

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SGECS4SQFX 20L 35HK XX CA4FX FO MW

Nom 4" square Chicago Plenum downlight, Fusion Optix lens, Matte white finish

Test Number

SP-01181

Test Date

6/16/2020

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

Summary of Results

Power

Input Watts	16.6 W
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Lumen Output

Output Lumens	1466
Efficacy	88.34 lm/W

Luminous Dimensions

0° - 180° Size	0.3
90° - 270° Size	0.3
Height	0

Spacing Criterion

Two luminaires, plane 0°	1.1
Two luminaires, plane 90°	1.1
Four luminaires	1.18

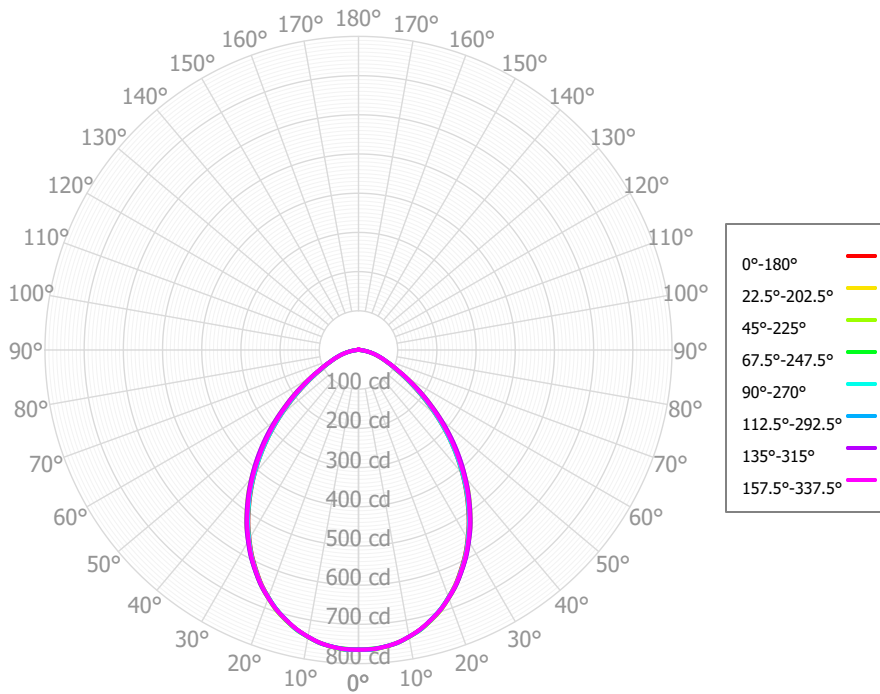
Full Beam Angle

0° - 180°	84°
90° - 270°	84°

IES File Header Contents

Keyword	Value
TEST	SP-01181
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	6/16/2020
ISSUEDATE	7/20/2020
LUMCAT	SGECS4SQFX 20L 35HK XX CA4FX FO MW
LUMINAIRE	Nom 4" square Chicago Plenum downlight, Fusion Optix lens, Matte white finish
OTHER	Beam angle: 83.9 deg
LAMPCAT	N/A
LAMP	N/A, 90CRI/35HK
OTHER	Total luminaire wattage is approximate
OTHER	CCT Output Multipliers: 27HK x 0.93, 30HK x 0.97, 35HK x 1.0, 40HK x 1.02
OTHER	This report prepared by Spectrum Lighting, scaled from 27HK
_CRI	90+
_CCTMULT	27HK x 0.93, 30HK x 0.97, 35HK x 1.00, 40HK x 1.02
_LAMPMULT	10L x 0.58

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	73.11	4.99%	90.00° - 100.00°	1.71	0.12%
10.00° - 20.00°	200.46	13.67%	100.00° - 110.00°	1.45	0.10%
20.00° - 30.00°	285.00	19.43%	100.00° - 120.00°	2.80	0.19%
30.00° - 40.00°	306.53	20.90%	120.00° - 130.00°	1.23	0.08%
40.00° - 50.00°	262.84	17.92%	130.00° - 140.00°	1.08	0.07%
50.00° - 60.00°	175.95	12.00%	140.00° - 150.00°	0.87	0.06%
60.00° - 70.00°	94.95	6.47%	150.00° - 160.00°	0.70	0.05%
70.00° - 80.00°	46.44	3.17%	160.00° - 170.00°	0.40	0.03%
80.00° - 90.00°	12.21	0.83%	170.00° - 180.00°	0.15	0.01%
0.00° - 90.00°	1,457.49	99.39%	0.00° - 180.00°	1,466.45	100.00%

