

**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): CR10**

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

**Type of  
Luminaire:** Downlights

**Report Date:** 2024-06-25

**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	37.0W/30.0W/24.0 W
Rated Initial Lamp Lumen	4500lm/3500lm/2800lm (mode2700K)
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>	2024-06-20	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	CR10	2700K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150007	120.0	60	0.307	36.60	0.996

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

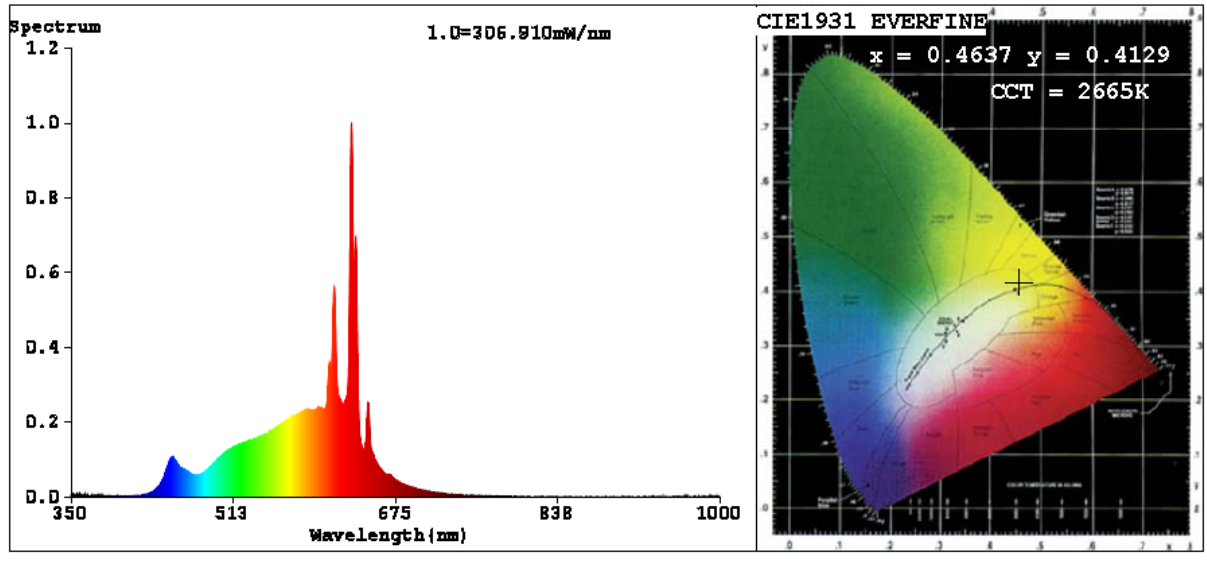
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	99	R9	68
Frequency (Hz)	60	R2	100	R10	98
CCT (K)	2665	R3	99	R11	96
Duv	0.0005	R4	100	R12	90
Chromaticity (x, y)	x=0.4637 y=0.4129	R5	99	R13	99
Chromaticity (u', v')	u'=0.2640 v'=0.5288	R6	94	R14	98
Color Rendering Index (CRI)	96.2	R7	92	R15	93
R9	68	R8	86	--	--
Rg	99				
Rf	92				
Rcs,h1%	-5				

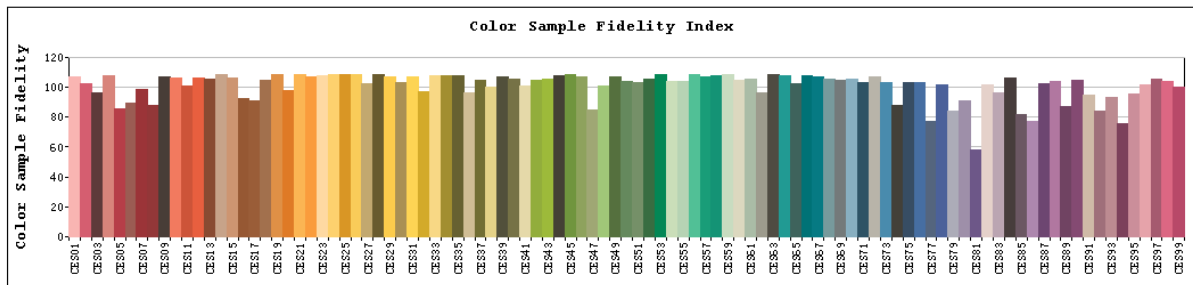
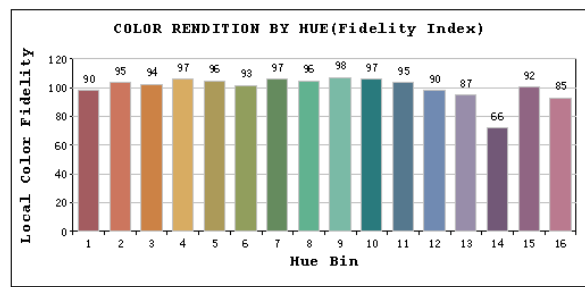
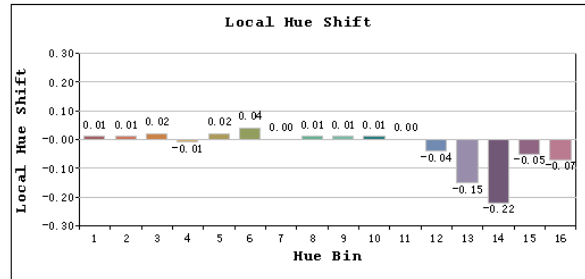
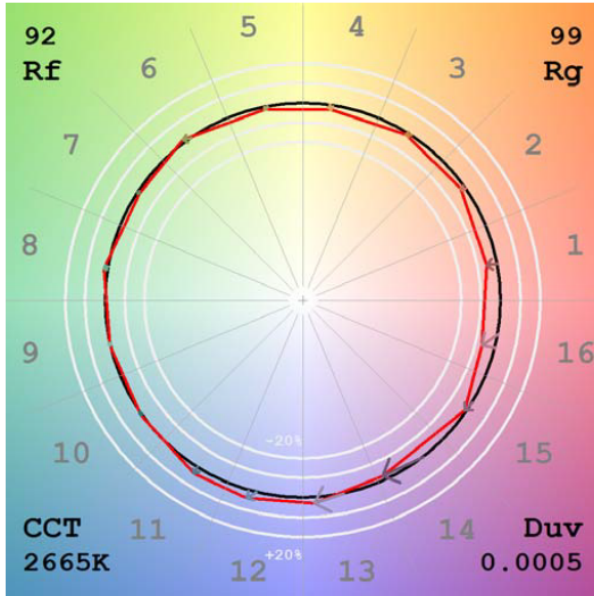
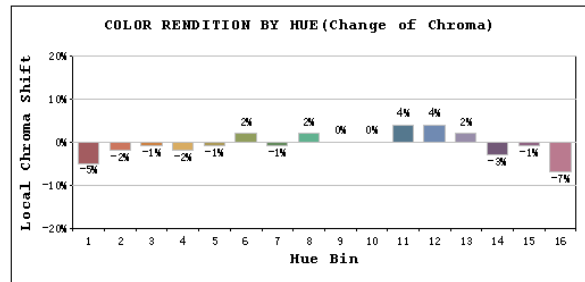
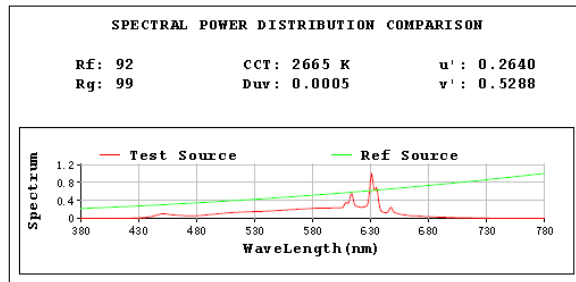
### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	4502.1
Luminous Efficacy (lm/W)	123.01
Beam Angle (°)	91.4
Center Beam Candle Power (cd)	2265.0

