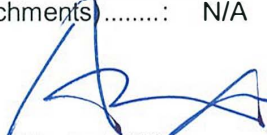

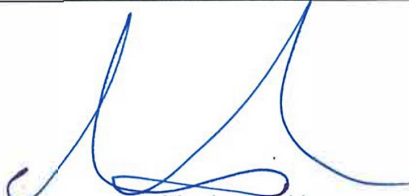




TEST REPORT IES LM-79-08 TÜV SÜD Test Report for Electrical and Photometric Measurements of Solid-State Lighting Products	
Report reference No.....	70.402.15.1040.27-01
Date of issue.....	2015-10-10
Project handler.....	Mr. Arsis XIN
Testing laboratory.....	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Address.....	3-13F, No. 151 Hengtong Road, 200070, Shanghai, P.R.China.
Testing procedure.....	<input type="checkbox"/> TMP <input type="checkbox"/> WMTL <input type="checkbox"/> SMTL <input type="checkbox"/> LTR
Testing location.....	No. 1999, Duhui Road, Shanghai, 201108, P. R. China
Client.....	P.Q.L., Inc.
Client number	N/A
Address.....	2285 Ward Avenue Simi Valley, CA 93065
Contact person	
Standard	This TÜV SÜD test program is based on the following requirements: IES LM-79-08
TRF originated by.....	TÜV SÜD Product Service GmbH, Mr. Kenneth Lau
Copyright blank test report.....	This test report is based on the content of the standard (see above). The test report considered selected clauses of the a.m. standard(s) and experience gained with product testing. It was prepared by TÜV SÜD Product Service GmbH. TUV SUD Group takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.
Test procedure	<input type="checkbox"/> TÜV Mark <input checked="" type="checkbox"/> without certification
Non-standard test method.....	N/A
National deviations	N/A
Number of pages (Report)	14
Number of pages (Attachments).....	N/A
Compiled by.....	Approved by.....
(+ signature)  Mr. Arsis XIN	 (Signature)  Ms. Lucy LU



Test sample	: Linear Ambient Luminaire										
Type of test object	: Fixed										
Trade mark	: Superior Life®										
Model and/or type reference	: 55130 3000K										
Rating(s)	: 120-277VAC, 50/60Hz, 42W										
Manufacturer	: P.Q.L., Inc.										
Manufacturer number	: N/A										
Address	: 2285 Ward Avenue Simi Valley, CA 93065										
Sub-contractors/ tests (clause)	: N/A										
Name	: N/A										
Order description	<table border="1"> <tr> <td><input type="checkbox"/></td> <td>Complete test according to TRF</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Partial test according to manufacturer's specifications</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Preliminary test</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Spot check</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Other:</td> </tr> </table>	<input type="checkbox"/>	Complete test according to TRF	<input checked="" type="checkbox"/>	Partial test according to manufacturer's specifications	<input type="checkbox"/>	Preliminary test	<input type="checkbox"/>	Spot check	<input type="checkbox"/>	Other:
<input type="checkbox"/>	Complete test according to TRF										
<input checked="" type="checkbox"/>	Partial test according to manufacturer's specifications										
<input type="checkbox"/>	Preliminary test										
<input type="checkbox"/>	Spot check										
<input type="checkbox"/>	Other:										
Date of order	: 2015-09-20										
Date of receipt of test item	: 2015-09-23										
Date(s) of performance of test	: 2015-09-24 to 2015-09-30										
Test item particulars (declared):											
DLC Category :	Linear Ambient										
DLC Primary Use:	Direct Linear Ambient Luminaires										
Lamp cap installed :	N/A										
Rated Voltage: (V)	120-277VAC										
Rated Power: (W):	42W										
Rated Power Factor :	N/A										
Rated Luminous Flux : (lm)	N/A										
Rated CCT : (K)	3000										
Rated CRI :	N/A										
Attachments:											
	1. Test Equipment List										
	2. Lighting FactsCM Uniform LM-79 Reporting Template										

General remarks:

"(see remark #)" refers to a remark appended to the report.
 "(see appended table)" refers to a table appended to the report.
 Throughout this report a comma is used as the decimal separator.
 The test results presented in this report relate only to the object tested.
 This report shall not be reproduced except in full without the written approval of the testing laboratory.

