

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):
DLW0091(WFRL6S139FA120WB)

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

**Type of
Luminaire:** Downlights

Report Date: 2022-07-18

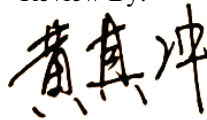
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	13.0 W
Rated Initial Lamp Lumen	800 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	2022-07-18	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0091(WFRL6S139FA120WB)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120053	120.0	60	0.106	12.50	0.986

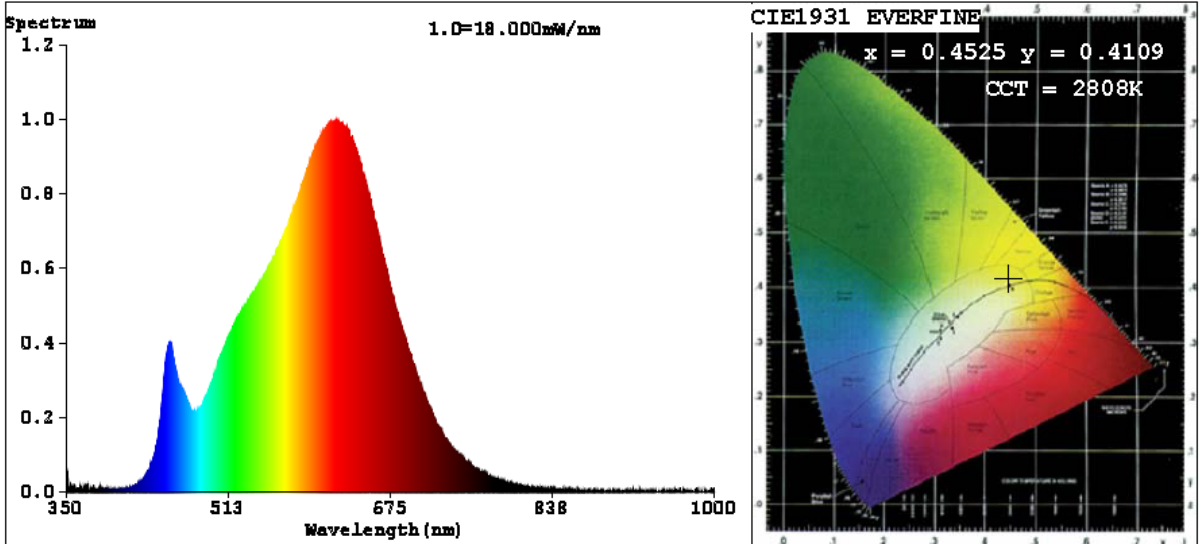
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	92	R9	54
Frequency (Hz)	60	R2	96	R10	91
CCT (K)	2808	R3	99	R11	93
Duv	0.0008	R4	92	R12	82
Chromaticity (x, y)	x=0.4525 y=0.4109	R5	92	R13	93
Chromaticity (u', v')	u'=0.2576 v'=0.5264	R6	96	R14	99
Color Rendering Index (CRI)	92.1	R7	91	R15	87
R9	54	R8	79	--	--

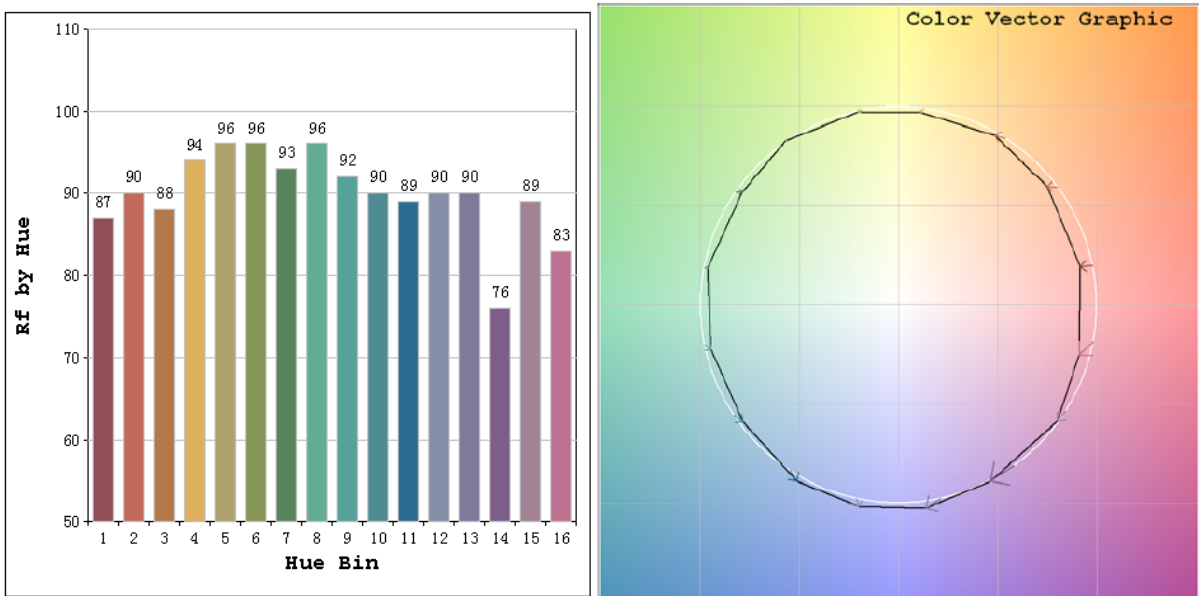
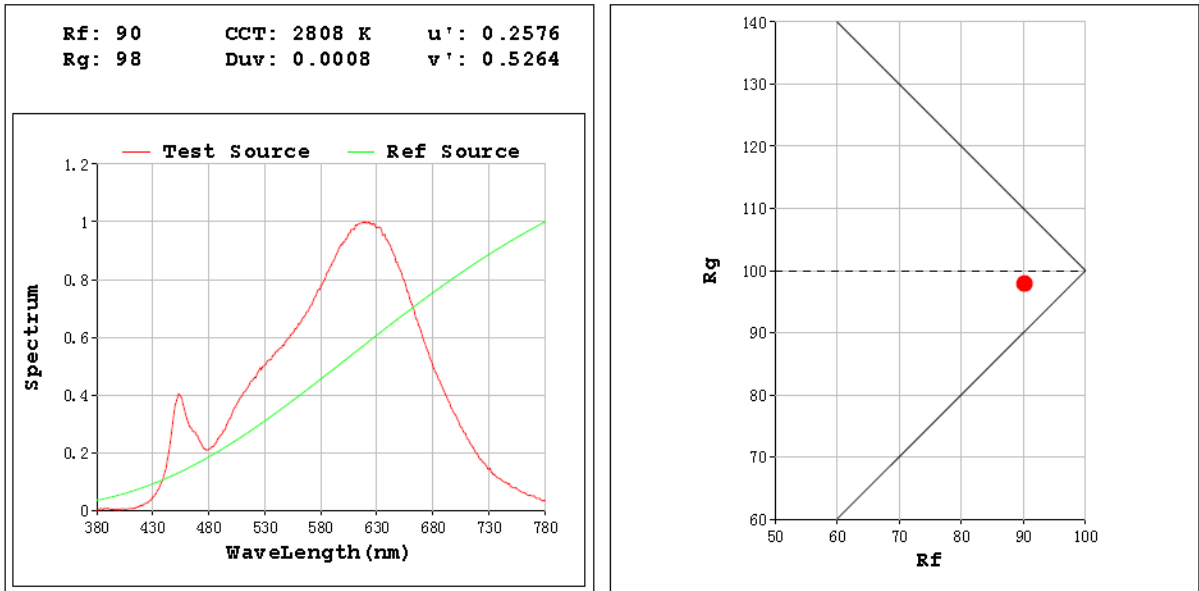
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	857.6
Luminous Efficacy (lm/W)	68.61
Beam Angle (°)	111.5
Center Beam Candle Power (cd)	306.3

