

INTERNATIONAL
RECOMMENDATION

OIML R 91-3

Edition YYYY (E)

TC7_SC4_P3_N035

1CD revision of R 91-3

Speed meters

Part 3: Test report format

Cinémomètres pour la mesure de la vitesse des véhicules

Partie 3: Format du rapport d'essais



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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 91-3, Edition YYYY - was developed by Project Group 3 of OIML TC 7/SC x *Speed meters*. It was approved for final publication by the International Committee of Legal Metrology in YYYY and will be submitted to the International Conference of Legal Metrology in YYYY for formal sanction.

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 “Test report format”, the subject of OIML R 91-3, aims at presenting, in a standardized format, the results of the various tests and examinations to which a type of speed meters shall be submitted with a view to its approval.

The “Test report” is a record of the results of the tests carried out on the instrument. The “test report” forms have been produced based on the tests detailed in the performance test procedures (OIML R 91-2).

The “information concerning the test equipment used for type evaluation” shall cover all test equipment which has been used in determining the test results given in a report. The information may be a short list containing essential data (name, type, reference number for purpose of traceability). For example:

- Verification standards (accuracy or accuracy class, and no.);
- Simulator for testing of modules (name, type, traceability and no.);
- Climatic test and static temperature chamber (name, type and no.);
- Electrical tests, bursts (name of the instrument, type and no.);
- Description of the procedure of field calibration for the electromagnetic susceptibility test.

All metrology services or laboratories evaluating types speed meter 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 “Test 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 test results may be transmitted by the country performing these tests 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 “Test report format” is mandatory.

Test report

Explanatory notes

Symbols	Meaning
v [km/h]	Indicated speed of measured vehicle
v_{EGO} [km/h]	EGO speed of speed meter, when the speed meter is installed in a vehicle
v_{REF} [km/h]	Reference measured speed by reference speed meter or simulator
Δv [km/h]	Absolute difference between v in v_{REF}
MPE [km/h]	Maximum permissible error
N	Constant number of performed measurements, typical value 500, 50 or 5
a_{REF} [m/s ²]	Acceleration for dynamic performance test
d [m]	Distance to vehicle for linearity test
α [°]	Angle to vehicle for linearity test

Explanatory notes (continued)

The name(s) or symbol(s) of the unit(s) used to express test results shall be specified on each form.

The boxes under the headings of the report should always be filled in according to the following example:

	At start	At end	
Temp.:	20.5	21.1	°C
Rel. h.:			%
Date:	2014-10-15	2014-10-15	yyyy-mm-dd
Time:	16:00:05	16:30:05	hh:mm:ss

where: Temp. = temperature
Rel. h. = relative humidity

“Date” in the test report refers to the date on which the test was performed.

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 test)

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

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:

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:
(attach photograph here if available)

General information concerning the type

Application no.: Manufacturer:

Type designation: Applicant:

Instrument category:

Testing on:

☐

Complete instrument

☐

Module*

Categorization of speed meter	
Mode of use	
Principle of installation	
Working principle	
Triggering and camera	

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 [deg], if applicable		
- Number of vehicles [/], if applicable		
Temperature		
- Operating temperature		
- Storage temperature		
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

General information concerning the type (continued)

Application no.:	Manufacturer:
Type designation:	Applicant:
Instrument category:		
Testing on:	<input type="checkbox"/> Complete instrument	<input type="checkbox"/> 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

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

[illegible]

Configuration for test

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.

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.

Summary of type evaluation tests

Application no.:

Type designation:

Report date:

Manufacturer:

Requirement (R 91-2)		Report page	Passed	Failed	Remarks
4	Metrological field test				
4.6	Maximum permissible error	20			
4.7	Statistical analysis of errors (optional)	22			
4.8	Assignment to image evidence	23			
5	Metrological laboratory tests by traffic simulation				
5.3	Dynamic performance test	24			
5.4	Speed linearity test	25			
5.5	Distance linearity test (optional)	26			
5.6	Angle linearity test (optional)	27			
6	Influence factor and disturbance tests				
6.1	Evaluation method* (detailed checklist)	19			
6.5	Checking facilities	63			
6.6	Acceleration test	64			
6.7	Further disturbance tests	65			
6.8	Installation and alignment of sensor and camera	66			
7	Tests specific to certain categories of speed meters				
7.1	Doppler-radar based speed meters	67			
7.2	Range-finding based speed meters	69			
7.3	Average speed meters	71			
7.4	Fixed-distance speed meters	72			
7.5	Image based speed meters	73			
7.6	Across-the-road speed meters	74			
7.7	Moving speed meters				
7.7.1	Moving metrological field test	75			
7.7.2	Metrological field test of ego speed meter	76			
7.7.3	Traffic simulation for moving speed meters	77			
8	Software tests				
8.3.1	General requirements (mandatory)	78			
8.3.2	Software protection (mandatory)	79			
8.3.3	Support of hardware features (mandatory)	80			
8.3.4	Specification and separation of legally relevant parts and specification of interfaces (optional)	81			
8.3.5	Maintenance and re-configuration (optional)	83			

