Verification Report

CENTRE TESTING INTERNATIONAL

Applicant ZHEJIANG CHINT INSTRUMENT&METER CO.,LTD

Address BRIDGE INDUSTRIAL ZONE, YUEQING CITY, ZHEJIANG PROVINCE, CHINA

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Conclusion

Tested Sample	According to directive	Result
Submitted Sample	RoHS Directive 2011/65/EU with amendment (EU) 2015/863	Pass#

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#:CTI conducted Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs&PBDEs and Phthalates(DBP, BBP, DEHP, DIBP) on the components which were identified by the client, and the results shown on the report comply with the limits set by RoHS Directive2011/65/EU with amendment(EU) 2015/863.

Tested by Guodong Jiang Reviewed by Sha Chen

Approved by Lin Zhang Date Mar. 22, 2018

Lin Zhang
Technical Manager

No. R340209947

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Report Content

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The following sample(s) and sample information was/were submitted and identified by/on the behalf of t he client.

Product Name single-phase smart meter
Sample Received Date Mar. 20, 2018
Testing Period Mar. 20, 2018 to Mar. 22, 2018

Client Reference Information:

Model	Reference voltage （V）	Current specification （A）	Degree of accuracy
DDSU666	230	5(80)A	Class 1
		100A/40mA	Class 1
		5(60)A	Class 1
		1.5(6)A	Class 1

Test Requested

1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr), Bromine(Br), Phthalates【Dibutyl phthalate(DBP), Benzylbutyl phthalate(BBP), Di-2-ethylhexyl phthalate(DEHP), Diisobutyl phthalate(DIBP)】 in the submitted sample(s).
2.As specified by client, when screening results exceed the screening limit in IEC 62321-3-1:2013 or screening limit of Phthalates in this report, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)),Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) and Phthalates【Dibutyl phthalate(DBP), Benzylbutyl phthalate(BBP), Di-2-ethylhexyl phthalate(DEHP), Diisobutyl phthalate(DIBP)】in the submitted samples.

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Photo(s) of the Product(s)

single-phase smart meter

At the request of client, the sample photo below in this report is provided by applicant and is for reference only.

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Test Method

A. Screening limits for regulated elements according to IEC 62321-3-1:2013 (Unit: mg/kg)

Element	Polymers	Metals	Composite material
Pb	BL≤(700-3σ) <X <(1300+3σ) ≤OL	BL≤(700-3σ) <X <(1300+3σ) ≤OL	BL≤(500-3σ)<X <(1500+3σ) ≤OL
Cd	BL≤(70-3σ)<X <(130+3σ) ≤OL	BL≤(70-3σ)<X <(130+3σ) ≤OL	LOD<X<(150+3σ) ≤OL
Hg	BL≤(700-3σ)<X <(1300+3σ) ≤OL	BL≤(700-3σ)<X <(1300+3σ) ≤OL	BL≤(500-3σ)<X <(1500+3σ) ≤OL
Cr	BL≤(700-3σ)< X	BL≤(700-3σ)< X	BL≤(500-3σ)< X
Br	BL≤(300-3σ)< X	N/A	BL≤(250-3σ)< X

B. Screening limits for Phthalates

Test Item(s)	Screening limits(Unit: mg/kg)
Dibutyl phthalate(DBP)	BL≤600 <X
Benzylbutyl phthalate(BBP)	BL≤600 <X
Di-2-ethylhexyl phthalate(DEHP)	BL≤600 <X
Diisobutyl phthalate(DIBP)	BL≤600 <X

C. Chemical Test

Tested Item(s)	Test Method	Measured Equipment(s)	MDL	Limit
Lead (Pb)	IEC 62321-5:2013	ICP-OES	10 mg/kg	1000 mg/kg
	Refer to IEC 62321-5:2013	ICP-OES	10 mg/kg	
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	10 mg/kg	100 mg/kg
	Refer to IEC 62321-5:2013	ICP-OES	10 mg/kg	
Mercury (Hg)	IEC 62321-4:2013	ICP-OES	10 mg/kg	1000 mg/kg
	Refer to IEC 62321-4:2013	ICP-OES	10 mg/kg	
Hexavalent Chromium(Cr(VI))	IEC 62321-7-2:2017	UV-Vis	20 mg/kg	1000 mg/kg
	IEC 62321-7-1:2015	UV-Vis	0.10μg/cm^2 (LOQ)	
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	100 mg/kg	1000 mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS	100 mg/kg	1000 mg/kg
Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS	50 mg/kg	1000 mg/kg for each

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Remark:

- BL = Under the screening limit
- OL = Above the screening limit
- X = The range of needing to do further testing
- 3σ = The reproducibility of analytical instruments
- N/A= Not applicable
- LOD= Detection limit
- LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 μg/cm^2

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Test Result(s)

