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Photometric Test Report

Relevant Standards
IES LM-79-2008
ANSI C78.377-2011, ANSI C82.77-2002
CIE 13.3-1995, CIE 15-2004, IES TM-30-15, UL 1598-2008

Prepared For
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Catalog Number
PDU-SQ4 3000K
Order Number
11524480
Test Number
11524880.07

Test Date

2017-01-27 - 2017-01-30

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Approved By

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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 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: White aluminum housing, aluminum lower reflectors, lower frosted plastic lens enclosure, upper frosted plastic lens enclosure
Lamp: 192 white LEDs, four boards with 48 LEDs each
Mounting: Pendant
Ballast/Driver: One Philips Advance Xitanium XI075C200V054BST1

Luminaire



Luminaire Characteristics

Luminous Length: 46.13 in.
Luminous Width: 3.750 in.
Luminous Height: 4.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 6702 Lumens
Efficacy: 109.1 lm/w
CCT: 3084 K
CRI (Ra): 83.9

Distribution

Total Luminaire Output: 6652 Lumens
Luminaire Efficacy: 108.3 lm/w
Maximum Candela: 1416 Candela

Electrical Data at 277 VAC

Test Temperature: 25.4 °C
Voltage: 277.0 VAC
Current: 0.2210 A
Power: 60.85 W
Power Factor: 0.990
Frequency: 60 Hz
Current THD: 9.63 %

In-Situ

LED Temperature: 60.5 °C
Driver Temperature: 55.4 °C
Measured LED Current: 0.1546 A

Temperature is offset to an ambient temperature of 25°C as described in UL1598-2008.



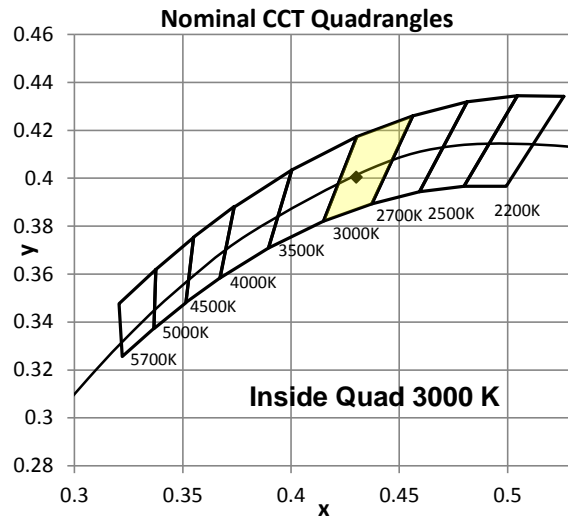
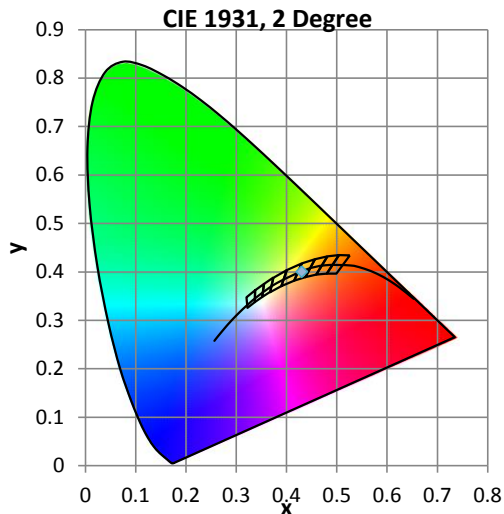
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.8 °C	120.0 VAC	0.5140 A	61.45 W	0.996	60 Hz	8.31 %

