



Australian Government
**National Measurement
Institute**

NMI R 76-2

Non-automatic Weighing Instruments. Part 2: Pattern Evaluation Report

(OIML R 76-2:1993(E), IDT)

The English version of international standard OIML R 76-2:1993
Nonautomatic Weighing Instruments. Part 2: Pattern Evaluation Report is adopted
as the identical national standard with the reference number NMI R 76-2

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1. SCOPE

NMI R 76-2 is a pattern evaluation report for recording the results of tests contained in Annexes A and B of NMI R 76-1.

2. CONTENTS

NMI R 76-2 is comprised of, and therefore identical with, OIML R 76-2:1993, *Nonautomatic Weighing Instruments. Part 2: Pattern Evaluation Report* (edition 1993 with amendment 1 (1995)) published by the International Organisation of Legal Metrology (OIML).

3. VARIATIONS AND INTERPRETATIONS

OIML R 76-1 is equivalent to *NMI R 76-1. Pattern Approval Specifications for Non-automatic Weighing Instruments for Trade Use.*

ORGANISATION INTERNATIONALE DE MÉTROLOGIE LÉGALE



INTERNATIONAL RECOMMENDATION

Nonautomatic weighing instruments Part 2 : Pattern evaluation report

Instruments de pesage à fonctionnement non automatique
Partie 2 : Rapport d'essai de modèle

**Note: This pdf document INCLUDES
the Amendment 1 (1995)**

OIML R 76-2

Edition 1993 (E)

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FOREWORD

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

The two main categories of OIML publications are:

- 1) **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; the OIML Member States shall implement these Recommendations to the greatest possible extent.
- 2) **International Documents (OIML D)**, which are informative in nature and intended to improve the work of the metrological services.

OIML Draft Recommendations and Documents are developed by technical committees or subcommittees which are formed by the Member States. Certain international and regional institutions also participate on a consultation basis.

Cooperative agreements are established between OIML and certain institutions, such as ISO and IEC, with the objective of avoiding contradictory requirements; consequently, manufacturers and users of measuring instruments, test laboratories, etc. may apply simultaneously OIML publications and those of other institutions.

International Recommendations and International Documents are published in French (F) and English (E) and are subject to periodic revision.

OIML publications may be obtained from the Organization's headquarters:

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* *

This publication in two parts - references OIML R 76-1, edition 1992 (E) and OIML R 76-2, edition 1993 (E) - was developed by the OIML working groups SP 7-Sr 4 "Nonautomatic weighing instruments", SP 7 "Measurement of mass" and by the "Nordic Countries Working Group", attached to SP 7 and author of Annex A and the Pattern Evaluation Report (R 76-2). It was approved for final publication by the International Committee of Legal Metrology in 1991 and was sanctioned by the International Conference of Legal Metrology in 1992. It supersedes the previous edition dated 1988.

INTRODUCTION

The "Pattern evaluation report", the subject of R 76-2, aims at presenting, in a standardized format, the results of the various tests to which a pattern of a nonautomatic weighing instrument shall be submitted with a view to its approval. These tests are described in Annexes A and B of R 76-1.

All metrology services or laboratories evaluating patterns of nonautomatic weighing instruments according to R 76-1 or to national or regional regulations based on OIML R 76-1 are strongly advised to use this "Pattern evaluation report", directly or after translation into a language other than English or French. Its direct use in English or in French, or in both languages, is even more strongly recommended whenever test results may be transmitted by the country performing these tests to the approving authorities of another country, under bi- or multi-lateral co-operation agreements. In the framework of the "OIML Certificate System for measuring instruments", already applicable to nonautomatic weighing instruments following R 76-1, edition 1992, use of the "Pattern evaluation report" is mandatory.

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

- Verification standards (accuracy, or accuracy class, and N°)
- Simulator for testing of modules (name, type, traceability and N°)
- Climatic test and static temperature chamber (name, type and N°)
- Electrical tests, bursts (name of the instrument, type and N°)
- Description of the procedure of field calibration for the test of immunity to radiated electromagnetic fields

Note concerning the numbering of the following pages

In addition to a sequential numbering: "R 76-2 page .." at the bottom of the pages of this publication, a special place is left at the top of each page (starting with the following page) for numbering the pages of reports established following this model; in particular, some tests (e.g. weighing performance) shall be repeated several times, each test being reported individually on a separate page following the relevant format; in the same way, a multiple range instrument shall be tested separately for each range and a separate form (including the general information form) shall be filled out for each range. For a given report, it is advisable to complete the sequential numbering of each page by the indication of the total number of pages of the report.

NONAUTOMATIC WEIGHING INSTRUMENTS

PATTERN EVALUATION REPORT

EXPLANATORY NOTES

Meaning of symbols:

- I = Indication
- I_n = nth indication
- L = Load
- ΔL = Additional load to next changeover point
- P = I + 1/2 e) ΔL = Indication prior to rounding (digital indication)
- E = I) L or P) L = Error
- mpe = Maximum permissible error (absolute value)
- EUT = Equipment under test

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

For each test, the "SUMMARY OF PATTERN EVALUATION" and the "CHECKLIST" shall be completed according to this example:

when the instrument has passed the test:

when the instrument has failed the test:

when the test is not applicable:

PASSED	FAILED
X	
	X
/	

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

	At start	At max	At end	
Temp:	20.5		21.2	°C
Rel. h:				%
Time:				
Bar. pres:				hPa

where:

Temp = temperature

Rel. h = relative humidity

Bar. pres = barometric pressure (barometric pressure is necessary for the span stability test and when specified by IEC test provisions; in other cases it may be necessary only for class ① instruments).

"Date" in the test reports refers to the date that the test was performed.

In the disturbance tests (12.1 through 12.4), faults greater than e are acceptable provided that they are detected and acted upon, or that they result from circumstances such that these faults shall not be considered as significant (see T.5.5.6 in R 76-1); an appropriate explanation shall be given in the column "Yes (remarks)".

Numbers in brackets refer to the corresponding subclauses of OIML R 76-1.

