

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):
**DLS0100(CRVFAS-14R-20-9CCT-UNV-
W/MVS)**

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: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 60 Hz
Nominal Power	20.0W
Rated Initial Lamp Lumen	1500 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	DLS0100(CRVFAS-14R-20-9CCT-UNV-W/MVS)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120041	120.0	60	0.166	19.90	0.997

Chromaticity Measurement - Sphere-Spectroradiometer Method:

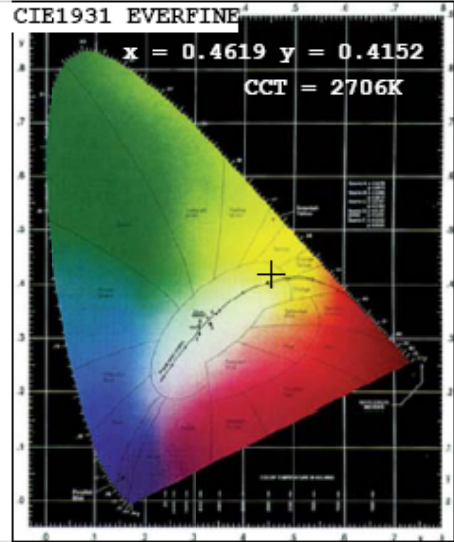
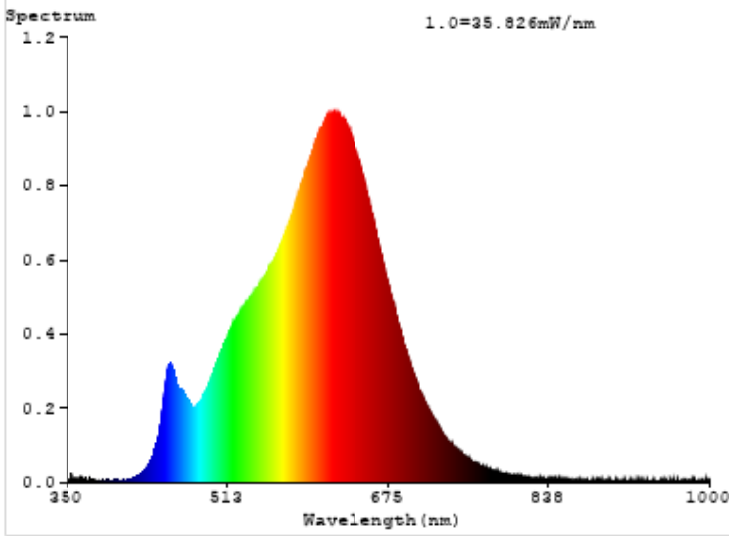
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	93	R9	54
Frequency (Hz)	60	R2	97	R10	93
CCT (K)	2706	R3	99	R11	94
Duv	0.0015	R4	92	R12	85
Chromaticity (x, y)	x=0.4619 y=0.4152	R5	93	R13	94
Chromaticity (u', v')	u'=0.2618 v'=0.5294	R6	98	R14	100
Color Rendering Index (CRI)	92.6	R7	90	R15	87
R9	54	R8	79	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1642.4
Luminous Efficacy (lm/W)	82.53
Beam Angle (°)	120.6
Center Beam Candle Power (cd)	464.9

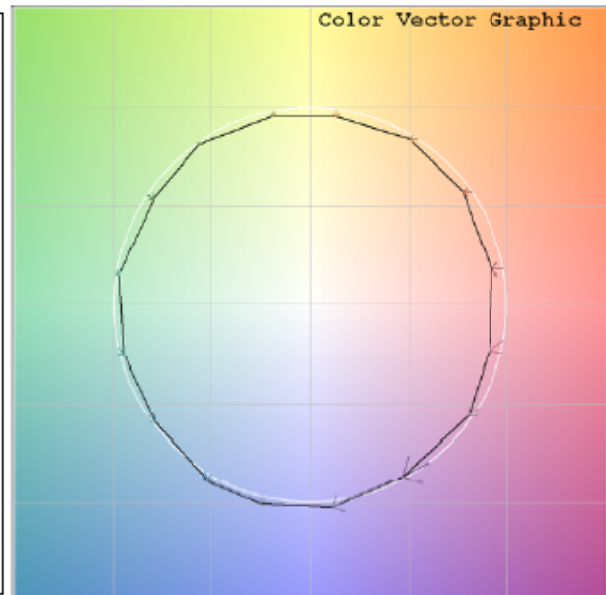
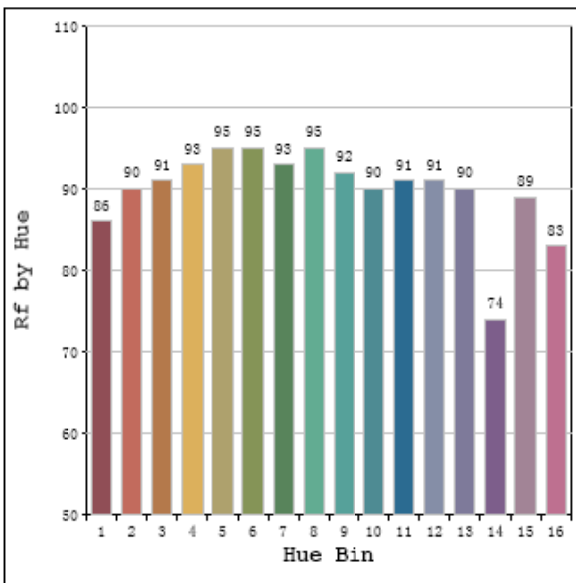
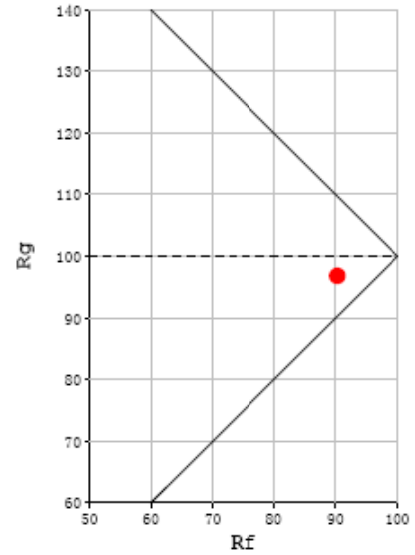
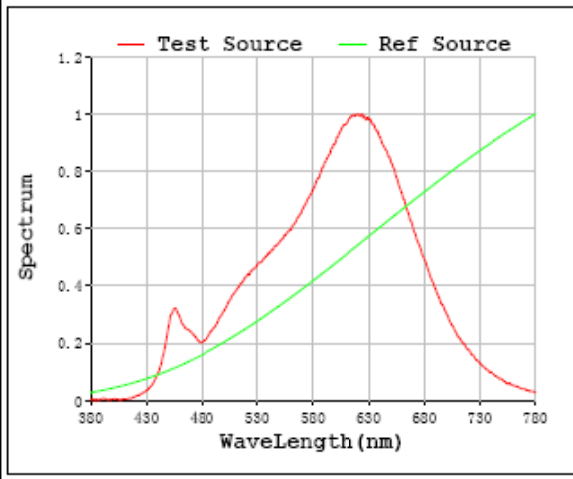
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1636.0
Luminous Efficacy (lm/W)	82.09

