Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SGx9LEDFX-20L35KDX-AR9223FX-SG-SO

Nom 9" diam recessed downlight

Test Number

SP-00747_1_M-20L

Test Date

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

Summary of Results

Power

Input Watts	17 W

Lumen Output

Output Lumens	1727
Efficacy	101.57 lm/W

Luminous Dimensions

0° - 180° Size	-0.71
90° - 270° Size	-0.71
Height	0

Spacing Criterion

Two luminaires, plane 0°	1.19
Two luminaires, plane 90°	1.19
Four luminaires	1.17

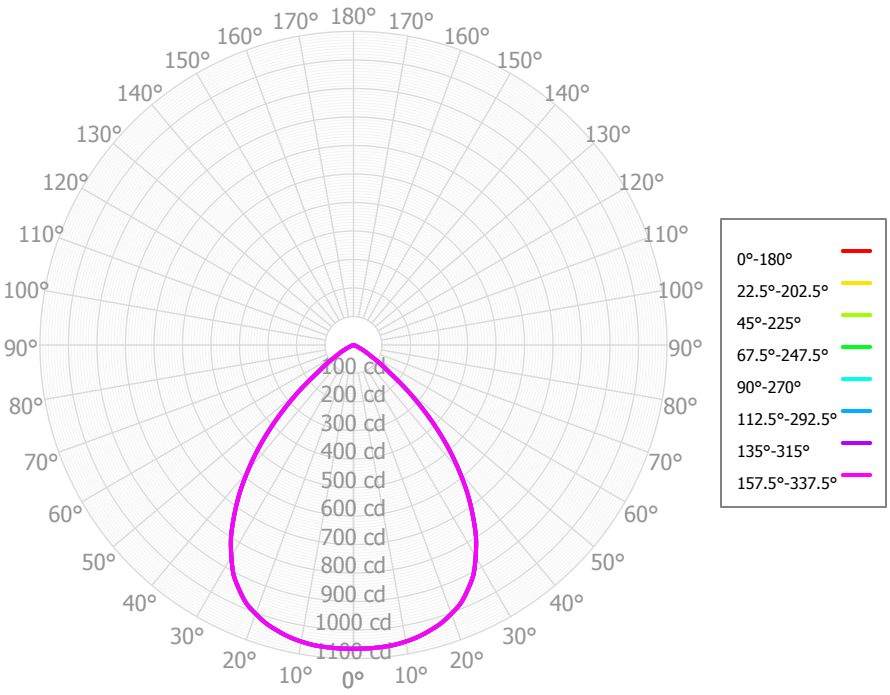
Full Beam Angle

0° - 180°	83°
90° - 270°	83°

IES File Header Contents

Keyword	Value
TEST	SP-00747_1_M-20L
TESTLAB	Spectrum Lighting Photometric Lab
MANUFAC	Spectrum Lighting
ISSUEDATE	1/10/2019
UPDATE	3/5/2019
LUMCAT	SGx9LEDFX-20L35KDX-AR9223FX-SG-SO
LUMINAIRE	Nom 9" diam recessed downlight
OTHER	Trim: AR9223FX, Soft Glow
OTHER	Regressed Integral Solite lens
OTHER	Data for New Construction: SGE9LEDFX-series w/AR9223FX-SG-SO
OTHER	Data for Retrofit: SGRTE9LEDFX-series w/AR9223FX-SG-SO
OTHER	Beam Angle: 83 deg
LAMPCAT	N/A
LAMP	N/A, Philips LED, Min CRI: 80+, Gen: 80G1
OTHER	CCT Tested: 3500K
OTHER	CCT Multipliers: 27K x 0.95, 30K x 1.0, 40K x 1.08
OTHER	This report prepared by Spectrum Lighting, scaled from 30L

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	102.93	5.96%	90.00° - 100.00°	0.07	0.00%
10.00° - 20.00°	292.34	16.93%	100.00° - 110.00°	0.00	0.00%
20.00° - 30.00°	433.88	25.13%	100.00° - 120.00°	0.00	0.00%
30.00° - 40.00°	451.83	26.17%	120.00° - 130.00°	0.00	0.00%
40.00° - 50.00°	313.07	18.13%	130.00° - 140.00°	0.00	0.00%
50.00° - 60.00°	109.63	6.35%	140.00° - 150.00°	0.00	0.00%
60.00° - 70.00°	21.08	1.22%	150.00° - 160.00°	0.00	0.00%
70.00° - 80.00°	1.10	0.06%	160.00° - 170.00°	0.00	0.00%
80.00° - 90.00°	0.82	0.05%	170.00° - 180.00°	0.00	0.00%
0.00° - 90.00°	1,726.68	100.00%	0.00° - 180.00°	1,726.68	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°	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85
2.50°	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85	1,065.85
5.00°	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57	1,064.57
7.50°	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26	1,062.26
10.00°	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56	1,056.56
12.50°	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61	1,048.61
15.00°	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93	1,036.93
17.50°	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23	1,023.23
20.00°	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68	1,003.68
22.50°	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62	981.62
25.00°	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03	948.03
27.50°	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60	910.60
30.00°	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26	857.26
32.50°	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89	799.89
35.00°	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71	729.71
37.50°	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25	657.25
40.00°	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06	577.06
42.50°	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99	495.99
45.00°	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15	410.15
47.50°	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04	324.04
50.00°	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63	241.63
52.50°	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01	161.01
55.00°	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01	116.01
57.50°	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32	73.32
60.00°	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55	52.55
62.50°	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79
65.00°	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69	18.69
67.50°	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
70.00°	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
72.50°	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
75.00°	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
77.50°	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
80.00°	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
82.50°	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
85.00°	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
87.50°	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
90.00°	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

