



UL LLC
1075 W Lambert Rd Suite B
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Indoor Distribution Test Report

Relevant Standards
IES LM-79-2008
ANSI C82.77-2002

Prepared For
Sonneman - A Way of Light

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United States

Catalog Number
CST.2903.13

Order Number
11281216
Test Number
1253398

Test Date

2016-06-07

Prepared By

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Approved By

Eric Gaudreau, Senior Engineering Associate

The results contained in this report pertain only to the tested sample.
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Luminaire Description: Spherical aluminum housing with frosted glass lens attached to CY.2913.01-KT
Lamp: White LEDs
Mounting: Pendant
Ballast/Driver: L.T.F. TA60WA12LED-0000

Luminaire



Luminaire Characteristics

Luminous Diameter: 3.75 in.
Luminous Height: 1.500 in.

Summary of Results

Total Luminaire Output:	196.5 Lumens
Luminaire Efficacy:	26.3 lm/w
Maximum Candela:	38 Candela

Test Conditions

Test Temperature:	24.8 °C
Voltage:	120.0 VAC
Current:	0.06480 A
Power:	7.469 W
Power Factor:	0.960
Frequency:	60 Hz
Current THD:	27.6 %

Laboratory results may not be representative of field performance
Ballast factors have not been applied



Distribution - Goniophotometer

Distribution Test Conditions

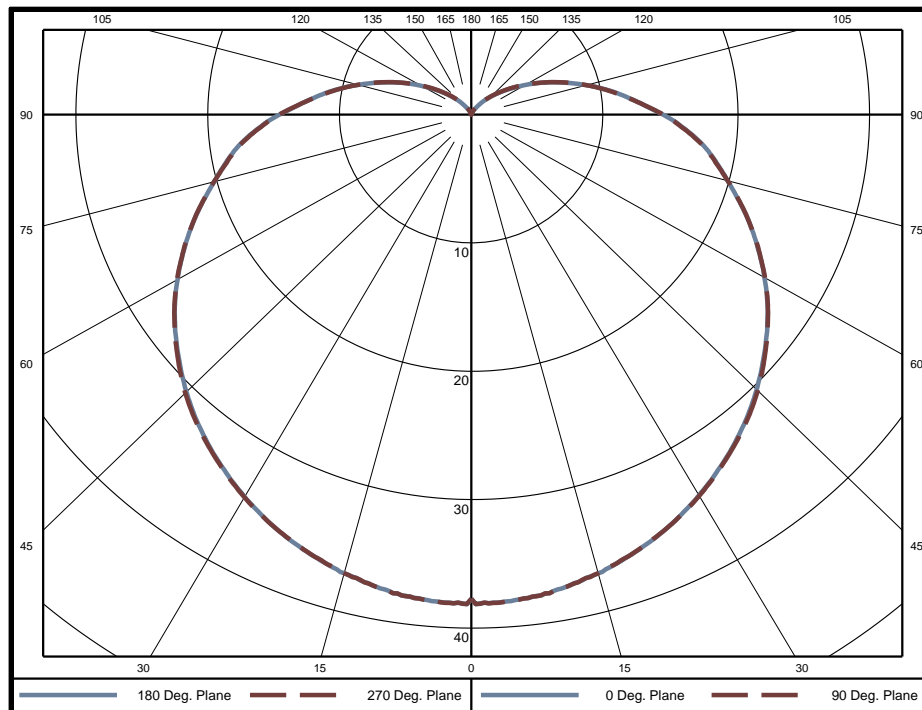
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.8 °C	120.0 VAC	0.06480 A	7.469 W	0.960	60 Hz	27.6 %

