



## IES INDOOR REPORT

PHOTOMETRIC FILENAME : 4CSDI-L12-9DWU-L12-9DWD-XXX-DIM-UNV-LM-WHU-LW-WHD-WM-3000K\_.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from UL #13257153.19 & #13257153.14

[TESTLAB] UL Verification Services Inc.

[ISSUE DATE] 19-APR-2021

[MANUFAC] H E Williams Inc

[LUMCAT] 4CSDI-L12-9DWU-L12-9DWD-xxx-DIM-UNV-LM-WHU-LW-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	2705
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	58
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	30194	37168	30719
55	24429	26442	24838
65	21347	21671	21579
75	16785	16483	17390
85	10104	8755	10777

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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>	1458.078	1458.078	1458.078	1458.078	1458.078	1458.078	1458.078	1458.078	1458.078
<b>2.5</b>	1484.059	1462.802	1450.205	1446.269	1444.694	1446.269	1450.205	1462.802	1484.059
<b>5.0</b>	1471.462	1450.205	1438.396	1434.459	1432.885	1434.459	1438.396	1450.205	1471.462
<b>7.5</b>	1450.205	1428.948	1418.713	1415.564	1417.139	1415.564	1418.713	1428.948	1450.205
<b>10.0</b>	1422.650	1402.180	1394.307	1391.945	1391.158	1391.945	1394.307	1402.180	1422.650
<b>12.5</b>	1384.072	1365.964	1359.666	1358.091	1355.729	1358.091	1359.666	1365.964	1384.072
<b>15.0</b>	1330.536	1314.790	1312.428	1309.279	1304.555	1309.279	1312.428	1314.790	1330.536
<b>17.5</b>	1258.892	1246.295	1245.507	1240.784	1232.123	1240.784	1245.507	1246.295	1258.892
<b>20.0</b>	1158.117	1154.968	1161.266	1150.244	1128.987	1150.244	1161.266	1154.968	1158.117
<b>22.5</b>	1015.616	1032.937	1054.194	1027.426	988.061	1027.426	1054.194	1032.937	1015.616
<b>25.0</b>	838.474	877.051	925.864	874.689	817.217	874.689	925.864	877.051	838.474
<b>27.5</b>	643.460	700.382	774.702	701.247	635.665	701.247	774.702	700.382	643.460
<b>30.0</b>	460.570	525.601	612.755	532.057	462.538	532.057	612.755	525.601	460.570
<b>32.5</b>	312.401	372.156	458.916	382.942	320.745	382.942	458.916	372.156	312.401
<b>35.0</b>	212.020	257.998	329.878	269.729	222.255	269.729	329.878	257.998	212.020
<b>37.5</b>	152.106	182.968	235.088	192.416	160.688	192.416	235.088	182.968	152.106
<b>40.0</b>	118.174	137.147	171.080	143.839	123.921	143.839	171.080	137.147	118.174
<b>42.5</b>	98.492	110.143	130.692	114.709	101.562	114.709	130.692	110.143	98.492
<b>45.0</b>	85.895	93.846	105.734	96.444	87.390	96.444	105.734	93.846	85.895
<b>47.5</b>	76.368	82.430	89.358	83.847	77.155	83.847	89.358	82.430	76.368
<b>50.0</b>	68.574	73.455	77.706	74.243	69.282	74.243	77.706	73.455	68.574
<b>52.5</b>	61.960	65.976	68.495	66.841	62.905	66.841	68.495	65.976	61.960
<b>55.0</b>	56.371	59.598	61.016	60.465	57.316	60.465	61.016	59.598	56.371
<b>57.5</b>	51.411	53.851	54.324	54.560	52.276	54.560	54.324	53.851	51.411
<b>60.0</b>	46.765	48.340	48.262	48.970	47.238	48.970	48.262	48.340	46.765
<b>62.5</b>	41.727	43.144	42.514	43.301	41.884	43.301	42.514	43.144	41.727
<b>65.0</b>	36.295	37.633	36.846	37.711	36.689	37.711	36.846	37.633	36.295
<b>67.5</b>	31.335	32.200	31.413	32.437	31.806	32.437	31.413	32.200	31.335
<b>70.0</b>	26.532	27.083	26.375	27.398	27.083	27.398	26.375	27.083	26.532
<b>72.5</b>	21.887	22.202	21.651	22.517	22.517	22.517	21.651	22.202	21.887
<b>75.0</b>	17.478	17.714	17.163	17.951	18.108	17.951	17.163	17.714	17.478
<b>77.5</b>	13.463	13.541	13.070	13.699	14.014	13.699	13.070	13.541	13.463
<b>80.0</b>	9.762	9.762	9.368	9.841	10.235	9.841	9.368	9.762	9.762
<b>82.5</b>	6.456	6.298	5.984	6.378	6.849	6.378	5.984	6.298	6.456
<b>85.0</b>	3.543	3.306	3.070	3.386	3.779	3.386	3.070	3.306	3.543
<b>87.5</b>	0.551	0.708	0.708	0.551	0.551	0.551	0.708	0.708	0.551
<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>	0.714	0.983	1.072	1.161	1.250	1.161	1.072	0.983	0.714
<b>95.0</b>	4.019	3.752	3.573	3.930	4.287	3.930	3.573	3.752	4.019
<b>97.5</b>	7.325	7.056	6.878	7.325	7.682	7.325	6.878	7.056	7.325
<b>100.0</b>	11.165	10.986	10.719	11.255	11.612	11.255	10.719	10.986	11.165
<b>102.5</b>	15.452	15.364	15.006	15.631	15.810	15.631	15.006	15.364	15.452
<b>105.0</b>	20.187	20.187	19.740	20.544	20.634	20.544	19.740	20.187	20.187
<b>107.5</b>	25.367	25.367	24.831	25.903	25.724	25.903	24.831	25.367	25.367
<b>110.0</b>	30.995	31.084	30.549	31.620	31.173	31.620	30.549	31.084	30.995
<b>112.5</b>	36.890	37.248	36.712	37.694	36.979	37.694	36.712	37.248	36.890
<b>115.0</b>	43.142	44.035	43.411	44.215	43.142	44.215	43.411	44.035	43.142
<b>117.5</b>	49.753	51.003	50.557	51.450	49.753	51.450	50.557	51.003	49.753
<b>120.0</b>	56.452	57.880	58.239	58.863	56.630	58.863	58.239	57.880	56.452
<b>122.5</b>	62.615	65.205	66.635	66.545	63.776	66.545	66.635	65.205	62.615
<b>125.0</b>	69.582	73.601	76.281	75.120	71.011	75.120	76.281	73.601	69.582
<b>127.5</b>	78.067	83.337	87.536	85.035	79.586	85.035	87.536	83.337	78.067
<b>130.0</b>	88.697	95.485	100.755	96.915	90.036	96.915	100.755	95.485	88.697
<b>132.5</b>	102.184	110.223	116.208	111.474	103.167	111.474	116.208	110.223	102.184

