

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

### Luminaire

ES03RMFxx 930 013 xxx WW WF LW MW  
Nom 3 inch diam round recessed wall wash estimator downlight

### Test Number

SP-00871

### 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	572
Efficacy	39.42 lm/W

#### Luminous Dimensions

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

#### Spacing Criterion

Two luminaires, plane 0°	1.52
Two luminaires, plane 90°	0.81
Four luminaires	1.07

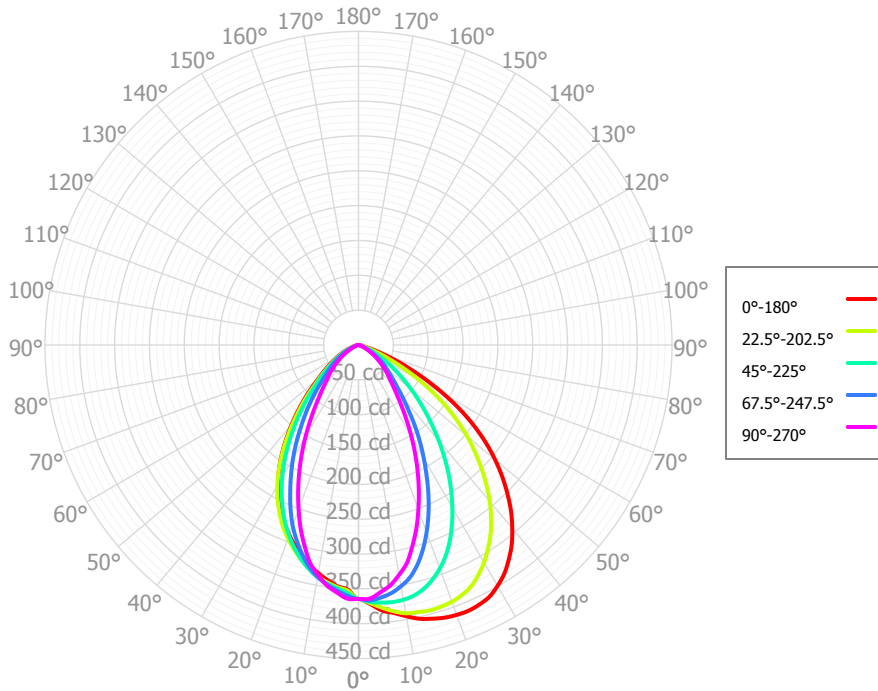
#### Full Beam Angle

0° - 180°	88°
90° - 270°	49°

### IES File Header Contents

Keyword	Value
TEST	SP-00871
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	6/6/2019
UPDATE	7/25/2019
LUMCAT	ES03RMFxx 930 013 xxx WW WF LW MW
LUMINAIRE	Nom 3 inch diam round recessed wall wash estimator downlight
LAMPCAT	N/A
LAMP	N/A; CRI: 90
OTHER	Asymmetrical Beam: 87.5 degrees x 55.2 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°	35.16	6.15%	90.00° - 100.00°	0.02	0.00%
10.00° - 20.00°	94.13	16.46%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	127.11	22.23%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	124.55	21.78%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	96.54	16.88%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	61.69	10.79%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	26.27	4.59%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	5.47	0.96%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	1.02	0.18%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	571.94	100.00%	0.00° - 180.00°	571.94	100.00%

