

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):
DLW0092(WFRL5R129CCT120WS)

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

**Type of
Luminaire:** Downlights

Report Date: 2022-08-12

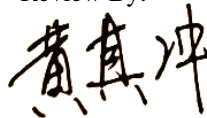
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	12.0 W
Rated Initial Lamp Lumen	900 lm
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

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	2022-08-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0092(WFRL5R129CCT120WS)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202208090012	120.0	60	0.097	11.50	0.985

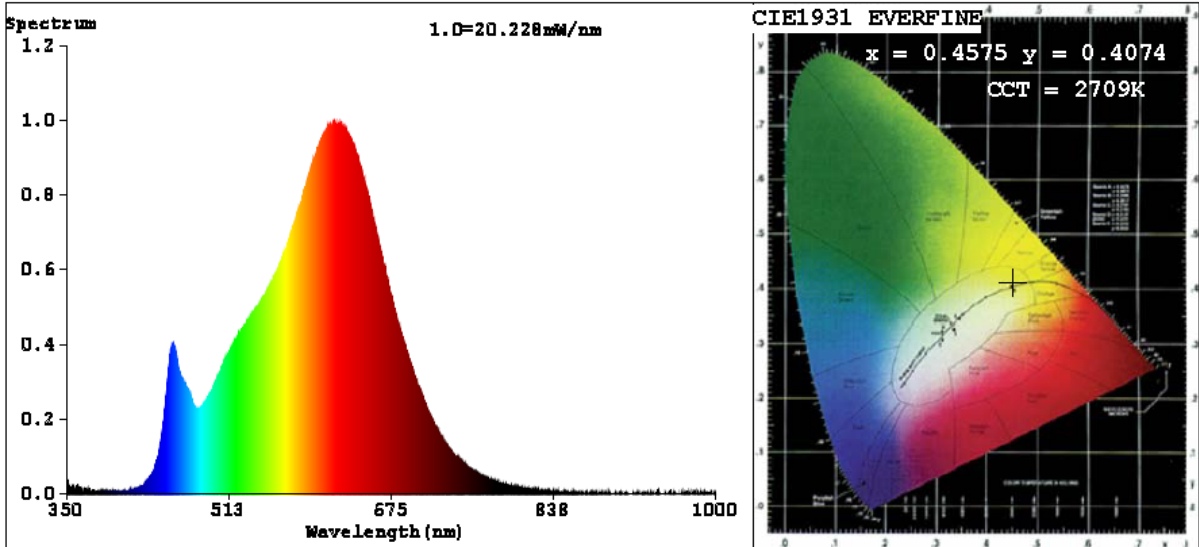
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	54
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	2709	R3	96	R11	93
Duv	-0.0010	R4	91	R12	84
Chromaticity (x, y)	x=0.4575 y=0.4074	R5	93	R13	95
Chromaticity (u', v')	u'=0.2624 v'=0.5258	R6	97	R14	99
Color Rendering Index (CRI)	91.8	R7	88	R15	88
R9	54	R8	77	--	--

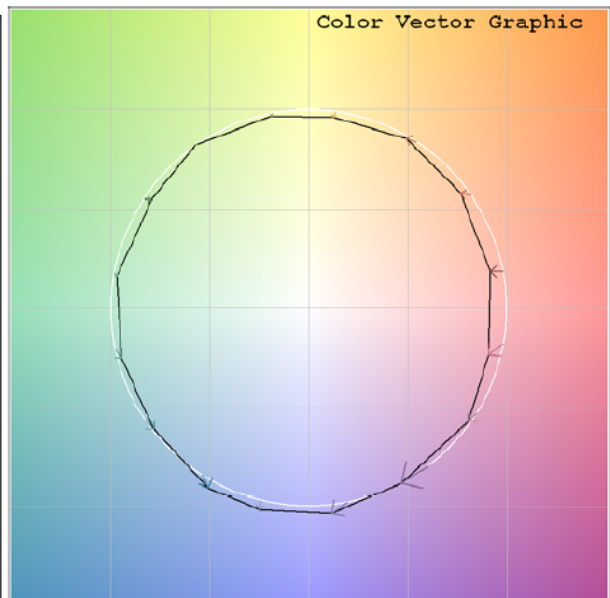
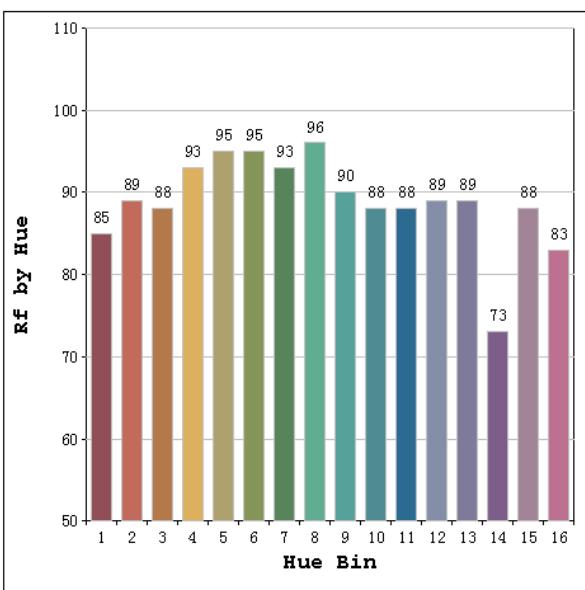
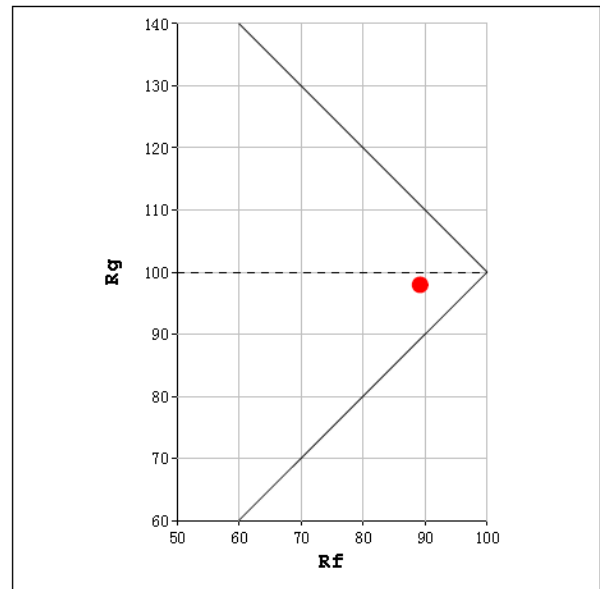
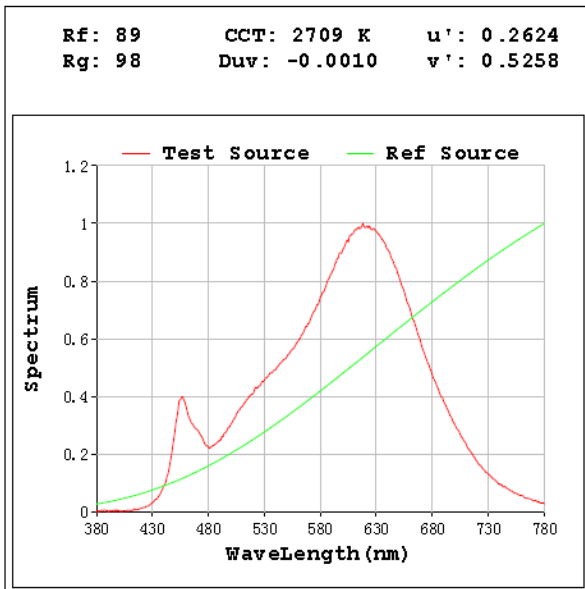
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	915.6
Luminous Efficacy (lm/W)	79.62
Beam Angle (°)	110.3
Center Beam Candle Power (cd)	327.9

