



CERTIFICATION OF CONFORMANCE

Title Page of Calibration Certificate Documentation

CUSTOMER:

ESTEIQ Test & Measurement (Pty) Ltd
Block 6 Tijingervallei Office Park
Silverlakes Road
Silverlakes Pretoria
Gauteng, 0081
SOUTH AFRICA

PURCHASE ORDER #: TMO2179

PCB ORDER #: I000193557

QTY	ITEM	DESCRIPTION
1	378C01	TEDS 0.9 - 377C01 WITH 426B03 00119184

Notes:

1. This document certifies that the subject item(s) have been manufactured, repaired (if applicable), tested, or inspected in accordance with referenced purchase order and conform(s) to applicable specifications per PCB Quality Policy Manual Rev. 1 09/30/2014.
2. Equipment used in validation is traceable to NIST and appropriate records are on file.
3. Calibrations comply with ISO 17025 and ANSI/NCSL Z540-1-1994 except as noted on associated calibration certificate(s).
4. Calibrations are performed using processes having a test uncertainty ratio (TUR) of four or more times greater than the unit calibrated, unless otherwise noted on the calibration certificate. Calibration at 4:1 TUR provides reasonable confidence that the instrument is within product specifications.

Logistics Associate:

Date: 04/06/15

**- ISO 9001 Certified / ISO 17025 Accredited -
PCB Piezotronics, Inc.**

3425 Walden Avenue Depew, New York, US 14043-2495
Phone: 716-684-0001 Fax: 716-684-0987

~ Certificate of Calibration and Compliance ~

Model: 378C01 Serial Number: 119184
Microphone Model: 377C01 Serial Number: 149260 Manufacturer: PCB
Preamplifier Model: 426B03 Serial Number: 036447 Manufacturer: PCB

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	PCB Control #	Cal Date	Due Date
Hewlett Packard	34401A	MY45028925	CA1219	11/7/14	11/6/15
Larson Davis	PRM915	144	CA2011	9/18/14	9/18/15
Larson Davis	PRM916	128	CA1553	7/30/14	7/30/15
Larson Davis	CAL250	4147	LD018	4/29/14	4/29/15
Larson Davis	2201	0	CA890	7/23/14	7/23/15
Larson Davis	2800	297	CA1235	10/13/14	10/13/15
Larson Davis	PRA951-4	250	CA2132	10/21/14	10/21/15
Larson Davis	PRM902	4944	CA1997	4/16/14	4/16/15
Larson Davis	GPRM902	4162	CA1088	4/11/14	4/10/15
Bruel & Kjaer	4192	2657834	CA1270	12/4/14	12/4/15
Larson Davis	ADP005	1	LD017	not required	not required
Newport	BTH-W/N	8410668	CA1187	not required	not required
PCB	377B02 LF	116832	0	not required	not required
Larson Davis	PRM902LF(UUT)	4762	CA1573	12/10/14	12/10/15

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found: n/a

As Left: New Unit, In Tolerance

Notes

1. Calibration of reference equipment is traceable to one or more of the following National Labs; NIST, PTB or DFM.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540.3 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Open circuit sensitivity is measured using the insertion voltage method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-63.

Technician: Nicholas Herdlein *NH*

Date: March 2, 2015



3425 Walden Avenue, Depew, New York, 14043

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ID:CAL61-3500159172.551

~ Calibration Report ~

Model: 378C01
 Microphone Model: 377C01
 Preamplifier Model: 426B03

Serial Number: 119184
 Serial Number: 149260
 Serial Number: 036447

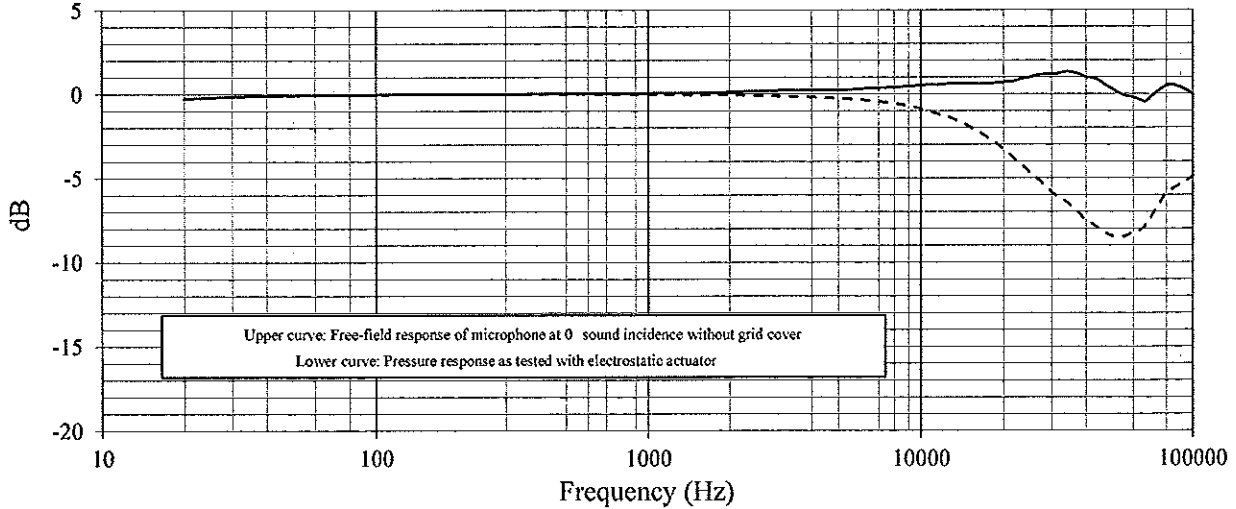
Description: 1/4" Free-Field Microphone
 and Preamplifier