Spectral Power Distribution & Chromaticity Diagram



TM30

Rf: 90 CCT: 2706 K u': 0.2618
 Rg: 97 Duv: 0.0015 v': 0.5294



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	367.3	22.4%
0-40	608.6	37.1%
0-60	1105.9	67.3%
60-90	391.4	23.8%
70-100	230.4	14.0%
90-120	86.7	5.3%
0-90	1497.3	91.2%
90-180	145.1	8.8%
0-180	1642.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	44.1	2.7%	90-100	34.8	2.1%
10-20	127.3	7.8%	100-110	28.1	1.7%
20-30	195.9	11.9%	110-120	23.8	1.4%
30-40	241.3	14.7%	120-130	19.4	1.2%
40-50	256.7	15.6%	130-140	15.1	0.9%
50-60	240.7	14.7%	140-150	11.0	0.7%
60-70	195.8	11.9%	150-160	7.4	0.4%
70-80	129.6	7.9%	160-170	4.2	0.3%
80-90	66.1	4.0%	170-180	1.4	0.1%

Photometric Data

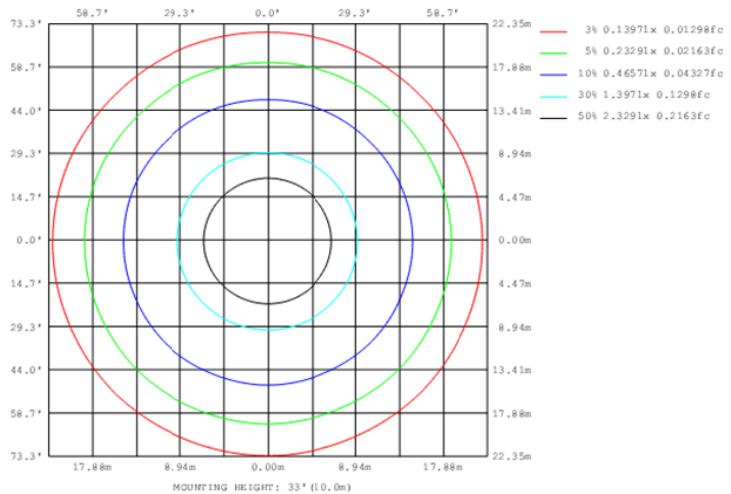
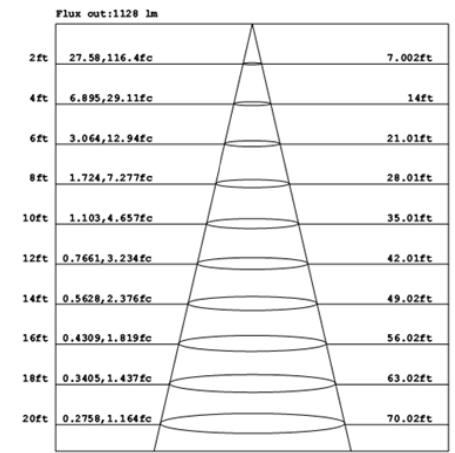
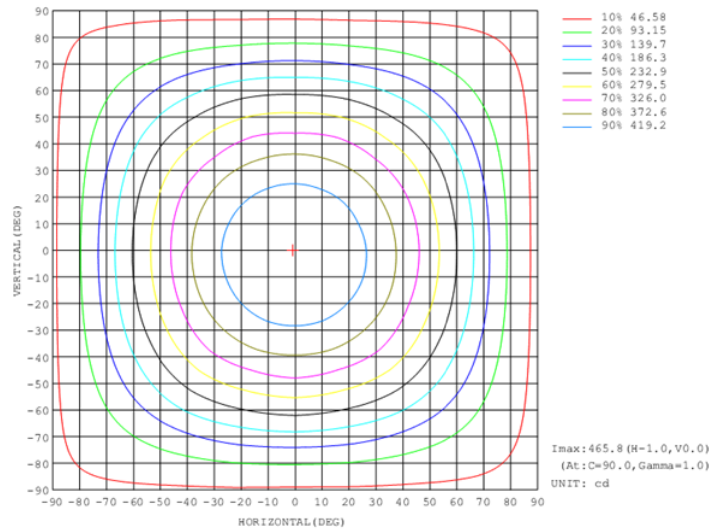
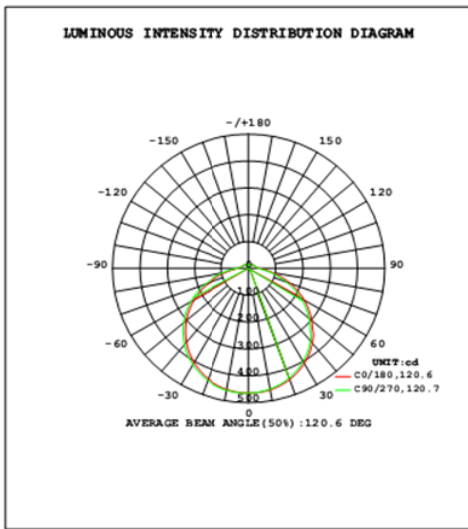