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4453.0
Luminous Efficacy (lm/W)	123.08

# Spectral Power Distribution & Chromaticity Diagram





# Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1675.8	37.2%
0-40	2651.1	58.9%
0-60	4157.4	92.3%
60-90	344.6	7.7%
70-100	100.9	2.2%
90-120	0.0	0.0%
0-90	4502.1	100.0%
90-180	0.0	0.0%
0-180	4502.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	213.0	4.7%	90-100	0.0	0.0%
10-20	596.6	13.3%	100-110	0.0	0.0%
20-30	866.3	19.2%	110-120	0.0	0.0%
30-40	975.3	21.7%	120-130	0.0	0.0%
40-50	893.4	19.8%	130-140	0.0	0.0%
50-60	612.9	13.6%	140-150	0.0	0.0%
60-70	243.7	5.4%	150-160	0.0	0.0%
70-80	79.3	1.8%	160-170	0.0	0.0%
80-90	21.7	0.5%	170-180	0.0	0.0%

## Photometric Data

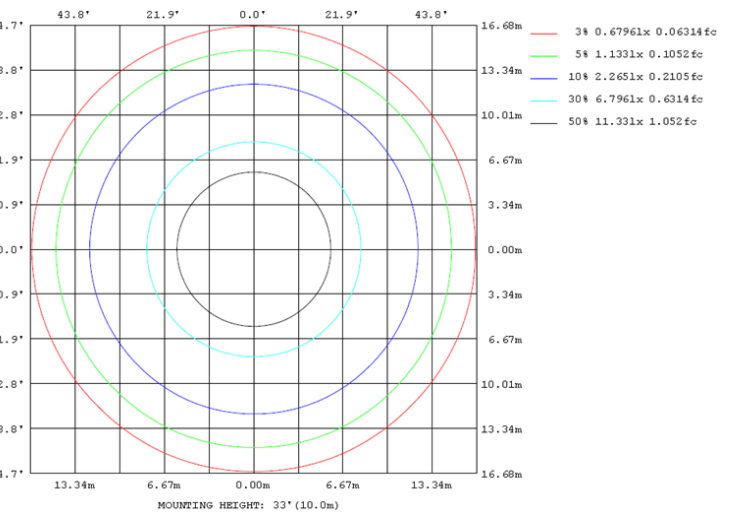
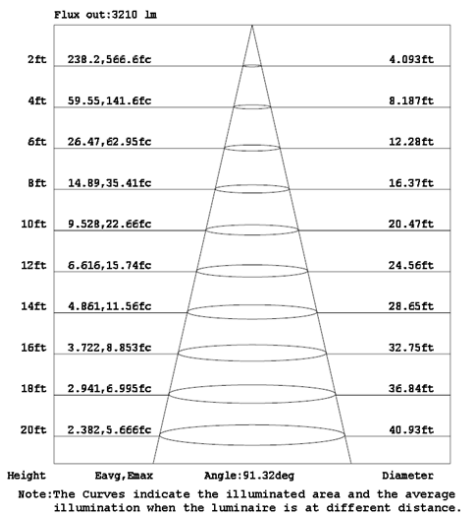
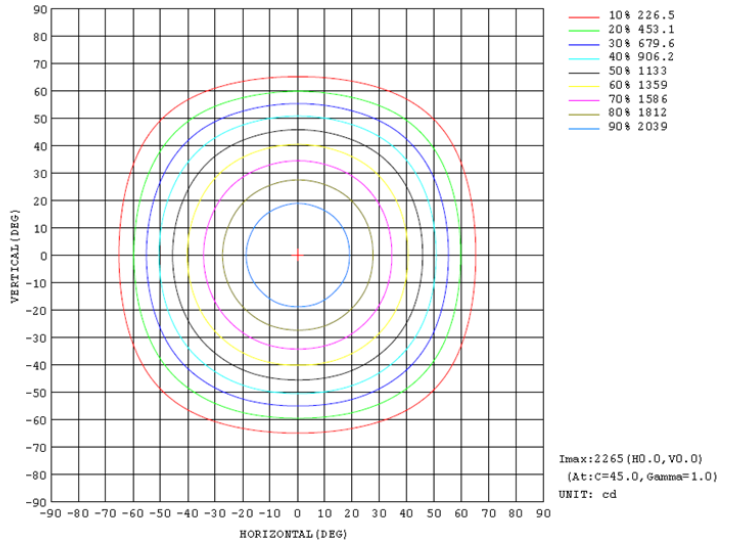
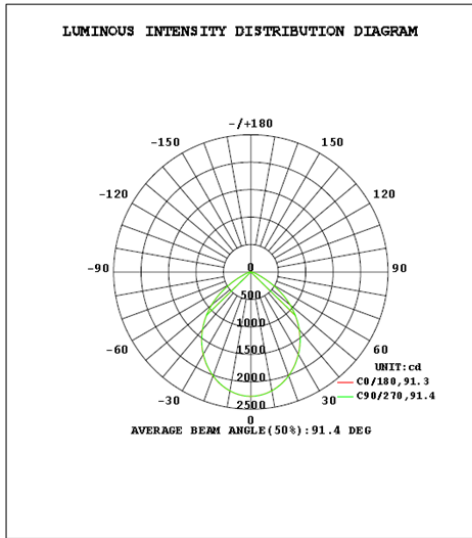


