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: 16732 DATE: 10-06-2009
PREPARED FOR: RENOVA LIGHTING SYSTEMS
CATALOG NUMBER: ECS-MPW4-MN-132-UNV-11L
LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, CLEAR PRISMATIC PLASTIC LENS WITH LINEAR PRISMATIC SIDES.
LAMP: ONE 32 WATT T8 LINEAR FLUORESCENT LAMP RATED AT 2850 LUMENS.
LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO
BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE1X32T8/UNV-ISL-SC
MOUNTING: SURFACE
ELECTRICAL VALUES: 120.0VAC, 0.2134A, 25.54W

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	719	719	719	719	719	719	719	719	719	719	719	719	719	719	719	719	
5	716	717	722	721	722	721	722	717	716	717	722	721	722	721	722	717	68.7
15	700	708	720	727	733	727	720	708	700	708	720	727	733	727	720	708	203.9
25	659	683	739	789	809	789	739	683	659	683	739	789	809	789	739	683	340.8
35	589	655	758	812	827	812	758	655	589	655	758	812	827	812	758	655	456.3
45	480	564	628	648	649	648	628	564	480	564	628	648	649	648	628	564	457.9
55	289	337	378	384	381	384	378	337	289	337	378	384	381	384	378	337	325.1
65	155	187	231	249	247	249	231	187	155	187	231	249	247	249	231	187	217.3
75	93	109	151	195	207	195	151	109	93	109	151	195	207	195	151	109	160.7
85	34	48	100	154	176	154	100	48	34	48	100	154	176	154	100	48	111.2
90	1	21	80	137	158	137	80	21	1	21	80	137	158	137	80	21	
95	0	23	83	132	145	132	83	23	0	23	83	132	145	132	83	23	82.9
105	0	27	60	65	63	65	60	27	0	27	60	65	63	65	60	27	50.6
115	0	22	43	51	52	51	43	22	0	22	43	51	52	51	43	22	35.7
125	0	18	42	54	57	54	42	18	0	18	42	54	57	54	42	18	31.6
135	1	8	28	40	44	40	28	8	1	8	28	40	44	40	28	8	19.3
145	0	0	17	25	28	25	17	0	0	0	17	25	28	25	17	0	9.1
155	0	0	3	12	15	12	3	0	0	0	3	12	15	12	3	0	2.9
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
175	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0.0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

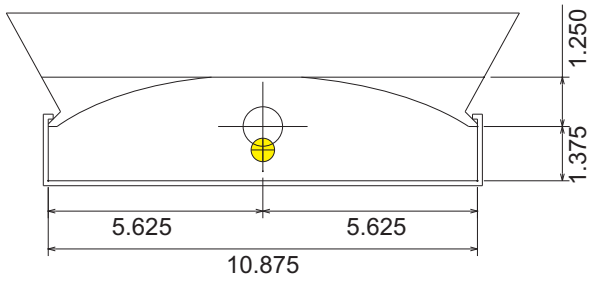
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	613.4	21.5%	23.8%
0-40	1069.7	37.5%	41.6%
0-60	1852.7	65.0%	72.0%
0-90	2341.9	82.2%	91.0%
90-180	232.5	8.2%	9.0%
0-180	2574.4	90.3%	100.0%

Total luminaire efficiency: 90.3%

CIE Type: Direct
Spacing Criterion: 0 deg: 1.29 90 deg: 1.63
180 deg: 1.29 270 deg: 1.63

