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Amendments

No.	Date	Page/s	Location	Details of change
1	August 2024	-	Various	Separation of test procedures for different kinds of utility meter – gas meter, electricity meter and water meter.
2	August 2024	-	Various	Test procedures for electricity meters updated for electricity meters approved under NMI M 6, NMI M 13 or NMI R 46.
3	August 2024	-	Various	Clarification of sampling plans and selection.
4	August 2024	-	-	Removal of references to in-service inspection.
5	August 2024	-	Various	Clarification of requirements for marking of verification marks and issuing of batch verification certificates.

Preface

The Chief Metrologist has determined that NITP 14.0 together with NITP 14.2 are the national instrument test procedures for electricity meters.

This document specifies:

- the test procedures for the verification of electricity meters including individual verification for individual electricity meters, individual verification using batch/lot sampling regimes to allow for a reduction in the number of test points and batch verification of imported electricity meters
- the related requirements for utility meter verifiers.

This document does not mandate the pattern approval or verification of utility meters that are of a type and class exempt from the operation of the *National Measurement Act 1960* (Cth) (the Act) under regulation 5.6 of the *National Trade Measurement Regulations 2009* (Cth) (the Regulations).

Contents

Abbreviations

Refer to NITP 14.0 for all terms and abbreviations.

1. Scope

NITP 14.2 describes the specific test procedures for the verification of electricity meters. Together with NITP 14.0 these are the test procedures to assess whether electricity meters operate within the maximum permissible errors (MPEs) and are of an approved pattern.

Certificates of approval for electricity meters are based on one of the following pathways:

1. *NMI M 6 Active-energy electricity meters (a.c.)* (NMI M 6)
2. *NMI M 13 Active-energy electricity meters (a.c.)* (NMI M 13)
3. *NMI R 46 Active-energy electricity meters* (NMI R 46).

All electricity meters must also comply with the Act and the Regulations.

2. Standard procedures

2.1 Accuracy

2.1.1 General

An accuracy test determines whether an electricity meter complies with the maximum permissible errors (MPEs) for specified test points.

2.1.2 Maximum permissible errors

MPEs are specified in the Regulations. Alternative MPEs may be stated in certificates of approval issued on or after 1 July 2007.

For reference, the usual MPEs are provided below in:

1. Table 1, Table 2 and Table 3 for electricity meters approved under NMI M 6
2. Table 4 and Table 5 for electricity meters approved under NMI M 13
3. Table 6 for electricity meters approved under NMI R 46.

Table 1. MPEs for single phase and polyphase direct-connected electricity meters with balanced loads (NMI M 6)

Range for test current	Power factor	Percentage error limits for meter class	
		1	1.5
0.05 $I_b \le I < 0.1\ I_b$	1	±1.5%	±1.5%
0.1 $I_b \le I \le I_{max}$	1	±1.0%	±1.5%
0.1 $I_b \le I < 0.2\ I_b$	0.5 inductive	±1.5%	±1.5%
	0.8 capacitive	±1.5%	—
0.2 $I_b \le I \le I_{max}$	0.5 inductive	±1.0%	±1.5%
	0.8 capacitive	±1.0%	—

Table 2. MPEs for single phase and polyphase transformer-operated electricity meters with balanced loads (NMI M 6)

Range for test current	Power factor	Percentage error limits for meter class		
		0.2	0.5	1
0.01 $I_n \le I < 0.05\ I_n$	1	±0.4%	±1.0%	—
0.02 $I_n \le I < 0.05\ I_n$	1	—	—	±1.5%
0.05 $I_n \le I \le I_{max}$	1	±0.2%	±0.5%	±1.0%
0.02 $I_n \le I < 0.1\ I_n$	0.5 inductive	±0.5%	±1.0%	—
	0.8 capacitive	±0.5%	±1.0%	—
0.05 $I_n \le I < 0.1\ I_n$	0.5 inductive	—	—	±1.5%
	0.8 capacitive	—	—	±1.5%
0.1 $I_n \le I \le I_{max}$	0.5 inductive	±0.3%	±0.6%	±1.0%
	0.8 capacitive	±0.3%	±0.6%	±1.0%

