

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):
DLW0100(WFD4)

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

**Type of
Luminaire:** Downlights

Report Date: 2023-03-14

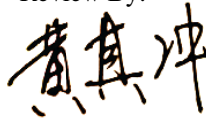
Prepared By:

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	2023-03-14	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0100(WFD4)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202303140015	120.0	60	0.101	11.90	0.985

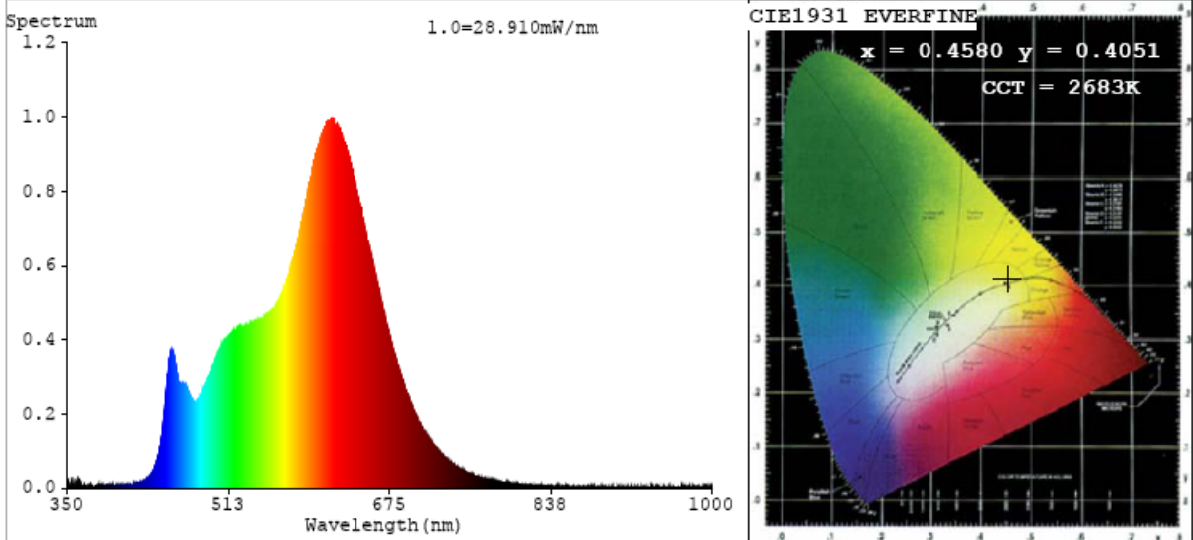
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	55
Frequency (Hz)	60	R2	96	R10	91
CCT (K)	2683	R3	91	R11	95
Duv	-0.0019	R4	97	R12	82
Chromaticity (x, y)	x=0.4580 y=0.4051	R5	98	R13	98
Chromaticity (u', v')	u'=0.2638 v'=0.5249	R6	88	R14	96
Color Rendering Index (CRI)	91.2	R7	86	R15	90
R9	55	R8	77	--	--

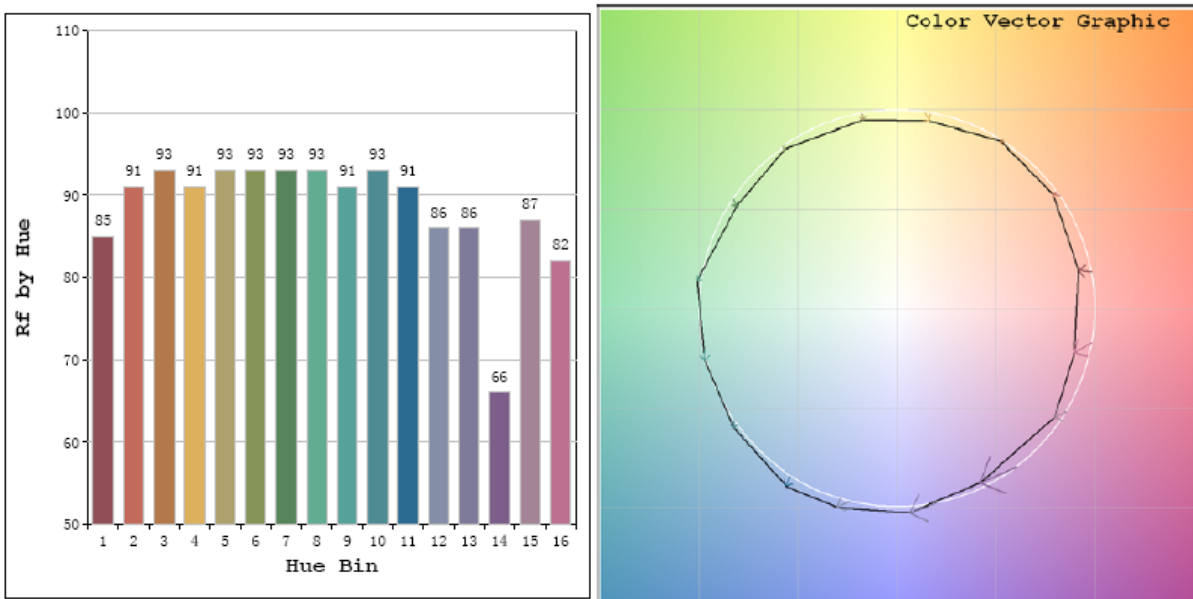
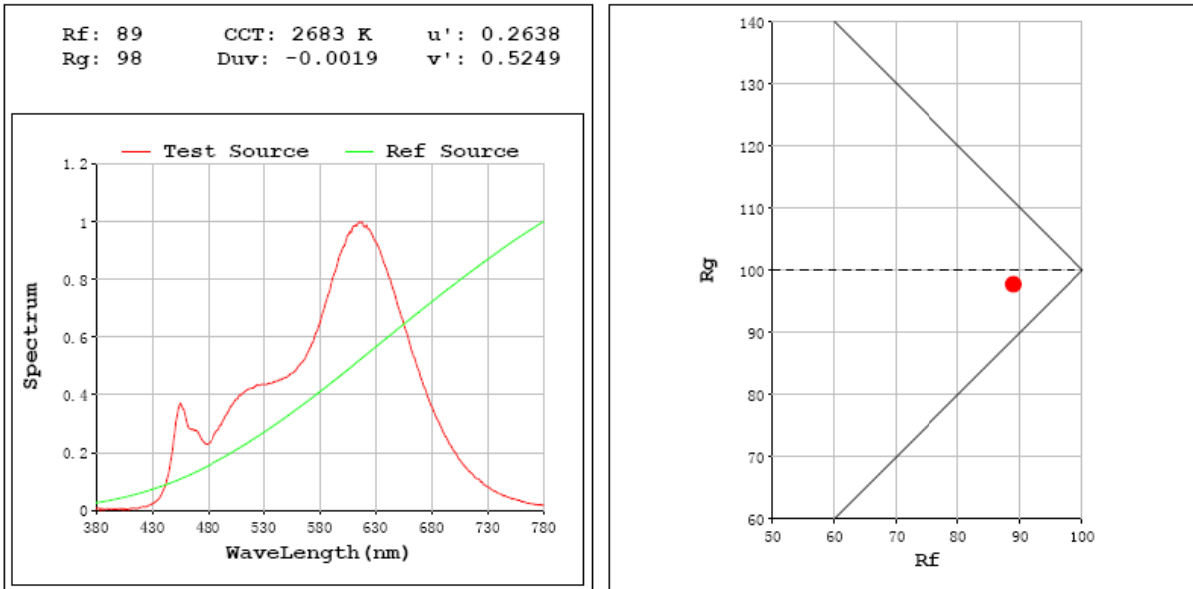
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1213.3
Luminous Efficacy (lm/W)	101.96
Beam Angle (°)	86.5
Center Beam Candle Power (cd)	632.0

