

LM-79-08 Test Report
For
RAB LIGHTING INC

(Brand Name: N/A)

170 Ludlow Ave, PO BOX 970, Northvale, NJ 07647-2305 USA

Model name(s):
DLC0038(C4R8/10/119FAUNVW)

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

**Type of
Luminaire:** Downlights

Report Date: 2020-09-10

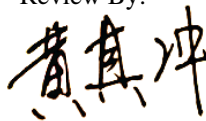
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 60 Hz
Nominal Power	8.0W /10.0 W /11.0W
Rated Initial Lamp Lumen	650 lm /750 lm /850 lm
Declared CCT	3000K/3500K/4000K/5000K

1.2 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

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25°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.

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.

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.

2.1.1 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-10	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLC0038(C4R8/10/119FAUNVW) 3000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008290049	120.0	60	0.091	11.00	0.998

Chromaticity Measurement - Sphere-Spectroradiometer Method:

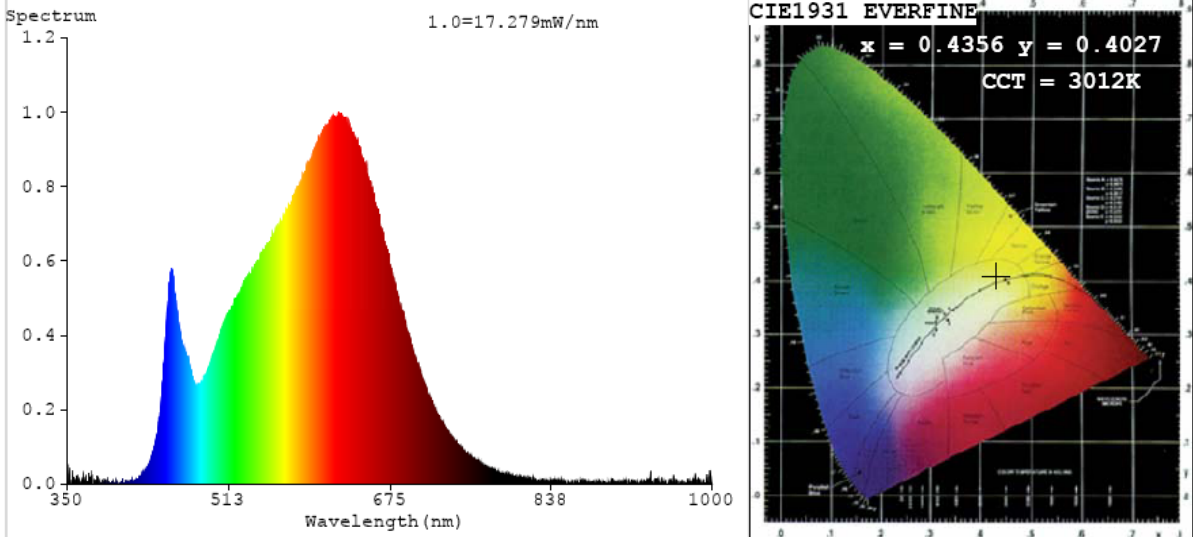
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	66
Frequency (Hz)	60	R2	98	R10	93
CCT (K)	3012	R3	99	R11	93
Duv	0.0004	R4	93	R12	79
Chromaticity (x, y)	x=0.4356 y=0.4027	R5	94	R13	95
Chromaticity (u', v')	u'=0.2503 v'=0.5206	R6	96	R14	99
Color Rendering Index (CRI)	93.8	R7	92	R15	91
R9	66	R8	84	--	--

Photometric Measurement – Goniophotometer Method:

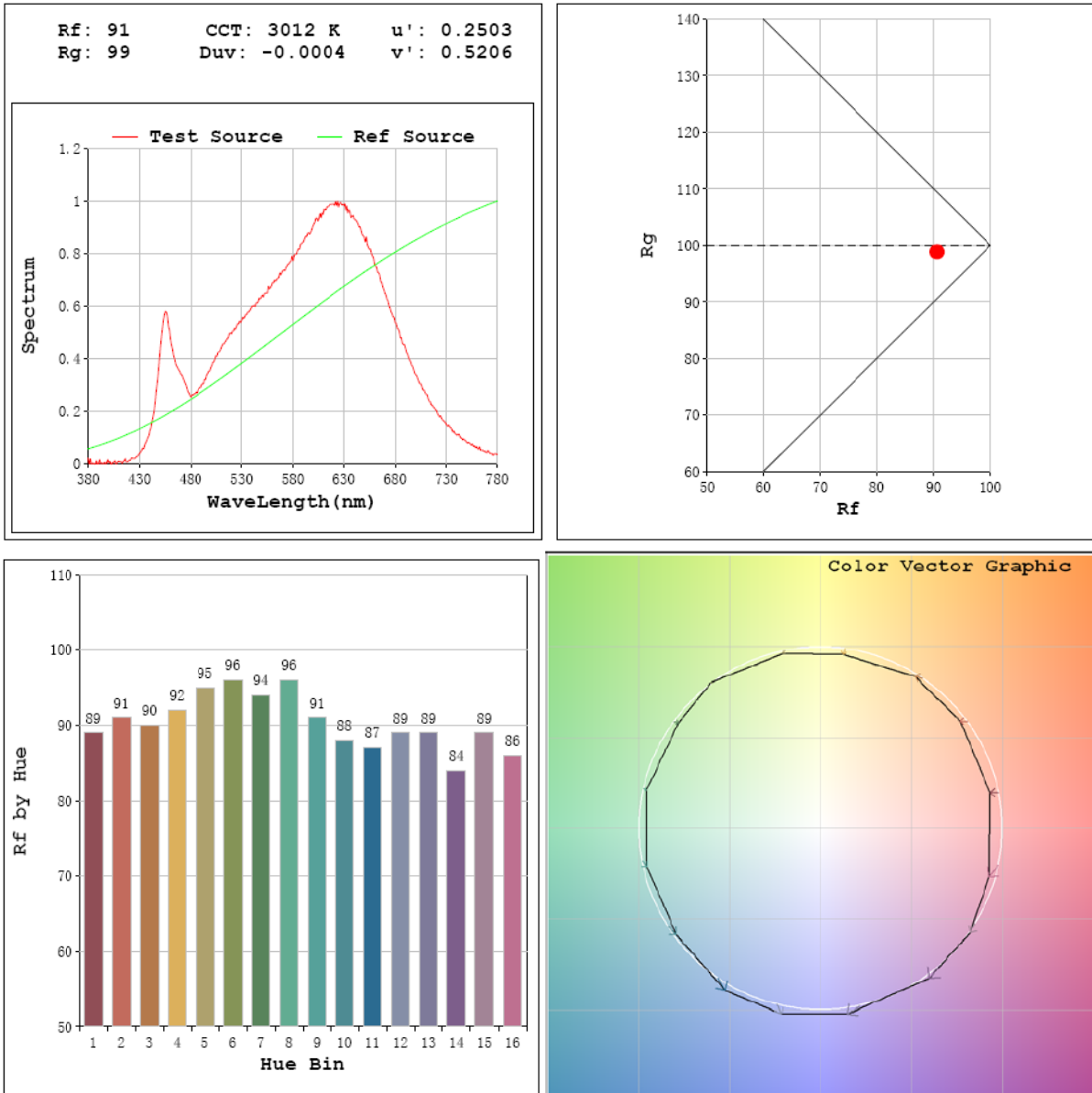
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	858.77
Luminous Efficacy (lm/W)	78.07
Beam Angle (°)	61.4
Center Beam Candle Power (cd)	660.8

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	857.4
Luminous Efficacy (lm/W)	77.95

Spectral Power Distribution & Chromaticity Diagram



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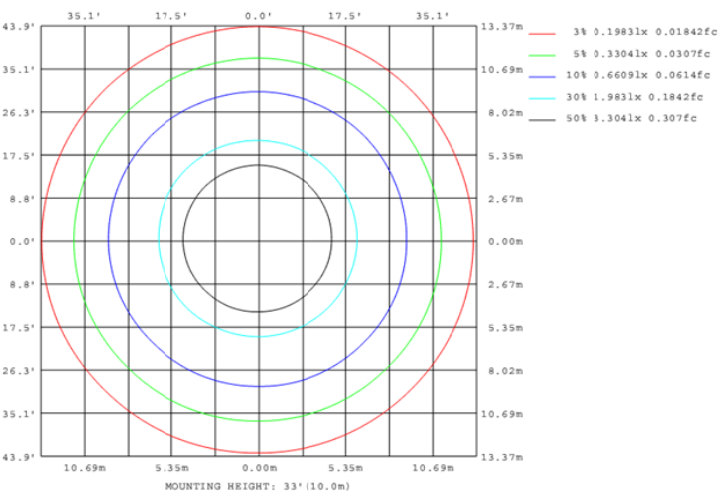
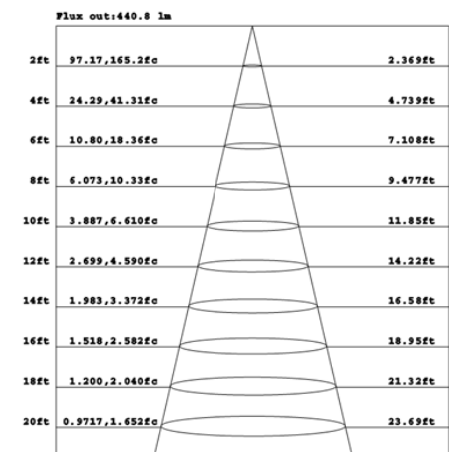
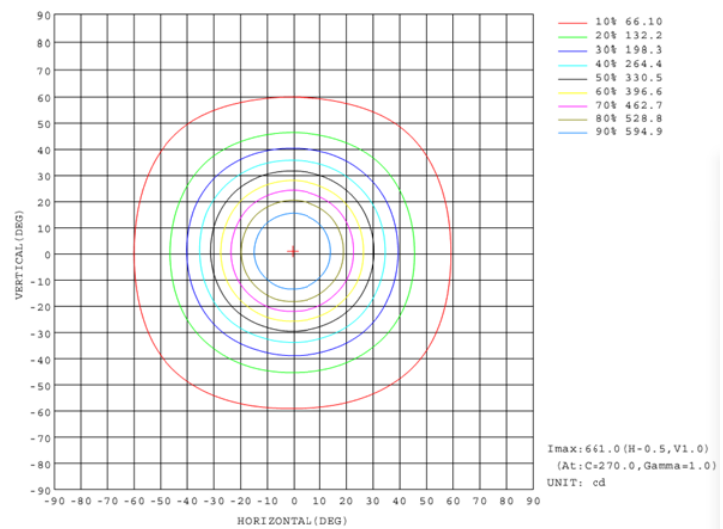
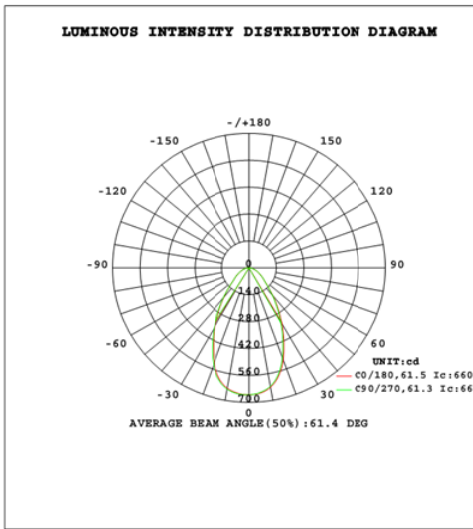