GENERAL INFORMATION CONCERNING THE PATTERN

Application N°:
 Pattern designation:
 Manufacturer:
 Applicant:
 Instrument category:

Complete instrument Module (*)

Accuracy class: I II III IIII

Self- Semi-self- Non-self-indicating

Min =

e =

Max =

d =

n =

e₁ =

Max₁ =

d₁ =

n₁ =

e₂ =

Max₂ =

d₂ =

n₂ =

e₃ =

Max₃ =

d₃ =

n₃ =

T = +

T =)

U_n = V

U_{min} = V

U_{max} = V

f = Hz

Battery, U = V

Zero-setting device:

Tare device:

Nonautomatic

Tare balancing

Combined zero/tare device

Semi-automatic

Tare weighing

Automatic zero-setting

Preset tare device

Initial zero-setting

Subtractive tare

zero-tracking

Additive tare

Initial zero-setting range = %

Temperature range: °C

Printer: Built-in

Connected

Non present
but connectable

No connection

Instrument submitted:

Identification N°:

Connected equipment:

Interfaces:

(number, nature)

Remarks: see following page

Date of report:

Observer:

Loadcell:

Manufacturer:

Type:

Capacity:

Number:

Classification

symbol:

Evaluation period:

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

GENERAL INFORMATION CONCERNING THE PATTERN
(continued)

Use this space to indicate additional remarks and/or information: connections equipment, interfaces and load cells, choice of the manufacturer regarding protection against disturbances (5.1.1.a or 5.1.1.b), etc.

Report page/....

INFORMATION CONCERNING THE TEST EQUIPMENT
USED FOR PATTERN EVALUATION

SUMMARY OF PATTERN EVALUATION

Application N°:

Pattern designation:

	TESTS	Report page	PASSED	FAILED	Remarks
1	Weighing performance Initial °C °C °C °C °C °C °C				
2	Temperature effect on no-load indication				
3.1	Eccentricity using weights				
3.2	Eccentricity using a rolling load				
4.1	Discrimination				
4.2	Sensitivity				
5	Repeatability				
6.1	Zero return				
6.2	Creep				
7	Stability of equilibrium				
8	Tilting				
9	Tare				
10	Warm-up time				
11	Voltage variations				
12.1	Short time power reductions				
12.2	Electrical bursts a) Power supply lines b) I/O circuits and communication lines				
12.3	Electrostatic discharges a) Direct application b) Indirect application (contact discharges only)				
12.4	Immunity to radiated electromagnetic fields				
13	Damp heat, steady state a) Initial test (at reference temperature) b) Test at high temperature and 85 % relative humidity c) Final test (at reference temperature)				
14	Span stability				
15	Endurance a) Initial test c) Final test				
	EXAMINATIONS				
16	Examination of the construction				
17	Checklist				

1 WEIGHING PERFORMANCE (A.4.4)(A.5.3.1)
(Calculation of the error)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range In operation

Initial zero-setting > 20% of Max: Yes No (see R 76-1, A.4.4.2)

$E = I + 1/2 e + \Delta L \cdot L$
 $E_c = E - E_0$ with $E_0 = \text{error calculated at or near zero}^{(*)}$

Load L	Indication I		Add. load ΔL		Error E		Corrected error E_c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

Passed Failed

Remarks:

2 TEMPERATURE EFFECT ON NO-LOAD INDICATION (A.5.3.2)

Application N°:

Pattern designation:

Observer:

Verification
 scale interval e:

Resolution during test
 (smaller than e):

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range

$P = I + 1/2e) \Delta L$

Report page (*)	Date	Time	Temp (°C)	Zero indication I	Add. load ΔL	P	ΔP	ΔTemp	Zero-change per °C

ΔP = difference of P for two consecutive tests at different temperatures
 ΔTemp = difference of Temp for two consecutive tests at different temperatures
 Check if the zero-change per 5 °C is smaller than e (class **II**, **III**, or **III**)
 " " " " " " 1 °C " " " " (class **I**)

Passed Failed

Remarks:

(*) Give the report page of the relevant weighing test where weighing tests and temperature effect on no-load indication test are conducted together (see R 76-1, figure 10).

3 ECCENTRICITY (A.4.7)

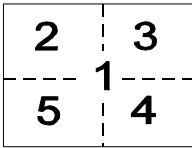
3.1 Eccentricity using weights (A.4.7.1, 2 and 3)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Location of test loads: mark on a sketch (see an example below) the successive locations of test loads, using numbers which shall be repeated in the table below.



Also indicate in the sketch the location of the display or of another perceptible part of the instrument.

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range

$E = I + 1/2e) \Delta L) L$

$E_c = E) E_0$ with E_0 = error calculated prior to each measurement at or near zero(*)

Load L	Location	Indication I	Add. load ΔL	Error E	Corrected error E_c	mpe
(*)				(*)		

Passed Failed

Remarks:

3.2 Eccentricity using a rolling load (A.4.7.4)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Location of test loads: mark on a sketch (see an example below) the successive locations of test loads, using numbers which shall be repeated in the table below.

1	2	3
---	---	---

Also indicate in the sketch the location of the display or of another perceptible part of the instrument.

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range

$E = I + 1/2e) \Delta L) L$
 $E_c = E) E_0$ with E_0 = error calculated prior to each measurement at or near zero(*)

Load L	Location	Indication I	Add. load ΔL	Error E	Corrected error E _c	mpe
(*)				(*)		

Passed Failed

Remarks:

4 DISCRIMINATION AND SENSITIVITY

4.1 Discrimination

4.1.1 Digital indication (A.4.8.2)

Application N°:
 Pattern designation:
 Date:
 Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Load L	Indication I_1	Remove load ΔL	Add 1/10d	Extra load = 1.4d	Indication I_2	$I_2 \setminus I_1$

Check if $I_2 \setminus I_1 = d$

Passed Failed

Remarks:

4.1.2 Analogue indication (A.4.8.1)

Application N°:
 Pattern designation:
 Date:
 Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Load L	Indication I_1	Extra load = *mpe*	Indication I_2	$I_2 \setminus I_1$

Check if $I_2 \setminus I_1 \geq 0.7 \text{ mpe}$

Passed Failed

Remarks:

4.1.3 Non-self-indicating instrument (A.4.8.1)

Application N°:
 Pattern designation:
 Date:
 Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Load L	Indication I	Extra load = 0.4 *mpe*	Movement (*)

(*) Mark visible movement by "+"

Passed Failed

Remarks:

4.2 Sensitivity (non-self-indicating instrument) (A.4.9)

Application N°:
 Pattern designation:
 Date:
 Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Load L	Extra load = *mpe*	Displacement of indicating element	Requirement

Passed Failed

Remarks:

5 REPEATABILITY (A.4.10)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Automatic zero-setting and zero-tracking device is:

Non-existent In operation

Load (weighing 1-10)

Load (weighing 11-20)

$P = I + 1/2e) \Delta L$

	Indication of load I	Add. load ΔL	P
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

	Indication of load I	Add. load ΔL	P
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

$P_{max}) P_{min}$ (weighing 1-10)

mpe

$P_{max}) P_{min}$ (weighing 11-20)

mpe

Passed Failed

Remarks:

6 TIME-DEPENDENCE

6.1 Zero return (A.4.11.2)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range

$P = I + 1/2e) \Delta L$

Time of reading	Load L_0	Indication of zero I_0	Add. load ΔL	P
After loading for 0.5 h		Load =		

Change of zero indication

* ΔP^* =

Check if $*\Delta P^* \leq 0.5 e$

Passed Failed

Remarks:

6.2 Creep (A.4.11.1)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

$P = I + 1/2 e) \Delta L$

Time of reading		Load L	Indication I	Add. load ΔL	P	ΔP
	0 min					
	5 min					
	15 min					
	30 min					

(*)

	1 h					
	2 h					
	3 h					
	4 h					

ΔP = difference between P at the start (0 min) and P at a given time.

