

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):
DLS0142(SUMO-R-15)

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

**Type of
Luminaire:** Downlights

Report Date: 2022-07-25

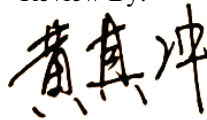
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	26.0 W
Rated Initial Lamp Lumen	1950 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	2022-07-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0142(SUMO-R-15)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120051	120.0	60	0.212	25.00	0.981

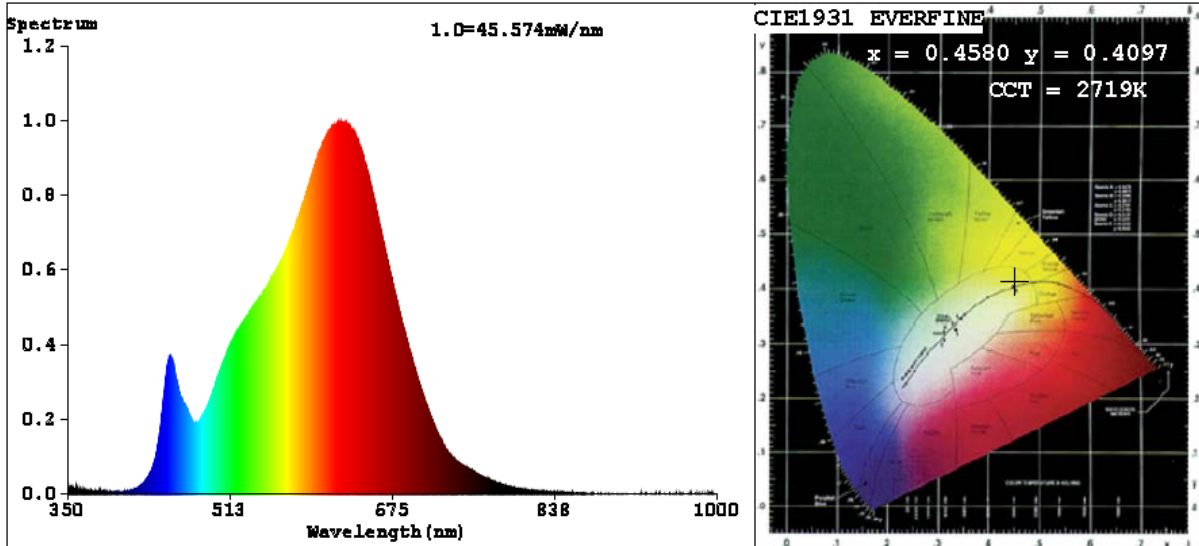
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	59
Frequency (Hz)	60	R2	97	R10	93
CCT (K)	2719	R3	99	R11	95
Duv	-0.0002	R4	94	R12	86
Chromaticity (x, y)	x=0.4580 y=0.4097	R5	94	R13	95
Chromaticity (u', v')	u'=0.2617 v'=0.5267	R6	97	R14	99
Color Rendering Index (CRI)	93.4	R7	91	R15	89
R9	59	R8	81	--	--

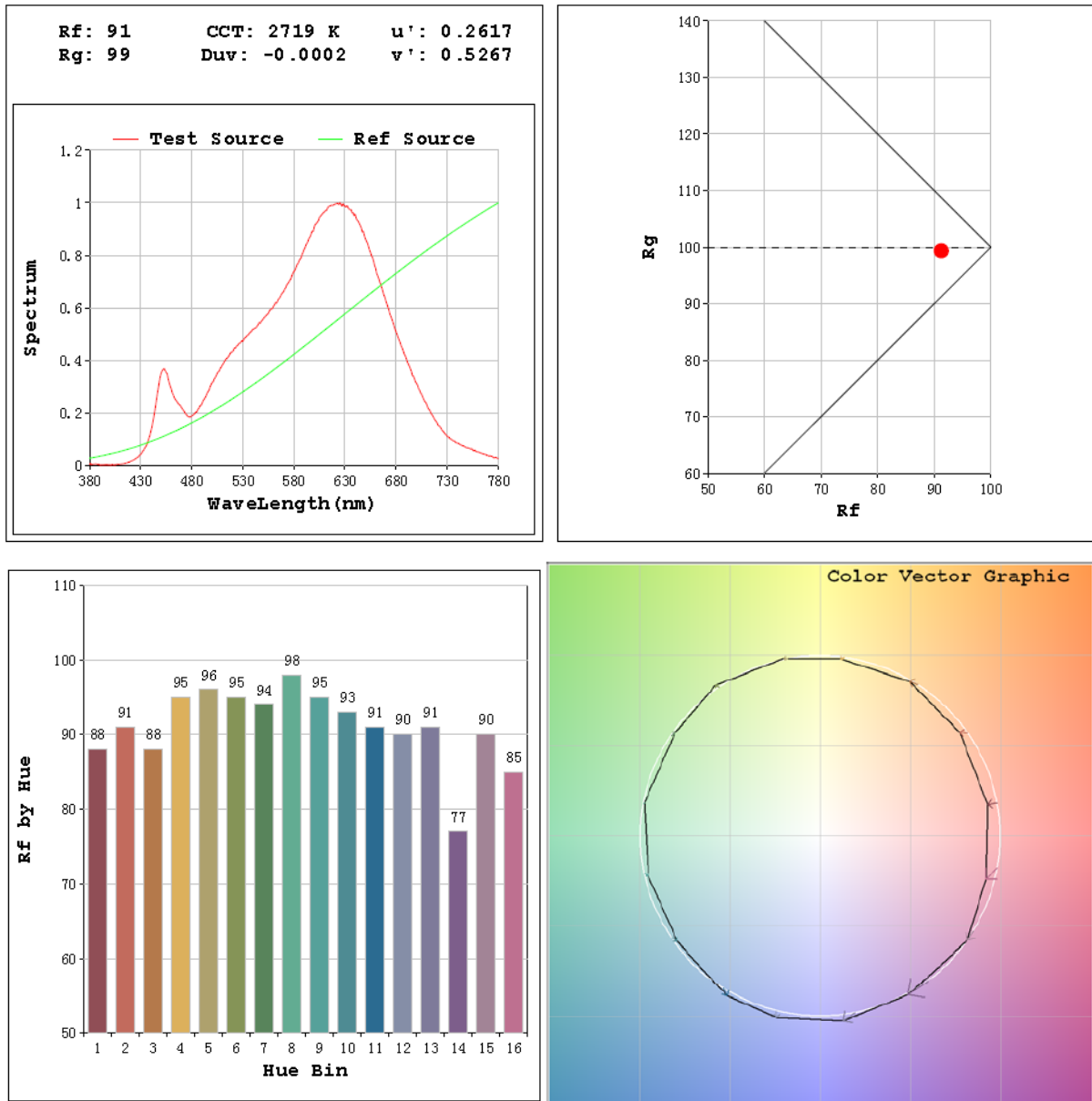
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2085.3
Luminous Efficacy (lm/W)	83.41
Beam Angle (°)	114.0
Center Beam Candle Power (cd)	717.7

