

30 January 20XXX

Agreement

Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions*

(Revision)

Addendum XXX – Regulation No. XXX

Date of entry into force as an annex to the 1958 Agreement: XXX

Uniform provisions concerning the approval of motor vehicles with regard to their DSSAD



UNITED NATIONS

* Former title of the Agreement:

Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version); Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

Regulation No. XXX

Uniform provisions concerning the approval of motor vehicles with regard to the installation of their-DSSAD

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Annexes

1. Introduction

This regulation specifies requirements for vehicles equipped with Data Storage Systems for Automated Driving (DSSADs) concerning the collection, storage, and retrievability of motor vehicles fitted with an Automated Driving System (ADS) and a driver who is able to engage and disengage this system.

It also specifies requirements for vehicle manufacturers to provide tools (if needed) and/or methods so that authorized parties (defined on a national basis by national legislation) are able to collect data from DSSADs.

The purpose is to ensure that DSSADs collect and store, in a readily usable manner, data valuable for effective investigations and analysis, when duly justified, and make it possible:

- to provide a clear picture of the significant interactions (i.e. activation/deactivation of the system, Minimum Risk Manoeuvre or Emergency manoeuvre by the system, and transition scenario) between the driver and the ADS), and
- to determine in an objective manner who, from the driver or the ADS, “was requested to be in control of the driving task”, and who from the driver or the ADS “was actually performing the driving task”, at a certain moment in time.

2. Scope

This regulation applies to vehicles of [M & N categories] (*to be harmonized with ALKS scope*) that have the possibility to have a driver and are equipped with an Automated Driving System (ADS) that once engaged by the driver, performs the full driving task.

3. Definitions

For the purposes of this Regulation:

- 3.1. “*Data Storage System for Automated Driving (DSSAD)*” means a system which aims at giving a clear picture of the significant interactions between the driver and the ADS by storing a set of data.
- 3.2. “*Automated Driving System (ADS)*” means a [system that performs the driving task when engaged by the driver].
- 3.3. [“*Dynamic Driving task*” : means the control of all longitudinal and lateral movements of the vehicle.]
- 3.4. “*Data*” means a series of timestamped information entries related to a logic signal indicating that the ADS was switched ON or OFF, or a specific significant interaction between the driver and the system occurred at a precise time.

- 3.5. “*Storing data*” : means collecting and keeping the collected data for future retrieval or “read only” access.

(Note : the definitions below, which are inspired from the ALKS draft regulation, are duplicated in the present draft for better and easier understanding, and may be deleted from here when the regulation for ALKS is finalized.)

- 3.6. [“*System off*” : means when deactivated (off mode) the ADS shall not provide any continuous control of either longitudinal or lateral movement of the vehicle.]
- 3.7. [“*System activation*” : means the ADS is activated by the driver upon a deliberate action.
- 3.8. [“*System automatic deactivation*” : means the system is deactivated automatically when the driver is detected to be back in manual control of the vehicle.
- 3.9. [“*System manual deactivation*” : means the system is deactivated by the driver.]
- 3.10. [“*Transition demand*” : means a logical and intuitive procedure to transfer the dynamic driving task from automated control by the system to human driver control. This request given from the system to the human driver indicates the transition phase.]
- 3.11. [“*Transition phase*” : means the duration of the transition demand.]
- 3.12. [“*Planned event*” is a situation which is known in advance, e.g. at the time of activation such as a journey point (e.g. exit of a highway) etc. and which requires a transition demand.]
- 3.13. [“*Unplanned event*” is a situation which is unknown in advance, but assumed as very likely in happening, e.g. [road construction, inclement weather, approaching emergency vehicle, missing lane marking, load falling from truck (collision)] and which requires a transition demand.]
- 3.14. [“*Imminent collision risk*” describes a situation or an event which leads to a collision of the vehicle with another road user or an obstacle unless an emergency manoeuvre is executed.]
- 3.15. [“*Emergency Manoeuvre*” is a manoeuvre performed by the system in case of a sudden unplanned event in which the vehicle is at imminent risk of a collision [and in case of insufficient lead time to transition the control back to the driver,] with the purpose of avoiding or mitigating a collision.]
- 3.16. [“*Minimal Risk Maneuver*” : means a procedure aimed at minimising risks in traffic, which is automatically performed by the system after a transition demand.]

