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**Amendments to Devices against Unauthorized Use, Immobilizers
and Vehicle Alarm systems regulations:****UN Regulation No. [162] (Immobilizers)****Proposal for Supplement 1 to the original version of UN
Regulation No. [162] on uniform technical prescriptions
concerning approval of immobilizers and approval of a
vehicle with regard to its immobilizer****Submitted by the expert from the International Organization of Motor
Vehicle Manufacturers ***

The text reproduced below was prepared by the expert from the International Organization of Motor Vehicle Manufacturers (OICA) to amend UN Regulation No. [162] to introduce an equal level of specification for digital keys. It is based on informal document GRSG-121-38. The modifications to the current text of the UN Regulation are marked in bold for new and strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2021 as outlined in proposed programme budget for 2021 (A/75/6 (Sect.20), para 20.51), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate



I. Proposal

Paragraph 2.9., amend to read:

- "2.9. "Key" means any ~~device~~ **mechanical and/or electronic solution** designed and constructed to provide a method of operating a locking system which is designed and constructed to be operated ~~only~~ by that ~~device~~ **mechanical and/or electronic solution.**"

Insert new paragraphs 2.14. to 2.16., to read:

- "2.14. "**Primary user**" is a user who is able to authorize digital keys. There can be more than one primary users.
- 2.15. "**Digital key**" means a key designed to be transferred to multiple devices by the primary user(s) through dedicated processes.
- 2.12. "**Close proximity**" means a distance of less than 6 m."

Insert a new paragraph 5.1.11., to read:

- "5.1.11. **In addition digital keys shall comply with the provisions of Annex 8.**"

Add a new Annex 8, to read:

"Annex 8

Safety provisions for digital keys

1. General

The purpose of this annex is to specify the requirements for documentation and verification for digital keys used to operate the 'immobilizer' of the vehicle.

2. Definitions

- 2.1. "**Authorization process**" means any method to provide the digital key which can operate the 'immobilizer' of the vehicle.
- 2.2. "**Revocation process**" means any method to prevent the digital key to operate the 'immobilizer' of the vehicle.
- 2.3. "**Boundary of functional operation**" defines the boundaries of the external physical limits (e.g. distance) within which the digital key is able to operate the 'immobilizer' of the vehicle.

3. Documentation

The vehicle manufacturer shall provide the following documentation for type approval:

- 3.1. A description of the authorization process.
- 3.2. A description of the revocation process.
- 3.3. A description of the boundary of functional operation.
- 3.4. A description of the safety measures designed within the digital key revocation process to ensure safe operation of the vehicle.

4. Requirements for Safe Operation

- 4.1. A digital key shall only be transferred to a device via the authorization process.

- 4.2. There shall be a revocation process.**
- 4.2.1. Revocation of a digital key shall not result in an unsafe condition.**
 A risk reduction analysis using functional safety standard such as ISO 26262 and safety of the intended functionality standard such as ISO/PAS 21448, which documents the risk to vehicle occupants caused by revocation of a digital key and documents the reduction of risk resulting from implementation of the identified risk mitigation functions or characteristics.
- 4.2.2. It shall be possible for the primary user(s) to identify the number of authorized registered digital keys.**
- 4.3. Boundary of functional operation for the immobilizer:**
- 4.3.1. Unsetting of the immobilizer shall require that an authorized registered digital key is detected in the interior of the vehicle, or that an actuation is triggered by user intent in close proximity of the vehicle.**
 The limitation of the distance for unsetting of the immobilizer by detection in the interior of the vehicle shall be verified using the following procedure including a tolerance of [2000 mm] around the vehicle perimeter:
- (a) The vehicle shall be parked in a secure condition in unobstructed free field condition, this means engine off and all windows, doors and roof shall be closed.
 - (b) The vehicle manufacturer will provide a typical user device for test in agreement with the technical service. The digital key device battery state of charge shall be at maximum.
 - (c) The technical service will define four test points around the vehicle perimeter at a distance not less than [2000 mm]. Distance means the distance between the nearest point of the motor vehicle and the user device.
 - (d) The user device is placed at each of the test points. During the attempt to operate the vehicle under its own power, the vehicle door shall be closed. If at one of the test points the vehicle can be operated under its own power, the requirement is not met.
- 4.3.2. The requirements in paragraph 4.3.1. shall not apply during a remote control manoeuvring and remote control parking as defined in UN Regulation No. 79.**
- 4.4. Detailed information shall be contained in the owner's manual of the vehicle, or by any other communication means in the vehicle; as a minimum, this information shall include:**
- (a) The method(s) for authorization of the digital key
 - (b) The method(s) for revocation of the digital key
- 5. The effectiveness of the system shall not be adversely affected by cyber-attacks, cyber threats and vulnerabilities. The effectiveness of the security measures shall be demonstrated by compliance with UN Regulation No. 155."**
- 6. Verification**
 Verification of the functionality of the digital key shall be conducted with support of manufacturer's documentation as specified in paragraph 3.
- 7. Competence of the auditors/assessors**
 The assessments under this Annex shall only be conducted by auditors/assessors with the technical and administrative knowledge necessary for such purposes. They shall in particular be competent as auditor/assessor for ISO 26262-2018 (Functional Safety - Road Vehicles),

and ISO/PAS 21448 (Safety of the Intended Functionality of road vehicles); and shall be able to make the necessary link with cybersecurity aspects in accordance with UN Regulation No. 155 and ISO/SAE 21434). This competence should be demonstrated by appropriate qualifications or other equivalent training records."

II. Justification

Prior to the finalization of this UN Regulation, a task to update UN Regulation No. 116 was started to introduce an equal level of specification for digital keys. These specifications had been elaborated by the Task Force on digital keys.
