TEST REPORT

LAB NO. : **(8818)316-0107**
DATE : **Nov 20, 2018**
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APPLICANT	:	**PARTICLE INDUSTRIES, INC** 126 POST ST, 4TH FLOOR, SAN FRANCISCO, CA 94108 USA
DATE OF SUBMISSION	:	NOV 12, 2018
TEST PERIOD	:	NOB 12, 2018 TO NOV 20, 2018
SAMPLE DESCRIPTION	:	BORON 2G/3G
Style No. :		BRN310
Sample Size:		1

BUREAU VERITAS SHENZHEN CO.,LTD
DONGGUAN BRANCH

Harvey Xue
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RT/SS/LL

REMARK

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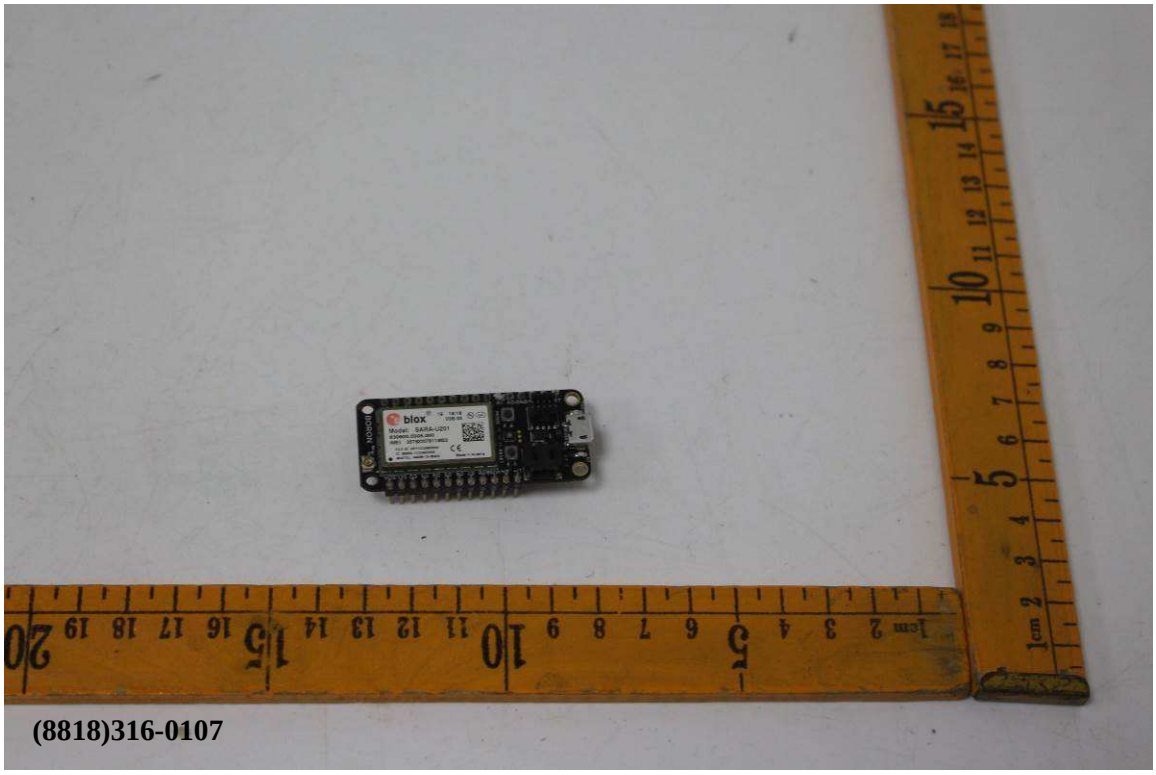
SUMMARY OF TEST RESULTS

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)	PASS	-

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		Silvery metal	Cover, PCB, Boron 2G/3G	-
I002		Pink/black/white printed yellow plastic	Sticker, cover, PCB, Boron 2G/3G	-
I003		Silvery metal	Contact plate, micro USB plug, PCB, Boron 2G/3G	-
I004		Silvery metal	Pin, micro USB plug, PCB, Boron 2G/3G	-
I005		Black plastic	Pin holder, micro USB plug, PCB, Boron 2G/3G	-
I006		Black plastic	Socket “MD”, PCB, Boron 2G/3G	-
I007		Silvery metal	Pin, socket “MD”, PCB, Boron 2G/3G	-
I008		Black plastic	Socket, PCB, Boron 2G/3G	-
I009		Silvery metal	Pin, socket, PCB, Boron 2G/3G	-
I010		Golden metal	Contact plate, plug, PCB, Boron 2G/3G	-
I011		Golden metal	Pin, plug, PCB, Boron 2G/3G	-
I012		White plastic	Pin holder, plug, PCB, Boron 2G/3G	-
I013		Black plastic	Button, touch switch, PCB, Boron 2G/3G	-
I014		Silvery metal	Case, touch switch, PCB, Boron 2G/3G	-
I015		Transparent/yellow plastic	Cover, contact plate, touch switch, PCB, Boron 2G/3G	-
I016		Silvery metal	Contact plate, touch switch, PCB, Boron 2G/3G	-
I017		Black plastic	Base, touch switch, PCB, Boron 2G/3G	-
I018		Silvery metal	Pin, touch switch, PCB, Boron 2G/3G	-

