



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Report No: L061600403

Date: 6/7/2016



NVLAP LAB CODE 200927-0

Report No: L061600403

Report Prepared For: Revolution Lighting Technologies (RVLT)
 4139 Guardian Street, Simi Valley, CA 93063

Model Number: 281403-003-M0X

Test: Electrical and Photometric tests

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Catalog number is 281403-003-M0X. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 6/2/16

Date of Tests: 6/3/16 - 6/7/16

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	11/18/16
Xitron Power Analyzer	2503AH	MT-EL01	11/30/16
ITECH DC Power Supply	IT6122	PSDC-03-S1	11/17/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/24/16
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Summary

Manufacturer:	Revolution Lighting Technologies (RVL)
Model Number:	281403-003-M0X
Driver Model Number:	CUSTOM DRIVER
Total Lumens:	7915.10
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.56
Input Power (W):	66.91
Input Power Factor:	0.99
Current ATHD @ 120V(%):	14%
Current ATHD @ 277V(%):	N/A
Efficacy:	118
Color Rendering Index (CRI):	75
Correlated Color Temperature (K):	3967
Chromaticity Coordinate x:	0.3836
Chromaticity Coordinate y:	0.3836
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:00
Total Operating Time (Hours):	1:50
Off State Power(W):	0.00

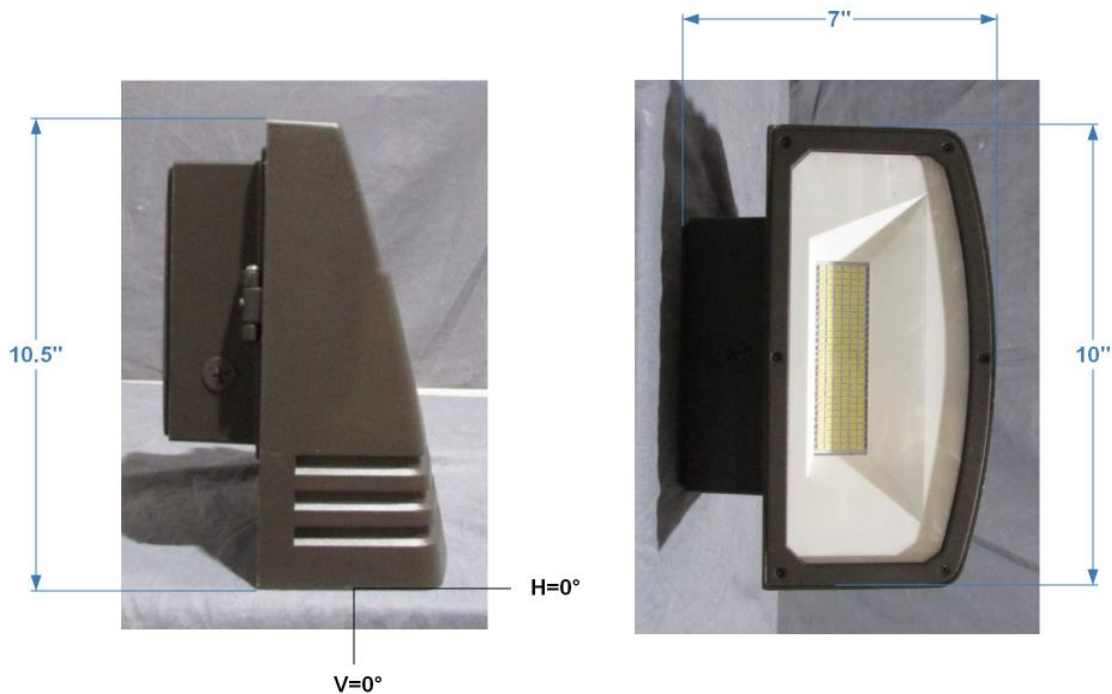
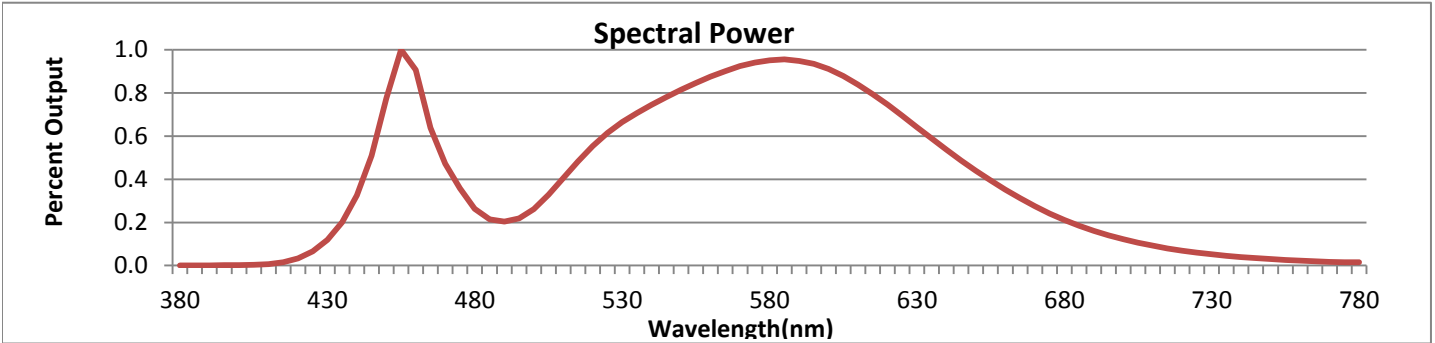


