



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

Photometric Test Report

Relevant Standards
IES LM-79-2008, IES LM-20-2013
ANSI C82.77-2002

Prepared For
MSI, LLC
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Catalog Number
zPAR30x404012T3N
Order Number
10585963
Test Number
830272

Test Date

2015-01-27 - 2015-01-30

Prepared By

Handwritten signature of Jeffrey Lockner in black ink.

Jeffrey Lockner, Project Engineer

Approved By

Handwritten signature of Jeff A. Smith Jr. in black ink.

Jeff Smith Jr., Project Handler

The results contained in this report pertain only to the tested sample.
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Lamp Description: Molded plastic housing, formed aluminum heatsink patterned plastic optic / enclosure
Lamp: Three white LEDs
Mounting: VBU

Lamp



Lamp Characteristics

Luminous Diameter: 2.75 in.

Summary of Results

Integrating Sphere

Luminous Flux: 1225 Lumens
Efficacy: 101.2 lm/w
CCT: 4084 K
CRI (Ra): 84.3

Distribution

Total Luminaire Output: 1221 Lumens
Luminaire Efficacy: 101.0 lm/w
Maximum Candela: 2500 Candela

Electrical Data at 120 VAC

Test Temperature: 25.0 °C
Voltage: 120.0 VAC
Current: 0.1035 A
Power: 12.11 W
Power Factor: 0.975
Frequency: 60 Hz
Current THD: 17.3 %



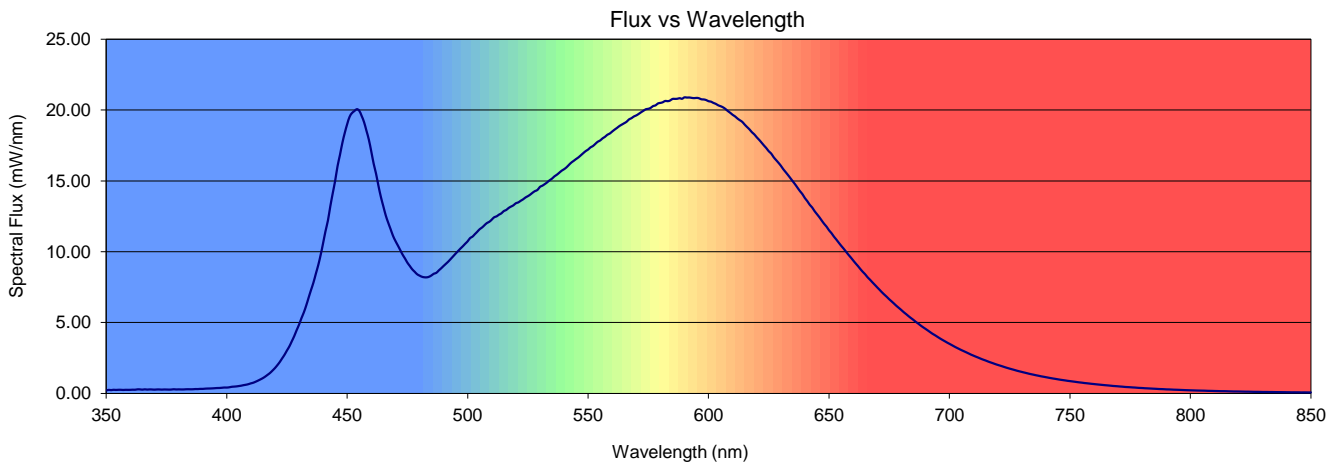
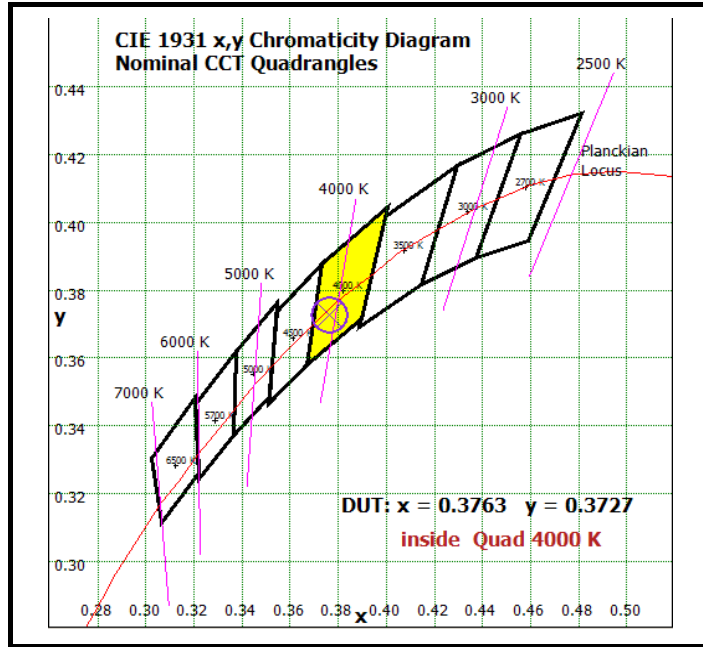
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.0 °C	120.0 VAC	0.1035 A	12.11 W	0.975	60 Hz	17.3 %