Spectral Power Distribution & Chromaticity Diagram



TM30

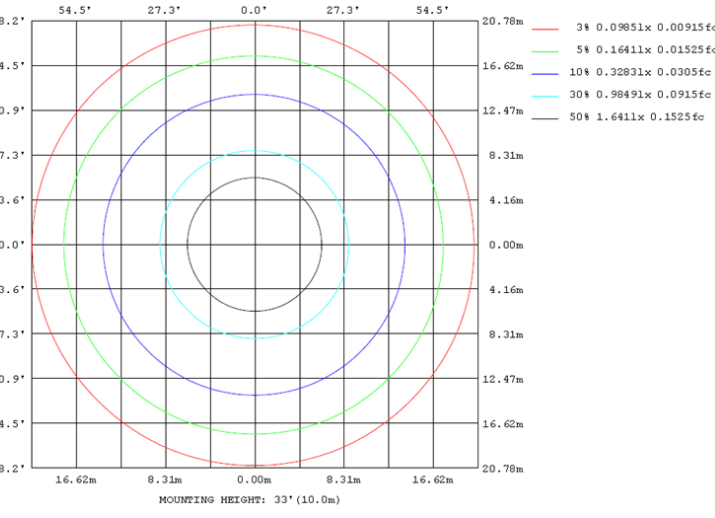
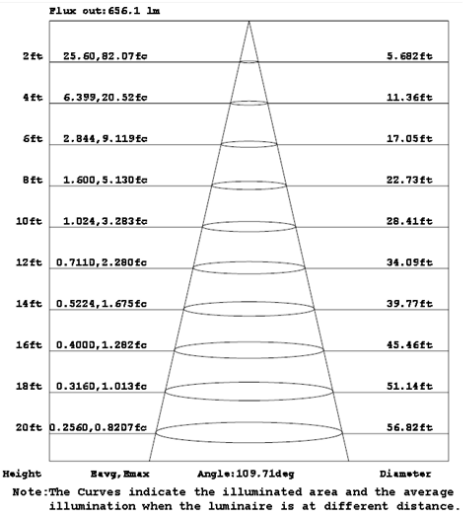
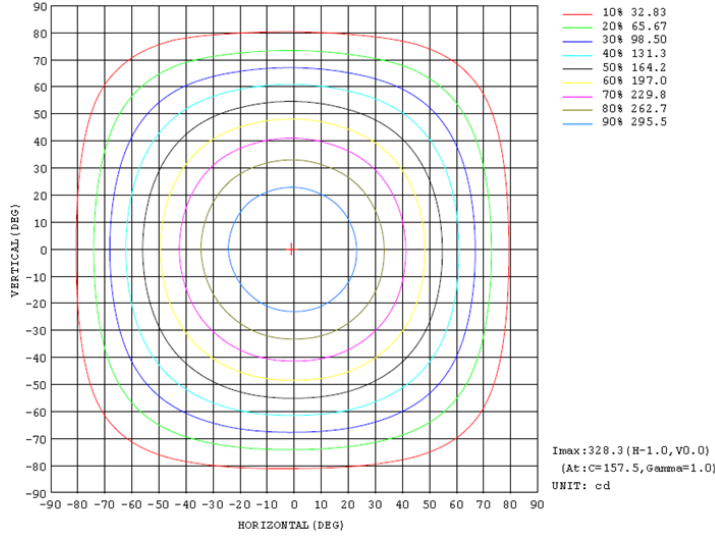
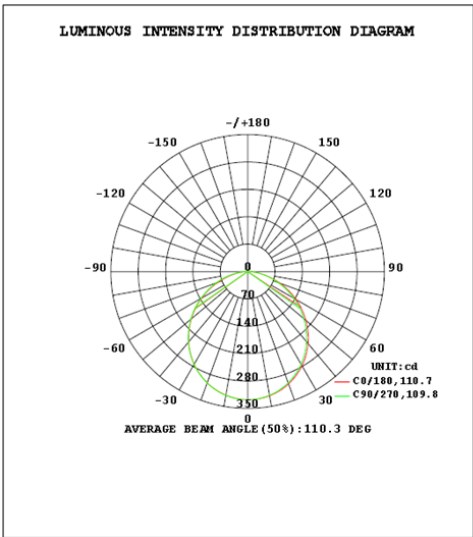


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	253.5	27.7%
0-40	414.1	45.2%
0-60	726.1	79.3%
60-90	189.5	20.7%
70-100	78.9	8.6%
90-120	0.0	0.0%
0-90	915.6	100.0%
90-180	0.0	0.0%
0-180	915.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.0	3.4%	90-100	0.0	0.0%
10-20	88.6	9.7%	100-110	0.0	0.0%
20-30	133.9	14.6%	110-120	0.0	0.0%
30-40	160.5	17.5%	120-130	0.0	0.0%
40-50	165.0	18.0%	130-140	0.0	0.0%
50-60	147.1	16.1%	140-150	0.0	0.0%
60-70	110.6	12.1%	150-160	0.0	0.0%
70-80	62.5	6.8%	160-170	0.0	0.0%
80-90	16.3	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2022-08-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0092(WFRL5R129CCT120WS)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202208090012	120.0	60	0.096	11.40	0.985

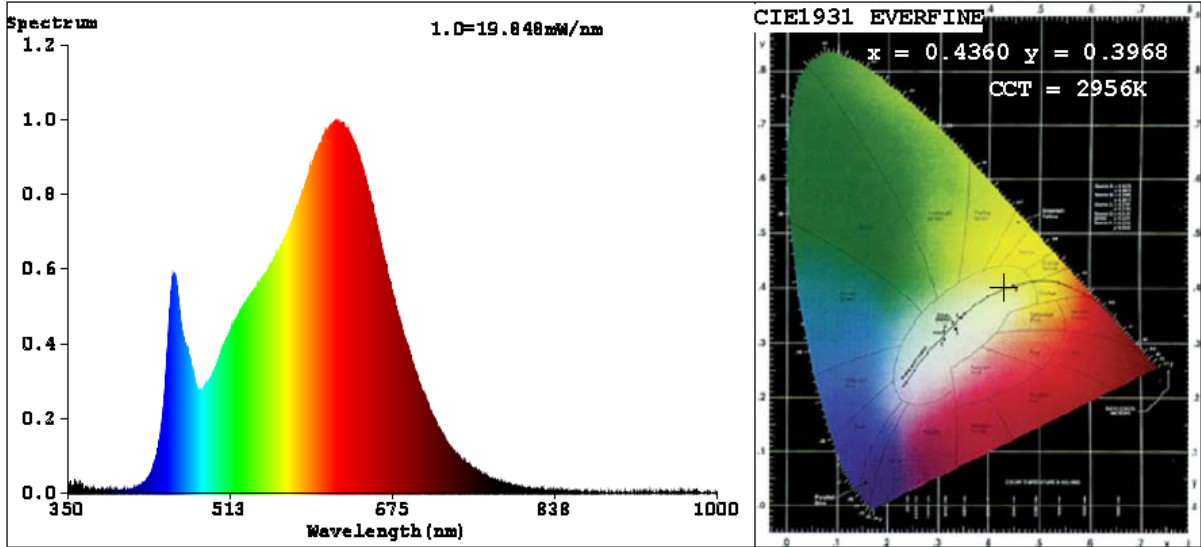
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	62
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	2956	R3	96	R11	94
Duv	-0.0028	R4	92	R12	81
Chromaticity (x, y)	x=0.4360 y=0.3968	R5	95	R13	97
Chromaticity (u', v')	u'=0.2531 v'=0.5183	R6	96	R14	99
Color Rendering Index (CRI)	93.0	R7	89	R15	91
R9	62	R8	81	--	--

