



TEST REPORT

Test Report # 19A-000868-2 Date of Report Issue: April 17, 2019
Date of Sample Received: March 6, 2019 Pages: Page 1 of 13

CLIENT INFORMATION:

Company: Mid Ocean Brands B.V.
Address: 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong



SAMPLE INFORMATION:

Product Name: SOLAR TORCH WITH 2 WHITE LED
Model/style No.: KC7014
Main Material: ABS
Buyer: Mid Ocean Brands B.V.
Supplier: 100396
Country of Distribution: Europe
Testing Period: 03/06/2019-03/14/2019, 03/26/2019-03/28/2019, 04/01/2019-04/04/2019, 04/16/2019-04/17/2019

OVERALL RESULT:

PASS

Refer to page 2 for test result summary and appropriate notes.

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The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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TEST REPORT

Test Report # 19A-000868-2 Date of Report Issue: April 17, 2019
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TEST RESULTS SUMMARY:

At the request of the client, the following tests were conducted:

CONCLUSION	TEST(S) CONDUCTED
PASS	Directive 2011/65/EU and it's amend regulation 2015/863/EU, Restriction of the Use of Certain Hazardous Substances (RoHS)
PASS	2013/56/EU-Batteries and accumulators

Remark: Test results are transferred from test report no. 19A-000868-1 date: 04/17/2019



**DETAILED RESULTS:****Directive 2011/65/EU and it's amend regulation 2015/863/EU, Restriction of the Use of Certain Hazardous Substances (RoHS)**

Test method:

- (1) With reference to IEC 62321-3-1:2013, determination of Cadmium, Lead, Mercury, Chromium and Br by XRF;
- (2) With reference of IEC 62321-4:2013/AMD1:2017, IEC 62321-5:2013 to determine Cadmium, Lead and Mercury by ICP-OES;
- (3) With reference of IEC62321-7-1:2015, IEC62321-7-2:2017 to determine Hexavalent Chromium by UV-vis
- (4) With reference of IEC 62321-6:2015 to determine PBBs and PBDEs by GC-MS.

No.	Parts Name	Test Item (mg/kg)						Conclusion
		Pb	Cd	Hg	CrVI	PBBs	PBDEs	
1	Silvery plastic upper cover	BL	BL	BL	BL	BL	BL	PASS
2	Silvery plastic lower cover	BL	BL	BL	BL	ND	60	PASS
3	Silvery plastic lower cover-silvery metal screw	ND	ND	ND	Ne	-	-	PASS
4	Transparent plastic upper cover	BL	BL	BL	BL	BL	BL	PASS
5	Silvery plastic end cover	BL	BL	BL	BL	BL	BL	PASS
6	Silvery metal ring	ND	ND	ND	Ne	-	-	PASS
7	Silvery metal small circle	ND	ND	ND	Ne	-	-	PASS
8	Silvery metal button	ND	ND	ND	Ne	-	-	PASS
9	Solar panel	BL	BL	BL	BL	BL	BL	PASS
10	Solar panel-soldering tin	507	ND	ND	BL	-	-	PASS
11	Solar panel-red wire sheath	BL	BL	BL	BL	BL	BL	PASS
12	Solar panel-blue wire sheath	BL	BL	BL	BL	BL	BL	PASS
13	Solar panel-copper wire	ND	ND	ND	Ne	-	-	PASS
14	Green plastic cortex	BL	BL	BL	BL	BL	BL	PASS
15	White sponge mat	BL	BL	BL	BL	BL	BL	PASS
17	Battery-pin	ND	ND	ND	Ne	-	-	PASS
18	Battery-soldering tin	401	ND	ND	BL	-	-	PASS
19	Battery-black wire sheath	BL	BL	BL	BL	BL	BL	PASS
20	Battery-red wire sheath	BL	BL	BL	BL	BL	BL	PASS
21	Battery-copper wire	ND	ND	ND	Ne	-	-	PASS
22	Green PCB board	BL	BL	BL	BL	BL	BL	PASS
23	Green PCB board-soldering tin	219	ND	ND	BL	-	-	PASS
24	Green PCB board-SMD resistor	BL	BL	BL	BL	BL	BL	PASS
25	Green PCB board-diode	BL	BL	BL	BL	BL	BL	PASS
26	Green PCB board-diode pin	ND	ND	ND	Ne	-	-	PASS
27	Light-transparent plastic shell	BL	BL	BL	BL	ND	ND	PASS
28	Light-wick	ND	ND	ND	Ne	-	-	PASS



