WELMEC 2.2
Issue 3

WELMEC

European cooperation in legal metrology

Guide for Testing Point of Sale (POS) Devices
(Non-Automatic Weighing Instruments)

May 2007

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European cooperation in legal metrology

WELMEC is a co-operation between the legal metrology services of the Member States of the European Union and EFTA. This document is one of a number of Guides published by WELMEC to provide guidance to manufacturers of measuring instruments and to notified bodies responsible for conformity assessment of their products. The Guides are purely advisory and do not themselves impose any restrictions or additional technical requirements beyond those contained in relevant EC Directives. Alternative approaches may be acceptable, but the guidance provided in this document represents the considered view of WELMEC as to the best practice to be followed.

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Contents

1 Introduction

1.1 Background

The previous guide WELMEC 2.2 issue 2 has been used for many years, and experience has shown that there were practical problems in the use of the guide in the field. That experience, and comments from seven different countries involved in the WG 2 work, has been the basis for this new version of the guide.

Reference to preliminary note in Annex I of Directive 90/384/EEC.

1.2 General considerations

The European Standard on non-automatic weighing instruments EN45501 contains the metrological and technical requirements for non-automatic weighing instruments subject to legal metrological control in order to provide presumption of conformity to the essential requirements of EC Directive 90/384/EEC. The requirements of this European Standard apply to all devices performing the relevant functions, whether integrated in an instrument or manufactured as a separate unit (see EN45501 point 2.4). Therefore a POS as a price-calculating device, is subject to the relevant requirements of EN45501. In this guide, number references in brackets refer to corresponding points in the European Standard EN45501:1992/AC 1993.

Subject to agreement with the notified body, the manufacturer may define and submit modules to be examined separately. This is particularly relevant in the following cases (EN45501 point 8.1):

- testing of the instrument as a whole is difficult or impossible
- the module is manufactured and/or placed on the market as a separate unit to be incorporated in a complete instrument
- the applicant wants to have a variety of modules included in the approved pattern. (EN45501 point 8.1.)

A problem with the testing of modules is that the Standard – with the exception of load cells – does not describe the relevant requirements and tests to be applied to these modules or devices, or how the outcome of the tests is certified.

This guide fills this gap as far as POS devices are concerned.

1.3 Scope

This guide specifies the requirements for electronic Point Of Sale (POS) devices connected to a non-automatic weighing instrument (NAWI) intended to be used for direct sales to the public via a digital protective interface on the NAWI (Reference to preliminary note in Annex I of Directive 90/384/EEC).

This guide follows the principles established in the modular guide and gives further details concerning POS.

POS devices, both free programmable and not free programmable, are included.

This guide does not specify software requirements, which are covered separately by WELMEC 2.3.

The principles of the full requirements for the NAWI and the special conditions that have to be included in the type approval certificate (TAC) for the NAWI are specified.

A POS device is a separate module according to the modular guide (WELMEC 2.5) Section 2.1, connected to a NAWI, that receives transaction data and together with data not derived from the weighing instrument presents transaction information to the customer.

The following types of POS device are covered by this guide: (see Annex 6)

- Price-computing POS devices which receive only the weight data from the NAWI and perform the price calculation.
- Non-price-computing POS devices which receive the weight, unit price and price to pay data from the NAWI.
- Non-price-computing POS devices that transfer PLU values to the price-computing NAWI and receive the weight, unit price and price to pay data back from the NAWI.

Note: POS devices need not repeat all three primary indications on the display, provided that these three indications are displayed to both the customer and the vendor (4.14.6 Visibility).

The guide does not include POS devices

- which could perform zero setting and tare operations, except preset tare functions according to Annex 5. However, preset tare operations and zero setting operations may be released by the POS device provided the NAWI is designed to perform in accordance with EN45501.

- which are the only source of display of all the primary indications of a weighing instrument. These POS devices may be regarded as an indicator and should be tested accordingly.

This guide does not apply to printers which just repeat the results, as these are considered to be peripherals. However the printouts from the POS are a part of the examination.

2 Modular Approach

There two ways of handling POS devices:

1. All references and tests and complete description of a specific type of POS are included in the TAC of a weighing instrument, or

2. The “open” modular approach used to allow the possibility of connecting a POS with a TC to a weighing instrument having a TAC with a general statement concerning the connection of any POS with a TC.

When the “open” modular approach is used, the following requirements are valid for the connection of a POS to a NAWI.

A POS device may be connected to a NAWI which meets the following requirements:

1 The connection is possible only with NAWIs intended for direct sales to the public.
2 The connection is possible only through the NAWI’s protected interfaces (5.3.6.1).
3 The NAWI shall transmit data relating to primary indications only in such a manner that the POS can meet the requirements (5.3.6.3).
4 The connection to the POS shall not allow the metrological functions of the NAWI to be inadmissibly influenced by the POS (5.3.6).
5 The connection of the POS shall not lead to an instrument having other essential characteristics (e.g. metrological) than those specified in the TAC for the instrument.
6 Examination: of NAWI: compatibility of preset tare coming from the POS and preset tare coming from the instrument and tare device of the instrument

Note: - 2 to 5 above to be declared by the manufacturer.

2.1 Wording in the type approval certificate of the NAWI

The manufacturer of the NAWI, in the application for type approval, must request the possibility of connecting any POS having a Test Certificate.

