

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SGECS4SQFX 20L 35HK XX CA4FX FO SG
Nom 4" square Chicago Plenum downlight, Fusion Optix lens, Soft glow finish

Test Number

SP-01182

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	1472
Efficacy	88.65 lm/W

Luminous Dimensions

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

Spacing Criterion

Two luminaires, plane 0°	1.2
Two luminaires, plane 90°	1.21
Four luminaires	1.3

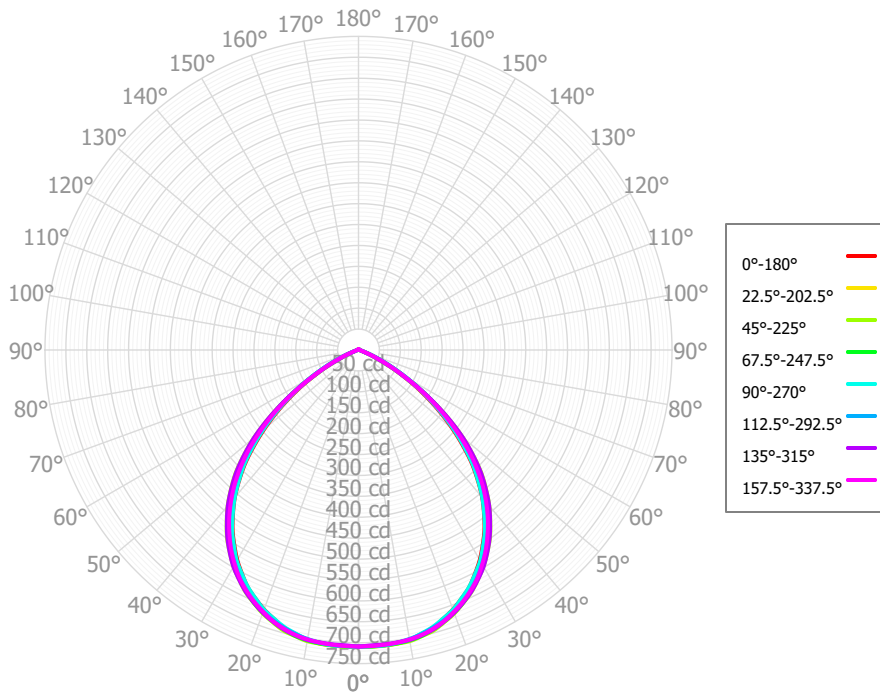
Full Beam Angle

0° - 180°	93°
90° - 270°	94°

IES File Header Contents

Keyword	Value
TEST	SP-01182
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 SG
LUMINAIRE	Nom 4" square Chicago Plenum downlight, Fusion Optix lens, Soft glow finish
OTHER	Beam angle: 93.2 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°	68.53	4.66%	90.00° - 100.00°	1.37	0.09%
10.00° - 20.00°	194.30	13.20%	100.00° - 110.00°	1.23	0.08%
20.00° - 30.00°	291.05	19.78%	100.00° - 120.00°	2.49	0.17%
30.00° - 40.00°	334.91	22.76%	120.00° - 130.00°	1.20	0.08%
40.00° - 50.00°	305.59	20.77%	130.00° - 140.00°	1.04	0.07%
50.00° - 60.00°	193.38	13.14%	140.00° - 150.00°	0.87	0.06%
60.00° - 70.00°	62.60	4.25%	150.00° - 160.00°	0.67	0.05%
70.00° - 80.00°	9.61	0.65%	160.00° - 170.00°	0.40	0.03%
80.00° - 90.00°	3.38	0.23%	170.00° - 180.00°	0.14	0.01%
0.00° - 90.00°	1,463.34	99.44%	0.00° - 180.00°	1,471.51	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°	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32	709.32
2.50°	709.21	710.55	709.31	710.01	709.29	708.96	707.26	709.04	709.21	710.55	709.31	710.01	709.29	708.96	707.26	709.04	709.21
5.00°	709.05	709.68	709.27	709.24	709.36	708.16	706.88	707.90	709.05	709.68	709.27	709.24	709.36	708.16	706.88	707.90	709.05
7.50°	706.75	708.66	708.38	707.99	706.43	706.29	705.74	706.14	706.75	708.66	708.38	707.99	706.43	706.29	705.74	706.14	706.75
10.00°	704.02	704.08	707.17	704.82	703.32	701.98	704.28	702.97	704.02	704.08	707.17	704.82	703.32	701.98	704.28	702.97	704.02
12.50°	696.03	699.23	701.04	700.31	694.84	696.36	698.88	698.20	696.03	699.23	701.04	700.31	694.84	696.36	698.88	698.20	696.03
15.00°	687.58	689.52	694.49	690.83	686.06	687.97	691.83	690.06	687.58	689.52	694.49	690.83	686.06	687.97	691.83	690.06	687.58
17.50°	674.22	679.58	682.60	680.64	673.57	678.47	681.08	680.12	674.22	679.58	682.60	680.64	673.57	678.47	681.08	680.12	674.22
20.00°	660.56	666.36	670.43	668.03	660.93	666.71	668.86	666.54	660.56	666.36	670.43	668.03	660.93	666.71	668.86	666.54	660.56
22.50°	643.85	652.77	654.89	654.01	643.48	652.78	654.01	651.79	643.85	652.77	654.89	654.01	643.48	652.78	654.01	651.79	643.85
25.00°	626.49	634.32	638.93	635.27	625.87	634.67	638.20	634.76	626.49	634.32	638.93	635.27	625.87	634.67	638.20	634.76	626.49
27.50°	603.59	615.47	618.73	615.49	604.17	614.75	618.94	615.48	603.59	615.47	618.73	615.49	604.17	614.75	618.94	615.48	603.59
30.00°	580.19	592.25	598.08	592.50	582.38	591.51	598.43	592.03	580.19	592.25	598.08	592.50	582.38	591.51	598.43	592.03	580.19
32.50°	553.06	568.46	573.47	568.07	554.79	566.77	573.52	566.78	553.06	568.46	573.47	568.07	554.79	566.77	573.52	566.78	553.06
35.00°	525.32	539.32	548.23	539.45	527.14	539.38	547.11	538.30	525.32	539.32	548.23	539.45	527.14	539.38	547.11	538.30	525.32
