TL-749

TEST REPORT

For

LED ONE CORPORATION

12437 Bellegrave Ave Eastvale CA US 91752

Model Number:	LOC-14TROF-DMWMCCT	
Report Type:	Electrical, Photometric and ISTMT tests according to the following standards and show the compliance to DLC Program SSL Technical Requirements V5.1	
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 CIE 190:2010 Calculation and presentation of unified glare rating tables for indoor lighting luminaires IES TM-30-18: IES Method for Evaluating Light Source Color Rendition	
Project Engineer:	Bay Wang	Bay Wang
Report Number:	PKS210215102-10	
Sample Size:	One sample was received on 2019-12-30 and used for testing.	
Test Date:	2020-01-03 to 2020-02-21	
Report Date:	2021-02-27	
Reviewed By:	Seven Xia/ EE Engineer	Seven Xia
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:	1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces
Voltage And Frequency:	120-277VAC, 50/60Hz
LED Source Manufacturer:	Lumileds Holding B.V.
LED Source Model:	L128-xx80RA35000Q1
Auxiliary Ballast Model:	NA
Auxiliary Housing Model:	NA
White Tunable:	Yes
Field-Adjustable Light Output:	Yes

Note:

1. The applicant LED ONE CORPORATION declared that their products are the same to the product in report# RKSB191230002-10 and is authorized by original applicant to use their test data.
2. All the data in previous report (RKSB191230002-10) is shared in report.

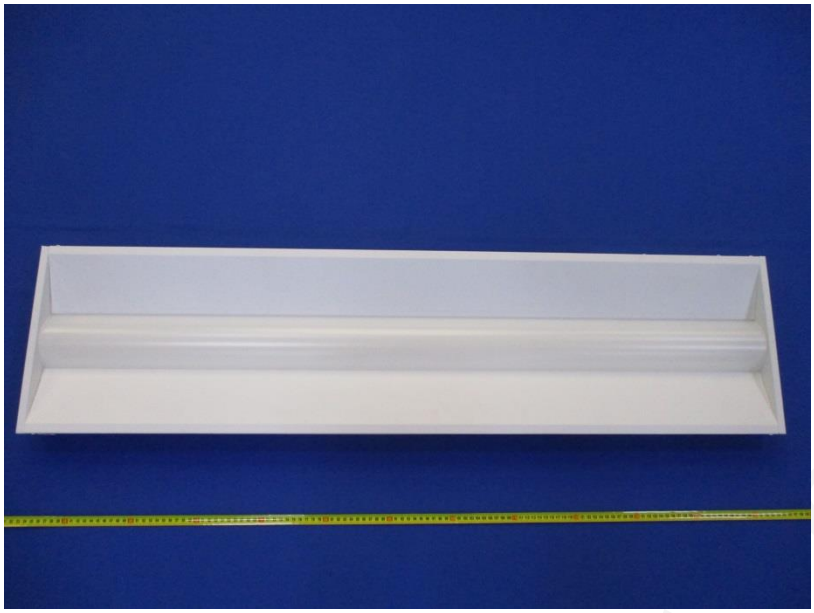
2. Product Rated Values#

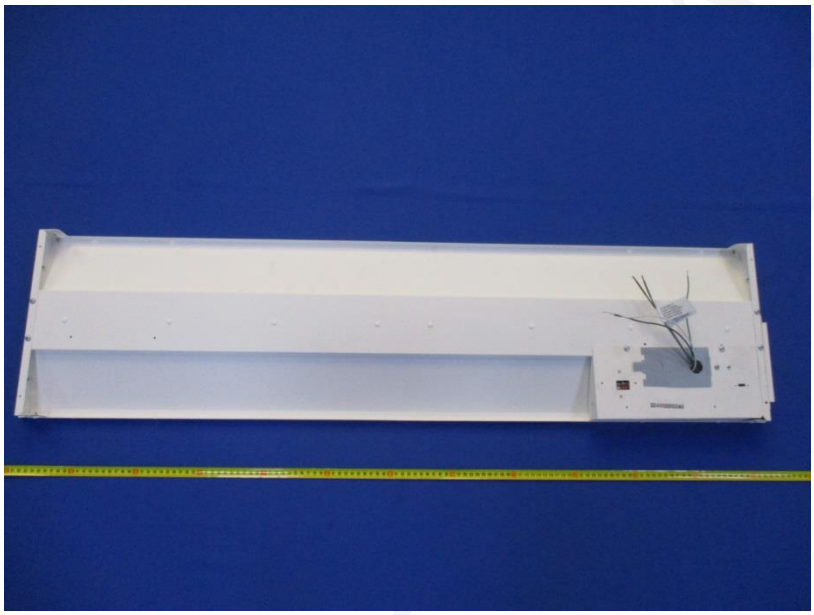
Test Model	CCT(K)	Light Output (lm)	Power(W)	Luminous Efficacy (lm/W)
LOC-14TROF-DMWMCCT	3500	2190	15	146
		2736	19	144
		3408	24	142
		4094.8	29	141.2
	4000	3002	15	158
		2964	19	156
		3696	24	154
		4437	29	153
	5000	2220	15	148
		2774	19	146
		3456	24	144
		4147	29	143

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-14TROF-DMWMCCT	3500	29	Yes	Yes	Yes	Yes
	4000	29	NA	Yes	Yes	NA
	5000	29	NA	Yes	Yes	NA

4. Product Photo





5. Test Result

Test Model: LOC-14TROF-DMWMCCT
Control setting: 3500K/29W

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	4095.8	≥1500	≥1350	Pass
Power(W)	29	None.	None.	N/A
Total Efficacy(lm/W)	141.26	≥110	≥106.7	Pass
CCT(K)	3418	3220~3710	No tolerances	Pass
Duv	0.000891	-0.0055~0.0065	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	96	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R_a	82.2	≥80	≥79	
R_9	3	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	4095.3	≥1500	≥1350	Pass
Power(W)	28.99	None.	None.	N/A
Total Efficacy(lm/W)	141.32	≥110	≥106.7	Pass
Zonal Lumen Distribution(0-60º)	76.18%	0-60º≥75%	0-60º≥72%	Pass
SC:0-180°	1.22	1.0≤SC≤2.0	0.9≤SC≤2.1	Pass
SC:90-270°	1.30	1.0≤SC≤2.0	0.9≤SC≤2.1	Pass

Goniophotometer THDi, PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9993	≥0.9	≥0.87	Pass
120	THDi	4.34%	≤20%	≤25%	Pass
277	Power Factor	0.9787	≥0.9	≥0.87	Pass
277	THDi	10.50%	≤20%	≤25%	Pass

