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): DLR0063(R6R11940120WS)

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Downlights
Report Date:	2019-09-30

Prepared By:

Test & Report By:

Engineer: Sun Fangfang

Review By:

Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 50/60 Hz
Nominal Power	10.5W
Rated Initial Lamp Lumen	900 lm
Declared CCT	4000K

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 Electrical, Photometric and Chromaticity Measurements

Test date	2019-09-28	**Test Ambient:**	25.5 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	DLR0063(R6R11940120WS)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
1908250047	120.0	60	0.083	9.83	0.983

Chromaticity Measurement - Sphere-Spectroradiometer Method:

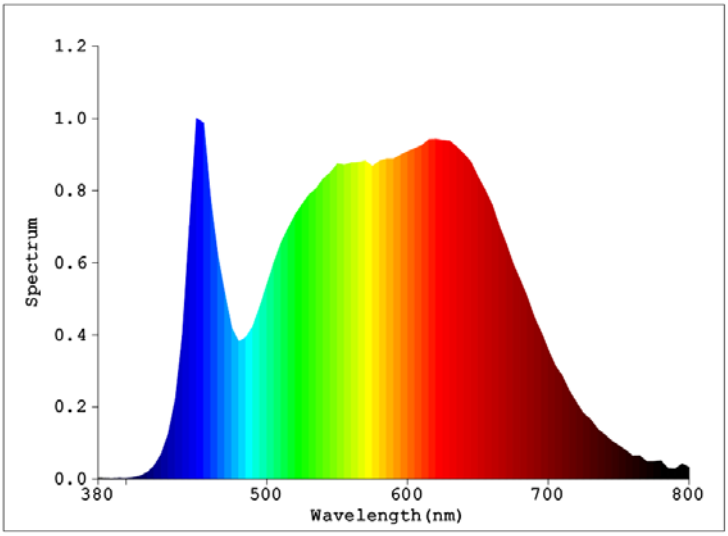
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4019
Duv	0.00160
Chromaticity (x, y)	x=0.3807 y=0.3804
Chromaticity (u', v')	u'=0.2238 v'=0.5032
Color Rendering Index (CRI)	92.9
R9	73

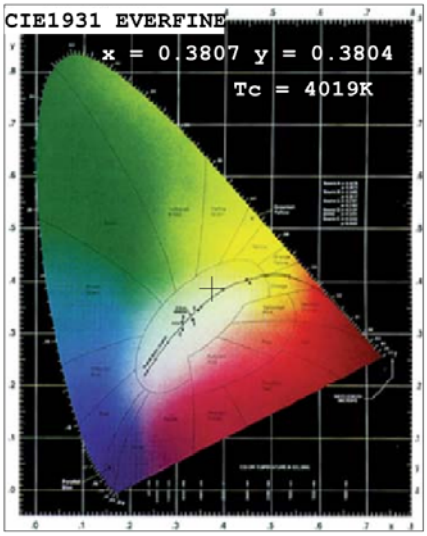
Special Color Rendering Indices			
R1	93	R9	73
R2	95	R10	85
R3	94	R11	92
R4	93	R12	68
R5	91	R13	93
R6	91	R14	96
R7	97	R15	92
R8	90	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1023.5
Luminous Efficacy (lm/W)	104.11
Beam Angle (°)	100.4
Center Beam Candle Power (cd)	385.9

