

Verification Report

No. XMNEC2300631001

Date: 24 May 2023

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Client Name : FuYanSheng Electronic (FuJian) Co., Ltd.

Client Address : 009, Area A1, Building 1, Science and Technology Innovation Center, National University Science and Technology Park, No. 6 Qiuyang East Road, Shangjie Town, Minhou County, Fujian Province, China

Sample Name : IO Module

Tested Basic Model No. CTEU-MPL-24

(P.O.No) :

Client Ref. Info. : USE FOR CTEU-XXX-X/ CTEU-XXX-XX /FNI-XX-XXX / FNI-XX-XXX-XX / FNI-XXX-XXX-XXX-X /FAS-XXXX-XXX-XX/FAS-XXX-X

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

SGS Job No. : 23500503 - XM

Date of Sample Received : 20 Apr 2023

Verification Period : 20 Apr 2023 - 22 May 2023

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
Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), and Diisobutyl phthalate (DIBP) listed in RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU	PASS

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Xiamen Branch

Rae Chen

Rae Chen
Approved Signatory

scan to see the report



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Photo of Submitted Sample



CTEU-MPL-24

Verification Method(s) :

1. With reference to IEC 62321-2:2021, review was performed for the samples disjointed from the submitted articles.
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 62321-6:2015 and IEC 62321-8:2017 , analyzed by ICP-OES,UV-Vis and GC-MS.

Verification Part Description :

SN ID	Sample No	SGS Sample ID	Description
SN1	A1	XMN23-006310.001	Grey plastic shell w/ black printing
SN2	A2	XMN23-006310.002	Transparent plastic cap
SN3	A3	XMN23-006310.003	Transparent plastic shell
SN4	A4	XMN23-006310.004	White plastic part
SN5	A5	XMN23-006310.005	Black plastic cover
SN6	A6	XMN23-006310.006	Silvery metal bolt
SN7	A7	XMN23-006310.007	Silvery metal screw



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SN ID	Sample No	SGS Sample ID	Description
SN8	A8	XMN23-006310.008	Silvery metal shell
SN9	A9	XMN23-006310.009	Silvery metal nut
SN10	A10	XMN23-006310.010	Silvery metal shell
SN11	A11	XMN23-006310.011	Black soft plastic gasket
SN12	A12	XMN23-006310.012	Silvery metal sheet
SN13	A13	XMN23-006310.013	Silvery metal screw
SN14	A14	XMN23-006310.014	Silvery metal block
SN15	A15	XMN23-006310.015	Golden metal part
SN16	A16	XMN23-006310.016	Green soft plastic gasket
SN17	A17	XMN23-006310.017	Green "PCB"
SN18	A18	XMN23-006310.018	Black plastic part
SN19	A19	XMN23-006310.019	Silvery metal part
SN20	A20	XMN23-006310.020	Brown body
SN21	A21	XMN23-006310.021	Black body (big)
SN22	A22	XMN23-006310.022	Black body (small)
SN23	A23	XMN23-006310.023	Silvery metal part
SN24	A24	XMN23-006310.024	Black body (small)
SN25	A25	XMN23-006310.025	Black body (big)
SN26	A26	XMN23-006310.026	Black plastic part
SN27	A27	XMN23-006310.027	Silvery metal pin
SN28	A28	XMN23-006310.028	Black plastic shell
SN29	A29	XMN23-006310.029	Black body (big)
SN30	A30	XMN23-006310.030	Black body (small)
SN31	A31	XMN23-006310.031	Grey body
SN32	A32	XMN23-006310.032	Silvery metal shell
SN33	A33	XMN23-006310.033	Black body (small)
SN34	A34	XMN23-006310.034	Black body (big)
SN35	A35	XMN23-006310.035	Black plastic shell
SN36	A36	XMN23-006310.036	Golden metal pin
SN37	A37	XMN23-006310.037	Black body



