

Verification Report No.: SHAEC24000070301 Date: Jan 12, 2024 Page 1 of 10

Client Name: Jiangsu DINGS' Intelligent Control Technology Co., Ltd.

Client Address: 355 Longjin Road, Changzhou Economic Development Zone, Jiangsu, China

Sample Name: Hybrid Rotary Stepper Motor

Tested Basic Model No.: 17H2049-120-4AL-S

Client Ref. Information: H/P/W

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

SGS Job No.: SHP24-000057 Sample Receiving Date: Jan 02, 2024

Verification Period: Jan 02, 2024 ~ Jan 11, 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 (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl)	Pass
phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and	
Diisobutyl phthalate (DIBP)	

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

Jessica Chen Approved Signatory



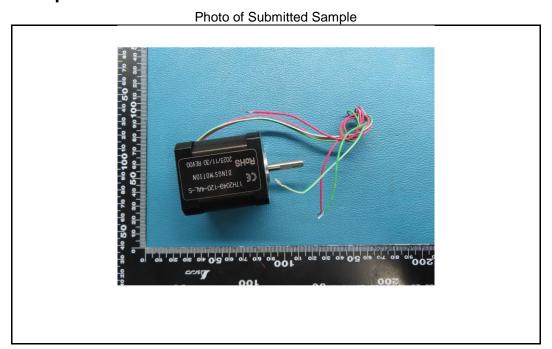


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## Verification Method(s):

- 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, ISO 17075-1:2017, 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:

verification Pai	Verification Part Description:							
SN ID	Sample No.	SGS Sample ID	Description					
SN1	A1	SHA24-0000703-0001.C001	Black adhesive plastic (label)					
SN2	A2	SHA24-0000703-0001.C002	Silver-blue metal (screw)					
SN3	A3	SHA24-0000703-0001.C003	Black metal (shell)					
SN4	A4	SHA24-0000703-0001.C004	Black metal (gasket)					
SN5	A5	SHA24-0000703-0001.C005	White plastic (gasket)					
SN6	A6	SHA24-0000703-0001.C006	Black metal (shell)					
SN7	A7	SHA24-0000703-0001.C007	Silvery metal (bearing)					
SN8	A8	SHA24-0000703-0001.C008	Silvery metal (bearing)					
SN9	A9	SHA24-0000703-0001.C009	Silvery metal (bearing)					
SN10	A10	SHA24-0000703-0001.C010	Silvery metal (bearing)					
SN11	A11	SHA24-0000703-0001.C011	Silvery metal (bearing)					
SN12	A12	SHA24-0000703-0001.C012	Black metal (circlip)					
SN13	A13	SHA24-0000703-0001.C013	Silvery metal (bushing)					
SN14	A14	SHA24-0000703-0001.C014	Silvery metal (shaft)					
SN15	A15	SHA24-0000703-0001.C015	Gray adhesive (shaft)					
SN16	A16	SHA24-0000703-0001.C016	Silvery metal (shaft)					
SN17	A17	SHA24-0000703-0001.C017	Silver-blue magnet					
SN18	A18	SHA24-0000703-0001.C018	White plastic					
SN19	A19	SHA24-0000703-0001.C019	Green PCB (body) (PCB)					
SN20	A20	SHA24-0000703-0001.C020	Silvery metal (soldering tin)					
SN21	A21	SHA24-0000703-0001.C021	Red/White plastic (jacket)					
SN22	A22	SHA24-0000703-0001.C022	Silvery metal (wire core)					
SN23	A23	SHA24-0000703-0001.C023	Green/White plastic (jacket)					
SN24	A24	SHA24-0000703-0001.C024	Green plastic (jacket)					
SN25	A25	SHA24-0000703-0001.C025	Red plastic (jacket)					
SN26	A26	SHA24-0000703-0001.C026	Black metal (silicon plate)					
SN27	A27	SHA24-0000703-0001.C027	Transparent plastic (bracket)					
SN28	A28	SHA24-0000703-0001.C028	Copper-colored metal (loop)					



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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).

sample have be	sample have been verified. (emess enterwise specified, the drift is mg/kg).							
Test Item(s)	A1	A2	A3	A4	A5	A6	A7	A8
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	ND	ND	ND	BL	ND	ND	ND
PBBs	BL				BL			
PBDEs	BL				BL			
DBP	BL				BL			
BBP	BL				BL			
DEHP	BL				BL			
DIBP	BL				BL			
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A9	A10	A11	A12	A13	A14	A15	A16
Cd	BL							
Pb	BL							
Hg	BL							
Cr(VI)▼	ND	BL	ND	ND	BL	ND	BL	ND
PBBs							BL	
PBDEs							BL	
DBP							BL	
BBP							BL	
DEHP							BL	
DIBP							BL	
Conclusion	PASS							

