



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™ 24V LED Strip Light DI-24V-HL65-80-XX

Order Number  
10460077  
Test Number  
758964

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.  
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Luminaire Description: LED strip  
Catalog Number: HYDROLUME™ 24V LED Strip Light DI-24V-HL65-80-XX  
Lamp: 12 white LEDs  
Mounting: Surface  
Ballast/Driver: One Meanwell LPV-60-24

Luminaire



#### Summary of Results

Radiant Flux: 343.7 mW  
Luminous Flux: 103.1 Lumens  
Luminaire Efficacy: 42.8 Lumens/Watt  
CCT: 6851 K  
CRI (Ra): 71.4  
Chromaticity (x): 0.3096  
Chromaticity (y): 0.3113  
Chromaticity (u): 0.2025  
Chromaticity (v): 0.3054  
Duv: -0.0051

#### Test Conditions

Test Temperature: 25.0 °C  
Voltage: 120.0 VAC  
Current: 0.05532 A  
Power: 2.410 W  
Power Factor: 0.362  
Frequency: 60 Hz  
Current THD: 173 %

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

Absorption correction was employed for this measurement.

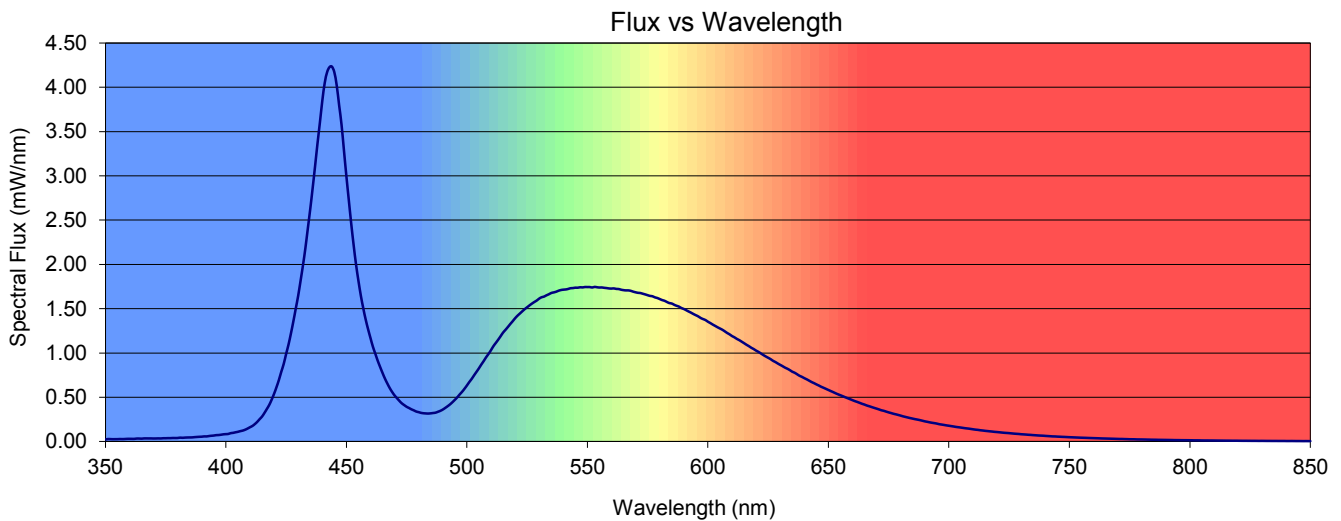
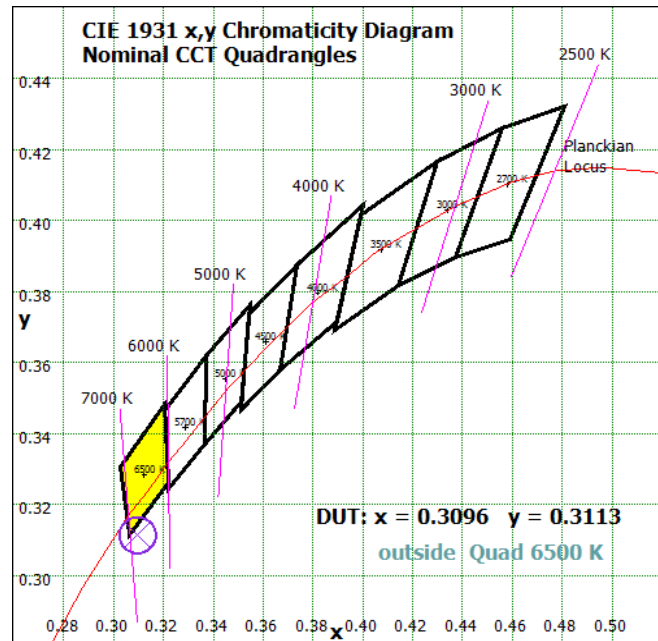
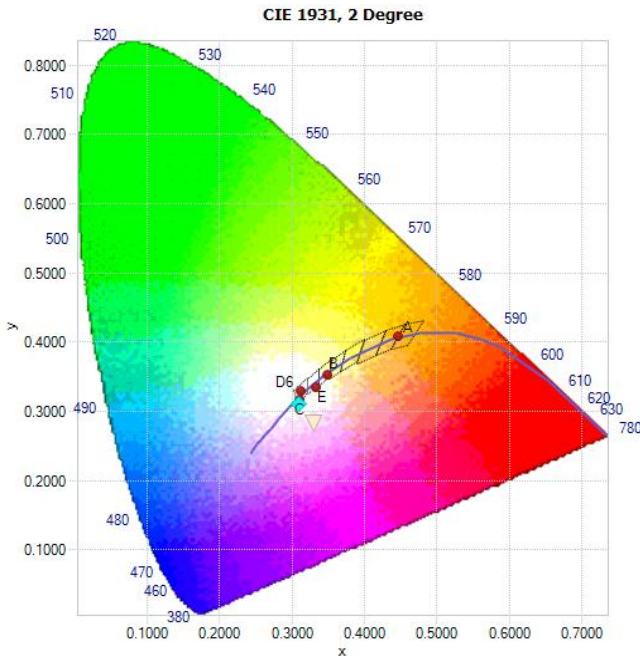


Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.3096	0.3113	0.2025	0.3054	0.2025	0.4581	-0.0051

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
71.4	74.0	72.7	68.6	74.4	74.9	63.6	75.9	66.7	-8.3	32.6	75.8	44.6	71.7	81.9





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
350	0.0229	422	0.695	494	0.444	566	1.71	638	0.743	710	0.138	782	0.0220
351	0.0276	423	0.789	495	0.471	567	1.71	639	0.731	711	0.134	783	0.0212
352	0.0274	424	0.877	496	0.499	568	1.70	640	0.716	712	0.131	784	0.0206
353	0.0261	425	0.990	497	0.531	569	1.69	641	0.702	713	0.127	785	0.0203
354	0.0265	426	1.10	498	0.561	570	1.69	642	0.688	714	0.124	786	0.0198
355	0.0269	427	1.22	499	0.596	571	1.68	643	0.672	715	0.121	787	0.0191
356	0.0279	428	1.36	500	0.632	572	1.68	644	0.660	716	0.118	788	0.0187
357	0.0274	429	1.50	501	0.672	573	1.67	645	0.646	717	0.115	789	0.0183
358	0.0282	430	1.65	502	0.707	574	1.66	646	0.633	718	0.112	790	0.0180
359	0.0302	431	1.82	503	0.748	575	1.65	647	0.619	719	0.109	791	0.0174
360	0.0304	432	1.99	504	0.787	576	1.64	648	0.607	720	0.107	792	0.0171
361	0.0300	433	2.18	505	0.827	577	1.64	649	0.594	721	0.104	793	0.0166
362	0.0300	434	2.41	506	0.870	578	1.63	650	0.582	722	0.101	794	0.0159
363	0.0335	435	2.63	507	0.910	579	1.62	651	0.570	723	0.0986	795	0.0158
364	0.0335	436	2.86	508	0.953	580	1.61	652	0.558	724	0.0967	796	0.0153
365	0.0323	437	3.11	509	0.990	581	1.60	653	0.545	725	0.0946	797	0.0150
366	0.0348	438	3.36	510	1.03	582	1.59	654	0.533	726	0.0918	798	0.0147
367	0.0353	439	3.60	511	1.08	583	1.58	655	0.522	727	0.0892	799	0.0145
368	0.0349	440	3.85	512	1.11	584	1.56	656	0.511	728	0.0870	800	0.0143
369	0.0348	441	4.05	513	1.15	585	1.56	657	0.500	729	0.0851	801	0.0138
370	0.0340	442	4.17	514	1.19	586	1.54	658	0.489	730	0.0823	802	0.0133
371	0.0344	443	4.23	515	1.23	587	1.53	659	0.478	731	0.0804	803	0.0132
372	0.0351	444	4.23	516	1.26	588	1.52	660	0.467	732	0.0786	804	0.0128
373	0.0346	445	4.17	517	1.29	589	1.51	661	0.456	733	0.0762	805	0.0121
374	0.0369	446	4.02	518	1.33	590	1.50	662	0.447	734	0.0745	806	0.0119
375	0.0371	447	3.80	519	1.36	591	1.48	663	0.436	735	0.0723	807	0.0117
376	0.0382	448	3.57	520	1.39	592	1.47	664	0.426	736	0.0705	808	0.0116
377	0.0382	449	3.29	521	1.42	593	1.46	665	0.417	737	0.0684	809	0.0115
378	0.0398	450	3.00	522	1.45	594	1.44	666	0.406	738	0.0669	810	0.0112
379	0.0393	451	2.73	523	1.47	595	1.43	667	0.398	739	0.0658	811	0.0108
380	0.0402	452	2.46	524	1.50	596	1.41	668	0.389	740	0.0636	812	0.0105
381	0.0437	453	2.22	525	1.52	597	1.40	669	0.380	741	0.0618	813	0.0102
382	0.0422	454	2.00	526	1.54	598	1.38	670	0.371	742	0.0600	814	0.0101
383	0.0441	455	1.82	527	1.56	599	1.37	671	0.363	743	0.0579	815	0.00977
