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Indoor Distribution Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-10-2014

Prepared For
H E Williams Inc
831 W Fairview Ave
PO Box 837
Carthage, MO 64836-0837
United States

Catalog Number
2AR-L12/835-DIM-UNV-LM-OF-WH-x-xx (45° TILT)
Order Number
13257190
Test Number
13257190.12

Test Date

2020-03-17

Prepared By

Jesse Litchfield, Technician

Approved By

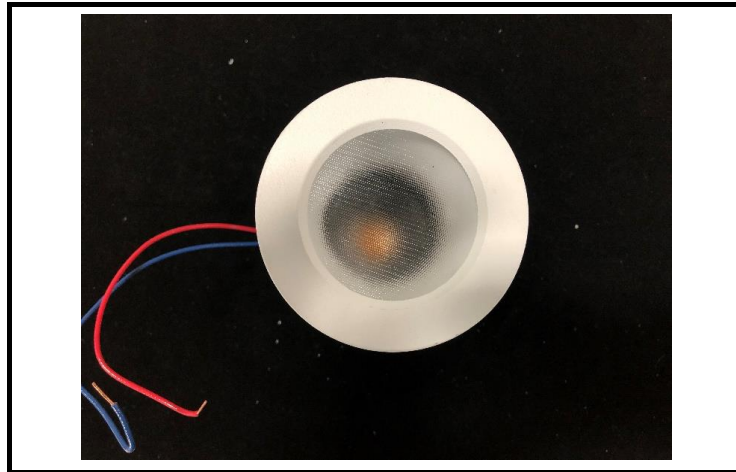
Alexa Lambert, Project Handler

The results contained in this report pertain only to the tested sample.
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Luminaire Description: Aluminum housing, optics, and trim enclosure
Lamp: One white LED
Mounting: Recessed
Ballast/Driver: One Philips Advance XI025C070V054DSM1 Driver

Luminaire



Luminaire Characteristics

Luminous Diameter: 2.50 in.

Summary of Results

Total Luminaire Output:	311.6 Lumens
Luminaire Efficacy:	14.9 lm/w
Maximum Candela:	758 Candela

Test Conditions

Test Temperature:	24.5 °C
Voltage:	120.0 VAC
Current:	0.1752 A
Power:	20.91 W
Power Factor:	0.995
Frequency:	60 Hz
Current THD:	8.87 %

Laboratory results may not be representative of field performance
Ballast factors have not been applied



Distribution - Goniophotometer

Distribution Test Conditions

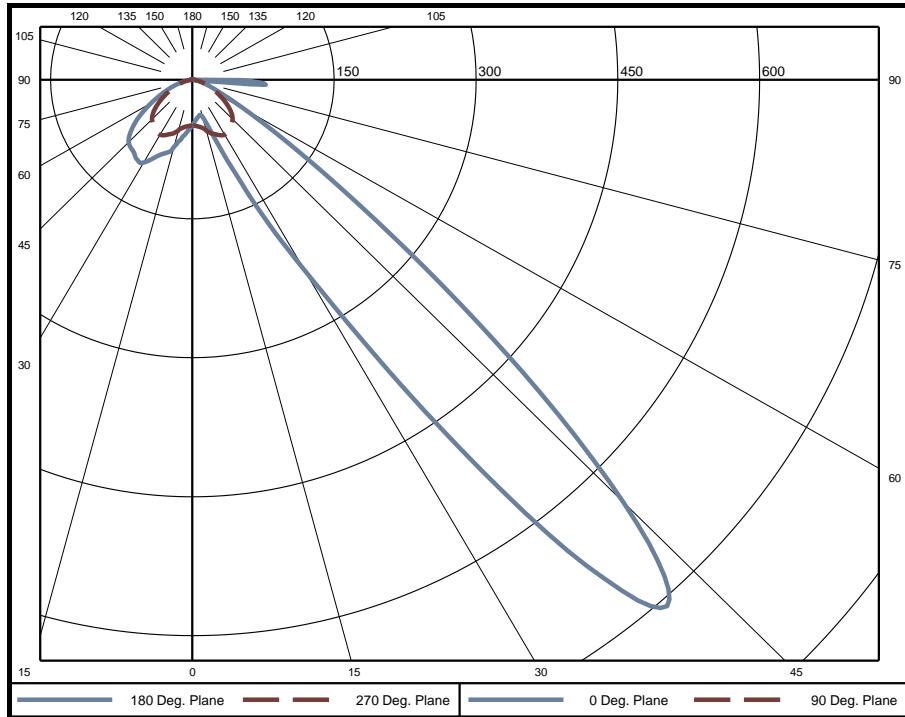
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.5 °C	120.0 VAC	0.1752 A	20.91 W	0.995	60 Hz	8.87 %

