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
FLUID VIEW™ 12v LED Tape Light DI-12V-FV33-80XX

Order Number
10460077
Test Number
758905

Test Date

2014-09-22

Prepared By

Javier Caban, Technician

Approved By

Eric Gaudreau, Engineering Project Handler

UL Verification Services Inc.
7036 Snowdrift Road
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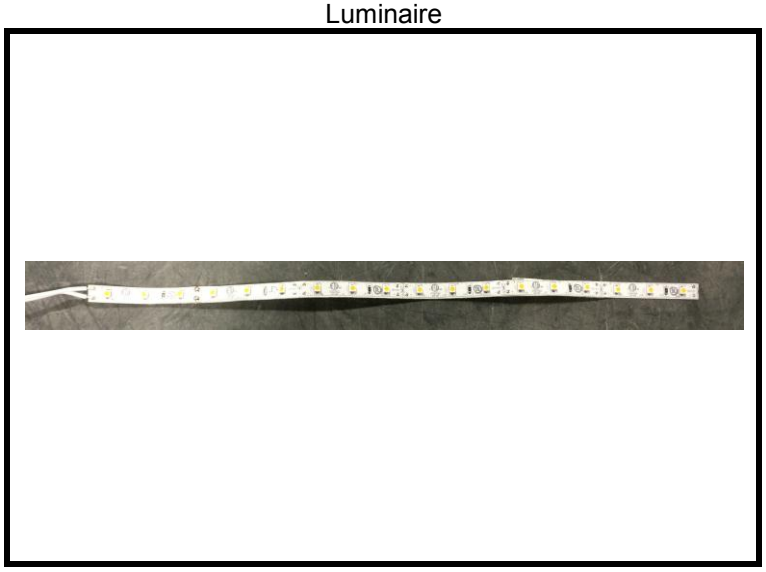
Luminaire Description:	LED strip
Catalog Number:	FLUID VIEW™ 12v LED Tape Light DI-12V-FV33-80XX
Lamp:	18 white LEDs
Mounting:	Surface
Ballast/Driver:	One Meanwell LPV-60-12

Luminaire



Summary of Results

Radiant Flux:	463.3	mW
Luminous Flux:	152.3	Lumens
Luminaire Efficacy:	67.1	Lumens/Watt
CCT:	3330	K
CRI (Ra):	81.4	
Chromaticity (x):	0.4140	
Chromaticity (y):	0.3927	
Chromaticity (u):	0.2405	
Chromaticity (v):	0.3422	
Duv:	-0.0009	

Test Conditions

Test Temperature:	24.4	°C
Voltage:	120.0	VAC
Current:	0.05248	A
Power:	2.270	W
Power Factor:	0.360	
Frequency:	60	Hz
Current THD:	168	%

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

Absorption correction was employed for this measurement.

