Bluetooth option for APx

Built-in *Bluetooth* wireless technology
for APx audio analyzers

APx525 2 channel analyzer with *Bluetooth* option and I²S digital serial option.

Key Features

- Comprehensive audio test over *Bluetooth*® wireless technology.
- Wide-band speech (mSBC) support.
- Built-in *Bluetooth* radio and *Bluetooth* stack supports A2DP, HFP, HSP, AVRCP profiles.
- Built-in *Bluetooth* controls: Open a connection, ring a device, send AVRCP commands.
- Check every part of the audio chain with one analyzer: *Bluetooth* to analog, PDM, Acoustic, S/PDIF, HDMI and I2S.
- MOS results when used with POLQA software option.
- Automation built-in or via VB.NET, C#, or LabVIEW.

The APx *Bluetooth*® option is the best solution in the world for testing audio over *Bluetooth* wireless technology. No other analyzer combines integrated *Bluetooth* controls with APx's best in class speed, ease-of-use and performance.

APx's built-in *Bluetooth* radio and *Bluetooth* stack allows engineers to measure their *Bluetooth* devices directly, eliminating the uncertainty and inconvenience of adapters and making *Bluetooth* audio test faster, easier and more reliable.

Wide-band speech support

The APx *Bluetooth* option supports the mSBC Wide Band Speech* (as per HFP 1.6) codec for complete testing of high quality headsets and microphones. A2DP, HFP, HSP and AVRCP profiles are supported as are SBC, CVSD and aptX codecs.

Perceptual audio tests with MOS results

The APx *Bluetooth* option is a perfect complement to the POLQA (Perceptual Objective Listening Quality Analysis) software option for APx500. As the successor to PESQ, it enables automated, objective, perceptual audio testing for smartphones, hands-free devices, speakerphones and other *Bluetooth* audio devices. Results can be obtained as raw POLQA scores or MOS (Mean Opinion Score), and then correlated with traditional sine-based measurements for comprehensive characterization.

Integrated *Bluetooth* control

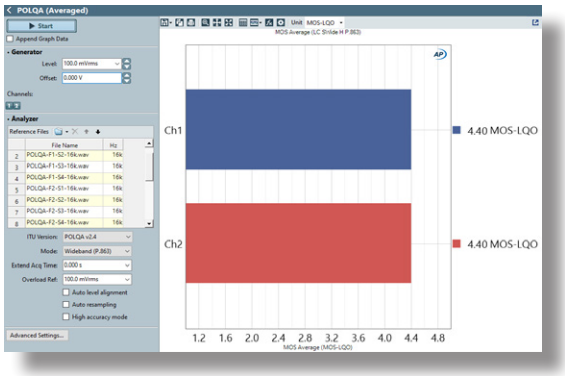
With APx, all *Bluetooth* controls are integrated into the analyzer software. In addition to standard commands like pairing or opening a connection, it's easy to switch between profiles and roles on the fly, specify a custom device class, connect with a preferred sample rate or codec, or force open a SCO without ringing. For deeper protocol analysis, a link key is available to cut and paste into a *Bluetooth* packet sniffer.

The APx500 advantage

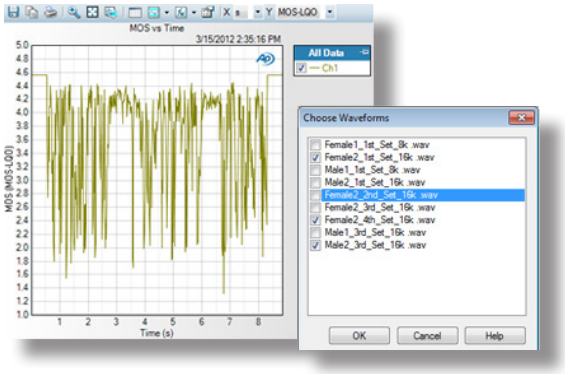
Audio Precision has been a leader in audio test for over 27 years. The APx500 software that powers our APx analyzers is the most powerful and elegant audio test engine we've ever developed, encapsulating our many years of experience so that you can get accurate, meaningful results in the shortest time and with the least effort.

