

# Verification Report

No. TAOEC2400470505 A02

Date: 22 May 2024

Page 1 of 11

Client Name : Shenzhen Aiko Digital Energy Technology Co.,Ltd.

Client Address : Room 607, Building B, Tengfei Industrial Building, No.6 taohua Road, Fubao Community, Fubao Street, Futian District, Shenzhen, 518045, Guangdong,P.R.China

Sample Name : photovoltaic modules  
 Tested Basic Model No. : AIKO-A440-MAH54Db  
 Tested Extended Model : AIKO-A615-MAH72Dw  
 No. :  
 Client Ref. Information : AIKO-Axxx-MAH54Dw ;AIKO-Axxx-MCE54Dw ;AIKO-Axxx-MAH54Db ;  
 AIKO-Axxx-MCH54Db ;AIKO-Axxx-MCE54Db ;AIKO-Axxx-MAH72Dw ;  
 AIKO-Gxxx-MCH72Dw ;AIKO-Axxx-MAE72Dw ;AIKO-Axxx-MDE72Dw ;  
 AIKO-Axxx-MAH78Dw ;AIKO-Axxx-MAE78Dw ;AIKO-Gxxx-MDH72Dw ;  
 AIKO-Gxxx-GRH66Dw ;AIKO-Axxx-GTE66Dw ;AIKO-Axxx-MAH60Dw ;  
 AIKO-Axxx-MCE60Dw ;AIKO-Axxx-MAH60Db ;AIKO-Axxx-MCE60Db ;  
 AIKO-Gxxx-MCH60Dw ;AIKO-Gxxx-MCH60Db

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

**THIS REPORT IS TO SUPERSEDE TEST REPORT NO.TAOEC2400470503 A01.**

SGS Job No. : SHP24-005148 - QD  
 Date of Sample Received : 27 Feb 2024  
 Verification Period : 27 Feb 2024 - 29 May 2024  
 Verification Requested : Select test(s) as requested by the client.  
 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)	PASS



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Signed for and on behalf of  
SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.

Justin

Zhang Bo, Justin  
Approved Signatory

scan to see the report



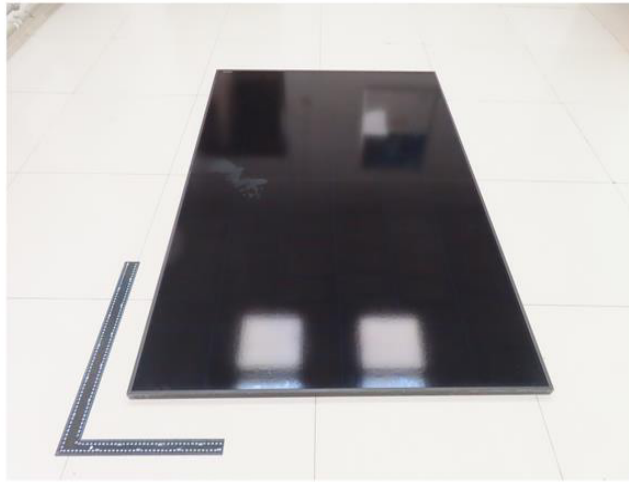
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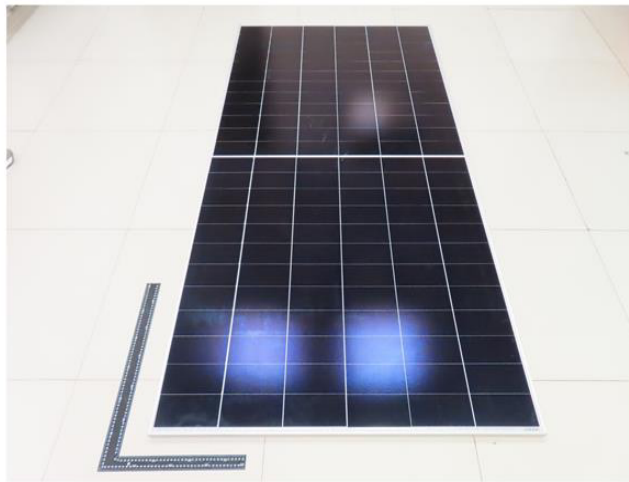
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Photo of Submitted Sample



AIKO-A440-MAH54Db



AIKO-A615-MAH72Dw



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**Verification Method(s) :**

1. With reference to IEC 62321-2:2021, disassembly and disjointment were performed for the submitted samples.
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+AMD1:2017, IEC62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, ISO 17075-1:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, AAS,UV-Vis and GC-MS.

