

LM-79-08 Test Report

For

L-TECH CORPORATION

(Brand Name: N/A)

No. 5, Central Road, Fudu Industrial Park, Shaogantou District, Qiaotou Town, Dongguan City

Model name(s):

LRKT477-2790

LRKT477-3090

LRKT477-4090

LRKT477-5090

Report Type: Testing and Report According to IES LM-79-2008

**Type of
Luminaire:** LED Luminaires

Report Date: 2019-01-11

Ningbo TengLi Testing Co., Ltd

Prepared By: 2nd floor, Block B, Ningbo Testing and Certification Base,
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Test & Report By:

Nick Song

Engineer: Nick Song

Review By:

Johnson Sun

Manager: Johnson Sun

Note: 1. The results contained in this report pertain only to the tested samples
2. This report does not imply product certification, approval, or endorsement by NVLAP, NIST,
or any agency of the Federal Government.

1.1 Product Information:		
Model Number	LRKT477-2790, LRKT477-3090, LRKT477-4090, LRKT477-5090	
Remark	N/A	
Representative (Tested) Model	LRKT477-2790, LRKT477-3090, LRKT477-4090, LRKT477-5090	
Model Difference	All construction and rating are the same, except CCT	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
LED Manufacturer	N/A	
LED Model	N/A	
Dimming	N/A	
Sample Number	JCE181205-A1(2700K), JCE181205-A2(3000K), JCE181205-A3(4000K), JCE181205-A4(5000K)	
Date of Receipt	Dec.15, 2018	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	120Vac, 50/60Hz
Nominal Power	6W
Rated Initial Lamp Lumen	--
Declared CCT	2700K, 3000K, 4000K, 5000K

1.3 Test Specifications:

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 C78.377-2015 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

1.4 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 ° vertical intervals and 22.5 ° 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

Test date	2018-01-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LRKT477-2790		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JCE18120 5 -A1	120.0	60	0.0793	9.032	0.9489	26.69

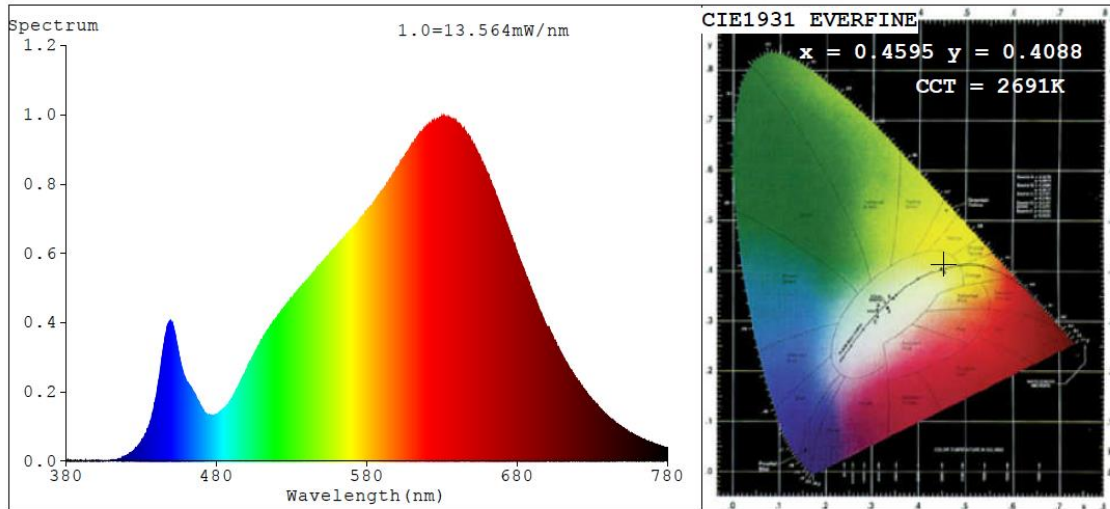
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	93	R9	68
Frequency (Hz)	60	R2	95	R10	86
CCT (K)	2691	R3	94	R11	93
Duv	-0.0006	R4	93	R12	80
Chromaticity (x, y)	x=0.4595 y=0.4088	R5	92	R13	93
Chromaticity (u', v')	u'=0.2631 v'=0.5266	R6	93	R14	96
Color Rendering Index (CRI)	92.4	R7	94	R15	91
R9	68	R8	86	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	652.56
Luminous Efficacy (lm/W)	72.25
Beam Angle (°)	93.7
Center Beam Candle Power (cd)	284

