

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):
DLS0102(CRVFAD-12R-16-9CCT-120-BN)

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

**Type of
Luminaire:** Downlights

Report Date: 2021-10-12

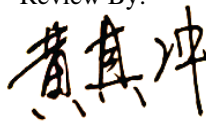
Prepared By:

Test & Report By:



Engineer: SunFangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	16.0W
Rated Initial Lamp Lumen	1100 lm
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

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	2021-10-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0102(CRVFAD-12R-16-9CCT-120-BN)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120044	120.0	60	0.135	15.80	0.971

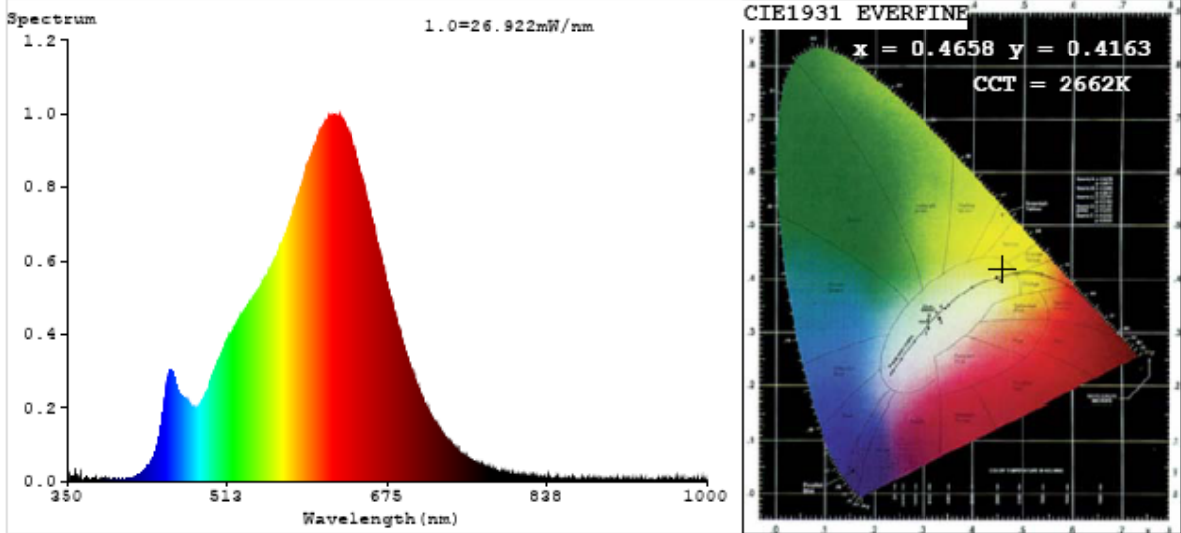
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	92	R9	51
Frequency (Hz)	60	R2	97	R10	92
CCT (K)	2662	R3	99	R11	93
Duv	0.0016	R4	91	R12	84
Chromaticity (x, y)	x=0.4658 y=0.4163	R5	92	R13	93
Chromaticity (u', v')	u'=0.2638v'=0.5304	R6	97	R14	100
Color Rendering Index (CRI)	91.8	R7	90	R15	86
R9	51	R8	77	--	--

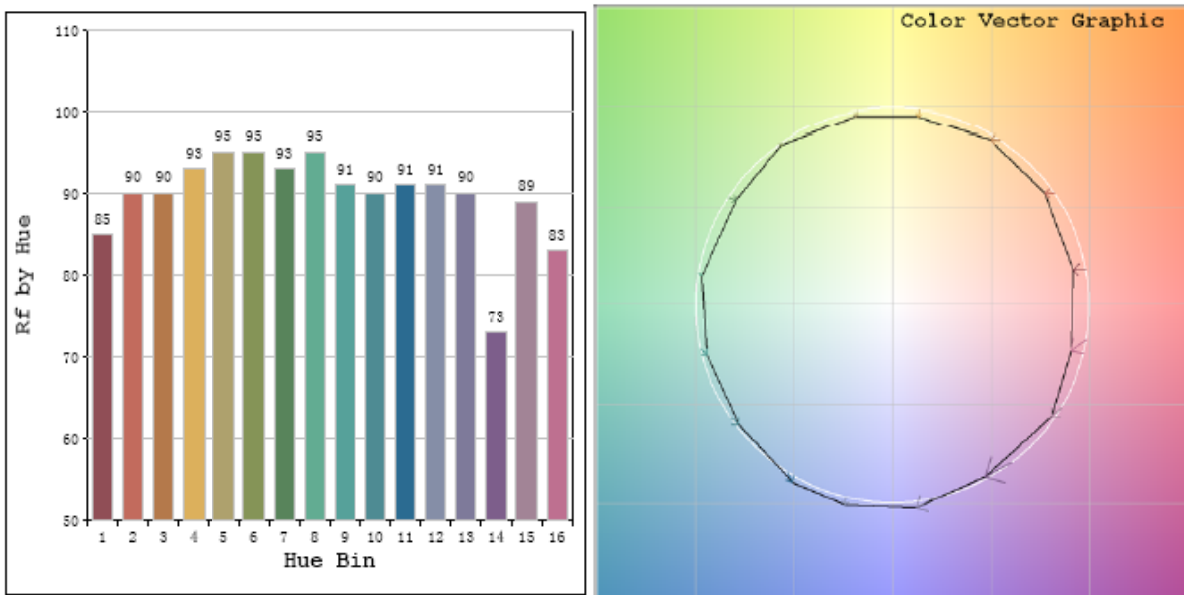
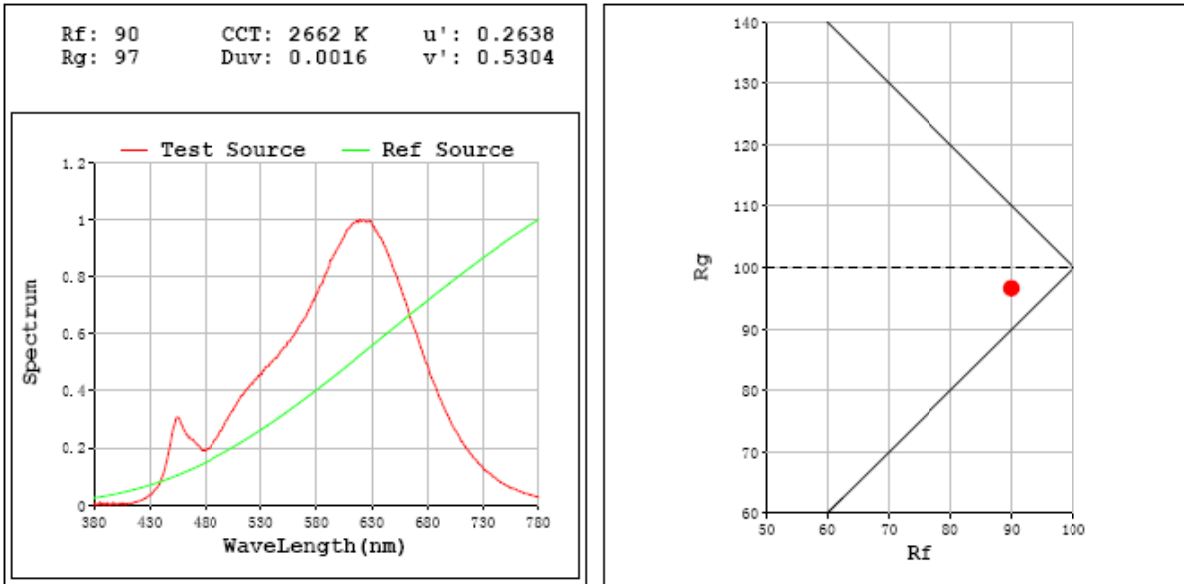
Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1215.7
Luminous Efficacy (lm/W)	76.95
Beam Angle (°)	135.7
Center Beam Candle Power (cd)	264.5

