

# LM-79-08 Test Report

For

## NINGBO DONGXING ELECTRIC CO.,LTD.

(Brand Name: N/A)

Fenglin Industrial Development Zone, Qiaotou Town, Cixi, Ningbo, Zhejiang, China

**Model name(s):**

**DLG0010(RA4R89FA120WS)**

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

**Type of  
Luminaire:** Downlights

**Report Date:** 2020-09-11

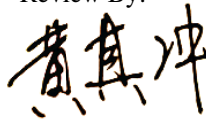
**Prepared By:**

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

### 1.1 Rated Values:

Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	8.0W
Rated Initial Lamp Lumen	700 lm
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

#### 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

<b>Test date</b>	2020-08-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLG0010(RA4R89FA120WS)	2700K	

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202008270001	120.0	60	0.063	7.43	0.980

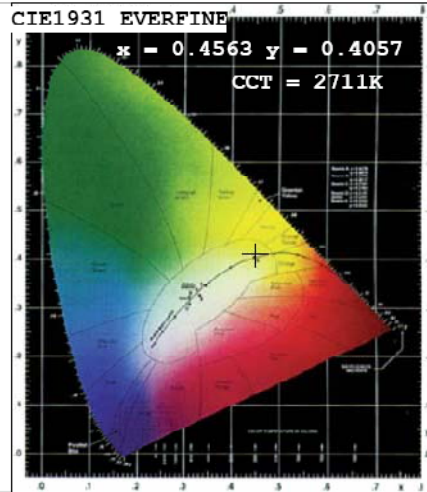
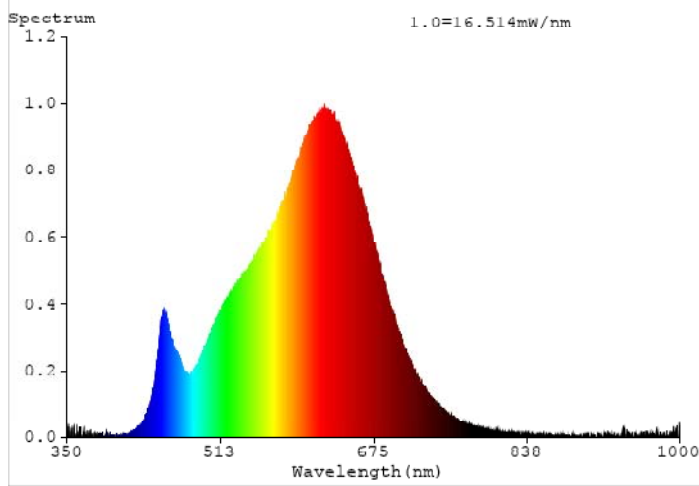
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	95	R9	64
Frequency (Hz)	60	R2	98	R10	95
CCT (K)	2711	R3	99	R11	96
Duv	0.0015	R4	94	R12	87
Chromaticity (x, y)	x=0.4563 y=0.4057	R5	95	R13	96
Chromaticity (u', v')	u'=0.2624 v'=0.5249	R6	97	R14	99
Color Rendering Index (CRI)	94.1	R7	92	R15	91
R9	64	R8	83	--	--

### Photometric Measurement – Goniophotometer Method:

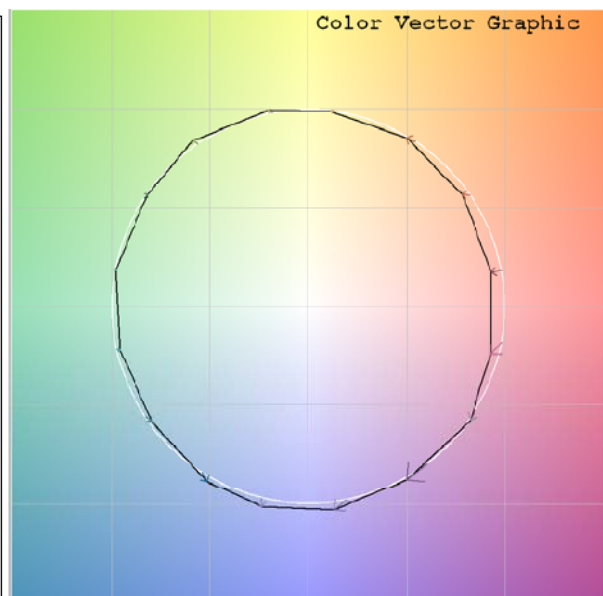
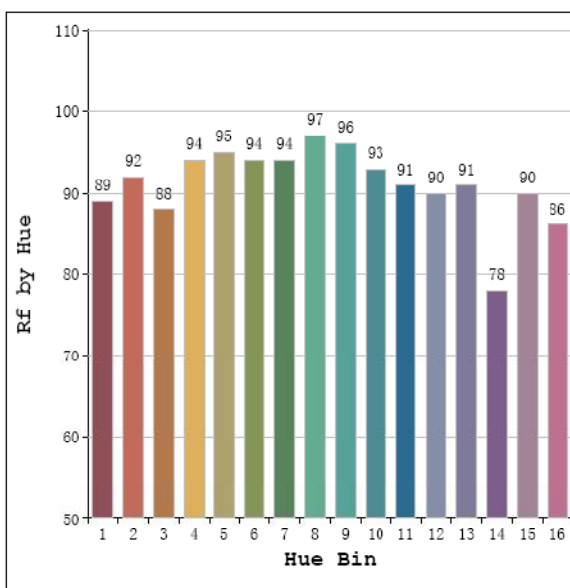
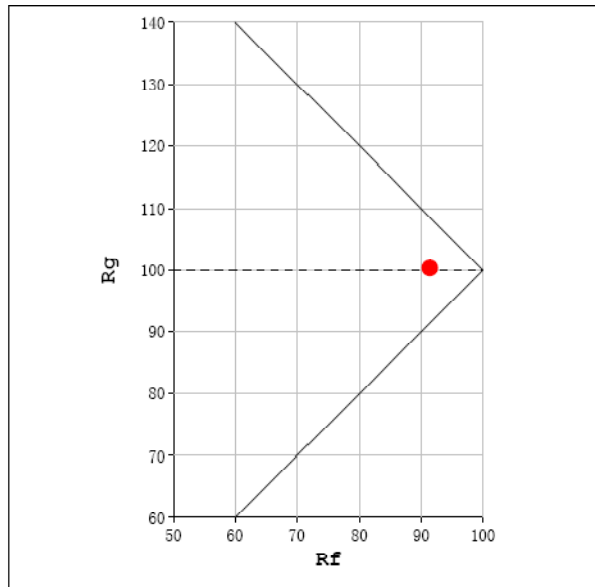
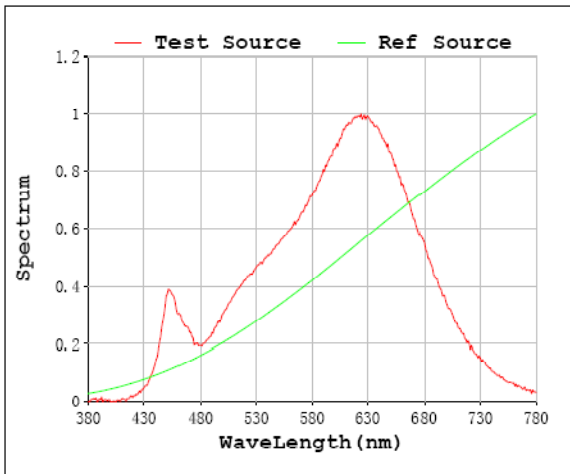
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	741.19
Luminous Efficacy (lm/W)	99.76
Beam Angle (°)	91.9
Center Beam Candle Power (cd)	326.2