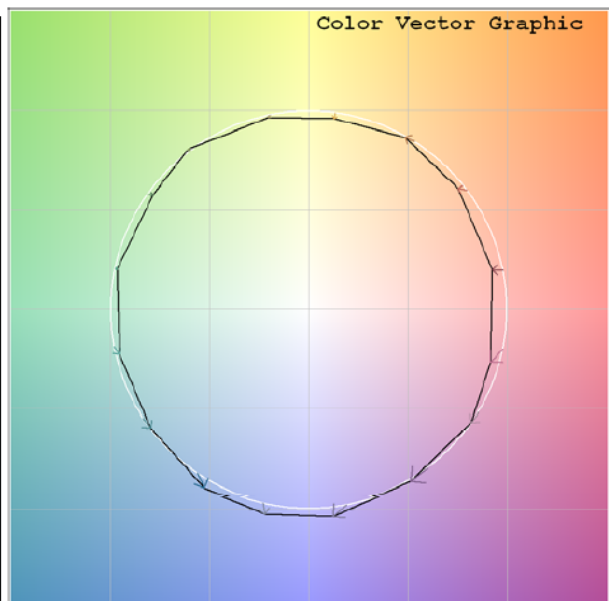
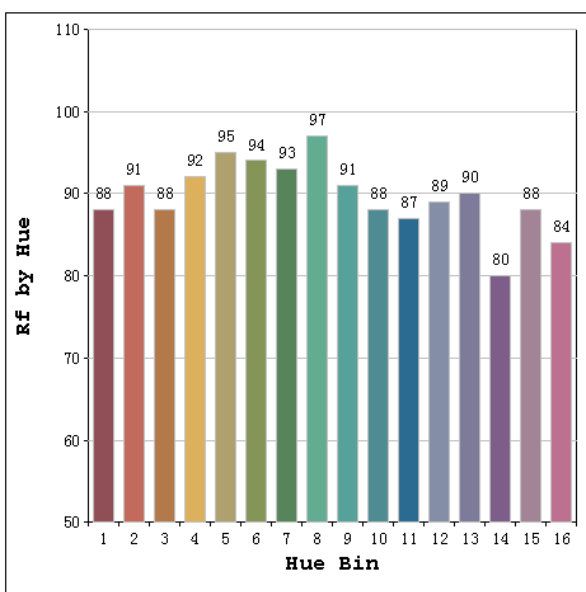
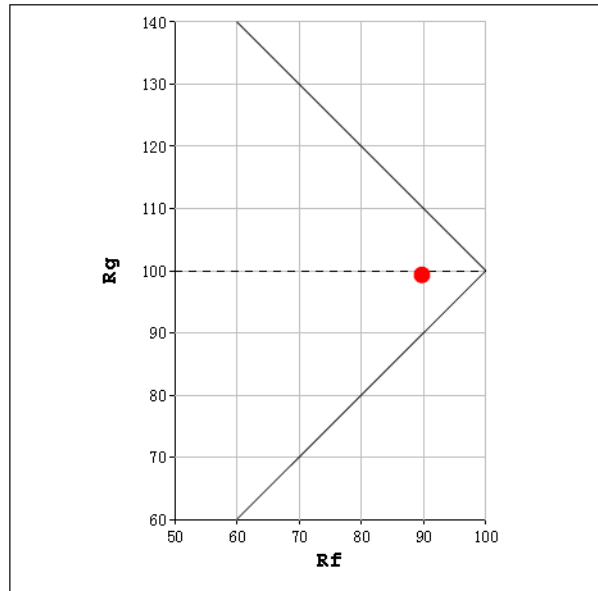
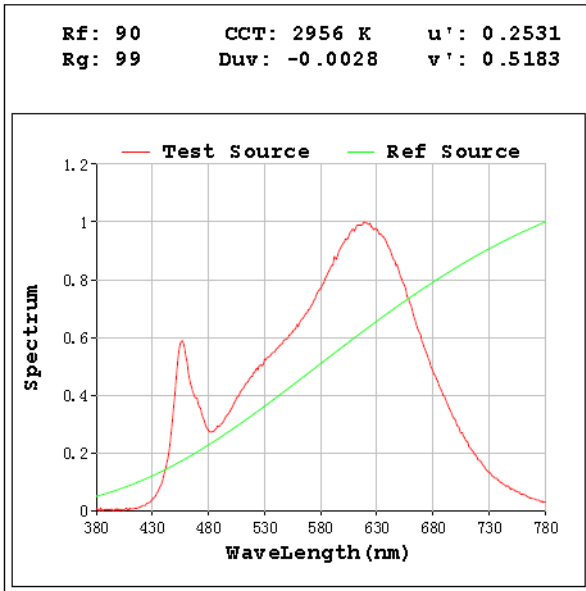
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	954.5
Luminous Efficacy (lm/W)	83.73
Beam Angle (°)	109.2
Center Beam Candle Power (cd)	346.0

Spectral Power Distribution & Chromaticity Diagram



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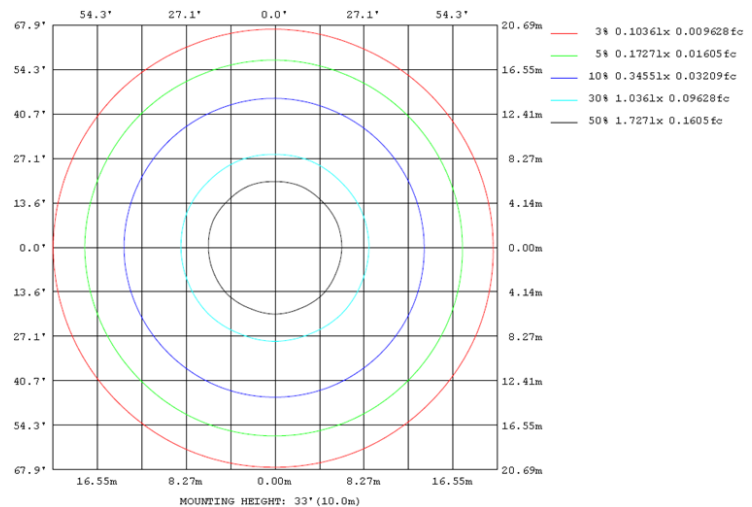
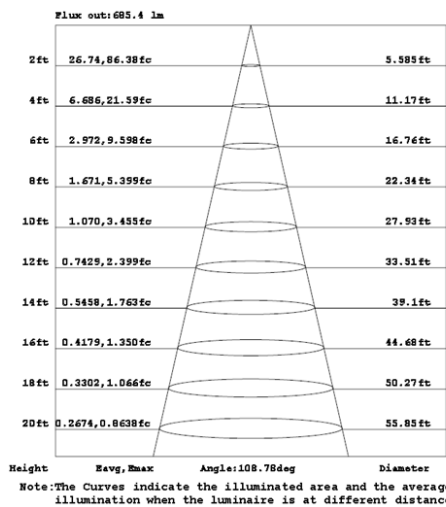
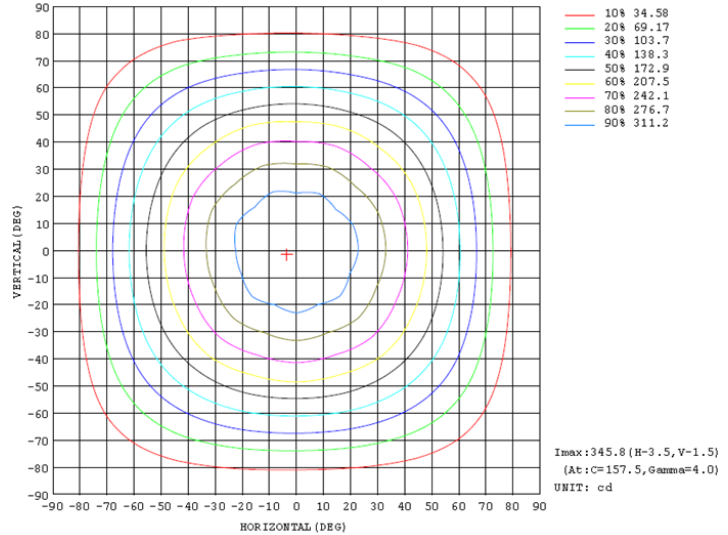
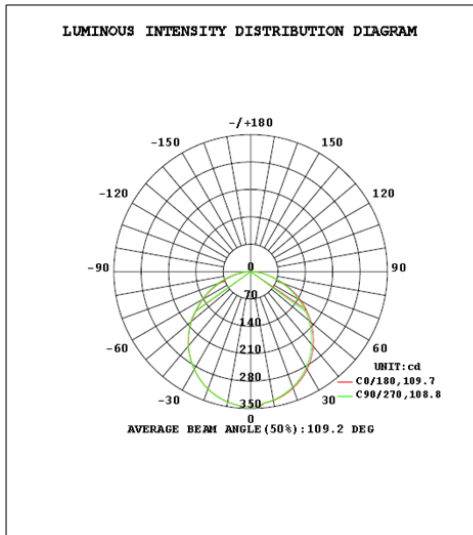


