

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): DLC0021(C8R24935UNVW)

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

**Type of
Luminaire:** Downlights

Report Date: 2019-10-10

Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 50/60 Hz
Nominal Power	24W
Rated Initial Lamp Lumen	2000 lm
Declared CCT	3500K

Note: The tests are conducted under the worst conditions.

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

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>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.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>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.</p>
<p>3) Electrical Measurements:</p> <p>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.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2019-10-08	Test Ambient:	25.6 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLC0021(C8R24935UNVW)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
1909180034	120.0	60	0.188	22.50	0.994

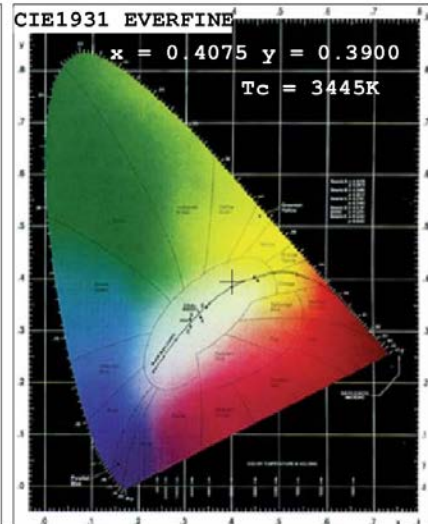
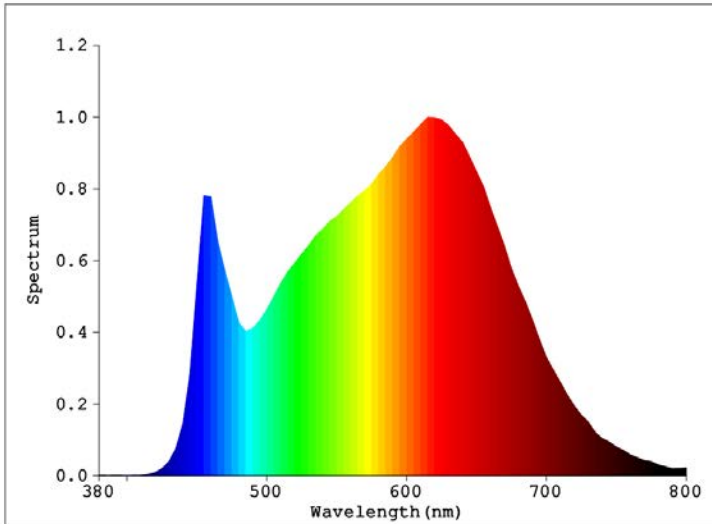
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	96	R9	73
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	3445	R3	98	R11	93
Duv	0.00080	R4	92	R12	75
Chromaticity (x, y)	x=0.4075 y=0.3900	R5	94	R13	98
Chromaticity (u', v')	u'=0.2375 v'=0.5113	R6	96	R14	100
Color Rendering Index (CRI)	94.2	R7	91	R15	93
R9	73	R8	87	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2014.8
Luminous Efficacy (lm/W)	89.55
Beam Angle (°)	90.2
Center Beam Candle Power (cd)	952.5

Spectral Power Distribution & Chromaticity Diagram

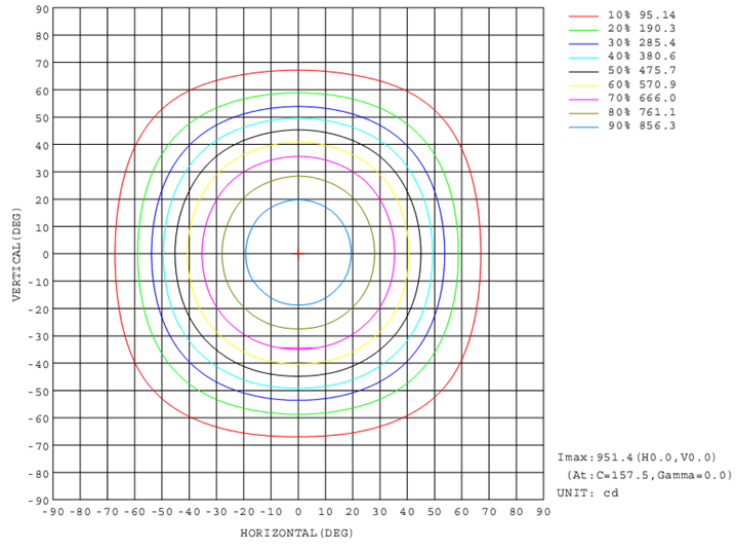
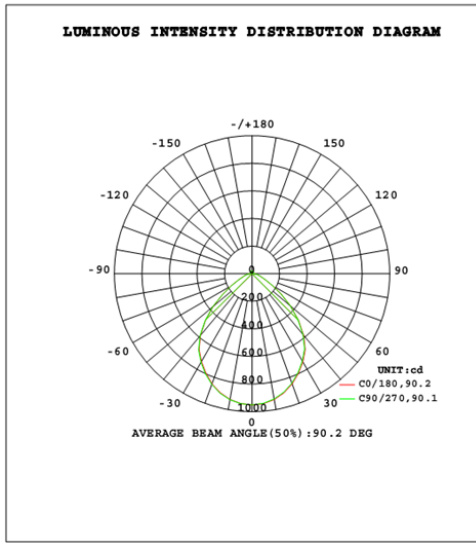


