

**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):**  
**WFRX-4BD**

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

**Type of  
Luminaire:** Downlights

**Report Date:** 2024-11-29

**Prepared By:**

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

<b>1.1 Rated Values:</b>	
Rated Voltage / Frequency	120V-277Vac, 60 Hz
Nominal Power	8.0W/10.0W/12.0W
Rated Initial Lamp Lumen	675lm/825lm/1100lm (mode 5000K)
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

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

<b>Test date</b>	2024-11-27	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WFRX-4BD	5000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200018	120.0	60	0.084	10.10	0.995

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

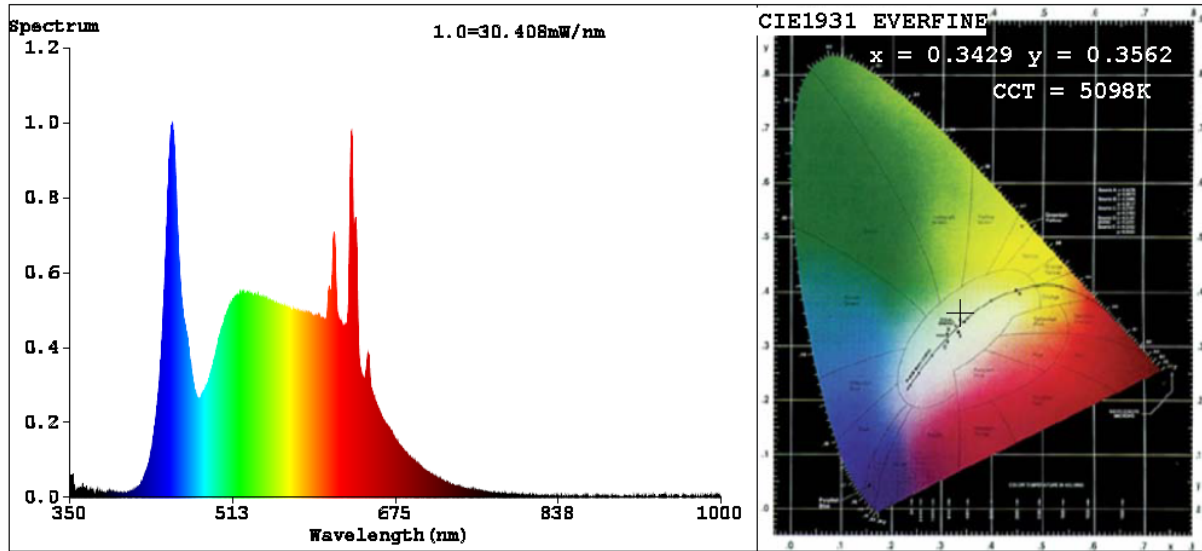
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	75
Frequency (Hz)	60	R2	96	R10	89
CCT (K)	5098	R3	94	R11	95
Duv	0.0032	R4	96	R12	74
Chromaticity (x, y)	x=0.3429 y=0.3562	R5	96	R13	96
Chromaticity (u', v')	u'=0.2082 v'=0.4866	R6	94	R14	96
Color Rendering Index (CRI)	94.9	R7	96	R15	94
R9	75	R8	92	--	--
Rg	101				
Rf	93				
Rcs,h1%	-4				

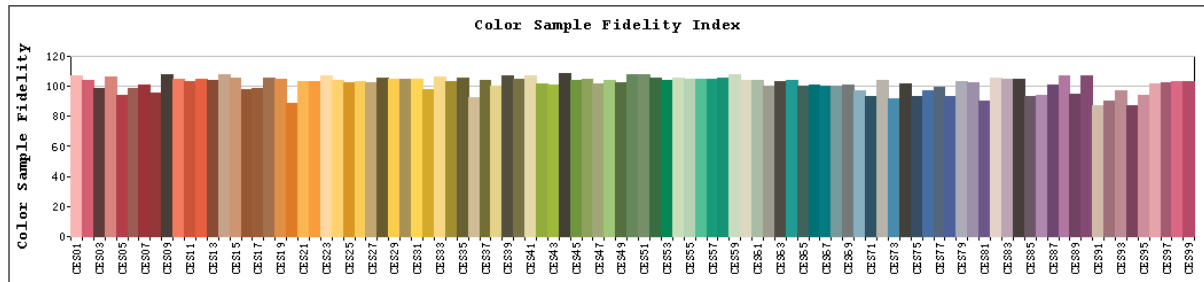
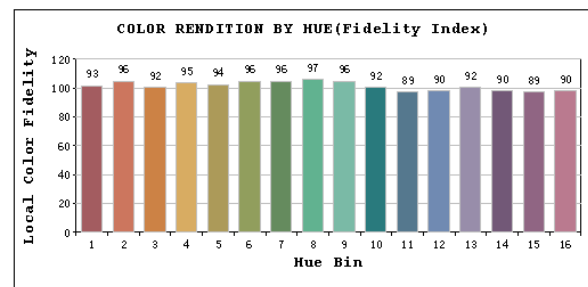
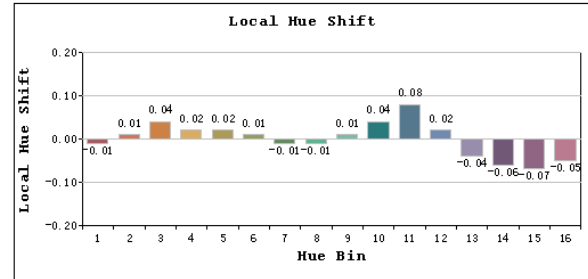
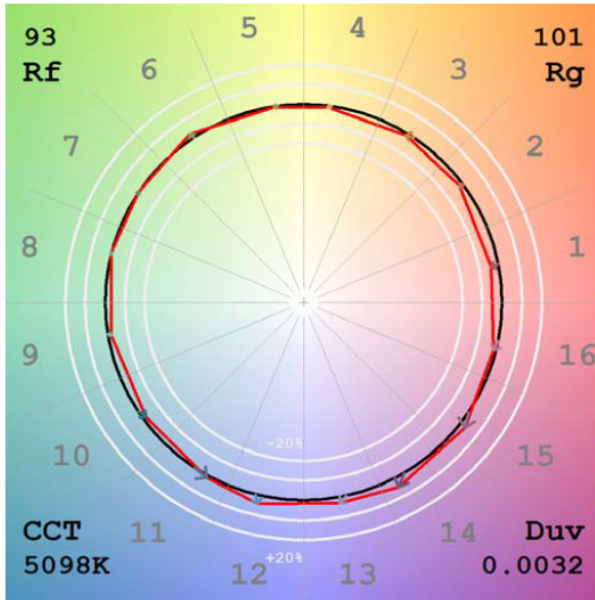
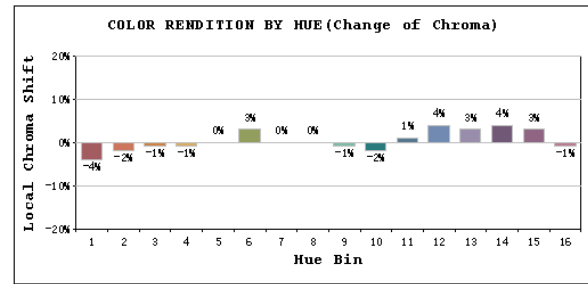
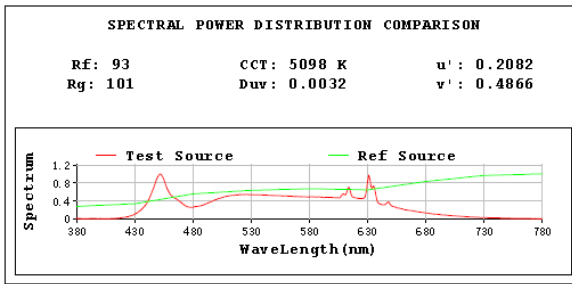
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1107.0
Luminous Efficacy (lm/W)	109.60
Beam Angle (°)	109.9
Center Beam Candle Power (cd)	406.5

