

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): DLC0020(C8R24930UNVW)

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	3000K

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	DLC0020(C8R24930UNVW)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
1909180033	120.0	60	0.189	22.60	0.994

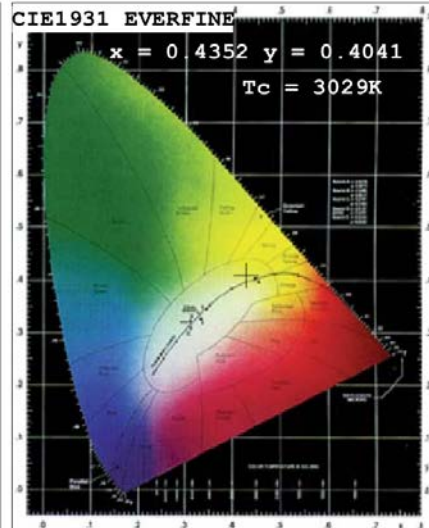
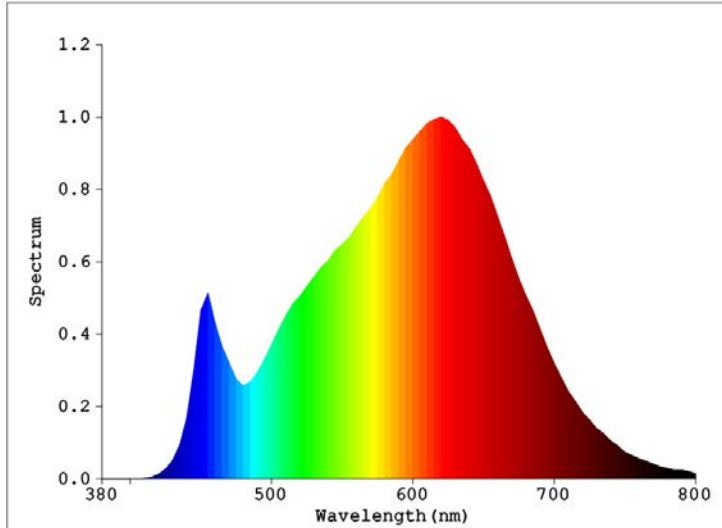
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	92	R9	56
Frequency (Hz)	60	R2	96	R10	91
CCT (K)	3029	R3	99	R11	92
Duv	0.00024	R4	91	R12	79
Chromaticity (x, y)	x=0.4352 y=0.4041	R5	92	R13	93
Chromaticity (u', v')	u'=0.2495 v'=0.5211	R6	95	R14	99
Color Rendering Index (CRI)	92.2	R7	91	R15	88
R9	56	R8	80	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2026.2
Luminous Efficacy (lm/W)	89.66
Beam Angle (°)	91.4
Center Beam Candle Power (cd)	938.6

Spectral Power Distribution & Chromaticity Diagram

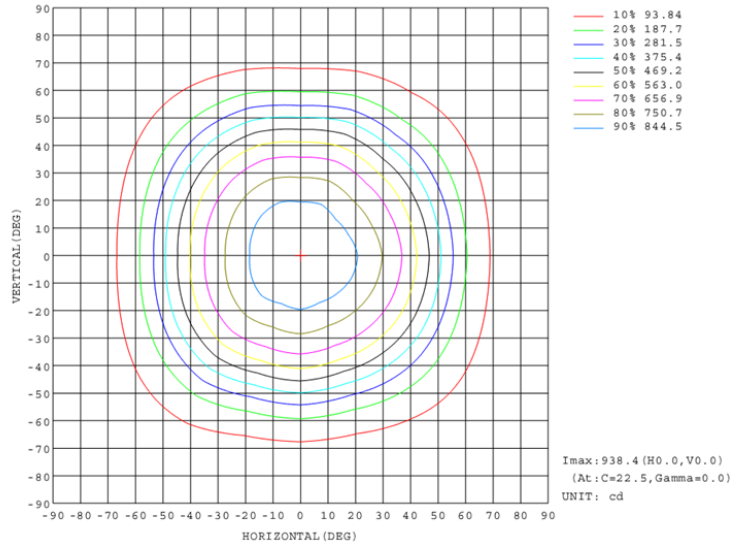
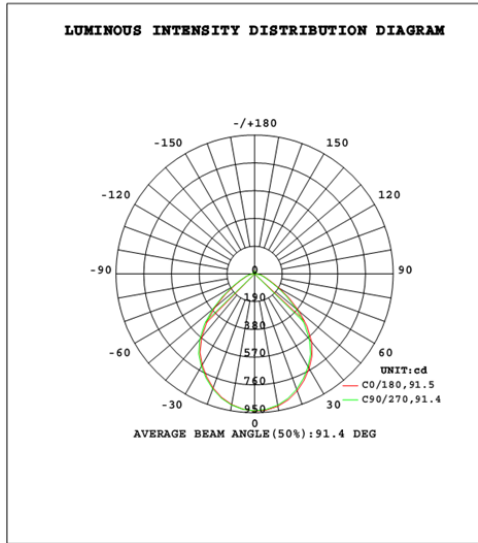


