

DRAFT
VOCABULARY

TC 1
(Poland)

SUBMITTED
FOR CIML
BALLOT

Revision of V 1

International vocabulary of terms in legal metrology
Vocabulaire international des termes de métrologie légale

Draft submitted for CIML postal ballot on 2013.01.22

Voting closes on 2013.04.15.



Contents

Foreword

Introduction

Scope

- 0. Basic terms**
- 1. Metrology and its legal aspects**
- 2. Legal metrology activities**
- 3. Documents and marks within legal metrology**
- 4. Classification of measuring instruments**
- 5. Construction and operation of measuring instruments**
- 6. Software in legal metrology**

Annex 1. Selected terms relating to conformity assessment

Alphabetical index

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 OIML 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 V 1, edition 2012 (E/F) - was developed by the OIML Technical Committee TC 1 *Terminology*. It was approved for final publication by the International Committee of Legal Metrology in 2012.

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:

Bureau International de Métrologie Légale
11, rue Turgot - 75009 Paris - France
Telephone: 33 (0)1 48 78 12 82
Fax: 33 (0)1 42 82 17 27
E-mail: biml@oiml.org
Internet: www.oiml.org

Avant-propos

L'Organisation Internationale de Métrologie Légale (OIML) est une organisation intergouvernementale mondiale dont l'objectif principal est d'harmoniser les réglementations et contrôles métrologiques mis en œuvre par les services nationaux de métrologie, ou organismes apparentés, de ses Etats Membres. Les principales catégories de publication de l'OIML sont:

- **Les Recommandations Internationales (OIML R)**, qui sont des modèles de réglementations fixant les caractéristiques métrologiques d'instruments de mesure et les méthodes et moyens de contrôle de leur conformité; les États Membres de l'OIML doivent, dans la mesure du possible, mettre en application ces Recommandations;
- **Les Documents Internationaux (OIML D)**, qui sont de nature informative et destinés à améliorer l'activité des services de métrologie;
- **Les Guides Internationaux (OIML G)**, qui sont de nature informative et qui sont destinés à donner des directives pour la mise en application à la métrologie légale de certaines exigences;
- **Les Publications de Base Internationales (OIML B)**, qui définissent les règles de fonctionnement des différentes structures et systèmes OIML.

Les projets de Recommandations, Documents et Guides OIML sont élaborés par des Groupes de Projets reliés à des Comités Techniques ou Sous-Comités Techniques composés de représentants d'États Membres. Certaines institutions internationales et régionales y participent également à titre consultatif. Des accords de coopération ont été conclus entre l'OIML et certaines institutions, telles que l'ISO et la CEI, pour éviter des prescriptions contradictoires; en conséquence les fabricants et utilisateurs d'instruments de mesure, les laboratoires d'essais, etc. peuvent appliquer simultanément les publications OIML et celles d'autres institutions.

Les Recommandations Internationales, Documents et Guides sont publiés en français (F) et en anglais (E) et sont révisés périodiquement.

De plus l'OIML participe à la publication de Vocabulaires (**OIML V**) et mandate périodiquement des Experts en métrologie légale pour rédiger des Rapports d'Expert (**OIML E**). Les Rapports d'Expert sont destinés à fournir des informations et conseils aux autorités de métrologie, et reflètent uniquement le point de vue de leur auteur, en dehors de toute participation d'un Comité Technique ou d'un Sous-Comité Technique, ou encore de celle du CIML. Ainsi, ils ne reflètent pas nécessairement l'opinion de l'OIML.

XXXXXX

Les Publications de l'OIML peuvent être téléchargées depuis le site internet de l'OIML sous la forme de fichiers PDF. Des informations complémentaires sur les Publications OIML peuvent être obtenues au siège de l'Organisation:

Bureau International de Métrologie Légale
11, rue Turgot - 75009 Paris - France
Téléphone: 33 (0)1 48 78 12 82
Fax: 33 (0)1 42 82 17 27
E-mail: biml@oiml.org
Internet: www.oiml.org

International vocabulary of legal metrology (VIML)

Vocabulaire international de métrologie légale (VIML)

Introduction

The history of this edition of the *International vocabulary of terms in legal metrology* (VIML) demonstrates the mutual relationship between specific fields of metrology and the importance of harmonized terminology in metrology.

The work on the harmonization of terminology used in the field of legal metrology was started by the OIML in 1961. The work was initiated by Professor Jan Obalski who played a leading role in the preparation of the first edition of the *Vocabulary of Legal Metrology* (VML). It was sanctioned by the 3rd International Conference of Legal Metrology in 1968 and published in 1969. The first edition was later completed by two addenda sanctioned by the 4th and 5th International Conferences of Legal Metrology in 1972 and 1976 respectively.

The second edition of the VML, which included the first edition of 1969 and the two addenda, was published in 1978 as a bilingual French–English version.

The need to harmonize metrological terminology worldwide resulted in the identification of general concepts which form the basic terminology common to various technical disciplines. Seven International Organizations (BIPM, IEC, IFCC, ISO, IUPAC, IUPAP and OIML) thus jointly prepared the International Vocabulary of Basic and General Terms in Metrology (VIM) for which the VML, 1978 edition, was used as one of the basic sources. The first edition of the VIM was published in 1984. The second edition of the *International vocabulary of basic and general terms in metrology* (VIM) was published in 1993.

The importance of international aspects of terminology in legal metrology and the need to speak a common language in international cooperation resulted in the continuation of the work on the *Vocabulary of Legal Metrology*

although the major part of the text of the 1978 edition had been transferred to the VIM. The work was restarted in 1995 by OIML TC 1 *Terminology* and in 2000 the *International Vocabulary of Terms in Legal Metrology* (VIML) was published.

