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Intelligent transport systems — Low-speed automated driving (LSAD) systems for predefined routes — Performance requirements, system requirements and performance test procedures

Systèmes de transport intelligents — Systèmes de conduite automatisée à basse vitesse pour des itinéraires prédéfinis (LSAD) — Exigences de performance, exigences du système et procédures de test de performance

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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 204, *Intelligent transport systems*.

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 move towards automated driving systems is leading to a shift in the way people, goods and services are transported. One such new mode of transport is low-speed automated driving (LSAD) systems, which operate on predefined routes. LSAD systems will be used for applications like last-mile transportation, transport in commercial areas, business or university campus areas and other low-speed environments.

A vehicle that is driven by the LSAD system (which can include interaction with infrastructure) can potentially have many benefits, like providing safe, convenient and affordable mobility and reducing urban congestion. It can also provide increased mobility for people who are not able to drive. However, with different applications of LSAD systems in the industry worldwide, there is a need to provide guidance for manufacturers, operators, end users and regulators to ensure their safe deployment.

The LSAD system requirements and procedures specified herein are intended to assist manufacturers of the LSAD systems in incorporating minimum safety requirements into their designs and to allow end users, operators and regulators to reference a minimum set of performance requirements in their procurements.

Intelligent transport systems — Low-speed automated driving (LSAD) systems for predefined routes — Performance requirements, system requirements and performance test procedures

1 Scope

This document specifies:

— requirements for the operational design domain,

— system requirements,

— minimum performance requirements, and

— performance test procedures

for the safe operation of low-speed automated driving (LSAD) systems for operation on predefined routes. LSAD systems are designed to operate at Level 4 automation (see ISO/SAE PAS 22736), within specific operational design domains (ODD).

This document applies to automated driving system-dedicated vehicles (ADS-DVs) and can also be utilized by dual-mode vehicles (see ISO/SAE PAS 22736). This document does not specify sensor technology present in vehicles driven by LSAD systems.

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 19206-2, *Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions — Part 2: Requirements for pedestrian targets*

ISO 19206-3, *Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions — Part 3: Requirements for passenger vehicle 3D targets*

ISO 19206-4, *Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions — Part 4: Requirements for bicyclist targets*

ISO 26262 (all parts), *Road vehicles — Functional safety*

ISO 21448:—[1)], *Road vehicles — Safety of the intended functionality*

ISO/SAE PAS 22736:—[2)], *Taxonomy and definitions for terms related to driving automation systems for on-road motor vehicles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/SAE PAS 22736 and the following apply.

1) Under preparation. Stage at the time of publication: ISO/DIS 21448:2021.

2) Under preparation. Stage at the time of publication: ISO/SAE PRF PAS 22736:2021.