FIG. 1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



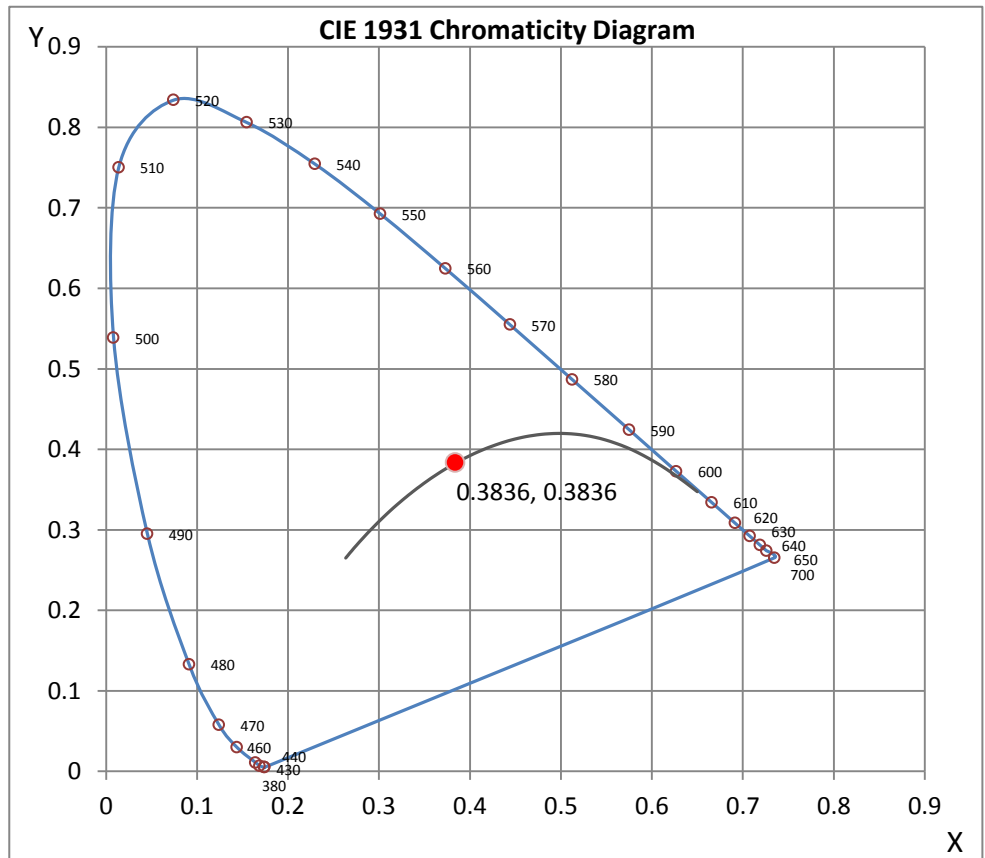
Wavelength	W/m ² nm	440	0.3248	510	0.4054	580	0.9515	650	0.4401	720	0.0692
380	0.0011	450	0.7753	520	0.5537	590	0.9494	660	0.3519	730	0.0522
390	0.0012	460	0.9077	530	0.6650	600	0.9123	670	0.2746	740	0.0392
400	0.0020	470	0.4718	540	0.7460	610	0.8388	680	0.2117	750	0.0298
410	0.0063	480	0.2626	550	0.8147	620	0.7463	690	0.1610	760	0.0226
420	0.0326	490	0.2034	560	0.8759	630	0.6420	700	0.1219	770	0.0172
430	0.1194	500	0.2610	570	0.9255	640	0.5381	710	0.0920	780	0.0150

