

Test Report

Number: GZHH00586198

Applicant: FLASHBAY ELECTRONICS
BUILDING2, JIXUN INDUSTRIAL PARK, XINJIAO,
DONG'AO VILLAGE, SHATIAN TOWN, HUIYANG
DISTRICT, HUIZHOU CITY, GUANGDONG PROVINCE,
P. R. CHINA

Date: Mar 19, 2025

Sample Description:

One (1) set of submitted sample said to be :
Item Name : **Pen Series**
Item No. : **Radiance (RA)**
Country of Origin : China
Date Sample Received : Mar 04, 2025 & Mar 10, 2025
Testing Period : Mar 04, 2025 ~ Mar 19, 2025

Tested Sample



Tests conducted:

As requested by the applicant, refer to attached page(s) for details.

To be continued



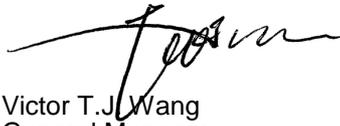
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Conclusion:

<u>Tested sample</u>	<u>Standard/Testing Item</u>	<u>Result</u>
Tested components of submitted sample	EU RoHS Directive 2011/65/EU and its Amendment(s) including (EU) 2015/863 Article 4(1) on Restricted Substances Content	Pass

Authorized by:
For Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch, Hardlines



Victor T.J. Wang
General Manager



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https://verifyindex.intertek.com.cn/home/index?id=hl_report_verify



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Tests Conducted

- 1 EU RoHS Directive 2011/65/EU and its Amendment(s) including (EU) 2015/863 Article 4(1) on Restricted Substances Content

(A) Screening Test by XRF Spectroscopy

Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) content were measured with reference to IEC 62321-3-1 Edition 1.0: 2013 by XRF spectroscopy and chemical confirmation test for RoHS restricted substances.

(A) Results:

Screened Components	XRF Results		Chemical Confirmation Result
(1)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(2)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(3)	Cd	ND	Cr ⁶⁺ : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(4)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(5)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(6)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(7)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(8)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(9)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	Detected	
	Br	NT	
(10)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(11)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(13)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(14)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(15a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(15b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(15c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(15d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(15e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(15f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(16)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(17)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18)	Cd	ND	Cr ⁶⁺ : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(19)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Detected	
(20a)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	



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Screened Components	XRF Results		Chemical Confirmation Result
(20b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(21)	Cd	ND	PBBs : ND PBDEs : See appendix
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	

(B) Phthalate Screening Test

Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
1	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
4	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
5	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
6	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
7	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
8	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
11	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
12	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
13	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
15a	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
15b	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
15c	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
16	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
17	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
19	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
20a	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
21	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	

DBP = Dibutyl phthalate
 DEHP = Di-(2-ethyl hexyl) phthalate
 BBP = Benzyl butyl phthalate
 DIBP = Di-(iso-butyl) phthalate

Detected = Below the lower screening limit of table (C) and pass
 ND = Not detected
 NT = Not tested
 P = Pass



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Negative = A negative test result indicated the concentration of Cr(VI) is less than threshold of 0.1 µg/cm² for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr(VI) based coating.

Appendix:

Testing Item	Result
	21
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND
Dibromobiphenyl (DiBB)	ND
Tribromobiphenyl (TriBB)	ND
Tetrabromobiphenyl (TetraBB)	ND
Pentabromobiphenyl (PentaBB)	ND
Hexabromobiphenyl (HexaBB)	ND
Heptabromobiphenyl (HeptaBB)	ND
Octabromobiphenyl (OctaBB)	ND
Nonabromobiphenyl (NonaBB)	ND
Decabromobiphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND
Dibromodiphenyl Ether (DiBDE)	ND
Tribromodiphenyl Ether (TriBDE)	ND
Tetrabromodiphenyl Ether (TetraBDE)	ND
Pentabromodiphenyl Ether (PentaBDE)	ND
Hexabromodiphenyl Ether (HexaBDE)	ND
Heptabromodiphenyl Ether (HeptaBDE)	ND
Octabromodiphenyl Ether (OctaBDE)	ND
Nonabromodiphenyl Ether (NonaBDE)	ND
Decabromodiphenyl Ether (DecaBDE)	196

