CERTIFICATION TEST REPORT

CERTIFICATION TEST REPORT
19121-1
NAVIGATIONAL LIGHT TESTING
TO
ABYC AND NMMA REQUIREMENTS
OF
ALL-AROUND WHITE LIGHT ASSEMBLY
FOR
NAVISAFE

CUSTOMER:

NAVISAFE
OLA VALDRISVEI 8
1357 BEKKESTUA
NORWAY

MANUFACTURER OF TEST ARTICLE: Navisafe

DATE: July 25, 2011

REPORT NO.:	19121-1
IMANNA JOB NO.:	19121
CUSTOMER P.O. NO.:	verbal
CONTRACT:	N/A
PAGES IN REPORT:	8

STATE OF FLORIDA

ROBERT L. WHITE , being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted tests and is to the best of his knowledge true and correct in all respects.

Robert L White

SUBSCRIBED and sworn to before me this 25th day of July , 2011

Marydel Kramer

MARYDEL KRAMER
Notary Public - State of Florida
My Comm. Expires Jul 31, 2012
Commission # DD 810718
Bonded Through National Notary Assn.

Imanna shall have no liability for damages of any kind to person or property, including special or consequential damages resulting from Imanna's providing the service covered by the report.

IMANNA LABORATORY, Inc.
TEST BY
ROBERT L. WHITE
PROJECT MANAGER

1. TEST ARTICLE

One Horizontal Mount, All-Around White, Navigational Light was received from Navisafe, Inc. for test. The light is designed to be mounted, via a magnetic base, above the sheer line on a boat deck. The light is battery operated, powered by three 1.5VDC IKEA alkaline batteries. The device consists of the following items: 1) a clear plastic lens / switch assembly that contained three 1.5 VDC AAA Alkaline batteries, the LEDs, reflector, and the assembly circuitry; 2) a black plastic base, containing 4 magnets; 3) a matching detachable base plate; 4) a rubber O-ring, attached to the clear plastic lens.

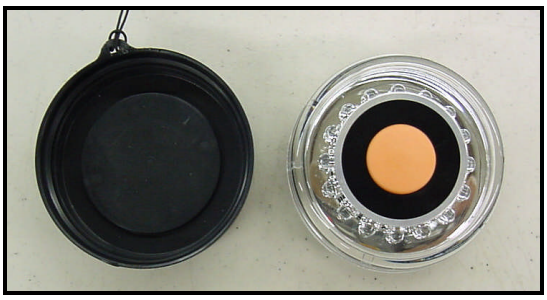


Figure 1: view of tested light

2. MODEL NUMBER

Navi Light 360° AA White
designed to meet 2 Mile requirements

3. REQUIREMENTS

The requirements for this effort are to test the light in accordance with the USCG COLREG 1972 (IMO) standards and verify conformance with the navigation light regulations of ABYC A-16.

4. PROCEDURES

The procedure used in performing this test program is IMANNA Laboratory, Inc. Test Procedure NAV-LITE-1. This procedure details the requirements and procedures specified in the NMMA Certification Handbook under the section entitled Navigation Lights without additions or deletions. The procedure contains the detailed steps necessary to determine the compliance of the test specimen to the USCG IMO requirements.

5. TESTING SEQUENCE

Receiving Inspection
Functional Operation
Chromaticity Test

Luminous Intensity Tests
Cut-off Angle Verification
Watertightness Test

6. RESULTS

The results of the tests performed are presented below by their order within the test sequence.

6.1 RECEIVING INSPECTION

One light sample was received for test. The light appeared to in good condition and ready for testing.

6.2 FUNCTIONAL OPERATION

The light was mounted on a panel simulating a boat deck surface then operated and tested using the batteries supplied with the light.

6.3 CHROMATICITY TEST

The chromaticity of the light emissions from the lens was measured and found to be within the “White Light” range as specified by the standards. The chromaticity chart is included in the Appendix.

6.4 LUMINOUS INTENSITY TESTS

The luminous intensity of the light was measured to be above the 2 mile limit of 4.3 candela in the critical areas. The light, equipped with new batteries, maintained a measured intensity above the minimum requirements of the standard for a period of 6 hours.

6.5 CUT-OFF ANGLE VERIFICATION

The light intensity that was measured was graphed and included in the Appendix. The graph also includes the minimum required cut-off angle of 4.3 candela.

The data for the light sample shows that the light emits sufficient light in the required zones and prevents light from entering the “keep out” zones. This indicates that the light meets the photometric requirements of the standard.

