

Test Report

Number : TWNC00579203

Applicant: Sharkoon Taiwan Co., Ltd.
8F-1, No. 646, Section 5
Chongxin Rd., Sanchong Dist.
New Taipei City, Taiwan R.O.C.

Date : Feb 14, 2017

Sample Description:

One (1) group of submitted samples said to be :
Sample Description : SHARK ZONE M52
Date Sample Received : Jan 18, 2017 / Feb 09, 2017
Date Test Started : Jan 18, 2017 / Feb 09, 2017

Test Conducted :

As requested by the applicant, for details please refer to attached pages.

Conclusion:

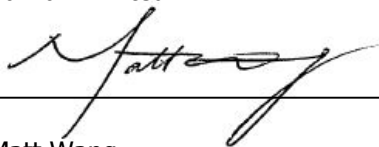
<u>Tested Samples</u>	<u>Standard</u>	<u>Result</u>
Screening components of submitted samples	With reference to test method of IEC 62321 edition 1.0:2013 part 3-1, screening by XRF spectroscopy and chemical confirmation test for RoHS Directive (2011/65/EU)	Pass

Remark:

As requested by the applicant, only components shown in this report were screened by XRF spectroscopy for 2011/65/EU. Other components were not screened in this report.

Chemical confirmation tests were conducted to verify the inconclusive results of XRF tests.

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited



Matt Wang
Sr. Manager



Test Conducted :

XRF Screening Test

Contents of cadmium (Cd), lead (Pb), mercury (Hg), chromium (Cr) and bromine (Br) were measured by XRF spectroscopy. The further wet chemical tests will be conducted if necessary.

Test Result Summary:

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
1	Matt black plastic top cover	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
2	Black plastic button	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		PBBs: ND
		Br	5063			PBDEs: ND
3	Translucent plastic cover with black printing	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
4	Black plastic housing	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		PBBs: ND
		Br	315			PBDEs: ND
5	Black plastic pad	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--



Test Conducted :

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
6	Black plastic base	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
7	Semi-white plastic cover	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
8	Silvery metal screw	Cd	ND		--	
		Pb	277		--	
		Hg	ND		--	
		Cr	317	--		--
		Br	NA			--
9	White plastic insulation film	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
10	Transparent plastic cover	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
11	Wheel - black rubber tire	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--



Test Conducted :

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
12	Wheel - semi-white/black plastic wheel	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			-- --
13	PCBA (X3-A9800 V1.6) [The all tested components were excluded]	Cd	--		ND	
		Pb	--		88	
		Hg	--		ND	
		Cr	--	ND		
		Br	--			PBBs: ND PBDEs: ND
14	Switch - white plastic button	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			-- --
15	Switch - black plastic housing	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			-- --
16	Switch - black plastic base	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			-- --
17	Silvery metal frame	Cd	ND		--	
		Pb	423		--	
		Hg	ND		--	
		Cr	478	--		
		Br	NA			-- --



Test Conducted :

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
18	Blue plastic socket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
19	Black plastic gear	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
20	Silvery metal pin	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	NA			--
21	Crystal - silvery metal cover	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	NA			--
22	Switch - red plastic button	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--
23	Switch - off-white plastic button	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		--
		Br	ND			--



Test Conducted :

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
24	Switch - black plastic housing	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			--
25	Switch - grey plastic base	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			--
26	Black plastic socket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			--
27	USB plug - golden metal frame	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	NA			--
28	USB plug - white plastic socket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND			--
29	USB plug - golden metal pin	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	NA			--



Test Conducted :

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
30	Black/yellow fabric sheath	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	1657			PBBs: ND PBDEs: ND
31	Black cable insulator	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		-- --	
32	Black strain relief hood	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		-- --	
33	Black core ring	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	212	--		
		Br	ND		-- --	
34	Green cable jacket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		-- --	
35	White cable jacket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		-- --	



Test Conducted :

	Tested Component	XRF screening		Chemical testing		
		Element	Result (ppm)	Cr ⁶⁺ (ppm)	Pb/Cd/Hg (ppm)	PBBs/PBDEs (ppm)
36	Black cable jacket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		--	
37	Clear cable jacket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		--	
38	Clear red cable jacket	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	ND	--		
		Br	ND		--	
39	Brass metal wire	Cd	ND		--	
		Pb	ND		--	
		Hg	ND		--	
		Cr	251	--		
		Br	NA		--	

Remarks: ppm = Parts per million = mg/kg
 ND = Not detected and pass, the screened sample is found to be under detection limit of table II.
 NA = Not applicable
 -- = Not tested
 - PCB assembly was ground and randomly selected for test.

Responsibility of Chemist: Pelny Hsiao/ Vita Fu

Date Sample Received : Jan 18, 2017 / Feb 09, 2017

Test Period : Jan 18, 2017 to Feb 07, 2017 / Feb 09, 2017 to Feb 14, 2017



Test Conducted :

Table I: XRF screening limits in mg/kg for regulated elements in various materials.

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	BL ≤ 70 < X < 130 ≤ OL	BL ≤ 70 < X < 130 ≤ OL	BL ≤ 70 < X < 150 ≤ OL
Pb	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 500 < X < 1500 ≤ OL
Hg	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 500 < X < 1500 ≤ OL
Cr	BL ≤ 700 < X	BL ≤ 700 < X	BL ≤ 500 < X
Br	BL ≤ 300 < X	Not Applicable	BL ≤ 250 < X

Remarks: mg/kg = Milligram per kilogram = ppm
 BL = Below Limit
 X = Inconclusive result
 OL = Over Limit

Table II: Estimated detection limits in mg/kg for regulated elements in various matrices.