(*) If $*\Delta P* \leq 0.5 e$ during the first 30 min and if the variation of $*\Delta P*$ between 15 min and 30 min $\leq 0.2 e$, then the test is terminated. If not, the test shall continue for the next 3.5 hours. Check that during the total 4 hours: $*\Delta P* \leq mpe$

Passed Failed

Remarks:

7 STABILITY OF EQUILIBRIUM (A.4.12)

Application N°:
 Pattern designation:
 Date:
 Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

In the case of printing or data storage

Load =

N°	First printed or stored value after disturbance and command	Reading during 5 s after print-out or storage	
		Minimum	Maximum
1			
2			
3			
4			
5			

Check if only two adjacent figures appear, one being the printed value

Passed Failed

Remarks:

In the case of zero-setting or tare balancing

$E_0 = I_0 + 1/2 e - \Delta L - L_0$ $L_0 = 0$ or near zero

N°	Load L_0	Indication I_0	Add. load ΔL	Error E_0
Zero setting				
1				
2				
3				
4				
5				
Tare balancing				
6				
7				
8				
9				
10				

Check the accuracy according to 4.5.2 for zero setting and to 4.5.3 for tare balancing

Passed Failed

Remarks:

8 TILTING (A.5.1, 2 and 3)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Tilting 0.2 % (class **II**, **III**, or **III**)

Tilting to the limiting value of level indicator (class **I**, **II**, **III**, and **III**), if the tilting at this limiting value is greater than 0.2 %)

Tilting to the limiting value of level indicator (class **I** only) if the tilting is not greater than 0.2 %, in which case the test shall not be performed.

Tilting 5 % if no level indicator on instrument liable to be tilted

Give (if appropriate on a separate sheet)
 a sketch of the load receptor showing the
 location of the level indicator, if provided.

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range

$P_v = I_v + 1/2 e \Delta L_v$ (v = 1,2,3,4,5)

P_v^0 is the indication P_v corrected for the deviation from zero the instrument had prior to loading.

Load	I ₁	ΔL ₁	I ₂	ΔL ₂	I ₃	ΔL ₃	I ₄	ΔL ₄	I ₅	ΔL ₅	*P ₁) P _{v max} or *P ₁ °) P _{v max} °
L											
Unloaded (*)											(≤ 2e)
P _v →											
Loaded											2e =
											(≤ mpe)
P _v →											
P _v ° →											
											(≤ mpe)
P _v →											
P _v ° →											
											mpe =

(*) No tilting test at no-load for instruments in class **I** and in class **II** not for direct sales to the public.

Passed Failed

Remarks:

9 TARE (WEIGHING TEST) (A.4.6.1)

Application N°:

Pattern designation:

Date:

Observer:

Verification

scale interval e:

Resolution during test

(smaller than e):

Automatic zero-setting and zero-tracking device is:

Non-existent

Not in operation

Out of working range

In operation

First tare value

Tare:

Tare indication:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

$$E = I + 1/2 e + \Delta L - L$$

$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

Load L	Indication I		Add. load ΔL		Error E		Corrected error E_c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

TARE (WEIGHING TEST) (cont.)

Second tare value

Tare:

Tare indication:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

$$E = | \frac{1}{2} e + \Delta L | \cdot L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero} (*)$$

Load L	Indication I		Add. load ΔL		Error E		Corrected error E _c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

Passed

Failed

Remarks:

10 WARM-UP TIME (A.5.2)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Duration of disconnection
 before test:

Automatic zero-setting and zero-tracking device is:

- Non-existent Not in operation Out of working range In operation

$E = I + 1/2 e + \Delta L / L$
 E_0 = error calculated prior to each measurement at or near zero
 E_l = error calculated at load (loaded)

	time (*)	Load	Indication I	Add. load ΔL	Error E	E_l / E_0	mpe=
Unloaded	0 min						
Loaded							
Unloaded	5 min						
Loaded							
Unloaded	15 min						
Loaded							
Unloaded	30 min						
Loaded							

(*) Counted from the moment an indication has first appeared. Check that $*E_l / E_0 \leq mpe$

- Passed Failed

Remarks:

11 VARIATIONS OF VOLTAGE (A.5.4)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range In operation

Marked nominal voltage or voltage range: V

$E = I + 1/2 e + \Delta L / L$
 $E_c = E - E_0$ with $E_0 =$ error at zero or near zero(*)

Voltage	U (V)	Load L	Indication I	Add. load ΔL	Error E	Corrected error E_c	mpe
Reference value (**)		10e =			(*)		
") 15 % (**)		10e =					
" + 10 % (**)		10e =					
Reference value (**)		10e =					

Passed Failed

Remarks:

(**) In case a voltage-range is marked, use the average value as reference value and calculate upper and lower values of applied voltages according to A.5.4.

12 ELECTRICAL DISTURBANCES
 12.1 Short time power reductions (B.3.1)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Marked nominal voltage U_n or voltage range: V

Small test load	Disturbance				Result		
	Amplitude (*) % of U_n	Duration cycles	Number of disturbances	Repetition interval(s)	Indication I	Significant fault (>e)	
						No	Yes (remarks)
	without disturbance						
	0	0.5	10				
	50	1	10				

Passed Failed

Remarks:

(*) In case a voltage range is marked, use the average value as reference value U_n .

12.2 Electrical bursts (B.3.2)

a) Power supply lines

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Power supply lines: test voltage 1 kV, duration of the test 1 min at each polarity

Small test load	Connection			Polarity	Indication I	Result	
	L	N	PE			No	Significant fault (>e) Yes (remarks)
	↓ ground	↓ ground	↓ ground				
	without disturbance						
	X			pos			
				neg			
	without disturbance						
		X		pos			
				neg			
	without disturbance						
			X	pos			
				neg			

L = phase, N = neutral, PE = protective earth

Passed Failed

Remarks:

Electrical bursts (cont.)

b) I/O circuits and communication lines

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

I/O signals, data and control lines: test voltage 0.5 kV, duration of the test 1 min at each polarity

Small test load	Cable/Interface	Polarity	Result	
			Indication I	Significant fault (>e)
				No
	without disturbance			
		pos		
		neg		
	without disturbance			
		pos		
		neg		
	without disturbance			
		pos		
		neg		
	without disturbance			
		pos		
		neg		
	without disturbance			
		pos		
		neg		

Explain or make a sketch indicating where the clamp is located on the cable; if necessary, use additional page.