**DETAILED RESULTS:**

No.	Parts Name	Test Item (mg/kg)						Conclusion
		Pb	Cd	Hg	CrVI	PBBs	PBDEs	
29	Light-pin	ND	ND	ND	Ne	-	-	PASS
30	Toggle switch-black plastic plectrum	BL	BL	BL	BL	BL	BL	PASS
31	Toggle switch-black plastic button	BL	BL	BL	BL	BL	BL	PASS
32	Toggle switch-silvery metal end cover	ND	ND	ND	Ne	-	-	PASS
33	Toggle switch-silvery metal shrapnel	ND	ND	ND	Ne	-	-	PASS
34	Toggle switch-brown plastic base	BL	BL	BL	BL	BL	BL	PASS
35	Toggle switch-pin	ND	ND	ND	Ne	-	-	PASS
36	Toggle switch-soldering tin	55	ND	ND	BL	-	-	PASS
37	Toggle switch-red wire sheath	BL	BL	BL	BL	BL	BL	PASS
38	Toggle switch-copper wire	ND	ND	ND	Ne	-	-	PASS

Parameter	Unit	Requirement	Method Detection Limit (MDL)
Lead (Pb)	mg/kg	1000	15
Cadmium (Cd)	mg/kg	100	15
Mercury (Hg)	mg/kg	1000	15
Chromium VI (Cr VI)	mg/kg	1000	15
Group PBBs	mg/kg	1000	20
Group PBDEs	mg/kg	1000	20

As specified by client, with XRF analysis toxic harmful substance content, All kinds of matrixes screening of the element is limited see chart (Unit: mg/kg)

Elements	Polymer material	Metal material/ Inorganic nonmetallic material	Electronic component
Lead (Pb)	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cadmium (Cd)	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Mercury (Hg)	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Chromium (Cr)	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
Bromine (Br)	$BL \leq (300-3\sigma) < X$	-	$BL \leq (250-3\sigma) < X$



**Note:**

1. Unit: mg/kg, 1mg/kg=1ppm=0.0001%
2. MDL=Method Detection Limit
3. ND=Not Detected(< MDL)
4. "-"= Not Regulated or Not Applicable
5. 3σ = Analysis shows that the instrument reproducibility
6. BL=Below Limit; OL=Over Limit
7. Ne=Negative, Absence of Cr(VI), the concentration of Cr (VI) in sample solution is less than $0.10\mu\text{g}/\text{cm}^2$.
Po = Positive, Presence of Cr(VI), the concentration of Cr (VI) in sample solution is more than $0.13\mu\text{g}/\text{cm}^2$.
8. "Results of XRF" is the result on total Br and total Cr while restricted substances are PBBs/PBDEs and Cr(VI).

Remark:

The test is carried out by external laboratory assessed as competent





DETAILED RESULTS:

2013/56/EU-Batteries and accumulators

Components and Parts Name	Item	MDL (mg/kg)	Result (mg/kg)	Limit (mg/kg)
16:Battery	Cadmium (Cd)	5	ND	20
	Lead (Pb)	5	ND	40
	Mercury (Hg)	5	ND	5
Conclusion	-	-	PASS	-

Note:

mg/kg = Milligrams per kilogram

MDL=Method Detection Limit

ND = Not detected (< MDL)



**DETAILED RESULTS:****Directive 2011/65/EU and it's amend regulation 2015/863/EU, Restriction of the Use of Certain Hazardous Substances (RoHS) (DBP, BBP, DEHP, DIBP)**

Test Method: IEC 62321-8:2017
 Analytical Method: Gas Chromatography/Mass Spectrometry

Specimen No.	1	2	4	5	9	Limit (mg/kg)
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
DBP	ND	ND	ND	ND	ND	1000
BBP	ND	ND	ND	ND	ND	1000
DEHP	ND	ND	ND	ND	ND	1000
DIBP	ND	ND	ND	ND	ND	1000
Conclusion	PASS	PASS	PASS	PASS	PASS	

Specimen No.	11	12	14	15	19	Limit (mg/kg)
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
DBP	ND	ND	ND	ND	ND	1000
BBP	ND	ND	ND	ND	ND	1000
DEHP	ND	ND	420	420	ND	1000
DIBP	ND	ND	ND	ND	ND	1000
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

DBP = Dibutyl phthalate; BBP = Benzyl butyl phthalate; DEHP = Di-(2-ethylhexyl) phthalate
 DIBP = Di-iso-Butylphthalate Phthalate;
 mg/kg = Milligrams per kilogram
 ND = Not detected (Reporting Limit =150mg/kg)

Remark:

The specification is quoted from client's requirement.





