

Verification Report No.: SHAEC24005375601 Date: Apr 22, 2024 Page 1 of 11

Client Name: Vybronics (HK) Ltd Client Address: 11/F, Tai Yau Building

181 Johnston Road

Wanchai, Hong Kong, China

Sample Name: Coin LRA motor

The above sample(s) and information were provided by the client.

SGS Job No.: SHP24-008421 Sample Receiving Date: Mar 22, 2024

Verification Period: Mar 22, 2024 ~ Apr 19, 2024

Verification Requested: With reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

Verification Method(s): Please refer to next page(s).

Verification Result(s): Please refer to next page(s).

## **Test Result Summary:**

Test Items	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass

Signed for and on behalf of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Jessica Chen Approved Signatory





essica Chen

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## Verification Method(s):

- 1. With reference to IEC 62321-2:2021, disassembly and disjointment were performed for the submitted samples.
- 2. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report.
- (1) With reference to IEC 62321-3-1:2013, screening by EDXRF spectroscopy.
- (2) Wet chemical test method: With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-12:2023, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES,UV-Vis and GC-MS.



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**Verification Part Description:** 

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	SHA24-0053756-0001.C001	Silvery metal (shell)
SN2	A2	SHA24-0053756-0001.C002	Silvery magnet
SN3	A3	SHA24-0053756-0001.C003	Black plastic (shell)
SN4	A4	SHA24-0053756-0001.C004	Copper-colored metal (shell)
SN5	A5	SHA24-0053756-0001.C005	Silvery metal (gasket)
SN6	A6	SHA24-0053756-0001.C006	Silvery metal (dowel)
SN7	A7	SHA24-0053756-0001.C007	Yellow FPC (body)
SN8	A8	SHA24-0053756-0001.C008	Silvery metal (soldering tin) (FPC)
SN9	B1	SHA24-0053756-0002.C001	Silvery metal (shell)
SN10	B2	SHA24-0053756-0002.C002	Black plastic (shell)
SN11	B3	SHA24-0053756-0002.C003	Silvery metal (bushing)
SN12	B4	SHA24-0053756-0002.C004	Silvery metal (dowel)
SN13	B5	SHA24-0053756-0002.C005	Silvery metal (bushing)
SN14	C1	SHA24-0053756-0003.C001	Silvery metal (shell)
SN15	C2	SHA24-0053756-0003.C002	Silvery metal (shell)
SN16	D1	SHA24-0053756-0004.C001	Black adhesive plastic (gasket)
SN17	D2	SHA24-0053756-0004.C002	Silvery metal (shell)
SN18	D3	SHA24-0053756-0004.C003	Silvery metal (bushing)
SN19	E1	SHA24-0053756-0005.C001	Silvery metal (shell)
SN20	E2	SHA24-0053756-0005.C002	Silvery metal (bushing)
SN21	F1	SHA24-0053756-0006.C001	Silvery metal (shell)
SN22	F2	SHA24-0053756-0006.C002	Copper-colored metal (dowel)
SN23	F3	SHA24-0053756-0006.C003	Silvery metal (bushing)
SN24	G1	SHA24-0053756-0007.C001	Silvery metal (shell)
SN25	G2	SHA24-0053756-0007.C002	Silvery metal (bushing)
SN26	H1	SHA24-0053756-0008.C001	Silvery metal (shell)
SN27	H2	SHA24-0053756-0008.C002	Silvery metal (bushing)
SN28	l1	SHA24-0053756-0009.C001	Silvery metal (shell)
SN29	12	SHA24-0053756-0009.C002	Silvery metal (bushing)



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## Verification Result(s):

In accordance with the result of material risk assessment, the following disjointed parts in the submitted sample have been verified. (Unless otherwise specified, the unit is mg/kg).

