

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):
DLS0181(SUMO34-R-15)

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

**Type of
Luminaire:** Downlights

Report Date: 2023-10-11

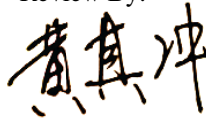
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	17.0 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	2023-10-11	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0181(SUMO34-R-15)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100014	120.0	60	0.146	17.00	0.966

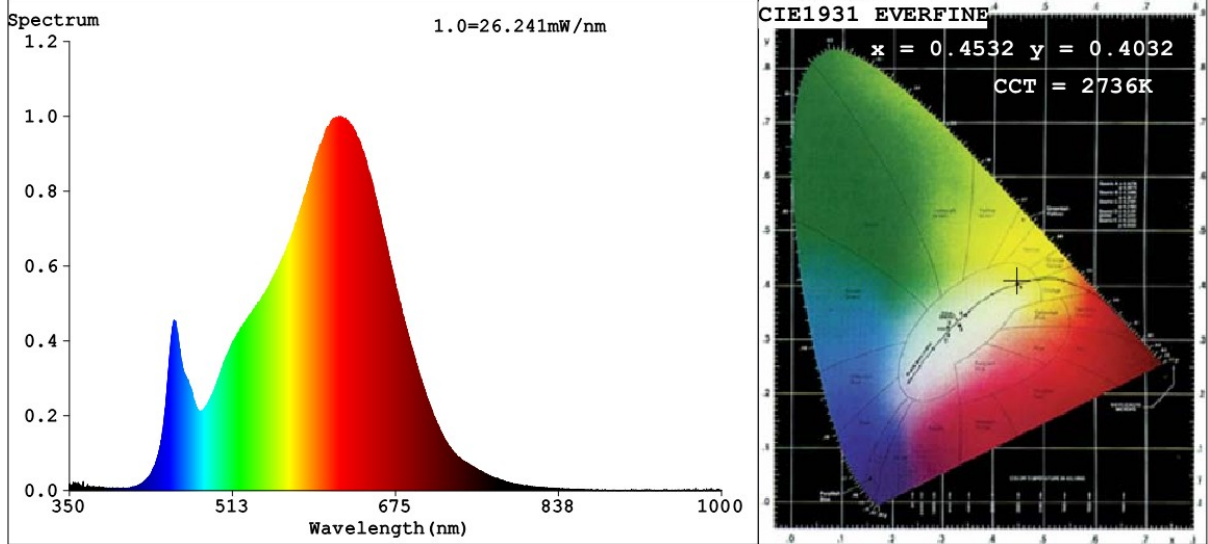
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	56
Frequency (Hz)	60	R2	98	R10	96
CCT (K)	2736	R3	97	R11	94
Duv	-0.0022	R4	92	R12	85
Chromaticity (x, y)	x=0.4532 y=0.4032	R5	94	R13	95
Chromaticity (u', v')	u'=0.2616 v'=0.5235	R6	96	R14	99
Color Rendering Index (CRI)	92.4	R7	89	R15	89
R9	56	R8	79	--	--

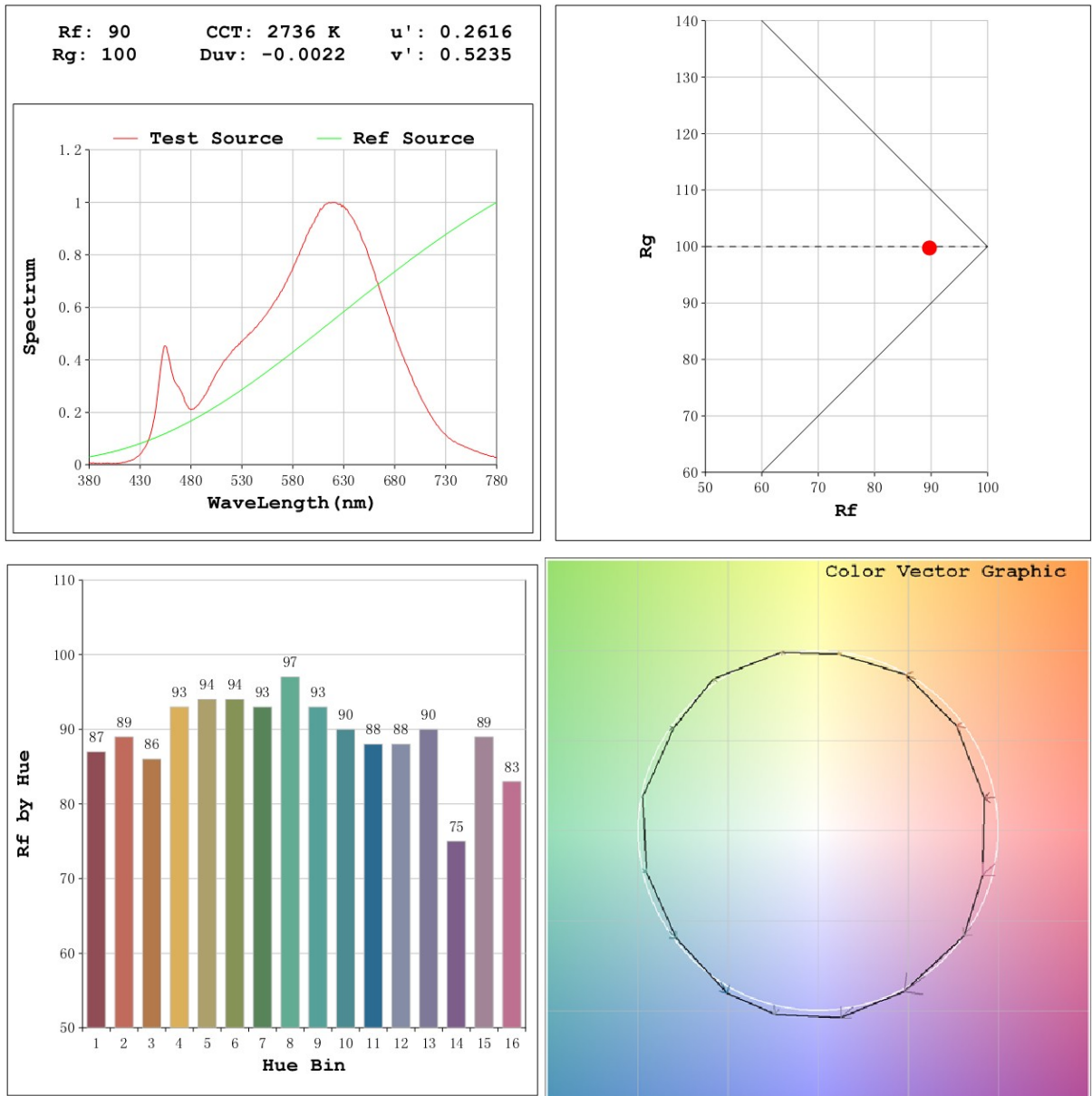
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1209.8
Luminous Efficacy (lm/W)	71.16
Beam Angle (°)	112.7
Center Beam Candle Power (cd)	424.2

