

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): CR6

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

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 60 Hz
Nominal Power	21.0W/17.0W/10.0 W
Rated Initial Lamp Lumen	2500lm/1800lm/1000lm (mode2700K)
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	2024-06-20	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CR6	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150005	120.0	60	0.170	20.30	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

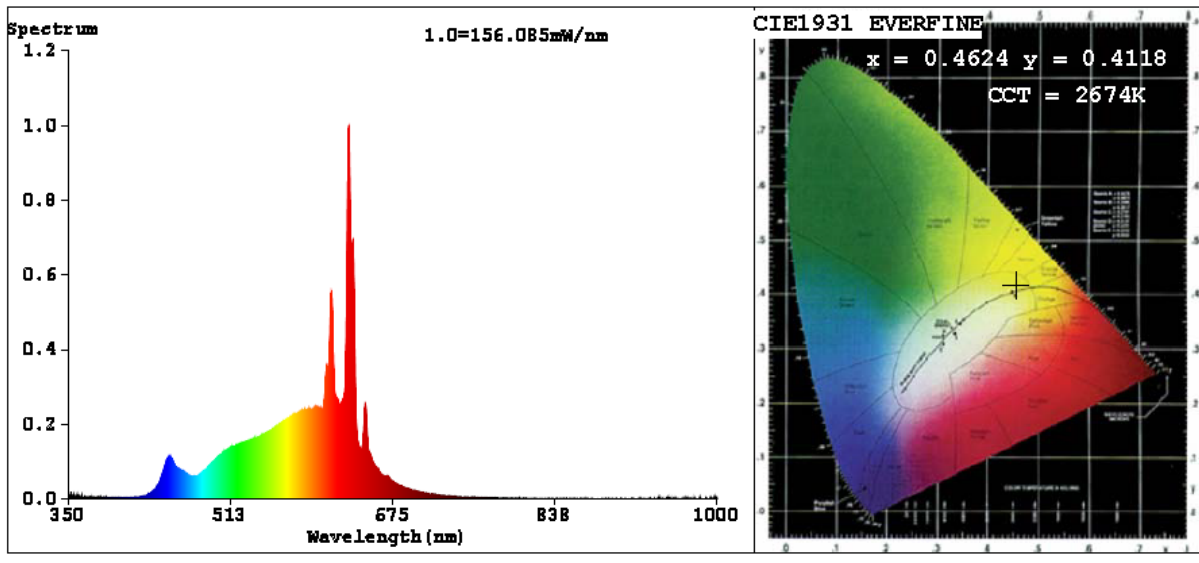
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	99	R9	69
Frequency (Hz)	60	R2	100	R10	98
CCT (K)	2674	R3	100	R11	96
Duv	0.0002	R4	100	R12	91
Chromaticity (x, y)	x=0.4624 y=0.4118	R5	99	R13	100
Chromaticity (u', v')	u'=0.2636 v'=0.5282	R6	94	R14	98
Color Rendering Index (CRI)	96.2	R7	92	R15	94
R9	69	R8	86	--	--
Rg	99				
Rf	93				
Rcs,h1%	-5				

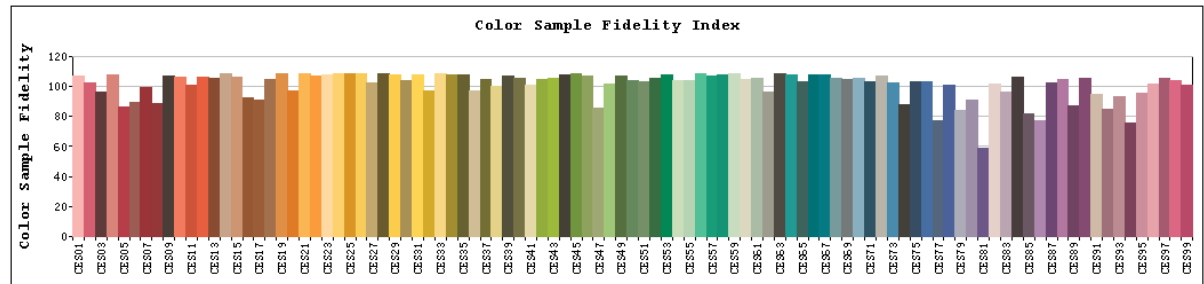
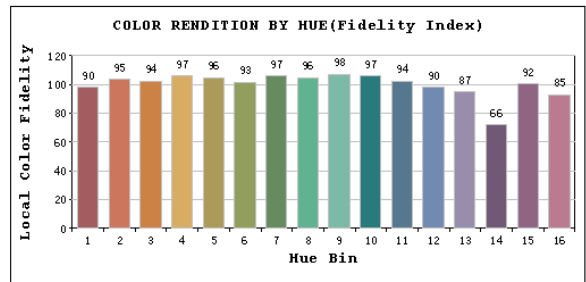
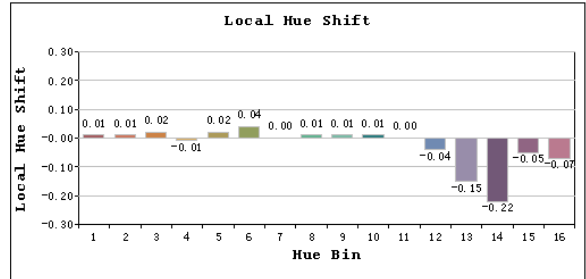
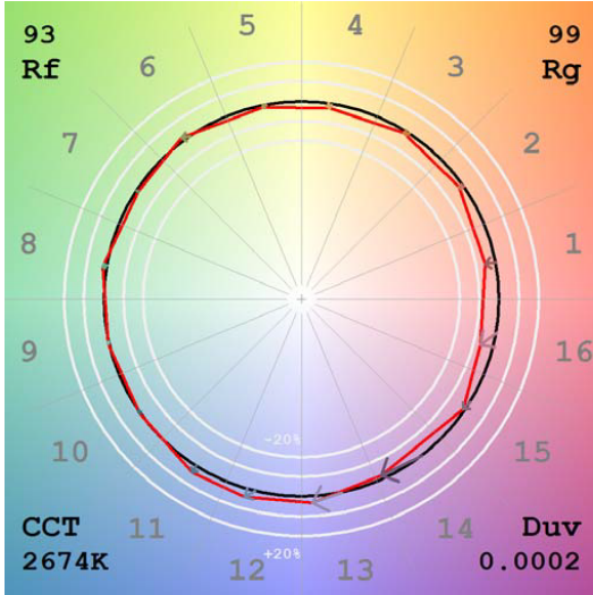
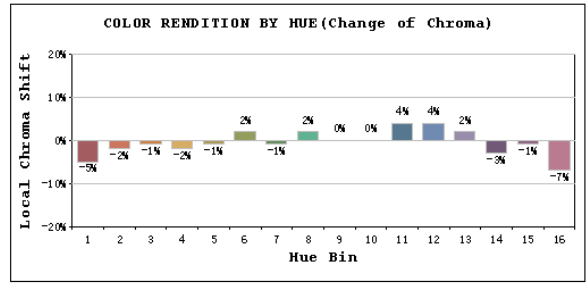
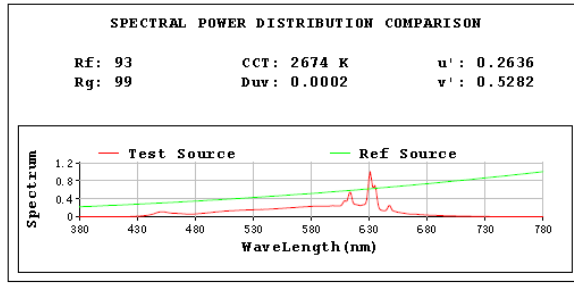
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2511.3
Luminous Efficacy (lm/W)	123.71
Beam Angle (°)	85.4
Center Beam Candle Power (cd)	1378.0

