

Hearing Aid Test System

hearing aid testing!



The FONIX 8000 Hearing Aid Test System is a direct descendent of the FONIX 7000 Hearing Aid Test System, prized by hearing health professionals the world over for its dependability, accuracy, and advanced testing capability. The new FONIX 8000 advances the science of hearing aid testing even farther with the introduction of the optional 8120 Polar Plot Sound Chamber.

Polar Plot Testing

The FONIX 8000 Hearing Aid Test System has a Polar Plot Option that includes a new test screen capable of performing polar plots of directional hearing aids and giving you a much better picture of the directional characteristics of these hearing aids. Although the results are not a replacement for laboratory testing using an anechoic chamber, the 8120 Polar Plot chamber provides the hearing health professional with a clinical tool for verifying approximate directional characteristics of the hearing aid.

How does it work?

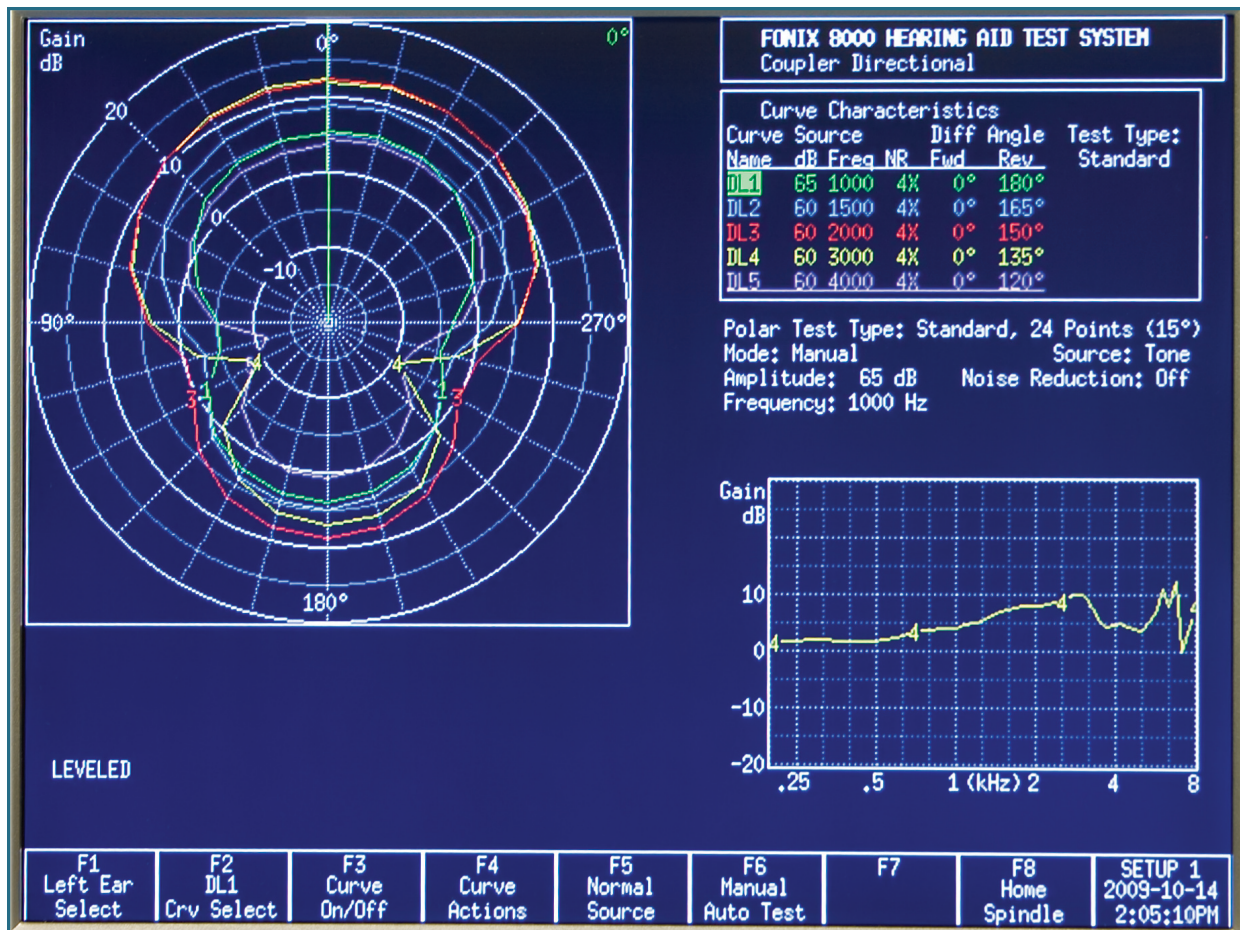
In the 8120 Polar Plot chamber, the hearing aid is mounted on a rotating spindle in front of the sound chamber speaker. During the polar plot test, the FONIX 8000 Hearing Aid Test System automatically rotates the hearing aid in a 360 degree circle, taking measurements at angles specified by the user. Results are displayed in polar plot format on the test screen in either dB Gain or dB SPL.

