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):
DLS0108(DSKFA-4R109CCT120WS/PIR)

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Downlights
Report Date:	2021-09-02

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	600 lm
Declared CCT	3000K/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 25ºC ±1ºC. 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 25ºC ±1ºC. 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	2021-09-02	Test Ambient:	25.3 ℃
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0108(DSKFA-4R109CCT120WS/PIR)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202109020018	120.0	60	0.085	9.37	0.914

Chromaticity Measurement - Sphere-Spectroradiometer Method:

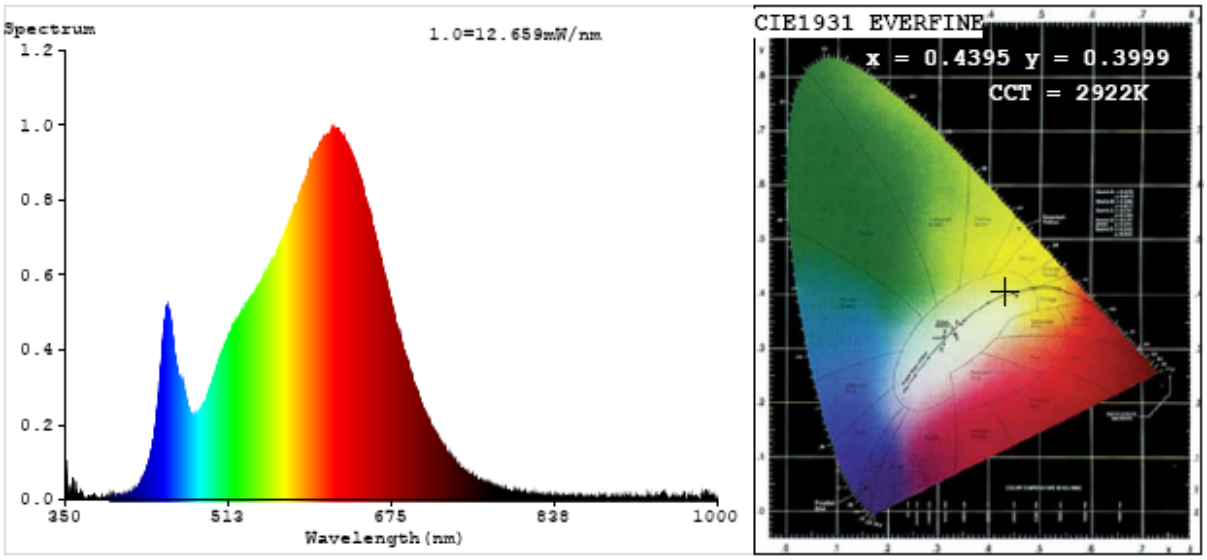
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2922
Duv	-0.0020
Chromaticity (x, y)	x=0.4395 y=0.3999
Chromaticity (u', v')	u'=0.2541 v'=0.5201
Color Rendering Index (CRI)	91.7
R9	53

Special Color Rendering Indices			
R1	92	R9	53
R2	97	R10	91
R3	98	R11	92
R4	91	R12	83
R5	92	R13	93
R6	96	R14	99
R7	90	R15	88
R8	78	--	--

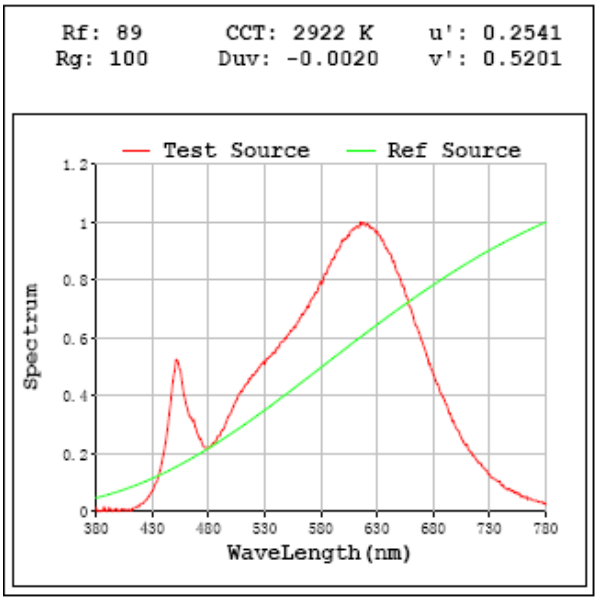
Photometric Measurement – Goniophotometer Method:

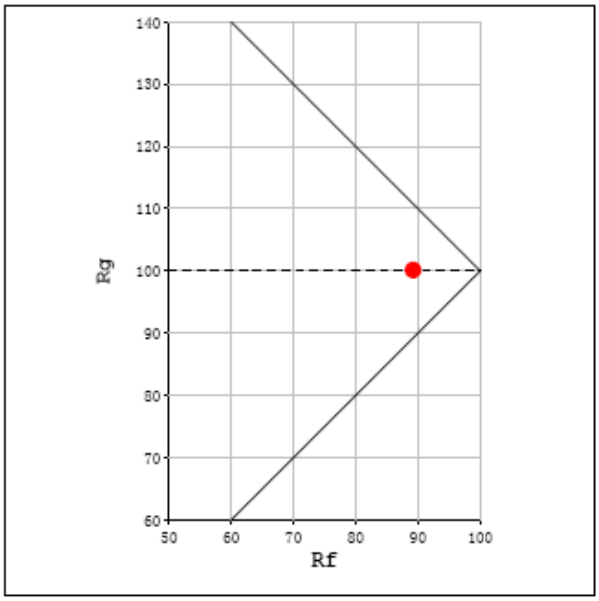
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	608.45
Luminous Efficacy (lm/W)	64.94
Beam Angle (°)	114.3
Center Beam Candle Power (cd)	197.5

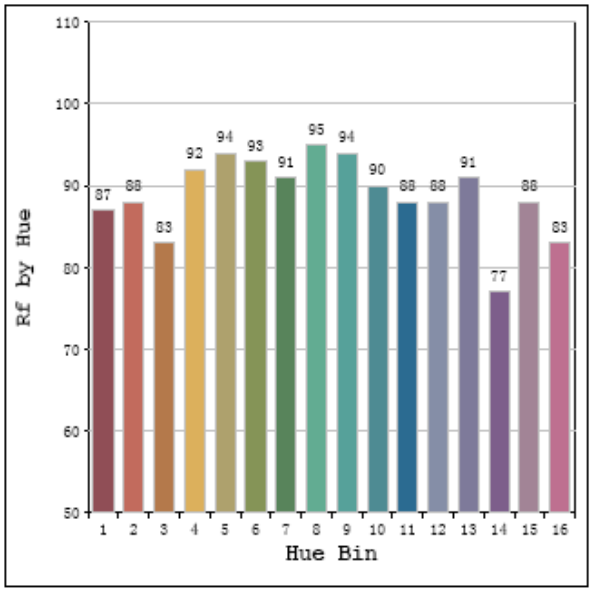
Spectral Power Distribution & Chromaticity Diagram

