



## IES INDOOR REPORT

PHOTOMETRIC FILENAME : 4CSDI-L12-9DWU-L12-9DWD-XXX-DIM-UNV-OM-CSU-RW-WHD-WM-3000K\_.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from UL #13257153.18 7 #13257153.16

[TESTLAB] UL Verification Services Inc.

[ISSUE DATE] 19-APR-2021

[MANUFAC] H E Williams Inc

[LUMCAT] 4CSDI-L12-9DWU-L12-9DWD-xxx-DIM-UNV-OM-CSU-RW-WHD-WM-3000k

[LUMINAIRE] 4" Square Aluminum housing, optics, and trim enclosure

[LAMP] Two white LEDs

[OTHER] This test was performed using the calibrated photodetector met

[MORE] hod of absolute photometry.

[\_ CONVERT] Photometric web converted from original test data

[\_ CONVERT] Luminaire test position and photometric web converted from original test data

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2301
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	49
Total Luminaire Watts	46.6
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)	0.21 ft
Luminous Width (90-270)	0.21 ft
Luminous Height	0.00 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	28281	38492	27672
55	19650	21219	19241
65	15233	14075	15279
75	8769	8089	8845
85	4041	4041	4041

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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>
<b>0.0</b>	1465.001	1465.001	1465.001	1465.001	1465.001	1465.001	1465.001	1465.001	1465.001
<b>2.5</b>	1462.639	1468.937	1461.852	1456.341	1454.767	1456.341	1461.852	1468.937	1462.639
<b>5.0</b>	1448.469	1454.767	1448.469	1442.171	1440.597	1442.171	1448.469	1454.767	1448.469
<b>7.5</b>	1428.002	1433.512	1427.214	1421.704	1418.555	1421.704	1427.214	1433.512	1428.002
<b>10.0</b>	1400.449	1406.747	1400.449	1394.152	1391.790	1394.152	1400.449	1406.747	1400.449
<b>12.5</b>	1362.663	1369.748	1363.450	1357.940	1354.791	1357.940	1363.450	1369.748	1362.663
<b>15.0</b>	1311.494	1319.366	1314.643	1309.133	1304.409	1309.133	1314.643	1319.366	1311.494
<b>17.5</b>	1243.794	1252.453	1250.092	1244.581	1238.284	1244.581	1250.092	1252.453	1243.794
<b>20.0</b>	1153.265	1165.073	1168.222	1160.350	1149.329	1160.350	1168.222	1165.073	1153.265
<b>22.5</b>	1035.183	1052.502	1065.097	1050.140	1032.034	1050.140	1065.097	1052.502	1035.183
<b>25.0</b>	886.400	915.527	941.505	914.740	884.826	914.740	941.505	915.527	886.400
<b>27.5</b>	720.219	759.659	798.232	757.770	716.756	757.770	798.232	759.659	720.219
<b>30.0</b>	557.267	599.383	643.782	592.770	546.561	592.770	643.782	599.383	557.267
<b>32.5</b>	404.548	448.553	495.549	439.421	387.623	439.421	495.549	448.553	404.548
<b>35.0</b>	270.565	321.654	366.132	310.240	257.339	310.240	366.132	321.654	270.565
<b>37.5</b>	179.799	219.868	267.022	211.681	170.431	211.681	267.022	219.868	179.799
<b>40.0</b>	126.269	152.876	196.409	146.264	120.128	146.264	196.409	152.876	126.269
<b>42.5</b>	97.457	112.099	146.106	107.691	93.599	107.691	146.106	112.099	97.457
<b>45.0</b>	80.453	89.112	109.501	86.436	78.721	86.436	109.501	89.112	80.453
<b>47.5</b>	68.881	74.628	85.491	73.368	67.779	73.368	85.491	74.628	68.881
<b>50.0</b>	59.671	64.079	69.511	63.292	58.726	63.292	69.511	64.079	59.671
<b>52.5</b>	51.877	55.577	58.097	54.869	51.012	54.869	58.097	55.577	51.877
<b>55.0</b>	45.343	48.177	48.964	47.548	44.399	47.548	48.964	48.177	45.343
<b>57.5</b>	39.833	41.722	41.328	41.171	39.125	41.171	41.328	41.722	39.833
<b>60.0</b>	35.030	35.976	34.716	35.661	34.637	35.661	34.716	35.976	35.030
<b>62.5</b>	30.307	30.701	29.048	30.622	30.307	30.622	29.048	30.701	30.307
<b>65.0</b>	25.899	25.821	23.931	25.899	25.978	25.899	23.931	25.821	25.899
<b>67.5</b>	21.570	21.255	19.444	21.412	21.648	21.412	19.444	21.255	21.570
<b>70.0</b>	17.398	17.004	15.429	17.240	17.555	17.240	15.429	17.004	17.398
<b>72.5</b>	13.226	12.989	11.729	13.147	13.462	13.147	11.729	12.989	13.226
<b>75.0</b>	9.131	9.210	8.423	9.368	9.210	9.368	8.423	9.210	9.131
<b>77.5</b>	4.644	5.431	5.589	5.510	5.038	5.510	5.589	5.431	4.644
<b>80.0</b>	3.385	3.385	3.464	3.306	3.306	3.306	3.464	3.385	3.385
<b>82.5</b>	2.362	2.362	2.283	2.283	2.283	2.283	2.283	2.362	2.362
<b>85.0</b>	1.417	1.417	1.417	1.417	1.417	1.417	1.417	1.417	1.417
<b>87.5</b>	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630
<b>90.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>92.5</b>	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
<b>95.0</b>	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
<b>97.5</b>	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187
<b>100.0</b>	0.187	0.187	0.187	0.187	0.280	0.187	0.187	0.187	0.187
<b>102.5</b>	0.280	0.280	0.280	0.280	0.373	0.280	0.280	0.280	0.280
<b>105.0</b>	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467
<b>107.5</b>	0.560	0.560	0.560	0.560	0.654	0.560	0.560	0.560	0.560
<b>110.0</b>	0.840	0.747	1.027	0.840	0.840	0.840	1.027	0.747	0.840
<b>112.5</b>	1.120	1.027	3.454	1.120	1.214	1.120	3.454	1.027	1.120
<b>115.0</b>	1.493	4.666	10.920	5.040	1.587	5.040	10.920	4.666	1.493
<b>117.5</b>	10.453	18.479	22.212	18.759	9.706	18.759	22.212	18.479	10.453
<b>120.0</b>	28.092	34.718	34.904	36.024	28.278	36.024	34.904	34.718	28.092
<b>122.5</b>	46.103	49.930	48.530	52.263	47.877	52.263	48.530	49.930	46.103
<b>125.0</b>	64.582	65.422	62.809	68.688	67.289	68.688	62.809	65.422	64.582
<b>127.5</b>	84.554	81.567	77.648	85.674	88.007	85.674	77.648	81.567	84.554
<b>130.0</b>	104.993	99.300	93.420	103.873	109.565	103.873	93.420	99.300	104.993
<b>132.5</b>	125.804	118.992	111.432	124.032	131.871	124.032	111.432	118.992	125.804

