

INTERTEK AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM

IESALC Government Contacts Spring Meeting

Washington, DC – May 4, 2017

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INTRODUCTION



- **Purpose / Outline**

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



TESTING VS. CERTIFICATION



- **Testing**
 - One-time event
 - 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.”



TESTING VS. CERTIFICATION



Certification

- 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.”

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**
 - Insure good quality, reliable, airfield lighting products
 - Verify equipment performance so that all pilots receive reliable, standardized visual queues.
- **Applicability**
 - 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



- **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



- **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



- **QUALIFICATION TESTING**

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

Must be done IAW ISO 17025

At Intertek – covered under A2LA accreditation

Outside of Intertek – covered by audit and witness

Test Plan Review and Acceptance

Assignment to Intertek Representative

Formal Report issued by Manufacturer



- **DOCUMENTATION REVIEW**

- AL-2 Application

- Section & part drawings

- Assembly drawings and schematics

- BOM with mfg name/catalogue numbers

- Statement of Warranty

- Instruction/installation/operating manual

- Product Description sheet (marketing)

- AL-2B Lamp Life form



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.



SEMI-ANNUAL INSPECTIONS

- **AL-7 Audit (follows basic ISO quality assurance requirements)**
 - Existence
 - Adequacy
 - Compliance
 - Objective Evidence
- **Production Testing Requirements**
 - Page 9 of AL-7 (Final Inspection and Testing)
 - As required in the applicable AC's
- **Audit Wrap-up**
 - Summarize issues on page 22.
 - Inspector and manufacturer sign page 22

SEMI-ANNUAL INSPECTIONS



- **Product Checklist(s)**
 - Construction review using the applicable ACs
 - Must also have the applicable AC available for questions/confusion
- **Production Testing Requirements**
 - As required in the applicable ACs
 - Documented as per the ACs
 - Traceability to units
- **AL-5 Inspection Data form**
 - Summary of production status

CURRENT PROGRAM STATISTICS



- 59 participants
- 69 manufacturing facilities
- Certifications since the Fall Government Contacts Meeting
 - 20 new certificates
 - 32 revised certificates

CERTIFICATE UPDATES IN PROCESS



- FAA AC 150/5345-43H (9/28/2016)
- FAA AC 150/5345-46E (3/2/2016)
- FAA AC 150/5345-42H (11/6/2015)
- FAA AC 150/5345-10H (11/5/2014)
- FAA AC 150/5345-44K (10/8/2015)

CERTIFICATE UPDATES IN PROCESS



- FAA AC 150/5345-43H (9/28/2016)
 - 12 month effective date
 - Result of FAA AC 70/7460-1L updates

Key certification updates:

Addition of flashing L-810(F) configuration

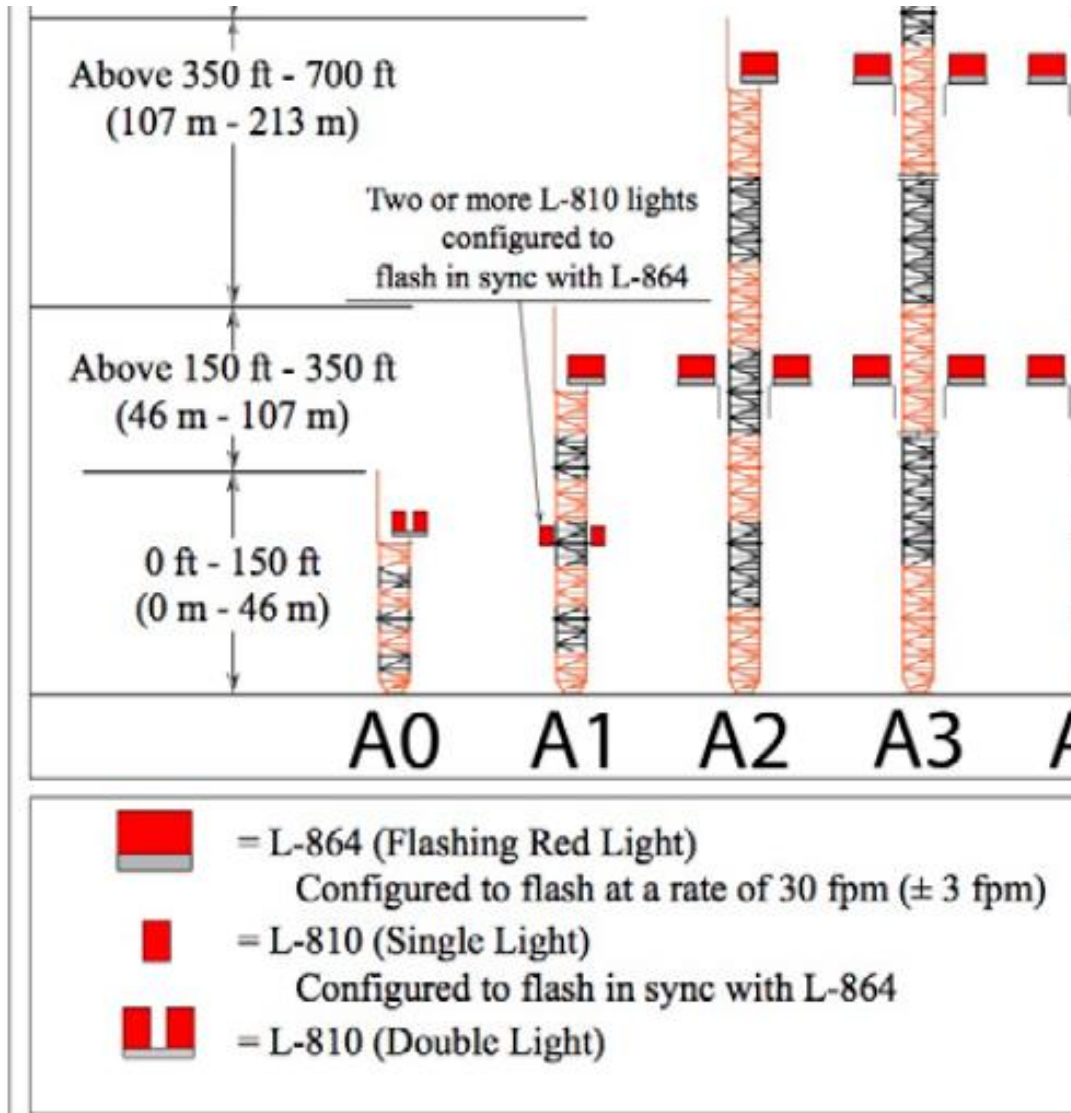
Change of L-864 flash rate and duration limits

CERTIFICATE UPDATES IN PROCESS



- FAA AC 150/5345-43H (9/28/2016)

Flashing L-810(F):



CERTIFICATE UPDATES IN PROCESS



- FAA AC 150/5345-43H (9/28/2016)

Flashing L-810(F):

Operational requirements:

Flash characteristics (Table 3-4)

30fpm flash rate

100ms to 1333ms flash duration

Control (3.3.5.2)

Monitoring (3.3.5.2.2)

“Simultaneous” Flashing within 1/60 second of the L-864 (3.4.1.2.1 and 3.4.3.1)

CERTIFICATE UPDATES IN PROCESS



- FAA AC 150/5345-43H (9/28/2016)

Certification of a flashing L-810(F):

Certification is tied to a specific controller

Existing certified L-810 used in L-810(F) systems do **NOT** need to repeat optical testing.

Operational testing will be required in most cases.