Spectral Power Distribution & Chromaticity Diagram

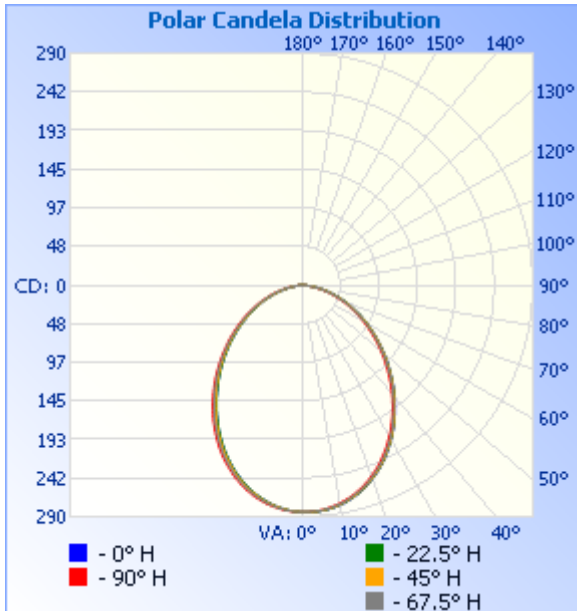


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	210.2	32.2%
0-40	332.3	50.9%
0-60	543.9	83.4%
60-90	108.6	16.6%
70-100	41.9	6.4%
90-120	0.0	0%
0-90	652.5	100%
90-180	0.0	0%
0-180	652.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	26.7	4.1%	90-100	0.0	0%
10-20	75.0	11.5%	100-110	0	0%
20-30	108.6	16.6%	110-120	0	0%
30-40	122.1	18.7%	120-130	0	0%
40-50	116.0	17.8%	130-140	0	0%
50-60	95.5	14.6%	140-150	0	0%
60-70	66.7	10.2%	150-160	0	0%
70-80	34.5	5.3%	160-170	0	0%
80-90	7.4	1.1%	170-180	0	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
3.3ft	26.1 fc	7.0 ft	7.1 ft
6.6ft	6.5 fc	14.0 ft	14.1 ft
9.9ft	2.9 fc	21.0 ft	21.2 ft
13.2ft	1.6 fc	28.1 ft	28.3 ft
16.5ft	1.0 fc	35.1 ft	35.3 ft
19.8ft	0.7 fc	42.1 ft	42.4 ft

■ Vert. Spread: 93.5°
 ■ Horiz. Spread: 93.9°

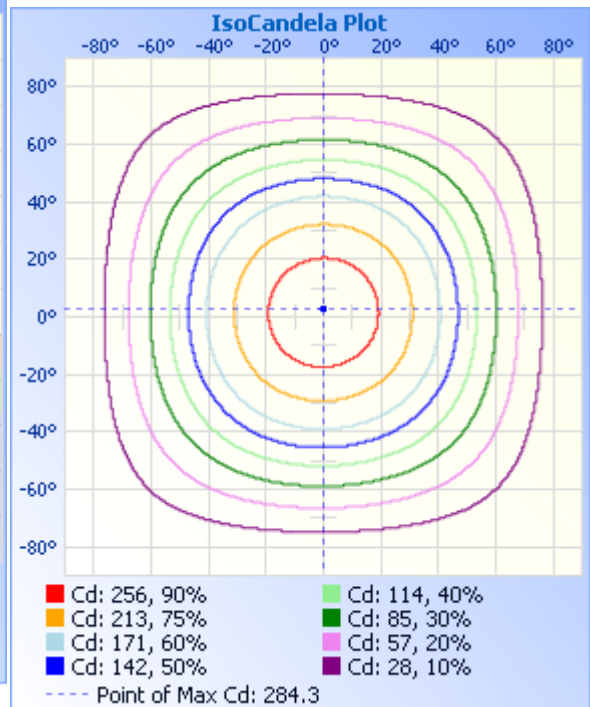
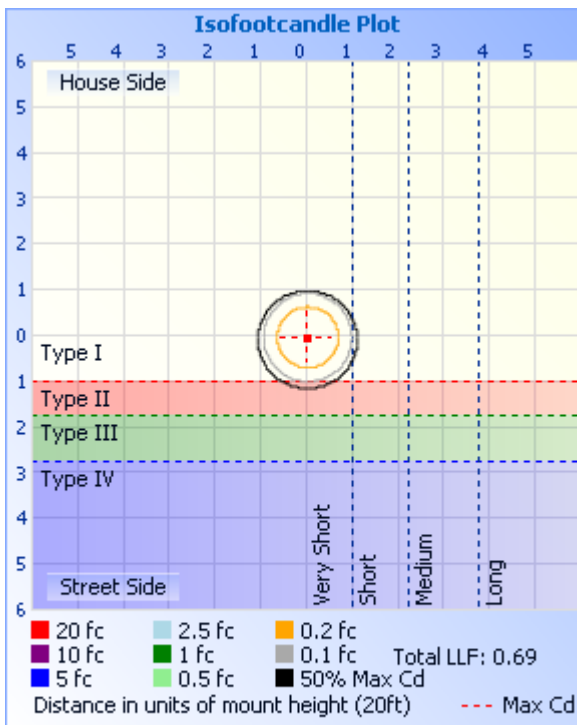


Table--1

UNIT: cd

C (DEG) \ y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284			
5	282	282	283	283	283	283	283	283	283	282	281	281	281	280	281	281			
10	275	277	278	279	279	279	279	278	277	276	275	273	273	273	273	275			
15	265	267	269	270	271	271	270	269	268	266	264	262	261	261	262	264			
20	252	254	256	258	258	258	258	256	255	252	250	248	246	246	248	250			
25	235	238	240	242	243	242	242	240	238	235	233	230	228	228	230	233			
30	215	218	222	223	224	224	223	222	219	216	213	210	208	208	210	213			
35	194	197	201	203	203	203	202	201	198	194	192	188	186	186	188	191			
40	172	174	178	180	181	180	180	179	176	172	169	166	164	164	166	169			
45	149	152	155	158	158	158	157	156	153	149	146	144	142	141	143	146			
50	126	129	133	135	136	135	135	133	131	127	124	122	120	119	121	124			
55	105	108	111	113	114	114	113	112	109	105	103	100	98.9	98.7	100	103			
60	84.6	87.3	90.5	92.7	93.5	93.3	92.7	90.9	88.2	84.9	82.3	80.3	79.0	78.8	80.3	82.5			
65	65.5	68.2	71.1	73.2	73.9	73.8	73.2	71.4	68.9	65.9	63.4	61.5	60.4	60.3	61.5	63.5			
70	47.5	50.2	52.8	54.8	55.5	55.5	54.8	53.1	50.8	48.0	45.6	43.9	42.9	42.8	43.8	45.7			
75	30.8	33.3	35.6	37.5	38.4	38.4	37.5	35.9	33.9	31.4	29.2	27.5	26.6	26.6	27.5	29.1			
80	15.9	18.0	20.1	21.8	22.5	22.6	21.8	20.3	18.6	16.4	14.6	13.2	12.4	12.4	13.1	14.5			
85	4.49	5.85	7.40	8.67	9.27	9.28	8.70	7.60	6.31	4.82	3.74	3.00	2.56	2.52	2.94	3.69			
90	0.01	0.04	0.17	0.26	0.27	1.11	0.25	0.17	0.08	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	0.00	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	0.00	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	0.00	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			

