

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):
DLW0102(WFD4B)

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

**Type of
Luminaire:** Downlights

Report Date: 2023-09-26

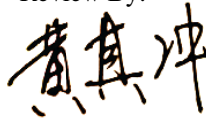
Prepared By:

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	1200 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	2023-09-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0102(WFD4B)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202309250009	120.0	60	0.104	12.30	0.985

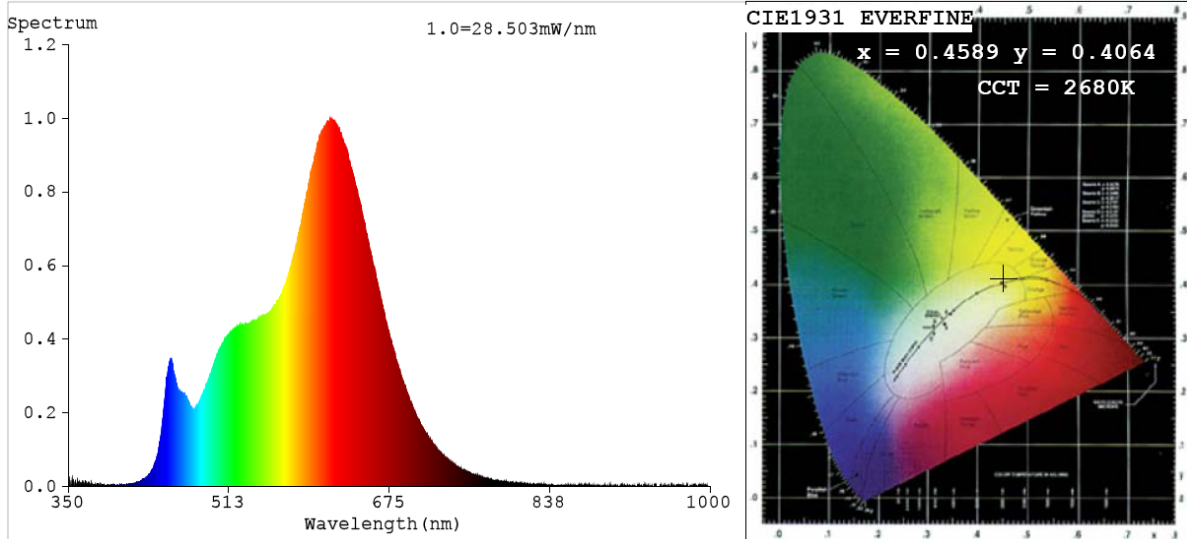
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	54
Frequency (Hz)	60	R2	97	R10	93
CCT (K)	2680	R3	92	R11	95
Duv	-0.0015	R4	98	R12	85
Chromaticity (x, y)	x=0.4589 y=0.4064	R5	98	R13	99
Chromaticity (u', v')	u'=0.2638 v'=0.5256	R6	89	R14	96
Color Rendering Index (CRI)	92.0	R7	87	R15	90
R9	54	R8	77	--	--

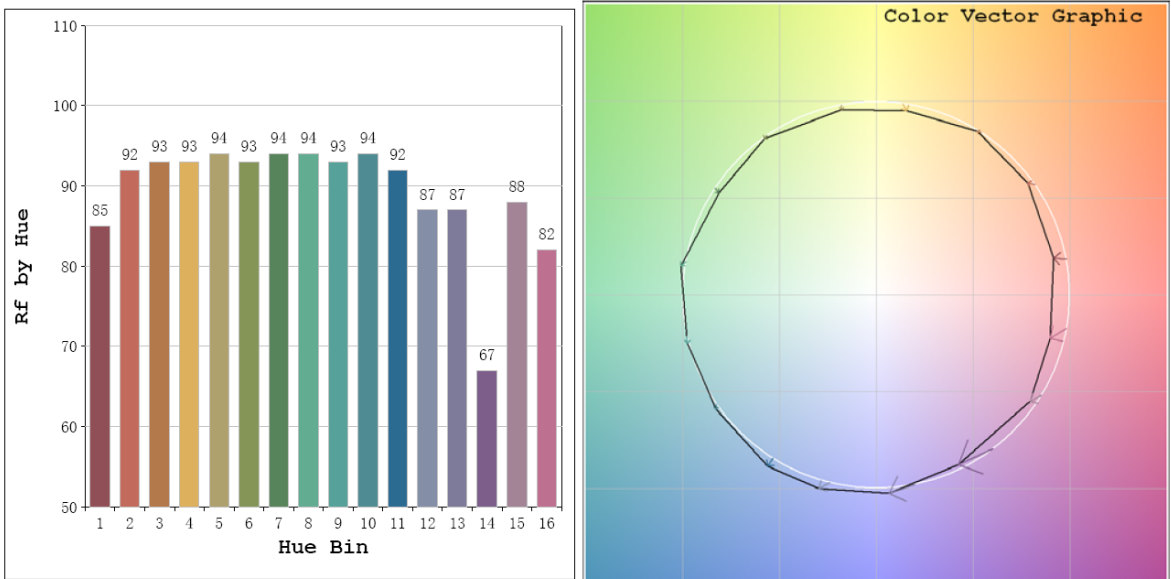
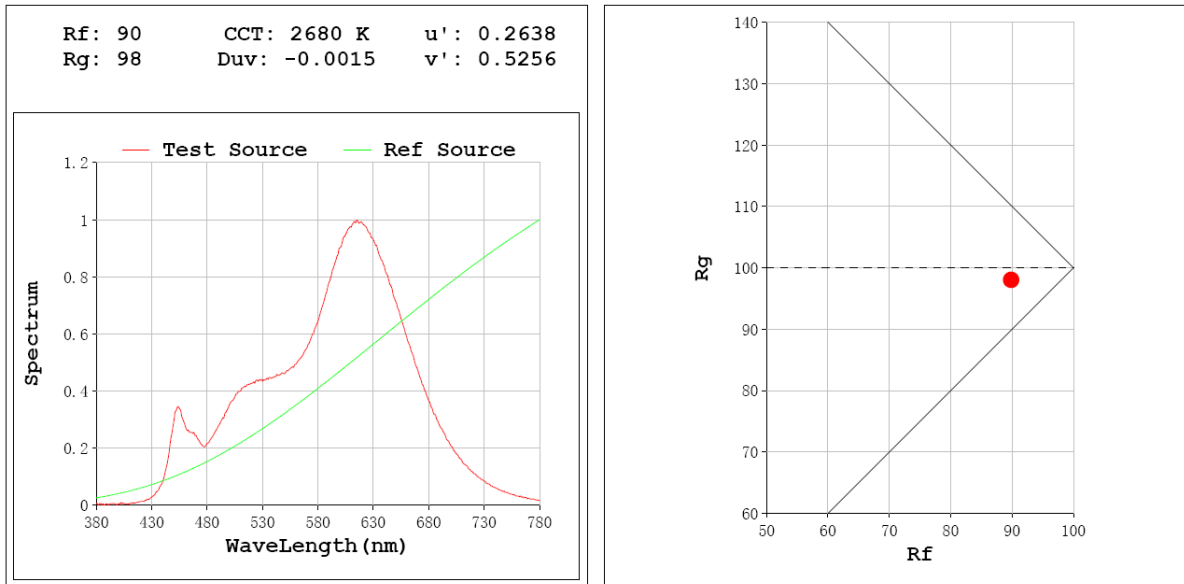
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1200.1
Luminous Efficacy (lm/W)	97.57
Beam Angle (°)	88.6
Center Beam Candle Power (cd)	599.0

