中国认可
国际互认
检测
TESTING
CNAS L4062

TEST REPORT

Report No.	:	WTX25X06171569C
Applicant	:	Particle Industries, Inc.
Address	:	548 Market St, PMB 34833, San Francisco, CA 94104, USA
Manufacturer	:	Particle Industries, Inc.
Address	:	548 Market St, PMB 34833, San Francisco, CA 94104, USA
Factory	:	UMEC (Shenzhen) Company Ltd
Address	:	NO.18 Hao Ye Rd., Tong Fu Yu Industrial Park, Fu Hai Sub-district, Baoan, Shenzhen, China
Sample Name	:	Tachyon
Model No.	:	TACH4ROW
Reference Model No.	:	TACH8ROW
Brand	:	Particle
Test Requested	:	In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863, to determine the 10 restricted substances content in the submitted sample.
Test Conclusion	:	**Pass** (Based on the performed tests on the submitted samples, the results comply with the requirement of EU RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863).
Date of Receipt sample	:	2025-06-30
Testing period	:	2025-06-30 ~ 2025-07-07
Date of Issue	:	2025-09-28
Test Result	:	Refer to next page (s)

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China
Tel:+86-755-33663308 Fax:+86-755-33663309 E-mail:sem@waltek.com.cn

Signed for and on behalf of
Waltek Testing Group (Shenzhen) Co., Ltd.