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2018-01-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LRKT477-3090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JCE18120 5-A2	120.0	60	0.0759	8.665	0.9513	25.31

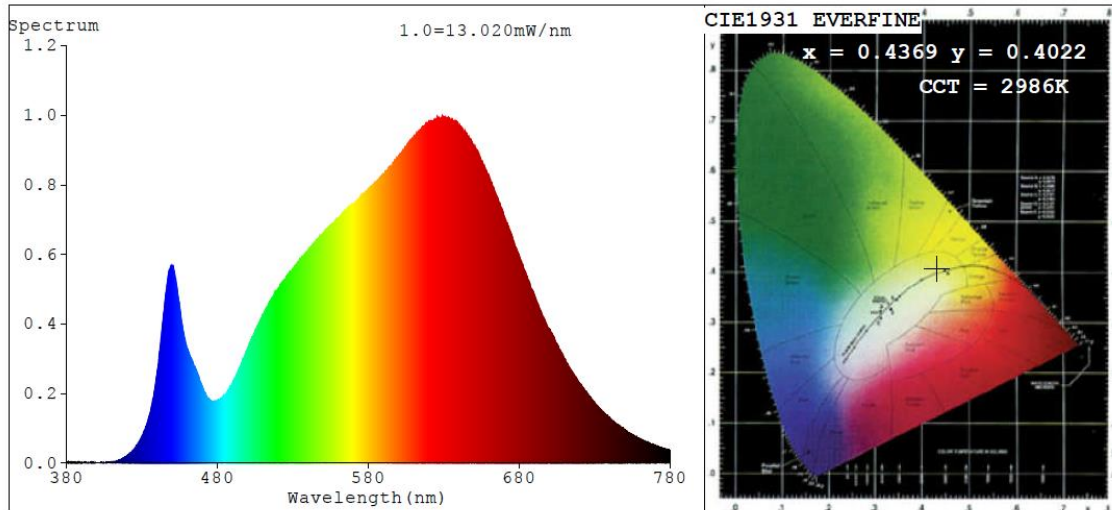
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	93	R9	69
Frequency (Hz)	60	R2	94	R10	85
CCT (K)	2986	R3	94	R11	92
Duv	-0.0007	R4	93	R12	77
Chromaticity (x, y)	x=0.4369 y=0.4022	R5	92	R13	93
Chromaticity (u', v')	u'=0.2513 v'=0.5206	R6	92	R14	96
Color Rendering Index (CRI)	92.2	R7	94	R15	91
R9	69	R8	87	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	692.92
Luminous Efficacy (lm/W)	79.97
Beam Angle (°)	94.0
Center Beam Candle Power (cd)	301

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	222.8	32.2%
0-40	352.4	50.9%
0-60	577.3	83.3%
60-90	115.6	16.7%
70-100	44.5	6.4%
90-120	0.0	0%
0-90	692.8	100%
90-180	0.0	0%
0-180	692.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.3	4.1%	90-100	0.0	0%
10-20	79.4	11.5%	100-110	0	0%
20-30	115.1	16.6%	110-120	0	0%
30-40	129.6	18.7%	120-130	0	0%
40-50	123.3	17.8%	130-140	0	0%
50-60	101.6	14.7%	140-150	0	0%
60-70	71.0	10.3%	150-160	0	0%
70-80	36.8	5.3%	160-170	0	0%
80-90	7.7	1.1%	170-180	0	0%