# Spectral Power Distribution & Chromaticity Diagram



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Rf: 91 CCT: 2711 K u': 0.2624  
Rg: 100 Duv: -0.0015 v': 0.5249



## Zonal Lumen Tabulation

Report No: 20200911005

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	238.9	32.2%
0-40	376.1	50.7%
0-60	612.5	82.6%
60-90	128.7	17.4%
70-100	53.2	7.2%
90-120	0.0	0.0%
0-90	741.2	100.0%
90-180	0.0	0.0%
0-180	741.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.6	4.1%	90-100	0.0	0.0%
10-20	85.4	11.5%	100-110	0.0	0.0%
20-30	122.9	16.6%	110-120	0.0	0.0%
30-40	137.2	18.5%	120-130	0.0	0.0%
40-50	129.6	17.5%	130-140	0.0	0.0%
50-60	106.7	14.4%	140-150	0.0	0.0%
60-70	75.5	10.2%	150-160	0.0	0.0%
70-80	41.1	5.5%	160-170	0.0	0.0%
80-90	12.1	1.6%	170-180	0.0	0.0%

### Photometric Data

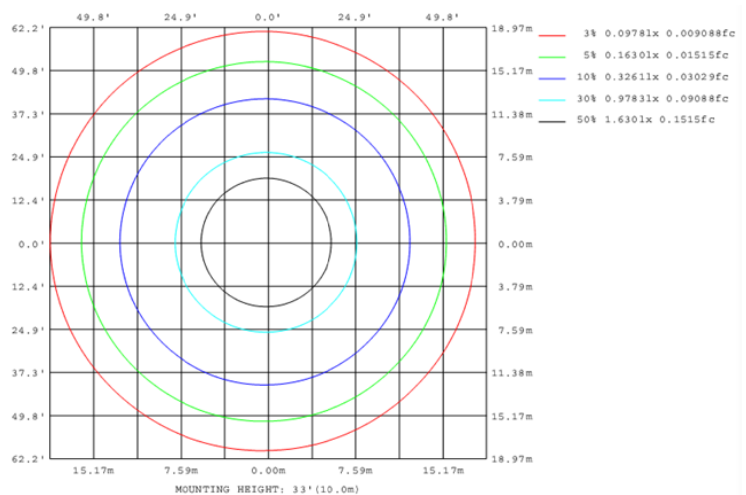
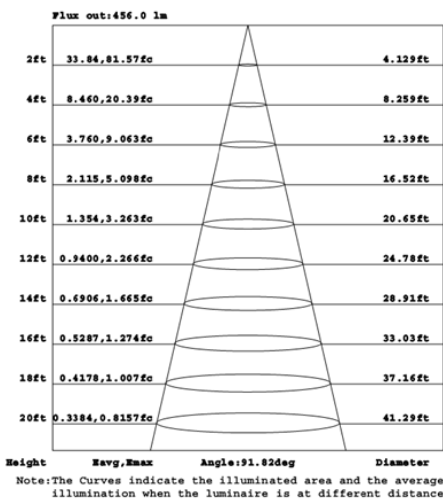
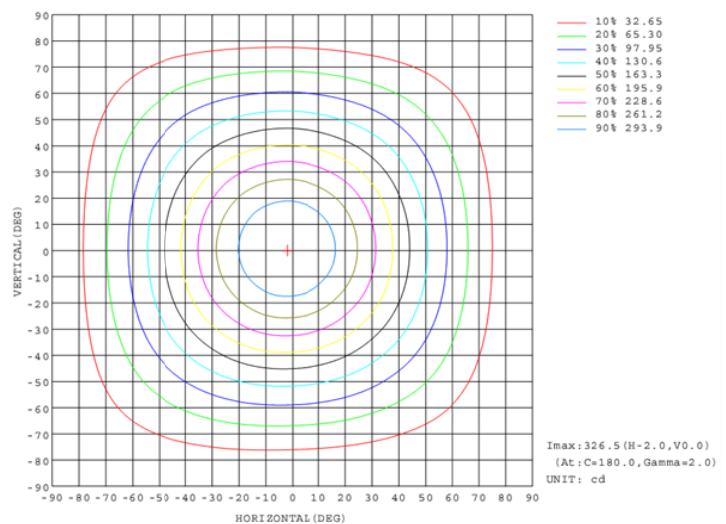
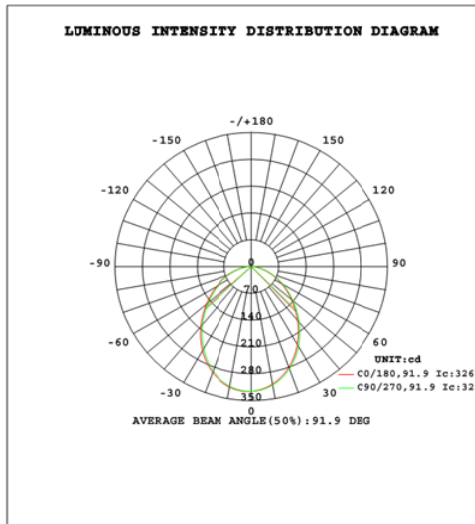


