

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):
DLW0059(WFRL3R69CCT120WS)

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

**Type of
Luminaire:** Downlights

Report Date: 2021-08-30

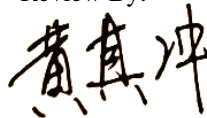
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	6.0W
Rated Initial Lamp Lumen	420 lm
Declared CCT	2700K/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	2021-08-30	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0059(WFRL3R69CCT120WS)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108300001	120.0	60	0.052	6.12	0.962

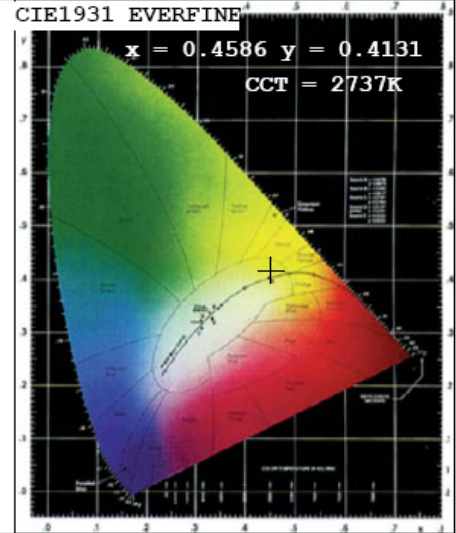
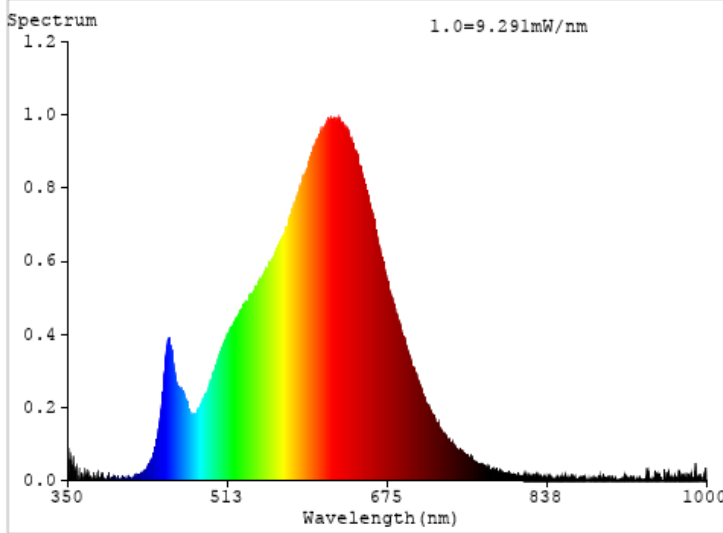
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	92	R9	55
Frequency (Hz)	60	R2	96	R10	91
CCT (K)	2737	R3	99	R11	94
Duv	0.0010	R4	92	R12	82
Chromaticity (x, y)	x=0.4586 y=0.4131	R5	92	R13	93
Chromaticity (u', v')	u'=0.2606 v'=0.5281	R6	96	R14	99
Color Rendering Index (CRI)	92.3	R7	91	R15	87
R9	55	R8	79	--	--

Photometric Measurement – Goniophotometer Method:

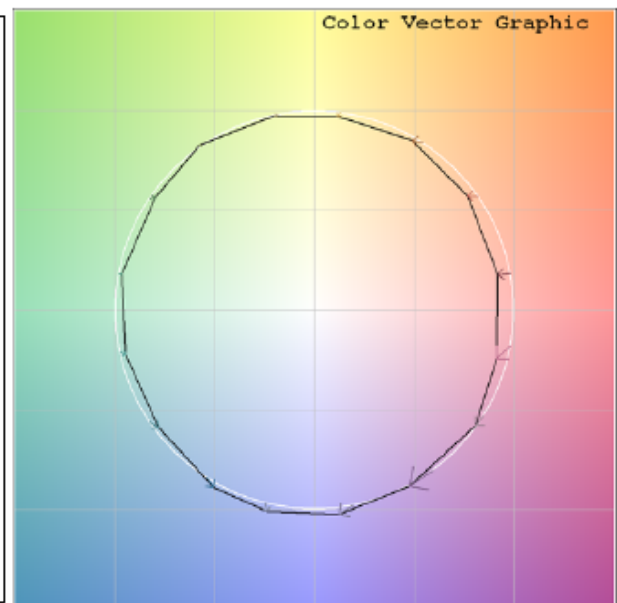
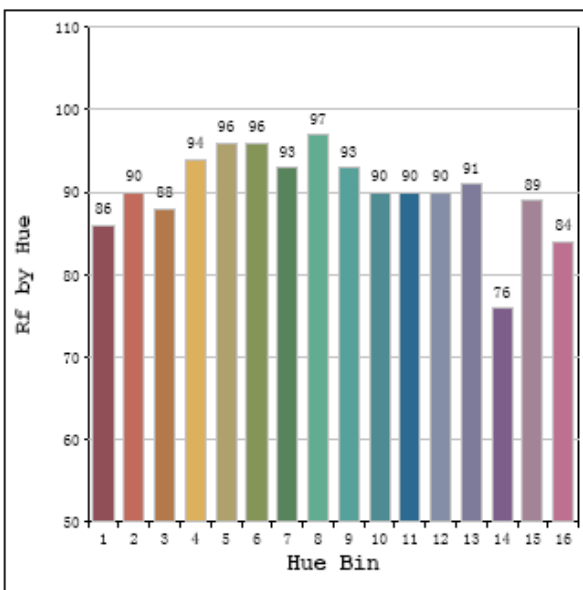
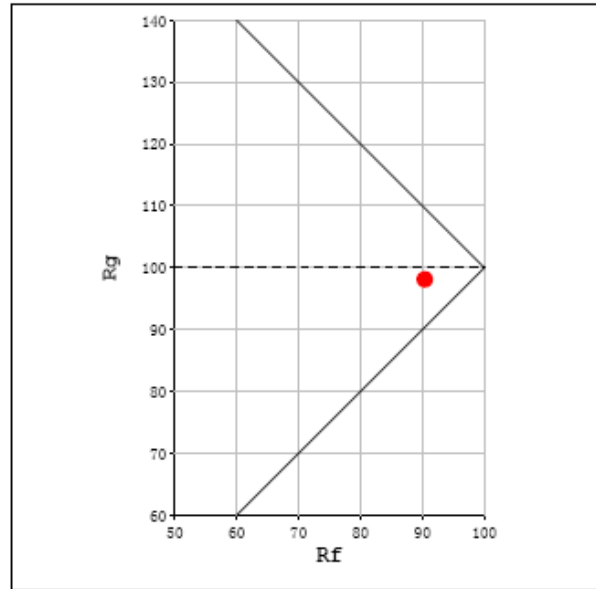
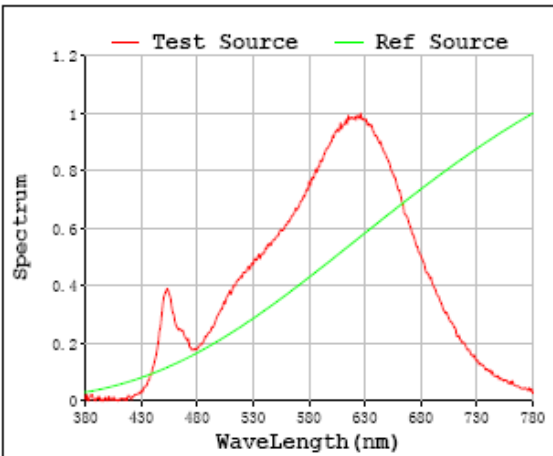
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	429.41
Luminous Efficacy (lm/W)	70.16
Beam Angle (°)	110.7
Center Beam Candle Power (cd)	152

Spectral Power Distribution & Chromaticity Diagram



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Rf: 90 CCT: 2737 K u': 0.2606
Rg: 98 Duv: 0.0010 v': 0.5281



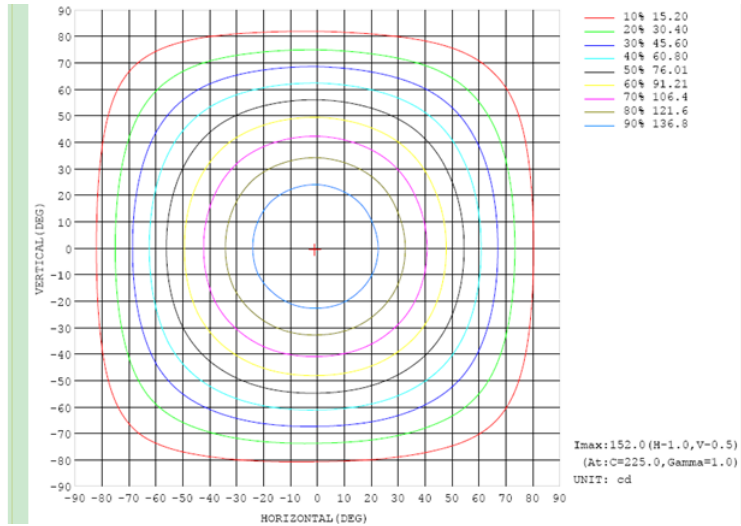
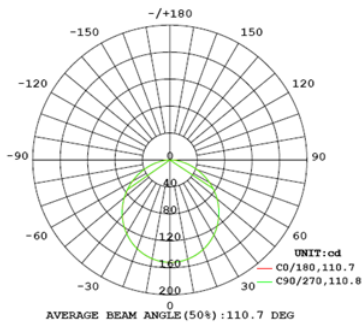
Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	117.5	27.4%
0-40	191.8	44.7%
0-60	337.1	78.5%
60-90	92.4	21.5%
70-100	40.2	9.4%
90-120	0.0	0.0%
0-90	429.4	100.0%
90-180	0.0	0.0%
0-180	429.4	100.0%

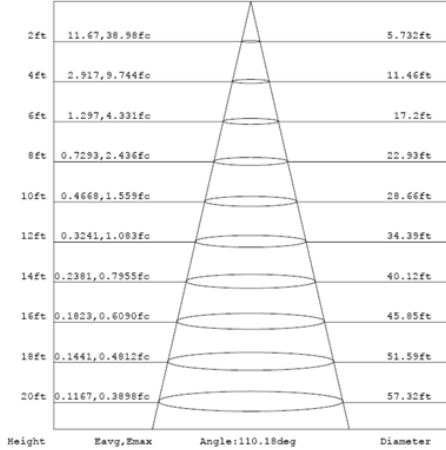
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	14.4	3.3%	90-100	0.0	0.0%
10-20	41.1	9.6%	100-110	0.0	0.0%
20-30	62.0	14.4%	110-120	0.0	0.0%
30-40	74.4	17.3%	120-130	0.0	0.0%
40-50	76.6	17.8%	130-140	0.0	0.0%
50-60	68.7	16.0%	140-150	0.0	0.0%
60-70	52.2	12.1%	150-160	0.0	0.0%
70-80	30.5	7.1%	160-170	0.0	0.0%
80-90	9.7	2.3%	170-180	0.0	0.0%

