

# Mesa Fitting Reference Guide

## Mesa Digital Signal Processor

### 1. Initial Fitting Procedures:

Enter patient information into the Standalone PFS (Standard ProHear) or NOAH database. Enter audiometric thresholds minimally at 500, 1000, 2000, and 4000 Hz.

### 2. Launch Hearing Aid Fitting Module and Read:

From the PFS Module Launchpad, click the Hearing Aid Fitting button to launch the Hearing Aid Fitting Module.



Select Binaural, Left Ear, or Right Ear. Click Read to establish communication with the hearing aid(s).



Click Best Fit to optimally adjust the programmable parameters to approximate the targets for the selected fitting formula. Best Fit buttons can be found in the button panel either in the center of the screen, or in the toolbar.



When communication is established, the Best Fit Optimization dialog box will appear. Select Adult or Child. If Adult is selected, choose the most appropriate Experience Level. The recommended Fitting Formula for each Experience Level will be selected. To continue with the current Fitting Formula, uncheck the change to recommended Fitting Formula checkbox.



*Note: Once the hearing aid is read, the volume control on the hearing aid will be disabled until the device is disconnected from the programming cable. Volume adjustments may be made within the software during programming.*

### 3. Fine Tuning:

From the Adjust tab, access Frequency Shaping, Volume Control and TK/CR by selecting the appropriate subtab. Within each of these adjustment modes there are three main ways to fine-tune Mesa:

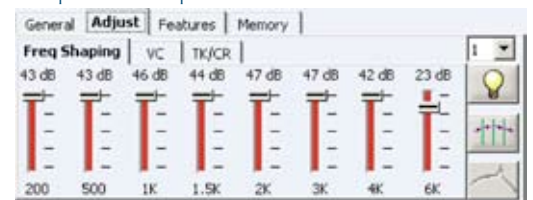
- 1) Drag and drop the curves on the fitting graph,
- 2) Adjust the slide controls on the control panel, or
- 3) Utilize the Expert Assistant fitting tool.

Drag and drop the curves of the fitting graph from either the General or Adjust tabs. Adjustments may be made by clicking and dragging a point within a channel or by dragging the crossover frequency line. Using the drag and drop function may ultimately adjust the gain, output, and compression characteristics.

Mesa Frequency Shaping adjustments can be made by using one of two adjustment modes: Band or Channel. These two adjustment options are accessible via the band/channel toggle button, located on the Adjust tab of the control panel. Toggling between these two adjustment modes will change the graphical display as well as the Frequency Shaping subtab of the Adjust tab.



**Band adjustment** is the default adjustment mode. There are eight individual frequency points to adjust the frequency response shape. In this mode, the frequency points are on the mid-level curve (i.e. 70 dB) and the selected band for all three input levels (soft, moderate, and loud) moves simultaneously. An adjustment affects the gain equally for all inputs and has no effect on the kneepoint or compression ratio.

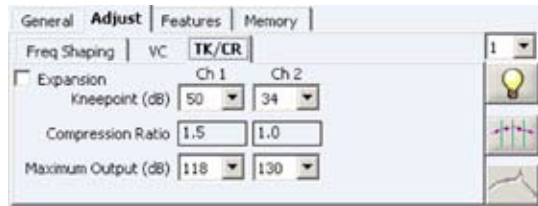


The **channel mode** accesses the two compression channels and the one crossover frequency. Channel adjustments are made to the soft and/or loud curves (i.e. 50 and 90 dB) and move only the selected curve, thus, changing the compression ratio. As the soft and loud responses are brought closer together, the compression ratio increases up to 3.3:1; separating the soft and loud responses decreases the compression ratio to 1.0:1 or linear.

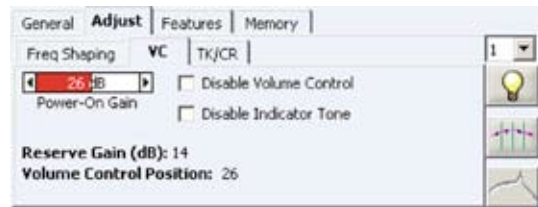


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Select the TK/CR subtab for direct access to the Channel Kneepoints and Maximum Output controls. The Compression Ratio is also displayed on this panel.



Click the VC subtab to make adjustments to the VC Position slider. These adjustments will be audible to the patient during programming.



To Optimize Target for Audibility, click on the **Best Fit Optimization** icon. The Best Fit Optimization dialog box will appear. Check the Optimize Target for Audibility checkbox. Optimized targets will be indicated by diamonds.



Click on the **Expert Assistant** button, available on the Adjust tab. From the Expert Assistant window, select the patient's complaint (e.g., Tinny).



choose Right, Left, or Both Ears, and then click Begin. Follow the prompts within the window to complete the adjustment for the complaint. Audio files are available within Expert Assistant to help determine the appropriate adjustments. Click the Audio File Player button on the Expert Assistant pop-up screen.



#### 4. Mesa Special Feature Adjustments:

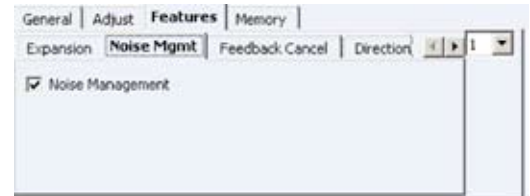
From the Features tab, the following parameters are available:

**Expansion:** To adjust the amount of gain for very soft inputs (below the expansion/compression kneepoint), such as a refrigerator running or computer fan, Expansion may be set to On or Off by unchecking the Expansion checkbox on the Expansion subtab. The default setting is On when any threshold is better than 40 dB HL and Off when all thresholds are poorer than 40 dB HL. This feature is adjustable per memory. Audio files are available to help determine the appropriate Expansion setting. Click the Audio File Player button on the toolbar or select it from the Activity menu to use this fitting tool.



