



UL Verification Services Inc.
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300



Photometric Test Report

Relevant Standards

IES LM-79-2008, ANSI C82.77-10-2014, CIE 13.3-1995
CIE 15-2004, ANSI C78.377-2017, IES TM-30-2018

Prepared For

H E Williams Inc

831 W FairView Ave
PO Box 837
Carthage, MO 64836-0837
United States

Catalog Number

MX2UD-4-L8/835U/L8/835D-F/G

Order Number

13052732

Test Number

13052732.01

Test Date

2019-10-11 - 2019-10-16

Prepared By

Josh Mitchell, Technician

Approved By

Alexa Lambert, Project Handler

The results contained in this report pertain only to the tested sample.
This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.
This report must not be used by the client to claim product certification, approval, or endorsement by
NVLAP, NIST, or any agency of the Federal Government.



Table of Contents

Summary of Results	Page 3
Integrating Sphere Results	Page 4
Distribution Results	
Conditions / Summary of Results / Polar Plot / Zonal Lumens	Page 5
Candela Tabulation / Average Luminance	Page 6
Coefficients of Utilization / Cone of Light	Page 7
ISOFootcandle Plot	Page 8

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

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: Formed White aluminum housing, specular/frosted lens enclosures
Lamp: 288 White LEDs
Mounting: Pendant
Ballast/Driver: Two Philips XI040C110V054BST1 Driver

Luminaire



Luminaire Characteristics

Luminous Length: 48.00 in.
Luminous Width: 2.000 in.
Luminous Height: 4.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 6265 Lumens
Efficacy: 123.6 lm/w
CCT: 3446 K
CRI (Ra): 82.7

Distribution

Total Luminaire Output: 6106 Lumens
Luminaire Efficacy: 120.2 lm/w
Maximum Candela: 1338 Candela

Electrical Data at 120 VAC

Test Temperature: 25.8 °C
Voltage: 120.0 VAC
Current: 0.4254 A
Power: 50.69 W
Power Factor: 0.993
Frequency: 60 Hz
Current THD: 9.99 %



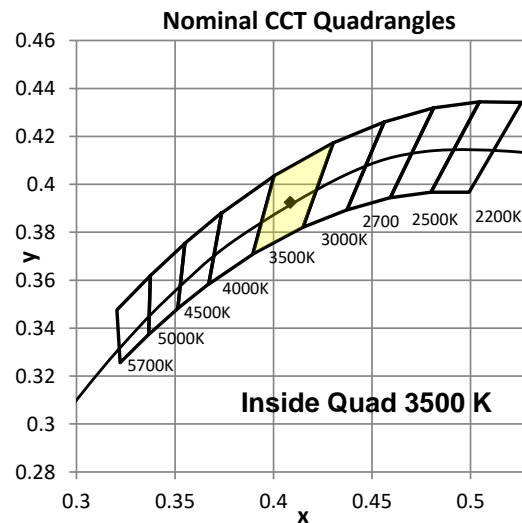
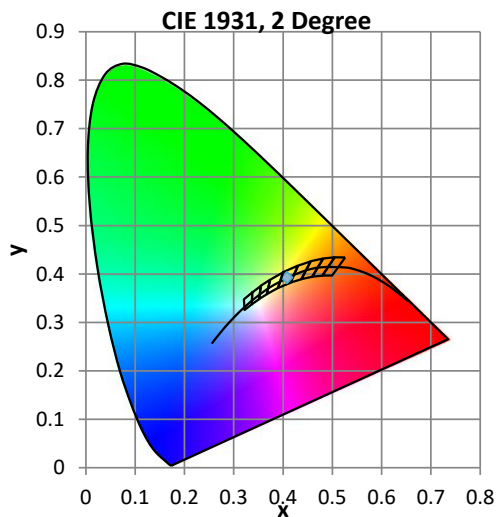
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.8 °C	120.0 VAC	0.4254 A	50.69 W	0.993	60 Hz	9.99 %

