Federal Aviation Administration

Memorandum

Date:

To: See Distribution

From: Manager, Small Airplane Directorate, Earl Lawrence, ACE-100

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Subject: PS-ACE-100-2010-003; Policy Memorandum, Clarification of Requirements for 14 CFR Part 23, LED Installations in Taxi and Landing Lights

Summary

This policy memorandum provides guidance on certification of Light Emitting Diode (LED) installations in taxi and landing lights. Whether for type certification or modification of an LED or existing incandescent light, §§ 23.1351(b)(1), 23.1357, 23.1359, 23.1367 and 23.1383 provide the requirements for which an applicant must show compliance. There are no requirements for color, intensity or area of coverage in taxi and landing light installations.

Current Regulatory Material

Section 23.1351(b)(1)
(b) Function. For each electrical system, the following apply:
(1) Each system, when installed, must be--
(i) Free from hazards in itself, in its method of operation, and in its effects on other parts of the airplane;
(ii) Protected from fuel, oil, water, other detrimental substances, and mechanical damage; and
(iii) So designed that the risk of electrical shock to crew, passengers, and ground personnel is reduced to a minimum.

Section 23.1357 states:
(a) Protective devices, such as fuses or circuit breakers, must be installed in all electrical circuits other than--
(1) Main circuits of starter motors used during starting only; and
(2) Circuits in which no hazard is presented by their omission.
(b) A protective device for a circuit essential to flight safety may not be used to protect any other circuit.
(c) Each resettable circuit protective device ("trip free" device in which the tripping mechanism

cannot be overridden by the operating control) must be designed so that--
(1) A manual operation is required to restore service after tripping; and
(2) If an overload or circuit fault exists, the device will open the circuit regardless of the position of the operating control.
(d) If the ability to reset a circuit breaker or replace a fuse is essential to safety in flight, that circuit breaker or fuse must be so located and identified that it can be readily reset or replaced in flight.
(e) For fuses identified as replaceable in flight--
(1) There must be one spare of each rating or 50 percent spare fuses of each rating, whichever is greater; and
(2) The spare fuse(s) must be readily accessible to any required pilot.

Section 23.1359 states:
(a) Each component of the electrical system must meet the applicable fire protection requirements of Secs. 23.863 and 23.1182.
(b) Electrical cables, terminals, and equipment in designated fire zones that are used during emergency procedures must be fire-resistant.
(c) Insulation on electrical wire and electrical cable must be self-extinguishing when tested at an angle of 60 degrees in accordance with the applicable portions of Appendix F of this part, or other approved equivalent methods. The average burn length must not exceed 3 inches (76 mm) and the average flame time after removal of the flame source must not exceed 30 seconds. Drippings from the test specimen must not continue to flame for more than an average of 3 seconds after falling.

Section 23.1367 states:
Each switch must be--
(a) Able to carry its rated current;
(b) Constructed with enough distance or insulating material between current carrying parts and the housing so that vibration in flight will not cause shorting;
(c) Accessible to appropriate flight crewmembers; and
(d) Labeled as to operation and the circuit controlled.

Section 23.1383 states: Each taxi and landing light must be designed and installed so that:
(a) No dangerous glare is visible to the pilots.
(b) The pilot is not seriously affected by halation.
(c) It provides enough light for night operations.
(d) It does not cause a fire hazard in any configuration.

Relevant Past Practice

There have been standardization issues in approval of LED lights for taxi and landing light installations. It was never the intent of the Small Airplane Directorate to require certification of colors, intensities and areas of coverage for taxi and landing lights whether LED or incandescent types. Those requirements are limited to position and anticollision light installations. PS-ACE100-2006-001, Installation of Non-Required Lights, is applicable to LED installations of non-required lights and remains in effect for other types of non-required lights.

Policy for Taxi and Landing Light Installations including LEDs

Position light and anticollision light requirements including color, intensity, and area of coverage in §§ 23.1385 through 23.1401 are not applicable to any installation of taxi or landing lights. Based on an opinion from the FAA Chief Counsel's Office, a general rule such as sections 23.1301 or 23.1309 cannot be used to add requirements to a specific rule in 14 CFR part 23.

Implementation

This clarification discusses compliance methods that should be applied to type certificate, amended type certificate, supplemental type certificate, and amended supplemental type certification programs and Field Approvals using FAA 337 Forms.

Conclusion

In no case are §§ 23.1385 through 23.1401 requirements for color, intensity, and area of coverage applicable for taxi and landing light installations.

For questions and support on this policy statement, please contact Mr. Leslie B. Taylor at (816) 329-4134, by fax (816) 329-4090, or by e-mail at leslie.b.taylor@faa.gov.

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