

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

ES03RMFxx 930 013 xxx DL WF GP MW
Nom 3 inch diam round recessed estimator downlight

Test Number

SP-00870

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	888
Efficacy	61.24 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

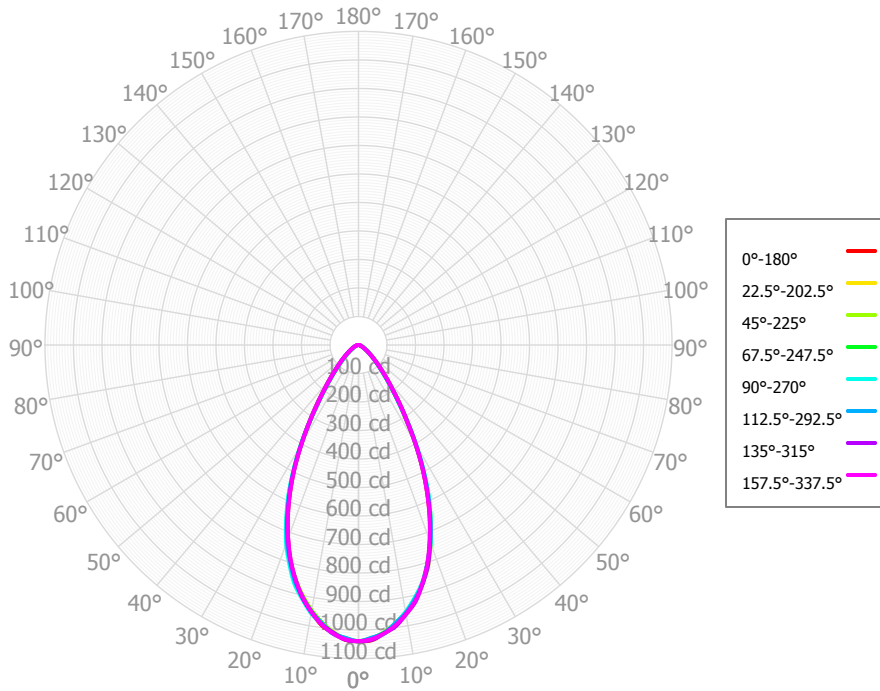
Full Beam Angle

0° - 180°	53°
90° - 270°	53°

IES File Header Contents

Keyword	Value
TEST	SP-00870
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	6/6/2019
UPDATE	7/25/2019
LUMCAT	ES03RMFxx 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: 52.9 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°	96.17	10.83%	90.00° - 100.00°	0.09	0.01%
10.00° - 20.00°	238.19	26.83%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	258.55	29.12%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	158.98	17.90%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	75.47	8.50%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	35.45	3.99%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	16.81	1.89%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	6.63	0.75%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.61	0.18%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	887.86	99.99%	0.00° - 180.00°	887.95	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°	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31	1,039.31
2.50°	1,037.18	1,031.64	1,031.48	1,030.08	1,031.95	1,028.95	1,035.30	1,033.61	1,035.64	1,030.35	1,032.84	1,030.14	1,031.35	1,028.32	1,035.60	1,032.90	1,037.18
5.00°	1,016.46	1,017.29	1,012.13	1,014.40	1,018.17	1,016.36	1,013.26	1,017.13	1,014.66	1,014.83	1,010.67	1,014.47	1,017.61	1,014.85	1,016.17	1,016.56	1,016.46
7.50°	992.43	988.48	987.25	985.11	985.70	984.72	988.76	989.18	991.48	982.88	982.75	983.15	987.30	985.65	995.78	991.70	992.43
10.00°	955.76	955.77	952.96	953.36	951.51	952.24	950.40	951.69	950.30	947.20	945.56	948.18	956.20	954.80	959.79	958.53	955.76
12.50°	915.58	915.13	915.74	910.97	909.37	906.89	908.67	905.53	907.91	902.14	902.67	904.57	912.74	913.34	922.86	919.80	915.58
15.00°	864.94	866.34	865.64	867.28	863.25	859.81	852.92	853.51	852.11	855.57	852.12	856.49	868.16	867.65	868.08	865.84	864.94
17.50°	806.87	804.28	812.56	804.38	803.71	797.97	793.61	790.77	795.49	791.83	793.23	800.01	806.15	803.36	811.15	803.42	806.87
20.00°	731.60	734.23	738.84	740.30	739.30	733.59	723.28	722.19	722.33	726.38	725.20	735.40	742.22	735.68	733.93	729.83	731.60
22.50°	653.31	653.63	661.84	660.19	661.87	655.37	649.92	646.28	648.54	647.71	651.46	658.53	662.87	656.54	655.74	651.29	653.31
25.00°	569.46	570.20	575.81	579.59	580.98	575.24	569.33	567.08	567.69	568.44	572.60	577.27	581.88	575.10	571.58	568.22	569.46
27.50°	484.70	483.66	488.85	489.20	492.83	487.69	486.60	483.20	486.33	485.01	488.40	490.48	492.38	487.77	486.85	483.59	484.70
30.00°	398.58	398.85	398.96	399.62	405.12	401.49	399.68	397.69	401.60	401.81	400.19	403.45	403.97	401.40	399.77	398.25	398.58
32.50°	320.07	315.62	309.17	318.57	318.16	319.39	319.68	321.41	320.74	322.50	319.97	316.17	319.58	316.98	318.02	312.72	320.07
35.00°	250.99	248.16	247.27	241.88	245.34	246.36	250.49	247.55	257.09	246.35	244.60	245.66	243.99	244.64	253.09	251.42	250.99
