

**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):**  
**DLS0143(SUMO-R-19)**

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

**Type of  
Luminaire:** Downlights

**Report Date:** 2022-07-20

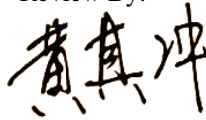
**Prepared By:**

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

<b>1.1 Rated Values:</b>	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	30.0 W
Rated Initial Lamp Lumen	2250 lm
Declared CCT	2700K/3000K/3500K/4000K/5000K

### 1.2 Test Specifications:

Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
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

<b>Test date</b>	2022-07-20	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0143(SUMO-R-19)	2700K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207120050	120.0	60	0.249	29.40	0.983

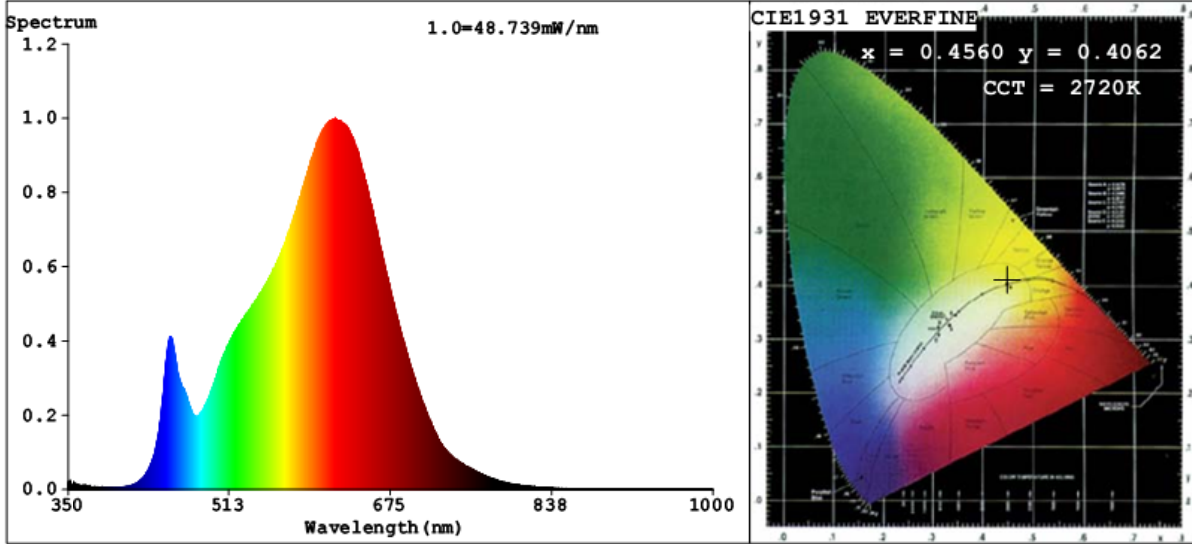
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	54
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	2720	R3	98	R11	93
Duv	-0.0013	R4	92	R12	85
Chromaticity (x, y)	x=0.4560 y=0.4062	R5	93	R13	94
Chromaticity (u', v')	u'=0.2620 v'=0.5251	R6	97	R14	100
Color Rendering Index (CRI)	92.0	R7	89	R15	88
R9	54	R8	78	--	--

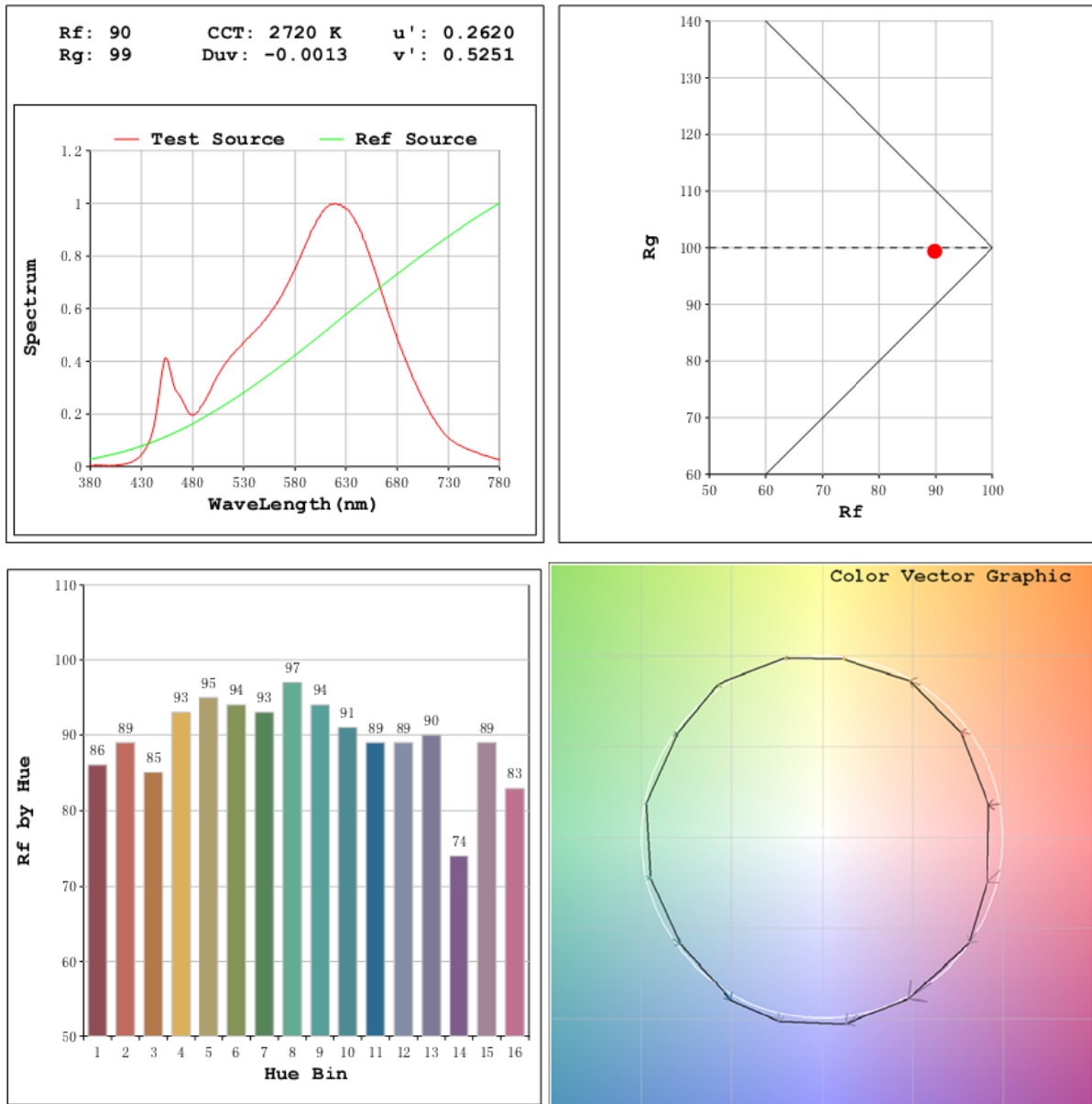
### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2255.4
Luminous Efficacy (lm/W)	76.71
Beam Angle (°)	113.5
Center Beam Candle Power (cd)	778.3

