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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

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ACCREDITED TEST

CATEGORY 認可測試類別 : Calibration Services 校正服務

Proficiency Testing Provider 能力驗證提供者



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Acoustic and vibration measurements		
- Acoustic measurements		
- 1 inch laboratory standard microphone (LS1P)	Calibration for pressure field open-circuit sensitivity in accordance with IEC 61094-2: 1992 over the following frequency ranges:	
	63 Hz to 4 kHz Above 4 kHz to 6 kHz	0.04 dB 0.05 dB
	Above 6 kHz to 8 kHz Above 8 kHz to 10 kHz	0.06 dB 0.08 dB
	Calibration for pressure field open-circuit sensitivity in accordance with IEC 61094-2: 2009 over the following frequency ranges:	
	20 Hz to 6.3 kHz Above 6.3 kHz to 8 kHz Above 8 kHz to 10 kHz	0.04 dB 0.05 dB 0.08 dB
- ½ inch laboratory standard microphone (LS2P)	Calibration for pressure field open-circuit sensitivity in accordance with IEC 61094-2: 1992 over the following frequency ranges:	
	63 Hz to 12 kHz Above 12 kHz to 16 kHz	0.04 dB 0.05 dB
	Above 16 kHz to 20 kHz Above 20 kHz to 25 kHz	0.08 dB 0.14 dB
	Calibration for pressure field open-circuit sensitivity in accordance with IEC 61094-2: 2009 over the following frequency ranges:	
	20 Hz Above 20 Hz to 25.1 Hz	0.08 dB 0.06 dB
	Above 25.1 Hz to 12.6 kHz Above 12.6 kHz to 16 kHz	0.05 dB 0.06 dB
	Above 16 kHz to 20 kHz Above 20 kHz to 25 kHz	0.09 dB 0.13 dB

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Acoustic and vibration measurements		
- Acoustic measurements		
- ½ inch working grade microphone	Calibration for pressure field open-circuit sensitivity by comparison with the laboratory standard microphone in accordance with IEC 61094-5: 2001 over the following frequency ranges:	
	63 Hz to 125 Hz Above 125 Hz to 10 kHz Above 10 kHz to 20 kHz	0.10 dB 0.07 dB 0.20 dB
	Calibration for pressure field open-circuit sensitivity by comparison with the laboratory standard microphone in accordance with IEC 61094-5: 2016 over the following frequency ranges:	
	20 Hz to 40 Hz Above 40 Hz to 125 Hz Above 125 Hz to 10 kHz Above 10 kHz to 20 kHz	0.15 dB 0.10 dB 0.07 dB 0.20 dB
	Calibration for pressure field open-circuit sensitivity using sound calibrator in accordance with in-house procedure TPA029 over the following frequency ranges:	
	63 Hz to 8 kHz Above 8 kHz to 12.6 kHz Above 12.6 kHz to 16 kHz Above 16 kHz to 20 kHz	0.2 dB 1.0 dB 1.5 dB 2.5 dB
	Calibration for relative frequency response using electrostatic actuator in accordance with IEC 61094-6: 2004 over the following frequency ranges:	
	63 Hz to 10 kHz Above 10 kHz to 20 kHz	0.1 dB 0.2 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
 -½ inch working grade microphone in combination with constant current line drive (CCLD) microphone preamplifier 	Calibration for pressure field open-circuit sensitivity in accordance with IEC 61094-5: 2016 over the following frequency ranges:	
	63 Hz to 4 kHz Above 4 kHz to 8 kHz Above 8 kHz to 10 kHz Above 10 kHz to 12.5 kHz	0.07 dB 0.10 dB 0.43 dB 1.2 dB
- ½ inch working grade microphone in combination with microphone preamplifier	Calibration for pressure field open-circuit sensitivity by comparison with the laboratory standard microphone in accordance with in-house procedure TPA031 over the following frequency ranges:	
	63 Hz to 126 Hz Above 126 Hz to 10 kHz Above 10 kHz to 20 kHz Above 20 kHz to 25 kHz	0.10 dB 0.08 dB 0.20 dB 0.40 dB
- 1/4 inch working grade microphone (WS3P)	Calibration for pressure field open-circuit sensitivity in accordance with IEC 61094-5:2016 over the following frequency ranges:	
	63 Hz to 4 kHz Above 4 kHz to 10 kHz Above 10 kHz to 20 kHz	0.10 dB 0.15 dB 0.35 dB
- 1 inch working grade microphone	Calibration for pressure field open-circuit sensitivity by comparison with the laboratory standard microphone in accordance with in-house procedure TPA028 over the following frequency ranges:	
	63 Hz to 4 kHz Above 4 kHz to 8 kHz Above 8 kHz to 10 kHz	0.07 dB 0.12 dB 0.15 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
- Audio network analyzer	Calibration for the following parameters in accordance with in-house procedure TPA023:	
	- Amplitude accuracy over the following ranges:	
	20 Hz and 100 kHz	
	0.02 V to 10 V	0.1 % to 0.3 %
	3 mV to 20 mV	0.2 % to 1 %
	- Amplitude linearity	0.02 dB
	- Frequency accuracy over the following	
	frequency ranges:	
	20 Hz to 20 kHz	1 Hz
	Above 20 kHz to 50 kHz	2 Hz
	Above 50 kHz to 100 kHz	3 Hz
	- Ratio between channels	0.002
	- Phase between channels over the following	
	frequency ranges:	
	20 Hz to 1 kHz	0.007°
	Above 1 kHz to 6.25 kHz	0.013°
	Above 6.25 kHz to 50 kHz Above 50 kHz to 100 kHz	0.032° 0.064°
	Above 50 kHz to 100 kHz	0.064*

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Acoustic and vibration measurements		
- Acoustic measurements		
- Audiometer	Calibration for the following parameters in accordance with IEC 60645-1: 2012:	
	- Level accuracy of earphone	
	over the following frequency ranges:	0.6.17
	125 Hz to 4 kHz Above 4 kHz to 8 kHz	0.6 dB 1.0 dB
	Above 4 kriz to 6 kriz	1.0 dB
	- Level accuracy of bone vibrator	
	over the following frequency ranges:	
	250 Hz to 1.5 kHz	0.7 dB
	Above 1.5 kHz to 2 kHz	0.9 dB
	Above 2 kHz to 4 kHz	1.3 dB
	Above 4 kHz to 6 kHz	1.8 dB
	Above 6 kHz to 8 kHz	2.0 dB
	- Frequency of test signals	1 Hz
	- Levels of masking noise	1.0 dB
	- Attenuator steps accuracy	0.2 dB
	- Harmonic distortion of test signals	0.6 %
	- Rise and fall times of test signals	2 ms
	- Cross-talk between earphone channels	1.0 dB
	- Masking noise spectra	0.5 dB
	- Distortion of speech input systems	0.6 %

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Acoustic and vibration measurements		
· Acoustic measurements		
- Hearing aid analyzer	Calibration for sound pressure level in accordance with in-house procedure TPA037 over the following range: 200 Hz to 2 kHz 55 dB to 85 dB	1 dB
- Measuring amplifier	Calibration for the following parameters in accordance with IEC 60651: 2001 and IEC 60804: 2000:	
	 Frequency weighting A test Frequency weighting Linear test Level linearity test Time weighting F test Time weighting S test 	0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
- Microphone preamplifier	Calibration for the following parameters in accordance with in-house procedure TPA032:	
	- Gain - Frequency response - Input capacitance	0.0003 0.01 dB 0.05 pF
- Mouth simulator	On-site calibration for the following parameters using the laboratory standard microphone in accordance with in-house procedure TPA030:	
	- Sound pressure level over the following frequency ranges: 100 Hz to 1 kHz	1.5 dB
	Above 1 kHz to 8 kHz - Distortion at 94 dB over the following frequency ranges: 100 Hz to 200 Hz Above 200 Hz to 8 kHz	2.0 dB 0.2 % 0.1 %
- Octave filter	Calibration for the following parameters in accordance with in-house procedure TPA008:	
	- Pass-band attenuation - Stop-band attenuation	0.02 dB 1 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
- Otoacoustic emissions (OAE) analyzer	Calibration for the following parameters in accordance with in-house procedure TPA038:	
	- Frequency of stimulus signal over the following range:	
	500 Hz to 8 kHz	0.5 Hz
	Sound pressure level of stimulus signal over the following range:65 dB to 75 dB	1 dB
	- Harmonic distortion of stimulus signal over the following frequency range:	
	500 Hz to 8 kHz	0.05 %
- Personal sound exposure meter, noise dose meter, noise dosimeter	Calibration for the following parameters in accordance with IEC 61252: 1993 + A1: 2000 + A2: 2017:	
	- Absolute acoustic sensitivity sound exposure	6.8 %
	- Electrical Tests - Frequency weighting	0.5 %
	- Linearity of response to steady signals over the following frequencies:	
	63 Hz 1 kHz	2.0 %
	Below 80 dB	20 %
	80 dB to 100 dB	5.0 %
	Above 100 dB to 130 dB	1.0 %
	Above 130 dB to 140 dB 8 kHz	2.0 %
	- Response to short-duration signals	1.1 %
	- Response to unipolar pulse	1.4 %
	- Latching overload indicator	0.2 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
- Sound calibrator	Calibration for the following parameters in accordance with IEC 60942: 2000:	
	- Sound pressure level over the following ranges: 63 Hz to 4 kHz	
	94 dB to 124 dB Above 4 kHz to 16 kHz	0.06 dB
	94 dB to 124 dB	0.09 dB
	- Frequency accuracy over the following frequency range:	
	63 Hz to 16 kHz	1 x 10 ⁻⁵ of result
	- Distortion over the following range: 63 Hz to 16 kHz	
	94 dB to 114 dB	0.5 %
	Calibration for the following parameters in accordance with IEC 60942: 2003:	
	- Sound pressure level over the following ranges: 63 Hz to 4 kHz	
	94 dB to 124 dB Above 4 kHz to 8 kHz	0.06 dB
	94 dB to 124 dB Above 8 kHz to 16 kHz	0.10 dB
	94 dB to 124 dB	0.16 dB
	- Frequency accuracy over the following frequency range:	
	63 Hz to 16 kHz	1 x 10 ⁻⁵ of result
	- Distortion over the following range: 63 Hz to 16 kHz	
	94 dB to 114 dB	0.5 %

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Calibration for the following parameters in accordance with IEC 60942: 2017: - Sound pressure level over the following ranges:	
63 Hz to 4 kHz 94 dB to 124 dB	0.06 dB
94 dB to 124 dB	0.10 dB
94 dB to 124 dB	0.16 dB
- Frequency accuracy over the following frequency range:	
63 Hz to 16 kHz	1 x 10 ⁻⁵ of result
- Total distortion and noise over the following ranges:	
63 Hz to 16 kHz: 94 dB to 114 dB	0.5 %
250 Hz 124 dB	0.5 %
	Calibration for the following parameters in accordance with IEC 60942: 2017: - Sound pressure level over the following ranges: 63 Hz to 4 kHz 94 dB to 124 dB Above 4 kHz to 8 kHz 94 dB to 124 dB Above 8 kHz to 16 kHz 94 dB to 124 dB - Frequency accuracy over the following frequency range: 63 Hz to 16 kHz - Total distortion and noise over the following ranges: 63 Hz to 16 kHz: 94 dB to 114 dB 250 Hz

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Acoustic and vibration measurements		
- Acoustic measurements		
- Sound level meter	Calibration for the following parameters in accordance with IEC 61672-3: 2006:	
	 Indication at the calibration check frequency Self-generated noise Acoustical signal tests of a frequency weighting over the following frequency ranges: 63 Hz to 4 kHz Above 4 kHz to 8 kHz Electrical signal tests of frequency weighting Frequency and time weightings at 1 kHz Level linearity on the reference level range Level linearity including the level range control Toneburst response Peak C sound level Overload indication 	0.1 dB 0.1 dB 0.2 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB
	Calibration for the following parameters in accordance with IEC 61672-3: 2013:	
	 Indication at the calibration check frequency Self-generated noise Acoustical signal tests of a frequency weighting over the following frequency ranges: 63 Hz to 1 kHz Above 1 kHz to 8 kHz Electrical signal tests of frequency weighting Frequency and time weightings at 1 kHz Long-term stability Level linearity on the reference level range Level linearity including the level range control Toneburst response C-weighted peak sound level Overload indication High-level stability 	0.2 dB 0.1 dB 0.2 dB 0.3 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB 0.1 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
- Tympanometer	Calibration for the following parameters in accordance with in-house procedure TPA035:	
	- Frequency of probe tone over the following range:	
	226 Hz to 1 kHz	0.6 Hz
	- Sound pressure level of probe tone at 85 dB - Harmonic distortion of probe tone	0.7 dB
	over the following frequency range: 226 Hz to 1 kHz	0.05 %
- Type 1 ear simulator	Calibration for the following parameters	
	in accordance with IEC 60318-1: 2009:	
	- Relative sound pressure response over the following frequency ranges:	
	40 Hz to 63 Hz	2.0 dB
	Above 63 Hz to 80 Hz	1.0 dB
	Above 80 Hz to 4 kHz	0.7 dB
	Above 4 kHz to 8 kHz	1.0 dB
	- Relative transfer impedance	
	over the following frequency ranges: 40 Hz to 63 Hz	2.0 dB
	Above 63 Hz to 80 Hz	2.0 dB 1.0 dB
	Above 80 Hz to 4 kHz	0.7 dB
	Above 4 kHz to 8 kHz	1.0 dB

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Acoustic and vibration measurements		
- Acoustic measurements		
- Type 3.2 ear simulator	Calibration for the following parameters in accordance with ITU-T P.57: 2005:	
	- Relative frequency sensitivity response over the following frequency ranges: 40 Hz to 63 Hz	2.0 dB
	Above 63 Hz to 80 Hz Above 80 Hz to 4 kHz	1.0 dB 0.7 dB
	- Acoustic impedance over the following frequency ranges: 40 Hz to 63 Hz Above 63 Hz to 80 Hz Above 80 Hz to 4 kHz	2.0 dB 1.0 dB 0.7 dB
- Head and Torso Simulator (HATS)	Calibration for the following parameters in accordance with ITU-T P.58: 2013:	
	- Maximum deliverable sound pressure level of HATS mouth over the following frequency range:	
	100 Hz to 10 kHz - Harmonic distortion of HATS mouth	0.5 dB
	over the following frequency range: 100 Hz to 10 kHz	1.5 %
	 Sound pick-up free field frequency response of HATS over the following frequency ranges: 100 Hz to 8 kHz 	1.5 dB
	Above 8 kHz to 20 kHz	2.9 dB

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Acoustic and vibration measurements		
Acoustic measurements		
- Ultrasonic transducer	Calibration for the following parameters in accordance with IEC 61161: 2013:	
	- Radiation conductance at the following values or over the following ranges:	
	1 MHz to 3 MHz	
	50 mW	8.0 %
	Above 50 mW to 10 W Above 3 MHz to 20 MHz	6.0 %
	50 mW	8.0 %
	Above 50 mW to 1 W	5.0 %
	- Ultrasonic power at the following values	
	or over the following ranges:	
	1 MHz to 3 MHz	
	50 mW	8.0 %
	Above 50 mW to 10 W	5.0 %
	Above 3 MHz to 20 MHz	
	50 mW	8.0 %
	Above 50 mW to 1 W	5.0 %

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Acoustic and vibration measurements		
- Vibration measurements		
- Accelerometer	Calibration for the following parameters using the laboratory standard laser vibrometer in accordance with in-house procedure TPV101:	
	- Charge sensitivity (modulus) over the following range: 10 Hz to 10 kHz	
	1 m/s ² to 350 m/s ²	1.1 %
	- Charge sensitivity (phase shift) over the following range: 0° to 360°	2°
	Calibration for the following parameters by comparison with the laboratory standard accelerometer in accordance with ISO 16063-21:2003:	
	- Charge sensitivity (modulus) over the following range: 10 Hz to 10 kHz 1 m/s² to 350 m/s²	1.5 %
	- Charge sensitivity (phase shift) over the following range: 0° to 360°	3°
	Calibration for the following parameter by comparison with the laboratory standard accelerometer in accordance with in-house procedure TPV002:	
	- Charge sensitivity (modulus) over the following range: 40 Hz to 4 kHz 10 m/s ² to 100 m/s ²	1.5 %

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Acoustic and vibration measurements		
- Vibration measurements		
- Accelerometer	Calibration for the following parameters in accordance with ISO 16063-11: 1999, Method 3	
	- Charge or voltage sensitivity (modulus) over the following range: 50 Hz to 5 kHz	0.50
	1 m/s² to 350 m/s² Above 5 kHz to 10 kHz 1 m/s² to 350 m/s²	0.5 %
	- Charge or voltage sensitivity (phase shift) over the following range: 50 Hz to 5 kHz	
	0° to 360° Above 5 kHz to 10 kHz 0° to 360°	0.5°

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Acoustic and vibration measurements		
- Vibration measurements		
- Acceleration measuring chain	Calibration for the following parameters using the laboratory standard laser vibrometer in accordance with in-house procedure TPV101:	
	- Voltage sensitivity (modulus) over the following range: 10 Hz and 10 kHz 1 m/s² to 350 m/s²	1.1 %
	- Voltage sensitivity (phase shift) over the following range: 10 Hz and 10 kHz 0° to 360°	2°
	Calibration for the following parameters by comparison with the laboratory standard accelerometer in accordance with ISO 16063-21:2003:	
	- Voltage sensitivity (modulus) over the following range: 10 Hz and 10 kHz 1 m/s² to 350 m/s²	1.5 %
	- Voltage sensitivity (phase shift) over the following range: 10 Hz and 10 kHz	
	0° to 360°	3°

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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Acoustic and vibration measurements		
- Vibration measurements		
- Charge amplifier	Calibration for gain magnitude by comparison with standard air capacitor and AC voltmeter in accordance with in-house procedure TPV003 over the following range:	
	50 Hz and 10 kHz 1 mV/pC to 1 V/pC	0.4 %
- Vibration calibrator	Calibration for continuous sinusoidal vibration range by comparison with standard accelerometer in accordance with in-house procedure TPV104 over the following range:	
	10 Hz to 10 kHz 1 m/s ² to 350 m/s ²	1.5 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Acoustic and vibration measurements		
- Vibration measurements		
- Vibration exciter, vibration shaker	On-site calibration for the following parameters of continuous sinusoidal vibration by using vibration analyser and accelerometer in accordance with in-house procedure TPV105:	
	- Displacement over the following range: 10 Hz to 10 kHz 0.0001 mm to 79 mm	2.4 %
	- Acceleration over the following range: 10 Hz to 10 kHz 1 m/s² to 350 m/s²	2.4 %
	- Velocity over the following range: 10 Hz to 10 kHz 0.5 mm/s to 500 mm/s	2.4 %
	Calibration for the following parameters of continuous sinusoidal vibration by using vibration analyser and accelerometer in accordance with in-house procedure TPV105:	
	- Displacement over the following range: 10 Hz to 10 kHz 0.0001 mm to 79 mm	2.4 %
	- Acceleration over the following range: 10 Hz to 10 kHz 1 m/s² to 350 m/s²	2.4 %
	- Velocity over the following range: 10 Hz to 10 kHz 0.5 mm/s to 500 mm/s	2.4 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Acoustic and vibration measurements		
- Vibration measurements		
- Vibration meter	Calibration for the following parameters of continuous sinusoidal vibration by using the laboratory standard laser vibrometer in accordance with in-house procedure TPV103:	
	- Displacement over the following range: 10 Hz to 10 kHz 0.0001 mm to 79 mm	1.1 %
	- Acceleration over the following range: 10 Hz to 10 kHz 1 m/s² to 350 m/s²	1.1 %
	- Velocity over the following range: 10 Hz to 10 kHz 0.5 mm/s to 500 mm/s	1.1 %
	Calibration for the following parameters of continuous sinusoidal vibration by using the laboratory standard accelerometer in accordance with in-house procedure TPV103:	
	- Displacement over the following range: 10 Hz to 10 kHz 0.0001 mm to 79 mm	1.5 %
	- Acceleration over the following range: 10 Hz to 10 kHz 1 m/s² to 350 m/s²	1.5 %
	- Velocity over the following range: 10 Hz to 10 kHz 0.5 mm/s to 500 mm/s	1.5 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- Direct Current (DC) and Low Frequency (LF) measurements		
- DC voltage source: standard cell, solid state voltage standard, multifunction calibrator	Calibration for DC voltage using the Josephson array voltage standard in accordance with in-house procedure TPD031 at the following values:	
	1 V 1.018 V 10 V	Q[60 nV, N] Q[60 nV, N] Q[120 nV, N] where Q[a, b] = $[a^2 + b^2]^{1/2}$, N is the source noise
	Calibration for DC voltage using the programmable Josephson array voltage standard in accordance with in-house procedure TPD091 at the following values:	
	1 V 1.018 V 10 V	Q[60 nV, N] Q[60 nV, N] Q[120 nV, N] where Q[a, b] = $[a^2 + b^2]^{1/2}$, N is the source noise
	Calibration for DC voltage using the electronic reference standards in accordance with in-house procedure TPD032 at the following values:	
	1 V 1.018 V 10 V	0.44 μV 0.44 μV 2.4 μV

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Electrical measurements and magnetism		
DC & LF measurements		
- DC voltage source: standard cell, solid state voltage standard, multifunction calibrator	Calibration for DC voltage using potentiometer in accordance with in-house procedure TPD007 over the following ranges:	
	1 μV to 20 mV Above 20 mV to 200 mV Above 200 mV to 2 V	0.12 μV 0.13 μV to 0.18 μV 0.26 μV to 1.3 μV
	Calibration for DC voltage using voltage ratio box in accordance with in-house procedure TPD016 over the following ranges:	
	2 V to 10 V Above 10 V to 1000 V	1.5 μV to 8.5 μV 8.5 μV to 1.1 mV
	Calibration for DC voltage using multi-function calibrator in accordance with in-house procedure TPD042 over the following ranges:	
	0.1 V to 10 V Above 10 V to 1000 V	0.17 μV to 8.5 μV 8.5 μV to 1.1 mV

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Electrical measurements and magnetism		
- DC & LF measurements		
- DC high voltage source: DC kilovolt source	Calibration for DC voltage in accordance with in-house procedure TPD102 over the following ranges:	
	1 kV to 30 kV Above 30 kV to 100 kV	0.042 V to 1.3 V 1.3 V to 4.2 V
	Calibration for DC voltage in accordance with in-house procedure TPD112 over the following ranges:	
	1 kV to 10 kV	0.04 V to 0.40 V
	Above 50 kV to 50 kV	0.28 V to 1.4 V
	Above 50 kV to 100 kV	1.9 V to 3.7 V

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Electrical measurements and magnetism		
DC & LF measurements		
- DC voltmeter: nanovoltmeter, microvoltmeter, DC voltmeter, multimeter, multifunction transfer standard	Calibration for DC voltage in accordance with in-house procedure TPD007 over the following ranges: 1 µV to 20 mV Above 20 mV to 200 mV Above 200 mV to 2 V	0.12 μV 0.24 μV 0.30 μV to 3.0 μV
	Calibration for DC voltage in accordance with in-house procedure TPD016 over the following range:	
	2 V to 1000 V	3.0 μV to 1.2 mV
	Calibration for DC voltage in accordance with in-house procedure TPL038 over the following ranges:	
	100 mV to 200 mV Above 200 mV to 2 V Above 2 V to 1000 V	1.6 μV to 3.2 μV 2.4 μV to 24 μV 26 μV to 13 mV
	On-site calibration for DC voltage in accordance with in-house procedure TPL038 over the following ranges:	
	100 mV to 200 mV Above 200 mV to 2 V Above 2 V to 1000 V	1.6 μV to 3.2 μV 2.4 μV to 24 μV 26 μV to 13 mV

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Electrical measurements and magnetism		
- DC & LF measurements		
- DC high voltage meter: DC kilovoltmeter, dedicated setup for high voltage	Calibration for DC voltage in accordance with in-house procedure TPD102 over the following ranges:	
	1 kV to 30 kV Above 30 kV to 100 kV	0.042 V to 1.3 V 1.3 V to 4.2 V
	Calibration for DC voltage in accordance with in-house procedure TPD112 over the following ranges:	
	1 kV to 10 kV	0.04 V to 0.40 V
	Above 10 kV to 50 kV	0.28 V to 1.4 V
	Above 50 kV to 100 kV	1.9 V to 3.7 V

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Electrical measurements and magnetism(cont	'd)	
- DC & LF measurements		
- DC voltage ratio device:	Calibration for DC voltage ratio	
resistive divider, ratio meter	in accordance with in-house procedure TPD038 over the following ranges:	
	20 V: 10 V to 100 V: 10 V	0.25 x 10 ⁻⁶
	100 V: 10 V	0.40 x 10 ⁻⁶
	200 V: 10 V to 1000 V: 10 V	0.55 x 10 ⁻⁶
	800 V: 10 V	0.60 x 10 ⁻⁶
	900 V: 10 V	0.70 x 10 ⁻⁶
	1000 V: 10 V	0.80 x 10 ⁻⁶
	2 V: 1 V to 5 V: 1 V	0.30×10^{-6}
	10 V: 1 V	0.45 x 10 ⁻⁶
	20 V: 1 V to 50 V: 1 V	0.50×10^{-6}
	100 V: 1 V	0.55 x 10 ⁻⁶
	200 V: 1 V to 700 V: 1 V	0.65 x 10 ⁻⁶
	800 V: 1 V	0.70×10^{-6}
	900 V: 1 V	0.80 x 10 ⁻⁶
	1000 V: 1 V	0.90 x 10 ⁻⁶
	Calibration for DC voltage ratio	
	in accordance with in-house procedure TPD048	
	over the following ranges:	
	20 V: 10 V to 100 V: 10 V	0.20 x 10 ⁻⁶
	200 V: 10 V to 1000 V: 10 V	0.40 x 10 ⁻⁶
- DC voltage ratio device for input	Calibration for DC voltage ratio	
voltage from 1 V to 100 V:	in accordance with in-house procedure TPD022	
voltage ratio divider,	over the following ranges:	
voltage ratio divider, voltage ratio box	over the following fallges.	
voltage ratio box	0.00001 to 0.0001	0.90 x 10 ⁻⁶
	Above 0.0001 to 0.001	0.90 x 10 ⁻⁶
	Above 0.0001 to 0.001	0.95 x 10 ⁻⁶
	Above 0.001 to 0.01 Above 0.01 to 0.1	0.82 x 10 ⁻⁶
	Above 0.01 to 0.1 Above 0.1 to 1	0.82 x 10 ° 0.87 x 10 ° 6
	ADDIVE 0.1 to 1	0.07 A 10

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- DC resistance standard and source: fixed resistor, resistance box, three-terminal resistor	Calibration for DC resistance by direct or indirect comparison with the Quantised Hall resistance standard in accordance with in-house procedure TPD217 at the following values:	
	1 Ω 10 Ω 25 Ω 100 Ω 1 kΩ 10 kΩ	$\begin{array}{c} 0.025 \; \mu\Omega \\ 0.25 \; \mu\Omega \\ 0.63 \; \mu\Omega \\ 2.5 \; \mu\Omega \\ 25 \; \mu\Omega \\ 0.25 \; m\Omega \end{array}$
	Calibration for DC resistance in accordance with in-house procedure TPD033 at the following values:	
	100 mΩ 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ	$\begin{array}{c} 94 \text{ n}\Omega \\ 0.30 \text{ m}\Omega \\ 3.0 \text{ m}\Omega \\ 30 \text{ m}\Omega \\ 0.30 \text{ m}\Omega \\ 3.0 \text{ m}\Omega \\ 50 \text{ m}\Omega \end{array}$
	Calibration for DC resistance in accordance with in-house procedure TPD040 over the following ranges:	
	0.1 Ω to 1 Ω Above 1 Ω to 10 Ω Above 10 Ω to 100 Ω Above 100 Ω to 1 k Ω Above 1 k Ω to 100 k Ω	0.14 $\mu\Omega$ to 1.4 $\mu\Omega$ 0.46 $\mu\Omega$ to 4.6 $\mu\Omega$ 4.2 $\mu\Omega$ to 42 $\mu\Omega$ 46 $\mu\Omega$ to 0.46 $m\Omega$ 6.8 $m\Omega$ to 0.68 Ω

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Electrical measurements and magnetism		
- DC & LF measurements		
- DC resistance standard and source: fixed resistor, resistance box, three-terminal resistor	Calibration for DC resistance in accordance with in-house procedure TPD006 at the following values or over the following range:	
	1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 kΩ to 100 kΩ	$\begin{array}{c} 6.8 \text{ m}\Omega \\ 68 \text{ m}\Omega \\ 0.68 \Omega \\ 6.8 \Omega \\ 68 \Omega \\ 0.68 \text{ k}\Omega \\ 0.68 \text{ m}\Omega \text{ to } 0.68 \Omega \end{array}$
	Calibration for DC resistance in accordance with in-house procedure TPD005 at the following values:	
	1 MΩ 10 MΩ 100 MΩ	1.0 Ω 10 Ω 0.50 kΩ
	Calibration for DC resistance in accordance with in-house procedure TPD025 over the following ranges:	
	100 MΩ to 10 GΩ Above 10 GΩ to 100 GΩ Above 100 GΩ to 1 TΩ Above 1 TΩ to 10 TΩ	$4.6 \text{ k}\Omega$ to $0.46 \text{ M}\Omega$ $0.78 \text{ M}\Omega$ to $7.8 \text{ M}\Omega$ $57 \text{ M}\Omega$ to $0.57 \text{ G}\Omega$ $1.4 \text{ G}\Omega$ to $14 \text{ G}\Omega$

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Electrical measurements and magnetism		
DC & LF measurements		
- DC resistance standard for high current: DC shunt	Calibration for DC resistance in accordance with in-house procedure TPD015 at the following values or over the following ranges:	
	$ 1 \ \text{m}\Omega $ $ 10 \ \text{m}\Omega $ $ 100 \ \text{m}\Omega $ $ 0.1 \ \text{m}\Omega \ \text{to} \ 1 \ \text{m}\Omega $ $ Above \ 1 \ \text{m}\Omega \ \text{to} \ 100 \ \text{m}\Omega $ $ Above \ 10 \ \text{m}\Omega \ \text{to} \ 100 \ \text{m}\Omega $ $ Above \ 0.1 \ \Omega \ \text{to} \ 1 \ \Omega $	$\begin{array}{c} 3.1 \ n\Omega \\ 19 \ n\Omega \\ 0.15 \ \mu\Omega \\ 0.39 \ n\Omega \ to \ 3.9 \ n\Omega \\ 3.9 \ n\Omega \ to \ 19 \ n\Omega \\ 19 \ n\Omega \ to \ 0.15 \ \mu\Omega \\ 0.15 \ \mu\Omega \ to \ 1.4 \ \mu\Omega \\ \end{array}$
	Calibration for DC resistance in accordance with in-house procedure TPD035 at the following values or over the following ranges:	
	$1 m\Omega$ $10 m\Omega$ $100 m\Omega$ $0.1 m\Omega \text{ to } 1 m\Omega$ Above 1 mΩ to 10 mΩ Above 10 mΩ to 100 mΩ Above 0.1 Ω to 1 Ω	$\begin{array}{c} 3.1 \ n\Omega \\ 19 \ n\Omega \\ 0.15 \ \mu\Omega \\ 0.39 \ n\Omega \ to \ 3.9 \ n\Omega \\ 3.9 \ n\Omega \ to \ 19 \ n\Omega \\ 19 \ n\Omega \ to \ 0.15 \ \mu\Omega \\ 0.15 \ \mu\Omega \ to \ 1.4 \ \mu\Omega \end{array}$

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC resistance standard and source: multifunction calibrator	Calibration for DC resistance in accordance with in-house procedure TPD037 at the following values or over the following ranges:	
		$\begin{array}{c} 30 \ \mu\Omega \\ 50 \ \mu\Omega \\ 0.50 \ m\Omega \\ 1.0 \ m\Omega \\ 30 \ m\Omega \\ 0.30 \ \Omega \\ 3.0 \ \Omega \\ 30 \ \Omega \\ 3.0 \ k\Omega \\ 80 \ k\Omega \\ 30 \ \mu\Omega \ to \ 50 \ \mu\Omega \\ 50 \ \mu\Omega \ to \ 50 \ m\Omega \\ 0.50 \ m\Omega \ to \ 3.0 \ m\Omega \\ 3.0 \ m\Omega \ to \ 0.40 \ \Omega \\ 0.40 \ \Omega \ to \ 3.0 \ \Omega \\ 3.0 \ \Omega \ to \ 3.0 \ k\Omega \\ 3.0 \ k\Omega \ to \ 0.1 \ M\Omega \\ \end{array}$

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Electrical measurements and magnetism		
- DC resistance standard and source: multifunction calibrator	Calibration for DC resistance in accordance with in-house procedure TPD046 at the following values or over the following ranges:	
	1 Ω 10 Ω 100 Ω 1 $k\Omega$ 10 $k\Omega$ 1 $M\Omega$ 10 $M\Omega$ 10 $M\Omega$ 1 Ω to 10 Ω Above 10 Ω to 100 Ω Above 190 Ω to 1.9 $k\Omega$ Above 1.9 $k\Omega$ to 190 $k\Omega$ Above 190 $k\Omega$ to 1 $M\Omega$ Above 1 $M\Omega$ to 10 $M\Omega$	$\begin{array}{c} 30 \ \mu\Omega \\ 50 \ \mu\Omega \\ 0.50 \ m\Omega \\ 1.0 \ m\Omega \\ 0.030 \ \Omega \\ 0.30 \ \Omega \\ 3.0 \ \Omega \\ 30 \ \Omega \\ 30 \ \mu\Omega \ to \ 50 \ \mu\Omega \\ 50 \ \mu\Omega \ to \ 50 \ m\Omega \\ 0.50 \ m\Omega \ to \ 3.0 \ m\Omega \\ 3.0 \ m\Omega \ to \ 0.40 \ \Omega \\ 0.40 \ \Omega \ to \ 3.0 \ \Omega \\ 30 \ \Omega \ to \ 3.0 \ k\Omega \\ 30 \ \Omega \ to \ 3.0 \ k\Omega \\ \end{array}$