TÜV SÜD Certification and Testing (China) Co., Ltd.
 Shanghai Branch is an accredited Test Laboratory (A2LA Lab
 Cert. No.: 3745.01) to IESNA LM-79-08 by A2LA (American
 Association for Laboratory Accreditation).



Cert. No.: 3745.01

Summary of testing:

- deviation(s) found
 no deviations found

Test at 120V/60Hz according to the applicant's instruction.

The specifications are met .

Model:	55130 3000K	
	Integrating Sphere	Goniophotometer
Input Voltage (VAC)	120,2	120,4
Input Current (Amps)	0,3257	0,3274
Input Frequency (Hz)	60	60
Power Factor	0,993	0,9945
Input Power (Watts)	38,85	39,21
Luminous Efficacy (Lumens/Watt)	-	115,07
Luminous Flux (Lumens)	-	4512,1
Beam angle (°)	-	116,1
ZL: 0-60°	-	66,3%
CCT (K)	3107	-
CRI	81,8	-
ISTMT (In-Situ Temp Test) (°C)	-	-



Measured values of PF & THDi at different input voltage

Input Voltage (VAC)	Input Frequency (Hz)	Input Power (Watts)	Power Factor	THDi
120,0	60	38,90	0,9935	3,20%
230,1	60	39,26	0,9428	4,53%
277,0	60	39,80	0,9057	5,61%

Copy of marking plate:

N/A

Picture of the product:



Picture of In-Situ Temp Test

N/A

Characteristic data

N/A



Purpose of the product

Direct linear ambient luminaire for for generally lighting purpose.

Manufacture of Light Source: LG

Model Number of Light Source: LGIT 5630HE

Possible test case verdicts:

- test case does not apply to the test object:: N(.A.) / not included in the order
- test object does meet the requirement.....: P(ass)
- test object does not meet the requirement:: F(ail)

Possible suffixes to the verdicts:

- suffix for detailed information for the client.....:- C(omment)
- suffix for important information for factory inspection...: - M(anufacturing)



Clause	Requirement – Test	Measuring result – Remark	Verdict
2.0	Ambient Conditions		P
2.1	General		P
2.2	Air Temperature		P
2.3	Thermal Condition for Mounting SSL Products		P
2.4	Air Movement		P
3.0	Power Supply Characteristics		P
3.1	Waveshape of AC power supply		P
3.2	Voltage regulation		P
4.0	Seasoning of SSL Product		P
	No seasoning of SSL product		P
5.0	Stabilisation of SSL Product		P
	SSL product has sufficiently satbilised before measurment		P
6.0	Operation Orientation		P
	SSL product shall be stabilized and measured in intended operating orientation		P
7.0	Electrical Settings		P
	SSL product shall be operated at rated voltage		P
	SSL product with dimming capability are tested at maximum input power condition		P
	SSL product with different modes are measured in all relvant modes		N/A
8.0	Electrical Instrumenttions		P
8.1	Circuits		P
8.2	Uncertainties		P
9.0	Testmethodes for Luminous Flux measurment		P
9.1	Integrating sphere with a spectroradiometer (Sphere-spectroradiometer system)		P
9.2	Integrating sphere with a photometer head (Sphere-photometer system)		P
9.3	Goniophotometer		P
10.0	Luminous Intensity Distribution		P
	Reporting acc. to IEC LM-63		P
11.0	Luminous Efficay		P
	Calculation	See table 1	P
12.0	Test Methodes for Color Characteristics of SSL Products		P



Clause	Requirement – Test	Measuring result – Remark	Verdict
	Measurments	See table 1	P
13.0	Uncertainty statement		N/A



