

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

ES03SMFxx 930 007 xxx DL NF GP MW
Nom 3 inch diam round recessed estimator downlight

Test Number

SP-00873_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	354
Efficacy	40.27 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	0.49
Two luminaires, plane 90°	0.49
Four luminaires	0.55

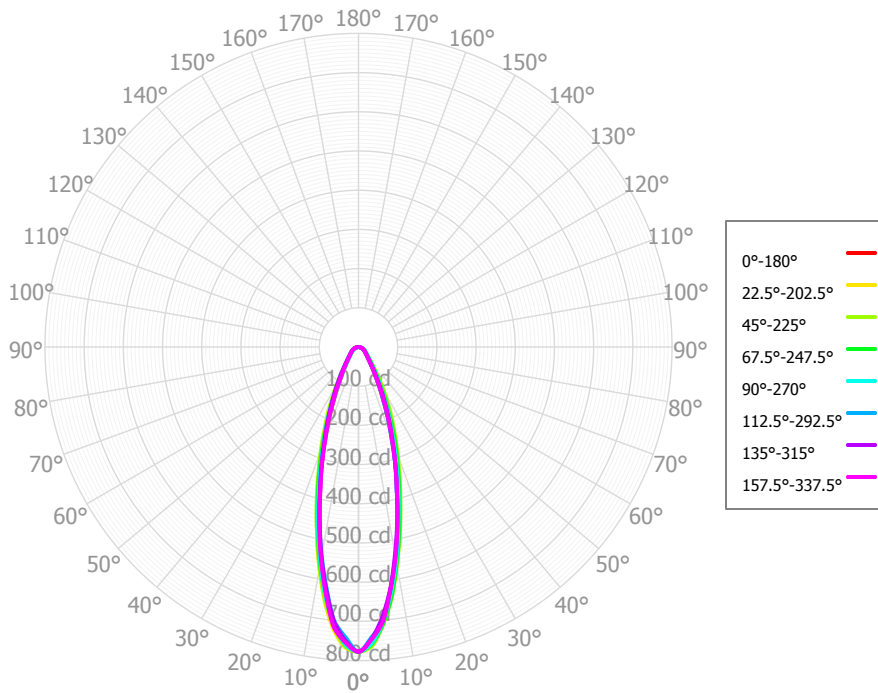
Full Beam Angle

0° - 180°	30°
90° - 270°	30°

IES File Header Contents

Keyword	Value
TEST	SP-00873_M-007L
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	6/6/2019
UPDATE	7/26/2019
LUMCAT	ES03SMFxx 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: 29.9 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°	63.16	17.82%	90.00° - 100.00°	0.04	0.01%
10.00° - 20.00°	107.74	30.40%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	76.41	21.56%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	40.46	11.42%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	24.93	7.03%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	18.63	5.26%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	13.87	3.91%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	7.72	2.18%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.45	0.41%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	354.37	99.99%	0.00° - 180.00°	354.41	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°	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25	777.25
2.50°	759.34	758.21	764.92	758.87	757.15	742.67	751.48	755.41	764.66	767.43	765.24	757.81	761.11	742.90	747.18	747.70	759.34
5.00°	706.43	712.45	710.17	711.56	705.16	703.72	705.19	718.72	718.92	724.20	716.60	714.72	708.48	703.48	693.11	705.17	706.43
7.50°	636.59	638.78	645.80	642.91	632.96	622.43	627.37	636.29	644.22	656.53	650.72	642.07	643.22	623.97	621.68	624.65	636.59
10.00°	551.06	561.20	564.16	560.36	552.18	541.01	544.64	550.32	560.23	573.21	572.02	564.47	558.56	542.63	536.91	543.61	551.06
12.50°	467.63	479.02	485.77	481.18	467.24	458.59	457.08	462.45	468.62	489.27	488.12	481.11	475.15	459.35	455.97	459.47	467.63
15.00°	385.94	403.38	412.60	403.95	393.02	378.78	378.87	374.46	386.48	404.98	412.45	403.23	393.48	376.01	377.69	378.21	385.94
17.50°	314.19	334.71	346.59	338.67	323.58	315.45	309.23	308.92	311.36	333.63	339.83	331.12	318.98	310.19	311.85	311.45	314.19
20.00°	250.17	274.02	290.93	279.85	265.48	254.86	251.45	244.04	248.31	269.16	280.48	266.95	253.43	244.80	253.77	248.15	250.17
22.50°	196.51	221.23	240.92	228.57	211.85	208.43	203.50	197.14	193.55	215.79	225.46	210.54	197.40	196.05	205.15	199.46	196.51
25.00°	150.12	174.98	198.51	180.95	168.66	164.60	164.06	150.55	150.46	167.67	181.95	164.15	152.39	148.11	161.91	153.71	150.12
27.50°	116.22	134.59	160.37	143.77	129.09	132.05	131.00	120.07	114.59	130.87	141.69	126.59	116.71	118.02	126.78	118.84	116.22
30.00°	90.22	103.77	127.42	111.08	102.17	102.03	104.62	90.20	89.69	98.85	111.78	98.09	90.78	88.83	95.84	88.17	90.22
32.50°	71.17	80.67	99.53	88.35	79.24	81.76	82.87	74.61	70.85	78.03	84.50	76.81	70.99	71.79	74.76	71.22	71.17
35.00°	56.18	63.74	77.19	69.53	64.57	63.99	66.95	59.45	58.05	61.53	67.80	61.36	57.00	55.55	58.21	56.12	56.18
