



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
zPAR30x401512T3N
Order Number
10585963
Test Number
830268

Test Date
2015-01-27 - 2015-01-29

Prepared By

A handwritten signature in black ink, appearing to read 'Jeffrey M. Lockner'.

Jeffrey Lockner, Project Engineer

Approved By

A handwritten signature in black ink, appearing to read 'Jeff A. Smith Jr.'.

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: 1189 Lumens
Efficacy: 97.5 lm/w
CCT: 4097 K
CRI (Ra): 84.5

Distribution

Total Luminaire Output: 1180 Lumens
Luminaire Efficacy: 97.0 lm/w
Maximum Candela: 14110 Candela

Electrical Data at 120 VAC

Test Temperature: 25.1 °C
Voltage: 120.0 VAC
Current: 0.1042 A
Power: 12.19 W
Power Factor: 0.975
Frequency: 60 Hz
Current THD: 17.8 %



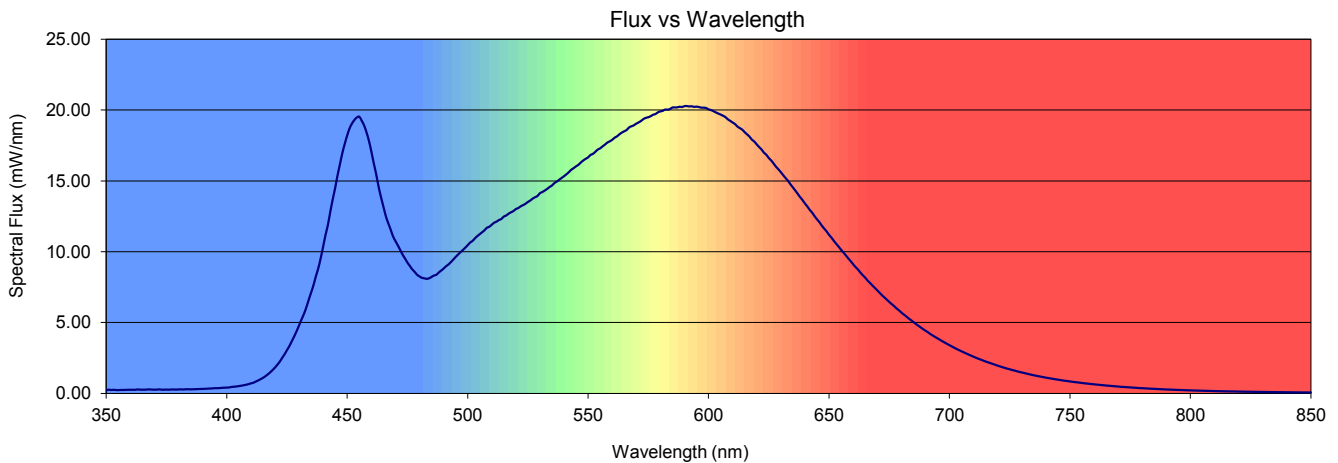
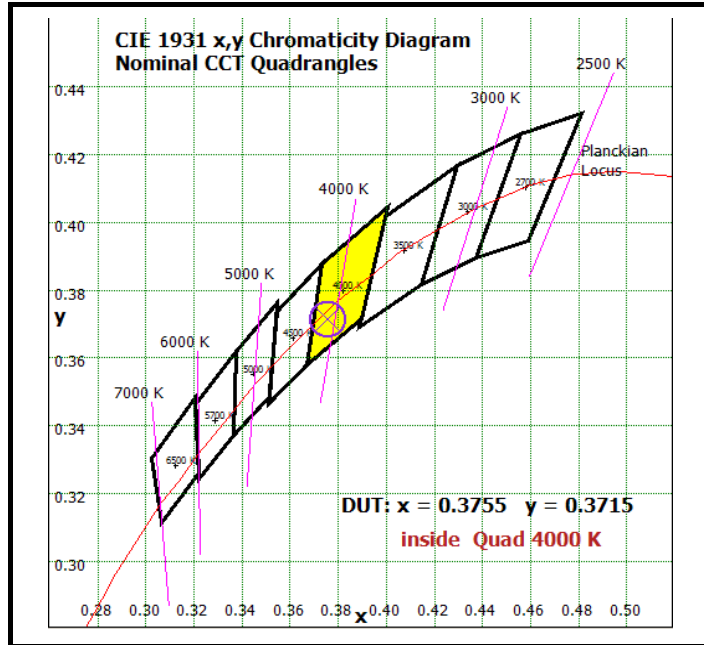
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.1 °C	120.0 VAC	0.1042 A	12.19 W	0.975	60 Hz	17.8 %

