How to Present External Multi-Channel Audio Stimuli from PC - MOTU Soundcards

This page explains how to present audio stimuli from an Researcher PC with a Mark of the Unicorn (MOTU) soundcard to a test subject in the CMA 2 CSD Clinic Audiology Booths.

This workflow addresses playback non-typical multi-channel media using Adobe Audition and is not for use by audiology students performing standard patient diagnostics. For playback of stardard mono or stereo media typically used in audiology testing, see How to Present External Stereo Audio Stimuli from PC - MOTU Soundcards

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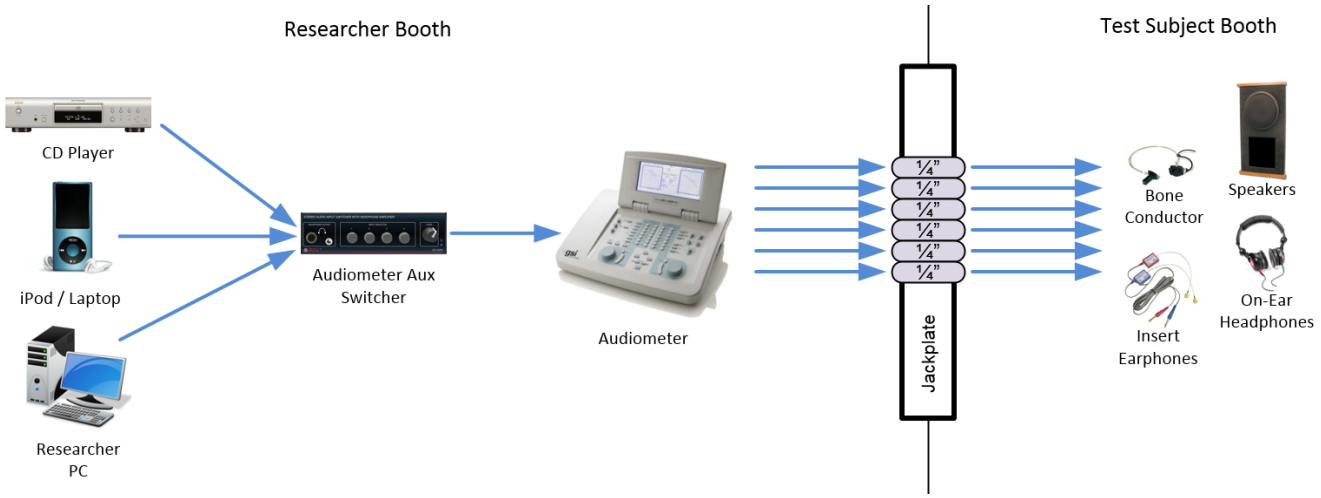
Research Objective

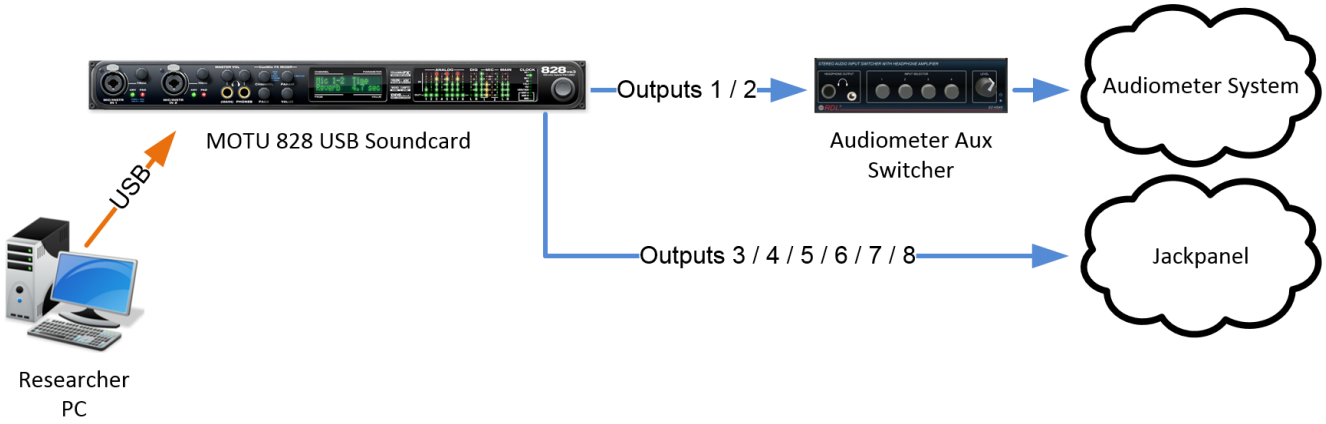
The researcher will play two audio files — one noise and one speech — from the computer in booth B or E and then route the signals through the audiometer to the test subject. Audio can be presented to the test subject using insert earphones, on-ear earphones, or free-air speakers. The noise will be routed to Audiometer input External A / Ch1 while the speech will be routed to External B / ch2. The audiometer will allow the researcher to adjust the levels of the noise and speech independently.	
Alternately, a final section of this document explains how (a) the audiometer can be set to a calibrated volume setting and volume levels can instead be adjusted in software or (b) the audiometer can be skipped entirely allowing up to 6 channels of audio to be presented using powered speakers.	

