



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

## Integrating Sphere Test Report

Relevant Standards  
IES LM-79-2008  
ANSI C78.377-2011, ANSI C82.77-2002  
CIE 13.3-1995, CIE 15-2004

Prepared For  
Elemental LED Inc, DBA Diode LED  
Wes Buck  
Suite 211, 1195 Park Ave.  
Emeryville, CA 94608  
United States

Catalog Number  
HYDROLUME™ Plus 24V LED Strip Light DI-24V-HLP35-80-XX

Order Number  
10460077  
Test Number  
758966

Test Date  
2014-09-26

Prepared By

*Javier Caban*

Javier Caban, Technician

Approved By

*Eric M. Gaudreau*

Eric Gaudreau, Engineering Project Handler

The results contained in this report pertain only to the tested sample.  
This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.



Luminaire Description: LED strip  
Catalog Number: HYDROLUME™ Plus 24V LED Strip Light DI-24V-HLP35-80-XX  
Lamp: 12 white LEDs  
Mounting: Surface  
Ballast/Driver: One Meanwell LPV-60-24

Luminaire



#### Summary of Results

Radiant Flux:	643.0 mW
Luminous Flux:	205.6 Lumens
Luminaire Efficacy:	55.3 Lumens/Watt
CCT:	3385 K
CRI (Ra):	77.9
Chromaticity (x):	0.4137
Chromaticity (y):	0.3986
Chromaticity (u):	0.2379
Chromaticity (v):	0.3438
Duv:	0.0012

#### Test Conditions

Test Temperature:	25.0 °C
Voltage:	120.0 VAC
Current:	0.07867 A
Power:	3.717 W
Power Factor:	0.396
Frequency:	60 Hz
Current THD:	189 %

Testing was performed in a 1-meter integrating sphere using the 4 $\pi$  geometry method.

Absorption correction was employed for this measurement.

