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## Photometric Test Report

### Relevant Standards

IES LM-79-2008, ANSI C82.77-2002, CIE 13.3-1995  
CIE 15-2004, ANSI C78.377-2015, IES TM-30-2015

### Prepared For

#### **H E Williams Inc**

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PO Box 837  
Carthage, MO 64836-0837  
United States

### Catalog Number

**MDS-22-L100/950-AS4**

Order Number

12186363

Test Number

12186363.01

### Test Date

2018-02-21

Prepared By

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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:** White formed steel housing, frosted plastic internal lens enclosure, clear plastic patterned external lens enclosure  
**Lamp:** 252 white LEDs  
**Mounting:** Recessed  
**Ballast/Driver:** Philips XI095C275V054BSS1

**Luminaire**



**Luminaire Characteristics**

Luminous Length: 20.00 in.  
Luminous Width: 20.00 in.

**Summary of Results**

**Integrating Sphere**

Luminous Flux: 8631 Lumens  
Efficacy: 85.5 lm/w  
CCT: 5163 K  
CRI (Ra): 93.4

**Distribution**

Total Luminaire Output: 8378 Lumens  
Luminaire Efficacy: 83.1 lm/w  
Maximum Candela: 4619 Candela

**Electrical Data at 120 VAC**

Test Temperature: 25.8 °C  
Voltage: 120.1 VAC  
Current: 0.8430 A  
Power: 101.0 W  
Power Factor: 0.998  
Frequency: 60 Hz  
Current THD: 5.09 %



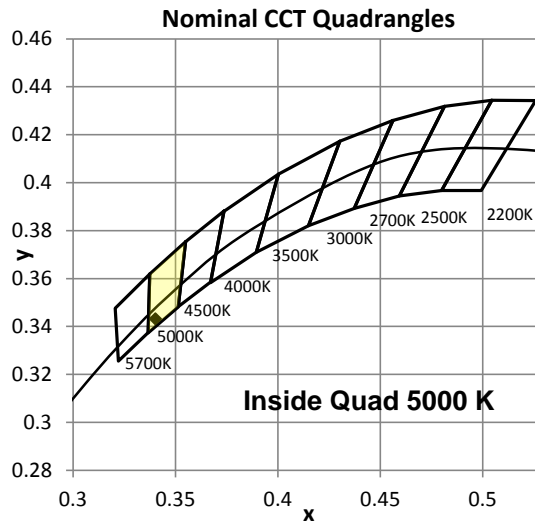
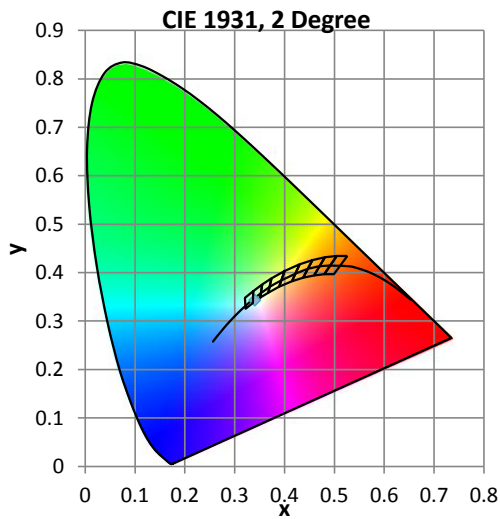
## Color Quality - Integrating Sphere

### Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.8 °C	120.1 VAC	0.8430 A	101.0 W	0.998	60 Hz	5.09 %

