LTL LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING MEMBER of the IESNA

905 Harrison Street · Allentown, PA 18103 · 610-770-1044 · Fax 610-770-8912 · www.LuminaireTesting.com

LTL NUMBER: 18809 DATE: 04-09-2010
PREPARED FOR: RENOVA LIGHTING SYSTEMS, INC.
CATALOG NUMBER: ECS-EGF4-MN-232-UNV-12L-FRL1
LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTORS WITH SPECULAR ALUMINUM REFLECTOR ABOVE LAMPS, FROSTED LINEAR PRISMATIC PLASTIC CENTER DIFFUSER.
LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.
LAMP CATALOG NUMBER: PHILIPS F32T8/841/ALTO
BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE2X32T8/UNV-ISL-SC
MOUNTING: RECESSED
ELECTRICAL VALUES: 120.0VAC, 0.4123A, 49.42W

Candela Distribution

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	
5	1697	1702	1707	1705	1707	1705	1707	1702	1697	1702	1707	1705	1707	1705	1707	1702	161.9
15	1630	1638	1648	1650	1653	1650	1648	1638	1630	1638	1648	1650	1653	1650	1648	1638	464.1
25	1494	1507	1531	1546	1553	1546	1531	1507	1494	1507	1531	1546	1553	1546	1531	1507	703.6
35	1290	1316	1366	1402	1414	1402	1366	1316	1290	1316	1366	1402	1414	1402	1366	1316	850.0
45	1034	1078	1158	1217	1236	1217	1158	1078	1034	1078	1158	1217	1236	1217	1158	1078	884.9
55	756	813	917	996	1017	996	917	813	756	813	917	996	1017	996	917	813	806.5
65	486	546	649	702	722	702	649	546	486	546	649	702	722	702	649	546	615.5
75	246	296	333	297	281	297	333	296	246	296	333	297	281	297	333	296	320.0
85	59	69	72	67	66	67	72	69	59	69	72	67	66	67	72	69	79.2
90	0	1	1	2	2	2	1	1	0	1	1	2	2	2	1	1	
95	0	0	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	0.0
115	0	0	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	0.0
135	0	0	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	0.0
155	0	0	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	0.0
175	0	0	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	

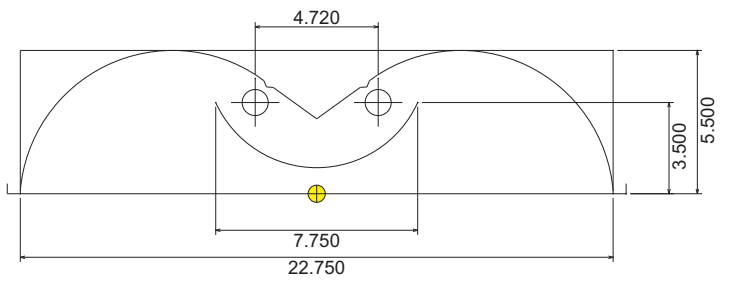
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1329.6	23.3%	27.2%
0-40	2179.7	38.2%	44.6%
0-60	3871.0	67.9%	79.2%
0-90	4885.7	85.7%	100.0%
90-180	0.0	0.0%	0.0%
0-180	4885.7	85.7%	100.0%

Total luminaire efficiency: 85.7%

CIE Type: Direct
Spacing Criterion: 0 deg: 1.22 90 deg: 1.29
180 deg: 1.22 270 deg: 1.29

Luminaire



Approved By: MG

THIS REPORT BASED ON LM-41 AND OTHER PERTINENT IESNA PROCEDURES.

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Candela Tabulation (5 degree Vertical Increments)

