



**BUREAU  
VERITAS**

# TEST REPORT

LAB NO. : (6619)343-2144  
DATE : December 18, 2019  
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Applicant:

**ZHEJIANG ERA SOLAR TECHNOLOGY CO., LTD.** / 浙江公元太阳能科技有限公司  
SIHAI ROAD, HUANGYAN ECONOMIC DEVELOPMENT ZONE, TAIZHOU, ZHEJIANG, CHINA /  
台州市黄岩经济开发区四海路

Date of Submission: 2019-12-09  
Test Period: 2019-12-09 to 2019-12-18  
BV EE Ref. No.: ERA-ESH-Q19112901-A0

Sample Description:		Sample(s) received is(are) stated to be: SOLAR LIGHT	
Manufacturer:	ZHEJIANG ERA SOLAR TECHNOLOGY CO., LTD.	Buyer:	/
Style No(s):	SL-1227A-2PK	PO No.:	/
Country of Origin:	/	Country of Destination:	Oversea Country

Test Item(s): SOLAR LIGHT

## SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION
Compliance Test - Heavy Metals, Flame Retardants Content - 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 Amendments	PASS
Compliance Test - Phthalate Test – (EU) 2015/863 amending Annex II to Directive 2011/65/EU	PASS

### REMARK

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

General enquiry and invoicing

Mr. Speed Yu/ Ms. Cabell Chen  
(021) 24166888\*6832/6850  
Speed.yu @cn.bureauveritas.com/ Cabell.chen@cn.bureauveritas.com

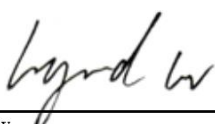
Technical enquiry

Mr. Gorden Yu/ Ken He  
(021) 24166888\*6852/6859  
Gorden.yu @cn.bureauveritas.com/ Kenny.he@cn.bureauveritas.com

### BUREAU VERITAS CONSUMER PRODUCTS SERVICES DIVISION (SHANGHAI)

Laboratory Test Location:  
No.368,Guangzhong Road, Zhuanqiao Town, Minhang, Shanghai  
No.168,Guanghua Road, Zhuanqiao Town, Minhang, Shanghai

PREPARED BY : Summer /Ann

  
Lynd Lv  
Technical Specialist



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### Photo of the Submitted Sample

Tested Model



Tested different components





**TEST RESULT**

**Compliance Test - Heavy Metals, Flame Retardants Content - 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 Amendments**

Test Method : See Appendix.

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

Parameter			Result					Conclusion
			Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs & PBDEs	
Unit			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
Test Item	Description	Location	-	-	-	-	-	-
Tested components of Model No. EC23391								
1	Silvery metal with black plating	Housing	<500	ND	ND	ND	NA	PASS
2	Silvery metal with silvery plating		ND	ND	ND	ND	NA	PASS
3	Silvery metal		ND	ND	ND	Negative*	NA	PASS
4	Silvery metal with black plating		<500	ND	ND	ND	NA	PASS
5	Silvery metal		ND	ND	ND	Negative*	NA	PASS
6	Silvery metal screw		<500	ND	ND	Negative*	NA	PASS
7	Silvery metal with black plating	Inside	<500	ND	ND	ND	NA	PASS
8	Black plastic		ND	ND	ND	ND	ND	PASS
9	Black plastic		ND	ND	ND	ND	ND	PASS
10	Transparent plastic		ND	ND	ND	ND	ND	PASS
11	Black plastic		ND	ND	ND	ND	ND	PASS
12	Black plastic		ND	ND	ND	ND	ND	PASS
13	Black plastic with silvery plating		ND	ND	ND	ND	ND	PASS
14	Black plastic		ND	ND	ND	ND	ND	PASS
15	Black glue		ND	ND	ND	ND	ND	PASS
16	Coppery metal wire		ND	ND	ND	ND	NA	PASS
17	Black plastic wire jacket		ND	ND	ND	ND	ND	PASS
18	Red plastic wire jacket	ND	ND	ND	ND	ND	PASS	
19	Silvery metal spring	ND	ND	ND	Negative*	NA	PASS	
20	Golden metal with silvery plating	PCB	ND	ND	ND	ND	NA	PASS
21	Silvery metal solder		ND	ND	ND	ND	NA	PASS
22	Silvery metal		ND	ND	ND	ND	NA	PASS
23	Black EC		ND	ND	ND	ND	ND	PASS
24	Black chip resistor		EX <sup>#</sup>	ND	ND	ND	NA	EX <sup>#</sup>
25	Black EC		ND	ND	ND	ND	ND	PASS