Table--1

UNIT: cd

γ (DEG)	C(DEG)															
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265
5	2248	2250	2250	2249	2247	2248	2246	2246	2245	2245	2247	2246	2247	2247	2249	2249
10	2200	2204	2201	2202	2199	2199	2195	2194	2195	2195	2197	2195	2198	2198	2202	2201
15	2122	2126	2123	2123	2118	2119	2114	2115	2115	2114	2117	2114	2118	2119	2124	2123
20	2016	2020	2017	2017	2012	2014	2008	2007	2010	2005	2010	2008	2014	2014	2021	2020
25	1888	1893	1889	1888	1884	1883	1877	1876	1880	1876	1880	1878	1884	1885	1893	1893
30	1737	1743	1737	1738	1731	1732	1724	1724	1728	1724	1729	1726	1734	1734	1743	1741
35	1567	1573	1567	1569	1561	1562	1553	1554	1559	1554	1561	1558	1566	1566	1575	1573
40	1376	1381	1375	1378	1370	1371	1362	1363	1367	1363	1370	1367	1376	1375	1383	1381
45	1165	1171	1165	1169	1160	1161	1150	1153	1158	1153	1161	1159	1168	1165	1174	1171
50	937	943	937	941	933	935	924	925	932	926	935	933	942	939	947	944
55	688	694	688	694	685	688	677	680	687	680	691	686	696	692	702	697
60	436	441	435	440	432	437	428	432	440	433	439	434	443	439	449	445
65	231	230	228	227	227	227	227	227	232	231	231	231	231	233	234	235
70	120	121	120	121	119	121	120	122	124	122	124	122	123	121	123	122
75	69.6	70.6	69.7	70.6	69.9	71.0	70.2	71.2	72.5	71.2	71.9	70.7	71.5	70.4	71.5	70.7
80	42.9	43.7	43.1	43.9	43.1	43.9	43.4	43.9	44.6	43.8	44.2	43.4	43.9	43.2	44.0	43.5
85	18.3	19.0	18.7	19.3	18.8	19.3	18.8	19.2	19.8	19.1	19.4	18.8	19.2	18.7	19.3	18.9
90	0.83	0.83	0.84	0.83	0.84	0.84	0.85	0.84	0.77	0.76	0.74	0.75	0.73	0.75	0.73	0.75

## 2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-06-20	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CR10	3000K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150007	120.0	60	0.308	36.80	0.996

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

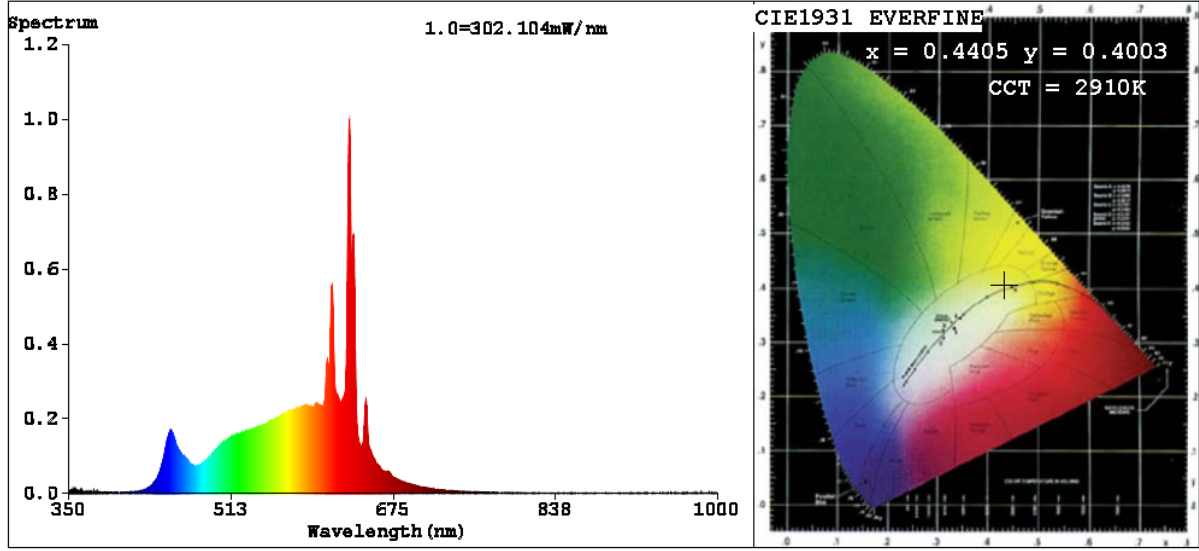
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	90
Frequency (Hz)	60	R2	98	R10	99
CCT (K)	2910	R3	97	R11	93
Duv	-0.0020	R4	96	R12	85
Chromaticity (x, y)	x=0.4405 y=0.4003	R5	97	R13	97
Chromaticity (u', v')	u'=0.2545 v'=0.5204	R6	94	R14	97
Color Rendering Index (CRI)	96.1	R7	96	R15	99
R9	78	R8	96	--	--
Rg	102				
Rf	93				
Rcs,h1%	-4				