In the meantime, work on revision of VIM continued within the *Joint Committee for Guides in Metrology* (JCGM) of which the OIML is a Member Organization. Their aim was among other things to cover measurements in fields which had not been sufficiently considered in earlier editions of VIM. Also some important general concepts (e.g. metrological traceability, measurement uncertainty) got their new definitions. The work led to the publication of the third edition of the VIM in 2008. Its title was changed to *International vocabulary of metrology — Basic and general concepts and associated terms* (VIM), in order to emphasize the primary role of concepts in developing a vocabulary.

The publication of the third edition of the VIM, as well as the period of eight years which elapsed from the publication of VIML gave a stimulus to start a revision of the latter. The developments in legal metrology which had occurred over that period included an increased role of conformity assessment, software tools as well as a change of views on the traditional forms of legal metrology. It is hoped that these developments have been adequately reflected in this new edition of VIML.

All the terms and definitions of the third edition of the VIM, published by the OIML as OIML V2-200:2010 are fully adopted by the OIML and are applicable in the field of legal metrology. However, it was found necessary to quote a few of those terms in the VIML. They are contained in Clause 0. *Basic terms*. Furthermore, considering the increasing use of conformity assessment it was acknowledged that selected terms pertaining to it should also be included into the VIML. Those terms have been taken from ISO/IEC 17000:2004 *Conformity assessment — Vocabulary and general principles* and they are contained in Annex A.

Scope

The set of terms and definitions in this Vocabulary is related to various aspects of legal metrology which are dealt with in OIML publications. However, this Vocabulary was developed to be compatible with fundamental metrological publications, first of all the *International Vocabulary Metrology – Basic and General Concepts and Associated Terms* (VIM), so it can be used not only within the OIML.

This Vocabulary is meant as a reference for metrologists as well as other specialists involved in various activities pertaining to legal metrology - from measurement and legal metrological control to legislation. It can also be a reference for governmental and intergovernmental bodies, trade associations, manufacturers of measuring instruments and users of metrological services.

It is intended to contribute to the global harmonization of the terminology used in (legal) metrology.

0. Basic terms	
0.01 metrology science of measurement and its application <i>Note:</i> Metrology includes all theoretical and practical aspects of measurement, whatever the measurement uncertainty and field of application. [OIML V2-200:2010, 2.2]	
0.02 International System of Units SI system of units, based on the International System of Quantities, their names and symbols, including a series of prefixes and their names and symbols, together with rules for their use, adopted by the General Conference on Weights and Measures (CGPM) <i>Note 1</i> The SI is founded on the seven base quantities of the ISQ. See: OIML V2-200:2008, 1.16 and the SI brochure. BIPM 2006 <i>Note 2</i> The base units and the coherent derived units of the SI form a coherent set, designated the “set of coherent SI units”. <i>Note 3</i> For a full description and explanation of the International System of Units, see the current edition of the SI brochure published by the Bureau International des Poids et Mesures (BIPM) and available on the BIPM website. <i>Note 4</i> In quantity calculus, the quantity ‘number of entities’ is often considered to be a base quantity, with the base unit one, symbol 1. <i>Note 5</i> The SI prefixes for multiples of units and submultiples of units are given in OIML V2-200:2008, 1.16 [OIML V2-200:2010, 1.16]	

<p>0.03</p> <p>indication</p> <p>quantity value provided by a measuring instrument or a measuring system</p> <p><i>Note 1</i> An indication may be presented in visual or acoustic form or may be transferred to another device. An indication is often given by the position of a pointer on the display for analog outputs, a displayed or printed number for digital outputs, a code pattern for code outputs, or an assigned quantity value for material measures.</p> <p><i>Note 2</i> An indication and a corresponding value of the quantity being measured are not necessarily values of quantities of the same kind.</p> <p>[OIML V2-200:2010, 4.1]</p>	
<p>0.04</p> <p>error(of indication)</p> <p>indication minus a reference quantity value</p> <p><i>Note</i> This reference value is sometimes referred to as a (conventional) true quantity value.</p>	
<p>0.05</p> <p>maximum permissible measurement error</p> <p>maximum permissible error</p> <p>limit of error</p> <p>extreme value of measurement error, with respect to a known reference quantity value, permitted by specifications or regulations for a given measurement, measuring instrument, or measuring system</p> <p><i>Note 1</i> Usually the term “maximum permissible errors” or “limits of error” are used, where there are two extreme values.</p> <p><i>Note 2</i> The term “tolerance” should not be used to designate ‘maximum permissible error’.</p> <p>[OIML V2-200:2010, 4.26]</p> <p><i>Note 3</i> Usually the term “maximum permissible errors” is abbreviated to “MPE” or “mpe”.</p>	

<p>0.06</p> <p>intrinsic error</p> <p>error of indication, determined under reference conditions</p>	
<p>0.07</p> <p>influence quantity</p> <p>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</p> <p><i>Example 1</i> Frequency in the direct measurement with an ammeter of the constant amplitude of an alternating current.</p> <p><i>Example 2</i> Amount-of-substance concentration of bilirubin in a direct measurement of haemoglobin amount-of substance concentration in human blood plasma.</p> <p><i>Example 3</i> Temperature of a micrometer used for measurement of length of a rod, but not the temperature of the rod itself, which can enter into the definition of the measurand.</p> <p><i>Example 4</i> Background pressure in the ion source of a mass spectrometer during a measurement of amount-of-substance fraction.</p> <p><i>Note 1</i> An indirect measurement involves a combination of direct measurements, each of which may be affected by influence quantities.</p> <p><i>Note 2</i> In the GUM, the concept ‘influence quantity’ is defined as in the 2nd edition of the VIM, covering not only the quantities affecting the measuring system, as in the definition above, but also those quantities that affect the quantities actually measured. Also, in the GUM this concept is not restricted to direct measurements.</p> <p>[OIML V2-200:2010, 2.52]</p>	
<p>0.08</p> <p>rated operating condition</p> <p>operating condition that must be fulfilled during measurement in order that a measuring instrument or measuring system perform as designed</p> <p><i>Note</i> Rated operating conditions generally</p>	

