

INTERTEK AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM

IESALC Government Contacts Subcommittee Meeting

IESALC Annual Technology Meeting

New Orleans, Louisiana – October 3, 2018

Jeremy N. Downs, P.E. – ALECP Program Administrator



INTRODUCTION



- **Purpose / Outline**

- Overview of ALECP
- Update of Current Program Status
- Update on Current Initiatives



TESTING VS. CERTIFICATION




• Testing

- One-time event
- May not be all specified tests
- End result is a Test Report
 - (and possibly supplemental document like TVOC)
- No follow-up production monitoring

“Fine Print”:

“ This verification is part of the full test report(s) and should be read in conjunction with them.”

“...This verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.”



Total Quality. Proven.

Test Verification of Conformity


Verification Number: 103111587CRT-001TVOC

In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out. This verification is part of the full test report(s) and should be read in conjunction with them.

Applicant Name & Address:	Orga B.V. Strickledeweg 13 3125 AT Schiedam Netherlands
Product Description:	Helipoint Touchdown/Positioning Marker (Yellow Circle) Eight elements (two sub sections) comprise one segment Helipoint Identification Marking (Green H) Eight sub sections comprise one four meter edge
Ratings & Characteristics:	Power Module Input Voltage: 110 - 254 VAC, p/n MPC510 4 yellow LEDs 46cm x 8.5cm, p/n HTP100EX-A 4 green LEDs 46cm x 8.5cm, p/n HTP100EX-G Sub section length is 0.5 meters
Models:	Orga HCH-xxx-xxx system
Relevant Standards:	Civil Aviation Authority CAP 437, "Standards for Offshore Helicopter Landing Areas" 8th Edition Dated December 2016 Appendix C: Photometry Sec. C25-C29 & Chromaticity Sec. C.31 Appendix C: Photometry Sec. C38-C41 & Chromaticity Sec. C.44
Verification Issuing Office:	Intertek Cortland - Lighting 3933 US Route 11 Cortland, NY 13045
Date of Tests:	January 22, 2014 through January 29, 2014
Test Report Number(s):	101493860CRT-001 Dated March 7, 2014

Additional information in Appendix.

Note: This verification supersedes all previous verifications with the noted Verification number dated before this verification.


Signature
Name: Jeremy N. Downs, P.E.
Position: Staff Engineer
Date: 29 August 2017

This verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement, entered into on the date of the test. This verification is not to be used for any other purpose, nor is it to be used as evidence of compliance with the requirements of the referenced specifications. Any use of the Intertek name or logo for the use or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test/inspection results referenced in this verification are relevant only to the sample tested/inspected. This verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Intertek Page 1 of 2 GFT-OP-11a (28-April-2017)

TESTING VS. CERTIFICATION



Certification

- Must include successful completion of all specified tests
- Must include compliance with all specified requirements
- Not just testing
- Includes follow-up quality assurance provisions
- Includes a authorization to use a mark
- Must be strict configuration management

“Fine Print”:

“This equipment requires continuing validation in accordance with the requirements of AC 150/5345-53, and the Intertek Airport Lighting Equipment Certification Program.”



Intertek
PROGRAM ADMINISTRATOR
DEPARTMENT ALECP
INTERTEK
3933 U.S. ROUTE 11
CORTLAND, NY 13045-0950

REVISED ISSUE DATE: October 12, 2017

ORIGINAL ISSUE DATE: August 7, 2017

Recertification due: April 2025

An Activity Sponsored and Administered by
Intertek

ATG AIRPORTS LTD.
Automation House
Lowton Business Park
Newton Road
Lowton St. Mary's, Warrington UK WA3 2AP

AIRPORT LIGHTING
EQUIPMENT
CERTIFICATION PROGRAM

CERTIFICATE OF
CONFORMANCE

The product described below is hereby approved for listing in the next issue of the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5345-53, Appendix 3 Addendum "Airport Lighting Equipment Certification Program". The approval is based on successful completion of tests in accordance with the specifications listed in, and the requirements for approval described in the Advisory Circular, and the reporting to the Program Administrator the results of such tests, accompanied by related documents by an Intertek recognized testing laboratory. This Certificate is only confirmable in conjunction with equipment being listed in AC 150/5345-53, Appendix 3, Addendum, as currently published by the FAA. The certification is not valid for a product modified with non-OEM replacement parts or non-production components.