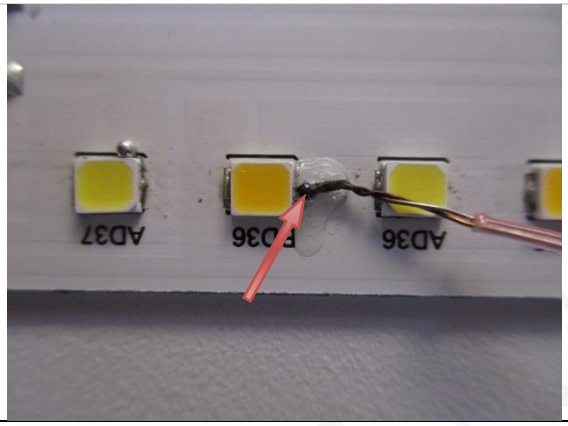
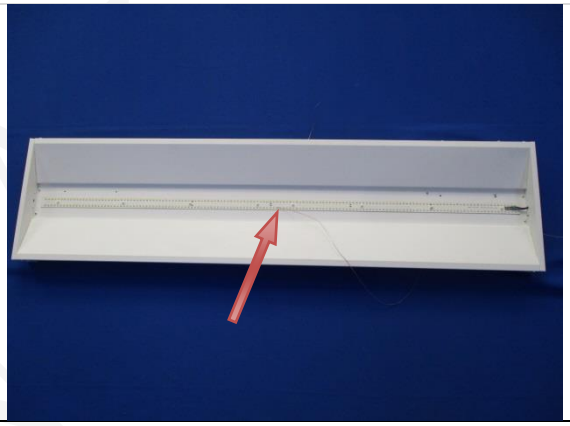
Integrating Sphere THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9973	≥0.9	≥0.87	Pass
120	THDi	4.53%	≤20%	≤25%	Pass
277	Power Factor	0.9778	≥0.9	≥0.87	Pass
277	THDi	10.64%	≤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)	31.3	≤115	With tolerance of ≤ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
Drive Current/Individual LED source(mA)	61.2	≤150	With +5% tolerance	Pass
L_{70} Lumen Maintenance Life (Hours)	>54000	≥50000	None.	Pass
Color Maintenance	0.002	≤0.004	≤0.0044	Pass

Note:
1. The test results were measured directly from the test equipment.
2. The DLC requirements were listed according to DLC Technical Requirements V5.1.
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.

TMP_{LED}(Zoomed-in View)	TMP_{LED}(Bird's-eye View)
	

Test Data

[Integrating Sphere System]

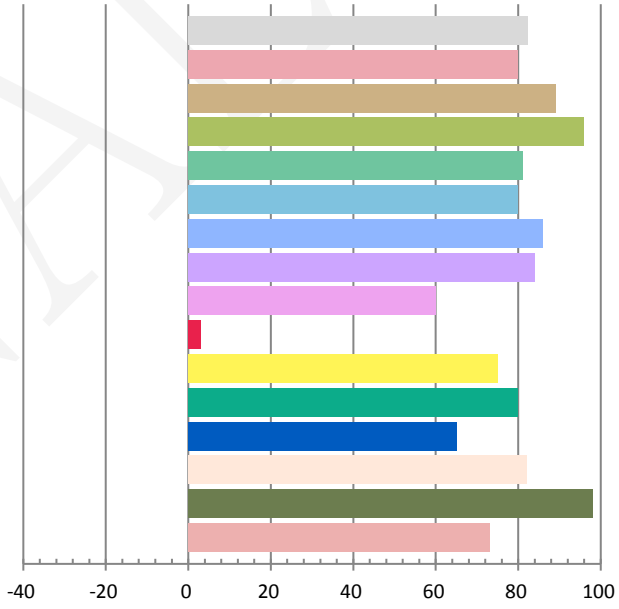
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.2423	29	0.9973	4095.8	141.26

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
12.194	3418	0.000891	0.4110	0.3956	0.2374	0.5141

Color Rendering Index

Ra			
82.2			
R1	R2	R3	R4
80	89	96	81
R5	R6	R7	R8
80	86	84	60
R9	R10	R11	R12
3	75	80	65
R13	R14	R15	
82	98	73	



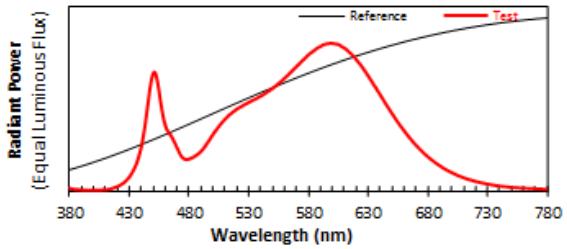
ANSI/IES TM-30-18 Color Rendition Report

