

High Voltage Measurement Current and Voltage Transformers

Design Standard – MTS001

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RESPONSIBILITIES

Western Power's Finance and Revenue Function is responsible for this document.

CONTACT

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Revision Details

Version	Date	Summary of change	Section
1	Feb 2025	Initial release – Conversion to a Western Power Standard template from the Guideline format maintained by the Metering, reviewed and updated.	All

1 Introduction

This Standard is to set out in detail related to the metering parameters required for high voltage (HV) current transformers (CT) and voltage transformers (VT) installed in:

- Customer's switchboards (11, 22 and 33kV)
- Customer's substations (11kV up to 330kV) and
- Western Power's transmission and Zone substations.

1.1 Purpose and scope

These requirements are to be met by Western Power and its customers for CTs and VTs for revenue and check metering purposes within switchboards and outdoor substations containing HV circuits to be connected to the Western Power network.

It is expected that Customer Connection requirements/Design reports shall conform with this standard and Metering Technical Services shall need to review and accept to connect the metering circuits to the HV Instrument Transformers.

The scope also covers the ongoing compliance including maintenance of metering installations, secondary isolation and access to metering circuits.

The scope does not cover the required specification or network design aspects for the primary plant which needs to comply with the Western Power Technical rules and the relevant AS Standards.

1.2 Acronyms

The following table provides a list of abbreviations and acronyms used throughout this Standard. Defined terms are identified in this Standard by capitals.

Term	Definition
CT	Current Transformers
HV	High Voltage
FS	Instrument Security Factor
VD	Voltage drop
VT	Voltage Transformers

1.3 Definitions

Term	Definition
Route length (of wiring)	(AS 3000) the distance measured along the run of wiring from the origin of the circuit to the point of consideration, e.g. the distance so measured between the CT or VT to Meter.
Type	Metering Installation types defined in Electricity Industry (Metering) Code 2012 Appendix 1 Table 3 based on annual energy throughputs at metering points are as follows: Type 1 - 1000 GWh and above, Type 2 - 100 to but not including 1000 GWh, Type 3 - 750MWh to but not including 100 GWh

1.4 References

1.4.1 External documents referenced in this Standard

Doc #	Title of document
Australian Standard	AS 61869.1 (2024) – Instrument transformers – General requirements
Australian Standard	AS 61869.2 (2021) Instrument transformers – Additional requirements for current transformers (incorporating the amendment)
Australian Standard	AS 61869.3 Instrument transformers – Additional requirements for inductive voltage transformers
Australian Standard	AS 61869.4 Instrument transformers – Additional requirements for combined transformers
Australian Standard	AS 61869.5 Instrument transformers – Additional requirements for capacitive voltage transformers
Australian Standard	AS 2067 Substations and High Voltage Installations exceeding 1kV a.c.
Australian Standard	AS/NZS 3000 Electrical Installations (Wiring Rules)
Code (WA)	Electricity Industry (Metering) Code 2012

1.4.2 Internal documents that reference in this document

References which support implementation of this document

Title of document
Metrology Procedure for Metering Installations on the Western Power Network
Western Power Technical Rules

2 Actions

2.1 Metering Configuration

The metering circuit/configuration shall be three phase-four wire (3Ø-4W).

Refer to the schematic diagram for the test block/marshalling point (ProjectWise Web View):

- Drawing No. MT-4-10-2-1: Template HV Metering Type 1 (Greater than 1000GWH/Annum)
- Drawing No. MT-4-10-1-1: Template HV Metering Type 2 (100 to 999 GWH/Annum)
- ESI_Standard_Drawing_Secondary

2.2 General and Technical requirements

2.2.1 General

- a) Western Power requires the following to be secured to prevent any interference:
 - i. CT and VT terminations in the marshalling panels to be secured from tampering as well as the removal of VT secondary isolation fuses and/or operation of isolation circuit breakers,
 - ii. Terminations for secondary wiring for both revenue and check circuits in associated marshalling panels,
 - iii. VT isolation/protection devices i.e. fuses and/or the operation of circuit breakers.

The customer is not allowed to isolate the revenue metering equipment without the knowledge of Western Power's Metering. A customer can apply for secondary isolation of metering circuits from Western Power Metering.

Request for secondary isolation and access can be obtained by contacting via email:
metering.technical.services@westernpower.com.au

WP's Metering Technician will perform the secondary isolation. The customer is not allowed to do any secondary isolation on revenue metering circuits. Western Power requires the provision to change CT taps as part of the management of the revenue metering infrastructure.