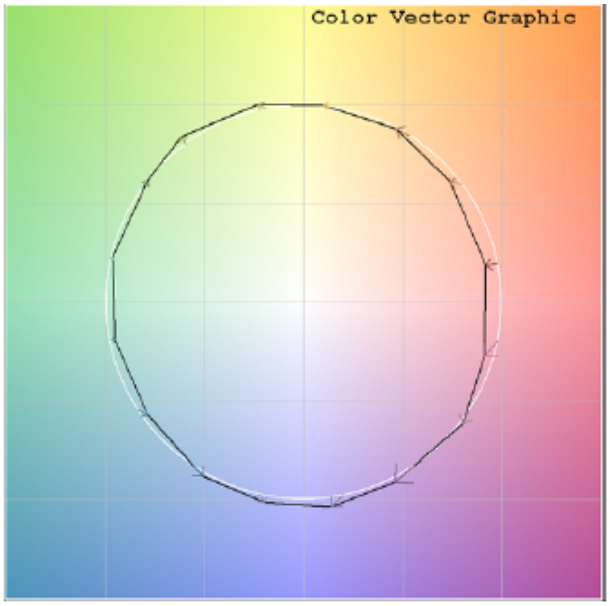


TM30







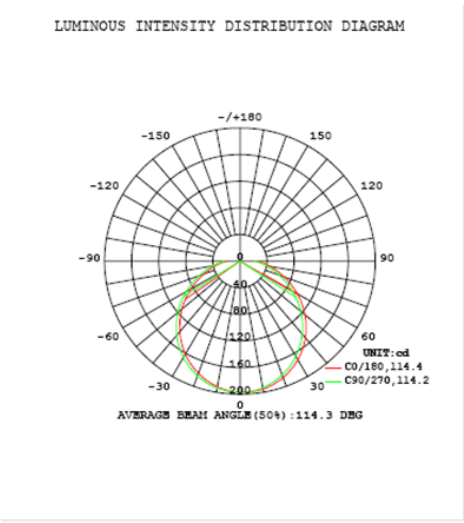


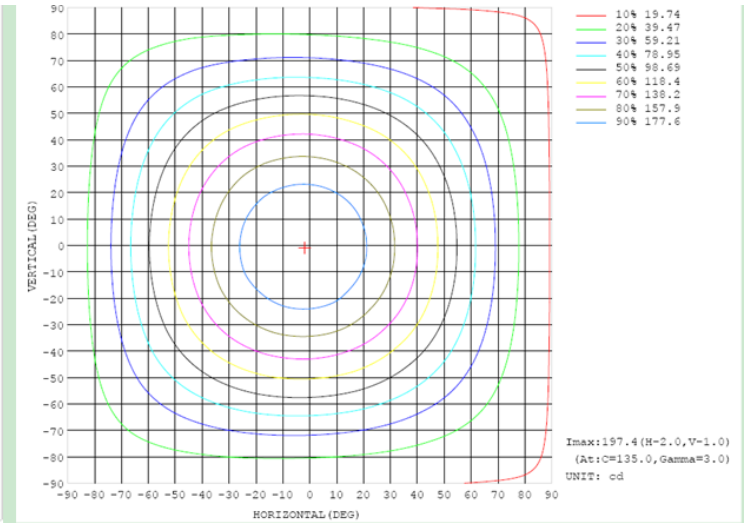
Zonal Lumen Tabulation

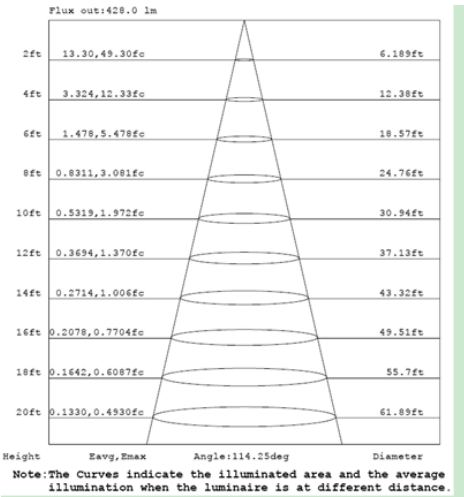
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	152.7	25.1%
0-40	250.1	41.1%
0-60	445.5	73.2%
60-90	162.9	26.8%
70-100	87.2	14.3%
90-120	0.0	0.0%
0-90	608.5	100.0%
90-180	0.0	0.0%
0-180	608.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	18.6	3.1%	90-100	0.0	0.0%
10-20	53.3	8.8%	100-110	0.0	0.0%
20-30	80.7	13.3%	110-120	0.0	0.0%
30-40	97.4	16.0%	120-130	0.0	0.0%
40-50	101.7	16.7%	130-140	0.0	0.0%
50-60	93.7	15.4%	140-150	0.0	0.0%
60-70	75.7	12.4%	150-160	0.0	0.0%
70-80	53.9	8.9%	160-170	0.0	0.0%
80-90	33.3	5.5%	170-180	0.0	0.0%

