

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):
WFRL6R139TW120WB-SS-NS/LCB

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

**Type of
Luminaire:** Downlights

Report Date: 2023-02-09

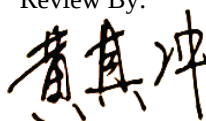
Prepared By:

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	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	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	2023-02-08	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRL6R139TW120WB-SS-NS/LCB	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302080007	120.0	60	0.116	13.0	0.932

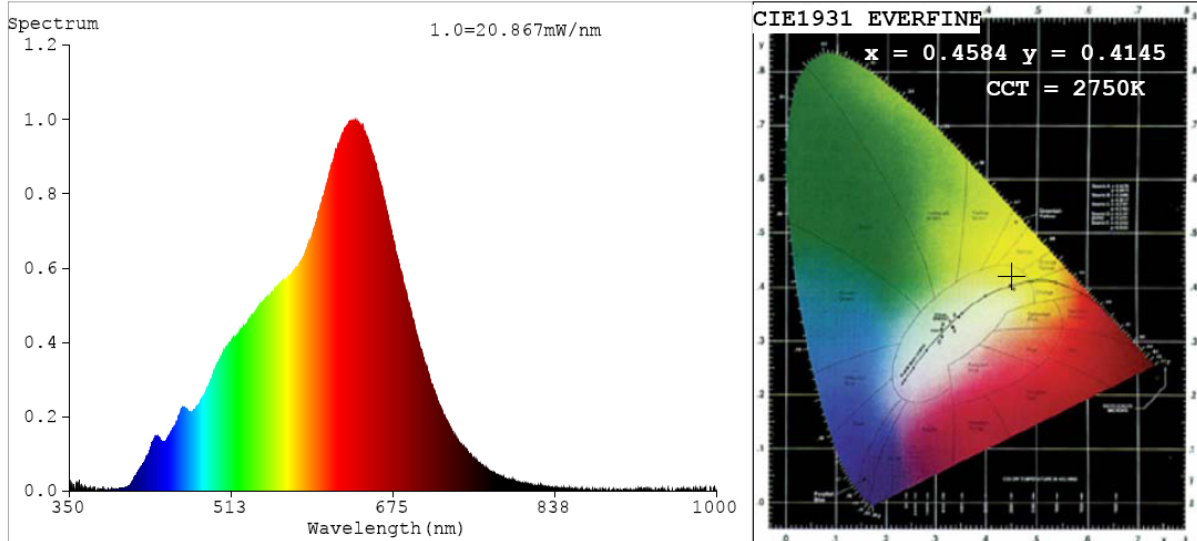
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	99
Frequency (Hz)	60	R2	98	R10	97
CCT (K)	2750	R3	98	R11	95
Duv	0.0016	R4	95	R12	95
Chromaticity (x, y)	x=0.4584 y=0.4145	R5	96	R13	96
Chromaticity (u', v')	u'=0.2598 v'=0.5286	R6	96	R14	98
Color Rendering Index (CRI)	97	R7	98	R15	99
R9	99	R8	99	--	--

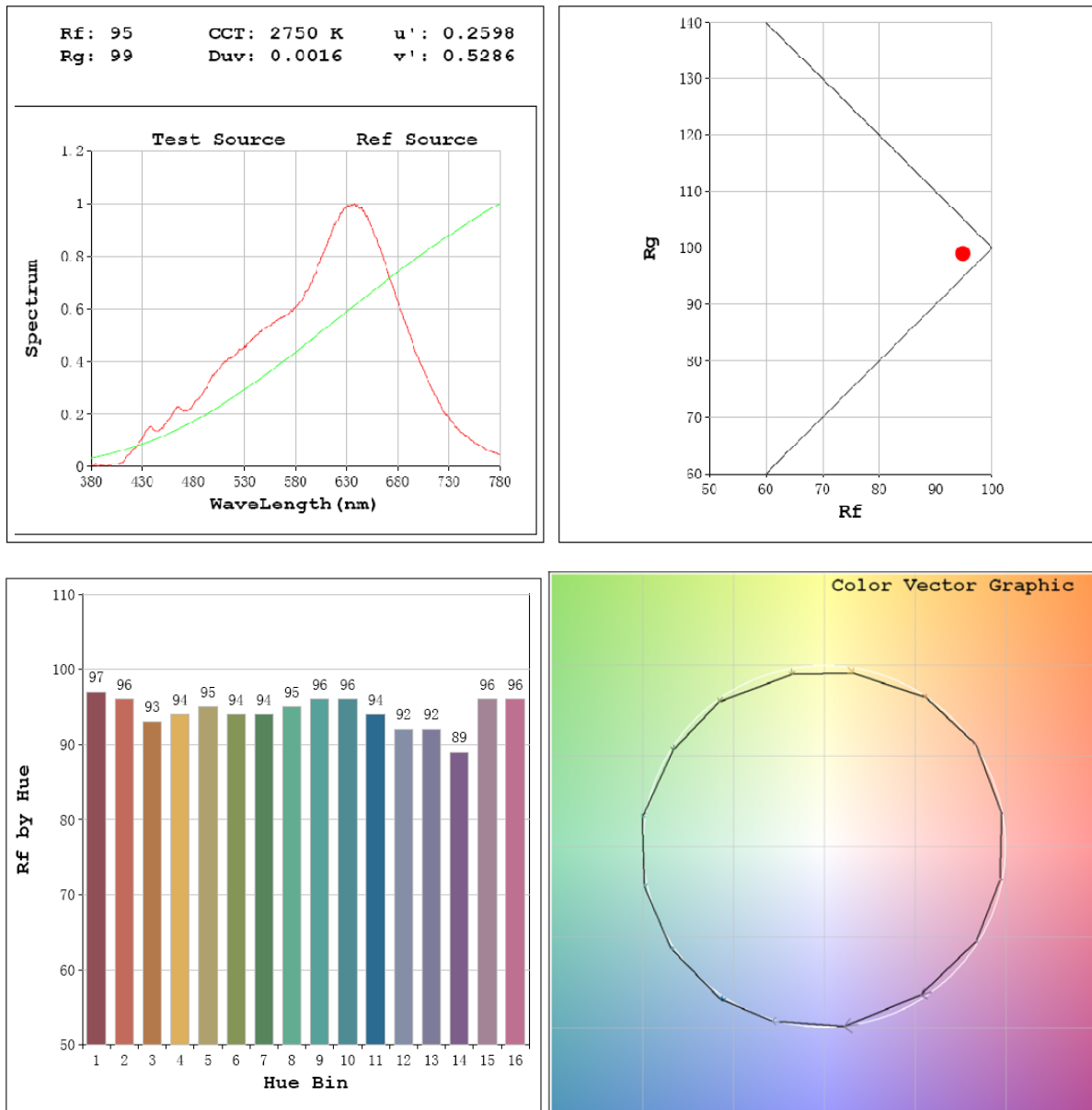
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	869.24
Luminous Efficacy (lm/W)	66.86
Beam Angle (°)	111.2
Center Beam Candle Power (cd)	312.2

Spectral Power Distribution & Chromaticity Diagram



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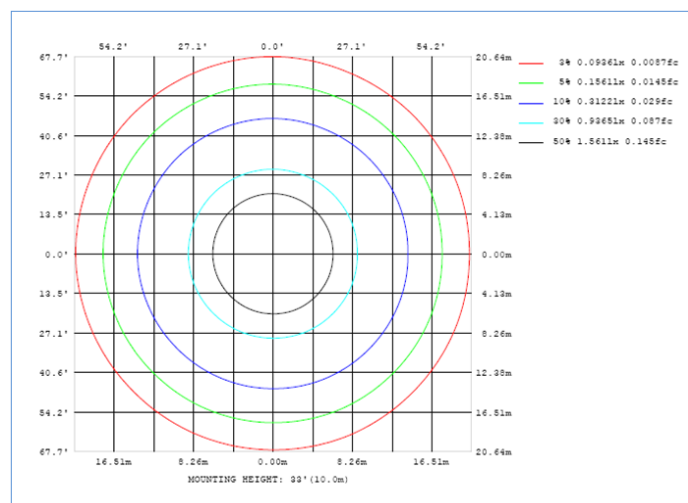
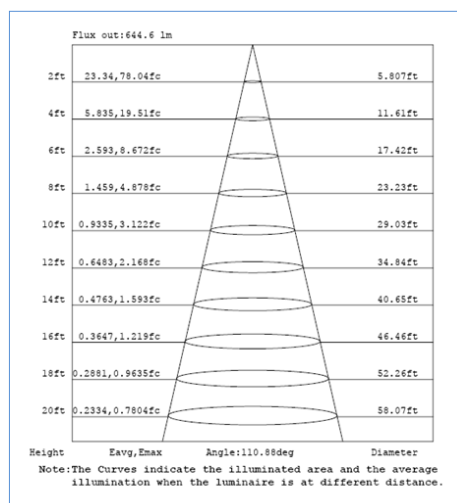
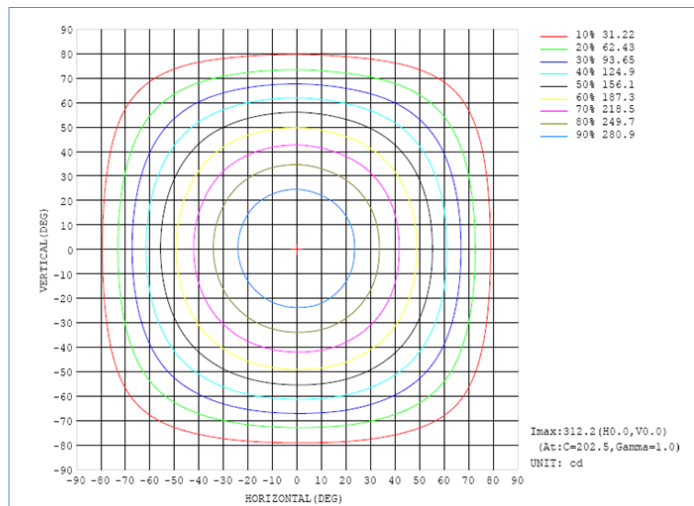
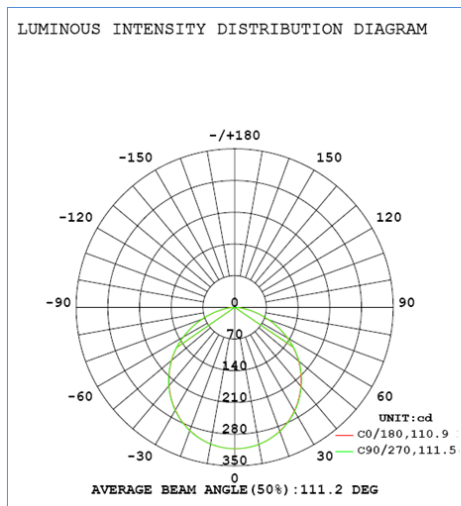


