



TEST REPORT

For

LED ONE CORPORATION

12437 Bellegrave Ave Eastvale CA US 91752

Model Number:	LOC-4FTVTHB-MW(120/150/180)MCCT(35/40/50)-OP1	
Report Type:	Electrical, Photometric and ISTMT tests according to the following standards and show the compliance to DLC Program SSL Technical Requirements V5.0	
Standards:	IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting ANSI/UL 1598-2008: Standard for Safety of Luminaires IES TM-30-18: IES Method for Evaluating Light Source Color Rendition	
Test Engineer:	George Yang	
Report Number:	PKS201220003-10	
Sample Size:	One sample was received on 2020-09-07 and used for testing.	
Test Date:	2020-09-08 to 2020-09-11	
Report Date:	2020-12-21	
Reviewed By:	Seven Xia/EE Engineer	
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No.248 Chenghu Road, Kunshan, Jiangsu province, China. Tel: +86-0512-86175000 Fax:+86-0512-88934268	

1. Product Information and Description

Product Primary Use:	High-bay Luminaires for Commercial and Industrial Buildings
Voltage And Frequency:	120-277VAC, 50/60Hz
LED Source Manufacturer:	Lumileds Holding B.V.
LED Source Model:	L128-xx80RA35000Q1
Driver Model:	SDU96CS210V46DL1A
Auxiliary Ballast Model:	NA
Auxiliary Housing Model:	NA
White Tunable:	Yes
Field-Adjustable Light Output:	Yes

Note:

- The applicant *LED ONE CORPORATION* declared that their products are the same to the product in report# RKS200907009-10 and is authorized by original applicant to use their test data.
- All the data in previous report (RKS200907009-10) is shared in report.

2. Product Rated Values (#)

Test Model	CCT(K)	Light Output (lm)	Power(W)	Luminous Efficacy (lm/W)
LOC-4FTVTHB-MW(120/150/180)MCCT(35/40/50)-OP1	3500	24876	180	138.2
		21000	150	140
		17040	120	142
	4000	26100	180	145
		22050	150	147
		18000	120	150
	5000	25380	180	141
		21450	150	143
		17400	120	145

3. Test List

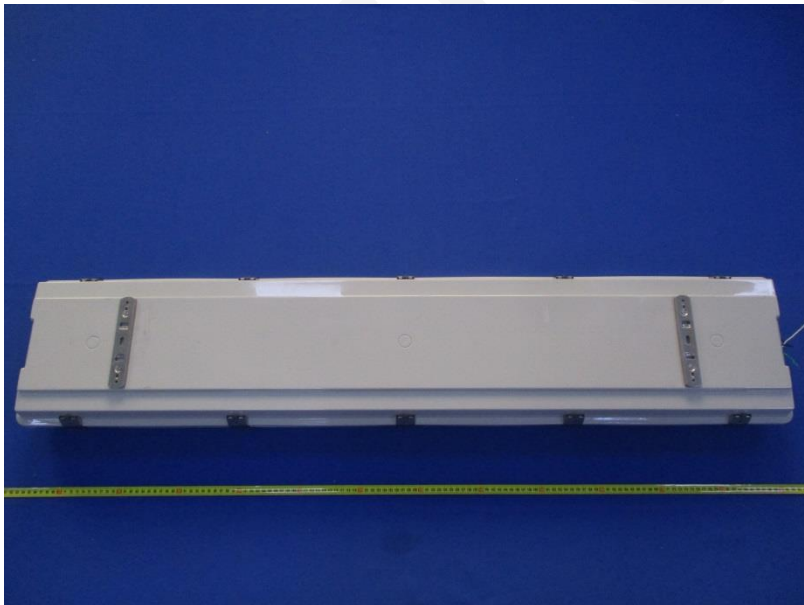
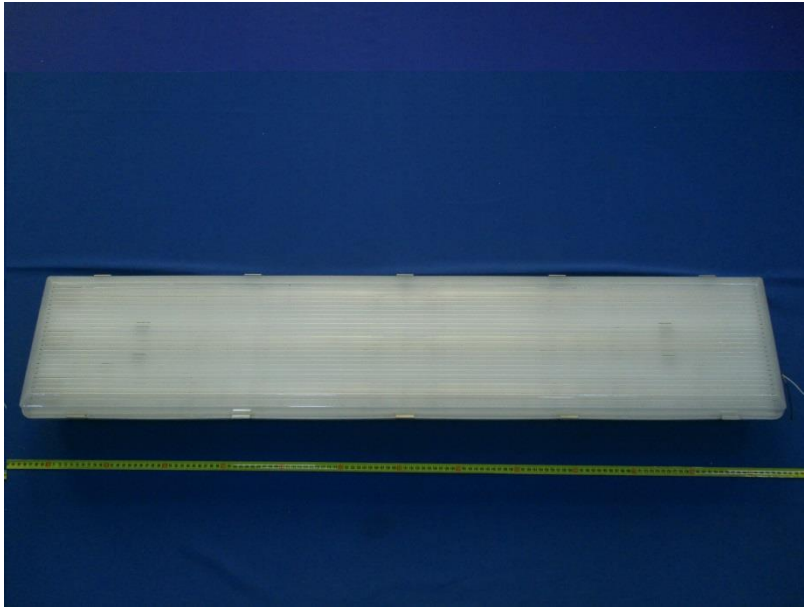
Test Model	CCT(K)	Power(W)	Test Item			
			Goniophotometer Test	Integrating Sphere Test	THDi and PF Test	In-Situ Temperature Measurement Test
LOC-4FTVTHB-MW(120/150/180)MCCT(35/40/50)-OP1	3500	180	Yes	Yes	Yes	Yes

Family Declaration (#):

Testing Products	Multiple Models	Differences Items	Detail

<p>LOC-4FTVTHB- MW(120/150/180)MCCT(35/4 0/50)-OP1</p>	<p>LOC-4FTVTHB- MW(120/150/180)MCCT(35/40/5 0)- OP1-[Blank,SPD]- [Blank,EM,MS,EMMS]</p>	<p>Surge Protector</p>	<p>[Blank, SPD]=Blank stands for without surge protector, SPD stands for with surge protector.</p>
		<p>Emergency Battery & Sensor</p>	<p>[Blank, EM,MS,EMMS]=Blank stands for without emergency battery & sensor, EM stands for with emergency battery; MS stands for with sensor, EMMS stands for with emergency battery & sensor</p>

4. Product Photo



5. Test Result

Control setting: 180W 3500K

Integrating Sphere Test; Orientation: Downward; Test Voltage: 120V 60Hz:

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
Total Efficacy(lm/W)	138.14	≥135	≥130.95	Pass
CCT(K)	3352	3220~3710	3220~3710	Pass
Duv	-0.00157	-0.0055~0.0065	-0.0055~0.0065	Pass
R _a	83.2	≥70	≥68	Pass

Goniophotometer Test; Orientation: Downward; Test Voltage: 120V 60Hz:

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
Light Output(lm)	24325.9	≥10000	≥9000	Pass
Power(W)	176.07	None.	None.	N/A
Total Efficacy(lm/W)	138.21	≥135	≥130.95	Pass
Zonal Lumen Distribution(0-60°)	40.00%	20-50°≥30%	20-50°≥20%	Pass

THDi, PF Test; Orientation: Downward:

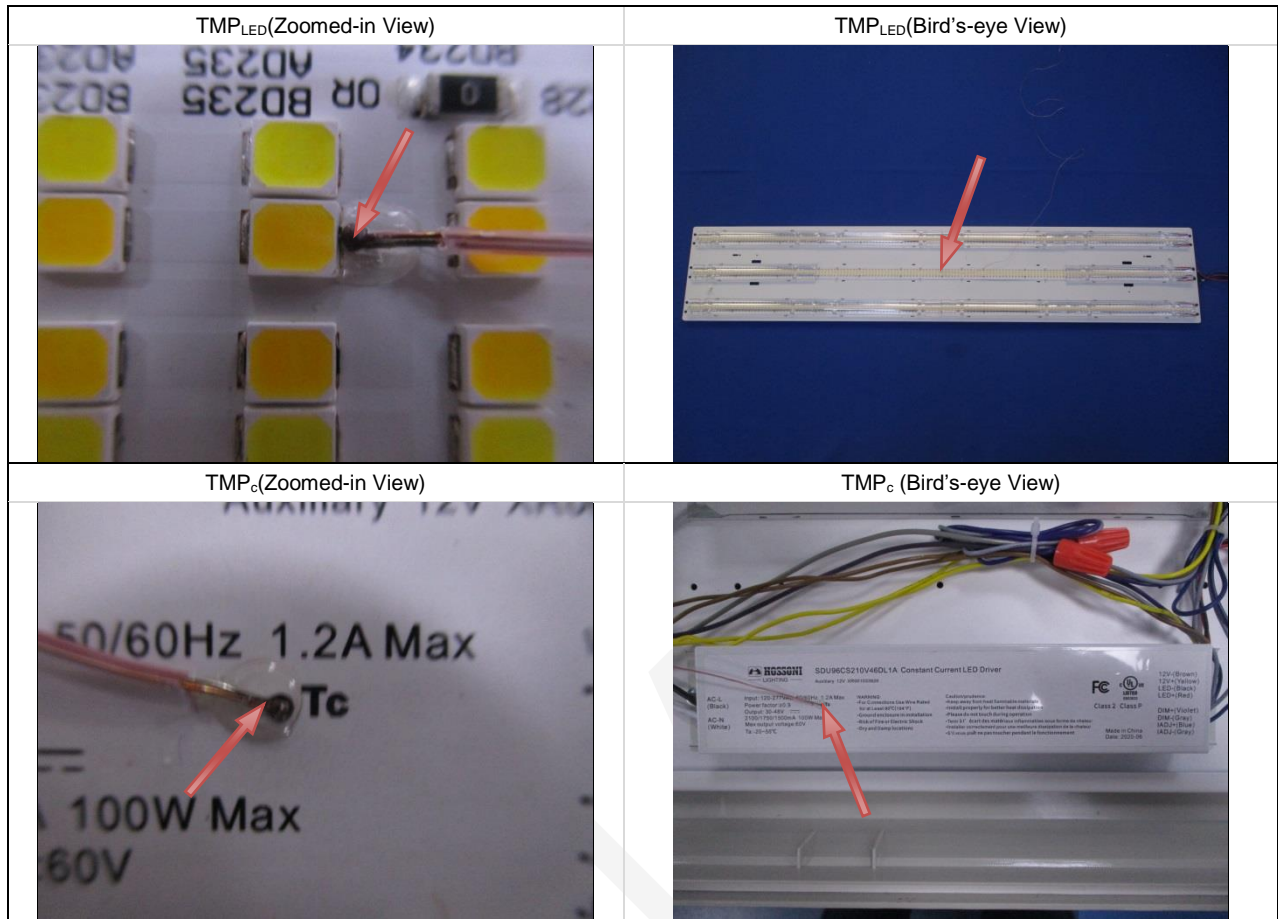
Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9985	≥0.9	≥0.87	Pass
120	THDi	5.97%	≤20%	≤25%	Pass
277	Power Factor	0.9725	≥0.9	≥0.87	Pass
277	THDi	11.78%	≤20%	≤25%	Pass

In-Situ Temperature Measurement Test: Test Voltage: 120V 60Hz:

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
TMP _{LED} (°C)	65.8	≤115	With tolerance of ≤ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
TMP _c (°C)	67.1	≤85	With tolerance of ≤ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
Drive Current/Individual LED source(mA)	61.7	≤150	With +5% tolerance	Pass
TM-21 Projected Lumen Maintenance at 50000hours	90.25%	L ₇₀ Life≥50000	L ₇₀ Life≥50000	Pass
L ₇₀ Lumen Maintenance Life (Hours)	>54000			
L ₉₀ Lumen Maintenance Life (Hours)	51000	≥36000	≥36000	Pass

Note:

- The test results were measured directly from the test equipment.
- The DLC requirements were listed according to DLC Technical Requirements V5.0
- The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.



Test Data

[Integrating Sphere System]

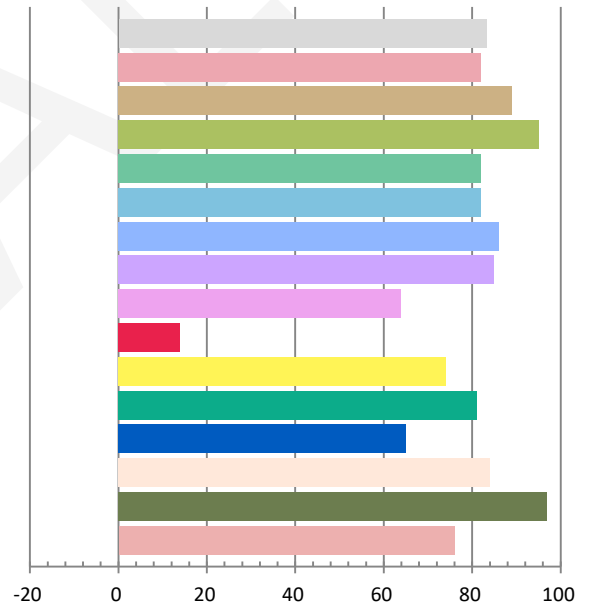
Photometric and Electrical Measurement Result

