



# DRAFT AMENDMENT ISO 20906:2009/DAM 1

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## Acoustics — Unattended monitoring of aircraft sound in the vicinity of airports

### AMENDMENT 1

*Acoustique — Surveillance automatique du bruit des aéronefs au voisinage des aéroports*

AMENDEMENT 1

ICS 17.140.30

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Amendment 1 to ISO 20906:2009 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

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# Acoustics — Unattended monitoring of aircraft sound in the vicinity of airports

## AMENDMENT 1

Page 11, Subclause 4.8

Delete subclause 4.8 and replace it with the following:

### 4.8 Calibration, testing and checking of Sound Monitors

#### 4.8.1 Calibration of Sound Monitor

The sensitivity of the Sound Monitor shall be determined using the best possible method. There are different ways to determine the sensitivity:

- Calibration of the measurement system to determine and adjust the sensitivity of the Sound Monitor in accordance with IEC 61672-3 under appropriate environmental conditions
- Use a sound calibrator to determine the Sound Monitor's sensitivity as described in 4.8.3 and at environmental conditions as close as possible to the annual average atmospheric pressure and temperature.

**NOTE** It is recommended to use corrections to the sensitivity calibration value of the Sound Monitor to account for the deviation of the environmental conditions at the time of calibration from the annual average atmospheric pressure and temperature.

#### 4.8.2 Periodic testing

The recommended time interval for testing of system performance is once a year. The maximum allowable interval is two years. If a change or fault is indicated by the system for automatic check of operation, immediate testing is recommended. The electroacoustical performance of each channel of the sound monitor shall be tested periodically for demonstration of continued conformance to the class 1 specifications of IEC 61672-1 in accordance with the procedures in IEC 61672-3.

**NOTE 1** Demonstrations from periodic testing of continued conformance to the performance specifications of IEC 61672-1 is possible only for those measurement systems for which there is evidence available of pattern approval by the procedures of IEC 61672-2.

A sound monitor that has not undergone such testing within the previous 24 month period shall be considered not to conform to the requirements of this International Standard, except during the first two years after installation.

The testing shall be performed using instruments for which the performance is traceable to relevant standards. It shall be performed by a laboratory that conforms to the requirements of ISO/IEC 17025 for this application or by a nationally recognized laboratory.

The periodic tests shall include inspection of elements (for example rain protection, windscreen, microphone device support, anti-bird-perching devices and lightning conductor) that are not tested with the procedures of IEC 61672-3.

**NOTE 2** National accreditation of the nationally recognized laboratory can provide a higher level of confidence in the results of periodic testing.

#### 4.8.3 Acoustic check of Sound Monitor sensitivity

Means shall be provided to apply an acoustical calibration signal from a sound calibrator to each microphone to check the acoustical sensitivity of the measurement system. The signal shall be a sinusoidal tone in the range from 160 Hz to 1 250 Hz. The sound pressure level of the tone shall be in the range from 90 dB to 125 dB.

A coupler or other means may be provided to minimize the influence of ambient sound when checking the acoustical sensitivity of a measurement channel of a sound-monitoring system. The calibrator used shall conform to the requirements of IEC 60942 for a class 1 instrument, and the performance of the sound calibrator shall have been verified by an accredited or otherwise nationally recognized laboratory within the last 12 months. Such an acoustic check shall be performed for each sound monitor at least once per year. More frequent checks (for example quarterly) are recommended.

If the sound monitor has only frequency weighting A, the sinusoidal signal used for checking the acoustical sensitivity of a sound-monitoring system shall have a nominal frequency of 1 000 Hz. If the sound monitor has an optional C or Z frequency weighting, then they may be used to check the acoustical sensitivity at any frequency specified by the manufacturer in the range from 160 Hz to 1 250 Hz.

If the acoustic check reveals deviations greater than 0,5 dB from the sensitivity determined according to clause 4.8.1, then the Sound Monitor is identified as defect and is to be repaired and calibrated. In this case, all data measured by that Sound Monitor since its last acoustic check must be dealt with caution as it is potentially erroneous and is not in accordance with this International Standard.

#### 4.8.4 Automatic operation check of Sound Monitor

Provision shall be made to check the operation of each sound monitor and the system to which it is connected.

It shall be possible to activate the check of operation both at the microphone site and from the central station. The automatic operation check system shall tell whether the system is functioning correctly or is potentially defect.

The method of operation of the automatic operation check system and the detection limits, including the maximum sensitivity deviation threshold for the daily check, shall be documented by the manufacturer in the instruction manual. The information that is recorded during the automatic operation check shall be described in the instruction manual.

The automatic operation check system shall function over the ranges of static pressure, temperature and humidity as specified by the manufacturer.

Changes due to physical damage of the weather protection of the microphone assembly (for example rain protection, windscreen, microphone device support, anti-bird-perching devices and lightning conductor) or water, snow or ice in or on the windscreen are not likely to be detectable, and are not covered as a part of the requirements in this subclause.

Any results of the automatic operation check system shall not be used to "correct" measurements of the sound from any source.

Checking the operation of any sound monitor shall occur automatically at least once per day (preferably during a time of low aircraft activity). Whenever automatic checking is taking place, any signals related to the check shall be excluded automatically through positive means from all accumulations of aircraft and non-aircraft sound. Operation of any automated checking system shall not be initiated while a sound event is being detected, but shall be delayed until the record of the event has terminated.

The results of the initial operation check and of the daily checks shall be stored and reported. At least the last 12 months of operation check results shall be stored by the sound-monitoring system.

#### 4.8.5 Actions regarding results from automatic operation check

On identifying an operation alert (a Sound Monitor which has not passed the check as identified in 4.8.4), all data measured by that Sound Monitor since its last check of operation must be dealt with caution as it is potentially erroneous and is not in accordance with this International Standard until an acoustic check indicates that the monitor can be used without being repaired or adjusted.

The cause of the operational alert shall be determined as soon as reasonably practical and possible faults corrected.

If an operation alert indicates a change in sensitivity, then the Sound Monitor's sensitivity shall be checked by using an acoustic calibrator. If this acoustic check indicates that the sensitivity is unchanged, then the Sound Monitor can be deemed calibrated and operational in accordance with this International Standard. Otherwise, the Sound Monitor shall be repaired and calibrated (see 4.8.1).

NOTE The automatic operation check may not identify the sensitivity changes.

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