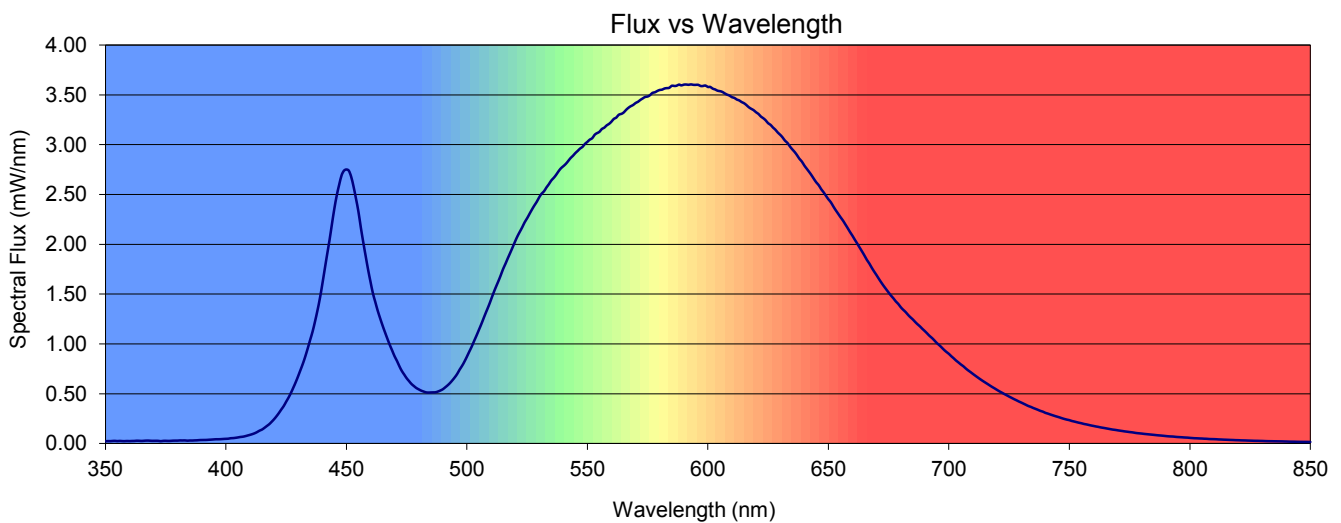
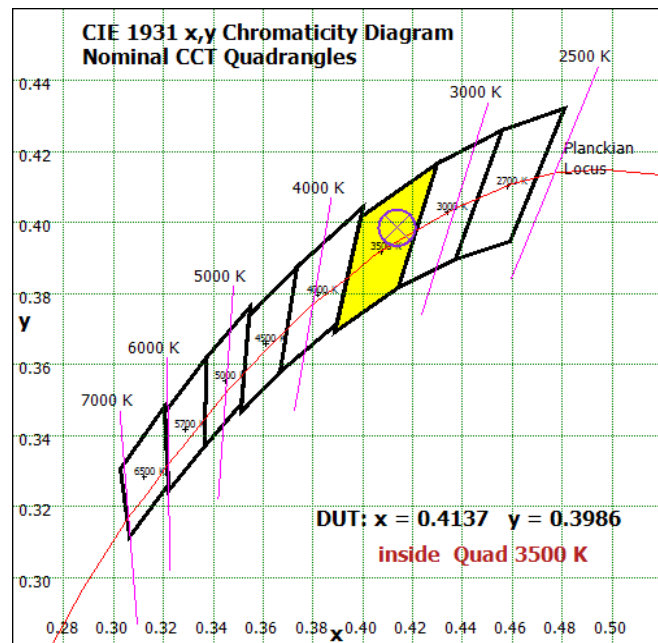
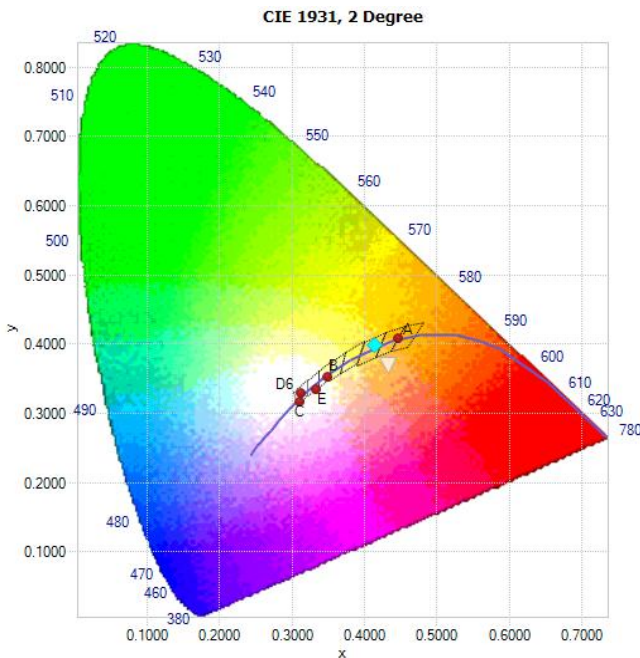


Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.4137	0.3986	0.2379	0.3438	0.2379	0.5157	0.0012

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
77.9	76.2	82.9	87.0	76.9	74.2	74.4	86.3	65.0	10.9	58.0	71.8	48.1	76.9	92.1