L-850 - Lights, Runway, Inpavement (AC 150/5345-46E)				
Manufacturer	Type	Class	Style	Manufacturer's Catalog Number
ATG Airports Ltd.	A	1	2	ZA484-WW-X (126); ZA484-WR-X (126)
	A	1	2	ZA484-WN-1 (126); ZA484-RN-1 (126)
	B	1	2	ZA480-WN-LHT (126)
	B	1	2	ZA480-WN-RHT (126)

1. This Equipment requires continuing validation in accordance with the requirements of AC 150/5345-53, and the Intertek Airport Lighting Equipment Certification Program.

2. Product tested and Report issued by: Intertek

(A) Report No: 102355430CRT-003

(B) Date of Report: 10/2017

NOTE: PLEASE REVIEW, AND ADVISE
ADMINISTRATOR AT INTERTEK IMMEDIATELY
IF DATA, AS SHOWN, NEED TO BE
CORRECTED.

Approved for Certification by:

Jeremy N. Downs, PE, Program Administrator
Date: October 12, 2017

Form AL-3 1/2006

AIRPORT LIGHTING EQUIPMENT CERTIFICATION

Certification Program covers all equipment specified in the FAA AC 150/5345 series:

- Rotating Beacons
- Obstruction Lights
- Wind Cones
- Isolation Transformers
- Taxiway/ Runway Inpavement Lights
- Retroreflective Markers
- Cable Connectors
- Underground Cable
- Runway & Taxiway Signs
- Portable Runway Lights
- Light Bases Constant Current Regulators
- Precision Approach Path Indicators (PAPI)
- Runway End Identification Lights (REIL)





ALECP PURPOSE AND APPLICABILITY

- **Purpose is to assist in enhancing aviation safety by:**
 - Insuring good quality, reliable, airfield lighting products
 - Verifying equipment performance so that all pilots receive reliable, standardized visual queues.
- **Applicability of ALECP Certification**
 - **Airfield Lighting Products:**
 - Only FAA acceptable means to satisfy Title 14 CFR Part 139 Section 139.311 Certification of Airports
 - Mandatory for all projects funded by Federal AIP for PFC monies
 - Widely used around the world to insure a standard level of performance

ALECP PURPOSE AND APPLICABILITY



- **Applicability of ALECP Certification**
- **Obstruction Lighting Products:**
 - **FAA Regulations - 14 CFR Part 77**
 - 77.7 – Specifies the requirements for notifying the FAA of construction or alteration of an obstruction.
 - FAA Form 7460-1, Notice of Proposed Construction or Alteration
 - 77.9 - Specifies what types of construction requires notification to the FAA.
 - 77.17 – Provides the definitions of obstructions.
 - 77.29 – Describes the aeronautical study that the FAA does to evaluate the impact of the proposed obstruction.
 - 77.31 – Describes the determination that FAA makes for each obstruction.
 - Determination of No Hazard to Air Navigation is issued with conditions including the lighting and marking.
 - 77.33 – Determination of No Hazard to Air Navigation is good for 18 months.



ALECP PURPOSE AND APPLICABILITY

- **Applicability of ALECP Certification**
- **Obstruction Lighting Products:**
 - FCC Regulations – 47 CFR Part 17
 - 17.4 – Antenna structure registration requirements
 - 17.7 – Requirements to notify FAA
 - 17.23 – Conditions set forth in FAA determination are mandatory
 - 17.47 – Inspection requirements for antenna structure obstruction lighting equipment.
 - 17.48 – Reporting of improper functioning lights
 - 17.49 – Documentation of inspections



ALECP PURPOSE AND APPLICABILITY

- **Applicability of ALECP Certification**

- **Obstruction Lighting Products:**

Taken from recent determination from FAA Obstruction Evaluation Group website:

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 L Change 2, Obstruction Marking and Lighting, paint/red lights - Chapters 3(Marked),4,5(Red),&12.

