ORGANISATION INTERNATIONALE

DE MÉTROLOGIE LÉGALE

INTERNATIONAL RECOMMENDATION

Automatic gravimetric filling instruments
Part 2: Test report format

Doseuses pondérales à fonctionnement automatique
Partie 2: Format du rapport d'essai

OIML R 61-2

Edition 1996 (E)

CONTENTS

FOREWORD

The International Organisation of Legal Metrology (OIML) is a worldwide, intergovernmental organisation whose primary aim is to harmonise the regulations and metrological controls applied by the national metrological services, or related organisations, 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.

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INTRODUCTION

This “test report format” aims at presenting, in a standardized format, the results of the various tests and examinations to which a pattern of an automatic gravimetric filling instrument shall be submitted with a view to its approval.

The test report format consists of two parts, a “checklist” and the “test report format” itself.

The checklist is a summary of the examinations carried out on the instrument. It includes the conclusions of the results of the test performed, and experimental or visual checks based on the requirements of Part 1. The words or condensed sentences aim at reminding the examiner of the requirements in R 61-1 without reproducing them.

The test report is a record of the results of the tests carried out on the instrument. The “test report format” forms have been produced based on the tests detailed in R 61-1.

All metrology services or laboratories evaluating patterns of automatic gravimetric filling instruments according to OIML R 61 or to national or regional regulations based on this OIML Recommendation are strongly advised to use this test report format, 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 multilateral cooperation agreements. In the framework of the *OIML Certificate System for measuring instruments*, use of this test report format 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 the purpose of traceability). For example:

- Verification standards (accuracy, or accuracy class, and No)
- Simulator for testing of modules (name, type, traceability and No)
- Climatic test and static temperature chamber (name, type and No)
- Electrical tests, bursts (name of the instrument, type and No)
- 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 61-2 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. metrological performance tests) 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.

IDENTIFICATION OF THE INSTRUMENT

Application No: .....

Report date: .....

Pattern designation: .....

Manufacturer: .....

Serial No: .....

Manufacturing documentation

(Record as necessary to identify the equipment under test)

System or module name	Drawing number or software reference	Issue level	Serial No
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Simulator documentation

System or module name	Drawing number or software reference	Issue level	Serial No
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Simulator function (summary)

Simulator description and drawings, block diagram, etc. should be attached to the report if available

IDENTIFICATION OF THE INSTRUMENT (continued)

Application No: .....

Report date: .....

Pattern designation: .....

Manufacturer: .....

Description or other information pertaining to identification of the instrument:
(attach photograph here if available)

GENERAL INFORMATION CONCERNING THE PATTERN

Application No: .....

Pattern designation: .....

Manufacturer: .....

Applicant: .....

Instrument category: .....

Testing on:

☐ Complete instrument ☐ Module[1]

Reference accuracy class ☐ Ref( ) Accuracy class ☐ X( )

Minimum capacity ☐ Maximum capacity ☐

T = + ☐ T = ! ☐ d = ☐

U_{nom}[2] = ☐ V U_{min} = ☐ V U_{max} = ☐ V f = ☐ Hz Battery, U = ☐ V

Zero-setting device:

☐ Non-automatic

☐ Semi-automatic

☐ Automatic

☐ Initial zero-setting

Initial zero-setting range ☐ % Temperature range ☐ °C

Printer: ☐ Built in ☐ Connected ☐ Not present but connectable ☐ No connection

---

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

[2] The voltage U_{nom} shall be as defined at IEC 1000-4-11 (1994) section 5.

GENERAL INFORMATION CONCERNING THE PATTERN (continued)

Instrument submitted:	.....	Loadcell:	.....
Identification No:	.....	Manufacturer:	.....
Connected equipment:	.....	Type:	.....
Remarks:		Capacity:	.....
		Number:	.....
Interfaces: (number, nature)	.....	Classification symbol:	.....
Remarks:	see following page		
Date of report:	.....	Evaluation period:	.....
Observer:	.....		

GENERAL INFORMATION CONCERNING THE PATTERN (continued)

Use this space to indicate additional remarks and/or information: other connected equipment, interfaces and load cells, choice of the manufacturer regarding protection against disturbances, etc.

PATTERN EVALUATION CHECKLIST

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

	Passed	Failed
when the instrument has passed the test:	X	
when the instrument has failed the test:		X
when the test is not applicable:	/	/

SUMMARY OF PATTERN EVALUATION

Requirements	Passed	Failed	Remarks
Metrological requirements Part 1 section 2			
Technical requirements Part 1 section 3			
Requirements for electronic instruments Part 1 section 4			
Metrological controls Part 1 section 5			
Test Report			
Overall results			

Use this space to detail remarks from the summary of pattern evaluation.

SUMMARY OF PATTERN EVALUATION (continued)

Use this page to detail remarks from the summary of pattern evaluation.

CHECKLIST

Application No: .....

Pattern designation: .....

References		Automatic gravimetric filling instruments		Enter value	Remarks
Requirement (R 61-1)	Test procedure				
2.2.1	A.5.5	Static test and reference value for accuracy class Maximum value of [error/$mpe_{(1)}$] for influence factor tests:			
2.5.1	A.6.2.1	Static temperatures:	ref.		
		Maximum value of $\frac{E_C}{mpe_{(1)}}$	High		
			Low		
			+ 5 °C		
			ref.		
2.5.1	A.6.2.2	Temperature effect on no-load indication $(mp)z_{(1)} = mpe_{(1)}$ for rated minimum fill) Maximum value of $\frac{)z}{mp)z_{(1)}}$			
4.1.2	A.6.2.3	Damp heat:	ref.		
		Maximum value of $\frac{E_C}{mpe_{(1)}}$	high + 85 % RH		
			ref.		
2.5.2	A.6.2.4	Power voltage variation:	! 15 %		
		Maximum value of $\frac{E_C}{mpe_{(1)}}$	+ 10 %		
2.5.3	A.6.2.5	Tilting: Maximum value of $\frac{E_C}{mpe_{(1)}}$			
		or level indicator enables tilt of 1 % or less		Note in Remarks	
	A.5.5	Maximum value of Error/$mpe_{(1)}$	$[Error/mpe_{(1)}]_{max}$		
5.2.5		Reference accuracy class	Ref(X)		
T.4.2.5 2.4	A.5.5 A.6.1.3.1	Significant fault			

Note: The above portion of the checklist enables the reference value for the accuracy class and the value of the significant fault to be determined. The results column should indicate the maximum value from the report for each test (it is not sufficient just to tick the box).

