



**BUREAU
VERITAS**

TEST REPORT

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DATE : Jan 16, 2025
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Applicant Name: PARTICLE INDUSTRIES,INC
Applicant Address: 325 9TH STREET, SAN FRANCISCO, CA 94103, UNITED STATES OF AMERICA
Date of Submission: DEC 4, 2024
Test Period: DEC 4, 2024 TO JAN 16, 2025
Sample Description: M.2 BREAKOUT BOARD
Style No.: M2BREAKOUT
Manufacturer: UMEC (SHENZHEN) COMPANY LTD.
Sample Size: 3



BUREAU VERITAS SHENZHEN CO.,LTD
DONGGUAN BRANCH

Lisa Bai
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RT/ Min Chen

REMARK

If there are questions or concerns on this report, please contact the following persons:

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SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION	REMARK
European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive (EU)2015/863	PASS	-

Photo of the Submitted Sample

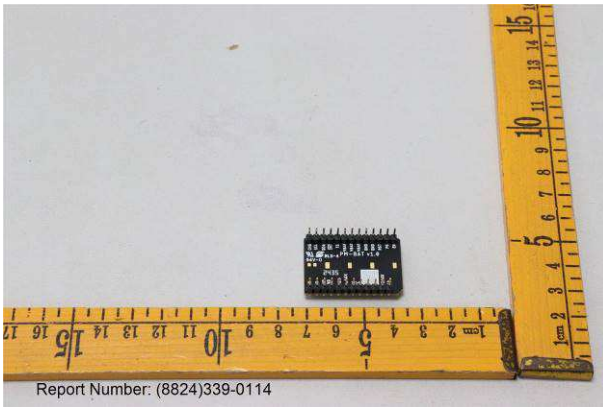
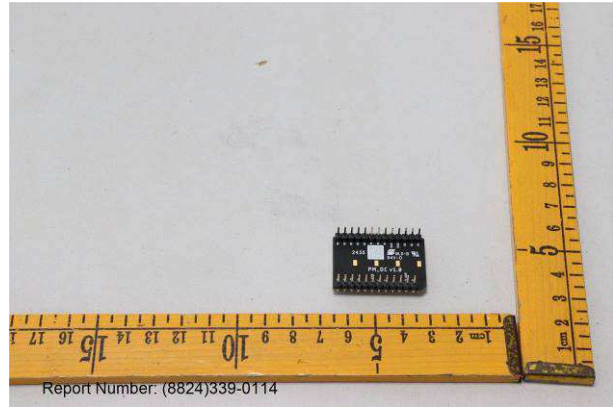
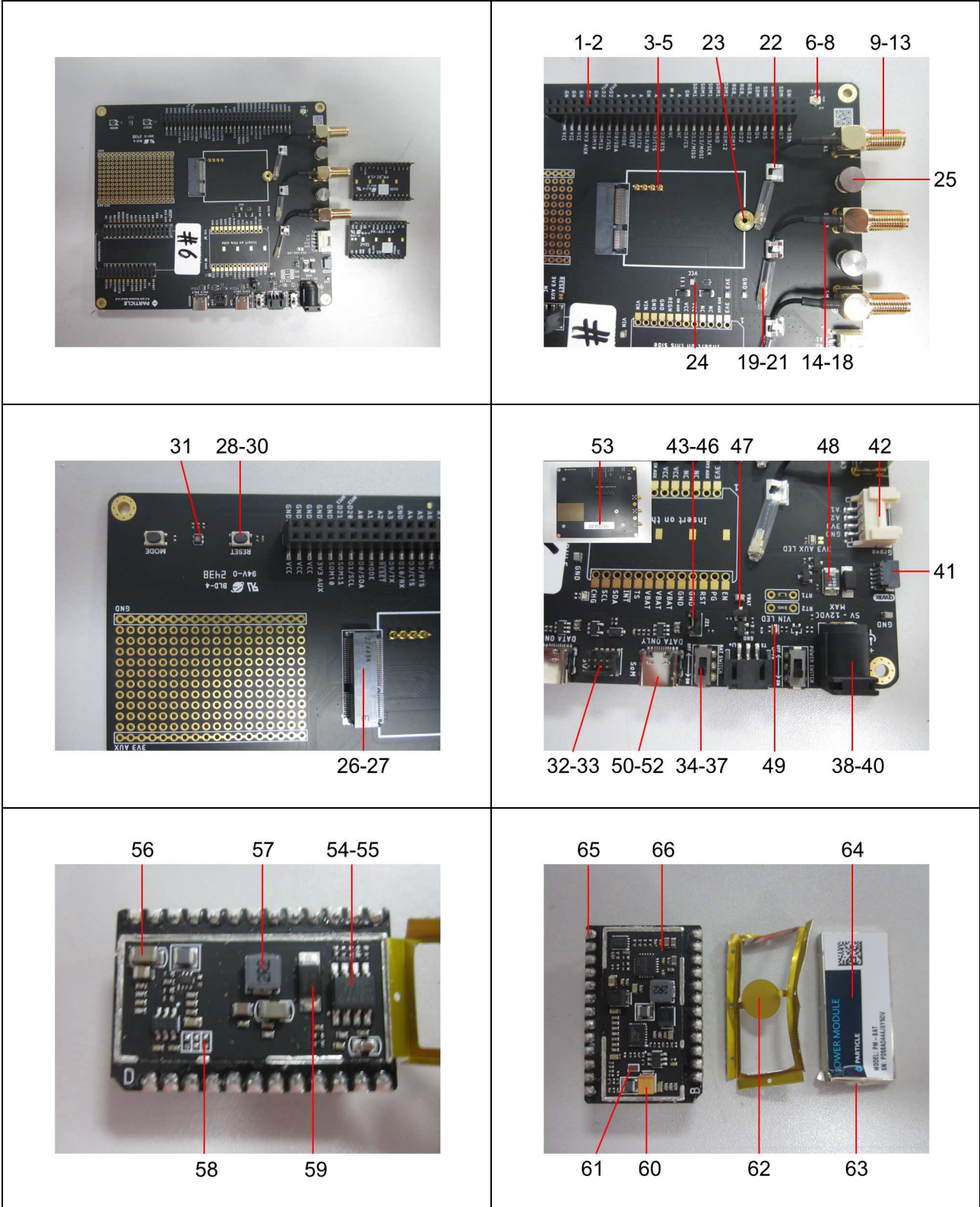