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
1	Grey-white plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
2	Grey-white plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
3	Grey-white plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
4	Grey-white plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
5	Soldering tin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
6	Cupreous metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
7	Cupreous metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
8	Metal with light multicolor plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.▼		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
9	Metal with light multicolor plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.▼		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
10	Metal with light multicolor plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.▼		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
11	Metal with silvery plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
12	Plastic with multicolor printing	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
13	Colorless transparent plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
14	Silvery label with black printing	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
15	Grey plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
16	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
17	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
18	Colorless transparent glass	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
19	Colorless transparent glass	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
20	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
21	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
22	Colorless transparent plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	/	N.D.		
		BBP	N/A	/	N.D.		
		DEHP	N/A	/	N.D.		
		DIBP	N/A	/	N.D.		
23	Green plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
24	Metal with light blue plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
25.1	Silvery plating	Pb	N/A	/	N.D.	PASS	Mar. 20, 2018
		Cd	N/A	/	N.D.		
		Hg	N/A	/	N.D.		
		Cr(Cr(VI))	N/A	/	N.D.▼		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
25.2	Metal base	Pb	OL	/	#1 19110	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
26.1	Silvery plating	Pb	N/A	/	N.D.	PASS	Mar. 20, 2018
		Cd	N/A	/	N.D.		
		Hg	N/A	/	N.D.		
		Cr(Cr(VI))	N/A	/	N.D.▼		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
26.2	Metal base	Pb	OL	/	#1 19110	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
27	Black plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
28	Silvery metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
29	Bimetal piece	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
30	Silvery metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
31	Black plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
32	Yellow solid	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
33	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
34	Black solid	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
35	Green body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
36	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
37	Black plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
38	Brass metal	Pb	OL	/	#1 25615	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

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Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
39	Red LED	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	/	N.D.		
		BBP	N/A	/	N.D.		
		DEHP	N/A	/	N.D.		
		DIBP	N/A	/	N.D.		
40	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
41	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
42	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
43	Metal with silvery plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
44	Black wire jacket	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	/	97		
		BBP	N/A	/	N.D.		
		DEHP	N/A	/	270		
		DIBP	N/A	/	N.D.		
45	Metal wire with silvery plating	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
46	Black plastic with white printing	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
47	Silvery metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
48	Black rubber	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	/	N.D.		
		BBP	N/A	/	N.D.		
		DEHP	N/A	/	N.D.		
		DIBP	N/A	/	N.D.		
49	Silvery metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
50	Brown paper	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
51	Silvery metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
52	Silver-grey metal	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
53	Light yellow solid	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
54	Cupreous metal wire	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
55	Cupreous metal wire	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
56	Cupreous metal wire	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
57	PCB	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
58	Soldering tin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
59	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
60	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
61	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
62	Yellow-brown body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
63	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
64	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
65	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
66	PCB	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
67	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
68	Black chip resistor	Pb	#2 3.0×10^3	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
69	Black body	Pb	#2 5.1×10^4	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
70	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
71	Soldering tin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
72	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
73	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
74	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
75	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
76	Black body	Pb	#2 2.1×10^{3}	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
77	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
78	White plastic	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
79	Brown body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	IN	/	N.D.		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
80	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
81	Silvery metal pin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		
82	PCB	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	IN	/	N.D.		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		

Verification Report

Sample No.	Tested Sample/Part Description	Tested Items	XRF Screening Test	Phthalates Screening Test	Chemical Test (mg/kg)	Conclusion	Sample Received/ Resubmitted Date
83	Black body	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	BL	/	/		
		DBP	N/A	BL	/		
		BBP	N/A	BL	/		
		DEHP	N/A	BL	/		
		DIBP	N/A	BL	/		
84	Soldering tin	Pb	BL	/	/	PASS	Mar. 20, 2018
		Cd	BL	/	/		
		Hg	BL	/	/		
		Cr(Cr(VI))	BL	/	/		
		Br(PBBs&PBDEs)	N/A	/	/		
		DBP	N/A	/	/		
		BBP	N/A	/	/		
		DEHP	N/A	/	/		
		DIBP	N/A	/	/		

Remark:

- N.D. = Not Detected (<MDL or LOQ)
- MDL = Method Detection Limit
- mg/kg = ppm = parts per million
- 1000mg/kg=0.1%
- /=Not tested
- IN= Uncertain, Further chemical test
- N/A= Not applicable
- BL = Under the screening limit
- OL = Further chemical test will be conducted while the result is above the screening limit.
- ▼The sample is negative for Cr(VI) − The Cr(VI) concentration is below 0.10μg/cm^2. The coating is considered a non-Cr(VI) based coating.
- When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.
- #1According to the client's statement, the material of the sample(s) fall into exemption items 6(c)according to EU Directive 2011/65/EU: Copper alloy containing up to 4% lead by weight.

[#2]According to the client's statement, the material of the sample(s) fall into exemption items 7(c)-IV according to EU Directive 2011/65/EU: Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors.

- The test result(s) of this report is/are presented in reference to the result(s) that reported in A2180032464101001.
- According to the client's statement, Reference information see the following table:

Sample No.	Reference Report No.	Sample No. in Reference Report
1	A2180009119101001R1	1
2	A2180009119101001R1	1
3	A2180009119101001R1	1
4	A2180009119101001R1	1
5	A2180009119101001R1	19
6	A2180009119101001R1	15
7	A2180009119101001R1	15
8	A2180009119101001R1	11
9	A2180009119101001R1	11
10	A2180009119101001R1	11
11	A2180009119101001R1	14
12	A2180009119101001R1	7
13	A2180009119101001R1	8
14	A2180009119101001R1	10
15	A2180009119101001R1	84
16	A2180009119101001R1	85
17	A2180009119101001R1	86
18	A2180009119101001R1	87
19	A2180009119101001R1	87
20	A2180009119101001R1	80
21	A2180009119101001R1	80
22	A2180009119101001R1	82
23	A2180009119101001R1	67
24	A2180009119101001R1	70
25.1	A2180009119101001R1	69.1
25.2	A2180009119101001R1	69.2
26.1	A2180009119101001R1	69.1
26.2	A2180009119101001R1	69.2
27	A2180009119101001R1	58
28	A2180009119101001R1	59
29	A2180009119101001R1	60

