

Project Number
17.02284



Date
8/21/2017

Lab 4
Sphere

Test Sample Description

Catalog Number: P710036-129-30
Description: 1-Lt. LED Wall Sconce

Photometry

Test Method: IES LM-79-08 § 10
Preburn Time: 16:00
Time To Stabilize: 0:45
Total Operating Time: 16:45

Input Voltage (Volts): 120.0
Input Current (Amps): 0.174
Input Wattage (Watts): 20.8
Ambient Temp (°C): 24.7

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 3:00
Time To Stabilize: 1:06
Total Operating Time: 4:06

Input Voltage (Volts): 120.0
Input Current (Amps): 0.172
Input Wattage (Watts): 20.4
Ambient Temp (°C): 24.0
PF @ 120V: 0.997
THD @ 120V (%): 4.6



Hubbell Lighting, Inc.

701 Millennium Boulevard
Greenville, SC 29607
www.hubbelllighting.com

Checked (sphere): B. LEE
Checked (photometry): R. HALL
Approved: D. BLACK

NVLAP[®]
TESTING
NVLAP LAB CODE: 201003-0

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Lamp Cat#: LG3030

Lamp Desc: 1 - n/a 4000K LEDs

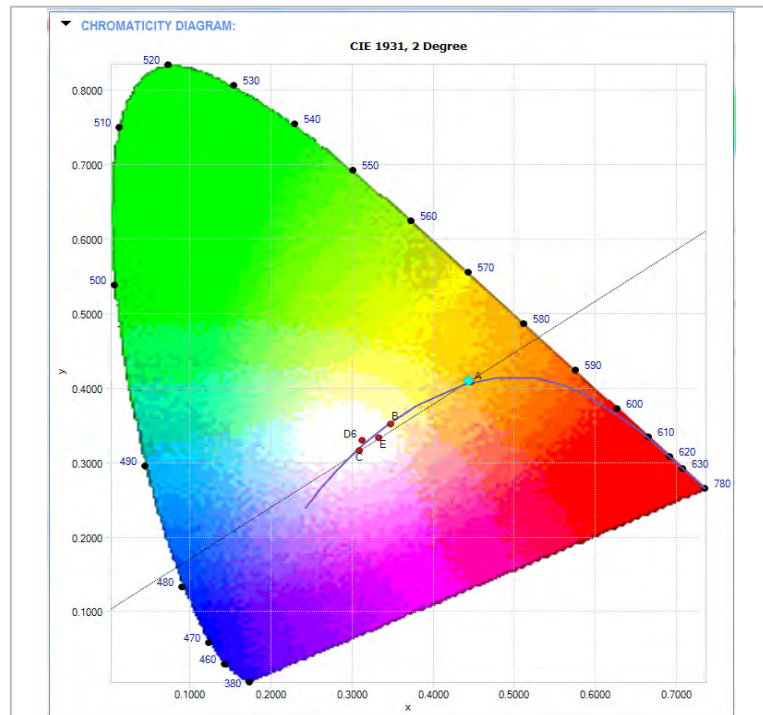
Driver Desc: 1- Espen Technology VEL30054MVHDA-10V-1

Efficacy: 46.2 LPW

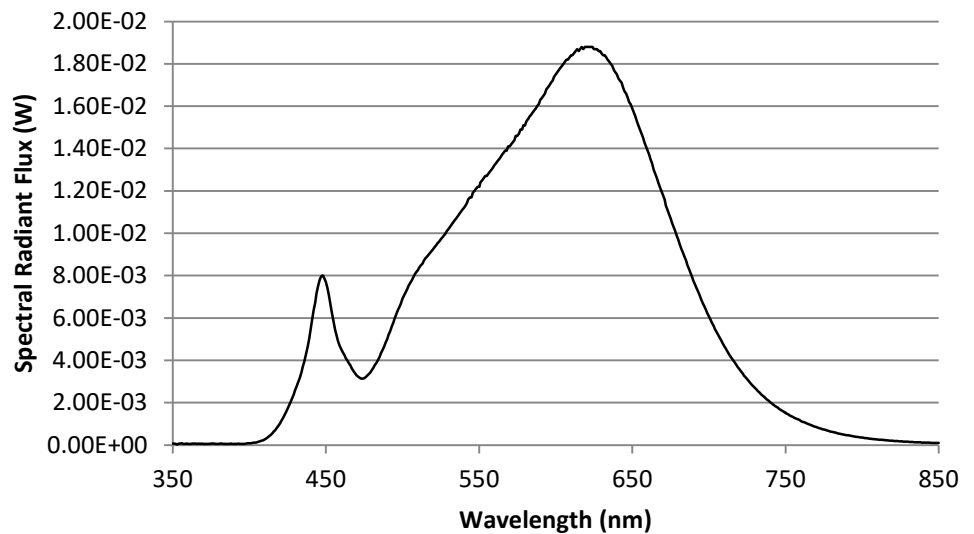
S/P Ratio: 1.3 LM'/LM

Spectral Results

Name	Value	Unit
Φ	3.25	watts
$\Phi(v)$	942	lumens
$\Phi(v')$	1265	lm'
Chrom x	0.4438	
Chrom y	0.4097	
Chrom u	0.2525	
Chrom v	0.3497	
Duv	0.001	
Chrom u'	0.2525	
Chrom v'	0.5246	
CCT	2931	K
Purity	56.2	%
λ (dom)	582.7	nm
FWHM	159.9	nm
λ (peak)	621.3	nm
λ (center)	601.5	nm
λ (centroid)	595.5	nm
SDCM	Cool White	
RA	91	
Corr. Coef.	0.001340697	
Correlation	0.0054	
R1	90.3	
R2	93.5	
R3	95.8	
R4	91.4	
R5	89.8	
R6	92.0	
R7	92.2	
R8	80.1	
R9	53.4	
R10	84.4	
R11	91.9	
R12	81.3	
R13	90.8	
R14	97.0	



