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Procedures for the Approval and Certification of Patterns of Measuring Instruments

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National Measurement Institute
Bradfield Road, Lindfield, NSW 2070

T: +61 2 8467 3600

W: www.measurement.gov.au

Amendments

No.	Date	Page	Details of change
1	9 th May 2023	Various	Included requirements concerning OIML Certificates issued under the OIML Certification System (OIML-CS).

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1 Introduction

The *National Measurement Act 1960* (the Act) provides the legal basis for examining and approving patterns (designs) of measuring instruments suitable for use for trade and other legal purposes. This document outlines the administrative framework for the application, examination, approval and certification of such instruments.

The approval and certification of patterns of measuring instruments relates to the suitability of the pattern of the instrument for use only in respect of its metrological characteristics. Approval and certification does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety. Similarly, other non-metrological considerations for measuring instruments, such as product contamination, are not covered by pattern approval.

2 Explanation of Terms

Accredited facility

A laboratory (or other testing facility) that maintains accreditation by a relevant third party organisation in accordance with ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories*.

Note: A relevant third party organisation is considered to be a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA).

Applicant

The person or persons (a legal entity or natural person) who is, or are, applying for pattern approval of a measuring instrument for use for trade or other legal purposes.

Approval holder

The person in whose name a Certificate of Approval or OIML Certificate is in force.

Note 1: The approval holder is the legal entity to which a Certificate has been issued.

Note 2: In most cases the applicant and approval holder will be the same legal entity.

Note 3: Also known as the **submitter** or the 'owner' of the approved pattern or Certificate.

Certificate of Approval (Certificate)

A Certificate issued under regulation 60 of the *National Measurement Regulations 1999* (the Regulations) by the Chief Metrologist.

Note: Certificates of Approval may be cancelled or withdrawn in accordance with the Regulations. See [clause 9 Certificates of Approval](#).

Chief Metrologist (or their delegate)

The Chief Metrologist mentioned in section 18A of the *National Measurement Act 1960* (Cth), who has the functions conferred on him or her under the *National Measurement Act 1960* (Cth), *National Measurement Regulations 1999* (Cth) and *National Trade Measurement Regulations 2009* (Cth).

Evaluation

The review and assessment of documentation (including test results), physical samples and other relevant material concerning a pattern of a measuring instrument.

Examination

The testing and evaluation of a pattern of a measuring instrument for the purpose of determining whether the pattern is suitable for its intended use.

Family of measuring instruments

Measuring instruments of the same design and that use the same measuring principle or technique to measure the same physical quantity, but may be of different capacities and sensitivities and may vary in other operating and performance characteristics.

Note: All of the instruments of the family are subject to the same metrological requirements (e.g. accuracy class, maximum permissible errors).

Measuring instrument

A thing by means of which a measurement may be made or a component of such a thing.

Note: Also known as 'instrument'.

Module

An element or component of a measuring instrument that performs a specific metrological function that can be separately examined and is subject to specified partial error limits or other performance or design criteria.

Mutual Acceptance Arrangements (MAA)

Implemented in January 2005, the OIML Mutual Acceptance Arrangement ("OIML MAA") was an international framework intended to increase the level of mutual confidence provided by OIML Basic Certificates and their underpinning test reports. Participating in the OIML MAA committed participants in principle to accepting and using MAA Test Reports issued by Issuing Participants. The OIML MAA has now been superseded by the OIML Certification System (OIML-CS).

OIML Certificate

A type examination certificate, issued by an OIML Issuing Authority, attesting the conformity of a type of a measuring instrument or module with the relevant requirements of an OIML Recommendation at the time of testing and evaluation.

Note: Adapted from 3.26 of OIML B 18 (2022) *Framework for the OIML Certification System (OIML-CS)*

OIML Certification System (OIML-CS)

A system for issuing, registering and using OIML Certificates and associated OIML type evaluation reports for types of measuring instruments (including families of measuring instruments, modules, or families of modules), based on the requirements in the relevant OIML Recommendation(s).

Note: Adapted from 3.27 of OIML B 18 (2022)

OIML Issuing Authority

A certification body or inspection body from an OIML Member State approved by the Management Committee to issue OIML Certificates and associated OIML type evaluation reports in accordance with Scheme A or Scheme B.

Note: Adapted from 3.28 of OIML B 18 (2022)

OIML Recommendation

Model regulations that establish the metrological characteristics required of certain measuring instruments and which specify methods and equipment for checking their conformity.

Note: OIML Member States are obligated to implement OIML Recommendations.

Pattern (of a measuring instrument)

The design of a measuring instrument, including a representative sample(s) of the measuring instrument.

Note 1: Also known as 'type'.

Note 2: The pattern specifically relates to the metrological design and operation of a measuring instrument.

Pattern approval

The process by which the Chief Metrologist, upon application, examines the pattern of a measuring instrument to examine whether it is suitable for its intended use.

Note 1: Examination of the suitability of a pattern includes, but is not limited to, its ability to provide reliable measurement results within maximum permissible errors (MPE) over a range of expected operating and environmental conditions.

Note 2: If the process of pattern approval is successful it results in the issue of a Certificate of Approval.

Note 3: Suitability of the pattern of the instrument for use is only in respect of its metrological characteristics. Approval does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety. Similarly, other non-metrological considerations for measuring instruments, such as product contamination, are not covered by pattern approval.

Pattern Approval Requirements (Document)

NMI documents that patterns will be examined against to determine suitability of their intended use.

Submittor

See *approval holder*.

Summary Report

The objective record of the pattern evaluation process and its results.

Note: Also known as the 'evaluation report'.