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<b>135.0</b>	118.352	127.284	133.269	128.267	118.888	128.267	133.269	127.284	118.352
<b>137.5</b>	137.199	146.131	153.098	147.025	137.467	147.025	153.098	146.131	137.199
<b>140.0</b>	158.637	167.033	178.108	168.372	158.637	168.372	178.108	167.033	158.637
<b>142.5</b>	181.503	191.150	211.068	194.008	181.503	194.008	211.068	191.150	181.503
<b>145.0</b>	207.228	222.055	257.516	226.521	209.461	226.521	257.516	222.055	207.228
<b>147.5</b>	242.510	266.359	320.399	270.646	246.529	270.646	320.399	266.359	242.510
<b>150.0</b>	295.567	331.207	395.072	332.993	297.533	332.993	395.072	331.207	295.567
<b>152.5</b>	374.081	413.473	478.500	416.152	372.206	416.152	478.500	413.473	374.081
<b>155.0</b>	475.015	515.300	581.577	522.982	478.053	522.982	581.577	515.300	475.015
<b>157.5</b>	614.180	661.164	731.549	680.010	632.134	680.010	731.549	661.164	614.180
<b>160.0</b>	850.795	905.728	982.545	937.884	886.256	937.884	982.545	905.728	850.795
<b>162.5</b>	1256.764	1307.678	1378.243	1339.834	1289.813	1339.834	1378.243	1307.678	1256.764
<b>165.0</b>	1814.135	1848.971	1898.991	1864.156	1822.174	1864.156	1898.991	1848.971	1814.135
<b>167.5</b>	2397.410	2410.808	2434.032	2407.235	2378.652	2407.235	2434.032	2410.808	2397.410
<b>170.0</b>	2859.206	2852.953	2860.992	2850.273	2836.875	2850.273	2860.992	2852.953	2859.206
<b>172.5</b>	3156.650	3145.038	3149.504	3151.290	3150.397	3151.290	3149.504	3145.038	3156.650
<b>175.0</b>	3356.731	3346.012	3352.265	3359.410	3362.983	3359.410	3352.265	3346.012	3356.731
<b>177.5</b>	3497.860	3484.461	3487.141	3496.967	3501.433	3496.967	3487.141	3484.461	3497.860
<b>180.0</b>	3541.754	3541.754	3541.754	3541.754	3541.754	3541.754	3541.754	3541.754	3541.754

