

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): DLG0011(RA6R109FA120WS)

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

**Type of
Luminaire:** Downlights

Report Date: 2020-09-12

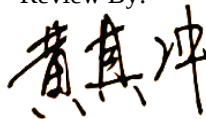
Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:

Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	10.0W
Rated Initial Lamp Lumen	900 lm
Declared CCT	2700K/3000K/3500K/4000K/5000K

1.2 Test Specifications:

Test item	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	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**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.

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.

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.

2.1.1 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLG0011(RA6R109FA120WS)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202009120027	120.0	60	0.079	9.38	0.983

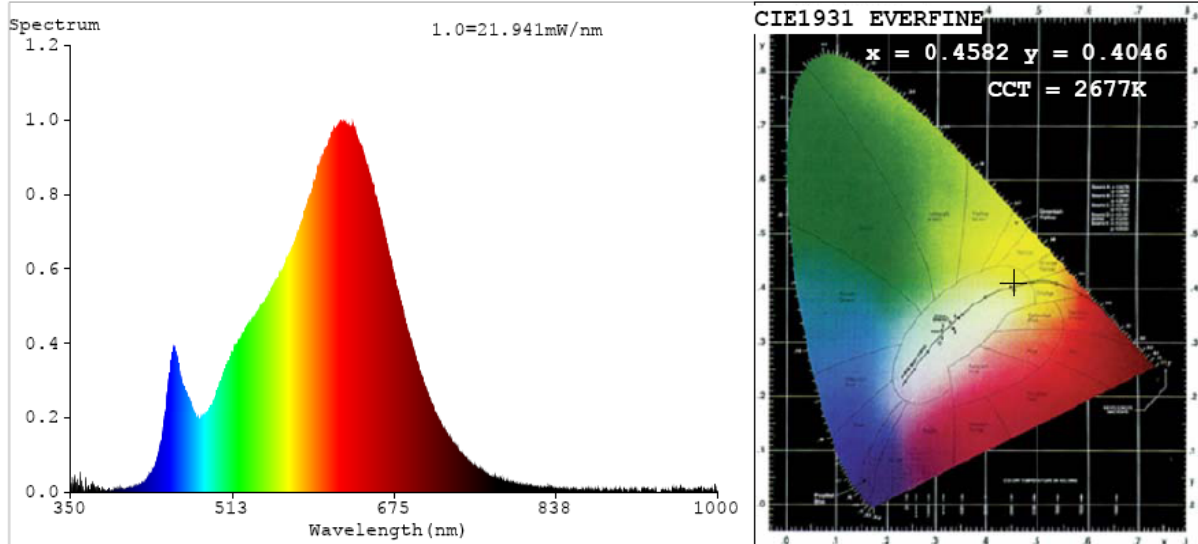
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	63
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	2677	R3	98	R11	96
Duv	0.0021	R4	94	R12	87
Chromaticity (x, y)	x=0.4582 y=0.4046	R5	95	R13	96
Chromaticity (u', v')	u'=0.2641 v'=0.5248	R6	97	R14	99
Color Rendering Index (CRI)	93.8	R7	91	R15	91
R9	63	R8	82	--	--

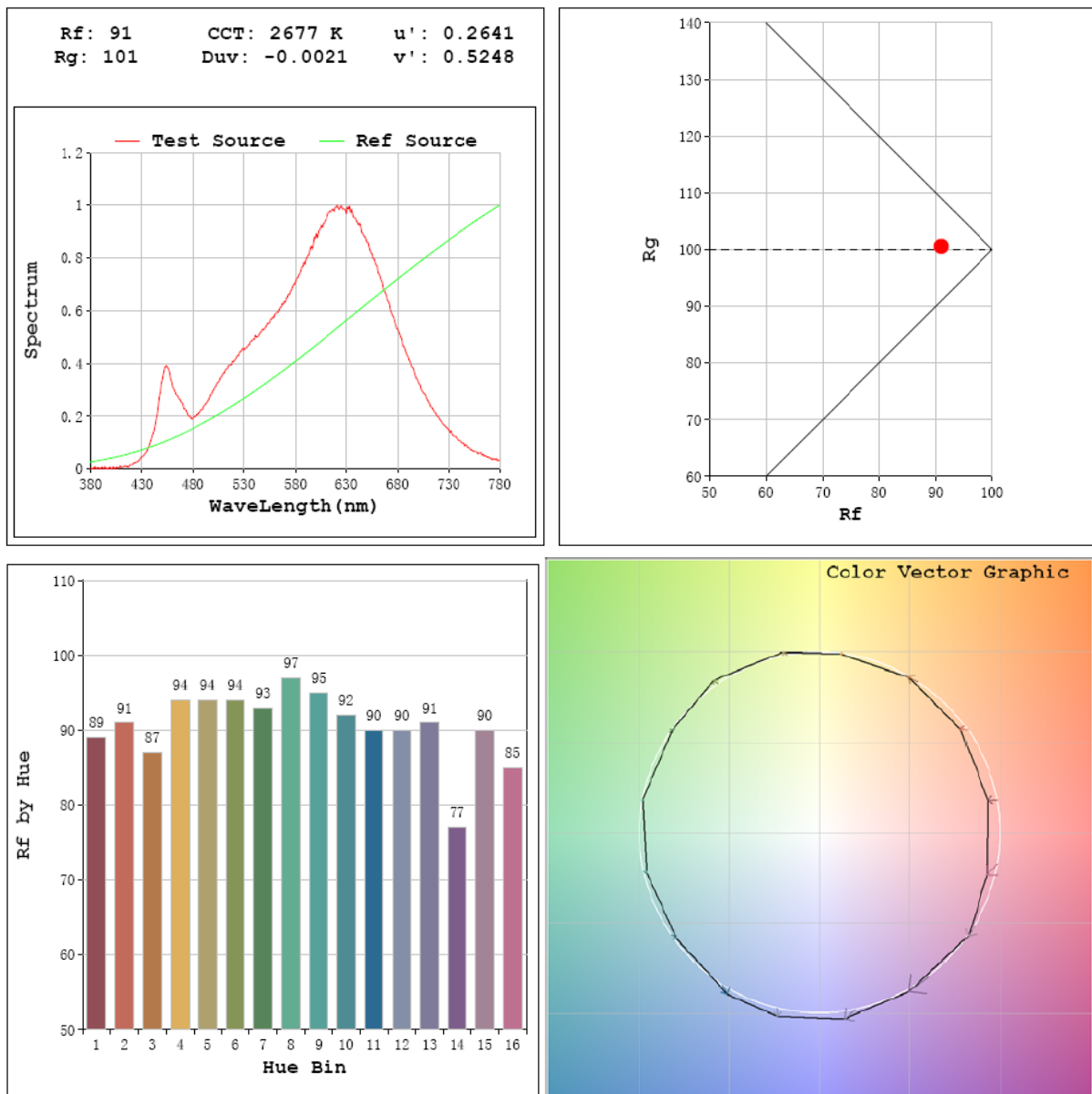
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	969.27
Luminous Efficacy (lm/W)	103.33
Beam Angle (°)	99.1
Center Beam Candle Power (cd)	397.5