Table 3. MPEs for polyphase electricity meters carrying a single-phase load, but with balanced polyphase voltages applied to voltage circuits (NMI M 6)

Meter type	Range for test current	Power factor	Percentage error limits for meter class			
			0.2	0.5	1	1.5
Direct-connected	0.1 $I_b \le I < I_{max}$	1	—	—	±2.0%	±2.5%
	0.2 $I_b \le I \le I_{max}$	0.5 inductive	—	—	±2.0%	±2.5%
Transformer-operated	0.05 $I_n \le I \le I_{max}$	1	±0.3%	±0.6%	±2.0%	—
	0.1 $I_n \le I \le I_{max}$	0.5 inductive	±0.4%	±1.0%	±2.0%	—

Table 4. MPEs for single phase and polyphase direct-connected electricity meters with balanced loads (NMI M 13)

Value of current		Power factor	Percentage error limits for meter class			
Direct-connected	Transformer-operated		0.2 S	0.5 S	1	2
—	0.01 $I_n \le I < 0.05\ I_n$	1	±0.4	±1.0	—	—
0.05 $I_b \le I < 0.1\ I_b$	0.02 $I_n \le I < 0.05\ I_n$	1	—	—	±1.5	±2.5
0.1 $I_b \le I \le I_{max}$	0.05 $I_n \le I \le I_{max}$	1	±0.2	±0.5	±1.0	±2.0
0.1 $I_b \le I < 0.2\ I_b$	0.02 $I_n \le I < 0.1\ I_n$	0.5 inductive	±0.5	±1.0	—	—
		0.8 capacitive	±0.5	±1.0	—	—
0.1 $I_b \le I < 0.2\ I_b$	0.05 $I_n \le I < 0.1\ I_n$	0.5 inductive	—	—	±1.5	±2.5
		0.8 capacitive	—	—	±1.5	—
0.2 $I_b \le I \le I_{max}$	0.1 $I_n \le I \le I_{max}$	0.5 inductive	±0.3	±0.6	±1.0	±2.0
		0.8 capacitive	±0.3	±0.6	±1.0	—

Table 5. MPEs for polyphase electricity meters carrying a single phase load, but with balanced polyphase (NMI M 13)

Value of current		Power factor	Percentage error limits for meter class			
Direct-connected	Transformer-operated		0.2 S	0.5 S	1	2
0.1 $I_b \le I \le I_{max}$	0.05 $I_n \le I \le I_{max}$	1	±0.3	±0.6	±2.0	±3.0
0.2 $I_b \le I \le I_{max}$	0.1 $I_n \le I \le I_{max}$	0.5 inductive	±0.4	±1.0	±2.0	±3.0

Table 6. MPEs for single phase or polyphase installations operating on alternating current circuits (NMI R 46)

Quantity		Percentage error limits for meter class			
Current	Power factor	A	B	C	D
$I_{tr} \le I \le I_{max}$	Unity	±2.0	±1.0	±0.5	±0.2
	0.5 inductive to 1 to 0.8 capacitive	±2.5	±1.5	±0.6	±0.3
$I_{min} \le I < I_{tr}$	Unity	±2.5	±1.5	±1.0	±0.4
	0.5 inductive to 1 to 0.8 capacitive	±2.5	±1.8	±1.0	±0.5
$I_{st} \le I < I_{min}$	Unity	±2.5·I_{min}/I	±1.5·I_{min}/I	±1.0·I_{min}/I	±0.4·I_{min}/I

Note: In NMI R 46, these error limits are called base maximum permissible errors.

2.2 No load

2.2.1 General

A no load test determines whether an electricity meter measures no significant amount of energy under no load conditions (no current flow).

The applicable test procedure and acceptance criteria are specified below based on the pattern approval requirements used for approval.

2.2.2 For approvals based on NMI M 6 and NMI M 13

The test procedure and acceptance criteria are specified in NMI M 6-1, clause 5.7.3, Running with no load.