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	213.7	17.6%
0-40	359.5	29.6%
0-60	680.7	56.0%
60-90	334.2	27.5%
70-100	249.1	20.5%
90-120	128.9	10.6%
0-90	1014.8	83.5%
90-180	201.0	16.5%
0-180	1215.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	25.1	2.1%	90-100	56.2	4.6%
10-20	73.4	6.0%	100-110	40.8	3.4%
20-30	115.2	9.5%	110-120	32.0	2.6%
30-40	145.8	12.0%	120-130	26.5	2.2%
40-50	161.4	13.3%	130-140	20.4	1.7%
50-60	159.7	13.1%	140-150	13.6	1.1%
60-70	141.3	11.6%	150-160	7.3	0.6%
70-80	111.7	9.2%	160-170	3.3	0.3%
80-90	81.3	6.7%	170-180	1.0	0.1%

Photometric Data

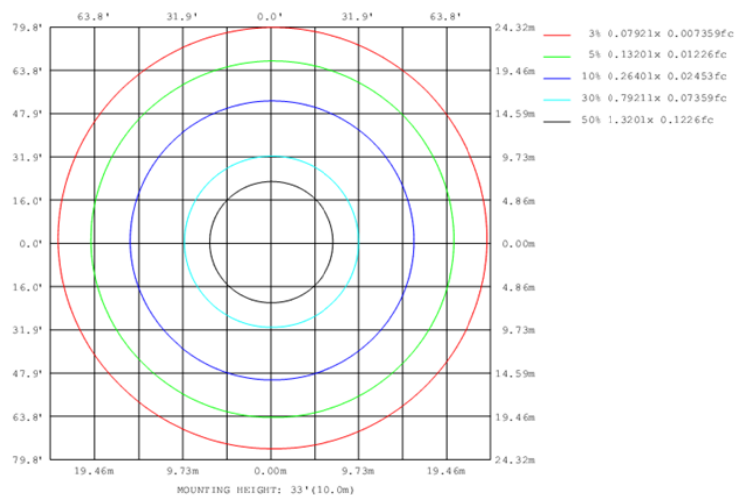
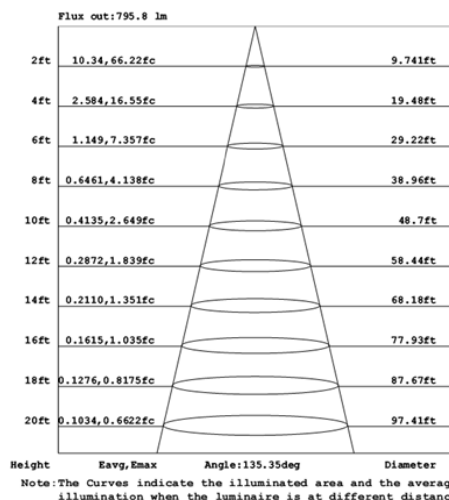
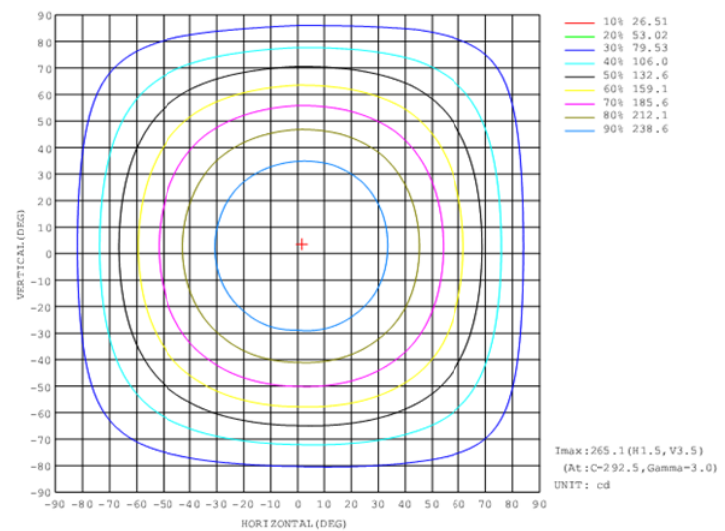
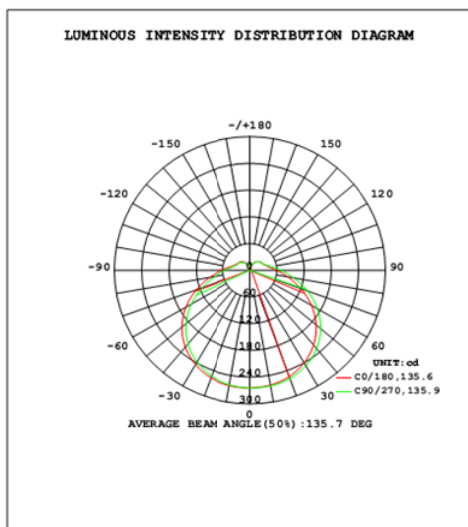


