

## PC Audio Test

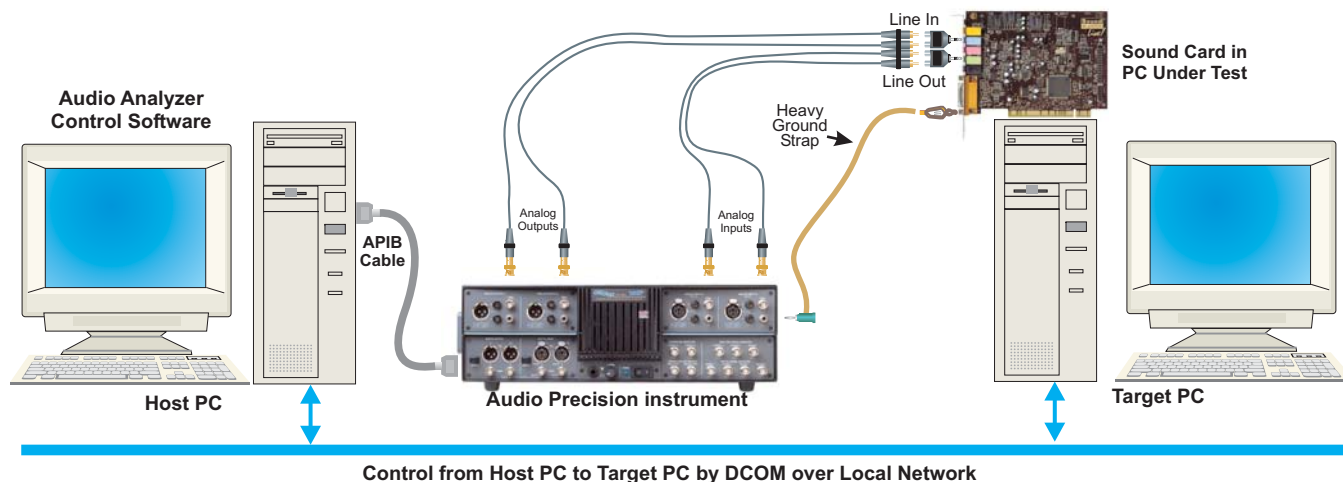
### APP-2010

The personal computer provides a powerful environment and adds a new level of convenience for home entertainment with its sophisticated organizational and storage capability. Current PC audio devices can exhibit a quality level commensurate with that of the best home stereo equipment. But the PC environment also presents new challenges to the developer of such equipment. One particularly difficult area is audio performance measurements.

While the PC audio system uses familiar components such as amplifiers and analog to digital converters, access to the digital signal paths is difficult. Also, control of the device's signal routing, internal level measurements, and gain settings of various signal paths is not always obvious. All of these controls and signals must be accessible while performing audio performance measurements.

The PC Audio Test application simplifies the complete characterization of a Microsoft-compliant PC audio device. The application establishes the control parameters for the device under test (DUT), and this setup is then saved to a configuration file. The application also connects to the PC digital bus, enabling the Audio Precision instrument to stream digital audio to and from the PC directly, with measurement access to all of the DUT digital domain signal paths and sub-paths.

PC Audio Test can also establish host-client computer connectivity using the Windows DCOM implementation. This allows the host computer (running PC Audio Test and connected to the Audio Precision instrument) to test a DUT mounted in a client or target computer, which requires only a network connection and a small utility application.



*The APP-2010 PC Audio Test application runs on a host PC to control the audio measurement instrument and operate all tests. It connects to the PC that contains the audio device under test via a local network using the Windows DCOM function. Control of the audio device and streaming of digital*

*audio signals is by means of this path. This means that the target computer with the device under test needs to only run only a small connectivity application, facilitating quick set up of test environments.*

# PC Audio Test everything you need at a glance.

The PC Audio Test application provides an easy-to-use interface for all control and test functions. An intuitive hierarchal structure allows easy navigation around the various tests, device setups, test results, and reports.

