

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-6D

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

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 60 Hz
Nominal Power	11.0W/13.0W/15.0W
Rated Initial Lamp Lumen	1000lm/1250lm/1500lm (mode 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: 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	2024-11-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFRX-6D	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200019	120.0	60	0.107	12.80	0.994

Chromaticity Measurement - Sphere-Spectroradiometer Method:

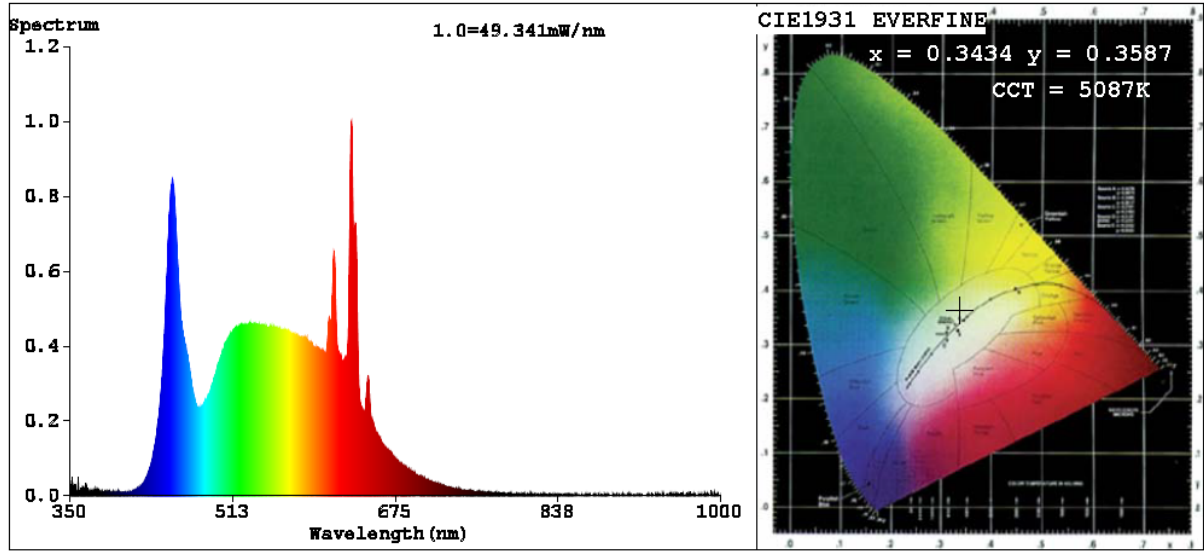
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	73
Frequency (Hz)	60	R2	95	R10	88
CCT (K)	5087	R3	94	R11	95
Duv	0.0042	R4	96	R12	72
Chromaticity (x, y)	x=0.3434 y=0.3587	R5	95	R13	95
Chromaticity (u', v')	u'=0.2075 v'=0.4879	R6	93	R14	96
Color Rendering Index (CRI)	94.5	R7	96	R15	93
R9	73	R8	91	--	--
Rg	100				
Rf	93				
Rcs,h1%	-4				

Photometric Measurement – Goniophotometer Method:

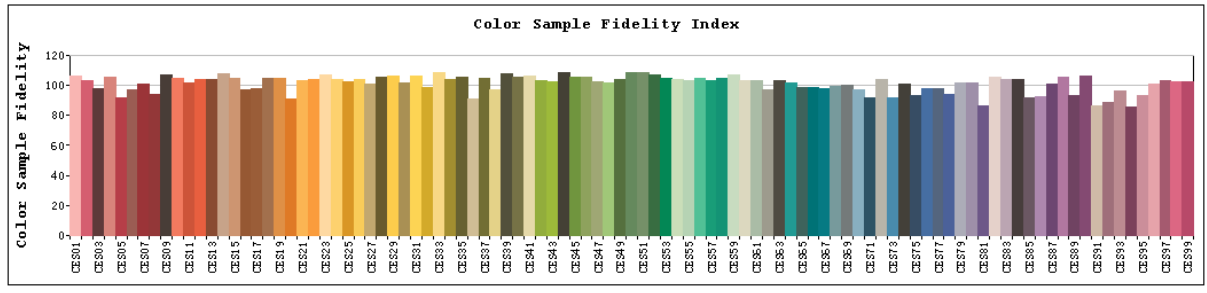
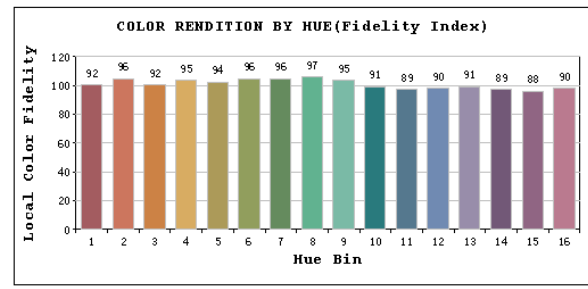
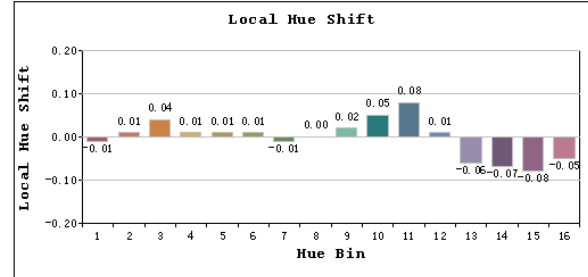
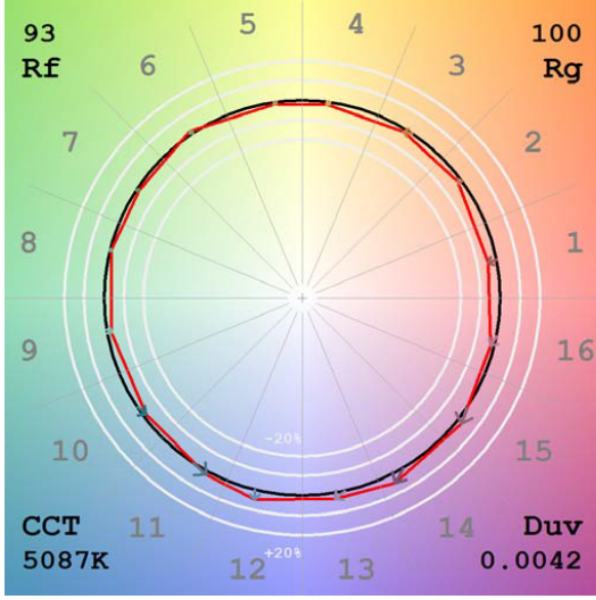
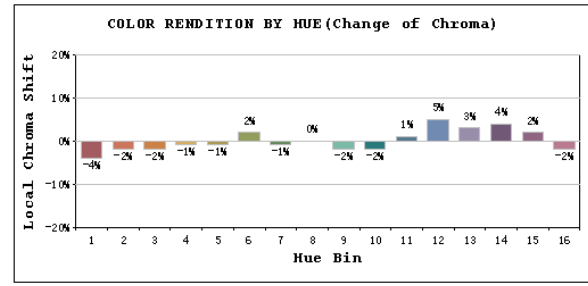
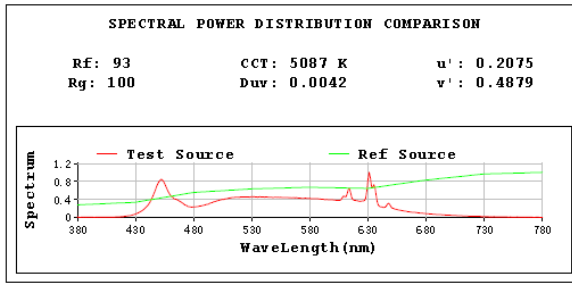
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1531.0
Luminous Efficacy (lm/W)	119.61
Beam Angle (°)	110.7
Center Beam Candle Power (cd)	544.0

