

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):
WFR6/RGB

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

**Type of
Luminaire:** Downlights

Report Date: 2024-01-10

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	850 lm
Declared CCT	2700K/3000K/3500K/4000K/5000K/6500K

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: 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: 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: 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	2024-01-08	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6/RGB	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030034	120.0	60	0.114	12.70	0.929

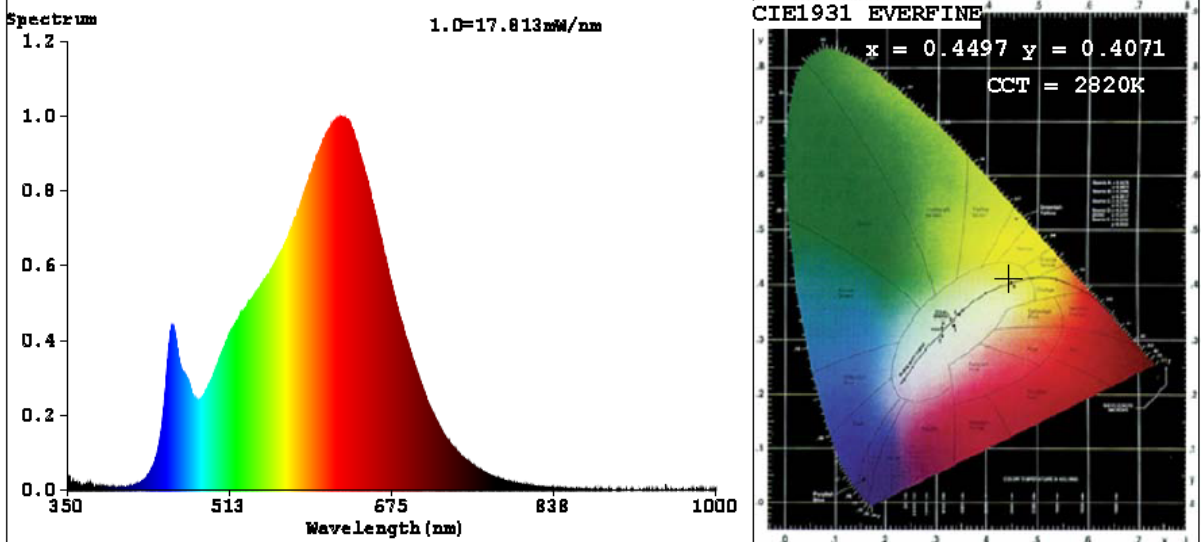
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	63
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	2820	R3	98	R11	96
Duv	-0.0004	R4	94	R12	84
Chromaticity (x, y)	x=0.4497 y=0.4071	R5	95	R13	97
Chromaticity (u', v')	u'=0.2575 v'=0.5245	R6	97	R14	100
Color Rendering Index (CRI)	94.0	R7	91	R15	91
R9	63	R8	83	--	--

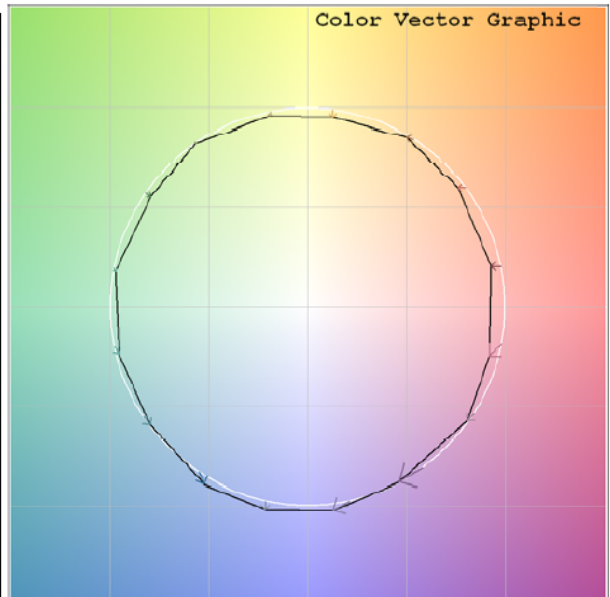
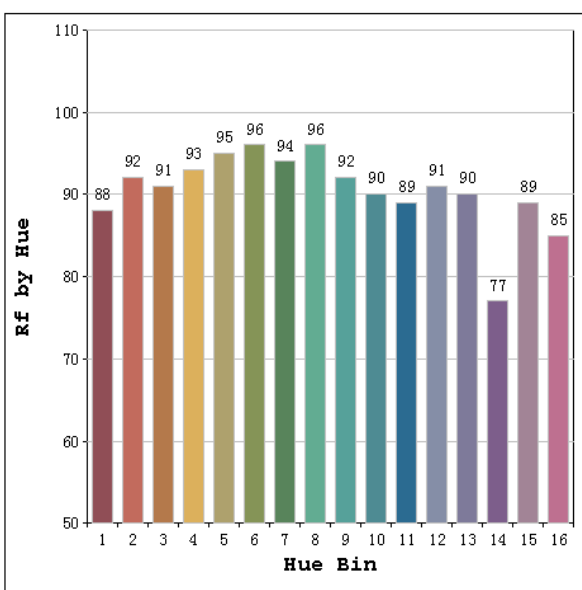
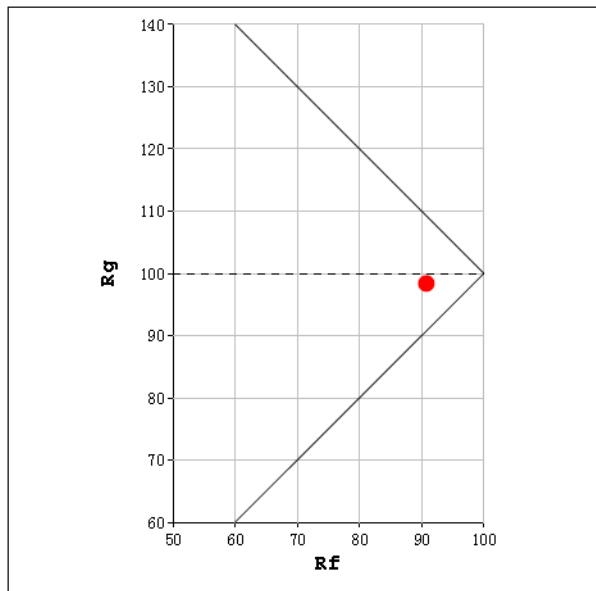
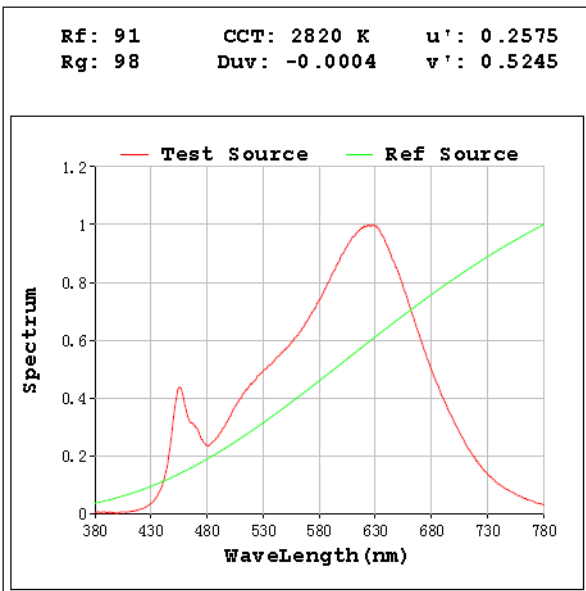
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	868.0
Luminous Efficacy (lm/W)	68.35
Beam Angle (°)	113.1
Center Beam Candle Power (cd)	302.1