Summary of Results

Spacing Criteria
 0-180: 2.91
 90-270: 1.85

Total Lumen Output: 311.6 Lumens
Luminaire Efficacy: 14.9 lm/w
Maximum Candela: 758 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	1.18	0.4%	60-65	15.55	5.0%	120-125	0	0.0%
5-10	3.63	1.2%	65-70	11.10	3.6%	125-130	0	0.0%
10-15	6.41	2.1%	70-75	7.56	2.4%	130-135	0	0.0%
15-20	10.00	3.2%	75-80	4.60	1.5%	135-140	0	0.0%
20-25	14.66	4.7%	80-85	2.07	0.7%	140-145	0	0.0%
25-30	21.55	6.9%	85-90	3.95	1.3%	145-150	0	0.0%
30-35	31.22	10.0%	90-95	0	0.0%	150-155	0	0.0%
35-40	41.78	13.4%	95-100	0	0.0%	155-160	0	0.0%
40-45	46.58	14.9%	100-105	0	0.0%	160-165	0	0.0%
45-50	39.35	12.6%	105-110	0	0.0%	165-170	0	0.0%
50-55	29.11	9.3%	110-115	0	0.0%	170-175	0	0.0%
55-60	21.30	6.8%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	130	41.9%
0-60	267	85.6%
0-90	312	100.0%
90-180	0	0.0%



Candela Tabulation

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
	0	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3
	5	43.6	43.8	45.5	47.8	50.2	52.5	54.1	55.1	55.8	55.1	54.1	52.5	50.2	47.8	45.5
	10	39.8	40.5	43.5	47.6	52.1	56.8	60.4	62.1	64.1	62.1	60.4	56.8	52.1	47.6	43.5
	15	41.1	40.9	44.6	49.7	56.3	61.8	68.1	72.8	75.1	72.8	68.1	61.8	56.3	49.7	44.6
	20	62.7	51.4	47.9	53.5	61.9	69.1	77.3	81.8	84.3	81.8	77.3	69.1	61.9	53.5	47.9
	25	122.1	80.0	52.5	57.2	65.7	75.0	81.8	88.6	92.0	88.6	81.8	75.0	65.7	57.2	52.5
	30	236.8	130.0	56.4	64.7	68.4	76.7	88.8	98.3	103.1	98.3	88.8	76.7	68.4	64.7	56.4
	35	460.1	180.6	56.2	79.5	67.0	77.1	89.5	98.8	103.5	98.8	89.5	77.1	67.0	79.5	56.2
	40	733.3	187.0	51.5	71.3	64.6	75.2	86.0	94.9	98.7	94.9	86.0	75.2	64.6	71.3	51.5
	45	645.5	140.5	44.6	50.7	60.2	72.1	82.8	91.8	95.0	91.8	82.8	72.1	60.2	50.7	44.6
	50	346.3	79.8	37.1	42.4	53.3	64.2	73.5	81.3	83.8	81.3	73.5	64.2	53.3	42.4	37.1
	55	147.8	47.4	30.3	34.8	43.5	52.3	59.7	65.8	67.7	65.8	59.7	52.3	43.5	34.8	30.3
	60	64.9	30.4	24.3	27.1	33.2	39.7	45.0	49.1	50.0	49.1	45.0	39.7	33.2	27.1	24.3
	65	31.7	21.0	18.6	20.1	24.1	28.3	31.8	34.3	34.7	34.3	31.8	28.3	24.1	20.1	18.6
	70	18.1	14.8	13.6	14.3	16.5	19.3	21.5	22.9	22.8	22.9	21.5	19.3	16.5	14.3	13.6
	75	11.0	9.7	9.2	9.4	10.6	12.2	13.3	14.0	13.7	14.0	13.3	12.2	10.6	9.4	9.2
	80	6.2	5.7	5.3	5.1	5.5	6.2	7.0	7.2	6.9	7.2	7.0	6.2	5.5	5.1	5.3
	85	17.0	3.0	1.7	1.3	1.1	1.3	1.9	1.9	1.6	1.9	1.9	1.3	1.1	1.3	1.7
	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	45	90
	0	15550	15550
	45	288200	19920
	55	81340	16700
	65	23690	13900
	75	13470	11210
	85	61610	6238



