
Audhere User Manual

Rev B

1.4.3

Edare

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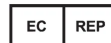
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PREFACE

1.1 Manufacturer Information



Edare LLC
48 Lafayette St.
Lebanon, NH, 03766 USA
DUNS: 006702621
<https://www.wahtshearing.com>
info@wahtshearing.com



OMC Medical
Unit - 763 Moat House Business Centre
54 Bloomfield Avenue
Belfast, Northern Ireland, BT5 5AD

Registration Number: NI685047

1.2 Device Identification

Trade Name: WAHTS AC



WAHTS AC: 00860005068302
Audhere Software: 00860005068319

Device Classifications

- FDA Class II
- EU MDR Class IIa
- IEC 60645-1:2017 and ANSI/ASA S3.6-2018 Type 4 Diagnostic Audiometer intended for diagnosis of human hearing loss

Accessories

- Calibration Check Fixture
- Mobile Tablet (with battery charger and charging cable)
- Headset Battery Charger
- Headset Charging Cable
- Sound Level Meter

1.3 Symbols

	Manufacturer		Date of Manufacture
	Authorized Representative in the European Community		Caution: Consult the instructions for use for important cautionary information such as warnings and precautions
	Unique Device Identifier		Batch Code
	CE Mark with Notified Body Reference		Medical Device
	Catalog Number		Serial Number
	Temperature range to which medical device can be safely exposed		Humidity range to which the medical device can be safely exposed
	Atmospheric pressure range acceptable for transport and storage		Keep Dry; Device needs to be protected from moisture
	Consult instructions for use		WEEE Symbol; Signifies waste from electrical and electronic equipment
	Type BF Part		Protected against ingress of solid foreign objects $\geq 12.5mm$ in diameter
	Non-ionizing electromagnetic radiation		

SAFETY AND WARNINGS

Caution:

1. No operator-serviceable parts inside unit.
2. Refer Servicing to qualified personnel.
3. Use only data and power cables offered by Edare LLC for this system.

Warning:

1. Use only the Edare LLC specified wall adapter for this product.
2. Recharge this device only as recommended by Edare LLC in the accompanying instructions.
3. Do not use this device in an oxygen rich environment or flammable anesthetic atmosphere containing a mixture of oxygen or nitrous oxide.

Warning:

Changes or modifications not expressly approved by the party responsible for compliance to Part 15 of the FCC Rules could void the user's authority to operate the equipment. Contains FCC ID: T9J-RN52

Caution:

WAHTS and tablets both contain lithium ion batteries. Most shipping regulations require knowing the battery capacity and how the batteries will be packed. It is advised to only ship the WAHTS and tablet in the provided plastic case. The WAHTS uses a 3.5 Wh battery and the Samsung Tab A7 lite uses a 19 Wh battery. For other tablets, refer to the manufacturer's specifications.

Important: NOTICE TO USER: Any serious incident resulting in death or permanent injury that has occurred in relation to the device should be reported to the manufacturer (Edare) and the medical device regulating authority in which the affected user and/or patient is established.

INTRODUCTION

This manual explains how to use the wireless audiometric hearing test system (WAHTS) headset with the Audhere mobile software application to perform audiometric and hearing protector fit tests.

3.1 Intended Use

The WAHTS is intended to measure air-conduction hearing threshold levels to assist in diagnosing and monitoring of hearing disorders.

Non-medical applications include in-ear occupational hearing protector fit testing.

The WAHTS is used as part of a total test battery to diagnose hearing loss by audiologists, ENTs, hearing healthcare professionals, or other trained technicians in a hospital, clinic, healthcare facility or other suitable quiet environment.

Indications.

The WAHTS automated hearing tests may be performed on individuals 5 years old or older with sufficient cognitive ability and motor control to respond to a noise stimulus by pressing a button on a touchscreen device (e.g., tablet). When the WAHTS is used in manual mode, the suitability of a patient is at the discretion of the operator.

Contraindications.

Individuals who have difficulty following directions for the hearing tests or are inconsistent in their response to stimuli may be unable to test with the automated algorithms.

3.2 What's a WAHTS?

The wireless audiometric hearing test system, or WAHTS, is an OSHA- and ANSI-compliant wireless audiometric headset that pairs via Bluetooth to a mobile App. The WAHTS headset provides sound isolation on par with single-walled soundbooths. Each WAHTS has a built-in audiometer that emits calibrated stimuli (e.g., pure- and warble-tones, narrow-band noise, speech, etc.).

The WAHTS extends the reach of quality audiometric testing outside soundbooths and eliminates the wires and cables that are often points of failure.