Table--1

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	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264			
5	264	264	263	263	263	263	263	263	263	263	264	264	264	264	264	264			
10	263	262	262	262	261	261	261	261	262	262	262	263	264	264	264	263			
15	261	260	259	258	258	257	257	258	259	259	260	261	262	262	262	261			
20	257	256	254	254	253	252	252	253	254	255	256	257	259	259	259	258			
25	252	250	248	247	246	245	245	246	248	249	251	252	254	254	254	253			
30	244	243	240	239	238	237	237	238	240	241	244	245	247	247	247	246			
35	236	234	231	229	228	226	226	228	230	232	235	237	239	239	239	237			
40	225	223	219	217	216	214	214	216	219	221	224	226	229	229	229	227			
45	213	210	206	204	202	201	201	203	206	208	212	214	218	217	217	215			
50	198	195	191	189	187	185	185	188	191	194	198	201	204	204	203	201			
55	183	179	175	172	170	168	168	171	175	178	182	185	189	189	188	185			
60	165	162	157	154	152	150	150	153	157	160	165	168	172	172	171	168			
65	147	143	138	135	133	131	131	134	138	142	147	150	154	154	153	150			
70	128	124	119	116	114	112	113	115	120	123	128	131	135	135	135	131			
75	109	106	101	98.5	96.3	94.9	95.1	97.4	101	105	109	112	116	116	116	112			
80	92.0	88.9	85.0	82.6	80.8	79.6	79.8	81.7	85.1	87.9	91.9	94.8	98.4	98.4	98.0	95.0			
85	76.8	74.1	70.8	68.9	67.3	66.3	66.7	68.3	71.1	73.6	76.9	79.4	82.7	82.4	82.3	79.6			
90	63.5	61.2	58.3	56.7	55.6	54.8	55.2	56.5	59.2	61.2	64.0	66.2	69.1	68.5	68.5	66.2			
95	52.2	50.5	48.4	47.4	46.5	45.9	46.2	47.2	49.5	50.8	52.7	54.4	57.1	56.2	56.2	54.3			
100	43.9	42.9	41.7	41.2	40.4	39.8	40.2	40.8	43.0	43.4	44.4	45.4	47.6	46.5	46.6	45.4			
105	38.5	38.0	37.4	36.9	36.2	35.8	36.2	36.9	38.7	38.7	38.9	39.3	41.0	39.9	40.0	39.4			
110	35.0	34.6	33.9	33.3	32.9	32.7	33.2	33.9	35.4	35.4	35.1	35.2	36.6	35.4	35.9	35.6			
115	32.0	31.7	31.3	31.0	30.7	30.7	31.3	31.8	32.7	32.6	32.2	32.0	33.2	32.0	32.7	32.7			
120	30.7	30.8	30.4	30.2	29.9	29.9	30.3	30.9	31.9	31.4	30.6	30.3	30.7	30.1	30.7	31.0			
125	29.8	29.7	29.3	29.2	28.7	28.8	29.1	29.8	30.9	30.4	29.7	29.5	30.0	29.3	29.8	30.0			
130	28.5	28.3	27.8	27.5	27.1	27.1	27.5	28.2	29.5	29.0	28.4	28.3	29.0	28.3	28.5	28.8			
135	26.7	26.4	25.8	25.5	25.0	25.1	25.5	26.2	27.5	27.1	26.7	26.6	27.3	26.7	26.9	27.1			
140	24.5	24.1	23.4	23.0	22.6	22.6	23.1	23.9	25.2	24.8	24.5	24.5	25.1	24.7	24.8	24.9			
145	22.0	21.6	20.8	20.3	19.7	19.8	20.5	21.3	22.5	22.2	22.0	21.9	22.6	22.2	22.4	22.5			
150	19.2	18.8	18.1	17.5	16.9	17.0	17.5	18.3	19.3	19.2	19.2	19.1	19.7	19.6	19.8	19.8			
155	16.0	15.7	14.9	14.5	14.1	14.0	14.1	14.7	15.6	15.9	16.1	16.2	16.8	16.8	16.9	16.8			
160	12.7	12.6	12.2	12.1	11.9	11.9	12.0	11.9	12.3	12.6	13.0	13.2	13.6	13.6	13.6	13.4			
165	11.1	11.2	11.1	11.1	11.1	11.1	10.8	10.7	11.0	11.1	11.3	11.5	11.7	11.6	11.6	11.5			
170	10.4	10.4	10.6	10.6	10.6	10.4	10.2	10.3	10.4	10.4	10.5	10.6	10.7	10.7	10.7	10.7			
175	10.1	10.1	10.1	10.1	10.04	9.96	9.96	10.0	10.1	10.0	10.1	10.1	10.2	10.2	10.2	10.2			
180	9.69	9.69	9.69	9.74	9.79	9.75	9.76	9.77	9.70	9.69	9.69	9.72	9.78	9.74	9.75	9.76			

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2021-10-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0102(CRVFAD-12R-16-9CCT-120-BN) 3000K		

Electrical Measurement:

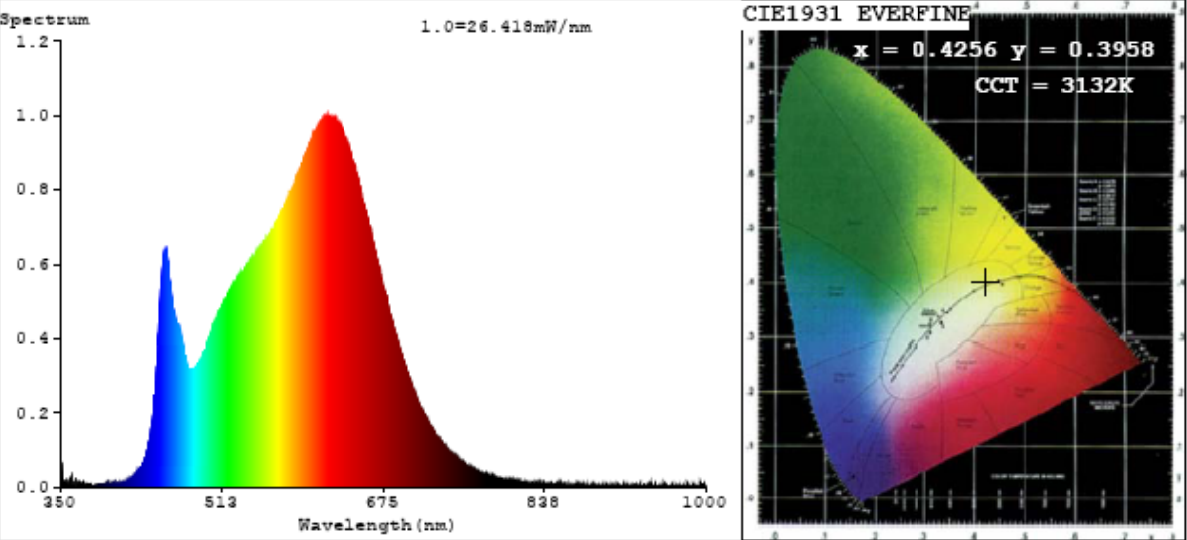
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120044	120.0	60	0.134	15.61	0.968