Available across the APx family of audio analyzers

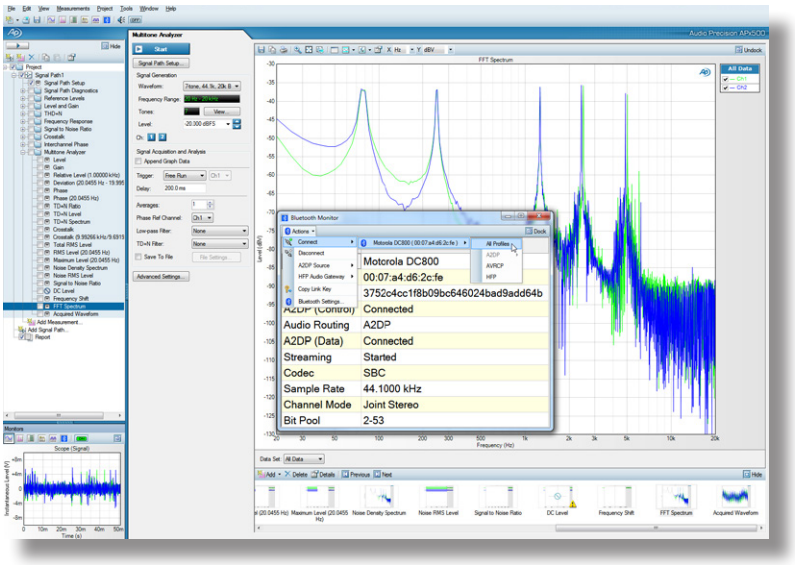
The APx *Bluetooth* option was available for the APx52x and APx58x family of analyzers. It has been replaced by the APx Bluetooth DUO option, which is available on the APx52x and APx58x family of analyzers, as well as the APx516 and APx517 analyzers.



▲ **POLQA SOFTWARE OPTION**
The APx POLQA software option gives you results in industry-standard MOS format.



▲ **DYNAMIC MOS ANALYSIS**
The APx POLQA software option allows you to analyze MOS data over time so that outlier samples and problems can be identified and addressed.



▲ **FAST & INTUITIVE UI**
A test engineer switches between profiles before running another multitone sequence that generates 21 measurements in 2 seconds. All key *Bluetooth* data is available in the *Bluetooth* monitor.

Bluetooth Specs

Bluetooth Core Version
2.1+EDR

Profiles / Roles Supported
A2DP Source; A2DP Sink; HFP Audio Gateway; HFP Hands-Free; HSP Audio Gateway; HSP Headset; AVRCP Controller

Codecs supported
mSBC, SBC; aptX; CVSD

RF Connection
Type N female jack. Antenna with N to SMA adapter included.

RF Input Impedance
50 Ω typical

RF Output Impedance
50 Ω typical

RF Power
0 dBm typical, 4 dBm maximum

RF Sensitivity (0.1% BER)
-81 dBm Typical

APx500 Series Audio Analyzer Key Specifications

SYSTEM PERFORMANCE

Residual THD+N (20 kHz BW)
–105 dB + 1.3 µV [APx520-25]
–103 dB + 1.4 µV [APx585]

GENERATOR PERFORMANCE

Sine Frequency Range
0.1 Hz to 80.1 kHz [APx520-25]
5 Hz to 80.1 kHz [APx585]

Frequency Accuracy
2 ppm [APx520-25]
3 ppm [APx585]

IMD Test Signals
SMPTE, MOD, DFD

Maximum Amplitude (balanced)
21.21 Vrms [APx520-25]
14.4 Vrms [APx585]

Amplitude Accuracy
±0.05 dB

Flatness (20 Hz–20 kHz)
±0.008 dB

Analog Output Configurations
unbalanced & balanced

Digital Output Sampling Rate
22 kHz–192 kHz

Dolby / DTS Generator
Yes

ANALYZER PERFORMANCE

Maximum Rated Input Voltage
300 Vrms (bal) / 160 Vrms (unbal) [APx520-25]
110 Vrms (bal/unbal) [APx585]

Maximum Bandwidth
>90 kHz

IMD Measurement Capability
SMPTE, MOD, DFD

Amplitude Accuracy (1 kHz)
±0.05 dB

Amplitude Flatness (20 Hz–20 kHz)
±0.008 dB

Residual Input Noise (20 kHz BW)
1.3 µV

Individual Harmonic Analyzer
d2–d10

Max FFT Length
1024K points

DC Voltage Measurement
Yes

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

Specifications subject to change.

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