

**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):**  
**DLS0177(SUMO-S-5)**

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

**Type of  
Luminaire:** Downlights

**Report Date:** 2023-07-27

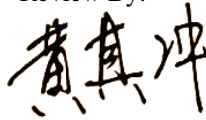
**Prepared By:**

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	10.0 W
Rated Initial Lamp Lumen	650 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>	2023-07-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0177(SUMO-S-5)	2700K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202307270004	120.0	60	0.088	9.82	0.927

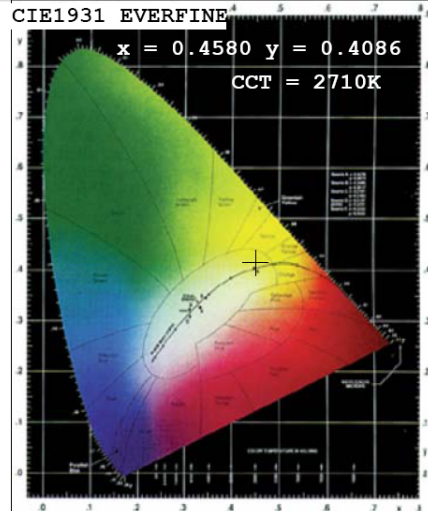
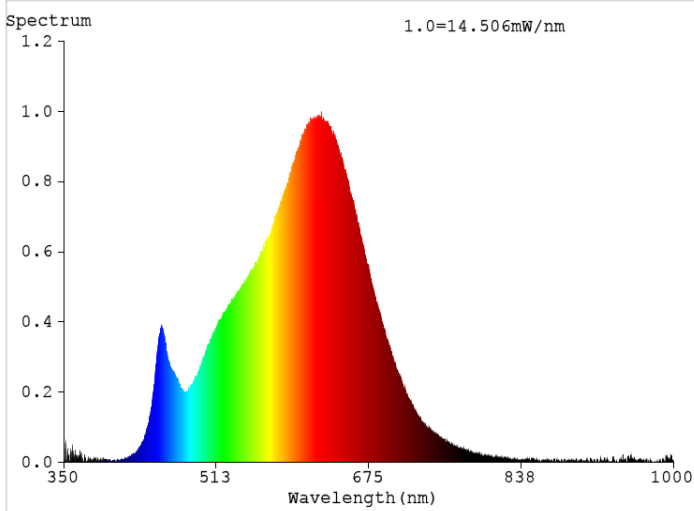
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	58
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	2710	R3	98	R11	95
Duv	-0.0006	R4	93	R12	85
Chromaticity (x, y)	x=0.4580 y=0.4086	R5	94	R13	95
Chromaticity (u', v')	u'=0.2622 v'=0.5263	R6	97	R14	100
Color Rendering Index (CRI)	93.0	R7	90	R15	89
R9	58	R8	80	--	--

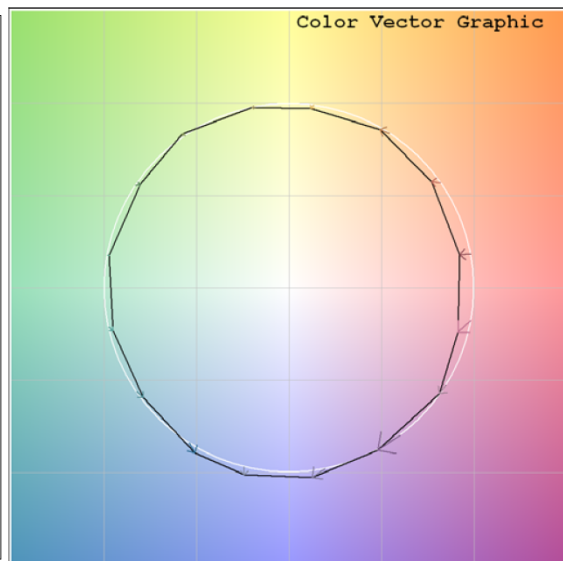
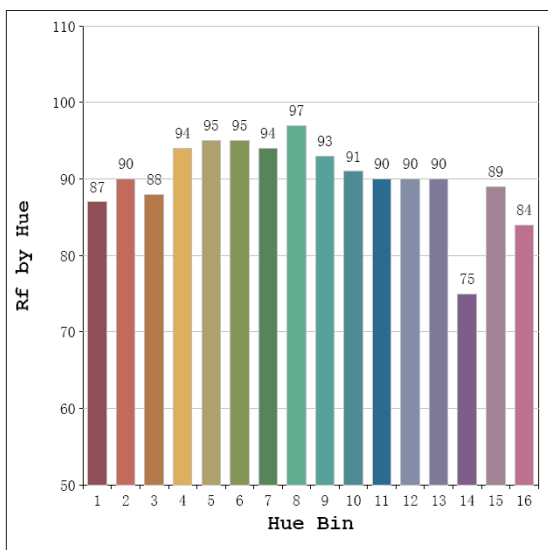
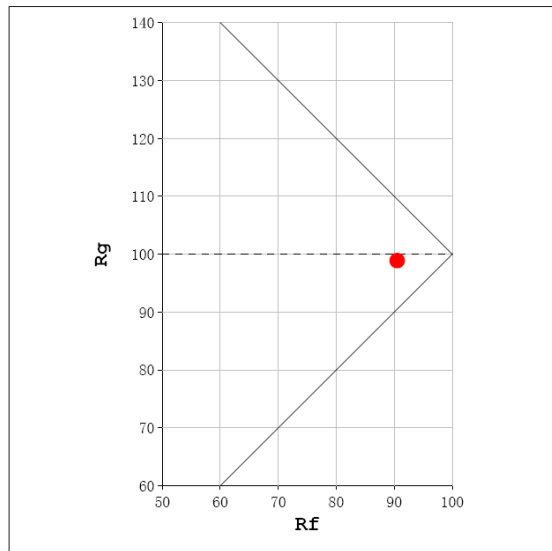
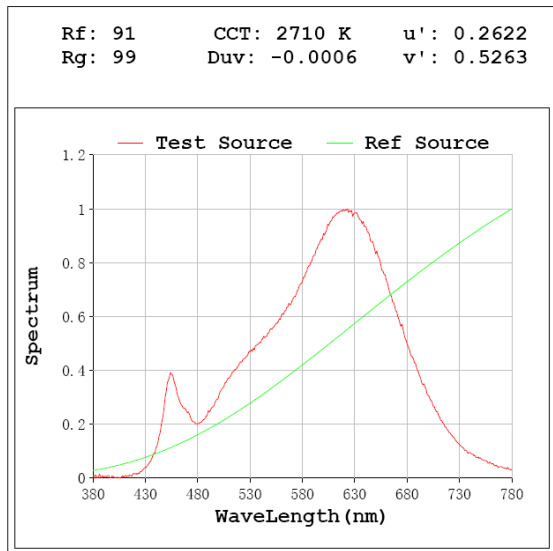
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	652.57
Luminous Efficacy (lm/W)	66.45
Beam Angle (°)	110.8
Center Beam Candle Power (cd)	232.0

