

Project Number
17.03183



HUBBELL
Lighting

Date
1/2/2017

LAB 6

Test Sample Description

Catalog Number: P2143-2030K9
Description: LED Bathroom Wall-Mount w/ Two HAL AC LED Modules

IES LM-46-04

Test Method: IES LM-79-08 § 10
Preburn 1:00
Time To Stabilize: 0:45
Total Operating Time: 4:35

Input Voltage (Volts): 119.8
Input Current (Amps): 0.142
Input Wattage (Watts): 15.90
Ambient Temp (°C): 24.2



Hubbell Lighting, Inc.

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

Checked: M.ELLMANN
Approved: P. McCARTHY



This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.



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LUMINAIRE: LED Bathroom Wall-Mount w/ Two HAL AC LED Modules

LAMP: 40- 3000K LEDs

MOUNTING: Wall

REFRACTOR: Etched Glass

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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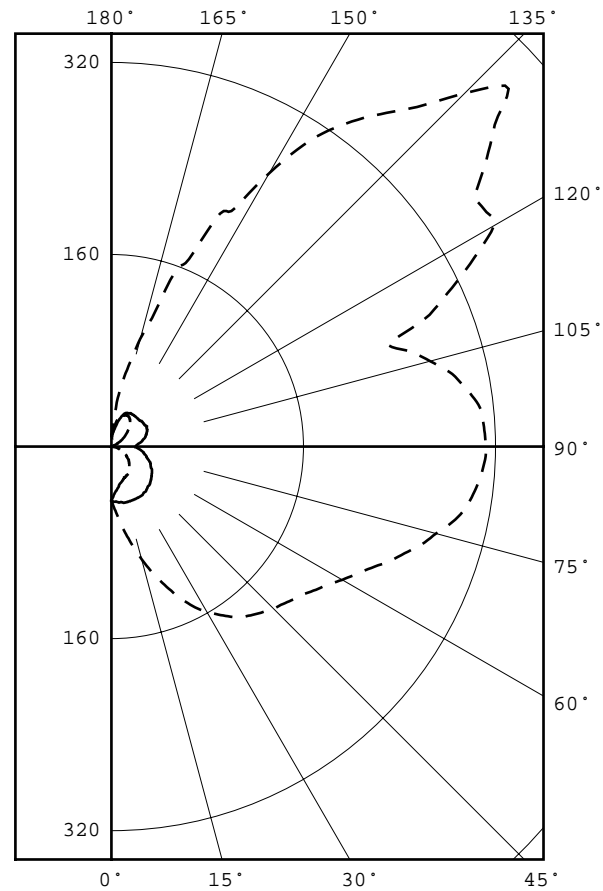
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CANDELA DISTRIBUTION						FLUX
	0.0	45.0	90.0	135.0	180.0	
0	45	45	45	45	45	
5	58	54	46	40	38	5
15	97	79	48	35	31	16
25	141	106	48	32	28	31
35	173	127	47	30	25	48
45	191	138	45	27	21	61
55	208	145	41	23	16	73
65	239	157	36	18	11	84
75	280	173	30	13	6	96
85	308	182	23	7	1	102
90	312	182	20	5	0	
95	310	181	22	5	0	101
105	275	165	29	8	0	93
115	313	250	33	13	5	111
125	371	333	33	19	12	121
135	416	289	32	24	20	106
145	324	205	32	27	27	68
155	214	121	31	26	29	35
165	93	66	22	20	26	12
175	19	16	12	12	10	2
180	9	9	9	9	9	

ZONAL ZONE	LUMEN LUMENS	SUMMARY %FIXT
0- 30	52	4.5
0- 40	100	8.6
0- 60	234	20.1
0- 90	516	44.4
90-120	304	26.1
90-130	426	36.6
90-150	600	51.5
90-180	648	55.6
0-180	1164	100.0

EFFICACY = 73.2 lm/W
CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG 180-DEG
SPACING CRITERIA : 3.85 1.58 0.81