CRI & CCT

x	0.3836
y	0.3836
u'	0.2245
v'	0.5050
CRI	75.20
CCT	3967
Duv	0.00227

R Values

R1	72.12
R2	83.60
R3	90.83
R4	70.74
R5	70.38
R6	74.99
R7	83.46
R8	55.50
R9	-16.58
R10	59.11
R11	64.55
R12	43.46
R13	74.69
R14	94.46



*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Released by:



Jeff Ahn
Engineering Manager

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 13*



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Photometric Test Report

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061600403.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L061600403
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 6/7/2016
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES (RVLT)
 [LUMCAT] 281403-003-M0X
 [LUMINAIRE] 70W WALL WASHER 4000K
 [BALLASTCAT] CUSTOM DRIVER
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [INPUT] 120VAC, 66.91W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type III
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	7915
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	118
Total Luminaire Watts	66.91
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	3329
Maximum Candela Angle	0H 5V
Maximum Candela (<90 Degrees Vertical)	3329
Maximum Candela Angle (<90 Degrees Vertical)	0H 5V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	153 (1.9% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061600403.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

ZONAL LUMEN SUMMARY

	Lumens	% Lamp	% Luminaire	Zone	%
FL - Front-Low (0-30)	1312.8	N.A.	16.6		
FM - Front-Medium (30-60)	2805.8	N.A.	35.4	0-20	14.5
FH - Front-High (60-80)	874.9	N.A.	11.1	0-30	30.6
FVH - Front-Very High (80-90)	24.6	N.A.	0.3	0-40	49.7
BL - Back-Low (0-30)	1110.1	N.A.	14.0	0-60	85
BM - Back-Medium (30-60)	1498.6	N.A.	18.9	0-80	99.5
BH - Back-High (60-80)	274.3	N.A.	3.5	0-90	100
BVH - Back-Very High (80-90)	14.1	N.A.	0.2	10-90	96.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0	20-40	35.2
UH - Uplight-High (100-180)	0.0	N.A.	0.0	20-50	54.4
				40-70	45.8
Total	7915.2	N.A.	100.0	60-80	14.5
				70-80	4
BUG Rating	B3-U0-G1			80-90	0.5
				90-110	0
				90-120	0
				90-130	0
				90-150	0
				90-180	0
				110-180	0
				0-180	100