Spectral Power Distribution & Chromaticity Diagram



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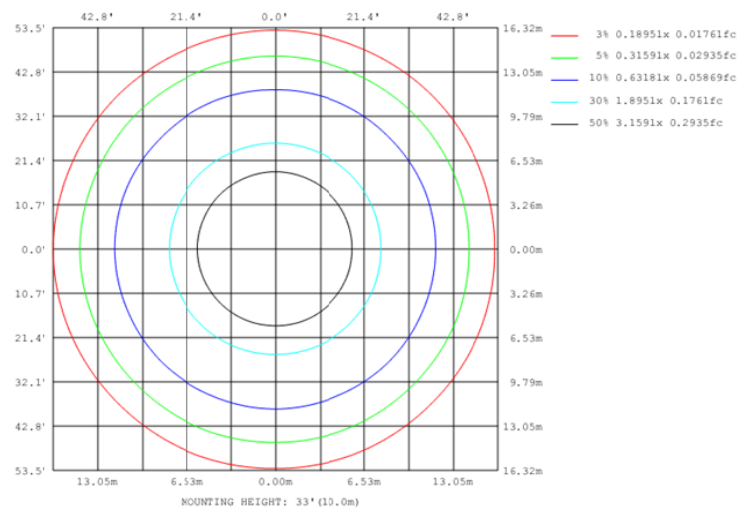
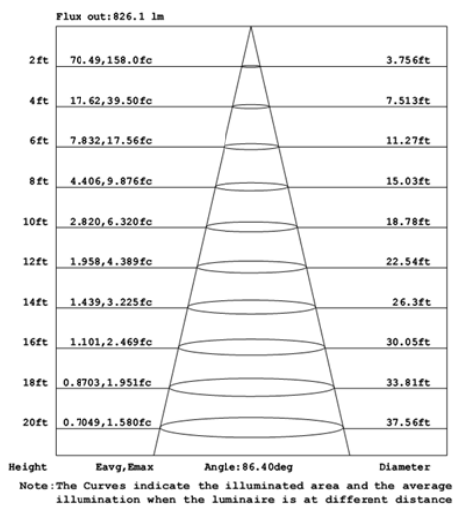
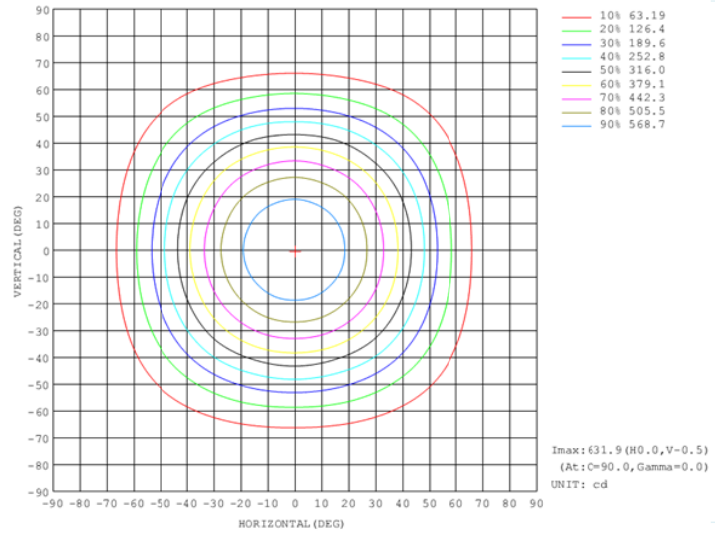
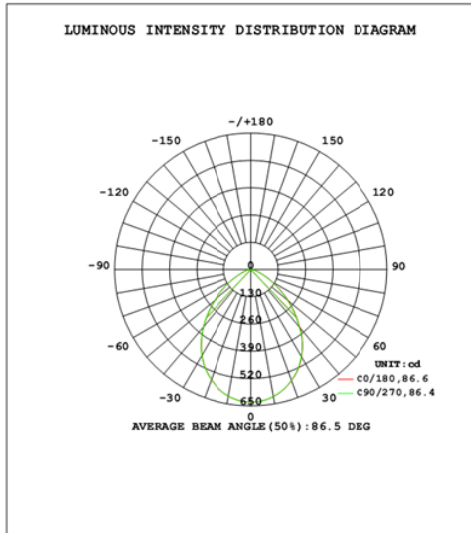


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	466.3	38.4%
0-40	728.7	60.1%
0-60	1104.1	91.0%
60-90	109.3	9.0%
70-100	36.7	3.0%
90-120	0.0	0.0%
0-90	1213.3	100.0%
90-180	0.0	0.0%
0-180	1213.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	59.5	4.9%	90-100	0.0	0.0%
10-20	166.5	13.7%	100-110	0.0	0.0%
20-30	240.3	19.8%	110-120	0.0	0.0%
30-40	262.5	21.6%	120-130	0.0	0.0%
40-50	225.6	18.6%	130-140	0.0	0.0%
50-60	149.7	12.3%	140-150	0.0	0.0%
60-70	72.6	6.0%	150-160	0.0	0.0%
70-80	29.3	2.4%	160-170	0.0	0.0%
80-90	7.4	0.6%	170-180	0.0	0.0%

Photometric Data



Test date	2023-03-14	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0100(WFD4)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202303140015	120.0	60	0.100	11.80	0.984

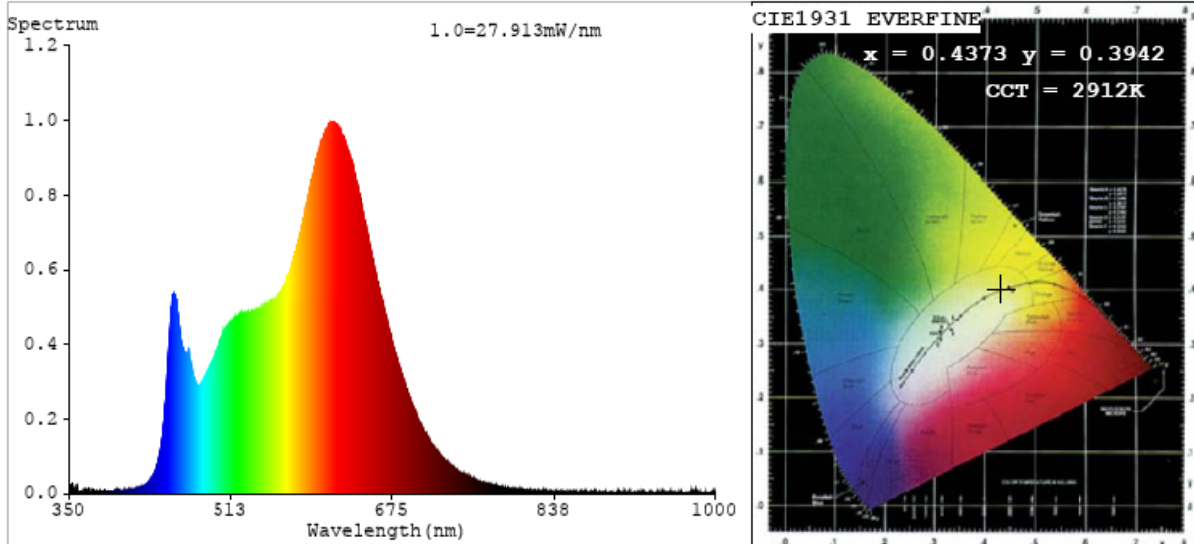
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	63
Frequency (Hz)	60	R2	94	R10	88
CCT (K)	2912	R3	91	R11	95
Duv	-0.0040	R4	97	R12	79
Chromaticity (x, y)	x=0.4373 y=0.3942	R5	96	R13	96
Chromaticity (u', v')	u'=0.2551 v'=0.5175	R6	87	R14	96
Color Rendering Index (CRI)	91.3	R7	87	R15	94
R9	63	R8	80	--	--

