



**IES INDOOR REPORT  
PHOTOMETRIC FILENAME : PNA-8998.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
[TEST] 13560404.01  
[TESTLAB] UL Verification Services Inc.  
[ISSUE DATE] 3/4/2021  
[MANUFAC] JUSTICE DESIGN GROUP L L C  
[LUMCAT] PNA-8998  
[LUMINAIRE] Circular metal housing and resin lens  
[LAMP] White LED array  
[BALLAST] Internal  
[OTHER] 24.3 C, 120.12 V, 0.401504 A, 44.7167 W, 0.927179 PF, 59.9894  
[MORE] Hz  
[OTHER] This test was performed using the calibrated photodetector met  
[MORE] hod of absolute photometry.

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1972
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	44
Total Luminaire Watts	44.7167
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.28
Spacing Criterion (90-270)	1.28
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Circular w/ Sides
Luminous Length (0-180)	1.54 ft (Diameter)
Luminous Width (90-270)	1.54 ft (Diameter)
Luminous Height	0.29 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	2771	2771	2771
55	2551	2551	2551
65	2280	2280	2280
75	1900	1900	1900
85	1486	1486	1486

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CANDELA TABULATION

	<u>0</u>
0.0	611.575
0.5	609.790
1.0	608.940
1.5	610.810
2.0	609.960
2.5	607.750
3.0	608.685
3.5	608.685
4.0	606.815
4.5	607.495
5.0	608.600
5.5	606.135
6.0	604.095
6.5	604.180
7.0	604.860
7.5	603.840
8.0	603.755
8.5	602.310
9.0	602.905
9.5	601.970
10.0	599.760
10.5	599.760
11.0	599.165
11.5	596.955
12.0	595.850
12.5	597.210
13.0	596.105
13.5	593.895
14.0	593.810
14.5	593.045
15.0	591.940
15.5	591.770
16.0	590.835
16.5	588.115
17.0	587.180
17.5	585.650
18.0	585.735
18.5	582.590
19.0	580.975
19.5	579.955
20.0	577.745
20.5	574.855
21.0	573.580
21.5	572.305
22.0	569.160
22.5	566.355
23.0	563.890
23.5	560.660
24.0	559.215
24.5	556.750
25.0	554.540
25.5	550.375
26.0	547.825
26.5	544.850

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**CANDELA TABULATION - (Cont.)**

<b>27.0</b>	542.555
<b>27.5</b>	540.515
<b>28.0</b>	537.455
<b>28.5</b>	535.330
<b>29.0</b>	531.080
<b>29.5</b>	527.510
<b>30.0</b>	525.555
<b>30.5</b>	523.260
<b>31.0</b>	520.285
<b>31.5</b>	517.565
<b>32.0</b>	514.590
<b>32.5</b>	511.105
<b>33.0</b>	508.045
<b>33.5</b>	504.645
<b>34.0</b>	501.245
<b>34.5</b>	497.845
<b>35.0</b>	494.190
<b>35.5</b>	491.470
<b>36.0</b>	489.175
<b>36.5</b>	485.860
<b>37.0</b>	482.205
<b>37.5</b>	478.635
<b>38.0</b>	474.130
<b>38.5</b>	469.455
<b>39.0</b>	465.970
<b>39.5</b>	463.080
<b>40.0</b>	459.595
<b>40.5</b>	455.430
<b>41.0</b>	451.605
<b>41.5</b>	448.035
<b>42.0</b>	444.295
<b>42.5</b>	440.215
<b>43.0</b>	436.730
<b>43.5</b>	434.180
<b>44.0</b>	430.440
<b>44.5</b>	425.000
<b>45.0</b>	422.280
<b>45.5</b>	418.285
<b>46.0</b>	413.780
<b>46.5</b>	410.805
<b>47.0</b>	406.895
<b>47.5</b>	402.475
<b>48.0</b>	399.415
<b>48.5</b>	395.760
<b>49.0</b>	391.765
<b>49.5</b>	387.430
<b>50.0</b>	383.095
<b>50.5</b>	379.780
<b>51.0</b>	375.870
<b>51.5</b>	371.280
<b>52.0</b>	366.180
<b>52.5</b>	362.440
<b>53.0</b>	359.040
<b>53.5</b>	354.280
<b>54.0</b>	349.435
<b>54.5</b>	345.355

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**CANDELA TABULATION - (Cont.)**

