

Legal Metrology System in Japan

Japan Measuring Instruments Federation 2021/3/25

Measurement Act (English version)

<http://www.japaneselawtranslation.go.jp/law/detail/?vm=04&re=01&id=82>

* translation is not authentic

Chapter 2. Regulations regarding measurement units

Legal units of measurement

Legal units of measurement are provided based on the SI unit system and the use of non-statutory measurement units is prohibited.

Examples of SI unit system

Units are provided for 65 physical quantities such as length (meter), mass (kg), time (second)

The definition of the four base units namely, kilogram, ampere, Kelvin and mole and has been changed from being linked to artefacts to being based on the fundamental constants on nature from 20th May, 2019.

Chapter 3. Obligation to supply accurate measurement

•Commodity quantification system

In making transactions or certifications with legal units of measurement, one is obliged to make effort to measure accurately.

Measurement regulations regarding sales of commodities

Article 11 Obligation to make effort to indicate length, etc. clearly

When one sells commodities whose length, mass, or volume is to be measured by sales, one is obliged to make effort to indicate such quantities in legal units of measurement.

Article 12 Paragraph 1 Obligation of accurate measurement of specified commodities

When one measures and sells specified commodities, they shall be measured without causing a measurement error to exceed the quantity tolerance

Article 12 Paragraph 2

When designated commodities out of specified commodities are sold in containers, their content quantities are required to be indicated

Article 13 Paragraph 1 Commodities with obligation of indication of quantities

When certain specified commodities designated by the cabinet orders are sealed and sold, they are required to be measured without causing measurement errors to exceed the quantity tolerance, and their content quantities as well as the addresses and the names of their manufacturers are required to be indicated

Article 13 Paragraph 2

When specific commodities excluding specific commodities specified in Article 13, Paragraph 1 are sealed and their content quantities are indicated, they are required to be measured without causing measurement errors to exceed the quantity tolerance.

Chapter 3. Obligation to supply accurate measurement

• Periodic inspection

Measurement regulations regarding Periodic inspection

Article 19 Periodic inspection of specified measuring instruments

When using a specified measuring instruments for trade or certification which are deemed to be appropriate to be inspected on a regular basis pertaining to its performance and instrumental error in consideration of its structure, conditions for use, actual use status, etc, it must undergo periodic inspection.

Article 20 Periodic inspection bodies

A designated periodic inspection bodies designated by the prefectural governor can carry out periodic inspections.

Article 21 Interval of inspection

Performed in the Interval of inspection specified by the Cabinet Order for each specified measuring instruments

Article 23 Passing conditions

- A periodic inspection mark is attached
- Meeting technical standards
- Instrumental error is within the operating tolerances