					0 0/			
Test Item(s)	A1	A2	A3	A4	A5	A6	A7	A8
Cd	BL							
Pb	BL							
Hg	BL							
Cr(VI)▼	BL	BL	BL	BL	BL	ND	BL	BL
PBB		BL	BL				BL	
PBDE		BL	BL				BL	
DBP			ND				ND	
DEHP			ND				ND	
BBP			ND				ND	
DIBP			ND				ND	
Conclusion	PASS							

Test Item(s)	B1	B2	В3	B4	B5	C1	C2	D1
Cd	BL							
Pb	BL	BL	BL	BL	BL	ND	BL	BL
Hg	BL							
Cr(VI)▼	BL	BL	BL	ND	BL	ND	ND	BL
PBB		BL						BL
PBDE		BL						BL
DBP		ND						ND
DEHP		ND						ND
BBP		ND						ND
DIBP		ND						ND
Conclusion	PASS							

Test Item(s)	D2	D3	E1	E2	F1	F2	F3	G1
Cd	BL							
Pb	ND	BL						
Hg	BL							
Cr(VI)▼	ND	BL	ND	BL	ND	BL	ND	ND
PBB								
PBDE								
DBP								
DEHP								
BBP								
DIBP								
Conclusion	PASS							

Test Item(s)	G2	H1	H2	I1	12
Cd	BL	BL	BL	BL	BL
Pb	BL	BL	BL	ND	BL
Hg	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	ND	BL



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Test Item(s)	G2	H1	H2	I1	l2
PBB					
PBDE					
DBP					
DEHP					
BBP					
DIBP					
Conclusion	PASS	PASS	PASS	PASS	PASS



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## Notes:

(1) Interpretation of screening results by X-ray fluorescence spectrometry (XRF):

(a) Screening limits in mg/kg for regulated elements in various matrices according to IEC 62321-1:2013 Annex A as below table.

Element	Polymer	Metal	Composite Materials
Cd	BL≤(70-3σ) <x<(130+3σ)≤ol< td=""><td>BL≤(70-3σ)<x<(130+3σ)≤ol< td=""><td>LOD<x<(150+3σ)≤ol< td=""></x<(150+3σ)≤ol<></td></x<(130+3σ)≤ol<></td></x<(130+3σ)≤ol<>	BL≤(70-3σ) <x<(130+3σ)≤ol< td=""><td>LOD<x<(150+3σ)≤ol< td=""></x<(150+3σ)≤ol<></td></x<(130+3σ)≤ol<>	LOD <x<(150+3σ)≤ol< td=""></x<(150+3σ)≤ol<>
Pb	BL≤(700-3σ) <x<(1300+3σ)≤ol< td=""><td>BL≤(700-3σ)<x<(1300+3σ)≤ol< td=""><td>BL≤(500-3σ)<x<(1500+3σ)≤ol< td=""></x<(1500+3σ)≤ol<></td></x<(1300+3σ)≤ol<></td></x<(1300+3σ)≤ol<>	BL≤(700-3σ) <x<(1300+3σ)≤ol< td=""><td>BL≤(500-3σ)<x<(1500+3σ)≤ol< td=""></x<(1500+3σ)≤ol<></td></x<(1300+3σ)≤ol<>	BL≤(500-3σ) <x<(1500+3σ)≤ol< td=""></x<(1500+3σ)≤ol<>
Hg	BL≤(700-3σ) <x<(1300+3σ)≤ol< td=""><td>BL≤(700-3σ)<x<(1300+3σ)≤ol< td=""><td>BL≤(500-3σ)<x<(1500+3σ)≤ol< td=""></x<(1500+3σ)≤ol<></td></x<(1300+3σ)≤ol<></td></x<(1300+3σ)≤ol<>	BL≤(700-3σ) <x<(1300+3σ)≤ol< td=""><td>BL≤(500-3σ)<x<(1500+3σ)≤ol< td=""></x<(1500+3σ)≤ol<></td></x<(1300+3σ)≤ol<>	BL≤(500-3σ) <x<(1500+3σ)≤ol< td=""></x<(1500+3σ)≤ol<>
Br	BL ≤ (300-3σ)< X	Not applicable	BL ≤ (250-3σ)< X
Cr	BL ≤ (700-3σ)< X	BL ≤ (700-3σ)< X	BL ≤ (500-3σ)< X