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Electrical measurements and magnetism		
DC & LF measurements		
- DC resistance meter: multimeter, multifunction transfer standard, resistance bridge, microohmmeter, ohmmeter, teraohmmeter	Calibration for DC resistance in accordance with in-house procedure TPD004 over the following ranges: $ 1 \text{ m}\Omega \text{ to } 10 \text{ m}\Omega $ Above $10 \text{ m}\Omega \text{ to } 100 \text{ m}\Omega $ Above $10 \text{ m}\Omega \text{ to } 1 \Omega $ Above $10 \text{ m}\Omega \text{ to } 1 \Omega $ Above $1 \Omega \text{ to } 10 \Omega $ Above $10 \Omega \text{ to } 10 \Omega $ Above $10 \Omega \text{ to } 100 \Omega $ Above $100 \Omega \text{ to } 100 \Omega $	1.2 $\mu\Omega$ 1.2 $\mu\Omega$ 1.2 $\mu\Omega$ to 1.5 $\mu\Omega$ 1.5 $\mu\Omega$ to 10 $\mu\Omega$ 10 $\mu\Omega$ to 0.10 $m\Omega$ 0.10 $m\Omega$ to 1.0 $m\Omega$
	Calibration for DC resistance in accordance with in-house procedure TPD040 over the following ranges: $100 \text{ m}\Omega \text{ to } 1 \Omega$ Above 1 Ω to 10 Ω Above 10 Ω to 100 Ω Above 100 Ω to 100 Ω Above 100 Ω to 100 Ω Above 100 Ω to 100 k Ω Above 10 k Ω to 100 k Ω	1.2 $\mu\Omega$ to 1.5 $\mu\Omega$ 1.5 $\mu\Omega$ to 10 $\mu\Omega$ 10 $\mu\Omega$ to 0.10 $m\Omega$ 0.10 $m\Omega$ to 1.0 $m\Omega$ 1.0 $m\Omega$ to 10 $m\Omega$ 10 $m\Omega$ to 10 $m\Omega$
	Calibration for DC resistance in accordance with in-house procedure TPL038 at the following values: $10~\Omega$ $100~\Omega$ $1~k\Omega$	0.50 mΩ 2.0 mΩ 0.020 Ω
	10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	0.20 Ω 2.0 Ω 0.020 kΩ 0.50 kΩ 50 kΩ
Unless othorwice are diffed and the desired	100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ	$\begin{array}{c} 2.0 \ \text{m}\Omega \\ 0.020 \ \Omega \\ 0.20 \ \Omega \\ 2.0 \ \Omega \\ 0.020 \ \text{k}\Omega \\ 0.50 \ \text{k}\Omega \end{array}$

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Electrical measurements and magnetism		
DC & LF measurements		
- DC resistance meter: multimeter, multifunction transfer standard, resistance bridge, microohmmeter, ohmmeter, teraohmmeter	On-site calibration for DC resistance in accordance with in-house procedure TPL038 at the following values: $10~\Omega$ $100~\Omega$ $1~k\Omega$ $10~k\Omega$ $10~k\Omega$ $1~M\Omega$ $1~M\Omega$ $10~M\Omega$	$\begin{array}{c} 0.50 \ m\Omega \\ 2.0 \ m\Omega \\ 0.020 \ \Omega \\ 0.20 \ \Omega \\ 2.0 \ \Omega \\ 0.020 \ k\Omega \\ 0.50 \ k\Omega \\ 50 \ k\Omega \end{array}$
	Calibration for DC resistance in accordance with in-house procedure TPD006 over the following range: $1~k\Omega~to~100~M\Omega$	$6.8~\mathrm{m}\Omega$ to $0.68~\mathrm{k}\Omega$
	Calibration for DC resistance in accordance with in-house procedure TPD025 over the following ranges: Above 100 M Ω to 1000 M Ω Above 1 G Ω to 10 G Ω Above 10 G Ω to 100 G Ω Above 100 G Ω to 1 T Ω Above 1 T Ω to 10 T Ω	$5.0 \text{ k}\Omega$ to $50 \text{ k}\Omega$ $50 \text{ k}\Omega$ to $6.0 \text{ M}\Omega$ $6.0 \text{ M}\Omega$ to $10 \text{ M}\Omega$ $90 \text{ M}\Omega$ to $0.90 \text{ G}\Omega$ $1.4 \text{ G}\Omega$ to $31 \text{ G}\Omega$

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- Insulation resistance tester	Calibration for the following parameters in accordance with in-house procedure TPD036:	
	- insulation resistance over the following ranges: 0.1 M Ω to 1 M Ω Above 1 M Ω to 10 M Ω Above 10 M Ω to 100 M Ω Above 100 M Ω to 1 G Ω Above 1 G Ω to 10 G Ω Above 10 G Ω to 100 G Ω Above 100 G Ω to 600 G Ω - DC output voltage over the following ranges: 100 V to 1 kV Above 1 kV to 10 kV	6.0 kΩ to 13 kΩ 13 kΩ to 0.13 MΩ 0.13 MΩ to 1.3 MΩ 1.3 MΩ to 12 MΩ 12 MΩ to 67 MΩ 67 MΩ to 0.67 GΩ 0.67 GΩ to 4.0 GΩ 12 mV to 59 mV 53 V to 156 V

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Electrical measurements and magnetism		
DC & LF measurements		
- DC current source: current generator, multifunction calibrator	Calibration for DC current in accordance with in-house procedure TPD058 at the following values or over the following ranges:	
	0.1 pA 1 pA 10 pA 100 pA 0.1 pA to 1 pA Above 1 pA to 10 pA Above 10 pA to 100 pA	0.30 fA 1.0 fA 5.0 fA 20 fA 0.4 fA to 4.0 fA 1.0 fA to 10 fA 5.0 fA to 40 fA
	Calibration for DC current in accordance with in-house procedure TPD076 over the following ranges:	
	0.1 nA to 1 nA Above 1 nA to 10 nA Above 10 nA to 100 nA	38 fA to 0.38 pA 0.15 pA to 1.5 pA 1.5 pA to 15 pA

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Electrical measurements and magnetism		
DC & LF measurements		
- DC current source: current generator, multifunction calibrator	Calibration for DC current by measuring voltage-drop with standard resistor and reference multimeter in accordance with in-house procedure TPD008 over the following ranges:	
	0.1 μA to 1 μA Above 1 μA to 10 μA Above 10 μA to 100 μA Above 0.1 mA to 1 mA Above 1 mA to 10 mA Above 10 mA to 100 mA Above 10 A to 10 A Above 1 A to 10 A Above 10 A to 20 A Above 20 A to 30 A Above 30 A to 100 A	0.89 pA to 3.2 pA 2.2 pA to 9.8 pA 18 pA to 90 pA 0.18 nA to 0.90 nA 1.8 nA to 0.20 μA 0.59 μA to 5.9 μA 2.9 μA to 26 μA 35 μA to 72 μA 72 μA to 0.13 mA 0.60 mA to 1.7 mA
	Calibration for DC current by direct measurement using reference multimeter in accordance with in-house procedure TPD037 over the following ranges: 0.1 mA to 1 mA Above 1 mA to 10 mA	0.18 nA to 0.90 nA 1.8 nA to 9.0 nA
	Above 10 mA to 100 mA Above 0.1 A to 1 A On-site calibration for DC current by direct measurement using reference multimeter in accordance with in-house procedure TPD037 over the following ranges:	18 nA to 0.20 μA 0.59 μA to 5.9 μA
	0.1 mA to 1 mA Above 1 mA to 10 mA Above 10 mA to 100 mA Above 0.1 A to 1 A	18 nA to 0.18 μA 0.18 μA to 1.8 μA 1.8 μA to 18 μA 29 μA to 0.29 mA

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Electrical measurements and magnetism		
DC & LF measurements		
- DC current meter:	Calibration for DC current	
multimeter,	in accordance with in-house procedure TPD056	
picoammeter,	at the following values or	
nanoammeter,	over the following ranges:	
multifunction transfer standard,		
current comparator,	0.1 pA	0.30 fA
current transducer,	1 pA	1.0 fA
dedicated equipment for heavy	10 pA	5.0 fA
current measurement	100 pA	11 fA
	0.1 pA to 1 pA	0.30 fA to 3.0 fA
	Above 1 pA to 10 pA	1.0 fA to 5.0 fA
	Above 10 pA to 100 pA	5.0 fA to 30 fA
	Calibration for DC current	
	in accordance with in-house procedure TPD076	
	over the following ranges:	
	0.1 nA to 1 nA	36 fA to 0.36 pA
	Above 1 nA to 10 nA	0.14 pA to 1.4 pA
	Above 10 nA to 100 nA	0.8 pA to 8 pA
	Calibration for DC current	
	by measuring voltage-drop	
	with standard resistor and reference multimeter	
	in accordance with in-house procedure TPD008	
	over the following ranges:	
	0.1 μA to 1 μA	5 pA to 25 pA
	Above 1 μA to 10 μA	25 pA to 30 pA
	Above 10 μA to 100 μA	0.030 nA to 0.30 nA
	Above 0.1 mA to 1 mA	0.30 nA to 3.0 nA
	Above 1 mA to 10 mA	3.0 nA to 30 nA
	Above 10 mA to 100 mA	30 nA to 0.30 μA
	Above 0.1 A to 1 A	1.0 μA to 10 μA
	Above 1 A to 10 A	10 μA to 0.10 mA
	Above 10 A to 20 A	0.10 mA to 0.40 mA
	Above 20 A to 30 A	0.40 mA to 0.90 mA
	Above 30 A to 100 A	0.90 mA to 4.5 mA

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Electrical measurements and magnetism		
DC & LF measurements		
- DC current meter:	Calibration for DC current	
multimeter,	by direct measurement using multi-function	
picoammeter,	calibrator in accordance with in-house procedure	
nanoammeter,	TPD045 over the following ranges:	
multifunction transfer standard,		
current comparator,	10 μA to 100 μA	0.030 nA to 0.30 nA
current transducer,	Above 0.1 mA to 1 mA	0.30 nA to 3.0 nA
dedicated equipment for heavy	Above 1 mA to 10 mA	3.0 nA to 30 nA
current measurement	Above 10 mA to 100 mA	30 nA to 0.30 μA
	Above 0.1 A to 1 A	1.0 μA to 10 μΑ
	Calibration for DC current	
	by direct measurement using multi-function	
	calibrator in accordance with in-house procedure	
	TPL038 over the following ranges:	
	100 μA to 200 μA	15 nA to 30 nA
	Above 0.2 mA to 2 mA	20 nA to 0.20 μA
	Above 2 mA to 20 mA	0.20 μA to 2.0 μA
	Above 20 mA to 200 mA	2.0 μA to 20 μA
	Above 0.2 A to 2 A	40 μA to 0.40 mA
	On-site calibration for DC current	
	by direct measurement using multi-function	
	calibrator in accordance with in-house procedure	
	TPL038 over the following ranges:	
	100 μΑ to 200 μΑ	15 nA to 30 nA
	Above 0.2 mA to 2 mA	20 nA to 0.20 μA
	Above 2 mA to 20 mA	0.20 μA to 2.0 μA
	Above 20 mA to 200 mA	2.0 μA to 20 μA
	Above 200 mA to 2 A	40 μA to 0.40 mA

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Electrical measurements and magnetism		
DC & LF measurements		
- DC current meter, clamp meter	Calibration for DC current in accordance with in-house procedure TPL146 over the following ranges:	
	100 A to 400 A	1.2 A
	Above 400 A to 600 A	2.0 A
	Above 600 A to 1000 A	3.0 A
	On-site calibration for DC current in accordance with in-house procedure TPL146	
	over the following ranges:	
	100 A to 400 A	1.2 A
	Above 400 A to 600 A	2.0 A
	Above 600 A to 1000 A	3.0 A

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Electrical measurements and magnetism		
- DC & LF measurements		
- DC power source	On-site calibration for DC power in accordance with in-house procedure TPD081 over the following range:	
	Voltage: 1 V to 1 kV Current: 0.1 A to 100 A Power: 0.1 W to 20 kW	30 μW/W
	Calibration for DC power in accordance with in-house procedure TPD081 over the following range:	
	Voltage: 1 V to 1 kV Current: 0.1 A to 100 A Power: 0.1 W to 20 kW	30 μW/W
- DC power meter	Calibration for DC power in accordance with in-house procedure TPD080 over the following ranges:	
	Voltage: 1 V to 1 kV Current: 0.1 A to 100 A Power: 0.1 W to 1 W Above 1 W to 10 kW Above 10 kW to 20 kW	70 μW 70 μW to 0.70 W 0.70 W

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Electrical measurements and magnetism		
DC & LF measurements		
- AC high voltage source: AC high voltage generator	Calibration for AC voltage at 50 Hz in accordance with in-house procedure TPD103 over the following ranges:	
	1 kV to 11 kV	0.26 V to 2.9 V
	Calibration for AC voltage at 50 Hz in accordance with in-house procedure TPD105 over the following ranges:	
	Above 11 kV to 30 kV Above 30 kV to 44 kV	5.1 V to 14 V 26 V to 38 V
- AC high voltage meter: AC high voltage meters, dedicated setup for high voltage measurement	Calibration for AC voltage at 50 Hz in accordance with in-house procedure TPD103 over the following ranges:	
	1 kV to 11 kV	0.26 V to 2.9 V
	Calibration for AC voltage at 50 Hz in accordance with in-house procedure TPD105 over the following ranges:	
	Above 11 kV to 30 kV Above 30 kV to 44 kV	5.1 V to 14 V 27 V to 40 V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage in accordance with in-house procedure TPL017 at the following values:	
	40 Hz, 1 kHz, 10 kHz, 20 kHz 0.1 mV 0.2 mV 0.5 mV 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 50 kHz 0.1 mV 0.2 mV 0.5 mV	3000 μV/V 1000 μV/V 1000 μV/V 300 μV/V 200 μV/V 60 μV/V 40 μV/V 20 μV/V 13 μV/V 13 μV/V 13 μV/V 1000 μV/V
	1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV	300 μV/V 200 μV/V 120 μV/V 40 μV/V 40 μV/V 30 μV/V 19 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage in accordance with in-house procedure TPL017 at the following values or over the following ranges:	
	100 kHz 0.1 mV 0.2 mV 0.5 mV 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV	4000 μV/V 4000 μV/V 4000 μV/V 400 μV/V 400 μV/V 340 μV/V 70 μV/V 70 μV/V 60 μV/V 48 μV/V 48 μV/V
	40 Hz to 20 kHz 0.1 mV to 1 mV Above 1 mV to 10 mV Above 10 mV to 250 mV	3000 μV/V 300 μV/V 70 μV/V
	20 kHz to 50 kHz 0.1 mV to 1 mV Above 1 mV to 10 mV Above 10 mV to 250 mV	3000 μV/V 300 μV/V 110 μV/V
	50 kHz to 100 kHz 0.1 mV to 1 mV Above 1 mV to 10 mV Above 10 mV to 250 mV	4000 μV/V 500 μV/V 220 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	On-site calibration for AC voltage in accordance with in-house procedure TPL017 over the following ranges:	
	40 Hz to 20 kHz 0.1 mV to 1 mV Above 1 mV to 10 mV Above 10 mV to 250 mV 20 kHz to 50 kHz 0.1 mV to 1 mV	3000 μV/V 300 μV/V 70 μV/V
	Above 1 mV to 10 mV Above 10 mV to 250 mV	300 μV/V 110 μV/V
	50 kHz to 100 kHz 0.1 mV to 1 mV Above 1 mV to 10 mV Above 10 mV to 250 mV	4000 μV/V 500 μV/V 220 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL023 at the following values:	
	20 Hz 0.5 V	14 μV/V
	1 V 2 V	14 µV/V 10 µV/V 12 µV/V
	3 V 5 V	11 μV/V 10 μV/V
	10 V 20 V	12 μV/V 14 μV/V
	50 V 100 V 200 V	13 μV/V 12 μV/V 13 μV/V
	500 V	18 μV/V
	40 Hz 0.5 V	13 μV/V
	1 V 2 V 3 V	10 μV/V 11 μV/V 12 μV/V
	5 V 5 V 10 V	12 µV/V 10 µV/V 13 µV/V
	20 V 50 V	12 μV/V 13 μV/V
	100 V 200 V	13 μV/V 16 μV/V
	500 V 700 V 1000 V	18 μV/V 20 μV/V 20 μV/V
	1000 V	20 μ τ// τ

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL023 at the following values:	
	1 kHz 0.5 V	13 μV/V
	1 V 2 V	10 μV/V 13 μV/V
	3 V 5 V	10 μV/V 10 μV/V
	10 V 20 V 50 V	12 μV/V 12 μV/V 12 μV/V
	100 V 200 V	12 μV/V 13 μV/V
	500 V 700 V 1000 V	17 μV/V 18 μV/V 13 μV/V
	10 kHz	13 μν/ ν
	0.5 V 1 V	12 μV/V 10 μV/V
	2 V 3 V 5 V	10 μV/V 10 μV/V 10 μV/V
	10 V 20 V	13 μV/V 14 μV/V
	50 V 100 V 200 V	12 μV/V 12 μV/V 13 μV/V
	500 V 700 V	16 μV/V 19 μV/V
	1000 V	16 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage	
The voltage generator/source	by comparison with AC/DC thermal converter	
	in accordance with in-house procedure TPL023	
	at the following values:	
	20 kHz	
	0.5 V	15 μV/V
	1 V	$10 \mu\text{V/V}$
	2 V	$10 \mu\text{V/V}$
	3 V	$10 \mu\text{V/V}$
	5 V	$10 \mu\text{V/V}$
	10 V	12 μV/V
	20 V	12 μV/V
	50 V	$12 \mu V/V$
	100 V	12 μV/V
	200 V	19 μV/V
	500 V	22 μV/V
	700 V	$30 \mu V/V$
	1000 V	28 μV/V
	30 kHz	
	100 V	12 μV/V
	200 V	19 μV/V
	500 V	$30 \mu V/V$
	700 V	36 μV/V
	1000 V	37 μV/V
	50 kHz	
	0.5 V	$14 \mu V/V$
	1 V	12 μV/V
	2 V	11 μV/V
	3 V	11 μV/V
	5 V	11 μV/V
	10 V	12 μV/V
	20 V	12 μV/V
	50 V	12 μV/V
	100 V	13 μV/V
	200 V	24 μV/V
	500 V	$34 \mu V/V$
	700 V	45 μV/V

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electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL023 at the following values:	
	100 kHz	
	0.5 V	18 μV/V
	1 V	15 μV/V
	2 V	14 μV/V
	3 V	12 μV/V
	5 V	12 μV/V
	10 V	12 μV/V
	20 V	13 μV/V
	50 V	16 μV/V
	100 V	16 μV/V
	200 V	44 μV/V
	500 V	65 μV/V
	700 V	85 μV/V
	300 kHz	
	0.5 V	42 μV/V
	1 V	32 μV/V
	2 V	28 μV/V
	3 V	25 μV/V
	5 V	22 μV/V
	10 V	22 μV/V
	20 V	23 μV/V
	500 kHz	
	0.5 V	160 μV/V
	1 V	150 μV/V
	2 V	150 μV/V
	3 V	150 μV/V
	5 V	150 μV/V
	10 V	150 μV/V
	20 V	150 μV/V

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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL023 at the following values or over the following ranges:	
	1 MHz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V	500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V
	40 Hz to 20 kHz 0.2 V to 1000 V	70 μV/V to 90 μV/V
	20 kHz to 50 kHz 0.2 V to 1000 V	90 μV/V to 130 μV/V
	50 kHz to 100 kHz 0.2 V to 700 V	170 μV/V to 400 μV/V
	100 kHz to 300 kHz 0.2 V to 0.6 V Above 0.6 V to 20 V	900 μV/V 230 μV/V
	300 kHz to 500 kHz 0.2 V to 0.6 V Above 0.6 V to 6 V Above 6 V to 20 V	1700 μV/V 500 μV/V 600 μV/V
	500 kHz to 1 MHz 0.2 V to 0.6 V Above 0.6 V to 20 V	2900 μV/V 1200 μV/V

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

^{*} The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values:	
	20 Hz 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 40 Hz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V	15 μV/V 13 μV/V 15 μV/V 15 μV/V 12 μV/V 13 μV/V 14 μV/V 22 μV/V 18 μV/V 20 μV/V 18 μV/V 500 μV/V 300 μV/V 50 μV/V 30 μV/V 35 μV/V 15 μV/V 15 μV/V 15 μV/V
	1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V 1000 V	11 µV/V 13 µV/V 12 µV/V 13 µV/V 14 µV/V 15 µV/V 16 µV/V 18 µV/V 20 µV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values:	
	1 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV	500 μV/V 300 μV/V 100 μV/V 50 μV/V 30 μV/V
	100 mV 200 mV 0.5 V 1 V 2 V 5 V	15 μV/V 15 μV/V 15 μV/V 11 μV/V 13 μV/V 12 μV/V
	10 V 20 V 50 V 100 V 200 V	13 μV/V 14 μV/V 15 μV/V 18 μV/V 16 μV/V
	500 V 700 V 1000 V	18 μV/V 20 μV/V 20 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values:	
	1 mV 2 mV 5 mV 10 mV	500 μV/V 300 μV/V 100 μV/V 50 μV/V
	20 mV 50 mV 100 mV 200 mV	30 μV/V 30 μV/V 15 μV/V 15 μV/V
	0.5 V 1 V 2 V 5 V	15 μV/V 11 μV/V 13 μV/V 12 μV/V
	10 V 20 V 50 V	13 μV/V 16 μV/V 16 μV/V
	100 V 200 V 500 V	18 µV/V 16 µV/V 18 µV/V
	700 V 1000 V	20 μV/V 20 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values:	
	20 kHz 1 mV 2 mV	500 μV/V 300 μV/V
	5 mV 10 mV 20 mV 50 mV	100 μV/V 50 μV/V 30 μV/V 30 μV/V
	100 mV 200 mV 0.5 V	15 µV/V 15 µV/V 15 µV/V
	1 V 2 V 5 V	11 μV/V 13 μV/V 12 μV/V
	10 V 20 V 50 V	13 μV/V 14 μV/V 15 μV/V
	100 V 200 V 500 V 700 V	18 μV/V 20 μV/V 25 μV/V 30 μV/V
	1000 V 30 kHz	30 μV/V
	100 V 200 V 500 V	18 μV/V 20 μV/V 30 μV/V
	700 V 1000 V	40 μV/V 42 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values:	
	1 mV 2 mV 5 mV 10 mV	500 μV/V 300 μV/V 200 μV/V 80 μV/V
	20 mV 50 mV 100 mV	50 μV/V 40 μV/V 25 μV/V
	200 mV 0.5 V 1 V 2 V	25 μV/V 15 μV/V 13 μV/V 13 μV/V
	5 V 10 V 20 V	12 μV/V 15 μV/V 14 μV/V
	50 V 100 V 200 V	15 μV/V 20 μV/V 25 μV/V
	500 V 700 V	40 μV/V 50 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values:	
	100 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V	600 μV/V 500 μV/V 400 μV/V 100 μV/V 100 μV/V 60 μV/V 60 μV/V 20 μV/V 20 μV/V 15 μV/V 15 μV/V 18 μV/V 20 μV/V 30 μV/V 40 μV/V
	500 V 300 kHz 0.5 V 1 V 2 V 3 V 5 V 10 V	100 μV/V 45 μV/V 40 μV/V 40 μV/V 40 μV/V 40 μV/V 40 μV/V 40 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values or over the following ranges:	
	500 kHz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V	160 μV/V 150 μV/V 150 μV/V 150 μV/V 150 μV/V 150 μV/V
	1 MHz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V	500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V
	40 Hz to 20 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 200 mV to 600 mV Above 0.6 V to 1000 V	2000 μV/V to 1300 μV/V 1000 μV/V to 500 μV/V 380 μV/V to 210 μV/V 170 μV/V to 110 μV/V 75 μV/V to 70 μV/V 40 μV/V to 90 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 over the following ranges:		
20 kHz to 50 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 200 V Above 200 V to 700 V	$3300 \mu\text{V/V}$ to $2100 \mu\text{V/V}$ $1700 \mu\text{V/V}$ to $850 \mu\text{V/V}$ $630 \mu\text{V/V}$ to $360 \mu\text{V/V}$ $270 \mu\text{V/V}$ to $190 \mu\text{V/V}$ $120 \mu\text{V/V}$ to $110 \mu\text{V/V}$ $90 \mu\text{V/V}$ to $130 \mu\text{V/V}$ $150 \mu\text{V/V}$	
20 kHz to 30 kHz 700 V to 1000 V	150 μV/V	
50 kHz to 100 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 200 V Above 200 V to 600 V	$4300~\mu\text{V/V}~to~2900~\mu\text{V/V}$ $2200~\mu\text{V/V}~to~1200~\mu\text{V/V}$ $840~\mu\text{V/V}~to~510~\mu\text{V/V}$ $450~\mu\text{V/V}~to~350~\mu\text{V/V}$ $240~\mu\text{V/V}~to~200~\mu\text{V/V}$ $170~\mu\text{V/V}~to~400~\mu\text{V/V}$ $580~\mu\text{V/V}$	
100 kHz to 300 kHz 0.2 V to 20 V	230 μV/V to 270 μV/V	
300 kHz to 500 kHz 0.2 V to 20 V	500 μV/V	
500 kHz to 1 MHz 0.2 V to 2 V Above 2 V to 20 V	1200 μV/V 1400 μV/V	
	PROPERTY MEASURED®特性® 特定測試或量度的特性® Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 over the following ranges: 20 kHz to 50 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 20 mV to 60 mV Above 20 mV to 60 mV Above 200 mV to 200 V Above 200 v to 700 V 20 kHz to 30 kHz 700 V to 1000 V 50 kHz to 100 kHz 1 mV to 2 mV Above 20 mV to 60 mV Above 200 V to 600 V 100 kHz to 300 kHz 0.2 V to 20 V 300 kHz to 500 kHz 0.2 V to 20 V	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	On-site calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 at the following values and ranges:	
	40 Hz to 20 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 0.6 V to 1000 V	2000 μV/V to 1300 μV/V 1000 μV/V to 500 μV/V 380 μV/V to 210 μV/V 170 μV/V to 110 μV/V 75 μV/V to 70 μV/V 40 μV/V to 90 μV/V
	20 kHz to 50 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 200 V Above 200 V to 700 V	$3300~\mu V/V~to~2100~\mu V/V$ $1700~\mu V/V~to~850~\mu V/V$ $630~\mu V/V~to~360~\mu V/V$ $270~\mu V/V~to~190~\mu V/V$ $120~\mu V/V~to~110~\mu V/V$ $90~\mu V/V~to~130~\mu V/V$ $150~\mu V/V$
	20 kHz to 30 kHz 700 V to 1000 V	150 μV/V
	50 kHz to 100 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 200 V Above 200 V to 600 V	$4300 \mu \text{V/V}$ to $2900 \mu \text{V/V}$ $2200 \mu \text{V/V}$ to $1200 \mu \text{V/V}$ $840 \mu \text{V/V}$ to $510 \mu \text{V/V}$ $450 \mu \text{V/V}$ to $350 \mu \text{V/V}$ $240 \mu \text{V/V}$ to $200 \mu \text{V/V}$ $170 \mu \text{V/V}$ to $400 \mu \text{V/V}$ $580 \mu \text{V/V}$

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	On-site calibration for AC voltage by direct measurement in accordance with in-house procedure TPL030 over the following ranges: 100 kHz to 300 kHz	
	0.2 V to 20 V 300 kHz to 500 kHz 0.2 V to 20 V	$230~\mu\text{V/V}$ to $270~\mu\text{V/V}$ $500~\mu\text{V/V}$
	500 kHz to 1 MHz 0.2 V to 2 V Above 2 V to 20 V	1200 μV/V 1400 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values:	
	20 Hz 0.5 V 1 V	20 μV/V 20 μV/V
	2 V 5 V 10 V 20 V	20 μV/V 20 μV/V 20 μV/V 20 μV/V
	50 V 100 V 200 V 500 V	20 μV/V 20 μV/V 20 μV/V 30 μV/V
	40 Hz 1 mV	500 μV/V
	2 mV 5 mV 10 mV	400 μV/V 200 μV/V 100 μV/V
	20 mV 50 mV 100 mV	60 μV/V 40 μV/V 30 μV/V
	200 mV 0.5 V 1 V	30 μV/V 15 μV/V 13 μV/V
	2 V 5 V 10 V	14 μV/V 13 μV/V 15 μV/V
	20 V 50 V 100 V	13 μV/V 15 μV/V 16 μV/V
	200 V 500 V 700 V	16 μV/V 20 μV/V 20 μV/V
	1000 V	21 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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SPECIFIC TEST OR PROPERTY MEASURED®	CALIBRATION AND MEASUREMENT
特定測試或量度的特性 [®]	CAPABILITY (CMC)* 校準和測量能力*
Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values: 1 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V 1000 V	500 μV/V 400 μV/V 200 μV/V 100 μV/V 60 μV/V 30 μV/V 30 μV/V 13 μV/V 13 μV/V 13 μV/V 13 μV/V 14 μV/V 15 μV/V 15 μV/V 20 μV/V 20 μV/V 20 μV/V
	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values: 1 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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	Calibration Services 校正服務		
SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*		
Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values: 10 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V 1000 V	500 μV/V 400 μV/V 200 μV/V 100 μV/V 60 μV/V 30 μV/V 30 μV/V 13 μV/V 13 μV/V 14 μV/V 15 μV/V 15 μV/V 15 μV/V 15 μV/V 25 μV/V 25 μV/V 25 μV/V		
	PROPERTY MEASURED [®] 特定測試或量度的特性 [®] Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values: 10 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V		

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values:	
	20 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V	500 μV/V 400 μV/V 200 μV/V 100 μV/V 60 μV/V 40 μV/V 30 μV/V 30 μV/V 15 μV/V 13 μV/V 13 μV/V 14 μV/V 13 μV/V 15 μV/V 16 μV/V 17 μV/V 18 μV/V 19 μV/V 19 μV/V 19 μV/V 19 μV/V
	1000 V 30 kHz 100 V 200 V 500 V 700 V 1000 V	35 μV/V 16 μV/V 19 μV/V 40 μV/V 50 μV/V 45 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values: 50 kHz 1 mV 2 mV 5 mV 10 mV 20 mV 50 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V	700 μV/V 500 μV/V 200 μV/V 150 μV/V 80 μV/V 50 μV/V 50 μV/V 15 μV/V 15 μV/V 15 μV/V 15 μV/V 15 μV/V 20 μV/V 20 μV/V 20 μV/V 20 μV/V 20 μV/V 21 μV/V

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values:	
	100 kHz 1 mV	700 μV/V
	2 mV 5 mV 10 mV,	500 μV/V 300 μV/V 200 μV/V
	20 mV 50 mV 100 mV	100 μV/V 100 μV/V 100 μV/V
	200 mV 0.5 V 1 V	100 μV/V 30 μV/V 20 μV/V
	2 V 5 V 10 V	20 μV/V 20 μV/V 20 μV/V
	20 V 50 V 100 V	20 μV/V 30 μV/V 31 μV/V
	200 V 500 V	44 μV/V 200 μV/V
	300 kHz 0.5 V 1 V	70 μV/V 70 μV/V
	2 V 5 V	70 μV/V 60 μV/V
	10 V 20 V	60 μV/V 60 μV/V
	500 kHz 0.5 V 1 V	200 μV/V 200 μV/V
	2 V 5 V	200 μV/V 200 μV/V
	10 V 20 V	200 μV/V 200 μV/V

