



DLC V4.1 TEST REPORT

Applicant's name: P.Q.L., Inc.

Address: 2285 Ward Avenue / Simi Valley, CA 93065

Brand Name.....: Superior Life®

Report No......: BTR66.181.16.0028.14

Product Name.....: WALLPACK FIXTURE

Basic Model: 83370, 83371

Tested by
(printed name and signature): David Zhang
Title: **Test Engineer** *David*

Approved by
(printed name and signature): Steven Huo
Title: **Approved Signatory** *[Signature]*

Date of issue: Apr 17, 2017

Testing Laboratory Name: BEST Test Service Shenzhen Co., Ltd.

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Accreditation: DLC/Lighting Facts/UL/ETL/ELI/CEC/EPA/DOE
 NVLAP Testing Lab Code: 200770-0

Test specification

Standard: DLC V4.1

Test procedure: DLC Test Procedure

Non-standard test method: No

Test Report Form No.: BEST_DLC-V4.1

TRF originator.....: BEST Test Service Shenzhen Co., Ltd. Mr Tseng

Master TRF: BEST_DLC V4.1.doc

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Product description:		
Sample received date	Apr 10, 2017	
Sample Quantity	1 pcs per model	
Model Number	83370, 83771	
Rating(s) (V; Hz)	120-277VAC 50/60HZ	
Nominal Power.....	100W	
Nominal Power Factor	N/A	
Nominal Lumen Output.....	11800lm; 12000lm	
Nominal CCT	4000K; 5000K	
Nominal CRI(Ra)	≥70	
Nominal Life	50000H	
Product Classification	<input type="checkbox"/> Premium	<input checked="" type="checkbox"/> Standard
Category	<input type="checkbox"/> Indoor	<input type="checkbox"/> Indoor Retrofit Kit
	<input checked="" type="checkbox"/> Outdoor	<input type="checkbox"/> Outdoor Retrofit Kit
	<input type="checkbox"/> Linear Replacement Lamp	<input type="checkbox"/> E39 Replacements for HID Lamps
	<input type="checkbox"/> Four Pin-Base Replacement Lamps for CFLs	
General Applicant	Outdoor –high Output	
Primary use	Outdoor Full-Cutoff Wall-mounted Area Luminaires	
Dimmable	<input checked="" type="checkbox"/> Yes,	<input type="checkbox"/> No
If Yes, Select Dimming Mechanism ...:	<input checked="" type="checkbox"/> Continuous dimming,	<input type="checkbox"/> Step dimming
If Yes, Mini Dimming Level	10%	
Integral Controller	<input checked="" type="checkbox"/> Yes,	<input type="checkbox"/> No
LED Lighting Source Manufacture	Lumileds	
LED Lighting Source Model	LUXEON 3030 2D	
LED Driver Brand.....	N/A	
LED Driver Model Number.....	N/A	
Maximum Recommended Temperature (°C) During Normal Operation	N/A	
Fixtures Band (Retrofit Kit/Lamp Only)	N/A	
Fixtures Model No. (Retrofit Kit/Lamp Only)	N/A	