The facilities for CT secondary shorting links shall be provided, otherwise Western Power may request a shutdown if it is deemed that a CT tap change is required.

- b) Western Power Metering do not allow any connections of customer connected equipment to any VT winding supplying metering equipment. Customers requiring additional secondary voltage connections, must include additional separate windings for that purpose.
 - Customer to provide burden specification in VA for all connected loads to these windings.
- c) Western Power Metering does not allow customer connected equipment to be connected to any of Metering's CT cores. Customer requiring any secondary CT connections, must specify their own additional cores.
 - Customer to provide burden specification in VA for all connected loads to these cores.
- d) Western Power shall have 24/7 access to the Metering cubicle.

- e) Western Power requires dedicated CT cores and VT windings for both revenue and check metering circuits which means Western Power metering does not allow to share the metering CTs Cores or VT windings for other purposes and shall be designed for the dedicated purpose of metering use only as there are issues with the safety and operation due to the isolation procedures that could affect the maintenance of the metering integrity.
- f) However, if additional CTs Cores/VTs windings are designed with multiple cores/windings to use for other services such as for protection and customer instruments/indications, such designs shall comply with the following requirements.
 - secondary circuits shall be segregated into a separate marshalling boxes so that Western Power will be able to ensure that the metering installation is secured to hinder and detect from unauthorised access. (Clause 3.8 of the Metering Code).
 - All schematic diagrams relating to the secondary circuits of other cores and windings shall be required as part of the submission.
 - The ratio and configuration of the taps for each core on the CTs and the specified number of windings for the VTs shall be agreed with Western Power Metering prior to the manufacture of the instrument transformers.
- g) The HV submission/Design Intent Document shall clearly identify the serial numbers of the CTs/VTs that are to be used for the revenue and check metering purposes.
- h) The HV submission/Design Intent Document will require to define the connection type (as per the annual estimated throughput of the connection for the each metering point as per the Metering Code (if it is bidirectional energy flow occurs in the connection, both ways of the volume of energy flow/direction must be stated), in such cases the design must be discussed the lowest (10% of nominal load/generation), average (50% of the nominal load/generation) and maximum demand (100% of load/generation) of each connection to meet the Overall error requirement of the Metering Code on both directional flow of energy.
- i) For Type 1 and 2 Substations, the station services need to be supplied from:
 - a separate supply.
 - This applies when distribution options are available.
 - If possible, should not be directly supplied from the Transmission network.
- j) Provision of a GPO (240V, twin Socket outlet) shall be provided within the Metering installation as shown in the schematic diagram.

2.2.2 Current Transformers

- a) The metering CTs shall **not** be provided in bushing turrets of power transformers.
- b) Summation of CTs at multiple installations (whether directly or by use of summation CTs) is **not** acceptable.
- c) The CTs shall be installed such that the P1 being connected to the Network supply side.
- d) The CT core and the CT secondary wiring forming part of the revenue metering installation must not be used for any purpose other than revenue metering and check metering; and the CT secondary wiring forming part of a check metering installation must not be used for other purpose.
- e) The duplicate CT secondary windings shall be required in metering installations where annual estimated throughput is greater than 100 GWh. (Type 1 and 2)
- f) All CT terminals including multi-taps if present shall be wired to an accessible marshalling point at which the star-point (non-polarity) is earthed (please see schematic diagram).
- g) The orientation of all CT secondary wiring terminals shall fall to the closed-circuit position.
- h) The CT marshalling point shall be located as close as possible to the CT secondary terminals and shall have CT winding shorting facility.
- i) The marshalling box must be segregated only for metering and facilitate the provision of a Western Power approved padlock.
- j) Provision shall be made for adequate access to perform the accuracy testing of CTs using the primary injection testing method. The metering design must be able to demonstrate this facility.
- k) The cabling between the marshalling point and meter panel shall be a 4-wire connection for three (3) CTs. This maximum route length cabling shall be such that the CT's rated VA burden rating is *not* exceeded. The maximum route length shall be 100m.
- l) The secondary cables shall be marked with a cable number to identify each cable within the metering circuit on each end of the cable as per the reference drawings.
- m) All HV installations must use three (3) CTs with one (1) Amp secondary windings. The CTs ratio/s (single or multi tap) shall be appropriate to the primary connected load (maximum or equivalent to the rating of the associated switchgear) or anticipated load growth.
 - This designed current range (nominated maximum demand and the future growth both considered) shall be within the maximum rating of 100% of the nominal current when it is normal operation.
 - All ratios shall be designed to operate to its extended range of 200% of nominal current to avoid the frequent tap change requests under the contingency situations.
 - The metering design shall include the load analysis, annual energy throughput calculation and the nominated maximum demand of the connection.
 - All available ratios of the CT must be shown in the single line/metering circuits diagram.
- n) The name plate details of each CT must be indelibly and legibly marked in a location where they are visible while the installation is in service.

