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

Report No: L061603701
Date: 6/13/2016

NVLAP LAB CODE 200927-0

Report No: **L061603701**

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

Model Number: **281401-003-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 281401-003-M0X. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 6/9/16

Date of Tests: 6/10/16 - 6/13/16

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.

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Test Summary	
Manufacturer:	Revolution Lighting Technologies (RVLT)
Model Number:	281401-003-M0X
Driver Model Number:	CUSTOM DRIVER
Total Lumens:	3109.50
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.24
Input Power (W):	28.86
Input Power Factor:	0.99
Current ATHD @ 120V(%):	13%
Current ATHD @ 277V(%):	N/A
Efficacy:	108
Color Rendering Index (CRI):	75
Correlated Color Temperature (K):	3968
Chromaticity Coordinate x:	0.3833
Chromaticity Coordinate y:	0.3827
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:55
Total Operating Time (Hours):	1:50
Off State Power(W):	0.00

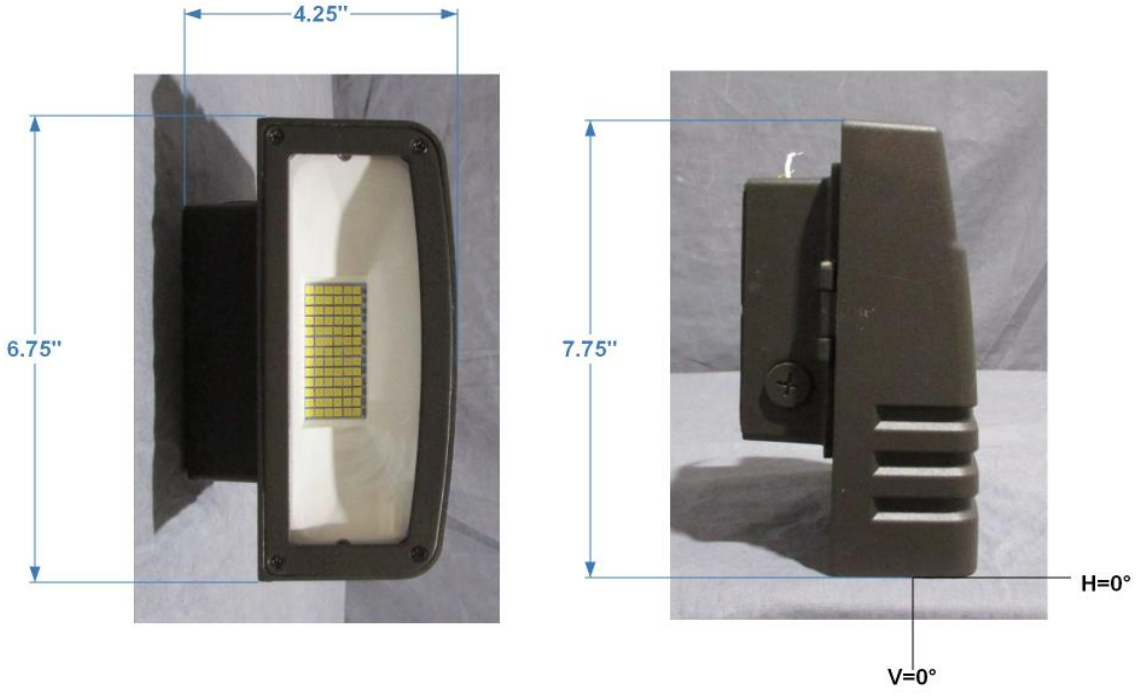

FIG. 1 LUMINAIRE

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

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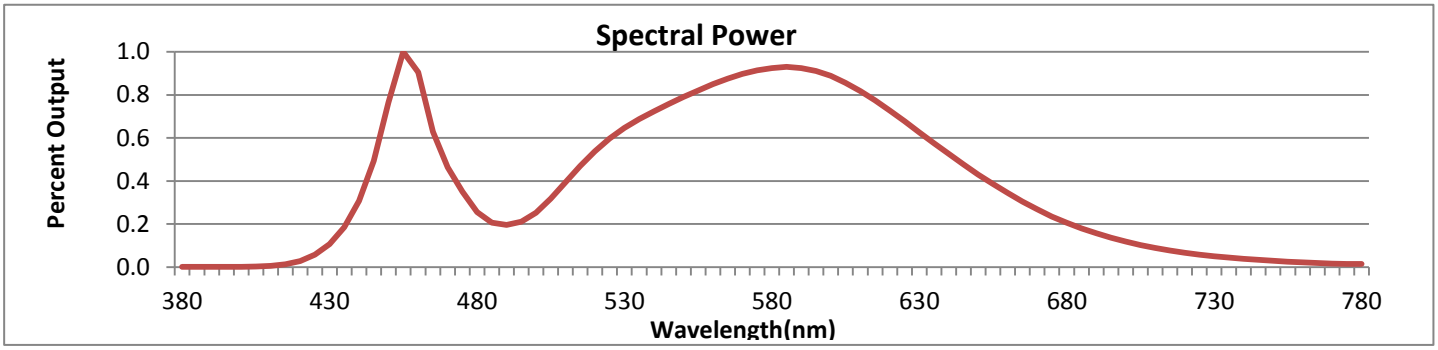


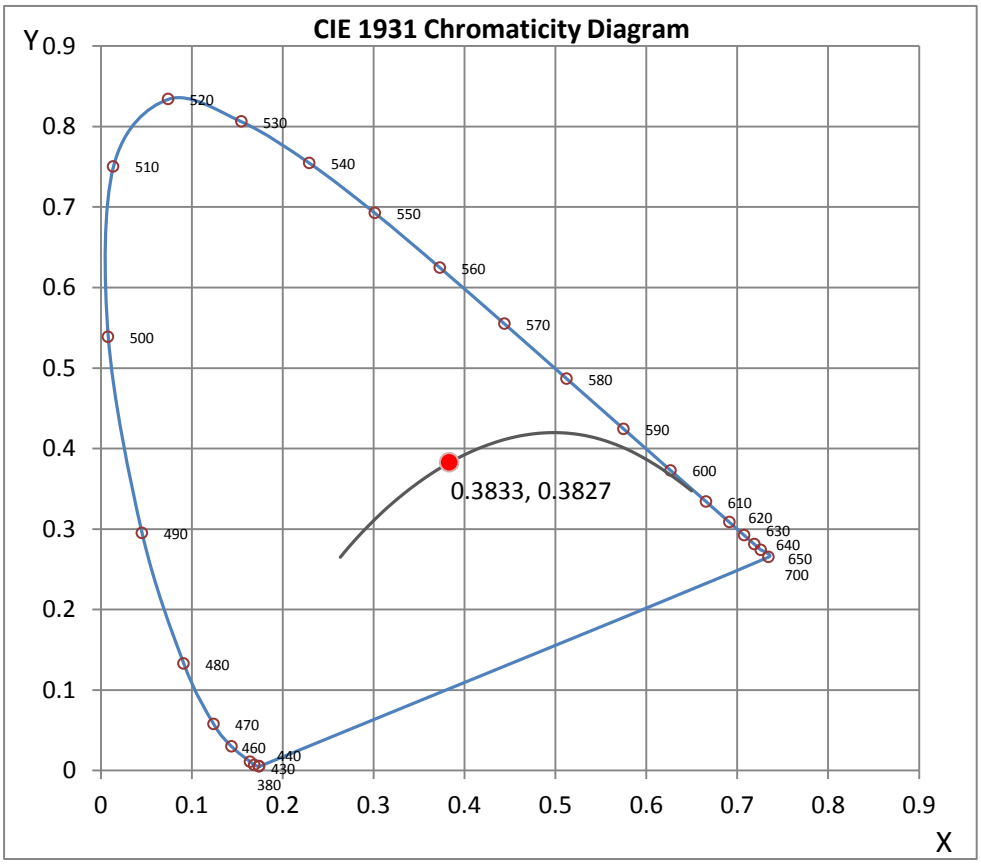
Wavelength	W/m²nm	440	0.3068	510	0.3939	580	0.9250	650	0.4299	720	0.0670
380	0.0010	450	0.7656	520	0.5383	590	0.9242	660	0.3440	730	0.0505
390	0.0010	460	0.9053	530	0.6463	600	0.8883	670	0.2682	740	0.0381
400	0.0017	470	0.4633	540	0.7244	610	0.8172	680	0.2062	750	0.0290
410	0.0055	480	0.2548	550	0.7900	620	0.7271	690	0.1568	760	0.0220
420	0.0281	490	0.1961	560	0.8500	630	0.6261	700	0.1187	770	0.0166
430	0.1074	500	0.2521	570	0.8975	640	0.5253	710	0.0895	780	0.0147