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2438.0
Luminous Efficacy (lm/W)	122.70

Spectral Power Distribution & Chromaticity Diagram





Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1012.0	40.3%
0-40	1578.8	62.9%
0-60	2320.3	92.4%
60-90	191.0	7.6%
70-100	72.8	2.9%
90-120	0.0	0.0%
0-90	2511.3	100.0%
90-180	0.0	0.0%
0-180	2511.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	129.5	5.2%	90-100	0.0	0.0%
10-20	361.7	14.4%	100-110	0.0	0.0%
20-30	520.8	20.7%	110-120	0.0	0.0%
30-40	566.8	22.6%	120-130	0.0	0.0%
40-50	471.9	18.8%	130-140	0.0	0.0%
50-60	269.6	10.7%	140-150	0.0	0.0%
60-70	118.2	4.7%	150-160	0.0	0.0%
70-80	56.9	2.3%	160-170	0.0	0.0%
80-90	15.9	0.6%	170-180	0.0	0.0%

Photometric Data

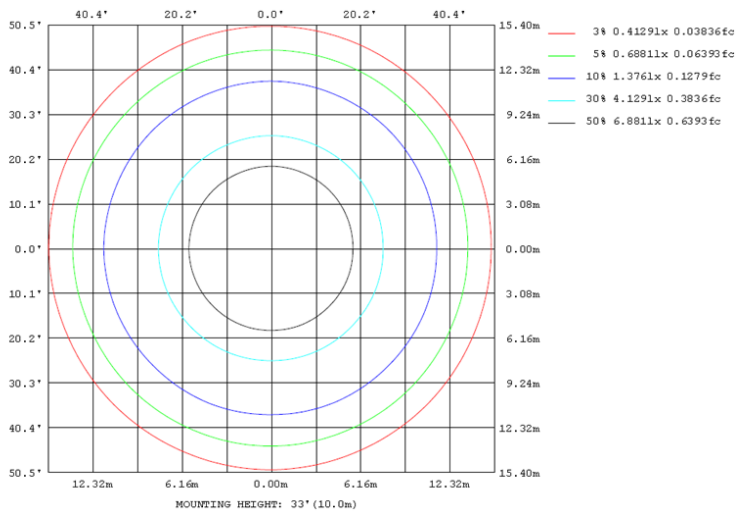
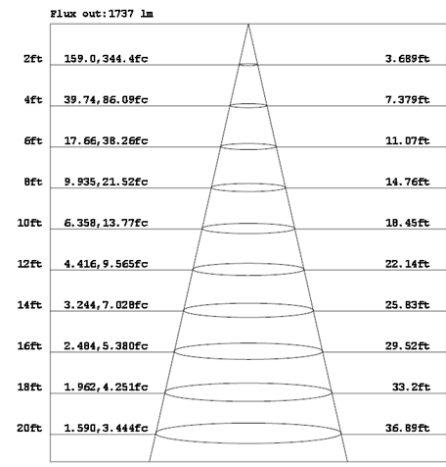
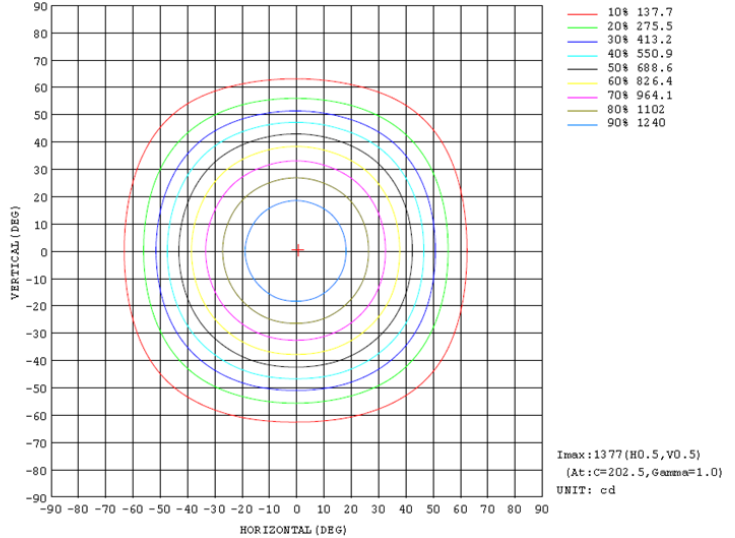
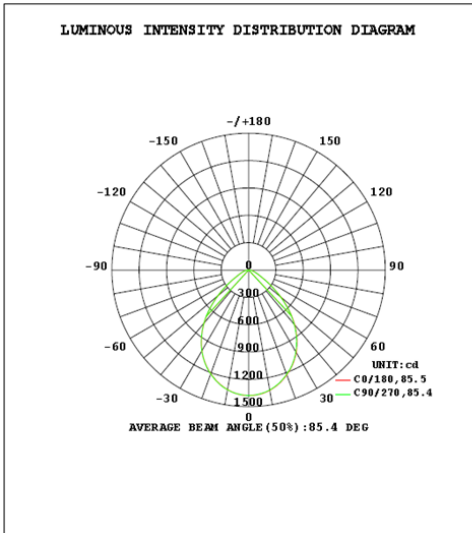