Hugo Chen

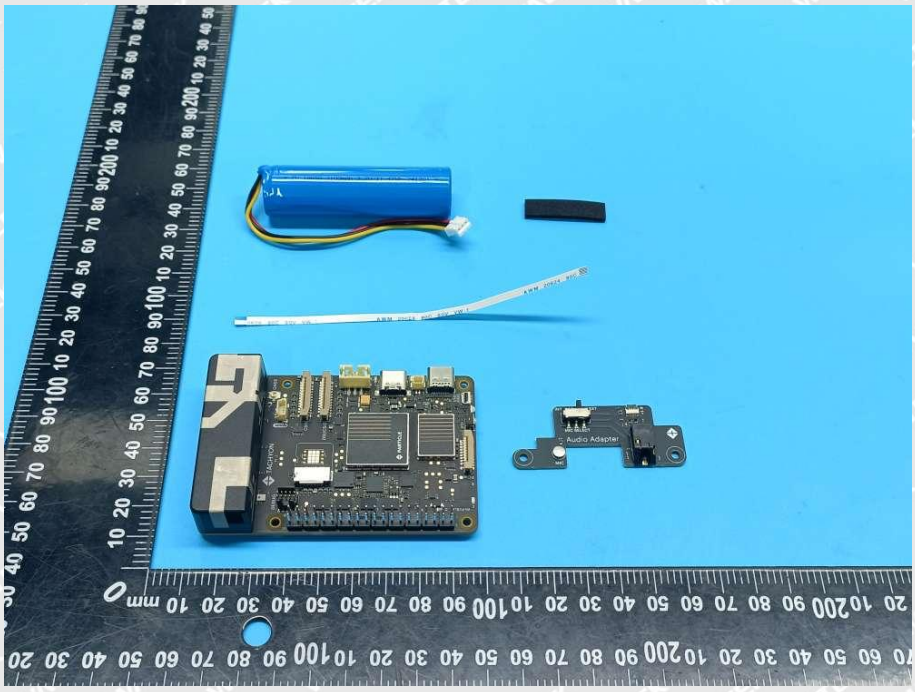
Hugo.Chen

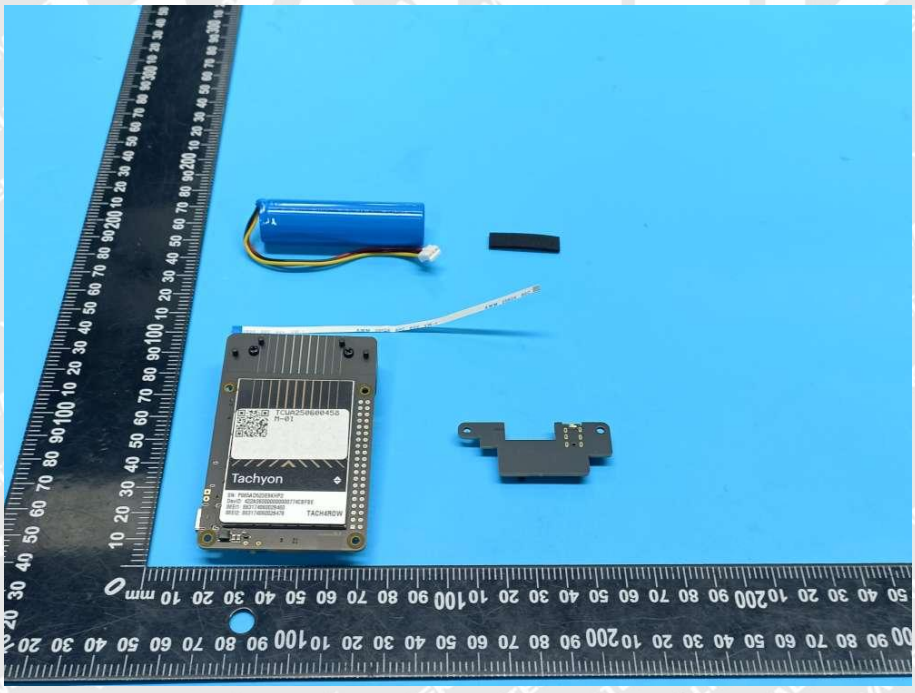
WTX25X06171569C

Test Method：

- IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry (XRF)
- IEC 62321-4:2013+AMD1:2017 CSV for mercury (Hg), analyzed by ICP-OES
- IEC 62321-5:2013 for lead (Pb) and cadmium (Cd), analyzed by ICP-OES
- IEC 62321-7-2:2017 and/or IEC 62321-7-1:2015 for hexavalent chromium (Cr^{6+}), analyzed by UV-Vis
- IEC 62321-6:2015 for PBBs and PBDEs, analyzed by GC-MS
- IEC 62321-8:2017 for phthalates, analyzed by GC-MS

Sample Photo:





Test Results:

1. Lead, Mercury, Cadmium, Hexavalent Chromium, PBBs and PBDEs

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
1	Black plastic	BL	BL	BL	IN	BL	Cr^{6+}：ND
2	Coppery metal nut	IN	BL	BL	BL	NA	Pb:11300#
3	Black plastic film	BL	BL	BL	BL	BL	NA
4	Silvery metal sheet	BL	BL	BL	IN	NA	Cr^{6+}：ND
5	Black cladding metal screw	BL	BL	BL	BL	NA	NA
6	Black plastic	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
7	Silvery metal PIN	BL	BL	BL	BL	NA	NA
8	Black IC SMD	BL	BL	BL	BL	BL	NA
9	Black IC SMD	BL	BL	BL	BL	BL	NA
10	Black IC SMD	BL	BL	BL	BL	BL	NA
11	Coppery metal PIN	BL	BL	BL	BL	NA	NA
12	Silvery metal	BL	BL	BL	IN	NA	Cr^{6+}：Negative

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
13	Black plastic	BL	BL	BL	BL	BL	NA
14	Golden cladding metal PIN	BL	BL	BL	BL	NA	NA
15	Black triode SMD	BL	BL	BL	BL	BL	NA
16	Yellow body	BL	BL	BL	BL	BL	NA
17	Black solid material（Inductance）	BL	BL	BL	BL	BL	NA
18	Coppery metal coil（Inductance）	BL	BL	BL	BL	NA	NA
19	Beige plastic	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
20	Coppery metal	BL	BL	BL	BL	NA	NA
21	White plastic base	BL	BL	BL	BL	BL	NA
22	Beige plastic	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
23	White plastic	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
24	Golden cladding metal PIN	BL	BL	BL	BL	NA	NA