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	242.5	27.9%
0-40	396.7	45.6%
0-60	698.0	80.3%
60-90	171.2	19.7%
70-100	66.5	7.6%
90-120	0.0	0.0%
0-90	869.2	100.0%
90-180	0.0	0.0%
0-180	869.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.5	3.4%	90-100	0.0	0.0%
10-20	84.7	9.7%	100-110	0.0	0.0%
20-30	128.3	14.8%	110-120	0.0	0.0%
30-40	154.2	17.7%	120-130	0.0	0.0%
40-50	159.2	18.3%	130-140	0.0	0.0%
50-60	142.2	16.4%	140-150	0.0	0.0%
60-70	104.7	12.0%	150-160	0.0	0.0%
70-80	55.4	6.4%	160-170	0.0	0.0%
80-90	11.1	1.3%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-08	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRL6R139TW120WB-SS-NS/LCB	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302080007	120.0	60	0.117	13.0	0.932

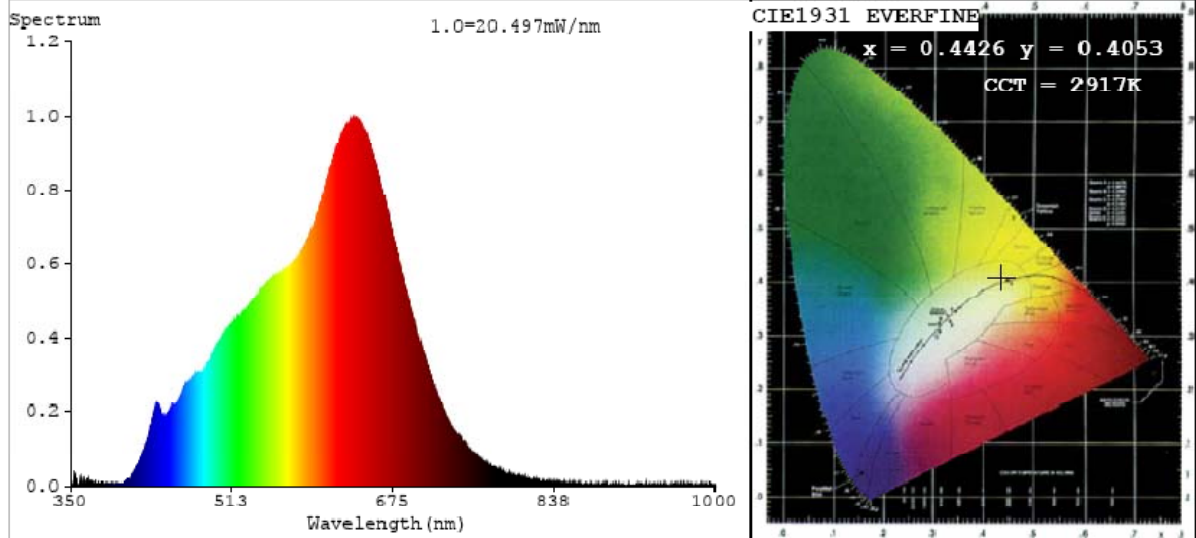
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	95
Frequency (Hz)	60	R2	97	R10	94
CCT (K)	2917	R3	99	R11	91
Duv	-0.0002	R4	94	R12	91
Chromaticity (x, y)	x=0.4426 y=0.4053	R5	95	R13	95
Chromaticity (u', v')	u'=0.2537v'=0.5227	R6	94	R14	98
Color Rendering Index (CRI)	96.1	R7	99	R15	97
R9	95	R8	97	--	--

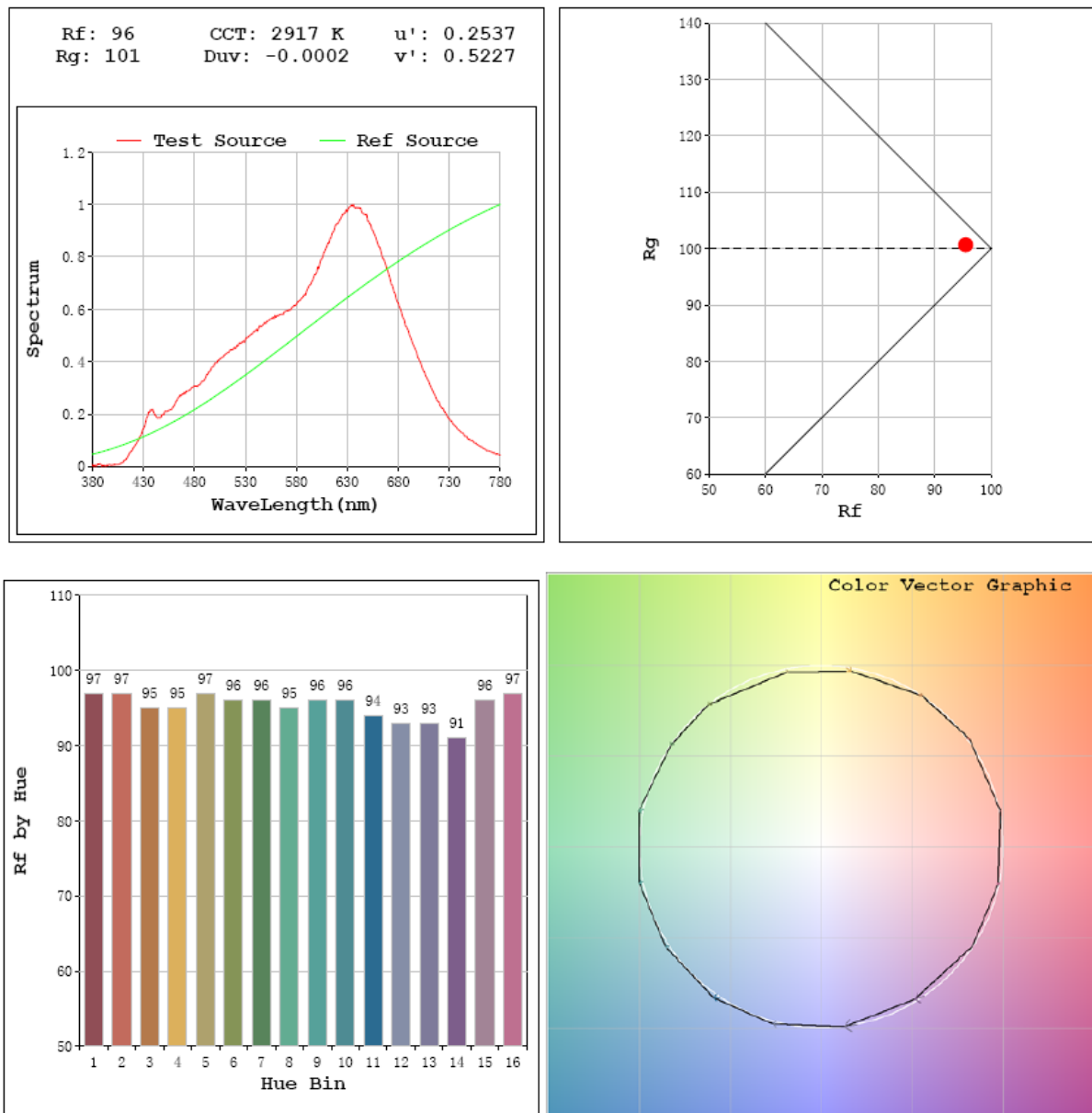
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	880.84
Luminous Efficacy (lm/W)	67.76
Beam Angle (°)	111.2
Center Beam Candle Power (cd)	316.6