Spectral Distribution of Radiant Flux



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REPORT NUMBER: 17.02284
ISSUE DATE: 8/17/2017
PREPARED FOR: PROGRESS
CATALOG NUMBER: P710036-129-30
LUMINAIRE: Half Round LED Wall Sconce
LAMP CAT. NO.: LG3030
LAMP: 15 - 3000K LEDs
BALLAST: 1- Espen Technology
BALLAST CAT. NO.: VEL30054MVHDA-10V-1

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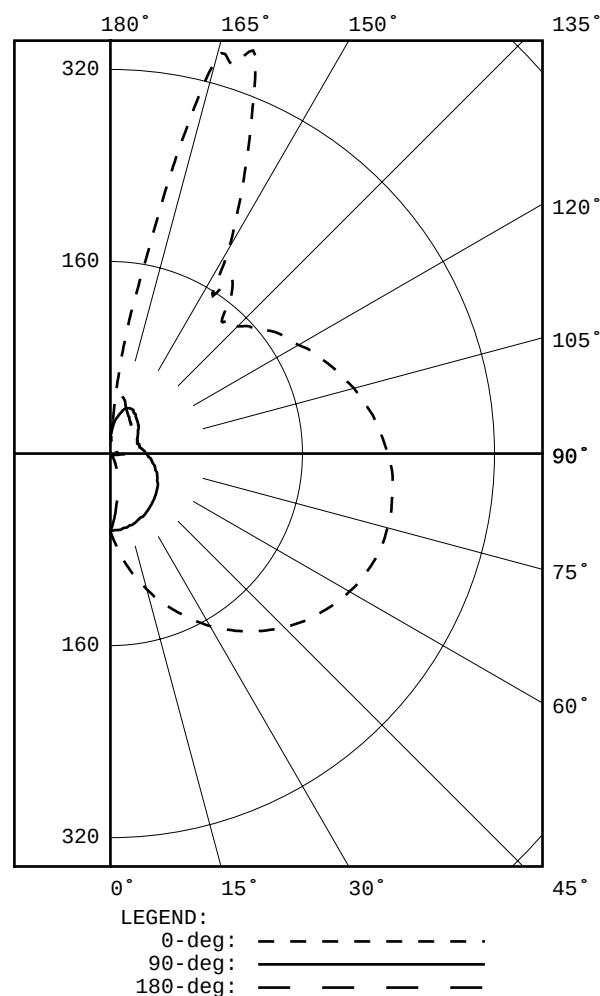
CANDELA DISTRIBUTION

FLUX

	0.0	45.0	90.0	135.0	180.0	
0	65	65	65	65	65	
5	82	77	64	53	49	6
15	117	101	62	34	24	19
25	150	123	59	20	10	33
35	180	142	56	11	3	47
45	205	157	52	6	1	61
55	223	168	48	3	2	74
65	235	173	43	1	3	83
75	239	174	38	2	4	87
85	236	169	32	6	8	88
90	231	165	30	4	5	
95	225	160	28	4	5	83
105	210	149	25	6	8	75
115	191	135	25	12	12	67
125	173	124	28	19	17	62
135	150	132	33	26	24	60
145	177	212	37	33	30	60
155	268	313	41	39	35	56
165	340	178	36	48	46	29
175	45	35	22	34	31	4
180	15	15	15	15	15	

ZONAL ZONE	LUMEN	SUMMARY LUMENS	%FIXT
0- 30		58	5.8
0- 40		105	10.5
0- 60		239	24.1
0- 90		497	50.1
90-120		225	22.7
90-130		287	28.9
90-150		407	41.0
90-180		496	49.9
0-180		993	100.0

