



## IES INDOOR REPORT

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

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from UL #13257153.18 & #13257153.19

[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-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	2295
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	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	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
95.0	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
97.5	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187
100.0	0.187	0.187	0.187	0.187	0.280	0.187	0.187	0.187	0.187
102.5	0.280	0.280	0.280	0.280	0.373	0.280	0.280	0.280	0.280
105.0	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467
107.5	0.560	0.560	0.560	0.560	0.654	0.560	0.560	0.560	0.560
110.0	0.840	0.747	1.027	0.840	0.840	0.840	1.027	0.747	0.840
112.5	1.120	1.027	3.454	1.120	1.214	1.120	3.454	1.027	1.120
115.0	1.493	4.666	10.920	5.040	1.587	5.040	10.920	4.666	1.493
117.5	10.453	18.479	22.212	18.759	9.706	18.759	22.212	18.479	10.453
120.0	28.092	34.718	34.904	36.024	28.278	36.024	34.904	34.718	28.092
122.5	46.103	49.930	48.530	52.263	47.877	52.263	48.530	49.930	46.103
125.0	64.582	65.422	62.809	68.688	67.289	68.688	62.809	65.422	64.582
127.5	84.554	81.567	77.648	85.674	88.007	85.674	77.648	81.567	84.554
130.0	104.993	99.300	93.420	103.873	109.565	103.873	93.420	99.300	104.993
132.5	125.804	118.992	111.432	124.032	131.871	124.032	111.432	118.992	125.804

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135.0	147.737	141.110	133.084	146.336	154.922	146.336	133.084	141.110	147.737
137.5	172.094	166.962	161.176	172.375	179.934	172.375	161.176	166.962	172.094
140.0	201.493	198.972	198.693	203.919	209.052	203.919	198.693	198.972	201.493
142.5	237.517	239.103	247.129	242.930	244.050	242.930	247.129	239.103	237.517
145.0	282.220	289.406	304.805	291.646	287.540	291.646	304.805	289.406	282.220
147.5	339.803	353.055	370.601	353.615	343.815	353.615	370.601	353.055	339.803
150.0	413.717	430.982	443.955	429.676	415.584	429.676	443.955	430.982	413.717
152.5	503.217	517.963	523.283	515.444	501.445	515.444	523.283	517.963	503.217
155.0	598.504	607.464	609.330	605.037	594.585	605.037	609.330	607.464	598.504
157.5	689.591	696.777	699.017	694.910	685.671	694.910	699.017	696.777	689.591
160.0	779.651	787.024	790.944	786.277	778.065	786.277	790.944	787.024	779.651
162.5	872.417	879.324	884.737	878.671	872.511	878.671	884.737	879.324	872.417
165.0	964.997	969.664	976.197	969.664	964.064	969.664	976.197	969.664	964.997
167.5	1052.725	1055.524	1059.257	1054.591	1051.791	1054.591	1059.257	1055.524	1052.725
170.0	1132.052	1132.985	1132.052	1132.052	1131.119	1132.052	1132.052	1132.985	1132.052
172.5	1197.381	1197.381	1195.514	1195.514	1196.448	1195.514	1195.514	1197.381	1197.381
175.0	1247.777	1248.710	1246.844	1246.844	1247.777	1246.844	1246.844	1248.710	1247.777
177.5	1283.241	1283.241	1280.442	1281.375	1282.308	1281.375	1280.442	1283.241	1283.241
180.0	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	707.97	N.A.	30.90
0-30	930.17	N.A.	40.50
0-40	1059.77	N.A.	46.20
0-60	1205.48	N.A.	52.50
0-80	1262.74	N.A.	55.00
0-90	1266.95	N.A.	55.20
10-90	999.21	N.A.	43.50
20-40	351.80	N.A.	15.30
20-50	438.72	N.A.	19.10
40-70	183.95	N.A.	8.00
60-80	57.26	N.A.	2.50
70-80	19.02	N.A.	0.80
80-90	4.21	N.A.	0.20
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.	16.10
90-180	1027.84	N.A.	44.80
110-180	1027.23	N.A.	44.80
0-180	2294.8	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	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	87	79	77	76	68	67	66	58	57	56	51
2	95	89	84	80	88	83	79	76	73	70	67	63	61	59	54	53	52	48
3	89	81	75	71	83	76	71	67	67	64	61	59	56	54	51	50	48	45
4	83	75	68	64	78	70	65	61	63	59	55	55	52	50	49	47	45	42
5	78	69	63	58	73	65	60	56	59	54	51	52	49	47	46	44	42	39
6	74	64	58	53	69	61	55	51	55	51	47	49	46	44	44	42	40	37
7	70	60	54	49	66	57	51	47	52	47	44	47	43	41	42	40	38	36
8	66	56	50	46	62	54	48	44	49	45	41	44	41	39	40	38	36	34
9	63	53	47	43	59	51	45	42	46	42	39	42	39	37	39	36	34	32
10	60	50	44	40	57	48	43	39	44	40	37	41	37	35	37	35	33	31

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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	15.9	16.6	16.8	17.5	18.8	UGR Viewed Endwise	16.0	16.7	17.0	17.7	18.9
	3H	17.2	17.9	18.2	18.8	20.0		17.3	18.0	18.3	18.9	20.2
	4H	17.6	18.3	18.6	19.2	20.4		17.8	18.4	18.7	19.3	20.6
	6H	17.9	18.5	18.9	19.4	20.7		18.0	18.6	19.0	19.6	20.8
	8H	18.0	18.5	18.9	19.5	20.7		18.1	18.6	19.1	19.6	20.8
	12H	18.0	18.5	19.0	19.4	20.7		18.1	18.6	19.1	19.6	20.8