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Calibration Services 校正服務		
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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement in accordance with in-house procedure TPL036 at the following values or over the following ranges:	
	1 MHz 0.5 V 1 V 2 V 5 V 10 V 20 V	500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V 500 μV/V
	40 Hz to 20 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 200 mV to 600 mV Above 200 V to 1000 V	2000 μV/V 1000 μV/V 380 μV/V 160 μV/V 70 μV/V 50 μV/V 40 μV/V 50 μV/V
	20 kHz to 50 kHz 1 mV to 2 mV Above 2 mV to 6 mV Above 6 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 200 V Above 200 V to 700 V	3200 μV/V 1600 μV/V 620 μV/V 260 μV/V 120 μV/V 90 μV/V
	20 kHz to 30 kHz 700 V to 1000 V	150 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	Calibration for AC voltage by direct measurement	
	in accordance with in-house procedure TPL036 over the following ranges:	
	50 kHz to 100 kHz	
	1 mV to 2 mV	4200 μV/V
	Above 2 mV to 6 mV	2100 μV/V
	Above 6 mV to 20 mV	830 μV/V
	Above 20 mV to 60 mV	440 μV/V
	Above 60 mV to 200 mV	230 μV/V
	Above 200 mV to 200 V	170 μV/V
	Above 200 V to 600 V	570 μV/V
	100 kHz to 300 kHz	
	0.2 V to 20 V	230 μV/V
	300 kHz to 500 kHz	
	0.2 V to 20 V	500 μV/V
	500 kHz to 1 MHz	
	0.2 V to 2 V	1200 μV/V
	Above 2 V to 20 V	1400 μV/V
	On-site calibration for AC voltage	
	by direct measurement	
	in accordance with in-house procedure TPL036	
	over the following ranges:	
	40 Hz to 20 kHz	
	1 mV to 2 mV	2000 μV/V
	Above 2 mV to 6 mV	1000 μV/V
	Above 6 mV to 20 mV	380 μV/V
	Above 20 mV to 60 mV	160 μV/V
	Above 60 mV to 200 mV	70 μV/V
	Above 200 mV to 600 mV	50 μV/V
	Above 0.6 V to 200 V	40 μV/V
	Above 200 V to 1000 V	50 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC voltage generator/source	On-site calibration for AC voltage	
	by direct measurement	
	in accordance with in-house procedure TPL036	
	over the following ranges:	
	20 kHz to 50 kHz	
	1 mV to 2 mV	3200 μV/V
	Above 2 mV to 6 mV	1600 μV/V
	Above 6 mV to 20 mV	620 μV/V
	Above 20 mV to 60 mV	260 μV/V
	Above 60 mV to 200 mV	120 μV/V
	Above 200 mV to 200 V	90 μV/V
	Above 200 V to 700 V	$150 \mu\text{V/V}$
	20 kHz to 30 kHz	
	700 V to 1000 V	150 μV/V
	50 kHz to 100 kHz	
	1 mV to 2 mV	4200 μV/V
	Above 2 mV to 6 mV	2100 μV/V
	Above 6 mV to 20 mV	830 μV/V
	Above 20 mV to 60 mV	440 μV/V
	Above 60 mV to 200 mV	230 μV/V
	Above 200 mV to 200 V	170 μV/V
	Above 200 V to 600 V	570 μV/V
	100 kHz to 300 kHz	
	0.2 V to 20 V	230 μV/V
	300 kHz to 500 kHz	
	0.2 V to 20 V	500 μV/V
	500 kHz to 1 MHz	
	0.2 V to 2 V	1200 μV/V
	Above 2 V to 20 V	1400 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL033 at the following values:	
	20 Hz 0.5 V	15 μV/V
	1 V 2 V 5 V	11 μV/V 13 μV/V 11 μV/V
	10 V 20 V 50 V	13 μV/V 14 μV/V 13 μV/V
	100 V 200 V 500 V	15 μV/V 16 μV/V 18 μV/V
	40 Hz 0.5 V	15 μV/V
	1 V 2 V	11 μV/V 13 μV/V
	5 V 10 V 20 V 50 V	11 μV/V 13 μV/V 14 μV/V 13 μV/V
	100 V 200 V 500 V	15 μV/V 16 μV/V 18 μV/V
	700 V 1000 V	20 μV/V 20 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL033 at the following values:	
	1 kHz	
	0.5 V 1 V	15 μV/V 11 μV/V
	2 V 5 V	13 μV/V 11 μV/V
	10 V 20 V 50 V	13 μV/V 14 μV/V 13 μV/V
	100 V 200 V	15 µV/V 16 µV/V
	500 V 700 V	18 μV/V 20 μV/V
	1000 V	15 μV/V
	10 kHz 0.5 V	15 μV/V
	1 V 2 V	11 μV/V 13 μV/V
	5 V 10 V	11 μV/V 13 μV/V
	20 V 50 V 100 V	14 μV/V 13 μV/V 15 μV/V
	200 V 500 V	16 μV/V 18 μV/V
	700 V 1000 V	20 μV/V 20 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
The volumeter	by comparison with AC/DC thermal converter	
	in accordance with in-house procedure TPL033	
	at the following values:	
	20 kHz	
	0.5 V	15 μV/V
	1 V	11 μV/V
	2 V	13 μV/V
	5 V	11 μV/V
	10 V	13 μV/V
	20 V	14 μV/V
	50 V	13 μV/V
	100 V	15 μV/V
	200 V	20 μV/V
	500 V	25 μV/V
	700 V	30 μV/V
	1000 V	30 μV/V
	30 kHz	
	100 V	15 μV/V
	200 V	20 μV/V
	500 V	30 μV/V
	700 V	40 μV/V
	1000 V	$40~\mu\text{V/V}$
	50 kHz	
	0.5 V	15 μV/V
	1 V	12 μV/V
	2 V	13 μV/V
	5 V	12 μV/V
	10 V	13 μV/V
	20 V	14 μV/V
	50 V	13 μV/V
	100 V	20 μV/V
	200 V	25 μV/V
	500 V	$40 \mu V/V$
	700 V	50 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC/DC thermal converter in accordance with in-house procedure TPL033 at the following values:	
	100 kHz	
	0.5 V	20 μV/V
	1 V	15 μV/V
	2 V	15 μV/V
	5 V	15 μV/V
	10 V	15 μV/V
	20 V	15 μV/V
	50 V	20 μV/V
	100 V	30 μV/V
	200 V	45 μV/V
	500 V	100 μV/V
	300 kHz	
	0.5 V	45 μV/V
	1 V	$40 \mu\text{V/V}$
	2 V	$40 \mu\text{V/V}$
	5 V	$40 \mu\text{V/V}$
	10 V	$40 \mu V/V$
	20 V	40 μV/V
	500 kHz	
	0.5 V	65 μV/V
	1 V	50 μV/V
	2 V	50 μV/V
	5 V	50 μV/V
	10 V	50 μV/V
	20 V	50 μV/V
	1 MHz	
	0.5 V	200 μV/V
	1 V	200 μV/V
	2 V	200 μV/V
	5 V	200 μV/V
	10 V	200 μV/V
	20 V	200 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL034 at the following values:	
	20 Hz 0.5 V	18 μV/V
	1 V 2 V	14 µV/V 16 µV/V
	5 V 10 V	14 μV/V 16 μV/V
	20 V 50 V 100 V	17 μV/V 16 μV/V 18 μV/V
	200 V 500 V	18 µV/V 18 µV/V 20 µV/V
	40 Hz	
	10 mV 100 mV	100 μV/V 30 μV/V
	200 mV 0.5 V 1 V	30 μV/V 18 μV/V 14 μV/V
	2 V 5 V	16 µV/V 14 µV/V
	10 V 20 V	16 μV/V 17 μV/V
	50 V 100 V 200 V	16 μV/V 18 μV/V 18 μV/V
	500 V 700 V	20 μV/V 23 μV/V
	1000 V	22 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
Ne volumeter	by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL034	
	at the following values:	
	1 kHz	
	10 mV	$100 \mu V/V$
	100 mV	$30 \mu V/V$
	200 mV	$30 \mu V/V$
	0.5 V	18 μV/V
	1 V	$14 \mu V/V$
	2 V	16 μV/V
	5 V	14 μV/V
	10 V	16 μV/V
	20 V	17 μV/V
	50 V	16 μV/V
	100 V	18 μV/V
	200 V	18 μV/V
	500 V	$20 \mu V/V$
	700 V	23 μV/V
	1000 V	18 μV/V
	10 kHz	
	10 mV	100 μV/V
	100 mV	$30 \mu V/V$
	200 mV	$30 \mu V/V$
	0.5 V	18 μV/V
	1 V	14 μV/V
	2 V	16 μV/V
	5 V	14 μV/V
	10 V	$16 \mu V/V$
	20 V	17 μV/V
	50 V	$16 \mu\text{V/V}$
	100 V	$18 \mu V/V$
	200 V	$18 \mu V/V$
	500 V	$20~\mu V/V$
	700 V	23 μV/V
	1000 V	22 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL034 at the following values:	
	20 kHz 10 mV	100 μV/V
	100 mV 200 mV 0.5 V	30 μV/V 30 μV/V 18 μV/V
	1 V 2 V 5 V	14 μV/V 16 μV/V 14 μV/V
	10 V 20 V 50 V	16 μV/V 17 μV/V 16 μV/V
	100 V 200 V	18 μV/V 22 μV/V
	500 V 700 V 1000 V	28 μV/V 33 μV/V 32 μV/V
	30 kHz 100 V	18 μV/V
	200 V 500 V 700 V	22 μV/V 32 μV/V 43 μV/V
	1000 V	42 μV/V

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Electrical measurements and magnetism		
DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL034 at the following values:	
	50 kHz	
	10 mV	150 μV/V
	100 mV	50 μV/V
	200 mV	50 μV/V
	0.5 V	18 μV/V
	1 V	15 μV/V
	2 V	16 μV/V
	5 V	16 μV/V
	10 V	16 μV/V
	20 V	17 μV/V
	50 V	16 μV/V
	100 V	22 μV/V
	200 V	27 μV/V
	500 V	42 μV/V
	700 V	52 μV/V
	100 kHz	
	10 mV	200 μV/V
	100 mV	100 μV/V
	200 mV	100 μV/V
	0.5 V	22 μV/V
	1 V	18 μV/V
	2 V	18 μV/V
	5 V	18 μV/V
	10 V	18 μV/V
	20 V	18 μV/V
	50 V	22 μV/V
	100 V	32 μV/V
	200 V	45 μV/V
	500 V	110 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL034 at the following values:	
	300 kHz 0.5 V 1 V 2 V 5 V 10 V 20 V	48 μV/V 46 μV/V 46 μV/V 44 μV/V 43 μV/V 43 μV/V
	500 kHz 0.5 V 1 V 2 V 5 V 10 V 20 V	92 μV/V 90 μV/V 85 μV/V 80 μV/V 90 μV/V
	1 MHz 0.5 V 1 V 2 V 5 V 10 V 20 V	320 μV/V 320 μV/V 320 μV/V 320 μV/V 320 μV/V 320 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL037 at the following values:	
	20 Hz 0.5 V	20 μV/V
	1 V 2 V 5 V	20 μV/V 20 μV/V 20 μV/V
	10 V 20 V 50 V	20 μV/V 20 μV/V 20 μV/V
	100 V 200 V 500 V	20 μV/V 20 μV/V 30 μV/V
	40 Hz 10 mV	100 μV/V
	100 mV 200 mV 0.5 V	30 μV/V 30 μV/V 15 μV/V
	1 V 2 V 5 V	13 μV/V 14 μV/V 13 μV/V
	10 V 20 V 50 V	15 μV/V 14 μV/V 15 μV/V
	100 V 200 V 500 V	16 μV/V 16 μV/V 20 μV/V
	700 V 1000 V	20 μV/V 21 μV/V

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Electrical measurements and magnetism		
-		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
	by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL037	
	at the following values:	
	1 kHz	
	10 mV	100 μV/V
	100 mV	30 μV/V
	200 mV	30 μV/V
	0.5 V	15 μV/V
	1 V	13 μV/V
	2 V	13 μV/V
	5 V	13 μV/V
	10 V	14 μV/V
	20 V	$14 \mu V/V$
	50 V	15 μV/V
	100 V	16 μV/V
	200 V	16 μV/V
	500 V	$20~\mu V/V$
	700 V	20 μV/V
	1000 V	20 μV/V
	10 kHz	
	10 mV	100 μV/V
	100 mV	$30 \mu V/V$
	200 mV	30 μV/V
	0.5 V	15 μV/V
	1 V	13 μV/V
	2 V	13 μV/V
	5 V	13 μV/V
	10 V	14 μV/V
	20 V	14 μV/V
	50 V	15 μV/V
	100 V	16 μV/V
	200 V	16 μV/V
	500 V	25 μV/V
	700 V	25 μV/V
	1000 V	25 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL037 at the following values:	
	20 kHz 10 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V	100 μV/V 30 μV/V 30 μV/V 15 μV/V 13 μV/V 13 μV/V 14 μV/V 14 μV/V 15 μV/V 16 μV/V 20 μV/V 35 μV/V
	1000 V 30 kHz 100 V 200 V 500 V 700 V 1000 V	35 μV/V 16 μV/V 20 μV/V 40 μV/V 50 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL037 at the following values:	
	50 kHz 10 mV	150 μV/V
	100 mV 200 mV	50 μV/V 50 μV/V
	0.5 V 1 V 2 V	15 μV/V 15 μV/V 15 μV/V
	5 V 10 V	15 μV/V 14 μV/V
	20 V 50 V 100 V	15 μV/V 20 μV/V 20 μV/V
	200 V 500 V	25 μV/V 80 μV/V
	700 V 100 kHz	100 μV/V
	10 mV 100 mV 200 mV	200 μV/V 100 μV/V 100 μV/V
	0.5 V 1 V 2 V	30 μV/V 20 μV/V 20 μV/V
	5 V 10 V	20 μV/V 20 μV/V
	20 V 50 V 100 V	20 μV/V 30 μV/V 31 μV/V
	200 V 500 V	45 μV/V 200 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL037 at the following values:	
	300 kHz 0.5 V 1 V 2 V 5 V 10 V 20 V	70 μV/V 70 μV/V 70 μV/V 60 μV/V 60 μV/V 60 μV/V
	500 kHz 0.5 V 1 V 2 V 5 V 10 V 20 V	200 μV/V 200 μV/V 200 μV/V 200 μV/V 200 μV/V 200 μV/V
	1 MHz 0.5 V 1 V 2 V 5 V 10 V 20 V	400 μV/V 400 μV/V 400 μV/V 400 μV/V 400 μV/V 400 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
	by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL037	
	at the following values:	
	40 Hz to 20 kHz	
	10 mV to 20 mV	380 μV/V
	Above 20 mV to 60 mV	170 μV/V
	Above 60 mV to 200 mV	80 μV/V
	Above 200 mV to 600 mV	50 μV/V
	Above 0.6 V to 200 V	40 μV/V
	Above 200 V to 1000 V	50 μV/V
	20 kHz to 50 kHz	
	10 mV to 20 mV	630 μV/V
	Above 20 mV to 60 mV	270 μV/V
	Above 60 mV to 200 mV	120 μV/V
	Above 200 mV to 1000 V	170 μV/V
	50 kHz to 100 kHz	
	10 mV to 20 mV	840 μV/V
	Above 20 mV to 60 mV	450 μV/V
	Above 60 mV to 200 mV	240 μV/V
	Above 200 mV to 200 V	170 μV/V
	Above 200 V to 600 V	570 μV/V
	100 kHz to 300 kHz	
	0.2 V to 20 V	230 μV/V
	300 kHz to 500 kHz	
	0.2 V to 20 V	500 μV/V
	500 kHz to 1 MHz	1200 1/4/
	0.2 V to 0.6 V	1200 μV/V
	Above 0.6 V to 2 V	1100 μV/V
	Above 2 V to 20 V	1400 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	On-site calibration for AC voltage	
	by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL037	
	over the following ranges:	
	40 Hz to 20 kHz	
	10 mV to 20 mV	$380~\mu V/V$
	Above 20 mV to 60 mV	170 μV/V
	Above 60 mV to 200 mV	$80 \mu V/V$
	Above 200 mV to 600 mV	50 μV/V
	Above 0.6 V to 200 V	40 μV/V
	Above 200 V to 1000 V	50 μV/V
	20 kHz to 50 kHz	
	10 mV to 20 mV	630 μV/V
	Above 20 mV to 60 mV	270 μV/V
	Above 60 mV to 200 mV	120 μV/V
	Above 200 mV to 1000 V	170 μV/V
	50 kHz to 100 kHz	
	10 mV to 20 mV	840 μV/V
	Above 20 mV to 60 mV	450 μV/V
	Above 60 mV to 200 mV	240 μV/V
	Above 200 mV to 200 V	170 μV/V
	Above 200 V to 600 V	570 μV/V
	100 kHz to 300 kHz	
	0.2 V to 20 V	$230 \mu V/V$
	300 kHz to 500 kHz	
	0.2 V to 20 V	500 μV/V
	500 kHz to 1 MHz	1000 1101
	0.2 V to 0.6 V	1200 μV/V
	Above 0.6 V to 2 V	1100 μV/V
	Above 2 V to 20 V	1400 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Calibration for AC voltage by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values:		
20 Hz 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V	30 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V	
500 V 40 Hz, 1 kHz, 10 kHz 10 mV 100 mV 200 mV 0.5 V 1 V	50 μV/V 300 μV/V 50 μV/V 50 μV/V 30 μV/V 30 μV/V	
5 V 10 V 20 V 50 V 100 V 200 V 500 V	30 µV/V 30 µV/V 30 µV/V 30 µV/V 30 µV/V 30 µV/V 50 µV/V 50 µV/V	
1000 V	50 μV/V	
	SPECIFIC TEST OR PROPERTY MEASURED®特定测試或量度的特性® Calibration for AC voltage by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values: 20 Hz 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 40 Hz, 1 kHz, 10 kHz 10 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 2 OV 5 OV	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values: 20 kHz 10 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V 1000 V 30 kHz 100 V 200 V 500 V 700 V 1000 V 500 V 700 V 1000 V	300 μV/V 50 μV/V 50 μV/V 30 μV/V 50 μV/V 50 μV/V 50 μV/V 50 μV/V 50 μV/V 50 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values:	
	10 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V	300 μV/V 50 μV/V 50 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V
	10 V 20 V 50 V 100 V 200 V 500 V 700 V	30 μV/V 30 μV/V 30 μV/V 30 μV/V 30 μV/V 100 μV/V 100 μV/V
	100 kHz 10 mV 100 mV 200 mV 0.5 V 1 V	300 μV/V 100 μV/V 100 μV/V 30 μV/V 30 μV/V
	2 V 5 V 10 V 20 V 50 V 100 V	$\begin{array}{c} 30 \; \mu V/V \\ 50 \; \mu V/V \end{array}$
	200 V 500 V	50 μV/V 200 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values: 300 kHz 0.5 V	100 μV/V
	1 V 2 V 5 V 10 V 20 V	100 μV/V 100 μV/V 100 μV/V 100 μV/V 100 μV/V
	500 kHz 0.5 V 1 V 2 V 5 V 10 V 20 V	200 μV/V 200 μV/V 200 μV/V 200 μV/V 200 μV/V 200 μV/V
	1 MHz 0.5 V 1 V 2 V 5 V 10 V 20 V	1 mV/V 1 mV/V 1 mV/V 1 mV/V 1 mV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage in accordance with in-house procedure TPL038 over the following ranges:	
	40 Hz to 20 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 200 kU to 2 V Above 2 V to 6 V Above 6 V to 2 V Above 6 V to 20 V Above 20 V to 60 V Above 60 V to 200 V Above 600 V to 600 V Above 600 V to 1000 V	1300 μV/V 1100 μV/V 600 μV/V 210 μV/V 140 μV/V 210 μV/V 140 μV/V 230 μV/V 150 μV/V 380 μV/V 300 μV/V
	20 kHz to 50 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 20 to 6 V Above 2 V to 6 V Above 6 V to 20 V Above 20 V to 60 V Above 60 V to 200 V Above 600 V to 600 V Above 600 V to 700 V	1800 μV/V 1500 μV/V 1100 μV/V 270 μV/V 200 μV/V 260 μV/V 180 μV/V 400 μV/V 290 μV/V 190 μV/V
	20 kHz to 50 kHz 700 V to 1000 V	180 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage in accordance with in-house procedure TPL038 over the following ranges:	
	50 kHz to 100 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 0.6 V to 2 V Above 2 V to 6 V Above 2 V to 60 V Above 60 V to 200 V Above 60 V to 200 V Above 60 V to 600 V	1800 μV/V 1500 μV/V 1100 μV/V 270 μV/V 200 μV/V 260 μV/V 180 μV/V 400 μV/V 290 μV/V
	100 kHz to 300 kHz 0.2 V to 0.6 V Above 0.6 V to 2 V Above 2 V to 6 V Above 6 V to 20 V	1.2 mV/V 0.81 mV/V 1.0 mV/V 0.62 mV/V
	300 kHz to 500 kHz 0.2 V to 0.6 V Above 0.6 V to 2 V Above 2 V to 6 V Above 6 V to 20 V	570 μV/V 500 μV/V 520 μV/V 500 μV/V
	500 kHz to 1 MHz 0.2 V to 0.6 V Above 0.6 V to 2 V Above 2 V to 6 V Above 6 V to 20 V	1.1 mV/V 1.1 mV/V 1.1 mV/V 1.1 mV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	On-site calibration for AC voltage in accordance with in-house procedure TPL038 over the following ranges:	
	40 Hz to 20 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 200 to 600 mV Above 2 V to 6 V Above 6 V to 2 V Above 60 V to 20 V Above 20 V to 60 V Above 60 V to 200 V Above 60 V to 200 V Above 600 V to 600 V Above 600 V to 1000 V	1300 μV/V 1100 μV/V 600 μV/V 210 μV/V 140 μV/V 210 μV/V 140 μV/V 150 μV/V 380 μV/V 300 μV/V
	20 kHz to 50 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 0.6 V to 2 V Above 2 V to 6 V Above 6 V to 20 V Above 20 V to 60 V Above 20 V to 60 V Above 60 V to 200 V Above 600 V to 700 V	1800 μV/V 1500 μV/V 1100 μV/V 270 μV/V 200 μV/V 260 μV/V 180 μV/V 400 μV/V 290 μV/V 190 μV/V
	20 kHz to 30 kHz 700 V to 1000 V	180 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC voltmeter	On-site calibration for AC voltage	
	in accordance with in-house procedure TPL038	
	Over the following ranges:	
	50 kHz to 100 kHz	
	10 mV to 20 mV	1800 μV/V
	Above 20 mV to 60 mV	1500 μV/V
	Above 60 mV to 200 mV	1100 μV/V
	Above 200 mV to 600 mV	270 μV/V
	Above 0.6 V to 2 V	200 μV/V
	Above 2 V to 6 V	260 μV/V
	Above 6 V to 20 V	180 μV/V
	Above 20 V to 60 V	$400 \mu\text{V/V}$
	Above 60 V to 200 V	290 μV/V
	Above 200 V to 600 V	190 μV/V
	100 kHz to 300 kHz	
	0.2 V to 0.6 V	1.2 mV/V
	Above 0.6 V to 2 V	0.81 mV/V
	Above 2 V to 6 V	1.1 mV/V
	Above 6 V to 20 V	0.62 mV/V
	300 kHz to 500 kHz	
	0.2 V to 0.6 V	570 μV/V
	Above 0.6 V to 2 V	500 μV/V
	Above 2 V to 6 V	520 μV/V
	Above 6 V to 20 V	500 μV/V
	500 kHz to 1 MHz	
	0.2 V to 0.6 V	1.1 mV/V
	Above 0.6 V to 2 V	1.1 mV/V
	Above 2 V to 6 V	1.1 mV/V
	Above 6 V to 20 V	1.1 mV/V
	500 kHz to 1 MHz	
	0.2 V to 0.6 V	1200 μV/V
	Above 0.6 V to 2 V	1100 μV/V
	Above 2 V to 20 V	1400 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL050 at the following values:	
	20 Hz 0.5 V 1 V 2 V 5 V 10 V	15 μV/V 13 μV/V 15 μV/V 12 μV/V 13 μV/V
	20 V 50 V 100 V 200 V 500 V	14 μV/V 22 μV/V 18 μV/V 20 μV/V 18 μV/V
	40 Hz, 1 kHz 10 mV 100 mV 200 mV 0.5 V 1 V 2 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V	100 μV/V 30 μV/V 30 μV/V 15 μV/V 11 μV/V 13 μV/V 12 μV/V 14 μV/V 15 μV/V 15 μV/V 15 μV/V 16 μV/V 16 μV/V 20 μV/V 20 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
- AC voluncter	by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL050	
	at the following values:	
	10 kHz	
	10 mV	100 μV/V
	100 mV	30 μV/V
	200 mV	30 μV/V
	0.5 V	15 μV/V
	1 V	11 μV/V
	2 V	13 μV/V
	5 V	12 μV/V
	10 V	13 μV/V
	20 V	16 μV/V
	50 V	16 μV/V
	100 V	18 μV/V
	200 V	16 μV/V
	500 V	18 μV/V
	700 V	20 μV/V
	1000 V	20 μV/V
	20 kHz	
	10 mV	100 μV/V
	100 mV	30 μV/V
	200 mV	30 μV/V
	0.5 V	15 μV/V
	1 V	11 μV/V
	2 V	13 μV/V
	5 V	12 μV/V
	10 V	13 μV/V
	20 V	14 μV/V
	50 V	15 μV/V
	100 V	18 μV/V
	200 V	20 μV/V
	500 V	25 μV/V
	700 V	30 μV/V
	1000 V	30 μV/V
	•	· ·

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL050 at the following values:	
	30 kHz 100 V 200 V 500 V 700 V 1000 V	18 μV/V 20 μV/V 30 μV/V 40 μV/V 42 μV/V
	50 kHz 10 mV 100 mV 200 mV 0.5 V	150 μV/V 50 μV/V 50 μV/V 15 μV/V
	1 V 2 V 5 V 10 V 20 V	13 μV/V 13 μV/V 12 μV/V 15 μV/V 14 μV/V
	50 V 100 V 200 V 500 V 700 V	15 μV/V 20 μV/V 25 μV/V 40 μV/V 50 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL050 at the following values:	
	100 kHz	
	10 mV	200 μV/V
	100 mV	100 μV/V
	200 mV	100 μV/V
	0.5 V	20 μV/V
	1 V	20 μV/V
	2 V	15 μV/V
	5 V	15 μV/V
	10 V	15 μV/V
	20 V	18 μV/V
	50 V	20 μV/V
	100 V	30 μV/V
	200 V	45 μV/V
	500 V	$100 \mu\text{V/V}$
	300 kHz	
	0.5 V	45 μV/V
	1 V	$40 \mu V/V$
	2 V	$40 \mu V/V$
	5 V	40 μV/V
	10 V 20 V	40 μV/V 40 μV/V
	500 kHz	
	0.5 V	65 μV/V
	1 V	50 μV/V
	2 V	50 μV/V
	5 V	50 μV/V
	10 V	50 μV/V
	20 V	50 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
- AC voltmeter	Calibration for AC voltage by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL050	
	at the following values or	
	over the following ranges:	
	over the following ranges.	
	1 MHz	
	0.5 V	$200~\mu V/V$
	1 V	$200~\mu V/V$
	2 V	$200~\mu V/V$
	5 V	$350 \mu\text{V/V}$
	10 V	$300 \mu\text{V/V}$
	20 V	350 μV/V
	40 Hz to 20 kHz	
	10 mV to 20 mV	380 μV/V
	Above 20 mV to 60 mV	170 μV/V
	Above 60 mV to 200 mV	80 μV/V
	Above 200 mV to 600 mV	50 μV/V
	Above 0.6 V to 2 V	$40~\mu V/V$
	Above 2 V to 6 V	$40~\mu V/V$
	Above 6 V to 20 V	$40~\mu V/V$
	Above 20 V to 60 V	$40~\mu V/V$
	Above 60 V to 200 V	$40~\mu V/V$
	Above 200 V to 600 V	50 μV/V
	Above 600 V to 1000 V	45 μV/V
	20 kHz to 50 kHz	
	10 mV to 20 mV	630 μV/V
	Above 20 mV to 60 mV	270 μV/V
	Above 60 mV to 200 mV	$120 \mu\text{V/V}$
	Above 200 mV to 600 mV	90 μV/V
	Above 0.6 V to 2 V	90 μV/V
	Above 2 V to 6 V	90 μV/V
	Above 6 V to 20 V	90 μV/V
	Above 20 V to 60 V	90 μV/V
	Above 60 V to 200 V	90 μV/V
	Above 200 V to 700 V	150 μV/V

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	Calibration for AC voltage	
	by comparison with AC Measurement Standard	
	in accordance with in-house procedure TPL050	
	over the following ranges:	
	20 kHz to 30 kHz	
	700 V to 1000 V	150 μV/V
	50 kHz to 100 kHz	
	10 mV to 20 mV	840 μV/V
	Above 20 mV to 60 mV	$450 \mu\text{V/V}$
	Above 60 mV to 200 mV	240 μV/V
	Above 200 mV to 600 mV	170 μV/V
	Above 0.6 V to 2 V	170 μV/V
	Above 2 V to 6 V	170 μV/V
	Above 6 V to 20 V	170 μV/V
	Above 20 V to 60 V	170 μV/V
	Above 60 V to 200 V	170 μV/V
	Above 200 V to 700 V	580 μV/V
	100 kHz to 300 kHz	
	0.2 V to 0.6 V	320 μV/V
	Above 0.6 V to 2 V	270 μV/V
	Above 2 V to 6 V	270 μV/V
	Above 6 V to 20 V	270 μV/V
	300 kHz to 500 kHz	
	0.2 V to 0.6 V	500 μV/V
	Above 0.6 V to 2 V	500 μV/V
	Above 2 V to 6 V	500 μV/V
	Above 6 V to 20 V	500 μV/V
	500 kHz to 1 MHz	10 1/4
	0.2 V to 0.6 V	1.2 mV/V
	Above 0.6 V to 2 V	1.1 mV/V
	Above 2 V to 6 V	1.4 mV/V
	Above 6 V to 20 V	1.4 mV/V

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	On-site calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL050 over the following ranges:	
	40 Hz to 20 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 200 to 2 V Above 2 V to 6 V Above 6 V to 20 V Above 60 V to 20 V Above 20 V to 60 V Above 60 V to 200 V Above 60 V to 200 V Above 600 V to 1000 V	380 μV/V 170 μV/V 80 μV/V 50 μV/V 40 μV/V 40 μV/V 40 μV/V 40 μV/V 50 μV/V 50 μV/V 45 μV/V
	20 kHz to 50 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 0.6 V to 2 V Above 2 V to 6 V Above 6 V to 20 V Above 20 V to 60 V Above 20 V to 60 V Above 60 V to 200 V Above 200 V to 700 V	630 μV/V 270 μV/V 120 μV/V 90 μV/V 90 μV/V 90 μV/V 90 μV/V 90 μV/V 150 μV/V
	20 kHz to 30 kHz 700 V to 1000 V	150 μV/V

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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC voltmeter	On-site calibration for AC voltage by comparison with AC Measurement Standard in accordance with in-house procedure TPL050 over the following ranges:	
	50 kHz to 100 kHz 10 mV to 20 mV Above 20 mV to 60 mV Above 60 mV to 200 mV Above 200 mV to 600 mV Above 200 to 20 V Above 2 V to 6 V Above 2 V to 60 V Above 20 V to 60 V Above 60 V to 200 V Above 200 V to 700 V 100 kHz to 300 kHz 0.2 V to 0.6 V Above 2 V to 6 V Above 0.6 V to 2 V Above 0.6 V to 2 V Above 2 V to 6 V Above 2 V to 6 V Above 6 V to 20 V	840 μV/V 450 μV/V 240 μV/V 170 μV/V 170 μV/V 170 μV/V 170 μV/V 170 μV/V 170 μV/V 270 μV/V 270 μV/V 270 μV/V 500 μV/V 500 μV/V 500 μV/V
	500 kHz to 1 MHz 0.2 V to 0.6 V Above 0.6 V to 2 V Above 2 V to 6 V Above 6 V to 20 V	1.2 mV/V 1.1 mV/V 1.4 mV/V 1.4 mV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC three phase voltmeter	Calibration for AC voltage in accordance with in-house procedure TPL102 over the following range of parameters:	
	45 Hz to 65 Hz 50 V to 500 V	60 μV/V

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL006 at the following values:	
	20 Hz 0.5 V	12 μV/V
	1 V 2 V	10 μV/V 10 μV/V
	3 V 5 V 10 V	10 μV/V 11 μV/V 11 μV/V
	20 V 50 V	12 μV/V 11 μV/V
	100 V 200 V 500 V	11 μV/V 13 μV/V 17 μV/V
	40 Hz	
	0.5 V 1 V 2 V	11 μV/V 9.0 μV/V 11 μV/V
	3 V 5 V	10 μV/V 10 μV/V
	10 V 20 V 50 V	11 μV/V 10 μV/V 11 μV/V
	100 V 200 V	11 μV/V 12 μV/V
	500 V 700 V 1000 V	16 μV/V 16 μV/V 18 μV/V

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL006 at the following values:	
	1 kHz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V 1000 V	11 μV/V 9.0 μV/V 9.0 μV/V 9.0 μV/V 9.0 μV/V 10 μV/V 9.0 μV/V 11 μV/V 11 μV/V 15 μV/V 15 μV/V 10 μV/V 9.0 μV/V
	5 V 10 V 20 V 50 V 100 V 200 V 500 V 700 V 1000 V	10 μV/V 10 μV/V 10 μV/V 11 μV/V 10 μV/V 12 μV/V 16 μV/V 18 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL006 at the following values:	
	20 kHz	
	0.5 V	13 μV/V
	1 V	10 μV/V
	2 V	9.0 μV/V
	3 V	9.0 μV/V
	5 V	10 μV/V
	10 V	9.0 μV/V
	20 V	10 μV/V
	50 V	11 μV/V
	100 V	11 μV/V
	200 V	15 μV/V
	500 V	23 μV/V
	700 V	30 μV/V
	1000 V	30 μV/V
	30 kHz	
	100 V	$10 \mu\text{V/V}$
	200 V	17 μV/V
	500 V	28 μV/V
	700 V	42 μV/V
	1000 V	42 μV/V
	50 kHz	
	0.5 V	12 μV/V
	1 V	11 μV/V
	2 V	9.0 μV/V
	3 V	9.0 μV/V
	5 V	$10 \mu V/V$
	10 V	9.0 μV/V
	20 V	$10 \mu V/V$
	50 V	11 μV/V
	100 V	$10 \mu V/V$
	200 V	$20 \mu\text{V/V}$
	500 V	$45 \mu V/V$
	700 V	61 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL006 at the following values:	
	100 kHz	
	0.5 V	27 μV/V
	1 V	17 μV/V
	2 V	14 μV/V
	3 V	14 μV/V
	5 V	14 μV/V
	10 V	14 μV/V
	20 V	14 μV/V
	50 V	16 μV/V
	100 V	16 μV/V
	200 V	36 μV/V
	500 V	73 μV/V
	700 V	110 μV/V
	200 kHz	
	100 V	27 μV/V
	300 kHz	
	0.5 V	56 μV/V
	1 V	39 μV/V
	2 V	28 μV/V
	3 V	25 μV/V
	5 V	25 μV/V
	10 V	24 μV/V
	20 V	25 μV/V
	500 kHz	
	0.5 V	69 μV/V
	1 V	56 μV/V
	2 V	34 μV/V
	3 V	33 μV/V
	5 V	29 μV/V
	10 V	29 μV/V
	20 V	29 μV/V

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SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Calibration for AC/DC voltage difference in accordance with in-house procedure TPL006 at the following values:		
1 MHz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V	160 μV/V 160 μV/V 120 μV/V 120 μV/V 120 μV/V 120 μV/V 120 μV/V	
Calibration for AC/DC voltage difference in accordance with in-house procedure TPL032 at the following values:		
20 Hz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V 50 V 100 V 200 V 500 V	12 μV/V 8.0 μV/V 9.0 μV/V 9.0 μV/V 8.0 μV/V 9.0 μV/V 12 μV/V 11 μV/V 10 μV/V 16 μV/V	
	SPECIFIC TEST OR PROPERTY MEASURED®特定測試或量度的特性® Calibration for AC/DC voltage difference in accordance with in-house procedure TPL006 at the following values: 1 MHz	

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL032 at the following values:	
	40 Hz 0.5 V 1 V	11 μV/V 8.0 μV/V
	2 V 3 V 5 V	11 μV/V 10 μV/V 8.0 μV/V
	10 V 20 V 50 V 100 V	11 μV/V 10 μV/V 11 μV/V 11 μV/V
	200 V 500 V 700 V	12 μV/V 16 μV/V 16 μV/V
	1000 V 1 kHz	18 μV/V
	0.5 V 1 V 2 V 3 V	11 μV/V 8.0 μV/V 8.0 μV/V 8.0 μV/V
	5 V 10 V 20 V 50 V	8.0 μV/V 9.0 μV/V 9.0 μV/V 10 μV/V
	100 V 200 V 500 V	10 μV/V 11 μV/V 12 μV/V
	700 V 1000 V	12 μV/V 12 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL032 at the following values:	
	10 kHz 0.5 V	10 μV/V
	1 V 2 V 3 V	$ \begin{array}{c} 8.0 \; \mu V/V \\ 8.0 \; \mu V/V \\ 8.0 \; \mu V/V \end{array} $
	5 V 10 V	8.0 μV/V 10 μV/V
	20 V 50 V	10 μV/V 10 μV/V
	100 V 200 V 500 V	10 μV/V 12 μV/V 14 μV/V
	700 V 1000 V	15 μV/V 15 μV/V
	20 kHz 0.5 V	13 μV/V
	1 V 2 V	8.0 μV/V 8.0 μV/V
	3 V 5 V	8.0 μV/V 8.0 μV/V
	10 V 20 V 50 V	9.0 μV/V 10 μV/V 10 μV/V
	100 V 200 V	10 μV/V 15 μV/V
	500 V 700 V 1000 V	20 μV/V 27 μV/V 27 μV/V