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1566.0
Luminous Efficacy (lm/W)	116.95

Spectral Power Distribution & Chromaticity Diagram



TM30

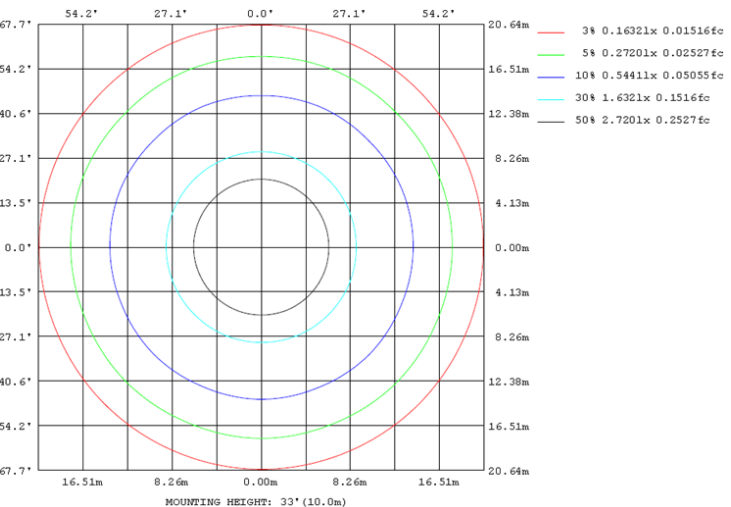
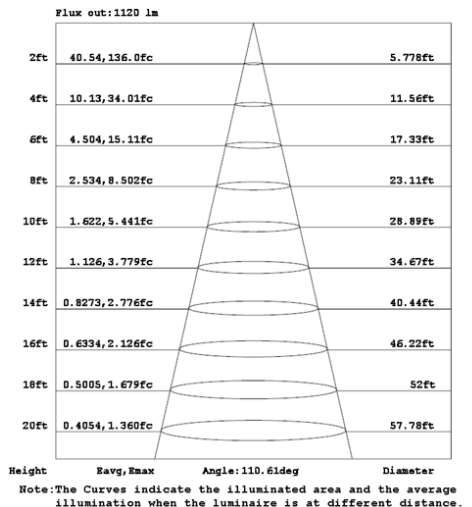
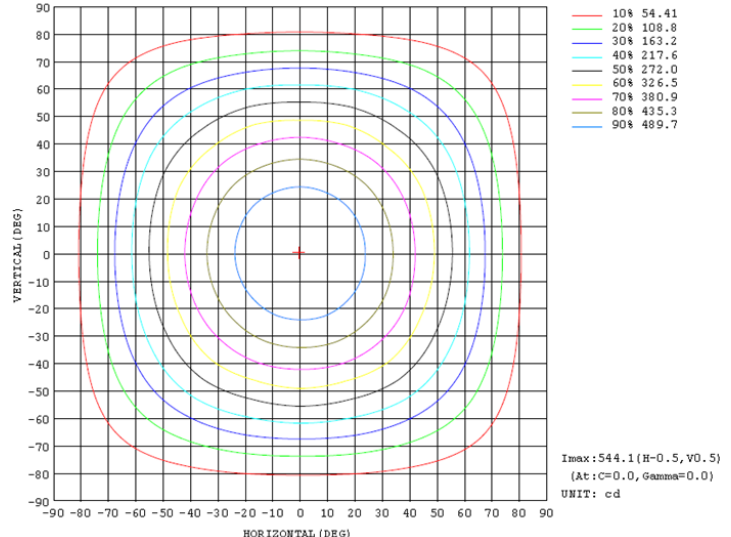
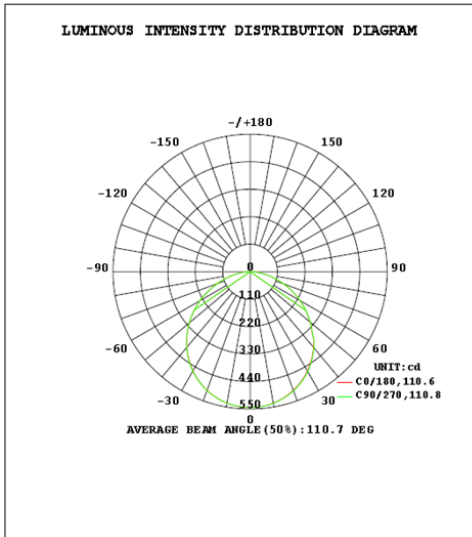