Photometric Data







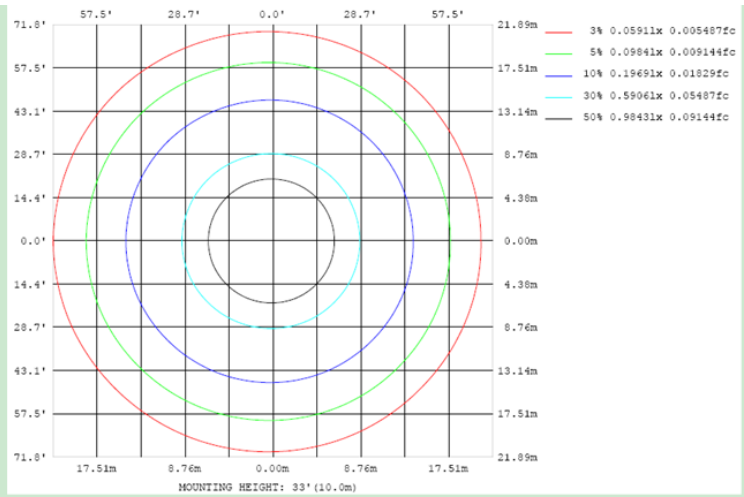


Table--1 UNIT: cd

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	197	197	197	197	197	197	197	197	197	197	197	197	197	197	197	197
5	195	195	195	196	196	197	197	197	197	197	196	196	196	196	196	195
10	192	192	192	193	194	194	195	195	195	195	194	194	193	193	192	192
15	186	187	187	189	190	191	191	192	192	191	190	189	188	187	187	187
20	180	180	180	182	184	185	186	187	186	186	184	183	182	181	180	179
25	171	172	173	175	176	177	179	179	179	178	177	176	175	173	172	171
30	161	162	163	165	167	169	170	171	171	170	169	167	165	164	162	161
35	150	152	152	155	156	159	160	161	161	160	159	157	155	153	152	150
40	138	140	141	143	145	147	149	150	150	149	147	145	143	141	140	138
45	125	127	128	131	133	135	137	138	138	137	135	133	131	129	127	126
50	112	113	115	118	120	122	124	125	125	124	122	119	117	115	114	112
55	97.9	99.4	101	104	106	108	110	112	112	110	109	106	103	101	99.5	98.1
60	83.6	85.1	86.6	89.4	91.9	94.0	95.6	97.4	97.8	96.1	94.4	91.3	88.9	87.0	85.2	83.7
65	69.7	71.1	72.6	75.2	77.4	79.8	81.3	83.0	83.4	82.0	80.2	77.2	74.9	72.8	71.4	69.9
70	56.8	58.2	59.5	61.9	63.8	65.8	67.4	69.0	69.5	68.1	66.5	63.6	61.6	59.9	58.4	57.1
75	45.4	46.6	47.8	49.9	51.6	53.3	54.8	56.3	56.6	55.4	54.0	51.6	49.7	48.0	46.7	45.4
80	34.9	36.0	37.2	39.0	40.5	42.1	43.4	44.6	45.2	44.3	42.9	40.6	38.9	37.4	36.1	35.2
85	26.0	27.0	28.0	29.3	30.8	32.1	33.2	34.4	34.9	34.1	33.1	31.0	29.5	28.1	27.1	26.3
90	18.7	19.3	20.2	21.2	22.4	23.5	24.6	25.4	26.0	25.5	24.5	22.9	21.4	20.4	19.5	19.0

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2021-09-02	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0108(DSKFA-4R109CCT120WS/PIR)	4000K	

Electrical Measurement:

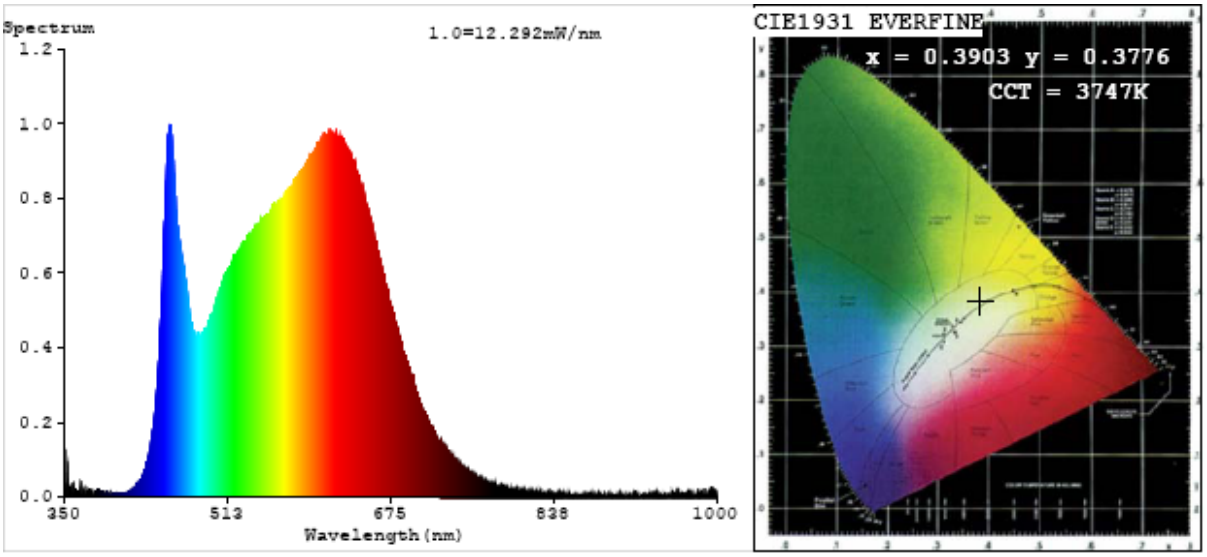
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202109020019	120.0	60	0.08718	9.673	0.9243