Summary of Environmental conditions (OIML R 91-2, 6.1 detailed)

Requirement (R 91-2, 6.1)		Report page	Passed	Failed	Remarks
1	Dry heat (operating)	28			
2	Dry heat (storage)	29			
3	Cold (operating)	30			
4	Cold (storage)	31			
5	Damp heat, steady-state (non-condensing)	32			
6	Damp heat, cyclic (condensing)	33			
7	Water	34			
8	Atmospheric pressure (optional)	35			
9	Sand and dust (optional)	36			
10	Salt mist (optional)	37			
11	Vibration	37			
12	Mechanical shock	38			
13	DC mains voltage variation	39			
14	Ripple on DC mains power	40			
15	AC mains voltage variation	41			
16	AC mains frequency variation	43			
17	DC mains voltage dips, short interruptions and reductions	44			
18	AC mains voltage dips, short interruptions and voltage reduction	44			
19	AC mains harmonics	46			
20	VLF and LF disturbances on AC and DC mains	46			
21	Bursts (transients) on AC and DC mains	48			
22	Surges on AC and DC mains power	48			
23	Bursts (transients) on signal, data and control lines	49			
24	Surges on signal, data and control lines	50			
25	Mains power frequency magnetic field	52			
26	Conducted (common mode) currents generated by RF EM fields	52			
27	RF electromagnetic fields	53			
28	Electrostatic discharge	54			
29	Low voltage of internal battery	55			
30	Voltage variations of a road vehicle battery	57			
31	Electrical transient conduction along supply lines of external 12 V and 24 V batteries (pulses 2a, 3a, 3b)	58			
32	Electrical transient conduction along supply lines of external 12 V and 24 V batteries (pulse 2b)	58			
33	Electrical transient conduction via lines other than supply lines for external 12 V and 24 V batteries	59			
34	Battery voltage variations during cranking	60			
35	“Load dump” test	62			

Metrological field test (R 91-2, 4)

Traffic condition during measurement (R 91-2, 4.6)

Application no.:	At start	At end	
Type designation:	Temp.:		°C
Observer:	Rel. h.:		%
	Date:		yyyy-mm-dd
	Time:		hh:mm:ss

Location:

Describe, using point form, the location (location, map, photos, ...):

Test site:

Describe, using point form, the test site (road category, speed limits, ...):

Traffic conditions:

Describe, using point form, the traffic conditions (traffic density, distance between vehicles, ...):

Number of measurements:

Describe, using point form, the decision for number of executed measurements:

Reference speed meter:

Describe, using point form, the used reference speed meter (manufacturer, type, serial, technology, traceability, ...):

Traffic condition during measurement (R 91-2, 4.6) (Continued)

Checklist for traffic conditions:

OIML R 91-2 requirements		Yes	No	Remark
4.1	General conditions			
4.2	Choice of test sites			
4.3	Traffic condition during measurement			
4.4	Number of measurements			
4.5	Reference speed meter			
4.9	Speed measurements outside the legal interval			

Results:

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:

Result:

Pass ☐ Fail ☐

Statistical analysis of errors (optional) (R 91-2, 4.7)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	PASS	FAIL
1						
2						
3						
...						
N						

Interval	Mean speed v_m [km/h]	Standard deviation σ [km/h]	$v_m - \sigma$ [km/h]	$v_m + \sigma$ [km/h]	MPE [km/h]	Pass	Fail
0 km/h .. 50 km/h							
50 km/h .. 100 km/h							
100 km/h .. 150 km/h							
150 km/h .. 200 km/h							
200 km/h .. 250 km/h							
250 km/h .. 300 km/h							
300 km/h .. 350 km/h							

Remarks:**Result:**

Pass

☐

Fail

☐

Assignment to image evidence (R 91-2, 4.8)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Examples of evidence photos:**Remarks:****Result:**

Pass

☐

Fail

☐

Metrological laboratory tests by traffic simulation (OIML R 91-2, 5)

