



IES INDOOR REPORT
PHOTOMETRIC FILENAME : HETG-AR22-L38-850-A-DIM-UNV.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] GEN FROM ORIG TEST
[TESTLAB] Intertek
[ISSUE DATE] 03/18/2019
[MANUFAC] WILLIAMS INDOOR
[OTHER] H.E. WILLIAMS, INC. - CARTHAGE, MO.
[LUMCAT] HETG-AR22-L38-850-A-DIM-UNV
[LUMINAIRE] 2x2 RECESSED GRID LUMINAIRE
[LAMP] LED
[LAMPCAT] HLM 80 CRI 5000K CCT
[_SEARCH_APPLICATION] INDOOR
[_SEARCH_SOURCETYPE] LED
[_SEARCH_MOUNTING] RECESSED

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4020
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	134
Total Luminaire Watts	30.1
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.22
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.30
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	1.92 ft
Luminous Width (90-270)	1.92 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4070	3906	3706
55	3758	3507	3134
65	2930	3117	2584
75	1860	2388	2075
85	631	1192	1529

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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>
0.0	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040
2.5	1658.124	1663.873	1660.948	1655.401	1650.560	1655.502	1661.049	1663.772	1657.418	1663.772
5.0	1652.073	1656.914	1653.888	1649.148	1644.307	1649.047	1654.695	1657.217	1650.560	1657.217
7.5	1641.584	1645.921	1642.593	1637.651	1632.407	1637.449	1643.601	1645.618	1638.760	1645.618
10.0	1625.347	1629.986	1626.557	1620.909	1615.060	1620.506	1627.969	1629.986	1623.632	1629.986
12.5	1604.773	1608.908	1604.672	1598.621	1592.872	1598.218	1607.294	1610.017	1603.058	1610.017
15.0	1580.064	1583.695	1578.551	1572.298	1565.440	1570.886	1581.678	1585.308	1578.148	1585.308
17.5	1551.321	1553.842	1548.194	1540.126	1532.865	1538.513	1551.220	1555.658	1549.304	1555.658
20.0	1518.342	1519.653	1512.694	1503.920	1495.549	1501.399	1515.316	1521.368	1516.527	1521.368
22.5	1481.329	1481.329	1472.050	1462.469	1453.897	1459.746	1475.681	1483.245	1479.009	1483.245
25.0	1439.374	1437.760	1426.868	1415.976	1407.202	1413.556	1431.205	1440.685	1437.256	1440.685
27.5	1392.679	1390.662	1378.055	1365.953	1356.271	1362.927	1382.796	1394.192	1391.469	1394.192
30.0	1341.950	1339.630	1324.200	1311.291	1300.802	1308.366	1330.150	1343.059	1342.152	1343.059
32.5	1287.893	1284.867	1266.915	1252.695	1241.299	1249.569	1273.269	1288.296	1288.700	1288.296
35.0	1231.113	1226.877	1206.807	1190.671	1177.560	1187.645	1213.161	1229.902	1230.407	1229.902
37.5	1172.114	1166.163	1144.278	1125.620	1110.896	1122.292	1150.531	1168.886	1170.097	1168.886
40.0	1111.602	1103.735	1079.531	1057.847	1041.005	1054.620	1085.985	1105.551	1108.475	1105.551
42.5	1049.476	1040.500	1013.875	988.662	970.004	985.334	1019.321	1041.106	1046.249	1041.106
45.0	986.645	976.761	946.707	918.468	898.298	914.535	951.649	976.055	982.813	976.055
47.5	924.721	912.720	881.455	850.292	826.490	841.417	882.565	910.501	920.384	910.501
50.0	864.512	851.603	816.405	780.401	754.885	771.525	814.186	844.039	855.738	844.039
52.5	803.193	789.376	752.061	711.720	684.489	702.441	748.128	780.501	792.805	780.501
55.0	738.950	727.453	689.633	645.157	616.212	635.071	683.380	717.267	726.545	717.267
57.5	663.209	662.705	628.718	580.712	550.960	570.122	620.851	651.611	649.493	651.611
60.0	581.922	588.276	569.819	518.889	489.137	508.299	560.743	577.081	572.744	577.081
62.5	505.576	512.031	511.627	460.293	430.138	450.006	502.349	504.971	493.978	504.971
65.0	424.490	439.921	451.519	404.925	374.366	395.041	442.543	430.844	412.085	430.844
67.5	345.522	364.886	387.780	353.187	322.024	343.203	381.224	356.213	334.933	356.213
70.0	275.631	294.793	327.772	304.677	273.110	294.692	321.217	286.725	265.748	286.725
72.5	215.019	231.962	268.269	258.688	226.919	249.107	261.108	223.692	205.538	223.692
75.0	164.996	177.400	211.892	214.212	184.057	205.337	205.337	169.736	156.726	169.736
77.5	128.184	131.512	159.751	169.736	145.228	161.869	153.801	125.865	121.427	125.865
80.0	103.576	105.190	112.350	126.571	108.518	120.217	108.014	103.677	101.559	103.677
82.5	52.645	61.520	78.161	85.624	74.833	83.305	80.481	66.361	58.192	66.361
85.0	18.860	22.994	35.601	48.107	45.686	48.006	38.122	24.406	19.465	24.406
87.5	6.152	7.766	10.186	17.851	20.171	17.952	10.690	7.867	6.051	7.867
90.0	1.009	1.311	1.009	0.403	0.303	0.706	1.513	1.715	1.210	1.715
92.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
97.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
107.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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CANDELA TABULATION - (Cont.)