37.50°	493.23	509.65	517.77	509.74	493.96	509.64	517.24	508.12	493.23	509.65	517.77	509.74	493.96	509.64	517.24	508.12	493.23
40.00°	460.35	475.22	486.73	476.90	460.74	475.94	486.27	475.05	460.35	475.22	486.73	476.90	460.74	475.94	486.27	475.05	460.35
42.50°	422.40	440.06	451.45	442.13	423.62	439.89	450.64	439.55	422.40	440.06	451.45	442.13	423.62	439.89	450.64	439.55	422.40
45.00°	383.48	399.29	415.01	402.21	386.38	400.07	413.59	400.12	383.48	399.29	415.01	402.21	386.38	400.07	413.59	400.12	383.48
47.50°	339.02	357.78	370.90	360.48	342.98	358.35	370.50	358.13	339.02	357.78	370.90	360.48	342.98	358.35	370.50	358.13	339.02
50.00°	294.49	311.23	325.80	314.22	299.54	313.65	325.69	312.09	294.49	311.23	325.80	314.22	299.54	313.65	325.69	312.09	294.49
52.50°	249.55	264.50	274.53	267.61	254.88	267.76	275.17	265.19	249.55	264.50	274.53	267.61	254.88	267.76	275.17	265.19	249.55
55.00°	204.90	216.60	223.07	220.14	210.31	220.10	223.14	217.02	204.90	216.60	223.07	220.14	210.31	220.10	223.14	217.02	204.90
57.50°	161.72	169.43	170.56	174.05	168.22	174.51	172.35	170.86	161.72	169.43	170.56	174.05	168.22	174.51	172.35	170.86	161.72
60.00°	120.61	126.53	120.28	131.12	126.62	131.86	121.87	127.57	120.61	126.53	120.28	131.12	126.62	131.86	121.87	127.57	120.61
62.50°	89.06	86.17	81.53	92.53	94.40	93.91	84.09	90.01	89.06	86.17	81.53	92.53	94.40	93.91	84.09	90.01	89.06
65.00°	59.41	59.33	46.41	63.34	62.73	62.46	49.34	60.43	59.41	59.33	46.41	63.34	62.73	62.46	49.34	60.43	59.41
67.50°	38.23	34.63	29.34	38.64	40.48	37.84	31.21	36.89	38.23	34.63	29.34	38.64	40.48	37.84	31.21	36.89	38.23
70.00°	19.81	20.94	14.55	23.39	19.30	22.23	16.73	21.37	19.81	20.94	14.55	23.39	19.30	22.23	16.73	21.37	19.81
72.50°	12.67	9.28	10.15	11.96	12.78	11.92	11.27	11.26	12.67	9.28	10.15	11.96	12.78	11.92	11.27	11.26	12.67
75.00°	6.76	7.11	6.44	8.14	6.69	8.24	7.71	7.96	6.76	7.11	6.44	8.14	6.69	8.24	7.71	7.96	6.76
77.50°	5.51	5.15	5.65	5.35	5.63	5.64	6.15	5.81	5.51	5.15	5.65	5.35	5.63	5.64	6.15	5.81	5.51
80.00°	4.37	4.14	4.83	4.51	4.56	4.37	4.98	5.08	4.37	4.14	4.83	4.51	4.56	4.37	4.98	5.08	4.37
82.50°	3.64	3.24	3.89	3.80	3.51	3.49	4.31	4.17	3.64	3.24	3.89	3.80	3.51	3.49	4.31	4.17	3.64
85.00°	2.94	2.83	3.02	3.32	2.51	3.06	3.73	3.05	2.94	2.83	3.02	3.32	2.51	3.06	3.73	3.05	2.94
87.50°	2.33	2.37	2.42	2.77	2.05	2.51	2.68	2.25	2.33	2.37	2.42	2.77	2.05	2.51	2.68	2.25	2.33
90.00°	1.76	1.69	1.88	2.06	1.61	1.80	1.55	1.81	1.76	1.69	1.88	2.06	1.61	1.80	1.55	1.81	1.76
92.50°	1.29	1.15	1.55	1.52	1.21	1.39	1.22	1.47	1.29	1.15	1.55	1.52	1.21	1.39	1.22	1.47	1.29
95.00°	0.95	1.12	1.27	1.24	0.89	1.29	1.00	1.25	0.95	1.12	1.27	1.24	0.89	1.29	1.00	1.25	0.95
97.50°	1.01	1.09	1.19	1.11	1.09	1.21	0.99	1.13	1.01	1.09	1.19	1.11	1.09	1.21	0.99	1.13	1.01
100.00°	1.07	1.08	1.13	1.23	1.27	1.14	1.00	1.13	1.07	1.08	1.13	1.23	1.27	1.14	1.00	1.13	1.07
102.50°	1.09	1.07	1.13	1.30	1.35	1.17	1.03	1.10	1.09	1.07	1.13	1.30	1.35	1.17	1.03	1.10	1.09
105.00°	1.10	1.06	1.13	1.31	1.40	1.27	1.07	1.03	1.10	1.06	1.13	1.31	1.40	1.27	1.07	1.03	1.10
107.50°	1.06	1.03	1.13	1.34	1.33	1.33	1.17	1.04	1.06	1.03	1.13	1.34	1.33	1.33	1.17	1.04	1.06
110.00°	1.06	0.97	1.13	1.37	1.28	1.34	1.28	1.12	1.06	0.97	1.13	1.37	1.28	1.34	1.28	1.12	1.06
112.50°	1.15	0.94	1.12	1.36	1.35	1.33	1.33	1.16	1.15	0.94	1.12	1.36	1.35	1.33	1.33	1.16	1.15