Spectral Power Distribution

$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm	$\lambda$ (nm)	mW/nm
350	0.0224	422	0.306	494	0.635	566	3.35	638	2.86	710	0.698	782	0.0943		
351	0.0241	423	0.342	495	0.665	567	3.37	639	2.83	711	0.680	783	0.0917		
352	0.0238	424	0.376	496	0.699	568	3.39	640	2.79	712	0.663	784	0.0893		
353	0.0257	425	0.419	497	0.742	569	3.40	641	2.76	713	0.646	785	0.0869		
354	0.0265	426	0.461	498	0.779	570	3.42	642	2.73	714	0.629	786	0.0842		
355	0.0243	427	0.509	499	0.823	571	3.43	643	2.69	715	0.614	787	0.0819		
356	0.0260	428	0.562	500	0.871	572	3.45	644	2.66	716	0.598	788	0.0800		
357	0.0242	429	0.617	501	0.923	573	3.46	645	2.62	717	0.583	789	0.0776		
358	0.0239	430	0.677	502	0.973	574	3.48	646	2.59	718	0.567	790	0.0750		
359	0.0251	431	0.741	503	1.03	575	3.48	647	2.55	719	0.553	791	0.0725		
360	0.0244	432	0.805	504	1.08	576	3.50	648	2.52	720	0.538	792	0.0710		
361	0.0254	433	0.878	505	1.14	577	3.52	649	2.49	721	0.524	793	0.0698		
362	0.0258	434	0.958	506	1.20	578	3.53	650	2.45	722	0.511	794	0.0673		
363	0.0280	435	1.04	507	1.26	579	3.54	651	2.42	723	0.497	795	0.0651		
364	0.0273	436	1.13	508	1.32	580	3.55	652	2.38	724	0.484	796	0.0637		
365	0.0260	437	1.23	509	1.38	581	3.55	653	2.34	725	0.471	797	0.0620		
366	0.0276	438	1.34	510	1.44	582	3.56	654	2.31	726	0.459	798	0.0603		
367	0.0293	439	1.46	511	1.51	583	3.57	655	2.27	727	0.446	799	0.0590		
368	0.0291	440	1.60	512	1.57	584	3.57	656	2.24	728	0.435	800	0.0568		
369	0.0272	441	1.75	513	1.63	585	3.59	657	2.20	729	0.423	801	0.0548		
370	0.0270	442	1.90	514	1.69	586	3.59	658	2.16	730	0.411	802	0.0531		
371	0.0273	443	2.04	515	1.75	587	3.59	659	2.12	731	0.400	803	0.0522		
372	0.0265	444	2.20	516	1.80	588	3.60	660	2.09	732	0.388	804	0.0508		
373	0.0235	445	2.36	517	1.86	589	3.60	661	2.04	733	0.376	805	0.0500		
374	0.0267	446	2.49	518	1.92	590	3.60	662	2.01	734	0.368	806	0.0482		
375	0.0272	447	2.60	519	1.97	591	3.60	663	1.97	735	0.357	807	0.0474		
376	0.0261	448	2.69	520	2.03	592	3.60	664	1.93	736	0.347	808	0.0452		
377	0.0267	449	2.74	521	2.08	593	3.60	665	1.89	737	0.338	809	0.0445		
378	0.0285	450	2.75	522	2.13	594	3.60	666	1.84	738	0.327	810	0.0438		
379	0.0291	451	2.74	523	2.17	595	3.60	667	1.81	739	0.320	811	0.0427		
380	0.0293	452	2.68	524	2.22	596	3.60	668	1.76	740	0.308	812	0.0411		
381	0.0310	453	2.58	525	2.26	597	3.59	669	1.73	741	0.301	813	0.0400		
382	0.0304	454	2.46	526	2.31	598	3.59	670	1.69	742	0.292	814	0.0389		
383	0.0312	455	2.33	527	2.35	599	3.59	671	1.65	743	0.284	815	0.0380		
384	0.0287	456	2.17	528	2.39	600	3.58	672	1.62	744	0.276	816	0.0369		
