



INDEPENDENT TESTING LABORATORIES, INC.  
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

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REPORT NUMBER: ITL61998

DATE: 03/13/09

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PREPARED FOR: LEDTRONICS, INC.

CATALOG NUMBER: PAR-30A-15W-XIW-001S

LAMP: ONE "PAR-30" STYLE MEDIUM BASE LED LAMP WITH INTEGRAL LED DRIVER, CAST FINNED METAL BODY, MOLDED PLASTIC TOP, ONE CIRCUIT BOARD WITH FIVE WHITE LIGHT EMITTING DIODES (LEDS) EACH WITH CLEAR HEMISPHERICAL PLASTIC INTEGRAL LENS, FROSTED CONICAL PLASTIC NON-INTEGRAL LENS WITH RECESSED TOP AND CONCAVE BOTTOM, FORMED BLACK PAINTED METAL TRIM PLATE, VERTICAL BASE-UP POSITION.

MOUNTING: MEDIUM BASE

INSTRUMENTATION: Yokogawa WT210 Digital Power Meter  
Optronic Laboratories OL770 Spectroradiometer  
1.5 meter integrating sphere  
Elgar CW2501 AC Power Source  
Omega HH-81 Digital Thermometer with Type J thermocouples

OBJECT OF TEST: Measure the total flux output in lumens, Correlated Color Temperature (CCT), Color Rendering Index (CRI), Chromaticity Coordinates ( $x/y$ ;  $u'/v'$ ), ANSI C78.377 Duv, and Spectral Power Distribution (SPD) of the lamp and input electrical parameters when operated in the integrating sphere. Measure surface temperature of the lamp at one location.

PROCEDURE: The lamp was supplied by client with an unknown number of burn hours. The lamp was prewarmed overnight before the test. Stabilization data was recorded to assure stable operation (stabilization data available on request). CCT, CRI,  $x/y$  and  $u'/v'$  chromaticity coordinates, SPD, ANSI C78.377 Duv, total flux, and input electrical data were measured with the lamp operating in the integrating sphere. In order to measure the mean performance, twenty data sets were averaged using the Optronic OL770. A Type J thermocouple was attached to the surface of the lamp to measure the operating temperature (see photograph in the report for location). All data are traceable to the National Institute of Standards and Technology. All testing performed with the lamp operated at 120V AC in a 25 +/-1 degree Celsius free air ambient.

Checked: <u>          N GULLY          </u>
Approved: <u>          R BERGIN          </u>



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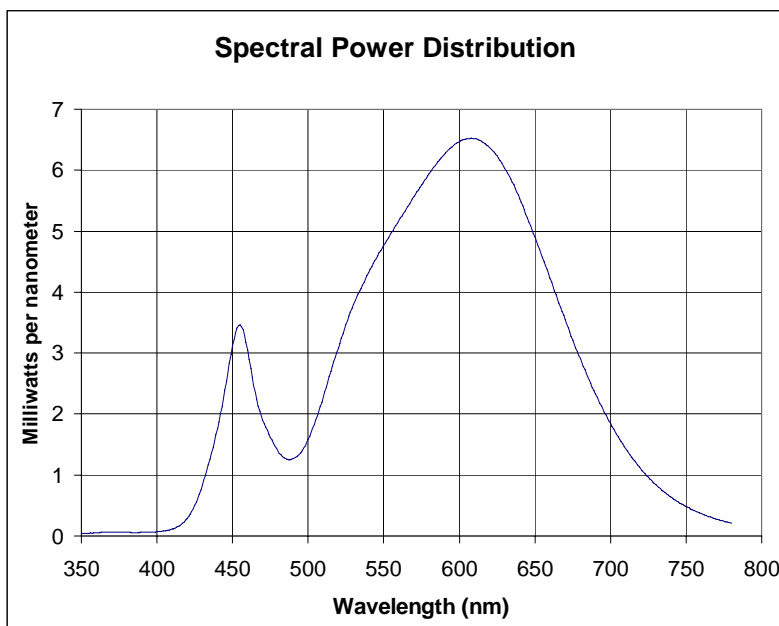
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RESULTS:

SPECTORADIOMETRIC TESTING IN INTEGRATING SPHERE	
PHOTOMETRIC	
Total Integrated Flux (Lumens)	346*
SPECTORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4337
Chromaticity Ordinate y	0.4026
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2491
Chromaticity Ordinate v'	0.5203
Correlated Color Temp CCT (K)	3043
Color Rendering Index (CRI)	83
Total Radiant Flux (milliWatts)	1128*
ANSI C78.377-2008 Duv	-0.000
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (mA AC)	130
Input Power (Watts)	8.8
EFFICACY	
Lumens/Watt	39.32



\*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional lamps will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of lamps with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results. For this test, the integrating sphere was calibrated using a directional incandescent flux standard with a distribution similar to the luminaire under test, per IESNA LM78-06.



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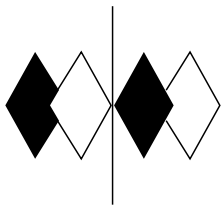
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RESULTS:

Tabulated Spectral Power Distribution

Wavelength (nm)	mWatts/nm	Wavelength (nm)	mWatts/nm
350.0	0.04247	570.0	5.56843
360.0	0.05027	580.0	5.94356
370.0	0.05969	590.0	6.25968
380.0	0.06110	600.0	6.46909
390.0	0.05913	610.0	6.51781
400.0	0.06854	620.0	6.37371
410.0	0.11255	630.0	6.03928
420.0	0.28781	640.0	5.53414
430.0	0.83107	650.0	4.90264
440.0	1.75904	660.0	4.23133
450.0	3.11253	670.0	3.55218
460.0	3.03986	680.0	2.90589
470.0	1.89778	690.0	2.33330
480.0	1.39286	700.0	1.84383
490.0	1.26466	710.0	1.43658
500.0	1.58175	720.0	1.10085
510.0	2.27739	730.0	0.83852
520.0	3.08587	740.0	0.63725
530.0	3.80206	750.0	0.48371
540.0	4.32399	760.0	0.36666
550.0	4.76495	770.0	0.27723
560.0	5.16923	780.0	0.21111



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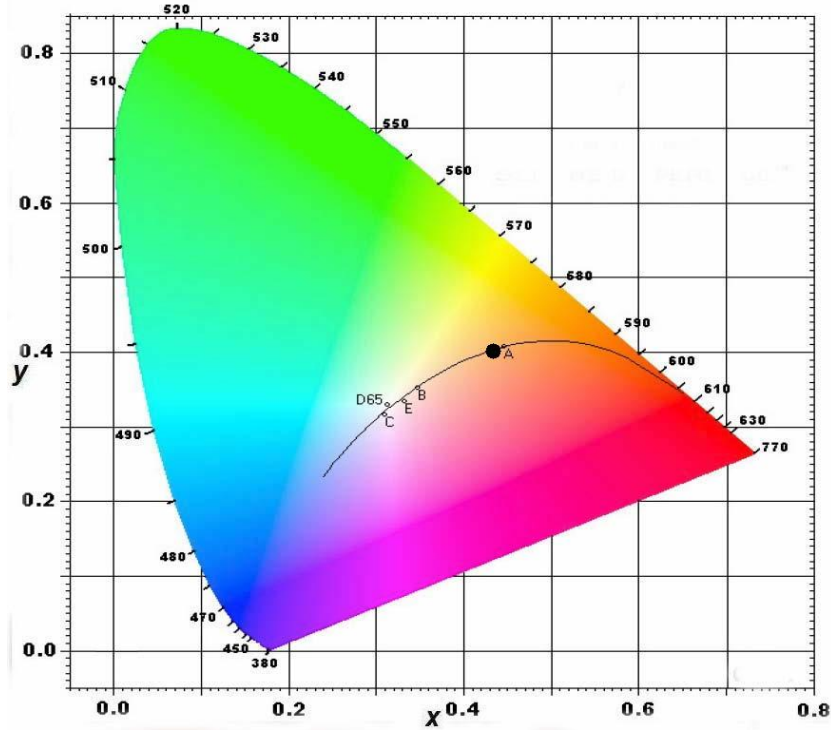
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### CIE Chromaticity Diagram

