

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

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

Test Number

SP-00868_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	494
Efficacy	56.16 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.45
Two luminaires, plane 90°	0.43
Four luminaires	0.47

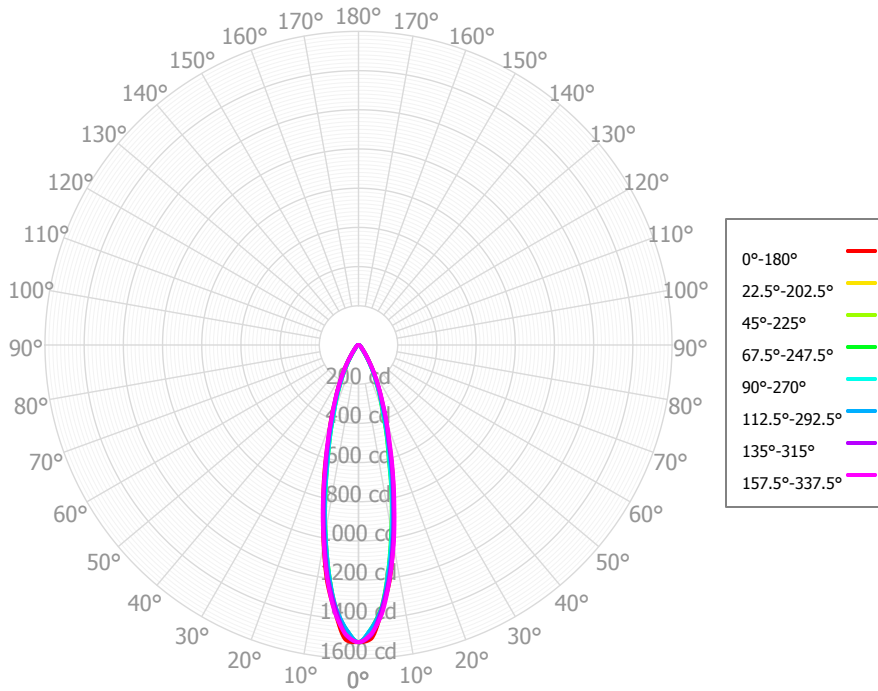
Full Beam Angle

0° - 180°	27°
90° - 270°	26°

IES File Header Contents

Keyword	Value
TEST	SP-00868_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 NF GP MW
LUMINAIRE	Nom 3 inch diam round recessed estimator downlight
LAMPCAT	N/A
LAMP	N/A; CRI: 90, 9mm LES
OTHER	Beam Angle: 27.3 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°	118.49	23.98%	90.00° - 100.00°	0.04	0.01%
10.00° - 20.00°	176.08	35.63%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	109.96	22.25%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	46.36	9.38%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	18.73	3.79%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	11.58	2.34%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	8.21	1.66%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	3.96	0.80%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.82	0.17%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	494.19	99.99%	0.00° - 180.00°	494.23	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°	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53	1,516.53
2.50°	1,499.67	1,473.94	1,459.85	1,451.04	1,452.24	1,451.42	1,481.53	1,478.86	1,505.29	1,471.71	1,454.92	1,452.00	1,452.69	1,452.67	1,482.21	1,476.02	1,499.67
5.00°	1,362.35	1,369.91	1,359.11	1,345.66	1,359.39	1,340.37	1,350.47	1,373.30	1,368.90	1,357.44	1,343.19	1,352.98	1,361.29	1,350.26	1,355.87	1,376.29	1,362.35
7.50°	1,215.12	1,197.23	1,178.96	1,162.47	1,166.70	1,172.35	1,199.46	1,211.84	1,221.33	1,191.23	1,168.51	1,164.47	1,166.86	1,175.10	1,199.68	1,211.05	1,215.12
10.00°	1,021.98	1,012.80	990.74	963.29	974.36	978.26	1,005.69	1,022.84	1,027.03	995.80	971.27	973.84	972.89	992.03	1,013.28	1,034.03	1,021.98
12.50°	834.93	817.14	791.15	778.03	784.52	796.81	821.44	840.50	832.38	812.73	788.49	778.77	784.41	799.86	820.82	844.32	834.93
15.00°	668.29	649.22	620.36	594.64	605.97	619.83	653.37	660.82	671.30	635.14	609.74	607.87	604.12	633.65	662.25	678.29	668.29
17.50°	517.63	502.77	482.37	473.21	481.34	493.42	511.12	526.11	514.49	503.17	484.98	477.40	479.05	492.34	508.36	532.93	517.63
20.00°	408.91	392.41	374.53	356.59	368.25	380.33	404.04	404.97	412.68	387.37	370.93	368.89	363.47	383.22	408.09	418.91	408.91
22.50°	313.98	305.19	294.49	287.87	294.72	303.42	315.75	321.53	315.70	307.03	296.04	290.74	290.58	299.08	311.77	326.97	313.98
25.00°	247.21	238.99	230.49	220.78	227.52	233.56	248.75	246.32	252.64	236.07	226.14	224.33	222.89	232.70	248.50	254.55	247.21
27.50°	188.35	183.50	178.81	173.62	177.33	181.43	191.50	191.51	192.66	183.14	174.64	171.03	172.55	177.38	186.29	193.47	188.35
30.00°	142.35	139.27	134.85	127.54	131.42	131.51	143.20	139.86	147.00	133.55	124.47	126.28	126.67	132.84	141.67	145.63	142.35
32.50°	103.93	99.53	95.66	94.06	94.44	98.28	104.82	105.34	105.37	99.73	92.30	89.28	92.25	93.71	98.69	103.87	103.93