Calibration Data

System Sensitivity @ 251.2 Hz: 2.00 mV/Pa Polarization Voltage, External: 0 V
 -53.98 dB re 1V/Pa

Temperature: 71 °F (22°C) Ambient Pressure: 999 mbar Relative Humidity: 33 %

Frequency Response (0 dB @ 251.2 Hz)



Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	-0.26	-0.26	1679	-0.06	0.08	7499	-0.51	0.38	33500	-6.36	1.31
25.1	-0.19	-0.19	1778	-0.06	0.08	7943	-0.56	0.39	35500	-6.67	1.29
31.6	-0.13	-0.13	1884	-0.06	0.10	8414	-0.62	0.42	37500	-7.05	1.18
39.8	-0.10	-0.10	1995	-0.05	0.12	8913	-0.69	0.45	39750	-7.48	1.01
50.1	-0.07	-0.07	2114	-0.07	0.12	9441	-0.78	0.48	42250	-7.74	0.94
63.1	-0.05	-0.05	2239	-0.08	0.14	10000	-0.87	0.51	44750	-7.99	0.79
79.4	-0.04	-0.04	2371	-0.09	0.16	10593	-0.97	0.54	47250	-8.27	0.52
100.0	-0.02	-0.02	2512	-0.10	0.16	11220	-1.12	0.53	50000	-8.43	0.31
125.9	-0.02	-0.02	2661	-0.11	0.17	11885	-1.24	0.56	53000	-8.48	0.06
158.5	-0.02	-0.02	2818	-0.11	0.20	12589	-1.36	0.60	56250	-8.43	-0.12
199.5	-0.01	-0.01	2985	-0.12	0.21	13335	-1.52	0.62	59500	-8.25	-0.19
251.2	0.00	0.00	3162	-0.13	0.22	14125	-1.71	0.62	63000	-8.12	-0.33
316.2	0.00	0.00	3350	-0.15	0.22	14962	-1.91	0.62	66750	-7.80	-0.44
398.1	0.00	0.02	3548	-0.16	0.22	15849	-2.14	0.60	70750	-7.18	-0.11
501.2	0.00	0.03	3758	-0.17	0.23	16788	-2.39	0.59	75000	-6.58	0.20
631.0	0.00	0.04	3981	-0.18	0.24	17783	-2.66	0.61	79500	-5.93	0.45
794.3	-0.01	0.04	4217	-0.20	0.24	18837	-2.94	0.65	84250	-5.63	0.52
1000.0	-0.02	0.05	4467	-0.22	0.23	19953	-3.26	0.70	89250	-5.41	0.40
1059.3	-0.02	0.06	4732	-0.24	0.23	21250	-3.66	0.72	94500	-5.16	0.21
1122.0	-0.03	0.06	5012	-0.26	0.22	22500	-4.01	0.83	100000	-4.89	-0.05
1188.5	-0.03	0.06	5309	-0.29	0.24	23750	-4.35	0.93	-	-	-
1258.9	-0.03	0.07	5623	-0.32	0.26	25000	-4.70	1.00	-	-	-
1333.5	-0.04	0.06	5957	-0.34	0.29	26500	-5.03	1.11	-	-	-
1412.5	-0.04	0.07	6310	-0.38	0.32	28250	-5.40	1.17	-	-	-
1496.2	-0.04	0.07	6683	-0.42	0.34	29750	-5.79	1.17	-	-	-
1584.9	-0.05	0.06	7080	-0.46	0.36	31500	-6.11	1.21	-	-	-

Technician: Nicholas Herdlein *NH* Date: March 2, 2015



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