Testing

Subjecting a sample (or samples) of a pattern of a measuring instrument to a series of physical tests to determine its characteristics, functioning and performance.

Note: Testing is typically performed in accordance with procedures and methods specified in the Pattern Approval Requirements Documents.

Testing Facility (Laboratory)

Accredited facility that has a recognised quality system to complete testing in accordance with prescribed procedures.

Variant

An addition, removal and/or modification to a component of the approved pattern of an instrument.

Note: Variants can include physical changes or those made to the software.

Variation

A change made to the Certificate which describes the approved pattern and its variants.

Wildcard

A symbol that indicates a character whose value can be replaced by another character, typically an asterisk or X (see [clause 9.5.1 Software version update or change](#)).

3 National Measurement Legislation

The Act requires measuring instruments that are used for trade in Australia to be pattern approved and verified. In addition, other regulatory frameworks (e.g. road safety) may require measuring instruments to be of an approved pattern in order to support trusted regulatory outcomes.

In support of these requirements the Chief Metrologist, and by extension the National Measurement Institute (NMI), has a regulatory obligation under the Act and *National Measurement Regulations 1999* (Cth) (the Regulations) to examine, and where appropriate, issue Certificates of Approval (Certificates) for patterns of measuring instruments.

In practice, Certificates for trade and legal measuring instruments are issued solely by the Chief Metrologist under regulation 60 of the Regulations and in general only for categories of measuring instruments supported by Pattern Approval Requirements Documents listed on the [NMI website](#).

4 OIML Certification System

The International Organisation of Legal Metrology (OIML) maintains an internationally recognised certification system for measuring instruments. The aim of the OIML Certification System (OIML-CS) is to facilitate, accelerate and harmonize the work of national and regional bodies that are responsible for type evaluation and approval of measuring instruments subject to legal metrological control.

OIML member economies participating in this certification system as an Issuing Authority or Utilizer agree to recognise OIML Certificates and accept associated evaluation reports and test report(s) issued under this system to support national pattern evaluation processes to issue national Certificates of approval for the categories of measuring instruments that participating countries regulate.

More information regarding the OIML-CS may be found on the [OIML website](#).

5 Application Process

5.1 New Applicant

Prior to commencement of the pattern approval process all new applicants are required to complete a credit application form.

A signed and completed credit application form is to be sent to: nmicreditcontrol@measurement.gov.au and to patternapproval@measurement.gov.au.

After the credit application form is processed, NMI will inform the applicant of its payment terms (payment-on-delivery or pre-payment). The applicant's payment terms may be subject to change based on their NMI credit history.

5.2 Application for Pattern Approval

For enquiries relating to pattern approval please contact NMI at patternapproval@measurement.gov.au.

NMI only accepts pattern approval applications and issues Certificates for categories of measuring instruments against the [Australian Pattern Approval Requirements](#). The applicant must accept the terms, conditions and obligations outlined in this document as part of the application process.

Pattern approval applications for new patterns or variations to approved patterns (which have not been withdrawn, cancelled or expired) are made by submitting a completed application form and checklist (credit application forms and checklists may be requested from NMI). Alternatively a hard copy pattern approval application can be mailed to:

Pattern Approval
National Measurement Institute
36 Bradfield Road
West Lindfield
NSW 2070

When accepting an application for pattern approval, NMI assumes the performance specifications and range of operating conditions included in the application form are those for which the manufacturer has designed the instrument.

When an application for pattern approval is received and processed by NMI, the applicant will incur a fixed pattern approval application processing fee, which will also be outlined in the application acknowledgment letter sent to the applicant. If you have not received the application acknowledgement letter within 10 working days of submitting the application please contact patternapproval@measurement.gov.au.

Requests for minor changes to a Certificate must be made in writing to [NMI](#). Major changes require an application for a variant (see [clause 9.5 Variations](#)).

Upon application NMI may issue an OIML Certificate for the categories of instrument for which NMI is appointed as an [OIML Issuing Authority](#). OIML Certificates may be applied for as part of the pattern approval application. This will incur additional fees.

If the applicant decides not to continue with an application, the applicant will be charged for the application processing fee. This fee is non-refundable.

5.3 Documentation to Accompany Applications

The application form has provision for describing documentation provided for evaluation. The applicant will advise if these documents have been supplied for a previous application and will detail their relevance to the current application. The following documentation is to be provided with each application in electronic format and in English:

- detailed drawings, diagrams, photographs and illustrations such as working drawings, functional drawings, electrical diagrams and piping diagrams. As well as sufficient specifications of the pattern of the measuring instrument such as descriptions and operating and service manuals to enable NMI to establish a detailed understanding of the construction and method of operation of the instrument and any variations. (Note: Drawings, diagrams, photographs and illustrations intended for inclusion in the Certificate must comply with the requirements specified in [clause 9.3 Format](#));
- where a sample of a measuring instrument is to be submitted to NMI for testing, a declaration of safety:
 - that the instrument has been designed and constructed to the relevant Australian safety standard; and
 - where appropriate, compliance of the measuring instrument with the relevant safety test scheme.
- where available a completed test report in an NMI, OIML or IEC format from a test laboratory referred to in Appendix 1; and
- where available a completed evaluation report in an NMI or OIML format from a regulatory authority referred to in Appendix 2.

Documentation may be retained and archived by NMI.

6 Application Assessment

6.1 General

On receiving an application for pattern approval, NMI assesses the documentation provided to determine:

- the category of measuring instrument and applicable Australian Pattern Approval Requirements document;
- what testing is required;
- NMI's capability to perform the testing;
- any additional instruments and/or modules that require testing; and
- variants applicable to the application.

If it becomes apparent during the application assessment or subsequent examination that there is insufficient information or the measuring instrument is not acceptable for pattern approval, the applicant will be notified.

