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## 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**

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United States

### Catalog Number

#### **MX2D-4-L8/835-R**

Order Number

13052732

Test Number

13052732.21

Test Date

2019-10-07

Prepared By

Josh Mitchell, Technician

Approved By

Alexa Lambert, Project Handler

The results contained in this report pertain only to the tested sample.

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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  $4\pi$  geometry method.  
Absorption correction was employed for Sphere measurement



**Luminaire Description:** Formed White aluminum housing, frosted lens enclosure  
**Lamp:** 144 White LEDs  
**Mounting:** Pendant  
**Ballast/Driver:** One Philips XI040C110V054BST1 Driver

**Luminaire**



**Luminaire Characteristics**

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

**Summary of Results**

**Integrating Sphere**

Luminous Flux: 2747 Lumens  
Efficacy: 102.16 lm/w  
CCT: 3456 K  
CRI (Ra): 83.1

**Distribution**

Total Luminaire Output: 2619 Lumens  
Luminaire Efficacy: 97.3 lm/w  
Maximum Candela: 1418 Candela

**Electrical Data at 120 VAC**

Test Temperature: 24.7 °C  
Voltage: 120.0 VAC  
Current: 0.2254 A  
Power: 26.89 W  
Power Factor: 0.994  
Frequency: 60 Hz  
Current THD: 9.23 %



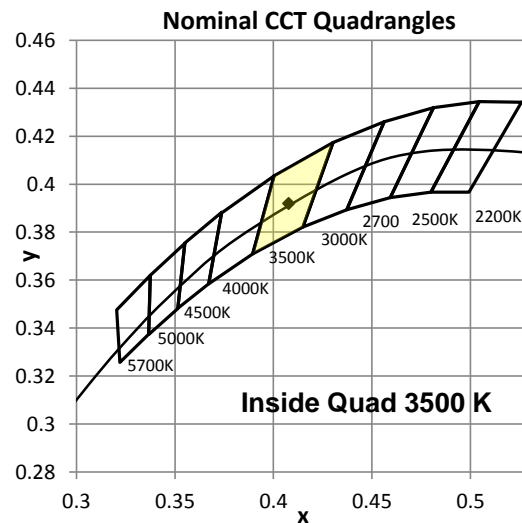
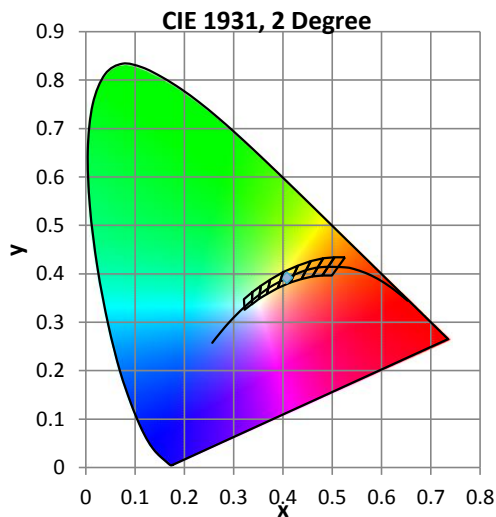
## Color Quality - Integrating Sphere

### Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.7 °C	120.0 VAC	0.2254 A	26.89 W	0.994	60 Hz	9.23 %

