

# ASIA-PACIFIC LEGAL METROLOGY FORUM

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## **SURVEY ON LEGISLATIVE HARMONISATION**

Harmonisation of legislative measurement requirements is fundamental to the removal of technical barriers to trade. The Forum secretariat will be analyzing the measurement legislation of each of the Forum members to ascertain the degree of harmonisation. A number of Forum members have already sent copies of their legislation to the Forum secretariat and I would urge all members to do this as soon as possible. The Directory entries provided by Forum members will also assist this analysis.

The following issues may constitute technical barriers to trade and we would therefore appreciate receiving your responses to these questions by 15 August to allow preparation and circulation of a first report before the Beijing Forum Meeting.

### **1. *Units of Measurement.***

*Does the measurement legislation require the use of the International System (SI) of units of measurements?*

*Is the SI system mandated for exclusive use or are some non SI units still legally acceptable? If so what are these units and the scope of their use?*

### **AUSTRALIA**

The Australian National Measurement Act (NMA) mandates the SI units and combinations of those units as the sole legal units of measurements except for some areas where non SI units require a lengthy time to be phased out e.g. land titles and spare parts for engineering plant or where non SI units are still allowed by international agreement e.g. feet for altitude navigation and mm of Hg for blood pressure.

### **CANADA**

The units of measurement that can be used in trade are defined in the *Weights and Measures Act*. Although avoirdupois units of measure are still legal in Canada, numerous pieces of legislation have been modified since the end of the 1970's restricting the use of non SI units. As a result, most of trade measurement is now based on SI units of measure but non SI units of measure are still being used.

### **PEOPLE'S REPUBLIC OF CHINA**

Measurement legislation in China requires the use of the SI units of measurements. There are some non-SI units selected by China such as time, plane angle, rotational velocity, length (nautical mile), velocity, mass (tonne), volume (litre) etc.

## **INDONESIA**

Yes, the measurement legislation requires the use of the International System (SI) of units of measurements.

Yes, the SI system is mandated for use in Indonesia.

## **JAPAN**

The measurement legislation in Japan requires the use of legal units for trade and certification purpose. It also restricts the use of non legal units for scales of measuring instruments. Japanese legal units fully adopt the SI. In addition some non-SI units are still legally acceptable as shown in Table 1, 2 and 3 on the attached sheets.

Table 1 is the list of non-SI units allowed to use legally in Japan without any restriction in scope of usage or termination. Table 2 is the list of non-SI units allowed to use with restriction in scope of usage but without termination. Table 3 is the list of non-SI units allowed to use with termination or transition deadline but without restriction in scope. There are three different deadlines for the third category, either September 1995, 1997 or 1999.

## **REPUBLIC OF KOREA**

The legal units of measurement within Korea are defined in the Presidential Decree of the Weights and Measures Act and are those of the International System of Units (SI). The unification of all measuring units into the metric system began in 1964 excluding the fields of land and building, and the SI units have constituted the legal units since 1st January 1983 including the fields of land and building with limited exceptions for some particular cases listed below:

- Measurements in relation with exports or with imports for exportation;
- Measurements on ship;
- Measurements on airplane;
- Measurements in relation with weaponry; and
- Measurements in relation with scientific research, etc.

## **MALAYSIA**

International System (SI) of units of measurement is mandatory.

## **NEW ZEALAND**

The International System (SI) units of measurement are included in the Weights and Measures Act 1987 as the lawful units of measurement for trade in New Zealand. The National Standard Regulations 1976 define the New Zealand units of measurement in terms of the SI system.

The only non SI unit legal for trade use is the "cord" measure for firewood which has been defined as 3.6 cubic metres.

## **PAPUA NEW GUINEA**

Yes, SI Units is the legal units of measurement in PNG.

## **SINGAPORE**

All instruments used in Singapore shall be in SI units except the customary Chinese units (tahils) which are still permitted for trading in Chinese herb/medicine.

## **CHINESE TAIPEI**

- Yes, the measurement legislation require the use of the International System (SI) units of measurements.
- A few traditional mass units are permitted for use in commercial transaction.

## **THAILAND**

Yes, the measurement legislation requires the use of metric units of measurements. It means that International System (SI) of units of measurements is permitted to be used legally in Thailand.

No, the SI system is not mandated for exclusive use. There are some customary units still legally acceptable. However these customary units have been adapted to the metric system by a table of conversion prescribed in the Weights and Measures Law and its regulation. The customary units are as follows:

### **Customary Standard Units of Length**

Name	Value (metre)	Abbreviation
Standard Sen	40	sn
Standard Wah	2	w
Standard Sauk	0.5	sk
Standard Keup	0.25	k

### **Customary Standard Units of Surface**

Name	Value (square metre)	Abbreviation
Standard Rai	1600	r
Standard Ngan	400	ng
Standard Square Wah	4	w <sup>2</sup>

### **Customary Standard Units of Mass**

Name	Value (kilogramme)	Abbreviation
Standard Picul	60	p
Standard Catty	0.6	c
Standard Carat	0.0002	ct

### Customary Standard Units of Volume

Name	Value (litre)	Abbreviation
Standard Kwien	2000	kw
Standard Ban	1000	b
Standard Sat	20	st
Standard Tanan	1	tn

### UNITED STATES OF AMERICA

SI units are the "preferred" system of weights and measures for use in trade and commerce in the USA by inch-pound units are still required on packaged goods.

SI units are legal for use in commercial transactions but inch-pound units are predominant.

### VIETNAM

Yes, the measurement legislation requires the use of the SI units of measurements.

Yes, the SI system is mandated for use in Vietnam for all fields except retail of gold.

