INTERNATIONAL RECOMMENDATION

# OIML R 91-4

Edition 202x (E)

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## Traffic speed meters

## Part 4: Type evaluation report format

Cinémomètres pour la mesure de la vitesse des véhicules

Partie 4: Format du rapport d'évaluation de type

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ORGANISATION INTERNATIONALE DE METROLOGIE LEGALE

INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY

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# Foreword

The International Organization of Legal Metrology (OIML) is a worldwide, intergovernmental organization whose primary aim is to harmonize the regulations and metrological controls applied by the national metrological services, or related organizations, of its Member States. The main categories of OIML publications are:

- **International Recommendations (OIML R),** which are model regulations that establish the metrological characteristics required of certain measuring instruments and which specify methods and equipment for checking their conformity. OIML Member States shall implement these Recommendations to the greatest possible extent;
- **International Documents (OIML D),** which are informative in nature and which are intended to harmonize and improve work in the field of legal metrology;
- **International Guides (OIML G),** which are also informative in nature and which are intended to give guidelines for the application of certain requirements to legal metrology; and
- **International Basic Publications (OIML B),** which define the operating rules of the various OIML structures and systems.

OIML Draft Recommendations, Documents and Guides are developed by Project Groups linked to Technical Committees or Subcommittees which comprise representatives from the Member States. Certain international and regional institutions also participate on a consultation basis. Cooperative agreements have been established between the OIML and certain institutions, such as ISO and the IEC, with the objective of avoiding contradictory requirements. Consequently, manufacturers and users of measuring instruments, test laboratories, etc. may simultaneously apply OIML publications and those of other institutions.

International Recommendations, Documents, Guides and Basic Publications are published in English (E) and translated into French (F) and are subject to periodic revision.

Additionally, the OIML publishes or participates in the publication of **Vocabularies (OIML V)** and periodically commissions legal metrology experts to write **Expert Reports (OIML E)**. Expert Reports are intended to provide information and advice, and are written solely from the viewpoint of their author, without the involvement of a Technical Committee or Subcommittee, nor that of the CIML. Thus, they do not necessarily represent the views of the OIML.

This publication – reference OIML R 91-4, Edition 202x – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – *Traffic speed meters*. It was approved for final publication by the International Committee of Legal Metrology at its xxth meeting in October 202x. It supersedes the previous edition of R 91 dated 1990.

OIML Publications may be downloaded from the OIML web site in the form of PDF files. Additional information on OIML Publications may be obtained from the Organization's headquarters:

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# Introduction

The “Type evaluation report format”, the subject of OIML R 91-4, aims at presenting, in a standardized format, the results of the evaluation to which a type of a speed meter shall be submitted with a view to its approval.

The “Checklist” is a summary of the evaluation and examinations carried out on the instrument. It includes the conclusions of the results of the tests performed, experimental or visual checks based on the required performance criteria and associated tests in OIML R 91-1 and -2. The words or condensed sentences intend to remind the examiner of the requirements of R 91-1 and -2 without reproducing them.

All metrology services evaluating types of speed meters according to OIML R 91-1 and -2 or to national or regional regulations based on OIML R 91-1 and -2 are strongly advised to use this “Type evaluation report format”, directly or after translation into a language other than English or French. Its direct use in English or in French, or in both languages, is even more strongly recommended whenever the results of type evaluation may be transmitted by the country performing these evaluations to the approving authorities of another country, under bi- or multi-lateral cooperation agreements. In the framework of the OIML Certification System (OIML-CS), use of the “Type evaluation report format” is mandatory.

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# Type evaluation report

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## Identification of the instrument

| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Identification no.: | ..... | Manufacturer: | ..... |
| Software version: | ..... | | |
| Report date: | ..... | | |

Documentation from the manufacturer

(Record as necessary to identify the equipment under evaluation)

| System or module name | Drawing number or software reference | Version | Serial no. |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Manufacturer provided simulator documentation (if applicable)

| System or module name | Drawing number or software reference | Version | Serial no. |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
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## Identification of the instrument (continued)

| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Identification no.: | ..... | Manufacturer: | ..... |
| Software version: | ..... | | |
| Report date: | ..... | | |

Simulator function (summary) (if applicable)

(Simulator description and drawings, block diagram, etc. should be attached to the report if available)

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## Identification of the instrument (continued)

| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Identification no.: | ..... | Manufacturer: | ..... |
| Software version: | ..... | | |
| Report date: | ..... | | |

Description or other information pertaining to identification of the instrument (components, interfaces, configuration). Attach photograph, diagrams or drawings if available:

Describe, using point form, the measurement technology used:

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## General information concerning the type

Application no.: ..... Manufacturer: .....