	ρfc	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%
	ρcc	80%	80%	80%	80%	70%	70%	70%	70%	50%	50%	50%	30%	30%	30%	10%	10%	10%	0%
	ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	30%
RCR	0	2,056	2,056	2,056	2,056	2,008	2,008	2,008	2,008	1,919	1,919	1,919	1,837	1,837	1,837	1,762	1,762	1,762	1,727
	1	1,942	1,886	1,836	1,792	1,898	1,848	1,804	1,763	1,778	1,741	1,708	1,713	1,684	1,657	1,653	1,630	1,609	1,597
	2	1,822	1,722	1,640	1,571	1,781	1,691	1,616	1,553	1,634	1,572	1,518	1,581	1,530	1,485	1,532	1,491	1,453	1,460
	3	1,705	1,573	1,470	1,389	1,668	1,548	1,453	1,377	1,500	1,420	1,354	1,457	1,389	1,332	1,416	1,360	1,311	1,332
	4	1,595	1,439	1,325	1,237	1,561	1,418	1,312	1,230	1,379	1,287	1,214	1,342	1,263	1,199	1,308	1,241	1,185	1,216
	5	1,492	1,320	1,199	1,110	1,461	1,302	1,189	1,105	1,269	1,170	1,094	1,238	1,152	1,084	1,210	1,134	1,074	1,113
	6	1,397	1,214	1,091	1,002	1,369	1,199	1,083	999	1,171	1,068	991	1,145	1,053	984	1,120	1,040	976	1,020
	7	1,310	1,120	996	910	1,284	1,107	990	907	1,083	978	902	1,061	967	896	1,040	956	891	939
	8	1,231	1,036	914	830	1,207	1,026	909	828	1,005	900	824	986	890	820	968	881	816	866
	9	1,158	962	842	761	1,137	953	838	760	935	830	757	918	823	754	903	815	751	802
	10	1,092	896	779	701	1,072	888	776	700	873	769	698	858	763	695	844	756	693	744

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	35.2 fc	9.7 ft
6.5 ft	25.2 fc	11.4 ft
7.5 ft	18.9 fc	13.2 ft
8.0 ft	16.7 fc	14.1 ft
10.0 ft	10.7 fc	17.6 ft
12.0 ft	7.4 fc	21.1 ft
14.0 ft	5.4 fc	24.7 ft
16.0 ft	4.2 fc	28.2 ft
20.0 ft	2.7 fc	35.2 ft
24.0 ft	1.9 fc	42.3 ft
28.0 ft	1.4 fc	49.3 ft

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	28,977	28,977	28,977
45.00°	15,770	15,770	15,770
55.00°	5,499	5,499	5,499
65.00°	1,202	1,202	1,202
75.00°	75	75	75
85.00°	255	255	255

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	11.6	12.8	12.0	13.1	13.4	11.6	12.8	12.0	13.1	13.4
	3H	11.5	12.5	11.9	12.9	13.2	11.5	12.5	11.9	12.9	13.2
	4H	11.4	12.4	11.8	12.7	13.1	11.4	12.4	11.8	12.7	13.1
	6H	11.3	12.2	11.7	12.6	13.0	11.3	12.2	11.7	12.6	13.0
	8H	11.3	12.1	11.7	12.5	12.9	11.3	12.1	11.7	12.5	12.9
	12H	11.2	12.0	11.6	12.4	12.8	11.2	12.0	11.6	12.4	12.8
4H	2H	11.5	12.5	11.9	12.8	13.2	11.5	12.5	11.9	12.8	13.2
	3H	11.4	12.2	11.8	12.6	13.0	11.4	12.2	11.8	12.6	13.0
	4H	11.3	12.0	11.7	12.4	12.8	11.3	12.0	11.7	12.4	12.8
	6H	11.2	11.8	11.6	12.2	12.7	11.2	11.8	11.6	12.2	12.7
	8H	11.1	11.7	11.6	12.1	12.6	11.1	11.7	11.6	12.1	12.6
	12H	11.1	11.6	11.6	12.0	12.5	11.1	11.6	11.6	12.0	12.5
8H	4H	11.1	11.7	11.6	12.1	12.6	11.1	11.7	11.6	12.1	12.6
	6H	11.0	11.5	11.5	12.0	12.4	11.0	11.5	11.5	12.0	12.4
	8H	10.9	11.3	11.5	11.9	12.4	10.9	11.3	11.5	11.9	12.4
	12H	10.9	11.3	11.4	11.8	12.3	10.9	11.3	11.4	11.8	12.3
12H	4H	11.1	11.6	11.5	12.0	12.5	11.1	11.6	11.5	12.0	12.5
	6H	10.9	11.4	11.5	11.8	12.4	10.9	11.4	11.5	11.8	12.4
	8H	10.9	11.2	11.4	11.7	12.3	10.9	11.2	11.4	11.7	12.3

Corrected UGR values based on total output lumens

SHR = 1.0