



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page 1 of 9

Applicant : Beijing Hipnuc Electronic Technology Co.,Ltd.
Address : 121, 1st Floor, Block B, No. 23 Chaoqian Road, Science and Technology Park, Changping District, Beijing.

Sample Information

Sample Name : IMU/VRU/AHRS Module
Sample Type/Specification : HI14R2N-232-000
Sample Qty. : 1
Sample acquisition method : Sent by client
Sample description : Solid
Manufacture : Beijing Hipnuc Electronic Technology Co.,Ltd.
Address : 121, 1st Floor, Block B, No. 23 Chaoqian Road, Science and Technology Park, Changping District, Beijing.

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Sample No. : E23070128-01
Date of Sample Received : 2023-08-01
Sample Test Period : 2023-08-01~2023-08-25

Test content:

Test Address : 155 Pingbei Rd, Minhang District, Shanghai
Test Items : Please refer to next page(s).
Test Methods : IEC 62321-3-1:2013; IEC 62321-4:2013+AMD1:2017; IEC 62321-5:2013; IEC 62321-7-1:2015; IEC 62321-7-2:2017; IEC 62321-6:2015; IEC 62321-8:2017
Test Results : The results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Di-(2-ethylhexyl) Phthalate (DEHP), Benzylbutyl Phthalate (BBP), Dibutyl Phthalate (DBP), and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.



Prepared by:

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(Xixi Weng)

Reviewed by:

赵玉晋

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王瑞

(Authorized signatory: Rachel Wang)



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page2 of 9

Test part ID	Test part description
1	screw
2	metal casing
3	gray glue blocks
4	screws
5	metal threaded joints
6	6black plastic
7	black rubber ring
8	metal ring
9	Yellow Metal Insert
10	Electronic components
11	Electronic components
12	Electronic components
13	Electronic components
14	PCB board
15	metal sheets



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page 3 of 9

Test Results:

Test part ID	Test Items	Unit	Chemical test method	XRF Screening	Limit	Conclusion
1	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Cr VI	μg/cm ²	Negative	X	/	/
2	Pb	mg/kg	ND	X	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
3	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass
4	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Cr VI	μg/cm ²	Negative	X	/	/
5	Pb [▲]	mg/kg	2.7×10 ⁴	X	≤4×10 ⁴	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass
6	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total PBBs	mg/kg	ND	X	≤1000	Pass
	Total PBDEs	mg/kg	ND		≤1000	Pass
7	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page4 of 9

Test part ID	Test Items	Unit	Chemical test method	XRF Screening	Limit	Conclusion
8	Pb [▲]	mg/kg	2.9×10 ⁴	X	≤4×10 ⁴	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Cr VI	μg/cm ²	Negative	X	/	/
9	Pb [▲]	mg/kg	2.6×10 ⁴	X	≤4×10 ⁴	Pass
	Cd	mg/kg	24	X	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass
10	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass
11	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass
12	Pb	mg/kg	28	X	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
13	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total Bromine (Br)	mg/kg	NT	P	≤1000	Pass
14	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass
	Total PBBs	mg/kg	ND	X	≤1000	Pass
	Total PBDEs	mg/kg	ND		≤1000	Pass



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page5 of 9

Test part ID	Test Items	Unit	Chemical test method	XRF Screening	Limit	Conclusion
15	Pb	mg/kg	NT	P	≤1000	Pass
	Cd	mg/kg	NT	P	≤100	Pass
	Hg	mg/kg	NT	P	≤1000	Pass
	Total Chromium (Cr)	mg/kg	NT	P	≤1000	Pass



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page6 of 9

Test part ID		Test part description
S1	3	gray glue blocks
	6	6black plastic
	7	black rubber ring
S2	10	Electronic components
	11	Electronic components
	13	Electronic components
	14	PCB board



