

Template for comments and convener's observations

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|---------------------------|------|-------------------|-------------------------|------------------------------|---|-----------------|---|
| 0001 SE | | | | gen | <p>We would like to thank the conveners for their efforts in advancing this recommendation. The document, and ultimately its integration into the OIML-CS, we believe will greatly benefit Police Authorities and society simplifying procurement procedures for authorities, facilitate the circulation of instruments and enable innovation.</p> <p>Our overall impression is however that the requirements have become more detailed and seems to be focused on and adapted to stationary instruments. In this version, the requirements have also become stricter, often without clear justification—for instance, the testing requirements in section 91-2 6.3.</p> | | <p>First thank you for all your contributions and ideas.</p> <p>We are aware that requirements are rather strict and detailed. The intention was to get at the end type approval certificates from OIML CS, which are going to be widely accepted.</p> <p>We could simplify R91 type approval procedure with less strict requirements and less testing. This “could” lead to cheaper testing and type approval procedure, but at the end nobody would accept OIML CS type approval documents and manufacturer would have to pass more additional tests demanded by various national conformity assessment bodies.</p> <p>Please also note our response sent by separate email.</p> |

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| 0002 SE | | | | gen | <p>For moving measurements, there is a risk that the requirements are now such that only a limited number of testing laboratories are likely to have the necessary equipment. We are therefore concerned that this will drive up costs due to a limited testing market. It is essential that all requirements are properly justified, both in terms of their contribution to measurement accuracy and the costs they impose. After being contacted by other European Police Authorities and their ministries having concerns on the costs of speed meters, we want to stress that the needs of the Police Authorities are reflected in this recommendation not predominantly those coming from the metrology institutes.</p> | | <p>We understand your concerns about price of type approval and that there are going to be limited number of laboratories capable to perform type approvals.</p> <p>We are always comparing speed meters with another similar field – breath analysers. There are only two laboratories in the field of breath analysers, which are capable to issue OIML CS certificates ...</p> <p>The higher number of laboratories does not guarantee lower price of the speed meters on the market. Europe Union had in 2003 a great chance to harmonise requirements for speed meters under Measuring Instrument Directive 2014/32/EU, but there was a “political” decision not to do this. Now manufacture has to pass type approval for each national legislation and repeat testing. This is the main reason for excessive costs for type approval and why it takes so long to pass it.</p> |

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| | | | | | | | <p>OIML CS for OIML R 91 is a first approach to do harmonization of requirements in the last 30 year all over the world.</p> <p>Our goal is to have a strong OIML R 91 type approval certificate, which would be mutually accepted by majority of countries.</p> <p>Nevertheless, we need to point out that OIML R 91 has different roles:</p> <ol style="list-style-type: none"> 1. It is a bases for OIML CS laboratories and 2. it can be a base to establish national requirements. <p>It is up to countries to accept completely or partially future OIML R 91 type approval certificates or tests reports according to the OIML R 91 requirements.</p> |
| 0003 SE | | | | gen | <p>The moving speed meters, particularly those equipped with picture/video systems, serve a dual purpose: beyond measuring speed, they are also used to enforce traffic behaviour. In countries with sparsely populated areas, stationary systems are often not cost-effective, making moving systems an attractive alternative. For this reason, the Swedish authorities plan to maintain a 50/50 balance between stationary and mobile systems in the coming years. However, there is a risk due to costs that those instruments will not be used or will be assessed outside the R91 and OIML-CS.</p> | | <p>The costs are impossible right now to predict.</p> |

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| | | | | | | | <p>We are only aware, if we lower current requirements, there might be more interested laboratories to join OIML CS based on the less investment in the laboratory personnel, procedures and equipment. This is not the right way, because we would like to have a “strong” and “trustful” OIML CS, where type approval certificates are widely accepted and trusted.</p> <p>Currently, type approval costs are high, because manufacturers need to repeat certain test and examination according to various national legislations.</p> <p>Type approval OIML R 91 based on the OIML CS is not meant to be easy to get, otherwise there is no point in OIML CS.</p> |
| 0004 JP | | | | | No comments | | OK, thank you ... |
| 0005 US-01 | All | | | Gen | <p>The US has reviewed the 3CD package of OIML R91 for “Traffic Speed Meters.”</p> <p>We thank the Convenors for their efforts on resolving the international comments received on the 2CD package and the 2.1 CD package.</p> | | <p>Technical issues are going to remain always, because there are two possible approaches to the OIML CS. Make it easy or make it hard.</p> |

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| | | | | | <p>We note that there are still some technical issues that remain to be resolved that are contained in the comments submitted by other nations on this 3CD package (especially those submitted by France, Netherlands, and Sweden).</p> <p>We would also like to see improvements to the software clauses in R91 (see note US-05 on Clause 7.10)</p> <p>We hope that all of these remaining technical issues on R91 can be resolved in a way that is acceptable to all countries (full consensus, if at all possible), and that we can quickly move to the next phase of this project.</p> | | <p>The consensus would be nice, but 100 % consensus might not be possible, even after years of discussions. There are always going to be issues. Within P members of TC7/SC4/p3 group there are different countries with different level of requirements and capabilities of laboratories in the field of speed enforcement. Some countries do not have even basic legal metrology legislation, some countries does not use a concept of type approval and the other side have countries with long time legal metrology tradition, a lot of type approval experience and well equipped laboratories.</p> <p>We have decided based on the last voting to continue with small change procedure and introduce as fast as is possible Draft document to CIML preliminary ballot.</p> |