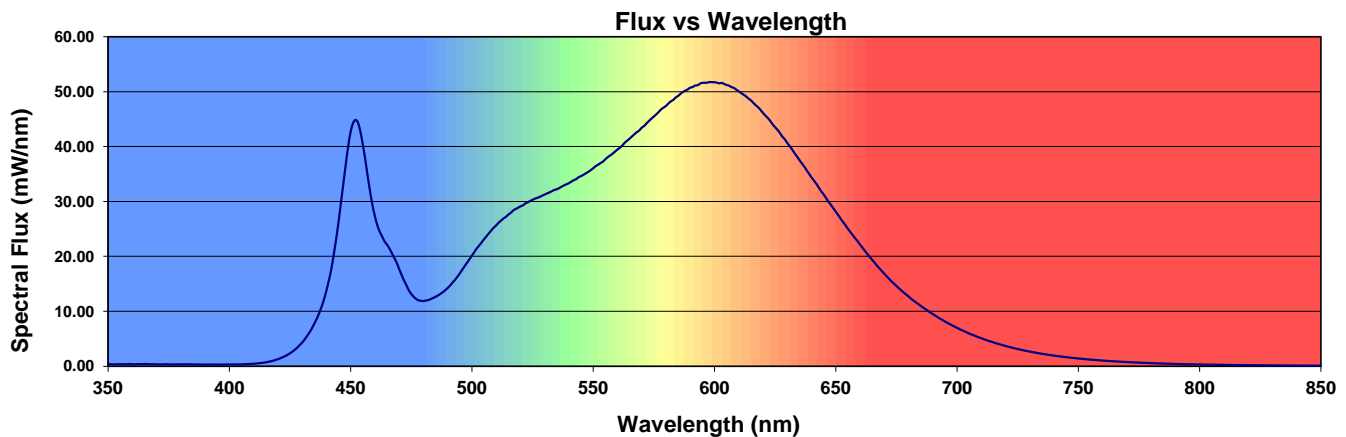
### Summary of Results

Total Output:	2747 Lumens	Chromaticity (x):	0.4077
Efficacy:	102.2 lm/w	Chromaticity (y):	0.3920
CCT:	3456 K	Chromaticity (u'):	0.2367
CRI (Ra):	83.1	Chromaticity (v'):	0.5121
CRI (R9):	7.8	TM-30 Rf:	84.4
Peak Wavelength:	599 nm	TM-30 Rg:	95.2
Dominant Wavelength:	581 nm	Duv:	0.0003
S/P Ratio:	1.52		



### Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
83.1	81.5	90.6	96.3	81.3	81.6	87.5	84.2	61.6	7.8	78.0	80.6	65.2	83.8	98.5	74.6





## Distribution - Goniophotometer

### Distribution Test Conditions

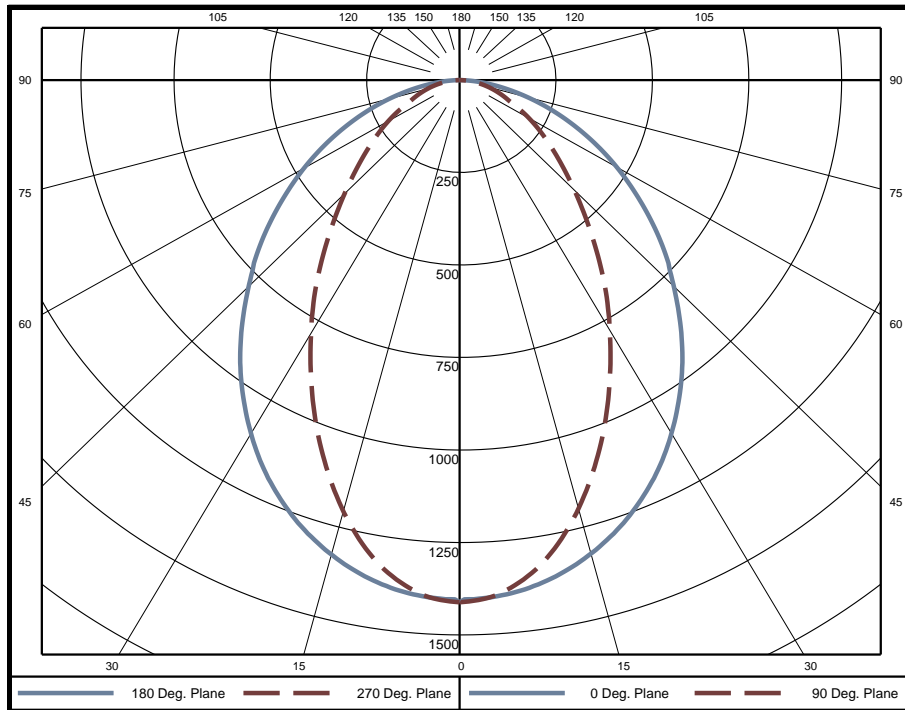
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.8 °C	120.0 VAC	0.2258 A	26.92 W	0.994	60 Hz	9.29 %