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page 7 of 9

Test part ID	Test Items	Unit	Test Results	Limit	Conclusion
S1	Dibutyl Phthalate (DBP)*	mg/kg	ND	≤1000	Pass
	Benzylbutyl Phthalate (BBP)*	mg/kg	ND	≤1000	Pass
	Di-(2-ethylhexyl)Phthalate (DEHP)*	mg/kg	ND	≤1000	Pass
	Diisobutyl phthalate(DIBP)*	mg/kg	ND	≤1000	Pass
S2	Dibutyl Phthalate (DBP)*	mg/kg	ND	≤1000	Pass
	Benzylbutyl Phthalate (BBP)*	mg/kg	ND	≤1000	Pass
	Di-(2-ethylhexyl)Phthalate (DEHP)*	mg/kg	ND	≤1000	Pass
	Diisobutyl phthalate(DIBP)*	mg/kg	ND	≤1000	Pass

Remarks:

- 1.P = Pass (Below Limit, See Table A)
- 2.X= Inconclusive(need further chemical analysis, See Table A)
- 3.F=Fail(Over Limit, See Table A)
- 4.NA=Not Applicable
- 5.MDL=Method Detection Limit (See Table B)
- 6.N.D.=Not detected (<MDL)
- 7.--- = Not regulated
- 8.NT=Not Tested
- 9.mg/kg=1ppm= 0.0001%
- 10.PBBs include Monobromobiphenyl (MonoBB)、Dibromobiphenyl (DiBB)、Tribromobiphenyl (TriBB)、Tetrabromobiphenyl (TetraBB)、Pentabromobiphenyl (PentaBB)、Hexabromobiphenyl (HexaBB)、Heptabromobiphenyl (HeptaBB)、Octabromobiphenyl (OctaBB)、Nonabromobiphenyl (NonaBB) and Decabromobiphenyl (DecaBB).
PBDEs include Monobromodiphenyl 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) and Decabromodiphenyl ether (DecaBDE)
- 11.Boiling-water-extraction:
Negative = Absence of CrVI coating, the detected concentration in boiling -water-extraction solution is less than 0.10µg/cm² equivalent comparison standard solution.
Positive = Presence of CrVI coating, the detected concentration in boiling -water-extraction solution is greater than 0.13µg/cm² equivalent comparison standard solution.
Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.



TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page 8 of 9

12. ▲ Applications exempted from the restriction in Article 4(1) according to ANNEX III of EU DIRECTIVE 2011/65/EU (amended by (EU) 2018/741):

6c) Copper alloy containing up to 4 % lead by weight

Table A: Screening limits in mg/kg for regulated elements in various matrices

Element	Polymer	Metal	Composite Materials
Cd	$P \leq (70-3\sigma) < X < (130+3\sigma) \leq F$	$P \leq (70-3\sigma) < X < (130+3\sigma) \leq F$	$LOD < X < (150+3\sigma) \leq F$
Pb	$P \leq (700-3\sigma) < X < (1300+3\sigma) \leq F$	$P \leq (700-3\sigma) < X < (1300+3\sigma) \leq F$	$P \leq (500-3\sigma) < X < (1500+3\sigma) \leq F$
Hg	$P \leq (700-3\sigma) < X < (1300+3\sigma) \leq F$	$P \leq (700-3\sigma) < X < (1300+3\sigma) \leq F$	$P \leq (500-3\sigma) < X < (1500+3\sigma) \leq F$
Br	$P \leq (300-3\sigma) < X$	--	$P \leq (250-3\sigma) < X$
Cr	$P \leq (700-3\sigma) < X$	$P \leq (700-3\sigma) < X$	$P \leq (500-3\sigma) < X$

Remark:

1. XRF Screening

These are the results on total Br while test items on hazardous substances are PBBs and PBDEs.

This is the result on total Cr while test item on hazardous substances is Cr(VI).