Spectral Power Distribution & Chromaticity Diagram



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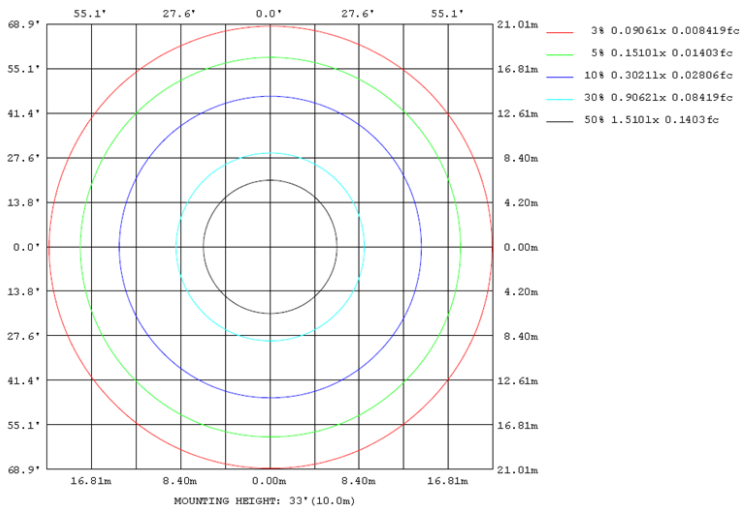
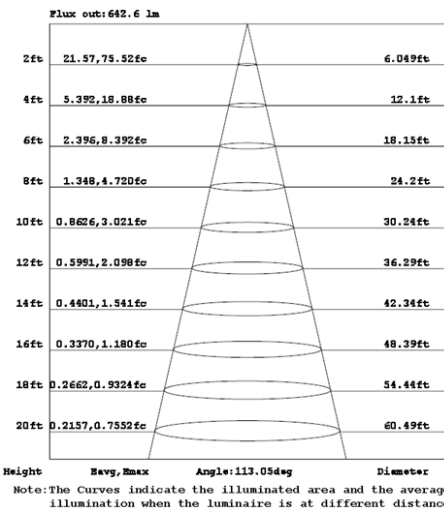
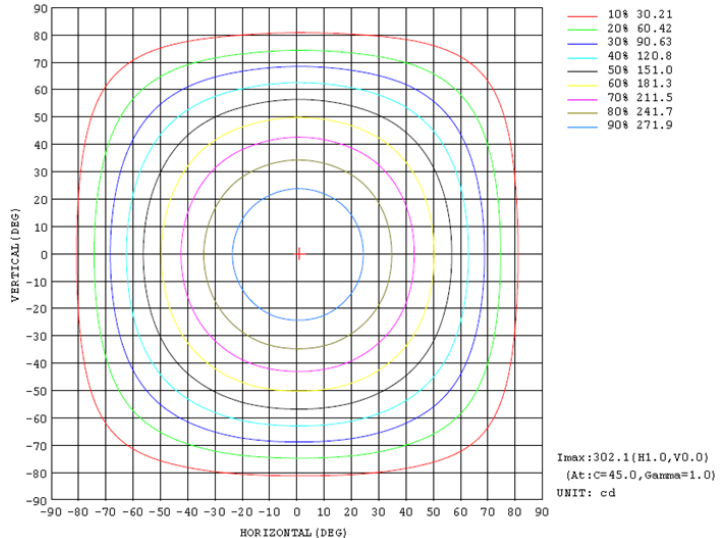
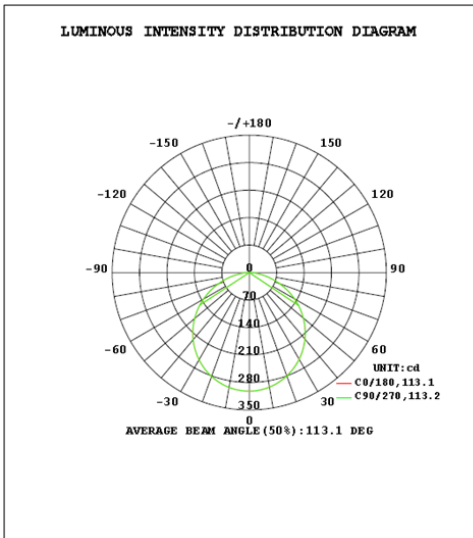


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	234.6	27.0%
0-40	384.6	44.3%
0-60	682.3	78.6%
60-90	185.7	21.4%
70-100	77.8	9.0%
90-120	0.0	0.0%
0-90	868.0	100.0%
90-180	0.0	0.0%
0-180	868.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.6	3.3%	90-100	0.0	0.0%
10-20	81.8	9.4%	100-110	0.0	0.0%
20-30	124.2	14.3%	110-120	0.0	0.0%
30-40	150.1	17.3%	120-130	0.0	0.0%
40-50	156.2	18.0%	130-140	0.0	0.0%
50-60	141.6	16.3%	140-150	0.0	0.0%
60-70	107.9	12.4%	150-160	0.0	0.0%
70-80	61.5	7.1%	160-170	0.0	0.0%
80-90	16.3	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6/RGB	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030034	120.0	60	0.114	12.70	0.929

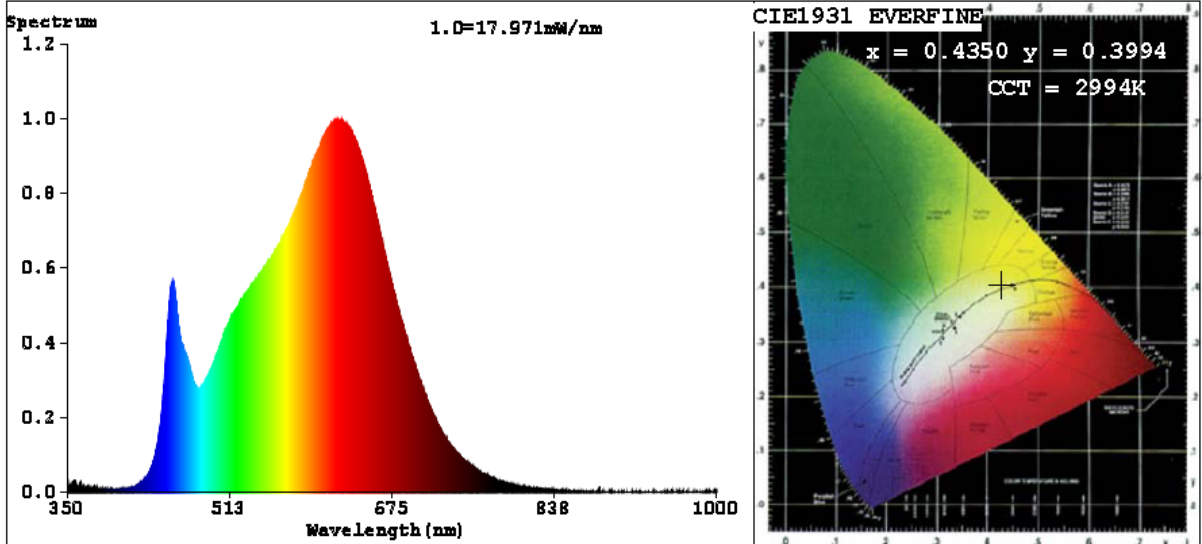
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	67
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	2994	R3	98	R11	96
Duv	-0.0016	R4	94	R12	82
Chromaticity (x, y)	x=0.4350 y=0.3994	R5	96	R13	97
Chromaticity (u', v')	u'=0.2514 v'=0.5192	R6	96	R14	100
Color Rendering Index (CRI)	94.4	R7	91	R15	92
R9	67	R8	84	--	--

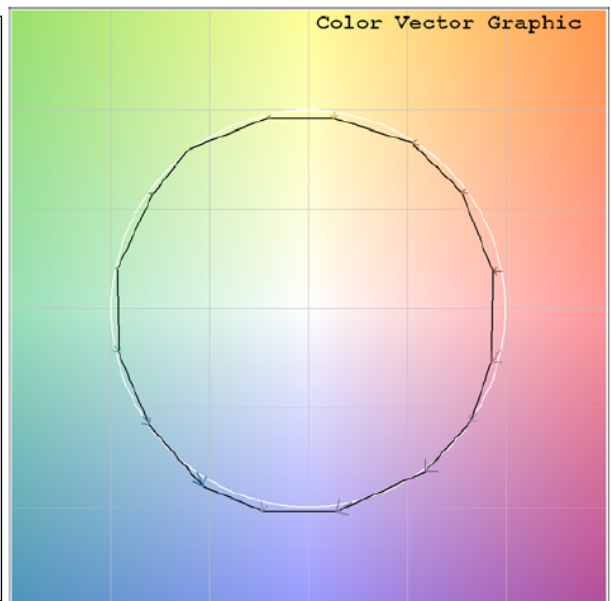
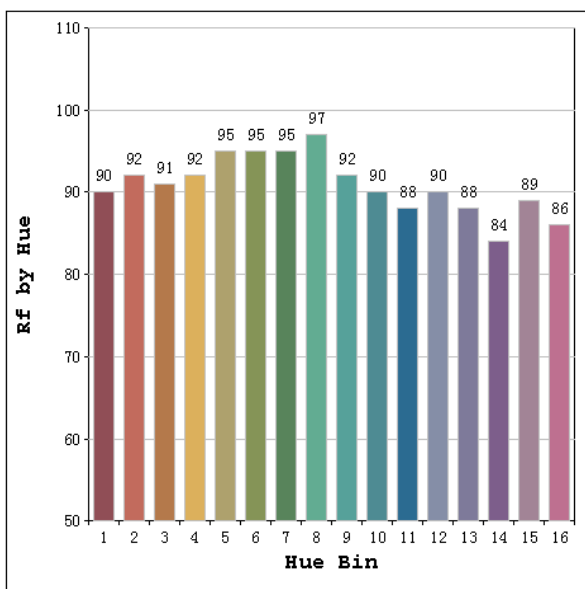
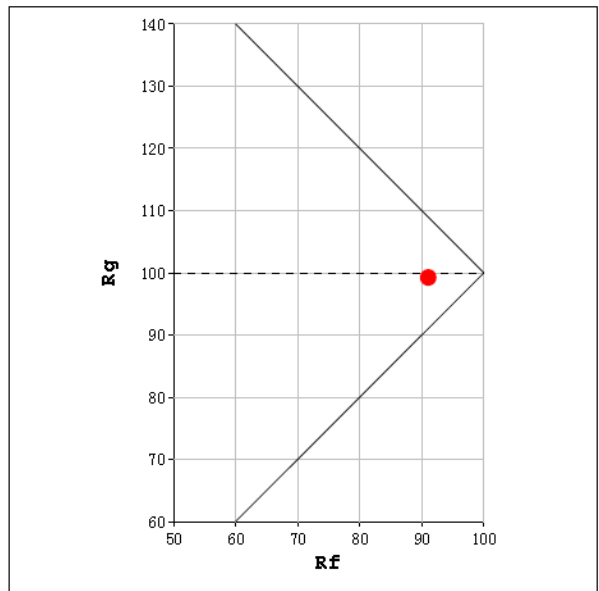
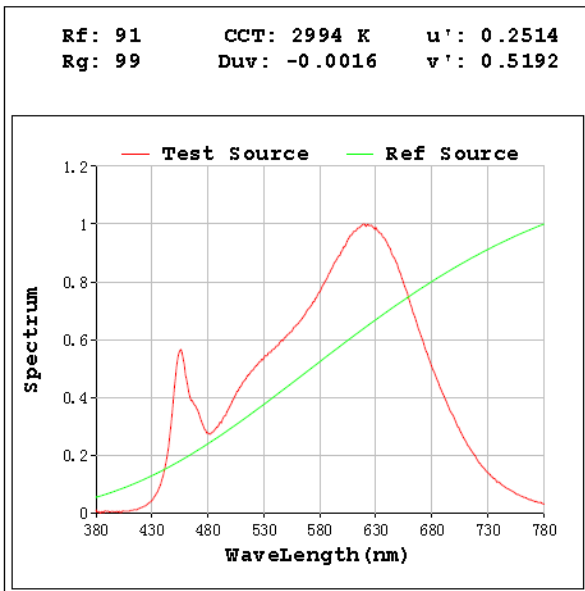
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	876.1
Luminous Efficacy (lm/W)	68.98
Beam Angle (°)	113.2
Center Beam Candle Power (cd)	304.9

