

LM-79-08 Test Report
For
RAB LIGHTING INC

(Brand Name: N/A)

408 W 14th St, New York, NY 10014, USA

Model name(s):
SUMO-R-12

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

**Type of
Luminaire:** Downlights

Report Date: 2024-09-29

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	22.0W
Rated Initial Lamp Lumen	1650lm (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	2024-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SUMO-R-12	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202409270001	120.0	60	0.193	21.50	0.930

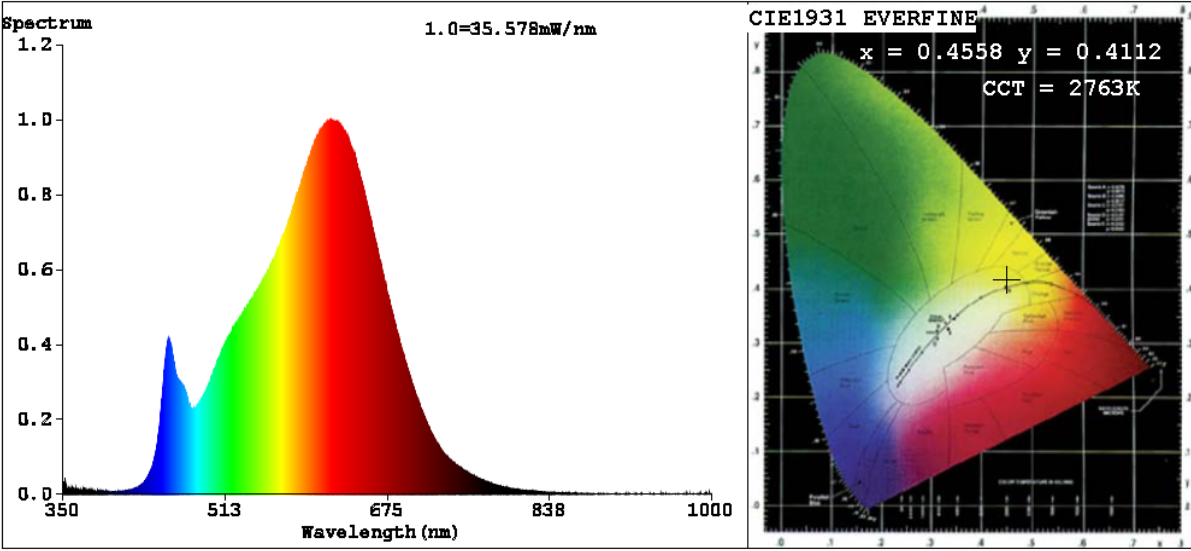
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	54
Frequency (Hz)	60	R2	98	R10	94
CCT (K)	2763	R3	98	R11	93
Duv	0.0006	R4	91	R12	82
Chromaticity (x, y)	x=0.4558 y=0.4112	R5	92	R13	94
Chromaticity (u', v')	u'=0.2596 v'=0.5270	R6	97	R14	100
Color Rendering Index (CRI)	92.1	R7	90	R15	87
R9	54	R8	78	--	--
Rg	97				
Rf	90				
Rcs,h1%	-6				

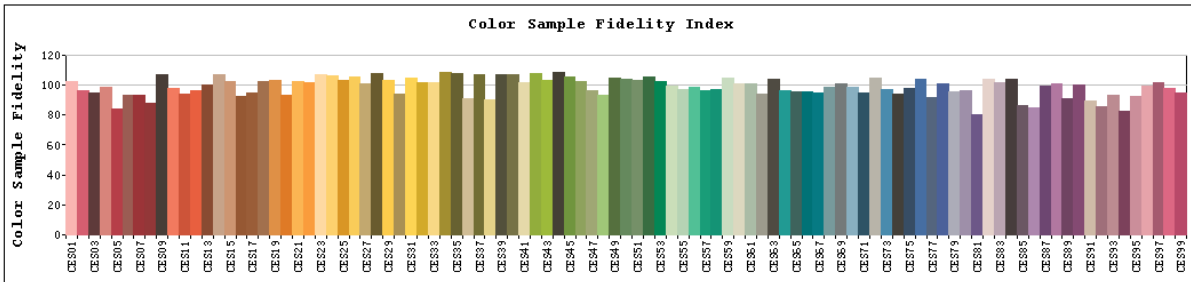
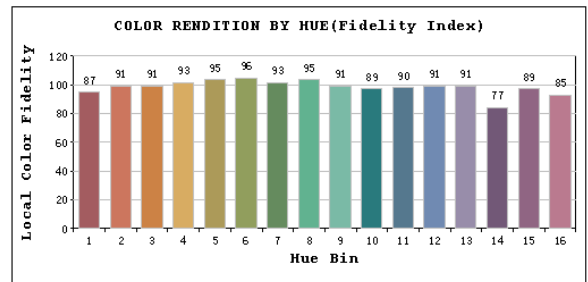
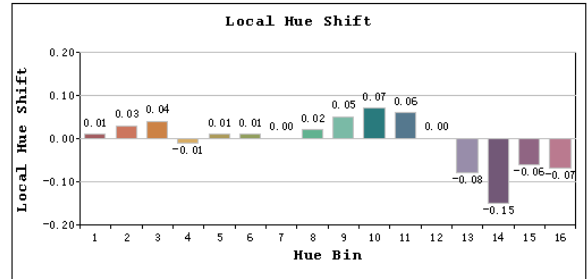
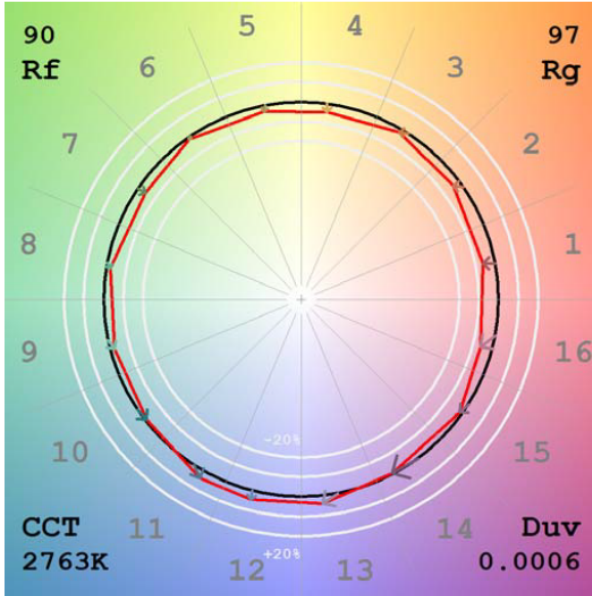
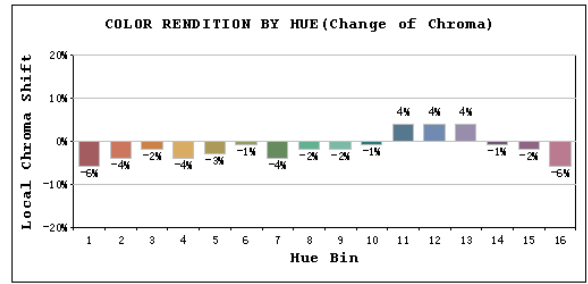
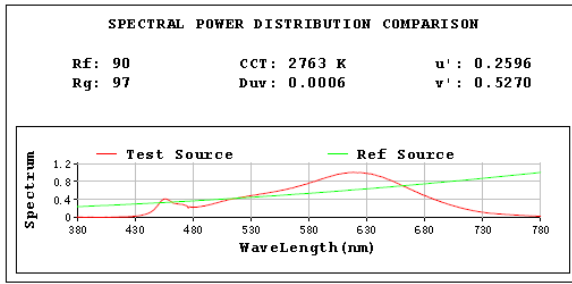
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1676.3
Luminous Efficacy (lm/W)	77.97
Beam Angle (°)	112.5
Center Beam Candle Power (cd)	580.1

