TEST REPORT

APPLICANT	:	Envertech (Shanghai) Corporation Ltd.
ADDRESS	:	Room 401，Block 1 No.138 XinjunhuanRoad, Minhang District, Shanghai, China
SAMPLE DESCRIPTION	:	Micro Inverter
TEST ITEM NO.	:	EVT450
REFERENCE ITEM NO.	:	EVT300/EVT350/EVT360/EVT400/EVT500/EVT560/EVT600/ EVT660/EVT700/EVT720/EVT800/EVT1000/EVT1100/ EVT1200/EVT1300/EVT1400/EVT1500/EVT1600/EVT1700/ EVT1800/EVT1900/EVT2000/EVT2400/EVT800SE/ EVT1600SE/EVT1800SE/EVT2000SE/ EVB300/EVBS
BRAND NAME	:	ENVERTECH
SAMPLE RECEIVED DATE	:	26-Apr-2024
TURN AROUND TIME	:	26-Apr-2024 to 17-Jun-2024
REVISED DATE	:	22-Jul-2024
TEST SPECIFICATION	:	Total concentration of Lead, Cadmium, Mercury, Chromium VI, Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs) , Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP) , Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) in accordance with EC Directive 2011/65/EU and its amendment Directive (EU) 2015/863 (RoHS)
CONCLUSION	:	Based on the analysis on the selected components of the submitted product, the test results do comply with the concentration limits as specified in Annex II to Directive 2011/65/EU and its amendment Directive (EU) 2015/863

The reference item(s) has not been tested in current report, but according to applicant´s request, the item number has also been included.

The following test item(s) was/were performed on submitted sample(s) and/or component(s) confirmed by applicant.

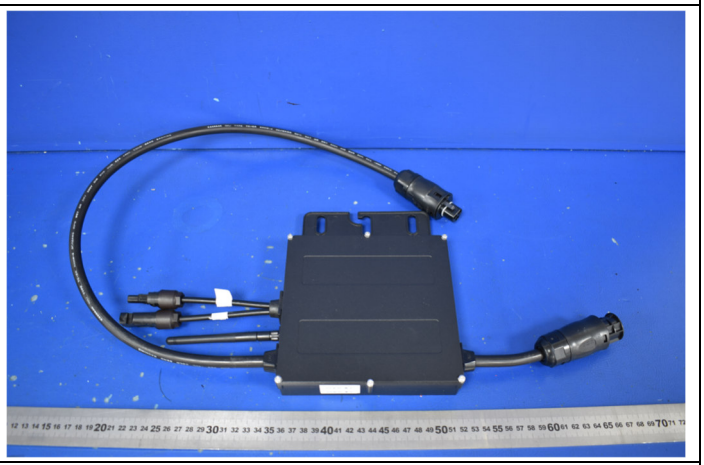
Note : This report cancels and supersedes report number EFW524046597-CG-01 issued on Jun 17th, 2024.
Modification description: as per client's request, submit component No.90 for RoHS test in the revised report.

********** FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S) **********

Signed for and on behalf of
Eurofins MTS Consumer Product Testing (Shanghai) Co., Ltd.

Vivian Gu
Lab Director

SAMPLE PHOTO(S)



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EFW524046597-CG-01+Rev 1

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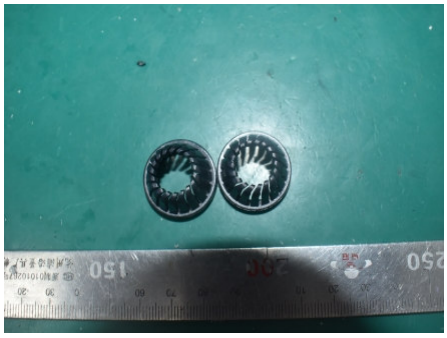
COMPONENT PHOTO(S)



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COMPONENT PHOTO(S)

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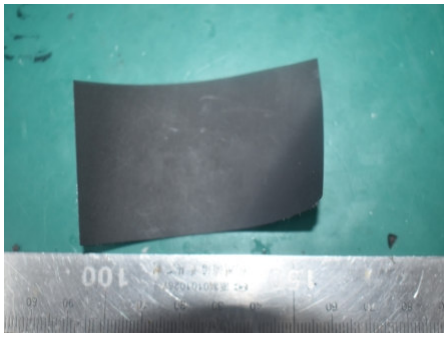

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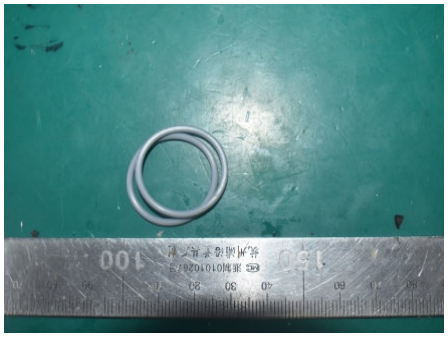