Table--1

UNIT: cd

C(DEG) γ (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	326	326	326	326	326	326	326	326	326	326	326	326	326	326	326	326			
5	321	321	321	322	322	323	324	325	325	325	325	325	324	323	322	322			
10	312	312	312	313	314	316	317	319	320	320	320	318	317	316	314	313			
15	298	298	298	300	301	304	306	308	309	309	309	307	306	303	301	299			
20	280	280	280	282	285	288	290	293	295	295	294	292	290	287	284	282			
25	259	259	259	261	264	268	271	274	276	276	276	273	271	267	264	261			
30	235	235	235	238	241	245	248	252	254	254	254	251	248	244	241	237			
35	210	209	209	213	216	221	224	228	230	230	229	226	223	219	216	212			
40	184	183	183	187	190	195	198	202	204	204	204	200	198	193	190	186			
45	158	158	158	161	164	169	172	176	178	178	178	174	172	167	164	160			
50	134	133	133	136	139	144	147	151	153	153	152	149	146	142	139	136			
55	110	110	110	113	115	120	123	126	128	128	128	125	122	119	116	113			
60	88.9	88.6	88.6	91.0	93.4	97.4	100	103	105	105	105	102	100.0	96.5	94.1	90.9			
65	68.6	68.3	68.4	70.6	72.8	76.3	78.9	82.0	83.9	84.0	83.7	81.1	79.0	75.7	73.4	70.5			
70	49.7	49.6	49.6	51.6	53.5	56.8	59.0	61.9	63.8	63.8	63.6	61.3	59.3	56.2	54.1	51.5			
75	32.7	32.6	32.7	34.4	36.0	38.9	40.9	43.2	44.8	44.7	44.6	42.7	41.2	38.4	36.6	34.3			
80	18.0	18.0	18.1	19.4	20.8	23.0	24.4	26.1	27.4	27.3	27.2	25.8	24.7	22.7	21.2	19.5			
85	6.90	6.91	6.96	7.77	8.49	9.76	10.5	11.5	12.6	12.4	12.4	11.5	10.9	9.69	8.96	7.96			
90	4.54	4.53	4.54	4.56	4.60	4.63	4.68	4.71	5.02	5.02	5.00	4.97	4.95	4.94	4.91	4.93			

## 2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2020-08-27	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLG0010(RA4R89FA120WS)	3000K	

### Electrical Measurement:

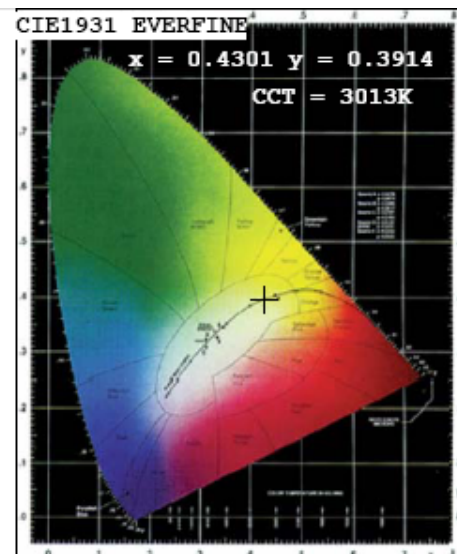
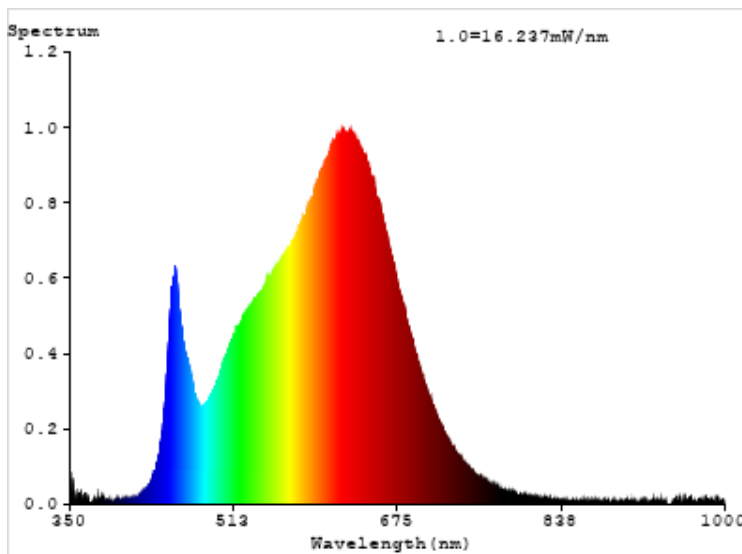
Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
202008270001	120.0	60	0.063	7.36	0.977