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	719	719	719	719	719	719	719	719	719	719	719	719	719	719	719	719
5	716	717	722	721	722	721	722	717	716	717	722	721	722	721	722	717
10	710	714	722	722	722	722	722	714	710	714	722	722	722	722	722	714
15	700	708	720	727	733	727	720	708	700	708	720	727	733	727	720	708
20	683	697	724	753	768	753	724	697	683	697	724	753	768	753	724	697
25	659	683	739	789	809	789	739	683	659	683	739	789	809	789	739	683
30	628	670	757	817	837	817	757	670	628	670	757	817	837	817	757	670
35	589	655	758	812	827	812	758	655	589	655	758	812	827	812	758	655
40	540	628	721	755	761	755	721	628	540	628	721	755	761	755	721	628
45	480	564	628	648	649	648	628	564	480	564	628	648	649	648	628	564
50	389	454	497	512	509	512	497	454	389	454	497	512	509	512	497	454
55	289	337	378	384	381	384	378	337	289	337	378	384	381	384	378	337
60	208	248	292	298	294	298	292	248	208	248	292	298	294	298	292	248
65	155	187	231	249	247	249	231	187	155	187	231	249	247	249	231	187
70	120	143	185	217	221	217	185	143	120	143	185	217	221	217	185	143
75	93	109	151	195	207	195	151	109	93	109	151	195	207	195	151	109
80	66	79	124	179	196	179	124	79	66	79	124	179	196	179	124	79
85	34	48	100	154	176	154	100	48	34	48	100	154	176	154	100	48
90	1	21	80	137	158	137	80	21	1	21	80	137	158	137	80	21
95	0	23	83	132	145	132	83	23	0	23	83	132	145	132	83	23
100	1	26	76	104	106	104	76	26	1	26	76	104	106	104	76	26
105	0	27	60	65	63	65	60	27	0	27	60	65	63	65	60	27
110	0	27	45	48	47	48	45	27	0	27	45	48	47	48	45	27
115	0	22	43	51	52	51	43	22	0	22	43	51	52	51	43	22
120	1	20	45	55	57	55	45	20	1	20	45	55	57	55	45	20
125	0	18	42	54	57	54	42	18	0	18	42	54	57	54	42	18
130	1	14	34	49	52	49	34	14	1	14	34	49	52	49	34	14
135	1	8	28	40	44	40	28	8	1	8	28	40	44	40	28	8
140	1	3	22	32	35	32	22	3	1	3	22	32	35	32	22	3
145	0	0	17	25	28	25	17	0	0	0	17	25	28	25	17	0
150	0	0	10	19	21	19	10	0	0	0	10	19	21	19	10	0
155	0	0	3	12	15	12	3	0	0	0	3	12	15	12	3	0
160	0	1	1	4	6	4	1	1	0	1	1	4	6	4	1	1
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	1	1	1	1	1	0	0	0	1	1	1	1	1	0
175	0	0	0	1	0	1	0	0	0	0	0	1	0	1	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	17.2		45-50	218.1		90-95	43.7		135-140	8.0
5-10	51.5		50-55	180.9		95-100	39.3		140-145	5.5
10-15	85.1		55-60	144.1		100-105	29.6		145-150	3.6
15-20	118.7		60-65	117.8		105-110	21.0		150-155	2.0
20-25	153.3		65-70	99.4		110-115	17.9		155-160	0.8
25-30	187.5		70-75	85.9		115-120	17.8		160-165	0.2
30-35	218.2		75-80	74.8		120-125	17.1		165-170	0.1
35-40	238.2		80-85	62.5		125-130	14.6		170-175	0.0
40-45	239.8		85-90	48.7		130-135	11.3		175-180	0.0

