

Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
Fall River, MA 02721
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Spectrum Lighting Photometric Lab

Luminaire

VP2407-20L-35K-EX-xx
Nom. 24" diam x nom. 7" H

Test Number

SP-00692_1_M-20L

Test Date

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

Summary of Results

Power

Input Watts	13.5 W
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Lumen Output

Output Lumens	1502
Efficacy	111.24 lm/W

Luminous Dimensions

0° - 180° Size	-2.01
90° - 270° Size	-2.01
Height	0

Spacing Criterion

Two luminaires, plane 0°	1.25
Two luminaires, plane 90°	1.25
Four luminaires	1.37

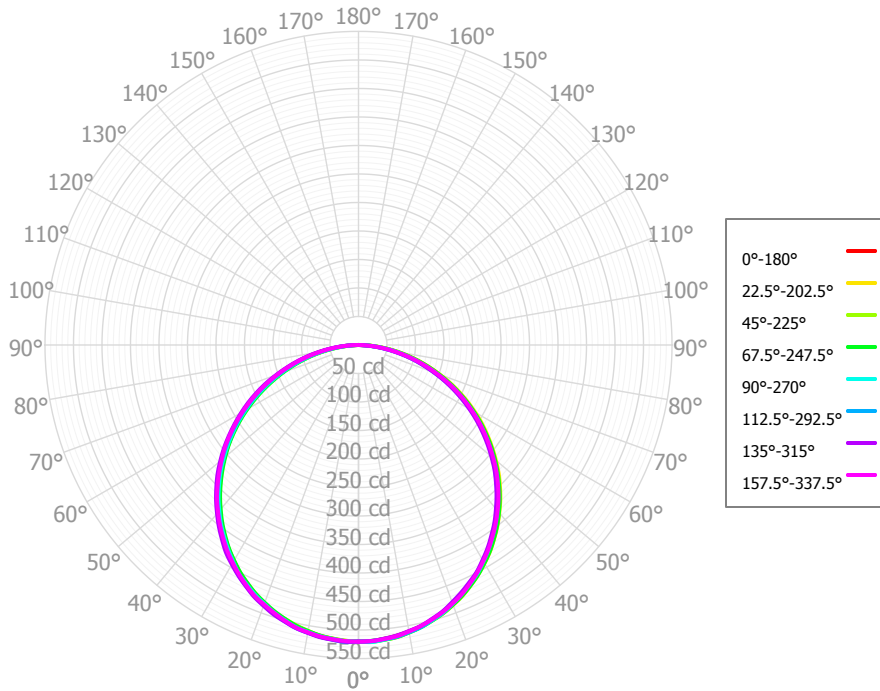
Full Beam Angle

0° - 180°	113°
90° - 270°	112°

IES File Header Contents

Keyword	Value
TEST	SP-00692_1_M-20L
TESTLAB	Spectrum Lighting Photometric Lab VLS-245-981
MANUFAC	Spectrum Lighting
ISSUEDATE	6/18/2018
UPDATE	3/11/2019
LUMCAT	VP2407-20L-35K-EX-xx
LUMINAIRE	Nom. 24" diam x nom. 7" H
OTHER	Reflector: Matte White interior finish
OTHER	Matte white diffusing lens - 2.0 ft diameter
OTHER	Beam Angle: 113 degrees
LAMP	N/A, Gen3
LAMPCAT	N/A
OTHER	Total Luminaire Watts is approximate
OTHER	CCT Multipliers: 27K x 0.97, 30K x 0.98, 40K x 1.02, 50K x 1.07
OTHER	This report generated by Spectrum Lighting
_CRI	80+