Gold in retail is measured by Ancient Unit as follows:

1 lang (cay)	= 10 d.c (chi)	= 37.5 g
1 d.c	= 10 fan	= 3.75 g
1 fan	= 10 li	= 0.375 g
1 li		= 37.5 mg

## 2. *Standards of Measurement.*

*Is there legislative provision for the maintenance of national standards of measurement for the SI units?*

*Are standards maintained for non SI units?*

## **AUSTRALIA**

The NMA provides for the CSIRO-National Measurement Laboratory to maintain "such standards of measurement as are necessary to provide means by which measurements of physical quantities for which there are Australian legal units of measurement may be made in terms of these units."

No standards are maintained for non SI units (except for hardness) which are related to SI units for numerical factors.

## **CANADA**

The Canadian reference standards that are kept and maintained by the National Research Council of Canada are SI standards. From these, several national standards are derived that are used in the calibration of other standards. National standards are kept and maintained in both SI and non SI units of measure.

## **PEOPLE'S REPUBLIC OF CHINA**

There is Law on Metrology for the maintenance of national standards of measurement for the SI units, and standards are not maintained for non SI units.

## **INDONESIA**

No, there is no legislative provision for the maintenance of national standards of measurement for the SI units. and standards are not maintained for non SI units.

## **JAPAN**

The Ministry of International Trade and Industry Establishing Law, Agency of Industrial Science and Technology Establishment Law and their supplementary orders collectively require the government to maintain national standards of measurement for the legal units. As long as a unit is a legal unit, whether SI or non-SI, the national standard of measurement for that particular unit is maintained.

## **REPUBLIC OF KOREA**

The Weights and Measures Act with the Presidential Decree and Enforcement Regulations specifies Korea's legal units of measurement of physical quantities, and requires that measurements made for any legal purpose are traceable to Korean primary standards.

## **MALAYSIA**

The Weights & Measures Act 1972 provides for the maintenance of national primary and secondary standards by the Custodian of Weights & Measures, Malaysia which is SIRIM

(Standards & Industrial Research Institute of Malaysia). Standards for non SI units are not maintained.

#### **NEW ZEALAND**

Yes, provision is made in the National Standards Act 1992 and the National Standards Regulations 1976 (with Amendment No 1, 1992). Standards are not maintained for non SI units.

#### **PAPUA NEW GUINEA**

Yes, NISIT Act - 1993 and Trade Measurement Act 1978.

No, no standards are maintained for non SI Units.

#### **SINGAPORE**

Singapore Institute of Standards & Industrial Research (SISIR) maintains the national standards of measurement for the SI units under the SISIR Act.

#### **CHINESE TAIPEI**

- Yes, there is legislative provision for the maintenance of national standards of measurement for the SI units.
- No, standards are not maintained for non SI units.

#### **THAILAND**

Yes, there is legislative provision for the maintenance of national standards of measurement for the SI units (Metric System). As prescribed in section 6 of Weights and Measures Law, the Weights and Measures Division, under the direction of the Department of Registration, Ministry of Commerce, has been authorized for the maintenance of national standard of the unit of the System of Weights and Measures which is subjected to Weights and Measures Law.

No. For customary units (non SI unit), there is no standard, since all of customary units (non SI unit) have been adapted to the Metric System by table of conversion.

#### **UNITED STATES OF AMERICA**

Yes, there is legislative provision for the maintenance of national standards of measurement for the SI units.

Yes, there is legislative provision for the maintenance of national standards of measurement for non SI units.

## VIETNAM

Yes, provision is made in Metrology Act 1990 and the Regulation of Measurement Standards System (No. 318/TDC- QD)

No, there are no Standards maintained for non SI units.

### 3. *Traceability.*

*Are there legislative requirements for measurements made for any legal purpose to be traceable to the national standards of measurement?*

*What are the specific requirements for such traceability?*

*Do the traceability requirements extend to certified reference materials and analytical (chemical) measurements?*

## AUSTRALIA

Section 10 of the National Measurement Act states:

10. When, for any legal purpose, it is necessary to ascertain whether a measurement of a physical quantity for which there are Australian legal units of measurement has been made or is being made in terms of those units, that fact shall be ascertained by means of, by reference to, by comparison with or by derivation from:

- (a) an appropriate Australian primary standard of measurement;
- (b) an appropriate Australian secondary standard of measurement;
- (c) an appropriate State primary standard of measurement;
- (d) an appropriate recognised-value standard of measurement;
- (e) an appropriate reference standard of measurement;
- (f) 2 or more standards of measurement, each of which is a standard of measurement referred to in paragraph (a), (b), (c), (d) or (e);
- (g) a certified reference material;
- (h) a certified measuring instrument;
- (i) one or more standards of measurement, each of which is a standard of measurement referred to in paragraph (a), (b), (c), (d) or (e) and a certified reference material;
- (j) one or more standards of measurement, each of which is a standard of measurement referred to in paragraph (a), (b), (c), (d) or (e) and a certified measuring instrument; or
- (k) one or more standards of measurement, each of which is a standard of measurement referred to in paragraph (a), (b), (c), (d) or (e), a certified reference material and a certified measuring instrument;

and not in any other manner.

This definition currently only allows for traceability to Australian standards. Overseas standards as such have no legal standing.

## CANADA

The Legal Metrology Branch administers the *Weights and Measures Act* and *Electricity and Gas Inspection Act*. This legislation, which regulates trade measurement, requires that measuring devices used in trade have received type approval from the Legal Metrology Branch (LMB) of Industry Canada before being used. All the standards that are used by Legal Metrology Branch officials when conducting device inspections have to be periodically calibrated in relation to LMB reference standards. The calibration period is prescribed in the *Weights and Measures Regulations*.

Legal Metrology Branch personnel also perform standards calibrations for service companies that are involved in the testing of measuring devices. Unless accredited to perform work for LMB, these companies are not required by law to have all their standards calibrated by the Branch or the National Research Council.

## **PEOPLE'S REPUBLIC OF CHINA**

There are legislative requirements for traceability to the national standards of measurement and certified reference materials in Acts for Management of Primary Standards of Measurement and Acts for the Management of Certified Reference Materials.

## **INDONESIA**

Yes there are, but only for mass and length.