Photometric Data

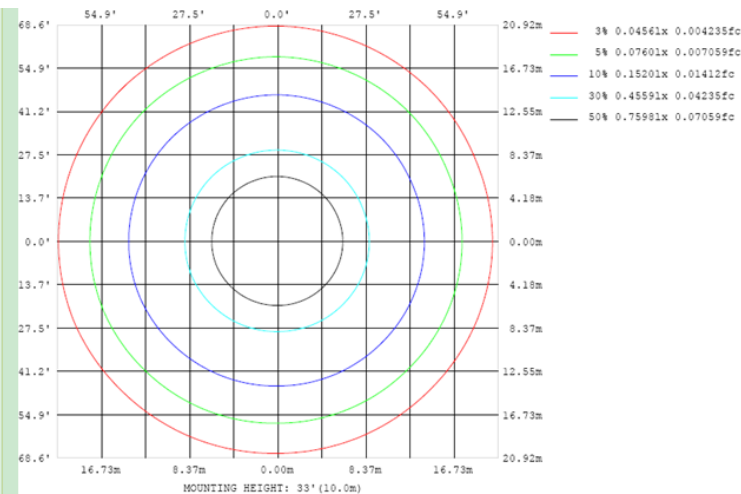
LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Flux out: 322.3 lm



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



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2020-08-30	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0059(WFRL3R69CCT120WS)	3000K	

Electrical Measurement:

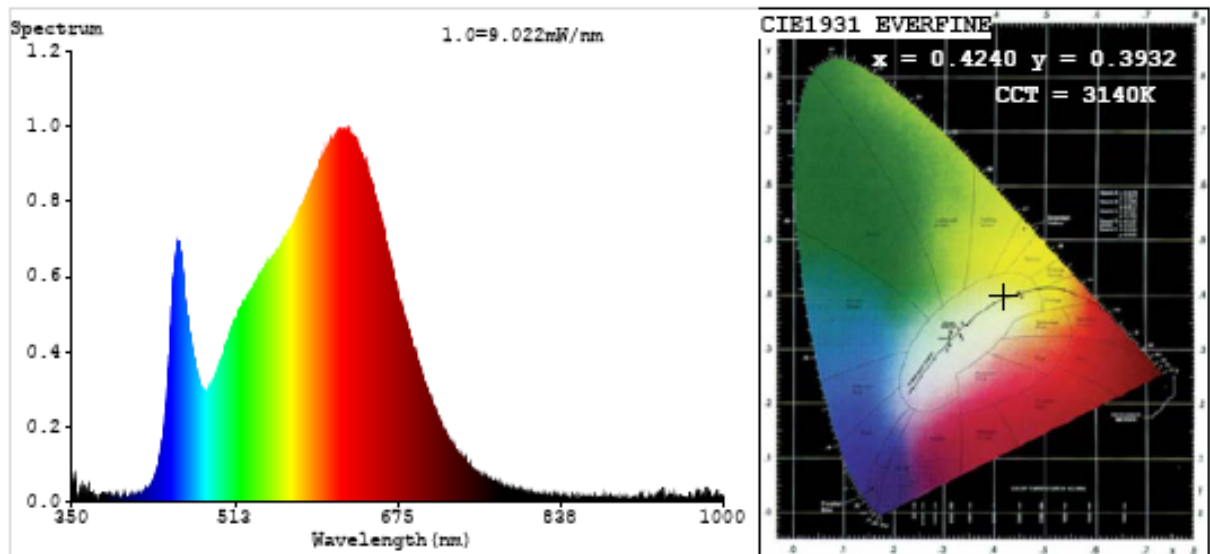
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108300001	120.0	60	0.0522	6.00	0.956

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3140
Duv	-0.0025
Chromaticity (x, y)	x=0.4240 y=0.3932
Chromaticity (u', v')	u'=0.2468 v'=0.5151
Color Rendering Index (CRI)	94.3
R9	69
Total Luminous (lm)	450.4
Luminous Efficacy (lm/W)	75.05