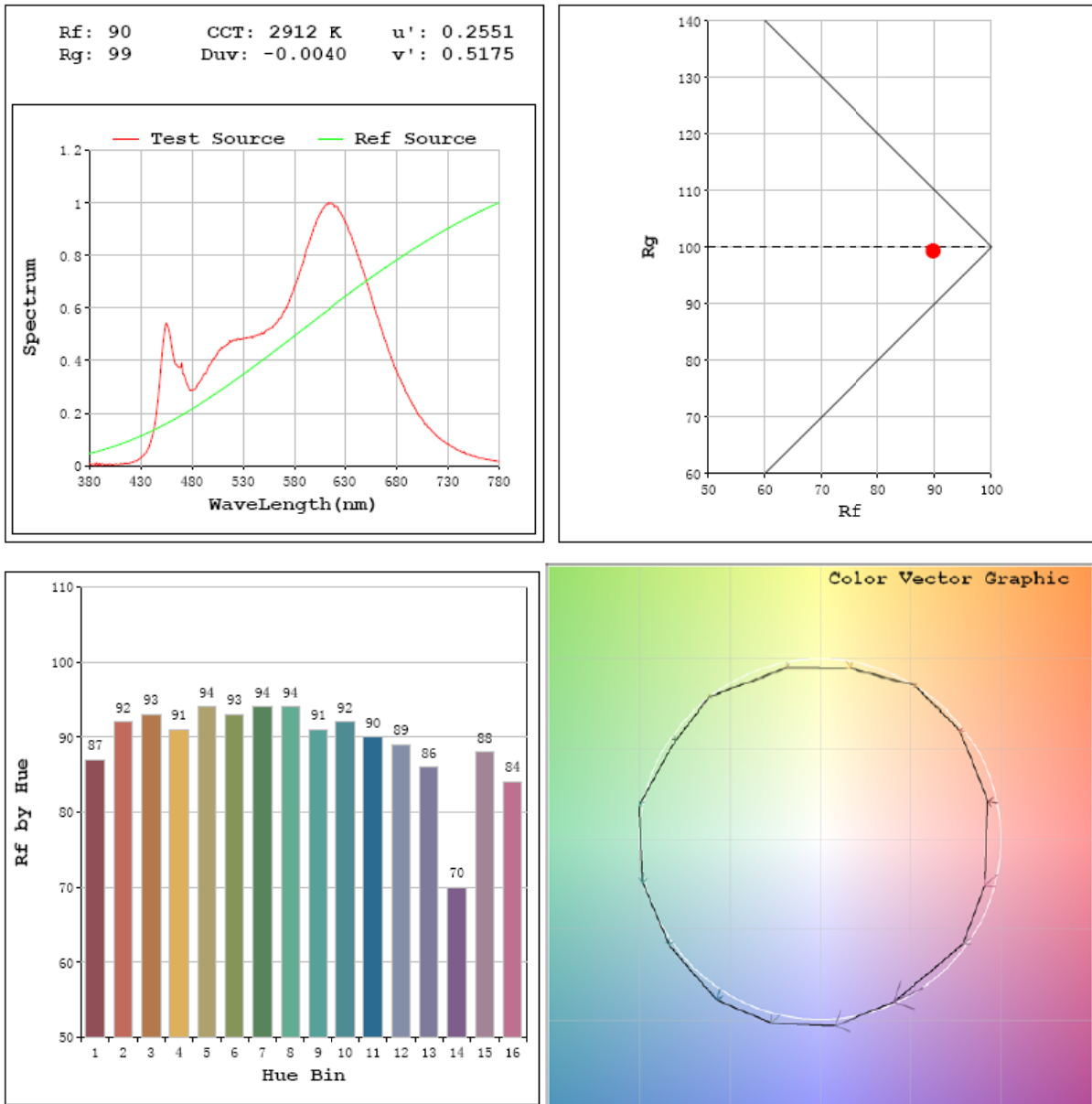
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1240.9
Luminous Efficacy (lm/W)	105.16
Beam Angle (°)	86.5
Center Beam Candle Power (cd)	646.0

Spectral Power Distribution & Chromaticity Diagram



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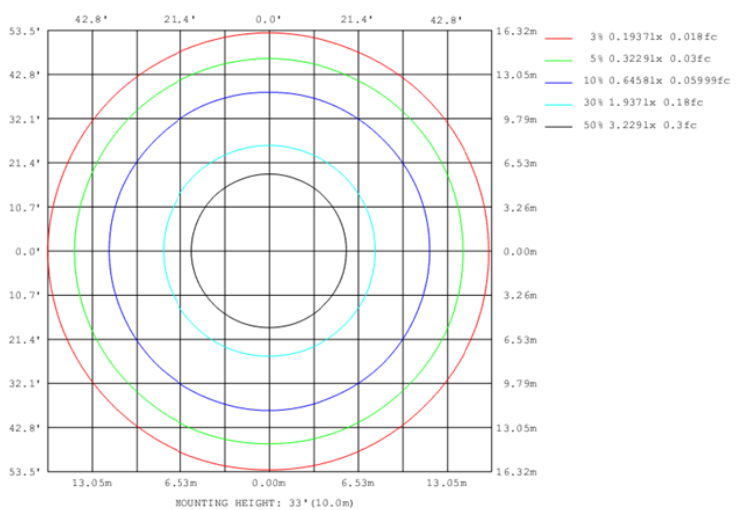
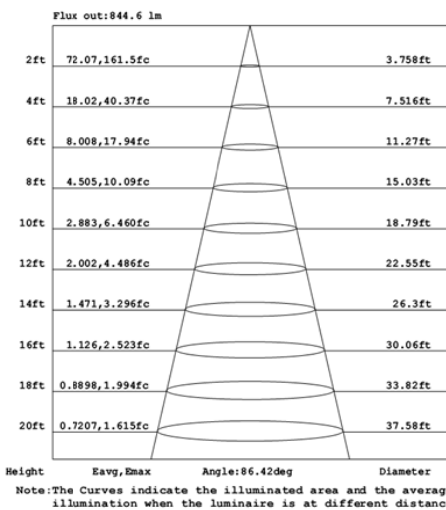
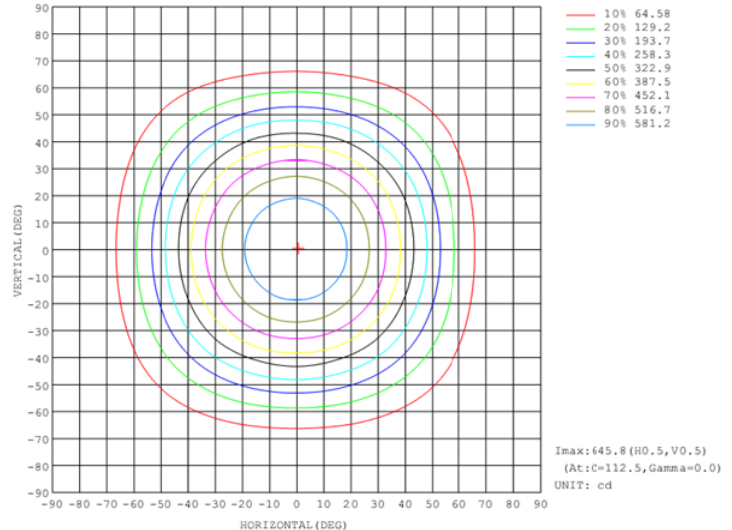
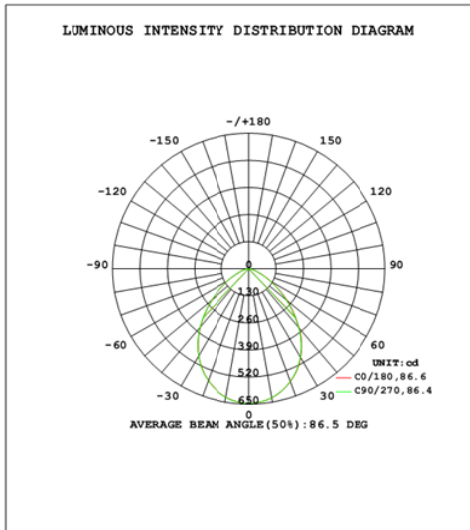