Table--1

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	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377	1377
5	1365	1366	1366	1366	1366	1367	1367	1368	1368	1368	1367	1368	1366	1365	1366	1365
10	1332	1335	1334	1334	1335	1336	1337	1339	1340	1339	1339	1336	1338	1336	1336	1334
15	1280	1282	1282	1282	1284	1287	1286	1289	1291	1290	1290	1286	1288	1284	1285	1282
20	1211	1212	1211	1214	1213	1217	1217	1221	1224	1221	1222	1218	1219	1215	1216	1215
25	1127	1129	1127	1131	1130	1134	1135	1140	1144	1141	1141	1138	1138	1134	1135	1132
30	1022	1025	1022	1026	1025	1030	1031	1038	1043	1040	1041	1036	1037	1031	1033	1028
35	900	903	899	903	901	908	909	917	924	921	922	916	917	910	911	906
40	760	763	759	763	762	770	770	779	786	783	785	778	779	771	772	766
45	601	606	601	607	605	614	614	622	630	627	630	622	623	615	616	610
50	437	442	438	445	442	450	449	458	466	462	464	457	458	450	451	445
55	287	286	289	288	292	293	298	299	306	308	305	305	301	299	295	293
60	172	174	172	175	175	179	179	183	187	185	188	187	185	180	180	175
65	111	112	111	113	113	115	114	116	119	118	119	118	118	116	116	113
70	75.9	76.8	76.3	77.8	77.5	78.9	78.4	79.8	81.1	80.4	81.0	79.9	80.2	78.6	78.6	77.3
75	51.7	52.5	52.2	53.2	53.0	53.9	53.8	54.6	55.3	54.6	54.7	53.8	53.8	52.8	53.0	52.4
80	30.8	31.6	31.5	32.4	32.3	33.2	33.0	33.7	34.3	33.5	33.6	32.6	32.6	31.7	31.9	31.3
85	12.5	13.2	13.2	13.9	13.9	14.7	14.5	15.1	15.6	14.9	14.8	14.0	14.0	13.2	13.4	12.9
90	0.50	0.50	0.50	0.49	0.50	0.49	0.51	0.50	0.49	0.48	0.46	0.46	0.44	0.45	0.44	0.46

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	CR6	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150005	120.0	60	0.170	20.40	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

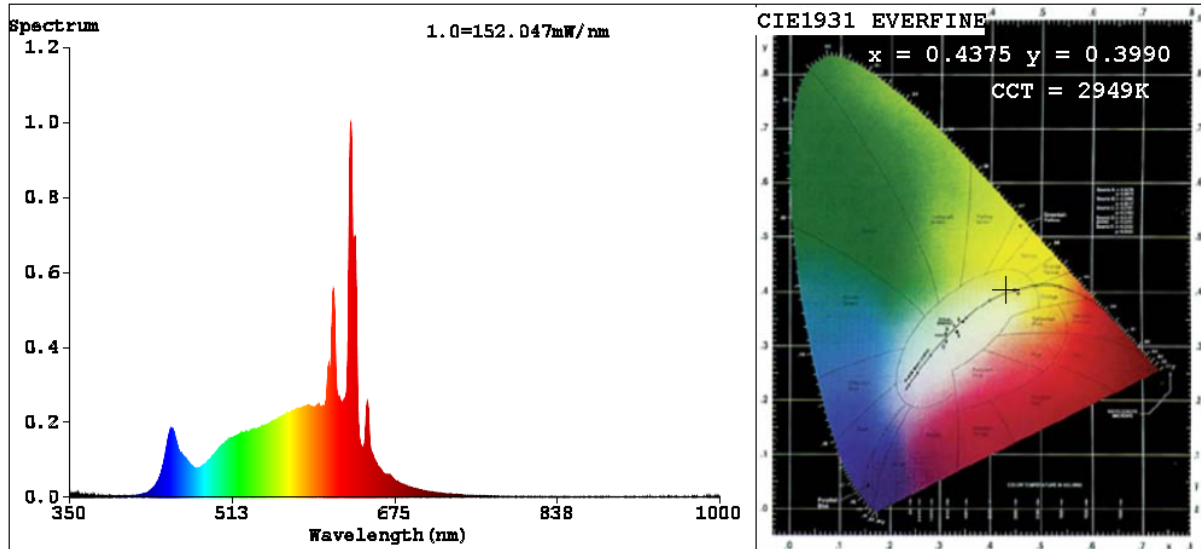
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	80
Frequency (Hz)	60	R2	98	R10	99
CCT (K)	2949	R3	99	R11	94
Duv	-0.0021	R4	98	R12	88
Chromaticity (x, y)	x=0.4375 y=0.3990	R5	98	R13	98
Chromaticity (u', v')	u'=0.2531 v'=0.5194	R6	93	R14	98
Color Rendering Index (CRI)	96.2	R7	94	R15	98
R9	80	R8	91	--	--
Rg	102				
Rf	93				
Rcs,h1%	-4				

Photometric Measurement – Goniophotometer Method:

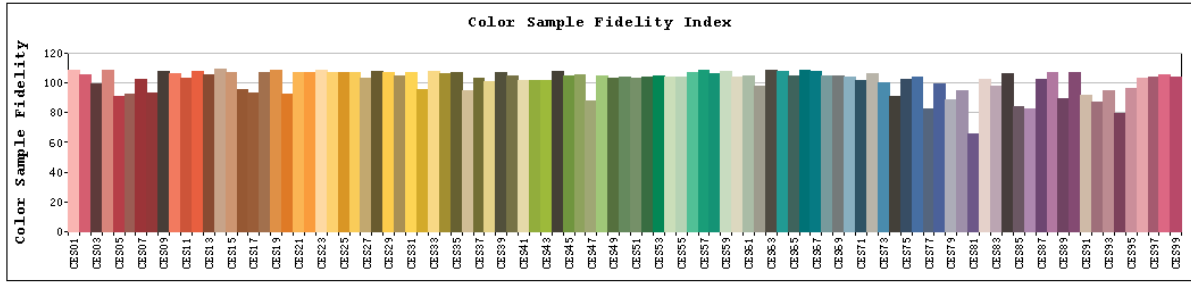
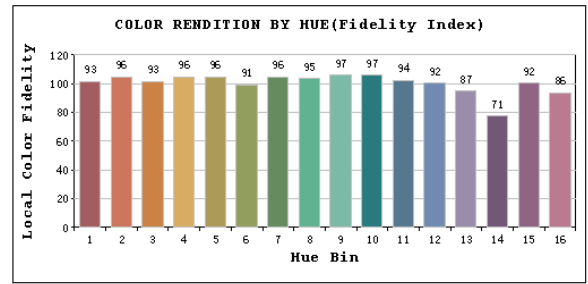
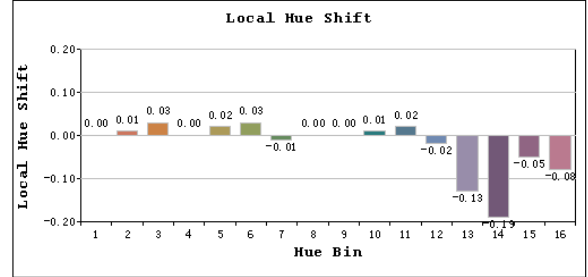
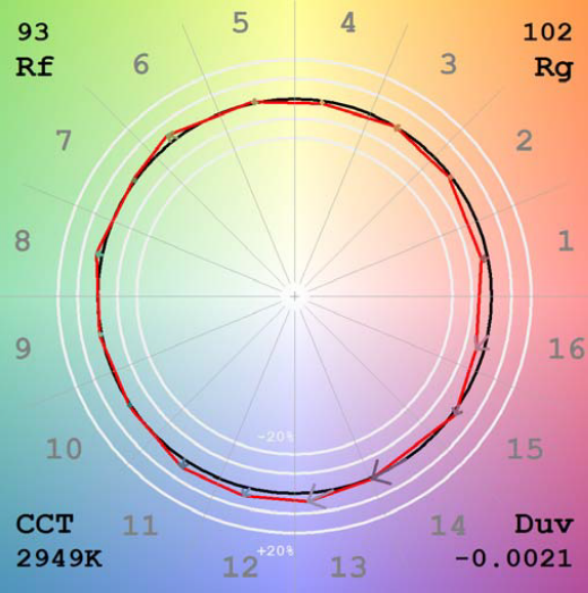
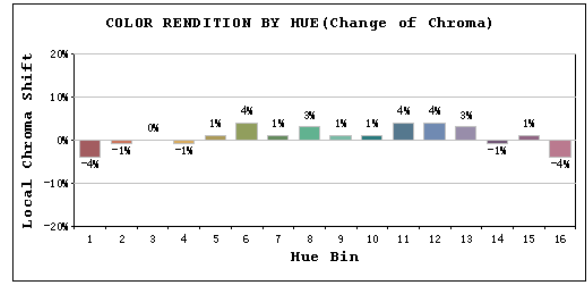
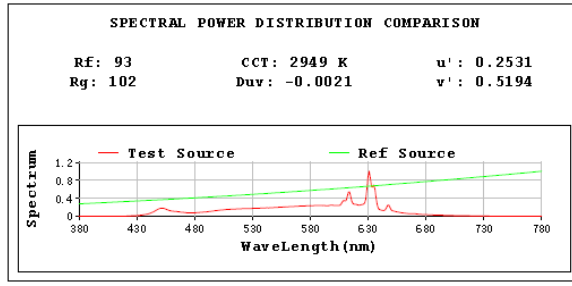
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2596.1
Luminous Efficacy (lm/W)	127.26

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2512.0
Luminous Efficacy (lm/W)	125.73

Spectral Power Distribution & Chromaticity Diagram



TM30



2.1.3 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	CR6	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150005	120.0	60	0.168	20.10	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

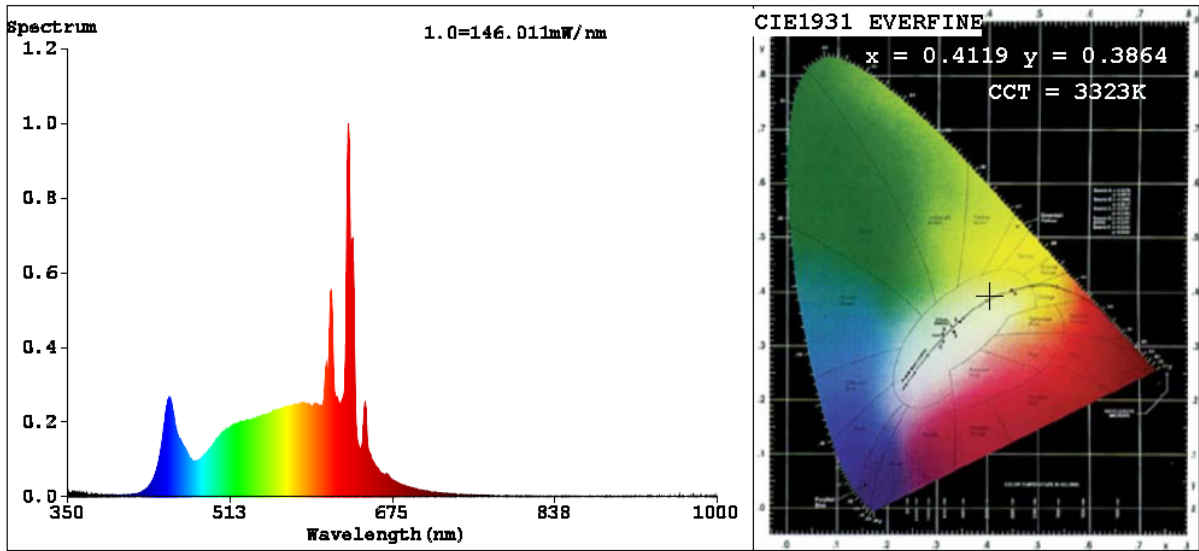
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	89
Frequency (Hz)	60	R2	98	R10	99
CCT (K)	3323	R3	97	R11	93
Duv	-0.0032	R4	97	R12	85
Chromaticity (x, y)	x=0.4119 y=0.3864	R5	97	R13	97
Chromaticity (u', v')	u'=0.2418 v'=0.5105	R6	94	R14	97
Color Rendering Index (CRI)	96.4	R7	96	R15	99
R9	89	R8	96	--	--
Rg	103				
Rf	93				
Rcs,h1%	-2				