Spectral Power Distribution & Chromaticity Diagram



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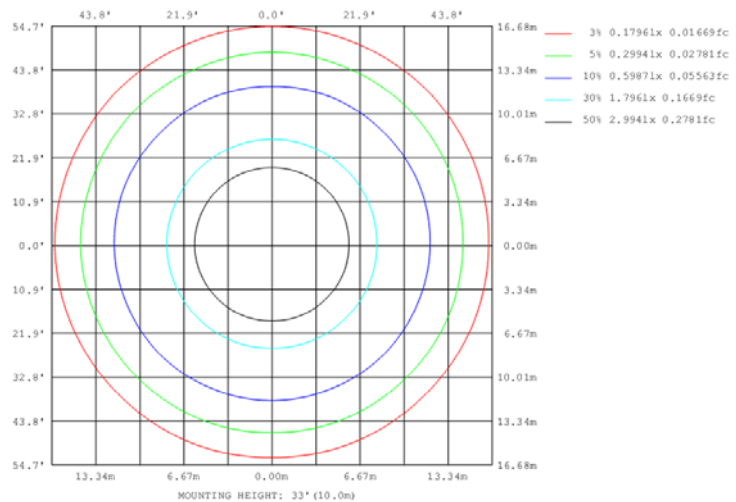
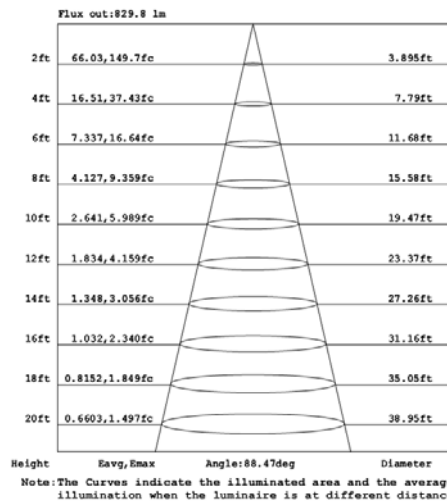
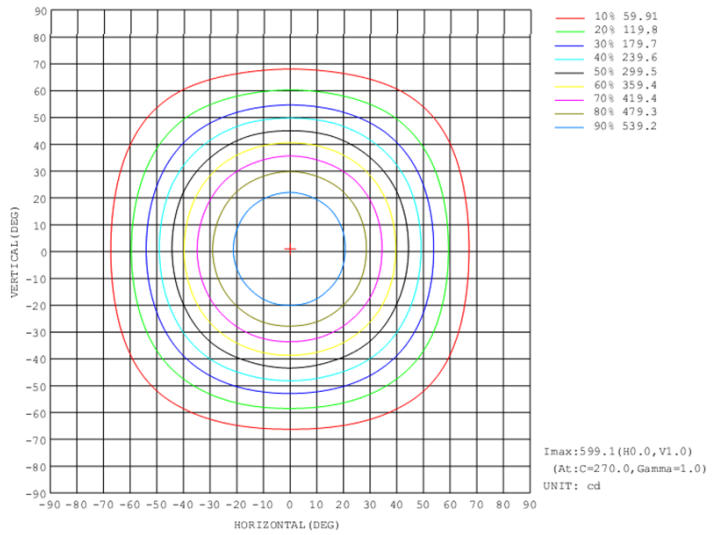
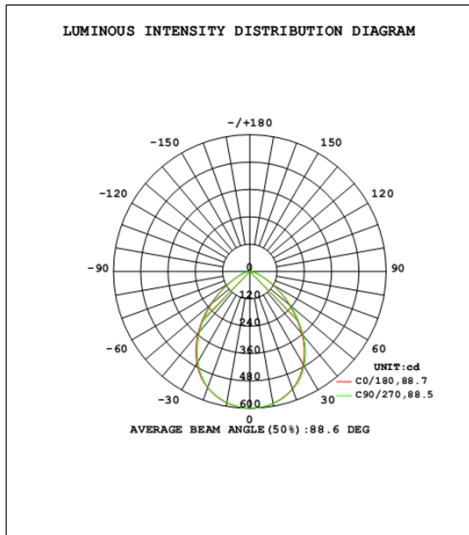


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	451.9	37.7%
0-40	710.6	59.2%
0-60	1084.2	90.3%
60-90	115.9	9.7%
70-100	41.1	3.4%
90-120	0.0	0.0%
0-90	1200.1	100.0%
90-180	0.0	0.0%
0-180	1200.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	56.6	4.7%	90-100	0.0	0.0%
10-20	160.4	13.4%	100-110	0.0	0.0%
20-30	235.0	19.6%	110-120	0.0	0.0%
30-40	258.7	21.6%	120-130	0.0	0.0%
40-50	223.7	18.6%	130-140	0.0	0.0%
50-60	149.9	12.5%	140-150	0.0	0.0%
60-70	74.8	6.2%	150-160	0.0	0.0%
70-80	32.2	2.7%	160-170	0.0	0.0%
80-90	8.9	0.7%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-09-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0102(WFD4B)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202309250009	120.0	60	0.103	12.20	0.985

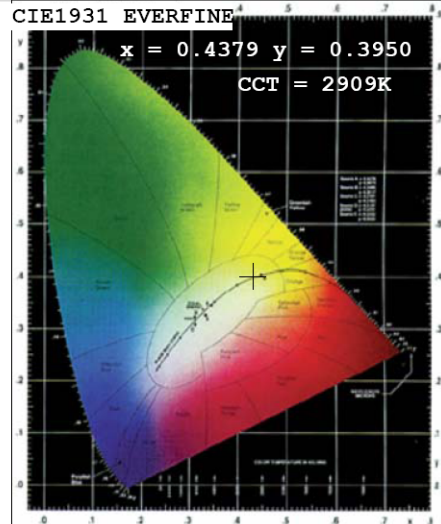
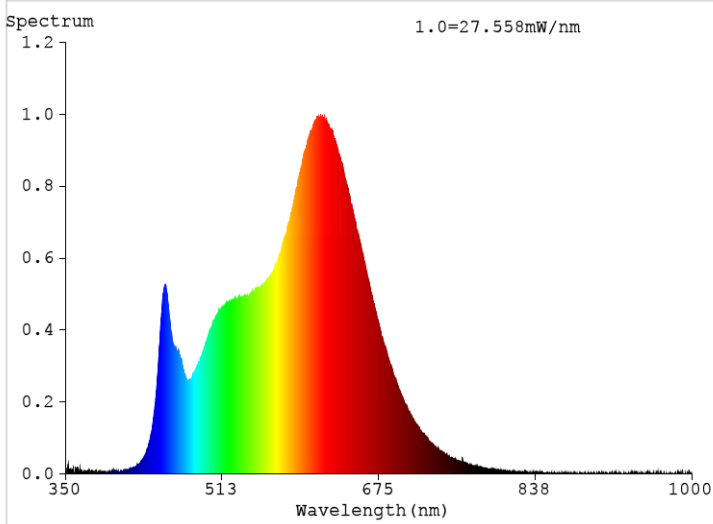
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	62
Frequency (Hz)	60	R2	96	R10	91
CCT (K)	2909	R3	92	R11	94
Duv	-0.0038	R4	99	R12	83
Chromaticity (x, y)	x=0.4379 y=0.3950	R5	97	R13	97
Chromaticity (u', v')	u'=0.2552 v'=0.5179	R6	89	R14	97
Color Rendering Index (CRI)	92.5	R7	88	R15	93
R9	62	R8	81	--	--