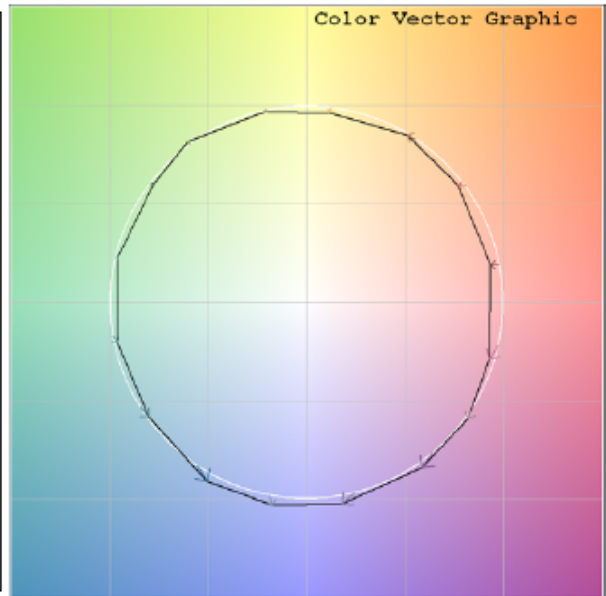
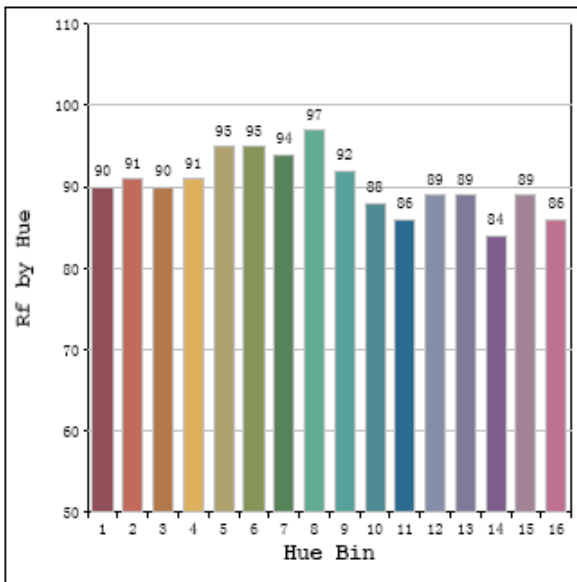
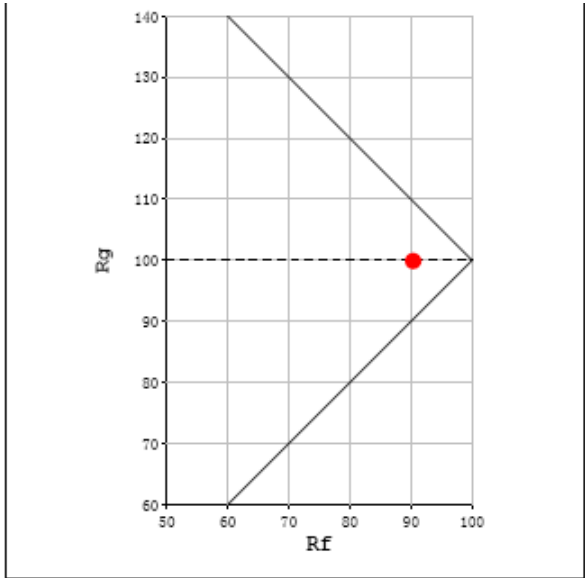
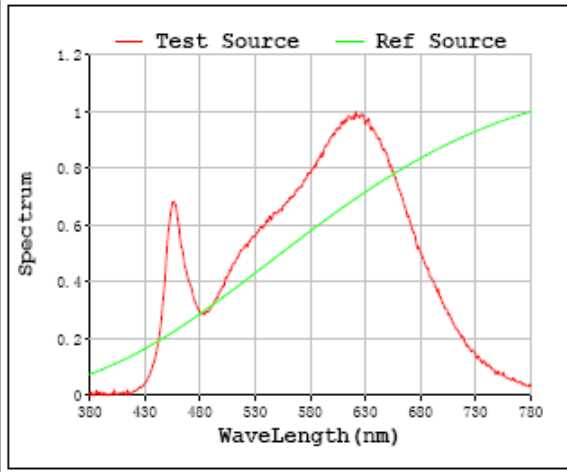
Special Color Rendering Indices			
R1	96	R9	69
R2	99	R10	96
R3	98	R11	94
R4	93	R12	79
R5	95	R13	97
R6	96	R14	99
R7	92	R15	93
R8	85	--	--

Spectral Power Distribution & Chromaticity Diagram



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Rf: 90 CCT: 3140 K u': 0.2468
 Rg: 100 Duv: -0.0025 v': 0.5151



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2020-08-30	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0059(WFRL3R69CCT120WS)	3500K	

Electrical Measurement:

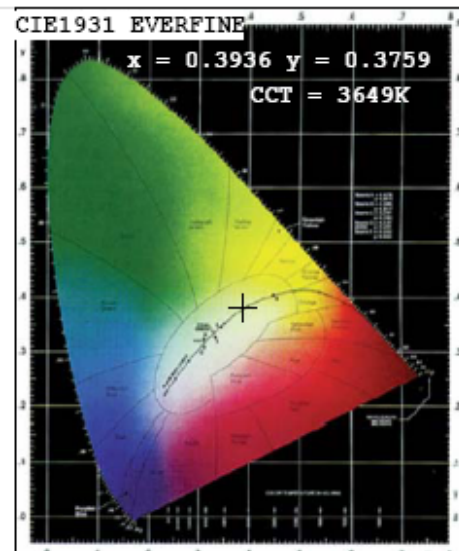
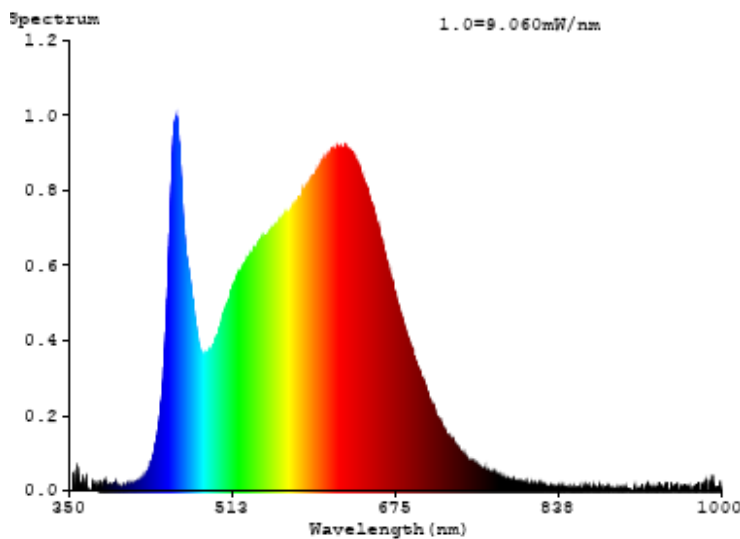
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108300001	120.0	60	0.0515	5.91	0.955