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| | | | | | | | We think that consensus has increased over the years we have worked on the drafts and in particular also after the PG meeting in September 2024. Consensus has reached a sufficiently high level and we would like to put the documents to life. |
| 0006 SE | 1 | | | gen | SE supports the decision to limit the recommendation to four parts at this stage. This will speed up the approval of the document. | | OK, yes this will speed up preparation of Final Draft document. This was also decided at PG meeting in September 2024. There is still an option to continue with Part 5. |
| 0007 NL | 1 | | | | The documents improved quite a lot. | | OK, thank you |
| 0008 BE | 1 | .Foreword | 1 | ed | The last of the listed OIML publications contains in its description an unnecessary comma. Text: <i>International Basic Publications (OIML B), which define the operating, rules of the various OIML structures and systems.</i> | Remove comma between the words <i>operating</i> and <i>rules</i> : <i>International Basic Publications (OIML B), which define the operating rules of the various OIML structures and systems.</i> | OK Will inform also OIML about this issue in their template. |
| 0009 SE | 1 | 3.3 | | te | SE strongly supports the PG vote not to include instruments related to pursuing methods for metrological purposes. Key reasons include the importance of safety and the efficient use of police resources, as emphasized by the Swedish Police Authority at the PG meeting. Instruments used in traffic enforcement must ensure officer safety and to a greater extent have functionalities that minimize manual interventions. This would allow traffic police to focus on road enforcement activities—rather than spending time giving oral testimony in court. | | OK, it was already decided at PG meeting in September 2024. |

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| 0010 FR | 1 | 3.3.6 | | te | To be consistent with the definition of beam width and to avoid any misunderstanding, we should not talk about "half-maximum power". | We propose to replace by "horizontal beam width of a radiation beam in the horizontal plane". And to replace the note 1 by "Note 1: The beam width of a radiation beam in the vertical plane is referred to as vertical beam width". | OK Somehow, we have missed this definition. We made confusion between Doppler RADAR and LIDAR. OK we removed "half-maximum power" in the definition and in Note 1, but we added a new Note 2, which includes this term. We also added the term "angular span" in the definition to avoid that the term "beam width" is defined using the term "beam width". |
| 0011 PT | 1 | 3.3.6 | Figure 1 | ed | The numbers are printed in upright type, not italic. | Replace: " $d = 1000$ m" By: " $d = 1000$ m" Replace: " $x = 1.5$ m" By: $x = 1.5$ m" Replace: " $\alpha = 1.5$ mrad" By: " $\alpha = 1.5$ mrad" | OK, corrected italic numbers |
| 0012 DE | 1 | 3.4.10 | Note 3 | ed | Clarify the English wording | Change to "A Doppler-radar based speed meter that does not compensate for the cosine error must be used at a measurement angle of 0° ." | NO, We don't agree with the proposal. Why Doppler-radar based speed meters must be used at a measurement angle of 0° when this is clearly not the case for hand-held LIDAR speed meters? We realized that this note does not add any value to R91 (rather confusion) and therefore propose to delete it without replacement. |
| 0013 PT | 1 | 3.4.9 | Note | ed | Symbols for quantities are set in an italic font. | Replace: " $v_m = v \cdot \cos(\alpha)$," By: " $v_m = v \cdot \cos(\alpha)$," | Ok, corrected to italic font |

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| 0014 UK | 1 | 6.4, 6.5, 6.15.1, 6.15.3, | Last paragraph | ed | Editorial correction for clarity. Since there are several types of errors mentioned, it will be useful to be specific about which error is being calculated. | Add "measurement" to "error", or should it be "maximum permissible error" "The integer speed value from the EUT shall be used to calculate the measurement error". | OK, it is more clear. Native speaker comment. |
| 0015 FR | 1 | 6.6 | | te | We take note the mail from the convenors on the deletion of the note 2 of the clause 6.6. Therefore we do not give comments on this note. For information, we had questions on this note before the mail. | Thank you for the mail. | OK, thank you for comment. Point 6.6., Note 2 was removed before the end of voting. |
| 0016 SE | 1 | 6.6 | | te | The note 2 is formulated as a requirement which we believe is not the intention since the justification mentions a "possible solution". We don't see in what way this supports the reader. On the contrary it imposes additional requirements without sufficient justification. | Remove the note | OK, thank you for comment. Point 6.6., Note 2 was removed before the end of voting. |
| 0017 US-02 | 1 | 6.6 | | te | We did have problems with Section 6.6, Note 2, but have received an email from the convenors that this note has been deleted. Therefore, we have not included our concerns with this note. | | OK, thank you for comment. Point 6.6., Note 2 was removed before the end of voting. |
| 0018 DE | 1 | 6.6 | Note 2 | te | (As of April 09 (e-mail by Daniel Sprecher), Note 2 has been removed, so comment no longer necessary) | (As of April 09 (e-mail by Daniel Sprecher), Note 2 has been removed, so comment no longer necessary) | OK, thank you for comment. Point 6.6., Note 2 was removed before the end of voting. |
| 0019 NL | 1 | 6.6 | Note 2 | ed | Note 2 appears to contain a requirement ("shall be.."). Requirements do not belong in notes. If Note 2 is removed, then the acceptable solution (reworded to avoid 'shall') can move to an Annex (as done in OIML R 126) or be included in Note 1. | Add to Note 1: "a second measurement result obtained by a different, independent measurement method with a measurement error not exceeding 10% of the actual speed. If this cannot be met, the measurement result is invalid or deleted." | No I have deleted 6.6 Note 2 as promised. I would not reintroduced this back in the Note 1. |

