

An Integrated Solution

The APx PDM option has all the functionality needed and is embedded in a fully-featured APx audio analyzer, enabling quick connection and sophisticated testing. APx500 measurement software provides over 30 customizable audio measurements, all of which can be easily put under automation control.

A Flexible PDM Modulator and Decimator

The APx PDM modulator provides a reference quality signal, embedding pristine audio from the APx generator. The flexible PDM input decimator simplifies direct audio measurements on PDM bitstreams.

Bitstream Analysis

PDM-to-PCM converters can decimate the embedded audio for testing, but the PDM option also makes the raw bitstream available for FFT analysis, an invaluable diagnostic tool.

PSR and PSR vs. Frequency

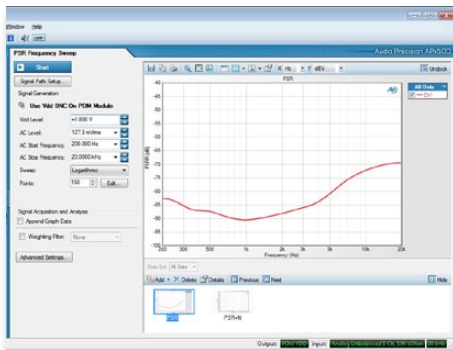
The MEMS device Vdd supply can be modulated with a sine wave or the standard GSM 217 Hz square wave. The APx software includes both PSR and PSR frequency sweep measurements; these can be used with analog MEMS microphones as well. A couple of clicks and you have PSR results.

Full Sampling Rate and Logic Level Ranges

Both the PDM input and output support audio sampling rates across a range of 4 kHz to 216 kHz. The logic level is variable from 0.8 to 3.3 V to test beyond the range of typical devices.

Jitter Tolerance Testing

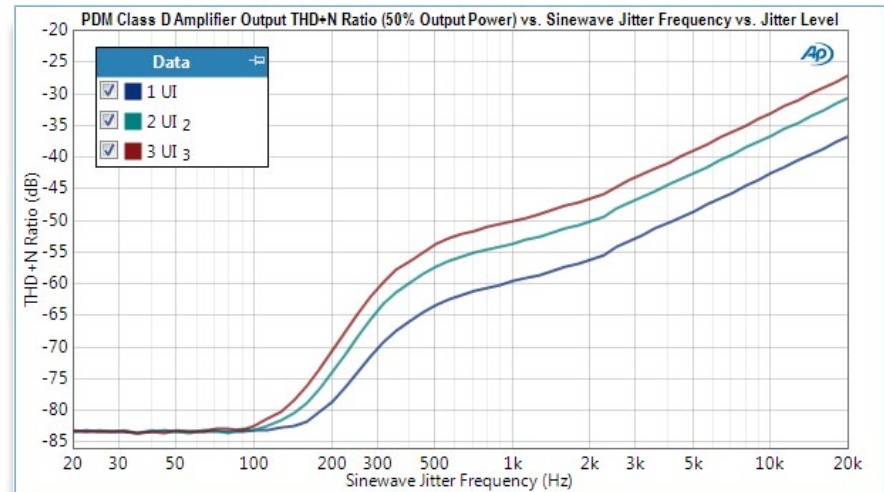
The jitter generator and jitter analyzer provided with the Advance Master Clock option supports full PDM device jitter tolerance testing. Sweeps of jitter level and frequency may be performed to confirm proper device jitter tolerance for reliable use in circuits intended for noisy RF environments common to mobile phones and tablets.



Measuring the PSR of a MEMS microphone with a PSR frequency sweep of Vdd sine wave frequency.



APx525 2-channel analyzer shown with digital I/O, digital serial, PDM and Bluetooth options.



A test engineer measures the jitter tolerance of a PDM class D amplifier. If desired, the result can be added to a larger automated sequence of measurements and then output to a formatted MS Word document or a database.

KEY SPECIFICATIONS

AUDIO PERFORMANCE

SNR
129 dB (1 kHz, BW, unwt'd, 256x oversampling, 4th order modulator)

THD+N
-130 dB (1 kHz, BW, unwt'd, 256x oversampling, 4th order modulator)

Dynamic Range
137 dB (AES 17, CCIR-RMS, 256x oversampling, 4th order modulator)

Flatness
±0.001 dB (20 Hz to 20 kHz)

Connectors
Output data, output clock, input data, input clock, external power (all via BNC)

INTERFACE

Sample rate range
4 kHz to 216 kHz

Bit clock range
128 kHz to 24.576 MHz

Oversampling Rate
32, 64, 128, 256

Interface Logic Levels
0.8-3.3 V

Edge Modes

Rising edge, 1 channel; Falling edge, 1 channel; Stereo (Both edges), 2 channels

Vdd Output

0.0-3.6 V, 15 mA max

JITTER PERFORMANCE

Jitter Generator Waveforms
Sine, Square, White Noise

Jitter Generator Frequency Range (FJ)
2 Hz to 200 kHz

Jitter Generator Amplitude Range
0 to 1591 ns peak for FJ ≤ 20 kHz (Sine)
0 to 40 ns peak (Square & Noise)

System Residual Jitter
1.0 ns

Jitter Measurement Range
0.0 to 650 ns, 50 Hz to 150 kHz

Jitter Measurement Detection
RMS, Peak, or Average

Modulator maximum input level
-0 dBFS

Interpolation Ratios
33 ratios from x16 to x800

Decimation Ratios
45 ratios from x1 to x800



Accredited by A2LA
under ISO/IEC: 17025
for equipment calibration