135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
142.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
147.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
152.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
157.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
162.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
167.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
172.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
177.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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>
0.0	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040	1660.040
2.5	1661.049	1655.502	1650.560	1655.401	1660.948	1663.873	1658.124
5.0	1654.695	1649.047	1644.307	1649.148	1653.888	1656.914	1652.073
7.5	1643.601	1637.449	1632.407	1637.651	1642.593	1645.921	1641.584
10.0	1627.969	1620.506	1615.060	1620.909	1626.557	1629.986	1625.347
12.5	1607.294	1598.218	1592.872	1598.621	1604.672	1608.908	1604.773
15.0	1581.678	1570.886	1565.440	1572.298	1578.551	1583.695	1580.064
17.5	1551.220	1538.513	1532.865	1540.126	1548.194	1553.842	1551.321
20.0	1515.316	1501.399	1495.549	1503.920	1512.694	1519.653	1518.342
22.5	1475.681	1459.746	1453.897	1462.469	1472.050	1481.329	1481.329
25.0	1431.205	1413.556	1407.202	1415.976	1426.868	1437.760	1439.374
27.5	1382.796	1362.927	1356.271	1365.953	1378.055	1390.662	1392.679
30.0	1330.150	1308.366	1300.802	1311.291	1324.200	1339.630	1341.950
32.5	1273.269	1249.569	1241.299	1252.695	1266.915	1284.867	1287.893
35.0	1213.161	1187.645	1177.560	1190.671	1206.807	1226.877	1231.113
37.5	1150.531	1122.292	1110.896	1125.620	1144.278	1166.163	1172.114
40.0	1085.985	1054.620	1041.005	1057.847	1079.531	1103.735	1111.602
42.5	1019.321	985.334	970.004	988.662	1013.875	1040.500	1049.476
45.0	951.649	914.535	898.298	918.468	946.707	976.761	986.645
47.5	882.565	841.417	826.490	850.292	881.455	912.720	924.721
50.0	814.186	771.525	754.885	780.401	816.405	851.603	864.512
52.5	748.128	702.441	684.489	711.720	752.061	789.376	803.193
55.0	683.380	635.071	616.212	645.157	689.633	727.453	738.950
57.5	620.851	570.122	550.960	580.712	628.718	662.705	663.209
60.0	560.743	508.299	489.137	518.889	569.819	588.276	581.922
62.5	502.349	450.006	430.138	460.293	511.627	512.031	505.576
65.0	442.543	395.041	374.366	404.925	451.519	439.921	424.490
67.5	381.224	343.203	322.024	353.187	387.780	364.886	345.522
70.0	321.217	294.692	273.110	304.677	327.772	294.793	275.631
72.5	261.108	249.107	226.919	258.688	268.269	231.962	215.019
75.0	205.337	205.337	184.057	214.212	211.892	177.400	164.996
77.5	153.801	161.869	145.228	169.736	159.751	131.512	128.184
80.0	108.014	120.217	108.518	126.571	112.350	105.190	103.576

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CANDELA TABULATION - (Cont.)

82.5	80.481	83.305	74.833	85.624	78.161	61.520	52.645
85.0	38.122	48.006	45.686	48.107	35.601	22.994	18.860
87.5	10.690	17.952	20.171	17.851	10.186	7.766	6.152
90.0	1.513	0.706	0.303	0.403	1.009	1.311	1.009
92.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
97.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
107.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
142.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
147.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
152.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
157.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
162.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
167.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
172.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
177.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	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	601.23	N.A.	15.00
0-30	1257.52	N.A.	31.30
0-40	2012.03	N.A.	50.00
0-60	3350.01	N.A.	83.30
0-80	3972.18	N.A.	98.80
0-90	4020.24	N.A.	100.00
10-90	3863.42	N.A.	96.10
20-40	1410.8	N.A.	35.10
20-50	2140.48	N.A.	53.20
40-70	1753.87	N.A.	43.60
60-80	622.17	N.A.	15.50
70-80	206.29	N.A.	5.10
80-90	48.06	N.A.	1.20
90-110	0.14	N.A.	0.00
90-120	0.14	N.A.	0.00
90-130	0.14	N.A.	0.00
90-150	0.14	N.A.	0.00
90-180	0.14	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	4020.38	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	156.82
10-20	444.41
20-30	656.29
30-40	754.51
40-50	729.68
50-60	608.30
60-70	415.89
70-80	206.29
80-90	48.06
90-100	0.14
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