# Spectral Power Distribution & Chromaticity Diagram



## TM30

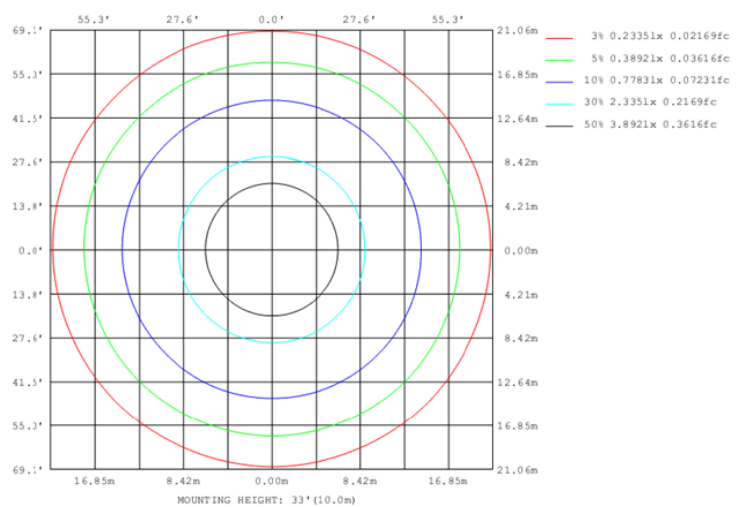
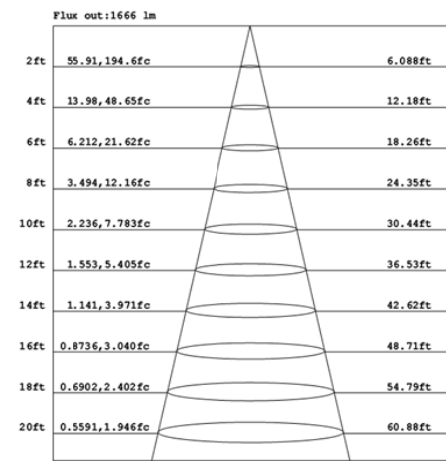
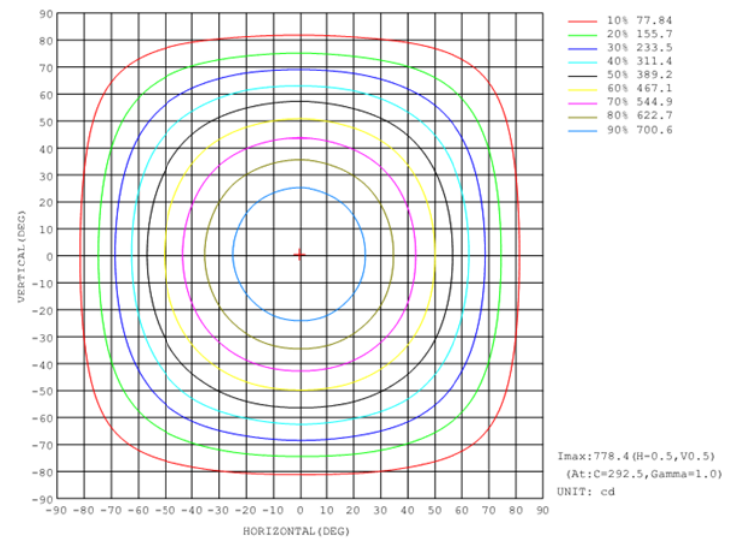
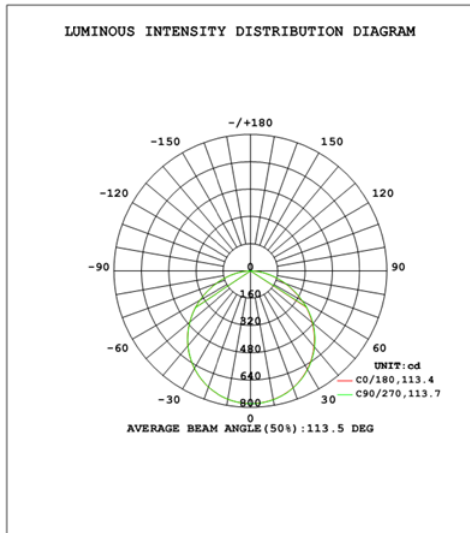


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	607.0	26.9%
0-40	996.6	44.2%
0-60	1768.5	78.4%
60-90	486.9	21.6%
70-100	208.4	9.2%
90-120	0.0	0.0%
0-90	2255.4	100.0%
90-180	0.0	0.0%
0-180	2255.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	73.7	3.3%	90-100	0.0	0.0%
10-20	211.5	9.4%	100-110	0.0	0.0%
20-30	321.8	14.3%	110-120	0.0	0.0%
30-40	389.6	17.3%	120-130	0.0	0.0%
40-50	405.4	18.0%	130-140	0.0	0.0%
50-60	366.6	16.3%	140-150	0.0	0.0%
60-70	278.4	12.3%	150-160	0.0	0.0%
70-80	161.7	7.2%	160-170	0.0	0.0%
80-90	46.8	2.1%	170-180	0.0	0.0%

## Photometric Data





## 2.1.2 Electrical, Photometric and Chromaticity Measurements

<b>Test date</b>	2022-07-20	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0143(SUMO-R-19)	3000K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202207120050	120.0	60	0.246	29.00	0.983

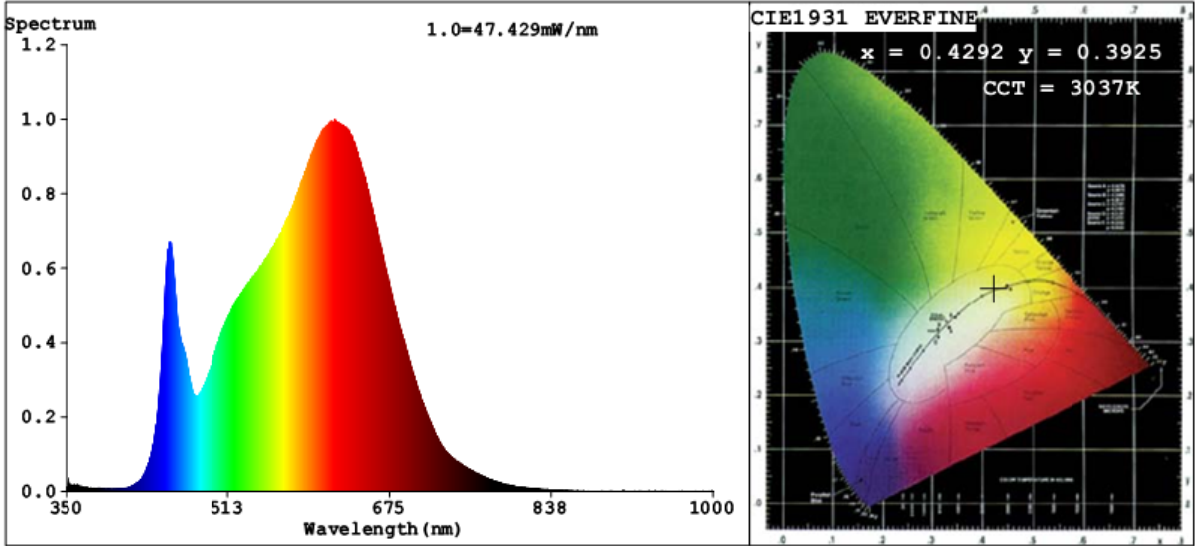
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	66
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3037	R3	98	R11	95
Duv	-0.0036	R4	94	R12	82
Chromaticity (x, y)	x=0.4292 y=0.3925	R5	95	R13	97
Chromaticity (u', v')	u'=0.2506 v'=0.5156	R6	96	R14	99
Color Rendering Index (CRI)	94.0	R7	91	R15	92
R9	66	R8	84	--	--