Spectral Power Distribution & Chromaticity Diagram



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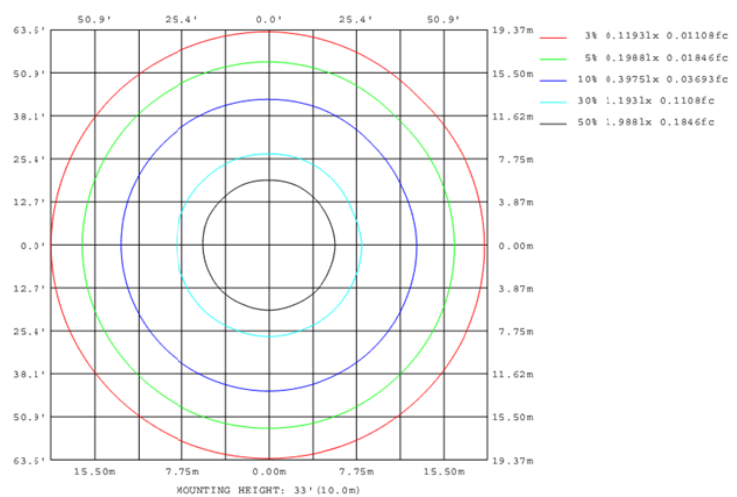
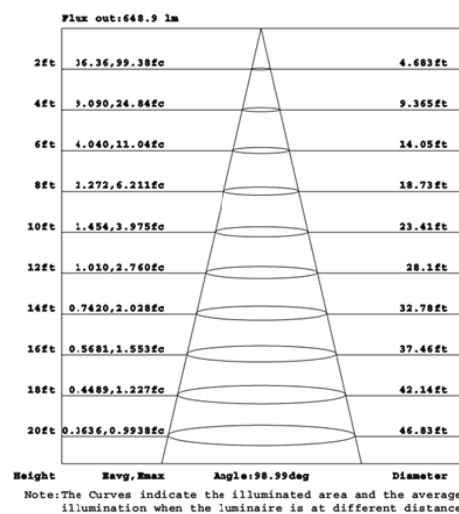
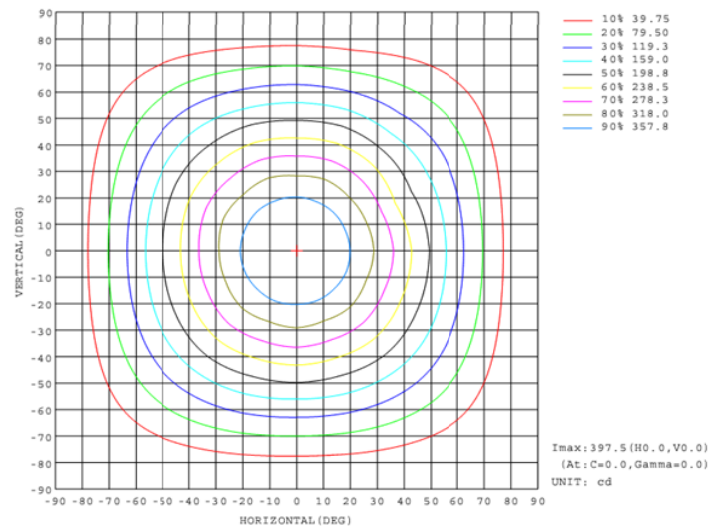
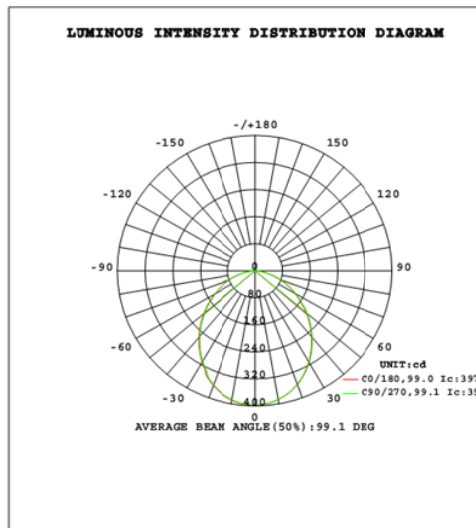