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
25	White plastic	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
26	Golden cladding metal PIN	BL	BL	BL	BL	NA	NA
27	Black plastic（Type-C）	BL	BL	BL	BL	BL	NA
28	Silvery metal shell（Type-C）	BL	BL	BL	IN	NA	Cr^{6+}：Negative
29	Golden cladding metal PIN（Type-C）	BL	BL	BL	BL	NA	NA
30	Black IC SMD	BL	BL	BL	BL	BL	NA
31	Black plastic（Type-C）	BL	BL	BL	BL	BL	NA
32	Silvery metal shell（Type-C）	BL	BL	BL	IN	NA	Cr^{6+}：Negative
33	Golden cladding metal PIN（Type-C）	BL	BL	BL	BL	NA	NA
34	White plastic	BL	BL	BL	BL	BL	NA
35	Black plastic	BL	BL	BL	BL	BL	NA
36	White plastic button (switch)	BL	BL	BL	BL	BL	NA

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
37	Silvery square metal body（switch）	BL	BL	BL	BL	NA	NA
38	Silvery metal sheet（switch）	BL	BL	BL	BL	NA	NA
39	Black plastic base（switch）	BL	BL	BL	BL	BL	NA
40	Black capacitor SMD	BL	BL	BL	BL	BL	NA
41	Black IC SMD	BL	BL	BL	BL	BL	NA
42	Black cladding PCB board	BL	BL	BL	BL	BL	NA
43	Black IC SMD	BL	BL	BL	BL	BL	NA
44	Black IC SMD	BL	BL	BL	BL	BL	NA
45	Yellow glue	BL	BL	BL	BL	BL	NA
46	Silvery glass	BL	BL	BL	BL	BL	NA
47	Black IC SMD	BL	BL	BL	BL	BL	NA
48	Black IC SMD	BL	BL	BL	BL	BL	NA

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
49	Black IC SMD	BL	BL	BL	BL	BL	NA
50	Black IC SMD	BL	BL	BL	BL	BL	NA
51	Silvery glass	BL	BL	BL	BL	BL	NA
52	Silvery metal body（Crystal oscillator）	BL	BL	BL	BL	NA	NA
53	Black body	BL	BL	BL	BL	BL	NA
54	Blue body	BL	BL	BL	BL	BL	NA
55	Black IC SMD	BL	BL	BL	BL	BL	NA
56	Blue cladding PCB board	BL	BL	BL	BL	BL	NA
57	Black IC SMD	BL	BL	BL	BL	BL	NA
58	White body	BL	BL	BL	BL	BL	NA
59	Black IC SMD	BL	BL	BL	BL	BL	NA
60	Black plastic button (switch)	BL	BL	BL	BL	BL	NA

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
61	Silvery square metal body（switch）	BL	BL	BL	IN	NA	Cr^{6+}：Negative
62	Silvery metal PIN（switch）	BL	BL	BL	IN	NA	Cr^{6+}：Negative
63	Black plastic base（switch）	BL	BL	BL	BL	BL	NA
64	Silvery metal shell	BL	BL	BL	BL	NA	NA
65	Black plastic	BL	BL	BL	BL	BL	NA
66	Coppery metal	BL	BL	BL	BL	NA	NA
67	Black sponge	BL	BL	BL	BL	BL	NA
68	White FPC	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
69	White paper（battery）	BL	BL	BL	BL	BL	NA
70	Blue plastic film（battery）	BL	BL	BL	BL	BL	NA
71	Black IC SMD（battery）	BL	BL	BL	BL	BL	NA
72	Silvery metal sheet（battery）	BL	BL	BL	BL	NA	NA

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
73	Green cladding PCB board（battery）	BL	BL	BL	BL	IN	PBBs：ND PBDEs：ND
74	Solder（battery）	BL	BL	BL	BL	NA	NA
75	Green plastic film（battery）	BL	BL	BL	BL	BL	NA
76	Black plastic wire jacket（battery）	BL	BL	BL	BL	BL	NA
77	Red plastic wire jacket（battery）	BL	BL	BL	BL	BL	NA
78	Yellow plastic wire jacket（battery）	BL	BL	BL	BL	BL	NA
79	Silvery metal core（battery）	BL	BL	BL	BL	NA	NA
80	White plastic（battery）	BL	BL	BL	BL	BL	NA
81	Silvery metal （battery）	BL	BL	BL	BL	NA	NA

Note:

(1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr^{6+}) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1: 2013 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	LOD < IN < (150+3σ) ≤ OL
Pb	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) <IN	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	--	BL ≤ (250-3σ) < IN

BL= Below Limit OL= Over Limit LOD = Limit of Detection -- = Not Regulated

(2) “IN” expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.