385	0.0302	457	2.02	529	2.43	601	3.58	673	1.58	745	0.269	817	0.0359		
386	0.0299	458	1.88	530	2.47	602	3.56	674	1.55	746	0.261	818	0.0351		
387	0.0313	459	1.75	531	2.51	603	3.55	675	1.52	747	0.253	819	0.0338		
388	0.0322	460	1.62	532	2.53	604	3.54	676	1.48	748	0.246	820	0.0331		
389	0.0344	461	1.51	533	2.57	605	3.54	677	1.46	749	0.240	821	0.0321		
390	0.0351	462	1.42	534	2.60	606	3.53	678	1.43	750	0.234	822	0.0312		
391	0.0355	463	1.33	535	2.64	607	3.51	679	1.40	751	0.226	823	0.0308		
392	0.0360	464	1.26	536	2.67	608	3.50	680	1.37	752	0.221	824	0.0298		
393	0.0379	465	1.19	537	2.70	609	3.49	681	1.34	753	0.215	825	0.0289		
394	0.0392	466	1.12	538	2.73	610	3.48	682	1.32	754	0.209	826	0.0281		
395	0.0413	467	1.05	539	2.76	611	3.47	683	1.29	755	0.203	827	0.0272		
396	0.0427	468	0.990	540	2.78	612	3.45	684	1.27	756	0.197	828	0.0269		
397	0.0428	469	0.933	541	2.81	613	3.44	685	1.25	757	0.192	829	0.0262		
398	0.0439	470	0.876	542	2.83	614	3.43	686	1.22	758	0.187	830	0.0256		
399	0.0458	471	0.829	543	2.86	615	3.42	687	1.20	759	0.181	831	0.0246		
400	0.0472	472	0.775	544	2.89	616	3.40	688	1.18	760	0.176	832	0.0237		
401	0.0485	473	0.729	545	2.92	617	3.38	689	1.15	761	0.171	833	0.0233		
402	0.0530	474	0.692	546	2.94	618	3.36	690	1.13	762	0.167	834	0.0230		
403	0.0543	475	0.655	547	2.96	619	3.35	691	1.10	763	0.162	835	0.0225		
404	0.0573	476	0.627	548	2.98	620	3.32	692	1.08	764	0.158	836	0.0222		
405	0.0609	477	0.598	549	3.01	621	3.31	693	1.06	765	0.153	837	0.0216		
406	0.0655	478	0.577	550	3.03	622	3.28	694	1.03	766	0.149	838	0.0215		
407	0.0683	479	0.558	551	3.05	623	3.27	695	1.01	767	0.144	839	0.0205		
408	0.0735	480	0.544	552	3.06	624	3.24	696	0.988	768	0.140	840	0.0199		
409	0.0802	481	0.531	553	3.10	625	3.22	697	0.965	769	0.137	841	0.0190		
410	0.0871	482	0.522	554	3.12	626	3.20	698	0.940	770	0.133	842	0.0184		
411	0.0945	483	0.514	555	3.13	627	3.17	699	0.919	771	0.129	843	0.0183		
412	0.104	484	0.512	556	3.16	628	3.15	700	0.900	772	0.125	844	0.0177		
413	0.116	485	0.513	557	3.17	629	3.12	701	0.876	773	0.122	845	0.0170		
414	0.130	486	0.513	558	3.19	630	3.10	702	0.856	774	0.119	846	0.0167		
415	0.140	487	0.514	559	3.21	631	3.07	703	0.833	775	0.115	847	0.0164		
416	0.157	488	0.522	560	3.23	632	3.04	704	0.814	776	0.112	848	0.0163		
417	0.176	489	0.532	561	3.26	633	3.02	705	0.793	777	0.108	849	0.0161		
418	0.194	490	0.545	562	3.27	634	2.98	706	0.776	778	0.105	850	0.0156		
419	0.218	491	0.564	563	3.30	635	2.95	707	0.754	779	0.102				
420	0.244	492	0.584	564	3.31	636	2.93	708	0.734	780	0.0998				
421	0.274	493	0.607	565	3.32	637	2.89	709	0.717	781	0.0967				