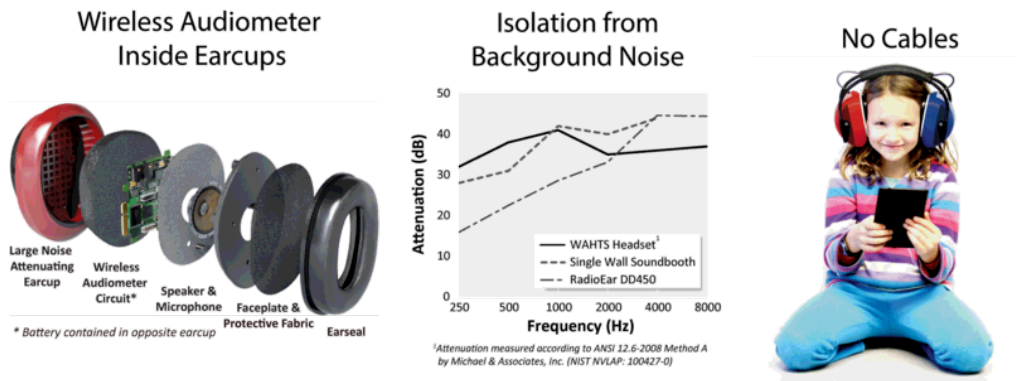


Figure 3.1: *WAHTS Key Features*. The WAHTS built-in audiometer ensures acoustic stimuli meet requirements regardless of the mobile device used to control the headset (left). The sound isolation enables testing in more locations (middle). The system is highly portable and cable-free (right).

3.3 What is Audhere?

Audhere is an app designed specifically for using the WAHTS for occupational hearing conservation. Audhere supports both hearing testing and earplug fit testing. It is designed to be used individually or for an administrator to monitor up to seven individuals as they simultaneously take an automated, self paced hearing test.



Figure 3.2: *Audhere app*. Test administrator can connect wirelessly to the test taker tablets for live progress monitoring. Maximize efficiency by testing up to seven individuals simultaneously.

GETTING STARTED

This section walks through the initial steps of opening the Audhere app, first setup, connecting with a additional tablets and connecting to the WAHTS. More in depth review of workflow and testing procedure occur in the *Suggested Workflow* chapter.

4.1 WAHTS Headset Startup

Unpacking the Headset



*Quick Start Instructions included underneath the calibration certificate

The WAHTS package contains the following:

- One Wireless Audiometric Hearing Test System (WAHTS) headset
- One WAHTS calibration check fixture
- One micro USB cable with wall charger
- One sturdy travel case to carry the above items

Optional:

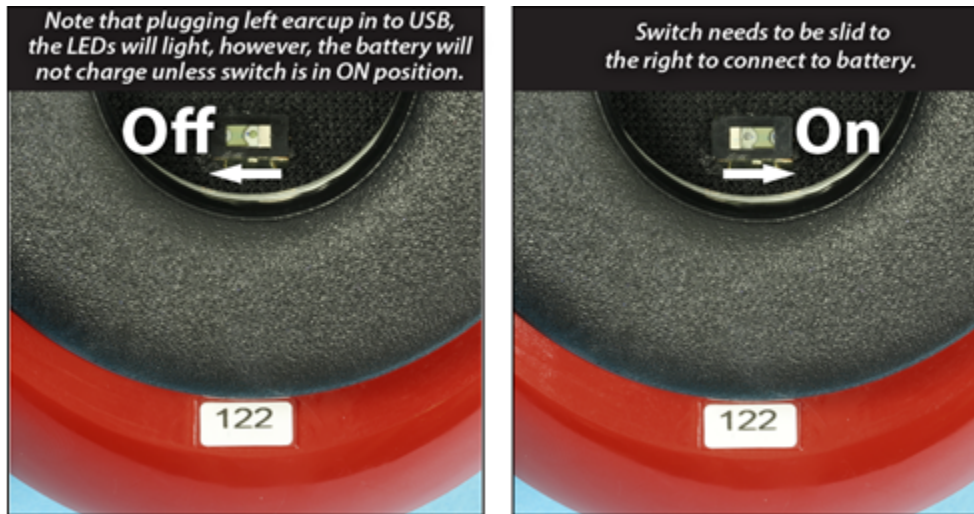
- One or more Samsung Tab A7 lite tablets
- USB C charging cable with wall charger

Basic Operation

The WAHTS has an internal rechargeable lithium-polymer battery. Prior to use, the shipping switch needs to be turned *on* and the plugged into USB to charge.

Shipping Switch

- Each WAHTS has a shipping switch in the right/red ear cup.
- Slide the switch to the *right* to turn it *on*. Sliding to the *left* disconnects the battery.



