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

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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.

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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.

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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 = n^{th} 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
when the instrument has passed the test:	X	
when the instrument has failed the test:		X
when the test is not applicable:		

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 (I) 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 = ☐

e_1 = ☐ Max_1 = ☐ d_1 = ☐ n_1 = ☐
e_2 = ☐ Max_2 = ☐ d_2 = ☐ n_2 = ☐
e_3 = ☐ Max_3 = ☐ d_3 = ☐ n_3 = ☐

T = + ☐ T =) ☐

U_n = ☐ V U_{min} = ☐ V U_{max} = ☐ V f = ☐ Hz Battery, U = ☐ V

Zero-setting device:

☐ Nonautomatic
☐ Semi-automatic
☐ Automatic zero-setting
☐ Initial zero-setting
☐ zero-tracking

Tare device:

☐ Tare balancing
☐ Tare weighing
☐ Preset tare device
☐ Subtractive tare
☐ Additive tare

☐ Combined zero/tare device

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.

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) ΔL) 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:

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) ΔL

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 (IIII))
" " " " " 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)

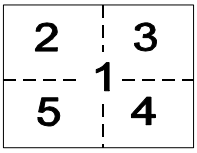
3.1 Eccentricity using weights (A.4.7.1, 2 and 3)

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) ΔL) 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) ΔL) 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) I_1

Check if I_2) I_1 = d

☐ Passed ☐ Failed

Remarks:

4.1.2Analogue 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) I_1

Check if I_2) I_1 ≥ 0.7 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) ΔL

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

mpe ☐ 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

$P = I + 1/2e$) ΔL

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

Change of zero indication

$*\Delta P* =$ ☐

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) ΔL

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 *ΔP* ≤ 0.5 e during the first 30 min and if the variation of *ΔP* between 15 min and 30 min ≤ 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: *ΔP* ≤ 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 IIII)

☐ Tilting to the limiting value of level indicator (class I, II, III, and IIII, 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^o is the indication P_v corrected for the deviation from zero the instrument had prior to loading.

Load L	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 $*P_1^o\ ) P_{v\ max}^{o*}$
Unloaded (*)											
											(≤ 2e)
$P_v \rightarrow$											
Loaded										2e =	
											(≤ mpe)
$P_v \rightarrow$											
$P_v^o \rightarrow$											
											(≤ mpe)
$P_v \rightarrow$											
$P_v^o \rightarrow$											
											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))

$E = I + 1/2\ e\ )\ \Delta L\ )\ L$
$E_c = E\ )\ E_0$ 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:

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) ΔL) 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_o	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_o* ≤ 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	Significant fault (>e) 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	Result		
	L ↓ ground	N ↓ ground	PE ↓ ground		Indication I	Significant fault (>e) No	Yes (remarks)
	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	Yes (remarks)
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			Result		
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval(s)	Indication I	Significant fault (>e) No	Yes (remarks)
	without disturbance					
	2					
	4					
	6					

Vertical coupling plane

Small test load	Discharges			Result		
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval(s)	Indication I	Significant fault (>e) 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	Significant fault 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) ΔL) 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

$E = I + 1/2\ e\ ) \Delta L\ ) L$
$E_c = E\ ) E_0$ 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:

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

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

	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 $(E_L\ ) E_0)$ = ☐

$(E_L\ ) E_0)_{max}\ ) (E_L\ ) E_0)_{min}$ = ☐

0.1 e = ☐

If $*(E_L\ ) E_O)_{max}\ ) (E_L\ ) E_O)_{min} * \leq 0.1$ 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:

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

	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) E_0) = [ ]

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:

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

	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) E_0) =

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:

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

	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) E_0) =

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:

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

	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) E_0) = ☐

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:

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

	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) E_0) = ☐

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:

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

	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) E_0) =

Remarks:

Measurement N° :

Date: .....
Observer: .....
Location: .....

