

Appointment as a Verifying Authority for Reference Standards of Measurement

In accordance with Regulation 73 of *National Measurement Regulations 1999* (Cth), in force under the *National Measurement Act 1960* (Cth), the Chief Metrologist hereby appoints,

**Energy Queensland Limited
(ABN 96 612 535 583)**

Operating at:

Energy Queensland Limited Instrument and Standards Laboratory
524 Bilsen Road
Geebung QLD 4034

to be a Verifying Authority for the verification of reference standards of measurement under regulation 13 of the *National Measurement Regulations 1999* (Cth) for the following physical quantities:

**time interval, frequency, electric current,
potential difference and electromotive force, power,
energy, electric resistance, phase angle**

This appointment is for the period from 3 August 2026 to 2 August 2029 and is limited to the range specified in the attached schedule, and the use of procedures approved by the Chief Metrologist.

Dated this Fourth day August 2026

Signed

James Cantrill
For the Chief Metrologist
National Measurement Institute

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Schedule to Appointment as a Verifying Authority for Reference Standards of Measurement

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Physical Quantity	Range of Standard	Least Uncertainty
Time Interval		
Time interval meters	from 0.1 μ s to 10 ⁴ s	0.1 ns/s
Frequency		
Frequency meters	from 10 mHz to 225 MHz	1 in 10 ¹⁰
Counters	from 10 mHz to 225 MHz	1 in 10 ¹⁰
Electric Current		
Current transformers	from 0.5 A to 3 000 A at 50 Hz	0.02% for current error 0.02 crad for phase displacement
Instrument calibrators (D.C. current)	at 0 A from 20 μA to 10 A from 10 A to 100 A	0.01 nA 0.005% 0.01%
Instrument calibrators (A.C. current)	from 30 μA to 20 A at 40 Hz to 1 kHz from 20 A to 120 A at 50 Hz	0.05% 0.1%
D.C. ammeters	at 0 A from 20 μA to 10 A from 10 A to 100 A	0.01 nA 0.005% 0.01%

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- | | | |
|---------------------|---|-------|
| • D.C. Clamp meters | up to 1000 A at 50 Hz | 0.7% |
| • A.C. ammeters | from 30 μ A to 20 A at 40 Hz to 1 kHz | 0.05% |
| | from 20 A to 120 A at 50 Hz | 0.1% |
| • A.C. Clamp meters | up to 1000 A at 50 Hz | 0.7% |

Potential Difference and Electromotive Force

Voltage standards

- | | | |
|---|--|---|
| • Electronic E.M.F. reference devices | at 1.018 V
at 10 V | 0.7 μ V/V
0.5 μ V/V |
| • Instrument calibrators (D.C. voltage) | at 0 V
up to 1 100 V | 0.02 μ V
5 μ V/V + 0.1 μ V |
| • Instrument calibrators (A.C. voltage) | from 1 mV to 100 mV and 40 Hz to 1 kHz | 0.2% |
| | from 100 mV to 500 mV and 40 Hz to 1 kHz | 0.02% |
| | from 0.5 V to 300 V and 40 Hz to 20 kHz | 0.01% |
| | from 300 V to 1000 V and 40 Hz to 1 kHz | 0.01% |
| | from 300 V to 1000 V and 1 kHz to 20 kHz | 0.02% |
| • D.C. voltmeters | at 0 V
up to 1 100 V | 0.02 μ V
5 μ V/V + 0.1 μ V |
| • A.C. voltmeters | from 1 mV to 100 mV and 40 Hz to 1 kHz | 0.2% |
| | from 100 mV to 500 mV and 40 Hz to 1 kHz | 0.02% |
| | from 0.5 V to 300 V and 40 Hz to 20 kHz | 0.01% |

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from 300 V to 1000 V at 40 Hz to 1 kHz	0.01%
from 300 V to 1000 V and 1 kHz to 20 kHz	0.02%

Power

D.C. Power

- Wattmeters up to 1000 V and 100 A on d.c. 0.01%

A.C. Active and Reactive Power

Wattmeters

- Single phase wattmeters from 63.5 V to 300 V and 5 mA to 20 A 0.04%/cos Φ
from 240 V to 320 V at 5 mA to 120 A 0.04%/cos Φ
at 40 Hz to 60 Hz
- Three phase wattmeters from 63.5 V P-N to 415 P-P V and 5 mA to 60 A 0.1%/cos Φ

Varmeters	from 63.5 V to 240 V and 10 mA to 60 A	0.2%
	at 240 V from 5 mA to 10 mA	0.2%
	at 50 Hz	

Energy

A.C. Active and Reactive Energy

Electrical energy meters	at phase to neutral voltages of 63.5 V to 240 V 50 Hz in single-phase and poly-phase configurations
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Varhour meters	from 5 mA to <10 mA at 240 V	0.035%/sin Φ
	from 10 mA to <20 mA	0.025%/sin Φ
	from 20 mA to 10 A	0.020%/sin Φ
	from >10 A to 100 A	0.017%/sin Φ
	from >100 A to 120 A at 240 V	0.013%/sin Φ

