Quality Assured

NVLAP LAB CODE 200960-0

LM-79-08 Test Report

for

Philips (China) Investment Co., Ltd.

Building 9, Lane 888, Tianlin Road
Shanghai, China

InstantFit LEDtube

Model: 9290011811

(with the ballast ICF-2S26-H1-LD)

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

No.1805, DongLiu road, BinJiang District, Hangzhou, China
Tel: +86-571-56680806
www.ledtestlab.com

Report No.: HZ15070027f

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Review by:

Engineer: April Zou
Jul. 22, 2015

Approved by:

LEADING TESTING LABORATORIES

Manager: Jim Zhang
Jul. 22, 2015

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Test Summary

Sample Tested: **9290011811 (with the ballast ICF-2S26-H1-LD)**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
83.6	1210.0	14.47	0.9932

CCT (K)	CRI	Stabilization Time (Light & Power)
2653	81.5	60

Table 1: Executive Data Summary

Note: The above results are recorded/ derived from measurements made using an Integrating Sphere.

Test specifications:

Date of Receipt : Jul. 16, 2015

Date of Test : Jul. 20, 2015 to Jul. 21, 2015

Test item : Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters

Reference Standard : IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

TABLE OF CONTENT

Sample Photos

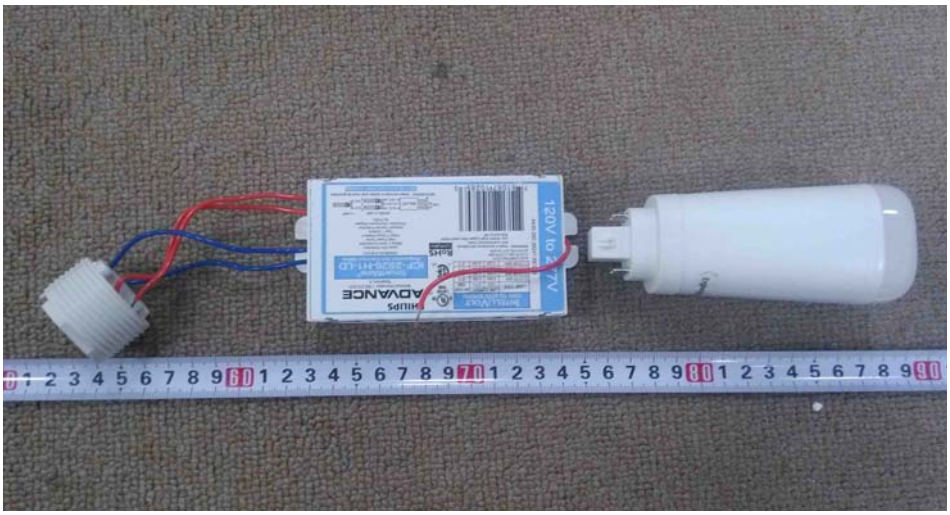


Figure 1- Overview of the sample

Equipment Under Test (EUT)	
Name	: InstantFit LEDtube
Model	: 9290011811 (with the ballast ICF-2S26-H1-LD)
Electrical Ratings	: 120V, 60Hz, 10.5W
Product Description	: 2700K, Frosted plastic lens, 10.5PL-C/T LED/26V-2700 IF 4P 10/1 LED lamps supplied by a high frequency fluoresent lamp ballast: Philips ICF-2S26-H1-LD
Manufacturer	: Philips (China) Investment Co., Ltd.
Address	: Building 9, Lane 888, Tianlin Road Shanghai, China

TEST RESULTS

Test ambient temperature was 24.8℃.

Base orientation was Light down. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 60 minutes, and the total operating time including stabilization was 65 minutes.

Sphere-Spectroradiometer Method

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.121
Power Factor	0.9932
Test Power (W)	14.47
Luminous Efficacy (lm/W)	83.6
THD A%	6.80
Total Luminous Flux (lm)	1210.0
Color Rendering Index (CRI)	81.5
R9	7.4
Correlated Color Temperature (CCT) (K)	2653
Chromaticity Chroma x	0.4653
Chromaticity Chroma y	0.4144
Chromaticity Chroma u	0.2643
Chromaticity Chroma v	0.3531
Duv	0.0009
Chromaticity Chroma u ’	0.2643
Chromaticity Chroma v’	0.5296

Special Color Rendering Indices	
R1	79.6
R2	91
R3	95.6
R4	78.1
R5	79.6
R6	89.6
R7	81.6
R8	56.9
R9	7.4
R10	79.9
R11	76.6
R12	73.3
R13	82.1
R14	98.3

Table 2: Test data per Sphere-Spectroradiometer Method

Note: According to CIE 1976 (u’,v’) diagram, u’ = u = 4x/(-2x+12y+3), v’ = 3v/2 = 9y/(-2x+12y+3).

Goniophotometer Method

Test ambient temperature was 25.2℃.

The photometric distance is 2.475m.

Luminous data was taken at 0.5°vertical intervals and 10°horizontal intervals.

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.122
Power Factor	0.9928
Test Power (W)	14.47
Luminous Efficacy (lm/W)	82.5
Total Luminous Flux (lm)	1194.2
Beam Angle (°)	128.9 (0°-180°)/129.0(90°-270°)
Center Beam Candle Power (cd)	279
Maximum Beam Candle Power (cd)	279.4 (At: C=40.0, Gamma=0.5)
Spacing Criteria	1.31 (0°-180°)/ 1.32 (90°-270°)
Zonal Lumens in the 0°-60°Zone	57.59%
Zonal Lumens in the 60°-90°Zone	26.54%
Zonal Lumens in the 90°-120°Zone	11.34%
Zonal Lumens in the 120°-180°Zone	4.53%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

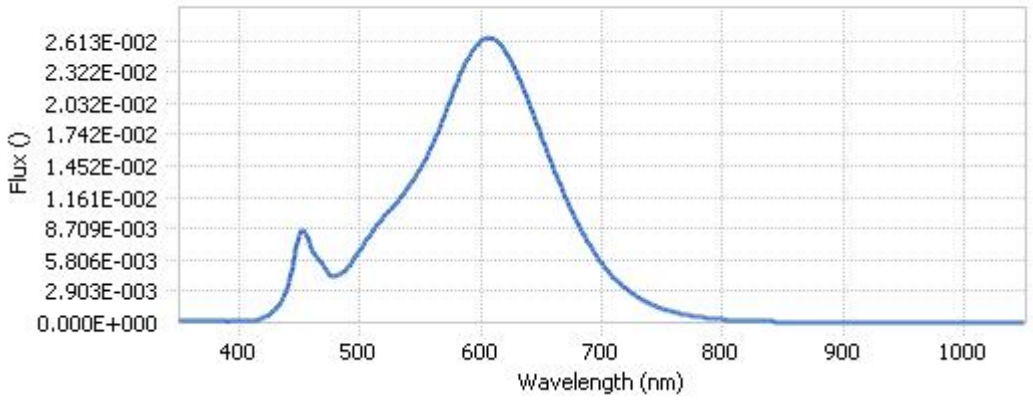
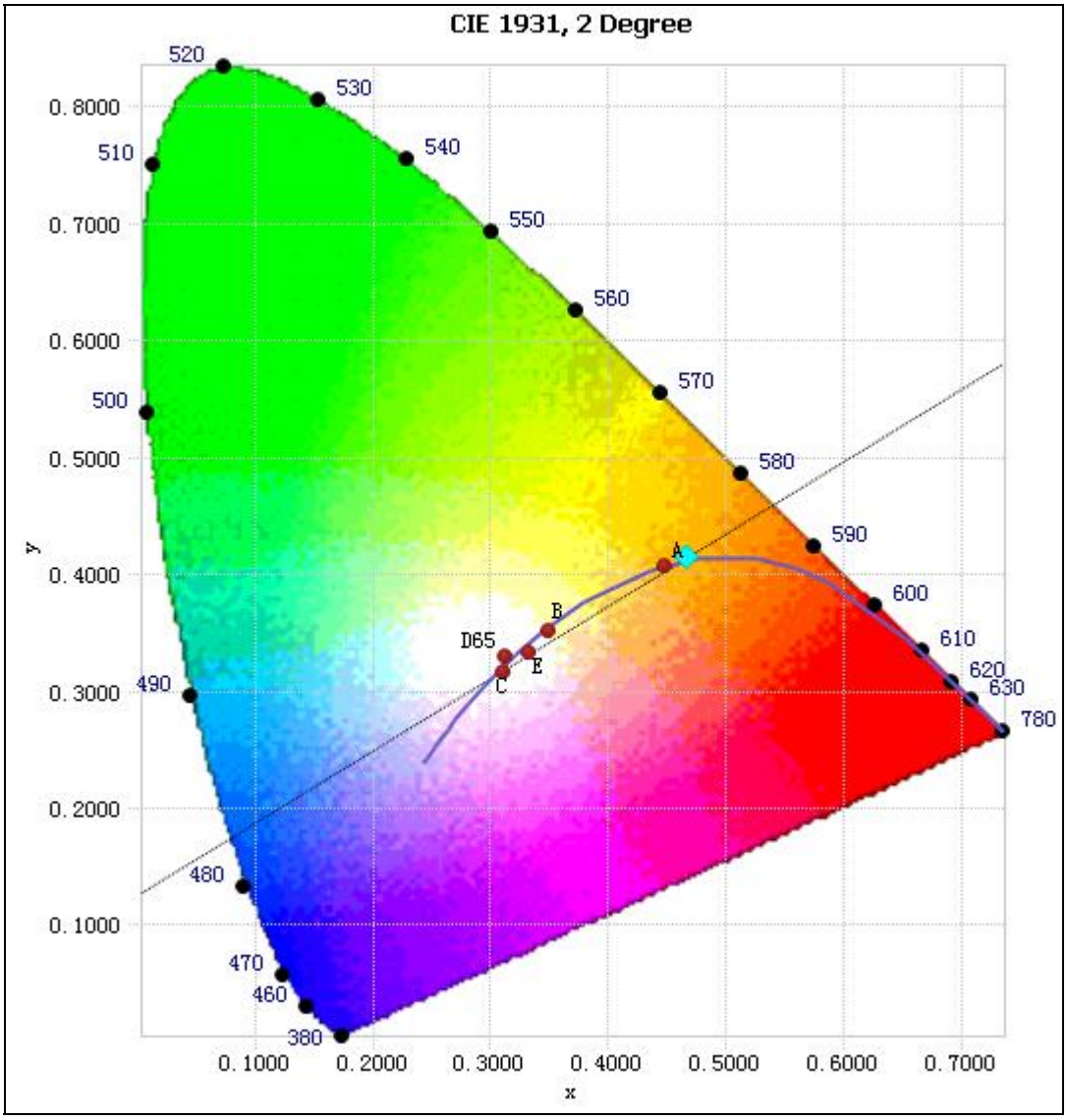