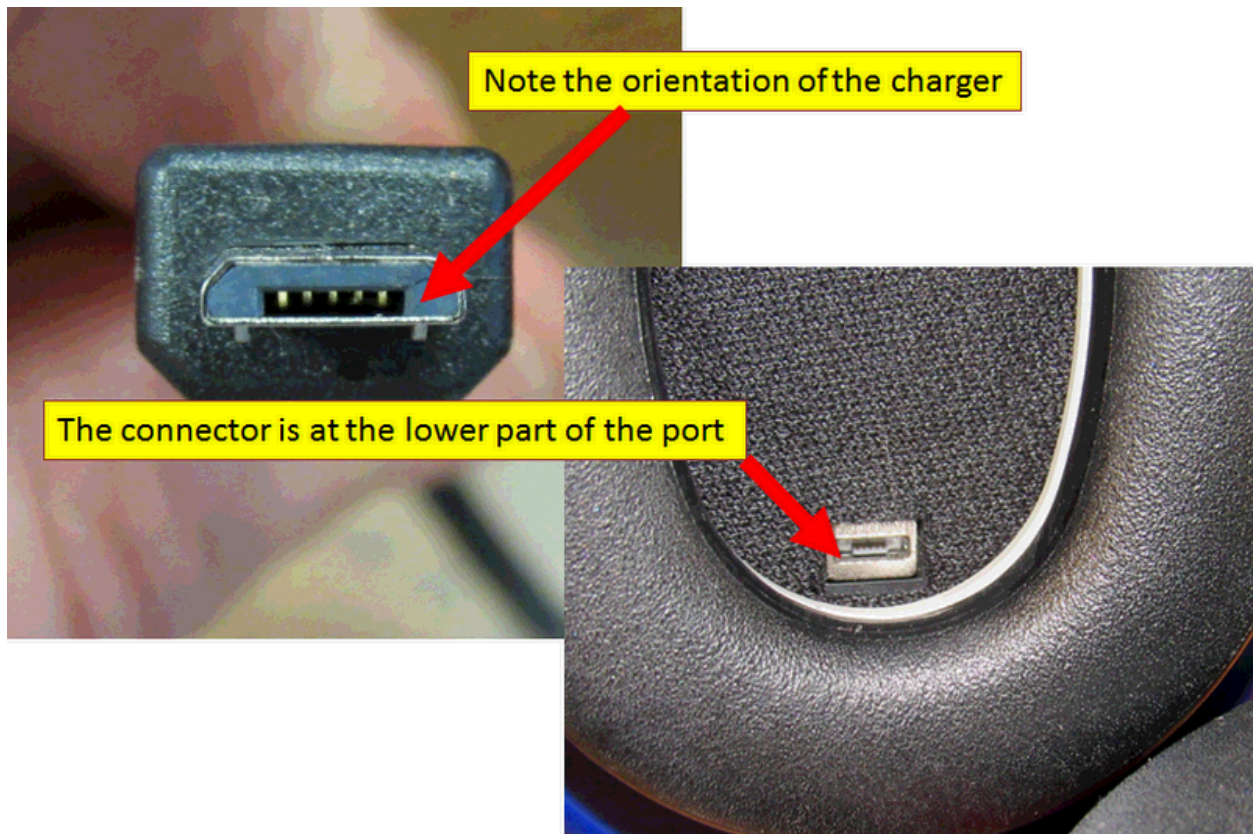
- Once the WAHTS is turned *on*, the shipping switch may remain in the *on* position. The WAHTS will automatically go to sleep. The WAHTS only needs to be turned *off* prior to shipping.

Charging the WAHTS

- Plug the micro USB charger into the port in the left/blue ear cup and connect to the wall charger. The shipping switch must be in the *on* position for the WAHTS to charge.



- The micro USB chargers have an orientation. It is important to take care when plugging in the USB charger to avoid damaging the WAHTS' charging port.



- The amount of time required to charge depends on the current battery level, but charging for two to three hours should be plenty to fully charge the WAHTS. Once charged, battery levels can be checked from the app.

Sleep and Wake

The WAHTS will enter a low-power idle state automatically after 60 minutes of inactivity; Bluetooth communication with the WAHTS does not work in the idle state.

To wake WAHTS from idle:

- Tap the blue ear cup robustly - this will activate the “shake-to-wake” feature.
 - This can be done by rotating the two ear cups so the pads face upwards, then tapping the bottoms of the cups together (shown below).



Looking closely through the black cloth inside the blue (left) ear cup, flashing blue lights should be visible after the headset has booted up and is ready for operation.



Once the WAHTS is charged and the Bluetooth activated, it is ready to be paired with a tablet.

