An Axiometrix Solutions Brand

Calibration Services
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ACCREDITED
Calibration Cert #2527.01

Calibration Report

Accredited Calibration

Report Number:XXXXXXXXX-XXXXXX-X

Model: APx517 **Data Type:** **AS SHIPPED, NEW** **Program:**
Serial Number: XXXXXXXXX **Date of Cal:** 27-Mar-2026 APxCalibration.exe 24.01

Internal Module Status and Data			
AP Name	***Description***	***Serial No.***	***Revision***
BCAM	Backplane module	XXXXX	101
BVAL	Power / Headphone Output module	XXXXX	101
BTOR	Analog I/O module	XXXXX	003
BAES	DIO module	XXXXX	204

Explanatory notes to the last three columns of the calibration report

"MU" - The column labeled "MU" lists the expanded measurement uncertainties derived from equipment specifications, repeatability data, and other significant sources. These are stated at a minimum confidence of 95% using a coverage factor k=2 (except as appropriate) following the recommendations in ISO/IEC 98-3 *Guide to the expression of uncertainty in measurement (GUM:1995)* , BIPM JCGM 100:2008, and NIST Technical Note 1297.

"TUR" - The column labeled "**TUR**" lists the test uncertainty ratio calculated by dividing the lesser of the lower and upper reading tolerances by the 95% expanded measurement uncertainty. An entry of "**na**" indicates [1] the specified limits are one-sided, or [2] the performance characteristic is not accredited.

"Result" - The column labeled "Result" lists color-coded assessments that the observed characteristic is within its specified limits of performance. There are three possible indications:

pass -- *The READING is within the specified upper and lower limits reduced by guard-bands equal to the 95% expanded measurement uncertainty. The probability or risk of false acceptance is very low, typically <0.2%.*

uncertain -- *The READING is within the specified upper and lower limits, but it is close to one of the limits by an amount that is less than the 95% expanded measurement uncertainty. The probability or risk of false acceptance is elevated.*

>> FAIL << -- *The READING is outside of the specified limit range.*

Accredited measurements listed in the following pages correlate to Audio Precision's Scope of Accreditation as noted:

note 1 - Frequency Measurement
note 2 - AC Voltage Measurement
note 3 - AC Flatness Measurement
note 4 - Resistance Measurement
note 5 - DC Voltage Measurement
note 6 - AC Voltage Source and AC Flatness Source for testing AC Measurement Equipment
note 7 - DC Voltage Source for testing DC Measurement Equipment

This report is valid only when accompanied by a signed Certificate of Calibration.

File name: APx517CalReport.xlsx File version: REV1.05-12APR2025-LB Specifications: NP0020.00045 r002
Uncertainty Calcs: 2021-08-25 NP0020.00037 r000