Passed Failed

Remarks:

12.3 Electrostatic discharges (B.3.3)

a) Direct application

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Contact discharges Paint penetration
 Air discharges Polarity(*): pos neg

Small test load	Discharges			Result		
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval(s)	Indication I	Significant fault (>e)	
					No	Yes (remarks, test points)
	without disturbance					
	2					
	4					
	6					
	8 (air discharges)					

Passed Failed

Remarks:

Note: If the EUT fails, the test point at which this occurs shall be recorded.

(*) IEC 801-2 specifies that the test shall be conducted with the most sensitive polarity.

Electrostatic discharges (cont.)

b) Indirect application (contact discharges only)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Polarity(*): pos neg

Horizontal coupling plane

Small test load	Discharges			Indication I	Result	
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval(s)		No	Yes (remarks)
	without disturbance					
	2					
	4					
	6					

Vertical coupling plane

Small test load	Discharges			Indication I	Result	
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval(s)		No	Yes (remarks)
	without disturbance					
	2					
	4					
	6					

Passed Failed

Remarks:

Note: If EUT fails, the test point at which this occurs shall be recorded.

(*) IEC 801-2 specifies that the test shall be conducted with the most sensitive polarity.

Electrostatic discharges (cont.)

Specification of test points of EUT (direct application), e.g. by photos or sketches

a) Direct application

Contact discharges:

Air discharges:

b) Indirect application

12.4 Immunity to radiated electromagnetic fields (B.3.4)

Application N°:
 Pattern designation:
 Date:
 Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Rate of sweep:

Load:

Material load:

Disturbance				Result		
Antenna	Frequency range (MHz)	Polarization	Facing EUT	Indication I	Significant fault	
					No	Yes (remarks)
without disturbance						
		Vertical	Front			
			Right			
			Left			
			Rear			
		Horizontal	Front			
			Right			
			Left			
			Rear			
		Vertical	Front			
			Right			
			Left			
			Rear			
		Horizontal	Front			
			Right			
			Left			
			Rear			

Frequency range: 26-1000 MHz
 Field strength: 3 V/m
 Modulation: 80 % AM, 1 kHz sine wave

Passed Failed

Remarks:

Note: If EUT fails, the frequency at which this occurs shall be recorded.

Immunity to radiated electromagnetic fields (cont.)

Description of the set-up of EUT, e.g. by photos or sketches:

13 DAMP HEAT, STEADY STATE (B.2.2)

a) Initial test (at reference temperature)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class I)

Automatic zero-setting and zero-tracking device is:

- Non-existent
 Not in operation
 Out of working range
 In operation

$E = I + 1/2 e + \Delta L / L$
 $E_c = E - E_0$ with $E_0 =$ error calculated at or near zero(*)

Load L	Indication I		Add. load ΔL		Error E		Corrected error E_c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

- Passed
 Failed

Remarks:

DAMP HEAT, STEADY STATE (cont.)

b) Test at high temperature and 85 % relative humidity

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Automatic zero-setting and zero-tracking device is:

- Non-existent Not in operation Out of working range In operation

$$E = I + 1/2 e + \Delta L / L$$

$E_c = E - E_0$ with $E_0 =$ error calculated at or near zero(*)

Load L	Indication I		Add. load ΔL		Error E		Corrected error E_c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

- Passed Failed

Remarks:

DAMP HEAT, STEADY STATE (cont.)

c) Final test (at reference temperature)

Application N°:
 Pattern designation:
 Date:
 Observer:
 Verification
 scale interval e:
 Resolution during test
 (smaller than e):

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

(only class **I**)

Automatic zero-setting and zero-tracking device is:

Non-existent Not in operation Out of working range In operation

$$E = I + 1/2 e + \Delta L / L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero} (*)$$

Load L	Indication I		Add. load ΔL		Error E		Corrected error E _c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

Passed Failed

Remarks:

14 SPAN STABILITY (B.4)

Application N°:

Pattern designation:

Verification

scale interval e:

Resolution during test

(smaller than e):

Automatic zero-setting and zero-tracking device is:

Non-existent

Not in operation

Out of working range

Test load =

Measurement N° 1: Initial measurement

Date:

Observer:

Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

Average error = average (E_L) E₀) =

(E_L) E₀)_{max}) (E_L) E₀)_{min} =

0.1 e =

If *(E_L) E₀)_{max}) (E_L) E₀)_{min} * ≤ 0.1 e , the loading and reading will be sufficient for each of the subsequent measurements; if not, five loadings and readings shall be performed at each measurement.

Remarks:

SPAN STABILITY (cont.)

Subsequent measurements

For each of the subsequent measurements (at least 7), indicate on the line "conditions of the measurement", as appropriate, if the measurement has been performed:

- after the temperature test, the EUT having been stabilized for at least 16 h;
- after the humidity test, the EUT having been stabilized for at least 16 h;
- after the EUT has been disconnected from the mains for at least 8 h and then stabilized for at least 5 h;
- after any change in the test location;
- under any other specific condition.

Measurement N° 2:

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

Average error = average (E_L) E₀) =

Remarks:

SPAN STABILITY (cont.)

Measurement N° 3:

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

Average error = average (E_L) E₀) =

Remarks:

Measurement N° 4:

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

Average error = average (E_L) E₀) =

Remarks:

SPAN STABILITY (cont.)

Measurement N° 5:

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

Average error = average (E_L) E₀) =

Remarks:

Measurement N° 6:

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

Average error = average (E_L) E₀) =

Remarks:

SPAN STABILITY (cont.)

Measurement N° :

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

Average error = average (E_L) E₀) =

Remarks:

Measurement N° :

Date:
 Observer:
 Location:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa

Conditions of the measurement:

$$E_0 = I_0 + 1/2 e) \Delta L_0) L_0 \quad E_L = I_L + 1/2 e) \Delta L) L$$

	Indication of zero (I ₀)	Add. load (ΔL ₀)	E ₀	Indication of load (I _L)	Add. load (ΔL)	E _L	E _L) E ₀	Corrected value (*)
1								
2								
3								
4								
5								

(*) When applicable, necessary corrections resulting from variations of temperature, pressure, etc.. See remarks.