Type designation: ..... Applicant: .....

Instrument category: .....

Testing on: ☐ Complete instrument ☐ Module*

| Categorisation of speed meter | |
|---|---|
| Mode of use | |
| Principle of installation | |
| Working principle | |
| Triggering and camera | |
| Compensation for cosine error | |

| Rated operating conditions | | |
|---|---|---|
| | **Minimum** | **Maximum** |
| **Speed measurement** | | |
| - Speed measurement [km/h] | | |
| - EGO speed measurement [km/h], if applicable | | |
| **Vehicle identification** | | |
| - Distance to vehicle [m], if applicable | | |
| - Angle to vehicle [°], if applicable | | |
| - Number of vehicles, if applicable | | |
| **Temperature** | | |
| - Operating temperature [°C] | | |
| - Storage temperature [°C] | | |
| **Power supply** | | |
| - Voltage [V] | | |

Evaluation period: ……

Date of report: ……

Observer: ……

* The test equipment (simulator or part of a complete instrument) connected to the module shall be defined in the test form(s) used

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## General information concerning the type (continued)

| | | | |
|---|---|---|---|
| Application no.: | ..... | Manufacturer: | ..... |
| Type designation: | ..... | Applicant: | ..... |
| Instrument category: | ..... | | |

Testing on: ☐ Complete instrument ☐ Module*

Use this space to indicate additional remarks and/or information: connecting equipment, interfaces and sensors, choice of the manufacturer regarding protection and specific speed meter requirements etc.

**Indications and controls**

Describe, using point form, all indications and controls of the instrument (such as wired or wireless communication with the instrument, installation, ready indication, error codes).:

**Evidence file**

Describe, using point form, evidence file for measurement (type of file, encryption, content, storage, retrieval, authentication):

**Checking facility**

Describe, using point form, checking facility (automatic and/or manual triggering, outcomes):

**Alignment and aiming device**

Describe, using point form, alignment procedure and use of aiming device, if applicable:

**Test interface**

Describe, using point form, test interface (access, parameters

**Software**

Describe, using point form, the means used to protect legally relevant software in the instrument and indicate the version of the software present at the time of testing and how to verify this version number:

**Sealing**

Describe, using point form, the physical and electronic seals (e.g. audit trails) used to protect the metrological characteristics of the instrument, and how to access them. Also describe any remote access abilities available and how these are sealed:

* The test equipment (simulator or part of a complete instrument) connected to the module shall be defined in the test form(s) used

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## Configuration for type evaluation

| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Report date: | ..... | Manufacturer: | ..... |

Use this space for additional information relating to equipment configuration, interfaces, data rates, protection options, additional devices and additional software for the instrument and/or simulator to support type evaluation.

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## Selection of sample(s)

| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Report date: | ..... | Manufacturer: | ..... |

Use this space for additional information relating to the justification for the selection of sample(s), in particular in case of a family of instruments or modules or if specific requirements are mentioned in OIML R 91-1 and -2 (if applicable).

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## Adjustments or modifications

| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Report date: | ..... | Manufacturer: | ..... |

Use this space for additional information relating to the identification of any authorized and agreed upon adjustments or modifications made to the sample or samples during the evaluation.

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## Summary of test report(s)

Use the table below to summarize the test report(s) used to support the type evaluation:

| Test Report Number | Issued by | Remarks* |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* Use this column to record if the test report was issued:

- under the OIML Basic Certificate System, the OIML Mutual Acceptance Arrangement (MAA) or the OIML Certification System Scheme A or B. Where the test report was used as the basis for issuing an existing OIML Certificate, the relevant OIML Certificate Number should be noted.
- by a Manufacturer Test Laboratory (MTL).
- under the scope of ISO/IEC 17025 accreditation.

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## Summary of appraisal of test data (where applicable)

Use this space to record the appraisal of test data [reference OIML-CS PD-05 and PD-07]:

| Requirement | Check if yes | Remarks (provide information) |
|---|---|---|
| Correct method has been used | | |
| Test data from acceptable testing facility | | |
| Testing facility capable of performing the testing | | |
| (accredited or peer assessed) | | |
| Test report provided in OIML format | | |
| Test performed against OIML R 91 (versions) | | |
| Results acceptable for all the tests performed | | |
| Further information/clarification needed | | |

If there is more than one test report, indicate in the remarks if the answers are not the same for all test reports by referring to the test report number from the previous table.

