



LTL Number: 15233

Date: 04-03-2009

Prepared For: Appalachian Lighting Systems

Catalog Number: HB1-GP-3424-1

Luminaire: Formed aluminum housing, formed specular aluminum reflectors, no enclosure.

Lamp: 32 White LEDs

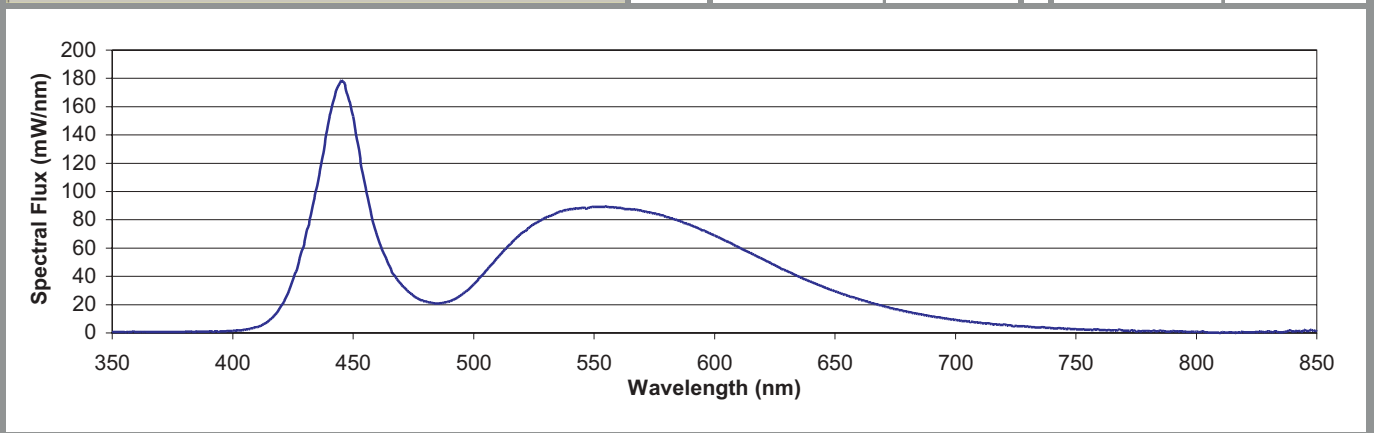
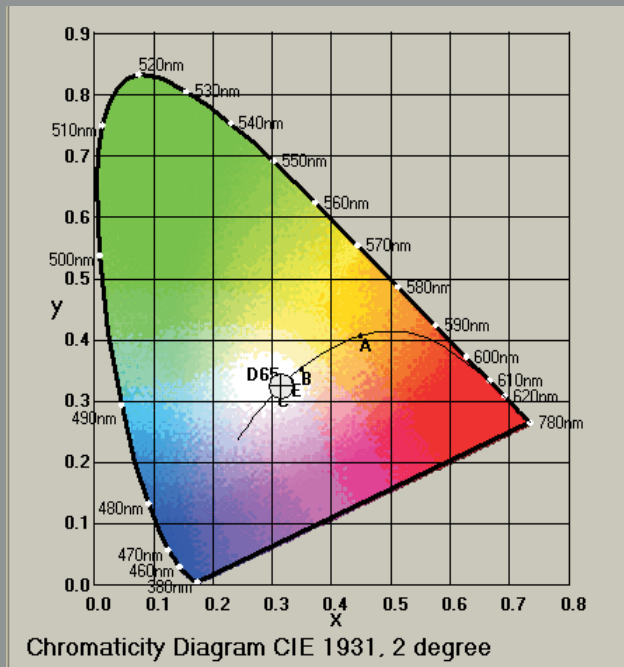
LED Power Supply: One Mean Well CLG-100-36

Power Factor: 0.978

Luminaire Efficacy: 61.8 Lumens/Watt

Lamp Arc Voltage	Lamp Current	Lamp Watts	Frequency
120.0VAC	0.7270A	85.31W	60 Hz
Radiant Flux mW	Luminous Flux lumen	Corr.Color Temperature K	Color Rend. Index Ra
16942.79	5269.116	6418	72.3
Chroma x	Chroma y	Chroma u	Chroma v
0.3147	0.3251	0.2007	0.311

