INTERNATIONAL STANDARD

**ISO 15006**

First edition
2004-10-15

# Road vehicles — Ergonomic aspects of transport information and control systems — Specifications and compliance procedures for in-vehicle auditory presentation

*Véhicules routiers — Aspects ergonomiques des systèmes de commande et d'information du transport — Spécifications et modes opératoires de conformité concernant la présentation des informations auditives à bord du véhicule*

Reference number
ISO 15006:2004(E)

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Published in Switzerland

 

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15006 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 13, *Ergonomics applicable to road vehicles*.



 

## Introduction

The driver and the vehicle are an integrated system that includes the environment, the primary vehicle controls, the instrumentation, and the transport information and control systems (TICS). The driving task, and human capabilities and limitations, are other primary factors. TICS are intended to support the driver in her/his primary task, and therefore it is expected that the overall workload of the driver will not be negatively influenced, while performance and comfort should be increased.

The multitude of information to be displayed to the driver through TICS may create the need to minimize visual load and make more and better use of the auditory channel. This standard provides ergonomic specifications for the design and installation of auditory displays presenting speech and tonal information while driving. The aim of these specifications is to help designers to provide auditory messages which meet usability, comfort and safety criteria.

# Road vehicles — Ergonomic aspects of transport information and control systems — Specifications and compliance procedures for in-vehicle auditory presentation



## 1 Scope

This International Standard establishes ergonomic specifications for the presentation of auditory information related to transport information and control systems (TICS) through speech or sounds. It applies only to the use of auditory displays when the vehicle is in motion. It presents a set of requirements and recommendations for in-vehicle auditory messages from TICS, and provides message characteristics and functional factors for maximizing message intelligibility and utility while helping prevent auditory or mental overload.

## 2 Normative references

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

ISO 5128, *Acoustics — Measurement of noise inside motor vehicles*

ISO 11429, *Ergonomics — System of auditory and visual danger and information signals*

ISO/TS 16951[1)], *Road vehicles — Criteria for determining priority of TICS and other messages presented to drivers*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1**
**audibility**
percentage of persons who are able to detect an auditory signal within a defined acoustical environment

**3.2**
**comprehensibility**
degree to which information conveyed to the driver is understood

**3.3**
**loudness**
sensation (perception) that is most closely related to the sound amplitude of an acoustical stimulus

**3.4**
**orienting reaction**
human behaviour in response to the novelty of a stimulus

NOTE If, in a given situation, factual and expected stimuli do not match, an orienting behaviour is released which in its amplitude is proportional to the degree of the stimulus' novelty. With increasing stimulus intensity, this behaviour changes to defensive reactions. In the case of very high and sharp stimuli, a startle reflex is released.

1) To be published.