Regulation of the Central Bureau of Weights and Measures

Regarding Rules, Procedures and Conditions in relation to Inspection and Verification of Water Meter by Metropolitan Waterworks Authority and Provincial Waterworks Authority Being Inspecting and Verifying Agencies,

B.E. 2564 (2021)

Whereas Section 31 of the Measurement Act, B.E. 2542 (1999) has stipulated that the Director-General of the Department of Internal Trade may request a government sector, a state agency, a state organization, a state enterprise, or a foreign or international measurement office or organization to inspect and to provide the verification of measuring instruments under the rules, procedures and conditions laid down by the Director-General; and such inspection shall be deemed the inspection by using a standard and the verification by a competent official. In this regard, the Director-General of the Department of Internal Trade has requested the Metropolitan Waterworks Authority and the Provincial Waterworks Authority, who are state enterprises, to inspect and to provide the verification of a water meter.

Therefore, in order that the inspection and verification of the water meter by the Metropolitan Waterworks Authority and the Provincial Waterworks Authority, who are inspecting and verifying agencies under Section 31 of the Measurement Act, B.E. 2542 (1999), can be carried out in an accurate manner, to meet standards in the same way and to be consistent with the intention of the law governing measurement, by virtue of Section 6 (5) and Section 31 of the Measurement Act, B.E. 2542 (1999), the Director-General of the Department of Internal Trade therefore issues this Regulation, as follows.

Article 1. This Regulation is called the "Regulation of the Central Bureau of Weights and Measures Regarding Rules, Procedures and Conditions in relation to Inspection and Verification of Water Meter by Metropolitan Waterworks Authority and Provincial Waterworks Authority Being Inspecting and Verifying Agencies, B.E. 2564 (2021)"

Article 2. This Regulation shall come into force as from the day following the date of its publication in the Government Gazette.[1]

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[1] Published in the Government Gazette, Volume 138, Special Part 67 d, Page 1, dated 24 March B.E. 2564 (2021).

Article 3. In this Regulation,

"Inspecting and Verifying Agencies" mean the Metropolitan Waterworks Authority and the Provincial Waterworks Authority who have been requested by the Director-General of the Department of Internal Trade to be agencies to inspect and to provide the verification of the water meter under Section 31 of the Measurement Act, B.E. 2542 (1999)

Article 4. The Director-General of the Department of Internal Trade shall have charge and control of the execution of this Regulation.

Chapter 1
Notification of Inspection and Providing of Verification

Article 5. The Inspecting and Verifying Agencies, who have intentions to carry out the inspection and to provide the verification of the water meter, shall notify a competent official of their intentions pursuant to Form ChorVor. TorRor. 3100-1 as attached to this Regulation. The notification shall be given in advance at least one day prior to the date of carrying out the inspection and providing the verification.

The notification under paragraph one shall be mainly given by electronic means. In the case where the electronic means cannot be proceeded for any reason whatsoever, the notification shall be given at the Central Bureau or the Branch Bureau having jurisdiction in a province in which the Inspecting and Verifying Agencies are located.

The payment of fees on inspection and verification shall comply with the Regulation of the Department of Internal Trade Governing Rules and Procedures Relative to Receiving Payment of Fees via Electronics System, B.E. 2560 (2017) *mutatis mutandis*.

Article 6. When the competent official has received the notification and considered that the notification is correct, he or she shall issue a meter serial number (in case of the inspection for initial verification) and the verification certificate of a measuring instrument in accordance with the number of the water meters as notified. In addition, the competent official shall prepare a correct verification mark to be stamped or displayed on such water meter. The Inspecting and Verifying Agencies shall make a single requisition for the verification mark in the first step of the notification.

When the competent official has completely performed under paragraph one, the Inspecting and Verifying Agencies shall sign and write the date, month and year of receiving the meter serial number, the verification certificate and the verification mark on a register every time of requisition.

Chapter 2
Rules, Procedures and Conditions in relation to Inspection and Verification

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Part 1
Standard and Providing or Building Laboratory or Place

Article 7. The Inspecting and Verifying Agencies shall provide an instrument for testing the water meter to be used as a standard for inspecting the accuracy of the water meter.

Article 8. The instrument for testing the water meter under Article 7 shall be composed of the following important tools and equipment.