A POS may be connected to the instrument under the following conditions which must be stated in the TAC:

- The POS has a Test Certificate issued by a Notified Body appointed to certify instruments according to paragraph 1 of Annex II of the Directive (90/384/EEC)

- If the POS has a preset tare function it shall carry out this function autonomously and this function shall be in conformity with the standard (only needed if the instrument has no preset tare function).

- The connection shall be made in such a way that the weight indication, the unit price and price-to-pay indications are positioned adjacent to each other.

Note: The question of the communications protocol is in praxis solved by using standardised protocols and is checked at the installation.

2.2 Conformity assessment procedure before putting into use

A POS alone cannot be declared in conformity to the NAWI directive, even if it has a test certificate.

The complete instrument (Scale and POS) shall be submitted to a conformity assessment procedure.

There shall be a declaration of conformity for the complete instrument (Scale + POS) if the combination is put on the market at the same time.

In principle, the manufacturer identified on the TAC is responsible for the declaration of conformity covering scale + POS but he can deliver the declaration of conformity concerning the scale as a stand-alone instrument. The manufacturer of the POS or the owner of the complete system shall ensure that there is a declaration of conformity for the complete system i.e. scale + POS.

There must be a declaration of conformity for the complete system. It is a legal obligation that any modifications to the system must be covered by a proper declaration of conformity.

Note : The manufacturer could include a note in the operation manual to cover the above two paragraphs.

To benefit from the open modular approach developed in this WELMEC guide, one condition is that at the stage of EC verification or EC declaration of conformity a form (see an example in Annex 5) is completed.

Unless an adjustment to take gravity into account is performed before putting the NAWI into service, there is no need for accuracy tests when the complete instrument is submitted to the 2nd stage, but only examinations and tests as described in 6.2 and 6.3.

After the second stage, the party involved (Notified Body for EC verification or manufacturer by Quality Assurance) shall make a declaration about the examinations and tests performed (see example in Annex 5).

3 Certification

There shall be a written application from the manufacturer of the POS to receive a Test Certificate for the POS. The application shall contain the following:

3.1 A written declaration including

- Manufacturers name and address, and also the authorised representative if applicable.
- That the standard EN45501:1992/AC 1993 on NAWI has been adopted, including a reference to any of the deviations referred to in Section 4.3.
- That the POS device cannot be disturbed or fraudulently manipulated via the peripheral devices interface (5.3.6).

3.2 Documentation

Further details in Annex 1.

Documentation shall include the following:

1. General description of type, and explanations necessary to understand the functioning of the POS device.
2. List of descriptions and characteristic data of all devices incorporated in the POS device.
3. Information concerning special cases.

4 Specification of the type of NAWI to be connected during the examinations, accompanied with reference of several TAC of such instruments.

4 Examination

4.1 Procedures for Test Certificates (TC)

During testing, the POS software should be executed on a computer platform which conforms to CE regulations and shall be connected, through a protective interface, to a non-automatic weighing instrument which satisfies the essential requirements of Directive 90/384/EEC for instruments intended for direct sales to the public or to such a non-automatic weighing instrument which is under EC type approval evaluation.

Note: Consideration must be given to the type of NAWI used during examination, to ensure that all functionality is catered for. For example, price computing, tare and preset tares, price display and price rounding.

4.2 Technical requirements (according to EN45501)

The POS device shall comply with the following technical requirements, where applicable, which are numbered according to EN45501. Further information and help can be obtained from the checklist in Annex 2.

3.6.3	Multiple indicating devices
4.1.1.1	Suitability for application
4.1.1.2	Suitability for use
4.1.2.1	Fraudulent use
4.1.2.2	Accidental breakdown and maladjustment
4.1.2.3	Controls
4.1.2.4	Securing of components and pre-set controls
4.2.1	Quality of reading
4.2.2.1	Weighing results
4.2.2.2	A digital indication
4.4.4	Multiple use of indicating devices
4.4.5	Printing device
4.6.5	Visibility of operation
4.6.11	Printing of weighing results
4.6.10	Consecutive tare operations
4.7.1	Scale interval
4.7.2	Modes of operation
4.7.3	Indication of operation
4.14.3.2	Semi-automatic tare device, first paragraph
4.14.4	Pre-set tare device
4.14.6	Visibility
4.14.9	Significant fault
4.15.1	Primary indications
4.15.3	Price computing instruments
4.15.4	Special applications of a price computing instrument
4.15.4.1	Non-weighed articles
4.15.4.2	Totalisation
4.15.4.3	Multi-vendor operation
4.15.4.4	Cancellation
4.15.4.5	Additional information
4.15.5	Self-service instrument
5.2	Acting upon significant fault[**]
5.3.1	Upon switch-on
5.3.4	Significant fault (see 3.6.3 above)
5.3.6	Interface (5.3.6.1-3)

[**] Any error message caused by a significant fault of the POS device shall be indicated by the POS device itself.

Notes

- If the POS has a preset tare function it shall carry out this function autonomously and this function shall be in conformity with the standard (EN45501).
- There may be a common display (see picture no 4 in Annex 4) for both the weighing instrument presenting the primary indications and the POS (see example 4). If during normal operation the zero indication of the weighing instrument is not visible, then software which ensures the correct zero is necessary. If the zero deviates in either a positive or negative direction, this software instructs the operator to set the instrument to zero.