Photometric Data

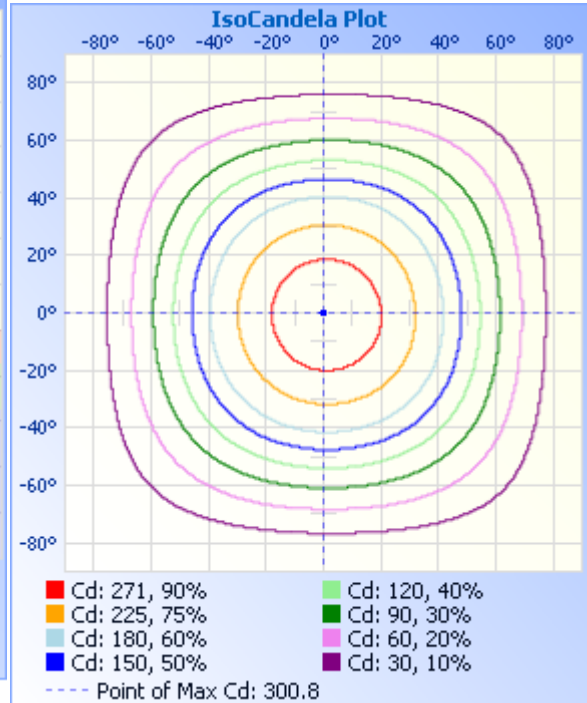
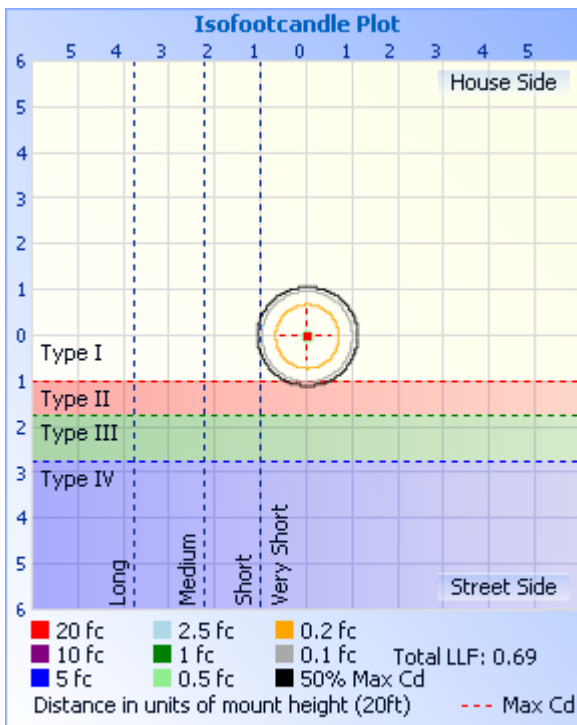
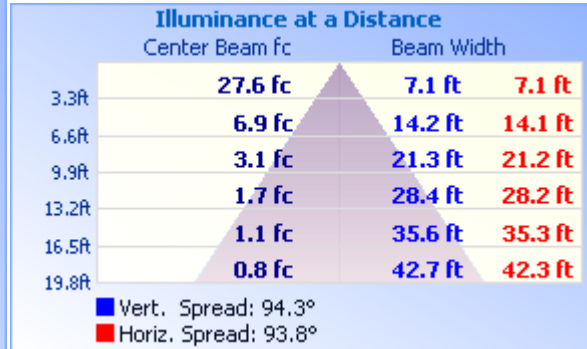
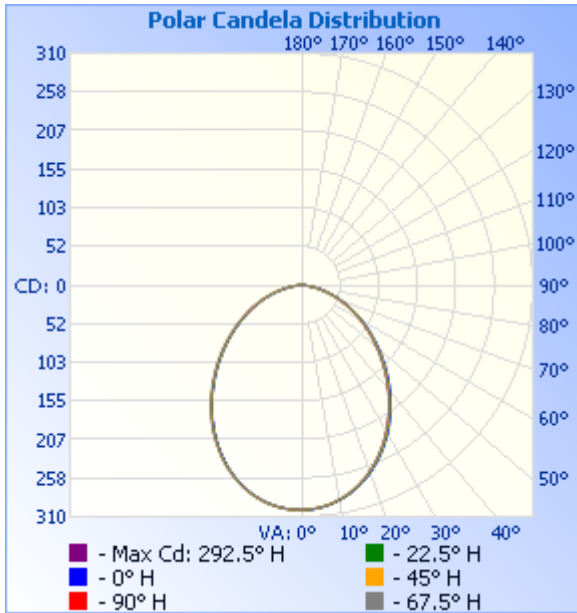


Table--1

UNIT: cd

C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	301	301	301	301	301	301	301	301	301	301	301	301	301	301	301	301			
5	299	299	299	299	298	298	298	298	298	298	298	299	299	299	299	299			
10	293	293	293	292	292	292	291	291	291	292	292	293	293	293	293	294			
15	284	283	283	282	282	281	280	280	280	281	281	282	283	284	284	284			
20	270	269	269	268	268	266	266	265	265	266	267	268	269	270	270	271			
25	252	252	251	251	250	249	248	247	247	247	249	250	252	253	253	254			
30	232	231	231	231	230	228	228	226	226	226	228	230	232	232	233	234			
35	210	209	209	208	207	206	205	204	204	203	205	207	209	210	211	212			
40	187	186	185	185	184	182	181	180	180	180	181	184	185	186	187	188			
45	163	162	162	161	160	158	157	156	156	156	157	160	161	162	163	164			
50	139	139	138	138	136	134	134	133	133	132	134	136	137	138	139	140			
55	116	116	116	115	114	112	111	110	110	110	111	113	114	115	116	117			
60	94.8	94.4	94.2	93.5	92.1	90.5	89.6	88.9	88.7	88.5	89.7	91.1	92.2	93.0	94.2	95.2			
65	74.3	74.1	73.8	73.1	71.7	70.4	69.4	68.8	68.7	68.6	69.4	70.7	71.7	72.5	73.6	74.7			
70	54.9	54.8	54.5	53.9	52.6	51.5	50.6	50.0	49.9	49.9	50.4	51.5	52.4	53.3	54.3	55.2			
75	36.8	36.8	36.5	35.9	34.8	33.8	32.9	32.3	32.5	32.3	32.8	33.6	34.4	35.2	36.1	37.0			
80	20.3	20.3	20.1	19.7	18.8	18.0	17.2	16.8	16.8	16.6	16.9	17.6	18.2	18.8	19.6	20.5			
85	7.01	7.07	7.01	6.80	6.22	5.59	5.20	4.91	4.85	4.66	4.82	5.14	5.45	5.82	6.45	7.08			
90	0.07	0.08	0.05	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.16			
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	0.00	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	0.00	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	0.00	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