Spectral Power Distribution & Chromaticity Diagram



TM30

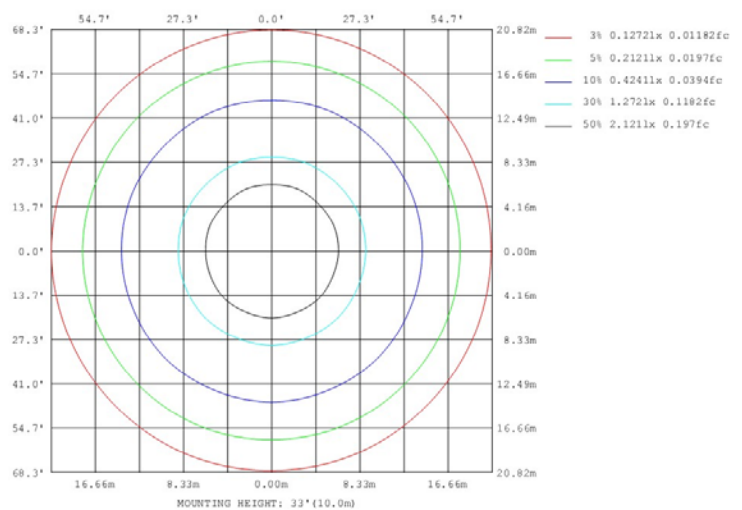
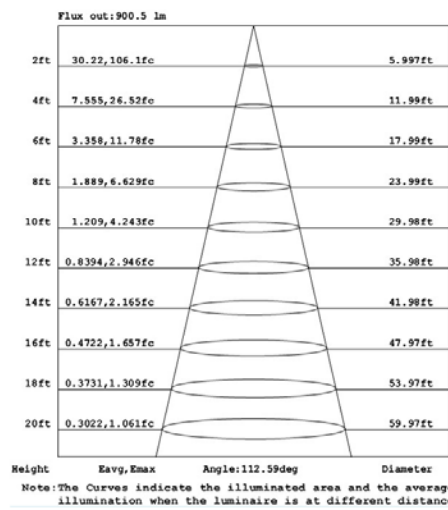
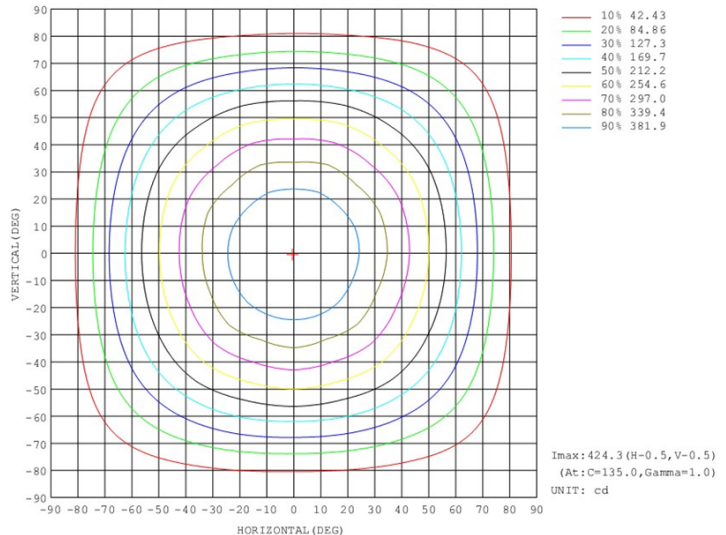
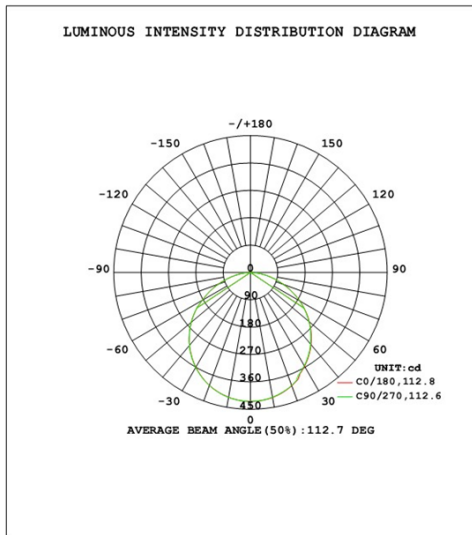


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	329.6	27.2%
0-40	539.7	44.6%
0-60	955.5	79.0%
60-90	254.3	21.0%
70-100	105.9	8.8%
90-120	0.0	0.0%
0-90	1209.8	100.0%
90-180	0.0	0.0%
0-180	1209.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	40.1	3.3%	90-100	0.0	0.0%
10-20	115.2	9.5%	100-110	0.0	0.0%
20-30	174.3	14.4%	110-120	0.0	0.0%
30-40	210.1	17.4%	120-130	0.0	0.0%
40-50	218.6	18.1%	130-140	0.0	0.0%
50-60	197.3	16.3%	140-150	0.0	0.0%
60-70	148.4	12.3%	150-160	0.0	0.0%
70-80	83.9	6.9%	160-170	0.0	0.0%
80-90	22.0	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-10-11	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0181(SUMO34-R-15)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100014	120.0	60	0.144	16.70	0.965

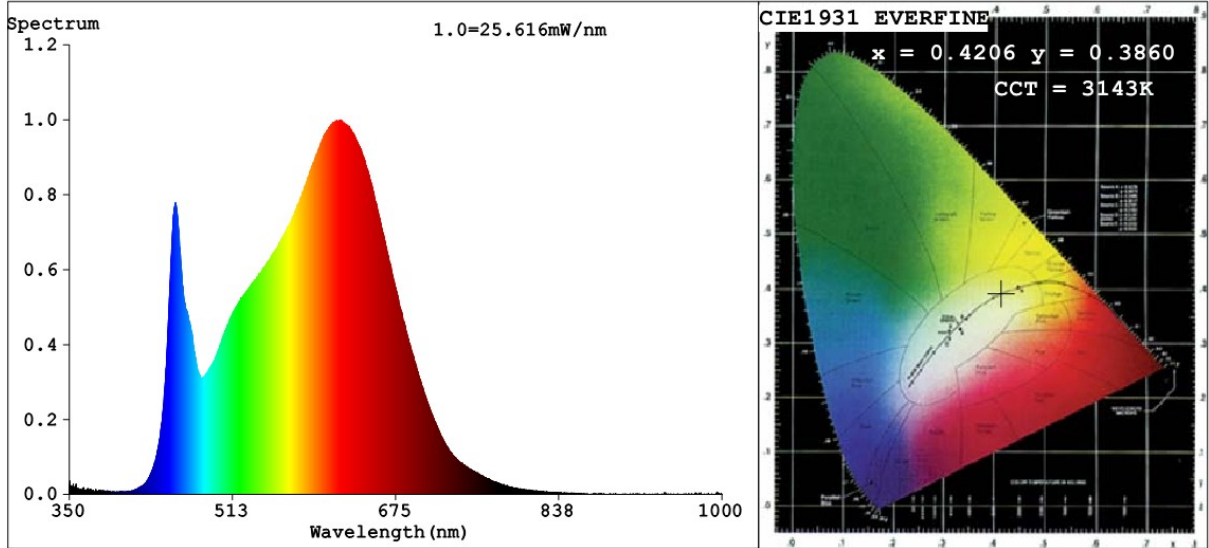
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	70
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	3143	R3	96	R11	95
Duv	-0.0050	R4	94	R12	80
Chromaticity (x, y)	x=0.4206 y=0.3860	R5	96	R13	99
Chromaticity (u', v')	u'=0.2477 v'=0.5116	R6	94	R14	99
Color Rendering Index (CRI)	93.7	R7	90	R15	94
R9	70	R8	85	--	--