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<b>135.0</b>	147.737	141.110	133.084	146.336	154.922	146.336	133.084	141.110	147.737
<b>137.5</b>	172.094	166.962	161.176	172.375	179.934	172.375	161.176	166.962	172.094
<b>140.0</b>	201.493	198.972	198.693	203.919	209.052	203.919	198.693	198.972	201.493
<b>142.5</b>	237.517	239.103	247.129	242.930	244.050	242.930	247.129	239.103	237.517
<b>145.0</b>	282.220	289.406	304.805	291.646	287.540	291.646	304.805	289.406	282.220
<b>147.5</b>	339.803	353.055	370.601	353.615	343.815	353.615	370.601	353.055	339.803
<b>150.0</b>	413.717	430.982	443.955	429.676	415.584	429.676	443.955	430.982	413.717
<b>152.5</b>	503.217	517.963	523.283	515.444	501.445	515.444	523.283	517.963	503.217
<b>155.0</b>	598.504	607.464	609.330	605.037	594.585	605.037	609.330	607.464	598.504
<b>157.5</b>	689.591	696.777	699.017	694.910	685.671	694.910	699.017	696.777	689.591
<b>160.0</b>	779.651	787.024	790.944	786.277	778.065	786.277	790.944	787.024	779.651
<b>162.5</b>	872.417	879.324	884.737	878.671	872.511	878.671	884.737	879.324	872.417
<b>165.0</b>	964.997	969.664	976.197	969.664	964.064	969.664	976.197	969.664	964.997
<b>167.5</b>	1052.725	1055.524	1059.257	1054.591	1051.791	1054.591	1059.257	1055.524	1052.725
<b>170.0</b>	1132.052	1132.985	1132.052	1132.052	1131.119	1132.052	1132.052	1132.985	1132.052
<b>172.5</b>	1197.381	1197.381	1195.514	1195.514	1196.448	1195.514	1195.514	1197.381	1197.381
<b>175.0</b>	1247.777	1248.710	1246.844	1246.844	1247.777	1246.844	1246.844	1248.710	1247.777
<b>177.5</b>	1283.241	1283.241	1280.442	1281.375	1282.308	1281.375	1280.442	1283.241	1283.241
<b>180.0</b>	1293.442	1293.442	1293.442	1293.442	1293.442	1293.442	1293.442	1293.442	1293.442

