



LM-79-08 Test Report

for

Philips (China) Investment Co., Ltd.

Building 9, Lane 888, Tianlin Road
Shanghai, China

InstantFit LEDtube

Model: 9290011813

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

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ15070027h

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:



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: **9290011813 (with the ballast ICF-2S26-H1-LD)**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
91.6	1330.0	14.52	0.9933
CCT (K)	CRI	Stabilization Time (Light & Power)	
3429	82.8	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

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Sample Photos

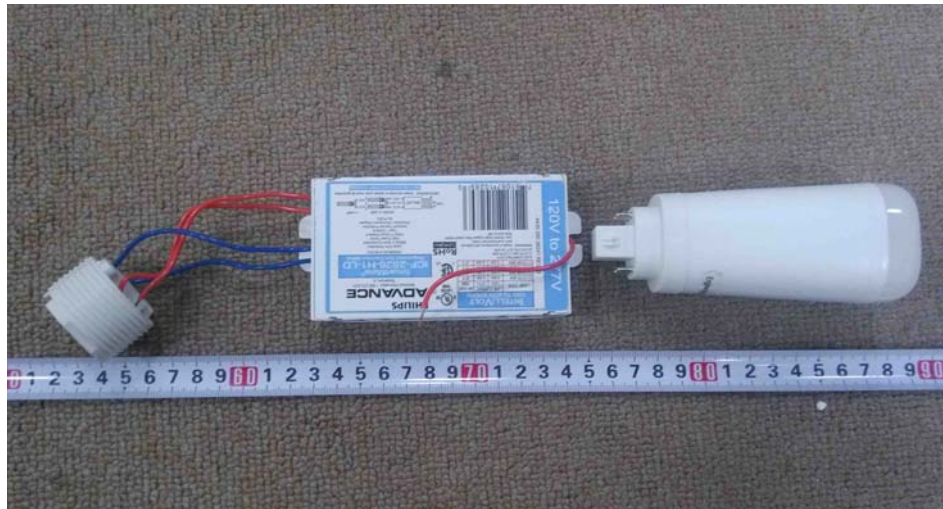


Figure 1- Overview of the sample

Equipment Under Test (EUT)

Name	: InstantFit LEDtube
Model	: 9290011813 (with the ballast ICF-2S26-H1-LD)
Electrical Ratings	: 120V, 60Hz, 10.5W
Product Description	: 3500K, Frosted plastic lens, 10.5PL-C/T LED/26V-3500 IF 4P 10/1 LED lamps supplied by a high frequency fluorescent 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 24.9°C.

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)	0.122
Power Factor	0.9933
Test Power (W)	14.52
Luminous Efficacy (lm/W)	91.6
THD A%	6.78
Total Luminous Flux (lm)	1330.0
Color Rendering Index (CRI)	82.8
R9	8.2
Correlated Color Temperature (CCT) (K)	3429
Chromaticity Chroma x	0.4095
Chromaticity Chroma y	0.3934
Chromaticity Chroma u	0.2373
Chromaticity Chroma v	0.3420
Duv	0.0001
Chromaticity Chroma u'	0.2373
Chromaticity Chroma v'	0.5130

Special Color Rendering Indices	
R1	80.9
R2	90.8
R3	96.3
R4	80.1
R5	81.1
R6	87.8
R7	84.1
R8	61.4
R9	8.2
R10	78.5
R11	78.6
R12	68
R13	83.4
R14	98.5

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 25.1°C.

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	0.9929
Test Power (W)	14.51
Luminous Efficacy (lm/W)	90.6
Total Luminous Flux (lm)	1314.7
Beam Angle (°)	128.6 (0°-180°)/128.8 (90°-270°)
Center Beam Candle Power (cd)	309
Maximum Beam Candle Power (cd)	309.6 (At: C=60.0, Gamma=3.5)
Spacing Criteria	1.30 (0°-180°)/ 1.30 (90°-270°)
Zonal Lumens in the 0°-60°Zone	57.87%
Zonal Lumens in the 60°-90°Zone	26.45%
Zonal Lumens in the 90°-120°Zone	11.21%
Zonal Lumens in the 120°-180°Zone	4.48%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