- **FAA AC 70/7460-1L**
 - Describes how obstructions must be marked and lighted
 - Section 12.4 states that lighting equipment should conform to the latest version of FAA AC 150/5345-43. FAA AC 150/5345-53 lists the manufacturers that have demonstrated compliance
Other manufacturers' equipment may be used if it meets the requirements of -43

FAA AC 150/5345-53D



- **Third Party Certifier Acceptance Criteria**
 - Section 5
- **Third Party Certifier Application (every 4 years)**
 - Section 6
 - Background as a certification body
 - Competency verification (accreditations)
 - Resumes of related staff
 - Copy of procedural guide and license agreement

FAA AC 150/5345-53D



- **GENERAL OUTLINE**

- Manufacturer submits certification request via AL-2 application form
- Qualification testing
- Documentation submittal and engineering review
- Initial manufacturing facility audit (semi-annual inspections continue)
- License Agreement
- Certificate issued and product listed in 53D Addendum
- Certification process covered under ANSI accreditation to ISO 17065

FAA AC 150/5345-53D

- DOCUMENTATION REVIEW

New AL-2 Application From



Chelsea Rulison
chelsea.rulison@intertek.com
Lighting Programs Administration
ALECP Department
Intertek
3933 US Route 11
Cortland, NY 13045-0950

An Activity Sponsored and Administered by INTERTEK TESTING SERVICES, NA, INC.

(AL-2) AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM REQUEST FOR EQUIPMENT CERTIFICATION

**** To be completed and forwarded with required documentaton to Chelsea Rulison ****

Date:					
1. Participant/Manufacturing Site					
Licensed Participant:					
Licensed Participant Contact:		Phone:		Email:	
Licensed Participant Contact Signature:					
Licensed Participant Address:					
Manufacturing Site Address: (if different than above)					

FAA AC 150/5345-53D



• DOCUMENTATION REVIEW

New AL-2 Application Form

2. Product Listing Details						
L-Type(s)	Class	Style	Mode	Size	Light Source (LED, Incan, Xenon)	Manufacturer's Catalog No.
3. This Certification is (check one; administrative fees may apply if there is no testing being done at Intertek Cortland)					Documentation Required	
<input type="checkbox"/>	New Listing				All documents required	
<input type="checkbox"/>	8 year requalification (4 years for L-890)				All documents required	
<input type="checkbox"/>	Revision of existing certificate (part # change/design modification)				Required documents depend on revision *Attach the existing certificate *Describe the requested revision:	
<input type="checkbox"/>	Update due to a specification change				AL-2 form only	
<input type="checkbox"/>	Non-OEM multiple listee certification				All documents required, along with OEM authorization	

FAA AC 150/5345-53D



- **DOCUMENTATION REVIEW**

New AL-2 Application Form

4. Testing (contact Program Administrator for required tests)

<input type="checkbox"/>	None required (clerical revision, non-OEM listing, etc.) *Attach Program Administrator's (Jeremy Downs) approval
<input type="checkbox"/>	Testing to be performed at Intertek-Cortland, NY
<input type="checkbox"/>	Manufacturer's facility (engineering review and witness required, contact Chelsea Rulison)
<input type="checkbox"/>	Independent Laboratory (engineering review and witness required, contact Chelsea Rulison)

5. Required Supporting Documentation (send with this form)

<input type="checkbox"/>	List of Types, Classes, Styles, Sizes, manufacturer's catalog numbers (product variants)
<input type="checkbox"/>	Electrical Schematics
<input type="checkbox"/>	Assembly Drawings
<input type="checkbox"/>	Bill of Materials showing manufacturer's name and part numbers
<input type="checkbox"/>	Statement of Warrantee
<input type="checkbox"/>	Instruction/Installation/Operating Manual
<input type="checkbox"/>	Product Description sheet (marketing material)
<input type="checkbox"/>	AL-2B Light Source Form with referenced documents for each light source (if applicable)
<input type="checkbox"/>	Test Reports for all testing not done by Intertek Cortland, NY

FAA AC 150/5345-53D



- DOCUMENTATION REVIEW

New AL-2B Supplement



Chelsea Rulison
chelsea.rulison@intertek.com
Lighting Programs Administration
ALECP Department
Intertek
3933 US Route 11
Cortland, NY 13045-0950

An Activity Sponsored and Administered by INTERTEK TESTING SERVICES, NA, INC.

