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Applicant: Shenzhen Growatt New Energy Co., Ltd.

Contact information: 4-13/F,Building A,Sino-German(Europe) Industrial Park,Hangcheng Ave,Bao'an District,

Shenzhen, China

The following sample(s) was (were) submitted and identified by client as:

Sample Name : Shine4G-X Model No. : Shine4G-X

Manufacturer : Guangdong Growatt New Energy Co., Ltd.

Address : Growatt Industrial Park, No. 17 Pingheng Road Pingtan Town, Huiyang District,

Huizhou, Guangdong, China

Received Date : Jan. 17, 2022

Testing Period : From Jan. 17, 2022 to Jan. 20, 2022

Test Request : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Shen Zhen UONE Test Co., LTD.

Prepared by

Lili Zeng

Checked by

Lin Zhu

Approved by

Levent Liang



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Sur	nmary of test results:		10/2, 10/2,	104, 104,
TES	ST REQUEST			CONCLUSION
Rol-	To determine Lead (Pb), Cadmi	ubsequent amendments Directive um(Cd), Mercury(Hg), Hexavalent Bs) and Polybrominated DiphenylE	Chromium(Cr(VI)),	PASS
(1)	content by screening test and c		uleis (i bbcs)	IONI AGO
(2)	To determine Phthalates (DBP,	BBP, DEHP, DIBP) content by che	emical test	PASS
	THE THE THE P		· WE WE	ONE ONE



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Test Material List

Test Material List	12 12 12 12 12 12	20 12 12 12
Material No.	Description (Location)	Photo(s) of tested materials
1011 101	Silver label	Opp. Opp. Opp. Op.
2	Black plastic (housing)	1 2 3 4 5 6 7
01/3 01/	White label	
4	White soft plastic (seal)	
5	Black soft plastic (washer)	2) Lines
6	Black plastic (nut)	
<u> </u>	Silver metal (screws)	
(0) 8	Silver metal (USB socket)	10, 10, 10, 10,
9	Blue inner plastic	
10	Copper-colored metal (pin)	THE THE THE THE
11 11	Blue printing (capacitor, PCB)	20, 10, 10, 10,
12	Silver metal shell (capacitor, PCB)	4. 4. 4. 4.
13	Black rubber base (capacitor, PCB)	(MO) 1401 1401 160
14	Silver metal pins (capacitor, PCB)	
15	Silver foil (capacitor, PCB)	ate ate at
16	Dark silver foil (capacitor, PCB)	8-10 11-17 18 19 20 21-23 24 25
17	Yellow paper with liquid (capacitor, PCB)	
18	Black body (transistor, PCB)	
19	Brown body (capacitor, PCB)	
20	Black body (resistor, PCB)	
21	Silver metal (card slot)	
22	Copper-colored metal (pin)	26 27 28 29 30
23	Black plastic (card slot)	alle alle alle alle
24	Silver metal (nut)	26, 10, 10, 10,
25	Black foam	6 6 6 6
26	Black body (EC, PCB)	OHY OHY OHY OHY
27	Silver metal (pin)	2 12 12 12
28	Black plastic (socket)	The state state state
29	White body (capacitor, PCB)	1012 11012 11012 11012
30	Black plastic sheet	4 4 4 4
	The transfer was a second	

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Material No.	Description (Location)	Photo(s) of tested materials
31	Green PCB	St. St. St. S
32	White label	Dr. 10, 10, 10,
33	Yellow body (LED light)	31 32 33 34 35 36 37 38 39 40
34	Gold Metal (terminal)	
35	Silver metal cover	SIH7640E
36	White paper	PAN 52-1070-71161 PAN 52-1070-71161 THE 1-06-1120/0614550
37	White glass glue	and the second s
38	Black plastic (cable wire)	
39	Silver Metal (solder)	25, 110, 110, 110,
40	Silver wire	St. St. St. S
41	Green PCB	41 42 43
42	Black plastic (socket)	S:-+01:202
43	Copper-colored metal (pin)	1000 1000 1000 1000 1000 1000 1000 100
44	Black body (EC, PCB)	
45	Brown body (capacitor, PCB)	44 45 46 47 48 49 50
46	Black body (resistor, PCB)	
47	Black body (integrated circuit, PCB)	
48	White body (capacitor, PCB)	
49	Black body (transistor, PCB)	
50	Silver metal (solder)	



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Test Result(s):

(1) Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)

<u>Test Method:</u> IEC62321-3-1: 2013, IEC62321-4: 2013+A1:2017, IEC62321-5: 2013, IEC62321-6: 2015, IEC 62321-7-1:2015, IEC 62321-7-2: 2017, analyzed by EDXRF & ICP-OES & GC-MS & UV-Vis.