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	699.8	34.5%
0-40	1115.5	55.1%
0-60	1730.0	85.4%
60-90	210.0	10.4%
70-100	102.6	5.1%
90-120	36.9	1.8%
0-90	1940.0	95.7%
90-180	86.3	4.3%
0-180	2026.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	88.2	4.4%	90-100	12.5	0.6%
10-20	248.3	12.3%	100-110	12.1	0.6%
20-30	363.3	17.9%	110-120	12.3	0.6%
30-40	415.7	20.5%	120-130	12.1	0.6%
40-50	371.7	18.3%	130-140	11.5	0.6%
50-60	242.8	12.0%	140-150	10.2	0.5%
60-70	119.9	5.9%	150-160	8.2	0.4%
70-80	61.5	3.0%	160-170	5.5	0.3%
80-90	28.6	1.4%	170-180	2.0	0.1%

Photometric Data



Flux out: 1487 lm

Height	Havg, Hmax	Angle: 91.31deg	Diameter
1ft	333.3, 938.6fc		2.046ft
2ft	83.33, 234.6fc		4.092ft
3ft	37.03, 104.3fc		6.139ft
4ft	20.83, 58.66fc		8.185ft
5ft	13.33, 37.54fc		10.23ft
6ft	9.258, 26.07fc		12.28ft
7ft	6.802, 19.15fc		14.32ft
8ft	5.208, 14.66fc		16.37ft
9ft	4.115, 11.59fc		18.42ft
10ft	3.333, 9.386fc		20.46ft

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

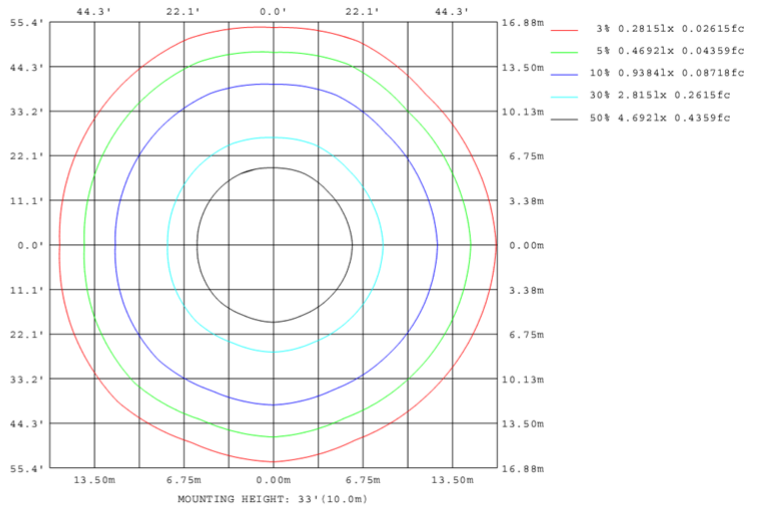
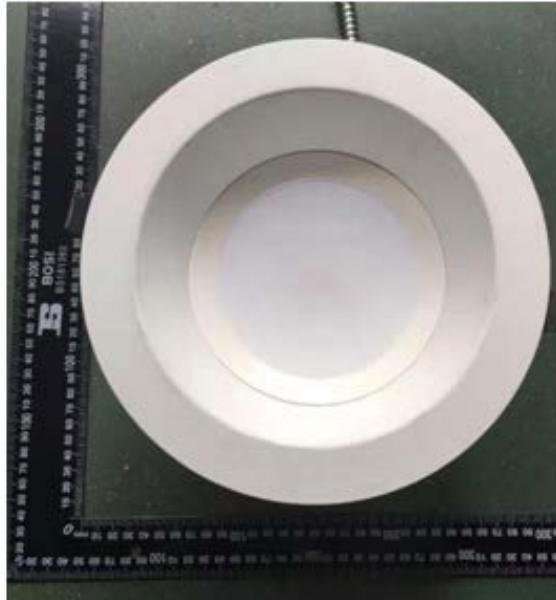
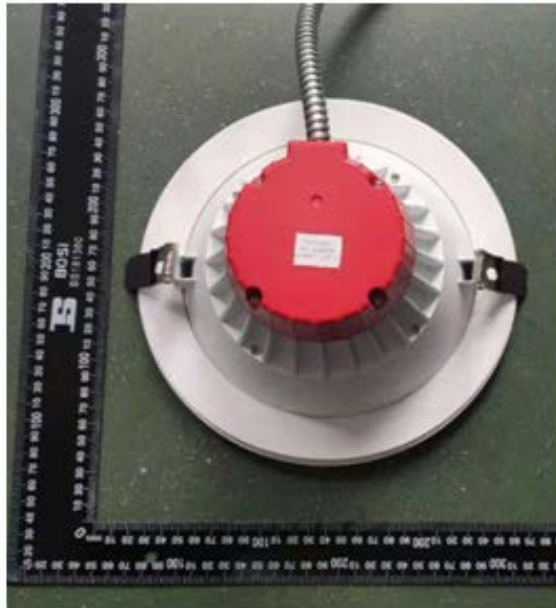