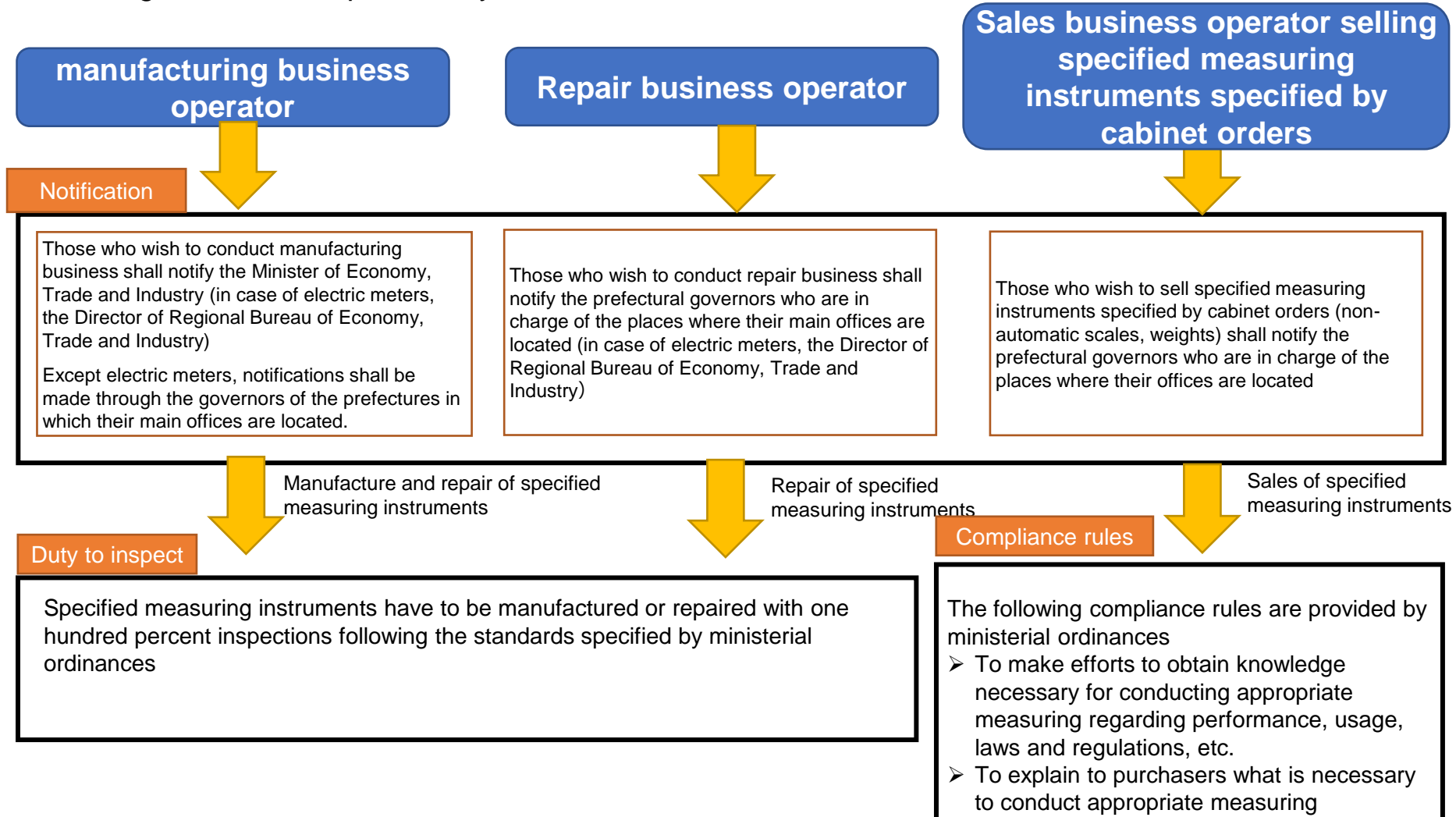
Article 25 Inspection by certified measurers

Periodic inspections are exempted when a certified measurer conducts an inspection and reports it within the specified period and by the specified method.

Chapter 4. Providing accurate specified measuring instruments

Notification System

The system aims to provide accurate specified measuring instruments by having business operators, who intend to manufacture, or repair specified measuring instruments or to sell specified measuring instruments specified by cabinet orders, make notification in advance.



Chapter 4. Providing accurate specified measuring instruments

Special container
manufacturing business



Weighing can be omitted by using a special container with a constant relationship between the internal volume and height.



Verification mark

Restrictions on transfer, etc.
Obligation to undergo
certification for specified
measuring instruments



Manufacturers, repairers, and importers of thermometers and sphygmomanometers must not transfer unless they have a certification mark



Standard conformity mark

Obligation to comply with
standards for household
specified measuring
instruments

