



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Exphil Calibration Labs, Inc.
415 Central Avenue
Bohemia, NY 11716

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

ISO/IEC 17025: 2005

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 January 2009):

Calibration of Electrical and Time and Frequency Equipment
(As detailed in the supplement)

Such testing and/or calibration services shall only be offered at or from the address given above. 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:

The validity of this certificate is mandated through ongoing surveillance.

Tracy Szeszen
 President/Operations Manager
 Perry Johnson Laboratory
 Accreditation, Inc. (PJLA)
 26555 Evergreen, Suite 1325
 Southfield, Michigan 48076

Initial Accreditation Date:
 September 4, 2009

Issue Date:
 September 4, 2009

Expiration Date:
 September 3, 2011

Accreditation No.
 65940

Certificate No.
 L09-88

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Certificate of Accreditation: Supplement

Exphil Calibration Labs, Inc.
415 Central Avenue
Bohemia, NY 11716

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

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	BEST MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	REMARKS
DC Volts-Generate	0 mV to 220 mV	7.8 μ V/V + 400 nV	Fluke 5720A
	0 V to 2.2 V	5.6 μ V/V + 700 nV	
	0 V to 22 V	3.7 μ V/V + 4 μ V	
	0 V to 220 V	5 μ V/V + 40 μ V	
	0 V to 1 000 V	7.4 μ V/V + 400 μ V	
DC Volts-Measure	0 mV to 200 mV	8 μ V/V + 100 nV	Fluke 8508A
	200 mV to 2 V	5.5 μ V/V + 400 nV	
	2 V to 20 V	5.5 μ V/V + 4 nV	
	20 V to 200 V	8 μ V/V + 40 nV	
	200 V to 1 000 V	7.5 μ V/V + 500 nV	
DC Current-Generate	0 μ A to 220 μ A	41 μ A/A + 6 nA	Fluke 5720A
	220 μ A to 2.2 mA	36 μ A/A + 7 nA	
	2.2 mA to 22 mA	39 μ A/A + 40 nA	
	22 mA to 220 mA	45 μ A/A + 700 nA	
	220 mA to 2 A	82 μ A/A + 12 μ A	
DC Current-Measure	0 μ A to 220 μ A	20 μ A/A + 400 nA	Fluke 8508A
	200 μ A to 2 mA	20 μ A/A + 4 nA	
	2 mA to 20 mA	22 μ A/A + 40 nA	
	20 mA to 200 mA	60 μ A/A + 800 nA	
	200 mA to 2 A	285 μ A/A + 16 μ A	



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AC Volts-Generate Range			Fluke 5720A
10 Hz to 20 Hz	2.2 mV	1.5 mV/V + 4 μ V	
20 Hz to 40 Hz	2.2 mV	1.1 mV/V + 4 μ V	
40 Hz to 20 kHz	2.2 mV	1.1 mV/V + 4 μ V	
20 kHz to 50 kHz	2.2 mV	1.2 mV/V + 4 μ V	
50 kHz to 100 kHz	2.2 mV	2.4 mV/V + 5 μ V	
100 kHz to 300 kHz	2.2 mV	4.3 mV/V + 10 μ V	
300 kHz to 500 kHz	2.2 mV	6.4 mV/V + 20 μ V	
500 kHz to 1 MHz	2.2 mV	7.7 mV/V + 20 μ V	
AC Volts-Generate Range			
10 Hz to 20 Hz	22 mV	2.5 mV/V + 4 μ V	
20 Hz to 40 Hz	22 mV	1.1 mV/V + 4 μ V	
40 Hz to 20 kHz	22 mV	7.3 mV/V + 4 μ V	
20 kHz to 50 kHz	22 mV	2.5 mV/V + 4 μ V	
50 kHz to 100 kHz	22 mV	55 mV/V + 5 μ V	
100 kHz to 300 kHz	22 mV	11 mV/V + 10 μ V	
300 kHz to 500 kHz	22 mV	1.5 mV/V + 20 μ V	
500 kHz to 1 MHz	22 mV	2.7 mV/V + 20 μ V	
AC Volts-Generate Range			
10 Hz to 20 Hz	220 mV	240 μ V/V + 12 μ V	
20 Hz to 40 Hz	220 mV	90 μ V/V + 7 μ V	
40 Hz to 20 kHz	220 mV	81 μ V/V + 7 μ V	
20 kHz to 50 kHz	220 mV	204 μ V/V + 7 μ V	
50 kHz to 100 kHz	220 mV	460 μ V/V + 17 μ V	
100 kHz to 300 kHz	220 mV	909 μ V/V + 20 μ V	
300 kHz to 500 kHz	220 mV	1.4 mV/V + 25 μ V	
500 kHz to 1 MHz	220 mV	2.7 mV/V + 45 μ V	