Chromaticity Measurement - Sphere-Spectroradiometer Method:

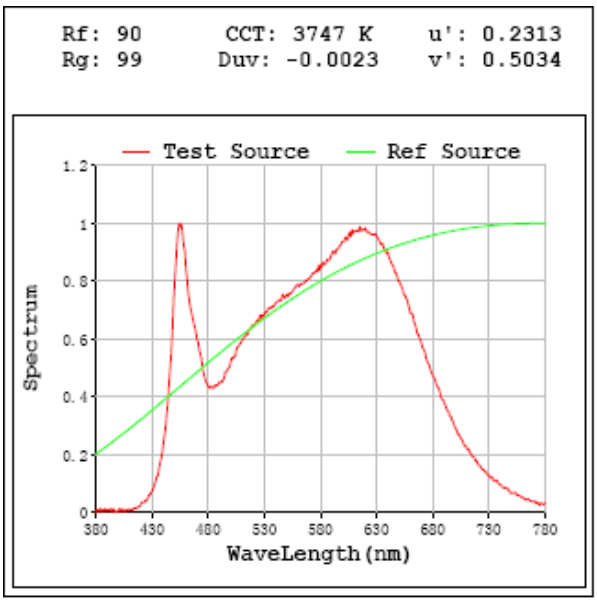
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3747
Duv	-0.0023
Chromaticity (x, y)	x=0.3903 y=0.3776
Chromaticity (u', v')	u'=0.2313 v'=0.5034
Color Rendering Index (CRI)	94.8
R9	74
Total Luminous (lm)	689.4
Luminous Efficacy (lm/W)	71.27

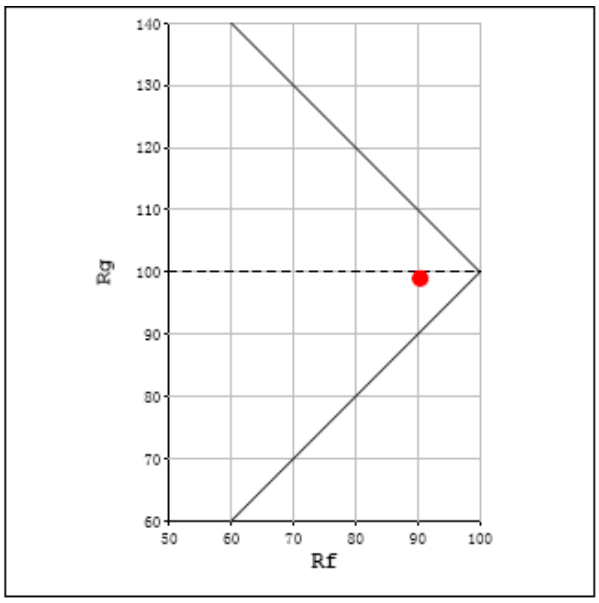
Special Color Rendering Indices			
R1	97	R9	74
R2	99	R10	98
R3	98	R11	95
R4	94	R12	75
R5	95	R13	99
R6	95	R14	100
R7	92	R15	94
R8	88	--	--

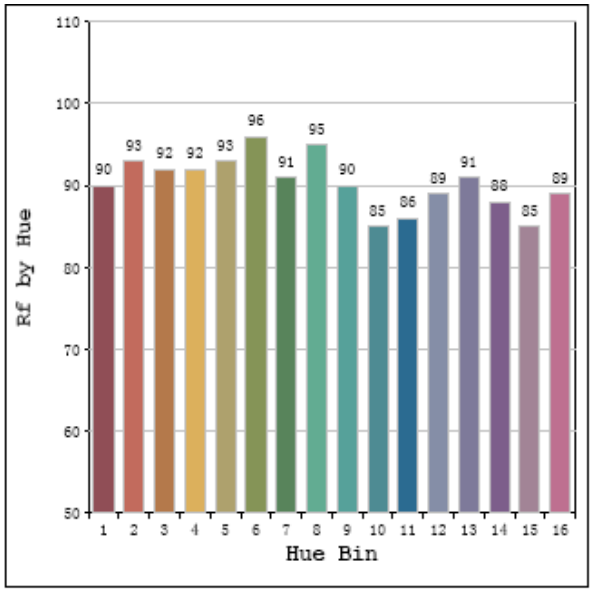
Spectral Power Distribution & Chromaticity Diagram