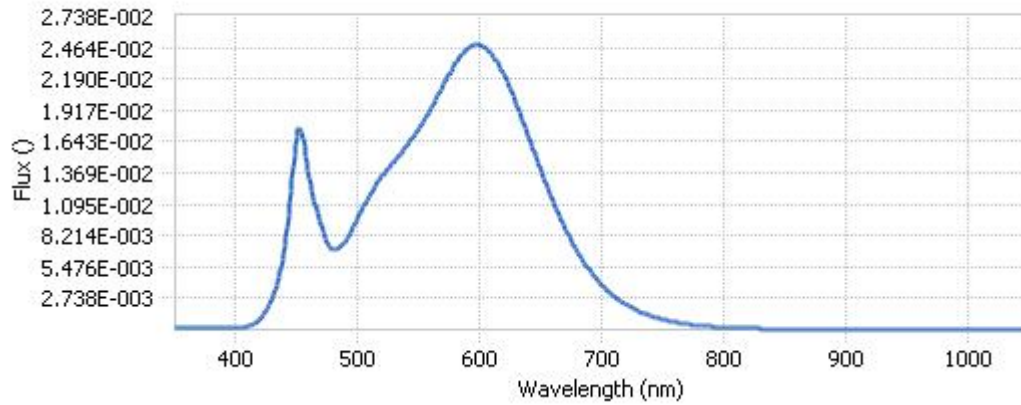
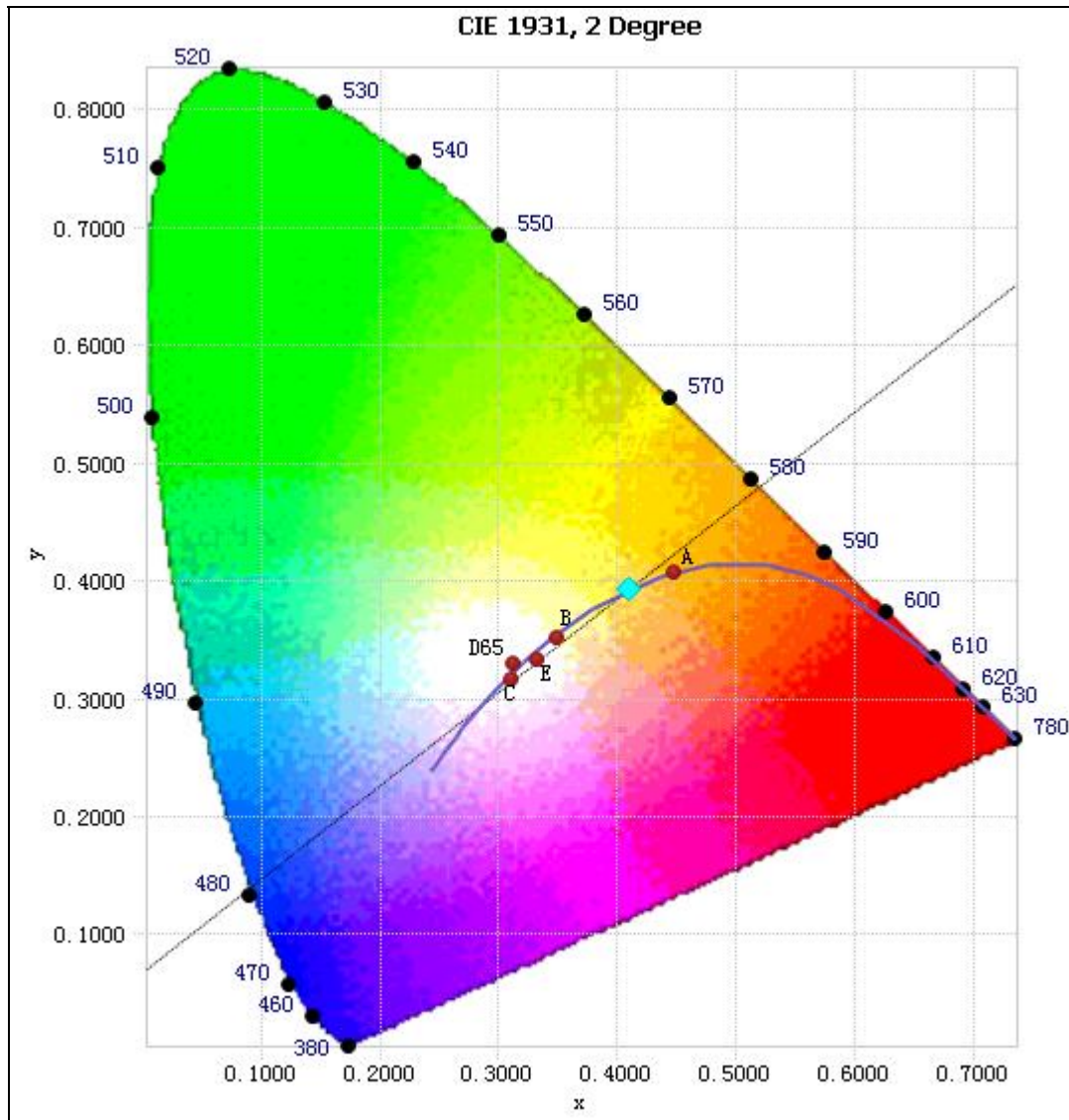