<b>55.0</b>	341.615
<b>55.5</b>	336.600
<b>56.0</b>	332.265
<b>56.5</b>	328.015
<b>57.0</b>	323.595
<b>57.5</b>	319.600
<b>58.0</b>	315.095
<b>58.5</b>	310.335
<b>59.0</b>	305.575
<b>59.5</b>	301.750
<b>60.0</b>	297.840
<b>60.5</b>	293.250
<b>61.0</b>	288.915
<b>61.5</b>	284.665
<b>62.0</b>	280.330
<b>62.5</b>	275.740
<b>63.0</b>	271.235
<b>63.5</b>	267.070
<b>64.0</b>	262.565
<b>64.5</b>	258.145
<b>65.0</b>	253.810
<b>65.5</b>	248.965
<b>66.0</b>	244.205
<b>66.5</b>	239.700
<b>67.0</b>	235.450
<b>67.5</b>	231.115
<b>68.0</b>	226.355
<b>68.5</b>	221.765
<b>69.0</b>	217.345
<b>69.5</b>	212.585
<b>70.0</b>	208.080
<b>70.5</b>	203.830
<b>71.0</b>	198.900
<b>71.5</b>	194.395
<b>72.0</b>	189.805
<b>72.5</b>	185.470
<b>73.0</b>	181.050
<b>73.5</b>	176.120
<b>74.0</b>	171.785
<b>74.5</b>	167.450
<b>75.0</b>	162.265
<b>75.5</b>	158.015
<b>76.0</b>	154.020
<b>76.5</b>	149.515
<b>77.0</b>	144.840
<b>77.5</b>	140.335
<b>78.0</b>	136.255
<b>78.5</b>	132.005
<b>79.0</b>	127.755
<b>79.5</b>	123.930
<b>80.0</b>	119.850
<b>80.5</b>	115.855
<b>81.0</b>	112.030
<b>81.5</b>	108.290
<b>82.0</b>	104.635
<b>82.5</b>	101.150

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**CANDELA TABULATION - (Cont.)**

<b>83.0</b>	97.410
<b>83.5</b>	94.010
<b>84.0</b>	90.950
<b>84.5</b>	87.805
<b>85.0</b>	84.448
<b>85.5</b>	81.311
<b>86.0</b>	78.498
<b>86.5</b>	75.446
<b>87.0</b>	72.276
<b>87.5</b>	69.046
<b>88.0</b>	66.054
<b>88.5</b>	63.223
<b>89.0</b>	60.495
<b>89.5</b>	58.149
<b>90.0</b>	55.692
<b>90.5</b>	53.567
<b>91.0</b>	52.029
<b>91.5</b>	50.805
<b>92.0</b>	49.351
<b>92.5</b>	47.243
<b>93.0</b>	44.693
<b>93.5</b>	41.293
<b>94.0</b>	38.157
<b>94.5</b>	35.250
<b>95.0</b>	32.198
<b>95.5</b>	29.087
<b>96.0</b>	26.325
<b>96.5</b>	23.545
<b>97.0</b>	20.621
<b>97.5</b>	17.731
<b>98.0</b>	14.943
<b>98.5</b>	12.257
<b>99.0</b>	9.716
<b>99.5</b>	7.472
<b>100.0</b>	5.636
<b>100.5</b>	4.072
<b>101.0</b>	2.754
<b>101.5</b>	1.768
<b>102.0</b>	1.029
<b>102.5</b>	0.544
<b>103.0</b>	0.247
<b>103.5</b>	0.077
<b>104.0</b>	0.009
<b>104.5</b>	0.000
<b>105.0</b>	0.000
<b>105.5</b>	0.000
<b>106.0</b>	0.000
<b>106.5</b>	0.000
<b>107.0</b>	0.000
<b>107.5</b>	0.000
<b>108.0</b>	0.000
<b>108.5</b>	0.000
<b>109.0</b>	0.000
<b>109.5</b>	0.000
<b>110.0</b>	0.000
<b>110.5</b>	0.000

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**CANDELA TABULATION - (Cont.)**

111.0	0.000
111.5	0.000
112.0	0.000
112.5	0.000
113.0	0.000
113.5	0.000
114.0	0.000
114.5	0.000
115.0	0.000
115.5	0.000
116.0	0.000
116.5	0.000
117.0	0.000
117.5	0.000
118.0	0.000
118.5	0.000
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134.0	0.000
134.5	0.000
135.0	0.000
135.5	0.000
136.0	0.000
136.5	0.000
137.0	0.000
137.5	0.000
138.0	0.000
138.5	0.000

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**CANDELA TABULATION - (Cont.)**

139.0	0.000
139.5	0.000
140.0	0.000
140.5	0.000
141.0	0.000
141.5	0.000
142.0	0.000
142.5	0.000
143.0	0.000
143.5	0.000
144.0	0.000
144.5	0.000
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161.5	0.000
162.0	0.000
162.5	0.000
163.0	0.000
163.5	0.000
164.0	0.000
164.5	0.000
165.0	0.000
165.5	0.000
166.0	0.000
166.5	0.000

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**CANDELA TABULATION - (Cont.)**

