

LM-79-08 Test Report

For

Hocan Group Co.,Ltd

(Brand Name: SEPICN LED Lighting)

Room 905 Working Berg, Commercial
Bldg, 41-47 Marble Rd, Hong Kong

Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B)

Model name(s):
HC-T8-4FT-18W-ID(CLEAR)

Representative (Tested) Model:
HC-T8-4FT-18W-ID(3000K,CLEAR)
HC-T8-4FT-18W-ID(5000K,CLEAR)

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

Test & Report By:

Jack Luo

Engineer: Jack Luo

Date: May.02,2017

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

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

1.1 Product Information:

Organization Name	Hocan Group Co.,Ltd	
Brand Name	SEPICN LED Lighting	
Model Number	HC-T8-4FT-18W-ID(CLEAR)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B)	
Rated Voltage / Frequency	100~277 Vac, 50/60 Hz	
Nominal Power	18W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K	
LED Manufacturer	Shenzhen Runlite Technology Co., Ltd	
LED Model	T2835	
Sample Number	GZE1704080-H-C1,C2(3000K),C3(5000K)	
Lamp Length	1200	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	May.01,2017
Date of Test	May.02,2017
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>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 °C ± 1 °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 °vertical intervals and 22.5 °horizontal intervals.</p>
<p>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 °C ± 1 °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.</p>
<p>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 °C ± 1 °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.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2017-05-02	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HC-T8-4FT-18W-ID(3000K,CLEAR)		

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170408	120.0	60	0.1563	17.30	0.9223	22.09
0-H-C1	277.0	60	0.0695	17.43	0.9051	23.14
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

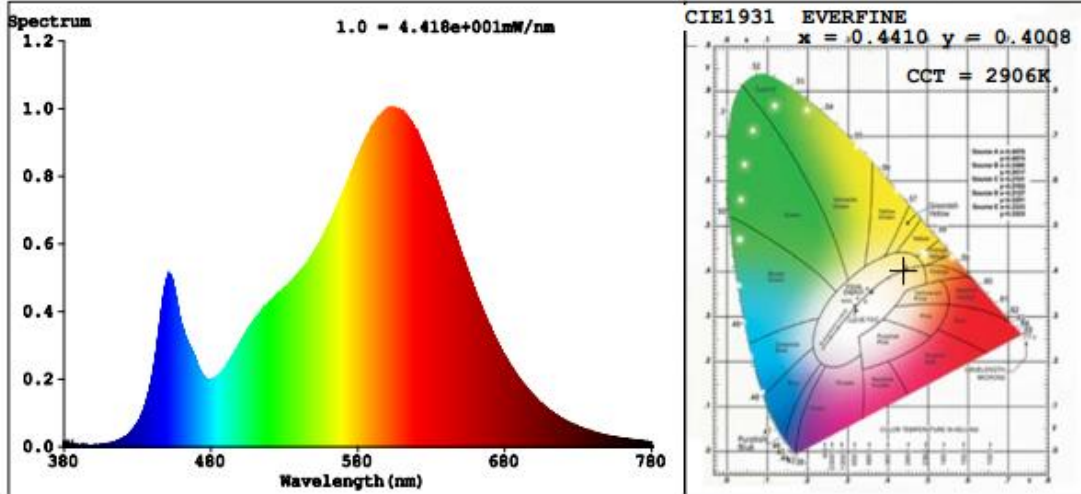
Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	6
Frequency (Hz)	60	R2	92	R10	83
CCT (K)	2906	R3	94	R11	79
Duv	-0.0018	R4	80	R12	75
Chromaticity (x, y)	x=0.4410 y=0.4008	R5	82	R13	84
Chromaticity (u', v')	u'=0.2546 v'=0.5207	R6	91	R14	98
Color Rendering Index (CRI)	82.3	R7	81	R15	74
R9	6	R8	57	--	--