Note: This test is also in AS 62053.21:2018 and AS 62053.22:2018 (clause 8.3.2) as referenced in NMI M 13.

This procedure includes the following test voltage and minimum test time:

1. Test voltage: 115% of reference voltage.
2. The minimum test period must be:
   a) $\frac{900\times10^6}{kmU_{\mathrm{nom}}I_{\mathrm{max}}}$ min for electricity meters of class 0.2 and 0.2 S
   b) $\frac{600\times10^6}{kmU_{\mathrm{nom}}I_{\mathrm{max}}}$ min for electricity meters of class 0.5, 0.5 S and 1
   c) $\frac{480\times10^6}{kmU_{\mathrm{nom}}I_{\mathrm{max}}}$ min for electricity meters of class 1.5 or class 2.

2.2.3 For approvals based on NMI R 46

The test procedure and acceptance criteria are specified in NMI R 46-1-2, clause 6.2.4, Test of no-load condition. This procedure includes the following test voltage and minimum test time:

1. Test voltage: 100% of reference voltage.
2. The minimum test period must be:
   o $\frac{100\times10^3}{bkmU_{\mathrm{nom}}I_{\mathrm{min}}}$ hours for all accuracy classes.

Where b is the base MPE at I_{min} expressed as a percentage (%) and is taken as a positive value.

2.3 Starting

A starting test determines whether an electricity meter starts and continues to measure energy when the current is equal to or greater than the specified starting current (I_{st}).

The test procedure and acceptance criteria are specified in NMI M 6-1, clause 5.7.4.

Note: This test is also in AS 62053.21:2018 and AS 62053.22:2018 (clause 8.3.3) as referenced in NMI M 13.

The starting currents for electricity meters approved under NMI M 6 and NMI M 13 are as follows:

1. Direct-connected electricity meters, class 1: 0.004 I_b
2. Direct-connected electricity meters, class 1.5 and class 2: 0.005 I_b
3. Transformer-operated electricity meters, class 0.2, class 0.2 S, class 0.5 and class 0.5 S: 0.001 I_n
4. Transformer-operated electricity meters, class 1: 0.002 I_n
5. Transformer-operated electricity meters, class 1.5: 0.0025 I_n
6. Transformer-operated electricity meters, class 2: 0.003 I_n

The starting currents for electricity meters approved under NMI R 46 are specified on the certificate of approval.

Note: The starting current test in NMI R 46, clause 6.2.3 may also be used for electricity meters approved under NMI R 46.

3. Test procedures

3.1 General requirements

The following test procedures determine if an electricity meter meets the requirements for verification.

The tests specified must be performed at the reference conditions within the permissible tolerances as detailed in NMI M 6, NMI M 13 or NMI R 46 (as applicable).

Check the certificate of approval and perform any additional tests that may be required.

Consider and comply with any relevant safety requirements.

There are three separate procedures for verifying electricity meters in clauses 3.2, 3.3 and 3.4.

The procedure in clause 3.2 must be used when verifying an individual electricity meter. Electricity meters verified using this procedure must be individually verified and marked with a verification mark.

The procedure in clause 3.3 may be used when verifying a batch of locally manufactured electricity meters. Refer to the procedure for more details and conditions. Electricity meters verified using this procedure must be individually verified and marked with a verification mark.

The procedure in clause 3.4 may be used when verifying a batch of imported electricity meters. Refer to the procedure for more details and conditions. Electricity meters verified using this procedure must be batch verified and identified in a batch verification certificate.

3.2 Individual verification – individual electricity meter

Use this procedure when verifying an individual electricity meter.

1. Complete an accuracy test (clause 2.1) at the mandatory test points specified in Table 7.
2. Complete a no load test (clause 2.2).
3. Complete a starting test (clause 2.3).
4. Determine whether the electricity meter has passed or failed. An electricity meter passes if it complies with the acceptance criteria for each and every test, otherwise it fails.