Test date	2018-01-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LRKT477-4090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JCE18120 5-A3	120.0	60	0.0801	9.165	0.9530	25.72

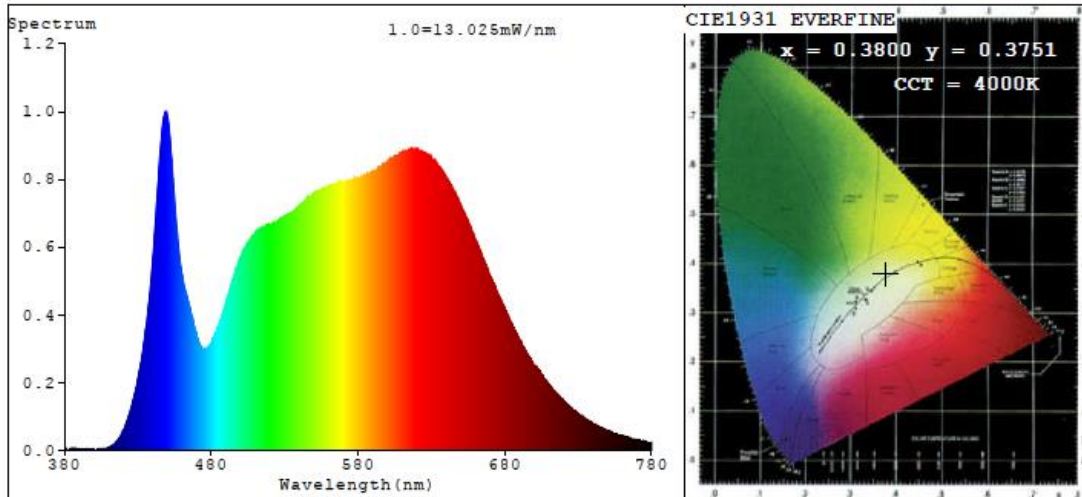
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	94	R9	70
Frequency (Hz)	60	R2	95	R10	88
CCT (K)	4000	R3	95	R11	95
Duv	-0.0007	R4	95	R12	79
Chromaticity (x, y)	x=0.3800 y=0.3751	R5	94	R13	94
Chromaticity (u', v')	u'=0.2255 v'=0.5008	R6	93	R14	97
Color Rendering Index (CRI)	93.7	R7	95	R15	92
R9	70	R8	89	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	749.71
Luminous Efficacy (lm/W)	81.80
Beam Angle (°)	95.8
Center Beam Candle Power (cd)	318

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	236.8	31.6%
0-40	375.7	50.1%
0-60	620.9	82.8%
60-90	128.7	17.2%
70-100	50.0	6.7%
90-120	0.0	0%
0-90	749.6	100%
90-180	0.0	0%
0-180	749.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.0	4.0%	90-100	0.0	0%
10-20	84.2	11.2%	100-110	0	0%
20-30	122.5	16.3%	110-120	0	0%
30-40	138.9	18.5%	120-130	0	0%
40-50	133.6	17.8%	130-140	0	0%
50-60	111.6	14.9%	140-150	0	0%
60-70	78.8	10.5%	150-160	0	0%
70-80	41.1	5.5%	160-170	0	0%
80-90	8.8	1.2%	170-180	0	0%