Where the CTs are installed within switchgear, duplicate nameplate shall be installed on the outside of the panel.

- o) The key technical requirements for CTs are listed in the table below.

Table 2:1 – Metrology Specification for HV CTs

Requirement	Type 1 & 2	Type 3
Voltage	11kV up to 330kV substation CTs	11, 22, 33kV switchboard CT
Design	Outdoor (post type, metal clad, CB turrets) or Indoor switchboard preferably encapsulated type	Indoor switchboard preferably encapsulated type
Standard	AS 61869	
Class	0.2S (revenue and check) for all taps, shall maintain the accuracy $\pm 0.2\%$ from 1% to 200% of nominal current to meet the overall error requirements in case of the low load conditions	0.5S (revenue and check) for all taps and shall maintain the accuracy $\pm 0.5\%$ from 1% to 200% of nominal current to meet the overall error requirements in case of the low load conditions.
Ratio(s)	As per I) above and the operating power factor as specified in the Western Power Technical Rules	
Secondary current	1 Amp	1 Amp
Rating output (secondary winding rated burden)	Minimum 5VA/phase on all ratios Design shall include the rated burden/phase with its calculation, Metering shall be the only load on the CT	
FS on lowest ratio	10	10
Rated continuous secondary thermal current	2 Amps for all taps/&core (which means extended range, 200% In for all the taps in the Core)	2 Amps for all taps/&core (which means extended range, 200% In for all the taps in the Core)
Secondary cabling	Minimum 4mm ²	Minimum 4mm ²
Check metering	Separate current transformer cores are required.	Not Applicable

2.2.3 Voltage Transformers

- a) All VT terminals shall be wired to an accessible marshalling point (located as close as practical to the VT secondary terminals) at which the CB or fuse protection is to be located.
- b) The VT's neutral star-point shall be earthed.
- c) The orientation of all VT secondary wiring terminals shall fall to the open circuit position.
- d) When VT is required as part of a revenue metering installation and only one secondary winding is provided from it, then the voltage supply to the metering point must be separately fused whereas a check metering installation (which is a metering installation separate from the revenue metering installation) shall use a separately fused VT secondary circuits supplied from separate secondary windings.

Western Power Metering preference is to have dedicated VT windings for each revenue and check metering circuits.

- e) The cabling to the meter is to be dedicated for metering and provided with its own protection with 10A circuit breaker (CB) or fuse. If metering is duplicated, there shall be duplicate VT secondary metering circuits separately protected. The maximum route length shall be 100m.
- f) The circuit breaker shall be selected in a such a way that it will not cause nuisance tripping.
- g) The secondary cables shall be marked with a cable number to identify each cable within the metering circuit on each end of the cable as per the reference drawings.
- h) The VT secondary CB or fuse and marshalling box shall be segregated only for metering and must be sealable and lockable. If the marshalling box is installed outdoors, it shall be rated IP56.
- p) Provision shall be made for adequate access to perform the accuracy testing of VTs using the primary injection testing method. The metering design must be able to demonstrate this facility.
- i) The secondary cabling to the marshalling point and to the meter panel shall not exceed the rated VA burden of the VT.
- j) All HV metering installations shall use single phase VTs manufactured and tested to comply with AS Standards applicable in this Standard.
- k) The name plate details of each VT must be indelibly and legibly marked in a location where they are visible while the installation is in service. Where the VTs are installed within switchgear, duplicate nameplated shall be installed on the outside of the panel.
- l) The key technical requirements for VTs are listed in the table below.