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1161.0
Luminous Efficacy (lm/W)	103.38

# Spectral Power Distribution & Chromaticity Diagram



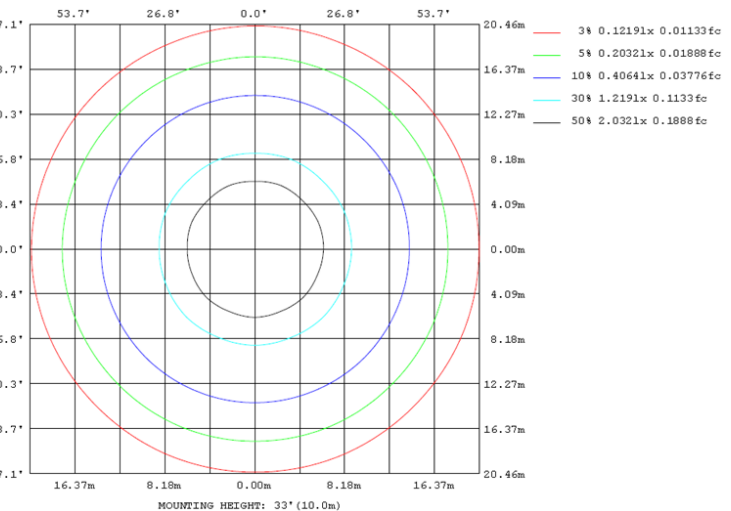
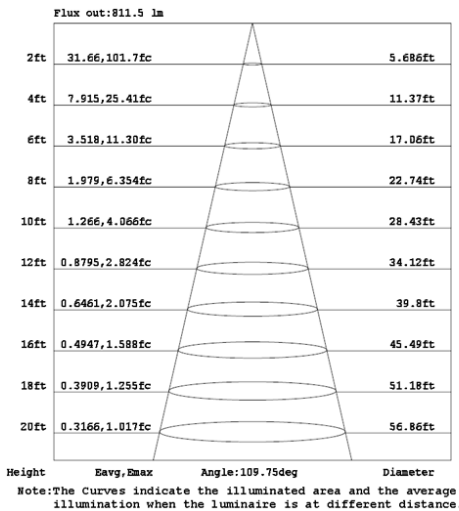
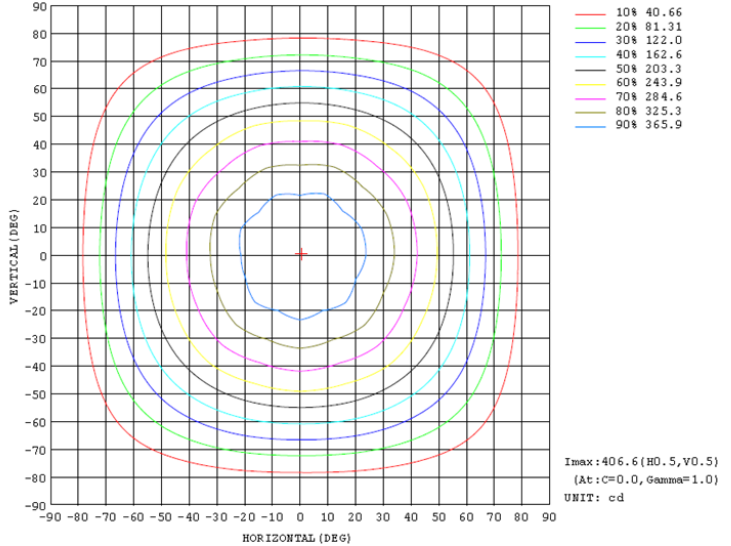
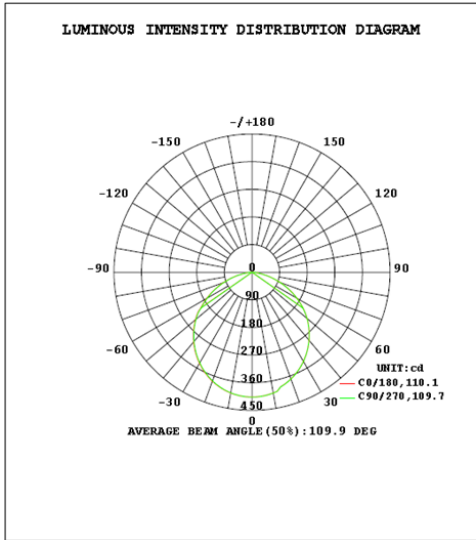


# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	312.5	28.2%
0-40	510.6	46.1%
0-60	897.5	81.1%
60-90	209.5	18.9%
70-100	77.5	7.0%
90-120	0.0	0.0%
0-90	1107.0	100.0%
90-180	0.0	0.0%
0-180	1107.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	38.5	3.5%	90-100	0.0	0.0%
10-20	109.3	9.9%	100-110	0.0	0.0%
20-30	164.8	14.9%	110-120	0.0	0.0%
30-40	198.0	17.9%	120-130	0.0	0.0%
40-50	204.9	18.5%	130-140	0.0	0.0%
50-60	182.1	16.4%	140-150	0.0	0.0%
60-70	132.0	11.9%	150-160	0.0	0.0%
70-80	66.5	6.0%	160-170	0.0	0.0%
80-90	10.9	1.0%	170-180	0.0	0.0%

## Photometric Data





## 2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRX-4BD	2700K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200018	120.0	60	0.085	10.10	0.995

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

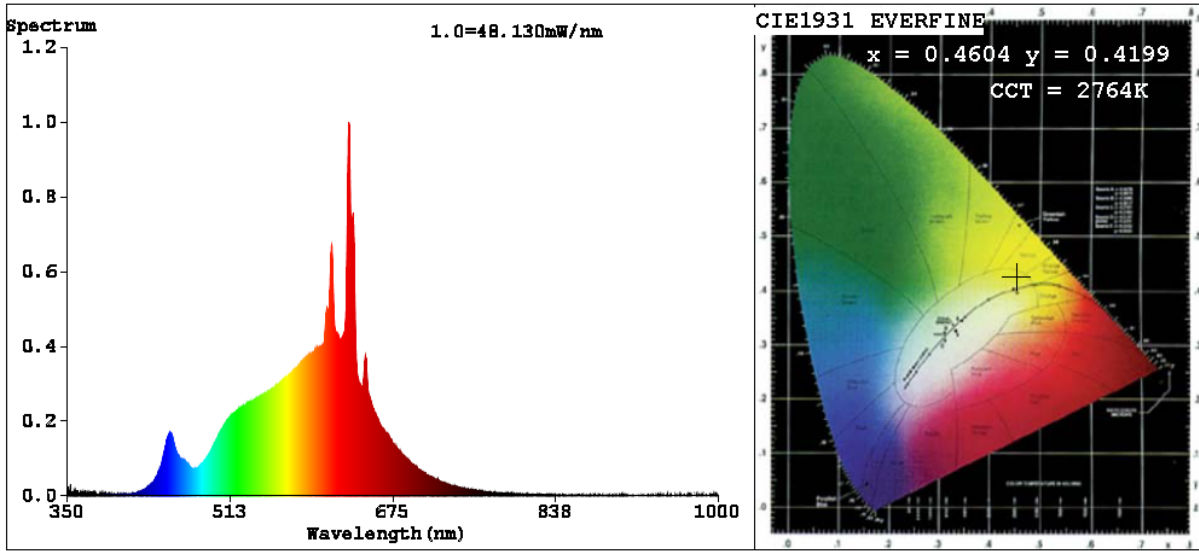
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	58
Frequency (Hz)	60	R2	96	R10	90
CCT (K)	2764	R3	97	R11	99
Duv	0.0034	R4	97	R12	84
Chromaticity (x, y)	x=0.4604 y=0.4199	R5	95	R13	95
Chromaticity (u', v')	u'=0.2587 v'=0.5309	R6	98	R14	97
Color Rendering Index (CRI)	94.2	R7	93	R15	89
R9	58	R8	83	--	--
Rg	98				
Rf	93				
Rcs,h1%	-6				