Overview

The audiometers in Booths B, E, F & G have external inputs which are fed from an Audiometer Aux Switcher which allow CD, iPod & PC external sources to be presented to the test subject.



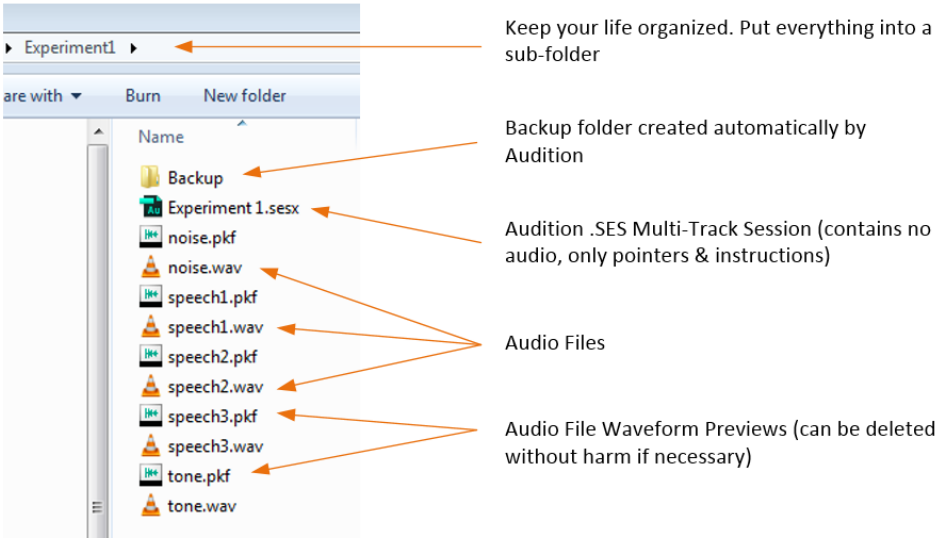
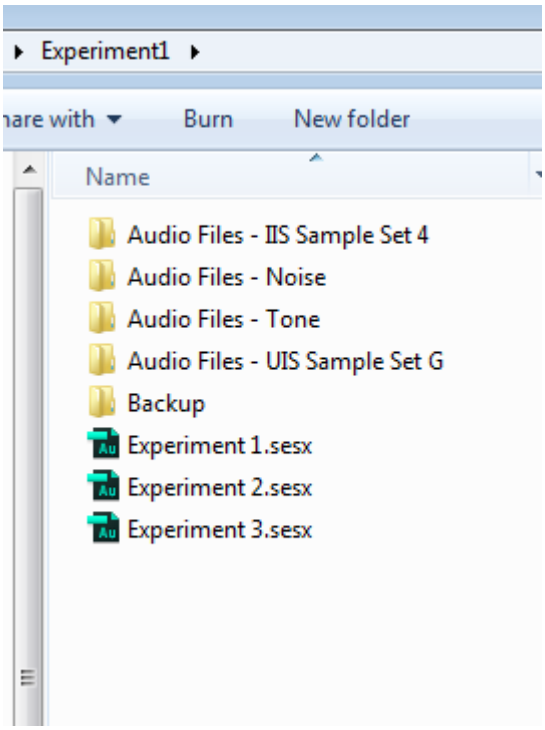
In Booths B & E, the Researcher PC has an 8-channel Mark of the Unicorn (MOTU) 838 USB soundcard. This device is capable of recording up to (2) mic or (8) line sources and playing back up to (8) channels of audio. Outputs 1 & 2 are the primary outputs (aka default Windows playback device) from the computer. These outputs feed to the audiometer via the Audiometer Aux Switcher. Outputs 3 - 8 feed directly to the jackpanel for use in specialized experiments.