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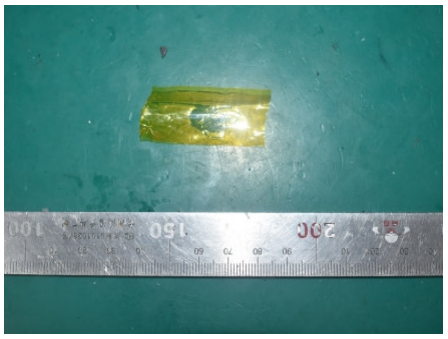

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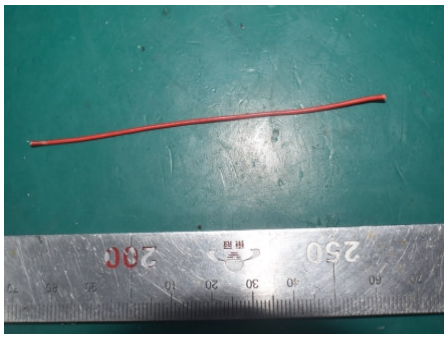

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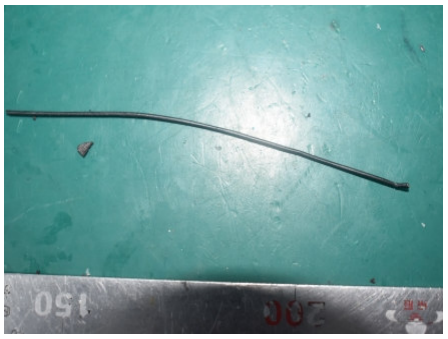

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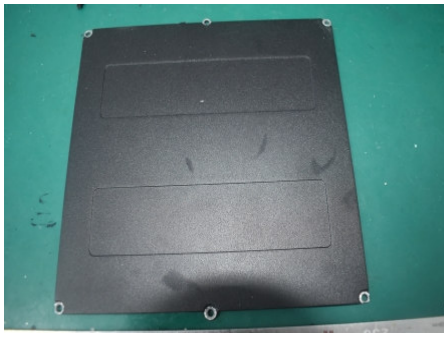

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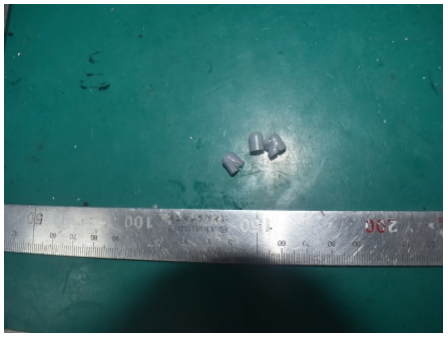

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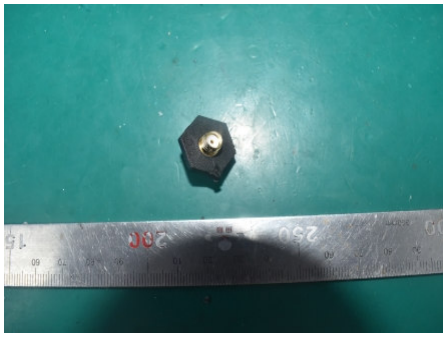

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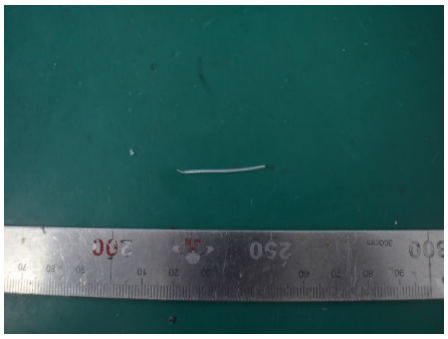

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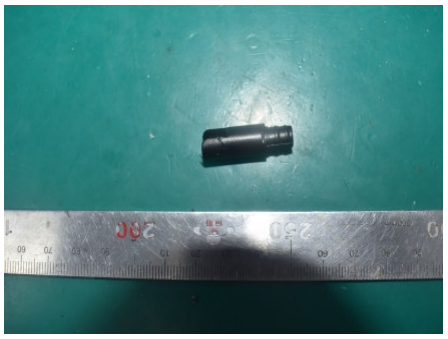