<b>167.0</b>	<b>0.000</b>
<b>167.5</b>	<b>0.000</b>
<b>168.0</b>	<b>0.000</b>
<b>168.5</b>	<b>0.000</b>
<b>169.0</b>	<b>0.000</b>
<b>169.5</b>	<b>0.000</b>
<b>170.0</b>	<b>0.000</b>
<b>170.5</b>	<b>0.000</b>
<b>171.0</b>	<b>0.000</b>
<b>171.5</b>	<b>0.000</b>
<b>172.0</b>	<b>0.000</b>
<b>172.5</b>	<b>0.000</b>
<b>173.0</b>	<b>0.000</b>
<b>173.5</b>	<b>0.000</b>
<b>174.0</b>	<b>0.000</b>
<b>174.5</b>	<b>0.000</b>
<b>175.0</b>	<b>0.000</b>
<b>175.5</b>	<b>0.000</b>
<b>176.0</b>	<b>0.000</b>
<b>176.5</b>	<b>0.000</b>
<b>177.0</b>	<b>0.000</b>
<b>177.5</b>	<b>0.000</b>
<b>178.0</b>	<b>0.000</b>
<b>178.5</b>	<b>0.000</b>
<b>179.0</b>	<b>0.000</b>
<b>179.5</b>	<b>0.000</b>
<b>180.0</b>	<b>0.000</b>



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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	224.92	N.A.	11.40
0-30	480.13	N.A.	24.30
0-40	789.76	N.A.	40.00
0-60	1420.66	N.A.	72.00
0-80	1843.66	N.A.	93.50
0-90	1936.79	N.A.	98.20
10-90	1879.07	N.A.	95.30
20-40	564.84	N.A.	28.60
20-50	890.66	N.A.	45.20
40-70	881.73	N.A.	44.70
60-80	423.00	N.A.	21.40
70-80	172.16	N.A.	8.70
80-90	93.13	N.A.	4.70
90-110	35.54	N.A.	1.80
90-120	35.54	N.A.	1.80
90-130	35.54	N.A.	1.80
90-150	35.54	N.A.	1.80
90-180	35.54	N.A.	1.80
110-180	0.00	N.A.	0.00
0-180	1972.33	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	57.73
10-20	167.19
20-30	255.21
30-40	309.63
40-50	325.82
50-60	305.08
60-70	250.84
70-80	172.16
80-90	93.13
90-100	34.82
100-110	0.72
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

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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	
0	119	119	119	119	116	116	116	116	110	110	110	105	105	105	100	100	100	98
1	107	101	96	92	104	99	94	90	94	91	87	90	87	84	86	84	81	79
2	97	88	80	74	94	85	79	73	82	76	71	78	73	69	75	71	67	65
3	88	76	68	61	85	75	67	60	71	64	59	68	62	57	65	60	56	54
4	80	67	58	51	78	66	57	51	63	56	50	61	54	49	58	53	48	46
5	73	60	51	44	71	59	50	43	56	49	43	54	47	42	52	46	41	39
6	68	54	45	38	66	53	44	38	51	43	37	49	42	37	47	41	36	34
7	63	49	40	33	61	48	39	33	46	38	33	45	38	32	43	37	32	30
8	58	45	36	30	57	44	35	30	42	35	29	41	34	29	39	33	29	27
9	55	41	32	27	53	40	32	27	39	31	26	38	31	26	36	30	26	24
10	51	38	30	24	50	37	29	24	36	29	24	35	28	24	34	28	23	22