EFFICACY = 47.8 Lm/W
CIE TYPE - DIRECT-INDIRECT





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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 1.000 9.000
HEIGHT OF SIDE : 6.000 6.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE AVERAGE AVERAGE
IN DEG 0-DEG 90-DEG 180-DEG
45 7130. 7596. 35.
55 6995. 7380. 63.
65 6903. 7210. 88.
75 6796. 7247. 114.
85 6700. 7333. 227.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5
0.0	65	65	65	65	65	65	65	65	65	65	65	65	65	65
2.5	73	73	73	73	73	73	73	73	73	73	72	72	72	72
5.0	82	82	82	82	82	82	81	81	81	81	80	80	80	79
7.5	91	91	91	91	90	90	90	90	89	89	88	88	87	87
10.0	100	100	100	99	99	99	98	98	97	97	96	96	95	94
12.5	108	109	108	108	107	107	107	106	106	105	104	103	102	101
15.0	117	117	117	116	116	116	115	114	114	113	112	111	110	108
17.5	126	126	126	125	124	124	123	122	122	121	119	118	117	116
20.0	134	134	134	133	132	132	131	130	129	128	127	126	124	122
22.5	142	142	142	141	140	140	139	138	137	136	134	133	131	129
25.0	150	150	150	149	148	147	147	146	144	143	141	140	138	136
27.5	158	158	158	156	156	155	154	153	151	150	148	146	144	142
30.0	166	166	166	164	163	162	161	160	158	157	155	153	151	148
32.5	173	174	173	171	170	169	169	167	165	163	161	159	157	154
35.0	180	181	180	178	177	176	175	174	172	170	168	165	163	160
37.5	187	188	187	184	183	183	182	180	178	176	174	171	168	165
40.0	193	194	193	191	190	189	187	186	184	182	179	176	173	170
42.5	199	200	199	196	195	194	193	191	189	187	184	182	178	175
45.0	205	206	205	202	201	200	198	197	194	192	189	186	183	179
47.5	210	211	210	207	205	205	203	201	199	197	194	191	187	183
50.0	215	216	215	211	210	209	208	206	203	201	198	195	191	187
52.5	219	220	219	215	214	213	212	210	207	205	202	198	194	190
55.0	223	224	223	219	218	217	215	213	211	208	205	201	198	193
57.5	227	228	226	222	221	220	219	216	214	211	208	204	200	196
60.0	230	231	229	225	224	223	221	219	216	214	210	207	203	198
62.5	233	234	232	227	226	225	224	221	218	216	212	209	204	200
65.0	235	236	234	229	228	227	226	223	220	217	214	210	206	201
67.5	237	238	236	231	230	229	227	225	222	219	215	212	207	202
70.0	238	239	237	232	231	230	228	226	223	220	216	212	208	203
72.5	239	240	238	233	231	230	229	226	223	220	217	213	208	203
75.0	239	240	238	233	232	231	229	227	224	220	217	213	208	203
77.5	239	240	238	233	231	230	229	226	223	220	217	213	208	203
80.0	238	240	238	232	231	230	228	226	223	219	216	212	207	202
82.5	237	239	237	231	229	229	227	225	221	218	215	211	206	201
85.0	236	237	235	229	228	227	226	223	220	217	213	209	204	199
87.5	234	235	233	227	226	225	224	221	218	215	211	207	202	198
90.0	231	233	231	225	223	223	221	219	216	213	209	205	200	195
92.5	228	230	228	222	220	220	218	216	213	210	206	202	198	193
95.0	225	227	225	219	217	217	215	213	210	207	204	200	195	190
97.5	222	223	221	215	214	213	212	210	207	204	201	197	192	188
100.0	218	220	217	211	210	210	209	206	204	201	198	194	189	184
102.5	214	216	213	207	206	206	205	203	200	197	194	190	186	181
105.0	210	211	209	203	202	202	201	199	196	194	190	187	182	178
107.5	205	207	204	199	198	197	197	195	192	189	186	183	178	174
110.0	201	202	200	194	193	193	192	190	188	185	182	179	174	170
112.5	196	197	195	189	188	188	188	186	183	181	178	175	170	166
115.0	191	193	190	185	184	184	183	181	179	177	174	170	166	162
117.5	187	188	186	180	180	179	178	177	175	172	169	167	162	158
120.0	181	184	181	176	175	175	174	173	170	169	165	161	159	153
122.5	176	179	175	171	169	170	169	168	166	162	161	159	153	150
125.0	173	174	173	167	165	166	163	163	160	158	157	154	148	144
127.5	168	168	167	160	160	159	157	158	156	152	153	149	144	140
130.0	159	164	159	154	154	152	154	153	150	147	149	146	140	138
132.5	157	155	154	150	146	148	148	146	145	151	146	140	136	135
135.0	150	154	151	144	145	143	145	143	142	141	141	140	139	137
137.5	152	155	153	150	146	141	148	141	141	139	144	148	146	140
140.0	144	152	145	140	150	148	152	148	151	151	144	150	156	145
142.5	165	162	166	162	157	147	165	165	169	158	154	161	164	162
145.0	177	180	175	165	175	160	161	155	171	180	156	171	175	169
147.5	158	181	157	174	171	169	183	176	179	192	182	176	208	204
150.0	198	191	195	188	185	193	193	228	210	235	228	232	247	236
152.5	231	237	243	227	238	241	241	235	249	221	283	252	280	277
155.0	268	285	256	266	258	255	263	297	289	266	294	289	311	284
157.5	309	303	297	299	272	310	295	312	289	307	284	343	338	293
160.0	353	336	342	337	326	319	317	304	315	318	318	334	339	320

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5
162.5	340	346	370	301	338	301	319	311	312	300	330	282	304	312
165.0	340	316	316	305	284	298	255	263	255	237	259	266	261	226
167.5	252	246	239	240	225	212	223	210	190	199	197	183	179	178
170.0	154	165	175	164	156	152	146	140	136	135	129	123	118	116
172.5	101	99	97	89	86	81	81	82	84	86	83	78	73	70
175.0	45	45	45	43	43	44	43	43	42	40	40	40	40	41
177.5	10	10	10	9	9	10	10	10	10	9	10	10	10	11
180.0	15	15	15	15	15	15	15	15	15	15	15	15	15	15