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	265.0	27.8%
0-40	432.8	45.3%
0-60	758.1	79.4%
60-90	196.5	20.6%
70-100	81.8	8.6%
90-120	0.0	0.0%
0-90	954.5	100.0%
90-180	0.0	0.0%
0-180	954.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	32.5	3.4%	90-100	0.0	0.0%
10-20	92.6	9.7%	100-110	0.0	0.0%
20-30	139.9	14.7%	110-120	0.0	0.0%
30-40	167.8	17.6%	120-130	0.0	0.0%
40-50	172.4	18.1%	130-140	0.0	0.0%
50-60	152.9	16.0%	140-150	0.0	0.0%
60-70	114.7	12.0%	150-160	0.0	0.0%
70-80	64.8	6.8%	160-170	0.0	0.0%
80-90	17.0	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2022-08-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0092(WFRL5R129CCT120WS)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202208090012	120.0	60	0.095	11.20	0.985

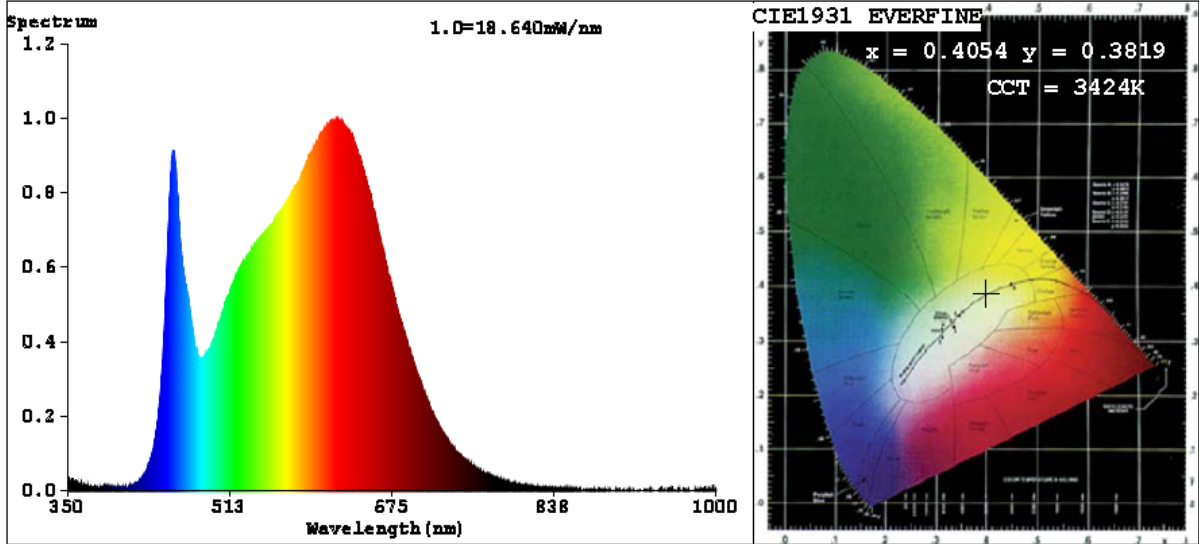
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	73
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3424	R3	98	R11	94
Duv	-0.0039	R4	94	R12	77
Chromaticity (x, y)	x=0.4054 y=0.3819	R5	95	R13	99
Chromaticity (u', v')	u'=0.2394 v'=0.5075	R6	95	R14	100
Color Rendering Index (CRI)	94.5	R7	92	R15	95
R9	73	R8	87	--	--

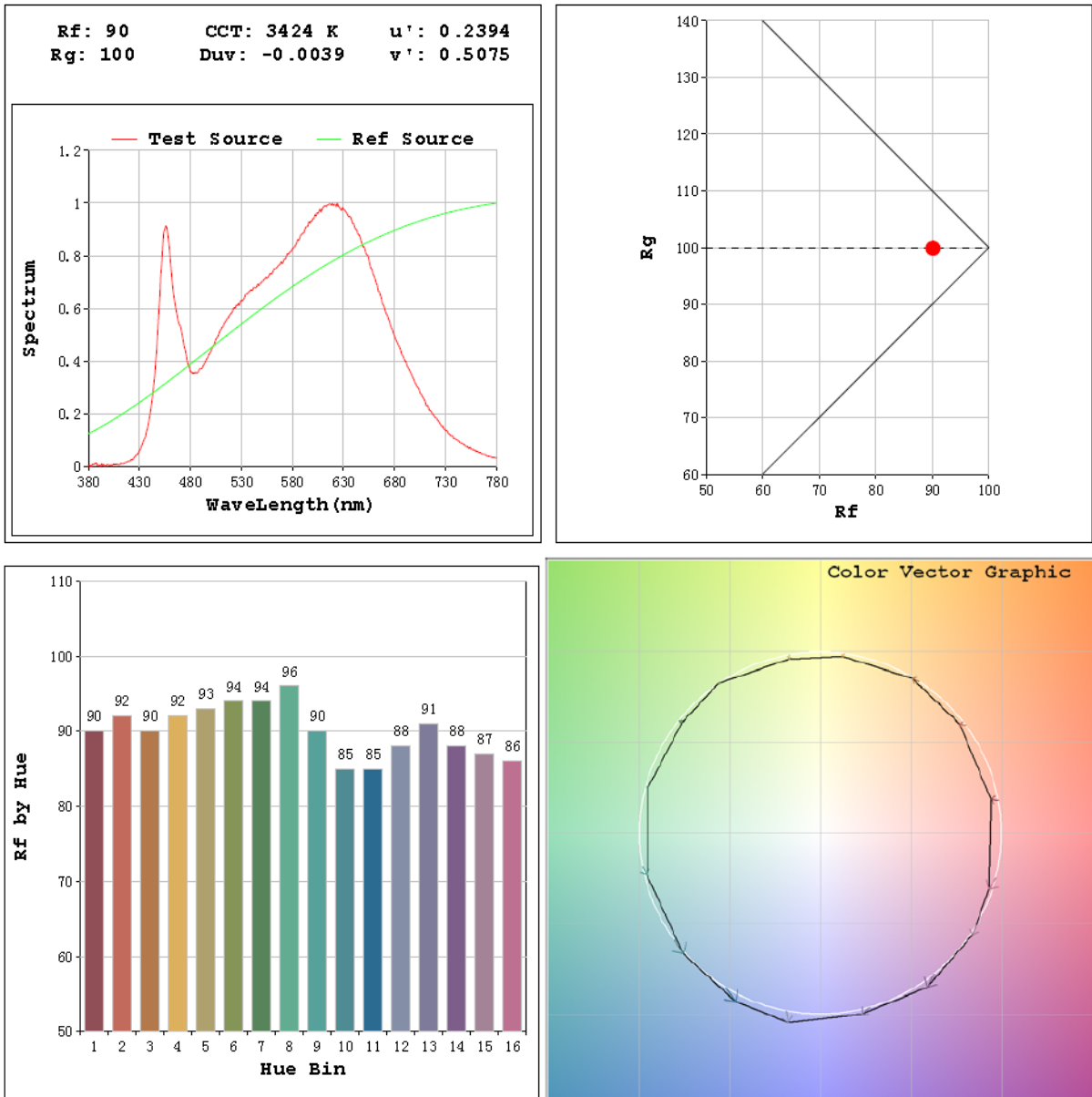
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	999.4
Luminous Efficacy (lm/W)	89.24
Beam Angle (°)	109.4
Center Beam Candle Power (cd)	361.3