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	298.1	30.8%
0-40	475.6	49.1%
0-60	795.9	82.1%
60-90	173.4	17.9%
70-100	67.9	7.0%
90-120	0.0	0.0%
0-90	969.3	100.0%
90-180	0.0	0.0%
0-180	969.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	37.4	3.9%	90-100	0.0	0.0%
10-20	105.8	10.9%	100-110	0.0	0.0%
20-30	154.9	16.0%	110-120	0.0	0.0%
30-40	177.4	18.3%	120-130	0.0	0.0%
40-50	173.4	17.9%	130-140	0.0	0.0%
50-60	147.0	15.2%	140-150	0.0	0.0%
60-70	105.5	10.9%	150-160	0.0	0.0%
70-80	55.4	5.7%	160-170	0.0	0.0%
80-90	12.4	1.3%	170-180	0.0	0.0%

Photometric Data



2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLG0011(RA6R109FA120WS)	3000K	

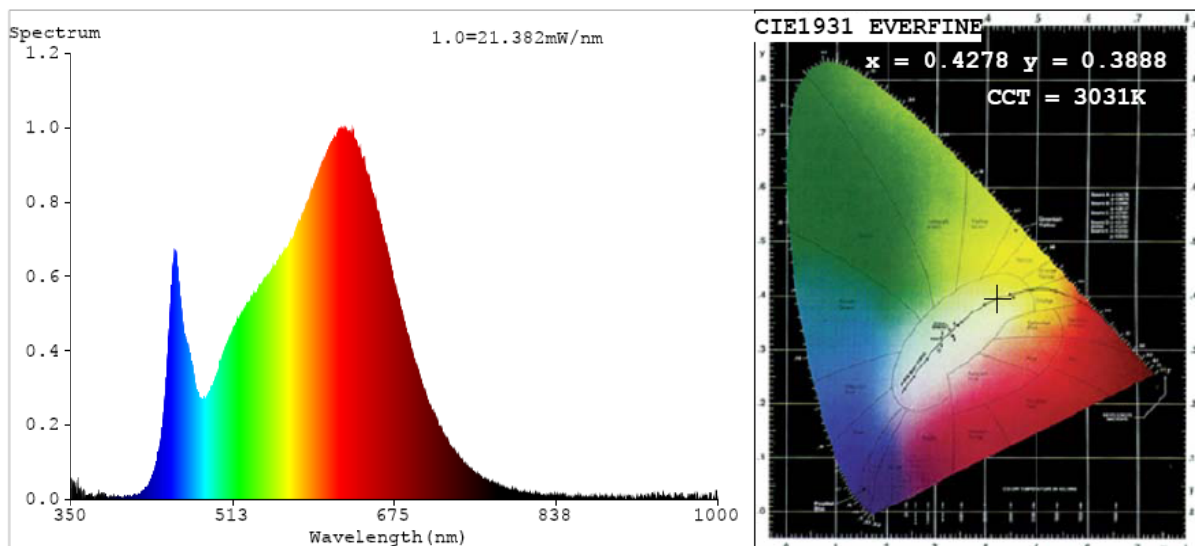
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202009120027	120.0	60	0.079	9.25	0.981

Chromaticity Measurement - Sphere-Spectroradiometer Method:

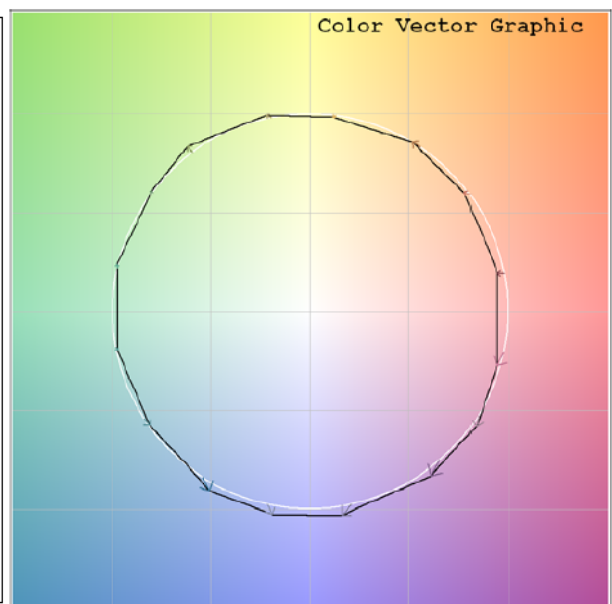
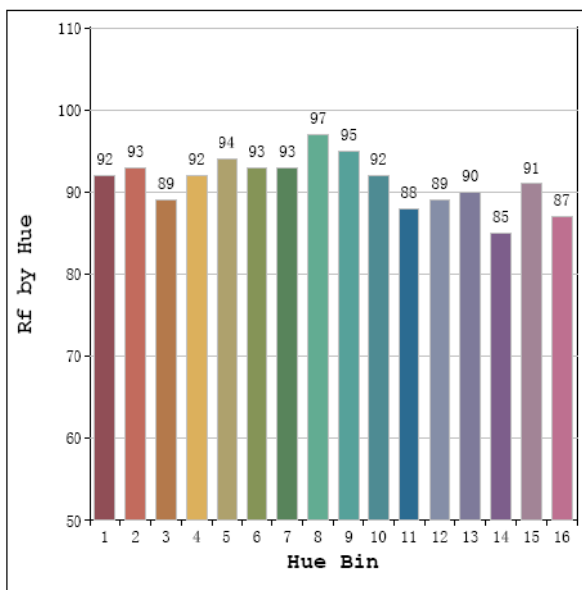
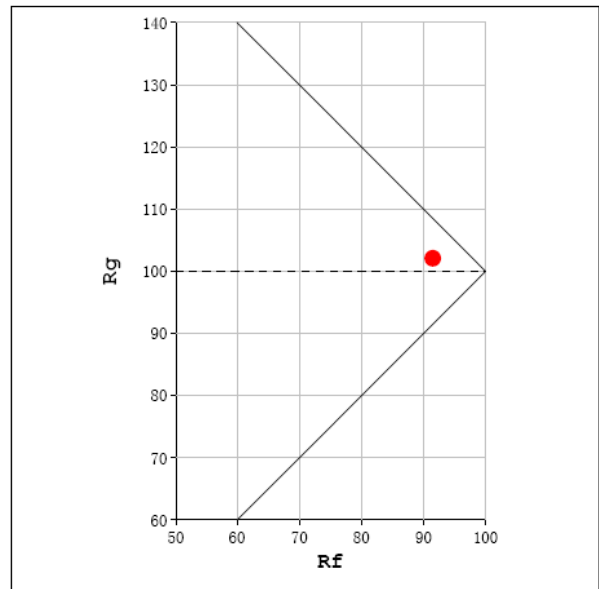
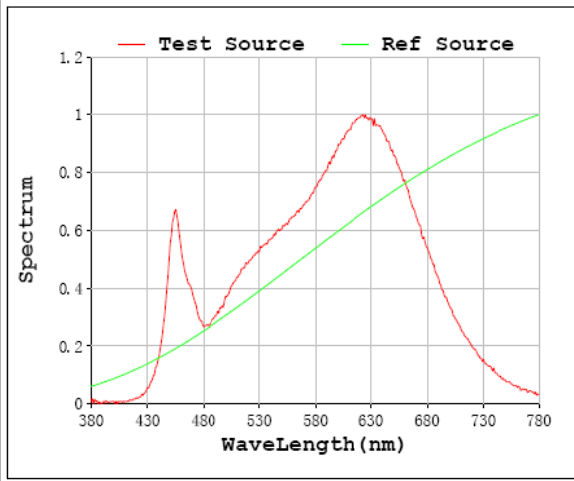
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	76
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	3031	R3	98	R11	96
Duv	0.0050	R4	96	R12	83
Chromaticity (x, y)	x=0.4278 y=0.3888	R5	98	R13	99
Chromaticity (u', v')	u'=0.2513 v'=0.5138	R6	95	R14	99
Color Rendering Index (CRI)	95.3	R7	92	R15	96
R9	76	R8	88	--	--
Total Luminous (lm)	1028.0				
Luminous Efficacy (lm/W)	111.16				

Spectral Power Distribution & Chromaticity Diagram



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Rf: 92 CCT: 3031 K u': 0.2513
Rg: 102 Duv: -0.0050 v': 0.5138



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLG0011(RA6R109FA120WS)	3500K	

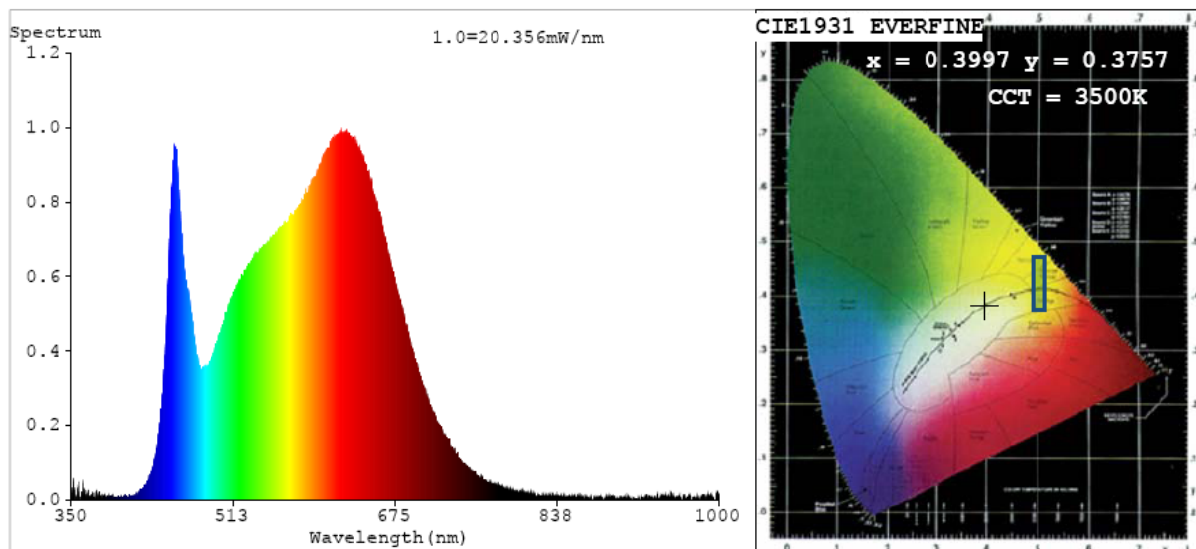
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202009120027	120.0	60	0.078	9.13	0.981

Chromaticity Measurement - Sphere-Spectroradiometer Method:

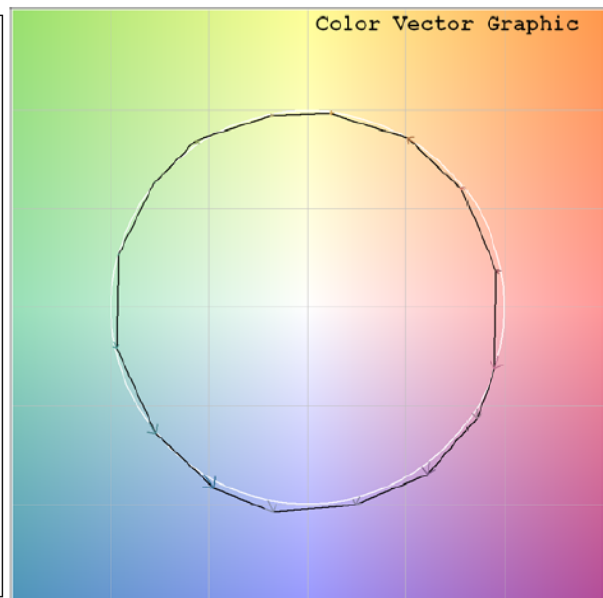
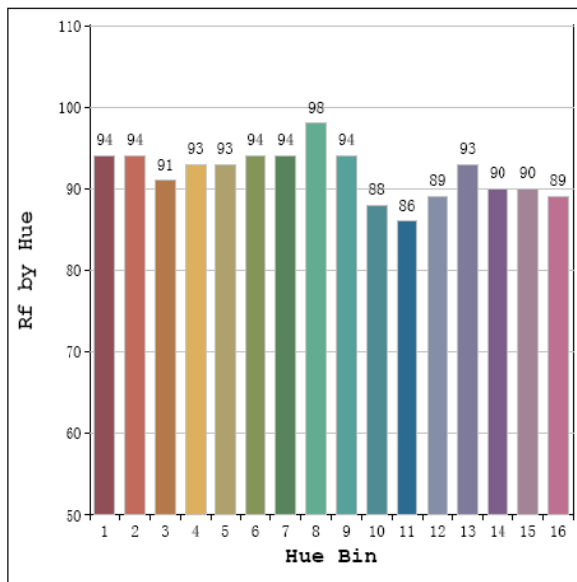
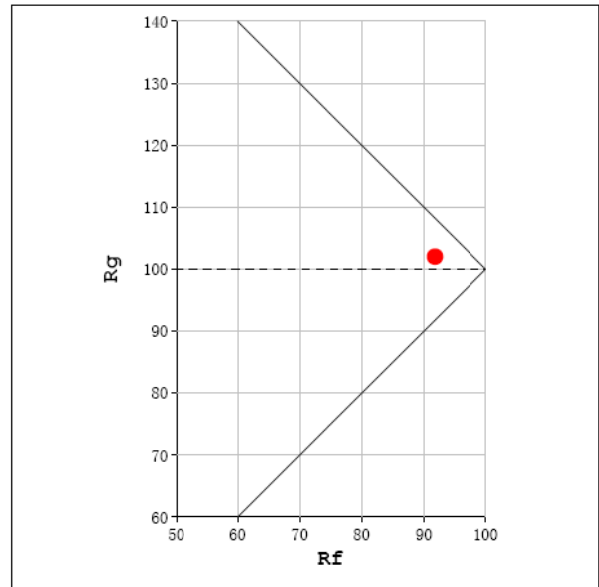
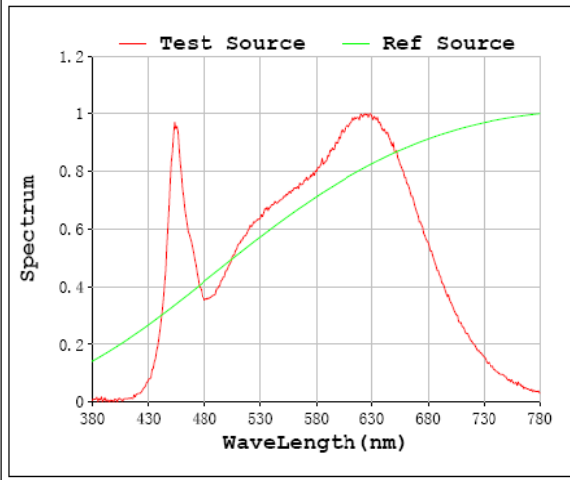
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	86
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	3500	R3	98	R11	97
Duv	0.0055	R4	97	R12	79
Chromaticity (x, y)	x=0.3997 y=0.3757	R5	98	R13	99
Chromaticity (u', v')	u'=0.2383 v'=0.5040	R6	95	R14	99
Color Rendering Index (CRI)	96.3	R7	94	R15	98
R9	86	R8	93	--	--
Total Luminous (lm)	1079.0				
Luminous Efficacy (lm/W)	118.24				

Spectral Power Distribution & Chromaticity Diagram



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Rf: 92 CCT: 3500 K u': 0.2383
Rg: 102 Duv: -0.0055 v': 0.5040



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLG0011(RA6R109FA120WS)	4000K	