			Result					
Parameter			Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs & PBDEs	Conclusion
Unit			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
Test Item	Description	Location	-	-	-	-	-	-
26	Brown chip capacitor	PCB	ND	ND	ND	ND	ND	PASS
27	Yellow LED		ND	ND	ND	ND	ND	PASS
28	White PCB		ND	ND	ND	ND	ND	PASS
29	Green resistor		ND	ND	ND	ND	ND	PASS
Tested different components								
30	Black plastic	Housing	ND	ND	ND	ND	ND	PASS
31	Transparent glass		ND	ND	ND	ND	NA	PASS
32	Silvery metal solder		ND	ND	ND	ND	NA	PASS
33	Silvery metal solder		ND	ND	ND	ND	NA	PASS
34	Transparent glass		ND	ND	ND	ND	NA	PASS
35	Silvery metal with golden plating		ND	ND	ND	ND	NA	PASS
36	Blue coating		ND	ND	ND	ND	ND	PASS
37	Pink coating		ND	ND	ND	ND	ND	PASS
38	Green coating		ND	ND	ND	ND	ND	PASS
39	Purple coating		ND	ND	ND	ND	ND	PASS
40	Blue coating		ND	ND	ND	ND	ND	PASS
41	Red coating		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  
 Detection Limit: See Appendix.                NA = Not applicable                                EX= Exempted

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.
- Only selected example(s) is (are) indicated on the photograph(s) in Comment.
- According to European Parliament and 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.
- For item 24:  
 #According to Annex III of European Council Directive 2011/65/EU with Amendment (EU)2018/736, exemptions were granted a few materials and Clause 7(c)-I is reiterated here “Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound.”. Test Item(s) was (were) claimed as is by client (received as is). Therefore, this (these) Test Item(s) containing the found lead level should be exempted.



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**TEST RESULT**

**Compliance Test - Phthalate Test – (EU) 2015/863 amending Annex II to Directive 2011/65/EU**

**Test Method** : Reference to IEC 62321-8: 2017.

**Maximum Allowable Limit : 0.1% (Each)**

Parameter	CAS No.	Unit	MDL	Result		
				9+15+17+18	8+10+11+12 +13+14+30	23+25+26+27 +28+29
Dibutyl phthalate (DBP)	84-74-2	%	0.005	ND	ND	ND
Butyl benzyl phthalate (BBP)	85-68-7	%	0.005	ND	ND	ND
Di-2-ethylhexyl phthalate (DEHP)	117-81-7	%	0.005	ND	0.010	ND
Diisobutyl phthalate (DIBP)	84-69-5	%	0.005	ND	ND	ND
<b>Conclusion</b>	-	-	-	PASS	PASS	PASS

Note: mg/kg= milligram per kilogram    % = percentage    1 mg/kg = 0.0001%  
MDL = Method Detection Limit    ND = Not Detected (< MDL)    “-“ = Not Regulated

END



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**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 Analyte(s)	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

NA = Not applicable IEC = International Electrotechnical Commission

[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+AMD1: 2017 CSV.

[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: 2017.

[h] Other Than Metal, Leather, Polymers and Electronics - Test method with reference to International Standard ISO 17075: 2017.

[i] 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)