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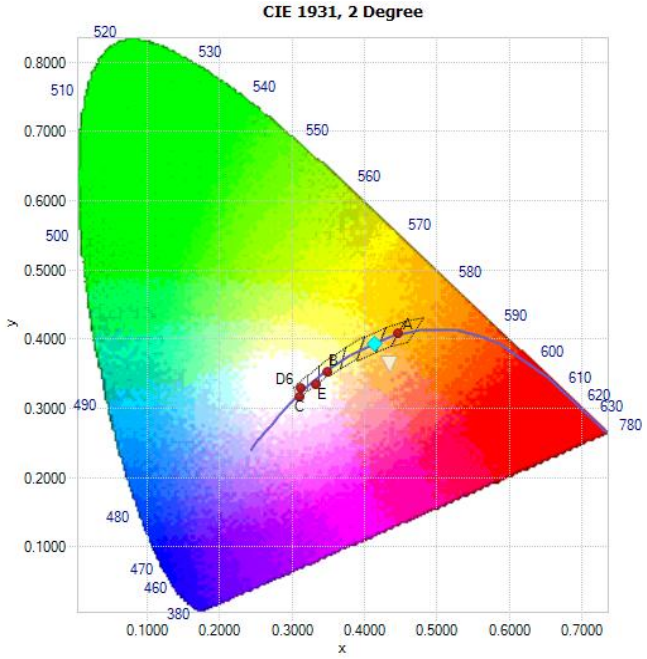
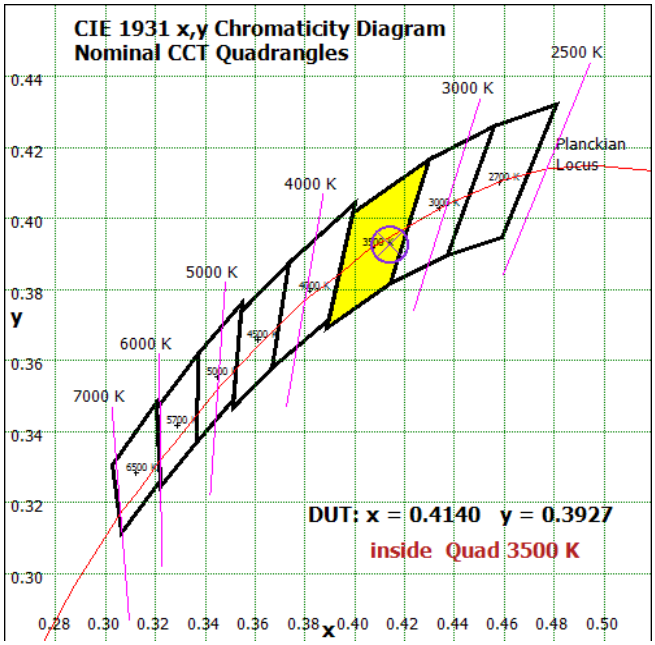
Chromaticity Coordinates

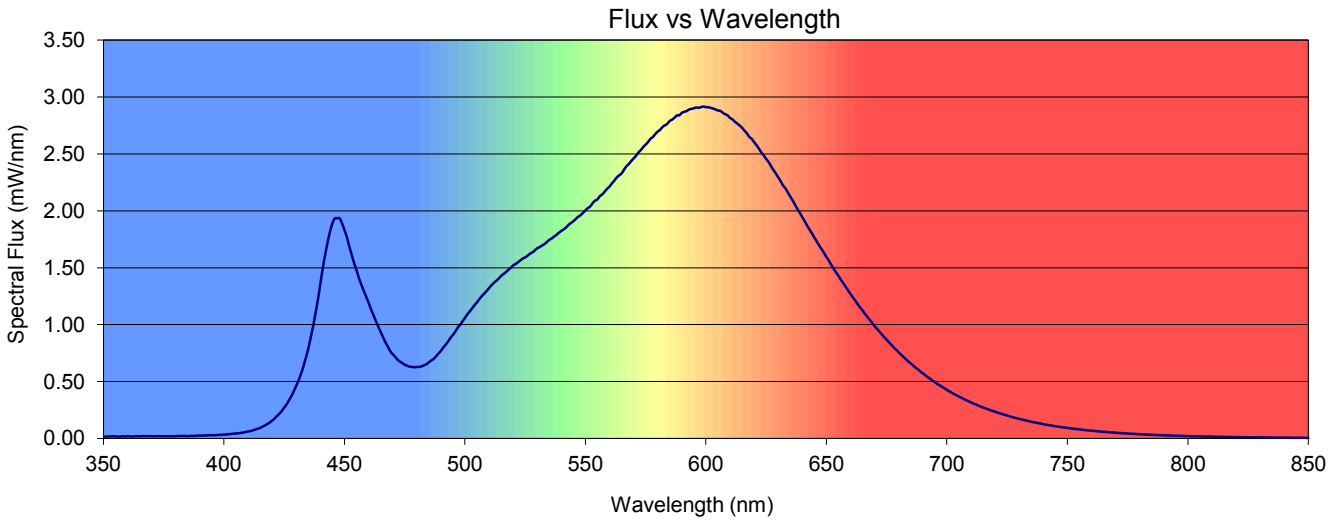
x	y	u	v	u'	v'	Duv
0.4140	0.3927	0.2405	0.3422	0.2405	0.5134	-0.0009

