



World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

TESEQ PTE LTD.

Industrial Estate, Singapore

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 7th day of December 2009.





Peter Meyer

President & CEO
For the Accreditation Council
Certificate Number 2939.01
Valid to December 31, 2011
Revised December 15, 2010

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

TESEQ PTE LTD.
 3015A UBI Road #05-09 KG UBI
 Industrial Estate SINGAPORE 408705
 Frankie Chua Phone: 65 68462488

CALIBRATION

Valid To: December 31, 2011

Certificate Number: 2939.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Electrical – RF/Microwave

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
ESD Simulators –			
Contact Voltage	(2 to 30) kV ± 5 %	0.8 %	IEC 61000-4-2 (2008) ISO 10605 (2008) Brandenburg HV meter 139D, HP3458A, DMM, Lecroy 7300A, Teseq MD103 ESD target
Rise Time	(0.6 to 1) ns	7.5 %	
Peak Current	(7.5 to 112.5) A ± 15 %	3.1 %	
30 ns Current	(4 to 60) A ± 30 %	3.1 %	
60 ns Current	(2 to 30) A ± 30 %	3.1 %	
EFT Simulators –			
Voltage	500 V to 8 kV ± 10 %	3.1 %	IEC 61000-4-4 (2004), (2004+A1:2010)
Rise Time	5 ns ± 30 %	3.4 %	

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
EFT Simulators – (cont)			IEC 61000-4-4 (2004), (2004+A1:2010)
Pulse Width	(35 to 150) ns	2.9 %	
Burst Duration/Period	(0.75 to 300) ms	0.5 %	
Repetition	(5 to 100) kHz	0.7 %	Lecroy 7300A, Teseq CAS 3025
Surge Simulators –			IEC 61000-4-5 (2005),
Rise Time			
Open Circuit	1 μs ± 30 %	3.4 %	
Short Circuit	8 μs ± 20 %	1.7 %	
Pulse Width			
Open Circuit	50 μs ± 20 %	1.6 %	
Short Circuit	20 μs ± 20 %	1.5 %	
Open Circuit Phase Shift	0° to 360° ± 10°	0.2 %	
Open Circuit Voltage	500 V to 6.6 kV ± 10 %	1.7 %	Lecroy 7300A, Teseq MD 200A, HILO Shunt ISM 50/2
Short Circuit Current	250 A to 3.3 kA ± 10 %	1.4 %	
Ring Wave Simulators –			
Rise Time			
Open Circuit	0.5 μs ± 30 %	3.9 %	IEC 61000-4-12 (2006), ANSI C62.41 (1991)
Short Circuit	(0.2 to 1) μs	3.9 %	
Open Circuit Phase Shift	(0 to 360)° ± 10°	0.2 %	Lecroy 7300A, Teseq MD 200A, HILO Shunt ISM 50/2
Open Circuit Voltage	200 V to 6.6 kV ± 10 %	1.8 %	
Short Circuit Current	(6 to 550) A ± 10 %	1.7 %	
Oscillation Frequency	100 kHz ± 30 %	0.2 %	
Output Impedence	12 & 30 Ω ± 20 %	2.5 %	
Decaying	(40 to 110) %	2.6 %	

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
PQT Simulators –			
Pulse Rise/Fall Time	(1 to 5) μs	4.6 %	IEC 61000-4-11 (2004)
Phase Angle	(0 to 360) °C ± 10 °	0.3 %	Lecroy 7300A, Teseq MD 200A, HILO Shunt
Voltage Measurement	Up to 240 VAC	0.1 %	ISM 50/2, HP 3458A
Time Interval	1 ms to 1 s	1.2 %	
Overshoot/Undershoot	Less than 5 %	1.4 %	

¹ This laboratory offers commercial calibration service.

² Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMC's represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ In the statement of CMC, percentages are to be read as percent of reading, unless noted otherwise.