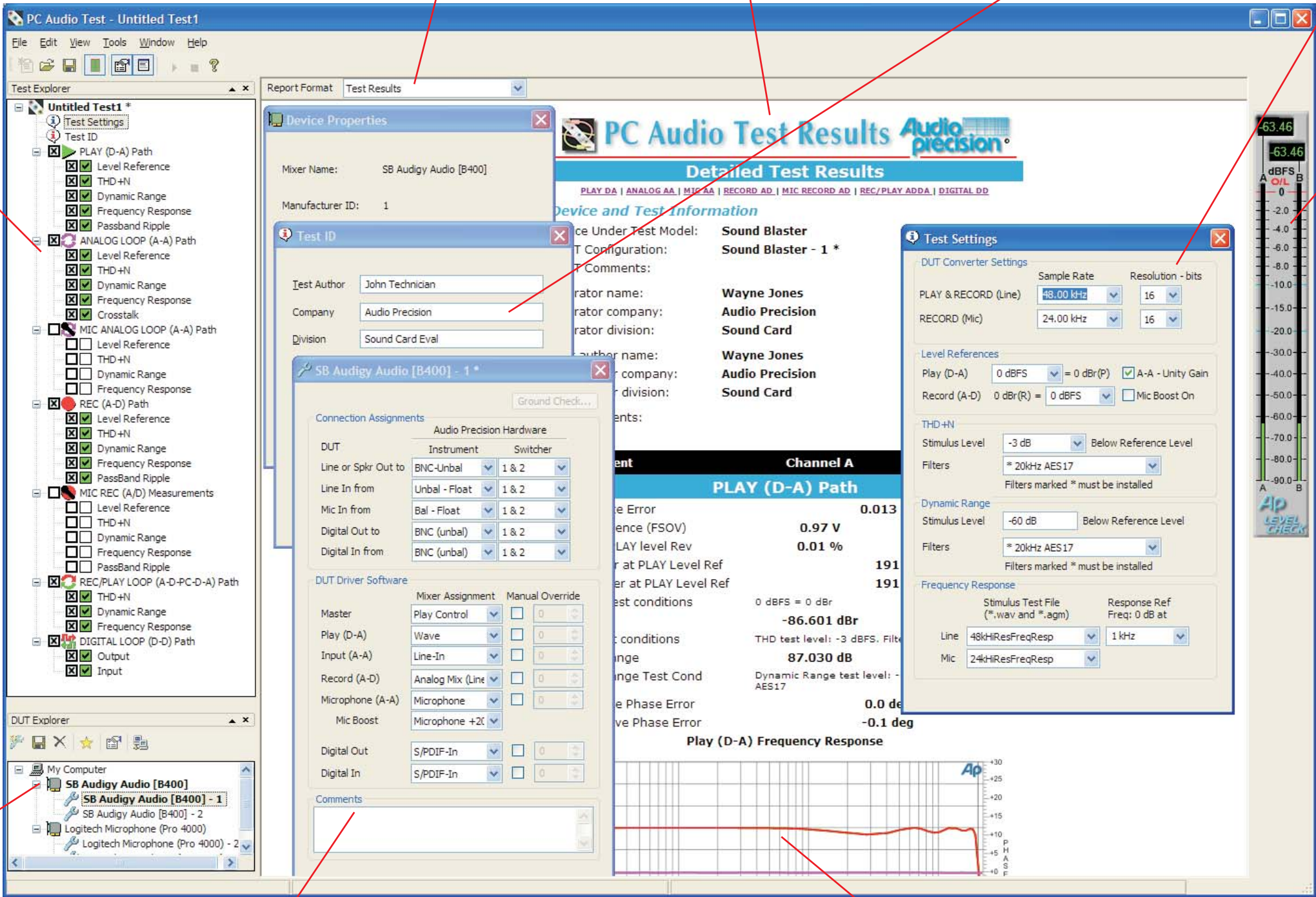
Test results are displayed in a formatted report. Both numerical and graphical results are updated in the display as the tests are run. Choose for a variety of pre-formatted templates or create your own.

