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## Indoor Distribution Test Report

Relevant Standards  
IES LM-79-2008, ANSI C82.77-2002

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

Catalog Number  
**SRK-X4-L31/830-X-XXX-UNV (Driver 1)**  
Order Number  
12118431  
Test Number  
12118431.19

Test Date

2018-01-08

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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**Luminaire Description:** White formed steel housing, no lens enclosure. Tested in Columbia CS Bi-Pin 2L reference housing.  
**Lamp:** 56 white LEDs  
**Mounting:** Surface – Ceiling  
**Ballast/Driver:** One Philips CI024C045V052CNN1 driver

#### Luminaire



#### Luminaire Characteristics

Luminous Length: 48.00 in.  
Luminous Width: 4.500 in.

#### Summary of Results

Total Luminaire Output:	3059 Lumens
Luminaire Efficacy:	142.7 lm/w
Maximum Candela:	1052 Candela

#### Test Conditions

Test Temperature:	24.7 °C
Voltage:	120.0 VAC
Current:	0.1795 A
Power:	21.43 W
Power Factor:	0.995
Frequency:	60 Hz
Current THD:	9.88 %

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
24.7 °C	120.0 VAC	0.1795 A	21.43 W	0.995	60 Hz	9.88 %

### Summary of Results

#### Spacing Criteria

0-180: 1.31

90-270: 1.27

#### Total Lumen Output:

3059 Lumens

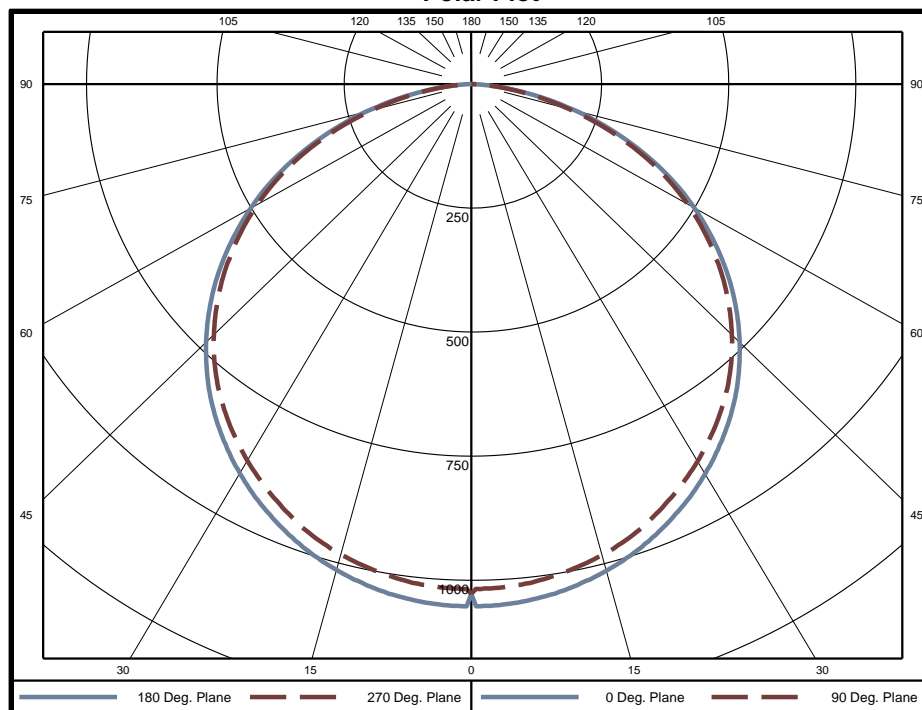
#### Luminaire Efficacy:

142.7 lm/w

#### Maximum Candela:

1052 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	24.5	0.8%	60-65	216.5	7.1%	120-125	0	0.0%
5-10	72.8	2.4%	65-70	178.2	5.8%	125-130	0	0.0%
10-15	118.8	3.9%	70-75	132.9	4.3%	130-135	0	0.0%
15-20	161.1	5.3%	75-80	84.6	2.8%	135-140	0	0.0%
20-25	198.2	6.5%	80-85	40.1	1.3%	140-145	0	0.0%
25-30	229.5	7.5%	85-90	8.8	0.3%	145-150	0	0.0%
30-35	253.9	8.3%	90-95	0	0.0%	150-155	0	0.0%
35-40	270.7	8.8%	95-100	0	0.0%	155-160	0	0.0%
40-45	278.7	9.1%	100-105	0	0.0%	160-165	0	0.0%
45-50	277.1	9.1%	105-110	0	0.0%	165-170	0	0.0%
50-55	266.3	8.7%	110-115	0	0.0%	170-175	0	0.0%
55-60	246.0	8.0%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	1330	43.5%
0-60	2398	78.4%
0-90	3059	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	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027
	5	1049	1030	1016	1018	1013	1018	1016	1030	1049	1030	1016	1018	1013	1018	1016
	10	1036	1019	1004	1005	1002	1005	1004	1019	1036	1019	1004	1005	1002	1005	1004
	15	1015	997	984	985	983	985	984	997	1015	997	984	985	983	985	984
	20	986	969	956	956	956	956	956	969	986	969	956	956	956	956	969
	25	950	933	923	919	919	919	923	933	950	933	923	919	919	919	923
	30	907	892	882	877	878	877	882	892	907	892	882	877	878	877	882
	35	857	844	835	831	831	831	835	844	857	844	835	831	831	831	835
	40	801	788	781	777	778	777	781	788	801	788	781	777	778	777	781
	45	736	725	718	715	715	715	718	725	736	725	718	715	715	715	718
	50	664	655	647	646	645	646	647	655	664	655	647	646	645	646	647
	55	584	578	571	569	568	569	571	578	584	578	571	569	568	569	571
	60	499	493	488	487	485	487	488	493	499	493	488	487	485	487	488
	65	408	404	398	396	396	396	398	404	408	404	398	396	396	396	398
	70	310	310	302	300	299	300	302	310	310	310	302	300	299	300	302
	75	213	213	200	201	199	201	200	213	213	213	200	201	199	201	200
	80	117	118	112	110	111	110	112	118	117	118	112	110	111	110	112
	85	39	39	38	38	39	38	38	39	39	39	38	38	39	38	38
	90	1	2	2	3	3	3	2	2	1	2	2	3	3	3	2
	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	7373	7373
	45	7465	7282
	55	7311	7149
	65	6924	6761
	75	5912	5547
	85	3250	3161



### 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	3641	3641	3641	3641	3557	3557	3557	3557	3399	3399	3399	3254	3254	3254	3121	3121	3121	3059
1	3324	3177	3045	2926	3241	3107	2987	2878	2977	2878	2787	2857	2777	2702	2747	2682	2621	2557
2	3017	2762	2550	2372	2936	2703	2509	2344	2594	2430	2289	2494	2357	2236	2401	2287	2186	2119
3	2745	2418	2165	1963	2669	2369	2134	1945	2277	2076	1910	2192	2021	1876	2114	1968	1844	1776
4	2509	2137	1864	1656	2438	2096	1841	1644	2018	1796	1621	1946	1754	1598	1879	1714	1576	1509
5	2304	1905	1626	1420	2239	1870	1608	1412	1805	1573	1396	1744	1540	1380	1687	1508	1365	1299
6	2125	1712	1434	1235	2066	1682	1420	1229	1627	1393	1218	1575	1366	1207	1526	1341	1196	1132
7	1969	1549	1278	1088	1915	1524	1266	1083	1477	1244	1075	1432	1223	1067	1390	1202	1059	997
8	1831	1412	1148	968	1782	1390	1139	964	1350	1121	958	1311	1104	952	1275	1087	946	887
9	1709	1294	1040	869	1666	1276	1033	866	1241	1018	861	1207	1003	857	1176	989	852	795
10	1602	1193	949	786	1562	1177	942	784	1146	930	780	1117	918	776	1090	906	773	719