If the electricity meter fails, the electricity meter cannot be verified.

If the electricity meter passes, the electricity meter can be verified.

In this procedure (clause 3.2) a verified electricity meter must be marked with a verification mark.

Table 7. Mandatory test points (individual electricity meter)

Current (A) for direct-connected meters[1]	Current (A) for transformer-operated meters[2]	Power factor	Direction of current flow[3]
0.05 I_b	0.01 I_n [4]	1	Positive only
0.1 I_b	0.1 I_n	1	Positive only
0.1 I_b	0.1 I_n	0.5 inductive	Positive only
I_b	I_n	1	Positive and negative
I_b	I_n	0.5 inductive	Positive and negative
I_{max}	I_{max}	1	Positive and negative
I_{max}	I_{max}	0.5 inductive	Positive and negative

Note 1: For electricity meters approved against NMI R 46, I_b is taken to be 10 I_{tr}.
Note 2: For electricity meters approved against NMI R 46, I_n is taken to be 20 I_{tr}.
Note 3: Tests at negative current flow are applicable for electricity meters where the certificate of approval states that the electricity meter is capable of measuring energy in both the positive and negative directions.
Note 4: This test point is not applicable for class 1 transformer-operated electricity meters. The test point for class 1 transformer-operated electricity meters is 0.02 I_n.

3.3 Individual verification – batch of locally manufactured electricity meters

3.3.1 General

Use this procedure to verify a batch of locally manufactured electricity meters that comply with the requirements in clause 3.3.2. This procedure permits the utility meter verifier to undertake batch testing to allow for a reduction in the number of test points required to be tested.

See example (A.1) provided in Appendix A.

Note: This procedure may also be used for a batch of imported electricity meters if the procedure in clause 3.4 cannot be used.

3.3.2 Requirements for determining a batch

A batch must only comprise utility meters that meet all of the following conditions:

1. of the same pattern
2. of the same accuracy class
3. electronic (solid-state) electricity meters
4. manufactured in the same location
5. manufactured within the same 12-month period

6. produced in a unform and continuously operating process resulting in a large number of identical units
7. compliant with any additional criteria for a batch that is specified in the certificate of approval.

3.3.3 Test procedure

1. Complete an accuracy test (clause 2.1) at the mandatory test points specified in Table 8 for every electricity meter in the batch.

Table 8. Mandatory test points for all meters in a batch of locally manufactured electricity meters

Current (A) for direct-connected meters[1]	Current (A) for transformer-operated meters[2]	Power factor	Direction of current flow[3]
0.1 I_b	0.1 I_n	1	Positive only
I_b	I_n	1	Positive and negative
I_b	I_n	0.5 inductive	Positive and negative

Note 1: For electricity meters approved against NMI R 46, I_b is taken to be 10 I_{tr}.
Note 2: For electricity meters approved against NMI R 46, I_n is taken to be 20 I_{tr}.
Note 3: Tests at negative current flow are applicable for meters where the certificate of approval states that the electricity meter is capable of measuring energy in both the positive and negative directions.

2. Draw a sample of electricity meters at random from the batch in accordance with Table 9. Batch sizes and sample sizes must be determined and documented by the utility meter verifier.

Note 1: The sampling plans specified below are based upon single sampling plans from *AS 1199.1 Sampling procedures for inspection by attributes*. Utility meter verifiers may develop and implement alternative sampling plans, such as those described in *AS 2490 Sampling procedures and charts for inspection by variables for percent nonconforming*. All sampling plans must be of reasonable and appropriate design, providing confidence equal to or better than the examples provided and therefore a sound statistical basis for decision making concerning the verification of a batch of utility meters.
Note 2: The sampling plans do not allow the use of switching rules or skip-lot sampling (as described in AS 1199.1). Each batch must be considered in isolation without reference to the performance of previously tested batches. The sample size must be determined and implemented consistently, without adjustment.