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Watthour meters	from 5 mA to < 10mA	0.024%/cos Φ
	from 10 mA to <20 mA	0.014%/cos Φ
	from 20 mA to <50 mA	0.010%/cos Φ
	from 50 mA to 50 A	0.007%/cos Φ
	from >50 A to 120 A	0.008%/cos Φ

Electric Resistance

• Precision resistors, resistance boxes and conductance boxes Ohmmeters, D.C. bridges	from 10 $\mu\Omega$ to 10 m Ω	0.05% + 1 $\mu\Omega$
	from 10 m Ω to 1 Ω	20 $\mu\Omega/\Omega$ + 1 $\mu\Omega$
	at 0 Ω	0.8 $\mu\Omega$
	from 1 Ω to 10 k Ω	5 $\mu\Omega/\Omega$
	from 10 k Ω to 1 M Ω	10 $\mu\Omega/\Omega$
	from 1 M Ω to 10 M Ω	20 $\mu\Omega/\Omega$
	from 10 M Ω to 1000 M Ω up to 200 V	0.5%
• Volt ratio boxes and potential dividers	up to 1000 V	10 $\mu\Omega/\Omega$
• Instrument calibrators (D.C. Resistance)	from 10 $\mu\Omega$ to 10 m Ω	0.05% + 1 $\mu\Omega$
	from 10 m Ω to 1 Ω	20 $\mu\Omega/\Omega$ + 1 $\mu\Omega$
	at 0 Ω	0.8 $\mu\Omega$
	from 1 Ω to 10 k Ω	5 $\mu\Omega/\Omega$
	from 10 k Ω to 1 M Ω	10 $\mu\Omega/\Omega$
	from 1 M Ω to 10 M Ω	20 $\mu\Omega/\Omega$
	from 10 M Ω to 1 000 M Ω	0.5%
• DC shunts	with currents to 100 A	
	from 10 $\mu\Omega$ to 10 m Ω	0.05% + 1 $\mu\Omega$
	from 10 m Ω to 1 Ω	20 $\mu\Omega/\Omega$ + 1 $\mu\Omega$
• Resistance temperature bridges	excluding a.c. bridges	
	at 0 Ω	0.8 $\mu\Omega$
	from 1 Ω to 10 k Ω	5 $\mu\Omega/\Omega$

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Phase Angle

- Phase angle indicators From 10 mV to 300 V and 0.1 A to 100 A
at 10 Hz to 65 Hz 0.04°
at 65 Hz to 1 kHz 0.05°
- Power factor meters From 10 mV to 300 V and 0.1 A to 100 A
and 40 Hz to 60 Hz 0.005

Signatories

The following persons are the permitted signatories under this appointment:

Name	Physical Quantity	Range
Rai Pippia	Time interval, frequency, electric current, potential difference and electromotive force, power, energy, electric resistance, phase angle	as per the scope of this schedule
Robert Gold	Time interval, frequency, electric current, potential difference and electromotive force, power, energy, electric resistance, phase angle.	as per the scope of this schedule

Statutory Conditions

This appointment as a verifying authority for reference standards of measurement under regulation 73 of the *National Measurement Regulations 1999* (Cth) is subject to the conditions stated in regulation 77 of the *National Measurement Regulations 1999* (Cth) as amended. At the time of appointment regulation 77 contains the following conditions

- That the authority participate in training, related to the performance of the duties of an authority, required by the Chief Metrologist;
- That the authority report, as required by the Chief Metrologist, about its performance of its duties;
- That the authority, and any responsible agent or employee of the authority, comply with the *National Measurement Act 1960* (Cth) and the *National Measurement Regulations 1999* (Cth) and any condition stated in the instrument of appointment.

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- (d) That the authority comply with any determinations applying to the authority under regulation 20 of the *National Measurement Regulations 1999* (Cth).

Additional Conditions

In addition to the statutory conditions of appointment of authorities contained in regulation 77 of the *National Measurement Regulations 1999* (Cth) this appointment is also subject to the following conditions:

- (i) Continuing accreditation against AS ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories* in the form of NATA accreditation No. 74
- (ii) The authority shall not engage a responsible agent or arrange for any standard of measurement to be verified by an agent or anyone under its supervision without obtaining the prior consent of the Chief Metrologist in writing;
- (iii) Discharge of all financial obligations to the Chief Metrologist and/or the National Measurement Institute in respect of this appointment;
- (iv) Compliance with the formatting and/or any other requirements of the Chief Metrologist and/or the National Measurement Institute with respect to certificates of verification of reference standards of measurement;
- (v) This appointment revokes and replaces any previous appointments and/or any extensions granted to any previous appointments.

Notes:

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