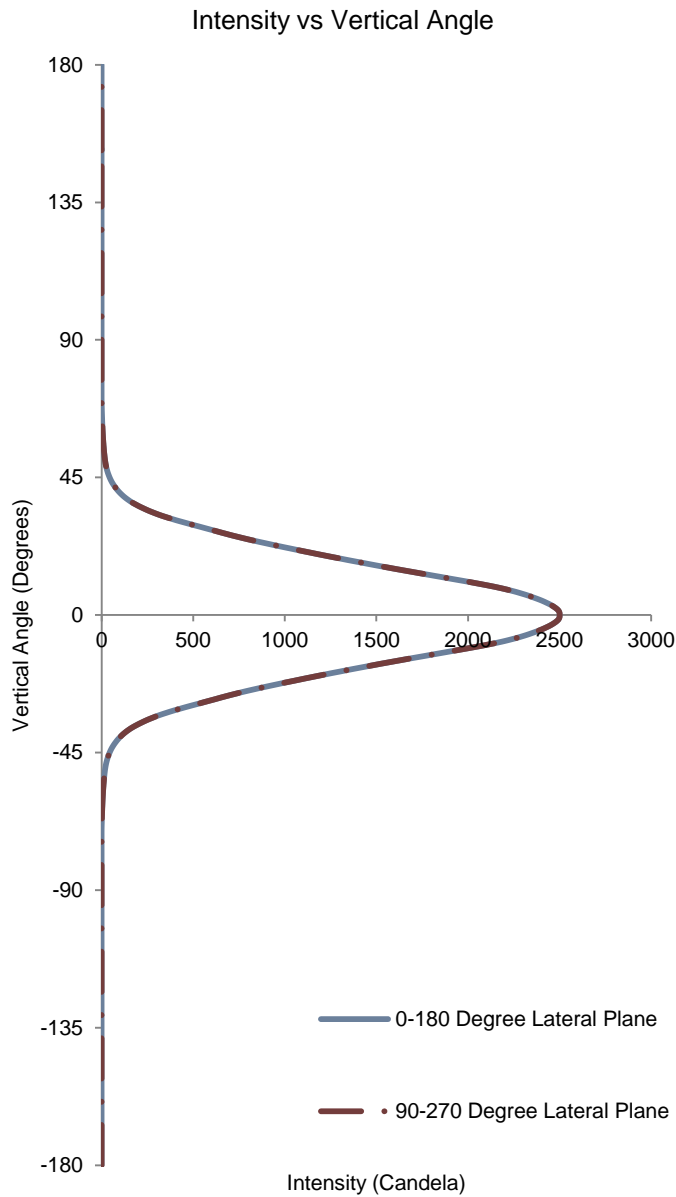
Summary of Results

Luminous Flux:	1225 Lumens
Efficacy:	101.2 lm/w
CCT:	4084 K
CRI (Ra):	84.3
CRI (R9):	16.5
Chromaticity (x):	0.3763
Chromaticity (y):	0.3727
Chromaticity (u):	0.2240
Chromaticity (v):	0.3328
Chromaticity (u')	0.2240
Chromaticity (v')	0.4992
Duv:	-0.0012





Distribution - Goniophotometer



Test Conditions

Test Temperature: 24.5 °C
Voltage: 120.0 VAC
Current: 0.1033 A
Power: 12.09 W
Power Factor: 0.975
Frequency: 60 Hz
Current THD: 17.5 %

Total Lumen Output: 1221 Lumens
Luminaire Efficacy: 101 Lumens/Watt
CIE Type: Direct
Spacing Criterion: 0.61 All Directions

Center Beam Intensity: 2500 Candela
Central Cone Intensity: 2462 Candela
Beam Flux: 620.8 Lumens
Beam Angle 0-180: 38.2 Degrees
Beam Angle 90-270: 38.2 Degrees
Field Angle 0-180: 68.6 Degrees
Field Angle 90-270: 68.6 Degrees

Data was acquired using the calibrated photodetector method of absolute photometry.



