



UL Verification Services Inc.  
7036 Snowdrift Road  
Allentown, PA 18106  
610-774-1300

## Photometric Test Report

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

**Prepared For**  
**Auroralight Inc**

Stacia Elmore  
2742 Loker Ave W  
#100  
Carlsbad, CA 92010-6619  
United States

**Catalog Number**  
**HSL16/HSL20-LM-4-SF-30 (4W, 60° SUPER FLOOD OPTIC, 3000K)**

Order Number  
13931356  
Test Number  
13931356.25

Test Date

2021-07-29

Prepared By

Josh Mitchell, Technician

Approved By

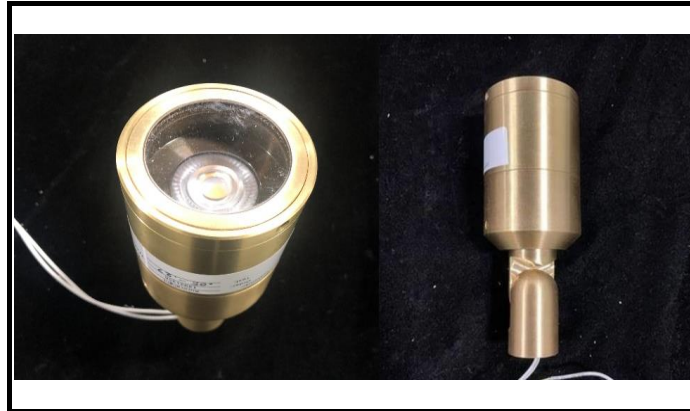
Alexa Lambert, Project Handler

The results contained in this report pertain only to the tested sample.  
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**Luminaire Description:** Cylindrical brass body with adjustable knuckle  
**Lamp:** One white LED  
**Mounting:** Flood  
**Ballast/Driver:** Integral  
**Note:** Report extrapolated using data from Test Numbers 13931356.05, 13931356.08, and 13931356.10

#### Luminaire



#### Luminaire Characteristics

Luminous Diameter: 1.88 in.

#### Summary of Results

Roadway Classification: Type V, Very Short  
Cutoff Classification: Full Cutoff  
BUG Rating: B1 U0 G0

#### Test Conditions

Test Temperature: 25.0 °C  
Voltage: 12.21 VAC  
Current: 0.3481 A  
Power: 3.706 W  
Power Factor: 0.872  
Frequency: 60 Hz  
Current THD: 47.8 %

Tested in 30 planes left side, 30 planes right side, left and right averaged  
Vertical test increments are 2.5 degrees  
Test distance exceeds five times the greatest luminous opening of luminaire

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
25.0 °C	12.21 VAC	0.3481 A	3.706 W	0.872	60 Hz	47.8 %

### Summary of Results

#### Spacing Criteria

0-180: 1.01

90-270: 1.01

Total Lumen Output:

322.5 Lumens

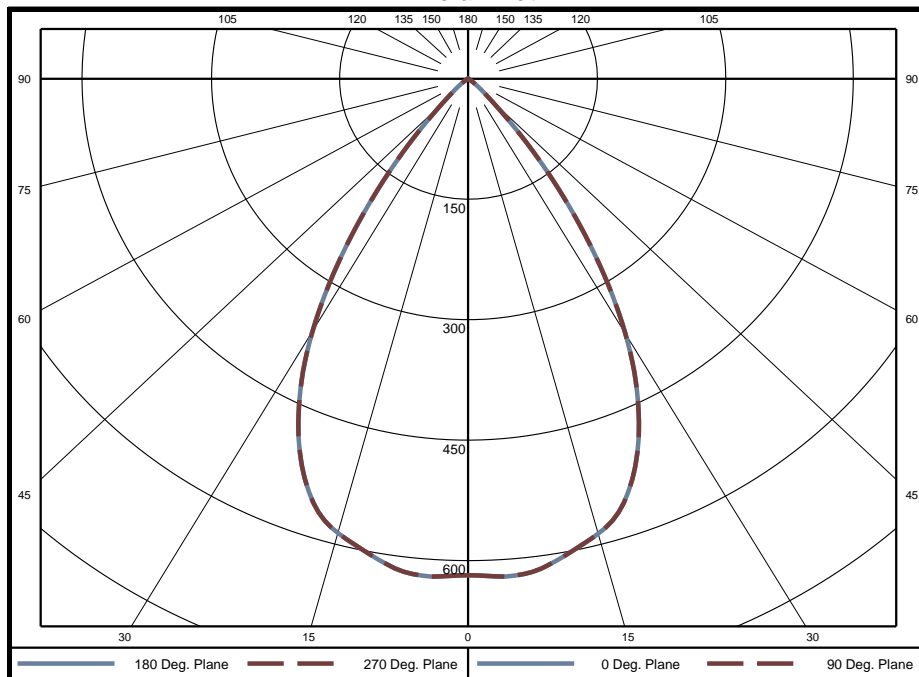
Luminaire Efficacy:

87.0 lm/w

Maximum Candela:

319 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	7.62	2.4%	60-65	0.38	0.1%	120-125	0	0.0%
5-10	22.60	7.0%	65-70	0.32	0.1%	125-130	0	0.0%
10-15	36.32	11.3%	70-75	0.26	0.1%	130-135	0	0.0%
15-20	48.14	14.9%	75-80	0.17	0.1%	135-140	0	0.0%
20-25	54.94	17.0%	80-85	0.09	0.0%	140-145	0	0.0%
25-30	54.57	16.9%	85-90	0.03	0.0%	145-150	0	0.0%
30-35	45.65	14.2%	90-95	0	0.0%	150-155	0	0.0%
35-40	29.86	9.3%	95-100	0	0.0%	155-160	0	0.0%
40-45	13.61	4.2%	100-105	0	0.0%	160-165	0	0.0%
45-50	5.10	1.6%	105-110	0	0.0%	165-170	0	0.0%
50-55	2.08	0.6%	110-115	0	0.0%	170-175	0	0.0%
55-60	0.72	0.2%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	300	92.9%
0-60	321	99.6%
0-90	322	100.0%
90-180	0	0.0%



### Candela Tabulation

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	Horizontal 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	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4	317.4
	5	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8	318.8
	10	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0
	15	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0	301.0
	20	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6	280.6
	25	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9	241.9
	30	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3	188.3
	35	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3	122.3
	40	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
	45	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7
	50	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
	55	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	60	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	65	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	70	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	75	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	80	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	85	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

### Average Luminance (cd/m<sup>2</sup>)

Horizontal Angle (Degrees)

