

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

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

Test Number

SP-00869_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	491
Efficacy	55.75 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.37
Two luminaires, plane 90°	0.34
Four luminaires	0.41

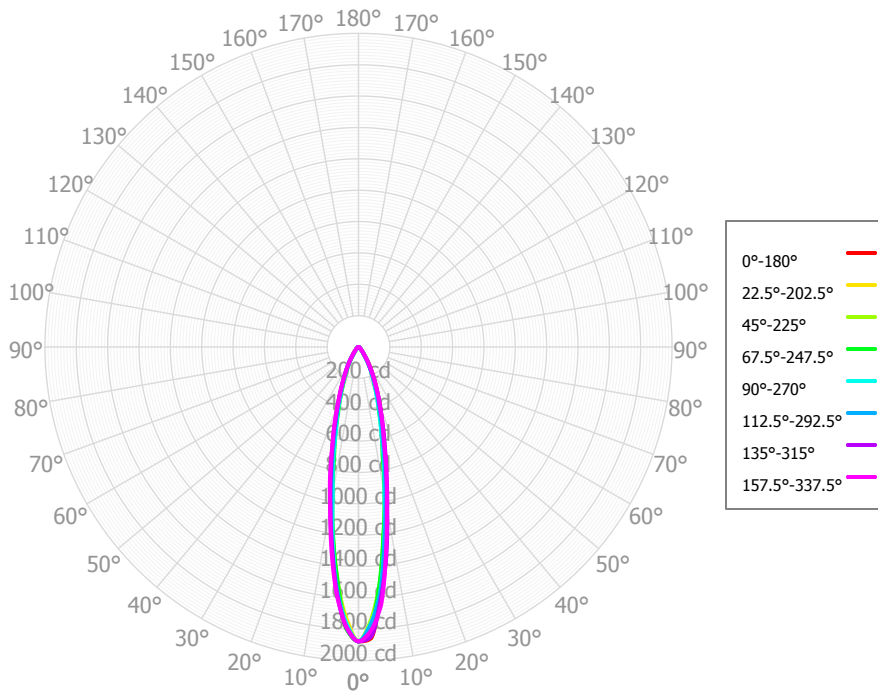
Full Beam Angle

0° - 180°	22°
90° - 270°	20°

IES File Header Contents

Keyword	Value
TEST	SP-00869_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 SP GP MW
LUMINAIRE	Nom 3 inch diam round recessed estimator downlight
LAMPCAT	N/A
LAMP	N/A; CRI: 90, 9mm LES
OTHER	Beam Angle: 22.0 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°	130.95	26.69%	90.00° - 100.00°	0.03	0.01%
10.00° - 20.00°	168.19	34.28%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	104.30	21.26%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	45.82	9.34%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	18.70	3.81%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	11.05	2.25%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	7.26	1.48%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	3.53	0.72%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.79	0.16%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	490.60	99.99%	0.00° - 180.00°	490.63	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°	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61	1,877.61
2.50°	1,858.55	1,789.72	1,752.21	1,791.90	1,769.23	1,787.89	1,790.37	1,784.96	1,795.69	1,737.71	1,764.28	1,797.57	1,764.88	1,776.03	1,849.12	1,812.41	1,858.55
5.00°	1,591.96	1,554.49	1,529.72	1,525.38	1,580.39	1,561.19	1,579.61	1,587.21	1,541.49	1,527.80	1,507.86	1,514.33	1,563.64	1,582.04	1,618.30	1,652.86	1,591.96
7.50°	1,323.25	1,291.60	1,220.20	1,214.44	1,260.62	1,292.28	1,288.66	1,316.18	1,265.76	1,238.31	1,243.90	1,233.59	1,254.58	1,267.31	1,353.04	1,338.09	1,323.25
10.00°	1,043.20	1,000.74	963.89	958.45	954.55	1,002.00	1,036.48	1,038.88	1,027.73	988.73	969.86	961.63	943.63	993.30	1,055.04	1,040.32	1,043.20
12.50°	787.38	775.83	734.48	710.43	748.57	784.39	812.09	837.33	792.23	765.97	744.18	719.45	749.05	772.95	822.05	823.20	787.38
15.00°	634.15	610.26	578.92	568.85	556.78	598.41	636.06	639.73	630.71	595.43	575.20	564.37	557.57	596.76	644.01	625.99	634.15
17.50°	494.19	482.66	455.46	438.29	445.63	467.73	490.25	507.40	471.76	455.43	440.05	427.53	446.94	472.24	507.66	505.04	494.19
20.00°	401.14	384.99	364.55	354.62	342.95	357.92	380.53	376.86	373.36	352.54	340.15	336.63	339.31	369.65	402.14	394.70	401.14
22.50°	315.50	306.29	285.68	274.19	278.13	282.91	290.37	298.94	276.20	268.74	262.92	257.72	271.45	289.53	317.77	317.95	315.50
25.00°	251.72	240.66	227.14	221.97	217.95	218.96	225.87	222.44	219.75	208.80	206.39	204.66	205.83	223.84	247.26	247.17	251.72
27.50°	193.43	187.27	175.05	170.67	174.62	173.32	173.56	175.60	164.53	159.43	159.53	156.53	160.58	171.12	190.02	192.54	193.43
30.00°	148.81	141.34	133.99	132.49	133.59	132.60	132.96	129.94	128.23	121.62	120.40	117.57	117.28	127.19	140.34	143.09	148.81
32.50°	108.83	105.38	95.82	94.77	99.67	100.83	97.11	98.84	93.21	88.25	88.94	84.50	86.86	90.31	103.18	105.58	108.83