Table 1a		Test data	
Model:	55130 3000K		
Rated Voltage (V):	120	Rated Power (W):	N/A
Rated luminous flux (lm):	-	Ambient temperature 25 ±1 (°C):	25,0
Test item	Measured Value		
	Integrating Sphere	Goniophotometer	
Key Photometric Results			
Luminous Efficacy (Lumens/Watt)	-	115,07	
Total Luminous Flux (Lumens)	-	4512,1	
Correlated Color Temperature (CCT:K)	3107	-	
Color Rendering Index (CRI)	81,8	-	
Chromaticity (Chroma x / Chroma y)	0,4265 / 0,3949	-	
Chromaticity (Chroma u / Chroma v)	0,2478 / 0,3441	-	
Chromaticity (Chroma u' / Chroma v')	0,2478 / 0,5161	-	
Duv Value	-0,00223	-	
Stabilization Time (Light and Power)	30	30	
Total Run Time – (Minutes)	35	40	
Spacing Criteria (C/γ)	-	C:45.0° / γ:1.0°	
ZL: 0-60°	-	66,3%	
Electrical Input Results			
Input Power (Watts)	38,85	39,21	
Input Voltage (Volts AC)	120,2	120,4	
Input Current (Amps)	0,3257	0,3274	
Input Frequency (Hertz)	60	60	
Power Factor	0,9930	0,9945	
A-THD (Current – Total Harmonic Distortion)	3,40%	-	
Additional Information			
Ambient Temperature (°C):	25,0	25,0	
Photometric measurement condition	-	-	
Number of hours operated prior to measurement	0h		
ISTMT (In-Situ Temperature Measurement) (°C):	-		
Orientation (burning position)	Base up & center		
Photometric measurement condition	-	-	
Supplementary Information:			
<ul style="list-style-type: none"> - Absorbption Correction used: Yes - Stabilization was considered reached by: the variation (maximum-minimum) of at least 3 readings of the light output and electrical power over a period of 30 minutes is less than 0,5%. 			

