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Photometric Test Report

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

Prepared For
MSI, LLC

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Catalog Number
zPAR38402512T3N

Order Number
10585963
Test Number
830276

Test Date

2015-01-28 - 2015-01-29

Prepared By

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Approved By

Jeffrey Lockner, Project Engineer

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: 1231 Lumens
 Efficacy: 103.0 lm/w
 CCT: 4011 K
 CRI (Ra): 83.8

Distribution

Total Luminaire Output: 1259 Lumens
 Luminaire Efficacy: 102 lm/w
 Maximum Candela: 5948 Candela

Electrical Data at 120 VAC

Test Temperature: 25.1 °C
 Voltage: 120.0 VAC
 Current: 0.1028 A
 Power: 11.96 W
 Power Factor: 0.974
 Frequency: 60 Hz
 Current THD: 17.7 %



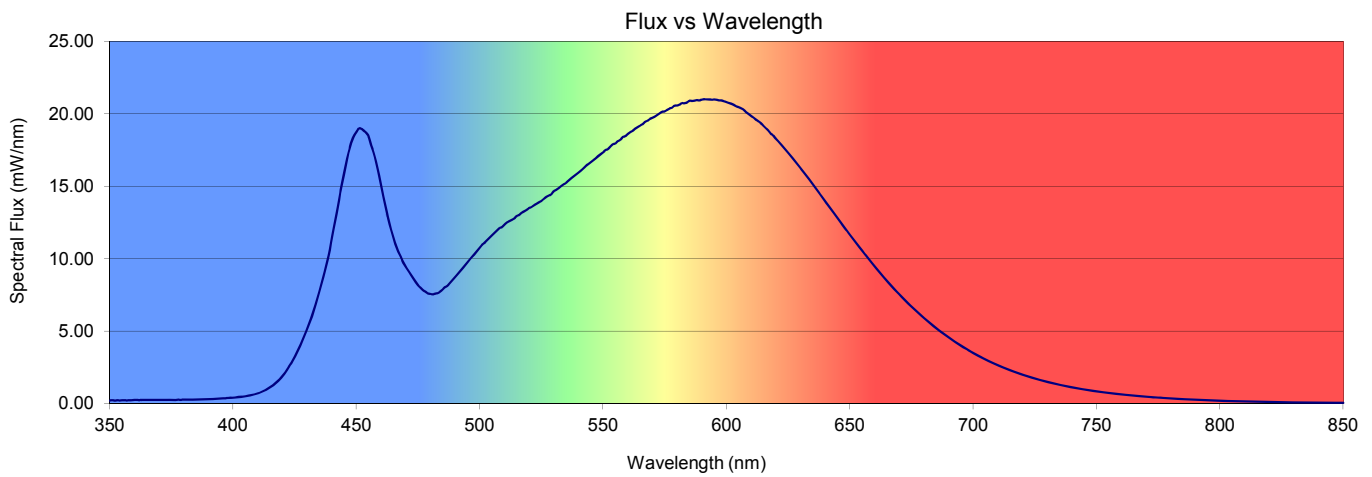
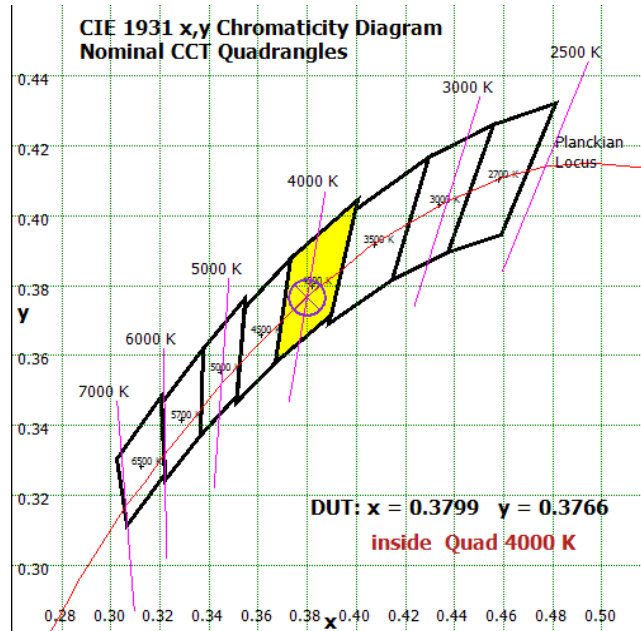
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.1 °C	120.0 VAC	0.1028 A	11.96 W	0.974	60 Hz	17.7 %

