

# Designing your own test in the Equinox/Affinity AC440 Module

There are many different demands and wishes regarding how an audiometer should both function and appear depending on the specific situation and national standards. One of the greatest advantages of the Affinity and Equinox AC440 module is the high flexibility enabling the individual clinician to tailor the system according to their specific preferences. It permits the creation of an unlimited number of personalized test settings and functions for different purposes and/or for different clinicians working at the same location. These numerous setup options can be very helpful and time saving in the daily work in the clinic.

In attempt to make the many functions more clear this paper explains the basics on designing your own test settings on the Affinity/Equinox AC440 module and takes you through making your own individual test step by step.

## Considerations before you begin

You must ensure that no prior testing has been conducted when trying to enter the setup menu to create a new test. If this is the case the AC440 Setup will be greyed out. This problem is, however, immediately solved by clicking on the "save" button in the tool bar. You may also find that if you are not connected to an Affinity or Equinox, the functions may be greyed out.

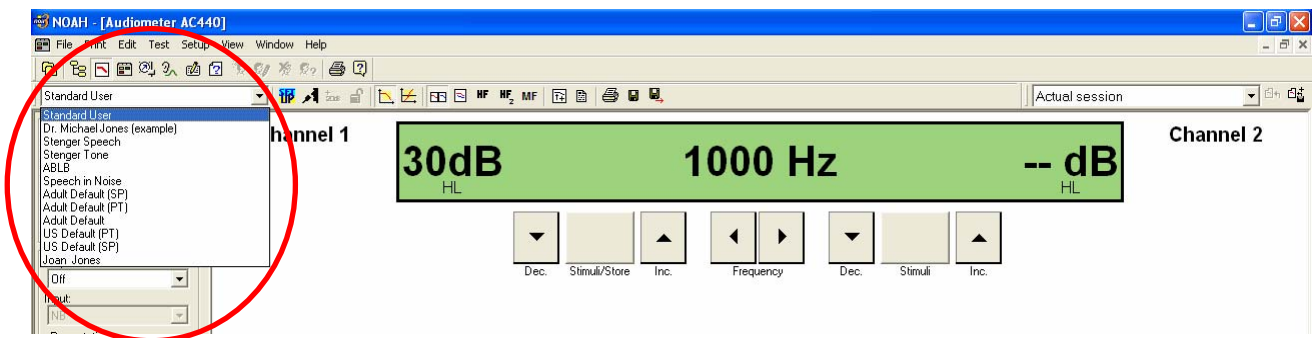


## Getting started

When you open the AC440 Module from Noah, OtoAccess, or the stand-alone mode you are basically ready to start measuring. The Affinity is pre-programmed with standard protocols that can be selected from the front screen. This simplifies the testing for people not yet acquainted with the module.

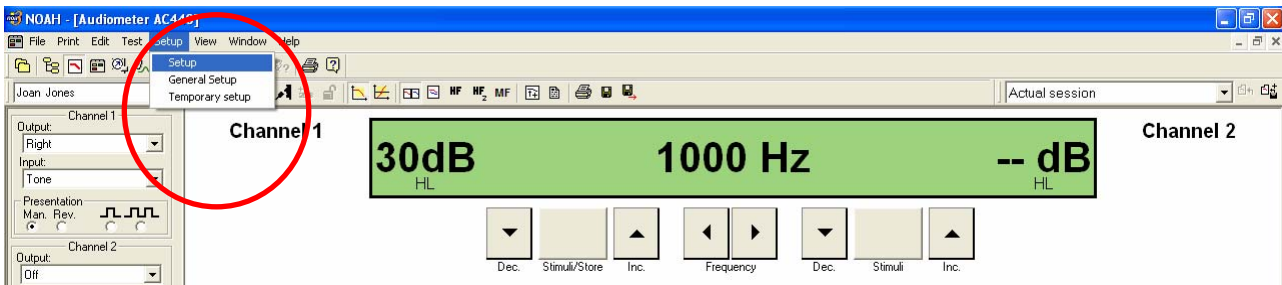
## Selecting a (standard) test:

The standard protocols can be selected in the dropdown menu in the top left corner of the front screen as illustrated below.