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Sample No.	Reference Report No.	Sample No. in Reference Report
30	A2180009119101001R1	61
31	A2180009119101001R1	62
32	A2180009119101001R1	51
33	A2180009119101001R1	49
34	A2180009119101001R1	50
35	A2180009119101001R1	45
36	A2180009119101001R1	44
37	A2180009119101001R1	130
38	A2180009119101001R1	2
39	A2180009119101001R1	52
40	A2180009119101001R1	44
41	A2180009119101001R1	25
42	A2180009119101001R1	25
43	A2180009119101001R1	41
44	A2180009119101001R1	28
45	A2180009119101001R1	27
46	A2180009119101001R1	73
47	A2180009119101001R1	72
48	A2180009119101001R1	75
49	A2180009119101001R1	74
50	A2180009119101001R1	79
51	A2180009119101001R1	77
52	A2180009119101001R1	76
53	A2180009119101001R1	93
54	A2180009119101001R1	101
55	A2180009119101001R1	101
56	A2180009119101001R1	101
57	A2180009119101001R1	108
58	A2180009119101001R1	19
59	A2180009119101001R1	25
60	A2180009119101001R1	25
61	A2180009119101001R1	113
62	A2180009119101001R1	115
63	A2180009119101001R1	131
64	A2180009119101001R1	44
65	A2180009119101001R1	133
66	A2180009119101001R1	108

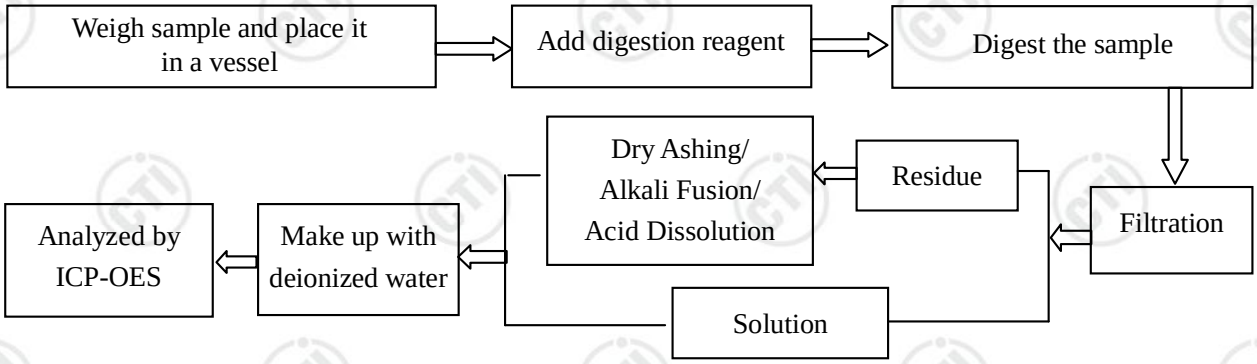
Verification Report

Sample No.	Reference Report No.	Sample No. in Reference Report
67	A2180009119101001R1	44
68	A2180009119101001R1	137
69	A2180009119101001R1	132
70	A2180009119101001R1	44
71	A2180009119101001R1	19
72	A2180009119101001R1	44
73	A2180009119101001R1	128
74	A2180009119101001R1	109
75	A2180009119101001R1	110
76	A2180009119101001R1	107
77	A2180009119101001R1	25
78	A2180009119101001R1	25
79	A2180009119101001R1	134
80	A2180009119101001R1	126
81	A2180009119101001R1	125
82	A2180009119101001R1	108
83	A2180009119101001R1	127
84	A2180009119101001R1	19