LEGEND
0-deg - - - - -
90-deg - - - - -
180-deg - - - - -



®

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 3.250 14.625
HEIGHT OF SIDE : 4.000 4.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE AVERAGE AVERAGE
IN DEG 0-DEG 90-DEG 180-DEG
45 3949. 1630. 434.
55 4288. 1676. 330.
65 5067. 1751. 233.
75 6307. 1871. 135.
85 7648. 2086. 25.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0	95.0	105.0	115.0
0.0	45	45	45	45	45	45	45	45	45	45	45	45	45	45
2.5	51	51	51	50	50	49	49	48	47	46	46	46	45	44
5.0	58	58	58	57	55	54	52	50	49	47	46	46	44	43
7.5	67	67	66	65	62	60	57	54	51	48	47	46	44	42
10.0	76	76	75	73	70	66	62	57	53	49	47	46	43	41
12.5	86	86	85	82	77	72	66	60	54	50	48	46	42	40
15.0	97	97	95	91	86	79	72	64	57	50	48	46	42	39
17.5	108	107	106	101	94	86	77	67	59	51	48	46	41	38
20.0	119	119	116	111	102	93	82	71	60	52	48	45	41	37
22.5	130	131	127	120	111	99	86	74	62	52	48	45	40	37
25.0	141	141	138	130	119	106	91	77	64	53	48	45	40	36
27.5	151	151	147	139	127	112	96	80	65	53	48	44	39	35
30.0	159	159	156	147	134	118	100	82	66	53	48	44	38	35
32.5	166	167	163	154	140	123	103	84	67	53	48	44	38	34
35.0	173	173	169	160	145	127	106	86	68	53	47	43	37	34
37.5	179	178	175	165	150	131	109	88	68	53	47	42	36	33
40.0	183	183	179	169	153	134	111	89	69	52	46	41	35	32
42.5	187	187	183	173	157	136	113	90	69	52	45	40	34	31
45.0	191	190	186	175	159	138	114	91	69	51	45	40	34	31
47.5	194	194	188	178	161	140	116	91	69	51	44	39	32	29
50.0	198	198	192	181	164	142	117	92	69	50	43	37	31	28
52.5	202	202	196	184	166	143	118	93	69	49	42	36	30	27
55.0	208	207	202	188	168	145	119	94	69	49	41	35	29	26
57.5	214	214	207	193	171	147	121	95	69	48	40	34	28	25
60.0	222	221	215	198	175	150	123	96	69	47	39	33	27	24
62.5	230	230	222	204	180	153	126	97	69	46	37	32	25	23
65.0	239	239	230	212	185	157	129	98	69	45	36	30	24	22
67.5	250	250	240	219	190	160	132	99	69	44	35	29	23	20
70.0	260	259	249	228	196	165	134	100	68	42	33	27	22	19
72.5	271	271	260	235	202	169	138	101	68	41	31	26	20	18
75.0	280	280	269	243	208	173	140	102	66	39	30	24	19	16
77.5	291	290	278	251	214	177	144	103	66	38	28	23	18	15
80.0	299	298	285	257	218	180	145	103	65	37	27	21	16	14
82.5	304	304	290	261	221	182	146	103	63	35	25	20	15	12
85.0	308	307	294	263	223	182	147	102	62	33	23	18	13	11
87.5	311	309	295	265	224	183	147	102	61	32	21	17	12	10
90.0	312	311	297	265	223	182	146	101	60	31	20	16	11	9
92.5	311	311	297	266	224	182	147	102	60	32	21	16	11	9
95.0	310	309	295	264	223	181	146	102	61	33	22	18	12	9
97.5	305	304	290	259	219	179	145	101	62	34	24	19	13	10
100.0	297	297	283	253	214	176	142	100	63	35	26	21	15	11
102.5	288	287	274	245	208	171	138	98	63	37	27	22	16	13
105.0	275	274	261	236	200	165	134	96	63	38	29	24	18	14
107.5	262	261	249	224	191	183	132	94	63	39	30	25	19	16
110.0	246	246	235	230	247	220	167	100	63	40	31	26	21	17
112.5	287	289	289	280	267	234	187	129	70	41	32	28	22	19
115.0	313	314	320	305	289	250	192	136	73	42	33	29	23	20
117.5	341	346	348	331	297	258	202	142	75	41	33	29	25	22
120.0	368	369	364	336	297	274	211	141	74	41	34	30	26	23
122.5	368	366	358	331	321	281	219	143	75	40	33	30	26	24
125.0	371	371	373	358	355	333	228	137	75	39	33	30	27	26
127.5	394	394	389	381	391	342	234	133	73	38	33	30	28	27
130.0	417	417	431	413	373	322	249	133	71	37	33	30	28	28
132.5	445	443	423	394	351	304	231	144	69	36	32	30	29	29
135.0	416	416	397	372	328	289	220	129	66	35	32	30	29	29
137.5	386	385	375	354	313	269	201	118	64	35	32	30	30	30
140.0	364	364	355	328	293	246	184	106	63	35	32	31	30	31
142.5	345	343	333	301	275	229	168	99	62	34	32	31	30	31
145.0	324	324	307	275	244	205	150	87	60	34	32	31	31	31
147.5	298	294	271	258	225	176	136	80	57	34	32	31	31	31



