



## IES INDOOR REPORT

PHOTOMETRIC FILENAME : MX4UD-4-00-L8-835U-L8-835D-FASYD-DIM-UNV\_.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
 [TEST] GEN FROM BALLABS TEST NO. 20657.0  
 [TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC  
 [ISSUE DATE] 26-AUG-2020  
 [MANUFAC] WILLIAMS INDOOR  
 [OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO 64836  
 [LUMINAIRE] 4' DIRECT/INDIRECT SUSPENDED LUMINAIRE  
 [MORE] WITH FROSTED ACRYLIC LENS  
 [LUMCAT] MX4UD-4-00-L8/835U/L8/835D-FASYD-DIM-UNV  
 [LAMPCAT] HLM 80 CRI, 3500K CCT  
 [SEARCH\_SOURCETYPE] LED  
 [SEARCH\_APPLICATION] Indoor, Architectural, Classroom, Indirect  
 [SEARCH\_MOUNTING] Suspended

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	6458
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	116
Total Luminaire Watts	55.8
Ballast Factor	1.00
CIE Type	General Diffuse
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	4.00 ft
Luminous Width (90-270)	0.32 ft
Luminous Height	0.00 ft

### LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	8685	10383	11021
55	8256	10083	10758
65	7683	9630	10329
75	6642	8989	9805
85	4837	8316	9665

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**CANDELA TABULATION**

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>	<u>112.5</u>	<u>135.0</u>	<u>157.5</u>	<u>180.0</u>	<u>202.5</u>
<b>0</b>	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515
<b>5</b>	1148.988	1169.641	1174.678	1185.256	1187.775	1185.256	1174.678	1169.641	1148.988	1132.366
<b>10</b>	1130.854	1168.130	1186.768	1205.909	1213.465	1205.909	1186.768	1168.130	1130.854	1098.113
<b>15</b>	1101.135	1154.530	1184.753	1212.457	1220.517	1212.457	1184.753	1154.530	1101.135	1055.800
<b>20</b>	1061.341	1127.329	1167.122	1200.872	1212.457	1200.872	1167.122	1127.329	1061.341	1004.420
<b>25</b>	1010.969	1086.527	1135.388	1175.182	1187.271	1175.182	1135.388	1086.527	1010.969	945.989
<b>30</b>	949.515	1031.621	1088.542	1131.358	1144.455	1131.358	1088.542	1031.621	949.515	881.513
<b>35</b>	881.009	965.130	1023.562	1069.400	1083.001	1069.400	1023.562	965.130	881.009	809.480
<b>40</b>	806.458	890.579	951.026	995.354	1006.939	995.354	951.026	890.579	806.458	732.411
<b>45</b>	726.366	811.495	868.416	909.721	921.810	909.721	868.416	811.495	726.366	653.327
<b>50</b>	645.771	724.351	779.761	819.051	829.629	819.051	779.761	724.351	645.771	575.754
<b>55</b>	560.138	634.185	684.054	721.833	729.892	721.833	684.054	634.185	560.138	496.518
<b>60</b>	472.491	539.486	583.813	617.059	624.615	617.059	583.813	539.486	472.491	415.570
<b>65</b>	384.088	441.512	481.406	509.262	516.314	509.262	481.406	441.512	384.088	334.421
<b>70</b>	293.115	344.545	378.093	400.811	407.007	400.811	378.093	344.545	293.115	251.760
<b>75</b>	203.352	245.715	275.183	294.878	300.168	294.878	275.183	245.715	203.352	170.812
<b>80</b>	119.029	152.174	175.648	191.464	195.797	191.464	175.648	152.174	119.029	97.923
<b>85</b>	49.868	70.068	85.733	96.261	99.636	96.261	85.733	70.068	49.868	37.023
<b>90</b>	2.317	6.599	12.643	16.975	18.990	16.975	12.643	6.599	2.317	0.353
<b>95</b>	61.986	58.477	59.647	57.307	58.477	57.307	59.647	58.477	61.986	58.477
<b>100</b>	122.802	123.971	118.124	125.141	123.971	125.141	118.124	123.971	122.802	123.971
<b>105</b>	201.161	204.669	208.178	208.178	209.348	208.178	208.178	204.669	201.161	204.669
<b>110</b>	283.029	288.876	291.216	294.724	299.402	294.724	291.216	288.876	283.029	288.876
<b>115</b>	371.914	371.914	383.609	390.626	396.474	390.626	383.609	371.914	371.914	371.914
<b>120</b>	459.629	465.477	471.325	481.851	492.376	481.851	471.325	465.477	459.629	465.477
<b>125</b>	548.514	554.362	566.057	577.753	580.092	577.753	566.057	554.362	548.514	554.362
<b>130</b>	644.417	647.925	658.451	670.146	671.316	670.146	658.451	647.925	644.417	647.925
<b>135</b>	728.623	733.302	747.336	760.201	757.862	760.201	747.336	733.302	728.623	733.302
<b>140</b>	817.509	817.509	837.391	845.577	850.256	845.577	837.391	817.509	817.509	817.509
<b>145</b>	899.376	909.902	914.580	927.445	933.293	927.445	914.580	909.902	899.376	909.902
<b>150</b>	981.244	985.922	996.448	1009.313	1002.296	1009.313	996.448	985.922	981.244	985.922
<b>155</b>	1052.586	1053.755	1066.620	1075.977	1070.129	1075.977	1066.620	1053.755	1052.586	1053.755
<b>160</b>	1113.402	1119.250	1125.098	1134.454	1129.776	1134.454	1125.098	1119.250	1113.402	1119.250
<b>165</b>	1162.523	1166.031	1171.879	1180.066	1174.218	1180.066	1171.879	1166.031	1162.523	1166.031
<b>170</b>	1201.118	1201.118	1204.626	1211.643	1205.796	1211.643	1204.626	1201.118	1201.118	1201.118
<b>175</b>	1215.152	1219.830	1223.339	1229.187	1222.169	1229.187	1223.339	1219.830	1215.152	1219.830
<b>180</b>	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848