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| | | | | | | | The reference to a second measurement result obtained by a different, independent measurement result would create more questions and confusion than it would help as a practical aid. We therefore refuse to add this proposal neither in Note 1 nor in an Annex. |
| 0020 PT | 1 | 6.6 | Note 2 | ed | When the symbol % is used, a space separates the number and the symbol %. | Replace: "10%" By: "10 %" | OK, corrected |
| 0021 FR | 1 | 6.9 | | te | The title has been changed after the comment 0017 NL (2.1CD) from "traffic density and any other possible influence" to "Measurement error under influence quantities". However, "Influence quantity" also refers to VIM and VIML definitions as "quantity that, in a direct measurement, does not affect the quantity that is actually measured, but affects the relation between the indication and the measurement result". This title could then lead to inconsistencies regarding metrological principles and perhaps misunderstandings. | We propose a new title for § 6.9 : " Measurement error under <u>several operating conditions</u> ". | It is more editorial than technical issue. Influence quantities = Several operating conditions We could replace this, but then we need to check also Part 2, 3 and 4. We don't see the inconsistency in this title. Vehicle shape, traffic density, ... which are mentioned in this clause are possible influence quantities, which need to be addressed by manufacturers. |
| 0022 US-03 | 1 | 6.9 | | ed | Suggested edits to Section 6.9. | Edit: "MPE's for stationary measurements (6.4) or for and moving measurements (6.15) shall be complied to comply with the respective MPE's regardless of . . ." Edit: "During Specific influence factor and disturbance tests shall ensure compliance with the linearity error limit for stationary | OK, very good proposal to clear text. |

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| | | | | | | measurements (6.5) or the fault limit value (6.18.1) shall be complied to (see R91-2). | |
| 0023 DE | 1 | 6.9 | 1st paragraph | ed | Two language changes | <p>"... shall be complied with regardless of vehicle shape, ..."</p> <p>"... influences from the environment..."</p> | <p>OK, we took the note, but we used formulation from 0022 US</p> <p>We included "the" in front of environment.</p> |
| 0024 UK | 1 | 6.9 | 1st paragraph | ed | Editorial correction Delete the apostrophe | "MPE's for stationary measurements..." should be corrected to "MPEs for stationary measurements..." | OK, deleting apostrophe |
| 0025 UK | 1 | 6.9 | 1st paragraph | ed | Editorial correction | Replace "complied" with "met" "shall be complied to regardless of vehicle shape..." corrected to "shall be met to regardless of vehicle shape..." | OK, change complied to met Native speaker suggestion |
| 0026 NL | 1 | 6.9 | 2 nd par | ed | Typing error "compiled to" | Change "compiled to" to "complied with" | OK, but we decided to use suggestions from 0025 UK |
| 0027 DE | 1 | 6.9 | 2nd paragraph | ed | Language change | "...shall be complied with (See R91-2)." | OK, "comply" |
| 0028 NL | 1 | 6.10 | | te | MPE for time measurement (0,2 %) is applicable for all speed meters so move the requirement to 6.6, and change it to 0,3%. | Create new clause 6.6 "MPE for time measurement" before "certainty of vehicle identification" (will become 6.7). The maximum permissible error for time measurement is 0.3 %." | No, if we add this new requirement, we also have to include test procedures to check this requirement. We don't think that such additional test procedures are necessary. If speed meters other than average speed meters have issues with time measurements, it will be detected during speed testing. |

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| | | | | | | | Also: Several countries have expressed their concern that there are already too many requirements and test procedures in R91. |
| 0029 FR | 1 | 6.11 | | te | The requirement regarding beam width is not relevant for scanning-based speed meters | Add "For hand-held range finding based speed meters" before "the beam width..." | NO, We have following in the requirement: "The beam width, <u>where only a single beam is used for the</u> ". This refers that this requirement is not for scanning LIDAR |
| 0030 FR | 1 | 6.11 | | te | The "magnification scope 2x" is not defined. We understand only a factor equivalent to 2 is accepted. Why another factor could not be accepted? | Please clarify and add a definition. Change if appropriate the authorized factor. | OK Added definition of 3.4.15 Now also other factors than 2 are allowed. |
| 0031 DE | 1 | 6.11 | 3rd paragraph | ed | Three language changes | "... is measured and defined in the horizontal and vertical directions of the measurement beam..." | OK, 2x times "the" and "directions" |
| 0032 UK | 1 | 6.11 | 4 th and 5 th paragraph | ed | The unit of beam width in "metres" (not "m") should be consistent throughout the Recommendation. | Change "1.5 m" and "600 m" to "1.5 metres" and "600 metres" | OK Native speaker comment |
| 0033 DE | 1 | 6.11 | 4th paragraph | ed | Two language changes, and a comma removed | "Maximum specified distance shall be smaller or equal to the distance where the beam width exceeds 1.5 m, to prevent..." | OK, "lower" → "smaller, included "exceeds" |
| 0034 DE | 1 | 6.11 | 5th paragraph | te | It must be allowed to use a magnification of more than 2x. And a language change, too. | "A magnifying viewfinder of a power of at least 2x is mandatory for..." | OK, of course, the minimum magnification should be at least 2x OK, also changed scope to viewfinder, this is the better term. |
| 0035 UK | 1 | 6.11 | Diagram | ed | In the diagram write the full text for "x" | Change "x = 1 m" to "x=1 metre" | MARKED VERSION BASED COMMENT Picture and text was moved to 3.3.6 in clean version of OIML R91. We will change m for metre. |

