



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: 19585

DATE: 06-09-2010

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-KCN4-WN-232-UNV-12L-FRL

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, FORMED WHITE ENAMEL ALUMINUM ENCLOSURE WITH FROSTED LINEAR PRISMATIC PLASTIC DIFFUSERS BELOW EACH LAMP.

LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.

LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO

BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE2X32T8/UNV-ISL-SC

MOUNTING: RECESSED

ELECTRICAL VALUES: 120.0VAC, 0.4081A, 48.84W

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	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
5	1739	1740	1742	1746	1743	1746	1742	1740	1739	1740	1742	1746	1743	1746	1742	1740	165.6
15	1669	1673	1682	1693	1691	1693	1682	1673	1669	1673	1682	1693	1691	1693	1682	1673	474.8
25	1527	1539	1563	1585	1590	1585	1563	1539	1527	1539	1563	1585	1590	1585	1563	1539	719.7
35	1316	1342	1387	1424	1436	1424	1387	1342	1316	1342	1387	1424	1436	1424	1387	1342	864.0
45	1047	1088	1154	1201	1214	1201	1154	1088	1047	1088	1154	1201	1214	1201	1154	1088	880.9
55	748	800	877	915	922	915	877	800	748	800	877	915	922	915	877	800	764.9
65	462	512	580	564	541	564	580	512	462	512	580	564	541	564	580	512	534.8
75	219	261	265	231	217	231	265	261	219	261	265	231	217	231	265	261	261.6
85	49	55	51	46	44	46	51	55	49	55	51	46	44	46	51	55	59.8
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	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	0

Zonal Lumen Summary

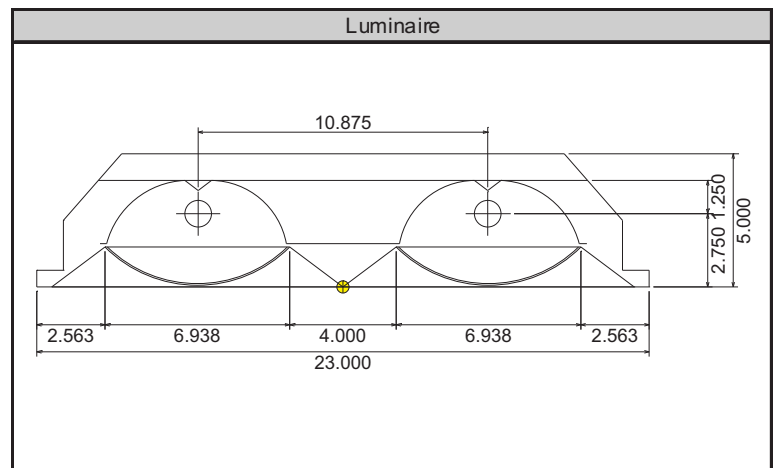
Zone	Lumens	% of Lamp	% of Luminaire
0-30	1360.1	23.9%	28.8%
0-40	2224.1	39.0%	47.1%
0-60	3869.9	67.9%	81.9%
0-90	4726.2	82.9%	100.0%
90-180	0.0	0.0%	0.0%
0-180	4726.2	82.9%	100.0%

Total luminaire efficiency: 82.9%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.22 90 deg: 1.29
180 deg: 1.22 270 deg: 1.29

Total reflectance of paint: 91.4



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	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
5	1739	1740	1742	1746	1743	1746	1742	1740	1739	1740	1742	1746	1743	1746	1742	1740
10	1714	1716	1720	1726	1723	1726	1720	1716	1714	1716	1720	1726	1723	1726	1720	1716
15	1669	1673	1682	1693	1691	1693	1682	1673	1669	1673	1682	1693	1691	1693	1682	1673
20	1607	1615	1630	1647	1647	1647	1630	1615	1607	1615	1630	1647	1647	1647	1630	1615
25	1527	1539	1563	1585	1590	1585	1563	1539	1527	1539	1563	1585	1590	1585	1563	1539
30	1430	1449	1482	1512	1519	1512	1482	1449	1430	1449	1482	1512	1519	1512	1482	1449
35	1316	1342	1387	1424	1436	1424	1387	1342	1316	1342	1387	1424	1436	1424	1387	1342
40	1187	1220	1277	1320	1333	1320	1277	1220	1187	1220	1277	1320	1333	1320	1277	1220
45	1047	1088	1154	1201	1214	1201	1154	1088	1047	1088	1154	1201	1214	1201	1154	1088
50	899	947	1020	1065	1075	1065	1020	947	899	947	1020	1065	1075	1065	1020	947
55	748	800	877	915	922	915	877	800	748	800	877	915	922	915	877	800
60	600	653	728	755	748	755	728	653	600	653	728	755	748	755	728	653
65	462	512	580	564	541	564	580	512	462	512	580	564	541	564	580	512
70	334	381	419	382	359	382	419	381	334	381	419	382	359	382	419	381
75	219	261	265	231	217	231	265	261	219	261	265	231	217	231	265	261
80	124	149	143	123	115	123	143	149	124	149	143	123	115	123	143	149
85	49	55	51	46	44	46	51	55	49	55	51	46	44	46	51	55
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