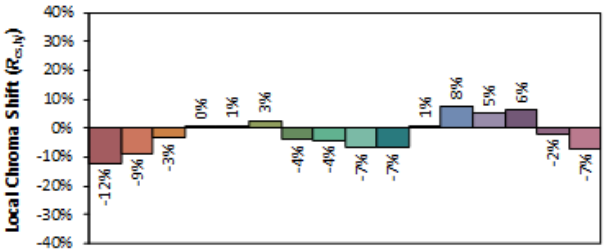
Source: User SPD

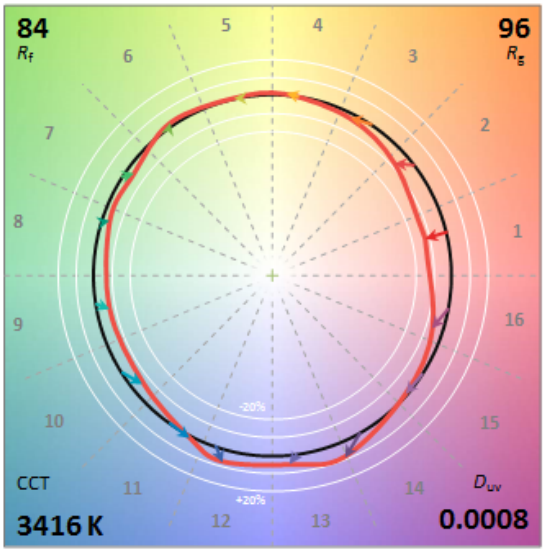
Manufacturer: LED ONE CORPORATION

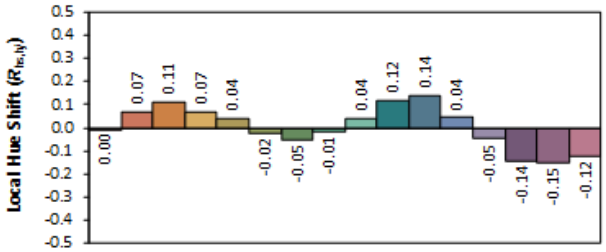
Date: 2020/1/9

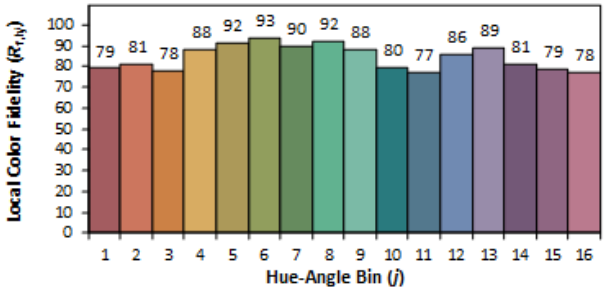
Model: LOC-14TROF-DMWMCCT

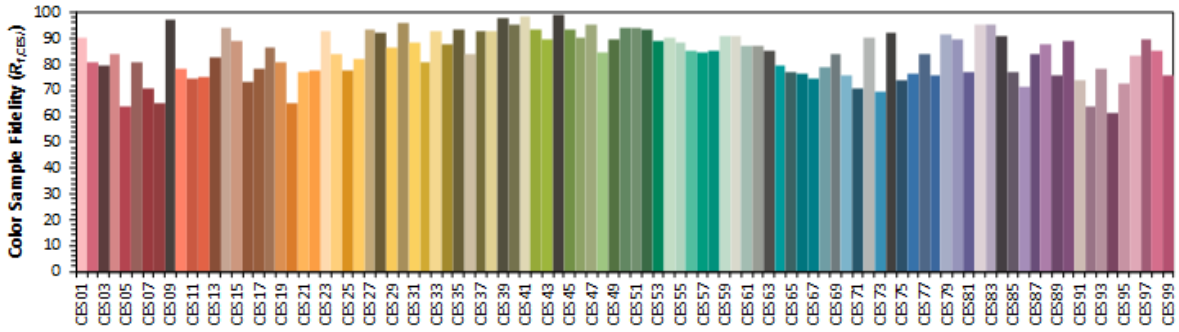












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

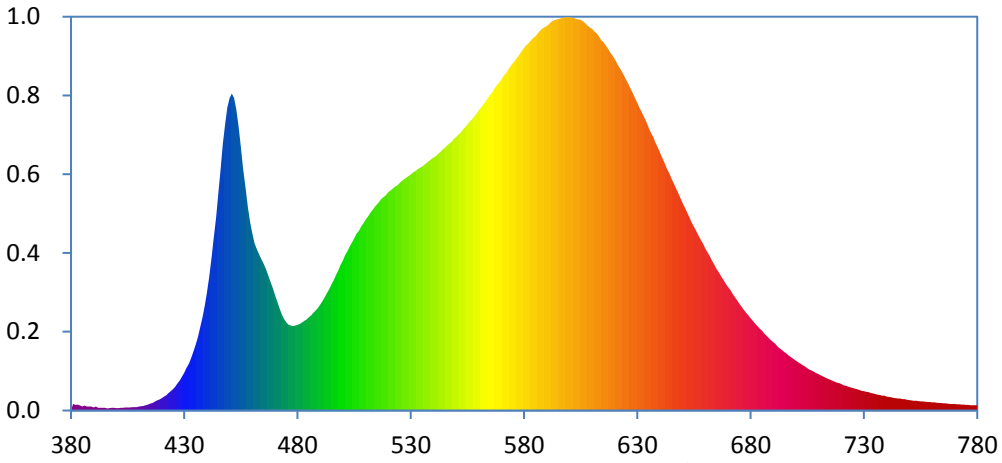
x	0.4110
y	0.3954
u'	0.2375
v'	0.5141

CIE 13.3-1995 (CRI)

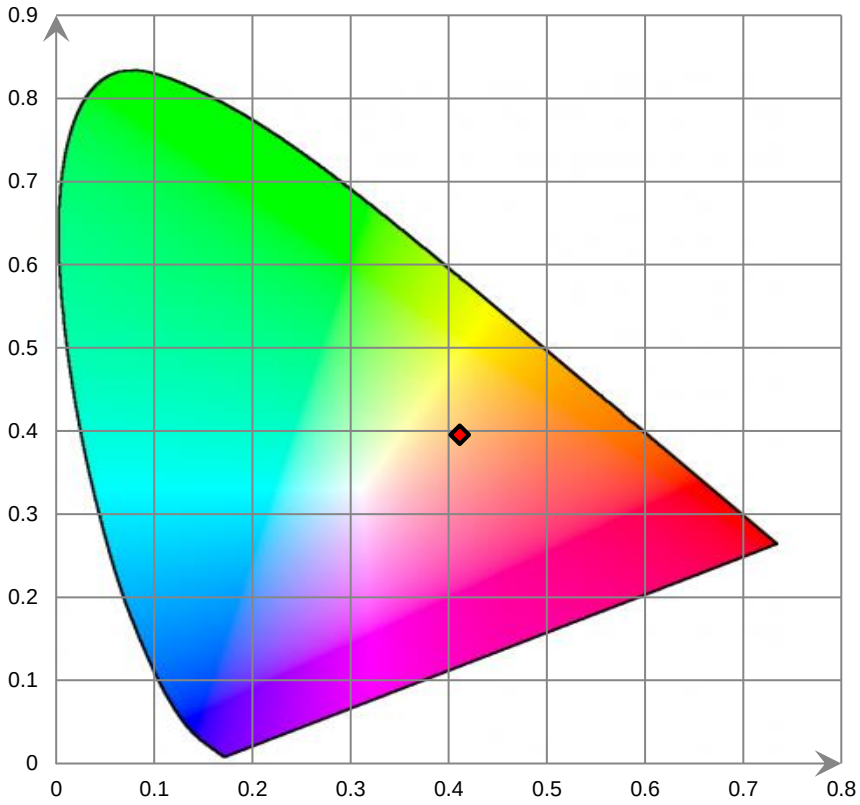
R_a	82
R_9	3

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

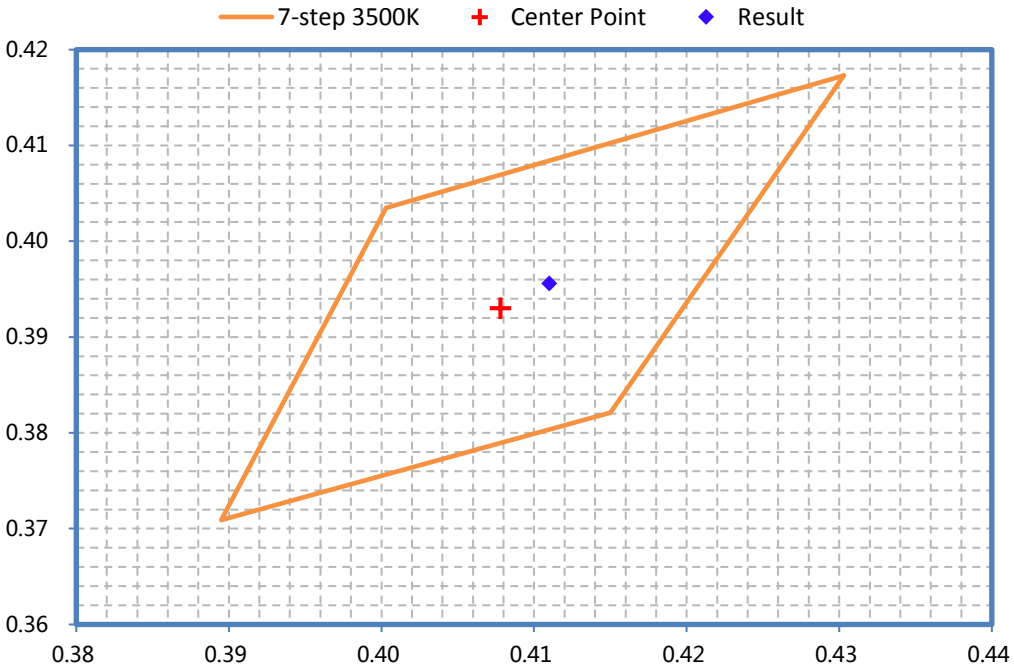
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

