



Technical Report No. 64.165.20.01498.01
Rev. 00
Dated 2020-05-19

Client: Dongguan HBH Electric Appliance Technology Co., Ltd

Address: 2 Floor, A Zone, Creative Industry Park, Hengan Road, Changan, Dongguan, China

Sample Description: USB Personal Space Air Cooler

Model No.: PSC-702

Sample Received Date: 2020-04-14, 2020-05-13

Test Period: From 2020-04-14 to 2020-05-19

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

Test Result: Refer to following page(s)

Remark: The result relates only to the items tested.



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

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Project Handler



Reviewed by:

Kevin Zhang

Kevin Zhang
Designated Reviewer

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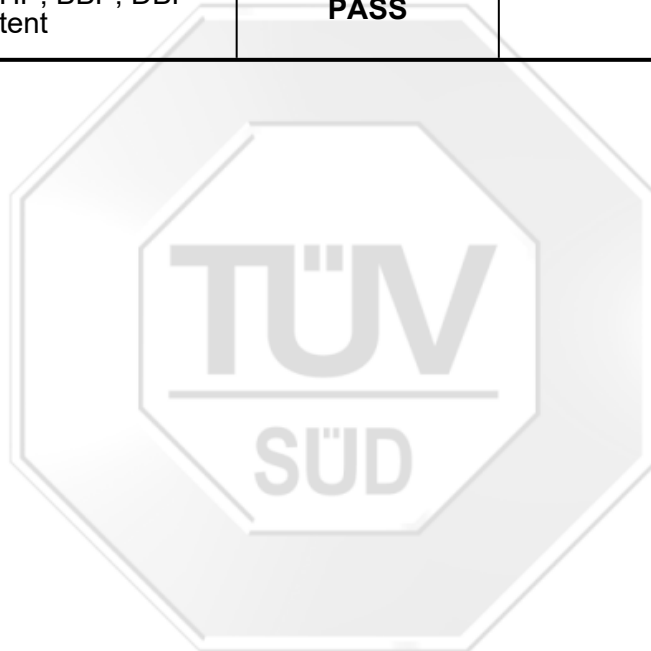
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SUMMARY OF TEST RESULTS

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	/

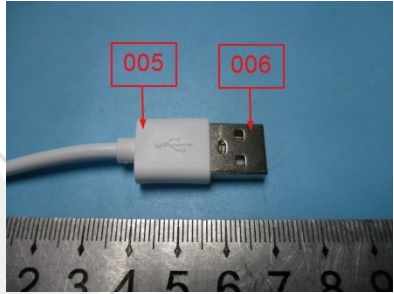
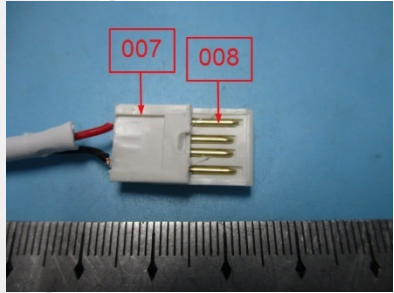
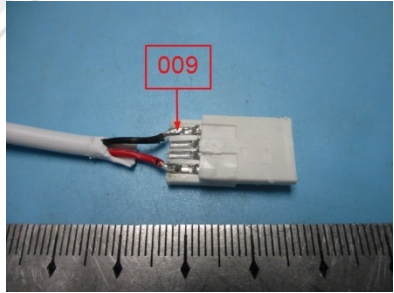
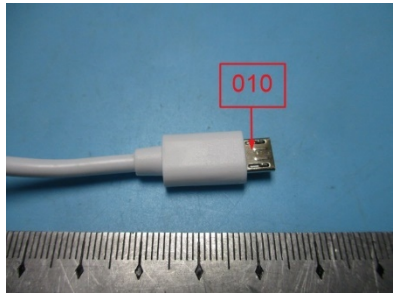