<p>specify intervals of values for a quantity being measured and for any influence quantity.</p> <p>[OIML V2-200:2010, 4.9]</p>	
<p>0.09</p> <p>reference operating condition</p> <p>reference condition</p> <p>operating condition prescribed for evaluating the performance of a measuring instrument or measuring system or for comparison of measurement results</p> <p><i>Note 1</i> Reference operating conditions specify intervals of values of the measurand and of the influence quantities.</p> <p><i>Note 2</i> In IEC 60050-300, item 311-06-02, the term “reference condition” refers to an operating condition under which the specified instrumental measurement uncertainty is the smallest possible.</p> <p>[OIML V2-200:2010, 4.11]</p>	
<p>0.10</p> <p>measuring instrument</p> <p>device used for making measurements, alone or in conjunction with one or more supplementary devices</p> <p><i>Note 1</i> A measuring instrument that can be used alone is a measuring system.</p> <p><i>Note 2</i> A measuring instrument may be an indicating measuring instrument or a material measure.</p> <p>[OIML V2-200:2008, 3.1]</p>	
<p>0.11</p> <p>measurement transducer</p> <p>device, used in measurement, that provides an output quantity having a specified relation to the input quantity</p> <p><i>Example</i> Thermocouple, electric current transformer, strain gauge, pH electrode, Bourdon tube, bimetallic strip.</p> <p>[OIML V2-200:2008, 3.7]</p>	

<p>0.12</p> <p>measuring system</p> <p>set of one or more measuring instruments and often other devices, including any reagent and supply, assembled and adapted to give information used to generate measured quantity values within specified intervals for quantities of specified kinds</p> <p><i>Note</i> A measuring system may consist of only one measuring instrument.</p> <p>[OIML V2-200:2008, 3.2]</p>	
<p>0.13</p> <p>scale of a displaying measuring instrument</p> <p>part of a displaying measuring instrument, consisting of an ordered set of marks together with any associated quantity values</p> <p>[OIML V2-200:2008, 3.5]</p>	
<p>0.14</p> <p>calibration</p> <p>operation that, under specified conditions, in a first step, establishes a relation between the quantity values with measurement uncertainties provided by measurement standards and corresponding indications with associated measurement uncertainties and, in a second step, uses this information to establish a relation for obtaining a measurement result from an indication</p> <p><i>Note 1</i> A calibration may be expressed by a statement, calibration function, calibration diagram, calibration curve, or calibration table. In some cases, it may consist of an additive or multiplicative correction of the indication with associated measurement uncertainty.</p> <p><i>Note 2</i> Calibration should not be confused with adjustment of a measuring system, often mistakenly called “self-calibration”, nor with verification of calibration.</p> <p><i>Note 3</i> Often, the first step alone in the above definition is perceived as being calibration.</p> <p>[OIML V2-200:2008, 2.39]</p>	

0.15

adjustment of a measuring system

adjustment

set of operations carried out on a measuring system so that it provides prescribed indications corresponding to given values of a quantity to be measured

Note 1 Types of adjustment of a measuring system include zero adjustment of a measuring system, offset adjustment, and span adjustment (sometimes called gain adjustment).

Note 2 Adjustment of a measuring system should not be confused with calibration, which is a prerequisite for adjustment.

Note 3 After an adjustment of a measuring system, the measuring system must usually be recalibrated.

[OIML V2-200:2008, 3.11]

1. Metrology and its legal aspects	
1.01 legal metrology practice and process of applying statutory and regulatory structure and enforcement to metrology (see 0.01) <i>Note 1</i> The scope of legal metrology may be different from country to country. <i>Note 2</i> Legal metrology includes: <ul style="list-style-type: none">• setting up legal requirements;• control / conformity assessment of regulated products and regulated activities;• supervision of regulated products and of regulated activities; and• providing the necessary infrastructure for the traceability of regulated measurements and measuring instruments to SI or national standards. <i>Note 3</i> There are also regulations outside the area of legal metrology pertaining to the accuracy and correctness of measurement methods.	
1.02 law on metrology legal acts and secondary legislation that provide the statutory structure to metrology <i>Note</i> Legal acts and secondary legislation in particular specify the legal units of measurement, prescribe: <ul style="list-style-type: none">• requirements with respect to the properties of measuring instruments,• accuracy of measurement in cases specified by law,• a system of legal control of measuring instruments and• metrological supervision	
1.03 legal metrology regulation technical regulation in the field of legal metrology	

<p><i>Note 1</i> These regulations shall, when applicable, be compatible with the International Recommendations of the OIML and make use of their requirements.</p> <p><i>Note 2</i> The scope of legal metrology generally includes:</p> <ul style="list-style-type: none"> • protection of the interests of individuals and enterprises; • protection of national interests; • protection of public health and safety, including in relation to the environment and medical services; and • meeting the requirements for commerce and trade. 	
<p>1.04</p> <p>national responsible body</p> <p>organization or agency at the national level or in a nation, responsible for developing and / or enforcing laws or regulations regarding legal metrological control</p>	
<p>1.05</p> <p>metrological authority</p> <p>legal entity designated by law or by the government to be responsible for specified legal metrology activities</p> <p><i>Note 1</i> The legal entity may be a central or local government body, or a non-governmental body empowered by the government.</p> <p><i>Note 2</i> The responsibility may include e.g. type approval.</p>	
<p>1.06</p> <p>legal units of measurement</p> <p>units of measurement required or permitted by regulations</p> <p><i>Note</i> Legal units may be:</p> <ul style="list-style-type: none"> • SI units, • their decimal multiples and submultiples as indicated by the use of SI prefixes, • non-SI units specified by relevant regulations. 	