### Photometric Measurement – Goniophotometer Method:

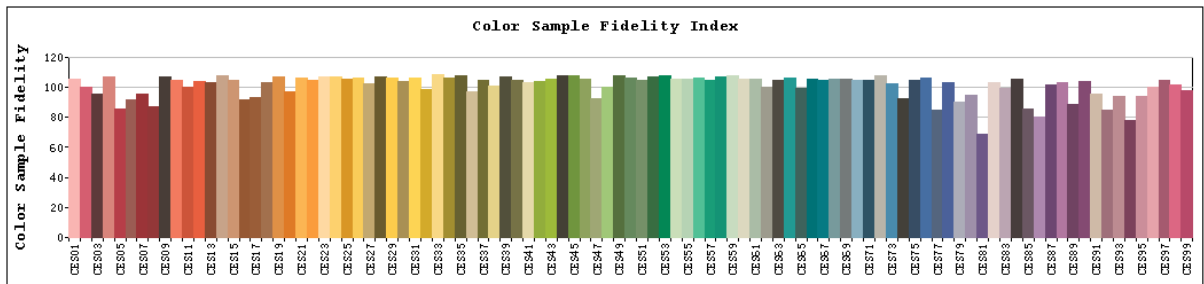
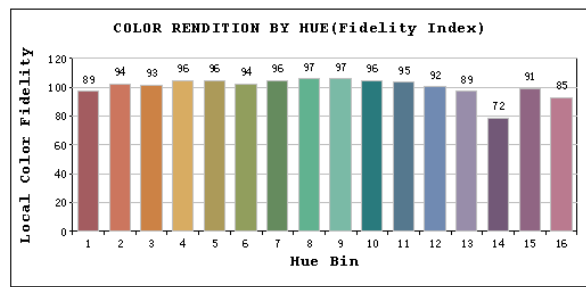
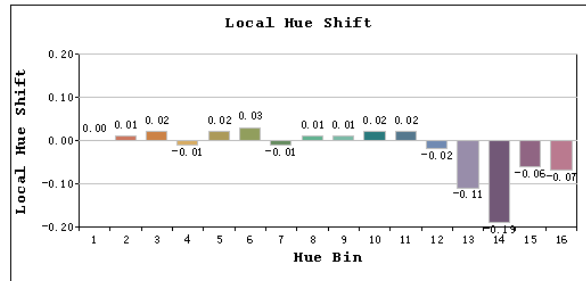
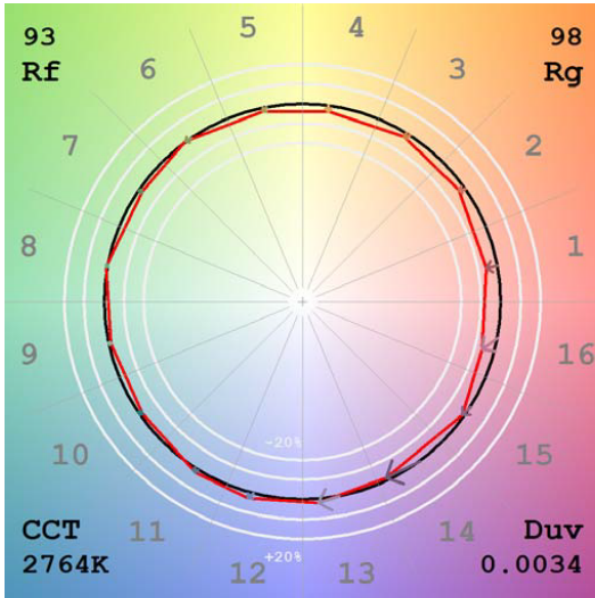
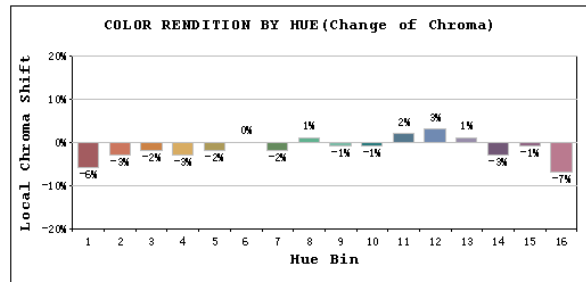
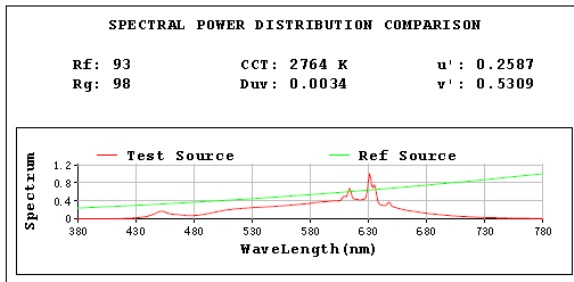
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1062.4
Luminous Efficacy (lm/W)	105.19

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1112.0
Luminous Efficacy (lm/W)	99.29

# Spectral Power Distribution & Chromaticity Diagram



# TM30



**2.1.3 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-11-27	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WFRX-4BD	3000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202411200018	120.0	60	0.084	10.00	0.995

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

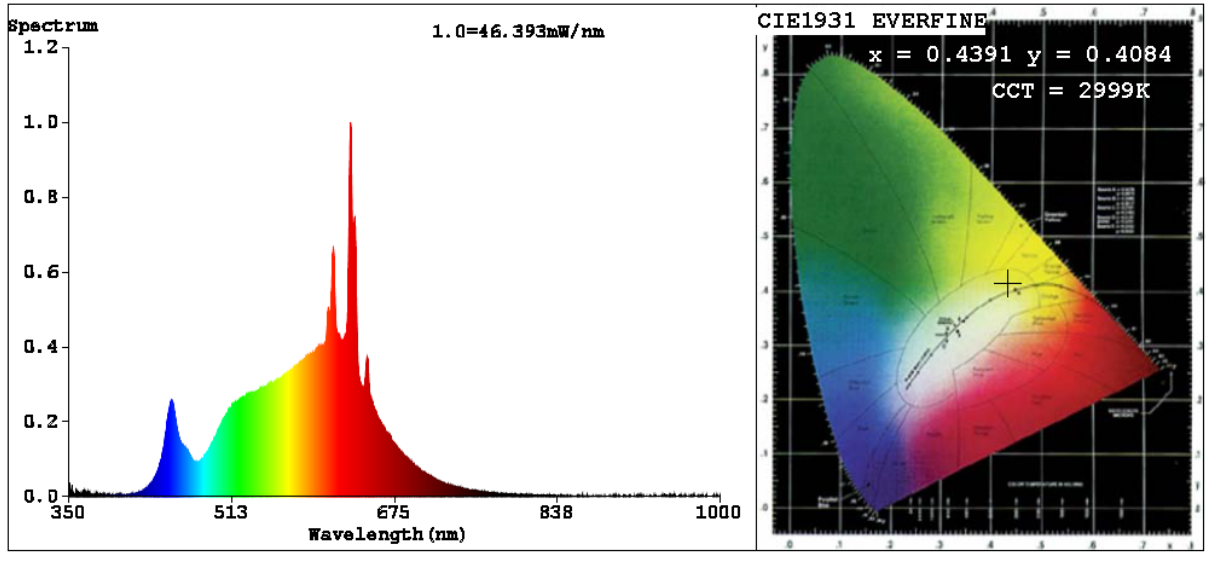
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	66
Frequency (Hz)	60	R2	97	R10	92
CCT (K)	2999	R3	97	R11	97
Duv	0.0014	R4	98	R12	83
Chromaticity (x, y)	x=0.4391 y=0.4084	R5	96	R13	97
Chromaticity (u', v')	u'=0.2501 v'=0.5234	R6	97	R14	97
Color Rendering Index (CRI)	95.4	R7	94	R15	92
R9	66	R8	86	--	--
Rg	100				
Rf	93				
Rcs,h1%	-5				