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3132
Duv	0.0017
Chromaticity (x, y)	x=0.4256 y=0.3958
Chromaticity (u', v')	u'=0.2468 v'=0.5164
Color Rendering Index (CRI)	94.4
R9	68
Total Luminous (lm)	1324.0
Luminous Efficacy (lm/W)	84.80

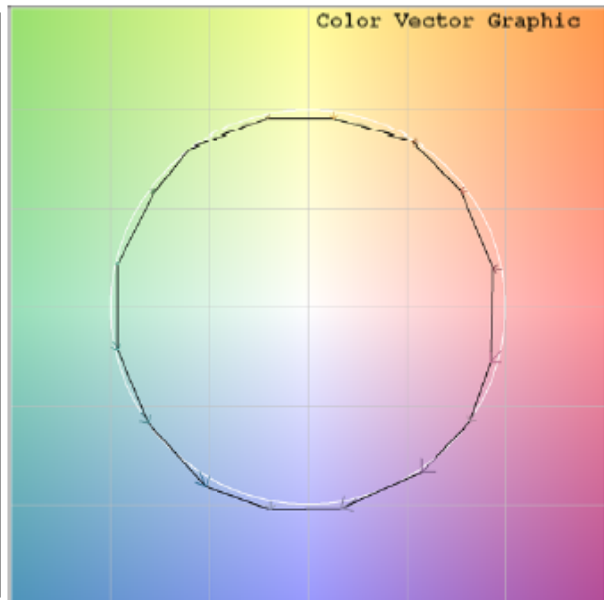
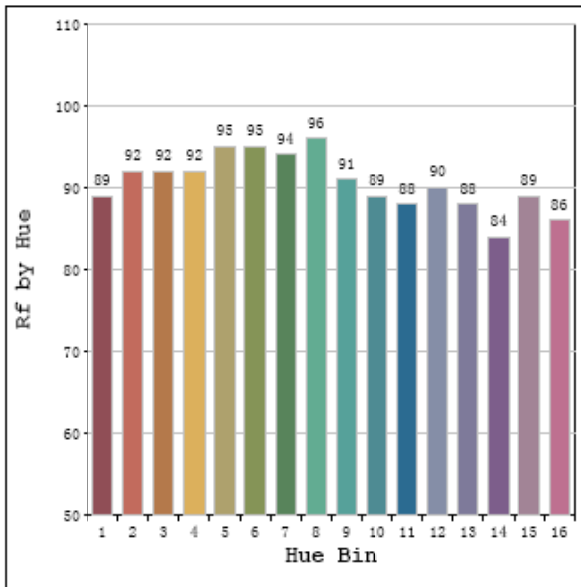
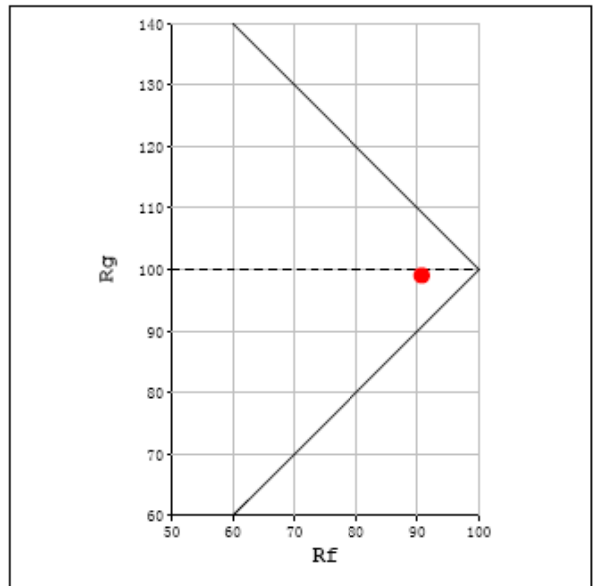
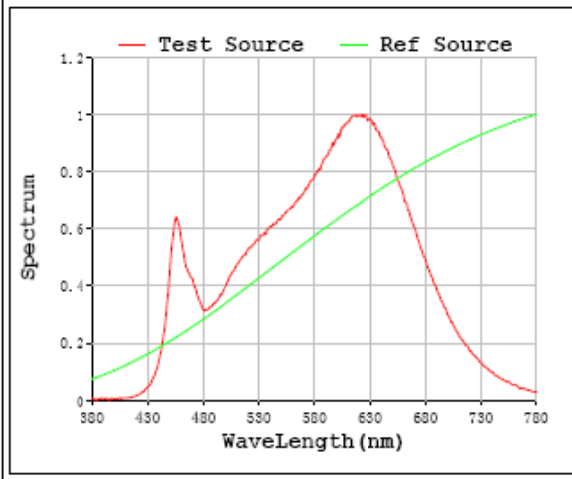
Special Color Rendering Indices			
R1	96	R9	68
R2	99	R10	98
R3	98	R11	96
R4	94	R12	81
R5	96	R13	98
R6	96	R14	100
R7	91	R15	93
R8	85	--	--

Spectral Power Distribution & Chromaticity Diagram



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Rf: 91 CCT: 3132 K u': 0.2468
 Rg: 99 Duv: -0.0017 v': 0.5164



2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2021-10-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0102(CRVFAD-12R-16-9CCT-120-BN)	3500K	

Electrical Measurement:

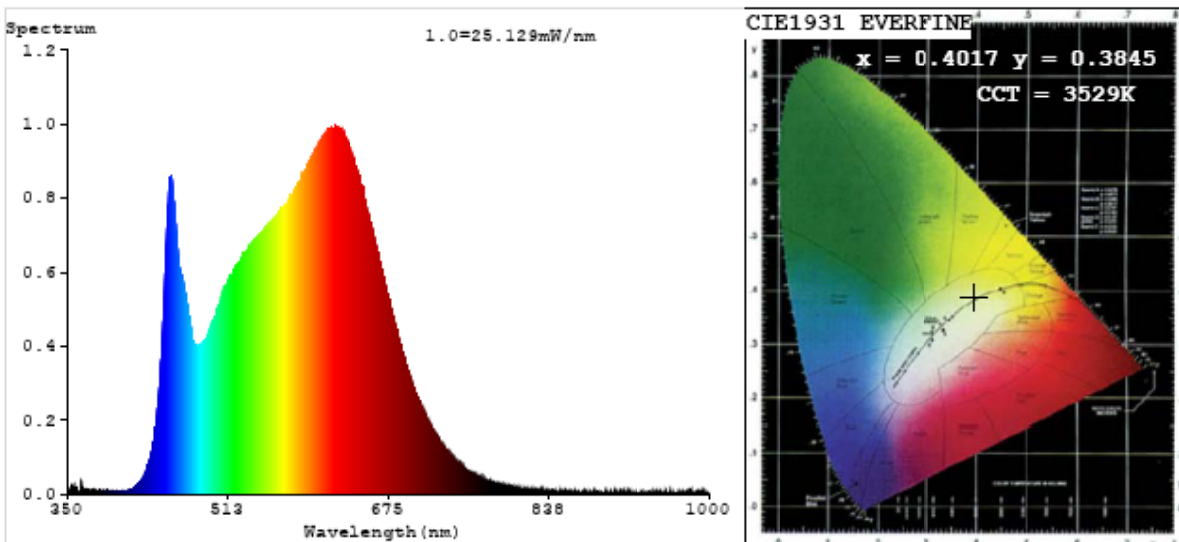
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120044	120.0	60	0.131	15.25	0.967

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3529
Duv	0.0019
Chromaticity (x, y)	x=0.4017 y=0.3845
Chromaticity (u', v')	u'=0.2359 v'=0.5081
Color Rendering Index (CRI)	95.2
R9	75
Total Luminous (lm)	1369.0
Luminous Efficacy (lm/W)	89.75

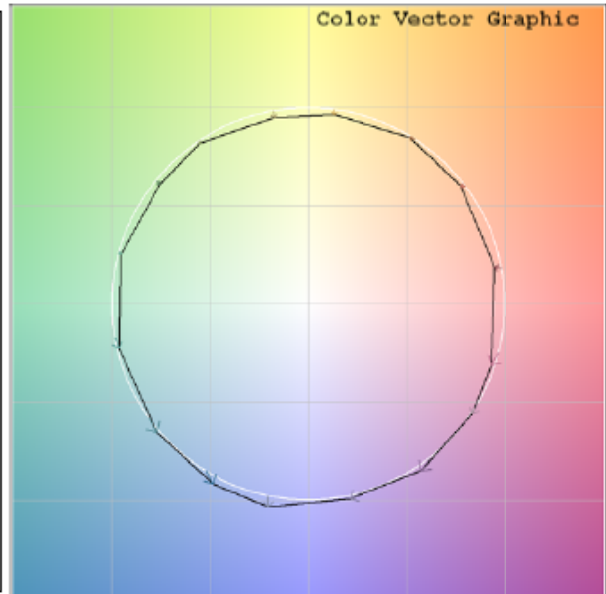
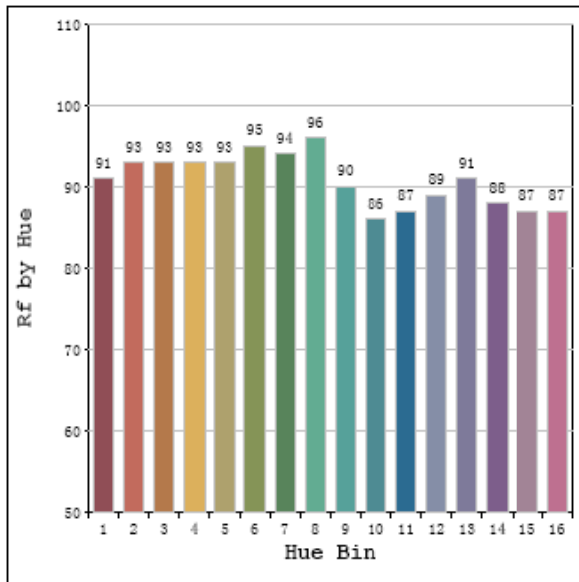
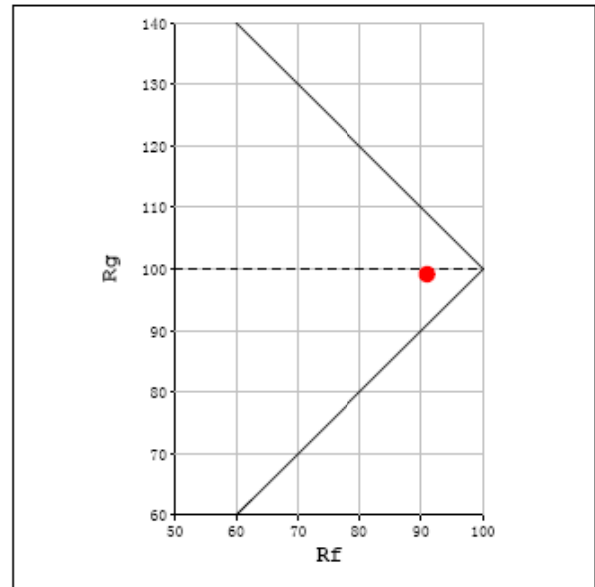
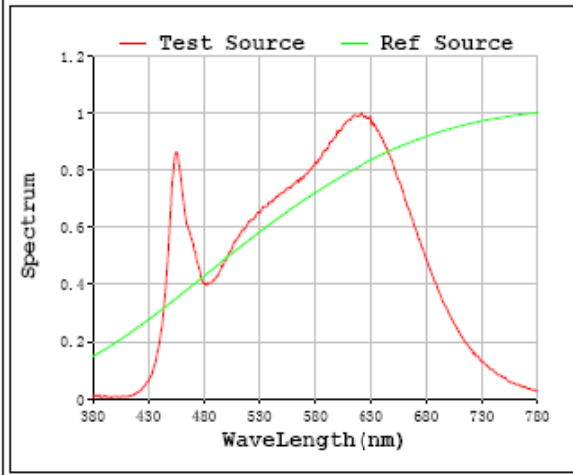
Special Color Rendering Indices			
R1	97	R9	75
R2	99	R10	99
R3	98	R11	96
R4	95	R12	78
R5	96	R13	99
R6	96	R14	100
R7	93	R15	95
R8	88	--	--