### Photometric Measurement – Goniophotometer Method:

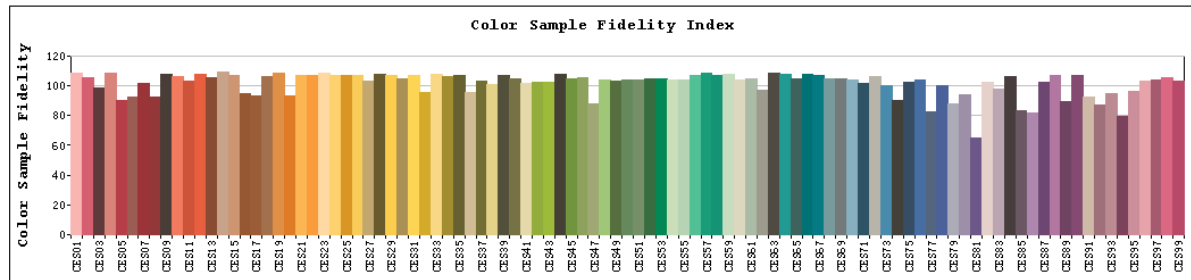
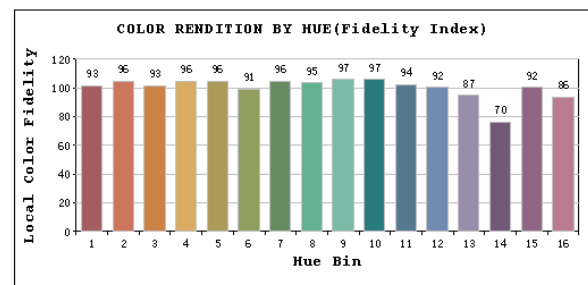
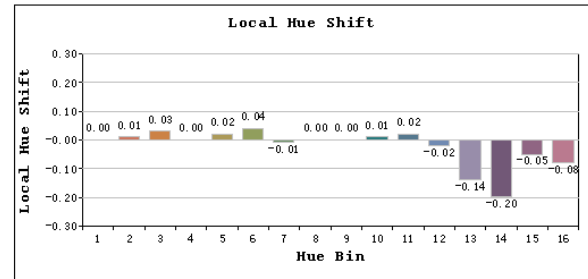
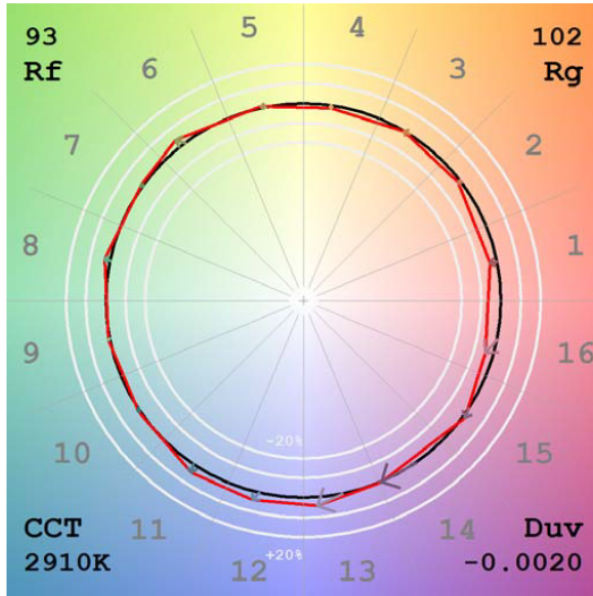
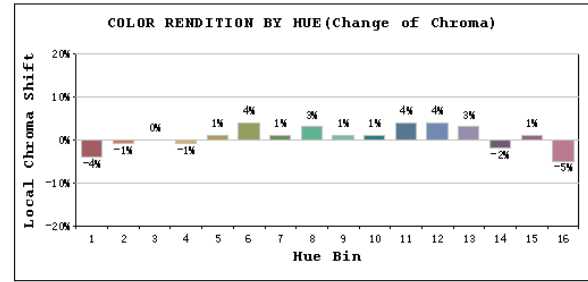
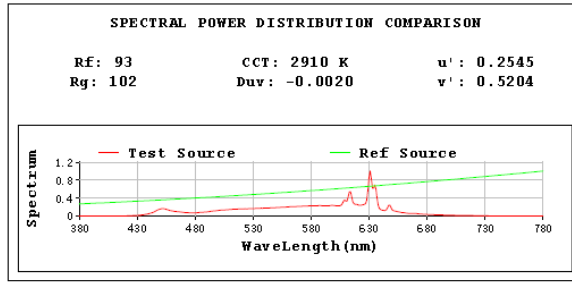
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	4665.4
Luminous Efficacy (lm/W)	126.78

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4621.0
Luminous Efficacy (lm/W)	126.74

# Spectral Power Distribution & Chromaticity Diagram



# TM30



**2.1.3 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-06-20	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	CR10	3500K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202406150007	120.0	60	0.303	36.20	0.996

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

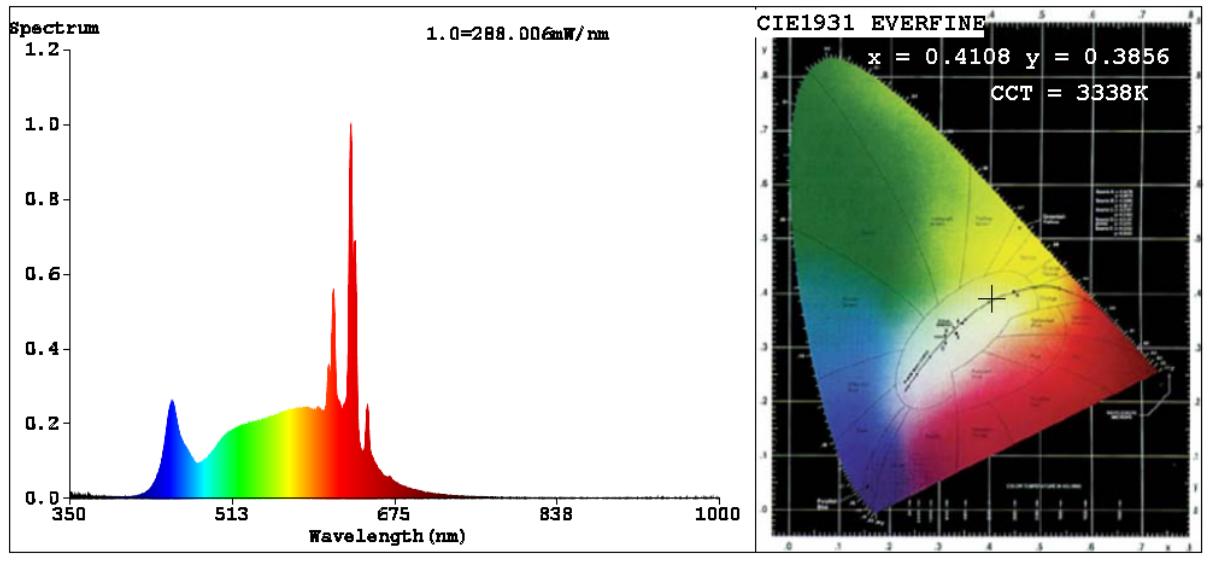
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	90
Frequency (Hz)	60	R2	98	R10	99
CCT (K)	3338	R3	97	R11	93
Duv	-0.0034	R4	96	R12	85
Chromaticity (x, y)	x=0.4108 y=0.3856	R5	97	R13	97
Chromaticity (u', v')	u'=0.2415 v'=0.5099	R6	94	R14	97
Color Rendering Index (CRI)	96.3	R7	96	R15	99
R9	90	R8	96	--	--
Rg	103				
Rf	93				
Rcs,h1%	-2				