If the applicant decides not to continue with an application, the applicant will be charged for the application assessment undertaken to that date. The application assessment fee is non-refundable.

NMI provides a separate consultation service (charged at an hourly rate) to assist applicants submitting patterns of measuring instruments for pattern approval.

All applications will be assessed in a fair and impartial manner. The assessment and evaluation of patterns is based upon the relevant pattern approval requirements documentation (and/or OIML Recommendation) and the suitability of the pattern of the measurement instrument for its intended use.

6.2 Instruments Required for Test

The following guidelines are used to determine what instruments covered by the application will be tested:

- if the application for approval covers a single pattern of an instrument, then one sample instrument (unless stated otherwise for a particular type of instrument or module, e.g. load cells) will be required for testing;
- if the application for approval is for a family of instruments, more than one sample instrument will be required for testing. Unless the performance characteristics of the instruments overlap significantly, at least the following instruments will be tested:
 - the instrument with the lowest performance characteristic(s);
 - the instrument with mid performance characteristic(s); and
 - the instrument with the highest performance characteristic(s).

Note: Performance characteristics include capacity of weighing instruments, flow rate of flowmeters, rated operating conditions (e.g. temperature) and value of the scale interval of a load cell or weighing instrument.

The application form requires the performance characteristics of the family of instruments to be specified. The sample instruments will be tested to establish that they perform correctly within the specified characteristics. By specifying these characteristics, the applicant is stating that instruments can be manufactured to perform consistently within the limits specified. The performance characteristics specified must therefore be carefully chosen as any request to change them after determining the test results will require further assessment.

- if an instrument in the family has additional metrological or operational functions (e.g. tare, price computing) a sample of this instrument will also be required for testing;
- where possible instruments will be selected with appropriate combinations of performance characteristics and operational functions to minimise the number of instruments required for testing;
- where possible an instrument will be tested as a single device for all influence factors and disturbances. However when this is not possible (e.g. due to instrument size) then the modules of the instrument will be tested separately for all influence factors and disturbances. A test of the instrument in the field under field conditions will then be necessary to complete the evaluation. A supplementary Certificate will not be issued for the modules tested unless a separate application for such a Certificate has been made by the applicant;
- if the application requires that the various modules of the instrument may be replaced by other modules, it will be necessary to test the modules separately as well as testing a complete instrument. Supplementary Certificates may be necessary for each module in some cases. The application must state the requirements; and
- if the application for approval is for variant instruments of the family to be added to an existing approval, then the guidelines for submission of instruments for test follow the above (see *clause 1 Explanation of Terms* for what instruments are included in a family of measuring instruments). If the variant only covers a module of the pattern, then only that module needs to be submitted for testing.

Testing may be performed by NMI, or an acceptable test laboratory as specified in Annex 2.

This clause provides general guidelines regarding the selection of samples of measuring instruments for testing. Nonetheless, for each application NMI will determine the number and characteristics of the measuring instruments that are required to be tested.

The guidelines also apply to modules when the application is for an approval of a module.

7 Pattern Approval Testing

7.1 General

Pattern approval testing is required to be completed on measuring instruments in accordance with the applicable [Australian Pattern Approval Requirements](#) document for that category of measuring instrument.

All test results and reports submitted for pattern approval must be in a NMI, IEC or OIML approved format (where available) and acceptable to the Chief Metrologist.

NMI has its own test laboratories in Lindfield and Londonderry (NSW) where testing can be completed on most categories of measuring instruments. The fees for testing are set by the Regulations.

Alternately testing can be completed by an appropriate testing facility in Australia and/or overseas. Submission of test results and reports from other testing facilities does not guarantee the approval of a pattern of a measuring instrument or issue of a Certificate of Approval. NMI reserves the right to reject test results and reports that are not fit for purpose.

The acceptance of test results and reports is at the discretion of the Chief Metrologist based on the risk framework in Appendix 1.

7.2 NMI Laboratory Testing

NMI's Lindfield and Londonderry laboratories have capability to complete a range of performance testing over a required range of influence and disturbance conditions designed to replicate conditions in the field.

Four programmable environmental test chambers provide testing to IEC 60068 temperature and humidity, or similar standards:

- temperature testing can be controlled for low temperatures to $-25\text{ }^{\circ}\text{C}$ and high temperature of $+70\text{ }^{\circ}\text{C}$. The environmental test chamber control system can apply a limit to the rate of temperature change;
- two environmental test chambers provide damp heat humidity testing, which can be controlled with a relative humidity of up to 95% using an injected water vapour (steam and cold water misting). Steady-state (no condensation of water on equipment) and cyclic (water condenses on the equipment) humidity testing types can be performed; and
- power variation testing can be conducted to an upper limit of 110% and a lower limit of 85% of the nominal AC voltage rating. Power variation for DC voltages can also be tested for battery operated equipment (IEC 61000-4-11).

An anechoic chamber 9 m long, 6 m wide and 4.5 m high provides automated electromagnetic susceptibility tests for immunity to:

- radiated interference over the frequency range 26 to 2000 MHz and at electromagnetic field strengths up to 3 V/m or 80 to 2000 MHz and at electromagnetic field strengths up to 10 V/m (IEC 61000-4-3); and
- conducted radio-frequency field strengths over the frequency range 26 to 80 MHz and at electromagnetic field strengths up to 10 V/m (IEC 61000-4-6).

An interference test system is used to test for the effects of short-time power reductions, AC mains voltage dips and short interruptions, and electrical bursts at voltage levels from 500 to 4000 V and for frequencies equal to and below 5 kHz (IEC 61000-4-4 and IEC 61000-4-11) and surge immunity testing (IEC 61000-4-5).