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	476.6	38.4%
0-40	745.1	60.0%
0-60	1129.0	91.0%
60-90	111.9	9.0%
70-100	37.5	3.0%
90-120	0.0	0.0%
0-90	1240.9	100.0%
90-180	0.0	0.0%
0-180	1240.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	60.8	4.9%	90-100	0.0	0.0%
10-20	170.2	13.7%	100-110	0.0	0.0%
20-30	245.7	19.8%	110-120	0.0	0.0%
30-40	268.5	21.6%	120-130	0.0	0.0%
40-50	230.7	18.6%	130-140	0.0	0.0%
50-60	153.2	12.3%	140-150	0.0	0.0%
60-70	74.3	6.0%	150-160	0.0	0.0%
70-80	30.0	2.4%	160-170	0.0	0.0%
80-90	7.6	0.6%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-03-14	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0100(WFD4)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202303140015	120.0	60	0.099	11.60	0.984

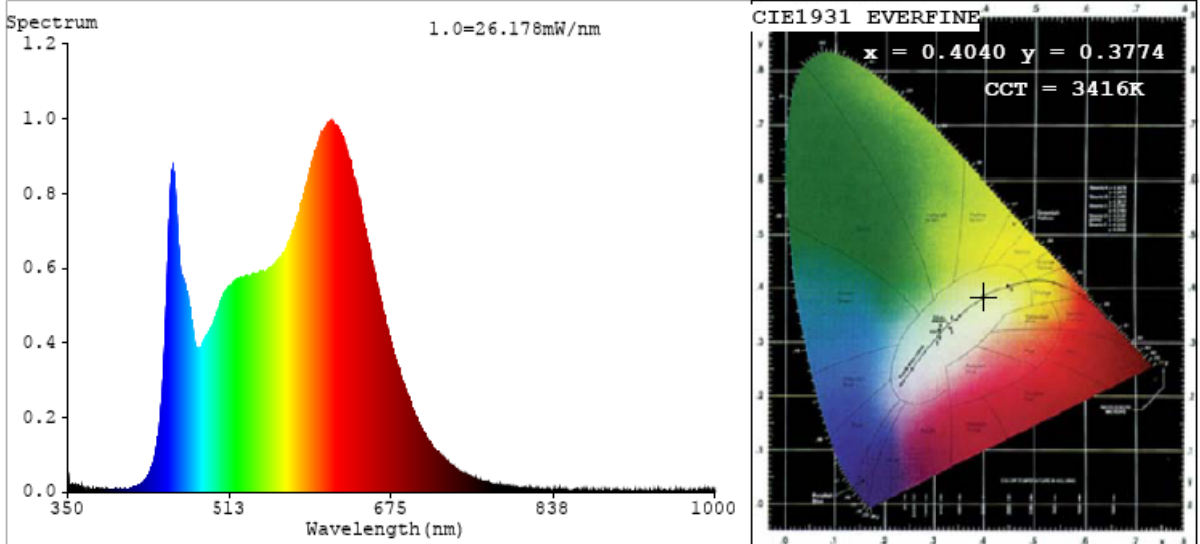
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	74
Frequency (Hz)	60	R2	94	R10	87
CCT (K)	3416	R3	92	R11	96
Duv	-0.0057	R4	97	R12	78
Chromaticity (x, y)	x=0.4040 y=0.3774	R5	95	R13	95
Chromaticity (u', v')	u'=0.2404 v'=0.5054	R6	88	R14	96
Color Rendering Index (CRI)	91.9	R7	88	R15	97
R9	74	R8	85	--	--

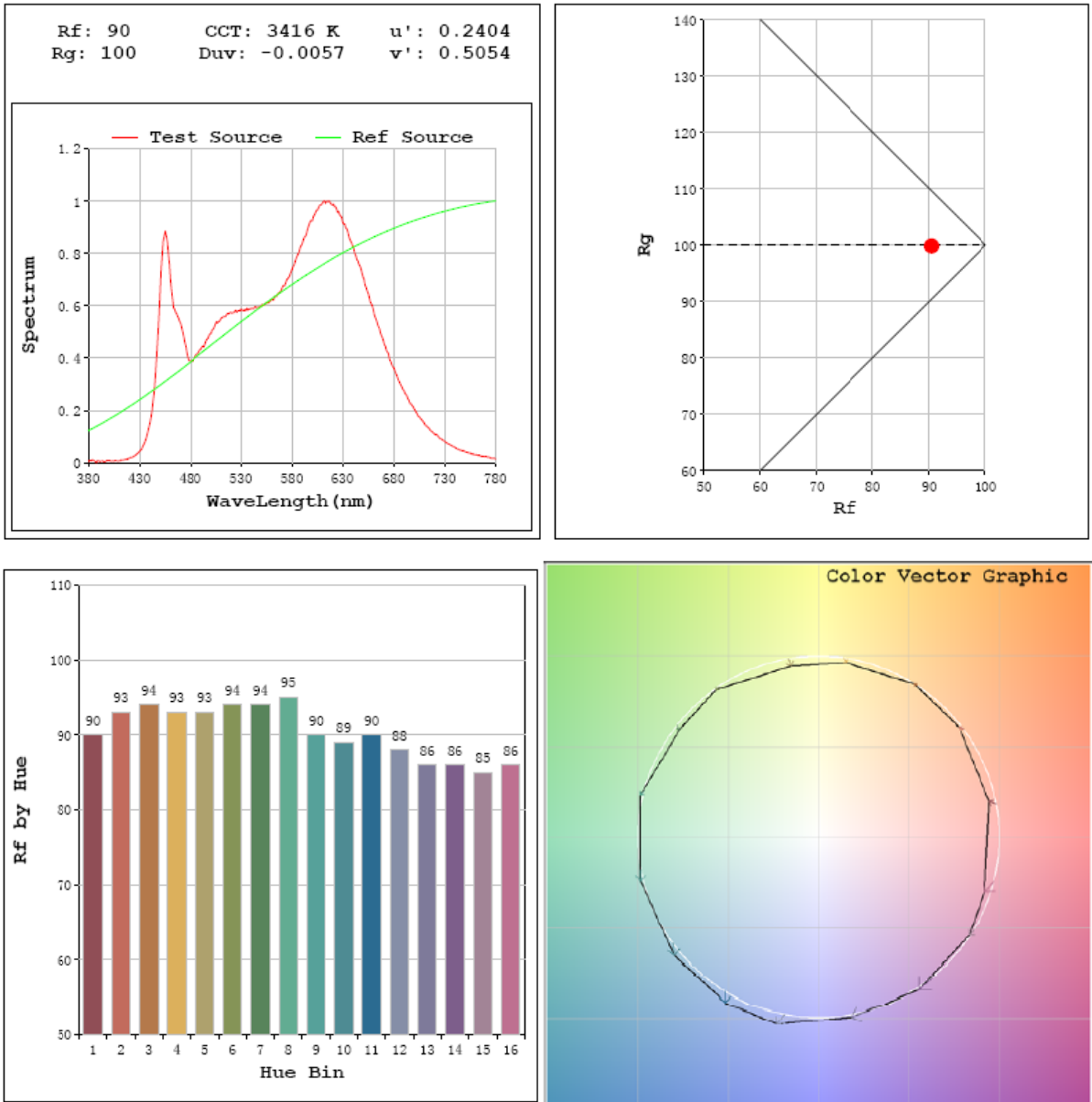
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1289.0
Luminous Efficacy (lm/W)	111.12
Beam Angle (°)	86.6
Center Beam Candle Power (cd)	670.4

