

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):
DLW0065(WFRL8R239FA120WS)

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

**Type of
Luminaire:** Downlights

Report Date: 2021-09-01

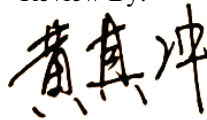
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	23W
Rated Initial Lamp Lumen	1800 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	2021-09-01	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0065(WFRL8R239FA120WS)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108310005	120.0	60	0.185	21.72	0.979

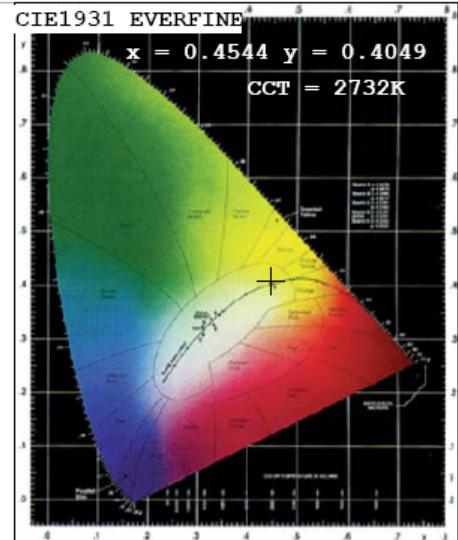
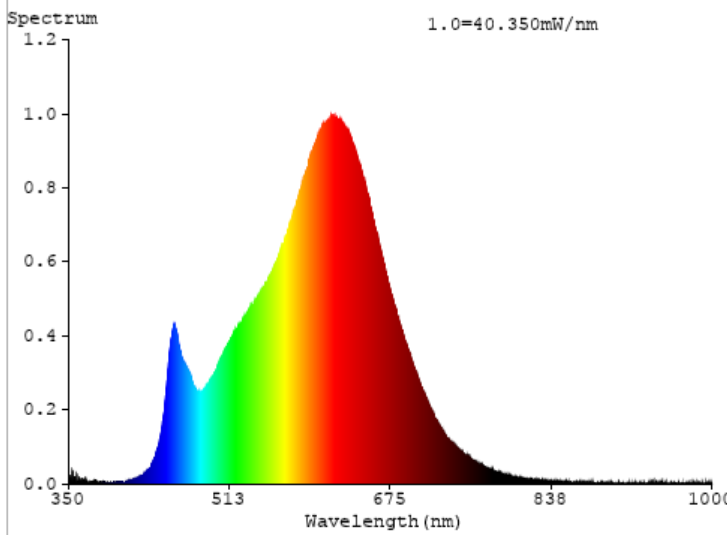
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	52
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	2732	R3	95	R11	92
Duv	0.0017	R4	90	R12	84
Chromaticity (x, y)	x=0.4544 y=0.4049	R5	93	R13	95
Chromaticity (u', v')	u'=0.2616 v'=0.5243	R6	96	R14	98
Color Rendering Index (CRI)	91.2	R7	87	R15	87
R9	52	R8	76	--	--