  As a result of the common display, the weighing instrument does not present the primary indications permanently. Therefore it is necessary to be able to re-call this data afterwards at the push of a button. For verification the weighing results need to be shown permanently.

  In this case of a common display for both the weighing instrument and the POS, a reference to the specific POS be used has to be made in the type-approval certificate of the weighing instrument.

- Compatibility with tare or preset tare of NAWI shall be checked

4.3 Allowed deviations from EN 45501

The following deviations from the standard have been accepted:

1 The height of the numerical figures need not be the same for the customer's and vendor's display provided that the essential requirements are fulfilled (all primary indications are displayed clearly and simultaneously to both the vendor and the customer; see paragraph 1 of 4.14.6).
2. The height of the numerical figure of the vendor's display need not be ≥ 9,5 mm if the data is clearly readable by the vendor in their normal operating position.
3. Notwithstanding the 5th paragraph of 4.15.3 the unit price (UP) and price to pay (PP) may remain visible until the next operation is performed, where only one of these values (UP or PP) are presented by the POS display. Both UP and PP shall be displayed in the appropriate currency unit.
4. Point 5.3.1 is not applicable to dedicated non-segmental displays and POS displays which repeat each of the three primary indications displayed by the NAWI.

If these are accepted by the Notified Body the TC should indicate what the deviations are and the solutions adopted in order to meet the essential requirements of EC Directive 90/384/EEC on NAWIs.

Note: A POS device is allowed to print results below minimum capacity (only price labelling instruments have a restriction)

4.4 Descriptive markings
(if applicable)

- on POS (not relevant for free programmable POS)

manufacturer's mark or name
name or mark of manufacturer's agent
type designation
serial number
TC number for the POS

- for free programmable POS

manufacturer's mark or name
name or mark of manufacturer's agent
identification of the software
type designation
TC number for the POS

must either be marked on the equipment or in the display through a special command

Note: The green M and the number of the Notified body should not be marked on the POS.

Note: If the POS is a purely digital module, has a CE marking, and does not include the ADC or the power supply for the weighing instrument, tests should not be performed on the hardware of the POS except those needed to fulfil the checks in the checklist.

Note: The POS software can be implemented in any CE-marked POS hardware during the test.

Note: This is following point 5.2 in Guide 2.5 (PC as modules) and is equivalent to the indicator guide Annex 6 Category No 4.

4.5 Software

Means shall be provided to prevent or make evident access by the user to change the calculation of price to pay based on the weight value and the unit price, and indication and registration of primary indications.

However when examining the software of a POS the notified body shall use this guide, and the part of the software dealing with

- display
- price calculation
- preset tare
- printouts

shall be covered by the examination.

Note: For free programmable POS, special securing measures for software according to WELMEC 2.3 are required. When applying this guide (point 2, table 1) calculation is a TP (type-specific parameter) and rounding is DP (device specific).

For free programmable POS, special tests for software according to WELMEC 2.3 are required.
Refer to WELMEC 2.5 point 3.7.

4.6 Evaluation report and checklist

The evaluation report including checklist (Annex 2) shall be used to check that a POS device fulfils the requirements.

5 Certificates

There are a number of different certificates involved in the complete conformity assessment procedures. They are the following:

5.1 Type approval certificate (TAC) for NAWI

The POS shall not have a TAC when the "open" module approach is used.
Note: A POS cannot have a TAC because it is not a weighing instrument.

The NAWI that the POS is connected to in the case of the "open" module approach should have the wording as mentioned in point 2.1.

5.2 Test certificate (TC), WELMEC 2.5 section 2.8

The possibility for other Notified Bodies to use the test results is enhanced greatly if a TC is issued. A proposed layout is given in Annex 3.

The test certificate for free programmable POS shall cover the requirements of this guide and WELMEC 2.3, and shall have a note that the software can be implemented in any CE-marked hardware.

Note: Add the following sentence into the test certificate when applicable: This software has a preset tare facility, and therefore may only be used in a system having a NAWI with an option to use this facility.

6 Conformity assessment procedures

Procedures for EC verification or EC declaration of type conformity.

The tests have to be performed with the same combination of weighing instrument and POS that are intended to be used together. These tests can to be done at the place of use or at the manufacturer's premises.

The following have to be performed to verify the correct functioning of the POS in combination with the NAWI in operation.

6.1 Application and information needed by the notified body for EC verification

- The application shall identify where the verification will take place.
- A contact person where the instrument is in use.
- The purpose of the verification (the first or second stage)
- Identification of the NAWI, POS and the software with reference to TAC, TC and reference number including description of the physical configuration. (Reference to annex 6)

6.2 Examinations

1. Check the conformity of the POS device to the type as specified in TAC or TC (could be the declaration of NAWI alone).
2. Check the (declaration of conformity) certificate concerning the first stage if applicable.
3. Check the compatibility scheme from the manufacturer as in 6.1 above
4. Visual inspection (8.2.1) including
   descriptive markings
   prescribed inscriptions and positions for verification and control marks. (TC number of POS and Software and reference number of the weighing instrument)
5. POS devices need not repeat all three primary indications on the display provided that these three indications are displayed in the scale display to both the customer and the vendor (4.14.6 Visibility).
6. The connection shall be made in such a way that the weight indication and price-to-pay indications can be positioned adjacent to each other.

