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Economy Report

Chinese Taipei

Report developed/approved by	Mr. Chia-Hao Hsu / Dr. Ching-Chang Lien
Position	Associate Technical Specialist / Director General
Organisation	Bureau of Standards, Metrology and Inspection M.O.E.A.
Contact details	e-mail: chiahao.hsu@bsmi.gov.tw Tel :886-2-23963360ext728 Fax :886-2-23970715

SECTION 1 – Organisation and structure for metrology

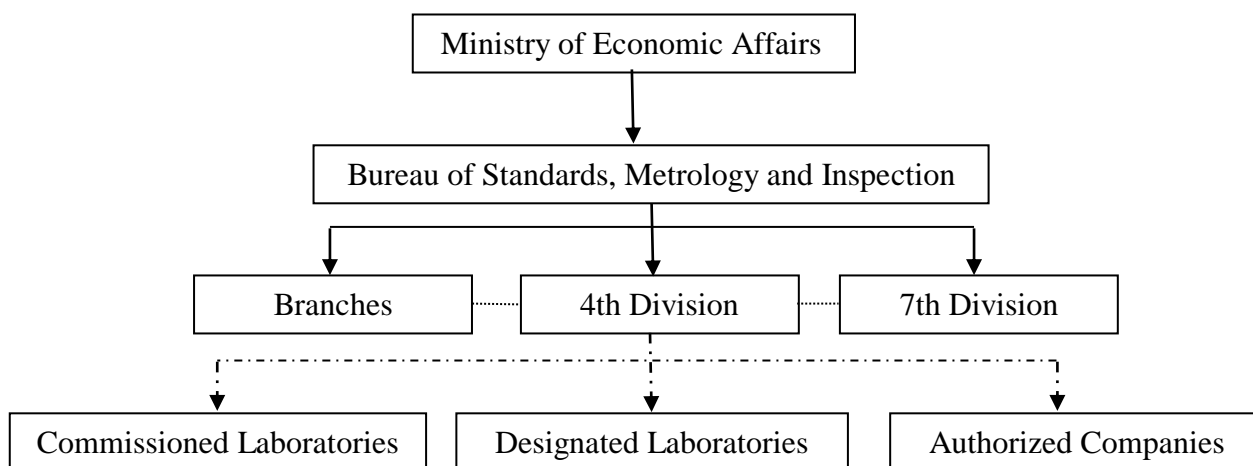
Organisation Structures

The Bureau of Standards, Metrology and Inspection (BSMI) under the Ministry of Economic Affairs is the competent authority for legal metrology. With a view to maintaining an effective national metrology system and to facilitating trade, the BSMI has been working towards promoting the use of international system of units, harmonizing national technical requirements for weights and measuring instruments with international requirements, and implementing a sound verification/inspection scheme in line with international practices.

Metrology is the science of measurement that includes units of measurement and their standards, measuring instruments and their fields of application, and all theoretical and practical problems relating to measurement. Legal metrology is defined in the International Vocabulary of Legal Metrology as the part of metrology relating to activities which result from statutory requirements and concern measurement, units of measurement, measuring instruments and methods of measurement and which are performed by competent bodies.

A legal measuring instrument means a measuring instrument that is designated by the competent authority for use in trade, certification, official inspection and testing or environmental protection activities, or is related to public safety and/or medical and health care affairs. The quality and creditability of legal measuring instruments are therefore important to ensure effective application in these areas.

The BSMI's activities in the field of metrology cover four areas, including establishment of national measurement standards, management of weights and measures industry, regulatory control of weights and measuring instruments, and regulatory control of prepackaged products.