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
81.4	79.4	88.8	95.8	79.7	79.6	85.3	83.3	59.4	3.0	74.0	78.3	68.4	81.4	97.9







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Spectral Power Distribution

λ(nm)	mW/nm	λ(nm)	mW/nm	λ(nm)	mW/nm	λ(nm)	mW/nm	λ(nm)	mW/nm	λ(nm)	mW/nm	λ(nm)	mW/nm
350	0.0138	422	0.197	494	0.883	566	2.36	638	2.02	710	0.318	782	0.0356
351	0.0174	423	0.218	495	0.910	567	2.39	639	1.98	711	0.308	783	0.0344
352	0.0177	424	0.242	496	0.938	568	2.41	640	1.94	712	0.300	784	0.0334
353	0.0184	425	0.271	497	0.973	569	2.44	641	1.91	713	0.290	785	0.0329
354	0.0195	426	0.299	498	0.997	570	2.46	642	1.87	714	0.281	786	0.0317
355	0.0183	427	0.335	499	1.03	571	2.48	643	1.84	715	0.272	787	0.0307
356	0.0177	428	0.373	500	1.06	572	2.51	644	1.80	716	0.265	788	0.0299
357	0.0163	429	0.415	501	1.09	573	2.53	645	1.77	717	0.257	789	0.0292
358	0.0203	430	0.462	502	1.12	574	2.56	646	1.73	718	0.249	790	0.0282
359	0.0180	431	0.511	503	1.14	575	2.58	647	1.70	719	0.242	791	0.0274
360	0.0197	432	0.568	504	1.17	576	2.60	648	1.66	720	0.235	792	0.0268
361	0.0186	433	0.633	505	1.20	577	2.63	649	1.63	721	0.228	793	0.0263
362	0.0178	434	0.708	506	1.22	578	2.65	650	1.59	722	0.221	794	0.0251
363	0.0196	435	0.788	507	1.25	579	2.67	651	1.56	723	0.215	795	0.0247
364	0.0199	436	0.884	508	1.27	580	2.70	652	1.53	724	0.208	796	0.0236
365	0.0190	437	0.984	509	1.30	581	2.71	653	1.49	725	0.202	797	0.0233
366	0.0209	438	1.10	510	1.32	582	2.74	654	1.46	726	0.195	798	0.0225
367	0.0211	439	1.22	511	1.35	583	2.75	655	1.43	727	0.189	799	0.0220
368	0.0208	440	1.36	512	1.37	584	2.76	656	1.40	728	0.184	800	0.0211
369	0.0212	441	1.49	513	1.38	585	2.79	657	1.36	729	0.179	801	0.0204
370	0.0198	442	1.61	514	1.40	586	2.80	658	1.33	730	0.173	802	0.0205
371	0.0194	443	1.72	515	1.43	587	2.82	659	1.30	731	0.168	803	0.0194
372	0.0210	444	1.81	516	1.44	588	2.84	660	1.27	732	0.163	804	0.0191
373	0.0208	445	1.89	517	1.46	589	2.84	661	1.24	733	0.158	805	0.0185
374	0.0193	446	1.93	518	1.48	590	2.86	662	1.21	734	0.153	806	0.0179
375	0.0202	447	1.93	519	1.50	591	2.87	663	1.18	735	0.148	807	0.0171
376	0.0196	448	1.93	520	1.52	592	2.88	664	1.15	736	0.144	808	0.0170
377	0.0199	449	1.89	521	1.53	593	2.89	665	1.12	737	0.139	809	0.0167
378	0.0193	450	1.83	522	1.55	594	2.90	666	1.10	738	0.135	810	0.0160
379	0.0196	451	1.77	523	1.56	595	2.90	667	1.07	739	0.131	811	0.0155
380	0.0207	452	1.69	524	1.58	596	2.91	668	1.04	740	0.126	812	0.0153
381	0.0217	453	1.62	525	1.59	597	2.90	669	1.02	741	0.122	813	0.0150
382	0.0220	454	1.54	526	1.61	598	2.91	670	0.987	742	0.119	814	0.0142
383	0.0224	455	1.48	527	1.62	599	2.92	671	0.963	743	0.115	815	0.0141
