



**BUREAU  
VERITAS**

# TEST REPORT

LAB NO. : (8815)330-0032  
DATE : Jan 7, 2016  
PAGE : 1 OF 11

**APPLICANT** : **PARTICLE INDUSTRIES, INC.**  
1400 Tennessee St., #4 San Francisco, CA 94107

**DATE OF SUBMISSION** : NOV 26, 2015

**TEST PERIOD** : NOV 26, 2015 to JAN 7, 2016

**SAMPLE DESCRIPTION** : WIFI INTERNET OF THINGS DEVELOPMENT KIT/ WIFI物  
连网开发套件

Style No. : PHOTONH, PHOTONNOH, PHOTONKIT

Country of Origin: CHINA

Country of Destination: 欧洲,日本,美国

Manufacturer : PARTICLE INDUSTRIES, INC.

## 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)	PASS	-

BUREAU VERITAS SHENZHEN CO.,LTD  
DONGGUAN BRANCH

Harvey Xue  
Assistant Manager, Analytical Lab

RT/CC

### REMARK

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

Report Enquiry: (86) 0769 85935656 Ext. 8819 CPSAnalytical.DG@cn.bureauveritas.com



Business Contact: (86) 0769 85893595

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Photo of the Submitted Sample





**Test Item Description And Photo List**

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I001		Red/translucent body	LED, development kit	-
I002		Silvery metal	Pin, development kit	-
I003		Multi- color coated beige body	Carbon film resistor, development kit	-
I004		Silvery metal	Pin, carbon film resistor, development kit	-
I005		White soft plastic	SR, big USB plug, cable, development kit	-
I006		Silvery metal	Case, big USB plug, cable, development kit	-
I007		White plastic	Pin holder, behind, big USB plug, cable, development kit	-
I008		Grey white plastic	Pin holder, front, case, big USB plug, cable, development kit	-
I010		Silvery metal	Pin, big USB plug, cable, development kit	-
I011		Silvery solder	Solder, pin, big USB plug, cable, development kit	-
I012		White soft plastic	Wire jacket, cable, development kit	-
I013		White soft plastic	Wire insulation, cable, development kit	-
I014		Red soft plastic	Wire insulation, cable, development kit	-
I015		Black soft plastic	Wire insulation, cable, development kit	-
I016		Green soft plastic	Wire insulation, cable, development kit	-
I017		Silvery plated coppery metal	Wire, cable, development kit	-
I018		Blue coated silver metal	Foil, cable, development kit	-

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I019		White soft plastic	SR, small USB plug, cable, development kit	-
I020		Silvery metal	Case, small USB plug, cable, development kit	-
I021		White plastic	Pin holder, behind, small USB plug, cable, development kit	-
I022		Black plastic	Pin holder, front, small USB plug, development kit	-
I023		Silvery metal	Pin, small USB plug, cable, development kit	-
I024		Red/blue printed white plastic	Small socket, development kit	-
I025		Silvery metal	Contact plate, small socket, development kit	-
I026		Black printed white plastic	Big socket, development kit	-
I027		Silvery metal	Contact plate, big socket, development kit	-
I028		Silvery metal	Cover, small PCB, development kit	-
I029		White coated brown body	SMD capacitor, small PCB, development kit	-
I030		Black body	SMD capacitor, small PCB, development kit	-
I031		Light brown body	SMD capacitor, small PCB, development kit	-
I032		Black body	SMD IC, small PCB, development kit	-
I033		Silvery/golden body	Small, heat sink, small PCB, development kit	-
I034		Silvery/golden body	Big, heat sink, small PCB, development kit	-
I035		Black printed glass body	Small, EC, small PCB, development kit	-
I036		Black printed glass body	Big, EC, small PCB, development kit	-
I037		Silvery solder	Solder, small PCB, development kit	-
I038		Green plastic with coppery metal	Small PCB, development kit	-
I039		Brown coated white body	SMD capacitor, big PCB, development kit	-