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Zone	Lumens	%Lamp	%Fixt
0-20	501.17	N.A.	18.50
0-30	892.09	N.A.	33.00
0-40	1072.85	N.A.	39.70
0-60	1203.4	N.A.	44.50
0-80	1259.19	N.A.	46.60
0-90	1263.32	N.A.	46.70
10-90	1126.95	N.A.	41.70
20-40	571.68	N.A.	21.10
20-50	648.64	N.A.	24.00
40-70	167.46	N.A.	6.20
60-80	55.79	N.A.	2.10
70-80	18.88	N.A.	0.70
80-90	4.13	N.A.	0.20
90-110	26.44	N.A.	1.00
90-120	69.95	N.A.	2.60
90-130	136.84	N.A.	5.10
90-150	383.20	N.A.	14.20
90-180	1441.54	N.A.	53.30
110-180	1415.1	N.A.	52.30
0-180	2704.86	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	136.37
10-20	364.80
20-30	390.92
30-40	180.76
40-50	76.95
50-60	53.60
60-70	36.91
70-80	18.88
80-90	4.13
90-100	4.79
100-110	21.64
110-120	43.51
120-130	66.89
130-140	98.90
140-150	147.46
150-160	252.82
160-170	500.89
170-180	304.63

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## COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC RW	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	106	106	106	106	98	98	98	98	81	81	81	67	67	67	53	53	53	47
1	99	95	92	89	91	88	85	83	74	72	71	61	60	59	50	49	48	43
2	92	86	81	76	85	79	75	72	68	65	62	57	55	53	46	45	44	40
3	85	78	71	67	79	72	67	63	62	58	55	52	50	48	43	42	40	36
4	79	70	64	59	73	66	60	56	57	53	49	48	46	43	41	39	37	34
5	74	64	58	53	69	60	54	50	52	48	45	45	42	40	38	36	34	31
6	69	59	52	47	64	56	50	45	49	44	41	42	39	36	36	34	32	29
7	65	55	48	43	60	51	45	41	45	41	37	39	36	34	34	32	30	27
8	61	51	44	39	57	48	42	38	42	38	34	37	34	31	32	30	28	26
9	58	47	41	36	54	44	39	35	40	35	32	35	32	29	30	28	26	24
10	54	44	38	33	51	42	36	32	37	33	30	33	30	27	29	27	25	23

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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	14.7	15.3	15.7	16.3	17.7	14.7	15.4	15.8	16.4	17.8
	3H	16.1	16.7	17.1	17.7	19.1	16.2	16.8	17.2	17.8	19.2
	4H	16.6	17.1	17.6	18.1	19.5	16.7	17.2	17.7	18.3	19.6
	6H	16.8	17.4	17.9	18.4	19.8	17.0	17.5	18.0	18.5	19.9
	8H	16.9	17.4	18.0	18.4	19.8	17.0	17.5	18.1	18.6	19.9
	12H	16.9	17.4	18.0	18.4	19.8	17.1	17.5	18.1	18.6	20.0