Periodic time of calibration.

No, there are no traceability requirements to certified reference materials and analytical (chemical) measurements.

## **JAPAN**

Measurement Law requires all the verification and inspection organizations to take verification standard tests as frequently as stated in the law. The primary verification standard test, though not a calibration in a strict sense, is executed by the national standards laboratories so that the traceability to the national measurement standards can be maintained. Manufacturers of measuring instruments are also required to take verification standard tests.

When the new Measurement Law became effective in November 1993, Japan Calibration Service System (JCSS), Japan's calibration laboratory accreditation system, started its service to disseminate national measurement standards and provide national traceability to the private sector in accordance with the international scheme such as ISO Guide 25 and other related guides. JCSS includes not only physical measurement standards but also certified reference materials. Though JCSS is a voluntary service, the calibration certificates with JCSS logo and appropriate uncertainty can be accepted, if calibrated frequently enough, as the substitute of verification standards test results.

The scope of metrology legislation in Japan includes concentration meters for O<sub>2</sub> gas, CO gas, CO<sub>2</sub> gas, SO<sub>2</sub> gas, NO<sub>x</sub> gas and pH level. The verification standard tests for these instruments are executed by using the corresponding certified reference gases and materials with JCSS logo mark. Other chemical measurement instruments, though out of the scope of mandatory verification, are also expected use certified reference materials by other requirements such as GLP and GMP requirements.



## **REPUBLIC OF KOREA**

The Weights and Measures Act requires that the measurement of physical quantity for legal purpose be made by means of, reference to, comparison with, or derived from, specified standards of measurement including certified reference materials (CRM).

## **MALAYSIA**

Yes all measurements used for trade purpose or for legal purpose must be traceable to the national standards. All working standards should be compared to the tertiary standards yearly; tertiary standards should be compared to secondary standards once every 3 years; secondary standards should be compared to national standards once every 5 years and the national standards to international standards from time to time as may appear to the minister expedient.

Traceability requirements do not extend to certified reference material and analytical measurements.

## **NEW ZEALAND**

Legislative requirements for traceability to the national standards of measurement only cover trade weights and measures specified in the Weights and Measures Act 1987, and a few other measurements such as net mesh gauges (Fisheries Regulations 1986, Amendment No. 13).

The standards provided in the Weights and Measures Act 1987 are required to be verified at intervals of no more than 5 years against the national standards. No specific performance criteria is set out in the legislation. Standard masses are expected to conform to the appropriate classification set out in OIML R111.

There are no requirements extending traceability to certified reference materials and analytical (chemical) measurements.

## **PAPUA NEW GUINEA**

- (i) Yes. Under NISIT Act 1993 and Trade Measurement Act 1978, all PNG measurement standards are traceable to PNG national primary measurement standards which in turn are traceable to international prototype primary standards of measurement.
- (ii) Yes, the same as in (i) above equally applies to certified reference materials and analytical measurements.

## **SINGAPORE**

The primary standard weight sets used in the Weights & Measures Office are periodically verified by SISIR and they are thus traceable to the national standards of measurement. SISIR's standard weights are traceable to international standards through calibration with MNL of Australia and PTB of Germany.

## **CHINESE TAIPEI**

- Yes.
- Verification and inspection.
- Not yet.

## **THAILAND**

Yes there are legislative requirements for measurements made for any legal purpose to be traceable to the national standards of measurement.

Any standard of measurement made and used for legal purpose and subjected to Weights and Measures Law shall be traceable to the standard of measurement maintained by Weights and Measures Division and all work in connection with traceability of standards of measurement shall be carried out by the Weights and Measures Division.

No, the traceability requirements do not extend to certified reference materials and analytical (chemical) measurements.

## **UNITED STATES OF AMERICA**

There are Federal and State laws relating to traceability.

Specific requirements vary according to the unit.

Yes, but not in all cases.

## **VIETNAM**

Yes, these requirements are made in Metrology Act and Regulation No. 318/TDC-QD.

No, these requirements do not extend to certified reference materials and analytical measurements.

### **4. *Pattern Approval.***

*Are there legislative requirements for the pattern approval testing of:*

*4.1 Trade measuring instruments;*

*4.2 Utility meters e.g. gas, electricity, water, telephone; and*

*4.3 Other legal measuring instruments.*

*What is the range of the instruments covered by these requirements?*

## **AUSTRALIA**

The National Measurement Act provides for the National Standards Commission or its agents to examine the patterns of measuring instruments and to make provisions for the approval and verification of patterns of measuring instruments as suitable for use for trade or for any other legal purpose.

## **CANADA**

### *4.1 Trade Measuring Instruments*

Measuring devices used in trade must be approved and inspected by LMB prior to being used in trade. In a first step, measuring devices are evaluated by LMB laboratories in order to determine if their design, conception, construction and performance meet the regulatory requirements. After a device type or model has received national approval, the devices sold in the marketplace must be tested and certified by Branch officials before they can be used in trade

In the *Weights and Measures Regulations*, some types of devices are exempted of type approval and inspection and can be used in trade without any LMB evaluation (see details below).

### **TYPES OF DEVICES EXEMPTED FROM TYPE APPROVAL AND INITIAL INSPECTION**

The following is an excerpt from the *Weights and Measures Regulations*:

#### **EXEMPTIONS FROM SECTION 8 OF THE ACT (SOR/90-118)**

The following classes or types of devices are exempt from section 8 of the Act:

- (a) water meters;
- (b) parking meters;
- (c) taxi meters;
- (d) odometers of motor vehicles;
- (e) coin-operated machines for weighing persons;
- (f) coin-operated machines that dispense a predetermined quantity of liquid into a container and that do not register by a mechanical or an electrical indicator the quantity of liquid dispensed;
- (g) clocks, watches, chronometers and other time measuring devices;
- (h) milk measuring tanks for farm use;
- (i) measuring tanks mounted on railway cars;
- (j) tanks that have a capacity in excess of 55,000 litres or 12,000 gallons; (SOR/90-118)
- (k) meters for the measurement of grease and other commodities having flow properties similar to grease;
- (l) static measures that are used as containers in which a commodity is sold or offered for sale; (SOR/80-429)
- (m) packing devices; and
- (n) weighing machines designed for use in laboratories, scientific study or weighing precious metals and that are used for weighing precious metals or other commodities

of comparable value, if they conform to applicable specifications for performance, installation and use established by these Regulations and if, prior to December 31, 1981, they are inspected and certified as meeting such specifications.