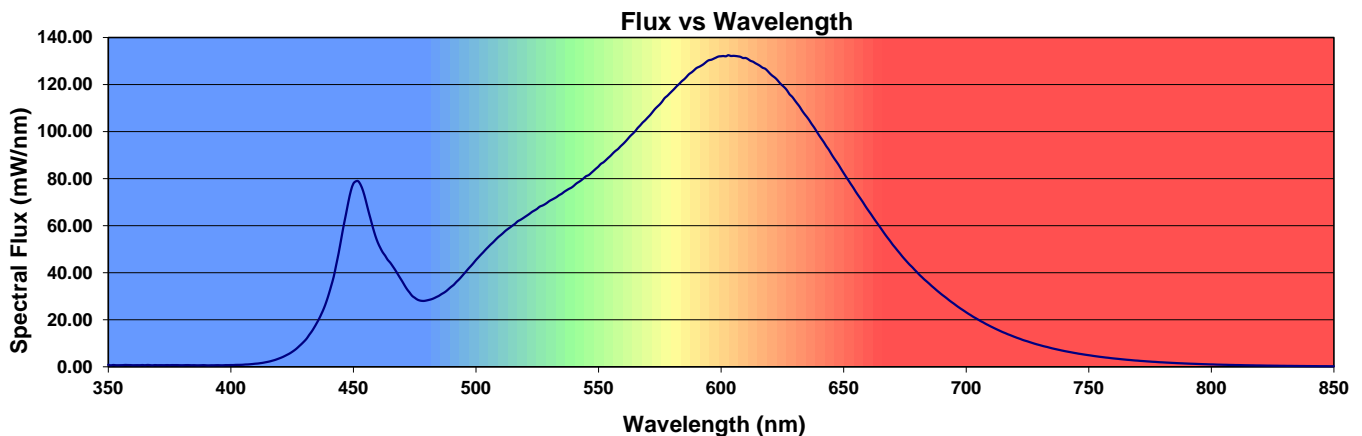
Summary of Results

Total Output:	6702 Lumens	Chromaticity (x):	0.4302
Efficacy:	109.1 lm/w	Chromaticity (y):	0.4004
CCT:	3084 K	Chromaticity (u'):	0.2478
CRI (Ra):	83.9	Chromaticity (v'):	0.5189
CRI (R9):	14.9	TM-30 R_f:	83.8
Peak Wavelength:	603.5 nm	TM-30 R_g:	96.4
Dominant Wavelength:	582.7 nm	Duv:	-0.0011
S/P Ratio:	1.388		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
83.9	82.4	91.6	96.6	81.7	82.5	89.4	84.1	62.6	14.9	80.5	80.8	71.6	84.6	98.8





Distribution - Goniophotometer

Distribution Test Conditions

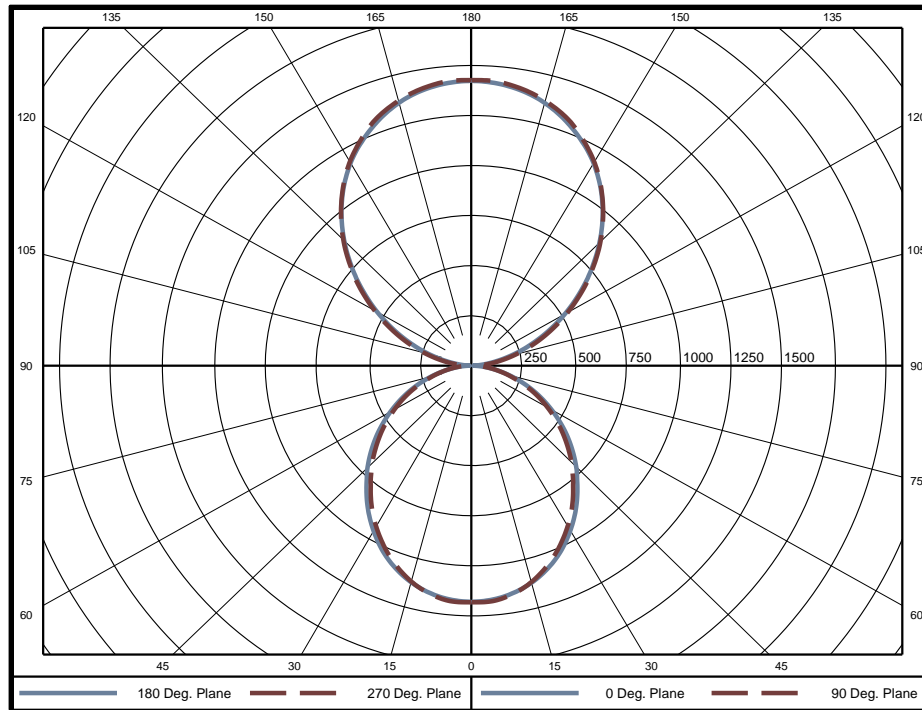
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.8 °C	120.0 VAC	0.5136 A	61.40 W	0.996	60 Hz	8.30 %