384	0.0219	456	1.41	528	1.64	600	2.91	672	0.939	744	0.112	816	0.0137
385	0.0214	457	1.35	529	1.65	601	2.91	673	0.914	745	0.108	817	0.0135
386	0.0226	458	1.30	530	1.67	602	2.90	674	0.891	746	0.105	818	0.0130
387	0.0232	459	1.25	531	1.68	603	2.90	675	0.869	747	0.102	819	0.0126
388	0.0230	460	1.20	532	1.69	604	2.89	676	0.845	748	0.0991	820	0.0122
389	0.0258	461	1.14	533	1.71	605	2.88	677	0.822	749	0.0961	821	0.0119
390	0.0257	462	1.09	534	1.72	606	2.88	678	0.799	750	0.0930	822	0.0117
391	0.0262	463	1.04	535	1.74	607	2.86	679	0.780	751	0.0906	823	0.0113
392	0.0266	464	0.985	536	1.76	608	2.85	680	0.757	752	0.0879	824	0.0112
393	0.0277	465	0.939	537	1.77	609	2.84	681	0.736	753	0.0851	825	0.0107
394	0.0292	466	0.892	538	1.79	610	2.82	682	0.716	754	0.0829	826	0.0106
395	0.0290	467	0.847	539	1.81	611	2.80	683	0.697	755	0.0803	827	0.00998
396	0.0290	468	0.808	540	1.82	612	2.78	684	0.677	756	0.0774	828	0.00970
397	0.0304	469	0.768	541	1.84	613	2.77	685	0.661	757	0.0759	829	0.00912
398	0.0318	470	0.742	542	1.85	614	2.75	686	0.642	758	0.0733	830	0.00936
399	0.0333	471	0.720	543	1.88	615	2.73	687	0.623	759	0.0712	831	0.00926
400	0.0341	472	0.694	544	1.89	616	2.70	688	0.607	760	0.0693	832	0.00928
401	0.0355	473	0.676	545	1.91	617	2.68	689	0.589	761	0.0670	833	0.00877
402	0.0382	474	0.664	546	1.93	618	2.65	690	0.574	762	0.0652	834	0.00853
403	0.0398	475	0.648	547	1.95	619	2.63	691	0.557	763	0.0628	835	0.00876
404	0.0421	476	0.640	548	1.96	620	2.60	692	0.539	764	0.0611	836	0.00801
405	0.0441	477	0.631	549	1.98	621	2.58	693	0.526	765	0.0593	837	0.00822
406	0.0459	478	0.629	550	2.00	622	2.55	694	0.510	766	0.0576	838	0.00795
407	0.0495	479	0.626	551	2.02	623	2.51	695	0.495	767	0.0563	839	0.00757
408	0.0519	480	0.629	552	2.04	624	2.49	696	0.480	768	0.0540	840	0.00744
409	0.0566	481	0.629	553	2.07	625	2.46	697	0.467	769	0.0527	841	0.00713
410	0.0618	482	0.634	554	2.09	626	2.43	698	0.454	770	0.0507	842	0.00768
411	0.0654	483	0.643	555	2.10	627	2.39	699	0.441	771	0.0494	843	0.00686
412	0.0718	484	0.652	556	2.13	628	2.36	700	0.428	772	0.0479	844	0.00620
413	0.0784	485	0.669	557	2.14	629	2.33	701	0.415	773	0.0467	845	0.00618
414	0.0855	486	0.685	558	2.17	630	2.30	702	0.403	774	0.0451	846	0.00647
415	0.0928	487	0.699	559	2.19	631	2.26	703	0.390	775	0.0435	847	0.00634
416	0.104	488	0.721	560	2.21	632	2.22	704	0.380	776	0.0427	848	0.00666
417	0.114	489	0.746	561	2.24	633	2.20	705	0.368	777	0.0415	849	0.00558
418	0.127	490	0.768	562	2.26	634	2.16	706	0.358	778	0.0404	850	0.00551
419	0.141	491	0.798	563	2.29	635	2.13	707	0.347	779	0.0388		
420	0.156	492	0.824	564	2.31	636	2.09	708	0.337	780	0.0376		
421	0.175	493	0.851	565	2.33	637	2.05	709	0.327	781	0.0369		