If five loadings and readings have been performed:

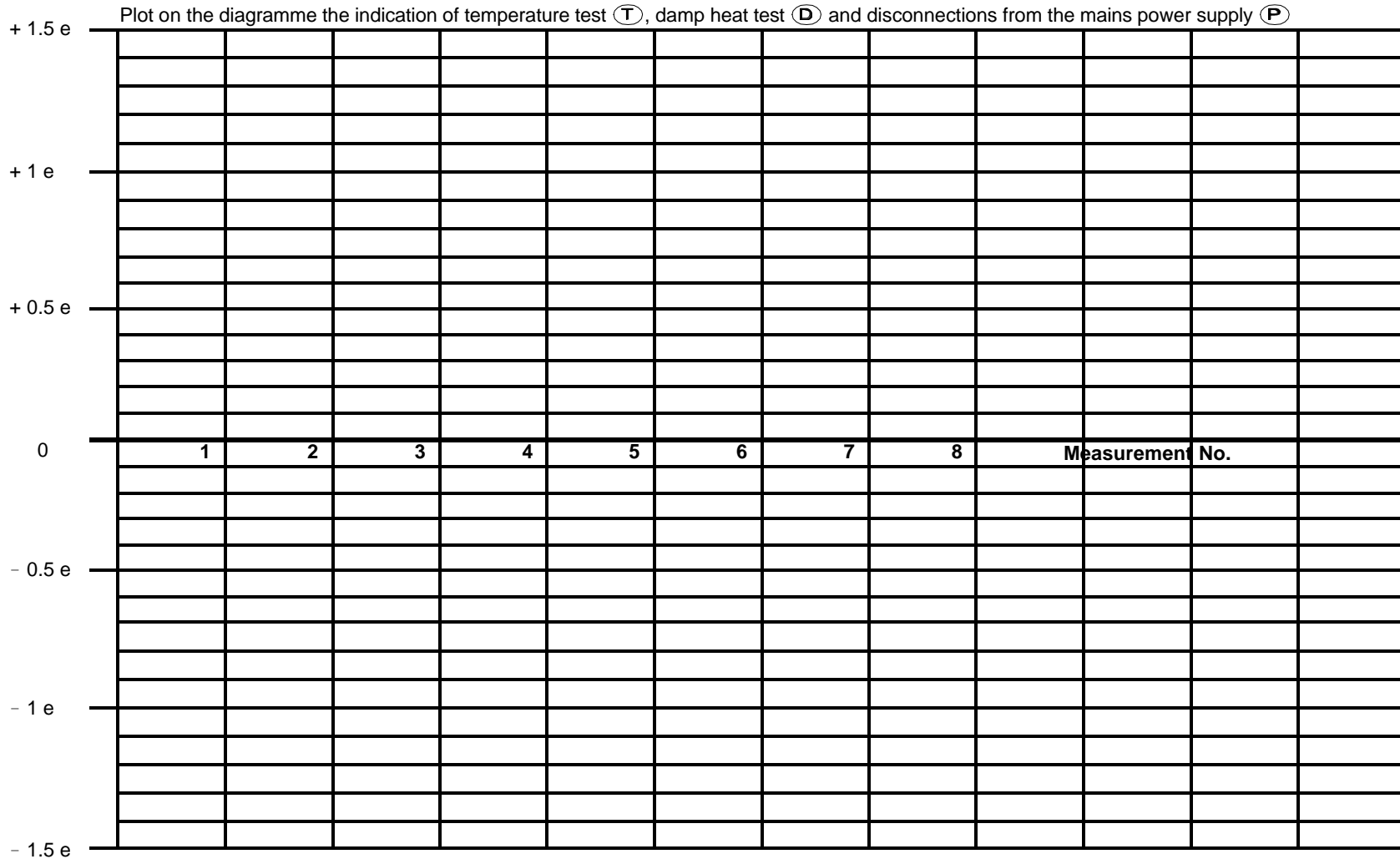
Average error = average (E_L) E₀) =

Remarks:

14 SPAN STABILITY (B.4)

Application No:

Pattern designation:



Maximum allowable variation:

Passed Failed

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Report page

15 ENDURANCE (A.6)

Application N°:

Pattern designation:

Verification

scale interval e:

Resolution during test

(smaller than e):

Automatic zero-setting and zero-tracking device is:

Non-existent

Not in operation

Out of working range

In operation

a) Initial test

Date:

Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres: (if applicable)				hPa

$$E = I + 1/2 e + \Delta L / L$$

$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

Load L	Indication I		Add. load ΔL		Error E		Corrected error E_c		mpe
	↓	↑	↓	↑	↓	↑	↓	↑	
(*)					(*)				

ENDURANCE TEST (cont.)

b) Performance of the test

Number of loadings:

Load applied:

c) Final test

Date:

Observer:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. pres:				hPa
(if applicable)				

$$E = I + 1/2 e \Delta L / L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero} (*)$$

$$\text{Durability error due to wear and tear} = *E_{c \text{ initial}} - E_{c \text{ final}} (**)$$

Load L	Indication I		Add. load ΔL		Error E		Corrected error E _c		mpe	Durability error due to wear and tear (**)
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

Passed

Failed

Remarks:

16 EXAMINATION OF THE CONSTRUCTION OF THE INSTRUMENT

Use this page to indicate any description or information pertaining to the instrument, additional to that already contained in this report and in the accompanying national pattern approval or OIML certificate. This may include a picture of the complete instrument, a description of its main components, and any remark which could be useful for authorities responsible for the initial or subsequent verifications of individual instruments built according to the pattern. It may also include references to the manufacturer description.

Description:

Remarks:

CHECKLIST

This checklist has been developed based on the following principles:

- to include requirements that cannot be tested according to tests 1 through 15 above, but that shall be checked experimentally, e.g. the operating range of the tare device (4.6.4), or visually, e.g. the descriptive markings (7.1);
- to include requirements which indicate prohibitions of some functions, e.g. automatic tare device for instruments for direct sales to the public (4.14.3.3);
- to include neither general requirements, e.g. suitability for use (4.1.1.2), nor weights and verification devices, e.g. auxiliary verification devices (4.9);
- not to include requirements that allow functions or devices to be used, e.g. a combined semi-automatic zero-setting and tare device operated by the same key (4.5.4).

This checklist is intended to serve as a summary of the results of examinations to be performed and not as a procedure. The items on this checklist are provided to recall the requirements specified in R 76-1, and they shall not be considered as a substitution to these requirements.

As for non-self-indicating instruments, clause 6 of R 76-1 shall be followed in lieu of this checklist.

The requirements that are not included in this pattern evaluation report (tests 1 through 15 and checklist 17) are considered to be globally covered by the pattern approval or OIML certificate (e.g. classification criteria [3.2 and 3.3], suitability for application, use and verification [4.1.1.1, 4.1.1.2 and 4.1.1.3]).