Organization	Bureau of Standards, Metrology and Inspection			
Director General	Dr. Ching-Chang Lien			
In Charge of	Scientific and Legal Metrology			
Specialty	Scientific Metrology			Legal Metrology
Organization	Center for Measurement Standards	Institute of Nuclear Energy Research	Chunghwa Telecom Laboratories	Bureau of Standards, Metrology and Inspection
Field	Physical and chemistry metrology	Ionizing radiation metrology	Time and frequency metrology	legal metrology policy and legal metrology affairs
Director	Dr. Tzeng-Yow Lin	Mr. Chien-Liang Shih	Dr. Jung-Tzu Lin	Dr. Ching-Chang Lien
Location	Hsin Chu	Tao Yuan	Tao Yuan	Taipei

Figure 1: Organizational structure

Legislative Frameworks

The Weights and Measures Act is the regulatory basis for the BSMI in conducting its activities in the field of legal metrology. The Act was revised in January 2009 to incorporate important elements for implementing the national metrology system more effectively. These elements include the establishment of criteria for metrological engineers and technicians to ensure that verification of measuring instruments is done by qualified personnel, the establishment of a consumer volunteer scheme to strengthen market surveillance, the inclusion of manufacturers' self-verification approach to simplify the verification procedure, and the inclusion of physical volume tests for prepackaged goods.

Having recognized the impact on fair trade resulted from the use of weights and measuring instruments and the specific characteristics of the industry, the BSMI requires that a license obtained first in order for any person to be engaged in operating the business of manufacturing, repairing or importing measuring instruments so as to ensure adequate management.

Measuring instruments employed for business transactions, public safety and health care purposes that are subject to metrological control as announced by the MOEA should be verified before sale or usage and should be inspected by the BSMI when they are in use. Except for a small range of measuring instruments (watt-hour meters, radar equipment for the measurement of the speed of vehicles, breath testers, evidential breath analyzers, sound level meters, and etc.) of which the verification is conducted by commissioned organizations assessed by the BSMI, almost all instruments are verified and inspected by this Bureau and its branches. All measuring instruments that pass verification will be inscribed, sprayed, branded, or lead-sealed with the logo and attached with a conformity sticker or issued a conformity certificate.