Using the Researcher PC, you can present audio stimuli from any program or website. This document will outline how to use a media player called Foobar 2000 to present standard audio tests to a subject via the primary outputs and the audiometer.

Building your Audition Files

Collect your assets

To make your research project easily portable, you need to collect all your digital assets into 1 folder. Create a new sub-folder for your experiment in your research folder on fileserver (refer Using the COMM Shares Server) (if you need a new research folder on fileserver, refer Moody College File Server and Shares). Your new sub-folder will hold a variety of files including the audio files (typically .WAV, .MP3, or .FLAC extension) as well as the Adobe Audition Multi-track Session file (.SES or SESX extension). The session file doesn't contain any audio data – only pointers and instructions to the audio files.	**Simple Adobe Audition Project Folder** 
Collect all your audio files in your experiment sub-folder. If you have lots of digital assets, feel free to organize using subfolders.	
To access the audiology library, navigate to: L:\Classmedia\CSD_Audiology Copy the files you need from the library to your experiment sub-folder. This will ensure that your experiment is portable and will be playable at offsite locations.	

Audition Overview

Adobe Audition is an audio editing tool which has 2 views: waveform (aka stereo editor) & multi-track.	screen grabs of stereo & multitrack views
When Audition is opened initially, you will see the stereo view.	
To switch between stereo and multi-track	illustration of switch view buttons
Open the folder of your digital assets	

Generating Tone or Noise in Audition

refer How to Create Noise & Tone audio test files in Adobe Audition	

Recording your own audio speech samples

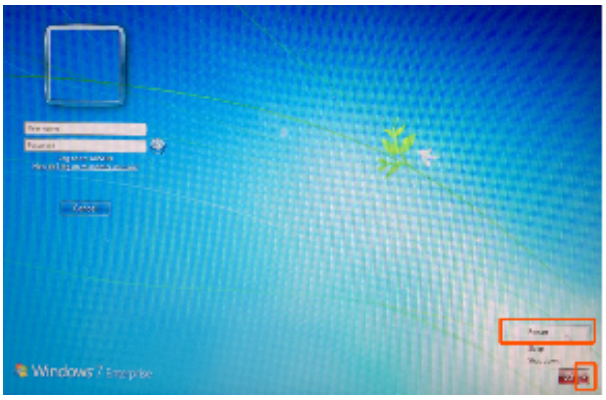
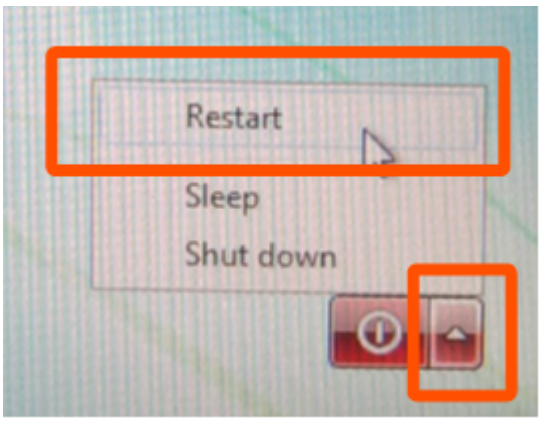
refer XXXX	

Create the Audition Session File

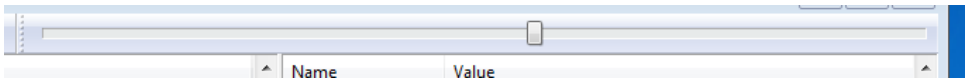
Switch to the multi-track view.	
If prompted to create a new session, choose XXX, XXX.	
In this example, we will place noise on track 1 and voice samples on track 2.	
Map the outputs	

Before Your Session

Power on the equipment in your booth. Instructions here.	

