H.E. WILLIAMS, INC.

IES INDOOR REPORT
PHOTOMETRIC FILENAME : MD4ARRG-4-L45-8TW-A-DALI-UNV BOTH ON 4000K_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] GEN FROM BALLABS TEST NO. 20051.0
[TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIE, INC
[ISSUEDATE] 28-JUL-2020
[MANUFAC] WILLIAMS INDOOR
[OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO
[LUMINAIRE] LED AMBIENT & READING (RIGHT) 4' MEDICAL ASYM TROFFER
[MORE] WHITE REFL w/FROSTED ACRYLIC RIBBED LENS IN DOOR & CLEAR
[MORE] ACRYLIC LENS
[LUMCAT] MD4ARRG-L45-8TW-A-DALI-UNV BOTH ON 4000k

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	5485
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	87
Total Luminaire Watts	63.4
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.04
Spacing Criterion (90-270)	1.24
Spacing Criterion (Diagonal)	1.18
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.44 ft
Luminous Width (90-270)	3.77 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	11752	13733	14760
55	10289	11688	11474
65	7575	8964	8072
75	4410	4805	4587
85	167	473	921

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CANDELA TABULATION

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0	202.5
0	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485
5	2635.226	2666.864	2708.785	2792.635	2888.721	2933.565	2925.127	2907.309	2852.212	2864.148
10	2575.003	2616.954	2631.433	2709.762	2859.968	2918.085	2771.456	2557.605	2464.046	2489.225
15	2481.790	2537.856	2575.990	2628.956	2798.594	2819.750	2427.278	2372.050	2339.589	2357.298
20	2314.889	2383.480	2474.315	2524.654	2686.299	2558.863	2289.609	2200.170	2156.874	2187.611
25	2120.231	2176.192	2339.306	2393.693	2536.399	2257.371	2105.508	1976.297	1918.288	1965.631
30	1906.469	1957.760	2162.521	2232.499	2377.747	2059.415	1864.733	1723.196	1662.606	1713.827
35	1678.478	1752.646	1968.023	2031.901	2153.240	1834.151	1606.360	1431.420	1381.276	1424.642
40	1478.508	1550.697	1744.374	1826.946	1896.123	1586.219	1337.550	1158.638	1113.667	1153.225
45	1276.339	1353.597	1491.448	1603.666	1603.072	1334.509	1071.730	927.243	874.262	922.119
50	1091.646	1161.557	1244.917	1357.289	1306.561	1076.335	815.106	711.613	662.555	707.556
55	906.438	968.595	1029.681	1106.951	1010.823	831.055	584.325	505.063	476.550	500.947
60	691.980	754.724	819.798	864.950	751.573	600.174	402.028	326.764	302.477	322.458
65	491.716	545.888	581.855	603.657	523.952	392.867	255.612	186.019	163.790	181.623
70	326.925	363.996	354.438	392.862	334.250	216.258	122.014	83.712	69.796	79.386
75	175.297	202.046	191.012	195.065	182.356	80.592	46.755	42.848	37.450	40.116
80	41.113	53.010	66.920	53.199	66.363	18.451	15.919	18.815	14.673	17.030
85	2.233	4.291	6.330	9.968	12.331	3.294	4.441	5.268	4.431	4.560
90	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Vert. Angles	**Horizontal Angles**						
	225.0	247.5	270.0	292.5	315.0	337.5	360.0
0	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485	2834.485
5	2876.783	2894.292	2884.435	2798.815	2709.881	2670.154	2635.226
10	2642.771	2857.380	2854.386	2715.144	2646.485	2632.205	2575.003
15	2407.741	2706.415	2789.922	2628.657	2585.958	2551.014	2481.790
20	2273.062	2414.229	2677.029	2518.773	2472.720	2393.746	2314.889
25	2091.254	2226.172	2530.916	2385.819	2332.329	2184.366	2120.231
30	1853.569	2046.656	2370.370	2222.132	2152.454	1960.751	1906.469
35	1599.981	1826.476	2156.231	2027.814	1955.264	1751.450	1678.478
40	1334.061	1581.135	1904.197	1814.985	1730.020	1539.134	1478.508
45	1067.215	1330.522	1623.905	1590.209	1484.072	1336.353	1276.339
50	811.608	1074.541	1331.680	1353.302	1233.055	1142.020	1091.646
55	582.511	831.733	1049.498	1106.353	1021.408	947.861	906.438
60	401.360	602.526	802.110	870.532	813.518	736.383	691.980

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CANDELA TABULATION - (Cont.)