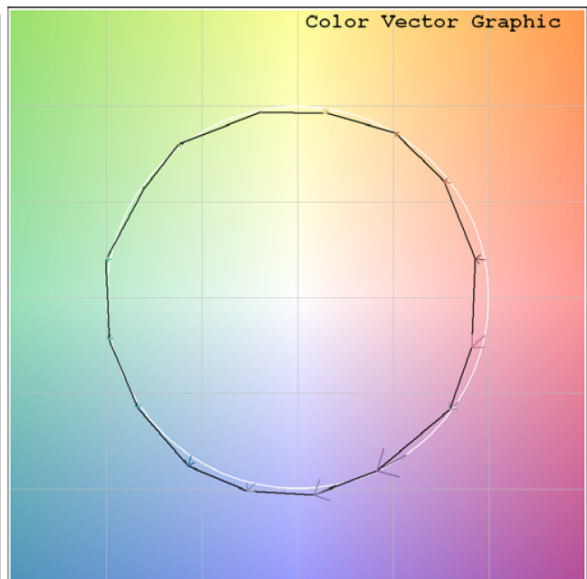
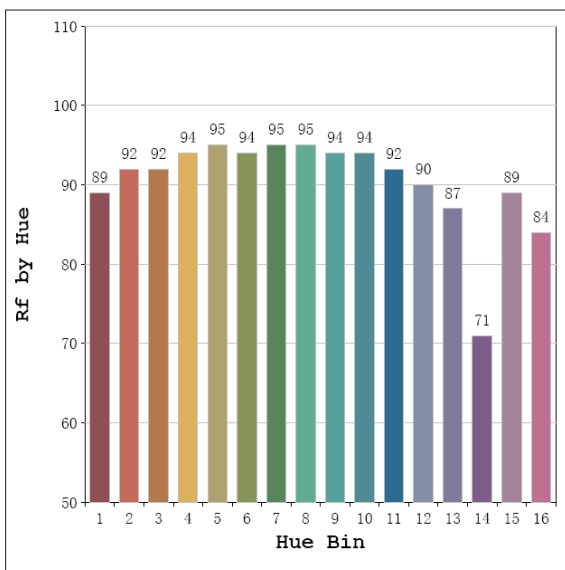
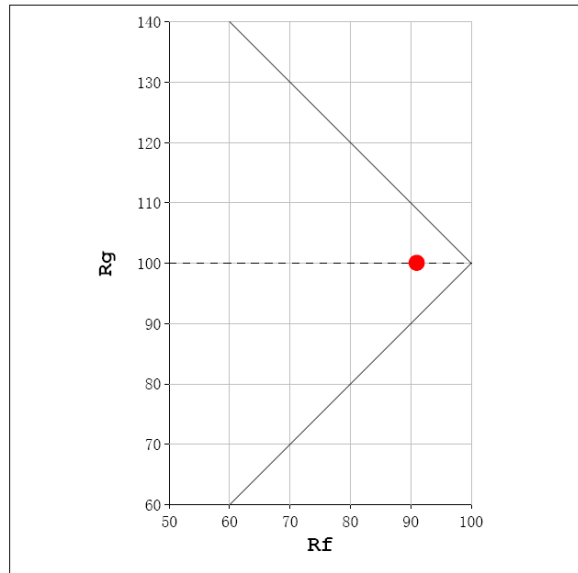
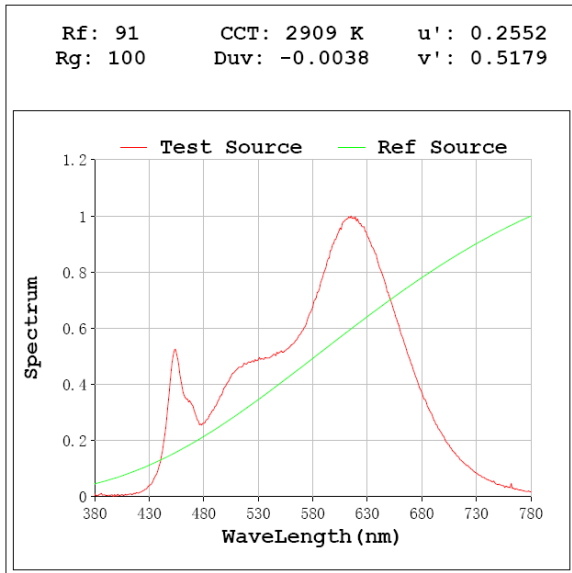
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1227.3
Luminous Efficacy (lm/W)	100.60
Beam Angle (°)	88.6
Center Beam Candle Power (cd)	612.1

Spectral Power Distribution & Chromaticity Diagram



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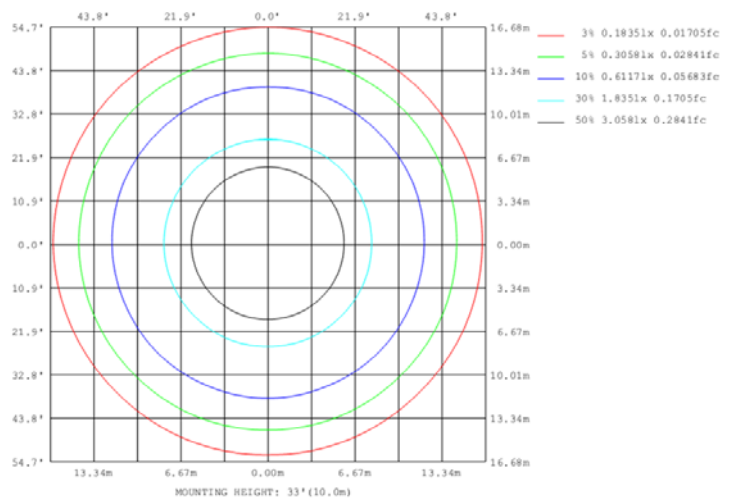
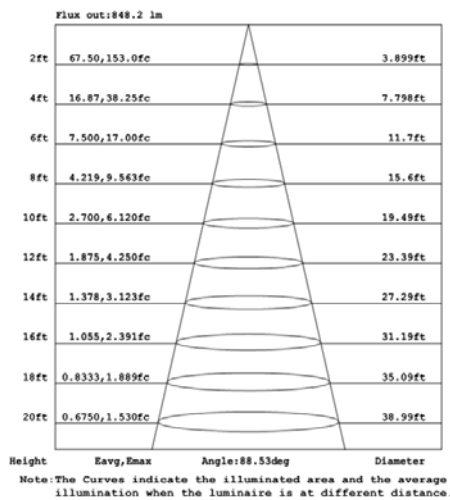
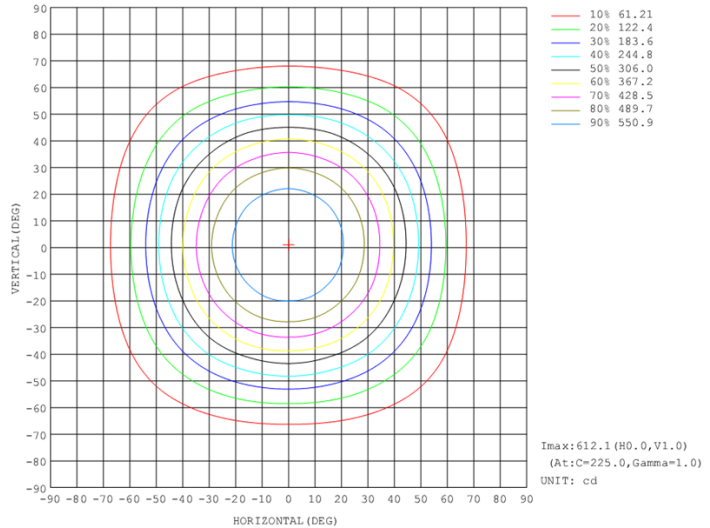
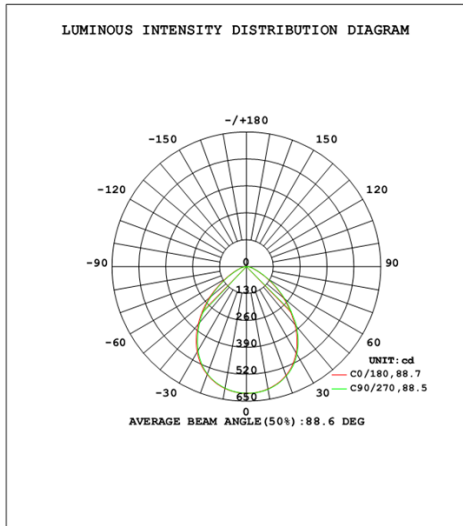