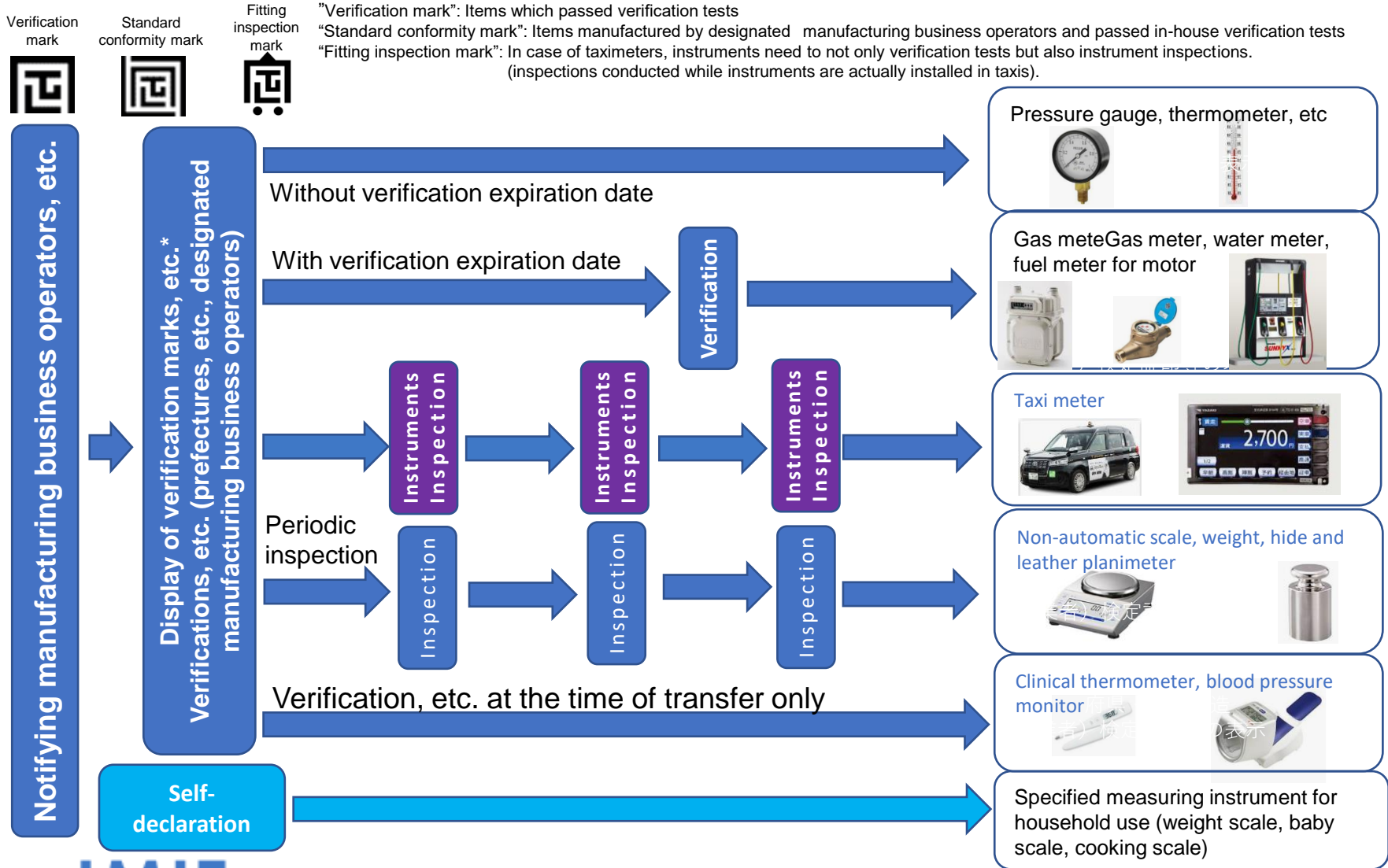


Manufacturers and importers of scales, scales for infants, and cooking scales must comply with technical standards and have a following markings on their scales. (Declaration of self-conformity)
The seller must not sell anything without a following markings.



Home measuring instrument seal

Chapter5. Process of verification and inspection



Chapter5. Process of verification and inspection

• Type approval system

In this system, structural inspection is considered to be carried out by testing and evaluating structure of an identical type instead of carrying out one hundred percent verification of structure and instrumental errors (→ One hundred percent verification of instrumental errors is necessary)

① Application

- Business operators (domestic or foreign manufacturing business operators or import business operators) shall apply to the National Institute of Advanced Industrial Science and Technology (in case of electric meters, the Japan Electric Meters Inspection Corporation) with samples of measuring instruments to be manufactured, designs, etc.

② Test

- Samples shall be tested and assessed by compatibility tests for structural technical standards (structure, material, performance, etc.) specified by ministerial ordinances.
- Tests can be contracted out to designated verification bodies

Example of test items of a type test

[Material test]

- Shock resistance test

[Confirmation test for descriptions, etc.]

