

### CS 27.1391 Minimum intensities in the horizontal plane of forward and rear position lights

Each position light intensity must equal or exceed the applicable values in the following table:

Dihedral angle (light included)	Angle from right or left of longitudinal axis, measured from dead ahead	Intensity (candelas)
L and R (forward red and green)	0° to 10°	40
	10° to 20°	30
	20° to 110°	5
A (rear white)	110° to 180°	20

### CS 27.1393 Minimum intensities in any vertical plane of forward and rear position lights

Each position light intensity must equal or exceed the applicable values in the following table:

Angle above or below the horizontal plane –	Intensity
0	1.0 I
0° to 5°	0.90 I
5° to 10°	0.80 I
10° to 15°	0.70 I
15° to 20°	0.50 I
20° to 30°	0.30 I
30° to 40°	0.10 I
40° to 90°	0.05 I

### CS 27.1395 Maximum intensities in overlapping beams of forward and rear position lights

No position light intensity may exceed the applicable values in the following table, except as provided in CS 27.1389(b)(3):

Overlaps	Maximum intensity	
	Area A (candelas)	Area B (candelas)
Green in dihedral angle L	10	1
Red in dihedral angle R	10	1
Green in dihedral angle A	5	1
Red in dihedral angle A	5	1
Rear white in dihedral angle L	5	1
Rear white in dihedral angle R	5	1

Where:

(a) Area A includes all directions in the adjacent dihedral angle that pass through the

light source and intersect the common boundary plane at more than 10° but less than 20°; and

(b) Area B includes all directions in the adjacent dihedral angle that pass through the light source and intersect the common boundary plane at more than 20°.

### CS 27.1397 Colour specifications

Each position light colour must have the applicable International Commission on Illumination chromaticity co-ordinates 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<sub>o</sub>–0.010’, whichever is the smaller; and

‘y’ is not greater than ‘x + 0.020’ nor ‘0.636–0.400x’;

Where ‘y<sub>o</sub>’ is the ‘y’ co-ordinate of the Planckian radiator for the value of ‘x’ considered.

### CS 27.1399 Riding light

(a) Each riding light required for water operation must be installed so that it can:

(1) Show a white light for at least 3.7 km (two nautical miles) at night under clear atmospheric conditions; and

(2) Show a maximum practicable unbroken light with the rotorcraft on the water.

(b) Externally hung lights may be used.

### CS 27.1401 Anti-collision light system

(a) *General.* If certification for night operation is requested, the rotorcraft must have an anti-collision light system that:

(1) Consists of one or more approved anti-collision lights located so that their emitted light will not impair the crew’s vision

or detract from the conspicuity of the position lights; and

(2) Meets the requirements of subparagraphs (b) to (f).

(b) *Field of coverage.* The system must consist of enough lights to illuminate the vital areas around the rotorcraft, considering the physical configuration and flight characteristics of the rotorcraft. The field of coverage must extend in each direction within at least 30° above and 30° below the horizontal plane of the rotorcraft, except that there may be solid angles of obstructed visibility totalling 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 rotorcraft's complete anti-collision 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) *Colour.* Each anti-collision light must be aviation red and must meet the applicable requirements of CS 27.1397.

(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 subparagraph (f). 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 (candelas).

$I(t)$  = 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 anti-collision light.* Each anti-collision light effective intensity must equal or exceed the applicable values in the following table:

Angle above or below the horizontal plane	Effective intensity (candelas)
0° to 5°	150
5° to 10°	90
10° to 20°	30
20° to 30°	15

## SAFETY EQUIPMENT

### CS 27.1411 General

(a) Required safety equipment to be used by the crew in an emergency, such as flares and 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 specified in CS 27.561.

### CS 27.1413 Safety belts

Each safety belt must be equipped with a metal to metal latching device.

### CS 27.1415 Ditching equipment

(a) Emergency flotation and signalling equipment required by any applicable operating rule must meet the requirements of this paragraph.

(b) Each raft and each life preserver must be approved and must be installed so that it is readily available to the crew and passengers. The storage provisions for life preservers must accommodate one life preserver for each occupant for which certification for ditching is requested.

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

(d) Each signalling device must be free from hazard in its operation and must be installed in an accessible location.