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Zone	Lumens	%Lamp	%Fixt
0-20	501.93	N.A.	21.80
0-30	911.03	N.A.	39.60
0-40	1118.31	N.A.	48.60
0-60	1236.19	N.A.	53.70
0-80	1271.32	N.A.	55.30
0-90	1272.97	N.A.	55.30
10-90	1136.33	N.A.	49.40
20-40	616.38	N.A.	26.80
20-50	691.23	N.A.	30.00
40-70	143.21	N.A.	6.20
60-80	35.13	N.A.	1.50
70-80	9.80	N.A.	0.40
80-90	1.65	N.A.	0.10
90-110	0.62	N.A.	0.00
90-120	10.78	N.A.	0.50
90-130	69.67	N.A.	3.00
90-150	368.32	N.A.	16.00
90-180	1027.84	N.A.	44.70
110-180	1027.23	N.A.	44.60
0-180	2300.81	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	136.63
10-20	365.30
20-30	409.10
30-40	207.27
40-50	74.85
50-60	43.04
60-70	25.33
70-80	9.80
80-90	1.65
90-100	0.13
100-110	0.49
110-120	10.16
120-130	58.89
130-140	112.07
140-150	186.58
150-160	275.39
160-170	268.73
170-180	115.40

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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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61	55
1	101	98	95	92	94	91	89	86	79	77	76	68	67	66	58	57	56	51
2	95	89	84	80	88	83	79	75	73	70	67	63	61	59	54	53	52	47
3	88	81	75	70	82	76	71	67	67	63	60	59	56	54	51	49	47	44
4	83	74	67	63	77	70	64	60	62	58	54	54	51	49	48	46	44	41
5	77	68	61	56	72	64	58	54	57	53	49	51	48	45	45	43	41	38
6	73	63	56	51	68	59	53	49	53	49	45	48	44	42	42	40	38	35
7	68	58	51	47	64	55	49	45	50	45	42	45	41	39	40	37	35	33
8	64	54	47	43	60	51	46	41	47	42	39	42	39	36	38	35	33	31
9	61	50	44	40	57	48	42	38	44	39	36	40	36	34	36	33	31	29
10	57	47	41	37	54	45	39	36	41	37	34	38	34	31	34	31	29	28

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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	13.7	14.4	14.6	15.3	16.5	13.6	14.3	14.6	15.2	16.5
	3H	14.8	15.4	15.7	16.3	17.6	14.7	15.3	15.7	16.3	17.5
	4H	15.0	15.6	16.0	16.5	17.8	15.0	15.5	15.9	16.5	17.7
	6H	15.0	15.5	16.0	16.5	17.7	15.0	15.5	16.0	16.5	17.7
	8H	15.0	15.5	16.0	16.4	17.7	14.9	15.4	15.9	16.4	17.7
	12H	14.9	15.4	15.9	16.4	17.6	14.9	15.4	15.9	16.3	17.6