#### 4.2 *Utility Meters*

Pursuant to the *Electricity and Gas Inspection Act*, electricity and natural gas meters are required to be approved and inspected by the Legal Metrology Branch. There is no such requirement for water meters.

#### 4.3 *Other Legal Measuring Instruments*

Except for measuring devices used solely in laboratories or exempted by regulations (see *Appendix A*), all measuring devices used in trade must be of an approved type and must be inspected prior to use.

### **PEOPLE'S REPUBLIC OF CHINA**

The instruments covered in Catalogues of the Measuring Instruments Supervised in Accordance with the Law of the P. R. China and Catalogue of Imported Measuring Instruments Subject to pattern Approval of the P. R. China, require pattern approval.

### **INDONESIA**

4.1 Yes, for trade measuring instruments.

4.2 Yes, for utility meters eg. gas, electricity, water (except the telephone).

4.3 Not yet for other legal measuring instruments.

The range of instrumentments covered by these requirements are for:

- public interest;
- business transaction;
- delivery or weighing;
- determination of yield or wage;
- determination of final product of business;
- the enforcement of legislative requirements.

### **JAPAN**

In Japan, measuring instruments under metrological control are called "specified measuring instruments" and are required to be used with valid verification mark. Table 5 is the list of specified measuring instruments. Pattern approval is virtually a mandatory requirement for the manufacturers of measuring instruments.

### **REPUBLIC OF KOREA**

Pattern approval requirements are contained in the criteria of verification by the Order of the Administrator. The measuring instruments which may be obtained pattern approval are the same as those for verification such as No. 9 (Verification).

## **MALAYSIA**

Trade measuring instruments need pattern approval under the Weights & Measures Act 1972. Utility meters eg. gas, electricity, water and telephone meters have been exempted from the Weights and Measures Act 1972 and placed under the various Authorities responsible for them. Thus pattern approval of these instruments is the responsibility of the respective authorities. No specific requirements for pattern approval of other legal measuring instruments except taxi meters.

### Note:

Pattern approval of other legal measuring instruments is not co-ordinated by the Ministry of Domestic Trade and Consumer Affairs.

## **NEW ZEALAND**

4.1 Trade measuring instruments are required to have pattern approval.

The range of equipment subject to pattern approval includes:

- Driveway flowmeters for petrol, diesel, kerosene and LPG
- Flowmeters fitted to vehicles for petrol, diesel, kerosene, LPG, milk and beer
- Milk delivery measures (farm milk tanks)
- Beer delivery measures (for delivery of beer to retailers)
- Oil measuring instruments
- Length measuring instrument
- Area measuring instruments for leather and various textiles
- Hopper weighing instruments
- Weighbridges
- Semi-automatic weighing instruments
- Belt weighing instruments
- Weighing instruments
- Bottles for measuring oil, milk and cream
- Measures of volume
- Masses

4.2 There are no provisions relating to the pattern approval of utility meters (gas, electricity, water or telephones).

4.3 New patterns of taximeters imported into New Zealand are required to be approved by the New Zealand Land Transport Safety Authority. Vehicle surveillance equipment and breath analysers are approved by regulation. There are no specific requirements set out in legislation relating to pattern approval examinations of these instruments. Approval testing is carried out by Industrial Research Limited, a Crown Research Institute to specifications provided by the traffic authority: New Zealand Police.



- 4.2. This is limited to only a few jurisdictions.
- 4.3. The following list details the types of devices that may be eligible for type evaluation:
- \* Scales
  - \* Belt-Conveyor Scale Systems
  - \* Automatic Bulk Weighing Systems
  - \* Weights
  - \* Automatic Weighing Systems
  - \* Liquid-Measuring Devices
  - \* Vehicle-Tank Meters
  - \* Liquefied Petroleum Gas and Anhydrous Ammonia Liquid Measuring Devices
  - \* Hydrocarbon Gas Vapour-Measuring Devices
  - \* Cryogenic Liquid-Measuring Devices
  - \* Milk Meters
  - \* Water Meters
  - \* Mass Flow Meters
  - \* Vehicle Tanks Used as Measures
  - \* Liquid Measures
  - \* Farm Milk Tanks
  - \* Measure-Containers
  - \* Graduates
  - \* Dry Measures
  - \* Berry Baskets and Boxes
  - \* Fabric-Measuring Devices
  - \* Wire- and Cordage-Measuring Devices
  - \* Linear Measures
  - \* Odometers
  - \* Taximeters
  - \* Timing Devices
  - \* Grain Moisture Meters
  - \* Near Infrared Grain Analyzers

## **VIETNAM**

Yes, such legislative requirements are stipulated in regulation No. 290/TDC- QD on production and repair of measuring instruments and their pattern approval.

The instruments covered by these requirements are the ones concerning Trade, Safety, Health and Environment Protection.

## **5. *Certification of Measuring Instruments.***

*Are there legislative requirements for the certification of measuring instruments as "fit for purpose" for:*

5.1 *Trade measuring instruments;*

5.2 *Utility meters; and*

### 5.3 *Other legal measuring instruments.*

*Which organisation is responsible for this certification?*

#### **AUSTRALIA**

The National Measurement Act also provides for the issuing of certificates in respect of the approval of patterns of measuring instruments. However mandatory requirements for pattern approval, testing and certification only apply currently to all trade measuring instruments (with utility meters exempted). However a recommendation is due to go to \_Government to provide for mandatory pattern approval, certification of specified utility meters and legal measurement instruments.

