



Report No.: STD150803NB-Z

NVLAP LAB CODE 201011-0

## LM-79-08 Test Report

For

# CEA GROUP INTERNATIONAL CO.,LTD

(Brand Name: CEA EAEC)

Sanjiali Industrial Zone Zhucheng Road Panshi North baixiang Yueqing  
Zhejiang China

## Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires

Model name(s): MFL1-30

Representative (Tested) Model: MFL1-30 (2700K)  
MFL1-30 (5700K)

Model Different: All construction and rating are the same, except CCT

Test & Report By:

*Jamie Lin*

Engineer: Jamie Lin

Date: Jul.14,2016

Review By:

*Tommy Liang*

Manager: Tommy Liang

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

Laboratory: Standard-Tech Co. Ltd Testing Center  
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

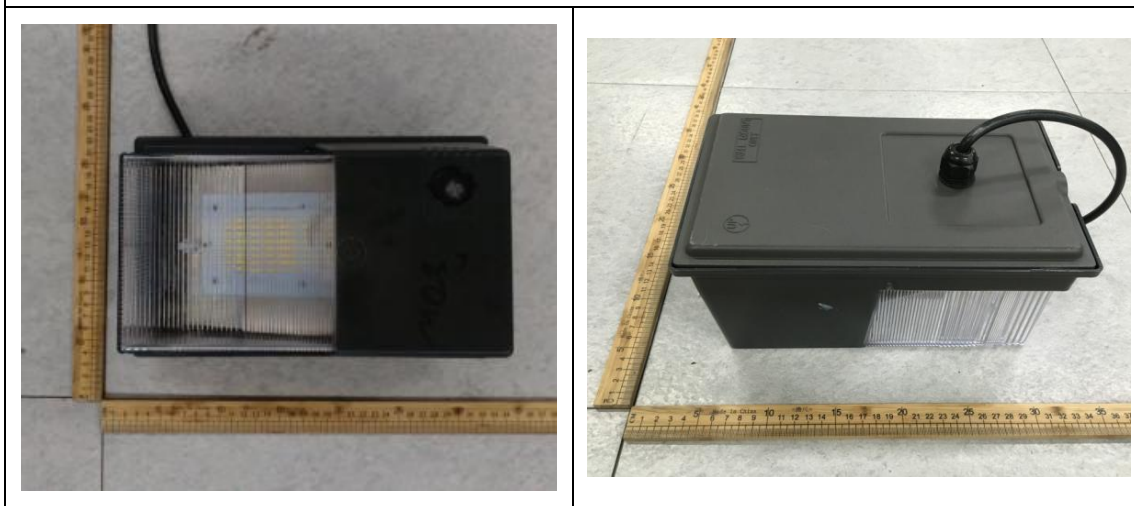
Fax: 8620-32290422

<http://www.standard-tech.com>

**1.1 Product Information:**

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA EAEC	
Model Number	MFL1-30	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K, 5700K	
LED Manufacturer	Chuang Te LED	
LED Model	CT-5730	
Sample Number	STD150803NB-Z1(2700K), Z2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**



## 1.2 Test Specifications:

Date of Receipt	Jul.09,2016
Date of Test	Jul.10,2016
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	QD25

## 1.3 Test Methods

### 1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ , measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  horizontal intervals.

### 2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

### 3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

## 2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

<b>Test date</b>	2016-07-10	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	MFL1-30(2700K)		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150803	120.0	60	0.2496	29.71	0.9919	8.93
NB-Z1	277.0	60	0.1162	29.18	0.9063	13.38
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	0
Frequency (Hz)	60	R2	92	R10	81
CCT (K)	2822	R3	94	R11	76
Duv	-0.0005	R4	77	R12	73
Chromaticity (x, y)	x=0.4493 y=0.4066	R5	79	R13	82
Chromaticity (u', v')	u'=0.2575 v'=0.5242	R6	90	R14	97
Color Rendering Index (CRI)	80.5	R7	80	R15	71
R9	0	R8	54	--	--

### Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V3.1 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	2260.7	2189.8	--	
Luminous Efficacy (lm/W)	76.09	75.04	--	
Total Luminous (lm) (0-90 °zone )	1976.4	1914.3	300-5000(-10%)	
Luminous Efficacy (lm/W) (0-90 °zone )	66.52	65.60	Standard: >= 65(-3%)	Premium: >= 100(-3%)
Zonal lumens in the 80-90 °zone (%)	12.82	--	<= 10(+3)	
Beam Angle ( °)	105.1	--	--	
Center Beam Candle Power (cd)	439	--	--	

Laboratory: Standard-Tech Co. Ltd Testing Center

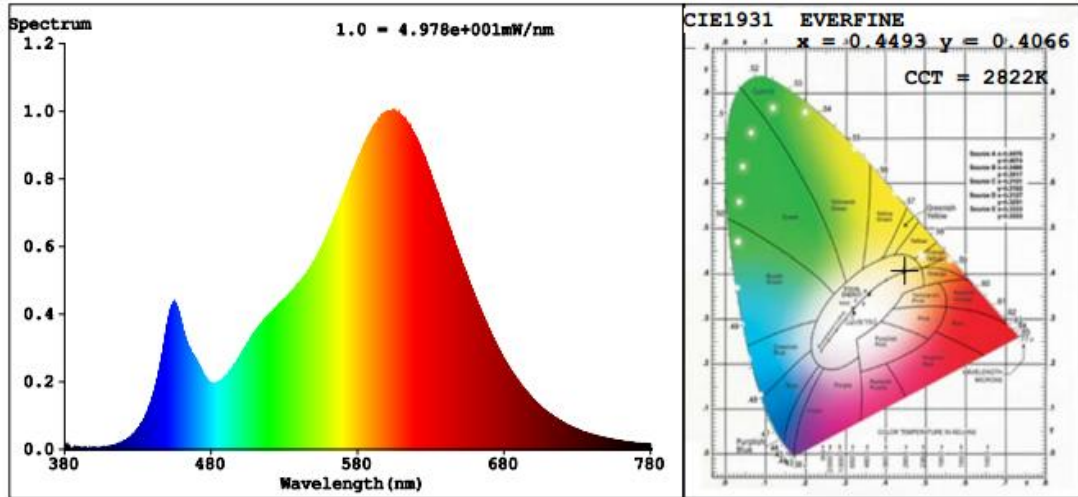
NVLAP CODE: 201011-0

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**Spectral Power Distribution & Chromaticity Diagram**