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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
FLUID VIEW™ 12v LED Tape Light DI-12V-FV33-80XX
Project Number
10460077
Test Number
758904

Test Date

2014-09-22

Prepared By

Javier Caban, Technician

Approved By

Eric Gaudreau, Engineering Project Handler

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Luminaire Description:	LED strip
Catalog Number:	FLUID VIEW™ 12v LED Tape Light DI-12V-FV33-80XX
Lamp:	18 white LEDs
Mounting:	Surface
Ballast/Driver:	One Meanwell LPV-60-12

Luminaire

Test Conditions

Test Temperature:	25.1	°C
Voltage:	120.0	VAC
Current:	0.04986	A
Power:	2.301	W
Power Factor:	0.385	
Frequency:	60	Hz
Current THD:	163	%

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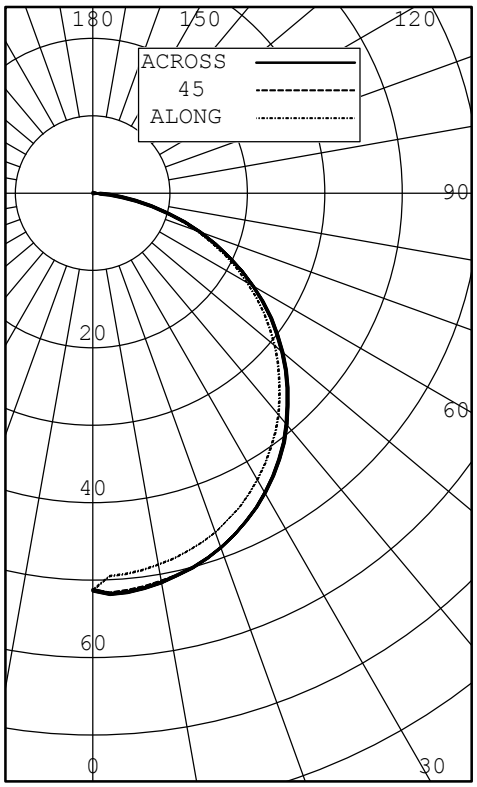

INTENSITY(CANDLEPOWER) SUMMARY

ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
0	51	51	51	51	51	
5	49	51	52	52	52	5
10	49	51	51	51	51	
15	48	50	50	50	50	14
20	47	48	49	49	49	
25	45	47	47	47	47	21
30	43	44	45	44	45	
35	40	42	42	42	42	26
40	37	39	39	39	39	
45	34	36	36	35	36	27
50	31	32	32	32	32	
55	27	28	28	28	28	25
60	23	24	24	24	24	
65	19	20	20	19	20	19
70	14	15	15	15	15	
75	10	10	10	10	10	11
80	6	6	6	6	6	
85	2	2	2	2	2	3
90	0	0	0	0	0	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	40	26.66
0-40	66	43.88
0-60	118	78.36
0-90	151	100.00
40-90	85	56.12
60-90	33	21.64
90-180	0	0.00
0-180	151	100.00

EFFICACY (LUMENS PER WATT): 65.7

*** THIS IS AN ABSOLUTE TEST ***

LUMINOUS LENGTH: 12.000 INS
WIDTH: 0.375 INS

LUMINANCE SUMMARY CD./SQ.M.

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

ANGLE	ALONG	45	ACROSS
45	16586	17407	17407
55	16184	16908	16939
65	15281	15949	15953
75	13108	13724	13559
85	8694	9509	8926

TESTED IN ACCORDANCE WITH IES PROCEDURES.