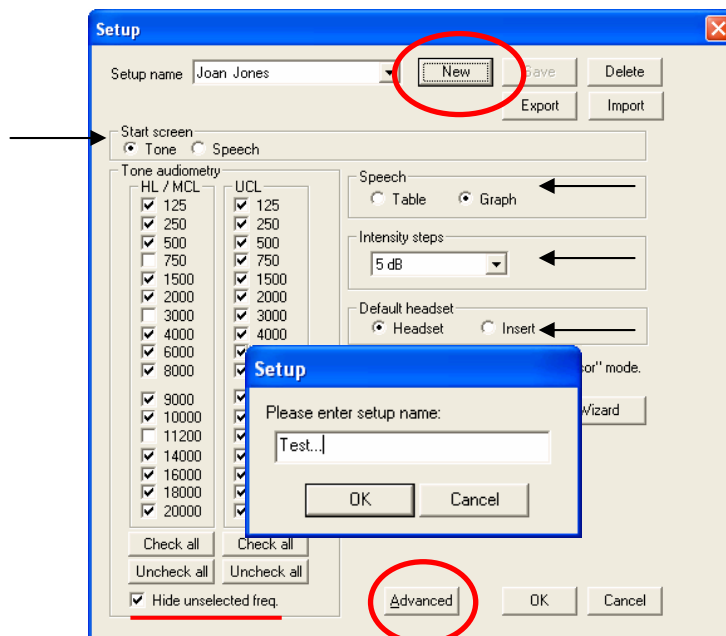


## Designing your own test:

To create your own personalized test you need to enter the Affinity/Equinox "Setup" menu.

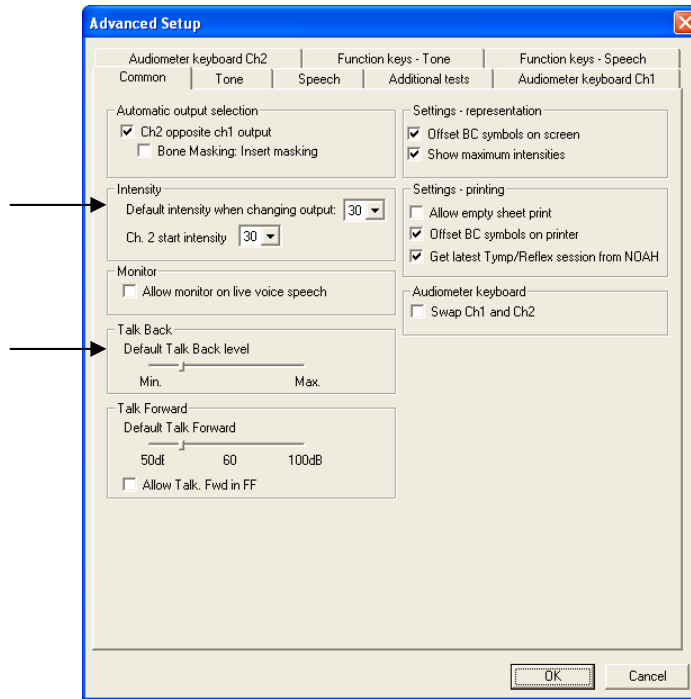


- 1) Click on "Setup" in the top tool bar and select "Setup". This opens the message box shown below.
- 2) Click on the "New" button and name your test.