Spectral Power Distribution & Chromaticity Diagram



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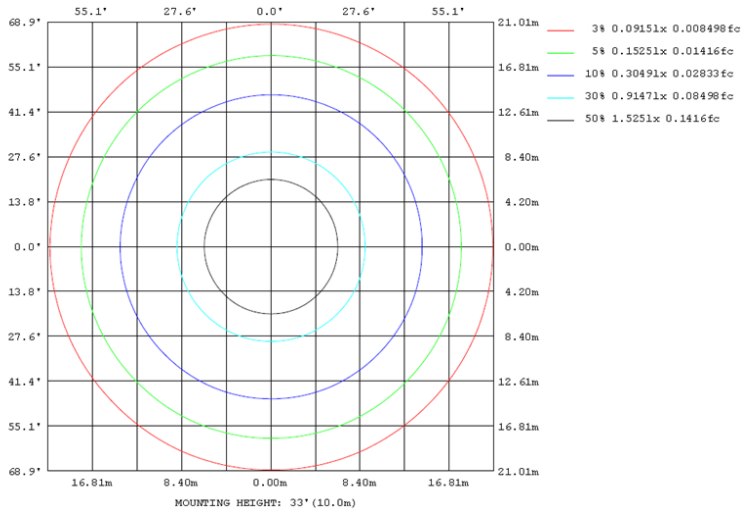
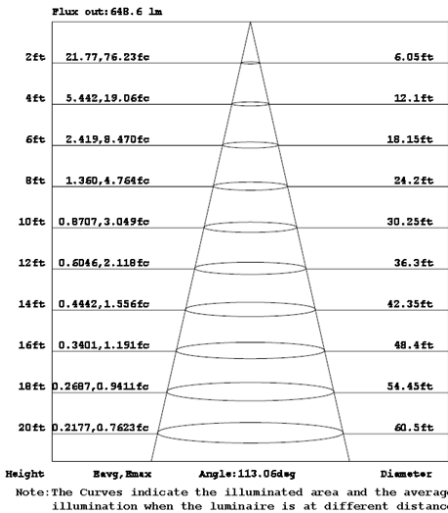
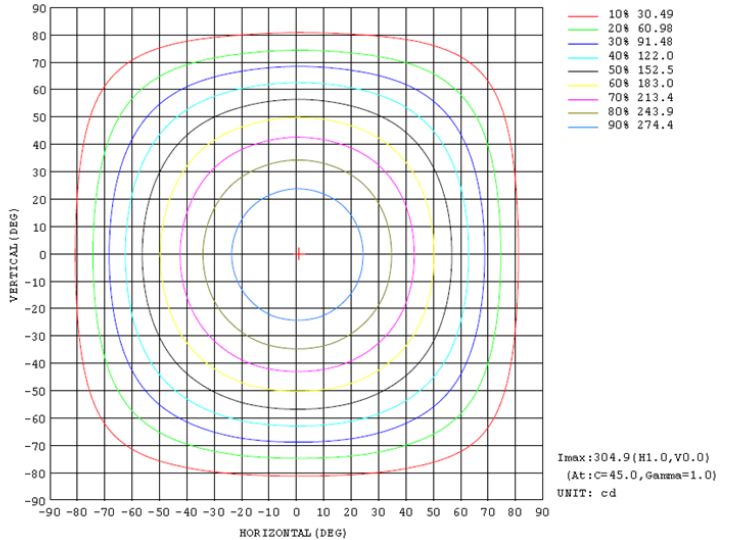
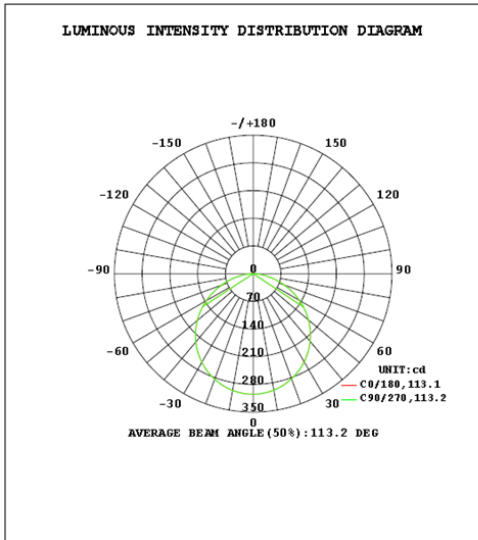


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	236.7	27.0%
0-40	388.2	44.3%
0-60	688.7	78.6%
60-90	187.4	21.4%
70-100	78.5	9.0%
90-120	0.0	0.0%
0-90	876.1	100.0%
90-180	0.0	0.0%
0-180	876.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.8	3.3%	90-100	0.0	0.0%
10-20	82.6	9.4%	100-110	0.0	0.0%
20-30	125.3	14.3%	110-120	0.0	0.0%
30-40	151.5	17.3%	120-130	0.0	0.0%
40-50	157.6	18.0%	130-140	0.0	0.0%
50-60	142.9	16.3%	140-150	0.0	0.0%
60-70	108.9	12.4%	150-160	0.0	0.0%
70-80	62.0	7.1%	160-170	0.0	0.0%
80-90	16.5	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6/RGB	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030034	120.0	60	0.114	12.70	0.929

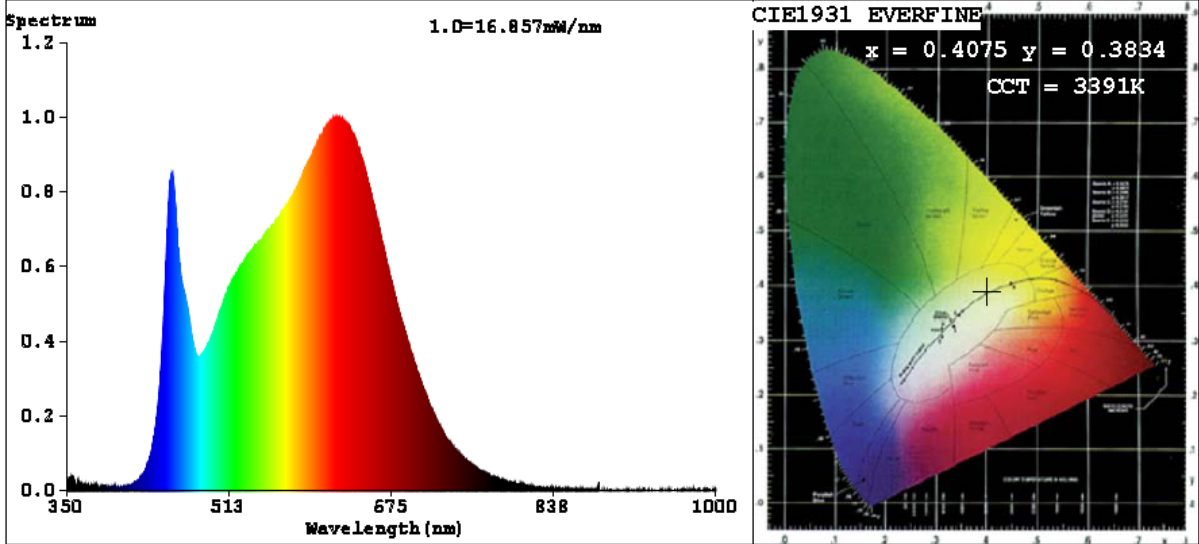
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	78
Frequency (Hz)	60	R2	99	R10	99
CCT (K)	3391	R3	98	R11	97
Duv	-0.0037	R4	95	R12	79
Chromaticity (x, y)	x=0.4075 y=0.3834	R5	97	R13	99
Chromaticity (u', v')	u'=0.2402 v'=0.5087	R6	95	R14	100
Color Rendering Index (CRI)	95.3	R7	93	R15	96
R9	78	R8	89	--	--