Spectral Power Distribution & Chromaticity Diagram



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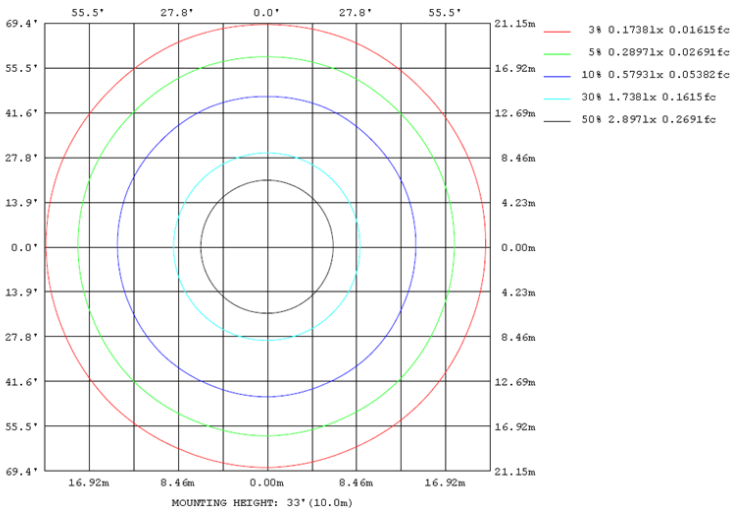
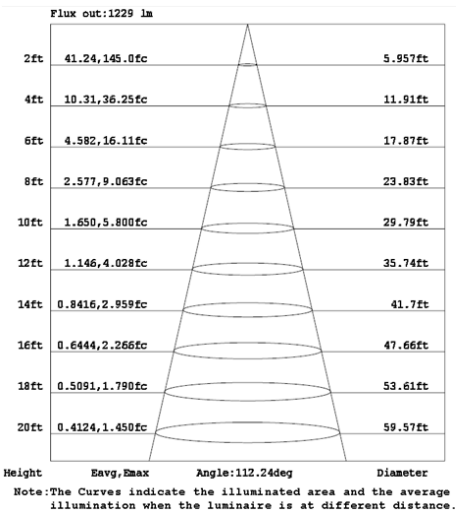
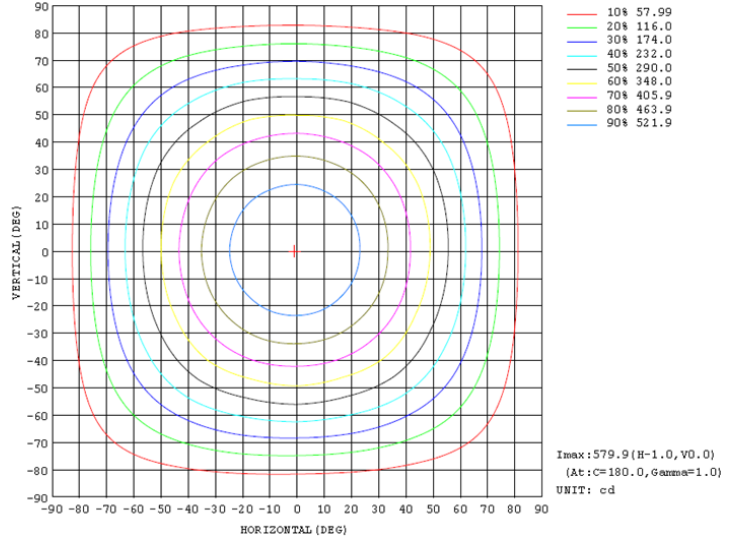
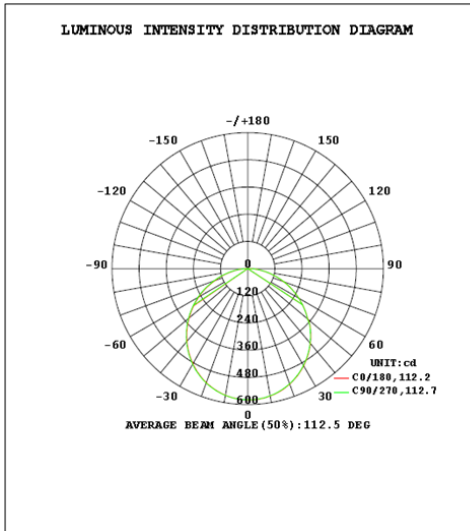