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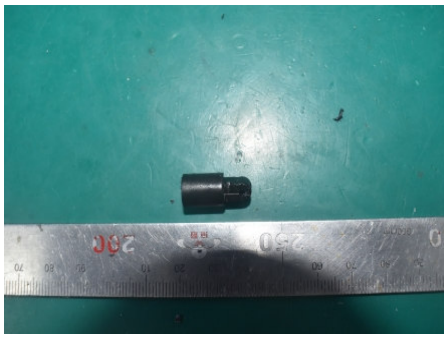

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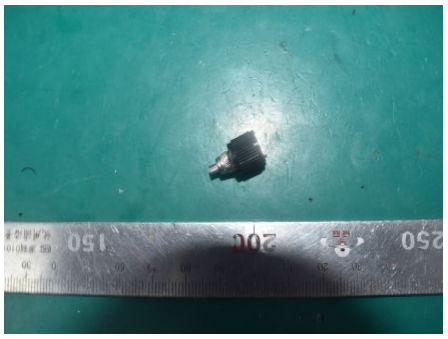

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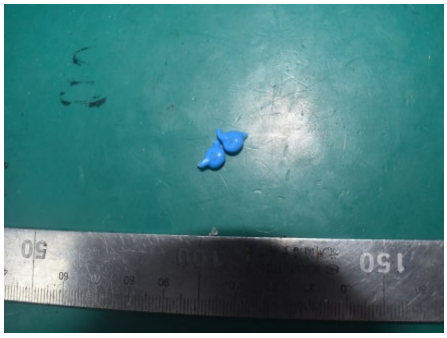

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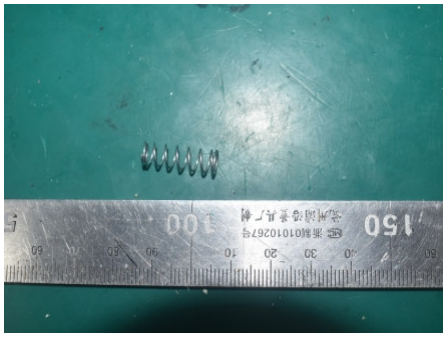

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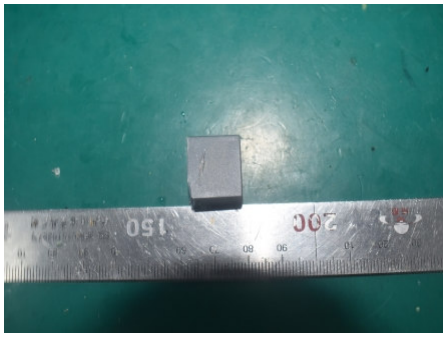

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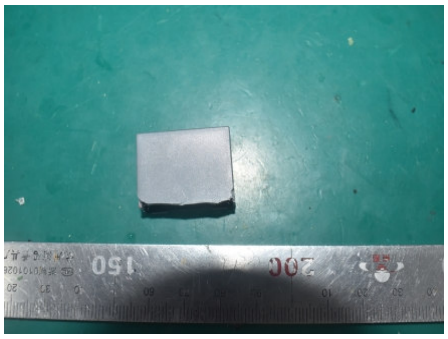

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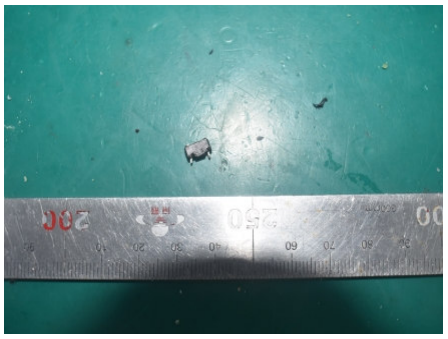

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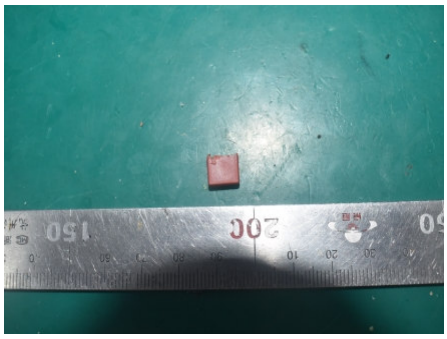

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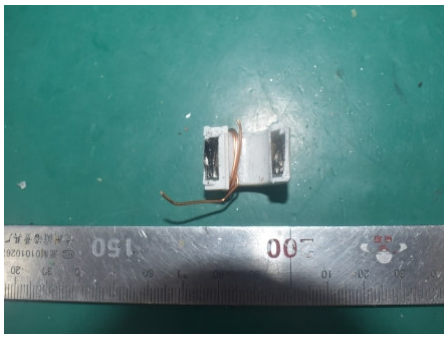