Summary of Results

Spacing Criteria
 0-180: 1.36
 90-270: 1.36

Total Lumen Output: 196.5 Lumens
Luminaire Efficacy: 26.3 lm/w
Maximum Candela: 38 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	0.91	0.5%	60-65	12.00	6.1%	120-125	1.87	1.0%
5-10	2.71	1.4%	65-70	11.57	5.9%	125-130	1.33	0.7%
10-15	4.42	2.2%	70-75	10.96	5.6%	130-135	0.90	0.5%
15-20	6.04	3.1%	75-80	10.28	5.2%	135-140	0.58	0.3%
20-25	7.52	3.8%	80-85	9.52	4.8%	140-145	0.35	0.2%
25-30	8.82	4.5%	85-90	8.50	4.3%	145-150	0.20	0.1%
30-35	9.94	5.1%	90-95	7.35	3.7%	150-155	0.11	0.1%
35-40	10.85	5.5%	95-100	6.27	3.2%	155-160	0.06	0.0%
40-45	11.55	5.9%	100-105	5.24	2.7%	160-165	0.03	0.0%
45-50	12.00	6.1%	105-110	4.25	2.2%	165-170	0.01	0.0%
50-55	12.23	6.2%	110-115	3.34	1.7%	170-175	0.00	0.0%
55-60	12.24	6.2%	115-120	2.54	1.3%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	51	26.1%
0-60	99	50.5%
0-90	162	82.5%
90-180	34	17.5%



Candela Tabulation

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
	0	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72	37.72
	5	37.97	38.02	38.00	38.02	37.98	38.02	38.00	38.02	37.97	38.02	38.00	38.02	37.98	38.02	38.00
	10	37.56	37.58	37.57	37.57	37.56	37.57	37.57	37.58	37.56	37.58	37.57	37.57	37.56	37.57	37.58
	15	36.99	37.02	37.01	37.01	37.00	37.01	37.01	37.02	36.99	37.02	37.01	37.01	37.00	37.01	37.02
	20	36.24	36.28	36.28	36.25	36.24	36.25	36.28	36.28	36.24	36.28	36.28	36.25	36.24	36.25	36.28
	25	35.37	35.40	35.41	35.37	35.37	35.37	35.41	35.40	35.37	35.40	35.41	35.37	35.37	35.41	35.40
	30	34.30	34.35	34.37	34.34	34.35	34.34	34.37	34.35	34.30	34.35	34.37	34.34	34.35	34.34	34.35
	35	33.13	33.15	33.17	33.15	33.17	33.15	33.17	33.15	33.13	33.15	33.17	33.15	33.17	33.15	33.17
	40	31.84	31.87	31.88	31.88	31.93	31.88	31.88	31.87	31.84	31.87	31.88	31.88	31.93	31.88	31.87
	45	30.43	30.47	30.48	30.51	30.56	30.51	30.48	30.47	30.43	30.47	30.48	30.51	30.56	30.51	30.48
	50	28.90	28.90	28.94	28.96	28.97	28.96	28.94	28.90	28.90	28.90	28.94	28.96	28.97	28.96	28.94
	55	27.31	27.32	27.33	27.37	27.35	27.37	27.33	27.32	27.31	27.32	27.33	27.37	27.35	27.37	27.33