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	35.0	37.5	40.0	42.5	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0	67.5
0.0	65	65	65	65	65	65	65	65	65	65	65	65	65	65
2.5	72	71	71	71	71	70	70	70	69	69	69	68	68	68
5.0	79	78	78	77	77	76	75	75	74	73	73	72	71	71
7.5	86	85	84	84	83	82	81	80	79	78	76	75	74	73
10.0	93	92	91	90	89	87	86	85	83	82	80	79	77	76
12.5	100	99	98	96	95	93	91	89	88	86	84	82	80	79
15.0	107	106	104	102	101	99	96	94	92	90	88	85	83	81
17.5	114	112	110	108	106	104	102	99	96	94	91	88	86	84
20.0	121	119	117	114	112	109	106	103	100	97	94	91	89	86
22.5	127	125	123	120	117	114	111	108	104	101	98	94	91	88
25.0	133	131	129	126	123	119	116	112	108	105	101	97	94	90
27.5	140	137	134	131	128	124	120	116	112	108	104	100	96	92
30.0	146	143	140	136	133	129	125	120	116	111	107	102	98	94
32.5	151	148	145	141	138	134	129	124	119	114	109	105	100	96
35.0	157	154	150	146	142	138	133	128	122	117	112	107	102	97
37.5	162	158	155	151	146	142	137	131	125	120	114	109	104	99
40.0	167	163	159	155	150	145	140	134	128	122	116	111	105	100
42.5	171	168	163	159	154	149	143	137	130	124	118	112	107	101
45.0	175	172	167	162	157	152	146	139	133	126	120	114	108	102
47.5	179	175	171	166	160	155	148	141	135	128	121	115	109	102
50.0	183	179	174	169	163	157	151	143	136	129	122	115	109	103
52.5	186	182	177	171	166	160	153	145	138	130	123	116	110	103
55.0	189	184	179	174	168	162	154	147	139	131	124	117	110	103
57.5	191	187	182	176	170	163	156	148	140	132	124	117	110	103
60.0	193	189	183	178	171	165	157	149	140	133	125	117	110	103
62.5	195	190	185	179	173	166	158	149	141	133	125	117	110	102
65.0	197	192	186	180	173	166	158	150	141	133	124	117	109	102
67.5	197	192	187	181	174	167	159	150	141	132	124	116	108	101
70.0	198	193	187	181	174	167	159	150	141	132	123	115	108	100
72.5	198	193	187	181	174	167	158	149	140	131	123	114	107	99
75.0	198	193	187	181	174	166	158	148	139	130	122	113	105	98
77.5	198	193	187	180	173	166	157	147	138	129	120	112	104	96
80.0	197	192	186	179	172	165	156	146	137	128	119	110	102	95
82.5	196	190	185	178	171	163	154	145	135	126	117	109	101	93
85.0	194	189	183	176	169	162	153	143	133	124	115	107	99	91
87.5	192	187	181	174	167	160	151	141	131	122	113	105	97	89
90.0	190	185	179	172	165	157	148	139	129	120	111	102	95	87
92.5	188	182	177	170	163	155	146	136	127	118	109	100	92	85
95.0	185	180	174	167	160	153	144	134	124	115	106	98	90	83
97.5	182	177	171	165	158	150	141	131	122	113	104	95	88	80
100.0	179	174	168	162	155	147	138	129	119	110	101	93	86	78
102.5	176	171	165	159	152	144	136	126	117	108	99	91	83	76
105.0	173	168	162	156	149	141	132	123	114	105	96	88	81	74
107.5	169	164	158	152	145	138	129	120	111	102	93	85	78	71
110.0	165	160	155	148	142	134	126	117	108	99	91	83	76	69
112.5	161	156	151	145	138	131	123	114	105	97	89	82	76	71
115.0	157	153	147	141	135	128	120	112	103	96	89	82	77	73
117.5	153	150	145	139	132	125	117	110	103	95	89	85	80	76
120.0	150	146	141	135	129	123	118	107	103	94	92	87	86	83
122.5	147	140	136	131	128	122	115	106	102	98	94	94	94	102
125.0	143	138	136	128	124	121	117	107	102	97	98	99	105	112
127.5	141	138	134	126	121	118	112	107	105	110	107	111	113	114
130.0	138	135	133	128	122	120	117	112	113	111	114	124	133	144
132.5	138	133	127	128	128	124	122	127	128	133	147	149	157	156
135.0	131	133	133	135	132	133	141	147	162	156	164	177	180	162
137.5	142	151	140	159	168	167	171	166	185	194	190	192	184	172
140.0	169	162	157	171	179	163	179	196	203	212	219	204	209	174
142.5	166	160	177	173	182	185	201	210	234	229	219	209	190	158
145.0	173	176	206	207	212	243	257	252	248	255	229	217	189	163
147.5	202	214	225	242	246	255	262	259	265	246	234	197	181	133
150.0	252	258	249	286	288	267	281	267	261	250	215	197	179	142
152.5	278	298	281	264	279	295	272	268	241	218	171	161	143	113
155.0	281	318	304	293	313	293	282	244	243	195	161	152	119	96
157.5	312	310	332	299	291	299	261	210	186	170	133	124	90	87
160.0	311	305	285	292	287	248	236	186	172	134	120	104	85	76

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CANDELA DISTRIBUTION
LATERAL ANGLE

	35.0	37.5	40.0	42.5	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0	67.5
162.5	277	248	226	238	211	216	170	161	131	113	101	82	72	65
165.0	216	210	201	172	178	149	127	119	96	84	75	67	61	55
167.5	168	146	140	134	123	112	102	85	77	73	62	53	52	48
170.0	113	109	103	90	80	76	71	63	57	53	49	46	43	40
172.5	67	65	63	60	57	55	51	47	42	39	36	34	32	31
175.0	40	40	39	37	35	34	32	30	28	26	25	24	23	23
177.5	11	12	12	12	12	13	13	13	13	13	14	14	15	15
180.0	15	15	15	15	15	15	15	15	15	15	15	15	15	15



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CANDELA DISTRIBUTION
LATERAL ANGLE