Spectral Power Distribution & Chromaticity Diagram



TM30

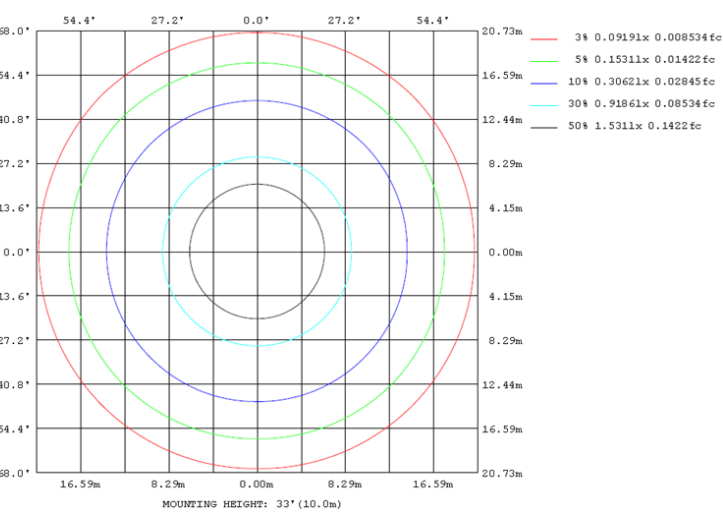
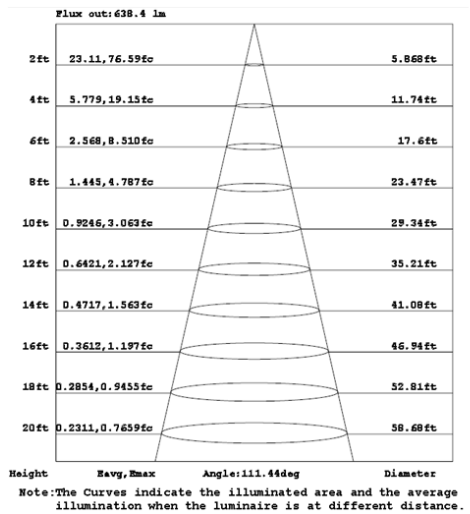
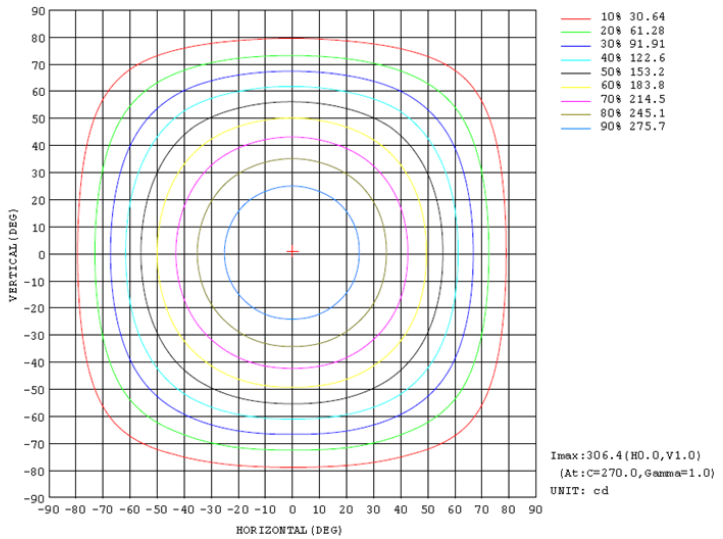
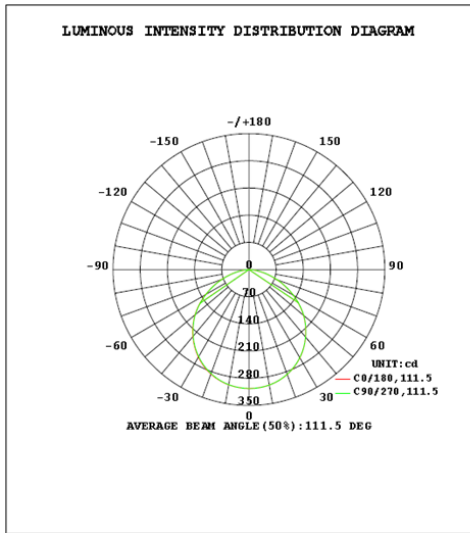


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	239.2	27.9%
0-40	392.1	45.7%
0-60	691.4	80.6%
60-90	166.3	19.4%
70-100	63.4	7.4%
90-120	0.0	0.0%
0-90	857.6	100.0%
90-180	0.0	0.0%
0-180	857.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.0	3.4%	90-100	0.0	0.0%
10-20	83.4	9.7%	100-110	0.0	0.0%
20-30	126.8	14.8%	110-120	0.0	0.0%
30-40	152.9	17.8%	120-130	0.0	0.0%
40-50	158.1	18.4%	130-140	0.0	0.0%
50-60	141.1	16.5%	140-150	0.0	0.0%
60-70	102.8	12.0%	150-160	0.0	0.0%
70-80	53.3	6.2%	160-170	0.0	0.0%
80-90	10.2	1.2%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-18	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0091(WFRL6S139FA120WB)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120053	120.0	60	0.105	12.40	0.986

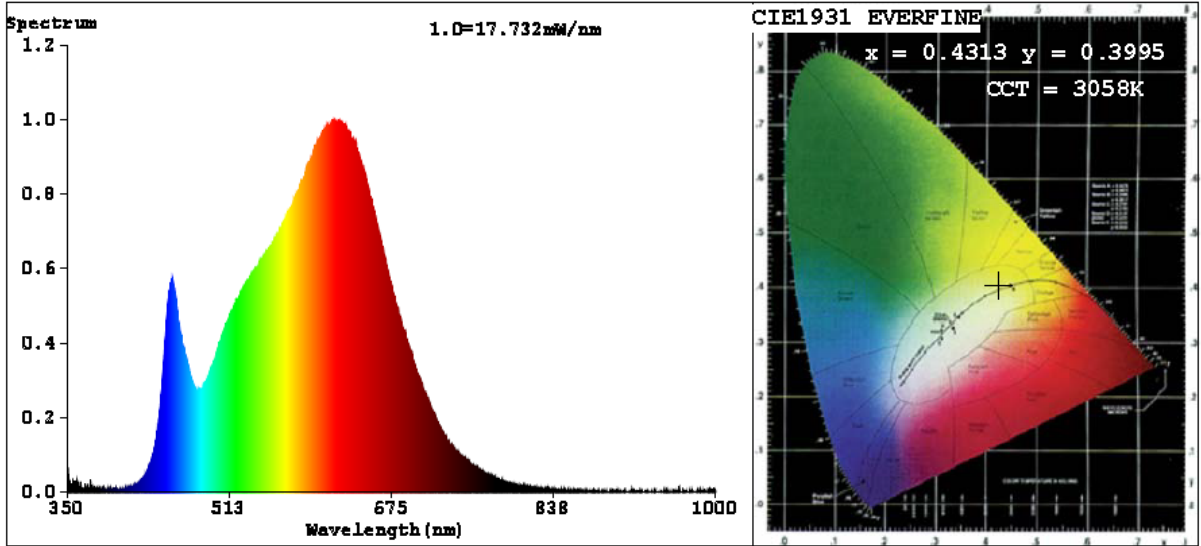
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	62
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	3058	R3	98	R11	93
Duv	-0.00011	R4	93	R12	80
Chromaticity (x, y)	x=0.4313 y=0.3995	R5	93	R13	95
Chromaticity (u', v')	u'=0.2489 v'=0.5187	R6	96	R14	99
Color Rendering Index (CRI)	93.3	R7	92	R15	90
R9	62	R8	83	--	--