3. For all electricity meters in the sample:
   a) Complete an accuracy test (clause 2.1) at the mandatory test points specified in Table 10.
   b) Complete a no load test (clause 2.2).
   c) Complete a starting test (clause 2.3).
4. Determine if the batch of electricity meters passes or fails. The batch passes if:
   a) every electricity meter in the batch passes the accuracy test in step 1
   b) the sample of electricity meters passes the testing in step 3. The sample passes if the number of electricity meter failures is equal to or less than the acceptance number (see Table 9). The sample of electricity meters fails if the number of electricity meter failures is equal to or higher than the rejection number (see Table 9).

      Note: An individual electricity meter in the sample fails if it fails any one or more of the tests in step 3.

If a batch of electricity meters fails, the batch must be rejected and cannot be verified.

If the batch of electricity meters passes, all electricity meters in the batch, except for any individual electricity meters that failed, can be verified. Any individual electricity meters in the sample that fail must not be verified.

In this procedure (clause 3.3) verified electricity meters must be marked with a verification mark.

Note: Electricity meters from a failed batch may be individually tested for verification in accordance with clause 3.2.

Table 9. Sampling plans – sample sizes and acceptance criteria (inspection level I)

Size of batch	Sample size	Acceptance level	
		Special	
		Accept	Reject
2 to 8	2	0	1
9 to 15	2	0	1
16 to 25	3	0	1
26 to 50	5	0	1
51 to 90	5	0	1
91 to 150	8	0	1
151 to 280	13	0	1
281 to 500	20	0	1
501 to 1200	32	0	1
1201 to 3200	50	0	1
3201 to 10 000	80	0	1
10 001 to 35 000	125	0	1
35 001 to 150 000	200	0	1
150 001 to 500 000	315	0	1
500 001 and over	500	0	1

Table 10. Mandatory test points (individual electricity meter)

Current (A) for direct-connected meters[1]	Current (A) for transformer-operated meters[2]	Power factor	Direction of current flow[3]
0.05 I_b	0.01 I_n [4]	1	Positive only
0.1 I_b	0.1 I_n	1	Positive only
I_{max}	I_{max}	1	Positive and negative
I_{max}	I_{max}	0.5 inductive	Positive and negative

Note 1: For electricity meters approved against NMI R 46, I_b is taken to be 10 I_{tr}.
Note 2: For electricity meters approved against NMI R 46, I_n is taken to be 20 I_{tr}.
Note 3: Tests at negative current flow are applicable for electricity meters where the certificate of approval states that the electricity meter is capable of measuring energy in both the positive and negative directions.
Note 4: This test point is not applicable for class 1 transformer-operated electricity meters. The test point for class 1 transformer-operated electricity meters is 0.02 I_n.

3.4 Batch verification – batch of imported electricity meters

3.4.1 General

Use this procedure to verify a batch of imported electronic (solid-state) electricity meters produced from a continuously operating process resulting in a large number of identical units. This procedure permits the utility meter verifier to take a sub-sample of the sample of electricity meters selected from the batch in accordance with NITP 14.0. This sub-sampling allows for a reduction in the number of test points required to be tested.

This procedure must only be used if the batch of imported electricity meters is accepted as a batch in accordance with NITP 14.0 (see clauses 2.2.4.1 and 2.2.4.2 of NITP 14.0). Otherwise, the electricity meters may be considered for individual verification in accordance with clauses 3.2 or 3.3.

See example (A.2) provided in Appendix A.

3.4.2 Test procedure

1. Complete an accuracy test (clause 2.1) at the mandatory test points specified in Table 11 for every electricity meter in the sample (the sample selected in accordance with NITP 14.0).

Table 11. Mandatory test points for all electricity meters in a sample of imported electricity meters

Current (A) for direct-connected meters[1]	Current (A) for transformer-operated meters[2]	Power factor	Direction of current flow[3]
0.1 I_b	0.1 I_n	1	Positive only
I_b	I_n	1	Positive and negative
I_b	I_n	0.5 inductive	Positive and negative

Note 1: For electricity meters approved against NMI R 46, I_b is taken to be 10 I_{tr}.
Note 2: For electricity meters approved against NMI R 46, I_n is taken to be 20 I_{tr}.
Note 3: Tests at negative current flow are applicable for meters where the certificate of approvals states that the electricity meter is capable of measuring energy in both the positive and negative directions.

