



**Les Industries Spectralux Inc.**  
**Spectralux Industries Inc.**

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ISO/IEC 17025  
**NVLAP**<sup>®</sup>  
 NVLAP LAB CODE: 200899-0

### Goniophotometer Test Report

**Standard(s):** Transport Canada - Canadian Aviation Regulation CAR 621 Version 2016

**Customer** Whitebear Innovations Ltd. 2101 Rue Nobel, Local G, Sainte-Julie Québec, Canada, J3E 1Z8

General Information		Lamp Details		AC Supply	
<b>Test Report</b>	G1611181-R1	<b>Description</b>	WB-111 LED	<b>Type</b>	AC Flashing Controller
<b>Test Date</b>	18 November 2016	<b>Soket Type</b>	Mogul Base	<b>Input Voltage</b>	120.0V
<b>Report Date</b>	25 November 2016	<b>Standard Designation</b>	CAR 621	<b>Manufacturer</b>	Whitebear Innovations
<b>Ambient</b>	24.8 °C	<b>Rated Lumens</b>	-1	<b>Catalog No.</b>	WB-211
<b>Humidity</b>	39.8 %	<b>Test Position</b>	Axial	<b>Frequency</b>	60 Hz
<b>Lamp Type</b>	Red LED	<b>Category</b>	L864 300mm Red	<b>Power</b>	18 W

### Luminaire Data

General Information		Optics		Aperture (mm)	
<b>Manufacturer</b>	N//A	<b>Reflector</b>	None	<b>X</b>	300
<b>Model Name</b>	300 mm Red Beacon	<b>Housing</b>	Die-Cast Aluminum	<b>Y</b>	300
<b>Catalog No.</b>	L864 300mm Red Beacon	<b>Lens</b>	Red - Symmetrical Prismatic Fresnel	<b>Z</b>	272

SKT Position: P3

**Tested By: George Hedrei**

**Approved Signatory: Chrisnel Blot**

**Signature:**



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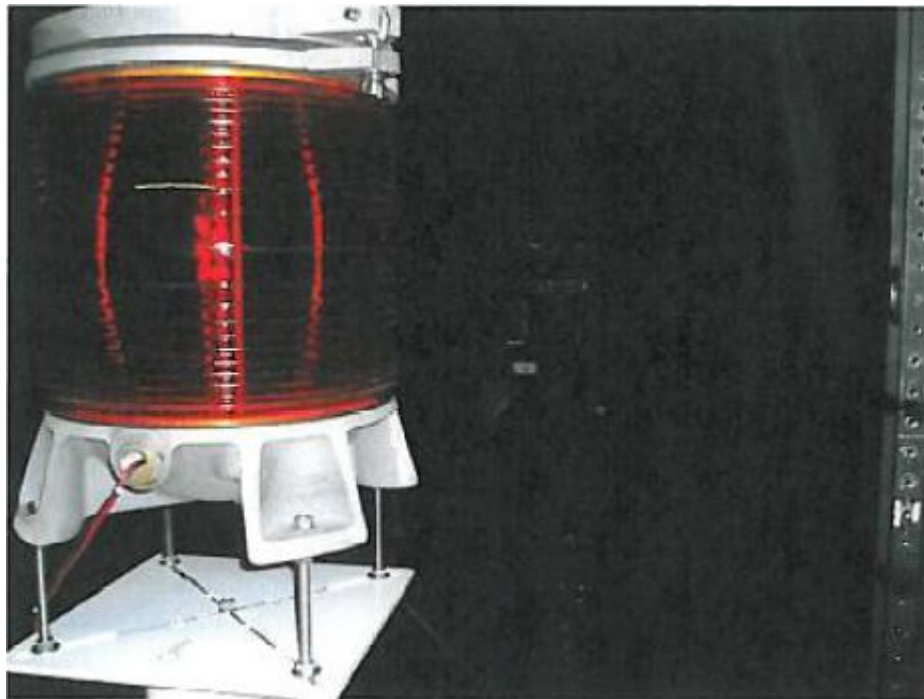
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**Test Method**

The sample received is operating with one lower LED module.. The test unit was installed on the dark photogoniometer test bench to measure the effective intensity and the flash duration. During the measurements a fast photometer system is used with a calibrated oscilloscope. The output of the photodetector is injected into channel-1 of the oscilloscope to measure the flash signal.



The effective intensity for single pulse flashing lights is calculated per the following formula:

$$I_e = \left( \int_{t_1}^{t_2} I dt \right) / (0.2 + (t_2 - t_1))$$

Where:

$I_e$  = Effective intensity (Candela)

$I$  = Instantaneous intensity (Candela)

$t_1, t_2$  = Times in seconds of the beginning and end of that part of the flash when the value of  $I$  exceeds  $I_e$ . This choice of the times maximizes the value of  $I_e$ .



**Test Results**

Effective Intensity Measurements												
Vertical Angle	Horizontal Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
-10.0°	52	51	53	56	59	51	53	56	59	54	56	53
-3.0°	357	350	368	386	409	350	368	386	405	370	388	366
-2.5°	463	454	476	500	530	454	476	500	525	479	503	475
-2.0°	587	575	604	634	672	575	604	634	666	608	638	602
-1.5°	760	745	782	822	871	745	782	822	863	787	826	779
-1.0°	950	931	978	1027	1088	931	978	1027	1078	984	1033	974
-0.5°	1172	1149	1206	1267	1343	1149	1206	1267	1330	1213	1274	1202
0.0°	1527	1573	1597	1615	1797	1650	1715	1643	1697	1566	1601	1627
0.5°	1656	1622	1704	1789	1896	1792	1880	1819	1878	1713	1802	1824
1.0°	1906	1868	1961	2059	2183	2068	1961	2059	2162	1973	2071	1954
1.5°	1910	1872	1966	2064	2188	1972	1966	2064	2167	1977	2076	1958
2.0°	1799	1763	1851	1904	1833	1763	1811	1875	1978	1862	1904	1844
2.5°	1905	1867	2043	2158	2081	1867	1960	2058	2161	1971	2070	1952
3.0°	1776	1641	1728	1804	1904	1741	1828	1919	1915	1838	1930	1821

The measured intensities comply with the minimum and maximum effective intensities requirements specified in Table 13.5a and Table 13.5b of the Standard CAR 621 version 2016.

The measured flash duration is 756 milliseconds.