Spectral Power Distribution & Chromaticity Diagram



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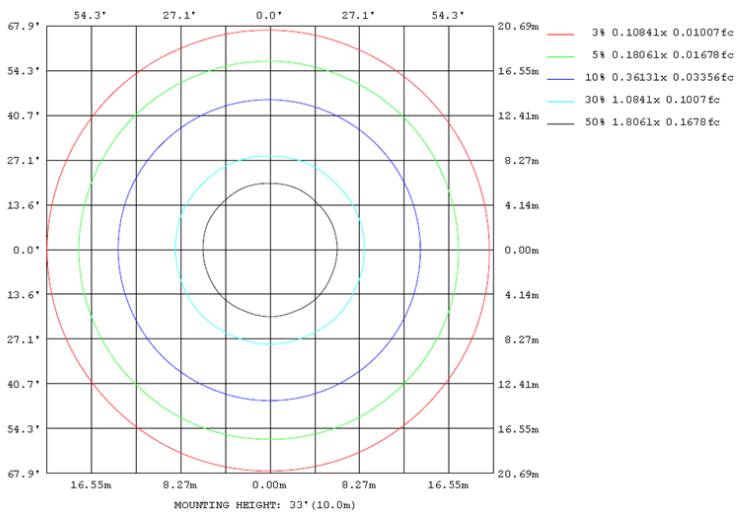
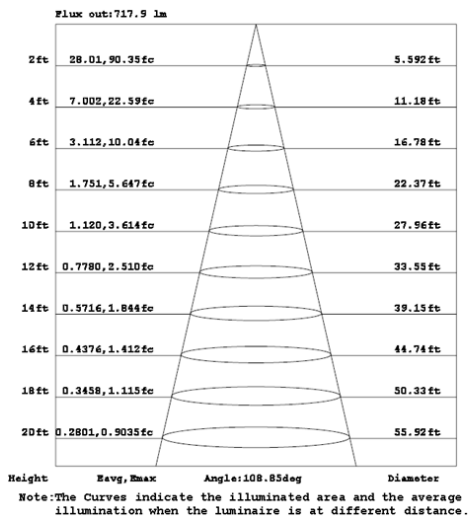
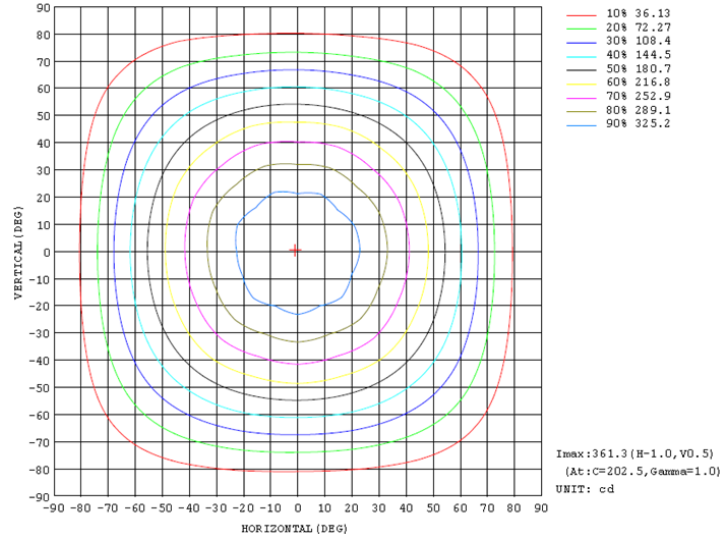
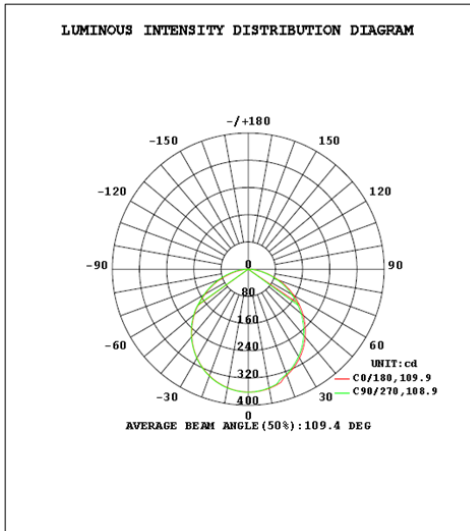


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	277.8	27.8%
0-40	453.3	45.4%
0-60	793.8	79.4%
60-90	205.6	20.6%
70-100	85.6	8.6%
90-120	0.0	0.0%
0-90	999.4	100.0%
90-180	0.0	0.0%
0-180	999.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	34.2	3.4%	90-100	0.0	0.0%
10-20	97.3	9.7%	100-110	0.0	0.0%
20-30	146.4	14.6%	110-120	0.0	0.0%
30-40	175.5	17.6%	120-130	0.0	0.0%
40-50	180.4	18.0%	130-140	0.0	0.0%
50-60	160.1	16.0%	140-150	0.0	0.0%
60-70	120.0	12.0%	150-160	0.0	0.0%
70-80	67.9	6.8%	160-170	0.0	0.0%
80-90	17.7	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2022-08-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0092(WFRL5R129CCT120WS)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202208090012	120.0	60	0.096	11.30	0.985

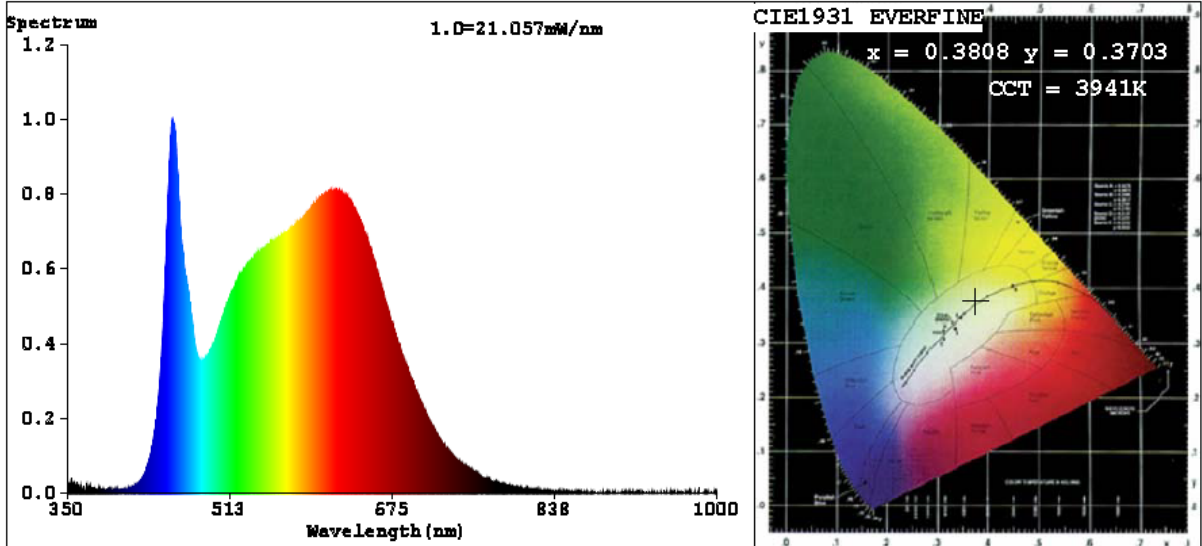
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	78
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3941	R3	98	R11	94
Duv	-0.0031	R4	93	R12	72
Chromaticity (x, y)	x=0.3808 y=0.3703	R5	95	R13	98
Chromaticity (u', v')	u'=0.2279 v'=0.4988	R6	95	R14	99
Color Rendering Index (CRI)	94.9	R7	93	R15	95
R9	78	R8	89	--	--