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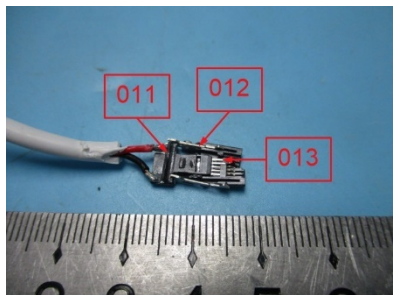
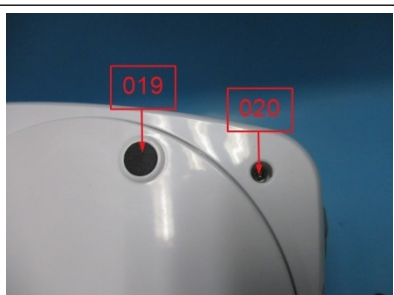
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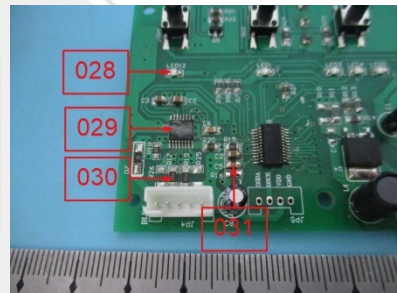
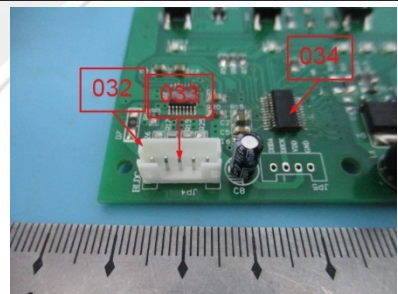
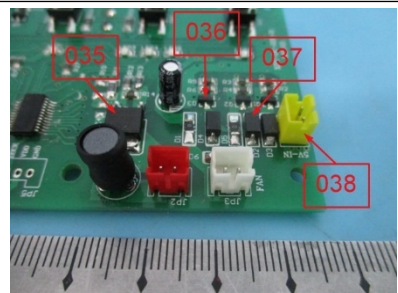
1. TESTED SUBJECT DESCRIPTION

Sample Number	Tested Material Description	Photo
001	White soft plastic cable jacket	
002	Red soft plastic wire jacket	
003	Black soft plastic wire jacket	
004	Copper-colored metal wire	
005	White soft plastic plug cover	
006	Silvery metal cover	
007	White plastic pedestal	
008	Golden metal pin	
009	Silvery metal solder	
010	Silvery metal cover	

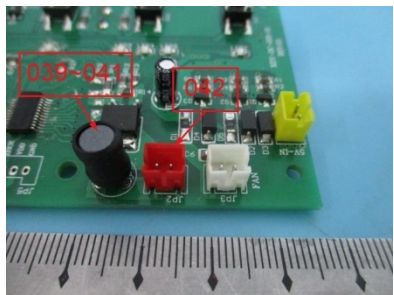
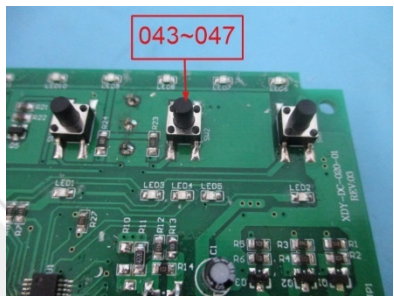
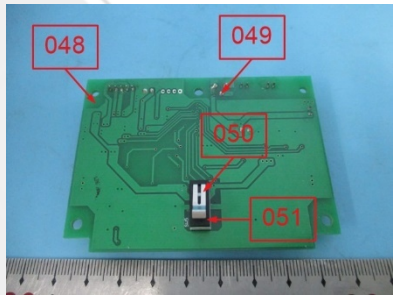
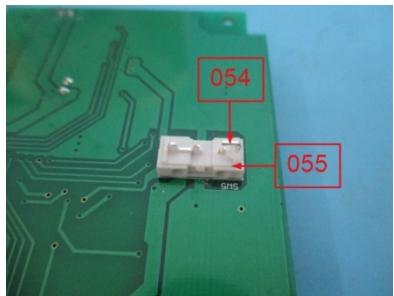
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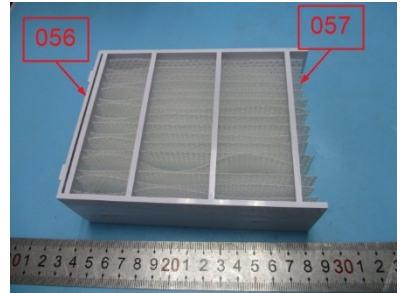
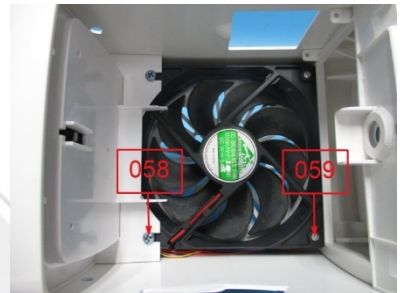
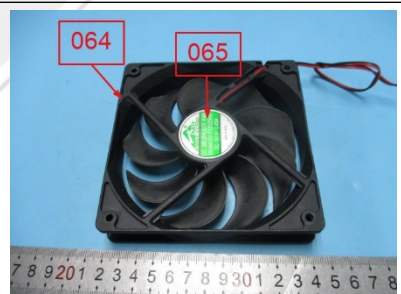
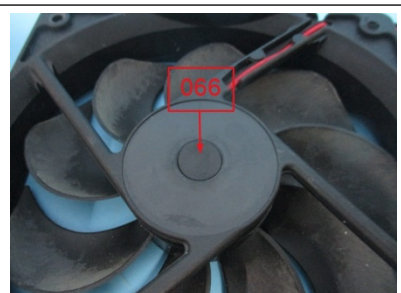
Sample Number	Tested Material Description	Photo
011	Black plastic pedestal	
012	Silvery metal pin	
013	Silvery metal pin	
014	Grey plastic net	
015	White plastic shell	
016	Grey plastic holder	
017	White plastic part	
018	Grey soft plastic stopper	
019	Black adhesive foam	
020	Silvery metal screw	