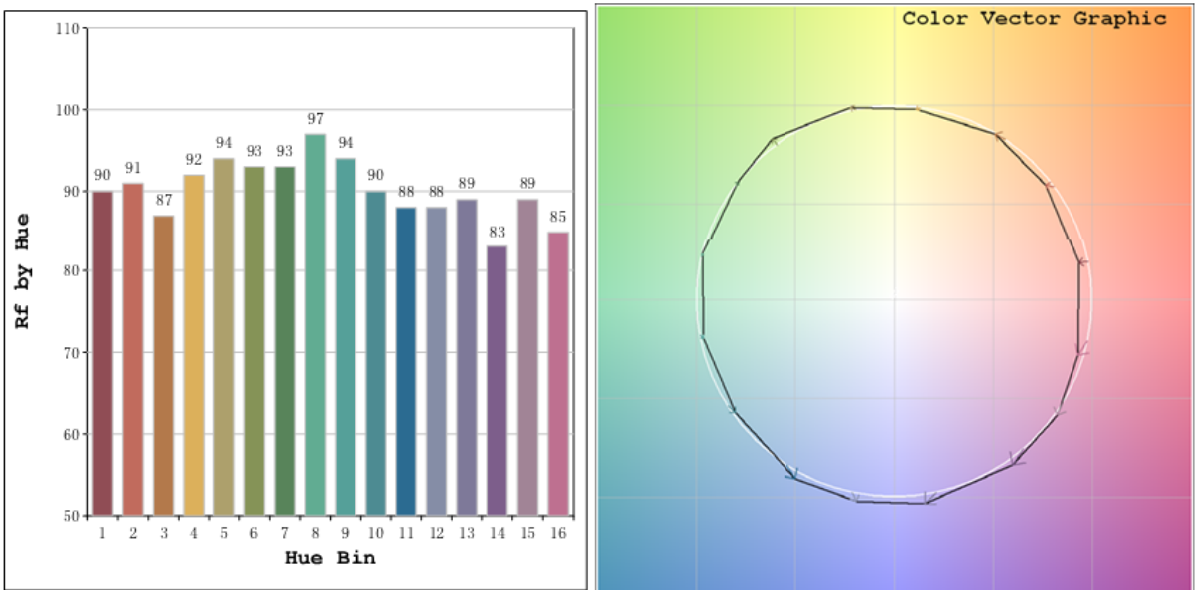
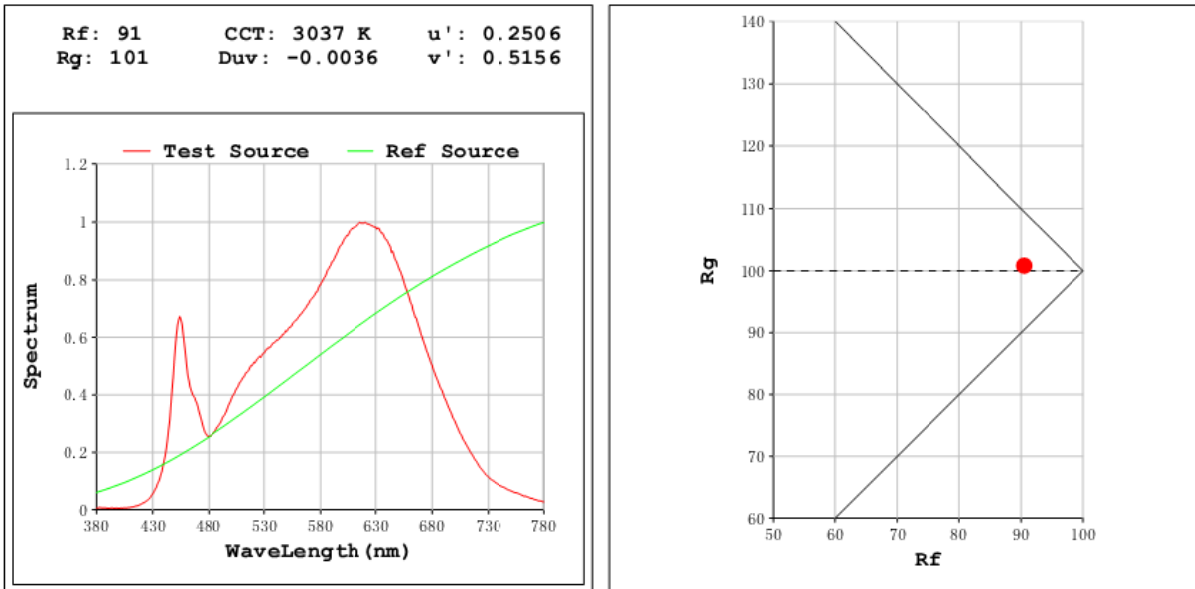
### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2358.9
Luminous Efficacy (lm/W)	81.34
Beam Angle (°)	113.5
Center Beam Candle Power (cd)	813.9

# Spectral Power Distribution & Chromaticity Diagram



## TM30

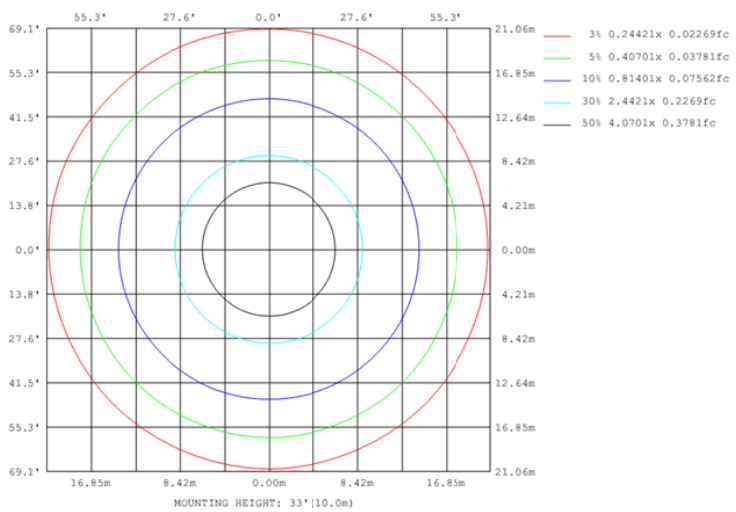
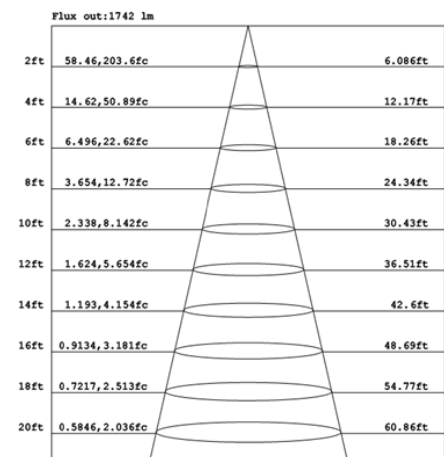
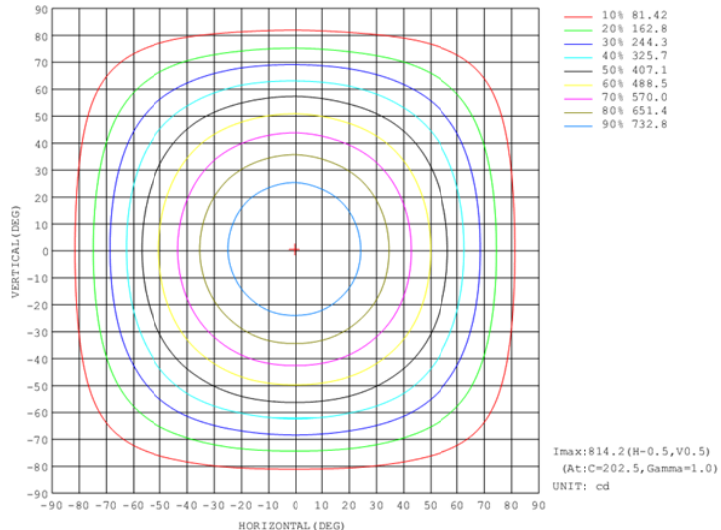
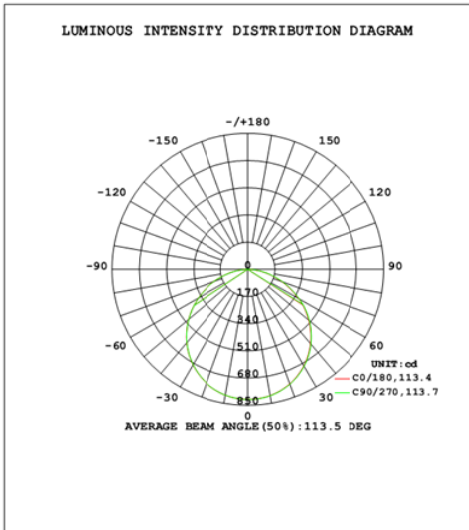