	70.0	72.5	75.0	77.5	80.0	82.5	85.0	87.5	90.0	92.5	95.0	97.5	100.0	102.5
0.0	65	65	65	65	65	65	65	65	65	65	65	65	65	65
2.5	67	67	67	66	66	66	65	65	64	64	64	63	63	63
5.0	70	69	69	68	67	66	66	65	64	63	63	62	61	60
7.5	72	71	70	69	68	67	66	65	64	63	62	60	59	58
10.0	75	73	72	70	69	68	66	65	63	62	61	59	58	56
12.5	77	75	73	72	70	68	66	65	63	61	59	58	56	54
15.0	79	77	75	73	71	68	66	64	62	60	58	56	54	52
17.5	81	79	76	74	71	69	66	64	62	59	57	54	52	50
20.0	83	80	77	74	72	69	66	64	61	58	56	53	50	48
22.5	85	81	78	75	72	69	66	63	60	57	54	51	48	46
25.0	87	83	79	76	72	69	66	63	59	56	53	50	47	44
27.5	88	84	80	76	73	69	65	62	59	55	52	48	45	42
30.0	90	85	81	77	73	69	65	61	58	54	50	47	43	40
32.5	91	86	82	77	73	69	64	61	57	53	49	45	42	39
35.0	92	87	82	77	73	68	64	60	56	52	48	44	40	37
37.5	93	88	83	78	73	68	63	59	55	51	47	42	39	35
40.0	94	89	83	78	73	68	63	58	54	50	45	41	37	34
42.5	95	89	83	78	72	67	62	58	53	49	44	40	36	32
45.0	96	89	83	78	72	67	61	57	52	48	43	39	35	31
47.5	96	90	83	77	72	66	61	56	51	47	42	37	33	30
50.0	96	90	83	77	71	65	60	55	50	46	41	36	32	28
52.5	96	89	83	76	70	64	59	54	49	44	39	35	31	27
55.0	96	89	82	76	70	63	58	53	48	43	38	34	29	26
57.5	96	89	81	75	69	62	57	51	47	42	37	32	28	25
60.0	95	88	81	74	68	61	56	50	45	41	36	31	27	23
62.5	95	87	80	73	66	60	54	49	44	39	34	30	26	22
65.0	94	86	79	72	65	59	53	48	43	38	33	29	25	21
67.5	93	85	78	71	64	58	52	46	42	37	32	27	23	20
70.0	92	84	76	69	63	56	50	45	40	36	31	26	22	19
72.5	91	83	75	68	61	55	49	44	39	34	30	25	21	18
75.0	90	81	74	67	60	53	48	42	38	33	28	24	20	17
77.5	88	80	72	65	58	52	46	41	36	32	27	23	19	16
80.0	86	78	71	63	57	50	45	40	35	30	26	22	18	16
82.5	85	76	69	62	55	49	43	38	34	29	25	21	17	15
85.0	83	75	67	60	53	47	42	37	32	28	24	20	17	14
87.5	81	73	65	58	52	46	40	35	31	27	23	19	16	14
90.0	79	71	63	56	50	44	39	34	30	26	22	18	15	13
92.5	77	69	61	55	48	43	37	33	29	25	21	17	14	12
95.0	75	67	60	53	47	41	36	32	28	24	20	17	14	12
97.5	73	65	58	51	45	40	35	31	27	23	20	16	14	12
100.0	71	63	56	50	44	39	34	30	26	23	19	16	14	12
102.5	68	61	54	48	43	38	33	29	25	22	19	16	14	12
105.0	66	59	53	47	41	36	32	28	25	22	19	16	14	12
107.5	64	57	51	45	40	36	31	28	25	22	19	16	14	12
110.0	62	56	51	44	39	35	31	27	24	22	19	16	14	13
112.5	64	58	50	44	39	35	30	27	24	22	19	17	15	14
115.0	67	59	54	45	40	35	30	27	25	23	20	18	16	15
117.5	74	64	60	50	40	34	30	28	25	23	21	19	17	16
120.0	83	76	62	51	41	34	30	28	26	24	22	20	18	17
122.5	107	103	77	55	43	35	31	29	27	25	23	21	19	18
125.0	105	97	79	59	45	36	33	30	28	26	24	22	20	19
127.5	118	106	77	59	43	37	33	31	29	27	26	23	22	21
130.0	124	115	89	61	46	39	34	32	30	29	27	25	23	22
132.5	142	121	93	64	47	40	35	34	32	30	29	26	24	24
135.0	150	115	81	58	46	39	35	34	33	31	30	28	26	25
137.5	154	119	85	56	46	40	36	35	34	33	31	29	28	27
140.0	141	97	77	56	47	39	37	35	35	34	33	31	30	29
142.5	123	98	70	57	45	41	38	37	36	35	34	32	31	30
145.0	123	89	65	54	46	41	39	38	37	36	36	34	33	32
147.5	110	80	61	51	44	42	39	38	39	38	37	35	34	34
150.0	110	77	63	51	45	42	40	39	39	39	38	37	36	36
152.5	98	75	61	51	45	43	41	41	41	41	39	38	37	37
155.0	85	69	57	49	44	43	41	41	41	41	40	39	38	38
157.5	71	60	51	48	45	43	42	41	41	41	40	39	38	38
160.0	62	54	51	47	45	43	41	40	40	40	39	38	38	38

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	70.0	72.5	75.0	77.5	80.0	82.5	85.0	87.5	90.0	92.5	95.0	97.5	100.0	102.5
162.5	58	53	48	45	43	41	39	39	39	38	38	37	36	37
165.0	50	46	43	41	40	38	36	36	36	37	36	35	34	35
167.5	44	41	39	37	35	34	33	33	33	34	33	33	32	33
170.0	38	35	33	32	31	30	29	30	30	30	30	29	29	30
172.5	30	28	27	26	26	26	26	26	27	27	27	26	26	27
175.0	22	21	21	21	21	21	21	21	22	22	22	21	21	22
177.5	15	16	16	16	16	16	16	16	17	17	17	17	16	17
180.0	15	15	15	15	15	15	15	15	15	15	15	15	15	15