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0	95.0	105.0	115.0
150.0	263	262	254	223	193	160	116	77	53	33	32	31	31	31
152.5	225	226	218	205	167	138	103	78	48	32	31	31	31	31
155.0	214	208	196	179	152	121	96	70	43	32	31	30	30	30
157.5	169	171	172	153	125	101	81	63	38	31	30	29	29	29
160.0	155	153	144	123	107	88	75	58	35	29	28	27	27	26
162.5	112	111	108	102	86	80	64	51	32	27	25	25	24	24
165.0	93	91	84	77	73	66	55	36	26	23	22	21	21	21
167.5	72	71	68	65	61	49	38	27	21	19	18	17	17	17
170.0	56	57	56	52	41	36	26	20	17	15	15	14	14	14
172.5	41	41	38	33	27	22	19	16	14	13	13	13	13	13
175.0	19	19	20	20	18	16	14	13	13	12	12	12	12	12
177.5	11	11	12	13	13	13	12	12	12	12	11	11	11	11
180.0	9	9	9	9	9	9	9	9	9	9	9	9	9	9



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CANDELA DISTRIBUTION
LATERAL ANGLE

	125.0	135.0	145.0	155.0	165.0	175.0	180.0
0.0	45	45	45	45	45	45	45
2.5	43	43	42	42	41	41	41
5.0	41	40	39	39	38	38	38
7.5	40	38	37	37	36	36	36
10.0	39	37	36	35	34	34	34
12.5	38	36	34	33	32	32	32
15.0	36	35	33	32	31	31	31
17.5	36	34	33	32	31	30	30
20.0	35	33	32	31	30	29	29
22.5	34	33	31	30	29	28	28
25.0	34	32	31	30	29	28	28
27.5	33	32	30	29	28	27	27
30.0	33	31	30	29	28	27	27
32.5	32	31	29	28	27	26	26
35.0	32	30	29	27	26	25	25
37.5	31	29	28	27	25	25	24
40.0	30	29	27	26	25	24	23
42.5	29	28	26	25	23	23	22
45.0	29	27	25	24	22	21	21
47.5	28	26	24	23	21	20	20
50.0	27	25	23	22	20	19	19
52.5	26	24	22	20	19	18	18
55.0	25	23	21	19	17	16	16
57.5	23	22	20	18	16	15	15
60.0	22	20	18	17	15	14	14
62.5	21	19	17	15	13	12	12
65.0	20	18	16	14	12	11	11
67.5	18	17	14	13	11	10	10
70.0	17	15	13	11	9	8	8
72.5	16	14	12	10	8	7	7
75.0	14	13	10	8	7	6	6
77.5	13	11	9	7	5	5	5
80.0	12	10	8	6	4	3	3
82.5	11	9	7	5	3	2	2
85.0	9	7	5	3	2	1	1
87.5	8	6	4	2	1	0	0
90.0	7	5	3	1	0	0	0
92.5	7	5	3	2	0	0	0
95.0	7	5	3	1	0	0	0
97.5	8	5	3	1	0	0	0
100.0	8	6	3	2	0	0	0
102.5	10	6	3	1	0	0	0
105.0	11	8	5	2	0	0	0
107.5	12	9	6	3	1	0	1
110.0	14	10	7	4	2	2	2
112.5	15	11	8	5	4	3	3
115.0	17	13	9	6	5	5	5
117.5	19	14	11	8	6	6	6
120.0	20	16	12	9	8	8	8
122.5	21	17	13	10	9	10	10
125.0	23	19	15	12	11	12	12
127.5	25	20	16	14	13	14	14
130.0	26	21	18	15	15	16	16
132.5	27	23	19	17	16	18	18
135.0	28	24	20	18	18	19	20
137.5	29	25	22	19	20	21	21
140.0	30	26	23	21	21	23	24
142.5	30	27	24	22	23	25	25
145.0	30	27	24	23	24	26	27
147.5	30	27	25	24	25	28	28



