

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

ES03SMFxx 930 013 xxx DL WF GP MW
Nom 3 inch diam round recessed estimator downlight

Test Number

SP-00875

Test Date

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

Summary of Results

Power

Input Watts	14.5 W
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Lumen Output

Output Lumens	700
Efficacy	48.29 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	0.85

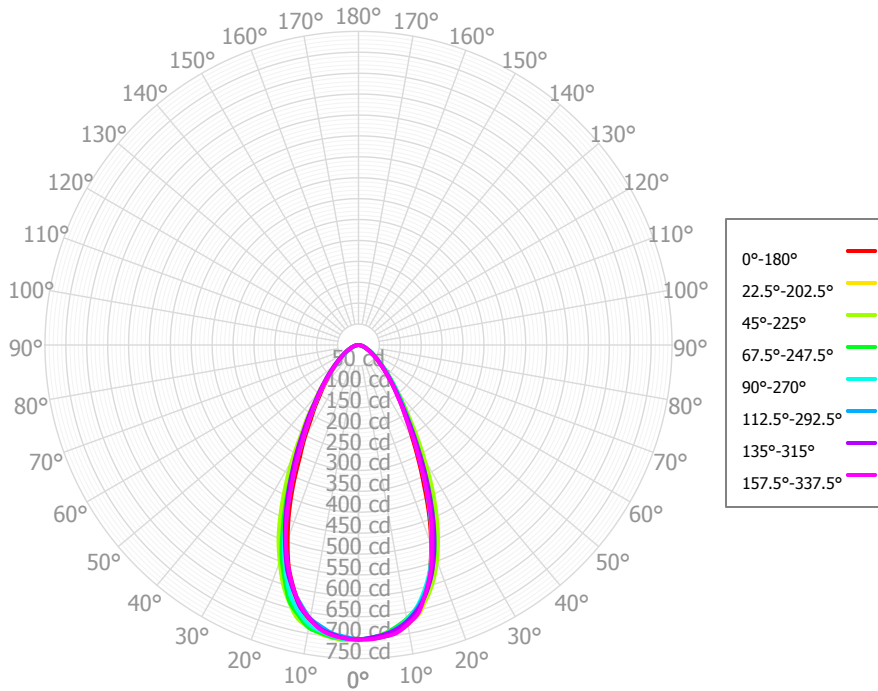
Full Beam Angle

0° - 180°	51°
90° - 270°	53°

IES File Header Contents

Keyword	Value
TEST	SP-00875
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	6/6/2019
UPDATE	7/26/2019
LUMCAT	ES03SMFxx 930 013 xxx DL WF GP MW
LUMINAIRE	Nom 3 inch diam round recessed estimator downlight
LAMPCAT	N/A
LAMP	N/A; CRI: 90
OTHER	Beam Angle: 51.6 degrees
OTHER	CCT Output Multipliers: 27HK x 0.97
OTHER	This report prepared by Spectrum Lighting
_CRI	90
_CCTMULT	27HK x 0.97
_LAMPMULT	7L x 0.49