An electrostatic discharge simulator is used to apply electrostatic discharges from 2 kV to 8 kV for air or contact discharges applied to the instrument, or 2 kV to 6 kV discharges indirectly applied through horizontal and vertical coupling planes. Testing is carried out to IEC 61000-4-2.

7.3 NMI On-site Testing

In cases where testing is not possible at a NMI laboratory, testing can be conducted at a site selected by NMI in consultation with the applicant. All on-site test procedures, supporting processes and documentation will be determined by NMI in consultation with the applicant prior to the commencement of testing. In these cases the applicant will be responsible for:

- the delivery, assembly, calibration and disassembly of the instrument;
- the provision of any facilities as determined by NMI required for testing; and
- site costs.

7.4 Retention and Removal of Instruments

NMI may hold the sample instrument, or any of its modules, for identification purposes, as long as any instrument conforming to the pattern is in use for trade or other legal purpose. This applies particularly to modules which incorporate the measurement or computational functions of the instrument.

The applicant will be responsible for packaging and removing the instruments and/or parts of instruments from NMI's premises (or the agreed examination site) when notified that the instruments are no longer required.

NMI reserves the right to pack and return to the applicant, at the applicant's expense (under reasonable terms), instruments (or parts thereof) not removed from NMI after three months from the date of any such notification.

8 Evaluation

Following pattern approval testing, NMI will review the test results and reports undertaken by the testing laboratory against the [Australian Pattern Approval Requirements](#) document to evaluate if the measuring instrument is fit for purpose in Australia.

The examination of patterns of measuring instruments (and samples thereof) includes the evaluation of measuring instrument design, performance and operation, test results and reports to determine compliance with relevant Pattern Approval Requirements documents, its intended use and the range of operational and environmental conditions which may impact its performance and reliability.

The Summary Report is an objective record of the evaluation process and its results, against which possible future evaluations and examinations can be compared and which can support the pattern approval or rejection decision.

While a test laboratory, an overseas national regulator or approving authority may provide an evaluation report, acceptance of evaluation reports is at the discretion of the Chief Metrologist based on the risk framework in Appendix 2. This provides NMI with the confidence the measuring instrument is fit for purpose and meets any local requirements specific to Australian conditions.

9 Certificates of Approval

9.1 General

The Chief Metrologist may issue a Certificate once satisfied a pattern of a measuring instrument (including any variants) has been examined and found to be suitable for its intended use.

The Chief Metrologist may issue General Certificates for particular categories of simple measures and simple measuring instruments which are not required to be submitted for pattern approval testing or evaluation by

NMI. Measuring instruments which are manufactured in accordance with a General Certificate are considered to be of an approved pattern and do not require individual approval and certification.

Certificates may be cancelled or withdrawn in accordance with the Regulations. Certificates may also expire subject to the conditions stated therein. Expired Certificates are taken to be cancelled (see clauses [9.7 Cancellation of a Certificate of Approval](#) and [9.8 Withdrawal of a Certificate of Approval](#)).

Note: Expiry is different to review periods which are discussed in clause 9.9.

9.2 Types of Certificates of Approval

The Chief Metrologist can issue a variety of Certificates including:

- **Certificates of Approval for measuring instruments** confirms that when examined, the pattern of the measuring instrument was determined to be suitable for its intended use;
- **Provisional Certificates of Approval** may be issued for up to twelve months (or a timeframe acceptable to the Chief Metrologist) in situations when the instrument pattern cannot be fully examined in the laboratory and requires field-testing (e.g. because of its large size, installation requirements or other features), or because it requires substantial durability testing;
- **Interim Certificates of Approval** may be issued to enable an instrument to be submitted for verification, in the lead up to the issuing of the Certificate. It is issued following a successful approval examination and is valid for up to three months (or a timeframe acceptable to the Chief Metrologist);
- **Variation to a Certificate of Approval** may be issued for a variant to a pattern which adds, removes and/or modifies a component (a variant) that alters the approved performance or operation of an approved pattern;
- **Supplementary Certificates of Approval** may be issued for a module to confirm that a component of a measuring instrument when examined, the pattern of the measuring instrument was determined to be suitable for its intended use;
- **General Certificates of Approval** (General Certificate) for simple measures and simple measuring instruments that are capable of being manufactured to a common standard. In a General Certificate, a set of design and/or installation parameters are specified;
- **General Supplementary Certificates of Approval** may be issued to supplement Certificates by approving ancillary or peripheral modules, for example printers and electronic cash registers; and
- **Conversion Certificate of Approval** which describes a pattern and a General Certificate allowing variants to that pattern, for example 6B/0. A conversion Certificate allows the applicant to modify some types of weighing instruments under specific conditions. The conditions under which such a conversion can be made are specified in the general Certificate 6B/0 and the applicants' conversion Certificate 6B/xxx.
- **Grandfathered Certificates of Approval** may be issued to support regulatory amendments and transition processes (for example, when exemptions are lifted for certain types of utility meters). A Grandfathered Certificate of Approval is issued and immediately cancelled, thereby providing approval for existing instruments of that pattern, but not for new instruments of that pattern to be manufactured.

Certificates of Approval are published on the [NMI website](#).

In addition, OIML Certificates may be issued by NMI as an Issuing Authority under the OIML Certification System. OIML Certificates are subject to the requirements of the OIML-CS, are registered with the International Bureau of Legal Metrology (BIML) and published on the [OIML website](#). OIML Certificates are not issued under the Act or Regulations, have no legal basis in Australia and are not legally binding internationally.