Dynamic performance test (OIML R 91-2, 5.3)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Checklist for conditions:

OIML R 91-2 requirements		Yes	No	Remark
5.1	General conditions			
5.2	Characteristics of the traffic simulator			

Results:

Measurement No.	v [km/h]	v_{REF} [km/h]	a_{ref} [m/s ²]	Δv [km/h]	MPE [km/h]	Pass	Fail
1							
2							
3							
...							
N							

Remarks:

Result:

Pass

☐

Fail

☐

Speed linearity test (optional) (OIML R 91-2, 5.4)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	PASS	FAIL
1						
2						
3						
...						
N						

Remarks:**Result:**

Pass

☐

Fail

☐

Distance linearity test (optional) (OIML R 91-2, 5.5)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Measurement No.	d [m]	d_{REF} [m]	Δd [m]	MPE [m]	PASS	FAIL
1						
2						
3						
...						
N						

The reference speed for this kind of test should be 0 km/h.

Remarks:**Result:**

Pass

☐

Fail

☐

Angle linearity test (optional) (OIML R 91-2, 5.6)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Measurement No.	α [°]	α_{ref} [°]	$\Delta\alpha$ [°]	MPE [°]	PASS	FAIL
1		0				
2		0				
3		0				
...		...				
N		0				

Remarks:**Result:**

Pass

☐

Fail

☐

Influence factor and disturbance tests (OIML R 91-2, 6)

Dry heat (operating)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 6

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:

Condition:

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass ☐ Fail ☐

Dry heat (storage)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 6

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

Cold (operating)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 7

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

Cold (storage)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

°C

Rel. h.:

%

Date:

yyyy-mm-dd

Time:

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 7

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

Damp heat, steady-state (non-condensing)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 8

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

Damp heat, cyclic (condensing)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 9

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

Water

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 10

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**Pass ☐ Fail ☐

Atmospheric pressure (optional)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 11

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Reference to OIML D 11: 2013, point 12

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

Sand and dust (optional)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 13

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

Salt mist (optional)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 14

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**Pass ☐ Fail ☐

Vibration

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 15

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Reference to OIML D 11: 2013, point 16

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

Mechanical shock

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 17

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

DC mains voltage variation

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 18

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass ☐ Fail ☐

Ripple on DC mains power

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 19

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

AC mains voltage variation

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 20

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass ☐ Fail ☐

AC mains frequency variation

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 21

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

DC mains voltage dips, short interruptions and reductions

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 22

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

AC mains voltage dips, short interruptions and voltage reduction

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 23

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

AC mains harmonics

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 24

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

VLF and LF disturbances on AC and DC mains

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 25

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**Pass ☐ Fail ☐

Bursts (transients) on AC and DC mains

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

--	--

°C

Rel. h.:

--	--

%

Date:

--	--

yyyy-mm-dd

Time:

--	--

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 26

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Surges on AC and DC mains power

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 27

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

Bursts (transients) on signal, data and control lines

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 28

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Surges on signal, data and control lines

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 29

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Mains power frequency magnetic field

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

--	--

°C

Rel. h.:

--	--

%

Date:

--	--

yyyy-mm-dd

Time:

--	--

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 30

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**Pass ☐ Fail ☐

Conducted (common mode) currents generated by RF EM fields

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 31

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**Pass ☐ Fail ☐

RF electromagnetic fields

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 32

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Reference to OIML D 11: 2013, point 33

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Reference to OIML D 11: 2013, point 34

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**Pass ☐ Fail ☐

Electrostatic discharge

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 35

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Low voltage of internal battery

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

--	--

°C

Rel. h.:

--	--

%

Date:

--	--

yyyy-mm-dd

Time:

--	--

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 36

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

Voltage variations of a road vehicle battery

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 37

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**

MPE Maximum permissible error defined in clause OIML R91-1, 6.4 is respected during the presence of the influence factor (in relation to OIML D 11:2013 [1] MPE)

Result:

Pass

☐

Fail

☐

Electrical transient conduction along supply lines of external 12 V and 24 V batteries (pulses 2a, 3a, 3b)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 38

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Electrical transient conduction along supply lines of external 12 V and 24 V batteries (pulse 2b)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 38

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**Pass ☐ Fail ☐

Electrical transient conduction via lines other than supply lines for external 12 V and 24 V batteries

Application no.:

At start

At end

Type designation:

Temp.:

°C

Observer:

Rel. h.:

%

Date:

yyyy-mm-dd

Time:

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 39

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Battery voltage variations during cranking

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 40

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

“Load dump” test

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Reference to OIML D 11: 2013, point 41

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFa No significant fault occurred after the disturbance**Result:**

Pass

☐

Fail

☐

Checking facilities (OIML R 91-2, 6.5)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Statement, if and how checking facilities were tested during Dry Heat, Cold and DC/AC voltage:

Remarks:

Result:

Pass

☐

Fail

☐

Acceleration test (OIML R 91-2, 6.6)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:Reference acceleration should be between $[-5 \text{ m/s}^2, -1.5 \text{ m/s}^2]$ and $[1.5 \text{ m/s}^2, 5 \text{ m/s}^2]$.