- Confirmation of used units, names of manufacturing business operators, etc., confirmation of visibility of descriptions

[Instrumental error performance test]

- Test of measured values within the measurement range

[Durability test]

- Test of influence by aging

[Test against electrical disturbance]

- Test of influence of external radio waves on measured values

[Basic performance test]

- Influence and operation test assuming the operating environment

③ Approval

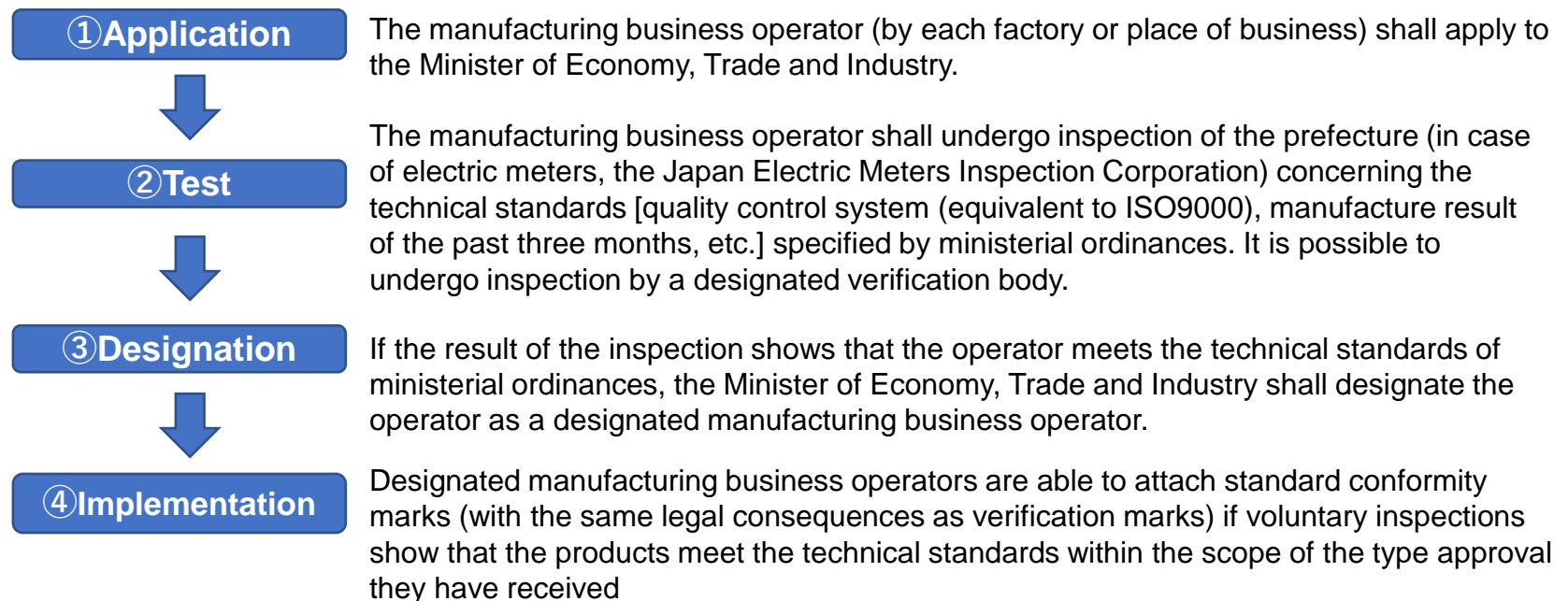
- If it is confirmed that the measuring instrument is compatible to structural technical standards, the type shall be approved.
- The approval is valid for 10 years.

Chapter 5. Process of verification and inspection

- Designated manufacturing business operator system

This system designates domestic and foreign manufacturing business operators with superior quality control ability (by each factory or place of business) and approves in-house inspection instead of verification

Procedure of designating a designated manufacturing business operator



List of Designated manufacturing business operator.

https://www.meti.go.jp/policy/economy/hyojun/techno_infra/33_files/20170818Shiteiseizou.pdf