IES ROAD REPORT
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CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0.0	3206	3206	3206	3206	3206	3206	3206	3206	3206	3206
5.0	3329	3329	3328	3323	3321	3315	3308	3301	3291	3280
10.0	3219	3220	3217	3217	3215	3215	3217	3220	3228	3233
15.0	3269	3265	3257	3243	3226	3202	3177	3153	3133	3119
20.0	3233	3236	3245	3276	3279	3215	3182	3182	3168	3123
25.0	3277	3273	3258	3220	3192	3203	3224	3132	3105	3095
30.0	3189	3188	3186	3176	3159	3093	3098	3140	3045	3081
35.0	3053	3051	3045	3032	3018	3007	3014	3004	2978	2931
37.5	3057	3052	3026	2988	2954	2941	2927	2919	2909	2897
40.0	2965	2969	2973	2976	2971	2923	2859	2844	2821	2815
42.5	2799	2797	2788	2786	2808	2848	2864	2800	2742	2715
45.0	2717	2715	2708	2699	2685	2660	2681	2742	2720	2624
47.5	2641	2640	2630	2609	2590	2575	2563	2542	2605	2609
50.0	2537	2538	2534	2525	2511	2494	2462	2449	2420	2468
52.5	2398	2400	2397	2393	2389	2386	2378	2353	2318	2282
55.0	2214	2211	2205	2210	2222	2238	2238	2240	2219	2169
57.5	2010	2020	2040	2068	2060	2042	2056	2084	2082	2063
60.0	1746	1744	1737	1733	1773	1853	1902	1885	1912	1909
62.5	1521	1529	1556	1592	1599	1584	1584	1694	1726	1717
65.0	1285	1283	1277	1268	1269	1336	1423	1424	1438	1527
67.5	994	1001	1024	1067	1118	1128	1113	1139	1245	1204
70.0	837	843	854	854	843	832	882	971	949	969
72.5	596	593	589	583	582	629	704	704	703	762
75.0	357	356	354	359	393	449	471	457	499	509
77.5	156	156	156	160	187	236	265	260	292	301
80.0	112	112	112	113	114	114	113	110	113	146
85.0	35	35	35	35	36	36	36	36	35	33
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	Horizontal Angles									
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0.0	3206	3206	3206	3206	3206	3206	3206	3206	3206	3206
5.0	3268	3256	3244	3233	3225	3212	3200	3186	3170	3153
10.0	3239	3239	3237	3229	3214	3194	3172	3148	3116	3082
15.0	3109	3113	3134	3153	3160	3149	3122	3088	3046	2993
20.0	3073	3035	3013	3015	3047	3068	3052	3010	2954	2885
25.0	3055	3030	2954	2905	2895	2936	2950	2908	2841	2753
30.0	2950	2969	2914	2836	2768	2767	2816	2791	2708	2604
35.0	2906	2911	2812	2745	2668	2592	2634	2640	2548	2427
37.5	2843	2783	2762	2681	2625	2513	2531	2557	2461	2336
40.0	2788	2770	2696	2607	2558	2439	2422	2463	2373	2234
42.5	2700	2638	2629	2558	2456	2372	2304	2360	2257	2119
45.0	2593	2586	2502	2464	2401	2294	2179	2245	2139	1985
47.5	2499	2466	2443	2394	2247	2206	2061	2101	2001	1862
50.0	2460	2354	2325	2235	2214	2066	1927	1970	1888	1729
52.5	2328	2273	2186	2152	2048	1949	1817	1806	1719	1569
55.0	2124	2174	2048	1989	1922	1774	1683	1626	1564	1414
57.5	1995	1929	1960	1818	1754	1678	1549	1446	1409	1260
60.0	1873	1786	1740	1652	1589	1486	1383	1263	1239	1104
62.5	1707	1637	1547	1536	1397	1324	1208	1095	1078	957
65.0	1476	1460	1367	1275	1222	1149	1035	928	915	803
67.5	1270	1217	1178	1087	1058	958	887	776	750	651

IES ROAD REPORT
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CANDELA TABULATION - (Cont.)

70.0	979	987	953	914	823	768	693	633	593	510
72.5	711	741	738	704	647	609	527	487	453	381
75.0	503	498	503	491	462	408	361	333	311	262
77.5	299	299	302	291	277	246	213	196	183	152
80.0	141	153	151	142	127	109	94	83	80	68
85.0	32	30	28	26	25	23	22	22	21	21
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Horizontal Angles
Angles

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0.0	3206	3206	3206	3206	3206	3206	3206	3206	3206	3206
5.0	3138	3122	3109	3099	3087	3074	3066	3055	3043	3033
10.0	3049	3020	2994	2974	2959	2946	2936	2926	2915	2907
15.0	2944	2906	2877	2859	2845	2831	2818	2804	2789	2782
20.0	2826	2784	2758	2739	2719	2701	2688	2674	2665	2652
25.0	2688	2648	2622	2596	2579	2562	2546	2521	2496	2444
30.0	2537	2499	2465	2445	2430	2398	2359	2254	2130	2019
35.0	2363	2323	2296	2277	2237	2127	1972	1841	1801	1777
37.5	2269	2229	2204	2173	2099	1941	1785	1737	1708	1657
40.0	2170	2131	2106	2061	1922	1739	1674	1642	1564	1437
42.5	2063	2027	1993	1915	1725	1603	1567	1484	1344	1280
45.0	1923	1891	1855	1707	1526	1482	1411	1261	1210	1187
47.5	1803	1778	1717	1509	1406	1357	1193	1133	1092	967
50.0	1663	1631	1524	1320	1277	1143	1058	1009	874	853
52.5	1522	1482	1312	1192	1114	973	936	798	773	665
55.0	1366	1315	1116	1051	897	860	724	683	597	541
57.5	1216	1128	960	873	773	661	614	535	453	401
60.0	1069	934	830	699	637	557	475	405	350	354
62.5	914	759	690	594	496	422	359	315	314	306
65.0	761	623	520	450	374	314	279	273	270	269
67.5	586	495	417	341	274	241	234	233	232	231
70.0	424	352	288	240	201	195	195	194	192	191
72.5	307	254	198	171	157	157	157	155	154	152
75.0	210	168	130	123	123	123	122	121	120	118
77.5	115	95	88	88	89	89	89	88	88	87
80.0	58	56	57	58	58	59	59	60	60	60
85.0	21	21	21	21	21	21	22	23	23	23
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Horizontal Angles
Angles