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
2		METROLOGICAL REQUIREMENTS			
2.1		Accuracy classes	Note in remarks		
2.2		Limits of error			
2.2.1	A.5.5	Static testing only, maximum permissible error for influence factor tests	Note in remarks Ref(x)		
2.2.2		Specified accuracy class X(x) maximum permissible deviation	Note in remarks		
2.3		Maximum permissible preset value error	Note in remarks		
2.4		Maximum permissible error for influence factor tests	Note in remarks		
2.5	A.6.2	Influence factors			
2.5.1	A.6.2.1	Static temperature tests			
	A.6.2.2	Temperature effect on no-load indication			
2.5.2	A.6.2.4	Power supply (power voltage variations)			
2.5.3	A.6.2.5	Tilting			
		Instrument not permanently installed, no level indicator	Note in remarks		
		Instrument not permanently installed with level indicator, can be set to 1 % or less	Note in remarks		
2.6		Units of measurement milligram (mg) gram (g) kilogram (kg) tonne (t)	Note in remarks		
3		TECHNICAL REQUIREMENTS			
3.1	A.1.3	Suitability for use			
		instrument suits method of operation and products for which it is intended			
		robust construction			
3.2		Security of operation			
3.2.1		Effect of accidental breakdown or maladjustment is evident			
3.2.2		Print-out is for information purposes only (except preset values and number of weighings)			
3.2.3		Ancillary devices do not affect correct functioning			
3.2.4		All scale intervals are the same			
3.3		Fill setting			
		scale graduated in units of mass	Note in remarks		
		or, fill setting weights,			
		in accordance with OIML requirements	Note in remarks		
		or, purpose-designed and identified with instrument	Note in remarks		
3.4		Final feed cut-off device:			
		clearly differentiated			
		direction of movement is shown			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
3.5		Feeding device:			
		sufficient and regular flowrate(s)			
		indication of the direction of movement resulting from adjustment			
3.6		Load receptor			
		Load receptor, feed and discharge devices are designed to ensure negligible retention of residual material			
		has facilities for test weights up to max capacity			
		manual discharge is not possible during automatic operation			
3.7	A.5.3	Zero-setting and tare devices			
	A.5.3.1	General, zero and tare functions are:			
		Performed by the same process, or	Note in remarks		
		by separate process	Note in remarks		
		Zero-setting mode Describe mode(s) below			
	A.5.3.2	Zero-setting, the device may be:			
		Manual, or	Note in remarks		
		semi-automatic, or	Note in remarks		
		automatic	Note in remarks		
		Capable of setting to less than or equal to 0.25 of the maximum permissible deviation			
	A.5.3.3	Tare-setting			
		Tare-setting Mode Describe mode(s) below			
		Tare-setting device, may be:			
		Manual, or	Note in remarks		
		semi-automatic, or	Note in remarks		
		automatic	Note in remarks		
		Capable of setting to less than or equal to 0.25 of the maximum permissible deviation			
3.8	A.1.3	Equilibrium mechanism - uses weights:			
		in accordance with OIML requirements	Note in remarks		
		or, purpose designed and identified with instrument	Note in remarks		

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments			Passed	Failed	Remarks
3.9	A.1.3	Security of components and preset controls					
		Function secured	Means of securing				
3.10	A.1.3	Descriptive markings					
3.10.1		Markings shown in full					
		name or identification mark of the manufacturer					
		name or identification mark of the importer					
		serial number and type designation of the instrument					
		temperature range	°C	°C			
		supply voltage		V			
		supply frequency		Hz			
		working fluid pressure		kPa			
		Product(s) designation					
		Average number of loads/fill					
		Maximum fill					
		Rated minimum fill					
		Maximum rate of operation (loads per minute)					
3.10.2		Markings shown in code					
		pattern approval sign					
		reference accuracy class Ref(x)					
		class of accuracy X(x)					
		scale interval					
		maximum capacity					
		minimum capacity					
		maximum additive tare +					
		maximum subtractive tare !					
		Marking shall be such that the alternative classes or operating parameters are clearly associated with the appropriate material designation.					
3.10.3		Presentation of descriptive markings					
		indelible					
		size, shape and clarity enables legibility					
		grouped together in clearly visible place					
		possible to seal the plate bearing the markings					
		If programmable display is used for markings, instrument has:					
		- means for any access to be recorded					
		- markings on plate					
		- type and designation					
		- name or mark of manufacturer					
		- pattern approval number					