4. Application for approval

- 4.1. The application for approval of a vehicle type with regard to the installation of its DSSAD shall be submitted by the vehicle manufacturer or by his authorized representative.

- 4.2. It shall be accompanied by the documents mentioned below in triplicate and include the following particular:
- 4.2.1. A description of the vehicle type with regard to the items mentioned in paragraph 6.
- 4.3. A vehicle representative of the vehicle type to be approved, or a simulation tool representing the vehicle type to be approved shall be submitted to the Technical Service conducting the approval tests.

5. Approval

- 5.1. If the vehicle type submitted for approval pursuant to this Regulation meets the requirements of paragraph 5, approval of that vehicle type shall be granted.
- 5.2. An approval number shall be assigned to each vehicle type approved; its first two digits (00 for the regulation in its initial form) shall indicate the series of amendments incorporating the most recent major technical amendments made to the regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another vehicle type with regard to the installation of its DSSAD .
- 5.3. Notice of approval or of refusal or withdrawal of approval pursuant to this Regulation shall be communicated to the Contracting Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 1 and photographs and/or plans supplied by the applicant being in a format not exceeding A4 (210 x 297 mm), or folded to that format, and on an appropriate scale.
- 5.4. There shall be affixed, conspicuously and in a readily accessible place specified on the approval form, to every vehicle conforming to a vehicle type approved under this Regulation, an international approval mark conforming to the model described in Annex 3, consisting of:
 - 5.4.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval;¹
 - 5.4.2. The number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in paragraph 5.4.1.
- 5.5. If the vehicle conforms to a vehicle type approved under one or more other Regulations annexed to the Agreement, in the country which has granted approval under this Regulation, the symbol prescribed in paragraph 5.4.1. need not be repeated; in such a case, the regulation and approval numbers and the additional symbols shall be placed in vertical columns to the right of the symbol prescribed in paragraph 5.4.1.
- 5.6. The approval mark shall be clearly legible and be indelible.
- 5.7. The approval mark shall be placed close to or on the vehicle data plate.

¹ As defined in Annex 3 to the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document ECE/TRANS/WP.29/78/Rev.4)
www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html

6. Specifications

6.1. Each vehicle equipped with a DSSAD complying with the definition of Paragraph 3.1. shall meet the requirements specified in paragraph 6.2 for data elements, paragraph 6.3 for data format, paragraph 6.4 for data storage, paragraph 6.5 for retrievability, and paragraph 6.6 for information to the driver.

6.1.1. Data shall be available by using a dedicated retrieval tool or any other solution.

6.2. Data elements

Each vehicle equipped with a DSSAD shall store all of the data elements listed below, so that their order of occurrence can be determined :

a) Time stamped switches of the ADS from a status to another status

- * Activation
- * Manual deactivation
- * Automatic deactivation

(Note : list to be continued if needed, for consistency with ALKS regulation)

b) Time stamped Transition Demand by the ADS, so that the nature of its cause can be determined from being either :

- Driver not available
- Driver override
- System failure
- Planned event, or
- Unplanned event

c) Time stamped Minimal Risk Maneuver engagement by the ADS

(Note : Definitions of the "start" of MRM will be given by ALKS regulation)

d) Time stamped override through steering control by the driver

e) Time stamped override through brake control by the driver

f) Time stamped override through accelerator control by the driver

(Note : Definition of these Overrides are given by ALKS regulation, chapter 2.4.8)

6.3. Data format

Each data element listed in Paragraph 6.2 shall be recognized without any possible confusion by the codification that will be chosen by the manufacturer.

Each time stamp attached to this data shall enable to determine when the significant interaction (change of ADS status, Transition Demand release,

Minimum Risk Maneuver or Emergency Manoeuvre or Override by the driver) occurred with a resolution of [1 second] in GMT time.

