

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

ES03RMFxx 930 007 xxx DL FL GP MW
Nom 3 inch diam round recessed estimator downlight

Test Number

SP-00867_M-007L

Test Date

The results contained in this report pertain only to this IES file.

Summary of Results

Power

Input Watts	8.8 W
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Lumen Output

Output Lumens	501
Efficacy	56.89 lm/W

Luminous Dimensions

0° - 180° Size	-0.22
90° - 270° Size	-0.22
Height	0

Spacing Criterion

Two luminaires, plane 0°	0.55
Two luminaires, plane 90°	0.52
Four luminaires	0.57

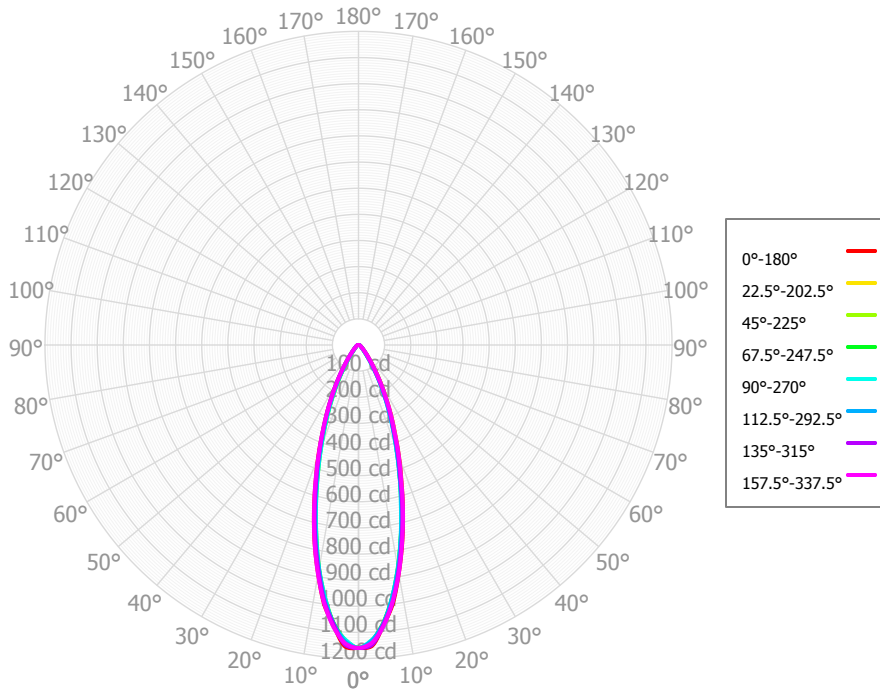
Full Beam Angle

0° - 180°	33°
90° - 270°	32°

IES File Header Contents

Keyword	Value
TEST	SP-00867_M-007L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	6/6/2019
UPDATE	7/25/2019
LUMCAT	ES03RMFxx 930 007 xxx DL FL GP MW
LUMINAIRE	Nom 3 inch diam round recessed estimator downlight
LAMPCAT	N/A
LAMP	N/A; CRI: 90, 9mm LES
OTHER	Beam Angle: 33.5 degrees
OTHER	CCT Output Multipliers: 27HK x 0.97
OTHER	This report prepared by Spectrum Lighting, scaled from 13L
_CCTMULT	27HK x 0.97

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	97.38	19.45%	90.00° - 100.00°	0.04	0.01%
10.00° - 20.00°	175.76	35.11%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	127.41	25.45%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	55.60	11.11%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	21.19	4.23%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	11.29	2.26%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	7.51	1.50%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	3.61	0.72%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.82	0.16%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	500.58	99.99%	0.00° - 180.00°	500.62	100.00%