(1) In case of the water meter having the permanent flowrate not exceeding 100 cubic metres per hour

(a) A water tank which is used as the standard for inspecting the volume of water which flows through the water meter at the minimum flowrate, the transitional flowrate and the permanent flowrate (or half of the permanent flowrate at least in the case where the water meter as inspected has the permanent flowrate greater than 50 cubic metres per hour). The aforesaid tank which is used as the standard shall have a capacity being equal to or greater than 1.5 times of the volume of real transmission through the water meter as to be inspected and verified within 1 minute. The tank shall also have scale marks, the marks of which shall have equal and parallel distance and be made to be legible, clear, permanent and indelible. The lowest scale mark shall indicate the volume not exceeding 1 in 3 of the maximum permissible errors of the water meter as inspected. In addition, the water tank which is used as the standard shall be inspected and verified its correctness by the Central Bureau, the Center of Weights and Measures or the Branch Bureau (in case of the Branch Bureau, it shall be in accordance with stipulation made by the Director-General) at least every two years.

(b) An instrument for controlling the flow of water through the water meter to be inspected shall be able to modify the water flowrate at least in the flowrate range from 0.2 litres per minute to 1,700 litres per minute. There shall also be a water flowrate meter to be installed jointly.

(c) A platform for inspecting the water meter shall be able to install the water meter to be tested not less than 10 water meters per each time in case of the water meter with the diameter of a pipe not exceeding 25 millimetres, or not less than 2 water meters per each time in case of the water meter with the diameter of a pipe exceeding 25 millimetres.

(d) A temperature gauge shall be installed in an entrance area to the water meter.

(e) Other necessary tools and equipment.

(2) In case of the water meter having the permanent flowrate exceeding 100 cubic metres per hour, but not exceeding 630 cubic metres per hour

(a) A water tank which is used as the standard for inspecting the volume of water which flows through the water meter at the minimum flowrate, the transitional flowrate and the permanent flowrate (or half of the permanent flowrate at least). The aforesaid tank which is used as the standard shall have a capacity being equal to or greater than 1.5 times of the volume of real transmission through the water meter as to be inspected and verified within 1 minute. The tank shall also have scale marks, the marks of which shall have equal and parallel distance and be made to be legible, clear, permanent and indelible. The lowest scale mark shall indicate the volume not exceeding 1 in 3 of the maximum permissible errors of the water meter as inspected. In addition, the water tank which is used as the standard shall be inspected and verified its correctness by the Central Bureau, the Center of Weights and Measures or the Branch Bureau (in case of the Branch Bureau, it shall be in accordance with stipulation made by the Director-General) at least every two years.

(b) An instrument for controlling the flow of water through the water meter to be inspected shall be able to modify the water flowrate at least in the flowrate range from 17 litres per minute to 5,250 litres per minute. There shall also be a water flowrate meter to be installed jointly.

(c) A temperature gauge shall be installed in an entrance area to the water meter.

(d) Other necessary tools and equipment.

The Inspecting and Verifying Agencies shall take care of and maintain the standard water tank under (1) (a) and (2) (a) in a ready-to-use condition all the time. In case of necessary, it is required to remove or repair the aforesaid standard water tank, the Inspecting and Verifying Agencies shall notify a competent official of such matter every time at the Central Bureau or the Branch Bureau having jurisdiction in a province in which the Inspecting and Verifying Agencies are located, as the case might be.

Article 9. The Inspecting and Verifying Agencies shall provide or build a laboratory or a place together with equipment necessary for the inspection and verification of the water meter with the following details.

(1) The laboratory or the place shall be in stable, strong and safe conditions, comply with an engineering principle, and follow the plan, layout and particulars as presented to the Director-General. The laboratory or the place shall also be situated in an area where the transportation to the location of the Central Bureau or the Branch Bureau is convenient.

(2) The laboratory or the place shall provide a working area enough to install the instrument for testing the water meter.

(3) The laboratory or the place shall provide an electrical system and enough light conforming to the factory safety standards.

(4) There shall be an instrument for testing pressure which is able to test the pressure not less than 1,000 kPa.

(5) There shall be necessary tools and equipment which are sufficient to inspect the water meter.

Part 2
Inspection

Article 10. The Inspecting and Verifying Agencies shall inspect the water meter pursuant to the following rules and procedures.

(1) The water meter which is on inspection and verification shall have the right characteristics according to the Measurement Act, B.E. 2542 (1999) as amended by the Measurement Act (No. 3), B.E. 2557 (2014), and the Notification of the Ministry of Commerce Regarding Prescription of Type and Characteristic of Water Meter, Detail of Materials Used for Manufacture and Maximum Permissible Error dated 26 September B.E. 2561 (2018). In addition, the Inspecting and Verifying Agencies shall notify the details of the inspection of such water meter in accordance with Form ChorVor. TorRor. 3101 as attached to this Regulation.

The water meter shall provide the details which comprise an identification mark, a name or a trademark, a model which is specified the form of an instrument, a meter serial number, the accuracy class of measurement, a year of manufacture, the permanent flowrate, the minimum flowrate or a ratio between the permanent flowrate and the minimum flowrate, a sign of direction of water flow, and the maximum admissible pressure if it exceeds 1,000 kPa.

(2) Test of Pressure Durability

(a) To take a sampling of 1% of the water meters of each size and the accuracy class of measurement which is notified for inspection and verification. In the case where the number of the water meters is less than 100 ones, it shall be deemed that there are 100 ones.

(b) To test the water meters under (a) to discover that the water meters can be durable throughout the working pressure range and continuously for not less than 1 minute by not reducing the efficiency of operation, not causing the outflow of water along the water meters, and not changing the shape of the water meters, whereby:

1) the water meter with diameter less than 50 centimetres shall be durable under the pressure at least 1,000 kPa.;

2) the water meter with diameter starting from 50 centimetres upward shall be durable under the pressure at least 600 kPa.

(c) In the case where all the water meters under (a) pass the test, it shall be deemed that the water meters as notified for inspection and verification pass the test. In the case where anyone of the water meters under (a) does not pass the test, it shall be deemed that the water meters as notified for inspection and verification do not pass the test. The test of every one of the water meters as notified for inspection and verification is then required.

(d) The outcome of the test of pressure durability shall be recorded in accordance with Form ChorVor. TorRor. 3102 as attached to this Regulation.

(3) Test of Loss of Pressure Drop

(a) To take a sampling of 1 per 1,000 of the water meters of each size and the accuracy class of measurement which are notified for inspection and verification. In the case where the number of the water meters is less than 1,000 ones, it shall be deemed that there are 1,000 ones.

(b) To test the water meters under (a) to discover the loss of pressure drop of the water meters by taking the following steps:

1) to install two pressure gauges, the distance between two gauges equals the length of the water meter at least;

2) at the time when the water meter has not been installed yet, it is required to discover the loss of pressure drop of water which flows through the pipes having the distance between them being equal to the distance under 1) at the minimum flowrate and the permanent flowrate of the water meter to be tested;

3) when the water meter has already installed, it is required to discover the loss of pressure drop of water which flows through the water meter at the minimum flowrate and the permanent flowrate (or half of the permanent flowrate at least in the case where the water meter as inspected has the permanent flowrate greater than 50 cubic metres per hour);

4) to discover the difference between the loss of pressure drop of water under 2) and the loss of pressure drop under 3);

5) the difference between the loss of pressure drop through the water meter shall not be greater than 63 kPa. upon operation between the minimum flowrate and the permanent flowrate, it shall be deemed to pass the test.

(c) In the case where all the water meters under (a) pass the test, it shall be deemed that the water meters as notified for inspection and verification pass the test. In the case where anyone of the water meters under (a) does not pass the test, it shall be deemed that the water meters as notified for inspection and verification do not pass the test. The test of every one of the water meters as notified for inspection and verification is then required.

(d) The outcome of the test of the loss of pressure drop shall be recorded in accordance with Form ChorVor. TorRor. 3103 as attached to this Regulation.

(4) Test of Preventive Capability for Magnetic Field

(a) To take a sampling of 1% of the water meters of each size and the accuracy class of measurement which are notified for inspection and verification. In the case where the number of the water meters is less than 100 ones, it shall be deemed that there are 100 ones.

(b) To test the water meters under (a) by installing a magnet that has the intensity of magnetic field in the amount of 5,000 lines of forces per square centimeter (whereby there shall be a report on the outcome of inspection or there shall be a magnet-testing instrument which can make a report on the outcome of inspection at least every two years). Each meter shall be installed the magnet in one position only by alternately putting in the left position or the right position or the top position or the bottom position. Subsequently, there shall be the test of the accuracy of water transmission of the water meter according to a size, the permanent flowrate (in the case where the water meter as inspected has the permanent flowrate greater than 50 cubic metres per hour, the test shall be taken at half of the permanent flowrate at least), the transitional flowrate and the minimum flowrate by using the volume as tested and the size of the water tank which is used as the standard and has the volume to be equal to or greater than 1.5 times of the volume of real transmission through the water meter as to be inspected and verified within 1 minute.

(c) The accuracy of water transmission of the water meter as compared to the water tank which is used as the standard shall have the wrong outcome not exceeding the maximum permissible errors both positive and negative sides under (6). This shall be deemed to pass the test.

(d) In the case where all the water meters under (a) pass the test, it shall be deemed that the water meters as notified for inspection and verification pass the test. In the case where anyone of the water meters under (a) does not pass the test, it shall be deemed that the water meters as notified for inspection and verification do not pass the test. The test of every one of the water meters as notified for inspection and verification is then required.

(e) The outcome of the test of preventive capability for magnetic field shall be recorded in accordance with Form ChorVor. TorRor. 3104 as attached to this Regulation.

(5) Test of Accuracy

(a) To test the accuracy of all the water meters.

(b) To test the water meters under (a) by testing the accuracy of water transmission of the water meter according to a size, the permanent flowrate (in the case where the water meter as inspected has the permanent flowrate greater than 50 cubic metres per hour, the test shall be taken at half of the permanent flowrate at least), the transitional flowrate and the minimum flowrate by using the volume as tested and the size of the water tank which is used as the standard and has the volume to be equal to or greater than 1.5 times of the volume of real transmission through the water meter as to be inspected and verified within 1 minute.

(c) The accuracy of water transmission of the water meter as compared to the water tank which is used as the standard shall have the wrong outcome not exceeding the maximum permissible errors both positive and negative sides under (6); and the deviation of the meter in every flowrate that deviates in the same side shall have at least any one value not exceeding the half of the maximum permissible errors under (6). This shall be deemed to pass the test.

(d) The outcome of the test of accuracy shall be recorded in accordance with Form ChorVor. TorRor. 3105 as attached to this Regulation.

(6) The maximum permissible errors for providing the initial verification and the subsequent verification of the water measurement system shall have both positive and negative sides as follows:

Accuracy Classes	Maximum Permissible Errors Compared to Volume as Tested (V)	
	Lower Flowrate Zone	Upper Flowrate Zone
Class 1 Entrance Temperatures to Water Meter - from 0.1 to 30 Degree Celsius - more than 30 but not exceeding 50 Degree Celsius	 3 % V 3 % V	 1 % V 2 % V
Class 2 Entrance Temperatures to Water Meter - from 0.1 to 30 Degree Celsius - more than 30 but not exceeding 50 Degree Celsius	 5 % V 5 % V	 2 % V 3 % V

The value of the deviation of the water meter in every flowrate that deviates in the same side shall have at least any one value not exceeding half of the maximum permissible errors.

(7) Anyone of the water meters which does not pass the inspection as specified under (1) – (5) shall be made improvements before reapplying for inspection and verification.

Part 3
Providing of Verification

Article 11. The water meter which passes the inspection under Part 2 shall be stamped a verification mark by the Inspecting and Verifying Agencies on the aforesaid water meter in the position which can prevent revision or change to the accuracy of the water meter. In addition, the Inspecting and Verifying Agencies shall issue the verification certificate of a measuring instrument by taking the following actions.

(1) In case of the issuance of the verification certificate according to Form ChorVor. 3007 as attached to the Notification of the Central Bureau of Weights and Measures Regarding Prescription of Form of Verification Certificate (No. 2), B.E. 2564 (2021) Dated 21 January B.E. 2564 (2021), the Inspecting and Verifying Agencies shall fill information in the form with completeness and correctness, put the signature of the officer of the Inspecting and Verifying Agencies

who has completed the training provided by the Central Bureau, and write the date, month and year when the aforesaid verification certificate is issued.

(2) In case of the issuance of the verification certificate according to Form ChorVor. 3008 as attached to the Notification of the Central Bureau of Weights and Measures Regarding Prescription of Form of Verification Certificate (No. 2), B.E. 2564 (2021) Dated 21 January B.E. 2564 (2021), the Inspecting and Verifying Agencies shall specify the name of the Inspecting and Verifying Agencies, the year of the issuance of the verification certificate, and the serial number of the aforesaid verification certificate to be arranged from minimum to maximum in the same manner as the meter serial number.

Chapter 3
Report on Inspection and Verification

Article 12. The Inspecting and Verifying Agencies shall make the report on the outcome of the inspection and verification of the water meter in accordance with Form ChorVor. TorRor. 3101, Form ChorVor. TorRor. 3102, Form ChorVor. TorRor. 3103, Form ChorVor. TorRor. 3104 and Form ChorVor. TorRor. 3105 as attached to this Regulation. In addition, it is required to present the report on the outcome of the performance of the Inspecting and Verifying Agencies in accordance with Form ChorVor. TorRor. 3100-2 to the Central Bureau or the Branch Bureau to which the Inspecting and Verifying Agencies notified their intentions to carry out the inspection and to provide the verification of the water meter.

The report under paragraph one shall be sent within 3 working days as from the date of the completion of carrying out the inspection and providing the verification of the water meter according to the total number as notified. The report shall be sent by registered and replied mail or facsimile, or through the system of measurement work. In case of sending by registered and replied mail, the date when there is a daily seal affixed at the origin post office shall be deemed as the date of sending the report. In case of sending the report by facsimile, the date when the facsimile is received shall be deemed as the date of the intention of sending the report. However, the report shall be completed when the Inspecting and Verifying Agencies have already sent the original report to the Central Bureau or the Branch Bureau to which the Inspecting and Verifying Agencies notified their intentions to carry out the inspection and to provide the verification of the water meter.

Article 13. The Inspecting and Verifying Agencies shall draw up the register of the outcome of the performance in the inspection and verification of the water meter by recording the following information together with details within the date of the completion of the inspection and verification, and keep the register at the office of the Inspecting and Verifying Agencies in order that a competent official shall be able to examine the register all the time.

(1) the date, month and year of the inspection and verification,

(2) the number of the form of notifying an intention to carry out the inspection and to provide the verification of the water meter,

(3) the permanent flowrate and the number of the water meters,

(4) the initial verification or the subsequent verification,

(5) the outcome of the inspection and verification of the water meter,

(6) a meter serial number, a right number of a meter and a wrong number of a meter,

(7) the name and signature of an officer who acts as an inspector and provides verification and an officer who controls inspection,

(8) the name and signature of an officer who registers,

(9) a place to install and to use the water meter (it is required to draw up an additional register after the installation has been finished).

Chapter 4
Maintenance of Verification Mark and Verification Certificate of Measuring Instrument

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Article 14. The Inspecting and Verifying Agencies shall take care of and maintain the verification mark and the verification certificate of a measuring instrument pursuant to the following rules and procedures.

(1) It is required to provide a register to control the use of the verification mark and to issue the verification certificate of the measuring instrument which is provided the verification by the Inspecting and Verifying Agencies with correctness and completeness in each day of carrying out the inspection and providing the verification.

(2) It is required to maintain the verification mark and the verification certificate of a measuring instrument in an entirely concealed and safe area at the office of the Inspecting and Verifying Agencies in order that a competent official shall be able to examine them all the time.

(3) It is required to check that the conditions of the verification mark and the verification certificate of a measuring instrument are always ready for use. In the event it has been found that the verification mark is defective and cannot be used or the verification certificate of a measuring instrument is damaged in a material part, the Inspecting and Verifying Agencies shall immediately send a written notification to a competent official at the Central Bureau or the Branch Bureau to which the Inspecting and Verifying Agencies notified their intentions to carry out the inspection and to provide the verification of the water meter. In addition, the Inspecting and Verifying Agencies shall return the verification mark or the verification certificate of a measuring instrument which is damaged or defective in order to make a requisition for the new verification mark or the new verification certificate of a measuring instrument.

In the event it has been found that the verification mark or the verification certificate of a measuring instrument is lost or destroyed, the Inspecting and Verifying Agencies shall immediately send a written notification to a competent official at the Central Bureau or the Branch Bureau to which the Inspecting and Verifying Agencies notified their intentions to carry out the inspection and to provide the verification of the water meter. The notification shall also be accompanied by a copy of daily report on the cause of loss or being destroyed as issued by a police station in which the incident took place in order to make a requisition for the new verification mark or the new verification certificate of a measuring instrument. In this regard, the Inspecting and Verifying Agencies shall reimburse for such verification mark according to its value.

Article 15. When the Inspecting and Verifying Agencies have already carried out the inspection and provided the verification of the water meter by issuing the verification certificate of a measuring instrument pursuant to Form ChorVor. 3007 according to the total number as notified under Article 5, the Inspecting and Verifying Agencies shall return a counterfoil of the verification certificate to a competent official at the Central Bureau or the Branch Bureau to which the Inspecting and Verifying Agencies notified their intentions to carry out the inspection and to provide the verification of the water meter within three working days as from the date of the completion of carrying out the inspection and providing the verification.

Given on the 21st Day of January B.E. 2564 (2021)

Wattanasak Sur-iam

Director-General of the Department of Internal Trade