- (b) If the maximum allowed level restricts PBB/PBDE and Cr(VI) rather than Br and Cr, the exceptions are the XRF determinations of Br and Cr. If the quantitative results for the elements Br and/or Cr are higher than the limit (for Br calculated based on the stoichiometry of Br in the most common congeners of PBB/PBDE), the sample is "inconclusive".
- (c) Results are obtained by EDXRF for primary screening, LOD = Limit of Detection, BL = Below Limit, OL= Over Limit, IN (The symbol X marks the region)=Inconclusive, where further investigation is necessary, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBB/PBDE) are recommended to be performed.
- (d) The EDXRF screening test for RoHS elements The reading may be different to the actual content in the sample be of non-uniformity composition.
- (2) Screening results of Phthalates (PHTH) are for primary screening, and further chemical testing by GC -MS (for DBP, BBP, DEHP and DIBP) are recommended to be performed if the concentration exceeds the below warning value (unit: mg/kg).

Test Items	CAS No.	Polymer/ Composite Materials
Dibutyl phthalate (DBP)	84-74-2	BL ≤ 600< X
Butyl benzyl phthalate (BBP)	85-68-7	BL ≤ 600< X
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	BL ≤ 600< X
Diisobutyl phthalate (DIBP)	84-69-5	BL ≤ 600< X

- (3) Interpretation of results by chemical tests:
  - (a) mg/kg = 0.0001%, MDL=Method detection Limit, ND = Not Detected (<MDL), --- = Not Applicable.
  - (b) Unit and MDL in wet chemical test

Test Items	Pb	Cd	Hg	DBP	BBP	DEHP	DIBP
Unit	mg/kg						
MDL	10	10	10	100	100	100	100

The MDL for single compound of PBB and PBDE is 100 mg/kg.

MDL of Cr(VI) for polymer, composite and leather sample is 10 mg/kg.

MDL of Cr(VI) for metal sample is 0.10 µg/cm<sup>2</sup>.

- (c) ▼ =Metal sample
  - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm². The sample coating is considered to contain Cr(VI).
  - b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-Cr(VI) based coating
  - c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive-unavoidable coating variations may influence the determination



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> Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

- (4) Restricted substances and maximum concentration values tolerated by weight in homogeneous materials under RoHS Directive: Cd: 0.01%, Pb/Hg/Cr(VI)/PBB/PBDE/DEHP/DBP/BBP/DIBP: 0.1%. The limit is quoted from RoHS Directive (EU) 2015/863.
- (5) IEC 62321 series is equivalent to EN 62321 series.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.



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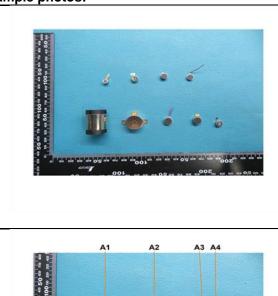
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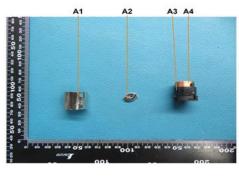


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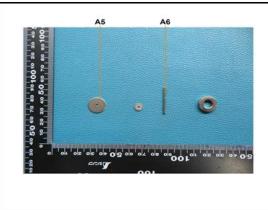
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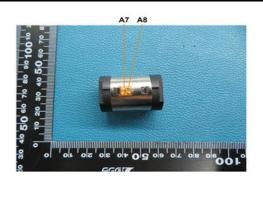