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
3.11		Verification marks			
3.11.1		Position			
		the part on which verification marks are located cannot be removed without damaging the marks			
		allows easy application of the mark			
		visible without instrument having to be moved when in service			
3.11.2		Mounting			
		verification mark support ensures conservation of the marks			
		correct construction			
4		REQUIREMENTS FOR ELECTRONIC INSTRUMENTS			
4.1		General requirements			
4.1.1		Rated operating conditions, maximum permissible errors not exceeded			
4.1.2	A.6.2	Influence factors, instrument complies with the requirements of 2.5, and			
	A.6.2.3	Damp heat, steady state			
4.1.3	A.6.3	Disturbances			
	A.6.3.1	Short time power reduction			
	A.6.3.2	Electrical bursts			
	A.6.3.3	Electrostatic discharges			
	A.6.3.4	Electromagnetic susceptibility			
4.1.4		Evaluation for compliance. The pattern complies with specified requirements of 4.1.1, 4.1.2 and 4.1.3 (passes examination and tests specified in Annex A)			
4.2		Functional requirements			
4.2.1		Switch on procedure / indicator test			
4.2.2		Acting upon a significant fault			
		either the instrument is made inoperative automatically, or			
		a visual or audible indication is provided automatically and continues until the user takes action or the fault disappears			
4.2.3	A.5.2	Warm-up time, no indication or transmission of weighing results			
		During first 30 minutes of operation:			
		Zero error complies with specified requirements			
		Span error complies with specified requirements			
4.2.4		Interface			
		Instrument continues to function correctly when interfaces are used			
		Metrological functions are not influenced			
4.2.5		Battery power supply			
		Continues to function correctly whenever the voltage drops below the manufacturer's specified minimum value, or			
		is automatically put out of service			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
4.3		Examination and tests			
4.3.1		General appraisal of design and construction			
4.3.2		Instrument meets the requirements of the following tests:			
	A.6.2.1	Static temperatures			
	A.6.2.2	Temperature effect on no-load indication			
	A.6.2.3	Damp heat, steady state			
	A.6.2.4	Power voltage variation			
	A.6.2.5	Tilting			
	A.6.3.1	Short time power reduction			
	A.6.3.2	Electrical bursts			
	A.6.3.3	Electrostatic discharges			
	A.6.3.4	Electromagnetic susceptibility			
4.3.3	A.7	Span stability			
		Absolute value of the difference between the errors obtained for any two measurements shall not exceed half the maximum permissible error for influence factor tests for a close maximum capacity load			
5		METROLOGICAL CONTROLS			
5.1.2		Material tests			
5.1.2.1		For pattern evaluation:			
	A.8.1	Material used as the test load representative of a product for which the instrument is designed. Test conducted in accordance with procedure at A.8.1			
5.1.2.2		For initial and in-service verifications			
	A.8.2	The in-situ material tests done in accordance with the descriptive markings, under normal conditions for which the instrument is intended. Test conducted in accordance with procedure at A.8.2			
5.2		Pattern approval			
5.2.1	A.1.1	Documentation includes:			
		metrological characteristics			
		set of specifications			
		functional description of the components and devices			
		drawings, diagrams and general software information as applicable, to explain construction and operation			
		documentary evidence of compliance with OIML R 76	Note in remarks		
5.2.2		General requirements			
		Instruments available for test as follows:			
		fully operational at typical site,			
		for laboratory simulation testing,			
		having a load indicator with scale interval < 0.125 mpd			
		Evaluation consists of tests specified at 5.1.2.1 and 5.2.3			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
5.2.3		Pattern evaluation			
		Documents examined and tests carried out to verify that instrument complies with:			
		requirements specified for static tests in clause 2			
		Acceptance of other equivalent test data	Note in remarks		
5.2.3.1		Technical requirements of clause 3			
5.2.3.2		Influence factor tests applied during simulation tests in manner that reveals corruption of weighing results of any weighing process in accordance with:			
		Subclause 2.5 for all instruments			
		Clause 4 for electronic instruments			
5.2.3.3		Apportioning of errors:			
		When parts of instrument are examined separately in process of pattern approval, errors apportioned as detailed at 5.2.3.3	Note in remarks		
5.2.4		Place of testing: Instrument submitted for pattern approval may be tested either:			
		on the premises of metrological authority or			
		place agreed between metrological authority and applicant	Note in remarks		
5.2.5		Certificate of approval and determination of class:			
		certificate shall state the reference value for the accuracy class determined by the static tests and,			
		shall state that the actual class (equal to or greater than the reference value) shall be determined by compliance with the metrological requirements at initial verification			
5.3		Initial verification			
5.3.1		instruments shall be examined for conformity with the approved pattern and tested for compliance with clause 2 (excluding 2.2.1 and 2.5) for intended products and corresponding accuracy classes under normal conditions of use			
		tests shall be carried out: by appropriate metrological authority, in situ, with instrument fully assembled and fixed in position in which it is intended to be used. The installation so designed that automatic weighing operation is the same whether for testing or used for transaction			
5.3.2		Material tests: Shall be done in compliance with 5.1.2			
5.3.3		Conduct of the tests: The appropriate metrological authority:			
		shall conduct the tests in a manner which prevents an unnecessary commitment to resources,			
		may, where appropriate and to avoid duplicating test previously done for pattern evaluation under 5.2.3.1, use the results	Note in remarks		

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
6		TEST METHODS			
6.1		Determination of the mass of individual fills			
		Mass of individual fills is determined using either:			
		6.5.1 (Separate verification method) or	Note in remarks		
		6.5.2 (Integral verification method)	Note in remarks		
6.2		Conduct of material tests			
		(a) Tests shall be carried out on fills using loads at or near: maximum capacity, minimum capacity, With products instrument is intended to be used for.			
		(b) Cumulative weighers shall be tested as above with: Maximum practical number of loads per fill, minimum number of loads per fill, and associated weighers as above with average (or optimum) number of loads per fill.			
		(c) If minimum capacity less than third of maximum capacity, tests shall also be carried out at near centre of load weighing range, preferably at value close to, but not above, 100 g, 300 g, 1000 g, or 1500 g as appropriate			
		(d) All tests conducted with adjustable parameters critical to metrological integrity set to most onerous condition allowed			
6.2.1		Testing effect of a correction device:			
6.2.1.1		Any correction device shall be operated during tests			
6.2.1.2		If not operated during each filling then tests at minimum capacity shall be arranged to include effect of one or more regular operations of correction device, e.g. by including at least three fills before and after operation of the device	Note in remarks		
6.2.1.3		Initial fills after change between maximum and minimum capacities shall be included in test unless there is a clear warning to discard stated number of fills	Note in remarks		
6.3		Number of fills as indicated in Table 2			
6.4		Accuracy of standards is as specified in 6.4			
6.5		Material test methods			
6.5.1		Separate verification method. Use of a separate control instrument	Note in remarks		
6.5.2		Integral verification method			
		Using either an appropriately designed indicating device, or			
		indicating device with standard weights to assess rounding error			
		Total uncertainty not greater than one third of maximum permissible error for the instrument			
6.5.2.1		Interruption of automatic operation, meets the specific requirements of 6.5.2.1			
6.6		Preset value, indicated preset value of the fill noted			
6.7		Mass and average value of the test fill shall:			
		be weighed on a control instrument			
		average value of all fills calculated and noted			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
6.8		Deviation for automatic weighing			
		Deviation used to determine compliance of each fill with the maximum permissible deviation shall be:			
		Difference between the conventional true value of the mass of test fill and average value of all fills in test			
6.9		Preset value error, for automatic weighing			
		The preset value error used to determine compliance with 2.3 shall be difference between average value of the conventional true value of mass of test fills and the preset value for fills			

Use this space to detail remarks from the checklist

Use this page to detail remarks from the checklist (continued)

INFORMATION CONCERNING THE TEST EQUIPMENT USED FOR PATTERN EVALUATION

TEST EQUIPMENT

Application No: .....

