

LM-79-08 Test Report

For

RAB LIGHTING INC

(Brand Name : RAB)

170 Ludlow Ave , PO BOX 970, Northvale, NJ 07647-2305 USA

Model name(s) :

R3STL

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

Type of Luminaire: Downlights

Report Date: 2024-09-04

1.1 Rated Values:	
Rated Voltage / Frequency	120V, 60HZ
Nominal Power	15W
Rated Initial Lamp Lumen	1250lm (5000k)
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

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>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.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>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.</p>
<p>3) Electrical Measurements:</p> <p>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.</p>

2.1.1 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-04	Test Ambient:	25.3
Test Orientation	As intended	Stabilization Time (min)	15
Model Number	R3STL	CCT Setting	2700k

Electrical Measurement:

Sampel No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
#1	120.7	60	0.123	14.52	0.981

Chromaticity Measurement – Sphere-Spectroradiometer Method:

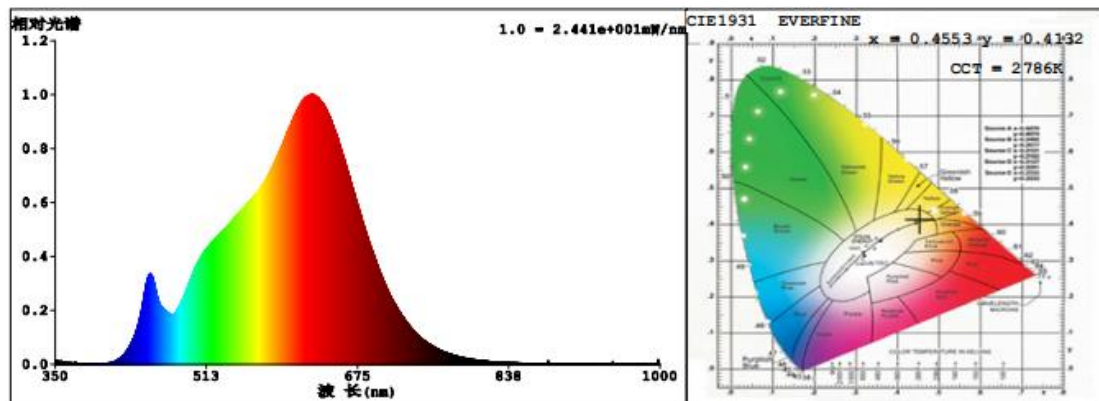
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
CCT (K)	2786
Duv	0.00138
Chromaticity (x, y)	x=0.4553, y=0.4132
Chromaticity (u', v')	u' =0.2584, v' =0.5277
Color Rendering Index (CRI)	95.8
R9	70

Special Color Rendering Indices			
R1	96	R9	70
R2	98	R10	95
R3	99	R11	99
R4	98	R12	89
R5	96	R13	97
R6	98	R14	98
R7	94	R15	92
R8	87	--	--

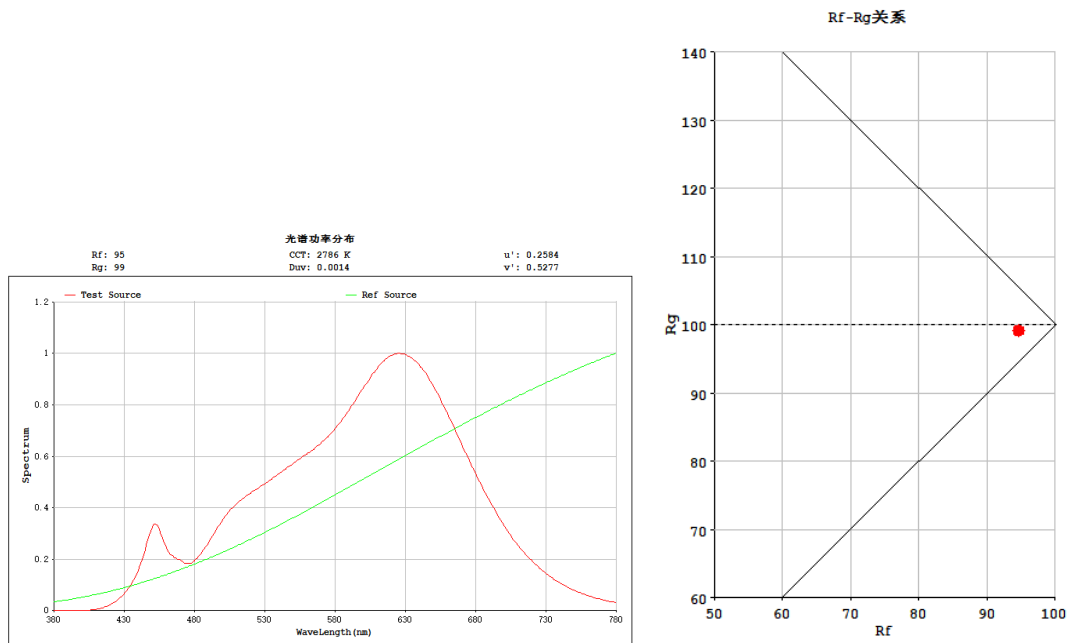
Photometric Measurement – Goniophotometer Method:

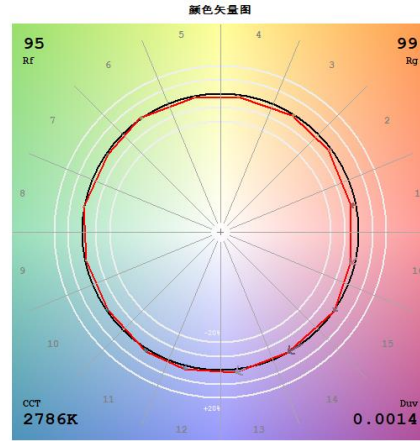
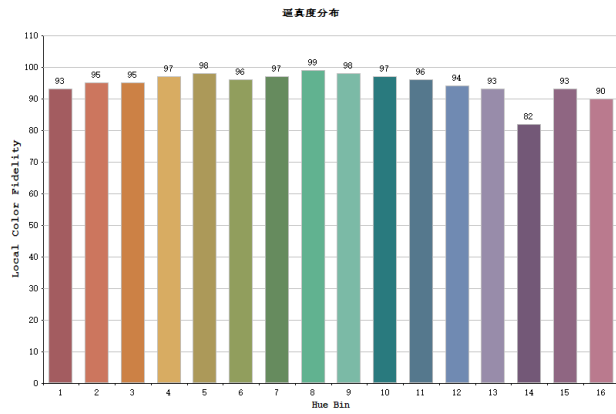
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
Total Luminous (lm)	1110.6
Luminous Efficacy (lm/W)	76.48
Beam Angle (°)	37.8
Center Beam Candle Power (cd)	2621

Spectral Power Distribution & Chromaticity Diagram



TM30



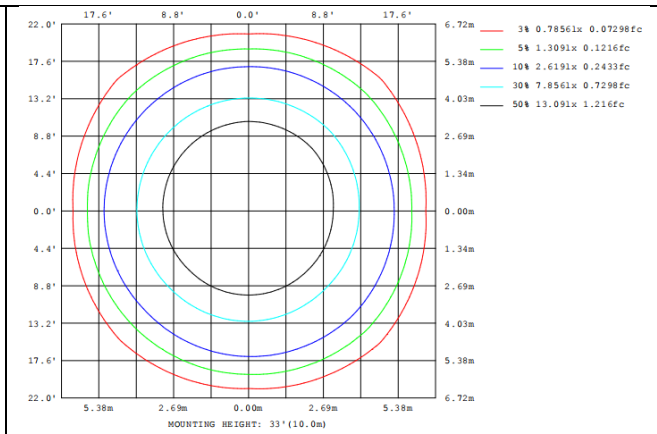
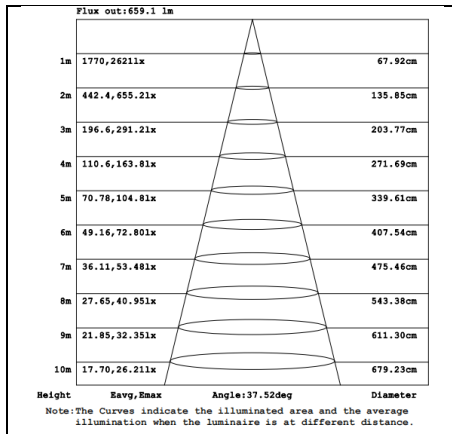
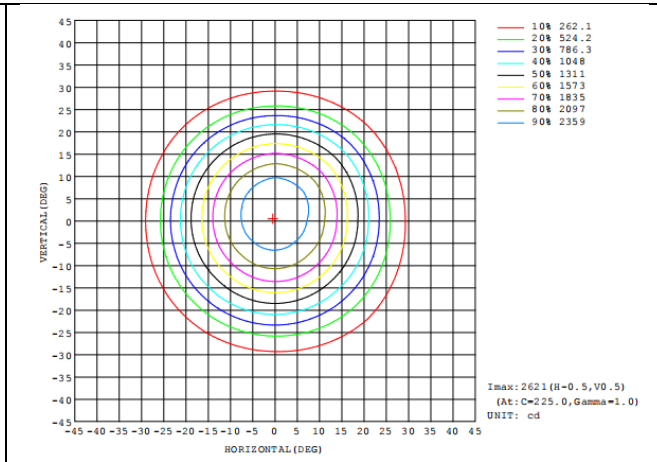
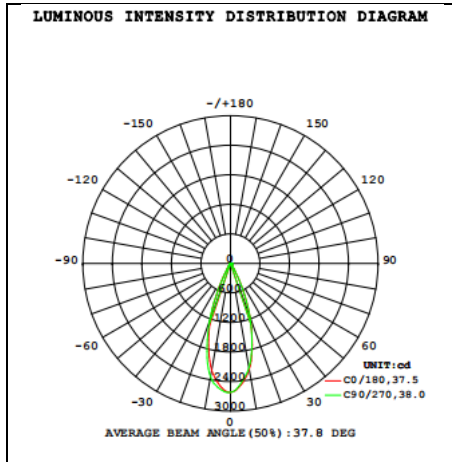


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	989.6	89.07%
0-40	1057.0	95.14%
0-60	1098.0	98.83%
60-90	13.1	1.18%
70-100	5.2	0.47%
90-120	0.0	0.00%
0-90	1111.0	100.00%
90-180	0.0	0.00%
0-180	1111.0	100.00%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	229.30	20.64%	90-100	0	0%
10-20	475.4	42.79%	100-110	0	0%
20-30	285.00	25.65%	110-120	0	0%
30-40	67.46	6.07%	120-130	0	0%
40-50	27.09	2.44%	130-140	0	0%
50-60	13.360	1.20%	140-150	0	0%
60-70	7.8880	0.71%	150-160	0	0%
70-80	4.1170	0.37%	160-170	0	0%
80-90	1.0670	0.10%	170-180	0	0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-04	Test Ambient:	25.3
Test Orientation	As intended	Stabilization Time (min)	15
Model Number	R3STL	CCT Setting	3000k

Electrical Measurement:

Sampel No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
#1	120.7	60	0.120	14.20	0.981

Chromaticity Measurement – Sphere-Spectroradiometer Method:

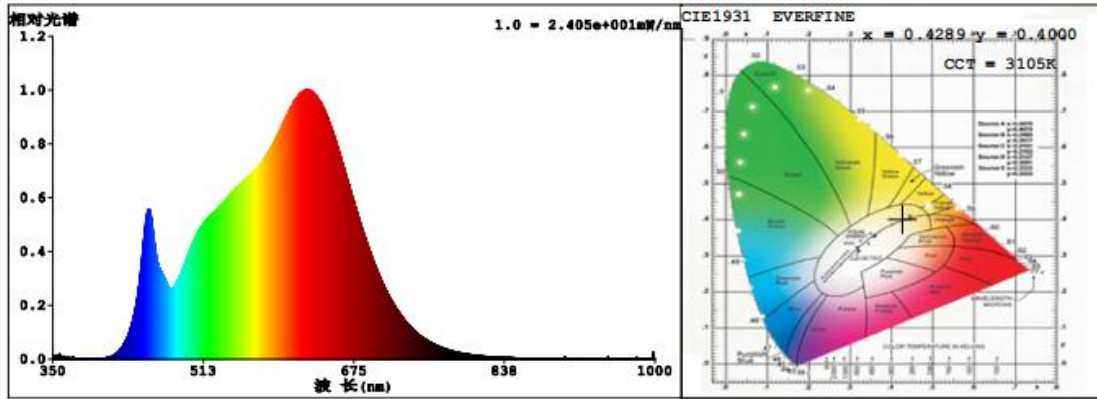
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
CCT (K)	3105
Duv	-0.000497
Chromaticity (x, y)	x=0.4289, y=0.4000
Chromaticity (u', v')	u' =0.2472, v' =0.5186
Color Rendering Index (CRI)	96.5
R9	76

Special Color Rendering Indices			
R1	98	R9	76
R2	99	R10	97
R3	99	R11	98
R4	98	R12	85
R5	97	R13	98
R6	97	R14	99
R7	95	R15	95
R8	89	--	--

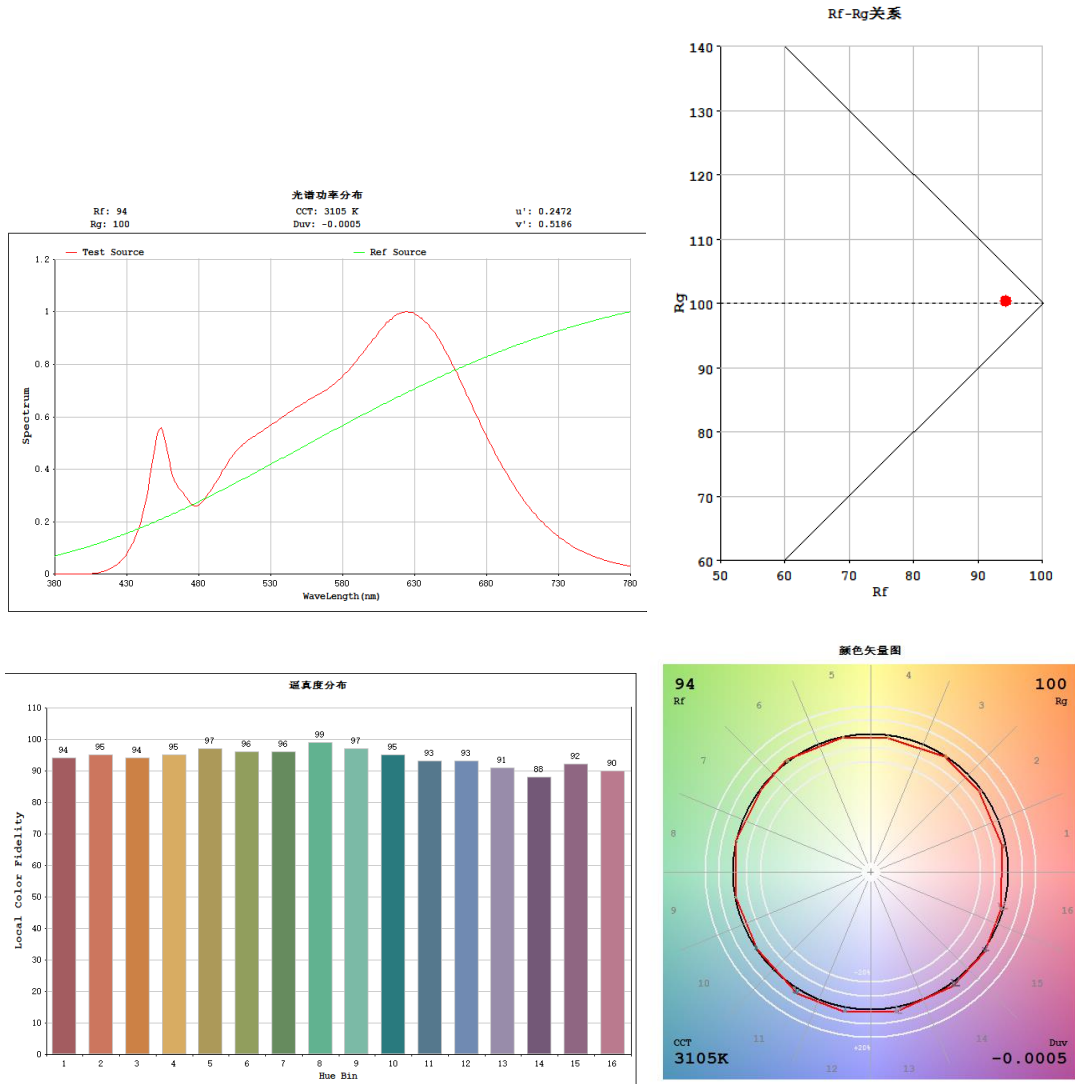
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
Total Luminous (lm)	1209.5
Luminous Efficacy (lm/W)	85.19
Beam Angle (°)	37.8
Center Beam Candle Power (cd)	2840