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.27E-04	485	4.64E-03	590	2.46E-02	695	6.30E-03
385	1.15E-04	490	5.15E-03	595	2.55E-02	700	5.49E-03
390	8.37E-05	495	5.93E-03	600	2.60E-02	705	4.78E-03
395	1.20E-04	500	6.75E-03	605	2.64E-02	710	4.17E-03
400	1.31E-04	505	7.60E-03	610	2.63E-02	715	3.64E-03
405	1.29E-04	510	8.38E-03	615	2.59E-02	720	3.15E-03
410	1.67E-04	515	9.18E-03	620	2.52E-02	725	2.76E-03
415	2.71E-04	520	9.84E-03	625	2.43E-02	730	2.37E-03
420	4.77E-04	525	1.05E-02	630	2.31E-02	735	2.04E-03
425	7.94E-04	530	1.11E-02	635	2.17E-02	740	1.75E-03
430	1.25E-03	535	1.18E-02	640	2.04E-02	745	1.52E-03
435	2.01E-03	540	1.26E-02	645	1.89E-02	750	1.30E-03
440	3.30E-03	545	1.34E-02	650	1.74E-02	755	1.13E-03
445	5.79E-03	550	1.43E-02	655	1.58E-02	760	9.71E-04
450	8.27E-03	555	1.54E-02	660	1.44E-02	765	8.31E-04
455	8.21E-03	560	1.65E-02	665	1.30E-02	770	7.14E-04
460	6.74E-03	565	1.78E-02	670	1.16E-02	775	6.18E-04
465	5.96E-03	570	1.93E-02	675	1.03E-02	780	5.34E-04
470	5.14E-03	575	2.07E-02	680	9.22E-03		
475	4.44E-03	580	2.21E-02	685	8.13E-03		
480	4.35E-03	585	2.34E-02	690	7.16E-03		

Table 4: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4653, 0.4144)

Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

Note: The location on the diagram of the tristimulus coordinates are indicated by the blue diamond.