10/11	101	EDX	(RF Resu	ılt ⁽¹⁾	10/4	Chemical Result (2)		10H1 10H1
No.	Pb	Cd	Hg	Cr	Br	(mg/kg)	Remark ⁽³⁾	Conclusion
1	BL	BL	BL	BL	BL	OHE - OHE	OHE OHE	PASS
2	BL	BL	BL	BL	BL	200	2 72	PASS
3	BL	BL	BL	BL	BL	all - all	all -all	PASS
4	BL	BL	BL	BL	BL	10, 70,	20. 70.	PASS
5	BL	BL	BL	BL	BL	& - &	de - de	PASS
6	BL	BL	BL	BL	BL	1012 -1012 "	7012 TOLE	PASS
7	BL	BL	BL	BL	NA	- L	4 - 6	PASS
8	BL	BL	BL	BL	NA	10HL -10HL	10HI - 10HI	PASS
9	BL	BL	BL	BL	BL	0 0	3 2	PASS
10	BL	BL	BL	BL	NA	ME - ME	ME -ME	PASS
11	BL	BL	BL	BL	BL	120 -720 .	20 70	PASS
12	BL	BL	BL	BL	NA	JE - JE	# - #	PASS
13	BL	BL	BL	BL	BL	10, -10,	10, 70,	PASS
14	BL	BL	BL	BL	NA	& - &	40 - 30	PASS
15	BL	BL	BL	BL	BL	110 pr -10 pr /	10 1 - 10 lai	PASS
16	BL	BL	BL	BL	BL	7. – 7.	, - ,	PASS
17	BL	BL	BL	BL	BL	10HF -10HF	10 HP. 10 HP.	PASS
18	BL	BL	BL	BL	BL	2 7	2 7	PASS
19	BL	BL	BL	BL	BL	ME - ME	ME -ME	PASS
20	BL	BL	BL	BL	BL	110 -110	20 70	PASS
21	BL	BL	BL	BL	NA	<u> </u>	± - €	PASS
22	BL	BL	BL	BL	NA	10, 10,	20, 40,	PASS
23	BL	BL	BL	BL	BL	July - July -	.cc.	PASS

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No	110	EDX	(RF Resu	ult ⁽¹⁾	10	Chemical Result (2)	D 1(2)	100 100
No.	Pb	Cd	Hg	Cr	Br	(mg/kg)	Remark ⁽³⁾	Conclusion
24	BL	BL	BL	BL	NA	10, -10, 13	2, 40,	PASS
25	BL	BL	BL	BL	BL	4 4.	4 4.	PASS
26	BL	BL	BL	BL	BL	1019 -1019	01/2 1-10 lbs	PASS
27	BL	BL	BL	BL	NA		, - ,	PASS
28	BL	BL	BL	BL	BL	OHE -OHE	740 - OHE	PASS
29	BL	BL	BL	BL	BL	0. 0. 0	0	PASS
30	BL	BL	BL	BL	BL	ME - ME	NE -NE	PASS
31	BL	BL	BL	BL	BL	10, 70, 1	0. 70.	PASS
32	BL	BL	BL	BL	BL	- A	.kk	PASS
33	BL	BL	BL	BL	BL	10, -10, 13	01 401	PASS
34	BL	BL	BL	BL	NA	4 - 4	.66.	PASS
35	BL	BL	BL	BL	NA	10 HO1- 10HD 1	OHIV. TOHIV	PASS
36	BL	BL	BL	BL	BL	3 - 0		PASS
37	BL	BL	BL	BL	BL	OHE - OHE	Mr - Mr	PASS
38	BL	BL	BL	BL	BL	200 0	77	PASS
39	BL	BL	BL	BL	NA	all - all		PASS
40	BL	BL	BL	BL	NA	10, 70, 1	2. 70.	PASS
41	BL	BL	BL	BL	BL	& - &	& - &	PASS
42	BL	BL	BL	BL	BL	11012 -1012 13	012 TO 12	PASS
43	BL	BL	BL	BL	NA	6 - 6	1 1.	PASS
44	BL	BL	BL	BL	BL	10HP -10HP	7HC - 0HC	PASS
45	BL	BL	BL	BL	BL	0 _0	2	PASS
46	BL	BL	BL	BL	BL	OHE - OHE	ME -ME	PASS
47	BL	BL	BL	BL	BL	120 -120 13	2 72	PASS
48	BL	BL	BL	BL	BL		<u> </u>	PASS
49	BL	BL	BL	BL	BL	10, -10, 13	0, 40,	PASS
50	BL	BL	BL	BL	NA	4 - 4	4 - 4	PASS



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Remark:

- (1) ①Results are obtained by EDXRF for primary screening, and further wet 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 an inconclusive result was found (as "X" in below table) (unit: mg/kg).
 - ②OL = Over Limit, BL = Below Limit, X = Inconclusive, NA = Not Applicable.
 - ③The EDXRF screening test for RoHS elements The reading may be different to the actual content in the sample be of non-uniformity composition.

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

Units and limits in EU RoHS Directive 2011/65/EU:

Element	Pb	Cd	Hg	Cr(VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit	1000	100	1000	1000	1000	1000

- (2) ① mg/kg = ppm = 0.0001%, N.D. = Not Detected (Less than MDL).
 - ②Unit and MDL (Method detection limit) in wet chemical test.

Element	Pb	Cd	Hg	Cr(VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	2	2	2	8	5	5

③According to IEC 62321-7-1:2015, result on Cr(VI) for metal sample is shown as Positive/Negative.