Spectral Power Distribution & Chromaticity Diagram



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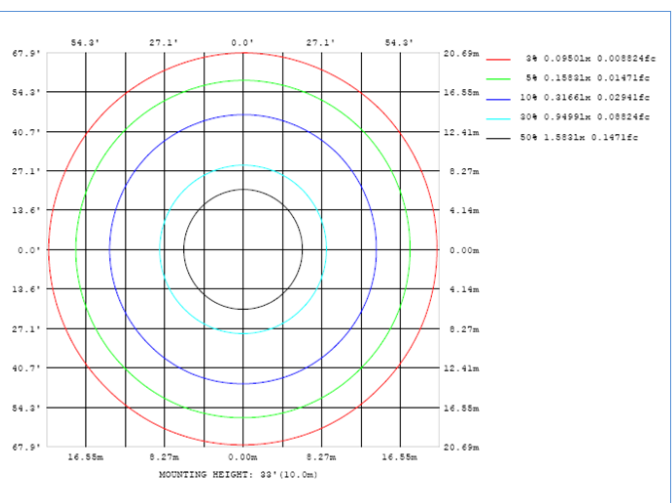
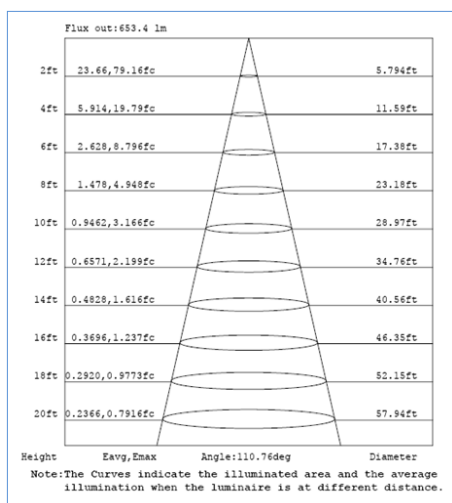
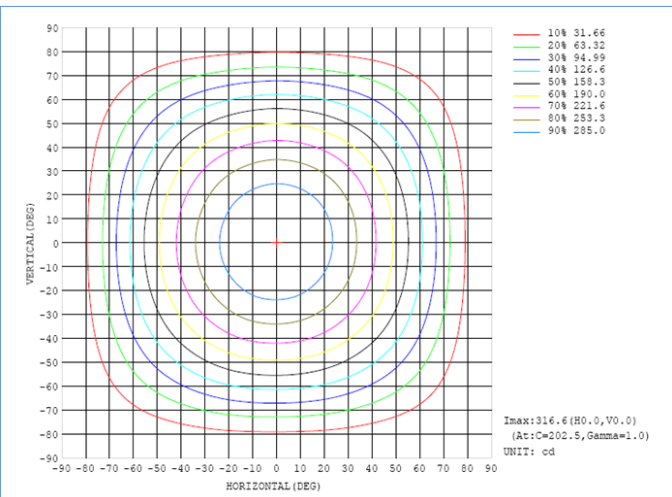
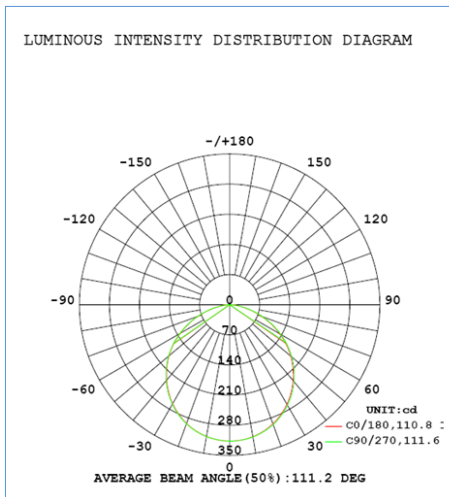


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	245.8	27.9%
0-40	402.1	45.6%
0-60	707.5	80.3%
60-90	173.4	19.7%
70-100	67.3	7.6%
90-120	0.0	0.0%
0-90	880.8	100.0%
90-180	0.0	0.0%
0-180	880.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.0	3.4%	90-100	0.0	0.0%
10-20	85.9	9.7%	100-110	0.0	0.0%
20-30	130.0	14.8%	110-120	0.0	0.0%
30-40	156.3	17.7%	120-130	0.0	0.0%
40-50	161.3	18.3%	130-140	0.0	0.0%
50-60	144.1	16.4%	140-150	0.0	0.0%
60-70	106.1	12.0%	150-160	0.0	0.0%
70-80	56.0	6.4%	160-170	0.0	0.0%
80-90	11.2	1.3%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-08	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRL6R139TW120WB-SS-NS/LCB	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302080007	120.0	60	0.117	13.10	0.932

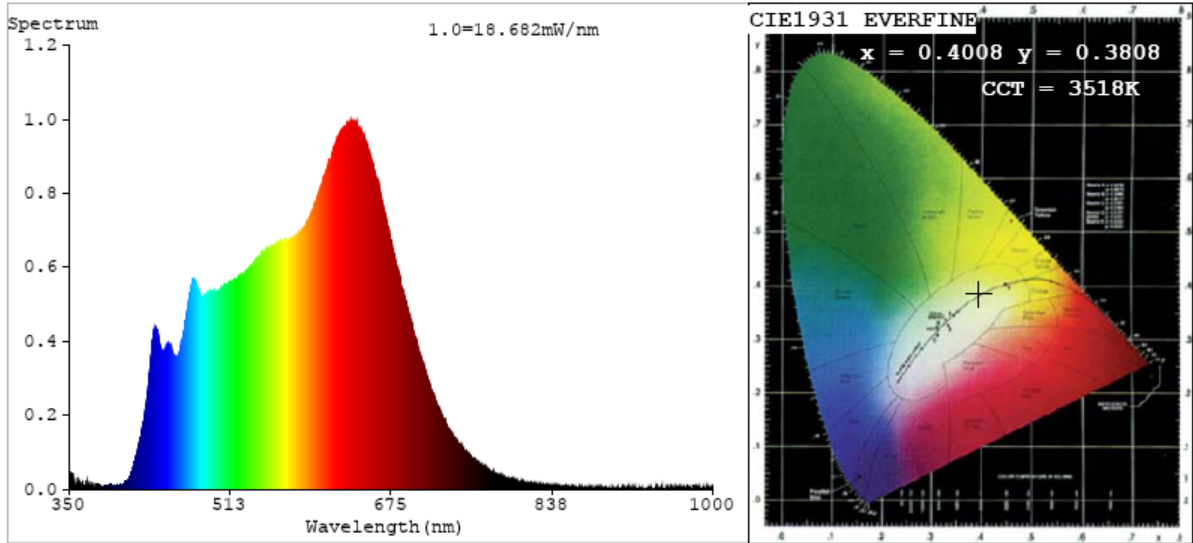
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	92	R9	82
Frequency (Hz)	60	R2	94	R10	88
CCT (K)	3518	R3	98	R11	91
Duv	-0.0034	R4	93	R12	86
Chromaticity (x, y)	x=0.4008 y=0.3808	R5	92	R13	92
Chromaticity (u', v')	u'=0.2369 v'=0.5064	R6	91	R14	99
Color Rendering Index (CRI)	93.9	R7	98	R15	92
R9	82	R8	93	--	--