Test Method Description

ANSI C78.376-2001 Specifications for the Chromaticity of Fluorescent Lamps
ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products
ANSI/NEMA/ANSLG C78.377-2011 Specifications for the Chromaticity of Solid State Lighting Products
ANSI C78.5-2003 Specifications for Performance of Self-ballasted Compact Fluorescent Lamps
ANSI/ANSLG C78.81-2010 Double-Capped Fluorescent Lamps—Dimensional and Electrical Characteristics
ANSI C78.901-2014 Single-Based Fluorescent Lamps—Dimensional and Electrical Characteristics
ANSI/ANSLG C81.61-2009 Specifications for Bases (Caps) for Electric Lamps
ANSI/ANSLG C81.62-2009 Lamp holders for Electric Lamps
ANSI C82.11-2011 High-Frequency Fluorescent Lamp Ballasts
ANSI/ANSLG C82.16-2015 (anticipated) Light Emitting Diode Drivers—Methods of Measurement
ANSI C82.2-2002 Method of Measurement of Fluorescent Lamp Ballasts
ANSI C82.77-10:2014 Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
ANSI/IEEE C62.41.1-2002 IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits
ANSI/IEEE C62.41.2-2002 IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits
ANSI/UL 153-2002 Standard for Safety of Portable Electric Luminaires
ANSI/UL 935-2009 Standard for Safety of Fluorescent-Lamp Ballasts
ANSI/UL 1310-2010 Standard for Safety of Class 2 Power Units
ANSI/UL 1574-2004 Standard for Safety of Track Lighting Systems
ANSI/UL 1598-2008 Standard for Safety of Luminaires
ANSI/UL 1598C Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits
ANSI/UL 1598B-2010 Standard for Supplemental Requirements for Luminaire Reflector Kits for Installation on Previously Installed Fluorescent Luminaires
ANSI/UL 1993-2009 Standard for Safety of Self-Ballasted Lamps and Lamp Adapters
ANSI/UL 2108-2004 Standard for Low-Voltage Lighting Systems
ANSI/UL 8750-2009 Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products
ASTM E283-04 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
CIE Pub. No. 13.3-1995 Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004 Colorimetry
EU Directive 2002/95/EC Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the Restriction of the Use of Certain Hazardous Substances In Electrical and Electronic Equipment
FCC CFR Title 47 Part 15 Radio Frequency Devices
FCC CFR Title 47 Part 18 Industrial, Scientific, and Medical Equipment
IEC 60061-1 (2012) Lamp Caps and Holders Together with Gauges for the Control of Interchangeability and Safety – Part 1: Lamp Caps
IEC 60081 Amend 4 Ed 5.0 (2010) Double-capped Fluorescent Lamps - Performance Specifications
IEC 60901 (2011) Single-capped Fluorescent Lamps - Performance Specifications
IEC 62301 ED.2.0 B:2011 Household electrical appliances - Measurement of standby power
IEC 61347-2-3-am2 ed1.0 b.2011 Amendment 2 - Lamp Control Gear - Part 2-3: Particular Requirements for A.C. Supplied Electronic Ballasts for Fluorescent Lamps
IEC 62321 Ed. 1.0 Electrotechnical Products - Determination Of Levels Of Six Regulated Substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)
IEEE PAR1789 IEEE Recommending Practices for Modulating Current in High Brightness LEDs for Mitigating Health Risks to Viewers
IES LM-9-09 Electric and Photometric Measurements of Fluorescent Lamps
IES LM-10-96 or LM-10-XX Photometric Testing of Outdoor Fluorescent Luminaires (2015 update anticipated)
IES LM-31-95 Photometric Testing of Roadway Luminaires Using Incandescent Filament and High Intensity Discharge (HID) Lamps
IES LM-40-10 Life Testing of Fluorescent Lamps
IES LM-41-14 Approved Method for Photometric Testing of Indoor Fluorescent Luminaires
IES LM-46-04 Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps
IES LM-49-12 Life Testing of Incandescent Filament Lamps
IES LM-58-13 Method for Spectroradiometric Measurement Methods for Light Sources
IES LM-65-14 Life Testing of Compact Fluorescent Lamps
IES LM-66-14 Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps
IES LM-79-08 Electrical and Photometric Measurements of Solid-State Lighting Products
IES LM-80-08 Measuring Lumen Maintenance of LED Light Sources
IES LM-82-12 Method for the Characterization of LED Light Engines and Integrated LED Lamps for Electrical and Photometric Properties as a Function of Temperature
IES LM-84-14 Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminaires
IES RP-16-10 Nomenclature and Definitions for Illuminating Engineering
IES TM-21-11 Projecting Long Term Lumen Maintenance of LED Sources
IES TM-28-14 Projecting Long-Term Luminous Flux Maintenance of LED Lamps and Luminaires
NEMA LL 9-2009 Dimming of T8 Fluorescent Lighting Systems
NEMA LSD 45-2009 Recommendations for Solid State Lighting Sub-Assembly Interfaces for Luminaires
NEMA SSL 7A-2013 Phase Cut Dimming for Solid State Lighting: Basic Compatibility