(AL-2B) AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM REQUEST FOR EQUIPMENT CERTIFICATION (LIGHT SOURCE SUPPLEMENT)

**** To be completed and forwarded with required documentaton to Chelsea Rulison ****

Date:			
1. Licensed Participant			
Licensed Participant:			
Manufacturing Site Location:			
Contact:		Contact Signature:	
Phone:			
E-mail:			

FAA AC 150/5345-53D

- DOCUMENTATION REVIEW



New AL-2B Supplement

2. Light Source (Lamp or field replaceable LED sub-assembly)	
L-Type:	
L-Type Catalog Number:	
Licensed Participant's Light Source part number:	
Light Source(s) technology: (LED, Incan, Xenon, etc.)	
FAA Lamp List Number (if applicable):	
Light technology Manufactured by (OEM):	
OEM part number:	
Electrical Input (voltage or current rating):	
OEM rated useful life hours:	
Licensed Participant's estimated life hours as installed:	

FAA AC 150/5345-53D



- **DOCUMENTATION REVIEW**
New AL-2B Supplement

4. Documentation	
<input type="checkbox"/>	a. Submit OEM Spec Sheet
<input type="checkbox"/>	b. If rated useful life hours < 8,750 hours, submit participant's plan for lamp life testing (FAA AC 150/5345-53D, Appendix 5).
<input type="checkbox"/>	c. If LED, submit participant's procedure to measure LED junction temperture per EB67D para 2.4b.
<input type="checkbox"/>	d. If LED, submit report of the LED junction temperture as measured using submitted procedure.
<input type="checkbox"/>	e. If LED, submit flicker compliance statement addressing EB67D para 2.15.



SEMI-ANNUAL INSPECTIONS

- **First Visit:**
 - AL-7 Audit (follows basic ISO quality assurance requirements)
 - AL-1; AL-1A Contact Sheet
- **Second Visit:**
 - Product Checklist(s)
 - Construction review using the applicable ACs
 - Production Testing Requirements
 - As required in the applicable ACs
 - AL-1; AL-1A Contact Sheet (as needed)
- **Documentation:**
 - Inspector leaves copy of all inspection reports with the manufacturer, and sends copy to Intertek, Cortland for review.
 - Results of the audit/inspection are reviewed and appropriate actions taken.

RESCINDING OF CERTIFICATES



FAA AC 150/5345-53D, Appendix 2, section 5.h

- Lack of required documentation

- Failure of manufacturer to honor required warranty

- Unsatisfactory failure rate of equipment in the field

 - Unreliable performance of equipment as determined by the FAA

- Failure of manufacturer to maintain quality system

- Changes made to the equipment without the approval of the third party certifier

- Failure to re-certify

- Non-compliance found during manufacturer challenge process

CURRENT PROGRAM STATISTICS



- 60 program participants
- 76 licensed manufacturing facilities
- Certifications since the Spring Government Contacts Meeting in May 2018
 - 52 new or re-qual. certificates
 - 78 revised certificates
 - 29 de-listings

DRAFT SPECIFICATIONS



FAA AC 150/5345-42J (Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories)

Deadline for comments – 1/8/2018

FAA AC 150/5345-26E (Specification for L-823 Plug and Receptacle, Cable Connectors)

Deadline for comments – 3/23/2018

FAA AC 150/5345-28H (Precision Approach Path Indicator (PAPI) Systems)

Deadline for comments – 2/12/2018

DRAFT SPECIFICATIONS



FAA AC 150/5345 – 54C (Specification for L-884, Power and Control Unit for Land and Hold Short Lighting Systems)

Deadline for comments – 3/28/18

FAA AC 150/5345 – 43J (Specification for Obstruction Lighting Equipment)

Deadline for comments – 6/4/2018

FAA AC 150/5345 – 39E (Specification for L-853, Runway and Taxiway Retroreflective Markers)

Deadline for comments – 8/24/2018

DRAFT SPECIFICATIONS



FAA AC 150/5345 – 3H (Specification for L-821, Panels for the Control of Airport Lighting)

Deadline for comments – 9/26/2018

FAA AC 150/5345 – 5C (Specifications for Airport Lighting Circuit Selector Switch)

Deadline for comments – 9/26/2018

DRAFT SPECIFICATIONS



FAA AC 150/5345-39E

Posted – 7/23/2018

Principal Change:

Editorial and formatting changes

Addition of yellow type II markers for front of EMAS beds.

Potential required action:

Manufacturers will need to provide compliance verification for yellow retroreflective sheeting.