Spectral Power Distribution & Chromaticity Diagram



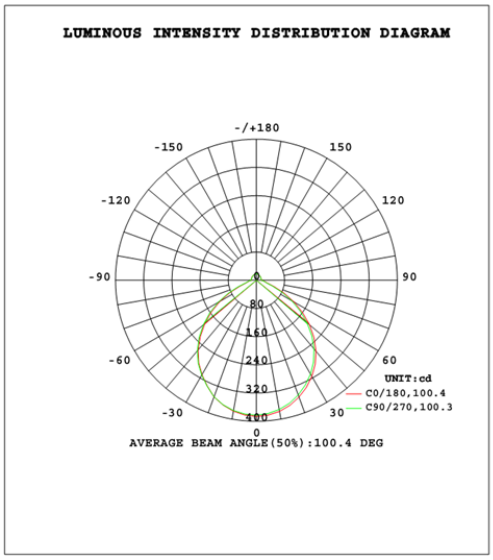


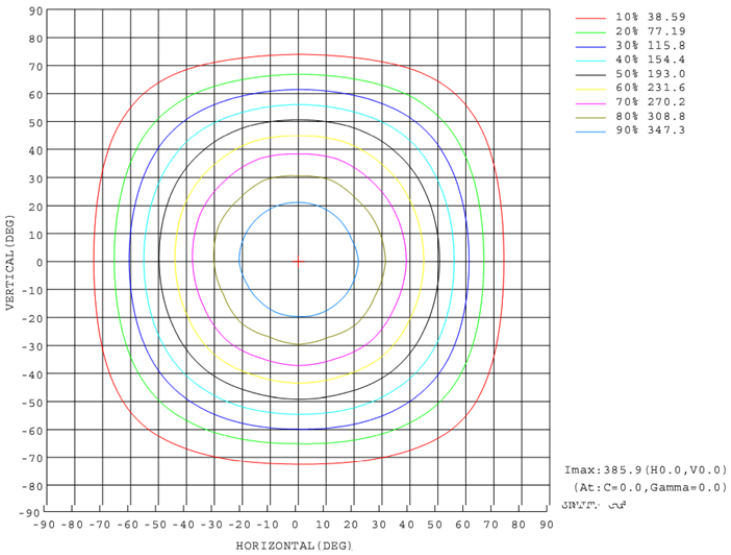
Zonal Lumen Tabulation

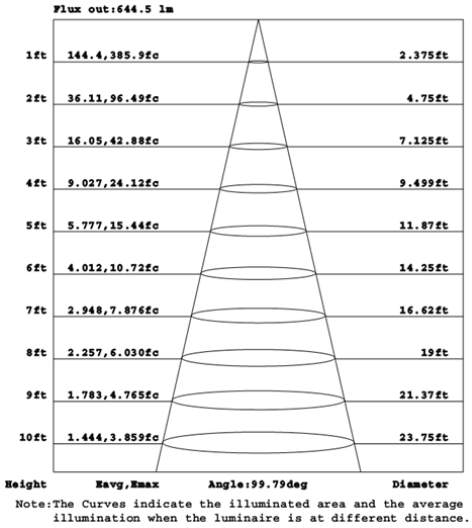
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	291.2	28.4%
0-40	469.8	45.9%
0-60	784.8	76.7%
60-90	142.6	13.9%
70-100	74.0	7.2%
90-120	45.3	4.4%
0-90	927.4	90.6%
90-180	96.1	9.4%
0-180	1023.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	36.2	3.5%	90-100	15.6	1.5%
10-20	102.7	10.0%	100-110	15.2	1.5%
20-30	152.3	14.9%	110-120	14.5	1.4%
30-40	178.7	17.5%	120-130	13.6	1.3%
40-50	174.6	17.1%	130-140	12.2	1.2%
50-60	140.3	13.7%	140-150	10.3	1.0%
60-70	84.3	8.2%	150-160	7.9	0.8%
70-80	37.1	3.6%	160-170	5.0	0.5%
80-90	21.2	2.1%	170-180	1.7	0.2%