Initial Photometric and Electrical Test Data

EUT	Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
83370	120.0	60.0	0.872	7.1%	104.10	0.995	12406.00	119.17
83370	277.0	60.0	0.399	12.8%	103.90	0.940	/	/

EUT	CCT (K)	CRI Ra	R9	x CIE1931	y CIE1931
83370	4041	73.5	-18	0.3767	0.3684
83371	5189	75.1	-15	0.3399	0.3445

EUT	u' CIE1976	v' CIE1976	Duv	Rf	Rg
83370	0.2260	0.4973	-0.0029	71	95
83371	0.2106	0.4804	-0.0015	72	95

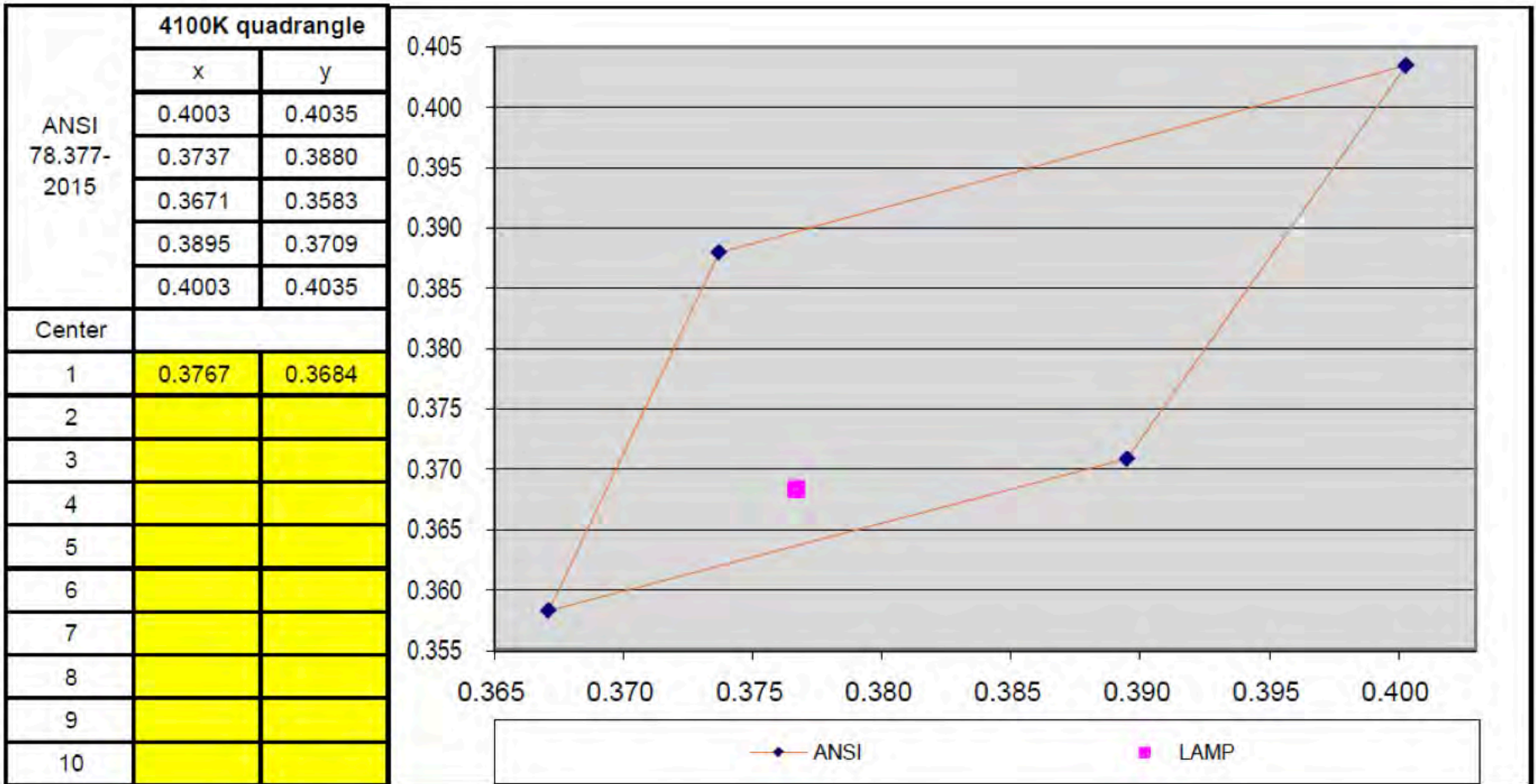
EUT	Zonal Lumen Density zone (0-90°)	Zonal Lumen Density zone (80-90°)*
83370	100.0%	0.5%

Note:

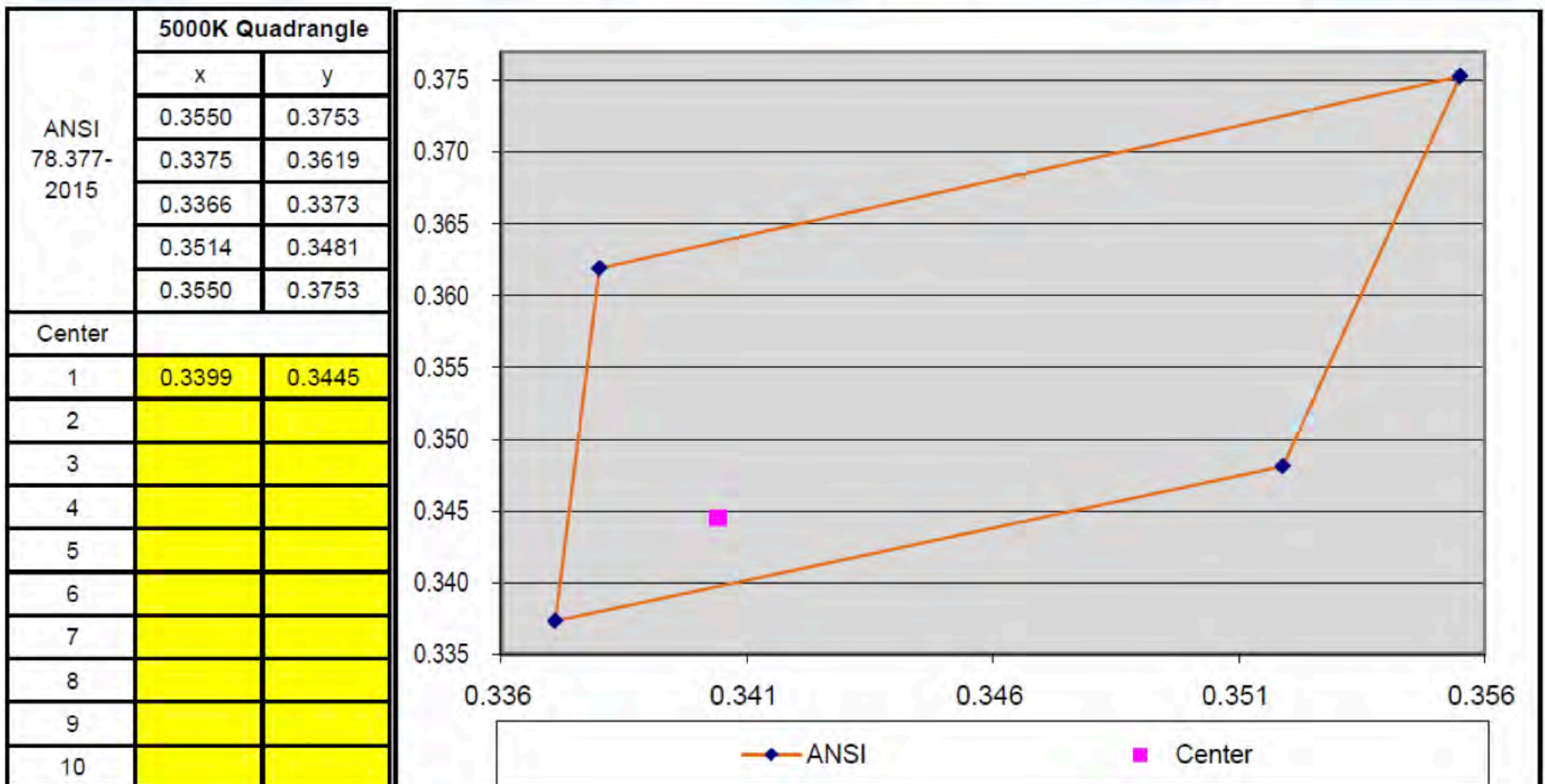
1. See the annex of Luminous Intensity Distribution Test Plots

7 Step Quadrangle

83370



83371



Spectral Energy Distribution

83370

WL(nm)	Spectrum	Spectrum	WL(nm)	Spectrum	Spectrum
380	0.0244	5.3720	585	0.8414	184.9000
385	0.0157	3.4560	590	0.8342	183.3000
390	0.0109	2.3980	595	0.8190	180.0000
395	0.0090	1.9690	600	0.7962	175.0000
400	0.0097	2.1240	605	0.7670	168.6000
405	0.0139	3.0520	610	0.7322	160.9000
410	0.0270	5.9310	615	0.6914	152.0000
415	0.0539	11.8400	620	0.6479	142.4000
420	0.1030	22.6400	625	0.6007	132.0000
425	0.1772	38.9300	630	0.5557	122.1000
430	0.2870	63.0800	635	0.5079	111.6000
435	0.4439	97.5500	640	0.4614	101.4000
440	0.6426	141.2000	645	0.4160	91.4200
445	0.8892	195.4000	650	0.3737	82.1300
450	0.9857	216.6000	655	0.3342	73.4600
455	0.7350	161.5000	660	0.2971	65.2900
460	0.4646	102.1000	665	0.2626	57.7000
465	0.3300	72.5300	670	0.2312	50.8000
470	0.2290	50.3200	675	0.2031	44.6500
475	0.1596	35.0700	680	0.1783	39.1900
480	0.1327	29.1600	685	0.1560	34.2900
485	0.1285	28.2400	690	0.1365	30.0000
490	0.1424	31.3000	695	0.1194	26.2500
495	0.1793	39.4100	700	0.1038	22.8200
500	0.2346	51.5600	705	0.0898	19.7300
505	0.2984	65.5900	710	0.0780	17.1400
510	0.3661	80.4600	715	0.0677	14.8800
515	0.4304	94.6000	720	0.0589	12.9500
520	0.4878	107.2000	725	0.0511	11.2400
525	0.5355	117.7000	730	0.0442	9.7040
530	0.5800	127.5000	735	0.0384	8.4440
535	0.6158	135.3000	740	0.0336	7.3770
540	0.6511	143.1000	745	0.0292	6.4170
545	0.6829	150.1000	750	0.0255	5.6140
550	0.7131	156.7000	755	0.0222	4.8890
555	0.7424	163.2000	760	0.0195	4.2960
560	0.7707	169.4000	765	0.0172	3.7890
565	0.7964	175.0000	770	0.0151	3.3290
570	0.8165	179.4000	775	0.0134	2.9370
575	0.8312	182.7000	780	0.0125	2.7370
580	0.8403	184.7000			

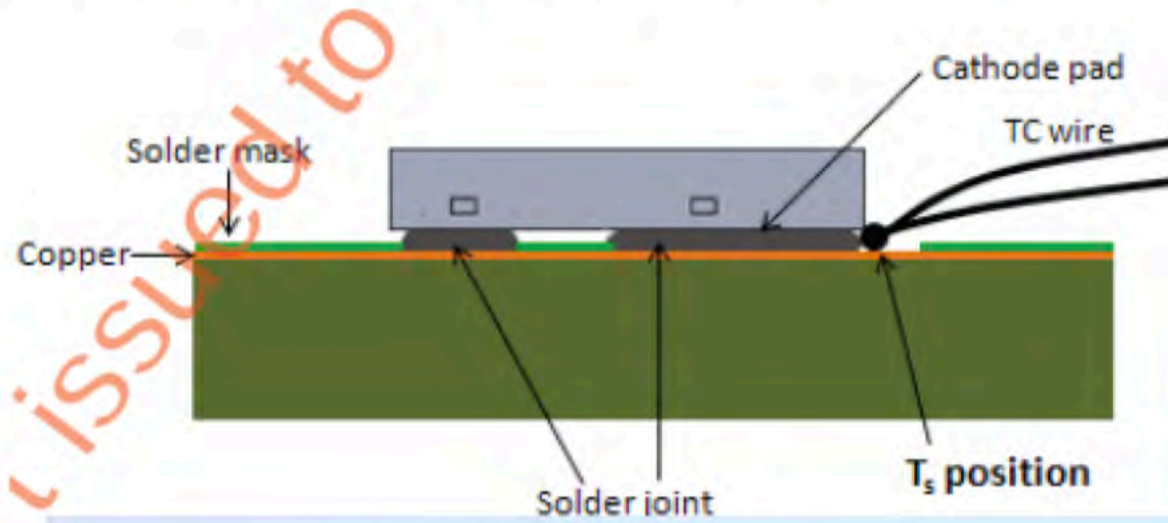
83371

WL(nm)	Spectrum	Spectrum	WL(nm)	Spectrum	Spectrum
380	0.0204	4.6360	585	0.5769	130.8000
385	0.0156	3.5370	590	0.5645	128.0000
390	0.0103	2.3360	595	0.5474	124.1000
395	0.0089	2.0140	600	0.5261	119.3000
400	0.0092	2.0770	605	0.5003	113.4000
405	0.0116	2.6280	610	0.4728	107.2000
410	0.0213	4.8400	615	0.4422	100.3000
415	0.0433	9.8160	620	0.4121	93.4500
420	0.0819	18.5700	625	0.3791	85.9700
425	0.1456	33.0200	630	0.3482	78.9600
430	0.2393	54.2600	635	0.3165	71.7700
435	0.3689	83.6600	640	0.2863	64.9200
440	0.5502	124.8000	645	0.2584	58.5800
445	0.8014	181.7000	650	0.2317	52.5400
450	0.9979	226.3000	655	0.2055	46.5900
455	0.8537	193.6000	660	0.1831	41.5200
460	0.5544	125.7000	665	0.1613	36.5700
465	0.3825	86.7300	670	0.1424	32.3000
470	0.2727	61.8400	675	0.1251	28.3600
475	0.1864	42.2600	680	0.1092	24.7700
480	0.1435	32.5500	685	0.0958	21.7300
485	0.1307	29.6300	690	0.0841	19.0700
490	0.1365	30.9600	695	0.0732	16.6000
495	0.1624	36.8300	700	0.0639	14.4900
500	0.2090	47.4000	705	0.0555	12.6000
505	0.2653	60.1400	710	0.0482	10.9200
510	0.3244	73.5500	715	0.0417	9.4460
515	0.3801	86.1900	720	0.0364	8.2590
520	0.4280	97.0400	725	0.0318	7.2030
525	0.4669	105.9000	730	0.0275	6.2350
530	0.4959	112.4000	735	0.0241	5.4650
535	0.5191	117.7000	740	0.0207	4.7020
540	0.5371	121.8000	745	0.0183	4.1600
545	0.5520	125.2000	750	0.0160	3.6390
550	0.5628	127.6000	755	0.0141	3.2050
555	0.5742	130.2000	760	0.0123	2.7930
560	0.5820	132.0000	765	0.0110	2.4880
565	0.5874	133.2000	770	0.0095	2.1620
570	0.5910	134.0000	775	0.0086	1.9560
575	0.5891	133.6000	780	0.0077	1.7410
580	0.5859	132.9000			