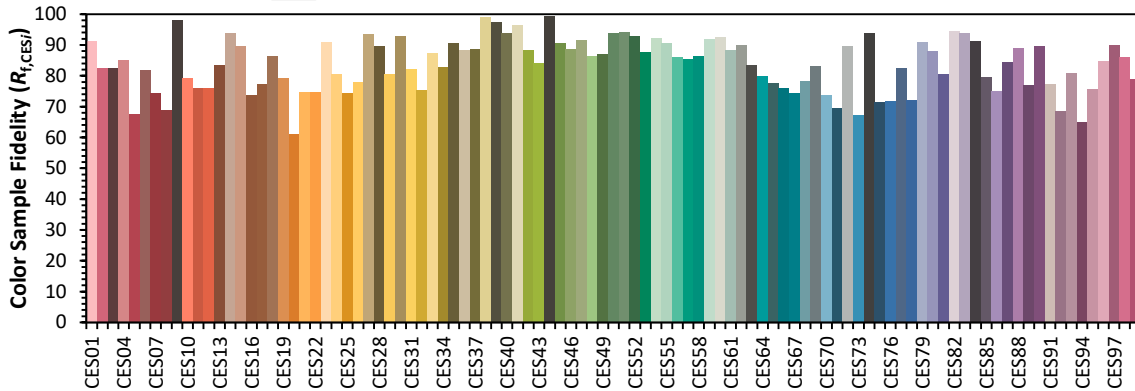
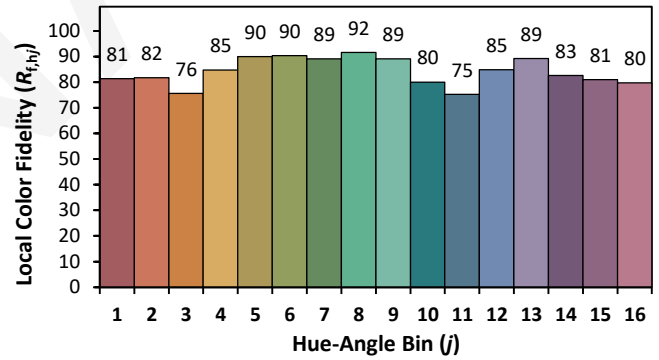
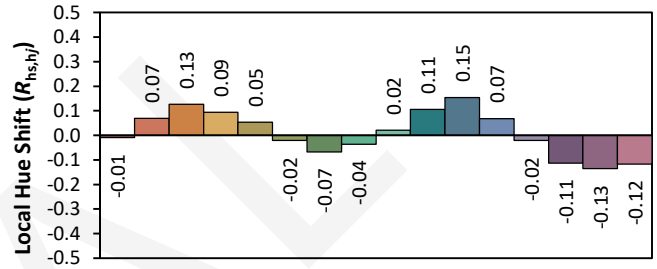
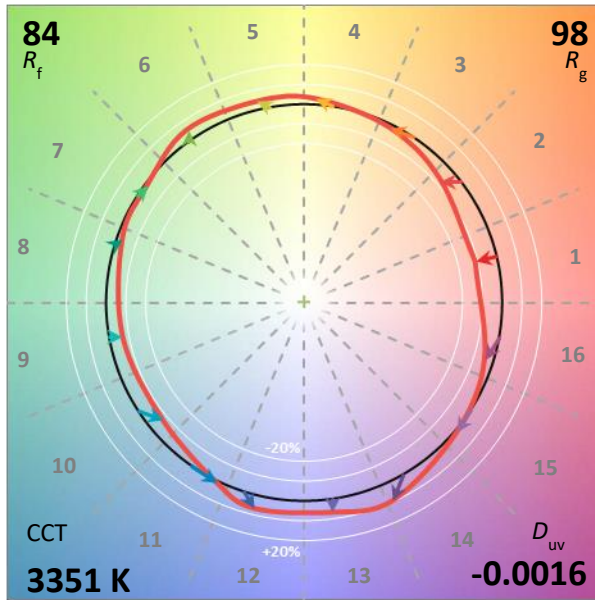
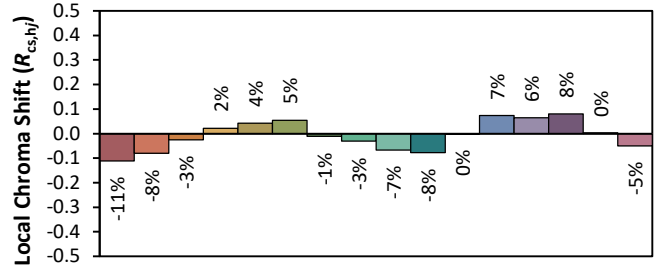
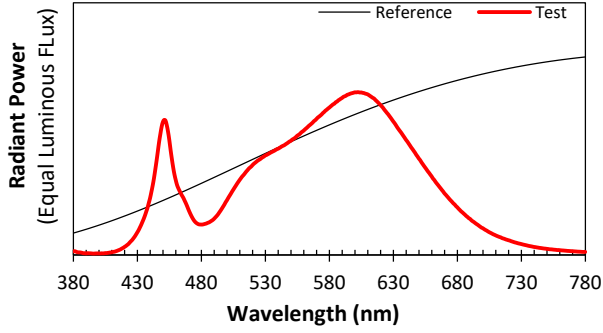
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	1.47	176	0.9977	24318	138.14

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
74.946	3352	-0.00157	0.4121	0.3904	0.2403	0.5121

Color Rendering Index

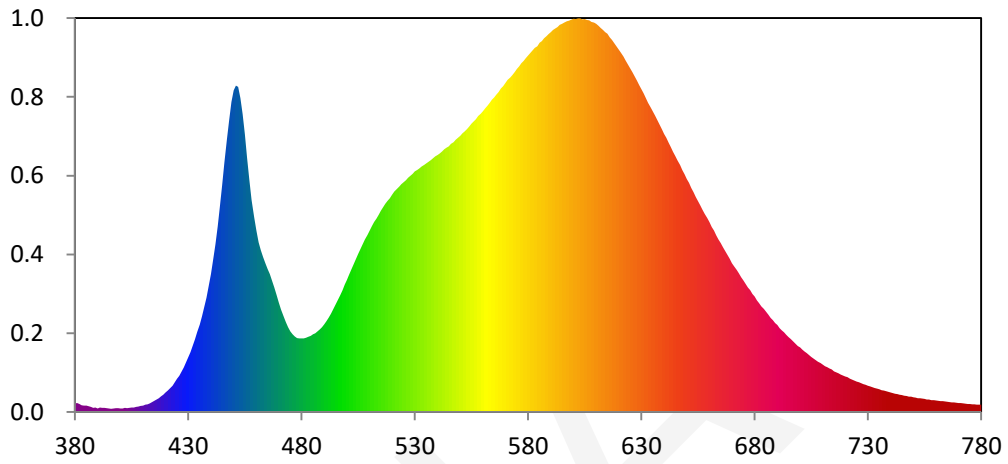
Ra			
83.2			
R1	R2	R3	R4
82	89	95	82
R5	R6	R7	R8
82	86	85	64
R9	R10	R11	R12
14	74	81	65
R13	R14	R15	
84	97	76	