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%	30%
	0	1,750	1,750	1,750	1,750	1,708	1,708	1,708	1,708	1,630	1,630	1,630	1,559	1,559	1,559	1,494	1,494	1,463
	1	1,638	1,585	1,537	1,494	1,600	1,552	1,508	1,469	1,489	1,454	1,422	1,432	1,404	1,378	1,379	1,357	1,328
	2	1,521	1,425	1,345	1,279	1,484	1,397	1,325	1,263	1,346	1,286	1,233	1,299	1,249	1,205	1,255	1,214	1,188
	3	1,409	1,281	1,183	1,105	1,375	1,259	1,168	1,095	1,216	1,139	1,075	1,177	1,111	1,056	1,140	1,085	1,062
	4	1,305	1,156	1,047	964	1,273	1,137	1,036	957	1,101	1,013	944	1,068	992	931	1,037	972	952
	5	1,210	1,047	933	849	1,181	1,031	924	844	1,001	907	835	973	890	826	946	875	857
	6	1,125	953	837	754	1,099	939	830	750	913	816	744	889	803	737	867	790	775
	7	1,048	871	755	675	1,024	859	750	672	837	739	667	816	728	662	797	718	704
	8	979	799	686	608	957	789	681	606	770	672	603	752	664	599	735	655	643
	9	917	737	626	552	897	728	623	550	712	615	547	696	608	545	682	601	590
	10	862	682	575	504	844	675	572	502	660	566	500	647	560	498	634	554	544