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

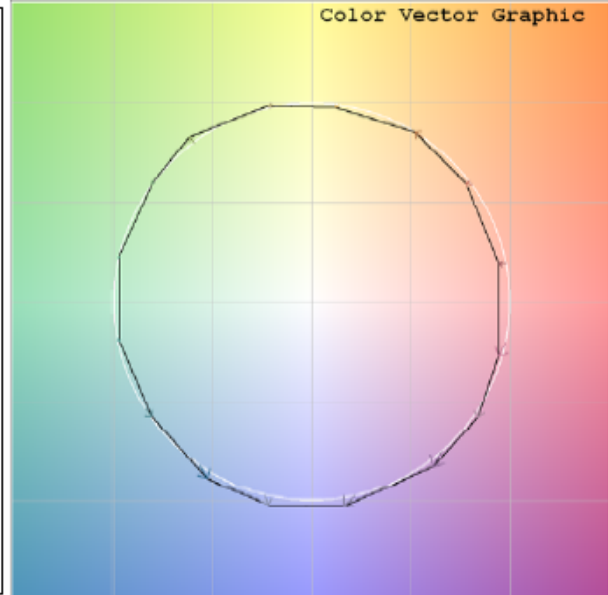
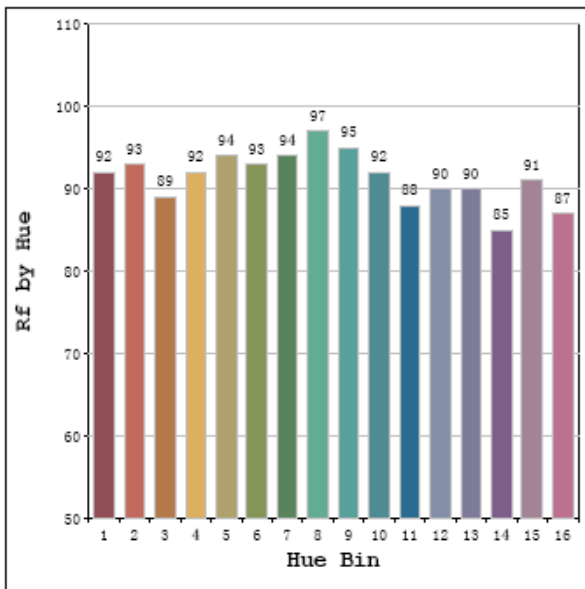
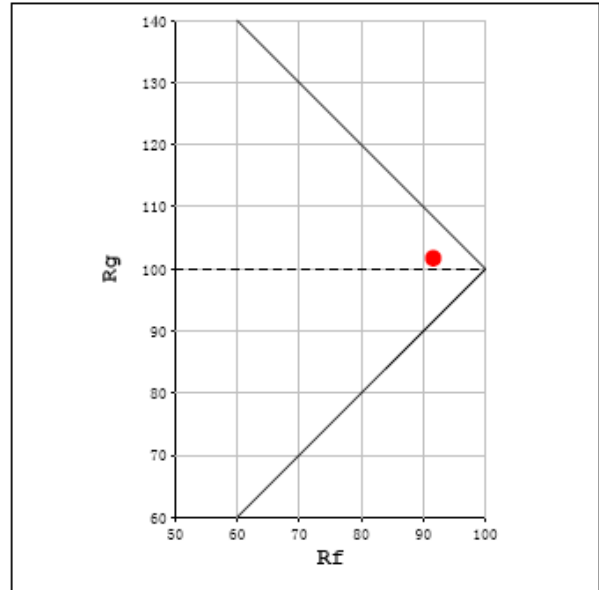
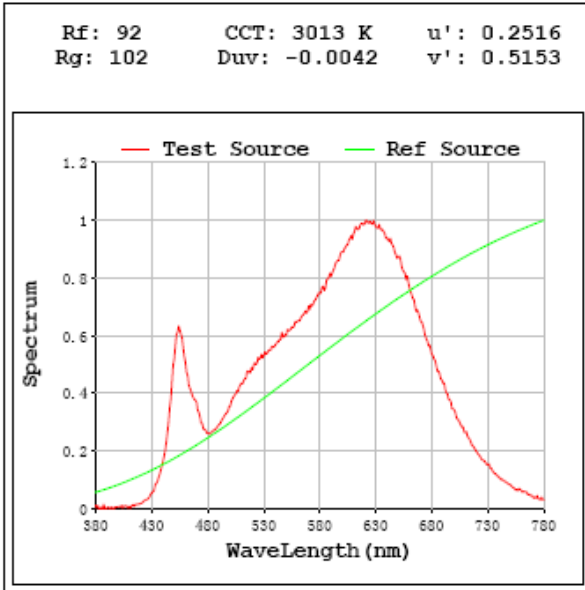
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3013
Duv	0.0042
Chromaticity (x, y)	x=0.4301 y=0.3914
Chromaticity (u', v')	u'=0.2516 v'=0.5153
Color Rendering Index (CRI)	95.4
R9	75
Total Luminous (lm)	776.2
Luminous Efficacy (lm/W)	105.45

Special Color Rendering Indices			
R1	98	R9	75
R2	99	R10	98
R3	98	R11	96
R4	96	R12	83
R5	97	R13	99
R6	96	R14	99
R7	93	R15	95
R8	88	--	--

## Spectral Power Distribution & Chromaticity Diagram



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**2.1.3 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2020-08-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLG0010(RA4R89FA120WS)	3500K	

**Electrical Measurement:**

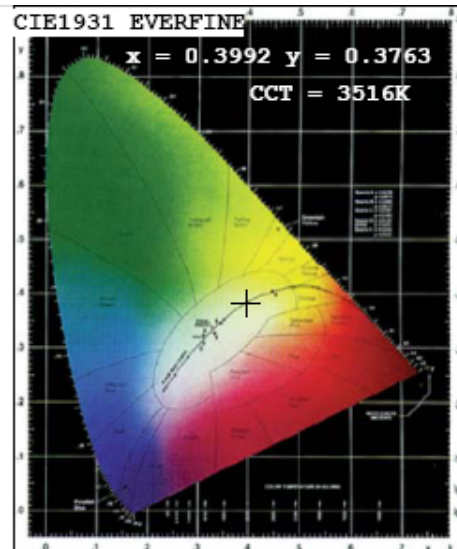
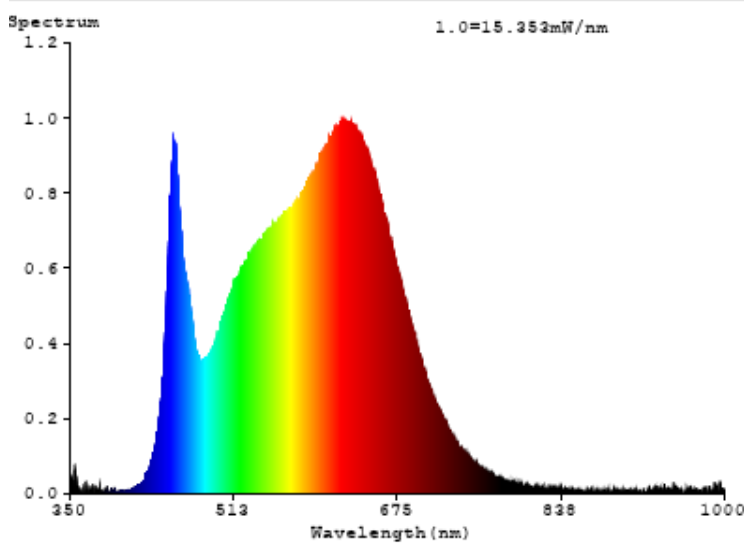
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008270001	120.0	60	0.062	7.25	0.977

