

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

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

Test Number

SP-00870_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	435
Efficacy	49.44 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.82
Two luminaires, plane 90°	0.83
Four luminaires	0.81

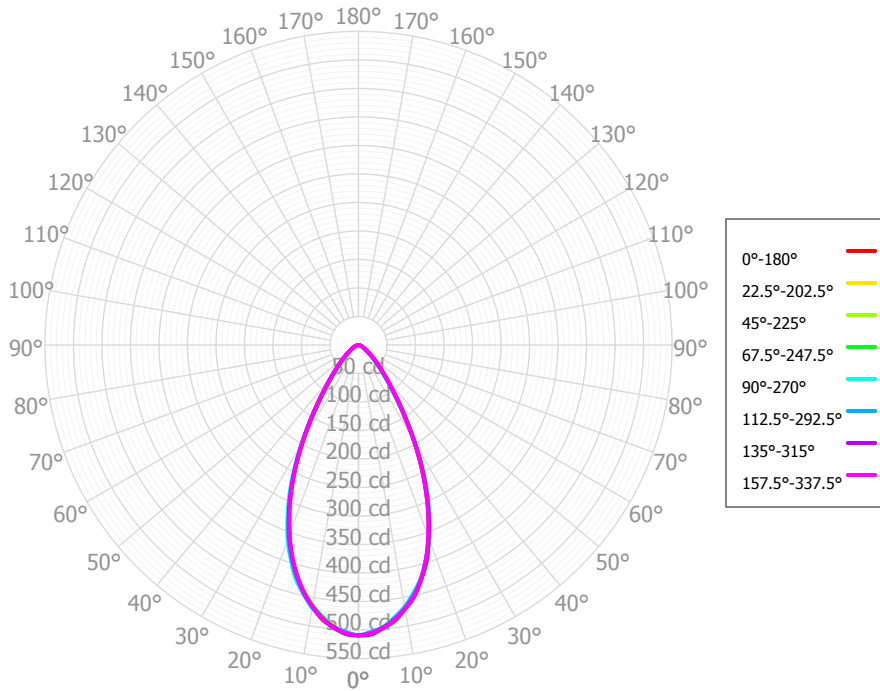
Full Beam Angle

0° - 180°	53°
90° - 270°	53°

IES File Header Contents

Keyword	Value
TEST	SP-00870_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 WF GP MW
LUMINAIRE	Nom 3 inch diam round recessed estimator downlight
LAMPCAT	N/A
LAMP	N/A; CRI: 90, 9mm LES
OTHER	Beam Angle: 52.9 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°	47.12	10.83%	90.00° - 100.00°	0.04	0.01%
10.00° - 20.00°	116.72	26.83%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	126.69	29.12%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	77.90	17.90%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	36.98	8.50%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	17.37	3.99%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	8.24	1.89%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	3.25	0.75%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.79	0.18%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	435.05	99.99%	0.00° - 180.00°	435.10	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°	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26	509.26
2.50°	508.22	505.51	505.43	504.74	505.66	504.19	507.30	506.47	507.46	504.87	506.09	504.77	505.36	503.88	507.44	506.12	508.22
5.00°	498.07	498.47	495.95	497.06	498.90	498.01	496.50	498.39	497.18	497.27	495.23	497.09	498.63	497.27	497.92	498.11	498.07
7.50°	486.29	484.36	483.75	482.70	482.99	482.51	484.49	484.70	485.83	481.61	481.55	481.74	483.78	482.97	487.93	485.93	486.29
10.00°	468.32	468.33	466.95	467.15	466.24	466.60	465.70	466.33	465.65	464.13	463.32	464.61	468.54	467.85	470.30	469.68	468.32
12.50°	448.63	448.41	448.71	446.38	445.59	444.38	445.25	443.71	444.87	442.05	442.31	443.24	447.24	447.54	452.20	450.70	448.63
15.00°	423.82	424.51	424.16	424.96	422.99	421.31	417.93	418.22	417.53	419.23	417.54	419.68	425.40	425.15	425.36	424.26	423.82
17.50°	395.36	394.10	398.15	394.15	393.82	391.01	388.87	387.48	389.79	388.00	388.68	392.01	395.01	393.65	397.47	393.68	395.36
20.00°	358.48	359.77	362.03	362.75	362.26	359.46	354.41	353.87	353.94	355.93	355.35	360.35	363.69	360.48	359.63	357.61	358.48
22.50°	320.12	320.28	324.30	323.49	324.32	321.13	318.46	316.68	317.78	317.38	319.21	322.68	324.81	321.70	321.31	319.13	320.12
25.00°	279.03	279.40	282.15	284.00	284.68	281.87	278.97	277.87	278.17	278.53	280.58	282.86	285.12	281.80	280.07	278.43	279.03
27.50°	237.51	236.99	239.54	239.71	241.48	238.97	238.43	236.77	238.30	237.65	239.32	240.33	241.27	239.01	238.56	236.96	237.51
30.00°	195.30	195.44	195.49	195.81	198.51	196.73	195.84	194.87	196.79	196.89	196.09	197.69	197.94	196.68	195.89	195.14	195.30
32.50°	156.84	154.65	151.49	156.10	155.90	156.50	156.64	157.49	157.16	158.03	156.79	154.92	156.60	155.32	155.83	153.23	156.84