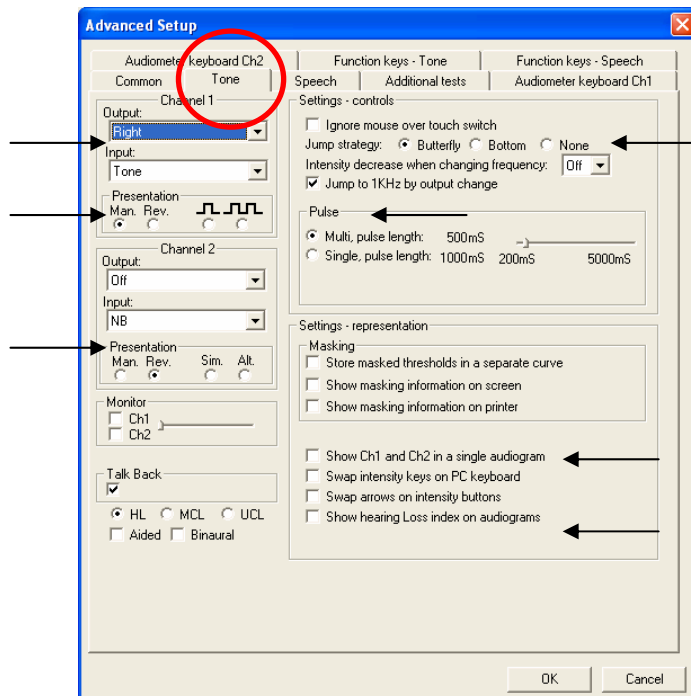


- 3) In this initial Setup menu you are able to adjust the frequencies you want to test. Select your preferred frequencies in the left side of the message box simply by ticking them. When finished you may want to tick the "Hide unselected freq" in the lower left corner of the dialogue. This function ensures that unwanted frequencies are not shown in the graph. Select your preferred "Start screen", "Speech format", "Intensity steps", and "headset".
- 4) When finished with the initial setup menu note that you also have access to a more advanced test setting menu. Click on the "Advanced" button" to prompt the message box shown on the following page.

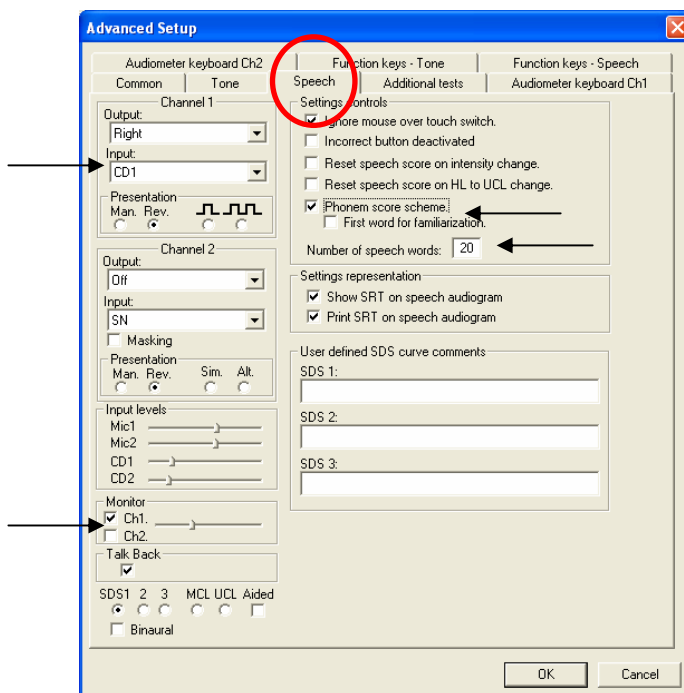
- 5) You now have the possibility to change numerous advanced test settings starting with a range of “Common” settings. You may wish to start by setting the “Intensity” to somewhere between 30-40 dB and “Talkback” to approximately 60 dB.



- 6) Continue to the tone audiogram setup by clicking on the “Tone” tab. Here you can for example change the default setting of your Channel 1 and Channel 2, the presentation, jump strategy, pulsation, if you want to view the audiogram as one or two graphs, and if you want the hearing loss index/percentage shown on the screen just to name a few.



- 7) When you are satisfied with your "Tone" settings go on with the "Speech" tab. This will enable you to setup your speech testing. Start by choosing your Channel 1 input in accordance with your with speech material you usually use<sup>1</sup>. You may choose Microphone, Wavefile or CD as in the example below. Select your preferred number of words and if you wish to employ phoneme scoring. Also make sure that your speech level is approximately 1/3 of the way along the "Monitor" sliding scale (index figure 60). Further adjustments will be made on the CD players' volume control if necessary.