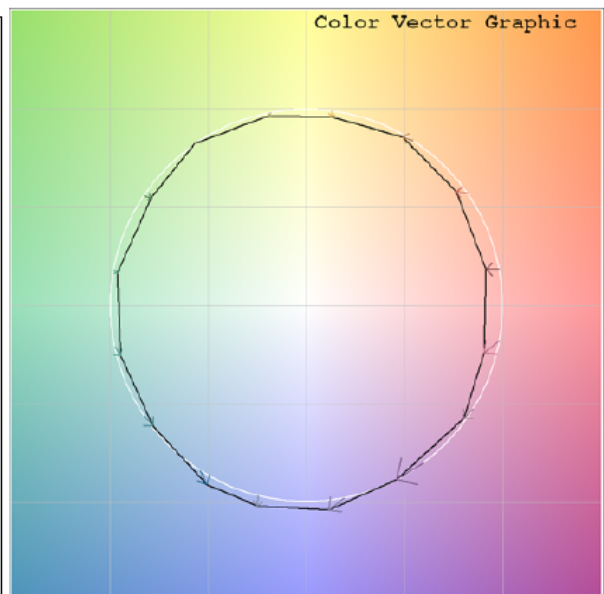
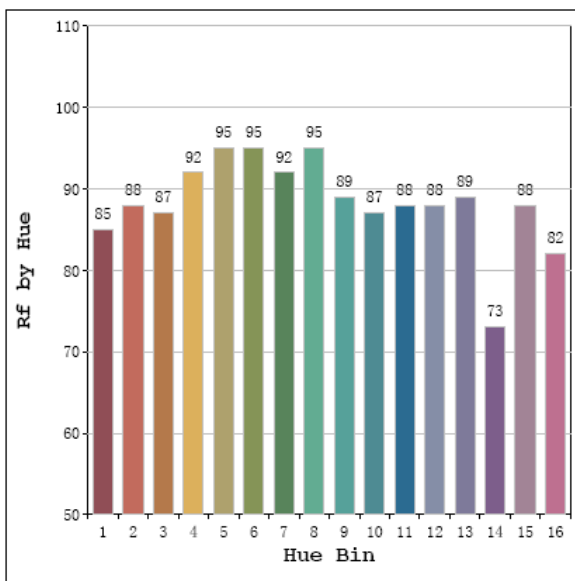
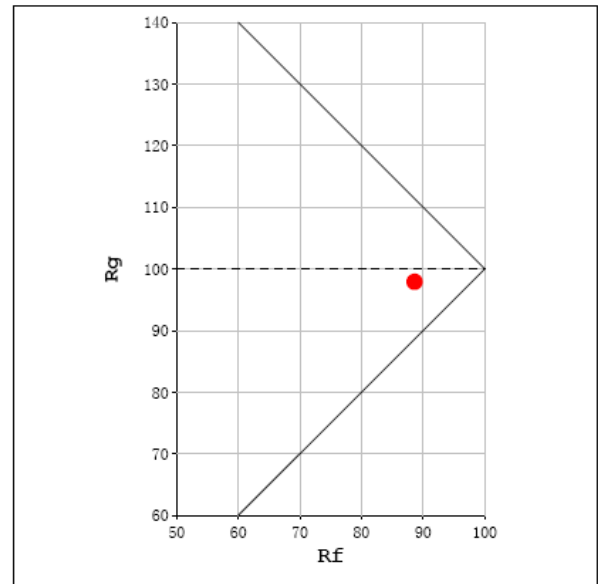
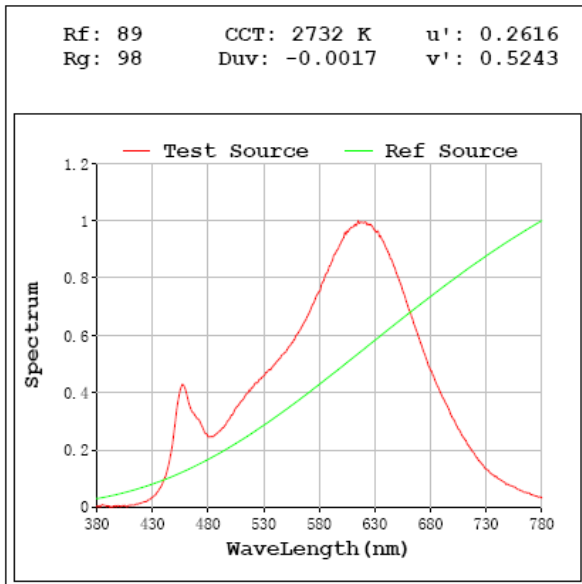
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1841.6
Luminous Efficacy (lm/W)	84.48
Beam Angle (°)	110.4
Center Beam Candle Power (cd)	649.2

Spectral Power Distribution & Chromaticity Diagram



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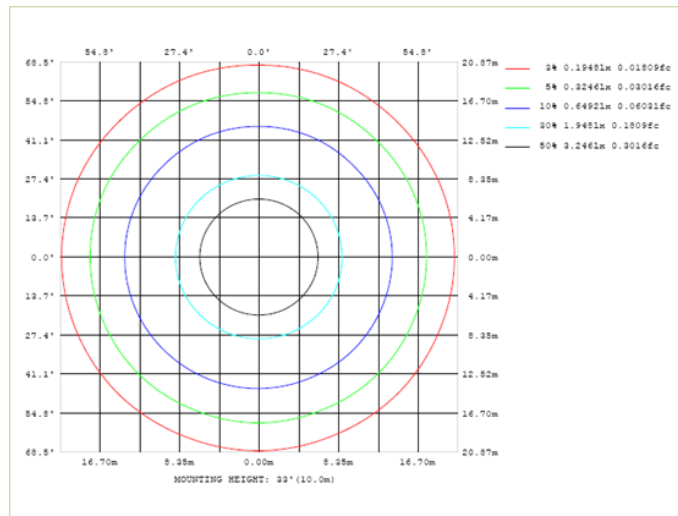
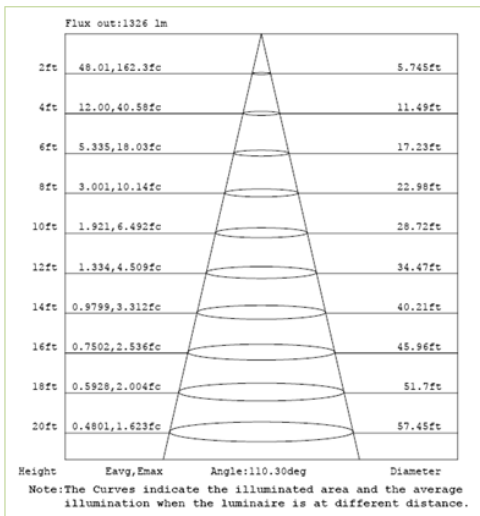
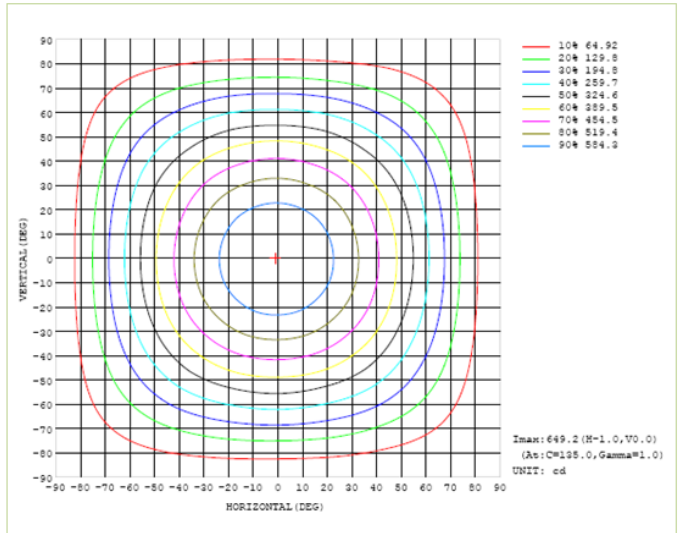
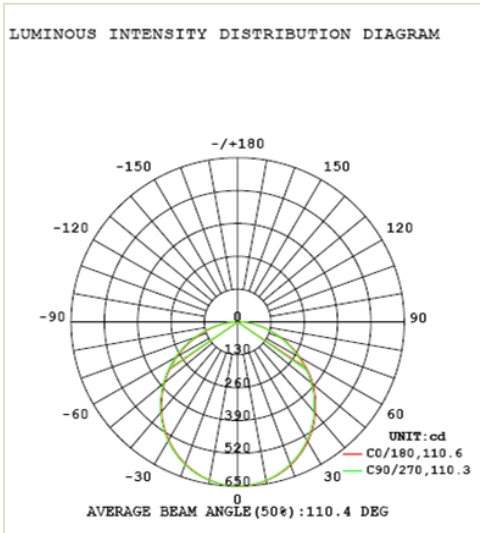


