

noise generator must be determined by a method traceable to the U.S. National Institute of Standards and Technology or to an equivalent national standards laboratory as determined by the FAA. Changes in the relative output from the previous calibration at each one-third octave band may not exceed 0.2 dB. The correction for frequency response must be reported to the FAA and applied to the measured one-third octave sound pressure levels determined from the output of the analyzer.

A36.3.9.6 The performance of switched attenuators in the equipment used during noise certification measurements and calibration must be checked within six months of each test series to ensure that the maximum error does not exceed 0.1 dB.

A36.3.9.7 The sound pressure level produced in the cavity of the coupler of the sound calibrator must be calculated for the test environmental conditions using the manufacturer's supplied information on the influence of atmospheric air pressure and temperature. This sound pressure level is used to establish the acoustical sensitivity of the measurement system. Within six months of each test series the output of the sound calibrator must be determined by a method traceable to the U.S. National Institute of Standards and Technology or to an equivalent national standards laboratory as determined by the FAA. Changes in output from the previous calibration must not exceed 0.2 dB.

A36.3.9.8 Sufficient sound pressure level calibrations must be made during each test day to ensure that the acoustical sensitivity of the measurement system is known at the prevailing environmental conditions corresponding with each test series. The difference between the acoustical sensitivity levels recorded immediately before and immediately after each test series on each day may not exceed 0.5 dB. The 0.5 dB limit applies after any atmospheric pressure corrections have been determined for the calibrator output level. The arithmetic mean of the before and after measurements must be used to represent the acoustical sensitivity level of the measurement system for that test series. The calibration corrections must be reported to the FAA and applied to the measured one-third octave band sound pressure levels determined from the output of the analyzer.

A36.3.9.9 Each recording medium, such as a reel, cartridge, cassette, or diskette, must carry a sound pressure level calibration of at least 10 seconds duration at its beginning and end.

A36.3.9.10 The free-field insertion loss of the windscreen for each one-third octave nominal midband frequency from 50 Hz to 10 kHz inclusive must be determined with sinusoidal sound signals at the incidence angles determined to be applicable for correction of directional response effects per sec-

tion A36.3.9.3. The interval between angles tested must not exceed 30 degrees. For a windscreen that is undamaged and uncontaminated, the insertion loss may be taken from manufacturer's data. Alternatively, within six months of each test series the insertion loss of the windscreen may be determined by a method traceable to the U.S. National Institute of Standards and Technology or an equivalent national standards laboratory as determined by the FAA. Changes in the insertion loss from the previous calibration at each one-third octave frequency band must not exceed 0.4 dB. The correction for the free-field insertion loss of the windscreen must be reported to the FAA and applied to the measured one-third octave sound pressure levels determined from the output of the analyzer.

A36.3.10 Adjustments for ambient noise.

A36.3.10.1 Ambient noise, including both an acoustical background and electrical noise of the measurement system, must be recorded for at least 10 seconds at the measurement points with the system gain set at the levels used for the aircraft noise measurements. Ambient noise must be representative of the acoustical background that exists during the flyover test run. The recorded aircraft noise data is acceptable only if the ambient noise levels, when analyzed in the same way, and quoted in PNL (see A36.4.1.3 (a)), are at least 20 dB below the maximum PNL of the aircraft.

A36.3.10.2 Aircraft sound pressure levels within the 10 dB-down points (see A36.4.5.1) must exceed the mean ambient noise levels determined in section A36.3.10.1 by at least 3 dB in each one-third octave band, or must be adjusted using a method approved by the FAA; one method is described in the current advisory circular for this part.

Section A36.4 Calculation of Effective Perceived Noise Level From Measured Data

A36.4.1 General.

A36.4.1.1 The basic element for noise certification criteria is the noise evaluation measure known as effective perceived noise level, EPNL, in units of EPNdB, which is a single number evaluator of the subjective effects of airplane noise on human beings. EPNL consists of instantaneous perceived noise level, PNL, corrected for spectral irregularities, and for duration. The spectral irregularity correction, called "tone correction factor", is made at each time increment for only the maximum tone.

A36.4.1.2 Three basic physical properties of sound pressure must be measured: level, frequency distribution, and time variation. To determine EPNL, the instantaneous sound pressure level in each of the 24 one-third octave bands is required for each 0.5 second increment of time during the airplane noise measurement.