Following successful examination and evaluation of the test results, draft documents including a Certificate and technical schedule are provided to the applicant for comment and agreement. At this time the applicant is to provide any illustrations, drawings or photographs necessary for inclusion in the technical schedule. The

applicant must provide their written agreement to the final draft of the Certificate before the Certificate can be finalised, signed and issued.

The application is finalised with the applicant receiving a copy of the Certificate which includes the technical schedule and test procedure. At the same time a copy is placed on the [NMI website](#), unless requested otherwise.

9.3 Format

In accordance with the Regulations a Certificate of Approval must include:

- the name and address of NMI;
- description of the pattern of the measuring instrument to which the Certificate relates;
- the number of the approved pattern;
- the date of issue of the Certificate;
- a statement that the pattern of the measuring instrument is approved under the Regulations as suitable for use for trade or as a legal measuring instrument; and
- any conditions to which approval is subject, such as those documented in clause [9.4 Conditions](#).

In addition to these mandatory regulatory requirements, a Certificate will also include:

- the name and address of the approval holder after the text “submitted by” (where applicable);
- the Australian Pattern Approval Requirements document against which the instrument was assessed (where applicable);
- document history including reasons/details and date; and
- signature and name of person delegated by the Chief Metrologist who approves the Certificate.

A Certificate includes a technical schedule which:

- describes the pattern and any variants;
- describes any specific tests required to be performed in addition to the tests described in the applicable National Instrument Test Procedure; and
- includes any illustrations, drawings or photographs relevant to the measuring instrument.

9.3.1 Illustrations

All illustrations (drawings and/or photographs) used in the technical schedule must comply with the requirements detailed below. Failure to provide correct illustrations may result in delays and additional charges.

The illustrations must be labelled and show the complete system and its major components. An explanation must be provided if the labelling is not the same as that used in the technical schedule.

Illustrations may be supplied electronically (e.g. as a TIFF or JPG file) or as hard copy (see clauses [9.3.2 Drawings](#) and [9.3.3 Photographs](#)).

Upon request from an applicant, NMI will arrange to have photographs and drawings prepared for inclusion in the technical schedules. The applicant must pay the full cost of any work.

9.3.2 Drawings

Where drawings are to be included in the technical schedule, two copies of each drawing will be supplied, one with and one without labelling, and these will:

- be of adequate size, resolution and clarity;
- generally follow good drawing practice principles, e.g. as set out in the relevant Australian Standard;
- consist of black lines on white paper, and be original drawings or high quality prints;
- include all details relevant to the approval;
- not be dimensioned unless NMI so directs; and

- have one copy clearly and unambiguously identify the major components of the instrument.

9.3.3 Photographs

Photographs will:

- be of adequate size, resolution and clarity;
- be in sharp focus and of good contrast;
- have a neutral or contrasting background; and
- include all details relevant to the approval.

9.4 Conditions

The Chief Metrologist can impose a condition on a Certificate including but not limited to:

- the conditions of review (see [clause 9.9 Review of Approvals](#));
- stipulating whether the Certificate relates to a single, or small number of, particular instruments (as distinct from a pattern of an instrument); and
- any additional conditions, as deemed necessary by NMI, dependent on the type of measuring instrument or component.

The various conditions stipulated in a Certificate vary depending on the type of measuring instrument as indicated below.

9.4.1 Modules/Components

Certificates with conditions pertaining to modules or components of measuring instruments are commonly known as supplementary Certificates.

The conditions specified in these Certificates include those by which a module/component of a measuring system must be fitted to the complementary part of an approved measuring instrument. For example:

- a load cell must be limited to use in baseworks of approved weighing instruments in which the force applied by the load is within a specified range; or
- a flowmeter calculator/indicator must be limited to those approved flowmeters in which the volume per revolution or pulse output of the meter is compatible with the calculator/indicator input.

9.4.2 Instruments Requiring Field Testing

Conditions are also specified for instruments, which, normally due to their size, installation requirements or other features, cannot be fully examined in the laboratory or require field testing, for example large bulk flowmeters. Such Certificates are commonly known as Provisional Certificates.

A Certificate may be issued on completion of a laboratory examination of the whole instrument or those modules which can be laboratory tested. Consequently, the Certificate is normally conditional on reports of field testing being received as required by NMI. Certificates may be withdrawn or cancelled if such reports are not received as specified.

In this case two applications must be made, one for the Certificate and the other for a Certificate (Provisional Certificate) nominating a limited number of instruments and location details. Each application attracts a separate non-refundable fee.

The applicant, in agreeing to the latter, accepts the risk involved, as in the event of unsatisfactory performance the Certificate is normally withdrawn (see [clause 7.4 Retention and Removal of Instruments](#)).

Such Certificates have an additional condition stipulating a period of validity. Exemptions to this condition are considered on an individual basis. After this period, if field evaluation proves satisfactory and all conditions of approval have been met, the provisional condition is removed and the normal review period is set based on the original date of the approval (see [clause 8 Evaluation](#)).

9.5 Variations

A variation to a Certificate of Approval is required when the approval holder or person authorised by the approval holder adds, removes and/or modifies a component of the approved pattern or software described in the Certificate (see [clause 9.5.1 Software Version Update or Change](#)).

To be considered a variant to the pattern, rather than a separate pattern, the arrangement of the components of the instrument and the measuring element must be substantially of the same design to that of the approved pattern.

When applying for a variant, it is advisable to assign the instrument with a model number which differs from the pattern and other variants.

On approval of a variant to the pattern, the Chief Metrologist will issue a revised Certificate stating the changes applicable to the pattern and any subsequent effect on the operating conditions. If there is any doubt as to whether there is a need for a variant to be obtained NMI must be contacted via patternapproval@measurement.gov.au, with any supporting documents.