6.3 Tests and checks

Check at least the following points (reference to a form in annex 7)

- Check that the indications are placed adjacent to each other.
- Stability of equilibrium test (A.4.12)
- Test for calculation of price based on for example using one unit price and checking with different loads including Max, or based on one load and using different unit prices.
- Check for correct rounding.
- Check for the form of indication and registration (4.2.2).
- Check for quality of printing (4.4.5).
- Check for clear difference for non-weighed articles (4.4.4, 4.15.4).
- Check for cancellation.
- Check software identification number if applicable.
- Check for correct functioning and transfer of preset tare from the POS if there is one.
- Check for correct transfer of tare and preset tare from the NAWI to the POS.

6.4 Declarations and certificates

There shall be a declaration of conformity for the complete instrument (Scale + POS). Refer to 2.2.

A certificate of conformity concerning the tests performed on the complete instrument shall be issued when the combination is tested (Refer to annex 5).

Annex 1: Documentation for testing of a POS device connected to a NAWI

This document shall be provided to the notified body together with necessary documents for the point of sale device to be tested.

Drawings, product descriptions, mounting instructions shall have a designation or number and construction date and latest revision date.

Also needed

A written application containing:

- Manufacturer's name and address, and also the authorised representative if applicable.
- A written declaration that the standard EN45501:1992/AC 1993 has been adopted including mention of deviations referred to in section 5.
- A written declaration that the POS cannot be disturbed or fraudulently manipulated via the peripheral device interfaces (point 5.3.6 in the standard).

Numbers in brackets (...) below refer to the European standard EN45501.

1 General description of type, and explanations necessary to understand the functioning of the POS devices

1.1 Intended purpose of use, description of POS device.

1.2 General characteristics (7.1).

When applicable:

- Applicant
- Manufacturer
- Type
- Power supply (voltage, frequency) etc.

2 List of descriptions and characteristic data of devices incorporated in the point of sales device

2.1 Software description (freeprogrammable software see 3.4 in WELMEC 2.3)

2.2 Means for securing components, controls etc. (4.1.2)

2.3 Multiple use of indicating devices (4.4.4)

2.4 Printing devices (4.4.5), printing of weighing result (4.6.11, 4.7.3) and other values (4.15.4, 4.17)

2.5 Memory storage device (4.4.6)

2.6 Functions of price-calculation instruments (e.g. for direct sales to the public) (4.15)

- Special applications (4.15.4)
- Self-service application (4.15.5)

2.7 Interfaces

Type(s), intended use, immunity to external influences instructions (5.3.6).
Information of data and function which may be performed from the POS to the NAWI.

2.8 Other devices or functions, e.g. for purposes other than determination of mass and price (not subject to conformity assessment).

3 Information concerning special cases

3.1 Special operating conditions (3.9.5).

3.2 Reaction of the indicator to significant fault (5.1.1, 5.2, 4.14.9).

3.3 Functioning of the display after switch-on (5.3.1).

3.4 Any other special information.

5 Specification of the non-automatic weighing instrument satisfying the essential requirements of the Directive 90/384/EEC to be connected during the tests and if applicable accompanied with a type approval certificate of the instrument.

Annex 2: Report and Checklist

Report page _____

POINT OF SALE DEVICE

EVALUATION REPORT

EXPLANATORY NOTES__

Meaning of symbols:

I = Indication
In = nth indication
L = Load
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 is specified in the form "SUMMARY OF EVALUATION".

For each test, the "SUMMARY OF 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:	/	/

Number in brackets refer to the corresponding subclauses of EN45501.

Report page _____

GENERAL INFORMATION CONCERNING THE PATTERN

Application No.: _____
Pattern designation: _____
Manufacturer: _____
Applicant: _____
Instrument category: _____

☐ Complete instrument ☐ POS Device (1)

Printer: ☐ Built-in ☐ Connected ☐ Non present but connectable ☐ No connection

Instrument submitted: _____
Identification N°.: _____
Connected equipment: _____
_____
_____
Interfaces: (2) _____
(number, nature) _____ _____
Remarks: see following page
Date of report: _____ Evaluation period: _____
Observer: _____

(1) The test equipment (simulator or part of a complete instrument) connected to the POS device shall be defined in the test form(s) used.
(2) Types of interfaces and types of peripherals

Report page _____

SUMMARY OF PATTERN EVALUATION

Application No.:
Pattern, designation:

Examinations

16	Examination of the construction				
	Checklist				

16. EXAMINATION OF THE CONSTRUCTION OF THE POS

Use this page to indicate any description or information pertaining to the POS, 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 POS, a description of its main components, and any remark which could be useful for authorities responsible for the initial or subsequent verifications of individual POS built according to the pattern. It may also include references to the manufacturer's description.