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.70E-04	485	7.22E-03	590	2.46E-02	695	4.57E-03
385	1.54E-04	490	7.80E-03	595	2.49E-02	700	3.94E-03
390	1.56E-04	495	8.73E-03	600	2.48E-02	705	3.40E-03
395	1.71E-04	500	9.84E-03	605	2.46E-02	710	2.94E-03
400	1.83E-04	505	1.09E-02	610	2.41E-02	715	2.54E-03
405	2.05E-04	510	1.18E-02	615	2.33E-02	720	2.20E-03
410	2.82E-04	515	1.27E-02	620	2.23E-02	725	1.90E-03
415	5.12E-04	520	1.34E-02	625	2.11E-02	730	1.63E-03
420	9.88E-04	525	1.41E-02	630	1.97E-02	735	1.41E-03
425	1.71E-03	530	1.47E-02	635	1.83E-02	740	1.20E-03
430	2.84E-03	535	1.53E-02	640	1.69E-02	745	1.04E-03
435	4.58E-03	540	1.61E-02	645	1.54E-02	750	8.89E-04
440	7.34E-03	545	1.68E-02	650	1.40E-02	755	7.69E-04
445	1.21E-02	550	1.75E-02	655	1.26E-02	760	6.63E-04
450	1.68E-02	555	1.84E-02	660	1.12E-02	765	5.67E-04
455	1.66E-02	560	1.93E-02	665	1.00E-02	770	4.89E-04
460	1.31E-02	565	2.03E-02	670	8.86E-03	775	4.21E-04
465	1.09E-02	570	2.14E-02	675	7.81E-03	780	3.64E-04
470	9.16E-03	575	2.24E-02	680	6.86E-03		
475	7.57E-03	580	2.33E-02	685	6.00E-03		
480	6.99E-03	585	2.40E-02	690	5.24E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4095, 0.3934)