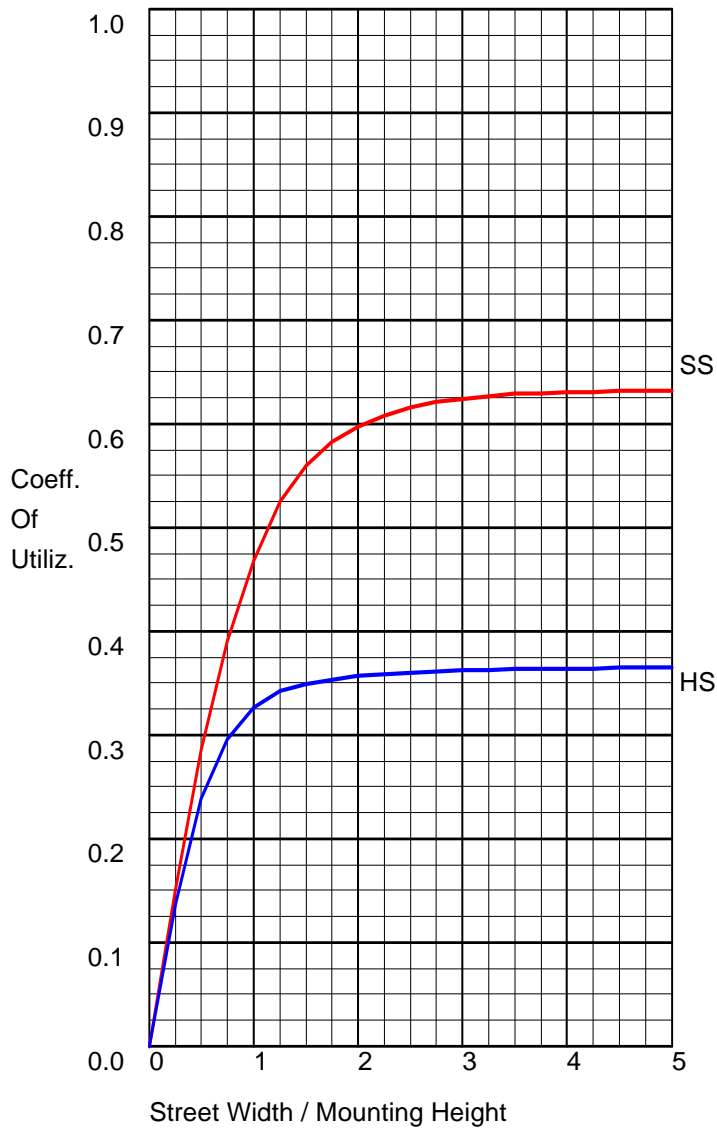
	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0.0	3206	3206	3206	3206	3206	3206	3206
5.0	3023	3014	3007	3001	2993	2990	2990
10.0	2897	2887	2879	2873	2865	2861	2864
15.0	2773	2762	2752	2743	2738	2735	2733
20.0	2636	2621	2609	2599	2590	2581	2578
25.0	2377	2306	2245	2197	2166	2144	2138
30.0	1951	1924	1910	1900	1891	1886	1883
35.0	1750	1696	1628	1573	1532	1509	1502
37.5	1559	1467	1413	1392	1385	1381	1379
40.0	1353	1332	1319	1311	1296	1278	1270
42.5	1261	1232	1157	1093	1052	1035	1030
45.0	1086	992	969	962	956	942	935
47.5	917	900	834	770	750	748	747

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061600403.IES

CANDELA TABULATION - (Cont.)

