

ANTIGUA AND BARBUDA



**THE METROLOGY ACT, 2007**

No. of 2007

**THE METROLOGY ACT, 2007**

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**ANTIGUA AND BARBUDA**  
**THE METROLOGY ACT, 2007**  
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**AN ACT** to make new provisions with respect to weights and measures, to repeal the Weights and Measures Act, Cap 335 and for related matters and for incidental and connected purposes.

**ENACTED** by the Parliament of Antigua and Barbuda as follows:

**PART 1**  
**PRELIMINARY**

**1. Short title and commencement**

This Act may be cited as the Metrology Act, 2007, and shall come into operation on a day to be appointed by the Minister by notice published in the *Gazette*.

**2. Interpretation**

In this Act—

“authorized denomination” means a denomination of weight or measure specified in Schedule 3;

“authorized units of measurement” means units of measurement specified in Schedule 2;

“Custodian” means the Custodian of Standards;

“Director” means the Director of the Bureau of Standards appointed under section 3 of the Standards Act, cap. 411;

“equipment” means

- (a) a weight or measure;
- (b) a weighing or measuring instrument; or
- (c) a sub-assembly of a weighing or measuring instrument;

“initial verification” means the verification of equipment prior to its being placed in service;

“in-service verification” means the periodic verification of repaired equipment which has been subject to initial verification and has been in service;

“Inspector” means an officer designated as an Inspector of Weights and Measures under subsection 24(3);

“measure” means a vessel of determinate capacity for determining the volume of a liquid or the length of a graduated rod or line;

“measuring instrument” means an instrument used for the measurement of length, area, volume or capacity or quantity ;

“Minister” means the Minister responsible for Metrology;

“pre-packaged” in relation to an article to be offered for sale, means wrapped, encased or packed in a container otherwise than in the presence of a person purchasing the goods and in a manner such that the goods cannot be removed from the container without disturbing the integrity of the package;

“packer” means a person who places in a container an article which is to be offered for sale;

“pattern approval” means the approval by the Director of a specific model of a weighing or measuring instrument for its intended use, after one or more instruments have been tested in accordance with the prescribed requirements;

“prescribed” means prescribed by regulations issued by the Minister under this Act;

“specified standards laboratory” means the national standards laboratory of any country or an international or regional standards laboratory specified by the Minister for the purpose of this Act, by notice published in the *Gazette*;

“verification” means all the operations, including examination and stamping, carried out by the National Metrology Service having the object of ascertaining and confirming that a measuring or weighing instrument satisfies the prescribed verification requirements;

“weight” means a body of determinate mass for use within a weighing instrument;

“weighing instrument” means an instrument for the measurement of mass or weight.

(2) For the purposes of this Act-

- (a) a weight or measure shall be deemed to be correct if, upon comparison with a reference or a working standard of that denomination, the error determined is equal to or less than the prescribed limit of error allowed; and
- (b) a weighing or measuring instrument shall be deemed to be correct if, upon verification, the differences between the loads applied (with the use of correct weights) and the corresponding indications are equal to or less than the prescribed limits of error allowed on verification.

(3) The abbreviated “SI” shall be recognized as a legal reference to the International System of Units.

## PART II

### LEGAL UNITS OF MEASUREMENTS

#### 3. SI as legal units of measurement

(1) The International System of Units as defined in Schedule 1 shall be the legal units of measurement in Antigua and Barbuda.

(2) The units specified in Part 1 of Schedule 2 may be used with SI units, because of practical importance, wide usage or in specialized fields.

(3) The Minister may by order published in the Gazette fix a date after which the units specified in the order no longer have legal force and validity in Antigua and Barbuda, and different dates may be fixed for different undertakings or classes of undertakings, as specified in the order.

(4) Subject to subsection (5), the British Imperial System of units as set out in Part 2 of Schedule 2 shall also be legal units in Antigua and Barbuda, to be used concurrently with the International System of Units.

(5) The Minister may, by order published in the Gazette, fix a date after which the system of units mentioned in Part 2 of Schedule 2 no longer has legal force and validity in Antigua and Barbuda, and different dates may be fixed for different undertakings or classes of undertakings, as specified in the order.

## PART III

### STANDARDS OF THE UNITS OF MEASUREMENT

#### 4. Primary standards

(1) For the purposes of this Act, the Minister shall procure and cause to be maintained a national standard metre and a national standard kilogram and shall procure and cause to be maintained the standards of other units of measurement that the Minister considers necessary.

(2) A standard of a unit of measurement procured under subsection (1) shall be the equivalent of a unit of measurement defined in Schedule 1 or any multiple or sub-multiple of any such unit of measurement, and shall be made in such a manner as to be, as far as practicable, proof against mechanical and atmospheric agents and other sources of error.

(3) A standard of a unit of measurement procured under subsection (1) shall be verified and authenticated at a specified standards laboratory before being brought into use in Antigua and Barbuda.

#### 5. Declaration of primary standards

(1) The Minister may, by notice published in the Gazette, declare that a standard of a unit of measurement which has been procured and verified under section 4 shall be brought into use in Antigua and Barbuda, and upon such notification, that standard shall become an Antigua and Barbuda Primary Standard and shall be deemed to be true and accurate for all purposes.

(2) Subject to subsection (3), the Minister may order the verification of any Antigua and Barbuda Primary Standard at a specified standards laboratory in accordance with the appropriate class of the standard.

(3) Before any Antigua and Barbuda Primary Standard of a unit of measurement is sent out of Antigua and Barbuda for verification, the Minister shall ensure that a secondary standard of that unit of measurement has been verified by comparison with the Antigua and Barbuda Primary Standard, authenticated in the manner that the Minister directs, and placed in the custody of the Custodian. During the time that the Antigua and Barbuda Primary Standard is out of Antigua and Barbuda, the secondary standard shall be deemed to be an Antigua and Barbuda Primary Standard.

#### 6. Secondary standards

(1) The Minister may, for the purposes of this Act, order the making of copies of any Antigua and Barbuda Primary Standard, in the prescribed form and manner and according to the prescribed specifications, to be used as an Antigua and Barbuda secondary standard.

(2) Every secondary standard shall be kept and preserved in the custody of the Custodian, in the prescribed manner, and the Custodian shall, once at least in every period of five years, cause the standard to be compared with the Antigua and Barbuda Primary Standard of that unit of measurement, and if necessary, to be corrected and adjusted.

(3) The Minister may, at any time by notice published in the Gazette, cancel any secondary standard, and any standard so cancelled may no longer be used as a secondary standard.

#### 7. Working standards

(1) The Custodian may procure the necessary copies of a secondary standard of any unit of measurement, and every copy shall be made in the prescribed form and manner and according to the prescribed specifications.

(2) The Custodian shall ensure that every copy of a secondary standard has been verified by comparison with the secondary standard and authenticated in the prescribed manner, and every authenticated copy shall be a working standard and shall be considered to be accurate until the contrary is proved.

(3) Every working standard in the custody of the Custodian, an Inspector or any other agency, shall be verified once at least in every period of two years by comparison against a secondary standard of that unit of measurement.

(4) A working standard that has been damaged shall not be used unless it has been compared with a secondary standard of that unit of measurement and found to be accurate, and authenticated in the prescribed manner.

#### 8. Judicial notice of standards

A court shall take judicial notice of every Antigua and Barbuda primary, secondary and working standard.

**PART IV**

**USE OF AUTHORIZED UNITS OF MEASUREMENT**

**9. Dealings, contracts, etc.**

- (1) Only authorized units of measurement may be used for contracts in Antigua and Barbuda.
- (2) All fees and duties charged or collected in Antigua and Barbuda shall be based on the authorized units of measurement.
- (3) The packing in Antigua and Barbuda of any article or container for the purpose of sale shall be done according to the authorized units of measurement.

**10. Exemption**

Section 9 does not apply to goods that are intended for dispatch to a destination outside of Antigua and Barbuda.

**PART V**

**USE OF WEIGHING AND MEASURING EQUIPMENT**

**11. Equipment, weights, etc. to be in authorized units**

- (1) All weighing and measuring equipment for trade used in Antigua and Barbuda shall be in the authorized units of measurement.
- (2) No weight or measure other than a weight or measure of an authorized denomination shall be used in trade.

**12. Weights etc. to be marked**

- (1) Subject to subsection (2), no person shall use for the purposes of trade or possess for use in trade—
  - (a) any weight which purports to be an authorized denomination, unless the denomination is indelibly marked on the top or side of it in legible figures and letters;
  - (b) any measure of length or volume which purports to be of a denomination equivalent to an authorized denomination, unless the denomination is marked indelibly on the outside of it in legible figures and letters; or
  - (c) any weighing or measuring equipment which does not bear a stamp indicating the maximum weight or measure, as the case may be, which may be weighed or measured by means of such instrument.
- (2) Nothing in this section requires the marking of a denomination of any weight, if it would be impractical to do so because of the small size of the weight.

**13. Sale of unstamped equipment prohibited**

No person shall sell or expose for sale any equipment that has not been verified and stamped by an Inspector with the prescribed mark of verification, for purposes of trade.

**14. Seller to weigh or measure article**

- (1) Every person who, in any place, sells any article by weight or by measure, whether on his or her own behalf or on behalf of its owner, shall on demand made by the person to whom the article is to be delivered—
  - (a) if the article is sold by weight, weigh it in a weighing instrument in the presence of that person;
  - (b) if the article is sold by volume or capacity, measure it in a measure of volume or capacity in the presence of that person; or
  - (c) if the article is sold by linear measure, measure it using a measure of length in the presence of that person.
- (2) Subsection (1) does not apply to the sale of pre-packaged goods.

**PART VI**

**VERIFICATION AND LICENSING OF WEIGHING AND MEASURING EQUIPMENT**

**15. Approval and verification of equipment**

- (1) All weighing and measuring equipment for use in trade and for purposes prescribed in subsection (2) shall be subject to—
  - (a) pattern approval in accordance with section 19;
  - (b) initial verification in accordance with the prescribed requirements;
  - (c) in-service verification in accordance with the prescribed requirements; and
  - (d) verification after repair or modification.
- (2) This section applies to the weighing and measuring equipment used in trade in Antigua and Barbuda specifically for use—
  - (a) in the field of health care;
  - (b) in postal services;
  - (c) for the sale of electricity and water; and
  - (d) in industry, engineering or any other field.

**16. Periodical examination of weights and instruments**

- (1) The Custodian shall fix the times and places within each parish or area at which an Inspector will examine and verify equipment.
- (2) The Custodian must give reasonable public notice of the time and place fixed under subsection (1).

(3) Every Inspector shall, at the time and place fixed under this section, attend with the working standards provided for the use of the Inspector and, after ensuring that the prescribed fee has been paid, shall—

- (a) examine in the prescribed manner every weight and measure which is produced for the purpose and compare it with a working standard of that weight or measure; and
- (b) examine and test in the prescribed manner every weighing and measuring instrument which is produced for the purpose.

(4) Nothing in subsection (1) prevents an Inspector from examining, comparing or testing any weight or measure or any weighing or measuring instrument which is produced for examination at any time or place other than a time and place fixed under this section.

#### **17. Stamping by Inspector**

(1) An Inspector who, upon examination under section 16, finds that the equipment complies with this Act and the regulations, shall stamp the equipment in the prescribed manner with the prescribed mark of verification.

(2) An Inspector shall not stamp any weight or measure with a mark of verification unless—

- (a) the weight or measure is of an authorized denomination; and
- (b) the Inspector has tested it by comparison with a working standard of that weight or measure.

#### **18. Effect of stamping**

(1) Equipment that has been duly stamped by an Inspector under this Act with the prescribed mark of verification is a legal weight, measure or instrument in every part of Antigua and Barbuda, unless it is later found not to be accurate.

(2) Where a subsequent examination shows that equipment which had been stamped is not accurate, the Inspector may cancel the stamp.

#### **19. Pattern approval**

No equipment may be used for purposes of trade in the fields specified in subsection 15(2) unless it has been subjected to pattern examination and approval by the Director in accordance with the prescribed specifications and limits of error and the prescribed fees associated with the examination and approval have been paid.

### **PART VII**

#### **MANUFACTURE, REPAIR AND SALE OF WEIGHING AND MEASURING EQUIPMENT**

#### **20. Licence required**

(1) No person shall sell, manufacture or repair equipment except under the authority of a licence issued under this section by the Director.

(2) Every person who wishes to obtain a licence under subsection (1)—

- (a) shall demonstrate, to the satisfaction of the Director, the ability to repair the type of equipment that the person seeks to repair; and
- (b) shall possess the tools and other facilities required for the proper execution of the repair.

(3) Every person who wishes to obtain a licence to manufacture equipment—

- (a) shall demonstrate, to the satisfaction of the Director, the ability to manufacture the type of equipment that the person seeks to manufacture;
- (b) shall possess the tools and other facilities required for the manufacture or assembly of the equipment; and
- (c) shall submit to the Director, for pattern approval, the drawings and samples required equipment to be manufactured.

(4) No licence to sell, manufacture or repair equipment shall be issued to any person unless the prescribed fee has been paid.

(5) Every licence issued under this section shall be in the prescribed form, may be subject to prescribed conditions, and is in force until the date specified in the licence.

(6) The Director may revoke any licence issued under this section if the holder of the licence is convicted of an offence under this Act.

(7) The Minister may, by regulation, fix maximum fees for the repair of equipment and prohibiting persons licensed under this section from demanding or accepting fees in excess of those maximum fees in respect of the repair of equipment.

### **PART VIII**

#### **PRODUCT QUANTITIES AND PRE-PACKAGED GOODS**

#### **21. Sale to by weight or measure**

(1) No person shall sell any goods by weight or measure except by net weight or measure.

(2) Subject to subsection 22(2), any person who, in selling or purporting to sell any goods by weight or other measurement or by number, delivers or causes to be delivered to the buyer a lesser quantity than that purported to be supplied or than corresponds with the price charged, commits an offence.

#### **22. Ministerial order to make provision for pre-packaged goods**

(1) The net weight or measure marked on pre-packaged goods shall be subject to the prescribed tests and limits.

(2) No person shall sell or expose for sale by weight or measure any pre-packaged goods unless they comply with the regulations made for the purposes of subsection (1).



(3) Subject to the prescribed exemptions, no person shall sell pre-packaged goods by weight or measure unless the net weight or the net measure is marked on the container in the prescribed manner in terms of the authorized units of measurement specified in Schedule 2.

(4) Any person who supplies, sells or exposes for sale pre-packaged goods or any container of packaged goods made, formed or filled in a misleading way as to their nature, weight or capacity commits an offence.

(5) Every importer or packer of pre-packaged goods shall ensure that the goods are marked in the prescribed manner with—

- (a) a statement of the quantity contained in terms of the authorized units of measurement; and
- (b) the name and address of the manufacturer, the packer or the importer, or a mark which enables the manufacturer, the packer or the importer to be readily ascertained.

(6) For the purpose of subsection (5) and section 38, "importer" means an individual, group of persons, agency or company that brings into Antigua and Barbuda a container, or weighing or measuring equipment.

## PART IX

### THE NATIONAL METROLOGY SERVICE

#### 23. Establishment

A National Metrology Service is established, which shall be administered by and form part of the operations of the Bureau of Standards established by the Standards Act (Cap. 411).

#### 24. Appointments

(1) The Minister shall appoint the Director of the Antigua and Barbuda Bureau of Standards to be the Custodian of the Antigua and Barbuda Primary Standards.

(2) The Director shall appoint an officer of the Bureau of Standards to be the Deputy Custodian of the Antigua and Barbuda Primary Standards who, subject to the general direction and control of the Director, may perform all of the functions of the Director as the Custodian of the Antigua and Barbuda Primary Standards under this Act.

(3) For the purposes of this Act, the Minister shall, on the advice of the Director, designate employees of the Bureau of Standards or other public officers to be Inspectors of Weights and Measures, and provide every Inspector with documentary evidence of such designation.

#### 25. Prohibition of certain acts by Inspector

(1) No Inspector shall—

- (a) use any working standard for the purpose of testing any weight or measure at any time after the expiry of a period of two years from the date on which that standard was last authenticated under section 7;
- (b) use for the purposes of this Act a weighing or measuring instrument, unless that instrument has been verified in the prescribed manner;
- (c) derive any profit from, or be employed in the making or selling of, weights or measures or weighing or measuring instruments; or
- (d) except as provided in subsection (2), repair, alter or adjust any equipment.

(2) Where the Director is satisfied that it is desirable that an Inspector should be allowed to adjust equipment within the area of any parish, the Director may authorize an Inspector to act in that area as an adjuster of equipment.

(3) Following an adjustment by an Inspector, equipment shall be immediately verified by another Inspector who has been authorized under this Act to be an adjuster.

#### 26. Adjustment fees

(1) An Inspector who is authorized under subsection (2) shall not adjust equipment unless the prescribed fee has been paid.

(2) All fees paid under this Part to an Inspector shall be credited to the Bureau of Standards.

#### 27. Inspector to keep register

Every Inspector shall keep a register in the prescribed form in which shall be entered particulars relating to the performance of duties as Inspector under this Act, and shall, at the prescribed times, transmit the register to the Director for examination.

#### 28. Inspectors to give security, etc

Every Inspector—

- (a) shall be held responsible for the due remittance of all fees that the Inspector receives under this Act and for the safety of the working standards and stamps and other appliances entrusted to that Inspector for the purposes of this Act, and shall sign a declaration accepting the responsibility; and
- (b) shall give security in the prescribed amount for the remittance of all fees received and the safety of those working standards, stamps and other appliances.

#### 29. Powers of the Service

(1) The Director, the Deputy Custodian or any Inspector may at any reasonable time enter any place in which any equipment is kept or suspected to be kept or used for the purpose of trade, or any article or goods are offered or exposed for sale and may—

- (a) search for, or require the person for the time being in charge of the place, to produce for inspection, any equipment in the place;
- (b) inspect any weight or measure found in the place or produced for examination and compare it with a working standard of that weight or measure;
- (c) inspect and test any weighing or measuring instrument found in the place or produced for examination;
- (d) subject to subsection (2), seize and detain, for the purpose of the prosecution of an offence under this Act or any other enactment, any equipment found by the comparison or test to be inaccurate, or which appears to the Inspector to have been likely to be used in contravention of any provision of this Act or the enactment;
- (e) inspect and weigh or inspect and measure any article which is kept, offered or exposed for sale in the place, in order to ascertain whether this Act is being complied with in respect of the article and seize and detain an article in relation to which contravention of this Act has been or is suspected to have been committed;
- (f) require the production of all books, accounts or documents relating to articles in the place and inspect and copy any of those books, accounts and documents; and
- (g) take samples of articles in the place that may reasonably be required for the proper performance of the duties imposed by this Act.

(2) In the event that seizure or detention under paragraph (1)(d) is impractical, the Director, Deputy Custodian or Director who is in the place shall ensure that the equipment is disabled by a non-destructive means, prepare a document certifying that this has taken place and leave a copy of the document with the person in charge.

(3) The Director, the Deputy Custodian or any Inspector may enter any place pursuant to subsection (1) after having obtained permission to enter it from the owner of the premises but if that permission cannot be obtained then the premises may only be entered pursuant to an order of the Court.

## PART X

### OFFENCES AND PENALTIES

#### **30. Use etc. of unmarked weights etc.**

Subject to subsection 12(2), a person who uses for trade or possesses for use in trade any weight or measure which is unmarked with its denomination commits an offence and is liable on summary conviction to a fine of three thousand dollars or to imprisonment for a term of six months or to both.

#### **31. Sale etc. of unstamped weights, etc.**

A person who sells or exposes for sale equipment that has not been stamped by an Inspector with the prescribed mark of verification commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

#### **32. Use etc. of unstamped weights, etc.**

A person who uses for the purposes of trade equipment that has not, in the twelve months immediately preceding the use, been stamped by an Inspector with the prescribed mark of verification commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

#### **33. Forgery etc. of stamp or mark**

A person who—

- (a) forges or counterfeits a stamp or mark provided under this Act for the use of Inspectors for stamping equipment;
- (b) makes, uses, sells, exposes for sale, utters or otherwise disposes of equipment bearing a stamp or mark which the person knows to be false, forged or counterfeited;
- (c) removes a mark which has been stamped by an Inspector on equipment and inserts the mark on any other equipment;
- (d) increases or diminishes a weight or a measure which has been stamped or certified by an Inspector or tampers with a weighing or measuring instrument which has been stamped; or
- (e) uses, sells, exposes for sale, utters for sale, possesses for use in a trade or otherwise disposes of any weight or measure knowing it was unlawfully increased, diminished or false, or any weighing or measuring instrument knowing that it was tampered with,

commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

#### **34. Use etc. of incorrect weight or measure**

A person who uses for the purpose of trade, or possesses for use in trade, inaccurate equipment commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

#### **35. False statement as to weight etc.**

A person who, in any place, whether directly or indirectly—

- (a) makes any false, incorrect or untrue statement as to the number, quantity, measure, gauge or weight of any things in connection with their purchase, sale, weighing or measurement or in the computation of any charges for services rendered on the basis of weight or measure; or
- (b) sells, or causes to be sold, or delivers or causes to be delivered to a purchaser anything by weight or measure short of the quantity demanded or represented by the seller,

commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

**36. Deceptive packaging**

A person who supplies, sells or exposes for sale any pre-packaged goods or any container of pre-packaged goods that are so made, formed or filled as to be misleading as to the nature, weight or capacity of the contents commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

**37. Use of false weight or measure**

A person who uses a false weight or false measure of capacity, or uses a weight or measure of length or capacity representing it to be a different weight or measure from what it is, commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

**38. Offences relating to pre-packaged goods**

An importer or a packer of pre-packaged goods who—

- (a) imports or packs them in contravention of section 22;
- (b) fails to mark in authorized units on them the number, net weight or measure contained;
- (c) fails to indicate the name and address of the manufacturer or the importer, or a mark enabling identification of that name and address; or
- (d) sells or exposes for sale a container of pre-packaged goods on which the number, the net weight or the measure is not marked on the container in terms of units specified in Schedule 2,

commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

**39. Manufacturing etc.**

A person who—

- (a) manufactures or repairs equipment without a licence issued under this Act; or
- (b) being a holder of a licence issued under this Act, commits a breach of any conditions of the licence,

commits an offence and is liable on summary conviction to a fine of three thousand dollars or to imprisonment for a term of three months or to both.

**40. Refusal to produce weight etc.**

A person who refuses to produce equipment when required to do so by the Director, the Deputy Custodian or an Inspector under section 29 or who resists or obstructs an Inspector in the exercise of powers conferred by that section, commits an offence and is liable on summary conviction to a fine of five thousand dollars or to imprisonment for a term of six months or to both.

**41. Breach by Inspector**

An Inspector who fails to act in conformity with the provisions of Part IX or a regulation relating to the examination, verification or stamping of equipment commits an offence and is liable on summary conviction to a fine of three thousand dollars or to imprisonment for a term of three months or to both.

**42. General penalty**

Where a person is convicted under this Act for an offence in respect of which no penalty has been expressly provided, that person is liable to a fine of two thousand dollars.

**43. Forfeiture of weights, etc**

A court may, on the conviction of a person for an offence under this Act relating to equipment, make an order declaring that the equipment be forfeited to the state and the equipment so forfeited shall be disposed of in the prescribed manner.

**44. Possession for use in trade presumed**

For the purposes of this Act, equipment found in the possession of a person who carries on any trade shall be presumed, until the contrary is proved, to be in the possession of that person for use in trade.

**45. Liability of principal presumed**

Where an offence under this Act is committed by an agent or servant of manufacturer or trader, the offence is presumed to have been committed by the manufacturer or trader unless he or she proves that it was committed without his or her knowledge.

**46. Offence by incorporated or unincorporated bodies**

Where an offence under this Act is committed by a body corporate or by an unincorporated body, every director and officer of the body corporate and every member of the incorporated body, as the case may be, is deemed to be guilty of the offence unless the director, officer or member can prove that the offence was committed without his or her knowledge or that he or she had exercised due diligence to prevent the commission of the offence.

**PART XI****GENERAL PROVISIONS****47. Regulations**

The Minister may make regulations to give effect to the provisions of this Act and to prescribe anything required by this Act to be prescribed.

**48. Fees**

The scale of fees payable for testing, verification and stamping of weights, measures or weighing and measuring instruments shall be prescribed by the Minister.

**49. Power to amend Schedules**

The Minister may, by order, amend the Schedules to this Act by adding or removing any unit of measurement specified in them, and the order may contain any ancillary, supplementary or consequential provisions that the Minister considers necessary or desirable on account of the amendment.

**50. Settlement of disputes**

(1) If a dispute arises between an Inspector and any other person as to the meaning or construction of any regulation or as to the methods to be adopted in testing equipment, either party may bring the dispute to the attention of the Director.

(2) The Director shall investigate the matter and make a decision on any such dispute.

**51. Certificate as *prima facie* evidence**

A certificate purporting to be issued by the Director or the Deputy Custodian regarding the condition of equipment examined by the Director or the Deputy Custodian shall be admissible as prima facie evidence of the facts stated in it

**52. Repeals**

The Weights and Measures Act Cap. 470, and the Sworn Weighers and Gaugers Act Cap. 422, are hereby repealed.

**SCHEDULE 1**

(Sections 3(1); 4(2))

**Definition of the International System of Units****1. The International System of Units**

1.1 The abbreviation "SI" refers to the International System of Units

1.2 The SI units consist of -

the base units;  
the supplementary units; and  
the derived units;

**2. Base units:**

for length	metre	m
for mass	kilogram	kg
for time	second	s
for electric current	ampere	A
for thermodynamic	kelvin	K
for amount of substance	mol	(mol)

2.2 The base units shall have the definitions assigned by the Minister from time to time by regulations, being the meanings appearing to the Minister to reproduce in English the international definitions which were adopted by the General Conference of Weights and Measures (CGPM) and in force at the date of making of the regulations

**3. Supplementary units:**

3.1 The names and symbols of supplementary units are respectively:

for plane angle	radian	rad
for solid angle	steradian	sr

**4.0 Derived units:**

The derived units are formed by combining base units with each other, by combining the base units with derived units, and by combining derived units with each other according to the algebraic relations linking the corresponding quantities. The symbols for derived units are obtained by means of the mathematical signs for the multiplication and division and use of exponent most commonly used derived units are indicated in paragraphs 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6.

4.1 Units of space and time

4.1.1 Plane angle: radian (symbol: rad)

The radian is the plane angle between two radii which cut off on the circumference of a circle an arc equal in length to the radius.

$$(1 \text{ rad} = 1 \text{ m}/1 \text{ m} = 1)$$

4.1.2 Solid angle: steradian (symbol: Sr)

The steradian is the solid angle which, having its vertex in the centre of a sphere, cuts off an area of the surface of the sphere equal to that of a square with its side of equal length to the radius of the sphere.

$$(1 \text{ sr} = 1 \text{ m}^2/1 \text{ m}^2 = 1)$$

4.1.3 Wave number 1 per metre (symbol:  $\text{m}^{-1}$ ).

1 per metre is the wave number of a monochromatic radiation whose wavelength is equal to 1 metre.

$$(1 \text{ m}^{-1} = 1/1 \text{ m})$$

4.1.4 Surface area: the square metre (symbol:  $\text{m}^2$ ).

The square metre is the surface of the square having a side of 1 metre.

$$(1 \text{ m}^2 = 1 \text{ m} \cdot 1 \text{ m})$$

4.1.5 Volume: the cubic metre (symbol:  $\text{m}^3$ )

The cubic metre is the volume of a cube having a side of 1 metre.

$$(1 \text{ m}^3 = 1 \text{ m} \cdot 1 \text{ m} \cdot 1 \text{ m})$$

4.1.6 Frequency: the hertz (symbol: Hz)

The hertz is the frequency of a periodic phenomenon of which the periodic time is 1 second.

$$(1 \text{ Hz} = 1 \text{ s}^{-1} = 1/1 \text{ s})$$

4.1.7 Angular velocity: radian per second (symbol: rad/s or  $\text{rad s}^{-1}$ ).

The radian per second is the angular velocity of a body which, animated by a uniform rotation around fixed axis, turns 1 radian in 1 second.

$$(1 \text{ rad/s} = 1 \text{ rad/1 s}).$$

4.1.8 Angular acceleration: radian per second squared (symbol:  $\text{rads/s}^2$  or  $\text{rad s}^{-2}$ ).

The radian per second squared is the angular acceleration of a body which is animated by a rotation varying uniformly around a fixed axis, and whose angular velocity varies by a radian per in 1 second.

$$(1 \text{ rad/s}^2 = 1 \text{ rad/1 s/1 s})$$

4.1.9 Speed: metre per second (symbol: m/s or  $\text{m}\cdot\text{s}^{-1}$ )

The metre per second is the speed of a body which, animated by a uniform movement, covers 1 metre in 1 second.

$$(1 \text{ m/s} = 1 \text{ m/1 s}).$$

4.1.10 Acceleration: metre per second squared (symbol:  $\text{m/s}^2$  or  $\text{ms}^{-2}$ )

The metre second squared is the acceleration of a body, animated by a uniformed varied movement whose speed varies in 1 second by 1 metre per second.

$$(1 \text{ m/s}^2 = 1\text{m/1s/1s})$$

**4.2 Units of Mechanics**4.2.1 Linear density: kilogram per metre (symbol: kg/m or  $\text{kg}\cdot\text{m}^{-1}$ )

The kilogram per metre is the linear density of a homogeneous body of uniform section having a mass of 1kilogram and a length of 1 metre.

$$(1 \text{ kg/m} = 1 \text{ kg/1 m}).$$

4.2.2 Surface density: kilogram per square metre (symbol:  $\text{kg/m}^2$  or  $\text{kg}\cdot\text{m}^{-2}$ )4.2.3 Density (mass density): kilogram per cubic metre (symbol:  $\text{kg/m}^3$  or  $\text{kg}\cdot\text{m}^{-3}$ )

The kilogram per cubic metre is the density of a homogeneous body having a mass of 1 kilogram and a volume of 1 cubic metre.

$$(\text{kg/m}^3 = 1 \text{ kg/1 m}^3).$$

## 4.2.4 Force: newton (symbol: N).

The newton is the force which, when applied to a body having a mass of 1 kilogram, gives it an acceleration of 1 metre per second squared.

$$(1 \text{ N} = 1 \text{ kg}\cdot\text{m/s}^2)$$

## 4.2.5 Pressure, Stress: pascal (symbol: Pa).

The pascal is the uniform pressure which, when acting on a plane surface of 1 square metre, exercises perpendicularly to that surface a total force of 1 newton. It is also the uniform stress which, when acting on a plane surface of 1 square metre, exercises on that surface a total force of 1 newton.

$$(1\text{Pa} = 1\text{N/1 m}^2).$$

4.2.6 Dynamic viscosity: Pascal second (symbol:  $\text{Pa}\cdot\text{s}$ )

The pascal second is the dynamic viscosity of a homogeneous fluid in which the uniform linear movement of a plane surface of 1 square metre leads to retarding force of 1 newton, when there is a difference in velocity of 1 metre per second between two parallel planes separated by a distance of one metre.

$$(1 \text{ Pa}\cdot\text{s} = 1 \text{ Pa}\cdot\text{m} / 1 \text{ m/ 1s}).$$

4.2.7 Kinematic viscosity: meter squared per second (symbol:  $\text{m}^2/\text{s}$  or  $\text{m}^2\cdot\text{s}^{-1}$ ).

The metre squared per second is the kinematic viscosity of a fluid whose dynamic 1 pascal second and whose density is 1 kilogram per cubic metre.

$$(1 \text{ m}^2 / \text{s} = 1 \text{ Pa}\cdot\text{s}/1\text{kg/1m}^3).$$

## 4.2.8 Work, Energy, Quantity of heat: joule (symbol: J)

The joule is the work done when the point of application of a force of 1 newton is displaced through a distance of 1 metre in the direction of the force.

$$(1 \text{ J} = 1 \text{ N}\cdot 1 \text{ m})$$

## 4.2.9 Power, Energy flow rate; Heat flow rate: watt (symbol: W).

The watt is the power which gives rise to a production of energy equal to 1 joule per second.

$$(1 \text{ W} = 1 \text{ J/1 s}).$$

4.2.10 Volume flow rate: cubic metre per second (symbol:  $\text{m}^3 / \text{s}$  or  $\text{m}^3 \cdot \text{s}^{-1}$ ).

The cubic metre per second is the volume flow rate of a uniform flow such that a substance having a volume of 1 cubic metre passes through the cross-section considered in 1 second.

$$(1 \text{ m}^3/\text{s} = 1 \text{ m}^3/1 \text{ s}).$$

4.2.11 Mass flow rate: kilogram per second (symbol: kg/s or  $\text{kg}\cdot\text{s}^{-1}$ ).

The kilogram per second is the mass flow rate of a uniform flow such that a substance having a mass of 1 kilogram passes through the cross section considered in 1 second.

(1 kg/s = 1 kg/1 s).

### 4.3 Units of Heat

4.3.1 Entropy: joule per kelvin (symbol: J/K or  $J \cdot K^{-1}$ ).

The joule per kelvin is the increase in the entropy of a system receiving a quantity of heat of 1 joule at the constant thermodynamic temperature of 1 kelvin, provided that no irreversible change takes place in the system

(1 J/K = 1 J/1K).

4.3.2 Specific heat capacity: joule per kilogram kelvin (symbol: J/(kg•K) or  $J \cdot kg^{-1} \cdot K^{-1}$ )

The joule per kilogram kelvin is the specific heat capacity of a homogenous body having a mass of 1 kilogram in which the addition of a quantity of heat of 1 joule produces a rise in temperature of 1 kelvin.

(J/(kg•K) = 1 J/1 kg•1 K).

4.3.3 Thermal conductivity: watt per metre kelvin (symbol: W/(m•K) or  $W \cdot m^{-1} \cdot K^{-1}$ ).

The watt per metre kelvin is the thermal conductivity of a homogeneous body in which a difference of temperature of 1 kelvin between two parallels planes having a surface of 1 square metre and which are 1 metre apart produces between these planes a heat low rate of 1 watt.

(1 W/(m•k) = 1 W/m<sup>2</sup>/1 K/1m).

### 4.4 Units of Electricity and Magnetism

4.4.1 Quantity of electricity, electric charge: coulomb (symbol: C).

The coulomb is the quantity of electricity carried in 1 second by a current of 1 ampere.

(1 C = 1 A•1s = 1 A•s).

4.4.2 Electric potential, Electric tension, Electromotive force: volt (symbol: V)

The volt is the difference of electric potential between two points of a conducting wire carrying a constant current of 1 ampere, when the power dissipated between these two points is equal to 1 watt.

(1 V = 1 W/1 A).

4.4.3 Electric field strength: volt per metre (symbol: V/m).

The volt per metre is the strength of the electric field which exercises a force of 1 newton on a body charged with a quantity of electricity of 1 coulomb.

(1 V/m = 1 N/1 C).

4.4.4 Electric resistance: ohm (symbol:  $\Omega$ )

The ohm is the electric resistance between two points of a conductor when a constant potential difference of 1 volt, applied to these points, produces in the conductor a current of 1 ampere, the conductor not being the seat of any electromotive forces.

(1  $\Omega$  = 1 V/1 A).

4.4.5 Conductanc : siemens (symbol: S).

The siemens is the conductance of a conductor having an electric resistance of 1 ohm.

(1 S = 1  $\Omega^{-1}$  = 1/1  $\Omega$ ).

4.4.6 Electric capacities: farad (symbol: F)

The farad is the capacitance of a capacitor between the plates of which there appears a difference of electric potential of 1 volt, when it is charged by a quantity of electricity of 1 coulomb.

(1 F = 1 C/1 V).

4.4.7 Inductance: henry (symbol: H).

The henry is the electric inductance of a closed circuit in which an electromotive force of 1 volt is produced when the electric current in the circuit varies uniformly at the rate of 1 ampere per second.

(1 H = 1 V•s /1 A).

4.4.8 Magnetic flux, magnetic induction flux: Weber (symbol: Wb).

The weber is the magnetic flux which, linking a circuit of 1 turn, would produce it in an electromotive force of 1 volt, if it were reduced to zero at a uniformed rate in 1 second.

(1 Wb = 1 V• s).

4.4.9 Magnetic induction, magnetic flux density: tesla (symbol: T).

The tesla is the uniform magnetic induction, which distributed normally over a surface of 1 square metre, produces across the surface a total magnetic flux of 1 weber.

(1 T = 1 Wb/1 m<sup>2</sup>).

4.4.10 Magnetomotive force: ampere (symbol: A).

The ampere is the magnetomotive force along any closed curve which surrounds once only an electric conductor through which an electric current of 1 ampere passes.

4.4.11 Magnetic field strength: ampere per metre (symbol: A/m or A•m<sup>-1</sup>).

The ampere per metre is the strength of the magnetic field produced in vacuum along the circumference of a circle of 1 metre circumference, by an electric current of 1 ampere, maintained in a straight conductor of infinite length, of negligible circular cross section, forming the axis of the circle mentioned

(A/m = 1 A/1 m).

**4.5 Units of Light and Electromagnetic Radiation**

4.5.1 Radiant intensity: watt per steradian (symbol: W/sr or W•sr<sup>-1</sup>)

The watt per steradian is the radiant intensity of a point source emitting a uniform radiant flux of 1 watt in a solid angle of 1 steradian.

(1 W/sr = 1 W/1 sr).

4.5.2 Luminance: candela per square metre (symbol: cd/m<sup>2</sup> or cd•m<sup>-2</sup>).

The candela per square metre is the luminous luminance perpendicular to the plane surface of 1 square metre of a source of which the luminous intensity perpendicular to that surface is 1 candela.

(1 cd/m<sup>2</sup> = 1 cd/1 m<sup>2</sup>).

4.5.3 Luminous flux: lumen (symbol: lm).

The lumen is the luminous flux emitted in the unit solid angle (steradian) by a uniform point source having a luminous intensity of 1 candela.

(1 lm = 1 cd•1 sr).

4.5.4 Illuminance: lux (symbol: lx)

The lux is the illuminance of a surface receiving a luminous flux of 1 lumen, uniformly distributed over a square metre of the surface

(1 lx = 1 lm / 1 m<sup>2</sup>).

**4.6 Units of Ionizing Radiation**

4.6.1 Activity (of a radioactive source): becquerel (symbol: Bq)

The becquerel is the activity of a radioactive source in which one nuclear transformation or transition occurs per second.

(1 Bq = 1/1 s)

4.6.2 Absorbed dose: gray (symbol: Gy).

The gray is the dose absorbed in an element of matter of 1 kilogram mass to which the energy of 1 joule is imparted by ionizing radiation whose energy fluence is constant.

(1 Gy = 1 J/1 Kg).

4.6.3 Exposure: coulomb per kilogram (symbol: C/Kg or C •kg<sup>-1</sup>).

The coulomb per kilogram is the exposure of a photonic ionizing radiation which can produce in a quantity of air 1 kilogram mass, ions of one sign carrying a total electric charge of 1 coulomb, the energy fluence being uniform in the quantity of air considered.

**5. Decimal Multiples and Sub-Multiples of SI Units**

5.1 The decimal multiples and sub-multiples of SI units are formed by means of the decimal numerical factors set out in paragraph 4.2 below by which the SI unit concerned is multiplied.

5.2 The names of the multiples and sub-multiples of the SI units are formed by means of SI refixes designating the decimal factors.

Factors	SI Prefix	Symbol
1 000 000 000 000 000 000 000 000= 10 <sup>24</sup>	yotta	Y
1 000 000 000 000 000 000 000= 10 <sup>21</sup>	zetta	Z
1 000 000 000 000 000 000= 10 <sup>18</sup>	exa	E
1 000 000 000 000 000= 10 <sup>15</sup>	peta	P
1 000 000 000 000= 10 <sup>12</sup>	tera	T
1 000 000 000= 10 <sup>9</sup>	giga	G
1 000 000= 10 <sup>6</sup>	mega	M
1 000= 10 <sup>3</sup>	kilo	k
100= 10 <sup>2</sup>	hecto	h
10= 10 <sup>1</sup>	deca	da
0 1= 10 <sup>-1</sup>	deci	d
0 01= 10 <sup>-2</sup>	centi	c
0 001= 10 <sup>-3</sup>	milli	m
0 000 001= 10 <sup>-6</sup>	micro	μ
0 000 000 001= 10 <sup>-9</sup>	nano	n
0 000 000 000 001= 10 <sup>-12</sup>	pico	p
0 000 000 000 000 001= 10 <sup>-15</sup>	femto	f



0 000 000 000 000 000 001=10 <sup>-18</sup>	atto	a
0 000 000 000 000 000 000 001=10 <sup>-21</sup>	zepto	z
0 000 000 000 000 000 000 000 001=10 <sup>-24</sup>	yocto	y

5.3 A prefix shall be considered to be combined with the name of the unit to which it is directly attached.

5.4 The symbol of the prefix shall be placed before the symbol of the unit without intermediate space; the whole forms the symbol of the multiple or sub-multiple of the unit. The symbol of the prefix is therefore considered to be combined with the symbol of the unit to which it is directly attached, forming with it a new unit symbol which can be raised to a positive or negative power and which can be combined with other unit symbols to form the symbols for compound units.

5.5 Compound prefixes, formed by the juxtaposition of several SI prefixes, are not permitted.

5.6 The names and symbols of the decimal multiples and sub-multiples of the unit mass are formed by the addition of the SI prefixes to the word << gram >>( symbol : g).

1 g = 0.001 kg = 10<sup>-3</sup> kg.

5.7 To designate the decimal multiples and sub-multiples of a derived unit which is expressed in the form of a fraction, a prefix can be attached indifferently to the units which appear either in the numerator, or in the denominator, or in both these terms.

**SCHEDULE 2**

(Sections 3(2),(4) &amp; (5), 4(2);22)

**Authorized Units for Use in Trade****Part 1****The International System of Units and other Metric Units****1.1 Measurement of length**

## 1.1.1 SI Units

kilometre (km)	= 1 000 metres
metre (m) - as defined in Schedule 1	
millimetre (mm)	= 1/1 000 metres
micrometre ( $\mu\text{m}$ )	= 1/1 000 000 metres

## 1.1.2 Other metric units

nautical mile	= 1852 metres
centimetre	= 1/100

**1.2 Measurement of Area**

## 1.2.1 SI units

Square metre ( $\text{m}^2$ ) - as defined in Schedule 1	
Square kilometre ( $\text{km}^2$ )	= 1 000 000 square metres
Square millimetre ( $\text{mm}^2$ )	= 1/1 000 000th of square metre

## 1.2.2 Other metric units

hectare (ha)	= 10 000 square metres
are (a)	= 100 square metres
square centimetre ( $\text{cm}^2$ )	= 1/10 000th of square metre

**1.3 Measurement of Plane and Solid (angle)**

## 1.3.1 plane (angle)

**radian (rad) - as defined in Schedule 1**

degree ( $^\circ$ )	= $n/180$ radians
minute ( $'$ )	= $n/10800$ radians
second ( $''$ )	= $n/64800$ radians

## 1.3.1 solid (angle)

steradian (sr) - as defined in Schedule 1

**1.4 Measurement of Speed**

## 1.4.1 SI units

metre per second (m/s) - defined in Schedule 1

## 1.4.2 Other metric units

kilometre per hour = 10/36 metres per second

**1.5 Measurement of volume or capacity**

## 1.5.1 SI units

cubic metre - as defined in Schedule 1

## 1.5.2 Other metric units

hectolitre (hl)	= 100 litres
litre (l)	= 1/1 000th of a cubic metre
cubic centimetre ( $\text{cm}^3$ )	= 1/ 1000 000th of a cubic metre
decilitre (dl)	= 1/10th of a litre
centilitre (cl)	= 1/100th of a litre
millilitre (ml)	= 1/1 000th of a litre

**1.6 Measurement of Mass**

## 1.6.1 SI units

kilogram (kg)	= as defined in Schedule 1
gram (g)	= 1/1000th of kilogram
milligram (mg)	= 1/1000 000th of a kilogram
microgram ( $\mu\text{g}$ )	= 1/1 000 000 000th of a kilogram

## 1.6.2 Other metric units

tonne (t) = 1000 kilograms

metric carat = 1/5th part of gram = 200 mg

### 1.7 Measurement of Density (mass density)

#### 1.7.1 SI units

kilogram per cubic metre - as defined in Schedule 1

#### 1.7.2 Other metric units

tonne per cubic metre = 1000 kilograms per cubic metre

### 1.8 Measurement of Force

#### 1.8.1 SI units

meganewton (MN) = 1 000 000 Newton  
 kilonewton (kN) = 1 000 Newton  
 Newton (N) - as defined in Schedule 1  
 millinewton (mN) = 1/1 000 of a Newton

### 1.9 Measurement of pressure and stress

#### 1.9.1 SI units

megapascal (MPa) = 1 000 000 pascal  
 kilopascal (kPa) = 1 000 pascal  
 pascal (Pa) - as defined in Schedule 1

### 1.10 Measurement of linear density of textiles

#### 1.10.1 Other metric units

Tex (tex) = the mass in grams of one kilometre of yarn = 1 g/1 km =  $10^{-6}$  kg/m  
 Millitex (mtex) = 1/1 000th of a tex  
 Decitex (dtex) = 1/10th of a tex  
 Kilotex (ktex) = 1 000 tex.

### 1.11 Measurement of Time and Frequency

#### 1.11.1 Time

second (s) - as defined in Schedule 1  
 minute (min) = 60 seconds  
 hour (h) = 3 600 seconds  
 day (d) = 86 400 seconds  
 week = 7 days  
 month and year of the Gregorian calendar

#### 1.11.2 Frequency

gigahertz (GHz) = 1 000 000 000 hertz  
 megahertz (MHz) = 1 000 000 hertz  
 kilohertz (kHz) = 1 000 hertz  
 hertz (Hz) - as defined in Schedule 1

### 1.12 Measurement of Temperature

#### 1.12.1 SI units

kelvin (K) - as defined in Schedule 1

#### 1.12.2 Other metric units

Degree Celsius ( $^{\circ}\text{C}$ ) = one kelvin (K)  
 The Celsius temperature scale is defined by the following equation:  
 $t = T - T_0$  where:  
 $t$  = temperature in degree Celsius,  
 $T$  = temperature in Kelvin  
 $T_0 = 273.15 \text{ K}$

### 1.13 Measurement of Energy and Power

#### 1.13.1 Energy, Work and Quantity of Heat

joule (J) - as defined in Schedule 1  
 kilojoule (kJ) = 1 000 joules  
 megajoule (MJ) = 1 000 000 joules  
 and all other multiples and sub-multiples as defined in paragraph 4 of Schedule 1.  
 watthour (Wh) = 1 000 watthour  
 electron volt (eV) = the energy acquired by an electron in passing through a potential difference of 1 volt in vacuum.

#### 1.13.2 Power, Energy flow rate and Heat flow rate

milliwatt (mW) = 1/1 000 of a watt  
 watt (W) - as defined in Schedule 1

kilowatt (kW) = 1 000 watts  
 megawatt (MW) = 1 000 000 watts and all other  
 multiples and sub- multiples as defined in paragraph 4 of Schedule 1

**1.14 Specific Energy**

## 1.14.1 SI Units

kilojoules per kilogram (kJ/kg) = 1 000 joules per kilogram  
 joules per kilogram (J/kg) = 1 joule per kilogram

## 1.14.2 Other units

joule per gram (J/g) = 1/1 000th joules per kilogram

**1.15 Electric current**

## 1.15.1 SI Units

ampere (A) - as defined in Schedule 1  
 milliampere (mA) = 1/1 000<sup>th</sup> of ampere  
 microampere ( $\mu$ A) = 1/1 000 000<sup>th</sup> of ampere

**1.16 Electromotive force and Potential difference**

## 1.16.1 SI Units

kilovolt (kV) = 1 000 volts  
 volt (V) - as defined in Schedule 1  
 millivolt (mV) = 1/1 000th of a volt  
 microvolt ( $\mu$ V) = 1/1 000 000th of a volt

**1.17 Electric Capacitance**

## 1.17.1 SI Units

henry (H) - as defined in Schedule 1  
 millihenry (mH) = 1/1 000<sup>th</sup> of a henry  
 microhenry ( $\mu$ H) = 1/1 000 000<sup>th</sup> of a henry

**1.18 Electric resistance**

## 1.18.1 SI Units

megohm ( $M\Omega$ ) = 1 000 000 ohms  
 kilohm ( $k\Omega$ ) = 1 000 ohms  
 ohm ( $\Omega$ ) - as defined in Schedule 1  
 milliohm ( $m\Omega$ ) = 1/1 000<sup>th</sup> of an ohm  
 microohm ( $\mu\Omega$ ) = 1/1 000 000<sup>th</sup> of an ohm

**1.19 Quantity of Electricity**

## 1.19.1 SI Units

coulomb (C) = as defined in Schedule 1  
 millicoulomb (mC) = 1/1 000th of coulomb  
 microcoulomb ( $\mu$ C) = 1/1 000 000th of coulomb

## 1.19.2 Other Units

Amperehour (Ah) = 36 000 coulombs

**1.20 Luminous Intensity**

## 1.20.1 SI Units

Candela (cd) - as defined in Schedule 1

**1.21 Illumination**

## 1.21.1 SI Units

lux (lx) = as defined in Schedule 1

**1.22 Luminous flux**

## 1.22.1 SI Units

lumen (lm) - as defined in Schedule 1

**1.23 Activity**

## 1.23.1 SI Units

becquerel (Bq) - as defined in Schedule 1  
 millibecquerel (mBq) = 1/1 000 of becquerel

**1.24 Absorbed dose**

## 1.24.1 SI Units

gray (Gy) - as defined in Schedule 1  
 milligray (mGy) = 1/1 000 of gray

**1.25 Exposure**

## 1.25.1 SI Units

coulomb per kilogram (C/kg) - as defined in Schedule 1

**Part 2****The British Imperial of Units****1.0 Measurement of length**

Yard	=	0.9144 metre
Mile	=	1760 yards
Furlong	=	220 yards
Chain	=	22 yards
Foot	=	1/3 <sup>rd</sup> of a yard
Inch	=	1/36 <sup>th</sup> of a yard

**2.0 Measurement of area**

Square mile	=	640 acres
Acre	=	4840 square yards
Rood	=	1210 square yards
Perch	=	30 ¼ square yards
(or square pole)		
Square yard	=	The superficial area equal to that of a square, each side of which measures 1 yard.
Square foot	=	1/9 <sup>th</sup> of a square yard
Square inch	=	1/144 <sup>th</sup> of a square foot

**3.0 Measurement of volume or capacity**

## 3.1 Volume in general

Cubic yard	=	A volume equal to that of a cube each edge of which measures 1 yard.
Cubic foot	=	1/27 <sup>th</sup> a cubic yard
Cubic inch	=	1/1728 <sup>th</sup> of a cubic foot

## 3.2 Liquid Measures

Gallon	=	0.004 546092 cubic metre (The space occupied by 10 pounds weight of distilled water of density 0.998859 gram per millilitre weight in air of density 0.001217 grams per millilitre against weight of density 8.136 grams per millilitre.)
Quart	=	¼ gallon
Pint	=	½ quart
Gill	=	¼ pint
Fluid ounce (fl oz)	=	1/20 pint
Fluid drachm	=	1/8 fluid ounce
Minim	=	1/60 fluid drachm
Bushel	=	8 gallons
Peck	=	2 gallons
Chaldron	=	288 gallons

**3.3 Measurement of mass or weight**

Ton	=	2240 pounds
Hundred weight (cwt)	=	112 pounds
Quarter	=	28 pounds
Stone	=	14 pounds
Pound (lb)	=	0.453 592 37 kilogram
Ounce (oz)	=	1/16 pounds
Dram	=	1/16 pounds
Grain (gr)	=	1/7000 pound
Ounce troy	=	480 grains

**SCHEDULE 3**

(Section 2)

**Authorized Denominations of Weight and Measures****Part 1****The International System of Units and Other Metric Units****1.1 Linear measures**

Measures of -

100 metres  
 50 metres  
 30 metres  
 20 metres  
 10 metres  
 5 metres  
 3 metres  
 2 metres  
 1 metre  
 1 centimetre  
 1 millimetre  
 1 micrometre

**1.2 Square Measures**

Measures of, or any multiple of, 1 square decimetre

**1.3 Cubic measures**Measures of, or any multiple of, the cubic decimetre = 0.001 m<sup>3</sup>**1.4 Capacity measures**

Measures of -

litres (or multiples of 10 litres)  
 5 litres  
 2.5 litres  
 2 litres  
 1 litre  
 500 millilitres  
 250 millilitres  
 200 millilitres  
 100 millilitres  
 50 millilitres  
 25 millilitres  
 20 millilitres  
 10 millilitres  
 5 millilitres  
 2 millilitres  
 1 millilitre

**1.5 Weights**

1.5.1 Weights of -

50 kilograms  
 20 kilograms  
 10 kilograms  
 5 kilograms  
 2 kilograms  
 1 kilogram

500 grams    500 milligrams  
 200 grams    200 milligrams  
 100 grams    100 milligrams  
 50 grams     50 milligrams  
 20 grams     20 milligrams  
 10 grams     10 milligrams  
 5 grams      5 milligrams  
 2 grams      2 milligrams  
 1 gram       1 milligram

1.5.2 Weights of –

500 carats (metric)  
 200 carats (metric)

100 carats (metric)  
 50 carats (metric)  
 20 carats.(metric)  
 10 carats (metric)  
 5 carats (metric)  
 2 carats (metric)  
 1 carat (metric)  
 0.50 carat (metric)  
 0.25 carat (metric)  
 0.20 carat (metric)  
 0.10 carat (metric)  
 0.05 carat (metric)  
 0.02 carat (metric)  
 0.01 carat (metric)

## PART 2

### THE BRITISH IMPERIAL SYSTEM

#### 2.1 Linear Measures

Measures of -

100 feet	10 feet
66 feet	8 feet
50 feet	6 feet
33 feet	5 feet
20 feet	4 feet
1 yard	1/10 <sup>th</sup> of an inch
2 feet	1/16 <sup>th</sup> of an inch
1 foot	1/32 <sup>nd</sup> of an inch
6 inches	1/64 <sup>th</sup> of an inch
1 inch	1/100 <sup>th</sup> of an inch
	1/128 <sup>th</sup> of an inch
	1/256 <sup>th</sup> of an inch
	1/1000 <sup>th</sup> of an inch

#### 2.2 Square measures

Measures of, or any multiple of, 1 square foot

#### 2.3 Cubic measures

Measures of, any multiple of, 1/4 the cubic yard

#### 2.4 Capacity measures

Measures of –

1 gallon (or any multiple of 1 gallon)  
 1/2 gallon  
 1 quart  
 1 pint  
 1/2 pint

8 fluid ounces  
 6 fluid ounces  
 4 fluid ounces  
 1 fluid ounce or sub-multiples of 1 fluid ounce

4 fluid drachms  
 2 fluid drachms  
 1 fluid drachm

60 minims  
 30 minims  
 10 minims  
 1 bushel  
 1/2 bushel  
 1 peck

#### 2.5 Weights

2.5.1 Weights of -

56 pounds	7 pounds
50 pounds	5 pounds
28 pounds	4 pounds
20 pounds	2 pounds
14 pounds	1 pound
10 pounds	

8 ounces  
4 ounces  
2 ounces  
1 ounce

8 drams  
4 drams  
2 drams  
1 dram  
½ dram

100 grains	5 grains
50 grains	3 grains
30 grains	2 grains
10 grains	1 grain

Passed the House of Representatives on the \_\_\_\_\_, 2007.

Passed the Senate on the \_\_\_\_\_, 2007.

Speaker.

President.

Clerk to the House of Representatives.

Clerk to the Senate.

### EXPLANATORY MEMORANDUM

The purpose of this Bill is to introduce a system for the standardization and verification of measurement for all products and services in Antigua and Barbuda.

Recent developments in the world economy, such as the globalisation of markets and the liberalization of world trade, pose serious challenges for Antigua and Barbuda's industries and private sector enterprises. In the CARICOM Region most of the countries already have relatively well developed metrology programmes and laboratories. In order to give Antigua and Barbuda equal conditions in regional cooperation and trade, the development of a functional metrology laboratory to provide efficient calibration/verification services traceable to the International System of Units is an absolute necessity.

Metrology activity according to the present legislation (Weights and Measures Act 1918) is administered by the Royal Antigua and Barbuda Police Force, which each year manages verification of weights and balances used in a few commercial transactions only. There are no permanent personnel involved as the responsibility is rotated to different officers, none of whom have been trained, formally or otherwise, in the basics of metrology.

Metrology, being the science of measurement, is involved or rather indispensable not only to industry (to control processes and provide interchangeableness of parts in mass production) but also in many other sectors and areas, including in consumer protection in trade and quality control; in safety control in industry, to protect against accidents caused by explosion, radiation; in health protection to protect against damage caused to health by incorrect measurements, dosages, etc.; in environmental protection to protect against noise, radiation, exhaust gases pollution; in scientific research and development to ensure correct results as all experimental results are based on measurements; and in navigation, aviation, telecommunications, time signals.

The National Metrology System deals with the units of measurement, methods of measurements and measuring instruments; in relation to the mandatory technical and legal requirements. The objective is to provide a public guarantee of the accuracy and precision of measurements used in trade, industry, environment and science and technology.

The Bill is divided into 11 parts with 52 clauses. Clause 2 of the Bill provides the requisite definitions. Clause 3 establishes the International System of Units as the legal units of measurement in Antigua and Barbuda. The clause also makes provision for other units specified in Part 2 of Schedule 2, including the British Imperial System of units, to be legal units, due to their wide usage or use in specialised fields.

Clauses 4 to 8 deal with the establishment and recognition of various standards.

Clause 9 provides that the use of authorized units of measurement shall be made in any dealings or contracts in Antigua and Barbuda, involving the sale or transfer of goods by unit of measurement and that fees and duties charged shall be based on the authorized units of measurement. Clause 10 makes an exception for goods that are intended for dispatch to a destination outside of Antigua and Barbuda.

Clauses 11 to 14 provide for the use of weighing and measuring equipment.

Clauses 15 to 19 makes provision with respect to the verification and licensing of weighing and measuring equipment, including provision for periodical examination of weights and instruments and stamping by an Inspector of Weights and Measures.

Clause 20 makes provision for the manufacture, repair and sale of weighing and measuring equipment. This clause provides that a person shall not sell, manufacture or repair any weight or measure or any weighing or measuring instrument except under the authority of a licence issued by the Director of the Bureau of Standards, and makes provision with respect to the procedure for obtaining a licence.

Clause 21 provides that no person shall sell any goods by weight or measure except by net weight or measure, and makes it an offence where a person delivers or causes to be delivered to the buyer a lesser quantity than that purported to be supplied.



Clause 22 provides that the Minister may subject the net weight or measure marked on pre-packaged goods to such tests and limits specified, and also provides for the statement of the quantity, manufacturer and importer.

Clause 23 makes provision for the establishment of a national metrology service which shall be administered by and form part of the operations of the Bureau of Standards established by the Standards Act. Clause 24 deals with appointments. The provisions will transfer responsibility for calibration and verification activities to the Bureau of Standards and establish the Director of the Bureau of Standards ("Director") as the custodian of the national standards of measurement.

Clauses 25 to 28 deal with the regulation of Inspectors of Weights and Measures.

Clause 29 allows the Director, the Deputy Custodian or any Inspector of Weights and Measures to enter at reasonable times, any place in which any weight or measure or weighing or measuring instrument is suspected to be kept or used for the purpose of trade, or any article or goods are offered or exposed for sale for purposes of inspection and verification.

Clauses 30 to 41 create a series of summary offences and imposes penalties. Offences created include the use and sale of unmarked weights, forgery of stamp or mark, use of incorrect weight or measure, false statement as to weight, use of deceptive packaging, use of false weight or measure, lack of identification prescribed on pre-packaged goods, manufacturing a weight or measure or a weighing or measuring instrument without a licence, and refusal to produce a weight.

Clause 42 provides for a general penalty. Clause 43 provides that a court may, on the conviction of any person for an offence under this Act, order any weight or measure or instrument forfeited to the state.

Clause 44 provides that any weight or measure or weighing or measuring instrument which is found in the possession of any person who carries on any trade shall be presumed, until the contrary is proved, to be in the possession of that person for use in trade.

Clause 45 makes the principal of a manufacturer or trader liable for any offence. Clause 46 provides for offences by incorporated or unincorporated bodies.

Clause 47 is a regulation making provision, clause 48 provides for fees for testing, verification and stamping of weights, measures or weighing and measuring instruments, and clause 49 gives the Minister the power to amend the Schedules

Clause 50 provides that the Director shall investigate any dispute that arises between an Inspector of Weights and Measures and any other person as to the meaning or construction of any regulation or as to the methods to be adopted in testing any weight, measure, weighing and measuring instruments,

Clause 51 provides that a certificate issued by the Director or the Deputy Custodian shall be admissible as prima facie evidence of the facts stated therein and clause 52 repeals the The Weights and Measures Act and the Sworn Weighers and Gaugers Act.

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Hon. Justin L. Simon, Q.C.  
Attorney General and Minister of Legal Affairs