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Test Report

Report No.: A001R20170527022-2

Date: Jun.30, 2017

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Applicant:	Mid Ocean	n Br	rands B.V.
Address:	7/F, Kings	То	wer, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.
Report on the	e submitte	d sa	mple(s) said to be:
Sample Name		:	Opener with LED torch
Model		:	See description
Item No.		:	MO8142
Manufacturers	K Complement		Carter Carter Contract
Address			
Country of ori	gin	:	China
Country of des	stination	1	Europe
Sample Receiv	ving Date	al Comp	May 27, 2017
Testing Period	Auestation	:	May 27, 2017 to Jun.30, 2017

Test Requested:	:	Please refer to next page(s).
Test Method	. 19:	Please refer to next page(s).
Test Result	1	Please refer to next page(s).

Tested by: Huisu Luo

Luohuisu Test Engineer Reviewed by: _

Suhongliang, Leon Test Team Leader Jiangyuncheng, Jason

Approved by:

aboratory Manager



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Test Requested:		Conclusion
1. As specified by client, to determine the Polycy	clic Aromatic Hydrocarbons (PAHs) content	
in the submitted sample(s) with reference to	entry 50, Annex XVII of the REACH	Pass
Regulation (EC) No 1907/2006 and Amendment	Regulation (EU) 2015/326.	
2. As specified by client, to determine Lead(Pb), C	admium(Cd), Mercury(Hg) content	Base C
accordance with European Directive 2006/66/EC a	and its amendments 2013/56/EU.	rass
3. As specified by client, to determine the nickel re-	elease in the submitted sample(s) with	AT IN
reference to entry 27, Annex XVII of the REAC	CH Regulation (EC) No 1907/2006.	F The Conne
4. As specified by client, to determine the Pb, Cd,	Hg, Cr ⁶⁺ , PBBs, PBDEs content in the	
submitted sample in accordance with EU RoHS	Directive 2011/65/EU(RoHS) and its	Pass
amendment directives on XRF and Chemical Me	thod.	

Test Result(s):

1. Test result of Polycyclic Aromatic Hydrocarbons (PAHs)

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T S Soon		107:	Ui	nit: mg/kg
Test Harry (a)	Test Method	The the stand	Result(s)	A Complete
Test Item(s)	/Equipment	MDL	1-5	Limit
Benzo[a]anthracene (BaA)		0.1	N.D.	1
Chrysene (CHR)	GC AL	0.1	N.D.	1
Benzo[b]fluoranthene (BbFA)	Refer to German consumer product safety	0.1	N.D.	TTA Stand
Benzo[k]fluoranthene (BkFA)		0.1	N.D.	Auestano 1
Benzo[j]fluoranthene (BjFA)		0.1	N.D.	1
Benzo[a]pyrene (BaP)	(ProdSG: 2014)	0.1	N.D.	1 1
Benzo[e]pyrene(BeP)	GC-MS	0.1	N.D.	onon 1
Dibenzo[a,h]anthracene (DBAhA)	The the compared - F along	0.1	N.D.	
Sum of 8 PAHs	C There are a C There are	-0	N.D.	
Conclusion	GU NOU	1	Pass	1 B

1. MDL=Method Detection Limit Note:

2. N.D.=Not Detected(less than method detection limit)

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2. Test result of Lead(Pb), Cadmium(Cd), Mercury(Hg)

The second secon	The the second	Totol Clou	The allon of Globa	Unit: %,w/w
Track there (a)	Test Method/	MDI	Result(s)	Timit
Test tiem(s)	Equipment	MDL	1-6	
Lead (Pb)	Refer to	0.0005	0.0032	GC
Cadmium (Cd)	ICP-OES	0.0005	N.D.	0.002
Mercury (Hg)	Refer to IEC 62321-4:2013, ICP-OES	0.0001	N.D.	0.0005
Conclusion			Pass	1

Note: 1.0.1%,w/w=1000 mg/kg

2.N.D.=Not Detected(less than method detection limit)

3.MDL = Method Detection Limit

4. Test result on specimen No.1-6 was resubmitted sample on Jun.27, 2017.

3. Test result of Nickel (Ni) release

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Unit:µg/cm²/week

				- Pro-	0
Test Item(s)	Test Method/equipment	MDL	С	Result(s)	
Test tiem(s)	Test Wiethou/equipment		1-1-A	1-1-B	1-1-C
Nickel (Ni) release	Refer to	0.05	N.D.	N.D.	N.D.
Conclusion	ICP-OES	0 /	Pass	Pass	Pass

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Unit:µg/cm²/week

Test Item(s)	Test Method/equipment	MDL	Result(s)		
Test Hein(s)	rest method, equipment	Fon of Glob	(1-2+1-3+1-4)-A*	(1-2+1-3+1-4)-B*	(1-2+1-3+1-4)-C*
Nickel (Ni) release	Refer to EN 1811:2011+A1:2015 ICP-OES	0.05	N.D.	0.08	N.D.

The Contraction of Contraction	Nickel release	(µg/cm ² /week)
Type of sample	Pass	Fail
Article with Nickel release limit of 0.5µg/cm ² /week (Non-body piercing)	<0.88	≥0.88
Article with Nickel release limit of 0.2µg/cm ² /week (Body piercing)	<0.35	≥0.35

Note:

- 1. N.D.=not detected (<MDL)
- 2. MDL=Method Detection Limit
- 3. $\mu g/cm^2/week = microgram per square centimeter per week$
- 4. Results shown above are testing data of three groups
- 5.*= As specified by client, the submitted samples were mixed to test.