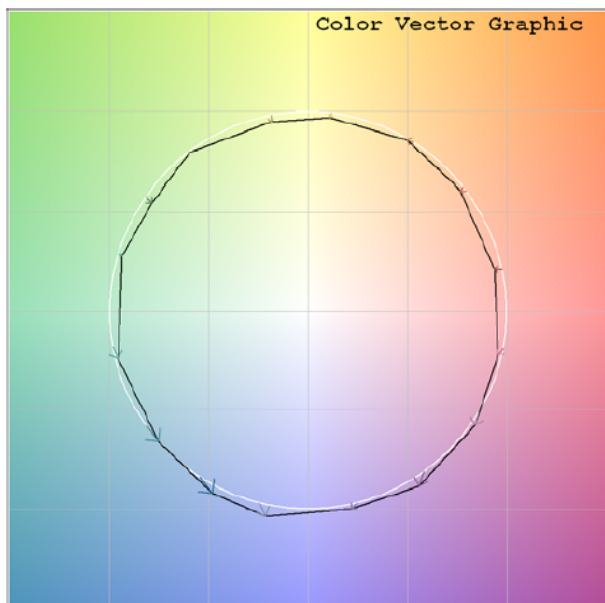
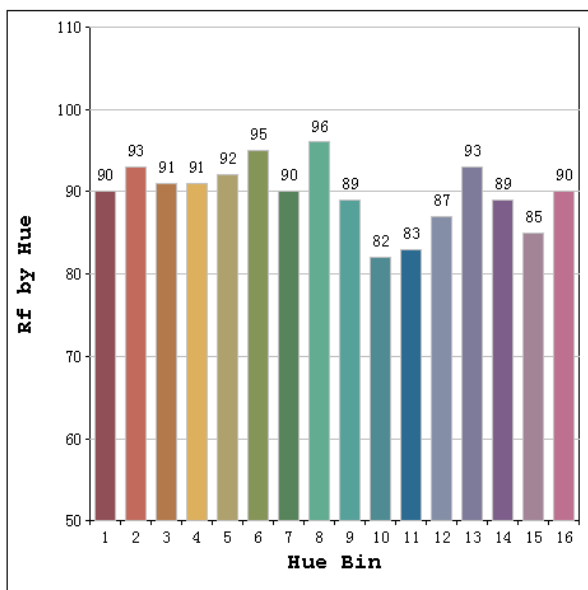
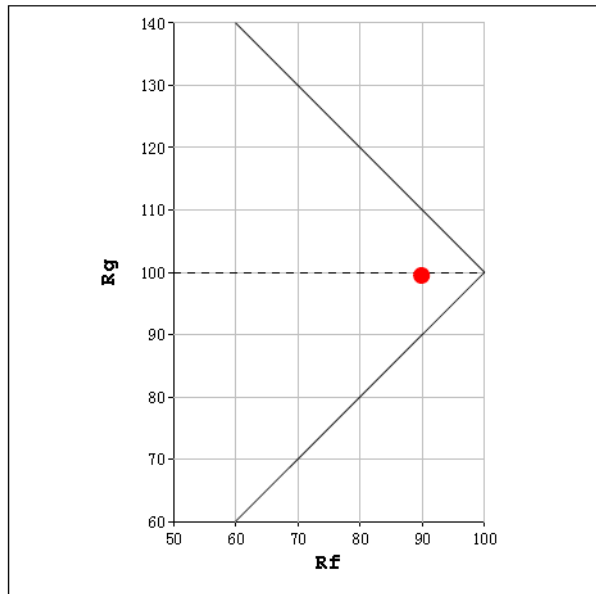
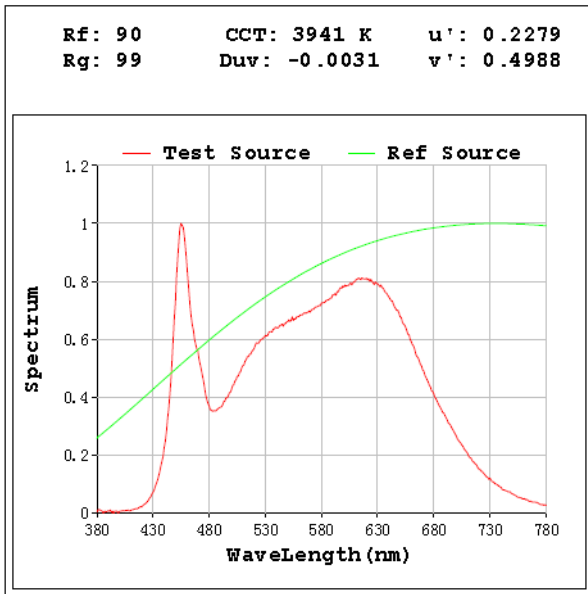
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1014.8
Luminous Efficacy (lm/W)	89.80
Beam Angle (°)	109.5
Center Beam Candle Power (cd)	366.8

Spectral Power Distribution & Chromaticity Diagram



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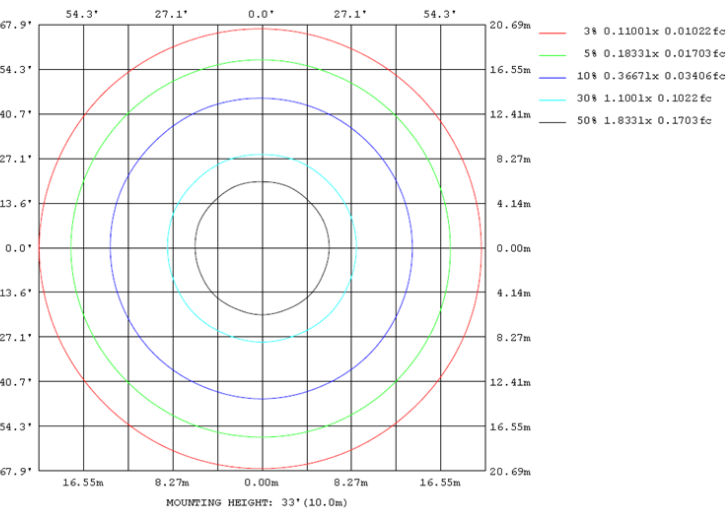
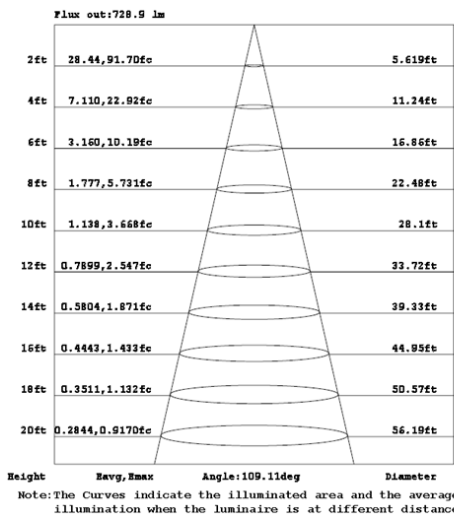
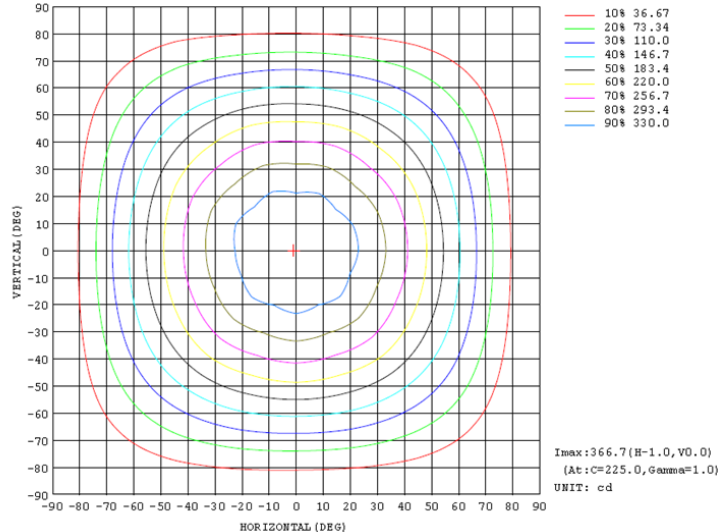
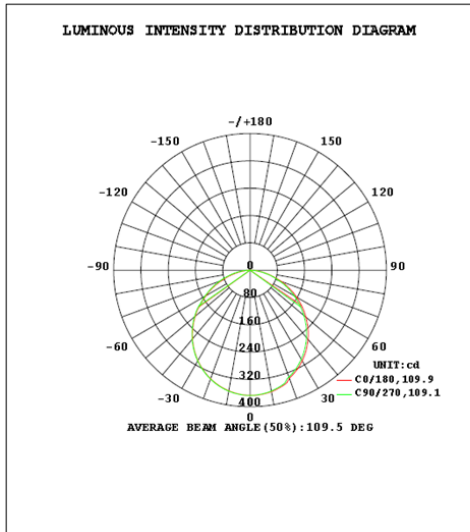


