



Test Report No.: 68.402.24.0619.01

Rev.: 00

Dated: 2024-09-29

Applicant: Guangzhou Linong Lighting Technology Co., Ltd

Address: Room 115, 1st Floor, Building 3, minjie Science and Technology Innovation Center, No. 3 Kerong Street, Guangzhou Private Science and Technology Park, No. 1633 Beitai Road, Baiyun District, Guangzhou

Sample Description: LED strip Light

Tested Model No.: LNTS8NW120H0-D24, LNTKD5RGB60V0-D24, LNTKD5RGB30G0-D12, LNTKD0RGB720COB0-D24, LNTKD0RGB720COB0-D12, LNTS0NW528COB0-D24, LNTS8NW60V0-AC220, LNTSONW528COB0-D12, LNTSOWW432COBH0-AC220, LNTS8NW120H0-D12(一体化堵头)

Ref. Model No.: Refer to APPENDIX II

Sample Received Date: 2024-06-27, Shenzhen

Test Period: From 2024-06-27 to 2024-07-18, 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:

Reviewed by:



Elsa Deng
Project Handler

Scarlett Liang
Designated Reviewer

Any use for advertising purposes must be granted in writing. This test report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

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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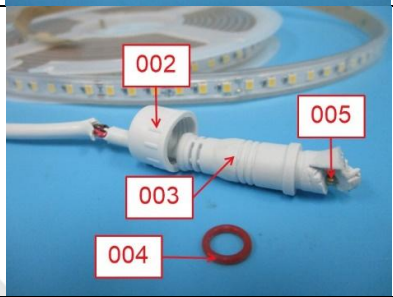
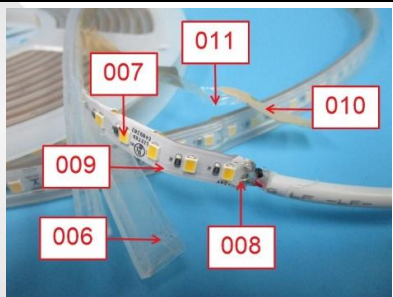
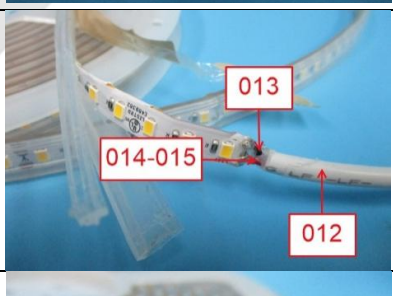


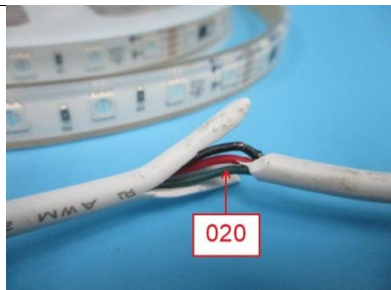
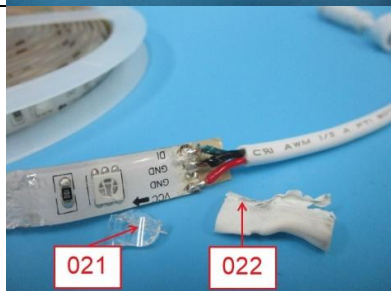
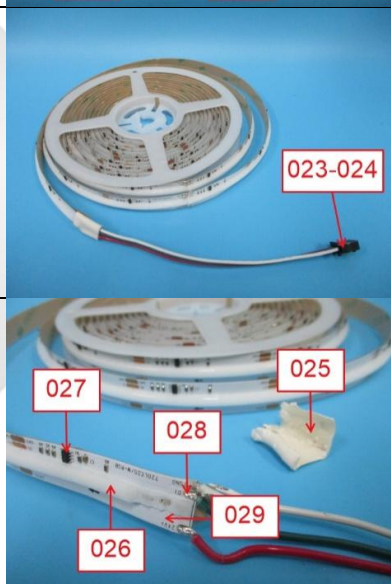
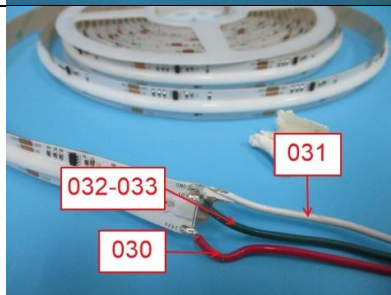
SUMMARY OF TEST RESULTS