50.0	775	707	698	669	621	593	584
52.5	650	571	537	524	482	456	450
55.0	494	427	418	421	422	421	420
57.5	386	388	381	374	371	370	370
60.0	344	339	337	337	336	335	336
62.5	304	303	303	302	300	300	299
65.0	268	266	265	263	262	261	261
67.5	229	227	225	224	223	222	222
70.0	189	187	186	185	184	183	186
72.5	151	150	148	147	147	146	146
75.0	117	116	115	115	114	114	114
77.5	86	85	85	84	84	83	83
80.0	59	59	58	58	57	57	57
85.0	23	23	23	22	22	22	22
90.0	0	0	0	0	0	0	0

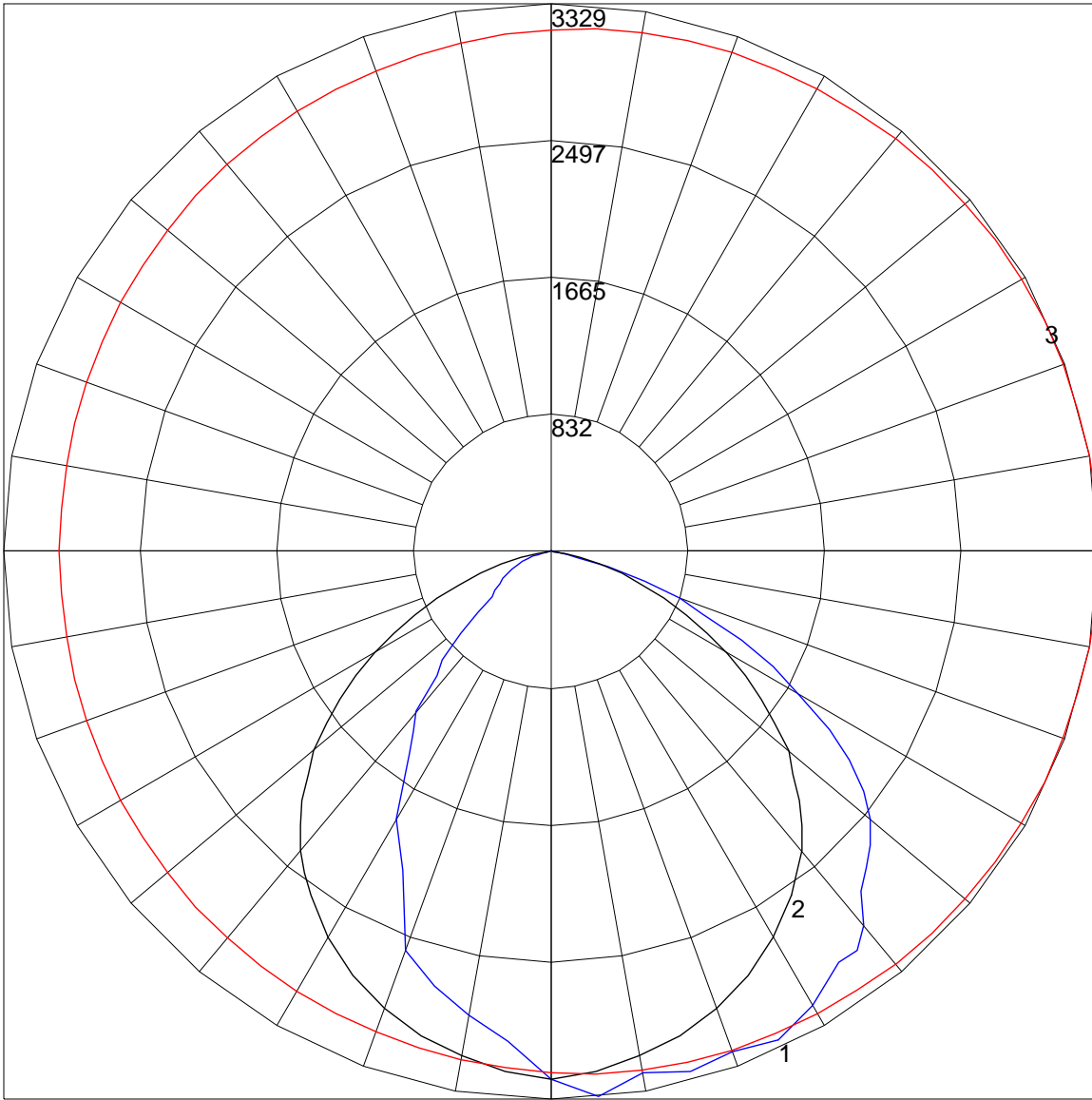
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	5018.1	63.4
Downward House Side	2897.0	36.6
Downward Total	7915.1	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	7915.1	100.0

