



## IES INDOOR REPORT

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

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from UL #13537338.13 & #13257153.20

[TESTLAB] UL Verification Services Inc.

[ISSUE DATE] 19-APR-2021

[MANUFAC] H E Williams Inc

[LUMCAT] 4CSDI-L12-9DWU-L12-9DWD-xxx-DIM-UNV-LW-WHU-RM-WHD-WM-3000k

[LUMINAIRE] 4" Square formed aluminum housing, wide distribution reflector

[MORE] trims, frosted lens enclosures

[LAMP] Two white LEDs (one up/one down)

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

[MORE] hod of absolute photometry.

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

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2686
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 w/Sides
Luminous Length (0-180)	0.33 ft
Luminous Width (90-270)	0.33 ft
Luminous Height	1.42 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	2712	2362	2723
55	1234	1033	1255
65	665	448	660
75	230	152	225
85	35	25	37

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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>	3117.961	3117.961	3117.961	3117.961	3117.961	3117.961	3117.961	3117.961	3117.961
<b>2.5</b>	3075.572	3063.012	3067.722	3077.927	3083.422	3077.927	3067.722	3063.012	3075.572
<b>5.0</b>	2945.264	2933.489	2939.769	2947.619	2949.189	2947.619	2939.769	2933.489	2945.264
<b>7.5</b>	2748.233	2742.738	2749.803	2749.803	2748.233	2749.803	2749.803	2742.738	2748.233
<b>10.0</b>	2464.068	2464.853	2478.198	2469.563	2463.283	2469.563	2478.198	2464.853	2464.068
<b>12.5</b>	2061.371	2067.651	2087.275	2080.211	2066.866	2080.211	2087.275	2067.651	2061.371
<b>15.0</b>	1568.400	1588.025	1615.499	1610.004	1588.810	1610.004	1615.499	1588.025	1568.400
<b>17.5</b>	1098.194	1135.088	1171.983	1161.778	1131.949	1161.778	1171.983	1135.088	1098.194
<b>20.0</b>	754.841	796.760	841.504	820.309	788.910	820.309	841.504	796.760	754.841
<b>22.5</b>	556.946	589.680	635.367	603.339	576.336	603.339	635.367	589.680	556.946
<b>25.0</b>	444.694	470.834	511.496	475.622	448.855	475.622	511.496	470.834	444.694
<b>27.5</b>	363.919	390.766	429.858	391.551	362.820	391.551	429.858	390.766	363.919
<b>30.0</b>	293.506	322.315	364.154	322.864	295.311	322.864	364.154	322.315	293.506
<b>32.5</b>	236.516	261.557	304.418	263.676	239.891	263.676	304.418	261.557	236.516
<b>35.0</b>	192.086	212.652	250.724	215.871	196.952	215.871	250.724	212.652	192.086
<b>37.5</b>	164.219	175.837	204.960	179.840	166.103	179.840	204.960	175.837	164.219
<b>40.0</b>	142.632	150.246	169.086	152.208	142.946	152.208	169.086	150.246	142.632
<b>42.5</b>	122.536	129.915	141.612	130.543	122.693	130.543	141.612	129.915	122.536
<b>45.0</b>	103.932	111.782	120.888	111.939	104.324	111.939	120.888	111.782	103.932
<b>47.5</b>	87.212	94.904	102.676	95.140	87.683	95.140	102.676	94.904	87.212
<b>50.0</b>	72.533	79.598	85.955	79.990	73.318	79.990	85.955	79.598	72.533
<b>52.5</b>	60.679	66.488	71.198	67.038	61.621	67.038	71.198	66.488	60.679
<b>55.0</b>	51.652	55.577	58.638	56.284	52.515	56.284	58.638	55.577	51.652
<b>57.5</b>	44.823	47.020	48.355	47.491	45.450	47.491	48.355	47.020	44.823
<b>60.0</b>	39.485	40.191	39.955	40.426	39.485	40.426	39.955	40.191	39.485
<b>62.5</b>	34.383	34.383	33.048	34.304	34.225	34.304	33.048	34.383	34.383
<b>65.0</b>	29.359	28.966	27.160	28.809	29.123	28.809	27.160	28.966	29.359
<b>67.5</b>	24.413	23.942	22.058	23.706	24.178	23.706	22.058	23.942	24.413
<b>70.0</b>	19.625	19.154	17.505	18.918	19.389	18.918	17.505	19.154	19.625
<b>72.5</b>	14.994	14.601	13.345	14.365	14.836	14.365	13.345	14.601	14.994
<b>75.0</b>	10.361	10.361	9.499	10.048	10.126	10.048	9.499	10.361	10.361
<b>77.5</b>	4.945	6.123	6.280	5.966	5.809	5.966	6.280	6.123	4.945
<b>80.0</b>	3.611	3.690	3.925	3.768	3.768	3.768	3.925	3.690	3.611
<b>82.5</b>	2.512	2.590	2.590	2.590	2.590	2.590	2.590	2.590	2.512
<b>85.0</b>	1.570	1.649	1.570	1.570	1.649	1.570	1.570	1.649	1.570
<b>87.5</b>	0.706	0.706	0.706	0.785	0.785	0.785	0.706	0.706	0.706
<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>	0.719	1.438	2.217	3.774	3.774	3.774	2.217	1.438	0.719
<b>95.0</b>	2.337	3.115	3.774	5.391	5.511	5.391	3.774	3.115	2.337
<b>97.5</b>	5.332	5.691	6.110	7.787	7.967	7.787	6.110	5.691	5.332
<b>100.0</b>	8.386	8.865	9.225	10.962	11.202	10.962	9.225	8.865	8.386
<b>102.5</b>	11.980	12.579	12.759	14.616	14.916	14.616	12.759	12.579	11.980
<b>105.0</b>	15.814	16.473	16.593	18.689	18.809	18.689	16.593	16.473	15.814
<b>107.5</b>	19.827	20.666	20.845	23.062	23.002	23.062	20.845	20.666	19.827
<b>110.0</b>	24.080	25.099	25.278	27.614	27.554	27.614	25.278	25.099	24.080
<b>112.5</b>	28.632	29.771	29.891	32.526	32.346	32.526	29.891	29.771	28.632
<b>115.0</b>	33.185	34.742	34.922	37.438	37.018	37.438	34.922	34.742	33.185
<b>117.5</b>	37.497	39.534	39.893	42.350	41.571	42.350	39.893	39.534	37.497
<b>120.0</b>	41.990	44.206	44.746	46.842	45.824	46.842	44.746	44.206	41.990
<b>122.5</b>	46.064	48.759	49.477	50.915	49.418	50.915	49.477	48.759	46.064
<b>125.0</b>	49.477	52.832	54.090	54.749	52.653	54.749	54.090	52.832	49.477
<b>127.5</b>	53.071	57.264	59.361	58.882	56.366	58.882	59.361	57.264	53.071
<b>130.0</b>	57.504	63.075	65.831	64.333	60.858	64.333	63.075	63.075	57.504
<b>132.5</b>	64.213	71.041	74.516	71.701	67.687	71.701	74.516	71.041	64.213

