

## Indoor Distribution Test Report

### Spectrum Lighting Inc.

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### Spectrum Lighting Photometric Lab

**Luminaire**

SN24 20L 30HK xx xx TW FCI  
24" x 23.5" Spin Pendant 20L 30HK TW FCI

**Test Number**

SP-01612\_1

**Test Date**

11/6/2023

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

### Summary of Results

#### Power

Input Watts	19.4 W
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#### Lumen Output

Output Lumens	1949
Efficacy	100.46 lm/W

#### Luminous Dimensions

0° - 180° Size	-2
90° - 270° Size	-2
Height	0

#### Spacing Criterion

Two luminaires, plane 0°	1.14
Two luminaires, plane 90°	1.13
Four luminaires	1.2

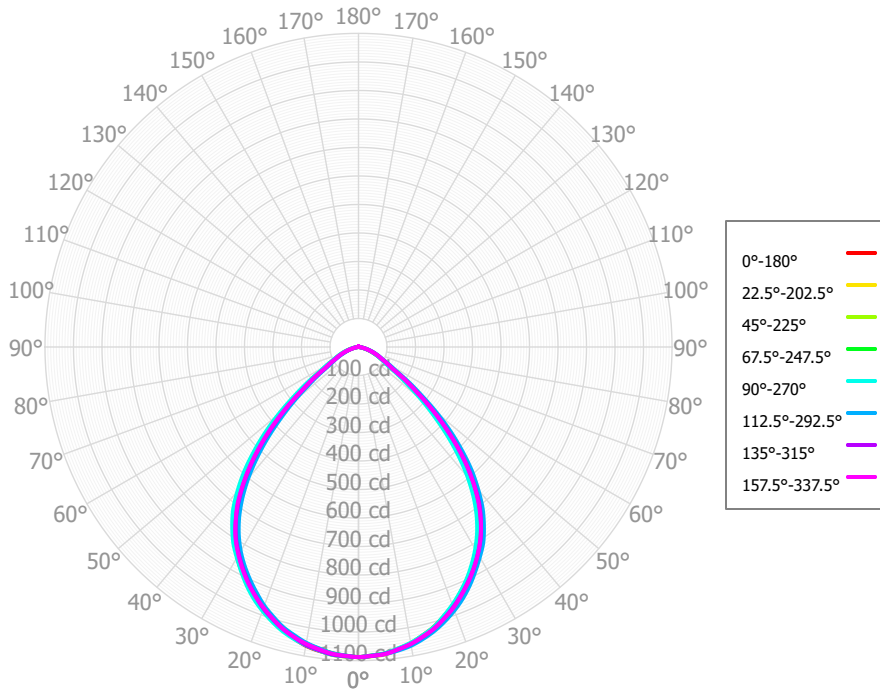
#### Full Beam Angle

0° - 180°	86°
90° - 270°	86°

### IES File Header Contents

Keyword	Value
TEST	SP-01612_1
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	11/6/2023
ISSUEDATE	11/07/2023
LUMCAT	SN24 20L 30HK xx xx TW FCI
LUMINAIRE	24" x 23.5" Spin Pendant 20L 30HK TW FCI
OTHER	Beam Angle: 86 deg
OTHER	90 CRI, 3000K tested
OTHER	CCT Output Multipliers: 27HK x 0.99, 35HK x 1.01
OTHER	Total luminaire wattages are approximate
OTHER	This report prepared by Spectrum Lighting
_CRI	90+