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL032 at the following values:	
	30 kHz 100 V	10 μV/V
	200 V 500 V	16 μV/V 28 μV/V
	700 V 1000 V	35 μV/V 37 μV/V
	50 kHz 0.5 V	12 μV/V
	1 V 2 V	9.0 μV/V 8.0 μV/V
	3 V 5 V	9.0 μV/V 9.0 μV/V
	10 V 20 V	9.0 μV/V 10 μV/V
	50 V 100 V	10 μV/V 10 μV/V
	200 V 500 V 700 V	19 μ V/V 34 μ V/V 44 μ V/V
	100 kHz	
	0.5 V 1 V	16 μV/V 13 μV/V
	2 V 3 V	12 μV/V 10 μV/V
	5 V 10 V	10 μV/V 10 μV/V
	20 V 50 V 100 V	11 μV/V 14 μV/V 14 μV/V
	200 V 500 V	33 μV/V 62 μV/V
	700 V	83 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL032 at the following values:	
	200 kHz 100 V	16 μV/V
	300 kHz 0.5 V 1 V 2 V 3 V 5 V 10 V 20 V 500 kHz 0.5 V 1 V 2 V 3 V 5 V 1 O 2 V	40 μV/V 29 μV/V 25 μV/V 21 μV/V 18 μV/V 18 μV/V 19 μV/V 60 μV/V 42 μV/V 34 μV/V 29 μV/V
	20 V 1 MHz 0.5 V 1 V 2 V 3 V 5 V 10 V	29 μV/V 120 μV/V 92 μV/V 78 μV/V 68 μV/V 68 μV/V 70 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL145 at the following values:	
	20 Hz 0.5 V 1 V	12 μV/V 8.0 μV/V
	2 V 3 V 5 V	9.0 μV/V 9.0 μV/V 8.0 μV/V
	10 V 20 V 50 V	9.0 μV/V 12 μV/V 11 μV/V
	100 V 200 V 500 V	10 μV/V 12 μV/V 16 μV/V
	40 Hz 0.5 V	11 μV/V
	1 V 2 V	8.0 μV/V 11 μV/V
	3 V 5 V 10 V 20 V	10 μV/V 8.0 μV/V 11 μV/V
	50 V 100 V 200 V	10 μV/V 11 μV/V 11 μV/V 12 μV/V
	500 V 700 V 1000 V	16 μV/V 16 μV/V 18 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL145 at the following values:	
	1 kHz 0.5 V 1 V	11 μV/V 8.0 μV/V
	2 V 3 V 5 V	$\begin{array}{c} 8.0 \; \mu V/V \\ 8.0 \; \mu V/V \\ 8.0 \; \mu V/V \end{array}$
	10 V 20 V 50 V	9.0 μV/V 9.0 μV/V 10 μV/V
	100 V 200 V 500 V	10 μV/V 11 μV/V 12 μV/V
	700 V 1000 V	12 μV/V 12 μV/V
	10 kHz 0.5 V 1 V 2 V	10 μV/V 8.0 μV/V 8.0 μV/V
	3 V 5 V 10 V	8.0 μV/V 8.0 μV/V 10 μV/V
	20 V 50 V 100 V	10 μV/V 10 μV/V 10 μV/V
	200 V 500 V 700 V	12 μV/V 14 μV/V 15 μV/V
	1000 V	15 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL145 at the following values:	
	20 kHz	
	0.5 V	13 μV/V
	1 V	8.0 µV/V
	2 V	8.0 μV/V
	3 V	8.0 µV/V
	5 V	8.0 µV/V
	10 V	9.0 μV/V
	20 V	10 μV/V
	50 V	10 μV/V
	100 V	10 μV/V
	200 V	15 μV/V
	500 V	20 μV/V
	700 V 1000 V	27 μV/V 27 μV/V
	30 kHz	
	100 V	$10 \mu\text{V/V}$
	200 V	16 μV/V
	500 V	28 μV/V
	700 V	35 μV/V
	1000 V	37 μV/V
	50 kHz	
	0.5 V	12 μV/V
	1 V	9.0 μV/V
	2 V	$8.0~\mu V/V$
	3 V	9.0 μV/V
	5 V	9.0 μV/V
	10 V	9.0 μV/V
	20 V	10 μV/V
	50 V	10 μV/V
	100 V	10 μV/V
	200 V	19 μV/V
	500 V	34 μV/V
	700 V	$44 \mu V/V$

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Electrical measurements and magnetism		
DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL145 at the following values:	
	100 kHz	
	0.5 V	16 μV/V
	1 V	13 μV/V
	2 V	12 μV/V
	3 V	10 μV/V
	5 V	10 μV/V
	10 V	10 μV/V
	20 V	11 μV/V
	50 V	14 μV/V
	100 V	14 μV/V
	200 V	33 μV/V
	500 V	62 μV/V
	700 V	83 μV/V
	200 kHz	
	100 V	16 μV/V
	300 kHz	
	0.5 V	$40 \mu V/V$
	1 V	29 μV/V
	2 V	25 μV/V
	3 V	21 μV/V
	5 V	18 μV/V
	10 V	18 μV/V
	20 V	19 μV/V
	500 kHz	
	0.5 V	60 μV/V
	1 V	42 μV/V
	2 V	$34 \mu V/V$
	3 V	33 μV/V
	5 V	29 μV/V
	10 V	29 μV/V
	20 V	29 μV/V

[@] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL145 at the following values:	
	1 MHz 0.5 V 1 V	120 μV/V 92 μV/V
	2 V 3 V 5 V	78 μV/V 78 μV/V 68 μV/V
	10 V 20 V	68 μV/V 70 μV/V
	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL148 at the following values:	
	20 Hz	
	1 V 2 V	13 μV/V 9.0 μV/V
	3 V 5 V 10 V	10 μV/V 12 μV/V 11 μV/V
	20 V 50 V	15 µV/V 13 µV/V
	100 V 200 V 500 V	12 μV/V 13 μV/V 17 μV/V
	40 Hz	
	1 V 3 V 700 V 1000 V	12 μV/V 10 μV/V 17 μV/V 18 μV/V
	1300	100

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Electrical measurements and magnetism		
DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference	
	in accordance with in-house procedure TPL148	
	at the following values:	
	1 kHz	
	1 V	11 μV/V
	2 V	8.0 μV/V
	3 V	13 μV/V
	5 V	13 μV/V
	10 V	11 μV/V
	20 V	11 μV/V
	50 V	11 μV/V
	100 V	11 μV/V
	200 V	12 μV/V
	500 V	13 μV/V
	700 V	12 μV/V
	1000 V	12 μV/V
	10 kHz	
	1 V	10 μV/V
	3 V	11 μV/V
	700 V	15 μV/V
	1000 V	17 μV/V
	30 kHz	
	700 V	35 μV/V
	1000 V	37 μV/V
	50 kHz	
	1 V	11 μV/V
	3 V	9.0 μV/V
	50 V	11 μV/V
	100 V	11 μV/V 11 μV/V
	200 V	19 μV/V
	500 V	34 μV/V
	700 V	$44 \mu V/V$
	730 1	11,617,4

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC voltage transfer instrument	Calibration for AC/DC voltage difference in accordance with in-house procedure TPL148 at the following values:	
	100 kHz	
	1 V	16 μV/V
	2 V	13 μV/V
	3 V	12 μV/V
	5 V	10 μV/V
	10 V	10 μV/V
	20 V	14 μV/V
	50 V	14 μV/V
	100 V	15 μV/V
	200 V	33 μV/V
	500 V	62 μV/V
	700 V	83 μV/V
	200 kHz	
	100 V	18 μV/V
	500 kHz	
	1 V	42 μV/V
	3 V	33 μV/V
	1 MHz	
	1 V	92 μV/V
	3 V	78 μV/V
	5 V	76 μV/V
	10 V	74 μV/V
	20 V	81 μV/V

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Electrical measurements and magnetism		
- DC & LF measurements		
- Inductive voltage divider	Calibration for the following parameters in accordance with in-house procedure TPL018:	
	- Magnitude of AC voltage ratio at 25 V and the following frequencies:	
	400 Hz	2.6 x 10 ⁻⁷ of input
	1 kHz	2.6 x 10 ⁻⁷ of input
	10 kHz	2.2 x 10 ⁻⁶ of input
	- Quadrature error of AC voltage	
	at 25 V and the following frequencies:	27 10.8 6
	400 Hz 1 kHz	27 x 10 ⁻⁸ of input 27 x 10 ⁻⁸ of input
	10 kHz	300 x 10 ⁻⁸ of input
	10 KHZ	300 x 10 of hiput
	Calibration for the magnitude of AC voltage ratio	
	in accordance with in-house procedure TPL087 at the following frequencies:	
	400 Hz	5.0 x 10 ⁻⁷ of input
	1 kHz	5.0 x 10 ⁻⁷ of input
	10 kHz	2.2 x 10 ⁻⁶ of input

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	On-site calibration for AC current in accordance with in-house procedure TPL044 over the following ranges:	
	40 Hz, 1 kHz 100 μA to 1 mA Above 1 mA to 100 mA	65 μA/A 40 μA/A
	Above 100 mA to 1 A	65 μA/A
	3 kHz, 5 kHz 100 μA to 1 mA Above 1 mA to 100 mA Above 100 mA to 1 A	83 μA/A 40 μA/A 81 μA/A
	10 kHz 100 μA to 1 mA Above 1 mA to 100 mA Above 100 mA to 1 A	190 μA/A 40 μA/A 200 μA/A
	Calibration for AC current in accordance with in-house procedure TPL044 over the following ranges:	
	40 Hz, 1 kHz 100 μA to 1 mA Above 1 mA to 100 mA Above 100 mA to 1 A	65 μA/A 40 μA/A 65 μA/A
	3 kHz, 5 kHz 100 μA to 1 mA Above 1 mA to 100 mA Above 100 mA to 1 A	83 μA/A 40 μA/A 81 μA/A
	10 kHz 100 μA to 1 mA Above 1 mA to 100 mA Above 100 mA to 1 A	190 μA/A 40 μA/A 200 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
DC & LF measurements		
- AC current generator/source	On-site calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges:	
	40 Hz	
	100 μA to 1 mA	65 μA/A
	Above 1 mA to 1 A	95 μΑ/Α
	1 mA	65 μA/A
	10 mA	45 μA/A
	100 mA	90 μΑ/Α
	1 A	75 μA/A
	2 A	90 μΑ/Α
	5 A	120 μΑ/Α
	10 A	120 μΑ/Α
	15 A	120 μΑ/Α
	20 A	120 μΑ/Α
	1 kHz	
	100 μA to 1 mA	65 μA/A
	Above 1 mA to 1 A	95 μΑ/Α
	1 mA	65 μA/A
	10 mA	45 μA/A
	100 mA	70 μΑ/Α
	1 A	75 μA/A
	2 A	90 μΑ/Α
	5 A	120 μΑ/Α
	10 A	120 μΑ/Α
	15 A	120 μΑ/Α
	20 A	120 μΑ/Α
	3 kHz	22 / .
	100 µA to 10 mA	83 μA/A
	Above 10 mA to 100 mA	100 μA/A
	Above 100 mA to 1 A	150 μΑ/Α

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SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
On-site calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges:		
5 kHz 100 μA to 10 mA Above 10 mA to 100 mA Above 100 mA to 1 A 1 mA 10 mA 100 mA 1 A 2 A 5 A 10 A 15 A 20 A 10 kHz 100 μA to 10 mA Above 10 mA to 100 mA Above 100 mA to 1 A 1 mA 10 mA 10 mA 100 mA	83 μΑ/Α 100 μΑ/Α 150 μΑ/Α 55 μΑ/Α 55 μΑ/Α 50 μΑ/Α 85 μΑ/Α 150 μΑ/Α 300 μΑ/Α 300 μΑ/Α 300 μΑ/Α 300 μΑ/Α 190 μΑ/Α 500 μΑ/Α 190 μΑ/Α 500 μΑ/Α 150 μΑ/Α 500 μΑ/Α 500 μΑ/Α 500 μΑ/Α 150 μΑ/Α	
	SPECIFIC TEST OR PROPERTY MEASURED® 特定测試或量度的特性® On-site calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges: 5 kHz	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	On-site calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges:	
	40 Hz to 1 kHz 2.5 mA to 2 A Above 2 A to 20 A	80 μA/A 120 μA/A
	1 kHz to 5 kHz 2.5 mA to 100 mA Above 100 mA to 1 A Above 1 A to 20 A 5 kHz to 10 kHz	100 μA/A 150 μA/A 300 μA/A
	2.5 mA to 100 mA Above 100 mA to 10 A	300 μA/A 500 μA/A
	Calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges:	
	40 Hz 100 μA to 1 mA Above 1 mA to 1 A 1 mA 10 mA	65 μA/A 95 μA/A 65 μA/A 45 μA/A
	100 mA 1 A 2 A 5 A 10 A 15 A	90 μA/A 75 μA/A 90 μA/A 120 μA/A 120 μA/A
	20 A	120 μΑ/Α

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	Calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges:	
	1 kHz 100 μA to 1 mA Above 1 mA to 1 A 1 mA	65 μA/A 95 μA/A 65 μA/A
	10 mA 100 mA 1 A	45 μA/A 70 μA/A 75 μA/A
	2 A 5 A 10 A 15 A	90 μΑ/Α 120 μΑ/Α 120 μΑ/Α 120 μΑ/Α
	20 A 3 kHz	120 μΑ/Α
	100 μA to 10 mA Above 10 mA to 100 mA Above 100 mA to 1 A	83 μA/A 100 μA/A 150 μA/A
	5 kHz 100 μA to 10 mA Above 10 mA to 100 mA Above 100 mA to 1 A	83 μA/A 100 μA/A 150 μA/A
	1 mA 10 mA 100 mA 1 A	55 μA/A 55 μA/A 50 μA/A 85 μA/A
	2 A 5 A 10 A 15 A	150 μA/A 300 μA/A 300 μA/A 300 μA/A
	20 A	300 μA/A

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	Calibration for AC current in accordance with in-house procedure TPL046 at the following values or over the following ranges:	
	10 kHz 100 μA to 10 mA Above 10 mA to 100 mA Above 100 mA to 1 A 1 mA 10 mA 100 mA 1 A 2 A 5 A 10 A 40 Hz to 1 kHz 2.5 mA to 2 A Above 2 A to 20 A 1 kHz to 5 kHz 2.5 mA to 100 mA Above 100 mA to 1 A Above 1 A to 20 A	190 μΑ/Α 300 μΑ/Α 500 μΑ/Α 190 μΑ/Α 190 μΑ/Α 75 μΑ/Α 185 μΑ/Α 230 μΑ/Α 500 μΑ/Α 500 μΑ/Α 500 μΑ/Α 120 μΑ/Α 120 μΑ/Α 150 μΑ/Α 300 μΑ/Α

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	Calibration for AC current in accordance with in-house procedure TPL025 at the following values:	
	40 Hz, 1 kHz 5 mA	30 μA/A
	10 mA	30 μΑ/Α
	20 mA	30 μΑ/Α
	30 mA	30 μΑ/Α
	50 mA	30 μΑ/Α
	100 mA	30 μΑ/Α
	200 mA	30 μΑ/Α
	300 mA	40 μΑ/Α
	500 mA	40 μA/A
	1 A	40 μA/A
	2 A	40 μA/A
	3 A	50 μA/A
	5 A	50 μA/A
	10 A	50 μA/A
	15 A	60 μA/A
	20 A	60 μΑ/Α
	5 kHz	
	5 mA	50 μA/A
	10 mA	50 μΑ/Α
	20 mA	50 μΑ/Α
	30 mA	50 μΑ/Α
	50 mA	50 μΑ/Α
	100 mA	50 μΑ/Α
	200 mA	50 μΑ/Α
	300 mA	100 μΑ/Α
	500 mA	100 μΑ/Α
	1 A	100 μΑ/Α
	2 A	100 μΑ/Α
	3 A	150 μΑ/Α
	5 A	150 μΑ/Α
	10 A	150 μΑ/Α
	15 A	250 μΑ/Α
	20 A	250 μΑ/Α

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Electrical measurements and magnetism		
DC & LF measurements		
- AC current generator/source	Calibration for AC current in accordance with in-house procedure TPL025 at the following values or over the following ranges:	
	10 kHz 5 mA 10 mA 20 mA 30 mA 50 mA 100 mA 200 mA 300 mA 500 mA 500 mA 1 A 2 A 3 A 5 A 10 A 15 A 20 Hz to 10 kHz 2.5 mA to 5 mA Above 5 M to 20 A	250 μA/A 250 μA/A 250 μA/A 250 μA/A 250 μA/A 250 μA/A 250 μA/A 500 μA/A 300 μA/A 300 μA/A

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Electrical measurements and magnetism		
- DC & LF measurements		
A.C	Calibration for AC comment	
- AC current generator/source	Calibration for AC current	
	by comparison with AC/DC transfer standard	
	in accordance with in-house procedure TPL040 at the following values:	
	40 Hz, 1 kHz	
	5 mA	30 μΑ/Α
	10 mA	30 μΑ/Α
	20 mA	30 μΑ/Α
	30 mA	30 μΑ/Α
	50 mA	30 μΑ/Α
	100 mA	30 μΑ/Α
	200 mA	30 μΑ/Α
	300 mA	40 μΑ/Α
	500 mA	40 μA/A
	1 A	40 μΑ/Α
	2 A	40 μΑ/Α
	3 A	50 μA/A
	5 A	50 μA/A
	10 A	50 μA/A
	15 A	60 μA/A
	20 A	60 μΑ/Α
	5 kHz	
	5 mA	50 μA/A
	10 mA	50 μA/A
	20 mA	50 μA/A
	30 mA	50 μA/A
	50 mA	50 μA/A
	100 mA	50 μA/A
	200 mA	50 μA/A
	300 mA	100 μΑ/Α
	500 mA	100 μΑ/Α
	1 A	100 μΑ/Α
	2 A	100 μΑ/Α
	3 A	150 μΑ/Α
	5 A	150 μΑ/Α
	10 A	150 μΑ/Α
	15 A	250 μΑ/Α
	20 A	250 μΑ/Α

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	Calibration for AC current by comparison with AC/DC transfer standard in accordance with in-house procedure TPL040 at the following values or over the following ranges:	
	10 kHz 5 mA 10 mA 20 mA 30 mA 50 mA 100 mA 200 mA 300 mA 300 mA 500 mA 1 A 2 A 3 A	250 μA/A 250 μA/A 250 μA/A 250 μA/A 250 μA/A 250 μA/A 250 μA/A 500 μA/A 500 μA/A 500 μA/A 500 μA/A
	5 A 10 A 15 A 40 Hz to 5 kHz	500 μA/A 500 μA/A 500 μA/A
	2.5 mA to 5 mA Above 5 mA to 5 A Above 5 A to 20 A	100 μA/A 220 μA/A 320 μA/A
	2.5 mA to 200 mA Above 200 mA to 20 A	300 μA/A 500 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC current generator/source	Calibration for AC current by measuring voltage-drop with current transformer in accordance with in-house procedure TPL016 over the following range: 45 Hz to 60 Hz 1 A to 100 A	80 μA/A
	On-site calibration for AC current by measuring voltage-drop with current transformer in accordance with in-house procedure TPL134 over the following ranges:	
	45 Hz to 65 Hz 1 A to 50 A Above 50 A to 100 A Above 100 A to 200 A	70 μA/A 80 μA/A 90 μA/A
	Calibration for AC current by measuring voltage-drop with current transformer in accordance with in-house procedure TPL134 over the following ranges:	
	45 Hz to 65 Hz 1 A to 50 A Above 50 A to 100 A Above 100 A to 200 A	70 μA/A 80 μA/A 90 μA/A

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Electrical measurements and magnetism		
- DC & LF measurements		
- AC ammeter	On-site calibration for AC current by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values or over the following ranges:	
	40 Hz, 1 kHz 100 μA 1 mA 10 mA 100 mA 1 A	120 μA/A 120 μA/A 120 μA/A 120 μA/A 240 μA/A
	5 kHz 100 μA 1 mA 10 mA 100 mA	210 μA/A 160 μA/A 120 μA/A 120 μA/A 360 μA/A
	10 kHz 100 μA 1 mA 10 mA 100 mA	510 μA/A 510 μA/A 310 μA/A 310 μA/A 1600 μA/A
	40 Hz to 1 kHz 100 μA to 200 μA Above 200 μA to 200 mA Above 200 mA to 2 A	300 μA/A 400 μA/A 600 μA/A
	1 kHz to 5 kHz 100 μA to 200 μA Above 200 μA to 2 mA Above 2 mA to 20 mA Above 20 mA to 200 mA Above 200 mA to 2A	600 μA/A 1000 μA/A 700 μA/A 500 μA/A 1200 μA/A

[@] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- AC ammeter	On-site calibration for AC current by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 over the following ranges:	
	5 kHz to 10 kHz 100 μA to 200 μA Above 200 μA to 2 mA Above 2 mA to 20 mA Above 20 mA to 200 mA Above 200 mA to 2A	2.4 mA/A 6.0 mA/A 5.0 mA/A 2.2 mA/A 11 mA/A
	Calibration for AC current by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values:	
	40 Hz, 1 kHz 100 μA 1 mA 10 mA 100 mA 1 A	120 μA/A 120 μA/A 120 μA/A 120 μA/A 240 μA/A
	5 kHz 100 μA 1 mA 10 mA 100 mA	210 μA/A 160 μA/A 120 μA/A 120 μA/A 360 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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SPECIFIC TEST OR PROPERTY MEASURED®	CALIBRATION AND MEASUREMENT
特定測試或量度的特性 [@]	CAPABILITY (CMC)* 校準和測量能力*
Calibration for AC current by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values or over the following ranges: 10 kHz 100 µA	510 μA/A
1 mA 10 mA 100 mA 1 A	510 μA/A 310 μA/A 310 μA/A 1600 μA/A
40 Hz to 1 kHz 100 μA to 200 μA Above 200 μA to 200 mA Above 200 mA to 2 A	300 μA/A 400 μA/A 600 μA/A
1 kHz to 5 kHz 100 μA to 200 μA Above 200 μA to 2 mA Above 2 mA to 20 mA Above 20 mA to 200 mA Above 200 mA to 2A	600 μA/A 1000 μA/A 700 μA/A 500 μA/A 1200 μA/A
5 kHz to 10 kHz 100 μA to 200 μA Above 200 μA to 2 mA Above 2 mA to 20 mA Above 20 mA to 200 mA Above 200 mA to 2A	2.4 mA/A 6.0 mA/A 5.0 mA/A 2.2 mA/A 11 mA/A
	by direct measurement using multi-function calibrator in accordance with in-house procedure TPL038 at the following values or over the following ranges: 10 kHz 100 µA 1 mA 10 mA 100 mA 1 A 40 Hz to 1 kHz 100 µA to 200 µA Above 200 µA to 200 mA Above 200 mA to 2 A 1 kHz to 5 kHz 100 µA to 200 µA Above 200 µA to 2 mA Above 200 mA to 2 mA Above 200 mA to 20 mA Above 200 mA to 20 mA Above 20 mA to 20 5 kHz to 10 kHz 100 µA to 200 µA Above 200 µA to 2 mA Above 200 µA to 2 mA Above 200 µA to 200 mA Above 200 mA to 200 mA Above 200 mA to 200 mA

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
DC & LF measurements		
- AC ammeter	On-site calibration for AC current by comparison with reference ammeter in accordance with in-house procedure TPL051 at the following values or over the following ranges:	
	40 Hz, 1 kHz, 5 kHz 100 μA 1 mA 10 mA 100 mA 1 A	120 μA/A 120 μA/A 120 μA/A 120 μA/A 240 μA/A
	10 kHz 100 µA 1 mA 10 mA 100 mA	200 μA/A 200 μA/A 200 μA/A 200 μA/A 400 μA/A
	40 Hz to 5 kHz 100 μA to 100 mA Above 100 mA to 1 A	120 μA/A 240 μA/A
	5 kHz to 10 kHz 100 μA to 200 mA Above 200 mA to 1 A	200 μA/A 400 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC ammeter	Calibration for AC current by comparison with reference ammeter in accordance with in-house procedure TPL051 at the following values or over the following ranges:	
	40 Hz, 1 kHz, 5 kHz 100 μA 1 mA 10 mA 100 mA 1 A	120 μA/A 120 μA/A 120 μA/A 120 μA/A 240 μA/A
	10 kHz 100 μA 1 mA 10 mA 100 mA 1 A	200 μA/A 200 μA/A 200 μA/A 200 μA/A 400 μA/A
	40 Hz to 5 kHz 100 μA to 100 mA Above 100 mA to 1 A	120 μA/A 240 μA/A
	5 kHz to 10 kHz 100 μA to 200 mA Above 200 mA to 1 A	200 μA/A 400 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC ammeter	On-site calibration for AC current by measuring voltage-drop with standard resistor and reference multimeter in accordance with in-house procedure TPL047 at the following values or over the following ranges: 40 Hz, 1 kHz, 5 kHz 100 µA 1 mA 10 mA 100 mA 1 A 10 kHz 100 µA 1 mA 10 mA 100 mA 1 mA 100 mA 100 mA 100 mA 1 A 40 Hz to 5 kHz 100 µA to 100 mA Above 100 mA to 1 A	120 μA/A 120 μA/A 120 μA/A 120 μA/A 240 μA/A 200 μA/A 200 μA/A 200 μA/A 200 μA/A 200 μA/A 200 μA/A 200 μA/A
	5 kHz to 10 kHz 100 μA to 200 mA Above 200 mA to 1 A	200 μA/A 400 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC ammeter	Calibration for AC current by measuring voltage-drop with standard resistor and reference multimeter in accordance with in-house procedure TPL047 at the following values or over the following ranges: 40 Hz, 1 kHz, 5 kHz 100 µA 1 mA 10 mA 100 mA 1 A 10 kHz 100 µA 1 mA 10 mA 100 mA 1 mA 100 mA	120 μΑ/Α 120 μΑ/Α 120 μΑ/Α 120 μΑ/Α 240 μΑ/Α 200 μΑ/Α 200 μΑ/Α 200 μΑ/Α 200 μΑ/Α 120 μΑ/Α
	100 μA to 100 mA Above 100 mA to 1 A 5 kHz to 10 kHz 100 μA to 200 mA Above 200 mA to 1 A	120 μA/A 240 μA/A 200 μA/A 400 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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On-site calibration for AC current in accordance with in-house procedure TPL049 over the following ranges:		
40 Hz to 1 kHz 1 A to 20 A	240 μΑ/Α	
1 kHz to 5 kHz 1 A to 20 A	360 μΑ/Α	
5 kHz to 10 kHz 1 A to 10 A	400 μA/A	
Calibration for AC current in accordance with in-house procedure TPL049 over the following ranges:		
40 Hz to 1 kHz 1 A to 20 A	240 μΑ/Α	
1 kHz to 5 kHz 1 A to 20 A	360 μΑ/Α	
5 kHz to 10 kHz 1 A to 10 A	400 μΑ/Α	
	SPECIFIC TEST OR PROPERTY MEASURED®特定測試或量度的特性® 特定測試或量度的特性® On-site calibration for AC current in accordance with in-house procedure TPL049 over the following ranges: 40 Hz to 1 kHz 1 A to 20 A 1 kHz to 5 kHz 1 A to 20 A 5 kHz to 10 kHz 1 A to 10 A Calibration for AC current in accordance with in-house procedure TPL049 over the following ranges: 40 Hz to 1 kHz 1 A to 20 A 1 kHz to 5 kHz 1 A to 20 A 5 kHz to 10 kHz	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC ammeter (clamp-on type)	On-site calibration for AC current in accordance with in-house procedure TPL135 over the following ranges:	
	45 Hz to 65 Hz	
	1 A to 150 A	2000 μΑ/Α
	Above 150 A to 200 A	5500 μA/A
	On-site calibration for AC current in accordance with in-house procedure TPL146	
	over the following range:	
	50 Hz	
	200 A to 300 A	1.2 A
	Above 300 A to 400 A	2.0 A
	Above 400 A to 1000 A	3.0 A
	Calibration for AC current in accordance with in-house procedure TPL135 over the following ranges:	
	45 Hz to 65 Hz	
	1 A to 150 A	2000 μΑ/Α
	Above 150 A to 200 A	5500 μA/A
	Calibration for AC current	
	in accordance with in-house procedure TPL146	
	over the following range:	
	50 Hz	
	200 A to 300 A	1.2 A
	Above 300 A to 400 A	2.0 A
	Above 400 A to 1000 A	3.0 A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC three phase ammeter	Calibration for AC current in accordance with in-house procedure TPL102 over the following ranges of parameters:	
	45 Hz to 65 Hz 0.1 A to 150 A	50 μA/A

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC current transfer instrument	Calibration for AC/DC current difference in accordance with in-house procedure TPL043 at the following values:	
	40 Hz 5 mA	26 μΑ/Α
	10 mA	26 μΑ/Α
	20 mA	26 μΑ/Α
	30 mA	26 μΑ/Α
	50 mA	26 μA/A
	100 mA	26 μA/A
	200 mA	26 μA/A
	300 mA	26 μA/A
	500 mA	26 μA/A
	1 A	26 μΑ/Α
	2 A	27 μΑ/Α
	3 A	29 μΑ/Α
	5 A	30 μA/A
	10 A	31 µA/A
	15 A	36 μΑ/Α
	20 A	36 μΑ/Α
	1 kHz	
	5 mA	26 μΑ/Α
	10 mA	26 μΑ/Α
	20 mA	26 μΑ/Α
	30 mA	26 μΑ/Α
	50 mA	26 μΑ/Α
	100 mA	26 μΑ/Α
	200 mA	26 μΑ/Α
	300 mA	26 μΑ/Α
	500 mA	26 μΑ/Α
	1 A	26 μΑ/Α
	2 A	27 μΑ/Α
	3 A, 5 A	30 μΑ/Α
	10 A	31 μΑ/Α
	15 A	34 μΑ/Α
	20 A	33 μΑ/Α

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- AC/DC current transfer instrument	Calibration for AC/DC current difference in accordance with in-house procedure TPL043 at the following values:	
	5 kHz 5 mA 10 mA	26 μA/A 26 μA/A
	20 mA 30 mA 50 mA 100 mA	26 μA/A 26 μA/A 26 μA/A 26 μA/A
	200 mA 300 mA 500 mA	26 μΑ/A 55 μΑ/A 55 μΑ/A
	1 A 2 A 3 A, 5 A	55 μA/A 56 μA/A 30 μA/A
	10 A 15 A 20 A	31 μA/A 34 μA/A 38 μA/A
	10 kHz 5 mA 10 mA	26 μA/A 26 μA/A
	20 mA 30 mA 50 mA	26 μA/A 26 μA/A 26 μA/A
	100 mA 200 mA 300 mA	26 μA/A 26 μA/A 183 μA/A
	500 mA 1 A 2 A 3 A	183 μA/A 183 μA/A 183 μA/A 30 μA/A
	5 A 5 A 10 A 15 A	30 µA/A 30 µA/A 31 µA/A 34 µA/A
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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- DC & LF measurements		
- Current transformer	Calibration for the following parameters in accordance with in-house procedure TPL124:	
	- Current error over the frequency range of 45 Hz to 60 Hz with secondary current at 1 A and the following primary current: 1 A 5 A 10 A 20 A 50 A	0.0012 % 0.0012 % 0.0012 % 0.0012 % 0.0012 % 0.0014 %
	1 A to 100 A - Phase error over the frequency range of 45 Hz to 60 Hz with secondary current at 1 A and the following primary current: 1 A 5 A 10 A 20 A	0.0050 % 0.17 mrad 0.17 mrad 0.17 mrad 0.17 mrad
	50 A 100 A 1 A to 100 A	0.17 mrad 0.17 mrad 0.20 mrad

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Electrical measurements and magnetism			
DC & LF measurements			
- AC single phase power source	Calibration for the following parameters in accordance with in-house procedure TPL130:		
	- Active power over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	130 μW/VA	
	- Reactive power over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	130 μvar/VA	
	- Apparent power over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	130 μVA/VA	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
DC & LF measurements			
- AC three phase power source	Calibration for the following parameters in accordance with in-house procedure TPL130:		
	- Active power over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	130 μW/VA	
	- Reactive power over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	130 μvar/VA	
	- Apparent power over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	130 μVA/VA	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]		CALIBRATION AND MEASUREME CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
- DC & LF measurements				
- AC single phase wattmeter		active power with in-house procedure TPL105 ving ranges of parameters:		
	Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 110 V to 120 V / 220 V to 240 V 1 A, 5 A, 10 A 50 A 100 A 160 A	30 μW/VA 35 μW/VA 40 μW/VA 50 μW/VA	
	Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 24 V to 480 V 0.1 A to 10 A Above 10 A to 50 A Above 50 A to 100 A Above 100 A to 160 A	50 μW/VA 60 μW/VA 70 μW/VA 80 μW/VA	
	over the follow Frequency: Voltage: Current: Power factor:	with in-house procedure TPL012 ving ranges of parameters: 400 Hz 75 V to 300 V 0.5 A to 20 A 0.5 lead/lag 0.5 lead/lag to unity	0.037 % 0.050 % 0.020 %	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism					
- DC & LF measurements					
- AC single phase varmeter		reactive power with in-house procedure TPL105 ving ranges of parameters:			
	Voltage:	45 Hz to 65 Hz 0 lead/lag to unity 110 V to 120 V / 220 V to 240 V			
	Current:	1 A, 5 A, 10 A 50 A 100 A 160 A	30 μνατ/VA 35 μνατ/VA 40 μνατ/VA 50 μνατ/VA		
	Frequency: Power factor: Voltage:	45 Hz to 65 Hz 0 lead/lag to unity 24 V to 480 V			
	Current:	0.1 A to 10 A Above 10 A to 50 A Above 50 A to 100 A Above 100 A to 160 A	50 μvar/VA 60 μvar/VA 70 μvar/VA 80 μvar/VA		
- AC single phase VA meter		apparent power with in-house procedure TPL105 wing ranges of parameters:			
	Frequency: Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 110 V to 120 V / 220 V to 240 V 1 A, 5 A, 10 A	30 μVA/VA		
		50 A 100 A 160 A	35 μVA/VA 40 μVA/VA 50 μVA/VA		
	Voltage:	45 Hz to 65 Hz 0 lead/lag to unity 24 V to 480 V 0.1 A to 10 A	50 VA /VA		
	Current:	Above 10 A to 10 A Above 50 A to 100 A Above 100 A to 160 A	50 μVA/VA 60 μVA/VA 70 μVA/VA 80 μVA/VA		