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	422.2	49.2%
0-40	586.6	68.3%
0-60	770.6	89.7%
60-90	88.2	10.3%
70-100	38.8	4.5%
90-120	0.0	0.0%
0-90	858.8	100.0%
90-180	0.0	0.0%
0-180	858.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	61.8	7.2%	90-100	0.0	0.0%
10-20	163.8	19.1%	100-110	0.0	0.0%
20-30	196.6	22.9%	110-120	0.0	0.0%
30-40	164.3	19.1%	120-130	0.0	0.0%
40-50	109.9	12.8%	130-140	0.0	0.0%
50-60	74.1	8.6%	140-150	0.0	0.0%
60-70	49.4	5.8%	150-160	0.0	0.0%
70-80	27.8	3.2%	160-170	0.0	0.0%
80-90	11.1	1.3%	170-180	0.0	0.0%

Photometric Data



Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

Table--1

UNIT: cd

γ (DEG) \ C (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	661	661	661	661	661	661	661	661	661	661	661	661	661	661	661	661			
5	654	653	652	652	652	653	653	654	655	656	657	657	658	657	657	655			
10	631	629	626	626	626	629	630	634	636	637	640	640	641	639	638	634			
15	583	580	574	575	575	580	583	590	594	597	601	601	602	598	595	588			
20	510	504	497	498	498	505	510	518	526	530	536	537	538	532	527	518			
25	421	416	407	407	408	416	421	432	438	443	452	452	452	444	439	429			
30	335	326	324	319	324	325	335	342	353	358	366	365	364	356	351	341			
35	257	250	250	247	248	249	256	261	269	279	280	281	277	273	265	262			
40	190	186	186	185	186	185	190	194	199	206	207	207	204	202	196	194			
45	136	136	134	135	135	137	138	142	145	145	148	146	145	143	142	138			
50	102	102	101	102	102	103	104	106	106	106	107	106	106	104	104	102			
55	80.7	80.6	79.9	80.6	80.7	82.1	82.6	84.0	84.0	84.0	84.7	84.1	84.1	82.8	82.5	81.0			
60	63.1	63.0	62.4	63.0	63.1	64.3	64.7	65.9	66.1	66.1	66.7	66.2	66.1	65.1	64.9	63.6			
65	48.1	48.0	47.5	48.0	48.1	49.0	49.4	50.5	50.9	50.9	51.5	51.0	50.9	50.0	49.8	48.8			
70	35.4	35.3	34.9	35.3	35.3	36.2	36.5	37.3	38.0	38.1	38.5	38.1	38.0	37.3	37.0	36.3			
75	24.8	24.8	24.4	24.7	24.7	25.4	25.7	26.4	27.2	27.2	27.6	27.3	27.2	26.6	26.4	25.7			
80	16.1	16.1	15.7	16.0	16.0	16.5	16.8	17.3	18.3	18.4	18.6	18.4	18.3	17.8	17.6	17.1			
85	8.93	8.82	8.57	8.70	8.75	9.18	9.36	9.86	10.9	11.0	11.2	11.0	11.0	10.5	10.4	9.91			
90	4.35	4.33	4.33	4.32	4.35	4.35	4.38	4.38	5.06	5.27	5.34	5.36	5.19	5.07	5.03	5.02			