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	49.99	3.33%	90.00° - 100.00°	0.10	0.01%
10.00° - 20.00°	140.89	9.38%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	213.46	14.21%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	257.38	17.14%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	267.21	17.79%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	242.26	16.13%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	186.90	12.45%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	111.48	7.42%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	32.06	2.14%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1,501.61	99.99%	0.00° - 180.00°	1,501.71	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°	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38	520.38
2.50°	519.70	520.32	519.72	521.09	521.57	521.68	521.11	519.86	520.08	519.46	519.26	520.11	520.04	519.59	520.08	519.91	519.70
5.00°	517.41	518.74	517.64	519.16	518.78	519.04	519.09	517.99	518.44	516.95	517.17	517.42	517.79	517.86	517.14	517.90	517.41
7.50°	514.43	516.91	515.27	516.67	515.93	516.31	516.99	515.69	516.06	514.32	514.66	514.25	515.50	516.09	514.15	515.26	514.43
10.00°	510.15	511.84	510.83	512.13	511.40	512.46	512.78	511.83	511.82	509.60	509.40	509.70	511.34	511.43	509.52	510.34	510.15
12.50°	505.41	506.67	506.12	507.11	506.77	508.37	508.50	507.57	506.86	504.75	503.99	504.79	507.14	506.58	504.87	505.05	505.41
15.00°	498.74	500.29	499.71	500.37	499.83	501.54	502.06	500.44	500.14	498.19	497.64	497.66	499.78	498.95	497.54	498.45	498.74
17.50°	491.36	493.74	493.10	493.24	492.77	494.56	495.52	492.61	492.93	491.55	490.96	489.99	492.38	491.16	490.18	491.38	491.36
20.00°	482.31	485.10	484.30	484.76	482.96	485.78	486.91	484.43	484.53	481.86	482.29	481.13	483.34	481.56	480.23	482.67	482.31
22.50°	472.67	476.27	475.24	475.80	473.10	476.85	478.19	476.17	475.45	472.04	473.22	471.98	474.29	471.86	470.26	473.39	472.67
25.00°	461.86	465.38	464.54	465.25	462.47	466.31	467.23	465.23	464.74	461.42	461.80	460.99	463.86	460.93	459.64	462.19	461.86
27.50°	450.65	454.36	453.65	454.26	451.69	455.52	456.23	453.67	453.46	450.76	450.17	449.56	453.42	449.95	449.02	450.60	450.65
30.00°	438.49	441.98	440.92	441.78	438.25	442.23	444.32	441.05	440.88	437.35	437.26	436.47	439.54	436.69	435.45	437.76	438.49
32.50°	426.00	429.39	427.99	428.82	424.72	428.84	432.23	428.21	427.73	423.84	424.12	423.00	425.66	423.34	421.86	424.52	426.00
35.00°	411.71	414.80	413.51	414.31	409.83	414.48	417.22	413.73	413.26	409.27	409.70	408.03	410.96	408.72	406.87	410.00	411.71
37.50°	396.83	400.09	398.87	399.40	394.84	399.92	402.14	398.89	398.48	394.66	395.00	392.75	396.25	394.04	391.87	395.23	396.83
40.00°	380.68	384.20	382.49	383.24	378.41	383.59	386.00	383.18	383.02	377.91	378.79	376.23	379.92	377.03	375.18	379.63	380.68
42.50°	364.13	368.16	365.93	366.68	361.92	367.15	369.80	367.27	366.93	361.09	362.31	359.46	363.57	359.94	358.47	363.55	364.13
45.00°	346.68	350.90	348.65	348.89	344.42	349.79	352.62	349.56	349.48	343.76	344.46	341.66	345.84	342.54	341.03	346.01	346.68
47.50°	328.95	333.45	331.31	330.91	326.82	332.26	335.31	331.48	331.62	326.42	326.40	323.65	328.08	325.14	323.54	328.06	328.95
50.00°	310.18	314.42	311.73	312.34	307.81	313.29	316.40	313.28	312.90	307.25	307.34	305.13	308.79	306.32	304.28	308.89	310.18
52.50°	291.10	295.36	291.96	293.48	288.75	294.13	297.41	295.05	293.95	288.06	288.14	286.53	289.50	287.45	285.01	289.61	291.10
55.00°	271.42	276.11	272.83	273.75	269.09	273.61	277.42	275.21	274.54	268.30	268.27	266.59	269.73	267.58	265.25	270.00	271.42
57.50°	251.57	256.71	253.75	253.83	249.37	253.12	257.42	255.06	254.73	248.53	248.24	246.39	249.93	247.70	245.46	250.19	251.57
60.00°	231.09	236.19	232.96	233.36	228.90	232.91	237.42	234.63	234.12	227.83	227.55	225.40	229.26	226.57	224.83	229.77	231.09
62.50°	210.42	215.61	212.05	212.74	208.31	212.60	217.35	214.15	213.16	207.12	206.82	204.26	208.58	205.44	204.19	209.24	210.42
65.00°	189.41	194.63	191.18	191.73	186.62	191.54	196.57	193.05	191.52	185.71	185.91	182.95	187.44	184.55	183.37	188.40	189.41
67.50°	168.31	173.50	170.33	170.69	165.08	170.41	175.59	171.84	170.35	164.37	165.02	161.62	166.32	163.59	162.46	167.34	168.31
70.00°	147.83	151.86	149.71	149.59	144.20	148.98	153.65	150.50	149.88	143.68	144.19	140.76	145.33	142.04	140.92	145.87	147.83
72.50°	127.28	130.83	129.01	128.88	123.48	128.00	132.37	129.35	129.42	123.19	123.18	120.08	124.33	121.11	120.22	124.96	127.28
75.00°	106.14	110.50	108.16	108.45	102.99	107.53	111.94	108.85	108.98	103.06	102.02	99.87	103.29	101.30	100.80	104.45	106.14
77.50°	85.92	90.49	87.93	88.56	83.53	87.35	91.52	88.23	88.74	82.63	82.25	79.85	83.33	81.21	80.24	84.06	85.92
80.00°	66.46	70.51	68.40	68.40	64.45	67.41	71.04	68.24	68.09	62.59	62.57	60.16	63.68	61.42	60.67	63.89	66.46
82.50°	47.51	50.84	49.55	48.67	45.73	47.97	51.22	49.51	47.83	43.38	43.22	41.21	44.70	42.34	42.36	45.03	47.51
85.00°	28.12	31.95	30.92	30.14	27.60	29.76	32.68	30.82	28.82	24.70	24.58	23.56	26.76	24.34	24.09	27.12	28.12
87.50°	10.90	13.81	13.89	12.58	10.76	12.79	14.47	12.84	11.16	7.90	8.01	7.64	9.36	7.88	7.51	9.08	10.90
90.00°	0.68	0.94	1.00	1.02	0.58	1.39	1.22	1.03	0.50	0.49	0.36	0.42	0.39	0.62	0.69	0.44	0.68
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	1,788	1,788	1,788	1,788	1,746	1,746	1,746	1,746	1,669	1,669	1,669	1,597	1,597	1,597	1,532	1,532	1,502
	1	1,629	1,556	1,490	1,431	1,588	1,522	1,462	1,407	1,458	1,408	1,363	1,399	1,358	1,321	1,344	1,312	1,284
	2	1,479	1,353	1,249	1,161	1,439	1,324	1,228	1,147	1,271	1,190	1,120	1,221	1,153	1,094	1,175	1,119	1,069
	3	1,347	1,186	1,061	962	1,309	1,162	1,046	953	1,117	1,018	936	1,075	991	920	1,036	965	904
	4	1,232	1,049	916	813	1,197	1,029	904	808	991	882	796	956	862	785	923	842	774
	5	1,133	937	800	699	1,101	920	791	695	888	774	687	858	758	680	830	742	672
	6	1,046	843	707	610	1,017	829	700	607	801	687	601	776	674	596	752	661	590
	7	969	764	631	538	943	752	626	536	729	615	532	707	604	528	686	594	524
	8	902	697	568	479	879	687	564	478	667	555	475	648	546	472	630	538	469
	9	843	640	515	431	821	631	512	430	613	504	428	597	497	425	582	490	423
	10	790	590	470	391	771	582	467	390	567	461	388	553	455	386	540	450	384