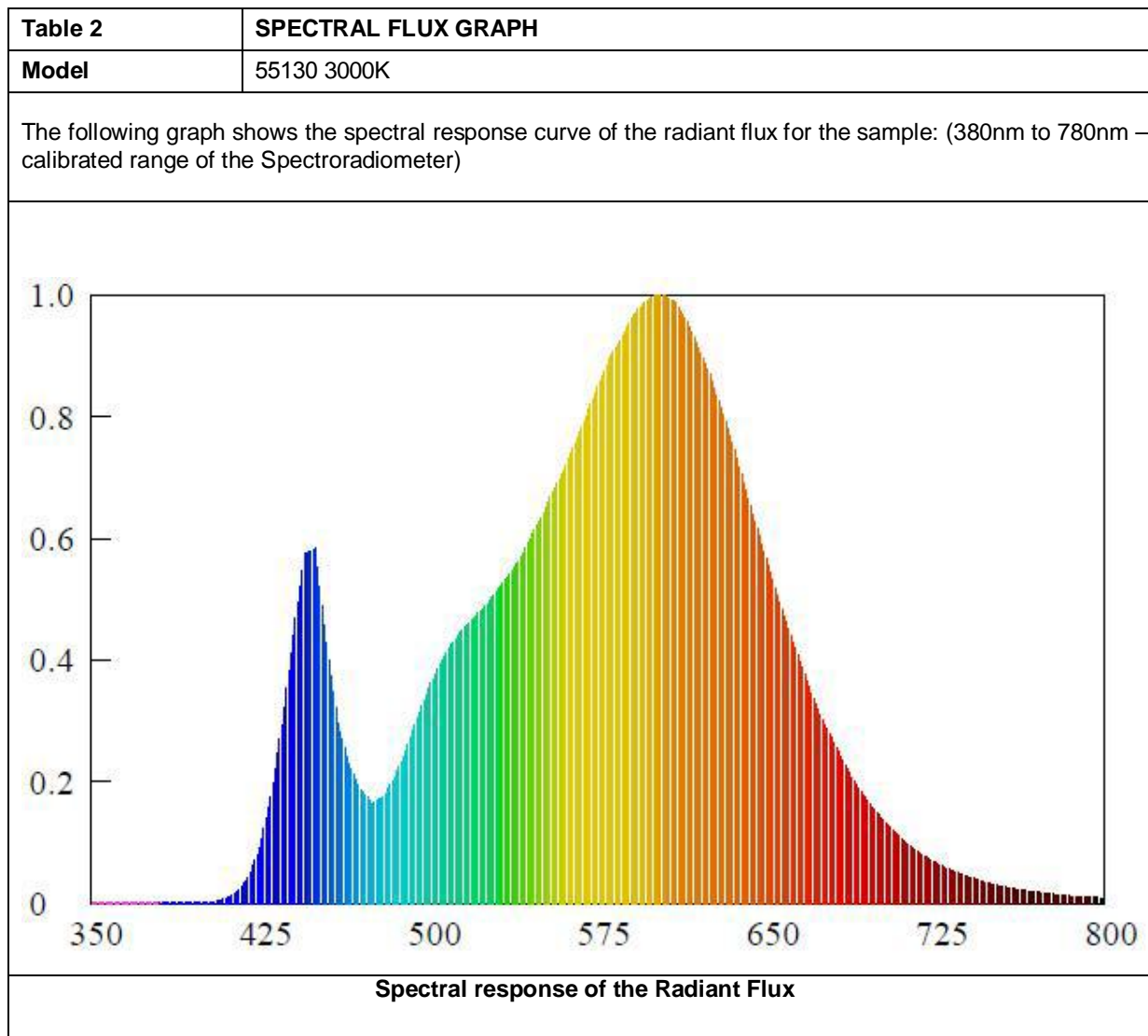




Table 3	CHROMATICITY DIAGRAM
Model	55130 3000K
ANSI 3000K	
Tristimulus values (from Table 1): x / y = 0,4265 / 0,3949 Location is indicated by: The X point.	

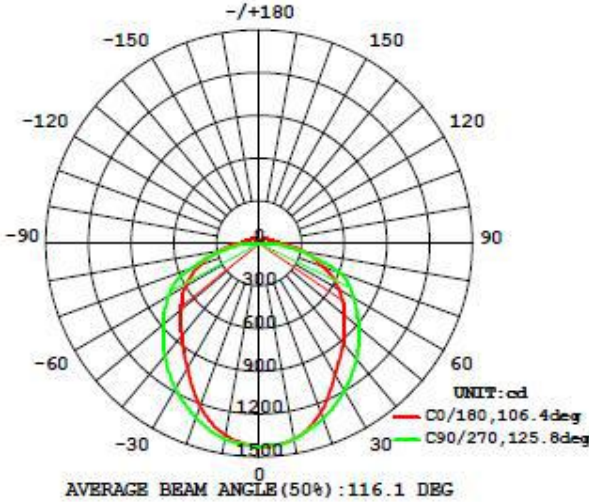
Table 4		LIGHT DISTRIBUTION & ZONAL FLUX DIAGRAM										
Model		55130 3000K										
 <p style="text-align: center;">AVERAGE BEAM ANGLE (50%) : 116.1 DEG</p>												
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	ϕ zone	ϕ total	ϕ lum
10	1398	1404	1397	1381	1371	1381	1397	1397	0- 10	134.3	134.3	2.98
20	1266	1298	1311	1261	1219	1265	1305	1290	10- 20	378.2	512.5	11.4
30	1068	1126	1196	1077	1014	1081	1179	1111	20- 30	550.2	1063	23.6
40	918.6	922.0	1064	872.0	853.3	876.0	1037	909.2	30- 40	636.9	1700	37.7
50	782.7	751.0	917.0	707.1	725.1	704.1	886.5	745.1	40- 50	658.7	2358	52.3
60	648.0	604.1	768.4	572.9	601.7	560.3	737.9	599.4	50- 60	632.4	2991	66.3
70	483.6	473.1	601.5	451.8	444.6	435.4	510.8	464.0	60- 70	558.9	3550	78.7
80	308.4	333.3	265.0	311.5	280.0	301.1	228.8	320.5	70- 80	409.7	3959	87.8
90	162.7	176.3	27.39	161.5	146.2	154.3	19.12	166.9	80- 90	229.8	4189	92.8
100	107.9	110.4	0.3383	109.0	103.3	105.8	4.066	108.6	90-100	106.1	4295	95.2
110	86.29	80.26	0.4791	82.43	83.26	79.22	2.012	80.23	100-110	75.02	4370	96.9
120	69.37	59.02	0.4978	63.60	69.73	61.28	0.4284	59.39	110-120	54.24	4425	98.1
130	55.24	42.69	0.5664	47.99	58.09	50.00	1.357	38.48	120-130	38.00	4463	98.9
140	42.33	29.65	0.7148	34.38	46.10	41.17	9.449	18.32	130-140	25.02	4488	99.5
150	29.70	17.14	0.8501	22.85	33.31	31.20	12.06	5.377	140-150	14.78	4502	99.8
160	17.21	8.032	0.9694	13.39	20.56	20.21	10.14	1.499	150-160	7.116	4509	99.9
170	5.363	1.621	0.8950	4.325	8.747	8.736	3.810	1.437	160-170	2.356	4512	100
180	1.455	1.160	1.219	1.309	1.457	1.465	1.161	1.222	170-180	0.2359	4512	100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