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-10	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLC0038(C4R8/10/119FAUNVW)		3500K

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008290049	120.0	60	0.090	10.83	0.998

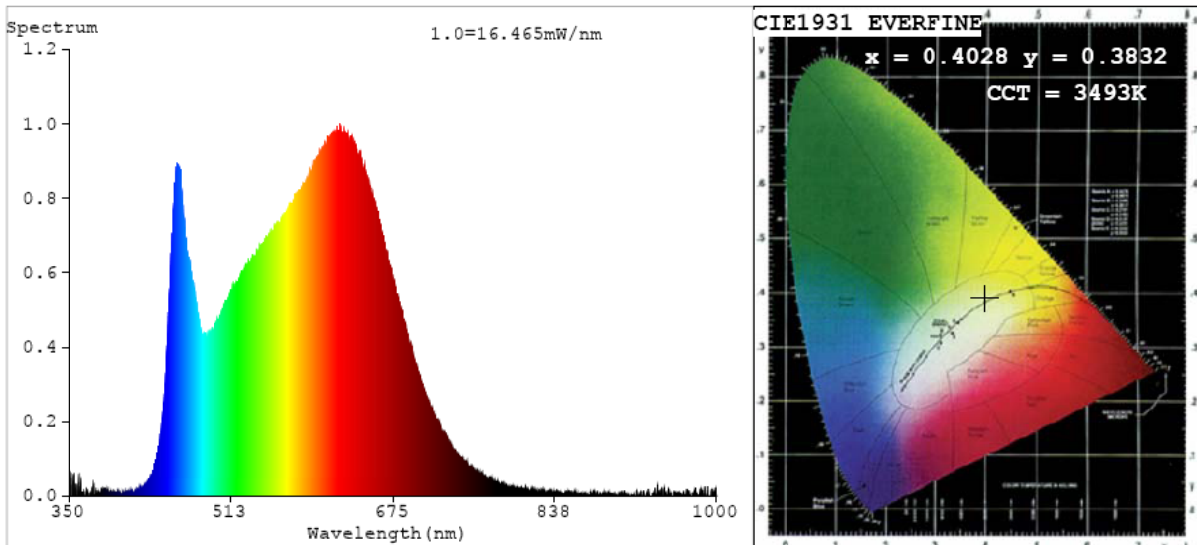
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3493
Duv	0.0028
Chromaticity (x, y)	x=0.4028 y=0.3832
Chromaticity (u', v')	u'=0.2372 v'=0.5077
Color Rendering Index (CRI)	93.6
R9	82
Total Luminous (lm)	880.4
Luminous Efficacy (lm/W)	81.32

Special Color Rendering Indices			
R1	98	R9	82
R2	97	R10	95
R3	95	R11	94
R4	92	R12	76
R5	95	R13	98
R6	93	R14	98
R7	90	R15	96
R8	89	--	--