35.00°	78.91	74.69	70.91	71.00	70.24	71.01	72.58	69.41	70.51	66.04	62.91	61.07	59.10	65.00	72.29	74.52	78.91
37.50°	54.74	54.41	48.80	48.03	52.46	53.35	51.95	53.79	49.34	47.44	46.13	43.11	44.77	47.79	53.01	56.25	54.74
40.00°	41.31	38.87	37.40	37.67	37.66	37.77	39.97	39.31	38.95	36.86	35.05	32.95	32.00	36.20	38.73	41.08	41.31
42.50°	30.72	29.64	27.82	27.82	29.48	30.04	30.53	31.75	29.45	28.42	27.35	25.23	25.64	28.09	29.89	31.30	30.72
45.00°	24.73	22.90	22.91	23.07	22.68	23.33	24.78	24.87	24.77	23.34	21.46	20.57	20.15	22.65	23.04	23.75	24.73
47.50°	19.91	19.29	18.59	18.59	18.54	19.74	19.91	21.34	20.33	19.01	17.89	16.88	17.64	18.64	19.23	19.58	19.91
50.00°	16.79	16.73	15.44	16.03	15.42	16.43	17.17	18.03	16.91	16.23	15.40	14.27	15.33	15.67	16.38	16.25	16.79
52.50°	14.17	14.46	12.39	13.71	14.00	14.68	14.85	15.63	13.86	13.72	13.03	12.42	13.58	13.21	14.07	14.07	14.17
55.00°	12.16	12.27	11.57	12.66	12.61	13.01	13.23	13.34	12.13	12.37	10.71	11.32	11.76	11.75	11.90	12.20	12.16
57.50°	10.41	10.81	10.88	11.58	11.29	11.36	11.71	11.35	10.54	11.19	9.38	9.85	9.79	10.70	10.55	10.72	10.41
60.00°	8.97	9.53	9.67	10.38	10.16	9.72	10.52	9.67	9.36	9.71	8.40	8.04	8.09	9.28	9.37	9.47	8.97
62.50°	7.95	8.27	8.47	9.24	9.28	9.02	9.37	8.81	8.25	8.22	7.52	7.08	6.94	7.72	7.99	8.46	7.95
65.00°	7.34	7.02	7.76	8.31	8.41	8.32	8.33	7.91	7.33	6.82	6.67	6.77	5.98	6.60	6.57	7.53	7.34
67.50°	6.44	6.11	7.02	7.17	7.54	7.37	7.29	6.90	6.42	5.46	5.57	5.65	5.35	5.59	5.69	6.67	6.44
70.00°	5.32	5.25	6.03	5.53	6.51	6.50	5.83	5.94	5.54	5.10	4.44	4.10	4.34	4.45	4.74	5.19	5.32
72.50°	4.09	4.58	5.13	4.54	5.36	6.14	4.50	5.06	4.56	4.51	3.43	3.48	3.06	3.37	3.35	3.59	4.09
75.00°	2.89	3.56	4.42	4.25	4.21	5.15	3.80	4.12	3.50	3.26	2.64	2.75	2.24	2.41	2.40	2.78	2.89
77.50°	1.85	2.18	3.04	2.95	3.14	3.15	2.79	3.13	2.42	2.11	2.13	1.48	1.38	1.86	1.80	2.01	1.85
80.00°	1.29	1.35	1.83	1.78	2.48	2.11	1.60	2.05	1.47	1.18	1.25	1.05	0.75	1.16	1.47	1.18	1.29
82.50°	0.73	0.62	1.27	1.05	1.31	1.29	1.06	1.23	0.83	0.72	0.63	0.71	0.68	0.63	0.61	0.56	0.73
85.00°	0.48	0.52	0.52	0.74	0.71	0.61	0.61	0.63	0.78	0.54	0.80	0.61	0.54	0.64	0.45	0.61	0.48
87.50°	0.58	0.55	0.66	0.43	0.66	0.43	0.50	0.46	0.79	0.51	0.46	0.64	0.68	0.24	0.61	0.35	0.58
90.00°	0.00	0.00	0.64	0.48	0.54	0.34	0.50	0.44	0.54	0.58	0.00	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	584	584	584	584	570	570	570	570	545	545	545	522	522	522	501	501	491
	1	559	547	536	526	547	536	526	517	517	509	501	498	492	486	482	477	467
	2	535	514	496	481	525	506	489	476	490	477	465	475	465	455	462	454	446
	3	513	485	463	446	504	478	459	443	466	449	436	454	440	429	443	432	424
	4	492	460	436	418	484	454	433	416	444	426	411	435	419	406	426	413	405
	5	473	438	413	395	466	433	410	393	425	405	389	417	400	386	410	395	388
	6	455	418	392	374	448	414	390	373	407	386	371	400	382	368	394	378	372
	7	438	400	375	357	432	397	373	356	391	370	354	385	367	353	380	364	358
	8	423	383	359	342	418	381	357	341	376	355	340	371	352	338	367	350	344
	9	408	369	344	328	404	366	343	327	362	341	326	358	339	325	355	337	332
	10	395	355	331	316	391	353	331	315	350	329	314	346	327	314	343	325	321