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SN ID	Sample No	SGS Sample ID	Description
SN38	A38	XMN23-006310.038	Orange body
SN39	A39	XMN23-006310.039	Black body (small)
SN40	A40	XMN23-006310.040	Black body (big)
SN41	A41	XMN23-006310.041	Orange body
SN42	A42	XMN23-006310.042	Black body w/ white printing
SN43	A43	XMN23-006310.043	Black body
SN44	A44	XMN23-006310.044	Green "PCB"
SN45	A45	XMN23-006310.045	Black body
SN46	A46	XMN23-006310.046	White adhesive plastic label w/ black printing
SN47	A47	XMN23-006310.047	Silvery metal wire (solder)
SN48	A48	XMN23-006310.048	Silvery metal pin
SN49	A49	XMN23-006310.049	Pink plastic button
SN50	A50	XMN23-006310.050	Black plastic part
SN51	A51	XMN23-006310.051	Silvery metal sheet
SN52	A52	XMN23-006310.052	Golden metal part



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Verification Results :

Unless otherwise specified, the unit is mg/kg.

Test Item(s)	A1	A2	A3	A4	A5	A6	A7	A8
Pb	BL	BL	BL	BL	BL	BL	BL	22122▲
Cd	BL	BL	BL	BL	43	BL	BL	74
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	ND	BL
PBBs	BL	BL	BL	BL	ND	---	---	---
PBDEs	BL	BL	BL	BL	ND	---	---	---
DBP	BL	ND	BL	ND	ND	---	---	---
BBP	BL	ND	BL	ND	ND	---	---	---
DEHP	BL	ND	BL	ND	ND	---	---	---
DIBP	BL	ND	BL	ND	ND	---	---	---
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A9	A10	A11	A12	A13	A14	A15	A16
Pb	<40000▲	<40000▲	BL	BL	BL	BL	<40000▲	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	ND	BL	BL
PBBs	---	---	BL	---	---	---	---	BL
PBDEs	---	---	BL	---	---	---	---	BL
DBP	---	---	ND	---	---	---	---	ND
BBP	---	---	ND	---	---	---	---	ND
DEHP	---	---	ND	---	---	---	---	ND
DIBP	---	---	ND	---	---	---	---	ND
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A17	A18	A19	A20	A21	A22	A23	A24
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	ND	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	BL	BL
PBBs	ND	ND	---	ND	BL	BL	---	BL



Test Item(s)	A17	A18	A19	A20	A21	A22	A23	A24
PBDEs	ND	ND	---	ND	BL	BL	---	BL
DBP	BL	ND	---	ND	ND	ND	---	ND
BBP	BL	ND	---	ND	ND	ND	---	ND
DEHP	BL	ND	---	ND	ND	ND	---	ND
DIBP	BL	ND	---	ND	ND	ND	---	ND
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A25	A26	A27	A28	A29	A30	A31	A32
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	ND	---	BL	BL	BL	BL	---
PBDEs	BL	ND	---	BL	BL	BL	BL	---
DBP	ND	ND	---	BL	ND	ND	ND	---
BBP	ND	ND	---	BL	ND	ND	ND	---
DEHP	ND	ND	---	BL	ND	ND	ND	---
DIBP	ND	ND	---	BL	ND	ND	ND	---
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A33	A34	A35	A36	A37	A38	A39	A40
Pb	BL	BL	BL	21043▲	BL	BL	ND	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	ND	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	ND	BL
PBBs	BL	BL	BL	---	ND	BL	BL	BL
PBDEs	BL	BL	BL	---	ND	BL	BL	BL
DBP	ND	ND	BL	---	ND	ND	<600 *	ND
BBP	ND	ND	BL	---	ND	ND	<600 *	ND
DEHP	ND	ND	BL	---	ND	ND	<600 *	ND
DIBP	ND	ND	BL	---	ND	ND	<600 *	ND
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



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Test Item(s)	A41	A42	A43	A44	A45	A46	A47	A48
Pb	BL	BL	BL	BL	ND	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	ND	BL	BL	BL
PBBs	BL	BL	BL	ND	BL	BL	---	---
PBDEs	BL	BL	BL	ND	BL	BL	---	---
DBP	ND	ND	ND	BL	ND	<600 *	---	---
BBP	ND	ND	ND	BL	ND	<600 *	---	---
DEHP	ND	ND	ND	BL	ND	<600 *	---	---
DIBP	ND	ND	ND	BL	ND	<600 *	---	---
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A49	A50	A51	A52
Pb	BL	BL	BL	BL
Cd	BL	BL	BL	BL
Hg	BL	BL	BL	ND
Cr(VI)▼	BL	BL	ND	BL
PBBs	BL	BL	---	---
PBDEs	BL	BL	---	---
DBP	ND	ND	---	---
BBP	ND	ND	---	---
DEHP	ND	ND	---	---
DIBP	ND	ND	---	---
Conclusion	PASS	PASS	PASS	PASS