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I040		Brown body	SMD capacitor, big PCB, development kit	-
I041		Grey body	SMD capacitor, big PCB, development kit	-
I042		Dull red body	SMD capacitor, big PCB, development kit	-
I043		Black body	SMD capacitor, big PCB, development kit	-
I044		Black body	SMD IC, big PCB, development kit	-
I045		Black/white body	EC, big PCB, development kit	-
I046		Transparent body	SMD LED, big PCB, development kit	-
I047		Golden body	Case, small socket, big PCB, development kit	-
I048		Golden body	Pin, small socket, big PCB, development kit	-
I049		White plastic	Holder, small socket, big PCB, development kit	-
I050		Black body	Inductor, big PCB, development kit	-
I051		Coppery metal	Coil, inductor, big PCB, development kit	-
I052		Black plastic	Button, micro switch, big PCB, development kit	-
I053		Silvery metal	Case, micro switch, big PCB, development kit	-
I054		Silvery metal	Contact plate, micro switch, big PCB, development kit	-
I055		Black plastic	Base, micro switch, big PCB, development kit	-
I056		Silvery metal	Pin, micro switch, big PCB, development kit	-
I057		Silvery metal	Case, USB plug, big PCB, development kit	-
I058		Black plastic	Pin holder, USB plug, big PCB, development kit	-
I059		Silvery metal	Pin, UCB plug, big PCB, development kit	-
I060		Silvery metal	Pin, long socket, big PCB, development kit	-

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I061		Black plastic	Pin holder, long socket, big PCB, development kit	-
I062		Silvery solder	Solder, big PCB, development kit	-
I063		Blue/black coated green plastic with coppery metal	Big PCB, development kit	-
I064		Transparent body	Small LED, development kit	-
I065		Silvery metal	Pin, small LED, development kit	-
I066		Transparent body	Big LED, development kit	-
I067		Silvery metal	Pin, big LED, development kit	-

### 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)**

**Test Method :** See Appendix.

**See Analytes and their corresponding Maximum Allowable Limit in Appendix**

-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg						-
Test Item(s)	-	-	-	-	-	-	-
I001	ND	ND	ND	ND	ND	ND	PASS
I002	ND	ND	ND	ND	NA	NA	PASS
I003	ND	ND	ND	ND	ND	ND	PASS
I004	ND	ND	ND	ND	NA	NA	PASS
I005	ND	ND	ND	ND	ND	ND	PASS
I006	ND	ND	ND	ND	NA	NA	PASS
I007	ND	ND	ND	ND	ND*	ND*	PASS
I008	ND	ND	ND	ND	ND	ND	PASS
I010	ND	ND	ND	ND	NA	NA	PASS
I011	ND	ND	ND	ND	NA	NA	PASS
I012	ND	ND	ND	ND	ND	ND	PASS
I013	ND	ND	ND	ND	ND	ND	PASS
I014	ND	ND	ND	ND	ND	ND	PASS
I015	ND	ND	ND	ND	ND	ND	PASS
I016	ND	ND	ND	ND	ND	ND	PASS
I017	ND	ND	ND	ND	NA	NA	PASS
I018	ND	ND	ND	ND	NA	NA	PASS
I019	ND	ND	ND	ND	ND	ND	PASS
I020	ND	ND	ND	Negative*	NA	NA	PASS
I021	ND	ND	ND	ND	ND	ND	PASS
I022	ND	ND	ND	ND	ND	ND	PASS
I023	ND	ND	ND	Negative*	NA	NA	PASS
I024	ND	ND	ND	ND	ND	ND	PASS

-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg						-
Test Item(s)	-	-	-	-	-	-	-
I025	ND	ND	ND	ND	NA	NA	PASS
I026	ND	ND	ND	ND	ND	ND	PASS
I027	ND	ND	ND	ND	NA	NA	PASS
I028	ND	ND	ND	ND	NA	NA	PASS
I029	ND	ND	ND	ND	ND	ND	PASS
I030	ND	ND	ND	ND	ND	ND	PASS
I031	ND	ND	ND	ND	ND	ND	PASS
I032	ND	ND	ND	ND	ND	ND	PASS
I033	ND	ND	ND	ND	NA	NA	PASS
I034	ND	ND	ND	ND	NA	NA	PASS
I035	ND	ND	ND	ND	ND	ND	PASS
I036	ND	ND	ND	ND	ND	ND	PASS
I037	ND	ND	ND	ND	NA	NA	PASS
I038	ND	ND	ND	ND	ND	ND	PASS
I039	ND	ND	ND	ND	ND	ND	PASS
I040	ND	ND	ND	ND	ND	ND	PASS
I041	ND	ND	ND	ND	ND	ND	PASS
I042	ND	ND	ND	ND	ND	ND	PASS
I043	ND	ND	ND	ND	ND	ND	PASS
I044	ND	ND	ND	ND	ND	ND	PASS
I045	ND	ND	ND	ND	ND	ND	PASS
I046	ND	ND	ND	ND	ND	ND	PASS
I047	ND	ND	ND	ND	NA	NA	PASS
I048	ND	ND	ND	ND	NA	NA	PASS
I049	ND	ND	ND	ND	ND	ND	PASS
I050	ND	ND	ND	ND	NA	NA	PASS
I051	ND	ND	ND	ND	NA	NA	PASS
I052	ND	ND	ND	ND	ND	ND	PASS
I053	ND	ND	ND	Negative*	NA	NA	PASS
I054	ND	ND	ND	Negative*	NA	NA	PASS
I055	ND	ND	ND	ND	ND	ND	PASS