Photometric Data







Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

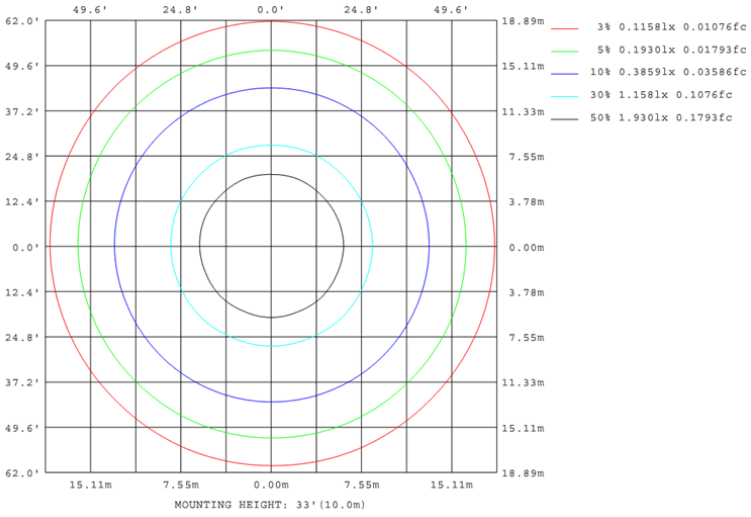
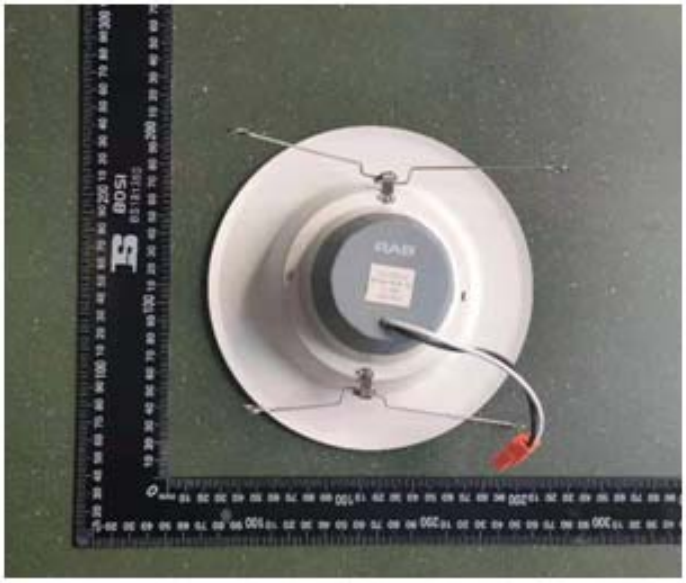