Spectral Power Distribution & Chromaticity Diagram



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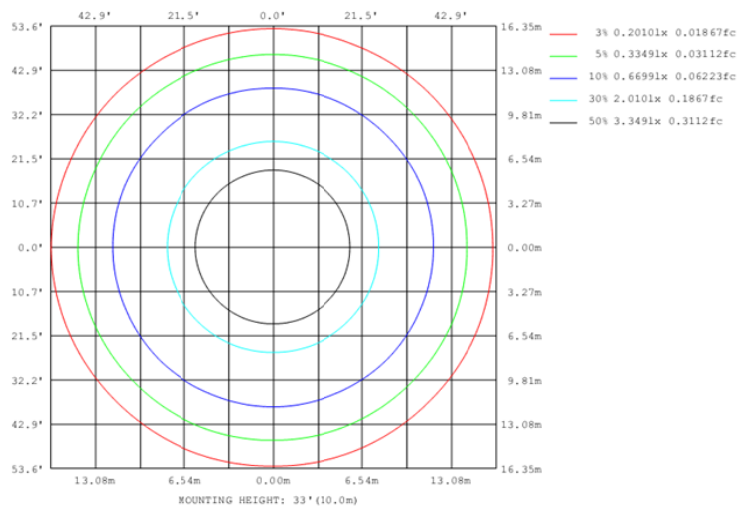
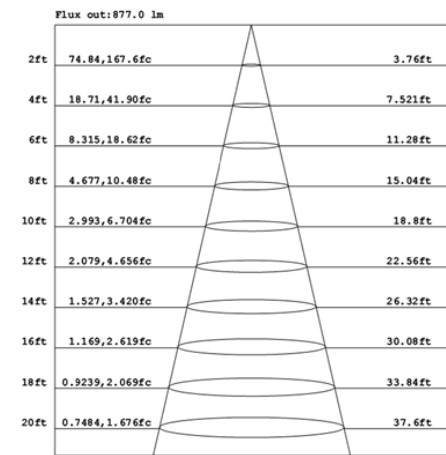
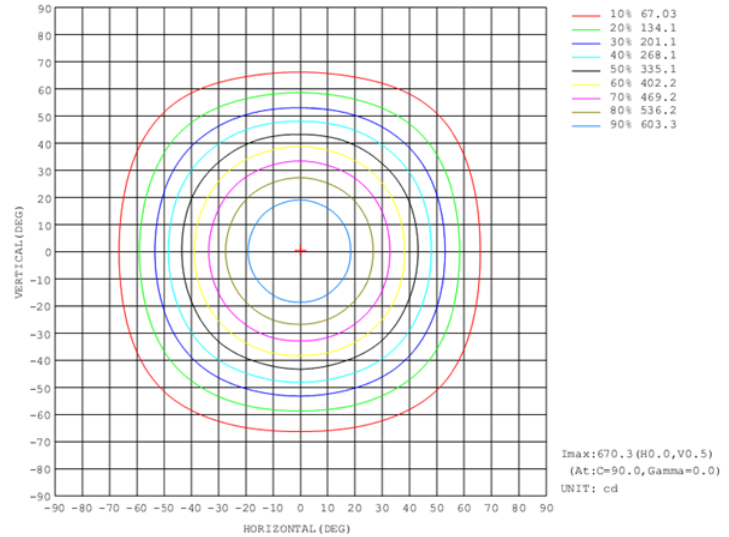
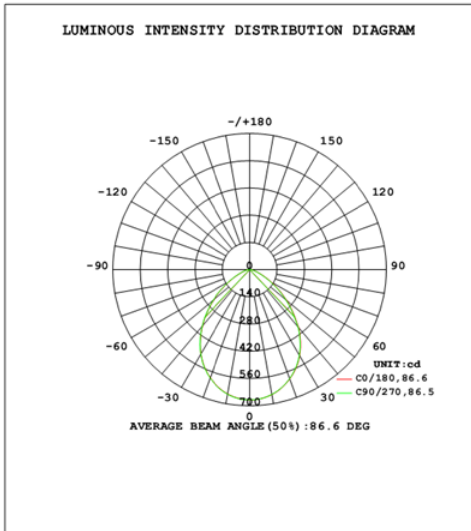


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	494.7	38.4%
0-40	773.4	60.0%
0-60	1172.7	91.0%
60-90	116.4	9.0%
70-100	39.0	3.0%
90-120	0.0	0.0%
0-90	1289.0	100.0%
90-180	0.0	0.0%
0-180	1289.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	63.1	4.9%	90-100	0.0	0.0%
10-20	176.6	13.7%	100-110	0.0	0.0%
20-30	255.0	19.8%	110-120	0.0	0.0%
30-40	278.8	21.6%	120-130	0.0	0.0%
40-50	239.8	18.6%	130-140	0.0	0.0%
50-60	159.4	12.4%	140-150	0.0	0.0%
60-70	77.4	6.0%	150-160	0.0	0.0%
70-80	31.1	2.4%	160-170	0.0	0.0%
80-90	7.9	0.6%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2023-03-14	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0100(WFD4)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202303140015	120.0	60	0.099	11.70	0.984

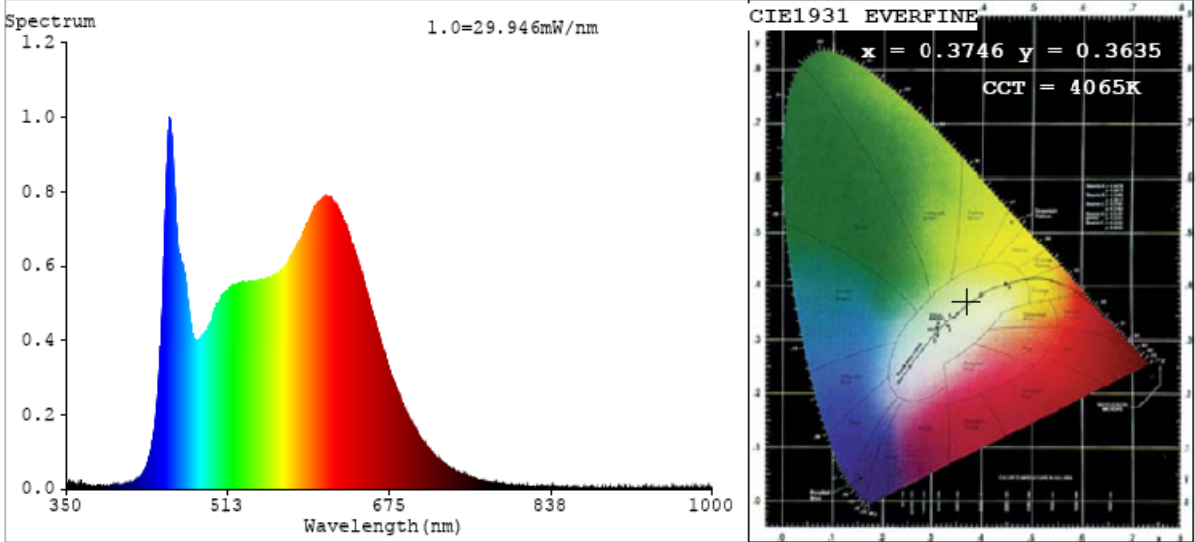
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	78
Frequency (Hz)	60	R2	95	R10	91
CCT (K)	4065	R3	94	R11	98
Duv	-0.0046	R4	95	R12	75
Chromaticity (x, y)	x=0.3746 y=0.3635	R5	95	R13	96
Chromaticity (u', v')	u'=0.2266 v'=0.4947	R6	91	R14	98
Color Rendering Index (CRI)	93.1	R7	90	R15	97
R9	78	R8	88	--	--

