



**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: 15658  
 PREPARED FOR: DIOGEN LIGHTING  
 CATALOG NUMBER: MT8-1200-13  
 LAMP: ONE T8 REPLACEMENT LAMP WITH 304 WHITE LEDS.  
 LAMP CATALOG NUMBER: DIOGEN MT8-1200-13  
 BALLAST: INTEGRAL  
 POWER FACTOR: 0.725  
 ELECTRICAL VALUES: 120.0VAC, 0.1824A, 15.87W  
 NOTE: THIS TEST WAS PERFORMED USING THE CALIBRATED  
 PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY.\*

DATE: 05-13-2009

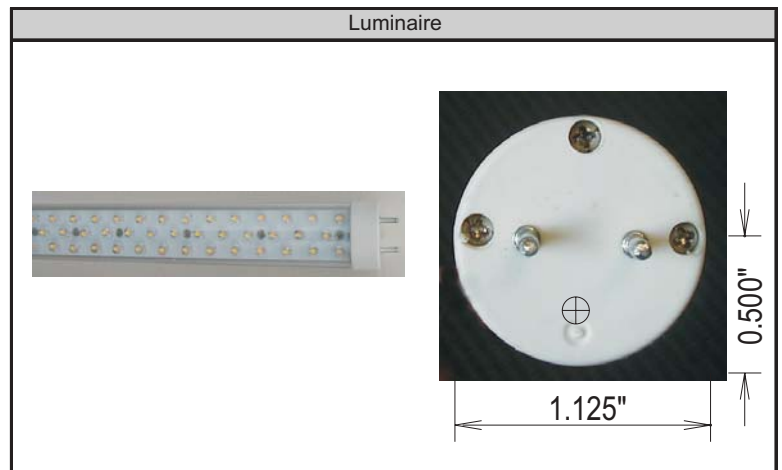
Candela Distribution

	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	478	478	478	478	478	478	478	478	478	478	478	478	478	478	478	478	
5	476	479	482	486	486	486	482	479	476	479	482	486	486	486	482	479	46.2
15	464	478	491	493	492	493	491	478	464	478	491	493	492	493	491	478	136.8
25	426	456	457	433	420	433	457	456	426	456	457	433	420	433	457	456	203.1
35	370	403	363	355	352	355	363	403	370	403	363	355	352	355	363	403	232.2
45	306	323	298	307	295	307	298	323	306	323	298	307	295	307	298	323	236.0
55	234	227	236	225	210	225	236	227	234	227	236	225	210	225	236	227	205.3
65	149	160	146	131	131	131	146	160	149	160	146	131	131	131	146	160	142.5
75	42	55	63	57	52	57	63	55	42	55	63	57	52	57	63	55	61.9
85	3	14	15	20	18	20	15	14	3	14	15	20	18	20	15	14	18.1
90	0	7	10	14	12	14	10	7	0	7	10	14	12	14	10	7	
95	0	7	14	14	10	14	14	7	0	7	14	14	10	14	14	7	11.4
105	0	1	19	20	7	20	19	1	0	1	19	20	7	20	19	1	11.4
115	0	0	5	14	3	14	5	0	0	0	5	14	3	14	5	0	5.3
125	0	0	1	4	2	4	1	0	0	0	1	4	2	4	1	0	1.3
135	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0.3
145	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0.1
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	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	386.1	N/A	29.4%
0-40	618.2	N/A	47.1%
0-60	1059.5	N/A	80.8%
0-90	1282.0	N/A	97.7%
90-180	29.9	N/A	2.3%
0-180	1311.9	N/A	100.0%

Total lumen Output            1311.9 Lumens  
 Luminaire efficacy:            82.7 Lumens per Watt  
 CIE Type:                        Direct  
 Spacing Criterion:            0 deg: 1.24     90 deg: 1.19  
    180 deg: 1.24   270 deg: 1.19



Approved By: MG

\*DATA WAS ACQUIRED USING THE CALIBRATED PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY. A UDT MODEL #211 PHOTODETECTOR AND UDT MODEL #S370 OPTOMETER COMBINATION WERE USED AS A STANDARD. A SPECTRAL MISMATCH CORRECTION FACTOR WAS EMPLOYED BASED ON THE SPECTRAL RESPONSIVITY OF THE PHOTODETECTOR AND THE SPECTRAL POWER DISTRIBUTION OF THE TEST SUBJECT.

**TESTING WAS PERFORMED IN ACCORDANCE WITH IES LM-79-08.**

TEST ANGULAR INCREMENTS AND REPORT FORMATTING WAS BASED ON IES LM-41-98 AND LM-46-04.