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism					
- DC & LF measurements					
- AC three phase wattmeter		active power with in-house procedure TPL102 wing ranges of parameters:			
	Frequency: Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 110 V to 120 V / 220 V to 240 V 1 A, 5 A, 10 A	50 μW/VA		
		50 A 100 A 160 A	60 μW/VA 70 μW/VA 80 μW/VA		
	Frequency: Power factor: Voltage:	45 Hz to 65 Hz 0 lead/lag to unity 24 V to 480 V			
	Current:	0.1 A to 10 A Above 10 A to 50 A Above 50 A to 100 A Above 100 A to 160 A	70 μW/VA 80 μW/VA 90 μW/VA 100 μW/VA		
- AC three phase varmeter		reactive power with in-house procedure TPL102 ving ranges of parameters:			
	Frequency: Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 110 V to 120 V / 220 V to 240 V 1 A, 5 A, 10 A	50 μvar/VA 60 μvar/VA		
		100 A 160 A	70 μvar/VA 80 μvar/VA		
	Voltage:	45 Hz to 65 Hz 0 lead/lag to unity 24 V to 480 V			
	Current:	0.1 A to 10 A Above 10 A to 50 A Above 50 A to 100 A Above 100 A to 160 A	70 μναr/VA 80 μναr/VA 90 μναr/VA 100 μναr/VA		

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]		CALIBRATION AND MEASUREME CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
DC & LF measurements				
- AC three phase VA meter		apparent power with in-house procedure TPL102 ving ranges of parameters:		
	Frequency: Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 110 V to 120 V / 220 V to 240 V 1 A, 5 A, 10 A 50 A 100 A 160 A	50 μVA/VA 60 μVA/VA 70 μVA/VA 80 μVA/VA	
	Frequency: Power factor: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 24 V to 480 V 0.1 A to 10 A Above 10 A to 50 A Above 50 A to 100 A Above 100 A to 160 A	70 μVA/VA 80 μVA/VA 90 μVA/VA 100 μVA/VA	

[@] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*		
Electrical measurements and magnetism				
- DC & LF measurements				
- AC three phase energy source	Calibration for the following parameters in accordance with in-house procedure TPL131:			
	- Energy in watt-hour over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V Current: 1 A to 160 A	150 μWh/VAh		
	- Energy in var-hour over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V			
	Current: 1 A to 160 A	150 μvarh/VAh		
	- Energy in VA-hour over the following ranges of parameters: Frequency: 45 Hz to 65 Hz Power factor: 0 lead/lag to unity Voltage: 24 V to 480 V			
	Current: 1 A to 160 A	150 μVAh/VAh		

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	PROPER	CIFIC TEST OR RTY MEASURED [®] 式或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
- DC & LF measurements				
- AC single phase watt-hour meter		energy n in-house procedure TPL125 ranges of parameters:		
	Power factor: Measuring time:	45 Hz to 65 Hz 0 lead/lag to unity 1 s to 1 h 24 V to 480 V 1 A to 55 A Above 55 A to 160 A	2.0 mWh/VAh 6.0 mWh/VAh	
- AC single phase var-hour meter	Calibration for AC energy in accordance with in-house procedure TPL125 over the following ranges of parameters:			
	Power factor: Measuring time:	45 Hz to 65 Hz 0 lead/lag to unity 1 s to 1 h 24 V to 480 V 1 A to 55 A Above 55 A to 160 A	2.0 mvarh/VAh 6.0 mvarh/VAh	
- AC single phase VA-hour meter		energy n in-house procedure TPL125 ranges of parameters:		
	Power factor:	45 Hz to 65 Hz 0 lead/lag to unity 1 s to 1 h 24 V to 480 V 1 A to 55 A Above 55 A to 160 A	2.0 mVAh/VAh 6.0 mVAh/VAh	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	PROPEI	CIFIC TEST OR RTY MEASURED [®] 試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
- DC & LF measurements				
- AC three phase watt-hour meter		energy h in-house procedure TPL101 g ranges of parameters:		
	Frequency: Power factor: Measuring time: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 1 s to 1 h 24 V to 480 V 1 A to 55 A Above 55 A to 160 A	2.0 mWh/VAh 6.0 mWh/VAh	
- AC three phase var-hour meter	Calibration for AC energy in accordance with in-house procedure TPL101 over the following ranges of parameters:			
	Frequency: Power factor: Measuring time: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 1 s to 1 h 24 V to 480 V 1 A to 55 A Above 55 A to 160 A	2.0 mvarh/VAh 6.0 mvarh/VAh	
- AC three phase VA-hour meter		energy h in-house procedure TPL101 g ranges of parameters:		
	Frequency: Power factor: Measuring time: Voltage: Current:	45 Hz to 65 Hz 0 lead/lag to unity 1 s to 1 h 24 V to 480 V 1 A to 55 A Above 55 A to 160 A	2.0 mVAh/VAh 6.0 mVAh/VAh	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務			
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
- DC & LF measurements			
- Capacitor	Calibration for capacitance in accordance with in-house procedure TPL069 at the following values or over the following ranges:		
	50 Hz to 100 Hz 1 pF to 10 pF	400 μF/F	
	100 Hz to 10 kHz 1 pF to 10 pF	200 μF/F	
	400 Hz to 10 kHz Above 10 pF to 1 nF	20 μF/F	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*		
Electrical measurements and magnetism				
- DC & LF measurements				
- Capacitor	Calibration for capacitance			
•	in accordance with in-house procedure TPL005			
	at the following values:			
	400 Hz			
	10 pF	5.0 μF/F		
	100 pF	5.0 µF/F		
	1 nF	5.0 μF/F		
	10 nF	77 μF/F		
	100 nF	77 μF/F		
	1 μF	99 μF/F		
	1 kHz			
	10 pF	5.0 μF/F		
	100 pF	5.0 μF/F		
	1 nF	5.0 μF/F		
	10 nF	66 μF/F		
	100 nF	66 μF/F		
	1 μF	84 μF/F		
	10 kHz			
	10 pF	8.0 μF/F		
	100 pF	5.3 μF/F		
	1 nF	5.3 μF/F		
	10 nF	230 μF/F		
	100 nF	230 μF/F		
	1 μF	350 μF/F		
	Calibration for capacitance			
	in accordance with in-house procedure TPL061			
	at the following values:			
	1 kHz			
	10 pF	5.0 μF/F		
	100 pF	5.0 μF/F		
	1 nF	5.0 μF/F		
	10 nF	66 μF/F		
	100 nF	66 μF/F		
	1 μF	84 μF/F		

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^{*} The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務			
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
- DC & LF measurements			
- Capacitor	Calibration for capacitance in accordance with in-house procedure TPL065 at the following values and ranges:		
	100 Hz 10 μF	700 μF/F	
	400 Hz 10 pF 100 pF 1 nF 10 nF 100 nF 1 μF	500 μF/F 200 μF/F 200 μF/F 200 μF/F 200 μF/F 200 μF/F	
	1 kHz 10 pF 100 pF 1 nF 10 nF 100 nF 100 nF 1 μF 10 μF	300 μF/F 200 μF/F 200 μF/F 200 μF/F 200 μF/F 200 μF/F 700 μF/F	
	10 kHz 10 pF 100 pF 1 nF 10 nF 100 nF 1 μF	200 μF/F 200 μF/F 200 μF/F 230 μF/F 230 μF/F 400 μF/F	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*		
Electrical measurements and magnetism				
- DC & LF measurements				
- Capacitor	Calibration for capacitance in accordance with in-house procedure TPL065 at the following values or over the following ranges:			
	100 Hz to 1 kHz 10 μF	700 μF/F		
	400 Hz to 1 kHz 10 pF to 1 μF	700 μF/F		
	1 kHz to 10 kHz 10 pF to 0.05 μF Above 0.05 μF to 1 μF	700 μF/F 2000 μF/F		
	Calibration for capacitance in accordance with in-house procedure TPL004 over the following ranges:			
	50 Hz to 100 Hz 10 pF to 100 pF Above 100 pF to 1.11 μF	1000 μF/F 100 μF/F		
	100 Hz to 1 kHz 10 pF to 1.11 μF	100 μF/F		
	1 kHz to 10 kHz 10 pF to 100 pF Above 100 pF to 0.05 μF Above 0.05 μF to 1.11 μF	200 μF/F 250 μF/F 2000 μF/F		
	Calibration for capacitance in accordance with in-house procedure TPL060 over the following ranges:			
	1 kHz 10 pF to 1 nF Above 1 nF to 1 μF	15 μF/F 100 μF/F		

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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SPECIFIC TEST OR		
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Calibration for inductance in accordance with in-house procedure TPL063 at the following values or over the following ranges:		
400 Hz 100 μH 1 mH 10 mH, 100 mH, 1 H 100 μH to 1 H	180 μH/H 200 μH/H 140 μH/H 500 μH/H	
1 kHz 100 μH 1 mH 10 mH, 100 mH, 1 H 100 μH to 1 H	140 μH/H 180 μH/H 140 μH/H 500 μH/H	
10 kHz 100 μH, 1 mH, 10 mH 100 mH 100 μH to 100 mH	270 μH/H 350 μH/H 500 μH/H	
Calibration for phase accuracy in accordance with in-house procedure TPL071 over the following ratios:		
40 Hz to 100 kHz voltage ratio 1:1 voltage ratio 1:10	0.0020° 0.0025°	
	Calibration for inductance in accordance with in-house procedure TPL063 at the following values or over the following ranges: 400 Hz 100 µH 1 mH 10 mH, 100 mH, 1 H 100 µH to 1 H 1 kHz 100 µH 1 mH 10 mH, 100 mH, 1 H 100 µH to 1 H Calibration for phase accuracy in accordance with in-house procedure TPL071 over the following ratios: 40 Hz to 100 kHz voltage ratio 1:1	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
- DC & LF measurements			
- Phasemeter	Calibration for phase over the voltage of 0.1 V to 100 V with equal input levels in accordance with in-house procedure TPL028 over the following ranges:		
	40 Hz to 1 kHz 0° to 360°	0.020°	
	1 kHz to 6.25 kHz 0° to 360°	0.040°	
	6.25 kHz to 50 kHz 0° to 360°	0.060°	
	50 kHz to 100 kHz 0° to 360°	0.10°	
	Calibration for phase over the voltage of 0.1 V to 100 V with equal input levels in accordance with in-house procedure TPL072 over the following ranges:		
	40 Hz to 1 kHz 0° to 360°	0.020°	
	1 kHz to 6.25 kHz 0° to 360°	0.040°	
	6.25 kHz to 50 kHz 0° to 360°	0.060°	
	50 kHz to 100 kHz 0° to 360°	0.10°	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務			
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMEN' CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
- DC & LF measurements			
- Distortion meter	Calibration for distortion in accordance with in-house procedure TPL086 over the following ranges:		
	40 Hz to 50 kHz -10 dB to -60 dB	0.20 dB	
	50 kHz to 100 kHz -10 dB to -50 dB -50 dB to -60 dB	0.20 dB 0.50 dB	
	40 Hz to 20 kHz -60 dB to -70 dB	0.60 dB	
- Power factor meter	Calibration for power factor in accordance with in-house procedure TPL070 over the following ranges of parameters: Voltage: 25 V to 250 V Current: 50 mA to 100 A Frequency: 50 Hz and 60 Hz Power factor: 0.0 lead/lag to 0.5 lead/lag Above 0.5 lead/lag to 0.9 lead/lag Above 0.9 lead/lag to unity	0.0040 0.0030 0.0020	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®] Calibration for the following parameters in accordance with in-house procedure TPL081:	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
- DC output voltage:	
1 kV to 5 kV	6.0 V
Above 5 kV to 11 kV	7.0 V
- AC output voltage:	
1 kV to 2 kV	6.0 V
Above 2 kV to 5 kV	7.0 V
Above 5 kV to 7 kV	8.0 V
Above 7 kV to 9 kV	9.0 V
Above 9 kV to 11 kV	10 V
- DC leak current:	
0.5 mA to 100 mA	0.040 %
- AC leak current:	
0.5 mA to 100 mA	0.080 %
Calibratical fronts for the fall and a second second	
in accordance with in-house procedure TPL064:	
- Resistance:	
1 kHz	
1 Ω to 10 kΩ	20 μΩ/Ω
- Capacitance:	
1 kHz	
10 pF to 1 nF	15 μF/F
Above 1 nF to 1 μF	100 μF/F
- Inductance:	
1 kHz	
100 μH to 1 H	100 μΗ/Η
	- DC output voltage: 1 kV to 5 kV Above 5 kV to 11 kV - AC output voltage: 1 kV to 2 kV Above 2 kV to 5 kV Above 5 kV to 7 kV Above 7 kV to 9 kV Above 9 kV to 11 kV - DC leak current: 0.5 mA to 100 mA - AC leak current: 0.5 mA to 100 mA Calibration for the following parameters in accordance with in-house procedure TPL064: - Resistance: 1 kHz 1 Ω to 10 kΩ - Capacitance: 1 kHz 10 pF to 1 nF Above 1 nF to 1 μF - Inductance: 1 kHz

Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務			
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
- DC & LF measurements			
- Electrostatic meter	Calibration for DC voltage at distance not exceeding 100 mm from the calibration plane in accordance with in-house procedure TPD057 over the following range:		
	10 V to 50 kV	1.2×10^{-2}	
- Electrometer	Calibration for the following parameters in accordance with in-house procedure TPD059:		
	- DC voltage: 1 V to 1 kV	20 μV to 20 mV	
	- DC current: 1 pA to 20 pA Above 20 pA to 200 pA Above 20 pA to 2 nA Above 2 nA to 20 nA Above 20 nA to 20 µA Above 20 µA to 20 mA	0.025 pA to 0.20 pA 0.20 pA 0.20 pA to 2.0 pA 2.0 pA to 0.010 nA 0.010 nA to 0.010 μA 0.010 μA to 2.0 μA	
	- Charge: 0.1 nC to 2 nC Above 2 nC to 20 nC Above 20 nC to 200 nC Above 200 nC to 2μC	0.1 pC to 2.5 pC 2.5 pC to 6.0 pC 6.0 pC to 60 pC 60 pC to 0.60 nC	
	- Resistance: $1~M\Omega~to~20~M\Omega$ Above 20 M Ω to 100 M Ω Above 100 M Ω to 100 G Ω Above 100 G Ω to 1 T Ω Above 1 T Ω to 10 T Ω	$\begin{array}{c} 1.0 \; k\Omega \; to \; 20 \; k\Omega \\ 20 \; k\Omega \; to \; 50 \; k\Omega \\ 50 \; k\Omega \; to \; 0.10 \; G\Omega \\ 0.10 \; G\Omega \; to \; 3.0 \; G\Omega \\ 3.0 \; G\Omega \; to \; 35 \; G\Omega \end{array}$	
	- DC output voltage (voltage source): 0.1 mV to 1 kV	0.15 μV to 20 mV	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

ITEM TESTED OR MEASURED 測試或量度項目 Electrical measurements and magnetism - DC & LF measurements - Residual-current device (RCD) tester	SPECIFIC TEST OR PROPERTY MEASURED® 特定測試或量度的特性® Calibration for the following parameters in accordance with in-house procedure TPD077: - AC residual current: 5 mA to 1 A	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
- DC & LF measurements	in accordance with in-house procedure TPD077: - AC residual current: 5 mA to 1 A	
	in accordance with in-house procedure TPD077: - AC residual current: 5 mA to 1 A	
- Residual-current device (RCD) tester	in accordance with in-house procedure TPD077: - AC residual current: 5 mA to 1 A	
	5 mA to 1 A	
		0.50 %
	Above 1 A to 2.5 A	2.2 %
	Above 2.5 A to 5 A	3.5 %
	- Residual pulsating DC current:	
	20 mA to 1.406 A	1.2 %
	- Ramping AC residual current:	
	2 mA to 4 mA	2.2 %
	Above 4 mA to 40 mA	1.3 %
	Above 40 mA to 550 mA	1.0 %
	- Tripping time:	
	10 ms to 40 ms	0.70 ms
	Above 40 ms to 160 ms	0.80 ms
	Above 160 ms to 430 ms	1.0 ms
	Above 430 ms to 1000 ms	2.2 ms

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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	PROPERT	FIC TEST OR 'Y MEASURED [@] 或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
- DC & LF measurements				
- Harmonics source	Calibration for harmonic voltage in accordance with in-house procedure TPL116 over the following ranges of parameters:			
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 100th ±(0 to 180)°		
	Harmonic voltage:	10 V to 12 V 20 V to 24 V	0.030 % 0.030 %	
	Calibration for harmonin accordance with it	n-house procedure TPL128		
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 100th ±(0 to 180)°		
	Harmonic voltage:	10 V to 12 V 20 V to 24 V	0.030 % 0.030 %	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	PROPERT	FIC TEST OR FY MEASURED [@] 或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
- DC & LF measurements				
- Harmonics source	Calibration for harmonic current in accordance with in-house procedure TPL117 over the following ranges of parameters:			
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 100th ±(0 to 180)°		
	Harmonic current:	10 mA to 20 mA Above 20 mA to 0.2 A Above 0.2 A to 6 A	0.24 % 0.18 % 0.24 %	
		onic current in-house procedure TPL129 anges of parameters:		
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 100th ±(0 to 180)°		
	Harmonic current:	10 mA to 20 mA Above 20 mA to 0.2 A Above 0.2 A to 6 A	0.24 % 0.18 % 0.24 %	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務				
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]		CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism				
- DC & LF measurements				
- Harmonics analyzer	Calibration for harmonia accordance with in over the following re	n-house procedure TPL114		
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 45th ±(0 to 180)°		
	Harmonic voltage:	10 V to 12 V 20 V to 24 V	0.30 % 0.30 %	
	Calibration for harmonia accordance with it over the following v	n-house procedure TPL110		
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 45th ±(0 to 180)°		
	Harmonic current:	4 A	0.80 %	
	Calibration for harmonia accordance with in over the following re-	n-house procedure TPL115		
	Frequency: Harmonic order: Phase:	50 Hz / 60 Hz 2nd to 45th ±(0 to 180)°		
	Harmonic current:	3 mA to 75 mA Above 75 mA to 3 A Above 3 A to 6 A	3.0 % 0.50 % 0.80 %	

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- DC & LF measurements		
- Flicker source	Calibration for modulation depth in accordance with in-house procedure TPL126: over the following ranges of parameters:	
	Modulation waveform: Sinusoidal Voltage: 120 V / 240 V Frequency: 50 Hz / 60 Hz Phase: 0° Modulating frequency: 5 Hz to 25 Hz	
	Modulation depth: 0.25 % to 1 %	0.010 % to 0.060 %
	Calibration for modulation depth in accordance with in-house procedure TPL136: over the following ranges of parameters:	
	Modulation waveform: Rectangular Voltage: 120 V / 230 V Frequency: 50 Hz / 60 Hz Phase: 0° Modulating frequency: 1 Hz to 25 Hz	
	Modulation depth: 0.25 % to 1 %	0.035 %
- Flicker meter	Calibration for short-term flicker severity (Pst) and long-term flicker severity (Plt) in accordance with in-house procedure TPL112 over the following ranges of parameters:	
	Modulation waveform: Rectangular Voltage: 230 V Frequency: 50 Hz Depth: 0.001 % to 60 %	
	Duty cycle: 0.01 % to 99.99 % Short-term flicker severity (Pst) Long-term flicker severity (Plt)	0.0030 0.0030

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務			
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Electrical measurements and magnetism			
- DC & LF measurements			
- Electrocardiograph (ECG) analyser	Calibration for voltage level in accordance with in-house procedure TPL143 over the following ranges of parameters:		
	Waveform: Sinusoidal Frequency: 10 Hz to 200 Hz		
	Voltage level: 1 mV to 5 mV	0.30 %	
- Electrical safety analyzer	Calibration for the following parameters in accordance with in-house procedure TPL141:		
	- Accessible voltage: 50 Hz		
	1 V to 300 V	0.10 V	
	- Mains voltage: 50 Hz		
	1 mV to 0.1 V	0.10 V	
	220 V	0.20 V	
	230 V 240 V	0.20 V 0.20 V	
	- Protective earth resistance: 0.5Ω to 2Ω	0.0030Ω	
	0.5 \$2 to 2 \$2	0.0030 \$2	
	- Insulation resistance:		
	$1~\mathrm{M}\Omega$ to $23~\mathrm{M}\Omega$	0.10 ΜΩ	
	Above 23 M Ω to 100 M Ω	0.20 ΜΩ	
	- Leakage current:		
	50 Hz		
	10 μA to 199.9 μA	0.10 μΑ	
	200 μA to 1999 μA 2 mA to 10 mA	1.0 μA 10 μA	
	2 111.10 10 111.1	-~ m-	
	- Equipment current: 50 Hz		
	1 A to 6.5 A	0.10 A	

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SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®] Calibration for the following parameters	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Calibration for the following parameters	
Calibration for the following parameters	
Calibration for the following parameters	
in accordance with in-house procedure TPL141:	
- Point to point voltage	
1 V to 300 V	0.10 V
- Point to point current:	
10 μΑ to 199.9 μΑ	0.10 μΑ
200 μA to 1999 μA	1.0 μΑ
2 mA to 10 mA	10 μΑ
- Point to point resistance: 0.5 Ω to 2 Ω	0.0030 Ω
Calibration for biphasic energy in accordance with in-house procedure TPL142 over the following ranges:	1.0 J
	1.5 J
Above 300 J to 360 J	2.0 J
Calibration for passband attenuation and stopband attenuation in accordance with in-house procedure TPL127 over the following ranges of parameters:	
Voltage: 3.2 V	
Frequency: 20 Hz to 25 kHz	
Passband attenuation: 0 dB to -10 dB Stopband attenuation: 0 dB to -80 dB	0.010 dB 0.20 dB
	50 Hz 1 V to 300 V - Point to point current: 50 Hz 10 μA to 199.9 μA 200 μA to 1999 μA 2 mA to 10 mA - Point to point resistance: 0.5 Ω to 2 Ω Calibration for biphasic energy in accordance with in-house procedure TPL142 over the following ranges: 150 J to 200 J Above 200 J to 300 J Above 300 J to 360 J Calibration for passband attenuation and stopband attenuation in accordance with in-house procedure TPL127 over the following ranges of parameters: Voltage: 3.2 V Frequency: 20 Hz to 25 kHz

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Calibration Services 校正服務		
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Electrical measurements and magnetism		
- DC & LF measurements		
- SINAD meter	Calibration for signal-to-noise and distortion ratio (SINAD) in accordance with in-house procedure TPL13: over the following ranges of parameters: Voltage level: 1 V to 6.4 V Frequency: 40 Hz, 1 kHz, 10 kHz	2
	Signal-to-noise and distortion ratio (SINAD): 10 dB to 70 dB	0.30 dB
	Voltage level: 1 V to 6.4 V Frequency: 20 kHz, 40 kHz	
	Signal-to-noise and distortion ratio (SINAD): 10 dB to 60 dB Above 60 dB to 70 dB	0.30 dB 0.80 dB
- Strain gauge meter	Calibration for voltage ratio in accordance with in-house procedure TPL13: at the following voltage levels:	3
	Test frequency: 40 Hz to 1 kHz 2.5 V 5 V 10 V	1.0 μV/V 1.0 μV/V 1.0 μV/V

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SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Calibration for the difference in Coordinated Universal Time (UTC – UTC(SCL)) in accordance with in-house procedure TPR001:	0.1 μs	
Calibration for time interval difference from laboratory reference time scale UTC(SCL) in accordance with in-house procedure TPR001 over the following range:		
1 ns to 1 s	1 ns	
	PROPERTY MEASURED [®] 特定測試或量度的特性 [®] Calibration for the difference in Coordinated Universal Time (UTC – UTC(SCL)) in accordance with in-house procedure TPR001: Calibration for time interval difference from laboratory reference time scale UTC(SCL) in accordance with in-house procedure TPR001 over the following range:	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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CALIBRATION AND MEASURE (MEASURED® CAPABILITY (CMC)* 校準和測量能力* Dowing parameters -house procedure TPR002: lowing values: $2.0 \times 10^{-13} \text{ of result} \\ 8.2 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-13} \text{ of result} \\ 100 \times 10^{-13} \text{ of result} $	
-house procedure TPR002: lowing values: $ 2.0 \times 10^{-13} \text{ of result} \\ 8.2 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-14} \text{ of result} \\ \text{for } \tau \geq 5 \text{ days, where } \tau \text{ is the averaging} $ the following frequencies: $ 2 \times 10^{-13} \text{ of result} \\ 2 \times 10^{-13} \text{ of result} \\ 2 \times 10^{-13} \text{ of result} $; time
-house procedure TPR002: lowing values: $ 2.0 \times 10^{-13} \text{ of result} \\ 8.2 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-14} \text{ of result} \\ \text{for } \tau \geq 5 \text{ days, where } \tau \text{ is the averaging} $ the following frequencies: $ 2 \times 10^{-13} \text{ of result} \\ 2 \times 10^{-13} \text{ of result} \\ 2 \times 10^{-13} \text{ of result} $; time
-house procedure TPR002: lowing values: $ 2.0 \times 10^{-13} \text{ of result} \\ 8.2 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-14} \text{ of result} \\ 8.0 \times 10^{-14} \text{ of result} \\ \text{for } \tau \geq 5 \text{ days, where } \tau \text{ is the averaging} $ the following frequencies: $ 2 \times 10^{-13} \text{ of result} \\ 2 \times 10^{-13} \text{ of result} \\ 2 \times 10^{-13} \text{ of result} $; time
$2.0 \times 10^{-13} \text{ of result}$ $8.2 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ for $\tau \ge 5$ days, where τ is the averaging the following frequencies: $2 \times 10^{-13} \text{ of result}$; time
$8.0 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ $60 \times 10^{-14} \text{ of result}$ for $\tau \ge 5$ days, where τ is the averaging the following frequencies: $2 \times 10^{-13} \text{ of result}$ $2 \times 10^{-13} \text{ of result}$ $2 \times 10^{-13} \text{ of result}$; time
2×10^{-13} of result 2×10^{-13} of result 2×10^{-13} of result	
for $\tau = 1$ day, where τ is the averaging	time
owing parameters -house procedure TPR049:	
llowing values: $8.2 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ $8.0 \times 10^{-14} \text{ of result}$ for $\tau \geq 5$ days, where τ is the averaging	g time
the following frequencies: $ 2 \times 10^{-13} \text{ of result} $ for $\tau=1$ day, where τ is the averaging $\tau=1$	time
1	2×10^{-13} of result 2×10^{-13} of result

[@] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- Time and frequency measurements		
- Frequency source	Calibration for frequency in accordance with in-house procedure TPR004 over the following ranges:	
	1 Hz to 1 kHz Above 1 kHz to 1 MHz Above 1 MHz to 1.3 GHz Above 1.3 GHz to 10 GHz Above 10 GHz to 26.5 GHz	4 x 10 ⁻⁶ to 3 x 10 ⁻⁹ of result 3 x 10 ⁻⁹ to 5 x 10 ⁻¹¹ of result 5 x 10 ⁻¹¹ of result 6 x 10 ⁻¹⁰ to 2 x 10 ⁻¹⁰ of result 2 x 10 ⁻¹⁰ to 1 x 10 ⁻¹⁰ of result
	Calibration for frequency in accordance with in-house procedure TPR073 over the following range:	
	12.4 GHz to 40 GHz	1 x 10 ⁻¹⁰ of result
- Frequency counter	Calibration for frequency in accordance with in-house procedure TPR003 over the following ranges:	
	1 Hz to 1 kHz Above 1 kHz to 1 MHz Above 1 MHz to 1.3 GHz Above 1.3 GHz to 10 GHz Above 10 GHz to 26.5 GHz	4 x 10 ⁻⁶ to 3 x 10 ⁻⁹ of result 3 x 10 ⁻⁹ to 6.1 x 10 ⁻¹¹ of result 6.1 x 10 ⁻¹¹ of result 6.1 x 10 ⁻¹⁰ to 2 x 10 ⁻¹⁰ of result 2 x 10 ⁻¹⁰ to 1 x 10 ⁻¹⁰ of result
	Calibration for frequency in accordance with in-house procedure TPR081 over the following range:	
	18 GHz to 40 GHz	1×10^{-10} of result

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
Time and frequency measurements		
- Flashing light source	Calibration for the following parameters in accordance with in-house procedure TPR084	
	- Frequency over the following range: 1 Hz to 1 kHz	4 x 10 ⁻⁶ to 3 x 10 ⁻⁹ of result
	- Period over the following range: 1 ms to 1 s	3 x 10 ⁻⁹ to 4 x 10 ⁻⁶ of result
- Two flashing light source	Calibration for time interval in accordance with in-house procedure TPR085 over the following range:	
	Above 0.05 μs to 999 s	3.0 ns

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Electrical measurements and magnetism		
- Time and frequency measurements		
- Period source	Calibration for period in accordance with in-house procedure TPR073 over the following range:	
	25 ps to 81 ps	1 x 10 ⁻¹⁰ of result
	Calibration for period in accordance with in-house procedure TPR004 over the following ranges:	
	Above 38 ps to 100 ps Above 100 ps to 769 ps Above 769 ps to 1 \mus Above 1 \mus to 1 ms Above 1 ms to 1 s	1 x 10 ⁻¹⁰ to 2 x 10 ⁻¹⁰ of result 2 x 10 ⁻¹⁰ to 6 x 10 ⁻¹⁰ of result 5 x 10 ⁻¹¹ of result 5 x 10 ⁻¹¹ to 3 x 10 ⁻⁹ of result 3 x 10 ⁻⁹ to 4 x 10 ⁻⁶ of result
- Period meter	Calibration for period in accordance with in-house procedure TPR081 over the following range:	
	25 ps to 56 ps	1 x 10 ⁻¹⁰ of result
	Calibration for period in accordance with in-house procedure TPR003 over the following ranges:	
	38 ps to 100 ps Above 100 ps to 769 ps Above 769 ps to 1 \mus Above 1 \mus to 1 ms Above 1 ms to 1 s	1 x 10 ⁻¹⁰ to 2 x 10 ⁻¹⁰ of result 2 x 10 ⁻¹⁰ to 6.1 x 10 ⁻¹⁰ of result 6.1 x 10 ⁻¹¹ of result 6.1 x 10 ⁻¹¹ to 3 x 10 ⁻⁹ of result 3 x 10 ⁻⁹ to 4 x 10 ⁻⁶ of result

Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
Time and frequency measurements		
- Time difference source	Calibration for time interval in accordance with in-house procedure TPR005 over the following ranges:	
	1 ns to 1 s Above 1 s to 999 s	1 ns 1 ns to 3 ns
- Time difference meter	Calibration for time interval in accordance with in-house procedure TPR005 over the following ranges:	
	1 ns to 1 s	1 ns
	Above 1 s to 999 s	1 ns to 15 ns

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Electrical measurements and magnetism		
- Time and frequency measurements		
- Timing device	Calibration for the following parameters in accordance with in-house procedure TPR056	
	- Relative accuracy: 10 ms to below 1 s 1 s to below 10 s 10 s to below 100 s 100 s to below 1,000 s	2 x 10 ⁻¹ 2 x 10 ⁻² 2 x 10 ⁻³ 2 x 10 ⁻⁴
	1,000 s to below 10,000 s 10,000 s to below 100,000 s 100,000 s to below 9,999,999.999 s	2 x 10 ⁻⁵ 2 x 10 ⁻⁶ 2 x 10 ⁻⁷
- Electronic stop watch (with resolution ≥ 0.001 s) (maximum measuring time interval of 9,999,999.999 s (~115 days))	Calibration for relative accuracy in accordance with in-house procedure TPR056 for a calibration period of 7 hours	2 x 10 ⁻⁷
- Quartz watch tester	Calibration for the following parameters in accordance with in-house procedure TPR066: - Relative time accuracy	
	over the following range: +8 sec per day to -8 sec per day	0.01 sec per day
	- Relative frequency accuracy over the following range of frequencies: 32765 Hz to 32771 Hz	3 x 10 ⁻⁷

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Electrical measurements and magnetism		
- Time and frequency measurements		
- Mechanical watch tester	Calibration for the following parameters in accordance with in-house procedure TPR067:	
	- Relative time accuracy over the following range:	
	+8 sec per day to -8 sec per day	0.05 sec per day
	- Relative frequency accuracy in beats per hour (BPH) over the following range:	
	14400 BPH to 36000 BPH	1.5 x 10 ⁻⁷
- Metronome	Calibration for frequency in beats per minute	
	(BPM) in accordance with in-house procedure TPR069 at the following values:	
	60 BPM	2 x 10 ⁻⁴ BPM
	120 BPM 150 BPM	2 x 10 ⁻⁴ BPM 2 x 10 ⁻⁴ BPM
	180 BPM	2 x 10 ⁻⁴ BPM
	200 BPM	2 x 10 ⁻⁴ BPM
	240 BPM	2 x 10 ⁻⁴ BPM

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Electrical measurements and magnetism		
- Radio Frequency (RF) measurements		
- Voltage source	Calibration for voltage in accordance with in-house procedure TPR039: over the following ranges:	
	DC and up to 2.5 GHz AC 50 Ω 4 mV to 5 V	1.2 %
	DC and up to 2.5 GHz AC 1 MΩ 0.8 V to 40 V	1.2 %
	0.8 V to 40 V	1.2 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- Power source fitted with 50 Ω type N connector	Calibration for power in accordance with in-house procedure TPR010 over the following ranges:	
	10 kHz to 30 MHz 10 nW to 10 μW	1.3 % to 4.5 %
	Above 10 μW to 100 mW 30 MHz to 3 GHz	1.3 % to 4.0 %
	10 nW to 10 μW Above 10 μW to 100 mW	1.0 % to 3.8 % 1.0 % to 3.1 %
	3 GHz to 18 GHz 10 nW to 10 μW	2.3 % to 7.7 %
	Above 10 µW to 100 mW	2.3 % to 7.4 %
	Calibration for power in accordance with in-house procedure TPR025 over the following ranges:	
	100 Hz to 3 GHz -100 dBm to +20 dBm	1.2 dB
	3 GHz to 18 GHz -100 dBm to +20 dBm	2.0 dB
- High Level RF Power source fitted with 50 Ω type N connector	Calibration for power in accordance with in-house procedure TPR036 over the following ranges:	
	1 MHz to 1 GHz 1 W to 30 W	2.8 % to 5.3 %
	1 GHz to 4.2 GHz 1 W to 5 W	2.4 % to 3.2 %
	4.2 GHz to 18 GHz 1 W to 10 W	3.2 % to 4.1 %