CRI & CCT

x	0.3833
y	0.3827
u'	0.2246
v'	0.5046
CRI	75.40
CCT	3968
Duv	0.00194

R Values

R1	72.41
R2	83.86
R3	90.92
R4	70.85
R5	70.62
R6	75.26
R7	83.44
R8	55.74
R9	-15.66
R10	59.61
R11	64.72
R12	43.42
R13	75.01
R14	94.52



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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*

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

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Photometric Test Report

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061603701.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L061603701
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 6/13/2016
[MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES (RVLT)
[LUMCAT] 281401-003-M0X
[LUMINAIRE] 4.25"L. X 6.75"W. X 7.75"H. 30W 4000K ARCHITECTURAL WALL PACK
[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, 28.86W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type II
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3110
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	108
Total Luminaire Watts	28.86
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	1357
Maximum Candela Angle	0H 10V
Maximum Candela (<90 Degrees Vertical)	1357
Maximum Candela Angle (<90 Degrees Vertical)	0H 10V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	58 (1.9% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061603701.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	539.0	N.A.	17.3
FM - Front-Medium (30-60)	1099.3	N.A.	35.4
FH - Front-High (60-80)	289.4	N.A.	9.3
FVH - Front-Very High (80-90)	7.1	N.A.	0.2
BL - Back-Low (0-30)	465.2	N.A.	15.0
BM - Back-Medium (30-60)	605.2	N.A.	19.5
BH - Back-High (60-80)	99.0	N.A.	3.2
BVH - Back-Very High (80-90)	5.3	N.A.	0.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	3109.5	N.A.	100.0
BUG Rating	B1-U0-G0		

ZONAL LUMEN SUMMARY

Zone	%
0-20	15.4
0-30	32.3
0-40	52.1
0-60	87.1
0-80	99.6
0-90	100
10-90	96
20-40	36.7
20-50	56.1
40-70	44.4
60-80	12.5
70-80	3.1
80-90	0.4
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061603701.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
0.0	1324	1324	1324	1324	1324	1324	1324	1324	1324	1324
5.0	1346	1345	1345	1345	1344	1343	1341	1339	1338	1336
10.0	1357	1357	1356	1355	1353	1351	1349	1345	1342	1338
15.0	1348	1348	1347	1347	1344	1343	1341	1336	1331	1327
20.0	1326	1327	1326	1323	1321	1318	1314	1311	1308	1302
25.0	1297	1296	1295	1293	1289	1284	1280	1276	1270	1265
30.0	1265	1264	1261	1258	1253	1246	1240	1233	1227	1219
35.0	1219	1219	1216	1212	1207	1202	1195	1186	1175	1165
37.5	1192	1190	1188	1184	1180	1174	1167	1160	1150	1138
40.0	1164	1164	1162	1156	1151	1144	1137	1129	1120	1109
42.5	1140	1141	1139	1130	1121	1113	1103	1094	1085	1075
45.0	1093	1094	1094	1091	1085	1082	1071	1058	1047	1036
47.5	1040	1040	1041	1041	1036	1035	1031	1024	1009	996
50.0	980	980	980	980	978	980	979	977	970	953
52.5	861	863	871	884	904	914	917	920	916	909
55.0	786	786	785	780	782	800	829	846	852	846
57.5	665	668	675	688	707	717	718	740	768	777
60.0	597	597	595	591	591	606	634	653	659	687
62.5	468	470	476	490	509	526	526	539	568	574
65.0	388	391	398	405	406	409	433	456	459	477
67.5	279	279	278	279	289	315	342	347	362	379
70.0	169	169	172	183	201	224	234	247	273	283
72.5	87	89	95	107	124	136	142	159	180	199
75.0	59	59	60	62	63	64	69	87	103	119
77.5	37	37	37	38	40	42	44	47	49	56
80.0	20	20	20	21	22	23	24	26	28	31
85.0	7	7	7	7	7	7	8	8	8	8
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	Horizontal Angles									
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**
0.0	1324	1324	1324	1324	1324	1324	1324	1324	1324	1324
5.0	1333	1330	1327	1324	1321	1319	1316	1313	1310	1307
10.0	1334	1328	1321	1315	1309	1304	1298	1292	1285	1279
15.0	1322	1313	1306	1298	1290	1280	1271	1263	1252	1244
20.0	1297	1290	1281	1272	1262	1251	1237	1225	1213	1201
25.0	1259	1252	1244	1234	1225	1211	1195	1179	1162	1148
30.0	1212	1204	1196	1188	1176	1163	1146	1125	1105	1090
35.0	1155	1144	1136	1127	1117	1103	1083	1058	1035	1018
37.5	1125	1114	1104	1094	1083	1068	1048	1020	995	975
40.0	1095	1081	1069	1057	1045	1030	1008	980	950	929
42.5	1063	1046	1031	1017	1003	987	963	932	901	878
45.0	1025	1009	989	971	955	936	913	881	847	824
47.5	982	965	947	923	903	884	861	829	794	771
50.0	937	919	898	872	850	830	807	774	741	718
52.5	892	868	844	818	793	772	751	708	684	661
55.0	836	813	786	762	735	702	687	659	624	601
57.5	769	753	729	699	673	647	626	598	563	540
60.0	692	683	669	643	617	588	565	534	501	479
62.5	596	607	600	584	559	528	499	470	438	418
65.0	491	514	527	518	497	464	437	411	375	352
67.5	392	414	436	442	427	401	373	347	311	287