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<b>135.0</b>	74.576	82.363	87.335	82.483	78.410	82.483	87.335	82.363	74.576
<b>137.5</b>	89.971	98.956	108.061	97.758	93.864	97.758	108.061	98.956	89.971
<b>140.0</b>	111.774	124.173	142.622	119.801	114.889	119.801	142.622	124.173	111.774
<b>142.5</b>	143.402	163.229	202.284	154.603	145.617	154.603	202.284	163.229	143.402
<b>145.0</b>	190.663	224.387	295.429	210.670	190.663	210.670	295.429	224.387	190.663
<b>147.5</b>	263.083	317.352	426.731	300.700	258.470	300.700	426.731	317.352	263.083
<b>150.0</b>	372.700	452.967	590.318	436.134	367.369	436.134	590.318	452.967	372.700
<b>152.5</b>	538.445	636.741	772.116	616.974	531.557	616.974	772.116	636.741	538.445
<b>155.0</b>	766.725	857.774	967.991	842.799	758.938	842.799	967.991	857.774	766.725
<b>157.5</b>	1046.460	1111.152	1182.434	1102.766	1033.282	1102.766	1182.434	1111.152	1046.460
<b>160.0</b>	1344.165	1375.912	1422.036	1382.501	1337.576	1382.501	1422.036	1375.912	1344.165
<b>162.5</b>	1608.925	1627.494	1651.454	1638.875	1615.514	1638.875	1651.454	1627.494	1608.925
<b>165.0</b>	1835.348	1841.937	1853.917	1849.724	1838.343	1849.724	1853.917	1841.937	1835.348
<b>167.5</b>	2014.451	2009.659	2020.441	2018.644	2013.852	2018.644	2020.441	2009.659	2014.451
<b>170.0</b>	2145.632	2139.642	2139.043	2136.647	2134.850	2136.647	2139.043	2139.642	2145.632
<b>172.5</b>	2221.107	2217.513	2213.919	2208.528	2206.731	2208.528	2213.919	2217.513	2221.107
<b>175.0</b>	2256.448	2254.052	2251.656	2249.859	2248.661	2249.859	2251.656	2254.052	2256.448
<b>177.5</b>	2257.047	2261.839	2263.636	2266.631	2267.829	2266.631	2263.636	2261.839	2257.047
<b>180.0</b>	2265.289	2265.289	2265.289	2265.289	2265.289	2265.289	2265.289	2265.289	2265.289