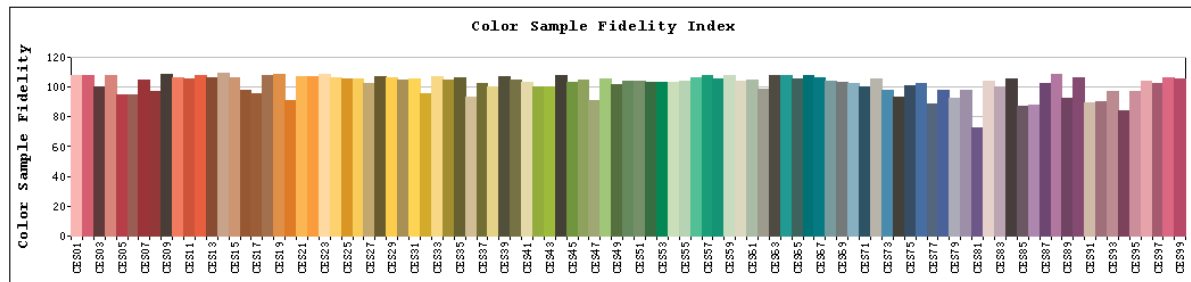
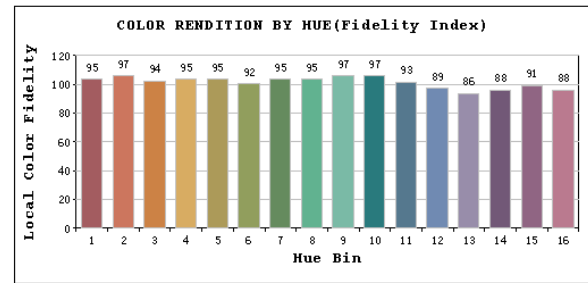
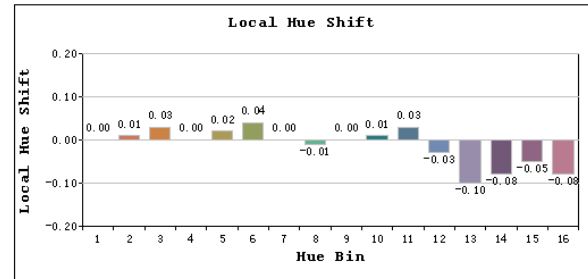
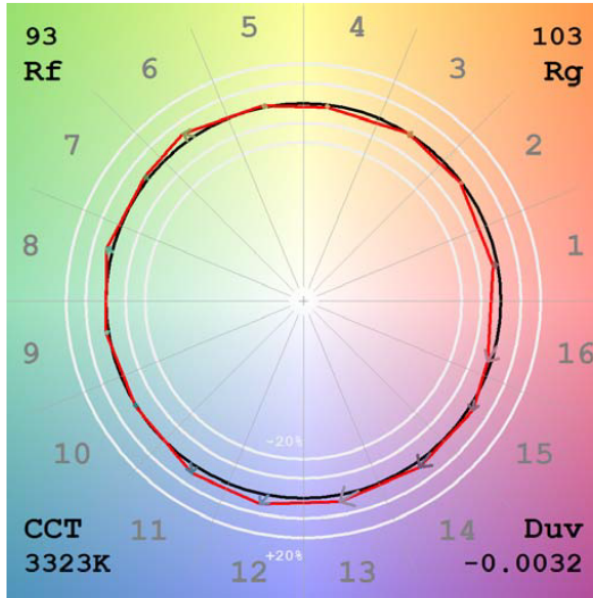
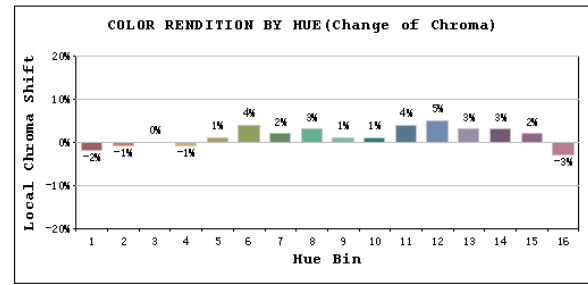
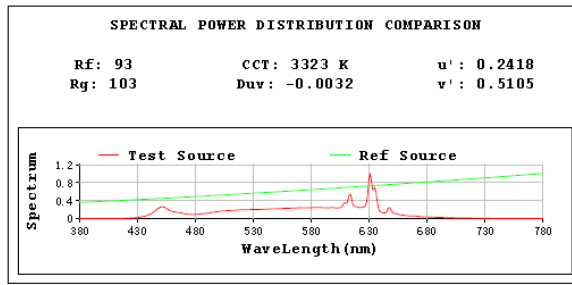
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2676.7
Luminous Efficacy (lm/W)	133.17

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2595.0
Luminous Efficacy (lm/W)	131.86

Spectral Power Distribution & Chromaticity Diagram





2.1.4 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	CR6	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150005	120.0	60	0.168	20.20	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

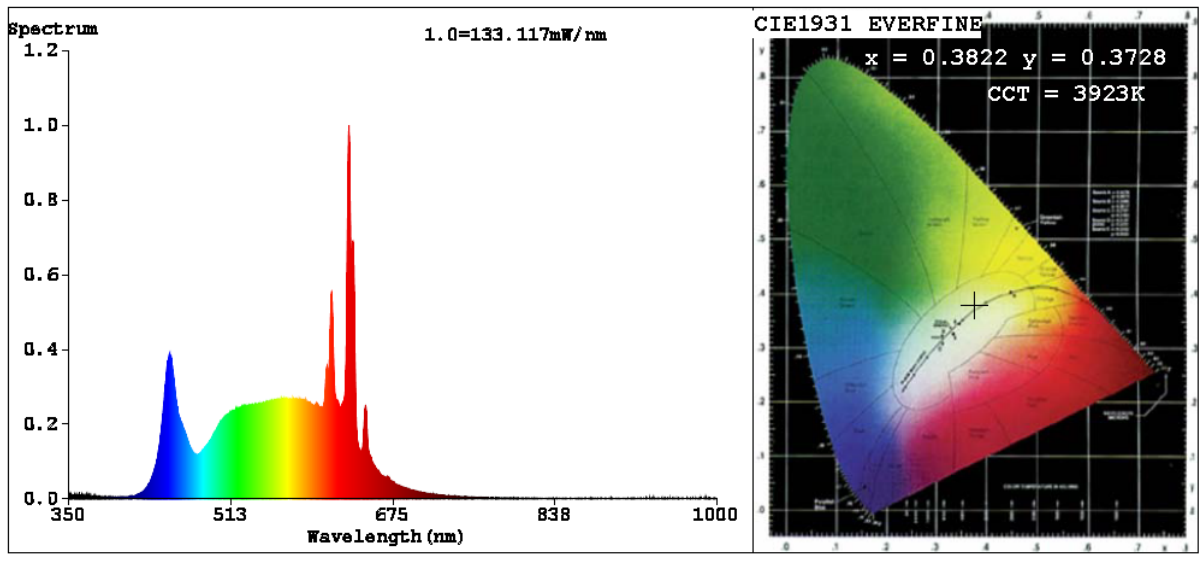
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	95
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	3923	R3	95	R11	93
Duv	-0.0024	R4	96	R12	79
Chromaticity (x, y)	x=0.3822 y=0.3728	R5	98	R13	98
Chromaticity (u', v')	u'=0.2278 v'=0.5001	R6	95	R14	96
Color Rendering Index (CRI)	97.3	R7	98	R15	98
R9	95	R8	99	--	--
Rg	103				
Rf	94				
Rcs,h1%	-2				