6.6 WEATHERTIGHTNESS TEST

Since the light will be installed above the sheer line, it was subjected to the Weathertightness Test. This test consisted of a continuous water spray using nozzles

over the entire top and all exposed sides of the structure for 15 minutes at a rate of at least two inches (50mm) per hour, at an operating pressure of five psi (0.352 kilograms per square centimeter).

No water intrusion was present after the 15 minute duration and therefore the light meets the weathertightness test.

7.0 COMMENTS AND OBSERVATIONS

The data from these tests show that the sample tested meets all of the requirements of the standards listed above for sail or power driven vessels under 12 meters in length.

Test equipment used in the performance of these tests was calibrated to standards traceable to the N.I.S.T. The results of the tests presented herein apply only to the test specimen as prepared and as tested.

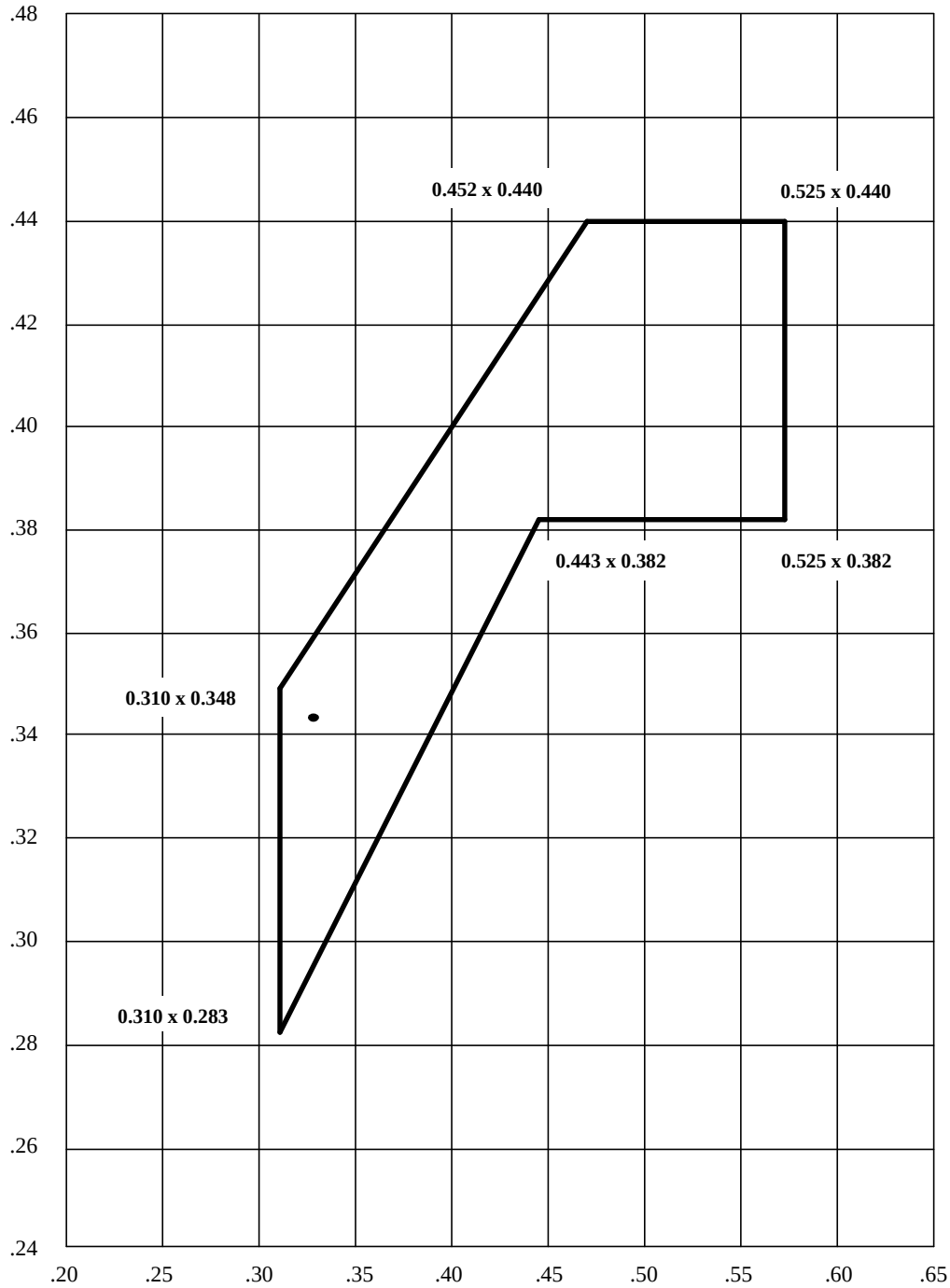
To be in full compliance with the USCG regulations a light must also be in compliance with the marking requirements listed in 33 CFR 183.810 that state in part that a light must:

(3) Bear a permanent and indelible label that is visible without removing or disassembling the light and states the following:

(i) "USCG Approval 33 CFR 183.810."
(ii) "Meets ABYC A-16."
(iii) "Tested by Imanna Lab., Inc." if tested by Imanna or other appropriate lab if not
(iv) Name of manufacturer.
(v) Number of model.
(vi) Visibility of the light in nautical miles.
(vii) Date on which the light was type-tested.
(viii) Identification and specifications of the bulb used in the compliance test.

If a light is too small to attach the required label –

(1) Place the information from the label in or on the package that contains the light: and
(2) Mark the light "USCG" followed by the certified range of visibility in nautical miles. Once installed, this mark must be visible without removing the light.



CHROMATICITY – *NMMA* "WHITE" Light Color Coordinates
Test Sample Measurements are: X = 0.317 Y = 0.342

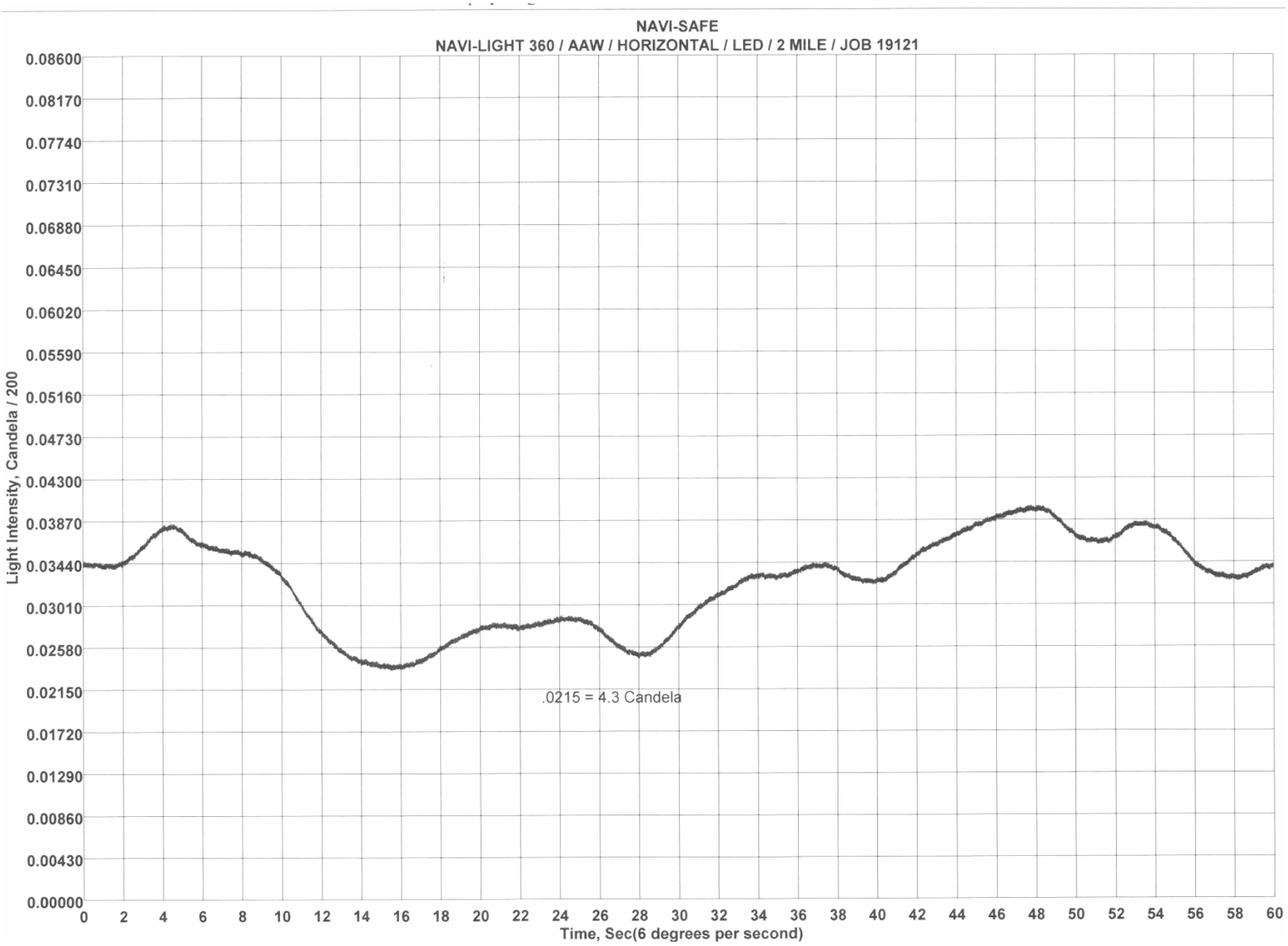


Figure 2: Horizontal Cut-Offs

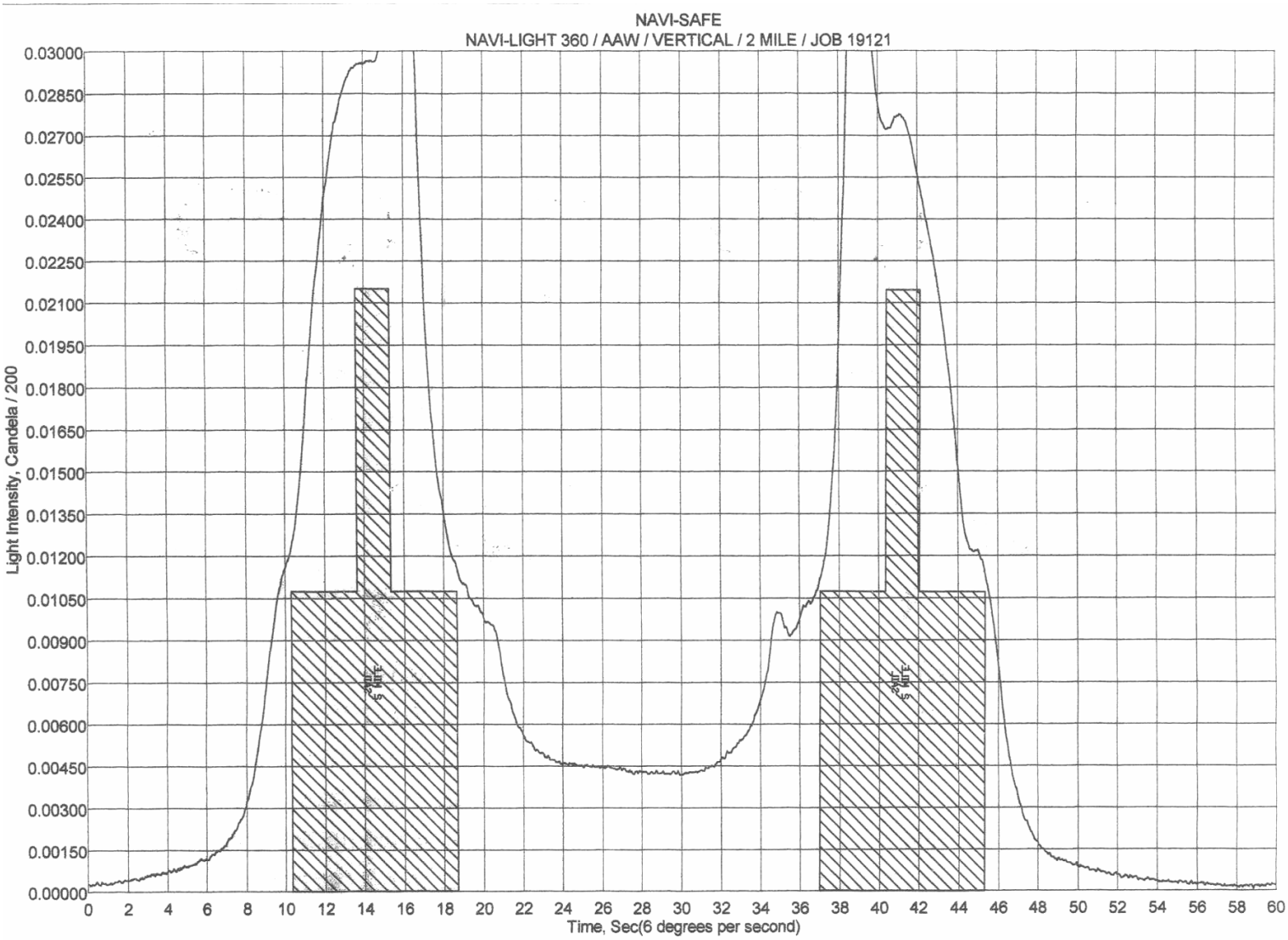


Figure 3: Vertical Cutoffs