Summary of Results

Spacing Criteria
 0-180: 1.20
 90-270: 1.20

Total Lumen Output: 6652 Lumens
Luminaire Efficacy: 108.3 lm/w
Maximum Candela: 1416 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	27.9	0.4%	60-65	186.0	2.8%	120-125	266.9	4.0%
5-10	82.5	1.2%	65-70	150.9	2.3%	125-130	302.1	4.5%
10-15	133.6	2.0%	70-75	112.8	1.7%	130-135	326.9	4.9%
15-20	178.7	2.7%	75-80	75.4	1.1%	135-140	341.0	5.1%
20-25	215.8	3.2%	80-85	41.2	0.6%	140-145	342.3	5.1%
25-30	243.8	3.7%	85-90	13.0	0.2%	145-150	330.3	5.0%
30-35	261.8	3.9%	90-95	12.4	0.2%	150-155	304.9	4.6%
35-40	269.4	4.0%	95-100	43.0	0.6%	155-160	267.5	4.0%
40-45	268.3	4.0%	100-105	84.5	1.3%	160-165	219.3	3.3%
45-50	259.1	3.9%	105-110	131.5	2.0%	165-170	162.7	2.4%
50-55	241.6	3.6%	110-115	179.0	2.7%	170-175	100.0	1.5%
55-60	216.7	3.3%	115-120	225.0	3.4%	175-180	33.7	0.5%

Zone	Lumens	% of Luminaire
0-40	1414	21.2%
0-60	2399	36.1%
0-90	2979	44.8%
90-180	3673	55.2%



Candela Tabulation
Horizontal 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	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168	1168
5	1159	1167	1160	1163	1167	1163	1160	1167	1159	1167	1160	1163	1167	1163	1160	1167
10	1140	1148	1140	1143	1144	1143	1140	1148	1140	1148	1140	1143	1144	1143	1140	1148
15	1108	1116	1106	1106	1105	1106	1106	1116	1108	1116	1106	1106	1105	1106	1106	1116
20	1064	1070	1057	1054	1051	1054	1057	1070	1064	1070	1057	1054	1051	1054	1057	1070
25	1007	1012	996	990	986	990	996	1012	1007	1012	996	990	986	990	996	1012
30	939	943	926	918	913	918	926	943	939	943	926	918	913	918	926	943
35	863	866	848	838	834	838	848	866	863	866	848	838	834	838	848	866
40	780	782	764	754	749	754	764	782	780	782	764	754	749	754	764	782
45	700	699	682	673	668	673	682	699	700	699	682	673	668	673	682	699
50	614	613	598	588	583	588	598	613	614	613	598	588	583	588	598	613
55	526	525	511	503	499	503	511	525	526	525	511	503	499	503	511	525
60	437	436	424	417	414	417	424	436	437	436	424	417	414	417	424	436
65	349	348	339	334	332	334	339	348	349	348	339	334	332	334	339	348
70	264	263	257	251	247	251	257	263	264	263	257	251	247	251	257	263
75	181	181	176	174	173	174	176	181	181	181	176	174	173	174	176	181
80	106	106	108	108	105	108	108	106	106	106	108	108	105	108	108	106
85	42	47	48	48	49	48	48	47	42	47	48	48	49	48	48	47
90	0	7	11	17	21	17	11	7	0	7	11	17	21	17	11	7
95	34	39	47	55	58	55	47	39	34	39	47	55	58	55	47	39
100	101	107	116	125	128	125	116	107	101	107	116	125	128	125	116	107
105	188	196	204	212	214	212	204	196	188	196	204	212	214	212	204	196
110	287	296	303	309	311	309	303	296	287	296	303	309	311	309	303	296
115	395	404	407	414	414	414	407	404	395	404	407	414	414	414	407	404
120	509	519	519	526	525	526	519	519	509	519	519	526	525	526	519	519
125	625	637	636	641	639	641	636	637	625	637	636	641	639	641	636	637
130	744	755	752	755	752	755	752	755	744	755	752	755	752	755	752	755
135	859	870	866	868	866	868	866	870	859	870	866	868	866	868	866	870
140	970	981	975	975	973	975	975	981	970	981	975	975	973	975	975	981
145	1071	1082	1076	1075	1075	1075	1076	1082	1071	1082	1076	1075	1075	1075	1076	1082
150	1160	1171	1166	1166	1166	1166	1166	1171	1160	1171	1166	1166	1166	1166	1166	1171
155	1232	1248	1244	1243	1244	1243	1244	1248	1232	1248	1244	1243	1244	1243	1244	1248
160	1295	1309	1306	1308	1311	1308	1306	1309	1295	1309	1306	1308	1311	1308	1306	1309
165	1346	1358	1353	1356	1357	1356	1353	1358	1346	1358	1353	1356	1357	1356	1353	1358
170	1381	1392	1386	1389	1390	1389	1386	1392	1381	1392	1386	1389	1390	1389	1386	1392
175	1402	1410	1403	1408	1411	1408	1403	1410	1402	1410	1403	1408	1411	1408	1403	1410
180	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413	1413