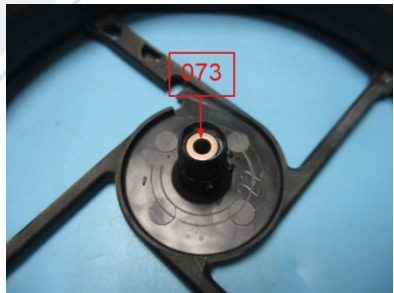
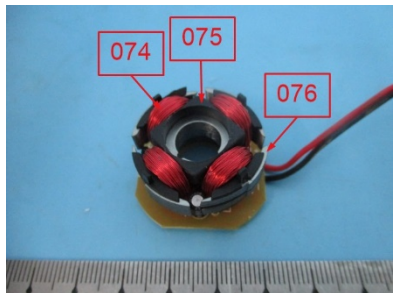
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Sample Number	Tested Material Description	Photo
021	Grey plastic button	
022	Black plastic cover with white printing	
023	Silvery metal shell	
024	Black rubber stopper	
025	Brown paper	
026	Grey metal foil	
027	Silvery metal pin	
028	Translucent LED body	
029	Black body	
030	Black body with white printing	
031	Brown body	
032	White plastic pedestal	
033	Silvery metal pin	
034	Black body	
035	Black body	
036	Black body	
037	Black body	
038	Yellow plastic pedestal	

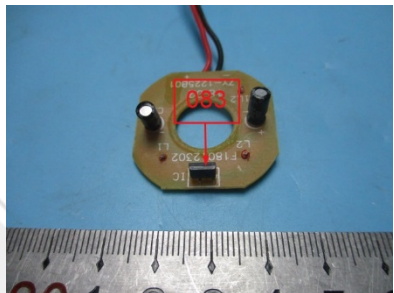
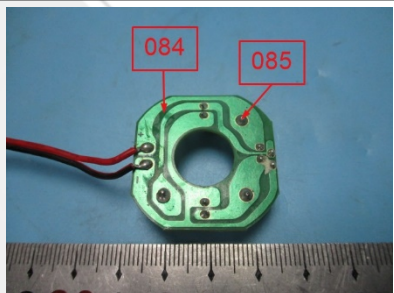
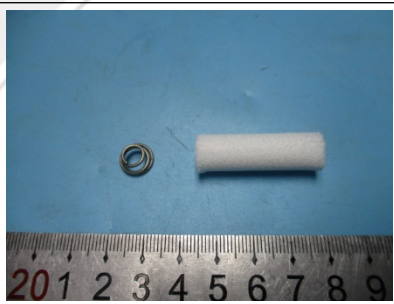
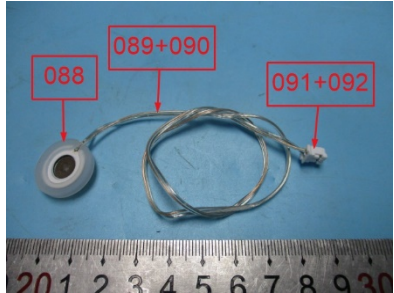
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Sample Number	Tested Material Description	Photo
039	Black soft plastic cover	
040	Black core	
041	Copper-colored metal wire	
042	Red plastic pedestal	
043	Black plastic button	
044	Silvery metal cover	
045	Silvery metal sheet	
046	Black plastic pedestal	
047	Silvery metal pin	
048	Green PCB	
049	Silvery metal solder	
050	Silvery metal sheet	
051	Black plastic cover	
052	White plastic button	
053	Copper-colored metal sheet	
054	Silvery metal pin	
055	White plastic pedestal	