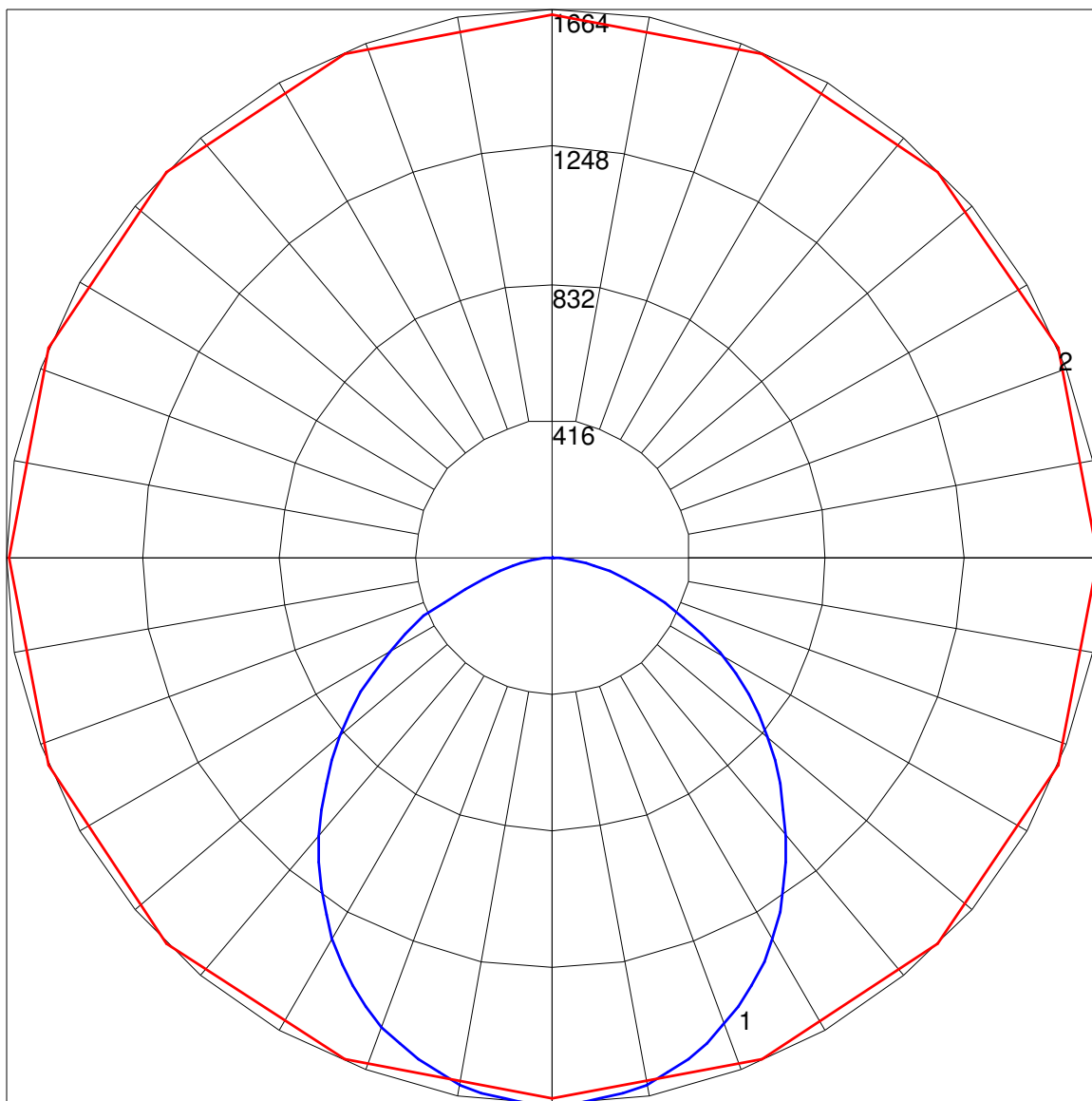
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	110	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	88	85
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74	72
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53
5	78	66	57	51	76	64	56	50	62	55	50	60	54	49	59	53	49	47
6	72	59	51	44	70	58	50	44	57	49	44	55	48	43	53	48	43	41
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	37
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30
10	55	42	34	29	54	41	34	29	40	34	29	40	33	29	39	33	29	27

POLAR GRAPH



Maximum Candela = 1663.873 Located At Horizontal Angle = 22.5, Vertical Angle = 2.5
1 - Vertical Plane Through Horizontal Angles (22.5 - 202.5) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)