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	478	478	478	478	478	478	478	478	478	478	478	478	478	478	478	478
5	476	479	482	486	486	486	482	479	476	479	482	486	486	486	482	479
10	472	480	489	496	496	496	489	480	472	480	489	496	496	496	489	480
15	464	478	491	493	492	493	491	478	464	478	491	493	492	493	491	478
20	449	471	481	475	468	475	481	471	449	471	481	475	468	475	481	471
25	426	456	457	433	420	433	457	456	426	456	457	433	420	433	457	456
30	399	433	414	384	379	384	414	433	399	433	414	384	379	384	414	433
35	370	403	363	355	352	355	363	403	370	403	363	355	352	355	363	403
40	339	368	326	330	331	330	326	368	339	368	326	330	331	330	326	368
45	306	323	298	307	295	307	298	323	306	323	298	307	295	307	298	323
50	270	273	275	262	266	262	275	273	270	273	275	262	266	262	275	273
55	234	227	236	225	210	225	236	227	234	227	236	225	210	225	236	227
60	194	194	208	178	168	178	208	194	194	194	208	178	168	178	208	194
65	149	160	146	131	131	131	146	160	149	160	146	131	131	131	146	160
70	95	106	98	94	89	94	98	106	95	106	98	94	89	94	98	106
75	42	55	63	57	52	57	63	55	42	55	63	57	52	57	63	55
80	16	27	30	35	33	35	30	27	16	27	30	35	33	35	30	27
85	3	14	15	20	18	20	15	14	3	14	15	20	18	20	15	14
90	0	7	10	14	12	14	10	7	0	7	10	14	12	14	10	7
95	0	7	14	14	10	14	14	7	0	7	14	14	10	14	14	7
100	0	5	22	18	9	18	22	5	0	5	22	18	9	18	22	5
105	0	1	19	20	7	20	19	1	0	1	19	20	7	20	19	1
110	0	0	14	17	4	17	14	0	0	0	14	17	4	17	14	0
115	0	0	5	14	3	14	5	0	0	0	5	14	3	14	5	0
120	0	0	2	7	3	7	2	0	0	0	2	7	3	7	2	0
125	0	0	1	4	2	4	1	0	0	0	1	4	2	4	1	0
130	0	0	0	2	1	2	0	0	0	0	0	2	1	2	0	0
135	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0
140	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0
145	0	0	0	1	0	1	0	0	0	0	0	1	0	1	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	11.5	45-50	116.1	90-95	5.2	135-140	0.1
5-10	34.7	50-55	109.3	95-100	6.2	140-145	0.1
10-15	57.8	55-60	96.0	100-105	6.3	145-150	0.0
15-20	79.0	60-65	80.3	105-110	5.1	150-155	0.0
20-25	96.0	65-70	62.2	110-115	3.5	155-160	0.0
25-30	107.0	70-75	40.2	115-120	1.9	160-165	0.0
30-35	114.0	75-80	21.7	120-125	0.9	165-170	0.0
35-40	118.2	80-85	11.8	125-130	0.4	170-175	0.0
40-45	120.0	85-90	6.3	130-135	0.2	175-180	0.0