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3649
Duv	-0.0040
Chromaticity (x, y)	x=0.3936 y=0.3759
Chromaticity (u', v')	u'=0.2342 v'=0.5032
Color Rendering Index (CRI)	95
R9	79
Total Luminous (lm)	463.4
Luminous Efficacy (lm/W)	78.42

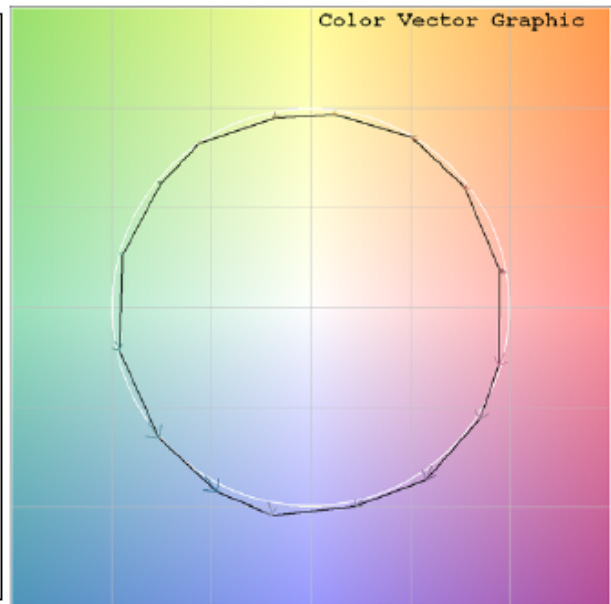
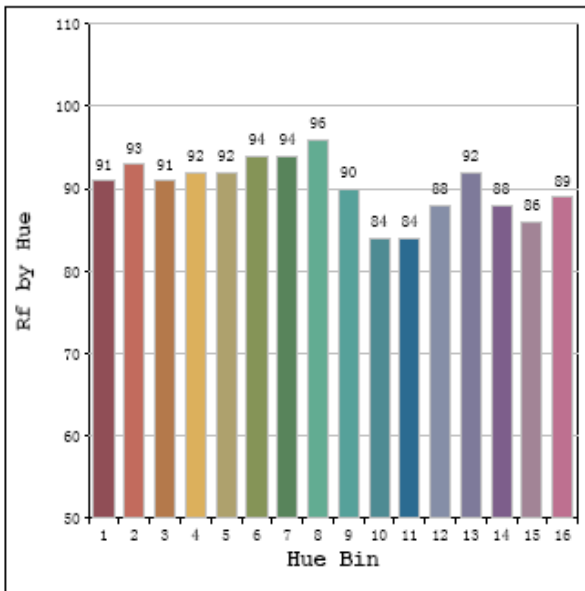
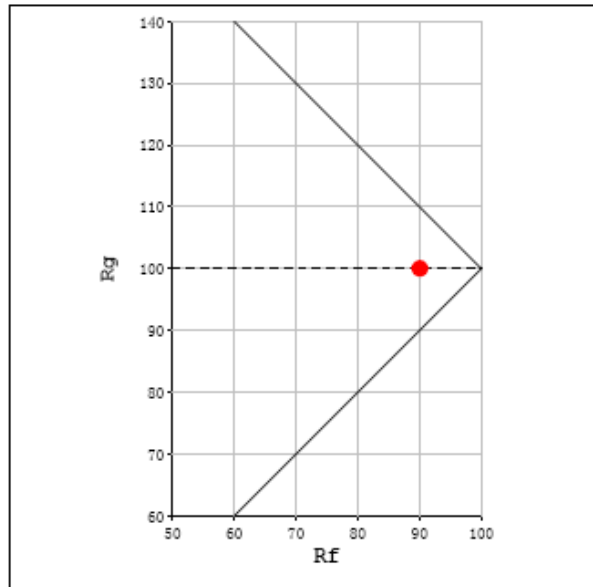
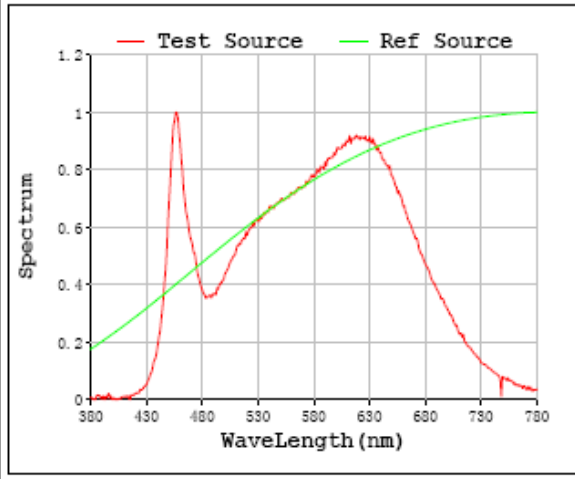
Special Color Rendering Indices			
R1	97	R9	79
R2	99	R10	98
R3	98	R11	95
R4	94	R12	74
R5	95	R13	99
R6	95	R14	99
R7	93	R15	96
R8	89	--	--