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	450.1	26.8%
0-40	737.5	44.0%
0-60	1304.5	77.8%
60-90	371.8	22.2%
70-100	163.7	9.8%
90-120	0.0	0.0%
0-90	1676.3	100.0%
90-180	0.0	0.0%
0-180	1676.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	54.8	3.3%	90-100	0.0	0.0%
10-20	157.1	9.4%	100-110	0.0	0.0%
20-30	238.2	14.2%	110-120	0.0	0.0%
30-40	287.4	17.1%	120-130	0.0	0.0%
40-50	298.2	17.8%	130-140	0.0	0.0%
50-60	268.8	16.0%	140-150	0.0	0.0%
60-70	208.1	12.4%	150-160	0.0	0.0%
70-80	125.1	7.5%	160-170	0.0	0.0%
80-90	38.6	2.3%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SUMO-R-12	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202409270001	120.0	60	0.192	21.40	0.930

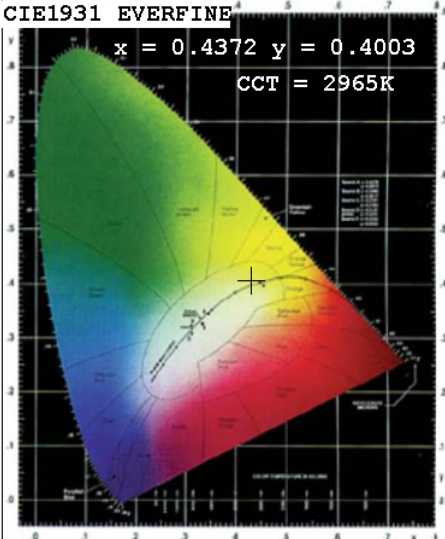
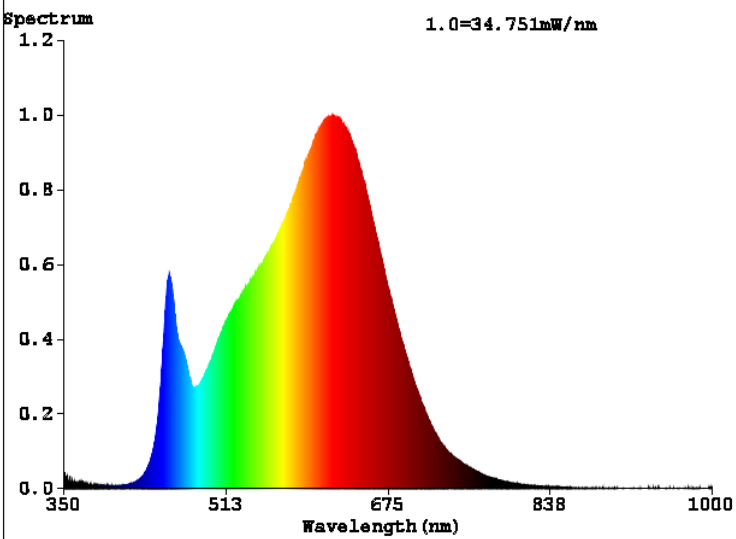
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	61
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	2965	R3	97	R11	94
Duv	-0.0015	R4	93	R12	81
Chromaticity (x, y)	x=0.4372 y=0.4003	R5	94	R13	96
Chromaticity (u', v')	u'=0.2524 v'=0.5199	R6	96	R14	100
Color Rendering Index (CRI)	93.3	R7	90	R15	90
R9	61	R8	82	--	--
Rg	99				
Rf	91				
Rcs,h1%	-5				

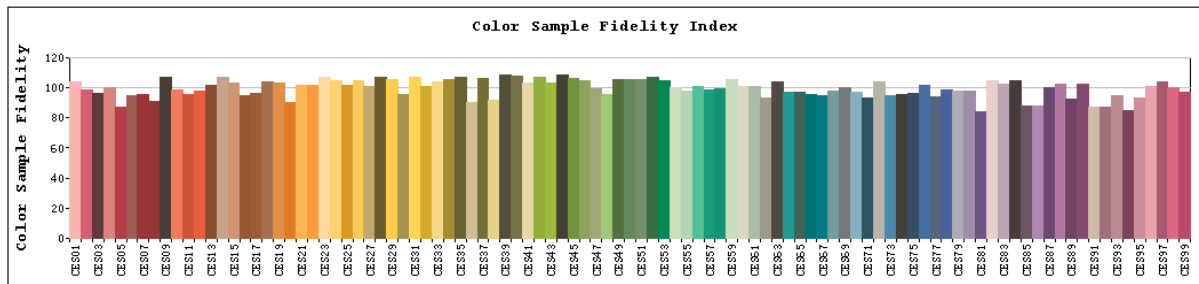
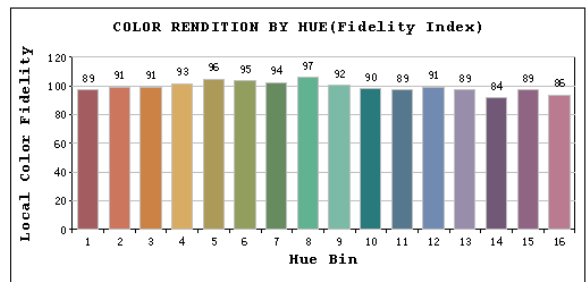
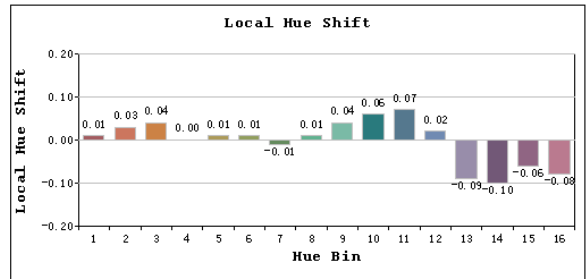
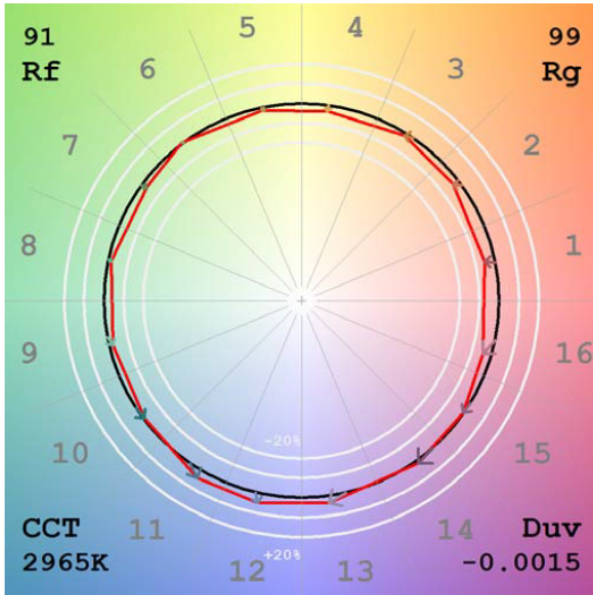
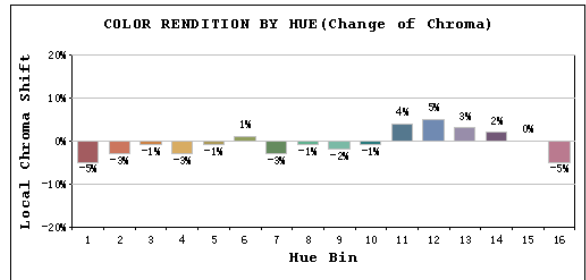
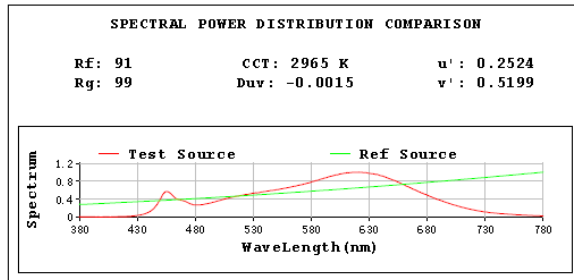
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1709.4
Luminous Efficacy (lm/W)	79.88