2. Legal metrology activities	
2.01 legal metrological control the whole of legal metrology activities <i>Note</i> Legal metrological control includes: <ul style="list-style-type: none"> • legal control of measuring instruments, • metrological supervision, • all the operations for the purpose of examining and demonstrating, e.g. to testify in a court of law, the condition of a measuring instrument and to determine its metrological properties, amongst others by reference to the relevant statutory requirements. 	
2.02 legal control of measuring instruments generic term used to globally designate legal operations to which measuring instruments may be subjected, e.g. type approval, verification, etc.	
2.03 metrological supervision activity of legal metrological control to check the observance of metrology laws and regulations <i>Note 1</i> Metrological supervision also includes checking the correctness of quantities indicated on and contained in prepackages. <i>Note 2</i> For achieving these purposes, means and methods such as market surveillance and quality management may be utilized.	
2.04 type (pattern) evaluation conformity assessment procedure on one or more specimens of an identified type (pattern) of measuring instruments which results in an evaluation report and / or an evaluation certificate <i>Note</i> “Pattern” is used in legal metrology with the same meaning as “type”; in the entries below, only “type” is used.	

<p>2.05</p> <p>type approval</p> <p>decision of legal relevance, based on the review of the type evaluation report, that the type of a measuring instrument complies with the relevant statutory requirements and results in the issuance of the type approval certificate</p> <p><i>Note</i> See also A1.26</p>	
<p>2.06</p> <p>type approval with limited effect</p> <p>approval of a type of measuring instrument that is linked with one or more specific restrictions</p> <p><i>Note</i> Restrictions may pertain to, for instance:</p> <ul style="list-style-type: none">• the period of validity,• number of instruments covered by the approval,• obligation to notify the competent authorities of the place of installation of each instrument,• use of the instrument	
<p>2.07</p> <p>recognition of type approval</p> <p>legal decision taken by a party either voluntarily or based on a bi- or multilateral arrangement whereby a type approved by another party is recognized as complying with the relevant statutory requirements, without issuing a new type approval certificate</p> <p><i>Note</i> See also A1.34</p>	
<p>2.08</p> <p>withdrawal of a type approval</p> <p>decision of legal relevance canceling a type approval</p> <p><i>Note</i> The withdrawal is justified in case of:</p> <ul style="list-style-type: none">• alterations of the type,• modification of its vital parts,• circumstances that affect metrological durability and/ or reliability,• effects altering the metrological performance of the instrument required by law and coming to light only after the	

official type approval was granted.	
2.09 verification of a measuring instrument conformity assessment procedure (other than type evaluation) which results in the affixing of a verification mark and / or issuing of a verification certificate <i>Note</i> See also OIML V2-200:2010, 2.44.	
2.10 preliminary examination examination of a measuring instrument either to partial requirements or before certain elements of the measuring instrument are installed as part of the verification procedure	
2.11 verification by sampling verification of a homogeneous batch of measuring instruments based on the results of examination of a statistically appropriate number of specimens selected at random from an identified lot	
2.12 initial verification verification of a measuring instrument which has not been verified previously	
2.13 subsequent verification verification of a measuring instrument after a previous verification <i>Note 1</i> Subsequent verification includes: <ul style="list-style-type: none">• mandatory periodic verification,• verification after repair,• voluntary verification <i>Note 2</i> Subsequent verification of a measuring instrument may be carried out before expiry of the period of validity of a previous verification either at the request of the user (owner) or when its verification is declared to be no longer valid.	

2.14 mandatory periodic verification subsequent verification of a measuring instrument, carried out periodically at specified intervals according to the procedure laid down by the regulations	
2.15 rejection of a measuring instrument disqualification of a measuring instrument decision of legal relevance that a measuring instrument does not comply with statutory requirements for verification and prohibiting its use for applications requiring mandatory verification	
2.16 requelification of a measuring instrument decision of legal relevance that a measuring instrument after it had been disqualified was returned to conformity with statutory requirements and its use for applications requiring mandatory verification is no more prohibited	
2.17 recognition of verification legal decision taken by a party, either voluntarily or based on a bi- or multilateral arrangement whereby a verification certificate issued and /or a verification mark applied by another party is recognized as complying with relevant requirements, without issuing a new type approval certificate	
2.18 inspection by sampling inspection of a homogeneous batch of measuring instruments based on the results of evaluation of a statistically appropriate number of specimens selected at random from an identified lot <i>Note 1</i> It should be assured, that the conditions under which the respective instruments have been used (e.g. water quality for water meters)	

<p>are as well comparable (homogeneous) within the batch.</p> <p><i>Note 2</i> ISO 3534-2 gives the following definition: “4.1.6 sampling inspection inspection of selected items in the group under consideration”</p>	
<p>2.19</p> <p>marking</p> <p>affixing of one or more marks</p> <p><i>Note 1</i> Examples of marks include: verification, rejection, sealing and type approval marks (as described in 3.05, 3.06, 3.07 and 3.08).</p> <p><i>Note 2</i> Verification and sealing marks may be combined.</p> <p><i>Note 3</i> The manufacturer may be authorized to apply other marks.</p>	
<p>2.20</p> <p>sealing</p> <p>means intended to protect the measuring instrument against any unauthorized modification, readjustment, removal of parts, software, etc.</p> <p><i>Note</i> It can be achieved by hardware, software or a combination of both.</p>	
<p>2.22</p> <p>securing</p> <p>means preventing unauthorized access to the device's hardware or software part</p>	
<p>2.23</p> <p>obliteration of a verification mark</p> <p>cancellation of the verification mark when it has been found that the measuring instrument no longer complies with the statutory requirements</p>	
<p>2.24</p> <p>initial verification of measuring instruments</p>	

<p>utilizing the manufacturer's quality management system</p> <p>manufacturer's declaration of conformity of measuring instruments to legal metrological requirements for initial verification; the declaration permitted on condition that the manufacturer has a quality management system implemented and approved by a competent body</p> <p><i>Note 1</i> The national responsible body shall have in place a means for periodically validating the implementation of a manufacturer's quality management system.</p> <p><i>Note 2</i> The quality management program for measuring instruments shall be in accordance with legal metrological requirements for initial verification according to national laws or regulations for legal metrological control.</p>	
<p>2.25</p> <p>placing on the market</p> <p>the first making available of a measuring instrument or a prepackage on the market</p> <p><i>Note</i> This may refer to the market of a single country or a group of countries (region).</p>	

