



## IES INDOOR REPORT

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

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from UL #13257153.19 & #13257153.12

[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-OW-CSD-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	2357
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	51
Total Luminaire Watts	46.6
Ballast Factor	1.00
CIE Type	Semi-Indirect
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	41204	41425	43169
55	18115	22857	18933
65	787	3658	787
75	377	377	377
85	225	225	225

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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	1150.117	1150.117	1150.117	1150.117	1150.117	1150.117	1150.117	1150.117	1150.117
2.5	1149.330	1143.819	1140.670	1139.883	1138.309	1139.883	1140.670	1143.819	1149.330
5.0	1123.352	1118.628	1115.480	1114.692	1113.905	1114.692	1115.480	1118.628	1123.352
7.5	1083.991	1079.268	1076.906	1076.906	1076.119	1076.906	1076.906	1079.268	1083.991
10.0	1033.610	1028.886	1028.099	1027.312	1026.525	1027.312	1028.099	1028.886	1033.610
12.5	969.845	967.484	966.696	965.909	965.122	965.909	966.696	967.484	969.845
15.0	895.060	894.273	895.060	893.486	891.911	893.486	895.060	894.273	895.060
17.5	813.977	813.190	814.765	813.977	811.616	813.977	814.765	813.190	813.977
20.0	728.014	728.407	729.194	728.958	726.125	728.958	729.194	728.407	728.014
22.5	641.184	642.208	642.365	642.444	638.980	642.444	642.365	642.208	641.184
25.0	558.290	560.101	561.518	559.787	555.221	559.787	561.518	560.101	558.290
27.5	471.540	476.735	481.144	476.106	469.651	476.106	481.144	476.735	471.540
30.0	387.465	396.125	404.548	395.180	387.701	395.180	404.548	396.125	387.465
32.5	313.546	320.946	333.227	320.946	314.649	320.946	333.227	320.946	313.546
35.0	253.167	257.024	270.171	258.521	255.372	258.521	270.171	257.024	253.167
37.5	205.934	206.565	216.719	209.398	210.029	209.398	216.719	206.565	205.934
40.0	169.251	167.912	173.502	171.769	174.997	171.769	173.502	167.912	169.251
42.5	140.675	138.234	141.383	142.958	146.737	142.958	141.383	138.234	140.675
45.0	117.216	115.012	117.846	119.892	122.805	119.892	117.846	115.012	117.216
47.5	96.119	95.332	99.189	99.976	100.606	99.976	99.189	95.332	96.119
50.0	76.439	77.855	82.972	81.949	79.902	81.949	82.972	77.855	76.439
52.5	58.254	61.796	67.700	65.260	60.851	65.260	67.700	61.796	58.254
55.0	41.801	46.682	52.743	49.515	43.690	49.515	52.743	46.682	41.801
57.5	27.788	32.748	38.179	34.716	28.733	34.716	38.179	32.748	27.788
60.0	16.452	20.625	24.876	21.727	16.295	21.727	24.876	20.625	16.452
62.5	7.085	10.627	13.855	10.706	6.455	10.706	13.855	10.627	7.085
65.0	1.338	3.149	6.219	2.755	1.338	2.755	6.219	3.149	1.338
67.5	1.023	0.944	2.126	0.944	1.023	0.944	2.126	0.944	1.023
70.0	0.708	0.708	0.787	0.708	0.787	0.708	0.787	0.708	0.708
72.5	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551
75.0	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393
77.5	0.315	0.315	0.315	0.315	0.315	0.315	0.315	0.315	0.315
80.0	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.236
82.5	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
85.0	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079
87.5	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079
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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<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	351.22	N.A.	14.90
0-30	605.88	N.A.	25.70
0-40	772.13	N.A.	32.80
0-60	908.19	N.A.	38.50
0-80	914.96	N.A.	38.80
0-90	915.08	N.A.	38.80
10-90	811.29	N.A.	34.40
20-40	420.90	N.A.	17.90
20-50	513.62	N.A.	21.80
40-70	142.37	N.A.	6.00
60-80	6.77	N.A.	0.30
70-80	0.46	N.A.	0.00
80-90	0.12	N.A.	0.00
90-110	26.44	N.A.	1.10
90-120	69.95	N.A.	3.00
90-130	136.84	N.A.	5.80
90-150	383.20	N.A.	16.30
90-180	1441.54	N.A.	61.20
110-180	1415.1	N.A.	60.00
0-180	2356.61	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	103.79
10-20	247.43
20-30	254.66
30-40	166.24
40-50	92.72
50-60	43.35
60-70	6.31
70-80	0.46
80-90	0.12
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	104	104	104	104	95	95	95	95	77	77	77	61	61	61	46	46	46	39
1	97	93	90	87	88	85	83	80	70	68	67	56	55	54	43	43	42	36
2	90	84	79	74	82	77	73	69	64	61	58	51	50	48	40	39	38	33
3	83	75	69	64	76	69	64	60	58	54	51	47	45	43	38	36	35	31
4	77	68	62	57	71	63	57	53	53	49	46	44	41	39	35	34	32	28
5	72	62	55	50	66	57	51	47	49	44	41	41	38	35	33	31	30	26
6	67	57	50	45	61	53	47	42	45	40	37	38	35	32	31	29	27	25
7	63	52	45	40	57	48	42	38	42	37	34	35	32	30	29	27	25	23
8	59	48	41	37	54	45	39	35	39	34	31	33	30	27	27	25	24	21
9	55	44	38	33	51	41	36	32	36	32	29	31	28	25	26	24	22	20
10	52	41	35	31	48	39	33	29	34	29	26	29	26	24	24	22	21	19

