Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

DMD22GY 220L 35K xx DF22 BC22 CN xx

Nom 22" diam round high bay with diffuse refractor and conical lens

Test Number

SP-01565_1

Test Date

9/18/2023

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

Summary of Results

Power

Input Watts	171 W

Lumen Output

Output Lumens	20253
Efficacy	118.44 lm/W

Luminous Dimensions

0° - 180° Size	-1.83
90° - 270° Size	-1.83
Height	0.83

Spacing Criterion

Two luminaires, plane 0°	1.53
Two luminaires, plane 90°	1.53
Four luminaires	1.34

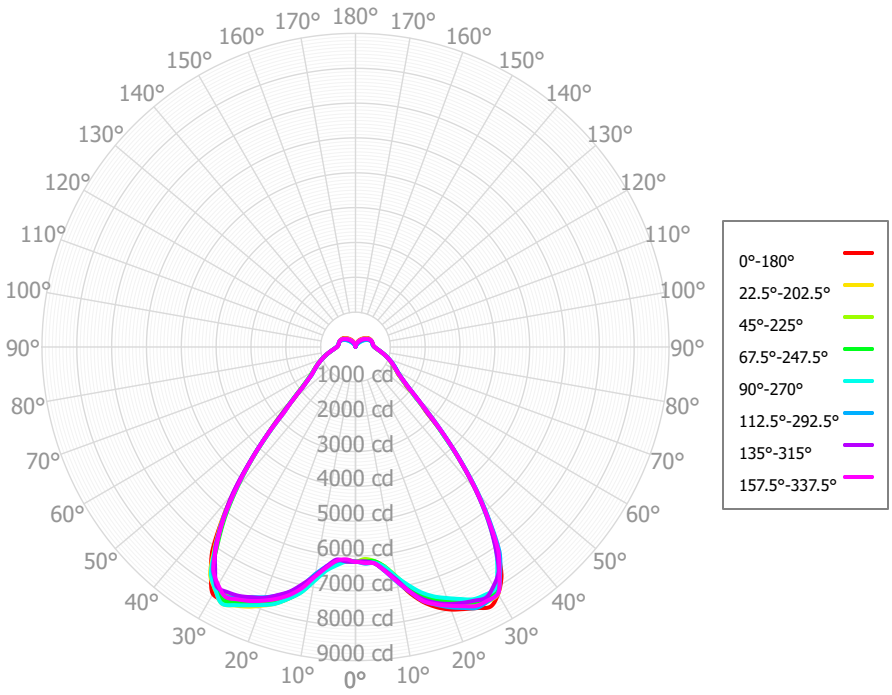
Full Beam Angle

0° - 180°	87°
90° - 270°	87°

IES File Header Contents

Keyword	Value
TEST	SP-01565_1
TESTLAB	Spectrum Lighting Photometric Lab, VLS-245-981
MANUFAC	Spectrum Lighting
TESTDATE	9/18/2023
ISSUEDATE	9/19/2023
LUMCAT	DMD22GY 220L 35K xx DF22 BC22 CN xx
LUMINAIRE	Nom 22" diam round high bay with diffuse refractor and conical lens
LAMPCAT	N/A
LAMP	N/A
OTHER	Beam Angle: 87 deg
OTHER	Total luminaire wattage is approximate
OTHER	This report prepared by Spectrum Lighting
_CRI	80+
_CCTMULT	40K x 1.01
_LAMPMULT	160L x 0.73, 200L x 0.91