Photometric Measurement – Goniophotometer Method:

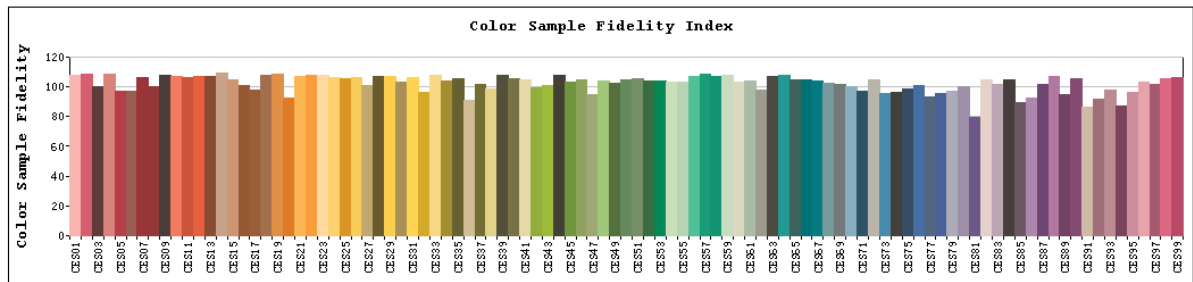
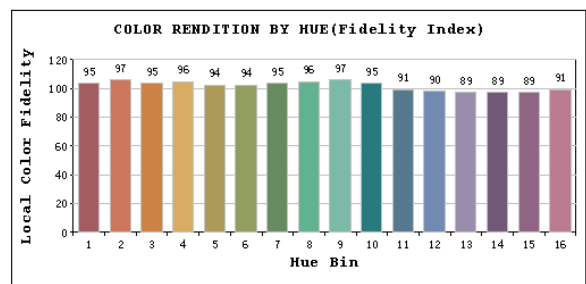
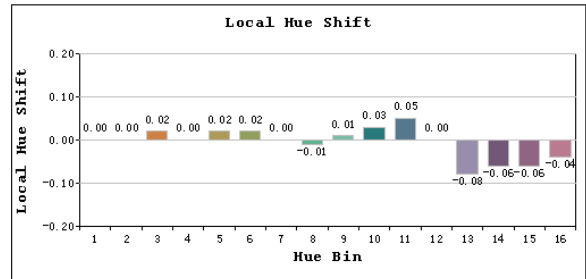
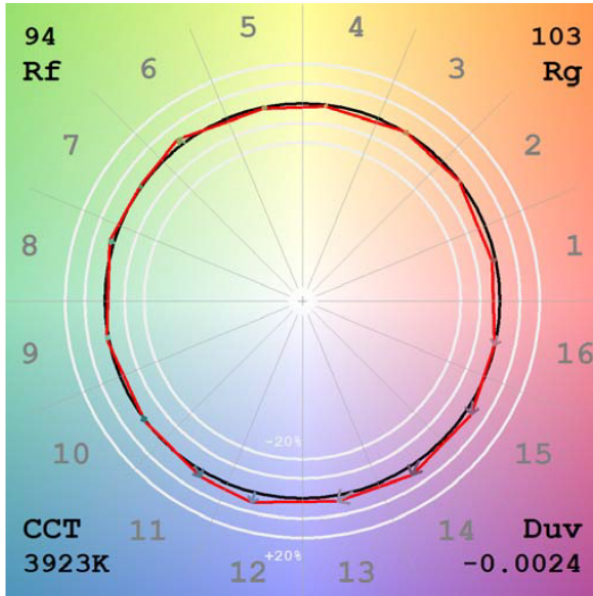
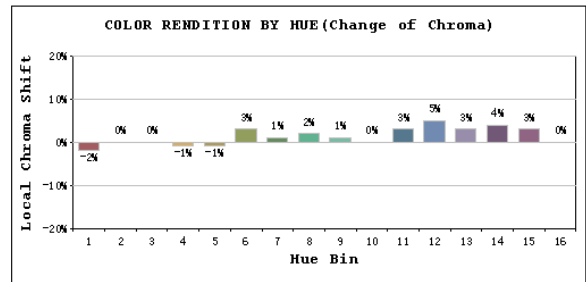
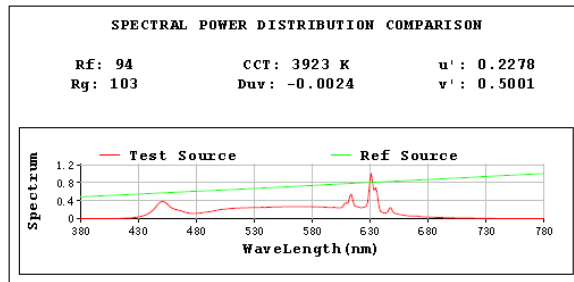
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2731.5
Luminous Efficacy (lm/W)	135.22

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2645.0
Luminous Efficacy (lm/W)	133.92

Spectral Power Distribution & Chromaticity Diagram



TM30



2.1.5 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	CR6	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202406150005	120.0	60	0.170	20.30	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