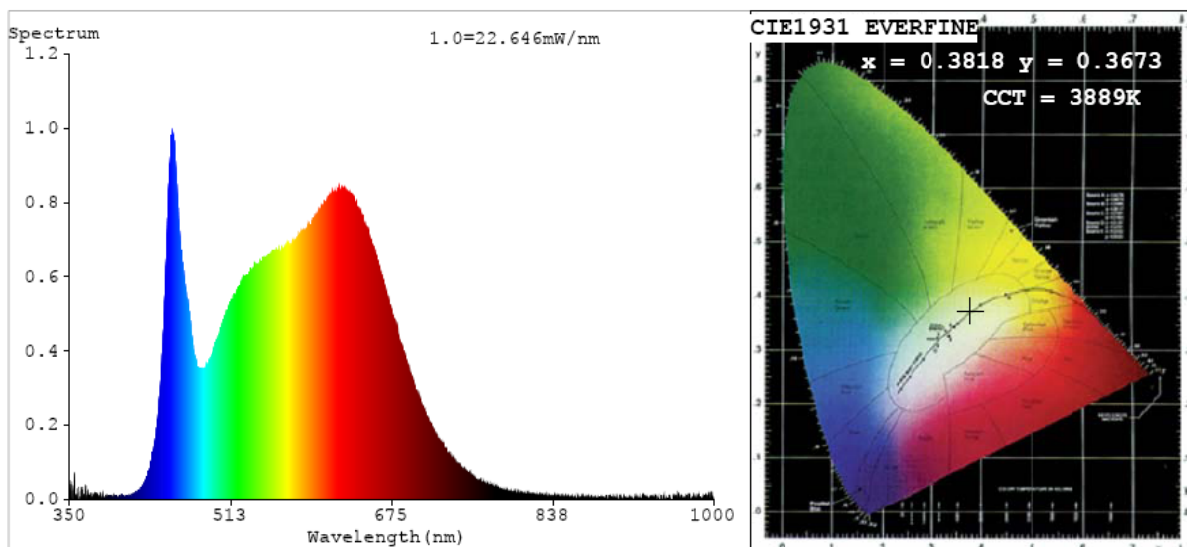
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202009120027	120.0	60	0.078	9.17	0.981

Chromaticity Measurement - Sphere-Spectroradiometer Method:

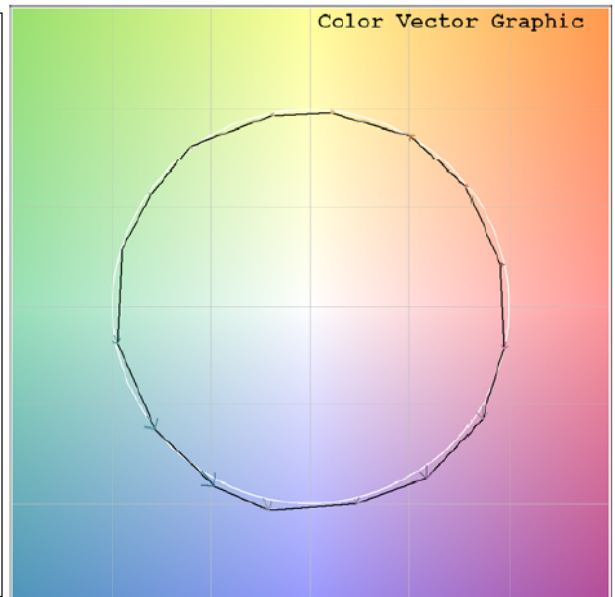
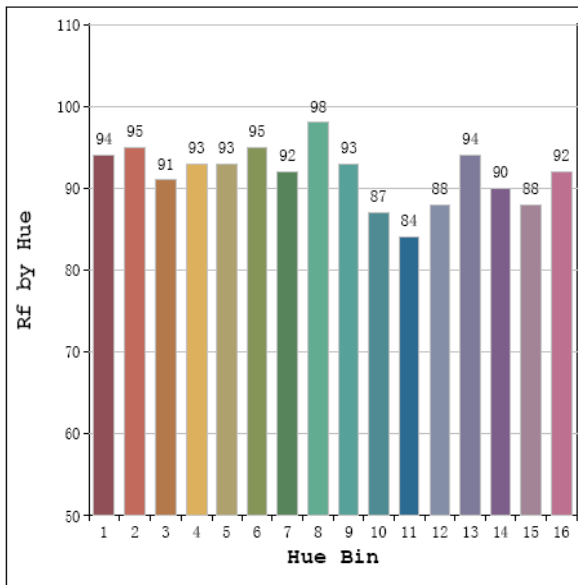
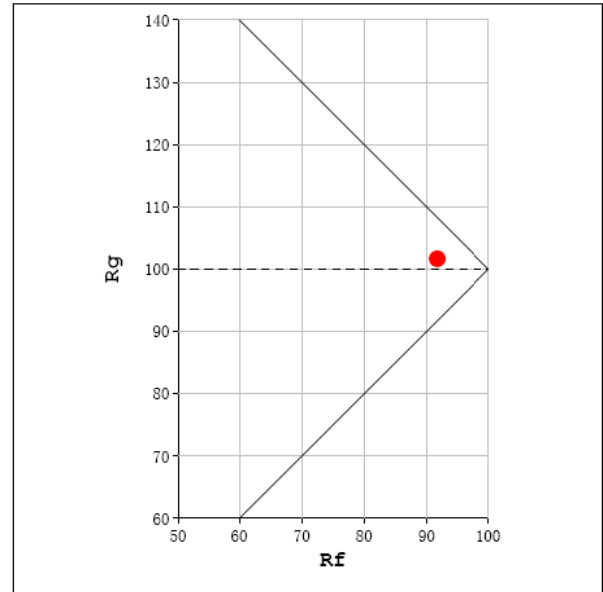
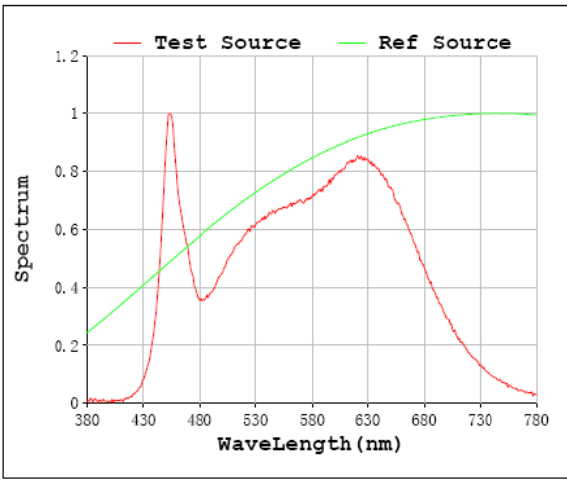
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	90
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3889	R3	97	R11	97
Duv	0.0049	R4	97	R12	75
Chromaticity (x, y)	x=0.3818 y=0.3673	R5	97	R13	99
Chromaticity (u', v')	u'=0.2299 v'=0.4976	R6	95	R14	98
Color Rendering Index (CRI)	96.7	R7	96	R15	98
R9	90	R8	95	--	--
Total Luminous (lm)	1091.0				
Luminous Efficacy (lm/W)	118.91				

