

the common boundary plane at more than 20 degrees.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23-43, 58 FR 18977, Apr. 9, 1993]

#### § 23.1397 Color specifications.

Each position light color must have the applicable International Commission on Illumination chromaticity coordinates as follows:

(a) *Aviation red*—

$y$  is not greater than 0.335; and  
 $z$  is not greater than 0.002.

(b) *Aviation green*—

$x$  is not greater than  $0.440 - 0.320y$ ;  
 $x$  is not greater than  $y - 0.170$ ; and  
 $y$  is not less than  $0.390 - 0.170x$ .

(c) *Aviation white*—

$x$  is not less than 0.300 and not greater than 0.540;  
 $y$  is not less than  $x - 0.040$  or  $y_0 - 0.010$ , whichever is the smaller; and  
 $y$  is not greater than  $x + 0.020$  nor  $0.636 - 0.400x$ ;  
Where  $y_0$  is the  $y$  coordinate of the Planckian radiator for the value of  $x$  considered.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, amended by Amdt. 23-11, 36 FR 12971, July 10, 1971]

#### § 23.1399 Riding light.

(a) Each riding (anchor) light required for a seaplane or amphibian, must be installed so that it can—

(1) Show a white light for at least two miles at night under clear atmospheric conditions; and

(2) Show the maximum unbroken light practicable when the airplane is moored or drifting on the water.

(b) Externally hung lights may be used.

#### § 23.1401 Anticollision light system.

(a) *General.* The airplane must have an anticollision light system that:

(1) Consists of one or more approved anticollision lights located so that their light will not impair the flight crewmembers' vision or detract from the conspicuity of the position lights; and

(2) Meets the requirements of paragraphs (b) through (f) of this section.

(b) *Field of coverage.* The system must consist of enough lights to illuminate the vital areas around the airplane,

considering the physical configuration and flight characteristics of the airplane. The field of coverage must extend in each direction within at least 75 degrees above and 75 degrees below the horizontal plane of the airplane, except that there may be solid angles of obstructed visibility totaling not more than 0.5 steradians.

(c) *Flashing characteristics.* The arrangement of the system, that is, the number of light sources, beam width, speed of rotation, and other characteristics, must give an effective flash frequency of not less than 40, nor more than 100, cycles per minute. The effective flash frequency is the frequency at which the airplane's complete anticollision light system is observed from a distance, and applies to each sector of light including any overlaps that exist when the system consists of more than one light source. In overlaps, flash frequencies may exceed 100, but not 180, cycles per minute.

(d) *Color.* Each anticollision light must be either aviation red or aviation white and must meet the applicable requirements of § 23.1397.

(e) *Light intensity.* The minimum light intensities in any vertical plane, measured with the red filter (if used) and expressed in terms of "effective" intensities, must meet the requirements of paragraph (f) of this section. The following relation must be assumed:

$$I_e = \frac{\int_{t_1}^{t_2} I(t) dt}{0.2 + (t_2 - t_1)}$$

where:

$I_e$ =effective intensity (candles).

$I(t)$ =instantaneous intensity as a function of time.

$t_2 - t_1$ =flash time interval (seconds).

Normally, the maximum value of effective intensity is obtained when  $t_2$  and  $t_1$  are chosen so that the effective intensity is equal to the instantaneous intensity at  $t_2$  and  $t_1$ .

(f) *Minimum effective intensities for anticollision lights.* Each anticollision light effective intensity must equal or exceed the applicable values in the following table.

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Angle above or below the horizontal plane	Effective intensity (candies)
0° to 5° .....	400
5° to 10° .....	240
10° to 20° .....	80
20° to 30° .....	40
30° to 75° .....	20

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23-11, 36 FR 12972, July 10, 1971; Amdt. 23-20, 42 FR 36969, July 18, 1977; Amdt. 23-49, 61 FR 5169, Feb. 9, 1996]

**SAFETY EQUIPMENT**

**§ 23.1411 General.**

(a) Required safety equipment to be used by the flight crew in an emergency, such as automatic liferaft releases, must be readily accessible.

(b) Stowage provisions for required safety equipment must be furnished and must—

(1) Be arranged so that the equipment is directly accessible and its location is obvious; and

(2) Protect the safety equipment from damage caused by being subjected to the inertia loads resulting from the ultimate static load factors specified in § 23.561(b)(3) of this part.

[Amdt. 23-17, 41 FR 55465, Dec. 20, 1976, as amended by Amdt. 23-36, 53 FR 30815, Aug. 15, 1988]

**§ 23.1415 Ditching equipment.**

(a) Emergency flotation and signaling equipment required by any operating rule in this chapter must be installed so that it is readily available to the crew and passengers.

(b) Each raft and each life preserver must be approved.

(c) Each raft released automatically or by the pilot must be attached to the airplane by a line to keep it alongside the airplane. This line must be weak enough to break before submerging the empty raft to which it is attached.

(d) Each signaling device required by any operating rule in this chapter, must be accessible, function satisfactorily, and must be free of any hazard in its operation.

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**§ 23.1416 Pneumatic de-icer boot system.**

If certification with ice protection provisions is desired and a pneumatic de-icer boot system is installed—

(a) The system must meet the requirements specified in § 23.1419.

(b) The system and its components must be designed to perform their intended function under any normal system operating temperature or pressure, and

(c) Means to indicate to the flight crew that the pneumatic de-icer boot system is receiving adequate pressure and is functioning normally must be provided.

[Amdt. 23-23, 43 FR 50593, Oct. 30, 1978]

**§ 23.1419 Ice protection.**

If certification with ice protection provisions is desired, compliance with the requirements of this section and other applicable sections of this part must be shown:

(a) An analysis must be performed to establish, on the basis of the airplane's operational needs, the adequacy of the ice protection system for the various components of the airplane. In addition, tests of the ice protection system must be conducted to demonstrate that the airplane is capable of operating safely in continuous maximum and intermittent maximum icing conditions, as described in appendix C of part 25 of this chapter. As used in this section, "Capable of operating safely," means that airplane performance, controllability, maneuverability, and stability must not be less than that required in part 23, subpart B.

(b) Except as provided by paragraph (c) of this section, in addition to the analysis and physical evaluation prescribed in paragraph (a) of this section, the effectiveness of the ice protection system and its components must be shown by flight tests of the airplane or its components in measured natural atmospheric icing conditions and by one or more of the following tests, as found necessary to determine the adequacy of the ice protection system—

(1) Laboratory dry air or simulated icing tests, or a combination of both, of the components or models of the components.