#### **CANADA**

Except for the devices mentioned in section 4.3, measuring devices are inspected and certified before being used in trade and on a periodic or selective basis after their initial inspection. These inspections are performed by LMB officials or private companies that have been accredited to perform LMB statutory work.

#### **PEOPLE'S REPUBLIC OF CHINA**

The manufacturer of measuring instruments must obtain the licenses from the metrology authority according to the requirements in Acts for the Management of Licenses for Manufacture and Repair of Measuring Instruments. This is similar to product certification in other countries.

#### **INDONESIA**

- 5.1 Yes, there are for trade measuring instruments;
- 5.2 Yes, there are for utility meters; and
- 5.3 Yes, there are for other legal measuring instruments.

#### **JAPAN**

The NRLM or other institutions for legal metrology do not issue any certificates for measuring instruments but pattern approvals.

The NRLM is about to issue test results for load cells and indicators of weighing system whether or not they are in compliance with the technical requirements as the parts of weighing instruments. The assembly makers of weighing instruments are exempt from tests on load cells and indicators if they get a copy of the results from parts suppliers and attach the results with their applications.

#### **REPUBLIC OF KOREA**



Yes. This case is the case as those of No. 9 (Verification).

## **MALAYSIA**

There are legislative requirements for trade measuring instruments to be certified yearly by the local Weights & Measures Inspectors as fit for trade purposes.

Utility meters are only checked as fit for use before being installed.

Taxi meters belong to other legal measuring instruments which require certification.

Trade measuring instruments come under the purview of the Ministry of Domestic Trade & Consumer Affairs.

Utility meters come under the purview of the respective authorities; for example gas and electricity meters come under the Department of Electric and Gas Supply; telephone meters under the Department of Telecommunications and water meters under the Water Works Department. Taxi meter certification is by the Road Transport Department.

## **NEW ZEALAND**

5.1 All trade measuring instruments are required to be verified and stamped before they are put into use for trade. Once in use, owners/users can have them tested and certified as correct at yearly intervals. This certification is not mandatory but does provide a defence to a charge of using an incorrect instrument in the case of a certified instrument being found to be incorrect.

5.2 Utility meter

Water - No

Electricity - No

Gas - Yes (Energy and Resources Division, Ministry of Commerce)

Telephone - No

5.3 Other legal measuring instruments.

Regular inspection/certification is carried out of vehicle surveillance equipment and breath analysers. Reference equipment is tested by Industrial Research Ltd. Field equipment is tested by the New Zealand Police.

Taximeters are required to be tested by Vehicle Testing (NZ) Ltd. at 6 monthly intervals. The performance standards are not set in national regulations.

## **PAPUA NEW GUINEA**

Not properly developed.

## **SINGAPORE**

All new or repaired weighing or measuring instruments for use for trade are required to be verified, stamped and approved by an Inspector of Weights & Measures of the Weights & Measures Office before they can be put for trade use. Utility meters (e.g. gas, electricity, water, telephone), taxi meters are legislated and administered by other governmental agencies.

## **CHINESE TAIPEI**

- No.

## **THAILAND**

No, there are no legislative requirements in connection with legal metrology for the certification of measuring instruments as "fit for purpose" for trade measuring instruments, utility meters; and other legal measuring instruments .

## **UNITED STATES OF AMERICA**

5. Yes
- 5.2. Some local jurisdictions regulate these devices in sub-metering situations.
- 5.3. Some medical and law enforcement devices are required to be "certified" by other Federal, State, or Local agencies.

## **VIETNAM**

No, not yet.

### **6. *OIML Certification Scheme.***

*Are OIML Certificates accepted for certification of measuring instruments?*

## **AUSTRALIA**

OIML Certificates are currently not accepted due to the lack of mutual recognition agreements on pattern approval testing (See Circular No. 376 dated 27 July 1993 attached).

## **CANADA**

Due to differences between OIML and Canadian approval requirements, Canada does not recognize OIML certificates.

Canada has signed an agreement with the United States of America whereby the approval laboratories of each country can perform approval evaluation for the other country. This allows device manufacturers to submit their device to only one country but obtain type

approval in both countries. This agreement is limited to specific types of devices and is the result of extensive work between Canada and the United States in order to train the laboratory staff on the other country's approval requirements and procedures.

#### **PEOPLE'S REPUBLIC OF CHINA**

OIML Certificates are currently not accepted due to lack of mutual recognition agreements on pattern approval.

#### **INDONESIA**

OIML Certificates are not yet accepted for certification of measuring instruments.

#### **JAPAN**

##### **<Acceptance>**

Each approval authority may accept the Certificate as a reference for its own decision. This is because Japan's technical requirements and corresponding OIML Recommendations are not necessarily the same. Certificates without test results cannot be accepted for this reason.

##### **<Issuance>**

The NRLM is now preparing to issue OIML certificates. Tests will be executed on OIML Recommendations not on Japan's own technical requirements.

#### **REPUBLIC OF KOREA**

Not yet. But we are preparing to adopt the OIML Certificate System in Korea.

#### **MALAYSIA**

OIML certificates for certification of measuring instruments is accepted.

#### **NEW ZEALAND**

New Zealand accepts applications for approval based on the OIML certification system provided all necessary supporting documentation is provided.

The overseas legal metrology authority must:

- be a full member of OIML and;
- in issuing the approval, act in conformity with OIML International Recommendations.

#### **PAPUA NEW GUINEA**

A formal position is yet to be established.

## **SINGAPORE**

All new weighing or measuring instruments for use for trade are required to be verified, stamped and approved by an Inspector of Weights & Measures before they can be put for trade use.

## **CHINESE TAIPEI**

- No.

## **THAILAND**

Yes, OIML Certificates are accepted for certification of measuring instruments.

