



IES INDOOR REPORT

PHOTOMETRIC FILENAME : 4CSDI-L12-9DWU-L12-9DWD-XXX-DIM-UNV-LM-WHU-LM-WHU-WM-3000K_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from UL #13257153.19

[TESTLAB] UL Verification Services Inc.

[ISSUE DATE] 21-APR-2021

[MANUFAC] H E Williams Inc

[LUMCAT] 4CSDI-L12/9DWU-L12-9DWD-xxx-DIM-UNV-LM-WHU-LM-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	2708
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	36565	41173	36730
55	26502	29053	27046
65	22301	22440	22301
75	17039	16662	17416
85	10076	8955	10746

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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>
0.0	3113.485	3113.485	3113.485	3113.485	3113.485	3113.485	3113.485	3113.485	3113.485
2.5	3074.232	3062.457	3064.812	3073.447	3077.372	3073.447	3064.812	3062.457	3074.232
5.0	2950.195	2940.775	2946.270	2952.550	2955.691	2952.550	2946.270	2940.775	2950.195
7.5	2774.345	2764.140	2768.065	2769.635	2768.850	2769.635	2768.065	2764.140	2774.345
10.0	2512.926	2507.431	2514.496	2505.075	2493.300	2505.075	2514.496	2507.431	2512.926
12.5	2107.058	2118.834	2139.245	2115.694	2090.572	2115.694	2139.245	2118.834	2107.058
15.0	1594.424	1625.041	1669.004	1638.387	1601.490	1638.387	1669.004	1625.041	1594.424
17.5	1104.557	1149.304	1211.323	1177.566	1133.604	1177.566	1211.323	1149.304	1104.557
20.0	747.754	796.035	863.548	824.296	778.920	824.296	863.548	796.035	747.754
22.5	539.797	581.089	642.951	597.654	555.575	597.654	642.951	581.089	539.797
25.0	417.487	452.891	511.143	459.643	420.155	459.643	511.143	452.891	417.487
27.5	328.777	363.396	420.548	365.752	327.128	365.752	420.548	363.396	328.777
30.0	259.771	291.095	347.225	292.665	261.499	292.665	347.225	291.095	259.771
32.5	213.139	234.100	281.595	237.868	216.672	237.868	281.595	234.100	213.139
35.0	182.130	195.162	226.328	199.088	184.093	199.088	226.328	195.162	182.130
37.5	159.521	167.999	185.506	170.511	159.521	170.511	185.506	167.999	159.521
40.0	139.424	146.803	156.537	147.981	139.424	147.981	156.537	146.803	139.424
42.5	120.583	128.434	134.556	129.219	120.818	129.219	134.556	128.434	120.583
45.0	104.018	111.869	117.128	112.733	104.490	112.733	117.128	111.869	104.018
47.5	89.809	96.874	102.135	97.974	90.673	97.974	102.135	96.874	89.809