Results are obtained by XRF for primary screening, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) 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

2. The reading may be different to the actual content in the sample due to non-uniformity composition.

Table B: Chemical test method

Item	Test Method	MDL
Pb	With reference to IEC 62321-5:2013, by acid digestion and determined by ICP-OES	10mg/kg
Cd	With reference to IEC 62321-5:2013, by acid digestion and determined by ICP-OES	2mg/kg
Hg	With reference to IEC 62321-4:2013, by acid digestion and determined by ICP-OES	10mg/kg
Cr(VI)(For non-metal)	With reference to IEC 62321-7-2:2017, by alkaline digestion and determined by UV-VIS spectrophotometer	20mg/kg
Cr(VI)(For metal)	With reference to IEC 62321-7-1:2015, determined by UV-VIS spectrophotometer	0.10µg/cm ²
PBBs	With reference to IEC 62321-6:2015, determined by GC-MS	5mg/kg
PBDEs	With reference to IEC 62321-6:2015, determined by GC-MS	5mg/kg
DBP	With reference to IEC 62321-8:2017, determined by GC-MS	50mg/kg
BBP	With reference to IEC 62321-8:2017, determined by GC-MS	50mg/kg
DEHP	With reference to IEC 62321-8:2017, determined by GC-MS	50mg/kg
DIBP	With reference to IEC 62321-8:2017, determined by GC-MS	50mg/kg



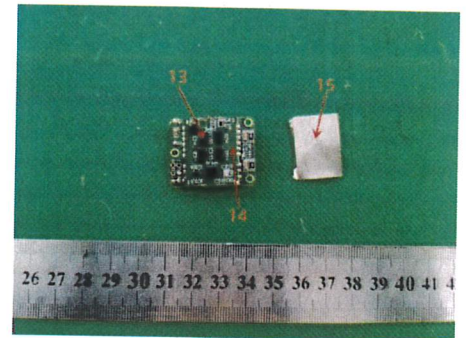
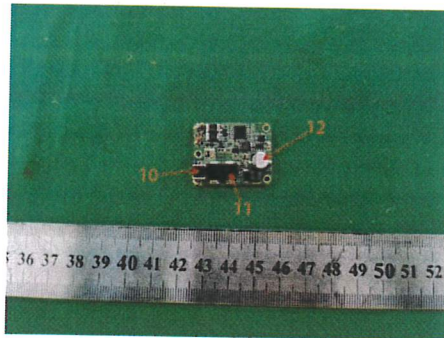
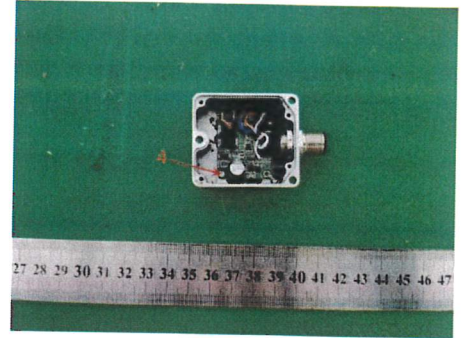
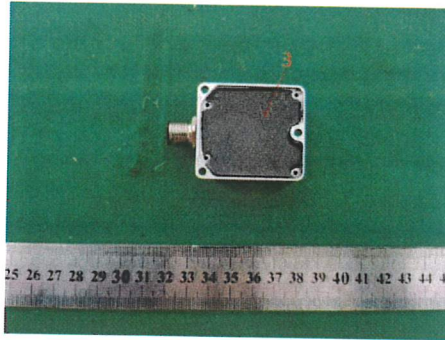
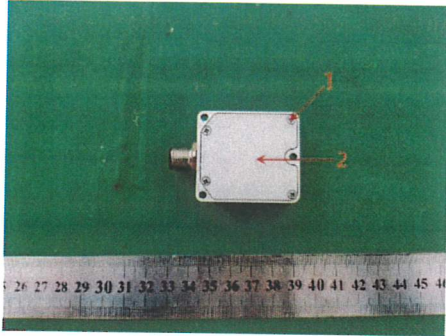
TEST REPORT

Report No.: SHE23070128-01DE

Date: 2023-08-25

Page 9 of 9

Sample Photos



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