3. Documents and marks within legal metrology	
3.01 type approval certificate document certifying that type approval has been granted	
3.02 verification certificate document certifying that the verification of the measuring instrument was carried out and compliance with statutory requirements was confirmed	
3.03 rejection notice document stating that a measuring instrument was found not to comply or no longer to comply with the relevant statutory requirements	
3.04 verification mark mark applied to a measuring instrument in a conspicuous manner certifying that the verification of the measuring instrument was carried out and compliance with statutory requirements was confirmed <i>Note</i> The verification mark may identify the body responsible for verification and/or indicate the year or date of verification or its expiry date. 3.05 rejection mark mark applied to a measuring instrument in a conspicuous manner to indicate that the measuring instrument does not comply with the statutory requirements and obliterating the previously applied verification mark	

3.06 sealing mark mark intended to protect the measuring instrument against any unauthorized modification, readjustment, removal of parts, etc.	
3.07 type approval mark mark applied to a measuring instrument certifying its conformity to the approved type	

4. Classification of measuring instruments	
4.01 category of instruments identifiable set of instruments according to unique metrological and technical characteristics that may include the measured quantity, the measuring range, and the principle or method of measurement	
4.02 family of measuring instruments identifiable group of measuring instruments belonging to the same manufactured type within the same category that have the same design features and metrological principles for measurement but which may differ in some metrological and technical performance characteristics, as defined in the relevant recommendation	
4.03 metrologically relevant attribute of any device, instrument, function or software that influences the measurement result or any other primary indication	
4.04 module identifiable part of a measuring instrument or of a family of measuring instruments that performs a specific function or functions and that can be separately evaluated according to prescribed metrological and technical performance requirements as specified in the relevant recommendation <i>Example</i> Typical modules of a weighing instrument are: weighing module, load cell, indicator, analog or digital data processing device, terminal, primary display.	

4.05 family of modules identifiable group of modules belonging to the same manufactured type that have similar design features but may differ in some metrological and technical performance requirements as defined in the relevant recommendation	
4.06 type of a measuring instrument or module definitive model of a measuring instrument or module (including a family of instruments or modules) of which all of the elements affecting its metrological properties are suitably defined	
4.07 legally controlled measuring instrument measuring instrument which conforms to prescribed requirements, in particular legal metrological requirements	
4.08 legally relevant attribute of a part of measuring instrument, device or software subject to legal control	
4.09 specimen of an approved type measuring instrument of an approved type, which on its own or together with suitable documentation, serves as a reference e.g. for checking conformity of instruments with the approved type	
4.10 legally relevant parameter parameter of a measuring instrument, (electronic) device, sub-assembly, software or a module subject to legal control <i>Note</i> The following types of legally relevant	

parameters can be distinguished: type-specific parameters and device-specific parameters.	
4.11 type-specific parameter legally relevant parameter with a value that depends on the type of instrument only <i>Note</i> Type-specific parameters are part of the legally relevant software.	
4.12 device-specific parameter legally relevant parameter with a value that depends on the individual instrument <i>Note</i> Device-specific parameters comprise adjustment parameters (e.g. span adjustment or other adjustments or corrections) and configuration parameters (e.g. maximum value, minimum value, units of measurement, etc.).	
4.13 approved type definitive model or family of measuring instruments permitted for legal use, the decision being confirmed by the issuing of a type approval certificate	
4.14 measuring instrument acceptable for verification measuring instrument of an approved type, or one that meets statutory requirements and may be exempt from type approval	
4.15 verification equipment equipment that meets the statutory requirements and that is used for verification	
4.16 equipment under test	

<p>a sub-assembly, a combination of subassemblies or a complete measuring instrument subject to a test</p> <p><i>Note</i> Abbreviated: EUT.</p>	
---	--

5. Construction and operation of measuring instruments	
5.01 scale interval value expressed in units of the measured quantity of the difference between: <ul style="list-style-type: none">• the values corresponding to two consecutive scale marks, for analog indication; or• two consecutive indicated values, for digital indication	
5.02 verification scale interval value, expressed in appropriate units, used for the classification and verification of an instrument	
5.03 number of verification scale intervals quotient of the maximum capacity of a balance, “Max” and the verification scale interval, “e”: $n = \text{Max} / e$ <i>Note 1</i> This term applies to weighing instruments. <i>Note 2</i> “Max” and “e” have to be in the same unit	
5.04 indicating device part of the measuring instrument which displays the measurement results either continuously or on demand <i>Note</i> A printing device is not an indicating device, although a printed measurement result is considered to be an indication.	
5.05 primary indication indication (displayed, printed or memorized)	

subject to legal metrology control	
<p>5.06</p> <p>ancillary device</p> <p>device intended to perform a particular function, directly involved in elaborating, transmitting or displaying measurement results</p> <p><i>Note 1</i> An ancillary device may or may not be subject to legal metrology control according to its function in the measuring system or to national regulations.</p> <p><i>Note 2</i> Main ancillary devices are:</p> <ul style="list-style-type: none">• zero setting device;• repeating indicating device;• printing device;• memory device;• price indicating device;• totalizing indicating device;• pre-setting device;• self-service device.	
<p>5.07</p> <p>checking facility</p> <p>facility that is incorporated in a measuring instrument and which enables significant faults to be detected and acted upon.</p> <p><i>Note</i> “Acted upon” refers to any adequate response by the measuring instrument (luminous signal, acoustic signal, prevention of the measurement process, etc.).</p>	
<p>5.08</p> <p>control instrument</p> <p>weighing instrument used to determine the conventional true value of the mass of the test load(s)</p> <p><i>Note 1</i> Control instruments used for testing may be:</p> <ul style="list-style-type: none">• separate from the instrument being tested; or• integral, when a static weighing mode is provided by the instrument being tested <p><i>Note 2</i> This term is applicable for weighing instruments.</p>	