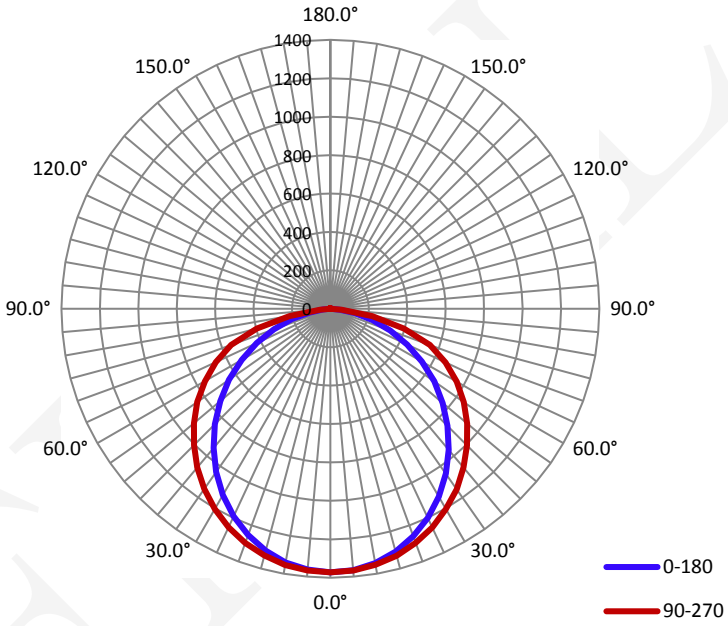
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.242	28.99	0.999

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
4095.3	141.32	1371.8	1.22	1.30

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	106.7	114.9	127.3	115.3	116.1
Field Angle (10% I_{max}):	158.1	165.8	165.0	165.8	163.7

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1371.8	1371.8	1371.8	1371.8	1371.8	1371.8	1371.8	1371.8
5.0°	1365.1	1365.2	1364.3	1366.2	1367.9	1368.2	1366.8	1366.3
10.0°	1343.8	1345.0	1345.1	1349.6	1352.5	1353.0	1349.4	1346.5
15.0°	1309.3	1310.2	1314.3	1322.8	1331.3	1325.8	1319.2	1316.2
20.0°	1260.6	1264.3	1271.8	1285.3	1296.6	1290.5	1276.1	1267.1
25.0°	1200.1	1204.1	1218.2	1236.3	1255.4	1242.3	1222.4	1209.9
30.0°	1127.8	1135.3	1155.6	1180.1	1203.4	1187.2	1159.5	1140.3
35.0°	1047.5	1057.0	1082.7	1115.4	1145.6	1125.0	1088.4	1058.9
40.0°	958.0	972.7	1003.6	1044.2	1078.3	1053.9	1008.4	971.5
45.0°	862.2	879.9	916.2	967.2	1006.4	975.4	922.7	878.4
50.0°	763.8	785.2	826.5	882.7	929.2	894.8	831.9	782.6
55.0°	659.8	685.1	733.0	802.0	848.5	811.2	739.4	680.9
60.0°	549.6	581.7	639.4	713.3	759.2	721.3	645.9	575.5
65.0°	440.2	476.9	546.3	619.3	661.0	626.0	552.2	472.5
70.0°	331.2	375.2	450.1	516.5	550.4	520.8	454.5	370.4
75.0°	225.0	279.6	354.1	382.4	396.3	387.9	354.6	273.6
80.0°	126.9	189.3	229.5	220.4	221.6	222.3	225.8	182.1
85.0°	48.0	90.0	80.5	62.3	58.7	59.8	73.9	80.1
90.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.8	1.1	0.8	0.7	1.1	1.0	1.2
140.0°	0.8	1.4	1.6	1.4	1.4	1.2	1.2	1.3
145.0°	1.2	2.0	2.4	1.7	1.8	2.6	2.0	2.4
150.0°	1.9	2.5	2.8	2.5	2.6	2.2	1.8	2.4
155.0°	2.5	2.6	3.4	2.9	2.9	3.0	2.9	2.6
160.0°	2.8	2.9	3.5	3.3	3.4	3.7	3.0	3.4
165.0°	3.2	3.2	3.7	3.3	2.9	3.2	3.4	3.2
170.0°	3.1	3.9	3.7	3.9	3.8	3.5	4.0	3.5
175.0°	3.5	3.9	4.4	4.3	4.4	4.4	3.4	4.0
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 / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1371.8	1371.8	1371.8	1371.8	1371.8	1371.8	1371.8	1371.8
5.0°	1363.1	1365.0	1365.5	1366.6	1367.0	1367.2	1365.3	1364.4
10.0°	1340.5	1344.3	1347.9	1350.5	1353.8	1349.5	1344.2	1344.1
15.0°	1303.8	1310.7	1316.1	1324.2	1329.4	1324.1	1312.8	1308.9
20.0°	1253.7	1263.4	1273.4	1287.1	1297.1	1286.0	1268.9	1261.9
25.0°	1191.7	1203.2	1219.0	1239.3	1254.3	1238.6	1214.1	1201.5
30.0°	1119.5	1132.3	1154.5	1182.6	1203.7	1181.3	1149.6	1131.2
35.0°	1036.6	1051.8	1082.0	1117.7	1144.4	1116.7	1075.7	1050.8
40.0°	945.6	964.8	1001.8	1044.2	1077.6	1044.6	996.9	964.3
45.0°	850.7	870.8	913.7	965.7	1004.1	967.0	909.9	870.7
50.0°	748.7	776.7	824.0	881.5	927.0	881.4	821.4	775.2
55.0°	643.9	674.1	730.1	799.1	845.6	799.5	729.6	674.2
60.0°	532.9	569.8	636.0	710.1	754.8	709.7	638.5	569.7
65.0°	422.4	464.9	540.4	616.0	658.9	614.5	544.4	469.4
70.0°	312.8	361.7	443.3	514.1	549.6	511.6	448.7	365.9
75.0°	206.7	264.3	346.2	382.2	396.0	378.7	352.2	270.1
80.0°	110.7	173.7	218.5	218.4	216.1	216.8	224.3	180.3
85.0°	37.0	73.1	67.7	57.3	53.1	58.5	73.4	83.1
90.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
140.0°	0.0	0.0	0.0	0.7	1.1	1.6	1.3	1.1
145.0°	0.0	1.2	1.0	2.0	1.7	1.6	1.7	1.9
150.0°	1.3	1.8	1.5	2.1	2.4	2.6	2.5	2.4
155.0°	1.9	1.9	2.7	2.6	2.3	3.0	2.6	2.6
160.0°	1.9	2.3	3.2	2.8	3.1	3.2	3.4	3.4
165.0°	2.9	2.9	3.2	3.8	3.5	3.8	3.6	3.0
170.0°	2.8	3.7	3.7	4.0	4.3	4.0	3.9	3.7
175.0°	3.2	3.3	4.1	4.6	4.2	3.8	4.0	3.9
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Test Model: LOC-14TROF-DMWMCCT
Control setting：4000K/29W