Photometric Data

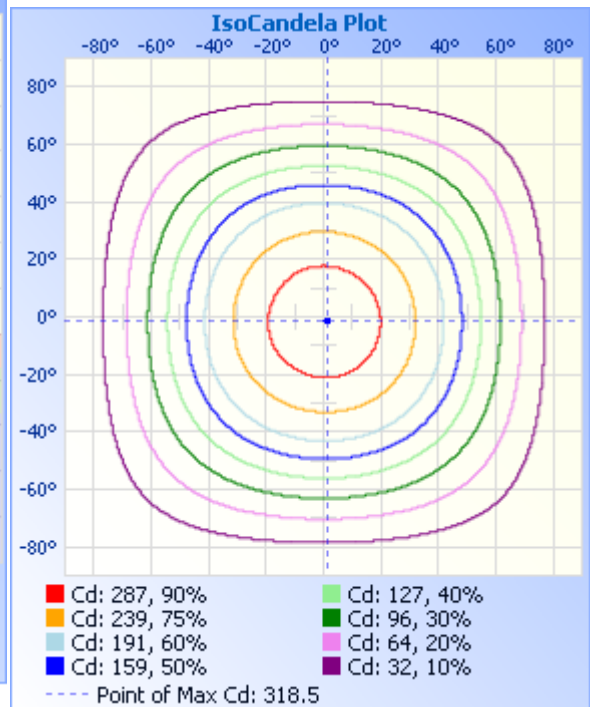
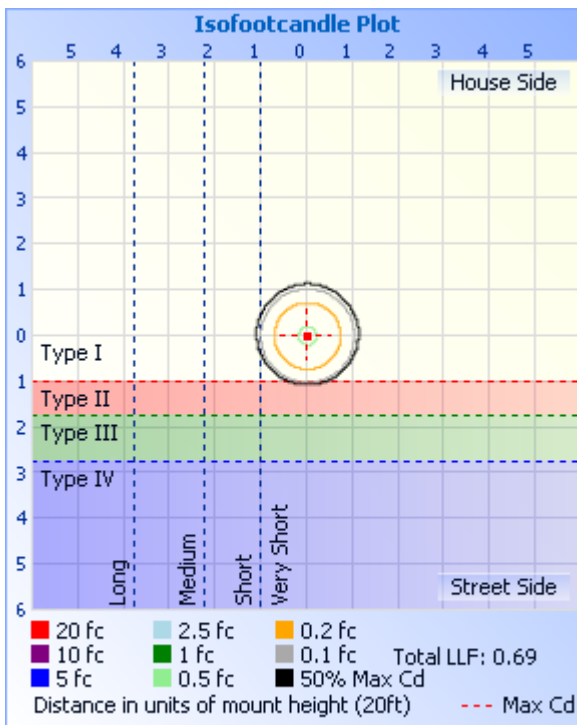
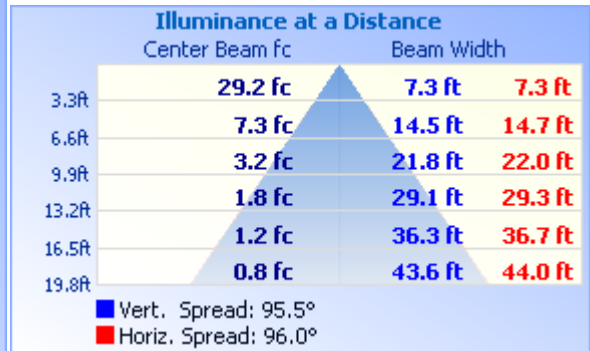
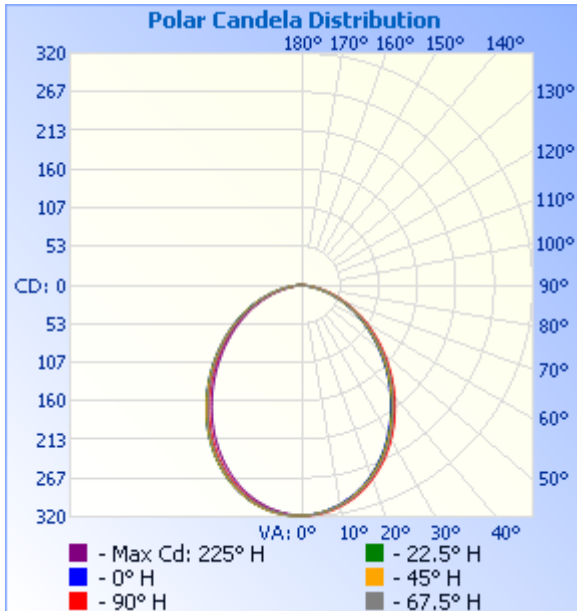


Table--1

UNIT: cd

C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318			
5	316	316	315	315	315	315	315	316	317	317	317	317	317	317	317	317			
10	310	309	308	307	307	308	308	309	310	311	311	312	312	312	312	311			
15	299	298	296	296	296	296	297	298	298	300	301	301	302	302	302	301			
20	285	283	281	280	280	281	282	283	285	287	287	288	289	289	288	287			
25	267	265	262	261	261	262	263	265	268	269	270	271	271	272	271	269			
30	246	243	240	239	239	240	242	244	247	248	249	250	251	251	250	248			
35	223	220	216	215	215	217	219	221	224	226	226	227	228	228	227	226			
40	198	195	192	190	191	192	194	196	200	202	202	203	204	204	203	201			
45	173	170	167	166	166	167	169	171	175	177	178	179	180	179	178	176			
50	149	146	143	141	141	143	145	147	150	152	153	154	155	155	153	151			
55	124	122	119	118	118	119	121	123	126	128	129	130	131	130	129	127			
60	101	98.9	96.3	95.0	95.0	96.1	97.6	99.7	103	105	106	107	108	107	106	104			
65	78.9	76.7	74.5	73.3	73.3	74.3	75.8	77.8	80.8	82.8	83.9	84.8	85.3	84.7	83.1	81.3			
70	57.7	55.8	53.8	52.8	52.7	53.5	55.0	56.9	59.7	61.6	62.8	63.6	64.0	63.4	62.1	60.2			
75	37.9	36.0	34.3	33.4	33.3	34.1	35.4	37.3	39.9	41.6	42.8	43.6	43.8	43.3	42.0	40.3			
80	20.0	18.4	16.9	16.2	16.3	16.9	17.9	19.5	21.8	23.4	24.4	25.1	25.4	24.9	23.6	22.0			
85	6.04	5.02	4.51	4.14	4.21	4.56	4.77	5.74	7.77	8.74	9.45	10.3	10.3	9.81	8.81	7.69			
90	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.22	0.56	0.69	0.75	0.60	0.25	0.06			
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	0.00	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	0.00	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	0.00	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			

2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2018-01-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LRKT477-5090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JCE18120 5-A4	120.0	60	0.0791	8.980	0.9465	28.03