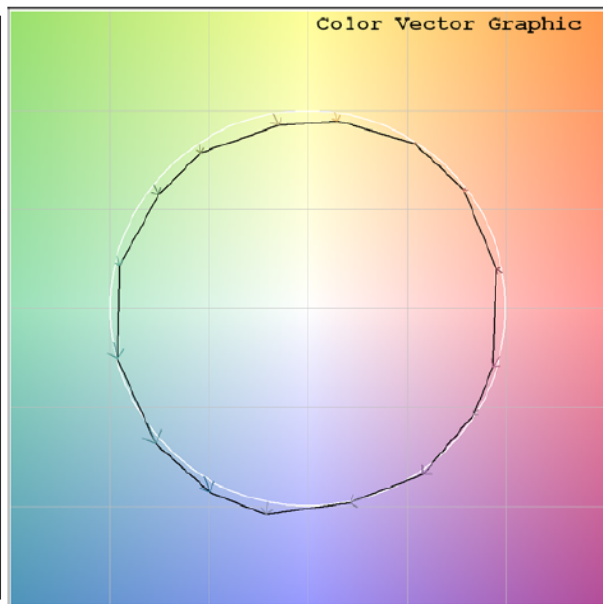
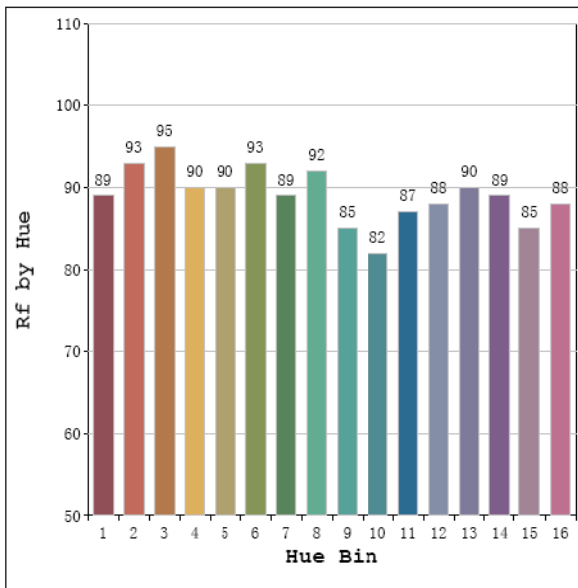
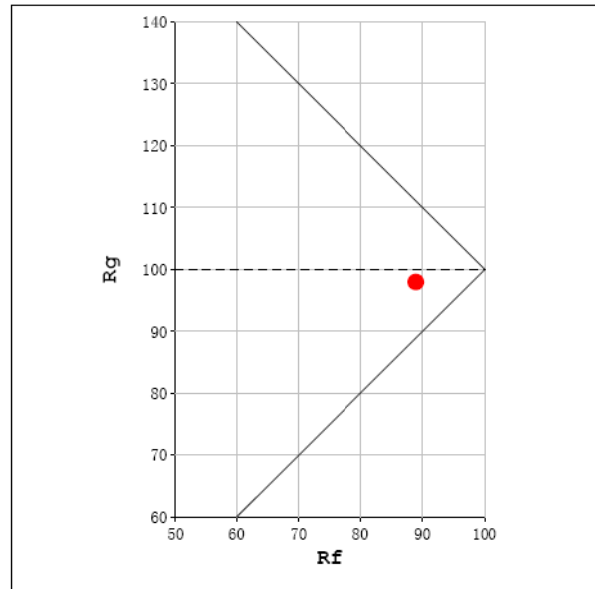
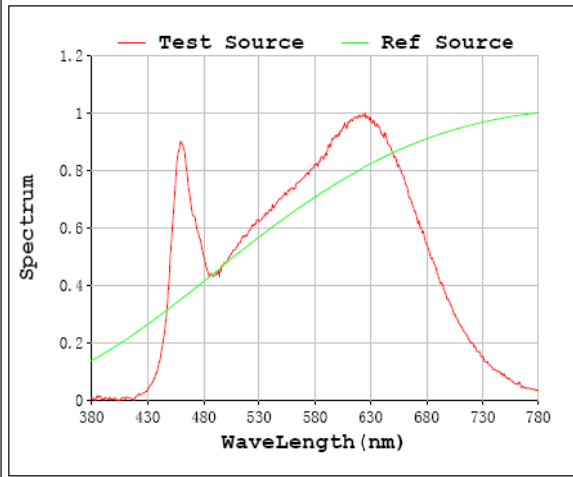
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	880.3
Luminous Efficacy (lm/W)	80.03

Spectral Power Distribution & Chromaticity Diagram



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Rf: 89 CCT: 3493 K u': 0.2372
 Rg: 98 Duv: -0.0028 v': 0.5077



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-10	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLC0038(C4R8/10/119FAUNVW) 4000K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008290049	120.0	60	0.089	10.62	0.998

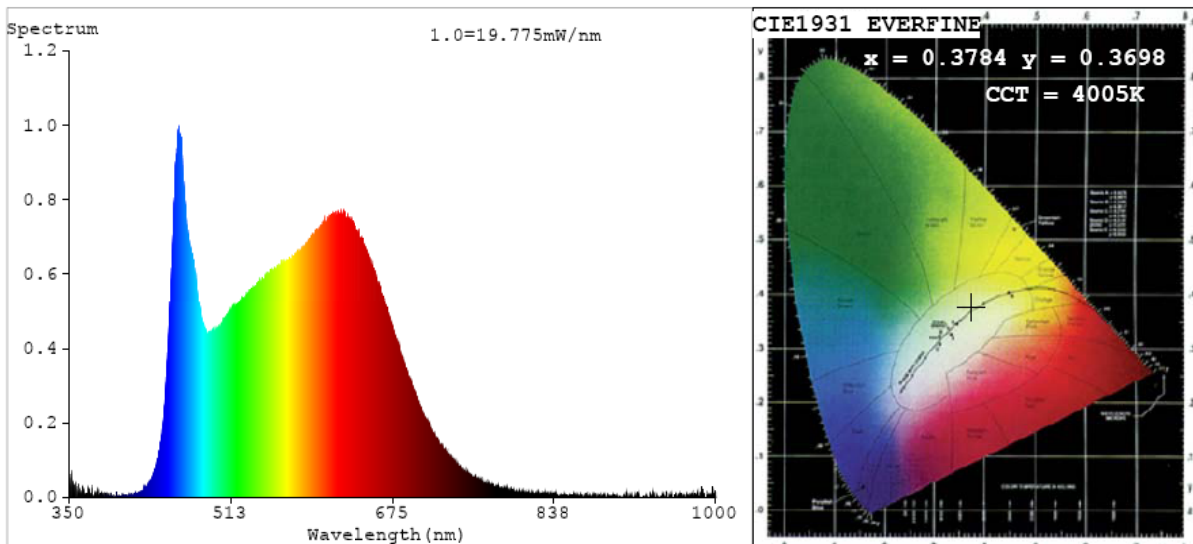
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4005
Duv	0.0027
Chromaticity (x, y)	x=0.3784 y=0.3698
Chromaticity (u', v')	u'=0.2265 v'=0.4982
Color Rendering Index (CRI)	91.9
R9	91
Total Luminous (lm)	889.3
Luminous Efficacy (lm/W)	83.70