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Electrical measurements and magnetism		
- RF measurements		
- Power meter fitted with 50 Ω	Calibration for power in accordance with	
type N connector	in-house procedure TPR009	
type iv commetter	over the following ranges:	
	, , , , , , , , , , , , , , , , , , ,	
	10 kHz to 30 MHz	
	10 nW to 10 μW	1.4 % to 4.5 %
	Above 10 µW to 100 mW	1.4 % to 4.0 %
	30 MHz to 3 GHz	
	10 nW to $10 \mu\text{W}$	1.0 % to 3.8 %
	Above 10 μW to 100 mW	1.0 % to 3.1 %
	2 000 1 10 000	
	3 GHz to 18 GHz 10 nW to 10 μW	1000 . 7400
	Above 10 μW to 100 mW	1.9 % to 7.4 % 1.9 % to 7.0 %
	Above to µw to 100 mw	1.5 /0 to 7.0 /0
	Calibration for power in accordance with	
	in-house procedure TPR025	
	over the following ranges:	
	100 Hz to 3 GHz	
	-100 dBm to +20 dBm	1.2 dB
	3 GHz to 18 GHz	
	-100 dBm to +20 dBm	2.0 dB
- High level RF power meter fitted	Calibration for power in accordance with	
with 50 Ω type N connector	in-house procedure TPR035	
	over the following ranges:	
	1 MHz to 1 GHz	
	23 dBm to 44 dBm	0.60 dB
	1 GHz to 4.2 GHz	
	23 dBm to 37 dBm	0.60 dB
	4.2 GHz to 18 GHz	
	23 dBm to 40 dBm	0.60 dB

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Electrical measurements and magnetism		
- RF measurements		
- Power meter fitted with 50 Ω 3.5 mm connector	Calibration for power in accordance with in-house procedure TPR045 over the following range:	
	50 MHz to 26.5 GHz 10 nW to 1 mW	5.7 % to 7.0 %
- Power source fitted with 50 Ω 3.5 mm connector	Calibration for power in accordance with in-house procedure TPR046 over the following range:	
	50 MHz to 26.5 GHz 10 nW to 1 mW	1.3 % to 4.5 %
- Power meter fitted with 50 Ω 2.4 mm connector	Calibration for power in accordance with in-house procedure TPR082 over the following range:	
	50 MHz to 100 MHz 10 μW to 1 mW	3.1 % to 3.4 %
	100 MHz to 10 GHz 10 μW to 1 mW	4.0 % to 4.9 %
	10 GHz to 26.5 GHz 10 μW to 1 mW	5.3 % to 7.0 %
	26.5 GHz to 40 GHz 10 μW to 1 mW	9.0 % to 9.7 %
- Power source fitted with 50 Ω 2.4 mm connector	Calibration for power in accordance with in-house procedure TPR078 over the following range:	
	50 MHz to 40 GHz 10 μW to 100 mW	1.1 % to 8.2 %

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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

	Calibration Services 校正服務		
SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*		
Calibration for power gain in accordance with in-house procedure TPR402 over the following ranges:			
10 kHz to below 1 MHz -100 dBm to 20 dBm	0.10 dB to 2.6 dB		
1 MHz to 50 MHz -100 dBm to 44.8 dBm	0.07 dB to 2.6 dB		
Above 50 MHz to 1 GHz -100 dBm to 44.8 dBm	0.09 dB to 2.6 dB		
Above 1 GHz to 3 GHz -100 dBm to 44.8 dBm	0.12 dB to 2.6 dB		
Above 3 GHz to 4.2 GHz -100 dBm to 37 dBm	0.12 dB to 7.7 dB		
Above 4.2 GHz to 18 GHz -100 dBm to 40 dBm	0.19 dB to 7.7 dB		
Above 18 GHz to 26.5 GHz -50 dBm to 20 dBm	0.21 dB to 0.44 dB		
Above 26.5 GHz to 40 GHz -50 dBm to 20 dBm	0.23 dB to 0.59 dB		
	特定測試或量度的特性 [®] Calibration for power gain in accordance with in-house procedure TPR402 over the following ranges: 10 kHz to below 1 MHz -100 dBm to 20 dBm 1 MHz to 50 MHz -100 dBm to 44.8 dBm Above 50 MHz to 1 GHz -100 dBm to 44.8 dBm Above 1 GHz to 3 GHz -100 dBm to 44.8 dBm Above 3 GHz to 4.2 GHz -100 dBm to 37 dBm Above 4.2 GHz to 18 GHz -100 dBm to 40 dBm Above 18 GHz to 26.5 GHz -50 dBm to 20 dBm Above 26.5 GHz to 40 GHz		

[@] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- RF measurements		
- Thermistor mount power sensor fitted with 50 Ω type N connector	Calibration for effective efficiency by using micro-calorimeter in accordance with in-house procedure TPR401 over the following range:	
	10 MHz to 18 GHz 0.9 to 1	0.003 to 0.006
- Thermistor mount power sensor fitted with 50 Ω type N connector	Calibration for effective efficiency at 10 mW by using direct method in accordance with in-house procedure TPR055 over the following range:	
	10 MHz to 18 GHz 0.9 to 1	0.004 to 0.019

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CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 的特性 [@] 校準和測量能力* procedure TPR008
1.0 % to 3.2 % 1.0 % to 3.2 %
1.0 % to 1.8 % 0.8 % to 1.2 %
1.8 % to 3.9 % 1.2 % to 3.3 %
tor at 1 mW procedure TPR074
2.3 %
3.7 %

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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- RF measurements		
- Coaxial system fitted with 50 Ω	Calibration for the following parameters	
type N connector	in accordance with in-house procedure TPR030:	
51		
	- Voltage reflection coefficient phase	
	over the following ranges:	
	300 kHz to 45 MHz	
	-180° to +180°	1.5° to 180°
	45 MHz to 2 GHz	
	-180° to +180°	0.7° to 180°
	2 GHz to 8 GHz	
	-180° to +180°	1.3° to 180°
	8 GHz to 18 GHz	
	-180° to +180°	2.5° to 180°
	- Voltage reflection coefficient magnitude	
	over the following ranges:	
	300 kHz to 45 MHz	
	0.000 to 1.000	0.0080 to 0.029
	45 MHz to 2 GHz	
	0.000 to 1.000	0.0066 to 0.010
	2 GHz to 8 GHz	
	0.000 to 1.000	0.011 to 0.022
	8 GHz to 18 GHz	
	0.000 to 1.000	0.020 to 0.036
	- Voltage reflection coefficient (real and	
	imaginary components)	
	over the following ranges:	
	300 kHz to 45 MHz	
	-1.000 to 1.000	0.0080 to 0.029
	45 MHz to 2 GHz	
	-1.000 to 1.000	0.0066 to 0.010
	2 GHz to 8 GHz	
	-1.000 to 1.000	0.011 to 0.022
	8 GHz to 18 GHz	
	-1.000 to 1.000	0.020 to 0.036
	- Voltage Standing Wave Ratio (VSWR)	
	$VSWR = (1+ \Gamma)/(1- \Gamma)$	$2U_{ \Gamma }/(1- \Gamma)^2$
	$ \Gamma $ = voltage reflection coefficient magnitude	where $U_{ \Gamma }$ is the CMC of $ \Gamma $

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- Coaxial system fitted with 50 Ω PC7 connector	Calibration for the following parameters in accordance with in-house procedure TPR030:	
	 Voltage reflection coefficient phase over the following ranges: 45 MHz to 2 GHz 	
	-180° to +180° 2 GHz to 8 GHz -180° to +180°	0.5° to 180° 0.7° to 180°
	8 GHz to 18 GHz -180° to +180°	2.1° to 180°
	 Voltage reflection coefficient magnitude over the following ranges: 45 MHz to 2 GHz 	
	0.000 to 1.000 2 GHz to 8 GHz 0.000 to 1.000	0.004 to 0.008 0.004 to 0.005
	8 GHz to 18 GHz 0.000 to 1.000	0.008 to 0.009
	- Voltage reflection coefficient (real and imaginary components) over the following ranges: 45 MHz to 2 GHz	
	-1.000 to 1.000 2 GHz to 8 GHz -1.000 to 1.000	0.004 to 0.008 0.004 to 0.005
	8 GHz to 18 GHz -1.000 to 1.000	0.008 to 0.009

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Electrical measurements and magnetism		
RF measurements		
- Coaxial system fitted with 50 Ω 2.4 mm connector	Calibration for the following parameters in accordance with in-house procedure TPR071:	
	 Voltage reflection coefficient phase over the following ranges: 10 MHz to 700 MHz 	
	-180° to +180° 700 MHz to 24 GHz	2.6° to 180°
	-180° to +180° 24 GHz to 40 GHz -180° to +180°	1.4° to 180° 4.0° to 180°
	 Voltage reflection coefficient magnitude over the following ranges: 10 MHz to 700 MHz 0.000 to 1.000 	0.023 to 0.046
	700 MHz to 24 GHz 0.000 to 1.000 24 GHz to 40 GHz	0.013 to 0.024
	0.000 to 1.000 - Voltage reflection coefficient (real and imaginary components)	0.023 to 0.046
	over the following ranges: 10 MHz to 700 MHz -1.000 to 1.000	0.023 to 0.046
	700 MHz to 24 GHz -1.000 to 1.000 24 GHz to 40 GHz	0.013 to 0.024
	-1.000 to 1.000	0.023 to 0.046
	- Voltage Standing Wave Ratio (VSWR) $VSWR = (1+ \Gamma)/(1- \Gamma) \\ \Gamma = voltage \ reflection \ coefficient \ magnitude$	$ 2U_{ \Gamma }/(1- \Gamma)^2 $ where $U_{ \Gamma }$ is the CMC of $ \Gamma $

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- Coaxial system fitted with 50 Ω	Calibration for transmission coefficient phase	
2.4 mm connector	in accordance with in-house procedure TPR072 over the following ranges:	
	10 MHz to 700 MHz	
	0 dB to 40 dB -180° to +180°	1.5°
	50 dB -180° to +180°	1.8°
	60 dB -180° to +180°	3.6°
	70 dB -180° to +180°	11°
	80 dB -180° to +180°	33°
	700 MHz to 24 GHz	
	0 dB to 30 dB -180° to +180°	0.8° to 2.8°
	40 dB to 60 dB -180° to +180°	1.1° to 3.4°
	70 dB -180° to +180°	2.1° to 4.0°
	80 dB -180° to +180°	5.9° to 6.9°
	24 GHz to 40 GHz	
	0 dB to 30 dB -180° to +180°	3.1° to 4.5°
	40 dB to 50 dB -180° to +180°	3.4° to 5.1°
	60 dB -180° to +180°	3.7° to 5.5°
	70 dB -180° to +180°	5.0° to 6.5°
	80 dB -180° to +180°	11° to 12°

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

香港灣仔告士打道7號入境事務大樓 36 樓 Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- RF measurements		
- Coaxial system fitted with 50 Ω 2.4 mm connector	Calibration for transmission coefficient magnitude in accordance with in-house procedure TPR072 over the following ranges:	
	10 MHz to 700 MHz 0 to 40 dB 50 dB	0.20 dB 0.25 dB
	60 dB 70 dB 80 dB	0.52 dB 1.5 dB 3.9 dB
	700 MHz to 24 GHz 0 to 50 dB 60 dB	0.11 dB 0.13 dB
	70 dB 80 dB	0.30 dB 0.83 dB
	24 GHz to 40 GHz 0 to 50 dB 60 dB 70 dB	0.20 dB 0.25 dB 0.54 dB
	80 dB	1.5 dB

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
Natural and an almost fixed soid 50.0	Calibration for the following a second to	
- Network analyzer fitted with 50 Ω 2.4 mm connector	Calibration for the following parameters in accordance with in-house procedure TPR075:	
	- Voltage reflection coefficient magnitude	
	over the following ranges:	
	10 MHz to 700 MHz 0.000 to 1.000	0.038
	700 MHz to 24 GHz	0.038
	0.000 to 1.000	0.023
	24 GHz to 40 GHz	0.023
	0.000 to 1.000	0.043
	- Voltage reflection coefficient phase	
	over the following ranges:	
	10 MHz to 700 MHz	
	-180° to +180°	5.6°
	700 MHz to 24 GHz	
	-180° to +180°	4.5° to 5.8°
	24 GHz to 40 GHz	
	-180° to +180°	9.0° to 11°
	- Transmission coefficient magnitude	
	over the following ranges:	
	10 MHz to 700 MHz	
	0 dB to 80 dB	0.24 dB
	700 MHz to 24 GHz	
	0 dB to 80 dB	0.12 dB
	24 GHz to 40 GHz	
	0 dB to 80 dB	0.22 dB
	- Transmission coefficient phase	
	over the following ranges:	
	10 MHz to 700 MHz	
	-180° to +180°	1.4°
	700 MHz to 24 GHz	4.40
	-180° to +180°	1.4° to 2.6°
	24 GHz to 40 GHz -180° to +180°	3.3° to 4.7°

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Electrical measurements and magnetism		
- RF measurements		
- Oscilloscope	Calibration for the following parameters in accordance with in-house procedure TPR016:	
	- Peak to Peak voltage of 1 kHz square waveform over the following range: 40 μV to 40 V	0.0032v + 3 μV
	- Period of triangular waveform over the following range:	where v is nominal test voltage in V
	0.5 ns to 5 s	0.060 %
	- Bandwidth over the following range: 1 MHz to 2 GHz	4.3 % of applied voltage level and it will be expressed in term of frequency for the UUT
	Calibration for rise time in accordance with in-house procedure TPR024: over the following range:	
	0.5 ns to 900 μs	0.03 ns to 23 μs
	Calibration for the following parameters in accordance with in-house procedure TPC101:	
	- Peak to Peak voltage of 1 kHz square waveform over the following range: $40~\mu V \ to \ 200~V$	$0.0032v + 3 \mu V$ where v is nominal test voltage in V
	- Period of triangular waveform over the following range:	where v is nonlinear test voltage in v
	0.2 ns to 50 s	0.060 %
	- Bandwidth over the following range: 0.1 MHz to 6.4 GHz	4.3 % of applied voltage level and it will be expressed in term of frequency for the UUT
	- Rise time over the following range: 300 ps to 1 ms	8.0 ps to 20 μs

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- Oscilloscope	Calibration for the following parameters in accordance with in-house procedure TPC105:	
	- Bandwidth: 6 GHz to 20 GHz	0.25 %
	- Rise time: 20 ps to 300 ps	0.25 ps
- Oscilloscope calibrator	Calibration for square wave output amplitude in accordance with in-house procedure TPC102 over the following ranges:	
	50 Hz to 1 kHz 50 Ω 0.4 mV to 4 V	0.90 % to 0.002 %
	1 MΩ 0.4 mV to 200 V	0.90 % to 0.002 %
- Amplitude modulation generator and meter	Calibration for modulation index in accordance with in-house procedure TPR013 over the following range of parameters:	
	Carrier frequency: 150 kHz to 1.3 GHz Modulating frequency: 100 Hz to 200 kHz	
	Modulation index: 0.01 to 0.99	3.4 % to 4.3 %
- Frequency modulation generator and meter	Calibration for frequency deviation in accordance with in-house procedure TPR014 over the following range of parameters:	
	Carrier frequency: 150 kHz to 1.3 GHz Modulating frequency: 100 Hz to 400 kHz	
	Frequency deviation at: 100 Hz to 400 kHz	0.80 %

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Electrical measurements and magnetism		
RF measurements		
- RF attenuator fitted with 50 Ω connector	Calibration for attenuation by using WBCO system in accordance with in-house procedure TPR012 over the following range:	
	30 MHz 0 dB to 50 dB	0.009 dB to 0.039 dB
	Above 30 MHz to 16 GHz 0 dB to 50 dB	0.050 dB
	Calibration for attenuation by using automatic network analyser in accordance with in-house procedure TPR031 over the following ranges:	
	300 kHz to 18 GHz 0 dB to 20 dB Above 20 dB to 40 dB Above 40 dB to 60 dB Above 60 dB to 80 dB	0.036 dB to 0.14 dB 0.036 dB to 0.15 dB 0.075 dB to 0.49 dB 0.56 dB to 5.8 dB

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Electrical measurements and magnetism		
- RF measurements		
- RF voltage generator of 50 Ω load	Calibration for voltage in accordance with in-house procedure TPR011 over the following range: 10 kHz to 1 GHz	
	0.71 mV to 2.2 V	0.80 % to 2.3 %
	Calibration for voltage in accordance with in-house procedure TPR025 over the following ranges:	
	100 Hz to 3 GHz 7 dBμV to 127 dBμV	1.2 dB
	3 GHz to 18 GHz 7 dBμV to 127 dBμV	2.0 dB
- RF voltage generator of 75 Ω load	Calibration for voltage in accordance with in-house procedure TPR050 over the following range:	
	300kHz to 1 GHz $65\text{dB}\mu\text{V}$ to 134 dB μV	0.30 dB

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Electrical measurements and magnetism		
- RF measurements		
- RF voltmeter of 50 Ω load	Calibration for voltage in accordance with in-house procedure TPR011 over the following range: 10 kHz to 1 GHz 0.71 mV to 2.2 V	1.5 % to 3.6 %
	Calibration for voltage in accordance with in-house procedure TPR025 over the following ranges:	
	100 Hz to 3 GHz 7 dBμV to 127 dBμV	1.2 dB
	3 GHz to 13 GHz 7 dBμV to 127 dBμV	2.5 dB
	13 GHz to 18 GHz 7 dBμV to 127 dBμV	3.2 dB
- RF voltmeter of 75 Ω load	Calibration for voltage in accordance with in-house procedure TPR051 over the following range:	
	300 kHz to 1 GHz 10 dB μ V to 120 dB μ V	0.50 dB

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Electrical measurements and magnetism		
- RF measurements		
- Power splitter fitted with 50 Ω type N connector	Calibration for the following parameters in accordance with in-house procedure TPR041:	
	- Equivalent output VRC magnitude (linear) over the following ranges: 50 MHz to 2 GHz	
	0.000 to 1.000 2 GHz to 8 GHz	0.020
	0.000 to 1.000 8 GHz to 18 GHz 0.000 to 1.000	0.030
	- Tracking (dB) over the following range: 50 MHz to 18 GHz -80 dB to 80 dB	0.20 dB
	Calibration for the following parameters in accordance with in-house procedure TPR054 using Juroshek direct method:	
	- Equivalent output VRC (real part and imaginary part) over the following range: 50 MHz to 18 GHz -1.000 to 1.000	0.010 + 0.0016 x f
	- Equivalent output VRC magnitude (linear): over the following range: 50 MHz to 18 GHz 0.000 to 1.000	where f is the frequency in GHz $0.010 + 0.0016 \text{ x f}$
	0.000 to 1.000	where f is the frequency in GHz

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- Power splitter fitted with 50 Ω 2.4 mm connector	Calibration for the following parameters in accordance with in-house procedure TPR077:	
	- Equivalent output VRC magnitude (linear) over the following ranges:	
	10 MHz to 700 MHz 0.000 to 1.000 700 MHz to 24 GHz	0.020
	0.000 to 1.000 24 GHz to 40 GHz	0.020
	0.000 to 1.000	0.040
	- Tracking (dB) over the following range: 10 MHz to 700 MHz	
	-80 dB to 80 dB 700 MHz to 24 GHz	0.30 dB
	-80 dB to 80 dB 24 GHz to 40 GHz -80 dB to 80 dB	0.20 dB 0.30 dB
	-00 db to 60 db	0.50 dB

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Electrical measurements and magnetism		
- RF measurements		
- Loop antenna		
	Calibration for antenna factor in accordance with CISPR 16-1-6: 2014 + A1: 2017 at the following frequency ranges:	
- Active loop antenna	1 kHz to 30 MHz -40 dB (S/m) to 10 dB (S/m)	1.2 dB
- Passive loop antenna	1 kHz to 1 MHz 10 dB (pT/μV) to 110 dB (pT/μV)	1.2 dB
	Calibration for antenna factor in accordance with in-house procedure TPR201 at the following frequency ranges:	
- Active loop antenna	1 kHz to 30 MHz -40 dB (S/m) to 10 dB (S/m)	1.9 dB
- Passive loop antenna	1 kHz to 1 MHz 10 dB (pT/μV) to 110 dB (pT/μV)	1.9 dB

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Electrical measurements and magnetism		
- RF measurements		
- Electrical fast transient/ burst (EFT/B) generator	Calibration for the following parameters in accordance with IEC 61000-4-4: 2004 Cl.6.1.2:	
	- Peak voltage V_p into 50 Ω load over the following range: 0.125 kV to 2.4 kV	3.7 %
	- Peak voltage V_p into 1 k Ω load over the following range: 0.24 kV to 4.6 kV	3.7 %
	- Repetition rate over the following range: 5 kHz and 100 kHz	0.60 %
	- Burst duration over the following ranges: 15 ms at 5 kHz 0.75 ms at 100 kHz	0.60 % 0.60 %
	- Burst period at 300 ms	0.60 %
	- Rise time t _r at 5 ns	1.3 %
	- Duration of pulse (to 50% of peak voltage) at 50 ns	1.1 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- RF measurements		
- Electrical fast transient/ burst (EFT/B) generator	Calibration for the following parameters in accordance with IEC 61000-4-4: 2012 Cl.6.2.3:	
	- Peak voltage V _p into 50 Ω load over the following range:	270
	$0.125~kV$ to $2.4~kV$ - Peak voltage V_p into $1~k\Omega$ load	3.7 %
	over the following range: 0.24 kV to 4.6 kV	3.7 %
	- Repetition rate over the following range: 5 kHz and 100 kHz	0.60 %
	- Burst duration at the following values: 15 ms at 5 kHz	0.60 %
	0.75 ms at 100 kHz	0.60 %
	- Burst period at 300 ms	0.60 %
	- Rise time t _r at 5 ns	1.3 %
	- Duration of pulse (to 50% of peak voltage) at 50 ns	1.1 %
- Electrostatic discharge (ESD) generator	Calibration for the following parameters in accordance with IEC 61000-4-2: 2008 Cl.6.2:	
	- First peak current of discharge over the following range:	
	7.5 A to 112.5 A - Rise time t _r over the following range: 0.6 to 1 ns	3.0 % 0.05 ns
	- Current at 30 ns over the following range: 4 A to 60 A	4.0 %
	- Current at 60 ns over the following range: 2 A to 120 A	6.0 %

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Electrical measurements and magnetism		
- RF measurements		
- EMI quasi-peak (QPK) measuring receiver	Calibration for the following parameters in accordance with CISPR 16-1-1: 2006 + A1: 2006 Cl.4.4.1, 4.4.2:	
	- Amplitude relationship: over the following range: 9 kHz to 1000 MHz	
	-10 dB to 10 dB	0.45 dB
	 - Variation with repetition frequency: over the following range: 9 kHz to 1000 MHz -20 dB to 45 dB 	0.50 dB
	Calibration for the following parameters in accordance with CISPR 16-1-1: 2015 Cl.4.4.1, 4.4.2:	
	 - Amplitude relationship: over the following range: 9 kHz to 1000 MHz -10 dB to 10 dB 	0.45 dB
	- Variation with repetition frequency: over the following range: 9 kHz to 1000 MHz	
	-20 dB to 45 dB	0.50 dB

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Electrical measurements and magnetism		
- RF measurements		
- EMI quasi-peak (QPK) measuring receiver	Calibration of the following parameters in accordance with CISPR 16-1-1: 2019-05 Cl.5.2.1, 5.2.2: - Amplitude relationship: over the following range: 9 kHz to 1000 MHz -10 dB to 10 dB	0.45 dB
	 Variation with repetition frequency: over the following range: 9 kHz to 1000 MHz -20 dB to 45 dB 	0.50 dB

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- $1.2/50~\mu s$ voltage surge generator	Calibration for the following parameters in accordance with IEC 61000-4-5: 2005:	
	 Front time at 1.2 μs Time to half-value at 0 μs Voltage surge peak over the following range: 	5.0 % 5.0 %
	0.5 kV to 7.4 kV	2.0 %
	Calibration for the following parameters in accordance with IEC 61000-4-5: 2014:	
	- Front time at 1.2 μs	5.0 %
	- Duration at 50 μs	2.0 %
	- Voltage surge peak over the following range: 0.5 kV to 4 kV	3.0 %
- 10/700 μs voltage surge generator	Calibration for the following parameters in accordance with IEC 61000-4-5: 2005:	
	- Front time at 10 μs	5.0 %
	- Time to half-value at 700 μs - Voltage surge peak over the following range:	5.0 %
	0.5 kV to 7.4 kV	2.0 %
	Calibration for the following parameters in accordance with IEC 61000-4-5: 2014:	
	- Front time at 10 μs	5.0 %
	- Duration at 700 μs	2.0 %
	- Voltage surge peak over the following range: 0.5 kV to 4 kV	3.0 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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SPECIFIC TEST OR	~ · · · · · · · · · · · · · · · · · · ·
PROPERTY MEASURED® 特定測試或量度的特性®	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Calibration for the following parameters in accordance with IEC 61000-4-5: 2005:	
 - Front time at 8 μs - Time to half-value at 20 μs - Current surge peak over the following range: 0.25 kA to 3.7 kA 	5.0 % 5.0 % 2.8 %
Calibration for the following parameters in accordance with IEC 61000-4-5: 2014:	
 Front time at 8 μs Duration at 20 μs Current surge peak over the following range: 	5.0 % 5.0 %
0.25 kA to 2.0 kA	2.8 %
Calibration for the following parameters in accordance with IEC 61000-4-5: 2005:	
- Front time at 5 μs	5.0 % 5.0 %
- Current surge peak over the following range: 12.5 A to 185 A	2.8 %
Calibration for the following parameters in accordance with IEC 61000-4-5: 2014:	
- Front time at 5 μs	5.0 %
- Duration at 20 μs - Current surge peak over the following range: 12.5 A to 100 A	5.0 %
	Calibration for the following parameters in accordance with IEC 61000-4-5: 2005: - Front time at 8 μs - Time to half-value at 20 μs - Current surge peak over the following range: 0.25 kA to 3.7 kA Calibration for the following parameters in accordance with IEC 61000-4-5: 2014: - Front time at 8 μs - Duration at 20 μs - Current surge peak over the following range: 0.25 kA to 2.0 kA Calibration for the following parameters in accordance with IEC 61000-4-5: 2005: - Front time at 5 μs - Time to half-value at 320 μs - Current surge peak over the following range: 12.5 A to 185 A Calibration for the following parameters in accordance with IEC 61000-4-5: 2014: - Front time at 5 μs - Duration at 20 μs - Current surge peak over the following range:

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Electrical measurements and magnetism		
- RF measurements		
-Voltage dips and short interruptions generator	Calibration for the following parameters in accordance with IEC 61000-4-11: 2004 + A1:2017:	
	- Ratio of residual voltage at the following values:	
	100 %	0.010
	80 %	0.025
	70 %	0.025
	40 %	0.025
	- Rise time over the following range:	
	0.1 μs to 10 μs	0.2 μs
	- Fall time over the following range:	
	0.1 μs to 10 μs	0.2 μs
	- Overshoot over the following range:	
	0 to 1	0.015
	- Undershoot over the following range:	
	0 to 1	0.015
	- Phase angle accuracy over the following ranges:	
	0° to 15°	5.9 °
	Above 15° to 165°	1.4 °
	Above 165 ° to 195 °	5.9°
	Above 195 ° to 345 ° Above 345 ° to 360 °	1.4° 5.9°
	Above 343 to 300	3.9

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
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Electrical measurements and magnetism		
RF measurements		
- 50 $\Omega/50~\mu H$ + 5 Ω V- network type artificial mains network (AMN) / line impedance stabilisation network (LISN)	Calibration for the following parameters in accordance with CISPR 16-1-2: 2003 + A1: 2004 + A2: 2006: at the following frequencies or over the following frequency ranges:	
	- Magnitude of impedance: 9 kHz 0.3 MHz to 7 MHz 10 MHz to 20 MHz 30MHz	1.7 Ω 1.7 Ω 1.8 Ω 1.9 Ω
	- Phase of impedance: 9 kHz 0.3 MHz to 3 MHz 4 MHz to 5 MHz 7 MHz	0.05° 1.0° 1.1° 1.2°
	10 MHz 15 MHz 20 MHz 30 MHz	1.5° 1.9° 2.5° 3.5°
	- Voltage division factor (dB): 9 kHz to 100 kHz Above 100 kHz to 300 kHz Above 0.3 MHz to 30 MHz	0.10 dB 0.40 dB 0.30 dB
	- Isolation: 9 kHz to 100 kHz Above 100 kHz to 300 kHz Above 0.3 MHz to 30 MHz	0.10 dB 0.60 dB 0.30 dB

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

SPECIFIC TEST OR PROPERTY MEASURED®特定測試或量度的特性® Calibration for the following parameters in accordance with CISPR 16-1-2: 2014 + A1: 2017: at the following frequencies or over the following frequency ranges: - Magnitude of impedance:	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
in accordance with CISPR 16-1-2: 2014 + A1: 2017: at the following frequencies or over the following frequency ranges:	
in accordance with CISPR 16-1-2: 2014 + A1: 2017: at the following frequencies or over the following frequency ranges:	
in accordance with CISPR 16-1-2: 2014 + A1: 2017: at the following frequencies or over the following frequency ranges:	
CISPR 16-1-2: 2014 + A1: 2017: at the following frequencies or over the following frequency ranges:	
at the following frequencies or over the following frequency ranges:	
at the following frequencies or over the following frequency ranges:	
over the following frequency ranges:	
- Magnitude of impedance:	
9 kHz	1.7 Ω
0.3 MHz to 7 MHz	1.7 Ω
10 MHz to 20 MHz	1.8 Ω
30MHz	1.9 Ω
- Phase of impedance:	
9 kHz	0.05°
0.3 MHz to 3 MHz	1.0°
4 MHz to 5 MHz	1.1°
7 MHz	1.2°
10 MHz	1.5°
15 MHz	1.9°
20 MHz	2.5 °
30 MHz	3.5°
- Voltage division factor (dB):	
9 kHz to 100 kHz	0.10 dB
Above 100 kHz to 300 kHz	0.40 dB
Above 0.3 MHz to 30 MHz	0.30 dB
- Isolation:	
9 kHz to 100 kHz	0.10 dB
Above 100 kHz to 300 kHz	0.60 dB
Above 0.3 MHz to 30 MHz	0.30 dB
	0.3 MHz to 3 MHz 4 MHz to 5 MHz 7 MHz 10 MHz 15 MHz 20 MHz 30 MHz - Voltage division factor (dB): 9 kHz to 100 kHz Above 100 kHz to 300 kHz Above 0.3 MHz to 30 MHz - Isolation: 9 kHz to 100 kHz Above 100 kHz to 300 kHz

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Electrical measurements and magnetism		
- RF measurements		
- Ultrasonic examination equipment	Calibration for the following parameters in accordance with EN 12668-1: 2010:	
	- Cl. 9.3 - Stability	
	- Stability after warm-up time	1 %
	- Display jitter	1 %
	- Stability against voltage variation	1 %
	- Cl. 9.4 - Transmitter pulse parameters	
	- Pulse voltage over the following range:	
	50 V to 450 V	3 %
	- Rise time over the following range:	
	5 ns to 50 ns	3 %
	- Reverberation	3 %
	- Duration over the following range:	
	50 ns to 2 μs	1 %
	- Cl. 9.5 - Receiver	
	- Amplifier frequency response	
	- Centre frequency	2 %
	- 3 dB bandwidth	3 %
	- Equivalent input noise	
	over the following range:	
	$10 \text{ nV/}\sqrt{\text{Hz}}$ to $100 \text{ nV/}\sqrt{\text{Hz}}$	3 %
	- Internal attenuator/gain	
	over the following range:	
	0 dB to 110 dB	0.3 dB
	- Linearity of vertical display	1 %
	- Linearity of time base	
	over the following range:	
	3 μs to 7 ms	1 %
	- Cl. 8.7.2 - Linearity of time base for	
	digital ultrasonic instruments	
	over the following range:	
	3 μs to 7 ms	1 %

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Electrical measurements and magnetism		
- RF measurements		
- Ultrasonic examination equipment	Calibration for the following parameters in accordance with BS EN ISO 22232-1: 2020:	
	- Cl. 9.3 - Transmitter pulse parameters - Pulse voltage over the following range:	
	50 V to 450 V - Rise time over the following range:	3 %
	2 ns to 50 ns - Duration over the following ranges:	3 %
	4 ns to 50 ns Above 50 ns to 2 μs	3 % 1 %
	- Cl. 9.4 - Receiver	
	- Frequency response - Centre frequency	2 %
	- 3 dB bandwidth- Noise level (Method B)over the following range:	3 %
	10 nV/√Hz to 100 nV/√Hz - Gain linearity over the following range:	3 %
	0 dB to 110 dB - Vertical display linearity	0.3 dB 1 %
	- vertical display illiearity	1 70

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Electrical measurements and magnetism		
- Magnetism		
- Gaussmeter, Teslameter	Calibration for DC magnetic flux density and applied magnetic field strength in axial and transverse directions in accordance with in-house procedure TPD301 over the following ranges:	
	0.3 mT to 0.5 mT Above 0.5 mT to 50 mT	2.0 % 1.0 %
	Calibration for DC magnetic flux density and applied magnetic field strength in transverse direction in accordance with in-house procedure TPD302 over the following range:	
	50 mT to 1.5 T	0.1 %
	Calibration for DC magnetic flux density and applied magnetic field strength in axial direction in accordance with in-house procedure TPD303 over the following range:	
	50 mT to 1.0 T	0.1 %
- Reference magnet	Calibration for magnetic flux density in axial and transverse directions in accordance with in-house procedure TPD307 over the following ranges:	
	0.3 mT to 0.5 mT Above 0.5 mT to 50 mT Above 50 mT to 1.5 T	2.0 % 1.0 % 0.1 %

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Length and related quantities		
- Length		
- Stabilised laser of the <i>mise en pratique</i> (wavelength at 633 nm)	Calibration for optical frequency at 474 THz by using an acousto-optic modulator in accordance with in-house procedure TPM706	25 kHz
- Red He-Ne laser (wavelength at 633 nm)	Calibration for optical frequency at 474 THz in accordance with in-house procedure TPM702	2 MHz
- Comparator	Calibration for length in accordance: with in-house procedure TPM111 over the following range:	
	0.3 μm to 60 mm	0.13 μm

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Length and related quantities		
- Length		
- Gauge block	Calibration for length by comparison with a reference gauge block (grade 0, 1 or 2) in accordance with in-house procedure TPM101 over the following range:	
	0.5 mm to 100 mm	Q[60 nm, 1.3e-6 l] where Q[a, b] = $[a^2 + b^2]^{1/2}$, l is the length
- Long gauge block and length bar	Calibration for length using comparator in accordance with in-house procedure TPM153 over the following range:	
	Above 100 mm to 600 mm	Q[400 nm, 4e-6 l] where Q[a, b] = [$a^2 + b^2$] ^{1/2} , l is the length
- Long gauge block, step gauge, fixture, work piece and component	Calibration for length using coordinate measuring machine by non-substitution method in accordance with ISO 15530-3: 2011 over the following ranges:	
	20 mm to 100 mm Above 100 mm to 300 mm Above 300 mm to 420 mm	0.5 μm 0.9 μm 1.1 μm