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AC Volts-Generate Range			Fluke 5720A
10 Hz to 20 Hz	2.2 V	295 μ V/V + 40 μ V	
20 Hz to 40 Hz	2.2 V	122 μ V/V + 15 μ V	
40 Hz to 20 kHz	2.2 V	82 μ V/V + 8 μ V	
20 kHz to 50 kHz	2.2 V	122 μ V/V + 10 μ V	
50 kHz to 100 kHz	2.2 V	131 μ V/V + 30 μ V	
100 kHz to 300 kHz	2.2 V	445 μ V/V + 80 μ V	
300 kHz to 500 kHz	2.2 V	1.1 mV/V + 200 μ V	
500 kHz to 1 MHz	2.2 V	1.7 mV/V + 300 μ V	
AC Volts-Generate Range			
10 Hz to 20 Hz	22 V	240 μ V/V + 400 μ V	
20 Hz to 40 Hz	22 V	90 μ V/V + 150 μ V	
40 Hz to 20 kHz	22 V	45 μ V/V + 50 μ V	
20 kHz to 50 kHz	22 V	82 μ V/V + 100 μ V	
50 kHz to 100 kHz	22 V	109 μ V/V + 200 μ V	
100 kHz to 300 kHz	22 V	290 μ V/V + 600 μ V	
300 kHz to 500 kHz	22 V	1 mV/V + 2 mV	
500 kHz to 1 MHz	22 V	1.5 mV/V + 3.2 mV	
AC Volts-Generate Range			
10 Hz to 20 Hz	220 V	240 μ V/V + 4 mV	
20 Hz to 40 Hz	220 V	90 μ V/V + 1.5 mV	
40 Hz to 20 kHz	220 V	55 μ V/V + 0.6 mV	
20 kHz to 50 kHz	220 V	90 μ V/V + 1 mV	
50 kHz to 100 kHz	220 V	159 μ V/V + 2.5 mV	
AC Volts-Generate Range			
50 Hz to 300 Hz	700 V	428 μ V/V + 16 mV	
300 Hz to 1 KHz	700 V	108 μ V/V + 3.5 mV	



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AC Volts-Measure Range			Fluke 8508A
1 Hz to 10 Hz	200 mV	160 μ V/V + 14 μ V	
10 Hz to 40 Hz	200 mV	130 μ V/V + 4 μ V	
40 Hz to 100 Hz	200 mV	110 μ V/V + 4 μ V	
100 Hz to 2 kHz	200 mV	110 μ V/V + 2 μ V	
2 kHz to 10 kHz	200 mV	110 μ V/V + 4 μ V	
10 kHz to 30 kHz	200 mV	310 μ V/V + 8 μ V	
30 kHz to 100 kHz	200 mV	710 μ V/V + 20 μ V	
AC Volts-Measure Range			
1 Hz to 10 Hz	2 V	140 μ V/V + 120 μ V	
10 Hz to 40 Hz	2 V	110 μ V/V + 20 μ V	
40 Hz to 100 Hz	2 V	85 μ V/V + 20 μ V	
100 Hz to 2 kHz	2 V	65 μ V/V + 20 μ V	
2 kHz to 10 kHz	2 V	85 μ V/V + 20 μ V	
10 kHz to 30 kHz	2 V	210 μ V/V + 40 μ V	
30 kHz to 100 kHz	2 V	510 μ V/V + 200 μ V	
AC Volts-Measure Range			
1 Hz to 10 Hz	20 V	140 μ V/V + 1.2 mV	
10 Hz to 40 Hz	20 V	110 μ V/V + 200 μ V	
40 Hz to 100 Hz	20 V	85 μ V/V + 200 μ V	
100 Hz to 2 kHz	20 V	65 μ V/V + 200 μ V	
2 kHz to 10 kHz	20 V	85 μ V/V + 200 μ V	
10 kHz to 30 kHz	20 V	210 μ V/V + 400 μ V	
30 kHz to 100 kHz	20 V	510 μ V/V + 2 mV	