50.0	77.955	83.921	88.553	85.177	79.133	85.177	88.553	83.921	77.955
52.5	68.612	73.245	76.934	74.736	69.948	74.736	76.934	73.245	68.612
55.0	61.155	64.687	67.042	66.023	62.411	66.023	67.042	64.687	61.155
57.5	55.032	57.308	58.565	58.486	56.052	58.486	58.565	57.308	55.032
60.0	49.615	50.871	51.185	51.734	49.771	51.734	51.185	50.871	49.615
62.5	43.727	44.826	44.434	45.219	43.727	45.219	44.434	44.826	43.727
65.0	37.918	38.703	38.154	38.860	37.918	38.860	38.154	38.703	37.918
67.5	32.423	32.736	32.266	33.129	32.500	33.129	32.266	32.736	32.423
70.0	27.241	27.320	26.848	27.790	27.398	27.790	26.848	27.320	27.241
72.5	22.295	22.295	21.824	22.766	22.609	22.766	21.824	22.295	22.295
75.0	17.742	17.742	17.350	18.056	18.135	18.056	17.350	17.742	17.742
77.5	13.581	13.503	13.189	13.738	13.895	13.738	13.189	13.503	13.581
80.0	9.813	9.656	9.421	9.892	10.206	9.892	9.421	9.656	9.813
82.5	6.437	6.201	6.045	6.437	6.752	6.437	6.045	6.201	6.437
85.0	3.533	3.297	3.140	3.454	3.768	3.454	3.140	3.297	3.533
87.5	0.628	0.864	0.942	1.021	1.099	1.021	0.942	0.864	0.628
90.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
92.5	0.714	0.983	1.072	1.161	1.250	1.161	1.072	0.983	0.714
95.0	4.019	3.752	3.573	3.930	4.287	3.930	3.573	3.752	4.019
97.5	7.325	7.056	6.878	7.325	7.682	7.325	6.878	7.056	7.325
100.0	11.165	10.986	10.719	11.255	11.612	11.255	10.719	10.986	11.165
102.5	15.452	15.364	15.006	15.631	15.810	15.631	15.006	15.364	15.452
105.0	20.187	20.187	19.740	20.544	20.634	20.544	19.740	20.187	20.187
107.5	25.367	25.367	24.831	25.903	25.724	25.903	24.831	25.367	25.367
110.0	30.995	31.084	30.549	31.620	31.173	31.620	30.549	31.084	30.995
112.5	36.890	37.248	36.712	37.694	36.979	37.694	36.712	37.248	36.890
115.0	43.142	44.035	43.411	44.215	43.142	44.215	43.411	44.035	43.142
117.5	49.753	51.003	50.557	51.450	49.753	51.450	50.557	51.003	49.753
120.0	56.452	57.880	58.239	58.863	56.630	58.863	58.239	57.880	56.452
122.5	62.615	65.205	66.635	66.545	63.776	66.545	66.635	65.205	62.615
125.0	69.582	73.601	76.281	75.120	71.011	75.120	76.281	73.601	69.582
127.5	78.067	83.337	87.536	85.035	79.586	85.035	87.536	83.337	78.067
130.0	88.697	95.485	100.755	96.915	90.036	96.915	100.755	95.485	88.697
132.5	102.184	110.223	116.208	111.474	103.167	111.474	116.208	110.223	102.184