CANDELA TABULATION - (Cont.)

70.0	307	322	342	357	356	338	308	283	252	228
72.5	223	240	253	270	281	268	246	224	194	172
75.0	140	159	173	187	198	197	180	161	138	120
77.5	71	86	102	115	120	121	113	99	85	71
80.0	33	37	46	54	58	58	53	47	41	35
85.0	9	10	10	11	11	10	10	9	9	9
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	**Horizontal Angles**									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0.0	1324	1324	1324	1324	1324	1324	1324	1324	1324	1324
5.0	1304	1302	1301	1299	1296	1295	1293	1291	1291	1290
10.0	1274	1270	1268	1263	1260	1257	1255	1252	1250	1249
15.0	1237	1231	1226	1222	1217	1212	1208	1201	1194	1186
20.0	1192	1185	1179	1173	1164	1151	1135	1118	1101	1085
25.0	1140	1131	1122	1109	1088	1061	1037	1013	990	969
30.0	1078	1069	1054	1026	993	962	929	900	878	858
35.0	1004	989	961	922	882	848	816	798	788	754
37.5	961	942	906	868	826	791	768	757	711	658
40.0	912	888	849	806	766	736	726	676	619	592
42.5	860	829	786	742	705	689	648	585	562	542
45.0	804	768	720	676	649	621	554	528	496	437
47.5	748	709	659	616	597	536	491	457	401	387
50.0	695	647	596	565	526	459	433	369	354	311
52.5	631	583	535	513	443	410	342	320	273	262
55.0	567	518	478	438	383	331	297	246	228	192
57.5	501	452	423	359	318	273	228	201	175	135
60.0	438	393	361	307	249	212	186	152	122	121
62.5	377	337	288	247	205	165	133	111	108	100
65.0	311	279	229	184	151	121	99	94	84	74
67.5	247	220	174	136	106	87	81	70	61	58
70.0	194	159	127	96	75	69	58	51	50	49
72.5	147	114	85	65	59	47	43	42	40	40
75.0	98	72	54	46	37	35	34	33	32	31
77.5	55	40	33	28	27	26	25	25	24	24
80.0	26	21	19	19	19	18	18	18	18	17
85.0	8	9	9	9	9	9	9	10	10	10
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0.0	1324	1324	1324	1324	1324	1324	1324
5.0	1289	1288	1287	1286	1286	1286	1286
10.0	1246	1245	1244	1243	1241	1241	1241
15.0	1178	1169	1163	1159	1154	1152	1151
20.0	1072	1060	1050	1043	1036	1034	1032
25.0	953	938	928	919	913	909	909
30.0	852	847	840	826	813	805	802
35.0	710	673	650	641	639	638	638
37.5	624	615	609	595	579	568	563
40.0	584	554	518	491	473	465	462
42.5	491	450	436	433	428	422	419
45.0	414	406	378	354	338	331	329
47.5	356	319	309	306	294	285	281