37.50°	195.45	192.31	186.70	192.62	192.19	194.50	194.21	198.74	198.76	196.99	191.81	189.21	193.91	192.19	195.16	194.78	195.45
40.00°	153.58	151.26	150.50	147.08	149.36	150.02	154.31	154.86	158.59	150.62	149.99	148.12	150.18	149.25	154.88	157.13	153.58
42.50°	120.70	119.30	115.72	118.33	118.20	119.22	122.20	125.37	122.96	120.41	119.18	117.80	120.79	119.19	120.03	121.85	120.70
45.00°	95.44	94.05	93.42	92.29	93.25	93.15	98.39	97.73	99.15	92.61	92.73	93.74	94.80	94.14	95.95	97.89	95.44
47.50°	74.52	72.12	72.48	75.20	74.03	74.35	79.16	80.30	78.24	74.49	74.04	73.22	74.93	74.60	75.44	74.76	74.52
50.00°	56.60	57.55	59.11	59.64	59.25	59.07	63.92	63.55	63.26	58.58	57.71	59.15	58.72	58.80	60.63	59.45	56.60
52.50°	45.17	45.83	46.70	47.93	47.94	48.15	51.76	51.92	50.15	49.34	46.97	47.97	47.99	46.35	48.03	44.49	45.17
55.00°	37.35	36.94	38.02	38.06	38.94	39.10	41.77	40.57	40.22	40.45	37.47	38.69	38.36	36.23	38.35	35.68	37.35
57.50°	29.60	28.93	30.08	31.85	31.40	31.94	34.17	34.62	32.69	32.43	31.51	30.08	30.09	27.88	29.84	27.18	29.60
60.00°	21.88	23.83	24.37	26.00	25.75	26.77	27.98	28.73	28.44	25.58	26.11	24.41	23.83	22.05	22.59	22.31	21.88
62.50°	17.93	19.40	19.40	20.73	21.05	23.30	23.15	23.45	23.84	20.96	21.93	19.55	19.56	17.75	17.21	17.64	17.93
65.00°	15.33	15.20	16.20	16.44	17.63	19.80	18.95	18.54	18.87	17.18	17.87	16.28	15.60	14.00	13.47	14.24	15.33
67.50°	11.89	11.09	13.22	13.41	14.75	16.27	15.71	16.06	14.90	14.67	14.68	13.32	11.88	10.50	10.46	11.01	11.89
70.00°	8.45	8.79	10.56	10.72	11.19	13.63	12.81	13.54	11.82	12.22	11.61	10.29	8.85	8.33	7.86	8.21	8.45
72.50°	6.57	6.85	7.84	8.26	7.74	11.38	9.70	10.89	9.49	9.81	9.20	7.47	6.15	6.39	6.15	5.81	6.57
75.00°	4.78	5.51	5.26	6.17	6.69	8.71	6.95	8.97	7.46	6.85	6.69	5.53	4.85	4.47	4.65	3.79	4.78
77.50°	3.22	3.72	4.00	4.51	4.89	6.11	5.47	7.72	5.14	4.08	4.06	3.88	3.61	2.65	3.34	2.74	3.22
80.00°	2.51	2.28	2.90	3.34	2.69	3.68	3.35	4.06	3.45	2.68	3.19	2.52	2.49	1.64	2.47	1.92	2.51
82.50°	1.40	1.42	1.64	2.19	1.51	2.23	1.76	2.27	2.25	1.90	2.16	1.53	1.60	1.48	1.21	1.42	1.40
85.00°	1.38	1.26	1.20	1.32	1.46	1.18	1.25	1.58	1.27	1.28	1.50	1.23	0.96	1.38	1.12	1.33	1.38
87.50°	0.72	0.94	1.74	1.20	1.39	1.14	1.08	1.08	0.97	1.19	1.10	1.37	1.27	1.05	1.23	0.98	0.72
90.00°	0.00	0.00	0.00	0.00	1.54	1.19	1.07	1.03	1.50	1.26	1.56	1.21	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	1,057	1,057	1,057	1,057	1,032	1,032	1,032	1,032	987	987	987	945	945	945	906	906	888
	1	1,003	977	953	932	981	958	936	917	921	904	889	888	875	862	858	847	830
	2	949	903	864	832	929	887	852	822	858	829	804	831	808	787	807	787	772
	3	898	836	789	752	879	824	780	745	800	764	733	778	748	722	758	732	718
	4	849	778	725	686	833	767	719	681	748	706	673	730	694	665	713	683	670
	5	804	725	671	630	789	717	666	627	701	656	621	686	646	616	671	638	626
	6	762	679	623	583	749	672	619	581	658	611	577	645	604	573	633	597	586
	7	723	637	581	542	711	631	578	540	619	572	537	608	566	534	598	560	551
	8	687	599	544	506	676	594	541	505	584	536	502	575	532	500	566	527	519
	9	654	565	511	474	644	561	509	473	552	505	472	544	501	470	537	497	489
	10	624	535	481	446	614	531	480	445	523	476	444	516	473	443	510	470	463