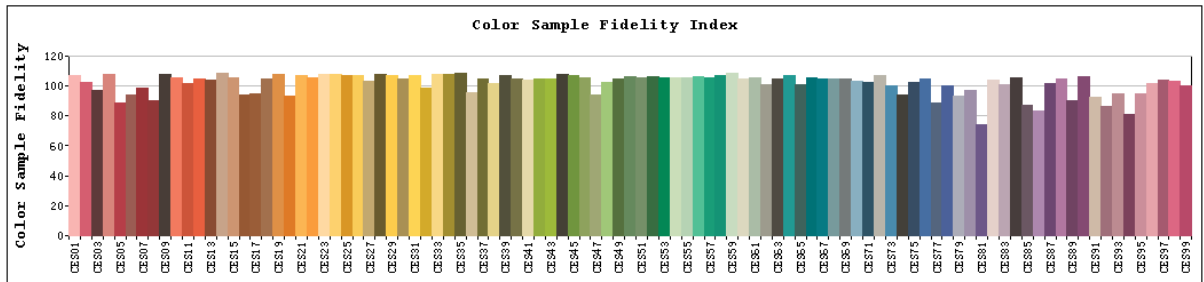
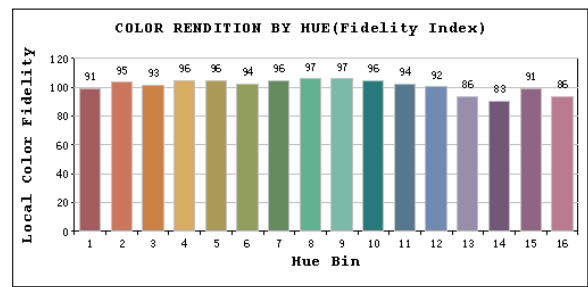
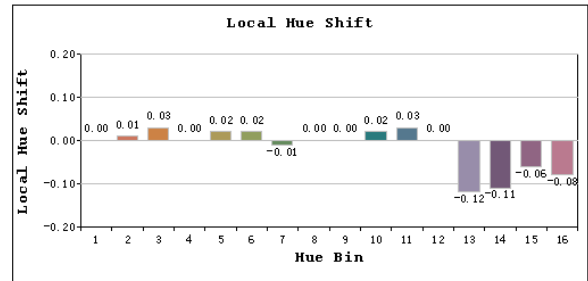
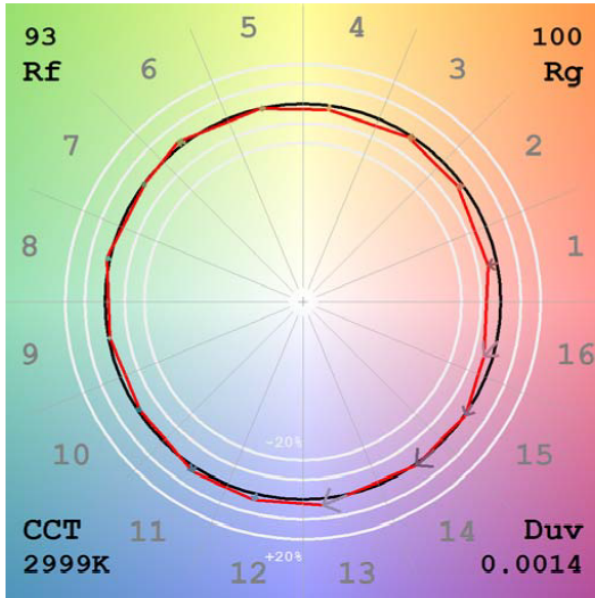
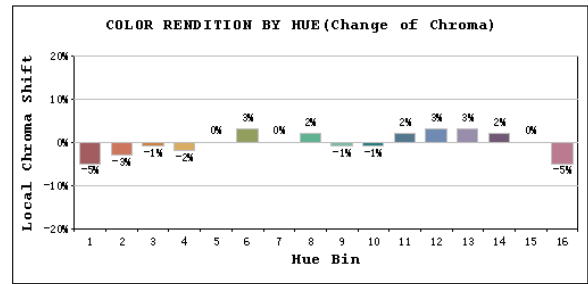
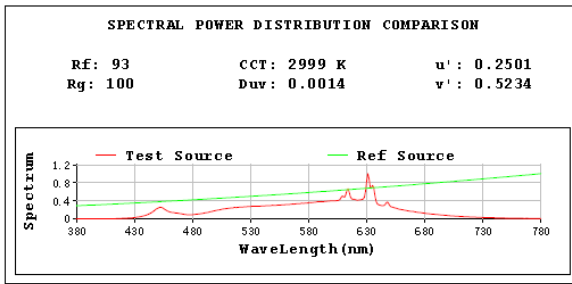
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1083.9
Luminous Efficacy (lm/W)	108.39

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1137.0
Luminous Efficacy (lm/W)	102.25

# Spectral Power Distribution & Chromaticity Diagram





**2.1.4 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-11-27	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WFRX-4BD	3500K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202411200018	120.0	60	0.083	9.95	0.995