	60	25.58	25.61	25.59	25.62	25.63	25.62	25.59	25.61	25.58	25.61	25.59	25.62	25.63	25.62	25.59
	65	23.78	23.77	23.74	23.78	23.81	23.78	23.74	23.77	23.78	23.77	23.74	23.78	23.81	23.78	23.77
	70	21.92	21.91	21.89	21.92	21.95	21.92	21.89	21.91	21.92	21.91	21.89	21.92	21.95	21.92	21.89
	75	20.06	20.05	20.03	20.07	20.09	20.07	20.03	20.05	20.06	20.05	20.03	20.07	20.09	20.07	20.03
	80	18.44	18.43	18.39	18.41	18.38	18.41	18.39	18.43	18.44	18.43	18.39	18.41	18.38	18.41	18.39
	85	16.61	16.54	16.57	16.56	16.53	16.56	16.57	16.54	16.61	16.54	16.57	16.56	16.53	16.56	16.57
	90	14.49	14.45	14.40	14.46	14.51	14.46	14.40	14.45	14.49	14.45	14.40	14.46	14.51	14.46	14.45
	95	12.42	12.37	12.51	12.40	12.41	12.40	12.51	12.37	12.42	12.37	12.51	12.40	12.41	12.40	12.51
	100	10.68	10.67	10.68	10.62	10.61	10.62	10.68	10.67	10.68	10.67	10.68	10.62	10.61	10.62	10.68
	105	8.93	8.98	8.92	8.94	8.93	8.94	8.92	8.98	8.93	8.98	8.92	8.94	8.93	8.94	8.92
	110	7.32	7.33	7.29	7.33	7.36	7.33	7.29	7.33	7.32	7.33	7.29	7.33	7.36	7.33	7.29
	115	5.89	5.87	5.84	5.91	5.93	5.91	5.84	5.87	5.89	5.87	5.84	5.91	5.93	5.91	5.84
	120	4.59	4.56	4.56	4.60	4.64	4.60	4.56	4.56	4.59	4.56	4.56	4.60	4.64	4.60	4.56
	125	3.48	3.50	3.50	3.53	3.57	3.53	3.50	3.50	3.48	3.50	3.50	3.53	3.57	3.53	3.50
	130	2.58	2.60	2.60	2.60	2.64	2.60	2.60	2.60	2.58	2.60	2.60	2.60	2.64	2.60	2.60
	135	1.86	1.82	1.87	1.87	1.91	1.87	1.87	1.82	1.86	1.82	1.87	1.87	1.91	1.87	1.87
	140	1.27	1.27	1.27	1.32	1.33	1.32	1.27	1.27	1.27	1.27	1.32	1.33	1.32	1.27	1.27
	145	0.78	0.82	0.84	0.87	0.87	0.87	0.84	0.82	0.78	0.82	0.84	0.87	0.87	0.84	0.82
	150	0.47	0.53	0.54	0.56	0.57	0.56	0.54	0.53	0.47	0.53	0.54	0.56	0.57	0.56	0.54
	155	0.29	0.34	0.37	0.37	0.35	0.37	0.37	0.34	0.29	0.34	0.37	0.37	0.35	0.37	0.34
	160	0.20	0.20	0.21	0.22	0.22	0.22	0.21	0.20	0.20	0.20	0.21	0.22	0.22	0.21	0.20
	165	0.10	0.11	0.06	0.12	0.13	0.12	0.06	0.11	0.10	0.11	0.06	0.12	0.13	0.12	0.06
	170	0.00	0.02	0.03	0.03	0.00	0.03	0.03	0.02	0.00	0.02	0.03	0.03	0.00	0.03	0.02
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	45	90
	0	5294	5294
	45	6047	6072
	55	5393	5402
	65	4835	4840
	75	4330	4336
	85	3919	3900