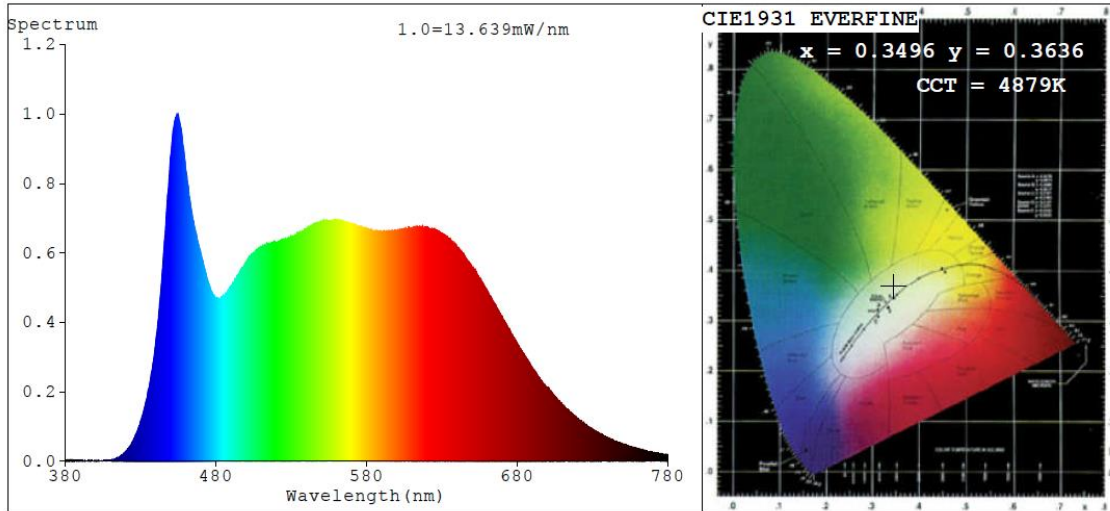
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	94	R9	74
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	4879	R3	99	R11	91
Duv	0.0042	R4	90	R12	69
Chromaticity (x, y)	x=0.3496 y=0.3636	R5	92	R13	95
Chromaticity (u', v')	u'=0.2099 v'=0.4911	R6	95	R14	99
Color Rendering Index (CRI)	93.7	R7	93	R15	91
R9	74	R8	89	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	689.37
Luminous Efficacy (lm/W)	76.77
Beam Angle (°)	94.4
Center Beam Candle Power (cd)	297

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	220.7	32%
0-40	349.4	50.7%
0-60	573.8	83.3%
60-90	115.4	16.7%
70-100	44.4	6.4%
90-120	0.0	0%
0-90	689.3	100%
90-180	0.0	0%
0-180	689.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.0	4.1%	90-100	0.0	0%
10-20	78.6	11.4%	100-110	0	0%
20-30	114.1	16.6%	110-120	0	0%
30-40	128.8	18.7%	120-130	0	0%
40-50	122.9	17.8%	130-140	0	0%
50-60	101.5	14.7%	140-150	0	0%
60-70	71.0	10.3%	150-160	0	0%
70-80	36.7	5.3%	160-170	0	0%
80-90	7.7	1.1%	170-180	0	0%

Photometric Data

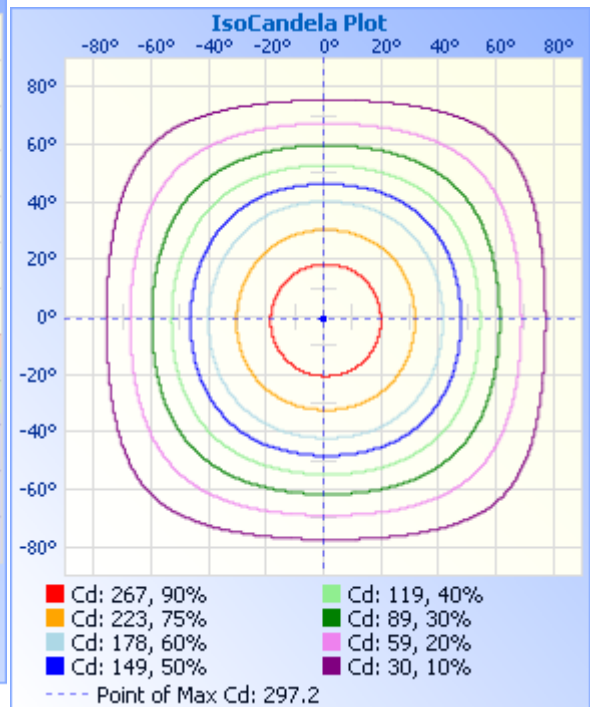
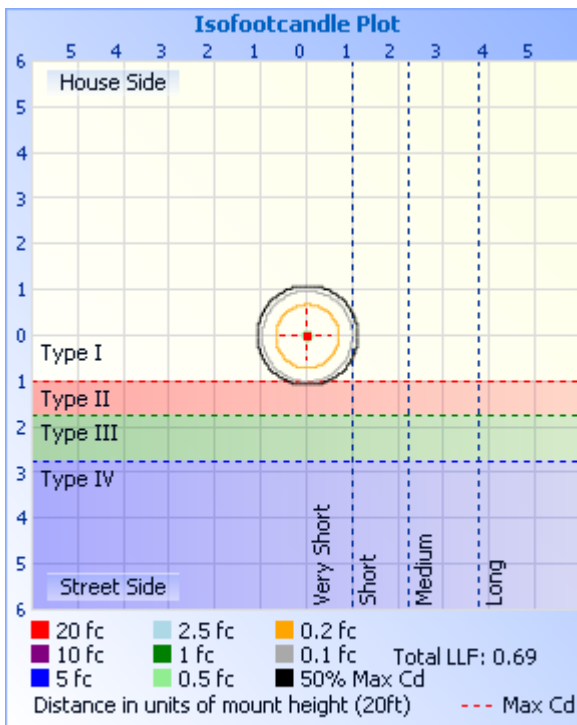
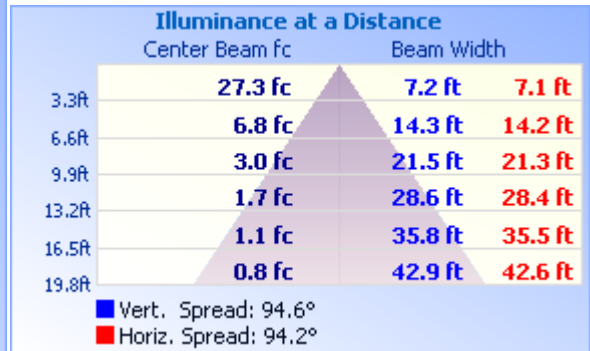
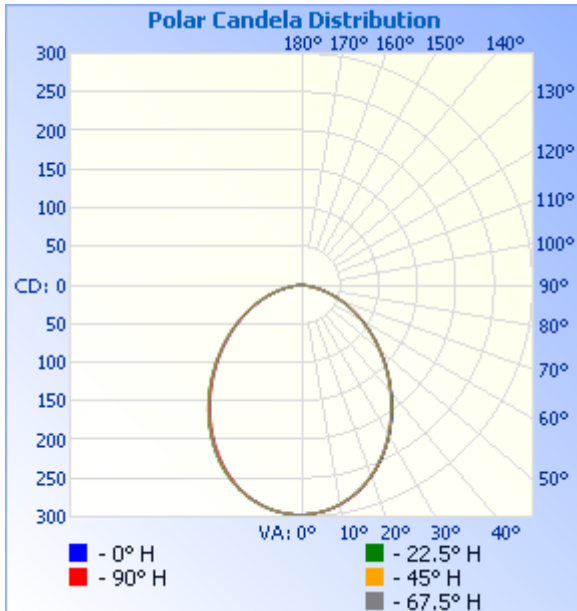