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	422.5	27.6%
0-40	691.2	45.1%
0-60	1212.3	79.2%
60-90	318.7	20.8%
70-100	134.0	8.8%
90-120	0.0	0.0%
0-90	1531.0	100.0%
90-180	0.0	0.0%
0-180	1531.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	51.5	3.4%	90-100	0.0	0.0%
10-20	147.5	9.6%	100-110	0.0	0.0%
20-30	223.5	14.6%	110-120	0.0	0.0%
30-40	268.7	17.6%	120-130	0.0	0.0%
40-50	275.4	18.0%	130-140	0.0	0.0%
50-60	245.7	16.0%	140-150	0.0	0.0%
60-70	184.7	12.1%	150-160	0.0	0.0%
70-80	105.3	6.9%	160-170	0.0	0.0%
80-90	28.7	1.9%	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-6D	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200019	120.0	60	0.107	12.80	0.994

Chromaticity Measurement - Sphere-Spectroradiometer Method:

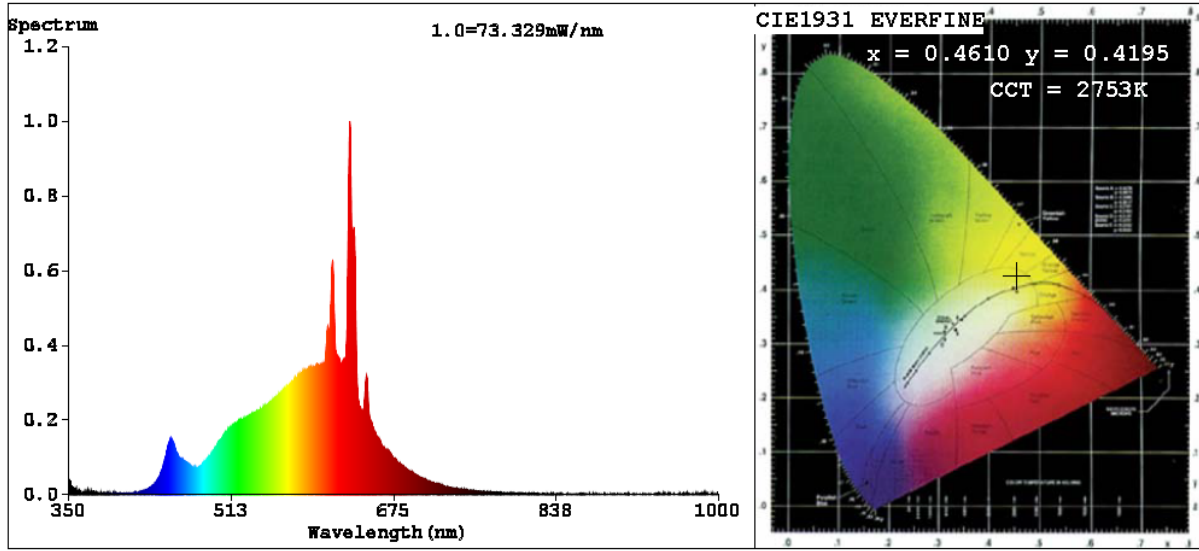
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	52
Frequency (Hz)	60	R2	96	R10	90
CCT (K)	2753	R3	98	R11	97
Duv	0.0032	R4	94	R12	83
Chromaticity (x, y)	x=0.4610 y=0.4195	R5	93	R13	94
Chromaticity (u', v')	u'=0.2593 v'=0.5309	R6	97	R14	98
Color Rendering Index (CRI)	92.8	R7	91	R15	87
R9	52	R8	79	--	--
Rg	96				
Rf	91				
Rcs,h1%	-7				

Photometric Measurement – Goniophotometer Method:

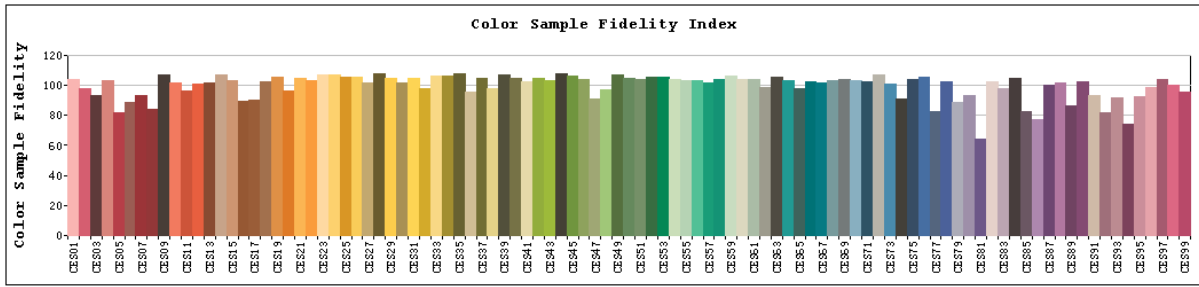
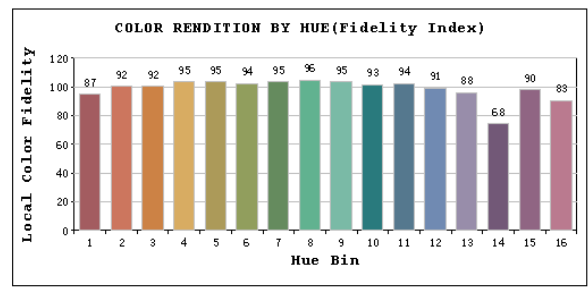
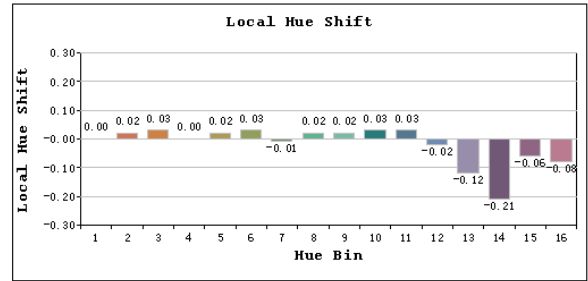
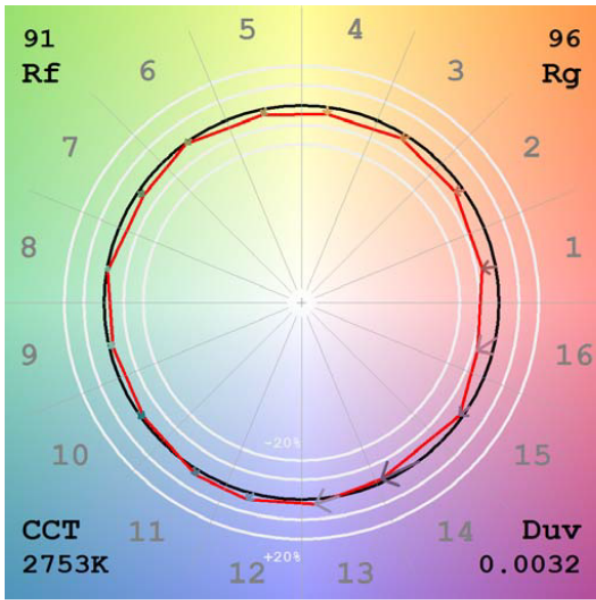
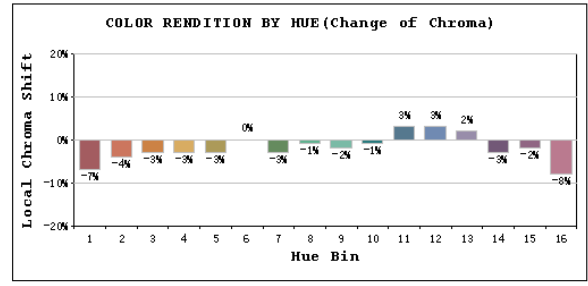
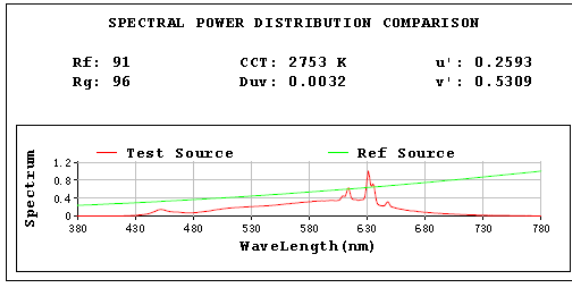
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1466.0
Luminous Efficacy (lm/W)	114.53

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1503.0
Luminous Efficacy (lm/W)	112.25

Spectral Power Distribution & Chromaticity Diagram



TM30



2.1.3 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-6D	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200019	120.0	60	0.107	12.80	0.994

Chromaticity Measurement - Sphere-Spectroradiometer Method:

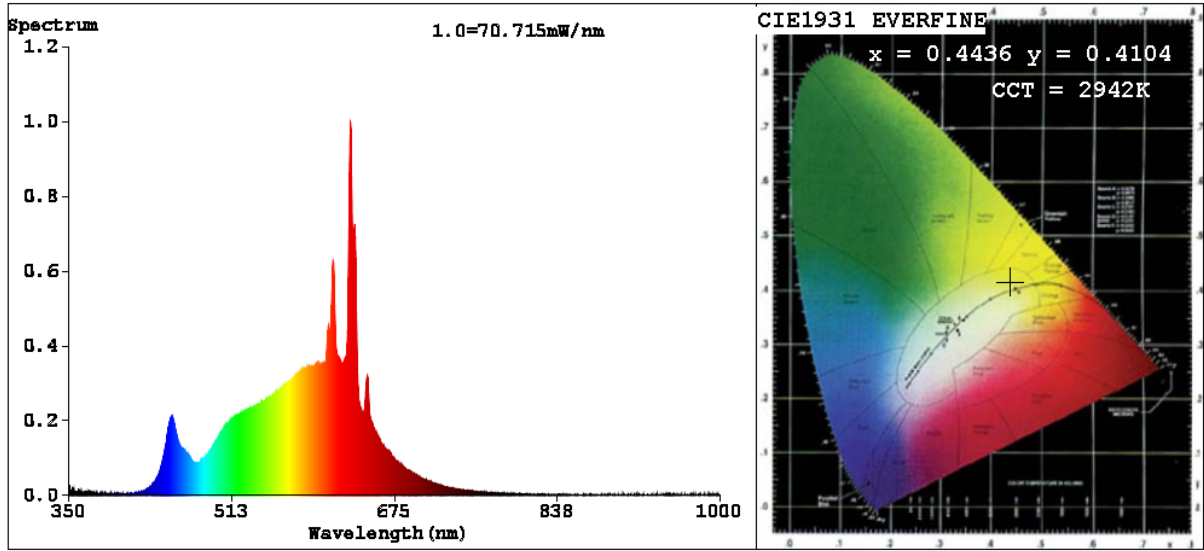
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	59
Frequency (Hz)	60	R2	97	R10	92
CCT (K)	2942	R3	99	R11	98
Duv	0.0016	R4	95	R12	83
Chromaticity (x, y)	x=0.4436 y=0.4104	R5	94	R13	95
Chromaticity (u', v')	u'=0.2521 v'=0.5248	R6	97	R14	98
Color Rendering Index (CRI)	94.0	R7	92	R15	89
R9	59	R8	82	--	--
Rg	98				
Rf	92				
Rcs,h1%	-6				