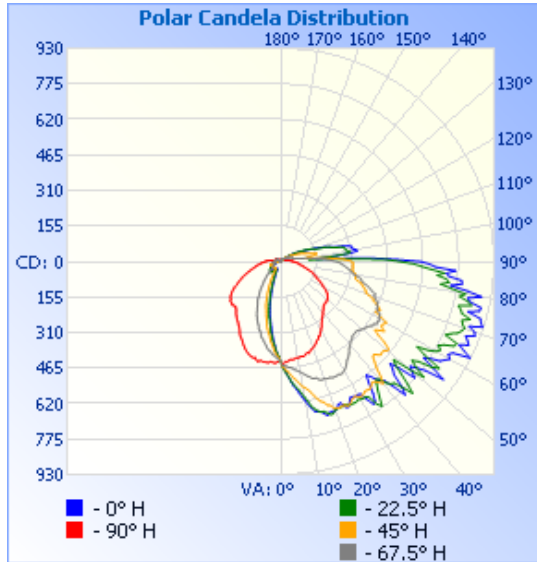


**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	340.9	15.1%
0-40	561.6	24.8%
0-60	1,108.1	49%
60-90	868.4	38.4%
70-100	677.1	29.9%
90-120	248.1	11%
0-90	1,976.4	87.4%
90-180	284.5	12.6%
0-180	2,260.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	41.6	1.8%	90-100	122.4	5.4%
10-20	121.1	5.4%	100-110	82.1	3.6%
20-30	178.1	7.9%	110-120	43.6	1.9%
30-40	220.7	9.8%	120-130	20.1	0.9%
40-50	253.9	11.2%	130-140	9.0	0.4%
50-60	292.6	12.9%	140-150	4.4	0.2%
60-70	313.7	13.9%	150-160	2.3	0.1%
70-80	301.2	13.3%	160-170	0.5	0%
80-90	253.4	11.2%	170-180	0.1	0%

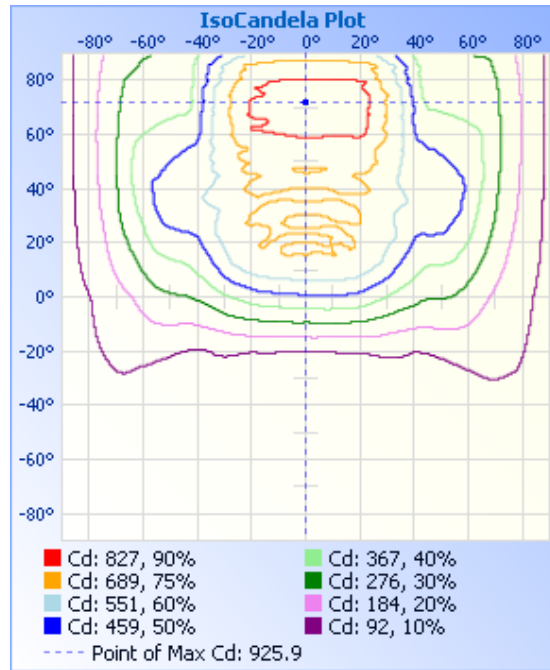
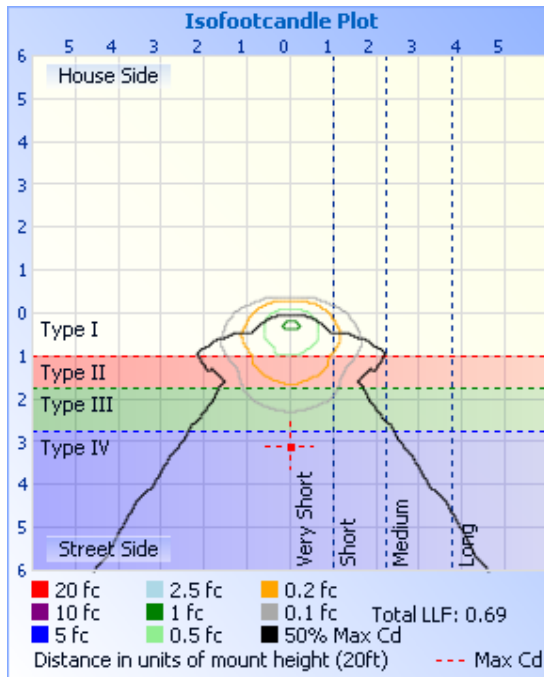
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	1.52 fc	34.2 ft	27.2 ft
34.0ft	0.38 fc	68.3 ft	54.4 ft
51.0ft	0.17 fc	102.5 ft	81.6 ft
68.0ft	0.09 fc	136.7 ft	108.8 ft
85.0ft	0.06 fc	170.9 ft	136.0 ft
102.0ft	0.04 fc	205.0 ft	163.2 ft

