

§ 23.1309

14 CFR Ch. I (1–1–14 Edition)

affected when the equipment providing the function is exposed to equipment HIRF test level 3, as described in appendix J to this part.

(d) Before December 1, 2012, an electrical or electronic system that performs a function whose failure would prevent the continued safe flight and landing of an airplane may be designed and installed without meeting the provisions of paragraph (a) provided—

(1) The system has previously been shown to comply with special conditions for HIRF, prescribed under § 21.16, issued before December 1, 2007;

(2) The HIRF immunity characteristics of the system have not changed since compliance with the special conditions was demonstrated; and

(3) The data used to demonstrate compliance with the special conditions is provided.

[Doc. No. FAA–2006–23657, 72 FR 44024, Aug. 6, 2007]

§ 23.1309 Equipment, systems, and installations.

The requirements of this section, except as identified in paragraphs (a) through (d), are applicable, in addition to specific design requirements of part 23, to any equipment or system as installed in the airplane. This section is a regulation of general requirements and does not supersede any requirements contained in another section of part 23.

(a) The airplane equipment and systems must be designed and installed so that:

(1) Those required for type certification or by operating rules perform as intended under the airplane operating and environmental conditions, including the indirect effects of lightning strikes.

(2) Any equipment and system does not adversely affect the safety of the airplane or its occupants, or the proper functioning of those covered by paragraph (a)(1) of this section.

(b) Minor, major, hazardous, or catastrophic failure condition(s), which occur during Type Inspection Authorization or FAA flight-certification testing, must have root cause analysis and corrective action.

(c) The airplane systems and associated components considered separately

and in relation to other systems, must be designed and installed so that:

(1) Each catastrophic failure condition is extremely improbable and does not result from a single failure;

(2) Each hazardous failure condition is extremely remote; and

(3) Each major failure condition is remote.

(d) Information concerning an unsafe system operating condition must be provided in a timely manner to the crew to enable them to take appropriate corrective action. An appropriate alert must be provided if immediate pilot awareness and immediate or subsequent corrective action is required. Systems and controls, including indications and annunciations, must be designed to minimize crew errors which could create additional hazards.

[Doc. No. FAA–2009–0738, 76 FR 75760, Dec. 2, 2011]

§ 23.1310 Power source capacity and distribution.

(a) Each installation whose functioning is required for type certification or under operating rules and that requires a power supply is an “essential load” on the power supply. The power sources and the system must be able to supply the following power loads in probable operating combinations and for probable durations:

(1) Loads connected to the system with the system functioning normally.

(2) Essential loads, after failure of any one prime mover, power converter, or energy storage device.

(3) Essential loads after failure of—

(i) Any one engine on two-engine airplanes; and

(ii) Any two engines on airplanes with three or more engines.

(4) Essential loads for which an alternate source of power is required, after any failure or malfunction in any one power supply system, distribution system, or other utilization system.

(b) In determining compliance with paragraphs (a)(2) and (3) of this section, the power loads may be assumed to be reduced under a monitoring procedure consistent with safety in the kinds of operation authorized. Loads not required in controlled flight need not be