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	634.8	26.9%
0-40	1042.1	44.2%
0-60	1849.5	78.4%
60-90	509.4	21.6%
70-100	218.2	9.2%
90-120	0.0	0.0%
0-90	2358.9	100.0%
90-180	0.0	0.0%
0-180	2358.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	77.0	3.3%	90-100	0.0	0.0%
10-20	221.2	9.4%	100-110	0.0	0.0%
20-30	336.6	14.3%	110-120	0.0	0.0%
30-40	407.4	17.3%	120-130	0.0	0.0%
40-50	423.8	18.0%	130-140	0.0	0.0%
50-60	383.6	16.3%	140-150	0.0	0.0%
60-70	291.2	12.3%	150-160	0.0	0.0%
70-80	169.2	7.2%	160-170	0.0	0.0%
80-90	48.9	2.1%	170-180	0.0	0.0%

## Photometric Data





**2.1.3 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2022-07-20	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0143(SUMO-R-19)	3500K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202207120050	120.0	60	0.242	28.60	0.982

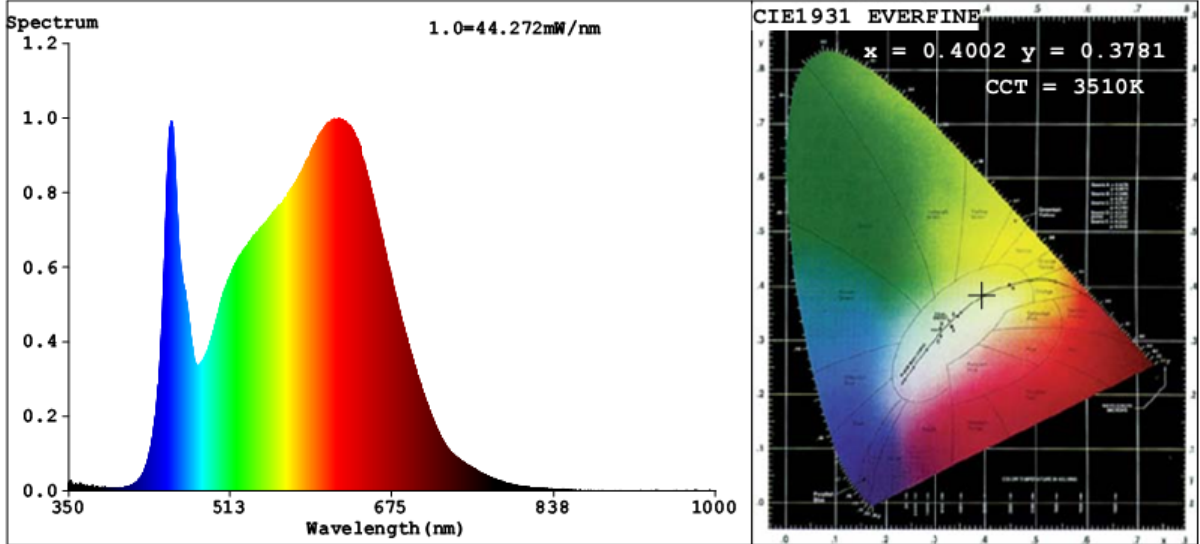
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	77
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3510	R3	98	R11	96
Duv	-0.0045	R4	96	R12	78
Chromaticity (x, y)	x=0.4002 y=0.3781	R5	96	R13	98
Chromaticity (u', v')	u'=0.2376 v'=0.5051	R6	95	R14	99
Color Rendering Index (CRI)	95.5	R7	94	R15	96
R9	77	R8	89	--	--

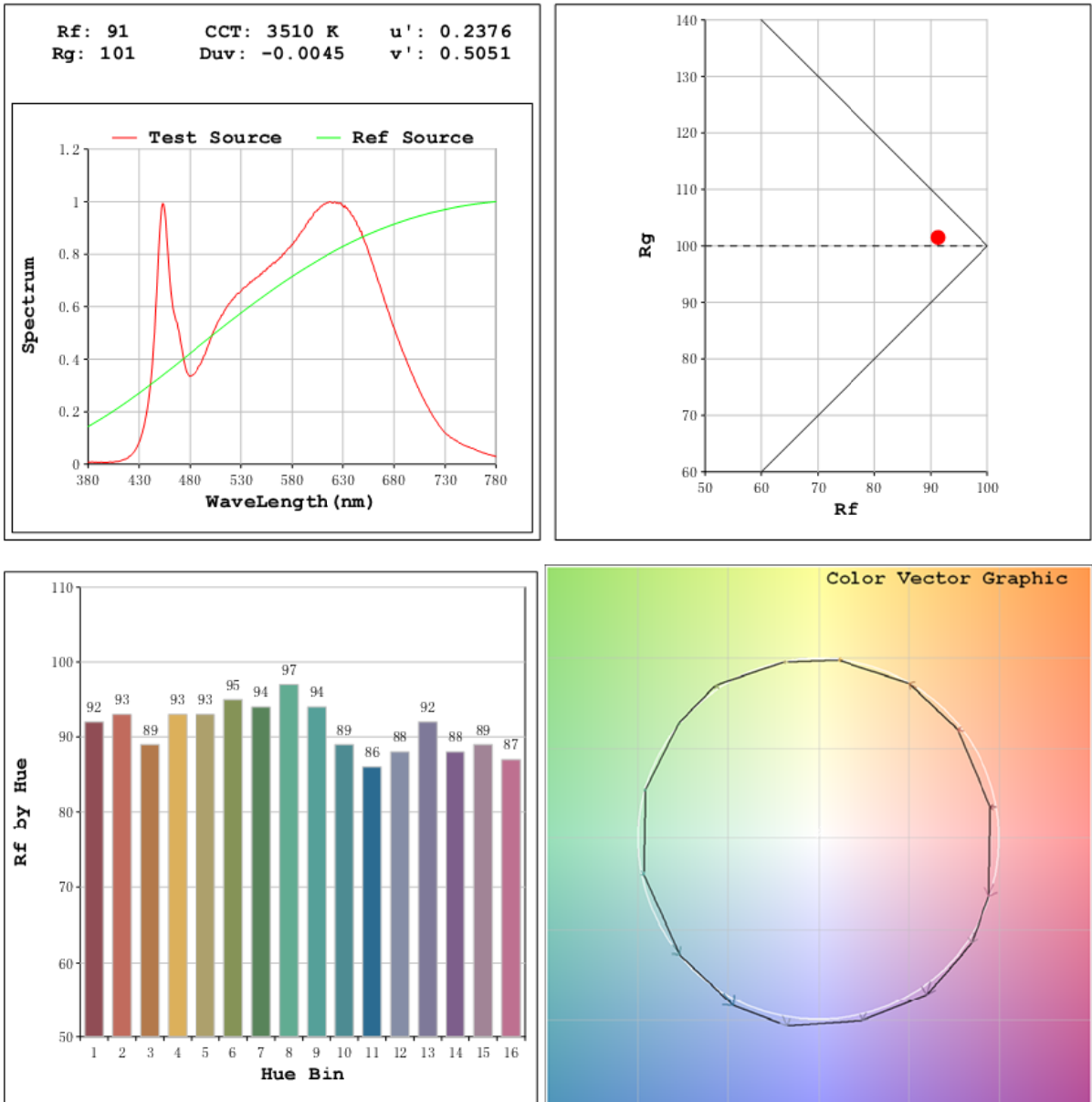
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2432.5
Luminous Efficacy (lm/W)	85.05
Beam Angle (°)	113.5
Center Beam Candle Power (cd)	839.2