Report Date: .....

Pattern Designation: .....

Manufacturer: .....

List all test equipment used for the tests.

Equipment Name	Manufacturer	Type No	Serial No	Used for (Test references)
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

CONFIGURATION FOR TEST

Application No: .....

Report Date: .....

Pattern Designation: .....

Manufacturer: .....

Use this space for additional information relating to equipment configuration, interfaces, data rates, load cells EMC protection options, etc. for the instrument and/or simulator.

EXPLANATORY NOTES

Meaning of symbols:

I	=	Indication
I_n	=	n^{th} indication
L	=	Load
) L	=	Additional load to next changeover point
P	=	I + ½ d !) L = Indication prior to rounding (digital indication)
E	=	I ! L or P ! L = Error
F	=	Mass of fill
F_P	=	Preset value of fill
mpe	=	Maximum permissible error (absolute value)
EUT	=	Equipment under test
$mpe_{(1)}$	=	maximum permissible error for influence factor tests for class X(1)
se	=	preset value error (setting error)
$mpse_{(1)}$	=	maximum permissible preset value error for class X(1)
md	=	maximum deviation of each fill from the average
$mpd_{(1)}$	=	maximum permissible deviation of each fill from the average for class X(1)
$mp)z_{(1)}$	=	maximum permissible zero change per 5 °C for class X(1)

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

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

	At start	At end	
Temp:	20.5	21.1	°C
Rel. h:			%
Date:	96:01:29	96:01:30	yy:mm:dd
Time:	16:00:05	16:30:25	hh:mm:ss

where:
Temp = temperature
Rel. h = relative humidity

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

In the disturbance tests, faults greater than 0.25 mpd 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; an appropriate explanation shall be given in the column “Yes (remarks)”.

Numbers in brackets refer to the corresponding subclauses of R 61-1.

SUMMARY OF TEST REPORT

Application No: .....

Pattern designation: .....

	Test procedure reference	R76-2 reference (if used)	Tests	Completed (date)	Place	Report page
1	A.5.2		Warm-up time			
2	A.5.3		Zero-setting			
3	A.5.3		Tare setting			
4	A.6.2		Influence factors			
4.1	A.6.2.1		Static temperatures			
4.2	A.6.2.2		Temperature effect on no-load indication			
4.3	A.6.2.3		Damp heat, steady state			
4.4	A.6.2.4		Power voltage variation			
4.5	A.6.2.5		Tilting			
5	A.6.3		Disturbances			
5.1	A.6.3.1		Short time power reduction			
5.2	A.6.3.2		Electrical bursts			
5.3	A.6.3.3		Electrostatic discharges			
5.4	A.6.3.4		Electromagnetic susceptibility			
6	A.7		Span stability			
7	A.8.2		Material tests at initial verification			
8	A.8.2.2		Load indicator performance test			

1 WARM-UP TIME (4.2.3, A.5.2)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....

Resolution during test (smaller than d:) .....

Duration of disconnection before test: .....

Automatic zero-setting device is:

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

$E = I + \frac{1}{2} d \pm \Delta L \pm L$

E_0 = error calculated at zero or near zero (unloaded)

E_L = error calculated at load (loaded)

	time (*)	Load	Indication I	Add. load ΔL	Error	$E_L \pm E_0$
Unloaded	0 min				E_{0I}=	
Loaded					E_L=	
Unloaded	5 min				E_0=	
Loaded					E_L=	
Unloaded	15 min				E_0=	
Loaded					E_L=	
Unloaded	30 min				E_0=	
Loaded					E_L=	

(*) Counted from the moment an indication has first appeared.

Initial zero-setting error	E_{0I}	
Maximum value of error unloaded	E_0	
Maximum value of error loaded	$E_L \pm E_0$	

Remarks:

2 ZERO-SETTING (3.7, A.5.3.2)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....

Resolution during test (smaller than d): .....

Accuracy of zero-setting

Zero-setting mode		
) L	E = 0.5 d !) L	E/d

Remarks:

Accuracy of zero-setting

Zero-setting mode		
) L	E = 0.5 d !) L	E/d

Remarks:

Accuracy of zero-setting

Zero-setting mode		
) L	E = 0.5 d !) L	E/d

Remarks:

3 TARE SETTING (3.7, A.5.3.3)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....

Resolution during test (smaller than d): .....

Accuracy of tare setting

Tare setting mode		
Tare load		
) L	E = 0.5 d !) L	E/d

Remarks:

Accuracy of tare setting

Tare setting mode		
Tare load		
) L	E = 0.5 d !) L	E/d

Remarks:

Accuracy of tare setting

Tare setting mode		
Tare load		
) L	E = 0.5 d !) L	E/d

Remarks:

4 INFLUENCE FACTORS (2.5)

4.1 Static temperatures (2.5.1, A.6.2.1)

4.1.1 Static temperature (20 °C)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting is:

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

$E = I + \frac{1}{2} d - L - L$
$E_C = E - E_0$ with E_0 = error calculated at or near zero (*)

Load L	Indication I		Add. load $-L$		Error E		Corrected error E_C		$mpe_{(1)}$	$\frac{E_C}{mpe_{(1)}}$
(*)					(*)					

(**) Use largest value of E_C in each case.

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

4.1.2 Static temperatures (specified high = °C)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting device is:

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

$E = I + \frac{1}{2} d - L - L$
$E_C = E - E_0$ with E_0 = error calculated at or near zero (*)

Load L	Indication I 9 8		Add. load L 9 8		Error E 9 8		Corrected error E_C 9 8		$mpe_{(1)}$	$\frac{E_C}{mpe_{(1)}}$
(*)					(*)					

(**) Use largest value of E_C in each case.