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	461.8	37.6%
0-40	726.3	59.2%
0-60	1108.6	90.3%
60-90	118.7	9.7%
70-100	42.1	3.4%
90-120	0.0	0.0%
0-90	1227.3	100.0%
90-180	0.0	0.0%
0-180	1227.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	57.8	4.7%	90-100	0.0	0.0%
10-20	163.9	13.4%	100-110	0.0	0.0%
20-30	240.1	19.6%	110-120	0.0	0.0%
30-40	264.5	21.5%	120-130	0.0	0.0%
40-50	228.8	18.6%	130-140	0.0	0.0%
50-60	153.5	12.5%	140-150	0.0	0.0%
60-70	76.6	6.2%	150-160	0.0	0.0%
70-80	32.9	2.7%	160-170	0.0	0.0%
80-90	9.2	0.7%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2023-09-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0102(WFD4B)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202309250009	120.0	60	0.102	12.10	0.985

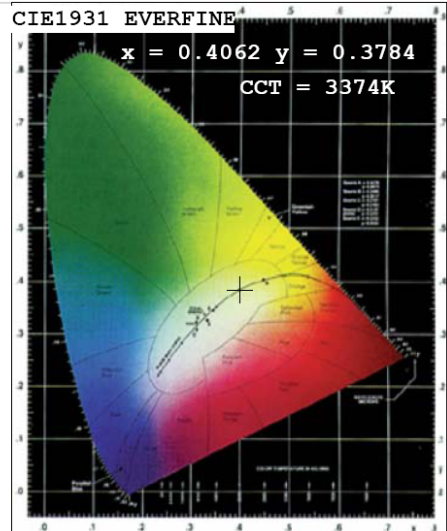
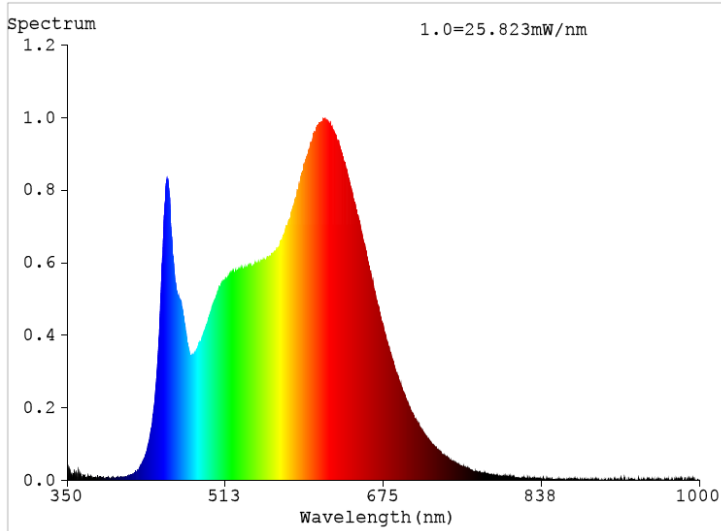
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	73
Frequency (Hz)	60	R2	95	R10	91
CCT (K)	3374	R3	94	R11	95
Duv	-0.0057	R4	99	R12	82
Chromaticity (x, y)	x=0.4062 y=0.3784	R5	96	R13	96
Chromaticity (u', v')	u'=0.2415 v'=0.5062	R6	90	R14	98
Color Rendering Index (CRI)	93.5	R7	90	R15	97
R9	73	R8	86	--	--

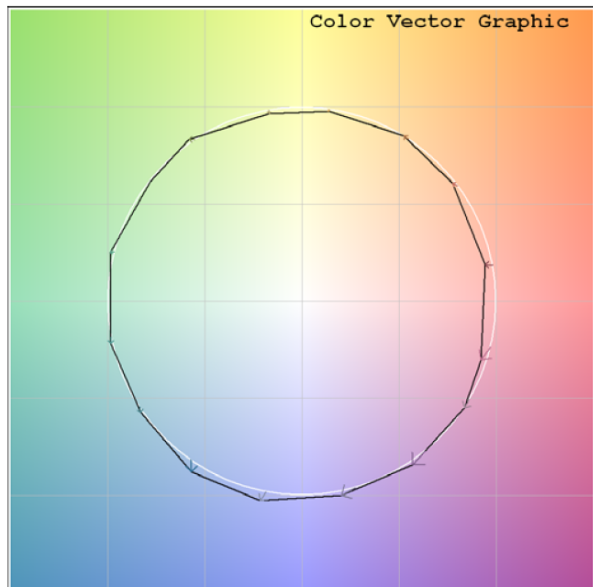
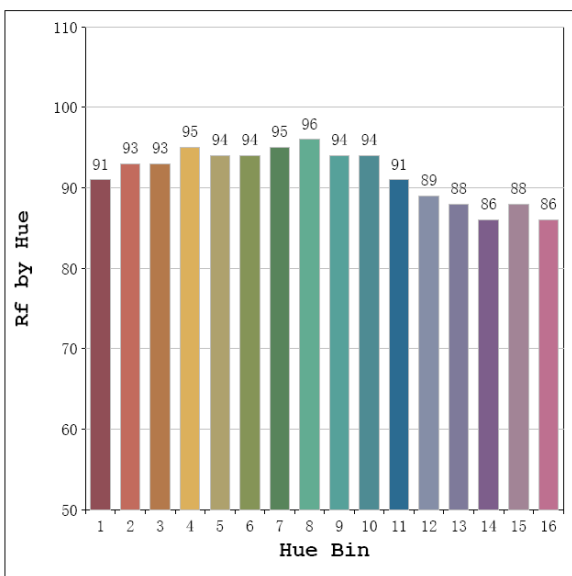
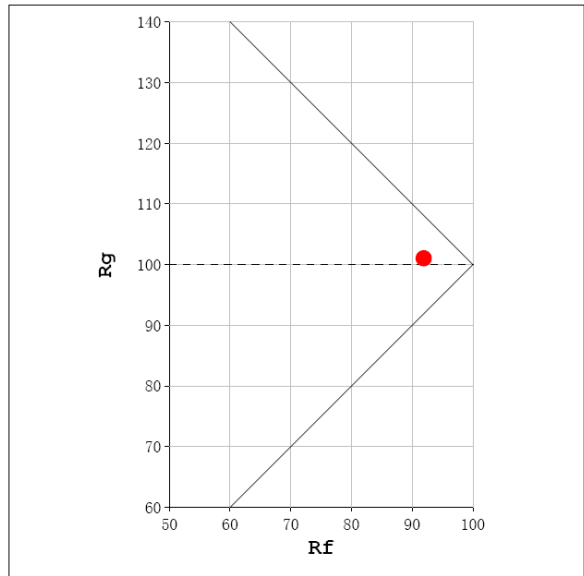
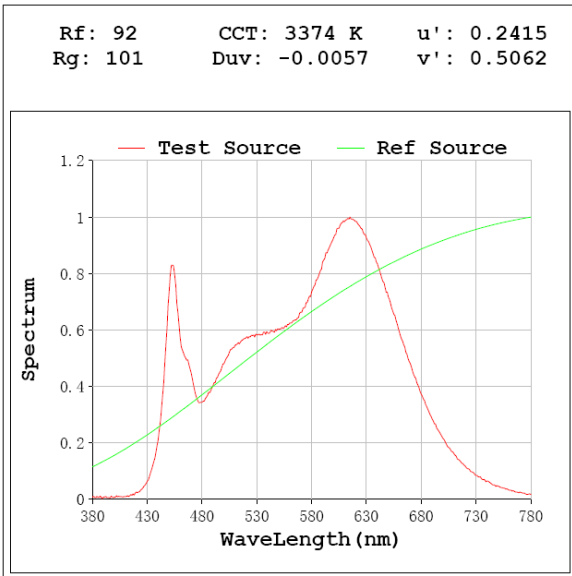
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1271.4
Luminous Efficacy (lm/W)	105.07
Beam Angle (°)	88.7
Center Beam Candle Power (cd)	633.1