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135.0	118.352	127.284	133.269	128.267	118.888	128.267	133.269	127.284	118.352
137.5	137.199	146.131	153.098	147.025	137.467	147.025	153.098	146.131	137.199
140.0	158.637	167.033	178.108	168.372	158.637	168.372	178.108	167.033	158.637
142.5	181.503	191.150	211.068	194.008	181.503	194.008	211.068	191.150	181.503
145.0	207.228	222.055	257.516	226.521	209.461	226.521	257.516	222.055	207.228
147.5	242.510	266.359	320.399	270.646	246.529	270.646	320.399	266.359	242.510
150.0	295.567	331.207	395.072	332.993	297.533	332.993	395.072	331.207	295.567
152.5	374.081	413.473	478.500	416.152	372.206	416.152	478.500	413.473	374.081
155.0	475.015	515.300	581.577	522.982	478.053	522.982	581.577	515.300	475.015
157.5	614.180	661.164	731.549	680.010	632.134	680.010	731.549	661.164	614.180
160.0	850.795	905.728	982.545	937.884	886.256	937.884	982.545	905.728	850.795
162.5	1256.764	1307.678	1378.243	1339.834	1289.813	1339.834	1378.243	1307.678	1256.764
165.0	1814.135	1848.971	1898.991	1864.156	1822.174	1864.156	1898.991	1848.971	1814.135
167.5	2397.410	2410.808	2434.032	2407.235	2378.652	2407.235	2434.032	2410.808	2397.410
170.0	2859.206	2852.953	2860.992	2850.273	2836.875	2850.273	2860.992	2852.953	2859.206
172.5	3156.650	3145.038	3149.504	3151.290	3150.397	3151.290	3149.504	3145.038	3156.650
175.0	3356.731	3346.012	3352.265	3359.410	3362.983	3359.410	3352.265	3346.012	3356.731
177.5	3497.860	3484.461	3487.141	3496.967	3501.433	3496.967	3487.141	3484.461	3497.860
180.0	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	707.97	N.A.	26.10
0-30	930.17	N.A.	34.30
0-40	1059.77	N.A.	39.10
0-60	1205.48	N.A.	44.50
0-80	1262.74	N.A.	46.60
0-90	1266.95	N.A.	46.80
10-90	999.21	N.A.	36.90
20-40	351.80	N.A.	13.00
20-50	438.72	N.A.	16.20
40-70	183.95	N.A.	6.80
60-80	57.26	N.A.	2.10
70-80	19.02	N.A.	0.70
80-90	4.21	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.	14.10
90-180	1441.54	N.A.	53.20
110-180	1415.1	N.A.	52.20
0-180	2708.49	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	267.74
10-20	440.23
20-30	222.20
30-40	129.60
40-50	86.92
50-60	58.79
60-70	38.24
70-80	19.02
80-90	4.21
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	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	106	106	106	106	98	98	98	98	82	82	82	67	67	67	53	53	53	47
1	99	96	92	90	91	88	86	83	74	73	71	62	61	60	50	49	49	43
2	92	86	81	77	85	80	76	72	68	65	63	57	55	54	47	46	45	40
3	86	78	73	68	79	73	68	64	63	59	56	53	51	49	44	43	42	38
4	80	72	65	61	74	67	62	57	58	54	51	50	47	45	42	40	39	35
5	75	66	59	55	70	62	56	52	54	50	47	47	44	41	40	38	36	33
6	71	61	54	50	66	57	52	47	50	46	43	44	41	39	38	36	34	32
7	67	57	50	46	62	54	48	44	47	43	40	42	39	36	36	34	33	30
8	63	53	47	42	59	50	45	41	45	40	37	40	36	34	35	33	31	29
9	60	50	44	39	56	47	42	38	42	38	35	38	34	32	33	31	29	28
10	57	47	41	37	53	45	39	36	40	36	33	36	33	31	32	30	28	26