CERTIFICATE UPDATES IN PROCESS

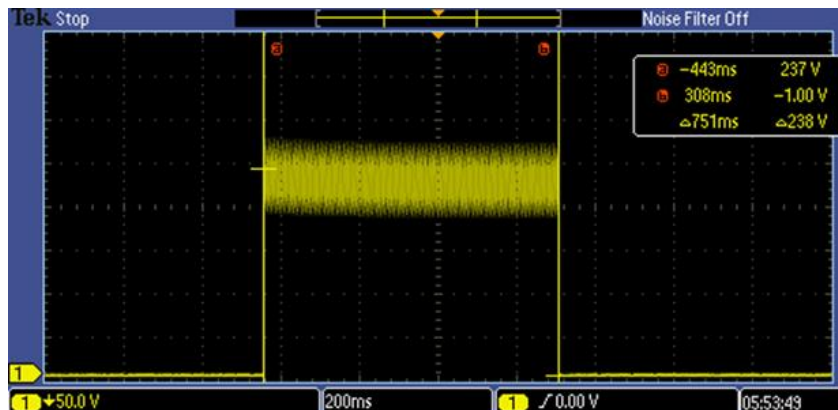
- FAA AC 150/5345-43H (9/28/2016)

Flashing L-810(F):

Photometry done in the steady burn mode – 3.4.1.2.1 (3)

3.4.1.2.1 (3) also states: “The minimum effective intensity will be half of this value, but is not calculated for this application.”

This is only true for an flash duration of 200ms.



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

NEW SPECIFICATIONS



FAA AC 150/5345-43H:
Flashing L-810(F)

on-time (s)	peak instantaneous intensity (cd)	Blondel-Rey effective intensity (cd) assuming square wave flash
0.1	32.5	10.8
0.2	32.5	16.3
0.5	32.5	23.2
1	32.5	27.1
1.333	32.5	28.3

CERTIFICATE UPDATES IN PROCESS

FAA AC 150/5345-46E (3/2/2016)