**Verification Part Description :**

SN ID	Sample No	SGS Sample ID	Description
SN1	A1	TAO24-004705.001	Black metal
SN2	A2	TAO24-004705.002	Black adhesive tape
SN3	A3	TAO24-004705.003	Silvery adhesive tape
SN4	A4	TAO24-004705.004	Black plastic
SN5	A5	TAO24-004705.005	Black plastic
SN6	A6	TAO24-004705.006	White adhesive
SN7	A7	TAO24-004705.007	Black plastic
SN8	A8	TAO24-004705.008	White adhesive
SN9	A9	TAO24-004705.009	Black plastic(jacket)
SN10	A10	TAO24-004705.010	Silvery metal(inner core)
SN11	A11	TAO24-004705.011	Black plastic
SN12	A12	TAO24-004705.012	Black plastic
SN13	A13	TAO24-004705.013	Silvery metal
SN14	A14	TAO24-004705.014	Red rubber
SN15	A15	TAO24-004705.015	Black rubber
SN16	A16	TAO24-004705.016	Transparent glass
SN17	A17	TAO24-004705.017	Transparent adhesive
SN18	A18	TAO24-004705.018	Green solid
SN19	A19	TAO24-004705.019	Black solid
SN20	B1	TAO24-004705.020	Black plastic
SN21	B2	TAO24-004705.021	Silvery plastic(label)
SN22	B3	TAO24-004705.022	Silvery plastic(label)
SN23	B4	TAO24-004705.023	Transparent glass



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SN ID	Sample No	SGS Sample ID	Description
SN24	B5	TAO24-004705.024	Transparent adhesive
SN25	B6	TAO24-004705.025	Silvery metal
SN26	B7	TAO24-004705.026	Green solid
SN27	B8	TAO24-004705.027	White solid
SN28	B9	TAO24-004705.028	Black rubber
SN29	B10	TAO24-004705.029	Black plastic
SN30	B11	TAO24-004705.030	Black plastic
SN31	B12	TAO24-004705.031	Gray rubber
SN32	B13	TAO24-004705.032	Black plastic
SN33	B14	TAO24-004705.033	Black plastic(jacket)



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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	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	BL
PBBs	---	BL	BL	BL	BL	BL	BL	BL
PBDEs	---	BL	BL	BL	BL	BL	BL	BL
DBP	---	BL	BL	BL	BL	BL	BL	BL
BBP	---	BL	BL	BL	BL	BL	BL	BL
DEHP	---	BL	BL	BL	BL	BL	BL	BL
DIBP	---	BL	BL	BL	BL	BL	BL	BL
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	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	BL	ND	BL	BL	BL
PBBs	BL	---	BL	BL	---	BL	BL	BL
PBDEs	BL	---	BL	BL	---	BL	BL	BL
DBP	BL	---	BL	BL	---	BL	BL	---
BBP	BL	---	BL	BL	---	BL	BL	---
DEHP	BL	---	BL	BL	---	BL	BL	---
DIBP	BL	---	BL	BL	---	BL	BL	---
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A17	A18	A19	B1	B2	B3	B4	B5
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	BL
PBBs	BL	BL	BL	BL	BL	BL	BL	BL



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Test Item(s)	A17	A18	A19	B1	B2	B3	B4	B5
PBDEs	BL	BL	BL	BL	BL	BL	BL	BL
DBP	BL	BL	BL	BL	BL	BL	---	BL
BBP	BL	BL	BL	BL	BL	BL	---	BL
DEHP	BL	BL	BL	BL	BL	BL	---	BL
DIBP	BL	BL	BL	BL	BL	BL	---	BL
<b>Conclusion</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>

Test Item(s)	B6	B7	B8	B9	B10	B11	B12	B13
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	BL
PBBs	---	BL	BL	BL	BL	BL	BL	BL
PBDEs	---	BL	BL	BL	BL	BL	BL	BL
DBP	---	BL	BL	BL	BL	BL	BL	BL
BBP	---	BL	BL	BL	BL	BL	BL	BL
DEHP	---	BL	BL	BL	BL	BL	BL	BL
DIBP	---	BL	BL	BL	BL	BL	BL	BL
<b>Conclusion</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>

Test Item(s)	B14
Pb	BL
Cd	BL
Hg	BL
Cr(VI)▼	BL
PBBs	BL
PBDEs	BL
DBP	BL
BBP	BL
DEHP	BL
DIBP	BL
<b>Conclusion</b>	<b>PASS</b>



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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	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/cm<sup>2</sup>.