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
POWER AMPLIFIER CHARACTERISTICS							
[1] Sine Amplitude Accuracy, 1 kHz (Volts, mVolts) - *note 2*							
	15 V	14.8625	**15.0068**	15.1388	0.0093	≥10	**pass**
	1.5 V	1.4862	**1.4999**	1.5139	0.0005	≥10	**pass**
[2] Sine Flatness, 2 Ohm Load, 1.10 Vrms (dB) - *note 3*							
	10 Hz	-0.2000	**0.0000**	0.2000	0.0020	≥10	**pass**
	10 kHz	-0.2000	**-0.0181**	0.2000	0.0017	≥10	**pass**
	20 kHz	-0.2000	**-0.0556**	0.2000	0.0021	≥10	**pass**
	50 kHz	-0.8000	**-0.2411**	0.8000	0.0038	≥10	**pass**
[3] Residual DC Offset (mV) - *note 5*							
		-5.00	**0.71**	5.00	0.20	≥10	**pass**
[4] Output Current Measurement Error, 1 kHz, 1 A (%) - *note 2*							
		-2.00	**0.06**	2.00	0.23	8.7	**pass**
HEADPHONE AMPLIFIER CHARACTERISTICS							
[5] Sine Frequency Accuracy (Hz) - *note 1*							
	10 kHz	9999.9700	**10000.0002**	10000.0300	0.0092	3.2	**pass**
[6] Sine Amplitude Accuracy, 1 kHz (Volts, mVolts) - *note 2*							
Channel 1	8.000 V	7.9541	**7.9993**	8.0462	0.0017	≥10	**pass**
	800 mV	795.4081	**799.9426**	804.6185	0.0480	≥10	**pass**
Channel 2	8.000 V	7.9541	**7.9995**	8.0462	0.0017	≥10	**pass**
	800 mV	795.4081	**799.9710**	804.6185	0.0480	≥10	**pass**
[7] Sine Flatness, 4 Ohm Load, 450 mV (dB) - *note 3*							
Channel 1	10 Hz	-0.0800	**0.0001**	0.0800	0.0016	≥10	**pass**
	10 kHz	-0.0800	**-0.0077**	0.0800	0.0019	≥10	**pass**
	20 kHz	-0.0800	**-0.0181**	0.0800	0.0020	≥10	**pass**
	50 kHz	-0.1500	**-0.0571**	0.1500	0.0037	≥10	**pass**
	80 kHz	-0.4000	**-0.1216**	0.4000	0.0071	≥10	**pass**
Channel 2	10 Hz	-0.0800	**0.0000**	0.0800	0.0016	≥10	**pass**
	10 kHz	-0.0800	**-0.0094**	0.0800	0.0019	≥10	**pass**
	20 kHz	-0.0800	**-0.0229**	0.0800	0.0020	≥10	**pass**
	50 kHz	-0.1500	**-0.0693**	0.1500	0.0037	≥10	**pass**
	80 kHz	-0.4000	**-0.1204**	0.4000	0.0071	≥10	**pass**
[8] Residual DC Offset (mV) - *note 5*							
Channel 1		-5.00	**0.19**	5.00	0.20	≥10	**pass**
Channel 2		-5.00	**0.57**	5.00	0.20	≥10	**pass**
[9] Output Current Measurement Error, 1 kHz, 100 mA (%) - *note 2*							
Left channel		-1.00	**0.26**	1.00	0.299	3.3	**pass**
Right Channel		-1.00	**0.22**	1.00	0.299	3.3	**pass**

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
MICROPHONE INPUT CHARACTERISTICS							
[10] Level Meter AC Accuracy, 1 kHz (Volts, mVolts) - *note 6*							
Channel 1	20 V	19.885	**20.003**	20.115	0.016	7.2	**pass**
	5 V	4.9713	**5.0009**	5.0289	0.004	7.0	**pass**
	2 V	1.9885	**2.0004**	2.0115	0.002	7.2	**pass**
	500 mV	497.13	**500.10**	502.89	0.413	7.0	**pass**
	200 mV	198.85	**200.02**	201.15	0.161	7.1	**pass**
	5 mV	4.9713	**5.0008**	5.0289	0.004	6.8	**pass**
Channel 2	20 V	19.885	**20.003**	20.115	0.016	7.2	**pass**
	5 V	4.9713	**5.0010**	5.0289	0.004	7.0	**pass**
	2 V	1.9885	**2.0004**	2.0115	0.002	7.2	**pass**
	500 mV	497.13	**500.11**	502.89	0.413	7.0	**pass**
	200 mV	198.85	**200.02**	201.15	0.161	7.1	**pass**
	5 mV	4.9713	**5.0009**	5.0289	0.004	6.8	**pass**
[11] Level Meter AC Flatness, 1.15 Vrms (dB) - *note 6*							
Channel 1	10 Hz	-0.0100	**-0.0015**	0.0100	0.0028	3.6	**pass**
	20 Hz	-0.0100	**-0.0005**	0.0100	0.0028	3.6	**pass**
	20 kHz	-0.0100	**-0.0013**	0.0100	0.0024	4.1	**pass**
	50 kHz	-0.0300	**-0.0058**	0.0300	0.0029	≥10	**pass**
	80 kHz	-0.6000	**-0.5014**	0.1000	0.0058	≥10	**pass**
Channel 2	10 Hz	-0.0100	**-0.0015**	0.0100	0.0028	3.6	**pass**
	20 Hz	-0.0100	**-0.0005**	0.0100	0.0028	3.6	**pass**
	20 kHz	-0.0100	**-0.0008**	0.0100	0.0024	4.1	**pass**
	50 kHz	-0.0300	**-0.0028**	0.0300	0.0029	≥10	**pass**
	80 kHz	-0.6000	**-0.4925**	0.1000	0.0058	≥10	**pass**
[12] Frequency Measurement Accuracy (uHz/Hz) - *note 1*							
	10 kHz	-3.00	**-0.02**	3.00	0.22	≥10	**pass**

