



# 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: 17548 DATE: 01-05-2010  
 PREPARED FOR: RENOVA LIGHTING SYSTEMS  
 CATALOG NUMBER: ECS-IRK4-MN-3LT8-UNV5.8-V  
 LUMINAIRE: FORMED STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR,  
 NO ENCLOSURE.  
 LAMP: THREE 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS  
 EACH.  
 LAMP CATALOG NUMBER: PHILIPS F32T8/841/ALTO  
 BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE-3X32T8/UNV-ISL-SC  
 MOUNTING: PENDANT  
 ELECTRICAL VALUES: 120.0VAC, 0.6263A, 75.08W

### Candela Distribution

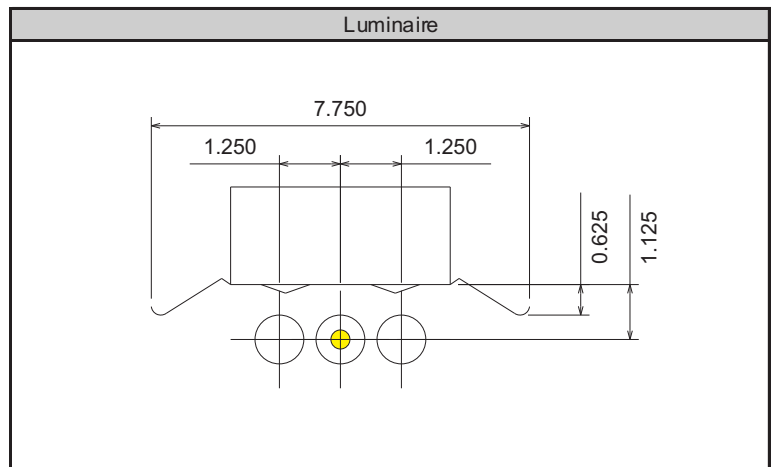
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	
5	2156	2200	2272	2313	2337	2313	2272	2200	2156	2200	2272	2313	2337	2313	2272	2200	218.8
15	2079	2299	2390	2299	2258	2299	2390	2299	2079	2299	2390	2299	2258	2299	2390	2299	640.7
25	1927	2217	1964	1976	2019	1976	1964	2217	1927	2217	1964	1976	2019	1976	1964	2217	938.4
35	1704	1842	1819	1893	1926	1893	1819	1842	1704	1842	1819	1893	1926	1893	1819	1842	1152.4
45	1427	1436	1626	1700	1721	1700	1626	1436	1427	1436	1626	1700	1721	1700	1626	1436	1226.0
55	1101	1208	1343	1463	1530	1463	1343	1208	1101	1208	1343	1463	1530	1463	1343	1208	1194.1
65	746	901	1104	1274	1321	1274	1104	901	746	901	1104	1274	1321	1274	1104	901	1058.9
75	383	579	746	728	743	728	746	579	383	579	746	728	743	728	746	579	701.5
85	70	211	333	415	450	415	333	211	70	211	333	415	450	415	333	211	350.2
90	2	105	225	313	345	313	225	105	2	105	225	313	345	313	225	105	
95	1	47	150	231	262	231	150	47	1	47	150	231	262	231	150	47	152.2
105	0	3	5	60	86	60	5	3	0	3	5	60	86	60	5	3	34.5
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
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	0

### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1797.9	21.0%	23.4%
0-40	2950.3	34.5%	38.5%
0-60	5370.5	62.8%	70.0%
0-90	7481.1	87.5%	97.6%
90-180	187.1	2.2%	2.4%
0-180	7668.1	89.7%	100.0%

Total luminaire efficiency: 89.7%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 1.25    90 deg: 1.37  
 180 deg: 1.25    270 deg: 1.37