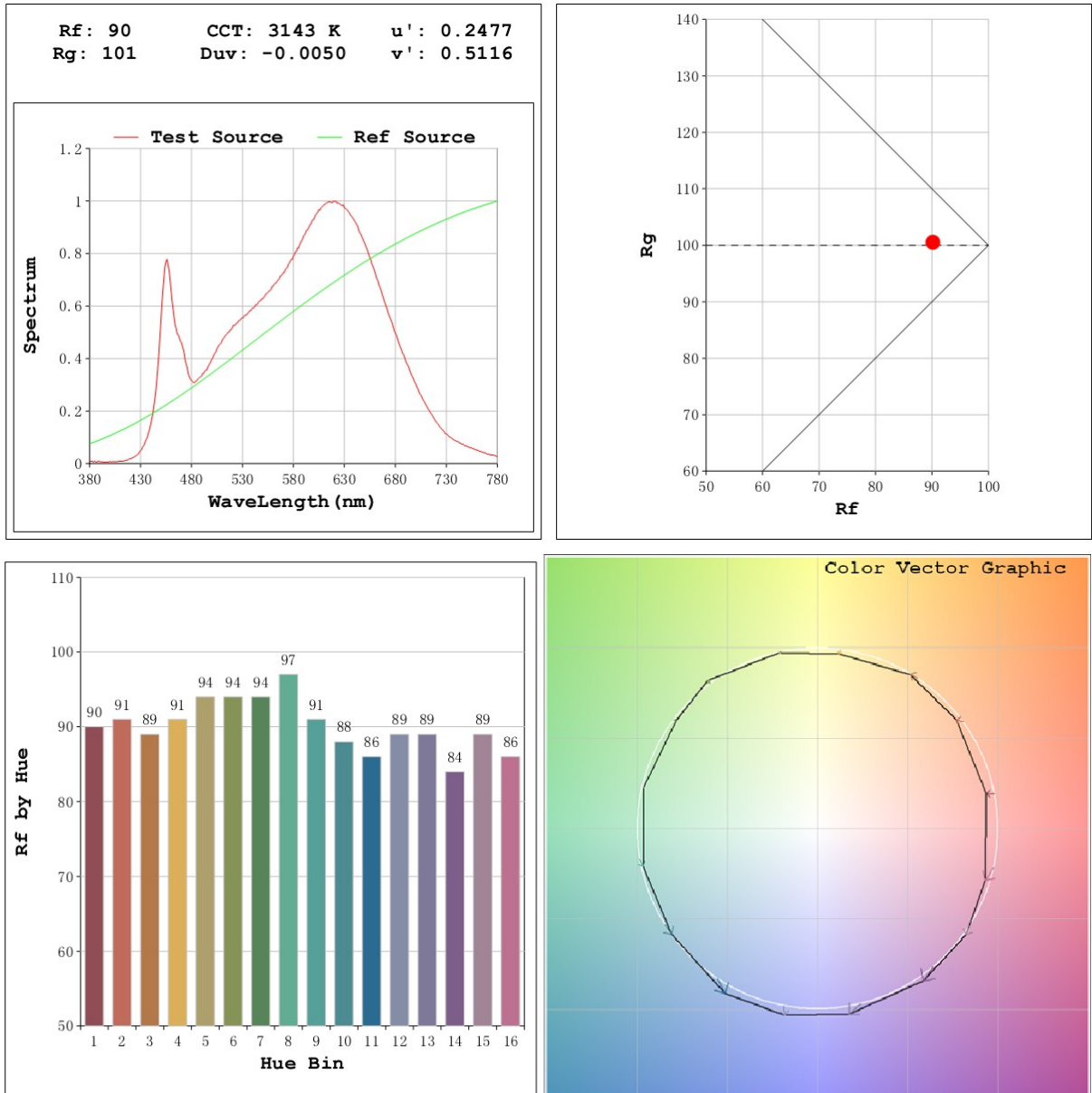
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1271.7
Luminous Efficacy (lm/W)	76.15
Beam Angle (°)	112.7
Center Beam Candle Power (cd)	445.5

Spectral Power Distribution & Chromaticity Diagram



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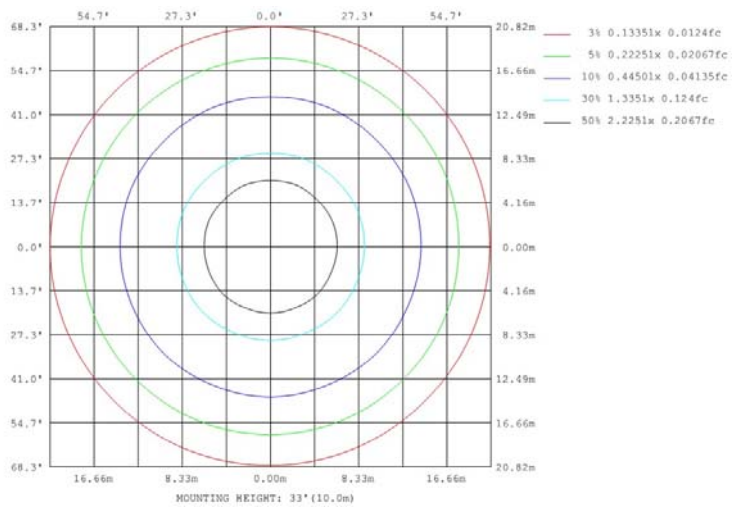
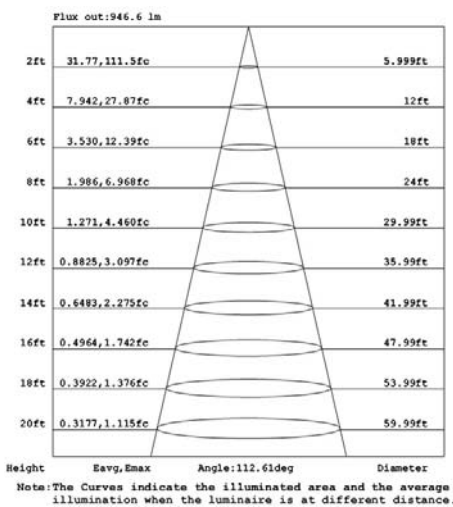
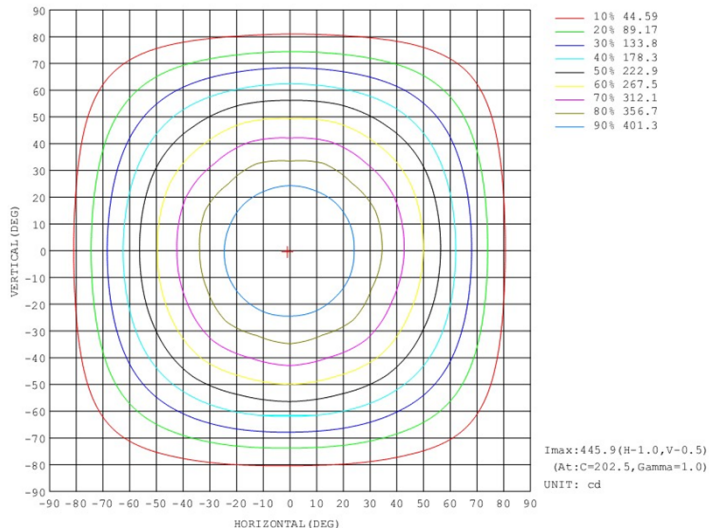
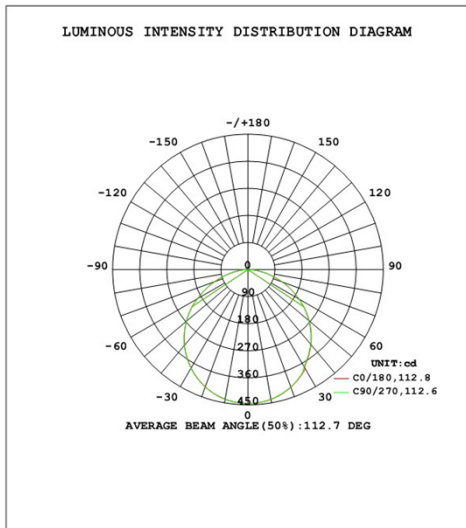