(C1) XRF Screening limits in mg/kg for Regulated Elements in Various Matrices

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 150 \leq F$
Pb	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Hg	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Cr	$P \leq 700 < X$	$P \leq 700 < X$	$P \leq 500 < X$
Br	$P \leq 300 < X$	Not applicable	$P \leq 250 < X$



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(C2) Preliminary Screening limits in mg/kg for phthalates test.

Phthalates	Polymer Materials
Dibutyl phthalate (DBP)	P ≤ 600 < X
Di-(2-ethyl hexyl) phthalate (DEHP)	P ≤ 600 < X
Benzyl butyl phthalate (BBP)	P ≤ 600 < X
Di-(iso-butyl) phthalate (DIBP)	P ≤ 600 < X

P = Pass

X = Inconclusive result

F = Fail

mg/kg = milligram per kilogram = ppm

(D) 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:

This XRF Screening 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 and Chemical Confirmation Test 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 is required to obtain quantitative data.



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(E) Chemical Test Methods:

Testing Item	Testing Method	Detection Limit
Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321-6 Edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	100 mg/kg
Chromium (VI) (Cr(VI)) Content	With reference to IEC 62321-7-1 Edition 1.0:2015, by boiling water extraction and determined by UV-VIS Spectrophotometer	0.1 µg/cm ²
Dibutyl phthalate (DBP), Di-(2-ethyl hexyl) phthalate (DEHP), Benzyl butyl phthalate (BBP) and Di-(iso-butyl) phthalate (DIBP)	With reference to IEC 62321-8 Edition 1.0:2017, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis	50 mg/kg

The test methods IEC 62321 series are the designated test methods in EN IEC 63000:2018.

(F) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr(VI))	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Di-(2-ethyl hexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di-(iso-butyl) phthalate (DIBP)	0.1% (1000 mg/kg)

The limit was quoted according to EU RoHS Directive 2011/65/EU and its Amendment(s) including (EU) 2015/863 Article 4(1) on Restricted Substances Content.



