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Acoustics — Objective method for assessing the audibility of tones in noise — Engineering method

bsi.

National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Acoustics — Objective method for assessing the audibility of tones in noise — Engineering method

Acoustique — Méthode objective pour évaluer l'audibilité des tons dans le bruit — Méthode d'expertise

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Foreword

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The committee responsible for this document is ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

Acoustics — Objective method for assessing the audibility of tones in noise — Engineering method

1 Scope

This Publicly Available Specification describes a method for the objective determination of the audibility of tones in environmental noise.

This Publicly Available Specification is intended to augment the usual method for evaluation on the basis of aural impression, in particular, in cases in which there is no agreement on the degree of the audibility of tones. The method described can be used if the frequency of the tone being evaluated is equal to, or greater than, 50 Hz. In other cases, if the tone frequency is below 50 Hz, or if other types of noise (such as screeching) are to be captured, then this method cannot replace subjective evaluation.

The method presented herein can be used in continuous measurement stations that work automatically.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1996-1, *Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1996-1 and the following apply.

3.1
tonality
presence of a tone in a noise, the level of which is below that of the remaining noise components in the *critical band* (3.5) about the *tone frequency* (3.2) by less than the value of the *masking index* (3.16), a_V

3.2
tone frequency
f_T
frequency of the *spectral line* (3.23) (or mid-band frequency of the narrow-band filter), to the level of which the tone contributes most strongly

3.3
tone level
L_T
energy summation of the *narrow-band level* (3.22) with the *tone frequency* (3.2), f_T, and the lateral lines about f_T, assignable to this tone

Note 1 to entry: If the *critical band* (3.5) for the frequency, f_T, under consideration contains a number of tones, then the tone level, L_T, is the energy sum of these tones. This level, L_T, is then assigned to the frequency of the participating tone that has the maximal value of *audibility* (3.4), ΔL.

Note 2 to entry: The method for the determination of the tone level, L_T, of a tone in a critical band is described in 5.3.3.