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	62.1 fc	2.1 ft
6.5 ft	44.4 fc	2.4 ft
7.5 ft	33.4 fc	2.8 ft
8.0 ft	29.3 fc	3.0 ft
10.0 ft	18.8 fc	3.7 ft
12.0 ft	13.0 fc	4.5 ft
14.0 ft	9.6 fc	5.2 ft
16.0 ft	7.3 fc	6.0 ft
20.0 ft	4.7 fc	7.5 ft
24.0 ft	3.3 fc	9.0 ft
28.0 ft	2.4 fc	10.5 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	531,667	531,667	531,667
45.00°	9,901	9,174	9,082
55.00°	6,002	5,714	6,227
65.00°	4,920	5,199	5,634
75.00°	3,167	4,837	4,601
85.00°	1,560	1,685	2,313

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	12.4	12.7	11.0	12.0	11.4	12.3	12.6
	3H	12.5	13.4	12.9	13.7	14.1	12.5	13.4	12.9	13.8	14.1
	4H	12.9	13.7	13.3	14.0	14.4	13.1	13.9	13.5	14.2	14.6
	6H	13.0	13.7	13.4	14.1	14.5	13.3	14.0	13.7	14.4	14.8
	8H	13.0	13.7	13.4	14.1	14.5	13.3	14.0	13.7	14.4	14.8
	12H	12.9	13.6	13.4	14.0	14.4	13.3	14.0	13.7	14.4	14.8
4H	2H	11.5	12.3	11.9	12.7	13.0	11.5	12.3	11.9	12.7	13.0
	3H	13.1	13.8	13.5	14.2	14.6	13.2	13.9	13.6	14.3	14.7
	4H	13.5	14.1	14.0	14.6	15.0	13.9	14.5	14.3	14.9	15.3
	6H	13.7	14.2	14.2	14.7	15.1	14.1	14.7	14.6	15.1	15.6
	8H	13.7	14.2	14.2	14.6	15.1	14.2	14.7	14.7	15.1	15.6
	12H	13.7	14.1	14.2	14.6	15.0	14.2	14.6	14.7	15.1	15.6
8H	4H	13.7	14.1	14.1	14.6	15.1	14.0	14.4	14.4	14.9	15.4
	6H	13.9	14.3	14.4	14.8	15.2	14.3	14.7	14.8	15.2	15.7
	8H	13.9	14.2	14.4	14.7	15.2	14.4	14.7	14.9	15.2	15.7
	12H	13.9	14.2	14.4	14.7	15.3	14.4	14.7	15.0	15.2	15.8
12H	4H	13.6	14.0	14.1	14.5	15.0	13.9	14.3	14.4	14.8	15.3
	6H	13.9	14.2	14.4	14.7	15.2	14.3	14.6	14.8	15.1	15.6
	8H	13.9	14.2	14.4	14.7	15.3	14.4	14.7	14.9	15.2	15.8

Corrected UGR values based on total output lumens

SHR = 1.0