(3) The XRF screening test for RoHS elements – the reading may be different to the actual content in the sample be of non-uniformity composition.

(4) mg / kg =milligram per kilogram=ppm, μg/cm^2= Micrograms per square centimeter.

(5) ND = Not Detected, less than the value of Method Detection Limit.

(6) NA = Not Applicable, as the XRF screening test result was below the limit, it was not need to conduct the chemical testing.

(7) MDL= Method Detection Limit in chemical test.

Test Items	Pb	Cd	Hg	Cr^{6+}		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm^2	mg/kg	mg/kg
MDL	10	10	10	10	0.1	10	10

The MDL for single compound of PBBs and PBDEs is 10mg/kg, MDL of Cr^{6+} for polymer and composite sample is 10mg/kg and MDL of Cr^{6+} for metal sample is 0.1μg/cm^2.

(8) Requirement as per RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

(9) According to IEC 62321-7-1:2015, determined of Cr^{6+} on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is less than 0.10μg/cm^2.

Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than 0.13μg/cm².

Information on storage conditions and production date of the tested sample is unavailable and thus Cr^{6+} results represent status of the sample at the time of testing.

(10) Abbreviation:

"Pb" denotes Lead, "Cd" denotes Cadmium, "Hg" denotes Mercury, "Cr" denotes Chromium, "Cr^{6+}" denotes Hexavalent Chromium, "Br" denotes Bromine, "PBBs" denotes Total Polybrominated Biphenyls, "PBDEs" denotes Total Polybrominated Diphenyl Ethers.

(11) #= Sample is copper alloy. The lead content which is under 4% (40000ppm) is exempted from the requirement of RoHS Directive (2011/65/EU).

(12)The sample material information (model information) is provided by the applicant. The test laboratory has not verified the difference between the main test model and the reference model, and the reference model sample has not been tested. The test laboratory does not assume the responsibility for the accuracy, appropriateness, completeness and authenticity of the information provided by the applicant.

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

Serial No.	Part No. (See Photograph of parts tested)	Result (mg/kg)			
		DIBP	DBP	BBP	DEHP
T01	1+6△	ND	ND	ND	ND
T02	3+45△	ND	ND	ND	ND
T03	8+9+10△	ND	ND	ND	ND
T04	13+15+16△	ND	ND	ND	ND
T05	17+19+21△	ND	ND	ND	ND
T06	22+23+25△	ND	ND	ND	ND
T07	27+30+31△	ND	ND	ND	ND
T08	34+35+36△	ND	ND	ND	ND
T09	39+40+41△	ND	ND	ND	ND
T10	42+43+44△	ND	ND	ND	ND
T11	46+47+48△	ND	ND	ND	ND
T12	49+50+51△	ND	ND	ND	ND
T13	53+54+55△	ND	ND	ND	ND
T14	56+57+58△	ND	ND	ND	ND
T15	59+60+63△	ND	ND	ND	ND
T16	65+68△	ND	ND	ND	ND
T17	67+69△	ND	ND	ND	ND
T18	70+75△	ND	ND	ND	ND
T19	71+73+80△	ND	ND	ND	ND
T20	76+77△	ND	ND	ND	ND
T21	78	ND	ND	ND	ND

Note:

(1) mg/kg =milligram per kilogram= ppm.