Special Color Rendering Indices			
R1	96	R9	91
R2	94	R10	90
R3	93	R11	93
R4	89	R12	72
R5	93	R13	96
R6	91	R14	97
R7	88	R15	95
R8	90	--	--

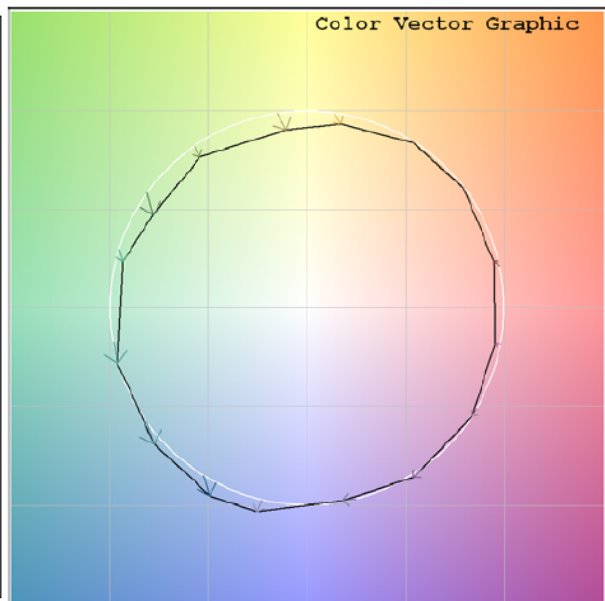
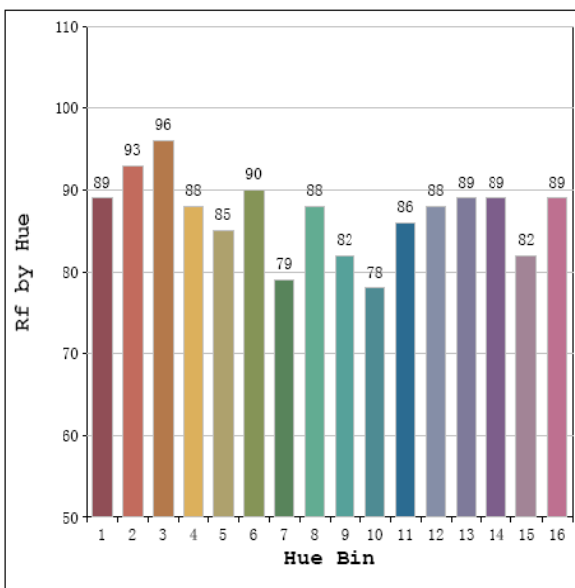
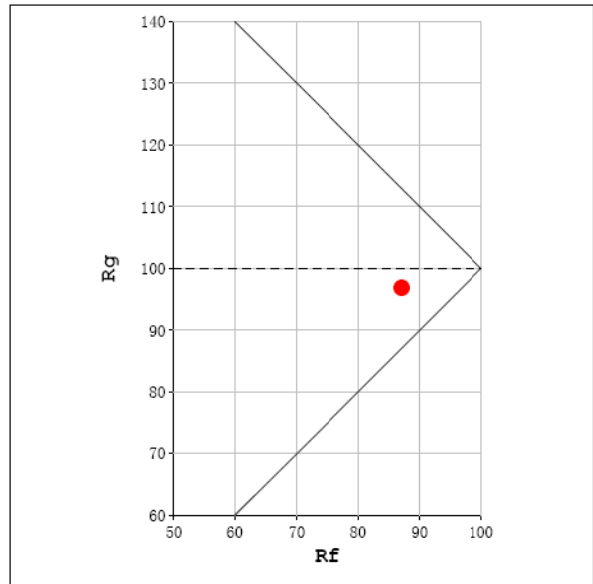
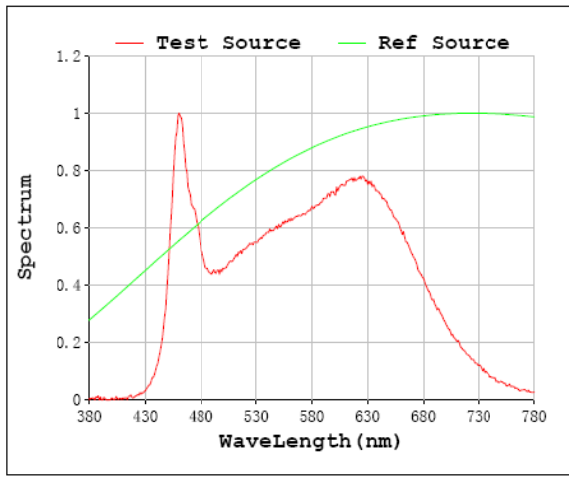
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	888.8
Luminous Efficacy (lm/W)	81.97