Table--1

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	465	465	465	465	465	465	465	465	465	465	465	465	465	465	465	465			
5	463	463	464	464	464	464	464	464	463	463	463	462	462	462	462	462			
10	458	459	460	461	461	461	460	460	459	458	457	457	457	456	457	457			
15	450	451	452	454	454	454	454	453	452	450	449	448	447	447	448	449			
20	438	440	442	444	444	444	443	442	440	438	437	436	435	435	436	437			
25	423	426	428	430	431	431	429	428	426	423	422	420	419	419	420	421			
30	405	408	410	413	414	414	412	411	408	405	403	401	400	400	401	403			
35	383	387	390	393	393	394	392	390	388	384	382	379	378	378	379	381			
40	359	363	366	369	370	371	368	367	364	359	357	354	353	352	354	356			
45	331	334	339	343	343	345	342	337	334	332	324	326	320	324	321	328			
50	301	301	309	309	314	310	312	306	302	302	294	295	290	293	291	298			
55	268	269	277	277	282	279	280	274	270	269	262	262	257	260	259	265			
60	233	235	242	243	248	245	246	239	236	234	227	227	222	225	224	230			
65	196	199	205	207	211	209	209	203	200	197	191	190	186	188	187	193			
70	156	161	165	170	170	172	169	166	163	157	154	150	149	148	150	153			
75	119	124	127	132	133	134	131	129	126	120	117	113	112	111	114	116			
80	84.2	88.9	91.6	95.7	96.6	97.6	95.0	93.2	90.6	85.7	83.1	79.4	78.8	77.7	80.1	81.9			
85	56.3	59.5	61.4	64.4	65.0	65.9	64.0	62.8	61.3	57.8	56.1	53.5	53.3	52.5	54.0	55.1			
90	38.2	40.0	41.0	42.7	43.1	43.7	42.6	41.9	41.5	39.7	38.9	37.7	37.6	37.2	37.8	38.1			
95	29.6	30.1	30.3	31.1	31.2	31.5	31.0	30.9	31.3	30.8	30.8	30.7	30.7	30.5	30.5	30.3			
100	27.3	27.2	27.1	27.2	27.2	27.3	27.3	27.4	28.4	28.5	28.7	28.9	28.9	28.8	28.6	28.3			
105	25.8	25.7	25.6	25.7	25.8	25.8	25.8	25.8	27.1	27.2	27.4	27.5	27.6	27.4	27.3	27.0			
110	24.4	24.3	24.3	24.4	24.4	24.5	24.4	24.5	25.9	26.0	26.1	26.2	26.2	26.1	26.0	25.8			
115	23.1	23.1	23.0	23.1	23.1	23.2	23.1	23.2	24.6	24.7	24.9	25.0	25.0	24.8	24.7	24.5			
120	21.9	21.9	21.8	21.9	21.9	22.0	21.9	21.9	23.4	23.5	23.7	23.7	23.7	23.6	23.5	23.3			
125	20.8	20.7	20.7	20.8	20.8	20.8	20.8	20.8	22.3	22.3	22.5	22.5	22.5	22.4	22.3	22.1			
130	19.7	19.7	19.7	19.8	19.8	19.8	19.7	19.8	21.2	21.2	21.3	21.4	21.3	21.2	21.1	21.0			
135	18.7	18.7	18.7	18.8	18.8	18.8	18.8	18.8	20.1	20.1	20.2	20.2	20.2	20.1	20.0	19.9			
140	17.8	17.8	17.8	17.9	17.8	17.9	17.9	17.9	19.1	19.1	19.2	19.1	19.1	19.0	19.0	18.9			
145	16.9	16.9	17.0	17.0	17.0	17.0	17.0	17.0	18.1	18.1	18.2	18.1	18.1	18.0	18.0	17.9			
150	16.1	16.2	16.2	16.3	16.2	16.3	16.3	16.3	17.2	17.2	17.2	17.1	17.1	17.0	17.0	17.0			
155	15.4	15.5	15.6	15.6	15.5	15.6	15.6	15.6	16.4	16.3	16.4	16.3	16.2	16.1	16.2	16.1			
160	14.8	14.9	15.0	15.0	14.8	15.0	15.0	14.9	15.6	15.6	15.6	15.5	15.3	15.3	15.4	15.3			
165	14.4	14.5	14.5	14.4	14.3	14.4	14.5	14.5	15.0	14.9	14.9	14.8	14.6	14.5	14.7	14.6			
170	14.3	14.2	14.0	14.0	14.1	14.0	14.1	14.1	14.6	14.6	14.4	14.2	14.2	14.2	14.1	14.3			
175	14.2	14.1	14.1	14.1	14.1	14.0	14.0	14.0	14.3	14.3	14.3	14.2	14.2	14.2	14.1	14.1			
180	14.3	14.4	14.4	14.3	14.3	14.3	14.3	14.3	14.4	14.3	14.4	14.3	14.3	14.3	14.3	14.2			

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	DLS0100(CRVFAS-14R-20-9CCT-UNV-W/MVS)		3000K

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120041	120.0	60	0.163	19.46	0.997

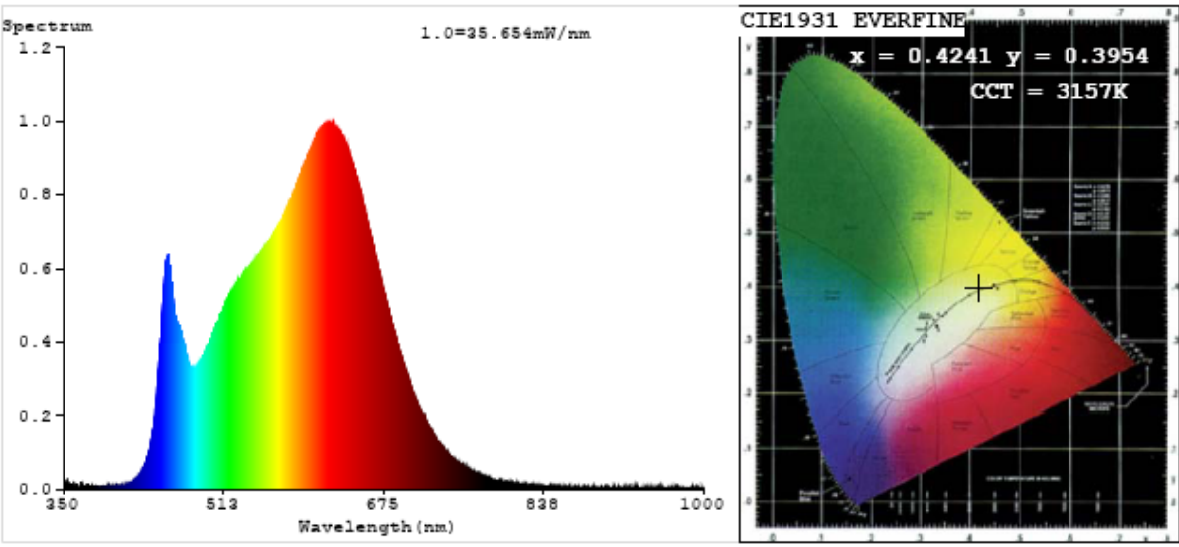
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3157
Duv	0.0016
Chromaticity (x, y)	x=0.4241 y=0.3954
Chromaticity (u', v')	u'=0.2460 v'=0.5160
Color Rendering Index (CRI)	94.6
R9	70
Total Luminous (lm)	1790.0
Luminous Efficacy (lm/W)	91.99

