

response and accuracy requirements of paragraph (d) of this section; and

(4) The calibration and checking of measurement systems must use the procedures described in Section A36.3.9.

(d) *Sensing, recording, and reproducing equipment.* (1) The noise levels measured from helicopter flyovers under this appendix may be determined directly by an integrating sound level meter, or the A-weighted sound level time history may be written onto a graphic level recorder set at “slow” response from which the SEL value may be determined. With the approval of the FAA, the noise signal may be tape recorded for subsequent analysis.

(i) The SEL values from each flyover test may be directly determined from an integrating sound level meter complying with the standards of IEC 804 (Incorporated by reference, see §36.6) for a Type 1 instrument set at “slow” response.

(ii) The acoustic signal from the helicopter, along with the calibration signals specified under paragraph (e) of this section and the background noise signal required under paragraph (f) of this section, may be recorded on a magnetic tape recorder for subsequent analysis for an integrating sound level meter identified in paragraph (d)(1)(i) of this section. The record/playback system (including the audio tape) of the tape recorder must conform to the requirements prescribed in section A36.3.6 of appendix A to this part. The tape recorder shall comply with the specifications of IEC 561 (Incorporated by reference, see §36.6).

(iii) The characteristics of the complete system shall comply with the recommendations given in IEC 651 (Incorporated by reference, see §36.6) with regard to the specifications concerning microphone, amplifier, and indicating instrument characteristics.

(iv) The response of the complete system to a sensibly plane progressive wave of constant amplitude shall lie within the tolerance limits specified in Table IV and Table V for Type 1 instruments in IEC 651 for weighting curve “A” over the frequency range of 45 Hz to 11500 Hz.

(2) [Reserved]

(v) A windscreen must be used with the microphone during each measurement of the helicopter flyover noise. Correction for any insertion loss produced by the windscreen, as a function of the frequency of the acoustic calibration required under paragraph (e) of this section, must be applied to the measured data and any correction applied must be reported.

(e) *Calibrations.* (1) If the helicopter acoustic signal is tape recorded for subsequent analysis, the measuring system and components of the recording system must be calibrated as prescribed under section A36.3.6 of appendix A of this part.

(2) If the helicopter acoustic signal is directly measured by an integrating sound level meter:

(i) The overall sensitivity of the measuring system shall be checked before and after the series of flyover tests and at intervals (not exceeding one-hour duration) during the flyover tests using an acoustic calibrator using sine wave noise generating a known sound pressure level at a known frequency.

(ii) The performance of equipment in the system will be considered satisfactory if, during each day’s testing, the variation in the calibration value does not exceed 0.5 dB. The SEL data collected during the flyover tests shall be adjusted to account for any variation in the calibration value.

(iii) A performance calibration analysis of each piece of calibration equipment, including acoustic calibrators, reference microphones, and voltage insertion devices, must have been made during the six calendar months proceeding the beginning of the helicopter flyover series. Each calibration shall be traceable to the National Institute of Standards and Technology.

(f) *Noise measurement procedures.* (1) The microphone shall be of the pressure-sensitive capacitive type designed for nearly uniform grazing incidence response. The microphone shall be mounted with the center of the sensing element 4 feet (1.2 meters) above the local ground surface and shall be oriented for grazing incidence such that the sensing element, the diaphragm, is substantially in the plane defined by the nominal flight path of the helicopter and the noise measurement station.

(2) If a tape recorder is used, the frequency response of the electrical system must be determined at a level within 10 dB of the full-scale reading used during the test, utilizing pink or pseudorandom noise.

(3) The ambient noise, including both acoustical background and electrical noise of the measurement systems shall be determined in the test area and the system gain set at levels which will be used for helicopter noise measurements. If helicopter sound levels do not exceed the background sound levels by at least 15 dB(A), flyovers at an FAA-approved lower height may be used and the results adjusted to the reference measurement point by an FAA-approved method.

(4) If an integrating sound level meter is used to measure the helicopter noise, the instrument operator shall monitor the continuous A-weighted (slow response) noise levels throughout each flyover to ensure that the SEL integration process includes, at minimum, all of the noise signal between the maximum A-weighted sound level ($L_{A\text{MAX}}$) and the 10 dB down points in the flyover time history. The instrument operator shall note the actual db(A) levels at the start and stop of the SEL integration interval and document these levels along with the value of