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Length and related quantities		
- Length		
- Calliper checker	Calibration for distance between a measuring face and the datum face (bottom) in accordance with in-house procedure TPM172 over the following ranges:	
	10 mm to 300 mm Above 300 mm to 600 mm	Q[0.5 μ m, 3.4e-6 l] Q[1.2 μ m, 3.1e-6 l] where Q[a, b] = [a ² + b ²] ^{1/2} , l is the distance between a measuring fa and the datum face (bottom)
	Calibration for distance between any measuring face and the datum face for internal measurement in accordance with in-house procedure TPM172 over the following ranges:	
	10 mm to 300 mm Above 300 mm to 600 mm	1.6 μm 3.4 μm
- Micrometer setting rod	Calibration for central length in accordance with in-house procedure TPM153 over the following ranges:	
	25 mm to 100 mm Above 100 mm to 500 mm	Q[260 nm, 4e-6 l] Q[400 nm, 4e-6 l] where Q[a, b] = $[a^2 + b^2]^{1/2}$, l is the length

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Length and related quantities		
- Length		
- Length gauge (flat ended) and micrometer extension rod	Calibration for length in accordance with in-house procedure TPM153 over the following range:	
	1 mm to 1000 mm	0.3 μ m + 4e-6 l where l is the length
- Length gauge (spherical ended)	Calibration for length in accordance with in-house procedure TPM153 over the following range:	
	1 mm to 600 mm	0.3 μ m + 4e-6 l where l is the length
- Internal micrometer	Calibration for length in accordance with in-house procedure TPM114 over the following range:	
	5 mm to 1 m	Q[2.4 μ m, 9e-6 l] where Q[a, b] = [a ² + b ²] ^{1/2} , l is the length
- Three-point micrometer	Calibration for diameter in accordance with in-house procedure TPE801 over the following range:	
	12 mm to 20 mm	3.2 μm

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Length and related quantities		
- Length		
- Coordinate measuring machine (CMM)	Verification for the following parameter of CMM stylus contacting probing system in accordance with ISO 10360-5: 2010:	
	- single probe probing error - multiple probes probing error	0.03 μm 0.04 μm
	Verification for the following parameters of CMM stylus contacting probing system in accordance with ISO 10360-5: 2020:	
	 single probe probing error scanning mode size error scanning mode form error 	0.03 μm 0.8 μm 1.6 μm
	Verification for test length of CMM stylus contacting probing system in accordance with ISO 10360-2: 2009	
	- by comparison with a length artefact 1 mm to 1540 mm	Q[0.25 μ m, 0.7e-6 l] where Q[a, b] = [a ² + b ²] ^{1/2} , l is the length
	- by comparison with a laser interferometer 1 mm to 4000 mm	Q[0.25 μ m, 1.3e-6 l] where Q[a, b] = [a ² + b ²] ^{1/2} , l is the length
- Coordinate table	On-site calibration for travel distance in accordance with in-house procedure TPM133 over the following range:	
	1 mm to 600 mm	0.3 μ m + 4e-6 l where l is the travel distance

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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Length and related quantities		
- Length		
- Measuring microscope and profile projector	On-site calibration for travel distance in accordance with in-house procedure TPM145 over the following range:	
	0.1 mm to 600 mm	0.3 μ m + 4e-6 l where l is the travel distance
	On-site calibration for magnification factor in accordance with in-house procedure TPM145 over the following range:	
	1 to 100	0.07 % of magnification factor
- Gauge, jig, fixture, work piece and component (with dimensions of 1 mm x 1 mm x 1 mm to 250 mm x 250 mm x 200 mm)	Calibration for dimensions by optical method in accordance with in-house procedure TPM132	0.3 μ m + 4e-6 l where l is the length
	Calibration for dimensions by mechanical comparison or by direct measurement in accordance with in-house procedure TPM153	$0.3 \mu m + 4e-6l$ where l is the length

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
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Length and related quantities		
- Length		
 Plain plug gauge, cylindrical setting standard, gear measuring cylinder, pin gauge and roller 	Calibration for diameter in accordance with in-house procedure TPM139 over the following range:	
	0.05 mm to 150 mm	Q[0.4 μ m, 9e-6d] where Q[a, b] = [a ² + b ²] ^{1/2} , d is the diameter
- Plain ring gauge	Calibration for diameter in accordance with in-house procedure TPM151 over the following range:	
	1 mm to 250 mm	Q[0.5 μ m, 10e-6d] where Q[a, b] = [a ² + b ²] ^{1/2} , d is the diameter
- Precision ball	Calibration for diameter in accordance with in-house procedure TPM159 over the following range:	
	1 mm to 25 mm	0.5 μm
- Radius gauge	Calibration for radius in accordance with in-house procedure TPE802 over the following range:	
	0.25 mm to 25 mm	7 μm
- Ring size measuring stick	Calibration for diameter in accordance with in-house procedure TPM188 over the following range:	
	10 mm to 25 mm	0.03 mm

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Length and related quantities		
- Length		
- Plastic film thickness gauge	Calibration for thickness in accordance with in-house procedure TPM152 over the following range:	
	0.01 mm to 0.05 mm	2 μm
- Ultrasonic thickness measuring system	Calibration for thickness in accordance with in-house procedure TPM170 over the following ranges:	
	0.3 mm to 25 mm Above 25 mm to 100 mm	0.03 mm 0.2 mm

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Length		
- Extensometer calibrator	Calibration for travel in accordance with standard method ISO 9513: 2012 over the following range:	
	0.01 mm to 0.333 mm Above 0.333 mm to 50 mm	0.23 μ m + 0.5e-3 <i>l</i> 0.49 μ m + 4e-6 <i>l</i> where <i>l</i> is the length
	Calibration for travel in accordance with in-house procedure TPE103 over the following range:	
	0.01 mm to 0.333 mm Above 0.333 mm to 50 mm	0.23 μ m + 0.5e-3 <i>l</i> 0.49 μ m + 4e-6 <i>l</i> where <i>l</i> is the length
- Laser distance meter (LDM/EDM)	Calibration for travel distance in accordance with in-house procedure TPE102 over the following range:	
	0.3 m to 20 m	1.0 mm
- Precision line scale	Calibration for interval length in accordance with in-house procedure TPE301 over the following range:	
	0.01 mm to 600 mm	Q[0.15 μ m, 0.5e-6 l] where Q[a, b] = [a ² + b ²] ^{1/2} , l is the length

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Length		
- Laser interferometry length measuring system	Calibration for travel distance in accordance with in-house procedure TPE105 over the following range:	
	0.01 mm to 20 m	2.7 x 10 ⁻⁷ of result
- Universal length measuring system	On-site calibration for travel distance in accordance with in-house procedure TPE106 over the following range:	
	0.01 mm to 20 m	Q[0.41 μ m, 3.3e-6 l] where Q[a, b] = [a ² + b ²] ^{1/2} , l is the travel distance

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Angle		
- Precision index table	Calibration for angle in accordance with in-house procedure TPE502 over the following range:	
	0° to 360°	0.16 second of arc
- Rotary table	Calibration for angle in accordance with in-house procedure TPM126 over the following range:	
	0° to 360°	1 second of arc
- Rotary axis, spindle of machine table and hear	On-site calibration for angle in accordance with in-house procedure TPE503 over the following range:	
	0° to 360°	1 second of arc

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Angle		
- Angle gauge	Calibration for angle in accordance with in-house procedure TPM134 over the following range:	
	0° to 90°	0.6 second of arc
- Bevel protractor	Calibration for angle in accordance with in-house procedure TPM121 over the following range:	
	5 minute of arc to 360°	2 minute of arc
- Protractor	Calibration for angle in accordance with in-house procedure TPM198 over the following range:	
	0° to 180°	0.1°
- Electronic level	Calibration for angle in accordance with in-house procedure TPM131 over the following range:	
	0 second of arc to 200 second of arc Above 200 second of arc to 1200 second of arc	0.3 second of arc 0.8 second of arc
- Laser level	Calibration for the following parameters in accordance with in-house procedure TPE501:	
	- Horizontal line (0°) - Vertical line (90°)	41 second of arc 38 second of arc

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Angle		
- Polygons up to 36 sides	Calibration for angle in accordance with in-house procedure TPM128 by direct comparison with a precision index table over the following range:	
	0° to 360°	0.6 second of arc
	Calibration for angle in accordance with in-house procedure TPE504 by circle closure method over the following range:	
	0° to 360°	0.16 second of arc
- Sine bar	Calibration for distance between the roller axes in accordance with in-house procedure TPM183 over the following range:	
	10 mm to 254 mm	2.1 μm
- Square		
- cylindrical type square	Calibration for squareness in accordance with in-house procedure TPM157 over the following range:	
	5 mm to 300 mm	0.6 μm
- Squareness tester	Calibration for squareness for travel distance in accordance with in-house procedure TPM118 over the following range:	
	5 mm to 300 mm	1 μm + 8e-6 l where l is the travel distance

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Length and related quantities		
- Form		
- Optical flat and optical parallel (10 mm to 200 mm diameter)	Calibration for flatness in accordance with in-house procedure TPM186 over the following range of diameter:	
	10 mm to 150 mm Above 150 mm to 200 mm	0.04 μm 0.11 μm
	Calibration for parallelism in accordance with in-house procedure TPM113 over the following range of diameter:	
	10 mm to 200 mm	0.15 μm
	Calibration for thickness in accordance with in-house procedure TPM186 over the following range of diameter:	
	10 mm to 200 mm	0.25 μm
- Surface plate (made of granite and cast iron, with dimensions of 160 mm x 100 mm to 2500 mm x 1600 mm)	Calibration for the following parameters in accordance with in-house procedure TPM130: - Local flatness - Overall flatness	0.6 μm 0.4 μm + 0.5e-6 <i>l</i>
	On-site calibration for the following parameters in accordance with in-house procedure TPM130:	where l is the diagonal length
	- Local flatness - Overall flatness	$0.6 \mu m$ $0.4 \mu m + 0.5e-6l$ where l is the diagonal length
- Toolmaker's flat (60 mm to 150 mm diameter)	Calibration for the following parameters in accordance with in-house procedure TPM112	
	- Flatness - Parallelism	0.04 μm 0.3 μm

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Form		
- Parallel (with dimensions of 5 mm x 10 mm x 100 mm to 50 mm x 100 mm x 400 mm)	Calibration for parallelism in accordance with in-house procedure TPM124	2 μm
- Roundness sample (with internal diameter from 3 mm to 200 mm and external diameter from 1 mm to 200 mm)	Calibration for roundness in accordance with in-house procedure TPM160 over the following range:	
	0 to 2000 μm	0.09 μm
- Hemisphere (with external diameter from 1 mm to 200 mm)	Calibration for roundness in accordance with in-house procedure TPM171 over the following range:	
	0 to 2000 μm	0.1 μm
- Sphere (with external diameter from 1 mm to 200 mm)	Calibration for roundness in accordance with in-house procedure TPM171 over the following range:	
	0 to 2000 μm	0.2 μm
	Calibration for diameter in accordance with in-house procedure TPM159 over the following range:	
	1 mm to 200 mm	0.5 μm

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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ODE OFFICE PROPERTY OF	
SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Calibration for straightness in accordance with in-house procedure TPM117	$0.5 \mu m + 0.1e-6l$ where l is the length
Calibration for straightness in accordance with in-house procedure TPM116	0.4 μm
Calibration for the following parameters in accordance with in-house procedure TPE702:	
- Depth, <i>d</i> from 0.26 μm to 12.00 μm - Roughness <i>Pt</i> from 0.26 μm to 12.00 μm - Roughness <i>Ra</i> from 0.10 μm to 6.30 μm - Roughness <i>Rq</i> from 0.10 μm to 6.30 μm - Roughness <i>Rt</i> from 1.10 μm to 23.00 μm - Roughness <i>Rz</i> from 0.40 μm to 20.10 μm - Roughness <i>RSm</i> from 80.0 μm to 140.0 μm	Q[0.026 μ m, 0.01 d] Q[0.026 μ m, 0.01 Pt] Q[0.011 μ m, 0.03 Ra] Q[0.011 μ m, 0.03 Rq] Q[0.03 μ m, 0.27 Rt] Q[0.03 μ m, 0.27 Rz] Q[0.036 μ m, 0.12 RSm] where Q[a, b] = [a ² + b ²] ^{1/2} ,
Calibration for the following parameters in accordance with standard method ISO7963: 2006	
- Length - Angle - Roughness	0.95 μm 0.0076° Ra: 0.046 μm
	特定測試或量度的特性 [®] Calibration for straightness in accordance with in-house procedure TPM117 Calibration for straightness in accordance with in-house procedure TPM116 Calibration for the following parameters in accordance with in-house procedure TPE702: - Depth, <i>d</i> from 0.26 μm to 12.00 μm - Roughness <i>Pt</i> from 0.26 μm to 12.00 μm - Roughness <i>Ra</i> from 0.10 μm to 6.30 μm - Roughness <i>Ra</i> from 0.10 μm to 6.30 μm - Roughness <i>Rt</i> from 1.10 μm to 23.00 μm - Roughness <i>Rz</i> from 0.40 μm to 20.10 μm - Roughness <i>RSm</i> from 80.0 μm to 140.0 μm Calibration for the following parameters in accordance with standard method ISO7963: 2006 - Length - Angle

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Length and related quantities		
- Rotational speed		
- Rotational speed standard		
- Variable speed drive	Calibration for rotational speed in accordance with in-house procedure TPM805 over the following ranges:	
	2 r/min to 8000 r/min Above 8000 r/min to 40000 r/min	0.1 r/min 0.3 r/min to 0.4 r/min
- Rotational speed measuring device		
- Frequency meter	Calibration for rotational speed in accordance with in-house procedure TPM802 over the following range:	
	1 r/min to 120000 r/min	0.01 r/min to 0.4 r/min
- Stroboscope	Calibration for rotational speed in accordance with in-house procedure TPM804 over the following ranges:	
	40 r/min to 4000 r/min Above 4000 r/min to 35000 r/min	0.2 r/min 1 r/min

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Length and related quantities		
- Tachometer	Calibration for rotational speed by comparison with a standard rotational speed setup in accordance with in-house procedure TPM801 over the following ranges:	
	6 r/min to 18,000 r/min	1.0 r/min
	Calibration for rotational speed by using function generator and laser diode in accordance with in-house procedure TPM803 over the following ranges:	
	6 r/min to 100,000 r/min	1.0 r/min
- Rotational equipment	On-site calibration for rotational speed in-accordance with in-house procedure TPM806 over the following ranges:	
	- using frequency meter 1 r/min to 120000 r/min	0.01 r/min to 0.4 r/min
	- using stroboscope 40 r/min to 4000 r/min Above 4000 r/min to 35000 r/min	0.2 r/min 1 r/min
	- using tachometer 6 r/min to 10000 r/min Above 10000 r/min to 100000 r/min	1 r/min 4 r/min

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Mass and related quantities		
- Mass		
- Weight (standard value)	Calibration for mass in accordance with in-house procedure TPM017 over the following ranges:	
	1 mg to 5 mg 10 mg to 100 mg 0.2 g to 1 g 2 g to 10 g 20 g to 100 g 200 g to 500 g 1 kg	0.7 μg to 0.8 μg 0.7 μg to 0.8 μg 0.8 μg to 1.7 μg 2.2 μg to 8 μg 9 μg to 14 μg 17 μg to 32 μg 57 μg
	Calibration for mass in accordance with in-house procedure TPM018 over the following ranges:	
	2 kg to 10 kg Calibration for mass in accordance with in-house procedure TPM020 over the following ranges:	0.6 mg to 2.1 mg
	20 kg to 50 kg	20 mg to 53 mg

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Mass and related quantities		
- Mass		
- Weight (non-standard value)	Calibration for mass in accordance with in-house procedure TPM017 over the following ranges:	
	1 mg to 2 g Above 2 g to 20 g Above 20 g to 200 g Above 200 g to 1 kg	4 μg 10 μg 52 μg 1.5 mg
	Calibration for mass in accordance with in-house procedure TPM018 over the following range:	
	Above 1 kg to 10 kg	30 mg
	Calibration for mass in accordance with in-house procedure TPM020 over the following ranges:	
	Above 10 kg to 20 kg Above 20 kg to 50 kg	30 mg 53 mg
- Magnetic susceptibility of standard weight	Calibration for magnetic susceptibility by using the BIPM-type susceptometer in accordance with in-house procedure TPM021 over the following range:	
	0 to 1	12 %

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Mass and related quantities		
- Mass		
- Electronic balance	Calibration for mass using OIML Class E2 weights from 1 mg to 50 kg in accordance with in-house procedure TPM007 over the following range:	
	1 mg to 5 g Above 5 g up to 50 g Above 50 g up to 500 g Above 500 g up to 1.2 kg Above 1.2 kg up to 100 kg	6 μg 6 μg to 50 μg 50 μg to 0.5 mg 0.5 mg to 1.2 mg 1.2 mg to 2 g
	On-site calibration for mass using OIML Class E2 weights from 1 mg to 20 kg in accordance with in-house procedure TPM007 over the following range:	
	1 mg to 5 g Above 5 g up to 50 g Above 50 g up to 500 g Above 500 g up to 1.2 kg Above 1.2 kg up to 20 kg	6 μg 6 μg to 50 μg 50 μg to 0.5 mg 0.5 mg to 1.2 mg 1.2 mg to 0.4 g

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Mass and related quantities		
- Density		
- Density of solid (stainless steel)	Calibration for density in the range of 7700 kg/m³ to 8400 kg/m³ in accordance with in-house procedure TPM503 for the following ranges of mass:	
	20 g Above 20 g up to 50 g Above 50 g up to 100 g Above 100 g up to 1000 g	5 kg/m ³ 2 kg/m ³ 1 kg/m ³ 0.5 kg/m ³

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Mass and related quantities		
- Flow speed		
- Anemometer		
- All types	Calibration for air velocity by comparison with pitot tube in accordance with in-house procedure TPM412 over the following ranges:	
	0.2 m/s to 0.5 m/s Above 0.5 m/s to 35 m/s	9 % 3 %
- Thermal type	Calibration for air velocity by comparison with laser Doppler anemometer (LDA) in accordance with in-house procedure TPM407 over the following ranges:	
	0.2 m/s to 1 m/s Above 1 m/s to 35 m/s	5 % 2 %
- Vane type	Calibration for air velocity by comparison with laser Doppler anemometer (LDA) in accordance with in-house procedure TPM409 over the following ranges:	
	0.2 m/s to 1 m/s Above 1 m/s to 35 m/s	5 % 2 %
- Pitot-static type	Calibration for air velocity by comparison with laser Doppler anemometer (LDA) in accordance with in-house procedure TPM411 over the following ranges:	
	3 m/s to 35 m/s	2 %
- Fume hood	On-site calibration for air velocity using anemometers in accordance with in-house procedure TPM410 over the following ranges:	
	0.2 m/s to 1 m/s Above 1 m/s to 35 m/s	6 % 3 %

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Mass and related quantities		
- Volume gas flow rate		
- Gas flow meter	Calibration for volume flow rate using air as working medium in accordance with in-house procedure TPM414 over the following ranges:	
	0.1 L/min to 10 L/min Above 10 L/min to 30 L/min	1 % 0.5 %
	Calibration for volume flow rate using air as working medium in accordance with in-house procedure TPM415 over the following ranges:	
	30 L/min to 100 L/min	0.5 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Mass and related quantities		
- Volume		
- Single channel piston-operated pipette	Calibration for the contained or delivered volume in accordance with standard method ISO 8655-6: 2002 over the following ranges:	
	1 μL to 5 μL Above 5 μl to 10 μL Above 10 μL to 50 μL Above 50 μL to 100 μL Above 100 μL to 500 μL Above 500 μL to 1 mL Above 1 mL to 5 mL	0.05 μL 0.1 μL 0.5 μL 1 μL 4 μL 6 μL 25 μL
	Calibration for the contained or delivered volume in accordance with in-house procedure TPM405 over the following ranges:	
	1 μL to 5 μL Above 5 μl to 10 μL Above 10 μL to 50 μL Above 50 μL to 100 μL Above 100 μL to 500 μL Above 500 μL to 1 mL Above 1 mL to 5 mL	0.05 μL 0.1 μL 0.5 μL 1 μL 4 μL 6 μL 25 μL

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
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Mass and related quantities		
- Volume		
- Multiple channel piston-operated pipette	Calibration for the contained or delivered volume in accordance with standard method ISO 8655-6: 2002 over the following ranges:	
	10 μL to 50 μL Above 50 μL to 100 μL Above 100 μL to 300 μL Above 300 μL to 500 μL Above 500 μL to 1000 μL	0.7 μL 2 μL 3 μL 5 μL 8 μL
	Calibration for the contained or delivered volume in accordance with in-house procedure TPM405 over the following ranges:	
	10 μL to 50 μL Above 50 μL to 100 μL Above 100 μL to 300 μL Above 300 μL to 500 μL Above 500 μL to 1000 μL	0.7 μL 2 μL 3 μL 5 μL 8 μL

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®] Calibration for volume in accordance with	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Calibration for volume in accordance with	
Calibration for volume in accordance with	
Calibration for volume in accordance with	
in-house procedure TPM401 over the following ranges:	
0.1 mL to 5 mL Above 5 mL to 200 mL Above 200 mL to 1000 mL Above 1 L to 5 L Above 5 L to 20 L Above 20 L to 50 L	5 μL 5 μL 50 μL to 130 μL 0.13 mL to 0.5 mL 1.5 mL 5 mL
Calibration for volume in accordance with in-house procedure TPM404 over the following ranges:	
20 L to 50 L	5 mL
Calibration for volume in accordance with in-house procedure TPM413 over the following ranges:	
1 μL to 10 μL Above 10 μL to 100 μL Above 100 μL to 1000 μL	0.05 μL 0.4 μL 4 μL
	over the following ranges: 0.1 mL to 5 mL Above 5 mL to 200 mL Above 200 mL to 1000 mL Above 1 L to 5 L Above 5 L to 20 L Above 20 L to 50 L Calibration for volume in accordance with in-house procedure TPM404 over the following ranges: 20 L to 50 L Calibration for volume in accordance with in-house procedure TPM413 over the following ranges: 1 μL to 10 μL Above 10 μL to 100 μL

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Mass and related quantities		
- Pressure		
- Electronic barometer	Calibration for absolute pressure in accordance with in-house procedure TPM207 over the following range:	0.11 hPa
- Differential pressure meter, manometer and differential pressure gauge (gas medium)	Calibration for differential pressure in accordance with in-house procedure TPM214 over the following ranges: 4 Pa to 400 Pa Above 400 Pa to 6000 Pa	$(0.2 + 2 \times 10^{-4}P) Pa$ $(0.3 + 5 \times 10^{-4}P) Pa$ where P is the pressure in Pa
	On-site calibration for differential pressure in accordance with in-house procedure TPM215 over the following range:	
	5 Pa to 100 Pa	6 Pa

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Mass and related quantities		
- Pressure		
- Gas pressure balance, pressure gauge, transducer and transmitter	Calibration for the following parameters in accordance with in-house procedure TPM205:	
	- Gauge pressure over the following range: 5 kPa to 7000 kPa	0.0035 %
	- Absolute pressure over the following range: 5 kPa to 7000 kPa	0.0035 %
	Calibration for effective area of piston-cylinder assembly in accordance with in-house procedure TPM208 over the following range:	
	3 mm ² to 3500 mm ²	0.0035 %
	Calibration for distortion coefficient in accordance with in-house procedure TPM208 over the following range:	
	0.5 x 10 ⁻⁹ /kPa to 1 x 10 ⁻⁷ /kPa	20 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*	
Calibration for the following parameters in accordance with in-house procedure TPM201		
- Hydraulic pressure over the following range: 2 MPa to 100 MPa	0.004 %	
 Area of piston-cylinder assembly over the following range: 3 mm² to 3500 mm² 	0.004 %	
- Distortion coefficient over the following range: 0.5 x 10 ⁻⁹ /kPa to 1 x 10 ⁻⁷ /kPa	20 %	
Calibration for hydraulic pressure in accordance with in-house procedure TPM202 over the following range:		
2 MPa to 100 MPa	0.004 %	
Calibration for gauge pressure in accordance with in-house procedure TPM210 over the following range :		
50 hPa to 400 hPa	0.5 hPa	
	SPECIFIC TEST OR PROPERTY MEASURED®特定測試或量度的特性® 特定測試或量度的特性® Calibration for the following parameters in accordance with in-house procedure TPM201 - Hydraulic pressure over the following range: 2 MPa to 100 MPa - Area of piston-cylinder assembly over the following range: 3 mm² to 3500 mm² - Distortion coefficient over the following range: 0.5 x 10-9/kPa to 1 x 10-7/kPa Calibration for hydraulic pressure in accordance with in-house procedure TPM202 over the following range: 2 MPa to 100 MPa Calibration for gauge pressure in accordance with in-house procedure TPM210 over the following range:	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Mass and related quantities		
- Force		
- Push-pull type force gauge (spring tester)	Calibration for force by using deadweight in accordance with in-house procedure TPM605 over the following range:	
	0.5 N to 500 N	0.1 %
- Torque		
- Torque meter and transducer	Calibration for torque in accordance with in-house procedure TPM603 over the following range:	
	0.1 N⋅m to 1000 N⋅m	0.1 %
- Torque wrench and screwdriver	Calibration for torque in accordance with in-house procedure TPM601 over the following range:	
	0.1 N·m to 1000 N·m	1 %

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Mass and related quantities		
- Hardness		
- Hardness testing machine	Indirect calibration for Rockwell hardness HRB and HRC scales in accordance with in-house procedure TPM303 over the following ranges:	
	20 HRB to 100 HRB 20 HRC to 70 HRC	1.0 HRB 0.5 HRC
	Indirect calibration for Rockwell superficial hardness N and T scales in accordance with in-house procedure TPM304 over the following ranges:	
	42 HR30N to 86 HR30N 29 HR30T to 82 HR30T	0.5 HR30N 1.0 HR30T
	Indirect calibration for Vickers hardness scales in accordance with in-house procedure TPM306 over the following ranges:	
	20 HV 10 to 2000 HV 10	2 %
	60 HV 30 to 2000 HV 30	2 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Mass and related quantities		
- Hardness		
- Hardness testing machine (cont'd)	On-site indirect calibration for Rockwell hardness HRB and HRC scales in accordance with in-house procedure TPM303 over the following ranges:	
	20 HRB to 100 HRB 20 HRC to 70 HRC	1.0 HRB 0.5 HRC
	On-site indirect calibration for Rockwell superficial hardness N and T scales in accordance with in-house procedure TPM304 over the following ranges:	
	42 HR30N to 86 HR30N 29 HR30T to 82 HR30T	0.5 HR30N 1.0 HR30T
	On-site indirect calibration for Vickers hardness scales in accordance with in-house procedure TPM306 over the following ranges:	
	20 HV 10 to 2000 HV 10	2 %
	60 HV 30 to 2000 HV 30	2 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Mass and related quantities		
- Hardness		
- Hardness block	Calibration for hardness in accordance with in-house procedure TPM301 over the following ranges:	
	- Rockwell B scale 20 HRB to 100 HRB	1.5 HRB
	- Rockwell C scale 20 HRC to 70 HRC	1.0 HRC
	Calibration for hardness in accordance with in-house procedure TPM302 over the following ranges:	
	- Rockwell superficial 42 HR30N to 86 HR30N 29 HR30T to 82 HR30T	1.0 HR30N 1.5 HR30T
	Calibration for hardness in accordance with in-house procedure TPM305 over the following ranges:	
	- Vickers scale 20 HV 10 to 2000 HV 10	2.5 %
	60 HV 30 to 2000 HV 30	2.5 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Mass and related quantities		
- Hardness		
- Metallic materials	Calibration for hardness in accordance with in-house procedure TPM301 over the following ranges:	
	- Rockwell B scale 20 HRB to 100 HRB	1.5 HRB
	- Rockwell C scale 20 HRC to 70 HRC	1.0 HRC
	Calibration for hardness in accordance with in-house procedure TPM302 over the following ranges:	
	- Rockwell superficial 42 HR30N to 86 HR30N 29 HR30T to 82 HR30T	1.0 HR30N 1.5 HR30T
	Calibration for hardness in accordance with in-house procedure TPM305 over the following ranges:	
	- Vickers scale 20 HV 10 to 2000 HV 10	2.5 %
	60 HV 30 to 2000 HV 30	2.5 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration for luminous flux in accordance with in-house procedure TPP601 over the following range:		
20 lm to 10000 lm	2.6 %	
Calibration for luminous flux in accordance with in-house procedure TPP601 over the following range:		
20 lm to 10000 lm	1.0 %	
Calibration for luminous intensity at colour temperature of 2856 K in accordance with in-house procedure TPP201 over the following range:		
35 cd to 3500 cd	1.5 %	
Calibration for luminous flux in accordance with in-house procedure TPP601 over the following range:		
20 lm to 10000 lm	2.2 %	
	SPECIFIC TEST OR PROPERTY MEASURED®特定測試或量度的特性® Calibration for luminous flux in accordance with in-house procedure TPP601 over the following range: 20 lm to 10000 lm Calibration for luminous flux in accordance with in-house procedure TPP601 over the following range: 20 lm to 10000 lm Calibration for luminous intensity at colour temperature of 2856 K in accordance with in-house procedure TPP201 over the following range: 35 cd to 3500 cd Calibration for luminous flux in accordance with in-house procedure TPP601 over the following range:	

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Photometry and radiometry		
- Photometry		
- Illuminance meter / lux meter	Calibration for illuminance at colour temperature of 2856 K in accordance with standard method BS667:2005 Annex B Calibration B.2.2 over the following range:	
	1 lx to 3000 lx	1.5 %
- Luminance meter	Calibration for luminance at colour temperature of 2856 K in accordance with in-house procedure TPP401 over the following range:	
	10 cd/m ² to 4000 cd/m ²	1.5 %
	Calibration for luminance at colour temperature of 2856 K in accordance with in-house procedure TPP402 over the following range:	
	10 cd/m ² to 23000 cd/m ²	1.4 %

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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Photometry and radiometry		
- Properties of detectors		
- Unfiltered broadband detector and photodetector	Calibration for spectral power responsivity in accordance with in-house procedure TPP501 at wavelength over the following ranges:	
	Power level below 20 μW: 200 nm to 204 nm Above 204 nm to 240 nm Above 240 nm to 380 nm	3.6 % 2.6 % 1.1 %
	Power level below 1 μW: 380 nm to 410 nm Above 410 nm to 920 nm Above 920 nm to 950 nm Above 950 nm to 1200 nm Above 1200 nm to 1800 nm	0.70 % 0.40 % 0.70 % 1.5 % 2.0 %
- Wavelength meter and spectrometer	Calibration for optical wavelength in accordance with in-house procedure TPP701 over the following range:	
	250 nm to 600 nm	1.5 nm

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Photometry and radiometry		
- Spectral emission properties of sources		
- Irradiance light source	Calibration for spectral irradiance below 250 mWm ⁻² nm ⁻¹ in accordance with in-house procedure TPP505 at wavelength at the following value or over the following ranges:	
	300 nm 310 nm to 330 nm 340 nm to 430 nm 440 nm to 690 nm 700 nm to 850 nm	3.3 % 3.0 % 3.0 % 2.1 % 2.1 %
- Tungsten standard lamp	Calibration for spectral irradiance below 300 mWm ⁻² nm ⁻¹ in accordance with in-house procedure TPP502 at wavelength over the following ranges:	
	250 nm to 290 nm Above 290 nm to 410 nm Above 410 nm to 950 nm Above 950 nm to 1800 nm	3.0 % 2.5 % 1.5 % 2.0 %
- Tungsten standard lamp	Calibration for spectral radiance below 150 mWm ⁻² sr ⁻¹ nm ⁻¹ in accordance with in-house procedure TPP503 at wavelength over the following ranges:	
	300 nm to 400 nm Above 400 nm to 999 nm Above 999 nm to 1800 nm	3.4 % 2.4 % 2.8 %

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Photometry and radiometry		
- Spectral emission properties of sources		
- Tungsten standard lamp (DC, constant current)	Calibration for spectral radiant flux in the range of $10~\mu \text{W}/\text{nm}$ to $200~\text{mW}/\text{nm}$ using spectrometer with measurement bandwidth from $2~\text{nm}$ to $5~\text{nm}$ in accordance with in-house procedure TPP602 at wavelength at the following value or over the following ranges:	
	365 nm 370 nm to 380 nm 385 nm to 390 nm 395 nm to 405 nm 410 nm to 450 nm 455 nm to 730 nm 735 nm to 790 nm 795 nm to 835 nm	3.7 % 3.6 % 3.1 % 3.0 % 2.6 % 2.2 % 2.5 % 3.0 %
	840 nm to 850 nm	3.3 %
- Tungsten standard lamp (AC, constant current)	Calibration for spectral radiant flux in the range of $10~\mu\text{W}/\text{nm}$ to $200~\text{mW}/\text{nm}$ using spectrometer with measurement bandwidth from $2~\text{nm}$ to $5~\text{nm}$ in accordance with in-house procedure TPP602 at wavelength at the following value or over the following ranges:	
	365 nm 370 nm to 380 nm 385 nm to 405 nm 410 nm to 450 nm 455 nm to 730 nm 735 nm to 790 nm	5.1 % 5.0 % 4.6 % 4.3 % 4.1 % 3.1 %
	795 nm to 835 nm 840 nm to 850 nm	3.5 % 3.7 %

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Photometry and radiometry		
- Spectral emission properties of sources		
- White LED standard lamp (AC, constant voltage)	Calibration for spectral radiant flux in the range of $10~\mu\text{W}/\text{nm}$ to $200~\text{mW}/\text{nm}$ using spectrometer with measurement bandwidth from 2 nm to 5 nm in accordance with in-house procedure TPP602 at wavelength at the following value or over the following ranges:	
	365 nm 370 nm to 380 nm 385 nm to 405 nm 410 nm to 440 nm 445 nm to 460 nm 465 nm to 730 nm 735 nm to 790 nm 795 nm to 835 nm	3.9 % 3.8 % 3.3 % 2.7 % 3.4 % 2.3 % 2.6 % 3.5 %
- Wavelength source	840 nm to 850 nm Calibration for optical wavelength in accordance	3.7 %
	with in-house procedure TPP701 over the following range:	
	250 nm to 600 nm	1.5 nm

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Photometry and radiometry		
- Spectrally-integrated measurements for sources and detectors		
- Colorimeter for tungsten light source	Calibration for correlated colour temperature in accordance with in-house procedure TPP301 over the following ranges:	
	2750 K to 2856 K Above 2856 K to 3200 K	20 K 21 K
- Tungsten standard lamp	Calibration for correlated colour temperature in accordance with in-house procedure TPP603 over the following ranges:	
	2700 K to 2856 K Above 2856 K to 3100 K	26 K 30 K