Approved By: \_\_\_\_\_

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	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168	2168
5	2156	2200	2272	2313	2337	2313	2272	2200	2156	2200	2272	2313	2337	2313	2272	2200
10	2128	2254	2409	2434	2438	2434	2409	2254	2128	2254	2409	2434	2438	2434	2409	2254
15	2079	2299	2390	2299	2258	2299	2390	2299	2079	2299	2390	2299	2258	2299	2390	2299
20	2012	2302	2214	2025	1998	2025	2214	2302	2012	2302	2214	2025	1998	2025	2214	2302
25	1927	2217	1964	1976	2019	1976	1964	2217	1927	2217	1964	1976	2019	1976	1964	2217
30	1825	2062	1855	1962	1984	1962	1855	2062	1825	2062	1855	1962	1984	1962	1855	2062
35	1704	1842	1819	1893	1926	1893	1819	1842	1704	1842	1819	1893	1926	1893	1819	1842
40	1572	1604	1727	1820	1852	1820	1727	1604	1572	1604	1727	1820	1852	1820	1727	1604
45	1427	1436	1626	1700	1721	1700	1626	1436	1427	1436	1626	1700	1721	1700	1626	1436
50	1268	1341	1506	1566	1604	1566	1506	1341	1268	1341	1506	1566	1604	1566	1506	1341
55	1101	1208	1343	1463	1530	1463	1343	1208	1101	1208	1343	1463	1530	1463	1343	1208
60	925	1057	1199	1393	1457	1393	1199	1057	925	1057	1199	1393	1457	1393	1199	1057
65	746	901	1104	1274	1321	1274	1104	901	746	901	1104	1274	1321	1274	1104	901
70	563	721	981	1059	1042	1059	981	721	563	721	981	1059	1042	1059	981	721
75	383	579	746	728	743	728	746	579	383	579	746	728	743	728	746	579
80	215	445	476	570	610	570	476	445	215	445	476	570	610	570	476	445
85	70	211	333	415	450	415	333	211	70	211	333	415	450	415	333	211
90	2	105	225	313	345	313	225	105	2	105	225	313	345	313	225	105
95	1	47	150	231	262	231	150	47	1	47	150	231	262	231	150	47
100	0	6	70	144	174	144	70	6	0	6	70	144	174	144	70	6
105	0	3	5	60	86	60	5	3	0	3	5	60	86	60	5	3
110	1	2	1	2	10	2	1	2	1	2	1	2	10	2	1	2
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	53.0	45-50	615.5	90-95	94.3	135-140	0.0
5-10	165.7	50-55	607.0	95-100	57.9	140-145	0.0
10-15	276.0	55-60	587.1	100-105	27.6	145-150	0.0
15-20	364.8	60-65	557.0	105-110	6.9	150-155	0.0
20-25	435.7	65-70	501.9	110-115	0.3	155-160	0.0
25-30	502.7	70-75	402.7	115-120	0.0	160-165	0.0
30-35	558.6	75-80	298.7	120-125	0.0	165-170	0.0
35-40	593.8	80-85	211.9	125-130	0.0	170-175	0.0
40-45	610.5	85-90	138.3	130-135	0.0	175-180	0.0



Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.091	1.091	1.091	1.091	1.062	1.062	1.062	1.062	1.035	1.035	1.035	1.035
1	0.984	0.93	0.881	0.838	0.955	0.906	0.862	0.822	0.928	0.883	0.843	0.806
2	0.89	0.8	0.727	0.665	0.862	0.78	0.712	0.655	0.835	0.761	0.698	0.646
3	0.808	0.696	0.611	0.543	0.781	0.679	0.6	0.537	0.756	0.663	0.589	0.53
4	0.737	0.612	0.522	0.454	0.713	0.598	0.514	0.45	0.689	0.584	0.506	0.445
5	0.676	0.544	0.453	0.387	0.654	0.532	0.447	0.384	0.632	0.52	0.44	0.381
6	0.623	0.488	0.399	0.336	0.602	0.477	0.393	0.333	0.583	0.467	0.388	0.331
7	0.576	0.441	0.354	0.295	0.558	0.432	0.35	0.293	0.541	0.423	0.346	0.291
8	0.536	0.401	0.318	0.262	0.519	0.393	0.314	0.26	0.503	0.386	0.311	0.259
9	0.5	0.367	0.288	0.235	0.485	0.361	0.285	0.233	0.47	0.354	0.282	0.232
10	0.468	0.338	0.262	0.212	0.454	0.332	0.26	0.211	0.441	0.327	0.257	0.21

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.984	0.984	0.984	0.984	0.938	0.938	0.938	0.895	0.895	0.895	0.875
1	0.877	0.84	0.807	0.777	0.801	0.774	0.749	0.765	0.743	0.722	0.701
2	0.786	0.724	0.672	0.627	0.691	0.647	0.609	0.66	0.624	0.592	0.57
3	0.71	0.632	0.569	0.518	0.604	0.551	0.506	0.578	0.533	0.494	0.472
4	0.647	0.558	0.49	0.436	0.534	0.475	0.428	0.512	0.461	0.42	0.398
5	0.594	0.498	0.428	0.374	0.478	0.416	0.368	0.459	0.405	0.362	0.341
6	0.548	0.449	0.378	0.326	0.431	0.369	0.321	0.415	0.359	0.316	0.297
7	0.509	0.407	0.338	0.287	0.392	0.33	0.283	0.378	0.322	0.28	0.261
8	0.474	0.372	0.304	0.256	0.359	0.297	0.253	0.347	0.291	0.25	0.232
9	0.444	0.342	0.276	0.23	0.331	0.27	0.227	0.32	0.265	0.225	0.208
10	0.418	0.316	0.252	0.208	0.306	0.247	0.206	0.297	0.243	0.204	0.188

Average Luminance Table (cd/m<sup>2</sup>)

	0	45	90
0	14000	11347	11330
45	12498	10549	10943
55	11664	10199	11313
65	10406	10496	12114
75	8178	9880	9349
85	3433	7661	9469

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.