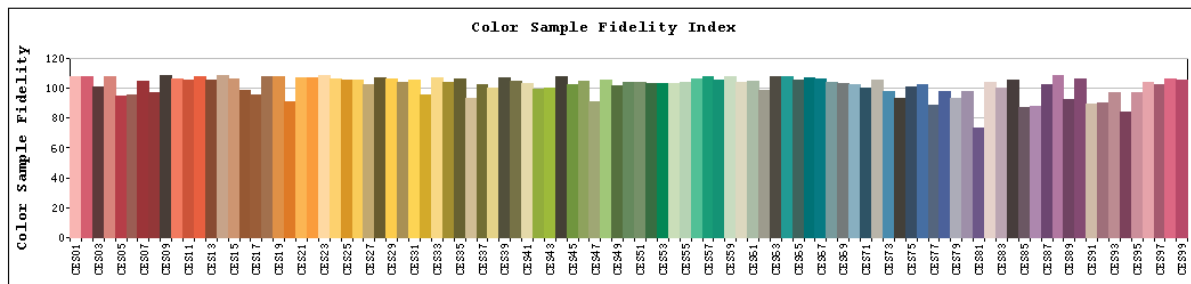
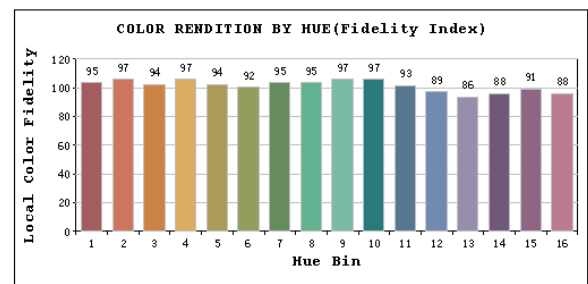
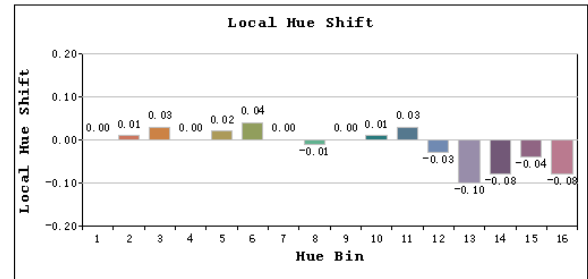
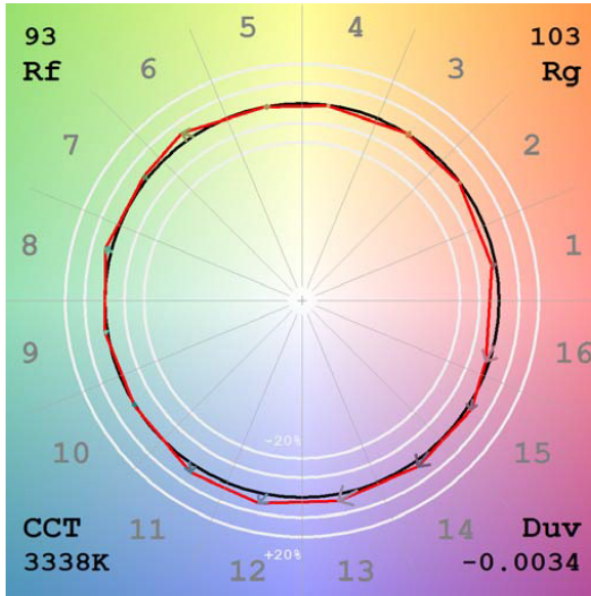
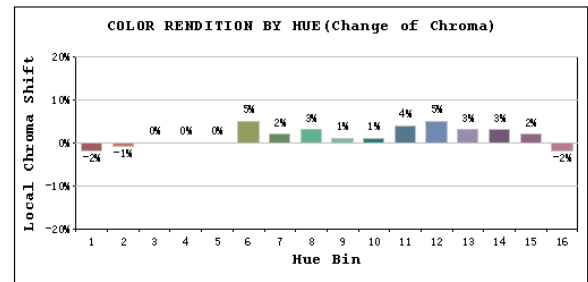
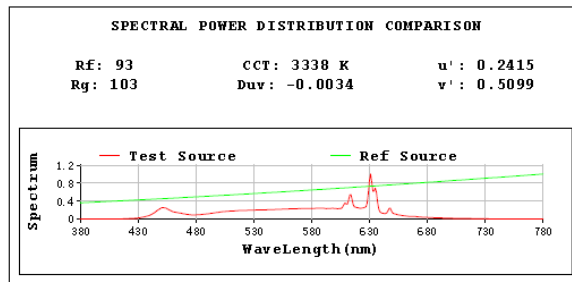
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	4855.9
Luminous Efficacy (lm/W)	134.14

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4806.0
Luminous Efficacy (lm/W)	134.06

# Spectral Power Distribution & Chromaticity Diagram





**2.1.4 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-06-20	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	CR10	4000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202406150007	120.0	60	0.304	36.40	0.996