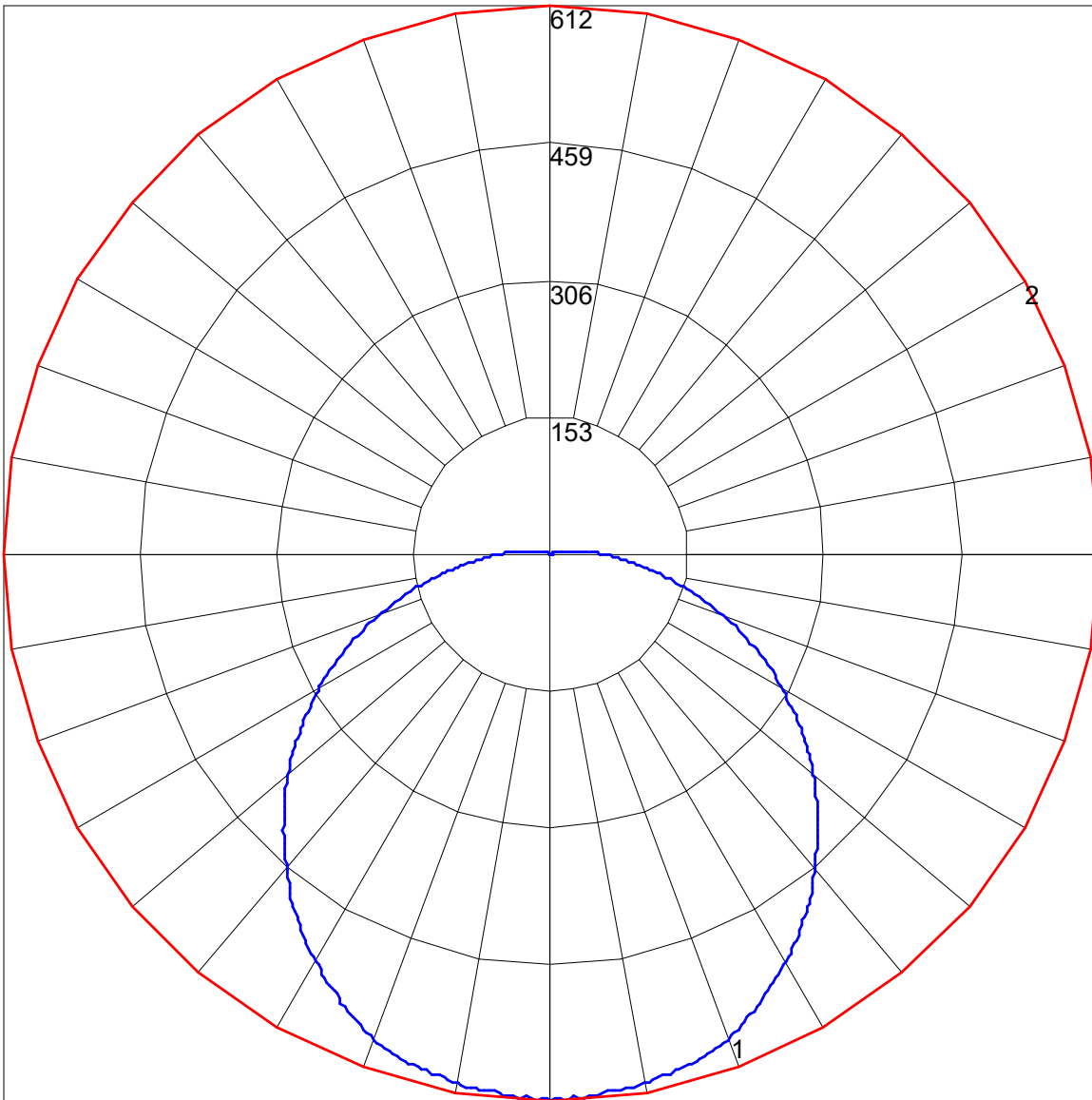
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**UGR TABLE - CORRECTED**

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					UGR Viewed Endwise				
X=2H	Y=2H	14.3	16.0	14.7	16.3	16.7	14.3	16.0	14.7	16.3	16.7
	3H	16.3	17.8	16.7	18.1	18.6	16.3	17.8	16.7	18.1	18.6
	4H	17.0	18.5	17.5	18.9	19.3	17.0	18.5	17.5	18.9	19.3
	6H	17.7	19.0	18.2	19.4	19.9	17.7	19.0	18.2	19.4	19.9
	8H	18.0	19.2	18.4	19.7	20.1	18.0	19.2	18.4	19.7	20.1
	12H	18.2	19.4	18.7	19.9	20.3	18.2	19.4	18.7	19.9	20.3
4H	2H	14.9	16.4	15.4	16.8	17.2	14.9	16.4	15.4	16.8	17.2
	3H	17.1	18.3	17.5	18.8	19.2	17.1	18.3	17.5	18.8	19.2
	4H	18.0	19.1	18.5	19.6	20.1	18.0	19.1	18.5	19.6	20.1
	6H	18.8	19.8	19.3	20.3	20.8	18.8	19.8	19.3	20.3	20.8
	8H	19.2	20.1	19.6	20.5	21.1	19.2	20.1	19.6	20.5	21.1
	12H	19.5	20.3	20.0	20.8	21.3	19.5	20.3	20.0	20.8	21.3
8H	4H	18.4	19.3	18.9	19.8	20.3	18.4	19.3	18.9	19.8	20.3
	6H	19.3	20.1	19.8	20.6	21.1	19.3	20.1	19.8	20.6	21.1
	8H	19.7	20.4	20.3	21.0	21.5	19.7	20.4	20.3	21.0	21.5
	12H	20.2	20.8	20.7	21.3	21.9	20.2	20.8	20.7	21.3	21.9
12H	4H	18.4	19.2	18.9	19.8	20.3	18.4	19.2	18.9	19.8	20.3
	6H	19.4	20.1	20.0	20.6	21.2	19.4	20.1	20.0	20.6	21.2
	8H	19.9	20.5	20.4	21.0	21.6	19.9	20.5	20.4	21.0	21.6

Maximum UGR = 21.9

POLAR GRAPH



Maximum Candela = 611.575 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)