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| 0036 NL | 1 | 6.11 | figure | ed | Typing error "mili rad" | Change "mili rad" to "millirad" | MARKED VERSION BASED COMMENT Picture and text was moved to 3.3.6 in clean version of OIML R91. We have changed it mrad according to SI units. |
| 0037 SE | 1 | 6.12 | | te | See 3.3 | | |
| 0038 UK | 1 | 6.12 | 2 nd paragraph | ed | Editorial correction | Change "The distance between detection points as a maximum permissible error of. ± 0.5 " to "The distance between detection points shall have a maximum permissible error of. ± 0.5 " | OK Comment from native speaker. We also realized that the word "variation" is too strong and changed it to "'shift'". |
| 0039 NL | 1 | 6.13 | | te | MPE for time measurement (0,3%) is applicable for all speed meters so move the requirement to 6.6 | Create new clause 6.6 "MPE for time measurement" before "certainty of vehicle identification" (will become 6.7). The maximum permissible error for time measurement is 0.3 %." | Same response as for 0028 NL. |
| 0040 UK | 1 | 6.13 | 2 nd paragraph | ed | Editorial correction. It is not clear what "maintained" means or how the time synchronisation is maintained. | Change "Time synchronisation between detection fields shall be achieved and maintained" to "Time synchronisation between detection fields shall be achieved and stored " | NO, you cannot store the time synchronisation, your average speed system should maintained during the operation. Time synchronisation should be maintained. If time synchronisation fails, the speed measurement should be stopped. We tried to make it more clear by adding "in a durable way". |
| 0041 DE | 1 | 6.15.3 | Note 2 | ed | Add a comma to clarify meaning. Change wording. | "Depending on national legislation, after changing a tyre the verification might no longer be valid. In this case, a new verification must be performed." | OK, added comma and change wording |

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| 0042 NL | 1 | 6.16 | Table 1 E | ed | The now mathematically correct description does not take into account the range of nominal voltage (see D 11) | Propose: $0,85 \times U_{nom2}$ to $1,1 \times U_{nom1}$ U_{nom1} = highest value of range U_{nom2} = lowest value of range | OK, we could change the description to meet OIML D 11 |
| 0043 NL | 1 | 6.16 | Table 1 F | ed | The now mathematically correct description does not take into account the range of nominal frequency (see D 11) | Propose: $0,98 \times f_{nom2}$ to $1,02 \times f_{nom1}$ f_{nom1} = highest value of range f_{nom2} = lowest value of range | OK, we could change the description to meet OIML D 11 |
| 0044 SE | 1 | 6.19 | | te | SE support the conveners in, at this point, not specifying further the durability tests. The requirement, in this wording is not possible for a manufacturer to meet. We would like to have the general requirement mention first and what the manufacturer should aim for in a note. | A speed meter shall be designed to maintain an adequate stability of its metrological characteristics over a period of time estimated substantiated by the manufacturer, provided that it is properly installed, maintained and used according to the manufacturer's instruction when in the environmental conditions for which it is intended. Note: Possible solution is if the requirements from 6.1 to 6.17.1 is met during, at least, the time interval between subsequent verifications according to national legislation. The verification period is defined under the responsibility of the National Authorities (subsequent verifications). | OK, we moved the first paragraph of this clause to the note. |
| 0045 UK | 1 | 6.19, 8.2, 8.3 | | ed | For consistency, harmonise the following text. "appropriate metrological authority", "National Authorities" | Change all to "metrological authority". | OK, Similar terms appear in clause 8.2, 8.3. I deleted "appropriate" in these clauses. |
| 0046 US-04 | 1 | 6.20 | | gen | Section 6.20 now seems introduces "piezo detectors" and "GNSS receivers" for the first and only time. Possibility this will cause confusion. | Propose that if these devices are going to be introduced ... it would help the users of R91 to have MORE information about what these are ... Piezoelectric detectors; and | OK, we have described GNSS ... |

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| | | | | | | at least spell out the GNSS acronym. | We changed piezoelectric detectors to pressure-sensitive barriers and also included this term as an example in clause 3.3.3. |
| 0047 DE | 1 | 6.20 | 2nd example in note 2 | ed | Several language changes | Make the second example read like this: “- fixed-distance speed meters with two piezo detectors only: the front wheel of a light motorcycle jumps over the first detector, then the rear wheel touches the first detector, then the front wheel touches the second detector. In this situation, the measured time interval is significantly shorter than the correct time interval and therefore a large speed error is present.” | OK, changed Also further changes to clarify where made. |
| 0048 BE | 1 | 7.1.1 | 2 | ed | Typo: <i>It shall be designed and manufactured to the highest level of quality in with respect to the measurement technology and security of the measurement data.</i> | Correct use is either <i>with respect to</i> or <i>in respect of</i> . Remove the word <i>in</i> : <i>It shall be designed and manufactured to the highest level of quality with respect to the measurement technology and security of the measurement data.</i> | OK, deleted “in” |
| 0049 SE | 1 | 7.4 | | te | The requirements on storge can vary depending on the surrounding systems used and legal framework. | Add a note: National regulations can have a different set of storage requirements. | NO, it is always possible that national requirements set different requirements as OIML R 91. We will not add this explicitly here. |
| 0050 DE | 1 | 7.5 | 4th paragraph | ed | Add a comma in the bracket at the end of the paragraph | “(i.e., also below 100 km/h)” | OK, added comma |
| 0051 DE | 1 | 7.6 | Note, second line | ed | Language changes | “- Virtual reference lines in the camera image match with the roadside.” | OK, proposed definition is clearer |
| 0052 US-05 | 1 | 7.10 and other places in R91 that involve software | | gen | It seems that the software requirements found in the 3CD of R91 are not fully harmonized with the latest version of D 31. This could possibly be sufficient for simple standalone radar speed meters without communication interfaces. | Propose that the Project Group working on D31 be consulted to help improve the software section of R91 ... and at least attempt to ensure full harmonization between R91 and D31 | OK, thank you for pointing this out. We have been looking for differences and changed the following: Part 1 7.10: 6.2.2.1 >> 6.3.2.2 |