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	4437.9	≥1500	≥1350	Pass
Power(W)	28.99	None.	None.	N/A
Total Efficacy(lm/W)	153.07	≥110	≥106.7	Pass
CCT(K)	4062	3710~4260	No tolerances	Pass
Duv	0.00121	-0.005~0.007	No tolerances	Pass
IES R_f	85	70	69	Pass
IES R_g	95	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R_a	83.7	≥80	≥79	
R_9	10	≥0	≥-1	

Integrating Sphere THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9974	≥0.9	≥0.87	Pass
120	THDi	4.51%	≤20%	≤25%	Pass
277	Power Factor	0.9775	≥0.9	≥0.87	Pass
277	THDi	10.63%	≤20%	≤25%	Pass

Test Data

[Integrating Sphere System]

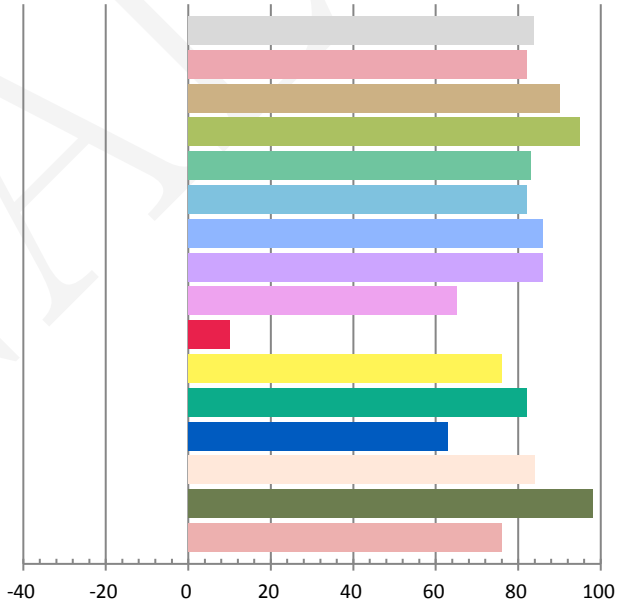
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.2422	28.99	0.9974	4437.9	153.07

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
13.444	4062	0.00121	0.3785	0.3781	0.2233	0.5019

Color Rendering Index

Ra			
83.7			
R1	R2	R3	R4
82	90	95	83
R5	R6	R7	R8
82	86	86	65
R9	R10	R11	R12
10	76	82	63
R13	R14	R15	
84	98	76	



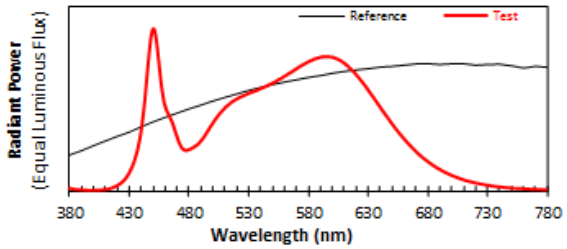
ANSI/IES TM-30-18 Color Rendition Report