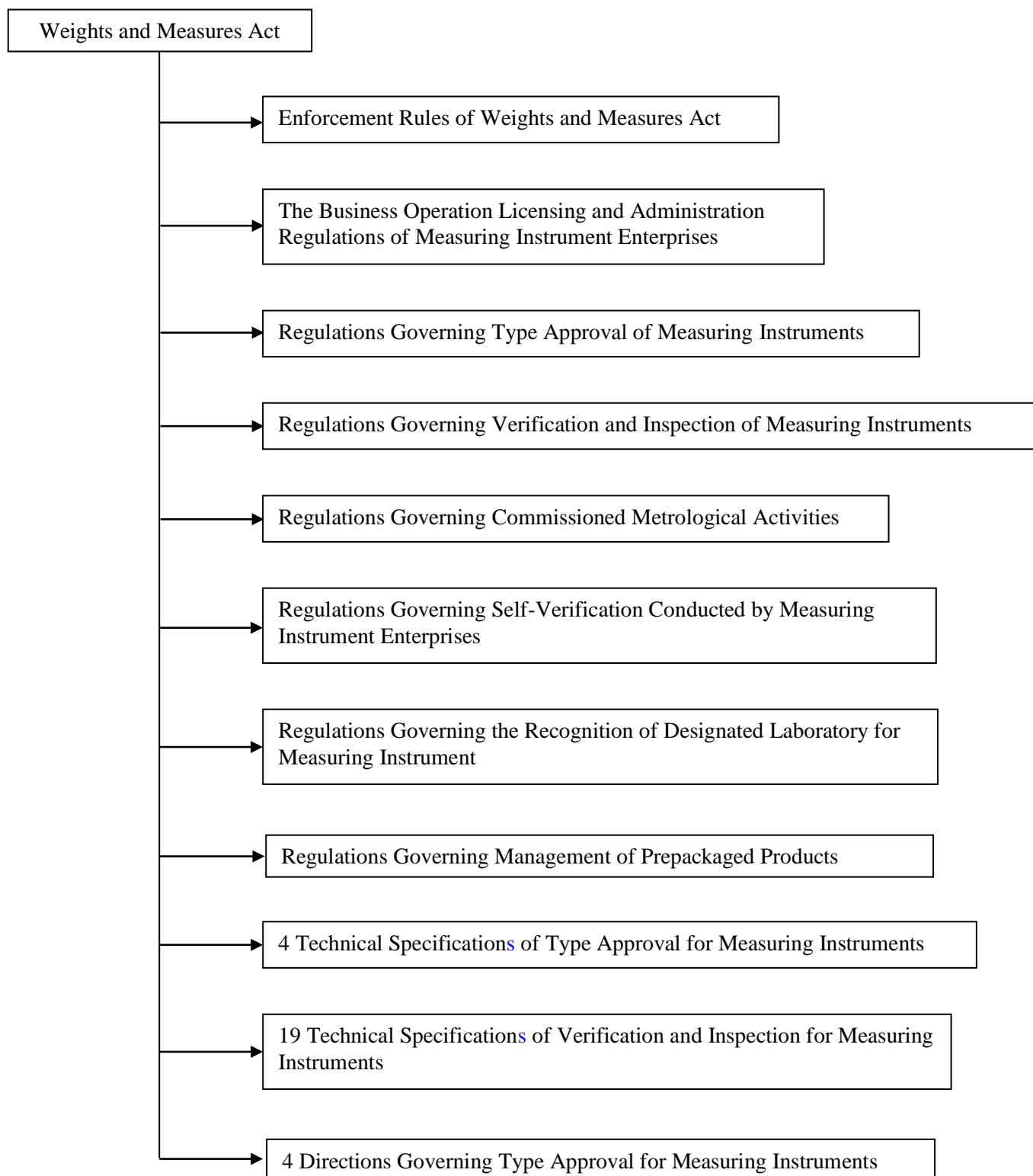


Figure 2: Legislative framework of legal metrology

SECTION 2 – Key activities of 2018/19

Working with industry

Legislation Affairs

Regulations Governing Self-verification Conducted by Measuring Instrument Enterprises was amended and promulgated in January 2019. First main purpose of the amendment was to make sure that the conformity of verification result of every self-verification enterprise was consistent. To be more specific, every qualified self-verification enterprise was obliged to participate in mandatory proficiency testings when requested by the BSMI. The second one was to adjust some penalty measures related to certain offences of the regulation. By taking practical experiences into consideration, these adjustments, in general, make the penalties lighter such as giving enterprises correction opportunities while unintended offences instead of direct monetary fines.

Regulations Governing Dispute Appraisal of Measuring Instruments was amended and promulgated in January 2019. This regulation is to appraise for dispute between public utility operators and their customers about the charging bills originated from using measuring instruments such as water meter, gas meter or electricity meter. The major purpose of the amendment was to solve some practical problems such as applicants shall submit the records of inspections in recent two months instead of any older ones, the Appraisal Agency shall refund the appraisal fee in case of failure to appraise as the causes not attributable to the applicant, and the Appraisal Agency shall conduct the appraisal testing based on the corresponding approved version of technical specification according to which the disputable meter were initially verified so that the Appraisal Agency could conduct the appraisal legally and properly.

The categories and scopes of legal measuring instrument defined in the Enforcement Rules of the Weights and Measures Act were amended and

promulgated in August 2019. The major purpose of the amendment was to define and clarify the detailed categories and scopes of legal measuring instrument in the provisions of Article 2, paragraph 2 of the Enforcement Rules, in order to facilitate future management and to harmonize them with the scopes and categories defined in the Regulations Governing Verification and Inspection of Measuring Instruments.