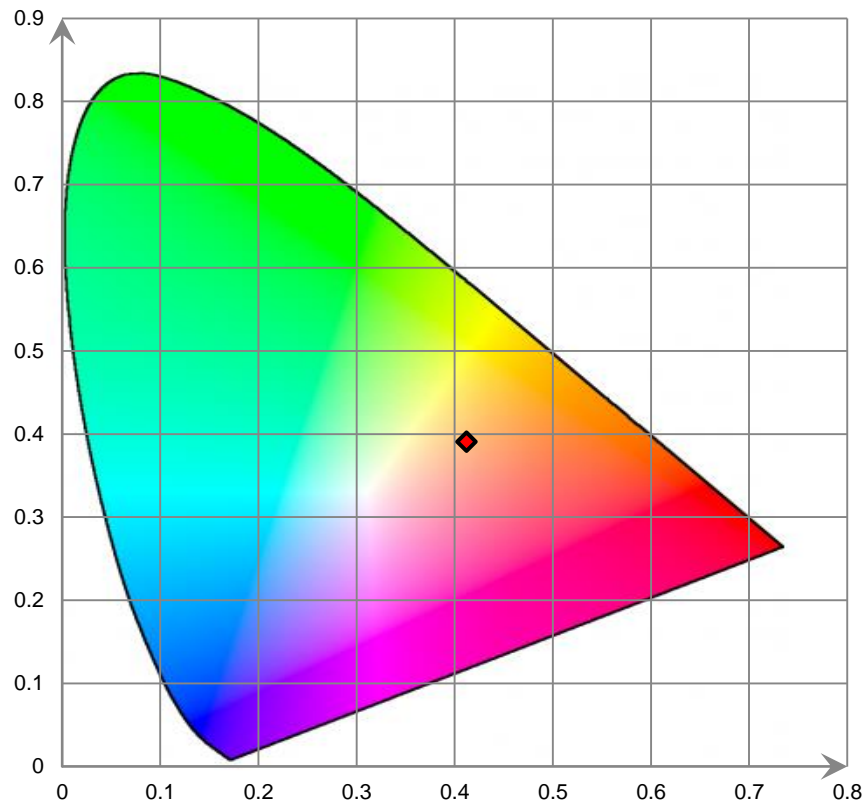


IES R_f	84
IES R_g	98
IES $R_{cs,h1}$	-11%

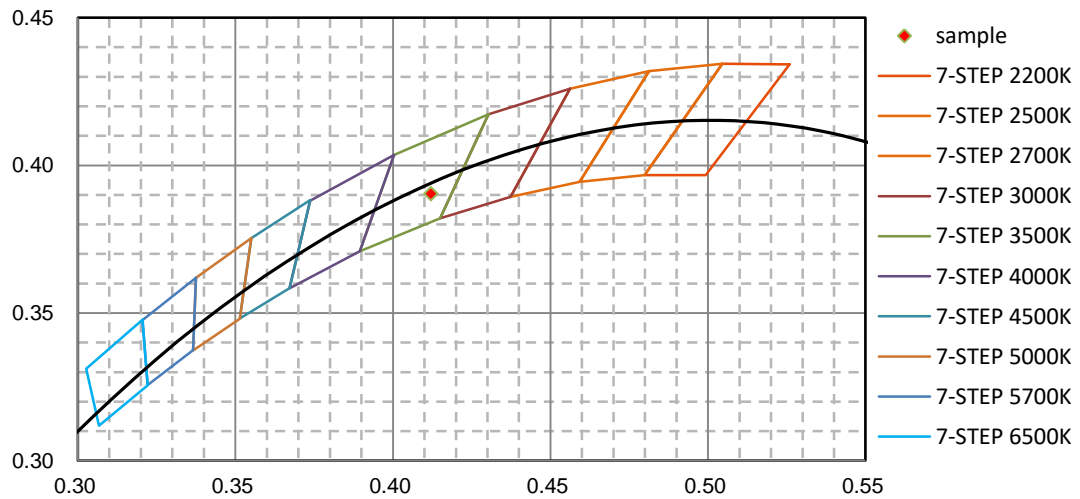
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

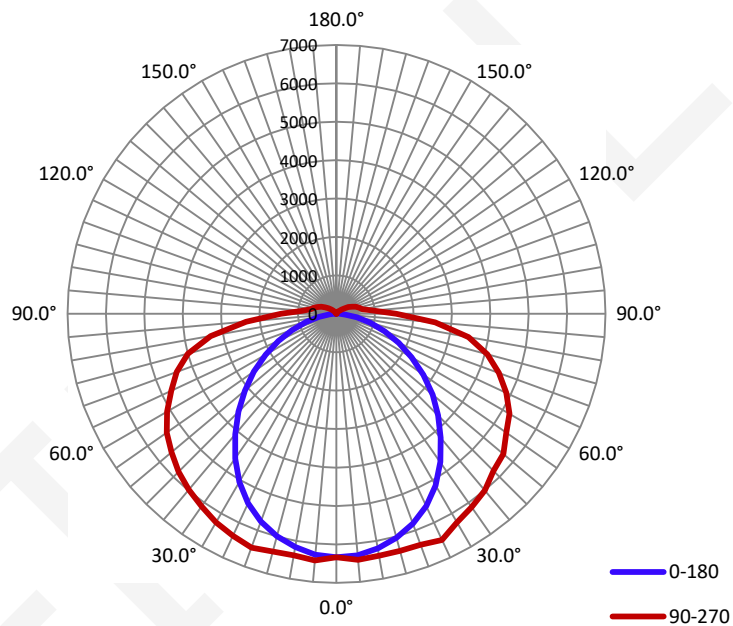
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	1.47	176.07	0.998

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
24325.9	138.21	6489.9	1.20	1.48

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	100.5	128.8	161.8	128.3	129.9
Field Angle (10% I _{max}):	156.3	190.9	204.9	190.2	185.6

Luminous Intensity (cd) Distribution Data

C Y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	6337.1	6337.1	6337.1	6337.1	6337.1	6337.1	6337.1	6337.1
5.0°	6310.9	6311.9	6345.1	6395.9	6423.7	6400.0	6343.7	6316.1
10.0°	6200.1	6254.9	6385.6	6355.3	6392.3	6359.4	6371.0	6245.0
15.0°	6036.4	6129.8	6192.8	6340.3	6390.4	6337.8	6190.5	6122.0
20.0°	5809.6	5868.5	6081.1	6274.3	6396.3	6271.6	6059.8	5846.1
25.0°	5521.5	5595.1	5890.1	6332.6	6489.9	6324.7	5866.6	5570.6
30.0°	5163.0	5260.0	5720.7	6125.2	6268.8	6121.7	5652.8	5207.9
35.0°	4708.6	4873.5	5417.2	5892.2	6142.3	5880.4	5364.5	4826.0
40.0°	4216.8	4469.6	5077.0	5744.5	6002.6	5714.4	5026.2	4398.4
45.0°	3745.5	4005.7	4697.4	5479.0	5775.1	5465.9	4634.9	3906.1
50.0°	3271.2	3542.7	4289.8	5239.7	5669.0	5224.8	4232.5	3435.9
55.0°	2763.9	3084.9	3972.9	5016.1	5393.8	5012.1	3902.4	2986.2
60.0°	2261.3	2618.5	3607.4	4720.3	5196.3	4707.7	3540.6	2527.0
65.0°	1785.8	2170.4	3200.5	4408.5	4871.7	4395.5	3156.6	2081.1
70.0°	1333.2	1732.3	2774.2	4028.6	4498.3	4015.5	2722.1	1642.4
75.0°	907.4	1328.3	2389.6	3663.4	4069.1	3646.4	2315.3	1245.3
80.0°	535.3	938.0	1999.6	3192.4	3492.7	3208.0	1932.6	868.9
85.0°	240.3	600.3	1541.2	2452.9	2582.1	2473.8	1487.7	545.5
90.0°	91.6	373.2	1054.5	1537.7	1554.0	1554.8	1004.8	337.0
95.0°	71.6	267.3	687.3	955.3	959.2	944.0	650.5	236.7
100.0°	53.5	179.7	479.9	670.3	693.0	673.0	458.9	154.7
105.0°	40.2	123.7	362.5	551.1	609.6	552.6	351.7	103.6
110.0°	26.1	83.8	276.7	457.4	536.3	463.8	265.9	66.7
115.0°	8.5	48.1	195.5	372.0	447.9	371.8	187.7	43.7
120.0°	0.0	29.4	141.0	288.5	352.0	282.6	131.0	23.2
125.0°	0.0	0.0	100.4	207.5	256.8	202.6	90.3	0.0
130.0°	0.0	0.0	68.9	142.8	172.9	138.0	60.3	0.0
135.0°	0.0	0.0	43.6	99.6	120.1	97.9	38.4	0.0
140.0°	0.0	0.0	29.5	68.4	85.4	64.9	13.1	0.0
145.0°	0.0	0.0	15.5	44.9	49.7	40.6	0.0	0.0
150.0°	0.0	0.0	0.0	25.2	25.5	18.4	0.0	0.0
155.0°	0.0	0.0	0.0	6.7	7.8	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Luminous Intensity (cd) Distribution Data (cont.)