Spectral Power Distribution & Chromaticity Diagram



TM30

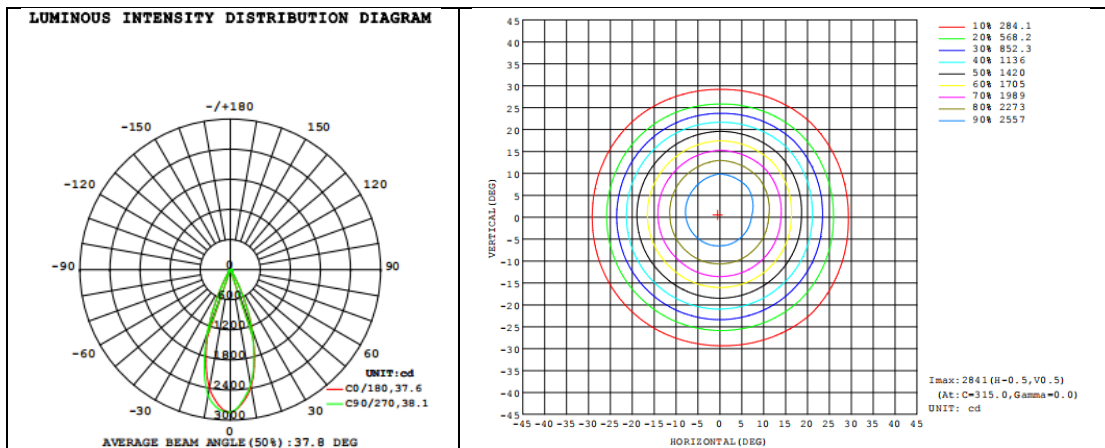


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1077.0	89.08%
0-40	1151.0	95.20%
0-60	1195.0	98.84%
60-90	14.3	1.18%
70-100	5.7	0.47%
90-120	0.0	0.00%
0-90	1209.0	100.00%
90-180	0.0	0.00%
0-180	1209.0	100.00%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	249.00	20.60%	90-100	0	0%
10-20	516.7	42.74%	100-110	0	0%
20-30	311.40	25.76%	110-120	0	0%
30-40	73.88	6.11%	120-130	0	0%
40-50	29.60	2.45%	130-140	0	0%
50-60	14.600	1.21%	140-150	0	0%
60-70	8.6320	0.71%	150-160	0	0%
70-80	4.5150	0.37%	160-170	0	0%
80-90	1.1790	0.10%	170-180	0	0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-04	Test Ambient:	25.3
Test Orientation	As intended	Stabilization Time (min)	15
Model Number	R3STL	CCT Setting	3500k

Electrical Measurement:

Sampel No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
#1	120.7	60	0.117	13.78	0.980

Chromaticity Measurement - Sphere-Spectroradiometer Method:

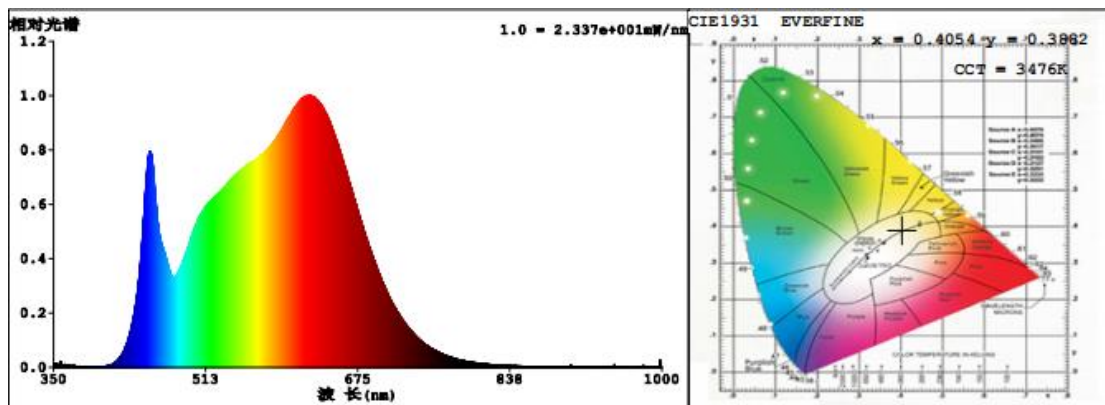
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
CCT (K)	3476
Duv	-0.00115
Chromaticity (x, y)	x=0.4054, y=0.3882
Chromaticity (u', v')	u' =0.2368, v' =0.5102
Color Rendering Index (CRI)	96.6
R9	80

Special Color Rendering Indices			
R1	98	R9	80
R2	99	R10	96
R3	98	R11	98
R4	97	R12	81
R5	97	R13	99
R6	97	R14	98
R7	96	R15	96
R8	91	--	--

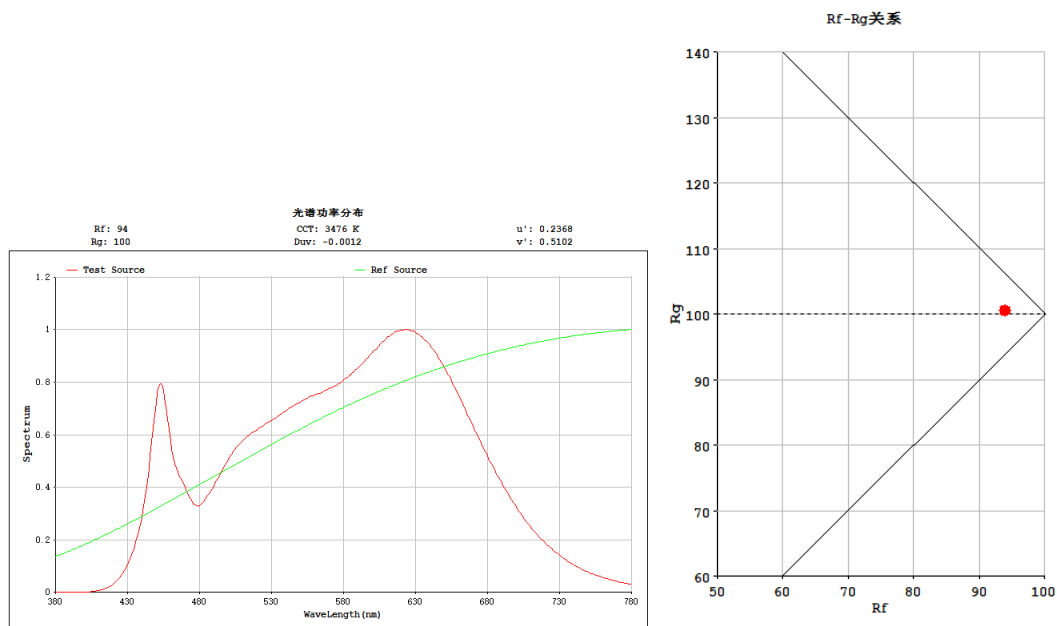
Photometric Measurement – Goniophotometer Method:

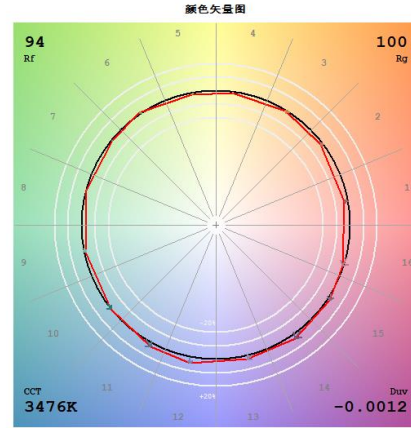
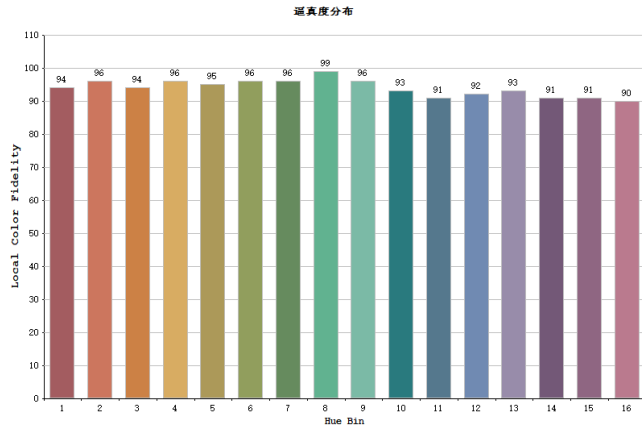
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
Total Luminous (lm)	1293.03
Luminous Efficacy (lm/W)	93.81
Beam Angle (°)	37.9
Center Beam Candle Power (cd)	3034

Spectral Power Distribution & Chromaticity Diagram



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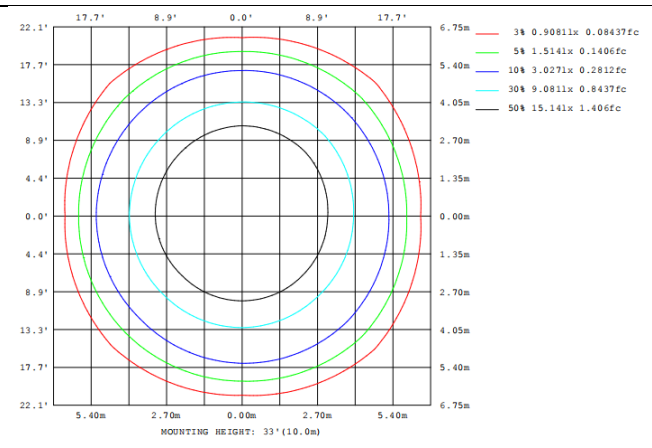
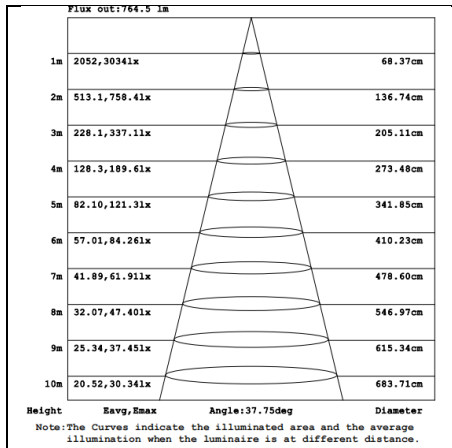
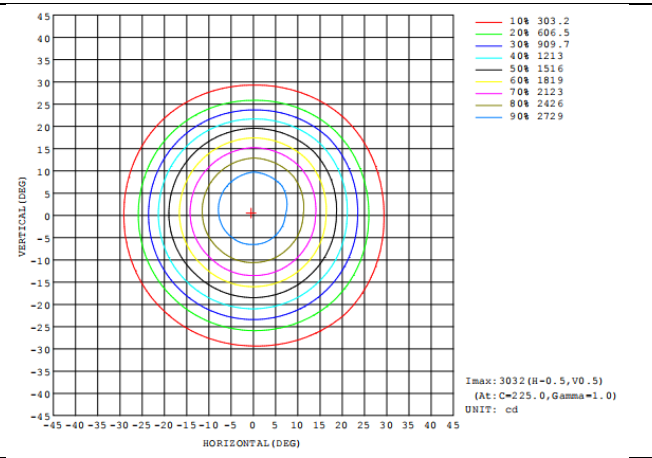
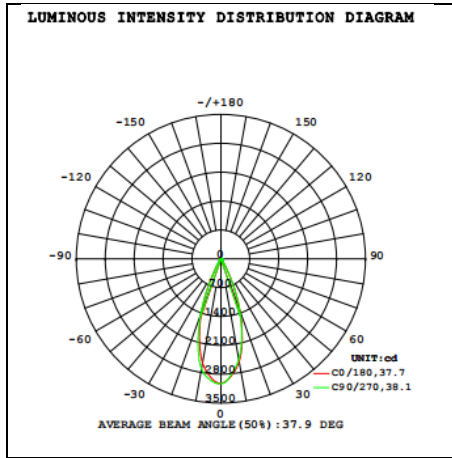