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

4.1.3 Static temperatures (specified low = °C)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting device is:

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

$E = I + \frac{1}{2} d - L - L$
$E_C = E - E_0$ with E_0 = error calculated at or near zero (*)

Load L	Indication I		Add. load L		Error E		Corrected error E_C		$mpe_{(1)}$	$\frac{E_C}{mpe_{(1)}}$
(*)					(*)					

(**) Use largest value of E_C in each case.

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

4.1.3 Static temperatures (5 °C)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting device is:

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

$E = I + \frac{1}{2} d - L - L$
$E_C = E - E_0$ with E_0 = error calculated at or near zero (*)

Load L	Indication I		Add. load L		Error E		Corrected error E_C		$mpe_{(1)}$	$\frac{E_C}{mpe_{(1)}}$
(*)					(*)					

(**) Use largest value of E_C in each case.

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

4.1.4 Static temperatures (20 °C)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting device is:

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

E = I + ½ d !)L ! L

$E_C = E ! E_0$ with E_0 = error calculated at or near zero (*)

Load L	Indication I 9 8		Add. load)L 9 8		Error E 9 8		Corrected error E_C 9 8		$mpe_{(1)}$	$\frac{E_C(((}{mpe_{(1)}}$
(*)					(*)					

(**) Use largest value of E_C in each case.

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

4.2 Temperature effect on no-load indication (A.6.2.2)

Application No: .....

Pattern designation: .....

Date: .....

Observer: .....

Scale interval d: .....

Automatic zero-setting device is:

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

$P = I + \frac{1}{2} d - L$

Report page[3]	Date	Time	Temp (°C)	Zero indication I	Add. load	P	ΔP	Δ Temp	Zero-change per 5 °C Δz	$\frac{\Delta z}{mp}$ $z_{(1)}$

Maximum value of $\frac{\Delta z}{mp}$ $z_{(1)}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Maximum permissible zero change per 5 °C, mp $z_{(1)}$ for the rated minimum fill.

ΔP = difference of P for two consecutive tests at different temperatures

Δ Temp = difference of Temp for two consecutive tests at different temperatures

Remarks:

[3] Give the report page of the relevant weighing test where weighing tests and temperature effect on no-load indication test are conducted together.

4.3 Damp heat, steady state (4.1.3, A.6.2.3)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting device is:

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

$E = I + \frac{1}{2} d - (L - L)$
$E_C = E - E_0$ with E_0 = error calculated at or near zero (*)

Temperature	Load L	Indication I	Add load (L	Error E	Corrected error E_C	$mpe_{(1)}$	$\frac{E_C}{mpe_{(1)}}$
Reference and 50 % RH				(*)			
High and 85 % RH							

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

4.4 Power voltage variation (2.5.2, A.6.2.4)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Automatic zero-setting and zero-tracking device is:

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

Marked nominal voltage U_{nom} or voltage range (U_{min} to U_{max})

☐ V

Test supply voltage ☐ V Test supply frequency ☐ Hz

$E = I + \frac{1}{2} d - L - L$
$E_C = E - E_0$ with E_0 = error calculated at or near zero (*)

$mpe_{(1)}$	

Voltage[4]	U (V)	Load L	Indication I	Add. load L	Error E	Corrected error E_C	$\frac{E_C}{mpe_{(1)}}$
Reference value					(*)		
" - 15 %							
" + 10 %							
Reference value							

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

Remarks:

[4] The reference voltage shall be as defined in IEC 1000-4-11 (1994) section 5.

4.5 Tilting (2.5.3, A.6.2.5)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

☐ Tilting 5 % not required for fixed installation

☐ Tilting 5 % not required, can be adjusted to 1 % or less

Automatic zero-setting device is:

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

Load L	
Maximum permissible error for class X(1) $mpe_{(1)}$	

$E = I + \frac{1}{2} d \pm \Delta L \pm L$
$E_C = E \pm E_0$ with E_0 = error calculated at or near zero (*)

Tilt	Indication I	Add. load ΔL	Error E	Corrected error E_C	$\frac{E_C}{mpe_{(1)}}$
Reference			(*)		
5 % 6					
5 % 7					
5 % 8					
5 % 9					
Reference					

Remarks:

Maximum value of $\frac{E_C}{mpe_{(1)}}$ (largest value in right hand column)	

Note: This value is to be inserted in the checklist

5 DISTURBANCES (4.1.3, A.6.3)

5.1 Short time power reduction (A.6.3.1)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Marked nominal voltage U_{nom} or voltage range (U_{min} to U_{max})

[ ] V

Load	Disturbance				Result		
	Amplitude % of U_{nom}	Duration cycles	Number of disturbances	Repetition interval (s)	Indication I	Significant fault	
						No	Yes (remarks)
	without disturbance						
	0	0.5	10				
	50	1	10				

Note(5)

Remarks:

(5) The reference voltage shall be as defined in IEC 1000-4-11 (1994) section 5.

5.2 Electrical bursts (A.6.3.2)

5.2.1 Power supply lines

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

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

Load	Connection			Polarity	Result		
	L 9 ground	N 9 ground	PE 9 ground		Indication I	Significant fault No	Significant fault Yes (remarks)
	without disturbance						
	X			pos			
				neg			
	without disturbance						
		X		pos			
				neg			
	without disturbance						
			X	pos			
				neg			

Note[6]

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

Remarks:

[6] The reference voltage shall be as defined in IEC 1000-4-11 (1994) section 5.

5.2 Electrical bursts (continued)

5.2.2 I/O circuits and communication lines

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

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

Load	Cable/Interface	Polarity	Result		
			Indication I	Significant fault	
				No	Yes (remarks)
without disturbance					
		pos			
		neg			
without disturbance					
		pos			
		neg			
without disturbance					
		pos			
		neg			
without disturbance					
		pos			
		neg			
without disturbance					
		pos			
		neg			
without disturbance					
		pos			
		neg			

Note[7]

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

Remarks:

[7] The reference voltage shall be as defined in IEC 1000-4-11 (1994) section 5.

