

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):
DLS0180(SUMO34-R-12)

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

**Type of
Luminaire:** Downlights

Report Date: 2023-10-11

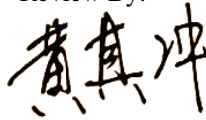
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	13.0 W
Rated Initial Lamp Lumen	900 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	DLS0180(SUMO34-R-12)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100013	120.0	60	0.109	12.90	0.980

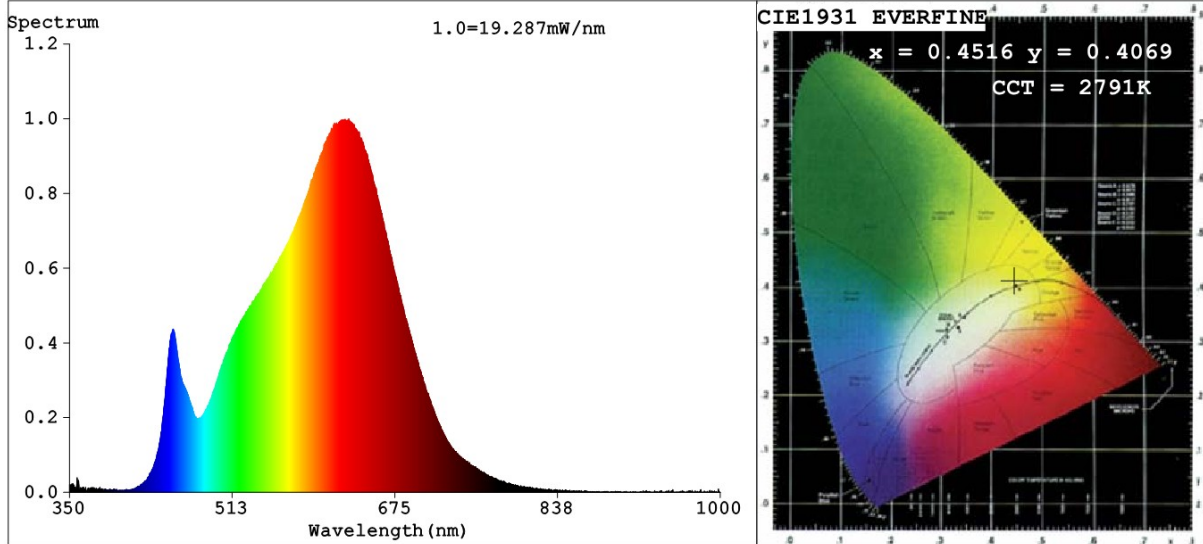
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	64
Frequency (Hz)	60	R2	97	R10	93
CCT (K)	2791	R3	99	R11	95
Duv	-0.0006	R4	94	R12	84
Chromaticity (x, y)	x=0.4516 y=0.4069	R5	94	R13	95
Chromaticity (u', v')	u'=0.2588 v'=0.5247	R6	97	R14	99
Color Rendering Index (CRI)	93.9	R7	92	R15	90
R9	64	R8	83	--	--

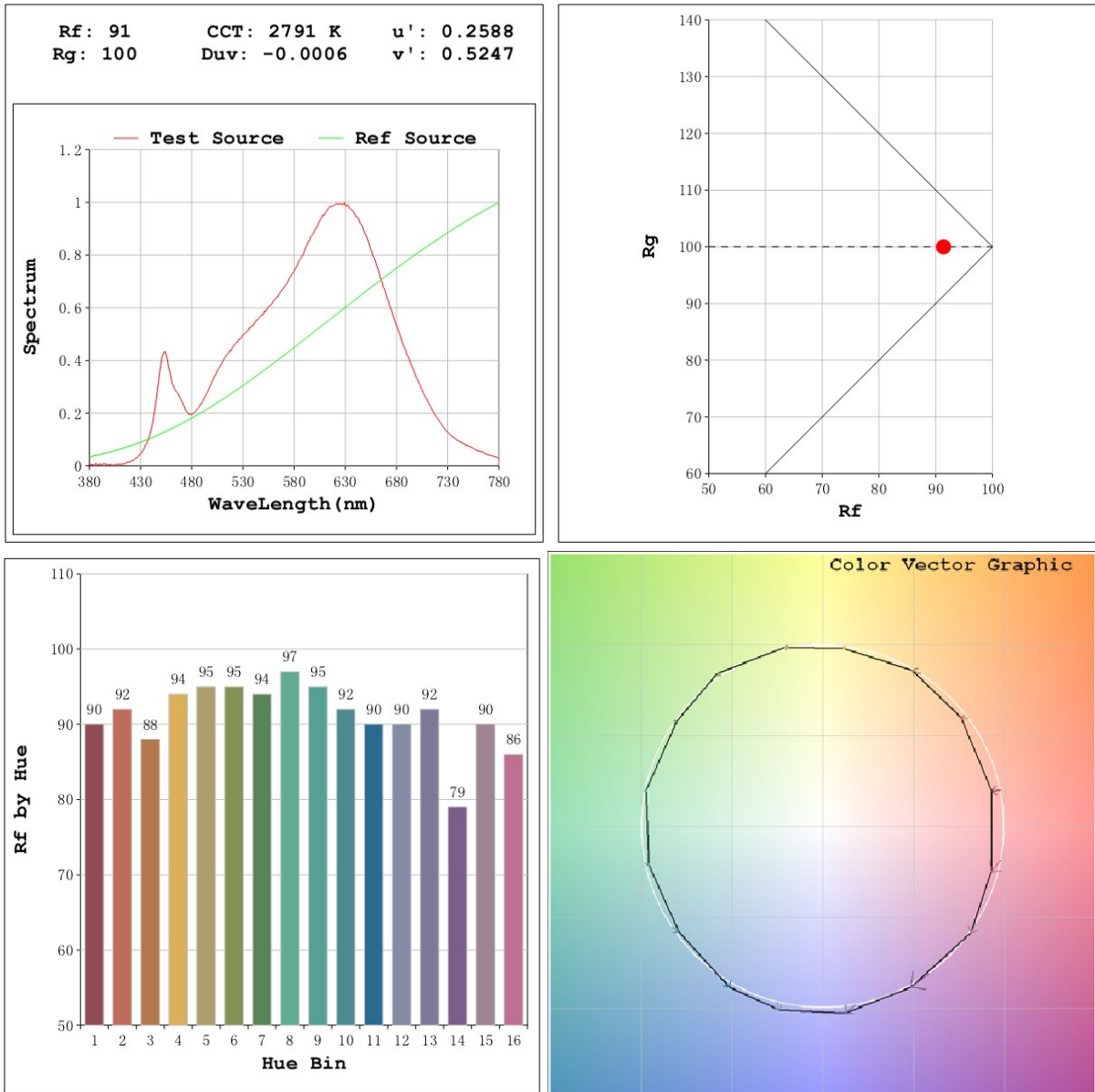
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	903.27
Luminous Efficacy (lm/W)	70.02
Beam Angle (°)	112.9
Center Beam Candle Power (cd)	313.9

