



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: 21362 DATE: 11-02-2010
 PREPARED FOR: RENOVA LIGHTING
 CATALOG NUMBER: ECS-MVT4-MN-332-UNV-13L-CAL
 LUMINAIRE: MOLDED PLASTIC AND FORMED STEEL HOUSING, FORMED "MIRO 4"
 SPECULAR ALUMINUM REFLECTOR, CLEAR LINEAR PRISMATIC
 ACRYLIC ENCLOSURE.
 LAMP: THREE 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS
 EACH.
 LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO
 BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE3X32T8/UNV-ISL-SC
 MOUNTING: PENDANT
 ELECTRICAL VALUES: 120.0VAC, 0.5617A, 67.36W

Candela Distribution

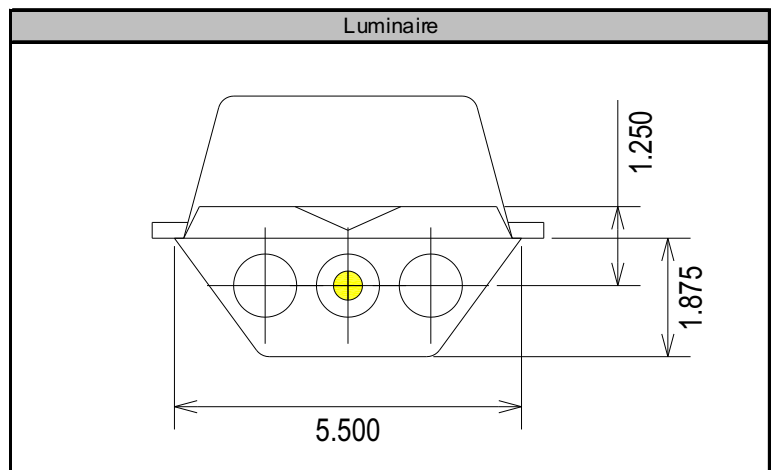
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	
5	1654	1663	1682	1679	1680	1679	1682	1663	1654	1663	1682	1679	1680	1679	1682	1663	159.1
15	1589	1605	1651	1704	1721	1704	1651	1605	1589	1605	1651	1704	1721	1704	1651	1605	466.5
25	1455	1507	1589	1628	1650	1628	1589	1507	1455	1507	1589	1628	1650	1628	1589	1507	723.7
35	1269	1372	1457	1566	1621	1566	1457	1372	1269	1372	1457	1566	1621	1566	1457	1372	911.8
45	1047	1134	1339	1435	1449	1435	1339	1134	1047	1134	1339	1435	1449	1435	1339	1134	989.4
55	787	900	1066	1111	1122	1111	1066	900	787	900	1066	1111	1122	1111	1066	900	902.9
65	501	657	752	806	835	806	752	657	501	657	752	806	835	806	752	657	715.6
75	229	355	506	620	662	620	506	355	229	355	506	620	662	620	506	355	512.8
85	46	182	348	477	527	477	348	182	46	182	348	477	527	477	348	182	356.6
90	14	128	289	432	483	432	289	128	14	128	289	432	483	432	289	128	
95	14	93	268	398	440	398	268	93	14	93	268	398	440	398	268	93	266.3
105	10	36	162	266	305	266	162	36	10	36	162	266	305	266	162	36	165.1
115	5	4	63	132	160	132	63	4	5	4	63	132	160	132	63	4	71.0
125	1	1	9	42	55	42	9	1	1	1	9	42	55	42	9	1	19.4
135	0	1	1	2	7	2	1	1	0	1	1	2	7	2	1	1	2.3
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
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	1349.3	15.8%	21.5%
0-40	2261.1	26.4%	36.1%
0-60	4153.4	48.6%	66.3%
0-90	5738.4	67.1%	91.6%
90-180	524.3	6.1%	8.4%
0-180	6262.7	73.2%	100.0%

Total luminaire efficiency: 73.2%

CIE Type: Direct
 Spacing Criterion: 0 deg: 1.22 90 deg: 1.48
 180 deg: 1.22 270 deg: 1.48