Candela Distribution

	0.00°	22.50°	45.00°	67.50°	90.00°	112.50°	135.00°	157.50°	180.00°	212.50°	225.00°	247.50°	270.00°	292.50°	315.00°	337.50°	360.00°
0.00°	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62	764.62
2.50°	765.00	765.53	765.31	762.89	764.68	765.33	763.79	764.39	765.00	765.53	765.31	762.89	764.68	765.33	763.79	764.39	765.00
5.00°	760.15	760.79	760.79	760.01	759.84	760.13	760.00	760.42	760.15	760.79	760.79	760.01	759.84	760.13	760.00	760.42	760.15
7.50°	754.39	754.04	754.27	753.19	753.94	754.28	753.80	753.28	754.39	754.04	754.27	753.19	753.94	754.28	753.80	753.28	754.39
10.00°	742.68	743.06	743.70	743.24	742.83	742.68	742.99	742.61	742.68	743.06	743.70	743.24	742.83	742.68	742.99	742.61	742.68
12.50°	730.27	730.70	731.69	729.82	730.96	730.68	729.86	729.61	730.27	730.70	731.69	729.82	730.96	730.68	729.86	729.61	730.27
15.00°	713.02	713.41	714.92	713.38	713.23	712.57	713.34	713.16	713.02	713.41	714.92	713.38	713.23	712.57	713.34	713.16	713.02
17.50°	695.51	694.89	696.89	694.24	695.02	694.25	695.44	694.89	695.51	694.89	696.89	694.24	695.02	694.25	695.44	694.89	695.51
20.00°	671.35	672.31	674.14	672.51	671.76	672.11	673.51	672.50	671.35	672.31	674.14	672.51	671.76	672.11	673.51	672.50	671.35
22.50°	646.93	649.04	650.51	648.87	648.22	649.53	650.33	648.41	646.93	649.04	650.51	648.87	648.22	649.53	650.33	648.41	646.93
25.00°	618.20	621.16	622.72	622.02	619.52	622.13	623.24	620.89	618.20	621.16	622.72	622.02	619.52	622.13	623.24	620.89	618.20
27.50°	589.07	592.79	594.41	593.26	590.50	594.11	595.26	592.25	589.07	592.79	594.41	593.26	590.50	594.11	595.26	592.25	589.07
30.00°	556.35	560.22	563.47	561.24	557.61	562.08	564.03	560.51	556.35	560.22	563.47	561.24	557.61	562.08	564.03	560.51	556.35
32.50°	523.10	527.41	532.36	527.67	524.30	529.25	532.28	528.02	523.10	527.41	532.36	527.67	524.30	529.25	532.28	528.02	523.10
35.00°	486.64	491.78	497.40	492.49	488.06	492.89	496.95	492.54	486.64	491.78	497.40	492.49	488.06	492.89	496.95	492.54	486.64
37.50°	449.89	456.00	462.30	456.70	451.35	456.27	461.27	456.57	449.89	456.00	462.30	456.70	451.35	456.27	461.27	456.57	449.89
40.00°	411.98	417.70	424.31	418.96	412.50	418.76	424.40	418.23	411.98	417.70	424.31	418.96	412.50	418.76	424.40	418.23	411.98
42.50°	373.85	379.43	386.34	380.66	373.67	381.11	387.49	379.65	373.85	379.43	386.34	380.66	373.67	381.11	387.49	379.65	373.85
45.00°	335.09	341.34	348.50	342.11	334.94	343.08	349.74	341.50	335.09	341.34	348.50	342.11	334.94	343.08	349.74	341.50	335.09
47.50°	296.53	303.38	310.73	303.52	296.52	305.30	311.96	303.37	296.53	303.38	310.73	303.52	296.52	305.30	311.96	303.37	296.53
50.00°	258.44	266.15	273.27	266.06	258.94	267.99	273.80	266.26	258.44	266.15	273.27	266.06	258.94	267.99	273.80	266.26	258.44