## **UNITED STATES OF AMERICA**

No. However, work is underway to implement the certificate system for non-automatic weighing devices and load cells and the possibility of mutual recognition agreements.

## **VIETNAM**

OIML certificates are currently not accepted yet in Vietnam, due to the lack of mutual recognition agreements on pattern approval testing and Vietnam does not fully recognize OIML certificates.

### **7. *Overseas Test Results.***

*Are there legislative or administrative provisions for the acceptance of overseas test results for the pattern approval certification of measuring instruments?*

## **AUSTRALIA**

The National measurement Act allows the National Standards Commission to accept test results from other testing laboratories. However, overseas test results would not be legally traceable to Australian national standards of measurement.

However the main practical impediment to acceptance of overseas test results is the absence of mutual recognition agreements.

## **CANADA**

Measuring devices must comply with the Canadian regulatory requirements in order to obtain type approval. As mentioned in section 6, the Legal Metrology Branch recognizes, for specific device types, approval evaluations performed in the United States. However, this mutual recognition agreement was only signed after mechanisms were put in place to ensure consistent approval evaluation for both countries.

## **PEOPLE'S REPUBLIC OF CHINA**

The overseas test results for pattern approval are not accepted yet. But we hope we have mutual recognition agreements on this.

## **INDONESIA**

Not yet.

## **JAPAN**

The Ministerial orders state that the test results issued by foreign laboratories which are certified by the Minister of International Trade and Industry will be accepted. This test should be executed completely in accordance with Japan's technical requirements.

The OIML certificates or other test certificates with test data issued by foreign laboratories may be accepted as a reference by each of the pattern approval authorities.

## **REPUBLIC OF KOREA**

The Ministerial Order states that the test results issued by foreign laboratories which are certified by the Administrator of KIAA may be accepted.

## **MALAYSIA**

There are legislative and administrative provisions for acceptance of overseas test results for the pattern approval of measuring instruments.

## **NEW ZEALAND**

There are no legislative provisions for the acceptance of overseas test results for the pattern approval certification of measuring instruments. Where New Zealand has attempted to obtain these from the issuing/examining authority we have encountered reluctance to make them available.

## **PAPUA NEW GUINEA**

Administrative provisions are yet to be established although pattern approval certification by NSC of Australia is provided for under the Trade Measurement Act - 1978.

## **SINGAPORE**

The pattern approval certification of measuring instruments issued by developed countries are accepted administratively.

## **CHINESE TAIPEI**

- No.

## **THAILAND**

No, there are no legislative or administrative provisions for the acceptance of overseas test results for the pattern approval certification of measuring instruments. However, all imported measuring and weighing instruments, even though they have been verified by legal metrology authority in foreign country, shall go through Weights and Measures Division for verification before they can be used legally in Thailand.

## **UNITED STATES OF AMERICA**

Yes on a case by case basis.

## **VIETNAM**

The Regulation No. 290/TDC-QD allows the acceptance of test results from other testing laboratories. However, the main practical impediment to acceptance of overseas test results is the absence of mutual recognition agreements.

### **8. *Pattern Compliance.***

*Are there any legislative requirements for ensuring that production instruments comply with the approved pattern?*

## **AUSTRALIA**

The Australian Uniform Trade Measurement Legislation requires that before any trade measurement instrument can be verified (and stamped) for use for trade, the inspector or certifier must be certified that the instrument is of an approval pattern.

However field inspection for compliance of electronic instruments has limitations in determining compliance with environmental and influence factors. An adequate compliance strategy will require appropriate statistical sampling of production instruments for laboratory compliance testing. There is no correct legislative provision for such sample testing in Australia.

## **CANADA**

Whenever the construction, composition, or design of an approved measuring device is modified, the manufacturer must submit a request to the Legal Metrology Branch in order to have their Notice of Approval revised. Measuring devices that are modified as mentioned above are no longer approved and cannot be used in trade unless a revised prototype is evaluated by the Legal Metrology Branch and the Notice of Approval is revised. Any device

modified without LMB approval would be subject to enforcement actions, i.e. seizures, legal actions, by Branch officials.

#### **PEOPLE'S REPUBLIC OF CHINA**

The manufacture of new kinds of measuring instruments needs pattern approval. These are the market inspection of measuring instruments and statistical sampling of production instruments.

#### **INDONESIA**

Yes, there are.

#### **JAPAN**

It is legally required for the manufacturers to ensure that production instruments comply with the approved pattern. The government occasionally inspects the manufacturers whether they satisfy this requirement and, if appropriate, the government can force them to make necessary revision or improvement.

#### **REPUBLIC OF KOREA**

No. But the type requirements, e.g. structure test, performance test, functioning test, etc., for verification, can be abbreviated by pattern approval.

#### **MALAYSIA**

No legislative requirements for ensuring that production instruments comply with the pattern approval.

#### **NEW ZEALAND**

Not at present. A review of the Weights and Measures Act 1987 is examining a proposal to introduce formal pattern compliance testing.

#### **PAPUA NEW GUINEA**

Administrative provisions are yet to be established although pattern approval certification by NSC of Australia is provided for under the Trade Measurement Act - 1978.

#### **SINGAPORE**

No legislative requirement.

#### **CHINESE TAIPEI**

- Yes.

## **THAILAND**

No, there are not.

## **UNITED STATES OF AMERICA**

Yes.

## **VIETNAM**

No, not yet.

### **9. Verification.**

*Are there legislative requirements for verification of trade and legal measuring instruments and does this include pattern compliance?*

*Are there any legislative requirements that allow the verification of trade and legal measuring instruments by private organisations?*

*Are these organisations required to be licensed and/or accredited for this activity?*

## **AUSTRALIA**

The requirements in the Uniform Trade Measurement Act for verification of trade measuring instruments are stated under Section 13.