IES ROAD REPORT
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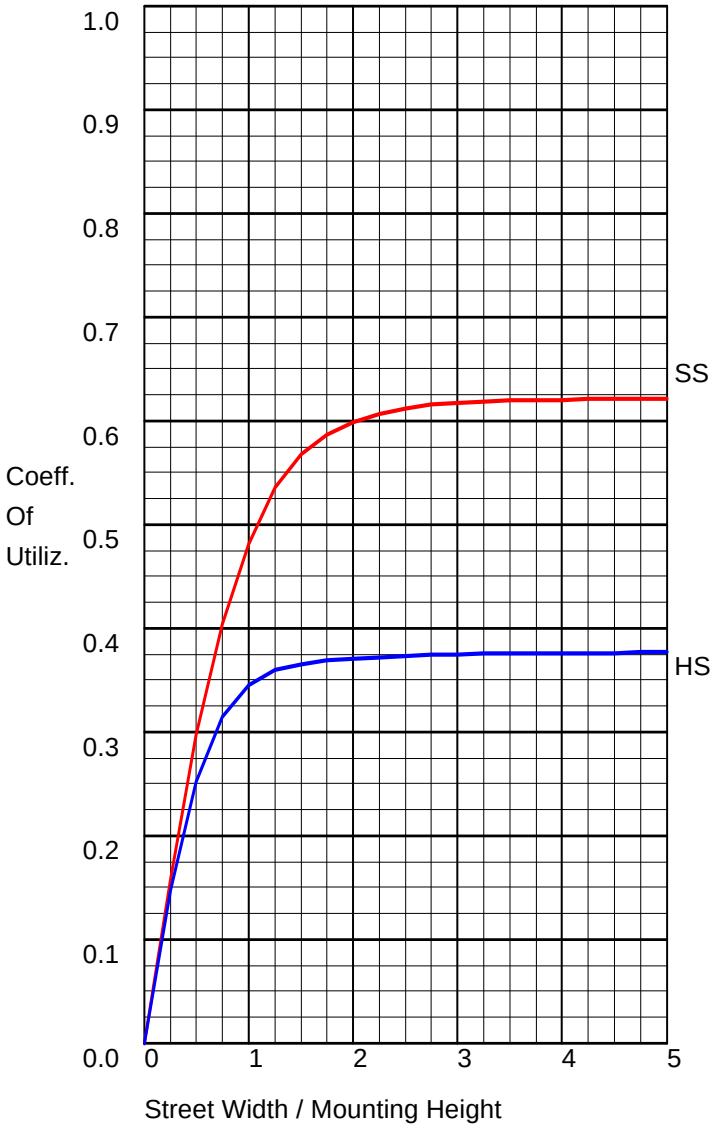
CANDELA TABULATION - (Cont.)

50.0	291	279	247	229	226	225	225
52.5	226	210	195	177	154	153	153
55.0	179	143	144	144	143	142	142
57.5	133	132	128	123	121	118	118
60.0	116	109	103	98	94	91	91
62.5	91	83	77	75	75	74	74
65.0	68	67	66	65	64	64	64
67.5	57	56	55	55	54	54	54
70.0	48	47	46	46	45	45	45
72.5	39	38	38	37	37	37	37
75.0	31	30	30	30	30	30	30
77.5	24	23	23	23	23	23	23
80.0	17	17	17	17	17	17	17
85.0	10	10	10	10	10	10	10
90.0	0	0	0	0	0	0	0

