
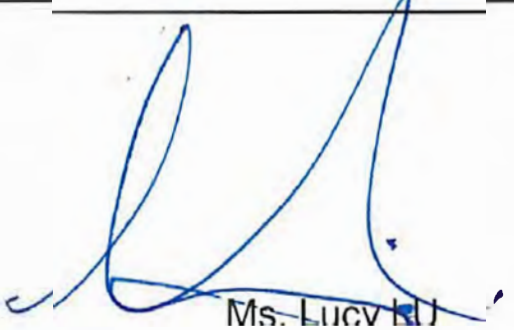




<b>TEST REPORT</b> <b>IES LM-79-08</b> <b>TÜV SÜD Test Report for</b> <b>Electrical and Photometric Measurements of Solid-State Lighting Products</b>	
Report reference No.....	70.402.15.1040.19-02
Date of issue.....	2015-10-08
Project handler.....	Mr. Arsis XIN
Testing laboratory.....	TÜV SÜD Certification 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.  <small>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.</small>
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).....	11
Number of pages (Attachments).....	N/A
Compiled by.....	Approved by.....
(+ signature)  Mr. Arsis XIN	(+ signature)  Ms. Lucy Lau



Test sample .....	Linear Ambient Luminaire	
Type of test object .....	Fixed	
Trade mark .....	P.Q.L., Inc.	
Model and/or type reference .....	55136	
Rating(s) .....	120-277VAC, 50/60Hz, 24W	
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.....	<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 (delared):		
DLC Category :	Linear Ambient	
DLC Primary Use:	Direct Linear Ambient Luminaires	
Lamp cap installed :	N/A	
Rated Voltage: (V)	120-277VAC	
Rated Power: (W):	24W	
Rated Power Factor :	N/A	
Rated Luminous Flux : (lm)	N/A	
Rated CCT : (K)	5000	
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:	55136	
	Integrating Sphere	Goniophotometer
Input Voltage (VAC)	120,1	-
Input Current (Amps)	0,1859	-
Input Frequency (Hz)	60	-
Power Factor	0,996	-
Input Power (Watts)	22,24	-
Luminous Efficacy (Lumens/Watt)	114,97	-
Luminous Flux (Lumens)	2556,94	-
Beam angle (°)	-	-
CCT (K)	5214	-
CRI	83,6	-
ISTMT (In-Situ Temp Test) (°C)	-	-



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.

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		N/A
10.0	Luminous Intensity Distribution		N/A
	Reporting acc. to IEC LM-63		N/A
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		
<b>Model:</b>	55136		
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	
<b>Key Photometric Results</b>			
Luminous Efficacy (Lumens/Watt)	114,97	-	
Total Luminous Flux (Lumens)	2556,94	-	
Correlated Color Temperature (CCT:K)	5214	-	
Color Rendering Index (CRI)	83,6	-	
Chromaticity (Chroma x / Chroma y)	0,3397 / 0,3525	-	
Chromaticity (Chroma u / Chroma v)	0,2074 / 0,3229	-	
Chromaticity (Chroma u' / Chroma v')	0,2074 / 0,4843	-	
Duv Value	+0,00266	-	
Stabilization Time (Light and Power)	30	-	
Total Run Time – (Minutes)	35	-	
Spacing Criteria (C/γ)	-	-	
ZL: 0-60°	-	-	
<b>Electrical Input Results</b>			
Input Power (Watts)	22,24	-	
Input Voltage (Volts AC)	120,1	-	
Input Current (Amps)	0,1859	-	
Input Frequency (Hertz)	60	-	
Power Factor	0,996	-	
A-THD (Current – Total Harmonic Distortion)	-	-	
<b>Additional Information</b>			
Ambient Temperature (°C):	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"> <li>- Absorbion Correction used: Yes</li> <li>- 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%.</li> </ul>			