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	500.8	63.2%
0-40	817.4	103.2%
0-60	1436.5	181.3%
60-90	405.1	51.1%
70-100	181.2	22.9%
90-120	0.0	0.0%
0-90	1841.6	232.4%
90-180	0.0	0.0%
0-180	792.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	61.3	7.7%	90-100	0.0	0.0%
10-20	175.2	22.1%	100-110	0.0	0.0%
20-30	264.3	33.3%	110-120	0.0	0.0%
30-40	316.6	40.0%	120-130	0.0	0.0%
40-50	326.4	41.2%	130-140	0.0	0.0%
50-60	292.7	36.9%	140-150	0.0	0.0%
60-70	223.9	28.3%	150-160	0.0	0.0%
70-80	133.9	16.9%	160-170	0.0	0.0%
80-90	47.3	6.0%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2021-09-01	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0065(WFRL8R239FA120WS)		3000K

Electrical Measurement:

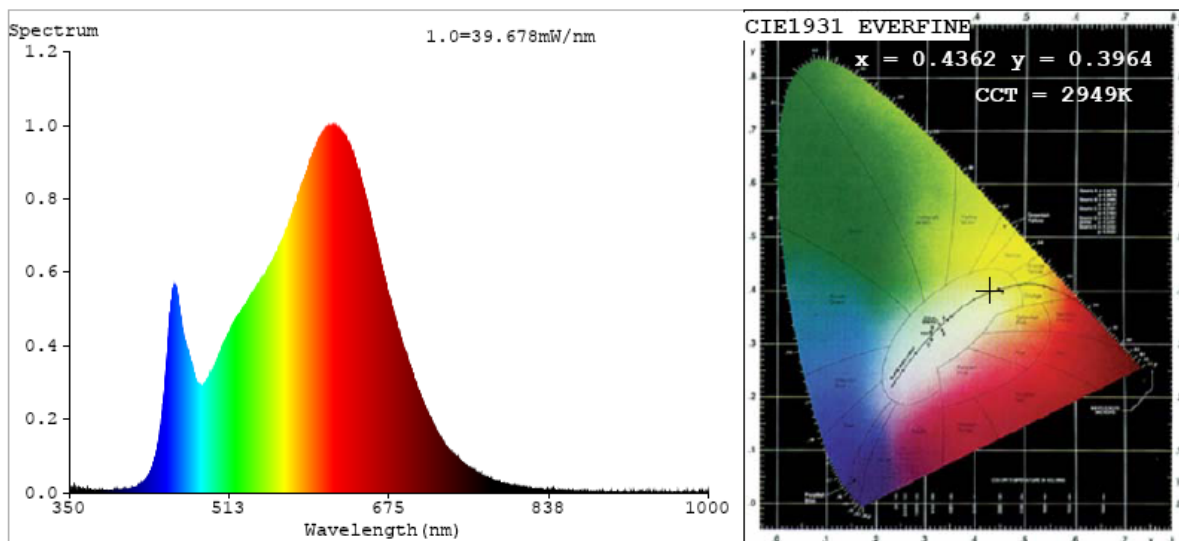
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108310005	120.0	60	0.184	21.57	0.978

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2949
Duv	0.0030
Chromaticity (x, y)	x=0.4362 y=0.3964
Chromaticity (u', v')	u'=0.2534 v'=0.5182
Color Rendering Index (CRI)	92.5
R9	60
Total Luminous (lm)	1923
Luminous Efficacy (lm/W)	89.15