Candela Polar Plot



Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 10.00°	620.94	3.07%	90.00° - 100.00°	557.96	2.75%
10.00° - 20.00°	2107.69	10.41%	100.00° - 110.00°	519.89	2.57%
20.00° - 30.00°	3725.89	18.40%	100.00° - 120.00°	978.97	4.83%
30.00° - 40.00°	4310.34	21.28%	120.00° - 130.00°	353.45	1.75%
40.00° - 50.00°	2825.09	13.95%	130.00° - 140.00°	231.21	1.14%
50.00° - 60.00°	1548.95	7.65%	140.00° - 150.00°	129.61	0.64%
60.00° - 70.00°	1187.04	5.86%	150.00° - 160.00°	58.74	0.29%
70.00° - 80.00°	918.86	4.54%	160.00° - 170.00°	17.00	0.08%
80.00° - 90.00°	678.87	3.35%	170.00° - 180.00°	2.22	0.01%
0.00° - 90.00°	17923.65	88.50%	0.00° - 180.00°	20252.81	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°	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27	6166.27
2.50°	6154.81	6166.39	6093.52	6162.04	6193.45	6143.93	6165.46	6102.51	6161.08	6119.75	6172.96	6119.89	6168.01	6224.73	6160.15	6208.56	6154.81
5.00°	6228.21	6181.58	6168.84	6170.84	6212.85	6175.19	6124.44	6160.41	6151.63	6241.51	6193.01	6217.08	6294.77	6231.18	6237.92	6234.13	6228.21
7.50°	6480.24	6369.71	6347.48	6360.32	6364.00	6347.43	6346.22	6384.91	6425.88	6440.42	6392.54	6400.24	6478.45	6495.09	6469.66	6486.32	6480.24
10.00°	6803.63	6745.22	6674.18	6698.17	6691.21	6613.67	6660.29	6693.26	6765.57	6794.49	6714.49	6751.34	6826.10	6845.37	6783.34	6831.33	6803.63
12.50°	7238.75	7107.06	7095.00	7047.61	7001.02	6993.18	6964.33	7086.68	7090.73	7208.19	7058.64	7191.60	7220.59	7198.60	7190.99	7190.68	7238.75
15.00°	7588.65	7457.71	7400.58	7404.19	7293.02	7280.98	7265.96	7375.66	7413.95	7486.65	7414.19	7481.34	7488.41	7552.49	7493.01	7554.17	7588.65
17.50°	7838.31	7697.07	7651.33	7619.51	7510.21	7485.23	7471.43	7583.47	7587.21	7729.63	7617.92	7713.42	7733.46	7761.50	7702.10	7744.95	7838.31
20.00°	8020.44	7867.07	7832.06	7771.00	7669.59	7645.21	7662.86	7749.69	7753.37	7903.85	7765.66	7866.13	7884.46	7951.66	7848.99	7904.17	8020.44
22.50°	8141.67	8045.20	7989.12	7925.40	7829.74	7774.82	7777.31	7891.36	7942.12	8067.05	7890.85	7997.65	8026.60	8108.54	7954.71	8052.67	8141.67
25.00°	8268.98	8227.06	8112.02	8080.76	7990.33	7919.23	7886.36	7995.42	8120.89	8187.51	8010.40	8098.92	8176.46	8259.99	8038.98	8200.17	8268.98
27.50°	8400.50	8236.13	8227.27	8119.39	8028.97	8071.28	7939.24	8083.26	8196.47	8304.65	8040.39	8195.23	8306.02	8231.07	8112.77	8204.96	8400.50
30.00°	8189.15	8189.33	7989.46	8132.59	8015.38	7909.32	7952.64	7885.09	8187.18	8050.98	8056.58	7929.56	8046.60	8164.92	7927.28	8181.63	8189.15
32.50°	7802.61	7665.88	7705.09	7658.13	7579.22	7630.71	7502.25	7600.77	7725.78	7765.58	7569.27	7636.16	7730.43	7725.56	7649.70	7688.57	7802.61
35.00°	7104.38	7039.12	7018.66	7124.01	7016.78	6993.79	7007.65	6948.88	7175.41	7048.31	7044.93	6898.08	6997.24	7218.93	6994.16	7152.66	7104.38
37.50°	6291.82	6242.38	6307.11	6287.24	6228.48	6264.72	6259.13	6224.24	6317.41	6304.13	6224.73	6150.89	6237.01	6351.01	6248.62	6295.27	6291.82
40.00°	5393.96	5424.23	5402.45	5435.56	5395.92	5398.02	5467.72	5355.68	5434.60	5386.15	5398.96	5297.73	5358.52	5469.10	5370.91	5425.38	5393.96
42.50°	4474.49	4489.17	4499.02	4491.35	4480.30	4509.89	4522.55	4471.94	4491.23	4472.86	4501.72	4446.78	4473.35	4539.55	4474.14	4501.23	4474.49
45.00°	3611.49	3556.21	3608.14	3572.61	3555.70	3650.38	3638.75	3616.83	3620.00	3578.23	3633.59	3610.41	3568.77	3665.56	3632.73	3627.48	3611.49
47.50°	2757.10	2877.31	2781.86	2891.22	2889.90	2793.49	2909.47	2779.21	2876.82	2794.93	2946.22	2847.20	2802.13	2923.34	2798.50	2902.05	2757.10
50.00°	2291.11	2231.85	2306.21	2266.74	2246.09	2343.06	2309.92	2337.06	2302.01	2312.41	2331.16	2374.85	2325.83	2318.04	2348.91	2295.72	2291.11
52.50°	1851.90	1908.91	1886.09	1934.30	1934.53	1908.82	1950.72	1918.34	1950.26	1916.47	1990.55	1965.30	1941.60	1953.20	1917.59	1938.48	1851.90
55.00°	1648.38	1616.94	1656.84	1644.47	1641.47	1686.33	1673.33	1695.36	1688.72	1691.33	1700.37	1728.00	1700.24	1676.40	1696.95	1656.43	1648.38
57.50°	1452.54	1483.17	1464.30	1494.99	1500.73	1480.73	1508.75	1494.09	1518.71	1511.13	1543.25	1530.62	1515.70	1516.74	1492.93	1490.35	1452.54
60.00°	1358.79	1359.71	1360.93	1364.28	1369.36	1381.20	1382.18	1394.02	1388.77	1396.63	1406.65	1411.77	1398.38	1390.83	1383.39	1360.20	1358.79
62.50°	1266.13	1270.81	1263.77	1277.55	1282.37	1283.80	1295.13	1295.73	1289.51	1292.23	1309.10	1303.10	1295.38	1298.82	1278.67	1272.32	1266.13
65.00°	1180.24	1183.56	1177.58	1191.06	1195.32	1194.74	1205.96	1202.85	1198.28	1199.12	1213.64	1209.51	1205.18	1208.97	1191.51	1187.33	1180.24
67.50°	1095.56	1100.15	1094.14	1104.97	1108.10	1106.92	1115.09	1112.80	1111.72	1111.60	1121.19	1118.94	1117.72	1120.76	1105.64	1104.95	1095.56
70.00°	1015.44	1018.01	1014.37	1021.77	1022.80	1022.42	1030.08	1028.96	1029.36	1028.80	1033.98	1031.73	1032.09	1034.78	1023.02	1022.03	1015.44
72.50°	936.42	938.06	935.73	942.25	941.72	940.81	948.62	947.83	948.77	947.18	952.45	948.33	951.11	950.07	942.07	938.75	936.42
75.00°	860.25	861.30	858.23	865.92	864.13	864.75	870.48	871.16	872.30	866.32	873.40	868.18	872.46	872.18	864.16	863.58	860.25
77.50°	787.91	788.68	785.88	792.72	792.24	792.08	793.82	798.12	797.07	793.06	796.39	794.53	799.02	797.14	791.17	792.49	787.91
80.00°	722.81	723.20	717.44	726.75	725.57	724.30	727.49	729.54	730.40	723.40	729.52	725.06	727.50	732.79	724.95	728.33	722.81
82.50°	665.00	664.71	660.30	666.19	665.29	664.11	664.37	667.85	665.39	665.17	668.96	667.48	670.17	671.61	666.75	666.71	665.00
85.00°	617.58	615.53	609.70	616.70	613.59	612.17	613.61	612.56	617.91	610.86	618.03	615.53	616.39	624.61	616.97	620.94	617.58
87.50°	578.20	573.32	572.03	573.40	569.81	570.84	565.41	570.62	572.20	571.54	571.56	576.56	579.90	580.30	577.86	579.11	578.20
90.00°	547.46	544.89	539.91	542.93	539.13	538.36	537.03	538.14	543.68	535.64	542.41	542.04	546.01	550.60	547.20	551.03	547.46
92.50°	525.36	524.28	521.53	517.68	517.71	517.61	510.90	518.02	516.30	516.57	518.96	522.73	526.09	522.39	526.95	525.05	525.36
95.00°	510.41	512.02	507.28	504.65	503.30	504.20	500.62	504.42	505.43	499.71	505.79	506.96	507.21	513.00	512.98	514.71	510.41
97.50°	501.70	503.20	501.50	495.13	492.63	496.46	491.21	497.24	495.38	495.52	494.85	499.88	503.54	504.30	505.55	505.44	501.70
100.00°	496.86	499.66	497.34	495.39	489.90	491.36	491.39	492.50	492.00	492.05	493.11	493.96	499.93	500.55	500.99	503.65	496.86
102.50°	495.74	497.63	496.86	497.41	490.23	489.09	491.20	490.36	489.49	490.91	492.52	490.41	497.06	496.76	497.34	501.90	495.74
105.00°	496.31	497.89	496.77	495.87	488.67	487.75	487.79	488.90	490.95	489.51	489.57	486.96	493.87	492.73	493.98	500.83	496.31