Spectral Power Distribution & Chromaticity Diagram



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Rf: 87 CCT: 4005 K u': 0.2265
 Rg: 97 Duv: -0.0027 v': 0.4982



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-10	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLC0038(C4R8/10/119FAUNVW) 5000K		

Electrical Measurement:

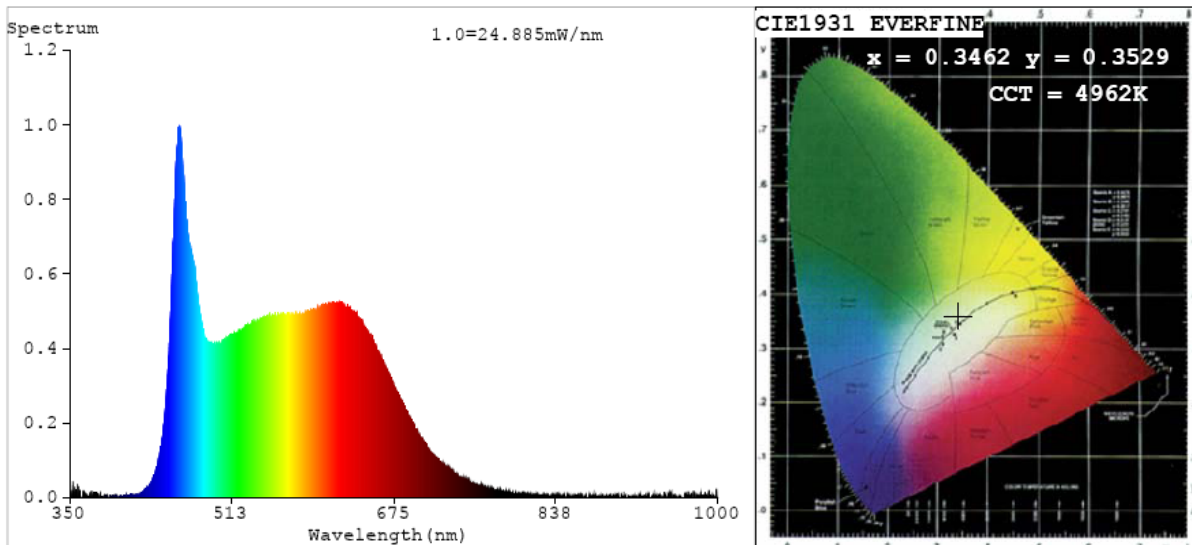
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008290049	120.0	60	0.091	10.84	0.998

Chromaticity Measurement - Sphere-Spectroradiometer Method:

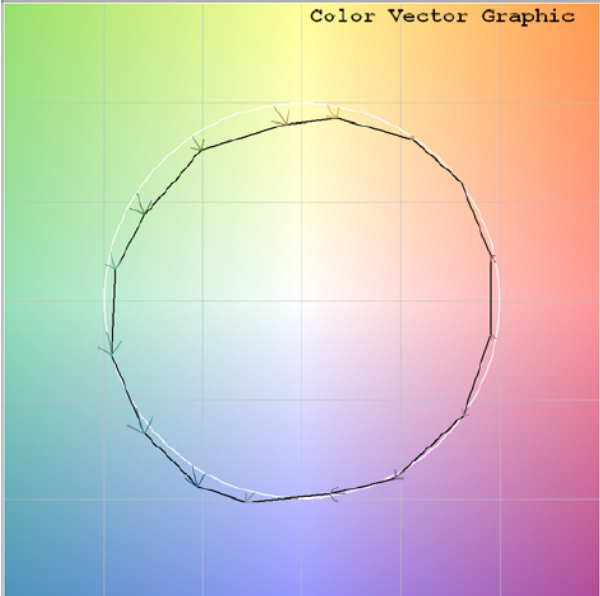
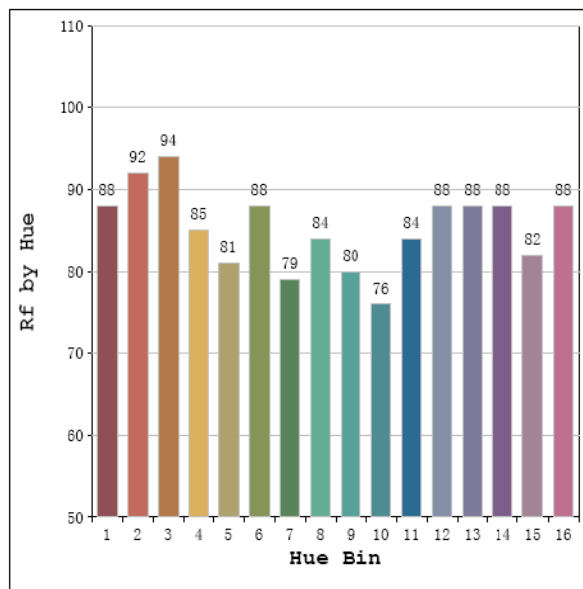
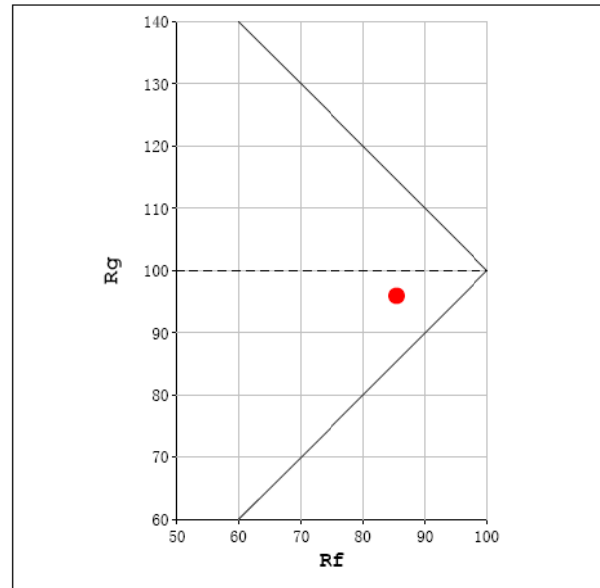
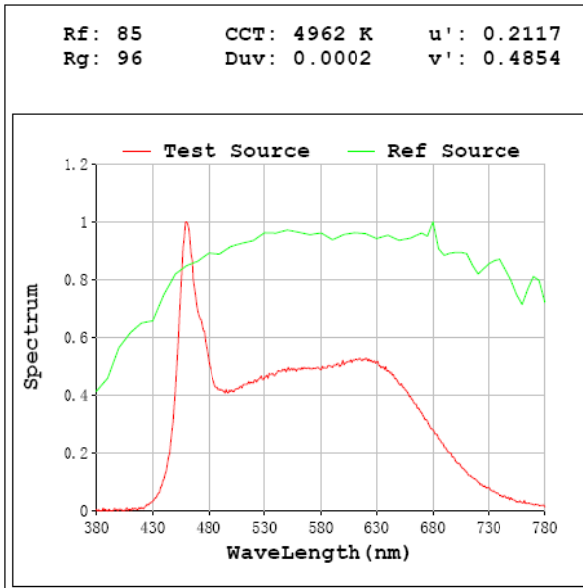
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	93
Frequency (Hz)	60	R2	93	R10	87
CCT (K)	4962	R3	91	R11	89
Duv	0.0002	R4	84	R12	67
Chromaticity (x, y)	x=0.3462 y=0.3529	R5	91	R13	95
Chromaticity (u', v')	u'=0.2117 v'=0.4854	R6	92	R14	96
Color Rendering Index (CRI)	91.2	R7	85	R15	92
R9	93	R8	87	--	--
Total Luminous (lm)	876.2				
Luminous Efficacy (lm/W)	80.80				

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	877.4
Luminous Efficacy (lm/W)	79.76

Spectral Power Distribution & Chromaticity Diagram

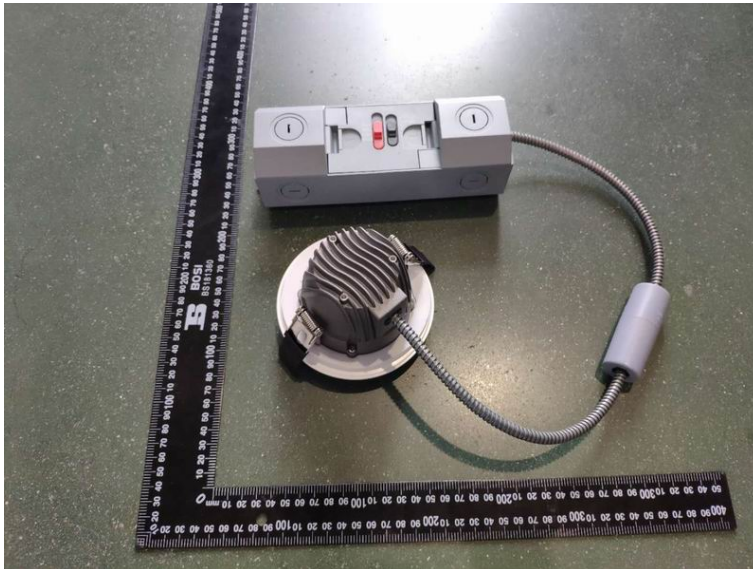


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Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
DLC0038(C4R8/10/119FAUNVW)	8.0W 3000K setting	120.0	657.3	7.68	85.59
		277.0	657.5	7.89	83.33
	10.0W 3000K setting	120.0	757.9	9.60	78.94
		277.0	758.0	9.88	76.71
	11.0W 3000K setting	120.0	857.8	10.89	78.77
		277.0	857.4	11.00	77.95
	11.0W 3500K setting	120.0	880.4	10.83	81.32
		277.0	880.3	11.00	80.03
	11.0W 4000K setting	120.0	889.3	10.62	83.70
		277.0	888.8	10.84	81.97
	11.0W 5000K setting	120.0	876.2	10.84	80.80
		277.0	877.4	11.00	79.76

3. Product Photo



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