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	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675
5	1654	1663	1682	1679	1680	1679	1682	1663	1654	1663	1682	1679	1680	1679	1682	1663
10	1631	1652	1656	1676	1689	1676	1656	1652	1631	1652	1656	1676	1689	1676	1656	1652
15	1589	1605	1651	1704	1721	1704	1651	1605	1589	1605	1651	1704	1721	1704	1651	1605
20	1531	1560	1658	1660	1673	1660	1658	1560	1531	1560	1658	1660	1673	1660	1658	1560
25	1455	1507	1589	1628	1650	1628	1589	1507	1455	1507	1589	1628	1650	1628	1589	1507
30	1368	1452	1522	1580	1603	1580	1522	1452	1368	1452	1522	1580	1603	1580	1522	1452
35	1269	1372	1457	1566	1621	1566	1457	1372	1269	1372	1457	1566	1621	1566	1457	1372
40	1163	1254	1380	1529	1552	1529	1380	1254	1163	1254	1380	1529	1552	1529	1380	1254
45	1047	1134	1339	1435	1449	1435	1339	1134	1047	1134	1339	1435	1449	1435	1339	1134
50	923	1020	1240	1264	1282	1264	1240	1020	923	1020	1240	1264	1282	1264	1240	1020
55	787	900	1066	1111	1122	1111	1066	900	787	900	1066	1111	1122	1111	1066	900
60	644	801	911	939	951	939	911	801	644	801	911	939	951	939	911	801
65	501	657	752	806	835	806	752	657	501	657	752	806	835	806	752	657
70	360	497	606	713	751	713	606	497	360	497	606	713	751	713	606	497
75	229	355	506	620	662	620	506	355	229	355	506	620	662	620	506	355
80	121	252	422	545	591	545	422	252	121	252	422	545	591	545	422	252
85	46	182	348	477	527	477	348	182	46	182	348	477	527	477	348	182
90	14	128	289	432	483	432	289	128	14	128	289	432	483	432	289	128
95	14	93	268	398	440	398	268	93	14	93	268	398	440	398	268	93
100	13	60	223	339	381	339	223	60	13	60	223	339	381	339	223	60
105	10	36	162	266	305	266	162	36	10	36	162	266	305	266	162	36
110	7	14	108	192	224	192	108	14	7	14	108	192	224	192	108	14
115	5	4	63	132	160	132	63	4	5	4	63	132	160	132	63	4
120	3	2	29	80	101	80	29	2	3	2	29	80	101	80	29	2
125	1	1	9	42	55	42	9	1	1	1	9	42	55	42	9	1
130	0	1	1	17	27	17	1	1	0	1	1	17	27	17	1	1
135	0	1	1	2	7	2	1	1	0	1	1	2	7	2	1	1
140	1	1	1	2	1	2	1	1	1	1	1	2	1	2	1	1
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	40.0	45-50	494.2	90-95	142.9	135-140	0.4
5-10	119.0	50-55	471.2	95-100	123.4	140-145	0.2
10-15	196.5	55-60	431.6	100-105	96.7	145-150	0.0
15-20	269.9	60-65	384.6	105-110	68.4	150-155	0.0
20-25	334.4	65-70	331.1	110-115	44.5	155-160	0.0
25-30	389.4	70-75	279.8	115-120	26.6	160-165	0.0
30-35	437.2	75-80	233.0	120-125	13.7	165-170	0.0
35-40	474.6	80-85	194.6	125-130	5.7	170-175	0.0
40-45	495.2	85-90	162.1	130-135	1.9	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	0.886	0.886	0.886	0.886	0.857	0.857	0.857	0.857	0.83	0.83	0.83	0.83
1	0.797	0.752	0.712	0.676	0.769	0.728	0.692	0.659	0.742	0.705	0.672	0.642
2	0.722	0.648	0.588	0.538	0.694	0.628	0.573	0.527	0.669	0.609	0.558	0.516
3	0.656	0.565	0.496	0.441	0.63	0.548	0.484	0.433	0.606	0.531	0.472	0.425
4	0.599	0.497	0.424	0.369	0.575	0.483	0.415	0.363	0.553	0.469	0.406	0.357
5	0.549	0.442	0.369	0.315	0.528	0.43	0.361	0.31	0.507	0.418	0.354	0.306
6	0.506	0.396	0.324	0.273	0.486	0.385	0.318	0.269	0.468	0.375	0.311	0.265
7	0.468	0.357	0.287	0.239	0.45	0.348	0.282	0.236	0.433	0.339	0.277	0.233
8	0.434	0.325	0.257	0.212	0.418	0.317	0.253	0.209	0.403	0.309	0.249	0.207
9	0.405	0.297	0.232	0.189	0.39	0.29	0.229	0.187	0.376	0.283	0.225	0.185
10	0.379	0.273	0.211	0.171	0.365	0.267	0.208	0.169	0.353	0.261	0.205	0.167

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.78	0.78	0.78	0.78	0.734	0.734	0.734	0.691	0.691	0.691	0.671
1	0.692	0.662	0.635	0.61	0.623	0.601	0.581	0.586	0.569	0.553	0.533
2	0.621	0.572	0.53	0.494	0.539	0.504	0.474	0.507	0.479	0.454	0.434
3	0.562	0.5	0.45	0.409	0.471	0.43	0.395	0.445	0.41	0.38	0.361
4	0.512	0.442	0.388	0.346	0.418	0.372	0.334	0.395	0.356	0.323	0.305
5	0.47	0.395	0.339	0.297	0.374	0.326	0.288	0.354	0.312	0.279	0.261
6	0.434	0.355	0.3	0.258	0.337	0.288	0.251	0.32	0.277	0.244	0.227
7	0.403	0.322	0.267	0.227	0.306	0.258	0.221	0.291	0.248	0.215	0.199
8	0.375	0.294	0.24	0.202	0.28	0.232	0.197	0.267	0.224	0.192	0.177
9	0.351	0.27	0.218	0.181	0.258	0.211	0.177	0.246	0.204	0.173	0.158
10	0.33	0.249	0.198	0.163	0.238	0.192	0.16	0.228	0.186	0.156	0.143

Average Luminance Table (cd/m²)

	0	45	90
0	9349	9349	9349
45	8036	8717	8849
55	7337	7814	7587
65	6177	6546	6554
75	4386	5633	6425
85	2093	5607	6981

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.