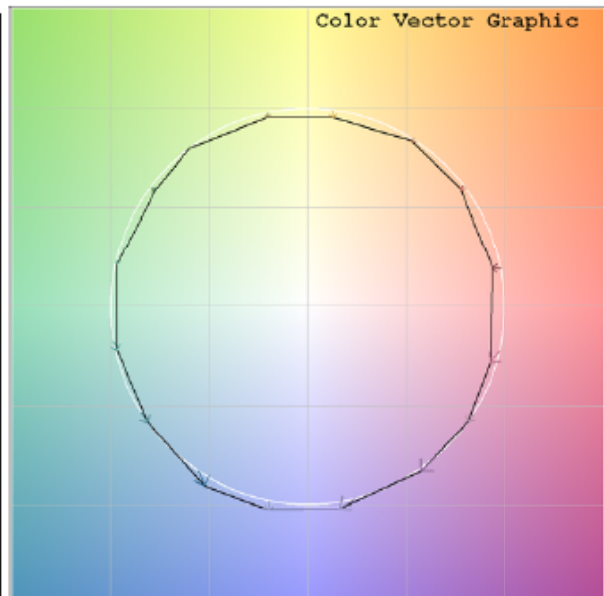
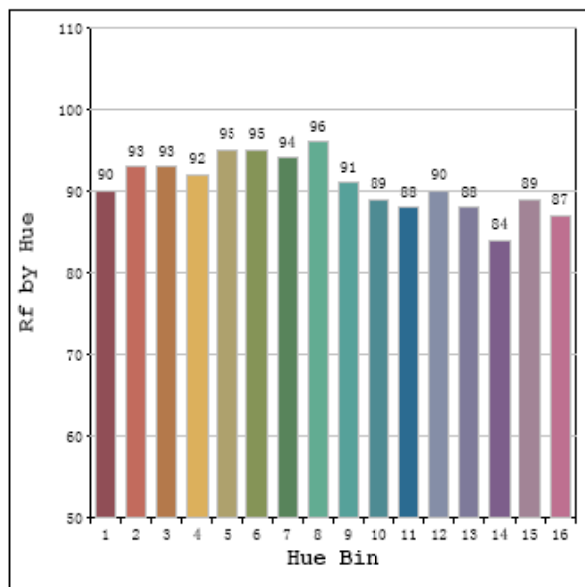
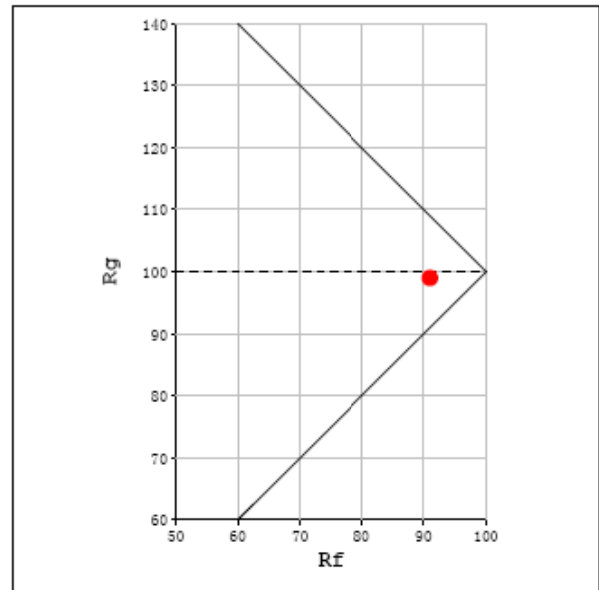
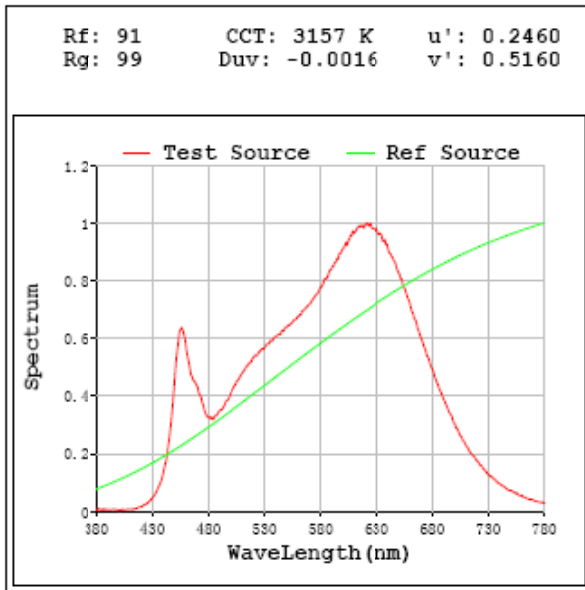
Special Color Rendering Indices			
R1	97	R9	70
R2	99	R10	99
R3	97	R11	96
R4	95	R12	81
R5	96	R13	99
R6	96	R14	100
R7	92	R15	93
R8	86	--	--

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1789.0
Luminous Efficacy (lm/W)	90.74

Spectral Power Distribution & Chromaticity Diagram



TM30



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	DLS0100(CRVFAS-14R-20-9CCT-UNV-W/MVS)		3500K

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120041	120.0	60	0.159	18.98	0.997