37.50°	45.76	51.44	59.96	57.22	52.15	54.52	54.69	50.40	48.33	51.13	53.37	50.24	46.77	46.93	47.45	46.31	45.76
40.00°	37.73	42.46	47.97	47.15	44.31	45.79	46.01	41.69	41.35	42.80	44.73	42.09	39.86	38.73	39.06	38.02	37.73
42.50°	32.52	35.74	39.45	40.01	37.55	39.21	39.32	36.67	35.63	37.14	37.12	35.93	34.12	33.90	33.86	33.54	32.52
45.00°	28.63	30.98	34.14	33.74	33.12	33.53	34.38	31.91	31.94	32.27	32.59	31.22	29.33	29.28	29.87	29.22	28.63
47.50°	25.80	27.43	29.88	29.91	29.18	30.23	30.33	29.30	29.06	28.73	28.53	27.37	25.95	25.91	26.71	25.27	25.80
50.00°	23.41	24.51	26.50	26.75	26.40	27.23	27.33	26.67	26.01	25.54	25.74	24.37	23.60	22.75	23.83	22.12	23.41
52.50°	21.38	21.96	23.62	24.09	23.81	24.91	24.82	23.98	22.88	23.09	23.11	21.84	21.42	20.66	21.85	20.58	21.38
55.00°	19.49	20.14	21.12	21.54	21.85	22.79	22.72	21.45	20.85	20.82	20.63	19.76	19.35	18.73	20.13	18.99	19.49
57.50°	17.62	18.68	18.94	19.78	19.98	21.11	20.78	19.93	19.16	19.05	18.16	17.89	17.64	17.56	18.41	17.32	17.62
60.00°	15.75	17.05	16.99	18.17	17.78	19.33	19.08	18.39	17.62	17.39	16.77	16.18	16.13	16.21	16.69	15.78	15.75
62.50°	14.52	15.33	15.61	16.56	15.55	17.34	17.46	16.80	16.11	15.54	15.46	14.54	14.52	14.15	14.98	14.46	14.52
65.00°	13.46	13.70	14.59	14.96	14.79	15.49	15.52	15.21	14.58	13.67	13.61	13.15	12.84	12.33	13.28	13.04	13.46
67.50°	11.84	12.10	13.09	13.40	14.10	13.85	13.47	13.63	13.04	12.28	11.77	11.86	11.23	11.12	11.41	11.49	11.84
70.00°	10.13	10.63	11.41	11.83	11.74	12.54	11.98	11.98	11.30	10.95	10.42	10.05	9.64	9.79	9.61	9.98	10.13
72.50°	8.26	9.03	9.67	10.22	9.68	11.55	10.61	10.15	9.53	9.25	9.05	8.12	7.90	8.29	8.27	8.43	8.26
75.00°	6.25	7.15	7.95	8.38	8.33	9.52	9.59	8.20	7.82	7.43	7.57	6.08	5.97	5.99	6.37	5.99	6.25
77.50°	4.45	5.09	6.24	6.30	6.25	7.09	7.82	6.18	6.12	5.31	5.76	4.34	3.63	3.87	4.27	3.86	4.45
80.00°	3.50	3.33	4.43	4.05	4.06	4.47	5.29	4.29	4.41	3.61	3.77	2.87	2.24	2.26	3.05	2.40	3.50
82.50°	1.25	1.78	2.47	2.40	2.25	2.96	3.40	2.79	2.24	2.10	1.78	1.30	1.21	0.82	0.95	1.41	1.25
85.00°	0.55	0.50	0.80	0.92	1.19	1.72	1.37	1.55	0.95	0.91	0.78	0.56	0.62	0.57	0.54	0.54	0.55
87.50°	0.60	0.50	0.35	0.59	0.52	0.72	0.74	0.71	0.44	0.53	0.40	0.43	0.45	0.46	0.68	0.54	0.60
90.00°	0.00	0.00	0.00	0.00	0.63	0.67	0.67	0.44	0.50	0.49	0.57	0.50	0.09	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	422	422	422	422	412	412	412	412	394	394	394	377	377	377	362	362	354
	1	400	389	379	370	391	381	372	364	367	359	353	353	348	342	341	337	330
	2	378	359	343	330	370	353	339	327	341	329	319	331	321	312	321	313	307
	3	358	334	315	300	351	329	311	297	319	304	292	310	298	288	302	292	286
	4	340	312	291	275	333	308	288	274	300	283	270	293	279	267	286	274	269
	5	323	293	271	255	317	289	269	254	283	265	252	277	262	250	271	258	253
	6	308	276	254	239	303	273	253	238	268	250	236	263	247	235	258	244	240
	7	294	261	240	225	290	259	239	224	254	236	223	250	234	222	246	232	228
	8	282	248	227	212	277	246	226	212	242	224	211	239	222	210	235	220	217
	9	270	236	216	202	266	235	215	201	231	213	201	228	212	200	225	210	207
	10	259	226	206	192	256	224	205	192	221	204	191	219	202	191	216	201	198