## Corrective actions required

| Issue identified | Details of corrective action required |
|---|---|
| | |
| | |
| | |
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## Summary of the checklist

For each test, the "Summary of the checklist" below and the "Checklist" in clause 1 shall be completed according to this example:

| | Passed | Failed |
|---|---|---|
| When the instrument has passed the test: | X | |
| When the instrument has failed the test: | | X |
| When the test is not applicable: | / | / |

Summary of the checklist:

| Requirement | Passed | Failed | Remarks |
|---|---|---|---|
| Metrological requirements<br><br>R 91-1 clause 6 | | | |
| Technical requirements<br><br>R 91-1 clause 7 | | | |
| Metrological controls<br><br>R 91-1 clause 8 | | | |
| Test procedures<br><br>R 91-2 | | | |
| Overall result | | | |

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| | | | |
|---|---|---|---|
| Application no.: | ..... | Type designation: | ..... |
| Report date: | ..... | Manufacturer: | ..... |

Use this page to detail remarks from the summary of the checklist

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## Checklist

Application no.: ..... Type designation: .....

Report date: ..... Manufacturer: .....

Serial no.: ..... .....

Date: ..... Observer .....

| Requirement (R 91-1) | | Passed | Failed | Remarks |
|---|---|---|---|---|
| | | | | |
| **4** | **Unit of measurement** | | | |
| **5** | **Categorisation of speed meters** | | | |
| **6** | **Metrological requirements** | | | |
| 6.1 | Measuring intervals | | | |
| 6.2 | Indicated speed value | | | |
| 6.3 | Metrologically relevant speed value | | | |
| 6.4 | MPE for stationary measurements | | | |
| 6.5 | Linearity error limit for stationary measurements | | | |
| 6.6 | Certainty of vehicle identification | | | |
| 6.7 | Indicated distance and angle values | | | |
| 6.8 | Requirements specific to across-the-road speed meters | | | |
| 6.9 | Measurement error under influence quantities | | | |
| 6.10 | Requirements specific to Doppler-radar based speed meters | | | |
| 6.11 | Requirements specific to range-finding based speed meters | | | |
| 6.12 | Requirements specific to fixed-distance speed meters | | | |
| 6.13 | Requirements specific to average speed meters | | | |
| 6.14 | Requirements specific to image-based speed meters | | | |
| 6.15 | Requirements specific to moving speed meters | | | |
| 6.15.1 | MPE for moving measurements | | | |
| 6.15.2 | Stationary mode | | | |
| 6.15.3 | Ego speed meter | | | |
| 6.16 | Minimum requirements for rated operating conditions | | | |
| 6.17 | Rated operating conditions | | | |
| 6.17.1 | Climatic environment classification | | | |
| 6.17.2 | Mechanical environment classification | | | |
| 6.17.3 | Electromagnetic environment classification | | | |
| 6.18 | Disturbances | | | |
| 6.18.1 | Fault limit value | | | |
| 6.18.2 | Acceptable significant faults | | | |
| 6.18.3 | Other causes of significant faults | | | |
| 6.18.4 | Reaction to disturbances | | | |
| 6.19 | Durability | | | |
| 6.20 | Redundancy of the measuring process | | | |
| 6.21 | Presumption of compliance | | | |
| **7** | **Technical requirements** | | | |
| 7.1 | General principles | | | |
| 7.1.1 | High level metrological protection | | | |
| 7.1.2 | Intended use | | | |
| 7.1.3 | Possibility to carry out examinations and tests | | | |
| 7.1.4 | Protection against fraud and misuse | | | |
| 7.1.5 | Protection of the measurement, software and parameters | | | |

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| Requirement (R 91-1) | | Passed | Failed | Remarks |
|---|---|---|---|---|
| 7.2 | Indication of measurement results | | | |
| 7.2.1 | Availability of the result of a manual measurement | | | |
| 7.2.2 | Availability of the result of automatic measurement | | | |
| 7.3 | Evidence file | | | |
| 7.4 | Storing evidence files | | | |
| 7.5 | Checking facilities | | | |
| 7.6 | Alignment parameters of mobile speed meters | | | |
| 7.7 | Aiming device | | | |
| 7.8 | Modes | | | |
| 7.8.1 | Enforcement mode | | | |
| 7.8.2 | Test mode | | | |
| 7.9 | Test interface | | | |
| 7.10 | Software | | | |
| 7.10.1 | Software identification | | | |
| 7.10.2 | Evidence and prevention of intervention and prevention of misuse | | | |
| 7.11 | Inscriptions – descriptive markings | | | |
| 7.12 | Manual | | | |
| 7.13 | Sealing | | | |
| 7.14 | Verification marks | | | |

## Result:

Pass ☐ Fail ☐

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Use this page to detail remarks from the checklist

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