Photometric Measurement for Bare-lamp –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.2 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2273	2286	Bare Lamp: 1600(-10%)
Luminous Efficacy (lm/W)	131.39	131.15	Bare lamp: >= 110(-3%)
Worst Luminous/Highest Watts	130.41		

Spectral Power Distribution & Chromaticity Diagram



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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2017-05-02	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HC-T8-4FT-18W-ID(3000K,CLEAR)		

Electrical Measurement for 2-lamp in Lithonia 2PM3N 12 cell 2x4 parabolic:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170408	120.0	60	0.3129	34.59	0.9213	22.47
0-H-C1,C2	277.0	60	0.1389	34.85	0.9057	23.02
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement for 2-lamp in Lithonia 2PM3N 12 cell 2x4 parabolic - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	6
Frequency (Hz)	60	R2	92	R10	83
CCT (K)	2905	R3	895	R11	80
Duv	-0.0018	R4	80	R12	76
Chromaticity (x, y)	x=0.4411 y=0.4010	R5	82	R13	84
Chromaticity (u', v')	u'=0.2546 v'=0.5208	R6	91	R14	98
Color Rendering Index (CRI)	82.5	R7	81	R15	74
R9	6	R8	57	--	--

Photometric Measurement 2-lamp in Lithonia 2PM3N 12 cell 2x4 parabolic – Goniophotometer Method:

Parameter	Result		DLC V4.2 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3775.1	3796.1	In luminaire (2 lamps): 3000(-10%)
Luminous Efficacy (lm/W)	109.14	108.93	In luminaire: >= 100(-3%)
Worst Luminous/Highest Watts	108.32		
Zonal lumens in the 0-60 ° zone (%)	91.3	--	>= 75(-3)
SC: 0-180 °(if applicable)	1.33	--	1.0-2.0(±0.1)
SC: 90-270 °(if applicable)	1.21	--	1.0-2.0(±0.1)
Beam Angle (°)	107.3	--	--
Center Beam Candle Power (cd)	1550	--	--

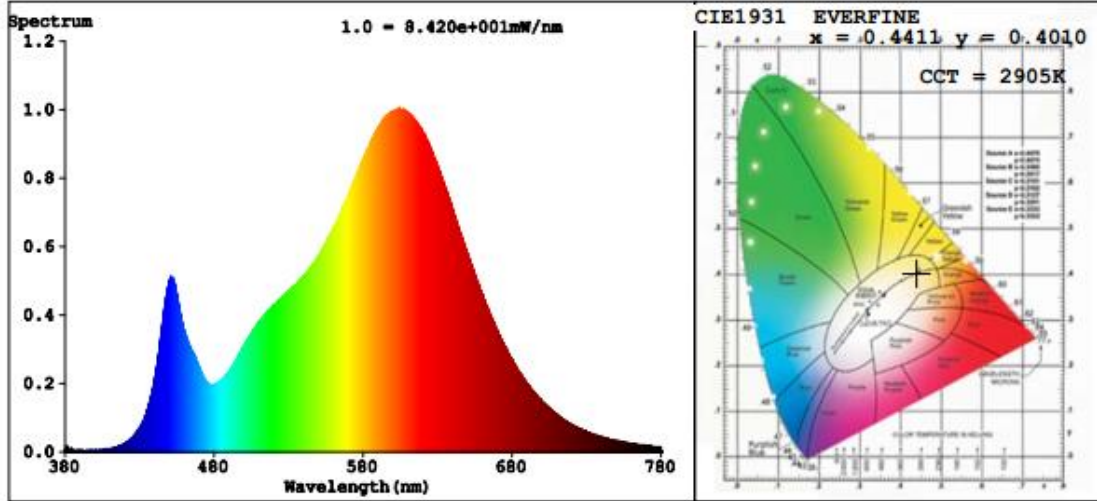
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Spectral Power Distribution & Chromaticity Diagram