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| | | | | | However (especially for sophisticated speed meter installation such as section speed meters), this seems insufficient. This is especially true considering that these systems are used for law enforcement, operate unattended and may, therefore, be subject to third party hackers. | | <p>7.10.1 >> no change</p> <p>7.10.2 >> change "Fraud protection" to "Evidence and prevention of intervention and prevention of misuse"</p> <p>Part 2</p> <p>8.3.4 Data Transmission</p> <p>Part 3</p> <p>Data Transmission</p> <p>Part 4</p> <p>"Evidence and prevention of intervention and prevention of misuse"</p> <p>We went once again over the Part 1 and Part 2 and checked requirements against average speed meters and other unattended speed meters.</p> <p>We think that requirements in the OIML R 91-2 in the point 8.3 are sufficient to cover attended and unattended speed meters and speed meters based on the different physical principles.</p> <p>We don't see the reason to contact OIML D 31 PG.</p> |
| 0053 UK | 1 | 7.12, 8, 8.2, 8.2.4, 8.3, 8.4 | | ed | For consistency, harmonise the following text. "National legislation", "national regulations", | Change all to "national regulations", and | OK, similar as UK 0038 |

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| | | | | | | | I changed from legislation to regulations at more places: 8.2, 8.2.4, 8.3, 8.4 |
| 0054 UK | 1 | 8.1.1 | 1 st bullet | ed | Editorial correction | Add "a" "...including statement about durability" corrected to "... including a statement about..." | OK Native speaker comment |
| 0055 UK | 1 | 8.1.1 | 4th bullet | ed | Editorial correction. "possible" is not useful in this context. It is assumed that there will be checking facilities. | Suggest deleting "possible" description of possible checking facilities to prevent measurements under certain conditions | OK Native speaker comment |
| 0056 DE | 1 | 8.1.1 | First "bullet" | ed | Add "a" | "... including a statement about..." | OK |
| 0057 NL | 1 | 8.1.1 | Last bullet | ed | "description of measuring principle or algorithm" suggests that one of them is sufficient, both are needed and there can be more than one. | Change to "description of measuring principle(s) and algorithm(s)" | OK, added plural option |
| 0058 DE | 1 | 8.1.1. | Last "bullet" | ed | Language change inside the parentheses | "... including the mathematical operation used to obtain integer speed values from high-resolution values)." | OK, clarified the text |
| 0059 BE | 2 | Foreword | 1 | ed | The last of the listed OIML publications contains in its description an unnecessary comma. Text: <i>International Basic Publications (OIML B), which define the operating, rules of the various OIML structures and systems.</i> | Remove comma between the words <i>operating</i> and <i>rules</i> : <i>International Basic Publications (OIML B), which define the operating rules of the various OIML structures and systems.</i> | OK, corrected in the part 1 |
| 0060 BE | 2 | Foreword | 5 | ed | In part 1, the project group is TC7/SC4 Traffic speed meters. In parts 2, 3 and 4, the project group is TC 7/SC 4 Speed meters: <i>This publication – reference OIML R 91-2, Edition 20xx – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – 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.</i> | Use consistent reference tot the project group. Change the paragraph in the foreword of parts 2, 3 and 4 to: <i>This publication – reference OIML R 91-2, Edition 20xx – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – Traffic sSpeed 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.</i> | OK, thank you for remark. Corrected in part 2, 3 and 4. |

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|---------------------------|------|-------------------|---------------------------|------------------------------|--|--|--|
| 0061 SE | 2 | 4.2 | | te | It will be difficult to fulfil the conditions in a-d in practise (ordinary traffic sites) especially containing all types of vehicles (b). We propose to leave some freedom and not having an exhaustive list. | b) The occurrence of all types of motor vehicles in typical traffic situations. : cars, motorcycles, small trucks, vehicles with trailers, and long vehicles such as busses or trucks. | OK, the explicit listing of vehicle types could indeed be disadvantageous. We have removed it. We have also realized that field tests down to the minimum specified speed were mandatory and these can be very time consuming, although unnecessary. We have therefore also added a corresponding sentence to point a of clause 4.2. |
| 0062 SE | 2 | 4.8 | | te | It has to be possible to separate the functions of speed estimation and identification. This requirement for image supported systems seems to be formulated for fully automatic/stationary measurements only. However, for certain applications, such as moving speed meters, an operator (police officer) takes the decision what measurement in field (incl evidence picture/video) of all registered is good enough to eventually be used as evidence. In this case the 'all measurements' and 'no doubt' is too strict and not proportional. | If the speed meter records image evidence (photo or video) for the identification of vehicles, the timing and markings of the image evidence must be correct for all measurements used as evidence. For fully automated systems , there must be no doubt about the correct assignment of the measured values to the vehicle visible on the image evidence, in particular in the case of overtaking procedures or when the distance from the EUT to the measured vehicles is near the minimal or maximal specified value. | OK we added "used as evidence". However, we also added the following sentence: "Any image that is not to be used as evidence must be clearly and easily identifiable as such by the user." We didn't add "For fully automated systems", because the sentence also applies for manual systems (if there is image evidence that is processed). |
| 0063 UK | 2 | 4.9 | 1 st paragraph | ed | Editorial correction for clarity | Add "the following": "...specified speed must be checked by the following additional tests:" | OK Native speaker comment. |

