
**Road vehicles — Ergonomic aspects
of transport information and control
systems — Calibration tasks for
methods which assess driver demand
due to the use of in-vehicle systems**

*Véhicules routiers — Aspects ergonomiques des systèmes
d'information et de contrôle du transport — Tâches de calibration
pour méthodes qui évaluent la distraction du conducteur due à
l'utilisation des systèmes embarqués*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 39, *Ergonomics*.

This second edition cancels and replaces the first edition (ISO/TS 14198:2012), which has been technically revised. The main changes compared to the previous edition are as follows:

- in addition to the Lane Change Test (LCT), the Detection Response Task (DRT) is added as a primary task;
- in addition to the Critical Tracking Task (CTT) and Surrogate Reference Task (SURT), the n-back task is added as calibration task.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The number of standardized methods to assess driver attentional demand due to the use of in-vehicle information and communication devices is continuing to increase. In applying these methodologies, it is important to understand and document variability in participants' performance of standard calibration tasks and procedures across laboratories and/or time.

A suitable calibration task should have the following attributes:

- It should be robust against the variations in cultural background of participants.
- Properly applied, the task should give repeatable quantitative results. It should be sensitive to inappropriate variations in participants, equipment, location, experimenter and instruction.
- It should use durable and readily available equipment for conducting the task.
- It should apply to the driver population and be usable in a driving-like context.

A standardized calibration task can be used to produce a range of statistically stable, repeatable and comparable secondary task demands for a participant in an experimental setting. This setting can be used to assess the effect on driving performance of the attentional demand due to driver interaction with an information, entertainment, and control or communication system while a vehicle is in motion.

Different calibration tasks are specified in this document to cover calibration manual, visual, and cognitive aspects of various secondary task characteristics.

Road vehicles — Ergonomic aspects of transport information and control systems — Calibration tasks for methods which assess driver demand due to the use of in-vehicle systems

1 Scope

This document provides procedures that can be used as a secondary task in a dual task setting to determine whether that evaluation setting is standardized and valid for purposes of assessing driver attentional demand due to the use of an in-vehicle system. This document does not define calibration procedures for other evaluation activities that a laboratory might undertake.

This document provides guidance on selecting a calibration task given a specific primary task. The primary tasks of interest include those that would be used in the evaluation of attentional demand. Such primary tasks are defined in other documents.

The description of a calibration task includes its application, experimental setup, data collection, and procedures for analysis of results.

The purpose of this document is not to define a reference criterion as to whether a given secondary task is suitable for use while driving. Although specific settings of parameters of a calibration task might be used to realize such a predefined pass/fail criterion, this document does not provide such a criterion for a given level of attentional demand.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 26022:2010, *Road vehicles — Ergonomic aspects of transport information and control systems — Simulated lane change test to assess in-vehicle secondary task demand*

ISO 17488, *Road vehicles — Transport information and control systems — detection-response-task (DRT) for assessing attentional effects of cognitive load in driving*

ISO/IEC 7498-1, *Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 7498-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>