

Sound Scouts Hearing Service: Automatic Audiometer

What is the Sound Scouts Automatic Audiometer?

The Automatic Audiometer conducts a traditional pure-tone test where the Client/Player touches the screen when a tone (beep) is heard.

The **Standard** screening setting (set to a loudness level of 20dB HL) tests the four standard frequencies (pitches): 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz in both ears, separately. At the end of the test, a Report is generated. The Report is an audiogram or hearing graph, with right ear thresholds shown as red circles and left ear thresholds shown as blue crosses. Levels greater than 20dB HL are typically considered outside normal with the level of hearing loss indicated on the right-hand side of the graph (on device). A test of both ears, when set to a screening level of 20dB HL, takes approximately 4-5 minutes (age dependent).

The Sound Scouts Automatic Audiometer can be used as one or more of the four sessions allocated to each testing credit.

What equipment is required?

The Automatic Audiometer can only be used with specific headphones on an Apple touchscreen device. Results will not be valid if other headphones are used. The Audiometer is more sensitive to background noise than the Sound Scouts Triple Factor Hearing Screener (speech and tone based test), both should be used in a quiet environment.

Selected Headphones

- Sennheiser HD 400S
- Sennheiser HD 300
- Telephonics TDH39
- RadioEar DD65V2
- Apple AirPods Pro (A2698)

How does the Client/Player do the test?

You can choose from two modes:

- Multi-Circle Response: more engaging, tap any circle when a tone is heard
- Single-Circle Response: less cognitive demand, better suited for those with poor visual acuity, can tap the big red circle when a tone is heard

It's recommended to complete the trial before testing as it helps to establish response times and provide practice with the selected test mode.

It's important the person being tested understands:

- tap **ONLY** once each time the tone (consisting of multiple beeps) is heard
- to respond in a timely manner (but it is not a speed test)
- the sound will get quieter and quieter until it is hard to hear, this is normal, and you should still tap even if you only think you heard a beep.

Note: it's not uncommon to receive 25dB HL at 500 Hz due to the nature of screening in an environment where background noise levels may be higher than ideal. If this occurs, and all other frequencies are 20dB, you may wish to retest 500 Hz in a quieter environment.

How do I use the Automatic Audiometer?

- Check you are on a version of the app that is 14.0.0 or higher. This can be seen under Info > About

Tap on New Session > Start > I Agree > Create Player

- Enter the Player details
- Tap on Submit > Test this Player
- Select Automatic Audiometer
- Standardised Equipment - select the correct headphones
- Tone Selection - select Standard tab
 - Standard Setting tests both ears on four frequencies (500, 1000, 2000 & 4000 Hz) at 20dB HL
 - Testing takes approx 5 mins (depending on age) for both ears if four frequencies are selected
 - Tap Reset to Default to both ears at four frequencies OR
 - (You can choose to test one ear and/or select frequencies)
- Sound Check
 - The Supervisor should complete the Headphone Sound Check (designed to check the headphones are in good working order and left and right sides are identified).
 - Tap the Play button and select the word you hear in each ear.
 - When correctly selected, the Continue button will turn blue and allow you to go the next screen.
 - Ensure the headphones are transferred correctly onto the person being tested (e.g. mark the right ear with a sticker)
- Trial & Test mode selection
 - Select Start Trial (on the left-hand side) to try the different test modes
 - Complete each trial (or opt out by tapping the top right-hand corner 3 times)
 - Select button on right hand side for preferred test mode
 - Tap Begin Test

For clinicians requiring access to the full range of frequencies please contact the Sound Scouts office on 1300 424 122 or contacts@soundscouts.com.au.

How do I download the Automatic Audiometer results (the Audiogram)?

Prior to testing ensure your Organisation and staff must have an account on the Sound Scouts Integrated Management Platform (SSIMPL). Log in on the app using the SSIMPL User ID.

The Audiogram is accessed by

- logging into SSIMPL on your web browser by clicking on this link <https://ssimpl.soundscouts.com.au/>
- click on Audiometer Sessions
- click on the Client / Player's Name and then Download Audiogram as a PDF or email the report by entering an email address and click on Resend Email.

Understanding the Automatic Audiometer results - the Audiogram

Along the top of the graph the numbers refer to frequencies, or different pitches of sounds. Frequency is expressed in terms of the number of cycles per second, or Hertz. The higher the number, the higher the pitch of the sound. Just like a piano.

Most times we typically screen hearing in the range of 500 to 4000 Hz, as most sounds of speech occur in this frequency range.

Loudness or intensity of sounds is measured in units called decibels (noted on the vertical axis). Zero decibels (0 dB) does not mean 'no sound' – it is just extremely soft. Conversational voice level is around 65 decibels, and 120 decibels (120 dB) is very, very loud.

Thresholds for the right ear (i.e. the softest sounds the ear can hear at each frequency) are marked as an 'O' in red, and the left ear is an 'X' in blue on the audiogram. Use the key on the right-hand side to identify if the Player has a hearing loss and at what severity.

On the device report, each ear result will indicate if they are a PASS or REFER with a hearing number underneath.

When receiving a REFER result, this means that a potential hearing loss is indicated in the audiogram and it is recommended to see a healthcare professional for further assessment.

The Hearing Number is a simple metric that gives you a snapshot of your hearing at the time of testing. Visit hearingnumber.org for more info.

NB: When screening at 20 dB, the quietest sound that can be heard will be at 20 dB, therefore a flat line is shown. This means that the person could hear the softest sounds presented to them. 20 dB is considered to be the cut off for normal hearing.

If a hearing loss is indicated on the audiogram, follow up is recommended with a healthcare professional who can provide further assessment and advice.

NB If the result is not in line with other indicators, we recommend re-testing or seeking further advice from a healthcare professional.

Sound Scouts can be contacted for a review of results on 1300 424 122 or contact@soundscouts.com.au

Screening of children in a school or clinic setting

The Automatic Audiometer is appropriate for testing children in the below scenarios:

- can't verbally identify 5 spondee words for Speech in Quiet (the balloons and boats test)
- can't complete the Triple Factor Hearing Screener due to behaviour/attention issues
- EALD and their English is still developing
- received an invalid tone result (helicopter activity) in the Triple Factor Hearing Screener