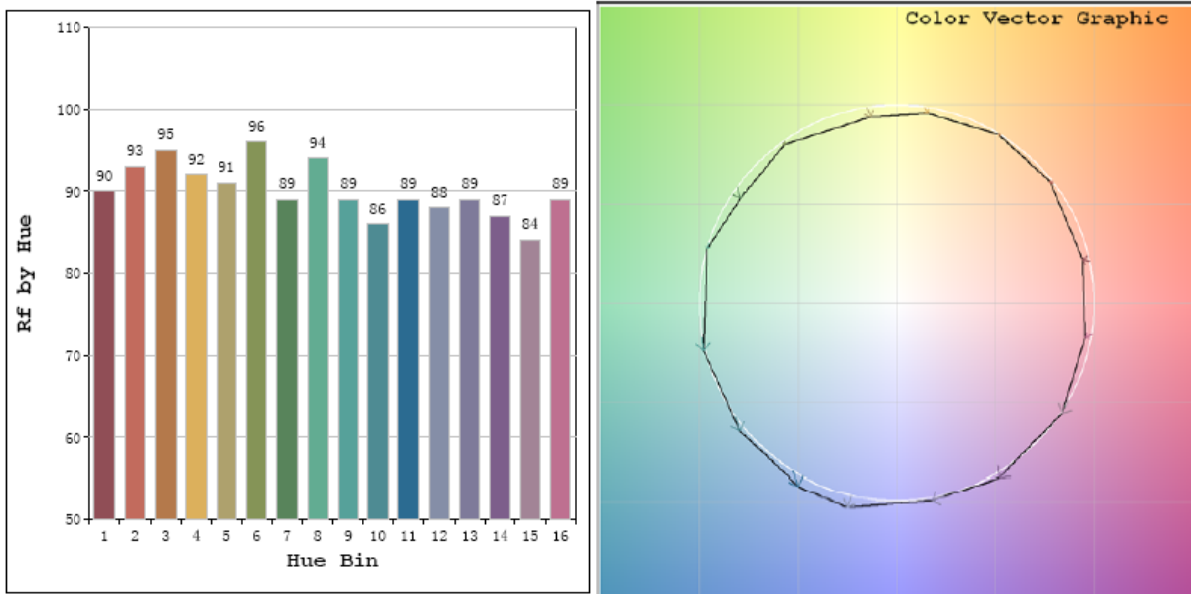
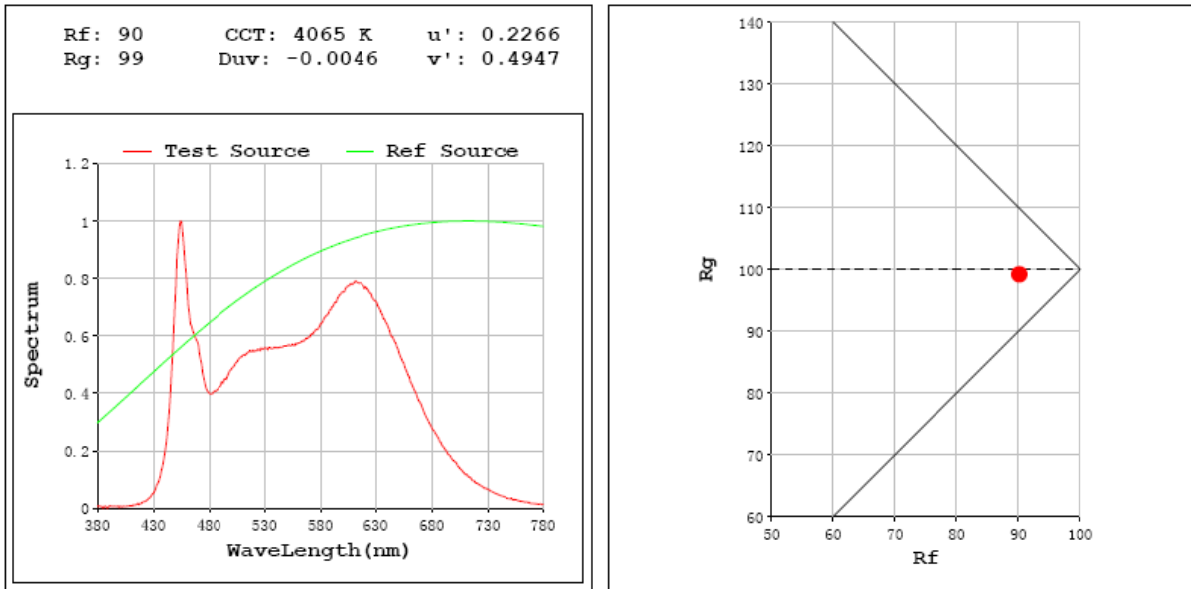
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1318.2
Luminous Efficacy (lm/W)	112.67
Beam Angle (°)	86.6
Center Beam Candle Power (cd)	684.8

Spectral Power Distribution & Chromaticity Diagram



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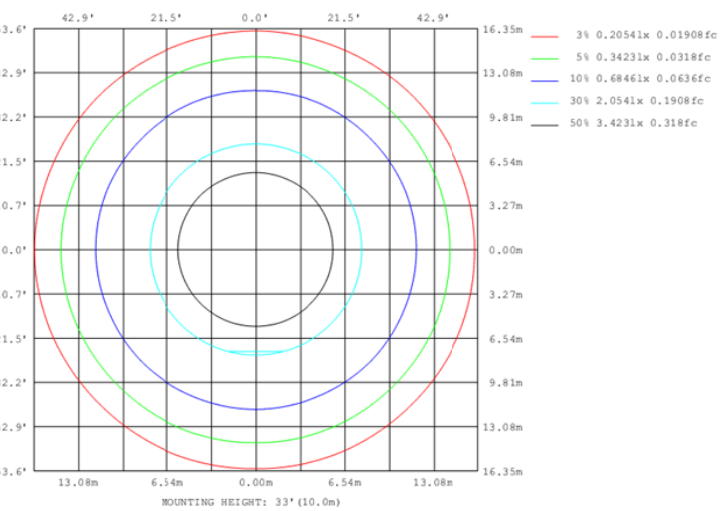
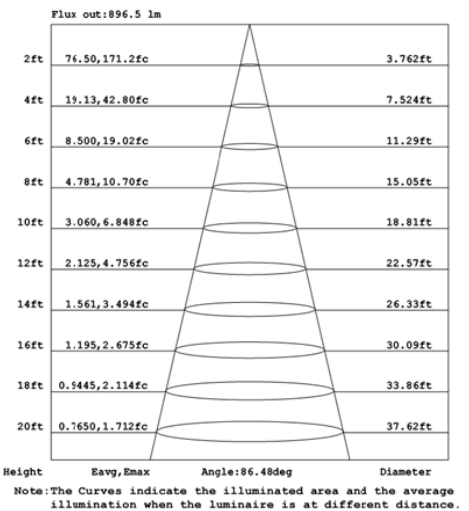
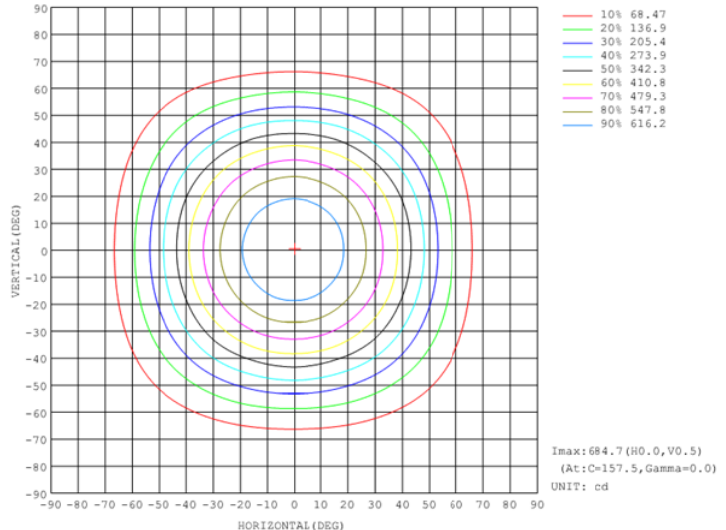
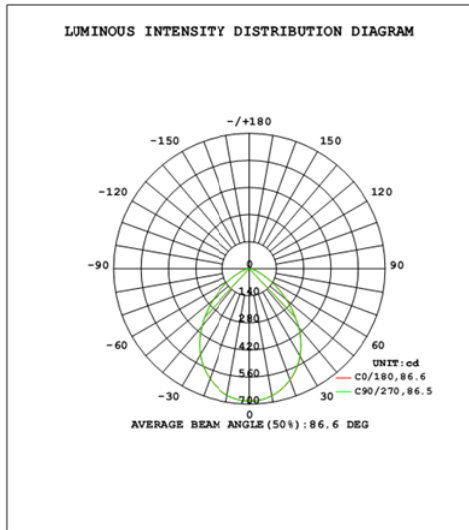