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	25.7 fc	3.0 ft
6.5 ft	18.4 fc	3.5 ft
7.5 ft	13.8 fc	4.0 ft
8.0 ft	12.1 fc	4.3 ft
10.0 ft	7.8 fc	5.4 ft
12.0 ft	5.4 fc	6.4 ft
14.0 ft	4.0 fc	7.5 ft
16.0 ft	3.0 fc	8.6 ft
20.0 ft	1.9 fc	10.7 ft
24.0 ft	1.3 fc	12.9 ft
28.0 ft	1.0 fc	15.0 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	172,857	172,857	172,857
45.00°	9,006	10,737	10,417
55.00°	7,558	8,188	8,473
65.00°	7,082	7,676	7,785
75.00°	5,372	6,831	7,159
85.00°	1,407	2,044	3,043

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	15.6	16.8	16.0	17.1	17.4	16.2	17.3	16.6	17.7	18.0
	3H	17.4	18.4	17.8	18.8	19.1	17.9	19.0	18.3	19.3	19.7
	4H	17.9	18.9	18.3	19.2	19.6	18.6	19.5	19.0	19.9	20.3
	6H	18.2	19.1	18.6	19.5	19.8	18.8	19.7	19.3	20.1	20.5
	8H	18.2	19.0	18.6	19.4	19.8	18.9	19.7	19.3	20.1	20.5
	12H	18.2	19.0	18.6	19.4	19.8	18.9	19.7	19.3	20.1	20.5
4H	2H	16.3	17.2	16.7	17.6	18.0	16.8	17.7	17.2	18.1	18.5
	3H	18.2	19.0	18.6	19.4	19.8	18.8	19.5	19.2	19.9	20.4
	4H	18.8	19.5	19.3	20.0	20.4	19.5	20.2	19.9	20.6	21.1
	6H	19.2	19.8	19.6	20.2	20.7	19.9	20.5	20.3	20.9	21.4
	8H	19.2	19.7	19.7	20.2	20.7	19.9	20.5	20.4	20.9	21.4
	12H	19.2	19.7	19.6	20.1	20.6	19.9	20.4	20.4	20.9	21.4
8H	4H	19.1	19.6	19.5	20.1	20.6	19.8	20.4	20.3	20.8	21.3
	6H	19.5	19.9	20.0	20.4	20.9	20.3	20.7	20.8	21.2	21.7
	8H	19.5	19.9	20.0	20.4	20.9	20.4	20.8	20.9	21.3	21.8
	12H	19.5	19.9	20.0	20.4	20.9	20.4	20.8	20.9	21.3	21.8
12H	4H	19.1	19.5	19.5	20.0	20.5	19.8	20.3	20.3	20.8	21.2
	6H	19.5	19.9	20.0	20.3	20.9	20.3	20.7	20.8	21.2	21.7
	8H	19.5	19.9	20.1	20.4	21.0	20.4	20.8	20.9	21.3	21.8

Corrected UGR values based on total output lumens

SHR = 1.0