

Verification Report

No. XMNEC2300630901

Date: 16 May 2023

Page 1 of 11

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. FNI MPL-506-105-M
 (P.O.No) :
 Client Ref. Info. : use for FNI XXX-XXX-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 - 11 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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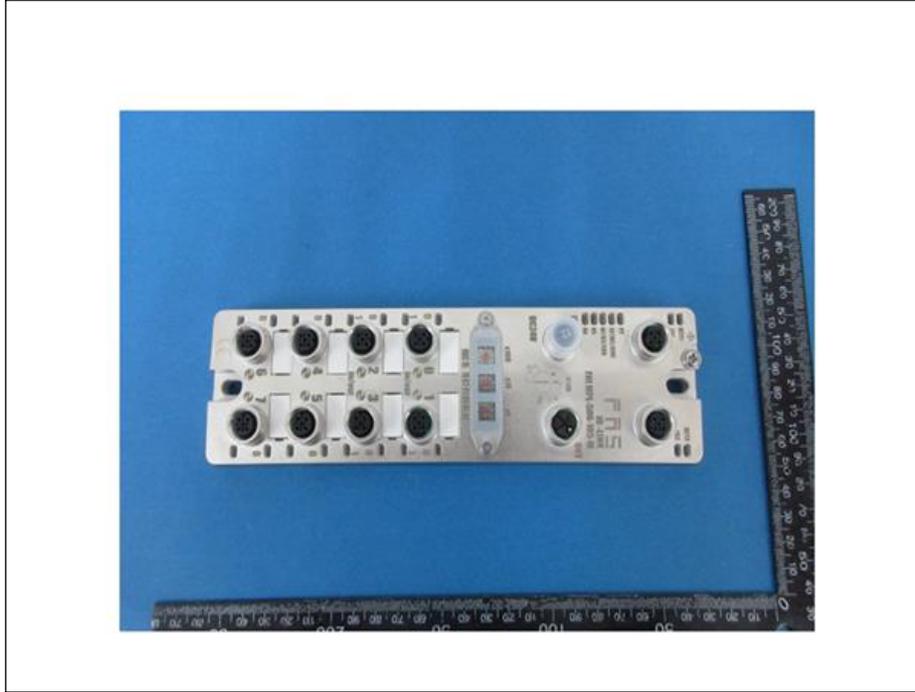
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Photo of Submitted Sample



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	XMN23-006309.001	Silvery metal shell
SN2	A2	XMN23-006309.002	Transparent plastic cap
SN3	A3	XMN23-006309.003	Transparent soft plastic part
SN4	A4	XMN23-006309.004	Transparent plastic shell
SN5	A5	XMN23-006309.005	Silvery metal bolt
SN6	A6	XMN23-006309.006	White plastic part
SN7	A7	XMN23-006309.007	Silvery metal screw



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SN ID	Sample No	SGS Sample ID	Description
SN8	A8	XMN23-006309.008	Silvery adhesive plastic label w/ black printing
SN9	A9	XMN23-006309.009	White adhesive plastic label w/ multicolored printing
SN10	A10	XMN23-006309.010	Black glue
SN11	A11	XMN23-006309.011	Transparent plastic part
SN12	A12	XMN23-006309.012	Black glue
SN13	A13	XMN23-006309.013	Silvery metal screw
SN14	A14	XMN23-006309.014	Black plastic shell
SN15	A15	XMN23-006309.015	Green soft plastic gasket
SN16	A16	XMN23-006309.016	Silvery metal pin
SN17	A17	XMN23-006309.017	Black plastic shell
SN18	A18	XMN23-006309.018	Golden metal pin
SN19	A19	XMN23-006309.019	Brown body
SN20	A20	XMN23-006309.020	Black body (small)
SN21	A21	XMN23-006309.021	Black body (big)
SN22	A22	XMN23-006309.022	Black body (medium)
SN23	A23	XMN23-006309.023	Brown body
SN24	A24	XMN23-006309.024	Black body
SN25	A25	XMN23-006309.025	Brown body
SN26	A26	XMN23-006309.026	Silvery metal shell
SN27	A27	XMN23-006309.027	Black body (medium)
SN28	A28	XMN23-006309.028	Black body (big)
SN29	A29	XMN23-006309.029	Black body (small)
SN30	A30	XMN23-006309.030	Pink plastic button
SN31	A31	XMN23-006309.031	Black plastic part
SN32	A32	XMN23-006309.032	Silvery metal sheet
SN33	A33	XMN23-006309.033	Silvery metal part
SN34	A34	XMN23-006309.034	Black body(big)
SN35	A35	XMN23-006309.035	Black body (small)
SN36	A36	XMN23-006309.036	Black body