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	41.7	45-50	434.0	90-95	0.0	135-140	0.0
5-10	123.8	50-55	404.6	95-100	0.0	140-145	0.0
10-15	201.8	55-60	360.3	100-105	0.0	145-150	0.0
15-20	273.0	60-65	302.2	105-110	0.0	150-155	0.0
20-25	334.7	65-70	232.7	110-115	0.0	155-160	0.0
25-30	384.9	70-75	162.0	115-120	0.0	160-165	0.0
30-35	421.5	75-80	99.6	120-125	0.0	165-170	0.0
35-40	442.6	80-85	48.4	125-130	0.0	170-175	0.0
40-45	447.0	85-90	11.4	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			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.011	1.011	1.011	1.011	0.987	0.987	0.987	0.987	0.964	0.964	0.964	0.964
1	0.93	0.888	0.851	0.818	0.906	0.869	0.835	0.804	0.884	0.85	0.819	0.791
2	0.85	0.777	0.718	0.668	0.827	0.761	0.706	0.66	0.805	0.745	0.695	0.652
3	0.777	0.684	0.613	0.557	0.755	0.67	0.604	0.552	0.735	0.657	0.596	0.547
4	0.712	0.606	0.53	0.472	0.692	0.595	0.524	0.469	0.673	0.584	0.517	0.466
5	0.655	0.542	0.464	0.407	0.637	0.532	0.459	0.405	0.62	0.523	0.454	0.403
6	0.605	0.488	0.41	0.356	0.588	0.48	0.406	0.354	0.573	0.472	0.403	0.352
7	0.561	0.442	0.366	0.314	0.546	0.435	0.363	0.313	0.531	0.428	0.36	0.312
8	0.522	0.403	0.33	0.28	0.508	0.397	0.327	0.279	0.495	0.391	0.325	0.278
9	0.487	0.37	0.299	0.252	0.475	0.365	0.297	0.251	0.463	0.36	0.295	0.251
10	0.456	0.341	0.273	0.229	0.445	0.336	0.271	0.228	0.435	0.332	0.27	0.228

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	0.921	0.921	0.921	0.921	0.882	0.882	0.882	0.846	0.846	0.846	0.829
1	0.842	0.815	0.789	0.766	0.782	0.762	0.743	0.753	0.736	0.721	0.704
2	0.765	0.716	0.674	0.637	0.689	0.654	0.623	0.664	0.635	0.609	0.591
3	0.697	0.632	0.58	0.537	0.61	0.565	0.528	0.589	0.551	0.519	0.501
4	0.639	0.563	0.505	0.459	0.544	0.494	0.453	0.526	0.483	0.447	0.429
5	0.588	0.505	0.445	0.398	0.489	0.436	0.394	0.474	0.427	0.39	0.372
6	0.544	0.457	0.395	0.349	0.443	0.388	0.346	0.43	0.381	0.343	0.326
7	0.505	0.416	0.354	0.309	0.404	0.348	0.307	0.392	0.343	0.305	0.289
8	0.471	0.38	0.32	0.277	0.37	0.315	0.275	0.36	0.311	0.273	0.258
9	0.441	0.35	0.291	0.249	0.341	0.287	0.248	0.333	0.283	0.247	0.232
10	0.415	0.324	0.266	0.227	0.316	0.263	0.225	0.309	0.26	0.224	0.21

Average Luminance Table (cd/m²)

	0	45	90
0	2757	2757	2757
45	2334	2573	2706
55	2056	2409	2533
65	1721	2161	2017
75	1334	1616	1320
85	880	927	787

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.