5.09 associated measuring instrument instrument for the measurement of a quantity, other than the measurand, the value of which is used to correct or convert a measurement result <i>Note:</i> Typically, an associated measuring instrument is connected to a device (correction device, conversion device, calculator) that is part of a measuring instrument and that changes (corrects, converts) the measurement result to obtain a value for the measurand under specified conditions.	
5.10 terminal digital device that has one or more keys (or mouse, touch-screen, etc.) to operate the instrument, and a display to provide the measurement results transmitted via the digital interface or an analog data processing device	
5.11 initial intrinsic error intrinsic error of a measuring instrument as determined prior to performance tests and durability evaluations	
5.12 fault difference between the error of indication and the intrinsic error of a measuring instrument <i>Note 1</i> Principally, a fault is the result of an undesired change of data contained in or flowing through an electronic measuring instrument. <i>Note 2</i> From the definition it follows that a “fault” is a numerical value which is expressed either in a unit of measurement or as a relative value, for instance as a percentage.	
5.13 fault limit	

value specified in the applicable Recommendation delimiting non-significant faults	
<p>5.14</p> <p>significant fault</p> <p>fault exceeding the applicable fault limit value</p> <p><i>Note</i> For particular types of measuring instruments some faults exceeding the fault limit may not be considered a significant fault the applicable Recommendation shall state when such exception applies. For example the occurrence of one or some of the following faults may be acceptable</p> <ul style="list-style-type: none"> • faults arising from simultaneous and mutually independent causes originating in a measuring instrument or in its checking facilities, • faults implying the impossibility to perform any measurement, • transitory faults being momentary variations in the indication, which cannot be interpreted, memorized or transmitted as a measurement result, • faults giving rise to variations in the measurement result that are serious enough to be noticed by all those interested in the measurement result; the applicable Recommendation may specify the nature of these variations. 	
<p>5.15</p> <p>durability</p> <p>ability of the measuring instrument to maintain its performance characteristics over a period of use</p>	
<p>5.16</p> <p>durability error</p> <p>difference between the intrinsic error after a period of use and the initial intrinsic error of a measuring instrument</p>	
5.17	

<p>significant durability error</p> <p>durability error exceeding the value specified in the applicable Recommendation</p> <p><i>Note</i> Some durability errors exceeding the value specified may still be considered not significant. The applicable Recommendation shall state when such exception applies. For example the occurrence of one or some of the following errors may be acceptable:</p> <ul style="list-style-type: none"> • the indication cannot be interpreted, memorized or transmitted as a measurement result; • the indication implies the impossibility to perform any measurement; • the indication is so obviously wrong that it is bound to be noticed by all those interested in the result of the measurement; or • a durability error cannot be detected and acted upon due to a breakdown of the appropriate durability protection facility. 	
<p>5.18</p> <p>influence factor</p> <p>influence quantity having a value which ranges within the rated operating conditions of a measuring instrument</p> <p><i>Note 1:</i> The rated operating conditions shall be in conformity with the applicable requirements specified in the applicable Recommendation</p> <p><i>Note 2:</i> The variation of an indication as a consequence of an influence factor is considered an error and not a fault.</p>	
<p>5.19</p> <p>disturbance</p> <p>influence quantity having a value within the limits specified in the relevant recommendation, but outside the specified rated operating conditions of a measuring instrument</p>	
<p>5.20</p> <p>test program</p> <p>description of a series of tests for certain types of</p>	

equipment	
5.21 performance test test intended to verify whether the EUT is able to accomplish its intended functions	
5.22 durability test test intended to verify whether the EUT is able to maintain its performance characteristics over a period of use	

6. Software in legal metrology	
6.01 software identification sequence of readable characters (e.g. version number, checksum) that is inextricably linked to the software or software module under consideration <i>Note</i> It can be checked on an instrument whilst in use.	
6.02 software separation separation of the software in measuring instruments, which can be divided into a legally relevant part and a legally non-relevant part <i>Note</i> These parts communicate via a software interface.	
6.03 software interface program code and a dedicated data domain receiving, filtering, or transmitting data between software modules <i>Note</i> Software interface is not necessarily legally relevant.	
6.04 software protection securing of measuring instrument software or data domain by a hardware or software implemented seal <i>Note</i> The seal must be removed, damaged or broken to obtain access to change software.	
6.05 audit trail continuous data file containing a time stamped information record of events, e.g. changes in the	

values of the parameters of a device or software updates, or other activities that are legally relevant and which may influence the metrological characteristics	
6.06 event action in which a modification of a measuring instrument parameter, adjustment factor or update of software module is made	
6.07 storage device storage used for keeping measurement data ready after completion of the measurement for later legally relevant purposes (e.g. the conclusion of a commercial transaction)	
6.08 user interface interface that enables information to be interchanged between the operator and the measuring instrument or its hardware or software components, e.g. switches, keyboard, mouse, display, monitor, printer, touch-screen, software window on a screen including the software that generates it	

A1 Terms relating to conformity assessment	
A1.1 conformity assessment demonstration that specified requirements relating to a product, process, system, person or body are fulfilled <i>Note 1</i> The subject field of conformity assessment includes activities defined in ISO/IEC 17000, such as testing, inspection and certification, as well as the accreditation of conformity assessment bodies. <i>Note 2</i> The expression “object of conformity assessment” or “object” is used in ISO/IEC 17000 to encompass any particular material, product, installation, process, system, person or body to which conformity assessment is applied. A service is covered by the definition of a product. [ISO/IEC 17000, 2.1]	
A1.2 conformity assessment body body that performs conformity assessment services <i>Note</i> An accreditation body is not a conformity assessment body. [ISO/IEC 17000, 2.5]	
A1.3 accreditation body authoritative body that performs accreditation <i>Note</i> The authority of an accreditation body is generally derived from government. [ISO/IEC 17000, 2.6]	
A1.4 conformity assessment system rules, procedures and management for carrying	