DETAILED RESULTS:

Directive 2011/65/EU and it's amend regulation 2015/863/EU, Restriction of the Use of Certain Hazardous Substances (RoHS) (DBP, BBP, DEHP, DIBP)

Test Method: IEC 62321-8:2017
Analytical Method: Gas Chromatography/Mass Spectrometry

Specimen No.	20	27	37	---	---	Limit (mg/kg)
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
DBP	ND	ND	ND	---	---	1000
BBP	ND	ND	ND	---	---	1000
DEHP	ND	ND	ND	---	---	1000
DIBP	ND	ND	ND	---	---	1000
Conclusion	PASS	PASS	PASS	---	---	

Note:
DBP = Dibutyl phthalate; BBP = Benzyl butyl phthalate; DEHP = Di-(2-ethylhexyl) phthalate
DIBP = Di-iso-Butylphthalate Phthalate;
mg/kg = Milligrams per kilogram
ND = Not detected (Reporting Limit =150mg/kg)

Remark:
The specification is quoted from client's requirement.



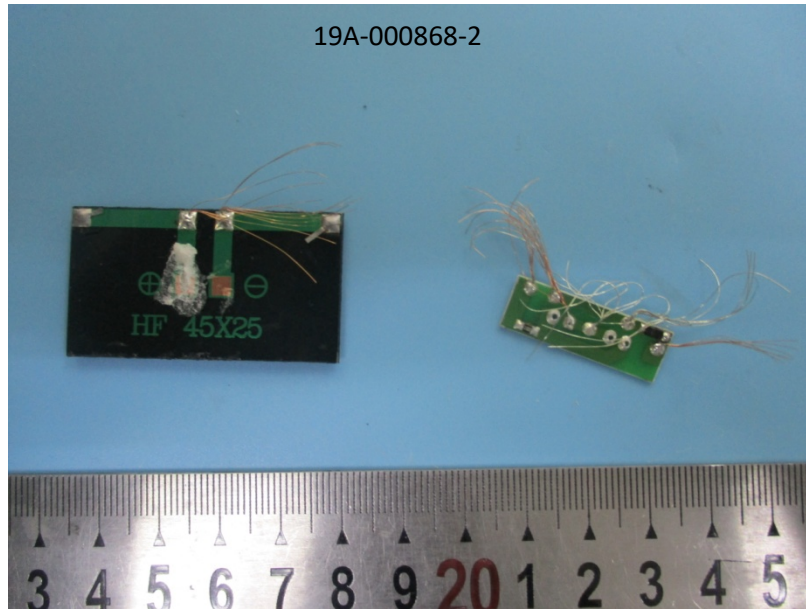
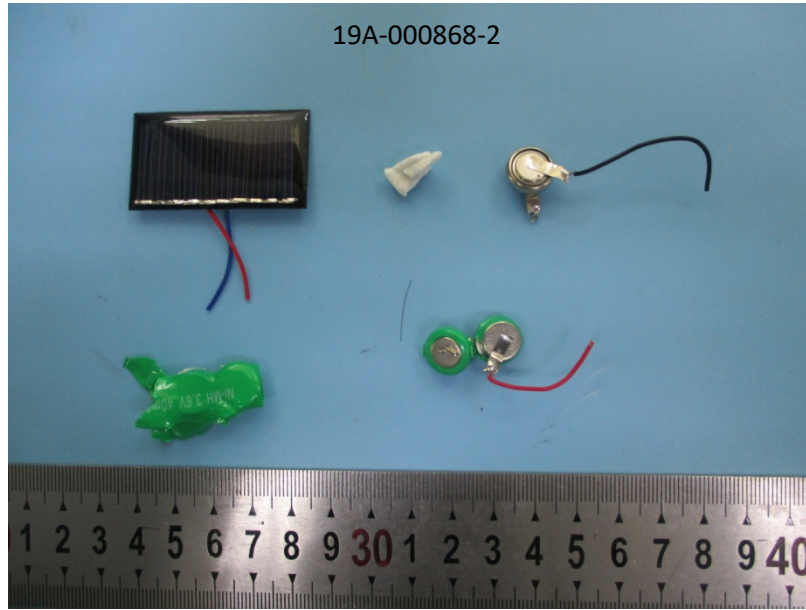