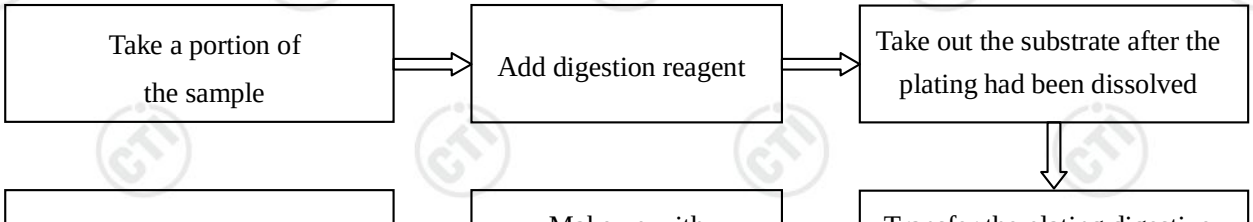
Chemical Test Process

1. Lead (Pb), Cadmium (Cd)

1) IEC 62321-5:2013

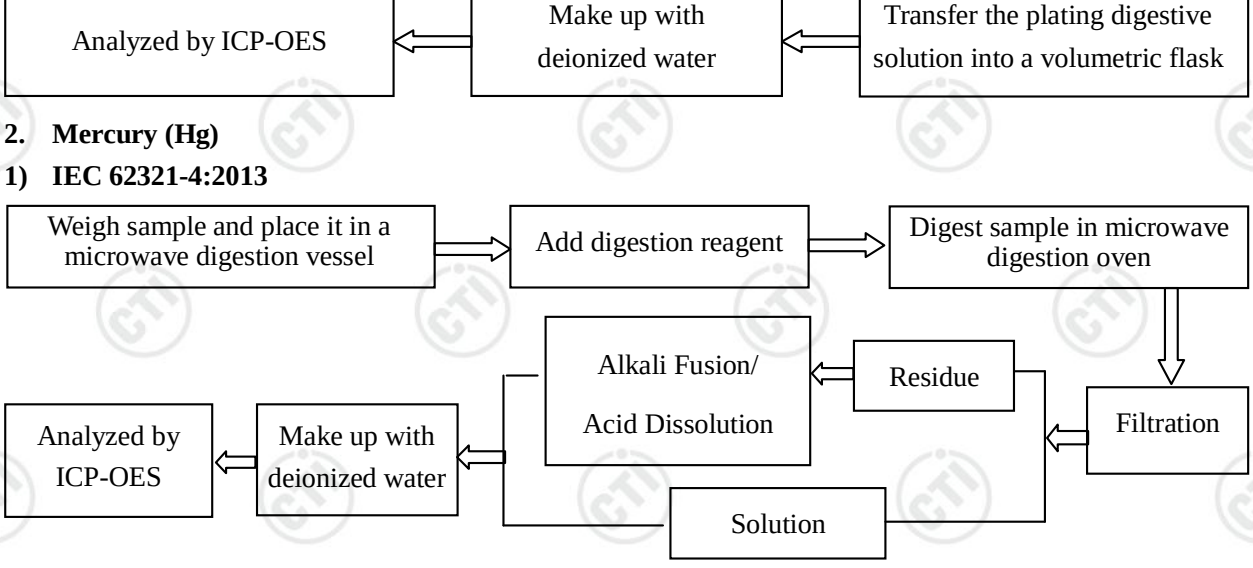


2) Refer to IEC 62321-5:2013

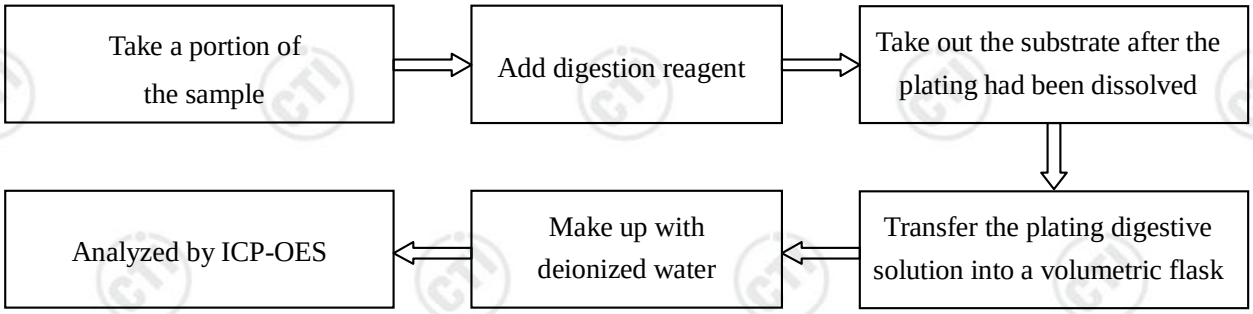


2. Mercury (Hg)

1) IEC 62321-4:2013

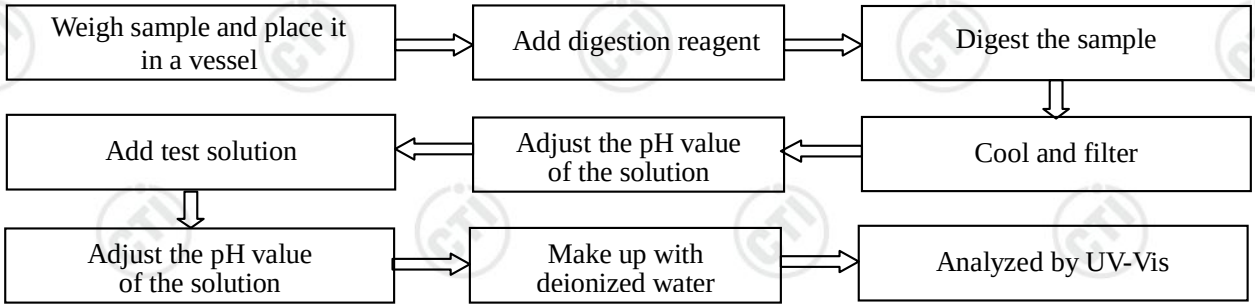


