Intertek Airport Lighting Equipment Certification Program

IES Government Contacts Subcommittee, October 20, 2014

IES ALC Fall Conference

Lake Buena Vista, Florida

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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)

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
- License Agreement
- Certificate issued and product listed in 53D Addendum
- Certification process covered under ANSI accreditation to ISO Guide 65

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

Qualification Testing

When is testing required?

1. 8 year re-qualifications (4 years for L-890 ALCMS)
2. Product modifications

   -requires - AL-2 resubmittal

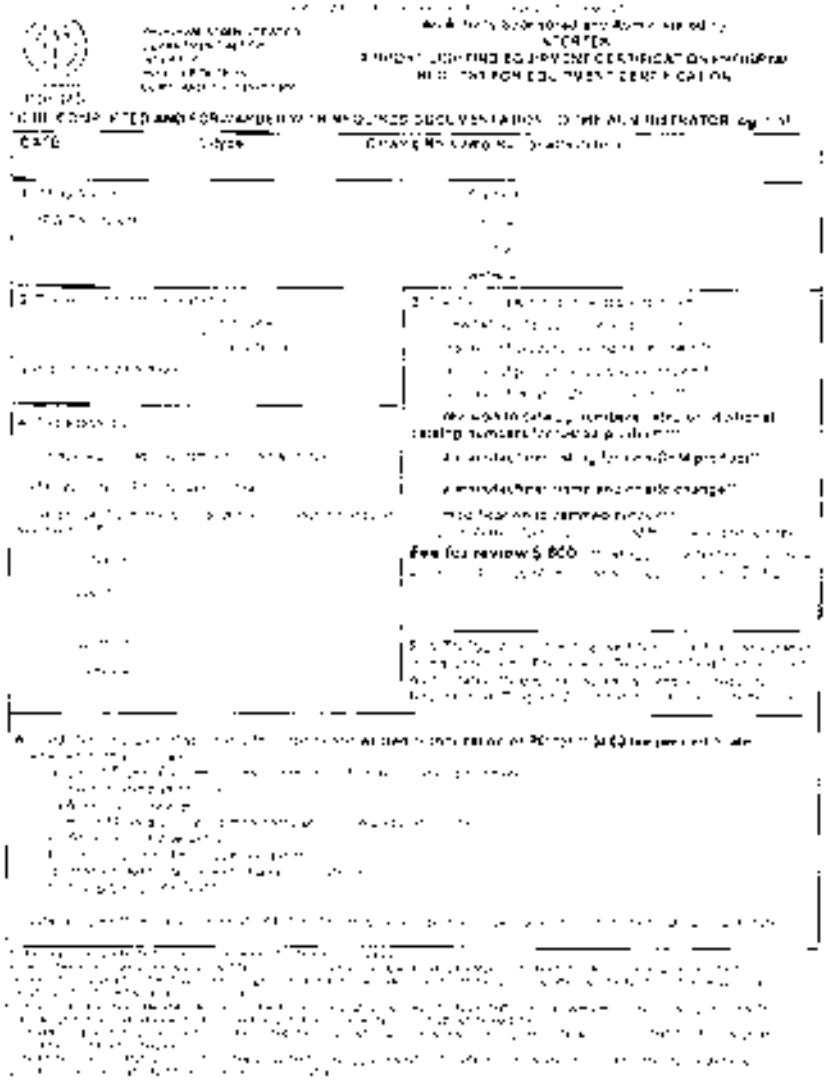
   - associated documentation

   - abbreviated testing
3. Specification updates

Semi-annual Inspections

- AL-7 Audit (follows basic ISO quality assurance requirements)
- AL-1; AL-1A Contact Sheet
- Product Checklist(s)
  - Construction review using the applicable ACs
- Production Testing Requirements
  - As required in the applicable ACs

AL-2 Request for Certification or Revision of Certificate



- Copy of all Qual Test Reports
- List of L-type, class, style, size
- List of catalogue number(s)
- Application required by ISO Guide 65

AL-2 Request for Certification (continued)

Required Product Documentation listed in section 6 of AL-2

- Section & part drawings
- Assembly drawings and schematics
- BOM with mfg name/catalogue numbers
- Statement of Warrantee
- Instruction/installation/operating manual
- Product Description sheet (marketing)
- AL-2B Lamp Life form

AL-2B Lamp Life Form

- Identifies the light source
  - Source manufacturer's designation
  - End product manufacturer's designation
- Provides life ratings, or airport lighting equipment manufacturer's life estimates in the end product

AL-2B Lamp Life Form (continued)

- Documents compliance with requirements that are not verified by qualification testing
- FAA AC 150/5345-53D Appendix 5
  - Determines Lamp Life in particular fixture by testing
  - Sources rated for more than 8,750 hours are exempt
- Product ACs contain minimum rated life
  - 46D (runway and taxiway lights)
    - 500 or 1,000 hours
  - 43G (obstruction lights)
    - Xenon – 2 years
    - Incandescent – 2,000 hours
    - LED – 2 years
  - 12F (beacons)
    - 4,000 hours

AL-2B Lamp Life Form (continued)