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	66.81	9.54%	90.00° - 100.00°	0.07	0.01%
10.00° - 20.00°	170.42	24.34%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	181.42	25.91%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	123.60	17.65%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	75.99	10.85%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	44.34	6.33%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	24.28	3.47%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	11.16	1.59%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	2.18	0.31%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	700.19	99.99%	0.00° - 180.00°	700.26	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°	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37	704.37
2.50°	703.84	702.65	701.35	700.94	701.79	699.02	702.47	702.73	704.63	705.26	707.13	704.20	704.43	700.22	700.70	704.52	703.84
5.00°	700.37	697.15	692.87	694.42	694.80	693.37	695.18	697.80	700.37	701.63	703.11	701.84	699.04	695.49	695.44	700.52	700.37
7.50°	692.80	691.40	683.00	680.94	684.97	679.65	685.45	687.27	694.46	696.07	696.33	694.63	690.27	684.93	686.60	695.08	692.80
10.00°	678.94	676.77	671.25	665.20	666.89	664.26	665.43	666.55	671.75	680.67	684.56	686.65	678.80	670.04	670.90	678.16	678.94
12.50°	654.48	661.32	653.20	643.78	643.07	635.78	642.91	639.18	643.52	660.50	670.84	662.36	655.43	645.90	649.46	658.24	654.48
15.00°	616.46	626.92	628.29	616.75	608.02	605.52	605.77	602.10	601.18	622.28	638.27	636.52	624.18	614.63	619.21	617.02	616.46
17.50°	567.80	590.59	593.13	578.29	566.67	559.11	566.16	558.52	555.41	580.17	599.98	587.79	576.98	571.23	579.77	571.65	567.80
20.00°	508.05	533.51	548.89	531.87	511.67	511.36	513.07	507.24	495.85	527.01	551.09	538.09	521.30	520.84	528.91	513.62	508.05
22.50°	442.22	475.01	496.77	472.51	450.62	452.34	458.47	449.44	433.95	469.85	499.79	473.45	455.99	460.85	471.22	453.99	442.22
25.00°	371.23	406.85	438.83	410.77	387.42	393.09	401.42	385.18	369.56	403.85	438.90	408.92	386.63	398.54	406.40	387.36	371.23
27.50°	310.92	340.48	377.61	345.88	323.47	335.69	344.26	326.08	304.89	340.88	376.54	346.11	327.11	333.58	343.81	320.28	310.92
30.00°	258.19	282.13	314.42	288.43	271.90	279.33	294.68	271.15	258.71	283.23	316.54	285.31	270.91	277.82	283.12	267.37	258.19
32.50°	217.41	228.88	260.06	239.05	223.66	236.54	245.62	227.92	213.53	233.50	256.74	240.49	229.29	230.66	232.76	215.36	217.41
35.00°	183.44	192.48	209.90	199.42	190.76	195.44	207.10	192.36	182.72	195.31	215.10	198.02	191.32	192.57	189.49	183.05	183.44
37.50°	155.53	159.25	173.04	168.53	160.79	166.52	169.91	163.06	152.38	162.91	174.38	168.21	163.65	161.35	157.30	151.64	155.53
40.00°	130.36	134.37	141.30	142.29	137.60	138.96	144.88	137.15	131.29	137.36	147.89	140.07	137.78	135.66	131.43	129.76	130.36
42.50°	110.04	112.00	118.78	119.43	115.30	117.85	120.95	115.91	110.71	115.71	121.93	118.27	117.35	113.48	110.46	108.57	110.04
45.00°	91.50	94.78	98.97	100.41	97.90	98.15	103.25	96.69	94.76	97.81	103.50	98.28	97.56	96.17	91.71	91.83	91.50
47.50°	77.64	79.52	83.20	83.65	80.83	83.51	86.43	81.78	79.50	82.64	85.71	83.43	82.12	81.32	77.92	75.99	77.64
50.00°	65.08	67.49	68.29	70.30	68.61	70.15	73.25	68.30	68.20	69.66	73.15	69.73	66.92	68.66	65.87	64.20	65.08
52.50°	55.56	56.44	57.91	58.60	56.58	60.25	61.06	58.74	57.33	59.24	61.06	58.66	57.87	56.87	55.64	53.27	55.56
55.00°	46.65	46.76	48.20	49.74	48.72	51.05	51.93	50.18	48.24	50.47	51.40	48.76	48.90	48.38	45.90	45.13	46.65
57.50°	39.66	38.81	40.66	41.95	40.99	43.33	43.59	43.35	39.86	42.74	42.48	41.01	41.26	40.94	39.43	37.64	39.66
60.00°	32.94	32.78	33.32	34.33	34.70	36.39	37.13	36.83	33.67	35.55	36.37	34.56	33.84	35.14	33.60	31.80	32.94
62.50°	27.83	27.50	27.37	26.75	28.67	30.79	30.95	31.41	28.13	29.66	30.46	30.02	28.54	29.72	27.54	26.42	27.83
65.00°	22.87	22.86	21.67	22.84	24.34	25.84	25.36	26.10	24.17	24.32	25.12	25.63	23.60	24.55	21.44	21.98	22.87
67.50°	18.76	18.70	18.70	19.66	20.03	21.77	20.78	21.71	20.68	20.59	20.54	21.41	20.60	19.43	18.29	18.67	18.76
70.00°	14.96	14.76	15.67	17.00	15.78	17.43	17.69	17.43	18.07	17.37	17.60	17.40	17.22	16.04	15.28	16.51	14.96
72.50°	11.90	11.81	12.52	13.91	12.61	12.86	14.66	14.29	15.00	14.96	14.65	13.54	12.98	12.75	12.55	12.61	11.90
75.00°	9.26	9.01	9.72	9.92	10.47	10.78	11.69	11.38	11.51	12.45	11.68	10.44	9.81	9.67	10.21	8.93	9.26
77.50°	6.79	6.41	7.13	6.79	7.55	8.48	10.20	8.99	8.61	8.62	9.01	7.61	7.20	7.15	7.65	6.32	6.79
80.00°	4.32	3.97	4.61	4.49	4.89	4.43	8.00	6.32	5.91	5.84	6.23	5.06	4.21	4.25	4.15	3.46	4.32
82.50°	1.95	2.26	2.07	2.83	2.60	3.04	4.69	4.00	3.45	3.72	3.29	2.72	2.11	1.78	1.97	1.97	1.95
85.00°	1.01	1.00	1.38	1.35	1.19	1.71	1.27	2.36	2.15	1.65	2.09	1.60	1.14	1.17	1.22	1.14	1.01
87.50°	1.51	0.00	1.11	0.99	1.40	0.98	0.89	1.20	1.23	1.05	1.02	1.53	1.23	1.12	0.93	0.00	1.51
90.00°	0.00	0.00	0.00	0.00	0.00	0.90	0.76	1.32	1.19	1.01	1.18	1.08	1.03	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	834	834	834	834	814	814	814	814	778	778	778	745	745	745	714	714	700
	1	787	764	744	725	769	749	730	714	720	705	692	694	682	671	669	660	647
	2	740	700	667	639	723	687	657	631	664	639	617	643	622	604	623	606	594
	3	695	643	603	570	681	633	596	566	614	582	556	596	570	547	580	558	547
	4	654	594	549	515	641	585	544	512	570	534	505	555	524	499	541	515	505
	5	617	550	504	469	605	543	500	467	530	492	463	518	485	458	506	478	469
	6	582	512	465	431	571	506	462	429	495	456	426	485	450	423	475	444	436
	7	551	478	431	398	541	473	429	397	464	424	395	455	419	392	447	415	408
	8	522	448	402	370	513	444	400	369	436	396	367	428	392	366	421	388	382
	9	496	421	376	345	487	418	374	344	411	371	343	404	368	342	398	365	359
	10	471	397	353	323	464	394	352	323	388	349	322	382	346	321	377	344	339