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

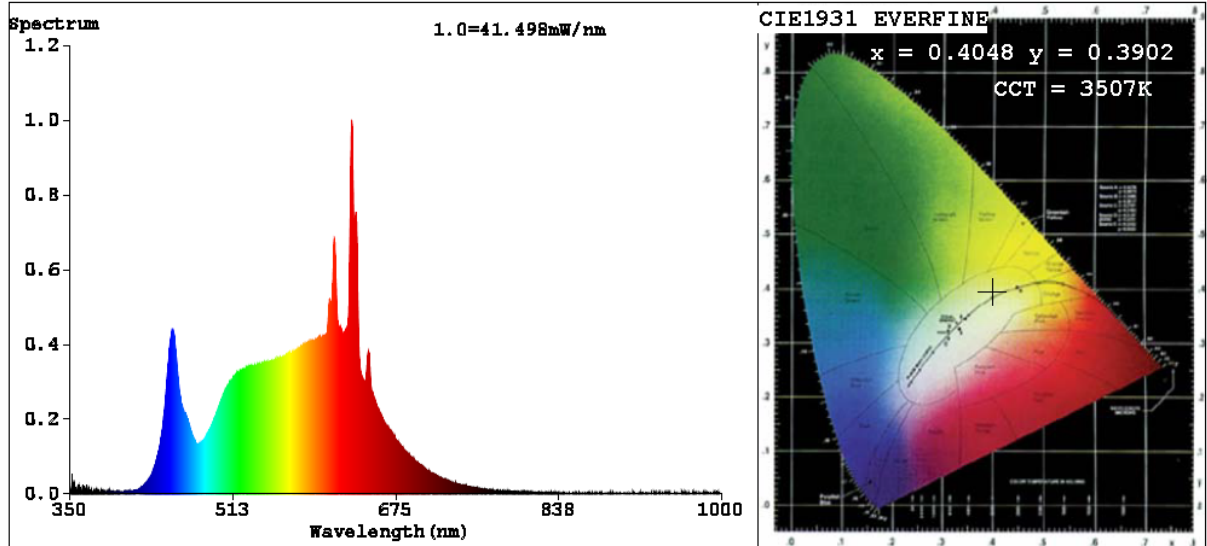
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	99	R9	76
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	3507	R3	96	R11	95
Duv	-0.0001	R4	98	R12	80
Chromaticity (x, y)	x=0.4048 y=0.3902	R5	98	R13	99
Chromaticity (u', v')	u'=0.2356 v'=0.5110	R6	96	R14	97
Color Rendering Index (CRI)	96.5	R7	96	R15	95
R9	76	R8	91	--	--
Rg	101				
Rf	93				
Rcs,h1%	-3				

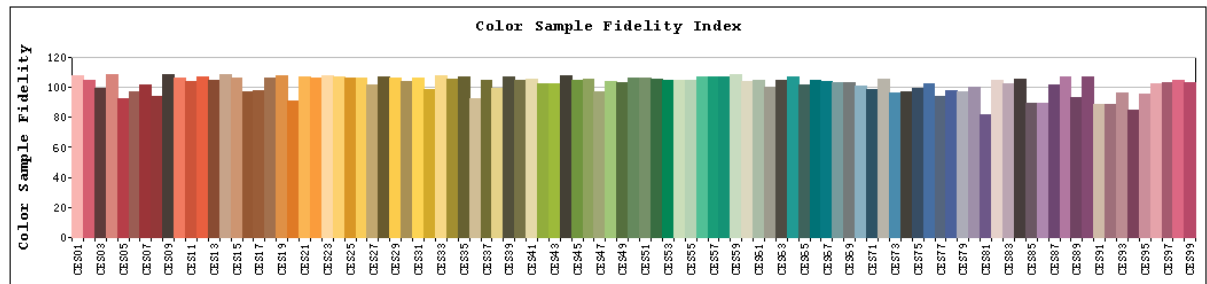
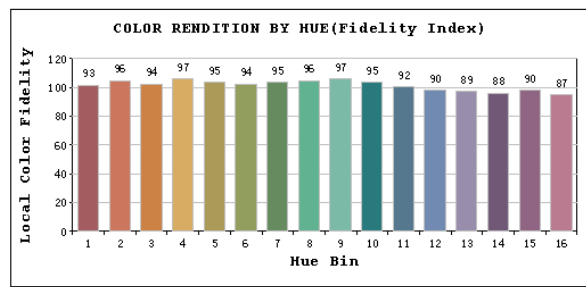
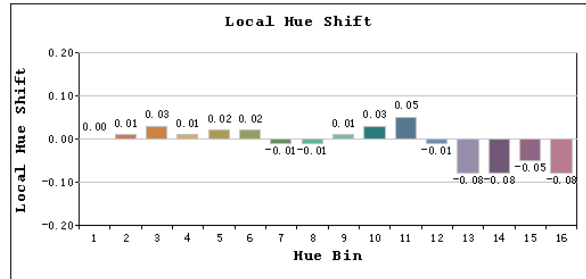
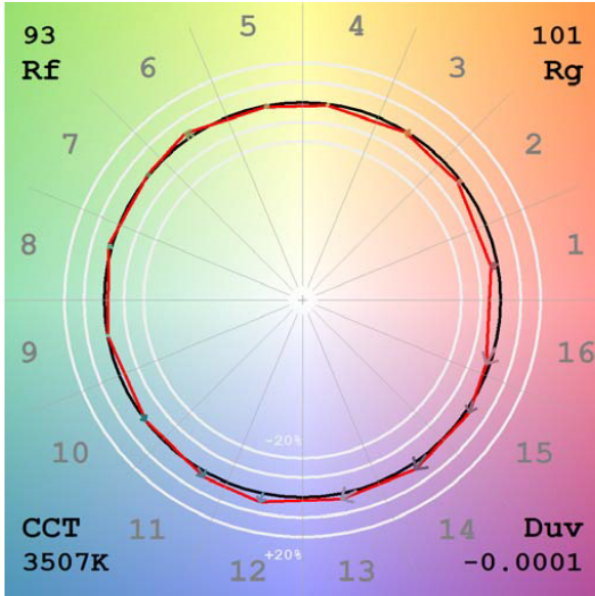
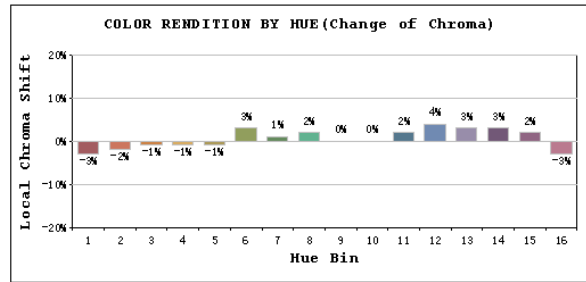
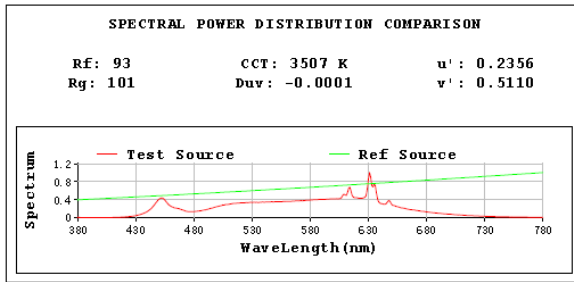
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1107.1
Luminous Efficacy (lm/W)	111.27