65	255.432	396.695	578.377	614.123	578.765	536.319	491.716
70	121.904	221.630	387.658	407.823	354.039	353.231	326.925
75	45.818	86.612	223.434	211.691	194.650	191.779	175.297
80	15.749	22.637	90.285	68.819	73.788	48.494	41.113
85	4.610	4.969	19.946	18.640	7.576	3.982	2.233
90	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	985.08	N.A.	18.00
0-30	2006.9	N.A.	36.60
0-40	3122.99	N.A.	56.90
0-60	4885.57	N.A.	89.10
0-80	5469.31	N.A.	99.70
0-90	5484.93	N.A.	100.00
10-90	5220.77	N.A.	95.20
20-40	2137.92	N.A.	39.00
20-50	3145.62	N.A.	57.40
40-70	2195.41	N.A.	40.00
60-80	583.73	N.A.	10.60
70-80	150.91	N.A.	2.80
80-90	15.62	N.A.	0.30
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	5484.93	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	264.16
10-20	720.92
20-30	1021.82
30-40	1116.1
40-50	1007.71
50-60	754.87
60-70	432.83
70-80	150.91
80-90	15.62
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	105	101	99	100	98	95	97	95	93	93	91	90	88
2	102	95	89	85	100	93	88	84	90	85	82	87	83	80	84	81	78	76
3	94	85	78	72	92	84	77	72	81	75	70	78	73	69	76	72	68	66
4	87	76	69	63	85	75	68	62	73	66	61	71	65	61	68	64	60	58
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	54	49	60	53	48	59	52	48	57	52	47	46
7	70	57	49	44	68	57	49	44	55	48	43	54	48	43	52	47	43	41
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	34
10	58	45	38	33	56	45	38	33	44	37	33	43	37	32	42	36	32	31

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UGR TABLE - CORRECTED

Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	20.2	21.6	20.5	21.9	22.3	20.3	21.8	20.7	22.1	22.4
	3H	21.3	22.6	21.6	22.9	23.3	21.3	22.6	21.7	22.9	23.3
	4H	21.5	22.7	21.9	23.1	23.5	21.5	22.7	21.9	23.1	23.5
	6H	21.6	22.7	22.0	23.1	23.4	21.6	22.7	22.0	23.1	23.5
	8H	21.5	22.6	22.0	23.0	23.4	21.5	22.6	22.0	23.0	23.4
	12H	21.5	22.5	21.9	22.9	23.3	21.5	22.5	21.9	22.9	23.4
4H	2H	20.7	21.9	21.1	22.3	22.7	20.6	21.8	21.0	22.1	22.5
	3H	21.9	23.0	22.4	23.4	23.8	21.7	22.7	22.1	23.1	23.5
	4H	22.3	23.2	22.7	23.6	24.0	21.9	22.8	22.4	23.3	23.7
	6H	22.3	23.1	22.8	23.6	24.0	22.0	22.8	22.5	23.2	23.7
	8H	22.3	23.0	22.8	23.5	24.0	22.0	22.7	22.5	23.2	23.6
	12H	22.3	22.9	22.8	23.4	23.9	22.0	22.6	22.5	23.1	23.6
8H	4H	22.4	23.1	22.8	23.5	24.0	21.9	22.7	22.4	23.1	23.6
	6H	22.5	23.0	23.0	23.5	24.0	22.0	22.6	22.5	23.1	23.6
	8H	22.4	23.0	22.9	23.5	24.0	22.0	22.5	22.5	23.1	23.5
	12H	22.4	22.9	22.9	23.4	23.9	22.0	22.5	22.5	22.9	23.5
12H	4H	22.4	23.0	22.8	23.5	23.9	21.9	22.6	22.4	23.0	23.5
	6H	22.4	23.0	23.0	23.4	24.0	22.0	22.5	22.5	23.0	23.5
	8H	22.4	22.9	22.9	23.4	23.9	22.0	22.5	22.5	22.9	23.5