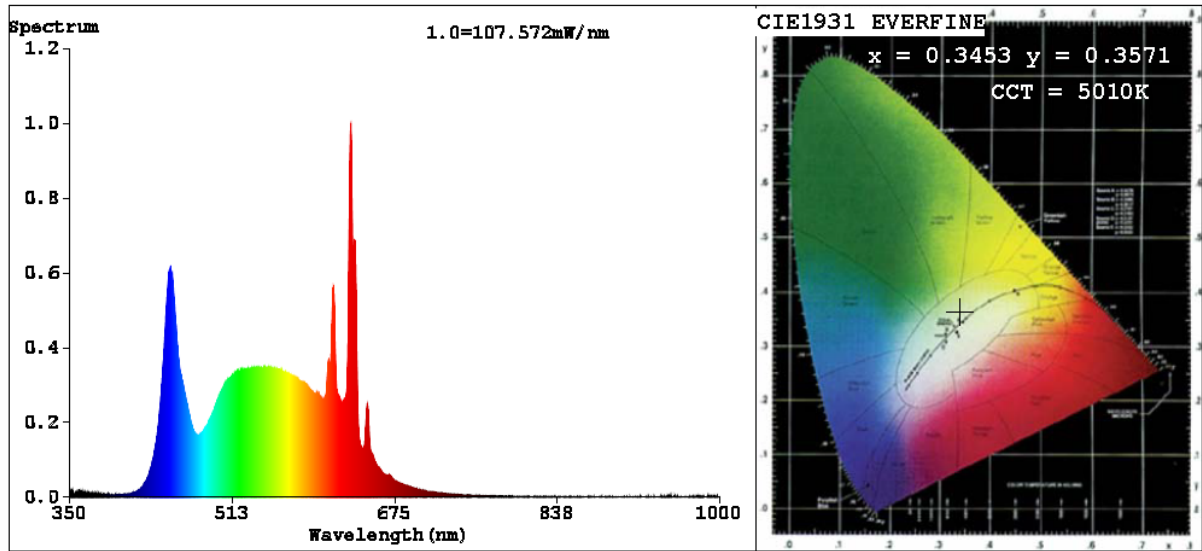
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	86
Frequency (Hz)	60	R2	95	R10	87
CCT (K)	5010	R3	91	R11	94
Duv	0.0026	R4	95	R12	75
Chromaticity (x, y)	x=0.3453 y=0.3571	R5	97	R13	97
Chromaticity (u', v')	u'=0.2095 v'=0.4873	R6	93	R14	94
Color Rendering Index (CRI)	95.3	R7	97	R15	97
R9	86	R8	96	--	--
Rg	102				
Rf	93				
Rcs,h1%	-3				

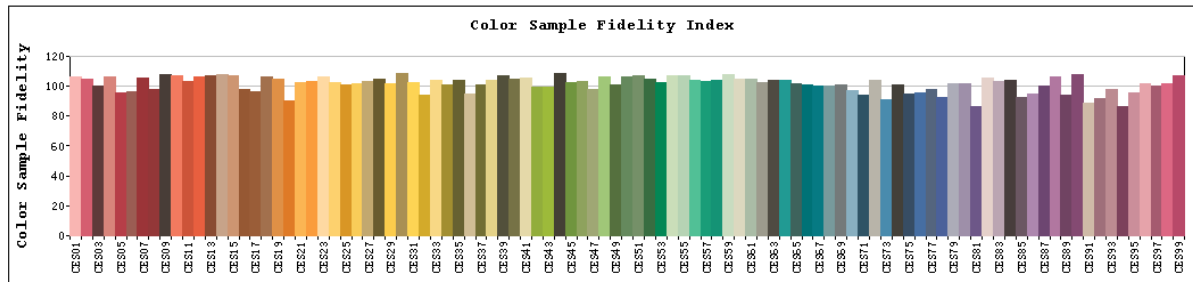
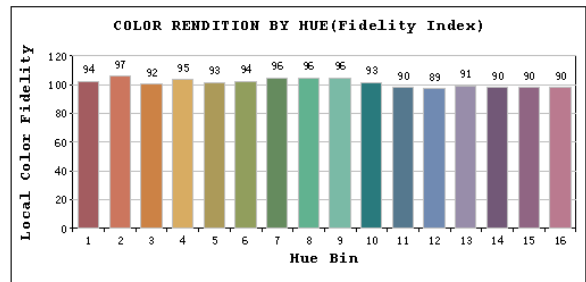
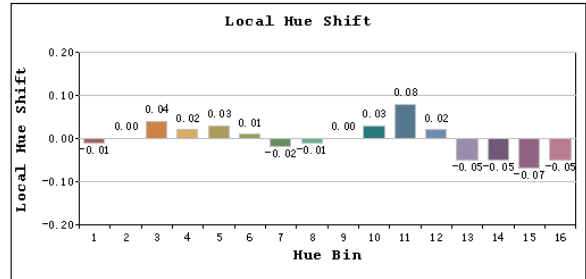
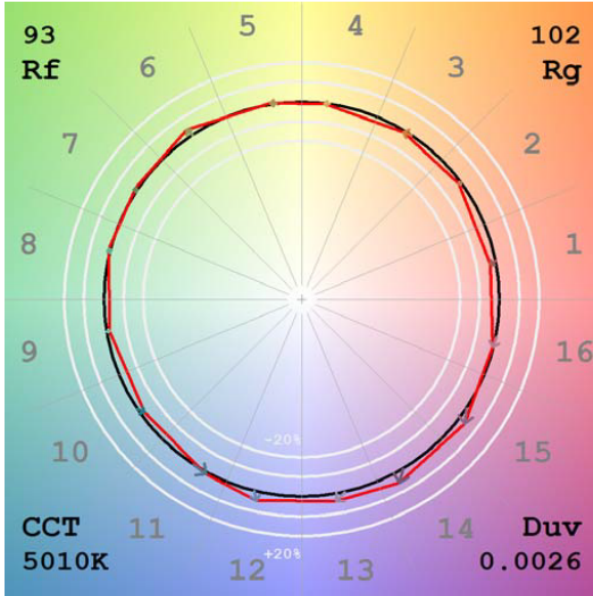
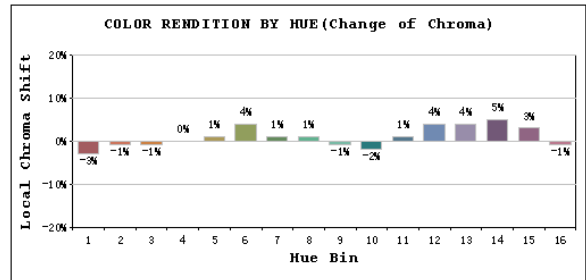
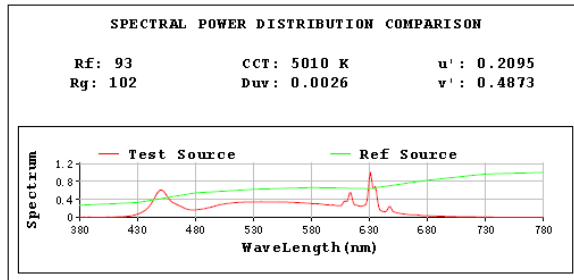
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2724.1
Luminous Efficacy (lm/W)	134.19