POLAR GRAPH



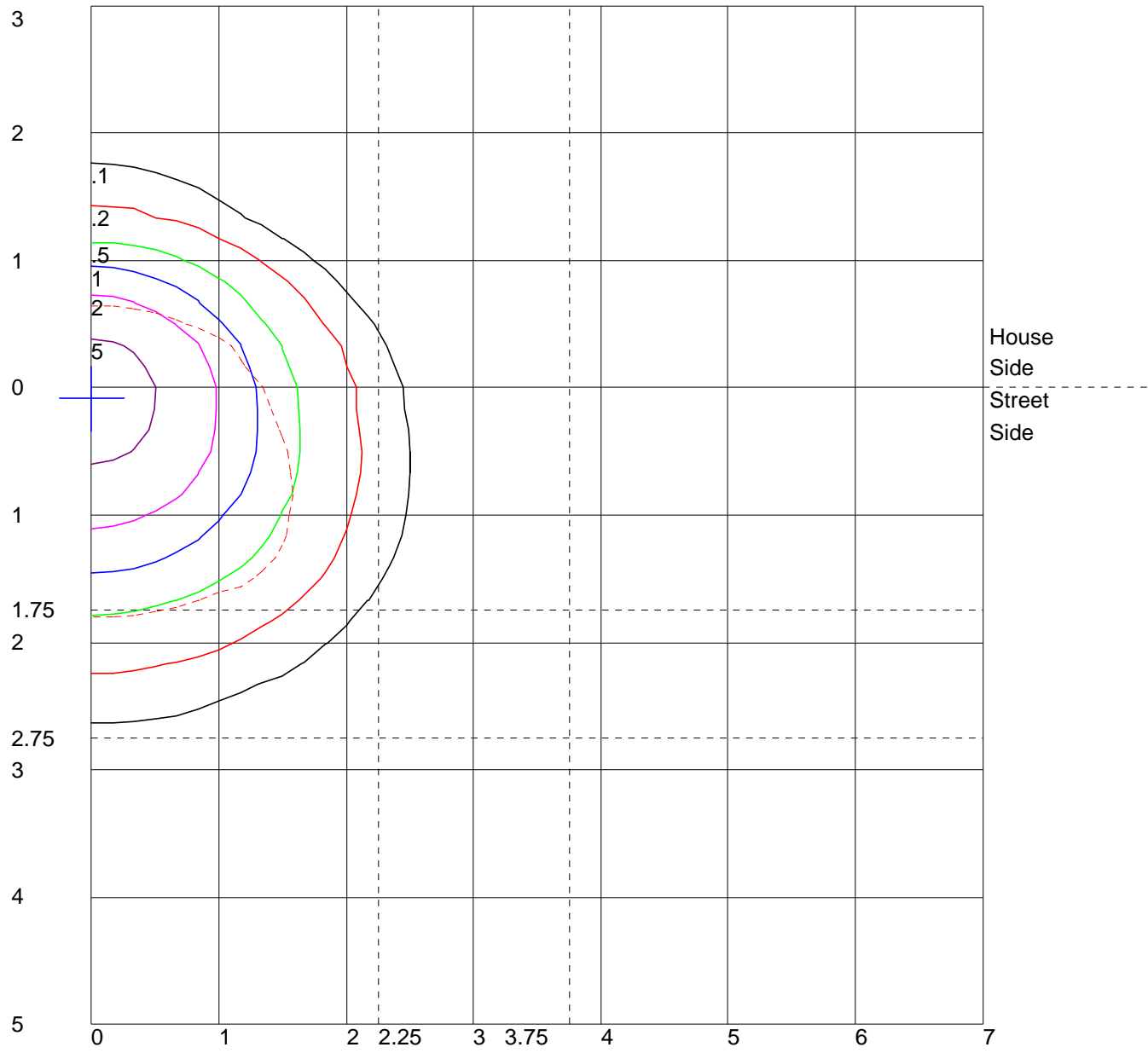
Maximum Candela = 3329 Located At Horizontal Angle = 0, Vertical Angle = 5