**Vert.  
Angles**

**Horizontal Angles**

	<u>225.0</u>	<u>247.5</u>	<u>270.0</u>	<u>292.5</u>	<u>315.0</u>	<u>337.5</u>	<u>360.0</u>
<b>0</b>	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515	1152.515
<b>5</b>	1110.202	1104.661	1103.654	1104.661	1110.202	1132.366	1148.988
<b>10</b>	1065.371	1051.267	1047.237	1051.267	1065.371	1098.113	1130.854
<b>15</b>	1013.487	991.827	985.783	991.827	1013.487	1055.800	1101.135
<b>20</b>	953.545	927.855	919.292	927.855	953.545	1004.420	1061.341
<b>25</b>	890.076	859.349	849.274	859.349	890.076	945.989	1010.969
<b>30</b>	822.577	790.843	779.761	790.843	822.577	881.513	949.515
<b>35</b>	748.530	716.292	707.225	716.292	748.530	809.480	881.009
<b>40</b>	671.964	638.215	626.629	638.215	671.964	732.411	806.458
<b>45</b>	595.902	564.168	554.597	564.168	595.902	653.327	726.366
<b>50</b>	522.359	493.697	484.781	493.697	522.359	575.754	645.771
<b>55</b>	448.463	421.867	413.102	421.867	448.463	496.518	560.138
<b>60</b>	375.373	351.749	344.596	351.749	375.373	415.570	472.491

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<b>65</b>	300.168	281.933	275.687	281.933	300.168	334.421	384.088
<b>70</b>	226.725	213.074	207.936	213.074	226.725	251.760	293.115
<b>75</b>	155.197	146.633	142.603	146.633	155.197	170.812	203.352
<b>80</b>	89.965	84.877	82.610	84.877	89.965	97.923	119.029
<b>85</b>	33.346	30.374	28.964	30.374	33.346	37.023	49.868
<b>90</b>	0.302	0.302	0.252	0.302	0.302	0.353	2.317
<b>95</b>	59.647	57.307	58.477	57.307	59.647	58.477	61.986
<b>100</b>	118.124	125.141	123.971	125.141	118.124	123.971	122.802
<b>105</b>	208.178	208.178	209.348	208.178	208.178	204.669	201.161
<b>110</b>	291.216	294.724	299.402	294.724	291.216	288.876	283.029
<b>115</b>	383.609	390.626	396.474	390.626	383.609	371.914	371.914
<b>120</b>	471.325	481.851	492.376	481.851	471.325	465.477	459.629
<b>125</b>	566.057	577.753	580.092	577.753	566.057	554.362	548.514
<b>130</b>	658.451	670.146	671.316	670.146	658.451	647.925	644.417
<b>135</b>	747.336	760.201	757.862	760.201	747.336	733.302	728.623
<b>140</b>	837.391	845.577	850.256	845.577	837.391	817.509	817.509
<b>145</b>	914.580	927.445	933.293	927.445	914.580	909.902	899.376
<b>150</b>	996.448	1009.313	1002.296	1009.313	996.448	985.922	981.244
<b>155</b>	1066.620	1075.977	1070.129	1075.977	1066.620	1053.755	1052.586
<b>160</b>	1125.098	1134.454	1129.776	1134.454	1125.098	1119.250	1113.402
<b>165</b>	1171.879	1180.066	1174.218	1180.066	1171.879	1166.031	1162.523
<b>170</b>	1204.626	1211.643	1205.796	1211.643	1204.626	1201.118	1201.118
<b>175</b>	1223.339	1229.187	1222.169	1229.187	1223.339	1219.830	1215.152
<b>180</b>	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848	1226.848