Coefficients of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as percent of total lumen output delivered to the task surface **																	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	100	97	106	102	99	95	98	95	92	94	92	89	91	89	87	85
2	99	91	85	79	97	90	83	78	86	81	76	83	78	75	80	76	73	71
3	91	80	72	66	88	79	71	65	76	69	64	73	67	63	70	66	62	60
4	83	71	62	55	80	69	61	55	67	60	54	64	58	53	62	57	52	50
5	76	63	53	47	73	61	53	46	59	52	46	57	51	45	55	50	45	43
6	69	56	47	40	67	55	46	40	53	45	39	51	44	39	50	43	39	37
7	64	50	41	35	62	49	40	34	47	40	34	46	39	34	45	38	34	32
8	59	45	36	30	57	44	36	30	43	35	30	42	35	30	40	34	29	27
9	54	41	32	26	53	40	32	26	39	31	26	38	31	26	37	30	26	24
10	51	37	29	23	49	36	29	23	35	28	23	34	28	23	34	27	23	21

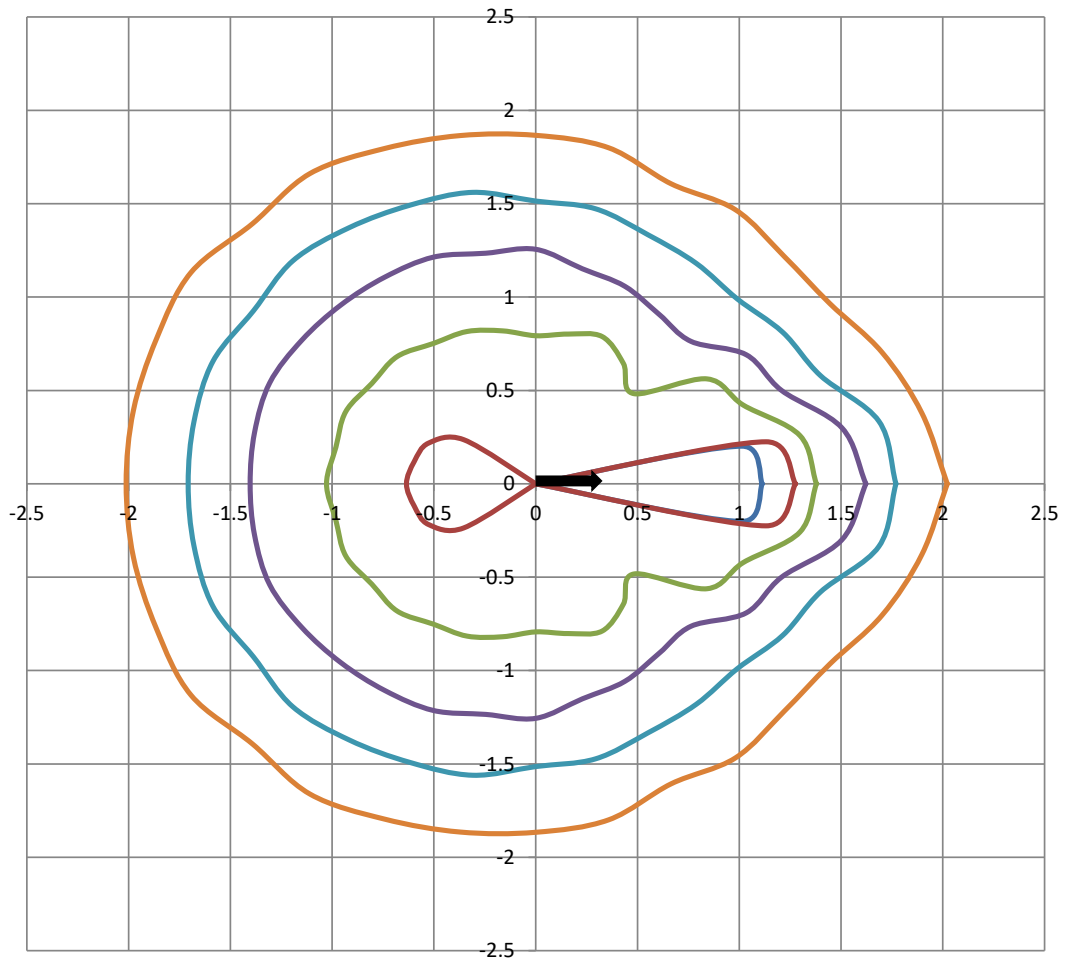
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	49.3 Candela
Central Cone Intensity:	49 Candela
Beam Flux:	285.8 Lumens
Beam Angle (0-180):	136.2 Degrees
Beam Angle (90-270):	129.4 Degrees
Field Angle (0-180):	163.5 Degrees
Field Angle (90-270):	161.2 Degrees

Cone of Light Tabulation			
Mounting Height (Feet)		Footcandles at Nadir	Diameter (Feet)
4.00		3.08	9.21
6.00		1.37	13.8
8.00		0.769	18.4
10.0		0.492	23.0
12.0		0.342	27.6
14.0		0.251	32.2
16.0		0.192	36.8



ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

— 2 fc — 1 fc — 0.5 fc — 0.2 fc — 0.1 fc — 0.05 fc