### Summary of Results

**Spacing Criteria**  
 0-180: 1.16  
 90-270: 0.91

**Total Lumen Output:** 2619 Lumens  
**Luminaire Efficacy:** 97.3 lm/w  
**Maximum Candela:** 1418 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	33.5	1.3%	60-65	127.0	4.8%	120-125	0	0.0%
5-10	97.9	3.7%	65-70	97.2	3.7%	125-130	0	0.0%
10-15	154.4	5.9%	70-75	70.1	2.7%	130-135	0	0.0%
15-20	199.4	7.6%	75-80	45.7	1.7%	135-140	0	0.0%
20-25	231.0	8.8%	80-85	24.5	0.9%	140-145	0	0.0%
25-30	248.9	9.5%	85-90	7.0	0.3%	145-150	0	0.0%
30-35	253.6	9.7%	90-95	0	0.0%	150-155	0	0.0%
35-40	246.9	9.4%	95-100	0	0.0%	155-160	0	0.0%
40-45	231.1	8.8%	100-105	0	0.0%	160-165	0	0.0%
45-50	209.7	8.0%	105-110	0	0.0%	165-170	0	0.0%
50-55	184.4	7.0%	110-115	0	0.0%	170-175	0	0.0%
55-60	156.5	6.0%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	1466	56.0%
0-60	2247	85.8%
0-90	2619	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	1412	1412	1412	1412	1412	1412	1412	1412	1412	1412	1412	1412	1412	1412	1412
	5	1395	1405	1391	1389	1384	1389	1391	1405	1395	1405	1391	1389	1384	1389	1391
	10	1368	1371	1339	1321	1310	1321	1339	1371	1368	1371	1339	1321	1310	1321	1339
	15	1323	1315	1257	1216	1196	1216	1257	1315	1323	1315	1257	1216	1196	1216	1257
	20	1263	1239	1151	1087	1061	1087	1151	1239	1263	1239	1151	1087	1061	1087	1151
	25	1188	1147	1032	950	918	950	1032	1147	1188	1147	1032	950	918	950	1032
	30	1097	1040	906	812	778	812	906	1040	1097	1040	906	812	778	812	906
	35	998	923	776	682	648	682	776	923	998	923	776	682	648	682	776
	40	891	804	656	558	524	558	656	804	891	804	656	558	524	558	656
	45	781	691	541	450	421	450	541	691	781	691	541	450	421	450	541
	50	678	578	437	359	337	359	437	578	678	578	437	359	337	359	437
	55	570	472	345	284	269	284	345	472	570	472	345	284	269	284	345
	60	467	373	264	221	210	221	264	373	467	373	264	221	210	221	264
	65	368	281	196	162	153	162	196	281	368	281	196	162	153	162	196
	70	273	199	135	118	116	118	135	199	273	199	135	118	116	118	135
	75	186	126	90	85	83	85	90	126	186	126	90	85	83	85	90
	80	107	65	56	53	52	53	56	65	107	65	56	53	52	53	56
	85	45	28	25	24	24	24	25	28	45	28	25	24	24	24	25
	90	1	1	1	1	2	1	1	1	1	1	1	2	1	1	1
	95	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
	105	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
	115	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
	125	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
	135	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
	145	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
	155	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
	165	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
	175	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

### Average Luminance (cd/m<sup>2</sup>)

Horizontal Angle (Degrees)

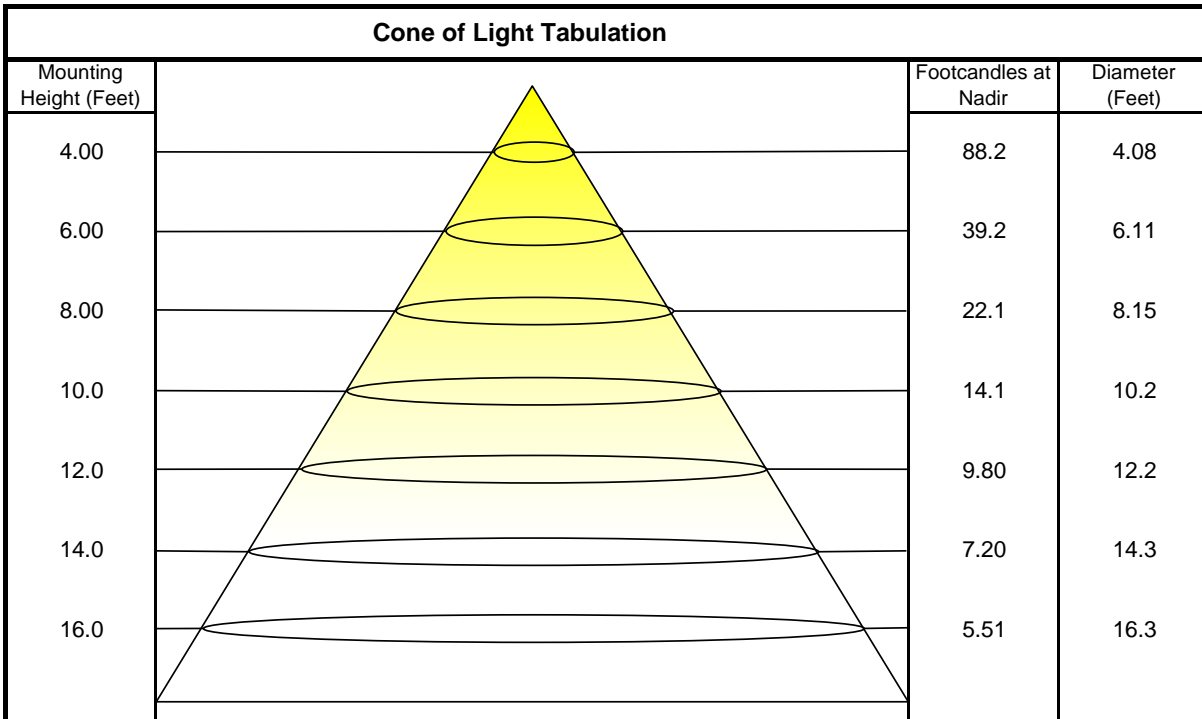
Vertical Angle (Degrees)	0	45	90
	0	22790	22790
	45	17830	12340
	55	16040	9714
	65	14050	7471
	75	11580	5611
	85	8260	4639