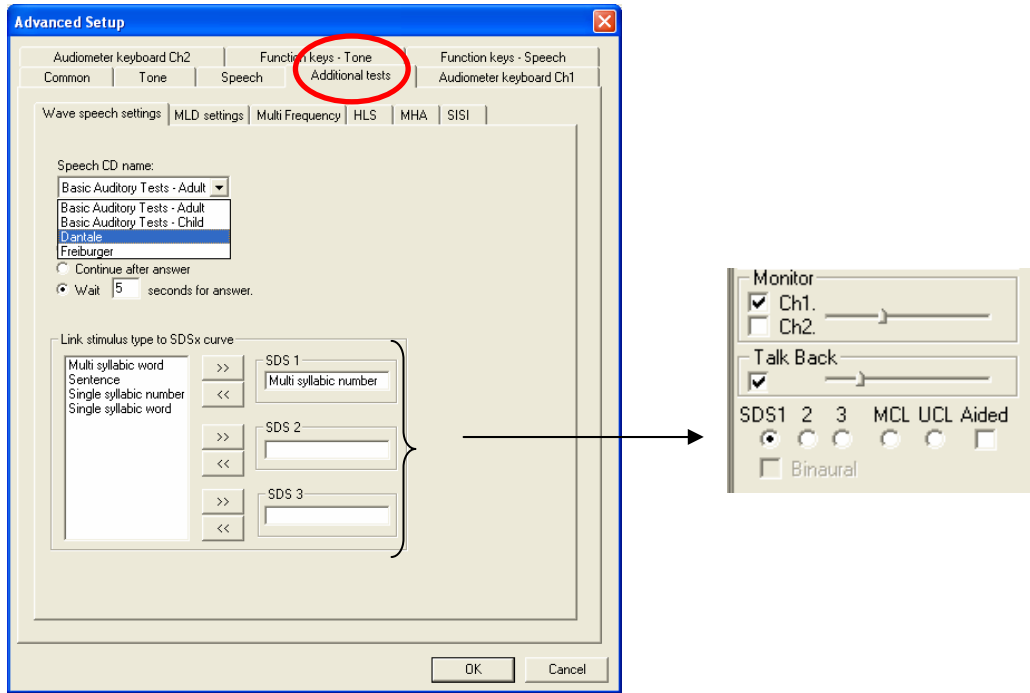


*Advanced note:*

Speech Calibration: After the test setup has been fully completed, go to the speech assessment page and play the calibration track. The VU meter should be adjusted with the CD's volume control to be at maximum just entering the red section but not beyond. If you are not able to adjust it effectively with the CD players volume control you can then go back into AC440 Setup whilst the track is still playing and go to "Advanced" features and press the "Speech" tab again. Then adjust the Input level meter slider up or down as necessary. To perform FF as standard, a Sound Level Meter will be required to calibrate the speaker. You can use Interacoustic's Canton speaker to do both FF and REM, obviously though it is important that the speaker remains in the one location to maintain its calibration. The patient should also be in a standard and consistent distance from the speaker (< 1m). Calibration with your Sound Level Meter is performed under the "THORCalibration" icon located on C:\Program Files\Common Files\IA\Affinity\ThorCalibration.

<sup>1</sup> To play speech through a stand alone CD player, it should be connected to the Affinity/Equinox in the appropriate CD input outlets. To play speech through the PC's D: drive, you will have to have an audio RCA stereo lead running from the PC audio out jack to the Equinox/Affinity. This requires you to play the CD and use Windows Media Player. Otherwise, "Speech from Hard Drive" as an additional module has to be purchased to run speech wave files from the hard drive. This is becoming increasingly popular and cheaper, so it's worthwhile to keep this solution in mind.

- 8) Now press the “Additional tests” tab. This prompts a new menu with five additional tabs. The first one “Wave speech settings” is relevant if using Wavefiles for speech testing. You are then able to choose your test material in the dropdown menu, set the time between words, and the SDS 1, 2, and 3 on the arrow buttons. This function enables you to toggle between specific word lists during the speech testing in the lower left corner of the screen.



- 9) In tab two, three, and five you have your “Masking Level Difference” (MLD), “Multi Frequency”, and “Short Increment Sensitivity Index” (SISI) respectively to be used for more advanced testing. For a description of the Affinity/Equinox counselling tools; the “Hearing Loss Simulation” (HLS) and “Master Hearing Aid” (MHA) located in third and fourth tab see **“Using Counselling Tools in the AC440 Module”**.
- 10) The remaining tabs in tabs in the “Advanced” setup menu are related to the dedicated audiometry keyboard. If this is not used press “OK” and jump to paragraph 16 (page 8).