Measurement No.	v [km/h]	v_{REF} [km/h]	a_{ref} [m/s ²]	Δv [km/h]	MPE [km/h]	Pass	Fail
1							
2							
3							
...							
N							

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**

Pass

☐

Fail

☐

Further disturbance tests (OIML R 91-2, 6.7)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Condition:**NSFd No significant fault occurred during the disturbance**Result:**Pass ☐ Fail ☐

Installation and alignment of sensor and camera (OIML R 91-2, 6.8)

Application no.:

Type designation:

Observer:

.....

.....

.....

.....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Results:

Mark observations as bullet points:

Remarks:

Result:

Pass ☐ Fail ☐

Tests specific to certain categories of speed meters (OIML R 91-2, 7)

Doppler-radar based speed meters (OIML R 91-2, 7.1)

Application no.:

Type designation:

Observer:

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Specific tests:

- a. carrier frequency or interval of modulated frequencies

Results:

Remarks:

- b. antenna pattern test to determine beam width and angles of the measurement beam

Results:

Remarks:

- c. equivalent isotropic radiated power [EIRP]

Results:

Remarks:

Doppler-radar based speed meters (OIML R 91-2, 7.1) (Continued)

d. minimum and maximum of distance measurement (if applicable)

Results:

Remarks:

e. accuracy of angle measurement, if applicable, and

Results:

Remarks:

f. accuracy of the aiming device, if applicable.

Results:

Remarks:

Result:

Pass ☐ Fail ☐

Range-finding based speed meters (OIML R 91-2, 7.2)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Specific tests:

- a. that vehicle shape does not significantly affect the speed measurement

Results:

Remarks:

- b. pulse repetition rate or another characteristic of the time intervals between the pulses

Results:

Remarks:

- c. beam width

Results:

Remarks:

- d. exit angle of measurement beam, if applicable,

Results:

Remarks:

Range-finding based speed meters (OIML R 91-2, 7.2) (Continued)

e. scanning range, if applicable and

Results:

Remarks:

f. modulation.

Results:

Remarks:

Result:

Pass ☐ Fail ☐

Average speed meters (OIML R 91-2, 7.3)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Specific tests:

- a. robustness of time synchronisation mechanism,

Results:**Remarks:**

- b. minimum and maximum area of trigger point/determination, and

Results:**Remarks:**

- c. minimum distance between entry and exit point.

Results:**Remarks:****Result:**

Pass

☐

Fail

☐

Fixed-distance speed meters (OIML R 91-2, 7.4)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Specific tests:

- a. accuracy of trigger point, and

Results:**Remarks:**

- b. minimum and maximum distance between trigger points.

Results:**Remarks:****Result:**

Pass

☐

Fail

☐

Image based speed meters (OIML R 91-2, 7.5)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Specific tests:

- a. accuracy of trigger point, and

Results:**Remarks:**

- b. minimum and maximum distance between trigger points.

Results:**Remarks:****Result:****Pass**☐**Fail**☐

Across-the-road speed meters (OIML R 91-2, 7.6)

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

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Specific test:

a. accuracy of aiming device, if applicable.

Results:

Remarks:

Result:

Pass ☐ Fail ☐

Moving speed meters (OIML R 91-2, 7.7)**Moving metrological field test (OIML R 91-2, 7.7.1)**

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

--	--

°C

Rel. h.:

--	--

%

Date:

--	--

yyyy-mm-dd

Time:

--	--

hh:mm:ss

Results:

(on road conditions)

Measurement No.	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Result:**

Pass

☐

Fail

☐

Metrological field test of the ego speed meter (OIML R 91-2, 7.7.2)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

--	--

°C

Rel. h.:

--	--

%

Date:

--	--

yyyy-mm-dd

Time:

--	--

hh:mm:ss

Results:

Measurement No.	v_{EGO} [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1						
2						
3						
...						
N						