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

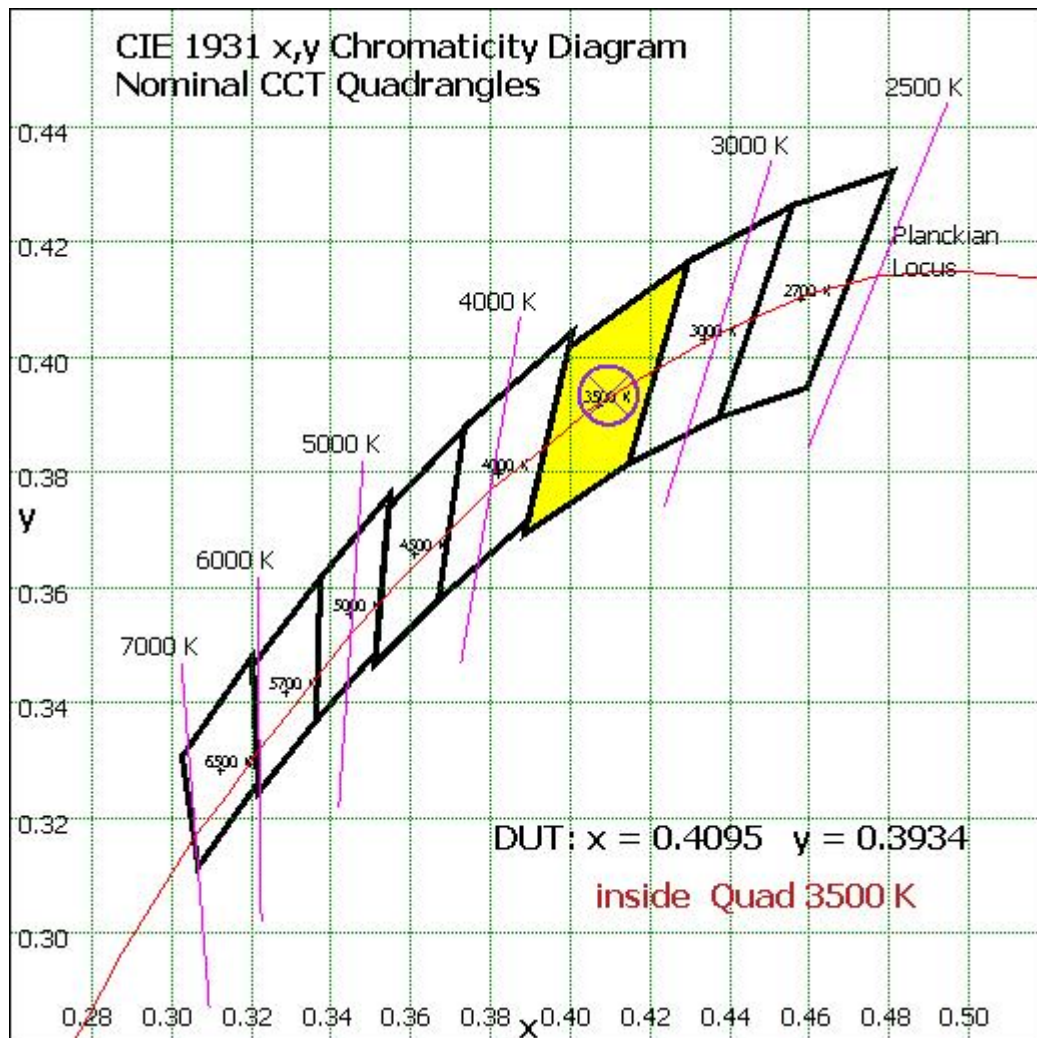


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	29.362	2.23%
10- 20	85.085	6.47%
20- 30	131.521	10.00%
30- 40	163.44	12.43%
40- 50	177.775	13.52%
50- 60	173.56	13.20%
60- 70	152.064	11.57%
70- 80	116.608	8.87%
80- 90	79.043	6.01%
90-100	60.291	4.59%
100-110	49.133	3.74%
110-120	37.917	2.88%
120-130	27.101	2.06%
130-140	17.408	1.32%
140-150	9.498	0.72%
150-160	3.87	0.29%
160-170	0.943	0.07%
170-180	0.044	0.00%
Total	1314.7	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	760.743	57.87%
60- 90	347.715	26.45%
0-90	1108.458	84.31%
90- 180	206.205	15.69%
0- 180	1314.7	100%

Table 5: Zonal Lumen Data

Illuminance Plots- Goniophotometer Method

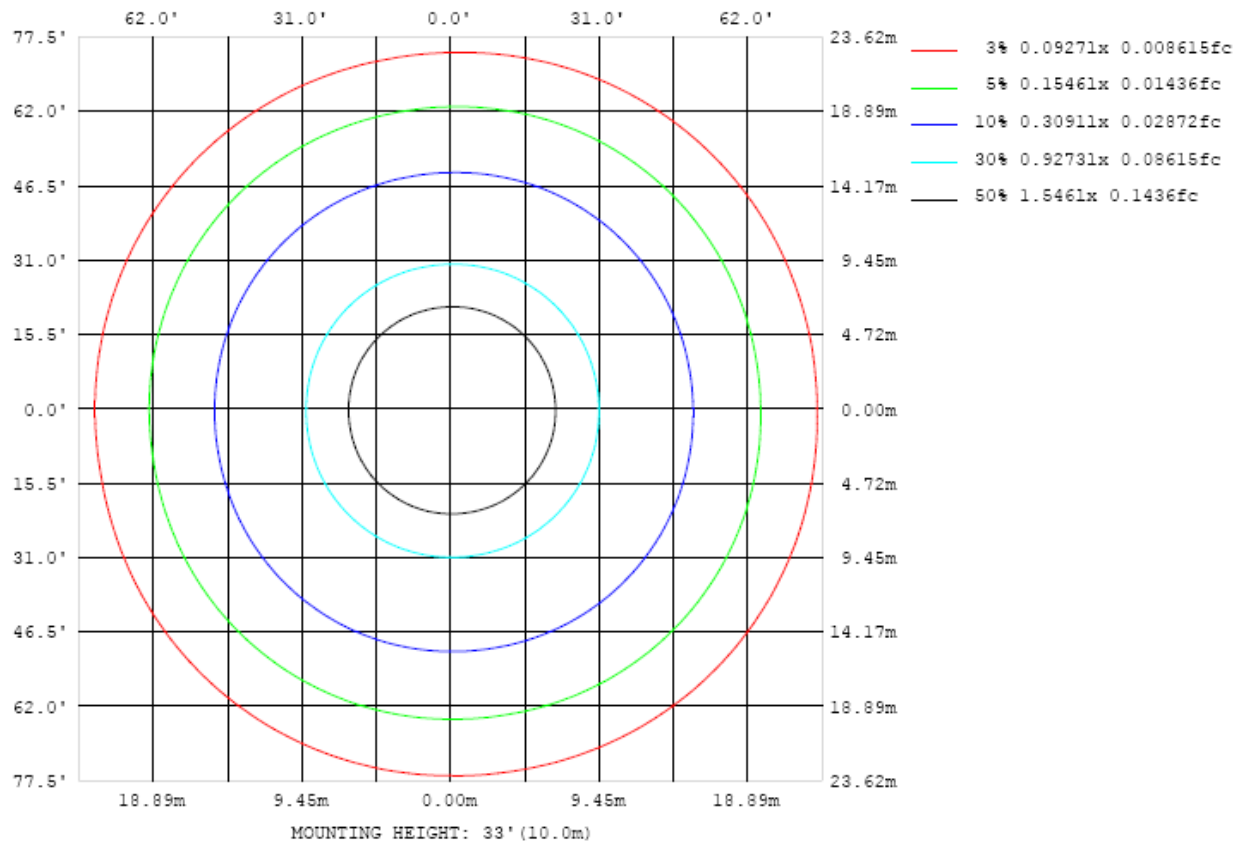


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

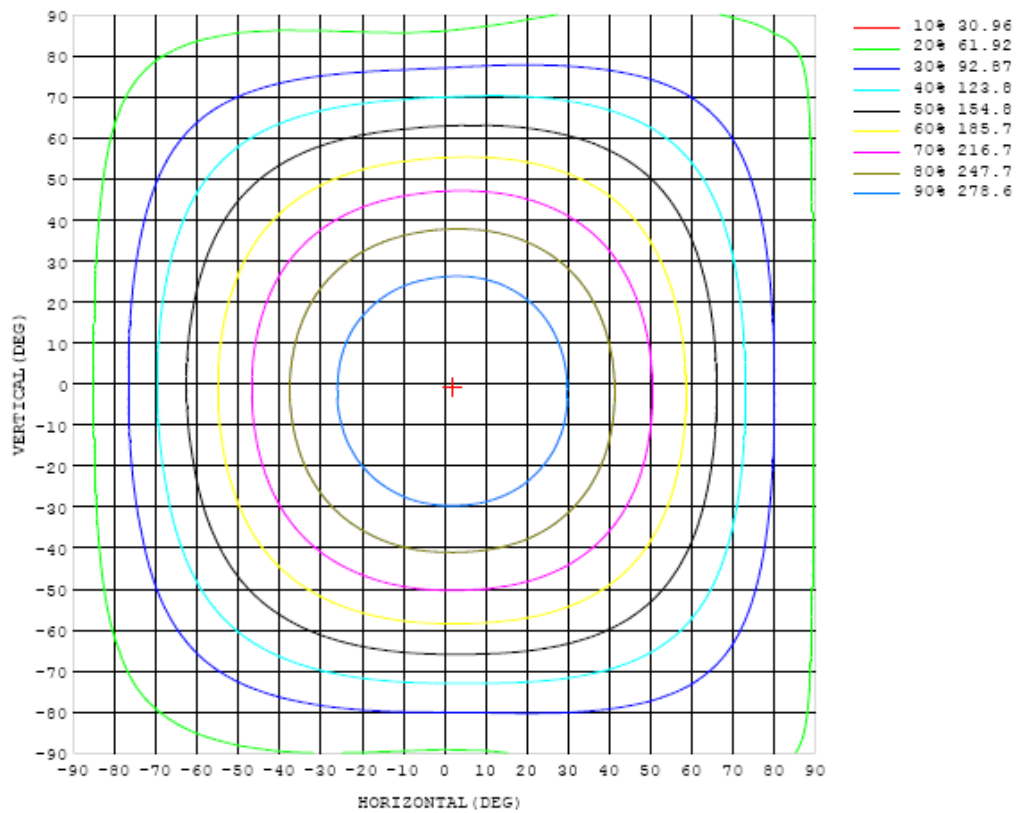


Chart 5: Isocandela Plot

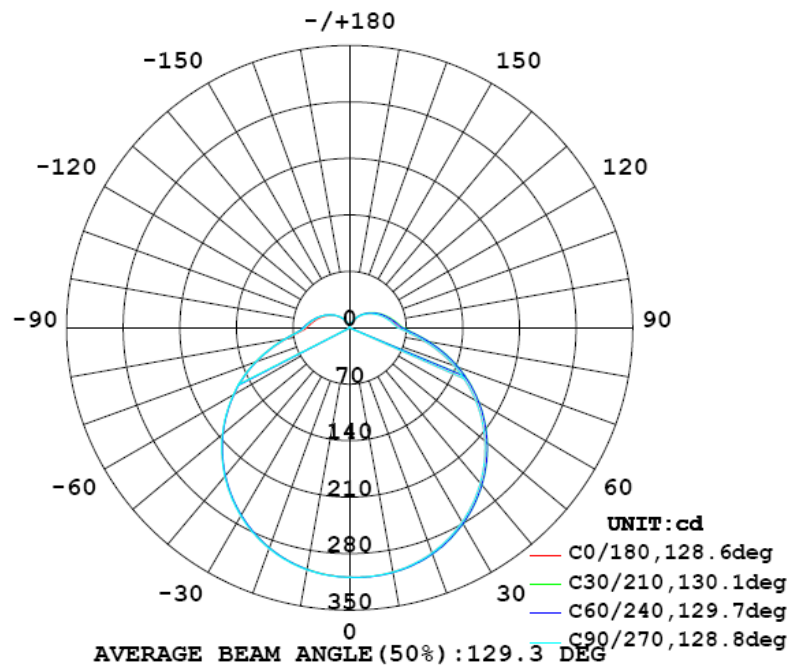


Chart 6: Polar Candela Distribution

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	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309
5	309	309	310	309	309	309	309	309	309	309	309	309	308	308	308	308	308	308	308
10	307	308	308	308	308	308	308	308	307	307	307	307	306	306	306	305	305	305	304
15	303	304	304	304	304	304	304	304	303	303	303	302	302	301	301	300	299	299	299
20	297	298	298	298	299	299	298	298	297	297	297	296	295	294	294	293	292	292	291
25	289	289	290	291	291	290	290	290	289	289	288	287	286	286	285	284	282	282	281
30	278	279	280	280	281	281	280	279	278	278	277	277	276	275	274	272	271	270	269
35	266	266	268	268	269	268	268	267	266	265	265	264	263	262	261	259	257	256	255
40	251	253	254	254	255	255	254	253	252	251	251	250	249	248	246	244	242	241	240
45	235	237	238	239	239	239	239	237	236	235	235	234	233	231	230	228	226	224	223
50	218	220	221	222	223	222	222	220	219	218	218	217	216	214	213	210	208	206	205
55	200	201	203	204	205	204	203	202	200	200	199	198	197	196	194	191	189	187	186
60	180	182	184	185	185	185	184	182	181	180	179	179	178	176	174	171	169	166	165
65	159	161	163	164	165	165	164	162	160	159	159	158	157	155	153	150	147	145	145
70	137	139	142	143	144	143	142	140	138	137	137	137	136	134	132	129	126	123	123
75	115	117	120	121	122	122	120	118	116	115	115	115	114	112	110	107	104	101	101
80	92.9	95.6	98.2	100.0	101	100	98.9	96.8	94.4	93.5	93.6	93.6	93.0	91.6	89.2	86.2	82.8	79.7	79.7
85	73.4	76.1	78.6	80.4	81.1	80.8	79.3	77.0	74.5	73.7	74.3	74.5	74.2	73.1	71.4	68.9	65.8	62.9	62.4
90	60.9	63.0	65.1	66.6	67.1	66.7	65.2	63.0	60.8	60.2	61.1	61.8	62.0	61.4	60.2	58.1	55.7	53.8	53.6
95	55.7	57.3	59.0	60.3	60.6	60.1	58.7	56.8	55.0	54.6	55.4	56.2	56.6	56.2	55.1	53.3	51.2	49.5	49.4
100	51.4	52.7	54.2	55.3	55.6	55.1	53.9	52.2	50.7	50.4	50.9	51.6	51.9	51.6	50.6	48.9	47.1	45.7	45.5
105	47.2	48.3	49.6	50.6	50.9	50.5	49.4	47.9	46.7	46.4	46.7	47.2	47.5	47.2	46.3	44.8	43.1	41.9	41.7
110	43.1	44.0	45.2	46.0	46.4	46.0	45.0	43.7	42.7	42.4	42.7	43.1	43.2	42.9	42.1	40.8	39.3	38.2	38.0
115	39.0	39.9	40.9	41.7	41.9	41.6	40.8	39.7	38.8	38.5	38.7	38.9	39.1	38.8	38.0	36.8	35.5	34.5	34.3
120	35.0	35.8	36.6	37.3	37.6	37.3	36.6	35.7	34.9	34.6	34.7	34.9	35.0	34.7	34.0	32.9	31.8	30.9	30.7