Spectral Power Distribution & Chromaticity Diagram



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Rf: 91 CCT: 3529 K u': 0.2359
 Rg: 99 Duv: -0.0019 v': 0.5081



2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2021-10-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0102(CRVFAD-12R-16-9CCT-120-BN)	4000K	

Electrical Measurement:

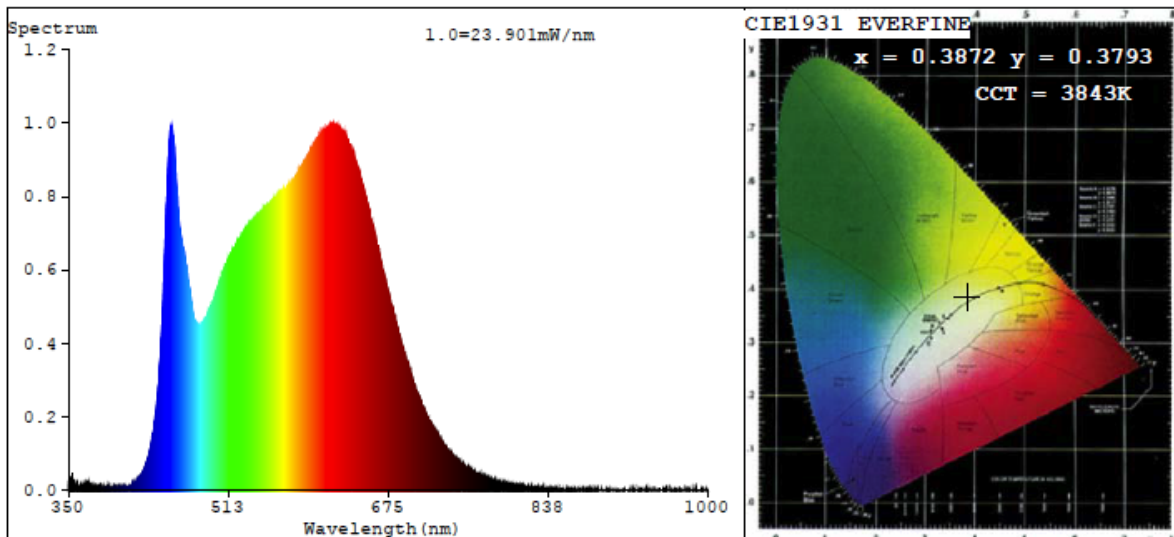
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120044	120.0	60	0.133	15.44	0.968

Chromaticity Measurement - Sphere-Spectroradiometer Method:

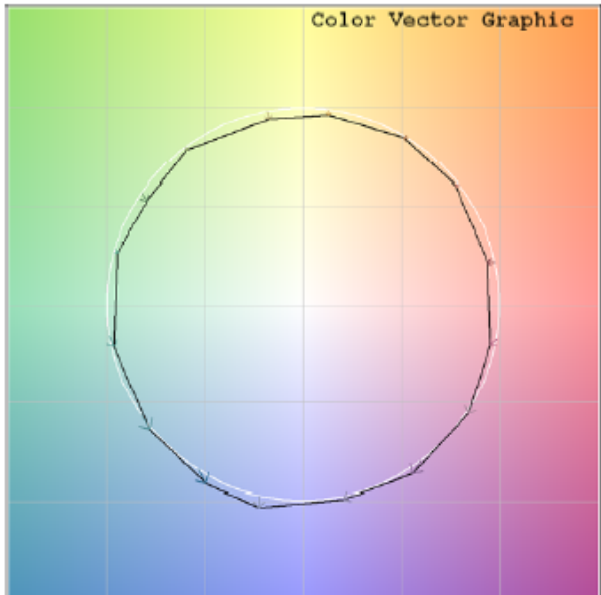
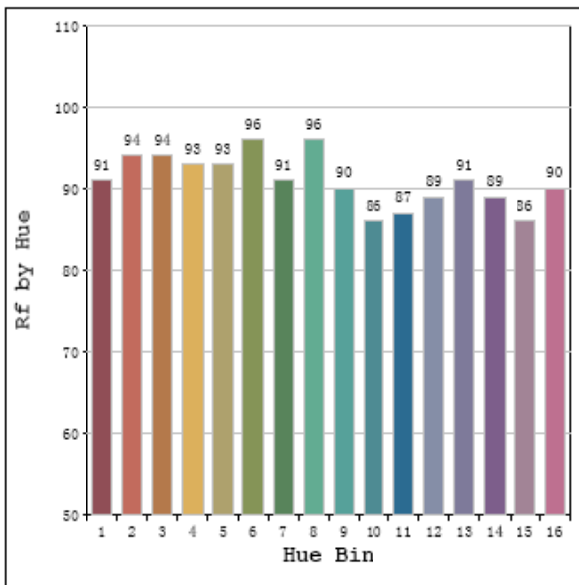
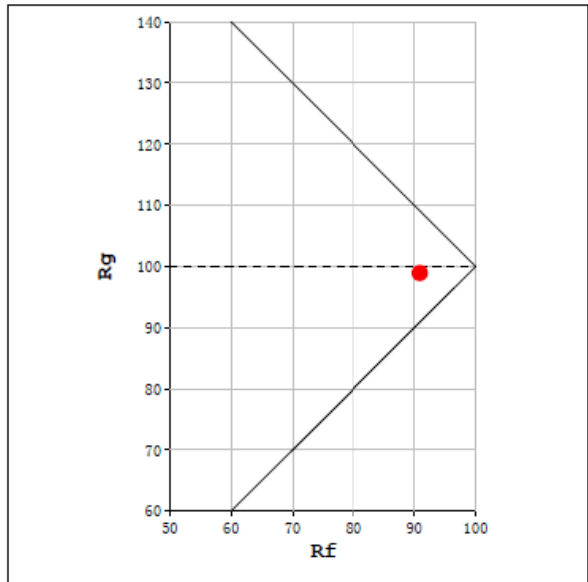
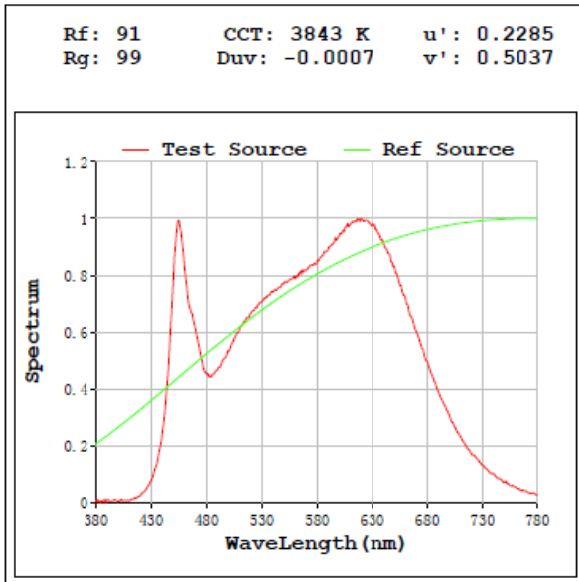
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3843
Duv	0.0007
Chromaticity (x, y)	x=0.3902y=0.3793
Chromaticity (u', v')	u'=0.2285 v'=0.5037
Color Rendering Index (CRI)	95.4
R9	77
Total Luminous (lm)	1364.0
Luminous Efficacy (lm/W)	88.36