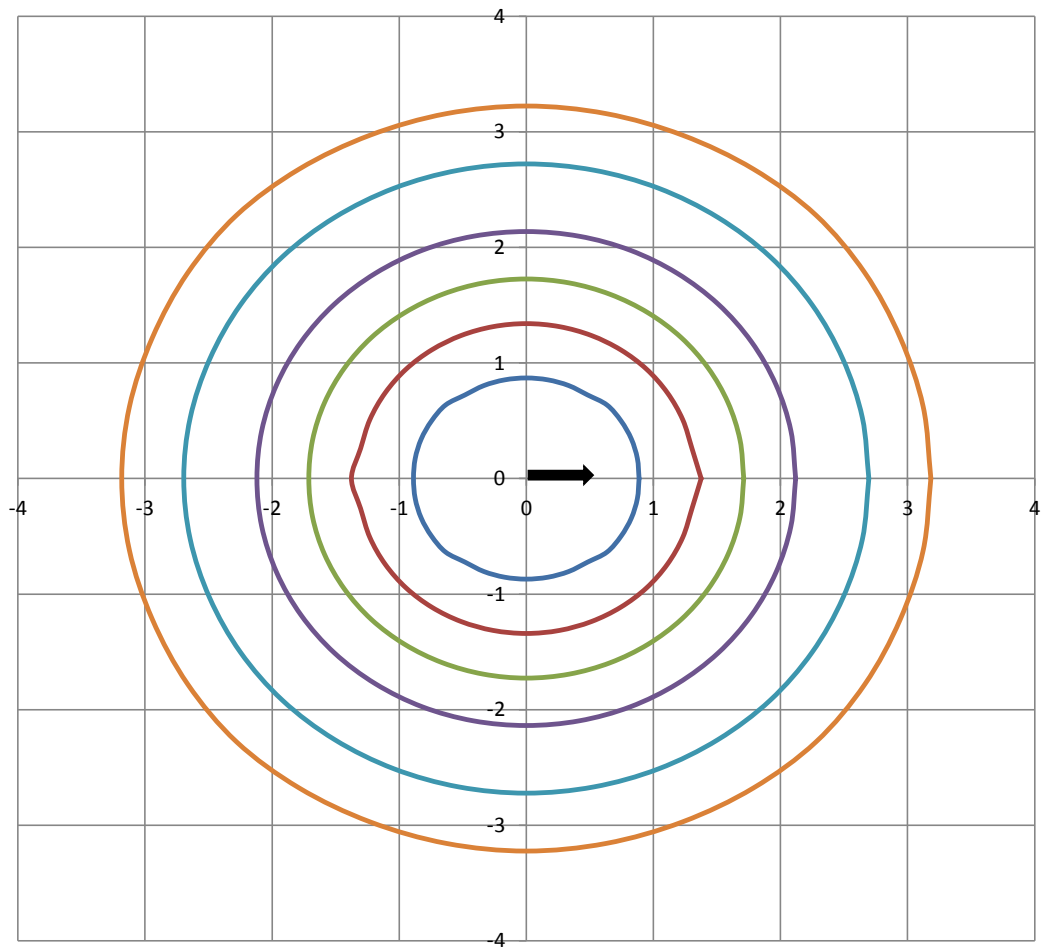
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	1027 Candela
Central Cone Intensity:	1026 Candela
Beam Flux:	2332.5 Lumens
Beam Angle (0-180):	118.3 Degrees
Beam Angle (90-270):	116.7 Degrees
Field Angle (0-180):	161.7 Degrees
Field Angle (90-270):	160.9 Degrees

Cone of Light Tabulation			
Mounting Height (Feet)		Footcandles at Nadir	Diameter (Feet)
4.00		64.2	5.13
6.00		28.5	7.70
8.00		16.1	10.3
10.0		10.3	12.8
12.0		7.14	15.4
14.0		5.24	18.0
16.0		4.01	20.5



## 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