35.00°	122.98	121.60	121.16	118.52	120.22	120.72	122.74	121.30	125.97	120.71	119.85	120.37	119.55	119.87	124.01	123.19	122.98
37.50°	95.77	94.23	91.48	94.38	94.18	95.30	95.16	97.38	97.39	96.53	93.99	92.71	95.02	94.17	95.63	95.44	95.77
40.00°	75.25	74.12	73.74	72.07	73.19	73.51	75.61	75.88	77.71	73.81	73.50	72.58	73.59	73.13	75.89	76.99	75.25
42.50°	59.14	58.45	56.70	57.98	57.92	58.42	59.88	61.43	60.25	59.00	58.40	57.72	59.19	58.40	58.81	59.70	59.14
45.00°	46.77	46.09	45.78	45.22	45.69	45.64	48.21	47.89	48.58	45.38	45.44	45.93	46.45	46.13	47.02	47.97	46.77
47.50°	36.52	35.34	35.52	36.85	36.27	36.43	38.79	39.35	38.34	36.50	36.28	35.88	36.71	36.56	36.97	36.63	36.52
50.00°	27.73	28.20	28.97	29.22	29.03	28.94	31.32	31.14	31.00	28.71	28.28	28.98	28.77	28.81	29.71	29.13	27.73
52.50°	22.13	22.46	22.88	23.49	23.49	23.60	25.36	25.44	24.58	24.17	23.01	23.51	23.51	22.71	23.53	21.80	22.13
55.00°	18.30	18.10	18.63	18.65	19.08	19.16	20.47	19.88	19.71	19.82	18.36	18.96	18.80	17.75	18.79	17.48	18.30
57.50°	14.50	14.17	14.74	15.61	15.39	15.65	16.74	16.97	16.02	15.89	15.44	14.74	14.74	13.66	14.62	13.32	14.50
60.00°	10.72	11.68	11.94	12.74	12.62	13.12	13.71	14.08	13.93	12.53	12.80	11.96	11.68	10.80	11.07	10.93	10.72
62.50°	8.78	9.51	9.51	10.16	10.31	11.42	11.34	11.49	11.68	10.27	10.75	9.58	9.58	8.70	8.43	8.64	8.78
65.00°	7.51	7.45	7.94	8.06	8.64	9.70	9.29	9.08	9.25	8.42	8.76	7.98	7.64	6.86	6.60	6.98	7.51
67.50°	5.83	5.43	6.48	6.57	7.23	7.97	7.70	7.87	7.30	7.19	7.19	6.53	5.82	5.15	5.12	5.40	5.83
70.00°	4.14	4.31	5.17	5.25	5.48	6.68	6.28	6.64	5.79	5.99	5.69	5.04	4.33	4.08	3.85	4.02	4.14
72.50°	3.22	3.36	3.84	4.05	3.79	5.58	4.75	5.34	4.65	4.81	4.51	3.66	3.01	3.13	3.02	2.85	3.22
75.00°	2.34	2.70	2.58	3.02	3.28	4.27	3.40	4.40	3.66	3.36	3.28	2.71	2.38	2.19	2.28	1.86	2.34
77.50°	1.58	1.82	1.96	2.21	2.40	2.99	2.68	3.78	2.52	2.00	1.99	1.90	1.77	1.30	1.64	1.34	1.58
80.00°	1.23	1.12	1.42	1.64	1.32	1.80	1.64	1.99	1.69	1.31	1.56	1.23	1.22	0.80	1.21	0.94	1.23
82.50°	0.69	0.70	0.81	1.07	0.74	1.09	0.86	1.11	1.10	0.93	1.06	0.75	0.78	0.73	0.60	0.70	0.69
85.00°	0.68	0.62	0.59	0.65	0.72	0.58	0.61	0.77	0.62	0.62	0.74	0.60	0.47	0.67	0.55	0.65	0.68
87.50°	0.35	0.46	0.85	0.59	0.68	0.56	0.53	0.53	0.48	0.58	0.54	0.67	0.62	0.52	0.60	0.48	0.35
90.00°	0.00	0.00	0.00	0.00	0.76	0.58	0.52	0.51	0.74	0.62	0.76	0.60	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	518	518	518	518	506	506	506	506	483	483	483	463	463	463	444	444	435
	1	492	479	467	457	481	469	459	449	451	443	435	435	429	422	420	415	407
	2	465	442	423	408	455	435	418	403	420	406	394	407	396	386	395	386	378
	3	440	410	387	368	431	404	382	365	392	374	359	381	366	354	371	359	352
	4	416	381	355	336	408	376	352	334	366	346	330	358	340	326	349	334	328
	5	394	355	329	309	387	351	326	307	343	321	305	336	317	302	329	312	307
	6	373	333	305	286	367	329	303	285	322	300	283	316	296	281	310	293	287
	7	354	312	285	265	348	309	283	265	303	280	263	298	277	262	293	275	270
	8	337	294	266	248	331	291	265	247	286	263	246	282	261	245	277	258	254
	9	321	277	250	232	316	275	249	232	271	247	231	267	245	230	263	244	240
	10	306	262	236	218	301	260	235	218	256	233	218	253	232	217	250	230	227