Special Color Rendering Indices			
R1	97	R9	77
R2	99	R10	98
R3	99	R11	96
R4	94	R12	76
R5	95	R13	99
R6	96	R14	100
R7	93	R15	95
R8	89	--	--

Spectral Power Distribution & Chromaticity Diagram



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2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2021-10-12	Test Ambient:	25.3 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0102(CRVFAD-12R-16-9CCT-120-BN)	5000K	

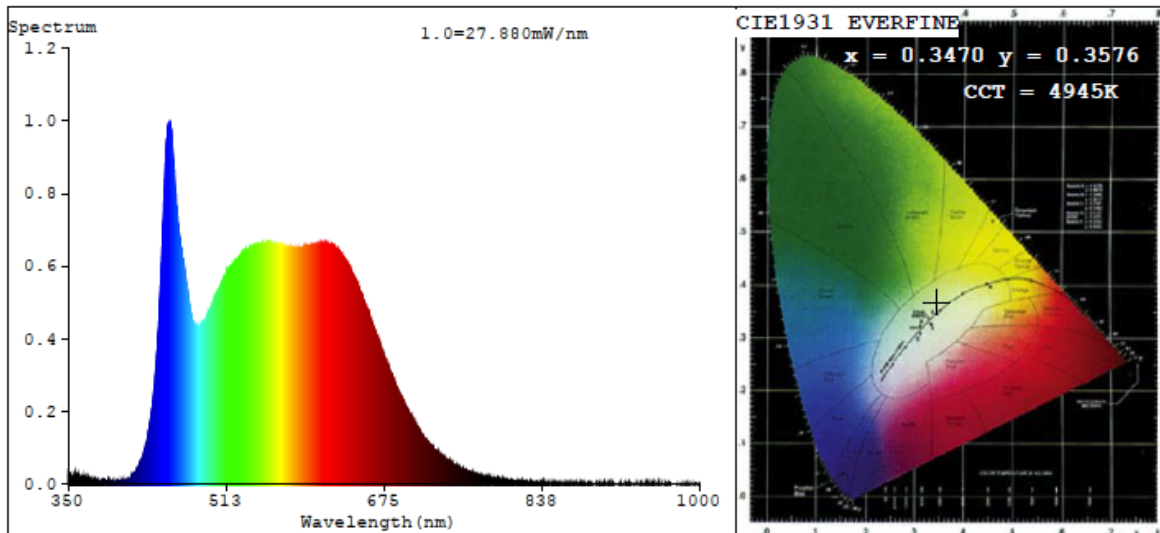
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120044	120.0	60	0.136	15.77	0.969