Photo of Test Item(s)





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Component Description List

Test Item(s)	Component Description(s)	Location	Style(s)
1	Black plastic	Socket, PCB	-
2	Silvery metal	Pin, socket, PCB	-
3	Golden metal	Terminal, thimble, PCB	-
4	Golden metal	Spring, thimble, PCB	-
5	Golden metal	Tube, thimble, PCB	-
6	Silvery metal	Cover, socket, PCB	-
7	White plastic	Base, socket, PCB	-
8	Silvery/golden metal	Pin, socket, PCB	-
9	Golden metal	Ring, plug, PCB	-
10	Golden metal	Holder, plug, PCB	-
11	White plastic	Pin holder, plug, PCB	-
12	Golden metal	Pin, plug, PCB	-
13	Silvery solder	Solder, plug, PCB	-
14	Golden metal	Connector, plug, PCB	-
15	Black soft plastic	Heat shrinkable tube, cable, plug, PCB	-
16	Black soft plastic	Wire jacket, cable, plug, PCB	-
17	Transparent soft plastic	Wire insulation, cable, plug, PCB	-
18	Silvery metal	Wire, cable, plug, PCB	-
19	Transparent soft plastic	Heat shrinkable tube, socket, cable, PCB	-
20	Golden metal	Socket, cable, PCB	-
21	White plastic	Socket, cable, PCB	-
22	Silvery metal	Buckle, PCB	-
23	Golden metal	Screw, PCB	-
24	Silvery metal	Ring, PCB	-
25	Silvery metal	Screw	-
26	Black plastic	Socket, PCB	-
27	Silvery metal	Pin, socket, PCB	-
28	Black plastic	Touch switch, PCB	-
29	Silvery metal	Touch switch, PCB	-
30	Beige plastic	Touch switch, PCB	-
31	Black/translucent body	EC, PCB	-
32	Black plastic	Socket, PCB	-
33	Silvery metal	Pin, socket, PCB	-
34	Black plastic	Button, toggle switch, PCB	-
35	Silvery metal	Case, toggle switch, PCB	-