2) Refer to EC 62321-4:2013

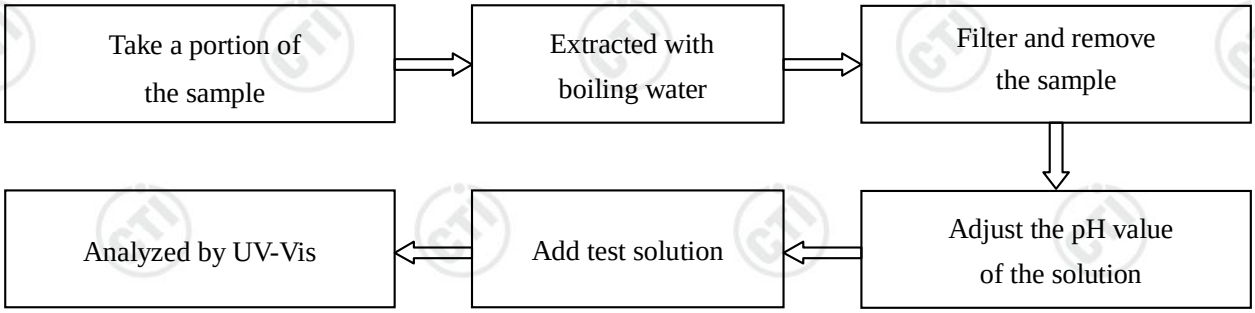


3. Hexavalent Chromium (Cr(VI))

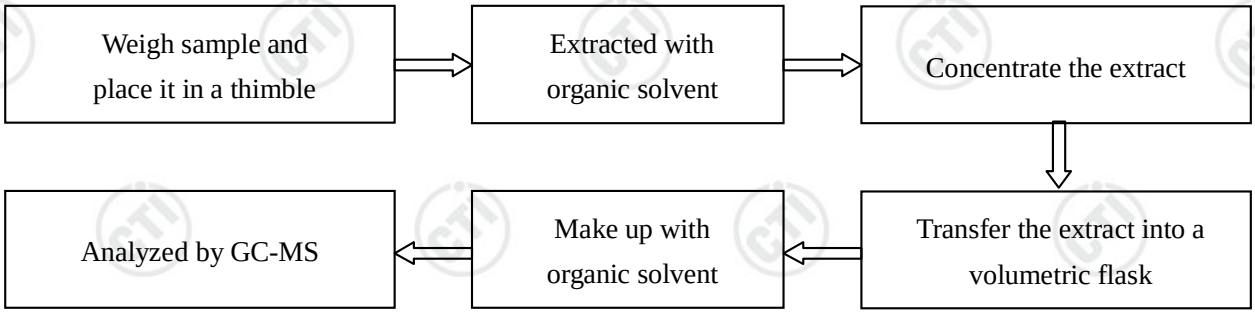
1) IEC 62321-7-2:2017



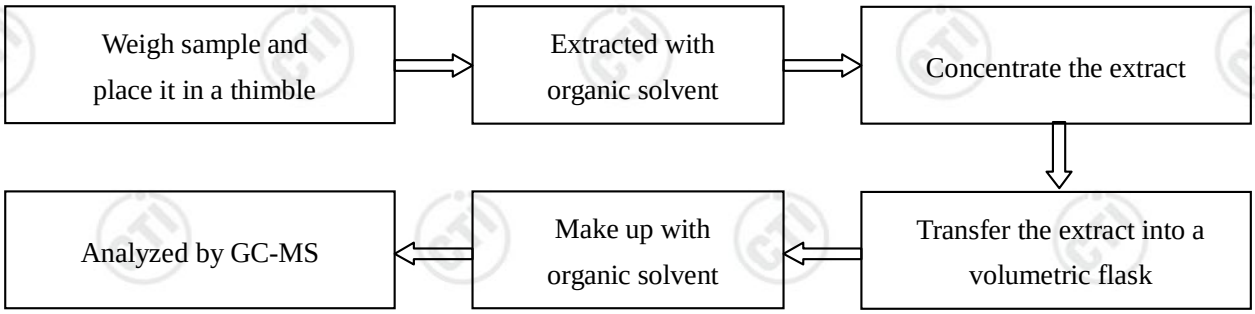
2) IEC 62321-7-1:2015



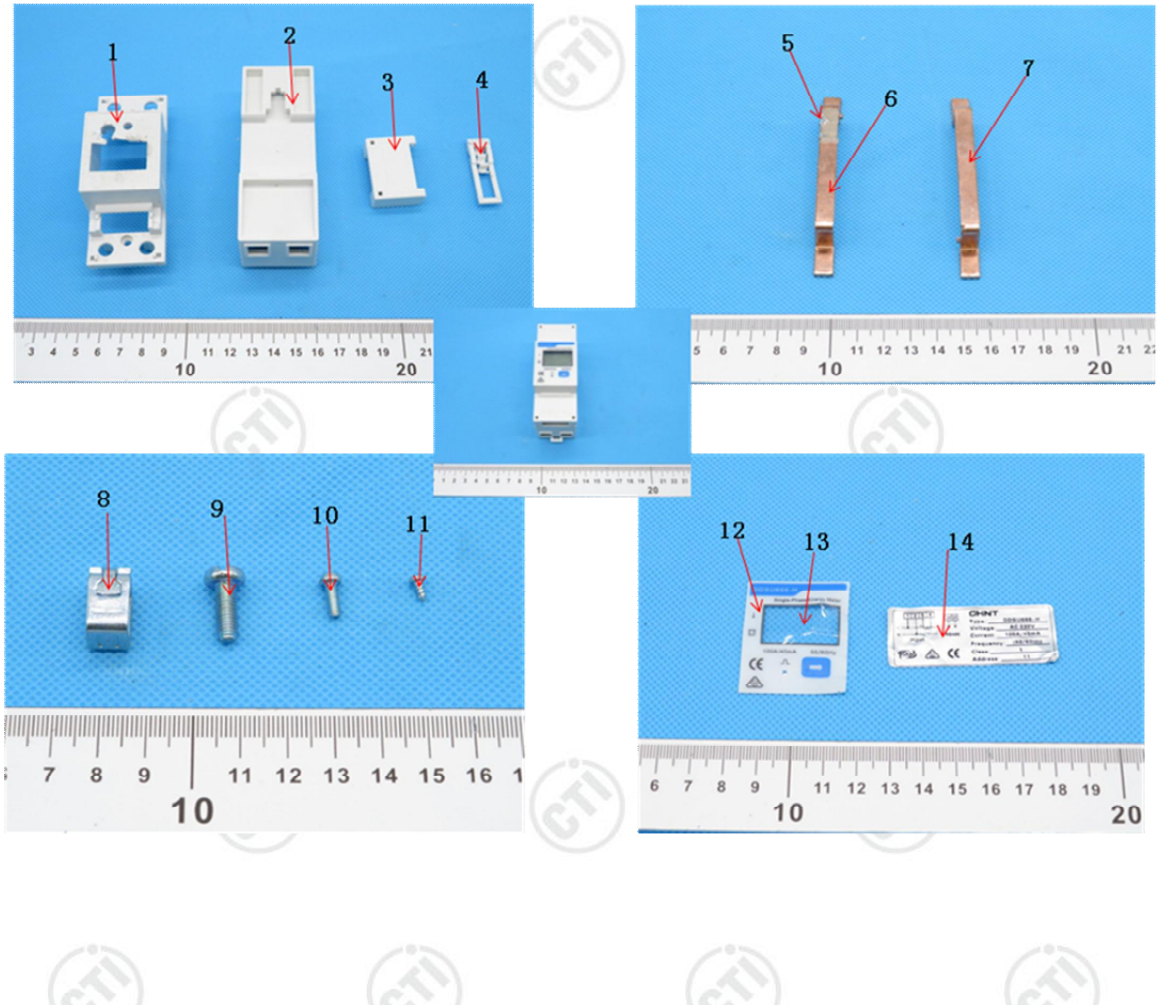
4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