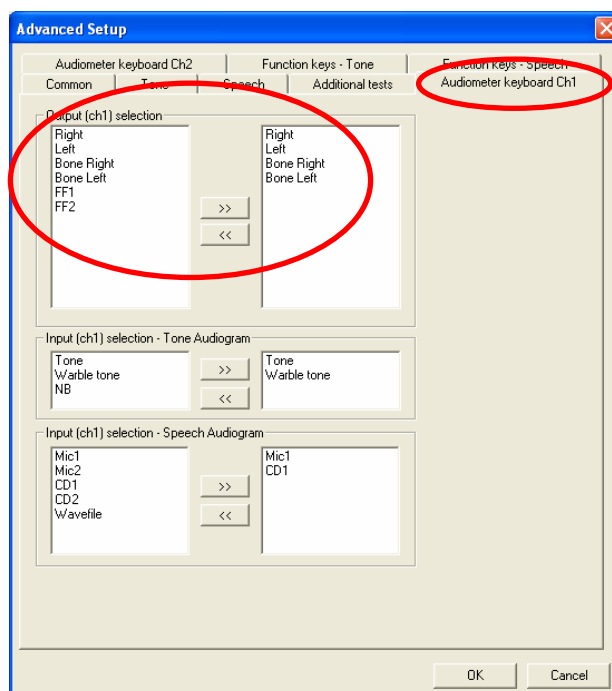


- 11) The “Advanced” setup menu also allows you to setup your keyboard buttons to have the exact functions you wish. Start by selecting the “Audiometer keyboard Ch1” tab. This enables you to decide the functions of the output and input buttons for Channel 1 (right side of the keyboard as indicated by the red circle above) both for tone and speech testing respectively.

The standard setting seen in the message box below illustrates that the output setting is default set to tone “Right”. When you press the output button it will switch to tone “Left”. Another push will prompt it to go to “Bone Right” and then in the end “Bone Left”. If pushing the button after conducting “Bone Left” it will automatically return to tone “Right”.

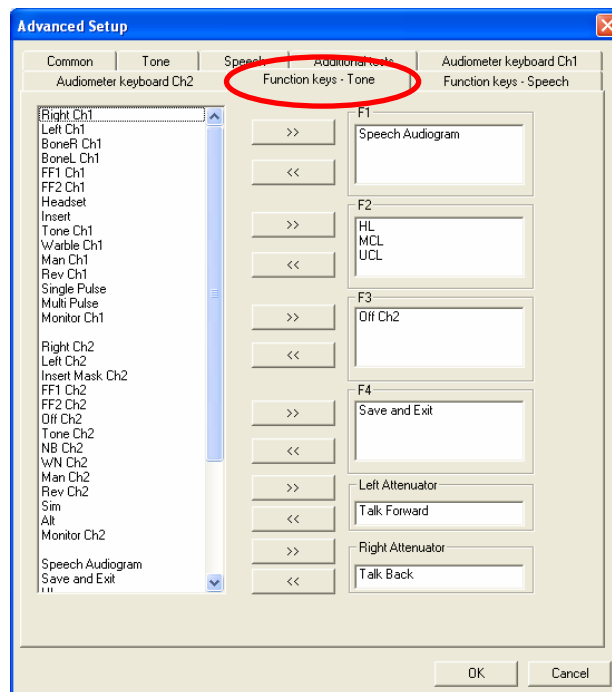
These settings can however be changed using the arrow buttons in the middle of the message box. If you wish to remove for example the “Bone Left” from the list click on it in the right side of the dialogue and then press the arrow button pointing to the left. The “Bone Left” will then jump back to the “Output (ch1)” selection list. To add tests from this selection list mark them by clicking on them and press on the arrow button pointing to the right. The test will then jump to list with selected tests. Follow the same procedure to change the functions of the “Input” button, first for the tone screen and then for the “Speech Audiogram”.

- 12) When having set the buttons for Channel 1 do the same for Channel 2 by clicking the “Audiometer keyboard Ch2” tab following the same procedure as for Channel 1.



- 13) The last thing to do in the “Advanced” setup is deciding the functions of the four “Function keys” (F1, F2, F3, F4) and the “Attenuators” on the keyboard (see picture on page 6) for both tone and speech testing. This is done the same way as for the output and input buttons described above.