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	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
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	$BL \leq (300-3\sigma) < X$	Not applicable	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

- (b) 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 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	$BL \leq 600 < X$
Benzylbutyl Phthalate (BBP)	85-68-7	$BL \leq 600 < X$
Bis(2-ethylhexyl) Phthalate (DEHP)	117-81-7	$BL \leq 600 < X$
Diisobutyl Phthalate (DIBP)	84-69-5	$BL \leq 600 < X$

- (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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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 0.10µg/cm².

(c) ▼ =Metal sample

- a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13µg/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 0.10µg/cm²).
The coating is considered a non-Cr(VI) based coating
- c. The result between 0.10µg/cm² and 0.13µg/cm² is considered to be inconclusive -
unavoidable coating variations may influence the determination

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.

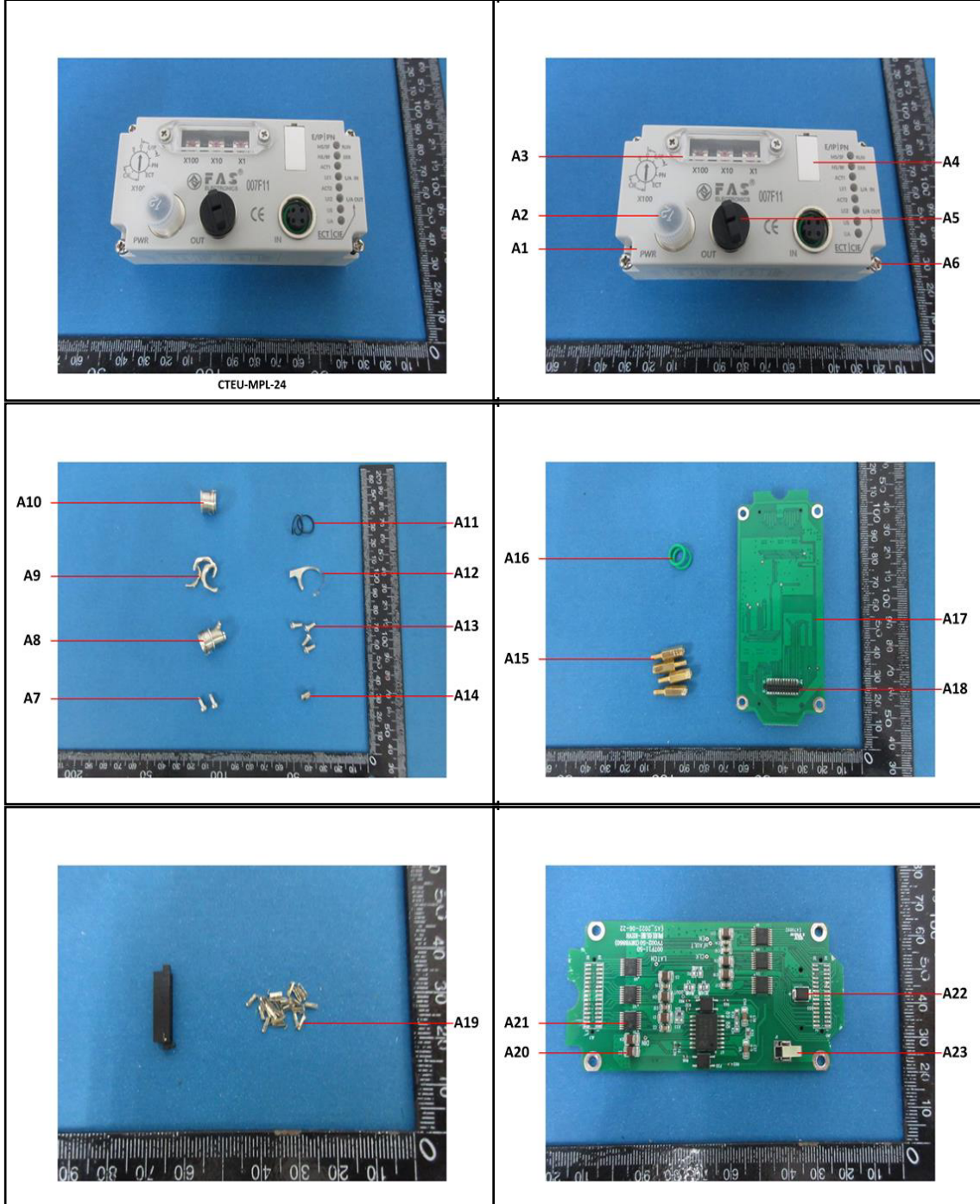
(6) * = Considering insufficient sample amount, the Method Detection Limit (MDL) is raised appropriately.