C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	6337.1	6337.1	6337.1	6337.1	6337.1	6337.1	6337.1	6337.1
5.0°	6292.2	6354.8	6412.1	6438.5	6443.4	6437.6	6401.0	6357.2
10.0°	6165.1	6281.5	6293.7	6347.9	6382.3	6348.6	6304.6	6276.7
15.0°	5990.0	6096.4	6204.6	6291.9	6404.5	6278.0	6198.2	6107.5
20.0°	5753.6	5825.9	6024.9	6360.2	6472.9	6367.0	6004.0	5835.1
25.0°	5440.4	5534.1	5921.4	6281.9	6371.8	6286.4	5904.8	5539.7
30.0°	5057.8	5199.1	5655.1	6073.7	6271.2	6079.8	5635.4	5232.4
35.0°	4599.1	4839.8	5367.2	5897.2	6117.4	5893.7	5362.1	4858.4
40.0°	4098.3	4362.4	5049.9	5689.0	5976.2	5694.2	5020.3	4385.4
45.0°	3604.6	3882.8	4642.8	5457.3	5815.0	5475.2	4636.1	3908.6
50.0°	3116.5	3432.0	4259.0	5253.8	5602.1	5269.3	4244.2	3455.9
55.0°	2626.5	2966.6	3931.3	4942.6	5394.3	4950.5	3910.9	2993.3
60.0°	2130.2	2513.6	3532.1	4652.8	5091.9	4649.5	3519.5	2547.2
65.0°	1666.0	2063.0	3113.0	4297.4	4743.7	4285.7	3103.6	2100.5
70.0°	1224.6	1626.4	2662.0	3919.3	4424.3	3930.9	2657.4	1657.7
75.0°	819.9	1218.2	2258.0	3575.9	4002.5	3591.3	2270.2	1245.3
80.0°	464.4	831.3	1849.9	3059.3	3329.2	3062.2	1876.6	872.6
85.0°	185.8	521.0	1406.7	2266.2	2359.0	2245.8	1418.7	552.2
90.0°	72.9	333.0	958.9	1446.2	1442.4	1434.5	966.6	352.8
95.0°	52.0	226.2	626.7	902.8	903.4	886.5	634.5	241.7
100.0°	37.3	147.0	442.9	652.5	688.1	649.2	444.2	163.4
105.0°	17.4	96.1	340.3	545.8	602.8	538.1	342.0	111.9
110.0°	8.4	63.8	252.1	449.1	521.6	449.7	259.0	79.7
115.0°	0.0	36.3	184.0	363.3	437.6	362.9	188.3	47.0
120.0°	0.0	14.7	123.0	275.9	341.3	273.2	128.8	18.6
125.0°	0.0	0.0	84.8	187.5	245.3	189.3	94.7	7.1
130.0°	0.0	0.0	60.3	130.4	171.8	133.3	64.8	0.0
135.0°	0.0	0.0	29.6	88.0	116.7	92.0	37.9	0.0
140.0°	0.0	0.0	14.7	58.3	77.3	62.4	21.6	0.0
145.0°	0.0	0.0	0.0	29.2	47.0	36.6	0.0	0.0
150.0°	0.0	0.0	0.0	13.8	20.5	14.5	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Control setting: 180W 4000K

Integrating Sphere Test; Orientation: <u>Downward</u> ; Test Voltage: <u>120V 60Hz</u> ;				
Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
Light Output(lm)	25921	≥10000	≥9000	Pass
Total Efficacy(lm/W)	145.63	≥135	≥130.95	Pass
CCT(K)	4058	3710~4260	3710~4260	Pass
Duv	-0.00265	-0.005~0.007	-0.005~0.007	Pass
R_a	84.8	≥70	≥68	Pass

Note:

1. The test results were measured directly from the test equipment.
2. The DLC requirements were listed according to DLC Technical Requirements V5.0.
3. The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.

FINAL

Test Data

[Integrating Sphere System]

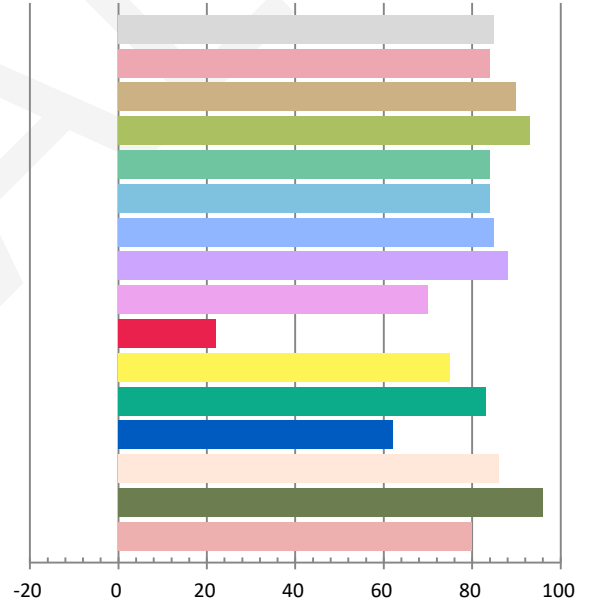
Photometric and Electrical Measurement Result

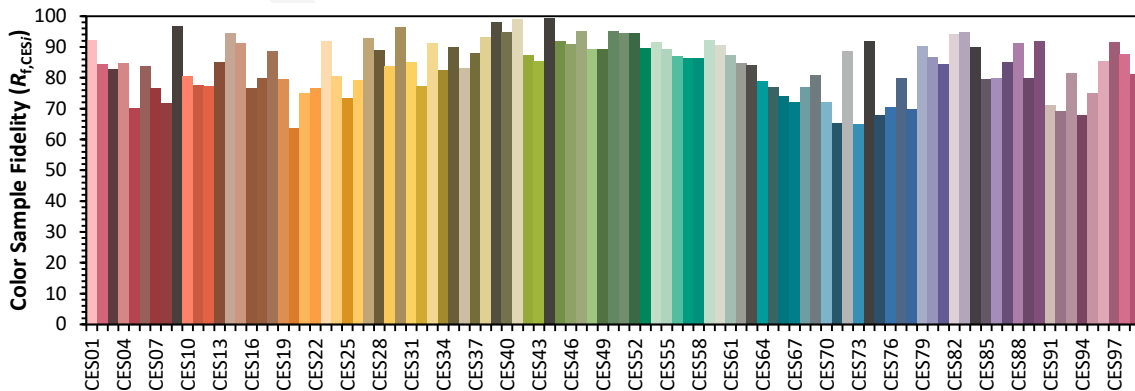
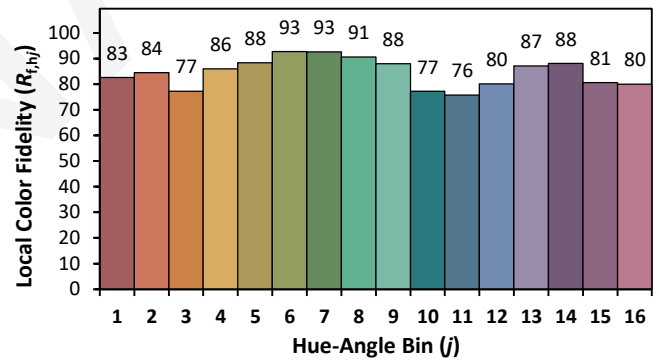
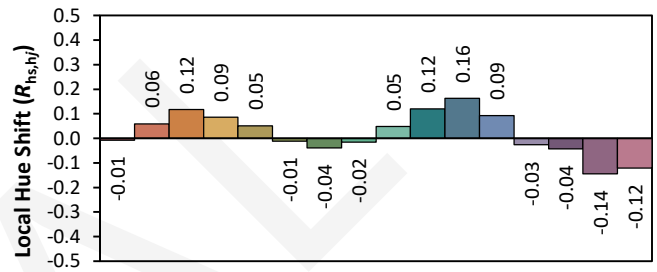
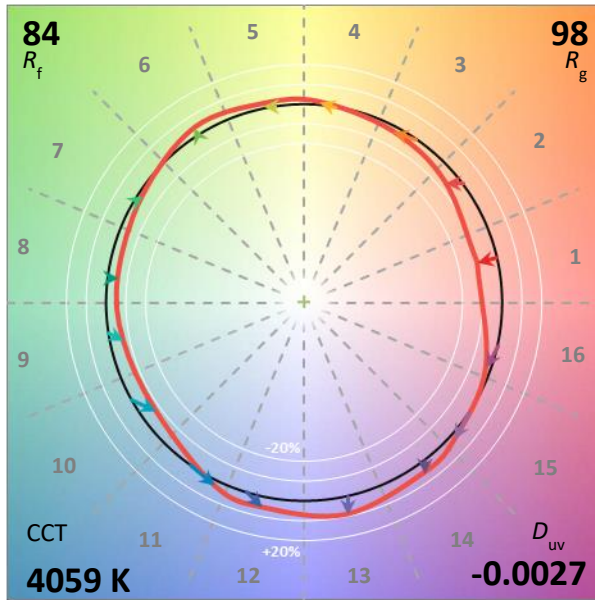
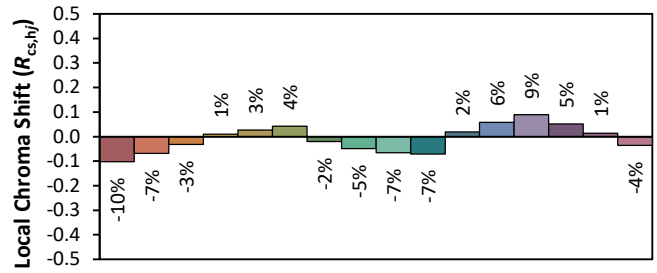
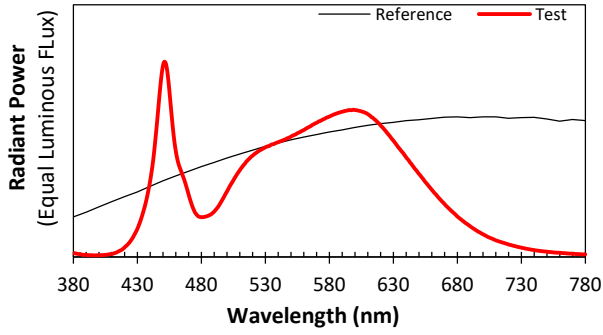
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
119.9	60	1.488	178	0.9973	25921	145.63