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▼ =Metal sample

- a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13µg/cm<sup>2</sup>.  
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/cm<sup>2</sup>).  
The coating is considered a non-Cr(VI) based coating
- c. The result between 0.10µg/cm<sup>2</sup> and 0.13µg/cm<sup>2</sup> 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) IEC 62321 series is equivalent to EN 62321 series.

(5) The client limit of Lead, Mercury, Hexavalent chromium (no metal), Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) are 1000 mg/kg , and Cadmium is 100mg/kg.

(6) Only selected parts in sample photos were tested and drew the conclusion.

(7) This report updates Client Ref. Information.

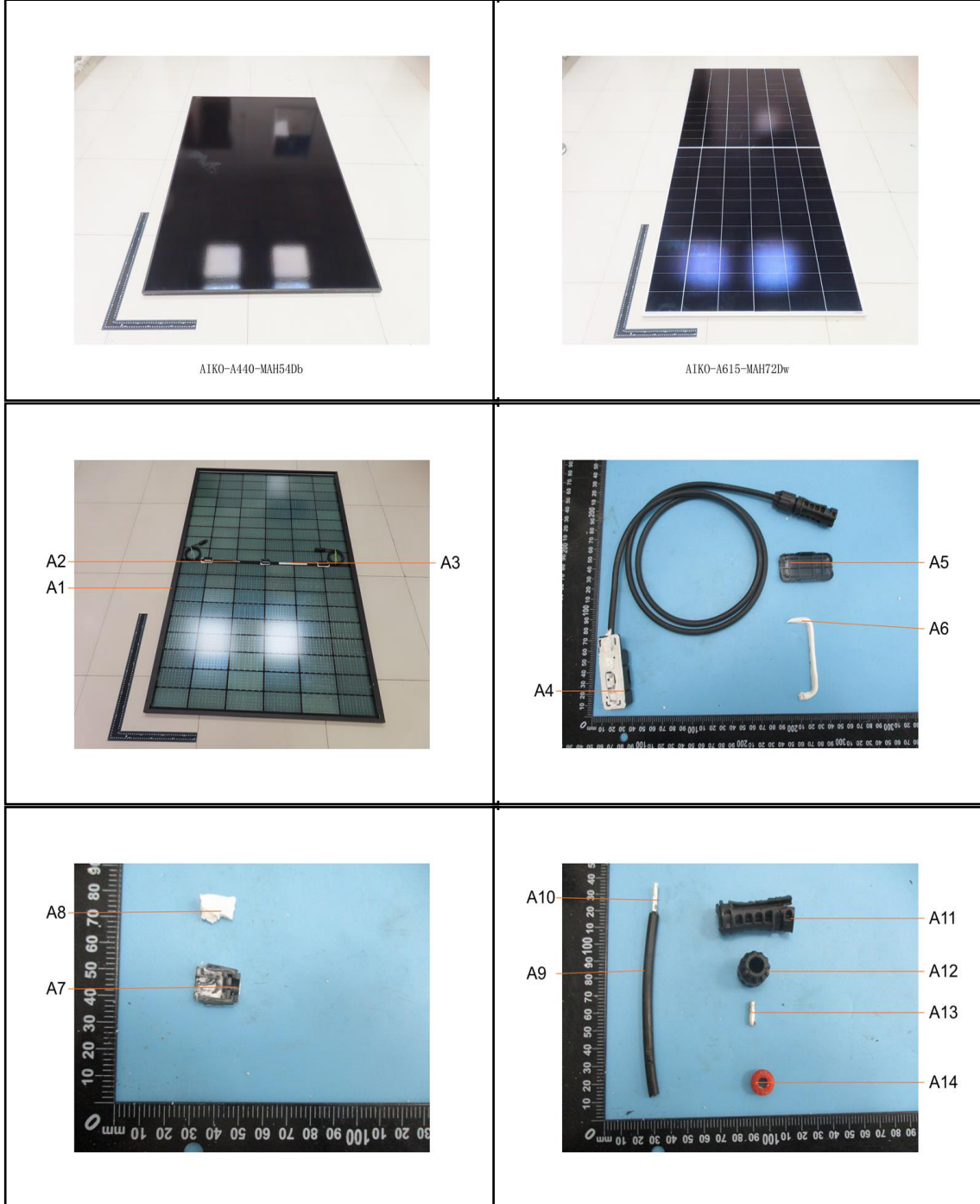
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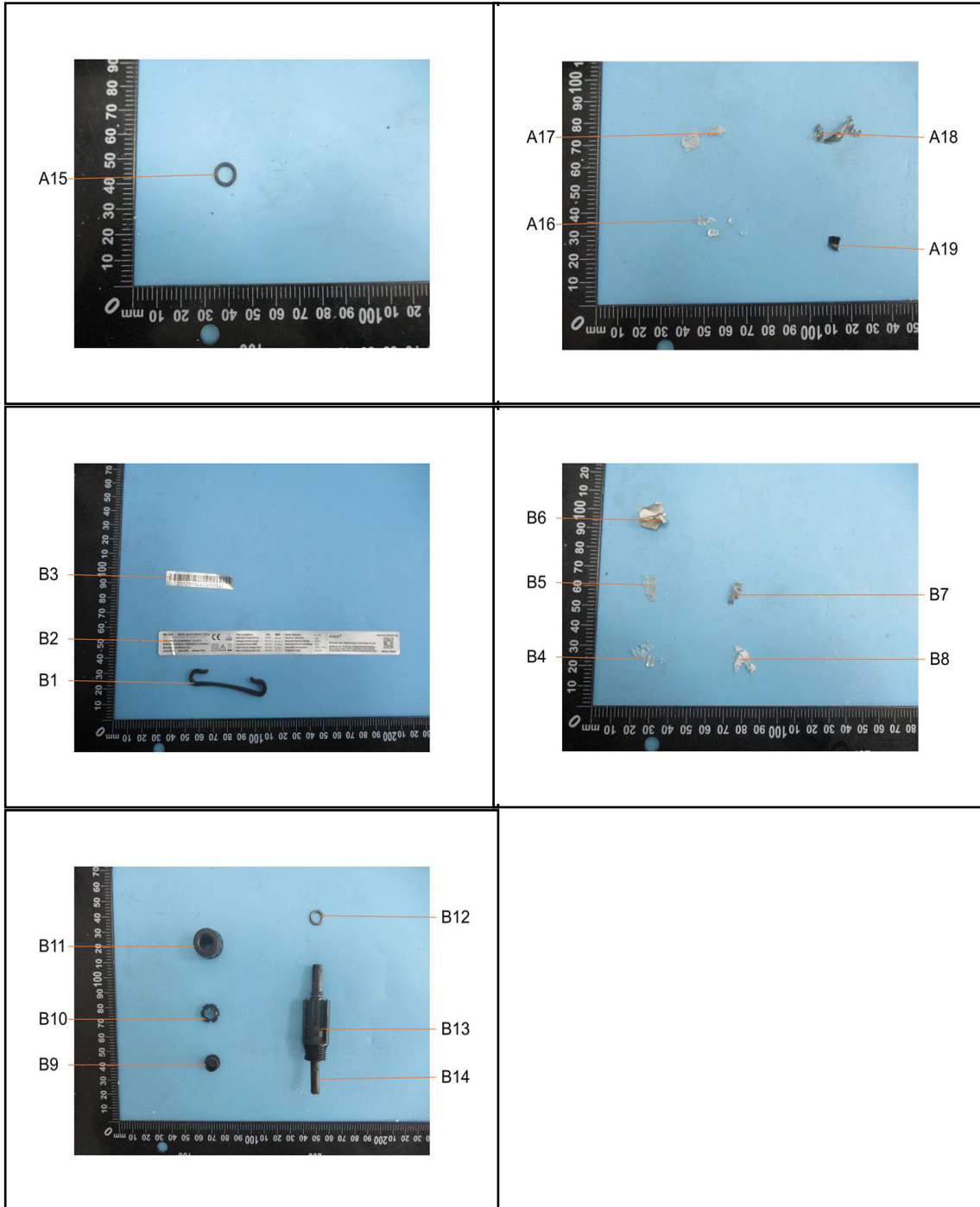
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