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061603701.IES

COEFFICIENTS OF UTILIZATION

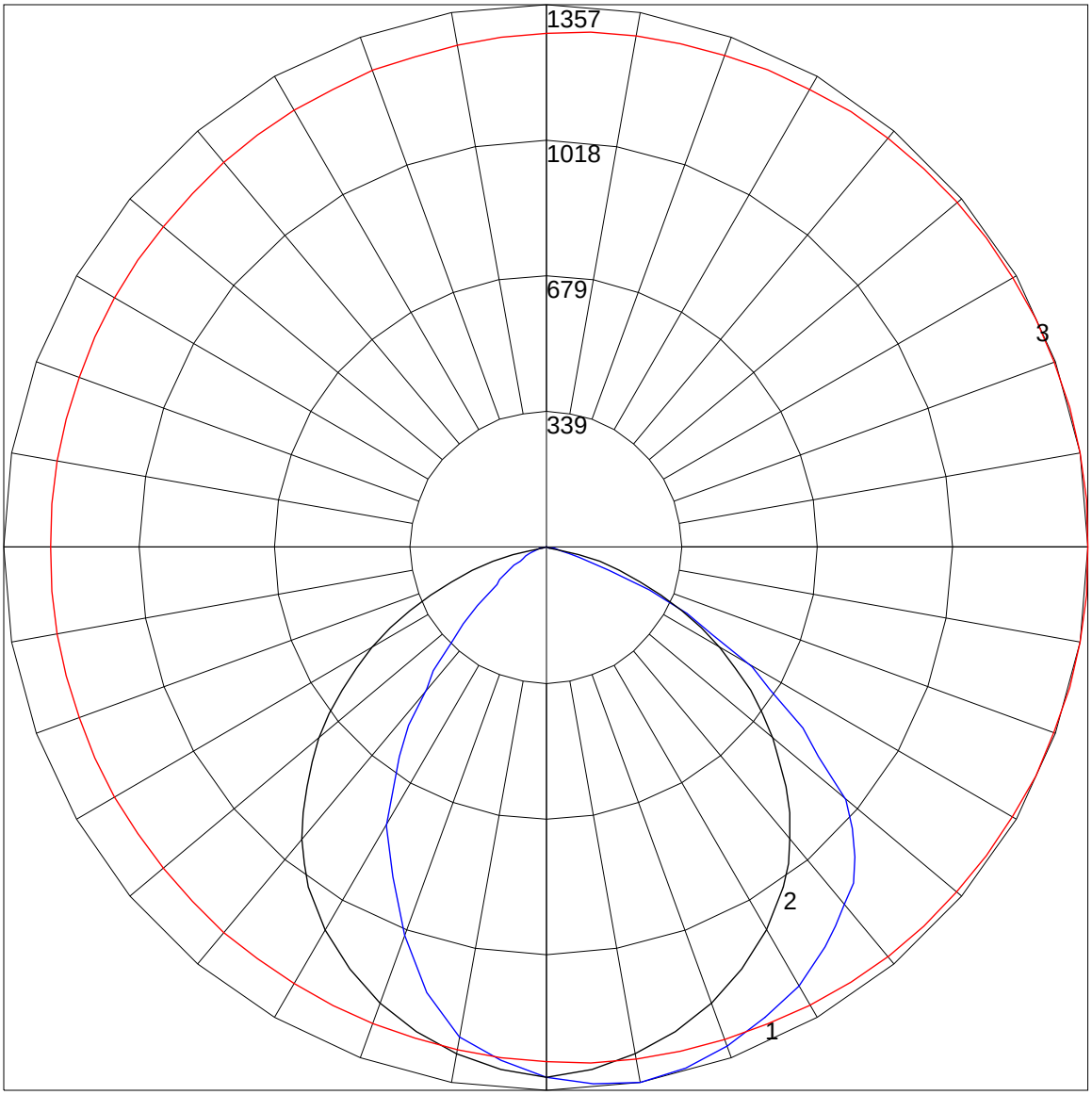


FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	1934.8	62.2
Downward House Side	1174.7	37.8
Downward Total	3109.5	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	3109.5	100.0

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061603701.IES

POLAR GRAPH



Maximum Candela = 1357 Located At Horizontal Angle = 0, Vertical Angle = 10
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 (10) (Through Max. Cd.)