SAMPLE PHOTO:



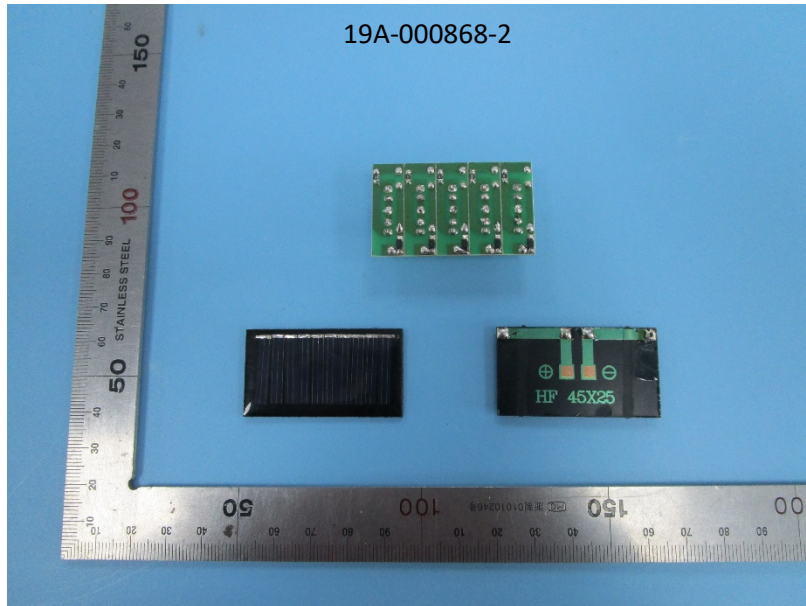
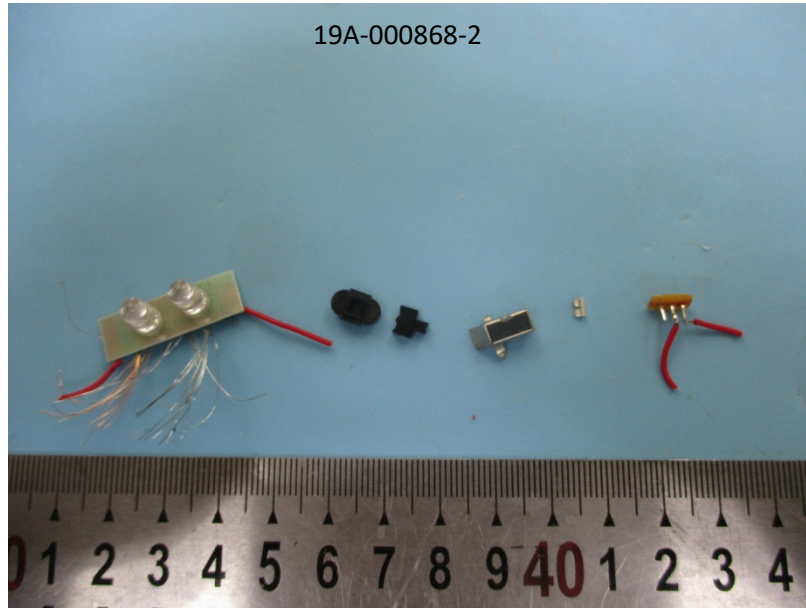