Description:

Checklist

General requirements of construction (differences from OIML R76 part 2 in italics)

Require-ment	Testing proce - dures		Passed	Failed	Remarks
4.1.1.1		**Suitability for application**			
4.1.1.2		**Suitability for use**			
4.1.2.1		**Fraudulent use**			
4.1.2.2		**Accidental breakdown and maladjustment**			
4.1.2.3		**Controls**			

Descriptive markings

7.1.1	A.3	**Compulsory in all cases**			
		- manufacturer's mark or name			
7.1.2	A.3	**Compulsory if applicable**			
		- name or mark of manufacturer’s agent			
		- type designation			
		- serial numbers			
		- identification marks on separate but associated units			
		- provisions for a test certificate number			
7.1.3	A.3	**Presentation of descriptive markings**			
		- indelible			
		- easy readable			
		- grouped together in a clearly visible place			

Indicating device

4.2.1		**Quality of reading**			
		Reading:- reliable, easy and unambiguous			
		- size, shape and clarity			
4.2.2.1	A.3	**Units of**			
		- mass			
		- currency			
		- price to pay			
		Form of indications			
		- for one indication, one unit of mass			
		- scale interval in the form (1, 2 or 5) x 10k			
		- same scale interval for all indicating devices, and printing devices			
4.2.2.2		**Form of digital indication**			
		- at least one figure at right			
		Decimal sign			
		- separate at least one figure to the left and all to the right			
		Zero	Existent ☐		Non-existent ☐
		- indication of zero figures			
		- only one non-significant zero to the right			
		- for values with decimal sign, non-significant zero only in third position			
4.4.4		**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 with MAN or complete wording 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 of measurements above column of values or to the right of values			

Differences between results

3.6.3		**Differences**			
		- no difference between digital indications and print-outs			

Tare devices

4.6.10		**Consecutive tare operations**	Existent ☐		Non-existent ☐
		- 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 (gross weight or net weight)			
		- 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)			
4.6.5		**Visibility of operation:**			
		operation indicated			
		net with sign ”NET”, ”Net”, ”net” or complete word (digital indication)			
		NET disappears if displayed temporarily			
		tare value or letter ”T”(mechanical adding tare)			

Preset Tare

Existent ☐ Non-existent ☐

4.7.1		dT = d or automatically rounded to d			
		transferred from one range to another one with larger ei , shall be rounded to the latter (multiple range)			
		tare value ≤ Max1 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		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			

Miscellaneous checkings (direct sales to the public)

4.14.9		**When significant fault has been detected**			
		- visible or audible alarm provided for customer and (1)			
		- data transmission prevented (11)			
		- until user takes action or cause disappears			

[1] Check by verifying the compliance with documents [ ] or by stimulating faults [ ]; this check does not duplicate the disturbance test 12.1 through 12.4

Indication device (direct sales to the public)

4.14.6		**Figures of primary indications**			
		- high ≥ 9,5 mm (digital devices) [2]			
		- The weight indication and the unit price and price to pay indications must be positioned adjacent to each other			

Tare device (direct sales to the public)

4.14.4		**Preset tare**	Existent ☐		Non-existent ☐
		- 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 (direct sales to the public)

4.15.1		**Visible to both vendor and customer (4.14.6)**			
		- *weight*			
		- unit price			
		- price to pay			
		- if applicable number, unit price and price to pay for non-weighed articles, price totals			
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 weight, unit price and price to pay visible			
		- for at least 1 s after stable weight indication and 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			
		- same data not to be printed twice to the customer			

[2] Only valid for the indications observed by the customer

4.15.4		**Additional functions for trade and management**			
		- if all transactions are printed for customers and			
		- shall not lead to confusion			
4.15.4.1		**Prices for more than one equal articles**			
		- number of articles shown on weight or supplementary display and			
		- without being taken for a weight and			
		- article price shown on unit price or supplementary display			
4.15.4.2		**Totalisation of transactions on one or several tickets**			
		- price total indicating 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			
4.15.4.3		**Instrument used by several vendors or to serve more than one customer at the same time**			
		- provided connection between transactions and vendor or customer identified			
4.15.4.4		**Cancellation 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 instrument**			
		- designation of product			

Disturbances

5.2		**Acting upon significant faults (In case 5.1.1 b)**			
		- instrument made automatically inoperative, or (1)			
		- visual or audible indication until user takes action or fault disappears[1]			

[1] Checked by verifying the compliance with documents [ ] or by stimulating faults [ ]; this check does not duplicate the disturbance test 12.1 through 12.4

Display check

5.3.1		**Upon switch-on**			
		- signs of indication are active and non-active long enough to be checked by operator			

Interface

5.3.6		**Interface[1] shall not allow**			
		- functions and measurement data to be inadmissible influenced by peripheral devices or other connected instrument or disturbances			
5.3.6.1		- displaying data which could be mistaken for weighing results			
		- falsifying weighing results (displayed, processed, stored)			
		- 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			

[1] Interface in the POS for connection to for example the NAWI or bar-code scanner

Annex 3: Layout of the test certificate (TC) of a point of sale (POS) device

Test certificate Certificate no.

Issued by	Notified Body A B C D Street City Country Notified body number...
In accordance with:	Paragraph 8.1 of the European Standard on metrological aspects of non-automatic weighing instruments EN 45501:1992 and WELMEC 2.2 and 2.3 (if applicable)
Applicant	Name of the applicant Street City Country
In respect of	The model of a point of sale device price/non price computing tested as a separate part module of a weighing instrument intended to be used for direct selling to the public. Manufacturer: Type:
Characteristics	In the annex the essential characteristics are described.
Description documentation	The POS device is described in the Descriptive Annex. Documents pertaining to this and test certificate are held in the documentation folder number xx.

City,
Notified Body's name

Name and status of signatory

The annex comprises xx pages.

This test certificate cannot be quoted without the permission of the applicant quoted above (this statement is used only if requested by the applicant).

