



Document Title:
Obstruction Lighting Equipment

Document Type:
Specification

Engineering Type
Equipment Specification

Document No.:
4752.319

Department:

Version:
02


Effective Date:
Dec 19, 2024

**Transmission
Engineering**

Shared document with: N/A

Author

Guillermo J. Nieves Díaz
Technical Specialist 1, Transmission Lines Engineering
Design & Standards


Guillermo Nieves (Dec 4, 2024 15:08 AST)

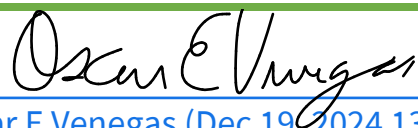
Reviewer 1

Leonardo Montes Sánchez
Engineer 2, Transmission Lines Engineering Design &
Standards


Leonardo Montes Sanchez (Dec 5, 2024 15:57 AST)

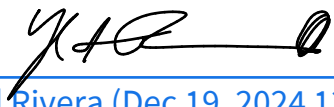
Reviewer 2

Oscar Venegas
Supervisor, Transmission Lines Engineering Design &
Standards


Oscar E Venegas (Dec 19, 2024 13:49 AST)

Approver

Yamil I. Rivera Hernández
Section Manager, Transmission Lines Engineering
Design


Yamil Rivera (Dec 19, 2024 13:52 AST)

Management Approval (If apply)

Approver

Name
Position

Signature and Date

Related/Referenced Documents

Version	Date	Revision Comments
00	Apr 5, 2023	First Issue
01	Jun 21, 2023	Added equipment characteristics in Section 7.0
02	Dec 19, 2024	Changed cover page and document to new format. Changed special requirements into specific requirements and reordered and reworted content. Added a table of compliance. Quantity and Nameplate section went under Marking and Packaging. Qualification Tests, Design Requirements went under Acceptance Criteria.

1. General

1.1. Overview

- 1.1.1. This is a general specification, covering the minimum requirements for Obstruction Lights.
- 1.1.2. This specification describes obstruction lighting systems used on LUMA structures and buildings near the airport. The Federal Aviation Administration (FAA) states that all structures near airports shall be appropriately marked with tower lights. The lighting standards stated in this specification are the minimum necessary for aviation safety.
- 1.1.3. Further information will be provided by LUMA Energy at the time of order placement and will provide information on site conditions, quantity, and other requirements.

2. Basic Use

- 2.1. Steady-burning red obstruction lights are used on any LUMA structures located near airports for aviation safety.

3. Specific Requirements

- 3.1. Samples shall be furnished to LUMA.
- 3.2. LUMA requires One (1) unit properly labeled for testing and analysis.
- 3.3. Descriptive and technical literature shall be supplied to LUMA.
- 3.4. They shall be required to show evidence of LUMA's approval of the equipment.

4. Acceptance Criteria

- 4.1. The product requires qualification and shall comply with the latest applicable codes, standards, and other regulations, including the following:

IES LM-79 – Approved Method for Optical and Electrical Measurements of Solid-State Lighting Products

AC 150/5345-43J – Specification for Obstruction Lighting Equipment

AC 70/7460-1M – Obstruction Marking and Lighting

ETL Certified L-810

ICAO Annex 14, Vol. 1, Type B

4.2. Qualification Tests

- 4.2.1. The following qualification tests must be performed on the light unit in the following order as per AC 150/5345-43J, manufacturers shall provide the following information for product evaluation:

- 1. Initial Photometric Test
- 2. Infrared Test (for LED obstruction Lights)
- 3. Environmental Test

4. 1000 hours of continuous operation
5. System Operational Test
6. Leakage Current Test
7. Visual Examination
8. Transient Protection Test

4.2.2. An instruction manual shall be provided with obstruction lighting equipment.

4.3. Design Requirements

4.3.1. Light Unit

4.3.1.1. Unit shall be lightweight and designed for easy servicing and lamp replacement.

4.3.1.2. Materials used for the light unit shall be compatible with their environment.

4.3.1.3. All plastic lens parts that are exposed to UV radiation or ozone gas shall not degrade and meet the warranty requirements as per AC 150/5345-53, Appendix 2.

4.3.1.4. Light unit shall be an independent unit and shall flash at the specified intensity or at its highest intensity when control signals are absent.

4.3.2. Light Covers

4.3.2.1. Light-transmitting covers shall comply with the requirements as per MIL-DTL-7989C. If plastic covers are used, they shall be resistant to color changes, cracking, or checking caused by UV radiation or ozone gas exposure.

4.3.3. Light Colors

4.3.3.1. The color for red obstruction lights shall be as per ICAO Annex 14, Volume 1, Appendix 1, Colors for Aeronautical Ground Lights, at operating temperature within the following chromaticity boundaries:

Purple Boundary $y = 0.980 - x$

Yellow Boundary $y = 0.335$

4.3.3.2. Means shall be provided for all L-810 obstruction lights to indicate the specified non-powered color during daytime viewing.

4.4. Environmental Requirements

4.4.1. Obstruction Lights shall be designed for continuous operation under the following conditions:

4.4.1.1. Temperature

a. Storage/Shipping: -67° F to 130° F

b. Operating: -40° F to 130° F

4.4.1.2. Humidity

- a. 95 % relative humidity

4.4.1.3. Wind

- a. Wind speeds up to 150 mph.

4.4.1.4. Wind-blown rain

- a. Exposure to wind-blown rain from any direction

4.4.1.5. Salt Fog

- a. Exposure to salt-laden atmosphere.

4.4.1.6. Sunshine

- a. Exposure to solar radiation.