Spectral Power Distribution & Chromaticity Diagram



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Rf: 92 CCT: 3889 K u': 0.2299
Rg: 102 Duv: -0.0049 v': 0.4976



2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2020-09-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLG0011(RA6R109FA120WS)	5000K	

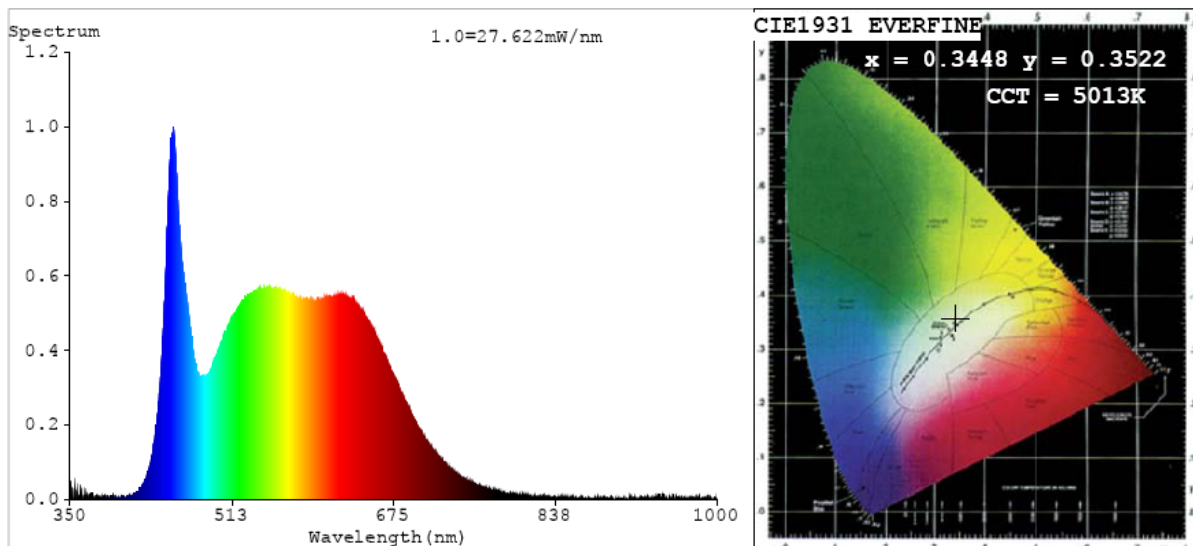
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202009120027	120.0	60	0.079	9.36	0.982

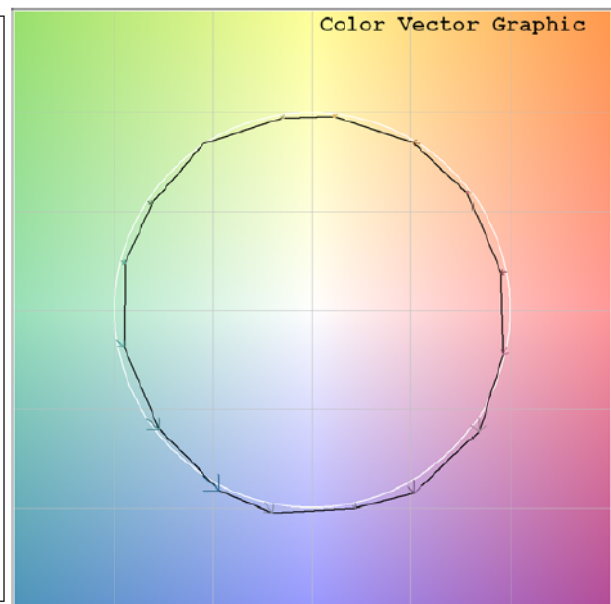
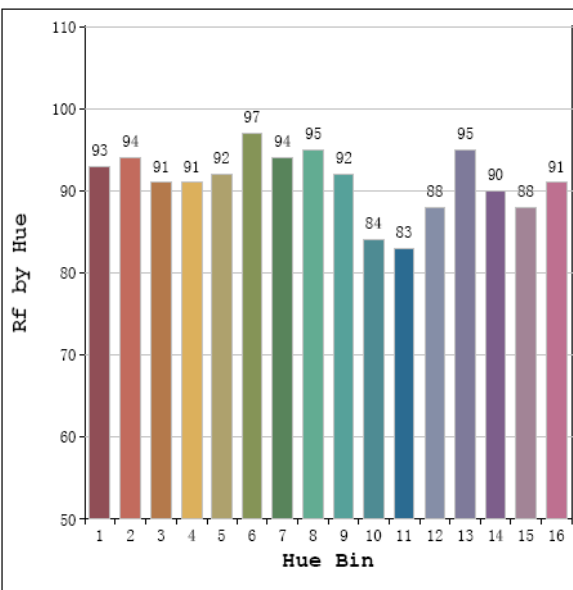
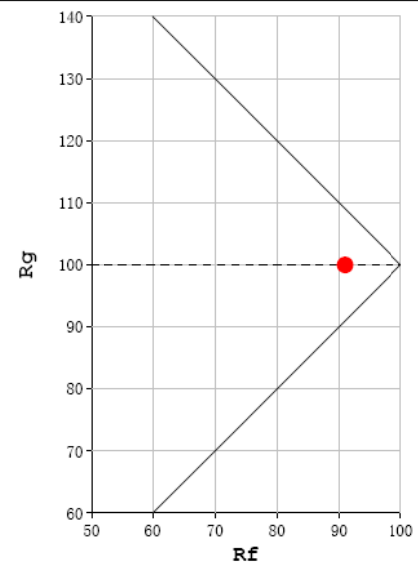
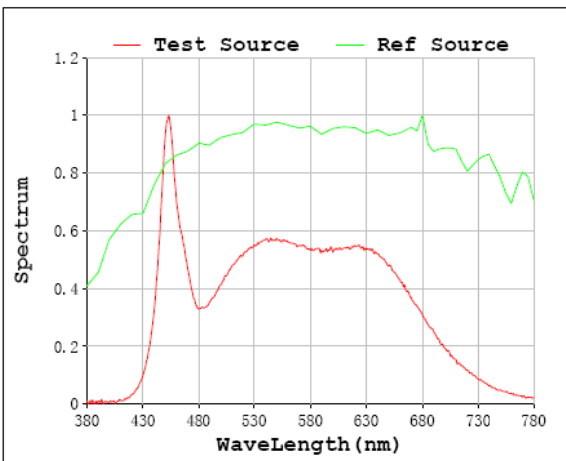
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	96	R9	83
Frequency (Hz)	60	R2	96	R10	90
CCT (K)	5013	R3	94	R11	94
Duv	0.0004	R4	95	R12	72
Chromaticity (x, y)	x=0.3448 y=0.3522	R5	95	R13	96
Chromaticity (u', v')	u'=0.2111 v'=0.4849	R6	92	R14	96
Color Rendering Index (CRI)	94.8	R7	97	R15	96
R9	83	R8	93	--	--
Total Luminous (lm)	1067.0				
Luminous Efficacy (lm/W)	114.07				