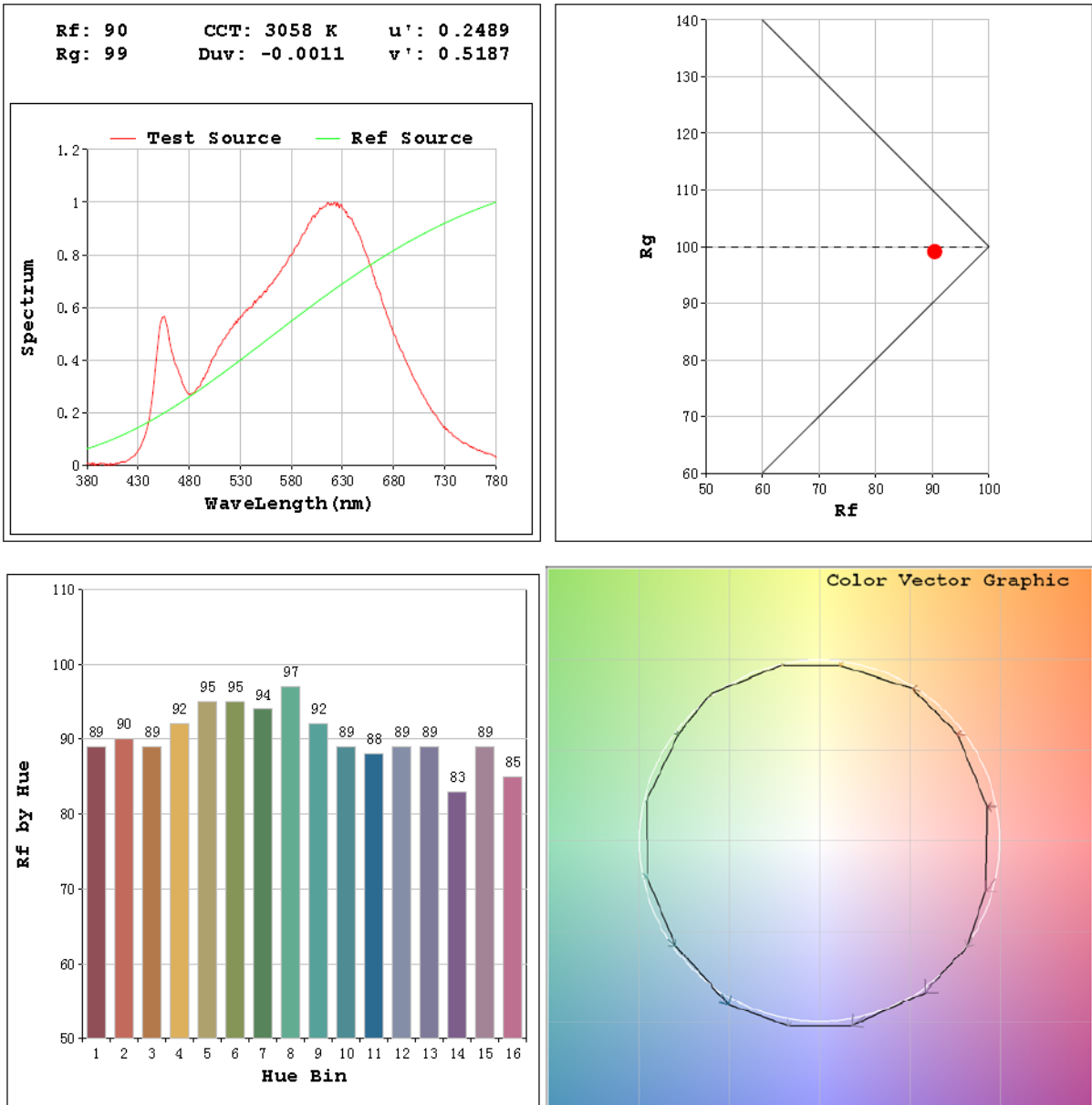
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	895.9
Luminous Efficacy (lm/W)	72.25
Beam Angle (°)	111.5
Center Beam Candle Power (cd)	320.0

Spectral Power Distribution & Chromaticity Diagram



TM30

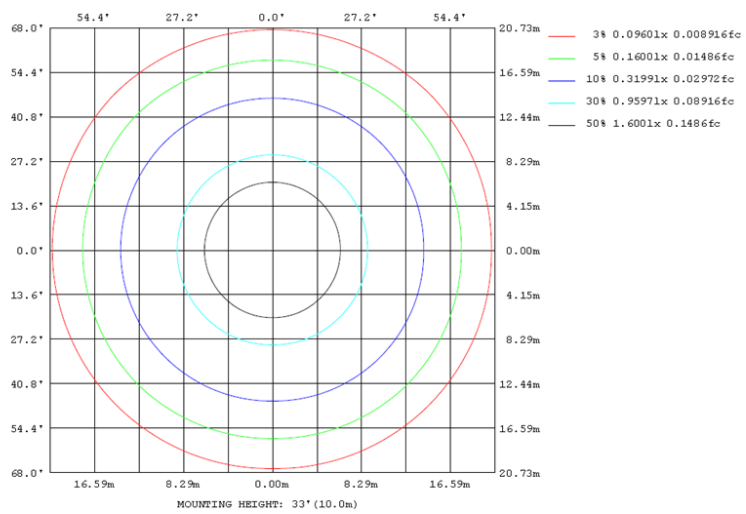
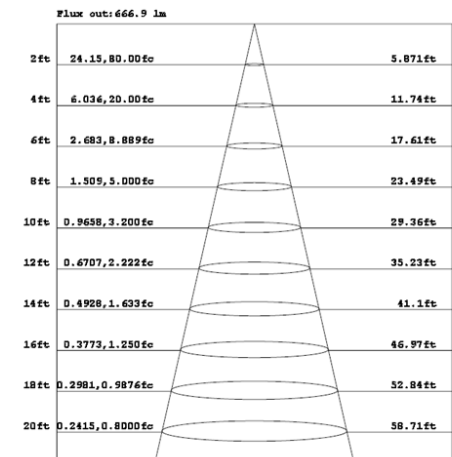
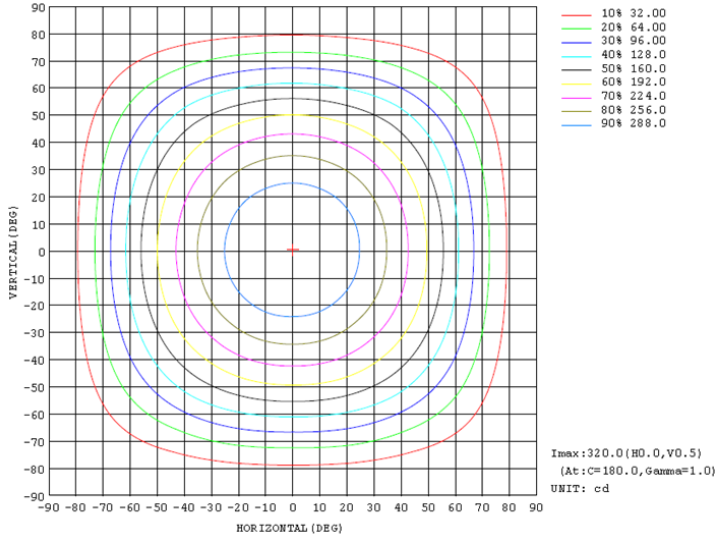
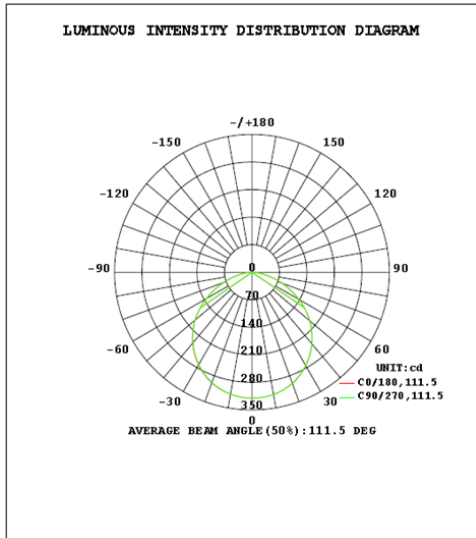