■ Vert. Spread: 90.3°  
■ Horiz. Spread: 77.3°



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Table--1

UNIT: cd

C (DEG) \ y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	439	439	439	439	439	439	439	439	439	439	439	439	439	439	439	439
5	439	473	498	519	526	524	495	464	431	400	373	360	349	357	374	408
10	445	504	565	604	618	601	555	489	426	356	305	272	256	272	312	369
15	433	545	638	670	678	680	621	527	419	322	241	190	172	193	244	333
20	423	554	687	688	694	690	682	543	403	277	176	108	83.6	106	181	289
25	389	552	692	696	700	691	694	555	379	240	114	47.6	35.9	47.3	118	244
30	356	545	673	681	672	693	682	550	350	194	61.8	39.6	36.9	39.7	66.2	201
35	324	509	647	757	702	770	678	512	315	147	38.4	46.2	46.9	45.8	38.6	155
40	303	474	658	668	678	672	694	472	286	101	37.2	59.4	56.4	57.5	35.9	113
45	277	447	587	817	698	813	574	450	266	71.3	37.9	64.3	55.5	63.2	35.8	80.5
50	279	471	597	732	748	730	607	461	262	47.9	40.7	63.6	51.9	60.3	40.0	56.6
55	265	503	537	852	813	802	522	489	249	35.5	44.6	59.4	45.5	55.9	41.8	41.2
60	235	501	514	803	851	784	532	493	213	29.2	43.9	53.8	36.5	51.0	42.0	32.0
65	197	481	464	843	858	845	470	466	176	28.7	44.1	47.3	31.1	43.8	44.5	28.9
70	164	441	407	870	899	853	394	435	151	30.3	47.1	37.9	24.3	37.0	45.9	29.2
75	130	392	376	839	845	813	365	382	117	32.2	45.8	31.5	17.0	31.7	42.4	30.8
80	107	356	327	877	889	818	331	326	90.7	33.2	41.1	23.8	10.9	24.6	37.8	32.3
85	85.8	318	306	712	736	685	316	286	74.6	33.3	36.2	16.9	7.29	19.2	33.7	32.3
90	68.3	266	288	554	612	523	311	244	57.1	29.3	28.1	11.0	2.71	13.0	26.7	27.5
95	52.5	164	151	207	183	166	176	160	42.9	22.7	19.2	6.63	1.80	6.23	17.8	21.4
100	34.2	66.6	125	332	319	289	132	76.6	31.0	21.0	12.1	6.68	1.86	7.56	11.7	20.1
105	25.8	51.4	128	249	249	235	139	56.0	22.1	20.3	8.27	7.38	1.75	8.63	9.15	19.0
110	21.0	50.9	101	164	178	162	104	50.7	19.2	18.9	12.0	6.30	1.58	7.33	11.1	17.6
115	17.8	41.2	75.3	115	110	118	75.6	39.4	16.2	19.6	13.7	5.33	1.52	5.46	12.8	18.6
120	23.6	33.4	51.9	73.3	74.0	75.6	52.8	36.6	22.8	19.2	10.9	5.29	1.47	4.06	11.8	18.5
125	19.0	25.1	35.1	42.7	31.0	43.3	36.4	28.1	18.9	15.5	9.34	5.23	1.44	4.68	9.05	15.5
130	14.1	20.8	28.2	26.3	17.9	26.0	25.4	21.4	13.8	11.5	8.73	4.61	1.40	4.79	7.74	10.7
135	10.4	18.5	16.5	17.0	13.0	16.4	14.8	19.7	10.5	9.65	7.65	4.51	1.08	4.11	7.37	8.39
140	9.17	15.9	10.6	15.4	6.58	14.4	11.3	14.9	8.91	8.12	6.43	4.05	0.70	3.69	6.01	7.87
145	7.41	10.6	13.7	11.1	2.87	10.3	11.6	11.0	6.73	6.19	5.92	2.86	0.69	0.68	4.17	6.17
150	5.68	9.75	11.7	1.23	2.13	1.30	11.3	10.2	5.77	5.43	5.46	1.94	0.68	1.09	3.67	5.23
155	5.28	9.01	12.0	10.4	0.52	8.96	12.0	8.67	5.11	4.47	4.74	0.84	0.68	0.54	2.22	3.51
160	4.11	6.67	2.97	8.67	0.38	9.12	6.47	7.24	3.75	3.76	3.62	0.82	0.67	0.45	1.73	2.80
165	1.59	0.56	0.46	2.12	0.15	2.52	0.42	1.64	1.65	1.25	0.31	2.05	0.46	0.37	0.94	0.85
170	1.40	2.18	1.43	0.10	0.00	0.31	1.52	1.58	1.67	1.72	1.68	1.23	0.46	0.43	0.31	1.10
175	0.41	0.21	0.10	0.00	0.00	0.00	0.21	0.21	0.20	0.10	0.25	0.30	0.05	0.26	0.05	0.26
180	0.00	0.15	0.10	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.11