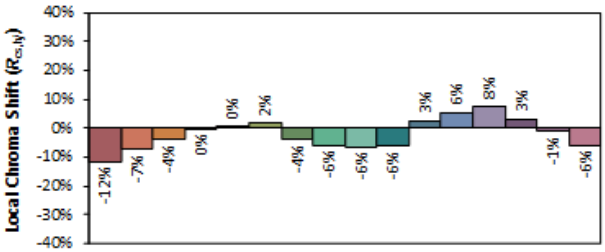
Source: User SPD

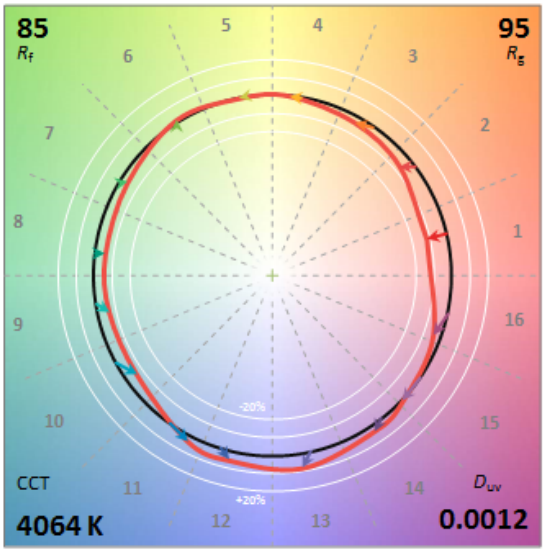
Manufacturer: LED ONE CORPORATION

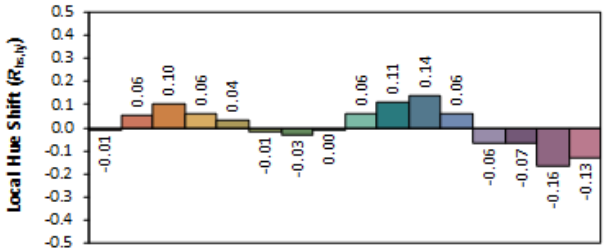
Date: 2020/1/9

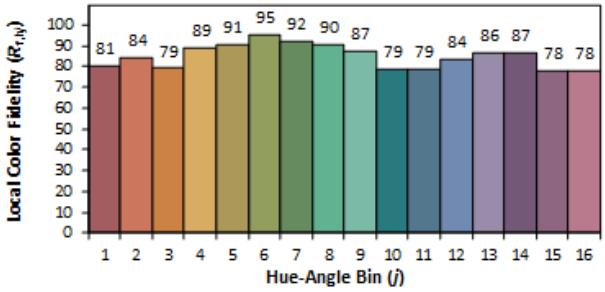
Model: LOC-14TROF-DMWMCCT

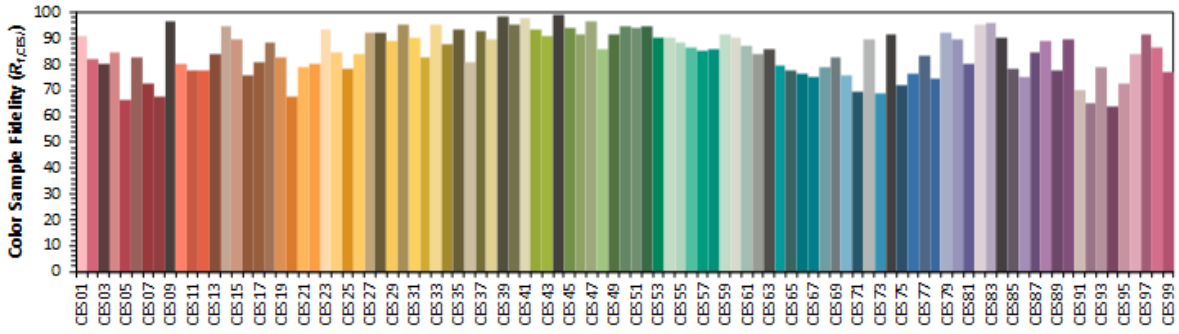












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

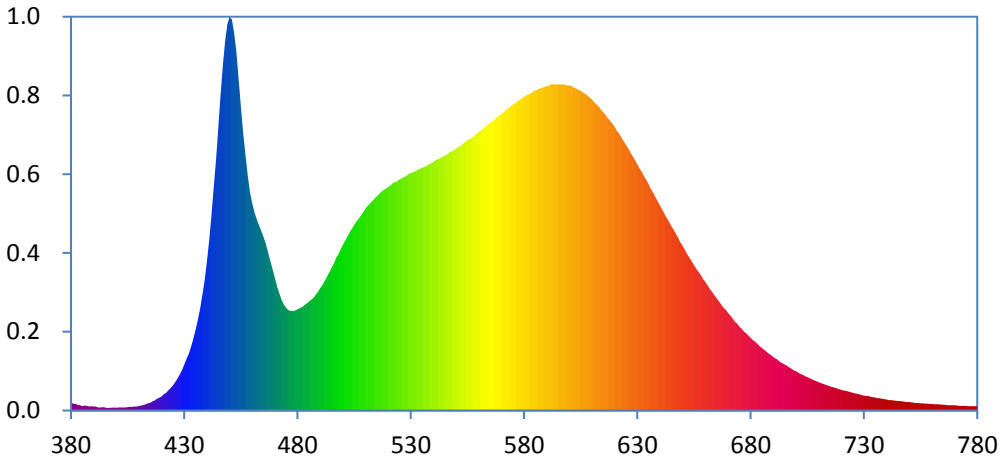
x	0.3784
y	0.3780
u'	0.2233
v'	0.5018

CIE 13.3-1995 (CRI)

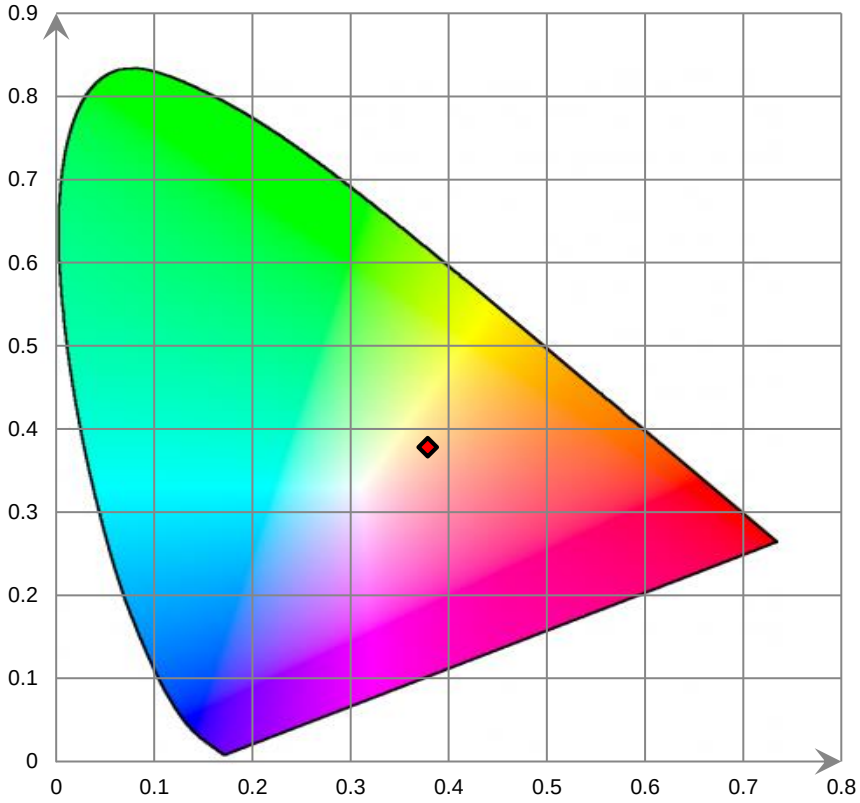
R_a	84
R_9	9

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

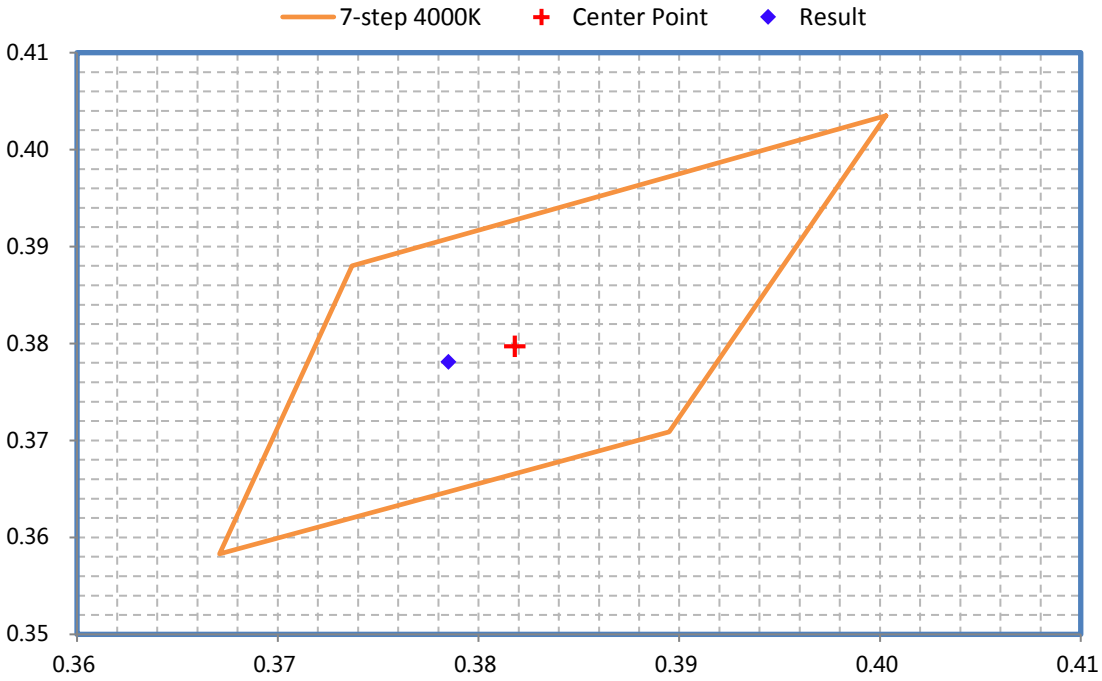
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LOC-14TROF-DMWMCCT
Control setting：5000K/29W

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	4148	≥1500	≥1350	Pass
Power(W)	29	None.	None.	N/A
Total Efficacy(lm/W)	143.04	≥110	≥106.7	Pass
CCT(K)	4922	4746~5312	No tolerances	Pass
Duv	0.00428	-0.004~0.008	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	96	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R_a	82.9	≥80	≥79	
R_9	6	≥0	≥-1	