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	708.0	35.1%
0-40	1124.8	55.8%
0-60	1726.6	85.7%
60-90	200.5	9.9%
70-100	98.2	4.9%
90-120	36.8	1.8%
0-90	1927.1	95.6%
90-180	87.7	4.4%
0-180	2014.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	89.6	4.4%	90-100	12.3	0.6%
10-20	251.7	12.5%	100-110	12.2	0.6%
20-30	366.8	18.2%	110-120	12.3	0.6%
30-40	416.8	20.7%	120-130	12.3	0.6%
40-50	367.1	18.2%	130-140	11.8	0.6%
50-60	234.7	11.7%	140-150	10.6	0.5%
60-70	114.6	5.7%	150-160	8.5	0.4%
70-80	59.4	2.9%	160-170	5.7	0.3%
80-90	26.5	1.3%	170-180	2.0	0.1%

Photometric Data



Flux out: 1492 lm

Height	Havg, Hmax	Angle: 90.11deg	Diameter
1ft	334.4, 952.5fc		2.004ft
2ft	83.59, 238.1fc		4.008ft
3ft	37.15, 105.8fc		6.012ft
4ft	20.90, 59.53fc		8.015ft
5ft	13.37, 38.10fc		10.02ft
6ft	9.288, 26.46fc		12.02ft
7ft	6.824, 19.44fc		14.03ft
8ft	5.224, 14.88fc		16.03ft
9ft	4.128, 11.76fc		18.03ft
10ft	3.344, 9.525fc		20.04ft

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

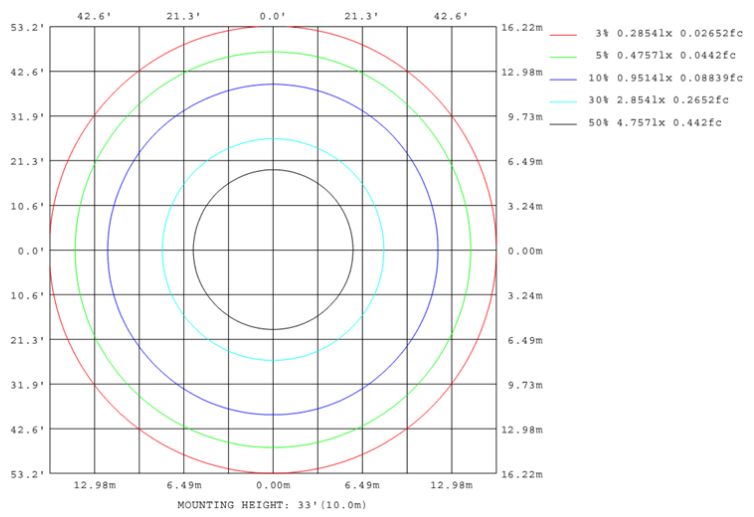
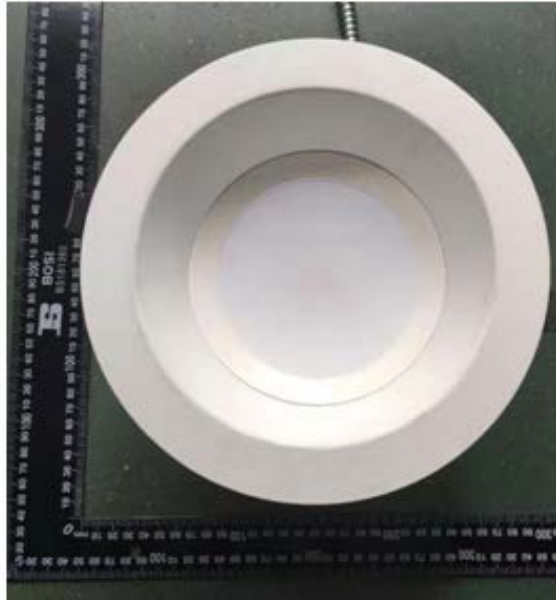
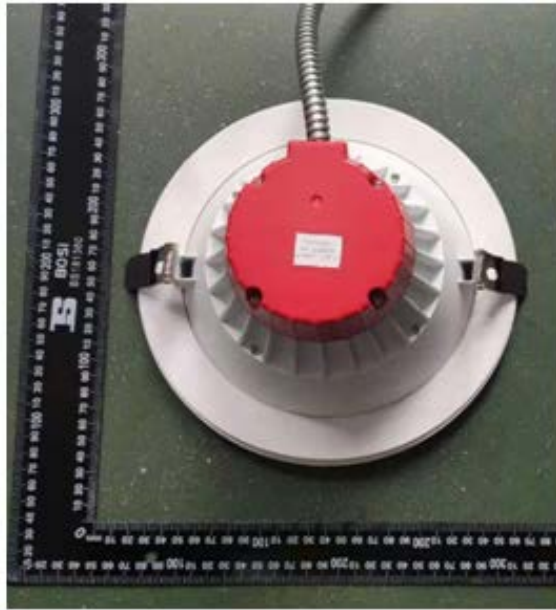


