

验证报告

编号: TAOEC25002932402

日期: 2025 年 04 月 29 日

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客户名称: 江苏鼎智智能控制科技股份有限公司
客户地址: 江苏省常州经济开发区潞城街道潞横路 2850 号

样品名称: 直流无槽无刷电机
测试基本型号: 16ZWWC40T-27
客户参考信息: 10/12/14/16/22/28/36/42

以上样品及信息由客户提供。

SGS 工作编号: SHP25-010158
样品接收时间: 2025 年 04 月 11 日
验证周期: 2025 年 04 月 11 日 ~ 2025 年 04 月 27 日
验证要求: 参考欧盟 RoHS 指令 2011/65/EU 的修正指令(EU) 2015/863。
验证方法: 见后续页。
验证程序和结果: 见后续页。

检测结果总结:

检测项目	结论
欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉、六价铬、多溴联苯 (PBB)、多溴二苯醚 (PBDE)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP)和邻苯二甲酸二异丁酯 (DIBP)	符合

通标标准技术服务(青岛)有限公司
授权签名

孙媛媛

Alice Sun 孙媛媛
批准签署人

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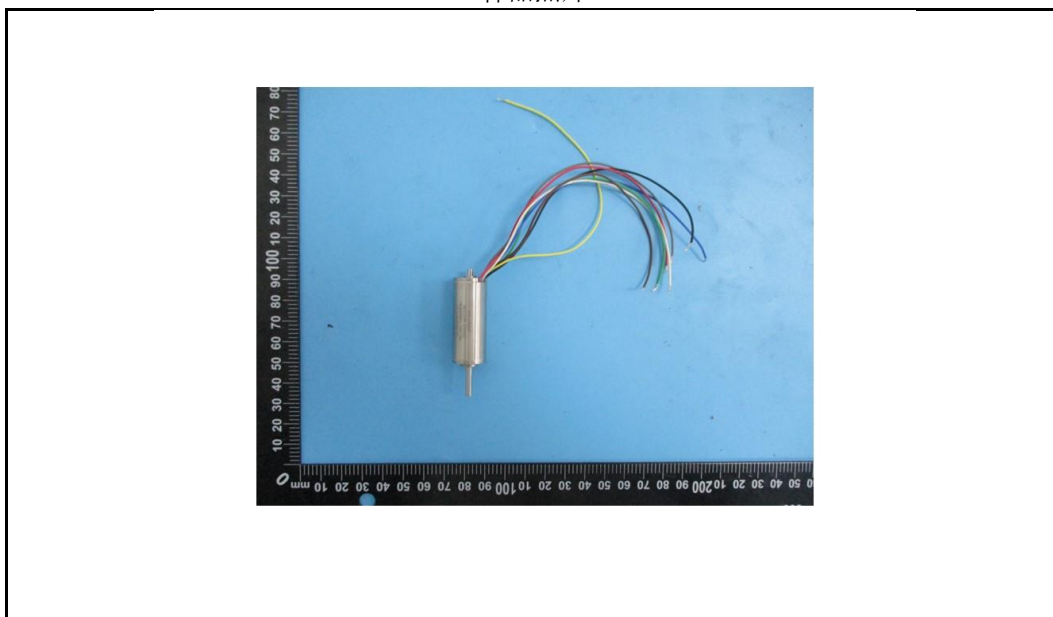
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样品照片



验证方法:

1. 参考 IEC 62321-2:2021, 拆分申请者提供的成品。
2. 参考 IEC 62321-1:2013, 仅对本报告照片中标识的样品进行了下列测试分析。
 - (1) 参考 IEC 62321-3-1: 2013, 用能量色散型 X 射线荧光分析仪器进行筛选。
 - (2) 湿法化学检测方法: 参考 IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-12:2023, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES, UV-Vis 和 GC- MS 进行分析。