5. Phthalates(DBP, BBP, DEHP, DIBP)



Photo(s) of the tested component(s)



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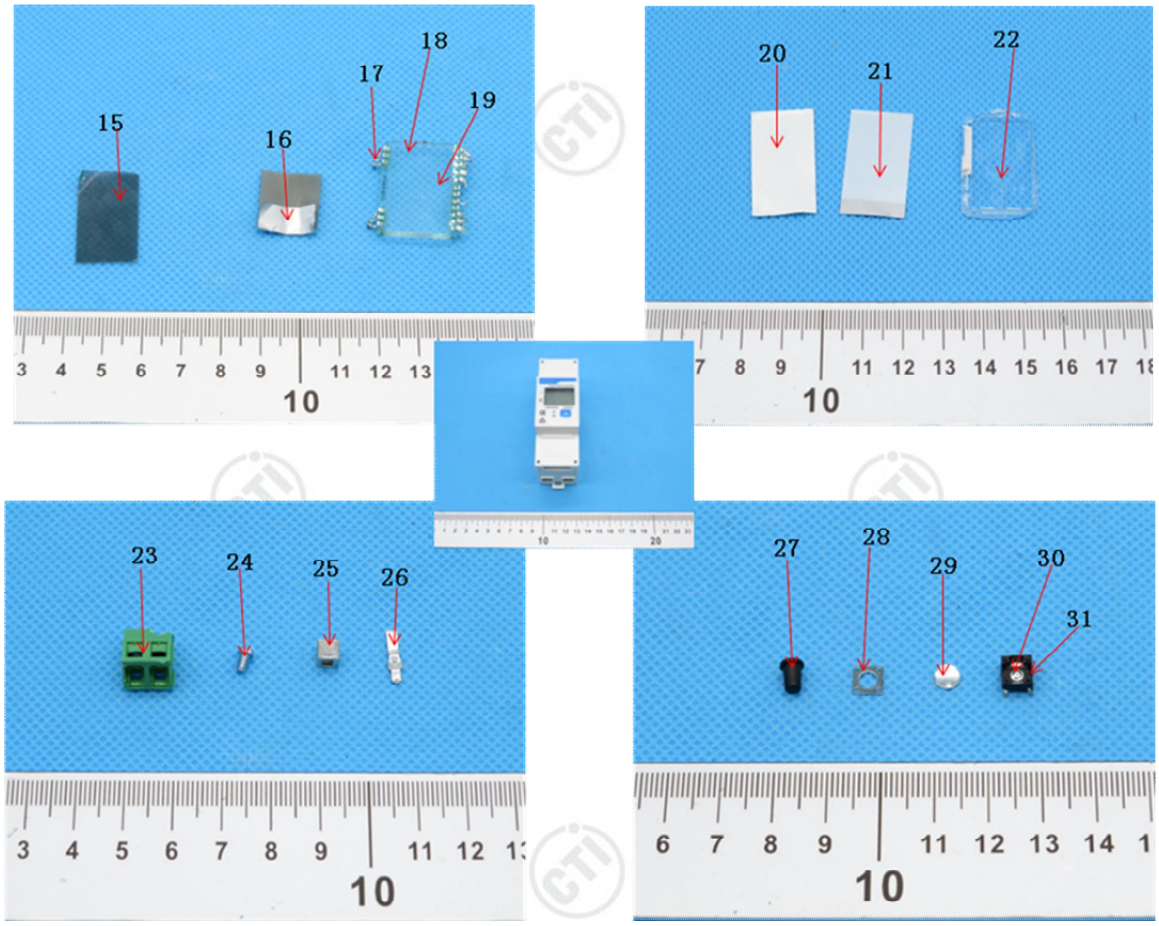
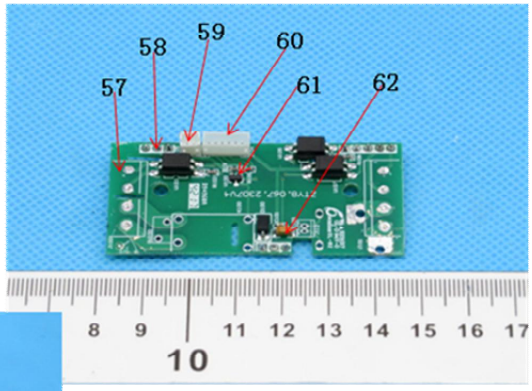
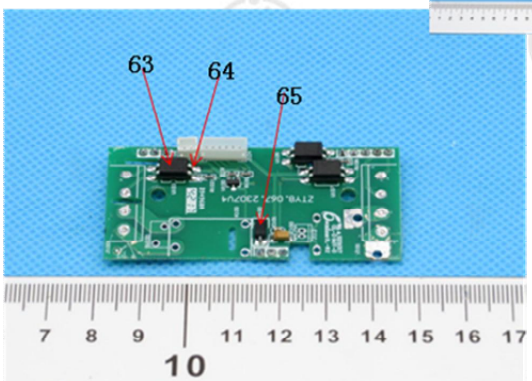
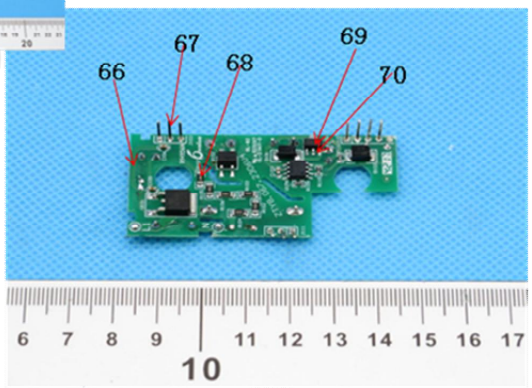