Open issues to address:

No dimensional requirements for type II plane markers.

Height requirement for all type II markers must be made consistent with -30J

Test needed to confirm compliance with frangibility and tethering requirements.

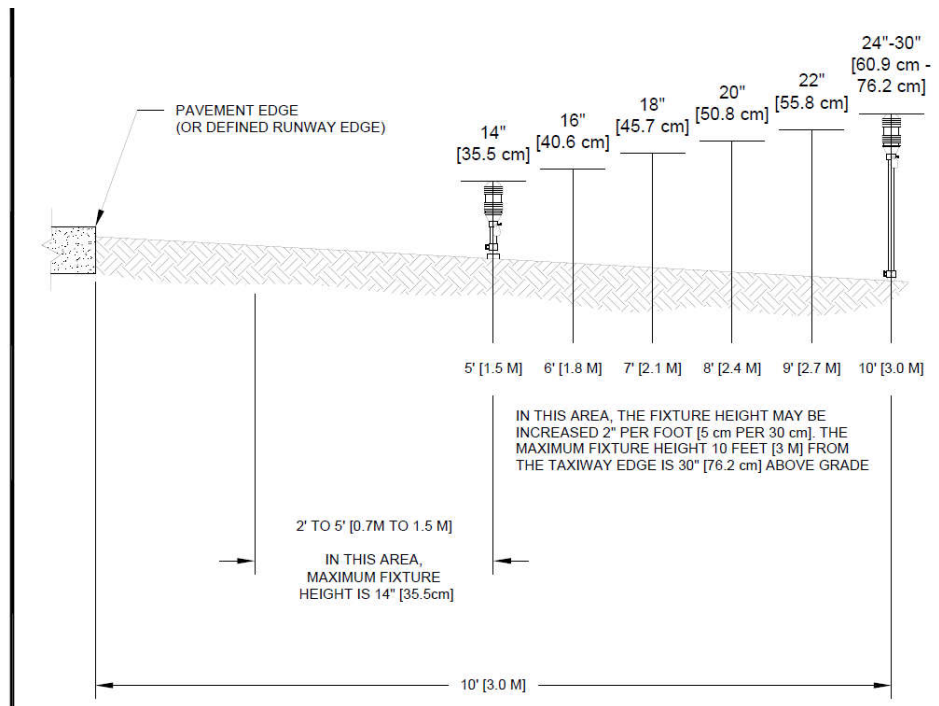
DRAFT SPECIFICATIONS



FAA AC 150/5345-39E

3. The standard installed height of the reflector must be 14 inches (35.6 cm) above finish grade. See the installation requirements for the height of the edge reflector versus distance from the defined pavement edge in AC 150/5340-30.

FAA AC 150/5340-30J
Figure A-109





DRAFT SPECIFICATIONS

FAA AC 150/5340-30H

NOTES:

1. WHEN LIGHTS ARE ELEVATED ABOVE 14 IN [35.5 cm] (STANDARD HEIGHT), A MINIMUM CLEARANCE OF 6 IN [15.2 cm] MUST BE MAINTAINED BETWEEN THE FIXTURE AND ANY OVERHANGING PART OF AN AIRCRAFT.
2. NOT APPLICABLE TO RUNWAY THRESHOLD/END LIGHTS (TYPES L-861E, L-861SE, L-862E AND L-862).
3. APPLICABLE TO ELEVATED EDGE REFLECTORS.

• **FAA AC 150/5340-30J (2/15/2018)**

NOTES:

1. WHEN LIGHTS ARE ELEVATED ABOVE 14 IN [35.5 cm] (STANDARD HEIGHT), A MINIMUM CLEARANCE OF 6 IN [15.2 cm] MUST BE MAINTAINED BETWEEN THE FIXTURE AND ANY OVERHANGING PART OF AN AIRCRAFT.
2. APPLICABLE TO ELEVATED EDGE REFLECTORS.

DRAFT SPECIFICATIONS



FAA AC 150/5345-3H

Posted – 9/4/2018

Principal Changes:

Emergency Generator Control Switch was changed from mandatory to optional.

Potential required action:

Manufacturer to update drawings if necessary.

No testing required.

Open issues to address:

None

DRAFT SPECIFICATIONS



FAA AC 150/5345 – 5C

Posted – 9/4/2018

Principal Change:

Editorial and formatting changes only.