125	31.1	31.7	32.5	33.0	33.3	33.0	32.5	31.7	31.0	30.8	30.8	30.9	30.9	30.6	30.0	29.1	28.1	27.3	27.1
130	27.1	27.7	28.3	28.8	29.0	28.9	28.4	27.7	27.2	27.0	27.0	27.0	26.9	26.7	26.1	25.3	24.4	23.8	23.5
135	23.3	23.8	24.3	24.7	24.9	24.8	24.4	23.9	23.4	23.3	23.2	23.1	23.1	22.8	22.3	21.6	20.8	20.3	20.1
140	19.5	19.9	20.3	20.7	20.8	20.8	20.5	20.1	19.7	19.6	19.5	19.4	19.3	19.0	18.6	17.9	17.3	16.8	16.7
145	15.8	16.2	16.5	16.8	16.9	16.9	16.7	16.4	16.2	16.0	15.9	15.8	15.6	15.4	15.0	14.5	14.0	13.6	13.4
150	8.32	6.20	11.6	13.0	13.2	13.2	13.1	12.9	12.7	12.6	12.5	12.3	12.1	11.9	11.6	11.2	10.8	10.5	10.3
155	5.90	9.25	9.48	8.96	9.72	9.79	9.71	9.59	9.51	9.43	9.27	9.11	8.94	8.73	8.46	8.13	7.81	7.57	7.42
160	6.00	6.25	6.36	5.91	6.32	6.63	6.63	6.59	6.57	6.49	6.28	6.18	5.96	5.79	5.62	5.39	5.16	4.99	4.88
165	3.46	3.56	3.49	3.18	3.39	3.71	3.86	3.85	3.94	3.95	3.83	3.63	3.49	3.35	3.23	3.07	2.94	2.85	2.76
170	1.43	1.33	0.92	0.62	0.43	0.46	0.94	1.45	1.76	1.82	1.81	1.65	1.34	1.15	1.09	1.10	1.15	1.19	1.12
175	0.28	0.28	0.28	0.28	0.28	0.27	0.28	0.28	0.28	0.28	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.26
180	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.25	0.26	0.25	0.25	0.25	0.26	0.26	0.26	0.26	0.26