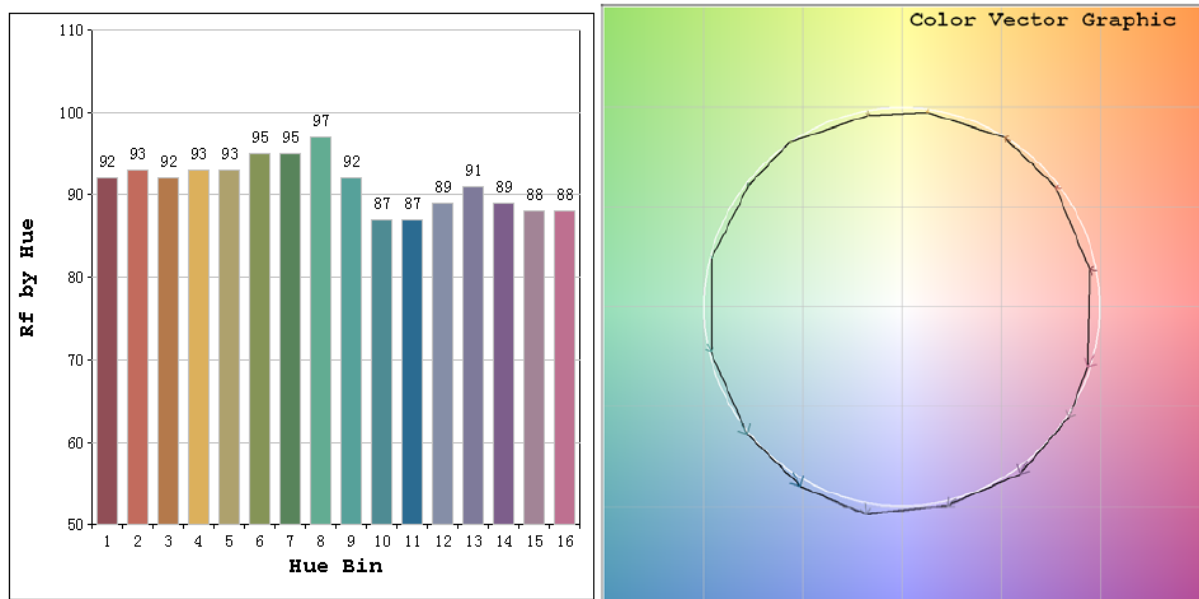
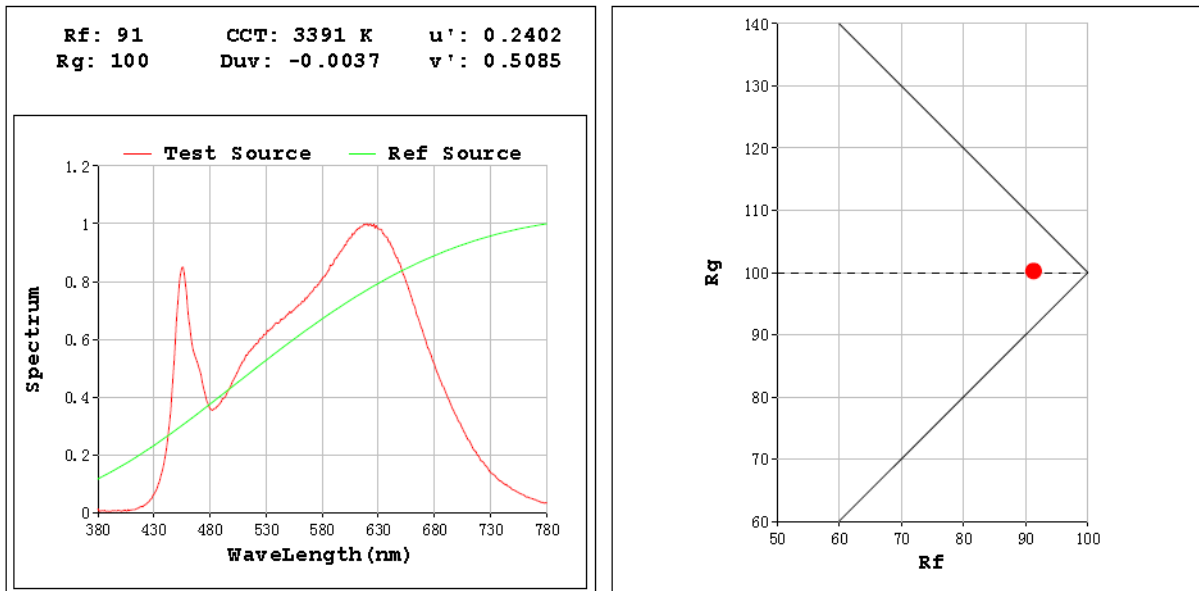
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	887.4
Luminous Efficacy (lm/W)	69.87
Beam Angle (°)	113.1
Center Beam Candle Power (cd)	308.8

Spectral Power Distribution & Chromaticity Diagram



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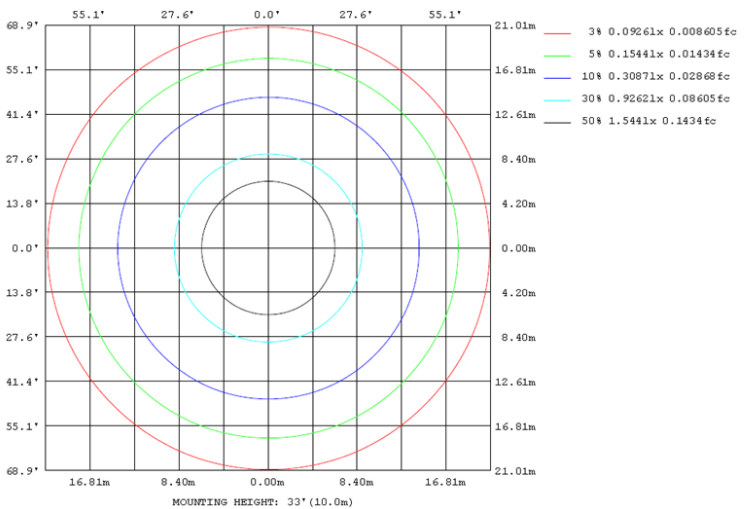
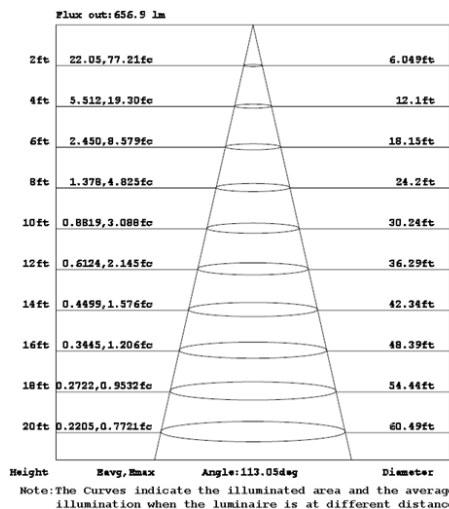
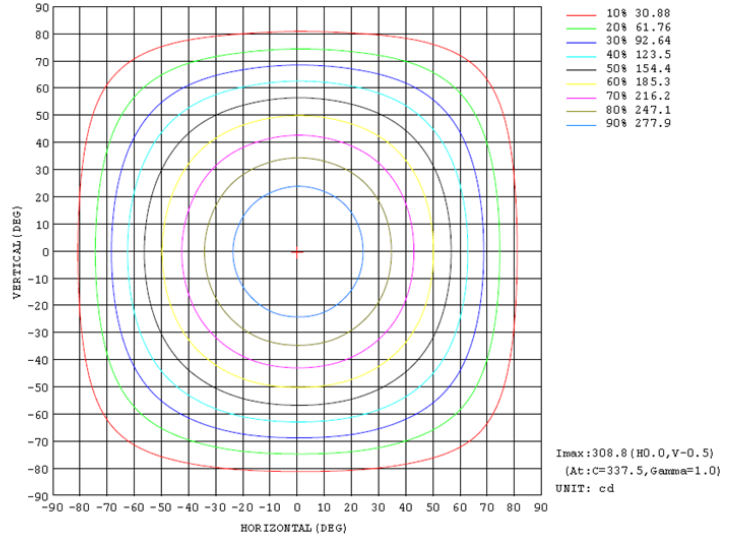
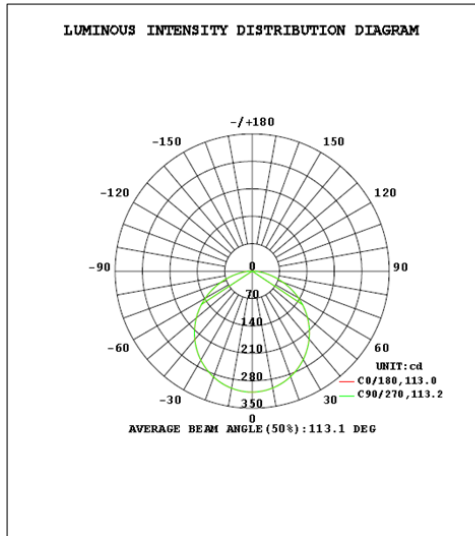


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	239.8	27.0%
0-40	393.2	44.3%
0-60	697.6	78.6%
60-90	189.8	21.4%
70-100	79.5	9.0%
90-120	0.0	0.0%
0-90	887.4	100.0%
90-180	0.0	0.0%
0-180	887.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.2	3.3%	90-100	0.0	0.0%
10-20	83.7	9.4%	100-110	0.0	0.0%
20-30	126.9	14.3%	110-120	0.0	0.0%
30-40	153.4	17.3%	120-130	0.0	0.0%
40-50	159.7	18.0%	130-140	0.0	0.0%
50-60	144.7	16.3%	140-150	0.0	0.0%
60-70	110.3	12.4%	150-160	0.0	0.0%
70-80	62.8	7.1%	160-170	0.0	0.0%
80-90	16.7	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6/RGB	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030034	120.0	60	0.114	12.70	0.929

