



# 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: 18034  
 PREPARED FOR: SPECIALTY LIGHTING  
 CATALOG NUMBER: 815  
 LUMINAIRE: FORMED WHITE ENAMEL ALUMINUM HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, CLEAR RIBBED GLASS ENCLOSURE.  
 LAMP: FOUR VBU 20 WATT MR16 HALOGEN LAMPS RATED AT 310 LUMENS EACH.  
 LAMP CATALOG NUMBER: SYLVANIA 20W MR16 12V ESX  
 MOUNTING: RECESSED

DATE: 03-29-2010

### Candela Distribution

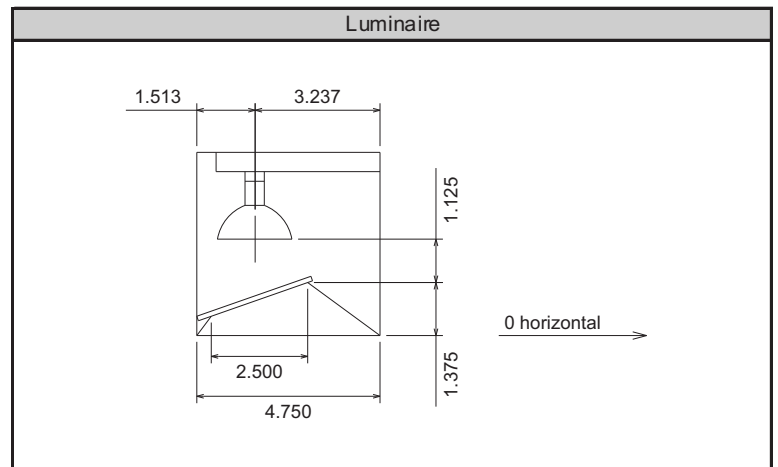
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	
5	3622	3722	4002	4256	4135	3714	3154	2777	2634	2777	3154	3714	4135	4256	4002	3722	291.3
15	355	416	763	2059	2967	1764	605	322	275	322	605	1764	2967	2059	763	416	326.5
25	188	191	198	455	1388	585	174	114	77	114	174	585	1388	455	198	191	189.4
35	142	151	154	154	345	179	63	38	34	38	63	179	345	154	154	151	94.7
45	61	61	114	98	109	76	26	15	11	15	26	76	109	98	114	61	52.8
55	41	42	47	51	57	30	12	8	7	8	12	30	57	51	47	42	30.5
65	26	26	25	22	34	20	4	2	1	2	4	20	34	22	25	26	17.9
75	10	10	9	11	19	6	0	0	0	0	0	6	19	11	9	10	7.9
85	0	0	0	1	2	0	0	0	0	0	0	0	2	1	0	0	0.7
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	807.2	65.1%	79.8%
0-40	901.9	72.7%	89.2%
0-60	985.2	79.4%	97.4%
0-90	1011.7	81.6%	100.0%
90-180	0.0	0.0%	0.0%
0-180	1011.7	81.6%	100.0%

Total luminaire efficiency: 81.6%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 0.26 90 deg: 0.63  
 180 deg: 0.20 270 deg: 0.63