Nominal CCT Quadrangles – Sphere Spectroradiometer Method

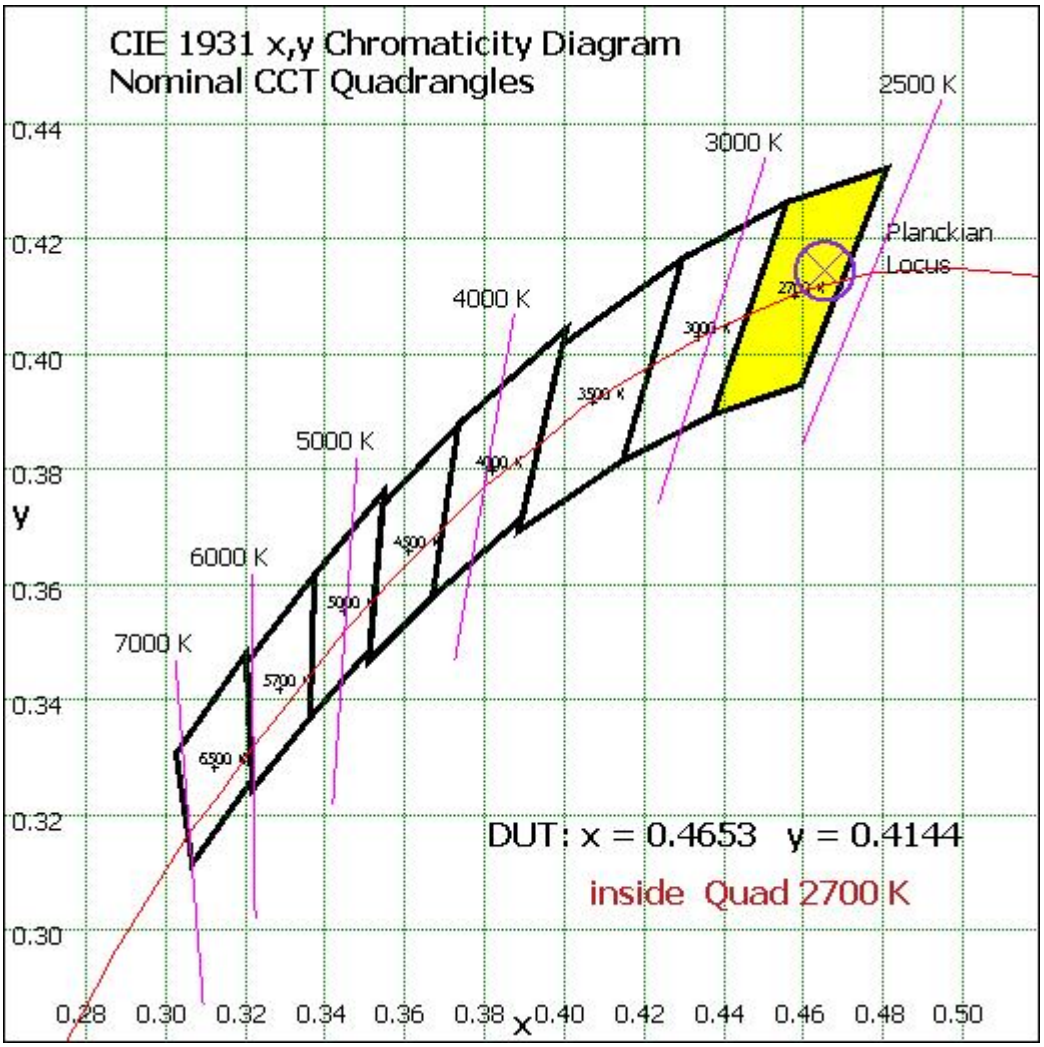


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

γ(°)	Lumens	% Total
0- 10	26.519	2.22%
10- 20	76.859	6.44%
20- 30	118.817	9.95%
30- 40	147.691	12.37%
40- 50	160.73	13.46%
50- 60	157.123	13.16%
60- 70	138.022	11.56%
70- 80	106.251	8.90%
80- 90	72.663	6.08%
90-100	55.411	4.64%
100-110	45.174	3.78%
110-120	34.859	2.92%
120-130	24.909	2.09%
130-140	15.994	1.34%
140-150	8.711	0.73%
150-160	3.581	0.30%
160-170	0.872	0.07%
170-180	0.048	0.00%
Total	1194.2	100%

γ(°)	Lumens	% Total
0- 60	687.739	57.59%
60- 90	316.936	26.54%
0-90	1004.675	84.13%
90- 180	189.559	15.87%
0- 180	1194.2	100%

Table 5: Zonal Lumen Data

Illuminance Plots- Goniophotometer Method

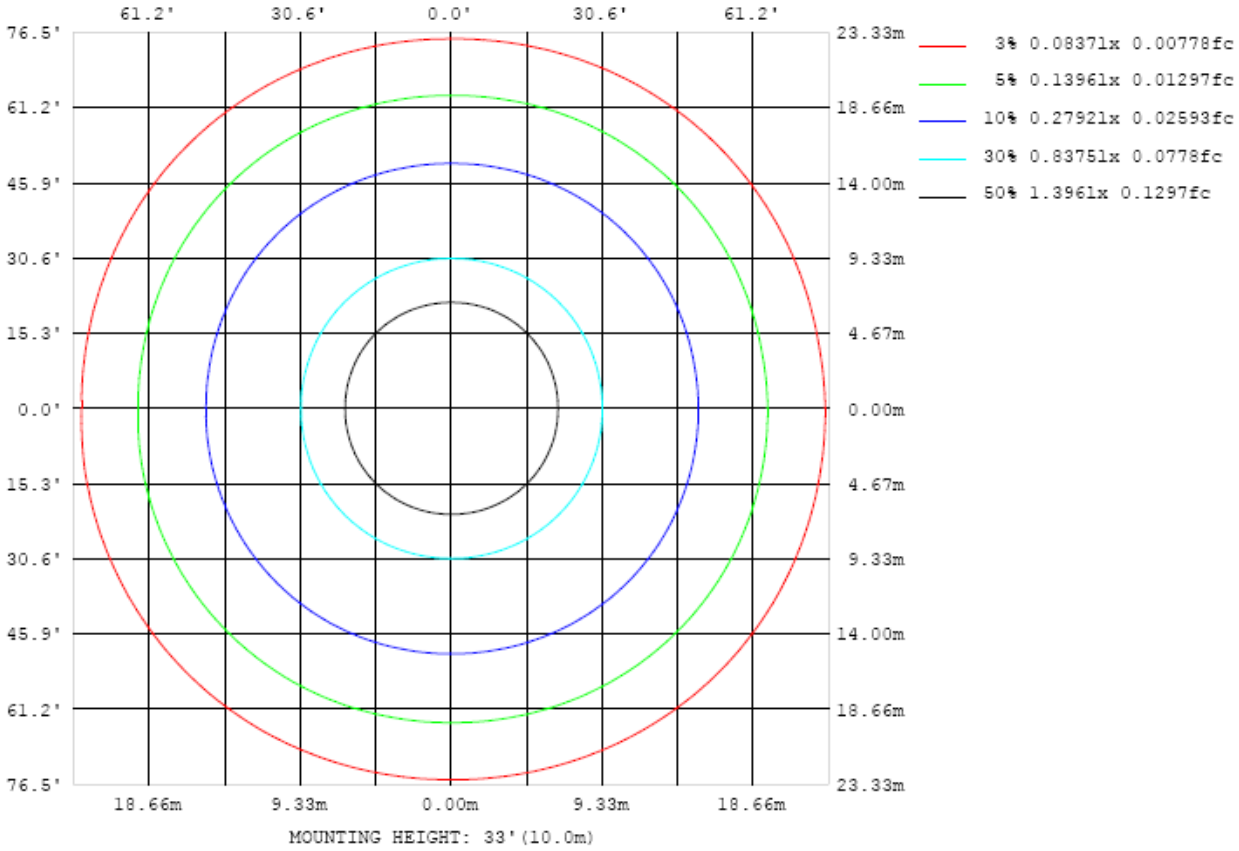


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

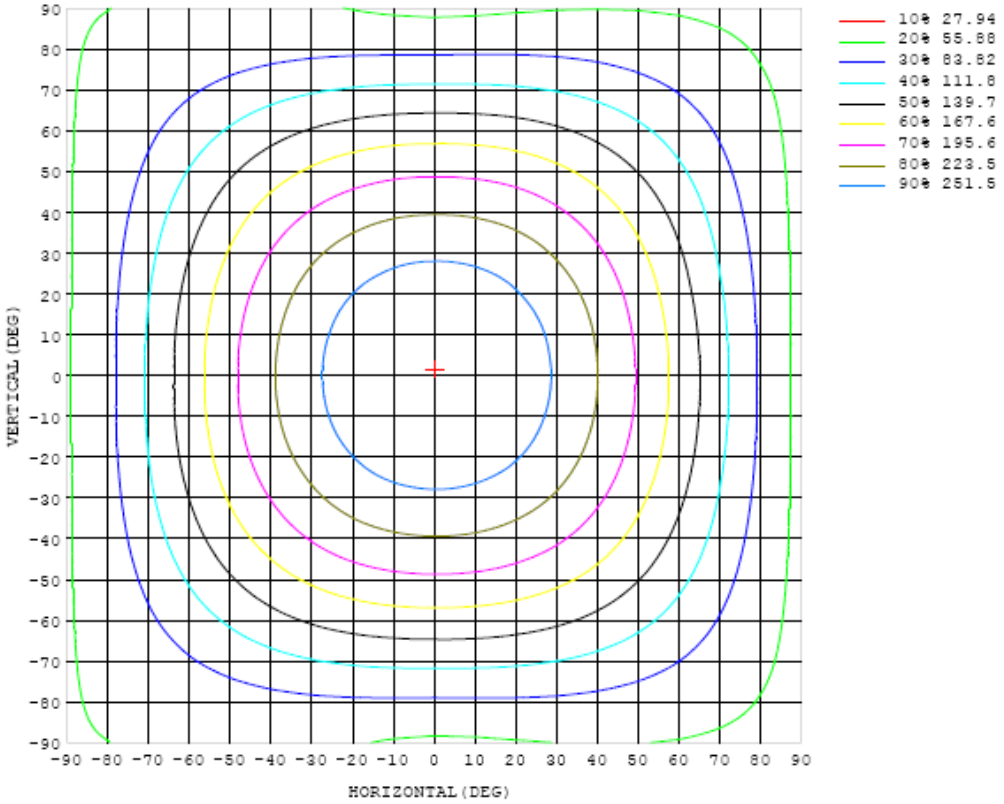


Chart 5: Isocandela Plot

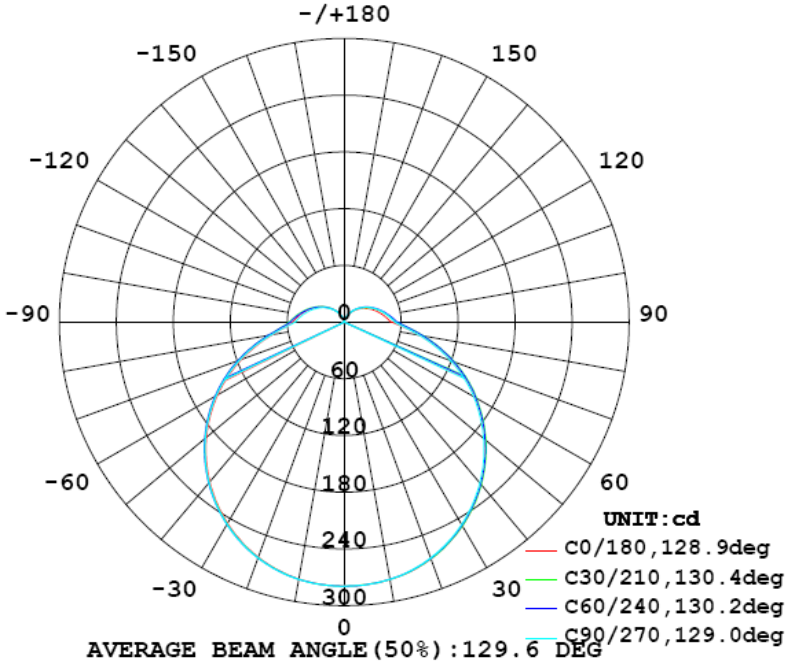


Chart 6: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1 UNIT: cd

C(DEG) / γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279
5	279	279	279	278	278	279	279	278	279	279	279	279	279	278	278	278	279	279	279
10	277	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276
15	272	272	272	273	273	272	272	272	272	272	272	272	272	272	272	272	272	271	271
20	267	267	266	266	266	266	266	266	266	266	265	265	266	265	265	265	265	265	265
25	258	258	258	259	259	258	258	258	257	257	257	257	257	257	257	257	256	256	256
30	249	249	249	249	249	249	248	248	247	247	247	247	247	247	247	247	246	246	246
35	237	237	237	237	237	237	236	236	235	235	235	235	236	236	235	235	235	234	234
40	224	224	224	224	224	224	223	223	222	222	222	222	222	222	222	222	221	221	220
45	209	210	210	210	210	210	209	208	208	207	207	208	208	208	208	207	207	206	206
50	193	194	194	195	195	194	194	193	192	192	192	192	193	192	192	192	191	190	190
55	176	177	178	178	178	178	177	176	175	175	175	175	176	176	176	175	174	173	172
60	159	159	160	161	161	161	160	159	158	157	158	158	159	159	159	158	157	156	154
65	140	141	142	143	143	143	142	140	139	139	139	140	140	141	140	139	138	137	135
70	120	121	122	123	124	123	122	121	120	119	120	120	121	121	121	120	119	117	115
75	100	101	103	104	104	104	103	102	100	99.3	100.0	101	102	102	102	101	99.4	97.8	95.6
80	80.6	81.7	83.4	84.7	85.3	85.2	84.2	82.8	81.1	80.2	81.1	82.5	83.5	83.9	83.6	82.5	81.0	79.2	76.9
85	62.9	64.2	66.0	67.6	68.3	68.3	67.5	66.2	64.6	63.8	64.9	66.5	67.9	68.4	68.2	67.3	65.7	64.0	62.7
90	50.3	51.6	53.5	55.2	56.2	56.5	56.0	55.0	53.9	53.5	54.8	56.8	58.4	59.3	59.4	58.7	57.3	55.8	55.0
95	45.5	46.5	48.3	50.0	51.0	51.5	51.2	50.4	49.5	49.4	50.4	52.1	53.6	54.5	54.6	53.9	52.7	51.5	50.8
100	42.0	42.8	44.3	45.8	46.8	47.3	47.0	46.3	45.7	45.6	46.4	47.9	49.2	50.0	50.1	49.5	48.5	47.4	46.8
105	38.6	39.2	40.6	41.9	42.8	43.2	43.0	42.5	42.0	41.9	42.6	43.8	45.0	45.7	45.8	45.3	44.3	43.4	43.0
110	35.3	35.8	36.9	38.1	39.0	39.3	39.2	38.7	38.3	38.3	38.8	39.9	40.9	41.5	41.6	41.1	40.3	39.6	39.1
115	32.0	32.4	33.4	34.4	35.2	35.5	35.4	35.0	34.7	34.7	35.1	36.0	36.9	37.4	37.5	37.1	36.4	35.7	35.3
120	28.8	29.1	29.9	30.8	31.5	31.8	31.7	31.4	31.1	31.1	31.4	32.2	32.9	33.4	33.4	33.0	32.5	31.9	31.6
125	25.5	25.8	26.5	27.3	27.8	28.1	28.0	27.8	27.6	27.6	27.8	28.4	29.0	29.4	29.4	29.1	28.6	28.1	27.8
130	22.4	22.6	23.1	23.8	24.2	24.5	24.4	24.2	24.1	24.1	24.2	24.7	25.1	25.5	25.5	25.2	24.8	24.4	24.2
135	19.3	19.4	19.9	20.4	20.7	20.9	20.9	20.8	20.6	20.6	20.7	21.0	21.4	21.6	21.6	21.4	21.1	20.8	20.5
140	16.2	16.3	16.7	17.0	17.3	17.5	17.5	17.4	17.3	17.3	17.3	17.5	17.8	17.9	17.9	17.7	17.4	17.2	17.0
145	13.2	13.3	13.5	13.8	14.0	14.1	14.1	14.0	14.0	14.0	13.9	14.0	14.2	14.3	14.2	14.1	13.9	13.7	13.6
150	10.4	10.4	10.6	10.7	10.9	11.0	11.0	10.9	10.9	10.9	10.8	10.8	10.9	10.9	10.8	10.7	10.6	10.5	10.0
155	7.74	7.75	7.82	7.94	8.02	8.08	8.07	8.04	8.00	7.98	7.90	7.83	7.82	7.80	7.74	7.64	7.59	6.67	3.91
160	5.35	5.35	5.35	5.39	5.43	5.46	5.44	5.42	5.39	5.38	5.30	5.18	5.10	5.04	4.97	4.90	4.64	4.40	4.43
165	3.28	3.29	3.26	3.25	3.24	3.24	3.22	3.19	3.17	3.16	3.10	2.99	2.88	2.78	2.70	2.54	2.31	2.15	1.34
170	1.62	1.65	1.63	1.58	1.53	1.51	1.49	1.41	1.29	1.44	1.29	1.23	1.14	1.06	0.93	0.76	0.68	0.70	0.57
175	0.24	0.38	0.32	0.26	0.27	0.26	0.24	0.27	0.32	0.24	0.24	0.24	0.25	0.25	0.25	0.24	0.24	0.24	0.24
180	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23

Table 6: Luminous Intensity Data

Table--2 UNIT: cd

C(DEG) / γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279		
5	278	278	279	279	278	279	279	279	279	279	279	279	279	279	279	279	279		
10	276	276	276	276	276	276	276	276	276	276	276	277	277	277	277	277	277		
15	271	271	272	272	272	272	272	272	272	272	272	273	273	272	273	273	273		
20	265	265	265	266	265	266	266	266	266	266	266	266	267	267	267	267	266		
25	256	257	257	257	257	257	257	257	257	257	258	258	259	258	259	259	259		
30	246	246	247	247	247	247	247	247	247	247	248	248	249	249	249	249	249		
35	234	234	235	235	236	235	235	235	235	236	236	237	237	237	237	237	237		
40	221	221	222	222	222	222	222	222	222	222	223	224	224	224	224	224	224		
45	206	206	207	208	208	208	207	207	207	208	208	209	210	210	210	210	209		
50	190	191	191	192	192	192	192	191	191	192	193	194	194	194	194	194	193		
55	173	174	175	175	175	175	175	174	174	175	176	177	178	178	178	177	176		
60	155	156	157	157	158	157	157	156	156	157	158	159	160	160	160	159	158		
65	136	137	138	139	139	139	138	137	137	138	139	140	141	141	141	140	139		
70	116	117	119	120	120	119	118	118	117	118	120	121	122	122	121	121	119		
75	96.5	98.1	99.4	100	100	100.0	99.0	97.9	97.2	98.3	100.0	101	102	102	102	101	99.4		
80	78.0	79.7	81.1	82.0	82.1	81.5	80.2	78.8	78.0	79.3	81.1	82.5	83.4	83.4	82.8	81.5	80.0		
85	63.7	65.3	66.7	67.4	67.3	66.5	65.0	63.3	62.4	63.5	65.2	66.5	67.3	67.1	66.3	64.8	63.2		
90	55.8	57.1	58.3	58.8	58.4	57.2	55.5	53.5	52.3	52.9	54.2	55.2	55.5	55.2	54.1	52.5	50.8		
95	51.4	52.6	53.6	54.0	53.6	52.5	50.9	49.2	48.3	48.6	49.6	50.4	50.6	50.2	49.1	47.5	46.0		
100	47.3	48.3	49.2	49.5	49.2	48.1	46.7	45.2	44.5	44.7	45.5	46.2	46.4	46.0	45.0	43.6	42.3		
105	43.3	44.1	44.9	45.2	44.9	44.0	42.7	41.5	40.9	41.0	41.7	42.3	42.4	42.0	41.2	39.9	38.8		
110	39.4	40.1	40.8	41.1	40.8	40.0	38.8	37.8	37.3	37.5	38.0	38.5	38.6	38.2	37.4	36.3	35.4		
115	35.6	36.2	36.7	36.9	36.7	36.0	35.0	34.2	33.8	33.9	34.3	34.7	34.8	34.5	33.8	32.9	32.1		
120	31.7	32.2	32.7	32.9	32.7	32.1	31.3	30.6	30.3	30.4	30.7	31.1	31.1	30.8	30.2	29.4	28.8		
125	28.0	28.4	28.8	29.0	28.8	28.2	27.6	27.0	26.8	26.8	27.2	27.4	27.5	27.2	26.7	26.1	25.5		
130	24.2	24.5	24.9	25.0	24.9	24.5	23.9	23.5	23.3	23.4	23.7	23.9	23.9	23.7	23.3	22.7	22.3		
135	20.6	20.8	21.1	21.2	21.1	20.8	20.4	20.0	20.0	20.0	20.2	20.4	20.4	20.3	19.9	19.5	19.2		
140	17.0	17.2	17.4	17.5	17.4	17.2	16.9	16.7	16.6	16.7	16.8	17.0	17.0	16.9	16.6	16.3	16.1		
145	13.5	13.7	13.8	13.9	13.9	13.7	13.5	13.4	13.5	13.5	13.6	13.7	13.8	13.7	13.5	13.3	13.1		
150	5.18	9.34	9.82	10.4	10.5	10.5	10.4	10.4	10.4	10.4	10.5	10.6	10.7	10.6	10.5	10.3	10.3		
155	5.59	7.23	6.68	6.95	7.42	7.46	7.44	7.50	7.58	7.60	7.67	7.74	7.77	7.76	7.71	7.63	7.64		
160	4.58	4.56	4.46	4.18	4.59	4.78	4.82	4.93	5.01	5.04	5.10	5.15	5.18	5.19	5.19	5.17	5.23		
165	1.29	1.51	1.63	1.69	1.96	2.33	2.60	2.78	2.86	2.89	2.91	2.96	3.01	3.05	3.08	3.11	3.18		
170	0.38	0.28	0.23	0.24	0.27	0.45	0.84	1.08	1.20	1.23	1.20	1.17	1.20	1.28	1.39	1.48	1.56		
175	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.36		
180	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Sep. 18, 2014	Sep. 17, 2015
Digital Power Meter	PF2010A	HZTE028-01	Sep. 18, 2014	Sep. 17, 2015
AC Power Supply	PCR 500L	HZTE001-08	Sep. 18, 2014	Sep. 17, 2015
DC Power Supply	WY12010	HZTE004-03	Sep. 18, 2014	Sep. 17, 2015
Temperature Meter	TES1310	HZTE017-01	Sep. 18, 2014	Sep. 17, 2015
Standard source	D908	HZTE012-01	Sep. 18, 2014	Sep. 17, 2015
Integrate Sphere system	2M	HZTE015-01	Sep. 18, 2014	Sep. 17, 2015
Digital Power Meter	WT210	HZTE008-01	Sep. 18, 2014	Sep. 17, 2015
AC Power Supply	PCR 500L	HZTE001-07	Sep. 18, 2014	Sep. 17, 2015
DC Power Supply	6154	HZTE004-04	Sep. 18, 2014	Sep. 17, 2015
Temperature and humidity recorder	JR900	HZTE018-01	Sep. 18, 2014	Sep. 17, 2015
Standard source	SCL-1400	HZTE012-02	Sep. 18, 2014	Sep. 17, 2015