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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	11.2	11.8	12.2	12.9	14.3	11.5	12.2	12.6	13.2	14.7
	3H	11.0	11.5	12.1	12.6	14.1	11.3	11.9	12.4	13.0	14.4
	4H	10.9	11.4	12.0	12.5	13.9	11.2	11.8	12.3	12.8	14.3
	6H	10.7	11.2	11.8	12.3	13.8	11.1	11.6	12.2	12.7	14.2
	8H	10.7	11.1	11.8	12.2	13.7	11.1	11.5	12.2	12.6	14.1
	12H	10.6	11.1	11.7	12.1	13.6	11.0	11.4	12.1	12.5	14.0

### UGR Viewed Endwise

4H	2H	10.9	11.5	12.0	12.5	14.0	11.3	11.8	12.4	12.9	14.4
	3H	10.7	11.2	11.8	12.3	13.7	11.1	11.5	12.2	12.6	14.1
	4H	10.6	11.0	11.7	12.1	13.6	11.0	11.4	12.1	12.5	14.0
	6H	10.5	10.9	11.6	12.0	13.5	10.9	11.2	12.0	12.3	13.8
	8H	10.4	10.8	11.6	11.9	13.4	10.8	11.1	11.9	12.2	13.7
	12H	10.4	10.7	11.5	11.8	13.3	10.7	11.0	11.9	12.1	13.6

8H	4H	10.4	10.8	11.6	11.9	13.4	10.8	11.1	11.9	12.2	13.7
	6H	10.3	10.6	11.5	11.7	13.2	10.7	11.0	11.8	12.1	13.6
	8H	10.3	10.5	11.4	11.6	13.1	10.6	10.9	11.8	12.0	13.5
	12H	10.2	10.4	11.4	11.5	13.1	10.6	10.8	11.7	11.9	13.5