384	0.0453	456	1.65	528	1.58	600	1.35	672	0.353	744	0.0572	816	0.00957
385	0.0460	457	1.51	529	1.59	601	1.34	673	0.347	745	0.0555	817	0.00923
386	0.0466	458	1.38	530	1.61	602	1.32	674	0.338	746	0.0541	818	0.00913
387	0.0494	459	1.27	531	1.63	603	1.31	675	0.329	747	0.0528	819	0.00912
388	0.0514	460	1.17	532	1.64	604	1.29	676	0.322	748	0.0517	820	0.00879
389	0.0533	461	1.07	533	1.65	605	1.28	677	0.313	749	0.0502	821	0.00845
390	0.0545	462	0.992	534	1.66	606	1.26	678	0.307	750	0.0487	822	0.00821
391	0.0577	463	0.912	535	1.68	607	1.24	679	0.300	751	0.0477	823	0.00817
392	0.0577	464	0.842	536	1.68	608	1.23	680	0.293	752	0.0465	824	0.00794
393	0.0619	465	0.774	537	1.69	609	1.21	681	0.284	753	0.0453	825	0.00772
394	0.0650	466	0.710	538	1.70	610	1.19	682	0.278	754	0.0441	826	0.00740
395	0.0674	467	0.655	539	1.71	611	1.18	683	0.271	755	0.0429	827	0.00761
396	0.0719	468	0.603	540	1.71	612	1.16	684	0.264	756	0.0423	828	0.00712
397	0.0732	469	0.559	541	1.72	613	1.15	685	0.258	757	0.0413	829	0.00694
398	0.0768	470	0.520	542	1.72	614	1.13	686	0.252	758	0.0401	830	0.00735
399	0.0813	471	0.489	543	1.73	615	1.11	687	0.247	759	0.0391	831	0.00680
400	0.0834	472	0.458	544	1.73	616	1.09	688	0.241	760	0.0382	832	0.00674
401	0.0857	473	0.431	545	1.74	617	1.08	689	0.235	761	0.0373	833	0.00656
402	0.0944	474	0.411	546	1.74	618	1.06	690	0.228	762	0.0364	834	0.00636
403	0.0979	475	0.392	547	1.74	619	1.04	691	0.223	763	0.0353	835	0.00631
404	0.104	476	0.378	548	1.74	620	1.03	692	0.217	764	0.0342	836	0.00618
405	0.110	477	0.363	549	1.74	621	1.01	693	0.212	765	0.0338	837	0.00599
406	0.117	478	0.352	550	1.74	622	0.995	694	0.207	766	0.0329	838	0.00602
407	0.123	479	0.339	551	1.74	623	0.977	695	0.202	767	0.0321	839	0.00597
408	0.134	480	0.332	552	1.74	624	0.961	696	0.196	768	0.0312	840	0.00554
409	0.146	481	0.324	553	1.75	625	0.946	697	0.192	769	0.0304	841	0.00542
410	0.161	482	0.319	554	1.74	626	0.931	698	0.187	770	0.0294	842	0.00558
411	0.176	483	0.317	555	1.74	627	0.912	699	0.182	771	0.0287	843	0.00553
412	0.197	484	0.316	556	1.74	628	0.898	700	0.178	772	0.0286	844	0.00520
413	0.222	485	0.318	557	1.74	629	0.881	701	0.174	773	0.0274	845	0.00508
414	0.252	486	0.322	558	1.73	630	0.866	702	0.169	774	0.0268	846	0.00495
415	0.282	487	0.326	559	1.73	631	0.851	703	0.165	775	0.0257	847	0.00445
416	0.323	488	0.336	560	1.73	632	0.835	704	0.161	776	0.0254	848	0.00467
417	0.367	489	0.347	561	1.73	633	0.822	705	0.158	777	0.0251	849	0.00456
418	0.414	490	0.361	562	1.72	634	0.807	706	0.153	778	0.0238	850	0.00456
419	0.473	491	0.379	563	1.72	635	0.789	707	0.149	779	0.0233		
420	0.539	492	0.398	564	1.71	636	0.777	708	0.146	780	0.0231		
421	0.614	493	0.420	565	1.71	637	0.760	709	0.142	781	0.0226		



