

**Road vehicles - Measurement of driver visual behaviour
with respect to transport information and control
systems - Part 1: Definitions and parameters (ISO
15007-1:2014)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 15007-1:2014 sisaldab Euroopa standardi EN ISO 15007-1:2014 inglisekeelset teksti.	This Estonian standard EVS-EN ISO 15007-1:2014 consists of the English text of the European standard EN ISO 15007-1:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.11.2014.	Date of Availability of the European standard is 12.11.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.180, 43.040.15

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

Road vehicles - Measurement of driver visual behaviour with
respect to transport information and control systems - Part 1:
Definitions and parameters (ISO 15007-1:2014)

Véhicules routiers - Mesurage du comportement visuel du
conducteur en relation avec les systèmes de commande et
d'information du transport - Partie 1: Définitions et
paramètres (ISO 15007-1:2014)

Straßenfahrzeuge - Messung zum visuellen Verhalten des
Fahrers in Bezug zu Transportinformationen und
Regelsystemen - Teil 1: Definitionen und Parameter (ISO
15007-1:2014)

This European Standard was approved by CEN on 20 September 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 15007-1:2014) has been prepared by Technical Committee ISO/TC 22 “Road vehicles” in collaboration with Technical Committee CEN/TC 278 “Intelligent transport systems” the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2015, and conflicting national standards shall be withdrawn at the latest by May 2015.

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

This document supersedes EN ISO 15007-1:2002.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 15007-1:2014 has been approved by CEN as EN ISO 15007-1:2014 without any modification.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Definition of measures and metrics	4
4.1 Basic Direct Measures.....	5
4.2 Glance Metrics Derived From Basic Measures.....	5
5 Data collection and analysis	7
6 Data presentation	7
Annex A (informative) Supporting Figures to explain terms and definitions	9
Bibliography	13

Introduction

Vision provides the primary source of information available to a driver. Information is gathered by looking at objects and events and this in turn affords control and navigation of the vehicle in the road traffic environment. Assessment of a driver's visual behaviour provides a method of quantifying the driver's visual allocation to the roadway or in-vehicle information sources (see Reference^[1]).

Transport Information and Control Systems (TICS) applications for vehicles may have visual displays that can present a range of driver-selected information. If these visual displays have associated controls (e.g. to select a zoom level or menu option) then these associated hand-control activities may also be visually guided and become part of the visual behaviour associated with a display/TICS application. For this reason it may be important to consider not only the visual behaviour in relation to information display, but also the duration and frequency of glances following driver controlled actions.

Comparisons between specific vehicle systems have been made more difficult because the studies were conducted in different environments using different experimental techniques, different measurement definitions, and different analysis methods.

ISO 15007 has been developed to give guidance on the terms and measurements relating to the collection and analysis of driver visual behaviour data. This approach aims to assess how drivers respond to vehicle design, the road environment, or other driver-related tasks in both real and simulated road conditions. More specifically, the approach of this standard is based on the assumption that efficient processing of visual information is essential to the performance of the driving task.

ISO 15007-1 defines key terms and parameters applied in the analysis of driver visual behaviour focused on glance and glance related measurements. ISO 15007-2 gives guidelines on equipment and procedures for analysis of driver visual behaviour.

Practical assessments of drivers in real or simulated environments are conducted to quantify the allocation of visual behaviour to specified areas of interest. Visual behaviour may be quantified by the location, duration and frequency of glances to a specified area of interest in the visual scene (and, over time, between areas of interest). This approach often uses commonly available eye tracking and/or video-recording equipment. However, it does not preclude the use of more sophisticated technologies which may elicit additional driver visual behaviour information.

Results from such assessments should enable comparison of the relative influence of the TICS use with reference conditions.

Road vehicles — Measurement of driver visual behaviour with respect to transport information and control systems —

Part 1: Definitions and parameters

1 Scope

This part of ISO 15007 defines key terms and parameters applied in the analysis of driver visual behaviour focused on glance and glance-related measures. These terms and parameters can be applied in environments from real-world driving experiments to laboratory-based driving simulator studies.

The procedures described in this part of ISO 15007 could also apply to more general assessments of driver visual behaviour without the introduction of TICS-specific systems. The parameters and definitions described below are intended to assist development of a common source of reference for driver visual behaviour data.

Minimum requirements for reporting the results of Transport Information and Control Systems (TICS) evaluations are provided.

Further guidance including the specification of how to analyse and present the results of studies of visual behaviour is available in other ISO publications (see, for example, ISO 2854 and ISO/TR 13425:2006). However, data collected and analysed according to this standard will allow comparisons to be performed across different TICS applications and experimental scenarios.

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 2854, *Statistical interpretation of data — Techniques of estimation and tests relating to means and variances*

ISO/TR 13425:2006, *Guidelines for the selection of statistical methods in standardization and specification*¹⁾

ISO/TS 15007-2:2014, *Road vehicles — Measurement of driver visual behaviour with respect to transport information and control systems — Part 2: Equipment and procedures*

3 Terms and definitions

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

3.1

accommodation

adjustment of the lens of the eye to bring about focusing of an image of an object upon the retina

Note 1 to entry: The time for the eye to accommodate from one object to another depends on the distance between the objects.

1) Withdrawn.