# Spectral Power Distribution & Chromaticity Diagram



## TM30

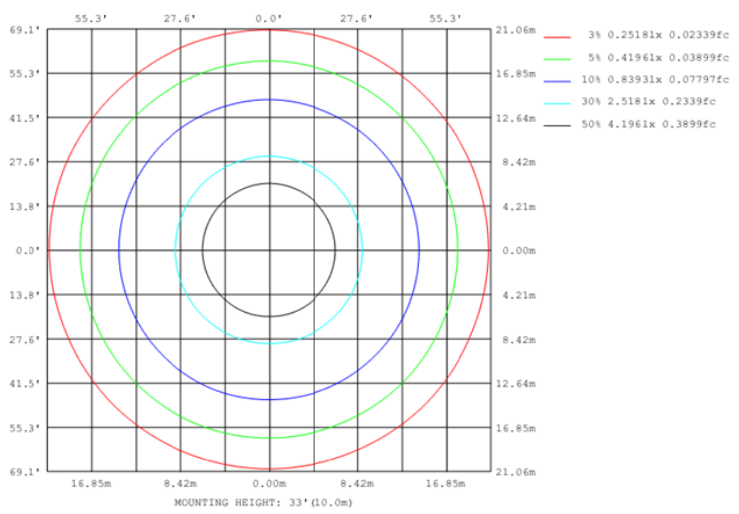
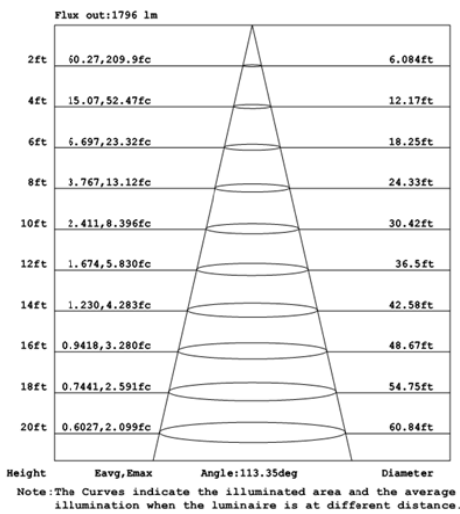
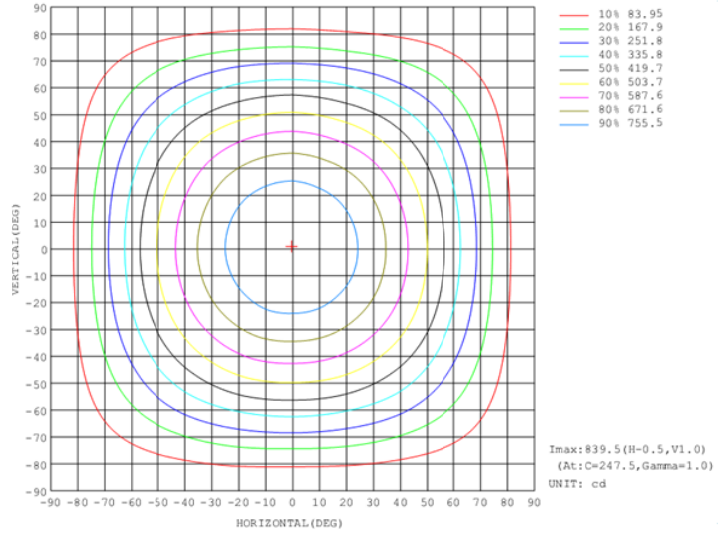
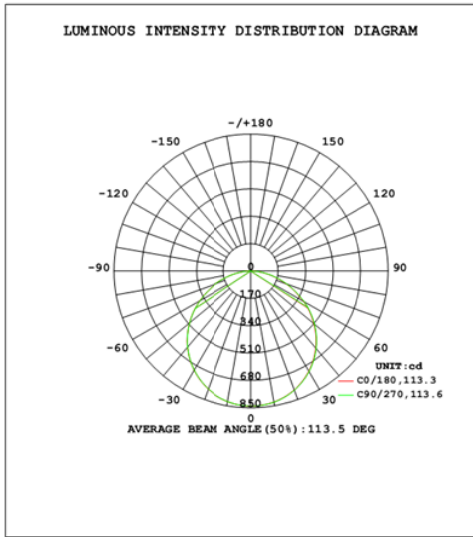


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	654.5	26.9%
0-40	1074.5	44.2%
0-60	1907.0	78.4%
60-90	525.4	21.6%
70-100	225.0	9.3%
90-120	0.0	0.0%
0-90	2432.5	100.0%
90-180	0.0	0.0%
0-180	2432.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	79.4	3.3%	90-100	0.0	0.0%
10-20	228.1	9.4%	100-110	0.0	0.0%
20-30	347.0	14.3%	110-120	0.0	0.0%
30-40	420.0	17.3%	120-130	0.0	0.0%
40-50	437.0	18.0%	130-140	0.0	0.0%
50-60	395.6	16.3%	140-150	0.0	0.0%
60-70	300.4	12.3%	150-160	0.0	0.0%
70-80	174.6	7.2%	160-170	0.0	0.0%
80-90	50.5	2.1%	170-180	0.0	0.0%

## Photometric Data





## 2.1.4 Electrical, Photometric and Chromaticity Measurements

<b>Test date</b>	2022-07-20	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0143(SUMO-R-19)	4000K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202207120050	120.0	60	0.245	28.90	0.982

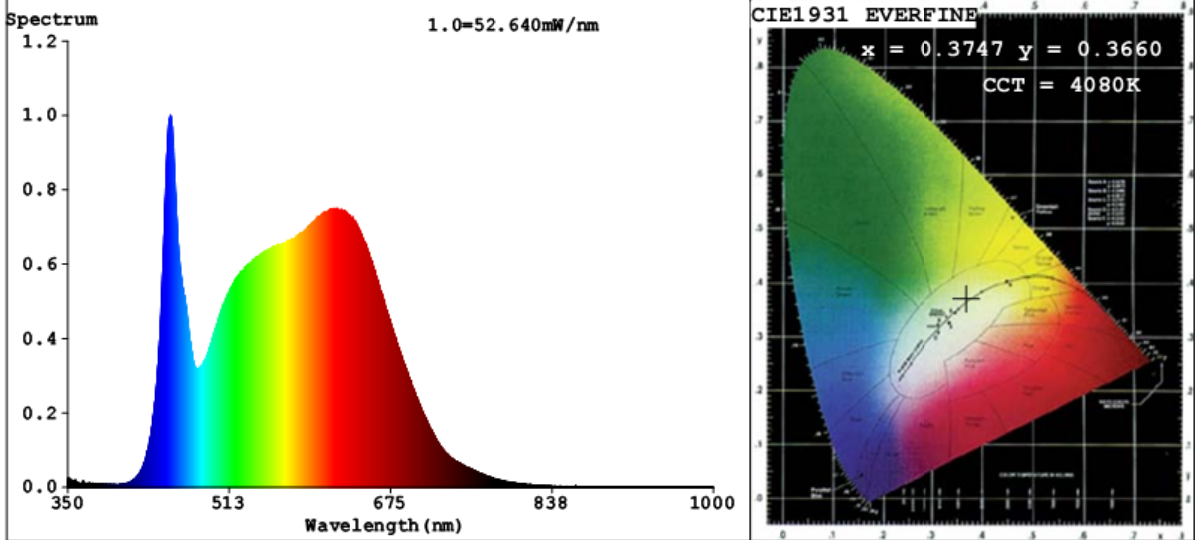
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	83
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	4080	R3	96	R11	96
Duv	-0.0034	R4	96	R12	73
Chromaticity (x, y)	x=0.3747 y=0.3660	R5	94	R13	98
Chromaticity (u', v')	u'=0.2257 v'=0.4959	R6	96	R14	97
Color Rendering Index (CRI)	95.8	R7	93	R15	97
R9	83	R8	83	--	--

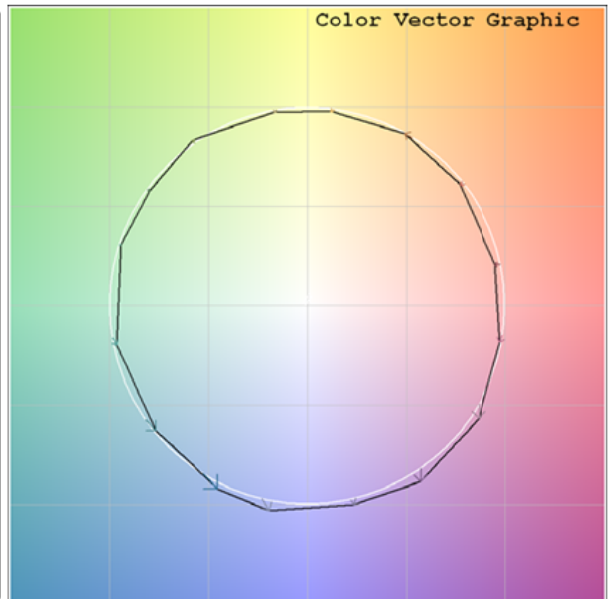
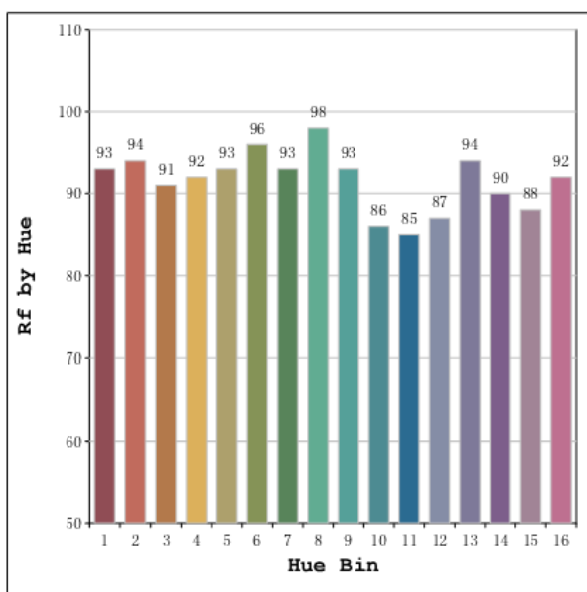
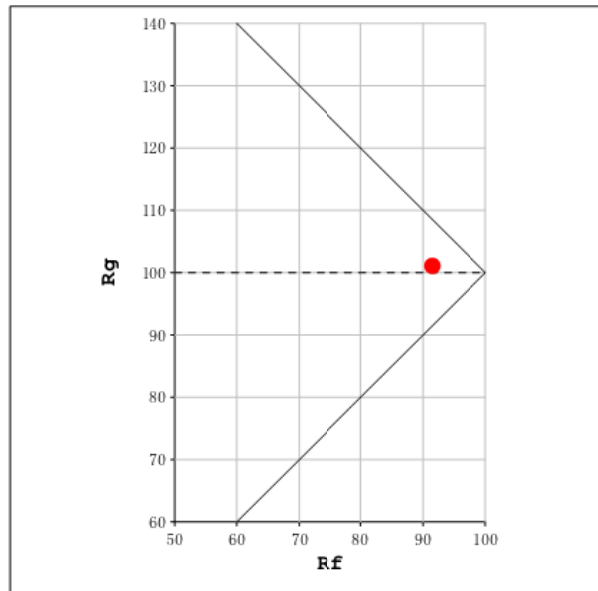
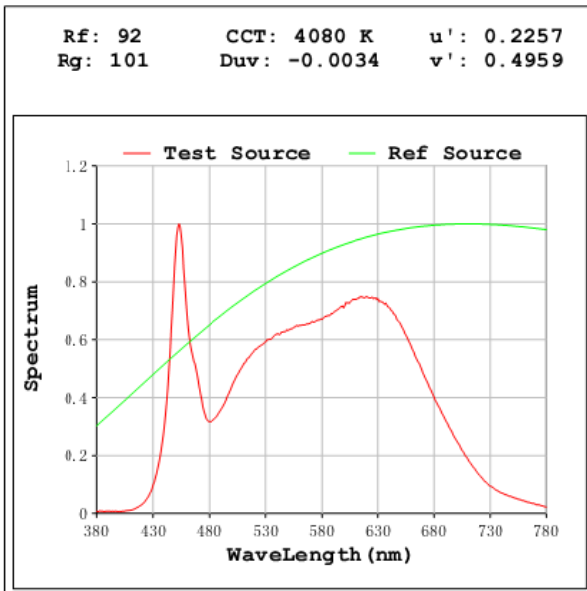
### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2405.2
Luminous Efficacy (lm/W)	83.22
Beam Angle (°)	113.5
Center Beam Candle Power (cd)	829.9

# Spectral Power Distribution & Chromaticity Diagram



## TM30

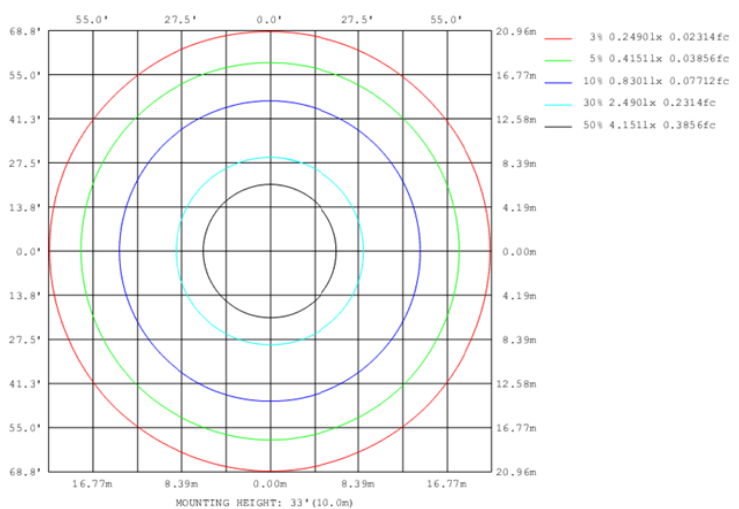
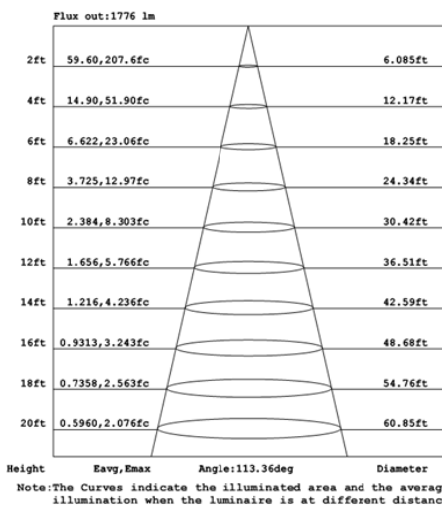
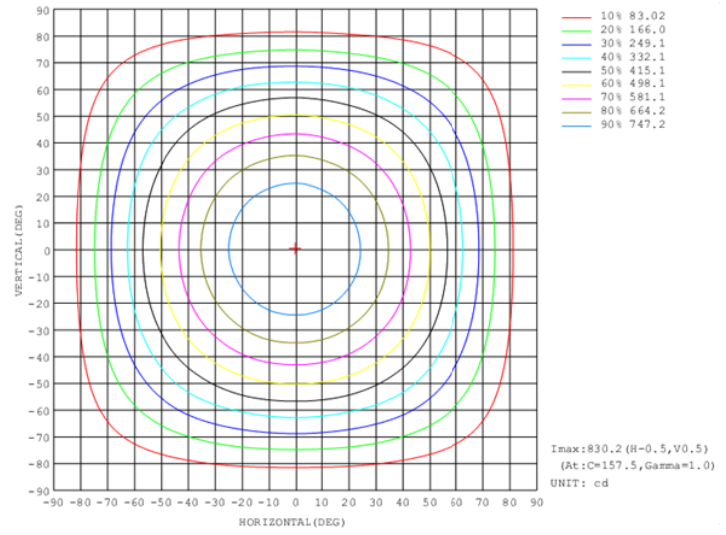
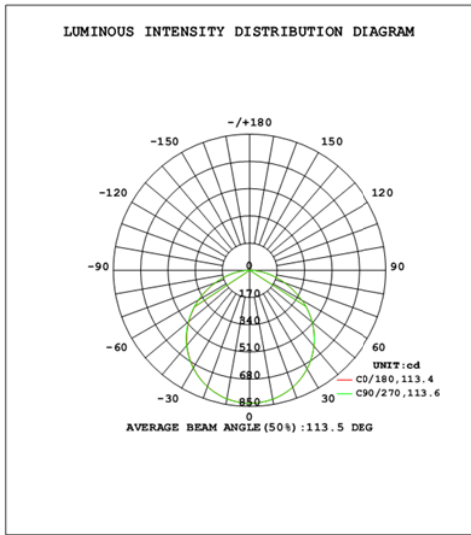


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	647.2	26.9%
0-40	1062.5	44.2%
0-60	1885.7	78.4%
60-90	519.5	21.6%
70-100	222.5	9.3%
90-120	0.0	0.0%
0-90	2405.2	100.0%
90-180	0.0	0.0%
0-180	2405.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	78.6	3.3%	90-100	0.0	0.0%
10-20	225.5	9.4%	100-110	0.0	0.0%
20-30	343.1	14.3%	110-120	0.0	0.0%
30-40	415.3	17.3%	120-130	0.0	0.0%
40-50	432.1	18.0%	130-140	0.0	0.0%
50-60	391.2	16.3%	140-150	0.0	0.0%
60-70	297.0	12.3%	150-160	0.0	0.0%
70-80	172.6	7.2%	160-170	0.0	0.0%
80-90	49.9	2.1%	170-180	0.0	0.0%

## Photometric Data





## 2.1.5 Electrical, Photometric and Chromaticity Measurements

<b>Test date</b>	2022-07-20	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0143(SUMO-R-19)	5000K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202207120050	120.0	60	0.249	29.40	0.983

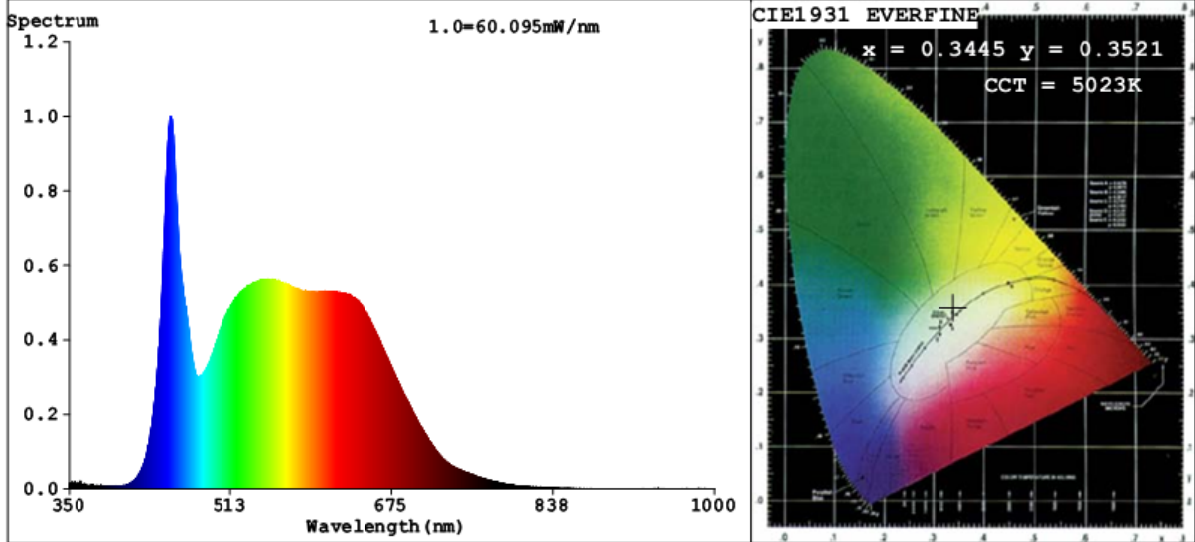
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	79
Frequency (Hz)	60	R2	95	R10	87
CCT (K)	5023	R3	93	R11	94
Duv	0.0005	R4	94	R12	72
Chromaticity (x, y)	x=0.3445 y=0.3521	R5	94	R13	95
Chromaticity (u', v')	u'=0.2108 v'=0.4848	R6	91	R14	96
Color Rendering Index (CRI)	93.9	R7	96	R15	95
R9	79	R8	92	--	--

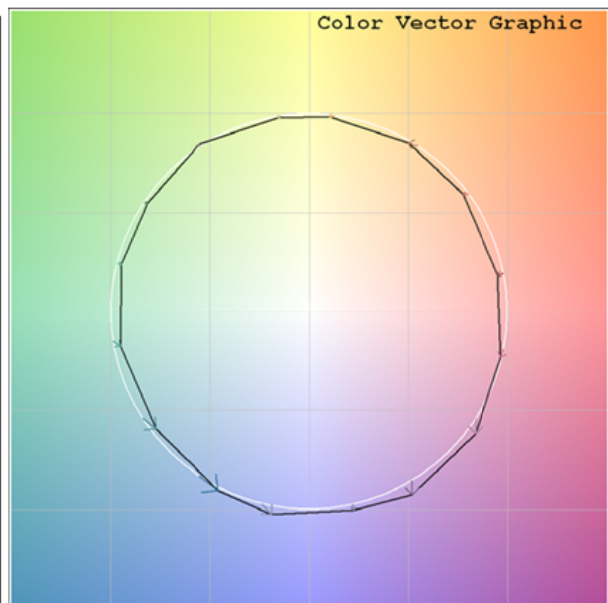
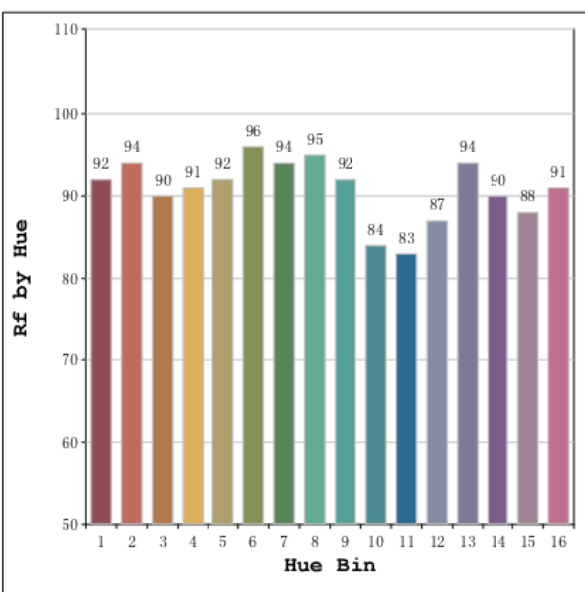
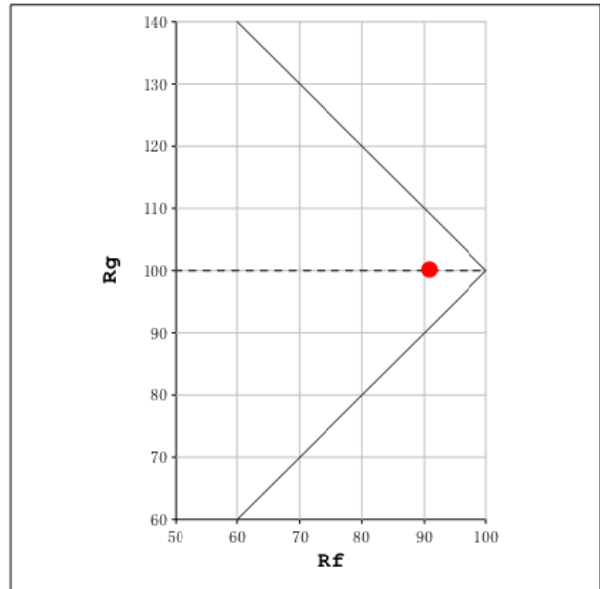
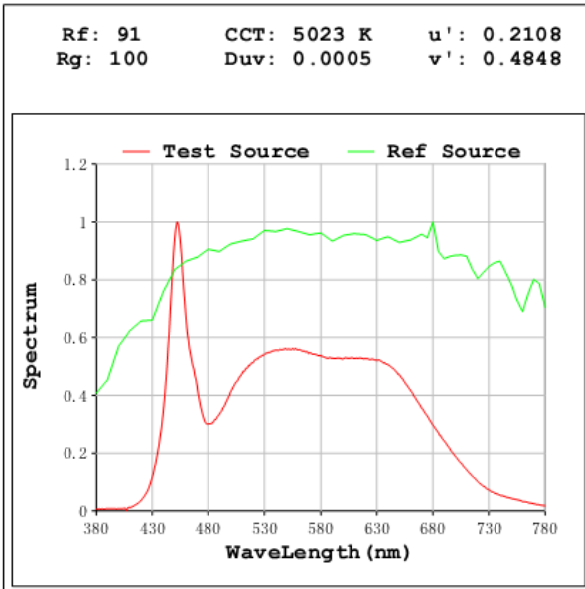
### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2269.3
Luminous Efficacy (lm/W)	77.19
Beam Angle (°)	113.4
Center Beam Candle Power (cd)	783.8