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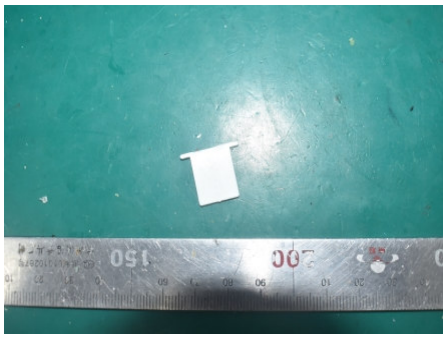

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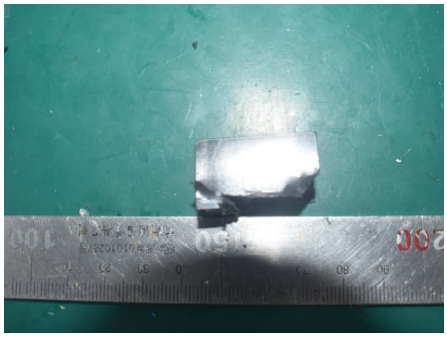

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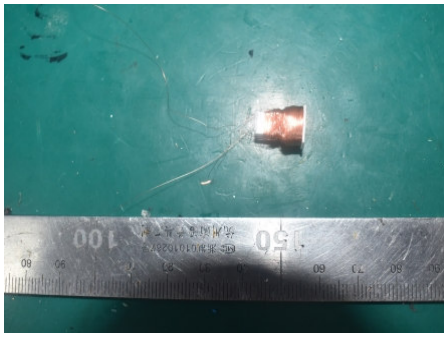

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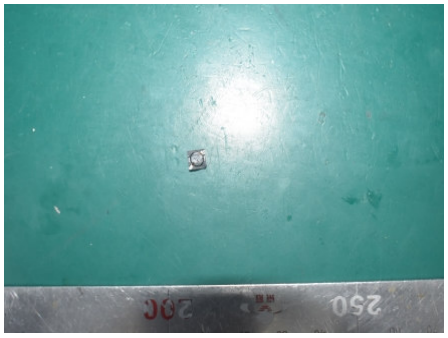

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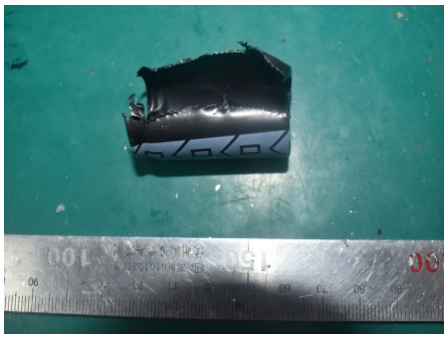

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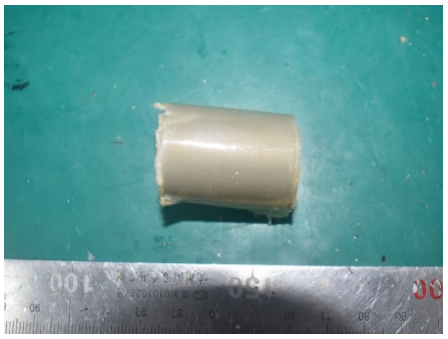

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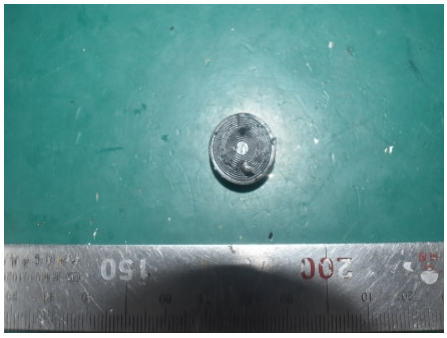

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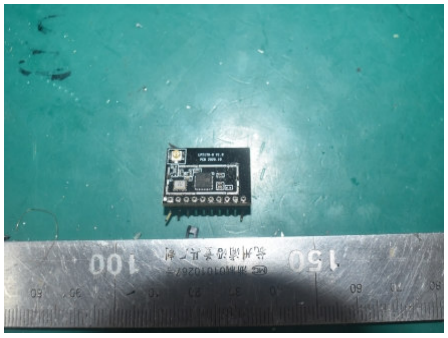

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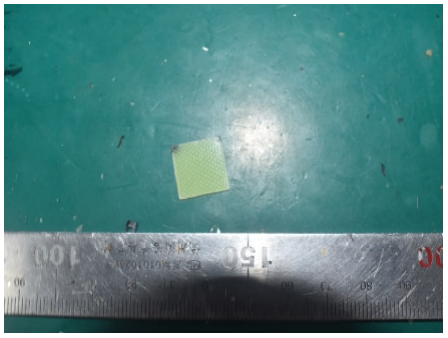