Customized test conditions and supplementary test information can be chosen for a particular test run. These test setups, DUT configuration, report formats, and test results can be saved for later recall.

The Test Explorer is used to select the paths to be tested and what measurements to run. All the common measurement paths are listed including playback (D to A), record (A to D), analog-to-analog, and digital-to-digital. Measurements include Frequency Response, Distortion (THD+N), Dynamic Range (Signal-to-Noise ratio), Crosstalk, and Passband Ripple. Simply check the tests to be run and click on the start button. The sequence can be paused at any point and specific tests repeated if desired.

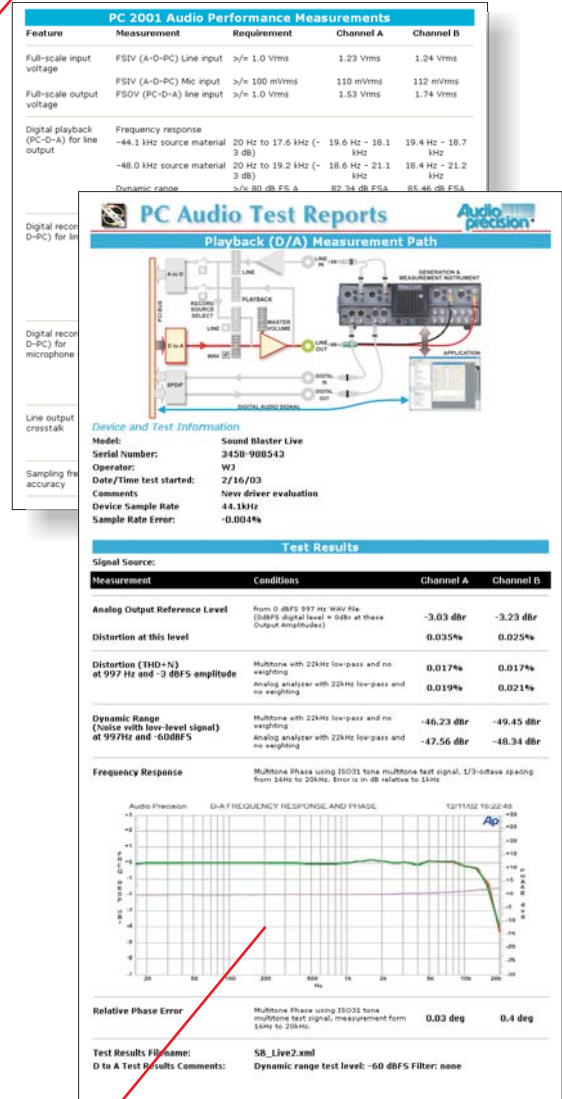
A bar graph level meter indicates the audio signal level on the digital bus of the target PC.

When the application launches, it searches for PC audio devices locally and across the network, and lists all the enabled PC audio devices in the DUT Explorer. You can select any local or network-accessible card for testing.



PC Audio Test's DUT Configuration panel allows detailed setups for individual PC audio devices. The configurations can be saved for quick recall later. Devices with unusual configurations can be accommodated in custom setups.