For non-mandatory devices, the checklist provides space to indicate whether or not the device exists and, if appropriate, its type. A cross in the box for "existent" indicates that the device exists and that it complies with the definition given in the terminology; when indicating that a device is non-existent, also check the boxes to indicate that the tests are not applicable (see page 5).

If appropriate, the results stated in this checklist may be supplemented by remarks given on additional pages.

17 CHECKLIST

Application N°:

Pattern designation:

17.1 All types of weighing instruments except non-self-indicating instruments (6.1-6.9, R 76-1)

Requirement	Testing procedures		PASSED	FAILED	Remarks
Descriptive markings					
7.1.1 (+ 3.3.1) (+ 3.3.1)	A.3	Compulsory in all cases:			
		manufacturer's mark or name			
		accuracy class			
		maximum capacity, Max, Max ₁ , Max ₂ ,...			
		minimum capacity, Min			
7.1.2	A.3	Compulsory if applicable:			
		name or mark of manufacturer's agent			
		serial number			
		identification marks on separate but associated units			
		pattern approval mark			
		scale interval d (d < e)			
		maximum tare effect T (subtractive tare only if T ≠ Max)			
		maximum safe load, Lim (if Lim > Max + T)			
		special temperature limits			
		counting ratio			
		ratio between weight platform and load platform			
		range of plus/minus indication			
7.1.3 3.2 4.16	A.3	Additional markings:			
		not to be used for direct sales to the public			
		to be used exclusively for:			
		the stamp does not guarantee/guarantees only...			
		to be used only as follows:			
		special applications clearly marked (weighings ranges in Classes (I) and (II) or (II) and (III))			
		near display "not to be used for direct sales to the public" (for instruments similar to those used for direct sales to the public)			
7.1.4	A.3	Presentation of markings:			
		indelible			
		easily readable			
		grouped together in a clearly visible place			
		Max, Min, e and d (d ≠ e) near display			
		possible to seal and apply a control mark/removal will result in destruction			
7.1.5.1	A.3	Instruments with several load receptors and load measuring devices:			
		identification mark, Max, Min and e of each load receptor on relating load measuring device (Lim and T = + if applicable)			

7.1.5.2	A.3	Separately-built main parts:			
		identification mark repeated in descriptive markings			
4.1.1.3		Identification of devices:			
		which have been subject to separate type examination			
Verification marks and sealing					
7.2.1	A.3	Verification mark:			
		cannot be removed			
		easy application			
		visibility without the instrument to be moved when it is in service			
7.2.2		Verification mark support or space:			
		which ensures conservation of the mark			
		for stamp, stamping area $\geq 200 \text{ mm}^2$			
		for self-adhesive type, $\varnothing \geq 25 \text{ mm}$			
4.1.2.4	A.3	Securing/sealing:			
		location			
		form			
		evidence, where software means are used			
4.1.2.5		Span adjustment device (automatic and semi-automatic):	Existent <input type="checkbox"/>	Non-existent <input type="checkbox"/>	
		external influence impossible after sealing			
4.1.2.6		Gravity compensation:	Existent <input type="checkbox"/>	Non-existent <input type="checkbox"/>	
		external influence on or access to impossible after sealing			
Documentation					
8.2.1.1	A.1	Technical information and data:			
5.3.6.1	A.1	specific declaration of the manufacturer			
		specifications of modules			
		specifications of components			
3.5.4.2	A.1	fractions p_i (modules tested separately)			
8.2.1.2	A.1	drawings			
		functional description			
		technical description with schematic diagrams for internal processing and exchange via interface			
5.3.7		manufacturer's lower limit of battery voltage			
8.2.2	A.2	Examination of:			
		documents			
		functions (spotchecks)			
		test reports from other authorities			
Indicating device					
4.2.1		Reading:			
4.3.1		reliable, easy and unambiguous			
		overall inaccuracy $\leq 0.2 e$ (analogue indication)			
		size, shape and clarity			
		by simple juxtaposition			
4.2.2.1	A.3	Units of:			
		mass			
		price			

4.2.2.1	Form of indications:			
	for one indication, one unit of mass			
	scale interval in the form (1,2 or 5) x 10 ^k			
4.2.2.2	same scale interval for all indicating devices, printing devices and tare weighing devices			
	Form of digital indication:			
	at least one figure at right			
	Decimal sign:			
	shall maintain its position (scale interval changed automatically)			
	separate at least one figure to the left and all to the right			
	Zero:			
	indication of zero figures			
4.2.3	only one non-significant zero to the right			
	for values with decimal sign, non-significant zero only in third position			
4.2.3	Limits:			
	preventing of indication above Max + 9 e			
4.2.4	"Approximate" indication: Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
	scale interval > Max/100 without being smaller than 20 e			
4.2.5	Semi-self indicating instruments:			
	extension of self-indication range ≤ self-indication capacity			
4.3.1 4.3.2 4.3.3 4.3.4	Analogue indication:			
	thickness and length of scale marks			
	scale spacing			
	limit of movement below zero and above capacity of self-indication			
4.4.1	damping of oscillations of indicating component			
	Changing of digital indication:			
4.4.3	after change in load, previous indication not longer than 1 s			
	Extended digital indication: Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
	not allowed when there is a differentiated scale division			
	while pressing key or			
	at most, 5 s after manual command			
4.4.4	prevention of printing			
	Digital indications other than primary indications: Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
	quantities identified by units or symbols or signs thereof			
	weight values (not weighed) shall be clearly identified or			
4.4.5	display only temporarily on manual command and			
	shall not be printed			
	Digital printing: Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
	clear and permanent			
4.4.5	figures ≥ 2 mm high			
	name or symbol of units	above column of values		
		behind column of values		
	printing impossible when equilibrium not stable			

4.4.6		Memory storage: Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
		storage, transfer, totalizing, etc. inhibited when equilibrium not stable			
3.4.1		Auxiliary indicating device (Classes I and II only; not allowed on multi-interval instruments) Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
		If existent, type: rider <input type="checkbox"/> interpolation <input type="checkbox"/> complementary <input type="checkbox"/> differentiated scale division <input type="checkbox"/>			
3.4.2		only to the right of decimal sign			
		d < e ≤ 10 d, e = 10 ^k kg or e = 1 mg for class I with d < 1 mg			
Differences between results					
3.6.3		Differences:			
		between multiple indications: ≤ mpe			
3.6.4		between digital indications and printout: zero			
		between two results: ≤ mpe for same load when method of balancing changed (semi-self-indicating)			
Level indicator Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>					
3.9.1.1		Indicator:			
		fixed firmly			
		visible to the user			
		Limiting value:			
		shows that maximum tilt is being exceeded			
Zero-setting, -tracking and -indicating Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>					
		Initial zero-setting	<input type="checkbox"/>	<input type="checkbox"/>	
		Semi-automatic zero-setting	<input type="checkbox"/>	<input type="checkbox"/>	
		Nonautomatic zero-setting	<input type="checkbox"/>	<input type="checkbox"/>	
		Zero-tracking	<input type="checkbox"/>	<input type="checkbox"/>	
		Zero-indicating	<input type="checkbox"/>	<input type="checkbox"/>	
4.5.1	A.4.2.1	Effect:			
		shall not alter Max			
		Overall effect of:			
		zero-setting			= %
		zero-tracking			= %
		initial zero-setting			= %
4.5.2	A.4.2.3	Accuracy:			
		deviation ≤ 0.25 e			
		deviation ≤ 0.5 d (auxiliary indicating device)			
4.5.3		Multiple range: Existing <input type="checkbox"/> Non-existent <input type="checkbox"/>			
		effective for greater weighing range (if switching when loaded possible)			
4.5.4		Control of zero-setting:			
		separate from that of tare weighing device			
		Semi-automatic zero-setting: functions only			
		in stable equilibrium and			
		if it cancels any previous tare operation			