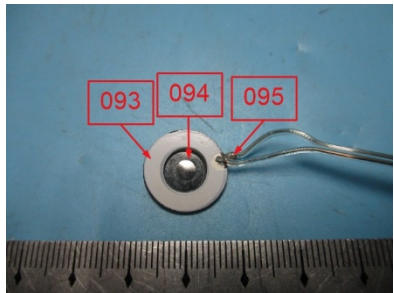
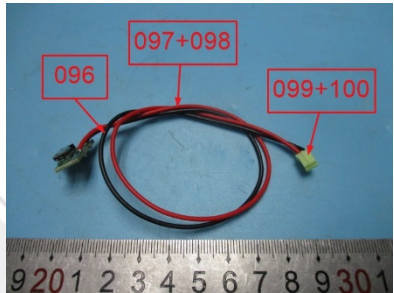
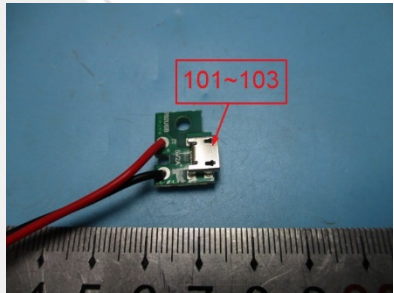
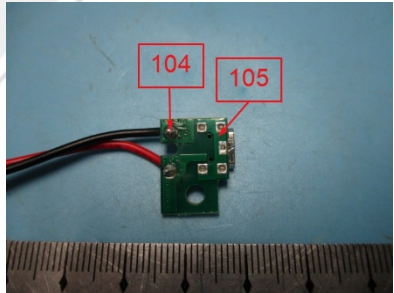
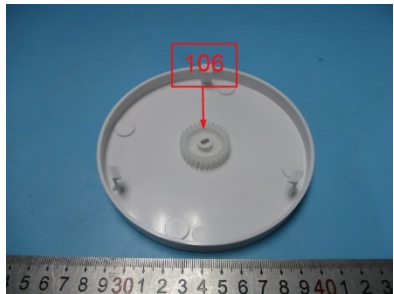
Sample Number	Tested Material Description	Photo
056	White plastic frame	
057	White fabric	
058	Lt blue metal screw	
059	Silvery metal screw	
060	Red soft plastic wire jacket with black printing	
061	Silvery metal wire	
062	White plastic pedestal	
063	Silvery metal pin	
064	Black plastic pedestal	
065	Silvery adhesive label with black/green printing	
066	Black soft plastic sheet	

Sample Number	Tested Material Description	Photo
067	White plastic jump ring	
068	Black plastic flabellum	
069	Silvery metal pin	
070	Red soft plastic ring	
071	Silvery metal ring	
072	Black magnet	
073	Copper-colored metal ring	
074	Red metal wire	
075	Black plastic part	
076	Silvery metal pedestal	