This test certificate does not bestow any form of type approval.

Required specifications in the test certificate (not relevant for freeprogrammable systems)

Power supply requirements

Specification of the point of sale device

- Variants of the type (hardware and software)
- Identification of software (Version No)
- Modules
- Interface types
- Cables (only if not standard)
- List of functions
- Markings
- How to get access to software version No. if applicable
- Descriptions of separate units
- Price calculation or not
- Display type
- Preset tare or not

Required specifications in the test certificate for free programmable systems

- Identification of software (Version No), if applicable
- How to get access to software version No.
- How to get access to audit trail if applicable
- Price calculation or not
- Preset tare or not
- Checksum of software if applicable

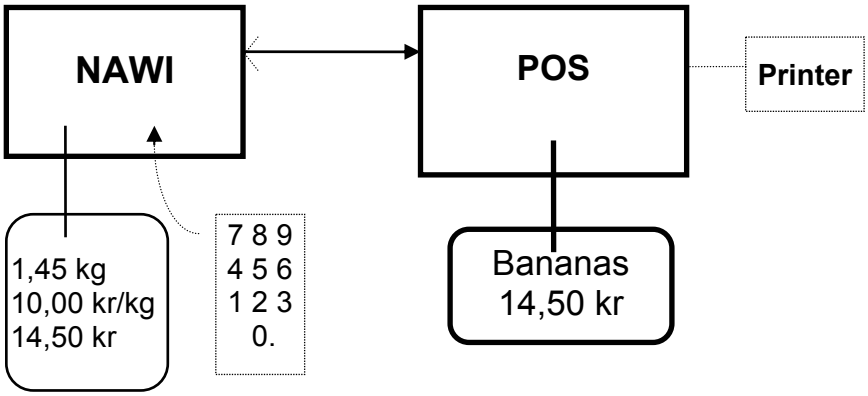
Note: List of tests as soon as something deviates from technical requirements

Note: The software version and checksum should be visible in an easy way, e.g. by pressing a button, otherwise the verification officer is not able to check at any time the implementation of the approved software.

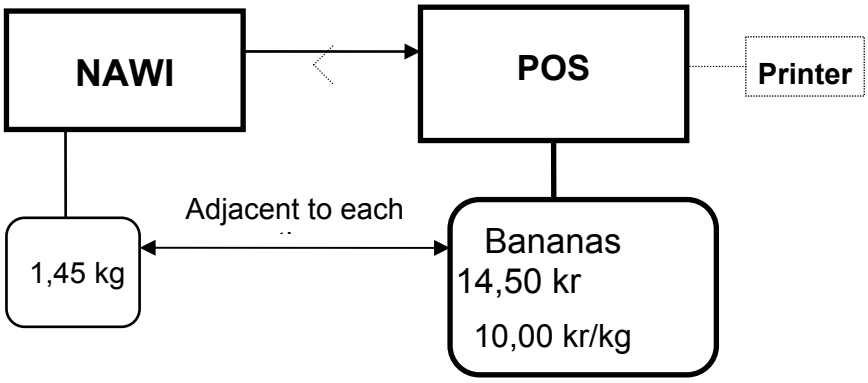
Note: The test certificate shall detail the software and describe the CE-marked POS hardware in generic terms. Any necessary special hardware shall be listed in the certificate.

Annex 4: Examples of connections of POS to a NAWI

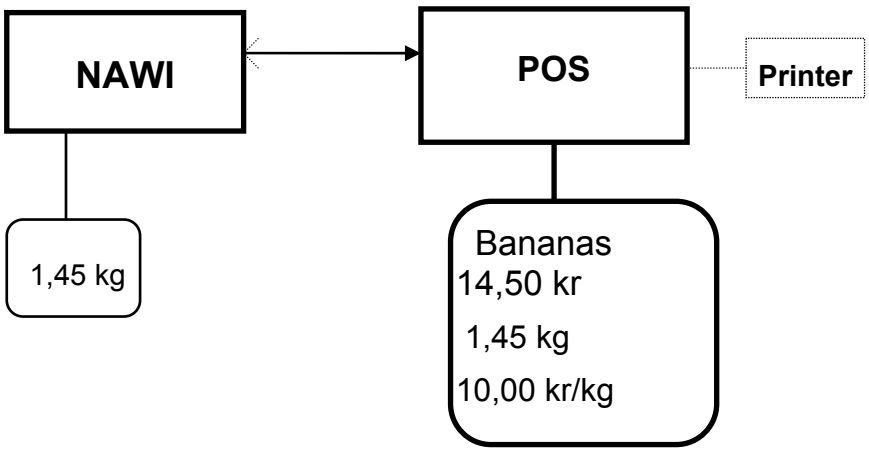
1 NAWI with all 3 primary indications on display