An application for a variation will not be accepted for a cancelled, expired or withdrawn Certificate.

9.5.1 Software version update or change

Where a software version described in a Certificate is expected to be updated frequently, appropriate wildcard fields may be permitted to describe the version used. Wildcards may only be used to indicate software changes which do not affect the metrological function or are not legally relevant.

Wildcards in the legally relevant software version do not permit changes to be made to the software without consideration or assessment by the Chief Metrologist. The Chief Metrologist will maintain a register of all possible software version numbers and it will be the responsibility of the approval holder to advise the Chief Metrologist of any updated software, before that version is applied to an instrument in use for trade or legal purpose.

Software changes that involve fixes or updates that do not affect measurement functionality (any function of the instrument subject to metrological control by NMI), and which have been included in NMI's software register, are permitted to the extent that the wildcard allows and no changes to the Certificate are required.

Where the software change does impact measurement functionality, details of the changes made must be provided and will be assessed by NMI. Where it is considered that the changes to measurement functionality require an examination or update to the Certificate, the approval holder will be required to make an application for a variant.

Where the updated version of software is approved, the Certificate will be updated to describe the changes including the new software version and updated wildcards.

9.6 Amendments

Requests for minor amendments to a Certificate or technical schedule must be made in writing to patternapproval@measurement.gov.au.

Minor amendments to a Certificate or technical schedule such as changes of address or markings, clarification of descriptive material, alteration to periods of validity and other administrative matters, must be notified by a revision to the Certificate.

Prior to the 13th edition of NMI P 106 such minor amendments or changes may have been notified via a Notification of Change.

9.7 Cancellation of a Certificate of Approval

Where a Certificate for trade and legal use has been cancelled and not withdrawn, the measuring instrument must not continue to be manufactured, however may continue to remain in use. This may lead to a situation where the components of the measuring instrument requires maintenance and/or updating.

9.7.1 Repairs to a Measuring Instrument of a Cancelled Certificate of Approval

Repairs may be made to a measuring instrument with a cancelled Certificate of Approval (subject to any conditions of the cancellation), provided that the repairs are limited to replacing mechanical parts, structural parts and indicating devices (digital for digital, mechanical for mechanical but not digital for mechanical other than as covered by Certificate 6B/0).

While replacement parts would be identical to those being replaced, this may not be possible due to the age of the instrument. Where original parts are not available, replacement parts must be of similar design, construction and materials as the original parts. Replacement modules must have a current Certificate. See Certificate 6B/0 for special conditions for replacement of load cells covered by a cancelled Certificate. Once repaired, the instrument must be verified. The original nameplate must be retained or copied without alteration except for any change of supplementary number for the replaced module.

Instruments for which the Certificate has been cancelled, and which are removed from a site, may be relocated and used for trade provided they have not been altered (although they may be repaired or refurbished) and are verified.

9.7.2 Application for Cancellation by Approval Holder

An approval holder may apply to have a Certificate cancelled. In these cases NMI will update the Certificate register on the [NMI website](#) to indicate the cancellation. In addition, NMI may issue a written notice of the cancellation to any relevant persons that NMI considers should be given notice of the cancellation.

9.7.3 Grounds for Chief Metrologist to Cancel

Grounds for the Chief Metrologist to cancel a Certificate include:

- the instrument does not comply with the relevant [Australian Pattern Approval Requirements](#);
- the instrument is not suitable for the intended use;
- instruments being manufactured or supplied do not conform or comply with the approved pattern specified in the Certificate; or
- other appropriate reasons.

9.8 Withdrawal of a Certificate of Approval

The Chief Metrologist may withdraw a Certificate where cancellation is not considered appropriate. The use of an instrument that purports to comply with a withdrawn Certificate, for trade or other legal purposes, may attract penalties under the Act.

In other words, all trade and legal instruments purporting to comply with the withdrawn Certificate may no longer be used for trade or legal purposes from the date of withdrawal, whether verified or not under that Certificate. In addition, the approval holder of the withdrawn Certificate must not continue to sell that measuring instrument for trade or legal use.

9.9 Review of a Certificate of Approval

The Chief Metrologist will review Certificates on application from the approval holder.

The Chief Metrologist will inform approval holders in writing of the need for a review as a result of significant changes to:

- the Australian Pattern Approval Requirements; or

- market conditions or conditions of use of the measuring instrument.

The Chief Metrologist will determine what constitutes a significant change necessitating a review of a Certificate.

Where the Chief Metrologist informs an approval holder of the need for a review and the approval holder fails to apply for a review, the Certificate may be cancelled.

Unless requested by the approval holder, Certificates issued on or after 27 July 2020 must not specify a date of review.

Certificates issued prior to 27 July 2020 will remain valid regardless of the date of review stated on the Certificate, until the Certificate is cancelled (see [clause 9.7 Cancellation of an Approval](#)) or withdrawn (see [clause 9.8 Withdrawal of an Approval](#)). On application by the approval holder, Certificates issued prior to 27 July 2020 may be reviewed to remove the specified date of review.

When the application for a review is received it is assessed by NMI to determine whether the measuring instruments described by the Certificate are required for testing. The Certificate will be cancelled if the:

- instrument requested by NMI for review is not received within the required timescale;
- instrument fails its review and the fault cannot be rectified; and
- Chief Metrologist informs an approval holder of the need for a review and an application for review is not received from the applicant/approval holder by the specified date.

If the instrument successfully meets the Australian Pattern Approval Requirements in force at the time of review, a reviewed Certificate will be issued.

In all cases failure to satisfactorily conduct reviews may result in cancellation of the Certificate.