Spectral Power Distribution & Chromaticity Diagram



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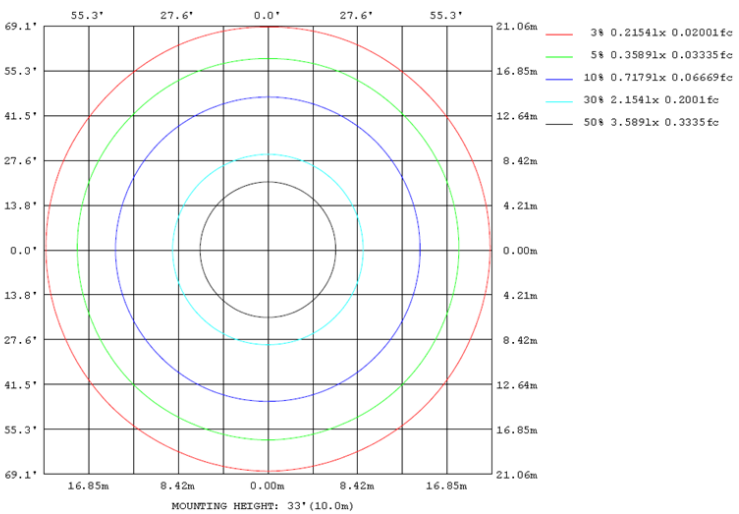
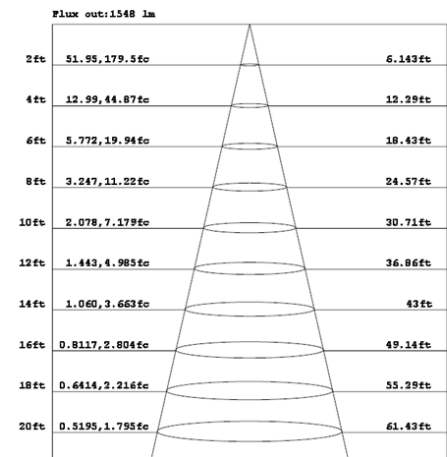
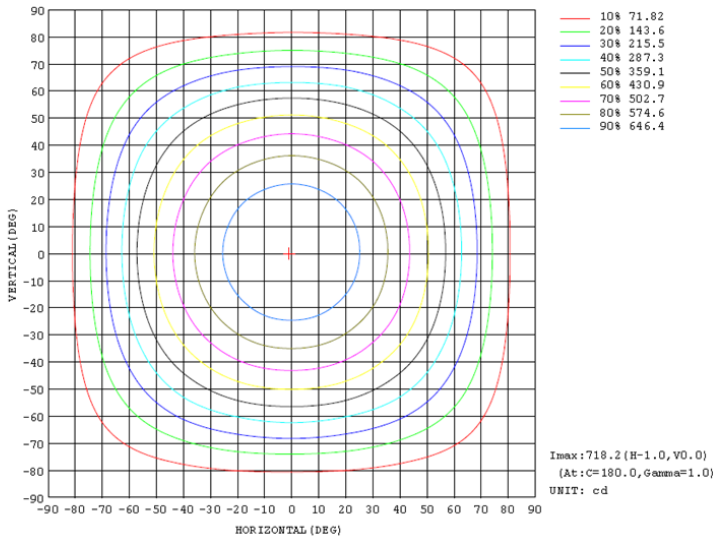
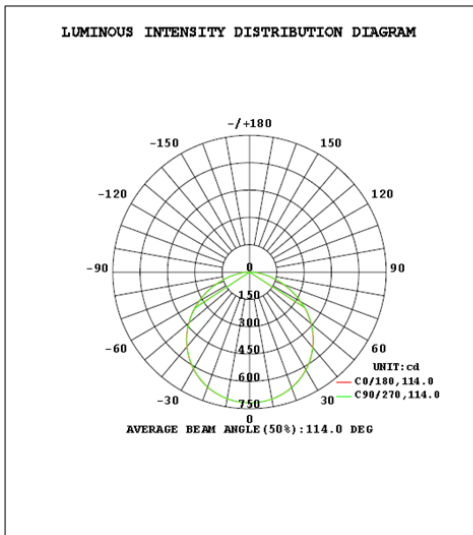


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	562.0	27.0%
0-40	924.5	44.3%
0-60	1643.2	78.8%
60-90	442.2	21.2%
70-100	185.3	8.9%
90-120	0.0	0.0%
0-90	2085.3	100.0%
90-180	0.0	0.0%
0-180	2085.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	68.0	3.3%	90-100	0.0	0.0%
10-20	195.5	9.4%	100-110	0.0	0.0%
20-30	298.5	14.3%	110-120	0.0	0.0%
30-40	362.5	17.4%	120-130	0.0	0.0%
40-50	377.7	18.1%	130-140	0.0	0.0%
50-60	340.9	16.3%	140-150	0.0	0.0%
60-70	256.9	12.3%	150-160	0.0	0.0%
70-80	145.3	7.0%	160-170	0.0	0.0%
80-90	40.0	1.9%	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.

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0142(SUMO-R-15)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120051	120.0	60	0.211	24.80	0.981

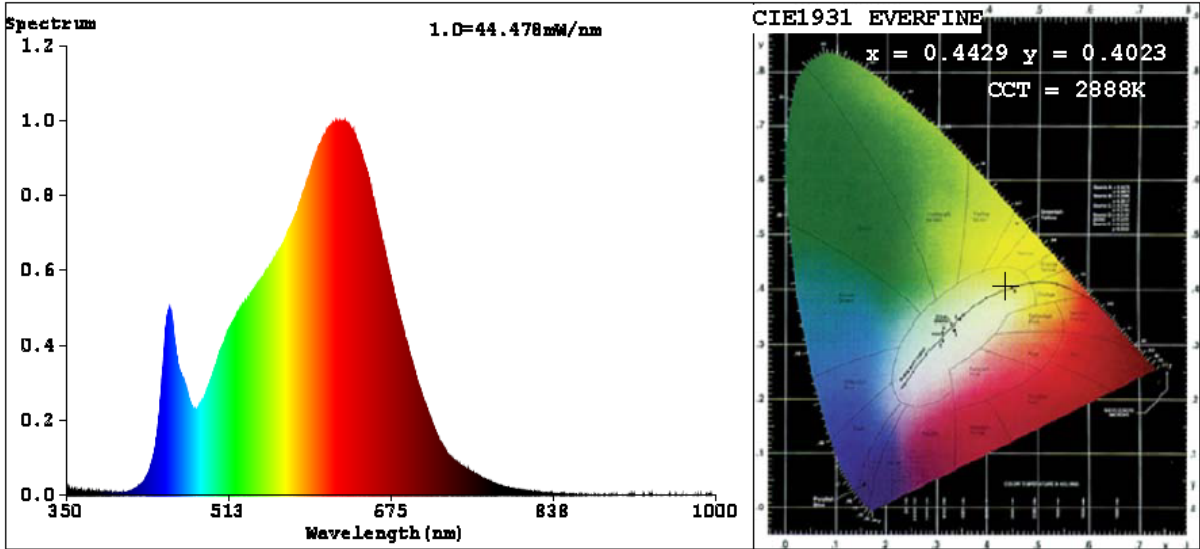
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	66
Frequency (Hz)	60	R2	98	R10	95
CCT (K)	2888	R3	99	R11	96
Duv	-0.0015	R4	95	R12	84
Chromaticity (x, y)	x=0.4429 y=0.4023	R5	95	R13	97
Chromaticity (u', v')	u'=0.2552 v'=0.5216	R6	97	R14	99
Color Rendering Index (CRI)	94.5	R7	92	R15	92
R9	66	R8	84	--	--