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	282.2	27.8%
0-40	460.3	45.4%
0-60	806.0	79.4%
60-90	208.8	20.6%
70-100	86.9	8.6%
90-120	0.0	0.0%
0-90	1014.8	100.0%
90-180	0.0	0.0%
0-180	1014.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	34.7	3.4%	90-100	0.0	0.0%
10-20	99.0	9.8%	100-110	0.0	0.0%
20-30	148.6	14.6%	110-120	0.0	0.0%
30-40	178.1	17.6%	120-130	0.0	0.0%
40-50	183.1	18.0%	130-140	0.0	0.0%
50-60	162.6	16.0%	140-150	0.0	0.0%
60-70	121.8	12.0%	150-160	0.0	0.0%
70-80	68.9	6.8%	160-170	0.0	0.0%
80-90	18.0	1.8%	170-180	0.0	0.0%

Photometric Data



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2022-08-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLW0092(WFRL5R129CCT120WS)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202208090012	120.0	60	0.098	11.60	0.986

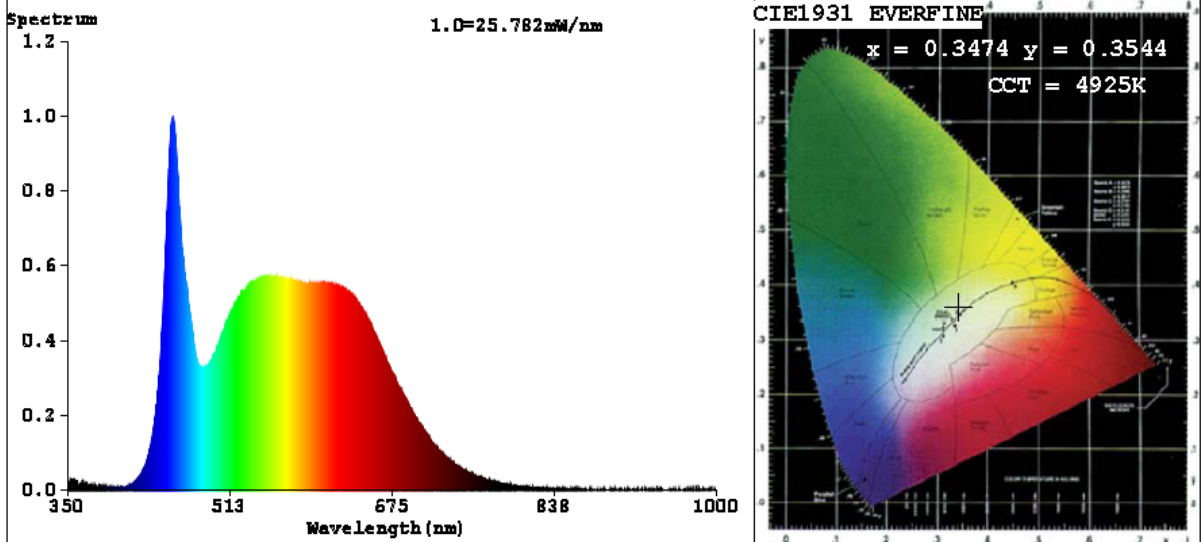
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	74
Frequency (Hz)	60	R2	97	R10	90
CCT (K)	4925	R3	96	R11	90
Duv	0.0005	R4	90	R12	63
Chromaticity (x, y)	x=0.3474 y=0.3544	R5	91	R13	95
Chromaticity (u', v')	u'=0.2119 v'=0.4863	R6	92	R14	98
Color Rendering Index (CRI)	92.8	R7	94	R15	92
R9	74	R8	89	--	--

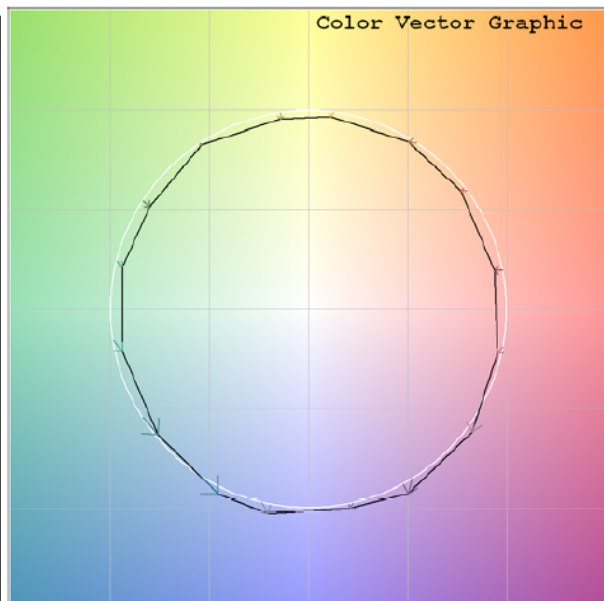
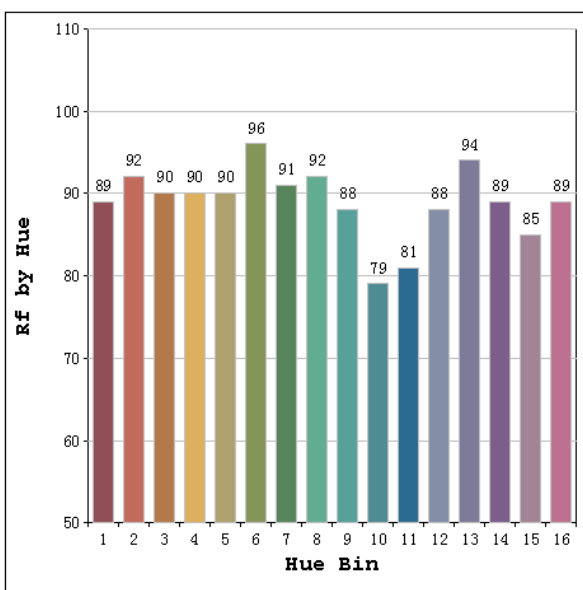
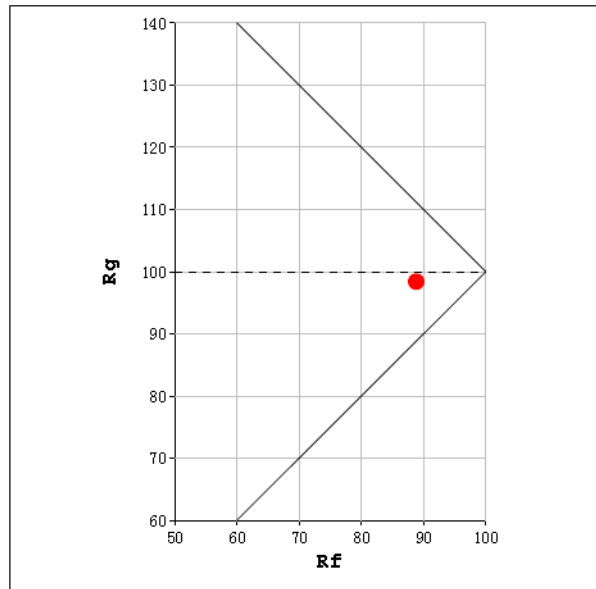
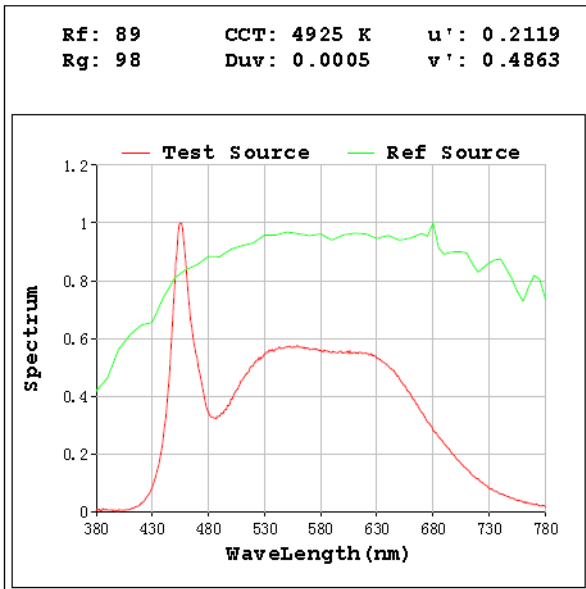
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	996.7
Luminous Efficacy (lm/W)	85.92
Beam Angle (°)	109.4
Center Beam Candle Power (cd)	360.3