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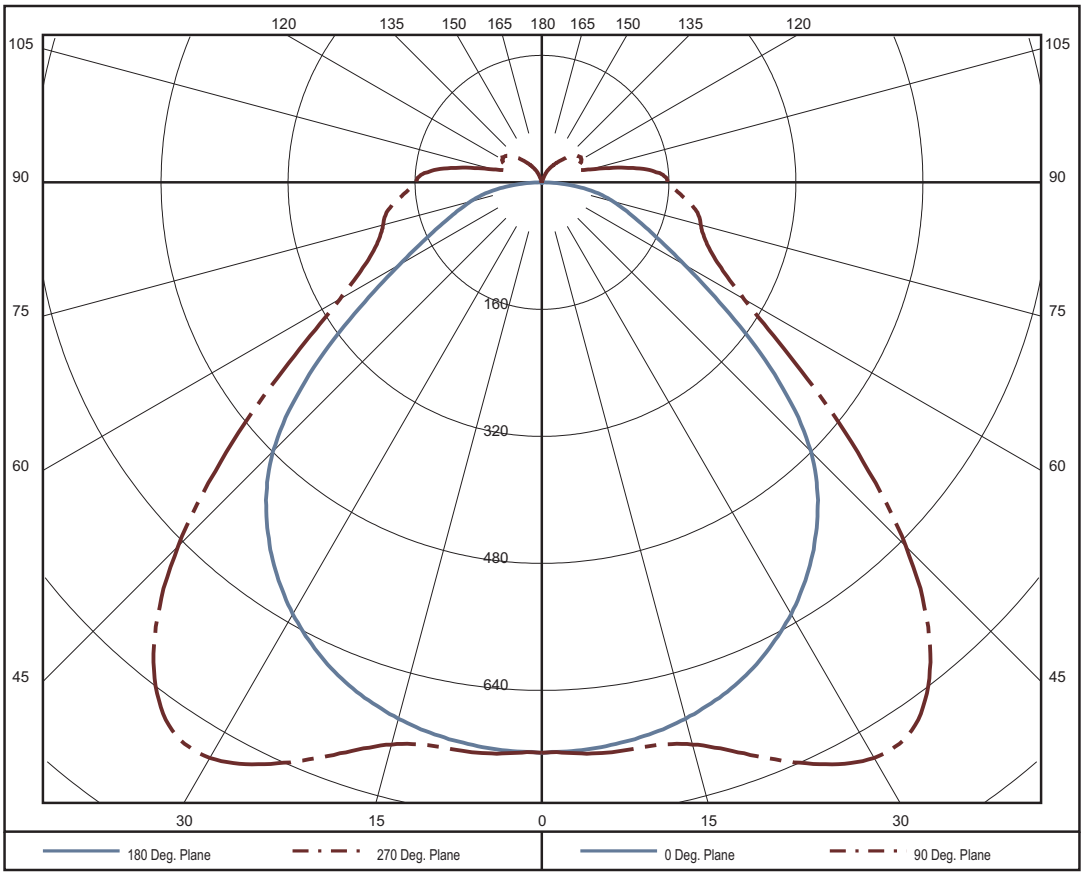
Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.092	1.092	1.092	1.092	1.056	1.056	1.056	1.056	1.022	1.022	1.022	1.022
1	0.992	0.942	0.897	0.856	0.957	0.912	0.871	0.834	0.924	0.883	0.846	0.813
2	0.905	0.821	0.753	0.696	0.871	0.796	0.734	0.681	0.84	0.772	0.715	0.667
3	0.827	0.722	0.642	0.579	0.796	0.701	0.627	0.568	0.766	0.68	0.613	0.558
4	0.758	0.64	0.555	0.491	0.729	0.622	0.543	0.483	0.702	0.604	0.531	0.475
5	0.697	0.571	0.485	0.422	0.671	0.556	0.475	0.416	0.646	0.541	0.466	0.41
6	0.643	0.513	0.428	0.368	0.619	0.5	0.42	0.363	0.597	0.487	0.412	0.358
7	0.595	0.464	0.381	0.323	0.574	0.453	0.374	0.319	0.553	0.441	0.368	0.315
8	0.553	0.422	0.342	0.287	0.533	0.412	0.336	0.284	0.515	0.402	0.331	0.281
9	0.515	0.386	0.309	0.257	0.497	0.377	0.304	0.254	0.48	0.369	0.299	0.251
10	0.482	0.355	0.28	0.232	0.465	0.347	0.276	0.229	0.45	0.34	0.272	0.227

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	0.958	0.958	0.958	0.958	0.9	0.9	0.9	0.847	0.847	0.847	0.822
1	0.862	0.83	0.8	0.772	0.781	0.757	0.734	0.735	0.716	0.698	0.674
2	0.782	0.727	0.679	0.639	0.685	0.646	0.612	0.646	0.615	0.587	0.563
3	0.712	0.642	0.585	0.538	0.606	0.558	0.518	0.573	0.533	0.5	0.476
4	0.652	0.571	0.509	0.46	0.541	0.488	0.445	0.512	0.468	0.431	0.408
5	0.601	0.512	0.448	0.398	0.486	0.43	0.386	0.462	0.414	0.375	0.354
6	0.555	0.463	0.397	0.348	0.44	0.383	0.339	0.418	0.369	0.33	0.31
7	0.515	0.42	0.355	0.308	0.4	0.343	0.3	0.382	0.331	0.292	0.273
8	0.48	0.384	0.32	0.274	0.366	0.309	0.268	0.35	0.299	0.261	0.243
9	0.449	0.352	0.29	0.246	0.337	0.281	0.24	0.322	0.272	0.235	0.218
10	0.421	0.325	0.264	0.222	0.311	0.256	0.217	0.299	0.249	0.213	0.196

Average Luminance Table (cd/m²)

	0	45	90
0	2134	2134	2134
45	2014	2423	2421
55	1495	1738	1670
65	1088	1362	1364
75	1066	1297	1616
85	1146	1684	2450

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
135
120
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180 Deg. Plane
270 Deg. Plane
0 Deg. Plane
90 Deg. Plane