

Test Report

Report No.: AGC07777190401-001

Date: Apr.22, 2019

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Applicant: Mid Ocean Brands B.V
Address: 7/F. Kings Tower,111King Lam Street,Cheung Sha Wan. kowloon HK
Test site: 1,6/F,Building 2,No. 1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong, China

Report on the submitted sample(s) said to be:

Sample Name: wireless mouse
Sample Model: MO8117 / LXW-273
Sample Received Date: Apr.11,2019
Testing Period: Apr.11,2019 to Apr.22,2019

Test Requested: Please refer to following page(s).

Test Method: Please refer to following page(s).

Test Result: Please refer to following page(s).

Approved by: 
Liulinwen, Lewis
Technical Director



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Test Requested:

1. As specified by client, to determine the Pb, Cd, Hg, Cr⁶⁺, PBBs, PBDEs content in the submitted sample in accordance with EU RoHS Directive 2011/65/EU(RoHS) and its amendment directives on XRF and Chemical Method.
- 2.As specified by client, to determine the DBP, BBP, DEHP, DIBP content in the submitted sample in accordance with Directive 2011/65/EU (RoHS) and its amendment directive (EU) 2015/863.

Conclusion

Pass

Pass

Test Methods:

A:Screening by X-ray Fluorescence Spectrometry (XRF) :With reference to IEC 62321-3-1:2013 Ed 1.0 Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

B:Chemical test:

Test Item	Test Method	Measuring Instrument	MDL
Cadmium (Cd)	IEC 62321-5:2013 Ed 1.0	ICP-OES	2 mg/kg
Lead (Pb)	IEC 62321-5:2013 Ed 1.0	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4: 2013+A1:2017 Ed 1.1	ICP-OES	2 mg/kg
Non-metal Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-2:2017 Ed 1.0	UV-Vis	1 mg/kg
Metal Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-1:2015 Ed 1.0	UV-Vis	/
PBBs/PBDEs	IEC 62321-6:2015 Ed 1.0	GC-MS	5 mg/kg

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Test Results:

A、EU RoHS Directive 2011/65/EU and its amendment directives on XRF

Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
1	Label(Shell)	BL	BL	BL	BL	BL
2	White plastic outer shell(Shell)	BL	BL	BL	BL	BL
3	White inner plastic shell(Shell)	BL	BL	BL	BL	BL
4	White pad(Shell)	BL	BL	BL	BL	BL
5	Silver screw	BL	BL	BL	BL	-
6	Transparent plastic	BL	BL	BL	BL	BL
7	White roller rubber sleeve	BL	BL	BL	BL	BL
8	Red wire jacket(Battery Connector)	BL	BL	BL	BL	BL
9	Black wire jacket(Battery Connector)	BL	BL	BL	BL	BL
10	Metal sheet(Battery Connector)	BL	BL	BL	BL	-
11	Metal spring(Battery Connector)	BL	BL	BL	BL	-
12	Black plastic button(Tact Switch)	BL	BL	BL	BL	BL
13	Silver metal sheet(Tact Switch)	BL	BL	BL	BL	-
14	Black plastic shell(Tact Switch)	BL	BL	BL	BL	BL
15	Black sleeving(Electrolytic capacitor)	BL	BL	BL	BL	BL
16	Aluminum shell(Electrolytic capacitor)	BL	BL	BL	BL	-
17	Grey IC	BL	BL	BL	BL	BL
18	Transparent LED	BL	BL	BL	BL	X*
19	Color ring resistance	BL	BL	BL	BL	BL
20	White plastic micropositioner	BL	BL	BL	BL	BL
21	Crystal oscillator	BL	BL	BL	BL	BL
22	Metal shell(Encoder)	BL	BL	BL	BL	-
23	Tin solder	BL	BL	BL	BL	-
24	Green PCB board	BL	BL	BL	BL	X*

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Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
Receiver						
25	White plastic	BL	BL	BL	BL	BL
26	USB metal plug	BL	BL	BL	BL	-
27	Crystal oscillator	BL	BL	BL	BL	BL
28	Tin solder	BL	BL	BL	BL	-
29	PCB board	BL	BL	BL	BL	BL
Difference						
30	Shiny black plastic shell(Black mouse)	BL	BL	BL	BL	BL
31	Black rubber idler wheel cover(Black mouse)	BL	BL	BL	BL	BL
32	Silver plastic shell(Silver mouse)	BL	BL	BL	BL	BL