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

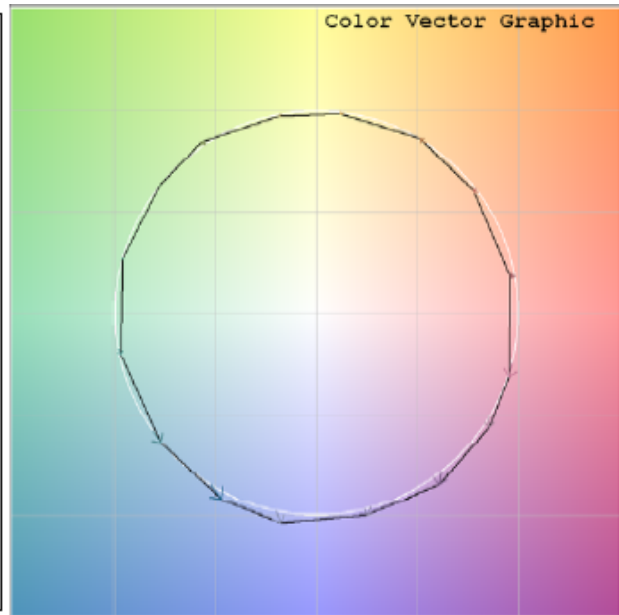
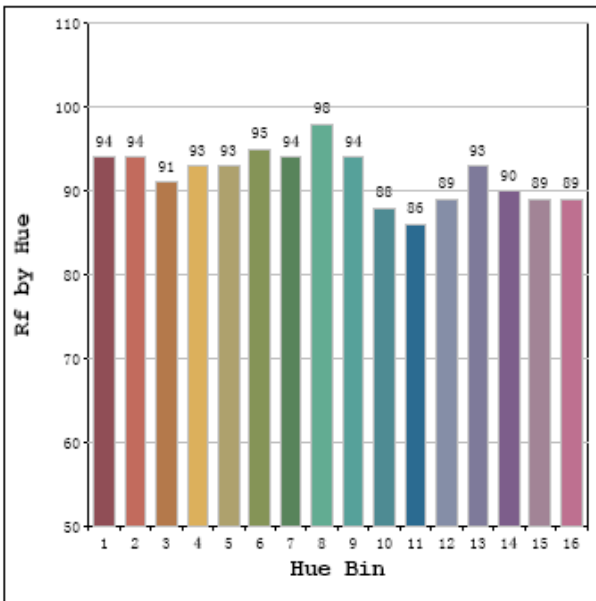
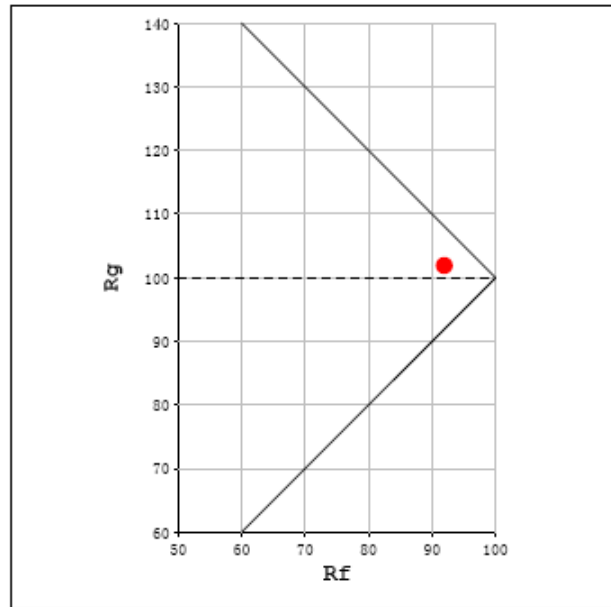
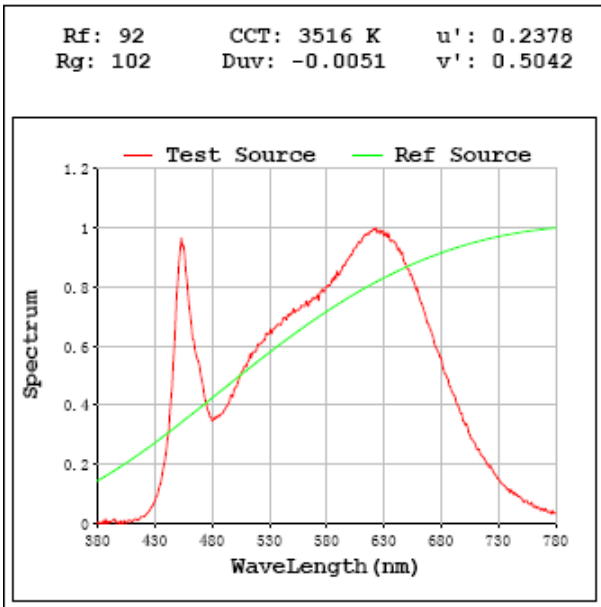
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3516
Duv	0.0051
Chromaticity (x, y)	x=0.3992 y=0.3763
Chromaticity (u', v')	u'=0.2378 v'=0.5042
Color Rendering Index (CRI)	96.5
R9	86
Total Luminous (lm)	818.7
Luminous Efficacy (lm/W)	112.94

Special Color Rendering Indices			
R1	98	R9	86
R2	98	R10	98
R3	98	R11	97
R4	97	R12	79
R5	98	R13	99
R6	95	R14	98
R7	95	R15	98
R8	93	--	--

**Spectral Power Distribution & Chromaticity Diagram**



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## 2.1.4 Electrical, Photometric and Chromaticity Measurements

<b>Test date</b>	2020-08-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLG0010(RA4R89FA120WS)		4000K