1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

2 - Vertical Plane Through Horizontal Angles (90 - 270)

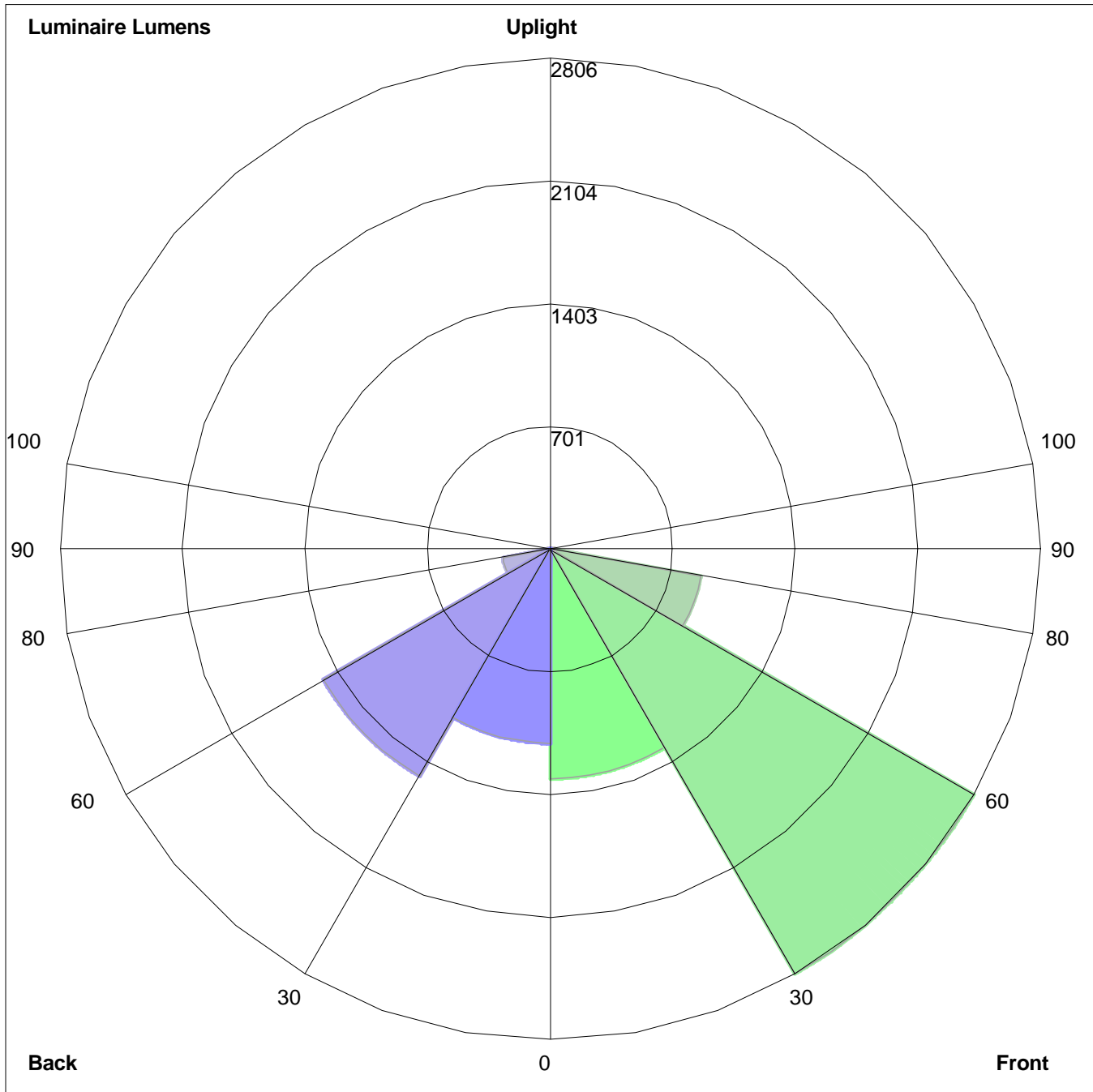
3 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 20 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=1312.8, Medium=2805.8, High=874.9, Very High=24.6
Back: Low=1110.1, Medium=1498.6, High=274.3, Very High=14.1
Uplight: Low=0.0, High=0.0

BUG Rating : B3-U0-G1