# Spectral Power Distribution & Chromaticity Diagram



## TM30

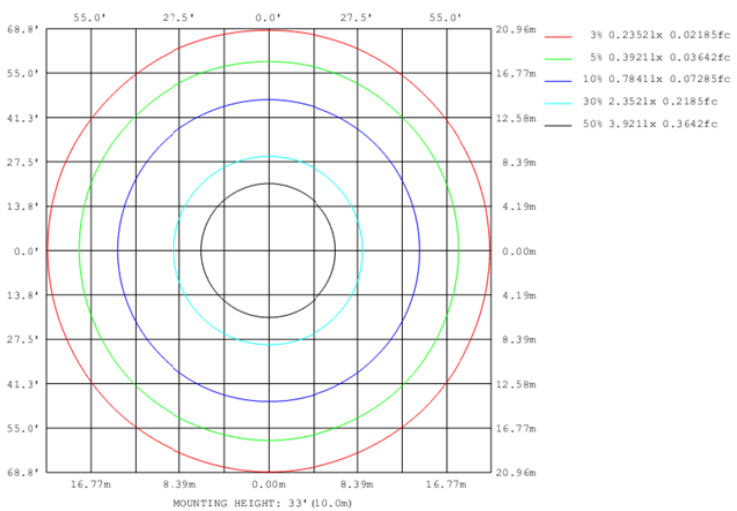
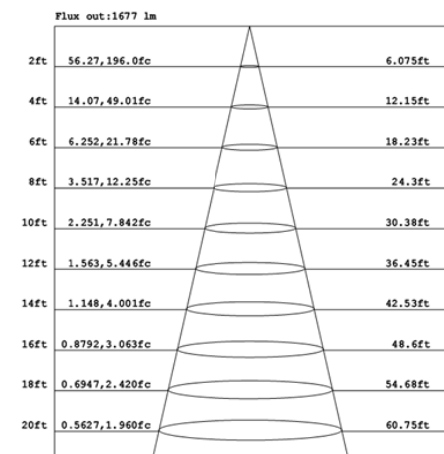
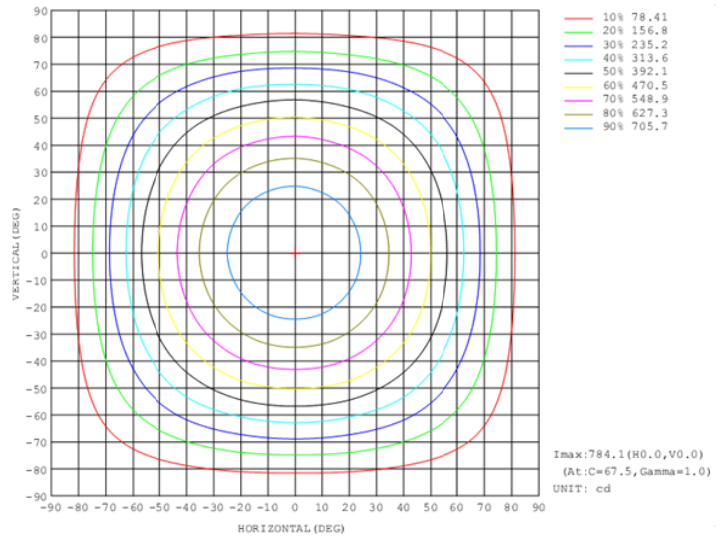
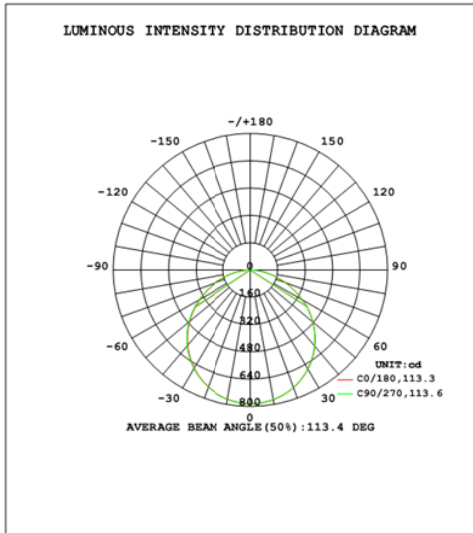


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	611.2	26.9%
0-40	1003.3	44.2%
0-60	1780.0	78.4%
60-90	489.3	21.6%
70-100	209.3	9.2%
90-120	0.0	0.0%
0-90	2269.3	100.0%
90-180	0.0	0.0%
0-180	2269.3	100.0%

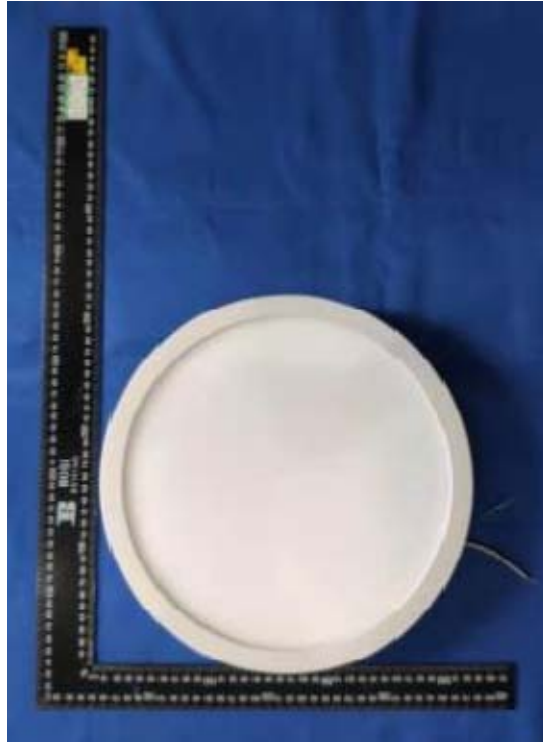
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	74.2	3.3%	90-100	0.0	0.0%
10-20	213.0	9.4%	100-110	0.0	0.0%
20-30	324.0	14.3%	110-120	0.0	0.0%
30-40	392.1	17.3%	120-130	0.0	0.0%
40-50	407.9	18.0%	130-140	0.0	0.0%
50-60	368.9	16.3%	140-150	0.0	0.0%
60-70	280.0	12.3%	150-160	0.0	0.0%
70-80	162.5	7.2%	160-170	0.0	0.0%
80-90	46.9	2.1%	170-180	0.0	0.0%

## Photometric Data





### 3. Product Photo



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