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验证部件外观描述：

样品序号	样品编号	SGS 样品 ID	样品描述
SN1	A1	TAO25-0029324-0001.C001	银色金属
SN2	A2	TAO25-0029324-0001.C002	黑色塑料线皮
SN3	A3	TAO25-0029324-0001.C003	红色塑料线皮
SN4	A4	TAO25-0029324-0001.C004	灰色塑料线皮
SN5	A5	TAO25-0029324-0001.C005	黄色塑料线皮
SN6	A6	TAO25-0029324-0001.C006	蓝色塑料线皮
SN7	A7	TAO25-0029324-0001.C007	白色塑料线皮
SN8	A8	TAO25-0029324-0001.C008	绿色塑料线皮
SN9	A9	TAO25-0029324-0001.C009	棕色塑料线皮
SN10	A10	TAO25-0029324-0001.C010	白色纸
SN11	A11	TAO25-0029324-0001.C011	铜色漆包线
SN12	A12	TAO25-0029324-0001.C012	银色金属
SN13	A13	TAO25-0029324-0001.C013	铜色金属
SN14	A14	TAO25-0029324-0001.C014	银色金属
SN15	A15	TAO25-0029324-0001.C015	银色金属
SN16	A16	TAO25-0029324-0001.C016	黑色磁体
SN17	A17	TAO25-0029324-0001.C017	银色金属
SN18	A18	TAO25-0029324-0001.C018	银色金属线芯
SN19	A19	TAO25-0029324-0001.C019	银色金属钢珠
SN20	A20	TAO25-0029324-0001.C020	透明胶
SN21	A21	TAO25-0029324-0001.C021	银色金属
SN22	A22	TAO25-0029324-0001.C022	银色金属焊锡
SN23	A23	TAO25-0029324-0001.C023	绿色 PCB



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验证结果:

(除特别标注, 单位均为: mg/kg)

检测项目	A1	A2	A3	A4	A5	A6	A7	A8
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	ND	BL	BL	BL	BL	BL	BL	BL
PBB	---	BL	BL	BL	BL	BL	BL	BL
PBDE	---	BL	BL	BL	BL	BL	BL	BL
DEHP	---	BL	BL	BL	BL	BL	BL	BL
BBP	---	BL	BL	BL	BL	BL	BL	BL
DBP	---	BL	BL	BL	BL	BL	BL	BL
DIBP	---	BL	BL	BL	BL	BL	BL	BL
结论	符合	符合	符合	符合	符合	符合	符合	符合

检测项目	A9	A10	A11	A12	A13	A14	A15	A16
Pb	BL	BL	BL	BL	15966▲	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	ND	ND	ND	ND	ND
PBB	BL	BL	BL	---	---	---	---	BL
PBDE	BL	BL	BL	---	---	---	---	BL
DEHP	BL	BL	BL	---	---	---	---	BL
BBP	BL	BL	BL	---	---	---	---	BL
DBP	BL	BL	BL	---	---	---	---	BL
DIBP	BL	BL	BL	---	---	---	---	BL
结论	符合	符合	符合	符合	符合	符合	符合	符合

检测项目	A17	A18	A19	A20	A21	A22	A23
Pb	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	ND	BL	ND	BL	ND	ND	BL
PBB	---	---	---	BL	---	---	ND
PBDE	---	---	---	BL	---	---	ND
DEHP	---	---	---	BL	---	---	ND
BBP	---	---	---	BL	---	---	ND
DBP	---	---	---	BL	---	---	ND
DIBP	---	---	---	BL	---	---	ND
结论	符合	符合	符合	符合	符合	符合	符合



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备注:

(1) X 射线荧光光谱法(XRF)筛选结果说明:

(a) 下表为 IEC62321-3-1: 2013 附录 A 不同基体材料中以 mg/kg 表示的筛选元素限值:

元素	聚合物	金属	复合材料
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	不适用	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

(b) 现行法规限制的最大允许值是对 PBB/PBDE 和 Cr(VI) 而不是对 Br 和 Cr 的, 而 XRF 测定的是 Br 和 Cr。如果元素 Br 和或 Cr 的定量结果均高于限值(Br 计算基于在常见物质中 PBB/PBDE 的组成的理论计算), 则样品的筛选结果为“不确定”。

(c) EDXRF 的结果用于初步筛选, LOD=检出限, BL=低于限值, OL=超出限值, IN (符号“X”标记的区域)=不确定, 需要进一步研究, 我们建议客户用更精确的化学检测方法测试样品, 如用 ICP-OES 测定 Cd/Pb/Hg; 用 UV-Vis 测定 Cr(VI); 用 GC-MS 测定 PBB/PBDE。