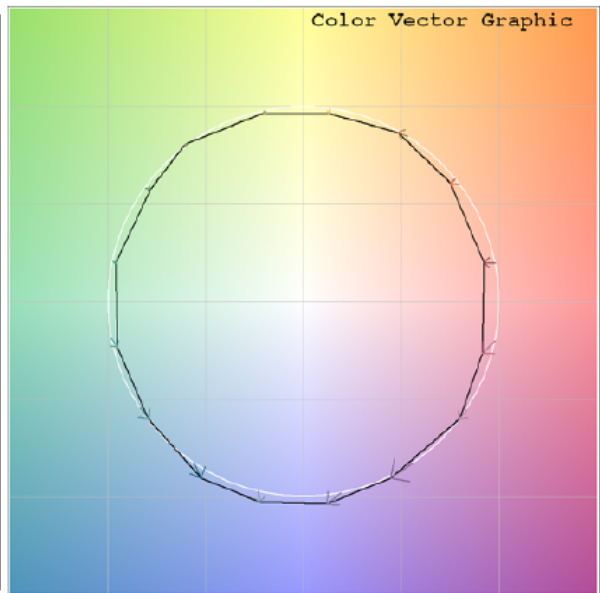
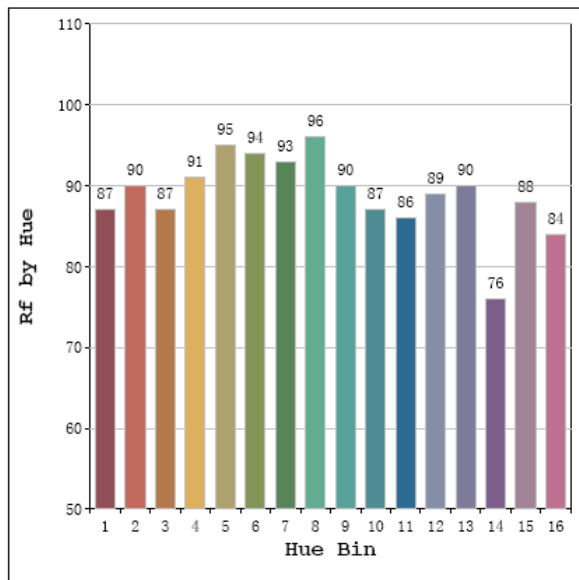
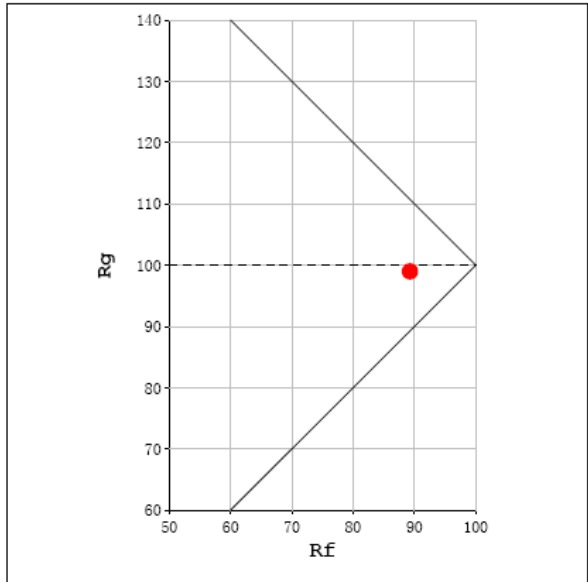
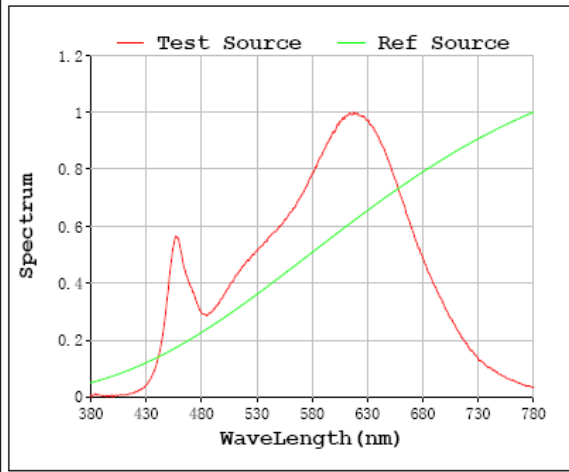
Special Color Rendering Indices			
R1	95	R9	60
R2	99	R10	98
R3	96	R11	93
R4	92	R12	82
R5	95	R13	97
R6	95	R14	99
R7	89	R15	90
R8	80	--	--

Spectral Power Distribution & Chromaticity Diagram



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Rf: 89 CCT: 2949 K u': 0.2534
 Rg: 99 Duv: -0.0030 v': 0.5182



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2021-09-01	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0065(WFRL8R239FA120WS)	3500K	