# Spectral Power Distribution & Chromaticity Diagram



## TM30

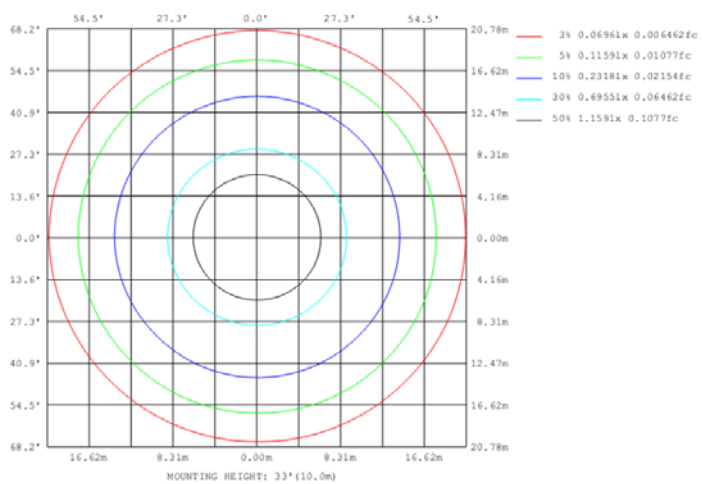
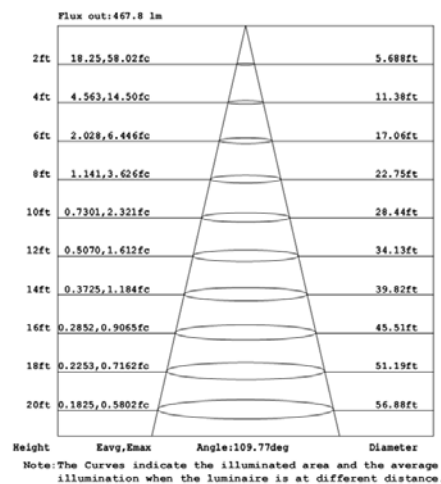
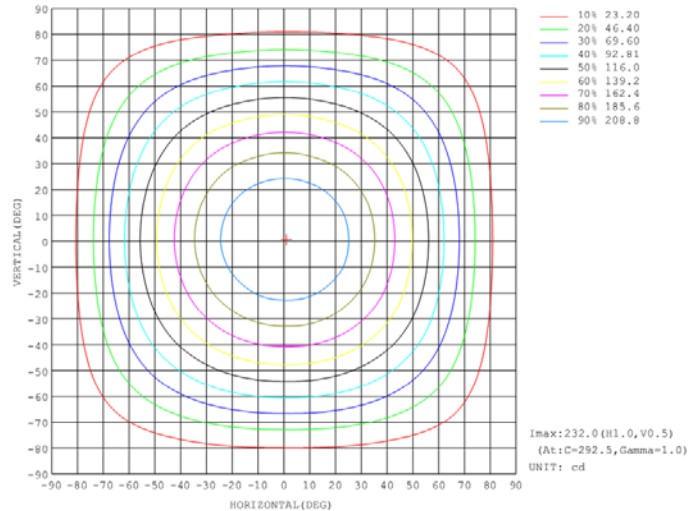
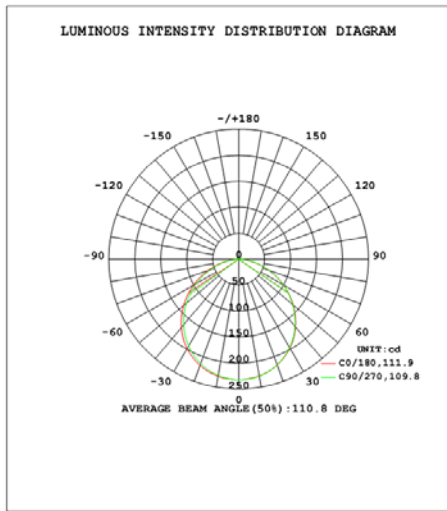


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	180.4	27.6%
0-40	295.1	45.2%
0-60	517.7	79.3%
60-90	134.8	20.7%
70-100	56.3	8.6%
90-120	0.0	0.0%
0-90	652.6	100.0%
90-180	0.0	0.0%
0-180	652.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	22.0	3.4%	90-100	0.0	0.0%
10-20	63.0	9.6%	100-110	0.0	0.0%
20-30	95.5	14.6%	110-120	0.0	0.0%
30-40	114.7	17.6%	120-130	0.0	0.0%
40-50	117.8	18.1%	130-140	0.0	0.0%
50-60	104.9	16.1%	140-150	0.0	0.0%
60-70	78.6	12.0%	150-160	0.0	0.0%
70-80	44.4	6.8%	160-170	0.0	0.0%
80-90	11.9	1.8%	170-180	0.0	0.0%

## Photometric Data





<b>Test date</b>	2023-07-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0177(SUMO-S-5)	3000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202307270004	120.0	60	0.088	9.81	0.928

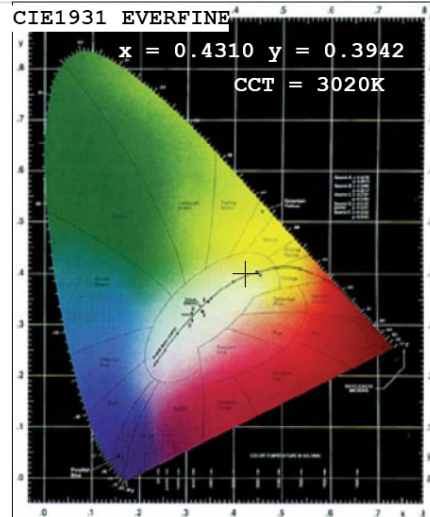
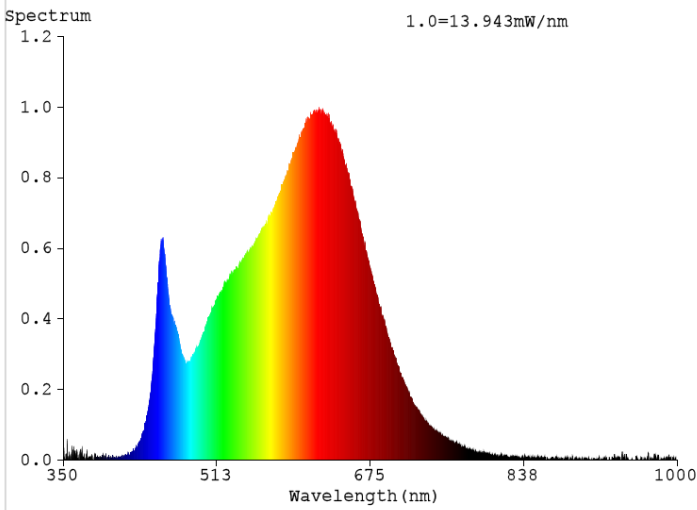
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	68
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3020	R3	97	R11	96
Duv	-0.0032	R4	94	R12	82
Chromaticity (x, y)	x=0.4310 y=0.3942	R5	96	R13	98
Chromaticity (u', v')	u'=0.2510 v'=0.5165	R6	95	R14	100
Color Rendering Index (CRI)	94.2	R7	91	R15	93
R9	68	R8	84	--	--

