	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	BL	BL	BL	BL	BL	BL	BL	BL	BL
009	BL	BL	BL	BL	BL	BL	BL	BL	BL
010	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
011	BL	BL	BL	BL	BL	BL	BL	BL	BL
012	BL	BL	BL	BL	BL	BL	BL	BL	BL
013	BL	BL	BL	Inc. ^(a)	NA	NA	NA	NA	NA
014	BL	BL	BL	BL	BL	BL	BL	BL	BL
015	BL	BL	BL	BL	BL	BL	BL	BL	BL
016	BL	BL	BL	BL	BL	BL	BL	BL	BL
017	BL	BL	BL	BL	BL	BL	BL	BL	BL
018	BL	BL	BL	BL	BL	BL	BL	BL	BL
019	BL	BL	BL	BL	BL	BL	BL	BL	BL
020	BL	BL	BL	BL	BL	BL	BL	BL	BL
021	BL	BL	BL	BL	BL	BL	BL	BL	BL
022	BL	BL	BL	BL	BL	BL	BL	BL	BL
023	BL	BL	BL	BL	NA	NA	NA	NA	NA
024	BL	BL	BL	BL	NA	NA	NA	NA	NA
025	BL	BL	BL	BL	BL	BL	BL	BL	BL
026	BL	BL	BL	BL	NA	NA	NA	NA	NA
027	BL	BL	BL	BL	NA	NA	NA	NA	NA
028	BL	BL	BL	BL	NA	NA	NA	NA	NA
029	BL	BL	BL	BL	NA	NA	NA	NA	NA



Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
030	BL	BL	BL	BL	NA	NA	NA	NA	NA
031	BL	BL	BL	Inc. ^(a)	NA	NA	NA	NA	NA
032	BL	BL	BL	BL	BL	BL	BL	BL	BL
033	BL	BL	BL	BL	BL	BL	BL	BL	BL
034	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
035	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
036	BL	BL	BL	BL	NA	NA	NA	NA	NA
037	BL	BL	BL	BL	BL	BL	BL	BL	BL
038	BL	BL	BL	BL	NA	NA	NA	NA	NA
039	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
040	BL	BL	BL	BL	BL	BL	BL	BL	BL
041	BL	BL	BL	BL	BL	BL	BL	BL	BL
042	BL	BL	BL	BL	BL	BL	BL	BL	BL
043	BL	BL	BL	BL	BL	BL	BL	BL	BL
044	BL	BL	BL	BL	BL	BL	BL	BL	BL
045	BL	BL	BL	BL	NA	NA	NA	NA	NA
046	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
047	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
048	BL	BL	BL	BL	BL	BL	BL	BL	BL
049	BL	BL	BL	BL	NA	NA	NA	NA	NA
050	BL	BL	BL	BL	NA	NA	NA	NA	NA
051	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
052	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
053	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
054	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
055	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
056	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
057	BL	BL	BL	BL	BL	BL	BL	BL	BL
058	BL	BL	BL	BL	NA	NA	NA	NA	NA
059	BL	BL	BL	BL	BL	BL	BL	BL	BL
060	BL	BL	BL	BL	BL	BL	BL	BL	BL
061	BL	BL	BL	BL	NA	NA	NA	NA	NA
062	BL	BL	BL	BL	BL	BL	BL	BL	BL
063	BL	Inc. ^(a)	BL	BL	Inc. ^(a)	BL	BL	BL	BL

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
064	BL	BL	BL	BL	NA	NA	NA	NA	NA
065	BL	BL	BL	BL	NA	NA	NA	NA	NA
066	BL	BL	BL	BL	NA	NA	NA	NA	NA
067	BL	BL	BL	BL	NA	NA	NA	NA	NA
068	BL	BL	BL	BL	NA	NA	NA	NA	NA
069	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
070	BL	BL	BL	BL	NA	NA	NA	NA	NA
071	BL	BL	BL	BL	NA	NA	NA	NA	NA
072	BL	BL	BL	BL	NA	NA	NA	NA	NA
073	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL

Note:

- "BL" denotes below limit
- "OL" denotes over limit
- "Inc." denotes inconclusive
- "NA" denotes not applicable
- "(a)" denotes further confirmation test was conducted, results are listed in 2.2, 2.3 and 2.4.