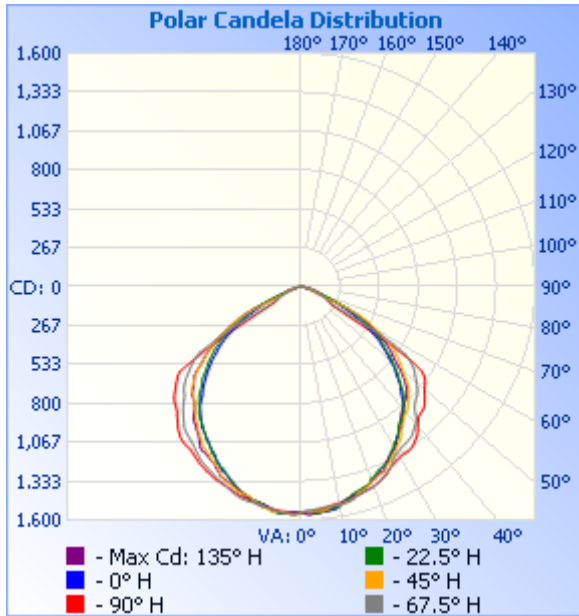


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,197.6	31.7%
0-40	1,968.6	52.2%
0-60	3,447.5	91.3%
60-90	327.0	8.7%
70-100	74.6	2%
90-120	0.0	0%
0-90	3,774.5	100%
90-180	0.0	0%
0-180	3,774.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	146.8	3.9%	90-100	0	0%
10-20	418.1	11.1%	100-110	0	0%
20-30	632.6	16.8%	110-120	0.0	0%
30-40	771.0	20.4%	120-130	0.0	0%
40-50	807.3	21.4%	130-140	0	0%
50-60	671.6	17.8%	140-150	0.0	0%
60-70	252.4	6.7%	150-160	0.0	0%
70-80	64.2	1.7%	160-170	0	0%
80-90	10.4	0.3%	170-180	0	0%

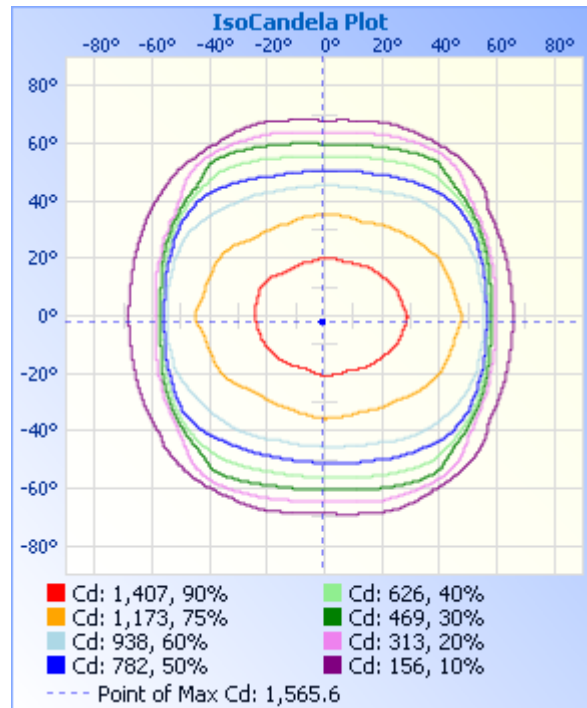
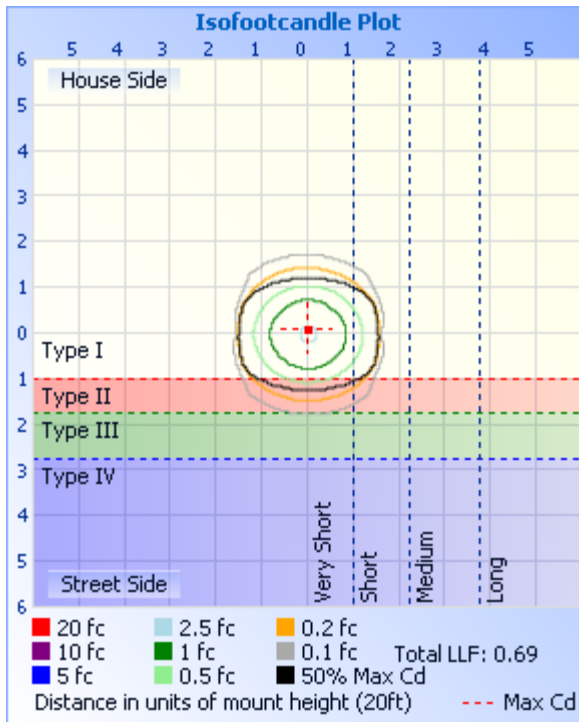
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	5.36 fc	41.5 ft	50.8 ft
34.0ft	1.34 fc	83.1 ft	101.5 ft
51.0ft	0.60 fc	124.6 ft	152.3 ft
68.0ft	0.34 fc	166.1 ft	203.1 ft
85.0ft	0.21 fc	207.7 ft	253.8 ft
102.0ft	0.15 fc	249.2 ft	304.6 ft