5.3 Electrostatic discharges (A.6.3.3)

5.3.1 Direct application

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

☐ Contact discharges ☐ Paint penetration

☐ Air discharges Polarity[8]: ☐ pos ☐ neg

Load	Discharges			Result		
	Test Voltage (kV)	Number of discharges $ 10	Repetition interval (s)	Indication I	Significant fault	
					No	Yes (remarks, test points)
	without disturbance					
	2					
	4					
	6					
	8 (air discharges)					

Remarks:

[8] IEC 1000-4-2 specifies that the test shall be conducted with the most sensitive polarity.

5.3 Electrostatic discharges (continued)

5.3.2 Indirect application (contact discharges only)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Polarity[9]: ☐ pos ☐ neg

Horizontal coupling plane

Load	Discharges			Result		
	Test voltage (kV)	Number of discharges $ 10	Repetition interval (s)	Indication I	Significant fault	
					No	Yes (remarks)
	without disturbance					
	2					
	4					
	6					

Vertical coupling plane

Load	Discharges			Result		
	Test voltage (kV)	Number of discharges $ 10	Repetition interval (s)	Indication I	Significant fault	
					No	Yes (remarks)
	without disturbance					
	2					
	4					
	6					

Remarks:

(9) IEC 1000-4-2 specifies that the test shall be conducted with the most sensitive polarity.

5.3 Electrostatic discharges (continued)

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

a) Direct application

Contact discharges:

Air discharges:

b) Indirect application

5.4 Electromagnetic susceptibility (4.1.3, A.8.4)

Application No: .....
Pattern designation: .....
Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Rate of sweep: ☐

Load: ☐ Material load: ☐

Disturbances				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

Remarks:

5.4 Electromagnetic susceptibility (continued)

Include a description of the set-up of EUT, e.g. by photos or sketches.

Note: If EUT fails, the frequency and field strength at which this occurs must be recorded.

6 SPAN STABILITY (4.3.3, A.7)

Application No: .....

Pattern designation: .....

Scale interval d: .....
(Control indicating device)

Resolution during test
(smaller than d): .....

Automatic zero-setting device is:

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

Test load	

Observer: .....

Location: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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 d = ☐

If $*(E_L\ !\ E_0)_{max}\ !\ (E_L\ !\ E_0)_{min}* \# 0.1$ d, 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:

6 SPAN STABILITY (continued)

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

Measurement No 2:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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:

6 SPAN STABILITY (continued)

Measurement No 3:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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 No 4:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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:

6 SPAN STABILITY (continued)

Measurement No 5:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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 No 6:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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:

6 SPAN STABILITY (continued)

Measurement No 7:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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 No 8:

		At start	At end	
Observer:	Temp:			°C
	Rel. h:			%
Location:	Date:			yy:mm:dd
	Time:			hh:mm:ss

Conditions of the measurement:

$E_0 = I_0 + ½\ d\ !\ )L_0\ !\ L_0$ $E_L = I_L + ½\ d\ !\ )L\ !\ L$

	Indication of zero (I_0)	Add. load ( ) L_0)	E_0	Indication of load (I_L)	Add. load ( ) L)	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) =

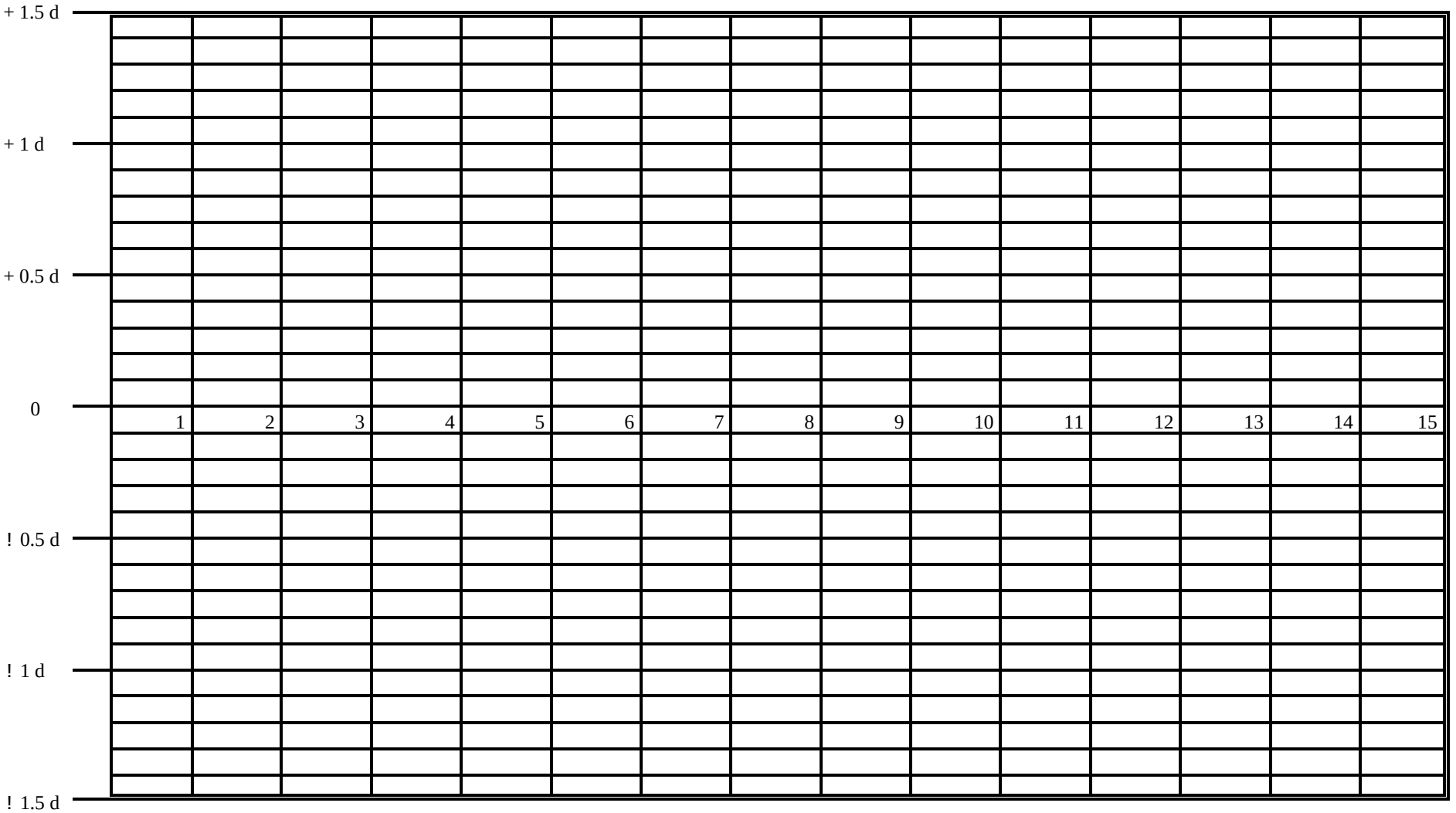
Remarks:

6 Span stability (continued)

Application No: .....