13.(1) The requirements for verification or certification of a measuring instrument are as follows:

- (a) the instrument must operate within the appropriate limits of error that may be tolerated under the National Measurement Act at verification;
  - (b) the instrument must be of an approved pattern; and
  - (c) the instrument must have no graduations in a unit of measurement other than a unit of measurement under the metric system of measurement within the meaning of the National Measurement Act (except in circumstances that are prescribed as exempt from this paragraph or in a case determined by the administering authority to be a special case).
- (2) The requirements for re-verification of a measuring instrument are the same as for verification under subsection (1) except that the instrument need not operate within the appropriate limits of error that may be tolerated under the National Measurement Act at verification but must operate within the appropriate limits of error that may be tolerated under that Act at re-verification.



When verification is conducted by licensed service organisations, it is known as certification. Currently, certifiers are licensed by State and Territory trade measurement authorities. It is proposed to introduce a national Trade Measurement Licensees Accreditation Scheme.

## **CANADA**

Pursuant to the *Electricity and Gas Inspection Act*, electricity and natural gas meters are required to be approved, initially inspected, and re-verified within a specific time period by LMB officials. Private organizations can be accredited by LMB to perform initial inspections and reverifications.

Pursuant to the *Weights and Measures Act*, the other trade measuring devices (except the ones specified in the *Appendix A*), are required to be approved and initially inspected by LMB officials. Random and selective inspections are performed by LMB officials on devices after their initial verification. An accreditation program was launched in May 1995 in order to enable private organisations to pursue LMB accreditation and eventually perform initial inspections of measuring devices.

## **PEOPLE'S REPUBLIC OF CHINA**

There are legislative requirements for verification in National Verification Regulations. The verification organisations are required to be authorized by the metrology authority.

## **INDONESIA**

Yes, there are.

## **JAPAN**

Verification is required for each single specified measuring instrument listed in Table 5 before sales. The requirements to pass the verification test are to (1) comply with approved pattern and (2) satisfy the permissible error requirement.

Verification authorities are listed in the fifth column of Table 5. As is shown there, private organizations such as Japan Quality Assurance Organization (JQA) may be designated by the MITI to execute verification for particular instruments. For example, MITI has designated JQA to be responsible for verification of concentration meters, vibration meters, noise level meters, thermometers etc.

Those manufacturers whose quality systems comply with the criteria stated in the Ministerial order and are designated by the Minister may exempt from verifications by government sectors. This scheme, called "designated manufactures scheme," is an equivalent of the Module B + Module D of the EU's New Approach (CE marking scheme).

## **REPUBLIC OF KOREA**

The Administrator of KIAA has the authority of verification for the measuring instruments prescribed by the Presidential Decree. The Standards for verification are prescribed by the

Administrator of KIAA. And the Administrator may designate specialized verification institutes.

The measuring instruments which must be verified by the provisions of the Presidential Decree are as follows:

- Taximeters
- Weighing instruments (4 items)
- Weights (2 items)
- Clinical thermometers
- Watt-hour meters
- Gas meters
- Water meters
- Integrating gasoline meters
- Oil meters
- Liquid petroleum gas meters
- Integrating graduated tanks
- Graduated tank lorries
- Blood pressure gauges
- Thermal energy meters

The requirements for verification are as follows:

- the instruments must satisfy the type requirements, e.g. structural test, performance test, functioning test, marking, etc. (this requirement can be abbreviated by pattern approval).
- The instruments must operate within the appropriate limits of errors that may be tolerated under the Order of the Administrator.

There are two kinds of verification for the above-mentioned measuring instruments i.e. verification after manufacturing and importing, and verification after repairing and expiration of the term of validity for verification.

At present, three institutes for verification after manufacturing and importing are designated as specialised verification institutes, i.e. Korea Machinery Meter and Petrochemical Testing & Research Institute (MPI), including three local institutes; the National Industrial Technical Institute (NITI) including nine local industrial technology institutes, and the Korea Research Institute of Standards and Science (KRISS) for verification of only normal watt-hour meters.

The authority for verification after repairing and expiration of the term of validity for verification has been delegated to mayors of 15 local governments. The duration of valid verification for certain measuring instruments are specified by the Ministerial Ordinance.

## **MALAYSIA**

All instruments for trade use must have pattern approval before they can be verified by the local Inspector of Weights & Measures.

No legislative requirements that allow for the verification of trade and legal measuring instruments by private organisations. However licensed and/or accredited organisations can carry out reverification work, witnessed by the Inspector. This is usually done for weighbridges and instruments used for flow measurement in depots. For other instruments licensed organisations or repairers can only carry out repairs, services and maintenance work.

## **NEW ZEALAND**

All measuring instruments used for trade are required to be verified before they are put into use. Instruments cannot be verified unless they comply with the certificate of approval covering the particular pattern. Private organisations are accredited under the Weights and Measures Act 1987 to carry out verification of measuring instruments. They can also be accredited to test instruments which are already in use and issue certificates confirming the accuracy of such instruments.

The organisations are formally accredited and are audited against regulatory requirements based on ISO 9000 quality systems series, which are specified in the Weights and Measures Regulations 1987, Amendment No. 4.

## **PAPUA NEW GUINEA**

- (a) Yes, Trade Measurement Act 1978 and NISIT Act 1994.
- (b) Yes, but the Certification Scheme is yet to be established by NISIT and the Consumer Affairs Council.

## **SINGAPORE**

All instruments for weighing or measuring are required by law to be verified, stamped and approved by Weights & Measures Office.

Two private companies are approved to calibrate flowmeters on behalf of Weights & Measures Office and they are to be accredited under Singlas Laboratories by SISIR.

## **CHINESE TAIPEI**

- Yes.
- Yes.
- Yes.

## **THAILAND**

Yes, there are legislative requirements prescribed in Weights and Measures Law and its Ministerial Regulations for verification of trade and legal measuring instruments but pattern approval requirement is not included since we do not have any requirement related to pattern approval of trade and legal measuring instruments.