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%
	0	23556	23556	23556	23556	22737	22737	22737	22737	21209	21209	21209	19811	19811	19811	18527	18527	18527	17924
	1	21602	20691	19874	19138	20821	20007	19274	18609	18728	18140	17601	17553	17087	16656	16469	16106	15767	15567
	2	19874	18355	17100	16046	19143	17781	16643	15678	16702	15771	14968	15707	14952	14290	14786	14181	13643	13706
	3	18325	16398	14908	13721	17648	15912	14549	13451	14995	13861	12927	14147	13209	12421	13360	12591	11932	12174
	4	16939	14744	13138	11911	16318	14330	12850	11706	13546	12295	11304	12819	11766	10914	12142	11262	10534	10898
RCR	5	15696	13332	11681	10462	15129	12976	11446	10301	12303	10990	9984	11675	10555	9675	11090	10137	9372	9818
	6	14581	12117	10463	9276	14064	11809	10267	9146	11226	9889	8891	10681	9524	8640	10171	9174	8395	8895
	7	13579	11064	9433	8289	13108	10796	9268	8183	10288	8949	7973	9812	8641	7766	9365	8344	7563	8099
	8	12678	10146	8553	7458	12249	9912	8413	7369	9467	8140	7194	9048	7877	7021	8654	7622	6850	7407
	9	11868	9343	7796	6750	11476	9137	7675	6675	8744	7440	6527	8373	7213	6380	8024	6992	6234	6802
	10	11136	8636	7139	6143	10778	8454	7035	6078	8105	6830	5951	7775	6632	5825	7464	6439	5700	6271