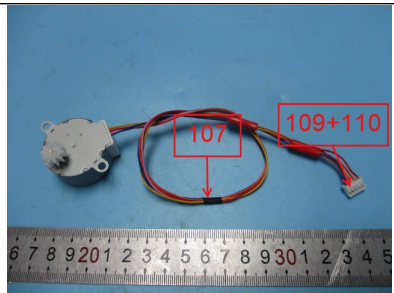
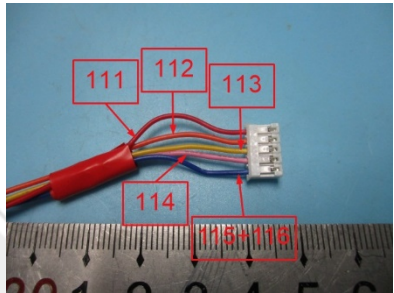
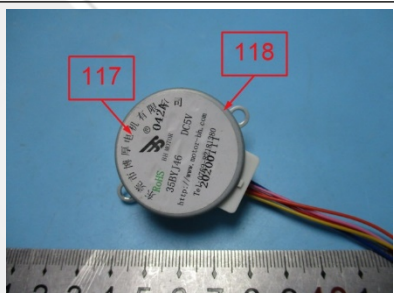
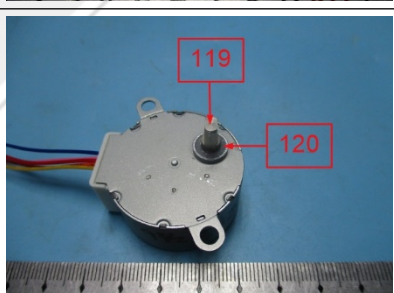
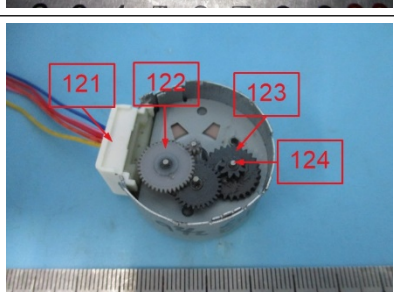
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Sample Number	Tested Material Description	Photo
077	Black plastic cover with white printing	
078	Silvery metal shell	
079	Black rubber stopper	
080	Brown paper	
081	Grey metal foil	
082	Silvery metal pin	
083	Black body	
084	Green PCB	
085	Silvery metal solder	
086	Silvery metal spring	
087	White fabric	
088	Translucent soft plastic part	
089	Translucent soft plastic wire jacket	
090	Copper-colored metal wire	
091	White/black plastic pedestal	
092	Silvery metal pin	

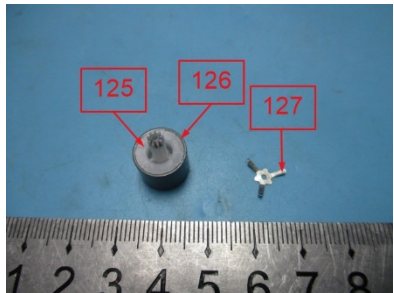
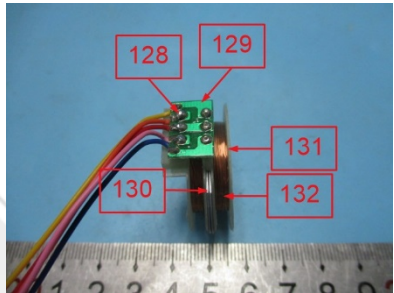
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Sample Number	Tested Material Description	Photo
093	White ceramic sheet	
094	Silvery metal sheet	
095	Silvery metal solder	
096	Black soft plastic wire jacket	
*097	Red soft plastic wire jacket	
098	Silvery metal wire	
099	Lt yellow plastic pedestal	
100	Silvery metal pin	
101	Silvery metal cover	
102	Black plastic pedestal	
103	Silvery metal pin	
104	Silvery metal solder	
105	Green PCB	
106	White plastic gear	

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Sample Number	Tested Material Description	Photo
107	Black adhesive tape	
109	White plastic pedestal	
110	Silvery metal pin	
111	Red soft plastic wire jacket	
112	Orange soft plastic wire jacket	
113	Yellow soft plastic wire jacket	
114	Pink soft plastic wire jacket	
115	Blue soft plastic wire jacket	
116	Silvery metal wire	
117	White adhesive label with black printing	
118	Silvery metal shell	
119	Silvery metal pin	
120	White plastic ring	
121	white plastic cover	
122	Grey metal gear	
123	Black metal gear	
124	Silvery metal pin	

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Sample Number	Tested Material Description	Photo
125	White plastic part	
126	Grey magnet	
127	Silvery metal part	
128	Silvery metal solder	
129	Green PCB	
130	Silvery metal part	
131	Beige plastic pedestal	
132	Copper-colored metal wire	
133	Silvery metal gasket	

Remark: * means the retest sample was provided by client on 2020-05-13.

2. TEST RESULTS

2.1. SCREENING TEST

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

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
001	BL	BL	BL	BL	BL	BL	BL	BL	BL
002	BL	BL	BL	BL	BL	BL	BL	BL	BL
003	BL	BL	BL	BL	BL	BL	BL	BL	BL
004	BL	BL	BL	BL	NA	NA	NA	NA	NA
005	BL	BL	BL	BL	BL	BL	BL	BL	BL
006	BL	BL	BL	BL	NA	NA	NA	NA	NA
007	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	BL	BL	BL	BL	NA	NA	NA	NA	NA
009	BL	BL	BL	BL	NA	NA	NA	NA	NA
010	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
011	BL	BL	BL	BL	BL	BL	BL	BL	BL
012	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
013	BL	BL	BL	BL	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	NA	NA	NA	NA	NA
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	BL	BL	BL	BL	BL
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	BL	BL	BL	BL	BL