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 50 - 3\sigma < X < 150 + 3\sigma \leq OL$
Pb	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Hg	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Cr	mg/kg	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	mg/kg	$BL \leq 300 - 3\sigma < X$	-	$BL \leq 250 - 3\sigma < X$

Note: BL= Below Limit

OL= Over limited

X= Inconclusive

“-“= Not regulated

*= Scanning by XRF and detected by chemical method. The test results of chemical method please refer to next pages.

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Remark:

- i Results were obtained by XRF for primary scanning, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the above warning value according to IEC 62321-3-1:2013 Ed 1.0.
- ii The XRF scanning test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- iii The maximum permissible limit is quoted from RoHS directive 2011/65/EU:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenylethers (PBDEs)	1000

Disclaimers:

This XRF Scanning report is for reference purposes only. 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 result shown in this XRF scanning 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.

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B、The Test Results of Chemical Method:

1) The Test Results of PBBs & PBDEs

Unit:mg/kg

Item(s)	MDL	Result(s)		Limit
		18	24	
Polybrominated Biphenyls (PBBs)				
Monobromobiphenyl	5	N.D.	N.D.	Total PBBs Content <1000
Dibromobiphenyl	5	N.D.	N.D.	
Tribromobiphenyl	5	N.D.	N.D.	
Tetrabromobiphenyl	5	N.D.	N.D.	
Pentabromobiphenyl	5	N.D.	N.D.	
Hexabromobiphenyl	5	N.D.	N.D.	
Heptabromobiphenyl	5	N.D.	N.D.	
Octabromobiphenyl	5	N.D.	N.D.	
Nonabromodiphenyl	5	N.D.	N.D.	
Decabromodiphenyl	5	N.D.	N.D.	
Total content	/	N.D.	N.D.	
PolybrominatedDiphenylethers (PBDEs)				
Monobromodiphenyl ether	5	N.D.	N.D.	Total PBDEs Content <1000
Dibromodiphenyl ether	5	N.D.	N.D.	
Tribromodiphenyl ether	5	N.D.	N.D.	
Tetrabromodiphenyl ether	5	N.D.	N.D.	
Pentabromodiphenyl ether	5	N.D.	N.D.	
Hexabromodiphenyl ether	5	N.D.	N.D.	
Heptabromodiphenyl ether	5	N.D.	N.D.	
Octabromodiphenyl ether	5	N.D.	N.D.	
Nonabromodiphenyl ether	5	N.D.	N.D.	
Decabromodiphenyl ether	5	N.D.	N.D.	
Total content	/	N.D.	N.D.	
Conclusion	/	Pass	Pass	/

Note: N.D. = Not Detected or less than MDL
mg/kg = parts per million
MDL = Method Detection Limit

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2. Test result of DBP, BBP, DEHP, DIBP content

Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)				Limit
			1	2	3	4	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	50	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Conclusion		/	Pass	Pass	Pass	Pass	/

Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)				Limit
			6	7	8	9	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	50	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Conclusion		/	Pass	Pass	Pass	Pass	/

Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)				Limit
			12	14	15	17	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	50	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Conclusion		/	Pass	Pass	Pass	Pass	/

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Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)				Limit
			18	19	20	21	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	50	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Conclusion		/	Pass	Pass	Pass	Pass	/

Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)				Limit
			24	25	27	29	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	50	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		50	N.D.	N.D.	N.D.	N.D.	1000
Conclusion		/	Pass	Pass	Pass	Pass	/

Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)			Limit
			30	31	32	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	50	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		50	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		50	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		50	N.D.	N.D.	N.D.	1000
Conclusion		/	Pass	Pass	Pass	/

Note: 1. MDL=Method Detection Limit
2. N.D.=Not Detected(less than method detection limit)