(d) 对于复合材料, EDXRF 筛选测定元素所得数据可能与样品中实际含量不同。

(2) 邻苯二甲酸酯(PHTH)先进行筛分检测以确认样品是否符合限值要求, 符合则以“BL”表示, 若不符合则采用更精确的 GC-MS 化学检测方法测试样品。

检测项目	CAS No.
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	117-81-7
邻苯二甲酸丁苄酯 (BBP)	85-68-7
邻苯二甲酸二丁酯 (DBP)	84-74-2
邻苯二甲酸二异丁酯 (DIBP)	84-69-5

(3) 化学检测方法结果说明:

(a) mg/kg = 0.0001%, MDL=方法检出限, ND =未检出(低于 MDL), --- =不适用。

(b) 化学检测方法的表达单位和方法检出限

检测项目	Pb	Hg	Cd	DEHP	BBP	DBP	DIBP
单位	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
方法检出限	10	10	10	100	100	100	100

任何一种 PBB 和 PBDE 的方法检出限是 100 mg/kg;

聚合物, 复合材料和皮革样品中 Cr(VI)的方法检出限是 10 mg/kg。

金属样品中 Cr(VI)的方法检出限是 0.10 $\mu\text{g}/\text{cm}^2$ 。

(c) ▼ = 金属样品中

a. 当六价格的浓度高于 0.13 $\mu\text{g}/\text{cm}^2$ 时, 样品为阳性, 即含有六价格;b. 当六价格的浓度为 ND(低于 0.10 $\mu\text{g}/\text{cm}^2$)时, 样品为阴性, 即未检测到六价格;c. 当六价格的浓度介于 0.10 $\mu\text{g}/\text{cm}^2$ 与 0.13 $\mu\text{g}/\text{cm}^2$ 之间时, 无法直接判定是否检测到六价格, 因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价格检测结果仅能代表检测时样品含六价格的状态。

(4) RoHS 指令中限制物质及均质材料中最大允许浓度值: Cd: 0.01%, Pb/Hg/Cr(VI)/PBB/PBDE/ DEHP



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/BBP/DBP/DIBP: 0.1%, 限值引用自 RoHS 指令(EU) 2015/863。

(5) IEC 62321 系列等同于 EN 62321 系列。

(6)▲ 根据客户提供的声明, 编号 A13 中的铅(Pb)被欧盟 RoHS 指令 2011/65/EU 豁免, 相应豁免条文(请以英文原文为准) [ANNEX III 6(c)]: 铜合金中的铅含量不得超过 4%。

更多豁免相关信息, 可以从以下链接获取:

<https://rohs.sgsonline.com.cn/PDFLinks/zh-cn/RSTS-TP-037%20RoHS%20Exemption%20%28CN%29.pdf>