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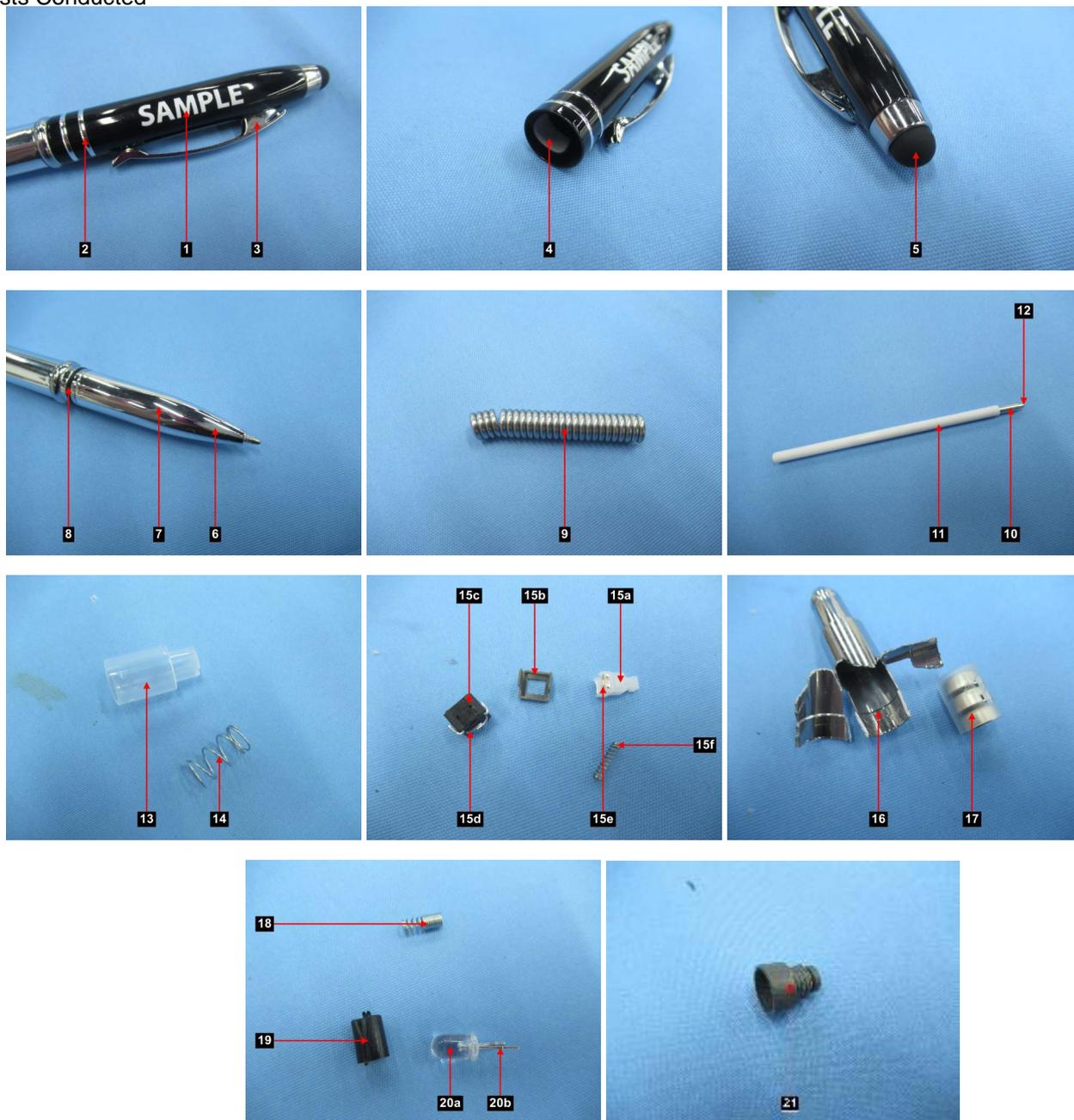
Tests Conducted

Tested Components:

- (1) Coatings (black, white) on metal.
- (2) Silver color metal excluding coatings.
- (3) Silver color metal.
- (4) White woven with inaccessible adhesive.
- (5) Black soft plastic.
- (6) Semi-transparent beige plastic excluding coating.
- (7) Silver color coating on plastic.
- (8) Dark black soft plastic.
- (9) Light silver color metal.
- (10) Silver color metal.
- (11) White plastic.
- (12) Black ink.
- (13) Semi-transparent plastic.
- (14) Light silver color metal.
- (15) Switch
- (15a) White plastic
- (15b) Grey plastic.
- (15c) Black plastic.
- (15d) Silver color metal
- (15e) Silver/copper color metal
- (15f) Black treated metal
- (16) Silver color plated plastic.
- (17) Matt semi-transparent plastic.
- (18) Silver color metal.
- (19) Light black plastic.
- (20) LED
- (20a) Transparent plastic
- (20b) Silver color metal
- (21) Dark grey plastic.



Tests Conducted



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Tests Conducted



Remark: The products in the reference photo are not tested in this report. It's declared by the applicant that they are the same series of products with the particular tested sample, just included in the report for reference.

End of report

The statements of conformity reported have considered the decision rule agreed, namely that Intertek have taken account of measurement uncertainty as calculated by Intertek, and applied according to ILAC-G8/09:2019 (Non-binary acceptance based on guard band $w = U$) except designation from the customer, regulation or test specification. This decision rule only applies to the numeric test results.

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