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SN ID	Sample No	SGS Sample ID	Description
SN37	A37	XMN23-006309.037	Black body w/ orange printing
SN38	A38	XMN23-006309.038	Black body
SN39	A39	XMN23-006309.039	Green "PCB"
SN40	A40	XMN23-006309.040	Silvery metal wire (solder)



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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							
Cd	BL							
Hg	BL							
Cr(VI)▼	BL	BL	BL	BL	ND	BL	ND	BL
PBBs	---	BL	BL	BL	---	BL	---	BL
PBDEs	---	BL	BL	BL	---	BL	---	BL
DBP	---	ND	ND	BL	---	BL	---	ND
BBP	---	ND	ND	BL	---	BL	---	ND
DEHP	---	ND	ND	BL	---	BL	---	ND
DIBP	---	ND	ND	BL	---	BL	---	ND
Conclusion	PASS							

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

Test Item(s)	A17	A18	A19	A20	A21	A22	A23	A24
Pb	BL	<40000▲	BL	OL▲	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	---	ND	BL	BL	BL	BL	BL



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

Test Item(s)	A25	A26	A27	A28	A29	A30	A31	A32
Pb	BL	BL	BL	BL	OL▲	BL	BL	BL
Cd	BL							
Hg	BL							
Cr(VI)▼	BL	ND	BL	BL	ND	BL	BL	ND
PBBs	ND	---	BL	BL	BL	BL	BL	---
PBDEs	ND	---	BL	BL	BL	BL	BL	---
DBP	ND	---	ND	ND	ND	ND	ND	---
BBP	ND	---	ND	ND	ND	ND	ND	---
DEHP	ND	---	ND	ND	ND	ND	ND	---
DIBP	ND	---	ND	ND	ND	ND	ND	---
Conclusion	PASS							

Test Item(s)	A33	A34	A35	A36	A37	A38	A39	A40
Pb	BL							
Cd	BL							
Hg	ND	BL						
Cr(VI)▼	BL							
PBBs	---	BL	BL	BL	ND	BL	ND	---
PBDEs	---	BL	BL	BL	ND	BL	ND	---
DBP	---	ND	ND	ND	ND	ND	BL	---
BBP	---	ND	ND	ND	ND	ND	BL	---
DEHP	---	ND	ND	ND	ND	ND	BL	---
DIBP	---	ND	ND	ND	ND	ND	BL	---
Conclusion	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	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
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						
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.A20 and No.A29 is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 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.

Lead (Pb) in No.A18 is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 6(c)]: Copper alloy containing up to 4 % lead by weight.