Summary of Results

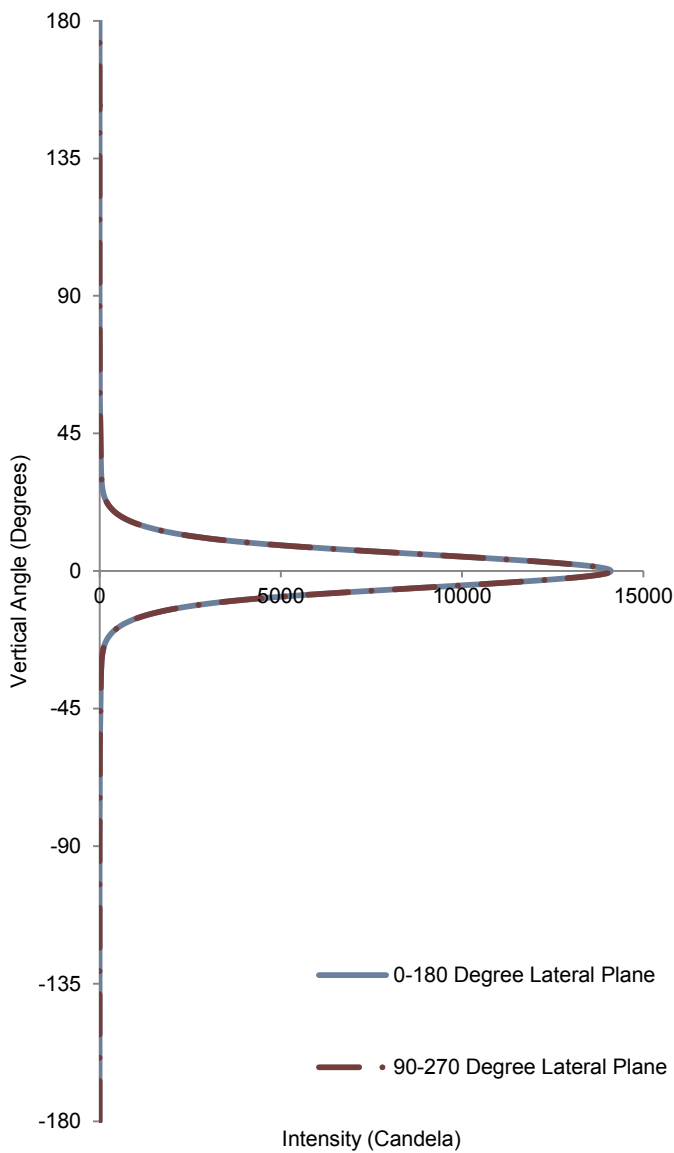
Luminous Flux:	1189 Lumens
Efficacy:	97.5 lm/w
CCT:	4097 K
CRI (Ra):	84.5
CRI (R9):	17.5
Chromaticity (x):	0.3755
Chromaticity (y):	0.3715
Chromaticity (u):	0.2240
Chromaticity (v):	0.3324
Chromaticity (u'):	0.2240
Chromaticity (v'):	0.4985
Duv:	-0.0015





Distribution - Goniophotometer

Intensity vs Vertical Angle



Test Conditions

Test Temperature: 24.5 °C
Voltage: 120.0 VAC
Current: 0.1040 A
Power: 12.17 W
Power Factor: 0.975
Frequency: 60 Hz
Current THD: 17.9 %

