

验证报告

编号: CANEC2214043504

日期: 2022年08月29日 第1页,共9页

客户名称: 桂林恒创光电科技有限公司
客户地址: 广西桂林市七星区信息产业园创新大厦C-214号

样品名称: MEMS 1x16光开关
检测基本型号: 1x16
客户参考信息: 适用于: MEMS 1xN Optical Switch
以上样品及信息由客户提供。

SGS工作编号: CP22-036001 - GZ
样品接收日期: 2022年06月29日
验证周期: 2022年06月29日 - 2022年08月23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: 请参见后续页。
验证结果: 请参见后续页。

检测结果总结

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

通标标准技术服务有限公司广州分公司
授权签名

张鹰

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批准签署人

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SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory.

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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, ISO 17075-1:2017, IEC 62321-6:2015和IEC 62321-8:2017, 采用ICP-OES, UV-Vis和GC- MS进行分析。

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	CAN22-140435.001	带黑色印字的白色粘性塑料片
SN2	A2	CAN22-140435.002	红色海绵环
SN3	A3	CAN22-140435.003	透明塑料壳
SN4	A4	CAN22-140435.004	透明塑料壳
SN5	A5	CAN22-140435.005	透明物料线
SN6	A6	CAN22-140435.006	黑色橡胶部件
SN7	A7	CAN22-140435.007	带黑色印字的银色粘性塑料片



样品序号	样品编号	SGS 样品ID	样品描述
SN8	A8	CAN22-140435.008	银色金属壳
SN9	A9	CAN22-140435.009	棕色透明塑料部件
SN10	A10	CAN22-140435.010	银色金属环
SN11	A11	CAN22-140435.011	透明玻璃片
SN12	A12	CAN22-140435.012	金色金属部件
SN13	A13	CAN22-140435.013	金色金属针脚
SN14	A14	CAN22-140435.019	黑色塑料部件
SN15	A15	CAN22-140435.020	银色金属部件
SN16	A16	CAN22-140435.021	黑色本体
SN17	A17	CAN22-140435.022	灰色物料环



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验证结果:

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

检测项目	A17
Pb	702644▲
Cd	BL
Hg	BL
Cr(VI)▼	BL
PBBs	BL



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检测项目	A17
PBDEs	BL
DBP	ND
BBP	ND
DEHP	ND
DIBP	ND
结论	符合



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备注:

(1) X 射线荧光光谱法(XRF)筛选结果说明:

(b) 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	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

(c) 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”。

(d) 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检测样品, 如用 ICP-OES 检测 Cd/Pb/Hg; 用 UV-Vis 检测 Cr(VI); 用 GC-MS 检测 PBBs/PBDEs。

(e) 对于复合材料, EDXRF 筛选检测 RoHS 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)筛分结果只作初步筛选, 如果检测结果超出下表所规定的警戒范围, 我们采用更精确的化学检测方法检测样品, 用 GC-MS 检测 DBP、BBP、DEHP 和 DIBP (单位: mg/kg)。

检测项目	CAS No.	聚合物/复合材料
邻苯二甲酸二丁酯 (DBP)	84-74-2	$BL \leq 600 < X$
邻苯二甲酸丁苄酯 (BBP)	85-68-7	$BL \leq 600 < X$
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	117-81-7	$BL \leq 600 < X$
邻苯二甲酸二异丁酯 (DIBP)	84-69-5	$BL \leq 600 < X$

(3) 化学检测方法结果说明

(a) $mg/kg = 0.0001\%$, MDL=方法检测限, 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测限

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

任何一种 PBBs 和 PBDEs 的方法检测限是 100mg/kg;
 聚合物, 复合材料和皮革样品中 Cr(VI)的方法检测限是 10mg/kg。
 金属样品中 Cr(VI)的方法检测限是 0.10µg/cm²。

(c) ▽ = 金属样品中

- a. 当六价铬的浓度高于 0.13µg/cm² 时, 样品为阳性, 即含有六价铬;
- b. 当六价铬的浓度为 ND (低于 0.10µg/cm²) 时, 样品为阴性, 即未检测到六价铬;
- c. 当六价铬的浓度介于 0.10µg/cm² 与 0.13µg/cm² 之间时, 无法直接判定是否检测到六价铬, 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, 样品的六价铬检测结果仅能代表测试时样品含六价铬的状态。

(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)/PBBs/PBDEs /DEHP/DBP/BBP/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。