UL Verification Services Inc.
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INTENSITY(CANDLEPOWER) DATA
IN 2.5 DEGREE STEPS

ANGLE	PLANE						OUTPUT
	ALONG	22.5	45	67.5	ACROSS	AVERAGE	LUMENS
0.0	51	51	51	51	51	51	
2.5	50	51	52	52	52	51	
5.0	49	51	52	52	52	51	5
7.5	49	51	51	51	51	51	
10.0	49	51	51	51	51	51	
12.5	48	50	51	51	51	50	
15.0	48	50	50	50	50	50	14
17.5	47	49	49	49	49	49	
20.0	47	48	49	49	49	48	
22.5	46	48	48	48	48	47	
25.0	45	47	47	47	47	46	21
27.5	44	46	46	46	46	45	
30.0	43	44	45	44	45	44	
32.5	41	43	43	43	43	43	
35.0	40	42	42	42	42	42	26
37.5	39	40	41	40	41	40	
40.0	37	39	39	39	39	39	
42.5	36	37	37	37	37	37	
45.0	34	36	36	35	36	35	27
47.5	32	34	34	34	34	34	
50.0	31	32	32	32	32	32	
52.5	29	30	30	30	30	30	
55.0	27	28	28	28	28	28	25
57.5	25	26	26	26	26	26	
60.0	23	24	24	24	24	24	
62.5	21	22	22	22	22	22	
65.0	19	20	20	19	20	19	19
67.5	17	17	17	17	17	17	
70.0	14	15	15	15	15	15	
72.5	12	13	13	13	13	12	
75.0	10	10	10	10	10	10	11
77.5	8	8	8	8	8	8	
80.0	6	6	6	6	6	6	
82.5	4	4	4	4	4	4	
85.0	2	2	2	2	2	2	3
87.5	1	1	1	1	1	1	
90.0	0	0	0	0	0	0	

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COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

CC	90				80				70				50			30			10			0
WALL	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																						
0	1.22	1.22	1.22	1.22	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.12	1.07	1.03	0.99	1.09	1.05	1.01	0.97	1.07	1.03	0.99	0.95	0.98	0.95	0.92	0.94	0.92	0.90	0.91	0.89	0.87	0.85
2	1.02	0.94	0.88	0.81	1.00	0.92	0.86	0.80	0.98	0.90	0.84	0.79	0.87	0.82	0.78	0.84	0.80	0.76	0.81	0.77	0.74	0.72
3	0.94	0.83	0.75	0.68	0.91	0.81	0.74	0.67	0.89	0.80	0.73	0.67	0.77	0.71	0.66	0.74	0.69	0.65	0.72	0.67	0.63	0.61
4	0.86	0.74	0.65	0.59	0.84	0.73	0.64	0.58	0.82	0.72	0.64	0.58	0.69	0.62	0.57	0.67	0.61	0.56	0.65	0.60	0.55	0.53
5	0.80	0.66	0.57	0.50	0.77	0.65	0.56	0.50	0.75	0.64	0.56	0.50	0.62	0.54	0.49	0.60	0.53	0.48	0.58	0.53	0.48	0.46
6	0.73	0.59	0.50	0.44	0.71	0.58	0.49	0.43	0.69	0.57	0.49	0.43	0.55	0.48	0.43	0.54	0.47	0.42	0.52	0.46	0.42	0.40
7	0.67	0.53	0.44	0.38	0.65	0.52	0.43	0.38	0.64	0.51	0.43	0.37	0.50	0.42	0.37	0.48	0.41	0.36	0.47	0.41	0.36	0.34
8	0.62	0.48	0.39	0.33	0.61	0.47	0.39	0.33	0.59	0.46	0.38	0.33	0.45	0.38	0.33	0.44	0.37	0.32	0.43	0.37	0.32	0.30
9	0.58	0.44	0.35	0.29	0.56	0.43	0.35	0.29	0.55	0.42	0.34	0.29	0.41	0.34	0.29	0.40	0.33	0.28	0.39	0.33	0.28	0.26
10	0.53	0.40	0.31	0.26	0.52	0.39	0.31	0.26	0.51	0.38	0.31	0.26	0.37	0.30	0.25	0.36	0.30	0.25	0.36	0.29	0.25	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.

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

Cone of Light

Cone Of Light Tabulation

Mounting Height (Feet)	Footcandles at Nadir	Diameter (Feet)
4.00	3.22	5.11
6.00	1.43	7.66
8.00	0.805	10.2
10.0	0.515	12.8
12.0	0.358	15.3
14.0	0.263	17.9
16.0	0.201	20.4

Cone of Light Plot