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

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
061	BL	BL	BL	BL	NA	NA	NA	NA	NA
062	BL	BL	BL	BL	BL	BL	BL	BL	BL
063	BL	BL	BL	BL	NA	NA	NA	NA	NA
064	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
065	BL	BL	BL	BL	BL	BL	BL	BL	BL
066	BL	BL	BL	BL	BL	BL	BL	BL	BL
067	BL	BL	BL	BL	BL	BL	BL	BL	BL
068	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
069	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
070	BL	BL	BL	BL	BL	BL	BL	BL	BL
071	BL	BL	BL	BL	NA	NA	NA	NA	NA
072	BL	BL	BL	BL	BL	BL	BL	BL	BL
073	BL	BL	BL	BL	NA	NA	NA	NA	NA
074	BL	BL	BL	BL	NA	NA	NA	NA	NA
075	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
076	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
077	BL	BL	BL	BL	BL	BL	BL	BL	BL
078	BL	BL	BL	BL	NA	NA	NA	NA	NA
079	BL	BL	BL	BL	BL	BL	BL	BL	BL
080	BL	BL	BL	BL	BL	BL	BL	BL	BL
081	BL	BL	BL	BL	NA	NA	NA	NA	NA
082	BL	BL	BL	BL	NA	NA	NA	NA	NA
083	BL	BL	BL	BL	BL	BL	BL	BL	BL
084	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
085	BL	BL	BL	BL	NA	NA	NA	NA	NA
086	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
087	BL	BL	BL	BL	BL	BL	BL	BL	BL
088	BL	BL	BL	BL	BL	BL	BL	BL	BL
089	BL	BL	BL	BL	BL	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)
090	BL	BL	BL	BL	NA	NA	NA	NA	NA
091	BL	BL	BL	BL	BL	BL	BL	BL	BL
092	BL	BL	BL	BL	NA	NA	NA	NA	NA

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
093	BL	BL	BL	OL ^(e)	BL	BL	BL	BL	BL
094	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
095	BL	BL	BL	BL	NA	NA	NA	NA	NA
096	BL	BL	BL	BL	BL	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)
097 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
098	BL	BL	BL	BL	NA	NA	NA	NA	NA
099	BL	BL	BL	BL	BL	BL	BL	BL	BL
100	BL	BL	BL	BL	NA	NA	NA	NA	NA
101	BL	BL	BL	BL	NA	NA	NA	NA	NA
102	BL	BL	BL	BL	BL	BL	BL	BL	BL
103	BL	BL	BL	BL	NA	NA	NA	NA	NA
104	BL	BL	BL	BL	NA	NA	NA	NA	NA
105	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
106	BL	BL	BL	BL	BL	BL	BL	BL	BL
107	BL	BL	BL	BL	BL	BL	BL	BL	BL
109	BL	BL	BL	BL	BL	BL	BL	BL	BL
110	BL	BL	BL	BL	NA	NA	NA	NA	NA
111	BL	BL	BL	BL	BL	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)
112	BL	BL	BL	BL	BL	BL	BL	BL	BL
113	BL	BL	BL	BL	BL	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)	Inc. ^(a)
114	BL	BL	BL	BL	BL	BL	BL	BL	BL
115	BL	BL	BL	BL	BL	BL	BL	BL	BL
116	BL	BL	BL	BL	NA	NA	NA	NA	NA
117	BL	BL	BL	BL	BL	BL	BL	BL	BL
118	BL	BL	BL	BL	NA	NA	NA	NA	NA
119	BL	BL	BL	BL	NA	NA	NA	NA	NA
120	BL	BL	BL	BL	BL	BL	BL	BL	BL
121	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
122	BL	Inc. ^(a)	BL	BL	BL	BL	BL	BL	BL
123	BL	BL	BL	BL	NA	NA	NA	NA	NA
124	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
125	BL	BL	BL	BL	BL	BL	BL	BL	BL

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
126	BL	BL	BL	BL	BL	BL	BL	BL	BL
127	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
128	BL	BL	BL	BL	NA	NA	NA	NA	NA
129	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
130	BL	BL	BL	BL	NA	NA	NA	NA	NA
131	BL	BL	BL	BL	BL	BL	BL	BL	BL
132	BL	BL	BL	BL	NA	NA	NA	NA	NA
133	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA

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.
- “(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*”
- “○” means the retest result

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

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

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

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X < (50-3\sigma)$	$(50-3\sigma) < X < (150+3\sigma)$	$X > (150+3\sigma)$
Pb	$X < (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X > (1500+3\sigma)$
Hg	$X < (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X > (1500+3\sigma)$
Br	$X < (250-3\sigma)$	$X > (250-3\sigma)$	NA
Cr	$X < (500-3\sigma)$	$X > (500-3\sigma)$	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 62321-4:2017/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 UV-Vis spectrophotometer. [Reporting Limit: 2 mg/kg for Cadmium; 10 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10 mg/kg for Lead and Mercury.]