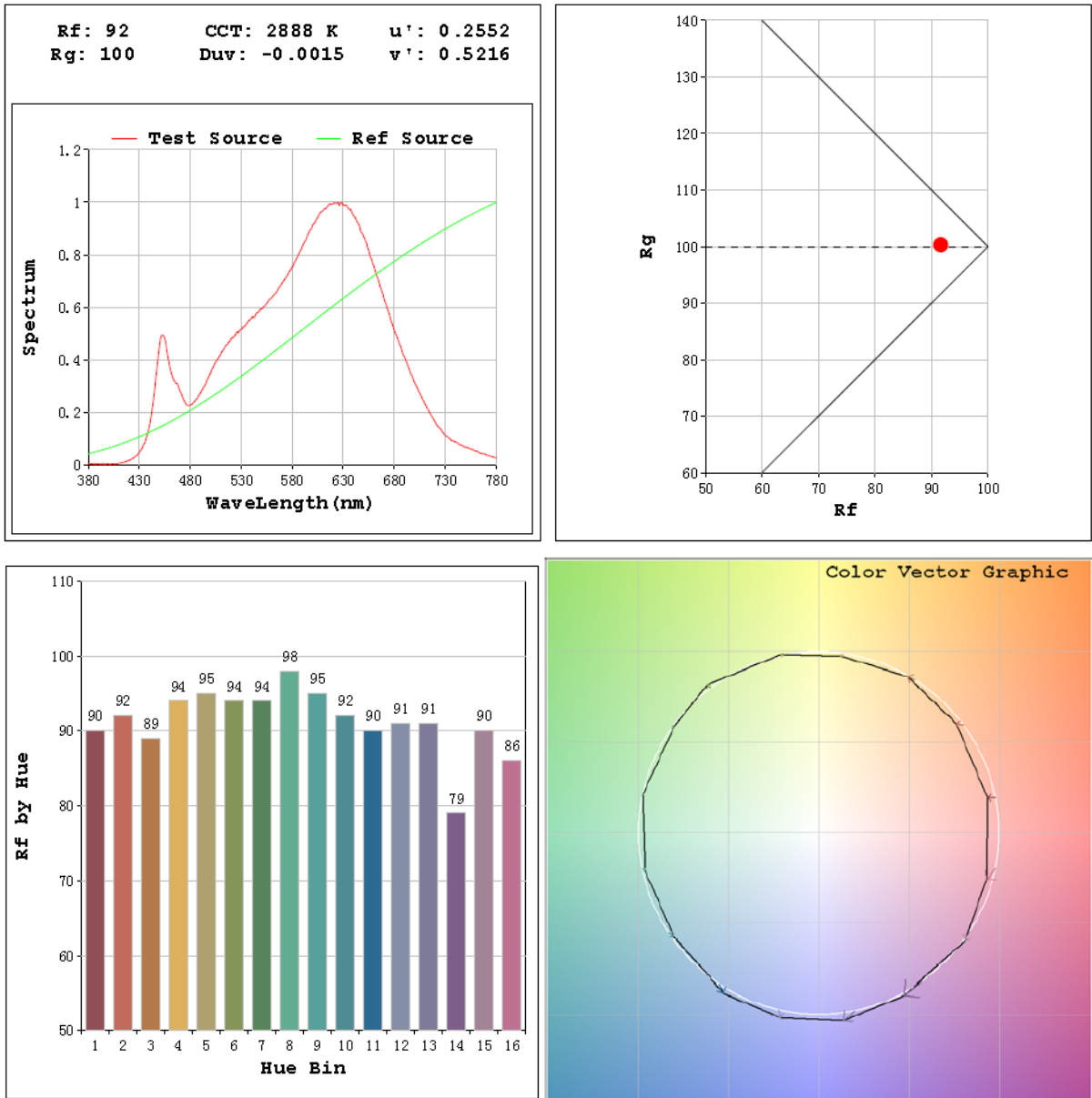
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2123.9
Luminous Efficacy (lm/W)	85.64
Beam Angle (°)	114.1
Center Beam Candle Power (cd)	731.0

Spectral Power Distribution & Chromaticity Diagram



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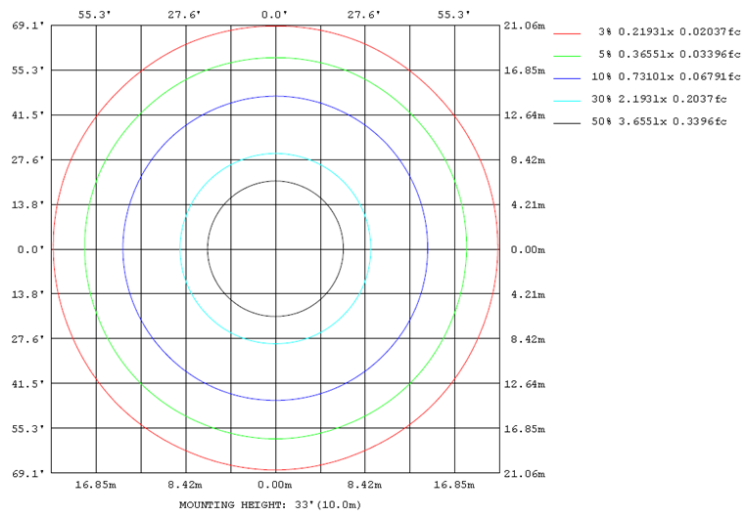
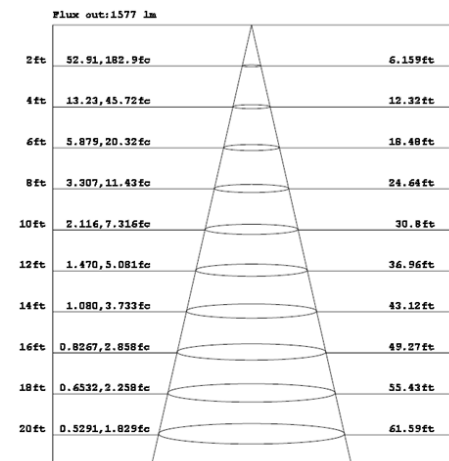
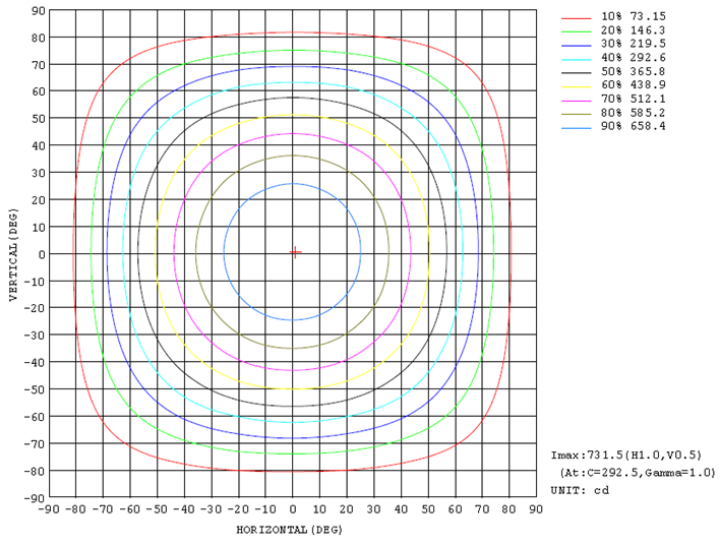
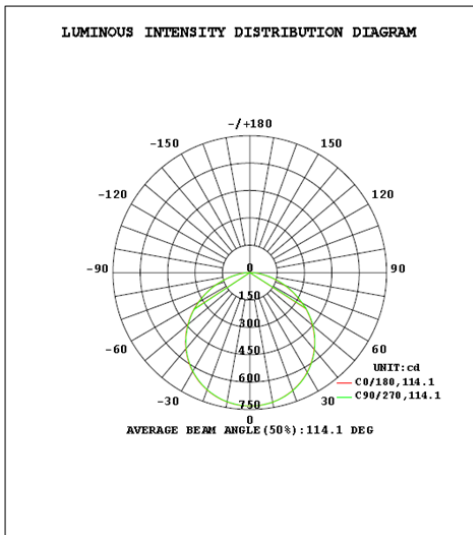


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	572.4	27.0%
0-40	941.6	44.3%
0-60	1673.6	78.8%
60-90	450.3	21.2%
70-100	188.7	8.9%
90-120	0.0	0.0%
0-90	2123.9	100.0%
90-180	0.0	0.0%
0-180	2123.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	69.2	3.3%	90-100	0.0	0.0%
10-20	199.2	9.4%	100-110	0.0	0.0%
20-30	304.0	14.3%	110-120	0.0	0.0%
30-40	369.2	17.4%	120-130	0.0	0.0%
40-50	384.7	18.1%	130-140	0.0	0.0%
50-60	347.4	16.4%	140-150	0.0	0.0%
60-70	261.6	12.3%	150-160	0.0	0.0%
70-80	148.0	7.0%	160-170	0.0	0.0%
80-90	40.8	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0142(SUMO-R-15)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120051	120.0	60	0.208	24.50	0.980