### Candela Distribution

	0.00°	22.50°	45.00°	67.50°	90.00°	112.50°	135.00°	157.50°	180.00°
0.00°	364.56	364.56	364.56	364.56	364.56	364.56	364.56	364.56	364.56
2.50°	371.85	370.64	369.00	366.86	364.47	360.47	356.60	353.03	351.49
5.00°	382.27	378.23	371.09	364.02	356.57	353.66	350.72	348.88	347.50
7.50°	387.96	385.43	372.25	359.31	348.11	346.80	345.52	343.72	340.33
10.00°	395.30	390.98	371.36	351.63	335.14	337.95	338.56	337.58	332.48
12.50°	402.45	392.85	368.29	341.62	320.74	326.47	329.36	328.26	323.48
15.00°	406.76	394.52	362.22	326.55	298.79	311.50	318.17	318.77	313.49
17.50°	410.38	393.89	353.01	307.56	276.21	294.56	305.57	307.65	302.43
20.00°	412.22	392.29	341.41	285.92	251.28	276.20	291.42	296.00	290.34
22.50°	412.85	388.27	327.30	262.42	226.28	254.85	275.42	282.79	277.08
25.00°	410.92	382.33	310.13	237.54	201.08	231.81	257.62	267.68	262.93
27.50°	407.23	372.30	290.43	211.71	176.17	209.55	238.69	251.23	247.30
30.00°	399.19	360.51	269.38	187.10	151.94	187.82	218.84	232.76	231.16
32.50°	389.39	346.10	247.50	163.52	129.06	166.06	197.77	213.12	212.63
35.00°	376.05	330.69	225.00	140.43	108.57	144.43	176.20	191.18	192.04
37.50°	361.27	312.50	201.98	117.64	90.97	125.39	154.67	168.72	170.64
40.00°	343.34	293.28	179.02	99.14	77.47	107.42	134.26	146.61	149.55
42.50°	324.14	271.55	156.89	82.81	66.58	91.18	115.01	125.04	129.03
45.00°	302.45	249.20	136.00	70.76	58.78	75.47	96.94	104.55	109.17
47.50°	279.84	226.33	116.48	60.31	50.88	65.07	80.88	85.60	91.27
50.00°	255.84	203.46	98.31	52.39	42.87	55.73	67.68	71.20	75.25
52.50°	230.38	178.61	81.75	45.37	35.82	47.74	56.77	59.00	63.15
55.00°	202.74	153.36	66.88	37.72	29.49	40.09	46.94	49.26	53.13
57.50°	173.44	126.80	53.37	29.87	23.51	33.77	38.28	40.67	44.36
60.00°	142.38	100.04	41.44	23.39	17.75	27.65	30.68	33.42	36.17
62.50°	111.89	74.69	30.93	17.41	13.42	21.39	24.15	26.88	29.67
65.00°	82.23	51.52	22.08	12.74	9.63	15.53	18.64	21.09	23.85
67.50°	58.13	34.52	14.50	8.70	6.98	11.12	13.90	15.60	18.55
70.00°	36.03	21.66	8.76	5.18	4.54	7.67	9.41	10.25	13.11
72.50°	21.42	11.87	4.70	3.68	2.50	5.02	6.02	7.05	9.52
75.00°	10.53	6.48	2.65	2.32	2.33	3.38	4.19	5.35	6.51
77.50°	4.71	3.66	1.88	1.20	1.32	2.44	2.90	3.90	4.13
80.00°	2.45	2.07	1.27	1.06	1.21	1.84	2.09	2.53	3.27
82.50°	1.33	1.12	1.20	1.08	1.33	1.36	1.45	1.64	2.51
85.00°	1.49	1.37	0.78	0.16	0.00	1.15	1.14	1.41	1.35
87.50°	1.06	0.35	0.00	0.00	0.00	0.17	0.75	1.26	1.02
90.00°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	1.66

### Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

<b>RCR</b>	<b>pfc</b>	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	<b>pcc</b>	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	0%
	<b>pw</b>	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	30%
	<b>0</b>	681	681	681	681	665	665	665	665	636	636	636	608	608	608	584	584	572
	<b>1</b>	639	619	601	585	625	607	590	576	583	570	558	561	551	541	541	533	522
	<b>2</b>	596	560	530	505	582	549	522	499	530	507	488	512	494	477	496	481	471
	<b>3</b>	554	507	470	441	542	498	464	437	482	454	430	468	443	423	454	433	425
	<b>4</b>	516	461	420	389	504	454	416	387	440	408	382	428	400	377	416	392	384
	<b>5</b>	481	420	378	347	470	415	375	345	403	368	342	393	362	338	383	356	350
	<b>6</b>	450	385	342	312	440	380	340	310	371	335	308	362	330	306	354	325	319
	<b>7</b>	421	355	312	282	412	351	310	281	343	306	279	335	302	278	328	299	293
	<b>8</b>	395	328	286	257	387	325	284	257	318	281	255	311	278	254	305	275	270
	<b>9</b>	372	305	264	236	365	302	262	235	296	260	234	290	257	233	285	254	250
	<b>10</b>	351	284	244	217	344	281	243	217	276	241	216	271	238	215	266	236	233