Table 2:2 – Metrology Specification for VTs

Requirement	Type 1 & 2	Type 3 & 4
Voltage	11kV up to 330kV substation VTs	11, 22, 33kV VTs
Design	Outdoor or Indoor (post type, metal clad)	Indoor switchboard
Standard	AS 61869 (single phase VTs)	AS 61869 (single phase VTs)
Class	0.2	0.5
Rated primary volts (phase-neutral)	Primary rating is dependent on maximum bus voltage/ $\sqrt{3}$	
Secondary winding rated volts (phase-neutral)	110V/ $\sqrt{3}$	110V/ $\sqrt{3}$
Rating output (rated burden)	Minimum 25VA/phase on all winding Design shall include the rated burden/phase with its calculation, Metering shall be the only burden connected on the VT	
Secondary cabling	Minimum 4mm ²	Minimum 4mm ²
Check metering	secondary circuits from separate secondary windings	Not Applicable

2.3 Test certificates

Western Power require that measurement error test Certificates, type test and routine test certificates be provided for CTs and VTs to conform to the relevant Standards' requirements.

These measurement error test certificates must include statements of the respective Testing Uncertainty and the results must have been obtained by use of Reference Standard CTs and VTs whose calibration is traceable either to:

1. Australian National Measurement Institute or,
2. Standards of some other national measurement body recognised by NATA under the International Laboratory Accreditation Corporation (ILAC) mutual recognition scheme. Further details of Signatories to the ILAC Mutual Recognition Arrangement (MRA) can be found at: <https://ilac.org/ilac-mra-and-signatories/>

Western Power, metering approved method of testing the CTs and VTs shall be Primary Injection only for the initial verification of the test accuracy of the instrument transformers used for metering purposes.

The measurement error tests of CTs/VTs shall be within 12 months from the date of the energisation for the proposed connection. Evidence of traceability shall also be submitted.

2.3.1 Current Transformer certificates

The measurement error test certificates for the CTs shall be accuracy test (ratio error and phase displacement at rated frequency) for all measuring windings (irrespective of the proposed connected tap for the revenue metering) for 25% and 100% of the rated burden at 0.8 power factor lagging and at unity power factor¹. The percentage of primary current shall be in accordance with the reference AS Standard.

The calibration certificates for the CT reference standard used to accuracy test the CTs shall also be submitted.

Refer to Annexure 1 for the CTs test results template requirements for the required complete test points for the CTs installed.

Note - Routine accuracy tests at a reduced number of currents and/or burdens are **not acceptable** to Western Power, Metering even after provided it has been shown by type tests on a similar transformer that such a reduced number of tests are sufficient to prove compliance.

2.3.2 Voltage Transformer certificates

The measurement error test certificates for the VTs shall be accuracy test (ratio error and phase displacement at rated frequency) for all measuring windings for 25% and 100% of the rated burden at the 0.8 power factor and at unity power factor². The percentage of voltage shall be in accordance with the reference AS Standard.

VTs of having two or more separate windings, accuracy shall be tested to prove the compliance of their interdependencies, by loading the other winding with 0%, 25% and 100% rated burden vice versa, whilst each winding should fulfil its respective accuracy requirements.

The calibration certificates for the VT reference standard used to accuracy test the VTs shall also be submitted.

Refer to Annexure 2 for the VTs test results template requirements for the VTs installed.

Note - Routine accuracy tests at a reduced number of currents and/or burdens are **not acceptable** to Western Power, Metering even after provided it has been shown by type tests on a similar transformer that such a reduced number of tests are sufficient to prove compliance.

2.3.3 Type tests, Routine tests and other documents

The following documents are required to be submitted for CTs and VTs that are provided for customers connections for revenue/check metering purposes within switchboard/outdoor substations where HV circuits to be connected to the Western Power:

- a) Accuracy test reports, certificates and the NATA traceability documents for the testing laboratory.
- b) Complete type test reports and certificates for the same model/type of CTs and VTs proposed for the connection, in accordance with the reference AS Standards. The type tests shall have been performed preferably within the last 5 years of the proposed connection date.
- c) Manufacturer's complete routine test certificates for the CTs and VTs proposed for the connection, in accordance with the reference AS Standards.

¹ The accuracy test at the unity power would be an additional requirement of Western Power of which is used to calculate the Overall error of the Metering Installation as per the Metering Code 2012.

- d) Certificate for the verification of instrument security factor and measurement of secondary resistance (corrected to 75 deg. Celsius) for the same model/type CTs proposed for the connection.
- e) Single line (schematic), HV metering panel and wiring diagrams.
- f) Maximum Demand, future intended growth of the connection and selection of ratings for the CTs and VTs, ratios, number of cores/windings, and taps etc. details.
- g) Name plate details showing the serial numbers and the model/type (photographs of the name plate of the CTs and VTs installing for the metering circuits).
- h) Manufacturer's technical literature and catalogues for the Model/Type of CTs/VTs proposed for the connection.

