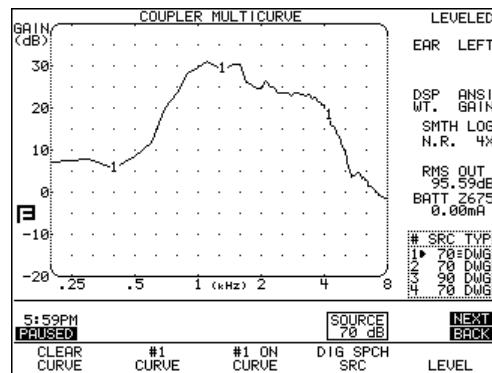


NEW & IMPROVED DIGITAL SPEECH SIGNAL

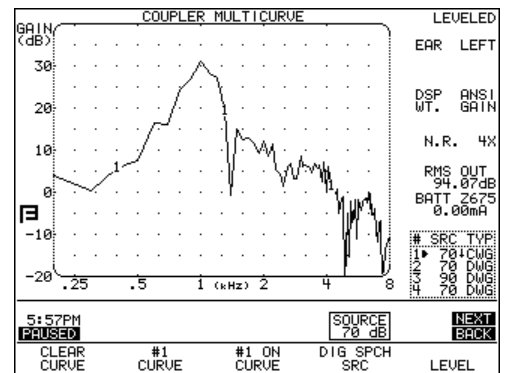
FOR TESTING HEARING AIDS WITH FEEDBACK AND NOISE SUPPRESSION

Evolution of a Test Signal

In the days before complicated digital circuitry, hearing aids could be tested very reliably using continuous broadband and pure-tone signals. When digital hearing aids came onto the market, they started using algorithms designed to detect whether the input to the hearing aid was modulated and thus should be amplified as a speech signal, or whether the signal was continuous and thus should be suppressed as a noise signal. In order to accurately test these hearing aids, the modulated Digital Speech signal was developed and used successfully for many years.



New & improved Digital Speech



Old style Digital Speech



Feedback Suppression

Open Fit hearing aids have become extremely popular in the past few years as comfortable, moderate gain hearing aids. In order to boost their maximum possible amplification, sophisticated feedback suppression algorithms have been created. These algorithms modify the relationship between the input signal and the output signal, creating slight randomizations that disrupt the oscillation that normally results in feedback.

Noise Reduction by Signal Averaging

Frye Electronics has always used "noise reduction" when performing hearing aid measurements. This noise reduc-

tion uses a type of signal averaging designed to help reduce temporary room noise in order to create a smooth, stable display. The traditional Frye noise reduction algorithms have assumed a fixed relationship between the hearing aid input and the hearing aid output. Unfortunately, the slight randomizations used by the feedback suppression algorithms of Open Fit hearing aids interfere with the noise reduction averaging. Resulting measurement curves can sometimes appear unstable or may even show negative gain in the higher frequencies.

Updated Digital Speech

Digital speech now includes improvements for testing both noise suppression and feedback suppression. Digital Speech remains a broadband signal that uses modulation in order to test hearing aids with noise suppression algorithms, but new averaging methods have been added so that it can also be used to accurately and reliably test Open Fit hearing aids with feedback suppression. The new averaging methods are much more flexible and robust and can be used for even the most advanced Open Fit hearing aids.

These improvements are fully backwards compatible; older style hearing aids without feedback or noise suppression can still be accurately tested with this updated Digital Speech signal.

The New and Improved Digital Speech signal is available on all current Frye analyzers for both Real-ear Measurements and Coupler Measurements.