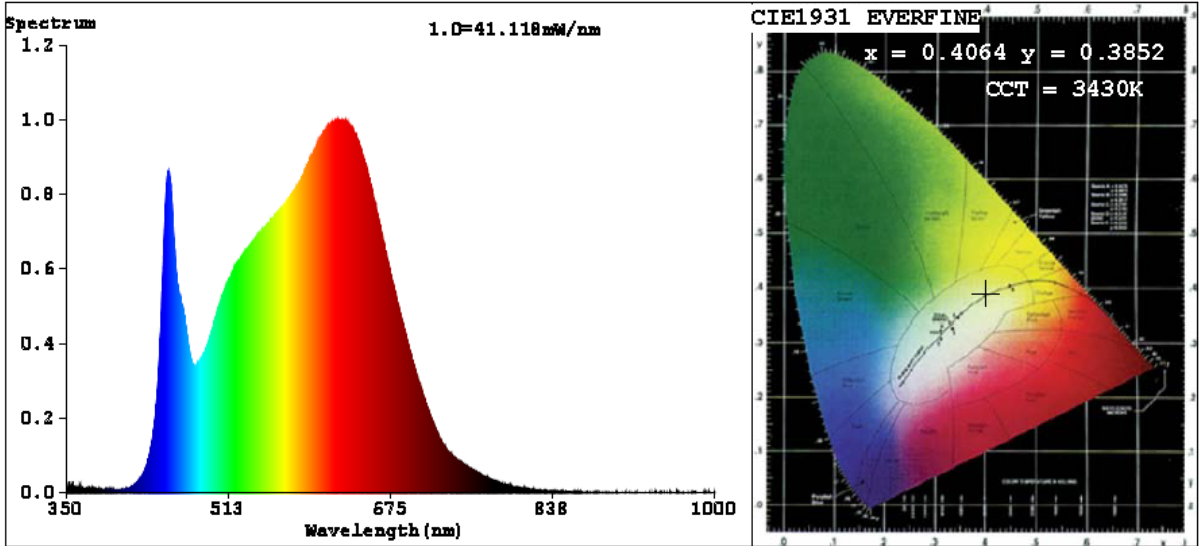
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	80
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	3430	R3	98	R11	97
Duv	-0.0027	R4	97	R12	80
Chromaticity (x, y)	x=0.4064 y=0.3852	R5	97	R13	99
Chromaticity (u', v')	u'=0.2387 v'=0.5091	R6	96	R14	99
Color Rendering Index (CRI)	96.3	R7	95	R15	96
R9	80	R8	91	--	--

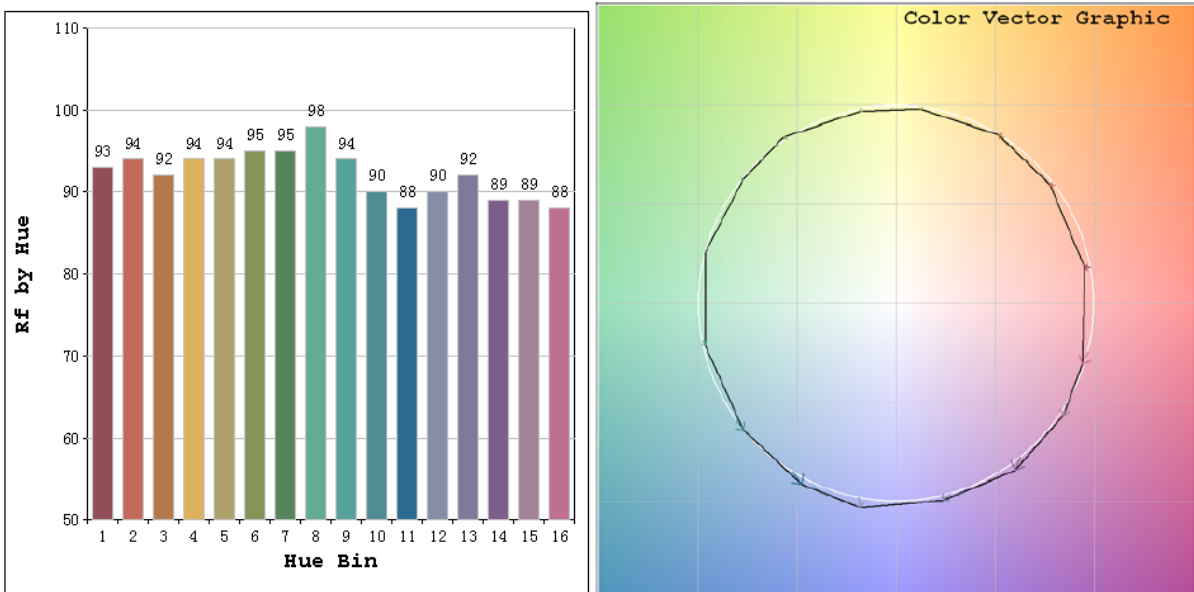
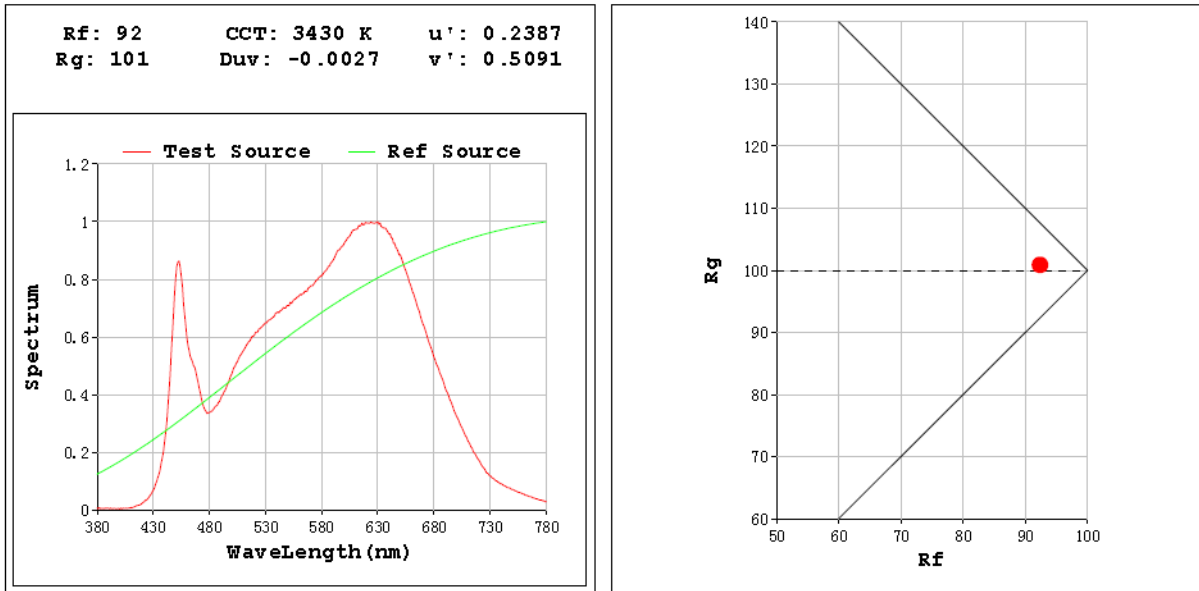
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2216.0
Luminous Efficacy (lm/W)	90.45
Beam Angle (°)	114.0
Center Beam Candle Power (cd)	762.9