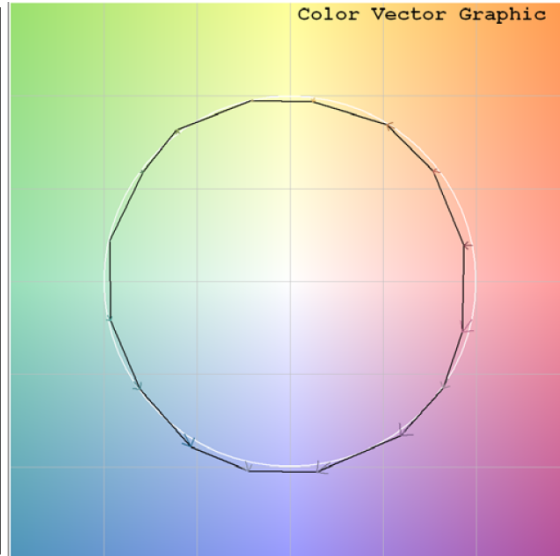
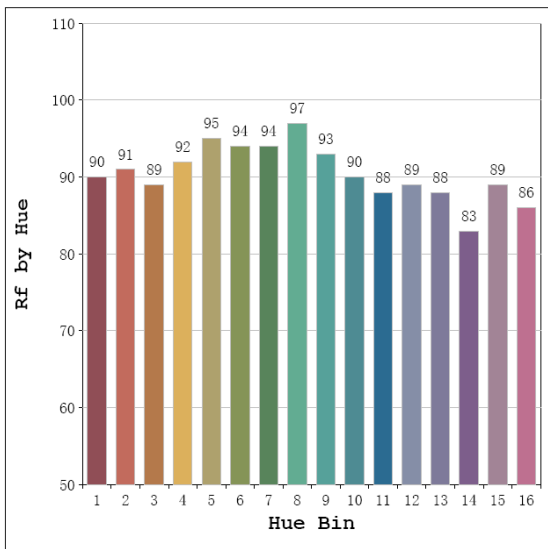
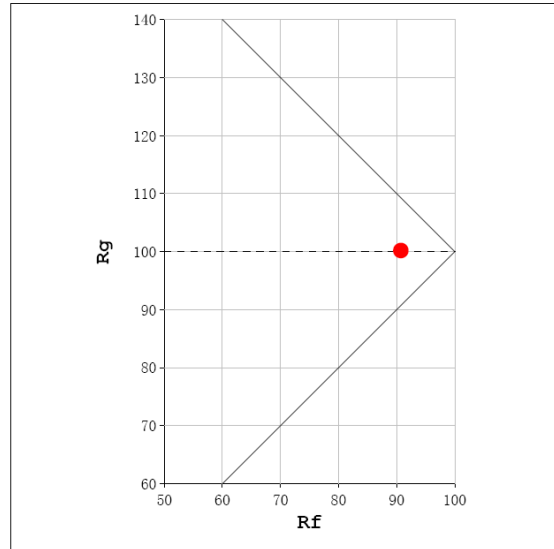
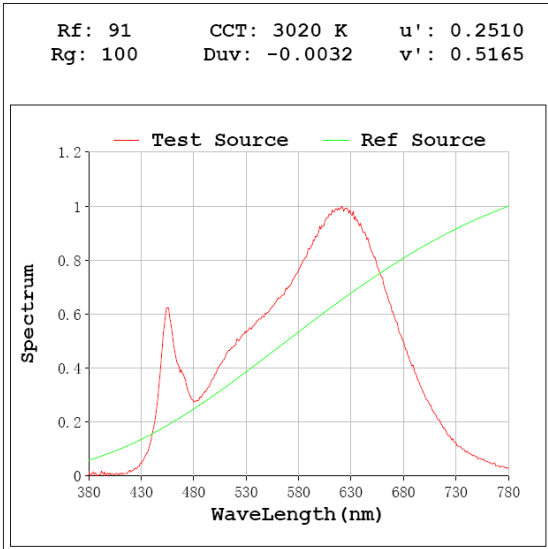
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	676.22
Luminous Efficacy (lm/W)	68.93
Beam Angle (°)	110.8
Center Beam Candle Power (cd)	240.4

# Spectral Power Distribution & Chromaticity Diagram



## TM30

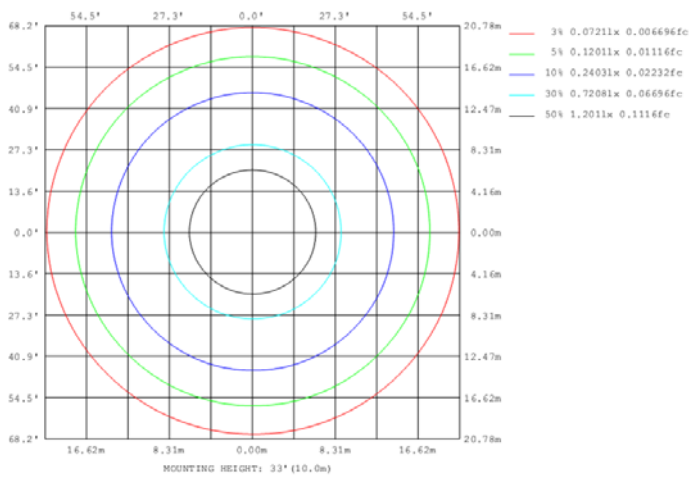
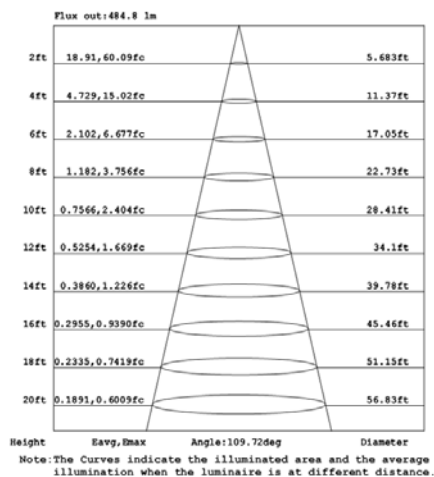
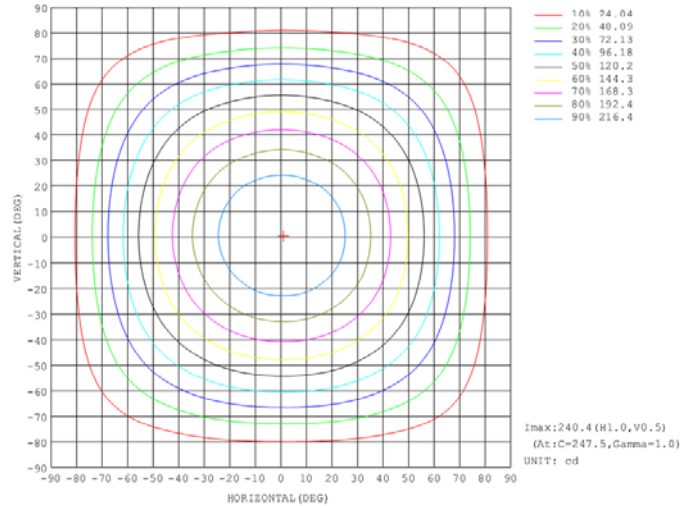
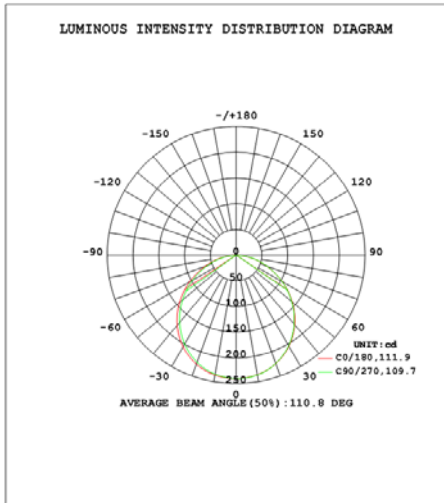


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	186.9	27.6%
0-40	305.7	45.2%
0-60	536.5	79.3%
60-90	139.7	20.7%
70-100	58.3	8.6%
90-120	0.0	0.0%
0-90	676.2	100.0%
90-180	0.0	0.0%
0-180	676.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	22.7	3.4%	90-100	0.0	0.0%
10-20	65.2	9.6%	100-110	0.0	0.0%
20-30	98.9	14.6%	110-120	0.0	0.0%
30-40	118.8	17.6%	120-130	0.0	0.0%
40-50	122.1	18.1%	130-140	0.0	0.0%
50-60	108.7	16.1%	140-150	0.0	0.0%
60-70	81.4	12.0%	150-160	0.0	0.0%
70-80	46.0	6.8%	160-170	0.0	0.0%
80-90	12.3	1.8%	170-180	0.0	0.0%