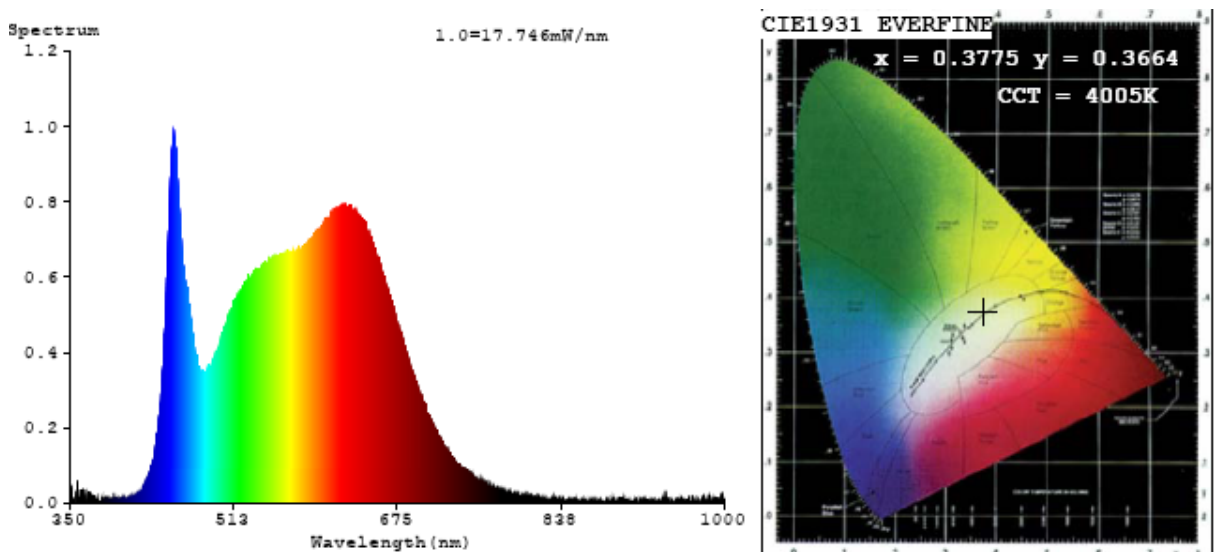
### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008270001	120.0	60	0.062	7.29	0.977

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

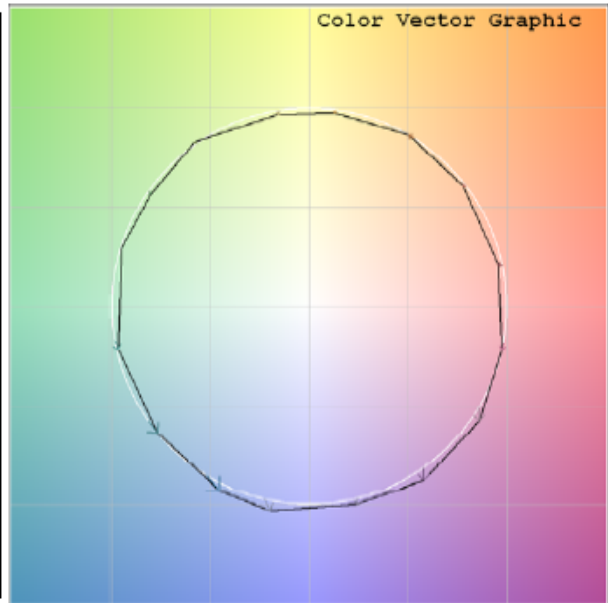
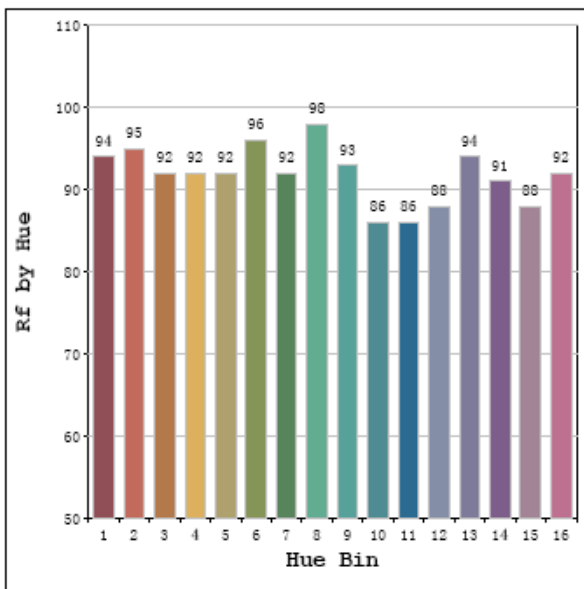
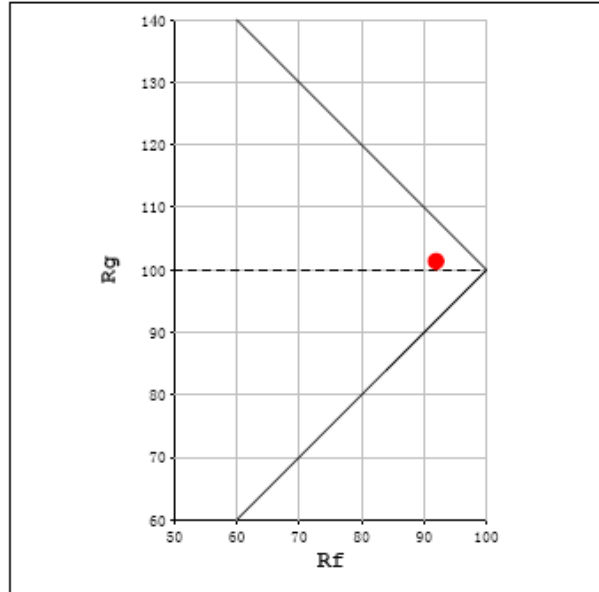
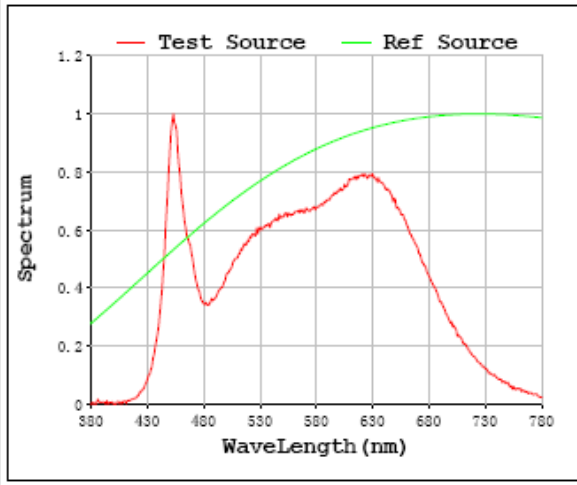
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	98	R9	90
Frequency (Hz)	60	R2	99	R10	97
CCT (K)	4005	R3	97	R11	97
Duv	0.0041	R4	97	R12	74
Chromaticity (x, y)	x=0.3775 y=0.3664	R5	97	R13	99
Chromaticity (u', v')	u'=0.2273 v'=0.4965	R6	95	R14	98
Color Rendering Index (CRI)	96.7	R7	96	R15	98
R9	90	R8	95	--	--
Total Luminous (lm)	831.7				
Luminous Efficacy (lm/W)	114.12				