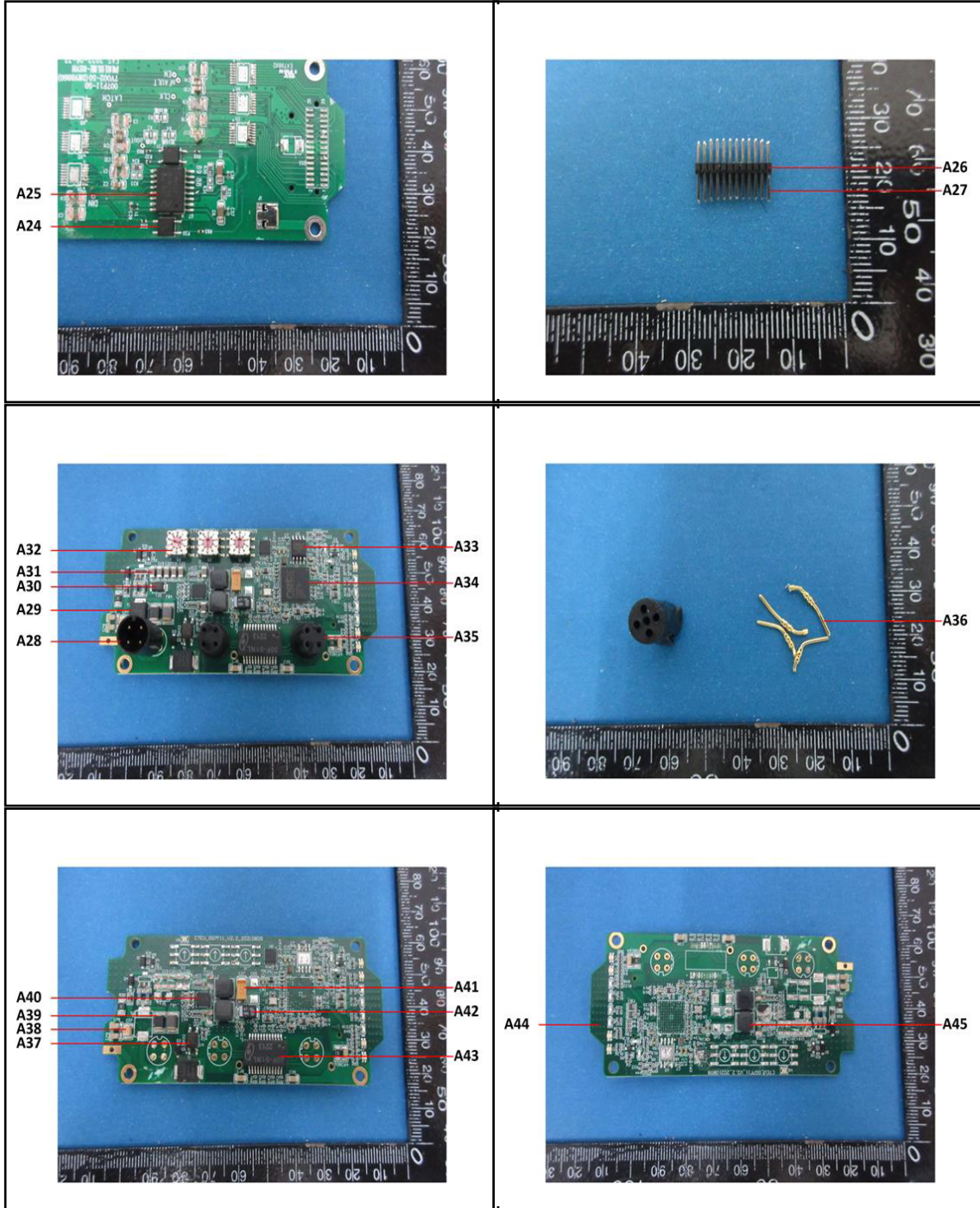
(7) ▲=According to the declaration from the client, Lead (Pb) in No.A8, No.A9, No.A10, No.A15 and No.A36 is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 6(c)]: Copper alloy containing up to 4 % lead by weight.