### UGR Viewed Endwise

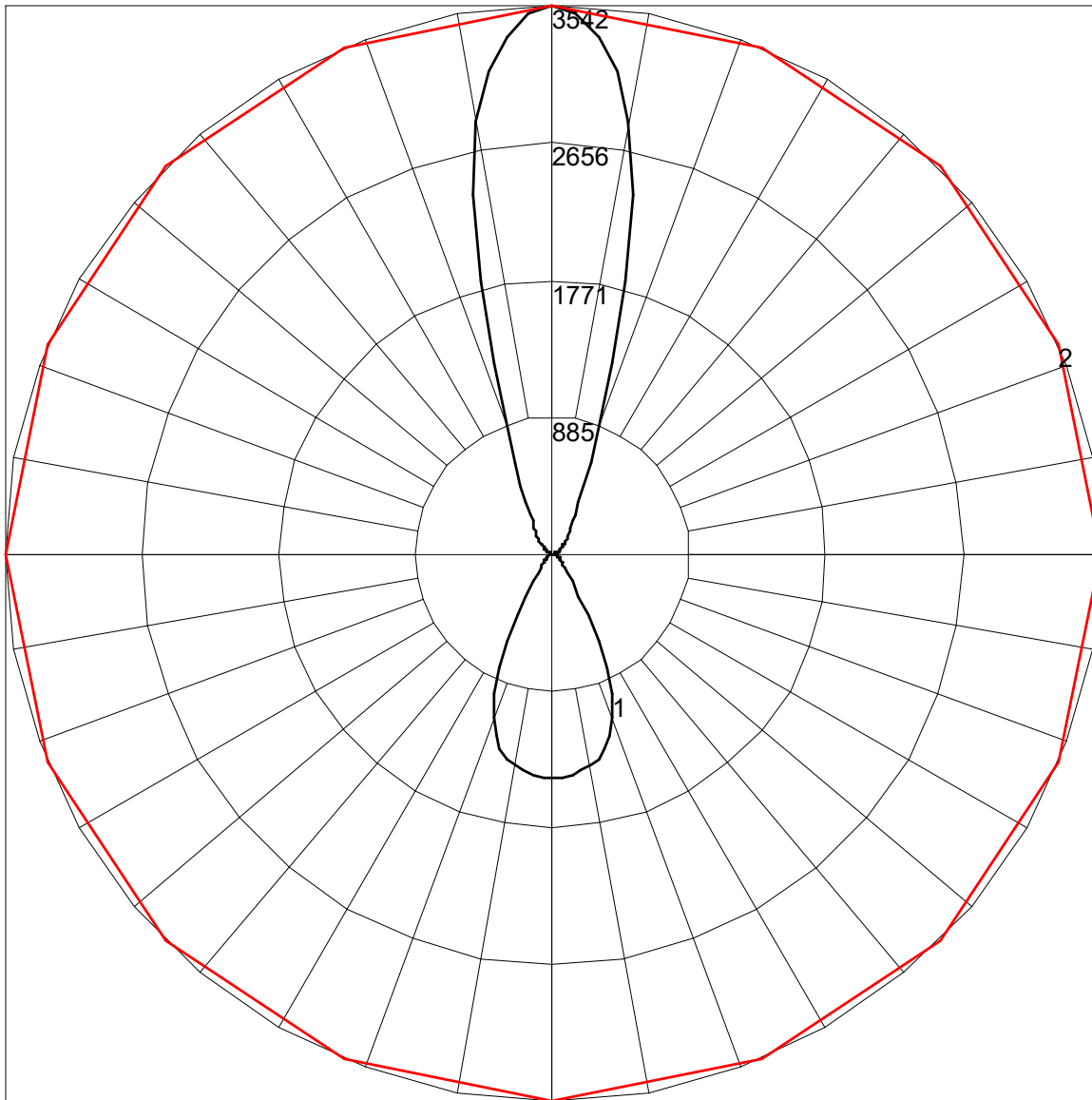
4H	2H	15.1	15.7	16.1	16.7	18.0	15.2	15.7	16.2	16.7	18.1
	3H	16.7	17.2	17.8	18.2	19.6	16.8	17.3	17.8	18.3	19.7
	4H	17.3	17.7	18.3	18.8	20.2	17.4	17.8	18.4	18.8	20.2
	6H	17.7	18.1	18.8	19.1	20.5	17.8	18.2	18.9	19.2	20.6
	8H	17.8	18.1	18.8	19.2	20.6	17.9	18.2	19.0	19.3	20.7
	12H	17.8	18.1	18.9	19.2	20.6	17.9	18.2	19.0	19.3	20.7
8H	4H	17.4	17.8	18.5	18.8	20.2	17.5	17.9	18.6	18.9	20.3
	6H	17.9	18.2	19.0	19.3	20.7	18.0	18.3	19.1	19.4	20.8
	8H	18.1	18.3	19.2	19.4	20.8	18.2	18.4	19.3	19.5	20.9
	12H	18.2	18.4	19.3	19.5	20.9	18.3	18.5	19.4	19.6	21.0
12H	4H	17.4	17.7	18.5	18.8	20.2	17.5	17.8	18.6	18.9	20.3
	6H	17.9	18.2	19.0	19.3	20.7	18.0	18.3	19.1	19.3	20.8
	8H	18.1	18.3	19.2	19.4	20.9	18.2	18.4	19.3	19.5	21.0

Maximum UGR = 21.0

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## POLAR GRAPH



Maximum Candela = 3541.754 Located At Horizontal Angle = 0, Vertical Angle = 180

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

# 2 - Horizontal Cone Through Vertical Angle (180) (Through Max. Cd.)