4H	2H	16.3	16.9	17.3	17.8	19.1		16.4	17.0	17.4	18.0	19.2
	3H	17.8	18.3	18.8	19.3	20.5		17.9	18.4	18.9	19.4	20.6
	4H	18.3	18.8	19.3	19.8	21.0		18.4	18.9	19.4	19.9	21.1
	6H	18.7	19.1	19.7	20.1	21.4		18.8	19.2	19.8	20.2	21.5
	8H	18.8	19.2	19.8	20.1	21.4		18.9	19.3	19.9	20.3	21.6
	12H	18.8	19.1	19.8	20.2	21.4		18.9	19.3	19.9	20.3	21.6

8H	4H	18.5	18.8	19.5	19.8	21.1		18.6	18.9	19.6	19.9	21.2
	6H	18.9	19.2	19.9	20.3	21.5		19.0	19.3	20.0	20.4	21.6
	8H	19.1	19.3	20.1	20.4	21.7		19.2	19.4	20.2	20.5	21.8
	12H	19.1	19.4	20.2	20.4	21.7		19.3	19.5	20.3	20.5	21.9

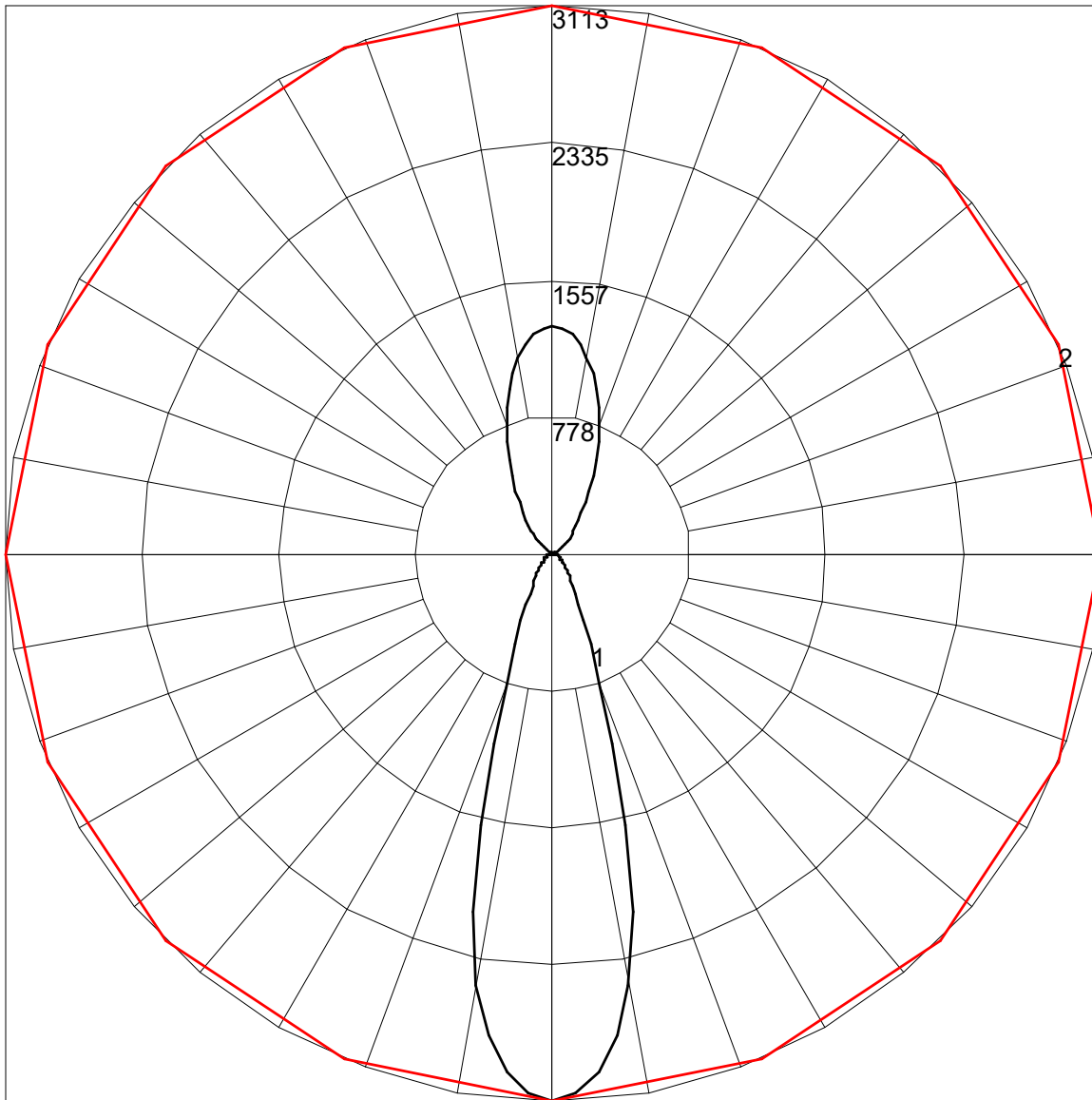
12H	4H	18.4	18.8	19.4	19.8	21.1		18.5	18.9	19.5	19.9	21.1
	6H	18.9	19.2	20.0	20.2	21.5		19.0	19.3	20.1	20.3	21.6
	8H	19.1	19.3	20.1	20.3	21.7		19.2	19.4	20.2	20.4	21.8

Maximum UGR = 21.9

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## POLAR GRAPH



Maximum Candela = 3113.485 Located At Horizontal Angle = 0, Vertical Angle = 0

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

# 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)