The Business Operation Licensing and Administration Regulations of Measuring Instrument Enterprises was amended and promulgated in December 2018. The major purpose of the amendment was to meet deregulation policy such as an applicant of manufacturer or repairer no longer need to submit the traceability plans of the measurement standards and technical documents and operating instructions of the measurement standards to the dedicated weights and measures authority, the BSMI.

License

According to the Weights and Measures Act, enterprises engaging in operating the business of manufacturing, repairing or importing legal controlled measuring instruments shall acquire a license issued by the Bureau of Standards, Metrology and Inspection. While applying for a business license, the importers only have to submit basic documents, like application forms and company register documents. However manufacturers or repairers have to show the BSMI they are equipped with necessary reference standards and file related technical documents in addition to importers in terms of the law. And then the staffs of the BSMI will review their technical documents such as calibration reports prepared by the applicants and carry out on-site evaluation before a license being approved. Up to the end of August 2019, there are 1186 licenses having been issued, including 252 for manufacturers, 213 for repairers and 721 for importers.

Self-Verification Scheme

By 2018, only four categories of legal controlled measuring instruments are authorized to be verified by private companies, i.e. taxi meters, NAWIs, water meters and diaphragm gas meters.

Starting from January 2019, one more category of legal controlled measuring instruments, i.e. electricity meters, is authorized to be verified by private companies. In addition, diaphragm gas meters are authorized to be self-verified not only in initial verification but also in re-verification.

The categories and scopes expansion of the self-verification scheme is expected to relieve pressures as follows:

Short of budget: Every year the BSMI has spent US \$5,000,000 to do the verification job on electricity meters. But every year the staffs of the BSMI have trouble to get enough budget to pay expense for the verification. With the new measures, the BSMI would save near US \$1,000,000 every year. Meanwhile, the measures will also benefit private companies because they only need to pay one fifth ordinary verification fee and they have more flexibility in production.

The expecting surge of verification quantities: The Bureau of Energy is planning to replace smart meters for low-voltage users in Taiwan. It is reported that 1 million households will be completed in 2020 and 3 million households will be completed in 2024. It can be expected that the verification quantities of smart electricity meters is going to surge in the upcoming years. The BSMI takes the verification of electricity meters into its self-verification scheme in order to expand its verification capacity and relieve the pressure coming from the huge increase in quantities.

On the other hand, in order to ensure the accuracy of the measuring meters verified by private companies, the BSMI implements a follow-up audit mechanism. Every year, the BSMI's staffs visit the private companies aperiodically. In 2019, the BSMI have sent staff to private companies authorized to implement self-verification more than 20 times to do follow-up audit and sample verified meters for re-test.

Fee-Charging Standards for Measuring Instruments

National Metrology Institutes, including National Measurement Laboratory, National Radiation Standard Laboratory and National Time and Frequency Standard Laboratory, provide necessary and essential calibration services to domestic industries and even foreign industries. The calibration services do not only underpin applied metrology but also secure traceability and identify global conformity at the same time. When providing these calibration services National Metrology Institutes collect fees from these industries. And the BSMI annually reviews the cost structure of these fees and amends it when necessary in order to help industries ease their operating cost. In 2019, the BSMI has adjusted fees of calibration services on calibration system of Low Pressure Gas Flow Calibration System, Total Luminous Flux System, and Static Gravity Method Inorganic Element Supply Verification System, etc.

Protecting consumers

Voluntary Self-Management Measures on Gas Stations, Traditional Markets and Post Office

According to the Weights and Measures Act, the BSMI shall implement inspection against measuring instruments used for trade. However, during a specific period of time only a small portion of in-service measuring instruments

used for trade has been actually inspected due to the limitation of sampling schedule and verification technicians workload. Therefore, the BSMI launched a program, named Voluntary self-management measures on gas stations, traditional markets, supermarket chains and post offices, to encourage the owners or the operators of gas stations, vendors in traditional markets and post offices' employees to voluntarily do calibration and maintenance for their own measuring instruments so that accuracy of these instruments in these places could be kept even without being inspected by the legal metrology officials. When the candidate of the program meets the specific requirements requested by the BSMI, the BSMI will issue a certificate to the candidate. This self-management program is expected to enhance consumers' confidence when they buy gas or trade goods at these places. Up to date, 1,748 gas stations and 388 traditional markets, supermarket chains and post offices are granted by the BSMI and obtain the certificates.

