

# Verification Report

No. CANEC1112220601

Date: 07 Apr 2014

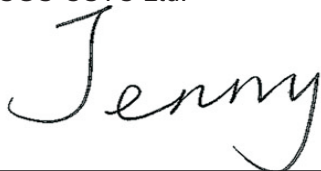
Page 1 of 8

LEMARK LIGHTING TECHNOLOGIES LTD.

CAODUN INDUSTRIAL DISTRICT DONGGUAN GUANGDONG  
CHINA

Sample Name : LED LAMP  
SGS Job No. : CP11-014532 - SZ  
Tested Basic Model No. E-Star  
(P.O. No.) :  
Client Ref. Info. : See remark  
Date of Sample Received : 21 Feb 2014  
Verification Period : 21 Feb 2014 - 07 Apr 2014  
Verification Requested : With reference to RoHS Directive 2011/65/EU recasting 2002/95/EC.  
Verification Method : Please refer to next page(s).  
Verification Result : Please refer to next page(s).  
Verification Conclusion : Based on the review of previous reports and verification results of the submitted samples, the results of Cadmium, Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU recasting 2002/95/EC.  
Note : The test results are related only to the tested items. The report shall not be reproduced except in full without the written approval of the testing laboratory.

Signed for and on behalf of  
SGS-CSTC Ltd.



JENNY LIAO

Approved Signatory

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## Verification Report

No. CANEC1112220601

Date: 07 Apr 2014

Page 2 of 8

### Verification Method :

1. Review was performed for the samples disjointed from the submitted articles and the related test reports submitted by the Applicant
2. Tests were performed for the samples indicated by the photos in the report with test methods reference to IEC 62321:2008: Procedures for the Determination of Levels of Six Regulated Substances in Electrotechnical Products
  - (1) Screening by XRF Spectroscopy
  - (2) Wet Chemical Test Method
    - a. Determination of Lead & Cadmium by ICP-OES or AAS
    - b. Determination of Mercury by ICP-OES
    - c. Determination of Hexavalent Chromium by Spot test or Colorimetric Method
    - d. Determination of PBBs and PBDEs by GC-MS

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# Verification Report

No. CANEC1112220601

Date: 07 Apr 2014

Page 3 of 8

Part No.	Part Description	BOM No.	Restricted Substances	Results of EDXRF (1)	Result of Wet Chemical Testing(2) (mg/kg)	Conclusion on RoHS	Sample Submitted / Resubmitted Date
1	Lens		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	---	---	---	
			PBDEs	---	---	---	
2	Loop		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	BL	---	Comply	
			PBDEs	BL	---	Comply	
3	Heat sink		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	---	---	---	
			PBDEs	---	---	---	
4	Rod		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	---	---	---	
			PBDEs	---	---	---	

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# Verification Report

No. CANEC1112220601

Date: 07 Apr 2014

Page 4 of 8

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5	Socket		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	BL	---	Comply	
			PBDEs	BL	---	Comply	
6	LED Chip		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	IN	ND	Comply	
			PBDEs	IN	ND	Comply	
7	Silver metal sheet		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	---	---	---	
			PBDEs	---	---	---	
8	Waterproof rings		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	IN	ND	Comply	
			PBDEs	IN	ND	Comply	

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# Verification Report

No. CANEC1112220601

Date: 07 Apr 2014

Page 5 of 8

Part No.	Part Description	BOM No.	Restricted Substances	Results of EDXRF (1)	Result of Wet Chemical Testing(2) (mg/kg)	Conclusion on RoHS	Sample Submitted / Resubmitted Date
9	Screw		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	BL	---	Comply	
			PBDEs	BL	---	Comply	
10	Wire		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	---	---	---	
			PBDEs	---	---	---	
11	Solder Flick		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	BL	---	Comply	
			PBDEs	BL	---	Comply	
12	Creamic		Pb	BL	---	Comply	21 Feb 2014
			Cd	BL	---	Comply	
			Hg	BL	---	Comply	
			Cr(VI)	BL	---	Comply	
			PBBs	---	---	---	
			PBDEs	---	---	---	

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## Verification Report

No. CANEC1112220601

Date: 07 Apr 2014

Page 6 of 8

### Remark :

(1) (a) It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).

(b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (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 IEC62321(unit: mg/kg)

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

(c) BL = Below Limit, OL = Over Limit, IN = Inconclusive, LOD = Limit of Detection, -- = Not Regulated.

(d) The XRF screening test for RoHS elements - The reading may be different to the actual content in the sample be of non-uniformity composition.

(2) (a) mg/kg = ppm = 0.0001%, ND = Not Detected (<MDL), --- = Not Conducted, - = Without BOM.

(b) Unit and Method Detection Limit (MDL) in wet chemical test

Test Items	Pb	Cd	Hg
Units	mg/kg	mg/kg	mg/kg
MDL	2	2	2

The MDL for single compound of PBBs & PBDEs is 5 mg/kg and MDL of Cr(VI) for polymer & composite sample is 2 mg/kg.

\* Due to the few amount of sample, MDL of Cr(VI) in Polymer and Composite Materials is 10 mg/kg.

(c) According to IEC 62321, result on Cr(VI) for metal sample is shown as Positive/Negative.

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

Sample photo:



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

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