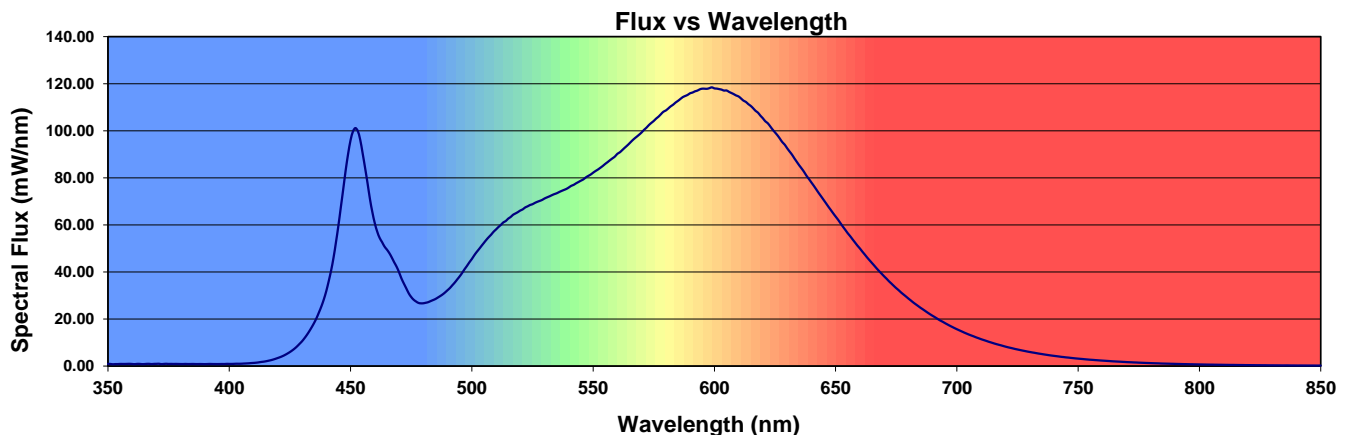
Summary of Results

Total Output:	6265 Lumens	Chromaticity (x):	0.4084
Efficacy:	123.6 lm/w	Chromaticity (y):	0.3925
CCT:	3446 K	Chromaticity (u'):	0.2370
CRI (Ra):	82.7	Chromaticity (v'):	0.5125
CRI (R9):	6.2	TM-30 Rf:	84.2
Peak Wavelength:	599 nm	TM-30 Rg:	95.1
Dominant Wavelength:	581 nm	Duv:	0.0002
S/P Ratio:	1.51		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
82.7	81.1	90.3	96.3	80.9	81.2	87.2	84.1	61.0	6.2	77.3	80.2	65.0	83.4	98.4	73.9





Distribution - Goniophotometer

Distribution Test Conditions

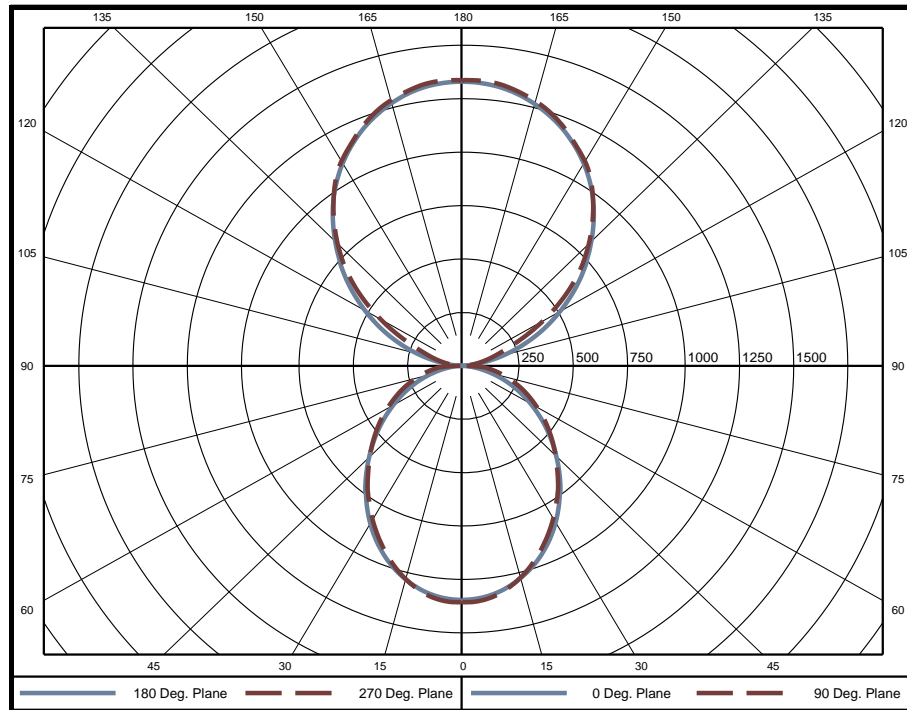
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.8 °C	119.9 VAC	0.4265 A	50.80 W	0.993	60 Hz	10.0 %