5. Description

5.1. Obstruction Light Equipment L-810

5.1.1. Red obstruction lights shall be steady burning L-810 for near airport obstructions for aviation safety.

5.1.2. Lamps shall be replaced after being in operation for approximately 75% of their rated life.

5.1.3. The fixture shall include an incandescent 116W, A21 medium screw base lamp.

5.1.4. Obstruction lighting equipment shall be Federal Aviation Administration (FAA) approved.

5.1.5. Incandescent lamps shall be operated to within $\pm 3\%$ of the rated lamp voltage to provide proper light output.

5.1.6. Incandescent light equipment must have a minimum rated life of 2000 hours at rated voltage.

5.1.7. Lights shall be manufacturer certified as, visible from a minimum distance of 4000 feet in nighttime conditions and under minimum Visual Flight Rules (VFR) conditions and have a minimum intensity of at least 32.5 candelas.

5.1.8. L-810 light equipment mounting type shall be floor flange.

5.1.9. Fixture style for this equipment shall be single and shall operate on a 120 VAC circuit.

6. Markings and Packaging

6.1. Containers/pallets or package shall be marked outside with LUMA'S purchase order number and code number.

6.2. Vendor shall prepare material and equipment for shipment in such manner as to facilitate handling and protection for damage.

- 6.3. All material should be packaged and marked in such a way that the receiving warehouse can readily identify and send in one (1) complete unit to a field location without opening crates or boxes to sort items and / or parts.
- 6.4. Nameplate
 - 6.4.1. A nameplate shall be permanently attached to each unit. The nameplate shall have the following information:
 - 1. Name of unit
 - 2. FAA type
 - 3. Manufacturer's catalog number
 - 4. Manufacturer's name and address
 - 5. Rated separation distance in feet is ____ to ____ between power supply and optical head using American Wire Gage (AWG) ____ conductors.

(Item 5 is required if a unique power supply and its associated optical head are separate components of the lighting system as in the case of some discharge lights.)
- 6.5. Submitted proposals must include:
 - a. Technical Information
 - b. Table of Compliance completed by the bidder with reference

7. Inspection, Repair and Maintenance

- 7.1. To ensure the proper candela output for fixtures with incandescent lamps, the voltage provided to the lamp filament should not vary more than plus or minus 3% of the lamp's rated voltage.
- 7.2. Lamps shall be replaced after being in operations for 75% of their rated life or immediately upon failure.
- 7.3. Because of harsh environments, light fixture lenses should be visually inspected every 24 months or when the light fixture fails.
- 7.4. Lenses that have cracks, UV damage, crazing, or excessive dirt buildup should be cleaned up or replaced.
- 7.5. The acceptance of any material or equipment shall in no way relieve the vendor from his responsibility to meet all the requirements of this specification, and it shall not prevent subsequent rejection if such material is found to be defective later

Warehouse ID	072-84584
--------------	-----------

— End of Specification —

Appendix

Appendix 1. Table of Compliance

Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Specification	The Proponent complies with the corresponding specification document (4752.319)		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document (ANSI, ASTM, IES, AC, ETL, ICAO)		
3	Material	Quadrant Deadend Socket Clamp 556.5-1192.5 ACSR No Fitting (USACE).		
5	Requirements	<ul style="list-style-type: none"> • Samples shall be furnished to LUMA. • LUMA requires One (1) unit properly labeled for testing and analysis. • Descriptive and technical literature shall be supplied to LUMA. • They shall be required to show evidence of LUMA’s approval of the equipment. • Complies with everything mentioned in sections 4., 5., 6., and 7.. 		












4752.319 -Obstruction Lightning Equipment

Final Audit Report

2024-12-19

Created:	2024-12-04
By:	Guillermo Nieves (guillermoj.nievesdia@lumapr.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAUhBq5DGMkA8x2tte9K0M3eJOtH9X3vo8

"4752.319 -Obstruction Lightning Equipment" History

-  Document created by Guillermo Nieves (guillermoj.nievesdia@lumapr.com)
2024-12-04 - 7:07:31 PM GMT
-  Document e-signed by Guillermo Nieves (guillermoj.nievesdia@lumapr.com)
Signature Date: 2024-12-04 - 7:08:44 PM GMT - Time Source: server
-  Document emailed to Leonardo Montes Sanchez (leonardo.montessanch@lumapr.com) for signature
2024-12-04 - 7:08:46 PM GMT
-  Document e-signed by Leonardo Montes Sanchez (leonardo.montessanch@lumapr.com)
Signature Date: 2024-12-05 - 7:57:38 PM GMT - Time Source: server- Signature captured from device with phone number XXXXXXXX5488
-  Document emailed to Oscar Venegas (oscar.venegas@lumapr.com) for signature
2024-12-05 - 7:57:40 PM GMT
-  Signer Oscar Venegas (oscar.venegas@lumapr.com) entered name at signing as Oscar E Venegas
2024-12-19 - 5:49:42 PM GMT
-  Document e-signed by Oscar E Venegas (oscar.venegas@lumapr.com)
Signature Date: 2024-12-19 - 5:49:44 PM GMT - Time Source: server- Signature captured from device with phone number XXXXXXXX2079
-  Document emailed to Yamil Rivera (yamil.rivera@lumapr.com) for signature
2024-12-19 - 5:49:46 PM GMT
-  Email viewed by Yamil Rivera (yamil.rivera@lumapr.com)
2024-12-19 - 5:51:37 PM GMT
-  Document e-signed by Yamil Rivera (yamil.rivera@lumapr.com)
Signature Date: 2024-12-19 - 5:52:48 PM GMT - Time Source: server
-  Agreement completed.
2024-12-19 - 5:52:48 PM GMT