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## 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™ 24V LED Strip Light DI-24V-HL65-80-XX  
Project Number  
10460077  
Test Number  
758963

Test Date

2014-09-24

Prepared By

A handwritten signature in black ink that reads "Javier Caban".

Javier Caban, Technician

Approved By

A handwritten signature in black ink that reads "Eric M. Gaudreau".

Eric Gaudreau, Engineering Project Handler

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Luminaire Description: LED strip  
Catalog Number: HYDROLUME™ 24V LED Strip Light DI-24V-HL65-80-XX  
Lamp: 12 white LEDs  
Mounting: Surface  
Ballast/Driver: One Meanwell LPV-60-24

Luminaire

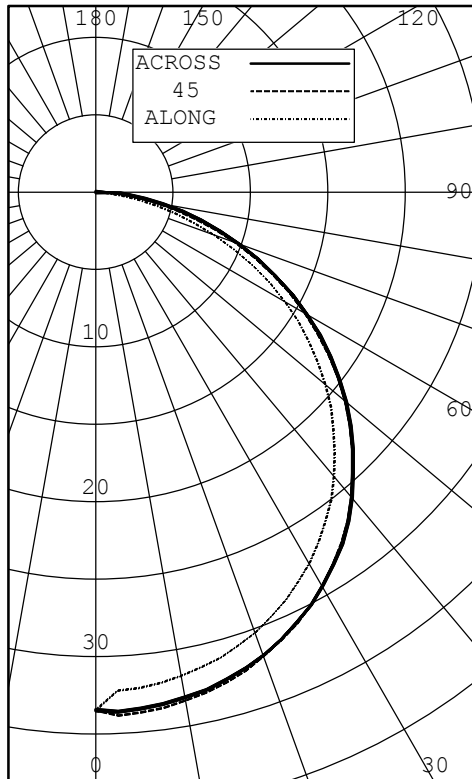


Test Conditions

Test Temperature:	24.3 °C
Voltage:	120.0 VAC
Current:	0.05202 A
Power:	2.394 W
Power Factor:	0.383
Frequency:	60 Hz
Current THD:	161 %



INTENSITY (CANDLEPOWER) SUMMARY OUTPUT LUMENS



ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
0	33	33	33	33	33	
5	32	34	34	34	34	3
10	32	33	33	33	33	
15	31	32	33	33	33	9
20	30	32	32	32	32	
25	29	30	31	31	31	14
30	28	29	29	29	29	
35	26	27	28	28	28	17
40	24	25	26	26	26	
45	22	23	23	24	24	18
50	19	21	21	21	21	
55	17	18	18	19	19	16
60	14	15	16	16	16	
65	11	12	13	13	13	12
70	8	9	10	10	10	
75	5	6	7	7	7	7
80	3	3	4	4	4	
85	1	1	2	2	2	2
90	0	0	0	0	0	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	26	26.77
0-40	44	44.09
0-60	77	78.54
0-90	99	100.00
40-90	55	55.91
60-90	21	21.46
90-180	0	0.00
0-180	99	100.00