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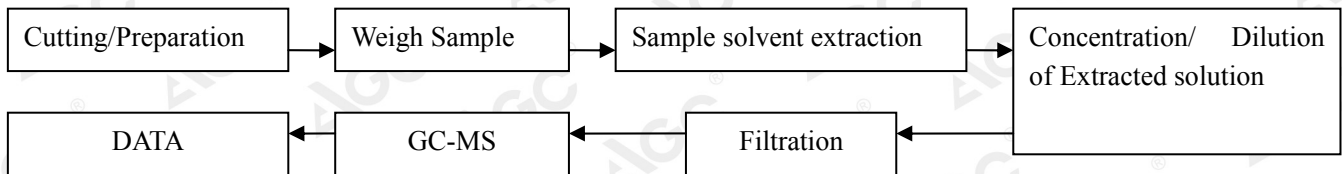
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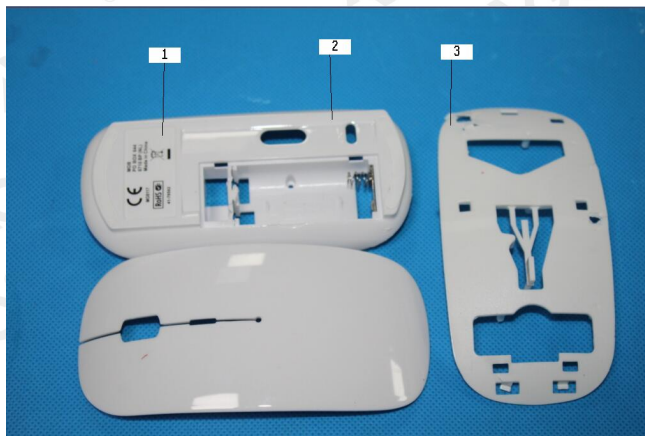
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Test Flow Chart