(2) Requirement as per RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863

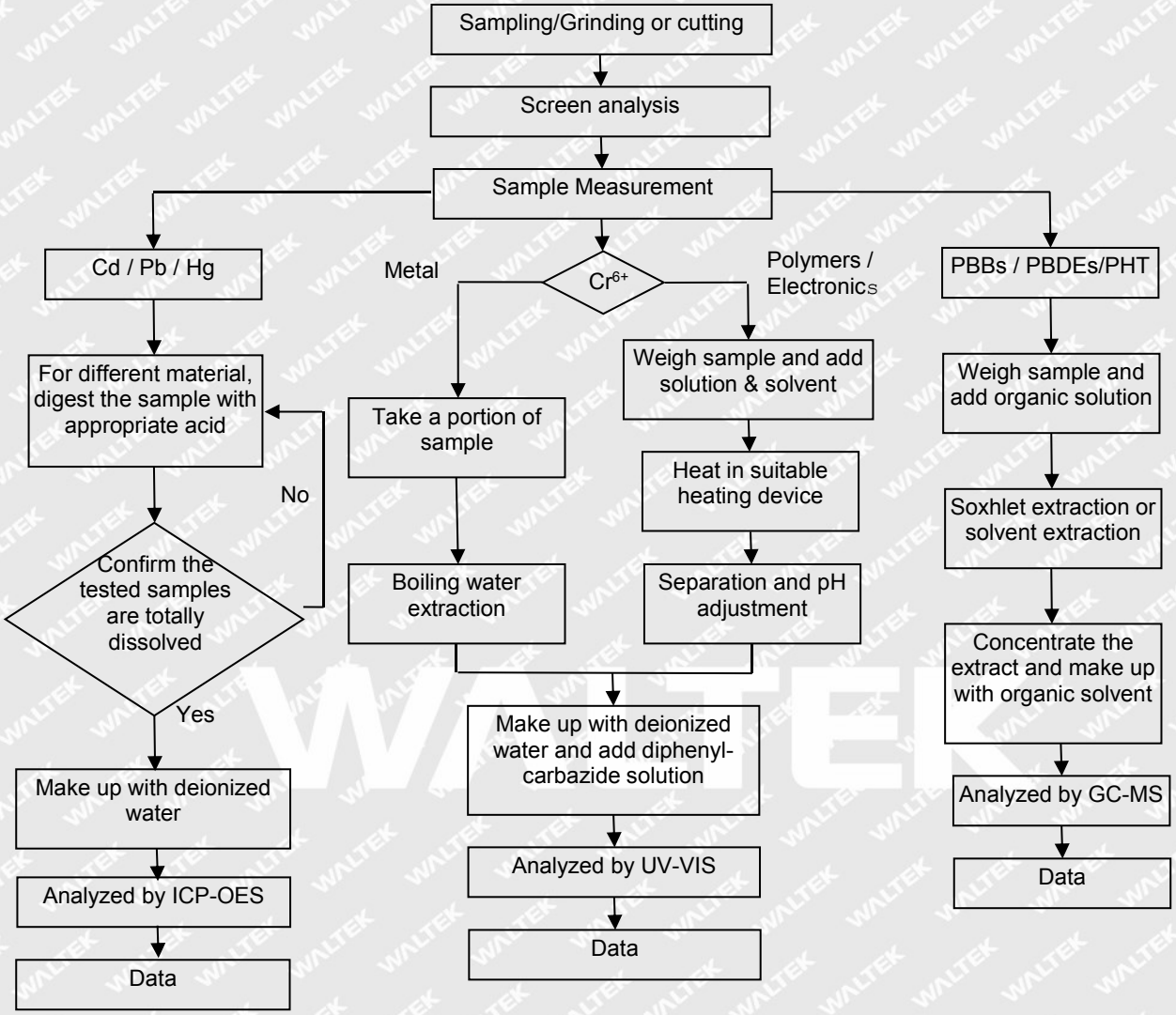
Test Item(s)	Limit（mg/kg）
Bis (2-ethylhexyl)- phthalate (DEHP)	1000
Dibutyl phthalate (DBP)	1000
Benzylbutyl phthalate (BBP)	1000
Diisobutyl phthalate (DIBP)	1000

(3) Abbreviation:
"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

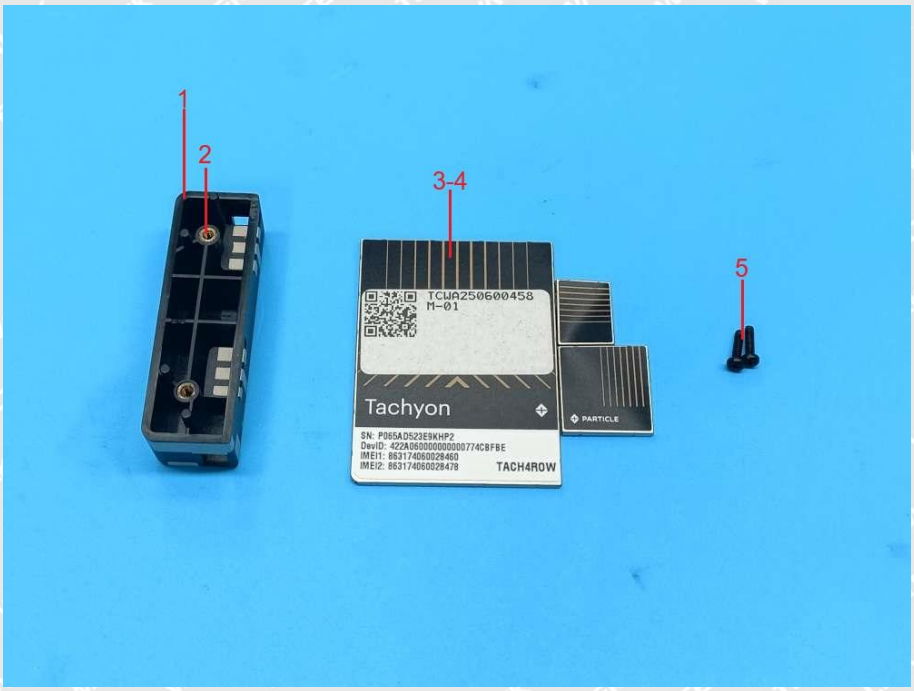
(4) Method Detection Limit (MDL) : 50mg/kg for each of phthalate.

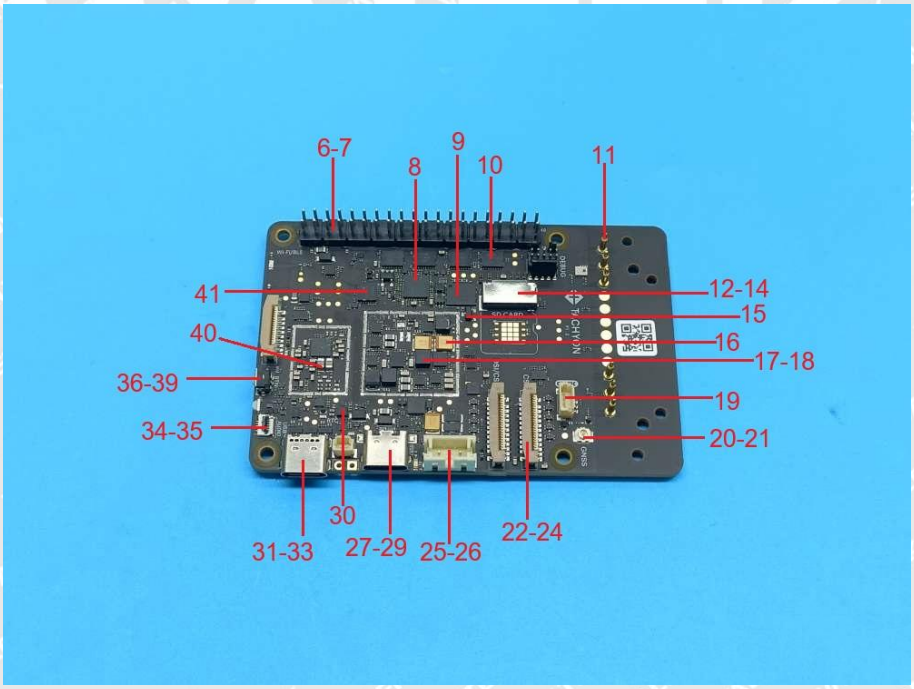
(5) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