-XRF screening limits in mg/kg for regulated elements in various matrices

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Br	$X \leq (300-3\sigma)$	$X > (300-3\sigma)$	NA
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	METAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (50-3\sigma)$	$(50-3\sigma) < X < (150+3\sigma)$	$X \geq (150+3\sigma)$
Pb	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Hg	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Br	$X \leq (250-3\sigma)$	$X > (250-3\sigma)$	NA



ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cr	$X \leq (500-3\sigma)$	$X > (500-3\sigma)$	NA

-Screening limits in mg/kg for regulated phthalates in various matrices

PHthalates	BL	INCONCLUSIVE
DEHP	$X < 600$	$X \geq 600$
BBP	$X < 600$	$X \geq 600$
DBP	$X < 600$	$X \geq 600$
DIBP	$X < 600$	$X \geq 600$



2.2 HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2014 /A1:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Ultraviolet-visible spectrophotometer (UV-Vis).

[Reporting Limit: 2.0 mg/kg for Cadmium; 5.0 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10.0 mg/kg for Lead and Mercury.]

Sample No.	Result(s)				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
013	--	/	Negative	--	--
031	--	/	Negative	--	--
055	--	--	--	--	25571.4 ^(e)
063	--	--	--	--	19332.0 ^(e)
Unit	mg/kg	mg/kg	µg/cm²	mg/kg	mg/kg
RoHS Requirement	<100	<1000	Negative [#]	<1000	<1000

Note:

- "mg/kg" denotes milligram per kilogram
- "µg/cm²" denotes micrograms per square centimeter
- "<" denotes less than
- "Positive" denotes the absorbance value of sample is > 0.13 µg/cm², the sample is considered to be positive for Hexavalent Chromium.
- "Inconclusive" denotes the absorbance value of sample is ≥ 0.10 µg/cm² and ≤ 0.13 µg/cm², the sample is considered to be Inconclusive for Hexavalent Chromium.
- "Negative" denotes the absorbance value of sample is < 0.10 µg/cm², the sample is considered to be negative for Hexavalent Chromium.
- ^{##} According to DIRECTIVE 2011/65/EU Article 4(1) and Annex II. While, positive means the presence of CrVI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1) and Annex II.
- "--" denotes tested by XRF, result is listed in 2.1.
- "(e)" denotes the exempt item according to DIRECTIVE 2011/65/EU Annex III item 7(c)-I "Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound".

2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs)

CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by toluene and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Sample No.	Result(s)	
	Polybrominated Biphenyls (PBBs)	Polybrominated Diphenyl Ethers (PBDEs)
002+010+034	<50	<50
035+039+046	<50	<50
047+051+052	<50	<50
053+054+056	<50	<50
063+069+073	<50	<50
Unit	mg/kg	mg/kg
RoHS Requirement	<1000	<1000

Note:

- "mg/kg" denotes milligram per kilogram.
- "<" denotes less than.
- PBBs denotes the sum of Monobromobiphenyl to Decabromobiphenyl.
- PBDEs denotes the sum of Monobromodiphenyl ether to Decabromodiphenyl ether.

APPENDIX I:

Photos of submitted products



Sample Description: Electronic plug-in time switch, Direct plug-in power meter
Model No.: TS-ED204, TS-ED1-2, TS-ED201-16, TS-JD01

Additional Listed Models Reference

Model No.:

TS-ED1/4/8/11/12/20/201/201-16/202/202-16/203/204/1-3,
 TS-ED16/19,
 TS-EF1/4/8/12/20/201/202/204/16/19,
 TS-EE1/8/12/20/201,
 TS-EI1/1(10)/4/20/201/202,
 TS-EN1/201/202/N4/N201,
 TS-ESW20,TS-GE2/3/4,
 TS-ES7/9,
 TS-JD02/03,TS-JF01/02/03,TS-JN01/02/03/JNN01/02/03,TS-JD/JF,
 USB-D1/D2/D3/D4/D5/E3/E4/E5/F1/F2/F3/F4/F5/NN3/NN4/NN5,USB-D4-18/20,TS-ED15/EF15/ENN15,EZ21,
 SY6-1,SY6-2,SY8-1,SY8-2,SY10-1,SY10-2,SY13-1,SY13-2,SY16-1,SY16-2,SY10-1-W,SY10-2-W

Remarks:

The above listed may covered models were only based on client's guarantee letter (self-declaration). TÜV SÜD takes no responsibility for any mistakes and the problems of product consistency caused by inaccurate and/or invalid information submitted by the client.

-----End of Report-----