Verification Report

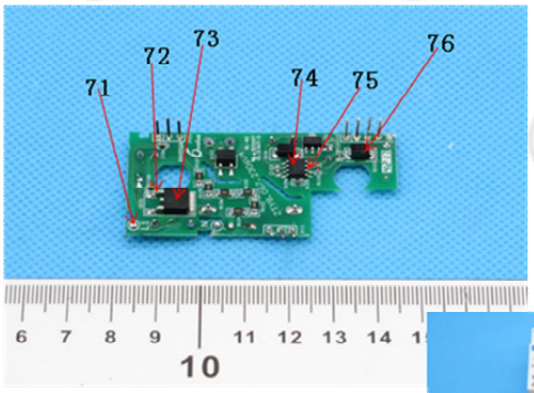
Verification Report

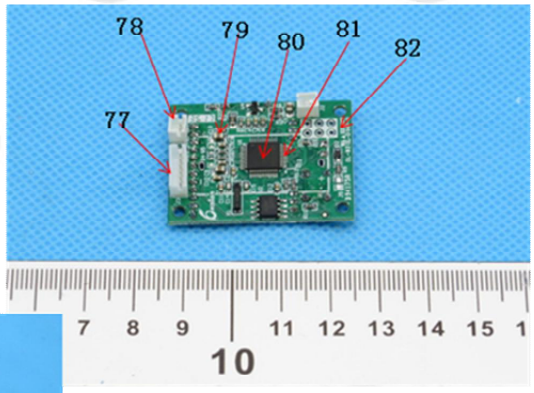


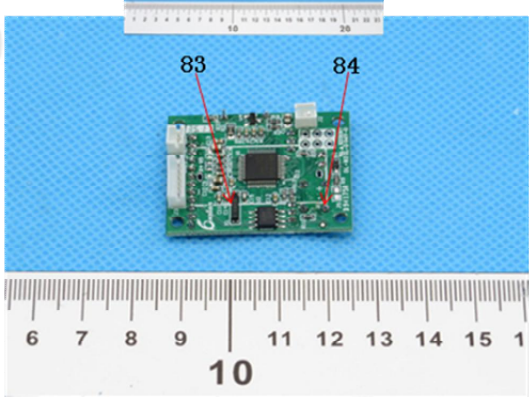




Verification Report







Exempted Items of RoHS Directive

In accordance with Directive 2011/65/EU as amended , there are 41 exemption items in Annex III of 2011/65/EU altogether.