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.



Sample photo:



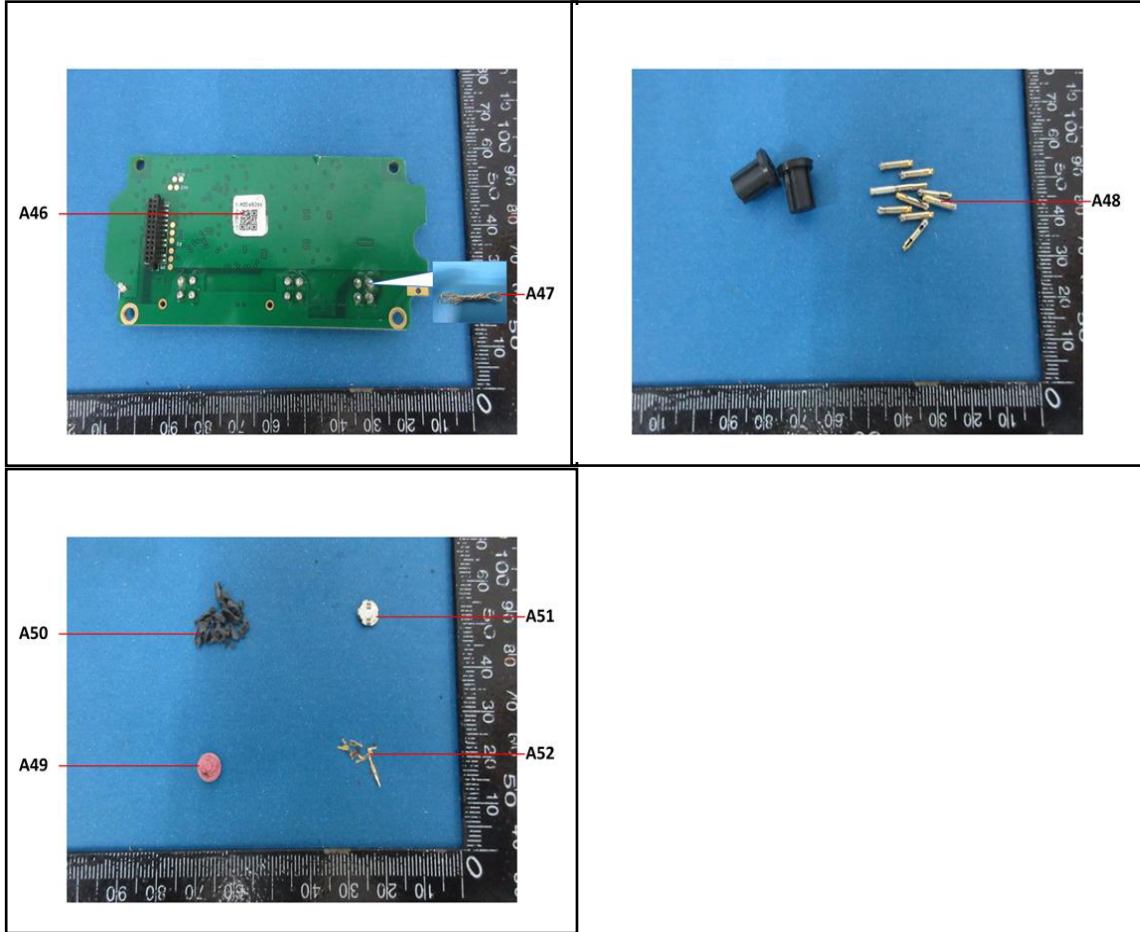


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