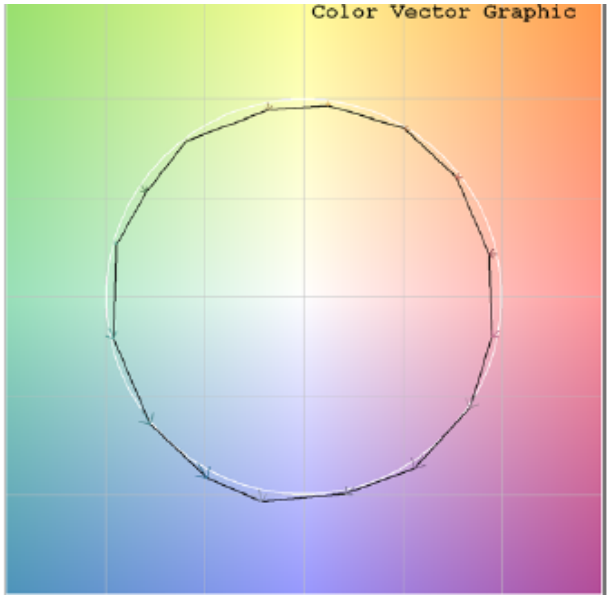


TM30


Rf: 90
Rg: 99
CCT: 3747 K
Duv: -0.0023
u': 0.2313
v': 0.5034
Test Source
Ref Source
Spectrum
WaveLength(nm)


Rg
Rf


Rf by Hue
Hue Bin
90 93 92 92 93 96 91 95 90 85 86 89 91 88 85 89


Color Vector Graphic

2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2021-09-02	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0108(DSKFA-4R109CCT120WS/PIR)	5000K	

Electrical Measurement:

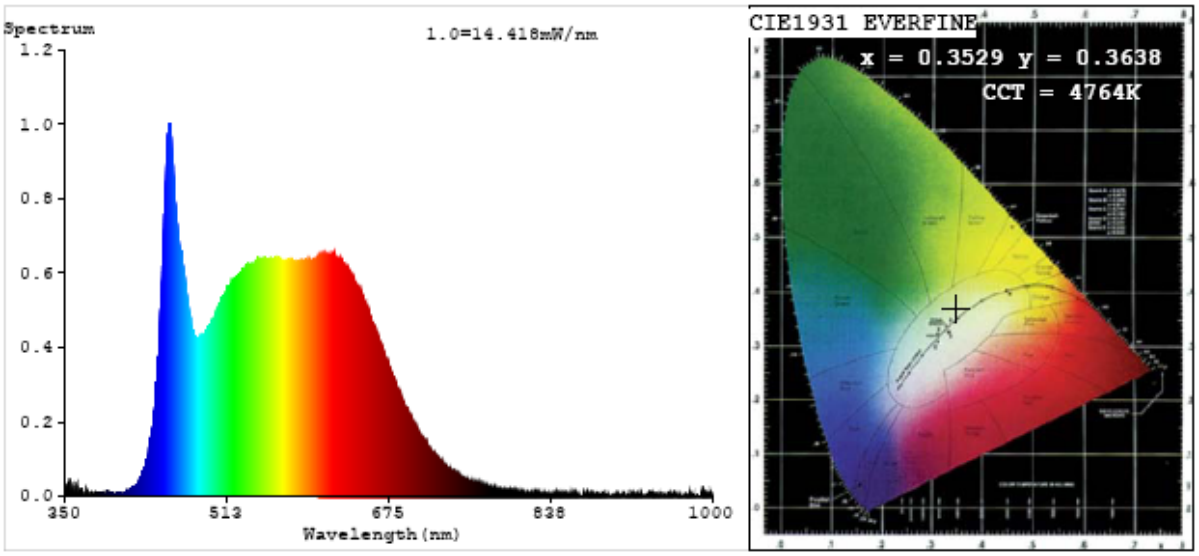
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202109020018	120.0	60	0.0854	9.388	0.9159

Chromaticity Measurement - Sphere-Spectroradiometer Method:

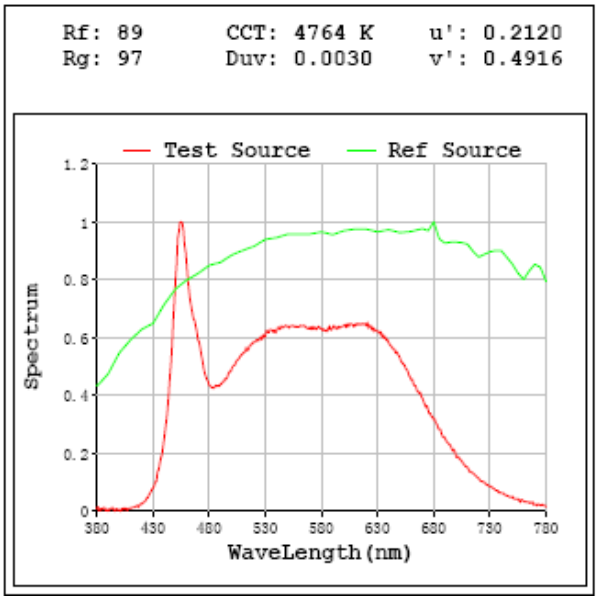
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4764
Duv	0.0030
Chromaticity (x, y)	x=0.3529 y=0.3638
Chromaticity (u', v')	u'=0.2120 v'=0.4916
Color Rendering Index (CRI)	93.5
R9	73
Total Luminous (lm)	640.6
Luminous Efficacy (lm/W)	68.24

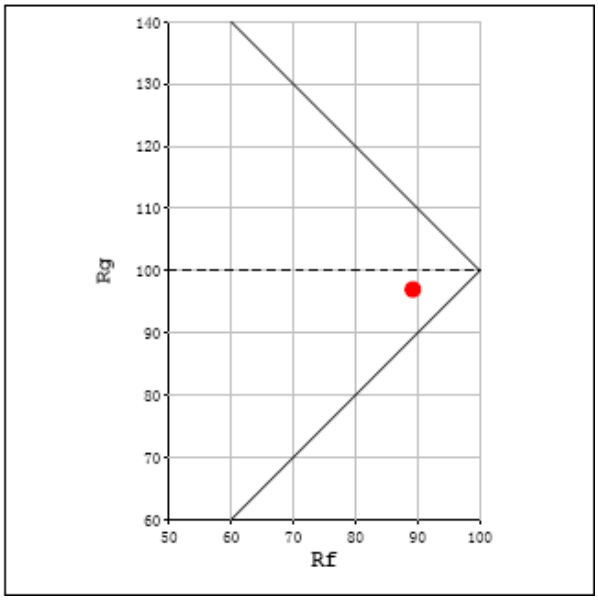
Special Color Rendering Indices			
R1	95	R9	73
R2	98	R10	94
R3	99	R11	91
R4	90	R12	67
R5	92	R13	96
R6	95	R14	99
R7	93	R15	91
R8	88	--	--

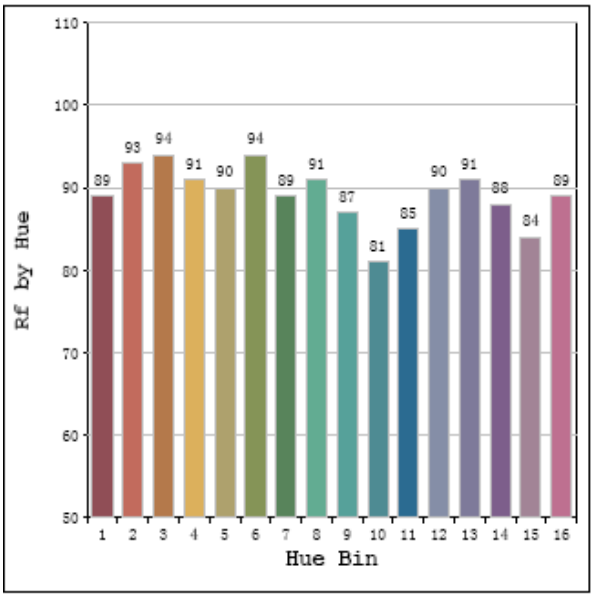
Spectral Power Distribution & Chromaticity Diagram