### 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	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89	87
2	101	94	88	83	99	92	87	82	89	84	80	86	82	78	83	79	76	74
3	93	84	77	71	91	82	76	70	79	74	69	77	72	68	74	70	67	65
4	86	75	67	61	84	74	67	61	72	65	60	69	64	59	67	63	59	57
5	80	68	60	54	78	67	59	54	65	58	53	63	57	53	61	56	52	50
6	74	62	54	48	73	61	53	48	59	53	47	58	52	47	56	51	47	45
7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40
8	65	52	44	39	63	52	44	39	50	44	39	49	43	38	48	42	38	36
9	61	48	41	35	60	48	40	35	47	40	35	46	39	35	45	39	35	33
10	57	45	38	33	56	44	37	32	43	37	32	43	37	32	42	36	32	30

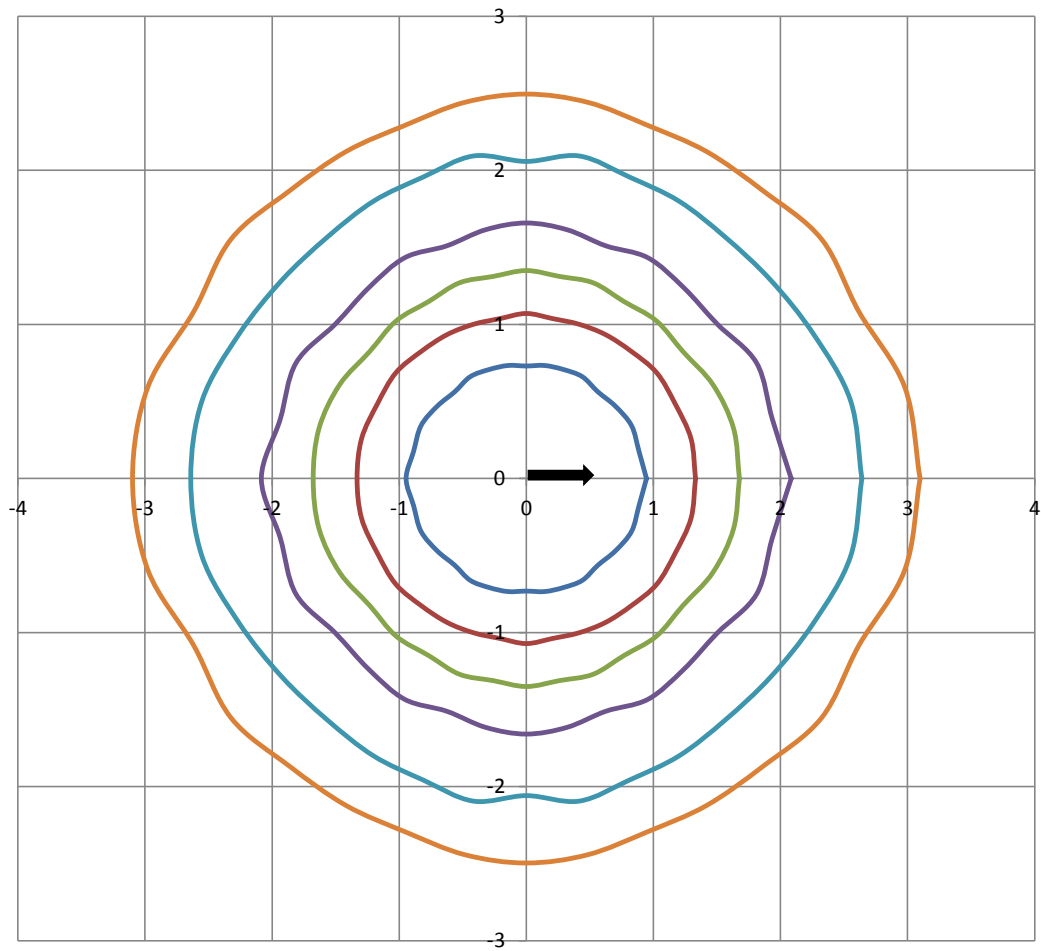
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	1412 Candela
Central Cone Intensity:	1405 Candela
Beam Flux:	1471.7 Lumens
Beam Angle (0-180):	97.4 Degrees
Beam Angle (90-270):	65.6 Degrees
Field Angle (0-180):	155.5 Degrees
Field Angle (90-270):	132.6 Degrees





## 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