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1151.0	89.02%
0-40	1230.0	95.13%
0-60	1278.0	98.84%
60-90	15.4	1.19%
70-100	6.1	0.47%
90-120	0.0	0.00%
0-90	1293.0	100.00%
90-180	0.0	0.00%
0-180	1293.0	100.00%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	265.40	20.53%	90-100	0	0%
10-20	552.0	42.69%	100-110	0	0%
20-30	333.50	25.79%	110-120	0	0%
30-40	79.41	6.14%	120-130	0	0%
40-50	31.70	2.45%	130-140	0	0%
50-60	15.640	1.21%	140-150	0	0%
60-70	9.2560	0.72%	150-160	0	0%
70-80	4.8480	0.37%	160-170	0	0%
80-90	1.2760	0.10%	170-180	0	0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-04	Test Ambient:	25.3
Test Orientation	As intended	Stabilization Time (min)	15
Model Number	R3STL	CCT Setting	4000k

Electrical Measurement:

Sampel No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
#1	120.7	60	0.118	13.92	0.980

Chromaticity Measurement - Sphere-Spectroradiometer Method:

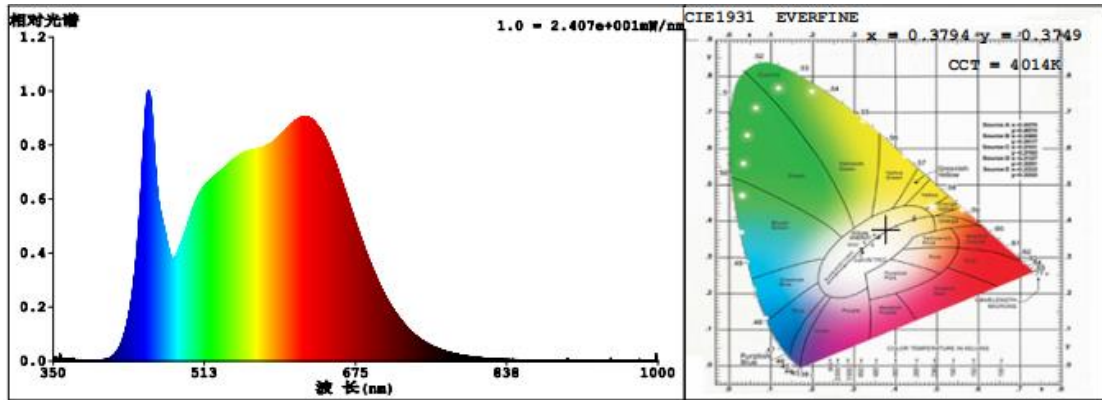
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
CCT (K)	4014
Duv	-0.000575
Chromaticity (x, y)	x=0.3794, y=0.3749
Chromaticity (u', v')	u' =0.2252, v' =0.5006
Color Rendering Index (CRI)	95.7
R9	79

Special Color Rendering Indices			
R1	97	R9	79
R2	98	R10	93
R3	97	R11	96
R4	96	R12	76
R5	96	R13	97
R6	95	R14	98
R7	96	R15	95
R8	92	--	--

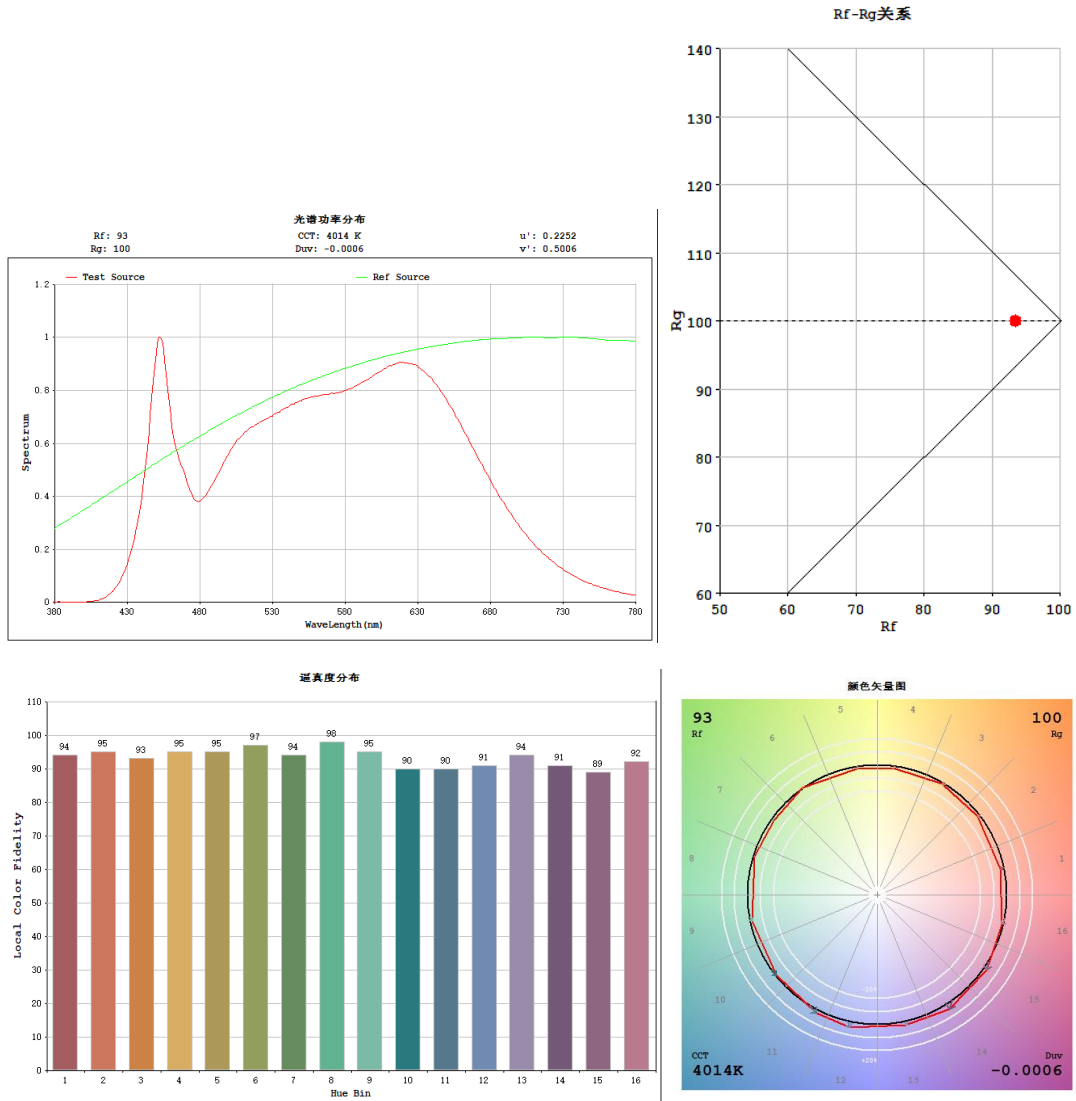
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
Total Luminous (lm)	1329.25
Luminous Efficacy (lm/W)	95.51
Beam Angle (°)	37.9
Center Beam Candle Power (cd)	3109