Candela Tabulation
 Lateral 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	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
1	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498
2	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485
3	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461
4	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429	2429
5	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391	2391
6	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345	2345
7	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294	2294
8	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234	2234
9	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163	2163
10	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080
11	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989
12	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894
13	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
14	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705	1705
15	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611	1611
16	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519
17	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431	1431
18	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343
19	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257
20	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173	1173
25	782	782	782	782	782	782	782	782	782	782	782	782	782	782	782	782
30	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468
35	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225
40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
45	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
50	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
55	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
60	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
65	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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



Utilization of Lumens - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **											
0	1489	1489	1489	1489	1454	1454	1454	1454	1420	1420	1420	1420
1	1425	1391	1360	1333	1394	1363	1336	1311	1364	1337	1313	1290
2	1362	1303	1255	1214	1335	1281	1237	1200	1308	1261	1221	1187
3	1302	1225	1167	1121	1277	1208	1154	1111	1254	1191	1142	1103
4	1245	1156	1092	1043	1223	1142	1082	1037	1202	1129	1073	1031
5	1191	1094	1027	978	1172	1082	1020	973	1153	1071	1013	969
6	1141	1037	969	921	1123	1028	964	918	1107	1019	958	915
7	1093	986	918	871	1077	978	914	869	1062	970	910	866
8	1049	940	872	826	1034	933	869	825	1021	926	865	823
9	1007	897	831	786	994	891	828	785	982	885	825	784
10	968	858	793	750	956	853	790	749	945	848	788	748

Ceiling Cavity Reflectance	50				30			10			0
Wall Reflectance	70	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	1357	1357	1357	1357	1299	1299	1299	1246	1246	1246	1221
1	1309	1288	1269	1251	1243	1228	1214	1201	1190	1179	1158
2	1260	1222	1189	1161	1186	1160	1137	1153	1132	1113	1094
3	1211	1160	1119	1085	1131	1097	1068	1105	1076	1052	1035
4	1164	1103	1056	1019	1080	1040	1007	1058	1024	996	979
5	1119	1050	1000	961	1031	987	952	1013	975	944	928
6	1076	1001	948	909	985	938	903	970	929	897	881
7	1035	956	901	862	942	894	858	929	886	853	838
8	996	914	859	820	902	852	816	891	846	813	798
9	959	875	820	781	864	815	779	855	810	776	762
10	925	838	784	746	830	780	744	821	775	742	728

Average Luminance Table (cd/m²)

		Horizontal Angle (Degrees)		
		0	45	90
Vertical Angle (Degree)	0	652400	652400	652400
	45	16190	16190	16190
	55	5116	5116	5116
	65	1506	1506	1506
	75	0	0	0
	85	0	0	0

This test was conducted using photometry techniques according to standard IES procedures. The user must therefore use caution in the following situations: 1) This test was performed using a specific ballast/lamp combination. Extrapolation of this data for other ballast/lamp combinations may produce erroneous results. 2) This test was conducted in a controlled laboratory environment where the ambient temperature was held at 25°C ±1°C. Field performance may differ particularly in regards to change in luminous output as a result of difference in ambient temperature and method of mounting the luminaire.



Zonal Lumen Tabulation (5 degree zones)

Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens
0-5	58.5	45-50	12.2	90-95	0	135-140	0
5-10	160.2	50-55	6.6	95-100	0	140-145	0
10-15	217.4	55-60	3.8	100-105	0	145-150	0
15-20	227.2	60-65	1.9	105-110	0	150-155	0
20-25	202.7	65-70	0.6	110-115	0	155-160	0
25-30	156.4	70-75	0.0	115-120	0	160-165	0
30-35	97.6	75-80	0	120-125	0	165-170	0
35-40	50.8	80-85	0	125-130	0	170-175	0
40-45	25.0	85-90	0	130-135	0	175-180	0

Polar Plot (Candela)