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**Annex**

**The client declared that the materials used of below Styles are same as tested style SL-1227A-2PK.**

EC2355, EC11014, EC11037, EC11044, EC11045, EC11045-1, EC11046, EC11047, EC11048, EC11050, EC11052, EC11053, EC11055, EC11056, EC11058, EC11060, EC11060-3, EC11062, EC11069, EC11070, EC11085, EC11088, EC11095, EC11103-D1, EC11103-D2, EC11111, EC11115, EC11116, EC11117, EC11118, EC11119, EC11120, EC11122, EC11123, EC11124, EC11125, EC11126, EC11127, EC11128, EC11129-1, EC11129-5, EC11132, EC11135, EC11136, EC11137, EC11138, EC11138-B1, EC11138-C1, EC11146, EC11149, EC11151, EC14011, EC21156, EC21229, EC23133-B1, EC23133-C1, EC23134, EC23134-B1, EC23134-D1, EC23137, EC23184, EC23184-D1, EC23185, EC23201, EC23204, EC23211, EC23211-1, EC23216, EC23216-B1, EC23216-C1, EC23216-D1, EC23217, EC23221, EC23230, EC23230-D1, EC23230-D2, EC23234, EC23235, EC23236, EC23241, EC23242, EC23245, EC23245-C1, EC23252, EC23262, EC23276-1, EC23280, EC23288, EC23289-1, EC23291-1, EC23291-2, EC23291-5, EC23291-6, EC23291-D2, EC23291-D3, EC23310, EC23311, EC23322, EC23329, EC23330, EC23331, EC23333, EC23334, EC23335, EC23336, EC23341, EC23342, EC23343, EC23344, EC23345, EC23346, EC23346-1, EC23348, EC23351, EC23352, EC23353, EC23357, EC23357-C1, EC11017, EC11075, EC011103-2, EC11150, EC11153, EC11155, EC11157, EC23211C, EC23359, EC23366, EC23374, EC23379, EC23379-C1, EC23386, EC23387, EC23387-1, EC23400, EC23402, EC23403, EC23405, EC23413, EC23418, EC23423, EC23428, EC23429, EC23432, EC23433, EC25219, EC25222, EC25226, EC41012, EC41013, EC41015, EC41018, EC41025, EC41026, EC41028, EC41029, EC41037, EC41051, EC41055, EC61012, EC61013, SL-1072-8PKA, SL1227A-2PK, EC41053, EC61013-1, EC61013-2, EC 61015-D1, EC61015-D4, EC61016-D1, EC61016-D2, EC61017, EC61018-D1, EC61018-D2, EC11151, EC41046, EC61018-D3, EC61023, EC61026-1, EC61026-2, EC61029, EC61030



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EC2355



EC11014



EC11037



EC11044



EC11045



EC11045-1



EC11046



EC11047



EC11048





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EC11050



EC11052



EC11053



EC11055



EC11056



EC11058



EC11060



EC11060-3



EC11062



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EC11069



EC11070



EC11085



EC11088



EC11095



EC11103-D1



EC11103-D2



EC11111



EC11115



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EC11116



EC11117



EC11118



EC11119



EC11120



EC11122



EC11123



EC11124



EC11125



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EC11126



EC11127



EC11128



EC11129-1



EC11129-5



EC11132



EC11135



EC11136



EC11137



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EC11138



EC11138-B1



EC11138-C1



EC11146



EC11149



EC14011



EC21156



EC21229



EC23133-B1



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EC23133-C1



EC23134



EC23134-B1



EC23134-D1



EC23137



EC23184



EC23184-D1



EC23185



EC23201



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EC23204



EC23211



EC23211-1



EC23216



EC23216-B1



EC23216-C1



EC23216-D1



EC23217



EC23221



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EC23230



EC23230-D1



EC23230-D2



EC23234



EC23235



EC23236



EC23241



EC23242



EC23245





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EC23245-C1



EC23252



EC23262



EC23276-1



EC23280



EC23288



EC23289-1



EC23291-1



EC23291-2



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EC23291-5



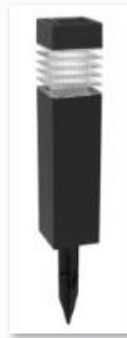
EC23291-6



EC23291-D2



EC23291-D3



EC23310



EC23311



EC23322



EC23329



EC23330



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EC23331



EC23333



EC23334



EC23335



EC23336



EC23341



EC23342



EC23343



EC23344



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EC23345



EC23346



EC23346-1



EC23348



EC23351



EC23352



EC23353



EC23357



EC23357-C1



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EC11017



EC11075



EC11103-2



EC11150



EC11153



EC11155



EC11157



EC23211C



EC23359



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EC23366



EC23374



EC23379



EC23379-C1



EC23386



EC23387



EC23387-1



EC23400



EC23402



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EC23403



EC23405



EC23413



EC23418



EC23423



EC23428



EC23429



EC23432



EC23433



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EC25219



EC25222



EC25226



EC41012



EC41013



EC41015



EC41018



EC41025



EC41026





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EC41028



EC41029



EC41037



EC41051



EC41055



EC61012



EC61013



SL-1072-8PKA



SL-1227A-2PK



EC61013-1



EC61013-2



EC61015-D1



EC61015-D4



EC61016-D1



EC61016-D2



EC61017



EC61018-D1



EC61018-D2



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EC11151



EC41046



EC61018-D3



EC61023



EC61026-1



EC61026-2



EC61029



EC61030