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	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309		
5	308	308	308	307	308	308	308	308	308	308	308	308	308	309	309	309	309		
10	304	304	304	304	304	304	304	304	305	305	305	305	306	306	307	307	307		
15	299	298	298	298	298	298	298	298	299	300	300	300	301	302	302	302	303		
20	291	291	290	290	290	290	290	290	291	292	292	293	294	295	296	296	297		
25	281	280	280	280	280	280	280	280	281	282	283	284	285	286	287	287	288		
30	269	269	268	268	268	268	268	268	269	270	271	273	274	275	276	277	277		
35	255	255	255	255	254	255	254	255	256	257	258	260	261	262	263	264	265		
40	240	240	239	239	239	239	239	239	240	242	243	245	246	248	249	250	251		
45	223	223	223	223	223	222	222	223	224	225	227	229	230	232	233	234	235		
50	205	205	205	205	205	204	204	204	205	207	209	211	213	215	216	216	217		
55	186	186	186	186	186	185	185	185	186	188	191	193	195	196	197	198	199		
60	165	166	166	166	166	165	165	165	166	168	171	173	175	177	178	178	179		
65	145	145	145	146	145	145	144	144	145	148	151	153	155	156	157	158	158		
70	123	123	124	124	124	123	122	122	123	126	129	132	134	135	136	136	137		
75	101	102	102	103	102	102	101	100	101	104	107	110	112	114	114	114	115		
80	80.3	81.3	82.1	82.5	82.2	81.4	80.3	79.6	80.8	83.7	86.7	89.3	91.3	92.6	92.9	92.8	92.8		
85	63.5	64.8	65.9	66.4	66.2	65.4	64.2	63.4	64.3	66.9	69.7	71.9	73.6	74.5	74.4	73.9	73.5		
90	55.0	56.6	58.0	58.6	58.6	57.8	56.7	55.8	56.4	58.4	60.6	62.4	63.3	63.5	62.7	61.5	60.5		
95	50.5	52.0	53.2	53.8	53.8	53.1	52.2	51.5	52.1	53.7	55.7	57.2	58.1	58.2	57.5	56.3	55.4		
100	46.4	47.7	48.7	49.3	49.3	48.7	47.9	47.4	48.0	49.4	51.1	52.5	53.3	53.4	52.8	51.8	51.1		
105	42.4	43.5	44.5	45.0	45.0	44.5	43.9	43.5	44.0	45.2	46.7	48.0	48.7	48.8	48.3	47.4	47.0		
110	38.5	39.5	40.3	40.8	40.8	40.4	39.9	39.6	40.0	41.1	42.4	43.6	44.2	44.3	43.9	43.2	42.9		
115	34.7	35.5	36.2	36.6	36.6	36.3	35.9	35.7	36.1	37.1	38.2	39.2	39.8	39.9	39.6	39.1	38.9		
120	31.0	31.6	32.2	32.6	32.6	32.3	32.0	31.9	32.3	33.1	34.1	35.0	35.5	35.6	35.3	35.0	34.9		
125	27.3	27.7	28.2	28.5	28.6	28.4	28.1	28.1	28.4	29.1	30.0	30.8	31.2	31.4	31.2	30.9	30.9		
130	23.6	24.0	24.4	24.6	24.6	24.5	24.3	24.3	24.6	25.2	26.0	26.6	27.1	27.2	27.1	27.0	27.0		
135	20.1	20.3	20.6	20.8	20.8	20.7	20.6	20.7	20.9	21.4	22.0	22.6	23.0	23.1	23.1	23.0	23.2		
140	16.6	16.8	17.0	17.1	17.1	17.1	17.0	17.1	17.3	17.7	18.2	18.7	19.0	19.2	19.2	19.2	19.4		
145	13.2	13.3	13.4	13.5	13.5	13.5	13.5	13.6	13.8	14.1	14.5	14.9	15.2	15.4	15.5	15.6	15.8		
150	10.1	10.1	10.1	10.2	10.2	10.2	10.2	10.3	10.5	10.7	11.0	11.3	11.6	11.8	11.9	12.0	12.0		
155	7.26	7.16	7.15	7.14	7.15	7.17	7.22	7.33	7.45	7.60	7.80	8.02	8.05	8.46	8.61	7.05	4.25		
160	4.76	4.61	4.53	4.50	4.50	4.52	4.57	4.67	4.76	4.83	4.97	5.03	5.00	5.10	5.08	5.21	5.95		
165	2.71	2.57	2.45	2.38	2.35	2.33	2.40	2.49	2.55	2.61	2.66	2.68	2.66	2.60	2.58	2.93	3.36		
170	1.12	0.98	0.83	0.80	0.83	0.87	0.89	0.61	0.39	0.35	0.48	0.64	0.74	1.07	1.12	1.26	1.42		
175	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.28		
180	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.26		

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 expanded 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 expanded uncertainty is 1.94% with a coverage factor $k=2$.

Color Characteristics Measurements

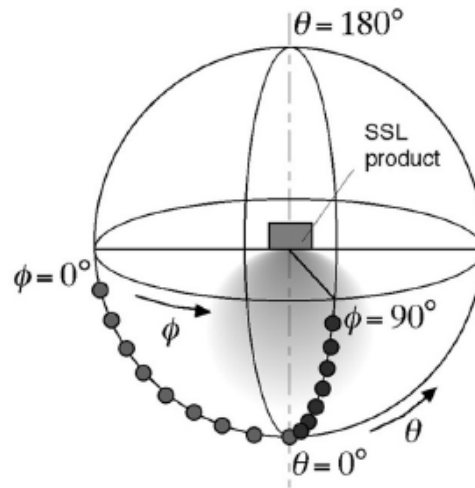
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as 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 ($C=0^\circ/180^\circ$ and $C=90^\circ/270^\circ$) 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, $\Delta u'v'$, 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 ***

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