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	347.0	27.3%
0-40	567.7	44.6%
0-60	1004.7	79.0%
60-90	267.0	21.0%
70-100	111.2	8.7%
90-120	0.0	0.0%
0-90	1271.7	100.0%
90-180	0.0	0.0%
0-180	1271.7	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	42.2	3.3%	90-100	0.0	0.0%
10-20	121.0	9.5%	100-110	0.0	0.0%
20-30	183.8	14.5%	110-120	0.0	0.0%
30-40	220.7	17.4%	120-130	0.0	0.0%
40-50	229.6	18.1%	130-140	0.0	0.0%
50-60	207.5	16.3%	140-150	0.0	0.0%
60-70	155.9	12.3%	150-160	0.0	0.0%
70-80	88.1	6.9%	160-170	0.0	0.0%
80-90	23.1	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2023-10-11	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0181(SUMO34-R-15)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100014	120.0	60	0.140	16.30	0.964

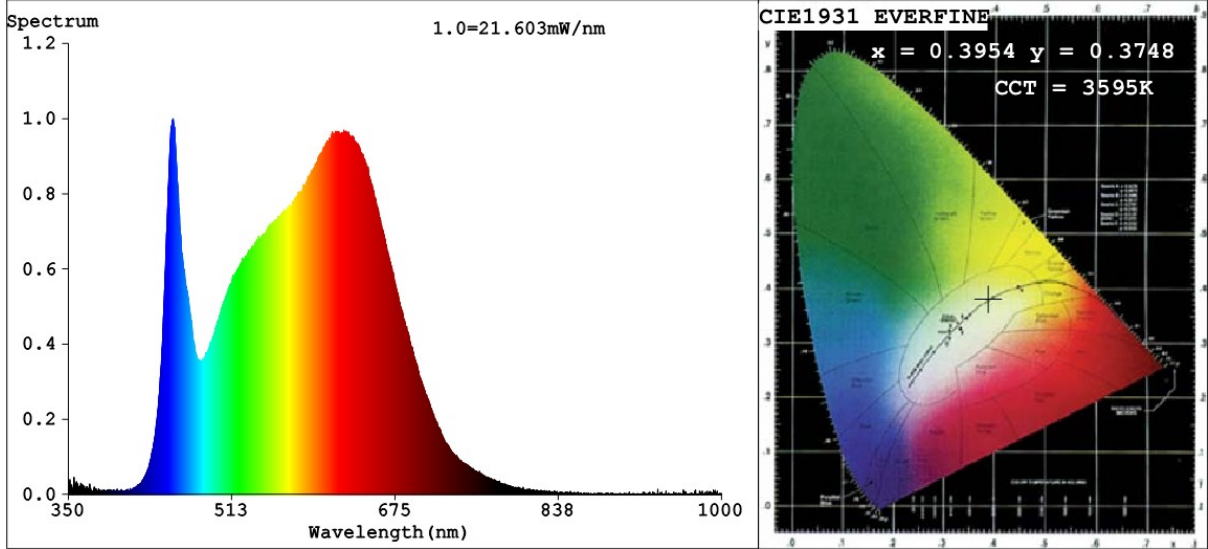
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	84
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3595	R3	98	R11	97
Duv	-0.0049	R4	97	R12	78
Chromaticity (x, y)	x=0.3954 y=0.3748	R5	97	R13	99
Chromaticity (u', v')	u'=0.2359 v'=0.5029	R6	95	R14	99
Color Rendering Index (CRI)	96.2	R7	94	R15	98
R9	84	R8	92	--	--

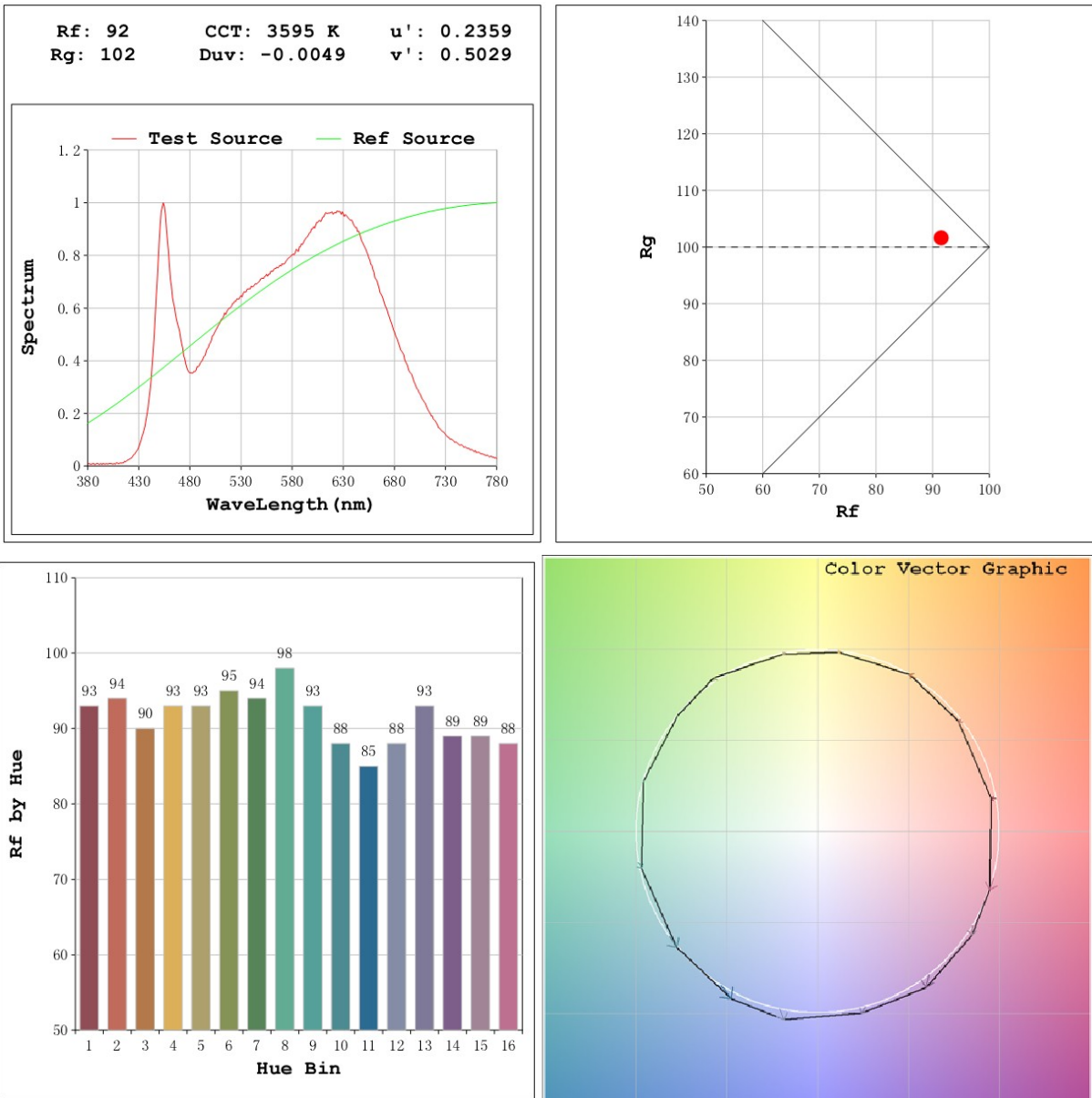
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1342.4
Luminous Efficacy (lm/W)	82.36
Beam Angle (°)	112.7
Center Beam Candle Power (cd)	470.1

