

# QUICK GUIDE

## AUDERA PRO - ASSR

The operating manual contains information pertinent to the use of the GSI Audera Pro™, including safety information, as well as maintenance and cleaning recommendations. Read the manual in its entirety prior to use of the Audera Pro on a patient.

### TESTING ENVIRONMENT

It is important that the test environment be conducive to collecting good quality test data free from excessive noise. The GSI Audera Pro should be used in a suitable acoustically quiet testing environment such as a sound booth or quiet room. To minimize the amount of electrical noise, it is recommended that the Audera Pro be plugged directly into a dedicated, earth-grounded electrical outlet. Any unnecessary equipment such as computer monitors, cellphones, fluorescent lights, electronic beds, etc. should be turned off during testing. To minimize muscle artifact and to encourage relaxation or sleep, a comfortable recliner or non-metal, comfortable bed should be used.

### PREPARE THE SOFTWARE

1. From the opening window, click on the search patient icon to select an existing patient or select the new patient icon to create a new patient file. Enter First Name and Last Name (required). Click OK.
2. Select the ASSR icon to launch the program.
3. Select Test Stimuli.
  - a. Tones: Select the desired tone stimuli on the Stimulus Information Panel by checking/unchecking individual frequencies. A minimum of 1 frequency per ear is required. Select Activate Stimuli Selection.
  - b. CE-Chirp Octave Bands: Go to Protocol > Load settings to select the CE-Chirp test protocols that include desired frequencies. Select Open.
4. Wait a few seconds until the desired test frequencies appear under the Stimulus Information, Left Ear, and Right Ear columns before starting the test.

SEARCH  
PATIENT



NEW  
PATIENT

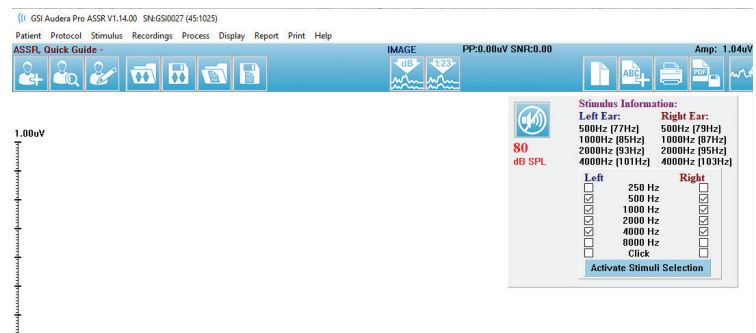


ASSR  
ICON



**NOTE:** All test stimuli are presented in dB SPL. The SPL to HL corrections include the RETSPLs and the threshold estimate. Threshold standard deviations can vary from 7 to 10 dB depending on test frequency. For insert earphones the corrections in dB are:

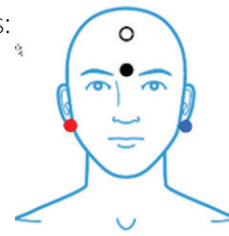
- 500 Hz: -26
- 1000 Hz: -11
- 2000 Hz: -13
- 4000 Hz: -19



## PREPARE THE PATIENT

1. Explain the procedure to the patient or family member.
2. Prepare the patient for data collection by scrubbing the skin at four locations: right and left mastoids or ear lobes, high forehead, and low forehead.
3. Using the 4-snap lead patient cable, attached 4 snap electrodes and place on the patient as shown in Figure A.
4. Check the electrode impedance by selecting the impedance icon from the side toolbar. Impedance readings will appear below the EEG window. Impedance below 5 kOhms is ideal. See Figure B.
5. Place the patient in a comfortable position and place the transducers on the patient's head. Ensure the transducer cables are separated from the patient cable and electrode leads.

FIGURE A



IMPEDANCE ICON

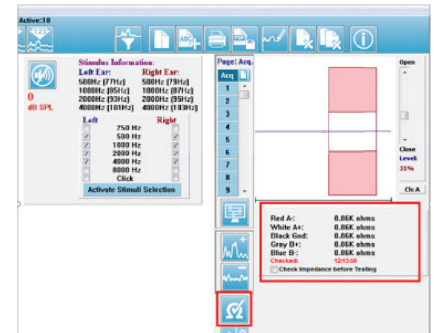


## PERFORMING THE ASSR

1. During collection, monitor the incoming EEG ensuring it falls within the acceptable range (white) and review the running Sweep accepted and rejected counts in the upper left side of the collection screen. See Figure C.

**NOTE:** ASSR responses are collected in blocks of 20 sweeps. Test data will not appear until the first 20 sweeps are collected and then will update in 20 sweep increments.