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	105.0	107.5	110.0	112.5	115.0	117.5	120.0	122.5	125.0	127.5	130.0	132.5	135.0	137.5
0.0	65	65	65	65	65	65	65	65	65	65	65	65	65	65
2.5	62	62	62	61	61	61	60	60	60	59	59	59	59	59
5.0	60	59	58	58	57	56	56	55	55	54	54	53	53	53
7.5	57	56	55	54	53	52	52	51	50	49	49	48	48	47
10.0	55	53	52	51	50	49	48	47	46	45	44	43	42	42
12.5	52	51	49	48	46	45	44	43	42	40	40	39	38	37
15.0	50	48	46	45	43	42	40	39	38	37	35	35	34	32
17.5	48	46	44	42	40	38	37	36	34	33	32	31	29	28
20.0	45	43	41	39	37	35	34	32	31	29	28	27	26	25
22.5	43	41	39	37	35	33	31	29	28	26	25	24	23	22
25.0	41	39	36	34	32	30	28	27	25	23	22	21	20	19
27.5	39	37	34	32	30	27	26	24	22	21	20	18	17	16
30.0	37	35	32	30	27	25	23	22	20	19	17	16	15	14
32.5	36	33	30	28	25	23	21	20	18	16	15	14	13	12
35.0	34	31	28	26	23	21	19	18	16	15	13	12	11	10
37.5	32	29	27	24	22	19	18	16	14	13	12	11	10	9
40.0	31	28	25	22	20	18	16	14	13	12	10	9	8	7
42.5	29	26	23	21	18	16	15	13	12	10	9	8	7	6
45.0	28	25	22	19	17	15	13	12	10	9	8	7	6	5
47.5	26	23	21	18	16	14	12	11	9	8	7	6	5	4
50.0	25	22	19	17	15	13	11	10	8	7	6	5	4	3
52.5	24	21	18	16	13	12	10	9	8	6	5	4	3	2
55.0	23	20	17	15	12	11	9	8	7	6	5	4	3	2
57.5	21	18	16	14	12	10	9	7	6	5	4	3	2	1
60.0	20	17	15	13	11	9	8	7	6	4	3	2	1	1
62.5	19	16	14	12	10	8	7	6	5	4	3	2	1	1
65.0	18	15	13	11	9	8	7	6	5	4	3	1	1	1
67.5	17	15	12	10	9	7	6	5	4	3	2	1	1	1
70.0	16	14	12	10	8	7	6	5	4	3	2	1	1	1
72.5	15	13	11	9	8	6	5	4	4	3	2	2	2	2
75.0	15	12	10	9	7	6	5	4	3	3	2	2	2	2
77.5	14	12	10	8	7	6	5	4	3	3	2	2	2	2
80.0	13	11	9	8	6	6	5	4	3	3	2	3	3	3
82.5	12	10	9	8	6	6	5	4	4	4	3	4	4	4
85.0	12	10	9	8	7	6	6	5	5	5	5	5	6	6
87.5	12	10	9	8	7	7	6	6	6	5	5	5	5	5
90.0	11	10	8	7	6	6	5	5	4	4	4	4	4	4
92.5	10	9	8	7	6	5	5	4	4	4	3	4	4	4
95.0	10	9	8	7	6	5	5	4	4	3	3	4	4	4
97.5	10	9	8	7	6	5	5	5	4	4	4	4	4	4
100.0	10	9	8	7	6	6	5	5	5	5	4	5	5	5
102.5	10	9	8	7	6	6	6	5	5	5	5	5	5	5
105.0	11	9	9	8	7	7	7	6	6	6	6	6	6	6
107.5	11	10	9	9	8	8	7	7	7	7	7	7	7	7
110.0	12	11	10	10	9	9	9	9	8	8	8	9	8	8
112.5	13	12	11	11	10	10	10	10	10	10	10	10	10	10
115.0	14	13	13	12	12	11	12	12	11	11	12	12	12	11
117.5	15	14	14	13	13	13	13	13	13	13	13	13	13	13
120.0	16	15	15	15	14	14	15	15	15	15	15	15	15	15
122.5	17	17	16	16	16	16	16	16	16	17	17	17	17	16
125.0	18	18	18	18	17	17	18	18	18	18	19	19	19	18
127.5	20	19	19	19	19	19	19	20	20	20	20	21	21	20
130.0	21	21	21	21	20	21	21	21	22	22	22	23	22	22
132.5	23	22	22	22	22	22	23	23	23	24	24	24	24	23
135.0	24	24	24	24	23	24	24	25	25	25	26	26	26	25
137.5	26	26	26	26	25	25	26	26	27	27	28	28	28	27
140.0	28	28	28	28	27	27	28	28	28	29	29	30	30	29
142.5	30	29	30	29	29	29	30	30	30	30	31	32	31	30
145.0	31	31	32	32	31	31	32	32	32	32	33	34	33	32
147.5	33	33	33	33	32	33	34	34	34	34	35	35	35	33
150.0	35	35	35	35	35	35	35	36	35	35	36	37	36	35
152.5	37	37	37	37	36	36	37	37	37	37	38	39	38	37
155.0	38	38	38	38	37	37	38	39	39	38	39	40	39	38
157.5	38	39	39	39	38	38	39	39	39	40	40	41	41	40
160.0	38	39	40	40	39	39	40	40	40	41	42	44	44	43

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	105.0	107.5	110.0	112.5	115.0	117.5	120.0	122.5	125.0	127.5	130.0	132.5	135.0	137.5
162.5	37	38	39	40	39	40	41	41	41	42	44	46	46	45
165.0	35	36	37	38	38	39	40	41	42	43	45	47	48	47
167.5	33	34	35	36	36	37	40	42	43	44	46	48	49	48
170.0	30	31	32	33	32	33	36	37	39	41	43	46	47	47
172.5	27	28	29	29	29	30	32	33	34	35	38	40	41	41
175.0	22	23	24	25	24	25	27	28	28	29	31	33	34	34
177.5	17	17	18	18	18	18	19	19	20	20	21	22	23	23
180.0	15	15	15	15	15	15	15	15	15	15	15	15	15	15



