DIN EN ISO 17511:2021-11 (E)

In vitro diagnostic medical devices - Requirements for establishing metrological traceability of values assigned to calibrators, trueness control materials and human samples (ISO 17511:2020)

Contents

Page

European foreword ... **5**

Annex ZA (informative) **Relationship between this European Standard and the General Safety and Performance Requirements of Regulation (EU) 2017/746 aimed to be covered** ... **7**

Foreword ... **9**

Introduction ... **10**

1 Scope ... **11**

2 Normative references ... **12**

3 Terms and definitions, symbols and abbreviated terms ... **12**

4 General requirements to be fulfilled by a manufacturer for establishing, validating and documenting metrological traceability of human sample values determined with a specified IVD MD ... **29**

4.1 Requirements for documenting metrological traceability of measured quantity values ... 29
4.2 Definition of the measurand ... 29
4.3 Specifications for maximum allowable expanded measurement uncertainty, ***Umax(y)*** ... 30
4.3.1 General requirements ... 30
4.3.2 Scope of the specification ... 30
4.4 Defining the calibration hierarchy ... 30
4.4.1 General requirements ... 30
4.4.2 Measured quantity ... 31
4.4.3 Highest level of metrological traceability ... 31
4.4.4 Traceability to SI ... 31
4.4.5 Non-SI traceable IVD MDs ... 31
4.4.6 Number of levels in the specified hierarchy ... 31
4.5 Selection and requirements for RMs and calibrators ... 31
4.5.1 General requirements ... 31
4.5.2 Characteristics to be documented ... 31
4.5.3 Higher order RMs that conform with ISO 15194 ... 32
4.5.4 RMs not conforming to ISO 15194 ... 32
4.5.5 Commutability of RMs ... 32
4.5.6 Exception to commutability assessment requirements ... 33
4.5.7 Application of a non-commutable CRM ... 33
4.5.8 Alternative RMs ... 33
4.5.9 Augmentation of alternative RMs ... 33
4.5.10 Non-commutable end-user IVD MD calibrators ... 34
4.6 Selection and requirements for MPs ... 34
4.6.1 Rationale for selection of MPs and documentation responsibility ... 34
4.6.2 Metrological status of MPs ... 34
4.6.3 Reference measurement laboratories ... 34
4.6.4 Impact of influence quantities ... 35
4.6.5 Changes in the measured quantity within a calibration hierarchy ... 35
4.7 Estimating uncertainty of assigned values for end-user IVD MD calibrators ... 35
4.7.1 General requirements ... 35
4.7.2 Documentation for method of estimating u_{cal} ... 36
4.7.3 Statistical considerations and scope of u_{cal} estimates ... 36

4.7.4 Expression of u_{cal} ... 36
4.7.5 Product modifications ... 37
4.7.6 Information to be provided to the end-user ... 38
4.8 Validation of metrological traceability of values assigned to an IVD MD calibrator ... 38
4.8.1 General validation requirements ... 38
4.8.2 Validation strategies ... 38
4.8.3 Test design considerations and acceptance criteria ... 39
4.8.4 Calibration hierarchies with an available RMP ... 39
4.8.5 Calibration hierarchies with no available RMP ... 39
4.8.6 Calibration hierarchies with no RMPs and no CRMs ... 39
4.8.7 Validation of design changes to an end-user IVD MD calibrator ... 40
4.9 Additional calibration hierarchy documentation responsibilities ... 40
4.9.1 Obligation to end-users ... 40
4.9.2 Maintaining documentation ... 40
4.9.3 Third party manufacturers of IVD MD calibrators ... 40
4.9.4 Modifications introduced by independent entities ... 40
4.9.5 Calibration hierarchies supporting IVD MDs developed by a single entity for its own use ... 41
4.9.6 RMs other than end-user IVD MD calibrators ... 41
4.9.7 EQA and PT materials with claims of metrologically traceable target values ... 41

5 Model calibration hierarchies for metrological traceability ... 41
5.1 Elements of the description of a calibration hierarchy ... 41
5.2 Cases with RMPs and primary RMs ... 42
5.2.1 General considerations ... 42
5.2.2 Definition of the measurand ... 43
5.2.3 Selecting RMPs ... 44
5.2.4 Primary RMPs ... 44
5.2.5 Primary calibrators ... 45
5.2.6 Assigning a value to a secondary RM or calibrator ... 45
5.2.7 Commutability of secondary RMs ... 45
5.2.8 Manufacturer's Selected MP ... 45
5.2.9 Working calibrators ... 45
5.2.10 Manufacturer's standing MP ... 46
5.2.11 Manufacturer's end-user calibrator ... 46
5.2.12 u_{cal} of the assigned value of the end-user calibrator ... 46
5.2.13 End-user IVD MD ... 46
5.3 Cases with a primary RMP that defines the measurand ... 46
5.3.1 General Considerations ... 46
5.3.2 Definition of the measurand ... 48
5.3.3 Higher order RMP that defines the measurand ... 48
5.3.4 The primary RMP and definition of the measurand ... 48
5.3.5 Documentation of the primary RMP ... 48
5.3.6 Assignment of values to secondary RMs ... 49
5.3.7 Manufacturer's selected MP ... 49
5.3.8 Manufacturer's working calibrator ... 49
5.3.9 Manufacturer's standing MP ... 50
5.3.10 Manufacturer's end-user calibrator ... 50
5.3.11 End-user IVD MD ... 50
5.4 Cases for measurands defined by a RMP calibrated with a particular primary calibrator 50
5.4.1 General considerations ... 50
5.4.2 Definition of the measurand ... 51
5.4.3 Value assignment of the primary RM ... 52
5.4.4 Value assignment of the primary calibrator ... 52
5.4.5 Selection and intended use of the RMP in the calibration hierarchy ... 52
5.4.6 Manufacturer's selected MP ... 52
5.4.7 Manufacturer's working calibrator ... 52

5.4.8 Manufacturer's standing MP 53
5.4.9 End-user IVD MD calibrator 53
5.4.10 End-user IVD MD 53
5.5 Cases with an international conventional calibrator that defines the measurand 53
5.5.1 General considerations 53
5.5.2 The international conventional calibrator — Material description 55
5.5.3 Value assignment of an international conventional calibrator 55
5.5.4 Commutability of an international conventional calibrator 55
5.5.5 Calibration and selection of the manufacturer's selected MP 56
5.5.6 Characteristics and value assignment of the manufacturer's working calibrator 56
5.5.7 Manufacturer's standing MP 56
5.5.8 End-user IVD MD calibrator 56
5.5.9 End-user IVD MD 56
5.6 Cases with metrological traceability supported by an international harmonisation protocol 56
5.6.1 General Considerations 56
5.6.2 International harmonisation protocol 57
5.6.3 Assignment of values to harmonisation RMs 58
5.6.4 Application of harmonisation RMs 58
5.6.5 End-user IVD MD 58
5.7 Cases for measurands with metrological traceability only to manufacturer's internal arbitrarily defined RM(s) 58
5.7.1 General considerations 58
5.7.2 Selection of RMs 59
5.7.3 Manufacturer's Selected MP 60
5.7.4 Manufacturer's Standing MP 60
5.7.5 End-user IVD MD calibrators 60
5.7.6 End-user IVD MD 60
5.7.7 Documentation of the calibration hierarchy 60
6 Labelling information to be provided to end-users by the manufacturer 61
Bibliography 62