Potential required action:

None

DRAFT SPECIFICATIONS



FAA AC 150/5345 – 43J

Posted – 5/3/2018

Principal Changes:

Added reference to EB98, Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Goggles.

The requirements of EB98 are fully included in this draft AC.

In order to be NVG compatible, red obstruction lights (L-810(L), L-864(L), and L-885(L)) must include IR emitters or be used in conjunction with a standalone IR emitter.

Since FAA EB98 provides for a “standalone IR emitter” that can be used in conjunction with LED red aviation obstruction lights, LED obstruction lights could still be offered without IR capability.

NEW SPECIFICATIONS



FAA AC 70/7460-1L Change 2 (9/6/2018)

Addition of reference to:

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)” – dated 12/18/2017



NEW SPECIFICATIONS

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Output Wavelength

- The IR output must be in the 800 to 900 nm range.

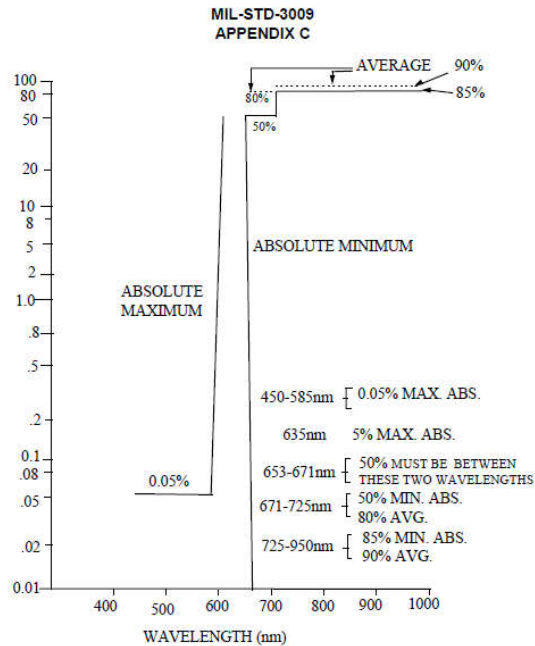
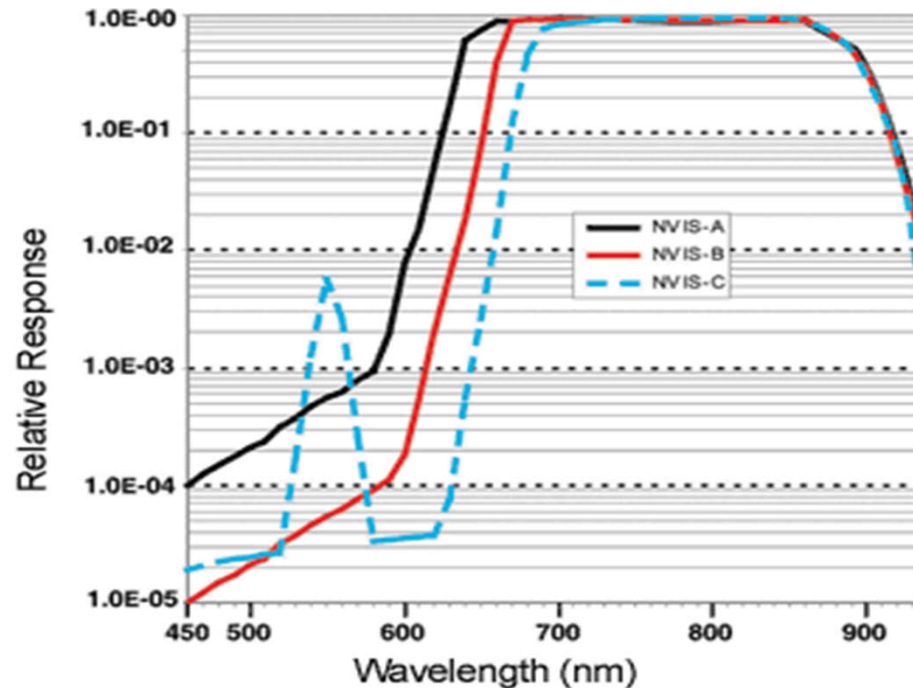


FIGURE C-5. Spectral transmission requirements for a Class B NVIS objective lens.