52.50°	221.87	229.72	236.53	228.77	222.69	231.53	236.17	229.37	221.87	229.72	236.53	228.77	222.69	231.53	236.17	229.37	221.87
55.00°	188.11	196.30	202.79	196.12	189.19	196.45	202.48	196.42	188.11	196.30	202.79	196.12	189.19	196.45	202.48	196.42	188.11
57.50°	157.18	164.54	170.23	163.83	158.48	164.75	169.66	164.23	157.18	164.54	170.23	163.83	158.48	164.75	169.66	164.23	157.18
60.00°	130.46	137.66	141.32	137.63	132.37	137.39	141.27	138.38	130.46	137.66	141.32	137.63	132.37	137.39	141.27	138.38	130.46
62.50°	107.94	113.17	115.00	111.78	109.58	113.78	114.93	113.71	107.94	113.17	115.00	111.78	109.58	113.78	114.93	113.71	107.94
65.00°	90.59	94.13	94.97	94.65	91.32	94.09	96.01	95.29	90.59	94.13	94.97	94.65	91.32	94.09	96.01	95.29	90.59
67.50°	75.96	77.42	77.43	77.96	76.37	78.37	78.72	78.19	75.96	77.42	77.43	77.96	76.37	78.37	78.72	78.19	75.96
70.00°	64.04	64.91	64.67	66.26	65.05	66.08	65.88	66.15	64.04	64.91	64.67	66.26	65.05	66.08	65.88	66.15	64.04
72.50°	53.10	53.39	52.99	54.76	53.82	54.94	53.99	54.44	53.10	53.39	52.99	54.76	53.82	54.94	53.99	54.44	53.10
75.00°	42.95	43.32	42.94	44.60	42.68	44.61	44.21	43.69	42.95	43.32	42.94	44.60	42.68	44.61	44.21	43.69	42.95
77.50°	33.41	33.76	33.35	34.60	32.72	34.62	34.32	33.63	33.41	33.76	33.35	34.60	32.72	34.62	34.32	33.63	33.41
80.00°	24.29	24.80	24.33	25.32	23.62	24.82	24.27	25.14	24.29	24.80	24.33	25.32	23.62	24.82	24.27	25.14	24.29
82.50°	16.50	16.96	16.23	16.63	16.07	16.73	15.73	17.26	16.50	16.96	16.23	16.63	16.07	16.73	15.73	17.26	16.50
85.00°	9.44	10.19	9.08	9.87	9.44	9.42	9.27	10.47	9.44	10.19	9.08	9.87	9.44	9.42	9.27	10.47	9.44
87.50°	5.44	5.71	4.58	4.54	5.30	5.22	4.82	5.45	5.44	5.71	4.58	4.54	5.30	5.22	4.82	5.45	5.44
90.00°	2.74	3.06	2.29	2.84	2.32	2.11	2.69	2.97	2.74	3.06	2.29	2.84	2.32	2.11	2.69	2.97	2.74
92.50°	1.80	1.86	1.32	1.62	1.41	1.33	1.59	1.56	1.80	1.86	1.32	1.62	1.41	1.33	1.59	1.56	1.80
95.00°	1.44	1.59	1.26	1.40	1.27	1.20	1.47	1.37	1.44	1.59	1.26	1.40	1.27	1.20	1.47	1.37	1.44
97.50°	1.36	1.50	1.29	1.27	1.23	1.22	1.41	1.35	1.36	1.50	1.29	1.27	1.23	1.22	1.41	1.35	1.36
100.00°	1.35	1.50	1.36	1.31	1.23	1.27	1.40	1.48	1.35	1.50	1.36	1.31	1.23	1.27	1.40	1.48	1.35
102.50°	1.32	1.60	1.37	1.36	1.22	1.32	1.41	1.48	1.32	1.60	1.37	1.36	1.22	1.32	1.41	1.48	1.32
105.00°	1.29	1.73	1.35	1.41	1.20	1.37	1.42	1.37	1.29	1.73	1.35	1.41	1.20	1.37	1.42	1.37	1.29
107.50°	1.27	1.72	1.35	1.37	1.15	1.30	1.45	1.37	1.27	1.72	1.35	1.37	1.15	1.30	1.45	1.37	1.27
110.00°	1.25	1.67	1.36	1.22	1.09	1.21	1.49	1.45	1.25	1.67	1.36	1.22	1.09	1.21	1.49	1.45	1.25
112.50°	1.43	1.61	1.25	1.23	1.14	1.27	1.51	1.43	1.43	1.61	1.25	1.23	1.14	1.27	1.51	1.43	1.43