	Exemption	Scope and dates of applicability
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	
1(a)	For general lighting purposes < 30 W: 5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011 until 31 December 2012; 2,5 mg shall be used per burner after 31 December 2012.
1(b)	For general lighting purposes ≥ 30 W and < 50 W: 5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011.
1(c)	For general lighting purposes ≥ 50 W and < 150 W: 5 mg	
1(d)	For general lighting purposes ≥ 150 W: 15 mg	
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤17 mm	No limitation of use until 31 December 2011; 7 mg may be used per burner after 31 December 2011.
1(f)	For special purposes: 5 mg	
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 mg	Expires on 31 December 2017.
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):	
2(a)(1)	Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 5 mg	Expires on 31 December 2011; 4 mg may be used per lamp after 31 December 2011.
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 5 mg	Expires on 31 December 2011; 3 mg may be used per lamp after 31 December 2011.
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 5 mg	Expires on 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011.
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg	Expires on 31 December 2012; 3,5 mg may be used per lamp after 31 December 2012.
2(a)(5)	Tri-band phosphor with long lifetime (≥ 25 000 h): 8 mg	Expires on 31 December 2011; 5 mg may be used per lamp after 31 December 2011.
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b)(1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2012.
2(b)(2)	Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016.

2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011.
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps).	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011.
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):	
3(a)	Short length (≤500 mm)	No limitation of use until 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011.
3(b)	Medium length (> 500 mm and ≤ 1 500 mm)	No limitation of use until 31 December 2011; 5 mg may be used per lamp after 31 December 2011.
3(c)	Long length (> 1500 mm)	No limitation of use until 31 December 2011; 13 mg may be used per lamp after 31 December 2011.
4(a)	Mercury in other low pressure discharge lamps (per lamp).	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011.
4(b)	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:	
4(b)-I	P ≤ 155 W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011.
4(b)-II	155 W < P≤405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011.
4(b)-III	P > 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011.
4(c)	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):	
4(c)-I	P ≤ 155 W	No limitation of use until 31 December 2011; 25 mg may be used per burner after 31 December 2011.
4(c)-II	155 W < P ≤ 405 W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011.
4(c)-III	P > 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011.
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV).	Expires on 13 April 2015.
4(e)	Mercury in metal halide lamps (MH)	

4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex.	
4(g)	Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair + 0,3 mg per tube length in cm ,but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20°C; (b) 15 mg per electrode pair + 0,24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications.	Expires on 31 December 2018.
5(a)	Lead in glass of cathode ray tubes.	
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight.	
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight.	
6(b)	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight.	
6(c)	Copper alloy containing up to 4% lead by weight.	
7(a)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead).	
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications.	
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.	
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher.	
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC.	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013.

7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors.	
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs.	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012.
8(b)	Cadmium and its compounds in electrical contacts.	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution.	
9(b)	Lead in bearing shells and bushes for refrigerant -containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications.	Applies to categories 8, 9 and 11; expires on: -21 July 2023 for category 8 in vitro diagnostic medical devices; -21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; -21 July 2021 for other subcategories of categories 8 and 9.
9(b)-(I)	Lead in bearing shells and bushes for refrigerant -containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications.	Applies to category 1; expires on 21 July 2019.
11(a)	Lead used in C-press compliant pin connector systems.	May be used in spare parts for EEE placed on the market before 24 September 2010.
11(b)	Lead used in other than C-press compliant pin connector systems.	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013.
12	Lead as a coating material for the thermal conduction module C-ring.	May be used in spare parts for EEE placed on the market before 24 September 2010.
13(a)	Lead in white glasses used for optical applications.	Applies to all categories; expires on: -21 July 2023 for category 8 in vitro diagnostic medical devices; -21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; -21 July 2021 for all other categories and subcategories.

13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards.	Applies to categories 8, 9 and 11; expires on: -21 July 2023 for category 8 in vitro diagnostic medical devices; -21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; -21 July 2021 for other subcategories of categories 8 and 9.
13(b)-(I)	Lead in ion coloured optical filter glass types.	Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10.
13(b)-(II)	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex.	
13(b)-(III)	Cadmium and lead in glazes used for reflectance standards.	
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight.	Expires on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011.
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages.	
16	Lead in linear incandescent lamps with silicate coated tubes.	Expires on 1 September 2013.
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications.	
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ($(Sr,Ba)_2MgSi_2O_7$:Pb).	Expires on 1 January 2011.
18(b)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP ($BaSi_2O_5$:Pb).	
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL).	Expires on 1 June 2011.

20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs).	Expires on 1 June 2011.
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses.	
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0, 65 mm and less.	May be used in spare parts for EEE placed on the market before 24 September 2010.
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors.	
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring.	
26	Lead oxide in the glass envelope of black light blue lamps.	Expires on 1 June 2011.
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers.	Expired on 24 September 2010.
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC.	
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more.	
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting).	
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes.	
33	Lead in solders for the soldering of thin copper wires of 100 μm diameter and less in power transformers.	
34	Lead in cermet-based trimmer potentiometer elements.	
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display.	Expired on 1 July 2010.
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body.	
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide.	

39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for use in solid state illumination or display systems.	Expires on 1 July 2014.
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment.	Expires on 31 December 2013.
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council.	Expires on 31 December 2018.

*** End of Report ***

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2. The sample(s) and sample Information was/were provided by the client who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
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