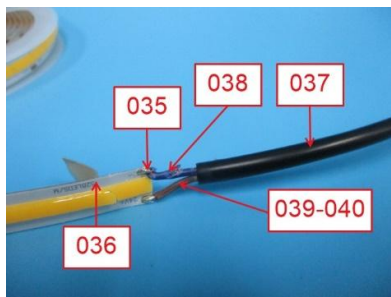
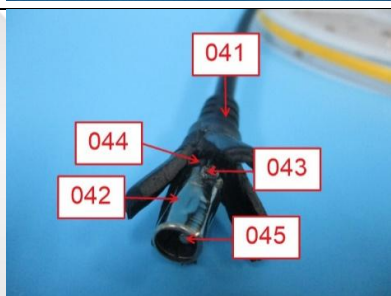
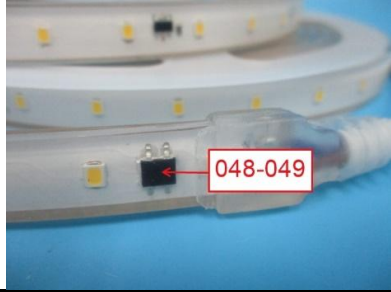
No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	



1. TESTED SUBJECT DESCRIPTION

Test No.	Sample No.	Tested Material Description	Photo
T1	001	Transparent white plastic wheel	
T2	002	White plastic cap (Plug)	
T3	003	White soft plastic housing (Plug)	
T4	004	Red soft plastic gasket (Plug)	
T5	005	Golden metal shaft (Plug)	
T6	006	Transparent soft plastic sleeve	
T7	007	Yellow/white LED body	
T8	008	Silvery metal solder	
T9	009	White FPC	
T10	010	Green printed brown paper tape	
T11	011	Transparent plastic adhesive tape	
T12	012	Black printed white soft plastic cable jacket	
T13	013	Black soft plastic wire jacket	
T14	014	Red soft plastic wire jacket	
T15	015	Coppery metal wire	
T16	016	Transparent white LED body with pin	
T17	017	Black body with pin (EC)	
T18	018	White printed black body (SMD Resistor)	
T19	019	Brown/silvery body (SMD Capacitor)	

Test No.	Sample No.	Tested Material Description	Photo
T20	020	Green soft plastic wire jacket	
T21	021	Transparent soft plastic housing	
T22	022	White soft plastic sleeve	
T23	023	Black plastic case (Connector)	
T24	024	Silvery metal pin (Connector)	
T25	025	Transparent glue	
T26	026	White soft plastic	
T27	027	Black body with pin (EC)	
T28	028	Silvery metal solder	
T29	029	Grey FPC	
T30	030	Pink soft plastic wire jacket	
T31	031	White soft plastic wire jacket	
T32	032	Green soft plastic wire jacket	
T33	033	Silvery metal wire	

Test No.	Sample No.	Tested Material Description	Photo
T34	034	Yellow soft plastic	
T35	035	Silvery metal solder	
T36	036	Grey FPC	
T37	037	Black soft plastic cable jacket	
T38	038	Blue soft plastic wire jacket	
T39	039	Brown soft plastic wire jacket	
T40	040	Coppery metal wire	
T41	041	Black soft plastic housing (Plug)	
T42	042	Silvery metal case (Plug)	
T43	043	Silvery metal solder (Plug)	
T44	044	Black plastic holder (Plug)	
T45	045	Silvery metal pin (Plug)	
T46	046	White soft plastic housing (Plug)	
T47	047	Silvery metal pin (Plug)	
T48	048	Black body (EC)	
T49	049	Silvery metal pin with solder (EC)	



Test No.	Sample No.	Tested Material Description	Photo
T50	050	Black body with pin (EC)	
T51	051	Black printed white soft plastic cable jacket	
T52	052	Blue soft plastic wire jacket	
T53	053	Brown soft plastic wire jacket	
T54	054	Coppery metal wire	
T55	056	Black body with pin (Diode)	