Press CTRL-ALT-DELETE. On the login screen, click the red arrow in the bottom right corner and choose RESTART	  
Once the machine has restarted, log into the PC using your EID & password. Launch Foobar2000 using the icon on your desktop or by clicking Start > All Programs > Foobar2000	
Select PC on the audiometer aux switcher. Note that the volume knob on this switcher has been disabled and does not affect output volume.	Volume knob disabled & does not affect volume blocked URL. blocked URL
Select External Input as your source on the audiometer. ~ Input Ext A corresponds with the Left output from your device. ~ Input Ext B corresponds with the Right output from your device.	blocked URL
In the left-hand folder browser in Foobar, navigate to the test media you wish to present. Drag the test media to the Default Playlist. Double click on a file in the playlist to begin playing it.	blocked URL blocked URL
Find the calibration tone for the test media you are going to present and use it to calibrate the audiometer's external input trims.	
Test and confirm all transducers are working prior to your test subject's arrival.	

During Your Session

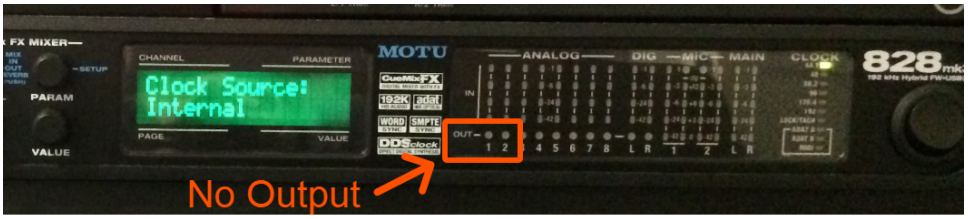
You can drag elements in your playlist to order them most appropriately for your session.	
Use the transport controls at the top of Foobar to stop, play, & pause the playback of files.	
Use the scrub bar at the top of Foobar to jump to a different part of a track.	

After Your Session

Log out of the PC. Please do NOT shut it down.	
Power off the equipment in your booth. Instructions here.	

Troubleshooting PC Audio Stimuli Playback

No Sound from PC	Is PC selected as the source on the correct switcher? ~ Some booths have 2 identical switchers in the rack (Audiometer Aux In & Mother's Distraction). Ensure the one labeled "Audiometer Aux In" has PC selected as the source. ~ Connect a pair of headphones to the Audiometer Aux In switcher. If you can hear the PC, the issue is downstream in the audiometer or transducers. If you cannot hear the PC, the issue is in the switcher or your device.	blocked URL blocked URL
	Is the Foobar2000 player time moving? ~ You should see the time indicator progressing and movement from the VU meters in Foobar.	blocked URL
	Is the Foobar2000 player Volume turned up? ~ Ensure that the volume slider at the top of the Foobar2000 interface is set to maximum.	blocked URL

	Is the MOTU soundcard playing audio? ~ Look at the front panel of the MOTU 828 soundcard and confirm output meters 1 / 2 show signal present.	 
	Is there any audio output from the PC? ~ Try opening a web browser and playing a video from youtube. If no sound is heard from any program, reboot the PC. If audio is heard from some programs but not others, contact Moody Technology Services at CMA 3.104.	
	Are the transducers connected to correct jacks & working? ~ Test other transducers and/or replacement transducer.	
	Is there power to the Switcher? ~ The Audiometer Aux In switcher has a small blue LED to the right of the headphone volume knob. Ensure that this is lit indicating that the switcher has power.	blocked URL
Sound from PC too low	Is the Foobar2000 player Volume turned up? ~ Ensure that the volume slider at the top of the Foobar2000 interface is set to maximum.	blocked URL

	Is Window's volume slider in the system tray turned up? ~ Left-click on the speaker in the bottom right of the desktop (near the clock) and ensure that the volume slider is set to maximum.	blocked URL

reviewed 10/9/17 - Cox