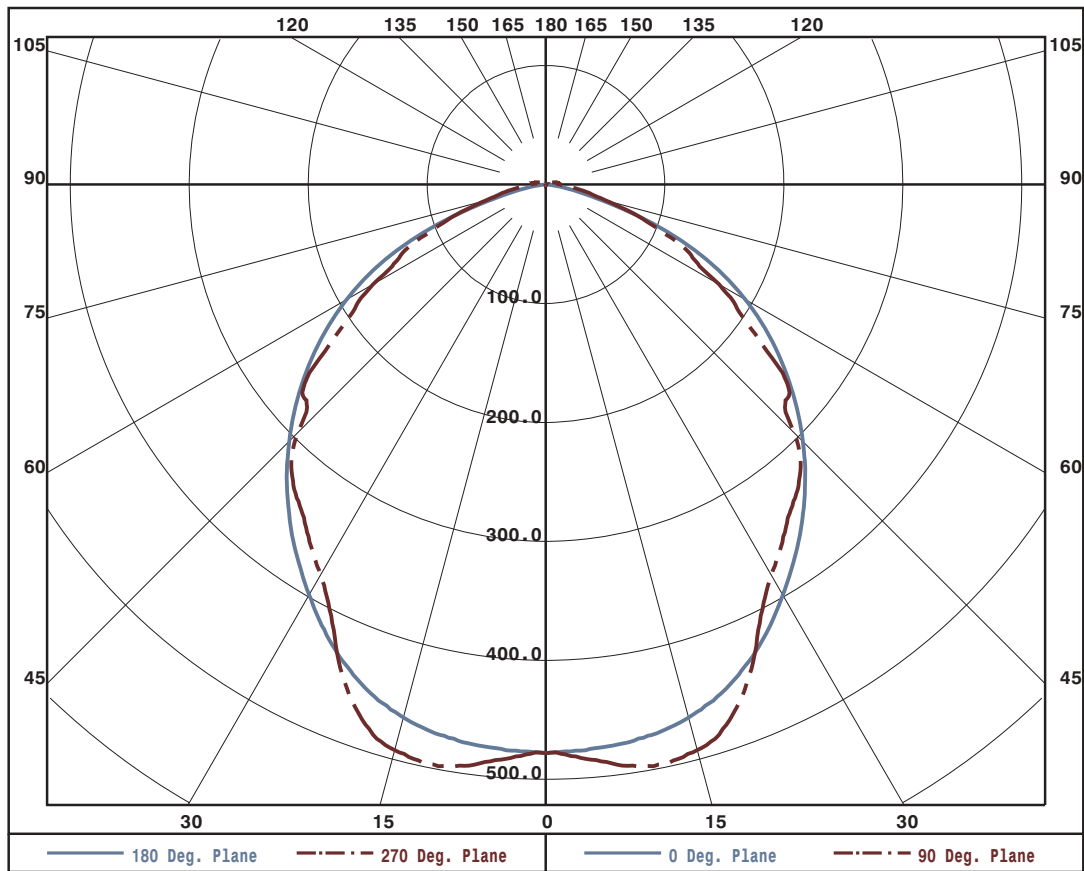
Utilization of Lumens - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **											
0	1596	1596	1596	1596	1555	1555	1555	1555	1515	1515	1515	1515
1	1469	1404	1346	1294	1429	1370	1317	1270	1391	1338	1290	1246
2	1344	1231	1138	1061	1305	1203	1118	1046	1269	1176	1098	1031
3	1230	1085	974.3	887.1	1194	1061	958.8	877.1	1159	1039	943.8	867.4
4	1129	963.6	844.5	754.6	1095	943.6	832.5	747.7	1063	924.4	820.9	740.9
5	1040	862.2	740.4	651.6	1009	845.3	731	646.7	979.6	829	721.8	641.7
6	960.9	776.9	655.9	570.1	932.6	762.5	648.3	566.4	906	748.6	641	562.7
7	891.1	704.8	586.4	504.5	865.5	692.4	580.2	501.6	841.3	680.5	574.2	498.8
8	829.5	643.2	528.5	450.7	806.2	632.6	523.4	448.4	784.2	622.3	518.4	446.2
9	774.7	590.4	479.8	406.1	753.6	581.2	475.6	404.2	733.7	572.2	471.4	402.4
10	725.9	544.7	438.4	368.6	706.8	536.7	434.8	367.1	688.8	528.9	431.3	365.6

Ceiling Cavity Reflectance	50				30				10				0
Wall Reflectance	70	50	30	10	50	30	10	50	30	10	0		
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **												
0	1441	1441	1441	1441	1373	1373	1373	1311	1311	1311	1282		
1	1319	1277	1238	1202	1221	1189	1160	1169	1144	1120	1092		
2	1201	1125	1059	1003	1078	1024	976	1034	989.8	950.1	921		
3	1096	995.7	914.9	848.4	956	887.5	830	919.1	861.6	812.3	783.2		
4	1005	888.1	798.5	727.6	854.4	777.2	714.7	823	756.8	702.1	673.4		
5	925.8	798.1	704.1	632.1	769.3	687.2	622.7	742.5	670.9	613.4	585.5		
6	857	722.2	626.7	555.5	697.5	613	548.3	674.5	599.8	541.4	514.3		
7	796.7	657.7	562.5	493.1	636.5	551.2	487.6	616.5	540.3	482.1	456.1		
8	743.8	602.6	508.7	441.7	584.2	499.3	437.3	566.8	490.2	433	408.1		
9	697	555.1	463.2	398.8	539	455.3	395.2	523.9	447.6	391.7	367.9		
10	655.4	513.9	424.4	362.6	499.8	417.7	359.6	486.5	411.1	356.7	334		

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

	0	45	90
0	14319	14319	14319
45	12946	9602	8648
55	12211	8509	6709
65	10558	6171	4750
75	4886	3355	2282
85	985	1118	1024