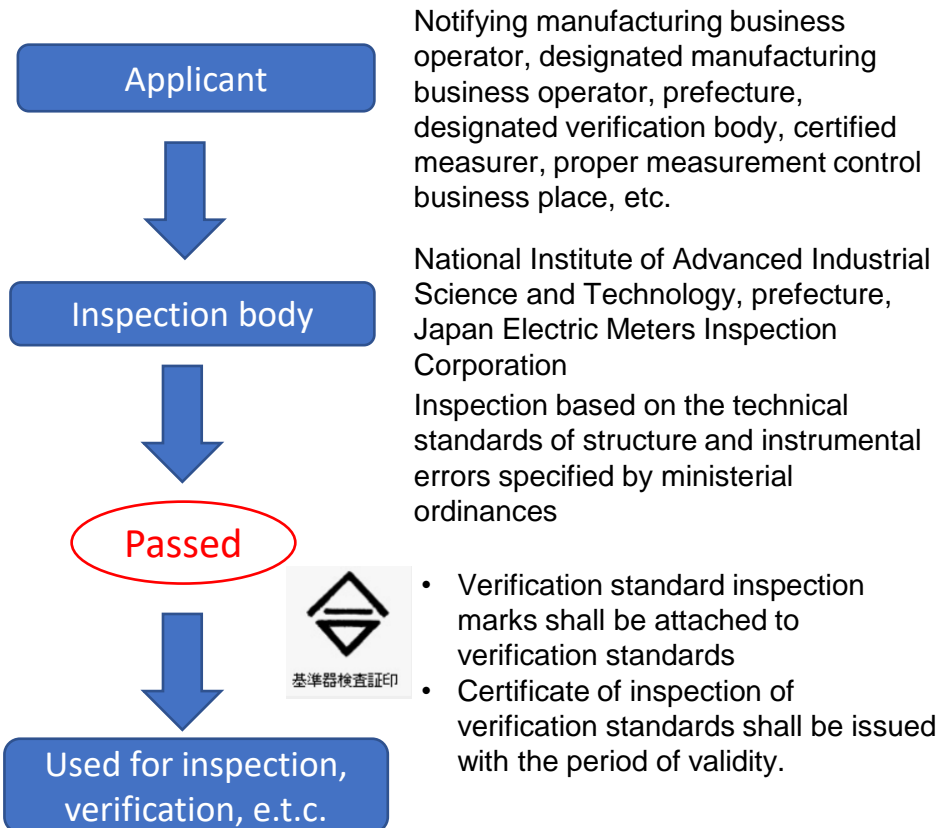
Chapter5. Process of verification and inspection

• Verification standard system

The system aims for supply of accurate specified measuring instruments by allowing only the measurement standards (verification standards) which meet the technical standards to be used for verification, inspection, etc. of instrumental errors such as verification and inspection of specified measuring instruments.

The period of validity of verification standards (example)

Type of verification standards	Period of validity
Verification standard for inspection of taximeter instrument	4 years
Mass verification standard	1 year
(a) Standard test weight made of cast iron or mild steel	
(b) Standard test weight except (a) (excluding special class standard test weights)	5 years
(c) All except (a) and (b)	3 years
Temperature verification standard	5 years
Electricity verification standard	6 months
(a) Reference current meter, reference voltage meter, and 3rd class reference electric power meter	
(b) Reference voltage generator, reference resistor, 1st class reference electric power meter, and 2nd class reference electric power meter	1 year
Illuminance verification standard	5 years
Noise verification standard	2 years
Vibration verification standard	4 years



Chapter6. Measurement certification business

• Measurement certification business system

This system requires business operators, who wish to carry out measurement certification business, to register with the governor of the prefecture in which each business place is located.