Select the “Function keys - Tone” tab. The standard functions are then listed in the right side of the message box. As the list illustrates pushing “F1” will in this case prompt the AC440 to switch to the speech screen, pressing “F2” will make it toggle between “HL”, “MCL”, and “UCL” and so on. You now have the option to change the function of each Function key using the arrow buttons and the selection list to the left. Pressing the “Attenuator” may also have the function of your preference. If this should not be “Talk Forward” and “Talk back” change it with the arrow buttons.



- 14) When you are satisfied with the functions of the Function keys in the speech screen continue and press the “Function keys – Speech” tab. Make your changes exactly like you did for “Function keys – Tone”.

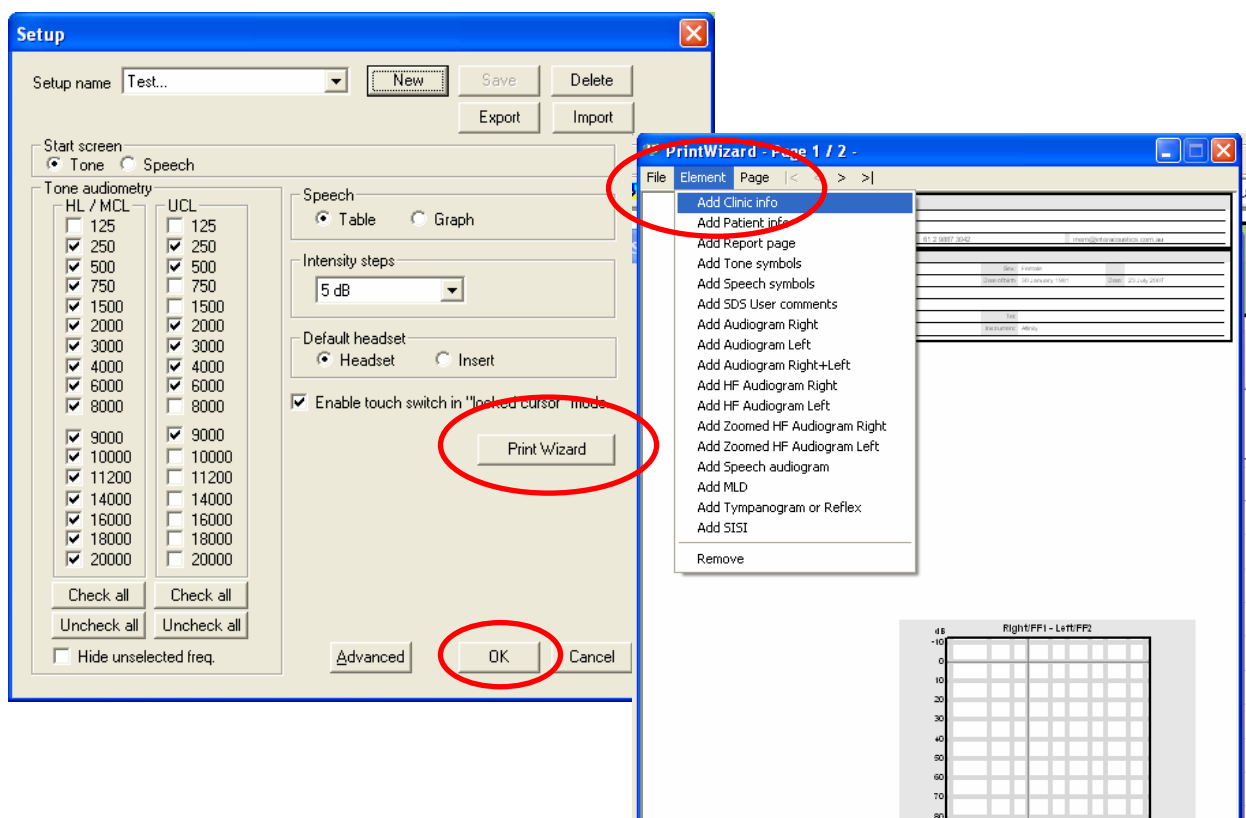
- 15) When finished press “OK” in the lower right corner of the “Advanced” setup menu. The AC440 will then return to the initial setup.

16) Now the only thing left to do is setting up your own layout for audiogram printouts which is done in the "Print Wizard". Pressing the button will open the print page below.