	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	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712	1712
5	1697	1702	1707	1705	1707	1705	1707	1702	1697	1702	1707	1705	1707	1705	1707	1702
10	1673	1678	1684	1683	1686	1683	1684	1678	1673	1678	1684	1683	1686	1683	1684	1678
15	1630	1638	1648	1650	1653	1650	1648	1638	1630	1638	1648	1650	1653	1650	1648	1638
20	1570	1580	1596	1603	1609	1603	1596	1580	1570	1580	1596	1603	1609	1603	1596	1580
25	1494	1507	1531	1546	1553	1546	1531	1507	1494	1507	1531	1546	1553	1546	1531	1507
30	1400	1419	1454	1479	1488	1479	1454	1419	1400	1419	1454	1479	1488	1479	1454	1419
35	1290	1316	1366	1402	1414	1402	1366	1316	1290	1316	1366	1402	1414	1402	1366	1316
40	1166	1201	1267	1314	1328	1314	1267	1201	1166	1201	1267	1314	1328	1314	1267	1201
45	1034	1078	1158	1217	1236	1217	1158	1078	1034	1078	1158	1217	1236	1217	1158	1078
50	895	948	1041	1112	1134	1112	1041	948	895	948	1041	1112	1134	1112	1041	948
55	756	813	917	996	1017	996	917	813	756	813	917	996	1017	996	917	813
60	618	679	786	861	874	861	786	679	618	679	786	861	874	861	786	679
65	486	546	649	702	722	702	649	546	486	546	649	702	722	702	649	546
70	361	419	492	515	492	515	492	419	361	419	492	515	492	515	492	419
75	246	296	333	297	281	297	333	296	246	296	333	297	281	297	333	296
80	146	175	177	170	166	170	177	175	146	175	177	170	166	170	177	175
85	59	69	72	67	66	67	72	69	59	69	72	67	66	67	72	69
90	0	1	1	2	2	2	1	1	0	1	1	2	2	2	1	1
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

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens		Zone	Lumens		Zone	Lumens		Zone	Lumens
0-5	40.8		45-50	439.6		90-95	0.0		135-140	0.0
5-10	121.1		50-55	420.0		95-100	0.0		140-145	0.0
10-15	197.3		55-60	386.4		100-105	0.0		145-150	0.0
15-20	266.8		60-65	338.6		105-110	0.0		150-155	0.0
20-25	327.2		65-70	276.9		110-115	0.0		155-160	0.0
25-30	376.5		70-75	197.4		115-120	0.0		160-165	0.0
30-35	413.5		75-80	122.6		120-125	0.0		165-170	0.0
35-40	436.6		80-85	63.5		125-130	0.0		170-175	0.0
40-45	445.3		85-90	15.7		130-135	0.0		175-180	0.0

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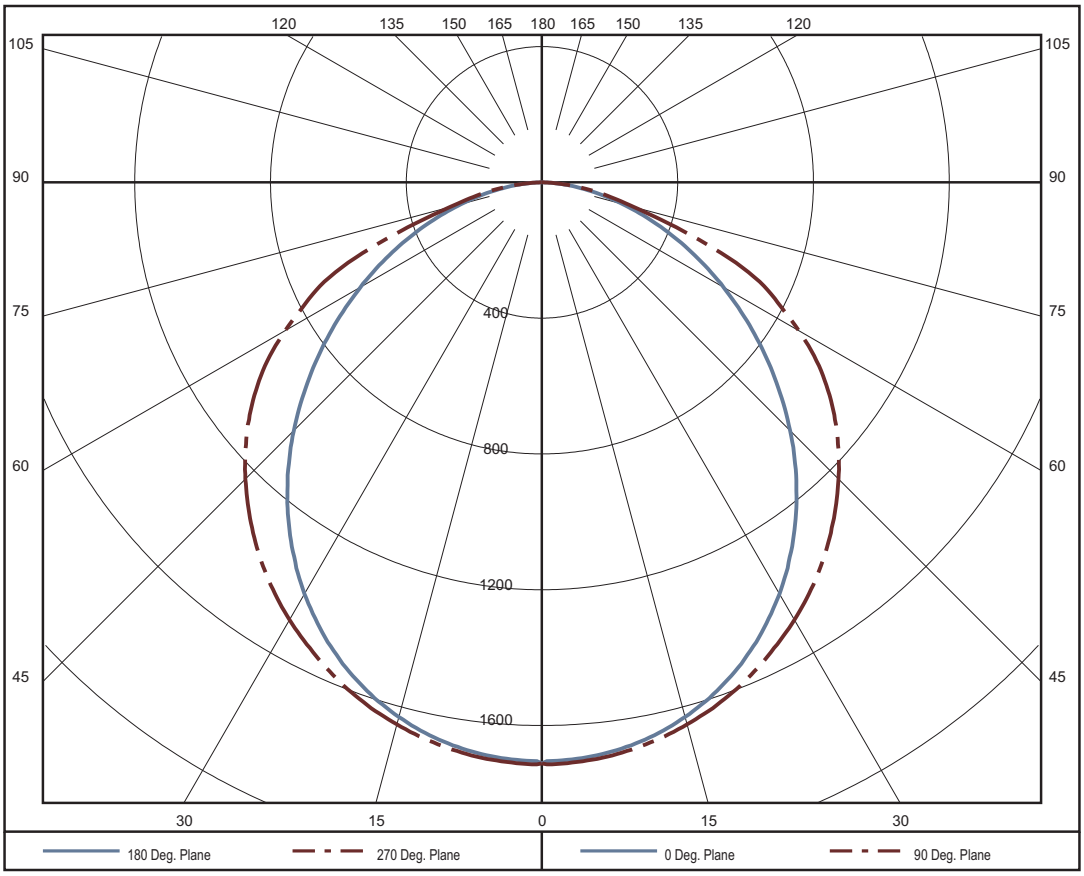
Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.045	1.045	1.045	1.045	1.02	1.02	1.02	1.02	0.997	0.997	0.997	0.997
1	0.957	0.913	0.873	0.837	0.933	0.892	0.856	0.823	0.91	0.873	0.839	0.809
2	0.872	0.794	0.731	0.678	0.848	0.777	0.719	0.67	0.825	0.761	0.707	0.662
3	0.795	0.696	0.62	0.561	0.773	0.682	0.612	0.556	0.751	0.668	0.603	0.551
4	0.728	0.615	0.534	0.473	0.707	0.603	0.528	0.47	0.687	0.592	0.521	0.467
5	0.669	0.549	0.466	0.406	0.65	0.539	0.461	0.404	0.631	0.529	0.456	0.402
6	0.617	0.493	0.412	0.354	0.599	0.485	0.407	0.352	0.583	0.476	0.404	0.351
7	0.571	0.446	0.367	0.312	0.556	0.439	0.364	0.311	0.541	0.432	0.36	0.309
8	0.531	0.407	0.33	0.278	0.517	0.4	0.327	0.277	0.503	0.394	0.325	0.276
9	0.496	0.373	0.299	0.249	0.483	0.367	0.297	0.249	0.471	0.362	0.294	0.248
10	0.464	0.343	0.273	0.226	0.453	0.339	0.271	0.225	0.442	0.334	0.269	0.225