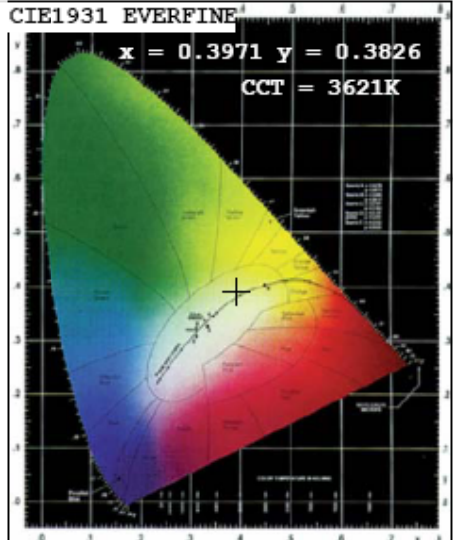
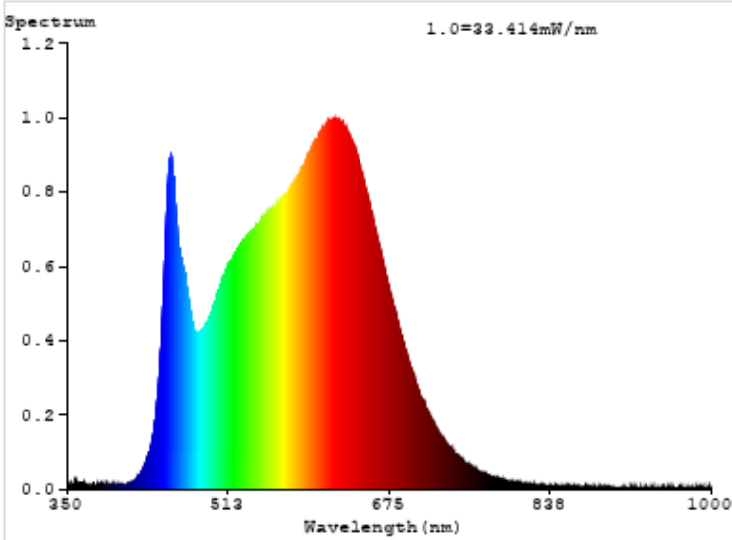
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3621
Duv	0.0017
Chromaticity (x, y)	x=0.3971 y=0.3826
Chromaticity (u', v')	u'=0.2337 v'=0.5066
Color Rendering Index (CRI)	95.5
R9	78
Total Luminous (lm)	1846.0
Luminous Efficacy (lm/W)	97.25

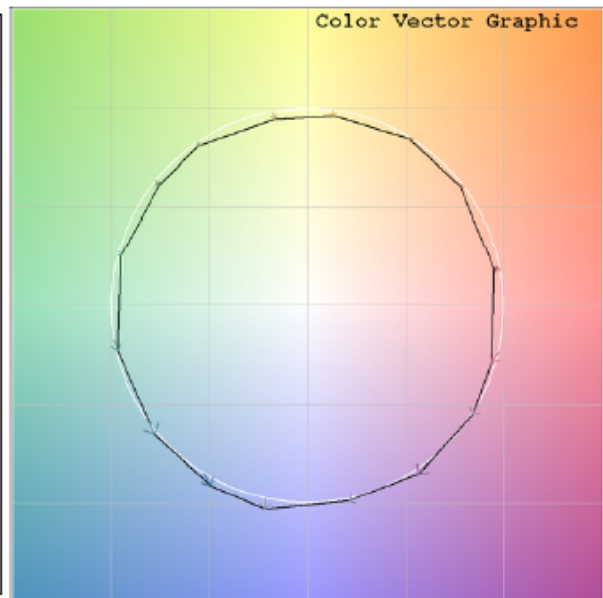
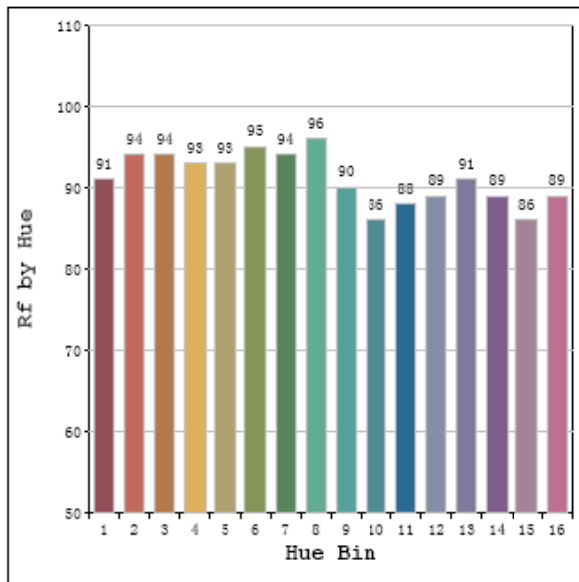
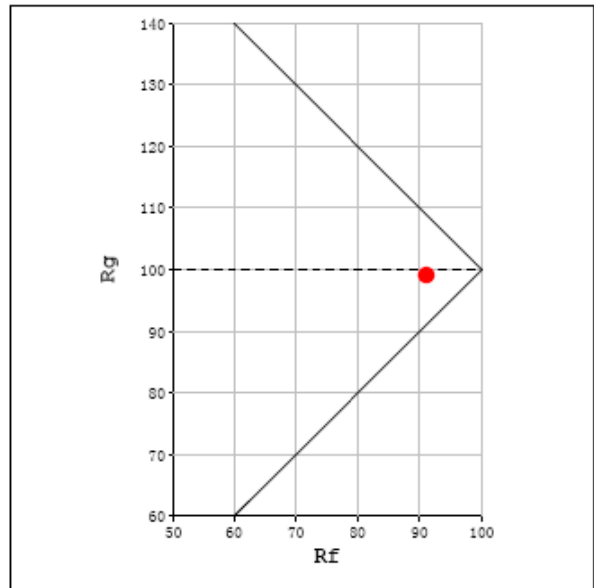
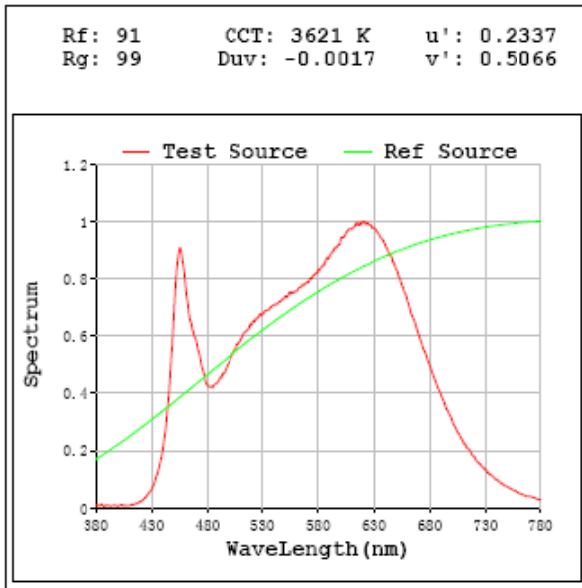
Special Color Rendering Indices			
R1	98	R9	78
R2	99	R10	99
R3	98	R11	97
R4	95	R12	77
R5	96	R13	100
R6	96	R14	100
R7	93	R15	95
R8	89	--	--