General measurement certification business

- Length, mass, area, volume or heat value

Environment measurement certificate business

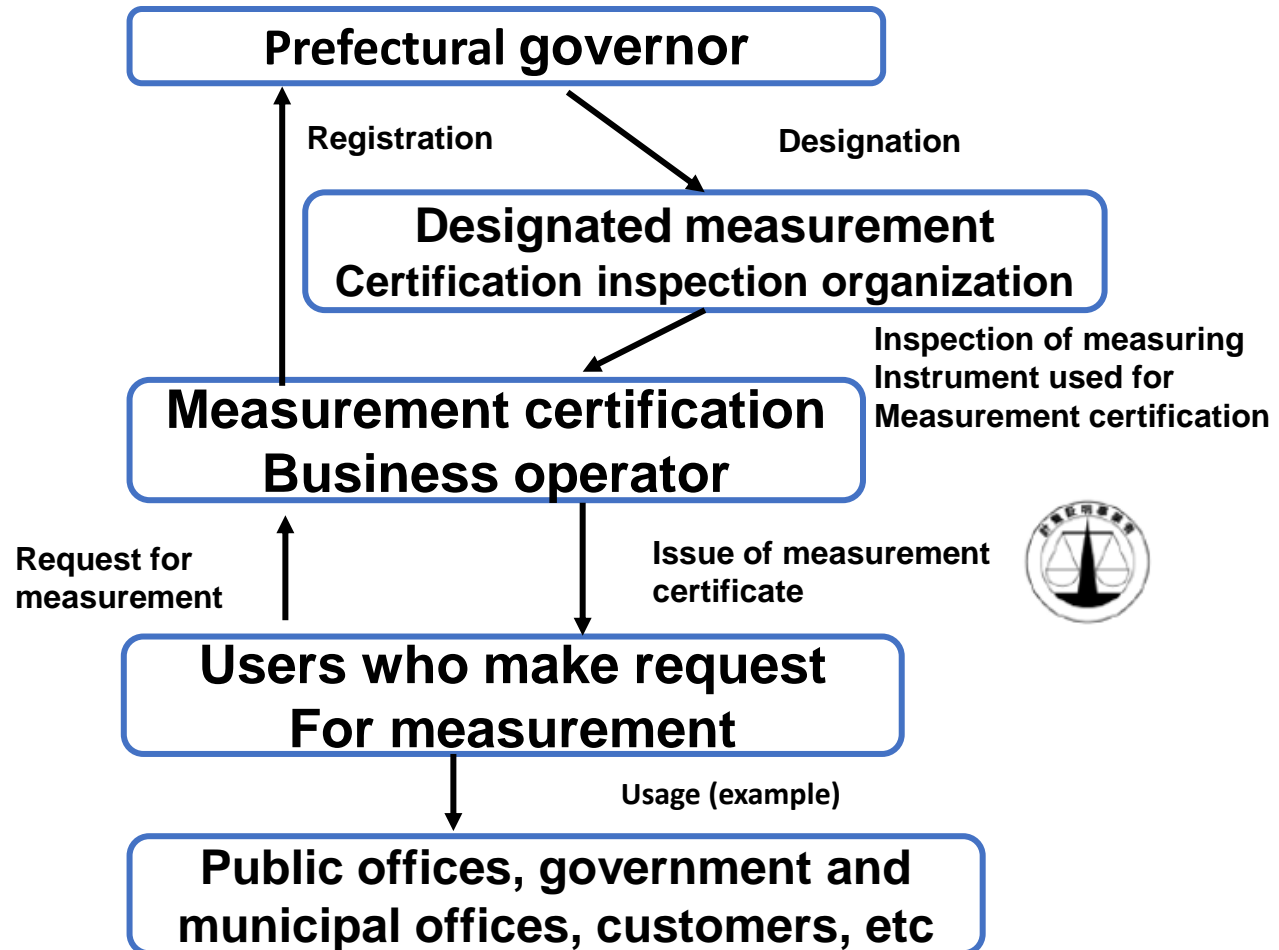
- Concentration, sound pressure level, vibration acceleration level



This mark can be attached to measurement certificates

Chapter6. Measurement certification business

- Outline of measurement certification business system



Chapter 6. Measurement certification business

• Measurement certification inspection

Measurement certification inspection is a system in which specified measuring instruments, which measurement certification business operators use, shall be inspected at regular interval concerning their quality and instrumental errors in order to guarantee appropriate measurement certification business

Specified measuring instrument	Period in which measurement certification inspection should be made	Period in which measurement certification inspection does not need to be made
Non-automatic scale, weight	2 years	1 year
Hide and leather planimeter	1 year	6 months
Noise meter	3 years	6 months
Vibration level meter	3 years	6 months
Concentration meter*	3 years	6 months

*Excluding glass electrode hydrogen ion concentration detector and alcohol meter

Chapter6. Measurement certification business

Specified measurement certification business

Operators which carry out measurement certification involving measurement of extremely small amount which requires high technique such as dioxins are required to register with the Minister of Economy, Trade and Industry as specified measurement certification business operators.



The mark can be attached to measurement certificates.

Chapter 7. Proper weighing management

• Certified measurer system

The certified measurer system gives a certain qualification to a person who has specialized knowledge and skills related to measurement and makes the person take charge of duties in a certain field. It aims to promote self-management of measuring instruments and ensure proper weighing.