2.3.4 Dispensation documents

Prior to connection, measurement error test certificates and other documents mentioned above shall be forwarded to Metering Technical Services, Western Power, for acceptance.

Western Power, Metering Technical Services advise the Customer if dispensation could be applied in case the above requirements are not met in accordance with this Standard followed by a review of the submitted documents.

The documents may be sent by email to metering.technical.services@westernpower.com.au at least four (4) weeks prior to the CTs/VTs being dispatched from the manufacturer's factory.

The procedure for submitting the documents for the review and acceptance is given in Annexure 3.

2.4 Provision for testing of CTs and VTs

All CTs and VTs that are used for revenue and check metering purposes are required to be tested for accuracy at 10 years interval as defined by the Western Power Metrology Procedure. For a new installation, or an upgrade of an existing installation, consideration should be given in the selection, design and installation of all CTs and VTs associated with metering, to ensure that primary injection testing of an individual transformer is practically achievable.

2.5 CT and VTs Commissioning & Accuracy testing

All new and replacement CTs and VTs shall be commissioned by Western Power Metering. As part of the commissioning, CTs and VTs will be accuracy tested by the secondary injection method and perform the measurement of the in-service burden and the VT secondary circuit voltage drop.

If the CTs/VTs are owned by the customer, it is the responsibility of the customer to ensure that the CTs and VTs are accuracy tested at every 10 years interval to meet the regulatory obligations.

2.6 Labelling

The metering panel and marshalling box shall be clearly identified by use of an engraved type of label with the word "WESTERN POWER METERING". The label shall be legible, indelible and be adequately secured to the metering panel. The label also requires describing the equipment details (Serial Numbers, Ratings etc.), NMI, the service details, installed date, last tested date and voltage level.

All equipment in metering panel and marshalling boxes shall be numbered and labelled as detailed in the appropriate drawing for the installation. All fuses and neutral links shall have a label on the base along with a label on the fuse/link holder.

Where an auxiliary power supply is used, the location of the upstream circuit protection shall be marked on the meter panel.

2.7 Auxiliary power supply

It is recommended that an auxiliary power supply is provided to the meter panel where possible. It may be 230V ac supply independent to the VT secondary circuit.

3 Authorities and Responsibilities

Principal/Design Engineers/Consultants/Contractors/Consultants/Customers shall follow the instructions for design and installations; and be responsible for lodging the information and test certificates with Western Power.

Engineering & Design/Project Managers, Western Power is responsible for the primary engineering technical specification to meet the Network requirements.

Meter Asset and Solutions Manager/Engineering Team Leader (Metering Technical Services), Western Power is responsible for the metrological content of this Standard and process for the approval if the dispensation is required.

Senior Metering Technician is responsible:

- for inspection, testing and installation of the High Voltage metering equipment prior to connection to Western Power's network.
- to verify the test certificates and other documents are in compliance with this Standard.

Appendix 1: CT test results template

Core/Tap & Serial No.	Accuracy Class	Current ratio	I/Ir (%)	Cos Ø	Secondary burden (VA)	Ratio error (%)	Phase displacement (min)
			200	0.8 and @unity	100% and 25% of rated burden		
			120				
			100				
			50				
			20				
			10				
			5				
			1				

Appendix 2: VT test results template

Winding & Serial No.	Accuracy Class	VT ratio	% of rated voltage	Burden (VA) Cos ϕ =0.8 and @unity (preferably)		Ratio error (%)	Phase displacement (min)	Burden (VA) Cos ϕ =0.8 and @unity		Ratio error (%)	Phase displacement (min)
				1a-1n	2a-2n			1a-1n	2a-2n		
1a-1n			120	100% rated burden	0			25% rated burden	0		
			100								
			80								
2a-2n			120	0	100% rated burden			0	25% rated burden		
			100								
			80								
1a-1n			120	100% rated burden	100% rated burden			25% rated burden	25% rated burden		
			100								
			80								
2a-2n			120	100% rated burden	100% rated burden			25% rated burden	25% rated burden		
			100								
			80								

Appendix 3: Document submission procedure

This information provides the guidance in attaching documents for the electronic submissions by email.

1. File naming tips

Follow examples below with the revision number at the end.