Spectral Power Distribution & Chromaticity Diagram



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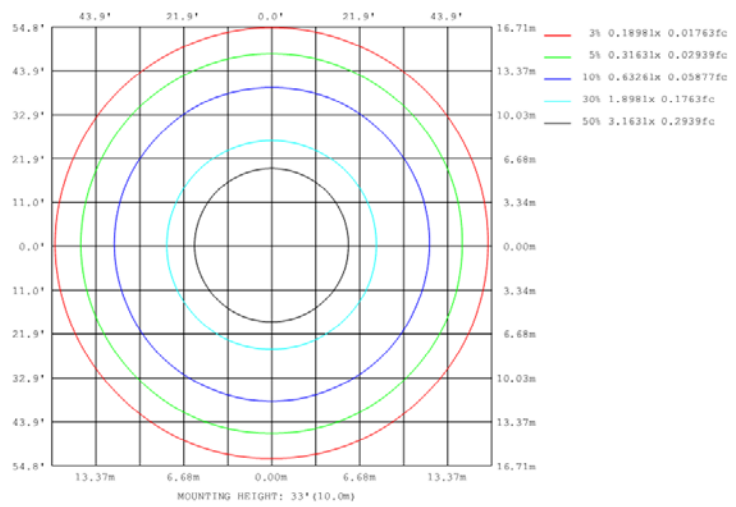
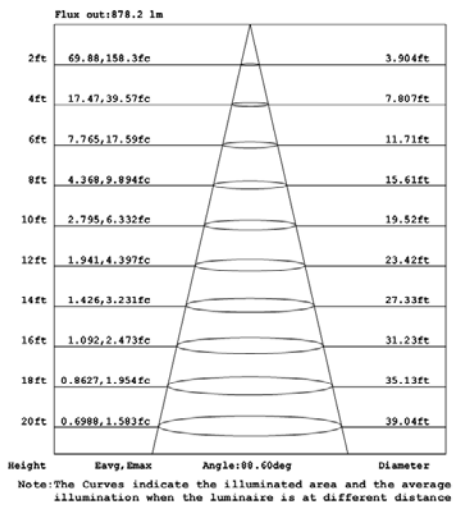
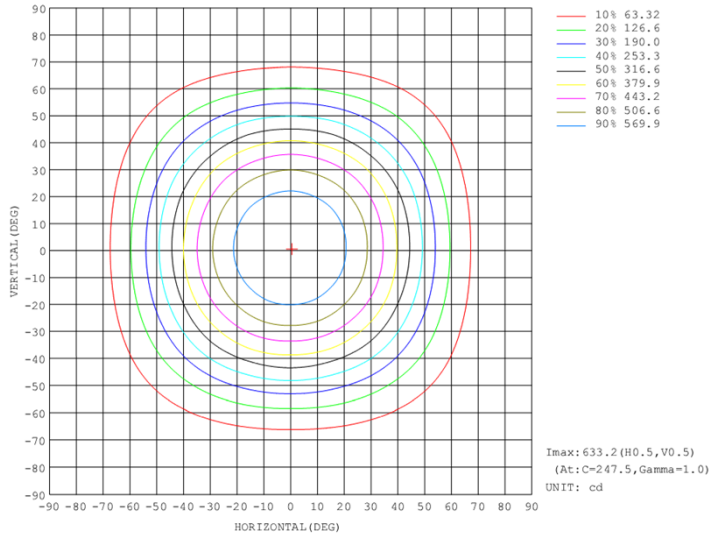
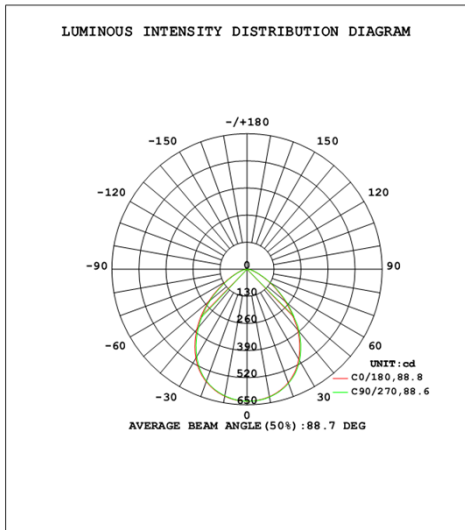


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	477.9	37.6%
0-40	751.7	59.1%
0-60	1148.2	90.3%
60-90	123.2	9.7%
70-100	43.7	3.4%
90-120	0.0	0.0%
0-90	1271.4	100.0%
90-180	0.0	0.0%
0-180	1271.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	59.8	4.7%	90-100	0.0	0.0%
10-20	169.6	13.3%	100-110	0.0	0.0%
20-30	248.5	19.5%	110-120	0.0	0.0%
30-40	273.8	21.5%	120-130	0.0	0.0%
40-50	237.3	18.7%	130-140	0.0	0.0%
50-60	159.3	12.5%	140-150	0.0	0.0%
60-70	79.5	6.3%	150-160	0.0	0.0%
70-80	34.2	2.7%	160-170	0.0	0.0%
80-90	9.5	0.7%	170-180	0.0	0.0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2023-09-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0102(WFD4B)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202309250009	120.0	60	0.103	12.20	0.985

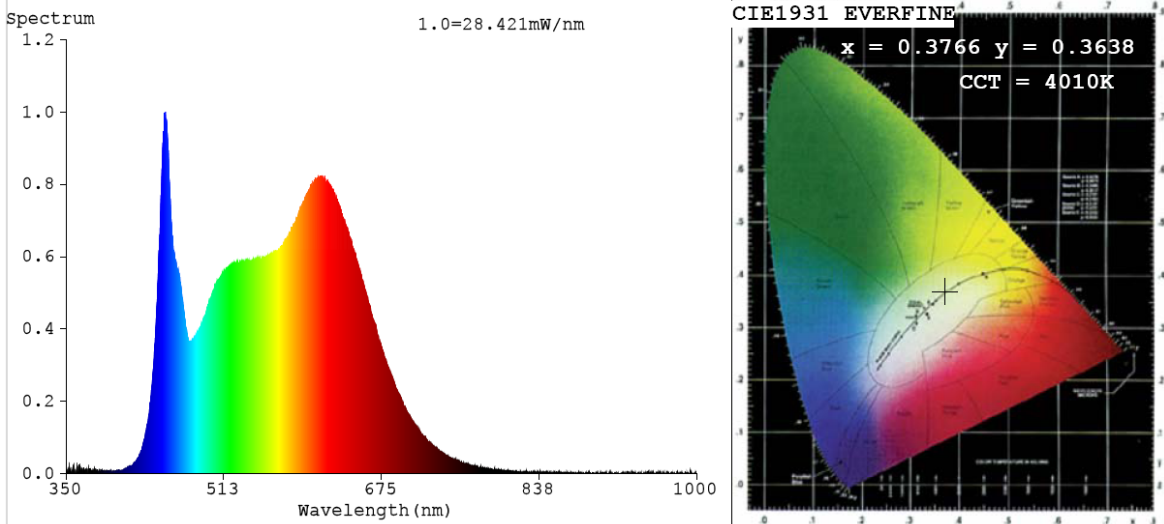
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	79
Frequency (Hz)	60	R2	97	R10	95
CCT (K)	4010	R3	97	R11	96
Duv	-0.0051	R4	98	R12	79
Chromaticity (x, y)	x=0.3766 y=0.3638	R5	97	R13	97
Chromaticity (u', v')	u'=0.2278 v'=0.4951	R6	96	R14	99
Color Rendering Index (CRI)	95.2	R7	96	R15	98
R9	79	R8	90	--	--