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

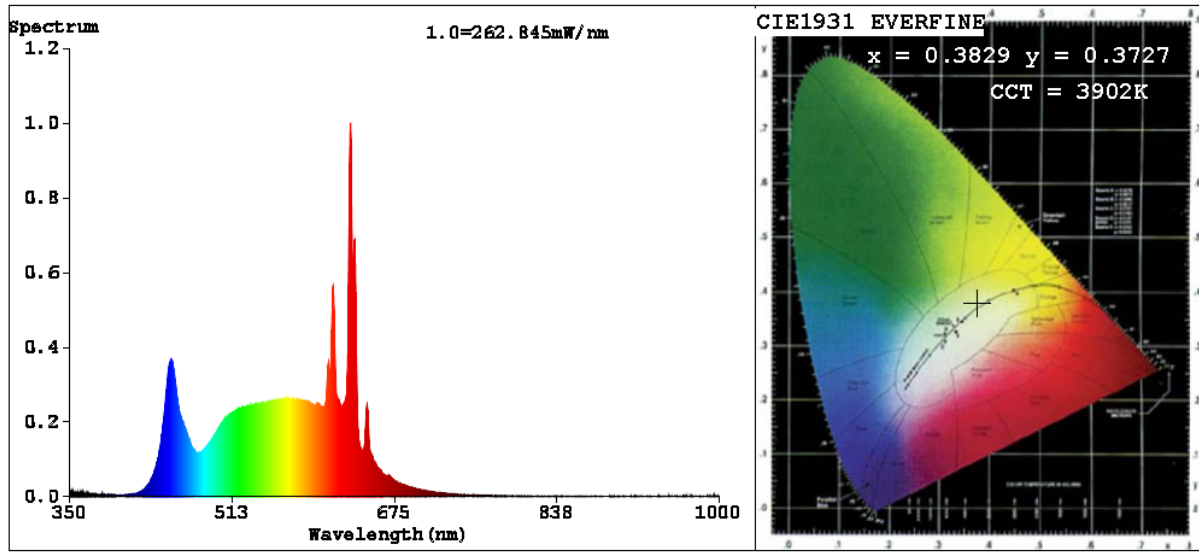
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	89
Frequency (Hz)	60	R2	97	R10	97
CCT (K)	3937	R3	99	R11	99
Duv	-0.0025	R4	97	R12	75
Chromaticity (x, y)	x=0.3815 y=0.3721	R5	96	R13	97
Chromaticity (u', v')	u'=0.2277 v'=0.4997	R6	93	R14	99
Color Rendering Index (CRI)	95.7	R7	93	R15	97
R9	89	R8	93	--	--
Rg	100				
Rf	91				
Rcs,h1%	-3				

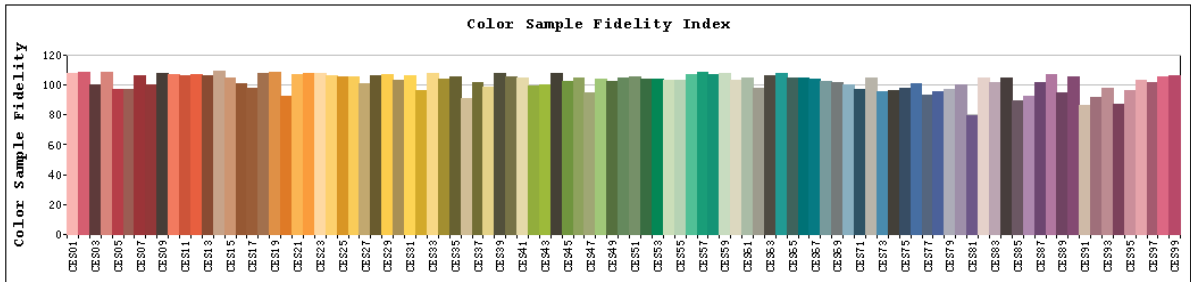
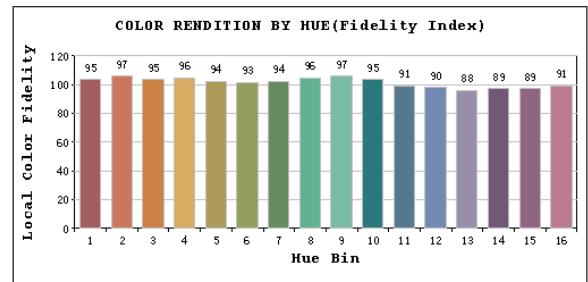
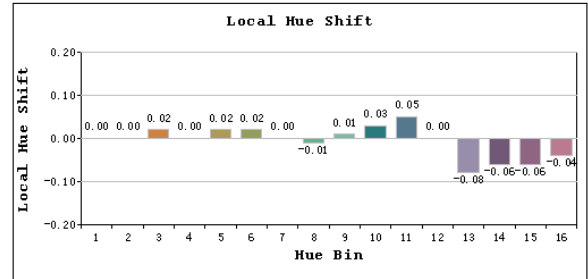
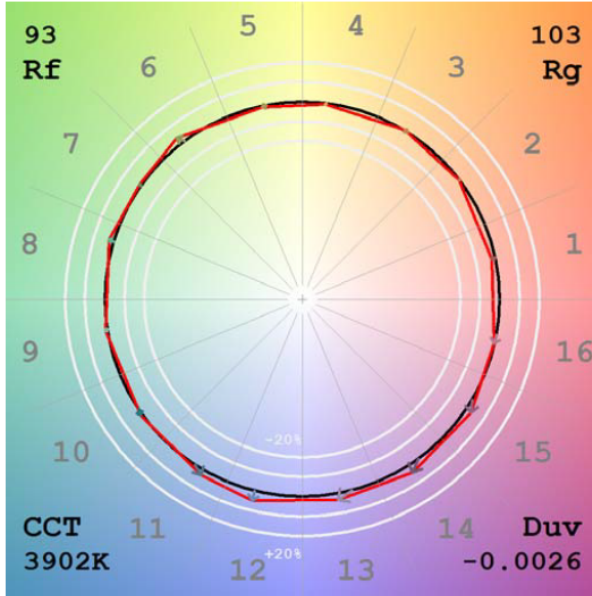
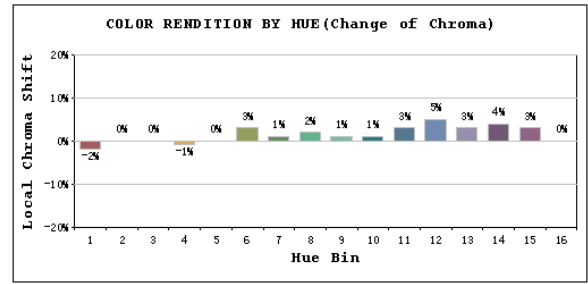
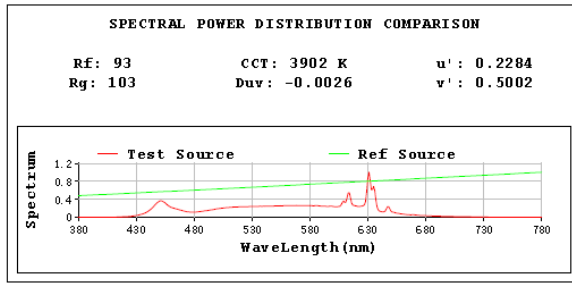
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	4954.3
Luminous Efficacy (lm/W)	136.11

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4898.0
Luminous Efficacy (lm/W)	135.94

# Spectral Power Distribution & Chromaticity Diagram





**2.1.5 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-06-20	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	CR10	5000K	

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202406150007	120.0	60	0.307	36.70	0.996