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	23.4 fc	11.6 ft
6.5 ft	16.8 fc	13.7 ft
7.5 ft	12.6 fc	15.9 ft
8.0 ft	11.1 fc	16.9 ft
10.0 ft	7.1 fc	21.1 ft
12.0 ft	4.9 fc	25.4 ft
14.0 ft	3.6 fc	29.6 ft
16.0 ft	2.8 fc	33.8 ft
20.0 ft	1.8 fc	42.3 ft
24.0 ft	1.2 fc	50.7 ft
28.0 ft	0.9 fc	59.2 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	84,834	84,834	84,834
45.00°	64,861	70,194	65,352
55.00°	42,724	46,513	43,852
65.00°	16,813	13,134	17,752
75.00°	3,123	2,975	3,094
85.00°	4,034	4,144	3,445

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	23.7	25.1	24.1	25.4	25.7	23.9	25.3	24.2	25.6	25.9
	3H	23.8	25.0	24.1	25.3	25.7	24.0	25.2	24.3	25.5	25.9
	4H	23.7	24.9	24.1	25.2	25.6	23.9	25.1	24.3	25.4	25.8
	6H	23.6	24.7	24.1	25.1	25.5	23.8	24.9	24.3	25.3	25.7
	8H	23.6	24.6	24.1	25.0	25.4	23.8	24.8	24.3	25.2	25.6
	12H	23.6	24.5	24.0	24.9	25.4	23.8	24.7	24.2	25.1	25.6
4H	2H	23.6	24.8	24.0	25.1	25.5	23.8	25.0	24.2	25.3	25.7
	3H	23.7	24.7	24.2	25.1	25.5	23.9	24.9	24.4	25.3	25.7
	4H	23.7	24.5	24.1	24.9	25.4	23.9	24.7	24.3	25.1	25.6
	6H	23.6	24.3	24.1	24.8	25.3	23.8	24.5	24.3	25.0	25.5
	8H	23.6	24.3	24.1	24.7	25.2	23.8	24.5	24.3	24.9	25.4
	12H	23.6	24.2	24.1	24.6	25.1	23.8	24.3	24.2	24.8	25.3
8H	4H	23.6	24.2	24.1	24.7	25.2	23.8	24.4	24.2	24.9	25.4
	6H	23.5	24.1	24.0	24.6	25.1	23.7	24.2	24.2	24.8	25.2
	8H	23.5	24.0	24.0	24.5	25.0	23.7	24.1	24.2	24.7	25.2
	12H	23.4	23.9	24.0	24.4	25.0	23.6	24.1	24.2	24.6	25.2
12H	4H	23.5	24.1	24.0	24.6	25.1	23.7	24.3	24.2	24.8	25.3
	6H	23.5	24.0	24.0	24.4	25.0	23.7	24.1	24.2	24.6	25.2
	8H	23.4	23.9	24.0	24.4	25.0	23.6	24.1	24.1	24.6	25.1

Corrected UGR values based on total output lumens

SHR = 1.0