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1850.0
Luminous Efficacy (lm/W)	95.95

Spectral Power Distribution & Chromaticity Diagram



TM30



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	DLS0100(CRVFAS-14R-20-9CCT-UNV-W/MVS)		4000K

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120041	120.0	60	0.161	19.26	0.997

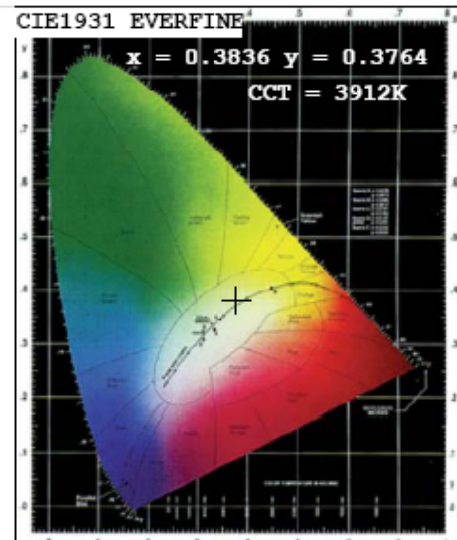
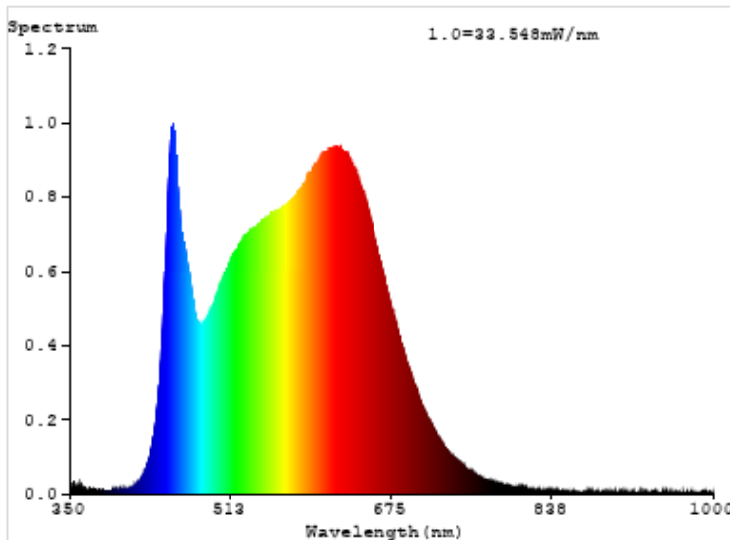
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3912
Duv	0.0011
Chromaticity (x, y)	x=0.3836 y=0.3764
Chromaticity (u', v')	u'=0.2273 v'=0.5019
Color Rendering Index (CRI)	95.6
R9	80
Total Luminous (lm)	1847.0
Luminous Efficacy (lm/W)	95.88

Special Color Rendering Indices			
R1	98	R9	80
R2	99	R10	99
R3	99	R11	96
R4	94	R12	75
R5	96	R13	99
R6	96	R14	100
R7	93	R15	95
R8	90	--	--

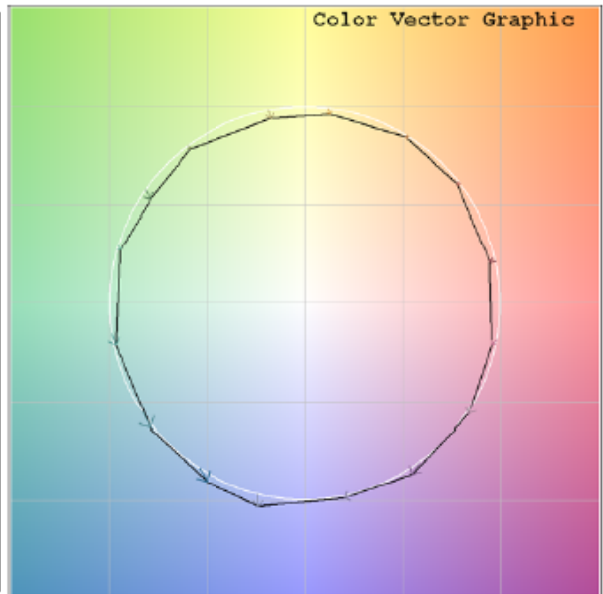
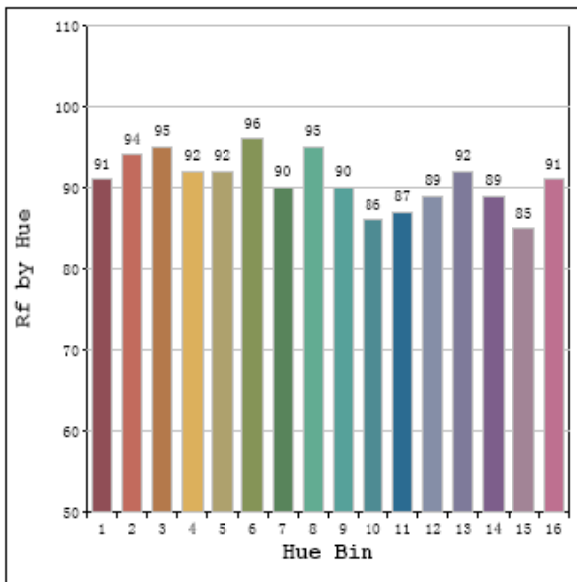
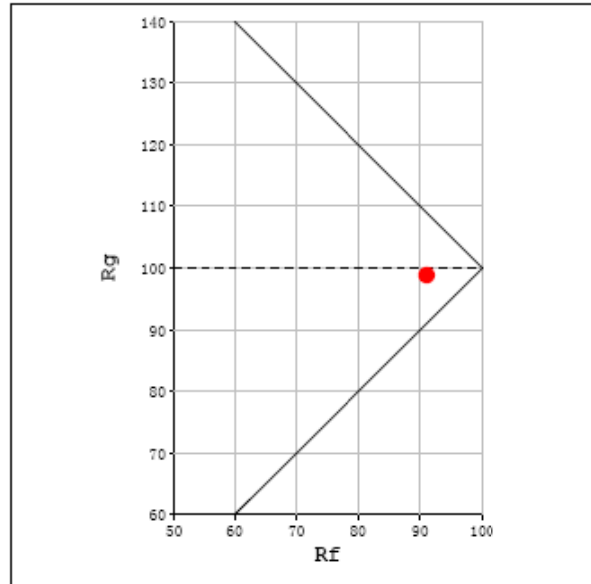
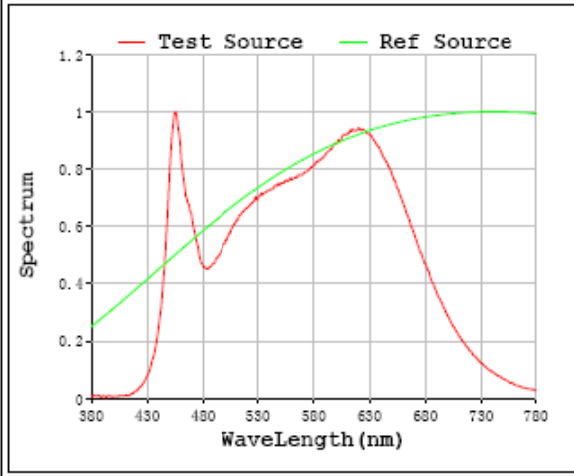
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1848.0
Luminous Efficacy (lm/W)	94.78

