

**§ 171.259**

**14 CFR Ch. I (1–19 Edition)**

208 V nominal value, 177 V to 239 V ( $\pm 2$  V).\*  
240 V nominal value, 204 V to 276 V ( $\pm 0.2$  V).\*

AC line frequency (60 Hz), 57 Hz to 63 Hz ( $\pm 0.2$  Hz).\*

DC voltage (48 V), 44 V to 52 V ( $\pm 0.5$  V).\*

\*NOTE: Where discrete values of the above frequency or voltages are specified for testing purposes, the tolerances given in parentheses indicated by an asterisk apply to the test instruments used to measure these parameters.

Elevation, 0 to 10,000 ft. above sea level.

Duty, continuous, unattended.

(2) Ambient conditions for localizer and glide path equipment:

Temperature,  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .

Relative humidity, 5% to 90%.

(3) Ambient conditions for marker beacon facilities and all other equipment installed outdoors (for example, antennae, field detectors, and shelters):

Temperature,  $-50^{\circ}\text{C}$ . to  $+70^{\circ}\text{C}$ .

Relative humidity, 5% to 100%.

(4) All equipment installed outdoors must operate satisfactorily under the following conditions:

Wind velocity, 0–100 MPH (not including gusts).

Hail stones,  $\frac{1}{2}$ " diameter.

Rain, provide coverage through a distance of 5 nautical miles with rain falling at a rate of 50 millimeters per hour, and with rain falling at the rate of 25 millimeters per hour for the additional design performance range of the system.

Ice loading, encased in  $\frac{1}{2}$ " radial thickness of clear ice.

(d) The ISMLS must perform in accordance with the following standards and practices for Facility Performance Category I operation:

(1) The ISMLS must be constructed and adjusted so that, at a specified distance from the threshold, similar instrumental indications in the aircraft represent similar displacements from the course line or ISMLS glide path, as appropriate, regardless of the particular ground installation in use.

(2) The localizer and glide path components listed in paragraphs (a)(1) and (a)(2) of this section which form part of an ISMLS, must comply at least with the standard performance requirements specified herein. The marker beacon components listed in paragraph (a)(3) of this section which form part of an ISMLS, must comply at least with the

standard performance requirements specified in subpart H of this part.

(3) The ISMLS must be so designed and maintained that the probability of operation is within the performance requirements specified in § 171.273(k).

(e) The signal format and pairing of the runway localizer and glide path transmitter frequencies of an ISMLS must be in accordance with the frequency plan approved by the FAA, and must meet the following signal format requirements:

(1) The localizer and glide slope stations must transmit angular guidance information on a C-band microwave carrier on narrow, scanned antenna beams that are encoded to produce a modulation in space which, after averaging over several beam scans, is equivalent to the modulation used for conventional ILS as specified in subpart C of this part, except that the frequency tolerance may not exceed  $\pm 0.0001$  percent.

(2) Guidance modulation must be impressed on the microwave carrier of the radiated signal in the form of a summation of 90 Hz and 150 Hz sinusoidal modulation corresponding to the pointing direction of the particular beam which radiates the signal.

(3) Each of the effective beam positions must be illuminated in a particular sequence for a short time interval. The modulation impressed on each beam must be a sample of the combined 90 Hz and 150 Hz waveform appropriate for that particular beam direction and time slot, and must be accomplished by appropriately varying the length of time the carrier is radiated during each beam illumination interval.

(4) For those cases where the scanning beam fills the coverage space in steps, the incremental step must not exceed 0.6 times the beam width where the beam is in the proportional guidance sector. In the clearance region, the step may not exceed 0.8 times the beam width.

(5) At least one pulse duration modulation (pdm) sample pulse per beam width of scan must be provided.

(6) The minimum pulse duration must be 40 microseconds.

(7) The minimum beam scan cycle must be 600 Hz.