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not Applicable	200

Disclaimers:

The numerical test data of this XRF screening report is for reference purposes only due to the data variation incurred from various factors as described in next paragraph. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The results shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.



Test Conducted :

Chemical Test Method

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321-4: 2013, by microwave or acid digestion and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content (for non-metal)	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm

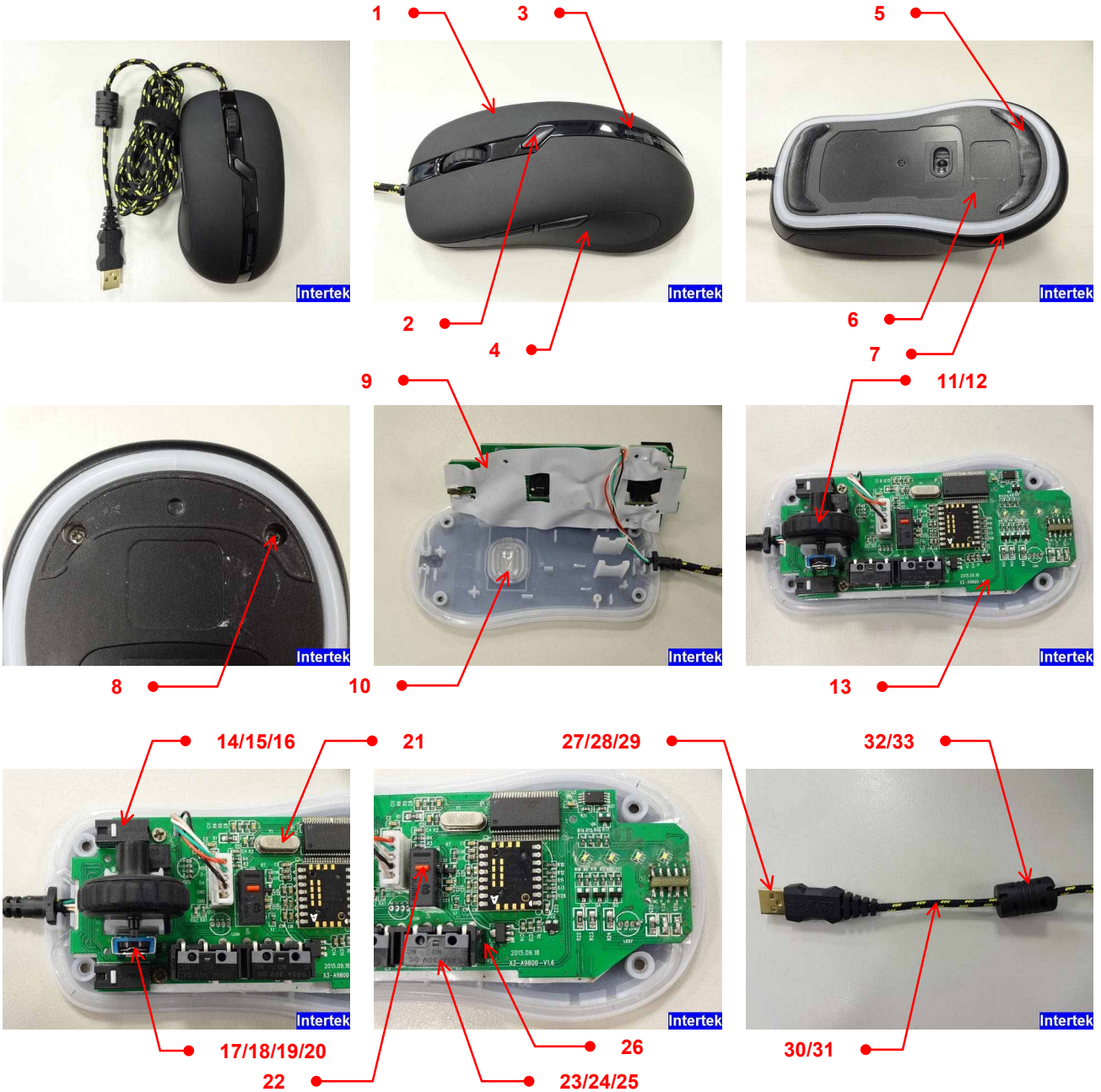
Remark : Reporting Limit = Quantitation limit of analyte in sample

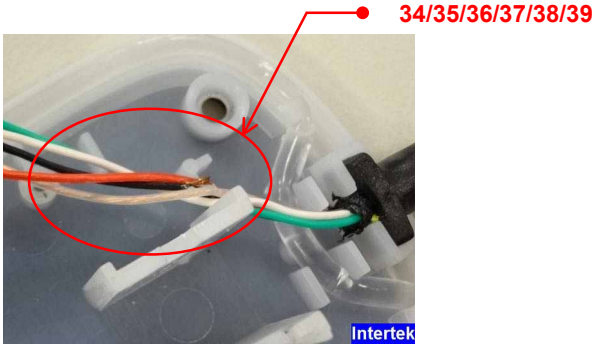
RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 ppm)
Lead (Pb)	0.1% (1000 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.







End of Report

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