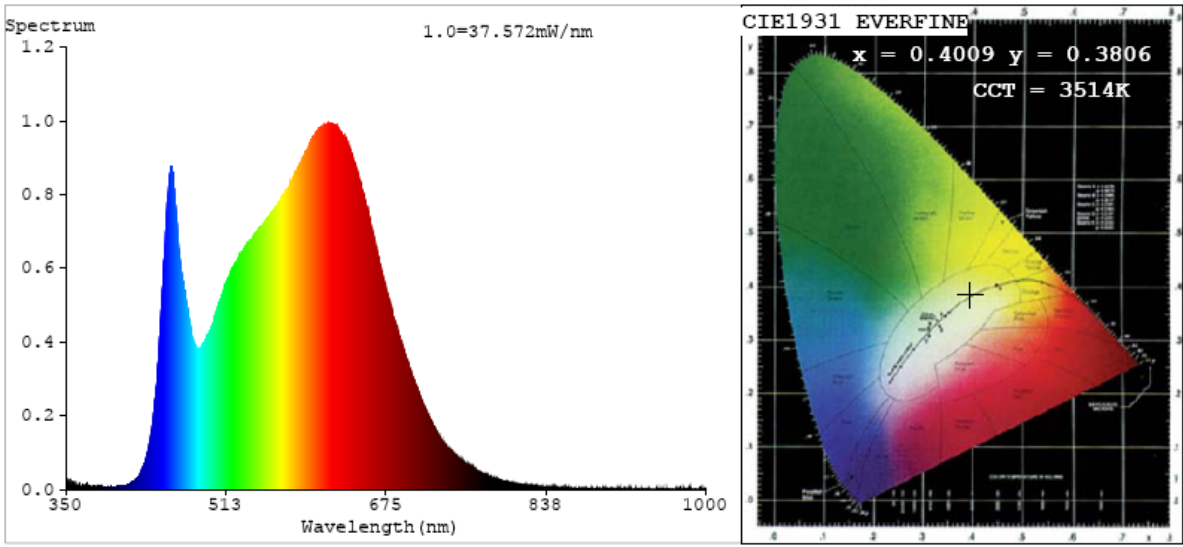
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108310005	120.0	60	0.180	21.14	0.978

Chromaticity Measurement - Sphere-Spectroradiometer Method:

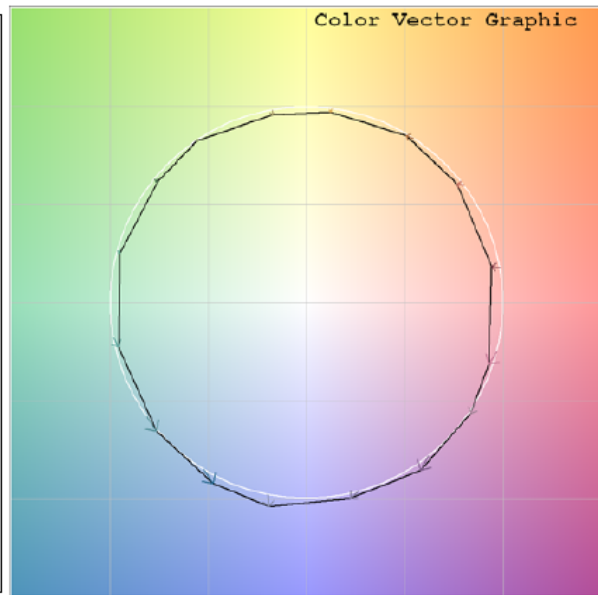
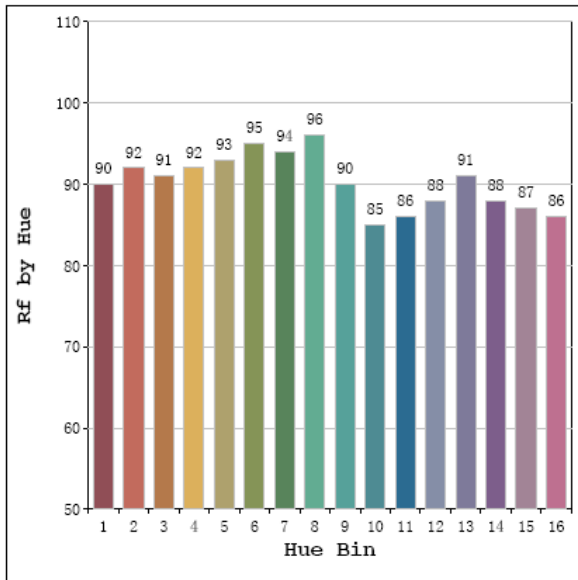
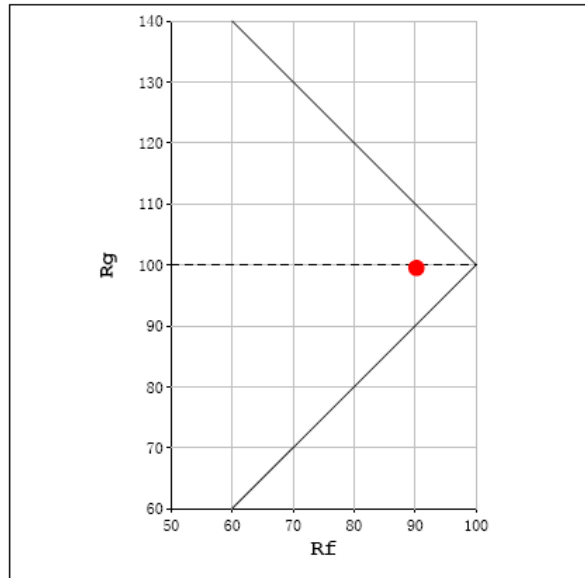
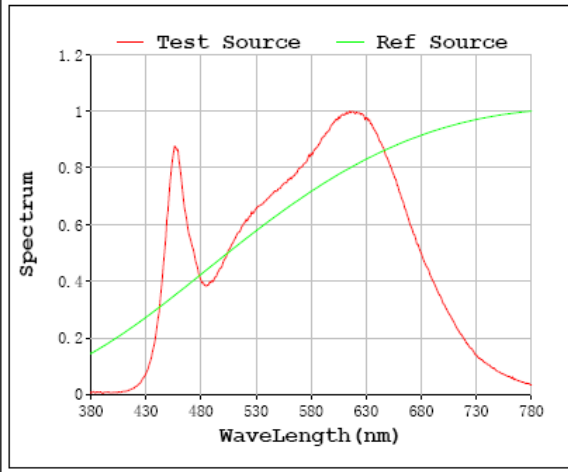
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	72
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3514	R3	98	R11	94
Duv	0.0035	R4	93	R12	77
Chromaticity (x, y)	x=0.4009 y=0.3806	R5	95	R13	98
Chromaticity (u', v')	u'=0.2370 v'=0.5063	R6	95	R14	100
Color Rendering Index (CRI)	94.4	R7	92	R15	94
R9	72	R8	87	--	--
Total Luminous (lm)	2061				
Luminous Efficacy (lm/W)	97.49				