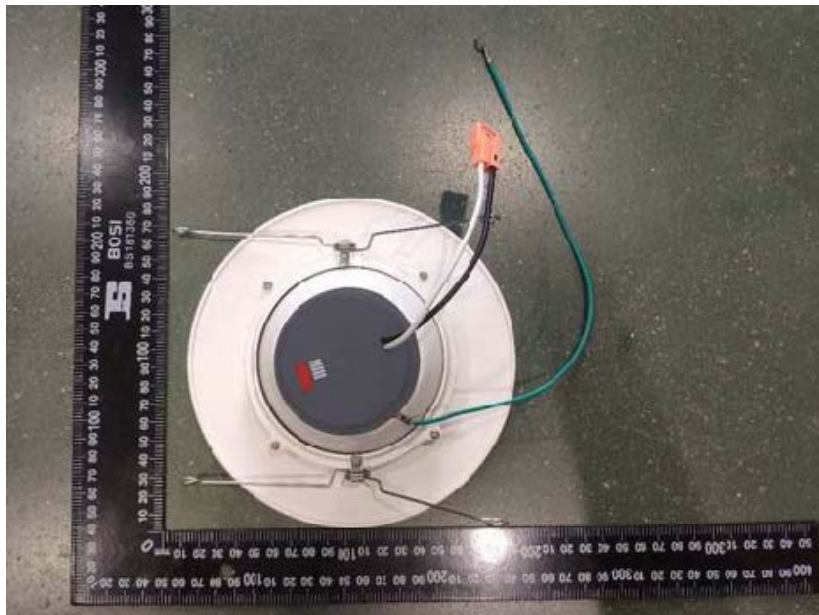
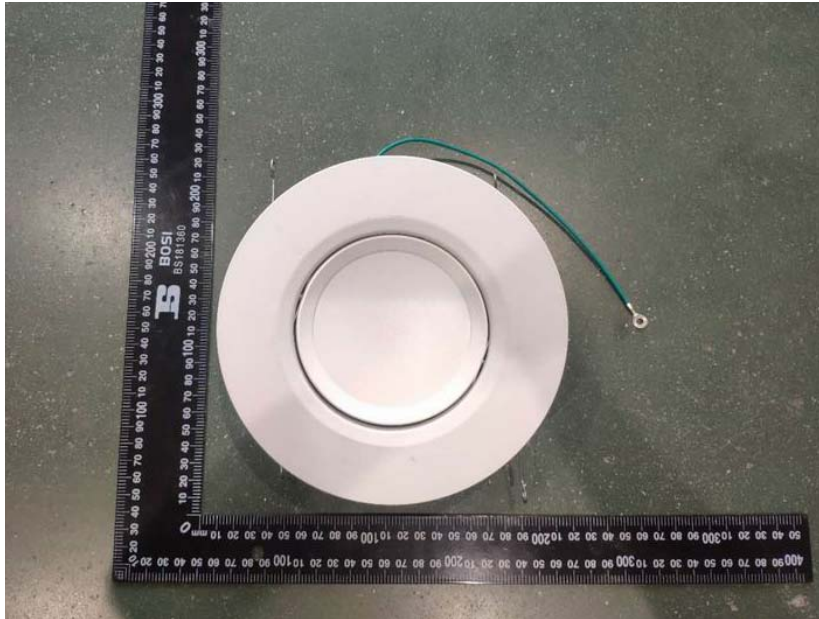
Spectral Power Distribution & Chromaticity Diagram



Rf: 91 CCT: 5013 K u': 0.2110
 Rg: 100 Duv: 0.0004 v': 0.4849



3. Product Photo



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