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	505.5	38.3%
0-40	790.4	60.0%
0-60	1199.1	91.0%
60-90	119.2	9.0%
70-100	39.9	3.0%
90-120	0.0	0.0%
0-90	1318.2	100.0%
90-180	0.0	0.0%
0-180	1318.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	64.4	4.9%	90-100	0.0	0.0%
10-20	180.5	13.7%	100-110	0.0	0.0%
20-30	260.6	19.8%	110-120	0.0	0.0%
30-40	285.0	21.6%	120-130	0.0	0.0%
40-50	245.4	18.6%	130-140	0.0	0.0%
50-60	163.2	12.4%	140-150	0.0	0.0%
60-70	79.3	6.0%	150-160	0.0	0.0%
70-80	31.9	2.4%	160-170	0.0	0.0%
80-90	8.0	0.6%	170-180	0.0	0.0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2023-03-14	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0100(WFD4)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202303140015	120.0	60	0.101	11.90	0.985

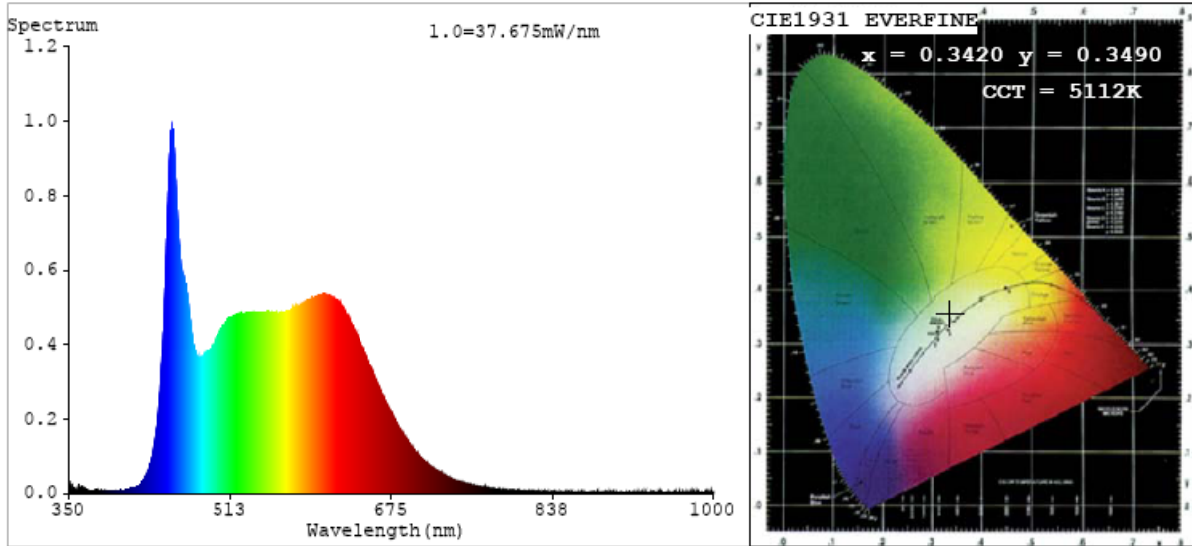
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	70
Frequency (Hz)	60	R2	98	R10	99
CCT (K)	5112	R3	97	R11	97
Duv	-0.0001	R4	94	R12	74
Chromaticity (x, y)	x=0.3420 y=0.3490	R5	95	R13	99
Chromaticity (u', v')	u'=0.2104 v'=0.4829	R6	94	R14	99
Color Rendering Index (CRI)	94.0	R7	91	R15	94
R9	70	R8	86	--	--

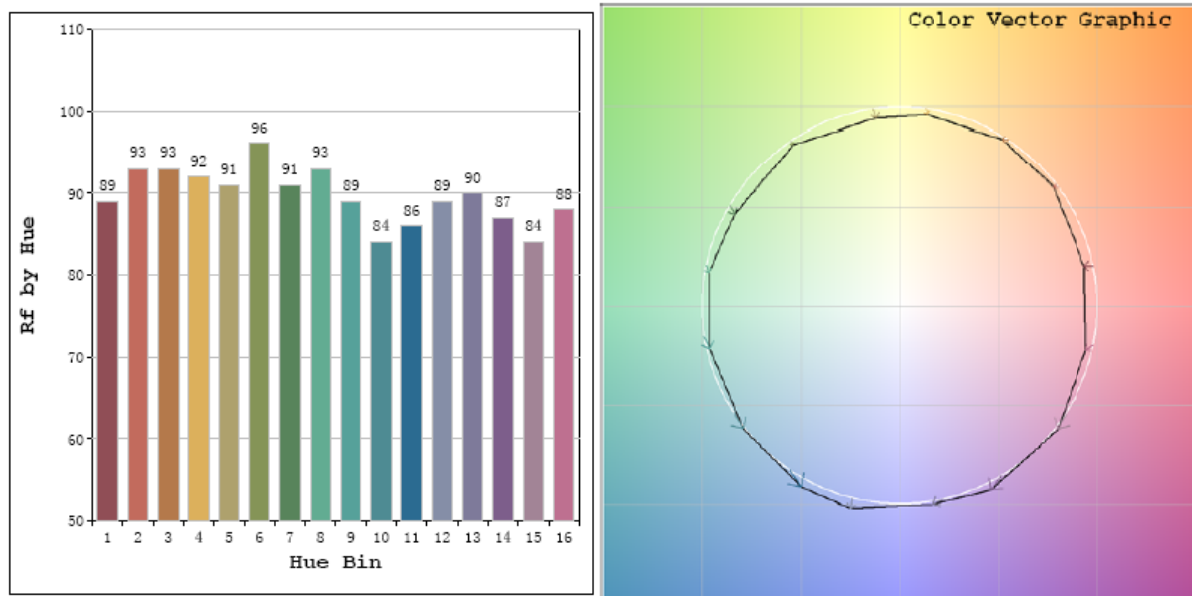
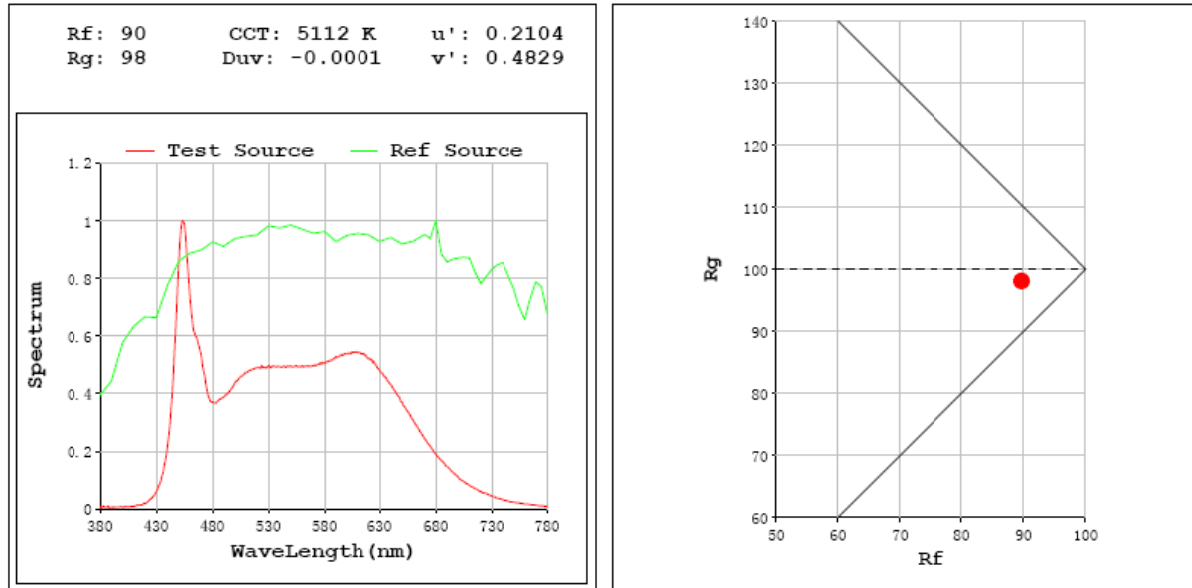
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1331.1
Luminous Efficacy (lm/W)	111.86
Beam Angle (°)	86.6
Center Beam Candle Power (cd)	691.0