Spectral Power Distribution & Chromaticity Diagram



TM30

Rf: 91 CCT: 3912 K u' : 0.2273
 Rg: 99 Duv: -0.0011 v' : 0.5019



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	DLS0100(CRVFAS-14R-20-9CCT-UNV-W/MVS)		5000K

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202110120041	120.0	60	0.164	19.63	0.997

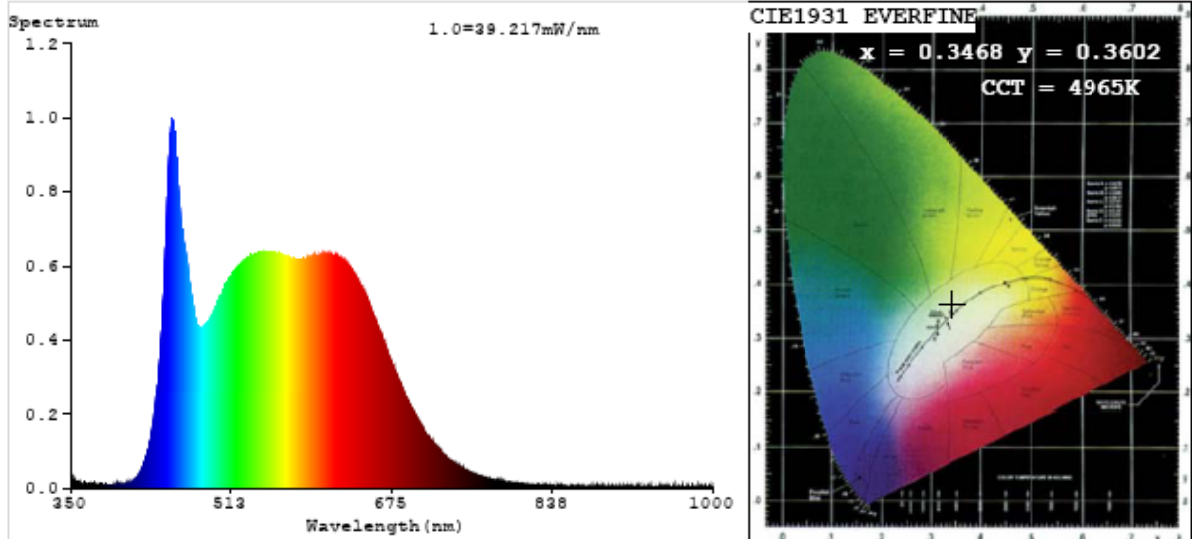
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4965
Duv	0.0036
Chromaticity (x, y)	x=0.3468 y=0.3602
Chromaticity (u', v')	u'=0.2093 v'=0.4890
Color Rendering Index (CRI)	93.7
R9	74
Total Luminous (lm)	1731.0
Luminous Efficacy (lm/W)	88.19