Spectral Power Distribution & Chromaticity Diagram



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Rf: 90 CCT: 3649 K u': 0.2342
 Rg: 100 Duv: -0.0040 v': 0.5032



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2020-08-30	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0059(WFRL3R69CCT120WS) 4000K		

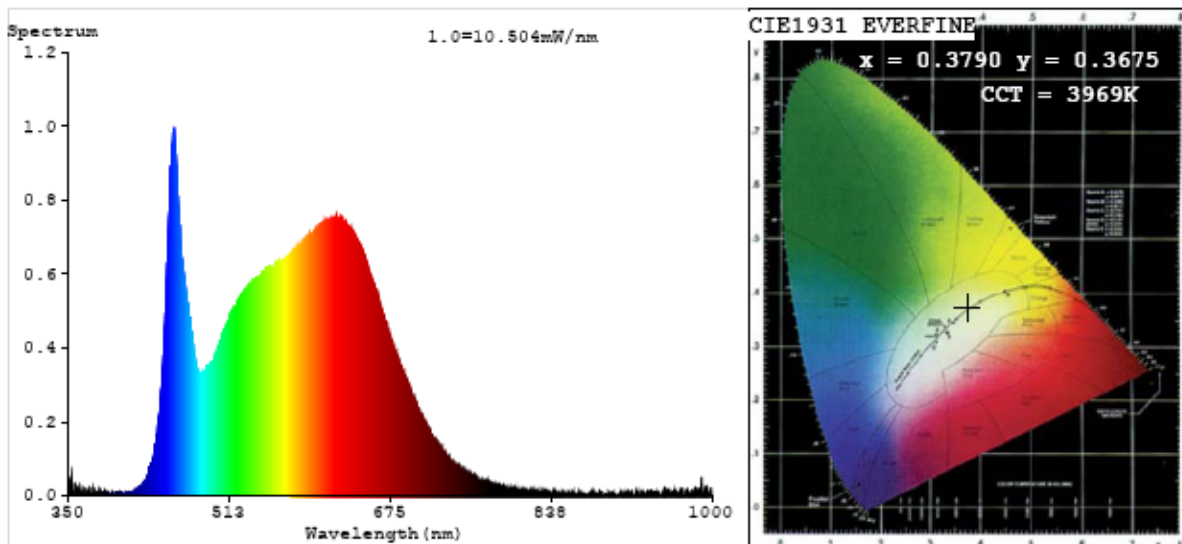
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108300001	120.0	60	0.05161	5.924	0.9552

Chromaticity Measurement - Sphere-Spectroradiometer Method:

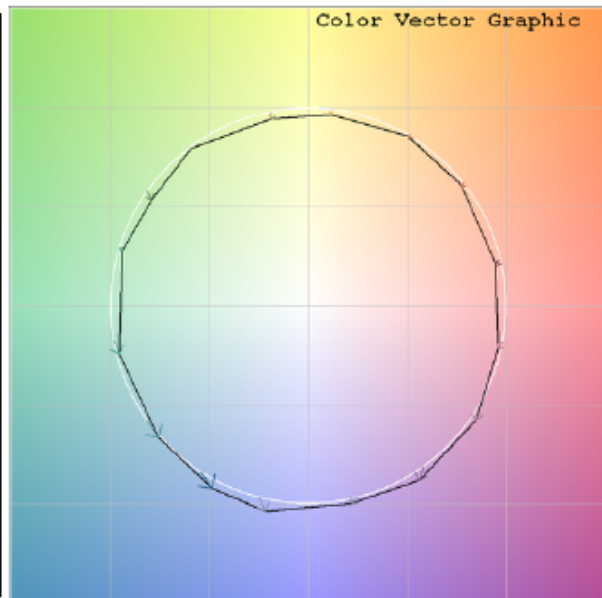
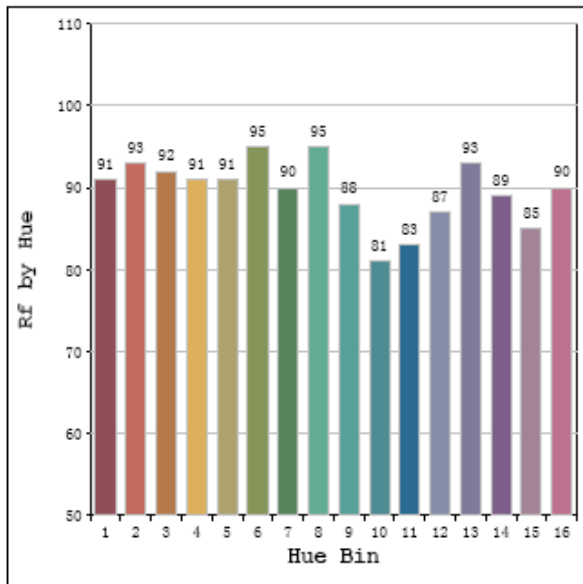
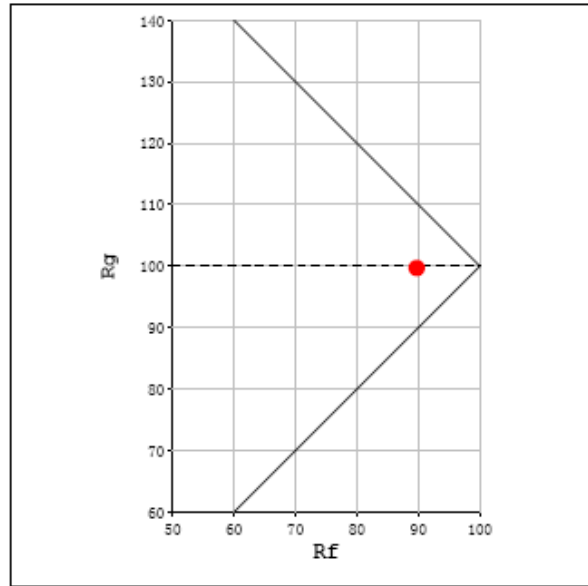
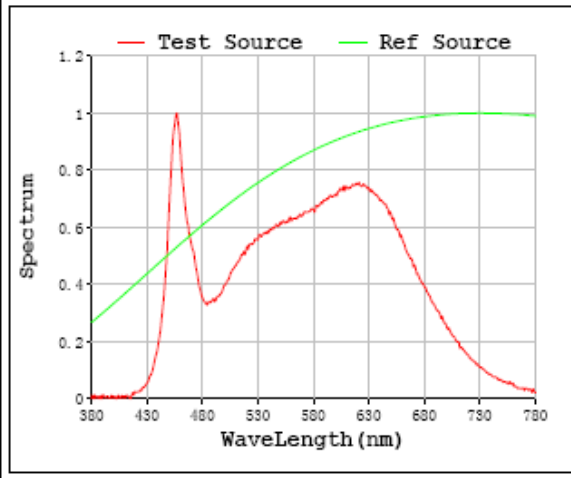
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	82
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3969	R3	98	R11	94
Duv	-0.0040	R4	93	R12	71
Chromaticity (x, y)	x=0.3790 y=0.3675	R5	95	R13	99
Chromaticity (u', v')	u'=0.2279 v'=0.4972	R6	94	R14	99
Color Rendering Index (CRI)	95	R7	93	R15	96
R9	82	R8	91	--	--
Total Luminous (lm)	468.1				
Luminous Efficacy (lm/W)	79.01				

Spectral Power Distribution & Chromaticity Diagram



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Rf: 90 CCT: 3969 K u': 0.2279
 Rg: 100 Duv: -0.0040 v': 0.4972



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2020-08-30	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0059(WFRL3R69CCT120WS)		5000K

Electrical Measurement:

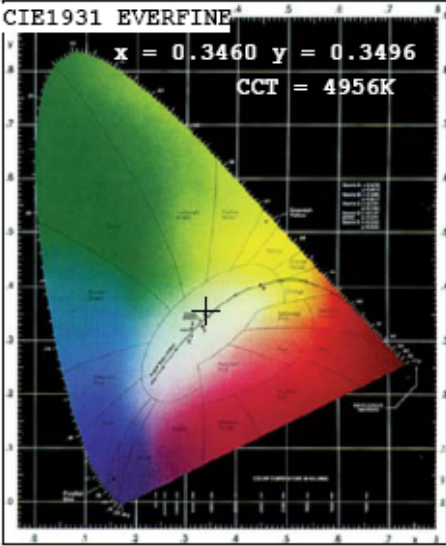
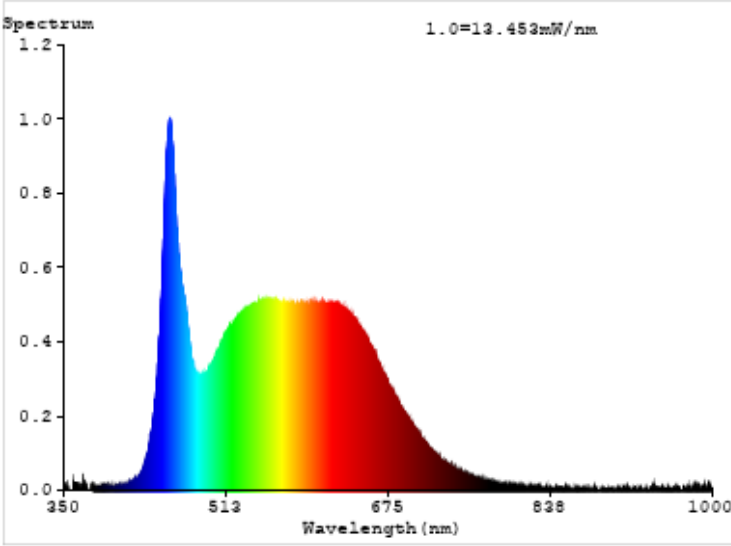
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108300001	120.0	60	0.05242	6.026	0.9566

Chromaticity Measurement - Sphere-Spectroradiometer Method:

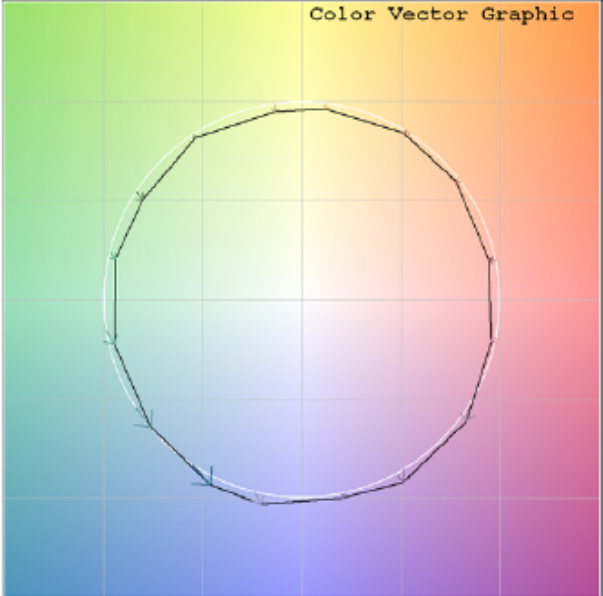
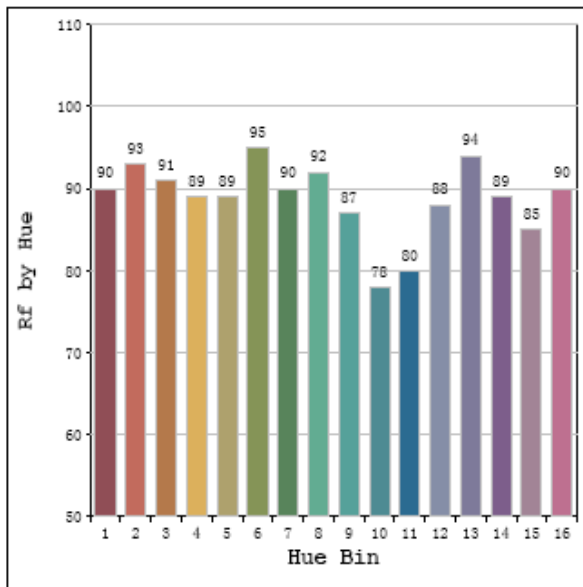
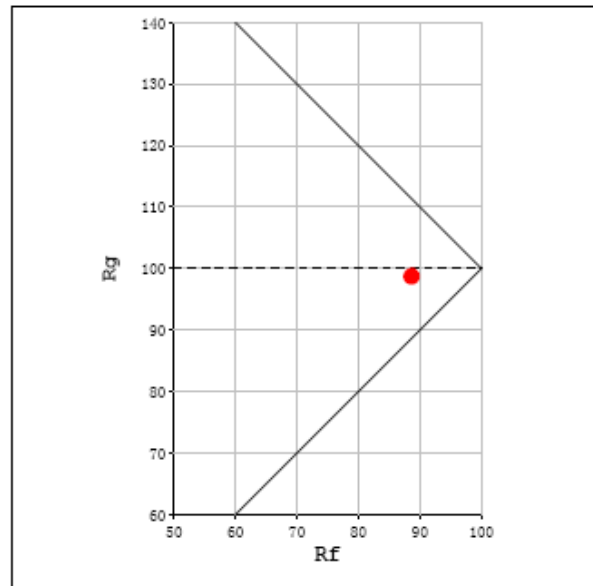
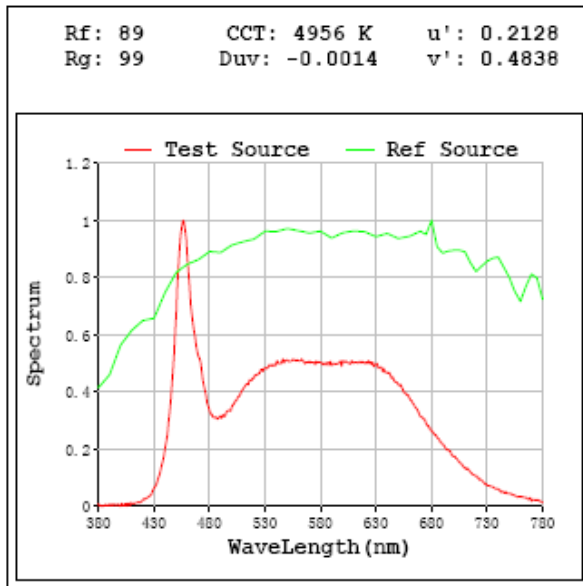
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4956
Duv	-0.0014
Chromaticity (x, y)	x=0.3460 y=0.3496
Chromaticity (u', v')	u'=0.2128 v'=0.4838
Color Rendering Index (CRI)	93.9
R9	82
Total Luminous (lm)	468.5
Luminous Efficacy (lm/W)	77.75

Special Color Rendering Indices			
R1	96	R9	82
R2	99	R10	95
R3	97	R11	91
R4	90	R12	63
R5	92	R13	98
R6	93	R14	99
R7	93	R15	94
R8	91	--	--

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
DLW0059(WFRL3R69CCT120WS)	2700K setting	120.0	429.4	6.12	70.16
	3000K setting	120.0	450.4	6.0	75.05
	3500K setting	120.0	463.4	5.91	78.42
	4000K setting	120.0	468.1	5.92	79.01
	5000K setting	120.0	468.5	6.03	77.75

3. Product Photo



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