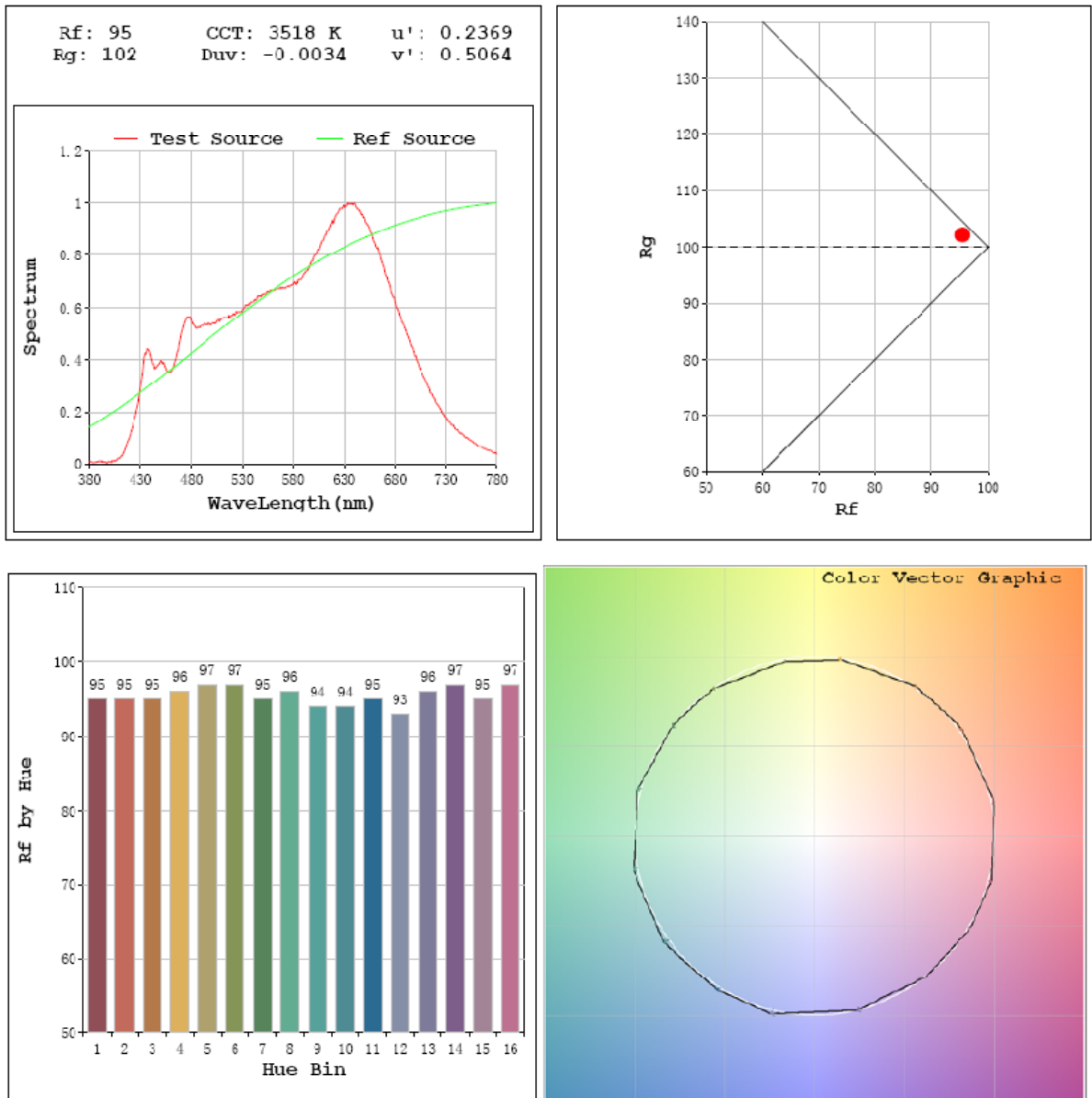
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	900.84
Luminous Efficacy (lm/W)	68.77
Beam Angle (°)	111.2
Center Beam Candle Power (cd)	323.8

Spectral Power Distribution & Chromaticity Diagram



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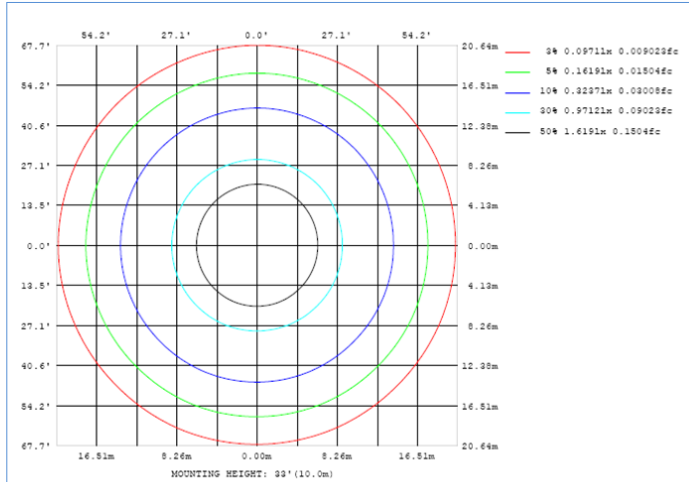
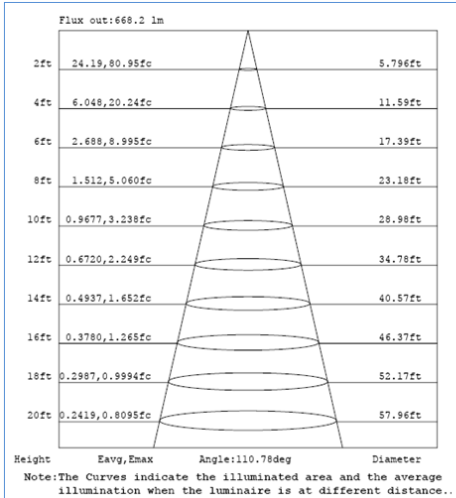
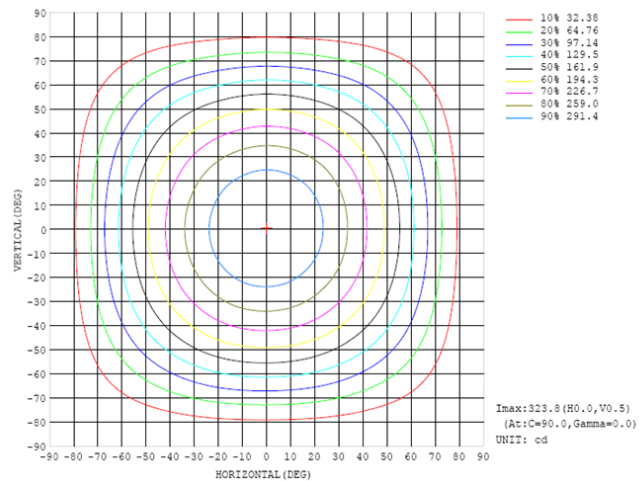
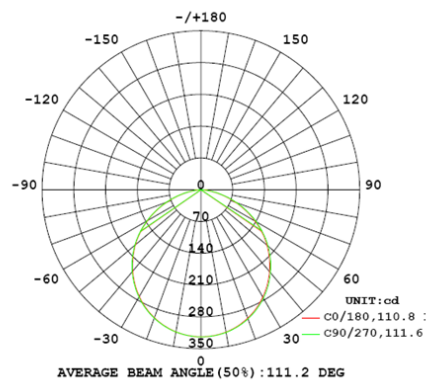
Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	251.4	27.9%
0-40	411.2	45.6%
0-60	723.5	80.3%
60-90	177.3	19.7%
70-100	68.8	7.6%
90-120	0.0	0.0%
0-90	900.8	100.0%
90-180	0.0	0.0%
0-180	900.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.6	3.4%	90-100	0.0	0.0%
10-20	87.8	9.7%	100-110	0.0	0.0%
20-30	133.0	14.8%	110-120	0.0	0.0%
30-40	159.8	17.7%	120-130	0.0	0.0%
40-50	165.0	18.3%	130-140	0.0	0.0%
50-60	147.4	16.4%	140-150	0.0	0.0%
60-70	108.5	12.0%	150-160	0.0	0.0%
70-80	57.3	6.4%	160-170	0.0	0.0%
80-90	11.5	1.3%	170-180	0.0	0.0%

Photometric Data

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-08	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRL6R139TW120WB-SS-NS/LCB	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302080007	120.0	60	0.117	13.0	0.932

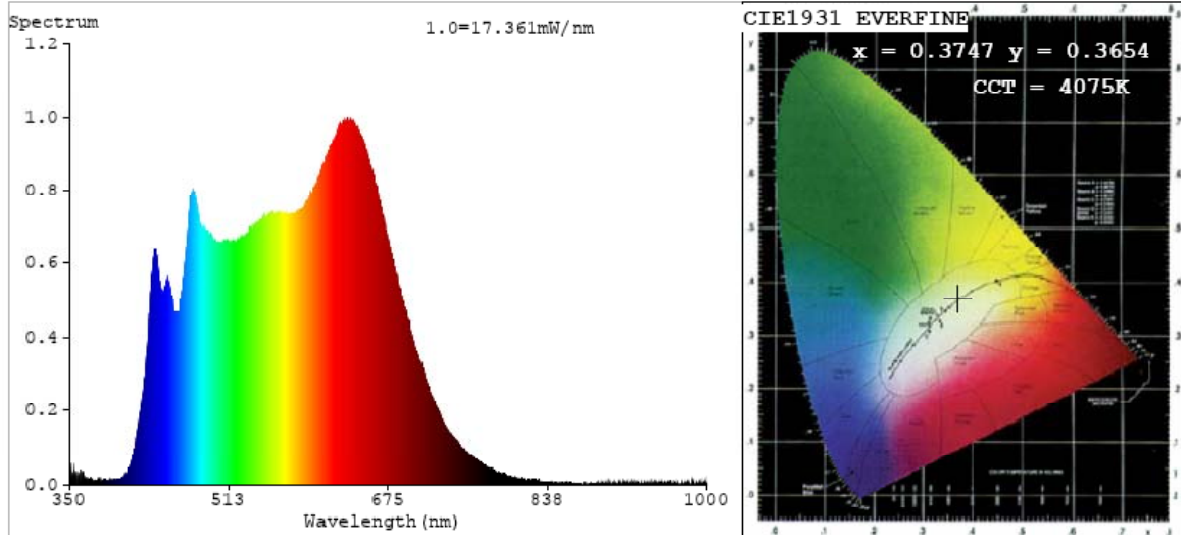
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	91	R9	76
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	4075	R3	97	R11	92
Duv	-0.0037	R4	93	R12	85
Chromaticity (x, y)	x=0.3747 y=0.3654	R5	91	R13	91
Chromaticity (u', v')	u'=0.2259 v'=0.4956	R6	91	R14	98
Color Rendering Index (CRI)	93	R7	97	R15	90
R9	76	R8	91	--	--