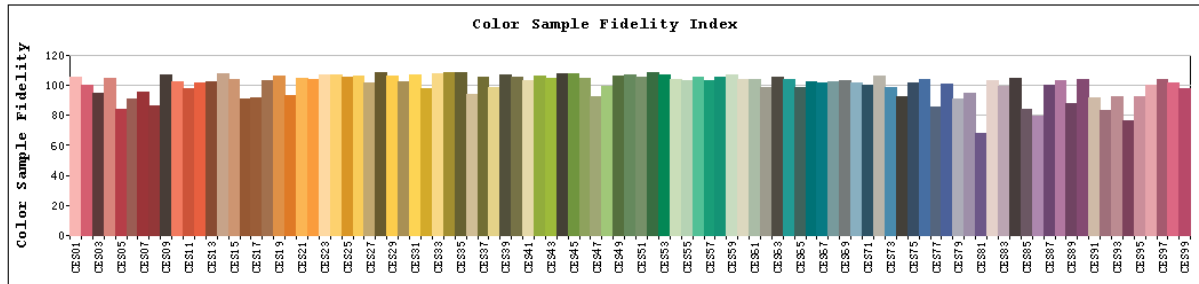
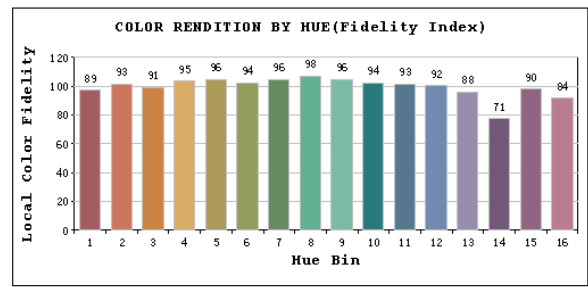
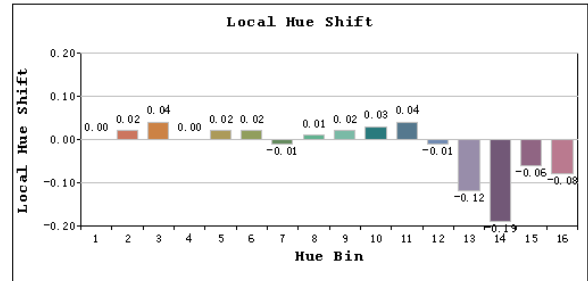
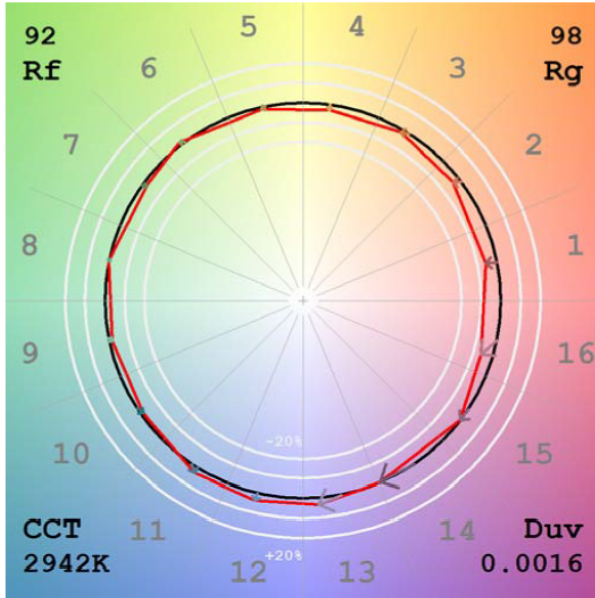
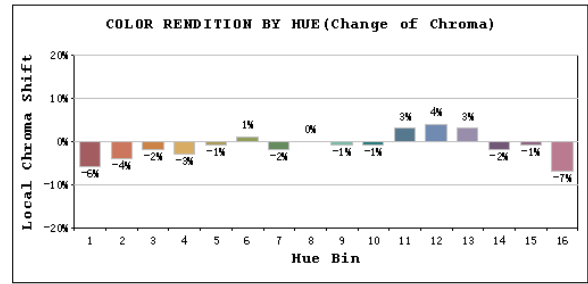
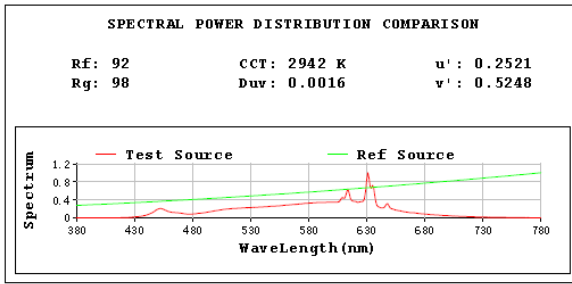
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1479.6
Luminous Efficacy (lm/W)	115.59

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1515.0
Luminous Efficacy (lm/W)	113.06

Spectral Power Distribution & Chromaticity Diagram





2.1.4 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-6D	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200019	120.0	60	0.105	12.60	0.994

Chromaticity Measurement - Sphere-Spectroradiometer Method:

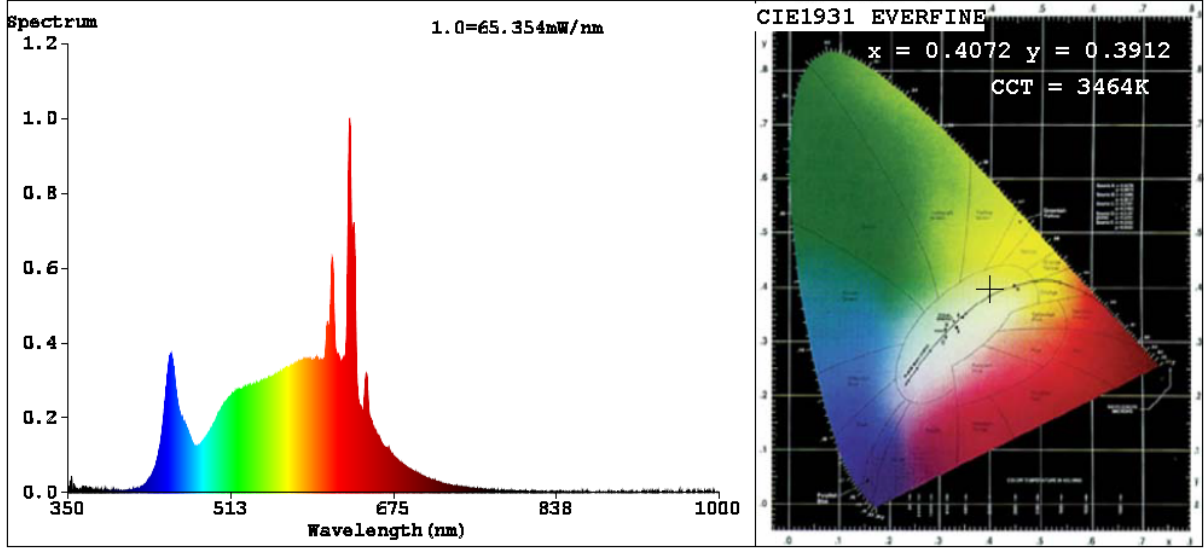
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	71
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	3464	R3	97	R11	97
Duv	-0.0002	R4	97	R12	79
Chromaticity (x, y)	x=0.4072 y=0.3912	R5	97	R13	98
Chromaticity (u', v')	u'=0.2367 v'=0.5117	R6	96	R14	98
Color Rendering Index (CRI)	95.7	R7	94	R15	94
R9	71	R8	88	--	--
Rg	100				
Rf	93				
Rcs,h1%	-4				

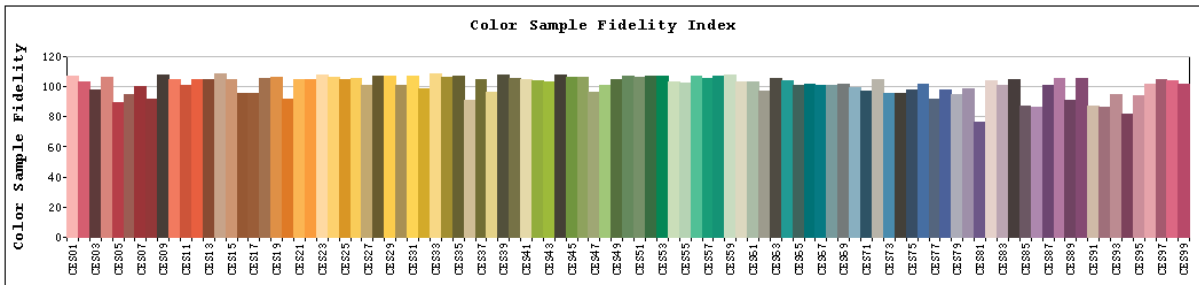
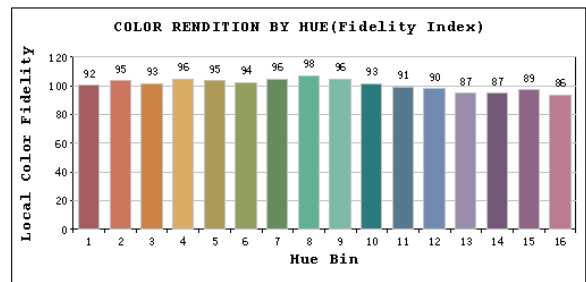
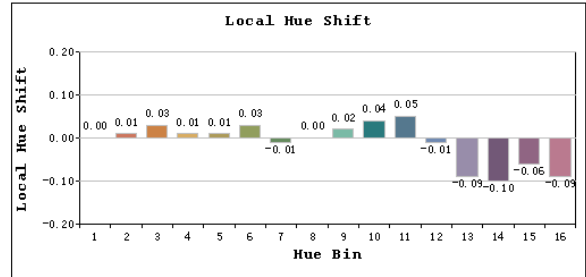
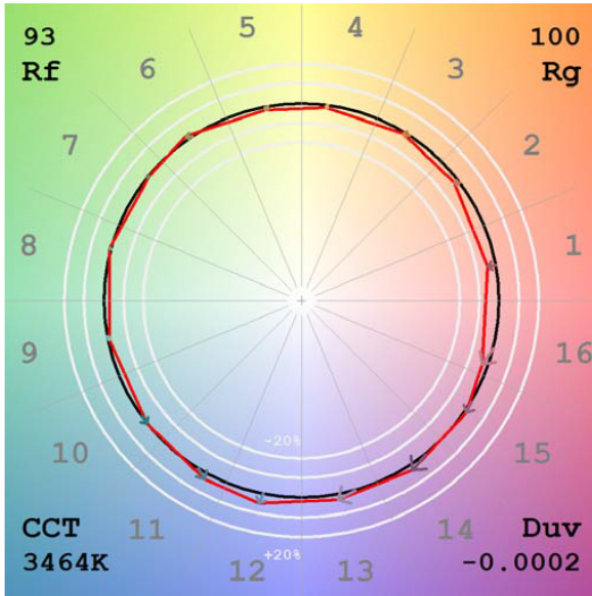
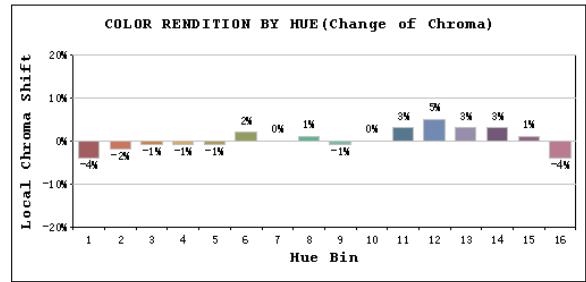
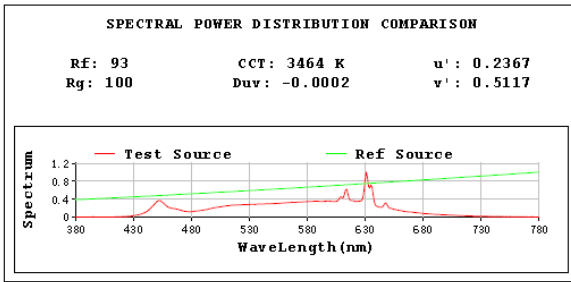
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1514.3
Luminous Efficacy (lm/W)	120.18