■ Vert. Spread: 101.4°
 ■ Horiz. Spread: 112.4°



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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	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	
5	1544	1538	1554	1558	1552	1556	1542	1524	1532	1541	1548	1563	1561	1562	1549	1554	
10	1513	1516	1532	1541	1527	1528	1516	1516	1507	1519	1512	1508	1513	1516	1531	1522	
15	1497	1498	1476	1475	1478	1454	1475	1485	1481	1495	1469	1461	1483	1475	1477	1512	
20	1463	1465	1434	1413	1413	1402	1419	1456	1455	1441	1421	1397	1413	1409	1438	1469	
25	1435	1416	1374	1358	1364	1349	1374	1407	1400	1382	1349	1327	1335	1343	1362	1418	
30	1395	1356	1315	1266	1281	1265	1293	1316	1350	1303	1277	1243	1254	1253	1301	1373	
35	1345	1296	1229	1175	1186	1164	1196	1282	1333	1275	1173	1153	1180	1171	1221	1303	
40	1300	1243	1145	1086	1087	1084	1123	1221	1241	1196	1080	1065	1077	1084	1129	1246	
45	1202	1143	1056	969	962	968	1036	1106	1183	1076	1025	943	939	963	1048	1138	
50	1129	1039	955	839	804	821	909	1031	1101	991	886	808	801	833	945	1042	
55	1013	904	778	682	658	682	785	922	1006	874	732	658	649	696	775	904	
60	203	357	589	509	471	538	613	277	232	379	561	488	464	521	596	285	
65	160	144	352	322	279	322	342	174	190	166	348	303	274	330	275	144	
70	118	99.8	81.1	128	110	135	95.4	126	144	119	89.8	119	109	136	83.0	101	
75	77.2	59.5	40.6	45.3	44.2	47.4	52.3	80.8	97.1	74.8	49.2	47.7	47.0	48.7	43.3	60.9	
80	33.2	25.4	17.5	19.2	19.1	21.3	27.4	41.8	52.9	38.9	25.5	23.8	21.4	21.8	20.4	26.6	
85	8.41	6.41	4.32	4.50	4.17	5.48	8.96	14.4	19.3	12.3	7.39	6.85	4.32	4.63	5.05	6.52	
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
145	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

2.3 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-05-02	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	HC-T8-4FT-18W-ID(5000K,CLEAR)		

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170408	120.0	60	0.1574	17.41	0.9215	21.98
0-H-C3	277.0	60	0.0698	17.48	0.9044	23.12
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

