ISTMT Test Report

For

ESPEN TECHNOLOGY INC

12257 FLORENCE AVE SANTA FE SPRINGS, CA 90670 USA

LED Tube

Model Name(s):
L36T8/8XX/12P-ID DE RF

Representative (Tested) Model:
L36T8/830/12P-ID DE RF

Model Difference:

1. **XX represents CCT, can be 30 for 3000K, 35 for 3500K, 40 for 4000K and 50 for 5000K;**
2. **All is the same construction, except CCT.**

Prepare by:

Engineer: Alan Wang
Date: 2021-02-

Review by:

Technical Lead: Vincent Yuan
Issue Date: 2021-04-29
Revised Date: N/A

Note:
1. The results contained in this report pertain only to the tested samples.
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3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

Client Information:

Applicant Name:	ESPEN TECHNOLOGY INC
Brand Name:	ESPEN

Product Information:

Model Number:	L36T8/830/12P-ID DE RF
Product Type:	3' T8 Lamp, Internal Driver/Line Voltage (UL Type B) Lamps
Rating Input:	100-277Vac, 50/60Hz, 12W
Declared CCT:	3000K
Declared Light Output:	1400 lm
Declared Lifetime:	50000 hours
LED Manufacturer:	Shenzhen JuFei Optoelectronics Co., Ltd.
LED Model:	2835 3V 0.5W WhiteSMD LED
LED Quantity:	84 pcs

Test Information:

Date of Receipt Samples:	2020-12-12
Quantity of Receipt Samples:	1 pc
Sample Number:	201212005-S1

Laboratory Information:

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	Neil_zhong@ntc-cert.com

Report Information:

Issued Date of Test Report:	2021-04-29
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR21010186
Remark *(If applicable)*:	N/A

Test Specification:	
Date of Test	2020-12-20
Test Item	1. In-Situ Temperature Measured Test (ISTMT)
Reference Standard	ANSI/UL 1993-2017 Luminaire IES LM-84-14 IES Approved Method for Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminaires

Test Methods:

1. In-Situ Temperature Measurement Test (ISTMT)

According to UL 1993 and IES LM-84-14, Annex A, maximum LED source operated temperature measurements were taken on one test sample per model with a thermocouple and temperature meter. The SSL sample could reach thermal equilibrium for at least 3 hours before measurements were taken. LED source temperature was measured at the point as indicated by the included diagram in accordance with manufacturers declared hot spot location. The maximum temperature was recorded for the sample.

In-Situ Temperature Measurement Test Results:

Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	Orientation	Test Time (hours)
120.0	60	0.0970	11.41	0.9775	Face Down	3.5

Test Result:

TC Location	Measured LED Drive Current (mA)	Temperature (°C)			Limits (°C)	TM-21 Result
		Ambient	Test Result	Corrected to 25°C		Reported L70 (hours)
TMP_{LED}	42.5	25.0	54.2	54.2	55	>60000

Test Result from TM-21:

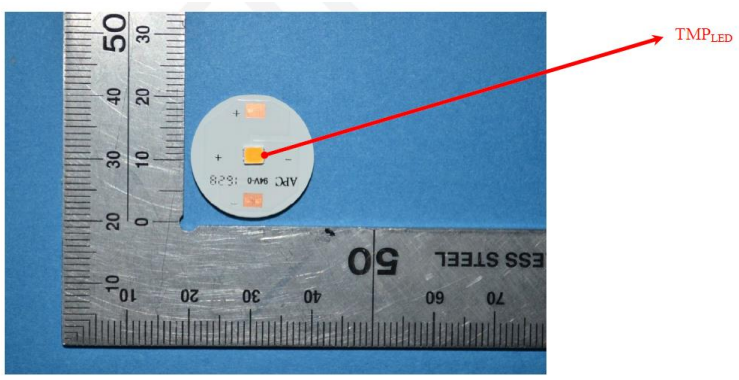
In-Situ Inputs

Drive current for each LED package/array/module (mA):	42.5
In-situ case temperature (T_c, ºC):	54.2
Percentage of initial lumens to project to (e.g. for L_{70}, enter 70):	70

Results

Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	90.84%
Reported L70 (hours):	>60000

TMP Position in LM-80:



Thermocouple Position on TMP:

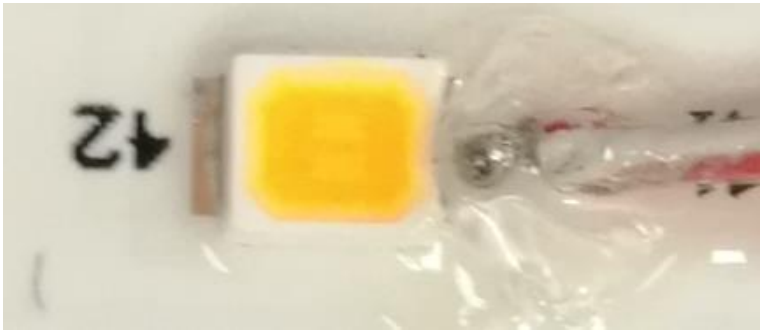
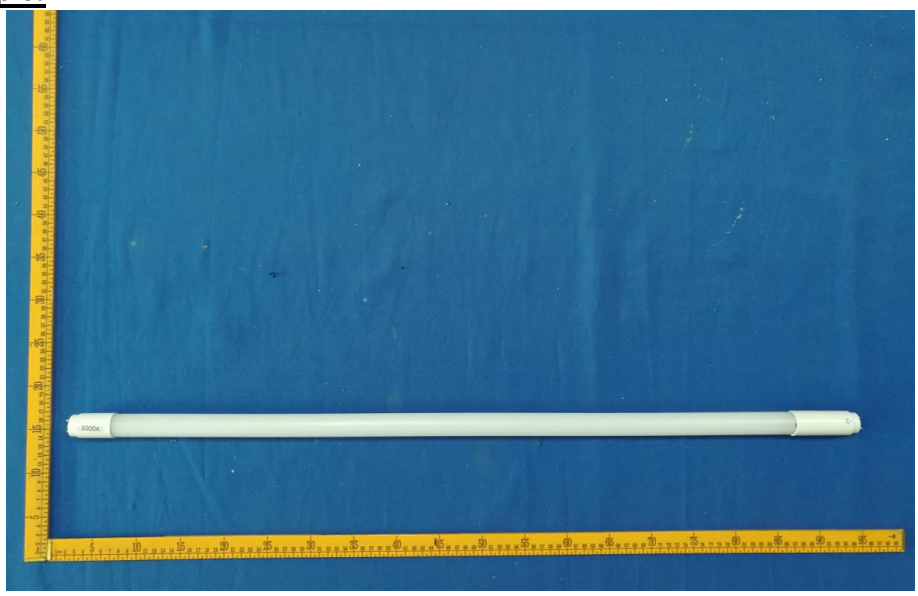
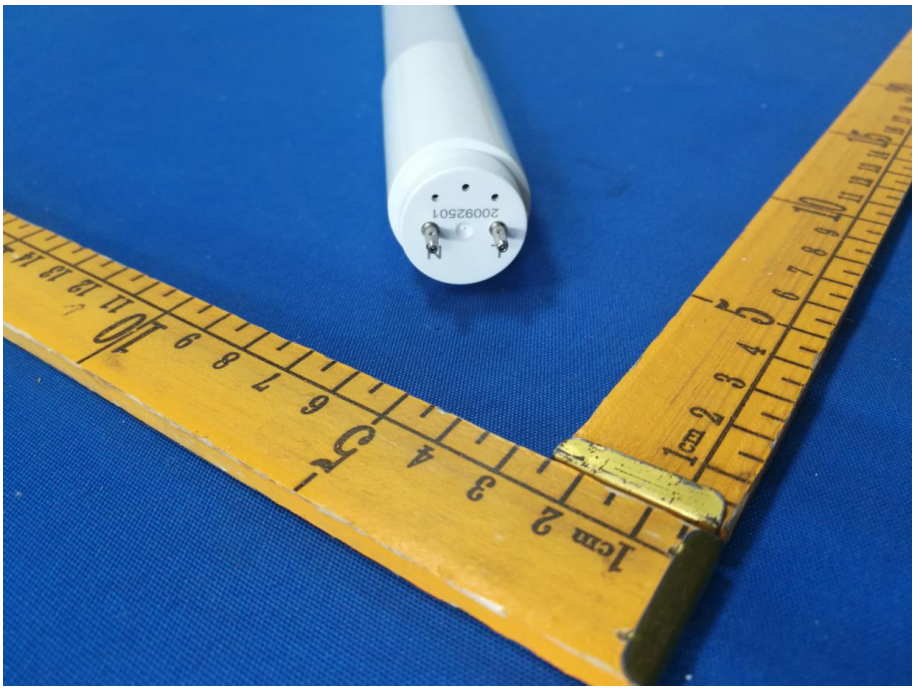


Photo of Sample:





Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-031	Digital Power Meter	2020-08-22	2021-08-21
NTC-F01-019	Temperature & Humidity Meter	2020-11-13	2021-11-12
NTCD-S001	Temperature Data Logger	2020-11-12	2021-11-11

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