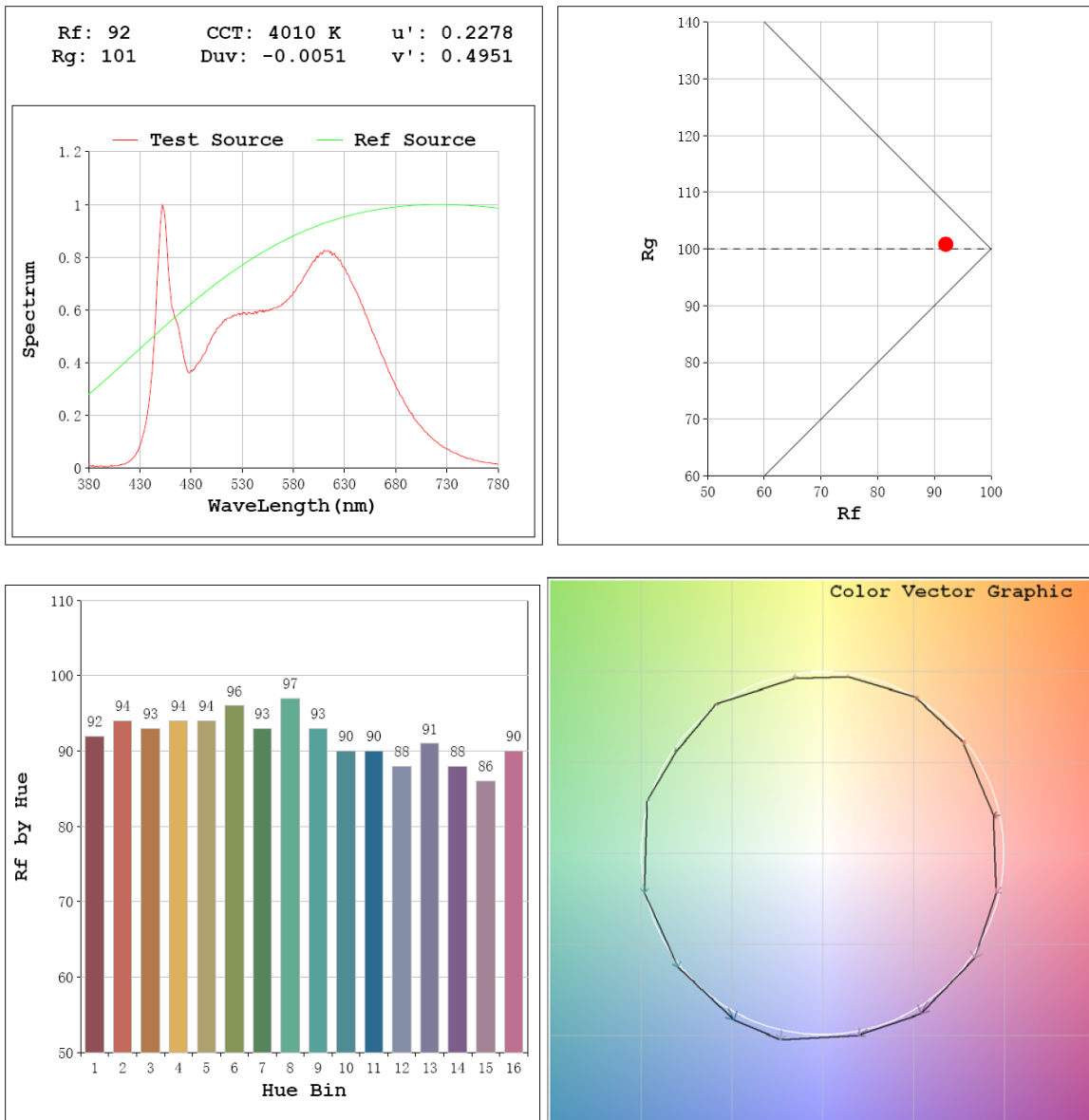
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1299.5
Luminous Efficacy (lm/W)	106.52
Beam Angle (°)	88.7
Center Beam Candle Power (cd)	646.6

Spectral Power Distribution & Chromaticity Diagram



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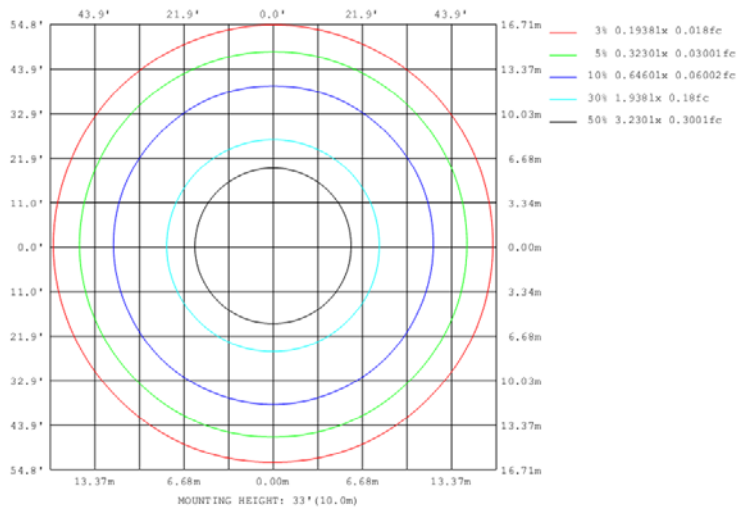
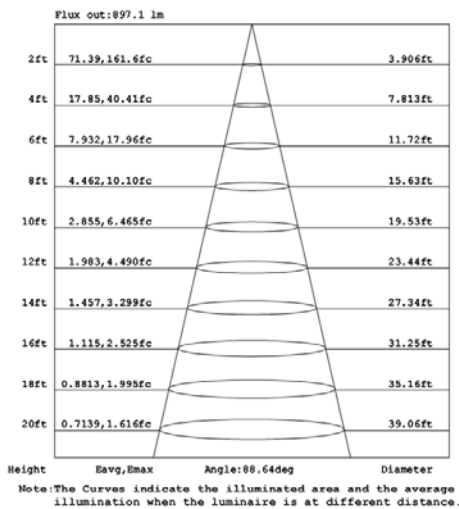
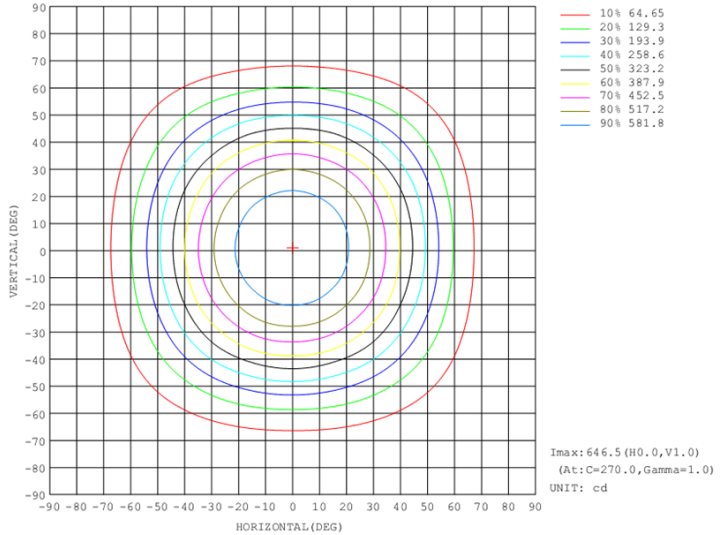
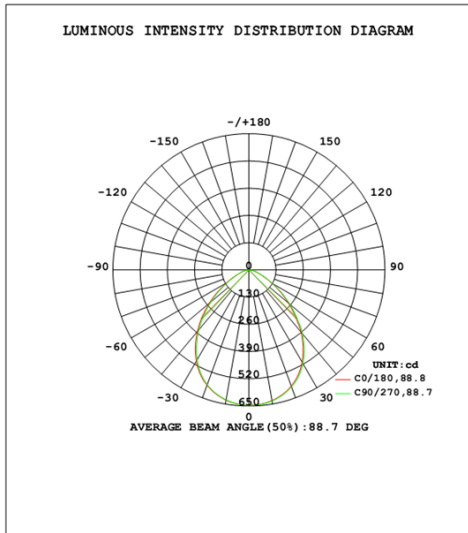