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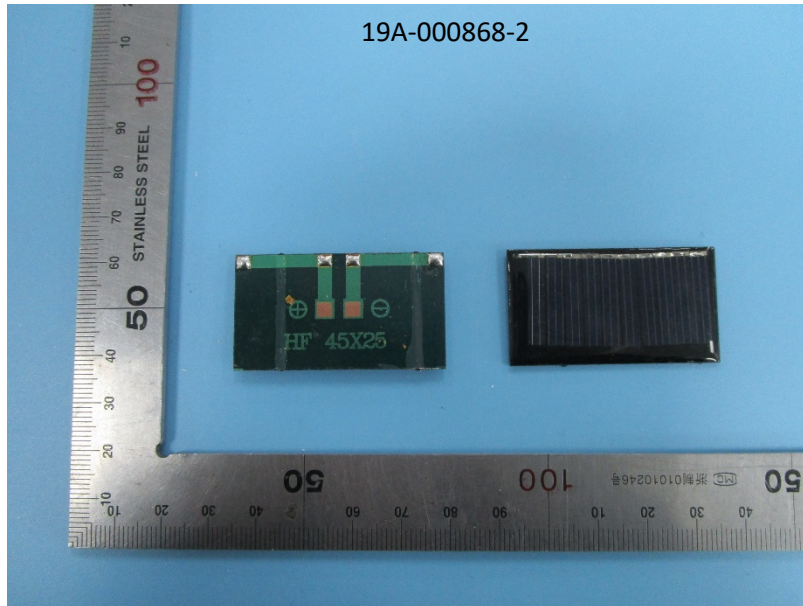
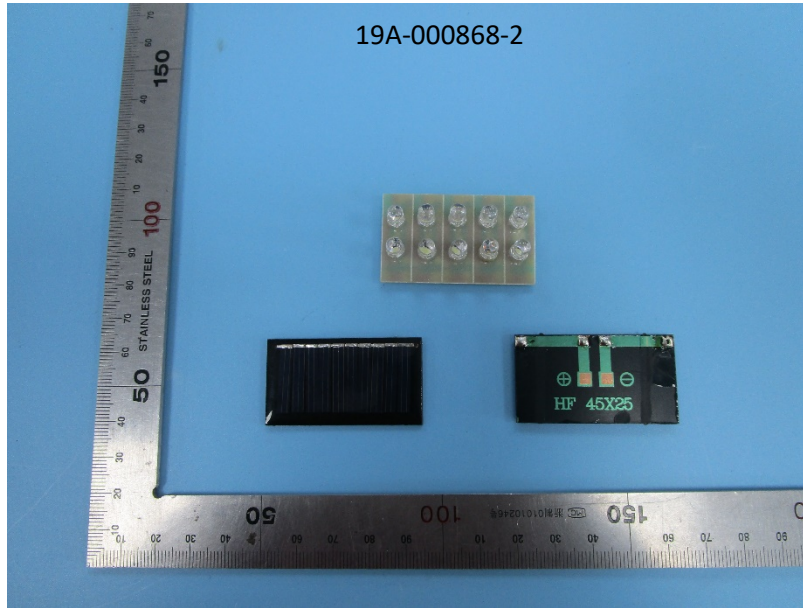


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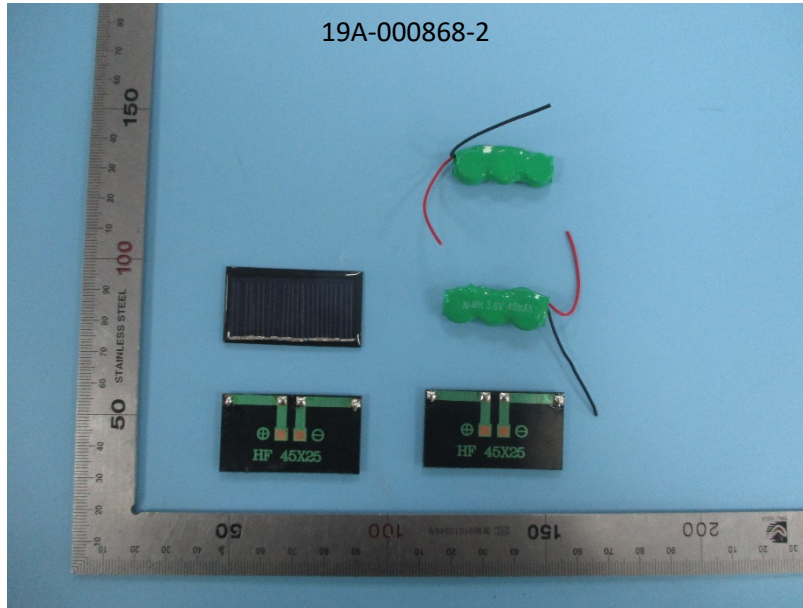


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