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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	15.1	15.7	16.1	16.7	18.1	15.2	15.9	16.2	16.9	18.2
	3H	16.4	17.0	17.4	18.0	19.4	16.5	17.1	17.5	18.1	19.5
	4H	16.8	17.4	17.9	18.4	19.8	16.9	17.5	18.0	18.5	19.9
	6H	17.1	17.6	18.1	18.6	20.0	17.2	17.7	18.2	18.7	20.1
	8H	17.1	17.6	18.2	18.7	20.0	17.3	17.8	18.3	18.8	20.2
	12H	17.1	17.6	18.2	18.6	20.0	17.3	17.7	18.3	18.8	20.2

UGR Viewed Endwise

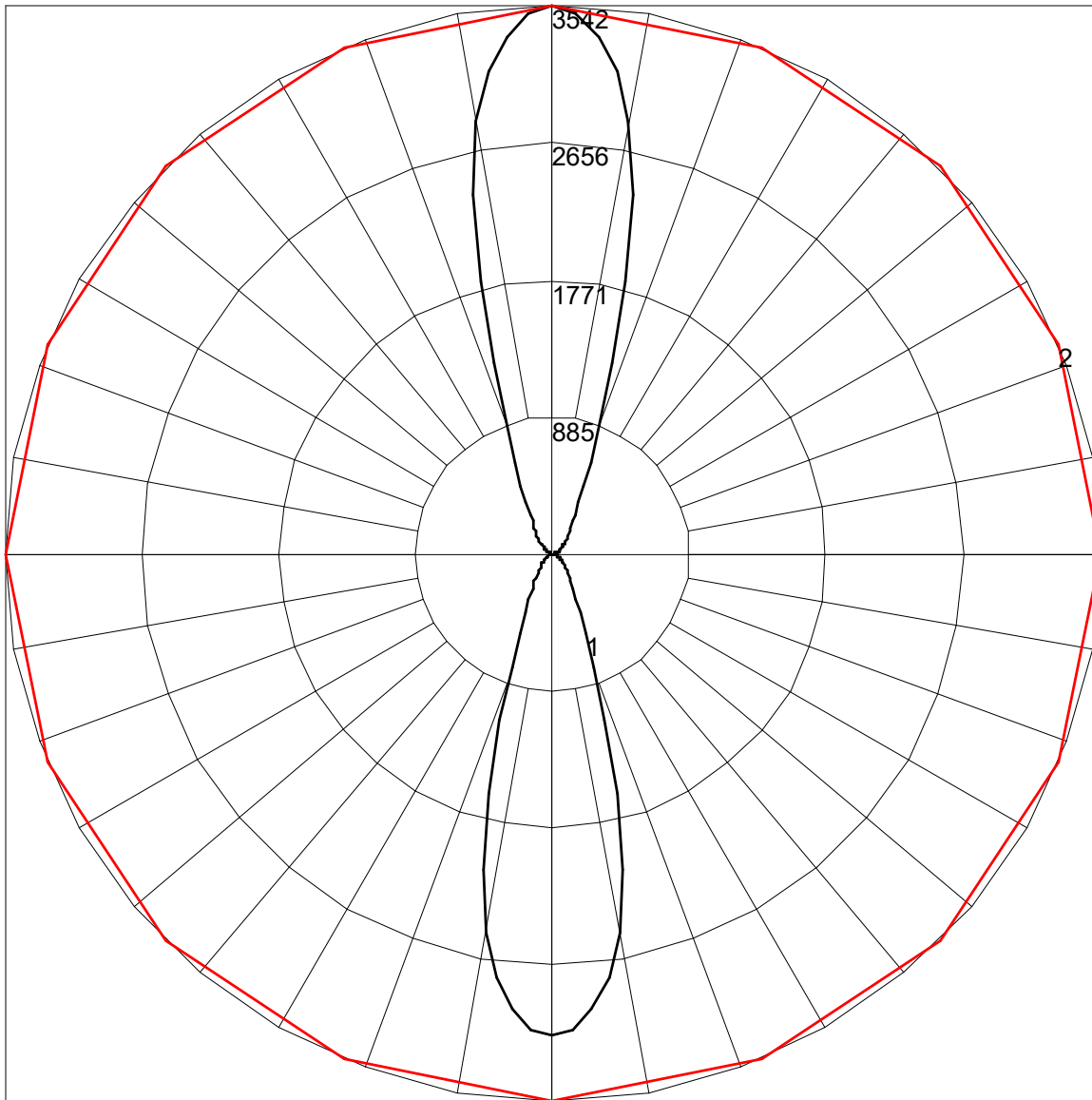
4H	2H	15.4	16.0	16.5	17.0	18.4	15.6	16.1	16.6	17.1	18.5
	3H	17.0	17.4	18.0	18.5	19.9	17.1	17.5	18.1	18.6	20.0
	4H	17.5	17.9	18.6	19.0	20.4	17.6	18.0	18.7	19.1	20.5
	6H	17.9	18.2	18.9	19.3	20.7	18.0	18.3	19.0	19.4	20.8
	8H	17.9	18.3	19.0	19.4	20.8	18.1	18.4	19.1	19.5	20.9
	12H	18.0	18.3	19.1	19.4	20.8	18.1	18.4	19.2	19.5	20.9
8H	4H	17.6	18.0	18.7	19.0	20.4	17.7	18.1	18.8	19.1	20.5
	6H	18.1	18.4	19.2	19.5	20.9	18.2	18.5	19.3	19.6	21.0
	8H	18.2	18.5	19.3	19.6	21.0	18.3	18.6	19.4	19.7	21.1
	12H	18.3	18.5	19.4	19.6	21.1	18.4	18.6	19.5	19.7	21.2
12H	4H	17.6	17.9	18.7	19.0	20.4	17.7	18.0	18.8	19.1	20.5
	6H	18.1	18.3	19.2	19.4	20.8	18.2	18.4	19.3	19.5	20.9
	8H	18.3	18.5	19.4	19.5	21.0	18.4	18.6	19.5	19.7	21.1

Maximum UGR = 21.2

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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.)