Table--1

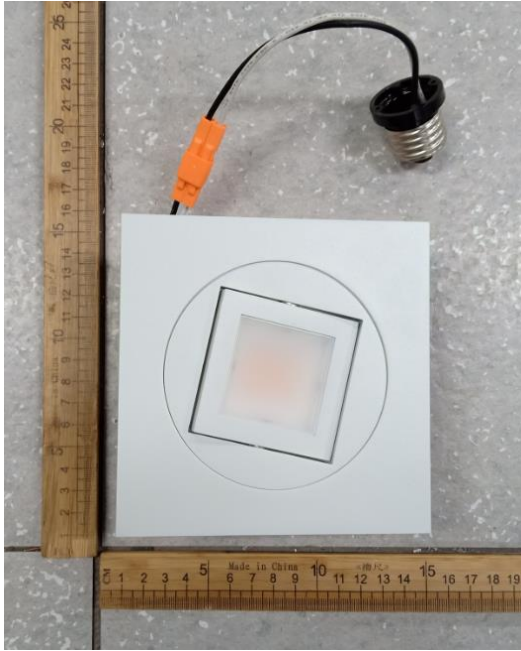
UNIT: cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297			
5	295	295	295	295	295	295	294	294	295	295	295	295	296	296	296	296			
10	290	289	289	288	288	288	288	288	289	289	289	290	290	290	290	290			
15	280	279	279	278	277	278	277	277	278	279	280	281	281	281	281	281			
20	266	266	265	264	263	263	263	262	264	265	266	267	268	268	268	267			
25	249	248	248	247	246	246	245	245	246	248	249	250	251	252	251	250			
30	229	228	228	227	226	226	225	224	226	228	230	231	231	232	232	230			
35	207	207	206	205	204	203	202	202	203	206	208	209	210	211	210	208			
40	184	183	183	181	180	180	179	179	180	182	184	185	186	187	187	185			
45	160	160	159	157	156	156	155	155	157	159	161	162	163	164	163	162			
50	137	137	136	134	133	133	132	132	134	135	137	138	139	140	140	139			
55	115	114	113	112	111	111	110	110	111	113	115	115	116	117	117	116			
60	93.3	92.6	91.6	90.3	89.5	89.1	88.7	88.5	90.0	91.4	92.7	93.6	94.4	95.3	95.3	94.7			
65	73.0	72.4	71.4	70.1	69.2	68.9	68.5	68.4	69.8	71.0	72.2	73.1	74.0	74.8	74.9	74.5			
70	54.0	53.2	52.2	51.2	50.3	49.8	49.5	49.4	50.7	51.8	53.0	53.9	54.7	55.4	55.6	55.3			
75	36.0	35.2	34.3	33.3	32.5	31.9	31.6	31.7	32.9	33.8	34.9	35.8	36.6	37.3	37.5	37.3			
80	19.7	19.2	18.3	17.3	16.6	16.2	15.9	15.9	16.9	17.8	18.6	19.4	20.2	20.9	21.1	20.9			
85	6.68	6.30	5.73	5.05	4.55	4.68	4.52	4.47	4.70	5.24	5.79	6.29	6.84	7.37	7.86	7.79			
90	0.03	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.11	0.05	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	0.00	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	0.00	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	0.00	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			

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-705	Standard Lamp D204	2018-02-08	2019-02-07
ST-R-704	Power Meter for Integrating Sphere	2019-01-06	2020-01-05
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp D908S	2018-02-13	2019-02-12
ST-R-711	Power Meter for Goniophotometer	2019-01-06	2020-01-05
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

4. Product Photo



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