Spectral Power Distribution & Chromaticity Diagram



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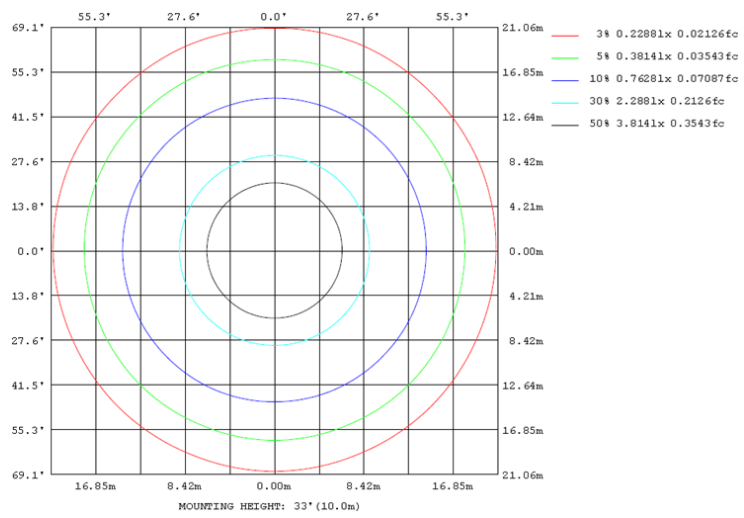
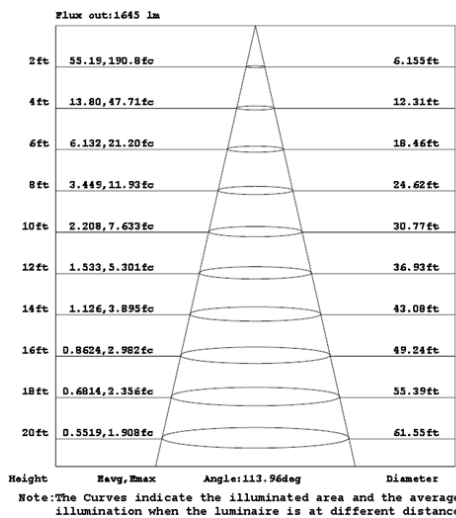
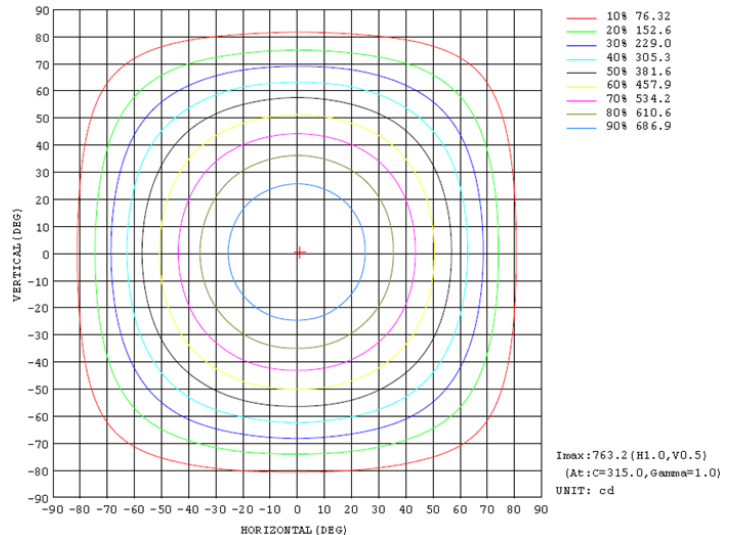
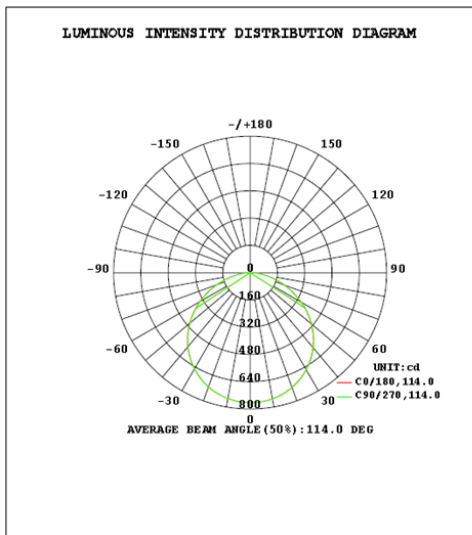


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	597.2	27.0%
0-40	982.3	44.3%
0-60	1746.1	78.8%
60-90	469.9	21.2%
70-100	197.0	8.9%
90-120	0.0	0.0%
0-90	2216.0	100.0%
90-180	0.0	0.0%
0-180	2216.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	72.2	3.3%	90-100	0.0	0.0%
10-20	207.8	9.4%	100-110	0.0	0.0%
20-30	317.2	14.3%	110-120	0.0	0.0%
30-40	385.1	17.4%	120-130	0.0	0.0%
40-50	401.2	18.1%	130-140	0.0	0.0%
50-60	362.6	16.4%	140-150	0.0	0.0%
60-70	272.9	12.3%	150-160	0.0	0.0%
70-80	154.5	7.0%	160-170	0.0	0.0%
80-90	42.5	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0142(SUMO-R-15)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120051	120.0	60	0.210	24.70	0.980

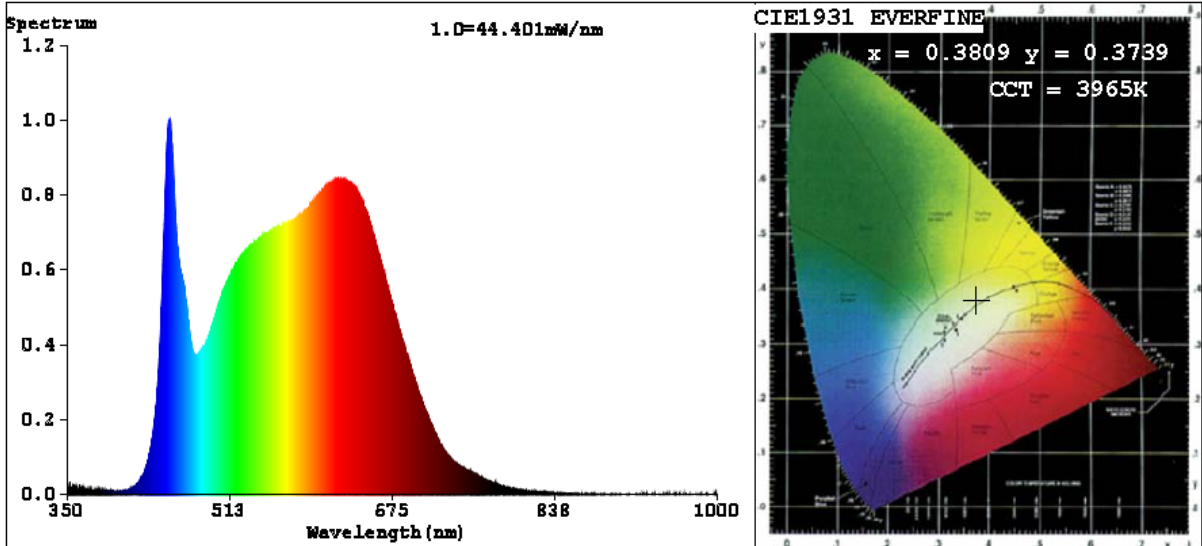
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	85
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3965	R3	97	R11	97
Duv	-0.0015	R4	97	R12	75
Chromaticity (x, y)	x=0.3809 y=0.3739	R5	96	R13	99
Chromaticity (u', v')	u'=0.2266 v'=0.5004	R6	95	R14	98
Color Rendering Index (CRI)	96.5	R7	96	R15	96
R9	85	R8	93	--	--