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

## Photometric Indoor Test Report

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

Prepared For  
Elemental LED Inc, DBA Diode LED  
Wes Buck  
Suite 211, 1195 Park Ave.  
Emeryville, CA 94608  
United States

Catalog Number  
HYDROLUME™ Plus 24V LED Strip Light DI-24V-HLP35-80-XX  
Project Number  
10460077  
Test Number  
758965

Test Date

2014-09-24

Prepared By

*Javier Caban*

Javier Caban, Technician

Approved By

*Eric M. Gaudreau*

Eric Gaudreau, Engineering Project Handler

The results contained in this report pertain only to the tested sample.  
This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.



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

Luminaire Description: LED strip  
Catalog Number: HYDROLUME™ Plus 24V LED Strip Light DI-24V-HLP35-80-XX  
Lamp: 12 white LEDs  
Mounting: Surface  
Ballast/Driver: One Meanwell LPV-60-24

Luminaire

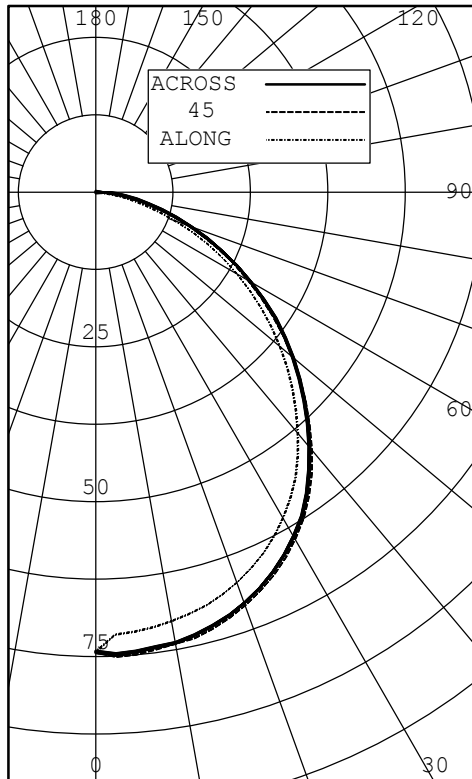


Test Conditions

Test Temperature:	24.3 °C
Voltage:	120.0 VAC
Current:	0.07319 A
Power:	3.674 W
Power Factor:	0.418
Frequency:	60 Hz
Current THD:	177 %



INTENSITY (CANDLEPOWER) SUMMARY OUTPUT LUMENS



ANGLE	ALONG 22.5	ALONG 45	ALONG 67.5	ACROSS 45	ACROSS 67.5	OUTPUT LUMENS
0	74	74	74	74	74	
5	71	74	75	75	75	7
10	70	74	74	74	74	
15	69	72	73	73	73	20
20	67	70	71	71	71	
25	64	67	68	68	68	31
30	61	64	65	64	64	
35	56	59	60	60	59	37
40	51	54	54	54	54	
45	45	47	48	48	48	36
50	39	41	42	42	42	
55	33	34	35	35	35	31
60	26	28	28	29	29	
65	20	21	22	23	23	22
70	14	15	16	16	17	
75	8	9	11	11	11	11
80	4	5	6	7	7	
85	1	2	3	3	4	3
90	0	0	0	0	0	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	58	29.50
0-40	95	48.08
0-60	163	82.04
0-90	198	100.00
40-90	103	51.92
60-90	36	17.96
90-180	0	0.00
0-180	198	100.00

EFFICACY (LUMENS PER WATT): 53.6

\*\*\* THIS IS AN ABSOLUTE TEST \*\*\*

LUMINOUS LENGTH: 12.000 INS  
 WIDTH: 0.500 INS

LUMINANCE SUMMARY CD./SQ.M.

S/MH: 1.3  
 SC (ALONG): 1.2, SC (ACROSS): 1.3

ANGLE	ALONG	45	ACROSS
45	16403	17566	17474
55	14682	15756	16004
65	12255	13434	13898
75	8434	10592	11221
85	4001	8320	10414

TESTED IN ACCORDANCE WITH IES PROCEDURES.