4.5.5	A.4.2.2	Zero-indicating device (digital indication):			
		shows deviation $\leq 0.25 e$			
		not mandatory if auxiliary indicating device or rate of zero-tracking $\geq 0.25 d/s$			
4.5.6		Automatic zero-setting:			
		operates only when equilibrium stable and indication has remained stable below zero at least 5 seconds			
4.5.7		Zero-tracking:			
		operates only when indication at zero or at negative net value equivalent to gross zero and equilibrium stable			
		corrections $\leq 0.5 d/s$			
		when operates after tare, the overall effect may be 4 % of Max			
Tare devices			Existing	Non-existent	
		Tare weighing	<input type="checkbox"/>	<input type="checkbox"/>	
		Tare balancing	<input type="checkbox"/>	<input type="checkbox"/>	
		Combined zero-setting and tare balancing	<input type="checkbox"/>	<input type="checkbox"/>	
		Tare indicating	<input type="checkbox"/>	<input type="checkbox"/>	
		Type:			
		Additive	<input type="checkbox"/>	Subtractive	<input type="checkbox"/>
4.6.1		4.1 through 4.4 apply			
4.6.2		Tare weighing device:			
		$d_T = d$			
4.6.3	A.4.6.2	Accuracy:			
		better than $\pm 0.25 e$ (electronic instruments and instruments with analogue indication), $e = e_1$ for multi-interval better than $\pm 0.5 d$ (mechanical instruments with digital indication and instruments with auxiliary indicating device)			
4.6.4		Operation range:			
		prevention of operation at or below its zero effect	at		
		prevention of operation above its maximum indicated effect	below		
4.6.5		Visibility of operation:			
		operation indicated			
		net with sign "NET", "Net", "net" or complete word (digital indication)			
		NET disappears if gross displayed temporarily tare value or letter "T" (mechanical adding tare)			
4.6.6		Subtracting tare:			
		prevention of use above Max or indication that capacity is reached			
4.6.7		Multiple range:			
		operation effective in greater weighing ranges if switching when loaded possible			
4.6.8		Semi-automatic or automatic tare:			
		operation only in stable equilibrium			

4.6.9	Combined zero/tare:		
	accuracy (4.5.2)		
	zero indicating device (4.5.5)		
	zero-tracking (4.5.7)		
4.6.10	Consecutive tare operations:		
	indicated or printed tare weight values clearly designated (if tare devices operative at the same time)		
4.6.11	Printing net or gross:		
	without designation		
	designation: by G or B (gross)		
	by N (only net printed)		
	designation of net and tare by N and T (if net printed with gross and/or tare)		
	instead of G, B, N and T, complete words		
	printing separately net and tare with identification (different tare devices)		
Preset tare			Existent <input type="checkbox"/> Non-existent <input type="checkbox"/>
4.7.1	$d_T = d$ or automatically rounded to d		
	transferred from one range to another one with larger e_i , shall be rounded to the latter (multiple range)		
	tare value $\leq Max_i$ for the same net weight value (multi-interval) and calculated net value rounded to the scale interval for the same net weight value		
4.7.2	4.6.10 applies		
	cannot be modified/cancelled if tare operated after the preset tare is still in use		
	operates automatically if clearly identified with load		
4.7.3	4.6.5 applies		
	possibility to indicate preset tare		
	if calculated net printed then preset tare value is printed as well		
	4.6.11 applies		
Locking devices			Existent <input type="checkbox"/> Non-existent <input type="checkbox"/>
4.8.1	Positions:		
	only two stable positions		
4.8.2	weighing only in "weigh" position		
	positions clearly shown		
Multiple ranges			Existent <input type="checkbox"/> Non-existent <input type="checkbox"/>
4.10	Weighing ranges:		
	range in operation clearly indicated		
	selection from smaller to greater range possible at any load (manual)		
	selection from smaller to the following greater range (automatic) possible only for load $\geq Max_i$ of smaller range		
	selection from a greater to a smaller range only when no load (manual)*		
	selection only from a greater to the smallest range only when no load (automatic)*		
when no load tare cancelled and zero to $\pm 0.25 e_i$ both automatically (manual and/or automatic selection)(applicable only to the two above requirements marked *)			

Selection between load receptors, transmitting and measuring devices			Existent <input type="checkbox"/>	Non-existent <input type="checkbox"/>
4.11		compensation for unequal no-load effect		
4.11.1		zero-setting without ambiguity and in accordance with 4.5		
4.11.2		weighing impossible while selection		
4.11.3				
4.11.4		combinations easy identifiable		
Load cells			Existent <input type="checkbox"/>	Non-existent <input type="checkbox"/>
4.12.1		$E_{max} \geq Q \cdot Max \cdot R/N$		
4.12.2		$n_{LC} \geq n$		
		$n_{LC} \geq n_i$ (multiple range/multi-interval)		
	multi-interval	$DR \leq 0.5 e_1 R/N$ or $n_{LC} \geq Max_i/e_1$ if DR unknown		
	multiple range	$DR \leq e_1 R/N$ or $n_{LC} \geq 0.4 Max_i/e_1$ if DR unknown		
4.12.3		$v_{min} \leq e R/\sqrt{N}$ ($e = e_1$ multiple range/multi-interval)		
"Plus and "minus" comparator instruments				
4.13.1		Distinction of zones:		
		by "+" and "-" signs (analogue indication)		
		by inscription (digital indication)		
4.13.2		Scale:		
		with at least one scale division $d = e$ on either side of zero and		
		value of $d = e$ shown at either end		
Mechanical counting instruments with unit weigh receptor				
4.18.1		Scale:		
		with at least one scale division $d = e$ on either side of zero and		
		value of $d = e$ shown on the scale		
4.18.2		Counting ratio:		
		shown clearly above each counting platform or		
		each counting scale mark		