• Main duties of a certified measurer

Qualification	Example of certified measurers' duties
Certified general measurer	Measurement management such as quality control and measurement plan formulation / implementation of measuring instruments such as length meters, mass meters, volume meters, and thermometers used in production factories, department stores, and supermarkets.
Certified environmental measurer (Concentration)	Measurement and measurement management of harmful substances, malodorous substances, etc. contained in soot and wastewater discharged from factories, environment (air / water area), and soil such as factory sites.
Certified environmental measurer (Noise, vibration)	Noise measurement and measurement management of factories with noise sources such as presses and blowers, construction work, roads (automobiles), railways, and aircraft

Chapter 7. Proper weighing management

How to become a certified measurer (1)

National Certified Measurer Examination course				
Qualification	STEP 1	STEP 2	STEP 3	
Certified general measurer	Pass the National Certified Measurer Examination	1 year or more of practical experience	Application	Registration
Certified environmental measurer (Concentration) (Noise, vibration)	Pass the National Certified Measurer Examination	1 year or more of practical experience or Meet other conditions prescribed by the ordinance of the Ministry of Economy, Trade and Industry	Application	Registration

Chapter 7. Proper weighing management

How to become a certified measurer (2)

Certified measurer qualification course

Qualification	STEP 1	STEP 2		STEP 3	
Certified general measurer	Finish a certain course by the National Institute of Advanced Science and Technology	2 years or more of practical experience	Document review	Application	Registration
Certified environment measurer (Concentration) (Noise, vibration)	Finish a certain course by the National Institute of Advanced Science and Technology	2 years or more of practical experience	Document review and Oral examination	Application	Registration

Chapter 7. Proper measurement control

• Proper measurement control business places

A business place certified by the national or prefectural governor as having proper measurement management is designated as a proper weighing control business place.



Sign of proper measurement control business place

Features

- (1) Specified measuring instruments are exempted from periodic inspection If voluntary inspection is conducted
- (2) Repairs within the scope of simple repair of specified measuring instruments are permitted
- (3) The sign of proper measurement control business place can be displayed

Main conditions for designation

- (1) Certified measurers conduct inspection periodically
- (2) Proper measurement management chief or measurer is assigned as many as necessary
- (3) Employees, etc. receive guidance about measurement control from certified measurers
- (4) Measurement control rules have been established, etc