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	34.4 fc	5.5 ft
6.5 ft	24.6 fc	6.5 ft
7.5 ft	18.5 fc	7.5 ft
8.0 ft	16.2 fc	8.0 ft
10.0 ft	10.4 fc	10.0 ft
12.0 ft	7.2 fc	12.0 ft
14.0 ft	5.3 fc	14.0 ft
16.0 ft	4.1 fc	16.0 ft
20.0 ft	2.6 fc	20.0 ft
24.0 ft	1.8 fc	24.0 ft
28.0 ft	1.3 fc	28.0 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	294,294	294,294	294,294
45.00°	38,219	37,410	37,341
55.00°	18,439	18,771	19,223
65.00°	10,268	10,856	11,816
75.00°	5,226	5,752	7,324
85.00°	4,491	3,886	4,747

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	16.7	16.0	17.0	17.4	16.3	17.4	16.6	17.7	18.0
	3H	16.2	17.2	16.6	17.5	17.9	17.1	18.1	17.5	18.4	18.8
	4H	16.4	17.3	16.8	17.6	18.0	17.3	18.2	17.7	18.5	18.9
	6H	16.4	17.2	16.8	17.6	18.0	17.3	18.2	17.8	18.5	18.9
	8H	16.4	17.1	16.8	17.5	18.0	17.3	18.1	17.8	18.5	18.9
	12H	16.4	17.1	16.8	17.5	17.9	17.3	18.0	17.7	18.4	18.9
4H	2H	15.8	16.7	16.2	17.1	17.5	16.6	17.5	17.0	17.8	18.2
	3H	16.6	17.3	17.0	17.7	18.1	17.6	18.3	18.0	18.7	19.1
	4H	16.7	17.4	17.2	17.8	18.2	17.9	18.5	18.3	18.9	19.4
	6H	16.8	17.3	17.3	17.8	18.3	18.0	18.5	18.5	19.0	19.5
	8H	16.8	17.3	17.3	17.7	18.2	18.0	18.5	18.5	18.9	19.4
	12H	16.8	17.2	17.3	17.7	18.2	18.0	18.4	18.5	18.9	19.4
8H	4H	16.7	17.2	17.2	17.7	18.2	17.9	18.4	18.4	18.9	19.4
	6H	16.8	17.2	17.3	17.7	18.2	18.1	18.5	18.6	19.0	19.5
	8H	16.8	17.2	17.4	17.7	18.2	18.1	18.5	18.6	19.0	19.5
	12H	16.9	17.2	17.4	17.7	18.3	18.1	18.4	18.6	18.9	19.5
12H	4H	16.7	17.1	17.2	17.6	18.1	17.9	18.3	18.4	18.8	19.3
	6H	16.8	17.2	17.3	17.6	18.2	18.1	18.4	18.6	18.9	19.5
	8H	16.8	17.1	17.3	17.6	18.2	18.1	18.4	18.6	18.9	19.5

Corrected UGR values based on total output lumens

SHR = 1.0