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	17.2 fc	16.4 ft
6.5 ft	12.3 fc	19.4 ft
7.5 ft	9.3 fc	22.4 ft
8.0 ft	8.1 fc	23.9 ft
10.0 ft	5.2 fc	29.9 ft
12.0 ft	3.6 fc	35.8 ft
14.0 ft	2.7 fc	41.8 ft
16.0 ft	2.0 fc	47.8 ft
20.0 ft	1.3 fc	59.7 ft
24.0 ft	0.9 fc	71.7 ft
28.0 ft	0.7 fc	83.6 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	1,765	1,765	1,765
45.00°	1,663	1,673	1,652
55.00°	1,605	1,614	1,591
65.00°	1,520	1,535	1,498
75.00°	1,391	1,418	1,350
85.00°	1,094	1,204	1,074

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	13.0	14.7	13.4	15.0	15.3	12.9	14.6	13.3	14.9	15.2
	3H	14.9	16.4	15.3	16.7	17.1	14.8	16.3	15.1	16.6	17.0
	4H	15.6	17.0	16.0	17.4	17.8	15.5	16.9	15.9	17.2	17.6
	6H	16.2	17.5	16.6	17.9	18.2	16.0	17.3	16.4	17.7	18.1
	8H	16.4	17.6	16.8	18.0	18.4	16.2	17.5	16.6	17.8	18.2
	12H	16.5	17.7	16.9	18.1	18.5	16.3	17.5	16.7	17.9	18.3
4H	2H	13.6	15.1	14.0	15.4	15.8	13.6	15.0	14.0	15.4	15.7
	3H	15.8	16.9	16.2	17.3	17.7	15.7	16.9	16.1	17.3	17.7
	4H	16.6	17.7	17.1	18.1	18.5	16.5	17.6	16.9	18.0	18.4
	6H	17.3	18.3	17.8	18.7	19.2	17.2	18.1	17.6	18.6	19.0
	8H	17.6	18.5	18.0	18.9	19.4	17.4	18.3	17.9	18.7	19.2
	12H	17.7	18.5	18.2	19.0	19.5	17.6	18.4	18.1	18.8	19.3
8H	4H	17.0	17.8	17.4	18.3	18.7	16.9	17.7	17.3	18.2	18.7
	6H	17.8	18.5	18.3	19.0	19.5	17.7	18.4	18.2	18.9	19.4
	8H	18.1	18.8	18.6	19.3	19.8	18.0	18.6	18.5	19.1	19.6
	12H	18.4	19.0	18.9	19.5	20.0	18.2	18.8	18.7	19.3	19.8
12H	4H	17.0	17.8	17.5	18.3	18.7	16.9	17.7	17.4	18.2	18.6
	6H	17.9	18.5	18.4	19.0	19.5	17.8	18.4	18.3	18.9	19.4
	8H	18.2	18.8	18.8	19.3	19.9	18.1	18.7	18.6	19.2	19.7

Corrected UGR values based on total output lumens

SHR = 1.0