Candela Distribution

	0.00°	22.50°	45.00°	67.50°	90.00°	112.50°	135.00°	157.50°	180.00°	202.50°	225.00°	247.50°	270.00°	292.50°	315.00°	337.50°	360.00°
0.00°	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64	1,159.64
2.50°	1,153.97	1,135.13	1,137.68	1,133.88	1,131.72	1,137.01	1,149.63	1,143.90	1,155.90	1,136.73	1,139.68	1,131.55	1,130.07	1,134.29	1,150.08	1,142.31	1,153.97
5.00°	1,079.84	1,081.82	1,070.68	1,073.01	1,083.47	1,073.97	1,076.67	1,085.84	1,080.57	1,083.69	1,072.70	1,072.81	1,080.33	1,072.49	1,077.03	1,083.22	1,079.84
7.50°	1,001.28	986.34	981.69	979.29	977.73	984.35	994.63	1,000.58	1,002.84	992.32	987.56	978.25	977.89	979.60	995.31	993.65	1,001.28
10.00°	887.63	881.11	869.38	866.03	868.03	871.79	879.96	891.43	889.46	886.56	874.55	868.71	871.02	870.26	880.88	887.65	887.63
12.50°	773.63	762.41	749.40	748.50	746.60	755.01	764.53	776.17	775.77	769.03	758.59	745.34	747.66	750.42	763.97	771.36	773.63
15.00°	657.76	647.90	635.49	628.88	625.68	635.27	646.92	656.57	658.62	648.15	638.97	628.36	628.09	634.46	646.72	656.99	657.76
17.50°	546.35	538.22	523.13	524.40	523.13	529.19	535.95	547.48	544.21	540.09	529.00	516.18	519.12	520.51	530.30	543.61	546.35
20.00°	451.62	442.01	433.54	425.72	422.64	430.82	439.56	444.42	447.46	434.65	428.79	419.72	418.48	425.69	439.22	448.30	451.62
22.50°	363.13	358.45	348.04	347.15	345.07	348.92	352.67	358.87	355.47	352.08	342.69	332.79	336.65	338.85	349.92	360.37	363.13
25.00°	292.17	286.68	281.38	274.46	270.25	274.62	282.32	281.59	284.40	272.80	268.53	261.63	262.87	269.35	282.24	289.61	292.17
27.50°	226.96	223.93	216.84	215.93	213.18	214.64	219.15	220.24	217.80	213.42	205.71	198.35	203.51	205.41	216.68	224.23	226.96
30.00°	174.73	171.15	166.58	160.55	158.89	159.81	166.38	164.76	166.22	155.64	150.67	148.16	151.06	155.56	165.58	172.37	174.73
32.50°	129.07	124.70	117.17	118.68	116.83	119.21	122.50	123.70	120.17	116.71	109.35	103.11	108.58	109.06	118.27	123.78	129.07
35.00°	95.18	91.26	87.19	78.83	79.60	82.47	89.05	86.67	88.28	78.64	75.60	74.52	75.95	80.54	88.39	93.67	95.18
37.50°	68.32	64.44	58.07	58.51	58.58	61.44	64.28	64.72	61.82	59.63	54.90	50.86	55.16	55.11	62.09	66.63	68.32
40.00°	51.63	47.82	44.70	39.85	40.99	43.61	47.80	45.94	46.27	41.38	40.12	38.38	39.81	42.69	48.03	51.71	51.63
42.50°	38.53	35.30	31.95	31.75	32.14	34.34	36.11	36.33	34.02	32.89	30.48	28.46	29.79	31.64	35.74	38.00	38.53
45.00°	29.78	27.87	25.49	24.09	24.53	26.21	28.24	28.01	27.24	24.86	22.65	22.75	22.96	25.75	28.14	30.12	29.78
47.50°	23.13	22.07	19.53	19.93	19.40	21.58	22.82	22.61	21.72	20.04	18.63	17.69	18.67	20.09	21.87	22.55	23.13
50.00°	18.56	18.40	16.57	15.91	15.42	17.20	18.98	17.43	17.90	15.74	15.60	15.03	15.54	16.45	18.36	19.17	18.56
52.50°	15.40	15.24	13.91	13.77	13.35	14.84	15.87	14.48	14.93	14.02	13.48	12.60	13.18	12.93	15.19	15.82	15.40
55.00°	13.35	12.96	12.49	11.79	11.76	12.57	13.14	11.63	12.90	12.28	11.53	11.24	11.33	11.78	12.58	13.10	13.35
57.50°	11.66	10.82	11.05	11.06	10.83	11.37	11.86	10.44	11.30	10.47	10.10	9.92	9.77	10.63	10.62	10.56	11.66
60.00°	10.21	9.89	9.57	10.23	9.79	10.18	11.20	9.30	10.09	8.96	8.72	8.68	8.75	9.40	9.55	9.63	10.21
62.50°	9.04	9.09	8.27	8.95	8.63	8.95	9.87	8.86	9.13	8.26	7.67	7.47	7.96	8.28	8.51	8.70	9.04
65.00°	8.01	7.93	7.46	7.70	7.58	7.77	8.32	8.34	8.33	7.44	6.63	6.56	7.01	7.72	7.52	7.71	8.01
67.50°	7.36	6.77	6.61	6.58	6.65	6.87	6.98	7.30	7.18	6.36	5.39	5.63	6.01	6.87	6.40	6.72	7.36
70.00°	6.81	5.62	5.73	5.49	5.50	5.98	5.68	6.35	5.83	5.26	4.21	4.62	4.74	5.37	5.21	5.74	6.81
72.50°	4.79	4.36	4.58	4.47	4.25	5.14	4.54	5.73	5.10	4.14	3.34	3.63	3.58	4.20	4.07	4.37	4.79
75.00°	3.33	2.96	3.33	3.69	3.63	4.05	3.53	4.62	4.43	2.99	2.62	2.69	2.85	3.20	3.04	2.98	3.33
77.50°	2.48	2.03	2.60	2.89	2.91	2.74	2.89	3.01	3.04	1.92	2.03	1.83	2.02	2.00	2.18	2.51	2.48
80.00°	1.40	1.26	1.57	1.67	1.88	1.95	1.97	1.76	1.90	1.29	1.23	1.27	1.18	1.21	1.18	1.28	1.40
82.50°	0.66	0.62	0.81	1.02	0.96	1.19	1.22	1.01	1.05	0.83	0.73	0.92	0.61	0.61	0.72	0.75	0.66
85.00°	0.71	0.54	0.56	0.60	0.62	0.74	0.83	0.72	0.66	0.64	0.50	0.62	0.52	0.50	0.90	0.79	0.71
87.50°	0.52	0.48	0.64	0.63	0.77	0.70	0.64	0.58	0.71	0.51	0.63	0.61	0.55	0.50	0.61	0.57	0.52
90.00°	0.00	0.00	0.00	0.69	0.79	0.83	0.55	0.52	0.61	0.54	0.49	0.00	0.00	0.00	0.00	0.00	0.00
92.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112.50°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