Ceiling Cavity Reflectance	50				30			10			0
Wall Reflectance	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.952	0.952	0.952	0.952	0.912	0.912	0.912	0.875	0.875	0.875	0.857
1	0.866	0.836	0.809	0.784	0.803	0.78	0.76	0.772	0.754	0.737	0.719
2	0.784	0.731	0.685	0.646	0.702	0.665	0.631	0.676	0.645	0.617	0.599
3	0.712	0.643	0.587	0.541	0.619	0.571	0.531	0.597	0.557	0.522	0.503
4	0.651	0.57	0.509	0.46	0.55	0.497	0.454	0.532	0.486	0.448	0.429
5	0.598	0.511	0.447	0.397	0.494	0.437	0.393	0.478	0.428	0.389	0.37
6	0.553	0.461	0.396	0.347	0.446	0.388	0.344	0.433	0.381	0.341	0.323
7	0.513	0.419	0.354	0.307	0.406	0.348	0.305	0.395	0.342	0.302	0.285
8	0.479	0.383	0.319	0.274	0.372	0.315	0.272	0.362	0.31	0.271	0.254
9	0.448	0.352	0.29	0.247	0.343	0.286	0.245	0.334	0.282	0.244	0.228
10	0.421	0.326	0.265	0.224	0.318	0.262	0.223	0.31	0.259	0.222	0.207

Average Luminance Table (cd/m²)

	0	45	90
0	2482	2482	2482
45	2121	2375	2534
55	1910	2316	2571
65	1666	2226	2478
75	1378	1864	1575
85	976	1203	1091

THIS TEST WAS CONDUCTED USING RELATIVE PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IESNA PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) ACCORDING TO IESNA PROCEDURES, THE BALLAST(S) AND LAMP(S) ARE PRESUMED TO PRODUCE 100% OF RATED OUTPUT. AN APPROPRIATE BALLAST FACTOR MUST BE APPLIED TO THE LUMEN OUTPUT RATINGS AND LUMINOUS INTENSITY VALUES GIVEN. 3) 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.


120
135
150
165
180
165
150
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15
30
180 Deg. Plane
270 Deg. Plane
0 Deg. Plane
90 Deg. Plane