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

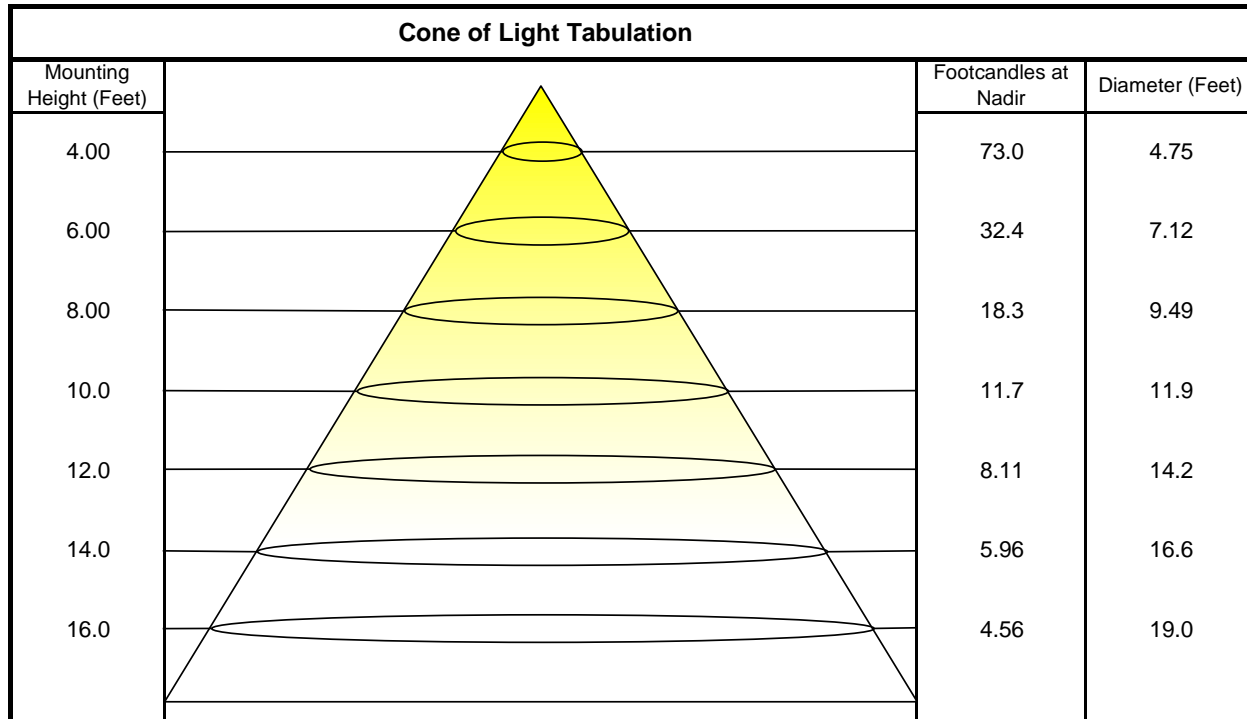
	0	45	90
0	10470	10470	10470
45	8868	8641	8459
55	8210	7982	7791
65	7405	7190	7028
75	6249	6093	5976
85	4361	4896	5052



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	7044	7044	7044	7044	6453	6453	6453	6453	5350	5350	5350	4341	4341	4341	3414	3414	3414	2979
1	6428	6142	5886	5655	5879	5637	5418	5220	4690	4534	4392	3820	3713	3615	3018	2949	2884	2510
2	5853	5365	4961	4621	5345	4929	4581	4285	4111	3857	3638	3356	3178	3021	2658	2538	2431	2106
3	5340	4716	4234	3849	4873	4339	3919	3581	3627	3316	3060	2968	2745	2557	2357	2203	2071	1786
4	4885	4173	3653	3255	4456	3844	3388	3036	3222	2879	2607	2645	2394	2191	2107	1931	1786	1534
5	4482	3717	3182	2787	4090	3428	2957	2605	2882	2523	2248	2374	2107	1898	1899	1709	1557	1334
6	4128	3332	2798	2415	3769	3078	2605	2261	2595	2231	1959	2145	1871	1662	1723	1526	1371	1172
7	3815	3006	2482	2115	3487	2781	2315	1984	2352	1989	1725	1951	1675	1470	1574	1373	1219	1041
8	3539	2727	2217	1867	3237	2527	2071	1754	2144	1786	1530	1784	1510	1310	1445	1243	1093	932
9	3294	2488	1995	1662	3016	2308	1866	1563	1964	1614	1369	1640	1370	1176	1334	1134	986	841
10	3075	2280	1805	1488	2819	2118	1690	1402	1808	1467	1232	1515	1250	1063	1238	1040	896	764