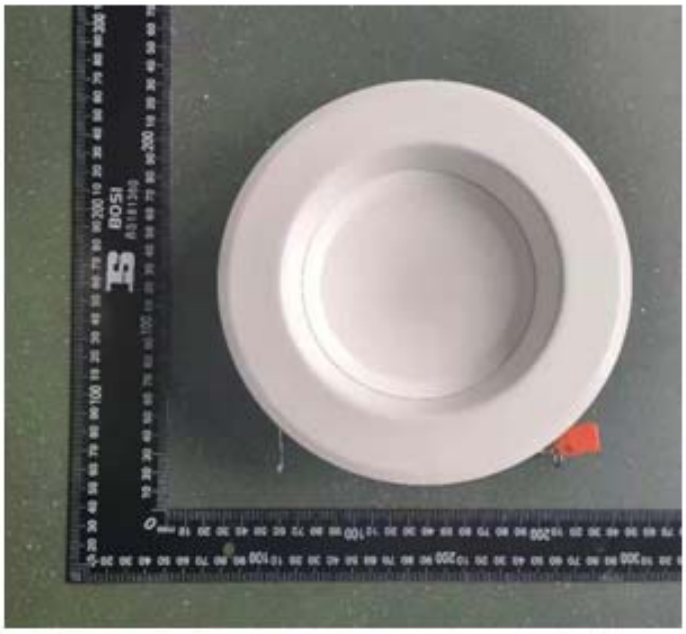
Table--1

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	386	385	384	383	383	382	382	382	386	385	384	383	383	382	382	382			
5	384	382	381	380	380	379	379	379	384	382	382	381	381	380	380	380			
10	378	376	374	373	372	372	372	373	377	376	376	375	375	375	375	374			
15	367	365	363	362	361	361	361	362	366	366	366	366	366	365	365	364			
20	353	351	349	348	346	347	346	347	352	351	352	352	352	351	351	349			
25	335	330	331	325	328	324	328	325	331	334	331	335	331	334	330	332			
30	315	308	310	305	307	304	307	305	310	314	311	315	311	314	309	312			
35	291	285	286	281	283	280	284	282	286	290	288	292	288	291	287	289			
40	263	258	257	253	254	252	255	254	258	262	260	264	261	264	260	261			
45	231	226	226	221	222	220	223	222	226	229	229	232	230	232	229	230			
50	197	193	192	188	188	186	188	188	192	195	195	198	197	198	196	196			
55	160	158	155	153	151	152	151	153	156	157	160	161	162	161	162	159			
60	124	123	119	118	115	115	115	117	120	121	124	124	126	126	126	124			
65	87.0	85.6	82.0	80.9	78.4	78.9	78.2	80.1	82.7	83.5	86.7	87.5	89.7	89.1	89.6	87.5			
70	53.3	52.1	49.5	48.8	47.3	47.7	47.3	48.7	50.5	51.2	53.6	54.2	55.9	55.5	55.8	54.0			
75	33.0	32.5	31.3	31.0	30.3	30.6	30.4	31.0	31.9	32.1	33.2	33.5	34.3	33.9	34.0	33.1			
80	25.2	25.1	24.6	24.4	24.0	24.1	24.0	24.2	24.6	24.6	24.8	24.8	25.1	25.0	25.1	25.0			
85	19.5	19.2	18.6	18.5	18.1	18.3	18.3	18.7	19.6	19.7	20.1	20.2	20.5	20.2	20.2	19.8			
90	14.3	14.3	14.2	14.2	14.1	14.1	14.1	14.1	14.7	14.6	14.7	14.7	14.9	14.7	14.7	14.6			
95	14.1	14.0	14.0	13.9	13.9	13.9	13.9	13.9	14.7	14.6	14.6	14.6	14.6	14.6	14.5	14.5			
100	14.0	13.9	13.9	13.9	13.9	13.8	13.8	13.8	14.8	14.7	14.6	14.6	14.6	14.6	14.6	14.6			
105	14.0	14.0	13.9	13.9	13.9	13.9	13.9	13.8	14.9	14.8	14.8	14.7	14.7	14.7	14.7	14.7			
110	14.1	14.1	14.0	14.0	14.0	14.0	14.0	13.9	15.1	15.0	14.9	14.9	14.9	14.9	14.8	14.9			
115	14.2	14.2	14.2	14.2	14.2	14.1	14.1	14.1	15.3	15.2	15.1	15.1	15.1	15.1	15.1	15.0			
120	14.5	14.4	14.4	14.4	14.4	14.4	14.4	14.4	15.5	15.4	15.3	15.3	15.3	15.3	15.3	15.3			
125	14.7	14.7	14.7	14.7	14.7	14.7	14.6	14.6	15.8	15.7	15.6	15.6	15.5	15.5	15.5	15.5			
130	15.0	15.0	15.0	15.0	15.0	15.0	14.9	14.9	16.0	15.9	15.9	15.8	15.8	15.8	15.8	15.8			
135	15.3	15.3	15.3	15.3	15.3	15.3	15.2	15.2	16.3	16.2	16.1	16.1	16.1	16.1	16.0	16.1			
140	15.7	15.7	15.7	15.7	15.6	15.6	15.6	15.6	16.6	16.5	16.5	16.4	16.4	16.4	16.4	16.4			
145	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.9	16.9	16.8	16.8	16.7	16.7	16.7	16.7	16.7			
150	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	17.3	17.2	17.1	17.1	17.0	17.0	17.0	17.0			
155	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.7	17.6	17.5	17.4	17.4	17.4	17.4	17.4	17.4			
160	17.3	17.3	17.2	17.2	17.2	17.2	17.2	17.2	17.9	17.8	17.8	17.7	17.7	17.7	17.7	17.7			
165	17.7	17.7	17.6	17.6	17.6	17.6	17.6	17.5	18.1	18.0	18.0	18.0	17.9	17.9	17.9	17.9			
170	18.0	18.0	18.0	18.0	17.9	17.9	17.9	17.9	18.4	18.2	18.2	18.2	18.2	18.1	18.1	18.1			
175	18.3	18.3	18.2	18.2	18.2	18.2	18.1	18.1	18.5	18.3	18.3	18.3	18.3	18.3	18.2	18.2			
180	18.4	18.4	18.4	18.4	18.3	18.3	18.3	18.3	18.5	18.4	18.4	18.4	18.4	18.3	18.3	18.3			

3. Product Photo





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