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|---------------------------|------|-------------------|-------------------------|------------------------------|--|--|---|
| 0064 NL | 2 | 5.2 | 4 th par | te | Why is the allowed uncertainty of the simulator factor 4 of MPE where other uncertainties are factor 5 or compensated if higher | The expanded measurement uncertainty (k = 2) of the simulated reference speed shall not exceed 0.2 km/h at speeds up to and including 100 km/h and 0.2 % of the speed value at speeds above 100 km/h. If the mentioned uncertainty cannot be met, a larger measurement uncertainty can be used, if the added uncertainty is compensated for in the maximum permissible error (see guarded acceptance in clause 8.3.2 of OIML G 1-106 [3]). | OK, it is true that there was a lack of consistency with clauses 4.5 and 7.7.2 (formerly 7.5.2). |
| 0065 SE | 2 | 5.3 | | te | The optionality is removed without a clear justification. Is this proportional? The tests will limit the number of test facilities and drive costs for society. If made mandatory at least there should be information on the justification, see SE gen comment above. | Reintroduce optional | <p>IDEA – we could organise an event under OIML patronage to teach them in general Sweden, France and China how to establish laboratory and testing procedures.</p> <p>We are convinced that there are a lot of advantages to have simulators available and to perform metrological laboratory tests. There are some initial investments necessary, but they are worth it and they help to reduce time-consuming field tests. Because it will be necessary to have simulators available for type approval, manufacturers will also use them during development of their products, thereby improving product quality. Also for laser scanner, light barriers, inductive loop, section speed meters simulators are available.</p> |

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|---------------------------|------|----------------------|----------------------------|---------------------------------|--|--|------------------------|
| 0066 FR | 2 | 5.3 | Title | te | Dynamic performance tests (lab) induce higher constraints in terms of means of tests. Many countries will not be able to have this type of simulator. Moreover, what is the need to realise dynamic tests in laboratory if the instrument complies with MPE with tests on the field? These tests should remain optional. Only the metrological field tests are able to test real conditions (traffic flow.....). | Keep "optional" in the title | See comment to 0065 SE |
| 0067 CN | 2 | 5.3 | title | te | Dynamic performance test is not applicable to all speed meters, and it is difficult to realize for most speed meters simulators, such as laser scanner, light barriers, inductive loop, section speed meters. It is suggested that this test is changed back to optional. | Keep as "optional" | See comment to 0065 SE |
| 0068 SE | 2 | 5.4 | | te | The optionality is removed without a clear justification. Is this proportional? The tests will limit the number of test facilities and drive costs for society. If made mandatory at least there should be information on the justification, see SE gen comment above. | Reintroduce optional | See comment to 0065 SE |
| 0069 DE | 2 | 5.4 | Last line | ed | Because Table 1 appears so much later in the text we suggest adding a pointer to Section 6.1 where Table 1 can be found. | Change end of sentence like this: "...criteria are given in Table 1 (see 6.1)." | OK |
| 0070 FR | 2 | 5.4 | Title | te | If this test is mandatory, it induces higher constraints in terms of means of tests. Many countries will not be able to have this type of simulator. A lot of countries Moreover, what is the need to realise this test in laboratory if the instrument complies with MPE with tests on the field? These tests should remain optional. Only the metrological field tests are able to test real conditions (traffic flow.....). | Keep "optional" in the title | See comment to 0065 SE |
| 0071 CN | 2 | 5.4 | title | te | ditto in 5.3 | Keep as "optional" | See comment to 0065 SE |