Sample Description

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No.	Sample name	Model No.
1	Opener with LED torch	MO8142
1-1	Black aluminum shell	CO NO
1-2	Metal ring	1 the second sec
1-3	Metal chain	Land Barthanne Chamber
1-4	Metal key ring	
1-5	Black rubber button	A S S S S S S S S S S S S S S S S S S S
1-6	Battery	CR2032

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4. Test Methods:

- A: <u>Screening by X-ray Fluorescence Spectrometry (XRF)</u>: 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 Section 7	ICP-OES	2 mg/kg
Lead (Pb)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4:2013 Ed 1.0 Section 7	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	GC
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.	Tostad Part(a)	Results(mg/kg)				
No.	Tested Part(s)	Cd	Pb	Hg	Cr	Br
1	Black aluminum shell	BL	BL	BL	BL	- 5.
2	Metal ring(Suspend)	BL	BL	BL	BL	5C ¹ ^m
3	Metal chain(Suspend)	BL	BL	BL	BL	-
4	Metal key ring(Suspend)	BL	BL	BL	BL	The of Clobal Complete
5	Black rubber button	BL	BL	BL	BL	BL
6	Transparent battery cover	BL	BL	BL	BL	BL
7	Sheet metal	BL	BL	BL	BL	- 3
8	Spring	BL	BL	BL	BL	C inter
9	Metal circlip	BL	BL	BL	BL	-
10	White plastic seat	BL	BL	BL	BL	BL
11	Reflective bowl	BL	BL	BL	BL	X*
12	Tin solder	BL	BL	BL	BL	
13	PCB board	BL	BL	BL	BL	X*
14	Spring	BL	BL	BL	BL	France Const
15	LED lamp	BL	BL	BL	BL	X*
Diffe	rence	30			No.	111
16	Green aluminum shell	BL	BL	BL	BL	- *
17	Red aluminum shell	BL	BL	BL	BL	30
18	Orange aluminum shell	BL	BL	BL	BL	-
19	Blue aluminum shell	BL	BL	BL	BL	F 31 Cons
20	Yellow aluminum shell	BL	BL	BL	BL	
21	Silver aluminum shell	BL	BL	BL	BL	

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Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	BL≤70-3σ <x <130+3σ≤OL</x 	BL≤70-3σ <x <130+3σ≤OL</x 	BL≤50-3σ <x <150+3σ≤OL</x
Pb	mg/kg	BL≤700-3σ <x <1300+3σ≤OL</x 	BL≤700-3σ <x <1300+3σ≤OL</x 	BL≤500-3σ <x <1500+3σ≤OL</x
Hg	mg/kg	BL≤700-3σ <x <1300+3σ≤OL</x 	BL≤700-3σ <x <1300+3σ≤OL</x 	BL≤500-3σ <x <1500+3σ≤OL</x
Cr	mg/kg	BL≤700-3σ <x< td=""><td>BL≤700-3σ<x< td=""><td>BL≤500-3σ<x< td=""></x<></td></x<></td></x<>	BL≤700-3σ <x< td=""><td>BL≤500-3σ<x< td=""></x<></td></x<>	BL≤500-3σ <x< td=""></x<>
Br	mg/kg	BL≤300-3σ <x< td=""><td>The second second</td><td>BL≤250-3σ<x< td=""></x<></td></x<>	The second second	BL≤250-3σ <x< td=""></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 the document 2005/618/EC amending 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.

Test result on specimen No.12 was resubmitted sample on Jun.27, 2017.

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B The Test Results of Chemical Method:

1) The Test Results of PBBs & PBDEs

					Unit.ing/kg
Item(s)	MDL	Result(s)			
		11	13	15	- Limit
Polybrominated Biphenyls (PBBs)					
Monobromobiphenyl	5	N.D.	N.D.	N.D.	Total PBBs Content <1000
Dibromobiphenyl	5	N.D.	N.D.	N.D.	
Tribromobiphenyl	5	N.D.	N.D.	N.D.	
Tetrabromobiphenyl	5	N.D.	N.D.	N.D.	
Pentabromobiphenyl	5	N.D.	N.D.	N.D.	
Hexabromobiphenyl	5	N.D.	N.D.	N.D.	
Heptabromobiphenyl	5	N.D.	N.D.	N.D.	
Octabromobiphenyl	5	N.D.	N.D.	N.D.	
Nonabromodiphenyl	5	N.D.	N.D.	N.D.	
Decabromodiphenyl	5	N.D.	N.D.	N.D.	
Total content	/	N.D.	N.D.	N.D.	
Polybrominated Diphenylethers (PBD	Es)				
Monobromodiphenyl ether	5	N.D.	N.D.	N.D.	Total PBDEs Content <1000
Dibromodiphenyl ether	5	N.D.	N.D.	N.D.	
Tribromodiphenyl ether	5	N.D.	N.D.	N.D.	
Tetrabromodiphenyl ether	5	N.D.	N.D.	N.D.	
Pentabromodiphenyl ether	5	N.D.	N.D.	N.D.	
Hexabromodiphenyl ether	5	N.D.	N.D.	N.D.	
Heptabromodiphenyl ether	5	N.D.	N.D.	N.D.	
Octabromodiphenyl ether	5	N.D.	N.D.	N.D.	
Nonabromodiphenyl ether	5	N.D.	N.D.	N.D.	
Decabromodiphenyl ether	5	314	N.D.	N.D.	
Total content	/	314	N.D.	N.D.	
Conclusion	1	Pass	Pass	Pass	

Note: N.D. = Not Detected or less than MDL

MDL = Method Detection Limit

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