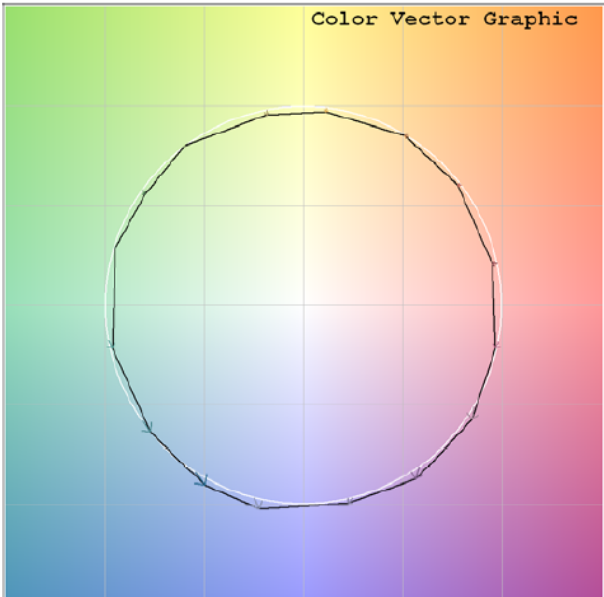
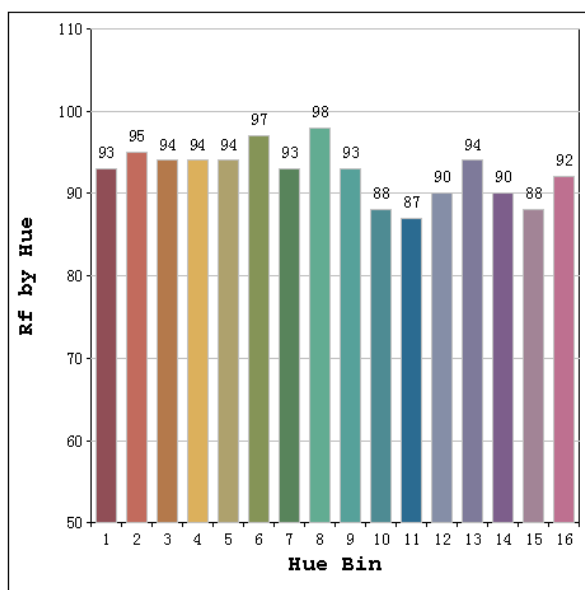
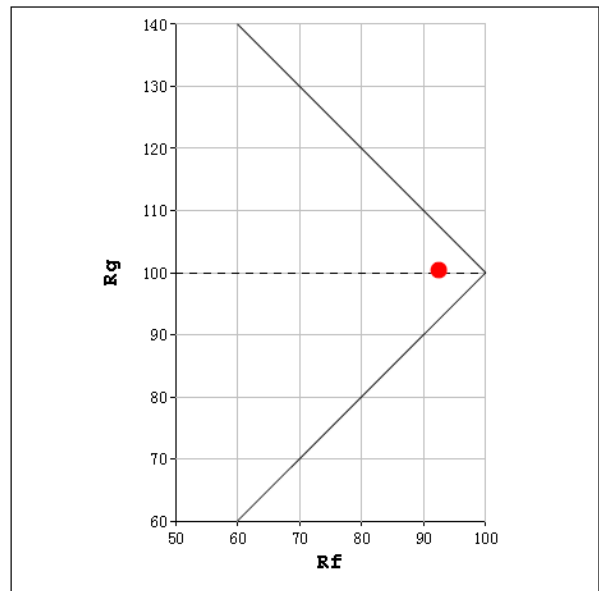
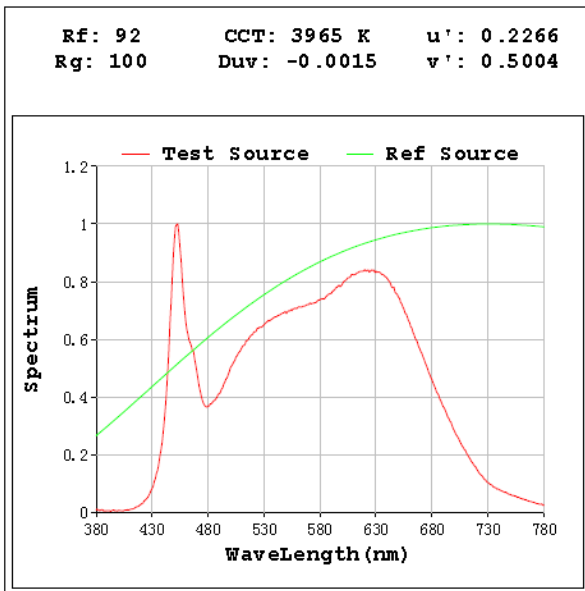
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2236.5
Luminous Efficacy (lm/W)	90.55
Beam Angle (°)	114.0
Center Beam Candle Power (cd)	770.0

Spectral Power Distribution & Chromaticity Diagram



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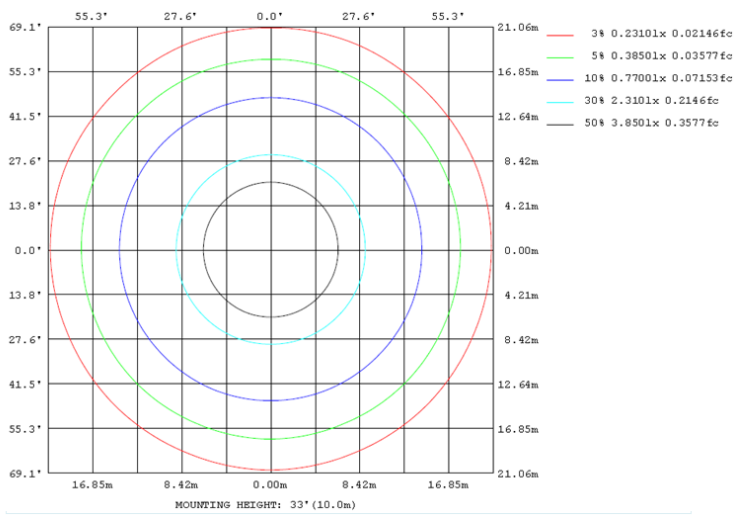
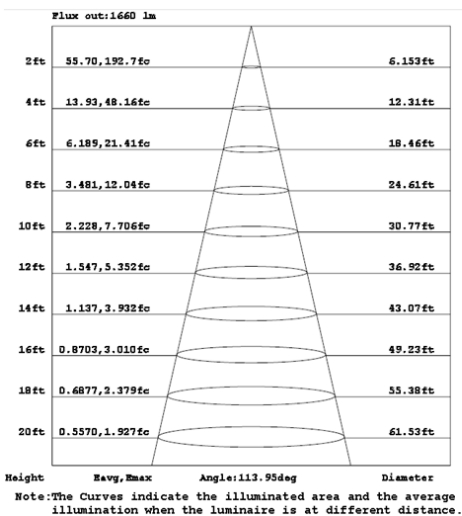
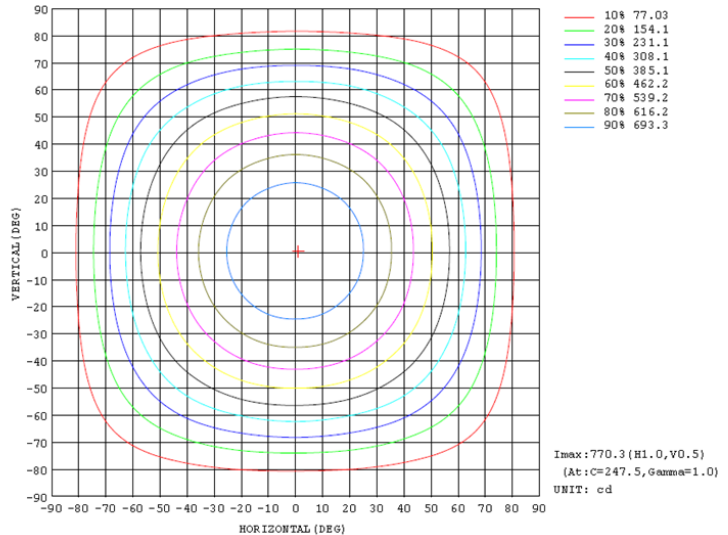
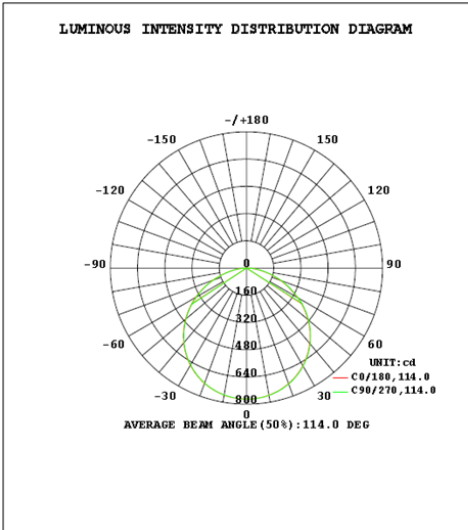