Spectral Power Distribution & Chromaticity Diagram



TM30

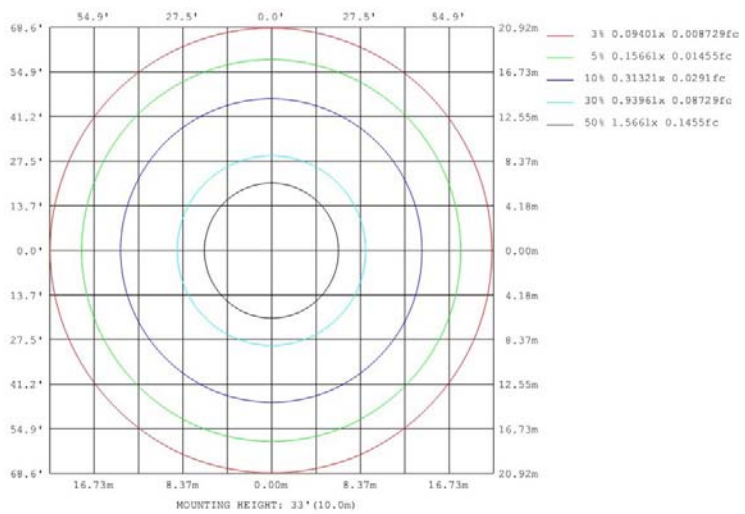
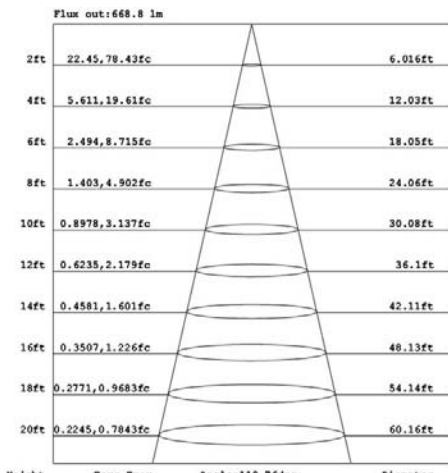
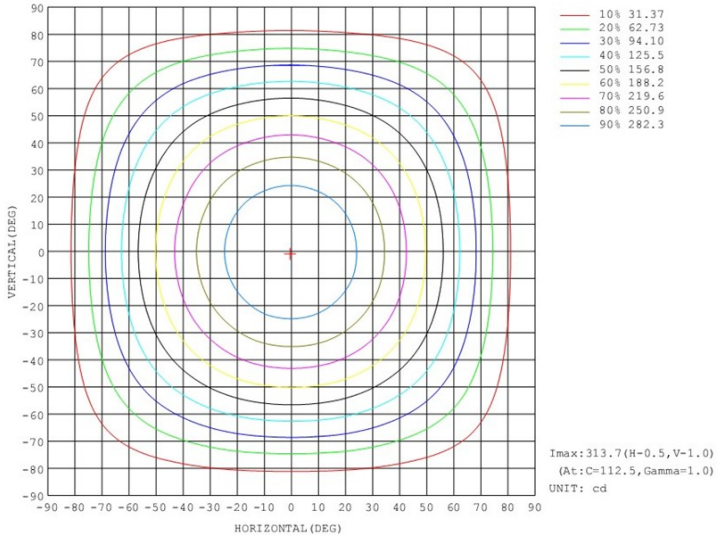
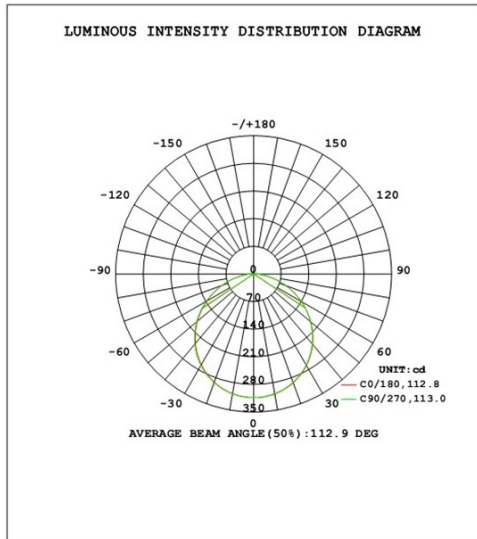


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	244.3	27.1%
0-40	400.9	44.4%
0-60	709.9	78.6%
60-90	193.4	21.4%
70-100	81.9	9.1%
90-120	0.0	0.0%
0-90	903.3	100.0%
90-180	0.0	0.0%
0-180	903.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.7	3.3%	90-100	0.0	0.0%
10-20	85.2	9.4%	100-110	0.0	0.0%
20-30	129.5	14.3%	110-120	0.0	0.0%
30-40	156.6	17.3%	120-130	0.0	0.0%
40-50	162.5	18.0%	130-140	0.0	0.0%
50-60	146.5	16.2%	140-150	0.0	0.0%
60-70	111.5	12.3%	150-160	0.0	0.0%
70-80	64.5	7.1%	160-170	0.0	0.0%
80-90	17.4	1.9%	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	DLS0180(SUMO34-R-12)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100013	120.0	60	0.108	12.70	0.980

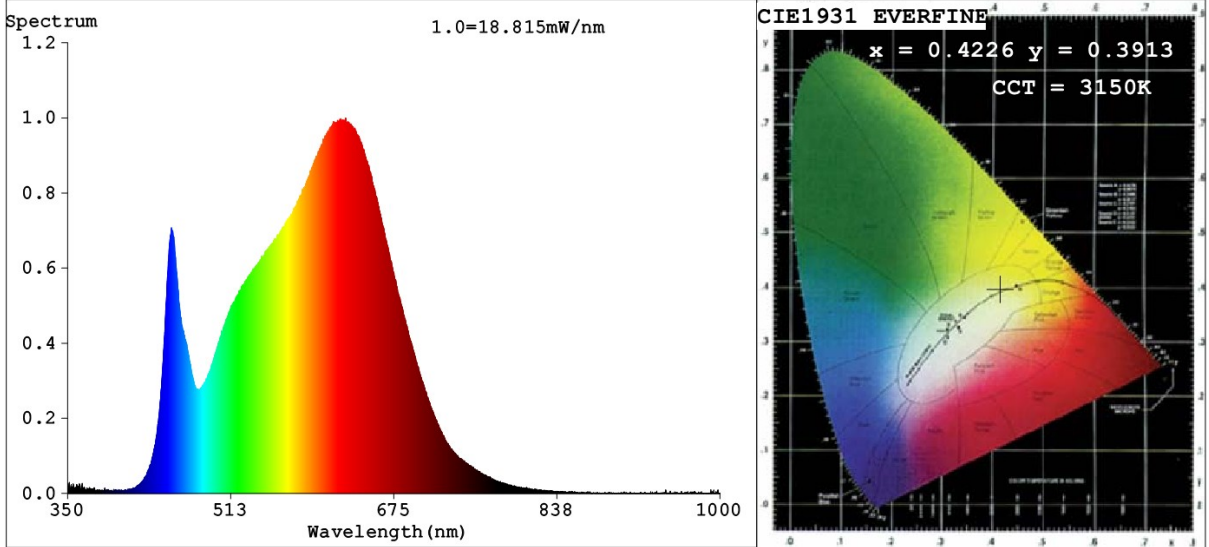
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	74
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3150	R3	98	R11	96
Duv	-0.0031	R4	95	R12	81
Chromaticity (x, y)	x=0.4226 y=0.3913	R5	96	R13	98
Chromaticity (u', v')	u'=0.2468 v'=0.5141	R6	96	R14	99
Color Rendering Index (CRI)	95.4	R7	93	R15	94
R9	74	R8	88	--	--