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Zone	Lumens	%Lamp	%Fixt
0-20	419.77	N.A.	6.50
0-30	887.42	N.A.	13.70
0-40	1443.09	N.A.	22.30
0-60	2516.67	N.A.	39.00
0-80	3131.25	N.A.	48.50
0-90	3200.44	N.A.	49.60
10-90	3091.54	N.A.	47.90
20-40	1023.32	N.A.	15.80
20-50	1589.63	N.A.	24.60
40-70	1460.83	N.A.	22.60
60-80	614.58	N.A.	9.50
70-80	227.33	N.A.	3.50
80-90	69.20	N.A.	1.10
90-110	285.43	N.A.	4.40
90-120	664.27	N.A.	10.30
90-130	1170.68	N.A.	18.10
90-150	2320.76	N.A.	35.90
90-180	3257.54	N.A.	50.40
110-180	2972.11	N.A.	46.00
0-180	6457.99	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	108.90
10-20	310.87
20-30	467.64
30-40	555.68
40-50	566.31
50-60	507.26
60-70	387.25
70-80	227.33
80-90	69.20
90-100	67.15
100-110	218.28
110-120	378.84
120-130	506.41
130-140	576.30
140-150	573.78
150-160	490.37
160-170	330.27
170-180	116.14

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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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	98	93	89	86	90	86	83	79	73	70	68	60	59	57	49	48	47	41
2	89	81	75	70	81	75	70	65	63	59	56	53	50	47	43	41	39	34
3	81	71	64	58	74	66	59	54	56	51	47	47	43	40	38	35	33	29
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	34	31	28	25
5	68	56	48	42	62	52	45	39	44	39	34	37	33	29	30	27	25	21
6	62	50	42	36	57	47	39	34	40	34	30	33	29	26	28	24	22	19
7	58	45	37	32	53	42	35	30	36	30	26	30	26	23	25	22	19	17
8	53	41	33	28	49	38	31	26	33	27	23	28	23	20	23	20	17	15
9	50	37	30	25	46	35	28	23	30	25	21	26	21	18	21	18	15	13
10	46	34	27	22	43	32	25	21	28	22	19	24	19	16	20	16	14	12

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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

X=2H	Y=2H	15.7	16.5	16.6	17.5	18.8	UGR Viewed Endwise	17.4	18.3	18.3	19.2	20.5
	3H	17.4	18.2	18.3	19.2	20.4		19.3	20.1	20.2	21.0	22.3
	4H	18.0	18.8	19.0	19.7	21.0		20.0	20.8	21.0	21.8	23.1
	6H	18.5	19.1	19.4	20.1	21.4		20.6	21.3	21.6	22.3	23.6
	8H	18.6	19.2	19.6	20.2	21.5		20.8	21.5	21.8	22.5	23.8
	12H	18.6	19.3	19.6	20.3	21.6		21.0	21.6	22.0	22.6	24.0

4H	2H	16.2	17.0	17.2	18.0	19.3		17.9	18.6	18.9	19.6	20.9
	3H	18.2	18.8	19.2	19.8	21.2		20.0	20.6	21.0	21.6	23.0
	4H	19.0	19.5	20.0	20.5	21.9		20.9	21.5	21.9	22.5	23.8
	6H	19.5	20.0	20.5	21.0	22.4		21.7	22.2	22.7	23.2	24.5
	8H	19.7	20.2	20.7	21.2	22.5		21.9	22.4	23.0	23.4	24.8
	12H	19.8	20.2	20.8	21.3	22.6		22.2	22.6	23.2	23.6	25.0

8H	4H	19.3	19.7	20.3	20.8	22.1		21.2	21.6	22.2	22.6	24.0
	6H	20.0	20.4	21.0	21.4	22.8		22.1	22.4	23.1	23.5	24.9
	8H	20.2	20.6	21.3	21.6	23.0		22.5	22.8	23.5	23.8	25.2
	12H	20.4	20.7	21.5	21.8	23.2		22.8	23.1	23.8	24.1	25.5