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating.

Storage condition and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

- ④ According to IEC 62321-3-1:2013, this column represents the results of wet chem test.
- (3) This column represents the exempted decoration of material or other related testing sample's information.



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

Test Method: IEC 62321-8: 2017, analyzed by gas chromatographic- mass spectrometer (GC-MS).

Substances	DBP	ВВР	DEHP	DIBP	10h, 10h
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	0 0
Limit (mg/kg)	1000	1000	1000	1000	Conclusion
MDL (mg/kg)	20	20	20	20	110 110
Material No.	16 16	Result	(mg/kg)	The The	all all
10, 110,	N.D.	N.D.	N.D.	N.D.	PASS
2	N.D.	N.D.	N.D.	N.D.	PASS
101 3 101	N.D.	N.D.	N.D.	N.D.	PASS
4	N.D.	N.D.	N.D.	N.D.	PASS
10HF 5 10HF	N.D.	N.D.	N.D.	N.D.	PASS
6	N.D.	N.D.	N.D.	N.D.	PASS
9	N.D.	N.D.	N.D.	N.D.	PASS
11	N.D.	N.D.	N.D.	N.D.	PASS
13	N.D.	N.D.	N.D.	N.D.	PASS
15	N.D.	N.D.	N.D.	N.D.	PASS
16	N.D.	N.D.	N.D.	N.D.	PASS
07 17 07	N.D.	N.D.	N.D.	N.D.	PASS
18	N.D.	N.D.	N.D.	N.D.	PASS
19	N.D.	N.D.	N.D.	N.D.	PASS
20	N.D.	N.D.	N.D.	N.D.	PASS
23	N.D.	N.D.	N.D.	N.D.	PASS
25	N.D.	N.D.	N.D.	N.D.	PASS
26	N.D.	N.D.	N.D.	N.D.	PASS
28	N.D.	N.D.	N.D.	N.D.	PASS
29	N.D.	N.D.	N.D.	N.D.	PASS
30	N.D.	N.D.	N.D.	N.D.	PASS
31	N.D.	N.D.	N.D.	N.D.	PASS

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Substances	DBP	BBP	DEHP	DIBP	10 10
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	ale a
Limit (mg/kg)	1000	1000	1000	1000	Conclusion
MDL (mg/kg)	20	20	20	20	de. 3
Material No.	104, 104,	Result	(mg/kg)	10 Hr. 10 Hr.	1011 101
32	N.D.	N.D.	N.D.	N.D.	PASS
33	N.D.	N.D.	N.D.	N.D.	PASS
36	N.D.	N.D.	N.D.	N.D.	PASS
37	N.D.	N.D.	N.D.	N.D.	PASS
38	N.D.	N.D.	N.D.	N.D.	PASS
41	N.D.	N.D.	N.D.	N.D.	PASS
42	N.D.	N.D.	N.D.	N.D.	PASS
44	N.D.	N.D.	N.D.	N.D.	PASS
45	N.D.	N.D.	N.D.	N.D.	PASS
46	N.D.	N.D.	N.D.	N.D.	PASS
47	N.D.	N.D.	N.D.	N.D.	PASS
48	N.D.	N.D.	N.D.	N.D.	PASS
49	N.D.	N.D.	N.D.	N.D.	PASS

Note:

- 1. mg/kg = milligram per kilogram (ppm).
- 2. MDL= method detection limit.
- 3. N.D.=not detected(less than MDL).



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Test Process Flow 1. Lead, Cadmium, Mercury Cut and Weigh the Add Digested Reagents or Completely dissolved and Cool Solutions Samples the Digested Solution Analyzed by ICP-OES Filter the Digested Solution Data process 2. Hexavalent Chromium (Non-metal) Cut and Weigh the Add Digested Reagents or Heat Samples at Proper Samples Solutions temperature Adjust pH value to 7.5±0.5 Cool and then Filter the Add the DI Water and Dipthenylcarbazide use Nitric acid solution Solution Adjust pH value to 2.0±0.5 Analyzed by UV-Vis use Sulfur acid solution Hexavalent Chromium (Metal) Heat Water to boil and keeping Cut sample (50+5) Add 50mL DI water to beaker 10mins cm² Add 1mL color Complement the water to 50mL Add 1mL orthophosphoric acid developing reagent

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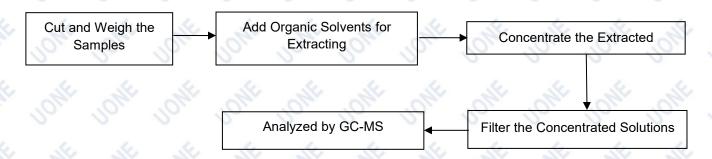
Analyzed by UV-Vis



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Test Process Flow (Continued):

3. PBBs & PBDEs, Phthalates



Photo(s) of Sample:



End of Report



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Statement

- The information as listed on the first page of this test report was all provided by the client except the
 received date, testing period, test result(s) and test request. The client shall be responsible for the
 representativeness of sample and authenticity of materials, for which UONE shall bear no
 responsibilities.
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