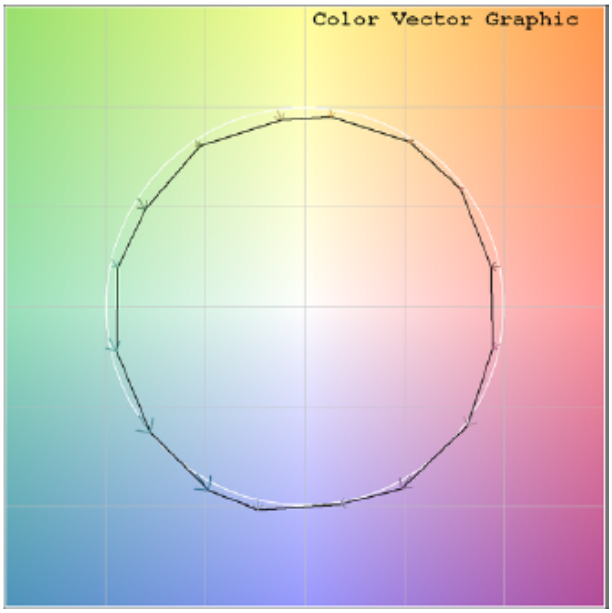


TM30



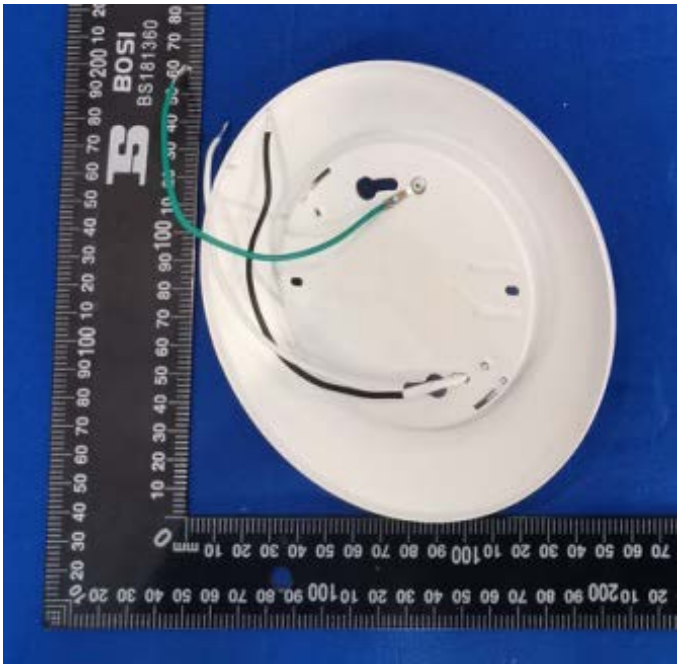


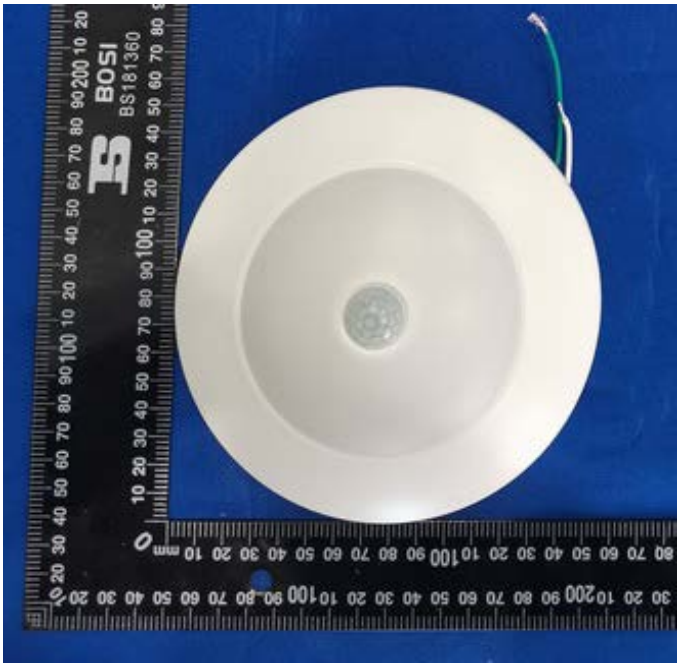




Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
DLS0108(DSKFA-4R109CCT120WSPIR)	3000K setting	120.0	608.5	9.37	64.94
	4000K setting	120.0	689.4	9.67	71.27
	5000K setting	120.0	640.6	9.39	68.24

3. Product Photo





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