Wavelength in nm	Spectral Flux in mW/nm	Wavelength in nm	Spectral Flux in mW/nm
350	0.4112	610	60.7170
360	0.6299	620	52.2630
370	0.6159	630	43.8190
380	0.7547	640	36.1780
390	0.8783	650	29.4500
400	1.4014	660	23.7350
410	4.0531	670	18.8420
420	18.7290	680	14.8650
430	65.7500	690	11.6160
440	151.1000	700	9.1306
450	153.1600	710	7.1303
460	68.6970	720	5.7207
470	34.2430	730	4.3685
480	22.1430	740	3.3047
490	22.2920	750	2.5473
500	34.2790	760	2.0756
510	53.3330	770	1.5631
520	70.6050	780	1.2554
530	81.6460	790	1.3310
540	87.2540	800	0.7995
550	89.0410	810	0.2067
560	88.5320	820	0.3500
570	86.3440	830	1.1479
580	82.0940	840	0.8860
590	76.2870	850	1.0081
600	68.9820		





LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING
MEMBER
of the
IESNA

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LTL NUMBER: 15232
 PREPARED FOR: APPALACHIAN LIGHTING SYSTEMS
 CATALOG NUMBER: HB1-GP-3424-1
 LUMINAIRE: FORMED ALUMINUM HOUSING, FORMED SPECULAR ALUMINUM REFLECTORS, NO ENCLOSURE.
 LAMP: 32 WHITE LEDS
 LED POWER SUPPLY: ONE MEAN WELL CLG-100-36
 POWER FACTOR: 0.982
 MOUNTING: PENDANT/SURFACE
 ELECTRICAL VALUES: 120.0VAC, 0.7279A, 85.77W
 LUMINAIRE WAS OPERATED 22 HOURS PRIOR TO TESTING
 NOTE: THIS TEST WAS PERFORMED USING THE CALIBRATED PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY.*

DATE: 04-03-2009

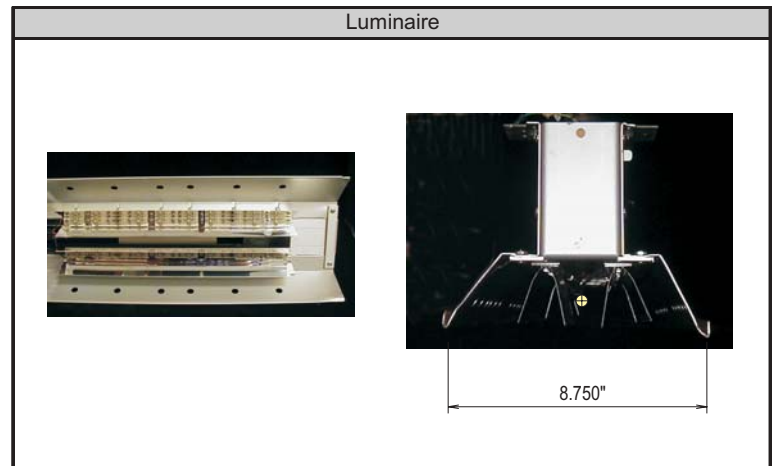
Candela Distribution

	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	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	
5	7261	7527	7413	6907	6709	6907	7413	7527	7261	7527	7413	6907	6709	6907	7413	7527	651.3
15	6807	6007	4724	3773	3543	3773	4724	6007	6807	6007	4724	3773	3543	3773	4724	6007	1354.6
25	5959	4263	2252	1292	1106	1292	2252	4263	5959	4263	2252	1292	1106	1292	2252	4263	1302.0
35	4766	2432	790	106	30	106	790	2432	4766	2432	790	106	30	106	790	2432	889.7
45	3156	1193	29	2	2	2	29	1193	3156	1193	29	2	2	2	29	1193	544.4
55	1709	244	4	0	1	0	4	244	1709	244	4	0	1	0	4	244	262.7
65	1070	32	0	0	0	0	0	32	1070	32	0	0	0	0	0	32	142.7
75	678	3	0	0	0	0	0	3	678	3	0	0	0	0	0	3	93.4
85	417	0	0	0	0	0	0	0	417	0	0	0	0	0	0	0	49.0
90	22	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
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	3307.9	N/A	62.5%
0-40	4197.6	N/A	79.3%
0-60	5004.7	N/A	94.6%
0-90	5289.9	N/A	100.0%
90-180	0.4	N/A	0.0%
0-180	5290.3	N/A	100.0%

Total lumen Output: 5290.3 Lumens
 Luminaire efficacy: 61.6 Lumens per Watt
 CIE Type: Direct
 Spacing Criterion: 0 deg: 1.10 90 deg: 0.46
 180 deg: 1.10 270 deg: 0.46