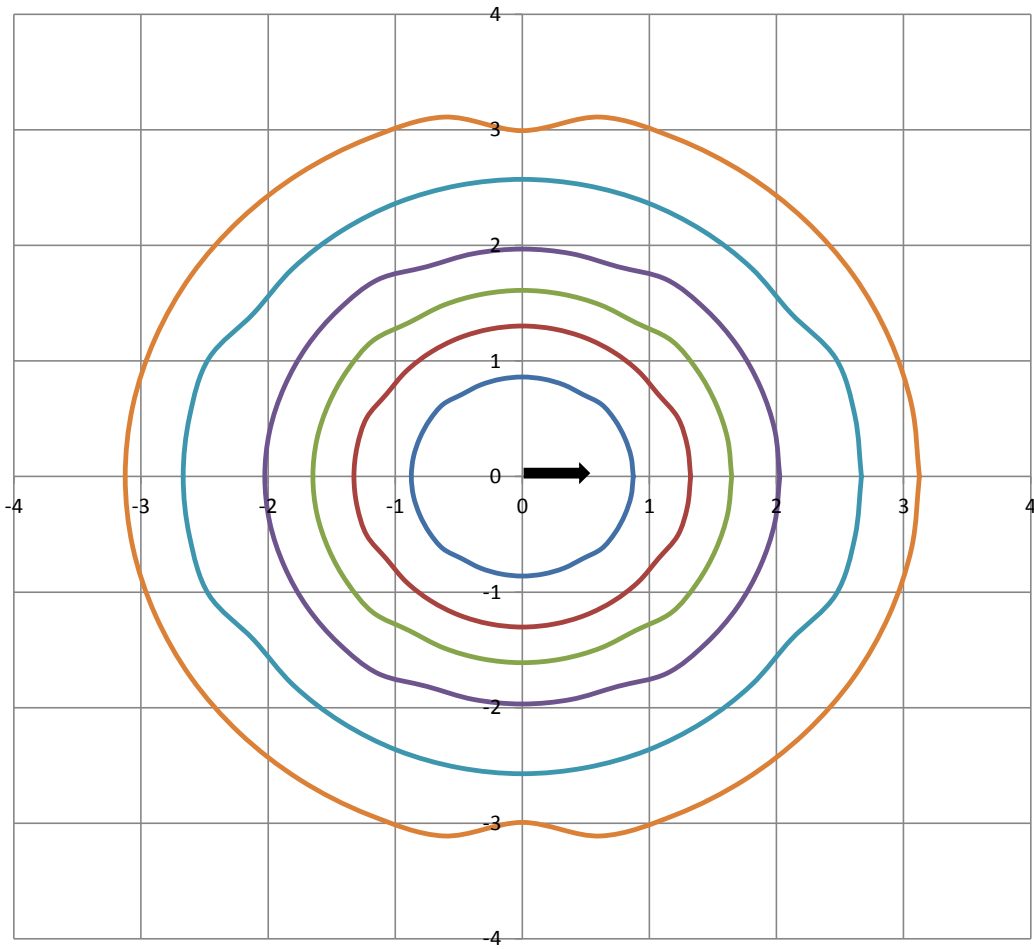
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	1168 Candela
Central Cone Intensity:	1166 Candela
Beam Flux:	4840.8 Lumens
Beam Angle (0-180):	103.4 Degrees
Beam Angle (90-270):	99.8 Degrees
Field Angle (0-180):	158.4 Degrees
Field Angle (90-270):	158.1 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height





In-Situ Test

In-Situ Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.5 °C	121.0 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

LED Temperature: 60.5 °C
Driver Temperature: 55.4 °C
Measured LED Current: 0.1546 A

Temperatures are offset to an ambient temperature of 25°C as described in UL1598-2008

LED Temperature Location



Driver Temperature Location