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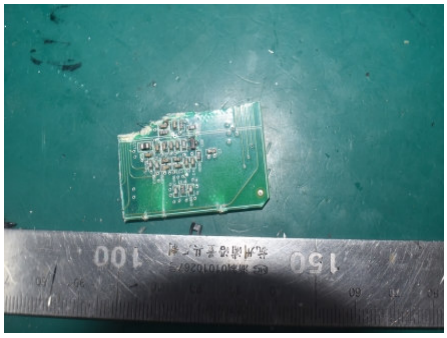

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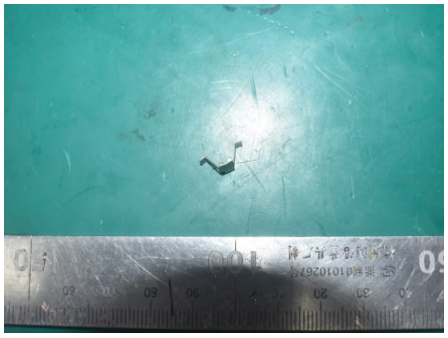

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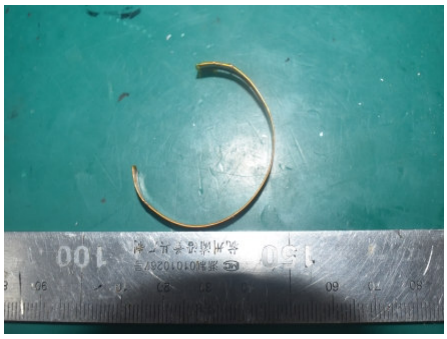

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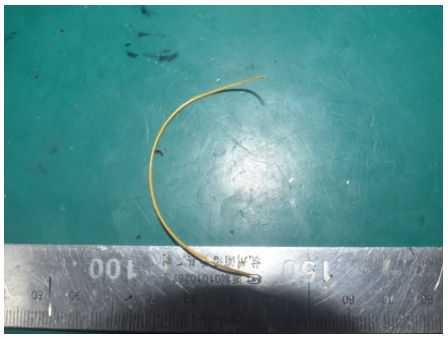

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COMPONENT PHOTO(S)

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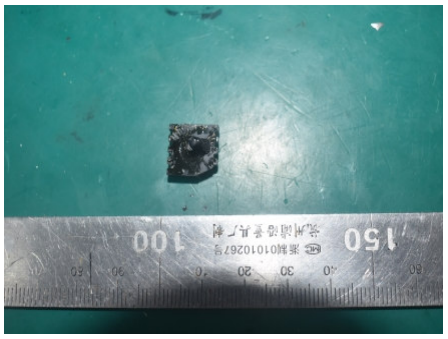

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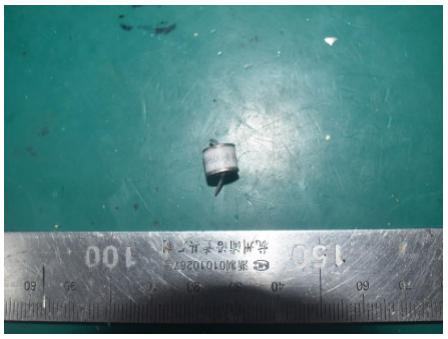

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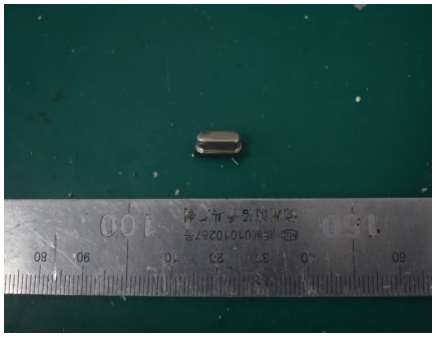

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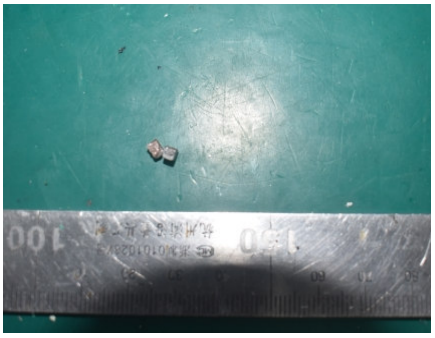

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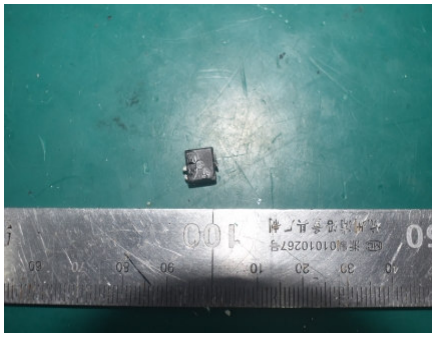