- LED products still must comply with the specific product AC and 53D
- Also must comply with EB67D
  - LED junction temperature as determined per the LED manufacturer's guidance
  - Must be consistent with life estimate
  - Usually done by product manufacturer

LED supplier's ratings must be submitted with the AL-2B

AL-2B Lamp Life Form (continued)

- This information results in the lamp list contained in the FAA AC 150/5345-53D addendum
- FAA lamp number can also be found on each product's certificate

LAMP DESCRIPTIONS

Lamp	Designation	Watts	Volts	Amps	Lamp Manufacturer
(10)	6.6A/T10/1P	30		6.6	General Electric, Sylvania, Philips
(10A)	6.6A/T10/1P	30		6.6	General Electric
(10C)	6.6A/T10/1P	30		6.6	Philips
(11)	6.6A/T10/P	45		6.6	General Electric, Sylvania, Philips
(11A)	6.6A/T10/P	45		6.6	General Electric
(11B)	6.6A/T10/P	45		6.6	Sylvania
(11C)	6.6A/T10/P	45		6.6	Philips
(16)	20058	115		6.6	Crouse-Hinds
(17)	40732	45		6.6	Crouse-Hinds
(18)	40737	30		6.6	Crouse-Hinds
(21)	EWR	150		6.6	General Electric
(31)	EXL	30		6.6	General Electric
(32A)	116A21/TS	116	120		General Electric
(32B)	116A21/TS	116	120		Philips
(32C)	116A21/TS	116	130		Philips
(33)	EXM	45		6.6	General Electric
(36)	EVV	120		6.6	General Electric
(48B)	620PS40P	620	120		GE
(54)	20538	185		6.6	Crouse-Hinds
(66)	64382	200		6.6	Osram

Current Program Status

72 Program Participants (+1)

81 Licensed Manufacturing Facilities (+1)

Certificates issued since the spring meeting:

- 22 new
- 16 requalification
- 36 revised

DRAFT SPECIFICATIONS

- FAA AC 150/5345-10H (Specification for Constant Current Regulators and Regulator Monitors)
  - Comments were due June 5, 2014
  - Currently still in review
  - Principal change relates to CCR response to short duration input voltage losses.

DRAFT SPECIFICATIONS

- FAA AC 150/5345-10H Section 3.3.11
  - Input losses from 5ms to 500ms
  - Resume operation within 1 s
  - Return to operation at commanded current within 5 s

DRAFT SPECIFICATIONS

Test Procedure to verify 3.3.11

- 4.2.13c (Protective Device Tests)
- Also related to 4.2.15 (Output Current Surge)

- How should switching be done?
- How many repetitions?
- How is “resume operation” defined?

NEW SPECIFICATIONS

FAA AC 150/5340-30H Design and Installation Details for Airport Visual Aids – 7/21/14

FAA AC 150/5340-26C Maintenance of Airport Visual Aid Facilities – 6/20/14

NEW SPECIFICATIONS

FAA AC 150/5340-30H

- Many principal changes
- Principal changes that effect testing and certification
  - 4.8e(3) 5-step CCR for high intensity LED lighting systems
  - 6.7.2.e separate power source for wind cones and associated obstruction lights

NEW SPECIFICATIONS

FAA AC 150/5340-30H 4.8e(3)

- Note added to require the use of 5-step CCR for taxiway centerline lights.

- -30G stated that a 5-step is “preferred”, but a 3-step could also be used.

NEW SPECIFICATIONS

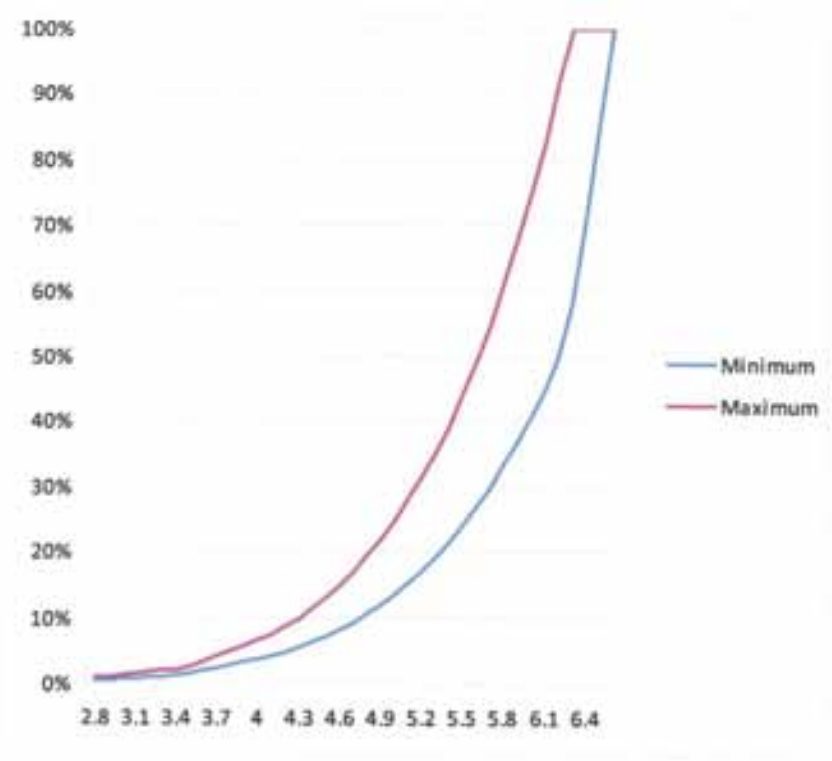
FAA AC 150/5340-30H 4.8e(3)