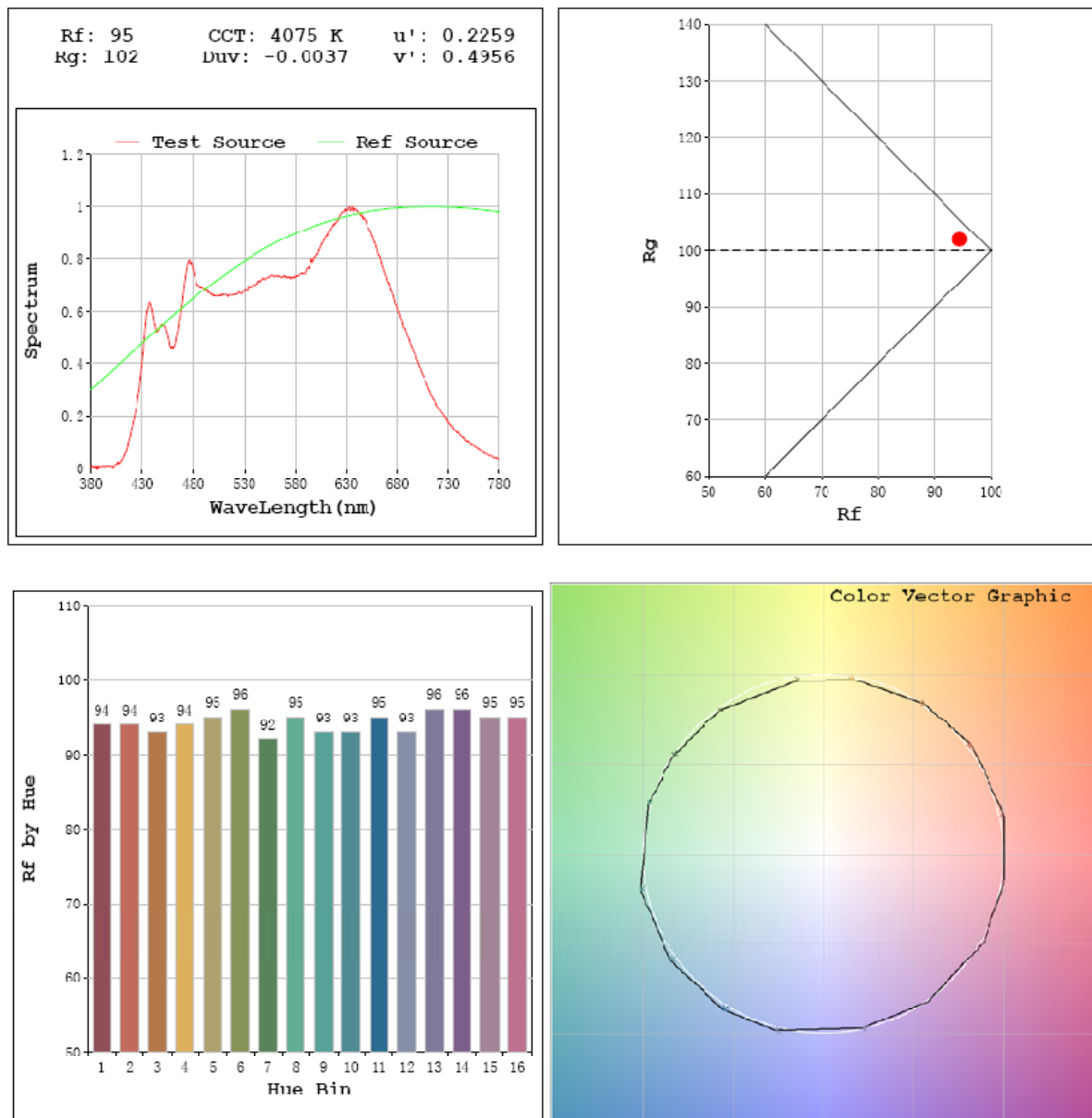
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	921.21
Luminous Efficacy (lm/W)	70.86
Beam Angle (°)	111.2
Center Beam Candle Power (cd)	331.1

Spectral Power Distribution & Chromaticity Diagram



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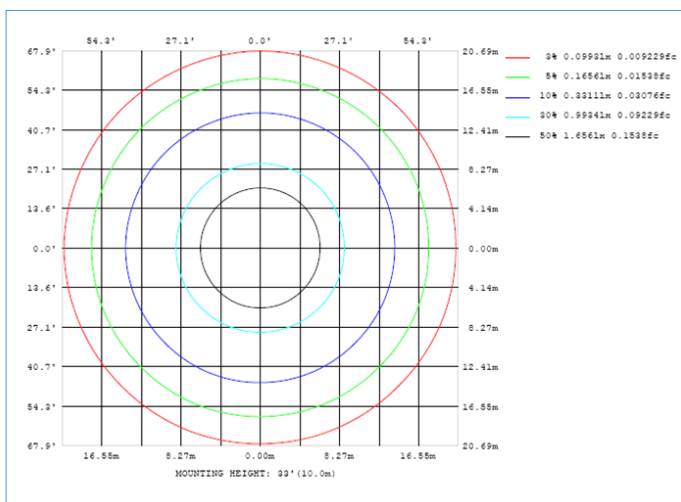
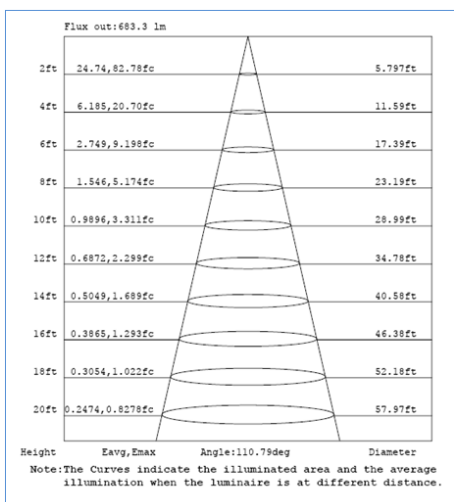
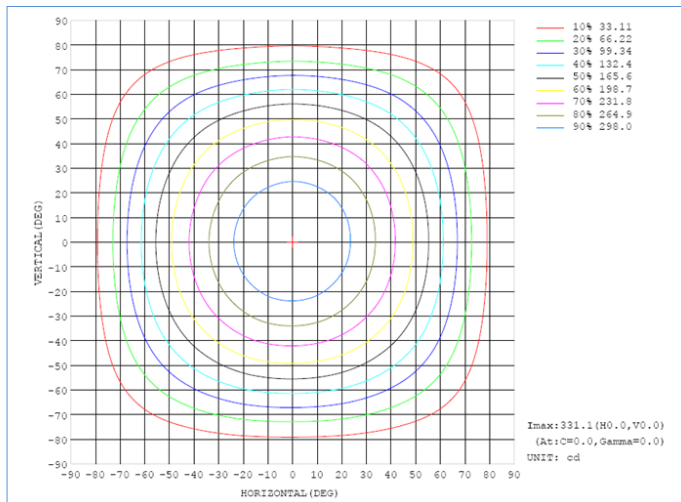
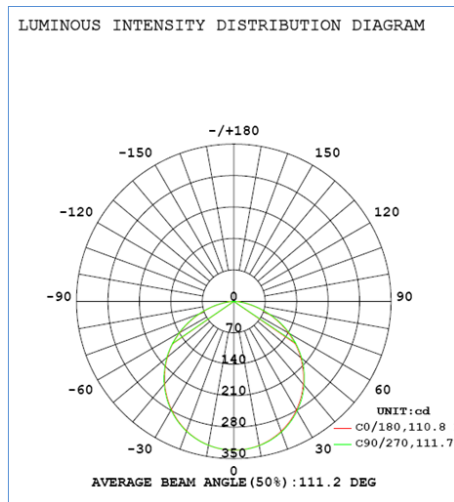


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	257.1	27.9%
0-40	420.5	45.6%
0-60	739.9	80.3%
60-90	181.3	19.7%
70-100	70.3	7.6%
90-120	0.0	0.0%
0-90	921.2	100.0%
90-180	0.0	0.0%
0-180	921.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.3	3.4%	90-100	0.0	0.0%
10-20	89.8	9.7%	100-110	0.0	0.0%
20-30	136.0	14.8%	110-120	0.0	0.0%
30-40	163.4	17.7%	120-130	0.0	0.0%
40-50	168.7	18.3%	130-140	0.0	0.0%
50-60	150.7	16.4%	140-150	0.0	0.0%
60-70	111.0	12.0%	150-160	0.0	0.0%
70-80	58.6	6.4%	160-170	0.0	0.0%
80-90	11.7	1.3%	170-180	0.0	0.0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-08	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRL6R139TW120WB-SS-NS/LCB	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302080007	120.0	60	0.116	13.0	0.932

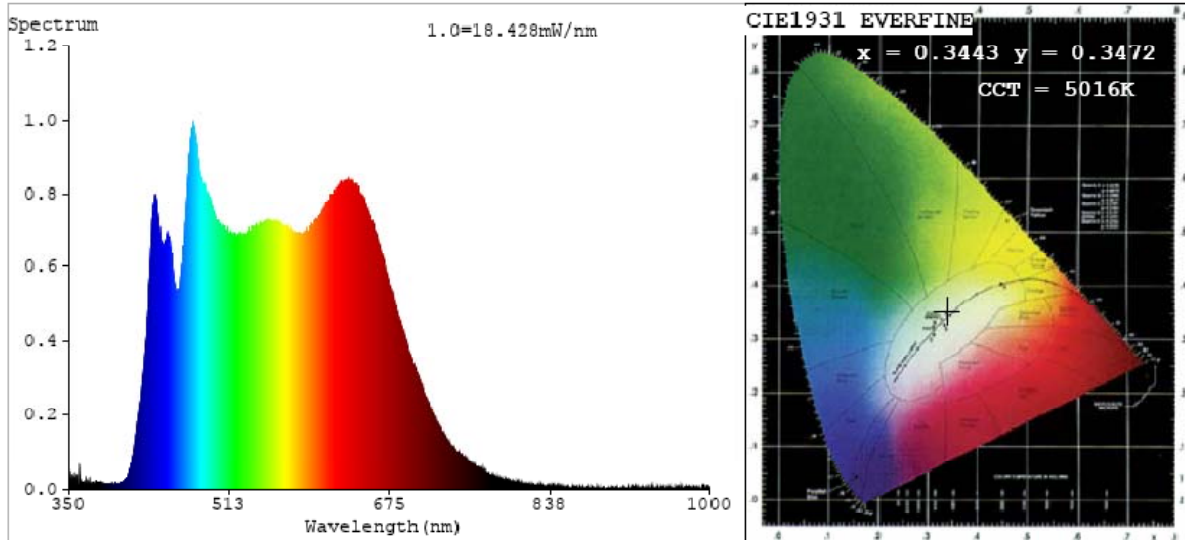
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	92	R9	77
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	5016	R3	96	R11	93
Duv	-0.0019	R4	94	R12	85
Chromaticity (x, y)	x=0.3443 y=0.3472	R5	92	R13	92
Chromaticity (u', v')	u'=0.2126 v'=0.4824	R6	91	R14	98
Color Rendering Index (CRI)	93.2	R7	97	R15	91
R9	77	R8	93	--	--

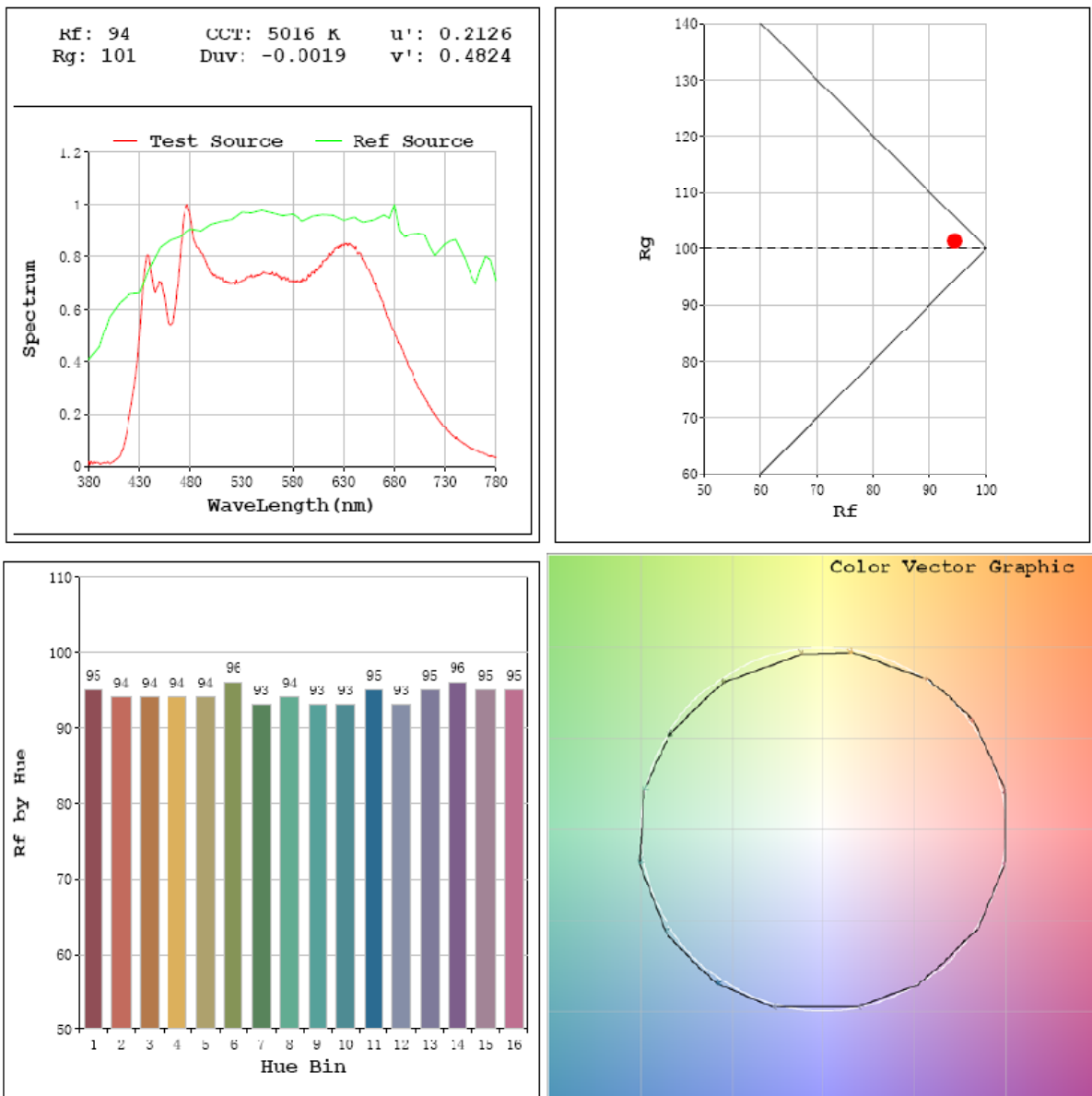
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	953.72
Luminous Efficacy (lm/W)	73.36
Beam Angle (°)	111.2
Center Beam Candle Power (cd)	342.8

Spectral Power Distribution & Chromaticity Diagram



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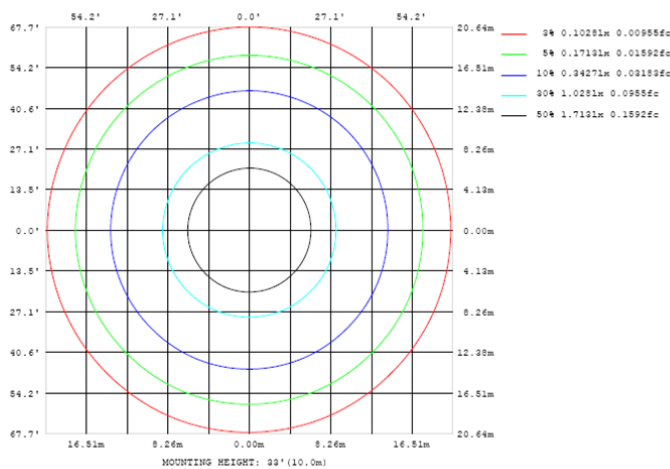
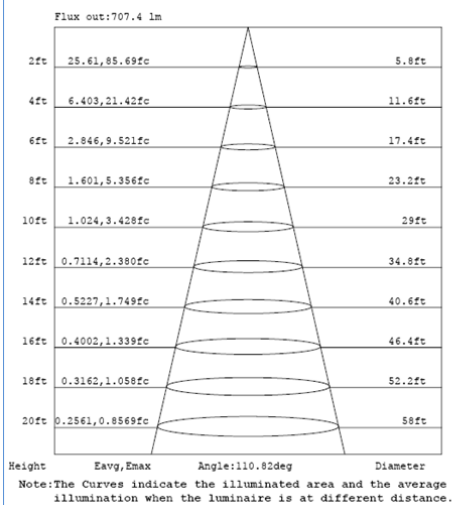
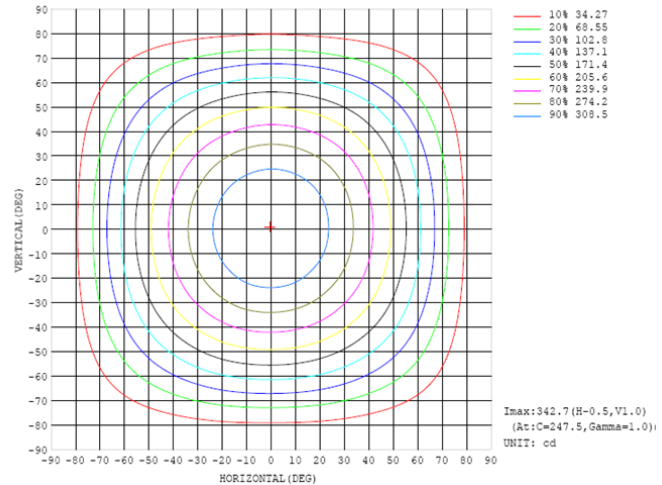
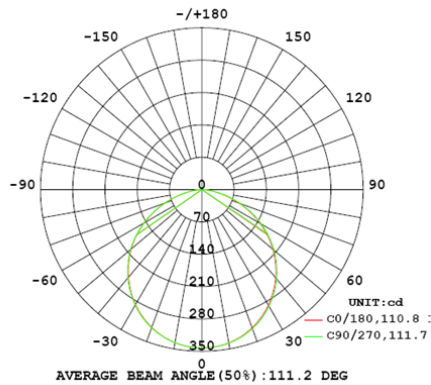
Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	266.1	27.9%
0-40	435.3	45.6%
0-60	766.0	80.3%
60-90	187.7	19.7%
70-100	72.8	7.6%
90-120	0.0	0.0%
0-90	953.7	100.0%
90-180	0.0	0.0%
0-180	953.7	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.4	3.4%	90-100	0.0	0.0%
10-20	92.9	9.7%	100-110	0.0	0.0%
20-30	140.7	14.8%	110-120	0.0	0.0%
30-40	169.2	17.7%	120-130	0.0	0.0%
40-50	174.7	18.3%	130-140	0.0	0.0%
50-60	156.1	16.4%	140-150	0.0	0.0%
60-70	114.9	12.0%	150-160	0.0	0.0%
70-80	60.6	6.4%	160-170	0.0	0.0%
80-90	12.2	1.3%	170-180	0.0	0.0%

Photometric Data

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-08	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRL6R139TW120WB-SS-NS/LCB	6500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302080007	120.0	60	0.116	12.9	0.932

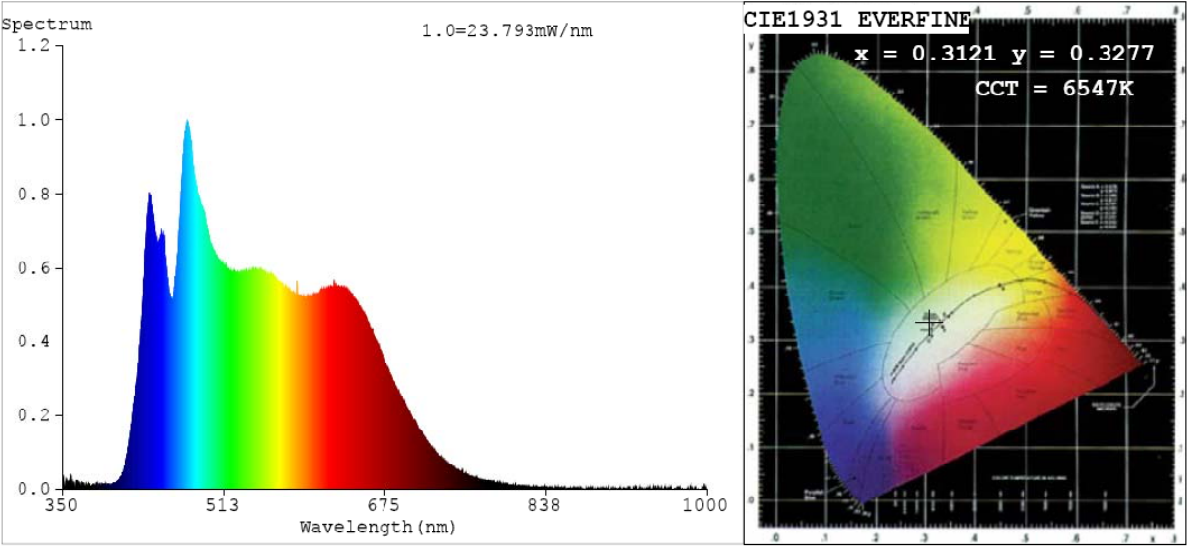
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	86
Frequency (Hz)	60	R2	94	R10	86
CCT (K)	6547	R3	93	R11	95
Duv	0.0028	R4	93	R12	90
Chromaticity (x, y)	x=0.3121 y=0.3277	R5	95	R13	94
Chromaticity (u', v')	u'=0.1979 v'=0.4675	R6	93	R14	96
Color Rendering Index (CRI)	93.9	R7	94	R15	94
R9	86	R8	95	--	--

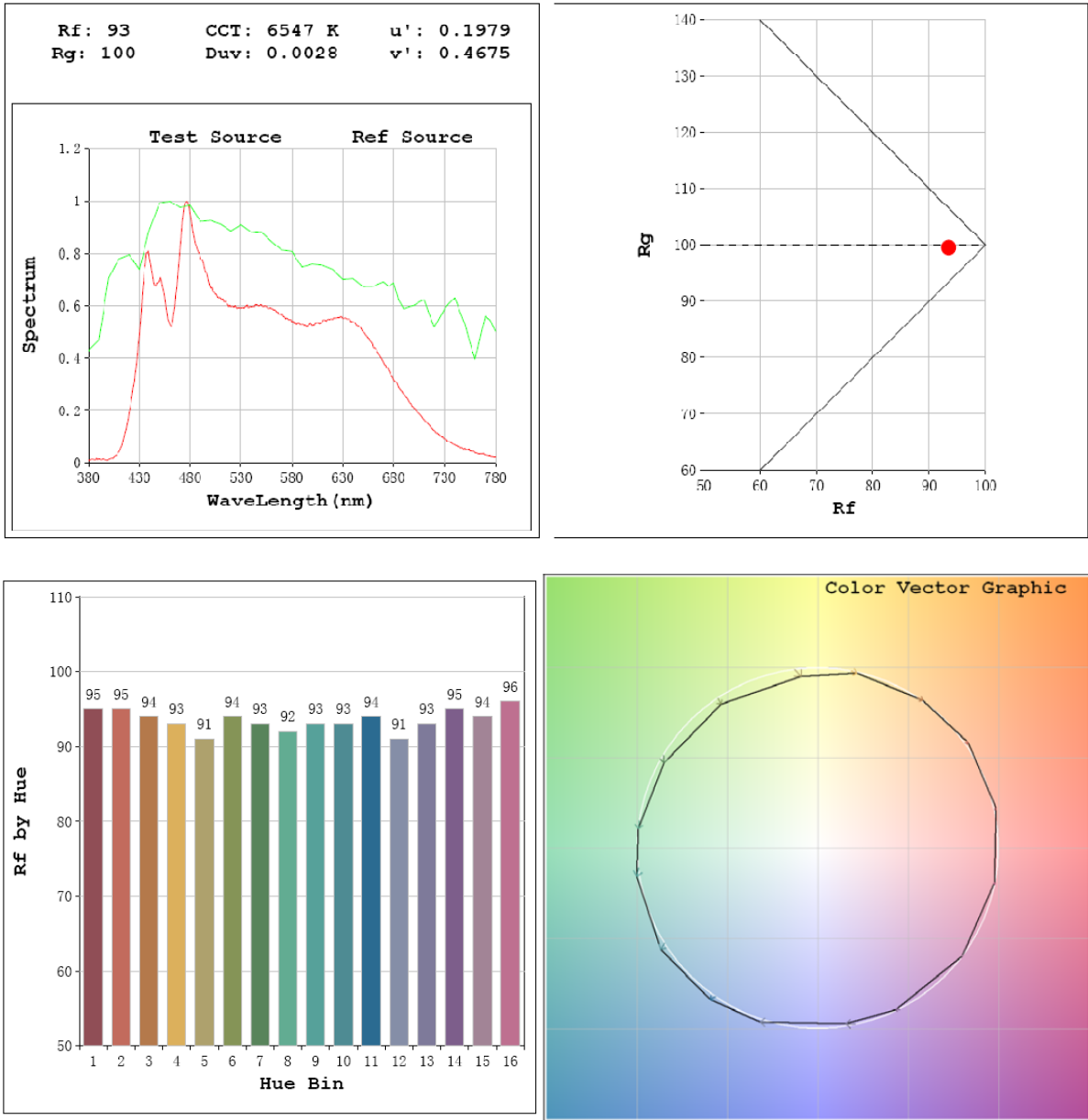
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	997.83
Luminous Efficacy (lm/W)	77.35
Beam Angle (°)	110.2
Center Beam Candle Power (cd)	362.4

Spectral Power Distribution & Chromaticity Diagram



TM30



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	279.3	28.0%
0-40	456.7	45.8%
0-60	802.7	80.4%
60-90	195.2	19.6%
70-100	75.7	7.6%
90-120	0.0	0.0%
0-90	997.8	100.0%
90-180	0.0	0.0%
0-180	997.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	34.3	3.4%	90-100	0.0	0.0%
10-20	97.5	9.8%	100-110	0.0	0.0%
20-30	147.5	14.8%	110-120	0.0	0.0%
30-40	177.4	17.8%	120-130	0.0	0.0%
40-50	183.2	18.4%	130-140	0.0	0.0%
50-60	162.8	16.3%	140-150	0.0	0.0%
60-70	119.5	12.0%	150-160	0.0	0.0%
70-80	63.0	6.3%	160-170	0.0	0.0%
80-90	12.6	1.3%	170-180	0.0	0.0%

Photometric Data

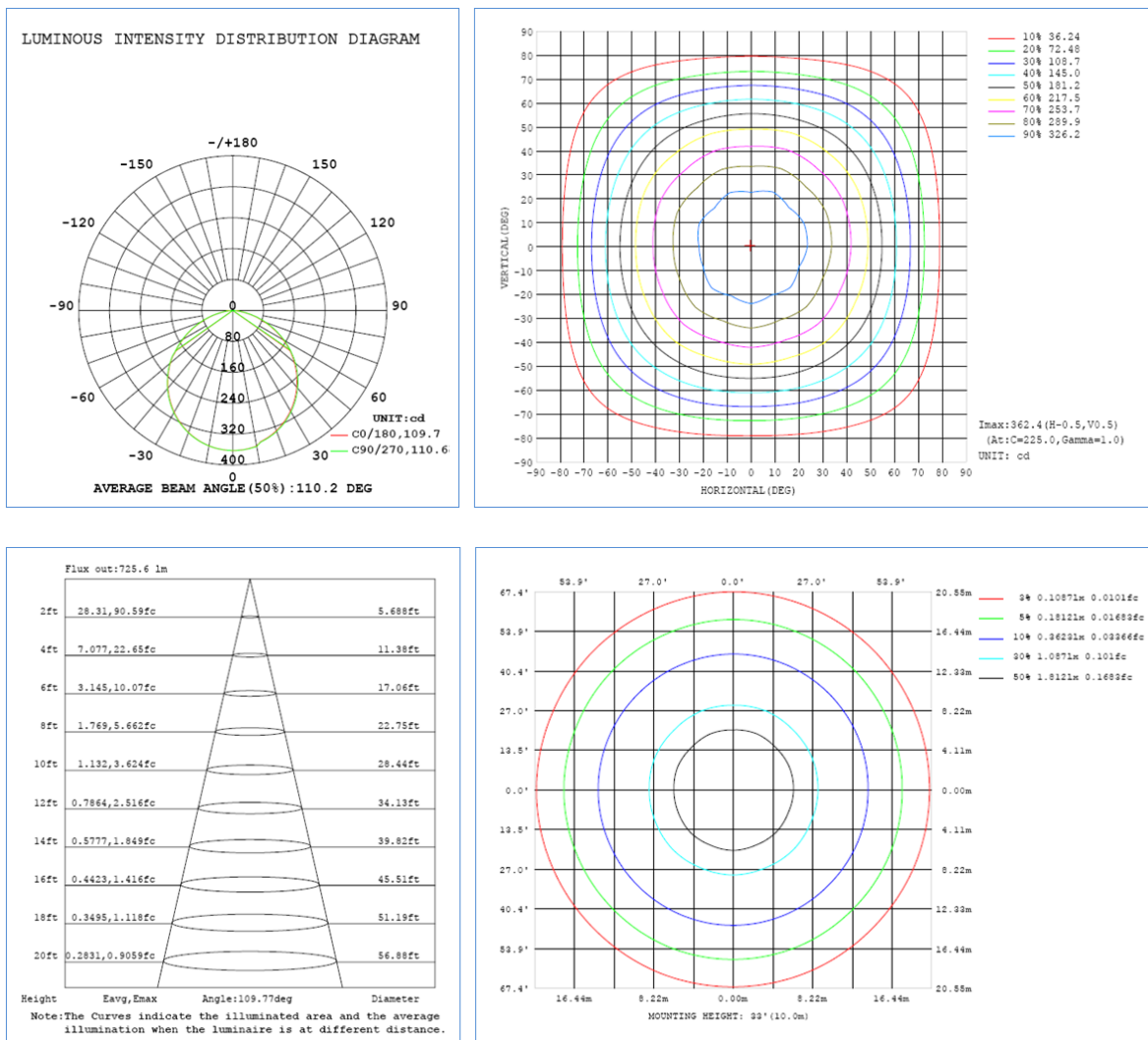


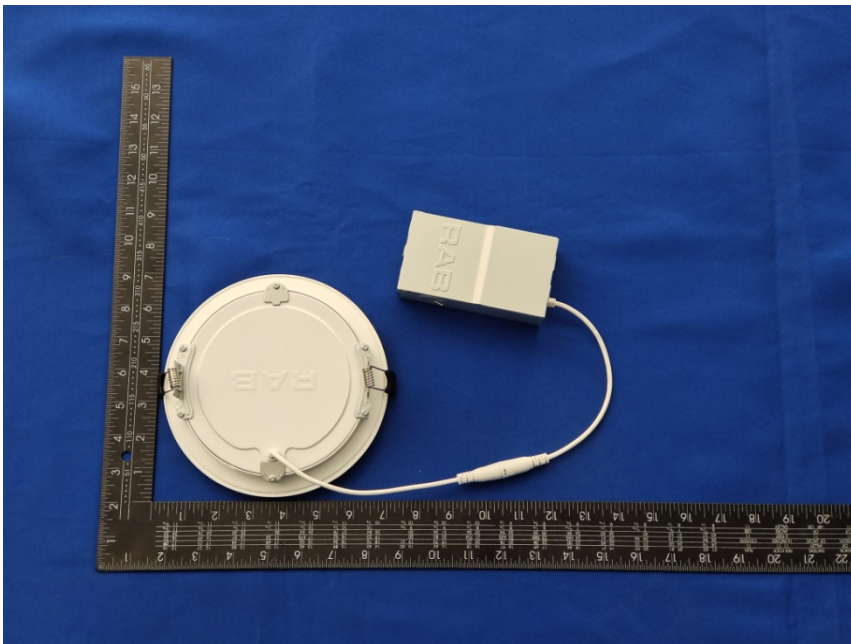
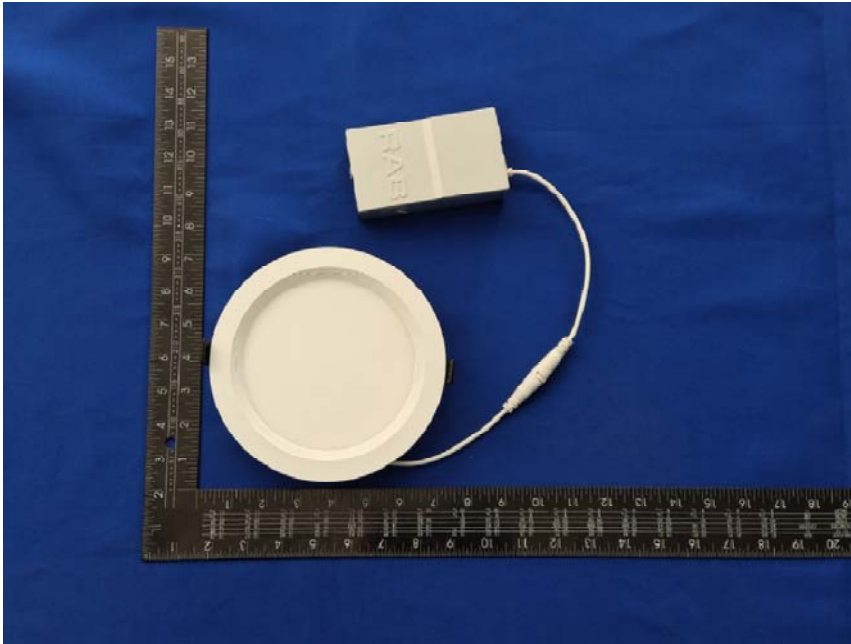
Table--1

UNIT: cd

[illegible]

Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
WFRL6R139TW120WB-SS-NS/LCB	2700K setting	120.0	869.24	13.0	66.86
	3000K setting	120.0	880.84	13.0	67.76
	3500K setting	120.0	900.84	13.10	68.77
	4000K setting	120.0	921.21	13.0	70.86
	5000K setting	120.0	953.72	13.0	73.36
	6500K setting	120.0	997.83	12.90	77.35

3. Product Photo



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