Spectral Power Distribution & Chromaticity Diagram



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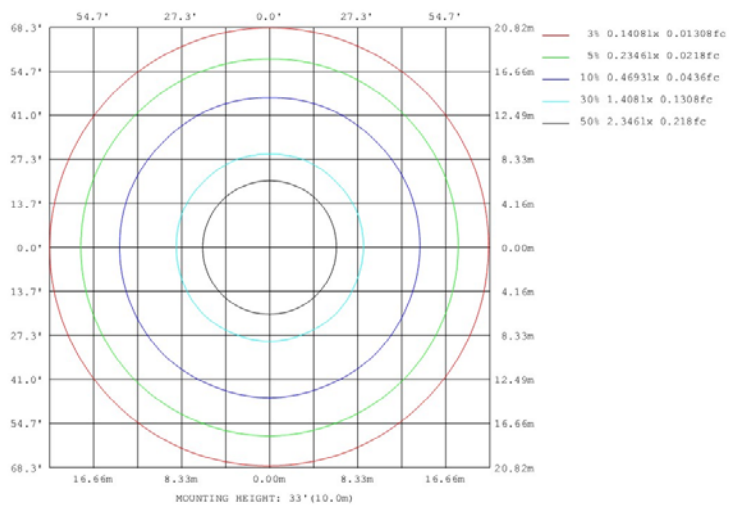
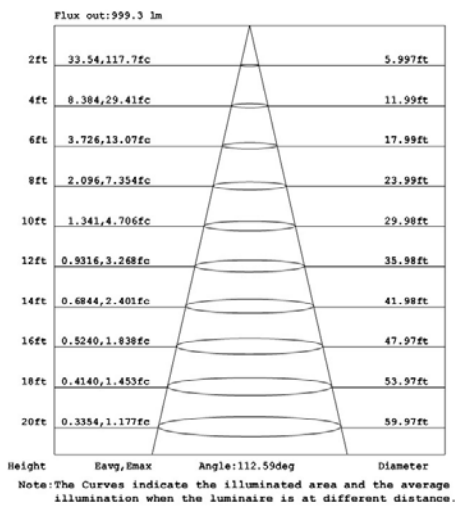
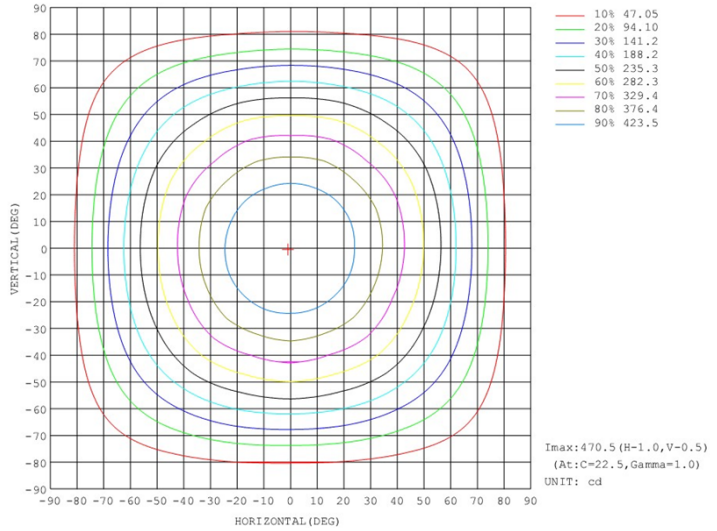
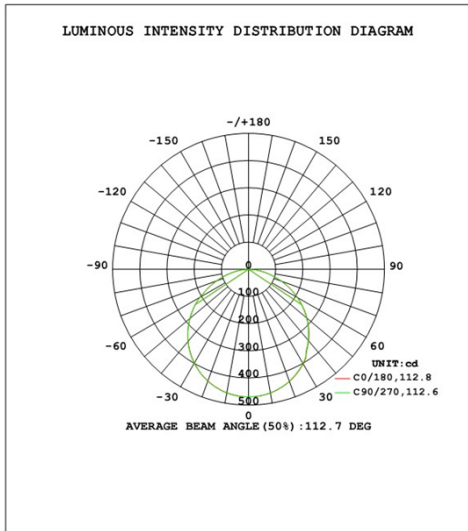


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	366.1	27.3%
0-40	599.7	44.7%
0-60	1060.7	79.0%
60-90	281.8	21.0%
70-100	117.2	8.7%
90-120	0.0	0.0%
0-90	1342.4	100.0%
90-180	0.0	0.0%
0-180	1342.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	44.5	3.3%	90-100	0.0	0.0%
10-20	127.6	9.5%	100-110	0.0	0.0%
20-30	194.0	14.5%	110-120	0.0	0.0%
30-40	233.5	17.4%	120-130	0.0	0.0%
40-50	242.1	18.0%	130-140	0.0	0.0%
50-60	218.9	16.3%	140-150	0.0	0.0%
60-70	164.5	12.3%	150-160	0.0	0.0%
70-80	92.9	6.9%	160-170	0.0	0.0%
80-90	24.4	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2023-10-11	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0181(SUMO34-R-15)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100014	120.0	60	0.140	16.30	0.964

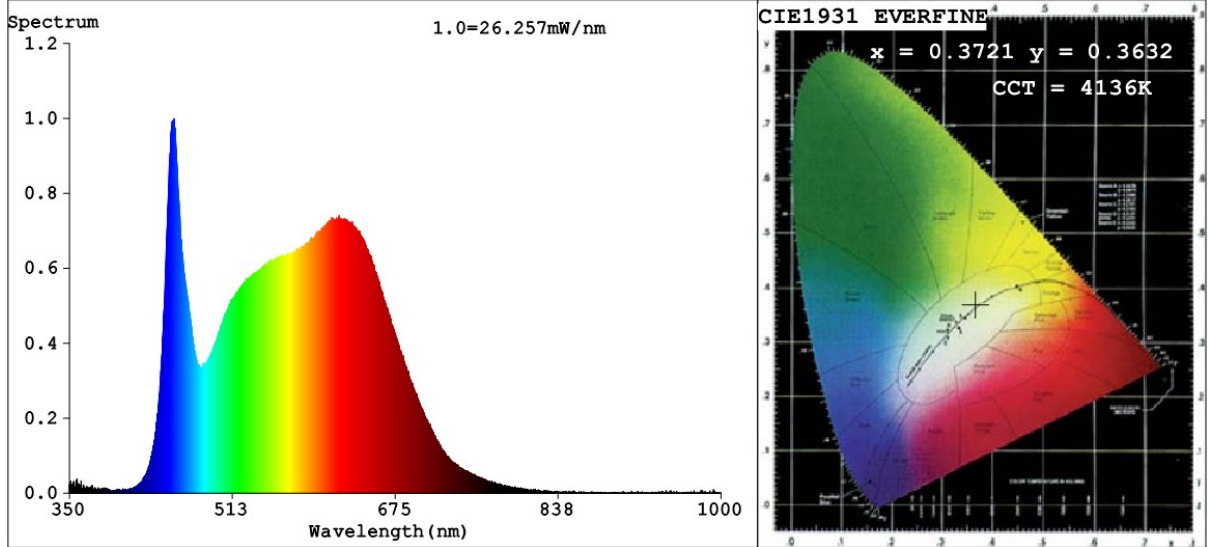
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	87
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	4136	R3	97	R11	96
Duv	-0.0040	R4	96	R12	73
Chromaticity (x, y)	x=0.3721 y=0.3632	R5	96	R13	99
Chromaticity (u', v')	u'=0.2251 v'=0.4942	R6	95	R14	98
Color Rendering Index (CRI)	96.2	R7	95	R15	97
R9	87	R8	93	--	--