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
81.363	4058	-0.00265	0.3762	0.3685	0.2256	0.4972

Color Rendering Index

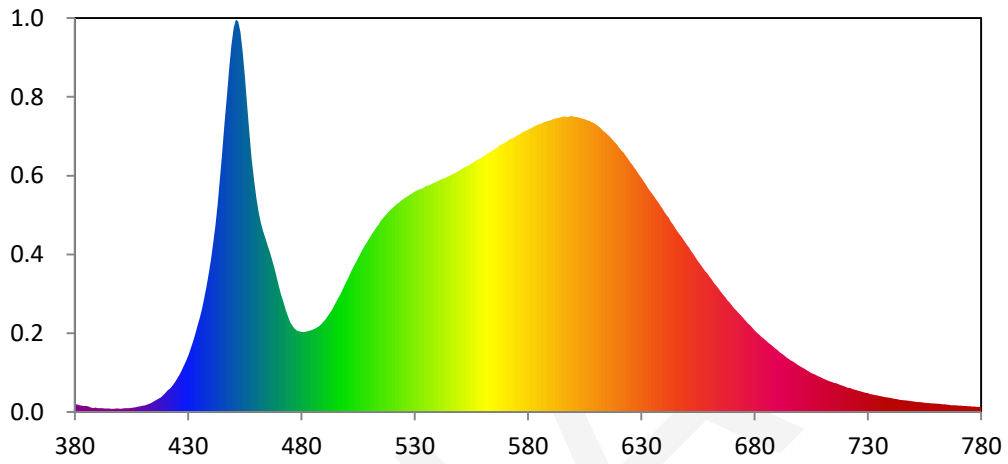
Ra			
84.8			
R1	R2	R3	R4
84	90	93	84
R5	R6	R7	R8
84	85	88	70
R9	R10	R11	R12
22	75	83	62
R13	R14	R15	
86	96	80	



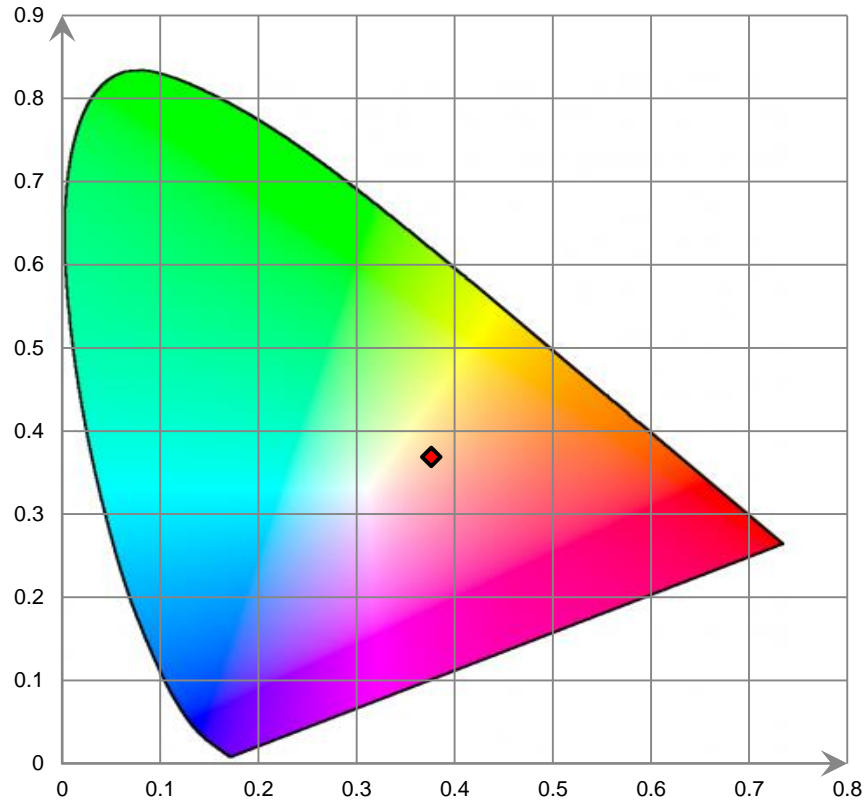


IES R_f	84
IES R_g	98
IES $R_{cs,h1}$	-10%

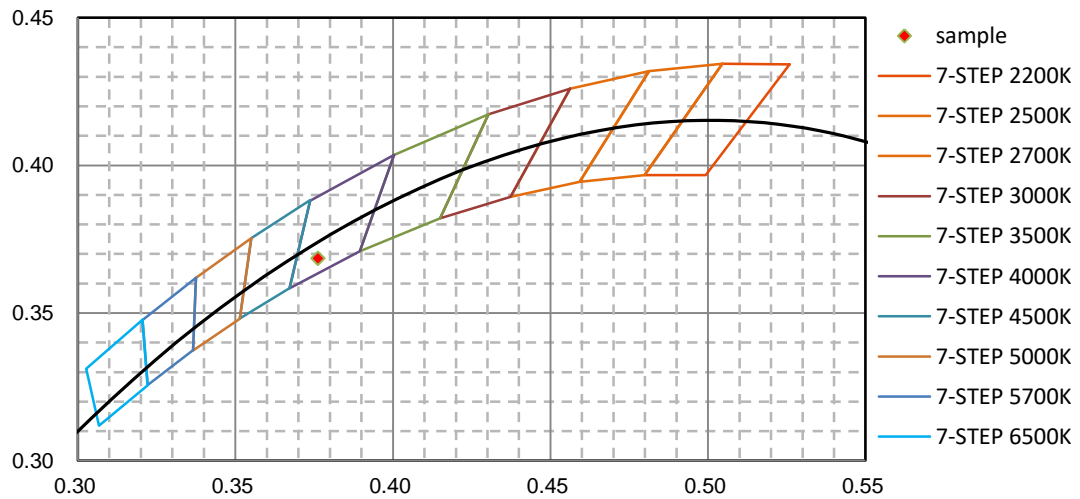
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Control setting: 180W 5000K

Integrating Sphere Test; Orientation: <u>Downward</u> ; Test Voltage: <u>120V 60Hz</u> ;				
Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
Light Output(lm)	25200	≥10000	≥9000	Pass
Total Efficacy(lm/W)	141.86	≥135	≥130.95	Pass
CCT(K)	4932	4746~5312	4746~5312	Pass
Duv	-0.00144	-0.004~0.008	-0.004~0.008	Pass
R_a	84.4	≥70	≥68	Pass

Note:

4. The test results were measured directly from the test equipment.
5. The DLC requirements were listed according to DLC Technical Requirements V5.0.
6. The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.