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	487.9	37.5%
0-40	767.7	59.1%
0-60	1173.4	90.3%
60-90	126.2	9.7%
70-100	44.7	3.4%
90-120	0.0	0.0%
0-90	1299.5	100.0%
90-180	0.0	0.0%
0-180	1299.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	61.0	4.7%	90-100	0.0	0.0%
10-20	173.1	13.3%	100-110	0.0	0.0%
20-30	253.8	19.5%	110-120	0.0	0.0%
30-40	279.7	21.5%	120-130	0.0	0.0%
40-50	242.6	18.7%	130-140	0.0	0.0%
50-60	163.1	12.5%	140-150	0.0	0.0%
60-70	81.5	6.3%	150-160	0.0	0.0%
70-80	35.0	2.7%	160-170	0.0	0.0%
80-90	9.7	0.7%	170-180	0.0	0.0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2023-09-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0102(WFD4B)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202309250009	120.0	60	0.105	12.40	0.985

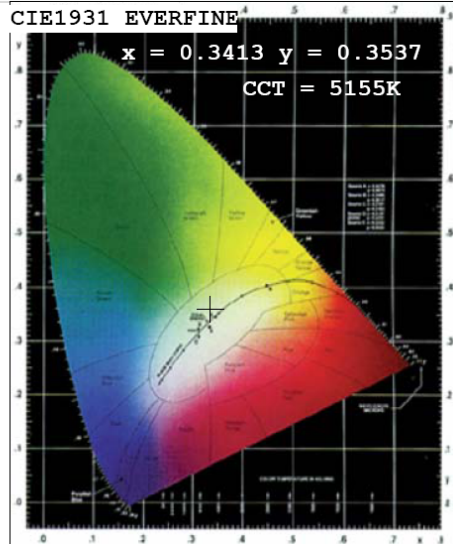
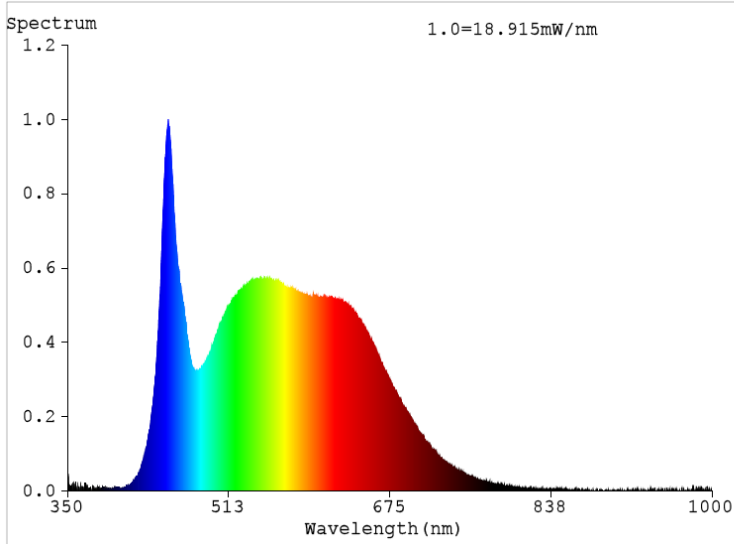
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	71
Frequency (Hz)	60	R2	94	R10	85
CCT (K)	5155	R3	94	R11	92
Duv	0.0026	R4	93	R12	71
Chromaticity (x, y)	x=0.3413 y=0.3537	R5	92	R13	93
Chromaticity (u', v')	u'=0.2080 v'=0.4851	R6	91	R14	96
Color Rendering Index (CRI)	92.7	R7	96	R15	92
R9	71	R8	90	--	--

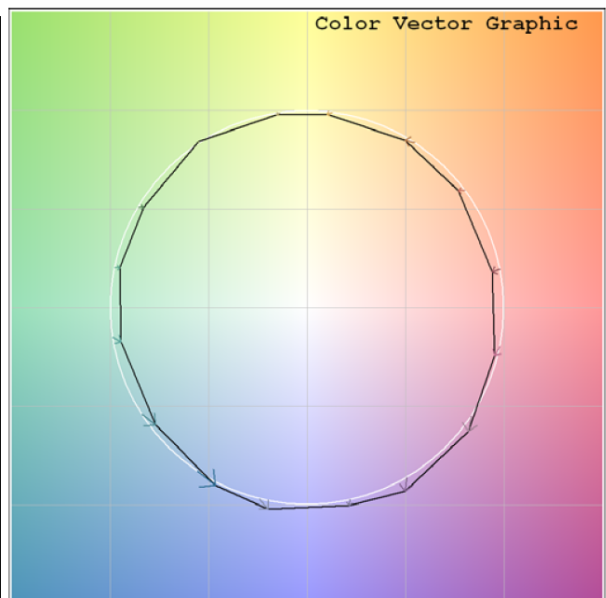
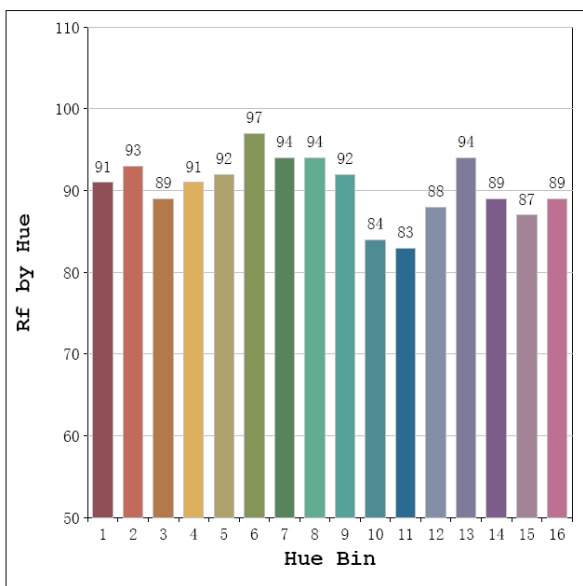
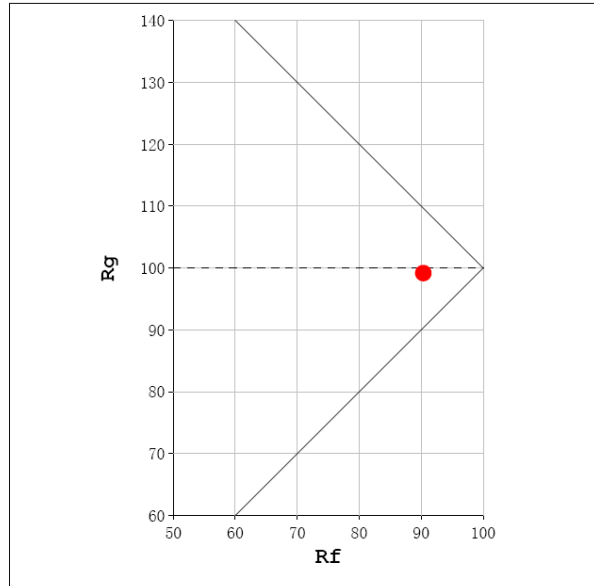
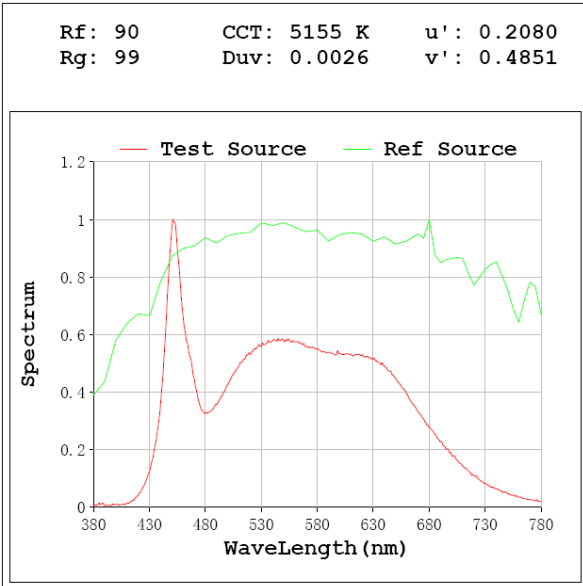
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1308.0
Luminous Efficacy (lm/W)	105.48
Beam Angle (°)	88.8
Center Beam Candle Power (cd)	649.6

Spectral Power Distribution & Chromaticity Diagram



TM30

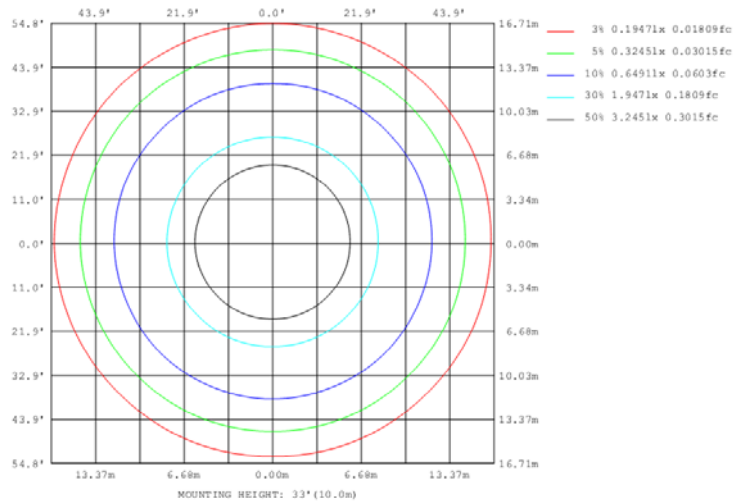
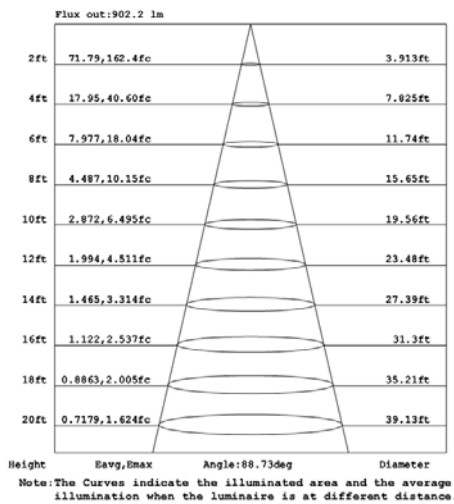
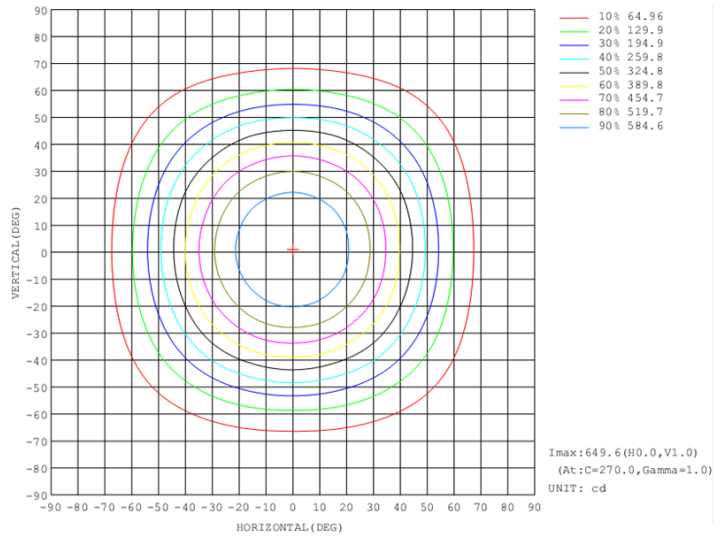
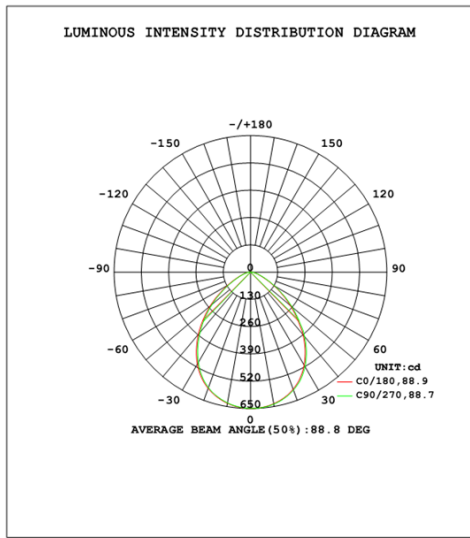


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	490.5	37.5%
0-40	771.9	59.0%
0-60	1180.7	90.3%
60-90	127.3	9.7%
70-100	45.0	3.4%
90-120	0.0	0.0%
0-90	1308.0	100.0%
90-180	0.0	0.0%
0-180	1308.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	61.3	4.7%	90-100	0.0	0.0%
10-20	174.0	13.3%	100-110	0.0	0.0%
20-30	255.2	19.5%	110-120	0.0	0.0%
30-40	281.4	21.5%	120-130	0.0	0.0%
40-50	244.3	18.7%	130-140	0.0	0.0%
50-60	164.5	12.6%	140-150	0.0	0.0%
60-70	82.3	6.3%	150-160	0.0	0.0%
70-80	35.3	2.7%	160-170	0.0	0.0%
80-90	9.8	0.7%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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