PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

NOISE LABORATORY CO., LTD.
Customer Service Center
1-4-4 Chiyoda, Chuo-ku, Sagamihara-shi, Kanagawa 252-0237

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Calibration of ESD Simulator, Fast Transient/Burst Simulator, Lightning Surge Simulator and Impulse Noise Simulator
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Perry Johnson Laboratory Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
February 25, 2018	February 4, 2022	February 29, 2024

Accreditation No.:	*Certificate No.:*
96653	L22-97

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

NOISE LABORATORY CO., LTD.
Customer Service Center
1-4-4 Chiyoda, Chuo-ku, Sagamihara-shi, Kanagawa 252-0237
Contact Name: Takashi Ninomiya Phone: 042-712-2021

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Electrostatic discharge immunity test [F] ESD Simulator Contact Discharge			"Calibration procedures for ESD Simulator based on IEC 61000-4-2 Ed.1" (TPS011-2-2) "Calibration procedures for EDS Simulator based on IEC 61000-4-2 Ed.2 or ISO 10605 Ed.2" (TPS011-2-3) "Calibration procedures for DC high voltage" (TPS011-7-1) On basis of: IEC 61000-4-2 Ed.1/Ed.2 and ISO 10605 Ed.2 Oscilloscope Current Target Attenuator High Voltage Voltmeter
Current (1 kV to 30 kV)	0.07 A to 148 A	6.8 % of reading	
Time Interval			
Rise Time	0.5 ns to 1.2 ns	5.2 % of reading	
Voltage Indication	0.2 kV to 30 kV	0.44 % of reading	
Electrical fast transient/burst immunity test [FO] EFT/Burst Simulator			"Calibration procedures for EFT/B Simulator based on IEC 61000-4-4: Ed.2+A1" (TPS021-7-2) "Calibration procedures for EFT/B Simulator based on IEC 61000-4-4 Ed.3" (TPS021-7-3,4) "Calibration procedures for phase angle measurement" (TPS001-1) On basis of: IEC 61000-4-4 Ed.2+A1/Ed.3 Oscilloscope Attenuator (50 Ω,1000 Ω load) High Voltage Probe
Voltage	0.01 kV to 5.5 kV	4.6 % of reading	
Time Interval			
Rise Time	3 ns to 7 ns	5.2 % of reading	
Pulse Width	30 ns to 160 ns	8 % of reading	
Burst Duration	0.5 ms to 20 ms	1.2 % of reading	
Burst Period	200 ms to 400 ms	0.14 % of reading	
Frequency	2 kHz to 120 kHz	0.34 % of reading	
Phase Shift	0 to 360 Degree	0.69 % of reading	

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Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Surge immunity test [FO] Lightning Surge Simulator			"Calibration procedures for Lightning Surge Simulator based on IEC 61000-4-5 Ed.2" (TPS031-2-2,4) "Calibration procedures for Lightning Surge Simulator based on IEC 61000-4-5 Ed.3" (TPS031-2-3,5) "Calibration procedures for phase angle measurement" (TPS001-1) On basis of: IEC 61000-4-5 Ed.2/Ed.3 Oscilloscope High Voltage Probe Current Probe / Transformer Rogowski coil
Voltage	0.001 kV to 17 kV	3.4 % of reading	
Current	0.001 kA to 8 kA	2.7 % of reading	
Time Interval			
Front Time	0.8 µs to 13 µs	6.3 % of reading	
Time to Half Value	14 µs to 900 µs	6.3 % of reading	
Phase Shift	0 to 360 Degree	0.69 % of reading	
Impulse Noise Simulator[FO]			"Calibration procedures for Impulse Noise Simulator" (TPS041-2) "Calibration procedures for phase angle measurement" (TPS001-1) On basis of: Specifications of Impulse Noise Simulator manufactured by NOISE LABORATORY CO., LTD. based on JEM-TR 177:2007 and JEM-TR 177: 2020 (Addendum 1) Oscilloscope Attenuator High voltage probe
Voltage	0.01kV to 5.0 kV	5.8 % of reading	
Time Interval			
Rise Time	0.1 ns to 4 ns	2.6 % of reading	
Pulse Width	8 ns to 1200 ns	1.8 % of reading	
Pulse Repetition	0.8 ms to 1200 ms	3.0 % of reading	
Phase Shift	0 to 360 Degree	0.69 % of reading	

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor *k* (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.

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Accreditation is granted to the facility to perform the following calibrations:

2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.

3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^{F} would mean that the laboratory performs this calibration at its fixed location.

4. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.

5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.