FINAL

Test Data

[Integrating Sphere System]

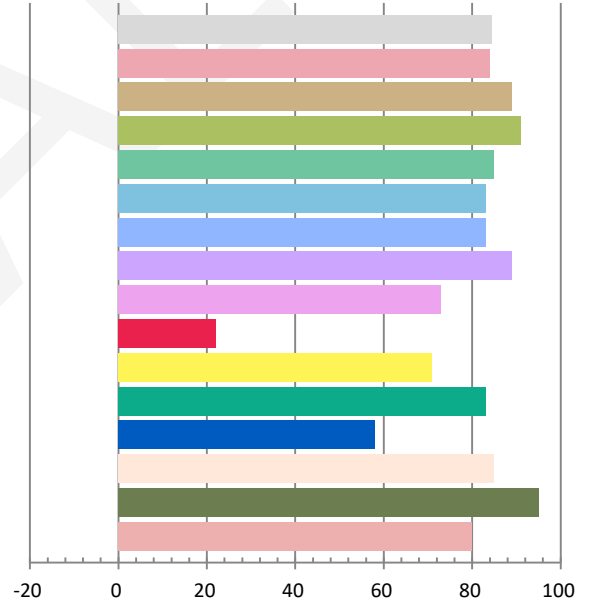
Photometric and Electrical Measurement Result

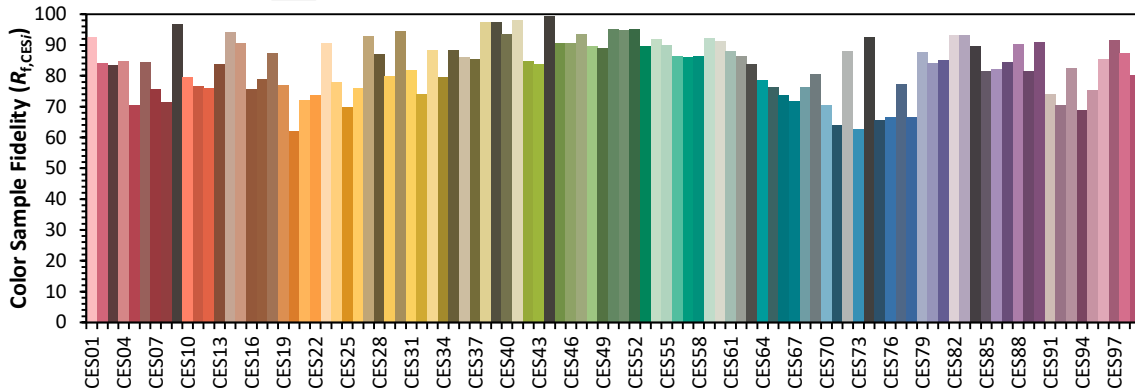
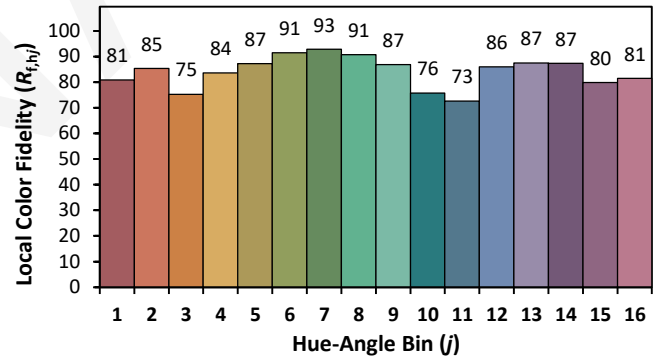
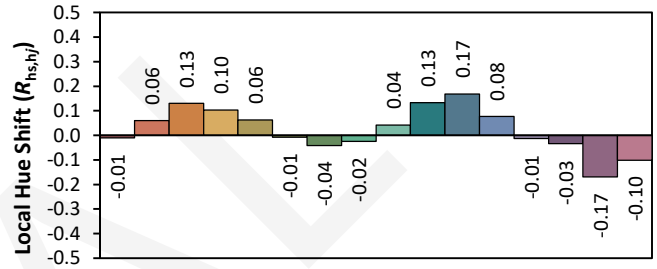
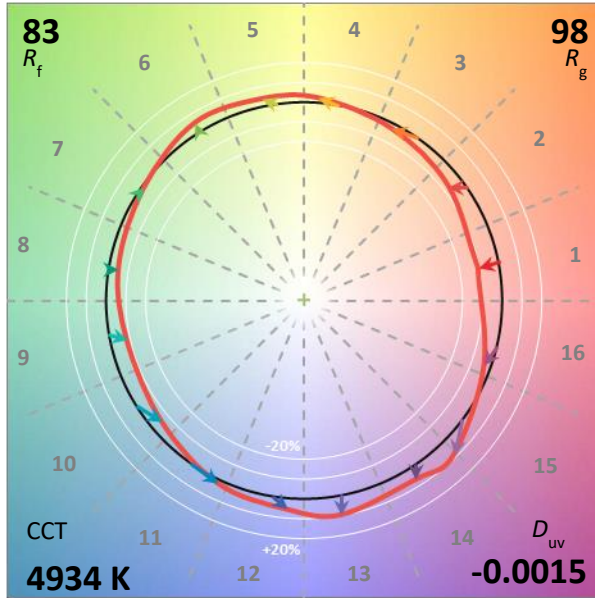
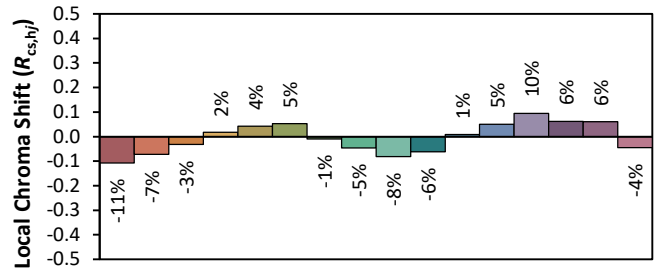
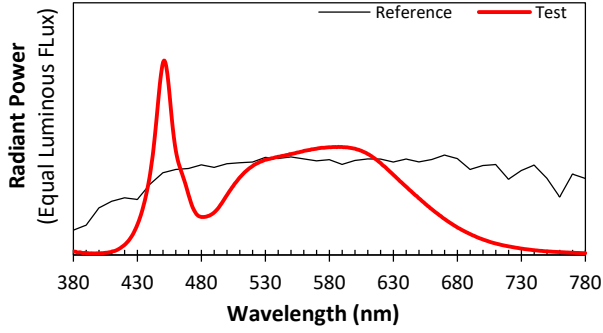
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
119.9	60	1.485	177.6	0.9974	25200	141.86

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
80.505	4932	-0.00144	0.3467	0.3501	0.2131	0.4842