### Candela Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	103.91	5.33%	90.00° - 100.00°	1.51	0.08%
10.00° - 20.00°	287.73	14.76%	100.00° - 110.00°	1.44	0.07%
20.00° - 30.00°	418.82	21.49%	100.00° - 120.00°	2.82	0.14%
30.00° - 40.00°	464.40	23.83%	120.00° - 130.00°	1.26	0.06%
40.00° - 50.00°	368.97	18.93%	130.00° - 140.00°	1.13	0.06%
50.00° - 60.00°	179.15	9.19%	140.00° - 150.00°	0.91	0.05%
60.00° - 70.00°	78.63	4.03%	150.00° - 160.00°	0.71	0.04%
70.00° - 80.00°	32.38	1.66%	160.00° - 170.00°	0.44	0.02%
80.00° - 90.00°	5.94	0.30%	170.00° - 180.00°	0.15	0.01%
0.00° - 90.00°	1939.94	99.54%	0.00° - 180.00°	1948.87	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°	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98	1087.98
2.50°	1083.39	1085.81	1085.16	1084.47	1083.18	1083.33	1085.95	1084.18	1084.57	1086.75	1086.55	1083.63	1086.20	1084.92	1084.95	1084.78	1083.39
5.00°	1079.61	1082.41	1079.61	1079.53	1078.40	1078.10	1082.39	1079.63	1081.57	1083.57	1082.93	1077.81	1083.42	1081.30	1079.97	1081.59	1079.61
7.50°	1068.16	1069.89	1068.06	1070.57	1066.48	1066.37	1072.35	1069.31	1074.69	1072.10	1071.30	1067.67	1073.81	1073.90	1069.70	1070.10	1068.16
10.00°	1055.86	1056.95	1055.05	1060.75	1054.05	1054.08	1061.63	1057.55	1064.23	1059.47	1059.23	1056.10	1062.96	1064.08	1057.94	1058.01	1055.86
12.50°	1037.17	1040.75	1037.70	1045.39	1036.63	1036.52	1043.38	1042.50	1047.06	1042.70	1042.50	1038.85	1048.95	1048.90	1041.93	1041.13	1037.17
15.00°	1017.90	1022.81	1018.48	1027.97	1017.91	1018.12	1024.34	1023.88	1028.16	1024.34	1024.85	1019.95	1031.91	1030.99	1023.02	1023.41	1017.90
17.50°	992.19	997.90	995.53	1003.01	990.64	992.70	1001.12	999.55	1007.01	1002.26	1002.53	996.92	1009.65	1008.88	998.54	999.23	992.19
20.00°	965.50	971.28	969.62	976.98	962.51	965.98	976.08	973.73	981.62	977.45	978.68	970.91	985.08	983.87	971.70	973.71	965.50
22.50°	933.39	940.30	939.63	948.39	931.29	933.64	945.26	946.21	952.20	948.27	950.13	939.80	957.68	955.68	941.71	942.75	933.39
25.00°	900.67	907.07	906.42	917.14	898.00	900.55	912.89	914.86	920.65	916.66	919.61	907.33	925.72	923.28	909.61	910.63	900.67
27.50°	865.98	869.85	870.02	881.52	859.83	865.40	877.21	880.39	887.67	882.28	885.12	873.20	889.78	887.57	875.47	875.53	865.98
30.00°	828.44	831.22	830.01	843.37	819.14	826.79	839.74	842.30	850.85	845.71	848.36	835.55	853.59	851.21	837.70	837.99	828.44
32.50°	784.85	790.81	787.42	802.31	774.35	781.86	799.67	802.11	812.22	807.38	808.35	794.83	817.24	814.50	797.46	796.18	784.85
35.00°	735.43	741.84	736.35	752.50	722.77	730.24	751.17	751.95	764.58	759.79	762.83	746.59	772.23	767.14	748.99	748.17	735.43
37.50°	677.28	685.34	681.08	695.44	663.42	670.08	693.91	697.88	714.11	706.83	711.74	693.66	723.53	715.79	696.57	692.52	677.28
40.00°	612.19	618.96	613.24	630.00	595.82	602.25	628.82	630.99	650.93	643.40	650.15	628.42	660.72	653.29	631.18	629.60	612.19