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

Conditions of the measurement:

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

	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) E_0) =

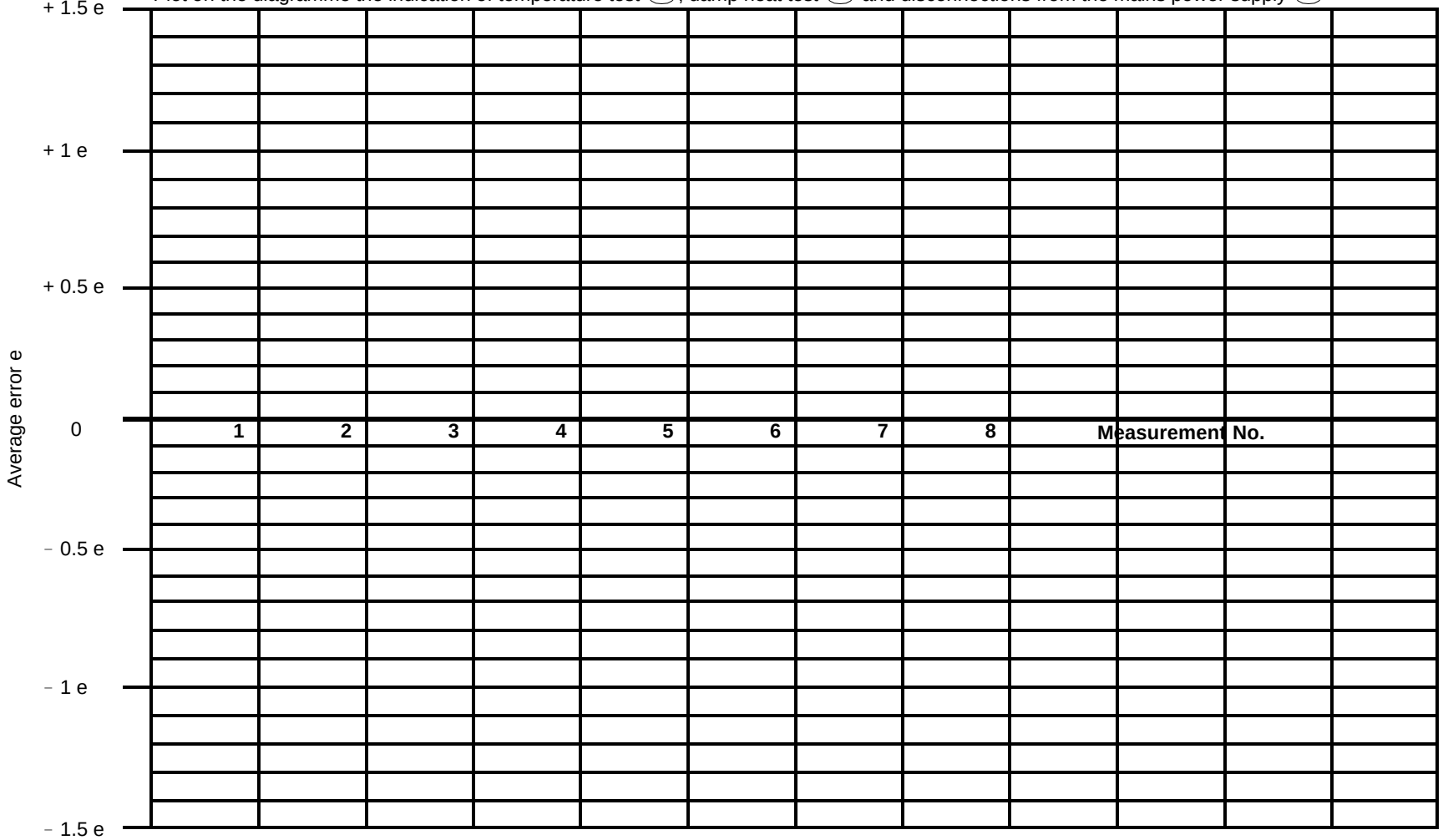
Remarks:

14 SPAN STABILITY (B.4)

Application No: .....

Pattern designation: .....