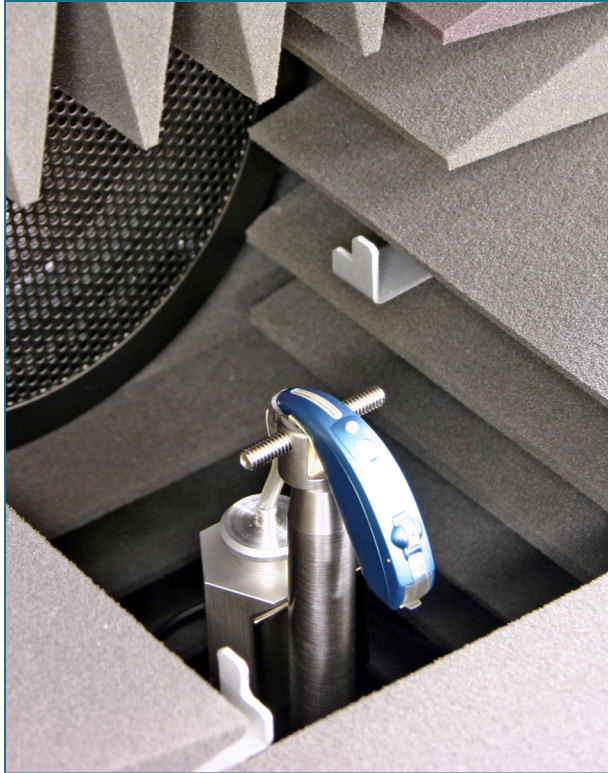
Simultaneous Mode

In Simultaneous Mode, a composite signal is used during the polar plot measurement, and the results at five different frequencies are plotted simultaneously, providing fast but complete test results.

Manual & Program Modes

In Manual Mode, the user can choose from the Composite signal or any choice of puretone frequency from 200-8000 Hz in 100 Hz intervals. Up to five different polar plot curves can be displayed on the screen at one time. In Program Mode, the user can choose a sequence of up to five different polar plot measurements and run them all automatically.





Automated Test Sequences

The FONIX 8000 Hearing Aid Test System can be purchased with the ANSI S3.22 87/96/03, IEC 60118-7 94/05, JIS 2000, or a combination of these test sequences. This makes the 8000 Test System capable of testing hearing aids manufactured and sold in countries all over the world.

Alternately, you can build your own automated test sequence with the Auto Test feature available in the Coupler Multicurve screen. Using Auto Test, you can program the source type and level of up to ten different frequency response curves. You can even add pauses to the test sequence to give you time to adjust the hearing aid in between measurements. Three different custom sequences are available for each user. These tests can be loaded automatically, creating a one-button test sequence that is fully customizable for the needs of the clinic.