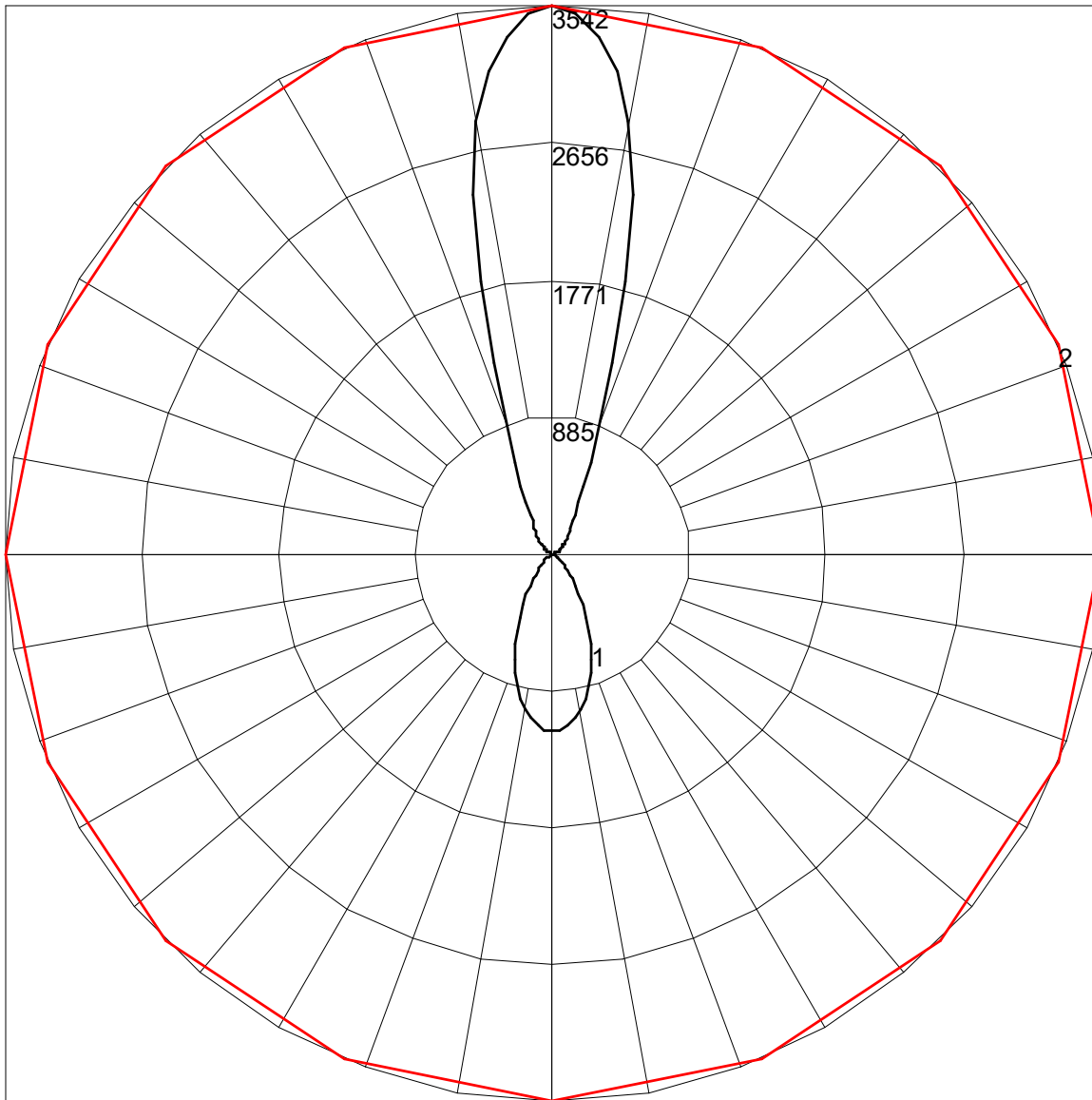
12H	4H	10.4	10.7	11.5	11.8	13.3	10.7	11.0	11.9	12.1	13.6
	6H	10.3	10.5	11.4	11.6	13.1	10.6	10.8	11.8	12.0	13.5
	8H	10.2	10.4	11.4	11.5	13.1	10.6	10.8	11.7	11.9	13.5

Maximum UGR = 14.7

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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.)