Summary of Results

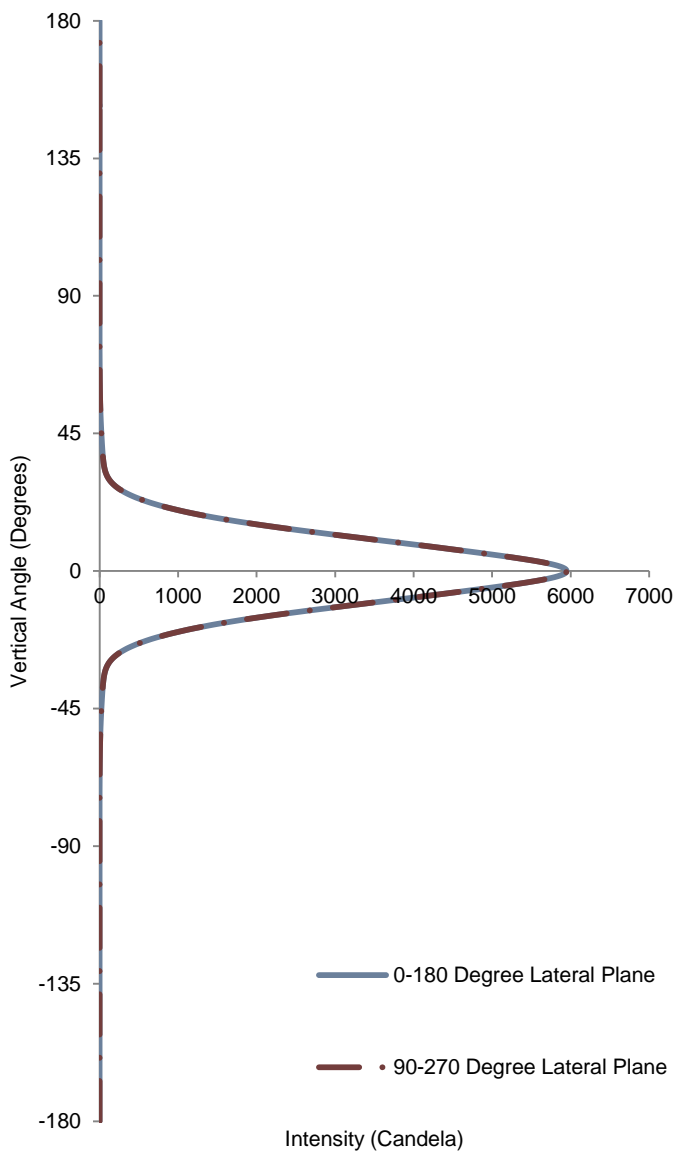
Luminous Flux: 1231 Lumens
Efficacy: 103.0 lm/w
CCT: 4011 K
CRI (Ra): 83.8
CRI (R9): 14.5
 Chromaticity (x): 0.3799
 Chromaticity (y): 0.3766
 Chromaticity (u): 0.2248
 Chromaticity (v): 0.3343
 Chromaticity (u'): 0.2248
 Chromaticity (v'): 0.5014
 Duv: 0.0006





Distribution - Goniophotometer

Intensity vs Vertical Angle



Test Conditions

Test Temperature: 24.7 °C
Voltage: 120.0 VAC
Current: 0.1055 A
Power: 12.35 W
Power Factor: 0.976
Frequency: 60 Hz
Current THD: 17.2 %