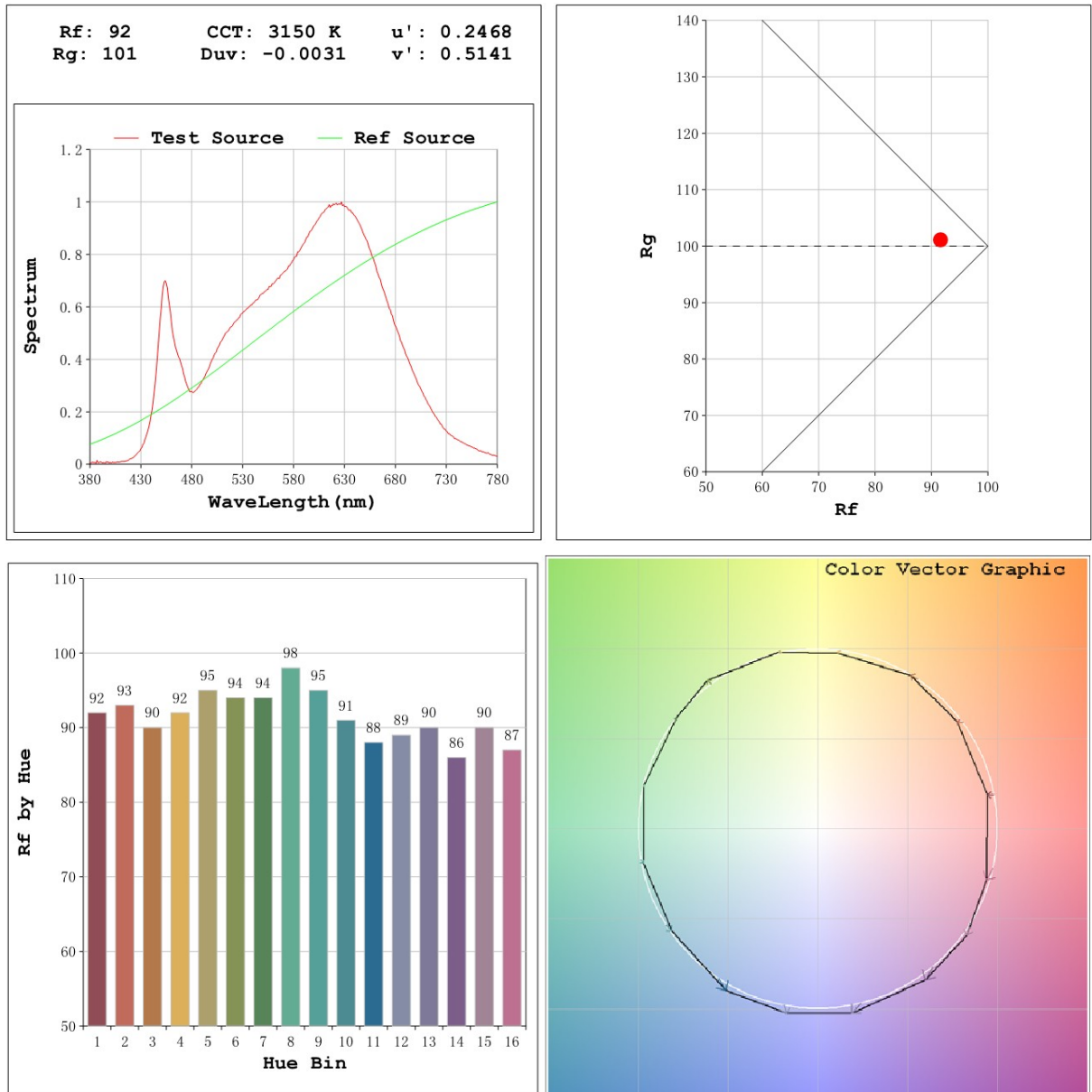
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	955.53
Luminous Efficacy (lm/W)	75.24
Beam Angle (°)	112.9
Center Beam Candle Power (cd)	332.2

Spectral Power Distribution & Chromaticity Diagram



TM30

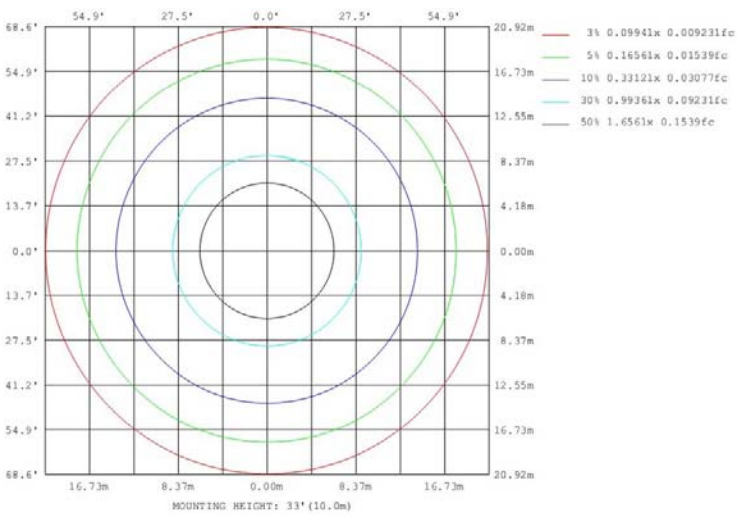
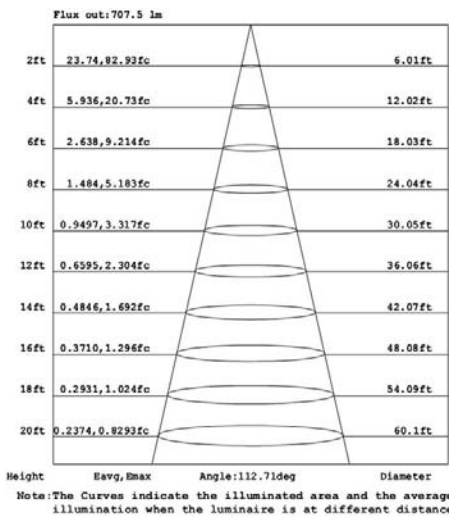
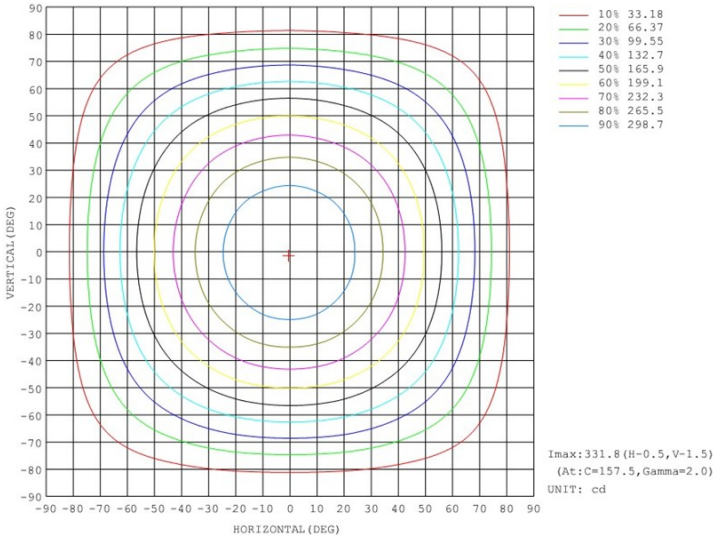
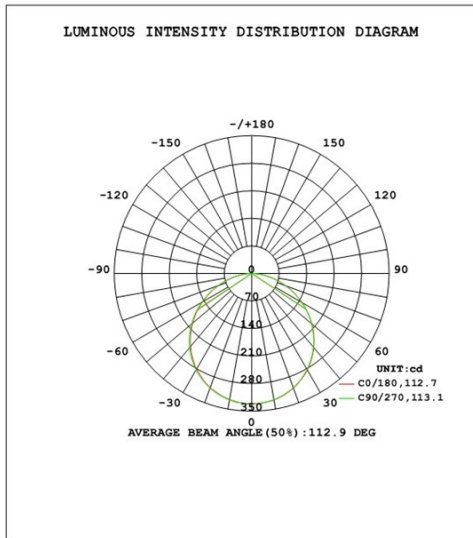