2 NAWI with only weight data on display, POS with unit price and price to pay on display

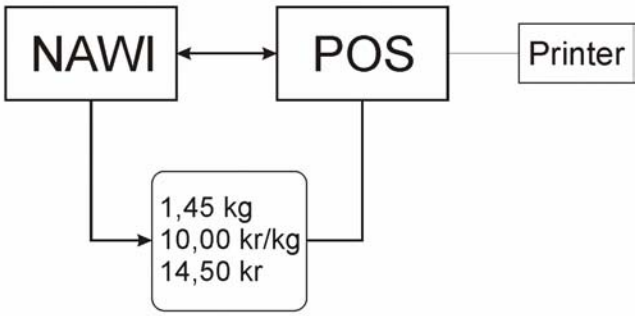


3 NAWI with only weight data on display, POS with weight, unit price and price to pay on display

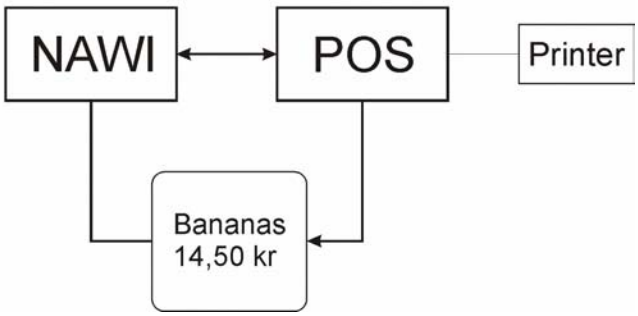


4 Non-price computing POS with a common display for both the weighing instrument and the POS

a) display at the time of weighing



b) display when weighing is finished



Possible function (see notes in 4.4):
There is only one display used by both weighing instrument and POS. When the vendor/cashier enters a PLU (Price Look-Up code) which stands for a weighed article, the weighing instrument takes control of the display and presents all primary indications. After a certain time period (e.g. 2 s) the weighing instrument gives the control of the display back to the POS which now shows its data, e.g. the article name and the price to pay.

Annex 5: Certificate of conformity

NOTIFIED BODY (NAME ADDRESS)

BENANNTE STELLE (NAME; ADRESSE)

Notified Body, identification number
Organismes notifié , numéro d'identtifiaction
Benannte Stelle, Identifizierungsnummer

Attestation de conformité

Certificate of conformity

Konformitätsbescheinigung

La conformité de l'instrument de pesage à fonctionnement non automatique et du dispositif Terminal Point de Vente connecté

The conformity of the non-automatic weighing instrument and the connected point of sale device

Die Übereinstimmung der nichtselbsttätigen Waage und des angeschlossenen Kassenterminals...

	IPFNA NAWI NSW	**TPV POS device Kassenterminal**
Fabricant : *Manufacturer :* *Hersteller:*		
Type/modèle : *Type/Model :* *Typ/Modell:*		
Numéro de série : **ou identification logiciel** *Serial number :* *or software identification number* Seriennummer(n): *bzw. Software-Identifikationsnummer*		
Numéro de certificat : *certificate number :* Zertifikatnummer :	TAC Bauartzulassung	TC Prüfschein

avec les exigences de la directive 90/384/CEE modifiée et les recommandations du guide WELMEC 2.2 été constatée à travers une vérification en conformité avec la norme européenne EN45501.

with the requirements of the Council Directive 90/384/EEC and by the WELMEC guide 2.2 was established by tests referred to in EN45501.

mit den Anforderungen der Richtlinie 90/384/EWG in der geltenden Fassung und der Empfehlung durch WELMEC guide 2.2 wurde durch Prüfungen festgestellt, auf die in EN45501 hingewiesen wird.

La vérification CE est valide pour l'emplacement / l'endroit d'utilisation / sphère d'utilisation suivant :

The EC-verification is valid for the following place of installation / location / area of use :

Die EG-Eichung gilt für folgenden Aufstellungsort / Gebrauchsort / Gebrauchsbereich:

Unterschrift	Datum
Signature	*Date*
Signature	Date

Annex 6: A list of information to be provided to the Notified body for EC verification

- TAC offering the possibility of connection to any POS having a TC
- TC of the POS and TC of software if applicable
- Actual metrological characteristics of the instrument
- Declaration of conformity for the complete instrument

Only if applicable

- Special conditions of connection (distance between parts.) and the corresponding actual installation data.
- Authorisation of representation by the owner of the TAC to ask for EC verification.
- Declaration of conformity concerning the weighing instrument without POS.
- Identification of software presented by the POS.

Annex 7: Form for EC verification in situ for a NAWI connected to a POS

FORM for EC VERIFICATION in situ for a NAWI connected to a POS		
Address of installation :	provisional date of control :	
	company installing the POS	
	name of person	

Preliminary important Remarks:

This form can be used in the following cases :

- there is a TAC covering both the NAWI and the POS
- there is a TAC with reference to the open approach according to WELMEC guide for the NAWI and a TC for the POS

This form is to be attached to the application for the EC verification

1°) Type of connection : circulation of data and display				
	display on NAWI	(⟶ ⟵)	display on POS	comment
unit price (*) :				*can only be in €/kg or €/100g*
weight (*) :	*mandatory*	⟶		*(eg :display of PT/display for the client)*
price to pay (*) :				
designation				
Conditions of use (distance POS - NAWI) :			OK *Mandatory*	non OK
(*) if the three primary indications are not on the same display then the maximum distance shall be 15 cm or ….(drawing to be given by the applicant)				

2°) Identification and conformity of [NAWI+POS] :			
	NAWI	**POS**	**software**
Name			
Type :			
serial n° :			
TAC (revision)			
TC (révision)			

Necessary Documents	available	not available
certificate of conformity 1rst stage	*mandatory*	
Declaration of conformity for the [NAWI + POS] by manufacturer identified in the TAC	*mandatory*	