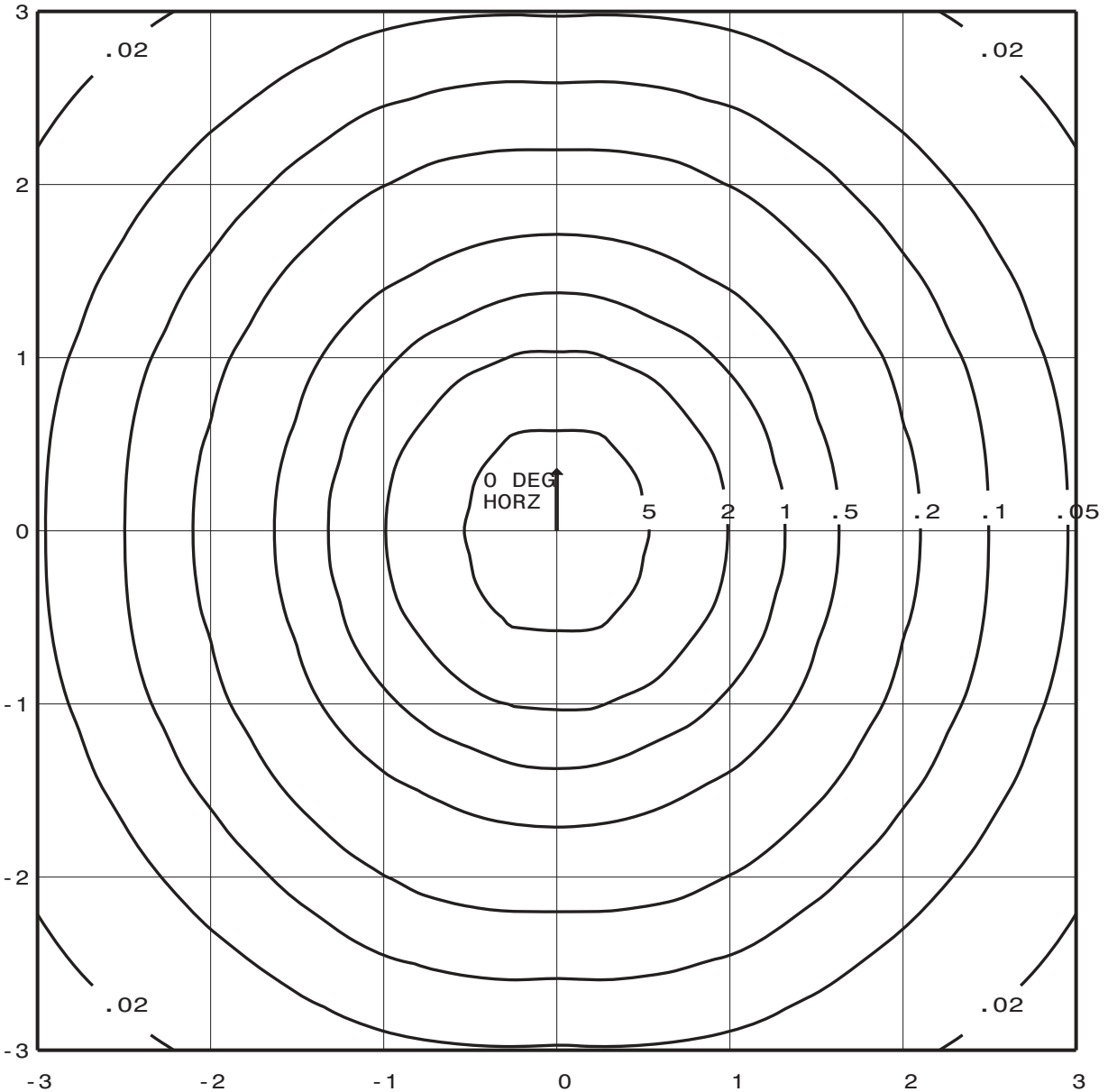
THIS TEST WAS CONDUCTED USING PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IES PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) 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.





ISOFOOTCANDLE CONVERSION FACTORS FOR SELECTED MOUNTING HEIGHTS

MOUNTING HEIGHT	6'	7'	8'	9'	10'
MULTIPLIER	1.78	1.31	1.00	0.79	0.64



LTL REPORT NUMBER 15658-ISOFOOTCANDLE VALUES ARE BASED ON A MOUNTING HEIGHT OF 8', WITH THE LUMINAIRE LOCATED AT 0,0. ISOFOOTCANDLE VALUES ARE CALCULATED FROM THE DIRECT CONTRIBUTION FROM THE LUMINAIRE ONLY. WALL, CEILING, AND FLOOR CONTRIBUTION IS NOT INCLUDED.