Australian Government
National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

No 14/2/51

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the

GE Energy Model SM-111 WiMAX Class 1 Electricity Meter

submitted by GE Energy (Australia) Pty Ltd
572 Swan Street
RICHMOND VIC 3121.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI M 6, *Pattern Approval and Initial Verification of Electricity Meter and Associated Transformers: Definitions, Metrological and Technical Requirements*, June 2010.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 December 2015, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number ‘NMI 14/2/51’ and only by persons authorised by the submittor.

It is the submittor’s responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

…./2

The National Measurement Institute reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0/A.

DESCRIPTIVE ADVICE

Pattern: approved 11 November 2010

- A GE Energy model SM-111 WiMAX electronic single phase Class 1 direct connect static watt hour meter used to measure electrical energy.

Variant: approved 11 November 2010

1. Model SM-112 WiMAX having two elements.

Technical Schedule No 14/2/51 describes the pattern and variant 1.

Variant: approved 22 February 2011

2. With additional auxiliary ports.

Technical Schedule No 14/2/51 Variation No 1 describes variant 2.

Variant: approved 18 January 2012

3. With certain additional optional features/functions.

Technical Schedule No 14/2/51 Variation No 2 describes variant 3.

FILING ADVICE

Certificate of Approval No 14/2/51 dated 23 February 2011 is superseded by this certificate, and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 14/2/51 dated 19 January 2012
Technical Schedule No 14/2/51 dated 12 November 2010 (incl. Test Procedure)
Technical Schedule No 14/2/51 Variation No 1 dated 23 February 2011
Technical Schedule No 14/2/51 Variation No 2 dated 19 January 2012 (incl. Notification of Change)
Figure 1 dated 12 November 2010
Figure 2 dated 19 January 2012

Signed by a person authorised by the Chief Metrologist to exercise his powers under Regulation 60 of the *National Measurement Regulations 1999*.

TECHNICAL SCHEDULE No 14/2/51

Pattern: GE Energy Model SM-111 WiMAX Class 1 Electricity Meter

Submittor: GE Energy (Australia) Pty Ltd
572 Swan Street
RICHMOND VIC 3121

1. Description of Pattern

A GE Energy model SM-111 WiMAX electronic single phase Class 1 direct connect static watt hour meter (Figure 1) used to measure electrical energy.

1.1 Field of Operation

The field of operation of the measuring system is determined by the following characteristics:

- Number of phases: 1
- Number of wires: 2
- Reference frequency: 50 Hz
- Reference ambient temperature ranges:
  - specified range of operation: -40 to 70°C
  - limit range of operation: -40 to 85°C
- Rated voltage: 230 V AC
- Rated currents: Basic current, I_b: 15 A
  Maximum current, I_{max}: 100 A
- Accuracy index: 1

1.2 Features/Functions

- One (1) element
- Electronic (LCD) digital indicator
- Active energy measurement (Class 1)
- Optical interface as per ANSI C12.18
- Load profile memory
- Bottom connect type base

In addition, meters may have an integrated 40 Amp load control relay.

The prepayment function (If fitted) is not approved for trade use.

1.3 Verification Provision

Provision is made for the application of a verification mark.

1.4 Sealing Provision

Provision is made for the calibration adjustments to be sealed by one or more mechanical seals (Figure 1).

1.5 Descriptive Markings

Instruments are marked with the following data, together in one location, in the form shown at right:

Manufacturer's name or mark	...
Model designation	...
Serial number	...
Pattern approval mark	NMI 14/2/51
Number of phases	...
Number or wires	...
Reference frequency	... Hz
Meter constant	1000 imp/kWh
Rated voltage	... AC
Rated currents:	I_b ... A
	I_{max} ... A
Accuracy index	Class 1

(*) Optional marking.

2. Description of Variant 1

A model SM-112 WiMAX which is similar to the pattern but has two (2) elements.

The field of operation of the measuring system is as listed for the pattern in clause **1.1 Field of Operation**, and in addition (for the 2nd element):

- Rated current: Maximum current, I_{max} 40 A (Element 2)

This information is also included in the markings.

TEST PROCEDURE

Instruments tested for verification shall comply with the certificate of approval and technical schedule, and the maximum permissible errors for verifications at the operating conditions in effect at the time of verification.

TESTS

1. AC Voltage Test
2. Running With No Load
3. Starting
4. Accuracy

TECHNICAL SCHEDULE No 14/2/51

VARIATION No 1

Pattern: GE Energy Model SM-111 WiMAX Class 1 Electricity Meter

Submittor: GE Energy (Australia) Pty Ltd
572 Swan Street
RICHMOND VIC 3121

1. Description of Variant 2

The GE Energy models SM-111 and SM-112 WiMAX meters now with some or all of the additional features/functions listed below:

1.1 Optional Features/Functions

- Two (2) external WiMAX antenna connections
- One (1) pulsing output connector
- Two (2) auxiliary expansion ports for optional communication modules
- Homeplug ® communications.

TECHNICAL SCHEDULE No 14/2/51

VARIATION No 2

Pattern: GE Energy Model SM-111 WiMAX Class 1 Electricity Meter

Submittor: GE Energy (Australia) Pty Ltd
572 Swan Street
RICHMOND VIC 3121

1. Description of Variant 3

The GE Energy models SM-111 and SM-112 WiMAX meters now with some or all of the additional features/functions listed below:

1.1 Optional Features/Functions

- ZigBee HAN module
- Ethernet WAN module.

Figure 2 shows a model SM112 WiMAX with Zigbee and Ethernet modules fitted.

NOTIFICATION OF CHANGE

In Technical Schedule No 14/2/51 dated 12 November 2010, clause **1.2 Features/Funcions** is amended by adding the additional bullet point shown below:

"• WiMAX WAN AMI communications."

FIGURE 14/2/51 – 1

GE Energy Model SM-111 WiMAX Electricity Meter

FIGURE 14/2/51 – 2

GE Energy Model SM112 WiMAX With Zigbee and Ethernet Modules (Variant 3)