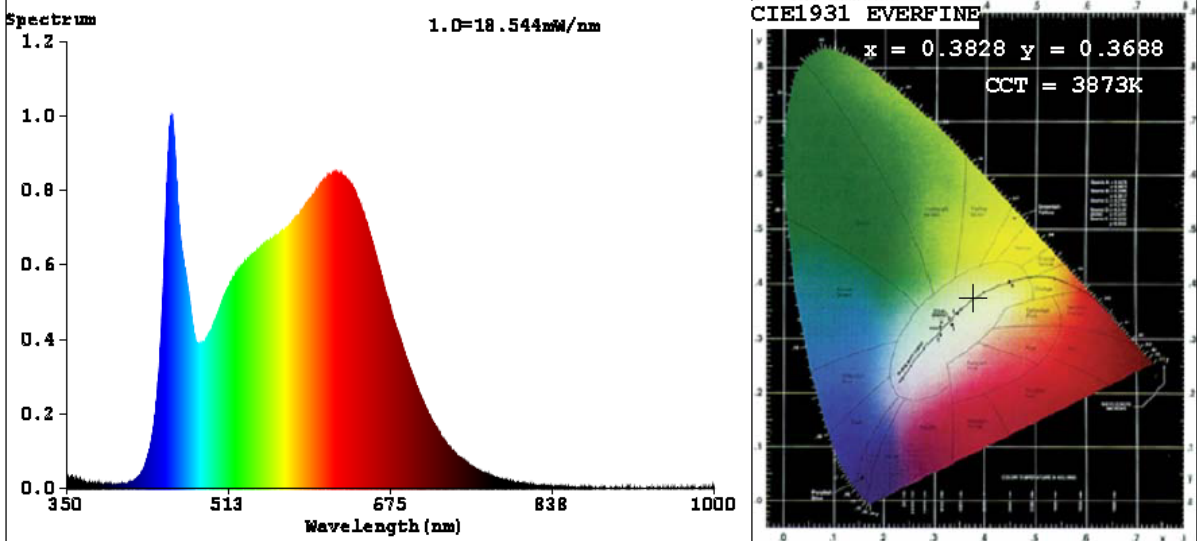
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	86
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	3873	R3	98	R11	97
Duv	-0.0044	R4	96	R12	75
Chromaticity (x, y)	x=0.3828 y=0.3688	R5	96	R13	99
Chromaticity (u', v')	u'=0.2299 v'=0.4984	R6	94	R14	100
Color Rendering Index (CRI)	95.6	R7	93	R15	97
R9	86	R8	92	--	--

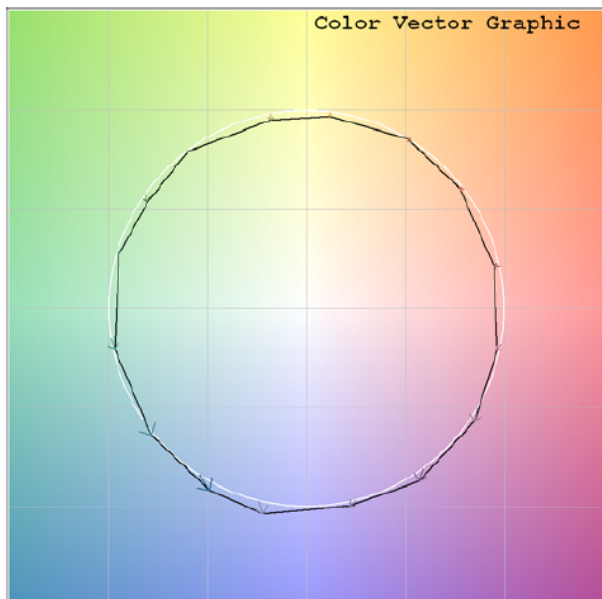
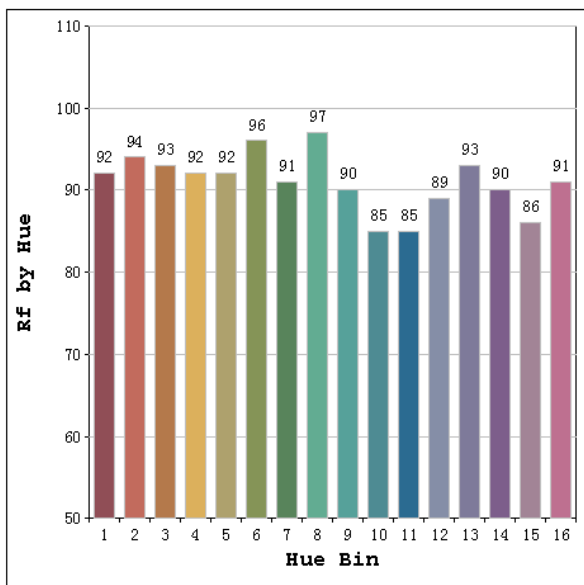
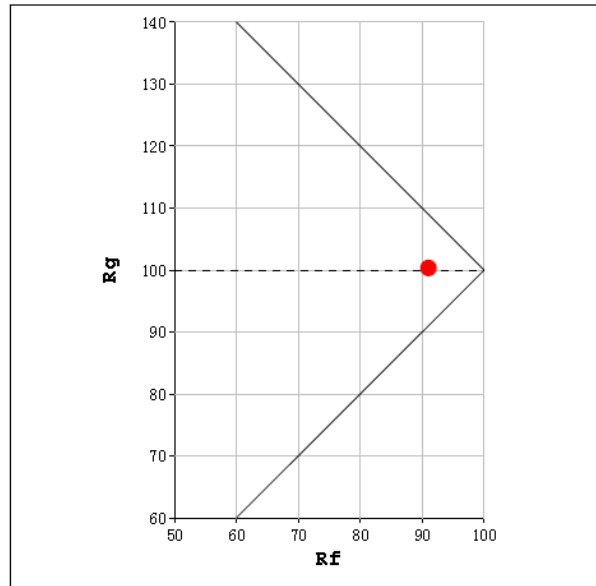
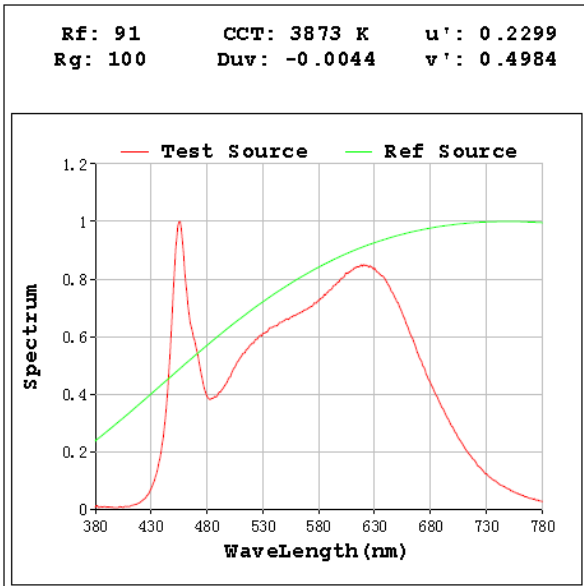
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	897.1
Luminous Efficacy (lm/W)	70.64
Beam Angle (°)	113.1
Center Beam Candle Power (cd)	312.1