Spectral Power Distribution & Chromaticity Diagram



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2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SUMO-R-12	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202409270001	120.0	60	0.190	21.30	0.933

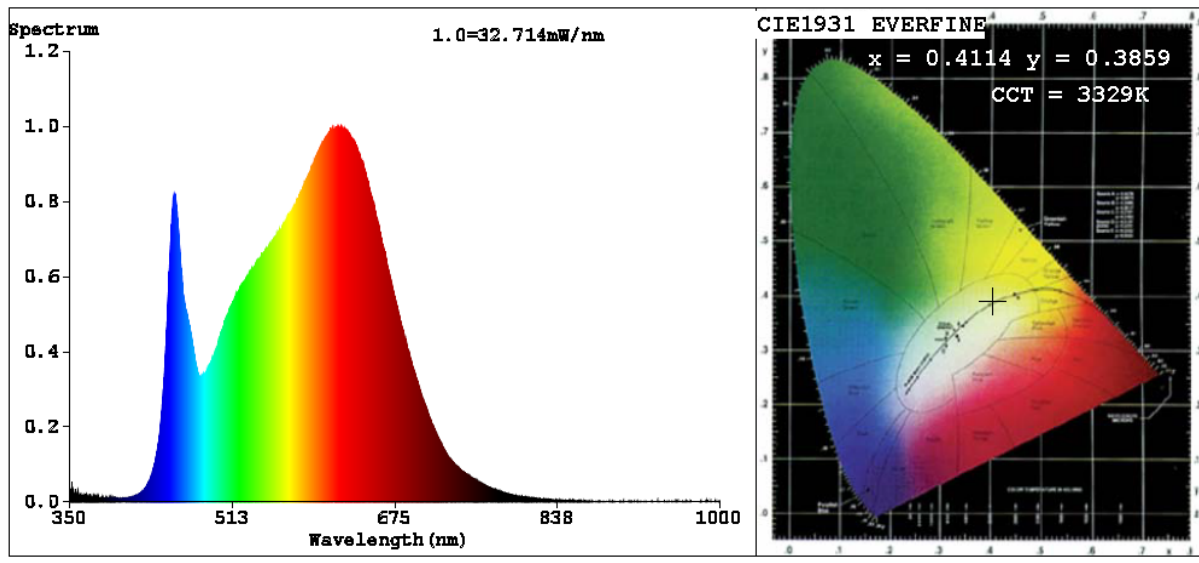
Chromaticity Measurement - Sphere-Spectroradiometer Method:

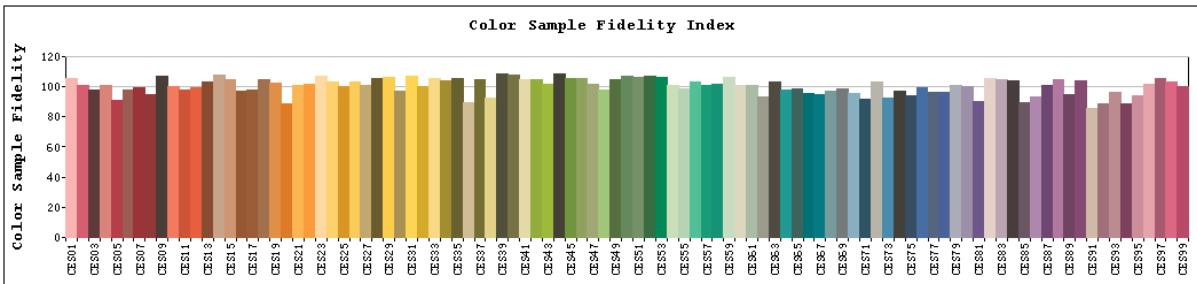
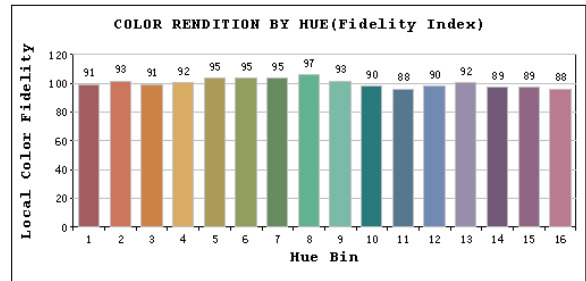
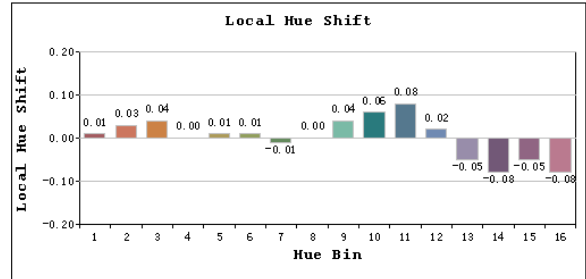
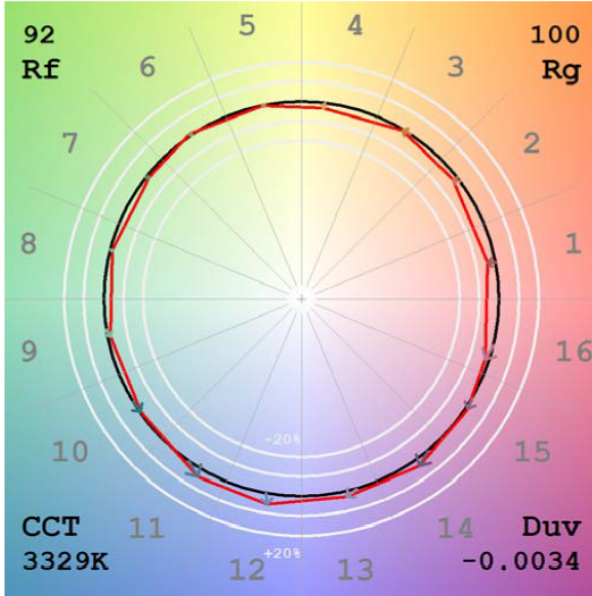
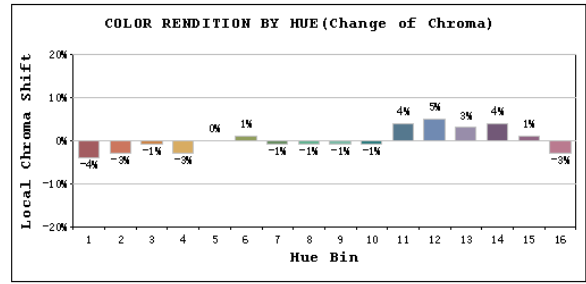
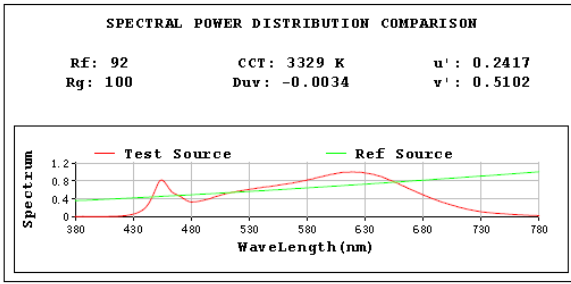
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	71
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3329	R3	98	R11	95
Duv	-0.0034	R4	94	R12	79
Chromaticity (x, y)	x=0.4114 y=0.3859	R5	96	R13	98
Chromaticity (u', v')	u'=0.2417 v'=0.5102	R6	95	R14	100
Color Rendering Index (CRI)	94.6	R7	92	R15	94
R9	71	R8	86	--	--
Rg	100				
Rf	92				
Rcs,h1%	-4				

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1738.0
Luminous Efficacy (lm/W)	81.60

Spectral Power Distribution & Chromaticity Diagram





2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SUMO-R-12	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202409270001	120.0	60	0.195	21.70	0.925

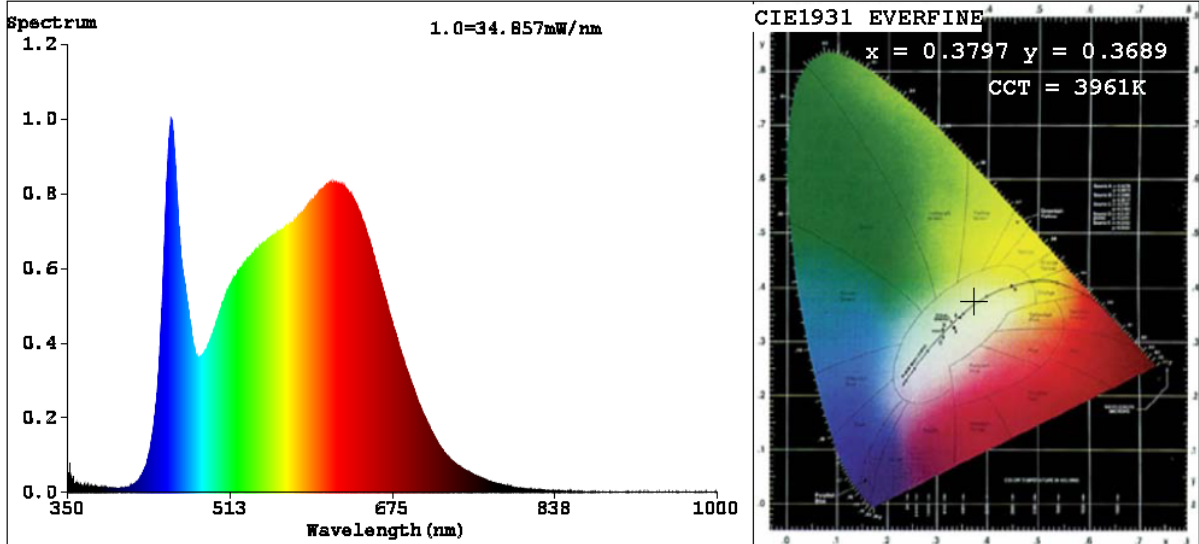
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	97	R9	78
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	3961	R3	98	R11	95
Duv	-0.0035	R4	95	R12	74
Chromaticity (x, y)	x=0.3797 y=0.3689	R5	96	R13	98
Chromaticity (u', v')	u'=0.2278 v'=0.4980	R6	95	R14	98
Color Rendering Index (CRI)	95.4	R7	94	R15	96
R9	78	R8	90	--	--
Rg	100				
Rf	92				
Rcs,h1%	-4				