INTENSITY (CANDLEPOWER) DATA  
 IN 2.5 DEGREE STEPS

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	22.5	45	67.5	ACROSS	AVERAGE	
0.0	74	74	74	74	74	74	
2.5	72	75	75	75	75	74	
5.0	71	74	75	75	75	74	7
7.5	71	74	75	74	74	74	
10.0	70	74	74	74	74	73	
12.5	70	73	74	73	73	73	
15.0	69	72	73	73	73	72	20
17.5	68	71	72	72	72	71	
20.0	67	70	71	71	71	70	
22.5	66	69	70	69	69	69	
25.0	64	67	68	68	68	67	31
27.5	63	66	67	66	66	66	
30.0	61	64	65	64	64	64	
32.5	59	62	62	62	62	62	
35.0	56	59	60	60	59	59	37
37.5	54	56	57	57	57	56	
40.0	51	54	54	54	54	53	
42.5	48	50	51	51	51	50	
45.0	45	47	48	48	48	47	36
47.5	42	44	45	45	45	44	
50.0	39	41	42	42	42	41	
52.5	36	38	38	38	39	38	
55.0	33	34	35	35	35	35	31
57.5	29	31	32	32	32	31	
60.0	26	28	28	29	29	28	
62.5	23	25	25	26	26	25	
65.0	20	21	22	23	23	22	22
67.5	17	18	19	19	20	19	
70.0	14	15	16	16	17	16	
72.5	11	12	13	14	14	13	
75.0	8	9	11	11	11	10	11
77.5	6	7	8	9	9	8	
80.0	4	5	6	7	7	6	
82.5	3	3	4	5	5	4	
85.0	1	2	3	3	4	3	3
87.5	1	1	2	2	3	2	
90.0	0	0	0	0	0	0	





COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

CC WALL	90				80				70				50				30				10				0	
	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR	0	1.221	.221	.221	.22	1.191	.191	.191	.19	1.161	.161	.161	.16	1.111	.111	.111	.11	1.061	.061	.061	.06	1.021	.021	.021	.02	1.00
	1	1.131	.081	.041	.00	1.101	.061	.020	.98	1.071	.041	.000	.97	0.990	.960	.94	0.950	.930	.91	0.920	.900	.88	0.86			
	2	1.040	.960	.900	.84	1.010	.940	.880	.83	0.990	.920	.870	.82	0.890	.840	.80	0.860	.820	.78	0.830	.790	.76	0.74			
	3	0.950	.850	.770	.71	0.930	.830	.760	.70	0.910	.820	.750	.70	0.790	.730	.69	0.760	.720	.67	0.740	.700	.66	0.64			
	4	0.880	.760	.680	.62	0.860	.750	.670	.61	0.840	.740	.670	.61	0.710	.650	.60	0.690	.640	.59	0.670	.620	.58	0.56			
	5	0.820	.690	.600	.53	0.790	.670	.590	.53	0.770	.660	.580	.53	0.640	.570	.52	0.620	.560	.51	0.600	.550	.51	0.49			
	6	0.750	.620	.530	.47	0.730	.610	.520	.46	0.710	.600	.520	.46	0.580	.510	.45	0.560	.500	.45	0.550	.490	.45	0.43			
	7	0.690	.550	.460	.41	0.670	.540	.460	.40	0.660	.540	.460	.40	0.520	.450	.40	0.500	.440	.39	0.490	.430	.39	0.37			
	8	0.640	.500	.420	.36	0.630	.490	.410	.36	0.610	.490	.410	.35	0.470	.400	.35	0.460	.400	.35	0.450	.390	.35	0.33			
	9	0.590	.460	.370	.31	0.580	.450	.370	.31	0.570	.440	.370	.31	0.430	.360	.31	0.420	.350	.31	0.410	.350	.31	0.29			
	10	0.550	.420	.330	.28	0.540	.410	.330	.28	0.530	.400	.330	.28	0.390	.320	.28	0.380	.320	.27	0.380	.320	.27	0.26			

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS  
 BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.  
 LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD  
 THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.  
 BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST  
 LUMINOUS OPENING OF LUMINAIRE.



## Cone of Light

**Cone Of Light Tabulation**

Mounting Height (Feet)	Footcandles at Nadir	Diameter (Feet)
4.00	4.68	5.05
6.00	2.08	7.58
8.00	1.17	10.1
10.0	0.749	12.6
12.0	0.520	15.2
14.0	0.382	17.7
16.0	0.292	20.2

**Cone of Light Plot**