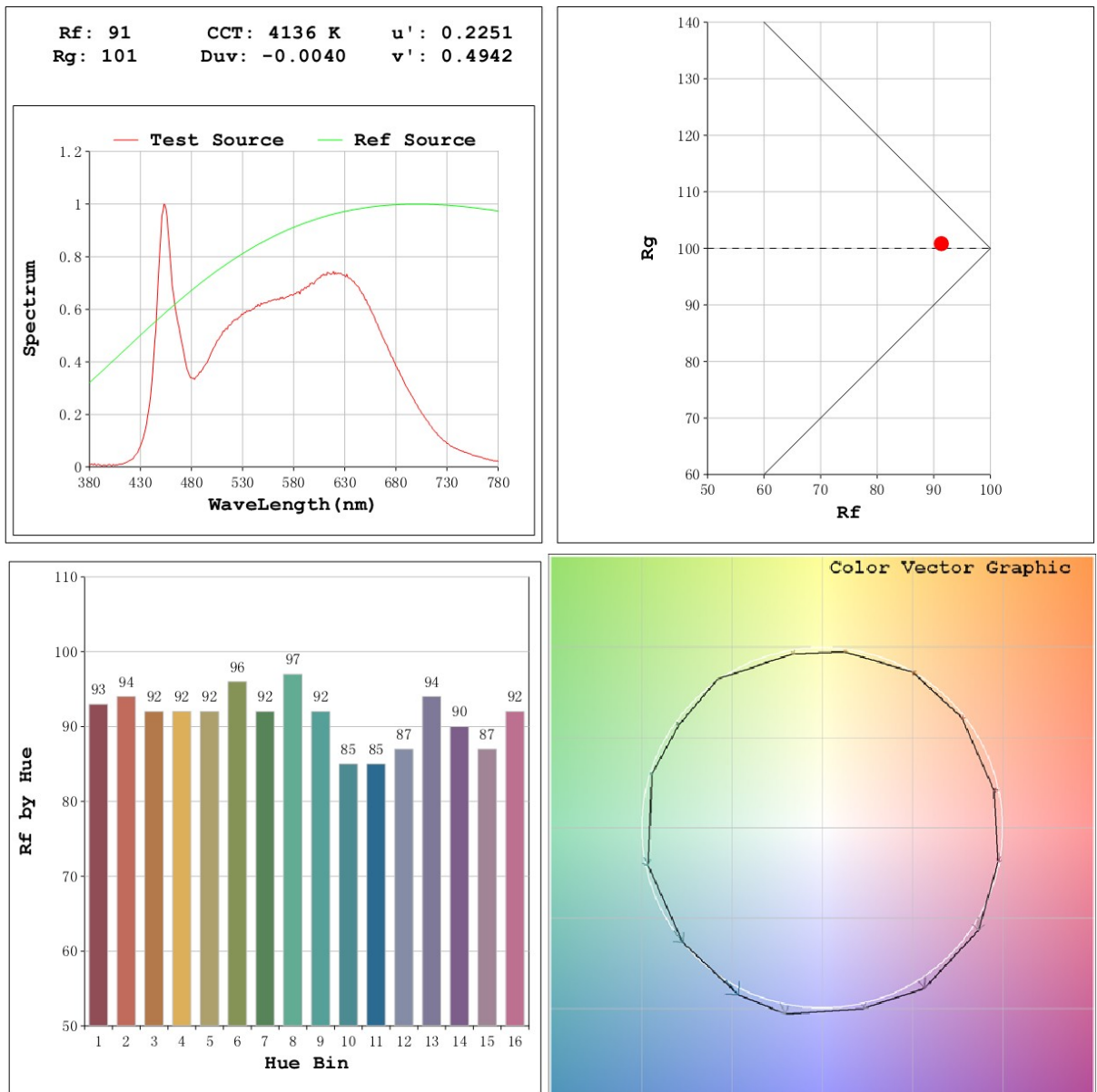
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1369.9
Luminous Efficacy (lm/W)	84.04
Beam Angle (°)	112.7
Center Beam Candle Power (cd)	479.6

Spectral Power Distribution & Chromaticity Diagram



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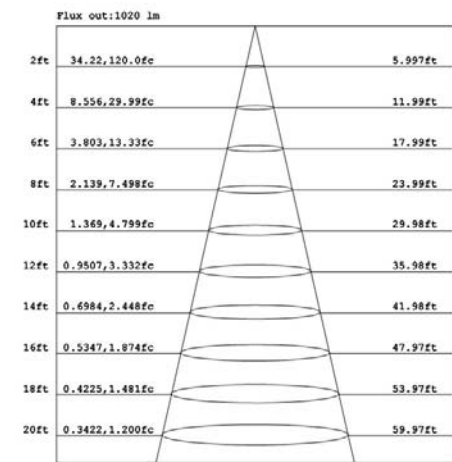
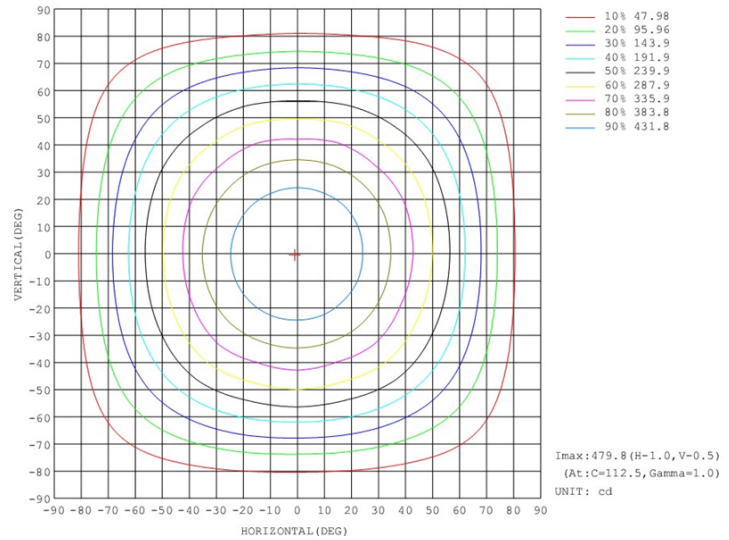
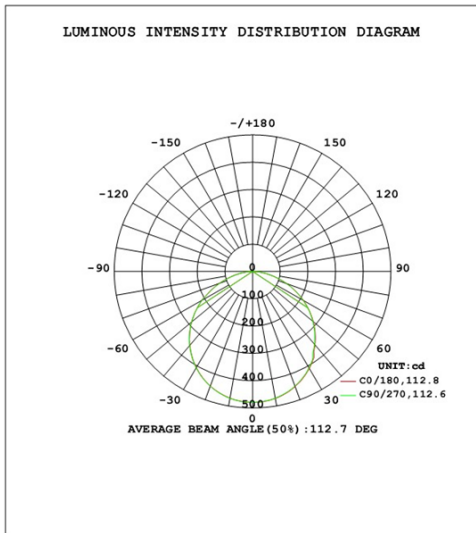