## Spectral Power Distribution & Chromaticity Diagram



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Rf: 92      CCT: 4005 K      u': 0.2273  
 Rg: 101      Duv: -0.0041      v': 0.4965



## 2.1.5 Electrical, Photometric and Chromaticity Measurements

<b>Test date</b>	2020-08-27	<b>Test Ambient:</b>	25.3 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	DLG0010(RA4R89FA120WS)	5000K	

### Electrical Measurement:

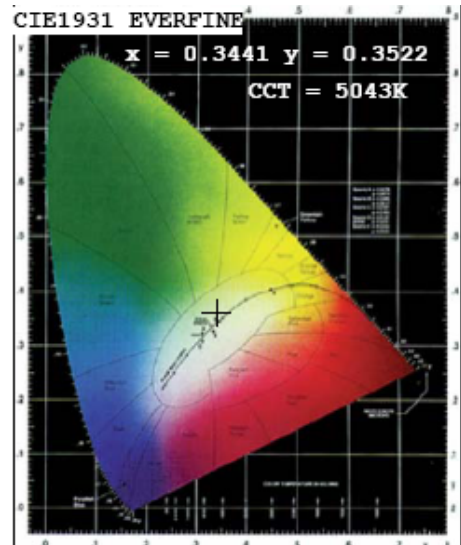
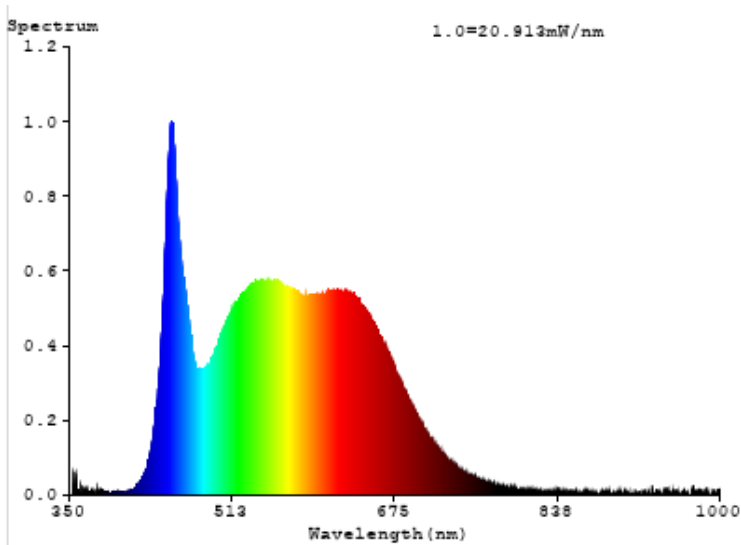
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202008270001	120.0	60	0.063	7.43	0.977

### Chromaticity Measurement - Sphere-Spectroradiometer Method:

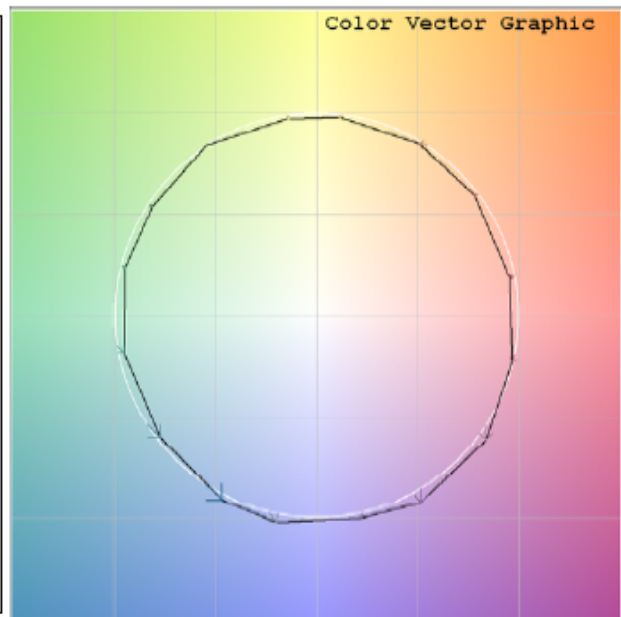
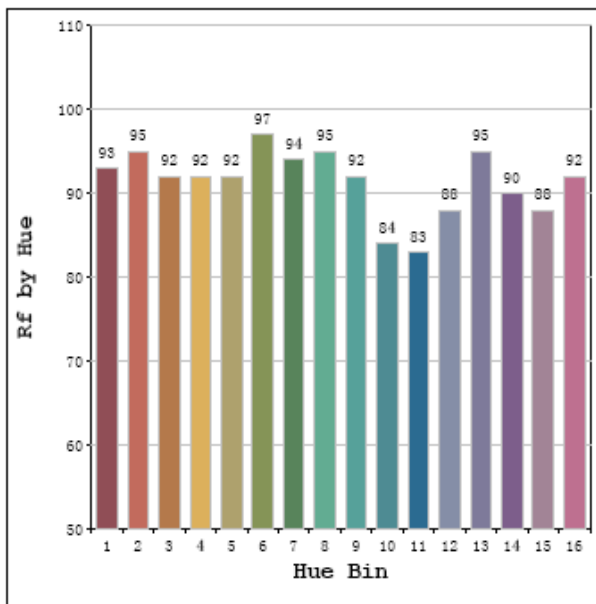
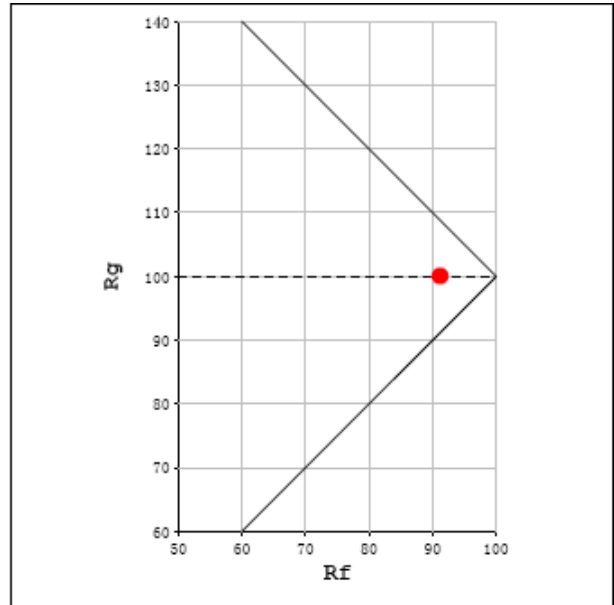
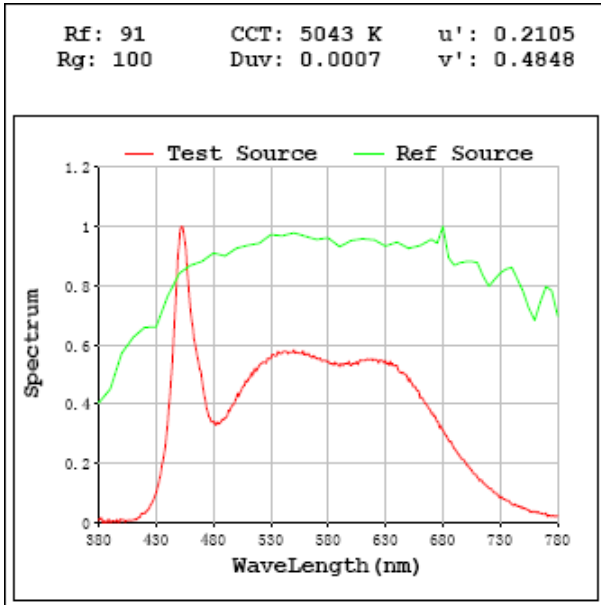
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5043
Duv	0.0007
Chromaticity (x, y)	x=0.3441 y=0.3522
Chromaticity (u', v')	u'=0.2105 v'=0.4848
Color Rendering Index (CRI)	94.8
R9	83
Total Luminous (lm)	815.3
Luminous Efficacy (lm/W)	109.76