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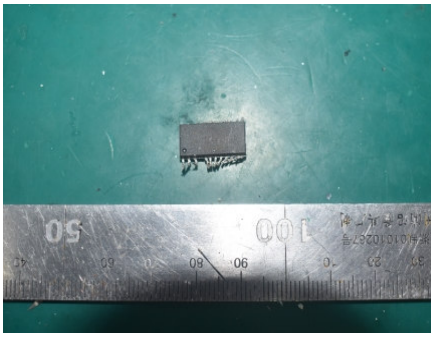

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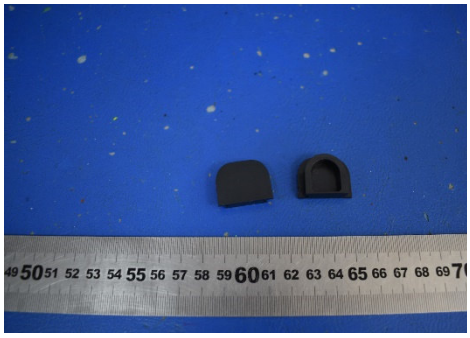

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TO BE CONTINUED

TEST RESULT

Part 1

A. Screening Test by XRF Spectroscopy

As specified by client, to analyze the contents of Lead, Cadmium, Mercury, Chromium, Bromine in the submitted sample by XRF. Screening limits in mg/kg for regulated elements in various matrices according to IEC 62321-3-1:2013

No.	Component	Test Results (mg/kg)				
		Cd	Pb	Hg	Cr	Br
		Limit (mg/kg)				
		100	1000	1000	Cr(VI): 1000	PBB:1000 PBDE:1000
1	Black plastic 1	BL	BL	BL	BL	BL
2	Black plastic 2	BL	BL	BL	BL	BL
3	Black plastic 3	BL	BL	BL	BL	BL
4	Black plastic 4	BL	BL	BL	BL	BL
5	Black plastic 5	BL	BL	BL	BL	BL
6	Black plastic 6	BL	BL	BL	BL	BL
7	Black plastic 7	BL	BL	BL	BL	BL
8	Black plastic 8	BL	BL	BL	BL	BL
9	Black plastic 9	BL	BL	BL	BL	BL
10	Black plastic 10	BL	BL	BL	BL	BL
11	Black plastic 11	BL	BL	BL	BL	BL
12	Black plastic 12	BL	BL	BL	BL	BL
13	Black plastic 13	BL	BL	BL	BL	BL
14	Colored adhesive tape with red printing	BL	BL	BL	BL	BL
15	Color adhesive tape with black printing	BL	BL	BL	BL	BL
16	Black soft plastic sheet	BL	BL	BL	BL	BL
17	Grey soft plastic circle 1	BL	BL	BL	BL	BL
18	Grey Soft Plastic 2	BL	BL	BL	BL	BL
19	Grey soft plastic sleeve	BL	BL	BL	BL	BL
20	Black plastic 14	BL	BL	BL	BL	BL
21	Semi transparent yellow soft plastic	BL	BL	BL	BL	BL
22	Black soft plastic sleeve	BL	BL	BL	BL	BL
23	Red wire skin	BL	BL	BL	BL	BL
24	Black wire skin	BL	BL	BL	BL	BL
25	Black soft plastic leather 1	BL	BL	BL	BL	BL
26	Silver metal with black coating removed	BL	BL	BL	BL	BL
27	Grey plastic	BL	BL	BL	BL	BL
28	Transparent wire sheath 1	BL	BL	BL	BL	BL
29	Black wrapping leather	BL	BL	BL	BL	BL
30	Black plastic 15	BL	BL	BL	BL	BL
31	Black plastic 16	BL	BL	BL	BL	BL
32	Transparent wire sheath 2	BL	BL	BL	BL	BL
33	Black plastic 17	BL	BL	BL	BL	BL
34	Brown wire skin	BL	BL	BL	BL	BL
35	Black plastic 18	BL	BL	BL	BL	BL
36	Black plastic 19	BL	BL	BL	BL	BL
37	Blue plastic electrical components	BL	BL	BL	BL	BL
38	Green plastic electrical components	BL	BL	BL	NC	BL
39	Silver metal spring	BL	BL	BL	BL	NA