<p>out conformity assessment</p> <p><i>Note</i> Conformity assessment systems may be operated at international, regional, national or sub-national level.</p> <p>[ISO/IEC 17000, 2.7]</p>	
<p>A1.5</p> <p>conformity assessment scheme</p> <p>conformity assessment program</p> <p>conformity assessment system related to specified objects of conformity assessment, to which the same specified requirements, specific rules and procedures apply</p> <p><i>Note</i> Conformity assessment schemes may be operated at international, regional, national or sub-national level.</p> <p>[ISO/IEC 17065]</p>	
<p>A1.6</p> <p>(specified) requirement</p> <p>need or expectation that is stated</p> <p><i>Note</i> Specified requirements may be stated in normative documents such as regulations, standards and technical specifications.</p> <p>[ISO/IEC 17000, 3.1]</p>	
<p>A1.7</p> <p>procedure</p> <p>specified way to carry out an activity or a process</p> <p>[ISO 9000:2000, 3.4.5]</p>	
<p>A1.8</p> <p>certification scheme</p> <p>certification system related to specified products, to which the same specified requirements, specific rules and procedures apply</p> <p>NOTE 1 Adapted from ISO/IEC 17000:2004, definition 2.8.</p> <p>NOTE 2 A “certification system” is a “conformity assessment system”, which is</p>	

<p>defined in ISO/IEC 17000:2004, definition 2.7.</p> <p>NOTE 3 The rules, procedures and management for implementing product, process and service certification are stipulated by the certification scheme.</p> <p>NOTE 4 General guidance for the development of schemes is given in ISO/IEC 17067, in combination with ISO/IEC Guide 28 and ISO/IEC Guide 53.</p> <p>[ISO/IEC 17065, 3.9]</p>	
<p>A1.9</p> <p>sampling</p> <p>provision of a sample of the object of conformity assessment, according to a procedure</p> <p>[ISO/IEC 17000, 4.1]</p>	
<p>A1.10</p> <p>testing</p> <p>determination of one or more characteristics of an object of conformity assessment, according to a procedure</p> <p><i>Note</i> “Testing” typically applies to materials, products or processes.</p> <p>[ISO/IEC 17000, 4.2]</p>	
<p>A1.11</p> <p>inspection</p> <p>examination of a product design, product, process or installation and determination of its conformity with specific requirements or, on the basis of professional judgement, with general requirements</p> <p><i>Note</i> Inspection of a process may include inspection of persons, facilities, technology and methodology.</p> <p>[ISO/IEC 17000, 4.3]</p>	
<p>A1.12</p> <p>audit</p>	

<p>systematic, independent, documented process for obtaining records, statements of fact or other relevant information and assessing them objectively to determine the extent to which specified requirements are fulfilled</p> <p><i>Note</i> Whilst “audit” applies to management systems, “assessment” applies to conformity assessment bodies as well as more generally.</p> <p>[ISO/IEC 17000, 4.4]</p>	
<p>A1.13</p> <p>peer assessment</p> <p>assessment of a body against specified requirements by representatives of other bodies in, or candidates for, an agreement group</p> <p>[ISO/IEC 17000, 4.5]</p>	
<p>A1.14</p> <p>review</p> <p>verification of the suitability, adequacy and effectiveness of selection and determination activities, and the results of these activities, with regard to fulfillment of specified requirements by an object of conformity assessment</p> <p>[ISO/IEC 17000, 5.1]</p>	
<p>A1.15</p> <p>attestation</p> <p>issue of a statement, based on a decision following review, that fulfillment of specified requirements has been demonstrated</p> <p><i>Note 1</i> The resulting statement, referred to in ISO/IEC 17000 as a “statement of conformity”, conveys the assurance that the specified requirements have been fulfilled. Such an assurance does not, of itself, afford contractual or other legal guarantees.</p> <p><i>Note 2</i> First-party and third-party attestation activities are distinguished by the terms: declaration, certification and accreditation. For second-party attestation, no special term is available.</p> <p>[ISO/IEC 17000, 5.2]</p>	

A1.16 scope of attestation range or characteristics of objects of conformity assessment covered by attestation [ISO/IEC 17000, 5.3]	
A1.17 declaration (of conformity) first-party attestation [ISO/IEC 17000, 5.4]	
A1.18 certification (of conformity) third-party attestation related to products, processes, systems or persons <i>Note 1</i> Certification of a management system is sometimes also called registration. <i>Note 2</i> Certification is applicable to all objects of conformity assessment except for conformity assessment bodies themselves, to which accreditation is applicable. [ISO/IEC 17000, 5.5]	
A1.19 accreditation third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks [ISO/IEC 17000, 5.6]	
A1.20 surveillance systematic iteration of conformity assessment activities as a basis for maintaining the validity of the statement of conformity [ISO/IEC 17000, 6.1]	

A1.21 suspension temporary invalidation of the statement of conformity for all or part of the specified scope of attestation [ISO/IEC 17000, 6.2]	
A1.22 appeal request by the provider of the object of conformity assessment to the conformity assessment body or accreditation body for reconsideration by that body of a decision it has made relating to that object [ISO/IEC 17000, 6.4]	
A1.23 complaint expression of dissatisfaction, other than appeal, by any person or organization to a conformity assessment body or accreditation body, relating to the activities of that body, where a response is expected [ISO/IEC 17000, 6.5]	
A1.24 agreement group bodies that are signatories to the agreement on which an arrangement is based [ISO/IEC 17000, 7.10]	
A1.25 approval permission for a product or process to be marketed or used for stated purposes or under stated conditions [ISO/IEC 17000, 7.1]	
A1.26 reciprocity	