Summary of Results

Spacing Criteria
 0-180: 1.14
 90-270: 1.12

Total Lumen Output: 6106 Lumens
Luminaire Efficacy: 120.2 lm/w
Maximum Candela: 1338 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	26.3	0.4%	60-65	167.1	2.7%	120-125	244.5	4.0%
5-10	77.5	1.3%	65-70	140.5	2.3%	125-130	281.0	4.6%
10-15	124.5	2.0%	70-75	112.0	1.8%	130-135	306.0	5.0%
15-20	165.0	2.7%	75-80	83.4	1.4%	135-140	319.9	5.2%
20-25	197.3	3.2%	80-85	56.7	0.9%	140-145	322.2	5.3%
25-30	220.6	3.6%	85-90	26.9	0.4%	145-150	311.1	5.1%
30-35	234.3	3.8%	90-95	8.7	0.1%	150-155	286.6	4.7%
35-40	239.6	3.9%	95-100	30.9	0.5%	155-160	251.5	4.1%
40-45	236.1	3.9%	100-105	64.2	1.1%	160-165	206.7	3.4%
45-50	226.3	3.7%	105-110	105.2	1.7%	165-170	153.6	2.5%
50-55	211.2	3.5%	110-115	151.7	2.5%	170-175	94.5	1.5%
55-60	191.1	3.1%	115-120	200.0	3.3%	175-180	31.8	0.5%

Zone	Lumens	% of Luminaire
0-40	1285	21.0%
0-60	2150	35.2%
0-90	2736	44.8%
90-180	3370	55.2%



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	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103
	5	1088	1098	1093	1097	1101	1097	1093	1098	1088	1098	1093	1097	1101	1097	1093
	10	1065	1074	1068	1071	1072	1071	1068	1074	1065	1074	1068	1071	1072	1071	1068
	15	1026	1036	1027	1028	1023	1028	1027	1036	1026	1036	1027	1028	1023	1028	1027
	20	975	986	973	968	962	968	973	986	975	986	973	968	962	968	973
	25	912	923	908	900	892	900	908	923	912	923	908	900	892	900	908
	30	840	851	835	827	819	827	835	851	840	851	835	827	819	827	835
	35	760	771	758	749	744	749	758	771	760	771	758	749	744	749	758
	40	681	691	680	671	666	671	680	691	681	691	680	671	666	671	680
	45	596	608	599	595	592	595	599	608	596	608	599	595	592	595	599
	50	514	527	524	523	522	523	524	527	514	527	524	523	522	523	524
	55	433	448	451	455	455	455	451	448	433	448	451	455	455	455	451
	60	356	373	381	388	389	388	381	373	356	373	381	388	389	388	381
	65	282	300	313	324	326	324	313	300	282	300	313	324	326	324	313
	70	211	231	249	263	268	263	249	231	211	231	249	263	268	263	249
	75	144	166	188	205	210	205	188	166	144	166	188	205	210	205	188
	80	85	108	134	152	160	152	134	108	85	108	134	152	160	152	134
	85	37	60	85	104	113	104	85	60	37	60	85	104	113	104	85
	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	95	35	32	32	27	25	27	32	32	35	32	32	27	25	27	32
	100	107	105	75	73	72	73	75	105	107	105	75	73	72	73	75
	105	197	194	151	126	124	126	151	194	197	194	151	126	124	126	151
	110	295	292	256	201	188	201	256	292	295	292	256	201	188	201	256
	115	399	394	367	313	288	313	367	394	399	394	367	313	288	313	367
	120	503	501	480	440	416	440	480	501	503	501	480	440	416	440	480
	125	610	609	594	569	552	569	594	609	610	609	594	569	552	569	594
	130	716	719	707	693	683	693	707	719	716	719	707	693	683	693	707
	135	815	822	812	805	799	805	812	822	815	822	812	805	799	805	812
	140	916	925	917	912	909	912	917	925	916	925	917	912	909	912	917
	145	1009	1019	1014	1013	1013	1013	1014	1019	1009	1019	1014	1013	1013	1013	1014
	150	1090	1101	1096	1098	1102	1098	1096	1101	1090	1101	1096	1098	1102	1098	1096
	155	1160	1172	1168	1168	1168	1168	1168	1172	1160	1172	1168	1168	1168	1168	1172
	160	1220	1231	1229	1233	1233	1233	1229	1231	1220	1231	1229	1233	1233	1233	1229
	165	1267	1279	1277	1281	1281	1281	1277	1279	1267	1279	1277	1281	1281	1281	1277
	170	1303	1312	1309	1314	1315	1314	1309	1312	1303	1312	1309	1314	1315	1314	1309
	175	1324	1330	1326	1332	1336	1332	1326	1330	1324	1330	1326	1332	1336	1332	1326
	180	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333