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	16.8 fc	5.5 ft
6.5 ft	12.1 fc	6.5 ft
7.5 ft	9.1 fc	7.5 ft
8.0 ft	8.0 fc	8.0 ft
10.0 ft	5.1 fc	10.0 ft
12.0 ft	3.5 fc	12.0 ft
14.0 ft	2.6 fc	14.0 ft
16.0 ft	2.0 fc	16.0 ft
20.0 ft	1.3 fc	20.0 ft
24.0 ft	0.9 fc	24.0 ft
28.0 ft	0.6 fc	28.0 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	144,204	144,204	144,204
45.00°	18,727	18,331	18,297
55.00°	9,035	9,198	9,419
65.00°	5,031	5,320	5,790
75.00°	2,561	2,819	3,589
85.00°	2,201	1,904	2,326

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	13.2	14.3	13.5	14.6	14.9	13.8	14.9	14.2	15.2	15.5
	3H	13.8	14.7	14.2	15.1	15.4	14.6	15.6	15.0	15.9	16.3
	4H	13.9	14.8	14.3	15.1	15.5	14.8	15.7	15.2	16.1	16.4
	6H	13.9	14.7	14.3	15.1	15.5	14.9	15.7	15.3	16.1	16.5
	8H	13.9	14.7	14.3	15.1	15.5	14.9	15.6	15.3	16.0	16.4
	12H	13.9	14.6	14.3	15.0	15.4	14.8	15.6	15.3	15.9	16.4
4H	2H	13.3	14.2	13.7	14.6	15.0	14.1	15.0	14.5	15.3	15.7
	3H	14.1	14.8	14.5	15.2	15.6	15.1	15.8	15.5	16.2	16.6
	4H	14.2	14.9	14.7	15.3	15.8	15.4	16.0	15.8	16.5	16.9
	6H	14.3	14.9	14.8	15.3	15.8	15.5	16.1	16.0	16.5	17.0
	8H	14.3	14.8	14.8	15.3	15.7	15.5	16.0	16.0	16.5	16.9
	12H	14.3	14.8	14.8	15.2	15.7	15.5	15.9	16.0	16.4	16.9
8H	4H	14.2	14.8	14.7	15.2	15.7	15.4	16.0	15.9	16.4	16.9
	6H	14.3	14.8	14.9	15.3	15.7	15.6	16.0	16.1	16.5	17.0
	8H	14.4	14.7	14.9	15.2	15.7	15.6	16.0	16.2	16.5	17.0
	12H	14.4	14.7	14.9	15.2	15.8	15.6	16.0	16.2	16.5	17.0
12H	4H	14.2	14.7	14.7	15.1	15.6	15.4	15.9	15.9	16.3	16.8
	6H	14.3	14.7	14.8	15.2	15.7	15.6	16.0	16.1	16.4	17.0
	8H	14.3	14.7	14.9	15.2	15.7	15.6	16.0	16.1	16.4	17.0

Corrected UGR values based on total output lumens

SHR = 1.0