RCR	pfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	pcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	0%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	0	596	596	596	596	582	582	582	582	556	556	556	533	533	533	511	511	501
	1	569	556	544	533	557	545	535	525	525	517	509	507	500	494	489	484	475
	2	543	520	501	485	533	512	494	480	496	482	469	481	469	459	467	458	449
	3	519	489	466	447	509	482	461	444	469	451	436	457	442	430	446	434	425
	4	496	461	436	416	487	456	432	414	445	425	409	435	418	404	426	411	404
	5	475	436	410	390	467	432	407	388	423	401	385	415	396	381	407	391	384
	6	455	414	387	367	448	410	385	366	403	381	364	396	377	361	390	373	366
	7	436	394	367	348	430	391	365	347	385	362	345	379	359	343	374	356	350
	8	419	376	349	331	413	373	348	330	368	345	329	363	342	327	359	340	335
	9	403	360	333	315	398	357	332	315	353	330	314	349	328	313	345	326	321
	10	388	344	318	301	383	342	317	301	339	316	300	335	314	299	331	312	308

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	38.3 fc	3.2 ft
6.5 ft	27.4 fc	3.8 ft
7.5 ft	20.6 fc	4.4 ft
8.0 ft	18.1 fc	4.7 ft
10.0 ft	11.6 fc	5.9 ft
12.0 ft	8.1 fc	7.1 ft
14.0 ft	5.9 fc	8.3 ft
16.0 ft	4.5 fc	9.4 ft
20.0 ft	2.9 fc	11.8 ft
24.0 ft	2.0 fc	14.2 ft
28.0 ft	1.5 fc	16.5 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	328,366	328,366	328,366
45.00°	11,924	10,208	9,821
55.00°	6,591	6,165	5,806
65.00°	5,365	4,997	5,080
75.00°	3,647	3,647	3,972
85.00°	2,295	1,809	2,000

UGR CIE 190:2010

Ceiling reflectance		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall reflectance		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Plane reflectance		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
2H	2H	11.1	12.1	11.5	12.5	12.8	11.0	12.0	11.3	12.3	12.6
	3H	12.9	13.8	13.2	14.1	14.5	12.4	13.3	12.8	13.6	14.0
	4H	13.2	14.1	13.6	14.4	14.8	12.8	13.6	13.2	14.0	14.4
	6H	13.4	14.1	13.8	14.5	14.9	13.0	13.8	13.4	14.1	14.5
	8H	13.4	14.1	13.8	14.5	14.9	13.0	13.7	13.5	14.1	14.5
	12H	13.4	14.0	13.8	14.4	14.9	13.0	13.7	13.4	14.1	14.5
4H	2H	11.6	12.4	12.0	12.7	13.1	11.4	12.3	11.8	12.6	13.0
	3H	13.4	14.1	13.8	14.5	14.9	13.0	13.7	13.4	14.1	14.5
	4H	13.8	14.4	14.3	14.9	15.3	13.5	14.1	14.0	14.6	15.0
	6H	14.0	14.6	14.5	15.0	15.5	13.8	14.3	14.3	14.8	15.3
	8H	14.0	14.5	14.5	15.0	15.4	13.8	14.3	14.3	14.8	15.2
	12H	14.0	14.4	14.5	14.9	15.4	13.8	14.3	14.3	14.7	15.2
8H	4H	13.9	14.4	14.4	14.8	15.3	13.6	14.1	14.1	14.6	15.0
	6H	14.2	14.5	14.7	15.1	15.5	14.0	14.4	14.5	14.9	15.4
	8H	14.2	14.5	14.7	15.0	15.5	14.1	14.4	14.6	14.9	15.4
	12H	14.2	14.5	14.7	15.0	15.6	14.1	14.4	14.7	14.9	15.5
12H	4H	13.9	14.3	14.4	14.8	15.3	13.6	14.0	14.1	14.5	15.0
	6H	14.1	14.5	14.7	14.9	15.5	14.0	14.3	14.5	14.8	15.4
	8H	14.2	14.5	14.7	15.0	15.5	14.1	14.4	14.6	14.9	15.5

Corrected UGR values based on total output lumens

SHR = 1.0