10 Ongoing Requirements

10.1 Change in Ownership of a Certificate of Approval

Copies of Certificates issued by NMI are retained for record keeping purposes.

The approval holder may apply to amend the person named as the approval holder (for example, when the pattern, the manufacturing or supply rights have been transferred to another person). It is the responsibility of the approval holder to manufacture, supply and/or install measuring instruments in accordance with the pattern approved in the Certificate.

Additionally, if the purchaser or assignee is a new applicant to the pattern approval process, it is recommended that they complete a credit application form if they wish to apply for any pattern approval work to be undertaken on any new or existing Certificate(s) of approval in the future.

10.2 Responsibility for Compliance of Instruments with a Certificate of Approval

It is the responsibility of the approval holder, whether as agent or manufacturer, to ensure that all instruments manufactured to an approved pattern, comply with the Certificate (i.e. Certificates of Approval and OIML Certificates), its technical schedule and the drawings and documentation retained by NMI. Instruments must not deviate in any significant structural or metrological fashion from the sample instrument or its approved variants.

It is the responsibility of the approval holder to ensure that only measuring instruments that comply with the approved pattern are marked with the pattern approval number. Only the approval holder, or a person authorised by the approval holder, are permitted to mark the pattern approval number on a measuring instrument, thereby purporting that it complies with that approved pattern.

However, a supplier/installer may copy an approval number from one part of an instrument to a central nameplate, for example when a dial is replaced with a digital indicator and the basework number which appears on the dial has to be transferred to the digital indicator.

10.3 Repair of an Approved Measuring Instrument

Repairs to pattern approved measuring instruments may be made, in certain circumstances. Repairs are limited to:

- replacement of parts with identical like for like parts;
- replacement of supplementary approved modules with alternative supplementary approved modules. Replacement modules must be of a similar type and have a current Certificate;
- replacement of parts to create a different type of measuring instrument, e.g. converting mechanical to digital indication (see [clause 9 Certificates of Approval](#)).

Once repaired, the instrument must be subsequently verified. The original nameplate must be retained or copied without alteration except for any change of supplementary number for the replaced module.

10.4 Discontinuing an Application

An application may be discontinued by the Chief Metrologist if:

- a sample instrument or full documentation is not received within three months of being requested;
- an applicant fails to reply to an examination report within one month of its date of issue;
- an applicant fails to rectify the non-compliance of the instrument within an additional two months from the reply to the examination report; or
- an applicant fails to supply illustrations suitable for the draft Certificate and technical schedule within two months of the date of the covering letter to the draft.

Up to that point in time, where the application is considered to be discontinued or abandoned, the applicant will be liable for the payment of the fees and costs incurred from all work performed on the application. The fees will be payable on NMI's regular terms and conditions.

10.5 Ongoing Obligations on the Approval Holder – Certificates of Approval

Once a Certificate of Approval is issued, the approval holder is subject to the following obligations, in addition those specified in clauses 10.1 to 10.3 above.

- The approval holder must fulfil and comply with the requirements specified in the Act, *National Measurement Regulations 1999* (Cth), *National Trade Measurement Regulations 2009* (Cth), this document (NMI P 106) and the Certificate of Approval, including any changes as implemented and communicated by NMI from time to time.

10.6 Ongoing Obligations on the Approval Holder – OIML Certificates

OIML Certificates are issued in accordance with and subject to the requirements of the OIML-CS.

Once an OIML Certificate is issued, the approval holder is subject to the following obligations, in addition those specified in clauses 10.1 to 10.3 above.

- The approval holder must make all necessary arrangements (including the provision of documents, records and access to relevant equipment, locations and personnel) to allow NMI to:
 - a. conduct evaluation and surveillance activities in relation to instruments that purport to comply with a certified pattern; and
 - b. undertake investigations of complaints in relation to instruments that purport to comply with a certified pattern.
- The approval holder must not make claims regarding a certified pattern or an instrument that purports to comply with a certified pattern that are inconsistent with the corresponding OIML Certificate;

- The approval holder must not use their OIML Certificate in such a manner that brings NMI into disrepute;
- The approval holder must not make misleading or unauthorised claims regarding an OIML Certificate;
- The upon cancellation of an OIML Certificate, the approval holder must update any advertising material in a manner consistent with the terms of the cancellation;
- The approval holder must only reproduce the OIML Certificate in its entirety;
- The approval holder must only use the OIML Certificate number as a statement of conformity; to be marked on instruments that comply with the OIML Certificate, or provided as information or reference concerning the certified pattern;
- The approval holder must keep records of all complaints made to it relating to a certified pattern. In addition, the approval holder will:
 - a. take appropriate action with respect to such complaints and any deficiencies that affect compliance with the OIML Certificate;
 - b. keep records of any such complaints and the responses and actions taken; and
 - c. make those records available to NMI upon written request;
- The approval holder must inform NMI of any changes that may affect its ability to comply with the requirements specified above.

Failure to meet the above obligations may result in the variation or cancellation of an OIML Certificate.

11 Fees Payable

Fees are charged according to regulation 90B and schedule 13 of the Regulations.

The following action may be taken if an applicant does not pay an account within the required terms (normally 30 days from the date of invoice):

- assessment work may be stopped;
- the Certificate may not be issued until the account is cleared; and
- action may be taken to recover the outstanding debt.

12 Additional Regulatory Requirements

12.1 Verification

Measuring instruments used for trade must be verified. Verification must be performed by a servicing licensee, employee of a servicing licensee or a trade measurement inspector. The exception is for utility meters (electricity, water and gas meters) which must be verified by a utility meter verifier.

Verification requires the measuring instrument to:

- be of an approved pattern; and
- operate within the appropriate limits of error permitted by the *National Trade Measurement Regulations 2009* (Cth) when tested in accordance with the applicable National Instrument Test Procedure.