Table 5		LUMINOUS DISTRIBUTION INTENSITY DATA															
Model		55130 3000K															
γ (DEG)	C (DEG)	0	45	90	135	180	225	270	315								
	0	1424	1424	1423	1421	1424	1424	1423	1421								
5	1422	1422	1419	1409	1407	1410	1417	1416									
10	1398	1404	1397	1381	1371	1381	1397	1397									
15	1344	1362	1357	1332	1307	1335	1358	1356									
20	1266	1298	1311	1261	1219	1265	1305	1290									
25	1165	1219	1256	1174	1116	1179	1245	1207									
30	1068	1126	1196	1077	1014	1081	1179	1111									
35	988	1022	1131	971	929	978	1110	1006									
40	919	922	1064	872	853	876	1037	909									
45	850	832	991	785	786	786	962	823									
50	783	751	917	707	725	704	887	745									
55	717	676	842	636	666	629	811	671									
60	648	604	768	573	602	560	738	599									
65	571	538	697	513	527	496	660	531									
70	484	473	601	452	445	435	511	464									
75	393	406	422	385	359	371	396	396									
80	308	333	265	311	280	301	229	320									
85	232	256	144	235	209	227	146	243									
90	163	176	27.4	162	146	154	19.1	167									
95	124	132	0.29	128	119	124	4.88	129									
100	108	110	0.34	109	103	106	4.07	109									
105	96.1	93.9	0.41	94.2	92.2	91.1	3.18	93.0									
110	86.3	80.3	0.48	82.4	83.3	79.2	2.01	80.2									
115	77.4	68.9	0.43	72.5	76.0	69.4	1.42	69.3									
120	69.4	59.0	0.50	63.6	69.7	61.3	0.43	59.4									
125	62.1	50.4	0.54	55.5	63.9	55.0	0.55	49.7									
130	55.2	42.7	0.57	48.0	58.1	50.0	1.36	38.5									
135	48.7	35.9	0.63	41.0	52.2	45.6	6.04	28.4									
140	42.3	29.6	0.71	34.4	46.1	41.2	9.45	18.3									
145	36.0	22.6	0.78	28.3	39.8	36.4	11.4	10.8									
150	29.7	17.1	0.85	22.8	33.3	31.2	12.1	5.38									
155	23.4	12.0	0.92	17.9	26.8	25.8	11.6	1.95									
160	17.2	8.03	0.97	13.4	20.6	20.2	10.1	1.50									
165	11.2	4.22	0.94	8.80	14.6	14.5	7.66	1.48									
170	5.36	1.62	0.90	4.33	8.75	8.74	3.81	1.44									
175	1.11	0.98	1.00	1.06	1.96	2.03	1.33	1.39									
180	1.46	1.16	1.22	1.31	1.46	1.46	1.16	1.22									