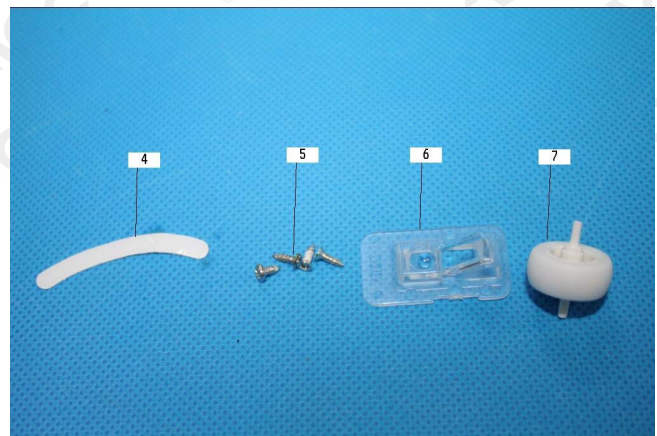
1.For PBBs, PBDEs, DBP, BBP, DEHP, DIBP



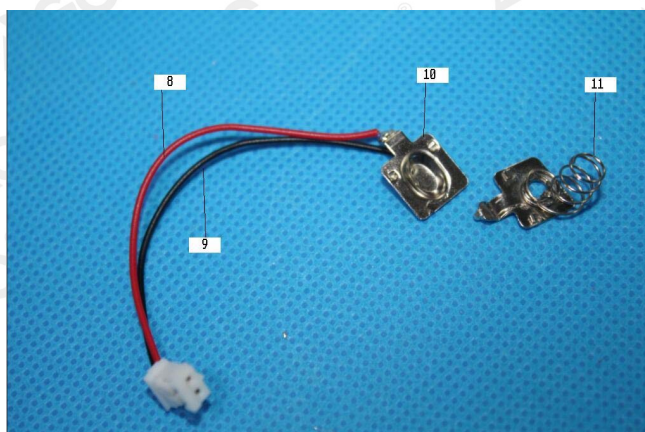
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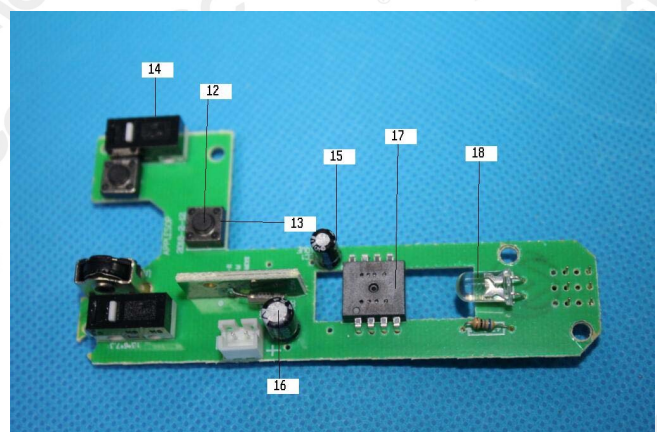
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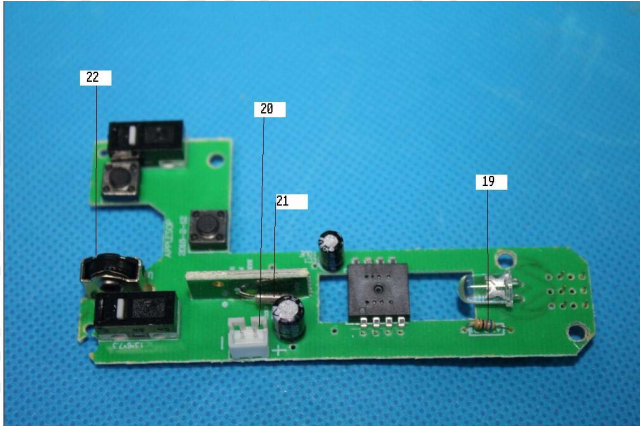
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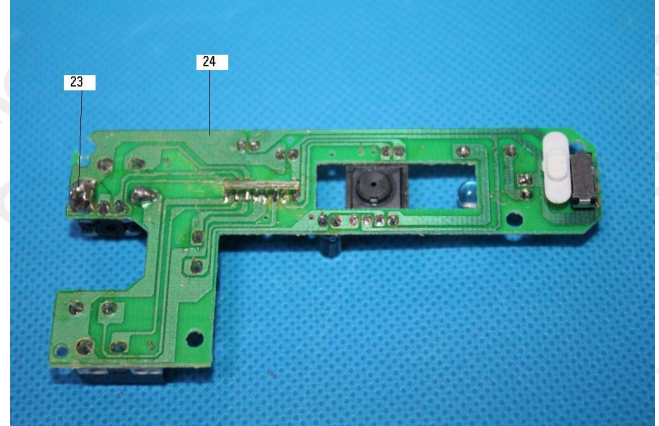
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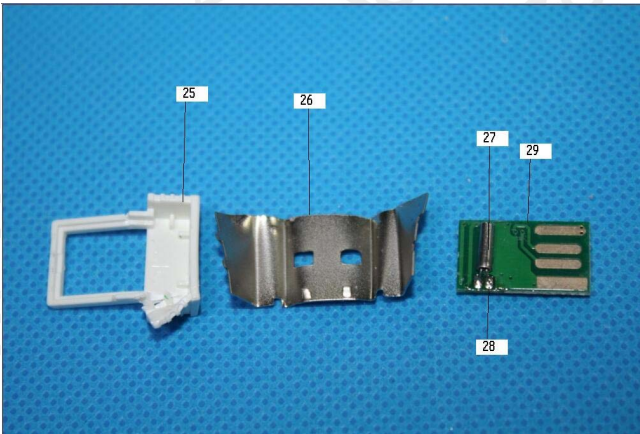
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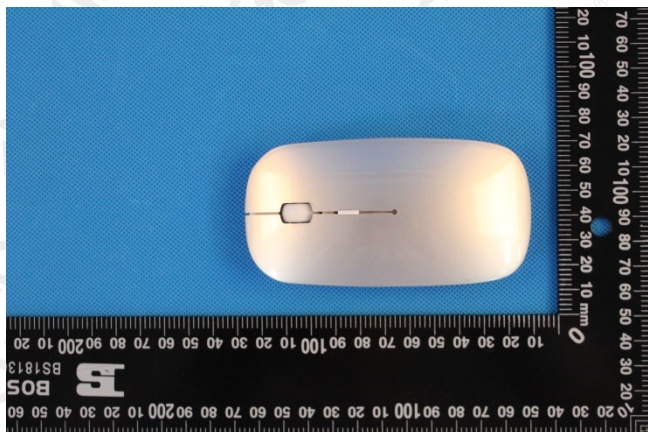
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