Appendix 1 – Acceptance of Test Results and Reports

Tier	Type of testing facility	Risk	Acceptance Criteria
1.	<ul style="list-style-type: none"> (a) NMI Australia (pattern approval laboratory). (b) Approving authorities appointed by NMI. (c) Testing facilities approved under Scheme A of the OIML-CS, to which NMI is an utiliser, with the exception of manufacturer test laboratories. 	Low	NMI will consider test results and test reports as part of the pattern evaluation.
2.	<ul style="list-style-type: none"> (a) Testing facilities approved under Scheme A of the OIML-CS, to which NMI is not an utiliser, with the exception of manufacturer test laboratories. (b) Testing facilities under the OIML MAA with the exception of manufacturer test laboratories. (c) Testing facilities under bilateral agreements relevant to pattern approval, to which NMI is a signatory. (d) Testing facilities accredited by NATA, with a scope aligned to the applicable NMI or OIML requirements. 	Minor	<p>NMI may consider test results and test reports as part of the pattern evaluation following an analysis including:</p> <ol style="list-style-type: none"> 1. The level of alignment and capability of the testing facility in relation to the applicable NMI and/or OIML requirements. 2. The independence of the facility from the manufacturer of the measuring instrument under test and, to the greatest degree possible, any other commercial influences.
3.	<ul style="list-style-type: none"> (a) Testing facilities accredited by a third-party organisation (excluding NATA) that is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) with a scope of accreditation aligned to the applicable NMI or OIML requirements. (b) Testing facilities accredited by NATA, with a scope not aligned to NMI or OIML requirements but covering the test conditions and limits prescribed by NMI. (c) Testing facilities approved under Scheme B of the OIML-CS, with the exception of manufacturer test laboratories. (d) Witness testing at a test facility accredited by a third-party organisation (including NATA) that is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). 	Medium	<p>NMI may consider test results and test reports as part of the pattern evaluation following an analysis including:</p> <ol style="list-style-type: none"> 1. The level of alignment and capability of the testing facility in relation to the applicable NMI and/or OIML requirements. 2. The level of alignment and capability of the testing facility in relation to the test limits prescribed by NMI. 3. The independence of the facility from the manufacturer of the measuring instrument under test and, to the greatest degree possible, any other commercial influences. 4. Confidence in the testing laboratory based upon test results and reports previously received by NMI. 5. In the case of witness testing the following conditions will apply: <ul style="list-style-type: none"> (a) an assessment of the laboratory must be undertaken as described above (b) written agreement from NMI regarding the conditions of testing will be obtained prior to the commencement of testing (c) testing must be witnessed, in person, by either: <ul style="list-style-type: none"> (i) NMI staff;

Appendix 1 – Acceptance of Test Results and Reports

Tier	Type of testing facility	Risk	Acceptance Criteria
			(ii) OIML-CS approved Legal Metrology Experts; or (iii) staff from organisations that are a party to a relevant bilateral agreement with NMI. (d) only the results of testing that is witnessed will be accepted; and (e) any additional conditions specified by NMI in writing.
4.	Testing facilities affiliated with manufacturers (a.k.a. manufacturer test laboratories).	High	NMI currently has no framework (for example auditing or peer assessment processes) in place to mitigate the risks identified in accepting test reports and/or test results from testing facilities affiliated with manufacturers and will not consider test results and reports from these testing facilities. However, where there is no non-affiliated testing facility capable of carrying out the required testing, NMI may consider the test with test results based on witness testing (see Tier 3(d)).

Note 1: For the purposes of Appendix 1 **Assessment** specifically relates to the analysis and review of testing facilities, test results and test reports for consideration towards evaluation. This assessment forms part of the broader Application Assessment process.

Note 2: The acceptance or consideration of test results and test reports does not guarantee that additional testing is not required. Accepted test results and test reports will be reviewed as part of the evaluation of the pattern. The outcome of the pattern evaluation may require additional testing or complete re-testing.

Note 3: Test reports are documents issued in accordance with Pattern Approval Requirements Documents and/or OIML Recommendations, using the formats provided.

Note 4: Test results are documents that contain the results of testing performed by a laboratory which are not issued in accordance with a specified format of a Pattern Approval Requirements Documents and/or OIML Recommendations.

Appendix 2 – Acceptance of Evaluation Reports

Tier	Organisation	Risk	Acceptance Criteria
1.	NMI Australia.	Low	NMI will accept evaluation reports as part of the pattern evaluation.
2.	Approving authorities appointed by NMI.	Minor	NMI will consider evaluation reports as part of the pattern evaluation, however NMI will undertake supplementary analysis of the evaluation criteria used for the report against the Australian Pattern Approval Requirements document to confirm all criteria have been met.
3.	<p>(a) Issuing authorities approved under Scheme A of the OIML-CS, to which NMI is not an utiliser, with the exception of evaluations based on test results from manufacturer test laboratories.</p> <p>(b) National regulators under the OIML MAA with the exception of evaluations based on test results from manufacturer test laboratories.</p> <p>(c) National regulators under bilateral agreements relevant to pattern approval, to which NMI is a signatory, with the exception of evaluations based on test results from manufacturer test laboratories.</p>	Medium	NMI may consider evaluation reports as part of the pattern evaluation, however NMI will undertake detailed analysis of the evaluation report and test results against the Australian Pattern Approval Requirements document to evaluate all criteria have been met.
4.	All other organisations.	High	NMI currently has no framework in place to mitigate the risks identified in accepting evaluation reports from organisations not mentioned earlier in this appendix. NMI will not accept evaluation reports in these cases.