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

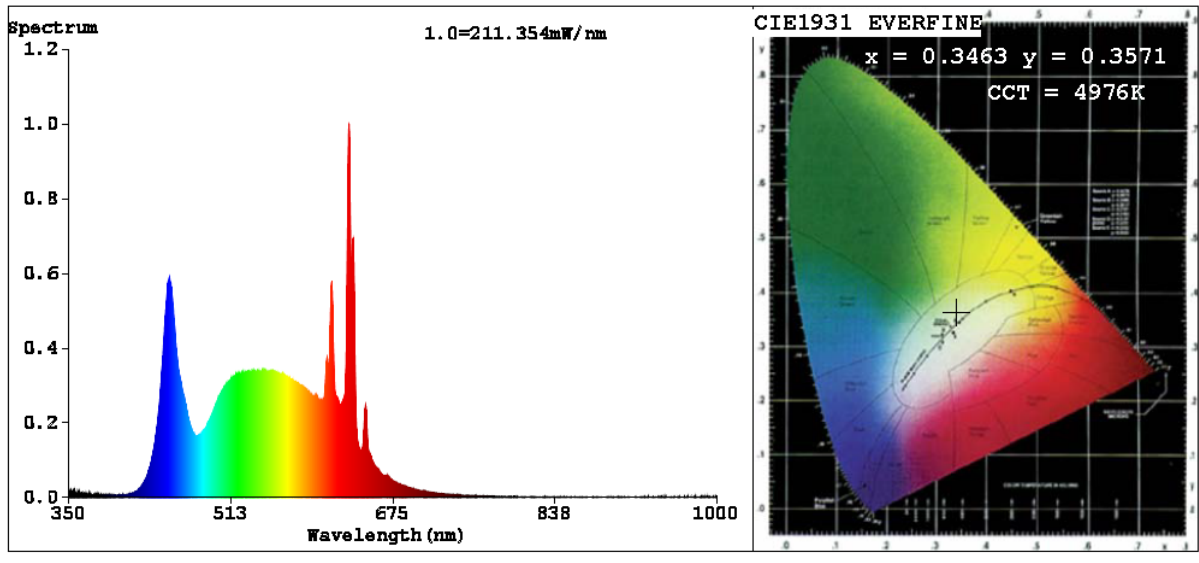
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	88
Frequency (Hz)	60	R2	96	R10	88
CCT (K)	4976	R3	92	R11	95
Duv	0.0023	R4	97	R12	69
Chromaticity (x, y)	x=0.3463 y=0.3571	R5	96	R13	97
Chromaticity (u', v')	u'=0.2101 v'=0.4875	R6	93	R14	95
Color Rendering Index (CRI)	95.8	R7	99	R15	96
R9	88	R8	97	--	--
Rg	102				
Rf	93				
Rcs,h1%	-3				

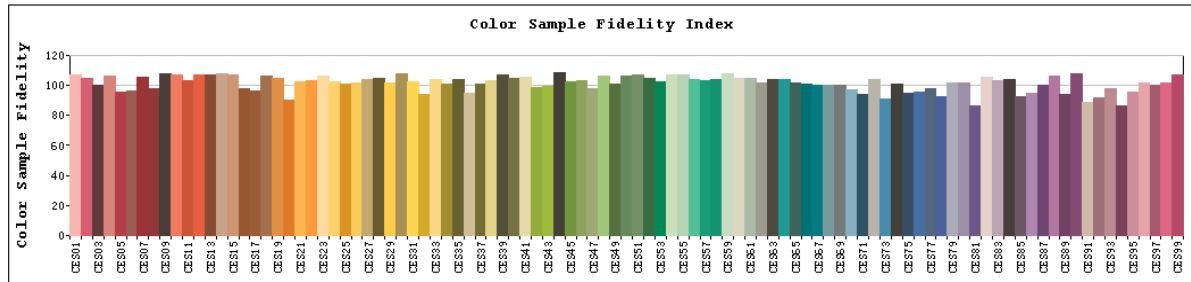
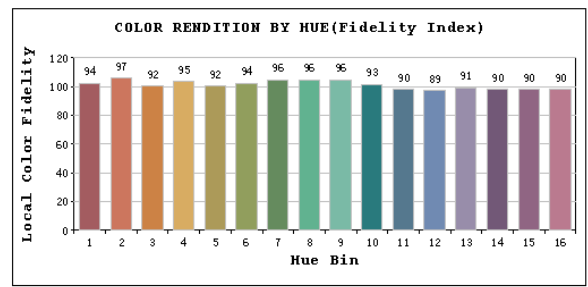
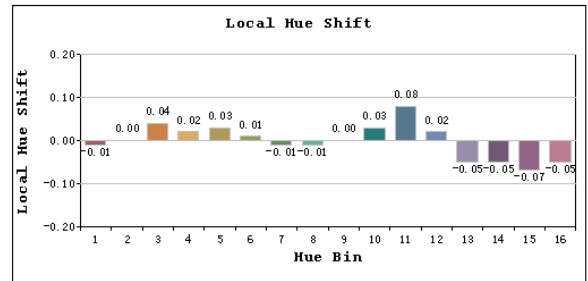
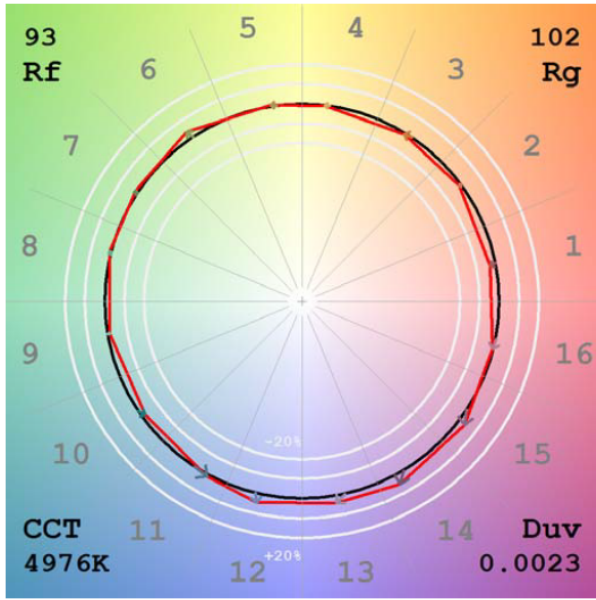
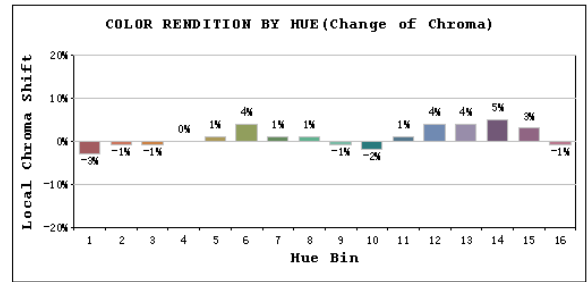
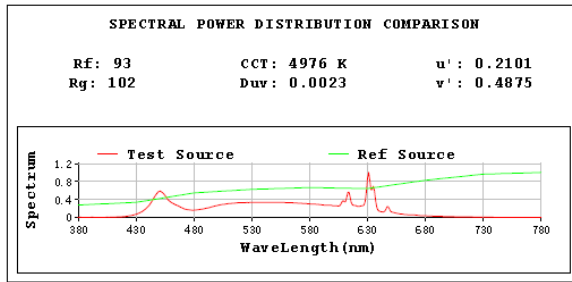
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	4924.2
Luminous Efficacy (lm/W)	134.18