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	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448	7448
5	7261	7527	7413	6907	6709	6907	7413	7527	7261	7527	7413	6907	6709	6907	7413	7527
10	7096	7027	5993	5353	5128	5353	5993	7027	7096	7027	5993	5353	5128	5353	5993	7027
15	6807	6007	4724	3773	3543	3773	4724	6007	6807	6007	4724	3773	3543	3773	4724	6007
20	6435	5148	3459	2380	2169	2380	3459	5148	6435	5148	3459	2380	2169	2380	3459	5148
25	5959	4263	2252	1292	1106	1292	2252	4263	5959	4263	2252	1292	1106	1292	2252	4263
30	5386	3203	1418	427	349	427	1418	3203	5386	3203	1418	427	349	427	1418	3203
35	4766	2432	790	106	30	106	790	2432	4766	2432	790	106	30	106	790	2432
40	3996	1695	280	18	4	18	280	1695	3996	1695	280	18	4	18	280	1695
45	3156	1193	29	2	2	2	29	1193	3156	1193	29	2	2	2	29	1193
50	2365	649	9	2	2	2	9	649	2365	649	9	2	2	2	9	649
55	1709	244	4	0	1	0	4	244	1709	244	4	0	1	0	4	244
60	1282	91	1	0	0	0	1	91	1282	91	1	0	0	0	1	91
65	1070	32	0	0	0	0	0	32	1070	32	0	0	0	0	0	32
70	871	17	0	0	0	0	0	17	871	17	0	0	0	0	0	17
75	678	3	0	0	0	0	0	3	678	3	0	0	0	0	0	3
80	570	1	0	0	0	0	0	1	570	1	0	0	0	0	0	1
85	417	0	0	0	0	0	0	0	417	0	0	0	0	0	0	0
90	22	0	0	0	0	0	0	0	22	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	178.6	45-50	230.8	90-95	0.4	135-140	0.0
5-10	472.7	50-55	157.8	95-100	0.0	140-145	0.0
10-15	649.1	55-60	104.9	100-105	0.0	145-150	0.0
15-20	705.5	60-65	77.8	105-110	0.0	150-155	0.0
20-25	692.1	65-70	64.9	110-115	0.0	155-160	0.0
25-30	609.8	70-75	52.3	115-120	0.0	160-165	0.0
30-35	500.6	75-80	41.2	120-125	0.0	165-170	0.0
35-40	389.1	80-85	35.1	125-130	0.0	170-175	0.0
40-45	313.6	85-90	14.0	130-135	0.0	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	6452	6452	6452	6452	6298	6298	6298	6298	6151	6151	6151	6151
1	6085	5894	5723	5570	5945	5773	5618	5480	5811	5657	5518	5392
2	5733	5404	5135	4911	5604	5307	5061	4854	5482	5214	4990	4799
3	5403	4979	4657	4402	5285	4900	4603	4365	5174	4825	4550	4329
4	5098	4610	4259	3994	4991	4545	4219	3970	4891	4483	4180	3945
5	4817	4287	3924	3659	4720	4233	3893	3642	4629	4182	3863	3625
6	4558	4003	3637	3378	4471	3958	3613	3366	4389	3914	3589	3353
7	4321	3751	3388	3138	4242	3712	3369	3129	4167	3676	3351	3120
8	4103	3526	3171	2930	4032	3494	3155	2923	3964	3462	3140	2916
9	3904	3326	2979	2748	3839	3298	2967	2743	3778	3271	2954	2738
10	3720	3146	2809	2587	3662	3122	2799	2584	3606	3098	2788	2580

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	5878	5878	5878	5878	5628	5628	5628	5398	5398	5398	5290
1	5563	5440	5328	5225	5241	5151	5068	5057	4987	4921	4822
2	5257	5039	4853	4693	4878	4725	4591	4729	4605	4494	4401
3	4970	4682	4450	4258	4550	4355	4190	4427	4264	4125	4035
4	4706	4365	4104	3897	4256	4032	3850	4154	3963	3805	3718
5	4462	4083	3805	3591	3992	3749	3559	3907	3696	3526	3442
6	4237	3831	3544	3329	3754	3500	3306	3682	3458	3283	3200
7	4030	3605	3314	3102	3540	3279	3085	3478	3245	3068	2988
8	3840	3402	3111	2903	3346	3083	2890	3293	3055	2877	2800
9	3665	3219	2930	2728	3170	2907	2718	3124	2884	2708	2633
10	3503	3053	2768	2572	3011	2749	2564	2971	2730	2556	2484

Average Luminance Table (cd/m²)

	0	45	90
0	45219	45219	45219
45	25505	185	11
55	16578	28	10
65	13500	0	0
75	12785	0	0
85	16586	0	0

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.