Enhanced DSP

Enhanced DSP is an innovative test unique to the FONIX line of hearing aid analyzers. It tests the signal processing delay and the phase of the digital hearing aids.

Signal processing delay is the time it takes for the hearing aid to process sound through its circuits. In a monaural or open fitting, unaided sound can reach the ear faster than it can travel through the hearing aid, potentially causing localization problems or “echoing” effects. In some cases, the digital signal processing delay of the hearing aid can be up to 15 ms, although more commonly it is in the range of 3-6 ms.

Phase is a measurement of how the hearing aid pushes and pulls sound through the receiver of the hearing aid. For a pair of aids in a binaural set to be working properly together, both aids must be “pushing” and “pulling” in the same manner. If the phase test shows opposite graphs, it’s possible that one of the components inside the hearing aid was wired backwards, decreasing the fidelity of the total signal. The phase test gives you the ability to quickly determine if the hearing aids are working together as a team.

Testing Digital Hearing Aids

The FONIX 8000 Hearing Aid Test System comes equipped with the Digital Speech signal. This is a modulated broadband signal for testing digital hearing aids. Many digital hearing aids have noise suppression technology. When part of the input signal is constant (such as a conventional test signal), the hearing aid does not amplify it as much as the part of the input signal that is modulated, such as a speech signal. The modulation in the Digital Speech signal typically causes the hearing aid to amplify the signal instead of suppressing it.

As an additional feature, the Digital Speech signal has the option of adding a Bias Tone. The Bias Tone creates a continuous signal at a selected frequency. This allows the user to determine how the hearing aid reacts in the presence of noise at various frequencies. This can also show the behavior of the hearing aid in channels where the noise is not present. If there is noise at 500 Hz, does the hearing aid suppress the signal at 4000 Hz? The Bias Tone can tell you exactly what’s going on when part of the test signal contains a continuous input.

Quick Coupler Measurements

Unlike many competing systems, the FONIX 8000 Hearing Aid Test System does not use a feedback microphone as part of its coupler measurements. Instead, we use a “leveling” system in which the sound chamber is leveled with the measurement microphone

before the coupler measurements are taken. This makes our measurements extremely fast because the feedback microphone does not need to be part of the measurement system. The leveling system also has the added feature of not interfering with the measurement of popular open fit hearing aids.

In a feedback system, the open fit hearing aids can interfere with the feedback microphone measurement and thus decrease the accuracy of the test. However, with our leveling system, there is no possibility of this occurring.

New AutoDetect Battery Simulator Pills

These new pills (#675, #13, #312, #10) conform to the ANSI S3.22 Hearing Aid Specification Standard. When you connect a battery pill to the analyzer, the 8000 automatically detects its size and chemistry. The pills are also color-coded for easy identification.



Advanced Testing

High end users such as researchers and hearing aid manufacturers often need to be able to perform specific coupler measurements that are usually included as part of an automated test sequence. For those users, the FONIX 8000 has the Input/Output, Attack & Release, and Battery Current test screens.



In the Input/Output test screen, you can measure the compression characteristics of the hearing aid at any frequency between 200 and 8000 Hz in 100 Hz intervals. Alternately, you can choose to use the broadband Composite signal.

In the Attack & Release test screen, you can measure the attack and release compression characteristics of the hearing aid and display the results as a function of time in graphical format. You can even zoom in on the test results to get more detailed information about how the hearing aid reacts to sudden increases and decreases in the test signal.

The Battery Current test screen gives the user an estimate of the battery life of the hearing aid and performs battery current measurements as a function of frequency and input level so you can see if the hearing aid drains the battery more in certain situations. This gives you a very complete picture of the battery current drain of the hearing aid.



8050 Mid-Sized Sound Chamber

For those users who don't need to perform polar plot measurements, the compact 8050 sound chamber is available. This newly-designed chamber minimizes internal sound reflections while occluding exterior noise.

Note:

Specifications can be found in 8000 Operator's manual. The FONIX 7000 cannot be upgraded to the 8000.



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