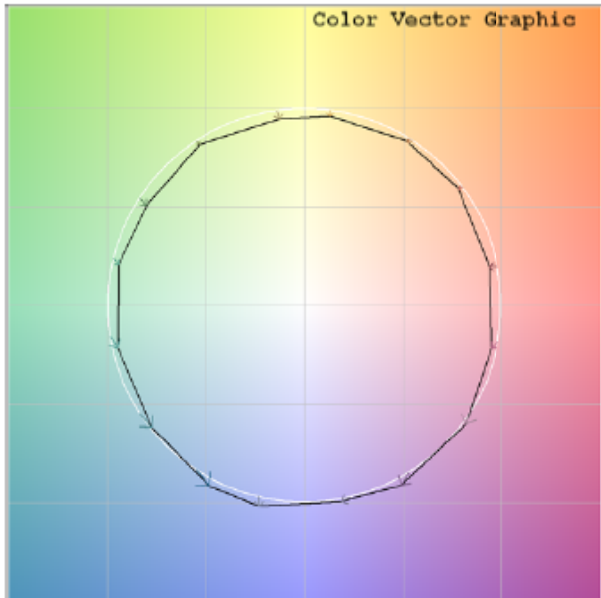
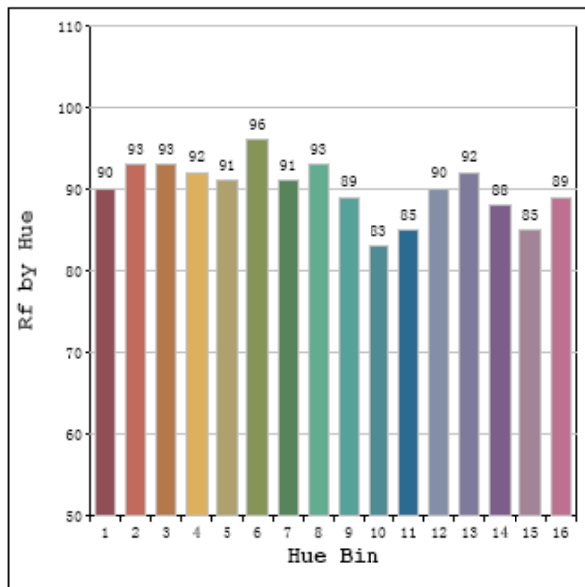
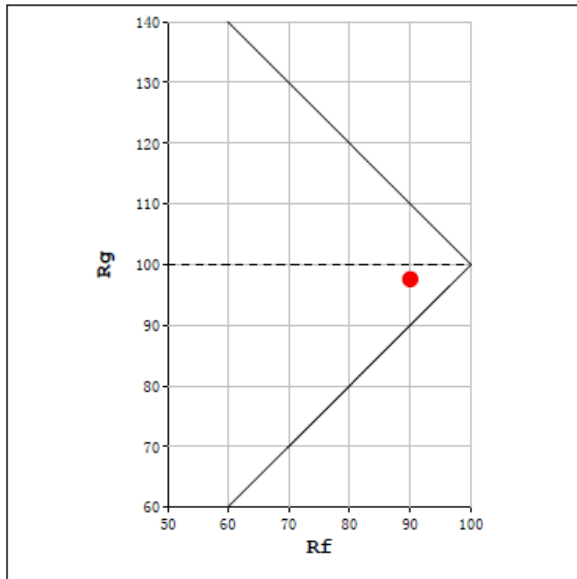
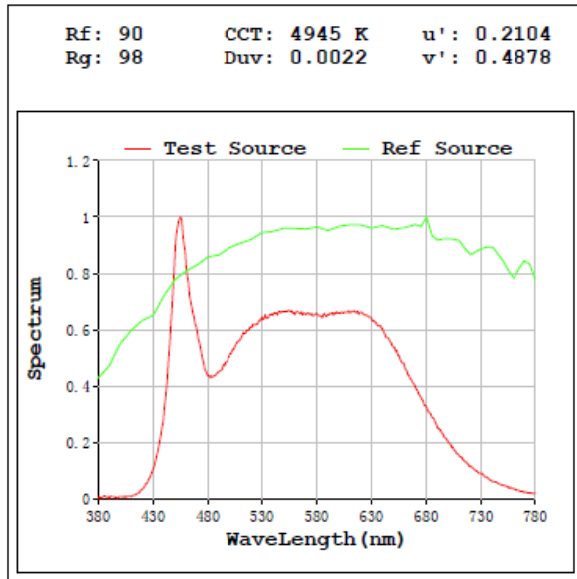
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	94	R9	72
Frequency (Hz)	60	R2	98	R10	92
CCT (K)	4945	R3	98	R11	91
Duv	0.0022	R4	91	R12	68
Chromaticity (x, y)	x=0.3470y=0.3576	R5	92	R13	95
Chromaticity (u', v')	u'=0.2104 v'=0.4878	R6	94	R14	99
Color Rendering Index (CRI)	93.5	R7	94	R15	91
R9	72	R8	88	--	--
Total Luminous (lm)	1273.0				
Luminous Efficacy (lm/W)	80.74				

Spectral Power Distribution & Chromaticity Diagram

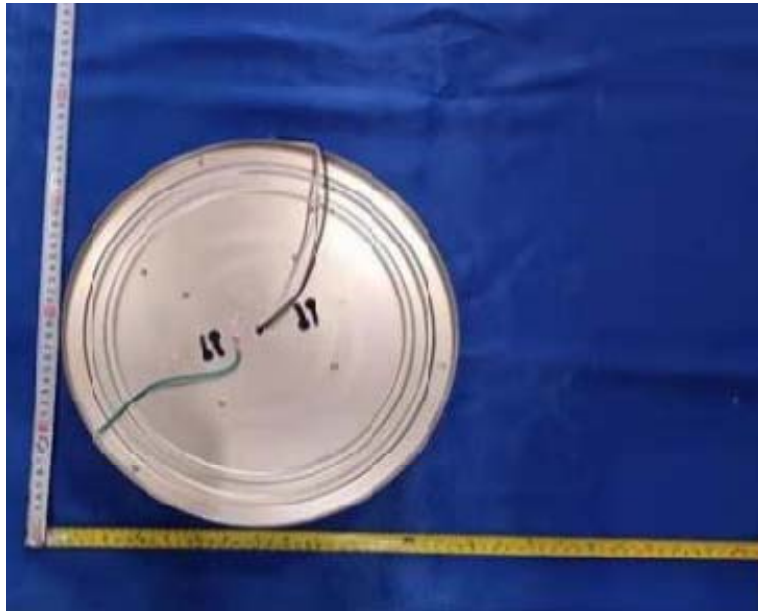
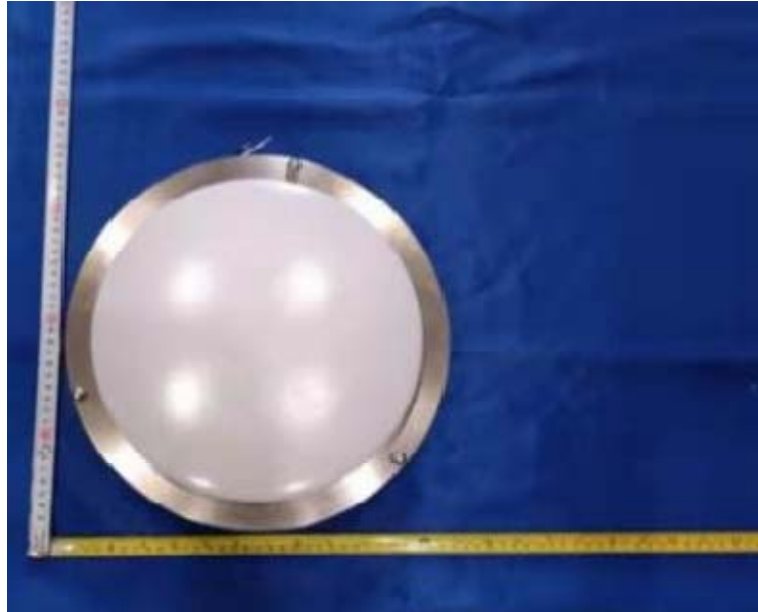


TM30



Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
DLS0102(CRVFAD-12R-16-9CCT-120-BN)	2700K setting	120.0	1215.7	15.80	76.95
	3000K setting	120.0	1324.0	15.61	84.80
	3500K setting	120.0	1369.0	15.25	89.75
	4000K setting	120.0	1364.0	15.44	88.36
	5000K setting	120.0	1273.0	15.77	80.74

3. Product Photo



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