Average Luminance (cd/m²)
Horizontal Angle (Degrees)

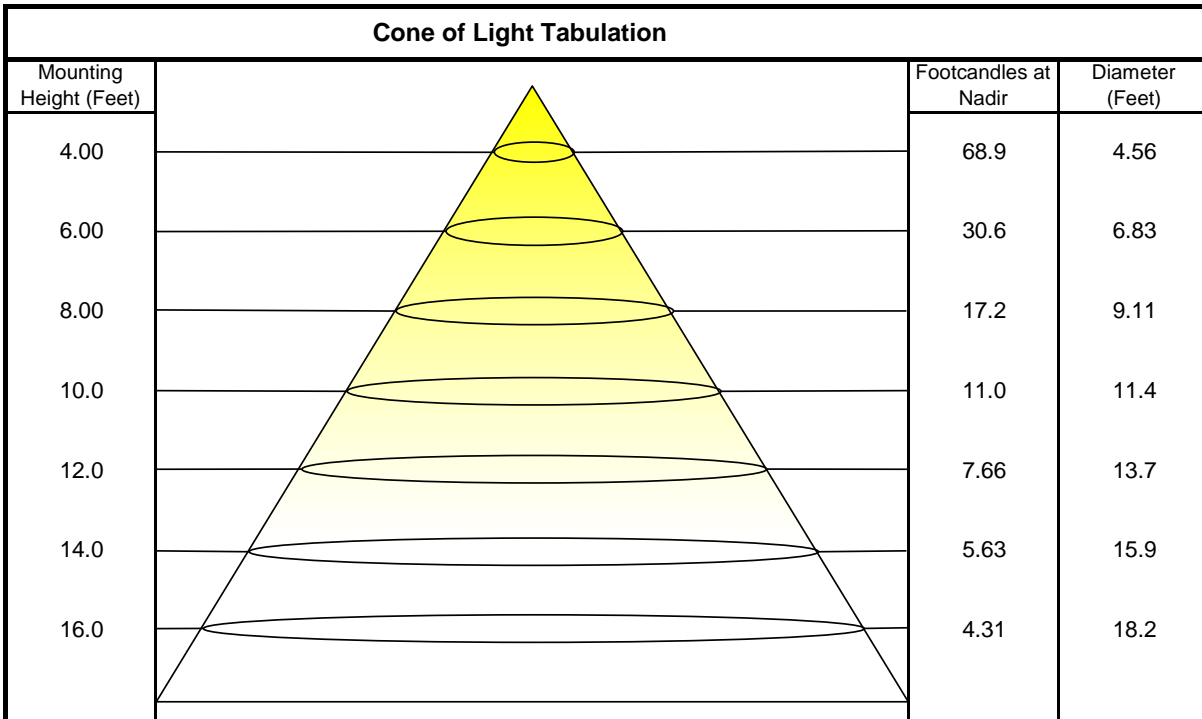
Vertical Angle (Degrees)	0	45	90
	0	17810	17810
	45	12550	4504
	55	10900	3319
	65	9127	2358
	75	6840	1547
	85	3549	874