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1552.0
Luminous Efficacy (lm/W)	117.49

Spectral Power Distribution & Chromaticity Diagram





2.1.5 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-6D	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202411200019	120.0	60	0.106	12.70	0.994

Chromaticity Measurement - Sphere-Spectroradiometer Method:

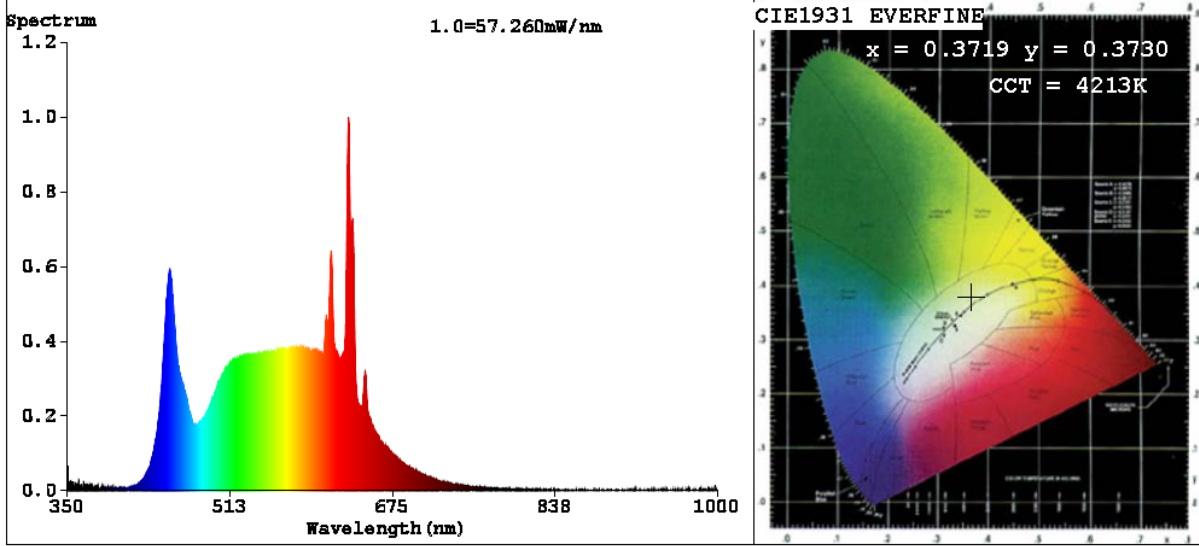
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	78
Frequency (Hz)	60	R2	98	R10	93
CCT (K)	4213	R3	96	R11	97
Duv	0.0008	R4	97	R12	73
Chromaticity (x, y)	x=0.3719 y=0.3730	R5	96	R13	98
Chromaticity (u', v')	u'=0.2210 v'=0.4986	R6	95	R14	97
Color Rendering Index (CRI)	96.0	R7	96	R15	95
R9	78	R8	92	--	--
Rg	100				
Rf	93				
Rcs,h1%	-4				

Photometric Measurement – Goniophotometer Method:

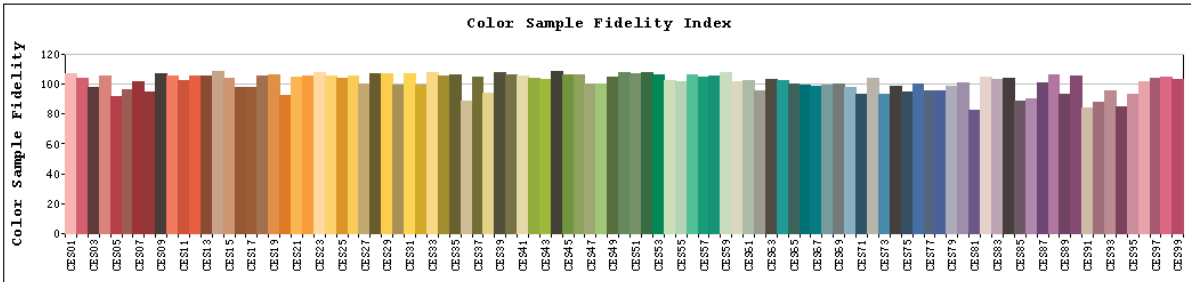
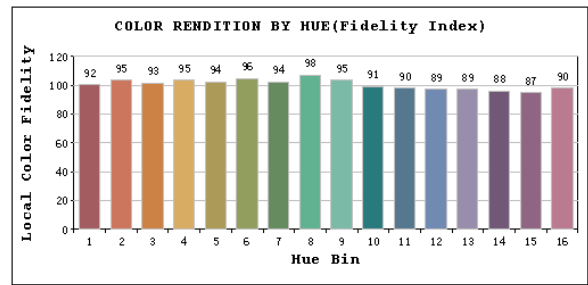
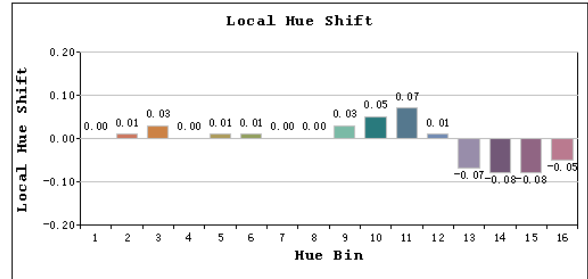
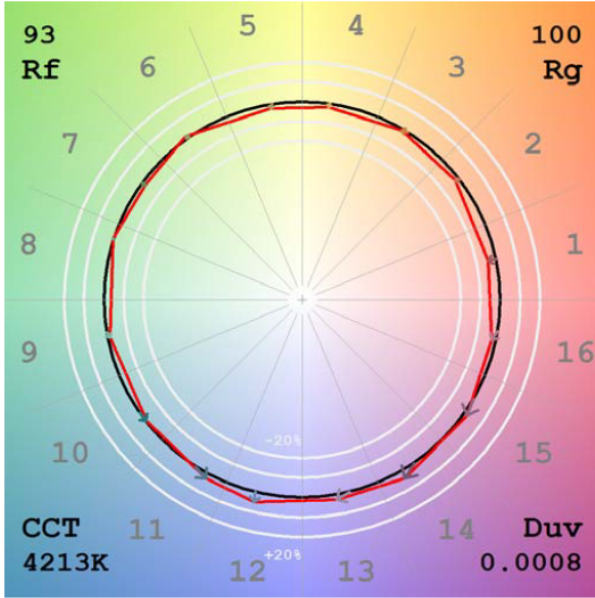
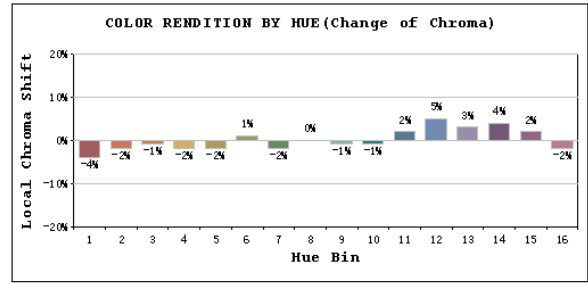
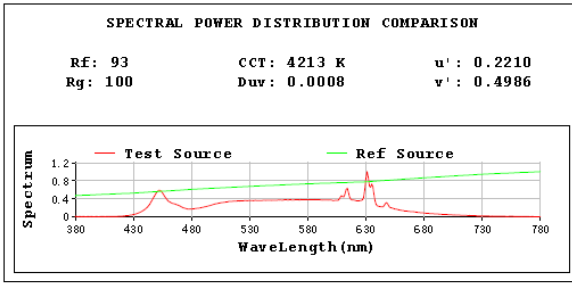
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1530.4
Luminous Efficacy (lm/W)	120.51

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1568.0
Luminous Efficacy (lm/W)	117.81

Spectral Power Distribution & Chromaticity Diagram

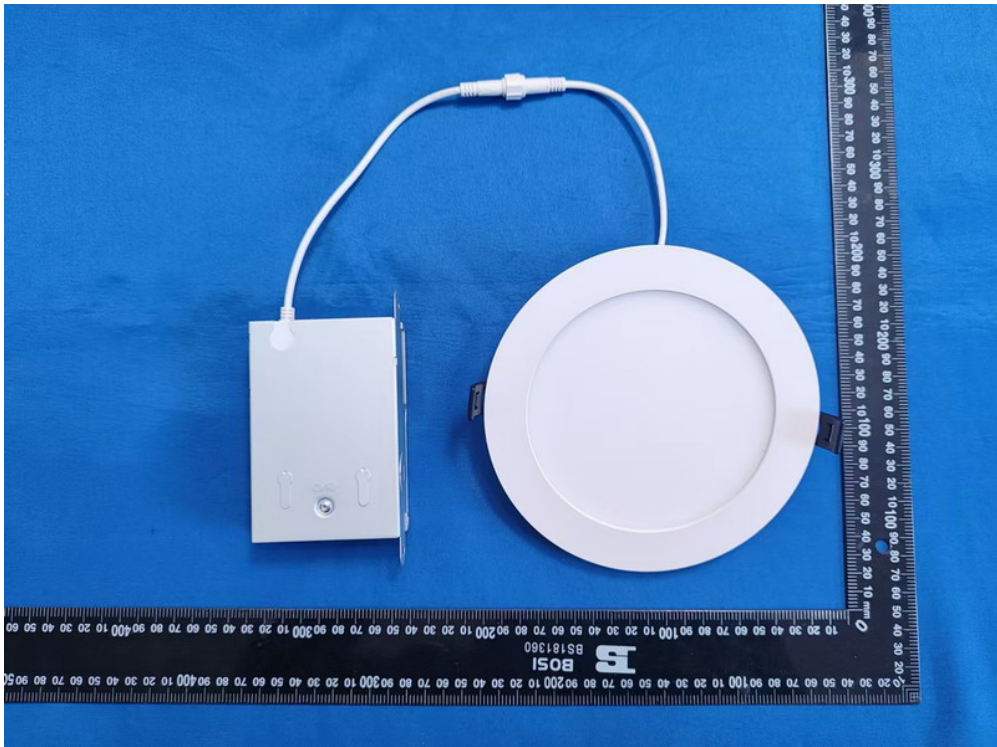


TM30



Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
WFRX-6D	11W-5000K setting	120	1077.2	9.49	113.51
		277	1136.2	10.62	107.00
	13W-5000K setting	120	1316.3	11.30	116.49
		277	1361.0	12.17	111.83
	15W-2700K setting	120	1466.0	12.80	114.53
		277	1503.0	13.39	112.25
	15W-3000K setting	120	1479.6	12.80	115.59
		277	1515.0	13.40	113.06
	15W-3500K setting	120	1514.3	12.60	120.18
		277	1552.0	13.21	117.49
	15W-4000K setting	120	1530.4	12.70	120.51
		277	1568.0	13.31	117.81
	15W-5000K setting	120	1531.0	12.80	119.61
		277	1566.0	13.39	116.95

3. Product Photo



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