35.00°	75.70	73.11	68.91	62.94	64.94	66.08	73.80	72.33	77.77	67.88	61.07	63.06	63.92	68.11	74.07	77.03	75.70
37.50°	54.49	50.90	48.24	47.39	47.83	49.79	53.29	55.63	54.19	51.49	46.62	44.95	47.84	47.92	51.24	55.50	54.49
40.00°	40.92	38.90	36.37	33.48	34.68	34.11	39.21	39.57	41.16	36.06	32.84	33.46	34.97	36.54	39.92	42.48	40.92
42.50°	31.24	29.25	27.96	26.81	26.95	28.18	30.29	32.27	30.38	29.11	26.49	25.96	27.25	27.83	29.86	31.81	31.24
45.00°	24.98	24.32	22.66	20.97	21.43	22.50	23.88	25.19	24.23	22.37	20.62	21.26	21.35	22.64	25.50	26.04	24.98
47.50°	20.55	20.11	18.29	17.88	18.37	19.22	19.83	21.16	19.30	19.24	17.81	17.90	17.86	18.21	21.49	21.22	20.55
50.00°	17.41	17.55	15.94	15.30	15.88	16.09	16.69	17.31	16.42	16.20	15.19	15.66	15.09	16.05	18.64	18.40	17.41
52.50°	15.12	15.14	14.02	14.02	13.91	13.92	14.15	14.87	14.15	14.10	13.36	13.85	13.07	14.24	15.94	15.83	15.12
55.00°	13.33	13.48	12.84	12.68	12.73	11.94	11.78	12.67	12.69	12.12	11.72	12.54	11.72	12.79	13.57	14.41	13.33
57.50°	11.86	11.85	11.77	11.23	12.14	10.77	10.84	11.69	11.32	10.82	10.66	11.38	10.93	11.37	11.76	13.07	11.86
60.00°	10.53	10.86	10.71	10.19	11.04	9.69	10.20	10.72	10.04	9.59	9.86	9.89	10.04	10.15	11.06	11.20	10.53
62.50°	9.60	9.84	9.65	9.79	9.63	8.85	9.02	9.82	9.02	8.67	9.68	8.32	9.09	8.94	10.18	9.39	9.60
65.00°	8.80	8.52	8.79	9.16	8.46	8.03	7.77	8.82	8.23	7.82	8.93	7.33	7.93	8.06	9.00	8.66	8.80
67.50°	7.33	7.16	7.88	8.24	7.40	7.22	6.81	7.56	6.98	7.22	7.12	6.42	6.67	7.07	7.62	7.82	7.33
70.00°	5.82	5.60	6.42	6.90	6.34	6.14	5.85	6.25	5.39	6.22	5.65	5.70	5.92	5.47	6.06	6.53	5.82
72.50°	5.08	4.38	5.09	5.28	5.28	4.65	4.62	4.85	4.62	4.50	4.54	4.83	5.24	4.23	4.96	5.20	5.08
75.00°	3.81	3.45	3.93	4.15	4.17	3.54	3.54	3.75	4.08	3.61	3.26	3.46	4.00	3.35	3.85	3.84	3.81
77.50°	2.32	3.10	2.74	2.96	2.92	2.59	2.70	2.84	2.92	3.10	2.15	2.57	2.58	2.40	2.40	2.38	2.32
80.00°	1.70	1.81	1.62	1.70	1.64	1.60	1.88	1.91	1.91	1.73	1.59	1.74	1.25	1.31	1.37	1.14	1.70
82.50°	0.72	0.88	0.76	0.75	0.92	0.93	1.13	1.21	1.16	0.97	0.88	0.71	0.58	0.64	0.74	0.79	0.72
85.00°	0.50	0.76	0.50	0.79	0.52	0.57	0.71	0.73	0.84	0.69	0.65	0.38	0.71	0.55	0.61	0.78	0.50
87.50°	0.56	0.49	0.48	0.56	0.60	0.52	0.59	0.55	0.68	0.77	0.49	0.46	0.62	0.49	0.66	0.61	0.56
90.00°	0.00	0.00	0.00	0.00	0.59	0.60	0.54	0.63	0.58	0.51	0.59	0.47	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	588	588	588	588	575	575	575	575	549	549	549	526	526	526	504	504	494
	1	563	550	539	528	551	539	529	520	520	511	504	501	495	489	484	479	475
	2	538	516	498	482	528	508	491	477	492	478	467	477	466	457	464	455	447
	3	515	486	464	446	506	480	459	443	467	450	436	455	441	429	444	433	424
	4	494	460	436	417	485	455	432	415	445	425	410	435	419	405	426	412	405
	5	474	437	412	393	466	433	409	391	424	404	388	416	399	385	409	394	387
	6	455	417	391	372	448	413	389	371	406	385	369	399	381	366	393	377	370
	7	438	398	372	354	432	395	371	353	389	367	352	384	364	350	378	361	355
	8	422	381	356	338	417	379	355	338	374	352	336	369	349	335	365	347	342
	9	407	366	341	324	402	364	340	324	360	338	323	356	336	322	352	334	329
	10	393	352	328	311	389	350	327	311	347	325	310	343	323	309	340	322	317