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AC Volts-Measure Range			Fluke 8508A
1 Hz to 10 Hz	200 V	140 μV/V + 12 mV	
10 Hz to 40 Hz	200 V	110 μV/V + 2 mV	
40 Hz to 100 Hz	200 V	85 μV/V + 2 mV	
100 Hz to 2 kHz	200 V	65 μV/V + 2 mV	
2 kHz to 10 kHz	200 V	85 μV/V + 2 mV	
10 kHz to 30 kHz	200 V	210 μV/V + 4 mV	
30 kHz to 100 kHz	200 V	510 μV/V + 20 mV	
AC Volts-Measure Range			
1 Hz to 10 Hz	1 000 V	100 μV/V + 70 mV	
10 Hz to 40 Hz	1 000 V	100 μV/V + 20 mV	
40 Hz to 1 kHz	1 000 V	108 μV/V + 20 mV	
AC Current-Measure Range			
1 Hz to 10 Hz	200 μA	650 μA/A + 20 nA	
10 Hz to 10 kHz	200 μA	650 μA/A + 20 nA	
10 kHz to 30 kHz	200 μA	650 μA/A + 20 nA	
30 kHz to 100 kHz	200 μA	650 μA/A + 20 nA	
AC Current-Measure Range			
1 Hz to 10 Hz	2 mA	650 μA/A + 200 nA	
10 Hz to 10 kHz	2 mA	650 μA/A + 200 nA	
10 kHz to 30 kHz	2 mA	650 μA/A + 200 nA	
30 kHz to 100 kHz	2 mA	650 μA/A + 200 nA	
AC Current-Measure Range			
1 Hz to 10 Hz	20 mA	700 μA/A + 2 μA	
10 Hz to 10 kHz	20 mA	700 μA/A + 2 μA	
10 kHz to 30 kHz	20 mA	650 μA/A + 2 μA	
30 kHz to 100 kHz	20 mA	850 μA/A + 2 μA	



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AC Current-Measure Range			Fluke 8508A
1 Hz to 10 Hz	200 mA	600 μ A/A + 20 μ A	
10 Hz to 10 kHz	200 mA	600 μ A/A + 20 μ A	
10 kHz to 30 kHz	200 mA	600 μ A/A + 20 μ A	
AC Current-Measure Range			
10 Hz to 2 kHz	2 A	1.3 mA/A + 200 μ A	
2 kHz to 10 kHz	2 A	1.5 mA/A + 200 μ A	
10 kHz to 30 kHz	2 A	3.1 mA/A + 200 μ A	Fluke 5720A
AC Current-Generate Range			
10 Hz to 20 Hz	220 μ A	259 μ A/A + 16 nA	
20 Hz to 40 Hz	220 μ A	168 μ A/A + 10 nA	
40 Hz to 1 kHz	220 μ A	127 μ A/A + 8 nA	
1 kHz to 5 kHz	220 μ A	313 μ A/A + 12 nA	
5 kHz to 10 kHz	220 μ A	1.1 mA/A + 65 nA	
AC Current-Generate Range			
10 Hz to 20 Hz	2.2 mA	255 μ A/A + 40 nA	
20 Hz to 40 Hz	2.2 mA	164 μ A/A + 35 nA	
40 Hz to 1 kHz	2.2 mA	127 μ A/A + 35 nA	
1 kHz to 5 kHz	2.2 mA	209 μ A/A + 110 nA	
5 kHz to 10 kHz	2.2 mA	1.1 mA/A + 650 nA	
AC Current-Generate Range			
10 Hz to 20 Hz	22 mA	259 μ A + 400 nA	
20 Hz to 40 Hz	22 mA	163 μ A/A + 350 nA	
40 Hz to 1 kHz	22 mA	127 μ A/A + 350 nA	
1 kHz to 5 kHz	22 mA	259 μ A/A + 550 nA	
5 kHz to 10 kHz	22 mA	1.1 mA/A + 5 μ A	