Spectral Power Distribution & Chromaticity Diagram



TM30

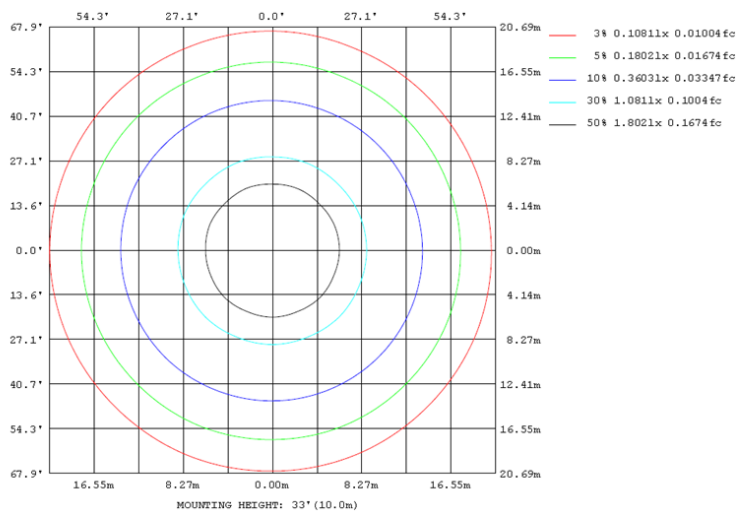
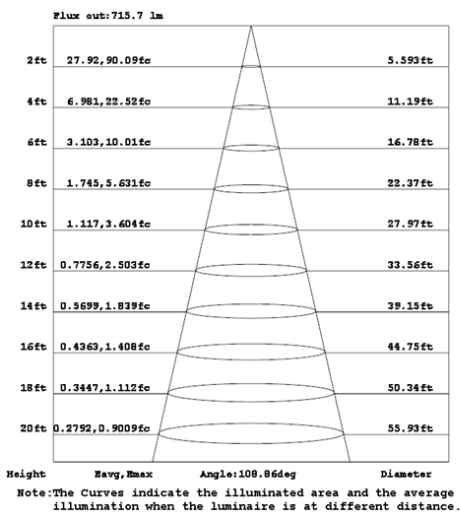
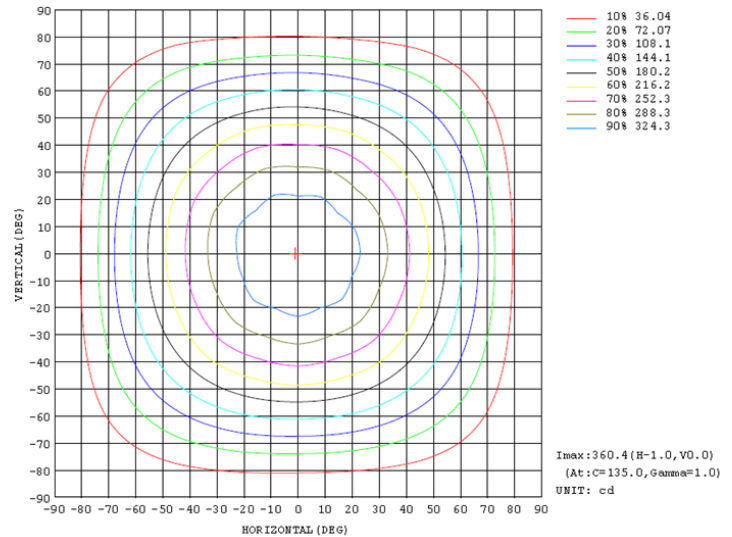
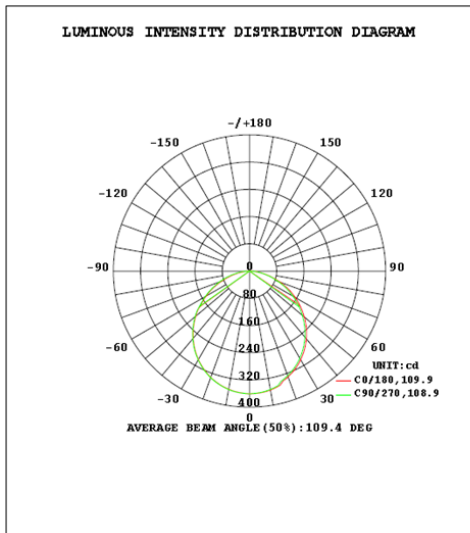


Zonal Lumen Tabulation

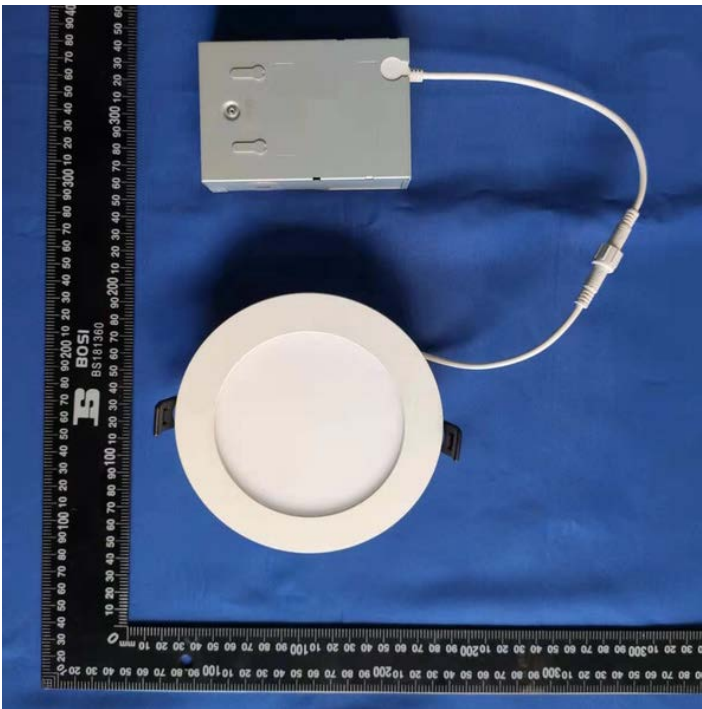
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	277.0	27.8%
0-40	451.9	45.3%
0-60	791.5	79.4%
60-90	205.2	20.6%
70-100	85.5	8.6%
90-120	0.0	0.0%
0-90	996.7	100.0%
90-180	0.0	0.0%
0-180	996.7	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	34.1	3.4%	90-100	0.0	0.0%
10-20	97.0	9.7%	100-110	0.0	0.0%
20-30	145.9	14.6%	110-120	0.0	0.0%
30-40	175.0	17.6%	120-130	0.0	0.0%
40-50	179.8	18.0%	130-140	0.0	0.0%
50-60	159.7	16.0%	140-150	0.0	0.0%
60-70	119.7	12.0%	150-160	0.0	0.0%
70-80	67.7	6.8%	160-170	0.0	0.0%
80-90	17.7	1.8%	170-180	0.0	0.0%

Photometric Data



3. Product Photo



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