-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg						-
Test Item(s)	-	-	-	-	-	-	-
I056	ND	ND	ND	ND	NA	NA	PASS
I057	ND	ND	ND	ND	NA	NA	PASS
I058	ND	ND	ND	ND	ND	ND	PASS
I059	ND	ND	ND	ND	NA	NA	PASS
I060	ND	ND	ND	ND	NA	NA	PASS
I061	ND	ND	ND	ND	ND*	ND*	PASS
I062	ND	ND	ND	ND	NA	NA	PASS
I063	ND	ND	ND	ND	ND*	ND*	PASS
I064	ND	ND	ND	ND	ND*	ND*	PASS
I065	ND	ND	ND	ND	NA	NA	PASS
I066	ND	ND	ND	ND	ND*	ND*	PASS
I067	ND	ND	ND	ND	NA	NA	PASS

**Note / Key:**

ND = Not detected  
 NA = Not applicable  
 % = percent  
 Detection Limit : See Appendix.

“>” = Greater than  
 mg/kg = milligram(s) per kilogram = ppm = part(s) per million  
 10000 mg/kg = 1 %

“<” = Less than

**Remark:**

- The testing approach is listed in table of Appendix.
- \* denotes as reported result(s) was (were) performed by wet chemistry method. Others were screened by XRF. For XRF screening, the result(s) of Cr VI was (were) reported as total chromium and the result(s) of PBBs and PBDEs was (were) reported as total bromine. Also, the XRF result(s) may be different to the actual content based on various factors including, but not limit to, sample size, thickness, area, non-uniformity composition, surface flatness.
- According to European Council Directive 2011/65/EU, Article 5 “Adaptation of the Annexes to scientific and technical progress”, exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.
- At the request of client, test(s) was conducted on the certain component(s) of the submitted samples(s) / submitted component(s).

## 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)				Maximum Allowable Limit (mg/kg)
		X-ray fluorescence (XRF) <sup>[a]</sup>			Wet Chemistry	
		Plastic	Metallic / glass / ceramic	Others		
1	Lead (Pb)	100	200	200	10 <sup>[b]</sup>	1 000
2	Cadmium (Cd)	50	50	50	10 <sup>[b]</sup>	100
3	Mercury (Hg)	100	200	200	10 <sup>[c]</sup>	1 000
4	Chromium (Cr)	100	200	200	NA	NA
5	Chromium VI (Cr VI)	NA	NA	NA	3 <sup>[g, h]</sup> / 10 <sup>[d]</sup> / See <sup>[e, i]</sup>	1 000 / Negative <sup>[j]</sup>
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 <sup>[f]</sup>	Sum 1 000
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 <sup>[f]</sup>	Sum 1 000

**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.
[d]	Polymers and Electronics - Test method with reference to European Standard EN 62321: 2009, Annex C.
[e]	Metal - Test method with reference to European Standard EN 62321: 2009, Annex B <sup>[i]</sup> .
[f]	Test method with reference to European Standard EN 62321: 2009, Annex A.
[g]	Leather - Test method International Standard ISO 17075: 2007.
[h]	Other Than Metal, Leather, Polymers and Electronics - Test method with reference to International Standard ISO 17075: 2007.
[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: 2013
- 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)

\*\*\* End of Report \*\*\*