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	249.9	27.9%
0-40	409.6	45.7%
0-60	722.2	80.6%
60-90	173.7	19.4%
70-100	66.3	7.4%
90-120	0.0	0.0%
0-90	895.9	100.0%
90-180	0.0	0.0%
0-180	895.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.3	3.4%	90-100	0.0	0.0%
10-20	87.1	9.7%	100-110	0.0	0.0%
20-30	132.5	14.8%	110-120	0.0	0.0%
30-40	159.8	17.8%	120-130	0.0	0.0%
40-50	165.2	18.4%	130-140	0.0	0.0%
50-60	147.4	16.5%	140-150	0.0	0.0%
60-70	107.4	12.0%	150-160	0.0	0.0%
70-80	55.7	6.2%	160-170	0.0	0.0%
80-90	10.6	1.2%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-18	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0091(WFRL6S139FA120WB)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120053	120.0	60	0.103	12.20	0.986

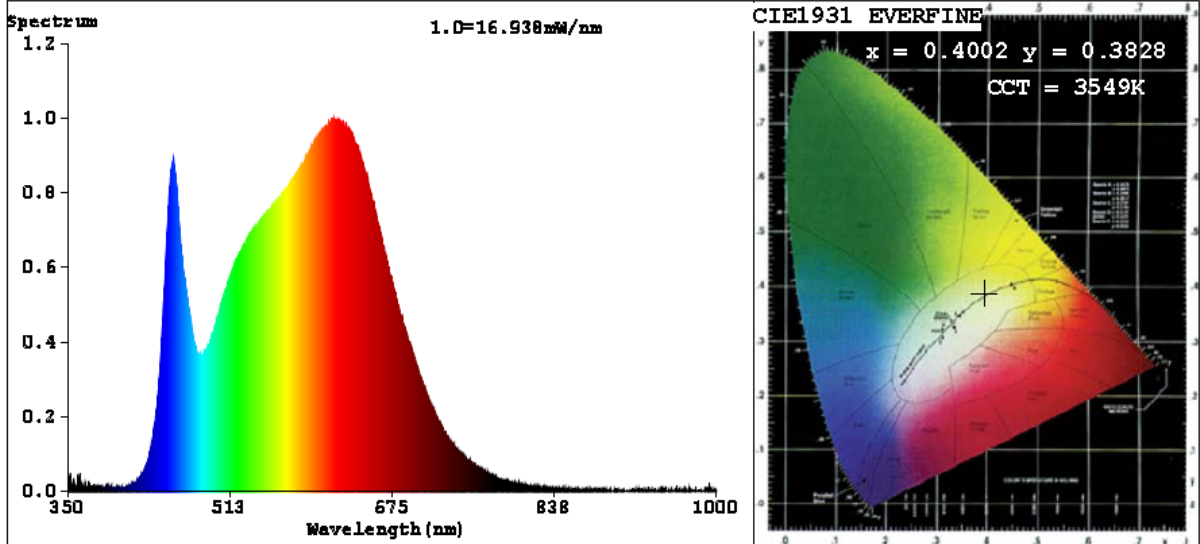
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	71
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	3549	R3	98	R11	94
Duv	-0.0024	R4	94	R12	76
Chromaticity (x, y)	x=0.4002 y=0.3828	R5	94	R13	97
Chromaticity (u', v')	u'=0.2357 v'=0.5072	R6	95	R14	99
Color Rendering Index (CRI)	94.4	R7	93	R15	93
R9	71	R8	87	--	--

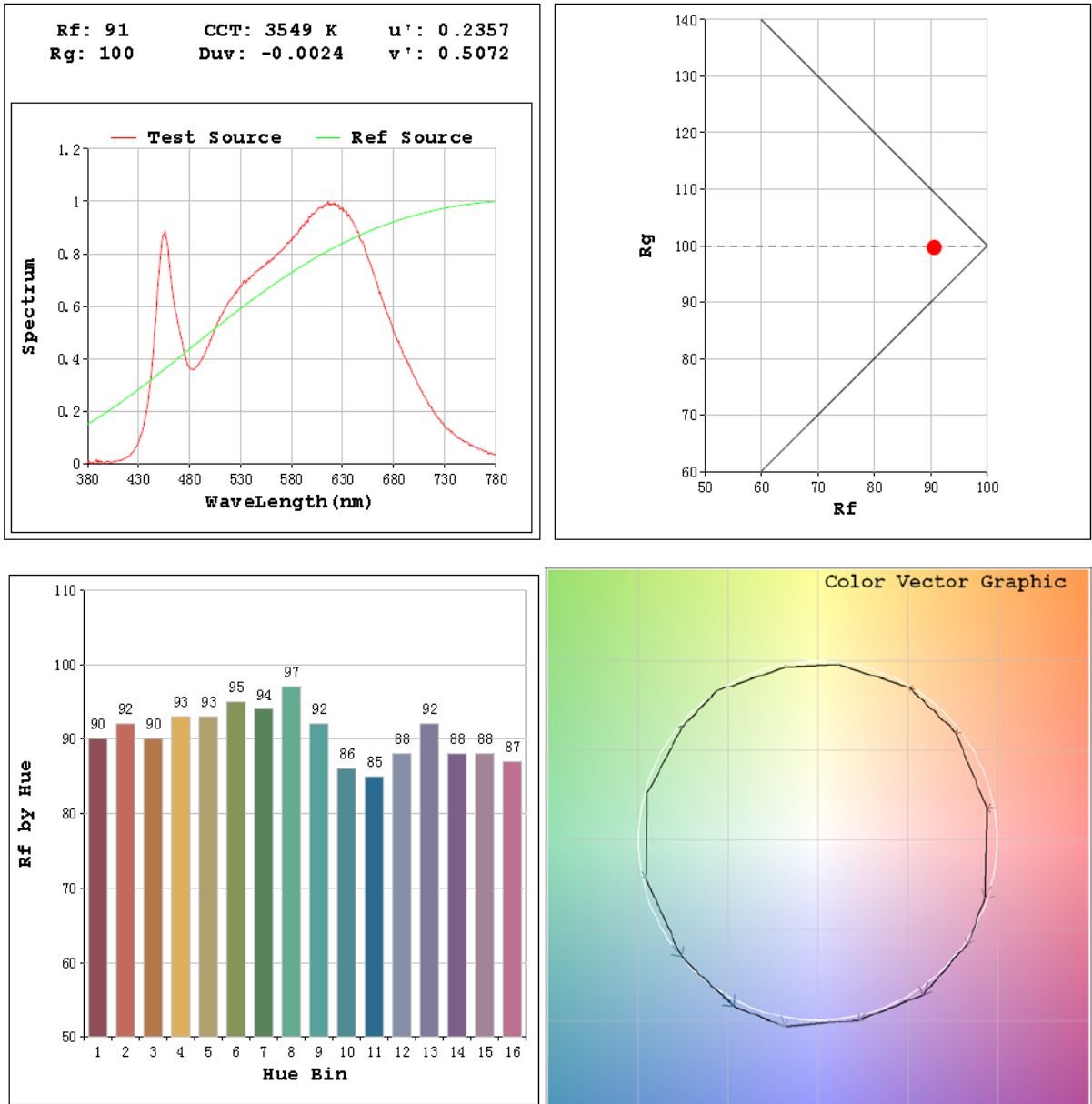
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	944.4
Luminous Efficacy (lm/W)	77.41
Beam Angle (°)	111.5
Center Beam Candle Power (cd)	337.3