<p>relationship between two parties where both have the same rights and obligations towards each other</p> <p><i>Note 1</i> Reciprocity can exist within a multilateral arrangement comprising a network of bilateral reciprocal relationships.</p> <p><i>Note 2</i> Although rights and obligations are the same, opportunities emanating from them can differ; this can lead to unequal relationships between parties</p> <p>[ISO/IEC 17000, 7.11]</p>	
<p>A1.27</p> <p>equal treatment</p> <p>treatment accorded to products or processes from one supplier that is no less favorable than that accorded to like products or processes from any other supplier, in a comparable situation</p> <p>[ISO/IEC 17000, 7.12]</p>	
<p>A1.28</p> <p>national treatment</p> <p>treatment accorded to products or processes originating in other countries that is no less favourable than that accorded to like products or processes of national origin, in a comparable situation</p> <p>[ISO/IEC 17000, 7.13]</p>	
<p>A1.29</p> <p>equal and national treatment</p> <p>treatment accorded to products or processes originating in other countries that is no less favorable than that accorded to like products or processes of national origin, or originating in any other country, in a comparable situation</p> <p>[ISO/IEC 17000, 7.14]</p>	
<p>A1.30</p> <p>designation</p> <p>governmental authorization of a conformity assessment body to perform specified assessment</p>	

activities [ISO/IEC 17000, 7.2]	
A1.31 designating authority body established within government or empowered by government to designate conformity assessment bodies, suspend or withdraw their designation or remove their suspension from designation [ISO/IEC 17000, 7.3]	
A1.32 equivalence equivalence of conformity assessment results sufficiency of different conformity assessment results to provide the same level of assurance of conformity with regard to the same specified requirements [ISO/IEC 17000, 7.4]	
A1.33 recognition recognition of conformity assessment results acknowledgement of the validity of a conformity assessment result provided by another person or body [ISO/IEC 17000, 7.5]	
A1.34 acceptance acceptance of conformity assessment results use of a conformity assessment result provided by another person or body [ISO/IEC 17000, 7.6]	
A1.35 unilateral arrangement arrangement whereby one party recognizes or accepts the conformity assessment results of	

another party [ISO/IEC 17000, 7.5]	
A1.36 bilateral arrangement arrangement whereby two parties recognize or accept each other's conformity assessment results [ISO/IEC 17000, 7.8]	
A1.37 multilateral arrangement arrangement whereby more than two parties recognize or accept one another's conformity assessment results [ISO/IEC 17000, 7.9]	

Alphabetical index	
A	
acceptance	A1.34
acceptance of conformity assessment	A1.34
Accreditation	A1.19
accreditation body	A1.3
agreement group	A1.24
ancillary device	5.06
appeal	A1.22
approval	A1.25
approved type	4.13
associated measuring instrument	5.09
attestation	A1.15
audit	A1.12
audit trail	6.05
B	
bilateral arrangement	A1.36
C	
category of instruments	4.01
certification (of conformity)	A1.18
checking facility	5.07
complaint	A1.23
conformity assessment	A1.1
conformity assessment body	A1.2
conformity assessment program	A1.5
conformity assessment scheme	A1.5
conformity assessment system	A1.4
control instrument	5.08

D	
declaration (of conformity)	A1.18
designating authority	A1.31
designation	A1.30
device-specific parameter	4.12
disturbance	5.19
durability error	5.16
durability test	5.22
E	
equal and national treatment	A1.29
equal treatment	A1.27
equipment under test	4.16
equivalence	A1.32
equivalence of conformity assessment results	A1.32
error (of indication)	0.04
event	6.06
F	
family of measuring instruments	4.02
family of modules	4.05
fault	5.12
I	
indicating device	5.04
indication	0.03
influence factor	5.18
influence quantity	0.07
initial intrinsic error	5.11
initial verification	2.12
initial verification of measuring instruments utilizing the manufacturer's quality management system	2.21
inspection	A1.11
inspection by sampling	2.18
International System of Units, SI	0.02

intrinsic error	0.06
L	
law on metrology	1.02
legal control of measuring instruments	2.02
legal metrological control	2.01
legal metrology	1.01
legal metrology regulations	1.03
legal units of measurement	1.06
legally controlled measuring instrument	4.07
legally relevant	4.08
legally relevant parameter	4.10
limit of error	0.05
M	
mandatory periodic verification	2.14
marking	2.19
maximum permissible error	0.05
maximum permissible measurement error	0.05
measurement transducer	0.11
measuring instrument	0.10
measuring instrument acceptable for verification	4.14
measuring system	0.12
metrological supervision	2.03
metrological authority	1.05
metrologically relevant	4.03
metrology	0.01
module	4.04
multilateral arrangement	A1.37
N	
national responsible body	1.04
national treatment	A1.28
number of verification scale intervals	5.03

O	
obliteration of a verification mark	2.20
P	
peer assessment	A1.13
performance test	5.21
placing on the market	2.22
preliminary examination	2.10
procedure	A1.7
product certification scheme	A1.8
putting into use (service)	2.23
R	
rated operating condition	0.08
reciprocity	A1.26
recognition	A1.33
recognition of conformity assessment results	A1.33
recognition of type approval	2.07
recognition of verification	2.17
reference condition	0.9
reference operating condition	0.09
rejection mark	3.05
rejection notice	3.03
rejection of a measuring instrument	2.15
requirement, (specified)	A1.6
review	A1.14
S	
sampling	A1.9
scale interval	5.01
scale of a displaying measuring instrument	0.13
scope of attestation	A1.16
sealing	2.20
sealing mark	3.06

securing	2.22
significant durability error	5.17
significant fault	5.14
software identification	6.01
software interface	6.03
software protection	6.04
software separation	6.02
specimen of an approved type	4.09
storage device	6.07
subsequent verification	2.13
surveillance	A1.20
suspension	A1.21
T	
terminal	5.10
test program	5.20
testing	A1.10
type (pattern) evaluation	2.04
type approval	2.05
type approval certificate	3.01
type approval Mark	3.07
type approval with limited effect	2.06
type of a measuring instrument or module	4.06
type-specific parameter	4.11
U	
unilateral arrangement	A1.35
user interface	6.08
V	
verification by sampling	2.11
verification certificate	3.02
verification equipment	4.15
verification mark	3.04

verification of a measuring instrument	2.9
verification scale interval	5.02
W	
withdrawal of a type approval	2.08