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	CANDELA DISTRIBUTION						
	LATERAL ANGLE						
	125.0	135.0	145.0	155.0	165.0	175.0	180.0
150.0	30	27	24	24	26	28	29
152.5	30	27	24	24	26	28	29
155.0	29	26	24	23	25	28	29
157.5	27	25	23	23	25	28	28
160.0	26	24	23	23	25	27	28
162.5	24	24	22	22	25	27	28
165.0	20	20	21	22	24	26	26
167.5	16	17	18	20	22	23	23
170.0	14	14	16	17	18	19	19
172.5	13	13	14	14	14	14	14
175.0	12	12	10	10	10	10	10
177.5	11	9	8	7	8	8	8
180.0	9	9	9	9	9	9	9



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5-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	5	1
5-	10	4
10-	15	6
15-	20	10
20-	25	14
25-	30	18
30-	35	22
35-	40	26
40-	45	29
45-	50	32
50-	55	35
55-	60	38
60-	65	41
65-	70	44
70-	75	47
75-	80	49
80-	85	51
85-	90	51
90-	95	51
95-	100	50
100-	105	47
105-	110	45
110-	115	53
115-	120	58
120-	125	60
125-	130	62
130-	135	58
135-	140	48
140-	145	39
145-	150	29
150-	155	21
155-	160	14
160-	165	8
165-	170	4
170-	175	1
175-	180	0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	10	5
0-	20	21
0-	30	52
0-	40	100
0-	50	161
0-	60	234
0-	70	318
0-	80	415
0-	90	516
0-	100	617
0-	110	710
0-	120	821
0-	130	942
0-	140	1048
0-	150	1116
0-	160	1150
0-	170	1163
0-	180	1164



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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	106	106	106	106	97	97	97	97	80	80	80	65	65	65	51	51	51	44
1	92	86	81	76	84	78	73	69	64	60	57	50	48	45	38	36	34	28
2	82	73	65	58	74	66	59	53	54	48	44	42	38	35	31	28	26	21
3	74	63	54	47	67	57	49	43	46	40	35	36	31	28	26	23	20	16
4	67	55	45	38	61	50	41	35	40	34	29	31	26	23	23	19	16	12
5	61	48	39	32	55	44	36	29	35	29	24	28	23	19	20	17	14	10
6	56	43	34	27	51	39	31	25	31	25	20	25	20	16	18	14	12	8
7	52	38	30	23	47	35	27	21	28	22	18	22	17	14	16	13	10	7
8	48	34	26	20	43	31	24	19	26	20	15	20	15	12	15	11	9	6
9	44	31	23	18	40	29	21	16	23	17	13	18	14	10	14	10	8	5
10	41	28	21	16	37	26	19	14	21	16	12	17	12	9	13	9	7	5

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 TEST SAMPLE.

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Date
1/2/2017

Goniophotometer Calibration

Calibration Lamp: GE 1000W, 120V, T6, CL (FEL)

Lamp Number: ITL78966-1000-38

Calibration Current: 8.300 Amps DC

Total Luminous Flux: 25889.0 Lumens

Calibration Date: 09/02/16

Test Equipment Used

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL / HLI LAB 6 - Test Distance: 31.3'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27076V	10/25/2018
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	1912745	10/26/2018

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