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1161.0
Luminous Efficacy (lm/W)	105.05

# Spectral Power Distribution & Chromaticity Diagram





**2.1.5 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-11-27	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WFRX-4BD	4000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202411200018	120.0	60	0.083	9.99	0.995

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

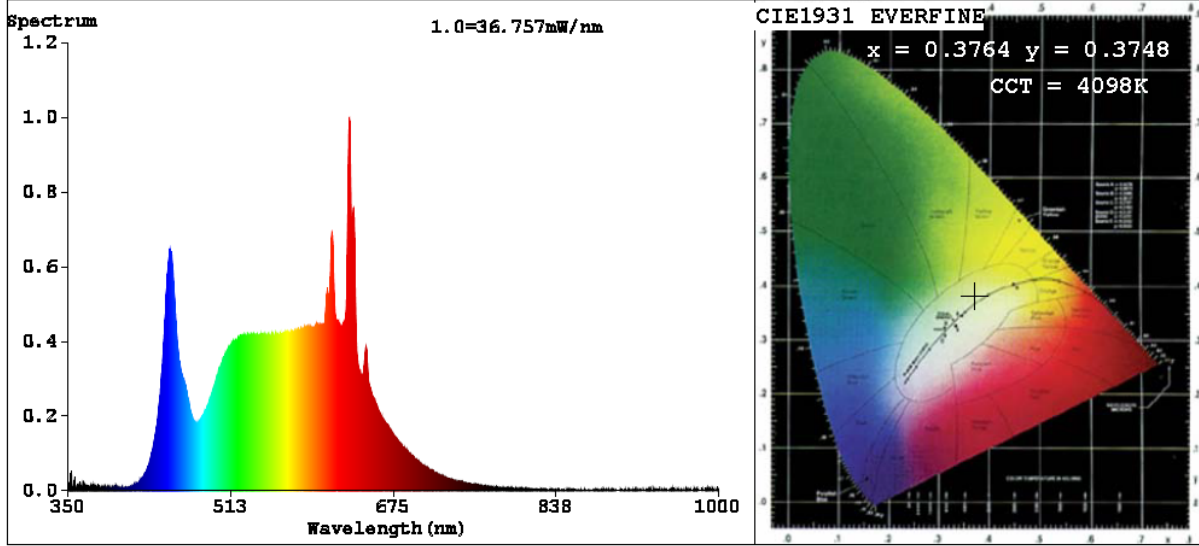
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	99	R9	80
Frequency (Hz)	60	R2	98	R10	93
CCT (K)	4098	R3	95	R11	95
Duv	0.0003	R4	98	R12	75
Chromaticity (x, y)	x=0.3764 y=0.3748	R5	97	R13	99
Chromaticity (u', v')	u'=0.2232 v'=0.5001	R6	96	R14	97
Color Rendering Index (CRI)	96.6	R7	97	R15	96
R9	80	R8	93	--	--
Rg	101				
Rf	94				
Rcs,h1%	-3				