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## 2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

<b>Test date</b>	2016-07-10	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	MFL1-30(5700K)		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150803	120.0	60	0.2441	29.08	0.9928	8.63
NB-Z1	277.0	60	0.1147	28.77	0.9053	13.75
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	90	R9	38
Frequency (Hz)	60	R2	95	R10	87
CCT (K)	5769	R3	95	R11	87
Duv	-0.0044	R4	88	R12	67
Chromaticity (x, y)	x=0.3269 y=0.3279	R5	89	R13	92
Chromaticity (u', v')	u'=0.2082 v'=0.4698	R6	89	R14	98
Color Rendering Index (CRI)	88.7	R7	88	R15	88
R9	38	R8	76	--	--

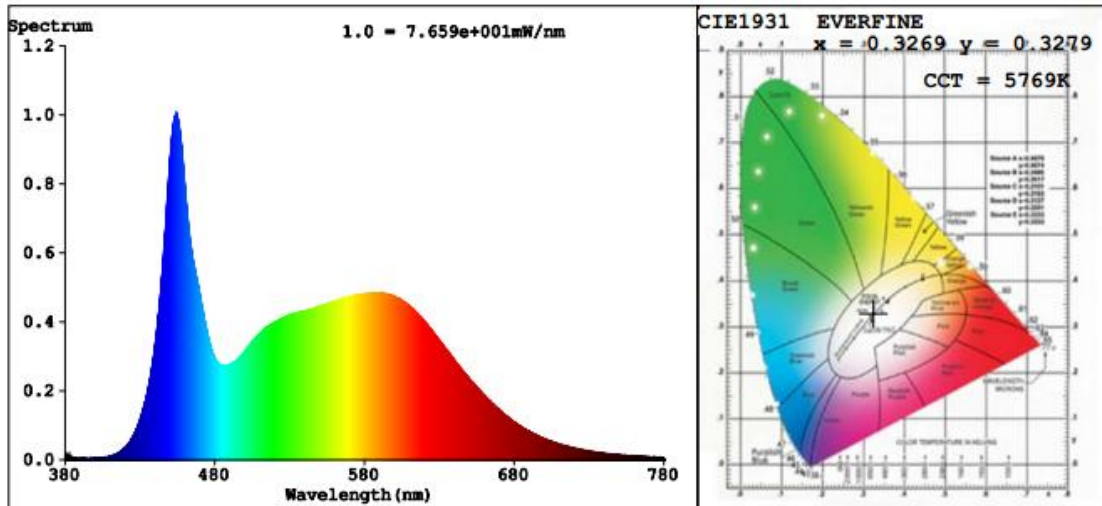
### Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V3.1 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	2463	2434	--	
Luminous Efficacy (lm/W)	84.70	84.60	--	
Total Luminous (lm)	2153*	2127*	300-5000(-10%)	
Luminous Efficacy (lm/W)	74.04	73.93	Standard: >= 65(-3%)	Premium: >= 100(-3%)

\* These values are calculated assuming ZLD of 0 °-90 ° zone is 87.4% (see “Zonal Lumen Tabulation” on page 5).



**Spectral Power Distribution & Chromaticity Diagram**



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### 3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

**\*\*\*\*\* END OF REPORT \*\*\*\*\***