Test Item(s)	A17	A18	A19	A20	A21	A22	A23	A24
Cd	BL							
Pb	BL							
Hg	BL							
Cr(VI)▼	BL							
PBBs	BL	BL	ND		BL		BL	BL
PBDEs	BL	BL	ND		BL		BL	BL
DBP		BL	BL		BL		BL	BL
BBP		BL	BL		BL		BL	BL
DEHP		BL	BL		BL		BL	BL
DIBP		BL	BL		BL		BL	BL
Conclusion	PASS							

Test Item(s)	A25	A26	A27	A28
Cd	BL	BL	BL	BL
Pb	BL	BL	BL	BL
Hg	BL	BL	BL	BL
Cr(VI)▼	BL	ND	BL	BL



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Test Item(s)	A25	A26	A27	A28
PBBs	BL		BL	
PBDEs	BL		BL	
DBP	BL		BL	
BBP	BL		BL	
DEHP	BL		BL	
DIBP	BL		BL	
Conclusion	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 PBBs/PBDEs) 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
Benzylbutyl 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 PBBs and PBDEs 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  $\mu g/cm^2$ . 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  $\mu g/cm^2$ ). The coating is considered a non-Cr(VI) based coating
  - c. The result between 0.10  $\mu$ g/cm² and 0.13  $\mu$ g/cm² 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)/PBBs/PBDEs/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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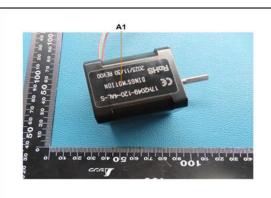
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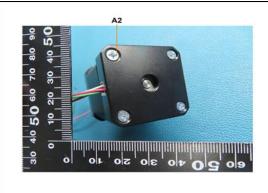


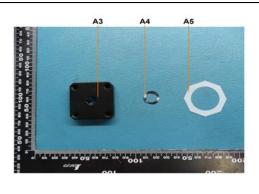
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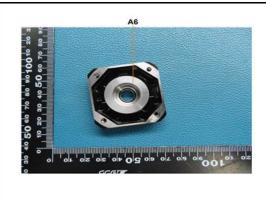
Sample photos:













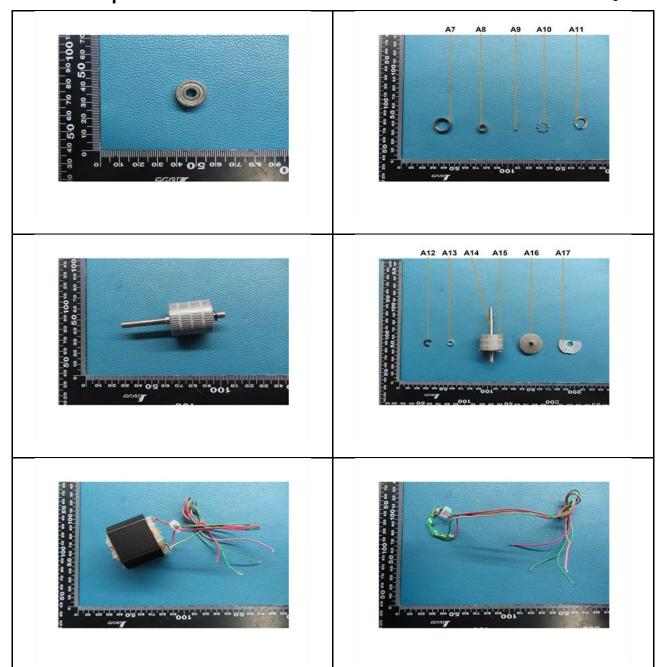


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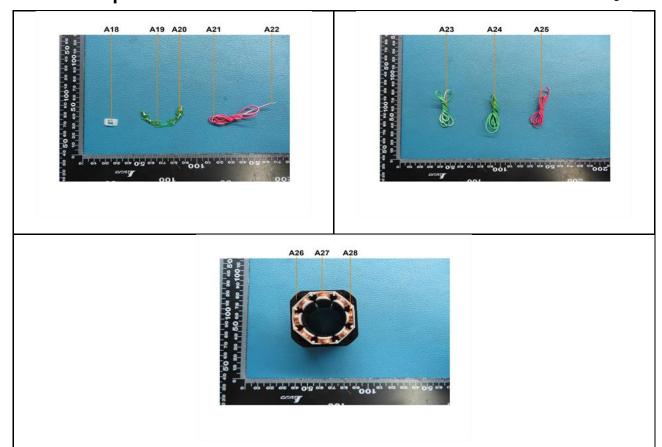


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