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AC Current-Generate Range			Fluke 5720A
10 Hz to 20 Hz	220 mA	277 μ A + 4 μ A	
20 Hz to 40 Hz	220 mA	168 μ A/A + 3.5 μ A	
40 Hz to 1 kHz	220 mA	127 μ A/A + 2.5 μ A	
1 kHz to 5 kHz	220 mA	209 μ A/A + 3.5 μ A	
5 kHz to 10 kHz	220 mA	1.1 mA/A + 10 μ A	
AC Current-Generate Range			
20 Hz to 1 kHz	2.2 A	268 μ A/A + 35 μ A	
1 kHz to 5 kHz	2.2 A	500 μ A/A + 80 μ A	
5 kHz to 10 kHz	2.2 A	6.8 mA/A + 160 μ A	
Resistance-Generate	1 Ω	100 $\mu\Omega/\Omega$	
	10 Ω	96 $\mu\Omega/\Omega$	
	100 Ω	24 $\mu\Omega/\Omega$	
	1 k Ω	9.2 $\mu\Omega/\Omega$	
	10 k Ω	9.1 $\mu\Omega/\Omega$	
	100 k Ω	12 $\mu\Omega/\Omega$	
	1 M Ω	21 $\mu\Omega/\Omega$	
	10 M Ω	42 $\mu\Omega/\Omega$	
	100 M Ω	110 $\mu\Omega/\Omega$	
Resistance-Measure	1 Ω	26 $\mu\Omega/\Omega$ + 4 $\mu\Omega$	Fluke 8508A
	10 Ω	15 $\mu\Omega/\Omega$ + 14 $\mu\Omega$	
	100 Ω	13 $\mu\Omega/\Omega$ + 50 $\mu\Omega$	
	1 k Ω	13 $\mu\Omega/\Omega$ + 0.5 m Ω	
	10 k Ω	13 $\mu\Omega/\Omega$ + 40 $\mu\Omega$	
	100 k Ω	13 $\mu\Omega/\Omega$ + 50 m Ω	
	1 M Ω	15 $\mu\Omega/\Omega$ + 1 Ω	
	10 M Ω	35 $\mu\Omega/\Omega$ + 100 Ω	
	100 M Ω	205 $\mu\Omega/\Omega$ + 10 k Ω	



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Oscilloscopes			Fluke 5820A Output stated as percent of output plus floor specification
Square 50 Ω @ 1 kHz Source	1 mV to 130 V	0.25 % of output + 40 μ V	
Square 1 M Ω @ 1 kHz Source	1 mV to 130 V	0.09 % of output + 5 μ V	
Leveled Sine Amplitude 50 kHz Reference	50 kHz to 100 MHz	3.5 % of output + 300 μ V	
	100 MHz to 300 MHz	4.0 % of output + 300 μ V	
	300 MHz to 500 MHz	5.5 % of output + 300 μ V	
Leveled Sine Amplitude 10 MHz Reference	500 MHz to 600 MHz	6.0 % of output + 300 μ V	
	600 MHz to 1.1 GHz	7.0 % of output + 300 μ V	
	1.1 GHz to 1.6 GHz	7.0 % of output + 300 μ V	
	1.6 GHz to 2.1 GHz	8.0 % of output + 300 μ V	
Leveled Sine Flatness Relative to 50 kHz	50 kHz to 100 MHz	3.1 % of output + 100 μ V	
	100 MHz to 300 MHz	3.7 % of output + 100 μ V	
	300 MHz to 500 MHz	4.3 % of output + 100 μ V	
Leveled Sine Flatness Relative to 10 MHz	500 MHz to 600 MHz	7.4 % of output + 100 μ V	
	600 MHz to 1.1 GHz	8.0 % of output + 100 μ V	
	1.1 GHz to 1.6 GHz	7.9 % of output + 100 μ V	
	1.6 GHz to 2.1 GHz	9.3 % of output + 100 μ V	
Time Marker 50 Ω	5 s to 50 ms	45 parts in 10^{-6} + 5 μ Hz	
	20 ms to 100 ns	4.5 parts in 10^{-6} + 5 μ Hz	
	50 ns to 20 ns	4.5 parts in 10^{-6} + 5 μ Hz	
	10 ns(5 to 2) ns	4.5 parts in 10^{-6} + 5 μ Hz	
	5 ns to 500 ps	4.5 parts in 10^{-6} + 5 μ Hz	
Rise Time	\leq 150 ps	+ 0 / -50 ps	



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Time & Frequency

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Frequency-Measure	10 MHz	1.5×10^{-11} Hz	Loran-C Model FS700
Frequency-Generate	10 Hz to 500 MHz	1.5×10^{-11} Hz + 1 Hz	HP 5343A with FS700 as time base
	500 MHz to 26.5 GHz	1.5×10^{-11} Hz + 1 Hz	
Capacitance Measure @ 1 kHz	11 aF to 1.1 uF	0.017 % of reading + 0.000 03 pF	Gen Rad 1615-A
Capacitance Generate @ 1 kHz	1 pF	0.01 % of reading	HP 16380A Capacitor Set
	10 pF	0.01 % of reading	
	100 pF	0.01 % of reading	
	1 000 pF	0.01 % of reading	

1. Remarks: This column shall include pertinent information about the calibration of the Measured Instrument or parameter. The information should include the type of standards used and any pertinent information about the measurement method. This column is not to be used for commercial advertisement of laboratory services.