File 1- Project Name & No._NATA Measurement error certification_CTs_revX

File 2- Project Name & No _Reference Standard certification_CTs_revX

File 3- Project Name & No _NATA Measurement error certification_VTs_revX

File 2- Project Name & No _Reference Standard certification_VTs_revX

File 4- Project Name & No _manufacturer's type tests certification_CTs_revX

File 5- Project Name & No _manufacturer's type tests certification_VTs_revX

File 6- Project Name & No _manufacturer's routine tests certification_CTs_revX

File 7- Project Name & No _manufacturer's routine tests certification_VTs_revX

File 8- Project Name & No _SLD_revX

File 9- Project Name & No _Metering schematic diagram_revX

File 10- Project Name & No _Name plate details (preferably photographs) _revX.

2. File formats

The files shall be in .pdf format for the documents and .jpg format for the name plate details.

Drawing Standards shall meet Western Power requirements.

3. Compressed files

A compressed file is a container for the above documents or other electronic files that are to be attached to an email. The maximum compressed file size shall be 20 Mega Bytes.

The compressed file should be attached to an email and name it as; NMIXXXXXXXXXX_Project name_revX

All the above documents shall be submitted with every compressed file with relevant revision including with a submission record sheet as below.

4. Submission Record Sheet

The format of the submission record sheet should be as follows.

Submission Record Sheet		
Connection details	Project Number:	
	Project Name:	
	Maximum Demand Now:	
	Future Growth:	
	Annual throughput:	
	Type as per Metering Code:	
	Route length:	
CT details	Manufacturer: Model: Type: Serial No.: Accuracy Class: Current Ratio: Rated burden: No. of Cores: No. of taps:	
VT details	Manufacturer: Model: Type: Serial No.: Accuracy Class: Voltage Ratio: Rated burden: No. of windings:	
Submission reference	Rev0	Rev1
Date of submission		
Submitted by		
Detail of the revision		
Review date		
Reviewed by		
Detail of the review		
Date of dispensation (If applicable)		

Submission Record Sheet		
Detail of the dispensation		
Dispensation approval date		
Dispensation approved by		
Accepted by		
Accepted date		

5. Document Checklist/Particulars

There are five categories of documents required for review and acceptance.

Each category provides a checklist of documents.

Category	Document required for	Checked (Y/N)
NATA Measurement error test certificates	CTs (ratio error and phase displacement error for all taps at 25% and 100% of rated burden for % primary currents (for the full range) as per reference AS Standard)	
	Calibration Certificate for the CT Reference Standard	
	Name of the Testing Authority (traceable to Australian National Measurement Institute)	
	Name of the Testing Authority (traceable to ILAC/MRA)- Provide evidence to this effect clearly.	
	Calibration Certificate for the VT Reference Standard	
	VTs (ratio error and phase displacement error for all windings at 25% and 100% of rated burden for % of rated voltage as per reference AS Standard)	
	Name of the Testing Authority (traceable to Australian National Measurement Institute)	
	Name of the Testing Authority (traceable to ILAC/MRA)- Provide evidence to this effect clearly.	
	Type tests CTs (for the model and type) The full type tests completed as per the relevant AS Standard of manufacture for General	

Category	Document required for	Checked (Y/N)
Type tests/Routine tests/Special tests reports	requirements (Part 1) and the product specific standard for the additional requirements.	
	Type tests VTs (for the model and type) The full type tests completed as per the relevant AS Standard of manufacture for General Requirements (Part 1) and the product specific standard for the additional requirements.	
	Routine tests CTs (for the Serial Numbers) The full routine tests completed as per the relevant AS Standard of manufacture for General Requirements (Part 1) and the product specific standard for the additional requirements. (Reduced test points in routine tests are not acceptable even in the type tests, those test points have been tested)	
	Routine tests VTs (for the Serial Numbers) The full routine tests completed as per the relevant AS Standard of manufacture for General Requirements (Part 1) and the product specific standard for the additional requirements.	
	Special tests for CTs The full special tests completed as per the relevant AS Standard of manufacture for General Requirements (Part 1) and the product specific standard for the additional requirements.	
	Special tests for VTs The full special tests completed as per the relevant AS Standard of manufacture for General Requirements (Part 1) and the product specific standard for the additional requirements.	
Sample tests	Instrument Safety Factor test (for the Model/Type) for the CT	
	Measurement of secondary resistance of the CTs (for the Model/Type)	
Metering Wiring Diagrams (Complete)	Single line diagram for metering circuits	
	Metering schematic for CTs and VTs	

Category	Document required for	Checked (Y/N)
Name plate details and their physical photos for verification of the test reports	CTs	
	VTs	
Manufacturer's documents	Technical literature and Catalogues for the Model/Type of CTs/VTs	