TO BE CONTINUED

TEST RESULT

No.	Component	Test Results (mg/kg)				
		Cd	Pb	Hg	Cr	Br
		Limit (mg/kg)				
		100	1000	1000	Cr(VI): 1000	PBB:1000 PBDE:1000
40	Grey plastic 1	BL	BL	BL	BL	NC
41	Grey plastic 2	BL	BL	BL	BL	NC
42	Grey plastic 3	BL	BL	BL	BL	NC
43	Grey plastic 4	BL	BL	BL	BL	NC
44	Grey plastic 5	BL	BL	BL	BL	BL
45	Black plastic inside wine red plastic	BL	BL	BL	BL	BL
46	Wine red plastic	BL	BL	BL	BL	NC
47	White plastic 1	BL	BL	BL	BL	NC
48	White plastic 2	BL	BL	BL	BL	NC
49	Black plastic on the circuit board	BL	BL	BL	BL	NC
50	White plastic is inside black plastic	BL	BL	BL	BL	NC
51	Silver metal plate 1	BL	BL	BL	BL	NA
52	Silver metal strip	BL	BL	BL	BL	NA
53	Black insulation block 1	BL	BL	BL	BL	NA
54	Yellow green wire sheath	BL	BL	BL	BL	BL
55	Rose red wire skin	BL	BL	BL	BL	BL
56	Black wire wrapped leather 2	BL	BL	BL	BL	BL
57	Black wire wrapping leather 3	BL	BL	BL	BL	BL
58	Yellow soft plastic	BL	BL	BL	BL	BL
59	Black soft plastic strip with white coating	BL	BL	BL	BL	BL
60	Beige soft plastic	BL	BL	BL	BL	BL
61	Black soft plastic pad	BL	BL	BL	BL	BL
62	Circuit board 1	BL	BL	BL	BL	NC
63	Green plastic	BL	BL	BL	BL	NC
64	Circuit board 2	BL	BL	BL	BL	NC
65	Silver metal plate 2	BL	BL	BL	BL	NA
66	Silver metal plug 1	BL	$1.08x10^4$ (*2)	BL	BL	NA
67	Silver metal plug 2	BL	BL	BL	BL	NA
68	Silver metal plug 3	BL	BL	BL	BL	NA
69	Gold metal tube	BL	BL	BL	BL	NA
70	Gold metal strip	BL	BL	BL	BL	NA
71	Copper wire	BL	BL	BL	BL	NA
72	Golden metal wire	BL	BL	BL	BL	NA
73	Copper wire 2	BL	BL	BL	BL	NA
74	Silver metal screw 1	BL	BL	BL	NC	NA
75	Silver metal screw 2	BL	BL	BL	BL	NA
76	Aluminum foil	BL	BL	BL	BL	NA
77	Silver metal shell	BL	BL	BL	BL	NA
78	Silver metal joint	BL	BL	BL	BL	NA
79	Silver metal electrical components	BL	BL	BL	BL	NA
80	Grey insulation block	BL	BL	BL	BL	NA
81	Black insulation block 2	BL	BL	BL	BL	NA
82	Green insulation block	BL	BL	BL	BL	NA
83	Soldering	BL	BL	BL	BL	NA
84	White ceramic	BL	BL	BL	BL	NA

TO BE CONTINUED

TEST RESULT

No.	Component	Test Results (mg/kg)				
		Cd	Pb	Hg	Cr	Br
		Limit (mg/kg)				
		100	1000	1000	Cr(VI): 1000	PBB:1000 PBDE:1000
85	Silver metal electrical components 2	BL	BL	BL	BL	NA
86	Brown electrical components	BL	BL	BL	BL	NA
87	Black electrical component 1	BL	BL	BL	BL	NA
88	Black electrical components 2	BL	BL	BL	BL	NA
89	Black electrical components 3	BL	BL	BL	BL	NA
90	Black plastic block	BL	BL	BL	BL	BL

Abbreviation:

Pb	denotes Lead
Cd	denotes Cadmium
Hg	denotes Mercury
Cr	denotes Chromium
Cr(VI)	denotes Chromium(VI)
Br	denotes Bromine
PBBs	denotes Total Polybrominated Biphenyls
PBDEs	denotes Total Polybrominated Diphenyl Ethers
NA	denotes Not Applicable
NC	denotes Not Conclusive
BL	denotes Below limit

XRF Screening limits for different materials:

Element	Polymers	Metals	Composite Material
Cd	BL ≤(70-3σ) ＜X ＜ (130+3σ) ≤ OL	BL ≤ (70-3σ) ＜ X ＜ (130+3σ) ≤OL	LOD＜X＜ (150+3σ) ≤OL
Pb	BL ≤ (700-3σ) ＜X ＜ (1300+3σ) ≤OL	BL ≤ (700-3σ) ＜ X ＜ (1300+3σ) ≤ OL	BL ≤ (500-3σ) ＜ X ＜ (1500+3σ) ≤ OL
Hg	BL ≤ (700-3σ) ＜ X ＜ (1300+3σ) ≤ OL	BL ≤ (700-3σ) ＜ X ＜ (1300+3σ) ≤ OL	BL ≤ (500-3σ) ＜X ＜ (1500+3σ) ≤OL
Br	BL ≤(300-3σ) ＜ X	/	BL ≤ (250-3σ) ＜ X
Cr	BL ≤ (700-3σ) ＜X	BL ≤ (700-3σ) ＜X	BL≤(500-3σ) ＜X

