

Test Report No.: 68.402.22.1075.02

Rev.: 02

Dated: 2022-12-13



Applicant: Guangzhou Linong Lighting Technology Co., Ltd

Address: Keying Rd, Guangzhou Sci-Tech Industry Park, Taihe Town Baiyun District, Guangzhou City, Guangdong Province, China.

Attn: Ms. Wang

Sample Description: LED strip Light

Tested Model No.: LNTS3X60XX-D12, LNTS5X60XX-D12, LNTS8X60XX-D12

Ref. Model No.: LNTS3X30XX-D12, LNTS5X30XX-D12, LNTS8X30XX-D12, LNTS3X120XX-D12, LNTS3X180XX-D12, LNTS3X240XX-D12, LNTS8X120XX-D12, LNTS8X240XX-D12

Sample Received Date: 2022-10-20, 2022-12-02, Shenzhen

Test Period: From 2022-10-20 to 2022-10-31, From 2022-12-02 to 2022-12-07, Shenzhen

Purpose of examination: Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples

Test Results: Refer to following page(s)

Remark: - The result relates only to the items tested.
- The reference model(s) was declared by client.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

Prepared by:

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Disclaimer Measurement Uncertainty: Unless otherwise agreed upon, pass or fail verdicts are given based on the measured values without consideration of measurement uncertainties. Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO IEC 17025 requirements. By taking measurement uncertainties into account it might happen that measured values can neither be assessed as pass or fail.

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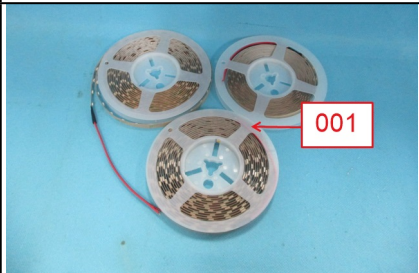
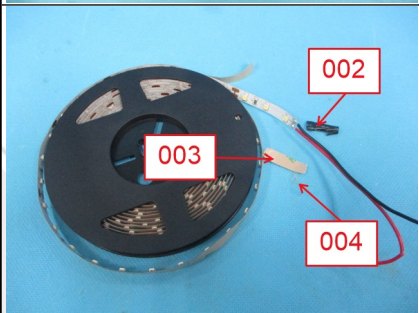
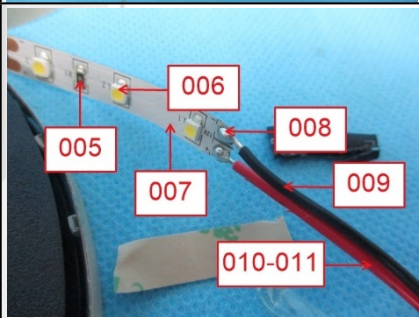
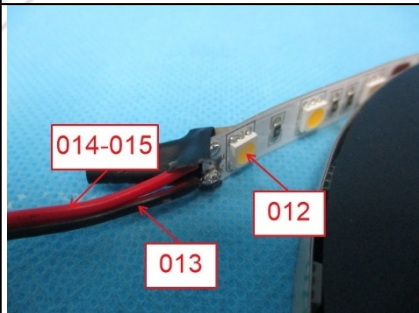
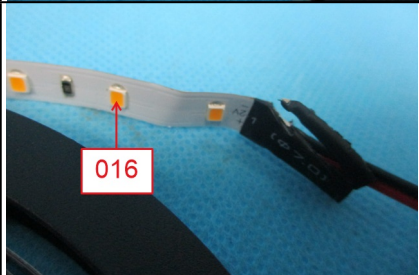


SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	



1. TESTED SUBJECT DESCRIPTION

Test No.	Sample No.	Tested Material Description	Photo
T1	001	White plastic wheel	
T2	002	White printed black soft plastic sleeve	
T3	003	Green printed brown paper tape	
T4	004	Transparent plastic adhesive tape	
T5	005	White printed black body (SMD resistor)	
T6	006	Yellow/white LED body with pin	
T7	007	White FPC	
T8	008	Silvery metal solder	
T9	009	Black/red soft plastic wire jacket	
T10	010	Red soft plastic wire jacket (JIE SHUO)	
T11	011	Copper metal wire	
T12	012	Orange/white LED body with pin	
T13	013	Black/red soft plastic wire jacket	
T14	014	Red soft plastic wire jacket (YI MEI)	
T15	015	Silvery metal wire	
T16	016	Orange/white LED body with pin	