Remarks:**Result:**

Pass

☐

Fail

☐

Traffic simulation for moving speed meters (OIML R 91-2, 7.7.3)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

Stationary mode

Measurement No.	v_{EGO} [km/h]	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1	0						
2	0						
3	0						
...							
N	0						

Moving mode

Measurement No.	v_{EGO} [km/h]	v [km/h]	v_{REF} [km/h]	Δv [km/h]	MPE [km/h]	Pass	Fail
1							
2							
3							
...							
N							

Remarks:**Result:**

Pass

☐

Fail

☐

Software tests (OIML R 91-2, 8)

General requirements [mandatory] (OIML R 91-2, 8.3.1)

Application no.:

Type designation:

Observer:

.....

.....

.....

.....

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

%

yyyy-mm-dd

hh:mm:ss

Results:

#	Requirement	OIML D 31 [2]	Pass	Fail	Remark
1	Software identification	6.1.1			
2	Correctness of algorithms and functions	6.1.2			

Remarks:

Result:

Pass

☐

Fail

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Software protection [mandatory] (OIML R 91-2, 8.3.2)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

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yyyy-mm-dd

hh:mm:ss

Results:

#	Requirement	OIML D 31 [2]	Pass	Fail	Remark
3	Prevention of misuse	6.1.3.1			
4	Evidence of intervention	6.1.3.2			

Remarks:**Result:**

Pass

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Fail

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Support of hardware features [mandatory] (OIML R 91-2, 8.3.3)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

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yyyy-mm-dd

hh:mm:ss

Results:

#	Requirement	OIML D 31 [2]	Pass	Fail	Remark
5	Detection of significant defects	6.1.4.1			
6	Durability protection	6.1.4.2			
7	Time stamps	6.1.5			

Remarks:**Result:**

Pass

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Fail

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Specification and separation of legally relevant parts and specification of interfaces [optional] (OIML R 91-2, 8.3.1)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

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Rel. h.:

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Date:

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yyyy-mm-dd

Time:

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hh:mm:ss

#	Requirement	OIML D 31 [2]	Pass	Fail	Remark
8	Separation of components	6.2.2.1			
9	Specification and separation of software parts	6.2.2.2			
10	Shared indication	6.2.3			
11	Storage of data	6.2.4			
12	The measurement data stored shall be accompanied by all relevant information necessary for future legally relevant use	6.2.4.2			
13	The stored measurement data shall be protected by software means to guarantee the authenticity, integrity and correctness of the information concerning the speed measurement	6.2.4.3			
14	Automatic storing	6.2.4.4			
15	Transmission via communication lines	6.2.5			
16	The measurement data transmitted shall be accompanied by all relevant information necessary for future legally relevant use.	6.2.5.1			
17	The transmitted data shall be protected by software means to guarantee the authenticity, integrity and, if necessary correctness of the information concerning the speed of measurement.	6.2.5.2			
18	Transmission delay or interruption	6.2.5.3			
19	Compatibility of operating systems and hardware	6.2.6			
20	Hardware interfaces not equipped with a protective software interface shall not be able to inadmissibly influence the legally relevant software part.	6.2.6.2			
21	If a secure boot process is needed to ensure protection of the legally relevant software part, the following requirements apply.	6.2.6.3			
22	The combination of the legally relevant software part and the operating system shall ensure that there are enough resources for the operation of the legally relevant application.	6.2.6.4			
23	Protection during use	6.2.6.5			

#	Requirement	OIML D 31 [2]	Pass	Fail	Remark
24	Communication with the legally relevant software part shall be made via protective interfaces.	6.2.6.6			
25	Identification and traceability	6.2.6.7			
26	The manufacturer shall identify the hardware and software environment that is suitable. Minimum resources and a suitable configuration necessary for correct functioning shall be declared by the manufacturer.	6.2.6.8			
27	Technical means shall be provided in the legally relevant software to prevent operation, if the minimum resources or a suitable configuration are not met.	6.2.6.9			

Remarks:

Result:

Pass

☐

Fail

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Maintenance and re-configuration [optional] (OIML R 91-2, 8.3.1)

Application no.:

Type designation:

Observer:

At start

At end

Temp.:

Rel. h.:

Date:

Time:

°C

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yyyy-mm-dd

hh:mm:ss

Results:

#	Requirement	OIML D 31 [2]	Pass	Fail	Remark
28	Verified update	6.2.8.3			
29	Traced update	6.2.8.3			

Result:

Pass

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Fail

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General remarks

Additional remarks: