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Project No. G101248590
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Report No. 101248590CRT-001

Delta Obstruction Lighting LTD.

Wrigley Street
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OL4 1SL
United Kingdom
Standards

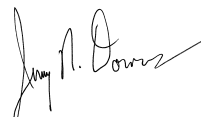
U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular, Specification for Obstruction Lighting Equipment, AC No. 150/5345-43G dated 9/26/2012.

U.S. Department of Transportation, Federal Aviation Administration, Memorandum, Light Sources Other Than Incandescent and Xenon For Airport and Obstruction Lighting Fixtures. Engineering Brief No. 67D dated 3/6/2012

Purpose: Photometric Testing only of Prototype L-864
Model: WL3000
Test Dates: 7/18/2013

Conclusion: The test results are provided for evaluation by the client.


Mike Guy
Associate Engineer
Lighting


Jeremy N. Downs PE
Staff Engineer
Lighting

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Project: G101248590

Product: L-864 Prototype

Client: Delta Obstruction Lighting LTD.

Model(s): WL3000

Standard: FAA AC No. 150/5345-43G dated 9/26/2012.

Test Plan and Datasheets			
Client	Delta Obstruction Lighting LTD.	Engineer	Mike Guy
Project	G101248590	Reviewer	Jeremy N. Downs
Product	L-864 Prototype	Model(s)	WL3000
Standard	FAA AC No. 150/5345-43G dated 9/26/2012.		

AC No.	Test name	Clause	Pass Fail NA
43G	Photometry	4.2.1	Pass

Project: G101248590
 Client: Delta Obstruction Lighting LTD.
 Standard: FAA AC No. 150/5345-43G dated 9/26/2012.

Product: L-864 Prototype
 Model(s): WL3000

Sample Information				
Date Rec.	Intertek ID	Description	Condition	Model No.
4/18/13	CRT1304181038-001	L-864 prototype	Good	WL3000

Type:	L-864
Light Source:	LED
Electrical Input:	120VAC
Catalog Number:	WL3000

Picture(s)



Photometry

Energize the light by the system power supply and control unit and test for compliance with the photometric requirements in 3.4.1. Vary the input voltage to the light $\pm 10\%$ ($\pm 3\%$ for Incandescent) from nominal voltage and measure the effective intensity at the input extremes. Compare the energy to the light to the energy input of the light during the high and low temperature tests to insure the proper intensity is obtained during the high and low temperature extremes. Make the effective intensity measurements using an integrating photometer whose calibration is traceable to an NIST steady state source. The test distance is 25 meters. The horizontal beam spread is 360 degrees.

Results

Parameter	Requirement	Measured	Result
Flash Rate (FPM)	20-40 FPM	30.4569	PASS
Flash Duration (s)	1/2 to 1/3 if Incandescent, 100 to 2000ms if other	1090	PASS
Pulse Freq. (Hz)	≥ 50 Hz if multiple pulse	NA	PASS
Min. Intensity	Continuous 3° at each vertical slice (min 750cd)	946	PASS
Min. Peak Intensity	2,000 cd $\pm 25\%$ at all radials	1571	PASS

Voltage Variation	Voltage	Position	Measured	Factor	Result
Input Voltage	120	HV	10560	NA	NA
Input Voltage +10%	264	HV	10500	0.99	PASS
Input Voltage -10%	99	HV	10570	1.00	PASS
Rated lowest V	110	HV	10560	1.00	PASS
Rated highest V	240	HV	10510	1.00	PASS

Complies: ☒ YES ☐ NO

Tested By	VS	Signature or Initials	VS	Comp. Date	7/18/13
Reviewed By	JND	Signature or Initials	JND		
Test Equipment Used	1,2,3,4		SEC		
Sample ID#	CRT1304187038-001	Ambient °C	72F	RH%	39

Photometry												
Distribution - L864 - 3.4.1.5 (and .1) and Table 4 of AC No. 150/5345-43G												
All intensity measurements are in candela												
Cable Length: 5'						120VAC						
On time-one flash (s): 1.09												
Flash Energy Raw Data - 5 flashes (candela seconds)												
Vertical Position	Horizontal Position (deg.)											
(deg.)	0	30	60	90	120	150	180	210	240	270	300	330
3U	9080	7170	6500	5880	5530	5090	5020	5250	5910	6490	6400	6940
2U	13370	12800	11800	10410	11260	10160	9950	10100	10760	11210	12090	12250
1.5U	13930	13070	13180	12470	11830	12060	11450	11690	12330	12010	13350	13660
1U	12890	12980	13360	12980	13260	13500	13010	12990	13260	13030	13490	12930
0	10130	10260	10960	11760	11440	11560	11220	11080	10660	10670	11260	10570
1D	6100	6760	6960	7240	7430	7220	7160	7100	6300	6330	6310	6770
1.5D	4640	5180	5010	5190	5170	4960	4900	4900	4360	4030	4590	5010
2D	3700	3570	3510	3470	3530	3450	3290	3430	3190	2840	2790	3240
3D	2230	2340	2350	2310	2520	2330	2500	2360	2430	2290	2400	2160

Calculated Effective Intensity Data (candela)												
Vertical Position (deg.)	Horizontal Position (deg.)											
	0	30	60	90	120	150	180	210	240	270	300	330
3U	1408	1112	1008	912	857	789	778	814	916	1006	992	1076
2U	2073	1984	1829	1614	1746	1575	1543	1566	1668	1738	1874	1899
1.5U	2160	2026	2043	1933	1834	1870	1775	1812	1912	1862	2070	2118
1U	1998	2012	2071	2012	2056	2093	2017	2014	2056	2020	2091	2005
0	1571	1591	1699	1823	1774	1792	1740	1718	1653	1654	1746	1639
1D	946	1048	1079	1122	1152	1119	1110	1101	977	981	978	1050
1.5D	719	803	777	805	802	769	760	760	676	625	712	777
2D	574	553	544	538	547	535	510	532	495	440	433	502
3D	346	363	364	358	391	361	388	366	377	355	372	335

At all radials, there must be a peak beam intensity of 2,000 cd $\pm$ 25% at 0 degrees, and a contiguous 3 degree beam spread of 750 cd minimum.

Project: G101248590
 Client: Delta Obstruction Lighting LTD.
 Standard: FAA AC No. 150/5345-43G dated 9/26/2012.

Product: L-864 Prototype
 Model(s): WL3000

Equipment list				
#	Intertek ID No.	Description	Manufacturer	Calibration Due
1	O109	GONIOMETER	OPTRONIK	15-Oct-2013
2	T1360	TEMP/RH INDCTR	EXTECH	05-Nov-2013
3	M135	MULTIMETER	FLUKE	20-Feb-2014
4	E466	DIGITAL SCOPE	TEKTRONIX	07-May-2014
5	L061	IL1700	INTERNATIONAL LIGHT	Calibrated on 7/18/2013
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Note: For measurement uncertainty, refer to the calibration certificates for all the test equipment located in the equipment files