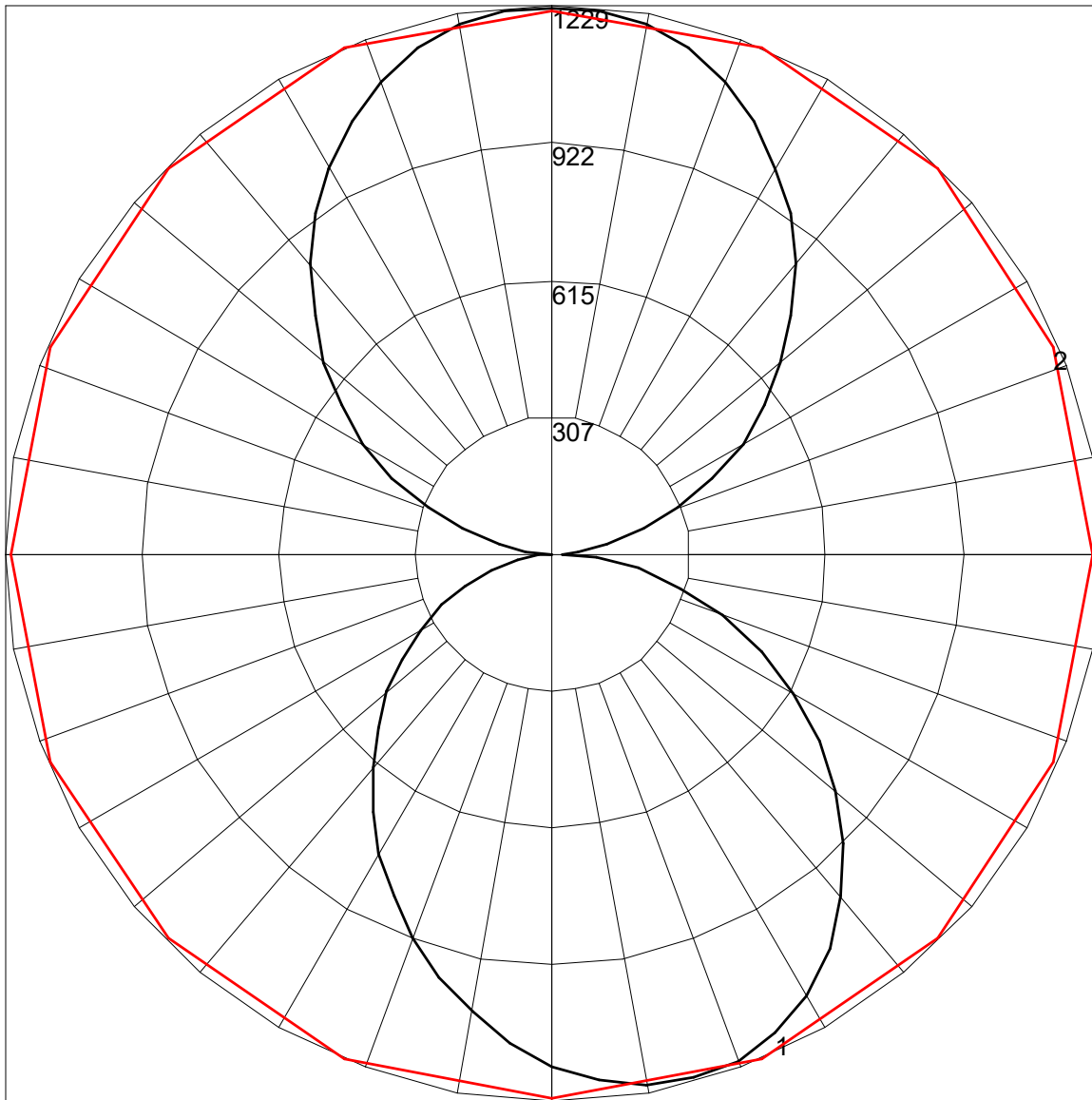
12H	4H	19.3	19.7	20.3	20.7	22.1		21.2	21.6	22.2	22.6	24.0
	6H	20.0	20.4	21.1	21.4	22.8		22.1	22.4	23.1	23.5	24.9
	8H	20.4	20.7	21.4	21.7	23.1		22.6	22.8	23.6	23.9	25.3

Maximum UGR = 25.5

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## POLAR GRAPH



Maximum Candela = 1229.187 Located At Horizontal Angle = 67.5, Vertical Angle = 175

# 1 - Vertical Plane Through Horizontal Angles (90 - 270)

# 2 - Horizontal Cone Through Vertical Angle (175) (Through Max. Cd.)