Total Lumen Output: 1259 Lumens
Luminaire Efficacy: 102 Lumens/Watt
CIE Type: Direct
Spacing Criterion: 0.40 All Directions

Center Beam Intensity: 5948 Candela
Central Cone Intensity: 5637 Candela
Beam Flux: 570.6 Lumens
Beam Angle 0-180: 23.9 Degrees
Beam Angle 90-270: 23.9 Degrees
Field Angle 0-180: 45.6 Degrees
Field Angle 90-270: 45.6 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	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948	5948
1	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911	5911
2	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795	5795
3	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612	5612
4	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376
5	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108	5108
6	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821
7	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521	4521
8	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216
9	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899	3899
10	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584	3584
11	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270	3270
12	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954	2954
13	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644
14	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349	2349
15	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070
16	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809	1809
17	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572	1572
18	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355	1355
19	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159	1159
20	986	986	986	986	986	986	986	986	986	986	986	986	986	986	986	986
25	378	378	378	378	378	378	378	378	378	378	378	378	378	378	378	378
30	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
35	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
40	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
45	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
50	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
55	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
60	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
65	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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	1536	1536	1536	1536	1499	1499	1499	1499	1464	1464	1464	1464
1	1480	1449	1422	1398	1448	1421	1397	1376	1418	1395	1373	1354
2	1428	1376	1334	1299	1400	1354	1317	1285	1374	1334	1299	1271
3	1379	1313	1263	1224	1355	1296	1251	1214	1333	1280	1238	1205
4	1334	1259	1204	1164	1313	1245	1195	1157	1293	1232	1186	1150
5	1292	1210	1154	1113	1273	1199	1147	1108	1256	1188	1140	1104
6	1252	1167	1110	1070	1236	1158	1105	1067	1221	1149	1099	1063
7	1216	1127	1071	1033	1201	1120	1067	1030	1188	1113	1063	1028
8	1181	1092	1036	999	1168	1085	1033	997	1156	1079	1030	995
9	1149	1059	1005	969	1137	1053	1002	967	1127	1048	999	966
10	1118	1028	976	941	1108	1024	973	940	1098	1019	971	939

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	1399	1399	1399	1399	1340	1340	1340	1285	1285	1285	1259
1	1363	1345	1328	1313	1299	1286	1274	1256	1246	1237	1216
2	1327	1294	1267	1243	1258	1236	1217	1225	1208	1192	1174
3	1291	1249	1214	1186	1220	1192	1168	1193	1170	1151	1134
4	1257	1207	1168	1137	1184	1151	1125	1162	1135	1112	1097
5	1225	1168	1126	1095	1149	1114	1086	1132	1101	1077	1063
6	1193	1132	1089	1057	1117	1079	1050	1102	1069	1044	1030
7	1163	1099	1055	1023	1086	1047	1018	1074	1039	1013	1000
8	1134	1068	1023	992	1057	1017	988	1046	1011	984	972
9	1107	1038	994	963	1029	989	960	1020	984	957	946
10	1080	1011	967	937	1003	963	934	995	959	932	921

Average Luminance Table (cd/m²)

		Horizontal Angle (Degrees)		
		0	45	90
Vertical Angle (Degree)	0	1552000	1552000	1552000
	45	8539	8539	8539
	55	3461	3461	3461
	65	1230	1230	1230
	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	131.8	45-50	7.4	90-95	0	135-140	0
5-10	306.3	50-55	4.6	95-100	0	140-145	0
10-15	327.4	55-60	2.6	100-105	0	145-150	0
15-20	240.3	60-65	1.4	105-110	0	150-155	0
20-25	133.4	65-70	0.7	110-115	0	155-160	0
25-30	56.2	70-75	0.1	115-120	0	160-165	0
30-35	22.7	75-80	0	120-125	0	165-170	0
35-40	14.1	80-85	0	125-130	0	170-175	0
40-45	10.6	85-90	0	130-135	0	175-180	0

Polar Plot (Candela)