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|---------------------------|------|----------------------|----------------------------|---------------------------------|---|--|--|
| 0072 SE | 2 | 5.5 | | te | The optionality is removed without a clear justification. Is this proportional? The tests will limit the number of test facilities and drive costs for society. If made mandatory at least there should be information on the justification, see SE gen comment above. | Reintroduce optional | See comment to 0065 SE |
| 0073 FR | 2 | 5.5 | Title | te | If this test is mandatory, it induces higher constraints in terms of means of tests. Many countries will not be able to have this type of simulator. Moreover, what is the need to realise this test in laboratory if the instrument complies with MPE with tests on the field? These tests should remain optional. Only the metrological field tests are able to test real conditions (traffic flow.....). | Keep “optional” in the title | See comment to 0065 SE |
| 0074 CN | 2 | 5.5 | title | te | ditto in 5.3 | Keep as “optional” | See comment to 0065 SE |
| 0075 SE | 2 | 5.6 | | te | The optionality is removed without a clear justification. Is this proportional? The tests will limit the number of test facilities and drive costs for society. If made mandatory at least there should be information on the justification, see SE gen comment above. | Reintroduce optional | See comment to 0065 SE |
| 0076 FR | 2 | 5.6 | Title | te | If this test is mandatory, it induces higher constraints in terms of means of tests. Many countries will not be able to have this type of simulator. Moreover, what is the need to realise this test in laboratory if the instrument complies with MPE with tests on the field? These tests should remain optional. Only the metrological field tests are able to test real conditions (traffic flow.....). | Keep “optional” in the title | See comment to 0065 SE |
| 0077 CN | 2 | 5.6 | title | te | ditto in 5.3 | Keep as “optional” | See comment to 0065 SE |
| 0078 DE | 2 | 6 | 1st paragraph | ed | Language changes in the new text at the end of the first paragraph | “... finally approved by the testing laboratory by reviewing the documentation and testing the EUT.” | OK, changed “overlooking” to “reviewing” |

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|---------------------------|------|-------------------|-------------------------|------------------------------|--|---|---|
| | | | | | | | |
| 0079 DE | 2 | 6.1 | 1st line | ed | Add word "table" | "Table 1 and Table 2 include..." | OK |
| 0080 DE | 2 | 6.1 | Definition of MPE | ed | Two language changes | Start the definition of MPE with "The linearity error limit..." and end it with "... (if the EUT includes a camera)." | OK |
| 0081 NL | 2 | 6.1 | Table 2# 33Note (g) | te | The centralized load dump suppression is mandatory for vehicles produced since 2004. Several vehicles produced earlier already had protection. So we propose to use only Test B (Pulse B comes from ISO 7637) | # 33 Replace A with B Note (g) Vehicles produced since 2004 have centralized load dump suppression, therefore Test B is applicable. | OK, thank you for pointing this out. We also deleted reference to ISO 16750-2 in clause 9. |
| 0082 UK | 2 | 6.3 | 1 st para | te | It is not clear the meaning of "special tools". | Give examples of "special tools". Or propose text. "If necessary, the simulator shall be provided by the manufacturer and/or the EUT shall feature special tools provided be configured appropriately by the manufacturer" | The word "tools" was used intentionally to not restrict anything. Following your comment we added "suitable configuration options" and made further changes making the clause more clear. We included the same changes also in clause 5.2 |
| 0083 DE | 2 | 6.3 | 2nd paragraph | ed | Remove a comma | ".. The EUT shall be configured such that evidence files..." | OK |
| 0084 DE | 2 | 6.3 | 5th paragraph | ed | Language changes | "... traffic simulator is possible. Those parts of the measurement chain that are not tested by the partial traffic simulator shall be tested..." | OK |
| 0085 BE | 2 | 6.4 | 1 | ed | Typo: <i>power</i> instead of <i>powered</i> : <i>For speed meters intended to be power by AC mains via a dedicated AC/DC converter (considered as a part of the EUT), the tests shall be performed on the AC mains and the frequency shall be at nominal value.</i> | <i>For speed meters intended to be powered by AC mains via a dedicated AC/DC converter (considered as a part of the EUT), the tests shall be performed on the AC mains and the frequency shall be at nominal value.</i> | OK |

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|---------------------------|------|-------------------|---------------------------|------------------------------|--|---|--|
| 0086 DE | 2 | 6.4 | 1st paragraph | ed | Correct a typo | "... For speed meters intended to be powered..." | OK, same like 0085 BE |
| 0087 UK | 2 | 6.4 | 1st paragraph | ed | Editorial correction | Change "power" to "powered" "For speed meters intended to be powered ..." | OK, same like 0085 BE |
| 0088 UK | 2 | 6.4 | 3 rd paragraph | ed | Editorial correction | Change "OK" to "acceptable" "This behaviour is OK acceptable as long as it is ensured that if the acceptable criterion is met..." | OK, changed "OK" to "acceptable" Native speaker comment |
| 0089 SE | 2 | 7.1 | | te | The number of tests should be sufficient and justified. As expressed now it is finite with no exceptions. Introduce a possibility to decrease the number of tests as in 4.4. | Add to second sentence: The EUT shall perform at least 200 valid measurements of the reference vehicle under various traffic conditions. A lower number of measurements is possible if statistically justified. | SIMPLIFICATION of testing procedures This comment applies to clause 7.7.1 (was 7.5.1 before). Most moving speed meters allow measurements in many traffic conditions and scenarios. In our opinion, 200 measurements are necessary to properly test all these conditions. If this is not the case, a lower number of measurements is justified. We added a corresponding sentence. |
| 0090 FR | 2 | 7.2 | | te | The beam width and secondary beams are not relevant for scanning-based speed meters (see comment for part 1, 6.11). | Add a bullet point with "if applicable": c. beam width, secondary beam, if applicable d. relevant characteristics of the field of view... | OK |
| 0091 FR | 2 | 7.2 | | te | Can you clarify whether the curve radius (e.) relates to the « laser wavefront curvature » or the « target trajectory »? | Please clarify | EXPLANATION |