## Photometric Data





**2.1.2 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2023-07-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0177(SUMO-S-5)	3500K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202307270004	120.0	60	0.087	9.77	0.930

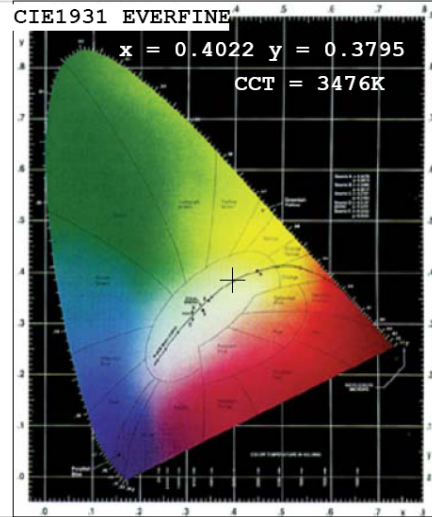
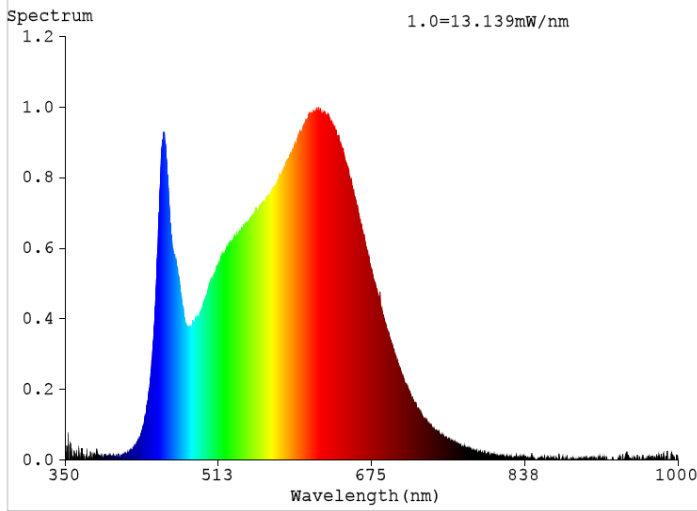
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	77
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	3476	R3	97	R11	97
Duv	-0.0043	R4	95	R12	79
Chromaticity (x, y)	x=0.4022 y=0.3795	R5	97	R13	99
Chromaticity (u', v')	u'=0.2383 v'=0.5060	R6	95	R14	100
Color Rendering Index (CRI)	95.0	R7	92	R15	96
R9	77	R8	88	--	--

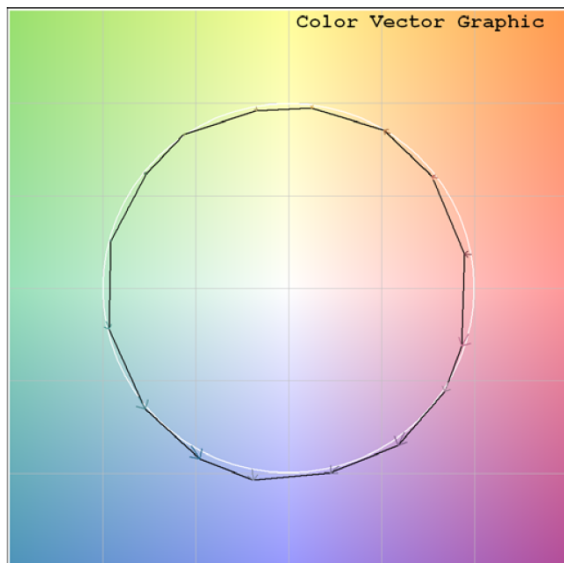
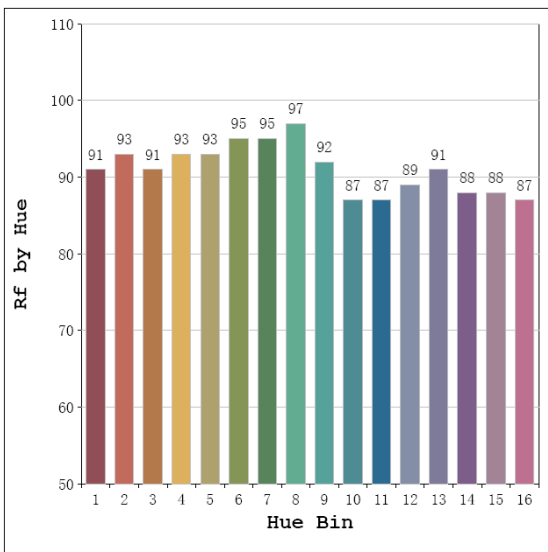
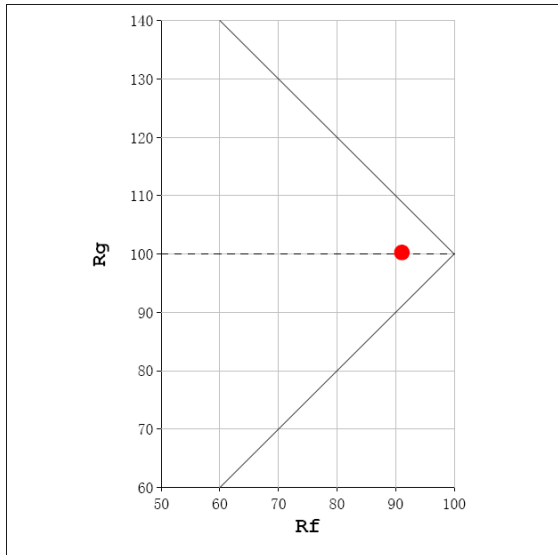
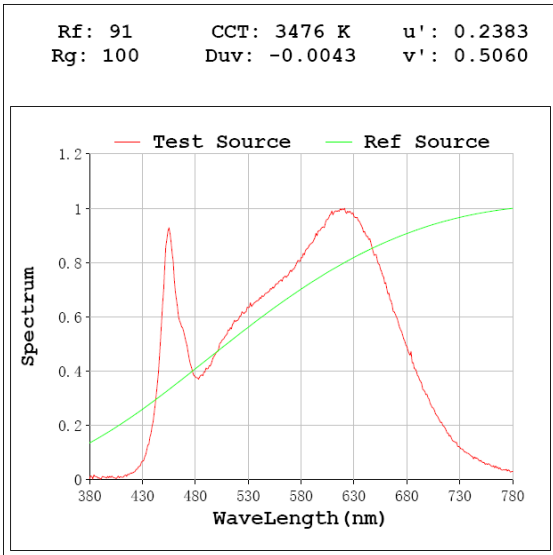
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	698.86
Luminous Efficacy (lm/W)	71.53
Beam Angle (°)	110.8
Center Beam Candle Power (cd)	248.6

# Spectral Power Distribution & Chromaticity Diagram



## TM30

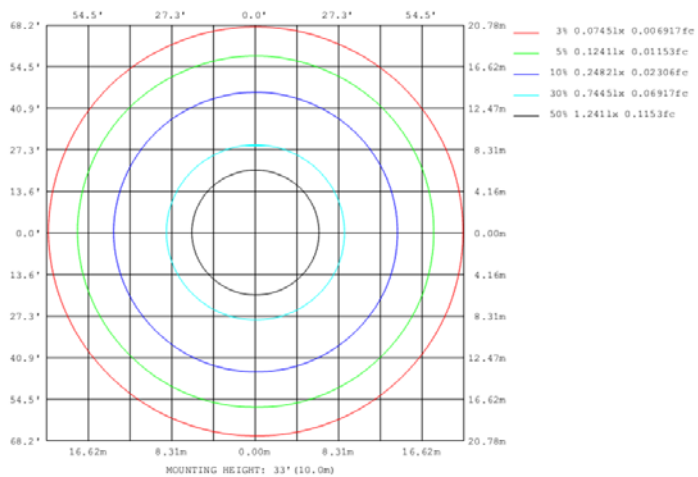
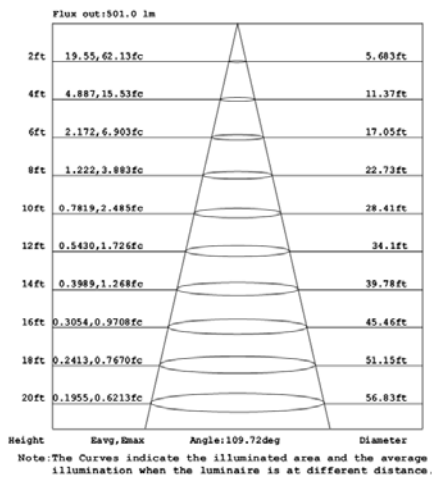
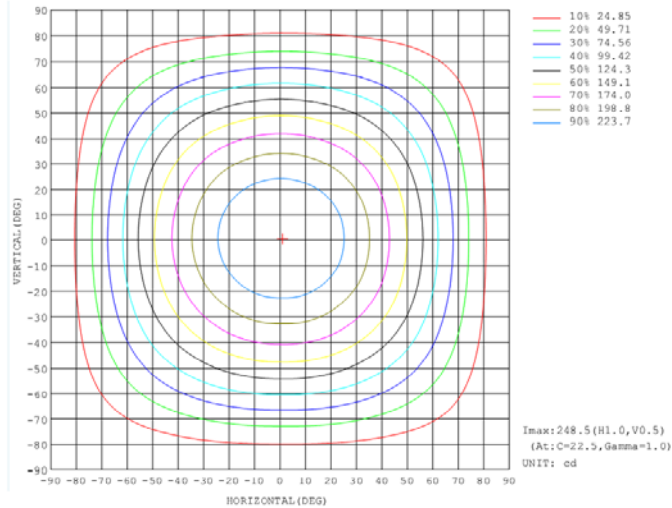
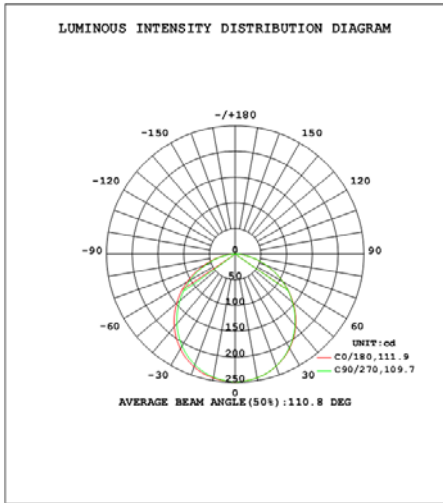


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	193.2	27.6%
0-40	316.0	45.2%
0-60	554.4	79.3%
60-90	144.4	20.7%
70-100	60.3	8.6%
90-120	0.0	0.0%
0-90	698.9	100.0%
90-180	0.0	0.0%
0-180	698.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	23.5	3.4%	90-100	0.0	0.0%
10-20	67.4	9.6%	100-110	0.0	0.0%
20-30	102.2	14.6%	110-120	0.0	0.0%
30-40	122.8	17.6%	120-130	0.0	0.0%
40-50	126.1	18.0%	130-140	0.0	0.0%
50-60	112.3	16.1%	140-150	0.0	0.0%
60-70	84.1	12.0%	150-160	0.0	0.0%
70-80	47.6	6.8%	160-170	0.0	0.0%
80-90	12.7	1.8%	170-180	0.0	0.0%

## Photometric Data





**2.1.3 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2023-07-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0177(SUMO-S-5)	4000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202307270004	120.0	60	0.087	9.77	0.929

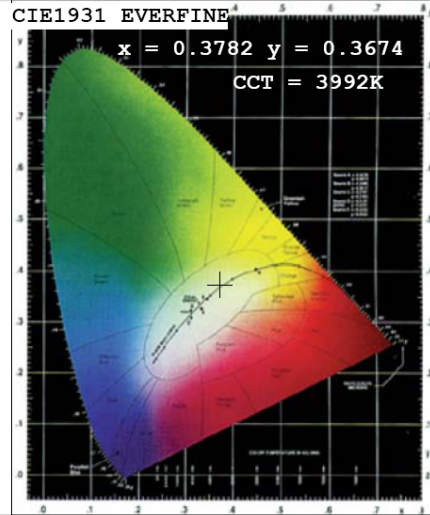
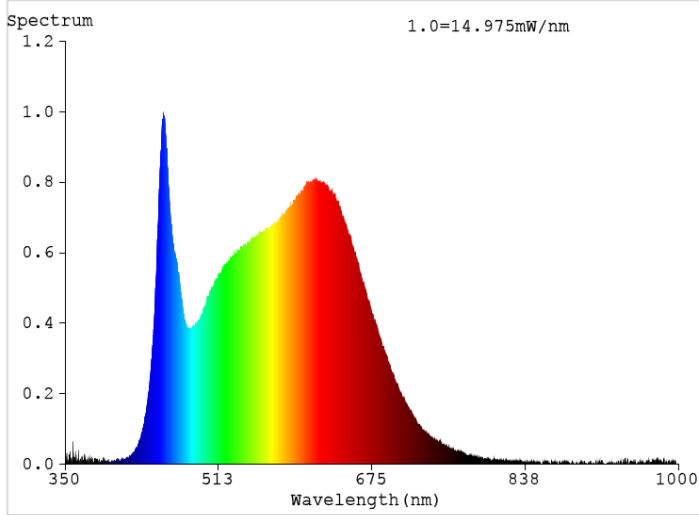
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	81
Frequency (Hz)	60	R2	98	R10	99
CCT (K)	3992	R3	98	R11	96
Duv	-0.0038	R4	95	R12	75
Chromaticity (x, y)	x=0.3782 y=0.3674	R5	96	R13	99
Chromaticity (u', v')	u'=0.2274 v'=0.4971	R6	95	R14	100
Color Rendering Index (CRI)	95.3	R7	93	R15	96
R9	81	R8	90	--	--