**Noise Management:** To improve the patient's listening comfort in noisy environments, Noise Management may be activated. When Noise Management is activated,

gain in the channel is automatically reduced when the speech/noise ratio (SNR) within the channel is poor (noise dominates as input to the channel). The default Noise Management setting is On which provides up to a 10 dB reduction in channel gain. The amount of channel gain will vary depending upon the channel SNR calculation. When the optional Noise Management feature is set to Off, no automatic gain reduction will occur in the presence of noise. This feature is adjustable per memory.



**Feedback Cancellation:** The Feedback Canceller is set to Adaptive by default. In the Adaptive mode, the feedback path is continuously monitored as the device is worn. Updates to the Feedback Cancellation filter are automatically made, as necessary, to provide the most effective feedback cancellation during use. In order to use the Static setting, the Feedback Canceller must be initialized while the instrument is in the patient's ear. Prior to running the algorithm, ensure that the room is quiet and that the hearing aids are fully inserted in the ears. Instruct the patient to remain quiet and still for the entire sequence. A static noise for calibration will be presented through the hearing aid. Click the Feedback Cancellation button within the Adjust tab (or the Feedback Cancel subtab from Features) to start the algorithm. When the initialization is complete, Initialized will appear next to Adaptive.

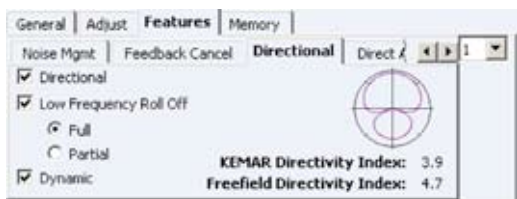


The Feedback Canceller is adjustable per memory and can be turned Off for no active feedback cancellation or to Static. If the Static mode is selected, the feedback path measured at the time of the fitting is used to determine the filter settings and this filter is not updated during use. The Static mode is only recommended in cases where the user complains of artifacts with tonal signals such as music and is not available in any memory that has been programmed with dynamic directionality.

An additional feature to assist in the manual reduction of feedback is the **Primary Feedback Frequency Detector**. This tool may be used when reduction to band gain is desirable to reduce feedback. The Primary Feedback Frequency Detector button is located on the Feedback Cancel subtab. Clicking the button will begin the test and the Primary Feedback Frequency Band will be reported. Gain can be reduced manually in the specified band in an effort to eliminate feedback with minimal effect to the channel gain.



**Dynamic Precision Directional Imaging (PDI):** When fitting Mesa PDI, the Directional subtab will be available. The Directional checkbox on the Directional subtab will set the device to Dynamic, which will automatically change from the omnidirectional mode to the diffuse directional pattern for the active memory when appropriate. For single memory devices, the Dynamic feature will default On for Memory 1. For multimemory devices, the Dynamic feature will default On for Memory 1 and Off for Memory 2 and Memory 3. For multimemory devices with the Autocoil, the Dynamic feature will default On for Memory 1, the Autocoil will be programmed in Memory 2 and Memory 3 will be unavailable. The Dynamic feature may be turned On or Off in any memory. If the Dynamic checkbox is unchecked, the device will activate a directional response whenever a memory with directionality is selected. Additional frequency response adjustments are available with the Low Frequency Roll Off checkbox. For thresholds at 500 Hz better than 40 dB HL, the default setting is Full Low Frequency Roll Off. For thresholds at 500 Hz between 40 and 70 dB HL, the default setting is Partial Low Frequency Roll Off. For thresholds at 500 Hz poorer than 70 dB HL, the default setting is Off or unchecked. The Full Roll Off option provides maximum reduction of the low frequencies, while the Partial Roll Off option offers increased gain to improve audibility for the low frequencies while in the directional mode. Unchecking the Low Frequency Roll Off checkbox will match the gain and frequency response of the directional and omnidirectional modes.



**Direct Audio Input (DAI):** If fitting a Mesa BTE, the DAI subtab will be available. To adjust the DAI response for the selected memory, go to the Direct Audio Input subtab of the Features tab. The default setting is 0 dB, which matches the output from the DAI source with the output from the hearing aid's microphone. To attenuate the level of the environmental microphone, select either -6 dB or -10 dB. Unchecking the Environmental Mic checkbox, turns off the environmental microphone for that memory whenever the DAI boot is attached. This feature is adjustable per memory.



If using the DAI feature, connect the DAI boot to your BTE. The instrument must be set to the "M" switch position to use the DAI. The programmed memories will still be available at the programmed attenuation level via the hearing aid's multimemory push button. For Mesa, the DAI must be removed to access the telecoil memory.

**Automatic Telephone Response (ATR):** If fitting Mesa CIC, Secret Ear, or Canal with the ATR option, the device uses the magnetic leakage from the telephone to automatically switch from the normal memory to the telephone acoustic environment. The telephone environment provides increased low- to mid-frequency emphasis while reducing the high frequencies. Performance is optimized on the telephone to improve sound quality and reduce feedback. When the telephone is placed in close proximity to the hearing aid, the ATR environment will be activated. The ATR parameters are accessed within Memory 2 via PFS software.

## 5. Indicator Tones:

The low battery, volume control, and multimemory beep tones are adjustable by selecting **Indicator Tones** from the Activity menu. Different frequencies and intensities are selectable for each tone. A tone can be disabled or a test tone can be presented through the hearing aid to verify audibility.

## 6. Program:

Click **Program**, either from the button panel in the center of the screen or from the toolbar, to store programming information into the hearing aid. After programming the device, set the user volume control to the position indicated on the VC subtab of the Adjust tab in order for programmed gain to be achieved.