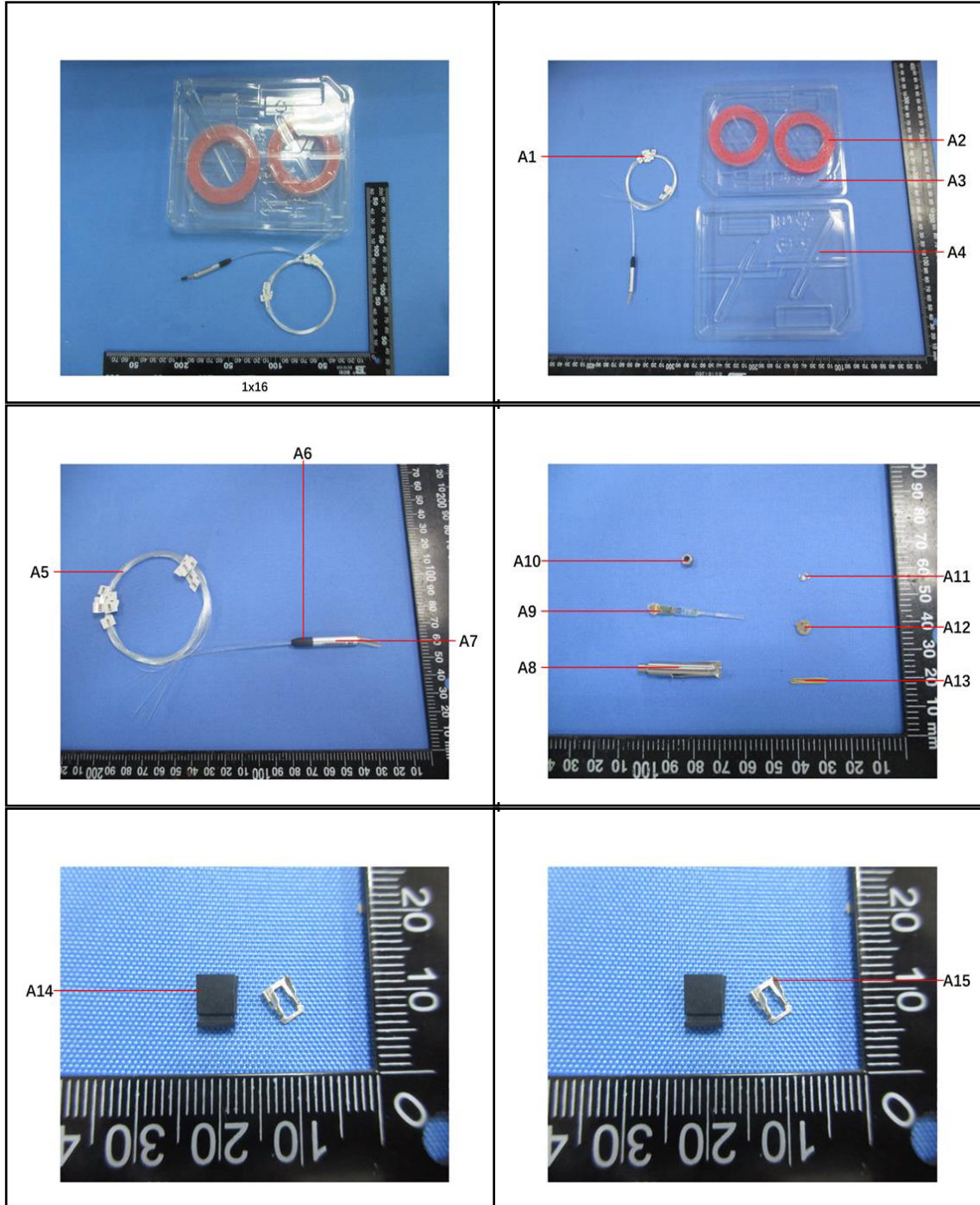
(6) ▲=根据客户提供的声明, 编号A17中的铅(Pb)被欧盟RoHS指令2011/65/EU豁免, 相应豁免条文(请以英文原文为准) |ANNEX III 7(c)-I|: 电子电气元件中玻璃或陶瓷材料(电容中陶瓷介质除外)所含的铅, 如压电设备、玻璃或陶瓷基复合元件。

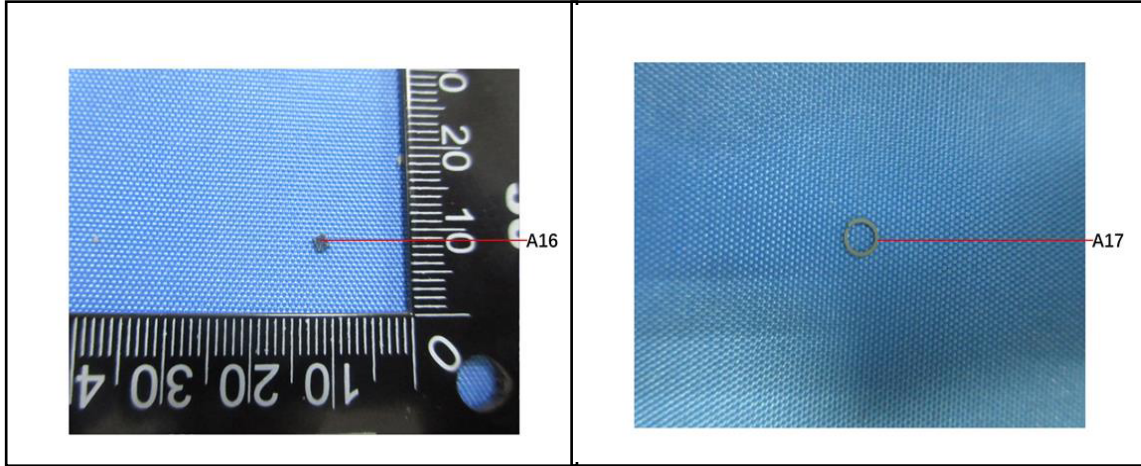
(7) 本报告中的检测结果和图片引用自验证报告CANEC2214043501。

除非另有说明, 参照ILAC-G8:09/2019, 使用简单接受 ($w=0$) 的二元判定规则进行符合性判定。
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 检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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*** 报告完 ***