Table--1

UNIT: cd

C (DEG) γ (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	938	939	938	938	937	936	934	933	938	939	938	938	937	936	934	933			
5	935	933	931	928	930	928	931	927	929	931	933	934	930	930	926	926			
10	919	916	911	907	913	908	914	910	908	911	916	918	911	913	905	908			
15	891	887	880	874	883	877	887	880	875	880	887	890	881	884	873	877			
20	852	846	836	830	841	834	847	840	831	838	847	852	839	844	829	835			
25	803	796	783	777	790	782	797	788	778	785	796	802	788	794	777	783			
30	747	739	727	719	733	725	742	733	720	728	741	747	731	738	719	727			
35	686	677	662	653	670	660	680	670	655	665	678	685	668	677	655	664			
40	608	595	573	562	585	572	600	587	566	580	599	610	586	598	569	581			
45	508	492	469	456	482	468	500	485	462	478	499	511	485	498	466	479			
50	399	384	360	347	373	359	392	378	354	370	393	405	378	391	358	372			
55	291	273	254	239	266	250	285	269	247	264	283	297	269	284	250	266			
60	195	180	166	156	175	164	190	178	161	174	188	200	177	189	164	175			
65	125	118	108	103	114	108	123	116	106	112	122	128	116	122	108	113			
70	84.8	79.9	73.5	70.2	77.0	73.3	82.7	78.6	71.7	75.8	82.0	85.8	78.0	81.9	73.0	76.6			
75	59.9	58.0	55.2	53.6	56.5	55.0	58.6	57.1	54.3	56.1	58.3	59.6	56.9	58.2	54.9	56.4			
80	45.0	42.4	38.7	36.8	40.8	38.9	44.0	41.8	38.6	40.8	44.1	45.9	41.7	43.9	39.1	41.3			
85	28.1	26.0	23.0	21.4	24.8	23.0	27.4	25.5	23.2	25.0	27.9	29.5	25.9	27.7	23.6	25.4			
90	14.0	12.4	10.7	10.6	11.6	10.7	13.6	12.1	11.8	12.3	14.4	15.7	13.0	14.3	11.8	12.5			
95	10.5	10.4	10.4	10.4	10.4	10.4	10.4	10.4	11.7	11.7	11.7	11.7	11.7	11.7	12.2	11.7			
100	10.3	10.3	10.3	10.4	10.3	10.4	10.3	10.3	11.9	11.9	11.8	11.8	11.8	11.8	13.1	11.8			
105	10.4	10.5	10.5	10.6	10.5	10.5	10.4	10.5	12.3	12.2	12.1	12.0	12.1	12.1	13.9	12.1			
110	10.7	10.8	10.9	11.0	10.8	10.9	10.8	10.8	12.8	12.6	12.5	12.5	12.6	12.5	14.5	12.6			
115	11.2	11.2	11.4	11.5	11.3	11.4	11.2	11.2	13.3	13.2	13.0	13.0	13.1	13.0	15.7	13.1			
120	11.7	11.8	12.0	12.1	11.9	12.0	11.8	11.8	13.9	13.8	13.6	13.5	13.7	13.6	14.9	13.7			
125	12.4	12.5	12.7	12.8	12.6	12.7	12.4	12.5	14.5	14.4	14.3	14.2	14.3	14.2	14.5	14.3			
130	13.1	13.2	13.4	13.5	13.3	13.4	13.1	13.2	15.2	15.1	14.9	14.8	15.0	14.9	15.1	15.0			
135	13.8	13.9	14.1	14.3	14.0	14.1	13.9	14.0	15.8	15.7	15.5	15.5	15.6	15.5	15.8	15.6			
140	14.6	14.7	14.8	15.0	14.7	14.9	14.6	14.7	16.5	16.3	16.2	16.1	16.3	16.2	16.4	16.3			
145	15.3	15.5	15.6	15.8	15.5	15.7	15.4	15.5	17.1	17.0	16.8	16.8	16.9	16.8	17.0	16.9			
150	16.2	16.3	16.5	16.6	16.4	16.5	16.2	16.3	17.8	17.7	17.5	17.5	17.6	17.5	17.7	17.6			
155	17.1	17.2	17.3	17.5	17.2	17.4	17.1	17.2	18.5	18.4	18.3	18.2	18.3	18.3	18.5	18.3			
160	18.0	18.1	18.3	18.4	18.2	18.3	18.0	18.1	19.3	19.2	19.0	19.0	19.1	19.0	19.2	19.1			
165	18.9	19.0	19.1	19.2	19.0	19.1	18.9	18.9	19.9	19.8	19.7	19.7	19.8	19.7	19.9	19.8			
170	19.7	19.8	19.9	20.0	19.8	19.9	19.7	19.8	20.5	20.4	20.3	20.3	20.3	20.3	20.4	20.4			
175	20.4	20.4	20.5	20.6	20.5	20.5	20.4	20.4	20.8	20.7	20.7	20.7	20.7	20.7	20.7	20.7			
180	20.8	20.8	20.9	20.9	20.8	20.9	20.8	20.8	20.8	20.8	20.9	20.9	20.8	20.8	19.7	20.8			

3. Product Photo



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