Spectral Power Distribution & Chromaticity Diagram



TM30

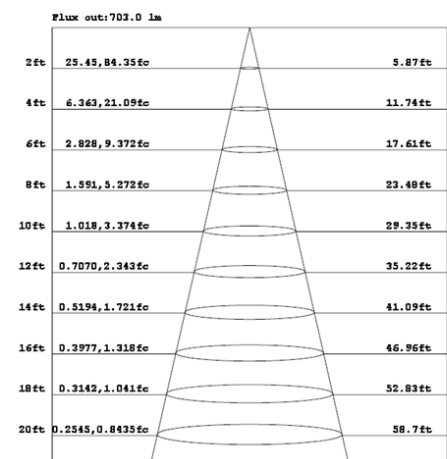
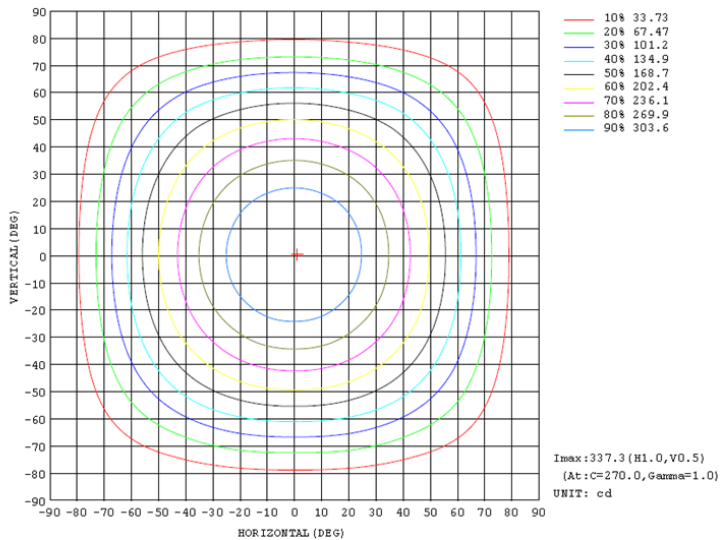
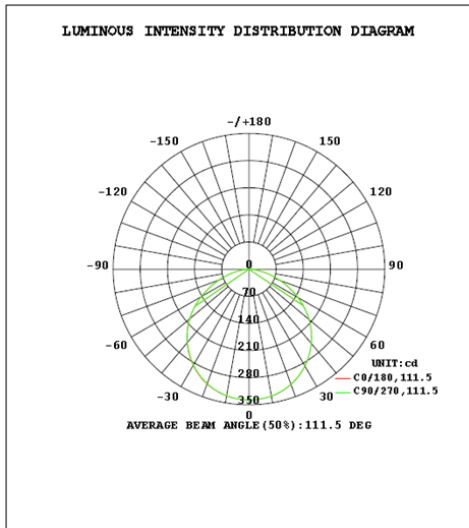


Zonal Lumen Tabulation

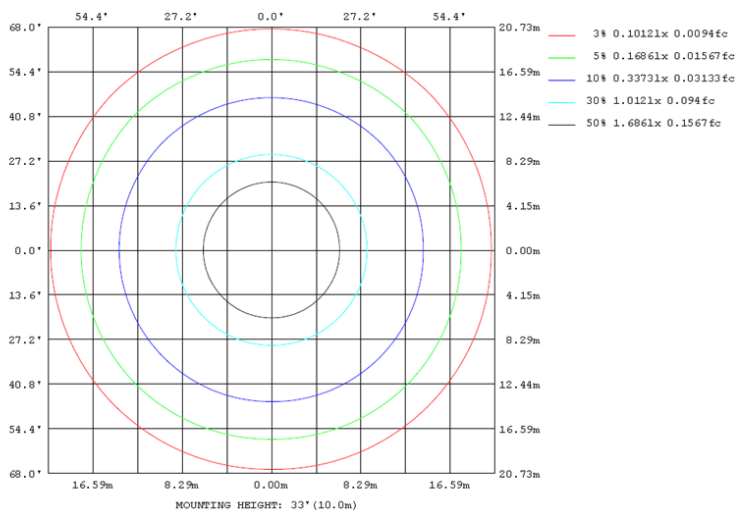
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	263.4	27.9%
0-40	431.8	45.7%
0-60	761.2	80.6%
60-90	183.1	19.4%
70-100	69.9	7.4%
90-120	0.0	0.0%
0-90	944.4	100.0%
90-180	0.0	0.0%
0-180	944.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.0	3.4%	90-100	0.0	0.0%
10-20	91.8	9.7%	100-110	0.0	0.0%
20-30	139.6	14.8%	110-120	0.0	0.0%
30-40	168.4	17.8%	120-130	0.0	0.0%
40-50	174.1	18.4%	130-140	0.0	0.0%
50-60	155.4	16.5%	140-150	0.0	0.0%
60-70	113.3	12.0%	150-160	0.0	0.0%
70-80	58.7	6.2%	160-170	0.0	0.0%
80-90	11.2	1.2%	170-180	0.0	0.0%

Photometric Data



Height Navg, Rmax Angle: 111.46deg Diameter
 Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-18	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0091(WFRL6S139FA120WB)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120053	120.0	60	0.104	12.30	0.986