FIGURE B

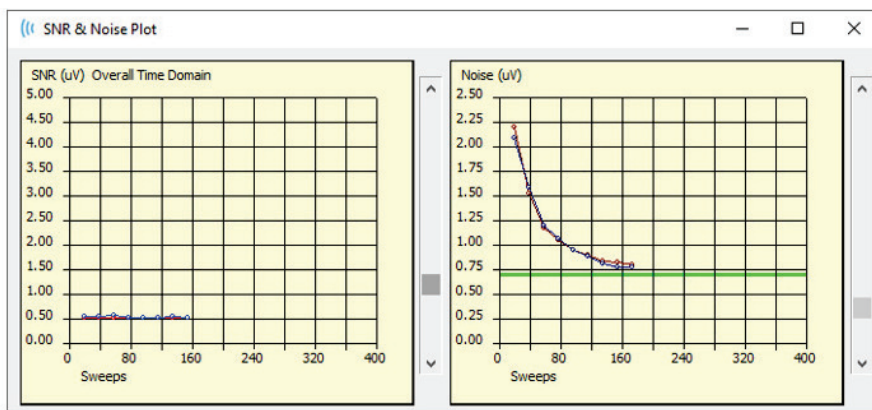


2. As blocks of sweeps are acquired observe the SNR and Noise graphs. The Residual Noise should decrease as the number of sweeps increases.
3. A response is indicated in the Stimulus Information panel when the test frequency turns green.
4. Monitor responses at each frequency. To save the results and move on to the next lower intensity level select Pause and Save data. Decrease intensity in the collection tool bar and begin collection.
5. Continue collecting at lower intensity levels until responses are no longer obtained.

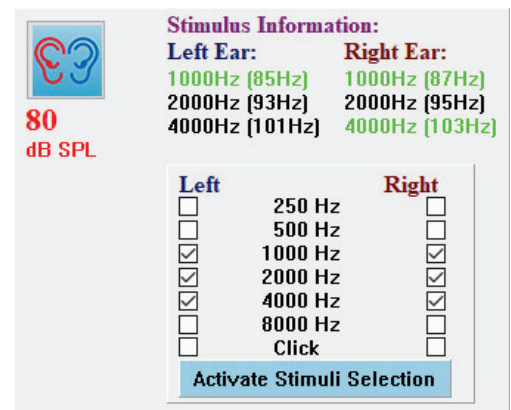
FIGURE C



## SNR AND NOISE GRAPHS



## ASSR STIMULUS PANEL



## ANALYZING THE RESULTS

1. During collection, select the Analyze Active icon to view the test results displayed in the spectral graph (FFT) and polar plot formats. See Figure D.
2. Select Harmonic Components.
3. Select Show Table to view the numerical details for each waveform such as SNR. Spectral graph (FFT) and polar plots will update when different intensity level/collection is selected.
4. A response is detected with 95% certainty when the SNR is 6.13 or higher and noise is below 0.05  $\mu\text{V}$ . The minimum response amplitude must be 0.0125  $\mu\text{V}$ .
5. Display the ASSR Response Audiogram by selecting the Audiogram icon from the side toolbar. See Figure E. Responses are indicated with red/blue circles. No responses are black circles.
6. Convert the SPL audiogram to HL by selecting General Table in the HL Correction section.

### ANALYZE ACTIVE ICON

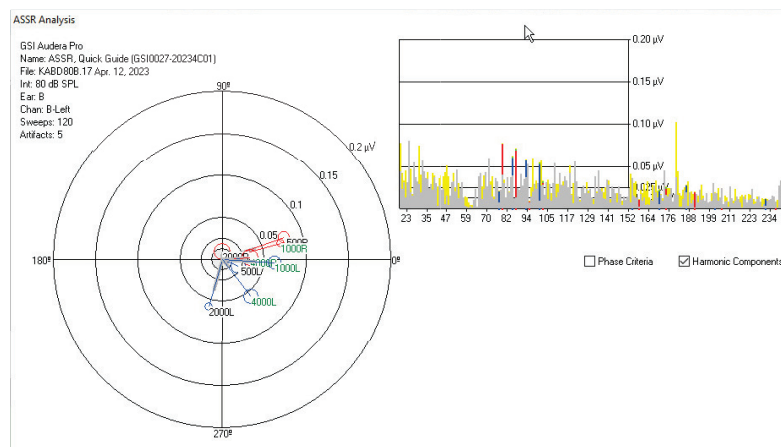


### AUDIOGRAM ICON



**NOTE:** Select Edit Values to view the SPL to HL corrections.

FIGURE D



## HELPFUL TIPS

- Testing 4 frequencies in both ears at 80 dB SPL is a good starting point when hearing status is unknown.
- Keep in mind the SPL to HL corrections when setting stimulus levels to ensure stimuli are above threshold. For example, for 500 Hz, 80 dB SPL when corrected is 54 dB HL.
- If other test results are available, select specific frequencies and starting levels based on already collected test data.
- After collection begins, select “Harmonic Components” in the ASSR Analysis window and save as part of the default test settings.
- Collect at least 80 sweeps at each intensity level. A true response should be detected for at least 40 sweeps.
- Assess the noise/EEG/artifacts after 40 sweeps-if high, stop and wait for the patient to relax or fall asleep and start again. Re-position the patient to maximize comfort.
- When testing multiple frequencies per ear, often a response is obtained for some but not all test frequencies. Stop the collection and remove the frequencies where no response is detected. Go back and test those frequencies later in the test session.
- Close to threshold, decrease the number of frequencies to one per ear.
- At high intensities, decrease the number of frequencies to one per ear for patient safety.
- True responses should be present at levels above threshold. Stop testing when no response is obtained at 10 or 20 dB below the last response.
- Responses usually appear between 80 and 240 sweeps. Therefore, if the noise level is low and a response is still not present after 240 sweeps then stop collecting that frequency.