Pattern designation: .....

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



7 MATERIAL TESTING (5.1.2 & 6, A.8)

7.1 Separate verification method (A.8.2.2)

7.1.1 Test 1 (load value close to maximum capacity)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Material .....

Condition of material .....

Nominal load .....

Correction devices	
Type	Settings

Number of loads per fill	

Preset value of fill F_p	

	Indication of control instrument I	Additional load) L	Mass of fill F	Deviation from average
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

	Indication of control instrument I	Additional load) L	Mass of fill F	Deviation from average
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

Results of material test 1 - Load value close to maximum capacity

Preset value of fill F_p	
Average mass of fill $\frac{\Sigma F}{n}$	
Preset value error $se = \frac{\Sigma F}{n} - F_p$	
Maximum permissible preset value error for class X(1) $mpse_{(1)}$	
$\frac{se}{mpse_{(1)}}$	

Maximum deviation from average md	
Maximum permissible deviation from average for class X(1) $mpd_{(1)}$	
$\frac{md}{mpd_{(1)}}$	

7 MATERIAL TESTING (continued)

7.1. Separate verification method (continued)

7.1.2 Test 2 (load value close to minimum capacity)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Material .....

Condition of material .....

Nominal load .....

Correction devices	
Type	Settings

Number of loads per fill	

Preset value of fill F_p	

	Indication of control instrument I	Additional load) L	Mass of fill F	Deviation from average
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

	Indication of control instrument I	Additional load) L	Mass of fill F	Deviation from average
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

Results of material test 2 - Load value close to minimum capacity

Preset value of fill F_P	
Average mass of fill $\frac{\Sigma F}{n}$	
Preset value error $se = \frac{\Sigma F}{n} - F_p$	
Maximum permissible preset value error for class X(1) $mpse_{(1)}$	
$\frac{se}{mpse_{(1)}}$	

Maximum deviation from average md	
Maximum permissible deviation from average for class X(1) $mpd_{(1)}$	
$\frac{md}{mpd_{(1)}}$	

Remarks:

7 MATERIAL TESTING (continued)

7.1 Separate verification method (continued)

7.1.3 Test 3 (mid range critical load value) (6.2 (c))

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Material .....

Condition of material .....

Nominal load .....

Correction devices	
Type	Settings

Number of loads per fill	

Preset value of fill F_p	

	Indication of control instrument I	Additional load) L	Mass of fill F	Deviation from average
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

	Indication of control instrument I	Additional load) L	Mass of fill F	Deviation from average
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

Results of material test 3 - Mid-range critical load value

Preset value of fill F_P	
Average mass of fill $\frac{\Sigma F}{n}$	
Preset value error $se = \frac{\Sigma F}{n} - F_p$	
Maximum permissible preset value error for class X(1) $mpse_{(1)}$	
$\frac{se}{mpse_{(1)}}$	

Maximum deviation from average md	
Maximum permissible deviation from average for class X(1) $mpd_{(1)}$	
$\frac{md}{mpd_{(1)}}$	

Remarks:

7 MATERIAL TESTING (continued)

7.2 Integral verification method (A.8.2.2)

7.2.1 Test 1 (load value close to maximum capacity)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Material .....

Condition of material .....

Nominal load .....

Correction devices	
Type	Settings

Preset value of fill F_p	

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
1	Full					
	Empty					
2	Full					
	Empty					
3	Full					
	Empty					
4	Full					
	Empty					
5	Full					
	Empty					
6	Full					
	Empty					
7	Full					
	Empty					
8	Full					
	Empty					
9	Full					
	Empty					
10	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
11	Full					
	Empty					
12	Full					
	Empty					
13	Full					
	Empty					
14	Full					
	Empty					
15	Full					
	Empty					
16	Full					
	Empty					
17	Full					
	Empty					
18	Full					
	Empty					
19	Full					
	Empty					
20	Full					
	Empty					
21	Full					
	Empty					
22	Full					
	Empty					
23	Full					
	Empty					
24	Full					
	Empty					
25	Full					
	Empty					
26	Full					
	Empty					
27	Full					
	Empty					
28	Full					
	Empty					
29	Full					
	Empty					
30	Full					
	Empty					
31	Full					
	Empty					
32	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
33	Full					
	Empty					
34	Full					
	Empty					
35	Full					
	Empty					
36	Full					
	Empty					
37	Full					
	Empty					
38	Full					
	Empty					
39	Full					
	Empty					
40	Full					
	Empty					
41	Full					
	Empty					
42	Full					
	Empty					
43	Full					
	Empty					
44	Full					
	Empty					
45	Full					
	Empty					
46	Full					
	Empty					
47	Full					
	Empty					
48	Full					
	Empty					
49	Full					
	Empty					
50	Full					
	Empty					
51	Full					
	Empty					
52	Full					
	Empty					
53	Full					
	Empty					
54	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
55	Full					
	Empty					
56	Full					
	Empty					
57	Full					
	Empty					
58	Full					
	Empty					
59	Full					
	Empty					
60	Full					
	Empty					

Results of material test 1 - Load value close to maximum capacity

Preset value of fill F_p	
Average mass of fill $\frac{\Sigma F}{n}$	
Preset value error $se = \frac{\Sigma F}{n} - F_p$	
Maximum permissible preset value error for class X(1) $mpse_{(1)}$	
$\frac{se}{mpse_{(1)}}$	

Maximum deviation from average md	
Maximum permissible deviation from average for class X(1) $mpd_{(1)}$	
$\frac{md}{mpd_{(1)}}$	

Remarks:

7 MATERIAL TESTING (continued)

7.2 Integral verification method (A.8.2.2)

7.2.2 Test 2 (load value close to minimum capacity)

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Material .....