Spectral Power Distribution & Chromaticity Diagram



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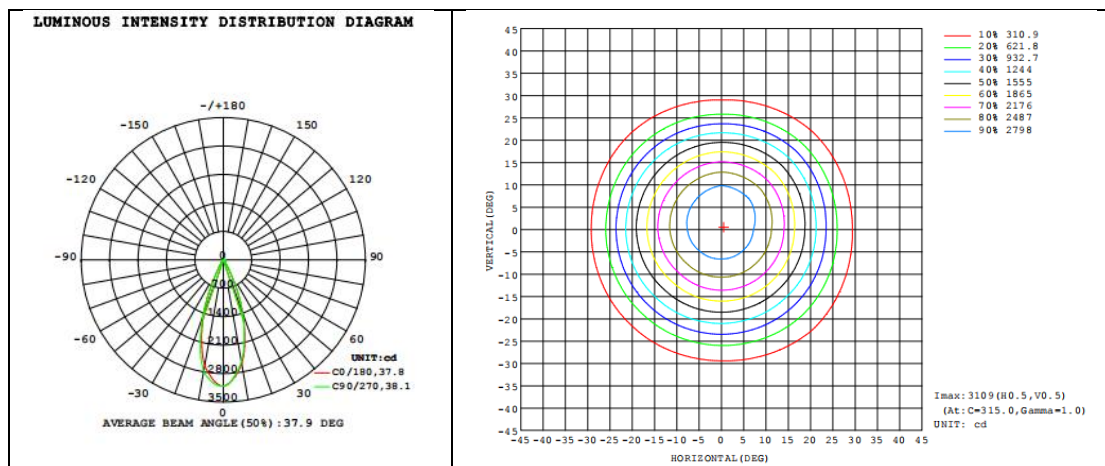


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1183.0	89.01%
0-40	1265.0	95.18%
0-60	1313.0	98.80%
60-90	15.9	1.19%
70-100	6.3	0.48%
90-120	0.0	0.00%
0-90	1329.0	100.00%
90-180	0.0	0.00%
0-180	1329.0	100.00%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	272.40	20.50%	90-100	0	0%
10-20	566.9	42.66%	100-110	0	0%
20-30	343.40	25.84%	110-120	0	0%
30-40	81.91	6.16%	120-130	0	0%
40-50	32.62	2.45%	130-140	0	0%
50-60	16.100	1.21%	140-150	0	0%
60-70	9.5330	0.72%	150-160	0	0%
70-80	4.9970	0.38%	160-170	0	0%
80-90	1.3200	0.10%	170-180	0	0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-04	Test Ambient:	25.3
Test Orientation	As intended	Stabilization Time (min)	15
Model Number	R3STL	CCT Setting	5000k

Electrical Measurement:

Sampel No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
#1	120.7	60	0.123	14.58	0.982

Chromaticity Measurement - Sphere-Spectroradiometer Method:

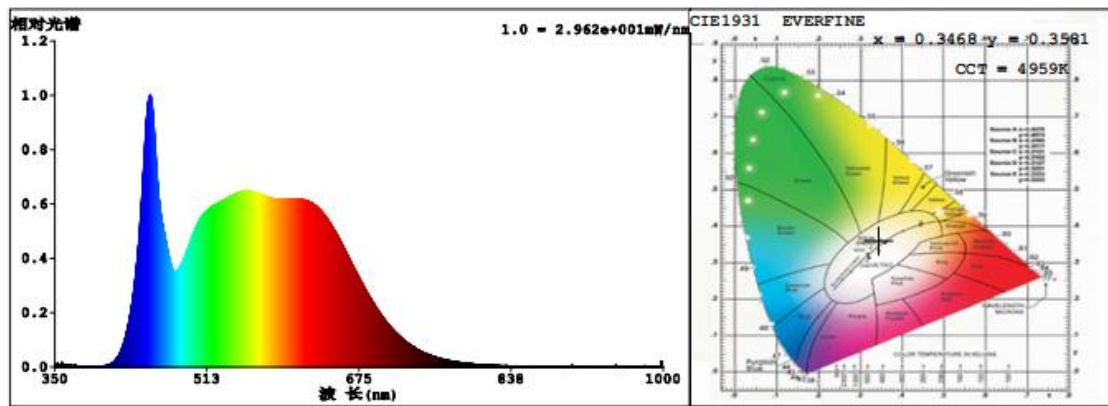
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
CCT (K)	4959
Duv	0.00257
Chromaticity (x, y)	x=0.3468, y=0.3581
Chromaticity (u', v')	u' =0.2100, v' =0.4881
Color Rendering Index (CRI)	92.4
R9	67