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2644.0
Luminous Efficacy (lm/W)	133.20

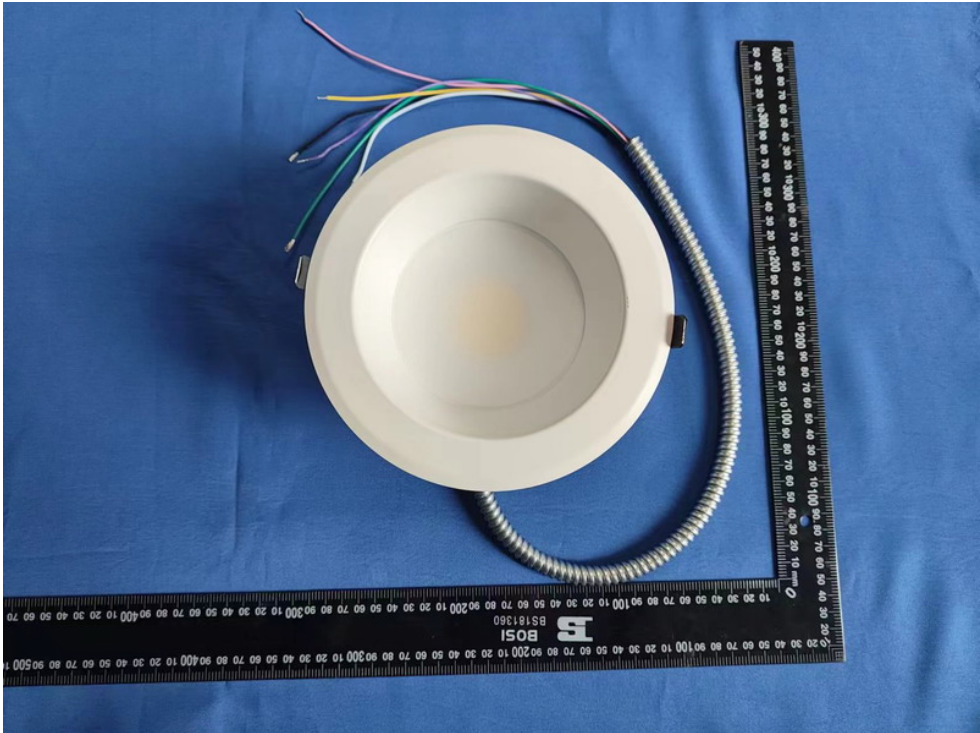
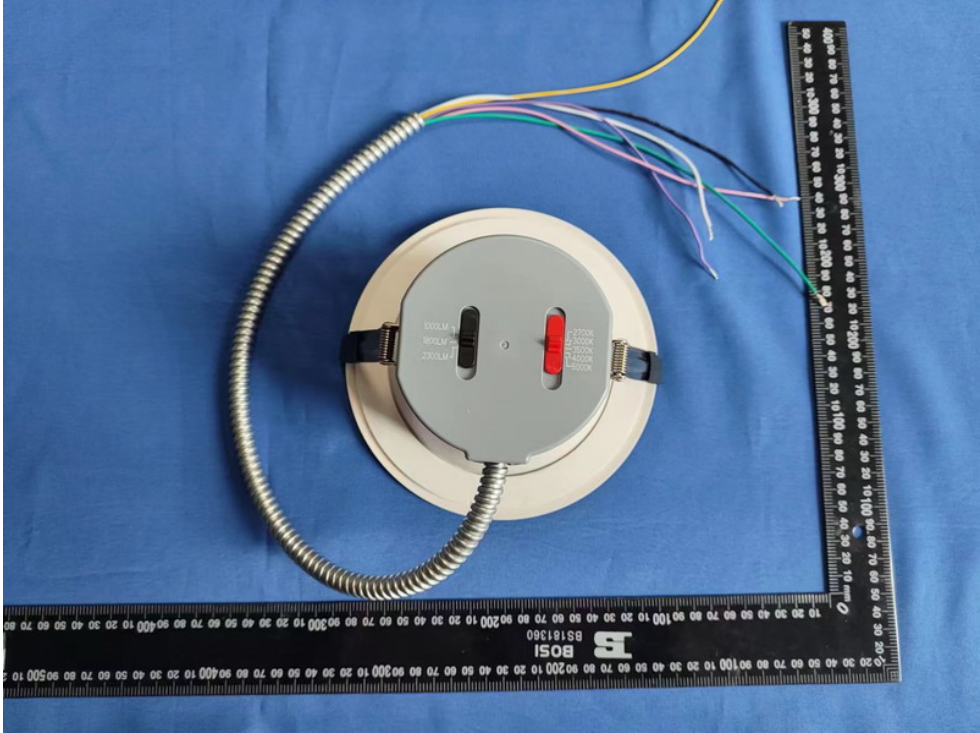
Spectral Power Distribution & Chromaticity Diagram





Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
CR6	10W-2700K setting	120	1068.5	8.84	120.87
		277	1056.0	9.44	111.91
	17W-2700K setting	120	1854.7	15.70	118.13
		277	1792.0	15.73	113.92
	21W-2700K setting	120	2511.3	20.30	123.71
		277	2438.0	19.87	122.70
	21W-3000K setting	120	2596.1	20.40	127.26
		277	2512.0	19.98	125.73
	21W-3500K setting	120	2676.7	20.10	133.17
		277	2595.0	19.68	131.86
	21W-4000K setting	120	2731.5	20.20	135.22
		277	2645.0	19.75	133.92
	21W-5000K setting	120	2724.1	20.30	134.19
		277	2644.0	19.85	133.20

3. Product Photo



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