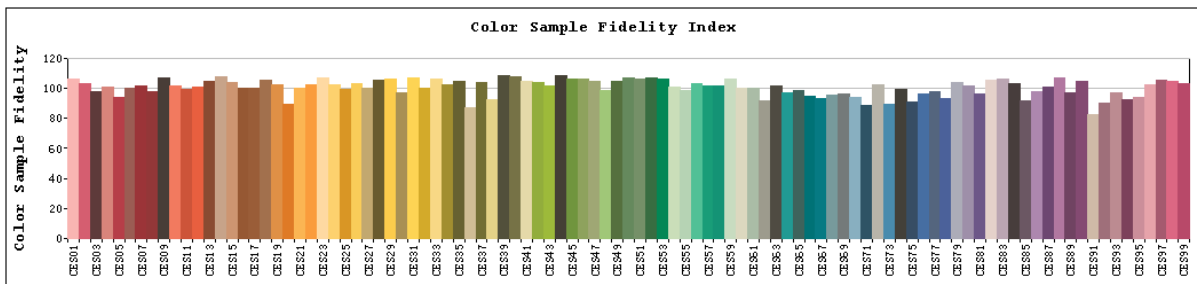
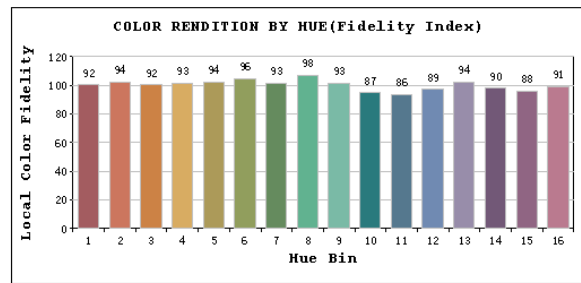
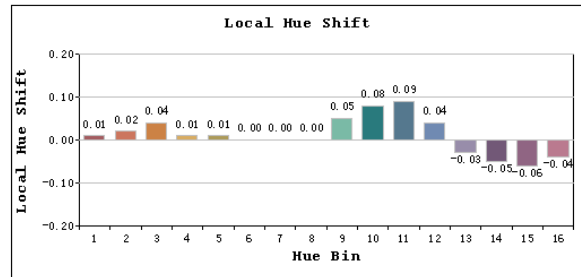
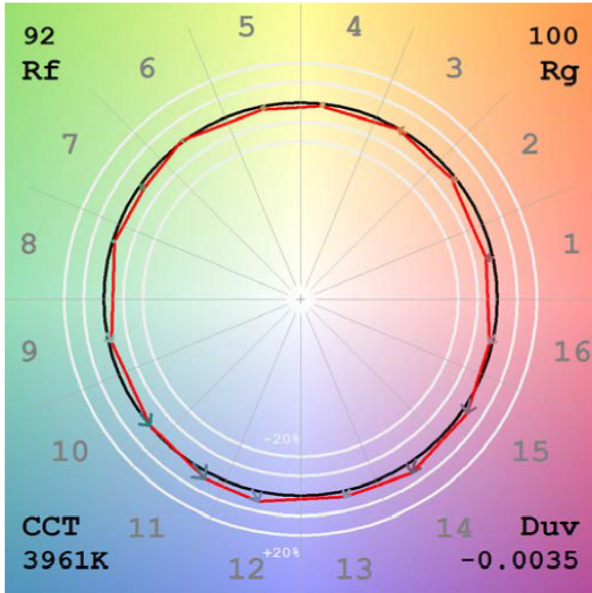
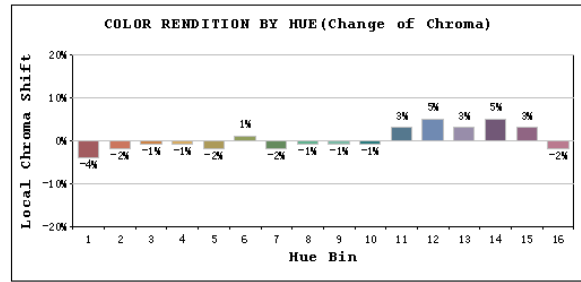
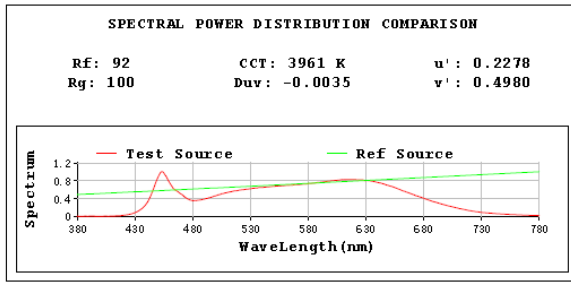
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1722.9
Luminous Efficacy (lm/W)	79.39

Spectral Power Distribution & Chromaticity Diagram



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2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-09-27	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SUMO-R-12	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202409270001	120.0	60	0.199	21.90	0.917