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	258.5	27.0%
0-40	424.1	44.4%
0-60	750.9	78.6%
60-90	204.6	21.4%
70-100	86.6	9.1%
90-120	0.0	0.0%
0-90	955.5	100.0%
90-180	0.0	0.0%
0-180	955.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.4	3.3%	90-100	0.0	0.0%
10-20	90.1	9.4%	100-110	0.0	0.0%
20-30	137.0	14.3%	110-120	0.0	0.0%
30-40	165.6	17.3%	120-130	0.0	0.0%
40-50	171.9	18.0%	130-140	0.0	0.0%
50-60	155.0	16.2%	140-150	0.0	0.0%
60-70	118.0	12.3%	150-160	0.0	0.0%
70-80	68.3	7.1%	160-170	0.0	0.0%
80-90	18.4	1.9%	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	DLS0180(SUMO34-R-12)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100013	120.0	60	0.106	12.50	0.979

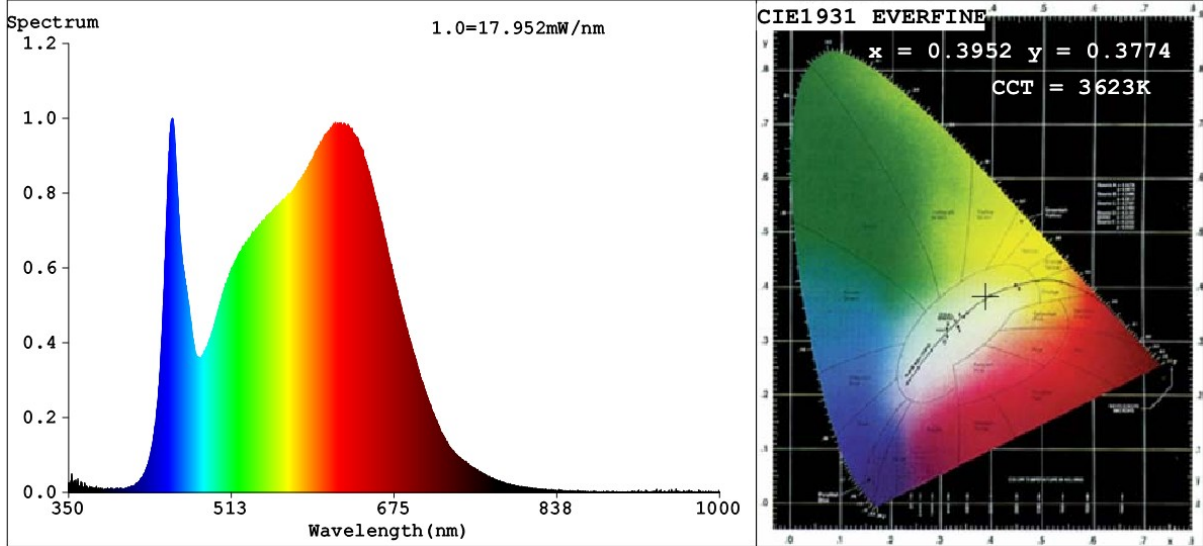
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	81
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	3623	R3	98	R11	96
Duv	-0.0036	R4	96	R12	77
Chromaticity (x, y)	x=0.3952 y=0.3774	R5	97	R13	99
Chromaticity (u', v')	u'=0.2346 v'=0.5041	R6	95	R14	98
Color Rendering Index (CRI)	96.0	R7	95	R15	97
R9	81	R8	91	--	--

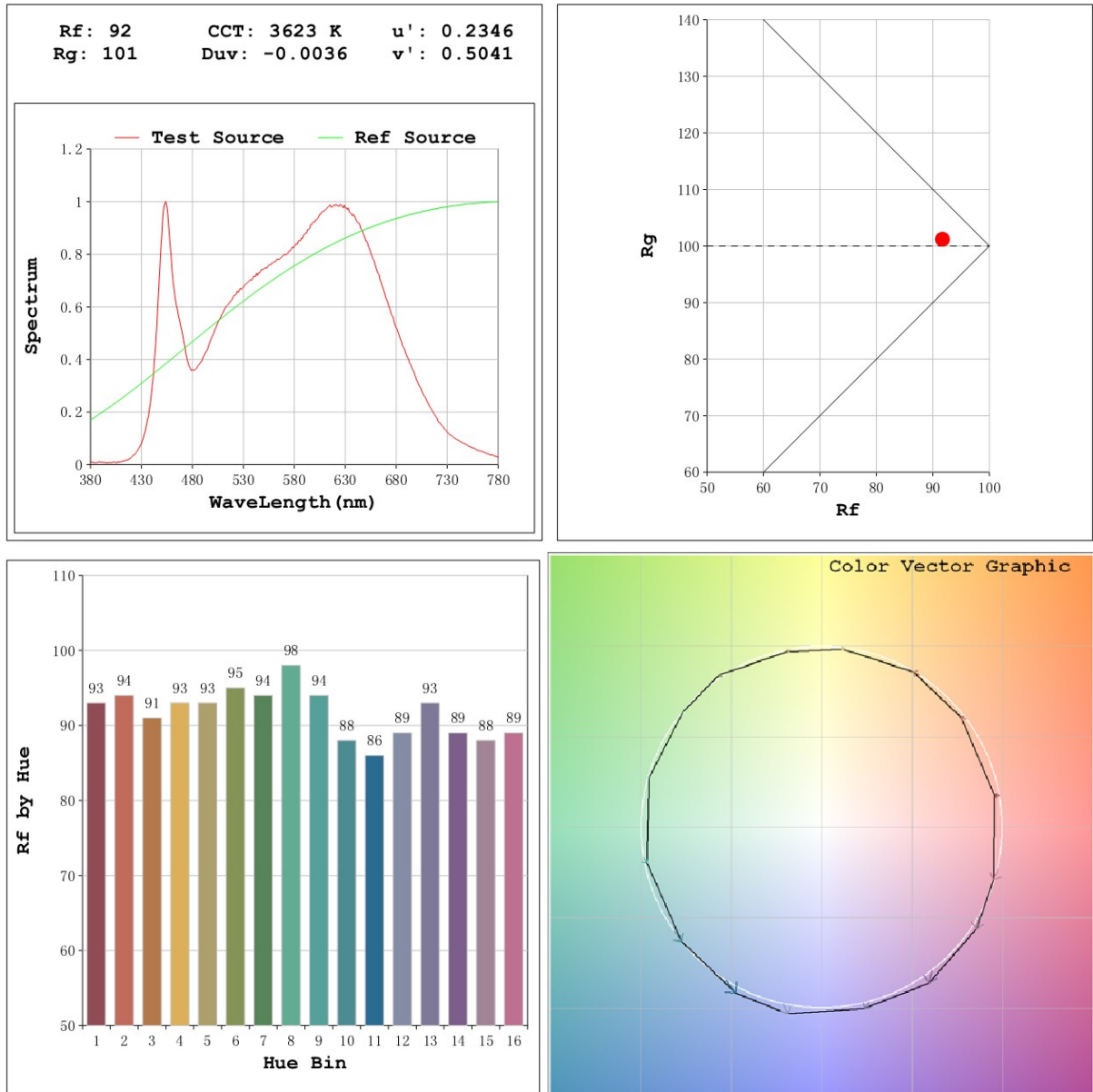
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	998.97
Luminous Efficacy (lm/W)	79.92
Beam Angle (°)	112.9
Center Beam Candle Power (cd)	347.0