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

THIS REPORT BASED ON LM-46 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	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498	4498
5	3622	3722	4002	4256	4135	3714	3154	2777	2634	2777	3154	3714	4135	4256	4002	3722
10	1220	1417	2073	3191	3559	2618	1555	975	815	975	1555	2618	3559	3191	2073	1417
15	355	416	763	2059	2967	1764	605	322	275	322	605	1764	2967	2059	763	416
20	215	228	312	1048	2224	1067	279	185	172	185	279	1067	2224	1048	312	228
25	188	191	198	455	1388	585	174	114	77	114	174	585	1388	455	198	191
30	160	170	171	227	717	314	105	53	51	53	105	314	717	227	171	170
35	142	151	154	154	345	179	63	38	34	38	63	179	345	154	154	151
40	84	123	142	124	180	113	35	25	18	25	35	113	180	124	142	123
45	61	61	114	98	109	76	26	15	11	15	26	76	109	98	114	61
50	52	51	75	74	74	46	19	11	8	11	19	46	74	74	75	51
55	41	42	47	51	57	30	12	8	7	8	12	30	57	51	47	42
60	32	33	35	34	35	20	7	5	4	5	7	20	35	34	35	33
65	26	26	25	22	34	20	4	2	1	2	4	20	34	22	25	26
70	18	18	15	17	25	14	2	0	0	0	2	14	25	17	15	18
75	10	10	9	11	19	6	0	0	0	0	0	6	19	11	9	10
80	2	3	4	6	9	0	0	0	0	0	0	0	9	6	4	3
85	0	0	0	1	2	0	0	0	0	0	0	0	2	1	0	0
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	96.9	45-50	22.9	90-95	0.0	135-140	0.0
5-10	194.4	50-55	17.6	95-100	0.0	140-145	0.0
10-15	179.7	55-60	12.9	100-105	0.0	145-150	0.0
15-20	146.8	60-65	10.1	105-110	0.0	150-155	0.0
20-25	112.2	65-70	7.7	110-115	0.0	155-160	0.0
25-30	77.3	70-75	5.3	115-120	0.0	160-165	0.0
30-35	54.3	75-80	2.6	120-125	0.0	165-170	0.0
35-40	40.4	80-85	0.7	125-130	0.0	170-175	0.0
40-45	29.9	85-90	0.0	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	0.995	0.995	0.995	0.995	0.971	0.971	0.971	0.971	0.949	0.949	0.949	0.949
1	0.951	0.927	0.906	0.887	0.93	0.909	0.89	0.873	0.91	0.891	0.875	0.859
2	0.908	0.867	0.834	0.807	0.889	0.853	0.823	0.798	0.872	0.839	0.812	0.789
3	0.868	0.816	0.776	0.745	0.851	0.804	0.768	0.739	0.836	0.793	0.76	0.733
4	0.831	0.771	0.728	0.696	0.816	0.762	0.722	0.691	0.802	0.753	0.716	0.687
5	0.797	0.732	0.688	0.655	0.784	0.725	0.683	0.652	0.772	0.717	0.678	0.649
6	0.766	0.698	0.653	0.621	0.754	0.691	0.649	0.619	0.743	0.685	0.646	0.617
7	0.737	0.667	0.623	0.592	0.727	0.662	0.62	0.59	0.717	0.657	0.617	0.589
8	0.711	0.64	0.596	0.567	0.701	0.635	0.594	0.565	0.692	0.631	0.592	0.564
9	0.686	0.615	0.572	0.544	0.678	0.611	0.571	0.543	0.67	0.608	0.569	0.542
10	0.663	0.593	0.551	0.524	0.656	0.589	0.55	0.523	0.648	0.586	0.548	0.523

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.907	0.907	0.907	0.907	0.868	0.868	0.868	0.833	0.833	0.833	0.816
1	0.873	0.858	0.845	0.833	0.828	0.818	0.808	0.801	0.792	0.785	0.771
2	0.839	0.813	0.791	0.772	0.789	0.771	0.755	0.767	0.752	0.74	0.727
3	0.807	0.772	0.744	0.721	0.753	0.73	0.71	0.735	0.716	0.699	0.687
4	0.777	0.736	0.704	0.679	0.72	0.693	0.672	0.705	0.683	0.664	0.653
5	0.749	0.703	0.669	0.644	0.69	0.661	0.638	0.678	0.653	0.633	0.622
6	0.723	0.674	0.639	0.613	0.663	0.632	0.609	0.653	0.626	0.605	0.595
7	0.699	0.647	0.612	0.586	0.638	0.606	0.583	0.629	0.601	0.58	0.57
8	0.676	0.623	0.587	0.562	0.615	0.583	0.56	0.608	0.579	0.558	0.548
9	0.655	0.6	0.565	0.541	0.594	0.562	0.539	0.588	0.559	0.537	0.528
10	0.635	0.58	0.545	0.521	0.574	0.543	0.52	0.569	0.54	0.519	0.51

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

	0	45	90
0	68346	68346	68346
45	1307	2444	2345
55	1075	1232	1510
65	943	886	1211
75	562	529	1102
85	0	0	270

Note: The zonal cavity calculation technique is accurate when luminaires with symmetric candela distributions are employed and when the luminaires are located symmetrically throughout the room. This unit has special characteristics and therefore these values should be used with caution.

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.