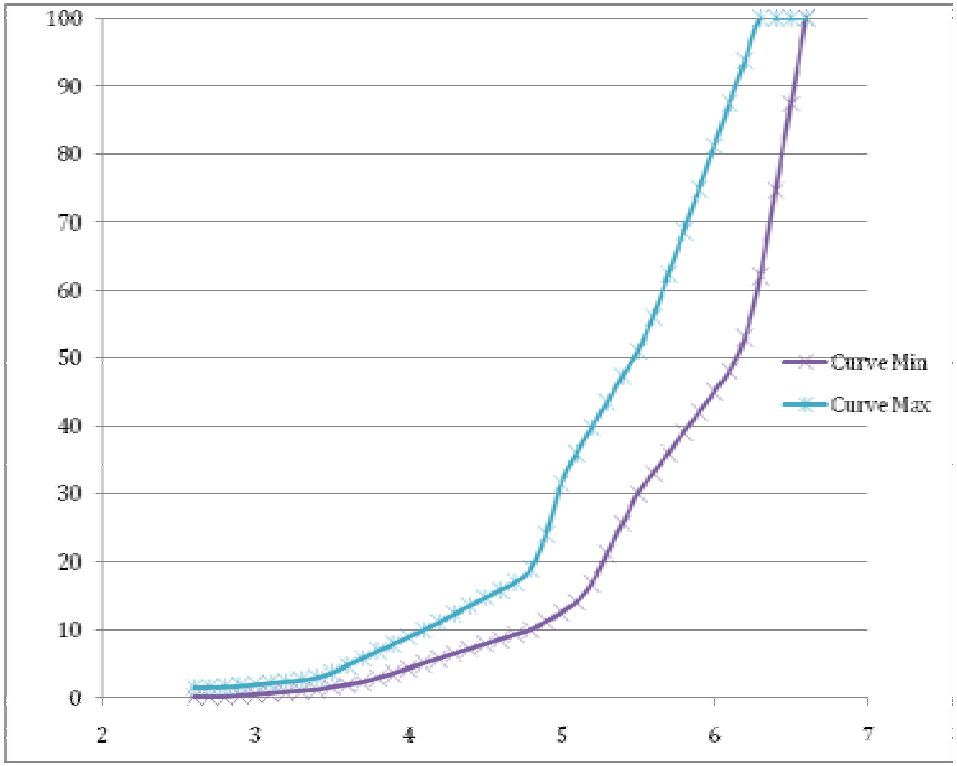
From FAA EB67D:

Intensity Ratios — The intensity of a fixture with an alternative light source intended to operate on a 3 or 5 step Constant Current Regulator must vary in accordance with characteristics of an incandescent lamp as described in AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*.

NEW SPECIFICATIONS

FAA AC 150/5340-30H 4.8e(3)





NEW SPECIFICATIONS

FAA AC 150/5340-30H 4.8e(3)

Most lights are tested over the full current range.

Verification for some applications could be limited to the current range of the appropriate power supply indicated in -30.

NEW SPECIFICATIONS

FAA AC 150/5340-30H

- RCL/TDZ - 3.4.c(2) – 20A or 6.6A CCR controlled independently, and independent from HIRL
- HIRL(L-850C, L-862, L-862E) – Table 2-2 – 5 step CCR
- MIRL(L-861, L-861E, L-861SE) – Table 2-2 – 3 step CCR
- LIRL (L-860, L-860E) – Table 2-2 – 1 step, mode 2
- MITL (L-861T, L-852T) – Table 2-2 – 3 step CCR
- RGL (L-804, L-852G) - 4.8f(1) – 3 step CCR or mode 2 for the elevated RGL
- Stop bar (L-862S, L-852S) 4.8g(2) – 3 step CCR

NEW SPECIFICATIONS

FAA AC 150/5340-30H 6.7.2.e

- Power to the obstruction light included with a wind cone must be separate.

- No effect on testing.

- Configuration verified visually or through documentation.

NEW SPECIFICATIONS

FAA AC 150/5340-26C

- Bolt torque must be per the light manufacturer's specifications
- Bolts should not be re-used
- References EB83 for more information
- Consistent with current testing practice
  - 18-8 stainless bolt with an A36 base.
  - Torque is critical for Load, Horizontal Shear, Shock, Vibration

Baseplate Clarification

Elevated light baseplates are certified as part of the light since the requirements are found in FAA AC 150/5345-46D.

Baseplates do not have their own “L” designation like other similar equipment found in FAA AC 150/5345-42G.

When elevated lights are certified, they are done so with a particular baseplate.

Intertek


IES/ALC
ILLUMINATING ENGINEERING SOCIETY
AVIATION LIGHTING COMMITTEE