EFFICACY (LUMENS PER WATT): 41.1

\*\*\* 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	7927	8599	8618
55	7566	8296	8364
65	6846	7729	7884
75	5340	6645	7113
85	2667	5497	6694

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	33	33	33	33	33	33	
2.5	32	34	34	34	34	34	
5.0	32	34	34	34	34	33	3
7.5	32	33	34	34	33	33	
10.0	32	33	33	33	33	33	
12.5	31	33	33	33	33	33	
15.0	31	32	33	33	33	32	9
17.5	31	32	32	32	32	32	
20.0	30	32	32	32	32	32	
22.5	30	31	31	31	31	31	
25.0	29	30	31	31	31	30	14
27.5	28	30	30	30	30	30	
30.0	28	29	29	29	29	29	
32.5	27	28	29	29	29	28	
35.0	26	27	28	28	28	27	17
37.5	25	26	27	27	27	26	
40.0	24	25	26	26	26	25	
42.5	23	24	25	25	25	24	
45.0	22	23	23	24	24	23	18
47.5	21	22	22	22	22	22	
50.0	19	21	21	21	21	21	
52.5	18	19	20	20	20	19	
55.0	17	18	18	19	19	18	16
57.5	16	17	17	17	17	17	
60.0	14	15	16	16	16	15	
62.5	13	14	14	14	14	14	
65.0	11	12	13	13	13	12	12
67.5	10	11	11	11	11	11	
70.0	8	9	10	10	10	9	
72.5	7	8	8	9	9	8	
75.0	5	6	7	7	7	6	7
77.5	4	5	5	6	6	5	
80.0	3	3	4	4	4	4	
82.5	2	2	3	3	3	3	
85.0	1	1	2	2	2	2	2
87.5	0	1	1	2	2	1	
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	1.121	.071	.071	.020	1.091	.041	.041	.000	1.061	.020	.020	.980	0.980	.950	.92	0.940	.910	.89	0.900	.880	.86	0.84			
	2	1.020	.940	.870	.81	1.000	.920	.860	.80	0.980	.900	.840	.79	0.870	.820	.77	0.840	.790	.76	0.810	.770	.74	0.72			
	3	0.940	.830	.740	.68	0.910	.810	.730	.67	0.890	.800	.730	.67	0.770	.710	.66	0.740	.690	.64	0.720	.670	.63	0.61			
	4	0.860	.740	.650	.58	0.840	.730	.640	.58	0.820	.710	.640	.57	0.690	.620	.57	0.670	.610	.56	0.650	.590	.55	0.53			
	5	0.800	.660	.570	.50	0.770	.650	.560	.50	0.750	.640	.550	.49	0.620	.540	.49	0.600	.530	.48	0.580	.520	.48	0.46			
	6	0.730	.590	.500	.44	0.710	.580	.490	.43	0.690	.570	.490	.43	0.550	.480	.42	0.540	.470	.42	0.520	.460	.42	0.40			
	7	0.670	.530	.440	.38	0.650	.520	.430	.37	0.640	.510	.430	.37	0.500	.420	.37	0.480	.410	.36	0.470	.410	.36	0.34			
	8	0.620	.480	.390	.33	0.610	.470	.390	.33	0.590	.460	.380	.33	0.450	.380	.32	0.440	.370	.32	0.430	.360	.32	0.30			
	9	0.580	.440	.350	.29	0.560	.430	.340	.29	0.550	.420	.340	.29	0.410	.340	.28	0.400	.330	.28	0.390	.330	.28	0.26			
	10	0.530	.390	.310	.25	0.520	.390	.310	.25	0.510	.380	.310	.25	0.370	.300	.25	0.360	.300	.25	0.350	.290	.25	0.23			

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	2.11	5.13
6.00	0.936	7.70
8.00	0.527	10.3
10.0	0.337	12.8
12.0	0.234	15.4
14.0	0.172	18.0
16.0	0.132	20.5

**Cone of Light Plot**