2. Draw a sub-sample of electricity meters at random from the sample in accordance with Table 12. Sample sizes and sub-sample sizes must be determined and documented by the utility meter verifier.

   Note 1: The sampling plans specified below are based upon single sampling plans from *AS 1199.1 Sampling procedures for inspection by attributes*. Utility meter verifiers may develop and implement alternative sampling plans, such as those described in *AS 2490 Sampling procedures and charts for inspection by variables for percent nonconforming*. All sampling plans must be of reasonable and appropriate design, providing confidence equal to or better than the examples provided and therefore a sound statistical basis for decision making concerning the verification of a batch of utility meters.
   Note 2: The sampling plans do not allow the use of switching rules or skip-lot sampling (as described in AS 1199.1). Each batch must be considered in isolation without reference to the performance of previously tested batches. The sample size must be determined and implemented consistently, without adjustment.

3. For all electricity meters in the sub-sample:

   a) Complete an accuracy test (clause 2.1) at the mandatory test points specified in Table 13.

   b) Complete a no load test (clause 2.2).

   c) Complete a starting test (clause 2.3).

4. Determine if the sub-sample of electricity meters passes or fails. The sub-sample of electricity meters passes if the number of electricity meter failures is equal to or less than the acceptance number in Table 12. The sub-sample of electricity meters fails if the number of electricity meter failures is equal to or higher than the rejection number in Table 12.

   Note: An individual electricity meter in the sub-sample fails if it fails one or more of the tests in step 3.

5. If the sub-sample of electricity meters fails, the sample of electricity meters fails. This means the batch of electricity meters (in accordance with NITP 14.0) must not be verified.

6. If the sub-sample of electricity meters passes, then determine if the batch of electricity meters is accepted or rejected based on the number of electricity meter failures within the sample (see step 1). Refer to NITP 14.0, clause 2.2.4.3 to determine if the batch of electricity meters must be accepted or rejected.

If the batch of electricity meters is rejected, it cannot be verified.

If the batch of electricity meters is accepted, all electricity meters in the batch, except for any individual electricity meters that failed, can be verified.

In this procedure (clause 3.4) verified electricity meters must be identified with a batch verification certificate (see NITP 14.0).

Note: Electricity meters from a failed batch may be individually tested for verification in accordance with clause 3.2.

Table 12. Sub-sampling plans – sub-sample sizes and acceptance criteria (inspection level I)

Size of sample	Sub-sample size	Acceptance level	
		Special	
		Accept	Reject
2 to 8	2	0	1
9 to 15	2	0	1
16 to 25	3	0	1
26 to 50	5	0	1
51 to 90	5	0	1
91 to 150	8	0	1
151 to 280	13	0	1
281 to 500	20	0	1
501 to 1200	32	0	1
1201 to 3200	50	0	1

Table 13. Mandatory test points (for a sub-sample of imported electricity meters)

Current (A) for direct-connected meters[1]	Current (A) for transformer-operated meters[2]	Power factor	Direction of current flow[3]
0.05 I_b	0.01 I_n [4]	1	Positive only
0.1 I_b	0.1 I_n	1	Positive only
I_{max}	I_{max}	1	Positive and negative
I_{max}	I_{max}	0.5 inductive	Positive and negative

Note 1: For electricity meters approved against NMI R 46, I_b is taken to be 10 I_{tr}.

Note 2: For electricity meters approved against NMI R 46, I_n is taken to be 20 I_{tr}.

Note 3: Tests at negative current flow are applicable for electricity meters where the certificate of approval states that the electricity meter is capable of measuring energy in both the positive and negative directions.

Note 4: This test point is not applicable for class 1 transformer-operated electricity meters. The test point for class 1 transformer-operated electricity meters is 0.02 I_n.