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	140.0	142.5	145.0	147.5	150.0	152.5	155.0	157.5	160.0	162.5	165.0	167.5	170.0	172.5
0.0	65	65	65	65	65	65	65	65	65	65	65	65	65	65
2.5	58	58	58	58	58	57	57	57	57	57	57	57	57	56
5.0	52	52	51	51	51	50	50	50	49	49	49	49	49	49
7.5	46	46	45	45	44	44	43	43	43	42	42	42	42	42
10.0	41	40	40	39	38	38	37	37	37	36	36	36	35	35
12.5	36	35	35	34	33	33	32	31	31	30	30	30	30	29
15.0	32	31	30	29	28	28	27	26	26	25	25	25	25	24
17.5	27	26	26	25	24	23	23	22	22	21	21	20	20	20
20.0	24	23	22	21	20	19	19	18	18	17	17	17	16	16
22.5	20	20	19	18	17	16	16	15	15	14	14	13	13	13
25.0	18	17	16	15	14	13	13	12	12	11	11	11	11	10
27.5	15	14	13	12	12	11	11	10	10	9	9	9	8	8
30.0	13	12	11	10	10	9	8	8	8	7	7	7	7	6
32.5	11	10	9	8	8	7	7	6	6	5	5	5	5	4
35.0	9	8	8	7	6	6	5	5	4	4	4	3	3	3
37.5	8	7	6	5	5	4	4	3	3	2	2	2	2	2
40.0	6	6	5	4	3	3	2	2	2	1	1	1	1	1
42.5	5	4	4	3	2	2	1	1	1	1	1	1	1	1
45.0	4	3	3	2	1	1	1	1	1	1	1	1	1	1
47.5	3	2	2	1	1	1	1	1	1	1	1	1	1	1
50.0	2	2	1	1	1	1	1	1	1	1	1	1	1	1
52.5	2	1	1	1	1	1	1	1	1	1	1	1	2	2
55.0	1	1	1	1	1	1	1	1	1	1	2	2	2	2
57.5	1	1	1	1	1	1	1	1	2	2	2	2	2	2
60.0	1	1	1	1	1	1	2	2	2	2	2	2	2	2
62.5	1	1	1	1	2	2	2	2	2	2	2	2	2	2
65.0	1	1	1	2	2	2	2	2	2	2	2	2	2	2
67.5	1	1	2	2	2	2	2	2	2	2	2	3	3	3
70.0	2	2	2	2	2	2	2	2	2	3	3	3	3	3
72.5	2	2	2	2	2	2	2	3	3	3	3	3	3	3
75.0	2	2	2	2	2	3	3	3	3	3	3	4	4	4
77.5	2	3	3	3	3	3	3	4	4	4	4	4	4	4
80.0	3	3	3	4	4	4	4	5	5	5	5	5	6	6
82.5	4	5	5	5	6	6	6	6	6	7	7	7	7	7
85.0	6	6	6	7	7	7	7	7	7	7	7	7	7	7
87.5	5	5	6	6	6	6	6	6	6	6	6	6	6	6
90.0	4	4	4	5	4	4	4	5	5	5	5	5	5	5
92.5	4	4	4	4	4	4	4	5	5	5	5	5	5	5
95.0	4	4	5	5	5	4	4	5	5	5	5	5	5	5
97.5	4	5	5	5	5	5	5	5	5	5	5	5	5	5
100.0	5	5	5	5	5	5	5	5	5	6	6	6	6	6
102.5	5	6	6	6	6	6	6	6	6	6	6	7	7	7
105.0	6	6	7	7	7	7	7	7	7	7	7	7	7	7
107.5	7	7	7	8	8	8	8	8	8	8	8	8	8	8
110.0	8	9	9	9	9	9	9	9	9	9	9	9	10	10
112.5	10	10	10	10	10	10	10	10	11	11	11	11	11	11
115.0	11	11	11	11	11	11	11	11	12	12	12	12	12	12
117.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13
120.0	14	14	14	14	14	14	14	14	14	14	14	14	14	14
122.5	16	16	16	16	16	16	15	16	15	16	16	16	15	15
125.0	18	18	18	18	18	17	17	17	17	17	17	17	17	17
127.5	20	20	20	20	19	19	19	19	19	19	19	19	18	18
130.0	21	22	22	21	21	21	21	20	20	20	19	19	19	19
132.5	23	23	23	23	23	23	22	22	21	20	20	20	20	20
135.0	25	25	25	25	25	24	23	23	22	22	22	22	22	22
137.5	27	27	27	26	26	25	25	24	24	23	23	23	23	24
140.0	28	28	28	27	27	26	26	25	25	25	25	25	25	26
142.5	30	30	29	29	28	28	27	27	27	27	27	27	27	28
145.0	31	31	31	30	29	29	28	28	28	28	28	29	29	29
147.5	32	32	32	31	30	30	30	30	30	30	30	30	31	31
150.0	34	34	34	33	32	32	32	32	32	32	32	32	32	32
152.5	36	36	35	35	34	34	34	34	34	34	34	34	34	34
155.0	38	38	38	37	36	36	36	35	35	35	35	35	35	35
157.5	40	40	40	39	39	38	38	38	38	38	38	38	37	37
160.0	42	42	42	42	41	41	41	41	41	40	40	40	40	40

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	140.0	142.5	145.0	147.5	150.0	152.5	155.0	157.5	160.0	162.5	165.0	167.5	170.0	172.5
162.5	45	46	46	45	45	44	44	44	44	43	43	43	42	42
165.0	47	48	49	48	48	48	47	47	47	47	46	46	46	46
167.5	49	50	50	50	50	50	50	49	49	49	49	49	49	48
170.0	48	49	51	51	51	51	51	51	51	50	50	50	50	50
172.5	42	44	45	45	45	46	46	46	47	47	48	48	49	49
175.0	34	35	35	35	35	35	34	34	34	33	33	32	32	32
177.5	23	23	23	22	21	21	20	19	19	19	18	18	18	18
180.0	15	15	15	15	15	15	15	15	15	15	15	15	15	15