Note:
BL= Below limit
X = The region where further investigation is necessary
OL = Over limit
3σ = The repeatability of the analyzer at the action level
LOD = Limit of detection
As per client's request, only the appointed materials have been tested.
(*2) As a copper alloy containing up to 4% lead by weight (RoHS Exemption 6(c)).

TO BE CONTINUED

TEST RESULT

B. Confirmation Test by Wet Chemistry

Tested Item(s)	Test Method	Measured Equipment	MDL
Lead (Pb) /Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	10 mg/kg
Mercury (Hg)	IEC 62321-4:2013/AMD1:2017	ICP-OES	10 mg/kg
Hexavalent Chromium (Cr(VI))	IEC 62321-7-1:2015	UV-Vis	0.01μg/cm^2
	IEC 62321-7-2:2017		10 mg/kg
Polybrominated Biphenyls （PBBs）	IEC 62321-6:2015	GC-MS	50 mg/kg
Polybrominated DiphenylEthers (PBDEs)			

Component No.	Boiling-water-extraction for Cr(VI) (*1)
74	Negative

Remark:

(*1) The screening result of Chromium (VI) was found in the inconclusive region, Thus the Chromium(VI) content in surface layer have been confirmed with reference to IEC 62321-7-1:2015.
Negative - The Cr(VI) concentration is below 0.10μg/cm^2.The coating is considered a non-Cr(VI) based coating.

Component No.	Test Results (mg/kg)					
	Cd	Pb	Hg	Cr (VI)	PBBs	PBDEs
	Limit (mg/kg)					
	100	1000	1000	1000	1000	1000
38	-	-	-	ND	-	-
40	-	-	-	-	ND	ND
41	-	-	-	-	ND	ND
42	-	-	-	-	ND	ND
43	-	-	-	-	ND	ND
46	-	-	-	-	ND	ND
47	-	-	-	-	ND	ND
48	-	-	-	-	ND	ND
49	-	-	-	-	ND	ND
50	-	-	-	-	ND	ND
62	-	-	-	-	ND	ND
63	-	-	-	-	ND	ND
64	-	-	-	-	ND	ND

Note:

The sample had been dissolved totally tested for Lead, Cadmium, Mercury.
MDL = method detection limit
ND = not detected (<MDL)
mg/kg = ppm = parts per million
μg/cm^2 = micrograms per square centimeter

TO BE CONTINUED

TEST RESULT

Part 2

Diisobutyl phthalate (DIBP), Bis (2- ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP)

Test specification : Total concentration of Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP) , Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) in accordance with EC Directive 2011/65/EU and its amendment Directive (EU) 2015/863 (RoHS)

Test method : IEC 62321-8:2017

Limit : Annex II to Directive 2011/65/EU and its amendment Directive (EU) 2015/863

Component	Test Results (%)			
	DIBP	DEHP	BBP	DBP
	Limit (%)			
	0.1%	0.1%	0.1%	0.1%
1+2+3	ND	ND	ND	ND
4+5+6	ND	ND	ND	ND
7+8+9	ND	ND	ND	ND
10+11+12	ND	ND	ND	ND
13+14+15	ND	ND	ND	ND
16+17+18	ND	ND	ND	ND
19+20+21	ND	ND	ND	ND
22+23+24	ND	ND	ND	ND
25+26+27	ND	ND	ND	ND
28+29+30	ND	ND	ND	ND
31+32+33	ND	ND	ND	ND
34+35+36	ND	ND	ND	ND
37+38	ND	ND	ND	ND
40+41+42	ND	ND	ND	ND
43+44+45	ND	ND	ND	ND
46+47+48	ND	ND	ND	ND
49+50	ND	ND	ND	ND
53+54+55	ND	ND	ND	ND
56+57+58	ND	ND	ND	ND
59+60+61	ND	ND	ND	ND
62+63+64	ND	ND	ND	ND
90	ND	ND	ND	ND

Note:
ND = Not Detected (＜0.005%)
0.1% equals to 1000 mg/kg
As per client's request, only the appointed materials have been tested.
According to client’s request, tests are combination tests. The experimental results are the total result of mixed samples.

END OF THE REPORT