Spectral Power Distribution & Chromaticity Diagram



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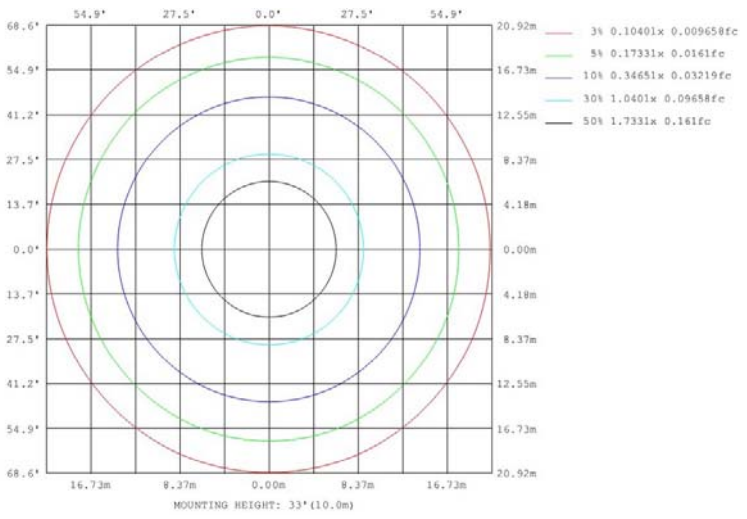
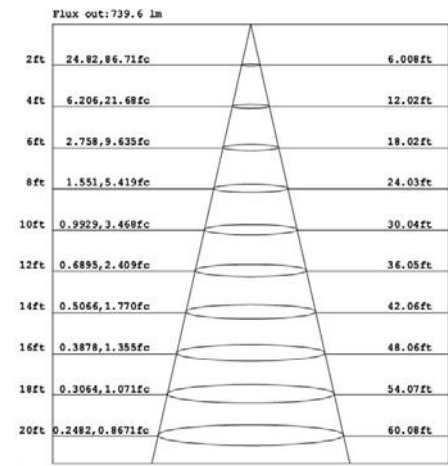
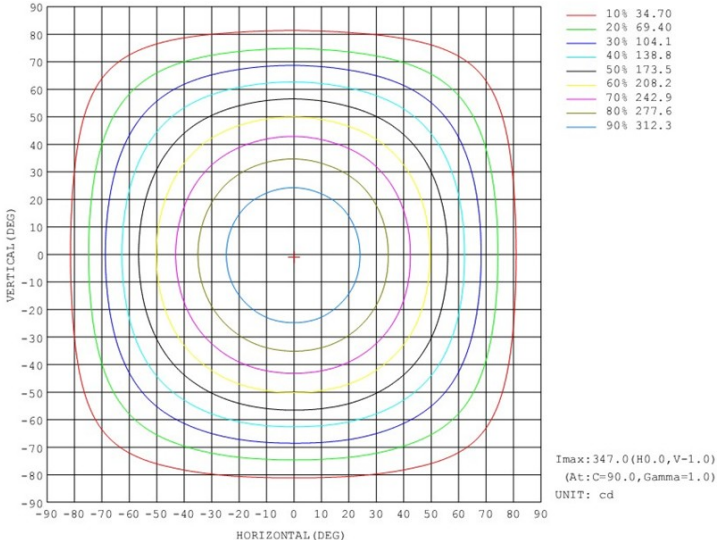
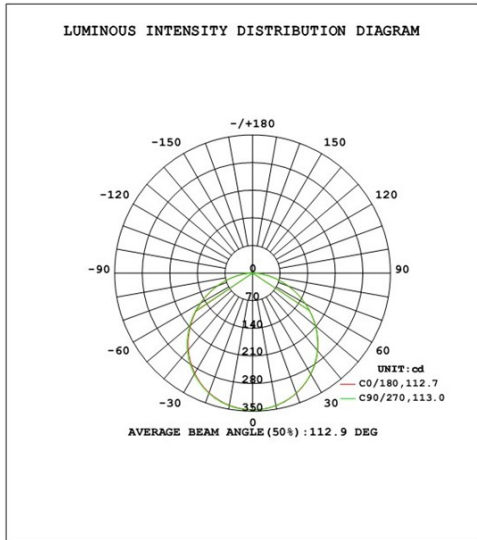


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	270.2	27.1%
0-40	443.4	44.4%
0-60	785.0	78.6%
60-90	213.9	21.4%
70-100	90.6	9.1%
90-120	0.0	0.0%
0-90	999.0	100.0%
90-180	0.0	0.0%
0-180	999.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.8	3.3%	90-100	0.0	0.0%
10-20	94.2	9.4%	100-110	0.0	0.0%
20-30	143.2	14.3%	110-120	0.0	0.0%
30-40	173.1	17.3%	120-130	0.0	0.0%
40-50	179.7	18.0%	130-140	0.0	0.0%
50-60	162.0	16.2%	140-150	0.0	0.0%
60-70	123.3	12.3%	150-160	0.0	0.0%
70-80	71.4	7.1%	160-170	0.0	0.0%
80-90	19.2	1.9%	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	DLS0180(SUMO34-R-12)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100013	120.0	60	0.107	12.60	0.980

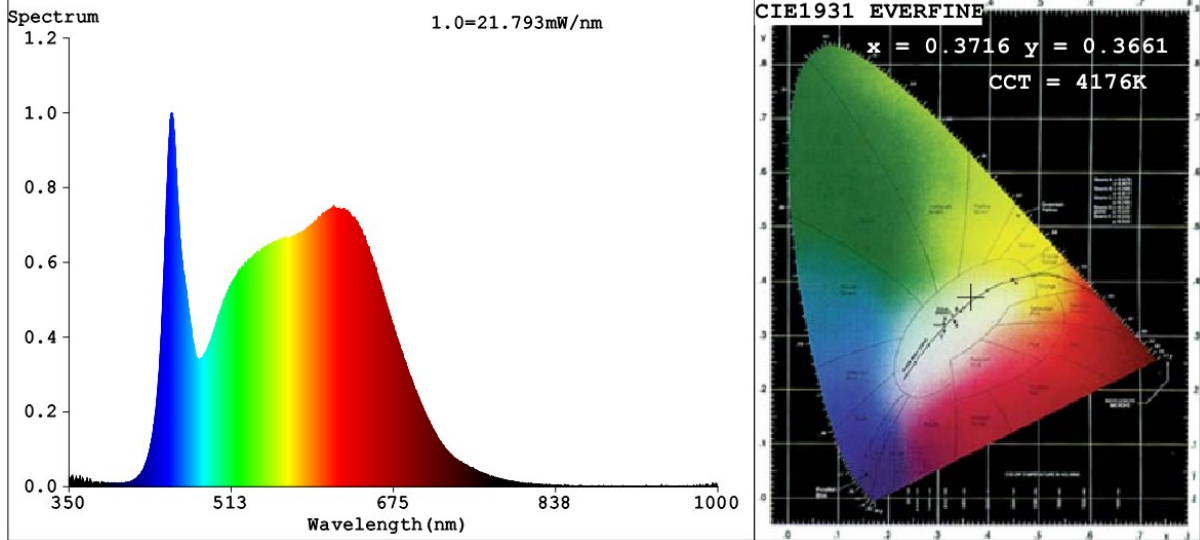
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	82
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	4176	R3	97	R11	96
Duv	-0.0024	R4	96	R12	72
Chromaticity (x, y)	x=0.3716 y=0.3661	R5	95	R13	98
Chromaticity (u', v')	u'=0.2235 v'=0.4955	R6	94	R14	98
Color Rendering Index (CRI)	95.7	R7	96	R15	96
R9	82	R8	92	--	--

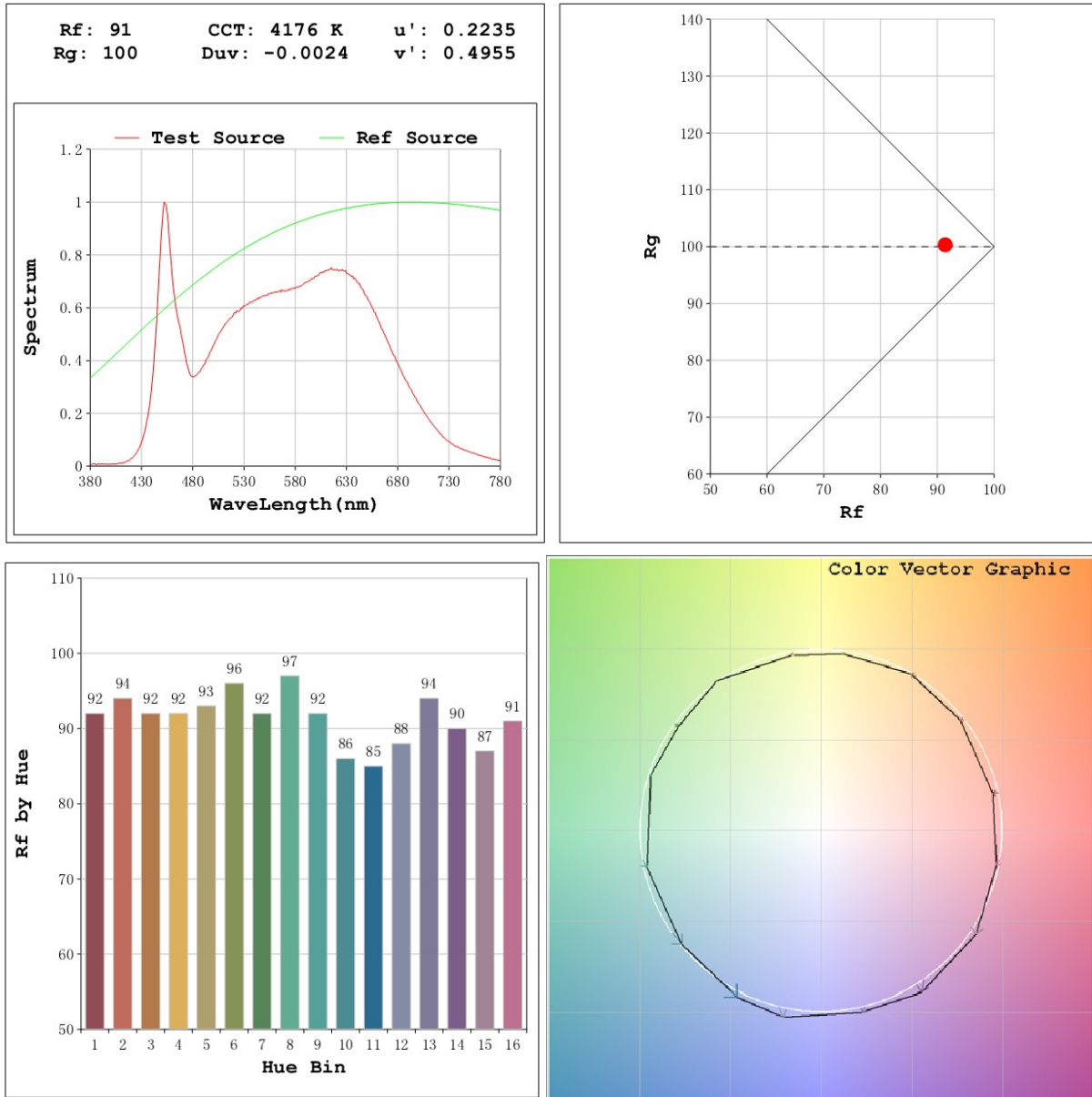
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1012.8
Luminous Efficacy (lm/W)	80.38
Beam Angle (°)	112.8
Center Beam Candle Power (cd)	352.0

Spectral Power Distribution & Chromaticity Diagram



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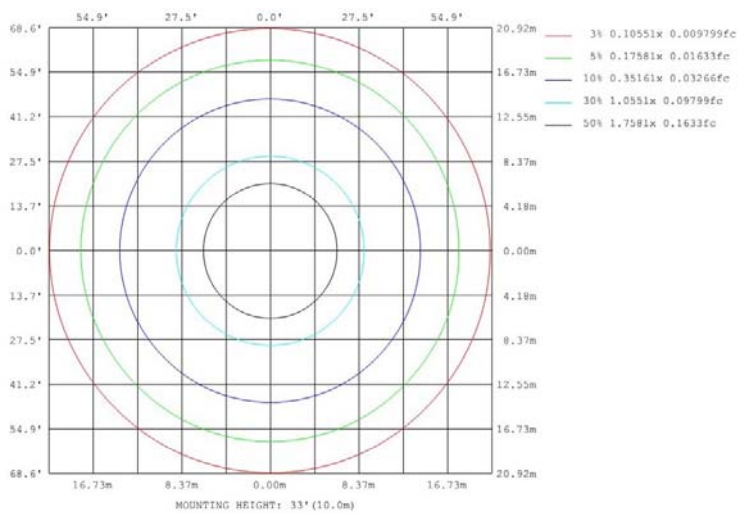
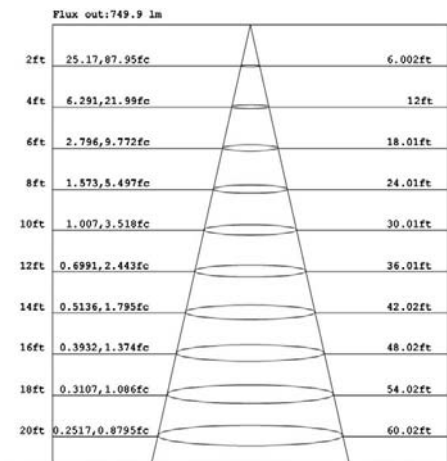
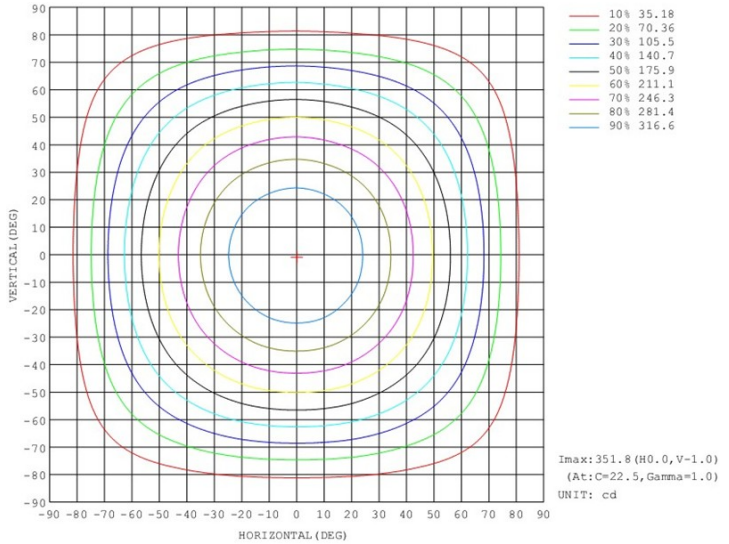
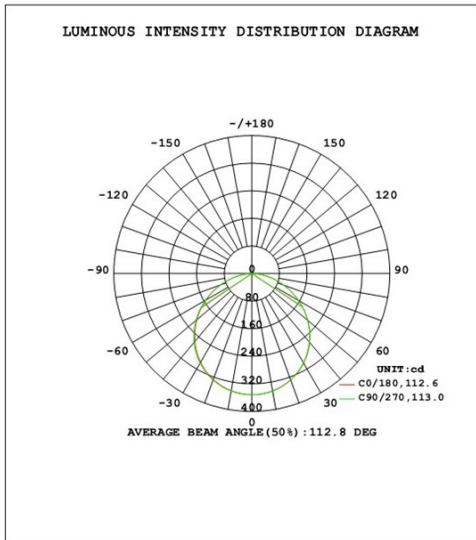


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	274.0	27.1%
0-40	449.5	44.4%
0-60	795.9	78.6%
60-90	216.9	21.4%
70-100	91.9	9.1%
90-120	0.0	0.0%
0-90	1012.8	100.0%
90-180	0.0	0.0%
0-180	1012.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	33.3	3.3%	90-100	0.0	0.0%
10-20	95.5	9.4%	100-110	0.0	0.0%
20-30	145.2	14.3%	110-120	0.0	0.0%
30-40	175.5	17.3%	120-130	0.0	0.0%
40-50	182.1	18.0%	130-140	0.0	0.0%
50-60	164.2	16.2%	140-150	0.0	0.0%
60-70	125.1	12.3%	150-160	0.0	0.0%
70-80	72.4	7.1%	160-170	0.0	0.0%
80-90	19.5	1.9%	170-180	0.0	0.0%

Photometric Data



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	DLS0180(SUMO34-R-12)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202310100013	120.0	60	0.109	12.90	0.980

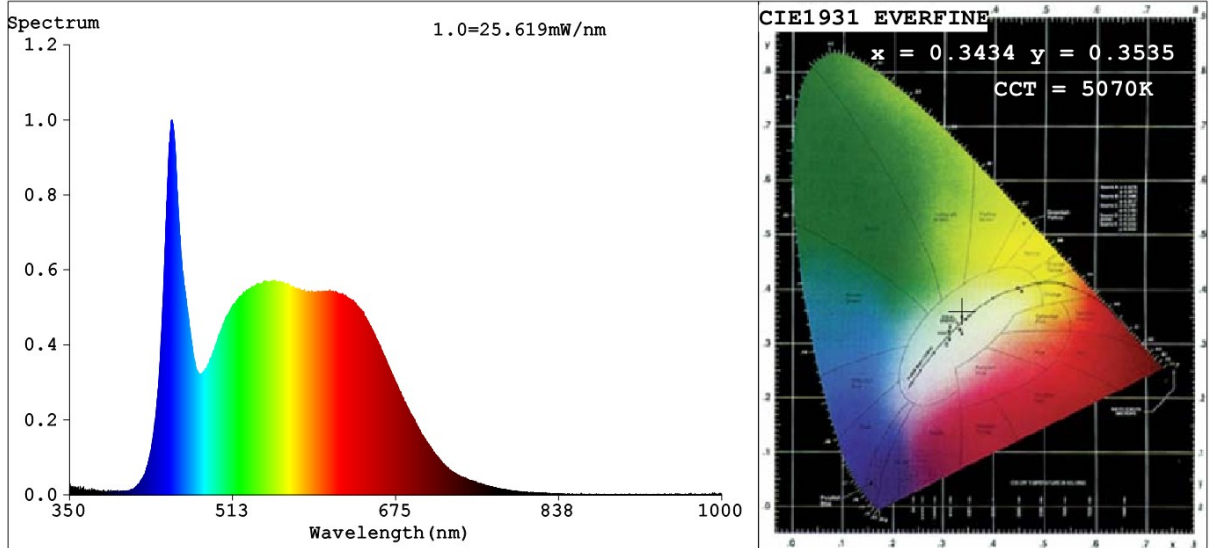
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	72
Frequency (Hz)	60	R2	95	R10	88
CCT (K)	5070	R3	95	R11	93
Duv	0.0016	R4	94	R12	72
Chromaticity (x, y)	x=0.3434 y=0.3535	R5	93	R13	95
Chromaticity (u', v')	u'=0.2096 v'=0.4853	R6	92	R14	97
Color Rendering Index (CRI)	93.5	R7	95	R15	93
R9	72	R8	90	--	--

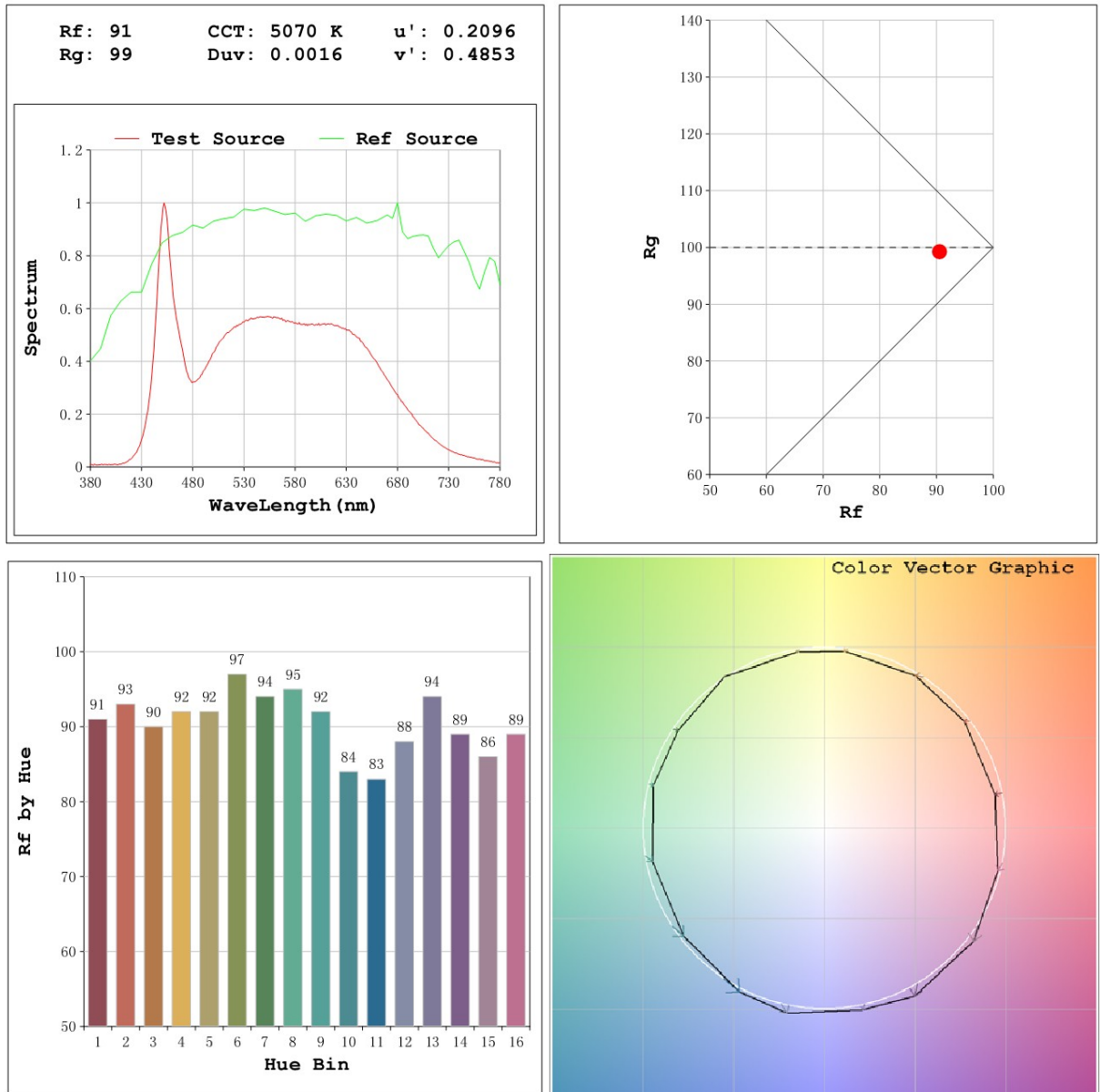
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	997.02
Luminous Efficacy (lm/W)	77.29
Beam Angle (°)	112.8
Center Beam Candle Power (cd)	346.6

Spectral Power Distribution & Chromaticity Diagram



TM30

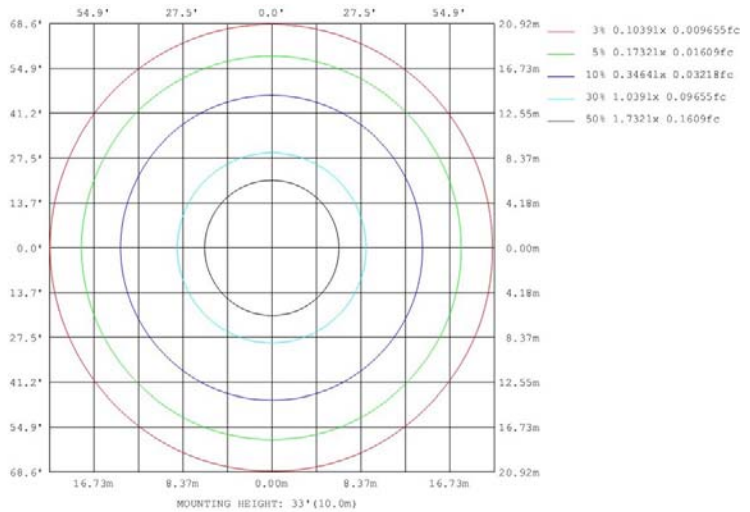
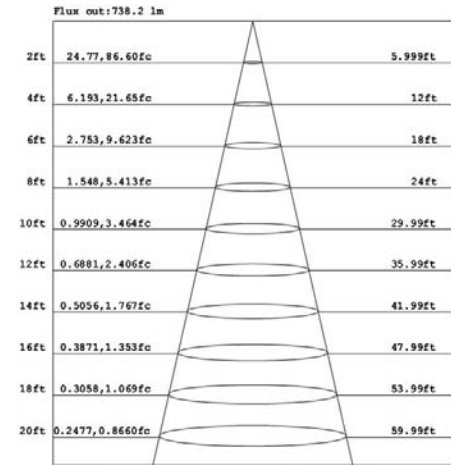
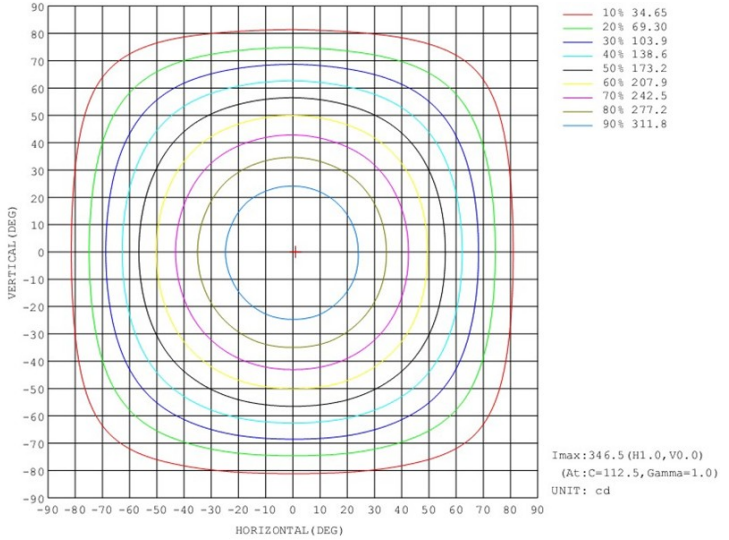
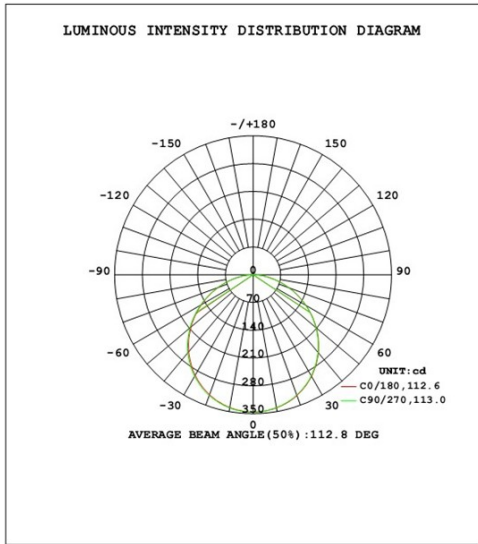


Zonal Lumen Tabulation

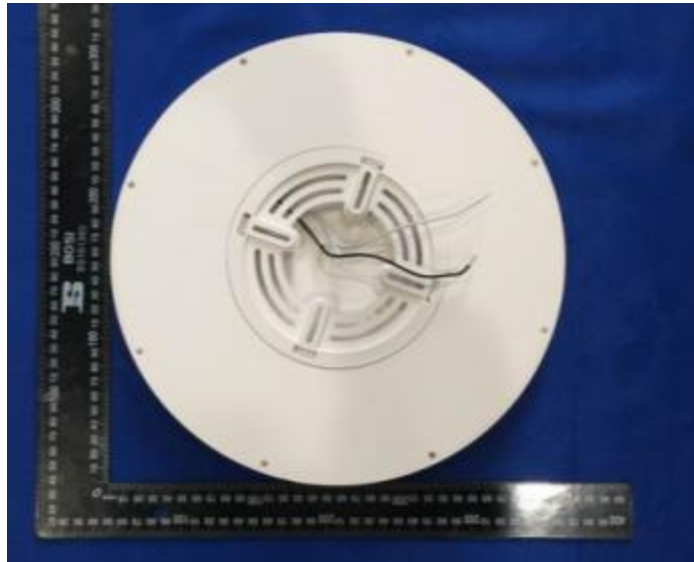
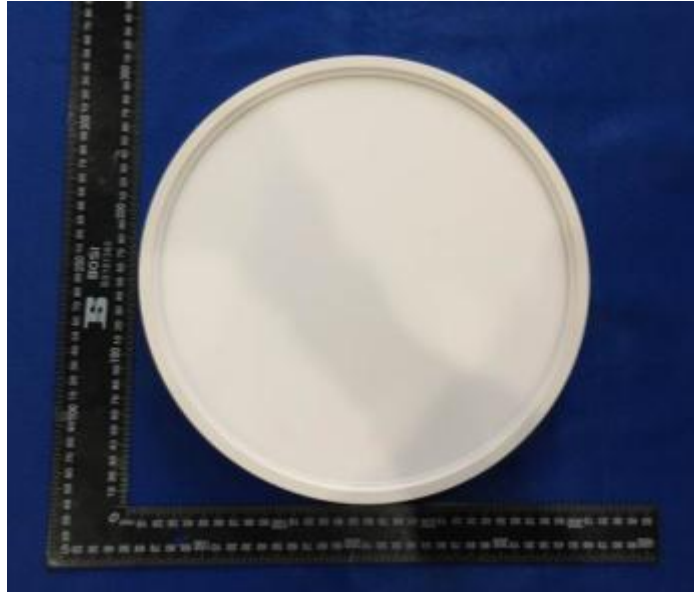
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	269.7	27.1%
0-40	442.5	44.4%
0-60	783.5	78.6%
60-90	213.5	21.4%
70-100	90.4	9.1%
90-120	0.0	0.0%
0-90	997.0	100.0%
90-180	0.0	0.0%
0-180	997.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.8	3.3%	90-100	0.0	0.0%
10-20	94.0	9.4%	100-110	0.0	0.0%
20-30	143.0	14.3%	110-120	0.0	0.0%
30-40	172.8	17.3%	120-130	0.0	0.0%
40-50	179.3	18.0%	130-140	0.0	0.0%
50-60	161.7	16.2%	140-150	0.0	0.0%
60-70	123.1	12.3%	150-160	0.0	0.0%
70-80	71.2	7.1%	160-170	0.0	0.0%
80-90	19.2	1.9%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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