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Foreword

This European Telecommunication Standard (ETS) has been produced by the Equipment Engineering (EE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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Introduction

Compatibility with the end-use environment is a primary concern for purchasers and manufacturers of telecommunications equipment. An important compatibility issue is the amount of acoustic noise emitted by the equipment. This ETS is intended to meet four primary needs of purchasers and manufacturers with regard to this issue:

- specification of acoustic noise emission measurement methods;
- specification of acoustic noise emission limits;
- specification of a method for reporting acoustic noise emission;
- specification of a method for verification of declared noise emission values.

To develop practical specifications and to have the capacity to make fair comparisons between equipment, it is essential to have a single, technically established method for the measurement of acoustic emission. Therefore, this ETS specifies the use of sound power measurement and, more specifically, adopts ISO 7779 [1] as the primary measurement document.

Sound power levels can be used for direct comparison of noise emission for functionally similar equipment manufactured by different vendors, and/or in the calculation of estimated sound pressure levels for spaces where the equipment is to be installed. The use of sound *power* level, instead of emission sound *pressure* level, as the specified quantity for product noise emission has clear precedent within the international noise control community.

The acceptability of the acoustic emission from a piece of equipment depends upon a number of details that vary from installation to installation, and the number of possible installations is extensive. Accordingly, the goal of this ETS is to specify limits that are applicable to the major installation categories.

The fundamental concern prompting the development of this ETS is the potential adverse impact that excessive equipment noise can have on people. For that reason, the impact of noise upon human activities has been carefully considered, and the intent has been to ensure that the acoustic noise emitted is at, or below, generally accepted levels. The perceptual issues considered included task concentration, speech communication, annoyance and other similar parameters. Generally, the relevant noise exposure levels are well below those needed to ensure worker safety and health. Requirements related to worker safety and health (including those related to infrasound and ultrasound) can be found in EEC Directive 86/188/EEC [4].

This ETS specifies that manufacturers report measured A-weighted sound power values for equipment. Given that it is impractical and unnecessary to measure every manufactured unit, the reported sound power value should be one that all, or nearly all, units of a particular model will not exceed. This means that the reported value needs to take into account both production variation and the precision of the measurement method. ISO 9296 [2] specifies methods that address these issues and is therefore specified in this ETS as the method for declaring sound power values. ISO 9296 [2] also specifies a method for verification of declared sound power values.