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	602.8	27.0%
0-40	991.5	44.3%
0-60	1762.3	78.8%
60-90	474.3	21.2%
70-100	198.8	8.9%
90-120	0.0	0.0%
0-90	2236.5	100.0%
90-180	0.0	0.0%
0-180	2236.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	72.9	3.3%	90-100	0.0	0.0%
10-20	209.8	9.4%	100-110	0.0	0.0%
20-30	320.1	14.3%	110-120	0.0	0.0%
30-40	388.6	17.4%	120-130	0.0	0.0%
40-50	404.9	18.1%	130-140	0.0	0.0%
50-60	365.9	16.4%	140-150	0.0	0.0%
60-70	275.4	12.3%	150-160	0.0	0.0%
70-80	155.9	7.0%	160-170	0.0	0.0%
80-90	42.9	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-25	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0142(SUMO-R-15)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120051	120.0	60	0.213	25.10	0.981

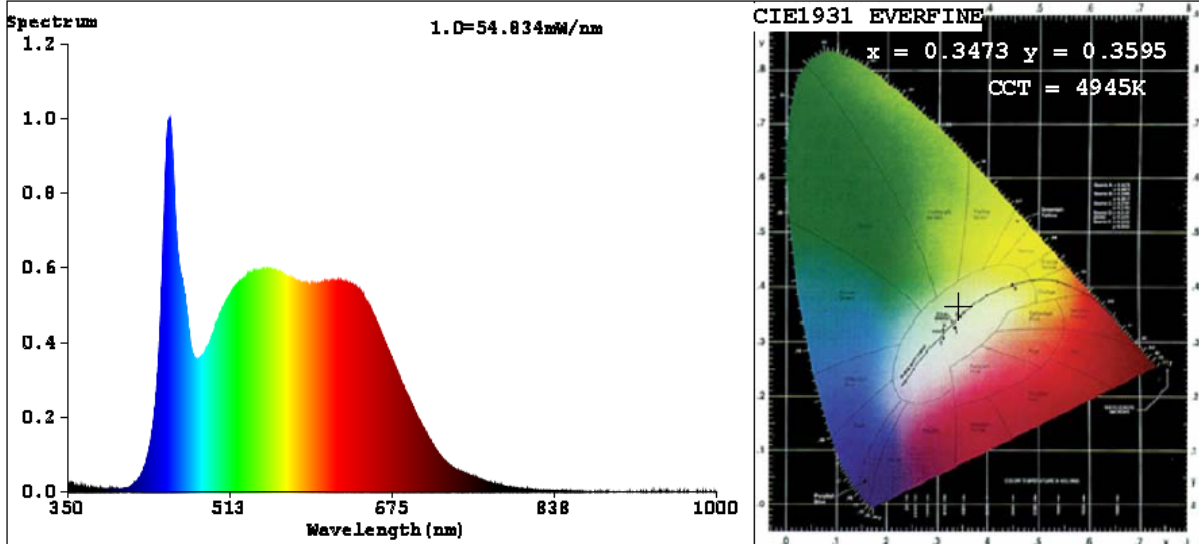
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	80
Frequency (Hz)	60	R2	96	R10	90
CCT (K)	4945	R3	96	R11	93
Duv	0.0030	R4	93	R12	67
Chromaticity (x, y)	x=0.3473 y=0.3595	R5	93	R13	95
Chromaticity (u', v')	u'=0.2099 v'=0.4888	R6	92	R14	98
Color Rendering Index (CRI)	94.2	R7	97	R15	93
R9	80	R8	92	--	--

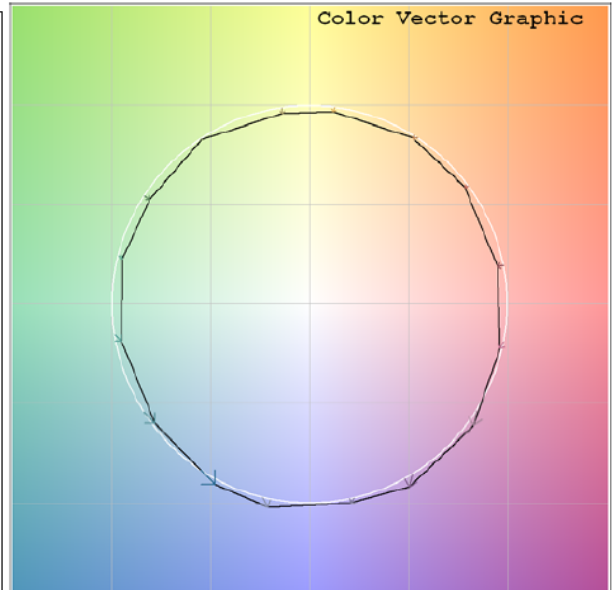
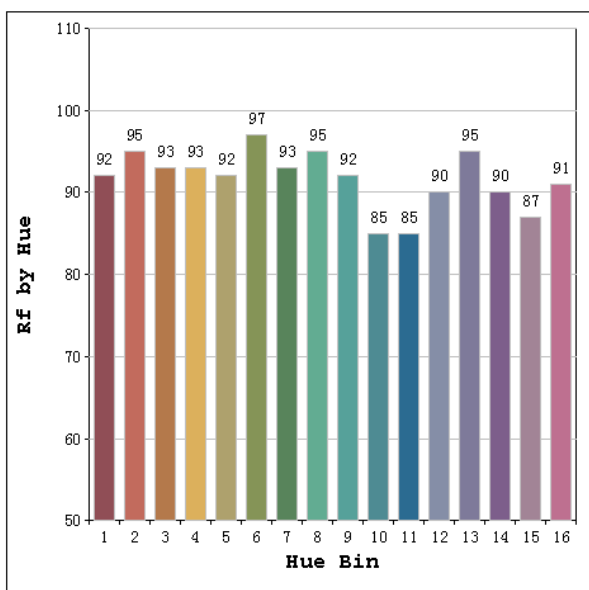
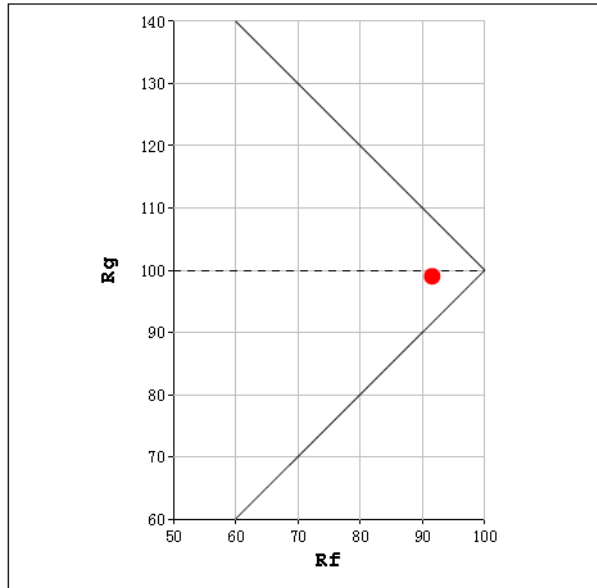
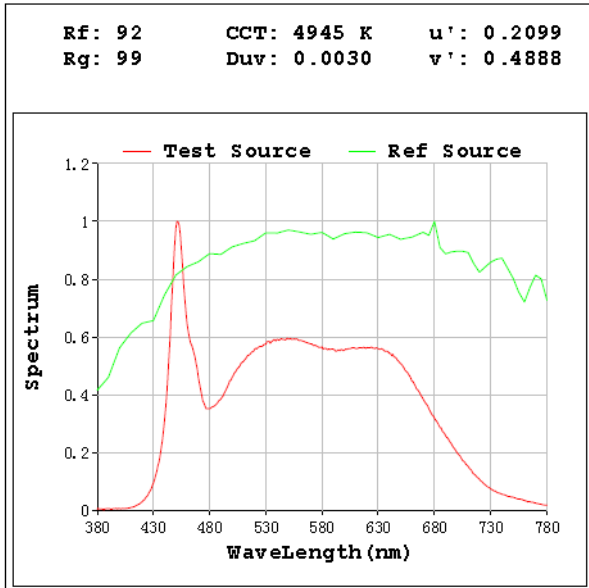
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2203.4
Luminous Efficacy (lm/W)	89.79
Beam Angle (°)	114.0
Center Beam Candle Power (cd)	759.1