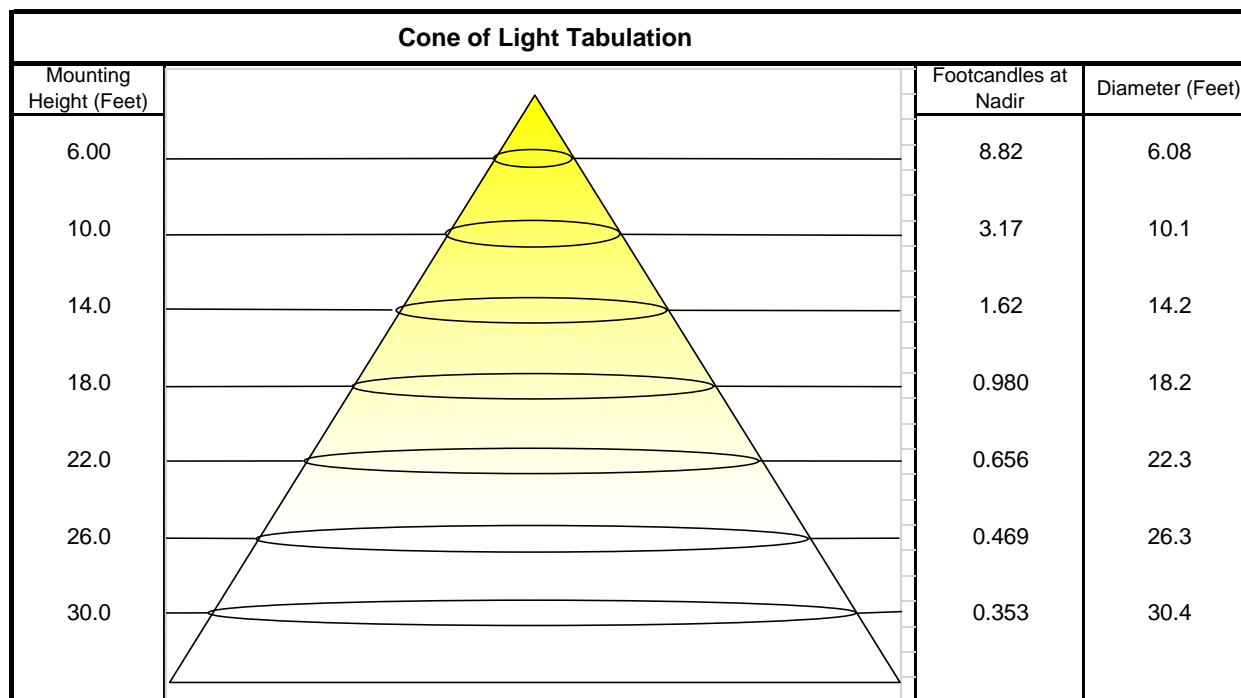
Vertical Angle (Degrees)	Horizontal Angle (Degrees)		
	0	45	90
	0	177200	177200
	45	15570	15570
	55	2654	2654
	65	907	907
	75	892	892
	85	664	664



### 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	384	384	384	384	375	375	375	375	358	358	358	343	343	343	329	329	329	322
1	366	357	349	342	358	350	343	336	337	331	326	325	320	316	314	310	307	301
2	348	332	319	308	340	326	314	304	316	306	297	306	298	291	297	291	285	280
3	330	309	293	280	323	304	289	277	296	283	273	288	278	269	281	272	265	260
4	313	288	270	256	307	284	268	255	277	263	252	271	259	249	265	255	246	241
5	297	269	250	236	291	266	248	235	260	245	233	255	242	231	250	238	229	224
6	281	252	233	219	276	250	231	218	245	228	216	240	226	215	236	223	213	209
7	267	237	217	203	263	234	216	203	230	214	202	226	212	200	223	209	199	195
8	254	222	203	189	250	221	202	189	217	200	188	214	198	187	211	197	187	182
9	241	210	190	177	237	208	189	177	205	188	176	202	187	176	199	185	175	171
10	229	198	179	166	226	196	178	166	194	177	165	191	176	165	189	175	164	160

Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	317.4 Candela
Central Cone Intensity:	318 Candela
Beam Flux:	246.3 Lumens
Beam Angle (0-180):	64.6 Degrees
Beam Angle (90-270):	64.6 Degrees
Field Angle (0-180):	85.9 Degrees
Field Angle (90-270):	85.9 Degrees





**IES "BUG" Rating**  
(Back Light, Uplight, Glare)  
Per IES TM-15-11



Luminaire Classification System (LCS)

LCS	Zone	Lumens	Luminaire %
FL	(0-30)	218.3	34.7%
FM	(30-60)	94.6	15.1%
FH	(60-80)	1.1	0.2%
FVH	(80-90)	0.1	0.0%
BL	(0-30)	218.3	34.7%
BM	(30-60)	94.6	15.1%
BH	(60-80)	1.1	0.2%
BVH	(80-90)	0.1	0.0%
UL	(90-100)	0.0	0.0%
UH	(100-180)	0.0	0.0%
Total		628.1	100.0%
<b>BUG Rating</b>	<b>B1 U0 G0</b>		