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	23.3 fc	5.4 ft
6.5 ft	16.7 fc	6.3 ft
7.5 ft	12.5 fc	7.3 ft
8.0 ft	11.0 fc	7.8 ft
10.0 ft	7.0 fc	9.8 ft
12.0 ft	4.9 fc	11.7 ft
14.0 ft	3.6 fc	13.7 ft
16.0 ft	2.8 fc	15.6 ft
20.0 ft	1.8 fc	19.5 ft
24.0 ft	1.2 fc	23.4 ft
28.0 ft	0.9 fc	27.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	156,648	156,648	156,648
45.00°	28,778	31,128	30,790
55.00°	18,087	18,690	18,890
65.00°	12,036	11,404	12,810
75.00°	7,955	8,354	8,996
85.00°	2,580	3,520	3,046

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	18.5	19.7	18.8	20.0	20.3	19.1	20.3	19.4	20.6	20.9
	3H	19.5	20.5	19.8	20.9	21.2	20.1	21.2	20.5	21.5	21.9
	4H	19.8	20.7	20.2	21.1	21.5	20.4	21.4	20.8	21.7	22.1
	6H	19.9	20.8	20.3	21.2	21.6	20.5	21.5	21.0	21.8	22.2
	8H	19.9	20.7	20.3	21.1	21.5	20.5	21.4	21.0	21.8	22.2
	12H	19.8	20.7	20.3	21.0	21.5	20.5	21.3	20.9	21.7	22.1
4H	2H	18.7	19.7	19.1	20.1	20.5	19.4	20.4	19.8	20.7	21.1
	3H	19.9	20.7	20.3	21.1	21.5	20.6	21.4	21.0	21.8	22.3
	4H	20.3	21.0	20.7	21.4	21.9	21.0	21.7	21.5	22.2	22.6
	6H	20.5	21.1	20.9	21.5	22.0	21.2	21.8	21.7	22.3	22.8
	8H	20.5	21.0	20.9	21.5	22.0	21.2	21.8	21.7	22.3	22.7
	12H	20.4	21.0	20.9	21.4	21.9	21.2	21.7	21.7	22.2	22.7
8H	4H	20.4	21.0	20.9	21.4	21.9	21.2	21.7	21.6	22.2	22.7
	6H	20.6	21.1	21.1	21.6	22.1	21.4	21.9	22.0	22.4	22.9
	8H	20.6	21.0	21.2	21.6	22.1	21.5	21.9	22.0	22.4	22.9
	12H	20.6	21.0	21.1	21.5	22.1	21.5	21.9	22.0	22.3	22.9
12H	4H	20.4	20.9	20.9	21.4	21.8	21.2	21.7	21.6	22.1	22.6
	6H	20.6	21.0	21.1	21.5	22.0	21.5	21.9	22.0	22.3	22.9
	8H	20.6	21.0	21.1	21.5	22.1	21.5	21.9	22.0	22.4	23.0

Corrected UGR values based on total output lumens

SHR = 1.0