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	106	106	106	106	97	97	97	97	80	80	80	65	65	65	51	51	51	45
1	96	92	88	84	88	84	81	78	70	68	66	57	55	54	45	44	43	37
2	88	80	74	69	80	74	68	64	61	58	54	50	47	45	40	38	36	31
3	80	71	63	57	73	65	58	53	54	49	46	44	41	38	35	33	31	26
4	73	62	55	49	67	57	51	45	48	43	39	39	36	33	31	29	26	23
5	67	56	48	42	61	51	44	39	43	38	33	35	31	28	28	25	23	20
6	62	50	42	36	56	46	39	34	39	33	29	32	28	25	26	23	20	17
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	24	20	18	15
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	16	14
9	49	37	30	25	45	35	28	23	29	24	20	25	20	18	20	17	15	13
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	19	16	13	11

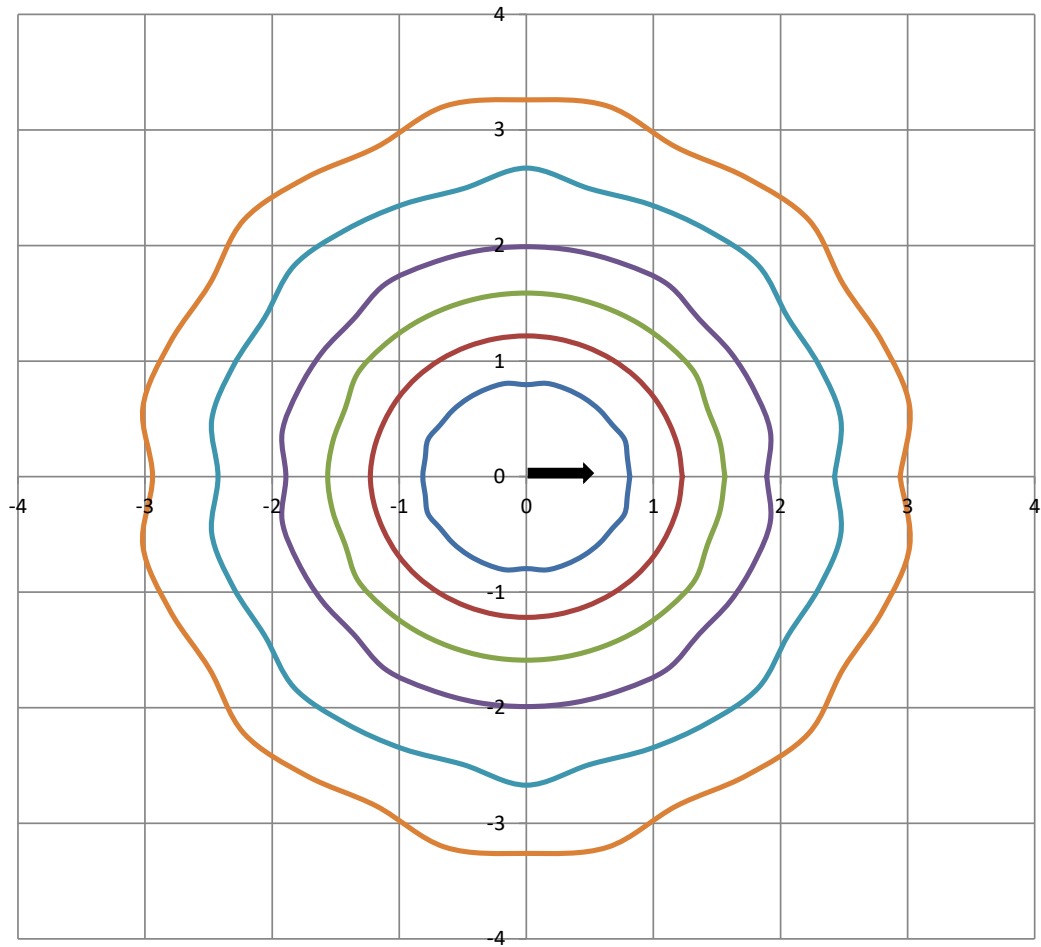
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	1103 Candela
Central Cone Intensity:	1101 Candela
Beam Flux:	4313.7 Lumens
Beam Angle (0-180):	95.3 Degrees
Beam Angle (90-270):	95.7 Degrees
Field Angle (0-180):	155.4 Degrees
Field Angle (90-270):	170.5 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

5 fc 2 fc 1 fc 0.5 fc 0.2 fc 0.1 fc