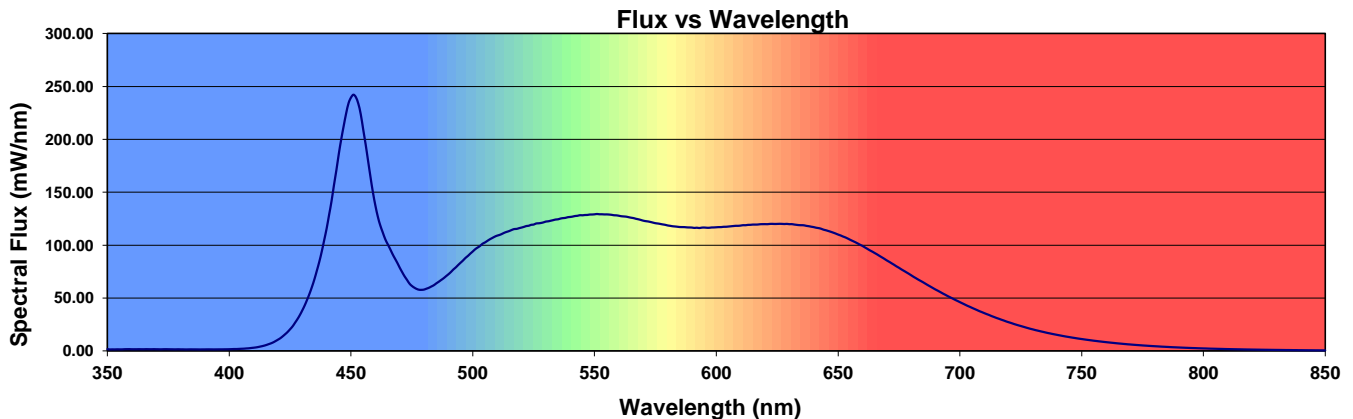
### Summary of Results

Total Output:	8631 Lumens	Chromaticity (x):	0.3403
Efficacy:	85.5 lm/w	Chromaticity (y):	0.3432
CCT:	5163 K	Chromaticity (u'):	0.2114
CRI (Ra):	93.4	Chromaticity (v'):	0.4798
CRI (R9):	89.0	TM-30 Rf:	89.1
Peak Wavelength:	451 nm	TM-30 Rg:	102.4
Dominant Wavelength:	573.8 nm	Duv:	-0.0028
S/P Ratio:	2.069		



### Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
93.4	96.2	94.1	89.3	93.4	95.3	89.4	93.9	95.4	89.0	84.3	92.9	72.8	95.6	93.7	98.3





## Distribution - Goniophotometer

### Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.5 °C	120.1 VAC	0.8416 A	100.9 W	0.998	60 Hz	5.12 %

### Summary of Results

#### Spacing Criteria

0-180: 1.97

90-270: 1.17

Total Lumen Output:

8378 Lumens

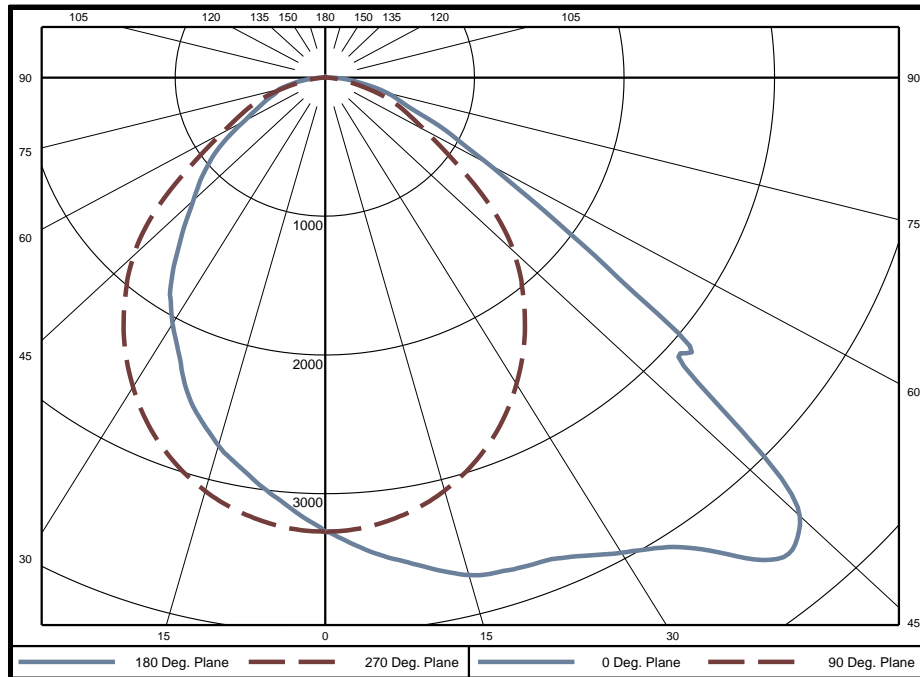
Luminaire Efficacy:

83.1 lm/w

Maximum Candela:

4619 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	78.2	0.9%	60-65	408.2	4.9%	120-125	0	0.0%
5-10	231.9	2.8%	65-70	292.6	3.5%	125-130	0	0.0%
10-15	378.7	4.5%	70-75	204.8	2.4%	130-135	0	0.0%
15-20	513.6	6.1%	75-80	136.8	1.6%	135-140	0	0.0%
20-25	629.5	7.5%	80-85	76.4	0.9%	140-145	0	0.0%
25-30	724.0	8.6%	85-90	26.3	0.3%	145-150	0	0.0%
30-35	799.6	9.5%	90-95	0	0.0%	150-155	0	0.0%
35-40	859.7	10.3%	95-100	0	0.0%	155-160	0	0.0%
40-45	900.4	10.7%	100-105	0	0.0%	160-165	0	0.0%
45-50	847.3	10.1%	105-110	0	0.0%	165-170	0	0.0%
50-55	718.9	8.6%	110-115	0	0.0%	170-175	0	0.0%
55-60	551.1	6.6%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	4215	50.3%
0-60	7233	86.3%
0-90	8378	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	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275	3275
	5	3429	3431	3379	3309	3252	3188	3153	3129	3085	3129	3153	3188	3252	3309	3379	3431
	10	3568	3543	3441	3312	3188	3073	3003	2967	2913	2967	3003	3073	3188	3312	3441	3543
	15	3712	3652	3479	3276	3087	2931	2845	2805	2747	2805	2845	2931	3087	3276	3479	3652
	20	3762	3684	3500	3196	2947	2767	2673	2612	2545	2612	2673	2767	2947	3196	3500	3684
	25	3816	3695	3451	3091	2776	2578	2458	2381	2276	2381	2458	2578	2776	3091	3451	3695
	30	3954	3758	3368	2951	2567	2361	2208	2115	2038	2115	2208	2361	2567	2951	3368	3758
	35	4132	3858	3275	2787	2335	2120	1936	1874	1786	1874	1936	2120	2335	2787	3275	3858
	40	4540	4160	3210	2572	2076	1840	1663	1589	1489	1589	1663	1840	2076	2572	3210	4160
	45	4478	4092	3282	2315	1800	1519	1381	1318	1239	1318	1381	1519	1800	2315	3282	4092
	50	3092	2963	2970	2063	1462	1202	1145	1077	1047	1077	1145	1202	1462	2063	2970	2963
	55	2088	1922	2204	1834	1075	960	926	900	846	900	926	960	1075	1834	2204	1922
	60	1279	1231	1346	1389	791	757	777	731	617	731	777	757	791	1389	1346	1231
	65	865	830	864	879	609	568	621	545	475	545	621	568	609	879	864	830
	70	567	526	552	524	455	414	431	407	370	407	431	414	455	524	552	526
	75	428	380	346	313	275	279	283	320	312	320	283	279	275	313	346	380
	80	260	247	195	175	139	166	184	222	197	222	184	166	139	175	195	247
	85	140	107	92	80	56	77	93	109	87	109	93	77	56	80	92	107
	90	23	14	13	14	10	14	17	20	1	20	17	14	10	14	13	14
	95	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
	105	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
	115	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
	125	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
	135	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
	145	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
	155	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
	165	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
	175	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

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

Horizontal Angle (Degrees)

Vertical Angle (Degrees)		0	45	90
	0	12690	12690	12690
	45	24540	17980	9865
	55	14100	14890	7262
	65	7931	7919	5588
	75	6411	5175	4110
	85	6212	4083	2509



### Utilization of Lumens - 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 Lumens delivered to the task surface **																	
0	9974	9974	9974	9974	9742	9742	9742	9742	9309	9309	9309	8913	8913	8913	8549	8549	8549	8378
1	9206	8845	8522	8231	8982	8657	8363	8097	8304	8063	7843	7980	7785	7604	7682	7525	7379	7210
2	8443	7810	7286	6846	8229	7654	7173	6765	7362	6958	6609	7092	6756	6460	6843	6566	6318	6145
3	7745	6924	6289	5783	7544	6794	6206	5732	6549	6046	5632	6323	5895	5535	6113	5752	5442	5268
4	7121	6176	5484	4956	6935	6067	5421	4922	5861	5300	4856	5670	5184	4791	5492	5074	4728	4555
5	6567	5544	4829	4302	6396	5452	4781	4278	5278	4686	4233	5116	4596	4188	4964	4510	4144	3974
6	6075	5007	4290	3776	5919	4929	4251	3759	4780	4177	3727	4642	4105	3695	4512	4036	3663	3497
7	5638	4548	3842	3346	5497	4481	3811	3334	4355	3750	3311	4236	3692	3287	4124	3636	3264	3103
8	5251	4155	3465	2992	5123	4098	3440	2983	3988	3391	2965	3886	3343	2947	3789	3298	2930	2775
9	4907	3815	3147	2695	4791	3766	3126	2688	3671	3085	2675	3582	3046	2661	3499	3008	2648	2499
10	4600	3521	2875	2445	4495	3478	2858	2440	3396	2824	2429	3318	2791	2418	3245	2759	2408	2265