Sample No.	Result				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
010	--	/	Negative	--	--
012	--	/	Negative	--	--
030	--	<10	/	--	--
050	--	/	Negative	--	--
058	--	/	Negative	--	--
059	--	/	Negative	--	--
069	--	/	Negative	--	--
076	--	/	Negative	--	--
086	--	/	Negative	--	--
094	--	/	Negative	--	--
122	--	/	Negative	--	--
124	--	/	Negative	--	--
127	--	/	Negative	--	--
133	--	/	Negative	--	--
Unit	mg/kg	mg/kg	µg/cm ²	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
- “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

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 Spectrometry (GC-MS). [Reporting Limit: 5 mg/kg]

Test Item		Result [mg/kg]		RoHS Requirement [mg/kg]
		Sample 029+031+036	Sample 048+084	
PBBs	Monobromobiphenyl	< 5	< 5	Sum of PBBs 1000
	Dibromobiphenyl	< 5	< 5	
	Tribromobiphenyl	< 5	< 5	
	Tetrabromobiphenyl	< 5	< 5	
	Pentabromobiphenyl	< 5	< 5	
	Hexabromobiphenyl	< 5	< 5	
	Heptabromobiphenyl	< 5	< 5	
	Octabromobiphenyl	< 5	< 5	
	Nonabromobiphenyl	< 5	< 5	
	Decabromobiphenyl	< 5	< 5	
	Sum of PBBs	< 5	< 5	
PBDEs	Monobromodiphenyl Ether	< 5	< 5	Sum of PBDEs 1000
	Dibromodiphenyl Ether	< 5	< 5	
	Tribromodiphenyl Ether	< 5	< 5	
	Tetrabromodiphenyl Ether	< 5	< 5	
	Pentabromodiphenyl Ether	< 5	< 5	
	Hexabromodiphenyl Ether	< 5	< 5	
	Heptabromodiphenyl Ether	< 5	< 5	
	Octabromodiphenyl Ether	< 5	< 5	
	Nonabromodiphenyl Ether	< 5	< 5	
	Decabromodiphenyl Ether	< 5	< 5	
	Sum of PBDEs	< 5	< 5	

Note:

- “mg/kg” denotes milligram per kilogram
- “<” denotes less than

(Continued)

Test Item		Result [mg/kg]		RoHS Requirement [mg/kg]
		Sample 064+068	Sample 075+121	
PBBs	Monobromobiphenyl	< 5	< 5	Sum of PBBs 1000
	Dibromobiphenyl	< 5	< 5	
	Tribromobiphenyl	< 5	< 5	
	Tetrabromobiphenyl	< 5	< 5	
	Pentabromobiphenyl	< 5	< 5	
	Hexabromobiphenyl	< 5	< 5	
	Heptabromobiphenyl	< 5	< 5	
	Octabromobiphenyl	< 5	< 5	
	Nonabromobiphenyl	< 5	< 5	
	Decabromobiphenyl	< 5	< 5	
	Sum of PBBs	< 5	< 5	
PBDEs	Monobromodiphenyl Ether	< 5	< 5	Sum of PBDEs 1000
	Dibromodiphenyl Ether	< 5	< 5	
	Tribromodiphenyl Ether	< 5	< 5	
	Tetrabromodiphenyl Ether	< 5	< 5	
	Pentabromodiphenyl Ether	< 5	< 5	
	Hexabromodiphenyl Ether	< 5	< 5	
	Heptabromodiphenyl Ether	< 5	< 5	
	Octabromodiphenyl Ether	< 5	< 5	
	Nonabromodiphenyl Ether	10	< 5	
	Decabromodiphenyl Ether	51	< 5	
	Sum of PBDEs	61	< 5	

Note:

- “mg/kg” denotes miligram per kilogram
- “<” denotes less than

(Continued)