Total Lumen Output: 1180 Lumens
Luminaire Efficacy: 97.0 Lumens/Watt
CIE Type: Direct
Spacing Criterion: 0.23 All Directions

Center Beam Intensity: 14110 Candela
Central Cone Intensity: 12388 Candela
Beam Flux: 441 Lumens
Beam Angle 0-180: 13.6 Degrees
Beam Angle 90-270: 13.6 Degrees
Field Angle 0-180: 28.1 Degrees
Field Angle 90-270: 28.1 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	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110	14110
1	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890	13890
2	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230	13230
3	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210	12210
4	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960	10960
5	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574	9574
6	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154	8154
7	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754	6754
8	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474	5474
9	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378
10	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492	3492
11	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788
12	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230	2230
13	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785	1785
14	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429	1429
15	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141	1141
16	907	907	907	907	907	907	907	907	907	907	907	907	907	907	907	907
17	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721
18	571	571	571	571	571	571	571	571	571	571	571	571	571	571	571	571
19	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452
20	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358
25	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
30	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
35	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
40	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
45	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
50	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
55	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
60	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
65	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
70	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
75	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
80	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
85	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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	1440	1440	1440	1440	1405	1405	1405	1405	1373	1373	1373	1373
1	1392	1365	1342	1321	1362	1339	1319	1300	1335	1314	1296	1280
2	1349	1305	1270	1240	1324	1285	1253	1226	1300	1266	1237	1213
3	1311	1256	1215	1182	1289	1241	1203	1173	1269	1225	1191	1164
4	1277	1215	1171	1138	1258	1203	1162	1131	1241	1191	1153	1125
5	1246	1180	1135	1102	1230	1170	1129	1098	1215	1161	1122	1093
6	1218	1150	1105	1074	1204	1142	1100	1070	1191	1134	1095	1067
7	1193	1124	1080	1049	1181	1117	1076	1047	1169	1111	1072	1044
8	1169	1100	1057	1028	1159	1095	1054	1027	1149	1089	1051	1025
9	1148	1079	1038	1010	1139	1074	1035	1009	1130	1070	1033	1007
10	1128	1060	1020	994	1120	1056	1018	992	1112	1052	1016	991

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	1312	1312	1312	1312	1256	1256	1256	1205	1205	1205	1180
1	1283	1268	1254	1241	1225	1214	1204	1185	1177	1170	1150
2	1256	1230	1207	1187	1196	1178	1162	1165	1151	1139	1122
3	1232	1197	1169	1146	1170	1148	1129	1146	1128	1112	1098
4	1209	1168	1137	1112	1147	1121	1100	1127	1106	1088	1075
5	1187	1142	1110	1084	1125	1098	1076	1110	1086	1067	1055
6	1167	1119	1086	1060	1106	1076	1054	1093	1067	1048	1037
7	1148	1098	1064	1040	1087	1057	1035	1076	1050	1030	1020
8	1130	1079	1045	1021	1070	1040	1017	1061	1034	1014	1004
9	1113	1061	1028	1004	1053	1023	1002	1046	1019	999	990
10	1097	1045	1012	989	1038	1008	987	1032	1005	985	976

Average Luminance Table (cd/m²)

		Horizontal Angle (Degrees)		
		0	45	90
Vertical Angle (Degree)	0	3681000	3681000	3681000
	45	9071	9071	9071
	55	4844	4844	4844
	65	4290	4290	4290
	75	5375	5375	5375
	85	2797	2797	2797

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	279.5	45-50	8.5	90-95	0	135-140	0
5-10	423.1	50-55	6.1	95-100	0	140-145	0
10-15	240.0	55-60	3.9	100-105	0	145-150	0
15-20	108.6	60-65	3.4	105-110	0	150-155	0
20-25	43.2	65-70	3.4	110-115	0	155-160	0
25-30	19.0	70-75	3.1	115-120	0	160-165	0
30-35	13.0	75-80	2.4	120-125	0	165-170	0
35-40	11.3	80-85	1.3	125-130	0	170-175	0
40-45	10.3	85-90	0.1	130-135	0	175-180	0

Polar Plot (Candela)