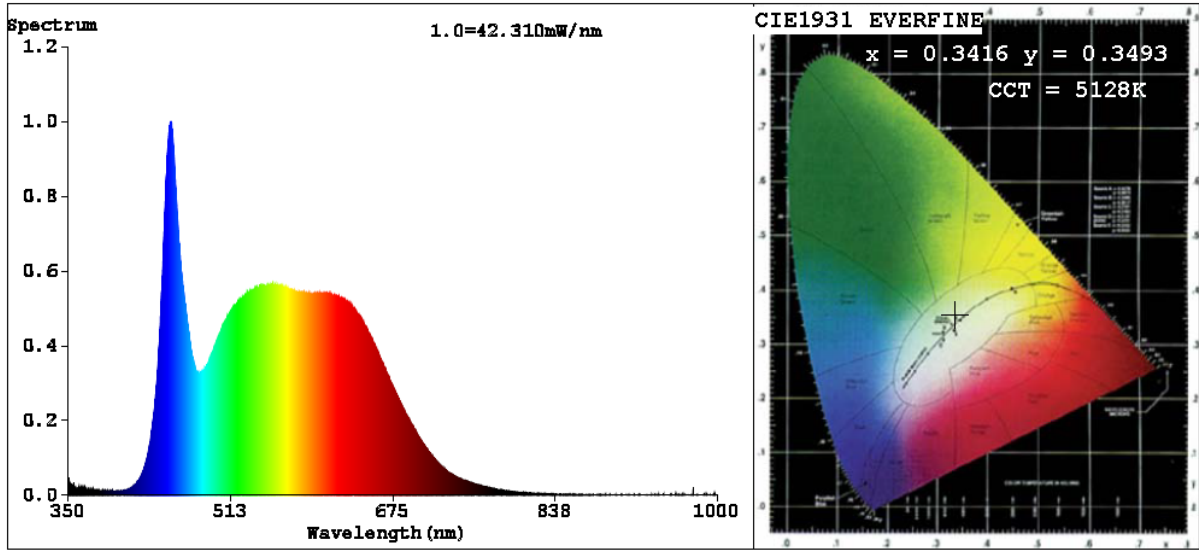
Chromaticity Measurement - Sphere-Spectroradiometer Method:

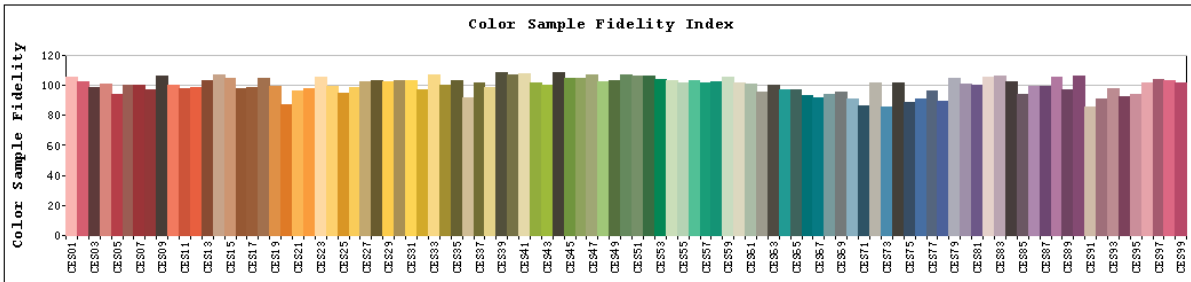
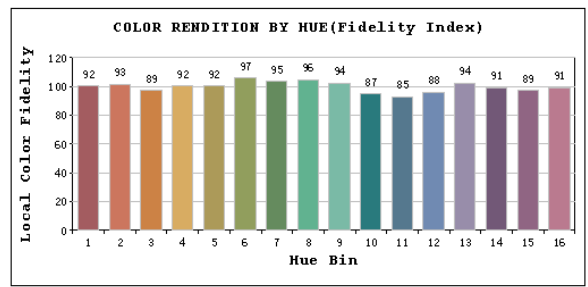
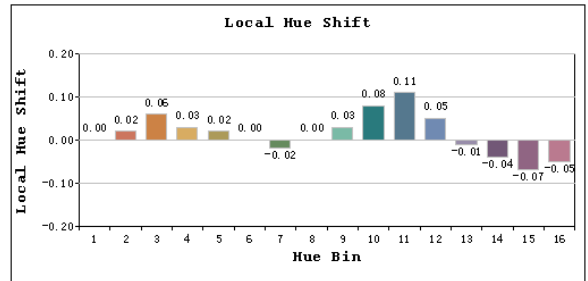
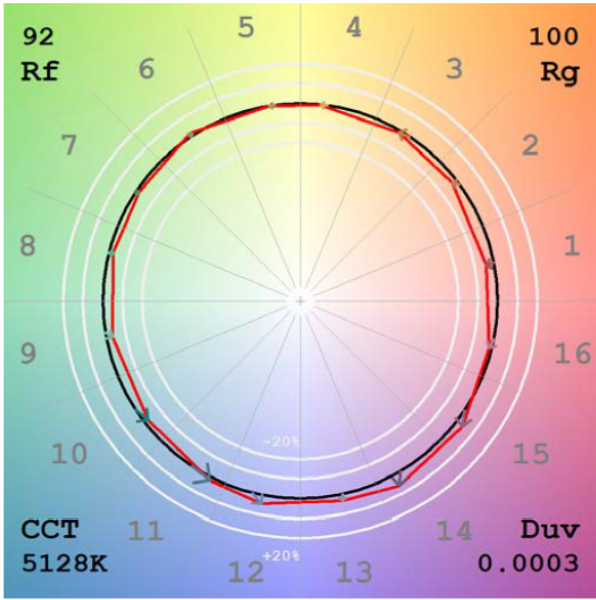
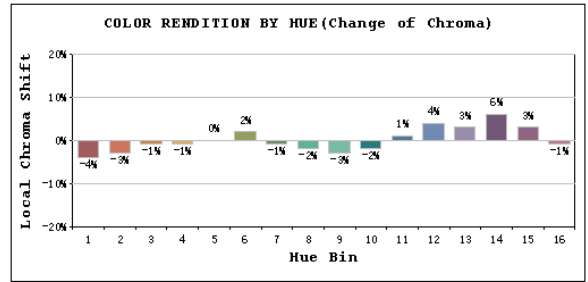
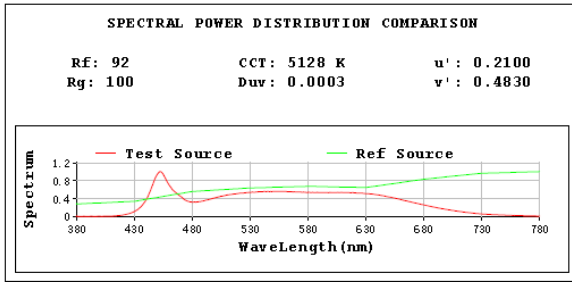
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	74
Frequency (Hz)	60	R2	96	R10	88
CCT (K)	5128	R3	94	R11	94
Duv	0.0003	R4	94	R12	72
Chromaticity (x, y)	x=0.3416 y=0.3493	R5	94	R13	95
Chromaticity (u', v')	u'=0.2100 v'=0.4830	R6	92	R14	97
Color Rendering Index (CRI)	93.7	R7	95	R15	94
R9	74	R8	90	--	--
Rg	100				
Rf	92				
Rcs,h1%	-4				