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4879.0
Luminous Efficacy (lm/W)	134.22

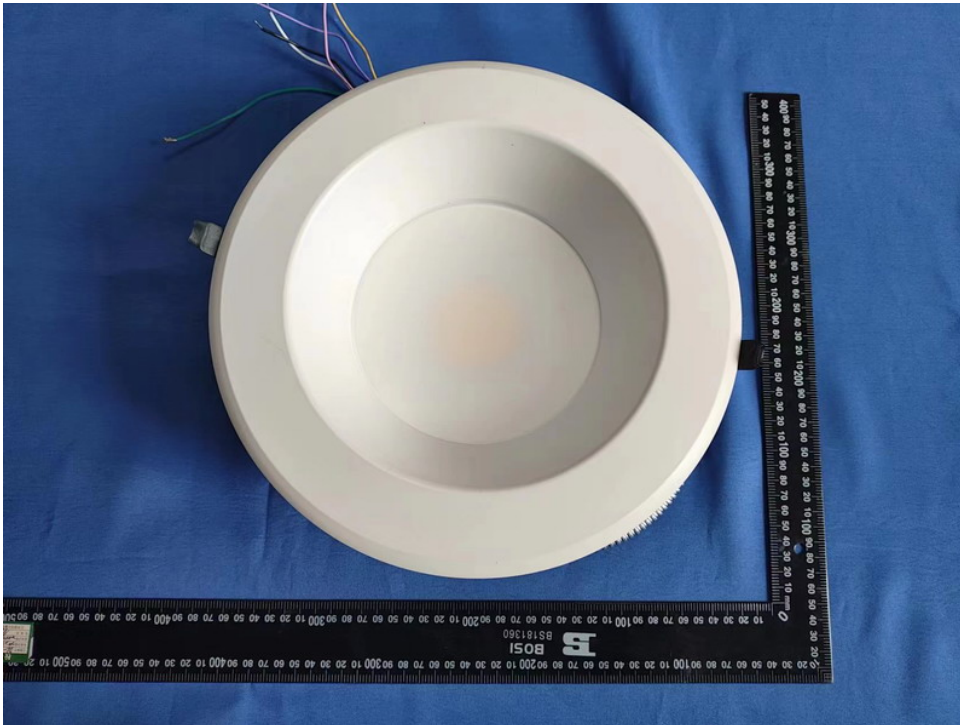
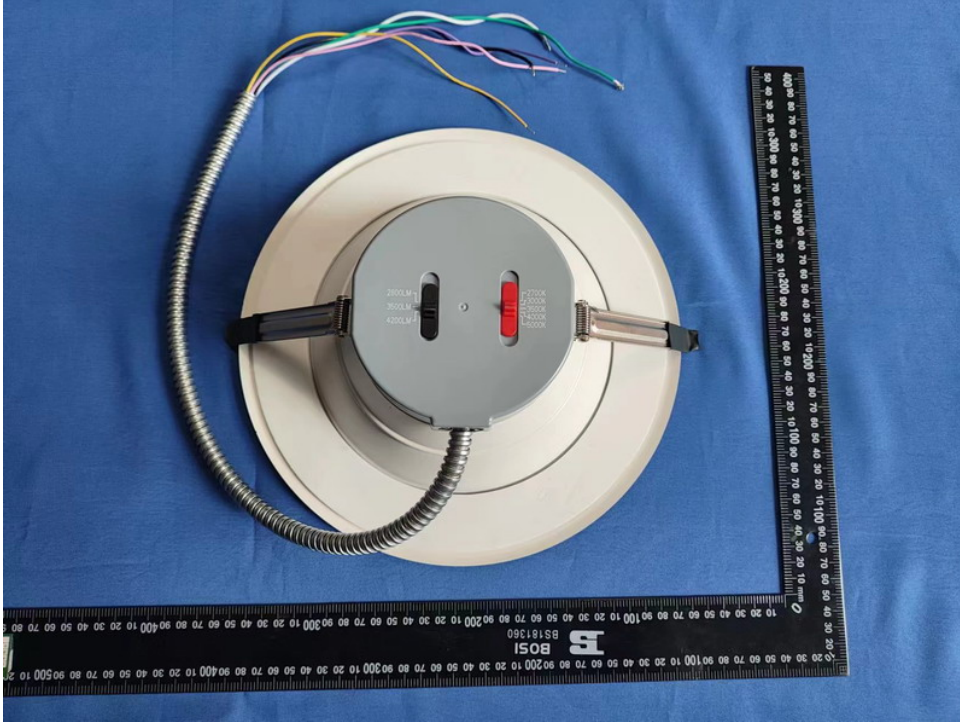
# Spectral Power Distribution & Chromaticity Diagram





Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
CR10	24W-2700K setting	120	2850.5	23.40	121.82
		277	2857.0	24.03	118.89
	30W-2700K setting	120	3581.9	29.70	120.60
		277	3555.0	29.84	119.14
	37W-2700K setting	120	4502.1	36.60	123.01
		277	4453.0	36.18	123.08
	37W-3000K setting	120	4665.4	36.80	126.78
		277	4621.0	36.46	126.74
	37W-3500K setting	120	4855.9	36.20	134.14
		277	4806.0	35.85	134.06
	37W-4000K setting	120	4954.3	36.40	136.11
		277	4898.0	36.03	135.94
	37W-5000K setting	120	4924.2	36.70	134.18
		277	4879.0	36.35	134.22

### 3. Product Photo



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