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	175.0	177.5	180.0
0.0	65	65	65
2.5	56	57	57
5.0	49	49	49
7.5	42	41	41
10.0	35	35	35
12.5	29	29	29
15.0	24	24	24
17.5	20	20	20
20.0	16	16	16
22.5	13	13	13
25.0	10	10	10
27.5	8	8	8
30.0	6	6	6
32.5	4	4	4
35.0	3	3	3
37.5	2	2	2
40.0	1	1	1
42.5	1	1	1
45.0	1	1	1
47.5	1	1	1
50.0	1	1	1
52.5	2	2	2
55.0	2	2	2
57.5	2	2	2
60.0	2	2	2
62.5	2	2	2
65.0	2	3	3
67.5	3	3	3
70.0	3	3	3
72.5	3	3	3
75.0	4	4	4
77.5	4	4	4
80.0	6	6	6
82.5	7	7	7
85.0	8	8	8
87.5	6	6	6
90.0	5	5	5
92.5	5	5	5
95.0	5	5	5
97.5	5	6	6
100.0	6	6	6
102.5	7	7	7
105.0	7	8	8
107.5	8	8	8
110.0	10	10	10
112.5	11	11	11
115.0	12	12	12
117.5	13	13	13
120.0	14	14	14
122.5	15	15	15
125.0	17	17	17
127.5	18	18	18
130.0	19	20	20
132.5	21	21	22
135.0	22	23	24
137.5	24	25	25
140.0	26	27	27
142.5	28	28	28
145.0	29	30	30
147.5	31	31	31
150.0	32	32	32
152.5	34	34	34
155.0	35	35	35
157.5	37	37	37
160.0	39	39	39

THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	175.0	177.5	180.0
162.5	42	42	42
165.0	46	46	46
167.5	48	48	48
170.0	50	50	50
172.5	49	49	49
175.0	32	31	31
177.5	19	19	19
180.0	15	15	15



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**5-DEGREE
ZONAL LUMEN SUMMARY**

0- 5	2
5- 10	5
10- 15	8
15- 20	11
20- 25	14
25- 30	18
30- 35	22
35- 40	25
40- 45	29
45- 50	32
50- 55	35
55- 60	38
60- 65	40
65- 70	42
70- 75	43
75- 80	44
80- 85	44
85- 90	44
90- 95	42
95-100	40
100-105	39
105-110	36
110-115	34
115-120	33
120-125	32
125-130	30
130-135	30
135-140	30
140-145	30
145-150	30
150-155	29
155-160	26
160-165	19
165-170	10
170-175	4
175-180	1

**10-DEGREE
ZONAL LUMEN SUMMARY**

0- 10	6
0- 20	25
0- 30	58
0- 40	105
0- 50	166
0- 60	239
0- 70	322
0- 80	409
0- 90	497
0-100	580
0-110	655
0-120	722
0-130	784
0-140	844
0-150	904
0-160	960
0-170	989
0-180	993



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	93	87	82	77	85	80	75	71	66	63	59	54	51	49	43	41	39	33
2	83	74	66	59	76	67	60	55	56	50	46	45	41	37	35	32	29	24
3	75	63	54	47	68	58	50	44	48	42	37	38	34	30	30	26	23	19
4	68	55	46	39	62	51	42	36	42	35	30	33	28	24	26	22	19	15
5	62	49	39	32	56	45	36	30	37	30	25	30	24	20	23	19	16	12
6	57	43	34	28	52	40	31	25	33	26	21	26	21	17	20	16	13	10
7	52	39	30	24	48	36	28	22	29	23	18	24	19	15	18	15	11	9
8	48	35	26	21	44	32	24	19	27	20	16	22	17	13	17	13	10	8
9	45	32	24	18	41	29	22	17	24	18	14	20	15	11	15	12	9	7
10	42	29	21	16	38	27	20	15	22	16	12	18	13	10	14	11	8	6

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

Project Number
17.02284



HUBBELL
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Date
8/21/2017

Goniophotometer Calibration

Calibration Lamp: Osram ST8-HA4-250-840 22 W/4000 K

Lamp Number: RM B6-28

Ballast: Vossloh Schwabe LN 36.149

Ballast Number: RM B6-28

Calibration Voltage/Frequency: 220Vac / 50hz

Total Luminous Flux: 2463 Lumens

Calibration Date: 01/19/2017

Test Equipment Used

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	LMT/GO-DS 1600 Lab 4- Test Dist.: 31.0'	10B6231	02/17/2019
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27074V	11/02/2017
<i>Power Source</i>	Chroma / 61604	616040003897	N/A
<i>Thermometer</i>	LMT / ATS-4Ch	10B623-3	12/14/2017

Sphere Calibration

Calibration Lamp: EIKO 28V75W/E10

Lamp Number: SCL-1400-J136

Calibration Current: 2.679 Amps

Total Luminous Flux: 1427 Lumens

Test Equipment Used - Color & SPD; THD & Power Factor

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>3-Meter Sphere</i>	Labsphere / LMS-3M	N/A	Calibrated Weekly
<i>Thermometer</i>	National Instruments / USB TC01	1912751	11/2/2017
<i>LAMP Power Meter</i>	Yokogawa / WT332	C2QA27075V	11/1/2017
<i>Power Supply</i>	Chroma / 61602	616020002113	N/A
<i>Power Supply PF/THD</i>	Voltage-Regulated House Power	N/A	N/A
<i>Aux Lamp Supply</i>	Labsphere / LPS-100-0833	031159372	10/31/2017
<i>Cal Lamp Supply</i>	Labsphere / LPS-150-0268	1218148505	12/1/2017
<i>Spectrometer</i>	Labsphere / CDS 1100	0624117792	N/A

Hubbell Lighting, Inc.

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