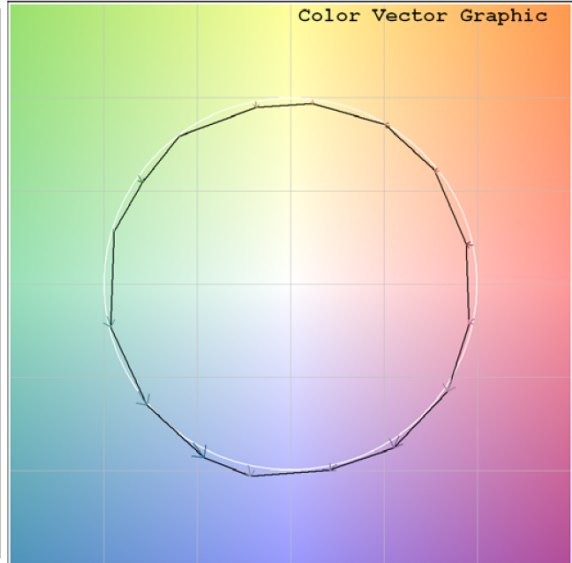
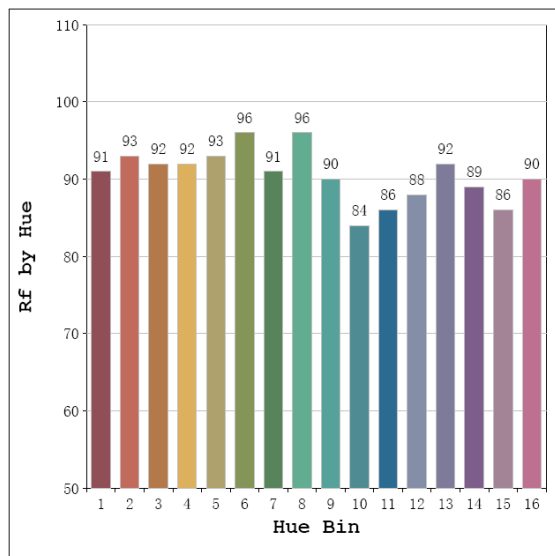
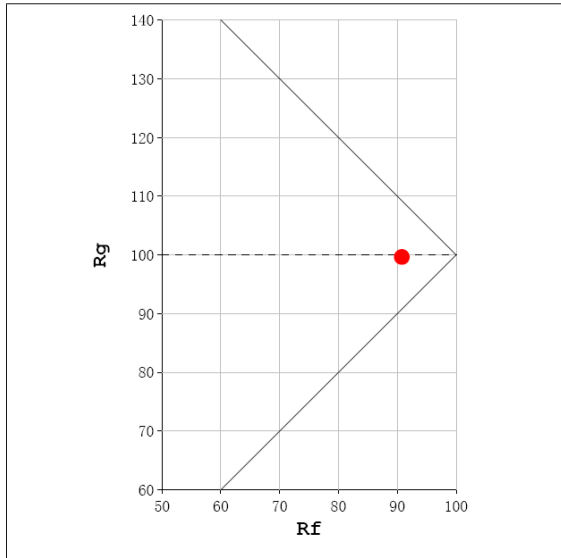
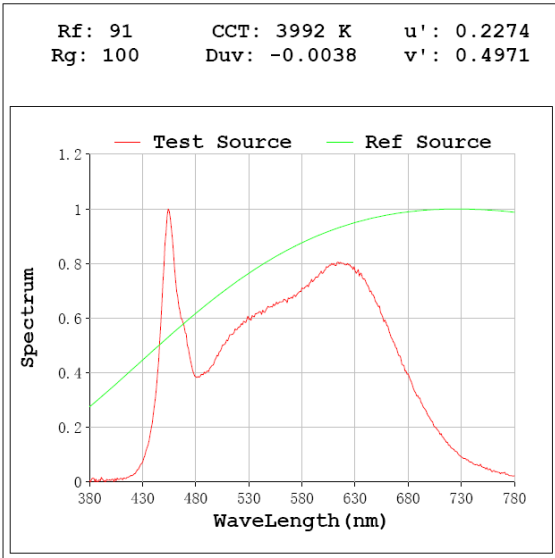
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	708.55
Luminous Efficacy (lm/W)	72.52
Beam Angle (°)	110.8
Center Beam Candle Power (cd)	252.0

# Spectral Power Distribution & Chromaticity Diagram



## TM30

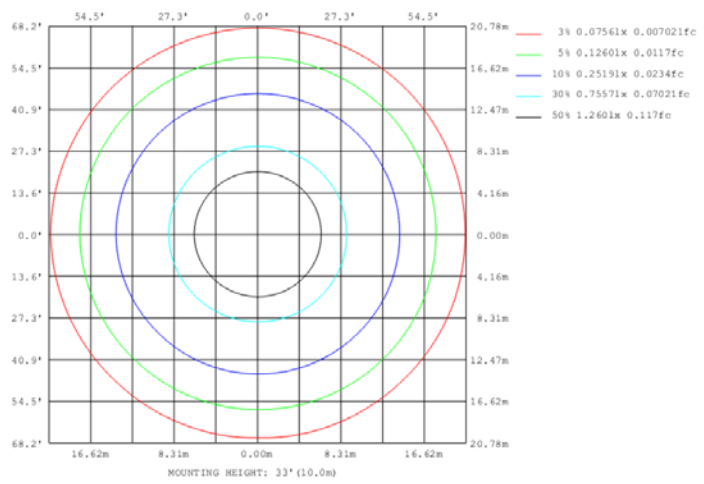
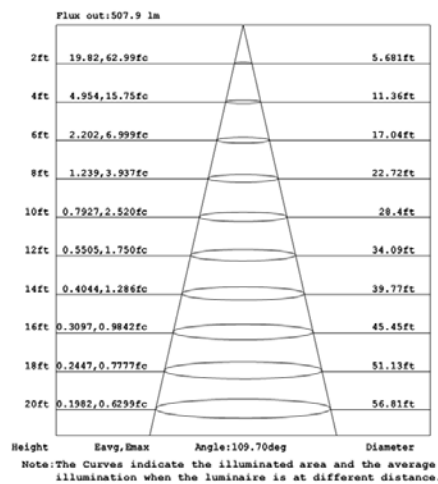
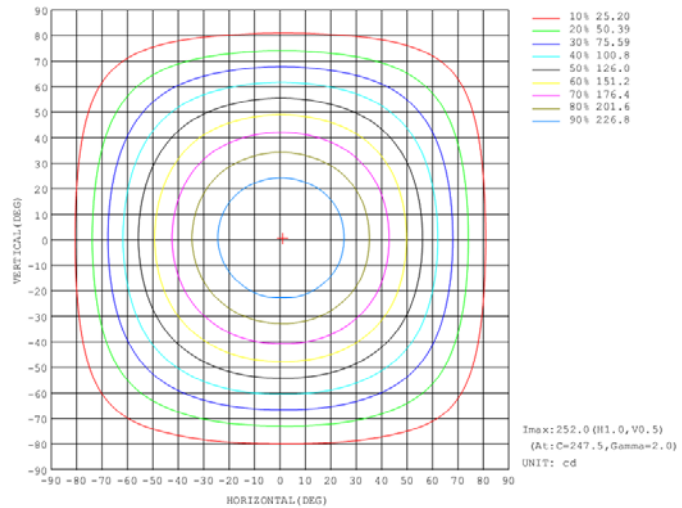
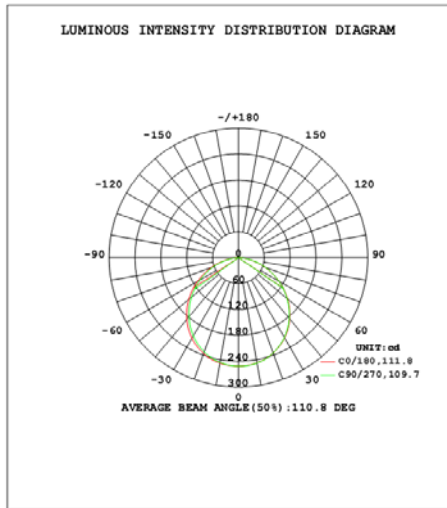