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	BL	BL	BL	NA	NA	NA	NA	NA
006	BL	BL	BL	BL	BL	BL	BL	BL	BL
007	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	BL	BL	BL	BL	NA	NA	NA	NA	NA
009	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
010	BL	BL	BL	BL	BL	BL	BL	BL	BL
011	BL	BL	BL	BL	BL	BL	BL	BL	BL
012	BL	BL	BL	BL	BL	BL	BL	BL	BL
013	BL	BL	BL	BL	BL	BL	BL	BL	BL
014	BL	BL	BL	BL	BL	BL	BL	BL	BL
015	BL	BL	BL	BL	NA	NA	NA	NA	NA
016	BL	BL	BL	BL	BL	BL	BL	BL	BL
017	BL	BL	BL	BL	BL	BL	BL	BL	BL
018	BL	BL	BL	OL ^(a)	BL	BL	BL	BL	BL
019	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
020	BL	BL	BL	BL	BL	BL	BL	BL	BL
021	BL	BL	BL	BL	BL	BL	BL	BL	BL
022	BL	BL	BL	BL	BL	BL	BL	Inc. ^(a)	BL
023	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
024	BL	BL	BL	BL	NA	NA	NA	NA	NA
025	BL	BL	BL	BL	BL	BL	BL	BL	BL
026	BL	BL	BL	BL	BL	BL	BL	BL	BL
027	BL	BL	BL	BL	BL	BL	BL	BL	BL



Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
028	Inc. ^(a)	BL	BL	BL	NA	NA	NA	NA	NA
029	BL	BL	BL	BL	BL	BL	BL	BL	BL
030	BL	BL	BL	BL	BL	BL	BL	BL	BL
031	BL	BL	BL	BL	BL	BL	BL	BL	BL
032	BL	BL	BL	BL	BL	BL	BL	BL	BL
033	BL	BL	BL	BL	NA	NA	NA	NA	NA
034	BL	BL	BL	BL	BL	BL	BL	BL	BL
035	BL	BL	BL	BL	NA	NA	NA	NA	NA
036	BL	BL	BL	BL	BL	BL	BL	BL	BL
037	BL	BL	BL	BL	BL	BL	BL	BL	BL
038	BL	BL	BL	BL	BL	BL	BL	BL	BL
039	BL	BL	BL	BL	BL	BL	BL	BL	BL
040	BL	BL	BL	BL	NA	NA	NA	NA	NA
041	BL	BL	BL	BL	BL	BL	BL	BL	BL
042	BL	BL	BL	BL	NA	NA	NA	NA	NA
043	BL	BL	BL	BL	NA	NA	NA	NA	NA
044	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
045	BL	BL	BL	BL	NA	NA	NA	NA	NA
046	BL	BL	BL	BL	BL	BL	BL	BL	BL
047	BL	BL	BL	BL	NA	NA	NA	NA	NA
048	BL	BL	BL	OL ^(a)	Inc. ^(a)	BL	BL	BL	BL
049	Inc. ^(a)	BL	BL	OL*	NA	NA	NA	NA	NA
050	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
051	BL	BL	BL	BL	BL	BL	BL	BL	BL
052	BL	BL	BL	BL	BL	BL	BL	BL	BL
053	BL	BL	BL	BL	BL	BL	BL	BL	BL
054	BL	BL	BL	BL	NA	NA	NA	NA	NA
056	BL	BL	BL	BL	BL	BL	BL	BL	BL

Note:

- "BL" denotes below limit
- "OL" denotes over limit
- "Inc." denotes inconclusive

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- "NA" denotes not applicable
- "(a)" denotes further confirmation test was conducted, results are listed in 2.2, 2.3 and 2.4.
- "*" denotes the exempt item according to DIRECTIVE 2011/65/EU Annex III item 7(a) "lead in high melting temperature type solder(i. e. lead-based alloy containing 85% by weight or more lead)".