Cone of Light

Mtg Height	Light Level	Beam Diameter
5.5 m	203.8 lx	10.4 m
6.5 m	145.9 lx	12.3 m
7.5 m	109.6 lx	14.1 m
8.0 m	96.3 lx	15.1 m
10.0 m	61.7 lx	18.9 m
12.0 m	42.8 lx	22.6 m
14.0 m	31.5 lx	26.4 m
16.0 m	24.1 lx	30.2 m
20.0 m	15.4 lx	37.7 m
24.0 m	10.7 lx	45.3 m
28.0 m	7.9 lx	52.8 m

Average Luminaire Luminance [cd/m²]

	0.00°	45.00°	90.00°
0.00°	2344	2344	2344
45.00°	1231	1230	1212
55.00°	599	602	596
65.00°	474	473	480
75.00°	401	400	402
85.00°	354	350	352

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	16.7	18.0	17.3	18.5	19.1	16.9	18.1	17.4	18.6	19.2
	3H	15.5	16.6	16.1	17.2	17.8	15.7	16.8	16.2	17.3	18.0
	4H	15.0	16.0	15.6	16.6	17.2	15.1	16.2	15.7	16.7	17.4
	6H	14.4	15.4	15.0	16.0	16.7	14.6	15.6	15.2	16.2	16.8
	8H	14.2	15.1	14.8	15.7	16.4	14.4	15.3	15.0	15.9	16.5
	12H	13.9	14.8	14.5	15.4	16.1	14.1	15.0	14.7	15.6	16.3
4H	2H	16.2	17.2	16.8	17.8	18.5	16.3	17.4	16.9	17.9	18.6
	3H	14.6	15.4	15.1	16.0	16.7	14.7	15.6	15.3	16.2	16.9
	4H	13.6	14.4	14.2	15.0	15.7	13.8	14.6	14.4	15.2	15.9
	6H	12.4	13.1	13.0	13.8	14.5	12.6	13.3	13.3	14.0	14.7
	8H	11.7	12.4	12.3	13.0	13.7	12.0	12.6	12.6	13.3	14.0
	12H	10.9	11.5	11.5	12.1	12.9	11.2	11.8	11.9	12.5	13.2
8H	4H	13.0	13.7	13.6	14.3	15.0	13.2	13.8	13.8	14.5	15.2
	6H	11.1	11.7	11.8	12.4	13.1	11.4	12.0	12.1	12.7	13.4
	8H	9.6	10.1	10.3	10.8	11.5	10.0	10.5	10.7	11.2	11.9
	12H	6.5	7.0	7.2	7.6	8.4	7.5	7.9	8.2	8.6	9.4
12H	4H	12.9	13.5	13.5	14.1	14.9	13.1	13.7	13.7	14.3	15.1
	6H	10.8	11.3	11.5	11.9	12.7	11.1	11.6	11.8	12.3	13.0
	8H	8.8	9.2	9.4	9.9	10.7	9.3	9.7	10.0	10.4	11.2

Corrected UGR values based on total output energy
SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0