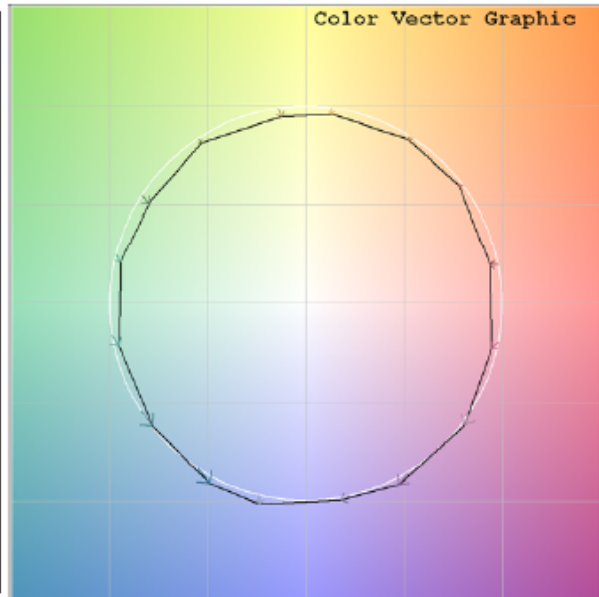
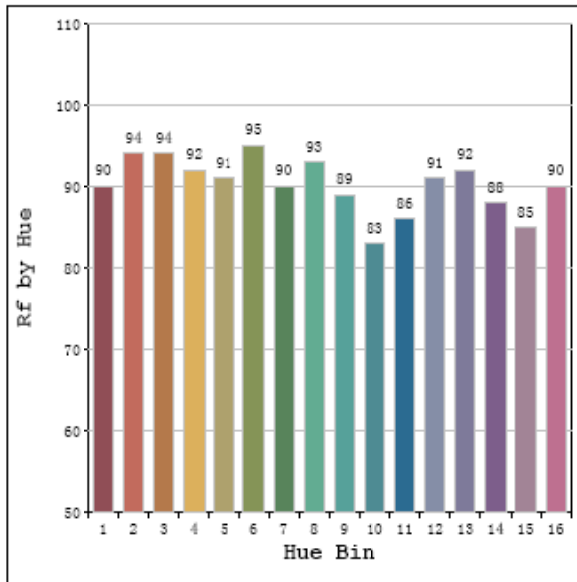
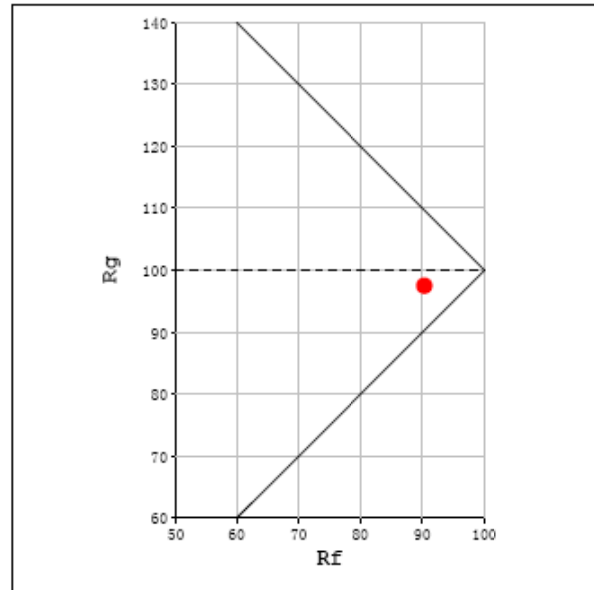
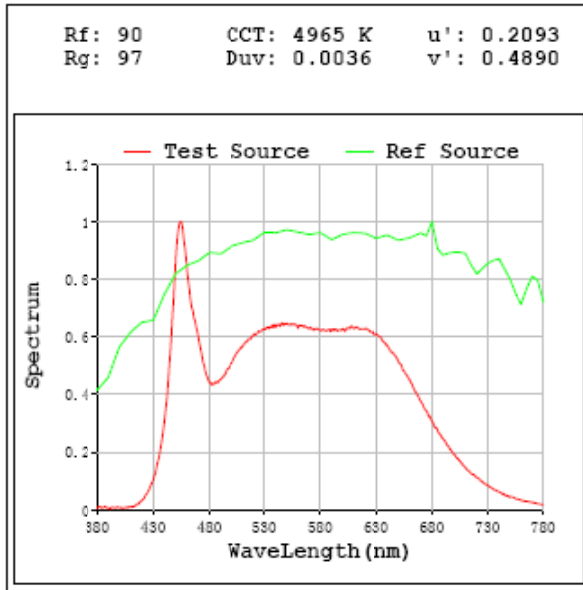
Special Color Rendering Indices			
R1	94	R9	74
R2	98	R10	93
R3	99	R11	91
R4	90	R12	68
R5	92	R13	96
R6	94	R14	99
R7	93	R15	91
R8	89	--	--

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	1734.0
Luminous Efficacy (lm/W)	87.16

Spectral Power Distribution & Chromaticity Diagram

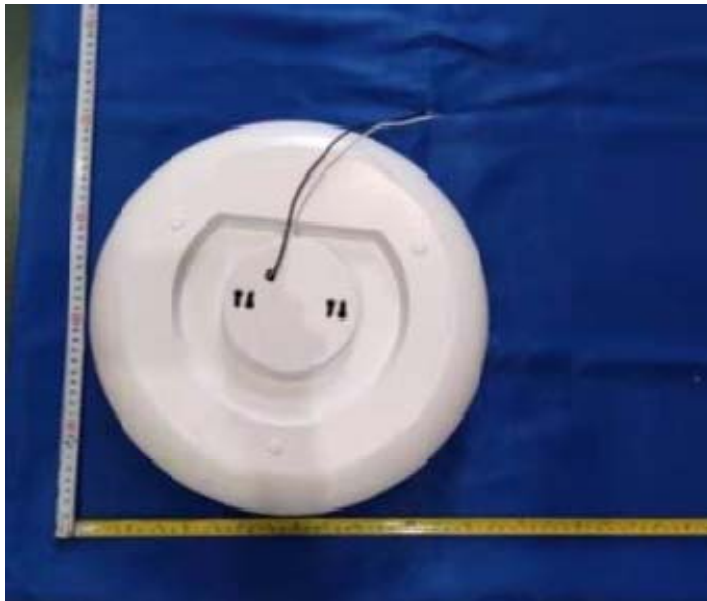
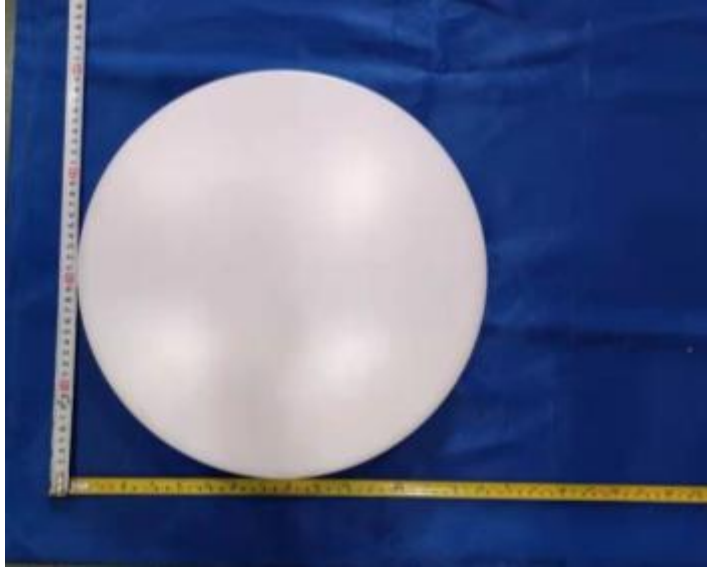


TM30



Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
DLS0100(CRVFAS-14R-20-9CCT-UNV-W/MVS)	2700K setting	120.0	1642.4	19.90	82.53
		277.0	1636.0	19.93	82.09
	3000K setting	120.0	1790.0	19.46	91.99
		277.0	1789.0	19.71	90.74
	3500K setting	120.0	1846.0	18.98	97.25
		277.0	1850.0	19.28	95.95
	4000K setting	120.0	1847.0	19.26	95.88
		277.0	1848.0	19.50	94.78
	5000K setting	120.0	1731.0	19.63	88.19
		277.0	1734.0	19.89	87.16

3. Product Photo



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