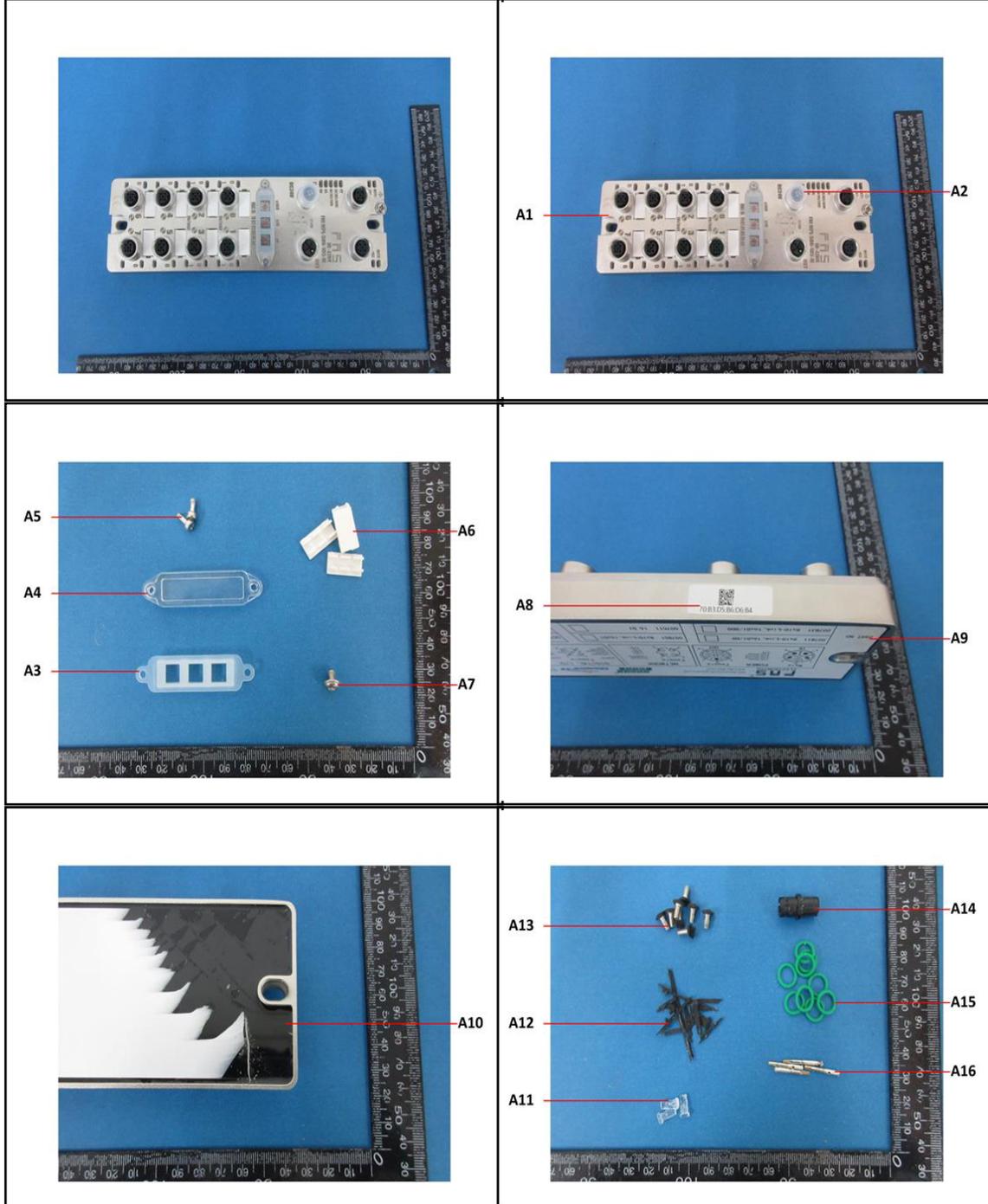
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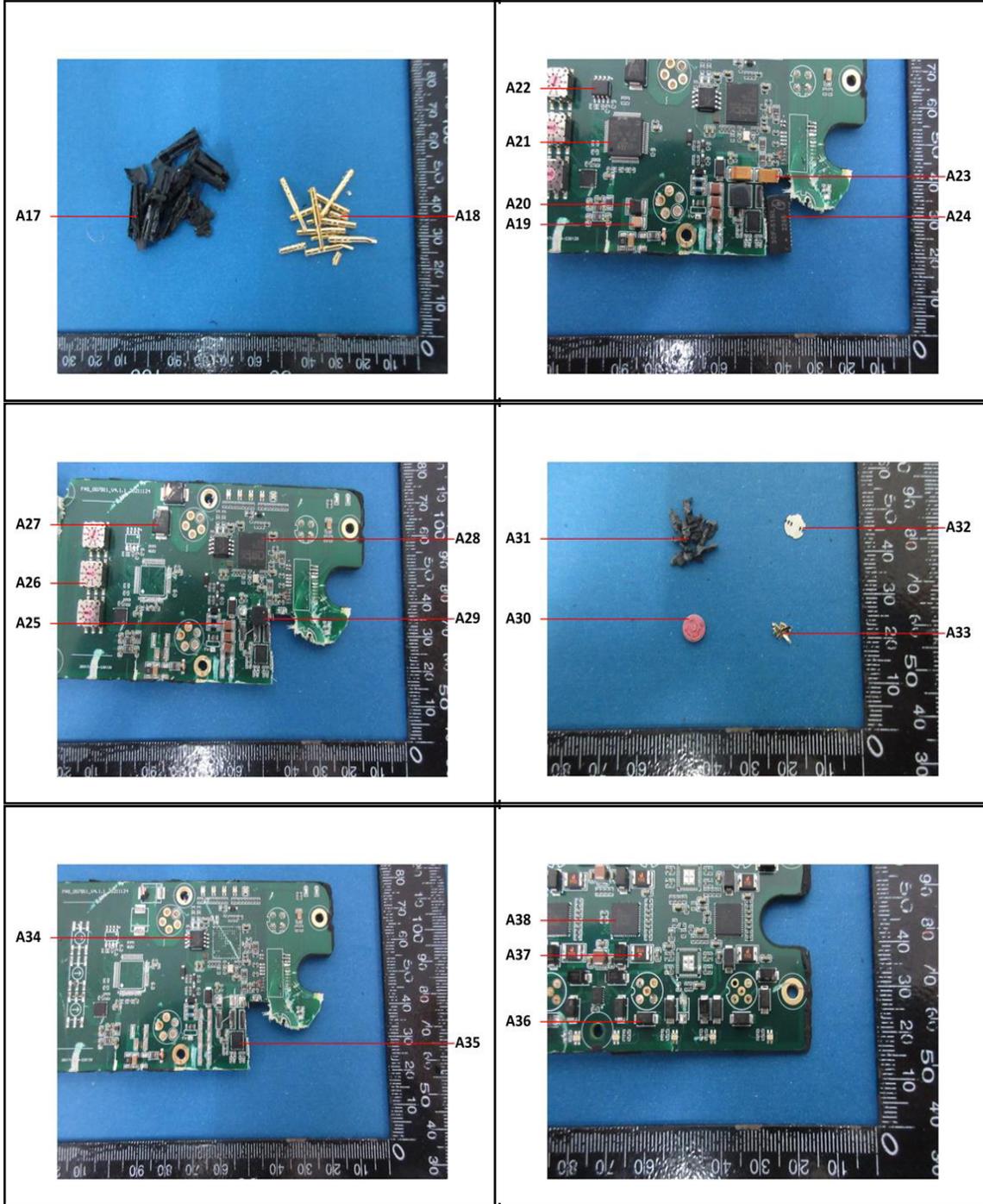
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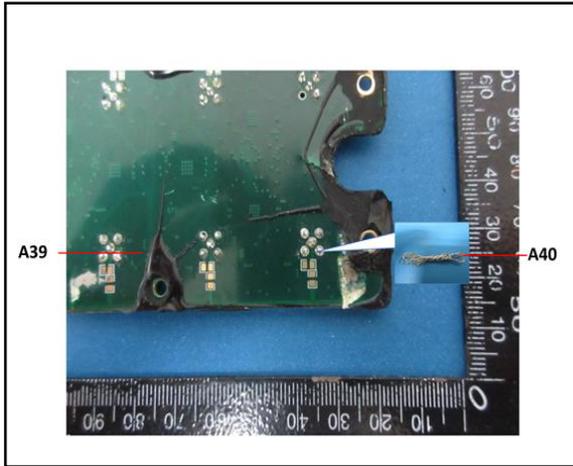
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