3°) Visual Inspection :		
Points examined	Results	
	OK	not OK
Presence of markings :	*mandatory*	
Position of control markings :	*mandatory*	
Identification of software :	*mandatory*	

4°) Tests and examinations :

Note : numbers refer to articles of EN45501 standard

4.1 test of stability of equilibrium (A.4.11.3) :

. Put a load 50% Max
. Perturb equilibrium and ask for printing*
. Read the value 5 seconds after printing

load used : ***kg***

(*) Perturb manually equilibrium and command printing as quickly as possible.

test	reading	
	OK**	not OK
1	*mandatory*	
2	*mandatory*	
3	*mandatory*	
4	*mandatory*	
5	*mandatory*	

4.2 Test of price calculation

Calculate prices with one unit price and different values of load, and with a fixed load and various unit prices
Control of correct rounding :

scale for unit price : scale for price to pay :

situation	load (kg)	unit price (€ /kg)	calculation (€)	display (€)	Result of rounding	
					OK	not OK
1 load and 3 different unit prices					*mandatory*	
					mandatory	
					mandatory	
1 fixed unit price and 3 different loads					*mandatory*	
					mandatory	
					mandatory	

4.3 Control of the form of indications and registrations (4.2.2)		
weighing results and points to be controlled	Results	
	OK	not ok
Symbol of mass unit	*mandatory*	
Symbol of monetary unit	*mandatory*	
only one mass unit (for all indications in *g* or *kg*)	*mandatory*	
Form of scale division : 1 or 2 or 5 x 10^{k} (k positive or negative whole number or zero)	*mandatory*	
Same scale division value on all indicating devices (at all charges considered)	*mandatory*	
digital indication shall show at least one figure from the right	*mandatory*	
decimal part shall be separated by a sign (. or ,)	*mandatory*	
presentation and form of zero identical on display of POS and scale		*not mandatory*
Not more than one non significant zero et the right	*mandatory*	

4.4 Control of quality of printing(4.4.5)		
points to be checked	Results	
	OK	not OK
Height of figures printed $\geq$ 2mm	*mandatory*	
symbol of unit after the value or on top of the column (symbol in front is acceptable too)	*mandatory*	
Impossibility to print the same transaction twice without modification of the weight- *point 4.15.3 in guide WELMEC 2.2*		*not mandatory*
printing inhibited when equilibrium is not stable	*mandatory*	

4°) test and technical controls :		
4.5 Control of clear differentiation of non weighed articles and cancellation (4.4.4 and 4.15.4)		
points to be checked	Results	
	OK	not OK
other values are identified by the unit, its symbol, or a sign		*not mandatory*
the number of articles shall appear when price to pay is calculated for several identical articles, without possible confusion with a weight	*mandatory*	
the totalised price to pay is printed, and the total is the sum of all printed prices	*mandatory*	
For totalisation of transactions from several instruments, the price division shall be identical	*mandatory*	
appropriate identification of each client for a multi vendor or multi client	*mandatory*	
In case of cancellation of an already printed transaction cancellation, the price cancelled shall be clear	*mandatory*	
additional information printed : clearly linked with transactions and do not interfere with association between weight value and symbol of unit		*not mandatory*

4.6 Control of preset tare function		
points to be checked	Results	
	OK	not OK
tare scale division is equal to or rounded to the scale division of instrument	*mandatory*	
preset tare values identified at indication and printing	*mandatory*	
automatic preset tare only if its value is clearly linked to the load to be weighed	*mandatory*	
Possibility of temporary indication of tare value		*not mandatory*

notified body name of inspector :

applicant :

conclusion of verification : **accepted** **rejected**

comments :

Annex 8: Declaration of conformity

Konformitätserklärung
(Kombination NSW und Kassenterminal)
Declaration of conformity
Déclaration de conformité (combination NAWI and POS)

Name und Anschrift des Herstellers oder seines autorisierten Vertreters
Name and address of manufacturer or his authorised representative
Nom et adresse du fabricant ou de son représentant autorisé

Die nichtselbsttätige Waage
The non-automatic weighing instrument
L'instrument de pesage à fonctionnement non automatique

Hersteller: *Manufacture*r: Fabricant:	Combined instrument Kombiniertes Gerät	
Typ/Modell: *Type/Mode*l: Type/modèle:	NAWI NSW	POS Kassenterminal
Nr. der EG-Bauartzulassung (gegebenenfalls): *No of the EC type-approval certificate (where applicable):* Nº du certificat d'approbation CE de type (le cas écheant):	NAWI NSW	POS Kassenterminal

entspricht dem in der EG Bauartzulassung beschriebenen Baumuster, sowie den Anforderungen der Richtlinie 90/384/EWG in der geltenden Fassung und den Anforderungen folgender EG-Richtlinien:
corresponds to the production model described in the EC type-approval certificate and to the requirements of the Directive 90/384/EEC as amended and to the requirements of the following EC directives:
correspond au modèle décrit dans le certificat d'approbation CE de type, aux exigences de la directive 90/384/CEE modifiée et aux exigences des directives CE suivantes:

Unterschrift *Signature* Signature	Datum *Date* Date

Nur gültig mit einer von einer Benannten Stelle erteilten Konformitätsbescheinigung
Only valid with a Certificate of Conformity issued by a Notified Body
Seulement valable avec une Attestation de Conformité délivré par une organisme notifié.