Utilization of Lumens - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **																	
0	226	226	226	226	216	216	216	216	199	199	199	183	183	183	169	169	169	162
1	198	185	174	164	189	177	167	158	162	154	147	149	142	136	136	131	126	119
2	177	157	141	128	168	151	136	123	138	126	115	126	116	107	115	107	100	93
3	160	136	117	103	152	130	113	100	119	105	93	109	97	87	99	90	82	75
4	145	119	100	85	138	114	96	83	104	89	78	96	83	73	87	77	68	62
5	133	105	86	72	126	101	83	70	93	78	66	85	72	62	78	67	58	53
6	122	94	75	62	116	90	73	60	83	68	57	77	64	54	70	59	50	45
7	113	85	67	54	107	81	64	52	75	60	50	69	57	47	64	53	44	40
8	105	77	59	47	100	74	58	46	69	54	44	63	51	42	59	47	39	35
9	98	70	53	42	93	68	52	41	63	49	39	58	46	37	54	43	35	31
10	91	65	48	38	87	62	47	37	58	44	35	54	42	33	50	39	32	28

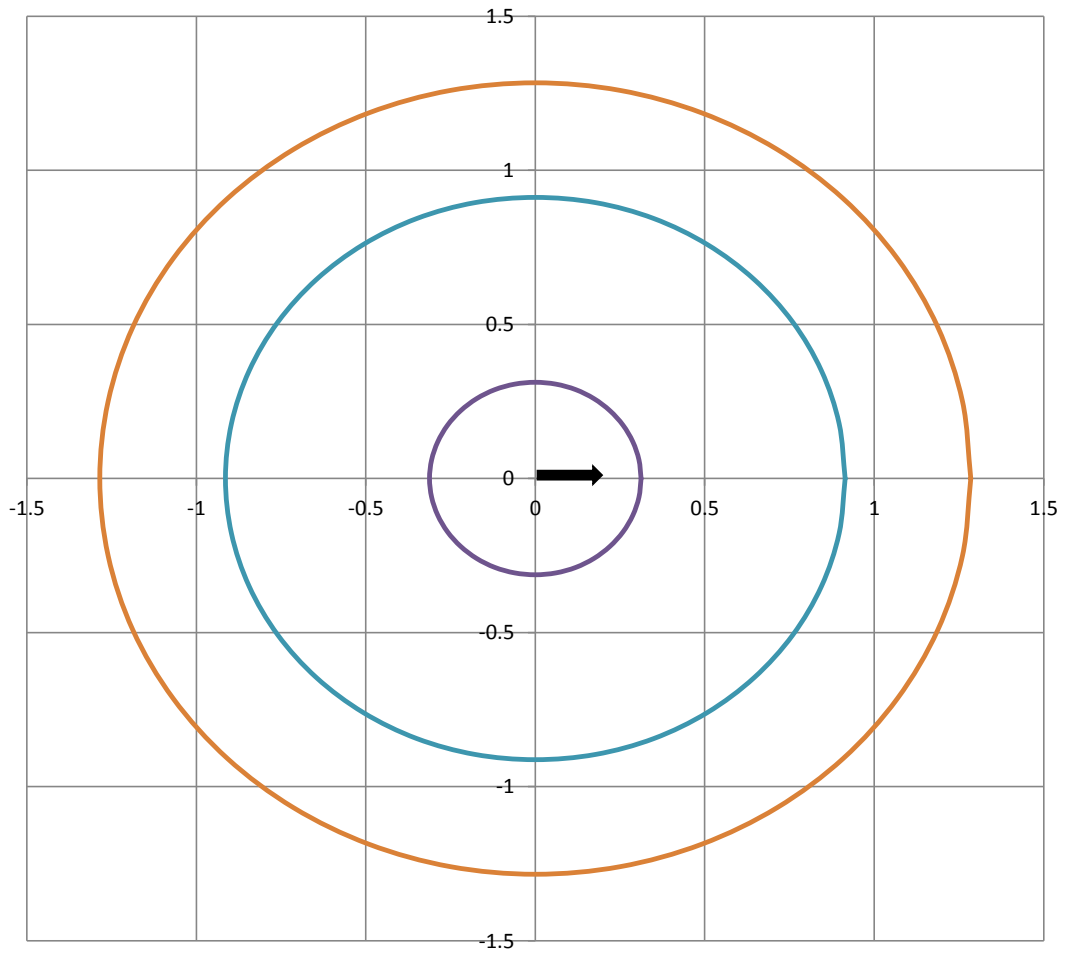
Beam and Field Information	
CIE Type:	Semi-Direct
Center Beam Intensity:	37.72 Candela
Central Cone Intensity:	38 Candela
Beam Flux:	141.2 Lumens
Beam Angle (0-180):	157.4 Degrees
Beam Angle (90-270):	156.9 Degrees
Field Angle (0-180):	247.1 Degrees
Field Angle (90-270):	248.0 Degrees

Cone of Light Tabulation			
Mounting Height (Feet)		Footcandles at Nadir	Diameter (Feet)
4.00		2.36	5.44
6.00		1.05	8.16
8.00		0.589	10.9
10.0		0.377	13.6
12.0		0.262	16.3
14.0		0.192	19.0
16.0		0.147	21.8



ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