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Photometry and radiometry		
- Spectral properties of materials		
- Optical filter and spectrally neutral material	Calibration for regular spectral transmittance in accordance with in-house procedure TPP504 at wavelength of 400 nm to 1000 nm over the following ranges:	
	1.00 to 0.10 below 0.10 to 0.05 below 0.05 to 0.01	0.50 % 0.55 % 1.8 %
- Spectrally-selective transmitting material	Calibration for wavelength in accordance with in-house procedure TPP506 over the following ranges:	
	260 nm to 536 nm above 536 nm to 650 nm	0.15 nm 0.20 nm

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Photometry and radiometry		
- Fibre optics		
- Optical time domain reflectometers (OTDRs) for single mode fibre <45 km)	Calibration for the following parameters in accordance with standard method IEC 61746-1: 2009:	
	Source with wavelength 1310 nm - distance scale deviation - zero location offset - location deviation - loss deviation - loss scale deviation - reflectance deviation at the following values: -10 dB -30 dB -50 dB Source with wavelength 1550 nm - distance scale deviation - zero location offset - location deviation - loss deviation - loss scale deviation - reflectance deviation - reflectance deviation at the following values: -10 dB -30 dB -50 dB	0.050 m/km 1.3 m 1.8 m 0.060 dB 0.090 dB/dB 1.7 dB 1.7 dB 1.7 dB 1.7 dB 0.050 m/km 1.3 m 2.0 m 0.040 dB 0.060 dB/dB 1.7 dB 1.7 dB 1.7 dB 1.7 dB
	-50 dB	1.7 dB

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Photometry and radiometry		
- Fibre optics		
- Optical time domain reflectometers (OTDRs) for single mode fibre <45 km)	Calibration for the following parameters in accordance with standard method BS EN 61746-1: 2011: Source with wavelength 1310 nm - distance scale deviation	0.050 m/km
	- distance scale deviation - zero location offset - location deviation - loss deviation - loss scale deviation - reflectance deviation at the following values:	1.3 m 1.8 m 0.060 dB 0.090 dB/dB
	-10 dB -30 dB -50 dB	1.7 dB 1.7 dB 1.7 dB
	Source with wavelength 1550 nm - distance scale deviation - zero location offset - location deviation - loss deviation - loss scale deviation	0.050 m/km 1.3 m 2.0 m 0.040 dB 0.060 dB/dB
	- reflectance deviation at the following values: -10 dB -30 dB -50 dB	1.7 dB 1.7 dB 1.7 dB

Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Photometry and radiometry		
- Fibre optics		
- Optical fibre power meter	Calibration for the following parameters in accordance with standard method IEC 61315: 2005:	
	- calibration factor at 1 mW	0.90 %
	- linearity at attenuation over the following range:	
	-50 dBm to below -45 dBm - linearity at attenuation over the following range:	0.90 %
	-45 dBm to 0 dBm	0.70 %
	Source with wavelength 1550 nm - calibration factor at 1 mW - linearity at attenuation over the following range:	0.90 %
	-50 dBm to below -45 dBm	0.90 %
	- linearity at attenuation over the following range: -45 dBm to 0 dBm	0.70 %
- Optical fibre laser source	Calibration for power output stability at 1 mW in accordance with standard method ISO 11554 at the following wavelengths:	
	1310 nm	0.011 dB
	1550 nm	0.015 dB
	Calibration for the following parameters in accordance with in-house procedure TPR101	
	Source with wavelength 1310 nm	
	- wavelength accuracy	2.0 pm
	- absolute power output level	10 %
	Source with wavelength 1550 nm	
	- wavelength accuracy	3.0 pm
	- absolute power output level	10 %

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Photometry and radiometry		
- Fibre optics		
- Optical fibre attenuator	Calibration for the following parameters in accordance with in-house procedure TPR102:	
	Source with wavelength 1310 nm - absolute attenuation over the following range: 0 dB to 25 dB - step attenuation over the following ranges: 0 dB to 10 dB	7.1 % 0.24 %
	Above 10 dB to 25 dB Source with wavelength 1550 nm - absolute attenuation over the following range: 0 dB to 25 dB - step attenuation over the following ranges: 0 dB to 10 dB Above 10 dB to 25 dB	7.1 % 0.24 % 1.0 %
- Optical fibre wavelength meter	Calibration for wavelength accuracy in accordance with in-house procedure TPR103 at the following wavelengths:	
	1310 nm 1550 nm	1.0 pm 1.2 pm

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

SPECIFIC TEST OR	CALIDDATION AND MEACHDEMENT
PROPERTY MEASURED® 特定測試或量度的特性®	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Calibration for temperature in accordance with in-house procedure TPT014 at the following values:	
Triple-point of argon (-189.3442 °C) Triple-point of mercury (-38.8344 °C) Triple-point of water (0.01 °C) Melting-point of gallium (29.7646 °C) Freezing-point of indium (156.5985 °C) Freezing-point of tin (231.928 °C) Freezing-point of zinc (419.527 °C) Freezing-point of aluminium (660.323 °C) Freezing-point of silver (961.78 °C)	0.3 mK 0.6 mK 0.2 mK 0.5 mK 2.0 mK 2.0 mK 2.0 mK 6.0 mK
Calibration for temperature in accordance with in-house procedure TPT014 at the following values:	
Triple-point of argon with bath (-189.3442 °C) Triple-point of mercury with bath (-38.8344 °C) Triple-point of water with bath (0.01 °C) Melting-point of gallium with furnace (29.7646 °C) Freezing-point of indium with furnace	0.3 mK 0.6 mK 0.2 mK 0.5 mK
Freezing-point of tin with furnace (231.928 °C) Freezing-point of zinc with furnace (419.527 °C) Freezing-point of aluminium with furnace (660.323 °C) Freezing-point of silver with furnace (961.78 °C)	2.0 mK 2.0 mK 6.0 mK
	Calibration for temperature in accordance with in-house procedure TPT014 at the following values: Triple-point of argon (-189.3442 °C) Triple-point of mercury (-38.8344 °C) Triple-point of sallium (29.7646 °C) Freezing-point of gallium (29.7646 °C) Freezing-point of tin (231.928 °C) Freezing-point of zinc (419.527 °C) Freezing-point of silver (961.78 °C) Calibration for temperature in accordance with in-house procedure TPT014 at the following values: Triple-point of argon with bath (-189.3442 °C) Triple-point of mercury with bath (-38.8344 °C) Triple-point of water with bath (0.01 °C) Melting-point of gallium with furnace (29.7646 °C) Freezing-point of indium with furnace (156.5985 °C) Freezing-point of tin with furnace (231.928 °C) Freezing-point of zinc with furnace (419.527 °C) Freezing-point of aluminium with furnace (660.323 °C)

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
Temperature measurements		
- Items used for defining ITS-90		
- Standard platinum resistance thermometer (SPRT)	Calibration for temperature in accordance with in-house procedure TPT015 at the following values:	
	Triple-point of argon: (-189.3442 °C) Triple-point of mercury: (-38.8344 °C) Melting-point of gallium: (29.7646 °C) Freezing-point of indium: (156.5985 °C) Freezing-point of tin: (231.928 °C) Freezing-point of zinc: (419.527 °C) Freezing-point of aluminium: (660.323 °C) Freezing-point of silver: (961.78 °C)	0.3 mK 0.6 mK 0.5 mK 2.0 mK 2.0 mK 2.0 mK 6.0 mK
	Calibration for temperature in accordance with in-house procedure TPT001 at the following values:	
	Triple-point of water: (0.01 °C)	0.2 mK
- Platinum resistance thermometer	Calibration for temperature in accordance with in-house procedure TPT002 over the following ranges:	
	-80 °C to 230 °C 230 °C to 550 °C	6 mK 10 mK

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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	Calibration Services 校正服務	
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
emperature and humidity measurements		
Temperature measurements		
- Items used for defining ITS-90		
- Liquid in glass thermometer	Calibration for temperature in accordance with in-house procedure TPT009 at the following point or over the following ranges: -80 °C to below -50 °C -50 °C to -30 °C Above -30 °C to below 0 °C	500 mK 200 mK 30 mK
	Ice-point (0 °C) Above 0 °C to 100 °C Above 100 °C to 250 °C Above 250 °C to 300 °C Above 300 °C to 450 °C Above 450 °C to 550 °C	7.0 mK 20 mK 30 mK 50 mK 200 mK 300 mK
- Thermistor	Calibration for temperature in accordance with in-house procedure TPT037 over the following range:	
	-50 °C to 90 °C	6 mK

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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	Calibration Services 校正服務	
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Items used for disseminating ITS-90		
- Thermocouple	Calibration for temperature in accordance with in-house procedure TPT008 over the following ranges:	
	-80 °C to -30 °C Above -30 °C to 550 °C	0.25 K 0.15 K
	Calibration for temperature in accordance with in-house procedure TPT012 over the following ranges:	
	500 °C to 1100 °C Above 1100 °C to 1200 °C	1.0 K 2.0 K
	Calibration for temperature in accordance with in-house procedure TPT017 over the following range:	
	550 °C to 950 °C	0.30 K

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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	Calibration Services 校正服務	
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Radiation thermometry		
- Radiation thermometer / infrared thermometer (working wavelength from 8 μm to 13 $\mu m)$	Calibration for radiance temperature in accordance with in-house procedure TPT025 over the following range:	
	-40 °C to 0 °C	0.45 K
	Calibration for radiance temperature in accordance with in-house procedure TPT022 over the following range:	
	0 °C to 50 °C	$(0.33 + 0.003t)$ K where t is measured radiance temperature in $^{\circ}$ C
	Calibration for radiance temperature in accordance with in-house procedure TPT020 over the following range:	
	50 °C to 200 °C	(0.33 + 0.003t) K where <i>t</i> is measured radiance temperature in °C
	Calibration for radiance temperature in accordance with in-house procedure TPT023 over the following range:	
	200 °C to 1000 °C	$(1.5 + 0.002t)$ K where t is measured radiance temperature in $^{\circ}$ C
- Black body radiation source (working wavelength from 8 μm to 13 $\mu m)$	Calibration for radiance temperature in accordance with in-house procedure TPT024 over the following ranges:	
	-40 °C to 0 °C Above 0 °C to 200 °C	(0.28 + 0.003 t) K (0.31 + 0.0025t) K where t is measured radiance temperature in ${}^{\circ}$ C

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®] Calibration for temperature by using a black body radiator which is designed to EN 12470-5 in accordance with in-house procedure TPT018 over the following range: 34 ℃ to 43 ℃	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
by using a black body radiator which is designed to EN 12470-5 in accordance with in-house procedure TPT018 over the following range:	0.2 K
by using a black body radiator which is designed to EN 12470-5 in accordance with in-house procedure TPT018 over the following range:	0.2 K
by using a black body radiator which is designed to EN 12470-5 in accordance with in-house procedure TPT018 over the following range:	0.2 K
by using a black body radiator which is designed to EN 12470-5 in accordance with in-house procedure TPT018 over the following range:	0.2 K
34 °C to 43 °C	0.2 K
Calibration for temperature in accordance with in-house procedure TPT019 over the following range:	
34 °C to 43 °C	0.15 K
	in accordance with in-house procedure TPT019 over the following range:

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Digital thermometer or temperature indicator	Calibration for temperature in accordance with in-house procedure TPT028 at the following value:	
	-196 ℃	20mK
	Calibration for temperature in accordance with in-house procedure TPT010 over the following ranges:	
	-80 °C to 230 °C Above 230 °C to 550 °C	6.0 mK 10 mK
	Calibration for temperature in accordance with in-house procedure TPT013 over the following ranges:	
	500 °C to 1100 °C	1.0 K
	Calibration for temperature in accordance with in-house procedure TPT021 over the following range:	
	500 °C to 1200 °C	2.0 K

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Digital thermometer or temperature Indicator	Calibration for temperature in accordance with in-house procedure TPT030 over the following range:	
	-30 °C to 75 °C	0.10 K
	On-site calibration for temperature in accordance with in-house procedure TPT030 over the following range:	
	-30 °C to 75 °C	0.10 K
	Calibration for temperature in accordance with in-house procedure TPT027 over the following range:	
	50 °C to 650 °C	0.45 K
	On-site calibration for temperature in accordance with in-house procedure TPT027 over the following range:	
	50 °C to 650 °C	0.45 K
- Thermometer with analogue display	Calibration for temperature in accordance with in-house procedure TPT010 over the following ranges:	
	-80 °C to 230 °C Above 230 °C to 550 °C	0.5 K 1 K

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Thermocouple simulator	Calibration for temperature by converting measured thermal EMF to equivalent temperature in accordance with in-house procedure TPT029	0.15K
- Resistance Temperature Detector (RTD) simulator	Calibration for temperature by converting measured resistance to equivalent temperature in accordance with in-house procedure TPT034	0.10 K
- Constant temperature bath	Calibration for temperature in accordance with in-house procedure TPT006 over the following ranges:	
	-80 °C to -75 °C Above -75 °C to 0 °C Above 0 °C to 70 °C Above 70 °C to 230 °C	6 mK 12 mK 5 mK 30 mK
	On-site calibration for temperature in accordance with in-house procedure TPT006 over the following ranges:	
	-80 °C to -75 °C Above -75 °C to 0 °C Above 0 °C to 70 °C Above 70 °C to 230 °C	6 mK 12 mK 5 mK 30 mK

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
Temperature measurements		
- Constant temperature bath	Calibration for the following parameters in accordance with in-house procedure TPT038:	
	- Temperature stability over the following temperature ranges: -80 °C to -25 °C Above -25 °C to 25 °C Above 25 °C to 70 °C Above 70 °C to 230 °C	1.2 mK 1.2 mK 1.5 mK 2.5 mK
	- Temperature gradient over the following temperature ranges: -80 °C to -25 °C Above -25 °C to 25 °C Above 25 °C to 70 °C Above 70 °C to 230 °C	2.5 mK 1 mK 2 mK 2 mK
	On-site calibration for the following parameters in accordance with in-house procedure TPT038:	
	- Temperature stability over the following temperature ranges: -80 °C to -25 °C Above -25 °C to 25 °C Above 25 °C to 70 °C Above 70 °C to 230 °C	1.2 mK 1.2 mK 1.5 mK 2.5 mK
	- Temperature gradient over the following temperature ranges: -80 °C to -25 °C Above -25 °C to 25 °C Above 25 °C to 70 °C Above 70 °C to 230 °C	2.5 mK 1 mK 2 mK 2 mK

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Temperature chamber of volume not greater than 2000 litre	On-site calibration for the following parameters in accordance with IEC 60068-3-5: 2018	
	- Temperature fluctuation over the following temperature range: -80 °C to 250 °C	0.01 K
	- Temperature gradient over the following temperature range: -80 °C to 250 °C	0.08 K
	- Temperature variation in space over the following temperature range: -80 °C to 250 °C	0.08 K
	- Temperature rate of change over the following temperature range: -80 °C to 250 °C	0.01 K/min
	- Achieved temperature over the following range: -80 °C to 250 °C	0.06 K
	On-site calibration for mean temperature in accordance with in-house procedure TPT039 over the following ranges:	
	-80 °C to below -40 °C -40 °C to 5 °C Above 5°C to 40 °C Above 40 °C to 70 °C	0.50 K 0.40 K 0.10 K 0.15 K
	Above 70 °C to 180 °C Above 180 °C to 250 °C	0.60 K 0.90 K

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Temperature measurements		
- Temperature chamber of volume not greater than 2000 litre	Calibration for the following parameters in accordance with IEC 60068-3-5: 2018	
	- Temperature fluctuation over the following temperature range: -80 °C to 250 °C	0.01 K
	- Temperature gradient over the following temperature range: -80 °C to 250 °C	0.08 K
	- Temperature variation in space over the following temperature range: -80 °C to 250 °C	0.08 K
	- Temperature rate of change over the following temperature range: -80 °C to 250 °C	0.01 K/min
	- Achieved temperature over the following range: -80 °C to 250 °C	0.06 K
	Calibration for mean temperature in accordance with in-house procedure TPT039 over the following ranges:	
	-80 °C to below -40 °C -40 °C to 5 °C Above 5°C to 40 °C Above 40 °C to 70 °C Above 70 °C to 180 °C Above 180 °C to 250 °C	0.50 K 0.40 K 0.10 K 0.15 K 0.60 K 0.90 K

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Cemperature and humidity measurements		
Temperature measurements		
- Psychrometer, relative humidity sensor and other relative humidity measurement instrument (excluding thermohygrograph)	Calibration for air temperature in accordance with in-house procedure TPH102 over the following ranges:	
	for relative humidity from 8 %rh to 95 %rh 5 °C to 40 °C Above 40 °C to 70 °C	(0.068 + 0.0008 x (t-5)) °C (0.096 + 0.002 x (t-40)) °C where t is measured air temperature in °C
- Thermohygrograph / Temperature and humidity chart recorder	Calibration for air temperature in accordance with in-house procedure TPH103 over the following ranges:	
	for relative humidity from 8 %rh to 95 %rh 5 °C to 40 °C Above 40 °C to 70 °C	(0.068 + 0.0008 x (t-5)) °C (0.096 + 0.002 x (t-40)) °C where t is measured air temperature in °C

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Humidity measurements		
- Dew-point generator	Calibration for dew-point temperature in accordance with in-house procedure TPH101 over the following ranges:	
	-60 °C to below -40 °C -40 °C to below 30 °C 30 °C to 65 °C	0.20 °C 0.15 °C 0.13 °C
- Dew point hygrometer	Calibration for dew-point temperature in accordance with in-house procedure TPH101 over the following ranges:	
	-60 °C to below -40 °C -40 °C to below 30 °C 30 °C to 65 °C	0.20 °C 0.15 °C 0.13 °C
- Relative humidity generator, chamber and calibrator	On-site calibration for relative humidity in accordance with in-house procedure TPH104 over the following range:	
	for air temperature from 5 °C to 85 °C 5 %rh to 95 %rh	(0.18 + 0.0075 x H)%rh where H is the relative humidity test point
	Calibration for relative humidity in accordance with in-house procedure TPH104 over the following range:	
	for air temperature from 5 °C to 85 °C 5 %rh to 95 %rh	(0.18 + 0.0075 x H)%rh where H is the relative humidity test point

Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Humidity measurements		
- Psychrometer, relative humidity sensor and other relative humidity measurement instrument (excluding thermohygrograph)	Calibration for relative humidity in accordance with in-house procedure TPH102 over the following ranges:	
	for air temperature from 5 °C to 40 °C 8 %rh to 20 %rh Above 20 %rh to 40 %rh Above 40 %rh to 60 %rh Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	0.50 %rh 0.60 %rh 0.70 %rh 1.1 %rh 1.3 %rh
	for air temperature from above 40 °C to 70 °C 8 %rh to 20 %rh Above 20 %rh to 40 %rh Above 40 %rh to 60 %rh Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	0.50 %rh 0.90 %rh 1.3 %rh 1.8 %rh 1.8 %rh
- Thermohygrograph / Temperature and humidity chart recorder	Calibration for relative humidity in accordance with in-house procedure TPH103 over the following ranges:	
	for air temperature from 5 °C to 40 °C 8 %rh to 20 %rh Above 20 %rh to 40 %rh Above 40 %rh to 60 %rh Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh for air temperature from above 40 °C to 70 °C	0.50 %rh 0.60 %rh 0.70 %rh 1.1 %rh 1.3 %rh
	8 %rh to 20 %rh Above 20 %rh to 40 %rh Above 40 %rh to 60 %rh Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	0.50 %rh 0.90 %rh 1.3 %rh 1.8 %rh 1.8 %rh

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [®] 特定測試或量度的特性 [®]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
Humidity measurements		
- Relative humidity chamber	On-site calibration for the following parameters in accordance with in-house procedure TPH105	
	- Mean humidity (excluding humidity fluctuation and gradient) over the following ranges:	
	for air temperature from 5 °C to 40 °C: 8 %rh to 20 %rh	0.60 %rh
	Above 20 %rh to 40 %rh	0.70 % rh
	Above 40 %rh to 60 %rh	0.80 %rh
	Above 60 %rh to 80 %rh	1.2 %rh
	Above 80 %rh to 95 %rh	1.4 %rh
	for air temperature from above 40 °C to 70 °C:	
	8 %rh to 20 %rh	0.60 % rh
	Above 20 %rh to 40 %rh	1.0 %rh
	Above 40 %rh to 60 %rh	1.4 %rh
	Above 60 %rh to 95 %rh	1.9 %rh
	- Humidity fluctuation over the following ranges:	
	for air temperature from 5 °C to 40 °C:	
	8 %rh to 95 %rh	0.30 %rh
	for air temperature from above 40 °C to 70 °C: 8 %rh to 95 %rh	0.20 W. ak.
	8 %m to 95 %m	0.30 %rh

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
Humidity measurements		
- Relative humidity chamber	On-site calibration for the following parameters in accordance with in-house procedure TPH105	
	- Humidity gradient over the following ranges:	
	for air temperature from 5 °C to 40 °C:	0.90 % 4
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	0.90 %rh
	Above 40 %rh to 60 %rh	1.0 %rh
	Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	1.6 %rh 1.9 %rh
	for air temperature from above 40 °C to 70 °C:	
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	1.3 %rh
	Above 40 %rh to 60 %rh	1.9 %rh
	Above 60 %rh to 95 %rh	2.6 %rh
	- Humidity variation in space:	
	over the following ranges	
	for air temperature from 5 °C to 40 °C:	
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	0.90 %rh
	Above 40 %rh to 60 %rh	1.0 %rh
	Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	1.6 %rh 1.9 %rh
	for air temperature from above 40 °C to 70 °C:	
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	1.3 %rh
	Above 40 %rh to 60 %rh	1.9 %rh
	Above 60 %rh to 95 %rh	2.6 %rh

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Humidity measurements		
- Relative humidity chamber	On-site calibration for the following parameters in accordance with in-house procedure TPH105	
	- Mean humidity (including humidity fluctuation and gradient) over the following ranges:	
	for air temperature from 5 °C to 40 °C:	
	8 %rh to 20 %rh	1.1 %rh
	Above 20 %rh to 40 %rh	1.2 %rh
	Above 40 %rh to 60 %rh	1.4 %rh
	Above 60 %rh to 80 %rh	2.1 %rh
	Above 80 %rh to 95 %rh	2.4 %rh
	for air temperature from above 40 °C to 70 °C: 8 %rh to 20 %rh	1.1 %rh
	Above 20 %rh to 40 %rh	1.7 %rh
	Above 40 %rh to 60 %rh	1.7 %m 2.4 %rh
	Above 40 %In to 00 %In Above 60 %rh to 95 %rh	3.3 %rh
	Acove do Ann to 33 Ann	5.5 /MII

[®] Unless otherwise specified, accredited activities are conducted at the laboratory.

The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
Humidity measurements		
- Relative humidity chamber	Calibration for the following parameters in accordance with in-house procedure TPH105	
	- Mean humidity (excluding humidity fluctuation and gradient) over the following ranges:	
	for air temperature from 5 °C to 40 °C: 8 %rh to 20 %rh	0.60 %rh
	Above 20 %rh to 40 %rh	0.70 %rh
	Above 40 %rh to 60 %rh	0.80 %rh
	Above 60 %rh to 80 %rh	1.2 %rh
	Above 80 %rh to 95 %rh	1.4 %rh
	for air temperature from above 40 °C to 70 °C:	0.60 % 4
	8 %rh to 20 %rh	0.60 %rh
	Above 20 %rh to 40 %rh	1.0 %rh
	Above 40 %rh to 60 %rh Above 60 %rh to 95 %rh	1.4 %rh 1.9 %rh
	Above of %in to 93 %in	1.9 %111
	- Humidity fluctuation over the following ranges:	
	for air temperature from 5 °C to 40 °C:	
	8 %rh to 95 %rh	0.30 %rh
	for air temperature from above 40 °C to 70 °C:	0.20 % 4
	8 %rh to 95 %rh	0.30 %rh

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
emperature and humidity measurements		
Humidity measurements		
- Relative humidity chamber	Calibration for the following parameters in accordance with in-house procedure TPH105	
	- Humidity gradient over the following ranges:	
	for air temperature from 5 °C to 40 °C: 8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	0.90 %rh 1.0 %rh
	Above 40 %rh to 60 %rh Above 60 %rh to 80 %rh	1.6 %rh
	Above 80 %rh to 95 %rh	1.9 %rh
	for air temperature from above 40 °C to 70 °C:	
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	1.3 %rh
	Above 40 %rh to 60 %rh Above 60 %rh to 95 %rh	1.9 %rh 2.6 %rh
	- Humidity variation in space	
	over the following ranges:	
	for air temperature from 5 °C to 40 °C:	
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	0.90 %rh
	Above 40 %rh to 60 %rh	1.0 %rh
	Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	1.6 %rh 1.9 %rh
	for air temperature from above 40 °C to 70 °C:	
	8 %rh to 20 %rh	0.80 %rh
	Above 20 %rh to 40 %rh	1.3 %rh
	Above 40 %rh to 60 %rh Above 60 %rh to 95 %rh	1.9 %rh 2.6 %rh

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Temperature and humidity measurements		
- Humidity measurements		
- Relative humidity chamber	Calibration for the following parameters in accordance with in-house procedure TPH105	
	- Mean humidity (including humidity fluctuation and gradient) over the following ranges:	
	for air temperature from 5 °C to 40 °C: 8 %rh to 20 %rh Above 20 %rh to 40 %rh Above 40 %rh to 60 %rh Above 60 %rh to 80 %rh Above 80 %rh to 95 %rh	1.1 %rh 1.2 %rh 1.4 %rh 2.1 %rh 2.4 %rh
	for air temperature from above 40 °C to 70 °C: 8 %rh to 20 %rh Above 20 %rh to 40 %rh Above 40 %rh to 60 %rh Above 60 %rh to 95 %rh	1.1 %rh 1.7 %rh 2.4 %rh 3.3 %rh

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.



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$\label{lem:condition} \begin{tabular}{ll} The Government of the Hong Kong Special Administrative Region-Standards and Calibration Laboratory \\ \end{tabular}$

Provision of Proficiency Testing Schemes 提供能力驗證		
PROFICIENCY TESTING SCHEME AND ITEM 能力驗證計劃及項目	MEASURAND OR CHARACTERISTIC MEASURED 測試參數或特質	PROFICIENCY TESTING SCHEME PROCEDURE 能力驗證計劃程序
Calibration Services		
Acoustic Measurements		
- Sound calibrator	Calibration for the following parameters:	PTA001: PT Plan for sound calibrator
	- Sound pressure level over the following range: 94 dB and 114 dB	
	- Frequency at the following value 1000 Hz	
	- Total distortion and noise over the following range: 0 to 3.0 %	
- Sound level meter	Calibration for relative frequency weighting C normalised to the response at 1 kHz over the following range:	PTA002: PT Plan for sound level meter
	125 Hz, 1 kHz, 4kHz and 8 kHz -3.0 dB to 0 dB	
- Audiometer	Calibration for the following parameters:	PTA003: PT Plan for audiometer
	- Sound pressure level over the following range: 125 Hz to 8 kHz 77 dB to 115 dB	
	- Force level over the following range: 250 Hz to 8 kHz 71 dB to 107 dB (re 1μN)	
	- Attenuator steps at the following value: 5 dB	



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Provision of Proficiency Testing Schemes 提供能力驗證		
PROFICIENCY TESTING SCHEME AND ITEM 能力驗證計劃及項目	MEASURAND OR CHARACTERISTIC MEASURED 測試參數或特質	PROFICIENCY TESTING SCHEME PROCEDURE 能力驗證計劃程序
Calibration Services		
Electricity		
- Digital multimeter	Calibration for the following parameters:	PTL001: PT plan for digital multimeter
	- DC voltage over the following range: 0.1 mV to 1000V	
	- DC current over the following range: 10 μA to 100 A	
	- DC resistance over the following range: $1 \ m\Omega \ to \ 1 \ G\Omega$	
	- AC voltage over the following range: 40 Hz to 10 kHz 10 mV to 1000 V 10 kHz to 100 kHz 10 mV to 300 V 100 kHz to 500 kHz 0.2 V to 3 V - AC current over the following range: 40 Hz to 10 kHz 100 µA to 1 A 45 Hz to 65 Hz 1 A to 200 A	



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Provision of Proficiency Testing Schemes 提供能力驗證		
PROFICIENCY TESTING SCHEME AND ITEM 能力驗證計劃及項目	MEASURAND OR CHARACTERISTIC MEASURED 測試參數或特質	PROFICIENCY TESTING SCHEME PROCEDURE 能力驗證計劃程序
Calibration Services		
Electricity		
- Multifunction calibrator	Calibration for the following parameters:	PTL002: PT plan for multifunction calibrator
	- DC voltage over the following range: 0.1 mV to 1000V	
	- DC current over the following range: $10~\mu A$ to $100~A$	
	- DC resistance over the following range: $1\ m\Omega\ to\ 1\ G\Omega$	
	- AC voltage over the following range: 40 Hz to 10 kHz	
	10 mV to 1000 V 10 kHz to 100 kHz 10 mV to 300 V	
	100 kHz to 500 kHz 0.2 V to 3 V	
	- AC current over the following range: 40 Hz to 10 kHz	
	100 μA to 1 A	
	45 Hz to 65 Hz 1 A to 200 A	
- Power meter	Calibration for single or three phase active/reactive/apparent power	PTL031: PT plan for power meter
	over the following range of parameters:	
	Voltage: 24 V to 300 V Current: 0.1 A to 10 A	
	Power factor: 0 lead/lag to unity Frequency: 45 Hz to 65 Hz	



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Provision of Proficiency Testing Schemes 提供能力驗證		
PROFICIENCY TESTING SCHEME AND ITEM 能力驗證計劃及項目	MEASURAND OR CHARACTERISTIC MEASURED 測試參數或特質	PROFICIENCY TESTING SCHEME PROCEDURE 能力驗證計劃程序
Calibration Services		
Electricity		
- Oscilloscope	Calibration for the following parameters:	PTR006: PT plan for oscilloscope
	- Peak to peak voltage of 1 kHz square waveform over the following range: 40 μV to 40 V	
	- Bandwidth over the following range: 1 MHz to 300 MHz	
	- Period of triangular waveform over the following range: 0.5 ns to 5 s	
Time and frequency		
- Stopwatch	Calibration for relative correction of time interval	PTR005: PT plan for stopwatch



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$\label{thm:condition} \begin{tabular}{ll} The Government of the Hong Kong Special Administrative Region-Standards and Calibration Laboratory \\ \end{tabular}$

Provision of Proficiency Testing Schemes 提供能力驗證		
PROFICIENCY TESTING SCHEME AND ITEM 能力驗證計劃及項目	MEASURAND OR CHARACTERISTIC MEASURED 測試參數或特質	PROFICIENCY TESTING SCHEME PROCEDURE 能力驗證計劃程序
Calibration Services		
Length and related quantities		
- Calliper	Calibration for length over the following range: 0.5 mm to 1 m	PTM008: PT scheme for calliper
- Engineer's steel rule	Calibration for length over the following range: 0.5 mm to 1 m	PTM006: PT scheme for engineer's steel rule
- Square	Calibration for squareness for travel over the following range: 5 mm to 500 mm	PTM004: PT scheme for square
Mass and related quantities		
- Standard weight	Calibration for mass over the following range: 1 mg to 50 kg	PTM001: PT scheme for standard weights
- Electronic balance	Calibration for mass over the following range: 1 mg to 50 kg	PTM002: PT scheme for electronic balances
- Piston-operated pipette	Calibration for contained or delivered volume over the following range: 1 µl to 5 ml	PTM003: PT scheme for piston-operated pipettes
Photometry and radiometry		
- Illuminance meter	Calibration for illuminance at colour temperature of 2856 K over the following range: 1 lx to 3000 lx	PTP001: PT plan for illuminance meter



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The Government of the Hong Kong Special Administrative Region – Standards and Calibration Laboratory

Provision of Proficiency Testing Schemes 提供能力驗證		
PROFICIENCY TESTING SCHEME AND ITEM 能力驗證計劃及項目	MEASURAND OR CHARACTERISTIC MEASURED 測試參數或特質	PROFICIENCY TESTING SCHEME PROCEDURE 能力驗證計劃程序
Calibration Services		
Humidity measurements		
- Digital thermohygrometer	Calibration for humidity over the following range:	PTH001: PT plan for relative humidity measurement instrument
	for air temperature 5 °C to 70 °C: 8 %rh to 95 %rh	
Temperature measurements		
- Platinum resistance thermometer	Calibration for temperature at the following value or over the following range:	PTT001: PT plan for platinum resistance thermometer
	Triple-point of water: (0.01 °C) -80 °C to 550 °C	
- Thermocouple	Calibration for temperature over the following range:	PTT002: PT plan for thermocouple
	-80 °C to 550 °C	
- Liquid-in-glass thermometer	Calibration for temperature over the following range:	PTT003: PT plan for liquid-in-glass thermometer
	-80 °C to 550 °C	
- Digital thermometer	Calibration for temperature over the following range:	PTT004: PT plan for digital thermometer
	-80 °C to 550 °C	



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The Government of the Hong Kong Special Administrative Region -**Standards and Calibration Laboratory**

香港特別行政區政府 - 標準及校正實驗所

G04, Public Works Central Laboratory Building, 2B Cheung Yip Street, Kowloon Bay, Kowloon 九龍九龍灣祥業街 2 號 B 工務中央試驗所大樓地下 04 室

Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED [@] 特定測試或量度的特性 [@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Mass and related quantities - Force		
- Force proving instruments, load cells, proving rings, load columns and other force measuring devices in tension and compression modes	Calibration for force using a deadweight or hydraulic force standard machine in accordance with standard methods BS EN ISO 376: 2011, EN ISO 376: 2011 or ISO 376: 2011 over the following ranges:- 50 N to 60 kN Above 60 kN to 600 kN	0.01 % 0.05 %
- Universal testing machines in tension and compression modes	On-site calibration for force using indicated or true force method in accordance with standard methods BS EN ISO 7500-1: 2018, EN ISO 7500-1: 2018 or ISO 7500-1: 2018, over the following ranges:-	
	50 N to 60 kN Above 60 kN to 600 kN Above 600 kN to 3000 kN	(Class 00 load cell with a maximum uncertainty of 0.08 %) (Class 0.5 load cell with a maximum uncertainty of 0.16 %) (Class 1 load cell with a maximum uncertainty of 0. 32 %)

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The calibration uncertainty of a device under test, which is usually reported at 95% confidence level, depends on both the CMC of the laboratory and the performance of the device during calibration.