Chapter 8. Measurement Standards

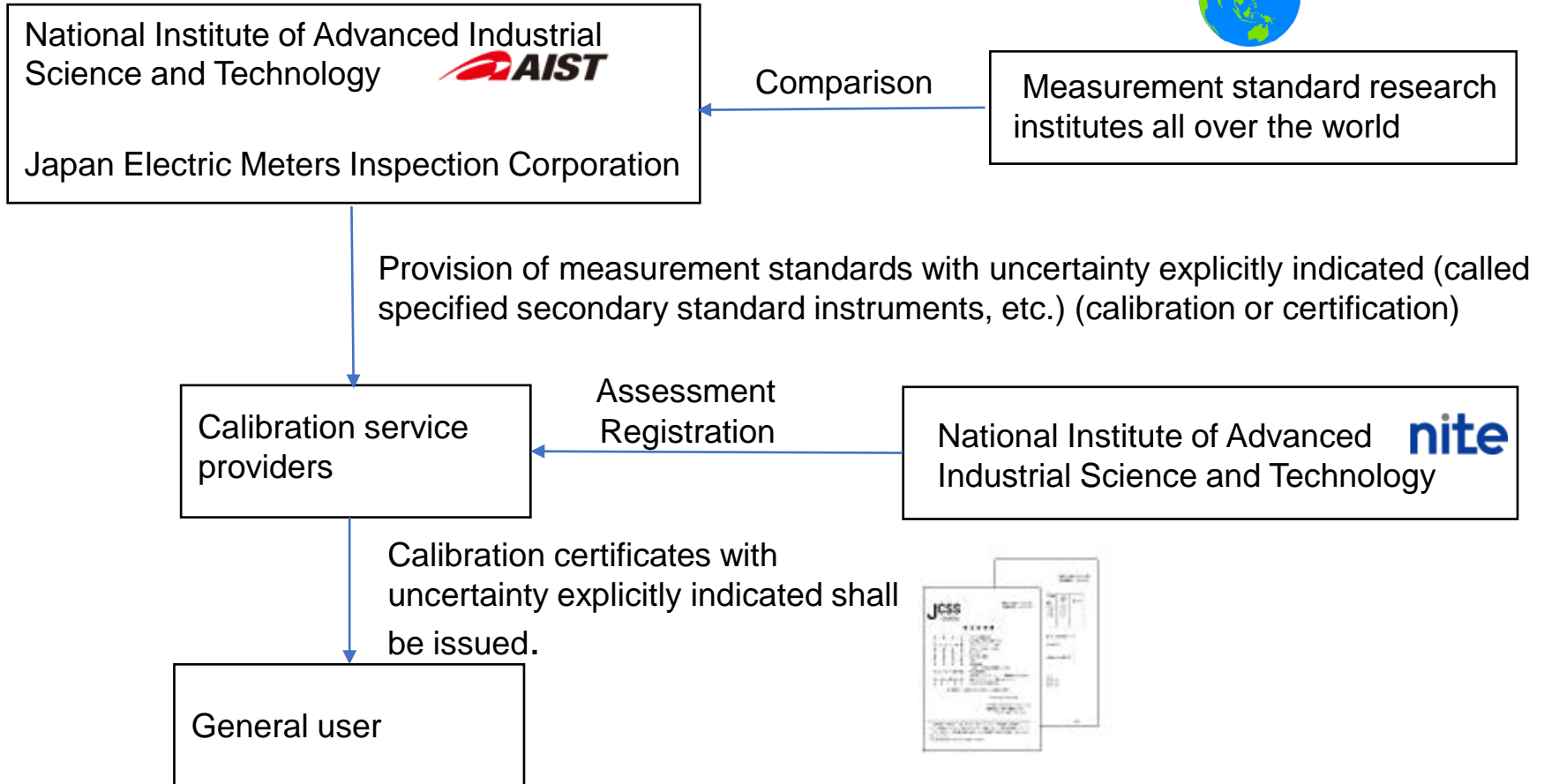
- **National Measurement Standards Provision System (JCSS)**

JCSS: Japan Calibration Service System

This system externally certifies the accuracy of measuring instruments by calibrating measuring instruments by unbroken chains of comparison using the highest-grade measurement standards in Japan (national measurement standards) as a benchmark.

Chapter 8. Measurement Standards

Traceability of Japan Calibration Service System



Chapter 8. Measurement Standards

Flow of calibration taking "length" as an example (JCSS of "length")

[Subject] National Institute of
Advanced Industrial Science
and Technology

**[Specified standard
instrument]**

Optical frequency comp
apparatus



↓ **Calibration**

[Subject] Registered calibration
service provider

**[Specified secondary standard
instrument]**

Laser apparatus for measuring
length



↓ **Calibration**

[Subject] User

[Functional standard instrument]

Example) Gauge block

[General measuring instrument]

Vernier caliper, etc.



↓ **Calibration**



Penalties related to the Measurement Law

The penalties related to the Measurement Law, provided for Articles the 170th to the 180th of the Measurement Law, are broadly summarized in the following five items.

Violation of obligation to report business, etc.

- When business is performed without notification of registration/ renewal / change / cancellation / abolition of the business related to weighing, such as measurement certification business, designated organization, weigher, etc.

Violation of duty to comply with standards

- If the designated manufacturer neglects to perform inspections at a specified measuring instrument manufactured at a designated location and to create and store inspection records.

Violations of restrictions on use

- If you do not comply with the restrictions on the transfer of products, such as prohibiting the use of non-statutory unit of measure, strict adhering to use in places where type approval and use of certified products are stipulated.

Transaction violations

- A manufacturer, repair, or importer of a specific measuring instrument shall not transfer, rent, or repair the specific weighing instrument to the entrusted person unless it is marked with a certification certificate, etc.

Violation of improvement and conformity orders

- In the event of a recommendation or request from the Ministry of Economy, Trade and Industry to report on improvement requests, matters pointed out, books, etc., the Ministry of Economy, Trade and Industry shall respond promptly.

Penalties

- Depending on the content of the penalties, a minimum fine of 100,000 yen will be charged from imprisonment for not more than 1 year or a fine of not more than 1,000,000 yen.

※For more details, please refer to Articles the 170th to the 180th "Penalties" of the Measurement Law.