Color Rendering Index

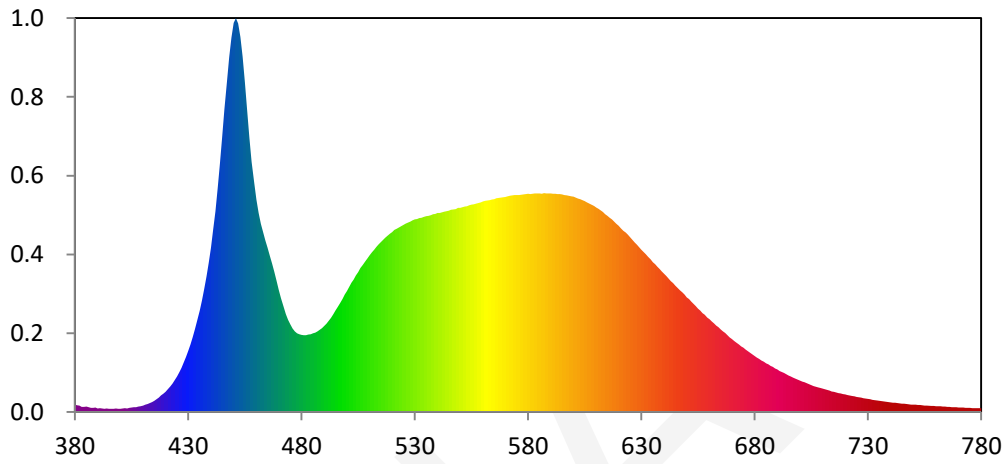
Ra			
84.4			
R1	R2	R3	R4
84	89	91	85
R5	R6	R7	R8
83	83	89	73
R9	R10	R11	R12
22	71	83	58
R13	R14	R15	
85	95	80	



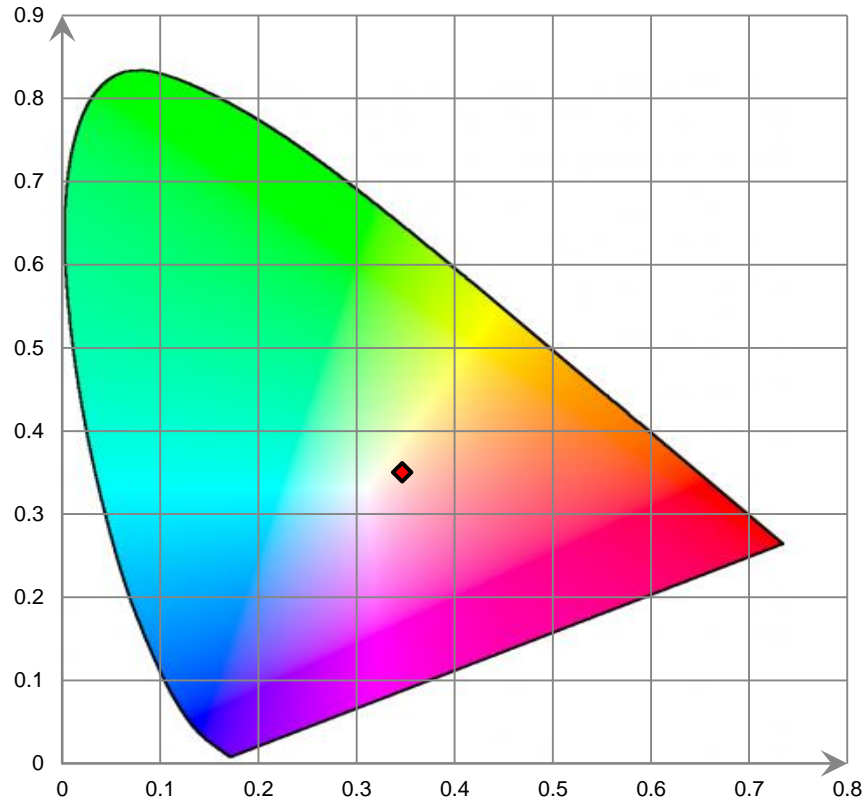


IES R_f	83
IES R_g	98
IES $R_{cs,h1}$	-11%

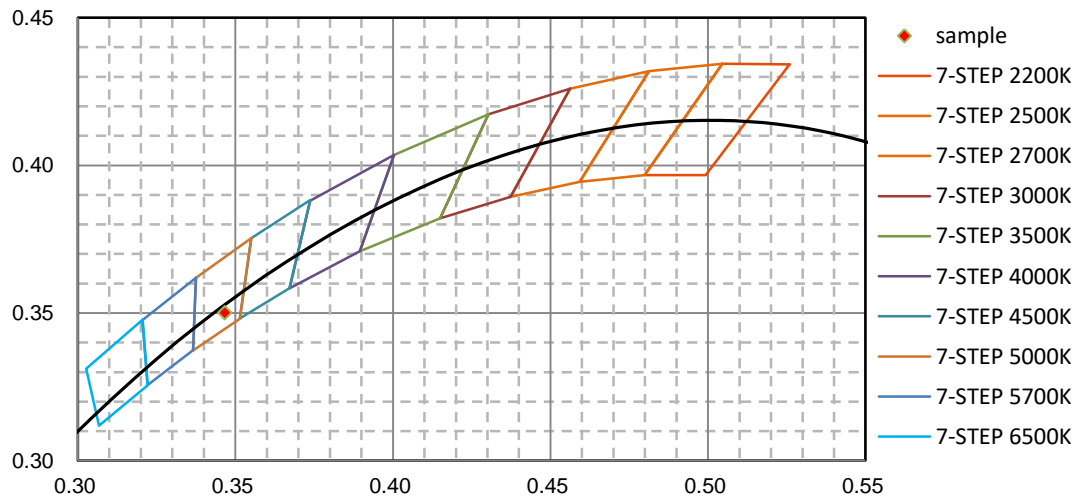
Relative Spectral Power Distribution



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7-Step Chromaticity Quadrangles



6. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	G121960CS1361154D	2019-12-24	2020-12-23
spectroradiometer	EVERFINE	HAAS-2000	M12048CS1361148	2019-12-24	2020-12-23
Digital CC&CV DC Power Supply	EVERFINE	WY305	G115986CN1361134	2019-12-20	2020-12-19
Thermal Meter	ANYMETRE	TH-20E	N/A	2019-12-24	2020-12-23
Standard Light Source	INVENTFINE	N/A	JWWCR020106	2019-11-19	2020-11-18
Digital Power Meter	YOKOGAWA	WT210	91KB35700	2020-04-02	2021-04-01
Intelligence ac power supply	EVERFINE	DPS1005	G119890CS1361121	2020-04-02	2021-04-01
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2020-04-02	2021-04-01
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2019-12-20	2020-12-19
Power Meter	INVENTFINE	WT500	GSDSQ200007	2020-04-02	2021-04-01
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2020-01-22	2021-01-21
Wireless Weather Station	ZHONGXING	KG218	N/A	2019-12-02	2020-12-01
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2020-03-19	2021-03-18
Digital Multimeter	FLUKE	115C	37840512WS	2019-10-08	2020-10-07
Hybrid Recorder	YOKOGAWA	DR230	4TJH0903	2020-04-02	2021-04-01
Power Supply	SC	SC/BP-11003	1608110030553	2019-12-14	2020-12-13

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

7. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The ambient temperature of the sample was maintained at 25°C±1°C during measurement. And relative humidity is less than 65%. The product was operated in its intended orientation in application during all testing.

Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement. 4π geometry was used during measurement.

Goniophotometer System

Type C goniophotometer was used for measuring luminous intensity distribution. The vertical angle (γ) test intervals were set no more than 1 degree while data for 5 degree intervals is reported. The horizontal angle (C plane) test intervals were set no more than 22.5 degree.

ISTMT Test

The LED which has the highest temperature was measured at the location of LED case which is specified by LED source manufacturer and detailed by LM-80 report. The drive current of LED package/module/ array was calculated as the total output current of the driver measured by multimeter, divided by the number of branches in parallel of LEDs.

Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of the Company.
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*****END OF REPORT*****

F E N V A L