Spectral Power Distribution & Chromaticity Diagram



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Rf: 90 CCT: 3514 K u': 0.2370
 Rg: 99 Duv: -0.0035 v': 0.5063



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2021-09-01	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0065(WFRL8R239FA120WS)		4000K

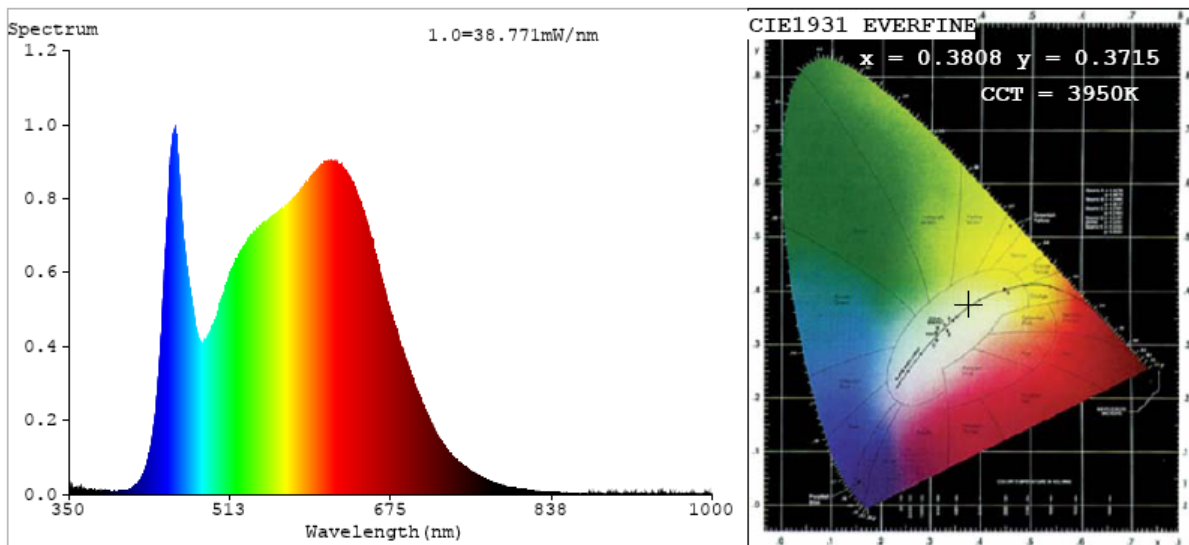
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108310005	120.0	60	0.181	21.29	0.978

Chromaticity Measurement - Sphere-Spectroradiometer Method:

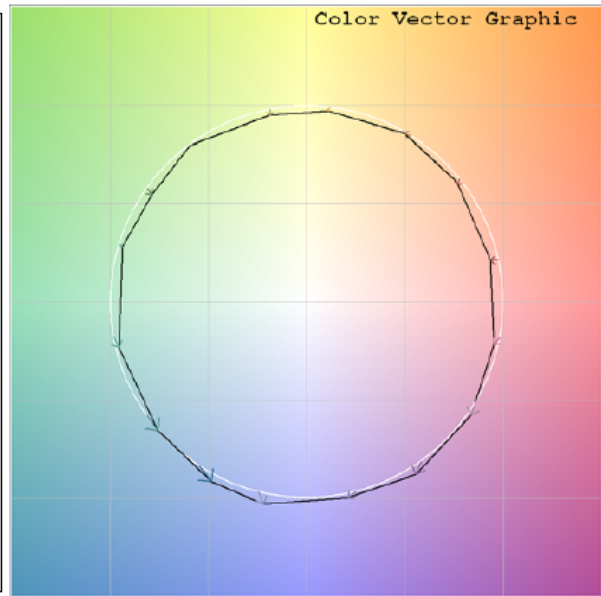
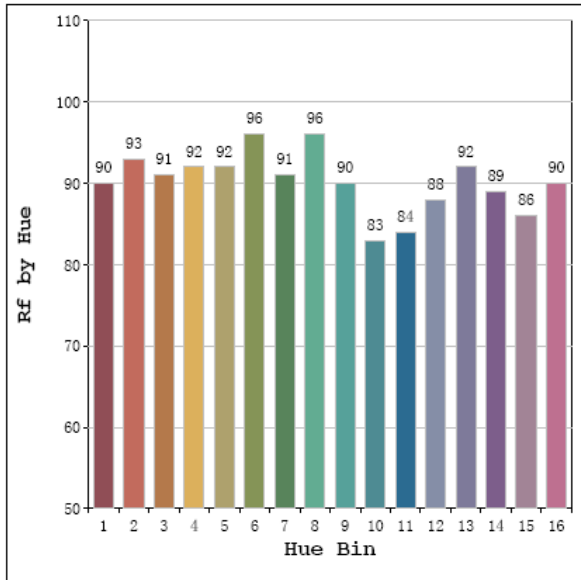
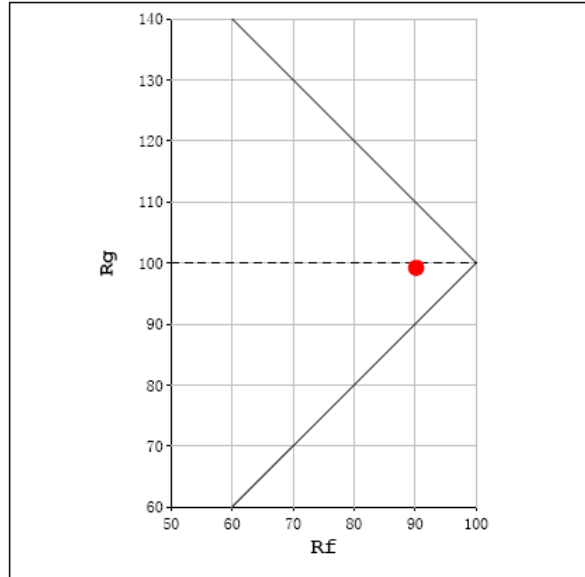
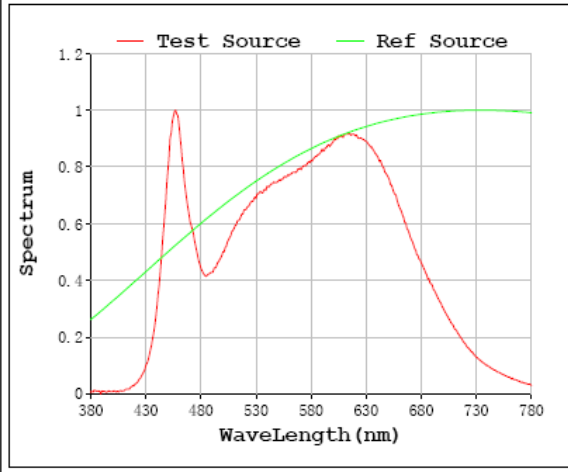
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	76
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3950	R3	98	R11	94
Duv	0.0026	R4	93	R12	74
Chromaticity (x, y)	x=0.3808 y=0.3715	R5	94	R13	98
Chromaticity (u', v')	u'=0.2275 v'=0.4993	R6	95	R14	99
Color Rendering Index (CRI)	94.8	R7	93	R15	95
R9	76	R8	89	--	--
Total Luminous (lm)	2099				
Luminous Efficacy (lm/W)	98.59				

Spectral Power Distribution & Chromaticity Diagram



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Rf: 90 CCT: 3950 K u': 0.2275
 Rg: 99 Duv: -0.0026 v': 0.4993



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2021-09-01	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0065(WFRL8R239FA120WS)		5000K

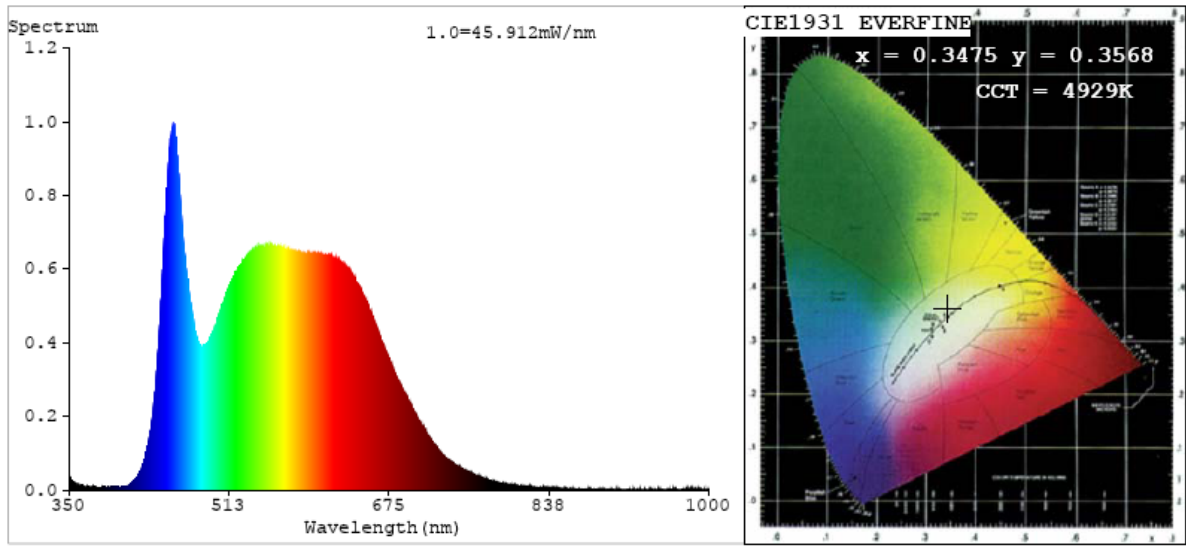
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202108310005	120.0	60	0.185	21.74	0.979