Component Description List

Test Item(s)	Component Description(s)	Location	Style(s)
36	Silvery metal	Contact plate, toggle switch, PCB	-
37	Silvery metal	Pin, toggle switch, PCB	-
38	Black plastic	Case, plug, PCB	-
39	Silvery metal	Shaft, plug, PCB	-
40	Silvery metal	Contact plate, plug, PCB	-
41	Dull black plastic	Socket, PCB	-
42	Beige plastic	Socket, PCB	-
43	Black plastic	Socket, PCB	-
44	Silvery metal	Buckle, socket, PCB	-
45	Black plastic	Base, socket, PCB	-
46	Silvery/golden metal	Pin, socket, PCB	-
47	Black body	SMD transistor, PCB	-
48	Black body	SMD fuse, PCB	-
49	Translucent body	SMD LED, PCB	-
50	Silvery metal	Contact plate, type-c plug, PCB	-
51	Black plastic	Pin holder, type-c plug, PCB	-
52	Silvery metal	Pin, type-c plug, PCB	-
53	Black/white coated yellow/transparent plastic with adhesive	Sticker, PCB	-
54	Black body	IC, PCB	-
55	Silvery/coppery metal	Plate, IC, PCB	-
56	Brown body	SMD capacitor, PCB	-
57	Black/coppery metal	Inductor, PCB	-
58	Black printed white body	SMD resistor, PCB	-
59	Black body	Diode, PCB	-
60	Yellow body	EC, PCB	-
61	Bright black body	EC, PCB	-
62	Yellow plated silvery metal	Frame, cover, PCB	-
63	Silvery metal	Cover, PCB	-
64	Black/white/blue coated yellow/transparent plastic with adhesive	Sticker, cover, PCB	-
65	Silvery solder	Solder, PCB	-
66	Black PCB	PCB	-



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TEST RESULT

Compliance Test – European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU

Test Method : See Appendix.

See Analytes and their corresponding Maximum Allowable Limit in Appendix

Parameter	Result						Conclusion
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Chromium VI (Cr VI)	PBBs	PBDEs	
Limit (mg/kg):	1000	1000	100	1000/ Negative	1000	1000	-
Test Item(s)	-	-	-	-	-	-	-
1	BL	BL	BL	BL	BL*	BL*	PASS
2	BL	BL	BL	BL	NA	NA	PASS
3	23670*	BL	BL	BL	NA	NA	EXEMPTED#
4	BL	BL	BL	Negative*	NA	NA	PASS
5	BL	BL	BL	BL	NA	NA	PASS
6	BL	BL	BL	BL	NA	NA	PASS
7	BL	BL	BL	BL	BL	BL	PASS
8	BL	BL	BL	BL	NA	NA	PASS
9	29460*	BL	BL	BL	NA	NA	EXEMPTED#
10	28140*	BL	BL	BL	NA	NA	EXEMPTED#
11	BL	BL	BL	BL	BL	BL	PASS
12	22330*	BL	BL	BL	NA	NA	EXEMPTED#
13	BL	BL	BL	BL	NA	NA	PASS
14	22330*	BL	BL	BL	NA	NA	EXEMPTED#
15	BL	BL	BL	BL	BL	BL	PASS
16	BL	BL	BL	BL	BL	BL	PASS
17	BL	BL	BL	BL	BL	BL	PASS
18	BL	BL	BL	BL	NA	NA	PASS
19	BL	BL	BL	BL	BL	BL	PASS
20	BL	BL	BL	BL	NA	NA	PASS
21	BL	BL	BL	BL	BL	BL	PASS
22	BL	BL	BL	BL	NA	NA	PASS
23	21360*	BL	BL	BL	NA	NA	EXEMPTED#
24	BL	BL	BL	BL	NA	NA	PASS
25	BL	BL	BL	Negative*	NA	NA	PASS



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TEST RESULT

-	Result						
Parameter	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Limit (mg/kg):	1000	1000	100	1000/ Negative	1000	1000	-
Test Item(s)	-	-	-	-	-	-	-
26	BL	BL	BL	BL	BL	BL	PASS
27	BL	BL	BL	BL	NA	NA	PASS
28	BL	BL	BL	BL	BL	BL	PASS
29	BL	BL	BL	Negative*	NA	NA	PASS
30	BL	BL	BL	BL	BL	BL	PASS
31	BL	BL	BL	BL	BL	BL	PASS
32	BL	BL	BL	BL	BL*	BL*	PASS
33	BL	BL	BL	BL	NA	NA	PASS
34	BL	BL	BL	BL	BL	BL	PASS
35	BL	BL	BL	Negative*	NA	NA	PASS
36	BL	BL	BL	BL	NA	NA	PASS
37	BL	BL	BL	BL	NA	NA	PASS
38	BL	BL	BL	BL	BL*	BL*	PASS
39	BL	BL	BL	BL	NA	NA	PASS
40	BL	BL	BL	BL	NA	NA	PASS
41	BL	BL	BL	BL	BL	BL	PASS
42	BL	BL	BL	BL	BL*	BL*	PASS
43	BL	BL	BL	BL	BL*	BL*	PASS
44	BL	BL	BL	BL	NA	NA	PASS
45	BL	BL	BL	BL	BL*	BL*	PASS
46	BL	BL	BL	BL	NA	NA	PASS
47	BL	BL	BL	BL	BL	BL	PASS
48	15*	BL	BL	BL	BL	BL	PASS
49	BL	BL	BL	BL	BL	BL	PASS
50	BL	BL	BL	BL	NA	NA	PASS
51	BL	BL	BL	BL	BL	BL	PASS
52	BL	BL	BL	BL	NA	NA	PASS
53	BL	BL	BL	BL	BL	BL	PASS
54	BL	BL	BL	BL	BL	BL	PASS
55	BL	BL	BL	BL	NA	NA	PASS
56	BL	BL	BL	BL	BL	BL	PASS
57	BL	BL	BL	BL	NA	NA	PASS