Spectral Power Distribution & Chromaticity Diagram



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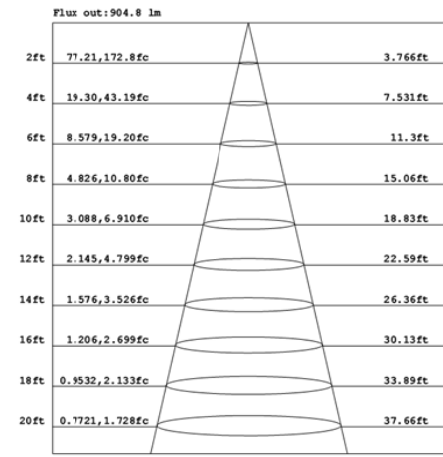
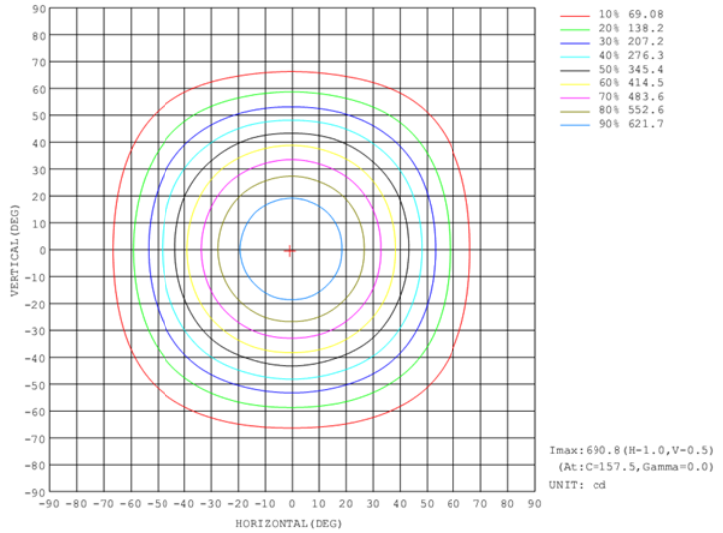
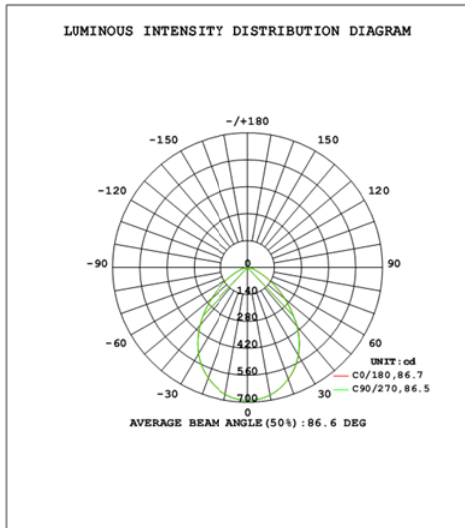


Zonal Lumen Tabulation

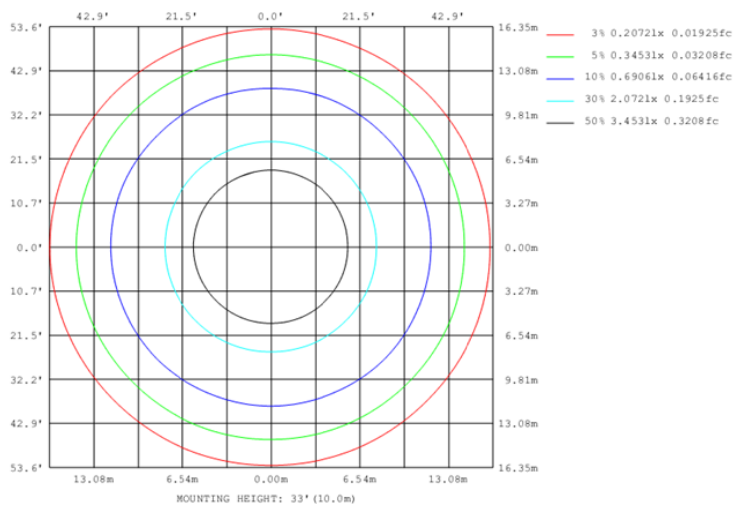
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	510.0	38.3%
0-40	797.7	59.9%
0-60	1210.6	90.9%
60-90	120.6	9.1%
70-100	40.3	3.0%
90-120	0.0	0.0%
0-90	1331.1	100.0%
90-180	0.0	0.0%
0-180	1331.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	65.0	4.9%	90-100	0.0	0.0%
10-20	182.1	13.7%	100-110	0.0	0.0%
20-30	263.0	19.8%	110-120	0.0	0.0%
30-40	287.6	21.6%	120-130	0.0	0.0%
40-50	247.9	18.6%	130-140	0.0	0.0%
50-60	165.0	12.4%	140-150	0.0	0.0%
60-70	80.2	6.0%	150-160	0.0	0.0%
70-80	32.2	2.4%	160-170	0.0	0.0%
80-90	8.1	0.6%	170-180	0.0	0.0%

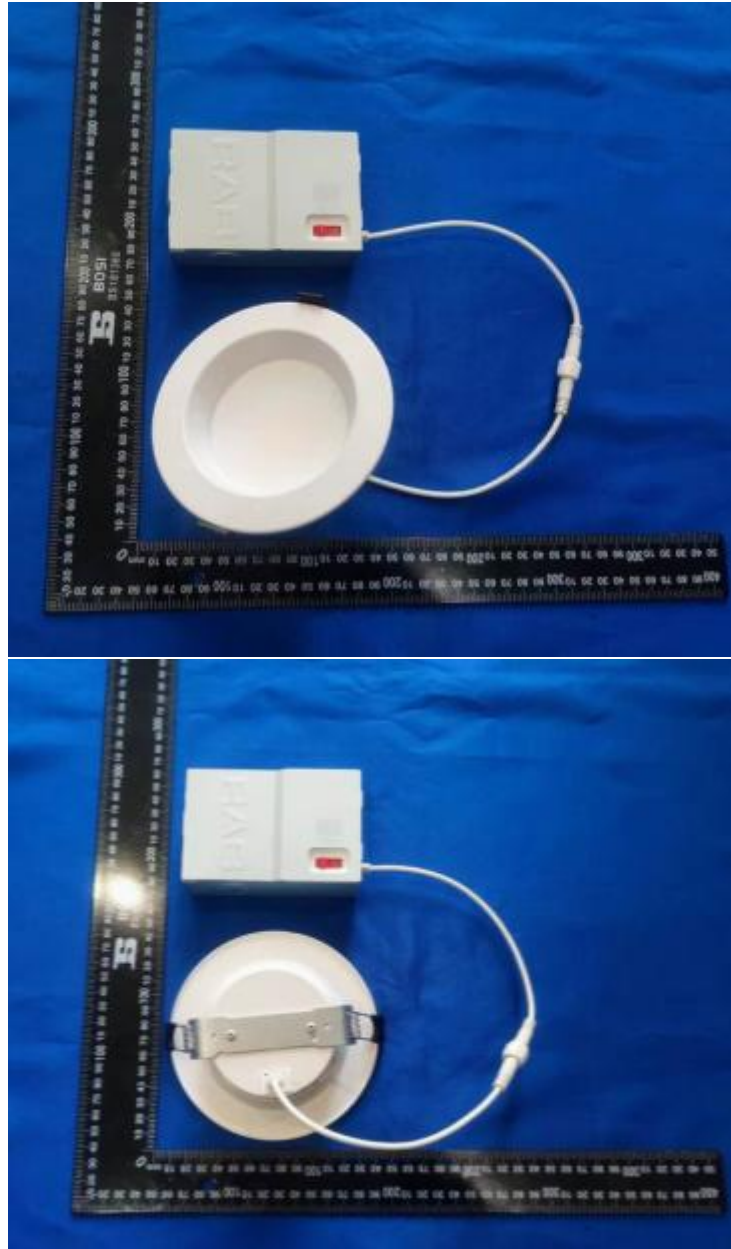
Photometric Data



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



3. Product Photo



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