Major projects - What we did and what we learned

Examinations for Metrological Technical Personnel

Six examinations have been held in 2019, including two for Class A metrological technical personnel and four for Class B metrological technical personnel. Up to the date, 2,729 examinees passed the examination since the program was launched in 2010. And according to the weights and measures related regulations, verification technicians and their technical supervisors of manufacturers or importers who are allowed to self-verify their own weighing and measuring instruments shall pass the examinations and get the certificates of metrological technical personnel issued by the BSMI. The same requirements are also applicable to those technicians and technical supervisors working in the commissioned organizations enforcing verification for the BSMI.

Training

By the end of September, 2019, four sessions of training programs on different topics were held by the BSMI. The topics of these trainings are international system of units, ISO 17025:2017, measurement uncertainty, and measurement management. These training programs were mainly focusing on strengthening verification skills for those in need. In addition, these training courses were not only opened to verification officials from the BSMI but also to metrological technicians and supervisors from industries who had have passed the aforementioned examinations of metrological technical personnel.

World Metrology Day

The BSMI organized a series of seminars on metrology affairs to celebrate the World Metrology Day in middle May, including a forum on “International System of Units – Fundamentally Better” on May 20. Domestic industries were invited to participate in.

SECTION 3 – Future focus

New initiatives planned (next 1-2 years)

Review on Regulations Governing Management of Metrological Technical Personnel

To tackle the practical issue raised by the measuring instrument enterprises, the BSMI will review on Regulations Governing Management of Metrological Technical Personnel and amend it if needed.

Loosening the eligibility requirements of candidate for Class A metrological technical personnel examination: According to the regulation, one eligibility

requirement for the registered candidate of Class A metrological technical personnel examination is that the candidate shall engage in work related to metrology for at least three years after being qualified as a Class B metrological technician personnel with a certificate. This requirement seems to form a hidden entry barrier to enterprises desired to apply for self-verification because of a precondition that at least one of their testing laboratory directors shall pass the Class A examination. To be more specific, this requirement may make an enterprise take 3 years or more to be able to apply for self-verification. Considering the strict eligibility requirement might not be adequate, the BSMI will plan to loosen it.

Evaluating the requirement of learning credits for certificate renewal: No matter Class A or Class B certificate has to be renewed every five years. One of the requirements for the certificate renewal is that the certificate holder must accumulate enough learning credits by attending trainings, publishing papers, etc. The enough learning credits required by the regulation may become a burden of the certificate holder and his/her company. The BSMI will evaluate if the regulation is appropriate or not.

Promotion of Self-verification Scheme

NAWIs have long been in the BSMI's self-verification scheme, however no enterprise is willing to apply to become a self-verifier. Through preliminary discussion with enterprises, the BSMI understand that these enterprises don't know the benefits and how to be a self-verifier. The BSMI is planning to promote the scheme and encourage more enterprises to be a self-verifier in order to tackle issues such as decreasing number of verification staff in the BSMI at the same time.

Review on the revision of the technical specifications of type approval

There are several types of gas meters and water meters available for measurement. At present time, only diaphragm gas meters, vortex water meters, volumetric water meters and velocity water meters are subject to type approval and verification. That means the other types of gas meters and water meters such as rotary type, ultrasonic type water/gas meters are not subject to type approval and verification. The issue taking other types of gas meters and water meters into legal control has been emerged recently. The BSMI is planning to review on the revision of the technical specifications of type approval, to evaluate how to build up new facilities for testing economically and to incorporate the opinions of stakeholders from industry.