Zonal Lumen Tabulation

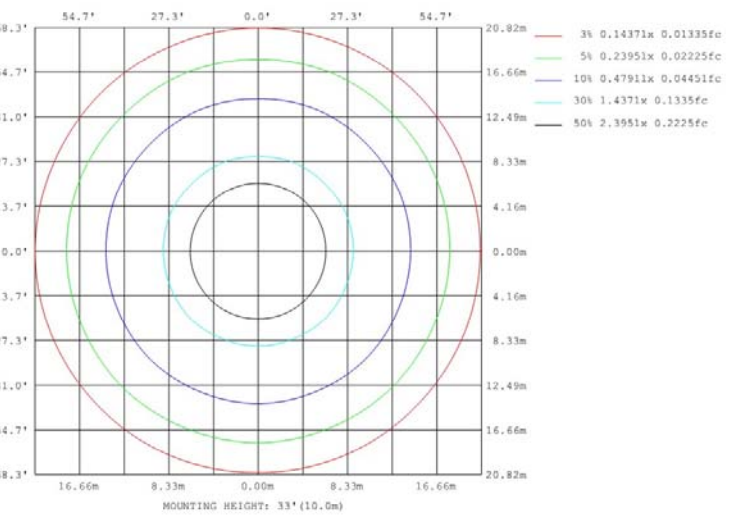
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	373.5	27.3%
0-40	612.0	44.7%
0-60	1082.4	79.0%
60-90	287.6	21.0%
70-100	119.6	8.7%
90-120	0.0	0.0%
0-90	1369.9	100.0%
90-180	0.0	0.0%
0-180	1369.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	45.4	3.3%	90-100	0.0	0.0%
10-20	130.2	9.5%	100-110	0.0	0.0%
20-30	197.9	14.4%	110-120	0.0	0.0%
30-40	238.5	17.4%	120-130	0.0	0.0%
40-50	247.0	18.0%	130-140	0.0	0.0%
50-60	223.3	16.3%	140-150	0.0	0.0%
60-70	168.0	12.3%	150-160	0.0	0.0%
70-80	94.7	6.9%	160-170	0.0	0.0%
80-90	24.8	1.8%	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.



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2023-10-11	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0181(SUMO34-R-15)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100014	120.0	60	0.142	16.50	0.965

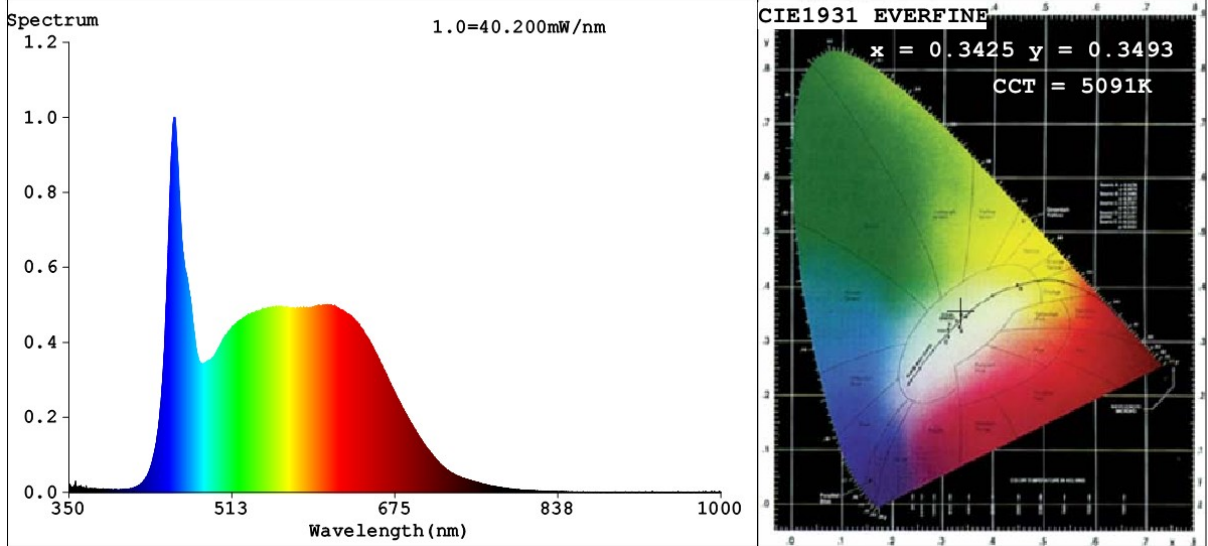
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	79
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	5091	R3	98	R11	94
Duv	-0.0001	R4	92	R12	71
Chromaticity (x, y)	x=0.3425 y=0.3493	R5	94	R13	99
Chromaticity (u', v')	u'=0.2106 v'=0.4832	R6	94	R14	100
Color Rendering Index (CRI)	94.3	R7	92	R15	95
R9	79	R8	89	--	--