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Zone	Lumens	%Lamp	%Fixt
0-20	698.58	N.A.	26.00
0-30	927.99	N.A.	34.50
0-40	1068.27	N.A.	39.80
0-60	1206.59	N.A.	44.90
0-80	1246.04	N.A.	46.40
0-90	1247.89	N.A.	46.50
10-90	981.79	N.A.	36.50
20-40	369.69	N.A.	13.80
20-50	457.00	N.A.	17.00
40-70	166.84	N.A.	6.20
60-80	39.44	N.A.	1.50
70-80	10.93	N.A.	0.40
80-90	1.85	N.A.	0.10
90-110	23.30	N.A.	0.90
90-120	58.42	N.A.	2.20
90-130	106.26	N.A.	4.00
90-150	328.24	N.A.	12.20
90-180	1438.44	N.A.	53.50
110-180	1415.14	N.A.	52.70
0-180	2686.33	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	266.10
10-20	432.48
20-30	229.41
30-40	140.28
40-50	87.32
50-60	51.01
60-70	28.51
70-80	10.93
80-90	1.85
90-100	4.87
100-110	18.44
110-120	35.11
120-130	47.84
130-140	66.39
140-150	155.59
150-160	395.75
160-170	503.04
170-180	211.41

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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	46
1	99	96	93	90	91	88	86	83	74	73	71	62	61	60	50	49	49	43
2	92	87	82	78	85	80	76	73	68	65	63	57	56	54	47	46	45	41
3	86	79	73	68	80	73	68	64	63	59	57	53	51	49	45	43	42	38
4	81	72	66	61	75	67	62	58	58	54	51	50	47	45	42	41	39	36
5	76	66	60	55	70	62	56	52	54	50	47	47	44	42	40	38	37	34
6	71	61	55	50	66	58	52	48	51	46	43	44	41	39	38	36	35	32
7	67	57	51	46	62	54	48	44	48	43	40	42	39	36	36	34	33	30
8	63	53	47	43	59	50	45	41	45	41	38	40	37	34	35	33	31	29
9	60	50	44	40	56	47	42	38	42	38	35	38	35	32	33	31	30	28
10	57	47	41	37	53	45	39	36	40	36	33	36	33	31	32	30	28	27

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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	3.5	3.5	3.7	4.3	5.7	3.5	3.5	3.7	4.4	5.7
	3H	3.5	4.0	4.4	5.0	6.3	3.5	4.0	4.4	5.0	6.4
	4H	3.5	4.0	4.5	5.0	6.4	3.5	4.1	4.5	5.1	6.4
	6H	3.5	3.9	4.4	4.9	6.3	3.5	3.9	4.5	5.0	6.3
	8H	3.5	3.8	4.4	4.9	6.2	3.5	3.9	4.4	4.9	6.3
	12H	3.5	3.8	4.3	4.8	6.2	3.5	3.8	4.4	4.8	6.2