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	195.9	27.6%
0-40	320.4	45.2%
0-60	562.1	79.3%
60-90	146.4	20.7%
70-100	61.1	8.6%
90-120	0.0	0.0%
0-90	708.6	100.0%
90-180	0.0	0.0%
0-180	708.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	23.8	3.4%	90-100	0.0	0.0%
10-20	68.4	9.6%	100-110	0.0	0.0%
20-30	103.7	14.6%	110-120	0.0	0.0%
30-40	124.5	17.6%	120-130	0.0	0.0%
40-50	127.9	18.0%	130-140	0.0	0.0%
50-60	113.9	16.1%	140-150	0.0	0.0%
60-70	85.3	12.0%	150-160	0.0	0.0%
70-80	48.2	6.8%	160-170	0.0	0.0%
80-90	12.9	1.8%	170-180	0.0	0.0%

## Photometric Data





## 2.1.4 Electrical, Photometric and Chromaticity Measurements

<b>Test date</b>	2023-07-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLS0177(SUMO-S-5)	5000K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202307270004	120.0	60	0.088	9.81	0.927

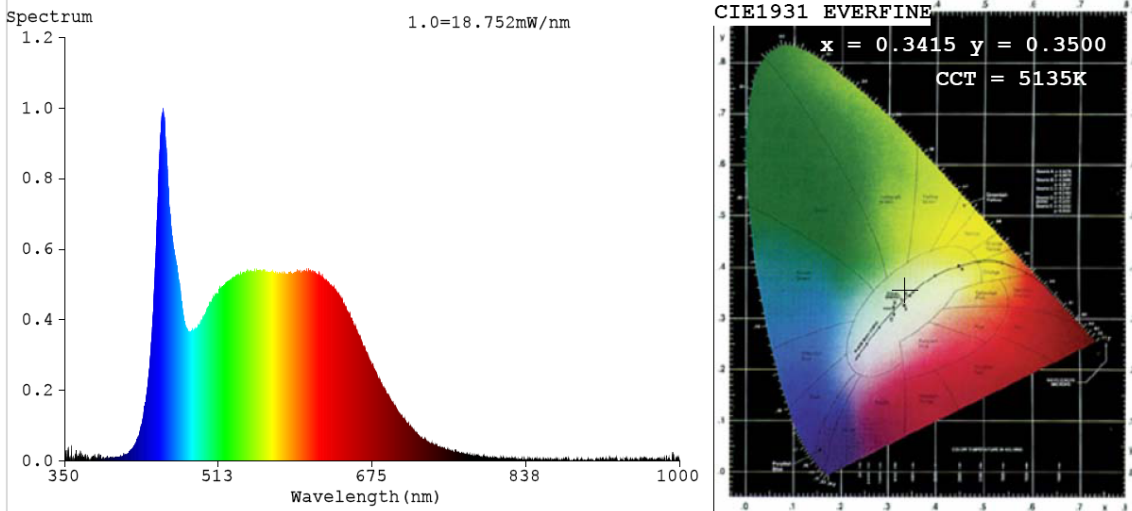
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	73
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	5135	R3	98	R11	94
Duv	0.0006	R4	93	R12	73
Chromaticity (x, y)	x=0.3415 y=0.3500	R5	94	R13	97
Chromaticity (u', v')	u'=0.2096 v'=0.4833	R6	94	R14	99
Color Rendering Index (CRI)	94.3	R7	93	R15	94
R9	73	R8	88	--	--

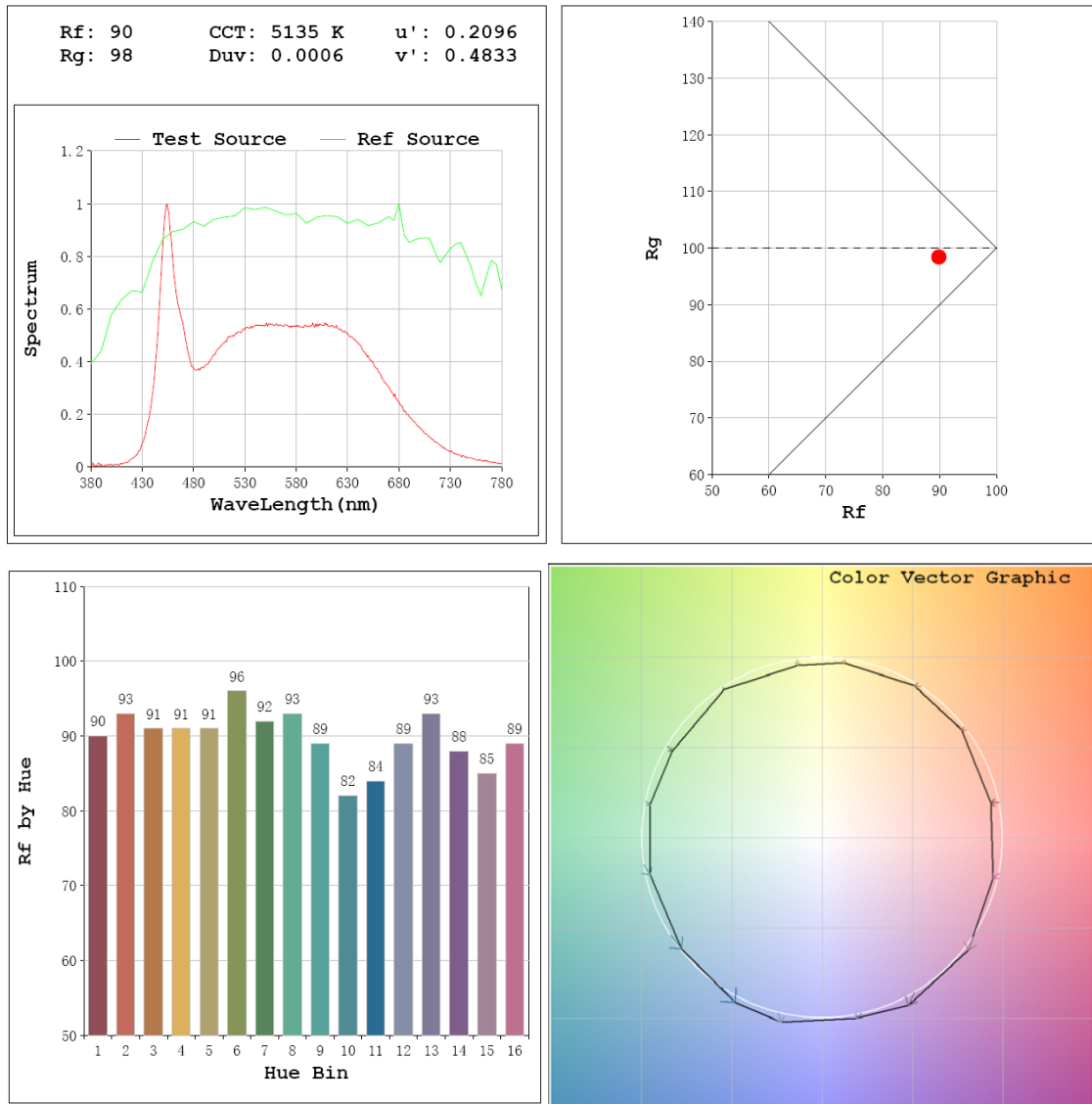
### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	700.13
Luminous Efficacy (lm/W)	71.37
Beam Angle (°)	110.8
Center Beam Candle Power (cd)	249.1