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%	10%
	pw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%
	0	1,744	1,744	1,744	1,744	1,702	1,702	1,702	1,702	1,624	1,624	1,624	1,553	1,553	1,553	1,488	1,488	1,488
	1	1,621	1,563	1,511	1,464	1,582	1,530	1,483	1,440	1,467	1,428	1,393	1,409	1,378	1,349	1,356	1,331	1,308
	2	1,498	1,396	1,312	1,241	1,461	1,369	1,291	1,226	1,317	1,252	1,196	1,269	1,216	1,169	1,225	1,181	1,142
	3	1,385	1,252	1,149	1,067	1,350	1,229	1,134	1,057	1,186	1,105	1,038	1,146	1,077	1,020	1,109	1,051	1,002
	4	1,283	1,129	1,016	930	1,251	1,110	1,005	924	1,073	983	911	1,040	961	898	1,008	941	886
	5	1,190	1,023	907	820	1,161	1,007	898	816	977	880	807	948	864	798	921	848	789
	6	1,108	933	815	731	1,081	919	808	727	893	794	721	869	781	714	846	768	708
	7	1,034	854	738	656	1,009	842	732	654	820	721	649	799	710	644	780	700	639
	8	967	786	672	594	945	776	667	592	757	658	588	739	650	584	722	641	581
	9	908	727	616	541	888	718	612	539	701	605	537	686	597	534	671	590	531
	10	854	675	567	496	836	667	564	495	653	558	492	639	552	490	626	546	488

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	25.3 fc	9.9 ft
6.5 ft	18.1 fc	11.7 ft
7.5 ft	13.6 fc	13.5 ft
8.0 ft	11.9 fc	14.4 ft
10.0 ft	7.6 fc	18.0 ft
12.0 ft	5.3 fc	21.5 ft
14.0 ft	3.9 fc	25.1 ft
16.0 ft	3.0 fc	28.7 ft
20.0 ft	1.9 fc	35.9 ft
24.0 ft	1.3 fc	43.1 ft
28.0 ft	1.0 fc	50.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	91,447	91,447	91,447
45.00°	56,677	58,945	56,651
55.00°	39,223	42,286	39,449
65.00°	25,638	26,876	25,844
75.00°	19,847	19,843	19,723
85.00°	12,950	12,459	12,954

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	23.5	24.9	23.8	25.2	25.5	23.5	24.9	23.8	25.2	25.6
	3H	24.4	25.7	24.8	26.1	26.4	24.5	25.7	24.9	26.1	26.5
	4H	24.8	26.0	25.2	26.4	26.8	24.8	26.0	25.2	26.4	26.8
	6H	25.1	26.2	25.5	26.5	27.0	25.1	26.2	25.5	26.6	27.0
	8H	25.1	26.2	25.6	26.6	27.0	25.1	26.2	25.6	26.6	27.0
	12H	25.2	26.2	25.6	26.6	27.0	25.2	26.2	25.6	26.6	27.0
4H	2H	23.8	25.0	24.2	25.4	25.8	23.8	25.0	24.2	25.4	25.8
	3H	25.0	26.0	25.4	26.4	26.8	25.0	26.0	25.4	26.4	26.8
	4H	25.5	26.4	25.9	26.8	27.2	25.5	26.4	26.0	26.8	27.3
	6H	25.8	26.6	26.3	27.1	27.5	25.9	26.6	26.3	27.1	27.6
	8H	25.9	26.7	26.4	27.1	27.6	26.0	26.7	26.4	27.1	27.6
	12H	26.0	26.6	26.5	27.1	27.6	26.0	26.7	26.5	27.1	27.6
8H	4H	25.6	26.3	26.1	26.8	27.3	25.7	26.4	26.1	26.8	27.3
	6H	26.1	26.7	26.6	27.2	27.7	26.1	26.7	26.6	27.2	27.7
	8H	26.2	26.8	26.8	27.3	27.8	26.3	26.8	26.8	27.3	27.8
	12H	26.4	26.8	26.9	27.3	27.9	26.4	26.8	26.9	27.3	27.9
12H	4H	25.6	26.3	26.1	26.8	27.2	25.7	26.3	26.2	26.8	27.3
	6H	26.1	26.6	26.6	27.1	27.7	26.1	26.7	26.7	27.1	27.7
	8H	26.3	26.8	26.8	27.3	27.8	26.3	26.8	26.8	27.3	27.9

Corrected UGR values based on total output lumens

SHR = 1.0