Shock Test added for L-852 Taxiway Inpavement Lights

New Inpavement Light Dimensional requirements

Grounding provisions made consistent with -30H

Elevated lights not certified with baseplates



CERTIFICATE UPDATES IN PROCESS

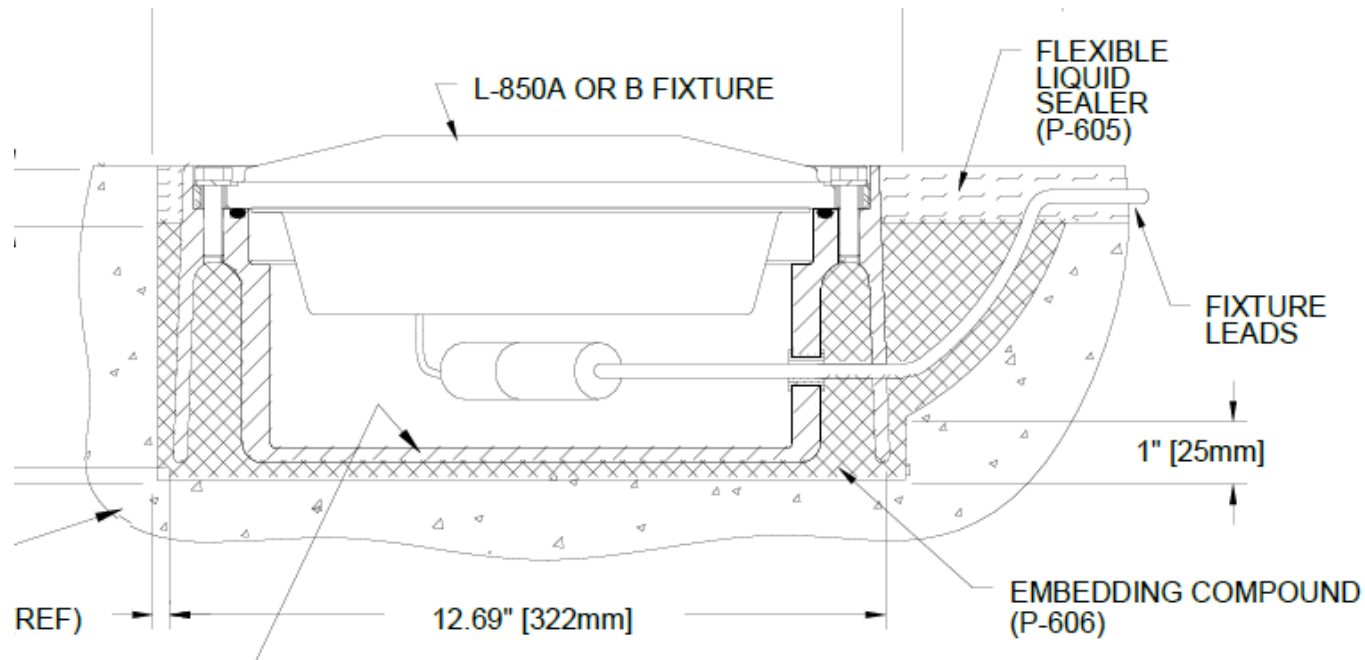


FAA AC 150/5345-46E (3/2/2016)

If the fixture doesn't fit:

Option 1 - Design Modification

Option 2 – Limit certification to Class 1:



CERTIFICATE UPDATES IN PROCESS



FAA AC 150/5345-42H (11/6/2015)

L-894 – Elevated Light Cover

0.63” max height

0.88” max thread depth



FAA References that require the frangible point to be no more than 3” above grade.

- FAA AC 150/5340-30H, Figure 23
- FAA AC 150/5300-13A, Change 1, paragraph 307b(4)
- FAA AC 150/5220-23, 3.2.c(1)(c)



DRAFT SPECIFICATIONS



FAA AC 150/5340-30J (Design and Installation Details for Airport Visual Aids)

Deadline for comments – 5/1/2017

Requirement for separate power for wind cone obstruction lights was removed.

PAPI Obstacle Clearance Surface evaluation guidance

10.2 bolt torque maintenance

INTERTEK / FAA AAS-100 MEETING – MARCH 1, 2017



Staff Introduction / Facility tour

ALECP Program overview

Review of Intertek Application Renewal

53D addendum clean-up

Audit of example product qualification files

AC clarification discussions

APPROVED AIRPORT LIGHTING EQUIPMENT – AUGUST 1952



APPROVED AIRPORT LIGHTING EQUIPMENT – AUGUST 1952



August 1, 1952

DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION
OFFICE OF AIRPORTS
WASHINGTON, D.C.

Supersedes
All Previous Issues

Sheet 1 of 1

SECTION "B"

Approved Equipment List
of products qualified under
Spec. CAA-291

Specification for Beacons, 36" Rotating, Double Ended Type

Beacons listed herein have been qualified under the requirements for the equipment as specified in the latest effective issue of the applicable specification and are approved for installation on airport lighting projects. The listing of beacons does not release the manufacturer from compliance with the specification requirements.

Manufacturer's Name and Address	Mfrs. Cat. No.	Type or Size	Description
Crouse-Hinds Co. Syracuse, N. Y.	41281B	DCB-36	One end clear, one end green.
Westinghouse Electric Corp. Cleveland, Ohio	S1122015	DCG	One end clear, one end green.

APPROVED AIRPORT LIGHTING EQUIPMENT – AUGUST 1959



APPROVED AIRPORT LIGHTING EQUIPMENT – AUGUST 1959



SECTION II

HIGH INTENSITY LIGHTING FIXTURES

Specification L-820 - High Intensity Light 100 Watt

Includes lens, mounting assemblies and base plate

Manufacturer	Approved Catalog Numbers			
	Clear	Green	Yellow	Remarks
Crouse-Hinds Co.	44543B	44546B	Right-Hand - 1 clear, 1 yellow Left-Hand - 1 clear, 1 yellow
	44545B 44544B	
Revere Elect. Co.	7560	7562	1 clear, 1 yellow
			7561	
Westinghouse Elect. Corp.	S1569552	S1569554	1 clear, 1 yellow
			S1569553	

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