Table 8: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.
Therefore, no seasoning was performed.

Sphere-Spectroradiometer Method- Photometric and Electrical Measurements

A Labsphere Model CDS 2100 Spectroradiometer and Two Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit. The coating reflectance of each sphere is 98%. The measure geometry is 4π. Self-absorption correction is conducted in testing. Bandwidth of spectroradiometer is 350nm-1050nm.
Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.
The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.
Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.
The standard reference of the integrated sphere system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Standards and Technology.
The uncertainty of integrating sphere system reported in this document is expended uncertainty is 1.06% with a coverage factor k=2.

Goniophotometer Method

Photometric and Electrical Measurements

An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.
Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.
The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.
Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.
Some graphics were created with Photometric Plus software.
The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.
The uncertainty of goniophotometer system reported in this document is expended uncertainty is 1.94% with a coverage factor k=2.

Color Characteristics Measurements

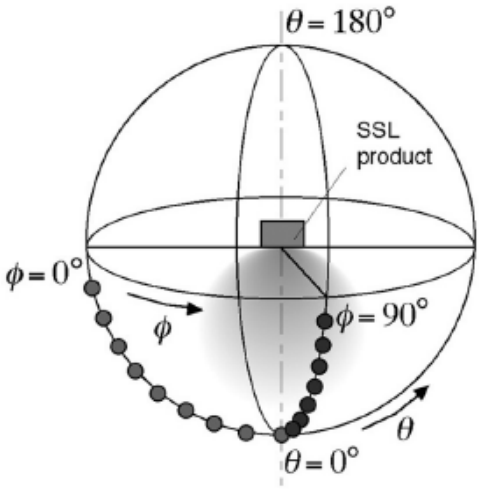
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

Color Spatial Uniformity

The characteristics of SSL products may be spatially non-uniform, the chromaticity coordinate shall be measured at two vertical planes (C=0°/180° and C=90°/270°) and at 10° or less intervals for vertical angle until the light output dropped to below 10% of the peak intensity. The averaged weighted chromaticity coordinate was calculated from these points. The data was then analyzed to check for delta color differences of the u', v' chromaticity coordinates. The spatial non-uniformity of chromaticity, Δu'v', is determined as the maximum deviation (distance on the CIE (u', v') diagram) among all measured points from the spatially averaged

chromaticity coordinate.

The geometry for the chromaticity measurement using gonio-spectroradiometer is shown as following.



*** End of Report ***