Currently there are no legislative requirements that allow the verification of trade and legal measuring instruments by private organizations, but we are in the process of revising our Weights and Measures Law, (which is now waiting to be approved by the Cabinet) which will allow private organizations to be licensed, accredited and monitored by Weights and Measures Division, for verification of trade and legal measuring instruments under the direction of Weights and Measures Division.

## **UNITED STATES OF AMERICA**

9.1 Yes.

9.2 In a few jurisdictions but information on this type of work is very limited

## **VIETNAM**

Yes, there is, but it does not include pattern compliance.

No, there are not.

### **10. OIML Recommendations.**

*Are the legislative requirements for pattern approval and verification harmonised with OIML International Recommendations?*

## **AUSTRALIA**

The National Measurement Act requires OIML International Recommendations to be used unless the National Standards Commission is of the opinion that:

- (a) it is in the national interest not to do so; or
- (b) because of particular circumstances applying in Australia it is not practicable to comply with the specifications.

Generally, the Australian requirements are harmonised with OIML Recommendations, however they may vary from other national requirements particularly in range of temperature-humidity. Such variations are normally allowed for in OIML Recommendations but can be impediments to mutual recognition.

## **CANADA**

Efforts have been made over the years to harmonize, whenever possible, the Canadian approval requirements with the OIML Recommendations. There still are however, many differences between Canadian and OIML approval requirements.

## **PEOPLE'S REPUBLIC OF CHINA**

Verification Regulations in China are becoming harmonised with OIML Recommendations.

## **INDONESIA**

Indonesian legislative requirements for pattern approval and verification are not 100% harmonised with OIML recommendations.

## **JAPAN**

Japan's technical requirements for measuring instruments, in general, mostly adopt the OIML recommendations. The requirements of non-automatic weighing instruments, however, include some discrepancies. It is now under consideration or operation to harmonize Japan's requirements with the OIML recommendations.

#### **REPUBLIC OF KOREA**

Not yet.

#### **MALAYSIA**

OIML International Recommendations are always referred to for pattern approval guidance and when amendments to legislation is required.

#### **NEW ZEALAND**

Yes, OIML recommendations are incorporated into the Weights and Measures Regulations 1987.

#### **PAPUA NEW GUINEA**

In principle yes but needs to be updated to include current OIML recommendations.

#### **SINGAPORE**

The Weights & Measures Office does not conduct pattern approval test.

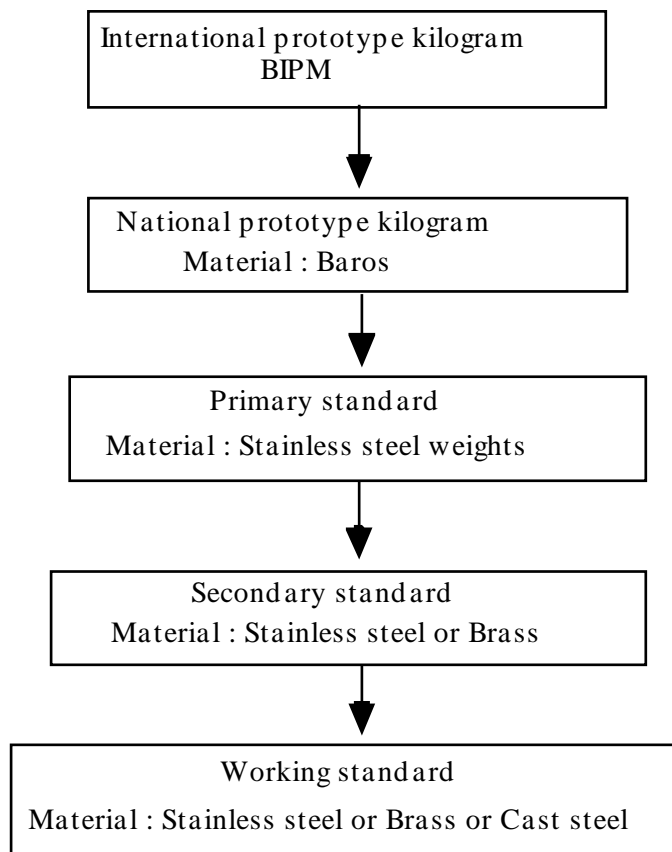
#### **CHINESE TAIPEI**

- To the maximum possible extent.

#### **THAILAND**

Some legislative requirements for verification have been harmonised with OIML International Recommendations but as stated we are revising Weights and Measures Law and its Ministerial Regulations which is mainly harmonised with OIML International Recommendations.

### **FLOW OF MASS STANDARD SYSTEM IN THAILAND**



#### **UNITED STATES OF AMERICA**

U.S. requirements for devices are not identical to OIML Recommendations but harmonisation efforts continue to advance.

#### **VIETNAM**

In principle yes, but needs to be updated to include current OIML recommendations

#### **11. Other Issues.**

*Are there any other issues relating to legislative harmonisation that should be considered?*

#### **AUSTRALIA**

None.

#### **CANADA**

The above covers the most significant legislative harmonization issues.

## **PEOPLE'S REPUBLIC OF CHINA**

None.

## **INDONESIA**

None.

## **JAPAN**

The idea of "series pattern approval" may vary from one country to another in this region. It should also be harmonised within this region and eventually all over the world.

## **REPUBLIC OF KOREA**

No.

## **MALAYSIA**

- Problems of enforcing legislative requirements.
- Amendments to legislation if any done in the last one year to comply with OIML requirements.
- Periodic verifications conducted on trade instruments/legal measuring instruments and their validity period,
- Time interval stipulated legally or administratively (if any) for comparison of various standards in the hierarchy of physical measurement.

## **NEW ZEALAND**

None.

## **PAPUA NEW GUINEA**

None.

## **SINGAPORE**

None.

## **CHINESE TAIPEI**

None.

**THAILAND**

None.

**UNITED STATES OF AMERICA**

U.S. requirements for devices are not identical to OIML Recommendations but harmonisation efforts continue to advance.

**VIETNAM**

No, there are not.