Spectral Power Distribution & Chromaticity Diagram



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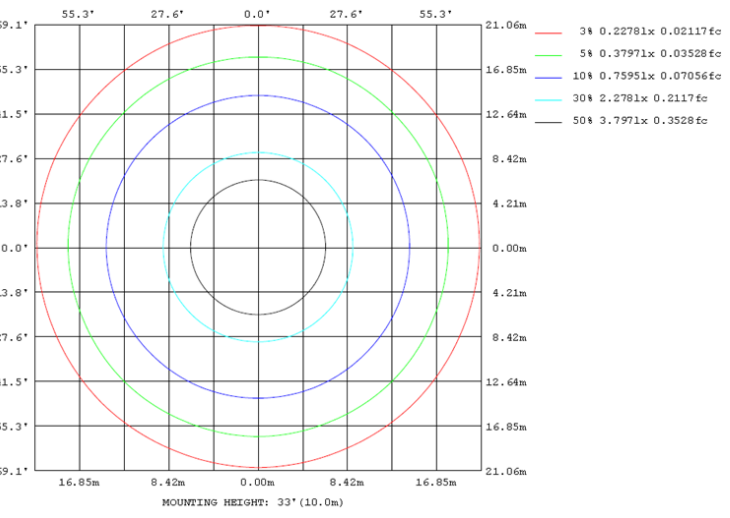
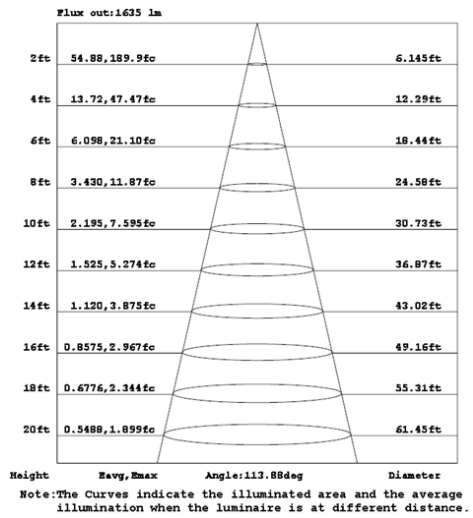
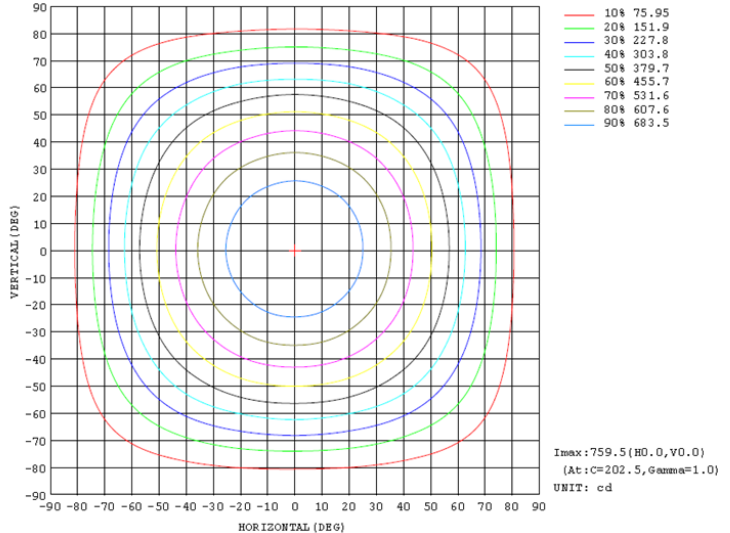
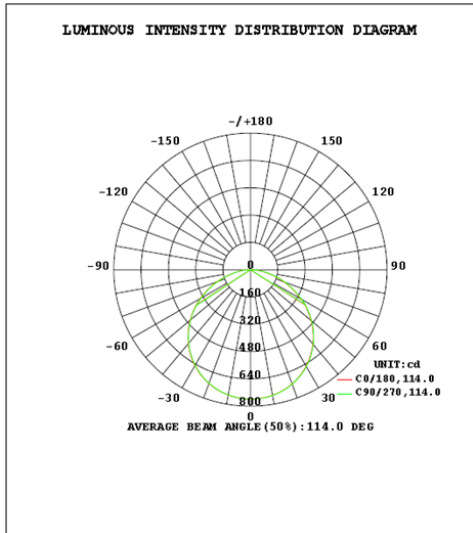


Zonal Lumen Tabulation

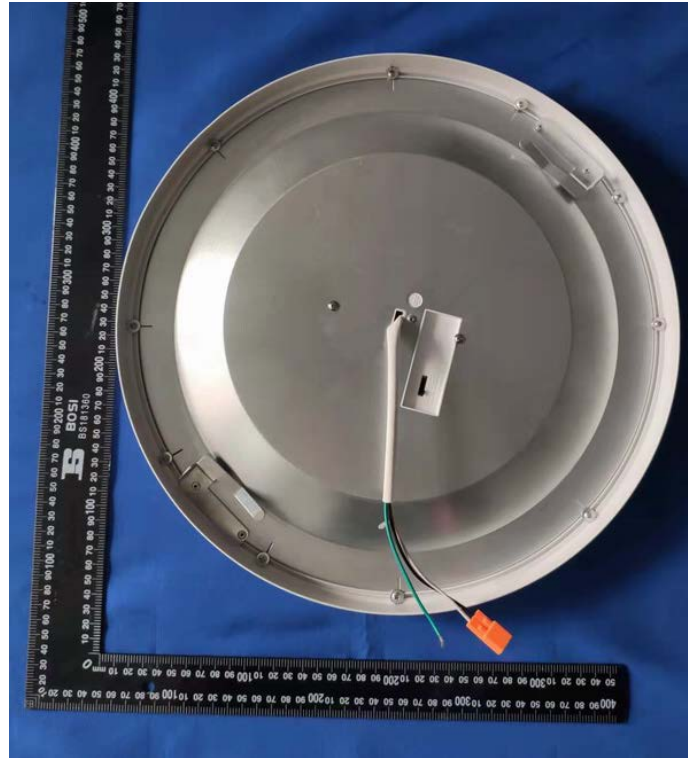
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	594.1	27.0%
0-40	977.0	44.3%
0-60	1736.2	78.8%
60-90	467.2	21.2%
70-100	195.9	8.9%
90-120	0.0	0.0%
0-90	2203.4	100.0%
90-180	0.0	0.0%
0-180	2203.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	71.9	3.3%	90-100	0.0	0.0%
10-20	206.7	9.4%	100-110	0.0	0.0%
20-30	315.5	14.3%	110-120	0.0	0.0%
30-40	382.9	17.4%	120-130	0.0	0.0%
40-50	398.9	18.1%	130-140	0.0	0.0%
50-60	360.4	16.4%	140-150	0.0	0.0%
60-70	271.3	12.3%	150-160	0.0	0.0%
70-80	153.6	7.0%	160-170	0.0	0.0%
80-90	42.3	1.9%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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