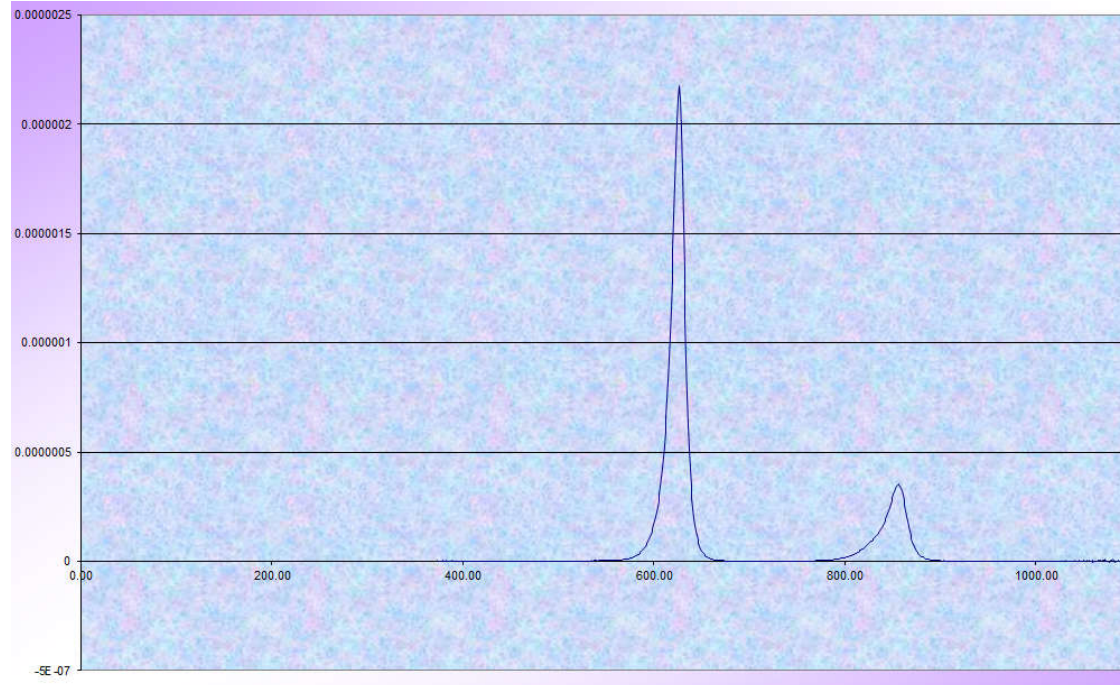


NEW SPECIFICATIONS

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Output Wavelength

- The IR output must be in the 800 to 900 nm range.