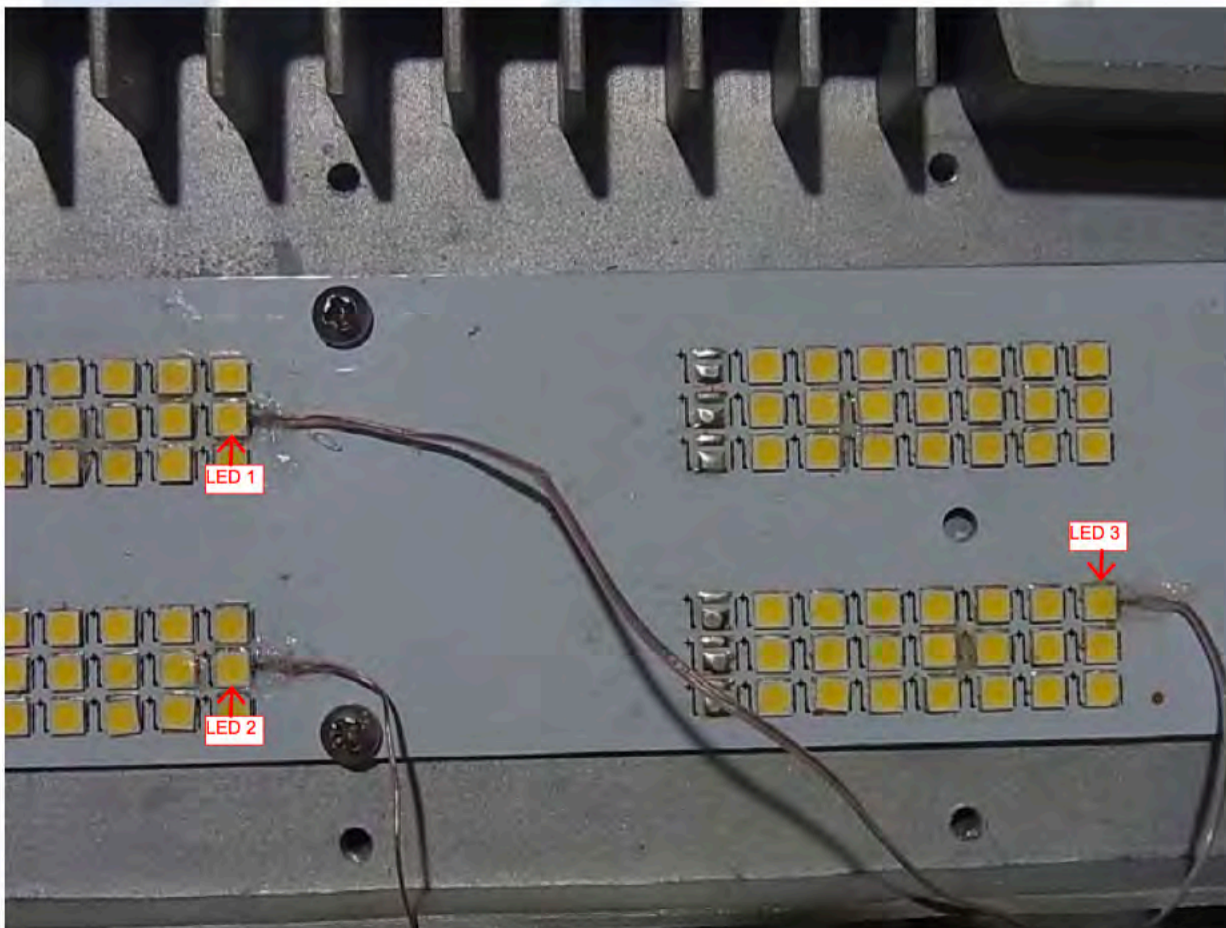
Driver Case Temperature/ LED Drive Current/TMP_{LED} Test Data

EUT	Driver Max T _c (°C)	Driver In-Situ Temperature (°C)	LED In-Situ Current (mA)	LED In-Situ Temperature (°C)(1#)	LED In-Situ Temperature (°C)(2#)	LED In-Situ Temperature (°C)(3#)
83370	N/A	N/A	122.0	86.4	86.8	84.9

LED Lighting Source Temperature Measurement Point in LM-80 Report



LED Lighting Source In Situ Temperature Measurement



EUT Photos