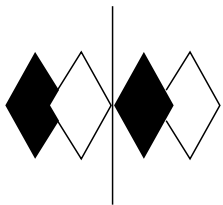


Temperature Measurements

At thermocouple #1 location: 53.2°C

THERMOCOUPLE  
ATTACHMENT POINT





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### PHOTOGRAPHS

LUMINAIRE – SIDE VIEW



LUMINAIRE – BOTTOM VIEW



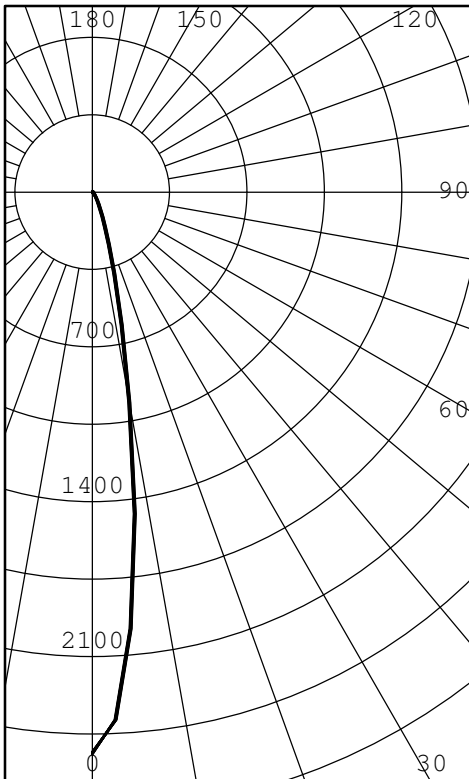
LUMINAIRE – FULL VIEW



CERTIFIED TEST REPORT No. 24801

LEDTRONICS INC - LED PAR 30 LAMP, CAT# PAR30A-15W-XIW-001S  
 WITH INDIVIDUAL FLAT PLASTIC TEXTURED LENSES  
 FIVE LEDS. LAMP LUMEN OUTPUT = 355 LMS.  
 LAMP OPERATING AT 120 VAC AND 8.9 WATTS

INTENSITY (CANDLEPOWER) SUMMARY



ANGLE	MEAN CP	LUMENS
0	2537	
5	1982	155
10	967	
15	381	115
20	169	
25	87	42
30	46	
35	26	17
40	17	
45	14	11
50	12	
55	9	8
60	7	
65	4	5
70	3	
75	2	2
80	1	
85	1	1
90	0	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LAMP	% LUMINAIRE
0-30	311	87.79	87.79
0-40	328	92.63	92.63
0-60	347	98.00	98.00
0-90	354	100.00	100.00
40-90	26	7.37	7.37
60-90	7	2.00	2.00
90-180	0	0.00	0.00
0-180	354	100.00	100.00

\*\* EFFICACY: 39.9 LUMENS/WATT \*\*

CERTIFIED BY:

DATE:  
 JAN 29, 2009

PREPARED FOR:  
 LEDTRONICS INC  
 TORRANCE, CA

TESTED IN ACCORDANCE WITH IES PROCEDURES.

LIGHTING SCIENCES, INC.  
7826 E. EVANS RD.  
SCOTTSDALE, AZ, USA 85260

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FIVE LEDS. LAMP LUMEN OUTPUT = 355 LMS.  
LAMP OPERATING AT 120 VAC AND 8.9 WATTS

INTENSITY (CANDLEPOWER) DATA  
IN 2.5 DEGREE STEPS

ANGLE	INTENSITY (CANDLEPOWER)	LUMENS
0.0	2537	
2.5	2389	
5.0	1982	155
7.5	1467	
10.0	967	
12.5	615	
15.0	381	115
17.5	249	
20.0	169	
22.5	120	
25.0	87	42
27.5	62	
30.0	46	
32.5	34	
35.0	26	17
37.5	20	
40.0	17	
42.5	15	
45.0	14	11
47.5	13	
50.0	12	
52.5	11	
55.0	9	8
57.5	8	
60.0	7	
62.5	6	
65.0	4	5
67.5	4	
70.0	3	
72.5	2	
75.0	2	2
77.5	1	
80.0	1	
82.5	1	
85.0	1	1
87.5	1	
90.0	0	