42.50°	539.76	546.35	541.21	559.61	521.49	527.39	557.85	560.94	585.44	575.86	580.93	557.92	593.99	588.21	561.70	560.22	539.76
45.00°	463.11	469.18	463.13	482.27	443.33	449.28	481.03	484.54	508.13	498.88	505.33	480.75	519.01	513.20	484.58	484.98	463.11
47.50°	383.24	390.00	383.86	402.14	362.94	369.03	401.10	407.30	429.91	419.54	426.50	401.76	442.73	437.01	406.02	406.02	383.24
50.00°	308.59	314.98	307.12	326.94	289.26	295.10	325.15	326.70	351.14	340.96	349.01	325.25	364.20	357.15	329.74	328.78	308.59
52.50°	236.74	241.11	230.64	252.99	218.29	224.05	250.61	247.29	273.91	262.48	271.97	249.12	286.04	278.22	253.79	252.29	236.74
55.00°	181.82	185.91	179.27	194.54	167.95	172.63	193.39	192.16	211.29	202.67	209.87	192.39	222.37	215.50	196.36	194.00	181.82
57.50°	133.06	133.60	130.37	138.20	122.81	127.10	139.97	140.95	154.46	145.20	150.82	137.82	162.40	157.33	141.96	140.82	133.06
60.00°	108.83	111.60	108.59	113.67	102.19	104.24	114.30	114.54	123.95	118.93	122.06	114.91	130.93	126.05	116.77	115.02	108.83
62.50°	90.03	91.47	88.29	90.81	84.80	85.25	91.54	91.01	97.25	94.25	96.22	93.04	102.61	98.47	93.62	93.58	90.03
65.00°	75.23	76.97	75.33	76.28	71.49	70.01	76.60	77.81	81.30	79.88	82.22	78.87	87.21	83.59	80.01	79.45	75.23
67.50°	60.88	62.82	62.24	62.19	58.40	55.13	61.91	64.53	66.34	66.04	68.35	64.84	72.59	69.61	66.57	65.77	60.88
70.00°	49.32	51.38	48.79	50.99	46.74	44.93	49.03	51.11	53.25	54.10	55.59	51.36	59.93	57.69	53.63	52.17	49.32
72.50°	37.93	40.07	36.60	40.06	35.28	34.96	36.48	38.89	40.99	42.28	43.27	39.05	47.72	46.14	41.18	39.12	37.93
75.00°	28.27	29.36	26.94	30.13	25.09	27.02	25.73	28.62	29.84	30.75	33.23	29.70	36.29	35.17	29.68	30.28	28.27
77.50°	18.97	19.81	18.74	20.91	15.83	19.16	16.56	19.88	21.14	20.96	23.58	20.97	26.37	25.43	20.09	21.72	18.97
80.00°	11.67	13.28	12.58	13.41	10.00	11.63	12.42	12.89	14.76	13.95	15.13	13.29	18.31	17.04	13.06	14.28	11.67
82.50°	5.59	7.78	7.48	7.54	5.30	5.46	8.57	7.52	9.44	8.41	8.26	7.57	11.40	10.41	7.84	7.87	5.59
85.00°	3.55	4.11	3.45	4.32	3.21	3.00	5.33	3.47	4.83	4.57	4.66	4.21	5.50	5.17	4.37	4.18	3.55
87.50°	2.05	1.95	1.58	2.33	1.77	1.34	2.86	1.77	2.48	2.34	2.34	2.23	2.61	2.67	2.42	1.70	2.05
90.00°	1.73	1.67	1.27	1.78	1.40	1.15	1.52	1.44	1.22	1.46	1.85	1.45	1.60	1.71	1.53	1.35	1.73
92.50°	1.56	1.56	1.35	1.49	1.32	1.19	0.91	1.20	1.11	1.19	1.50	1.23	1.37	1.53	1.29	1.20	1.56
95.00°	1.62	1.59	1.64	1.40	1.57	1.53	1.09	1.01	1.36	1.27	1.28	1.36	1.49	1.66	1.37	1.30	1.62
97.50°	1.55	1.55	1.60	1.45	1.65	1.58	1.13	1.10	1.24	1.24	1.32	1.36	1.56	1.38	1.26	1.36	1.55
100.00°	1.33	1.48	1.44	1.57	1.57	1.37	1.07	1.27	1.06	1.16	1.54	1.32	1.62	1.02	1.08	1.38	1.33
102.50°	1.27	1.36	1.41	1.49	1.72	1.61	1.22	1.19	1.03	1.24	1.48	1.33	1.62	1.18	1.18	1.30	1.27
105.00°	1.34	1.21	1.41	1.34	2.02	2.15	1.48	1.09	1.02	1.35	1.27	1.36	1.61	1.41	1.33	1.16	1.34

### Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

<b>RCR</b>	<b>ptc</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>	2318	2318	2318	2318	2263	2263	2263	2263	2160	2160	2160	2067	2067	2067	1980	1980	1940
	<b>1</b>	2172	2102	2039	1982	2121	2058	2001	1950	1976	1930	1887	1900	1863	1829	1831	1801	1764
	<b>2</b>	2021	1896	1793	1706	1973	1860	1766	1686	1793	1714	1647	1731	1666	1609	1674	1620	1586
	<b>3</b>	1878	1714	1587	1486	1834	1685	1567	1473	1629	1529	1447	1577	1493	1422	1529	1458	1428
	<b>4</b>	1747	1555	1415	1308	1706	1530	1400	1299	1484	1371	1281	1440	1343	1264	1400	1317	1290
	<b>5</b>	1627	1417	1270	1162	1589	1396	1258	1155	1356	1236	1143	1320	1214	1131	1285	1193	1170
	<b>6</b>	1517	1296	1147	1040	1483	1278	1138	1036	1245	1120	1027	1213	1103	1018	1184	1086	1065
	<b>7</b>	1418	1190	1042	938	1387	1175	1034	935	1146	1020	928	1119	1006	922	1094	993	974
	<b>8</b>	1329	1097	951	851	1301	1084	945	849	1060	934	844	1036	922	839	1015	911	895
	<b>9</b>	1248	1016	873	777	1222	1004	868	775	983	859	771	963	849	768	944	840	826
	<b>10</b>	1175	943	805	713	1151	934	801	711	915	793	708	898	785	705	881	777	765

### Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 ft	36.0 fc	10.3 ft
6.5 ft	25.8 fc	12.2 ft
7.5 ft	19.3 fc	14.0 ft
8.0 ft	17.0 fc	15.0 ft
10.0 ft	10.9 fc	18.7 ft
12.0 ft	7.6 fc	22.5 ft
14.0 ft	5.6 fc	26.2 ft
16.0 ft	4.2 fc	30.0 ft
20.0 ft	2.7 fc	37.4 ft
24.0 ft	1.9 fc	44.9 ft
28.0 ft	1.4 fc	52.4 ft

### Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
<b>0.00°</b>	3728	3728	3728
<b>45.00°</b>	2244	2244	2148
<b>55.00°</b>	1086	1071	1003
<b>65.00°</b>	610	611	580
<b>75.00°</b>	374	357	332
<b>85.00°</b>	139	135	126

### 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	8.2	9.5	8.5	9.8	10.2	8.1	9.4	8.4	9.7	10.1
	3H	9.1	10.3	9.5	10.6	11.0	9.0	10.2	9.4	10.5	10.9
	4H	9.3	10.4	9.7	10.8	11.2	9.3	10.4	9.7	10.7	11.1
	6H	9.4	10.4	9.8	10.8	11.2	9.4	10.4	9.8	10.8	11.2
	8H	9.4	10.3	9.8	10.7	11.1	9.4	10.4	9.8	10.8	11.2
	12H	9.3	10.3	9.8	10.6	11.1	9.4	10.3	9.8	10.7	11.1
4H	2H	8.5	9.6	8.9	9.9	10.3	8.4	9.5	8.8	9.9	10.3
	3H	9.5	10.4	10.0	10.9	11.3	9.5	10.4	9.9	10.8	11.2
	4H	9.9	10.7	10.3	11.1	11.5	9.8	10.6	10.3	11.1	11.5
	6H	10.0	10.7	10.5	11.1	11.6	10.0	10.7	10.5	11.1	11.6
	8H	10.0	10.6	10.5	11.1	11.6	10.0	10.6	10.5	11.1	11.6
	12H	10.0	10.5	10.5	11.0	11.5	10.0	10.6	10.5	11.1	11.5
8H	4H	9.9	10.6	10.4	11.0	11.5	9.9	10.5	10.4	11.0	11.5
	6H	10.1	10.6	10.6	11.1	11.6	10.1	10.6	10.6	11.1	11.6
	8H	10.1	10.6	10.6	11.1	11.6	10.1	10.6	10.6	11.1	11.6
	12H	10.1	10.5	10.6	11.0	11.6	10.1	10.5	10.6	11.0	11.6
12H	4H	9.9	10.5	10.4	11.0	11.4	9.9	10.4	10.4	10.9	11.4
	6H	10.1	10.6	10.6	11.0	11.6	10.1	10.5	10.6	11.0	11.6
	8H	10.1	10.5	10.6	11.0	11.6	10.1	10.5	10.6	11.0	11.6

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0