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Intelligent transport systems — Motorway chauffeur systems (MCS) —

Part 2: Requirements and test procedures for discretionary lane change

Systèmes de transport intelligents — Systèmes de conduite automatisée sur voie à chaussée séparée (MCS) —

Partie 2: Exigences et procédures d'essai pour le changement de voie

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Foreword

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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 document 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).

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This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems.*

A list of all parts in the ISO 23792 series can be found on the ISO website.

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

In order to operate a vehicle automatically on motorways, it is necessary for the automated driving system (ADS) to be designed with the capability to cope with various conditions such as the driving environment, status of other vehicles in the surroundings, traffic regulations, etc.

In addition, an ADS designed to operate on motorways can encounter various situations such as merging into the main lane of traffic, adjusting the speed according to congested or freely flowing traffic, overtaking other vehicles, or changing lanes when approaching an exit or lane closure.

For Level 3 automated driving, the ADS issues a request to the fallback-ready user (FRU) to take over driving tasks when it cannot respond to certain conditions and situations.

The ISO 23793 series identifies the performance requirements of an ADS based on its capability to respond to various conditions and situations. The requirements are derived in order to reliably transfer the vehicle operation between the human driver and ADS, and for the safe operation by the ADS.

This series focuses on the system functionalities, keeping in mind that the FRU is assumed to be receptive and properly responding to system requests to take over driving tasks, which is a prerequisite condition for the use of Level 3 driving automation.

This document focuses on discretionary lane change (DLC) for motorway chauffeur systems (MCS). When conditions are satisfied, a DLC-equipped MCS performs the entire DDT to change the current lane of travel independently of the possibility of continuing operation within its current lane of travel. The system monitors the driving environment in the adjacent lanes and operates the SV by adjusting the speed and lateral position to move the SV to the intended lane. The MCS can delay the manoeuvre until the conditions for initiating the lane change are satisfied or can cancel the lane change when conditions are not satisfied. Activation of the DLC requires an engaged MCS performing in-lane driving.

Intelligent transport systems — Motorway chauffeur systems (MCS) —

Part 2: Requirements and test procedures for discretionary lane change

1 Scope

This document specifies the requirements for discretionary lane change (DLC) for motorway chauffeur systems (MCS) that perform Level 3 automated driving[1] on limited access motorways. It also specifies the test procedures to verify the requirements. DLC is an additional functionality that can be added to an MCS conforming to the general requirements specified in ISO/TS 23792-1.

Means related to setting a destination and selecting a route to reach the destination are not in the scope of this document.

This document applies to the system installed in light vehicles.[2]

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/TS 23792-1, *Intelligent transport systems — Motorway chauffeur systems (MCS) — Part 1: Framework and general requirements*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
subject vehicle
SV
vehicle equipped with the system in question and related to the topic of discussion

3.2
lane
strip of road intended to accommodate a single line of moving vehicles, frequently defined by visible *lane marking* (3.6)