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I019		Black body	SMD IC, PCB, Boron 2G/3G	-
I020		Bright black body	SMD IC, PCB, Boron 2G/3G	-
I021		Black body	SMD resistor, PCB, Boron 2G/3G	-
I022		Brown body	SMD capacitor, PCB, Boron 2G/3G	-
I023		Grey body	SMD capacitor, PCB, Boron 2G/3G	-
I024		White body	SMD LED, PCB, Boron 2G/3G	-
I025		Black body	SMD diode, PCB, Boron 2G/3G	-
I026		Silvery body	SMD EC, PCB, Boron 2G/3G	-
I027		Silvery/golden body	SMD EC, PCB, Boron 2G/3G	-
I028		Black/green body	SMD EC, PCB, Boron 2G/3G	-
I029		Translucent/black body	SMD EC, PCB, Boron 2G/3G	-
I030		Silvery solder	Solder, PCB, Boron 2G/3G	-
I031		Green coated brown plastic with coppery metal	Green PCB, Boron 2G/3G	-
I032		Black plastic	Socket, PCB, Boron 2G/3G	-
I033		Golden metal	Pin, socket, PCB, Boron 2G/3G	-
I034		Silvery metal	Contact plate, socket, PCB, Boron 2G/3G	-
I035		Golden metal	Pin, socket, PCB, Boron 2G/3G	-
I036		Black plastic	Pin holder, socket, PCB, Boron 2G/3G	-
I037		Black body	Inductor, PCB, Boron 2G/3G	-
I038		Coppery metal	Coil, inductor, PCB, Boron 2G/3G	-
I039		Grey body	Inductor, PCB, Boron 2G/3G	-

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I040		Coppery metal	Coil, inductor, PCB, Boron 2G/3G	-
I041		Black body	IC, PCB, Boron 2G/3G	-
I042		Black body	SMD IC, PCB, Boron 2G/3G	-
I043		Black body	SMD transistor, PCB, Boron 2G/3G	-
I044		Yellow/orange body	SMD EC, PCB, Boron 2G/3G	-
I045		White printed brown body	SMD EC, PCB, Boron 2G/3G	-
I046		Brown printed white body	SMD EC, PCB, Boron 2G/3G	-
I047		Coppery body	SMD EC, PCB, Boron 2G/3G	-
I048		Brown/white body	SMD EC, PCB, Boron 2G/3G	-
I049		Silvery solder	Solder, PCB, Boron 2G/3G	-
I050		Black coated brown plastic with coppery metal	PCB, Boron 2G/3G	-

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	NA	NA	PASS
I002	ND	ND	ND	ND	ND	ND	PASS
I003	ND	ND	ND	ND	NA	NA	PASS
I004	ND	ND	ND	ND	NA	NA	PASS
I005	ND	ND	ND	ND	ND	ND	PASS
I006	ND	ND	ND	ND	ND*	ND*	PASS
I007	ND	ND	ND	ND	NA	NA	PASS
I008	ND	ND	ND	ND	ND*	ND*	PASS
I009	ND	ND	ND	ND	NA	NA	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	Negative*	NA	NA	PASS
I015	ND	ND	ND	ND	ND	ND	PASS
I016	ND	ND	ND	ND	NA	NA	PASS
I017	ND	ND	ND	ND	ND	ND	PASS
I018	ND	ND	ND	ND	NA	NA	PASS
I019	ND	ND	ND	ND	ND	ND	PASS
I020	ND	ND	ND	ND	ND	ND	PASS
I021	ND	ND	ND	ND	ND	ND	PASS
I022	ND	ND	ND	ND	ND	ND	PASS
I023	ND	ND	ND	ND	ND	ND	PASS
I024	ND	ND	ND	ND	ND	ND	PASS
I025	ND	ND	ND	ND	ND	ND	PASS
I026	ND	ND	ND	ND	ND	ND	PASS
I027	ND	ND	ND	ND	ND	ND	PASS

I028	ND	ND	ND	ND	ND	ND	PASS
I029	ND	ND	ND	ND	ND	ND	PASS
I030	ND	ND	ND	ND	NA	NA	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	Negative*	NA	NA	PASS
I035	ND	ND	ND	ND	NA	NA	PASS
I036	ND	ND	ND	ND	ND	ND	PASS
I037	ND	ND	ND	ND	ND	ND	PASS
I038	ND	ND	ND	ND	NA	NA	PASS
I039	ND	ND	ND	ND	ND	ND	PASS
I040	ND	ND	ND	ND	NA	NA	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	ND	ND	PASS
I048	ND	ND	ND	ND	ND	ND	PASS
I049	ND	ND	ND	ND	NA	NA	PASS
I050	ND	ND	ND	ND	ND*	ND*	PASS

Note / Key:

ND = Not detected	">" = Greater than	"<" = Less than
NR = Not requested	mg/kg = milligram(s) per kilogram = ppm = part(s) per million	
NA = Not applicable	% = percent	10000 mg/kg = 1 %

Detection Limit : See Appendix.

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.

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)[a]			Wet Chemistry	
		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] / See [e, j]	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

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: 2017.
[d]	Polymers and Electronics - Test method with reference to European Standard EN 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.
[j]	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).

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 ***