2. TEST RESULT(S)

2.1 SCREENING TEST

Test method: With reference to EN 62321-1:2013, EN IEC 62321-2:2021, EN 62321-3-1:2014 and EN 62321-8:2017. For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometer (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometer (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
001	BL	BL	BL	BL	BL	BL	BL	BL	BL
002	BL	BL	BL	BL	BL	BL	BL	BL	BL
003	BL	BL	BL	BL	BL	BL	BL	BL	BL
004	BL	BL	BL	BL	BL	BL	BL	BL	BL
005	BL	Inc. ^(a)	BL	OL ^(a)	BL	BL	BL	BL	BL
006	BL	BL	BL	BL	BL	BL	BL	BL	BL
007	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	OL ^(a)	BL	BL	BL	NA	NA	NA	NA	NA
009	BL	BL	BL	BL	BL	BL	BL	Inc. ^(a)	BL
010	BL	BL	BL	BL	BL	BL	BL	Inc. ^(a)	BL
011	BL	BL	BL	BL	NA	NA	NA	NA	NA
012	BL	BL	BL	BL	BL	BL	BL	BL	BL
013	BL	BL	BL	BL	BL	BL	BL	Inc. ^(a)	BL
014	BL	BL	BL	BL	BL	BL	BL	Inc. ^(a)	BL
015	BL	BL	BL	BL	NA	NA	NA	NA	NA
016	BL	BL	BL	BL	BL	BL	BL	BL	BL

Note:

- "BL" denotes below limit
- "OL" denotes over limit
- "Inc." denotes inconclusive
- "NA" denotes not applicable
- "(a)" denotes further confirmation test was conducted, results are listed in 2.2 and 2.3.



-XRF screening limits in mg/kg for regulated elements in various matrices

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Br	$X \leq (300-3\sigma)$	$X > (300-3\sigma)$	NA
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	METAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (50-3\sigma)$	$(50-3\sigma) < X < (150+3\sigma)$	$X \geq (150+3\sigma)$
Pb	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Hg	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Br	$X \leq (250-3\sigma)$	$X > (250-3\sigma)$	NA
Cr	$X \leq (500-3\sigma)$	$X > (500-3\sigma)$	NA

-Screening limits in mg/kg for regulated phthalates in various matrices

PHTHALATES	BL	INCONCLUSIVE
DEHP	$X < 600$	$X \geq 600$
BBP	$X < 600$	$X \geq 600$
DBP	$X < 600$	$X \geq 600$
DIBP	$X < 600$	$X \geq 600$



2.2 HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2014 /A1:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Ultraviolet-visible spectrophotometer (UV-Vis).

[Reporting Limit: 2.0 mg/kg for Cadmium; 10.0 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10.0 mg/kg for Lead and Mercury.]

Sample No.	Result(s)				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
005	--	<10.0	/	--	322.1
008	<2.0	--	--	--	--
Unit	mg/kg	mg/kg	µg/cm²	mg/kg	mg/kg
RoHS Requirement	100	1000	Negative#	1000	1000

Note:

- "mg/kg" denotes milligram per kilogram
- "µg/cm²" denotes micrograms per square centimeter
- "<" denotes less than
- "Negative" denotes the absorbance value of sample is < 0.10 µg/cm², the sample is considered to be negative for Hexavalent Chromium.
- "#" According to DIRECTIVE 2011/65/EU Article 4(1) and Annex II. While, positive means the presence of CrVI 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) and Annex II.
- "--" denotes tested by XRF, result is listed in 2.1



2.3 PHTHALATES (DEHP, BBP, DBP and DIBP) CONTENT TEST

Test method: With reference to EN 62321-8:2017, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 100 mg/kg]

Test Item	Result(s) [mg/kg]		RoHS Requirement [mg/kg]
	Sample 009+010	Sample 013+014	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	<100	<100	1000
Butyl-benzyl Phthalate (BBP)	<100	<100	1000
Di-butyl Phthalate (DBP)	347	112	1000
Di-iso-butyl Phthalate (DIBP)	<100	<100	1000


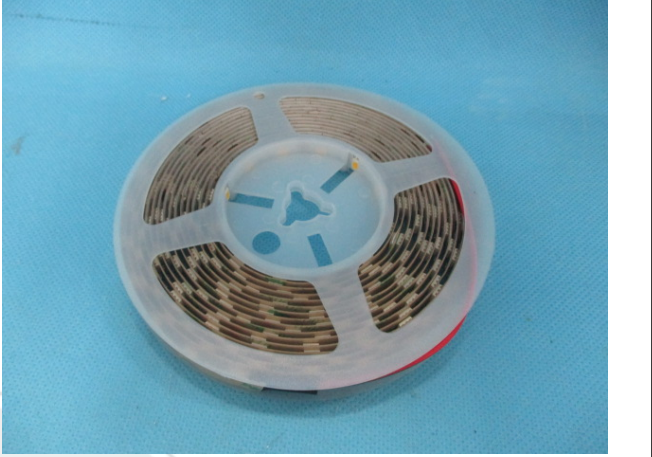

Note:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than



APPENDIX I:

Photos of submitted products

	
<p>LED strip Light (LNTS3X60XX-D12)</p>	<p>LED strip Light (LNTS5X60XX-D12)</p>
	/
<p>LED strip Light (LNTS8X60XX-D12)</p>	/

-----End of Report-----