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1619.4
Luminous Efficacy (lm/W)	73.95

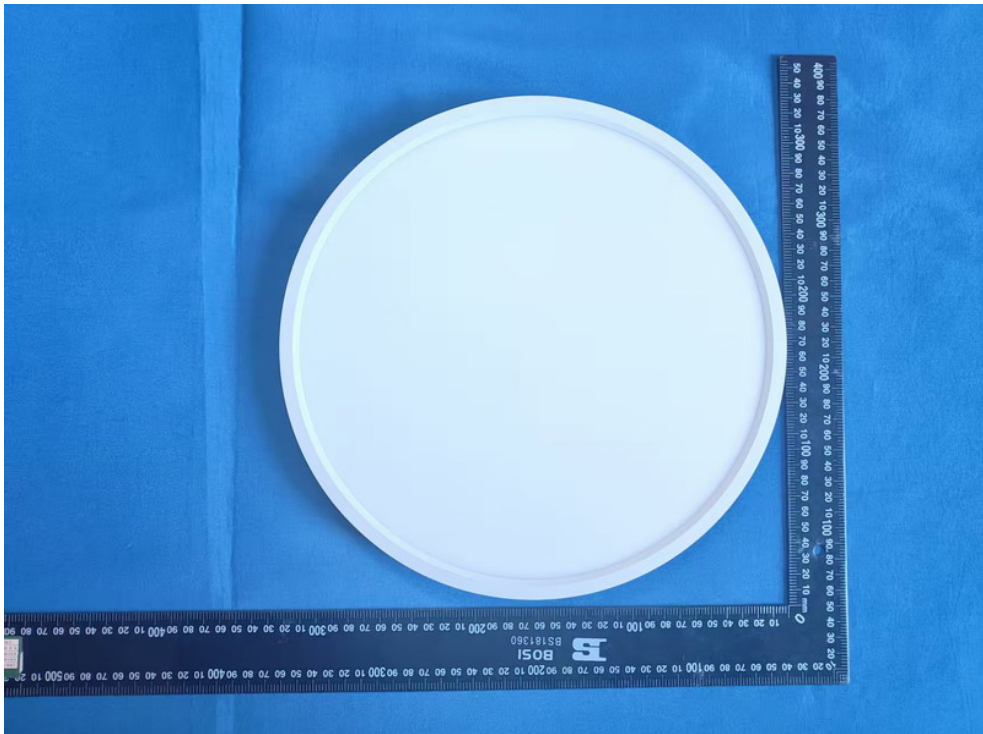
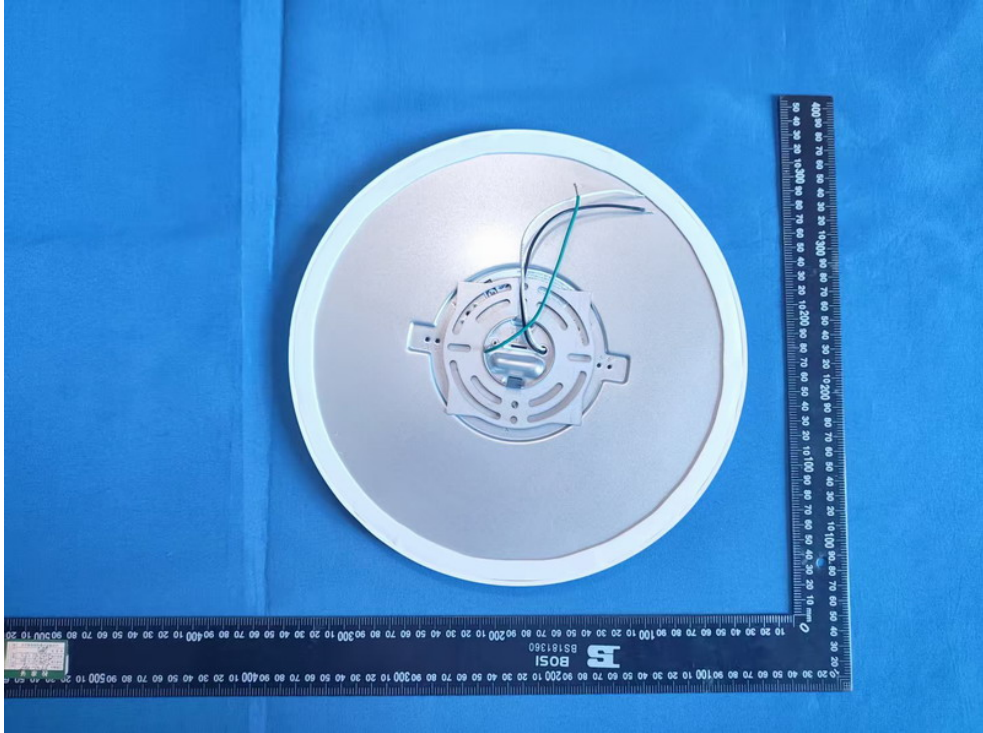
Spectral Power Distribution & Chromaticity Diagram





Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
SUMO-R-12	2700K setting	120	1676.3	21.50	77.97
	3000K setting	120	1709.4	21.40	79.88
	3500K setting	120	1738.0	21.30	80.60
	4000K setting	120	1722.9	21.70	79.39
	5000K setting	120	1619.4	21.90	73.95

3. Product Photo



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