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| | | | | | | | We realized that influence of curve radius is already mentioned in clause 7.6 and that it is not necessary to mention it also in 7.2. We therefore added "target trajectory" in clause 7.6 and deleted the bullet point in 7.2. |
| 0092 DE | 2 | 7.2 | Last line | ed | Add full stop at end of line | Add full stop at end of line | OK |
| 0093 NL | 2 | 7.3 | | te | There are more procedures necessary for average speed meters,. For example; | Add these points | Thank you, we have extended the specific test procedures for average speed meters (see below). |
| 0094 NL | 2 | 7.3 | d | | Time measurement error of detection system with image registration (time stamp) | | OK, we have included a similar sentence as bullet point b. |
| 0095 NL | 2 | 7.3 | e | | Reaction to overload of vehicles (mix up of images and time stamps is possible) | | See answer to 0093 NL No, dense traffic is already mentioned in clause 6.6 and it is important to have this in mind for all speed meters. This is one of the reason why tests in real traffic are important. We don't think it is necessary to specifically mention it here. |

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| 0096 NL | 2 | 7.3 | f | | Error caused by height of license plate when detection is based on image detection | | See answer to 0093 NL No, it is important for all speed meters to look for such special influence factors. We don't think it is necessary to specifically mention it here. |
| 0097 NL | 2 | 7.3 | g | | Error caused by shift of detection caused by difference in speed at entry and exit | | See answer to 0093 NL OK, we have included varying speeds under existing test procedure (now bullet point c). |
| 0098 NL | 2 | 7.3 | h | | Determination of section length (not the shortest distance between points, but the distance on the road including hills and bends) | | See answer to 0093 NL No, the procedure to determine section length is important for verification, not for type approval. |
| 0099 BE | 2 | 7.5 | | ed | Missing sentence before the listed test procedures. | Add: <i>Specific test procedures shall be performed to determine:</i> | OK, added missing sentence |
| 0100 BE | 2 | 7.6 | | ed | Missing sentence before the listed test procedures. | Add: <i>Specific test procedures shall be performed to determine:</i> | OK, added missing sentence |
| 0101 BE | 3 | .Foreword | 5 | ed | In part 1, the project group is TC7/SC4 Traffic speed meters. In parts 2, 3 and 4, the project group is TC 7/SC 4 Speed meters: <i>This publication – reference OIML R 91-2, Edition 20xx – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – 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.</i> | Use consistent reference tot the project group. Change the paragraph in the foreword of parts 2, 3 and 4 to: <i>This publication – reference OIML R 91-2, Edition 20xx – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – Traffic sSpeed 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.</i> | OK |

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|---------------------------|------|---|----------------------------|---------------------------------|--|--|---|
| 0102 BE | 3 | Introduction | 4 | ed | Typo: Missing <i>of</i> , and plural of <i>speed meter</i> : <i>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.</i> | Add the word <i>of</i> : <i>All metrology services or laboratories 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 "Test report format", directly or after translation into a language other than English or French.</i> | OK |
| 0103 PT | 3 | Angle linearity test (OIML R 91-2, 5.6) | Results | ed | Symbols for quantities are set in an italic font. Subscripts, such as those representing words or fixed numbers, are printed in upright type | Replace: "N" By:"N" Replace; " α_{ref} " By: " α_{ref} " | OK |
| 0104 PT | 3 | Angle linearity test (OIML R 91-2, 5.6) | Results | ed | Symbols for quantities are set in an italic font. Subscripts, such as those representing words or fixed numbers, are printed in upright type | Replace: "N" By:"N" Replace; " α_{ref} " By: " α_{ref} " | OK |
| 0105 PT | 3 | Distance linearity test (OIML R 91-2, 5.5) | Results | ed | Symbols for quantities are set in an italic font. Subscripts, such as those representing words or fixed numbers, are printed in upright type | Replace: "N" By:"N" Replace; " d_{ref} " By: " d_{ref} " | OK |
| 0106 PT | 3 | Dynamic performance test (OIML R 91-2, 5.3) | Results | ed | Symbols for quantities are set in an italic font. Subscripts, such as those representing words or fixed numbers, are printed in upright type | Replace: "N" By:"N" Replace; " v_{ref} " By: " v_{ref} " | OK |
| 0107 PT | 3 | From page 27 to page 60 Then from page 60 to page 72 | Results | ed | Symbols for quantities are set in an italic font. Subscripts, such as those representing words or fixed numbers, are printed in upright type | Replace: "N" By:"N" Replace; " v_{ref} " By: " v_{ref} " | OK, we really prefer that |
| 0108 NL | 3 | Page 67 | | | Tests specific to certain categories of speed meters need to be extended with the added points of 7.3 | A proposal will be supplied separately | OK, we have also aligned part 3 with changes to part 2. |
| 0109 PT | 3 | Speed linearity test (OIML R 91-2, 5.4) | Results | ed | Symbols for quantities are set in an italic font. Subscripts, such as those representing words or fixed numbers, are printed in upright type | Replace: "N" By:"N" Replace; " v_{ref} " By: " v_{ref} " | OK |
| 0110 BE | 4 | Foreword | 5 | ed | In part 1, the project group is TC7/SC4 Traffic speed meters. In parts 2, 3 and 4, the project group is TC 7/SC 4 Speed meters: | Use consistent reference tot the project group. Change the paragraph in the foreword of parts 2, 3 and 4 to: | OK, changed |

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| | | | | | <i>This publication – reference OIML R 91-2, Edition 20xx – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – 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.</i> | <i>This publication – reference OIML R 91-2, Edition 20xx – was developed by Project Group 3 of OIML Technical Subcommittee TC 7/SC 4 – Traffic sSpeed 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.</i> | |

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