



Technical Report No.68.164.14.00075.01
Dated 2014-07-02

Client: Shenzhen SGSLight Technology Co., Ltd.

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Attn.: Jane Wu

Product Description: LED tube

Model No.: PL22-XY

Ref Model No.: PL35-XY, PL35-XY-H, PL18-XY, PL12-XY

Sample Received Date: 2014-06-17,

Test Period: From 2014-06-17 to 2014-06-25

Test Requested and Conclusion: 2012/19/EU - on waste electrical and electronic equipment (WEEE)
- Article 4, 11 & Annex V

Test Result: Refer to the following page(s)

Remark: The result relates only to the items tested.

PASS

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1. TESTED SUBJECT DESCRIPTION

Item Name		Photo
Product Name:	LED tube	
Model Number:	PL22-XY	
Product total weight:	302.2 gram	





2. REQUIREMENT OF WEEE DIRECTIVE

2.1 PRODUCT DESIGN

According to article 4 of WEEE directive 2012/19/EU:

- Design and production of electrical and electronic equipment which take into account and facilitate dismantling and recovery of the components and materials. The design features or manufacturing processes do not prevent the product from being reused.

2.2 PROPER TREATMENT

Proper treatment, other than preparing for re-use, and recovery or recycling operations shall, as a minimum, include the removal of all fluids and a selective treatment in accordance with Annex VII of WEEE directive 2012/19/EU:

- Polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (1),
- Mercury containing components, such as switches or backlighting lamps,
- Batteries,
- Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
- Toner cartridges, liquid and paste, as well as colour toner,
- Plastic containing brominated flame retardants,
- Asbestos waste and components which contain asbestos,
- Cathode ray tubes,
- Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC),
- Gas discharge lamps,
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimetres and all those back-lighted with gas discharge lamps,
- External electric cables,
- Components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (2),
- Components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (3),
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).

2.3 REQUIREMENT OF RECYCLING AND RECOVERY RATE

According to article 11 and Annex V part 1, below minimum target of Recycling and Recovery rate should be met from 13 August 2012 until 14 August 2015,

Category	Product Type	Minimum Recycling Rate	Minimum Recovery Rate
1	Large household appliances	75%	80%
2	Small household appliances	50%	70%
3	IT and telecommunications equipment	65%	75%
4	Consumer equipment and photovoltaic panels	65%	75%
5	Lighting equipment	50%	70%
6	Electrical and electronic tools (with the exception of large-scale stationary industrial tools)	50%	70%
7	Toys, leisure and sports equipment	50%	70%
8	Medical devices (with the exception of all implanted and infected products)	50%	70%
9	Monitoring and control instruments	50%	70%
10	Automatic dispensers	75%	80%
---	Gas discharge lamps	80%	---

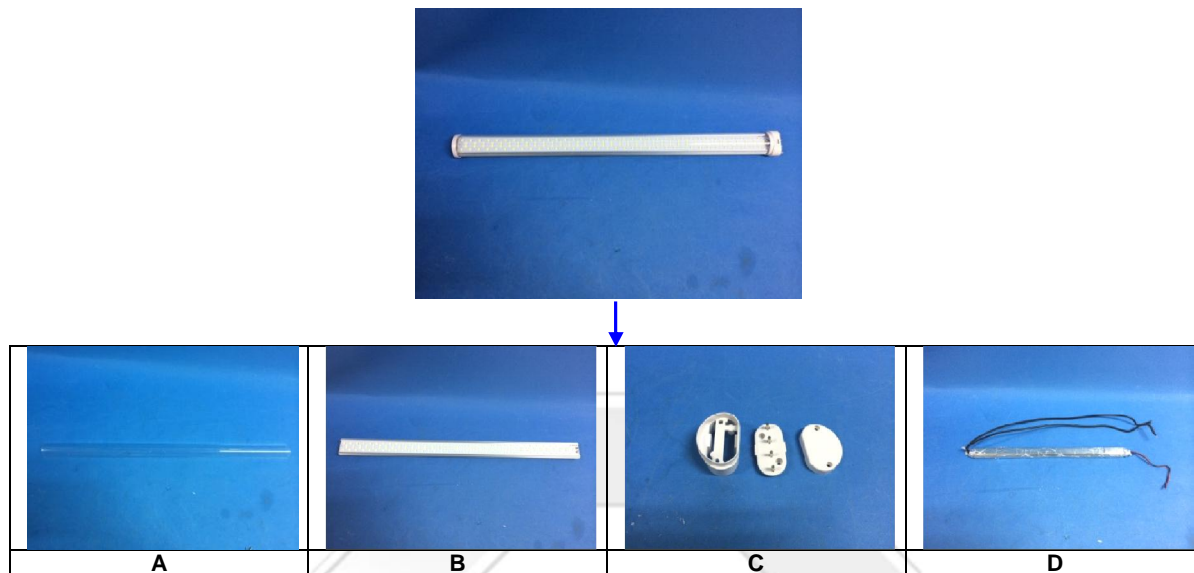
Recycling & Recovery Rate are calculated as following formulas:

$$\text{Recycling Rate} = \frac{\text{Recycling Weight}}{\text{Product Total Weight}} (\%)$$

$$\text{Recovery Rate} = \frac{\text{Recycling Weight} + \text{Energy Recovery Weight}}{\text{Product Total Weight}} (\%)$$

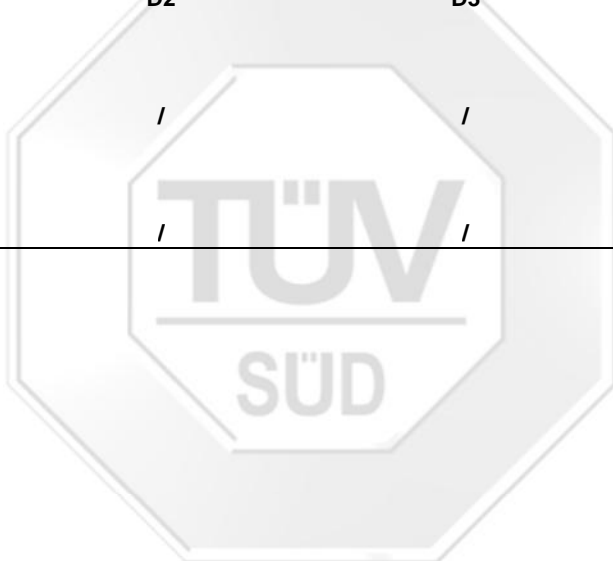
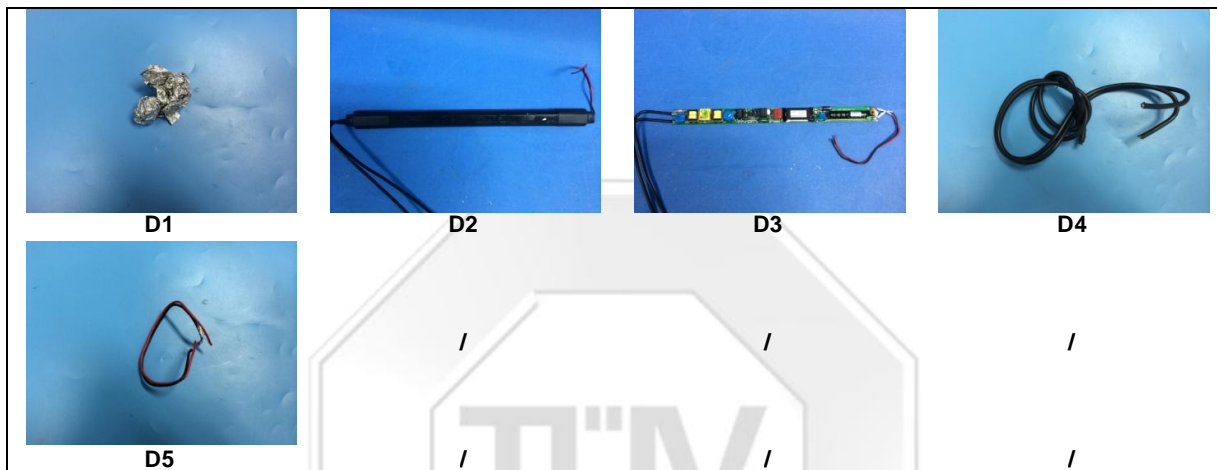
3. EVALUATION RESULTS