Attachment 1



U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information

Name of test lab	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Date of test report	2015-10-10
Test report number	70.402.15.1040.27-01
Laboratory contact name	Ms. Lucy LU
Laboratory contact signature*	

* By signing this form, the signatory is attesting that the information on the form is correct and the same as on the original, complete test report(s).
The signatory also attests that all of the results on this form were measured entirely in accordance with IES LM-79-08.

Product Information

Applicant	P.Q.L., Inc.		
Manufacturer	P.Q.L., Inc.		
Brand name	Superior Life®		
Model number	55130 3000K		
SKU (if available)	N/A		
Type of luminaire (for integral lamps, list base type and lamp type)	Linear Ambient Luminaire		
Luminaire aperture (downlights)	-	<input type="checkbox"/> in. <input type="checkbox"/> mm	
Luminaire length	-	<input type="checkbox"/> in. <input type="checkbox"/> mm	
Luminaire width	-	<input type="checkbox"/> in. <input type="checkbox"/> mm	
Number of units (modular products)	-		

Electrical Measurements	Integrating sphere output (Average)	Goniophotometer output (Average)	
Input wattage	38,85	39,21	W
Input current	0,3257	0,3274	A
Input voltage (AC)	120,2	120,4	V
Power factor	0,9930	0,9945	
Off-state power	-	-	W

Photometric Characteristics

Total initial lumen output	-	4512,1	lm
Initial luminaire efficacy	-	115,07	lm/W
Correlated color temperature / CCT	3107	K	
Color rendering index / CRI	81,8		
Duv	-0,00223		

Luminous Intensity Distribution		Goniophotometer output	
Center beam candlepower (if applicable)		1425,0	cd
Beam angle (if applicable)		116,1	°
Zonal lumens in the 0°-60° zone		66,3	%
Zonal lumens in the 60°-90° zone	-	26,5	%
Zonal lumens in the 90°-120° zone		5,3	%
Zonal lumens in the 120°-180° zone		1,9	%



Attachment 2: Equipment List

No.	Type	Manufacture	Model	Equipment ID	Next Calibration
1	Full-field Speed Goniophotometer	Everfine	GO-R5000	S1207714-YQ	Aug.8.2016
2	High-accuracy Digital Photometer Head	Everfine	ID-1000_P-B/ID-1000_P-C	S1207714a-YQ	Aug.8.2016
3	High-accuracy Digital Photometer Head	Everfine	ID-1000_P-B/ID-1000_P-C	S1207714b-YQ	Aug.8.2016
4	High Accuracy Array Spectroradio Meter	Everfine	HAAS-2000	S1207714c-YQ	Sep.4.2016
5	Standard Light Source	Everfine	D908	S1207714d-YQ	Aug.15.2016
6	Digital Power Meter	Yokogawa	WT310	S1310805-YQ	Nov.30.2016
7	Digital CC & CV DC Power Supply	Everfine	WY12010	S1207714f-YQ	Jul.30.2016
8	Intelligent AC Power Source	Everfine	DPS1060	S1207714g-YQ	May. 18.2016
9	Image Luminance Meter	Everfine	CX-2B_WL	S1207714h-YQ	May. 18.2016
10	DC Power Supply	Everfine	WY3010	S1108624-YQ	May. 18.2016
11	Flux Reference Lamp	Everfine	D204BH	S1108625-YQ	May. 18.2016
12	luminance Source	Everfine	SLS-150	S1108626-YQ	May. 18.2016
13	Thermometer	Fluke	Fluke 52-II	S0712414-YQ	May. 18.2016
Additional info of the Standard light: - HID, Omni, 557,81W, Traceability:NIM					

-- END OF TEST REPORT --