### UGR Viewed Endwise

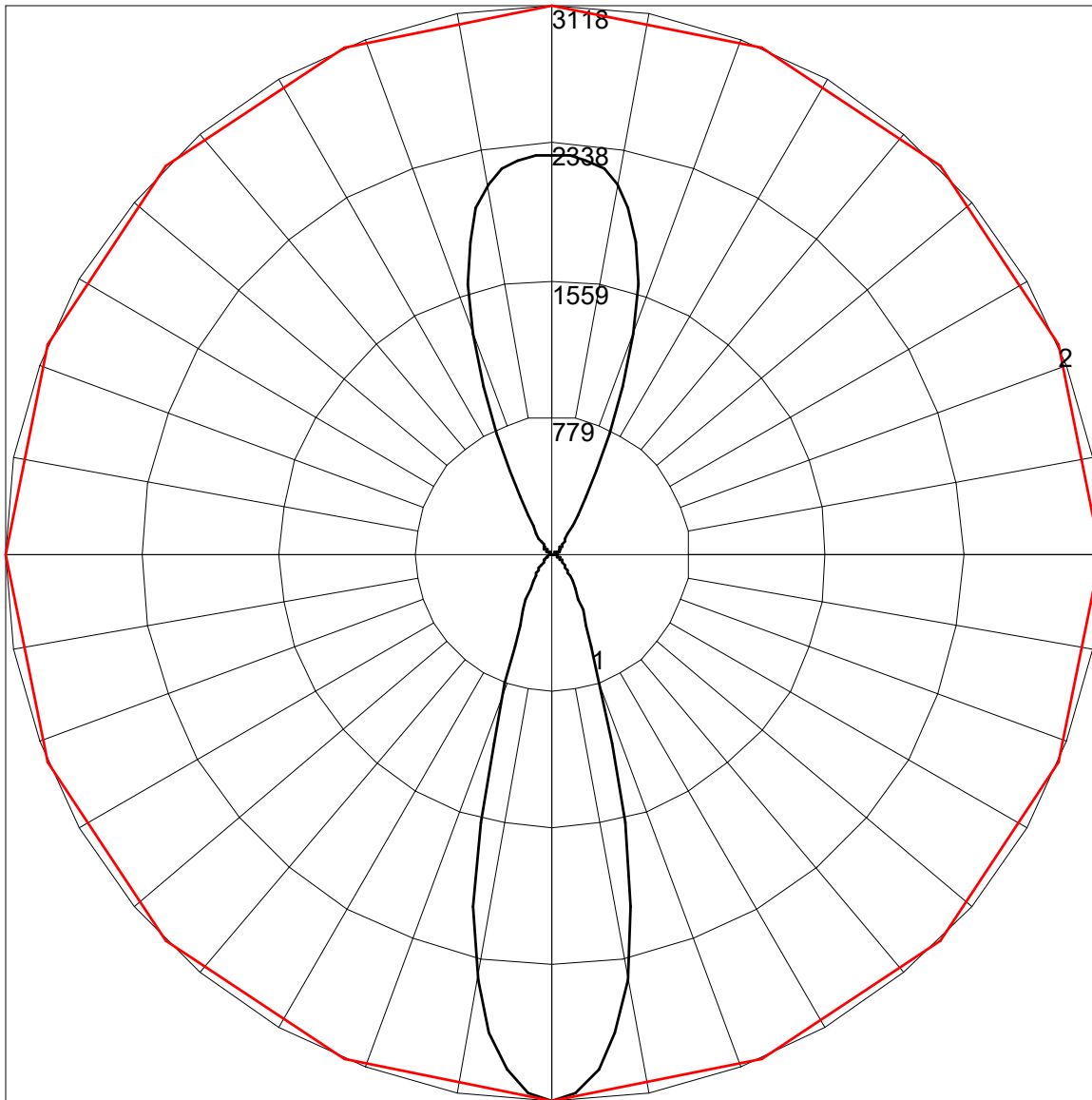
4H	2H	3.5	3.5	3.8	4.3	5.7	3.5	3.5	3.8	4.4	5.7
	3H	3.5	4.0	4.6	5.1	6.4	3.6	4.0	4.6	5.1	6.5
	4H	3.7	4.1	4.7	5.1	6.5	3.7	4.1	4.7	5.2	6.6
	6H	3.6	4.0	4.7	5.1	6.4	3.6	4.0	4.7	5.1	6.5
	8H	3.6	3.9	4.7	5.0	6.4	3.6	3.9	4.7	5.0	6.4
	12H	3.5	3.8	4.6	4.9	6.3	3.5	3.8	4.6	4.9	6.3
8H	4H	3.6	3.9	4.7	5.0	6.4	3.6	3.9	4.7	5.0	6.4
	6H	3.6	3.8	4.6	4.9	6.3	3.6	3.9	4.7	5.0	6.4
	8H	3.5	3.8	4.6	4.8	6.3	3.5	3.8	4.6	4.9	6.3
	12H	3.5	3.7	4.6	4.7	6.2	3.5	3.7	4.6	4.8	6.2
12H	4H	3.5	3.8	4.6	4.9	6.3	3.5	3.8	4.6	4.9	6.3
	6H	3.5	3.7	4.6	4.8	6.2	3.5	3.8	4.6	4.8	6.3
	8H	3.5	3.7	4.6	4.7	6.2	3.5	3.7	4.6	4.8	6.2

Maximum UGR = 6.6

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## POLAR GRAPH



Maximum Candela = 3117.961 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.)