Spectral Power Distribution & Chromaticity Diagram



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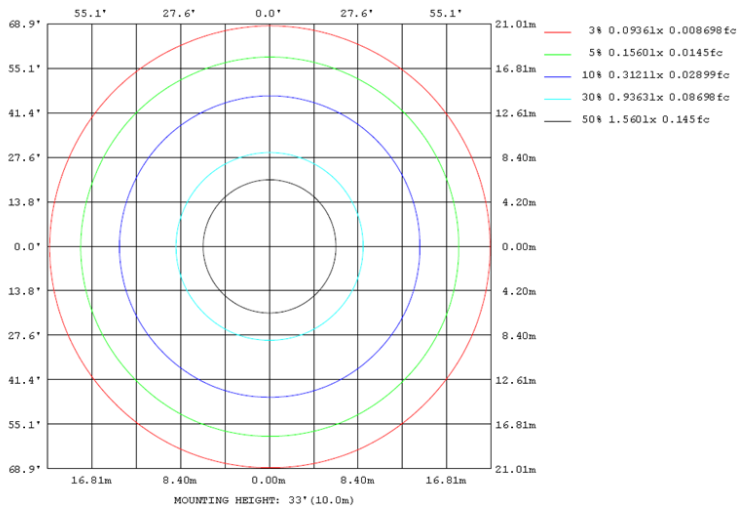
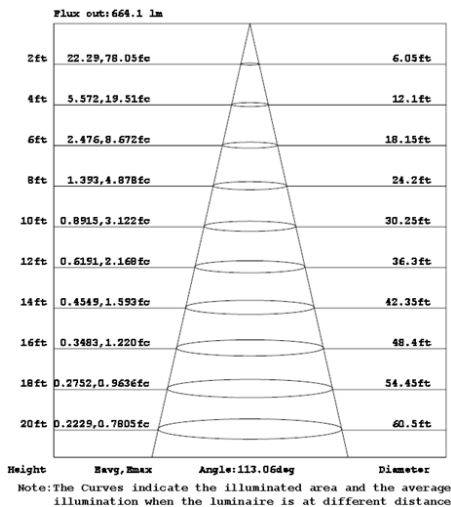
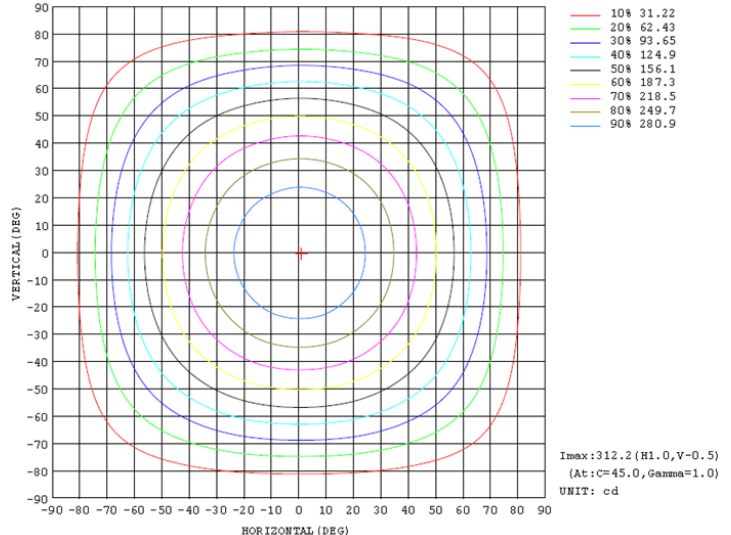
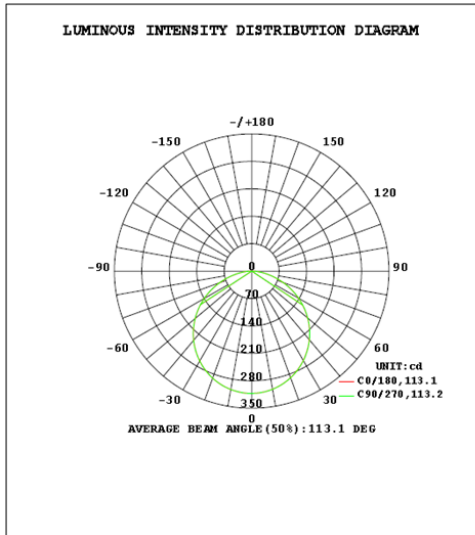


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	242.4	27.0%
0-40	397.5	44.3%
0-60	705.2	78.6%
60-90	191.9	21.4%
70-100	80.4	9.0%
90-120	0.0	0.0%
0-90	897.1	100.0%
90-180	0.0	0.0%
0-180	897.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.5	3.3%	90-100	0.0	0.0%
10-20	84.6	9.4%	100-110	0.0	0.0%
20-30	128.3	14.3%	110-120	0.0	0.0%
30-40	155.1	17.3%	120-130	0.0	0.0%
40-50	161.4	18.0%	130-140	0.0	0.0%
50-60	146.3	16.3%	140-150	0.0	0.0%
60-70	111.5	12.4%	150-160	0.0	0.0%
70-80	63.5	7.1%	160-170	0.0	0.0%
80-90	16.9	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6/RGB	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030034	120.0	60	0.114	12.70	0.929

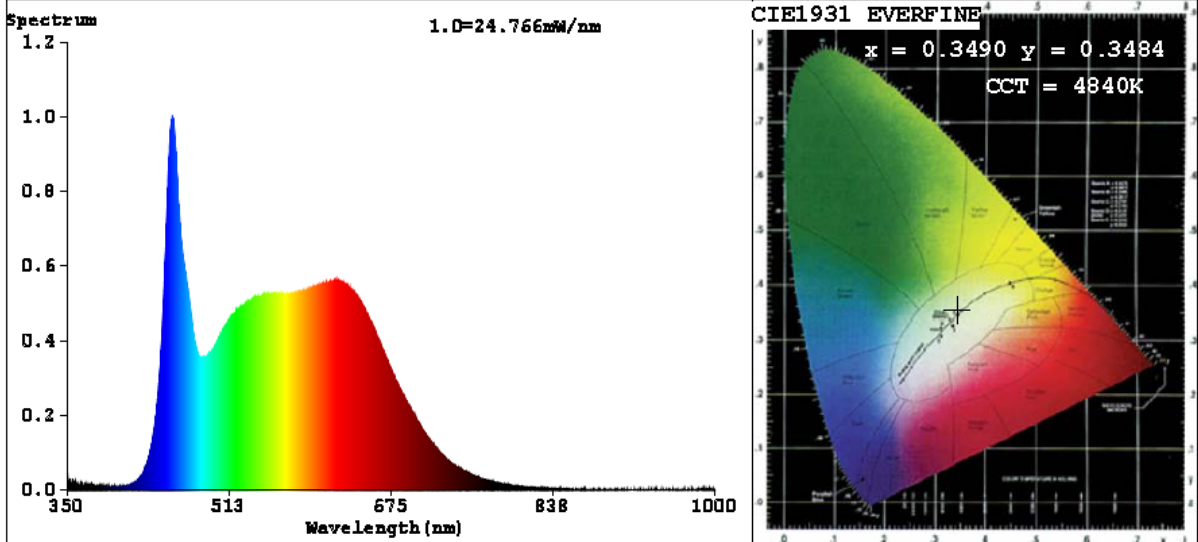
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	92
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	4840	R3	98	R11	95
Duv	-0.0032	R4	93	R12	69
Chromaticity (x, y)	x=0.3490 y=0.3484	R5	94	R13	98
Chromaticity (u', v')	u'=0.2153 v'=0.4837	R6	94	R14	99
Color Rendering Index (CRI)	95.1	R7	93	R15	95
R9	92	R8	93	--	--

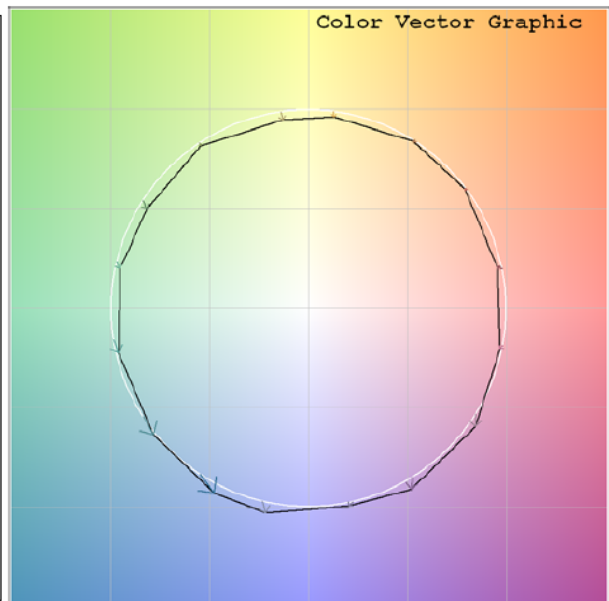
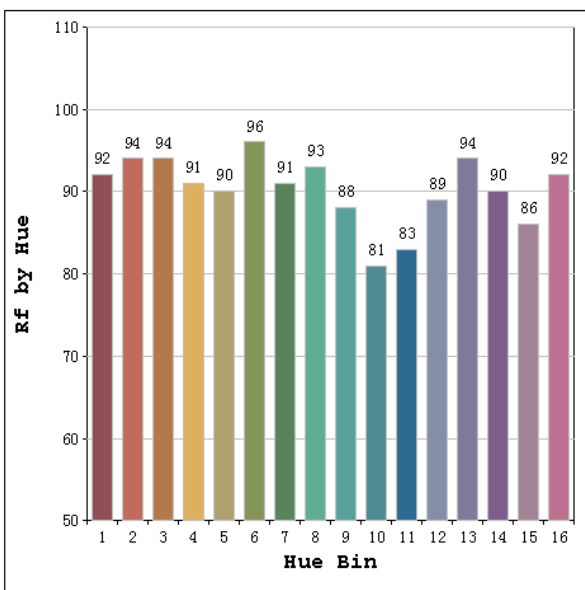
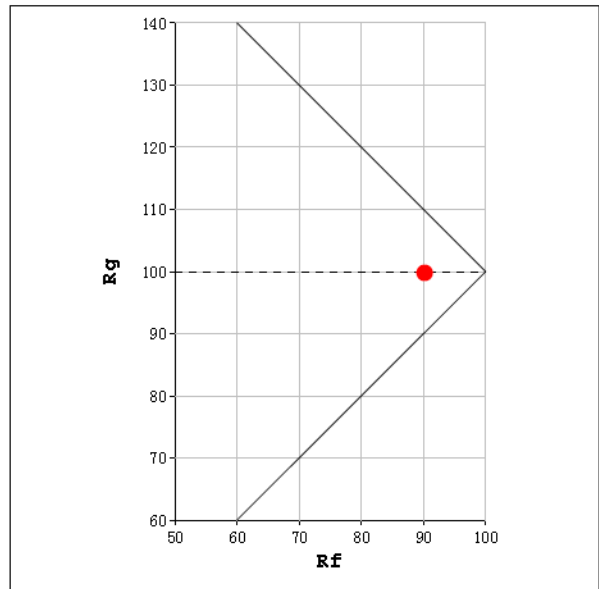
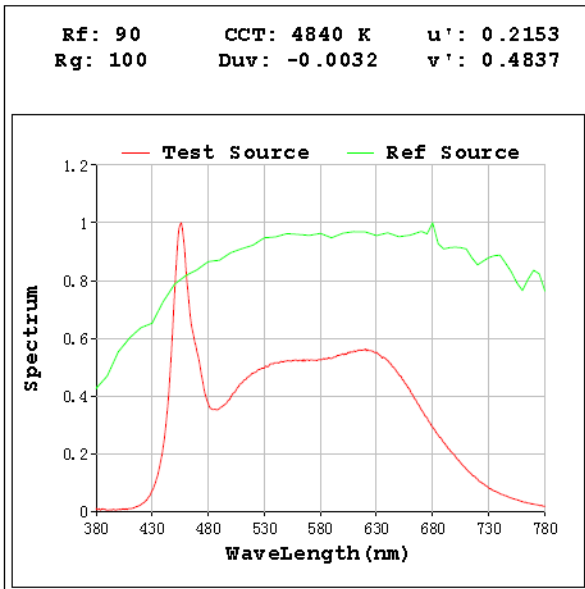
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	911.3
Luminous Efficacy (lm/W)	71.75
Beam Angle (°)	113.2
Center Beam Candle Power (cd)	317.0

Spectral Power Distribution & Chromaticity Diagram



TM30

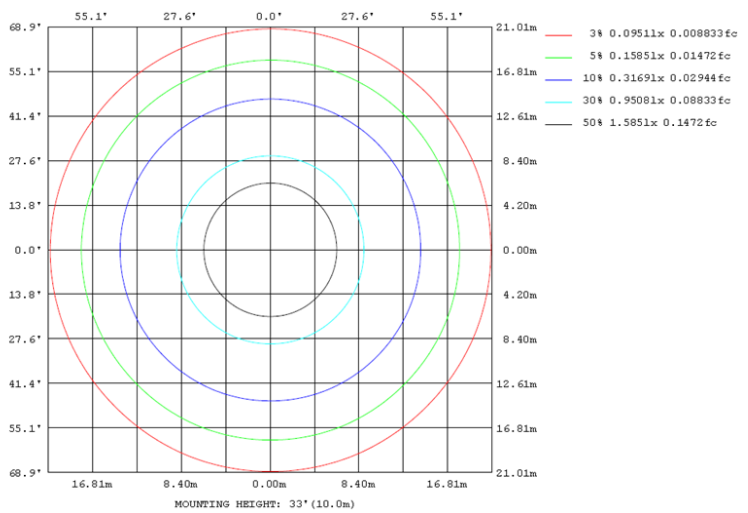
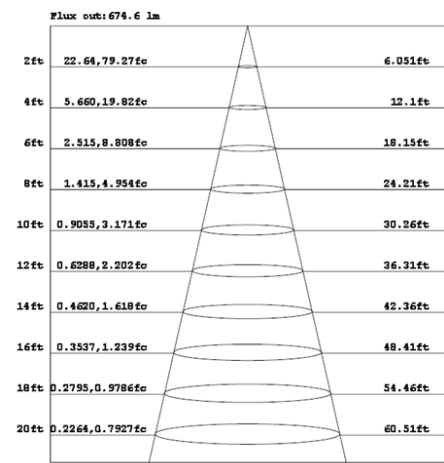
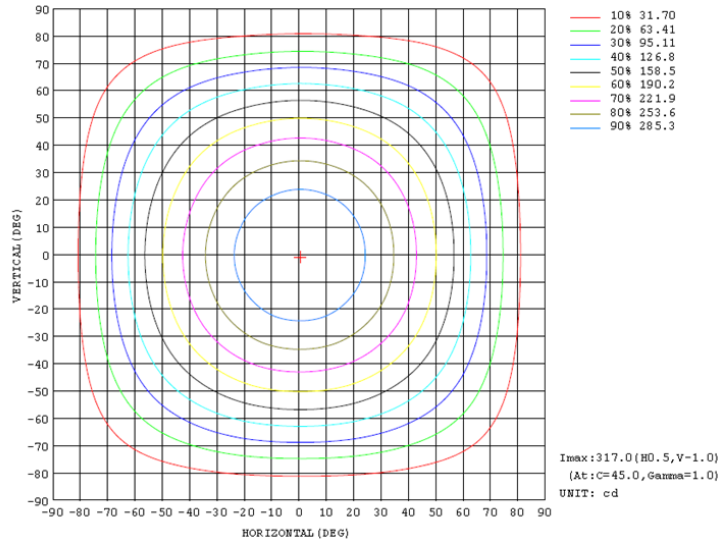
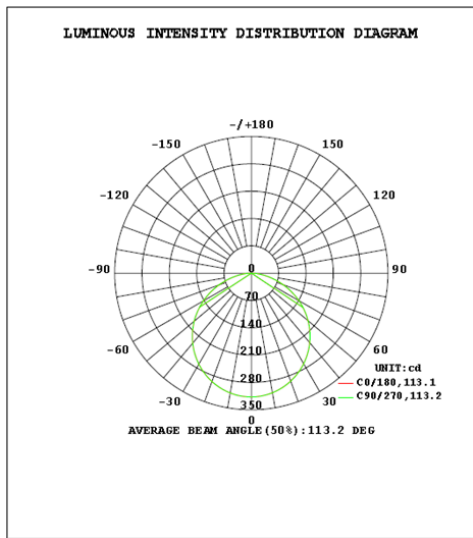


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	246.2	27.0%
0-40	403.7	44.3%
0-60	716.3	78.6%
60-90	195.0	21.4%
70-100	81.7	9.0%
90-120	0.0	0.0%
0-90	911.3	100.0%
90-180	0.0	0.0%
0-180	911.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.0	3.3%	90-100	0.0	0.0%
10-20	85.9	9.4%	100-110	0.0	0.0%
20-30	130.3	14.3%	110-120	0.0	0.0%
30-40	157.5	17.3%	120-130	0.0	0.0%
40-50	164.0	18.0%	130-140	0.0	0.0%
50-60	148.6	16.3%	140-150	0.0	0.0%
60-70	113.3	12.4%	150-160	0.0	0.0%
70-80	64.5	7.1%	160-170	0.0	0.0%
80-90	17.2	1.9%	170-180	0.0	0.0%

Photometric Data



2.1.6 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6/RGB	6500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030034	120.0	60	0.113	12.60	0.929

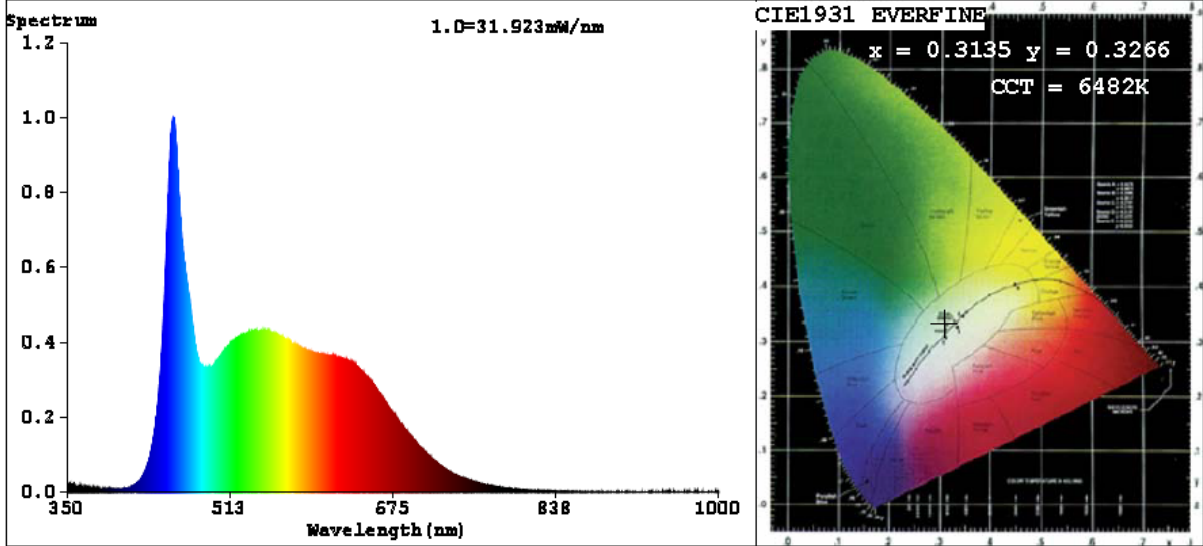
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	89
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	6482	R3	98	R11	92
Duv	0.0016	R4	90	R12	67
Chromaticity (x, y)	x=0.3135 y=0.3266	R5	93	R13	99
Chromaticity (u', v')	u'=0.1993 v'=0.4672	R6	94	R14	99
Color Rendering Index (CRI)	94.2	R7	93	R15	94
R9	89	R8	92	--	--

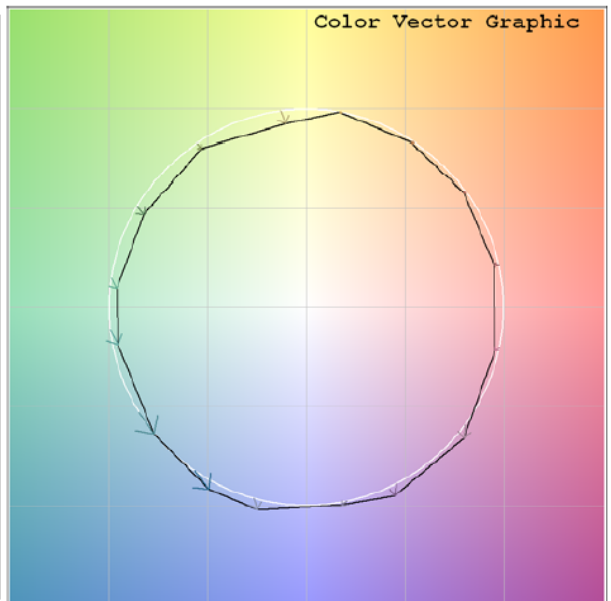
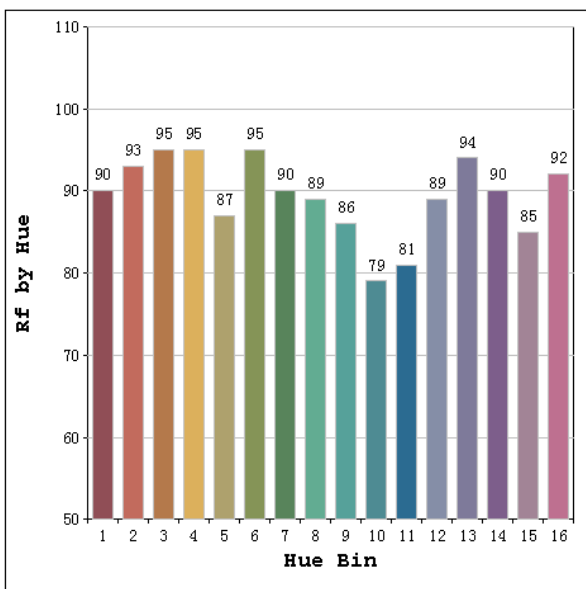
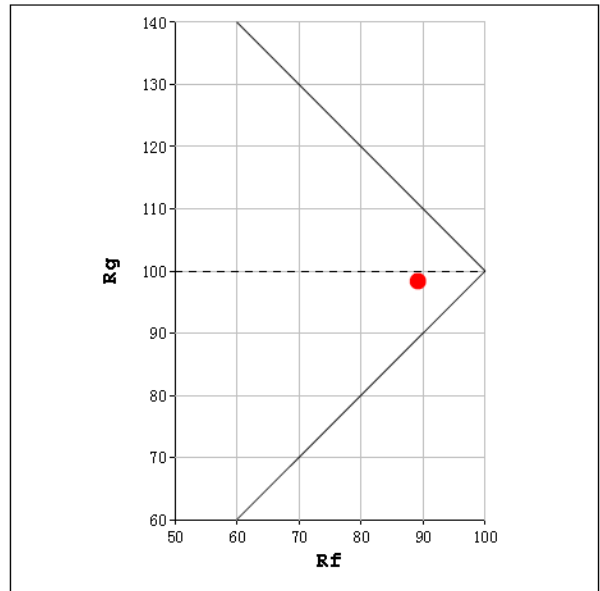
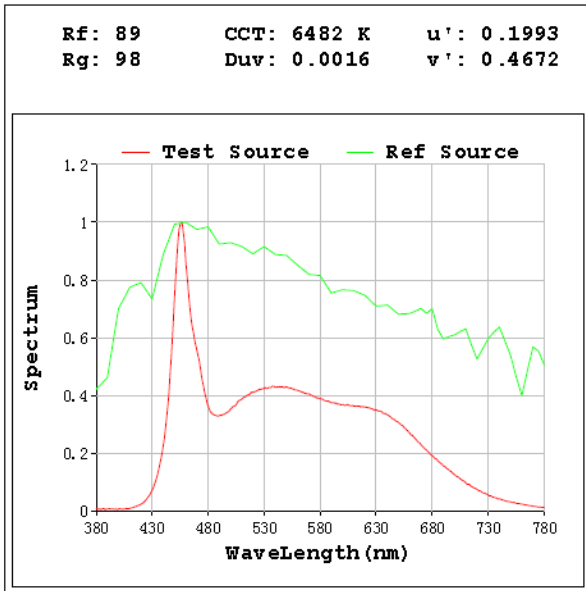
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	918.4
Luminous Efficacy (lm/W)	72.89
Beam Angle (°)	113.2
Center Beam Candle Power (cd)	319.4

Spectral Power Distribution & Chromaticity Diagram



TM30

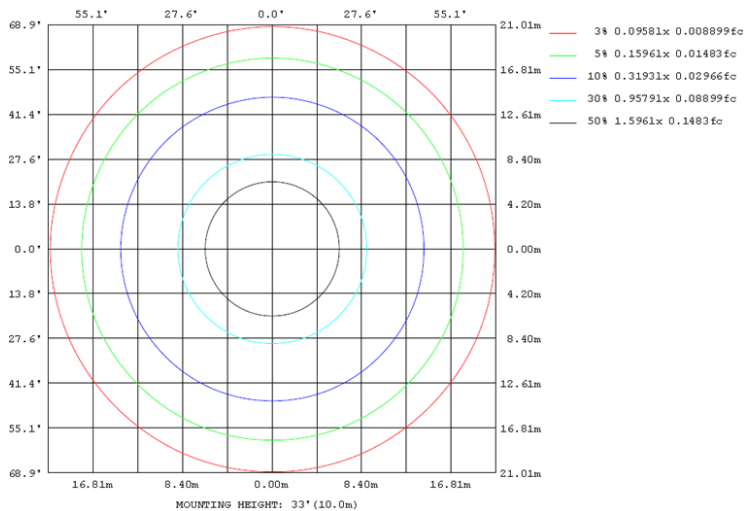
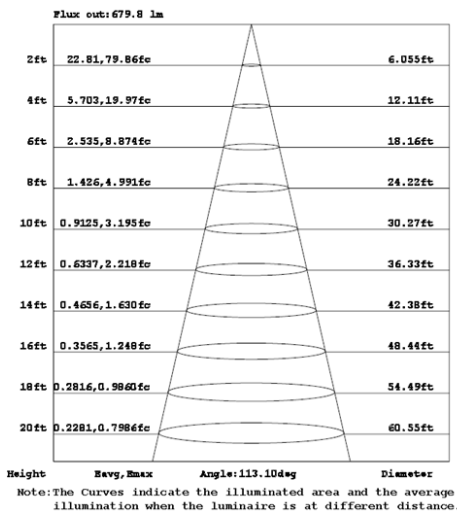
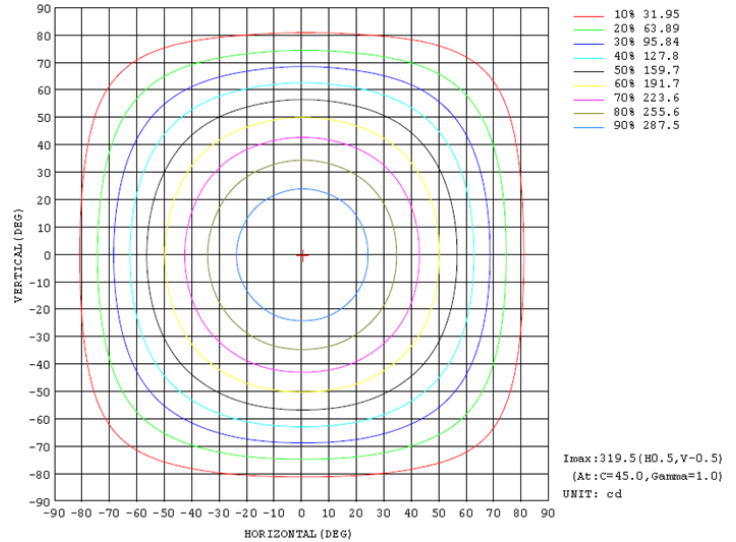
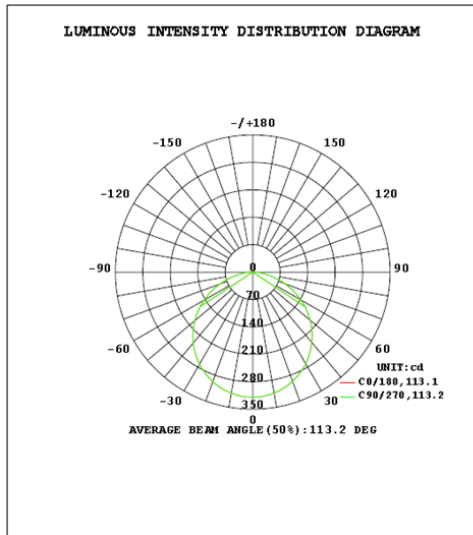


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	248.1	27.0%
0-40	406.8	44.3%
0-60	721.8	78.6%
60-90	196.6	21.4%
70-100	82.4	9.0%
90-120	0.0	0.0%
0-90	918.4	100.0%
90-180	0.0	0.0%
0-180	918.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.2	3.3%	90-100	0.0	0.0%
10-20	86.5	9.4%	100-110	0.0	0.0%
20-30	131.3	14.3%	110-120	0.0	0.0%
30-40	158.7	17.3%	120-130	0.0	0.0%
40-50	165.2	18.0%	130-140	0.0	0.0%
50-60	149.8	16.3%	140-150	0.0	0.0%
60-70	114.2	12.4%	150-160	0.0	0.0%
70-80	65.1	7.1%	160-170	0.0	0.0%
80-90	17.3	1.9%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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