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
VDRVR INPUT CHARACTERISTICS							
[13] Level Meter AC Accuracy, 1 kHz (Volts, mVolts) - *note 6*							
Power Amp	20 V	19.885	**20.000**	20.115	0.005	≥10	**pass**
	5 V	4.9713	**4.9999**	5.0289	0.0014	≥10	**pass**
	2 V	1.9885	**2.0001**	2.0115	0.0004	≥10	**pass**
	500 mV	497.13	**500.02**	502.89	0.4127	7.0	**pass**
	200 mV	198.85	**199.99**	201.15	0.38	3.0	**pass**
	5 mV	4.9713	**5.0003**	5.0289	0.0018	≥10	**pass**
[14] Level Meter AC Flatness, 1.15 Vrms (dB) - *note 6*							
Power Amp	10 Hz	-0.0100	**-0.0014**	0.0100	0.0028	3.6	**pass**
	20 Hz	-0.0100	**-0.0004**	0.0100	0.0028	3.6	**pass**
	20 kHz	-0.0100	**-0.0002**	0.0100	0.0022	4.5	**pass**
	50 kHz	-0.0300	**0.0008**	0.0300	0.0029	≥10	**pass**
	80 kHz	-0.6000	**-0.4832**	0.1000	0.0058	≥10	**pass**

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
NON-ACCREDITED CHARACTERISTICS							
[15] Mic Input Common Mode Rejection (mV) - non-accredited							
Channel 1 (5V CM signal)	2.5V range, 200 Hz	0	**0.015**	0.500	0.058	na	**pass**
	2.5V range, 5 kHz	0	**0.105**	0.500	0.071	na	**pass**
	2.5V range, 20 kHz	0	**0.42**	1.58	0.18	na	**pass**
	8V range, 20 kHz	0	**0.90**	15.81	0.22	na	**pass**
	25V range, 20 kHz	0	**5.58**	15.81	0.29	na	**pass**
Channel 2 (5V CM signal)	2.5V range, 200 Hz	0	**0.023**	0.500	0.058	na	**pass**
	2.5V range, 5 kHz	0	**0.148**	0.500	0.071	na	**pass**
	2.5V range, 20 kHz	0	**0.58**	1.58	0.18	na	**pass**
	8V range, 20 kHz	0	**1.12**	15.81	0.22	na	**pass**
	25V range, 20 kHz	0	**4.38**	15.81	0.29	na	**pass**
[16] Phase Measurement Offset (Deg), DC Coupled - non-accredited, self-test							
Ch1 - Ch 2	50 Hz	-0.200	**0.000**	0.200	0.001	na	**pass**
	200 Hz	-0.200	**0.001**	0.200	0.001	na	**pass**
	5 kHz	-0.200	**0.018**	0.200	0.004	na	**pass**
	20 kHz	-0.800	**0.072**	0.800	0.0160	na	**pass**
	50 kHz	-2.000	**0.184**	2.000	0.04000	na	**pass**
[17] Sine THD+N, 2Ω Load, (dB) - non-accredited, self-test							
Pow Amp A, Input 1 Bal	1kHz, 20kBW, 8.35 V	-999	**-93.7**	-80.0	1.15	na	**pass**
Headphone Ch. 1 *Mic Input Ch. 1 Unbal*	20Hz, 20kBW, 400 mV	-999	**-92.2**	-82.7	1.15	na	**pass**
	1kHz, 20kBW, 400 mV	-999	**-92.4**	-82.7	1.15	na	**pass**
	10kHz, 20kBW, 400 mV	-999	**-93.8**	-82.7	1.15	na	**pass**
Headphone Ch. 2 *Mic Input Ch. 2 Unbal*	20Hz, 20kBW, 400 mV	-999	**-92.4**	-82.7	1.15	na	**pass**
	1kHz, 20kBW, 400 mV	-999	**-92.6**	-82.7	1.15	na	**pass**
	10kHz, 20kBW, 400 mV	-999	**-93.1**	-82.7	1.15	na	**pass**
[18] Sine THD+N, 8Ω Load, (dB) - non-accredited, self-test							
Power Amp Output A *Mic Input Ch. 1 Bal*	20Hz, 20kBW, 17 V	-999	**-98.1**	-80.0	1.15	na	**pass**
	1kHz, 20kBW, 17 V	-999	**-97.3**	-80.0	1.15	na	**pass**
	10kHz, 20kBW, 17 V	-999	**-93.1**	-80.0	1.15	na	**pass**