17) Select "Element" and choose the items you want on your layout one by one. These can be moved around on the page and resized if you prefer. If you click "Page" you have the option to add additional pages to your layout (or removing pages). Make sure that only 1 of 1 page is displayed if that is what is desired, otherwise an extra page will commence printing for every print job. If you need to remove a graph, click on element, remove and then select the graph to remove. You need to repeat this process for every graph you want to remove.

18) When finished with your layout exit the "Print Wizard" and select "Yes" when the dialogue asks if you want to save your layout. AC440 will then return to the initial setup.

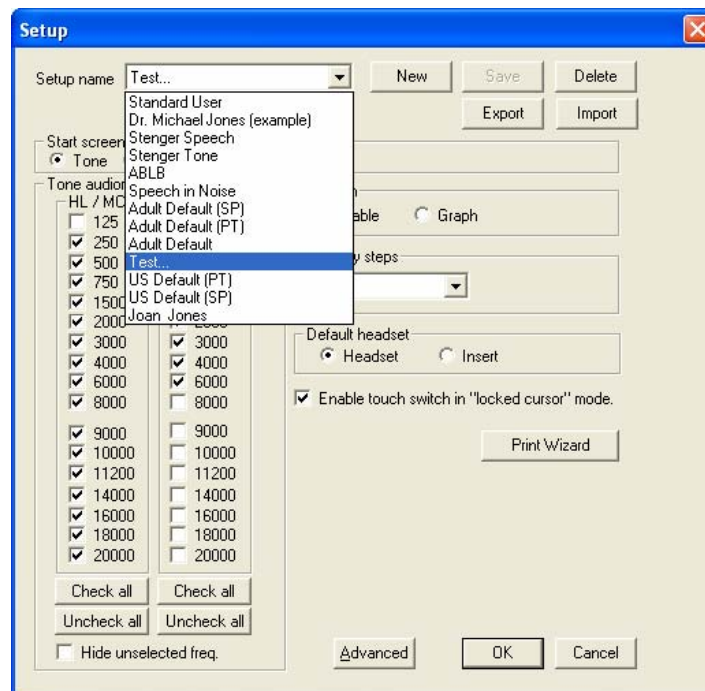
19) You are now complete with the AC440 personal test protocol. Click "OK" and select "Yes" when the dialogue asks if you want to save your test.



### Changing your personal test:

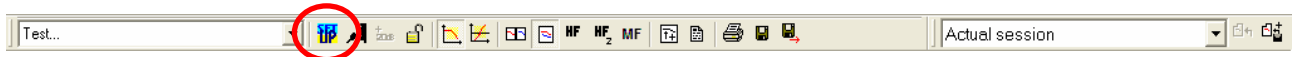
You can make changes to your test at any time by entering the AC440 setup again as you did when creating the test.

- 1) Choose your test in the dropdown menu under "Setup name".
- 2) Browse the setup options as if creating a test.
- 3) When you are finished click "OK" and select "Yes" when the dialogue asks if you want to save your test.

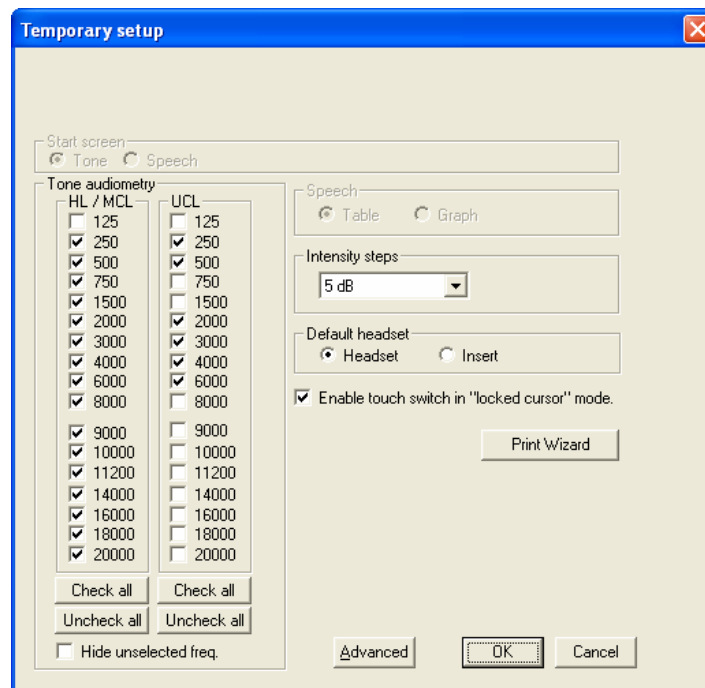


### Changing your temporary personal test:

You may from time to time run into a patient with special needs requiring advanced or different testing. In this situation the "Temporary Setup" comes in handy. When using this setup changes you make will be specific to this particular session. The protocol name will be supplemented with an \* to indicate that changes have been made to original protocol. After saving they will disappear making you ready for your next patient.