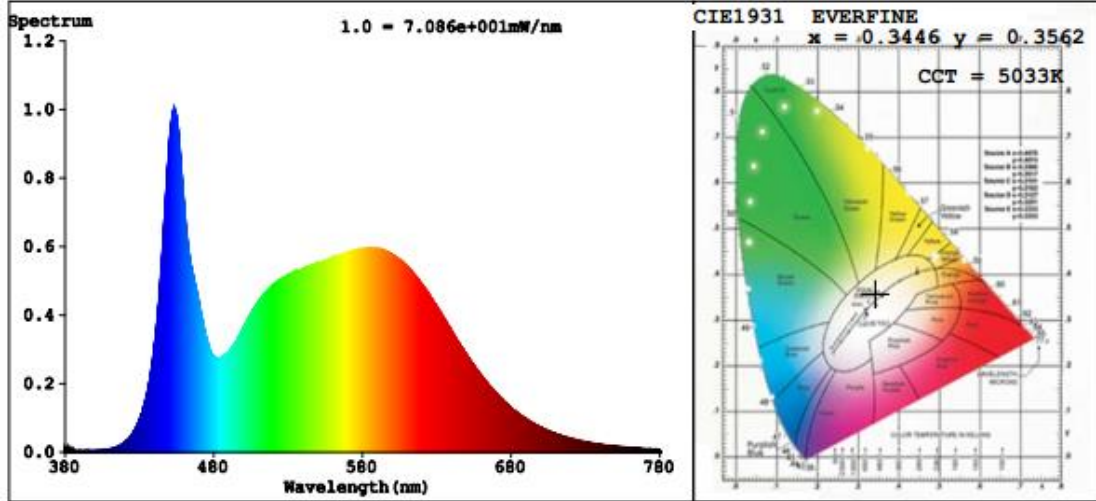
Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	13
Frequency (Hz)	60	R2	91	R10	77
CCT (K)	5033	R3	95	R11	82
Duv	0.0025	R4	83	R12	62
Chromaticity (x, y)	x=0.3446 y=0.3562	R5	83	R13	85
Chromaticity (u', v')	u'=0.2093 v'=0.4868	R6	86	R14	97
Color Rendering Index (CRI)	84.5	R7	87	R15	78
R9	13	R8	68	--	--

Photometric Measurement for Bare-lamp –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.2 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2345	2348	Bare Lamp: 1600(-10%)
Luminous Efficacy (lm/W)	134.69	134.32	Bare lamp: >= 110(-3%)
Worst Luminous/Highest Watts	134.15		

Spectral Power Distribution & Chromaticity Diagram



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2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
HC-T8-4FT-18W-ID(3000K,CLEAR)	3000K	2273	17.30	131.39
HC-T8-4FT-18W-ID(3500K,CLEAR)	3500K	2291 ^{*1}	17.36 ^{*2}	131.97 ^{*3}
HC-T8-4FT-18W-ID(4000K,CLEAR)	4000K	2309 ^{*1}	17.36 ^{*2}	133.01 ^{*3}
HC-T8-4FT-18W-ID(4500K,CLEAR)	4500K	2327 ^{*1}	17.36 ^{*2}	134.04 ^{*3}
HC-T8-4FT-18W-ID(5000K,CLEAR)	5000K	2345	17.41	134.69

*1: This value is calculated and the calculation formula is as below:

$$2291 = (2345 - 2273) / 4 + 2273$$

$$2309 = (2345 - 2273) / 4 + 2291$$

$$2327 = (2345 - 2273) / 4 + 2309$$

*2: This value is calculated and the calculation formula is as below:

$$17.36 = (17.30 + 17.41) / 2$$

*3: This value is calculated and the calculation formula is as below:

$$131.97 = 2291 / 17.36$$

$$133.01 = 2309 / 17.36$$

$$134.04 = 2327 / 17.36$$

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-327	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-12	2017-07-11
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
GO-R5000	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-12	2017-07-11
PF210	Power Meter for Goniophotometer	2016-07-07	2017-07-06

Expand Uncertainty:
Photometric Measurement (Sphere):2.04%, k=2
Chromaticity Measurement(Sphere):28.8K, k=2
Photometric Measurement(Goniophotometer):2.36%, k=2

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