### UGR Viewed Endwise

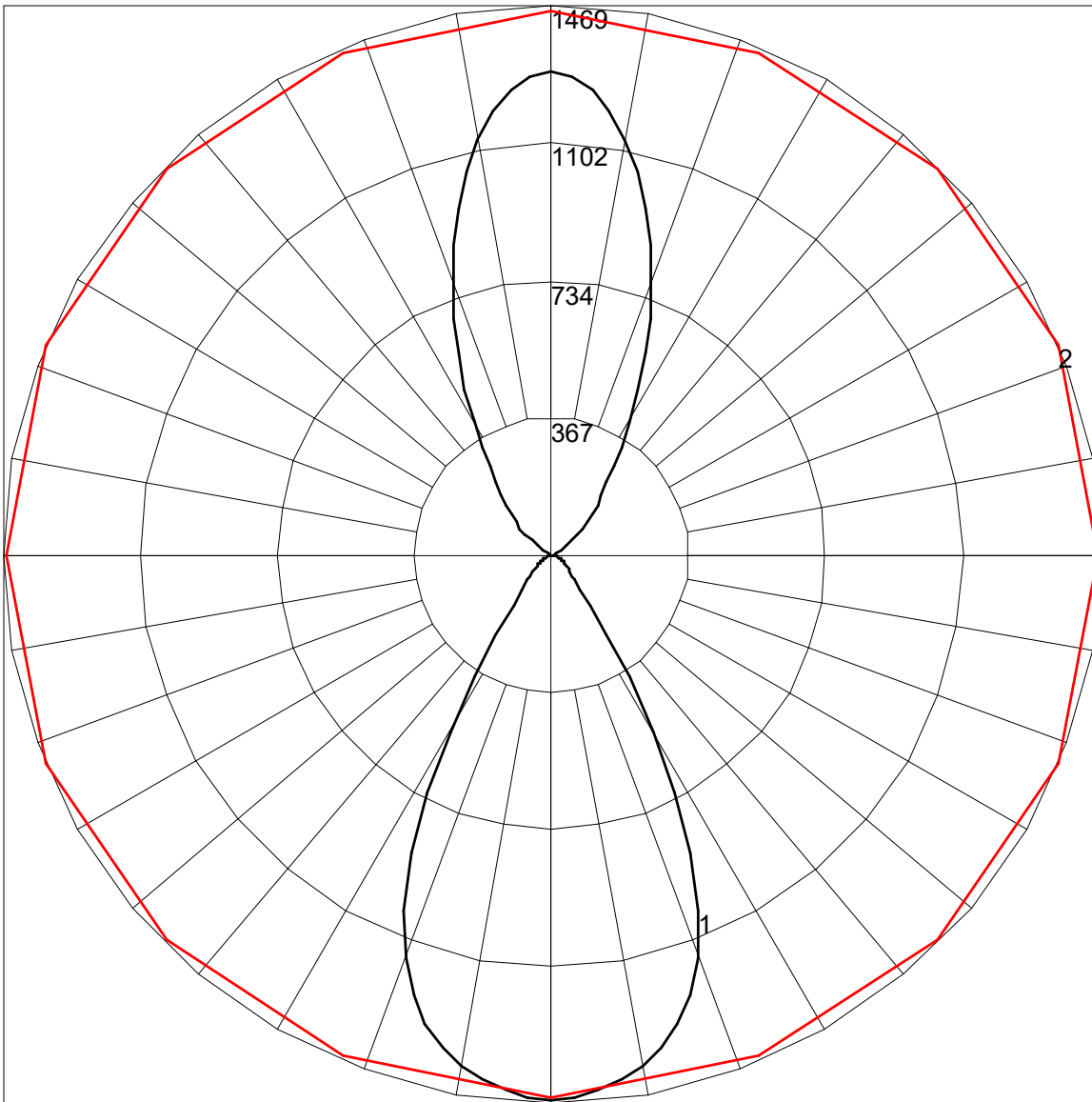
4H	2H	13.9	14.5	14.9	15.5	16.7	13.9	14.4	14.8	15.4	16.6
	3H	15.1	15.6	16.1	16.6	17.9	15.1	15.6	16.1	16.6	17.8
	4H	15.4	15.9	16.4	16.9	18.1	15.4	15.9	16.4	16.8	18.1
	6H	15.5	15.9	16.5	16.9	18.1	15.5	15.9	16.5	16.9	18.1
	8H	15.5	15.8	16.5	16.8	18.1	15.5	15.8	16.5	16.8	18.1
	12H	15.4	15.8	16.5	16.8	18.1	15.4	15.7	16.4	16.7	18.0
8H	4H	15.4	15.8	16.4	16.8	18.1	15.4	15.8	16.4	16.8	18.1
	6H	15.5	15.8	16.5	16.8	18.1	15.5	15.8	16.5	16.8	18.1
	8H	15.5	15.8	16.6	16.8	18.1	15.5	15.8	16.6	16.8	18.1
	12H	15.5	15.7	16.6	16.8	18.1	15.5	15.7	16.5	16.7	18.1
12H	4H	15.4	15.7	16.4	16.7	18.0	15.4	15.7	16.4	16.7	18.0
	6H	15.5	15.7	16.5	16.7	18.1	15.5	15.7	16.5	16.7	18.0
	8H	15.5	15.7	16.5	16.7	18.1	15.5	15.7	16.5	16.7	18.1

Maximum UGR = 18.1

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## POLAR GRAPH



Maximum Candela = 1468.937 Located At Horizontal Angle = 22.5, Vertical Angle = 2.5

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

# 2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)