IES ROAD REPORT
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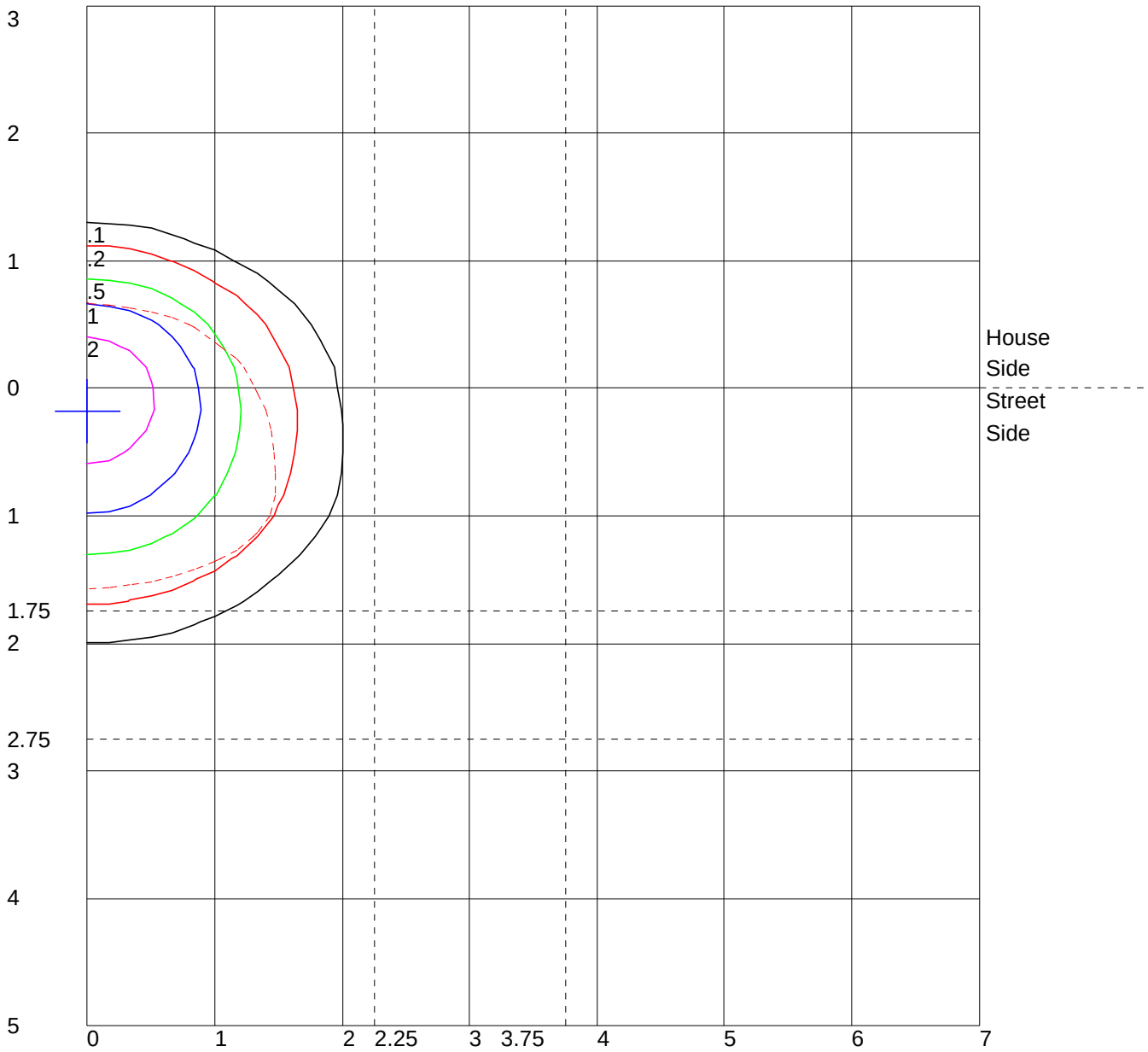
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



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

IES ROAD REPORT
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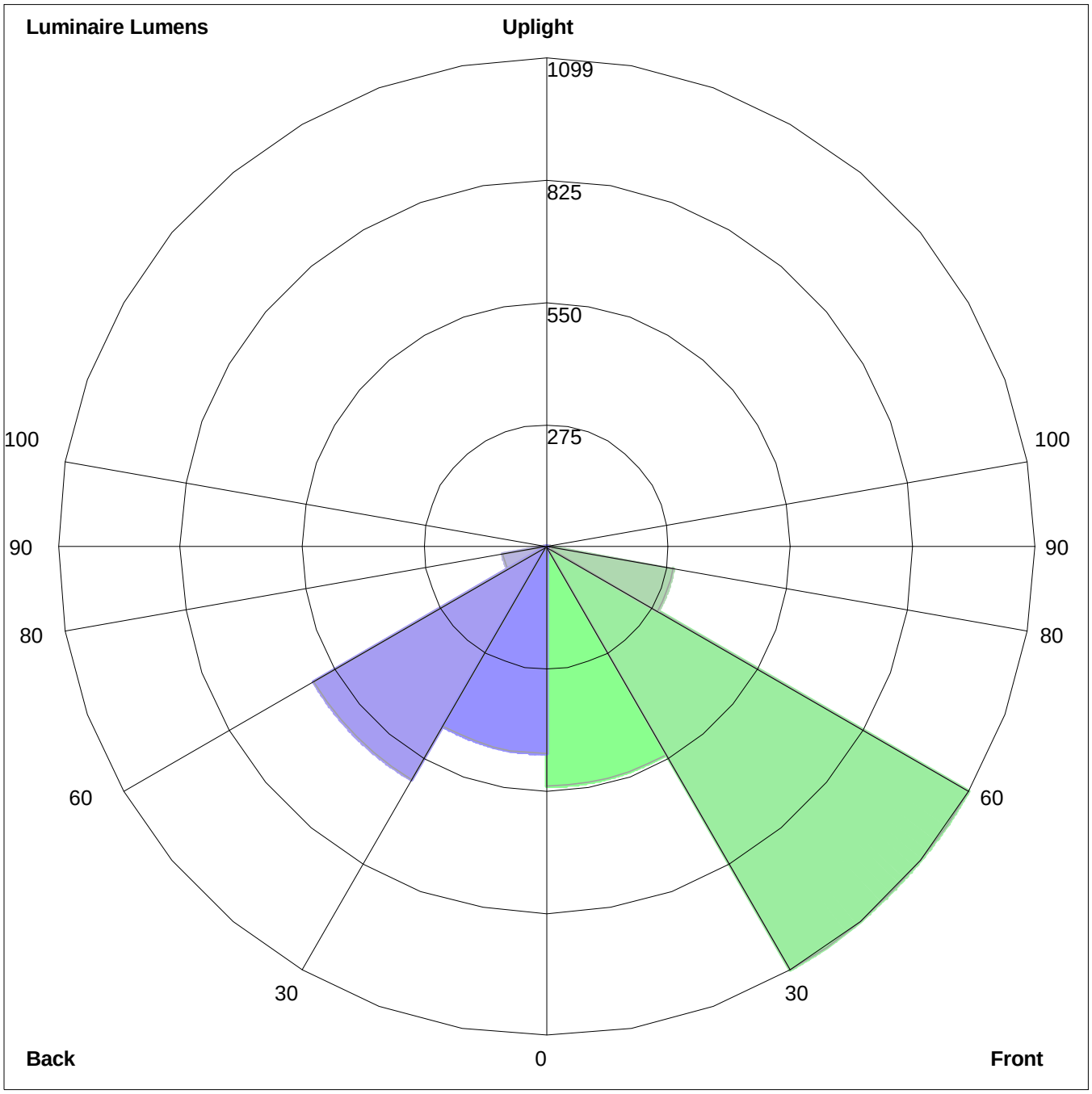
LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=539.0, Medium=1099.3, High=289.4, Very High=7.1
Back: Low=465.2, Medium=605.2, High=99.0, Very High=5.3
Uplight: Low=0.0, High=0.0

BUG Rating : B1-U0-G0