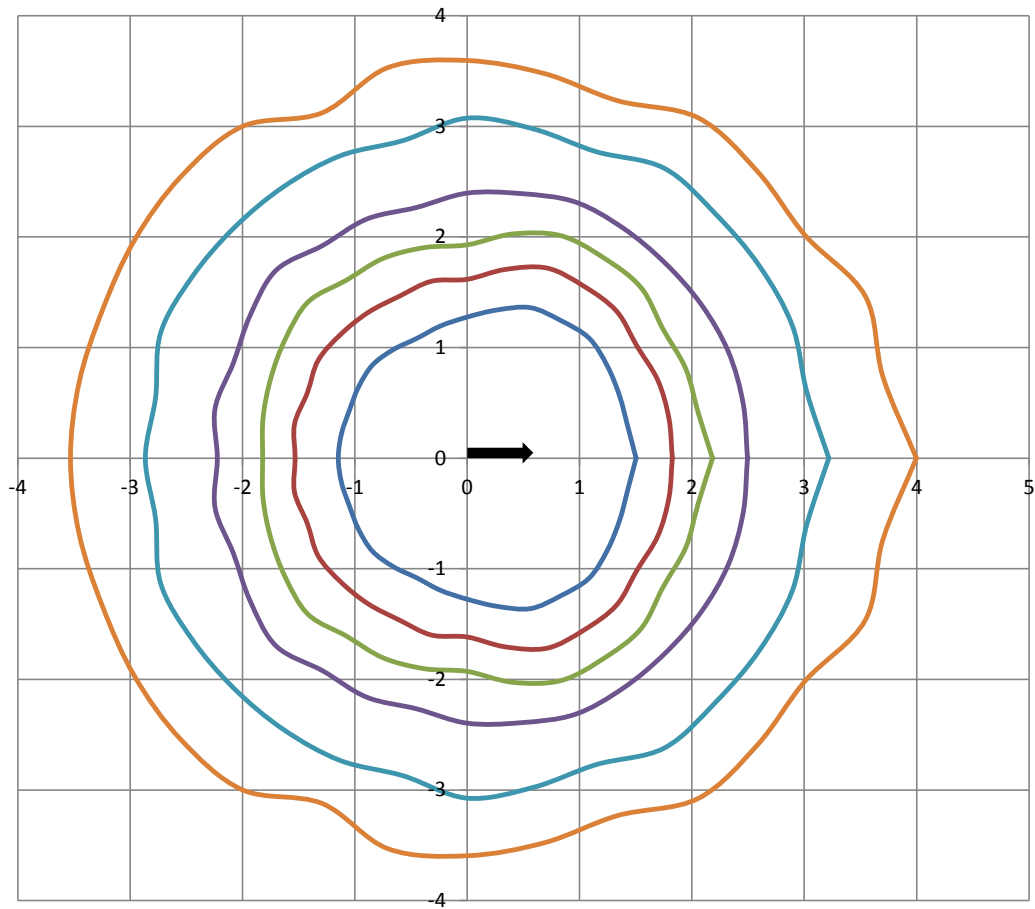
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	3275 Candela
Central Cone Intensity:	3271 Candela
Beam Flux:	6118.3 Lumens
Beam Angle (0-180):	94.8 Degrees
Beam Angle (90-270):	95.2 Degrees
Field Angle (0-180):	152.1 Degrees
Field Angle (90-270):	147.0 Degrees

Cone of Light Tabulation			
Mounting Height (Feet)		Footcandles at Nadir	Diameter (Feet)
4.00		205	5.07
6.00		91.0	7.61
8.00		51.2	10.1
10.0		32.7	12.7
12.0		22.7	15.2
14.0		16.7	17.8
16.0		12.8	20.3



## ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