6.4. Data storage

DSSAD shall be able to store a minimum of [X.000] timestamped significant interactions or cover a minimum period of [X] months of use, whichever is achieved first.

Once these storage limits of the DSSAD are achieved, additional data storage may erase the previous data, following the "First In / First Out" rule, and data over these limits may be impossible to retrieve.

6.5. Data retrievability

If the main onboard vehicle power supply is not available, it shall be possible to retrieve stored timestamped data from the DSSAD with the appropriate tool or method provided by the manufacturer.

After a UN Regulation No. 94 (Frontal collision) impact test, it shall be possible to retrieve timestamped data stored prior to the impact, from the DSSAD, with the appropriate tool or method provided by the manufacturer.

6.6. Information to the driver

The manufacturer shall provide in the vehicle owner's handbook, or by any other communication means in the vehicle, the necessary information about DSSAD.

7. Modification of vehicle type and extension of approval

7.1. Every modification to an existing vehicle type shall be notified to the Type Approval Authority which approved the vehicle type. The Type Approval Authority shall then either:

- (a) Decide, in consultation with the manufacturer, that a new type approval is to be granted; or
- (b) Apply the procedure contained in paragraph 7.1.1. (Revision) and, if applicable, the procedure contained in paragraph 7.1.2. (Extension).

7.1.1. Revision

When particulars recorded in the information documents of Annex 1 have changed and the Type Approval Authority considers that the modifications made are unlikely to have an appreciable adverse effect and that, in any case, the vehicle still complies with the requirements, the modifications shall be designated a "revision";

In such a case, the Type Approval Authority shall issue the revised pages of the information documents of Annex 1 as necessary, marking each revised page to show clearly the nature of the modification and the date of re-issue. A consolidated, updated version of the information documents of Annex 1, accompanied by a detailed description of the modification, shall be deemed to meet this requirement.

- 7.1.2. Extension
- The modification shall be designated an "extension" if, in addition to the change of the particulars recorded in the information documents of Annex 1,
- (a) Further inspections or tests are required; or
 - (b) Any information on the communication document (with the exception of its attachments) has changed; or
 - (c) Approval to a later series of amendments is requested after its entry into force.
- 7.2. Confirmation or refusal of approval, specifying the alterations, shall be communicated by the procedure specified in paragraph 4.3. above to the Contracting Parties to the Agreement applying this Regulation. In addition, the index to the information documents and to the test reports, attached to the communication document of Annex 1, shall be amended accordingly to show the date of the most recent revision or extension.
- 7.3. The Type Approval Authority issuing the extension of approval shall assign a series number to each communication form drawn up for such an extension.

8. Conformity of production

- 8.1. Procedures concerning conformity of production shall conform to the general provisions defined in Article 2 and Appendix 2 to the Agreement (E/ECE/324-E/ECE/TRANS/505/Rev.2) and meet the following requirements:
- 8.2. A vehicle approved pursuant to this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements of paragraph 5.;
- 8.3. The Type Approval Authority which has granted the approval may at any time verify the conformity of control methods applicable to each production unit. The normal frequency of such inspections shall be once every two years.

9. Penalties for non-conformity of production

- 9.1. The approval granted in respect of a vehicle type pursuant to this Regulation may be withdrawn if the requirements laid down in paragraph 7. are not complied with.
- 9.2. If a Contracting Party withdraws an approval it had previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation by sending them a communication form conforming to the model in Annex 1 to this Regulation.

10. Production definitively discontinued

If the holder of the approval completely ceases to manufacture a type of vehicle approved in accordance with this Regulation, he shall so inform the authority which granted the approval, which in turn shall forthwith inform the other Contracting Parties to the Agreement applying this Regulation by means of a communication form conforming to the model in Annex 1 to this Regulation.

11. Names and addresses of the Technical Services responsible for conducting approval tests and of Type Approval Authorities

The Contracting Parties to the Agreement applying this Regulation shall communicate to the United Nations Secretariat the names and addresses of the Technical Services responsible for conducting approval tests and of the Type Approval Authority which grant approval and to which forms certifying approval or extension or refusal or withdrawal of approval are to be sent.