Appendix A. Examples

A.1 Example 1

This example shows a batch of locally manufactured class 1 electricity meters (direct-connected) that have been batch tested to allow for a reduction in the number of test points in accordance with the provisions for batch testing detailed in clause 3.3.

It is assumed the electricity meters comply in all other respects not detailed. This example does not meet the requirements for batch testing.

The number of electricity meters forming the batch is 14 000.

The utility meter verifier tests all 14 000 electricity meters in accordance with clause 2.1 and at the following test points (in accordance with Table 8:

Current (A)	Power factor
0.1 I_b	1
I_b	1
I_b	0.5 inductive

Test results indicate all 14 000 electricity meters meet the relevant acceptance criteria.

The utility meter verifier randomly selects a sample of 125 electricity meters from the batch (in accordance with Table 9) and tests each sample in accordance with clauses 2.2, 2.3 and 2.1 and at the following test points (in accordance with Table 10):

Current (A)	Power factor
0.05 I_b	1
0.1 I_b	0.5 inductive
I_{max}	1
I_{max}	0.5 inductive

Test results indicate the following:

- 124 sample electricity meters meet the acceptance criteria
- 1 sample electricity meter failed to meet the acceptance criteria.

Based on the results of batch testing, the utility meter verifier determines that the batch of 14 000 electricity meters does not meet the acceptance criteria and therefore none of the 14 000 electricity meters can be verified.

The utility meter verifier tests the remaining 13 999 electricity meters individually in accordance with clause 3.2.

Test results indicate the following:

- 13 997 electricity meters individually tested meet the acceptance criteria
- 2 electricity meters individually tested failed to meet the acceptance criteria.

The utility meter verifier marks each of the 13997 electricity meters that met the acceptance criteria with a verification mark.

The 3 electricity meters that failed are repaired several days later and then individually tested in accordance with clause 3.2. All 3 electricity meters meet the acceptance criteria and the utility meter verifier marks each of the 3 electricity meters with a verification mark.

A.2 Example 2

This example shows a batch of imported class 1 electricity meters (direct-connected) that have been batch tested to allow for a reduction in the number of electricity meters tested in accordance with the provisions for batch verification detailed in NITP 14.0, in addition to batch testing to allow for a reduction in test points in accordance with the provisions for batch testing detailed in clause 3.4. It is assumed the electricity meters comply in all other respects not detailed. This example meets the requirements for batch verification.

The number of electricity meters forming the batch is 5000.

All 5000 electricity meters have been tested in the country of manufacture and meet the acceptance criteria in accordance with clauses 2.1, 2.2 and 2.3.

Test results supplied to the utility meter verifier indicate that all 5000 electricity meters pass the required testing.

Following importation, the utility meter verifier randomly selects a sample of 200 electricity meters from the batch (in accordance with the provisions for batch testing detailed in NITP 14.0) for testing in accordance with clause 2.1 and at the following test points (in accordance with Table 11):

Current (A)	Power factor
0.1 I_b	1
I_b	1
I_b	0.5 inductive

Test results indicate that 195 of the 200 sample electricity meters meet the acceptance criteria (so far meeting acceptance criteria in accordance with NITP 14.0 (clause 2.2.4 and Table 1)).

The utility meter verifier randomly selects a sub-sample of 13 electricity meters and tests each sub-sample in accordance with clauses 2.2, 2.3 and 2.1 and at the following test points (in accordance with Table 13).

Current (A)	Power factor
0.05 I_b	1
0.1 I_b	0.5 inductive
I_{max}	1
I_{max}	0.5 inductive

Test results indicate all 13 sub-sample electricity meters meet the acceptance criteria.

Based on the results of batch testing, the utility meter verifier determines that the batch of 5000 electricity meters meets the acceptance criteria and issues a batch verification certificate. The batch verification certificate includes the relevant test results for all 5000 electricity meters (i.e. the test results performed by the overseas manufacturer and the test results from verification testing performed by the utility meter verifier). As the electricity meters are detailed on a batch verification certificate, they do not require a physical verification mark.