-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
018	--	--	--	--	420.5
028	<2.0	--	--	--	--
048	--	--	--	--	4.06×10 ^{3(a)}
049	<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
- "(a)" denotes the exempt item according to DIRECTIVE 2011/65/EU Annex III item 7(c)-I "Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound"



2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Test Item		Result(s) [mg/kg]		RoHS Requirement [mg/kg]
		Sample 009	Sample 019+048+050	
PBBs	Monobromobiphenyl	<5	<5	Sum of PBBs 1000
	Dibromobiphenyl	<5	<5	
	Tribromobiphenyl	<5	<5	
	Tetrabromobiphenyl	<5	<5	
	Pentabromobiphenyl	<5	<5	
	Hexabromobiphenyl	<5	<5	
	Heptabromobiphenyl	<5	<5	
	Octabromobiphenyl	<5	<5	
	Nonabromobiphenyl	<5	<5	
	Decabromobiphenyl	<5	<5	
	Sum of detected PBBs	<50	<50	
PBDEs	Monobromodiphenyl ether	<5	<5	Sum of PBDEs 1000
	Dibromodiphenyl ether	<5	<5	
	Tribromodiphenyl ether	<5	<5	
	Tetrabromodiphenyl ether	<5	<5	
	Pentabromodiphenyl ether	<5	<5	
	Hexabromodiphenyl ether	<5	<5	
	Heptabromodiphenyl ether	<5	<5	
	Octabromodiphenyl ether	<5	<5	
	Nonabromodiphenyl ether	<5	<5	
	Decabromodiphenyl ether	<5	<5	
	Sum of detected PBDEs	<50	<50	

Note:

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



2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Test Item		Result(s) [mg/kg]		RoHS Requirement [mg/kg]
		Sample 023	Sample 044	
PBBs	Monobromobiphenyl	<5	<5	Sum of PBBs 1000
	Dibromobiphenyl	<5	<5	
	Tribromobiphenyl	<5	<5	
	Tetrabromobiphenyl	<5	<5	
	Pentabromobiphenyl	<5	<5	
	Hexabromobiphenyl	<5	<5	
	Heptabromobiphenyl	<5	<5	
	Octabromobiphenyl	<5	<5	
	Nonabromobiphenyl	<5	<5	
	Decabromobiphenyl	<5	<5	
	Sum of detected PBBs	<50	<50	
PBDEs	Monobromodiphenyl ether	<5	<5	Sum of PBDEs 1000
	Dibromodiphenyl ether	<5	<5	
	Tribromodiphenyl ether	<5	<5	
	Tetrabromodiphenyl ether	<5	<5	
	Pentabromodiphenyl ether	<5	<5	
	Hexabromodiphenyl ether	<5	<5	
	Heptabromodiphenyl ether	<5	<5	
	Octabromodiphenyl ether	<5	<5	
	Nonabromodiphenyl ether	<5	<5	
	Decabromodiphenyl ether	<5	<5	
	Sum of detected PBDEs	<50	<50	

Note:

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

**2.4 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 022	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	<100	1000
Butyl-benzyl Phthalate (BBP)	<100	1000
Di-butyl Phthalate (DBP)	351	1000
Di-iso-butyl Phthalate (DIBP)	<100	1000

Note:

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



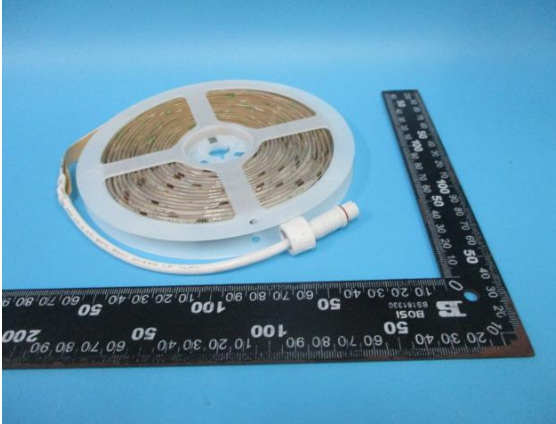
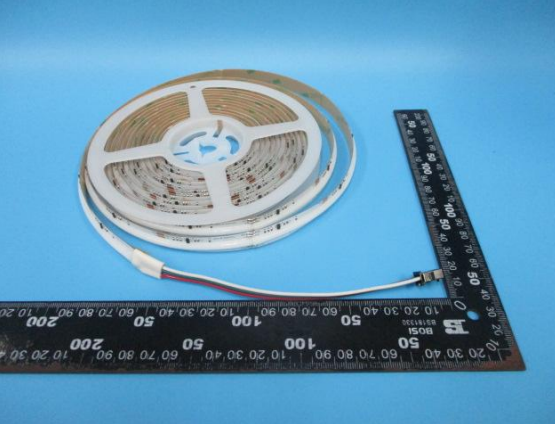
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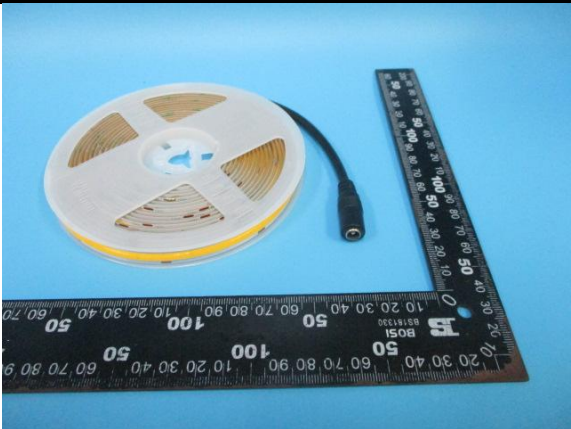
APPENDIX I:

Photos of submitted products

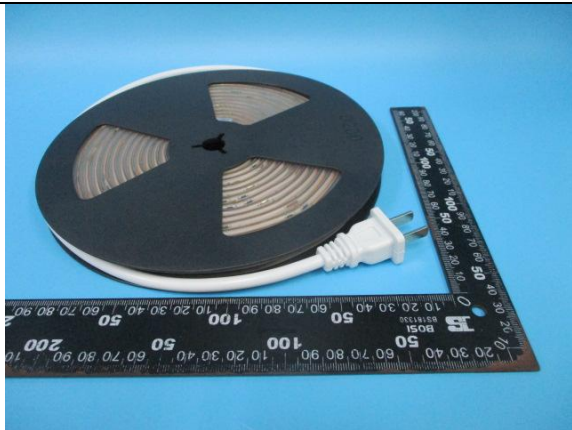
	
LNTS8NW120H0-D24	LNTKD5RGB60V0-D24
	
LNTKD5RGB30G0-D12	LNTKD0RGB720COB0-D24
	
LNTKD0RGB720COB0-D12	LNTS0NW528COB0-D24



LNTS8NW60V0-AC220



LNTSONW528COB0-D12



LNTSOWW432COBH0-AC220



LNTS8NW120H0-D12(一体化堵头)



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APPENDIX II:

According to client's declaration, tested material would be produced as relevant product(s):

LNTSFIMCOBXZ-D12
LNTSFIMCOBXZ-D24
LNTKDFIMCOBXZ-D12
LNTKDFIMCOBXZ-D24
LNTKDFIMXZ-D12
LNTKDFIMXZ-D24
LNTSFIMCOBXZ-D12
LNTSFIMCOBXZ-D24
LNTKDFIMCOBXZ-D12
LNTKDFIMCOBXZ-D24
LNTKDFIMXZ-D12
LNTKDFIMXZ-D24
LNTSFIMXZ-D12
LNTSFIMXZ-D24
F: Can be 3,4 5, 6, 7, 8 or 0, represent 3528,4040 5050, 2216, 5630, 2835 COB LED type respectively. I: Can be WNW, WW, CW, NW, PW, W, R, G, B, Y or RGB, RGBW, RBGWNW represent WNW=Warm white and nature white, WW=Warm white, CW=Cool white, NW=Nature white, PW=Pure white, W=White, R=Red, G=Green, B=Blue, Y=yellow, RGB=RGB, RGBW=integrated RGB and white, RGBWNW=integrated RGB and bi-color white of LED respectively. M: Can be any three digit, represent LED qty. per meter respectively. X: Can be N, H, J, V, U, T, E or G, represent enclose method. "N" means bare, non-enclosed, suitable for using in dry location. "H, J, V, U, T, E or G" means tube enclosed by different method, "H" means extrude tubing, "J" means covered with PU, "V" means Solid extrusion, "U" means U type tube enclosed with potting, "T" means Spray, "E" Hollow tube, "G" means surface potting, suitable for using in wet location. Z: Can be 0-9, represent LED tape length, "1, 2, ... 9 or A0" means 0.5, 1.0, ... 4.5 m respectively, "0" means 5 m, "A0" means 10m

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