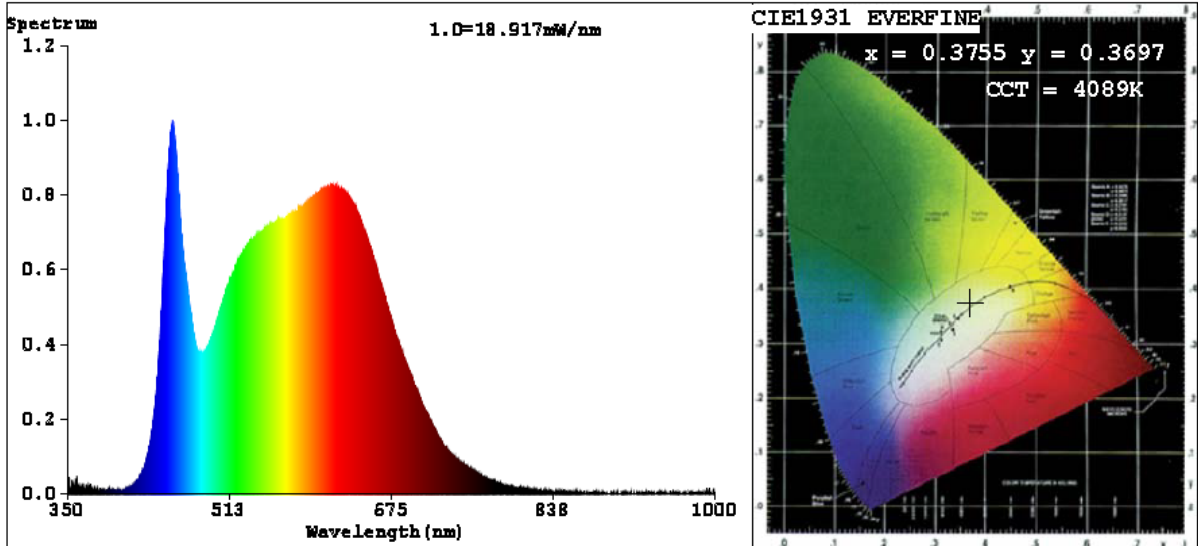
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	75
Frequency (Hz)	60	R2	98	R10	93
CCT (K)	4089	R3	97	R11	93
Duv	-0.0019	R4	93	R12	71
Chromaticity (x, y)	x=0.3755 y=0.3697	R5	94	R13	97
Chromaticity (u', v')	u'=0.2246 v'=0.4977	R6	94	R14	98
Color Rendering Index (CRI)	94.4	R7	94	R15	94
R9	75	R8	89	--	--

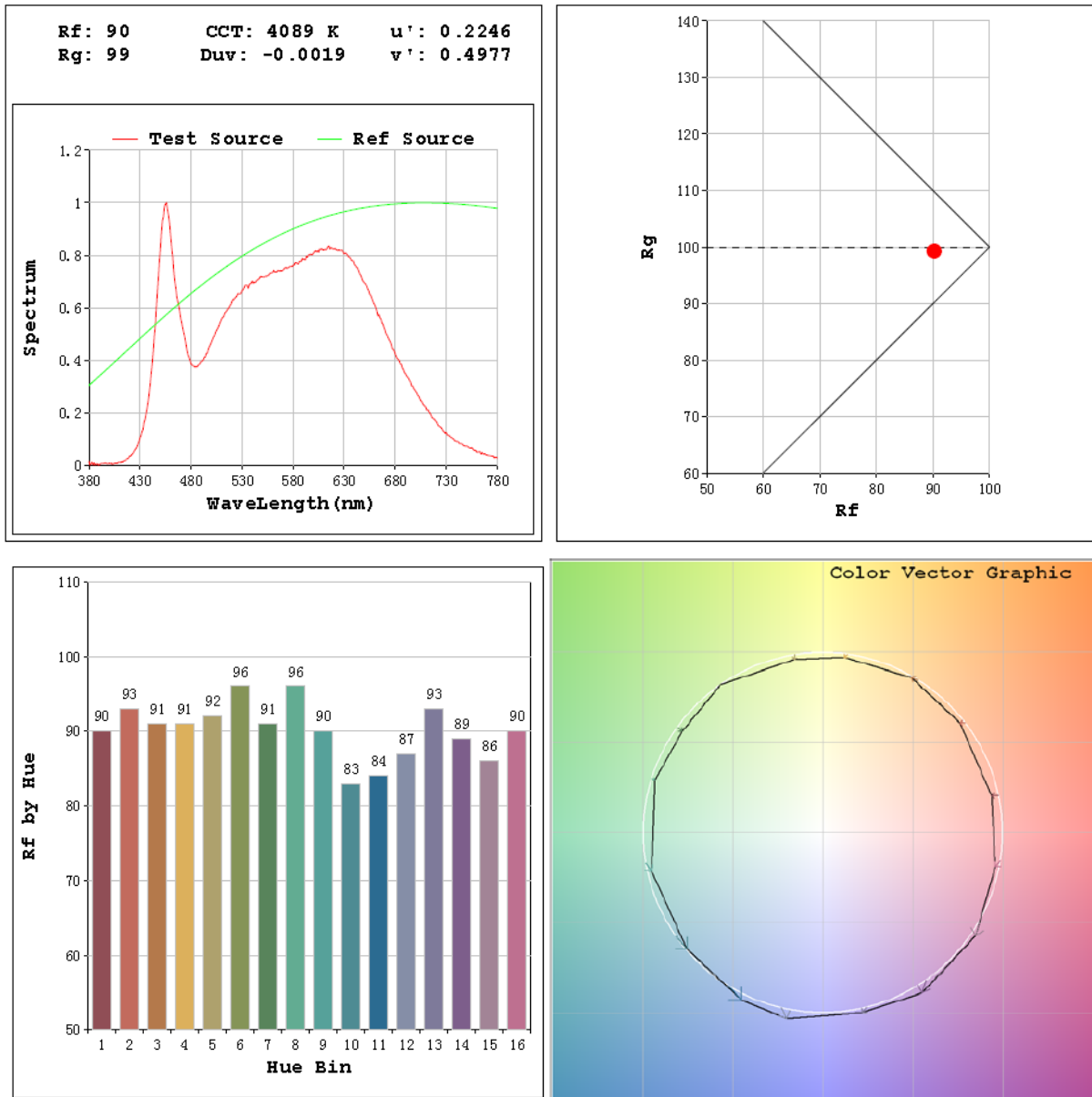
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	967.4
Luminous Efficacy (lm/W)	78.65
Beam Angle (°)	110.5
Center Beam Candle Power (cd)	349.2