Special Color Rendering Indices			
R1	96	R9	83
R2	96	R10	89
R3	94	R11	94
R4	95	R12	72
R5	95	R13	96
R6	92	R14	96
R7	97	R15	96
R8	94	--	--

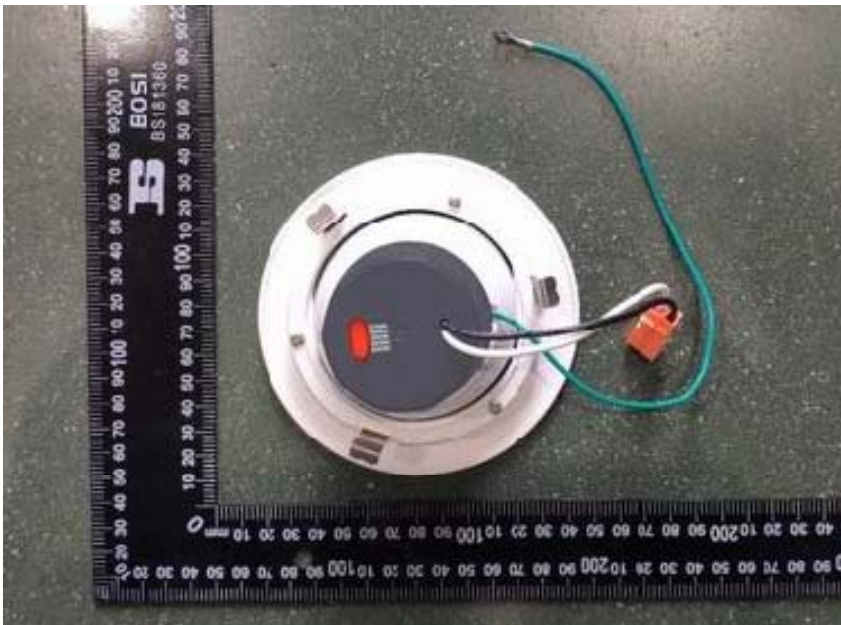
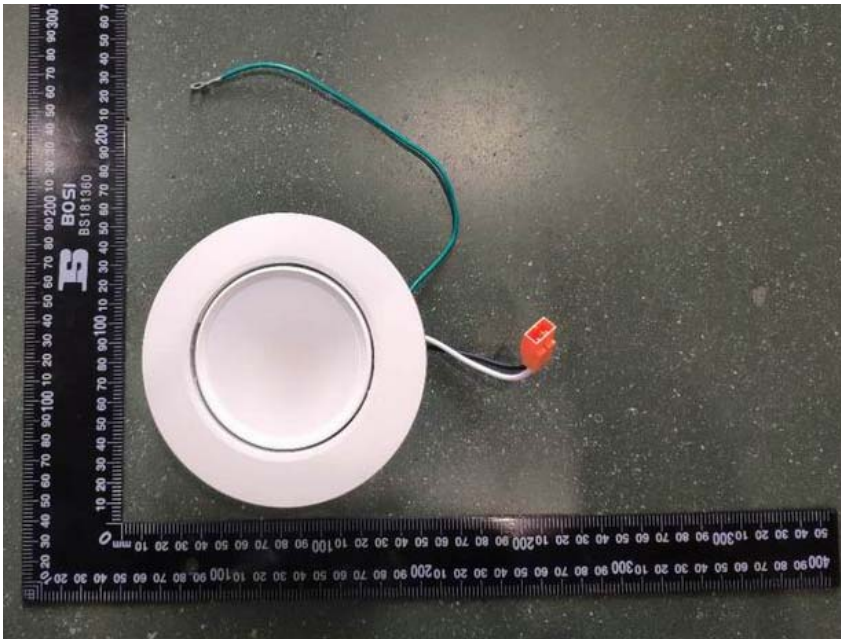
## Spectral Power Distribution & Chromaticity Diagram



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### 3. Product Photo



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