system and the root mean square sound pressure that would exist at the position of the microphone in its absence.

A36.3.1.6 *Free-field sensitivity level of a microphone system* means, in decibels, twenty times the logarithm to the base ten of the ratio of the free-field sensitivity of a microphone system and the reference sensitivity of one volt per Pascal.

NOTE: The free-field sensitivity level of a microphone system may be determined by subtracting the sound pressure level (in decibels re 20 μPa) of the sound incident on the microphone from the voltage level (in decibels re 1 V) at the output of the microphone system, and adding 93.98 dB to the result.

A36.3.1.7 *Time-average band sound pressure level* means in decibels, ten times the logarithm to the base ten, of the ratio of the time mean square of the instantaneous sound pressure during a stated time interval and in a specified one-third octave band, to the square of the reference sound pressure of 20 μPa.

A36.3.1.8 *Level range* means, in decibels, an operating range determined by the setting of the controls that are provided in a measurement system for the recording and one-third octave band analysis of a sound pressure signal. The upper boundary associated with any particular level range must be rounded to the nearest decibel.

A36.3.1.9 *Calibration sound pressure level* means, in decibels, the sound pressure level produced, under reference environmental conditions, in the cavity of the coupler of the sound calibrator that is used to determine the overall acoustical sensitivity of a measurement system.

A36.3.1.10 *Reference level range* means, in decibels, the level range for determining the acoustical sensitivity of the measurement system and containing the calibration sound pressure level.

A36.3.1.11 *Calibration check frequency* means, in hertz, the nominal frequency of the sinusoidal sound pressure signal produced by the sound calibrator.

A36.3.1.12 *Level difference* means, in decibels, for any nominal one-third octave midband frequency, the output signal level measured on any level range minus the level of the corresponding electrical input signal.

A36.3.1.13 *Reference level difference* means, in decibels, for a stated frequency, the level difference measured on a level range for an electrical input signal corresponding to the calibration sound pressure level, adjusted as appropriate, for the level range.

A36.3.1.14 *Level non-linearity* means, in decibels, the level difference measured on any level range, at a stated one-third octave nominal midband frequency, minus the corresponding reference level difference, all input and output signals being relative to the same reference quantity.

A36.3.1.15 *Linear operating range* means, in decibels, for a stated level range and frequency, the range of levels of steady sinusoidal electrical signals applied to the input of the entire measurement system, exclusive of the microphone but including the microphone preamplifier and any other signal-conditioning elements that are considered to be part of the microphone system, extending from a lower to an upper boundary, over which the level non-linearity is within specified tolerance limits.

NOTE: Microphone extension cables as configured in the field need not be included for the linear operating range determination.

A36.3.1.16 *Windscreen insertion loss* means, in decibels, at a stated nominal one-third octave midband frequency, and for a stated sound incidence angle on the inserted microphone, the indicated sound pressure level without the windscreen installed around the microphone minus the sound pressure level with the windscreen installed.

A36.3.2 *Reference environmental conditions.*

A36.3.2.1 The reference environmental conditions for specifying the performance of a measurement system are:

(a) Air temperature 73.4 °F (23 °C);

(b) Static air pressure 101.325 kPa; and

(c) Relative humidity 50%.

A36.3.3. *General.*

NOTE: Measurements of aircraft noise that are made using instruments that conform to the specifications of this section will yield one-third octave band sound pressure levels as a function of time. These one-third octave band levels are to be used for the calculation of effective perceived noise level as described in section A36.4.

A36.3.3.1 The measurement system must consist of equipment approved by the FAA and equivalent to the following:

(a) A windscreen (See A36.3.4.);

(b) A microphone system (See A36.3.5):

(c) A recording and reproducing system to store the measured aircraft noise signals for subsequent analysis (see A36.3.6);

(d) A one-third octave band analysis system (see A36.3.7); and

(e) Calibration systems to maintain the acoustical sensitivity of the above systems within specified tolerance limits (see A36.3.8).

A36.3.3.2. For any component of the measurement system that converts an analog signal to digital form, such conversion must be performed so that the levels of any possible aliases or artifacts of the digitization process will be less than the upper boundary of the linear operating range by at least 50 dB at any frequency less than 12.5 kHz. The sampling rate must be at least 28 kHz. An anti-aliasing filter must be included before the digitization process.

A36.3.4 *Windscreen.*