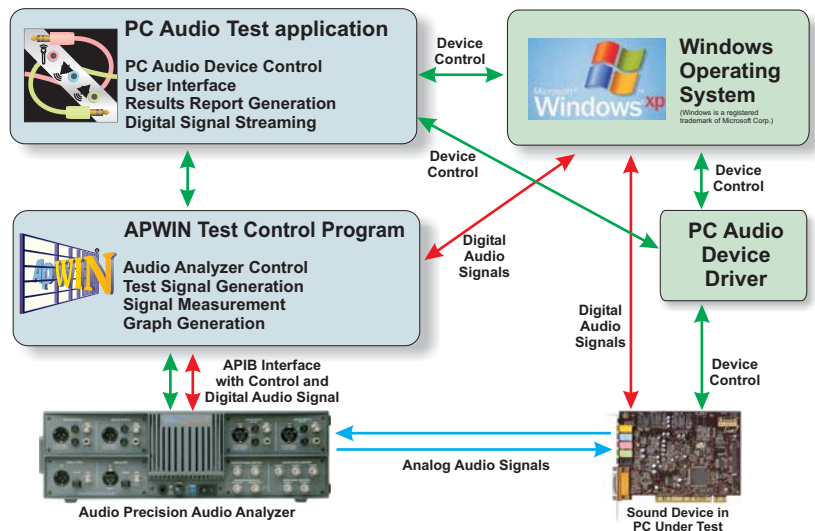
Measured results are saved with reference to DUT configuration and other test parameters, providing a comprehensive record of the complete test exercise. The test result data are saved in XML format for easy post-processing. Data can be directly imported into spreadsheet programs. XML schemas and XSLT translators are included, allowing rich presentation of test results. Limit and conformance testing are easily performed.



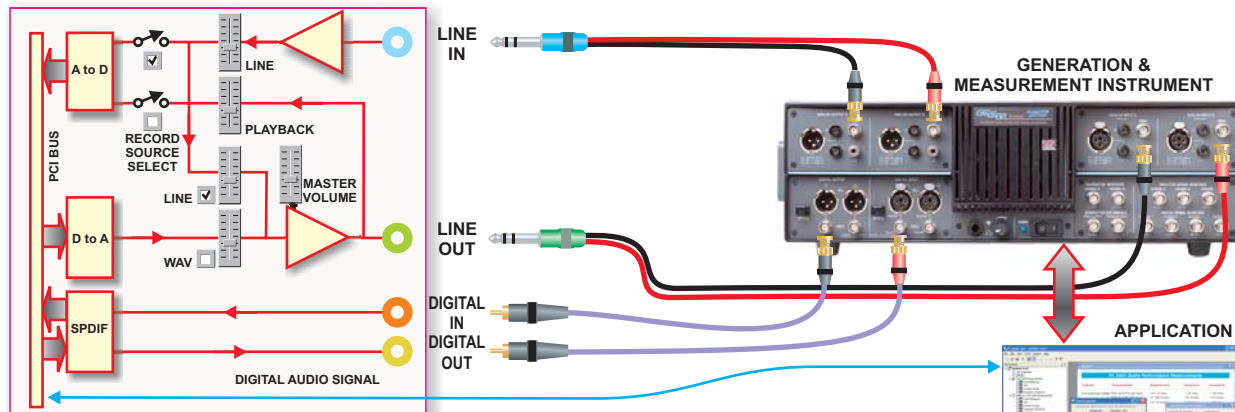


## Application Architecture

The PC Audio Test application works with APWIN or AP2700 and the audio analyzer to perform all tests. APWIN or AP2700 and the DSP core inside the instrument generate the test signals and make the measurements. The application establishes control communication with the PC audio device and sets up the digital audio signal path between the device and the analyzer. It generates test reports and handles all file storage functions.



## Measure all Signal Paths of a PC Audio Device



The PC Audio Test application allows easy measurement of each of the common signal paths of a typical PC audio device. Several paths require connection to both the easy-to-reach analog connections as well as the

difficult-to-access internal digital bus. PC Audio Test sets up each path, establishes levels, establishes and verifies connectivity, and manipulates the device's mixer controls for best measurement.

## The Complete Solution



The PC Audio Test application comes with a set of special cables to facilitate connecting the measurement instrument to the device being tested. These include Line In, Line Out, and Microphone cables with industry standard color-coded 3.5 mm phone plugs on one end and the correct connectors for the instrument on the other end. The

microphone cable includes the special wiring to measure bias voltage and current. Also included is a heavy gauge supplemental ground cable to improve the integrity of the ground between the measurement instrument and the device under test. Use of this cable can sometimes reduce noise and distortion components by 6 to 10 dB or more ensuring the best test results.

**Audio precision**

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