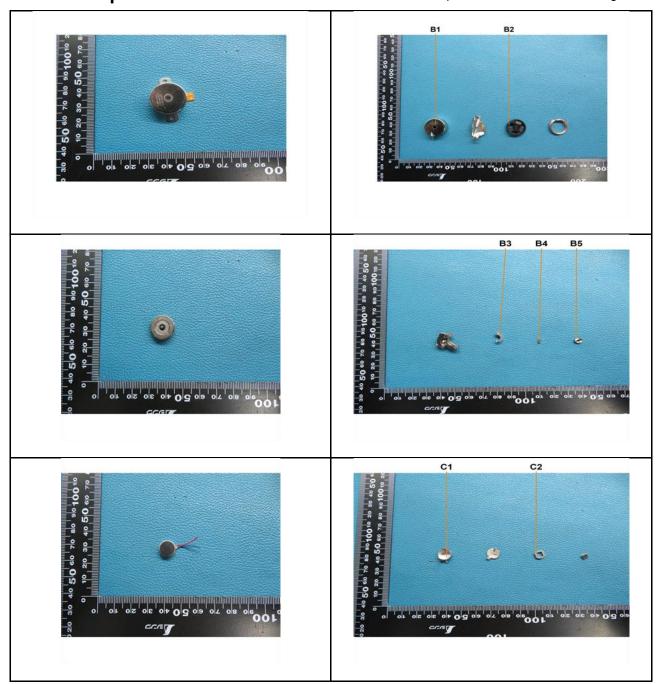


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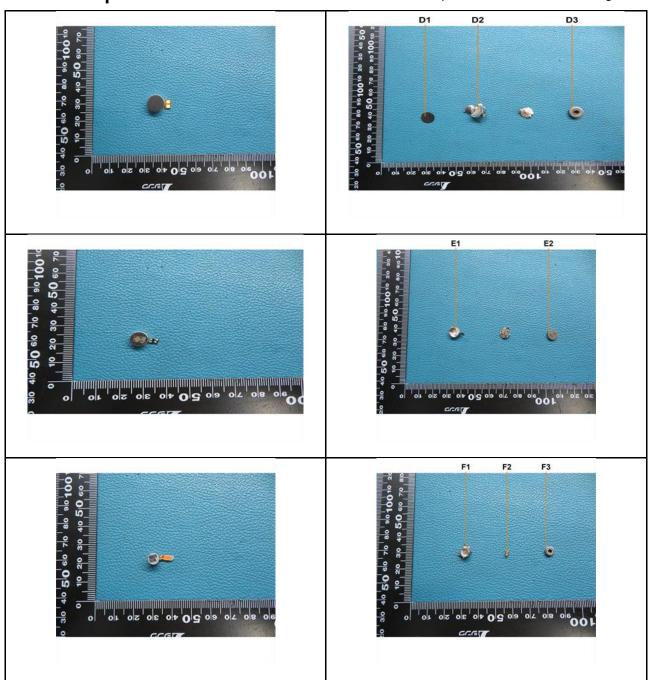


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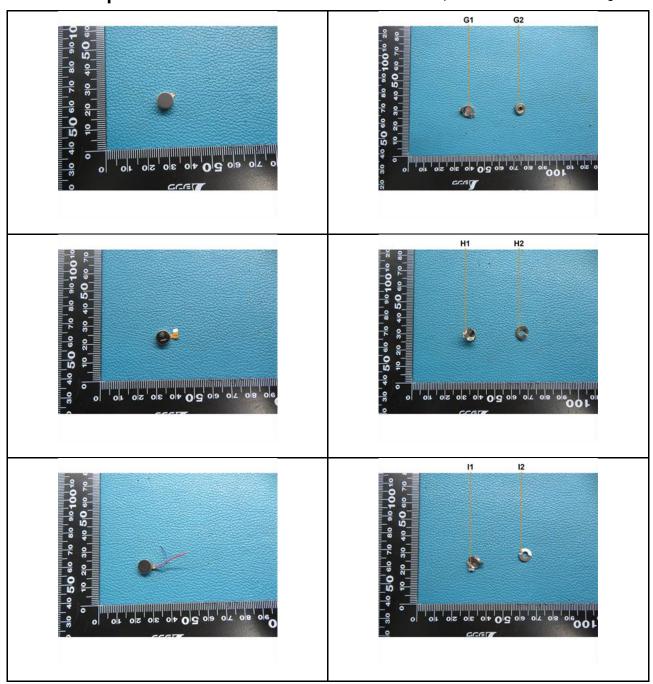


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