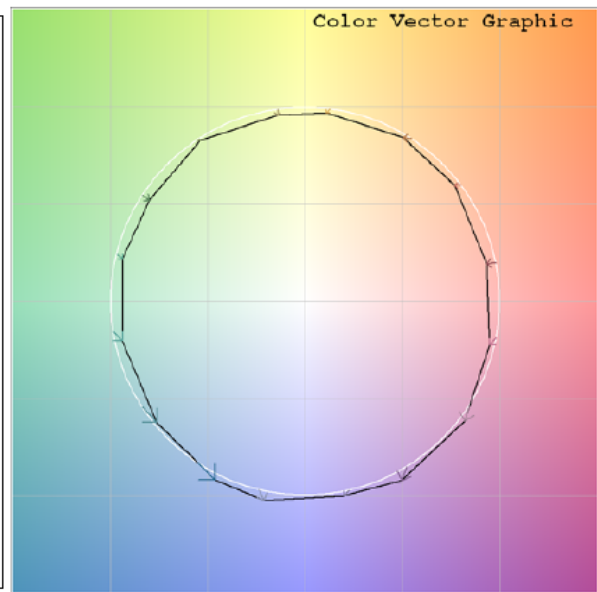
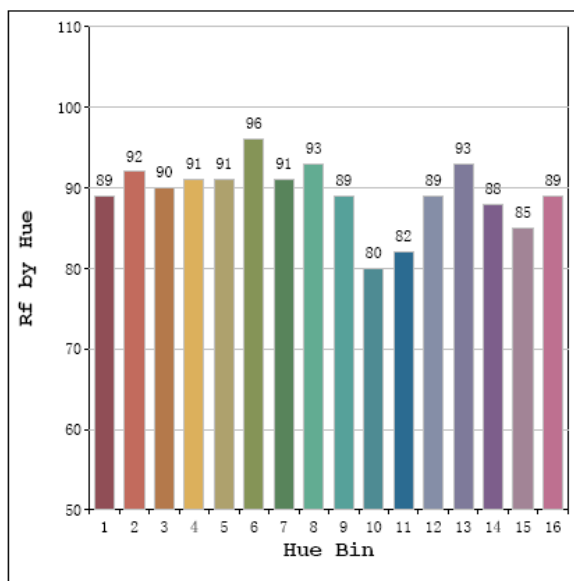
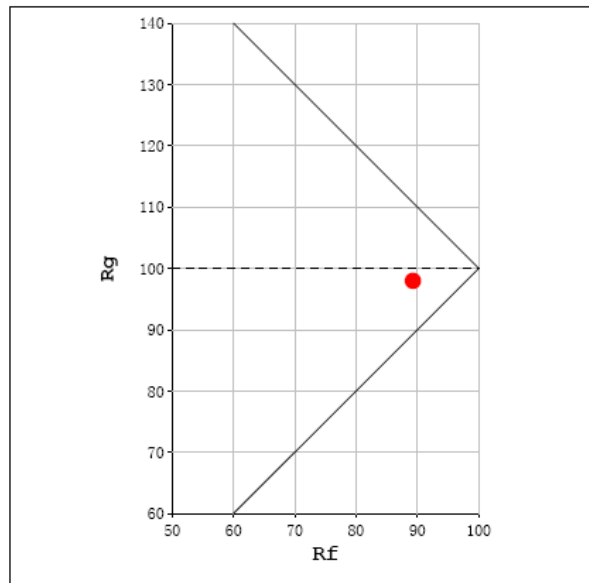
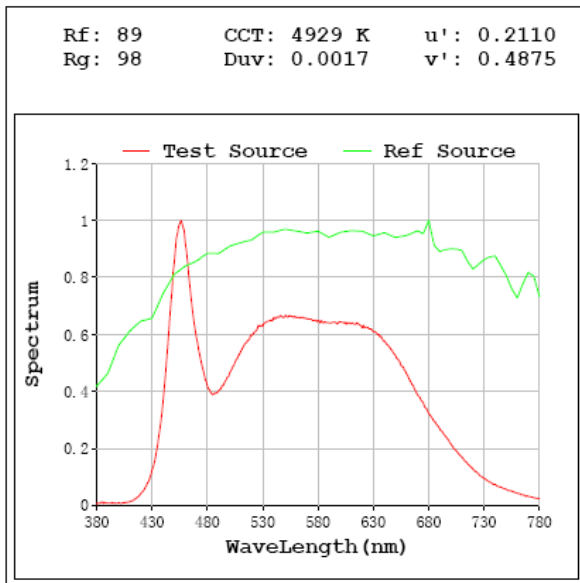
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	70
Frequency (Hz)	60	R2	96	R10	89
CCT (K)	4929	R3	96	R11	90
Duv	0.0017	R4	90	R12	65
Chromaticity (x, y)	x=0.3475 y=0.3568	R5	91	R13	94
Chromaticity (u', v')	u'=0.2110 v'=0.4875	R6	92	R14	98
Color Rendering Index (CRI)	92.6	R7	94	R15	91
R9	70	R8	88	--	--
Total Luminous (lm)	2071				
Luminous Efficacy (lm/W)	95.25				

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
DLW0065(WFRL8R239FA120WS)	2700K setting	120.0	1841.6	21.72	84.48
	3000K setting	120.0	1923	21.57	89.15
	3500K setting	120.0	2061	21.14	97.49
	4000K setting	120.0	2099	21.29	98.59
	5000K setting	120.0	2071	21.74	95.25

3. Product Photo



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