Condition of material .....

Nominal load .....

Correction devices	
Type	Settings

Preset value of fill F_P	

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
1	Full					
	Empty					
2	Full					
	Empty					
3	Full					
	Empty					
4	Full					
	Empty					
5	Full					
	Empty					
6	Full					
	Empty					
7	Full					
	Empty					
8	Full					
	Empty					
9	Full					
	Empty					
10	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
11	Full					
	Empty					
12	Full					
	Empty					
13	Full					
	Empty					
14	Full					
	Empty					
15	Full					
	Empty					
16	Full					
	Empty					
17	Full					
	Empty					
18	Full					
	Empty					
19	Full					
	Empty					
20	Full					
	Empty					
21	Full					
	Empty					
22	Full					
	Empty					
23	Full					
	Empty					
24	Full					
	Empty					
25	Full					
	Empty					
26	Full					
	Empty					
27	Full					
	Empty					
28	Full					
	Empty					
29	Full					
	Empty					
30	Full					
	Empty					
31	Full					
	Empty					
32	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
33	Full					
	Empty					
34	Full					
	Empty					
35	Full					
	Empty					
36	Full					
	Empty					
37	Full					
	Empty					
38	Full					
	Empty					
39	Full					
	Empty					
40	Full					
	Empty					
41	Full					
	Empty					
42	Full					
	Empty					
43	Full					
	Empty					
44	Full					
	Empty					
45	Full					
	Empty					
46	Full					
	Empty					
47	Full					
	Empty					
48	Full					
	Empty					
49	Full					
	Empty					
50	Full					
	Empty					
51	Full					
	Empty					
52	Full					
	Empty					
53	Full					
	Empty					
54	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
55	Full					
	Empty					
56	Full					
	Empty					
57	Full					
	Empty					
58	Full					
	Empty					
59	Full					
	Empty					
60	Full					
	Empty					

Results of material test 2 - Load value close to minimum capacity

Preset value of fill F_P	
Average mass of fill $\frac{\Sigma F}{n}$	
Preset value error $se = \frac{\Sigma F}{n} - F_p$	
Maximum permissible preset value error for class X(1) $mpse_{(1)}$	
$\frac{se}{mpse_{(1)}}$	

Maximum deviation from average md	
Maximum permissible deviation from average for class X(1) $mpd_{(1)}$	
$\frac{md}{mpd_{(1)}}$	

Remarks:

7 MATERIAL TESTING (continued)

7.2 Integral verification method (continued)

7.2.3 Test 3 (Mid-range critical load value) (6.2 (c))

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Material .....

Condition of material .....

Nominal load .....

Correction devices	
Type	Settings

Preset value of fill F_p	

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
1	Full					
	Empty					
2	Full					
	Empty					
3	Full					
	Empty					
4	Full					
	Empty					
5	Full					
	Empty					
6	Full					
	Empty					
7	Full					
	Empty					
8	Full					
	Empty					
9	Full					
	Empty					
10	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
11	Full					
	Empty					
12	Full					
	Empty					
13	Full					
	Empty					
14	Full					
	Empty					
15	Full					
	Empty					
16	Full					
	Empty					
17	Full					
	Empty					
18	Full					
	Empty					
19	Full					
	Empty					
20	Full					
	Empty					
21	Full					
	Empty					
22	Full					
	Empty					
23	Full					
	Empty					
24	Full					
	Empty					
25	Full					
	Empty					
26	Full					
	Empty					
27	Full					
	Empty					
28	Full					
	Empty					
29	Full					
	Empty					
30	Full					
	Empty					
31	Full					
	Empty					
32	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
33	Full					
	Empty					
34	Full					
	Empty					
35	Full					
	Empty					
36	Full					
	Empty					
37	Full					
	Empty					
38	Full					
	Empty					
39	Full					
	Empty					
40	Full					
	Empty					
41	Full					
	Empty					
42	Full					
	Empty					
43	Full					
	Empty					
44	Full					
	Empty					
45	Full					
	Empty					
46	Full					
	Empty					
47	Full					
	Empty					
48	Full					
	Empty					
49	Full					
	Empty					
50	Full					
	Empty					
51	Full					
	Empty					
52	Full					
	Empty					
53	Full					
	Empty					
54	Full					
	Empty					

		Indication of control instrument I	Add. load) L	Mass of load L	Mass of fill F	Deviation from average
55	Full					
	Empty					
56	Full					
	Empty					
57	Full					
	Empty					
58	Full					
	Empty					
59	Full					
	Empty					
60	Full					
	Empty					

Results of material test 3 - Mid-range critical load value

Preset value of fill F_P	
Average mass of fill $\frac{\Sigma F}{n}$	
Preset value error $se = \frac{\Sigma F}{n} - F_p$	
Maximum permissible preset value error for class X(1) $mpse_{(1)}$	
$\frac{se}{mpse_{(1)}}$	

Maximum deviation from average md	
Maximum permissible deviation from average for class X(1) $mpd_{(1)}$	
$\frac{md}{mpd_{(1)}}$	

Remarks:

8 LOAD INDICATOR PERFORMANCE (6.5.2, A.8.2.2)

This form may be used to record static weighing performance of the load indicator if necessary for the integral verification method for material tests.

Application No: .....

Pattern designation: .....

Observer: .....

	At start	At end	
Temp:			°C
Rel. h:			%
Date:			yy:mm:dd
Time:			hh:mm:ss

Scale interval d: .....
(Control indicating device)

Resolution during test .....
(smaller than d)

Automatic zero-setting is:

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

$E = I + \frac{1}{2} d - (L - L)$

Load L	Indication I		Add. load (L		Error E	
	↗	↘	↗	↘	↗	↘
(*)					(*)	

(*) At or near zero

Remarks