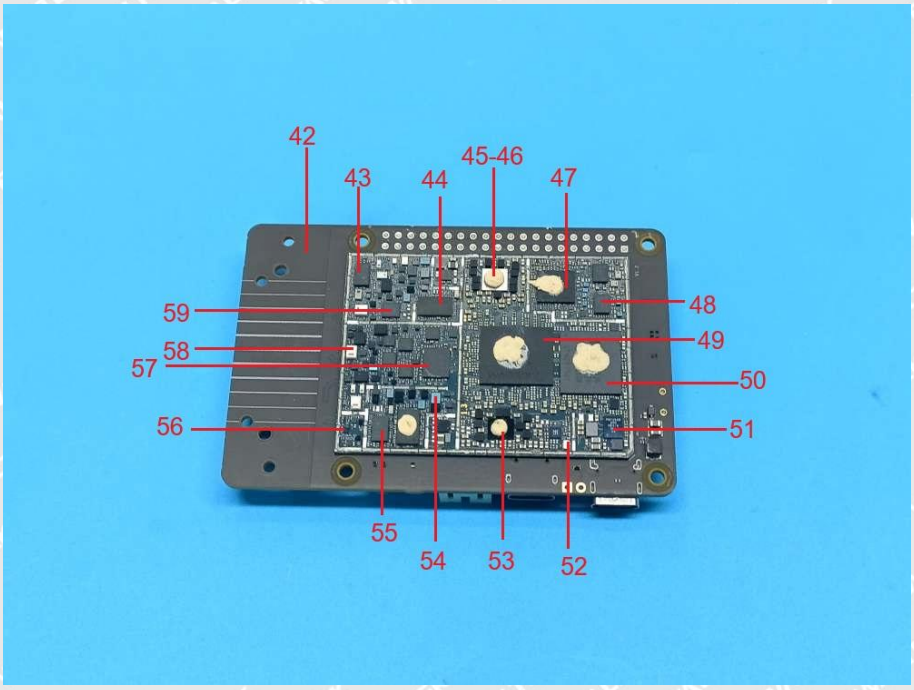
Measurement Flow chart:



Photograph of parts tested ：



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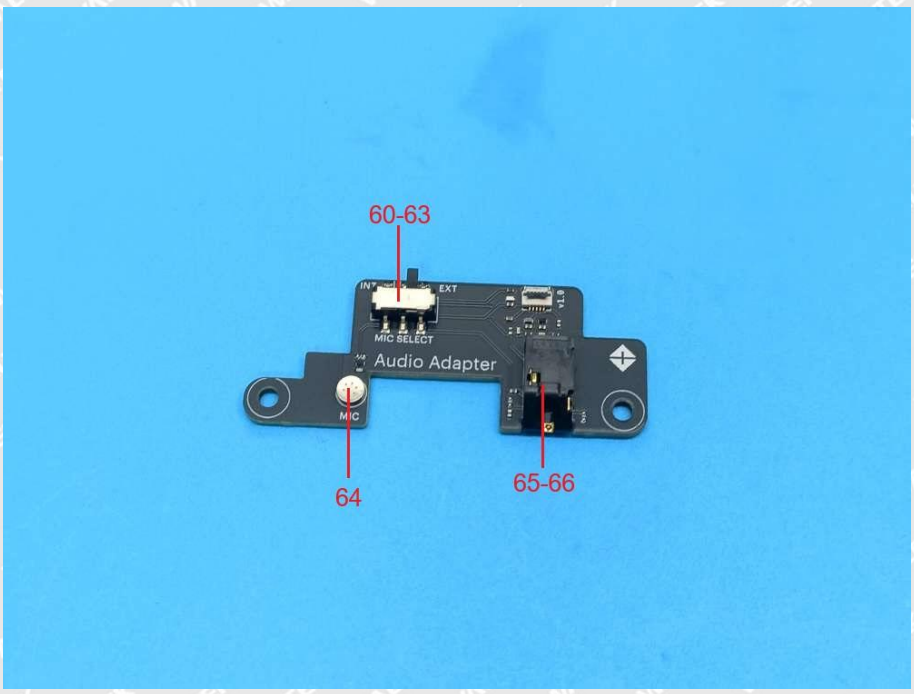
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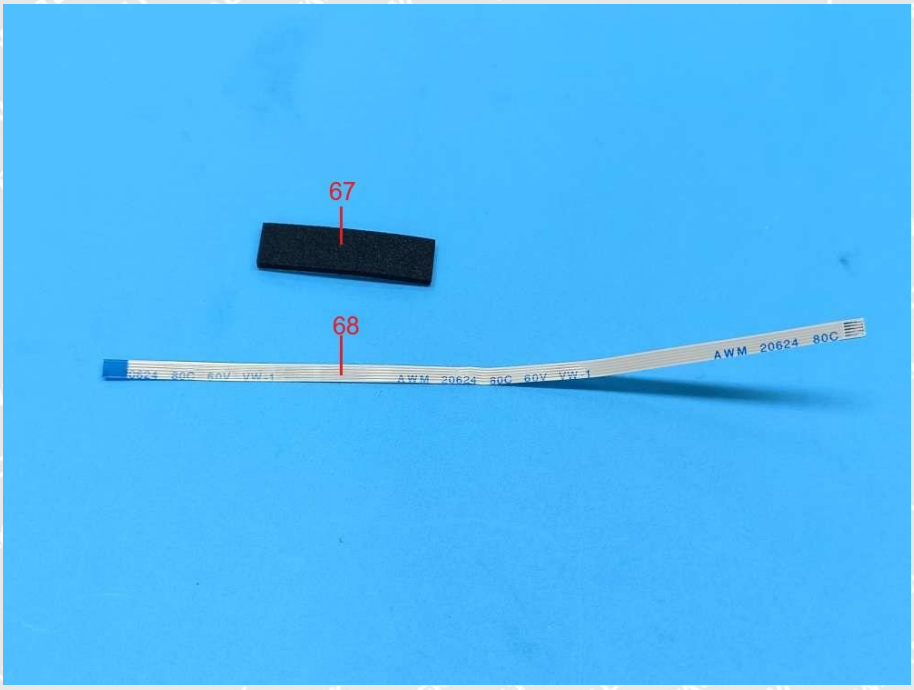
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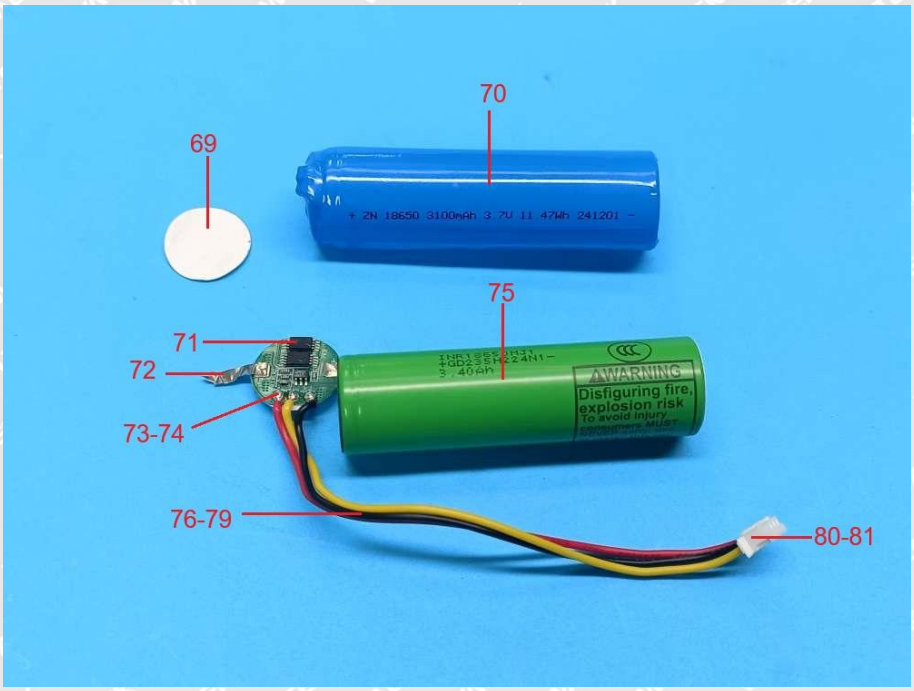
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WARNING
Disfiguring fire, explosion risk
to avoid injury,

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====== End of Report ======