Maximum UGR = 24.0

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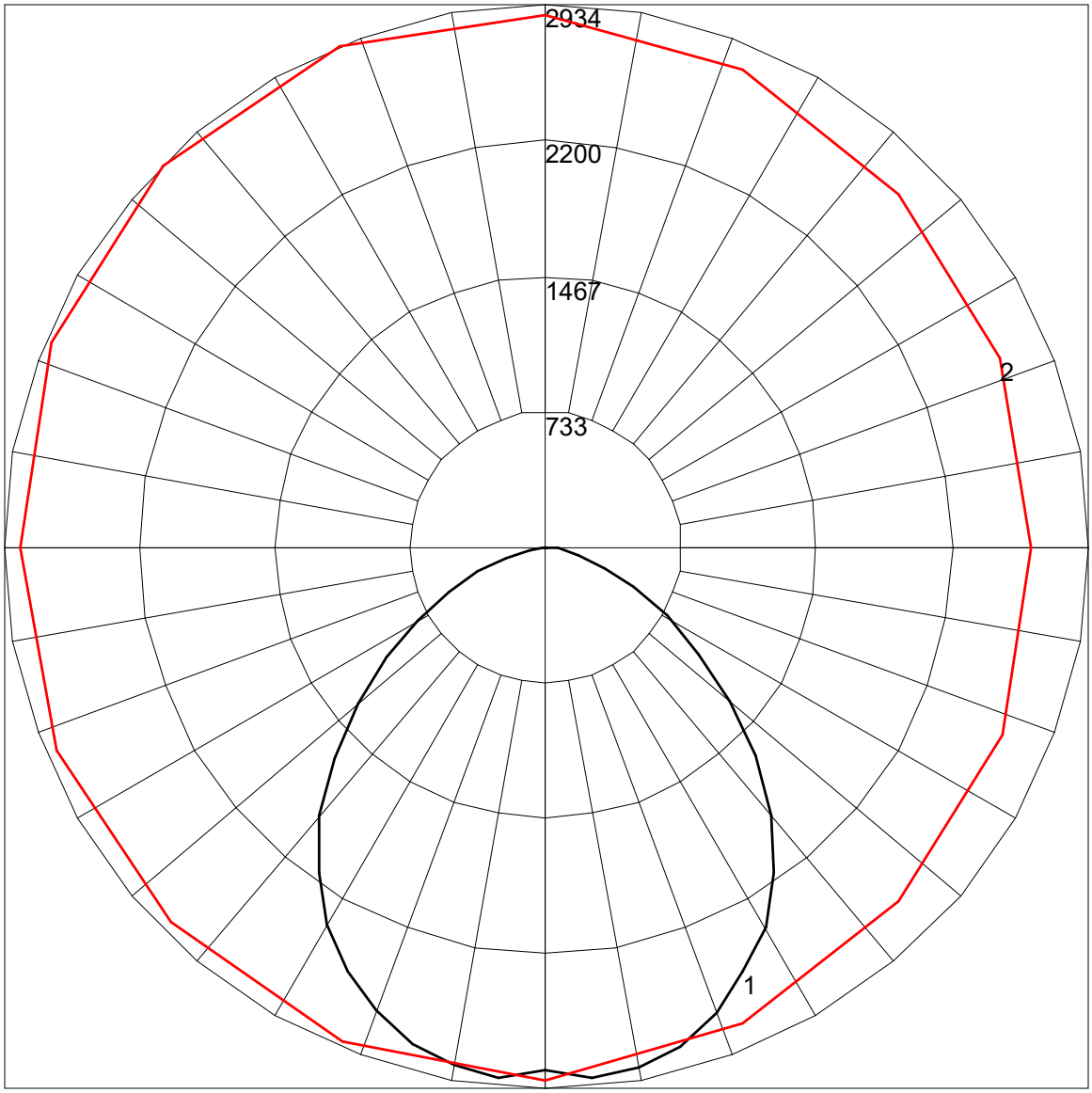
POLAR GRAPH



Maximum Candela = 2933.565 Located At Horizontal Angle = 112.5, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (90 - 270)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)

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