Integrating Sphere THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9974	≥0.9	≥0.87	Pass
120	THDi	4.75%	≤20%	≤25%	Pass
277	Power Factor	0.9775	≥0.9	≥0.87	Pass
277	THDi	10.55%	≤20%	≤25%	Pass

Test Data

[Integrating Sphere System]

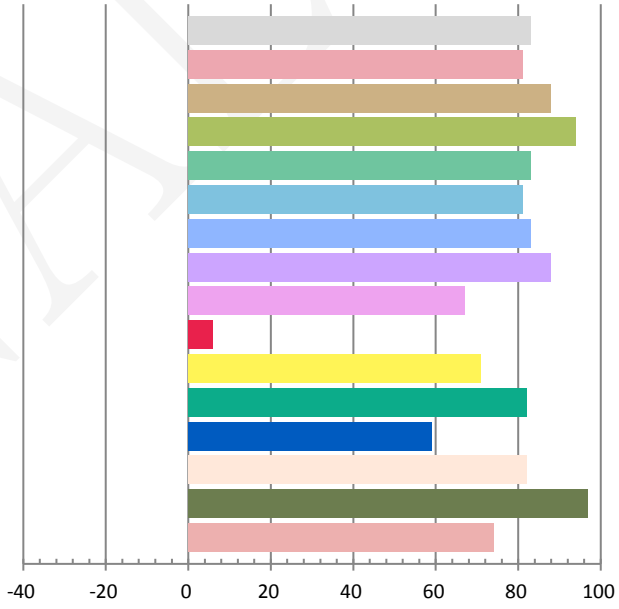
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.2423	29	0.9974	4148	143.04

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
12.747	4922	0.00428	0.3483	0.3628	0.2093	0.4905

Color Rendering Index

Ra			
82.9			
R1	R2	R3	R4
81	88	94	83
R5	R6	R7	R8
81	83	88	67
R9	R10	R11	R12
6	71	82	59
R13	R14	R15	
82	97	74	



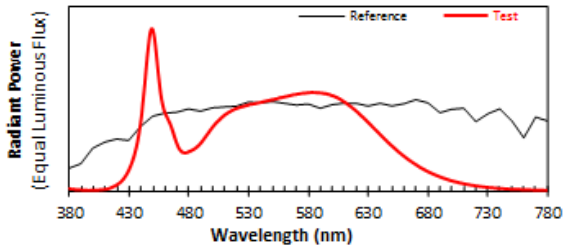
ANSI/IES TM-30-18 Color Rendition Report