Special Color Rendering Indices			
R1	92	R9	67
R2	94	R10	86
R3	95	R11	92
R4	92	R12	69
R5	91	R13	93
R6	91	R14	97
R7	96	R15	90
R8	88	--	--

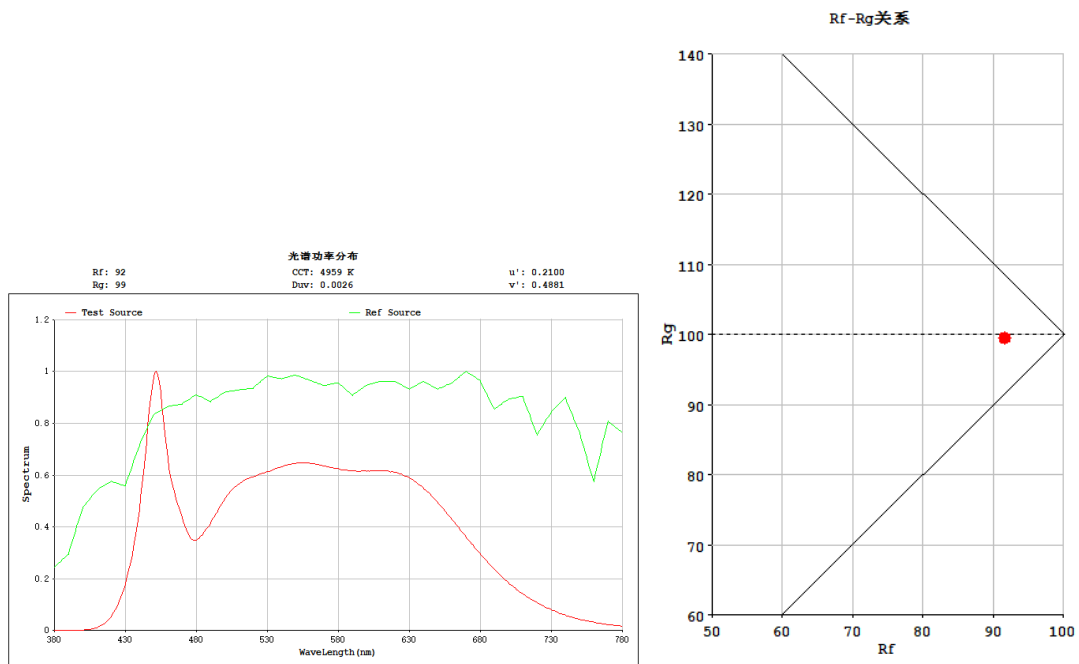
Photometric Measurement – Goniophotometer Method:

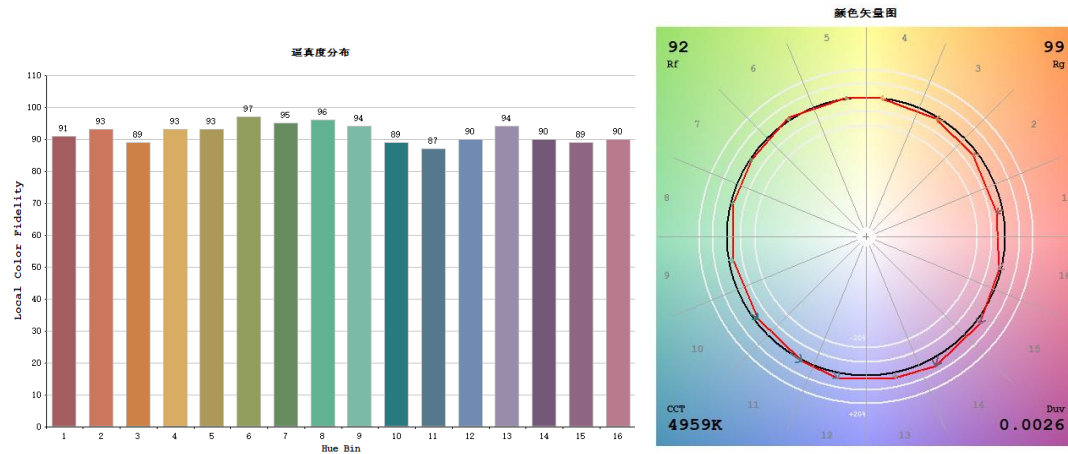
Parameter	Result
Test Voltage (V)	120.7
Frequency (Hz)	60
Total Luminous (lm)	1332.06
Luminous Efficacy (lm/W)	91.39
Beam Angle (°)	37.9
Center Beam Candle Power (cd)	3110

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1185.0	88.96%
0-40	1267.0	95.12%
0-60	1316.0	98.80%
60-90	16.0	1.20%
70-100	6.4	0.48%
90-120	0.0	0.00%
0-90	1332.0	100.00%
90-180	0.0	0.00%
0-180	1332.0	100.00%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	272.40	20.45%	90-100	0	0%
10-20	567.2	42.58%	100-110	0	0%
20-30	345.00	25.90%	110-120	0	0%
30-40	82.60	6.20%	120-130	0	0%
40-50	32.77	2.46%	130-140	0	0%
50-60	16.180	1.21%	140-150	0	0%
60-70	9.5820	0.72%	150-160	0	0%
70-80	5.0290	0.38%	160-170	0	0%
80-90	1.3390	0.10%	170-180	0	0%

Photometric Data