Spectral Power Distribution & Chromaticity Diagram



TM30

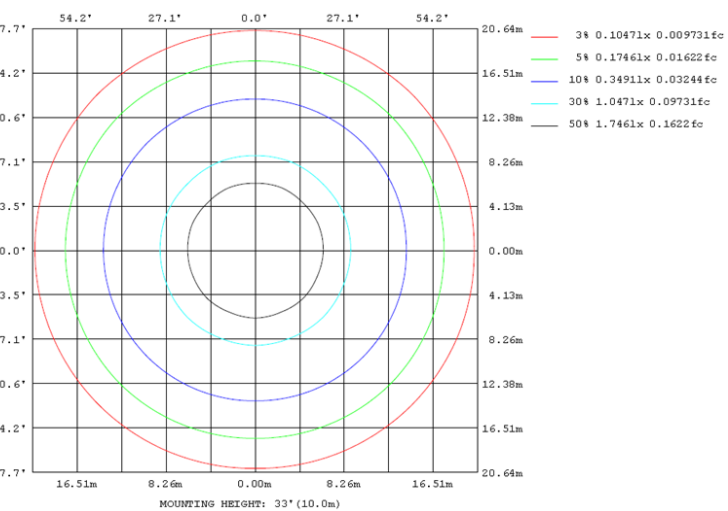
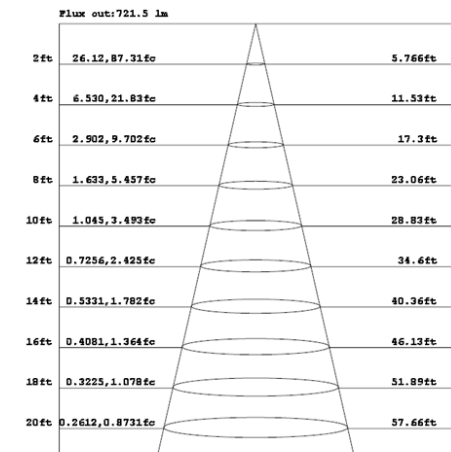
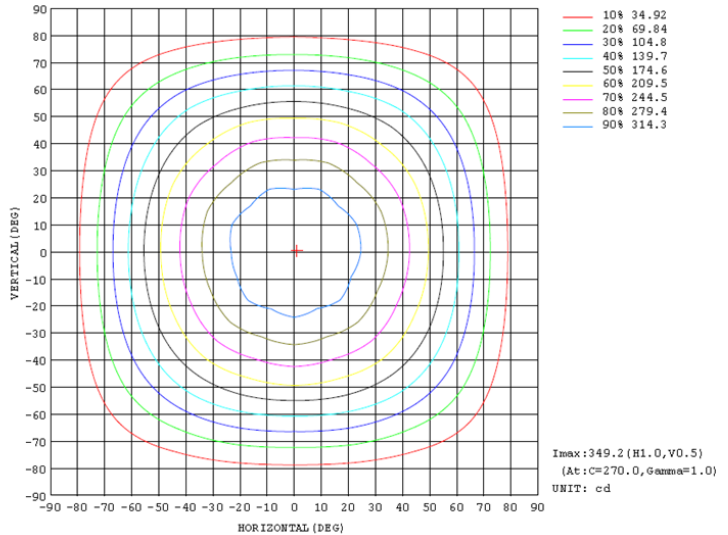
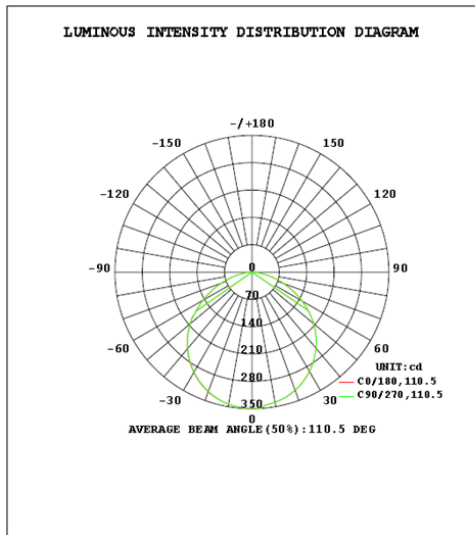


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	270.5	28.0%
0-40	443.3	45.8%
0-60	780.8	80.7%
60-90	186.5	19.3%
70-100	71.2	7.4%
90-120	0.0	0.0%
0-90	967.4	100.0%
90-180	0.0	0.0%
0-180	967.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.9	3.4%	90-100	0.0	0.0%
10-20	94.3	9.7%	100-110	0.0	0.0%
20-30	143.3	14.8%	110-120	0.0	0.0%
30-40	172.8	17.9%	120-130	0.0	0.0%
40-50	178.8	18.5%	130-140	0.0	0.0%
50-60	158.8	16.4%	140-150	0.0	0.0%
60-70	115.3	11.9%	150-160	0.0	0.0%
70-80	59.8	6.2%	160-170	0.0	0.0%
80-90	11.4	1.2%	170-180	0.0	0.0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-18	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0091(WFRL6S139FA120WB)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120053	120.0	60	0.106	12.50	0.986

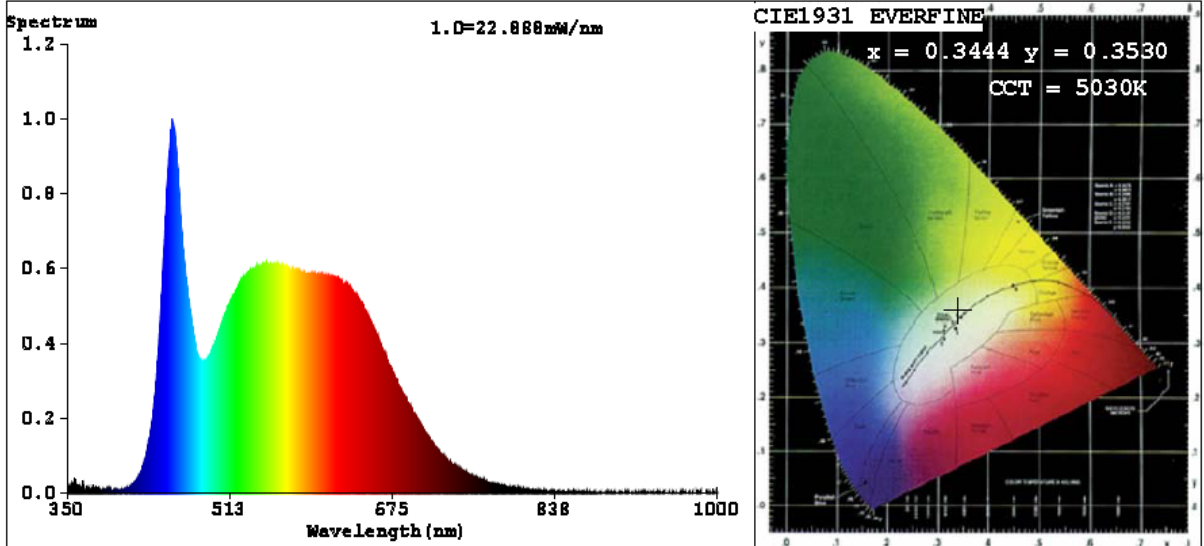
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	70
Frequency (Hz)	60	R2	96	R10	88
CCT (K)	5030	R3	95	R11	91
Duv	0.0010	R4	92	R12	70
Chromaticity (x, y)	x=0.3444 y=0.3530	R5	92	R13	94
Chromaticity (u', v')	u'=0.2104 v'=0.4853	R6	92	R14	97
Color Rendering Index (CRI)	92.8	R7	94	R15	92
R9	70	R8	88	--	--