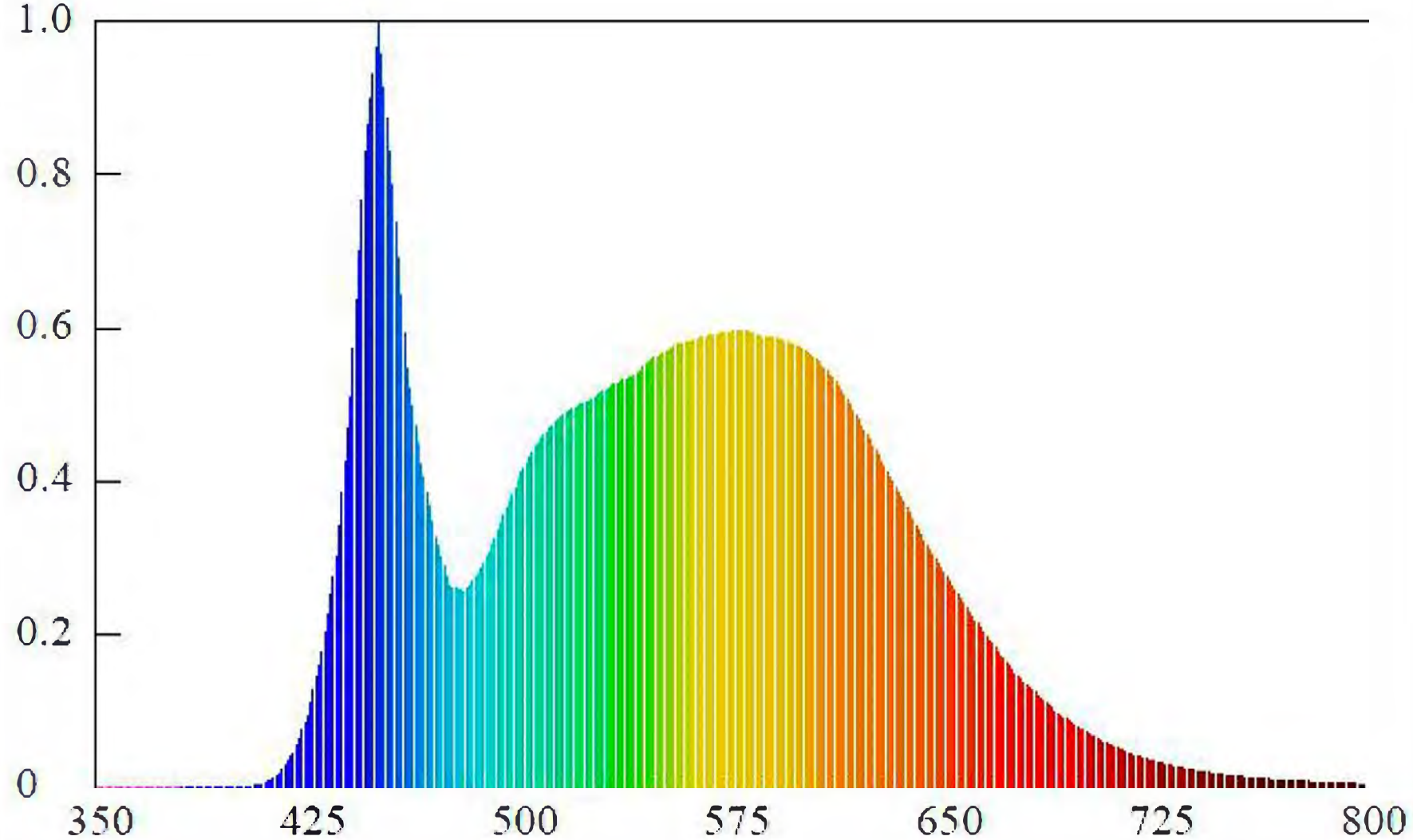
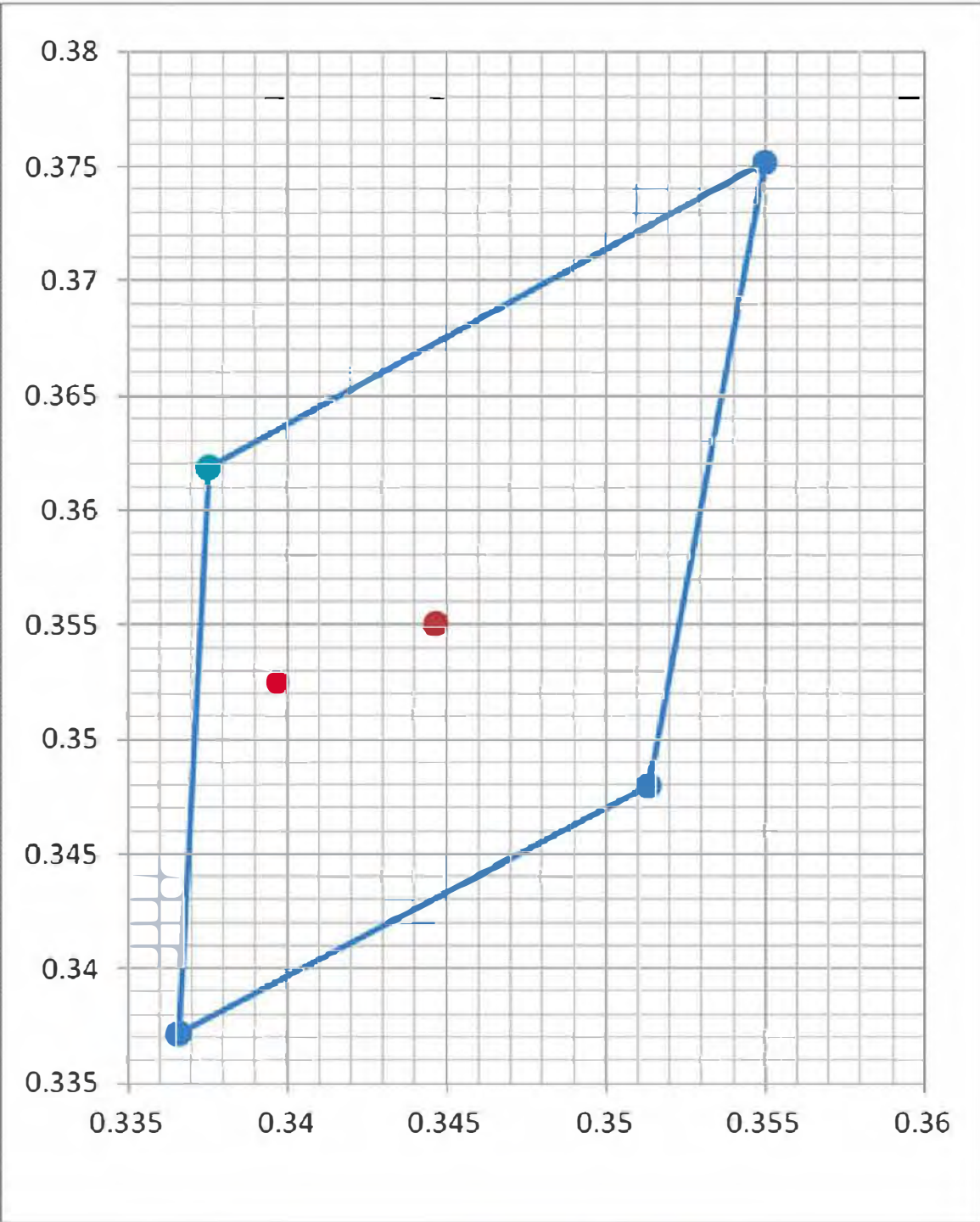
<b>Table 2</b>	<b>SPECTRAL FLUX GRAPH</b>
<b>Model</b>	55136
<p>The following graph shows the spectral response curve of the radiant flux for the sample: (380nm to 780nm – calibrated range of the Spectroradiometer)</p>	
	
<p><b>Spectral response of the Radiant Flux</b></p>	





Table 3	CHROMATICITY DIAGRAM
Model	55136
<b>ANSI 5000K</b> 	
<b>Tristimulus values (from Table 1):</b> <b><math>x / y = 0,3467 / 0,3559</math></b> <b>Location is indicated by: The X point.</b>	



**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	2015-10-08
Test report number	70.402.15.1040.19-02
Laboratory contact name	Ms Lucy LJ
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	55136		
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	22,24	-	W
Input current	0,1859	-	A
Input voltage (AC)	120,1	-	V
Power factor	0,996	-	
Off-state power	-	-	W

**Photometric Characteristics**

Total initial lumen output	2556,94	-	lm
Initial luminaire efficacy	114,97	-	lm/W
Correlated color temperature / CCT	5214	K	
Color rendering index / CRI	83,6		
Duv	+0,00266		

**Luminous Intensity Distribution**

		Goniophotometer output	
Center beam candlepower (if applicable)		-	cd
Beam angle (if applicable)		-	°
Zonal lumens in the 0°-60° zone		-	%
Zonal lumens in the 60°-90° zone	-	-	%
Zonal lumens in the 90°-120° zone		-	%
Zonal lumens in the 120°-180° zone		-	%



**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 --