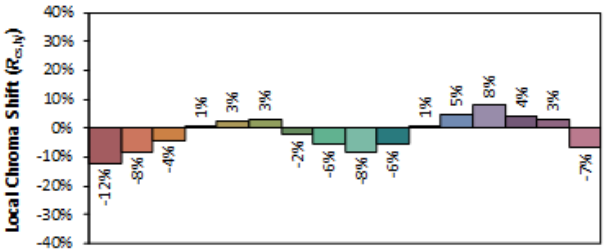
Source: User SPD

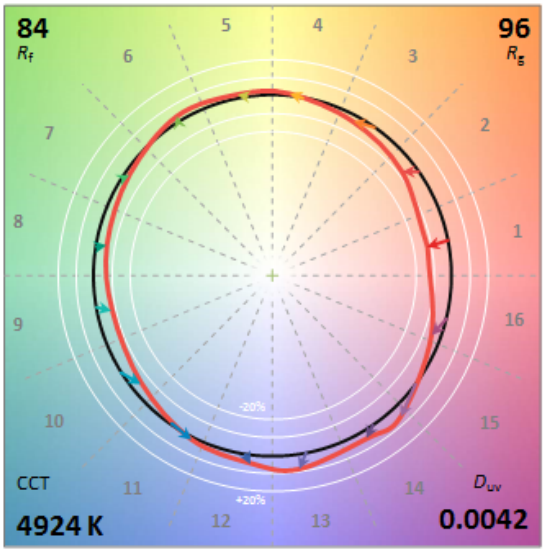
Manufacturer: LED ONE CORPORATION

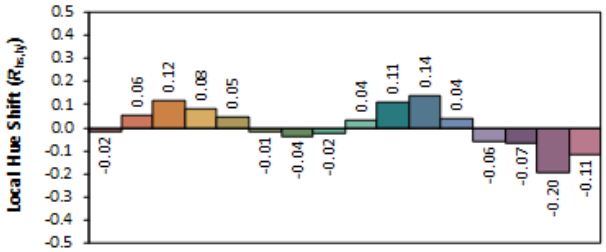
Date: 2020/1/9

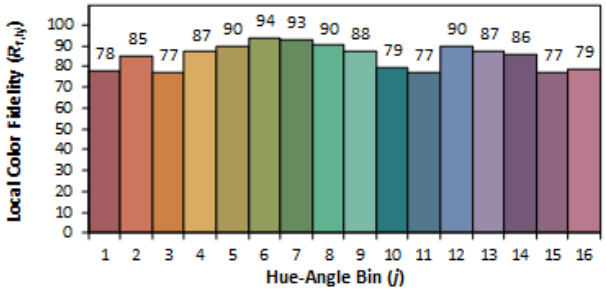
Model: LOC-14TROF-DMWMCCT

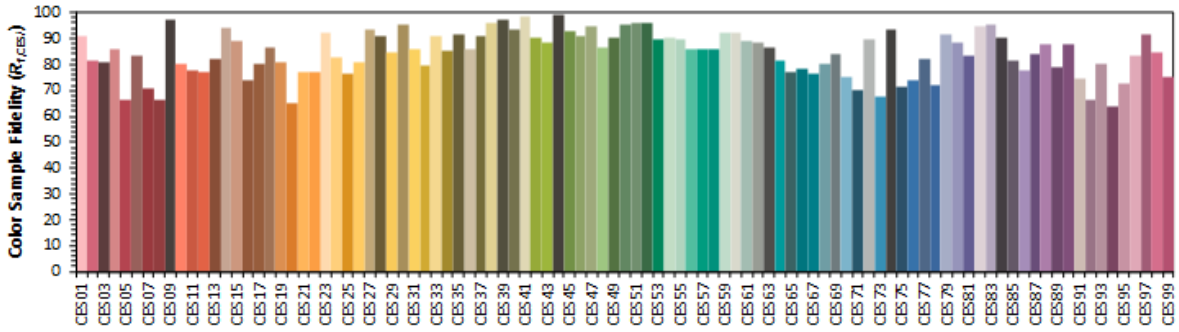












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

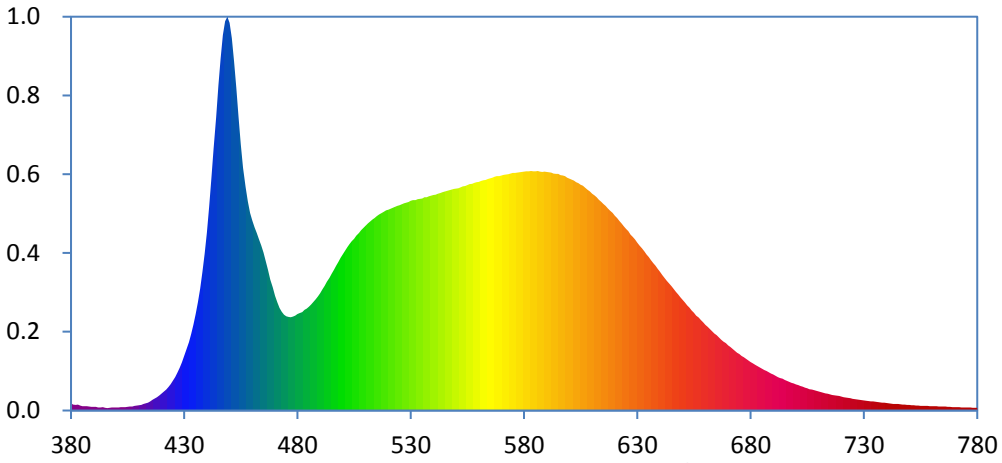
x	0.3482
y	0.3626
u'	0.2093
v'	0.4904

CIE 13.3-1995 (CRI)

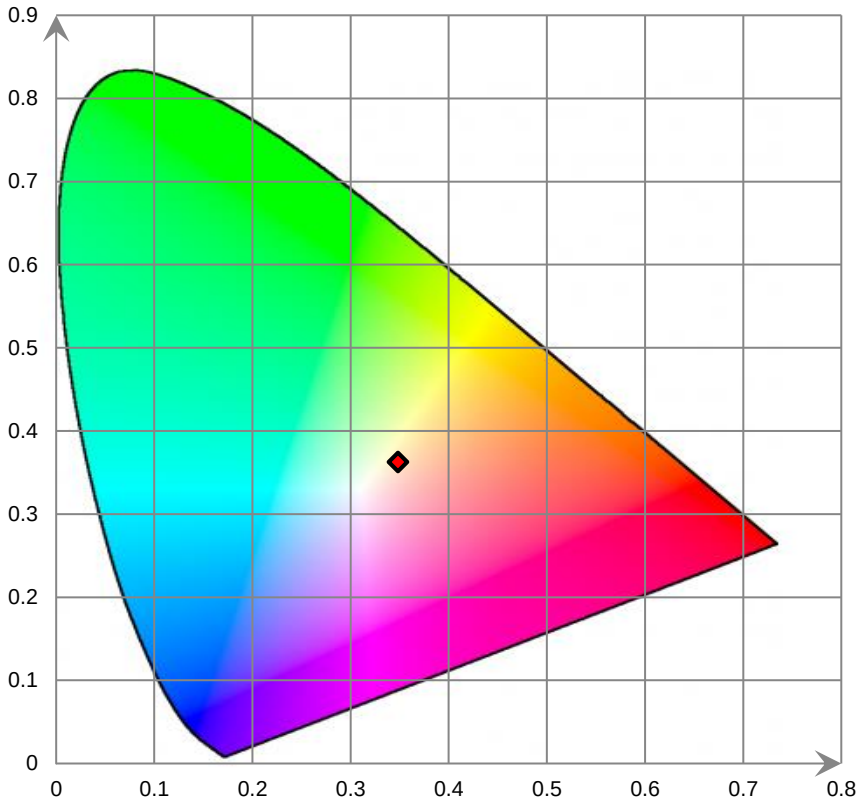
R_a	83
R_9	4

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

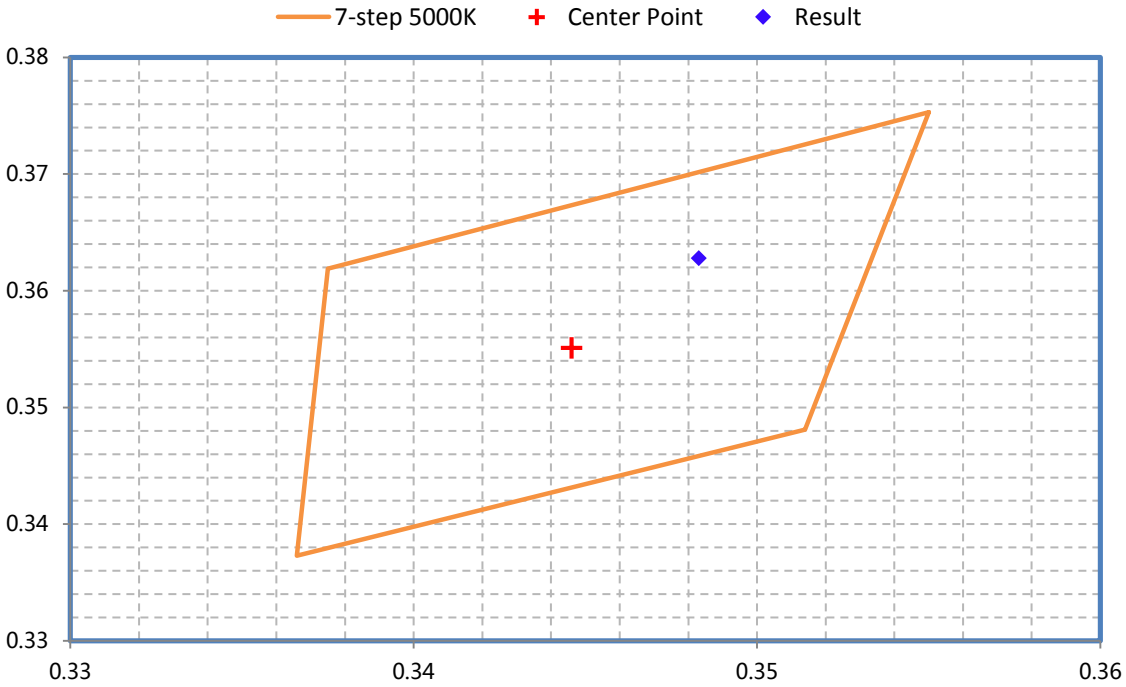
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 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	2020-02-14	2021-02-13
Temperature/humidity/clock	KEJIAN	TA298	EE053	2019-12-02	2020-12-01
Standard Light Source	INVENTFINE	N/A	JWWCR020106	2019-11-19	2020-11-18
Digital Power Meter	YOKOGAWA	WT210	91KB35700	2019-04-23	2020-04-22
Intelligence ac power supply	EVERFINE	DPS1005	G119890CS1361121	2020-02-14	2021-02-13
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2019-04-23	2020-04-22
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2019-04-23	2020-04-22
Power Meter	INVENTFINE	WT500	GSDSQ200007	2019-04-23	2020-04-22
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2019-12-24	2020-12-23
Wireless Weather Station	ZHONGXING	KG218	N/A	2019-12-02	2020-12-01
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2019-03-08	2020-03-07
Digital Multimeter	FLUKE	115C	37840512WS	2019-10-08	2020-10-07
Hybrid Recorder	YOKOGAWA	DR230	4TJH0903	2019-04-24	2020-04-23
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.
6. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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