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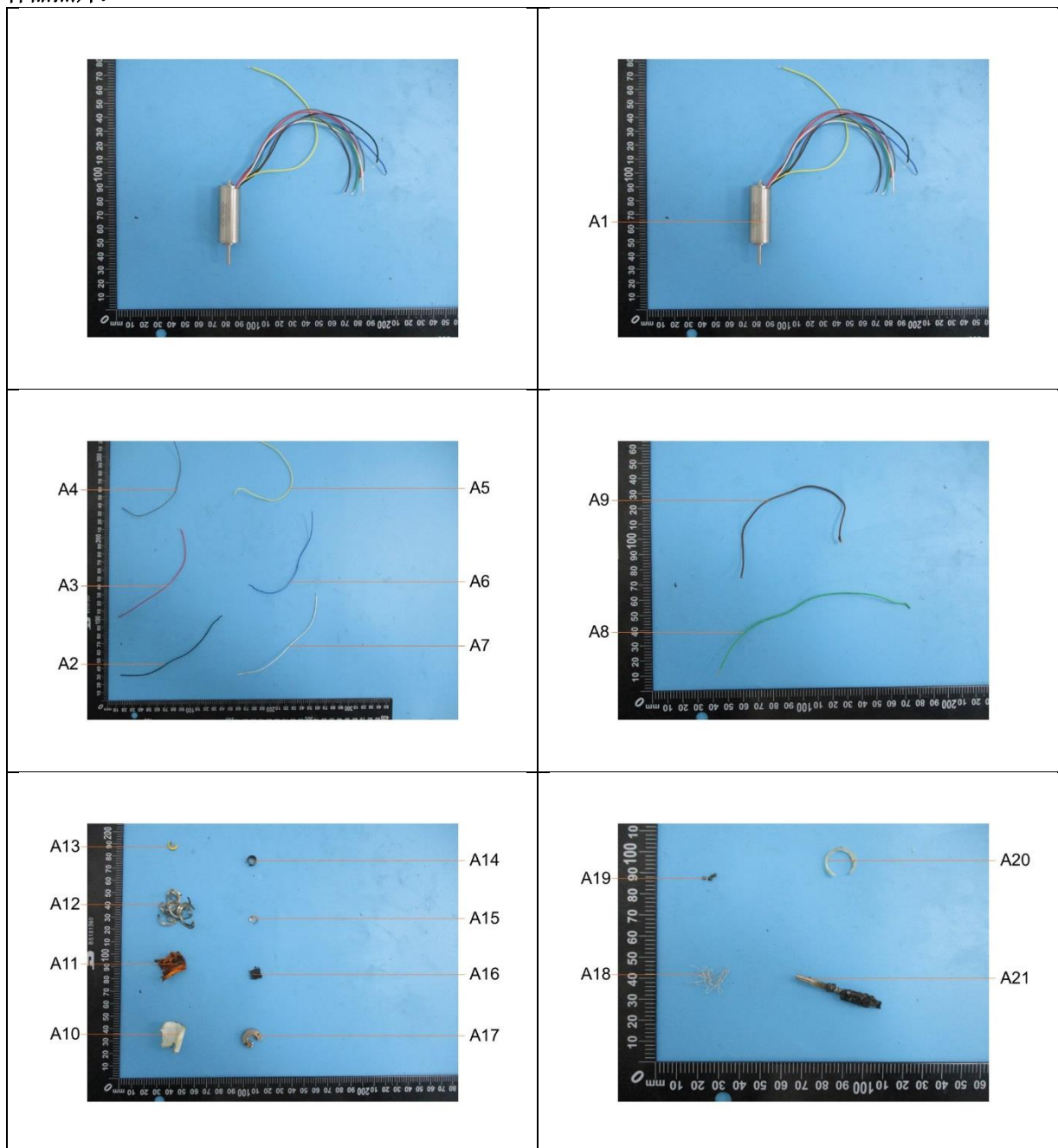
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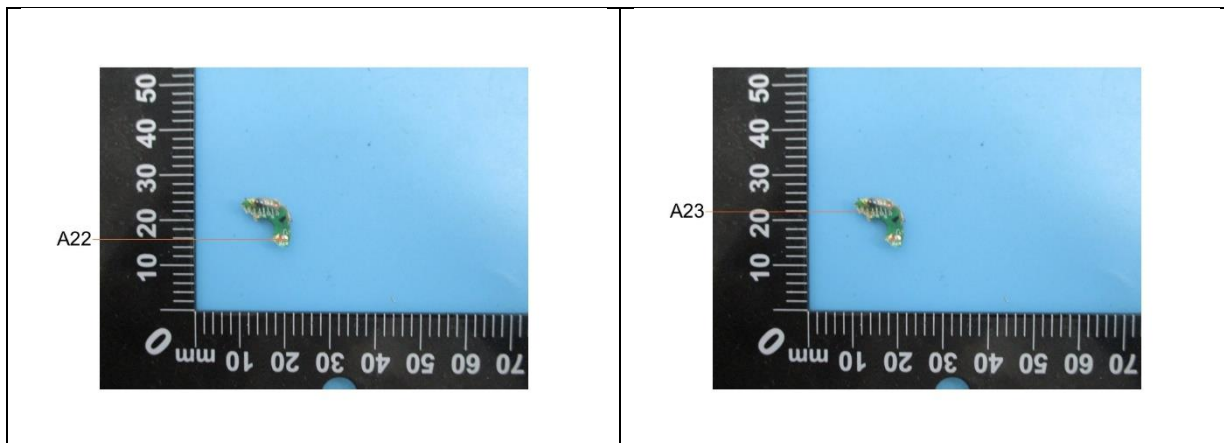
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