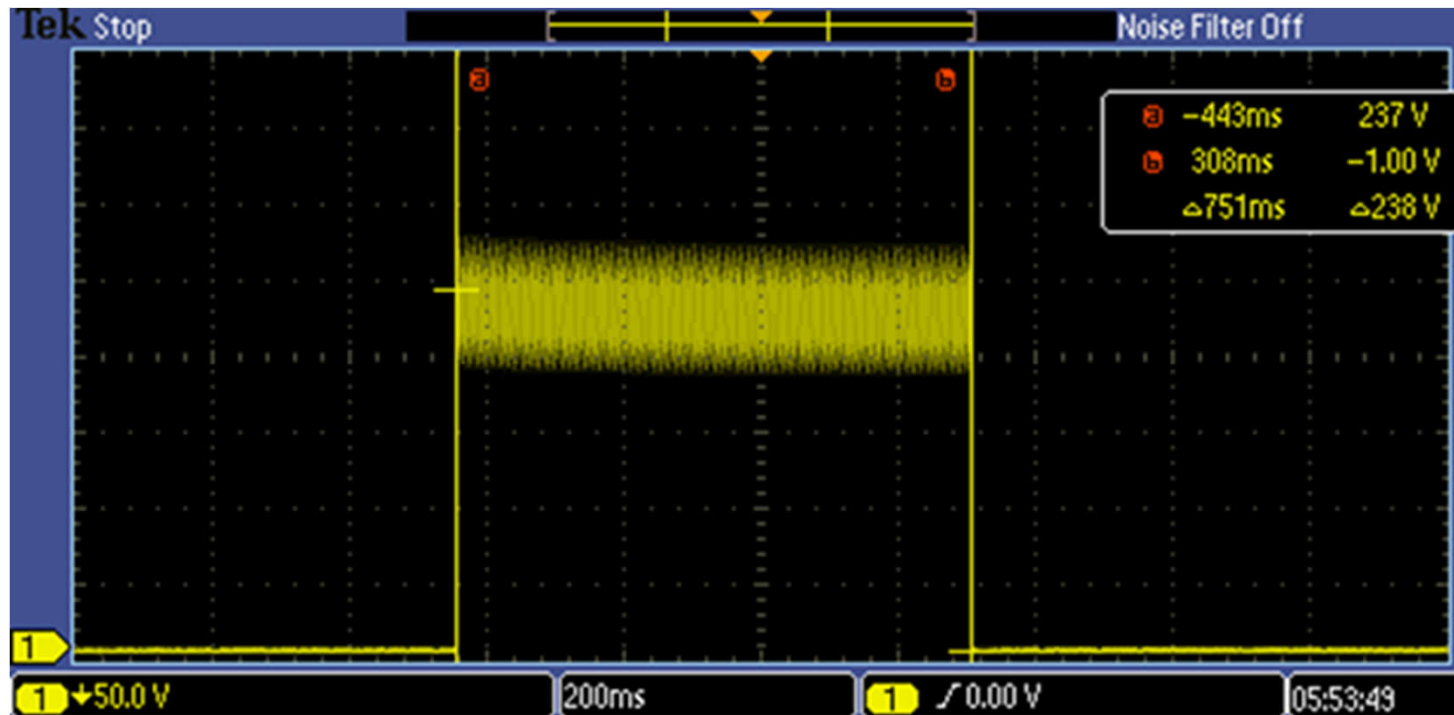


NEW SPECIFICATIONS

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Timing Synchronization

- The IR radiation must be synchronized with the visible light both in flash duration, and flash rate. The IR emitters must be on when the visible light is on, and off when the visible light is off.





NEW SPECIFICATIONS

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Minimum IR Radiant Intensity in the 800-900nm range:

IR radiation angular distribution must match the visible light photometric angular distribution for the applicable product type.

- 4 mW/sr for L-810(L) applications
- 246mW/sr for L-864(L) and L-885(L) applications
- Analogous to luminous intensity in $\text{cd} = \text{lumen/sr}$
 - Not to be confused with radiance or irradiance
 - Sum of energy from 800-900nm instead of the photopically corrected
- Peak value for flashing applications



NEW SPECIFICATIONS

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Monitoring / Control

- IR emitters must be monitored in accordance with the requirements in FAA AC 150/5345-43H.
 - Section 3.3.5.2.2
 - Failures must be monitored (outage or flasher failure).
 - Monitor signals must be failsafe.
 - Must be provisions to permit connection to a remote alarm device.
- IR emitter failure must result in the visible light being de-energized.



NEW SPECIFICATIONS

FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Certified systems with IR capability.

- Testing must be conducted to demonstrate compliance with the requirements contained in FAA EB98 as stated above.

Certified systems that are now being modified to include IR capability.

- The manufacturer must submit the design details of the modification to Intertek so that an engineering review can be done to determine what FAA AC 150/5345-43H and FAA EB67D testing must be repeated.
- Testing must be conducted to demonstrate compliance with the requirements contained in FAA EB98 as stated above.

Stand-alone IR emitters.

- Testing must be conducted to demonstrate compliance with all applicable requirements found in FAA AC 150/5345-43H and FAA EB67D. Proper system integration must be demonstrated for all systems that the stand alone IR emitter is intended to be used with.
- Testing must be conducted to demonstrate compliance with the requirements contained in FAA EB98 as stated above.

NEW SPECIFICATIONS



FAA Engineering Brief 98 – “Infrared Specifications for Aviation Obstruction Light Compatibility with Night Vision Imaging Systems (NVIS)”

Current Note on the FAA AC 150/5345-53D Addendum:

“IR element present is not tested nor certified under this program as to compatibility with any night vision equipment.”

IR elements currently are tested to ensure they do not create any adverse effects that may render the equipment non-compliant with the base standard.

This note will transition to indicate that NVG compatible LED red obstruction lights have been evaluated to EB98.

ALECP certificates will also indicate that products have been evaluated to EB98.