APPENDIX

List of Analytes and their Corresponding Test Methods, Detection Limit and Maximum Allowable Limit							
[Compliance Test for European Parliament and Council Directive 2011/65/EU] :							
No.	Name of Analytes	Detection Limit (mg/kg)				Wet Chemistry	Maximum Allowable Limit (mg/kg)
		X-ray fluorescence (XRF)^[a]					
		Plastic	Metallic / glass / ceramic	Others			
1	Lead (Pb)	100	200	200	10 ^[b]	1000	
2	Cadmium (Cd)	50	50	50	10 ^[b]	100	
3	Mercury (Hg)	100	200	200	10 ^[c]	1000	
4	Chromium (Cr)	100	200	200	NA	NA	
5	Chromium VI (Cr VI)	NA	NA	NA	3 ^[g, h] / 10 ^[d] / Sec ^[e, i]	1000 / Negative ^[j]	
6	Bromine (Br)	200	NA	200	NA	NA	
7	Polybromobiphenyls (PBBs) - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	NA	NA	NA	Each 50 ^[f]	Sum 1000	
8	Polybromodiphenyl ethers (PBDEs) - Bromodiphenyl ether (MonoBDE) - Dibromodiphenyl ether (DiBDE) - Tribromodiphenyl ether (TriBDE) - Tetrabromodiphenyl ether (TetraBDE) - Pentabromodiphenyl ether (PentaBDE) - Hexabromodiphenyl ether (HexaBDE) - Heptabromodiphenyl ether (HeptaBDE) - Octabromodiphenyl ether (OctaBDE) - Nonabromodiphenyl ether (NonaBDE) - Decabromodiphenyl ether (DecaBDE)	NA	NA	NA	Each 50 ^[f]	Sum 1000	



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List of Analytes and their Corresponding Test Methods, Detection Limit and Maximum Allowable Limit [Compliance Test for European Parliament and Council Directive 2011/65/EU] :

NA = Not applicable

- [a] Test method with reference to International Standard IEC 62321-3-1: 2013.
- [b] Test method with reference to International Standard IEC 62321-5: 2013.
- [c] Test method with reference to International Standard IEC 62321-4:2013+A1:2017.
- [d] Polymers and Electronics - Test method with reference to International Standard IEC 62321-7-2:2017.
- [e] Metal - Test method with reference to International Standard IEC 62321-7-1: 2015.
- [f] Test method with reference to International Standard IEC 62321-6: 2015.
- [g] Leather - Test method International Standard ISO 17075-1:2017.
- [h] Other Than Metal, Leather, Polymers and Electronics - Test method with reference to International Standard ISO 17075-1:2017.
- [i] The principle of this method was evaluated and supported by two studies organized by IEC TC 111 WG3. These studies were focused on detecting the presence of Cr VI in the corrosion protection coatings on metallic samples. Result(s) of Cr VI for metallic material(s) was (were) expressed in term of positive and negative. Negative means the absence of Cr VI on the tested areas and the result(s) was (were) regarded as in compliance with European Parliament and Council Directive 2011/65/EU, Article 4(1). While, positive means the presence of Cr VI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1).
- [j]

Testing Approach [Compliance Test for European Parliament and Council Directive 2011/65/EU] :

The testing approach was with reference to the following document(s).

- 1 International Standards IEC 62321-1: 2013 and IEC 62321-2: 2021
- 2 "RoHS Enforcement Guidance Document Version 1" by EU RoHS Enforcement Authorities Informal Network. (May 2006)
- 3 "RoHS Regulations - Government Guidance Notes" by United Kingdom Department for Business Innovation & Skills. (February 2011)
- 4 "Final Report to RoHS substances (Hg, Pb, Cr(VI), Cd, PBB and PBDE) in electrical and electronic equipment in Belgium" by Belgium Federal Public Service Health, Food Chain Safety and Environment. (November 2005)