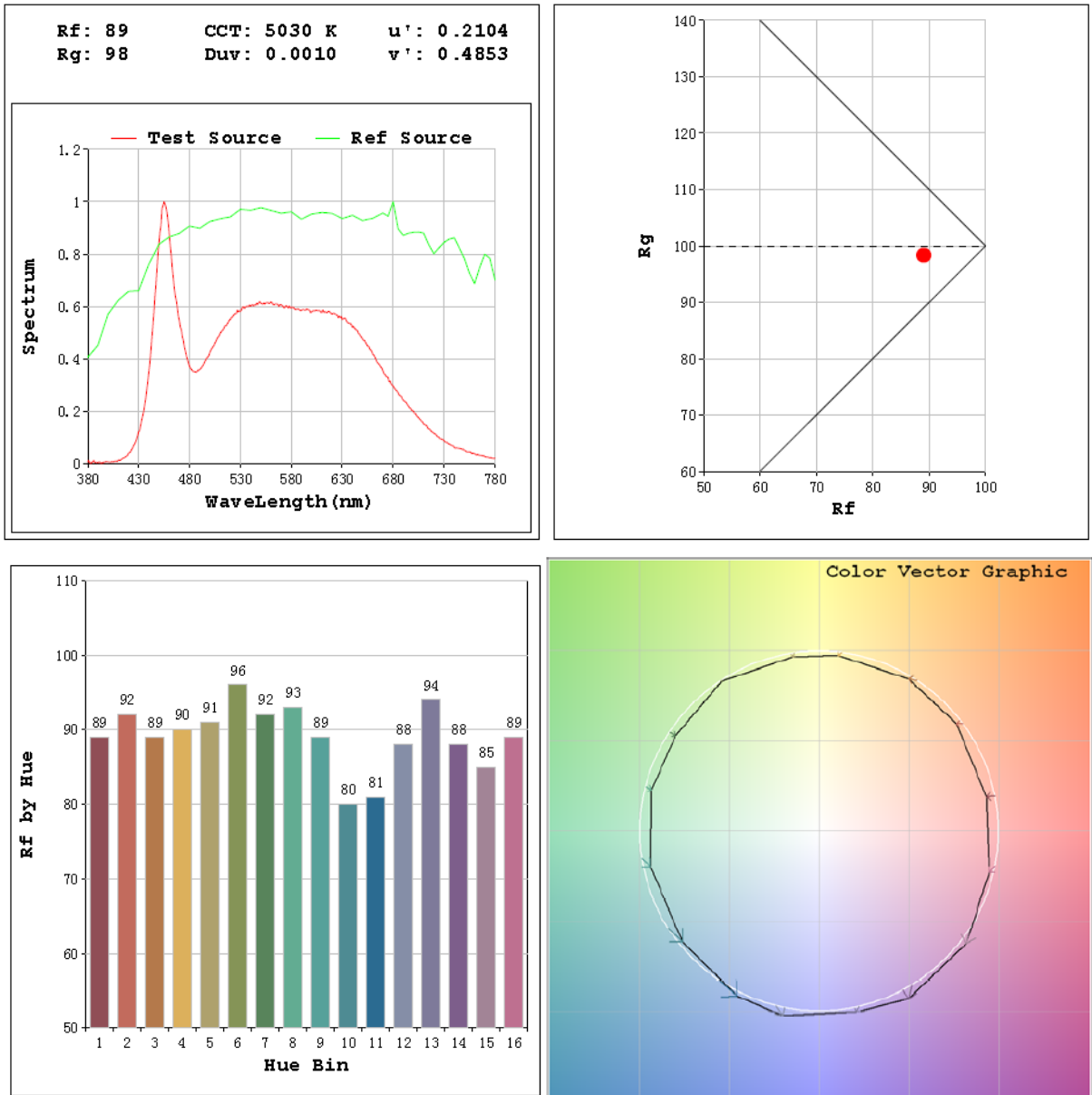
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	943.6
Luminous Efficacy (lm/W)	75.48
Beam Angle (°)	111.5
Center Beam Candle Power (cd)	337.2

Spectral Power Distribution & Chromaticity Diagram



TM30

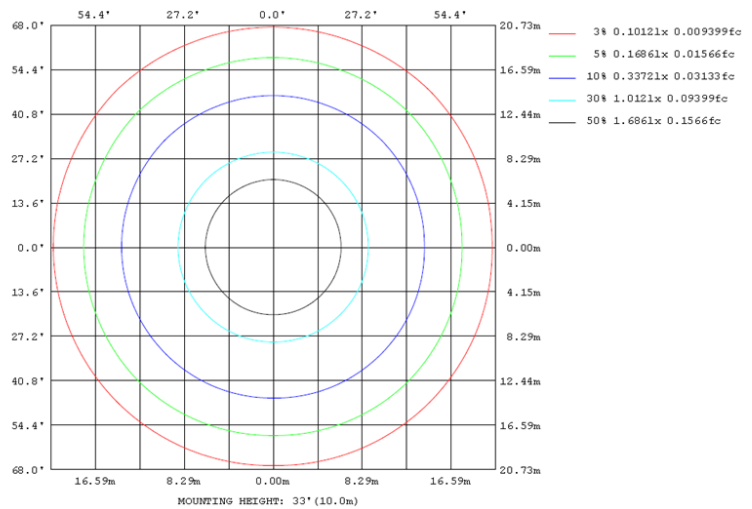
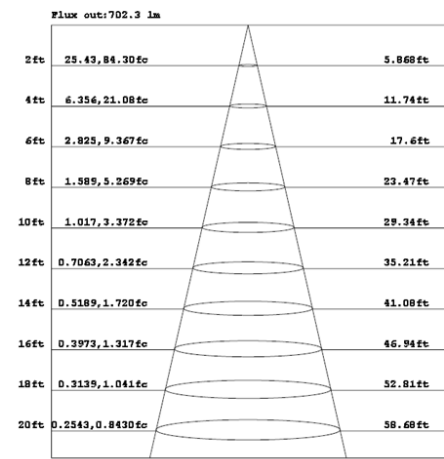
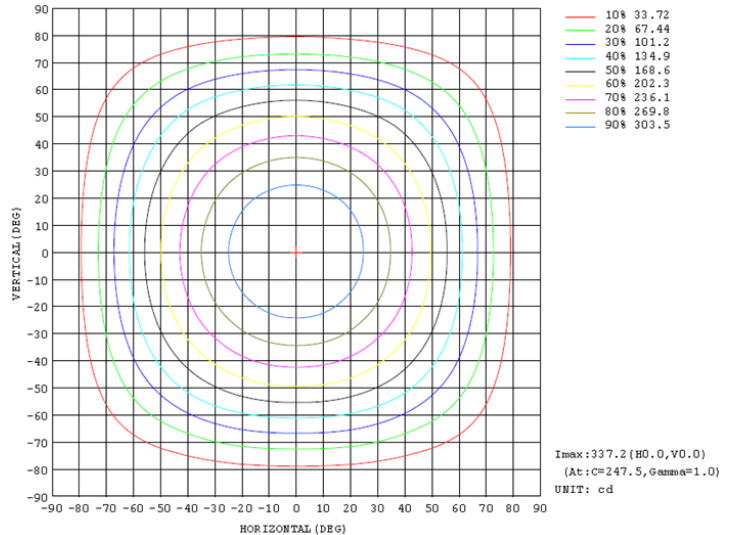
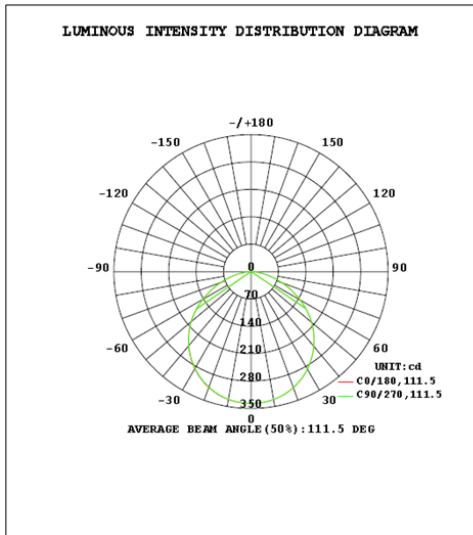


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	263.2	27.9%
0-40	431.4	45.7%
0-60	760.5	80.6%
60-90	183.1	19.4%
70-100	69.9	7.4%
90-120	0.0	0.0%
0-90	943.6	100.0%
90-180	0.0	0.0%
0-180	943.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.9	3.4%	90-100	0.0	0.0%
10-20	91.8	9.7%	100-110	0.0	0.0%
20-30	139.5	14.8%	110-120	0.0	0.0%
30-40	168.2	17.8%	120-130	0.0	0.0%
40-50	173.9	18.4%	130-140	0.0	0.0%
50-60	155.2	16.5%	140-150	0.0	0.0%
60-70	113.2	12.0%	150-160	0.0	0.0%
70-80	58.7	6.2%	160-170	0.0	0.0%
80-90	11.2	1.2%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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