Annex 1

(Maximum format: A4 (210 mm x 297 mm))

Information document

in accordance with Regulation on the installation of DSSAD

1. General
 - 1.1. Make (trade name of manufacturer):.....
 - 1.2. Type:
 - 1.2.1. Commercial name(s) (if available):.....
 - 1.3. Means of identification of type, if marked on the vehicle:¹
 - 1.3.1. Location of that marking:.....
 - 1.4. Category of vehicle:².....
 - 1.5. Name and address of manufacturer:.....
 - 1.6. Name(s) and address(es) of assembly plant(s):.....
 - 1.7. Name and address of the manufacturer's representative (if any):
2. General construction characteristics of the vehicle
 - 2.1. Photographs and/or drawings of a representative vehicle:.....

¹ If the means of identification of type contains characters not relevant to describe the vehicle, component or separate technical unit types covered by this information document, such characters shall be represented in the documentation by the symbol "?" (e.g. ABC??123??)

² As defined in section 2 of the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document TRANS/WP.29/78/Rev.4).

Annex 2

Communication

(Maximum format: A4 (210 x 297 mm))

issued by :

(Name of administration)



.....
.....
.....

- ¹concerning :²
- Approval granted
 - Approval extended
 - Approval refused
 - Approval withdrawn
 - Production definitively discontinued

of a type of vehicle with regard to its DSSAD

Approval No.: Extension No.:

Section I

1. Make (trade name of manufacturer):
2. Type:
- 2.1. Commercial name(s) (if available):
3. Means of identification of type, if marked on the vehicle:³
- 3.1. Location of that marking:
4. Category of vehicle:⁴
5. Name and address of manufacturer:
6. Name(s) and address(es) of assembly plant(s):
7. Name and address of the manufacturer's representative (if any):

Section II

1. Additional information: see Addendum
2. Technical Service responsible for carrying out the tests:
3. Date of test report:
4. Number of test report:

¹ Distinguishing number of the country which has granted/extended/refused/withdrawn an approval (see approval provisions in the regulation).

² Strike out what does not apply.

³ If the means of identification of type contains characters not relevant to describe the vehicle, component or separate technical unit types covered by this information document, such characters shall be represented in the documentation by the symbol "?" (e.g. ABC??123??).

⁴ See footnote 1.

5. Remarks (if any): see Addendum
6. Place:.....
7. Date:.....
8. Signature:
9. Information package (when relevant)

Addendum to communication form No.

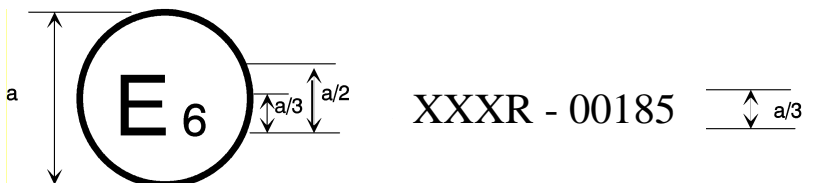
concerning the type approval of a vehicle with regard to the installation of its DSSAD

1. Additional information
 - 1.1. Brief description of the vehicle type
 - 1.2. Description of the DSSAD data retrieval method (and tools if needed, with description in Annex 4)

Annex 3

Arrangements of approval marks

(see paragraphs 4.4. to 4.4.2. of this Regulation)



a = 8 mm min

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in Belgium (E 6) with regard to its Data Storage System for Automated Vehicle (DSSAD) pursuant to Regulation No. XXX. The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of Regulation No. XXX in its original form.

Annex 4

Data retrieval tools

1. Whenever a dedicated tool is necessary to retrieve the data, the manufacturer shall ensure by licensing agreement or other means that a tool(s) is available that is capable of accessing and retrieving the data stored in the DSSAD and that are required by this regulation.
2. The tool(s) shall be available [when the approval according to this regulation is granted / not later than 90 days after the first sale of the motor vehicle for purposes other than resale].