Plot on the diagramme the indication of temperature test (T), damp heat test (D) and disconnections from the mains power supply (P)



Maximum allowable variation:

☐ Passed ☐ Failed

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: (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(*)

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

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	**A.3**	**Compulsory in all cases:**			
		manufacturer's mark or name			
		accuracy class			
(+ 3.3.1)		maximum capacity, Max, Max_1, Max_2,...			
		minimum capacity, Min			
(+ 3.3.1)		verification scale interval, e, e_1, e_2,...			
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	**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:			
3.2		special applications clearly marked (weighings ranges in Classes (I) and (II) or (II) and (III))			
4.16		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 ≥ 200 mm²			
		for self-adhesive type, Ø ≥ 25 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 ☐ Non-existent ☐			
		external influence impossible after sealing			
4.1.2.6		**Gravity compensation:** Existent ☐ Non-existent ☐			
		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 ≤ 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			
		same scale interval for all indicating devices, printing devices and tare weighing devices			
4.2.2.2		**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			
		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:** Existent ☐ Non-existent ☐			
		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			
		Analogue indication:			
4.3.1		thickness and length of scale marks			
4.3.2		scale spacing			
4.3.3		limit of movement below zero and above capacity of self-indication			
4.3.4		damping of oscillations of indicating component			
4.4.1		**Changing of digital indication:**			
		after change in load, previous indication not longer than 1 s			
4.4.3		**Extended digital indication:** Existent ☐ Non-existent ☐			
		not allowed when there is a differentiated scale division			
		while pressing key or			
		at most, 5 s after manual command			
		prevention of printing			
4.4.4		**Digital indications other than primary indications:** Existent ☐ Non-existent ☐			
		quantities identified by units or symbols or signs thereof			
		weight values (not weighed) shall be clearly identified or			
		display only temporarily on manual command and			
		shall not be printed			
4.4.5		**Digital printing:** Existent ☐ Non-existent ☐			
		clear and permanent			
		figures ≥ 2 mm high			
		name or symbol of units — above column of values			
		name or symbol of units — behind column of values			
		printing impossible when equilibrium not stable			

4.4.6		**Memory storage:** Existent ☐ Non-existent ☐				
		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)** Existent ☐ Non-existent ☐ If existent, type: rider ☐ interpolation ☐ complementary ☐ differentiated scale division ☐				
		only to the right of decimal sign				
3.4.2		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				
		between digital indications and printout: zero				
3.6.4		between two results: ≤ mpe for same load when method of balancing changed (semi-self-indicating)				
Level indicator Existent ☐ Non-existent ☐						
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			Existent	Non-existent		
		Initial zero-setting	☐	☐		
		Semi-automatic zero-setting	☐	☐		
		Nonautomatic zero-setting	☐	☐		
		Zero-tracking	☐	☐		
		Zero-indicating	☐	☐		
4.5.1		**Effect:**				
		shall not alter Max				
	A.4.2.1	**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:** Existent ☐ Non-existent ☐				
		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 ≤ 0.25 e			
		not mandatory if auxiliary indicating device or rate of zero-tracking ≥ 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 ≤ 0.5 d/s			
		when operates after tare, the overall effect may be 4 % of Max			

Tare devices

	Existent	Non-existent
Tare weighing	☐	☐
Tare balancing	☐	☐
Combined zero-setting and tare balancing	☐	☐
Tare indicating	☐	☐

Type:

Additive ☐ Subtractive ☐

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 ± 0.25 e (electronic instruments and instruments with analogue indication), e = e_1 for multi-interval			
		better than ± 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 at or below its zero effect — below			
		prevention of operation above its maximum indicated effect			
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 ☐ Non-existent ☐			
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 ≤ Max_1 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			
		designation of preset tare by PT or complete word			
		Locking devices Existent ☐ Non-existent ☐			
4.8.1		**Positions:**			
		only two stable positions			
		weighing only in "weigh" position			
4.8.2		positions clearly shown			
		Multiple ranges Existent ☐ Non-existent ☐			
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 ≥ 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 ± 0.25 e_1 both automatically (manual and/or automatic selection)(applicable only to the two above requirements marked *)			

Selection between load receptors, transmitting and measuring devices			Existent ☐		Non-existent ☐
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		combinations easy identifiable			
4.11.4					
Load cells			Existent ☐		Non-existent ☐
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			
		multi-interval: $n_{LC} \geq Max_r/e_1$ if DR unknown			
		multiple range: $DR \leq e_1\ R/N$ or			
		multiple range: $n_{LC} \geq 0.4\ Max_r/e_1$ 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 ☐ Non-existent ☐			
		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 · U) P* ≤ e · 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.