# Spectral Power Distribution & Chromaticity Diagram



## TM30

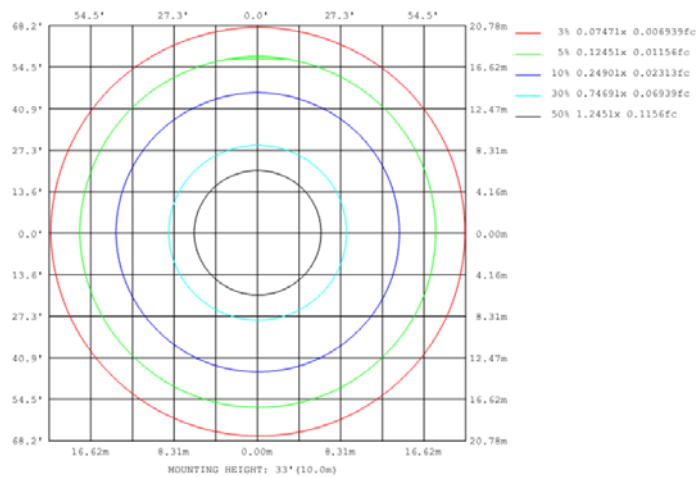
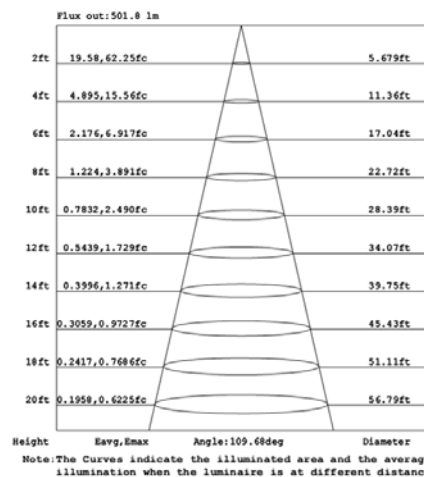
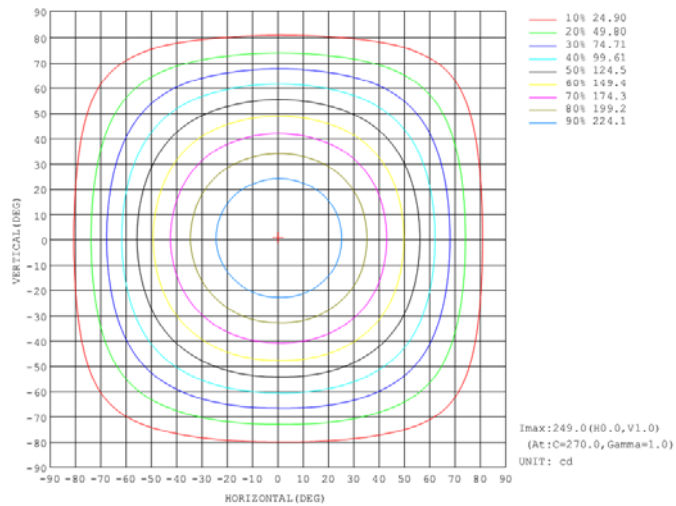
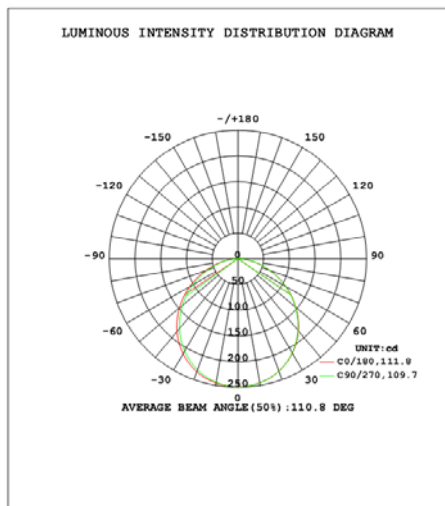


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	193.5	27.6%
0-40	316.5	45.2%
0-60	555.4	79.3%
60-90	144.8	20.7%
70-100	60.5	8.6%
90-120	0.0	0.0%
0-90	700.1	100.0%
90-180	0.0	0.0%
0-180	700.1	100.0%

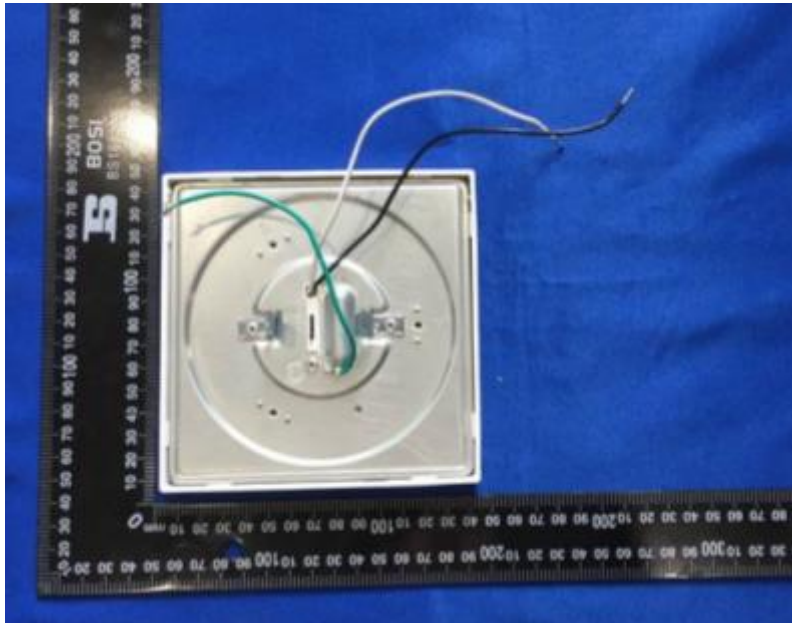
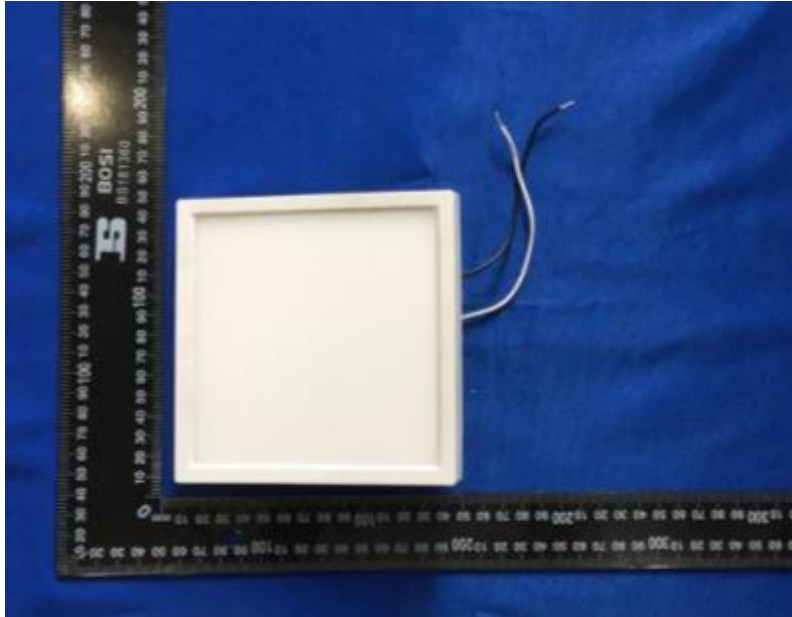
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	23.6	3.4%	90-100	0.0	0.0%
10-20	67.6	9.6%	100-110	0.0	0.0%
20-30	102.4	14.6%	110-120	0.0	0.0%
30-40	123.0	17.6%	120-130	0.0	0.0%
40-50	126.4	18.0%	130-140	0.0	0.0%
50-60	112.5	16.1%	140-150	0.0	0.0%
60-70	84.3	12.0%	150-160	0.0	0.0%
70-80	47.7	6.8%	160-170	0.0	0.0%
80-90	12.8	1.8%	170-180	0.0	0.0%

## Photometric Data





### 3. Product Photo



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