3.1. DISASSEMBLING FLOWCHART






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3.2. DISASSEMBLY INFORMATION

For this product, manual operation and disassembly tools have been applied to separate the components and materials as following:

Disassembly tool	Screw driver tool set	
	Scissors	
Disassembly time	1 minutes 30 seconds	
Connection technology of the product	Screws: 8	
	Adhere: 1	
	Snap: 0	
	Spring 0	

3.3. WEEE ARTICLE 4-PRODUCT DESIGN

Requirement	Observation	Conformance
Design and production of electrical and electronic equipment which take into account and facilitate dismantling and recovery of the components and materials. The design features or manufacturing processes do not prevent the product from being reused.	Different parts can be separated easily.	Yes

3.4. SELECTIVE TREATMENT FOR MATERIALS AND COMPONENTS

According to Article 8 (2) and Annex VII of WEEE directive 2012/19/EU, below materials and components should be selective treated,

No.	Item	Weight [g]	Size or Quantity
D3	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	44.9	42.3 cm ²



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3.5. DISASSEMBLED SAMPLE RECYCLABILITY AND RECOVERABILITY

Based on the sample disassembly and the BOM table provided by the supplier/applicant, the main materials involved are listed below with relevant evaluation results.

No.	Component Name	Description	Weight [g]	Percent Weight [%]	Recycling rate [%]	Energy Recovery Rate [%]	Recovery Rate [%]
A	Cover	Transparent plastic cover	24.7	8.17%	6.62%	0.82%	7.44%
B	LED tube	Silvery metal shell with LED board	194.8	64.46%	61.24%	0.00%	61.24%
C1	Cap	White plastic	8.8	2.91%	2.36%	0.29%	2.65%
C2		Silvery metal pin	2.0	0.66%	0.63%	0.00%	0.63%
C3		Silvery metal screw	1.3	0.43%	0.41%	0.00%	0.41%
D1	Power supply	Silvery aluminum foil	2.2	0.73%	0.69%	0.00%	0.69%
D2		Black plastic shell	7.0	2.32%	1.88%	0.23%	2.11%
D2		Black heat-shrinkable tube	2.6	0.86%	0.70%	0.09%	0.78%
D3		PCB with units	44.9	14.86%	9.06%	0.00%	9.06%
D4		Black plastic wire	12.8	4.24%	3.43%	0.42%	3.85%
D5		Red plastic wire	1.1	0.36%	0.29%	0.04%	0.33%
Total			302.2	100.00%	87.3%	1.89%	89.2%

Note:

- "g" denotes gram
- The listed Recycling and Recovery Rate were evaluated based on theoretical and efficient treatment of waste.
- "%" means percentage by weight

3.6. THEORETICAL RECOVERY RATE

The recycling and recovery rate by weight of the samples:

Item	Recycling Rate [%]	Recovery Rate [%]	Conformance
LED tube (PL22-XY)	87.3%	89.2%	Yes
Requirement of Category 5* (Lighting equipment)	70%	50%	---

Note:

- ** According to Directive 2012/19/EU article 11 & Annex V part 1.
- “%” means percentage by weight



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APPENDIX:

Photos of submitted products