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	12.1 fc	10.3 ft
6.5 ft	8.6 fc	12.1 ft
7.5 ft	6.5 fc	14.0 ft
8.0 ft	5.7 fc	14.9 ft
10.0 ft	3.6 fc	18.7 ft
12.0 ft	2.5 fc	22.4 ft
14.0 ft	1.9 fc	26.1 ft
16.0 ft	1.4 fc	29.9 ft
20.0 ft	0.9 fc	37.3 ft
24.0 ft	0.6 fc	44.8 ft
28.0 ft	0.5 fc	52.2 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	103,229	103,229	103,229
<b>45.00°</b>	121,117	54,461	23,541
<b>55.00°</b>	100,088	33,018	14,560
<b>65.00°</b>	55,097	14,796	6,454
<b>75.00°</b>	11,520	2,900	2,552
<b>85.00°</b>	4,847	2,537	0

### UGR CIE 190:2010

<b>Ceiling reflectance</b>		<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>
<b>Wall reflectance</b>		<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>
<b>Plane reflectance</b>		<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>Room dimensions</b>		<b>Viewed crosswise</b>					<b>Viewed endwise</b>				
<b>2H</b>	<b>2H</b>	27.7	29.1	28.1	29.4	29.7	17.7	19.0	18.1	19.3	19.7
	<b>3H</b>	28.1	29.3	28.5	29.6	30.0	17.9	19.1	18.3	19.5	19.8
	<b>4H</b>	28.1	29.2	28.5	29.5	29.9	17.9	19.0	18.3	19.4	19.8
	<b>6H</b>	28.0	29.0	28.4	29.4	29.8	17.9	18.9	18.3	19.3	19.7
	<b>8H</b>	28.0	28.9	28.4	29.3	29.7	17.9	18.8	18.3	19.2	19.6
	<b>12H</b>	27.9	28.8	28.4	29.2	29.7	17.8	18.7	18.3	19.1	19.5
<b>4H</b>	<b>2H</b>	27.6	28.7	28.0	29.0	29.4	18.0	19.1	18.4	19.5	19.9
	<b>3H</b>	28.0	28.9	28.4	29.3	29.7	18.4	19.3	18.8	19.7	20.1
	<b>4H</b>	27.9	28.7	28.4	29.1	29.6	18.4	19.2	18.8	19.6	20.0
	<b>6H</b>	27.9	28.6	28.3	29.0	29.5	18.4	19.1	18.8	19.5	20.0
	<b>8H</b>	27.8	28.5	28.3	28.9	29.4	18.3	19.0	18.8	19.4	19.9
	<b>12H</b>	27.8	28.3	28.3	28.8	29.3	18.3	18.9	18.8	19.4	19.8
<b>8H</b>	<b>4H</b>	27.8	28.4	28.3	28.9	29.4	18.4	19.0	18.8	19.5	19.9
	<b>6H</b>	27.7	28.2	28.2	28.7	29.2	18.4	18.9	18.9	19.4	19.9
	<b>8H</b>	27.7	28.1	28.2	28.6	29.1	18.4	18.8	18.9	19.3	19.8
	<b>12H</b>	27.6	28.0	28.1	28.5	29.1	18.4	18.8	18.9	19.3	19.8
<b>12H</b>	<b>4H</b>	27.8	28.3	28.2	28.8	29.3	18.3	18.9	18.8	19.4	19.9
	<b>6H</b>	27.7	28.1	28.2	28.6	29.1	18.3	18.8	18.9	19.3	19.8
	<b>8H</b>	27.6	28.0	28.1	28.5	29.1	18.4	18.8	18.9	19.3	19.8

Corrected UGR values based on total output lumens

SHR = 1.0