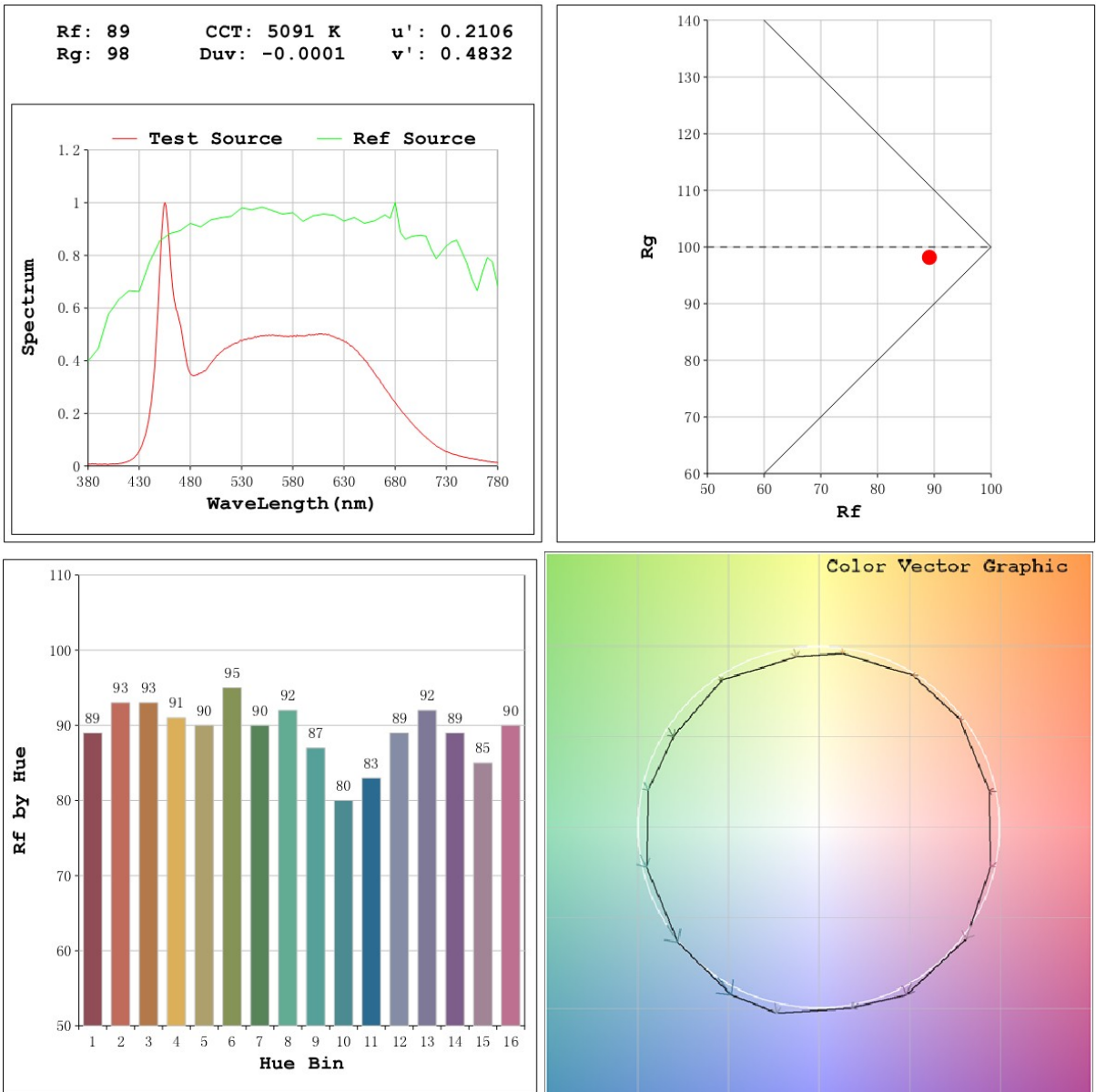
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1384.6
Luminous Efficacy (lm/W)	83.91
Beam Angle (°)	112.7
Center Beam Candle Power (cd)	484.8

Spectral Power Distribution & Chromaticity Diagram



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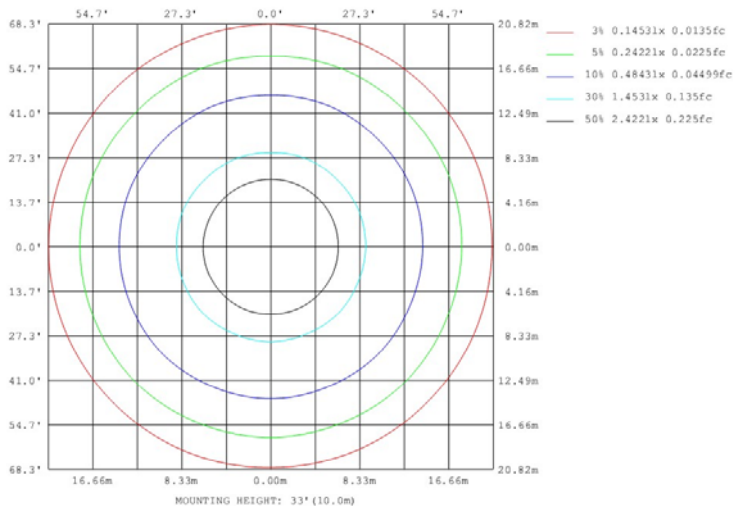
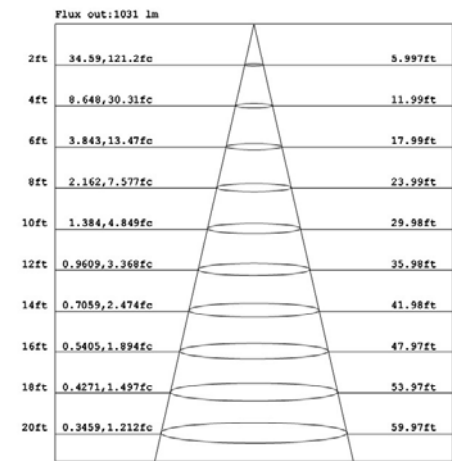
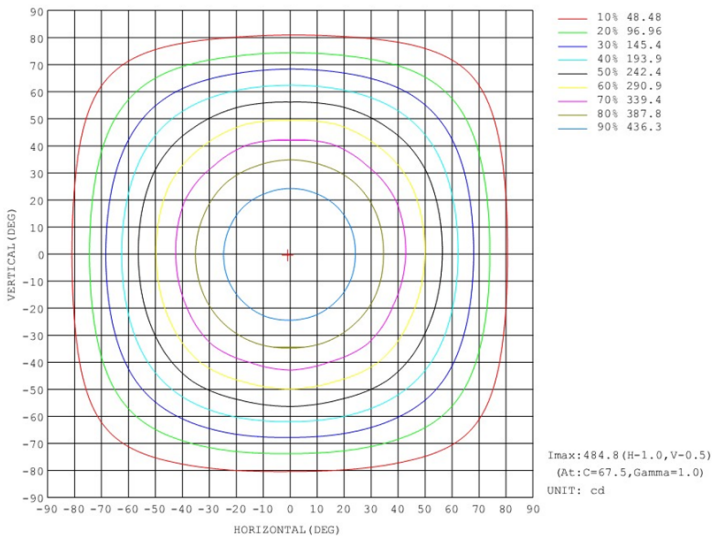
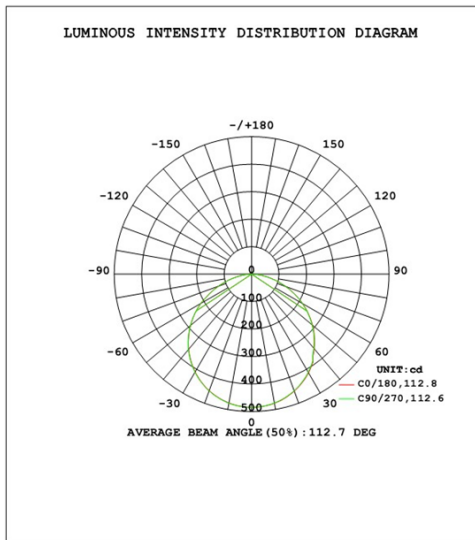


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	377.5	27.3%
0-40	618.7	44.7%
0-60	1094.0	79.0%
60-90	290.6	21.0%
70-100	120.8	8.7%
90-120	0.0	0.0%
0-90	1384.6	100.0%
90-180	0.0	0.0%
0-180	1384.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	45.9	3.3%	90-100	0.0	0.0%
10-20	131.6	9.5%	100-110	0.0	0.0%
20-30	200.0	14.4%	110-120	0.0	0.0%
30-40	241.2	17.4%	120-130	0.0	0.0%
40-50	249.6	18.0%	130-140	0.0	0.0%
50-60	225.7	16.3%	140-150	0.0	0.0%
60-70	169.8	12.3%	150-160	0.0	0.0%
70-80	95.7	6.9%	160-170	0.0	0.0%
80-90	25.1	1.8%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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