Test Item		Result [mg/kg]	RoHS Requirement [mg/kg]
		Sample 105+129	
PBBs	Monobromobiphenyl	< 5	Sum of PBBs 1000
	Dibromobiphenyl	< 5	
	Tribromobiphenyl	< 5	
	Tetrabromobiphenyl	< 5	
	Pentabromobiphenyl	< 5	
	Hexabromobiphenyl	< 5	
	Heptabromobiphenyl	< 5	
	Octabromobiphenyl	< 5	
	Nonabromobiphenyl	< 5	
	Decabromobiphenyl	< 5	
	Sum of PBBs	< 5	
PBDEs	Monobromodiphenyl Ether	< 5	Sum of PBDEs 1000
	Dibromodiphenyl Ether	< 5	
	Tribromodiphenyl Ether	< 5	
	Tetrabromodiphenyl Ether	< 5	
	Pentabromodiphenyl Ether	< 5	
	Hexabromodiphenyl Ether	< 5	
	Heptabromodiphenyl Ether	< 5	
	Octabromodiphenyl Ether	< 5	
	Nonabromodiphenyl Ether	< 5	
	Decabromodiphenyl Ether	< 5	
	Sum of PBDEs	< 5	

Note:

- “mg/kg” denotes miligram per kilogram
- “<” denotes less than

2.4. PHTHALATES (DEHP, BBP, DBP and DIBP) CONTENT TEST

Test method: With reference to EN 62321-8:2017, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS). [Reporting limit: 100 mg/kg]

Test Item	Result [mg/kg]		RoHS Requirement [mg/kg]
	Sample 060+089	Sample 096	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	< 100	< 100	1000
Butyl-benzyl Phthalate (BBP)	< 100	< 100	1000
Di-butyl Phthalate (DBP)	455	105	1000
Di-iso-butyl Phthalate (DIBP)	< 100	< 100	1000

Test Item	Result [mg/kg]		RoHS Requirement [mg/kg]
	Sample 111	Sample 113	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	760	200	1000
Butyl-benzyl Phthalate (BBP)	< 100	< 100	1000
Di-butyl Phthalate (DBP)	< 100	< 100	1000
Di-iso-butyl Phthalate (DIBP)	< 100	< 100	1000

Note:

- “mg/kg” denotes miligram per kilogram
- “<” denotes less than

3. REMARK

The chemical testing was performed in TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Chemical lab and the test results were reviewed at TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch.

APPENDIX I: Summary of Limits and test standards

RoHS requirement according to directive 2011/65/EU and its amendment (EU) 2015/863:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Hexavalent Chromium (Cr6+)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Phthalates (DEHP, BBP, DBP, DIBP)	0.1% (1000 mg/kg) each

Test Standards and Reporting limits:

Reference Standards	Testing Items	Analytical instrument	Reporting Limit
EN 62321-1:2013 (IEC 62321-1:2013)	Introduction and overview	---	---
EN 62321-2:2014 (IEC 62321-2:2013)	Disassembly, disjointment and mechanical sample preparation	---	---
EN 62321-3-1: 2014 (IEC 62321-3-1: 2013)	Cadmium (Cd), total Chromium (Cr), Mercury (Hg), Lead (Pb), Bromine (Br)	Energy Dispersive X-ray Fluorescence Spectrometers (XRF)	---
EN 62321-4:2014 /A1:2017 (IEC 62321-4:2013/A1:2017)	Mercury (Hg)	Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)	10 mg/kg
EN 62321-5:2014 (IEC 62321-5:2013)	Cadmium (Cd)	Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)	2 mg/kg
	Total Chromium (Cr), Mercury (Hg), Lead (Pb)		10 mg/kg
EN 62321-6:2015 (IEC 62321-6:2015)	Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)	Gas Chromatography and Mass Spectrometry (GC-MS)	100 mg/kg
EN 62321-7-1: 2015 (IEC 62321-7-1:2015)	Hexavalent Chromium (Cr6+)	Ultraviolet–visible spectrophotometer (UV- Vis)	0.10 µg/cm ²
EN 62321-7-2: 2017 (IEC 62321-7-2:2017)	Hexavalent Chromium (Cr6+)		10 mg/kg
EN 62321-8:2017 (IEC 62321-8:2017)	Phthalates (DEHP, BBP, DBP, DIBP)	Gas Chromatography and Mass Spectrometry (GC-MS)	100 mg/kg

APPENDIX II:

Photos of submitted products