Table--1

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	951	951	951	951	951	951	952	953	951	951	951	951	951	951	952	953			
5	945	945	944	944	943	944	944	946	945	945	946	945	946	946	946	946			
10	926	925	924	924	922	923	924	926	926	926	927	926	928	928	928	927			
15	894	894	891	891	889	891	891	895	894	894	896	896	897	897	897	896			
20	851	850	847	847	845	847	847	850	850	850	853	852	854	853	854	852			
25	797	797	793	793	791	793	793	797	796	796	799	799	801	800	801	798			
30	738	738	733	734	731	734	734	738	737	737	740	740	742	741	741	738			
35	672	672	667	668	665	668	668	672	672	671	675	674	677	675	676	672			
40	582	583	578	580	577	580	580	585	585	583	587	586	589	586	587	583			
45	476	477	472	475	471	476	475	480	480	478	482	479	483	480	480	476			
50	364	367	362	365	362	366	366	371	370	368	371	368	372	368	369	365			
55	257	256	256	255	256	256	260	260	259	261	260	261	260	260	257	257			
60	168	167	168	167	168	168	171	171	171	171	170	170	170	170	168	168			
65	109	110	108	110	109	110	110	112	111	110	111	110	111	109	110	108			
70	73.6	74.0	73.2	74.3	73.5	74.6	74.7	76.1	75.3	74.5	75.3	74.5	74.9	73.7	74.1	73.3			
75	55.3	55.7	55.2	55.4	55.3	55.9	56.0	56.6	56.5	56.1	56.2	55.7	55.9	55.6	55.7	55.2			
80	38.3	38.7	38.0	38.5	38.1	38.8	38.7	39.6	40.2	39.8	40.3	39.7	40.0	39.5	39.7	39.1			
85	22.3	22.6	22.1	22.5	22.1	22.7	22.6	23.2	24.4	24.0	24.4	24.0	24.3	23.8	24.0	23.4			
90	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1			
95	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	12.0	12.0	11.9	11.9	11.9	12.0	12.0	12.0			
100	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.4	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1			
105	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	12.4	12.4	12.4	12.4	12.4	12.3	12.4	12.5			
110	10.9	10.8	10.9	10.9	10.9	10.9	10.9	10.9	12.9	12.9	12.8	12.8	12.8	12.8	12.9	12.9			
115	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.5			
120	12.0	12.0	12.0	12.0	12.1	12.1	12.1	12.0	14.1	14.0	14.0	14.0	14.0	14.0	14.0	14.1			
125	12.7	12.7	12.8	12.8	12.8	12.8	12.8	12.8	14.8	14.7	14.7	14.7	14.7	14.7	14.8	14.8			
130	13.5	13.5	13.6	13.6	13.6	13.6	13.6	13.6	15.5	15.5	15.4	15.4	15.4	15.5	15.5	15.5			
135	14.3	14.3	14.4	14.4	14.4	14.4	14.4	14.4	16.2	16.2	16.1	16.1	16.1	16.2	16.2	16.3			
140	15.1	15.1	15.2	15.2	15.2	15.2	15.3	15.2	16.9	16.9	16.8	16.8	16.8	16.9	16.9	17.0			
145	16.0	16.0	16.0	16.0	16.1	16.1	16.1	16.1	17.5	17.5	17.5	17.5	17.5	17.6	17.6	17.7			
150	16.9	16.8	16.9	16.9	17.0	17.0	17.0	17.0	18.3	18.3	18.2	18.3	18.3	18.3	18.3	18.4			
155	17.8	17.8	17.8	17.8	17.9	17.9	17.9	17.9	19.0	19.0	19.0	19.0	19.0	19.1	19.1	19.2			
160	18.7	18.7	18.7	18.7	18.8	18.8	18.8	18.8	19.8	19.8	19.8	19.8	19.8	19.9	19.9	20.0			
165	19.7	19.6	19.7	19.7	19.7	19.7	19.8	19.7	20.5	20.6	20.5	20.6	20.6	20.6	20.6	20.7			
170	20.5	20.5	20.6	20.5	20.6	20.5	20.6	20.6	21.2	21.2	21.1	21.1	21.2	21.2	21.2	21.3			
175	21.2	21.2	21.2	21.2	21.3	21.3	21.3	21.3	21.5	21.5	21.5	21.5	21.5	21.5	21.6	21.6			
180	21.6	21.6	21.6	21.6	21.7	21.7	21.7	21.7	21.6	21.6	21.6	21.6	21.6	21.6	21.7	21.7			

3. Product Photo



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