17.2 Instruments for direct sales to the public and price computing and labelling instruments

Requirement	Testing procedures		PASSED	FAILED	Remarks
Miscellaneous checkings (direct sales to the public)					
4.5.4		Combined semi-automatic zero-setting device and semi-automatic tare-balancing device operated by the same key:			
		not allowed			
4.8.1		"Preweigh" position:			
		not allowed			
4.14.10		Counting ratio:			
		1/10 or 1/100 (mechanical counting instrument)			
4.14.5		Impossibility of weighing during:			
		locking operation			
		adding or subtracting weights			
4.14.7		Auxiliary and extended indicating device:			
		not allowed			
4.14.9		When significant fault has been detected (electronic instruments):			
		visible or audible alarm provided for customer and (1)			
		data transmission prevented (1)			
		until user takes action or cause disappears			
Indication device (direct sales to the public)					
4.14.6		Primary indications (4.14.1) to both vendor and customer:			
		Double display: Existent <input type="checkbox"/> Non-existent <input type="checkbox"/>			
		weight			
		information about correct zero position			
		tare operation			
		preset tare operation			
		Figures of primary indications:			
		same dimension and			
		high ≥ 9.5 mm (digital devices)			
		Instruments to be used with weights:			
		value of weights possible to distinguish			
Zero-setting device (direct sales to the public)					
4.14.2		Non-automatic zero-setting:			
		with tool only			

(1) Checked by verifying the compliance with documents [] or by simulating faults []; this check does not duplicate the disturbance tests 12.1 through 12.4.

Tare device (direct sales to the public)			
4.14.3		Tare on mechanical instrument with weights receptor:	
		not allowed	
		Public is allowed to see whether tare:	
		is in use	
		setting is altered	
		only one tare may be in operation at any given time	
		Recalling gross value:	
		with tare or preset tare in operation prohibited	
4.14.3.1		Non-automatic tare:	
		displacement of 5 mm at most e	
4.14.3.2		Semi-automatic tare:	
		reduction of value of tare not permitted and	
		cancelling of tare effect only if no load on the receptor	
		One of the following conditions fulfilled:	
		tare value indicated permanently in a separate display	
		indicated with sign "-" when no load on the receptor	
		effect cancelled automatically when unloading after net weighing	
4.14.3.3		Automatic tare:	
		not allowed	
4.14.4		Preset tare:	
		indicated on separate display clearly differentiated from weight display	
		reduction of tare value not permitted and	
		cancelling of tare effect only if no load on the receptor	
		impossible to operate if tare device in operation	
		cancelled at the same time as PLU if associated with PLU	
Price computing instruments and price scales (direct sales to the public)			
4.15.1		Visible to both vendor and customer (4.14.6):	
		unit price	
		price to pay	
		if applicable number, unit price and price to pay for non-weighed articles, price totals	
4.15.2 4.2 4.3.1-4.3.3		Price scales:	
		4.2 and 4.3.1 through 4.3.3 apply to unit price and price to pay scales	
		error of price scale $*W \cdot U) P* \leq e \cdot U$	
4.15.3		Price computing:	
		multiplication of weight and unit price as indicated	
		rounding to nearest interval of price to pay	
		unit price: Price/(100 g or kg)	
		Indications of weights, unit price and price to pay visible:	
		for at least 1 s after stable weight indication after any introduction of unit price and while load on load receptor	
		freezing for ≤ 3 s and not possible to introduce or change unit price (if indication has been stable before and would otherwise be zero)	
		printing weight, unit price and price to pay	

		Stored in memory:			
		before printing			
		same data not to be printed twice for customer			
4.15.4		Additional functions for trade and management:			
		if all transactions are printed for customer and shall not lead to confusion			
4.15.4.1		Prices-to-pay (positive or negative) of non-weighed articles:			
		weight indication zero or weighing mode inoperative			
		prices shall be shown on price-to-pay display			
		Prices for more than one equal articles:			
		number of articles shown on weight or supplementary display and without being taking for a weight and article price shown on unit price or supplementary display			
4.15.4.2		Totalization of transactions on one or several tickets:			
		price total indicated on price-to-pay display and printed accompanied by a special word or symbol and reference to commodities whose prices are totalized if a separate ticket is issued for total			
		all prices-to-pay shall be printed and price total shall be the algebraic sum of these prices			
		Totalization of transactions from linked instruments:			
		price-to-pay scale intervals of all connected instruments identical			
4.15.4.3		Instrument used by several vendors or to serve more than one customer at the same time:			
		connection between transactions and vendor or customer identified			
4.15.4.4		Cancelling previous transactions:			
		price-to-pay cancelled shall be printed with comment (transaction already printed)			
		transaction clearly differentiated from normal transactions (transaction displayed to customer)			
4.15.4.5		Printing additional information:			
		clearly correlated to transaction and does not interfere with assignment of weight value to unit symbol			
4.15.5		Self-service instruments:			
		designation of product			
Price labelling instruments					
4.17		Display:			
		for weight possibly to verify values of unit price and preset tare during the use of the instrument			
		Printing:			
		prevention of printing below Min			
		labels with fixed values of weight, unit price and price-to-pay allowed provided weighing mode made inoperative			

17.3 Electronic weighing instruments

Requirement	Testing procedures		PASSED	FAILED	Remarks
Disturbances					
5.1.1		not confusing with other messages that appear in the display			
5.2		Acting upon significant faults in case 5.1.1, b):			
		instrument made automatically inoperative (1), or			
		visual or audible indication until user takes action or fault disappears (1)			
Display check					
5.3.1		Upon switch-on:			
		signs of indication are active and non-active long enough to be checked by operator			
External equipment					
5.3.6		Interface shall not allow:			
		- functions and measuring data to be inadmissibly influenced by peripheral devices or other connected instrument or disturbance			
5.3.6.1		- displaying data which could be mistaken for weighing result			
		- falsifying weighing results (displayed, processed, stored)			
		- changing adjustment factor or adjusting the instrument (except authorized cases)			
		- falsifying displayed primary indications (direct sales)			
5.3.6.2		need not be secured if functions in 5.3.6.1 cannot be performed or initiated			
5.3.6.3		shall transmit data so that peripheral device can meet requirements			
5.3.6		Functions performed or initiated through the interface meet relevant requirements of clause 4			
5.3.7		Battery operated instrument: if voltage below manufacturer's specified value			
		continues to function correctly or			
		indicates no weight			

(1) Checked by verifying the compliance with documents [] or by simulating faults []; this check does not duplicate the disturbance tests 12.1 through 12.4.