**Photometric Measurement – Goniophotometer Method:**

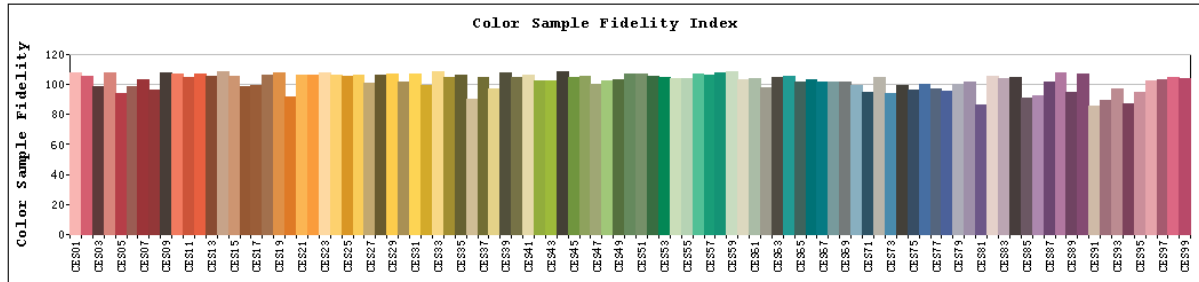
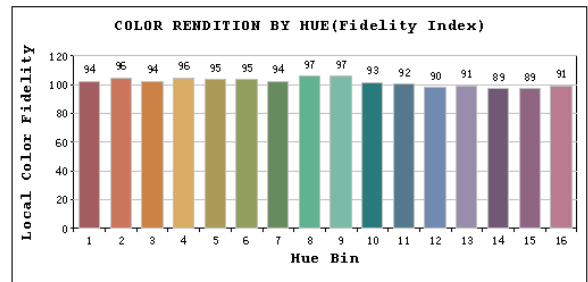
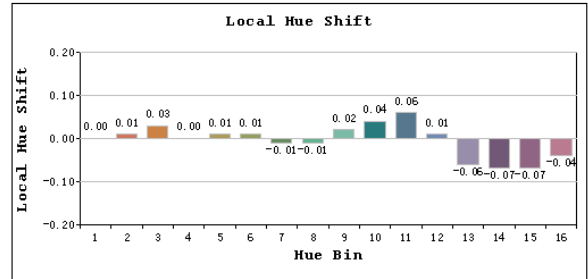
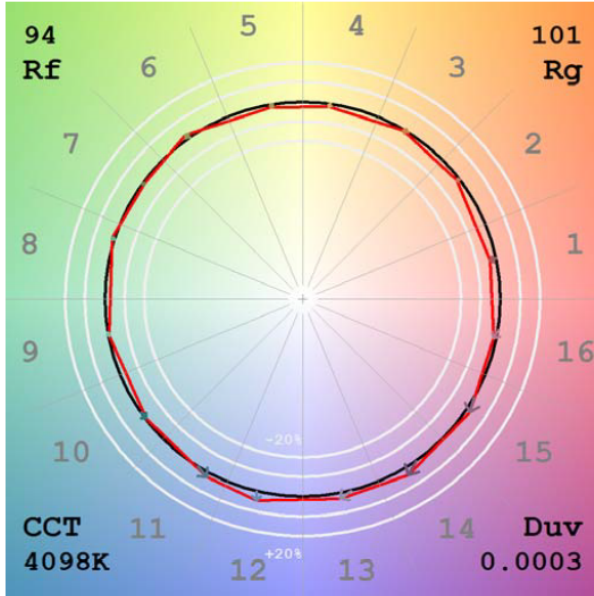
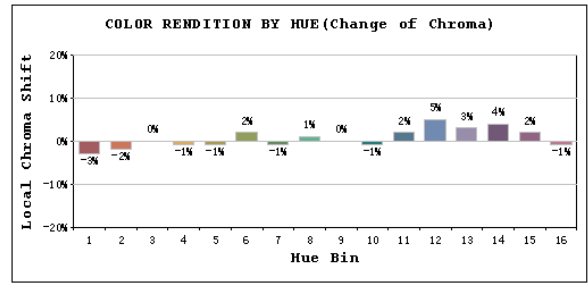
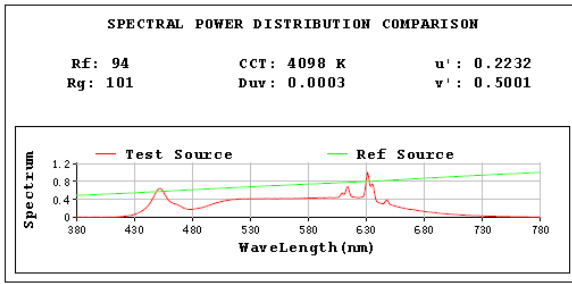
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Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1114.0
Luminous Efficacy (lm/W)	111.51

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1170.0
Luminous Efficacy (lm/W)	105.42

# Spectral Power Distribution & Chromaticity Diagram

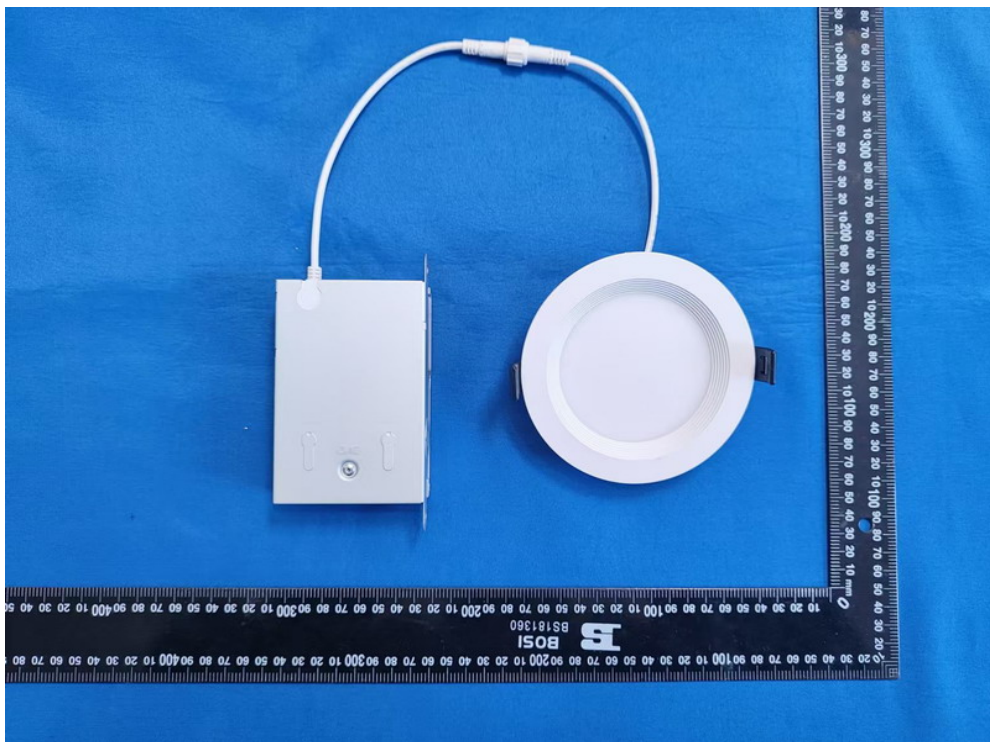


# TM30



Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
WFRX-4BD	8W-5000K setting	120	707.4	6.96	101.64
		277	766.6	8.00	95.85
	10W-5000K setting	120	893.1	8.73	102.31
		277	941.8	9.96	94.55
	12W-2700K setting	120	1062.4	10.10	105.19
		277	1112.0	11.20	99.29
	12W-3000K setting	120	1083.9	10.00	108.39
		277	1137.0	11.12	102.25
	12W-3500K setting	120	1107.1	9.95	111.27
		277	1161.0	11.05	105.05
	12W-4000K setting	120	1114.0	9.99	111.51
		277	1170.0	11.10	105.42
	12W-5000K setting	120	1107.0	10.10	109.60
		277	1161.0	11.23	103.38

**3. Product Photo**



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