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
[19] Sine THD+N, 800Ω Load, (dB) - non-accredited, self-test							
Headphone Ch. 1	20Hz, 20kBW, 9 V	-999	**-98.2**	-90.0	1.15	na	**pass**
Mic Input Ch. 1 Unbal	1kHz, 20kBW, 9 V	-999	**-98.5**	-90.0	1.15	na	**pass**
	10kHz, 20kBW, 9 V	-999	**-100.5**	-90.0	1.15	na	**pass**
Headphone Ch. 2	20Hz, 20kBW, 9 V	-999	**-97.9**	-90.0	1.15	na	**pass**
Mic Input Ch. 2 Unbal	1kHz, 20kBW, 9 V	-999	**-98.2**	-90.0	1.15	na	**pass**
	10kHz, 20kBW, 9 V	-999	**-100.2**	-90.0	1.15	na	**pass**
[20] Residual Noise (uVolts) - non-accredited, self-test							
Balanced Input,	Ch 1, 20 kHz BW	0	**1.49**	1.90	0.06	na	**pass**
inputs shorted.	Ch 2, 20 kHz BW	0	**1.52**	1.90	0.06	na	**pass**
Power Amp 20 kHz	Output A	0	**25.58**	35.00	0.34	na	**pass**
HP Amp 20 kHz	Chan 1	0	**9.06**	15.00	0.12	na	**pass**
	Chan 2	0	**8.81**	15.00	0.12	na	**pass**
[21] Residual SMPTE IMD (%), 4:1, 60Hz:7kHz - non-accredited, self-test							
Power Amp Output A	Mic Input Ch. 1 Bal	0%	**0.00308%**	0.02000%	0.00030%	na	**pass**
HP Amp Ch. 1	Mic Input Ch. 1 Unbal	0%	**0.00138%**	0.03200%	0.00030%	na	**pass**
HP Amp Ch. 2	Mic Input Ch. 2 Unbal	0%	**0.00154%**	0.03200%	0.00030%	na	**pass**
[22] Residual MOD IMD (%), 4:1, 60Hz:7kHz - non-accredited, self-test							
Power Amp Output A	Mic Input Ch. 1 Bal	0%	**0.00286%**	0.02000%	0.0002%	na	**pass**
HP Amp Ch. 1	Mic Input Ch. 1 Unbal	0%	**0.00095%**	0.03200%	0.0002%	na	**pass**
HP Amp Ch. 2	Mic Input Ch. 2 Unbal	0%	**0.00106%**	0.03200%	0.0002%	na	**pass**
[23] Residual DFD IMD (%), mean 19.5kHz, diff 1kHz - non-accredited, self-test							
Power Amp Output A	Mic Input Ch. 1 Bal	0%	**0.00278%**	0.01000%	0.0002%	na	**pass**
HP Amp Ch. 1	Mic Input Ch. 1 Unbal	0%	**0.00018%**	0.01000%	0.0002%	na	**pass**
HP Amp Ch. 2	Mic Input Ch. 2 Unbal	0%	**0.00024%**	0.01000%	0.0002%	na	**pass**
[24] Microphone Input Crosstalk, 20 kHz (dB), non-accredited, self-test							
Unbalanced	mic input 1 driven	-999.00	**-129.66**	-120.00	4.00	na	**pass**
	mic input 2 driven	-999.00	**-129.60**	-120.00	4.00	na	**pass**
[25] Digital Output Amplitude Accuracy (Volts) - non-accredited, oscilloscope referenced							
Unbal, consumer	0.5 Vpp	0.450	**0.497**	0.550	0.004	na	**pass**
Unbal, professional	1.0 Vpp	0.900	**0.984**	1.100	0.008	na	**pass**
Balanced	5.0 Vpp	4.500	**5.058**	5.500	0.182	na	**pass**

END OF REPORT