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	50.1 fc	2.6 ft
6.5 ft	35.9 fc	3.1 ft
7.5 ft	27.0 fc	3.5 ft
8.0 ft	23.7 fc	3.8 ft
10.0 ft	15.2 fc	4.7 ft
12.0 ft	10.5 fc	5.7 ft
14.0 ft	7.7 fc	6.6 ft
16.0 ft	5.9 fc	7.5 ft
20.0 ft	3.8 fc	9.4 ft
24.0 ft	2.6 fc	11.3 ft
28.0 ft	1.9 fc	13.2 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	429,425	429,425	429,425
45.00°	10,003	9,074	8,582
55.00°	6,583	6,341	6,284
65.00°	5,899	5,892	5,667
75.00°	4,174	4,302	4,557
85.00°	1,611	1,629	1,674

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	12.1	13.1	12.4	13.4	13.7	11.4	12.4	11.7	12.7	13.0
	3H	13.5	14.4	13.9	14.7	15.1	12.9	13.8	13.3	14.2	14.5
	4H	13.9	14.7	14.3	15.1	15.5	13.5	14.3	13.9	14.6	15.0
	6H	14.0	14.8	14.4	15.2	15.6	13.7	14.4	14.1	14.8	15.2
	8H	14.0	14.7	14.5	15.1	15.5	13.7	14.4	14.1	14.8	15.2
	12H	14.0	14.7	14.4	15.0	15.5	13.6	14.3	14.1	14.7	15.1
4H	2H	12.5	13.4	13.0	13.7	14.1	11.9	12.7	12.3	13.1	13.5
	3H	14.1	14.8	14.5	15.2	15.6	13.6	14.3	14.0	14.7	15.1
	4H	14.6	15.2	15.0	15.6	16.1	14.2	14.8	14.6	15.2	15.7
	6H	14.8	15.3	15.3	15.8	16.2	14.5	15.0	14.9	15.4	15.9
	8H	14.8	15.3	15.3	15.7	16.2	14.4	14.9	14.9	15.4	15.9
	12H	14.8	15.2	15.3	15.7	16.2	14.4	14.8	14.9	15.3	15.8
8H	4H	14.7	15.2	15.2	15.6	16.1	14.3	14.8	14.8	15.2	15.7
	6H	14.9	15.3	15.5	15.8	16.3	14.6	15.0	15.1	15.5	16.0
	8H	15.0	15.3	15.5	15.8	16.3	14.6	15.0	15.2	15.5	16.0
	12H	15.0	15.3	15.5	15.8	16.4	14.7	14.9	15.2	15.4	16.0
12H	4H	14.7	15.1	15.1	15.6	16.0	14.3	14.7	14.8	15.2	15.6
	6H	14.9	15.3	15.4	15.7	16.3	14.6	14.9	15.1	15.4	16.0
	8H	15.0	15.2	15.5	15.7	16.3	14.7	14.9	15.2	15.4	16.0

Corrected UGR values based on total output lumens

SHR = 1.0