- 1) Enter the "Temporary Setup" by clicking on the corresponding button in the AC440 tool bar. This opens the setup message box below.



- 2) Make your changes as when you created the test.
- 3) Click "OK" when you are finished and the AC440 will exit the "Temporary Setup"

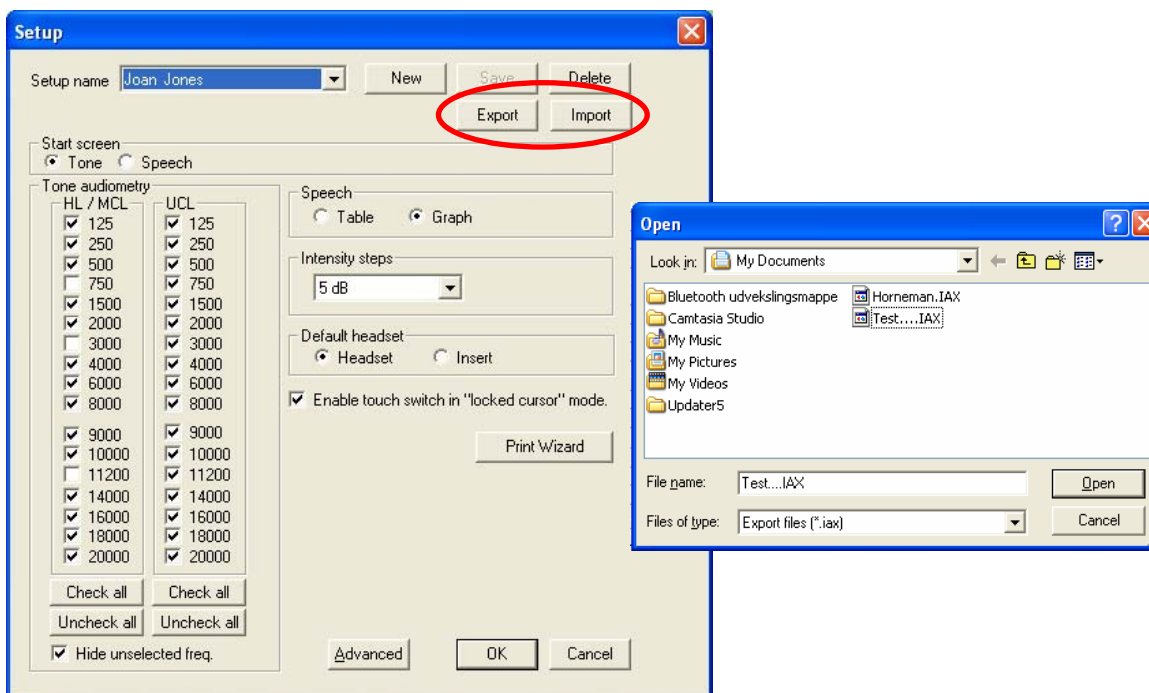
### Importing and Exporting tests:

The AC440 also allows you to import and export tests or in other words save a particular test you have designed and export it to other computers. You may also import a test exported and saved on for example a USB memory stick and import it to your own AC440 module.

You must however make sure it is not saved as a “read only” file or otherwise you will not be able to import it and use it. So select “no” when asked if you want to save as a read only file.

#### Importing a test:

- 1) Go to AC440 Setup
- 2) Click “New” for new test, and name it accordingly.
- 3) Click on “Import”, find the test file from your USB, and click “Open”



#### Exporting a test:

- 1) Go to AC440 Setup
- 2) Click on “Export”, find the location where you want to save the test, and click “save”. Other people in possession of an Affinity/Equinox will then be able to upload your test using the “Import” function.