4.2 Audhere

There are three Audhere apps: (1) All-in-One, (2) Admin, and (3) TestTaker¹. These three Audhere apps allow the system to be setup in two different configurations:

1. <i>Admin Setup</i>	Designed for having one tablet with the Admin app installed that can connect and monitor one (or more) TestTaker systems. Each TestTaker system includes a single tablet with the TestTaker app paired with a single WAHTS headset. In this configuration, the person administering the test uses the Admin app to setup, monitor, and review results for the one (or more) people taking the test.
2. <i>Audhere All-in-One Setup</i>	Designed for using a single tablet paired with a single WAHTS headset. The tablet is passed back and forth between the person administering the test and the person taking the test. This is typically the setup when testing one person at a time.

¹ If you need to install Audhere, it is available via the Google PlayStore. Follow the [install instructions in the FAQ](#).

Follow the appropriate section based on your desired configuration.

4.3 Audhere App Setup

4.3.1 Audhere Setup (all apps)

1. If this is your first time launching the app, you will be guided to setup your clinic by a series of required steps.
2. You will be asked to:
 - Allow location services, select *While using the app*
 - Accept license agreement, select *Next* then *I agree*
 - When prompted, create examiner login and set a PIN
 - Allow Audhere Admin to access all media, files, and documents on your tablet

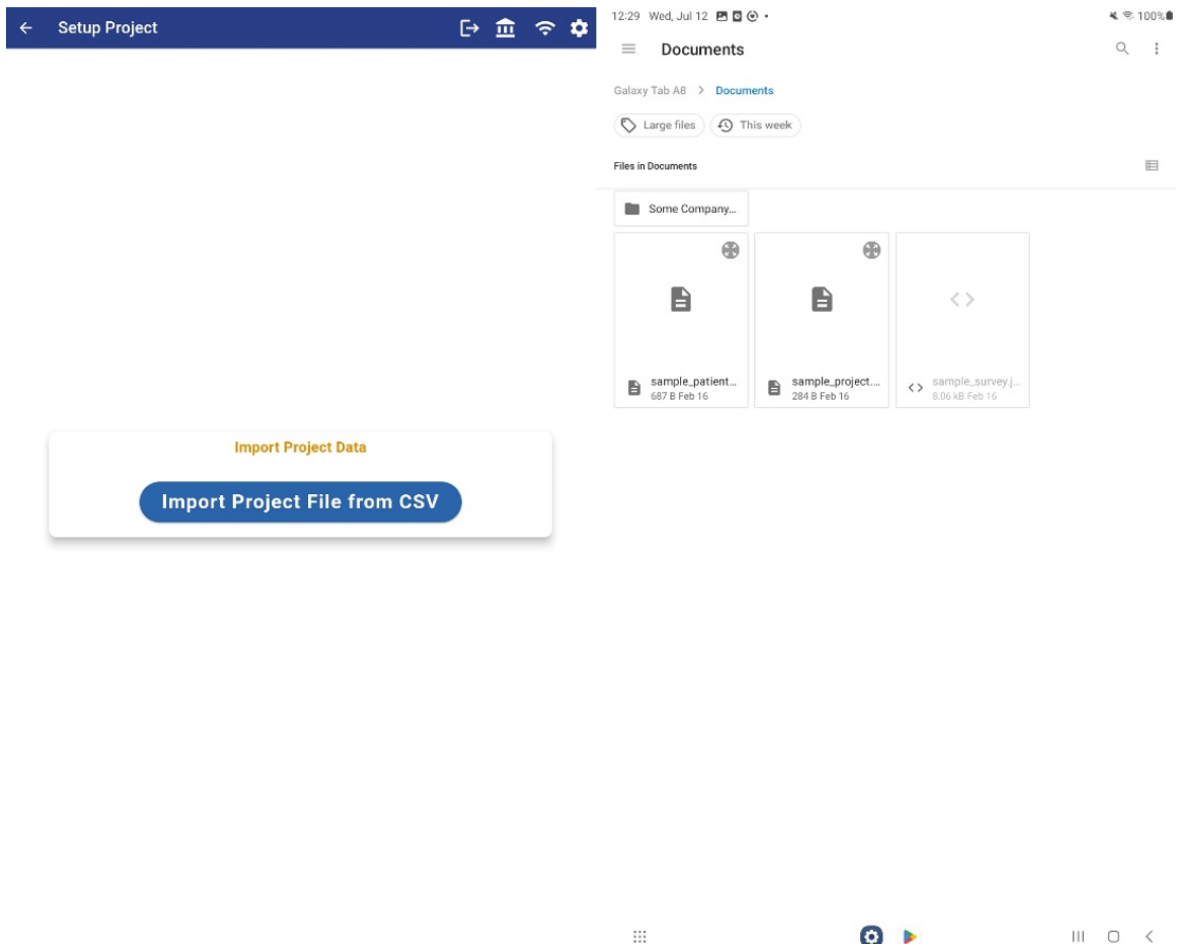
Important: When going through application setup, accept all permissions. The application will not work correctly if permissions are not accepted.

4.3.2 Admin Setup

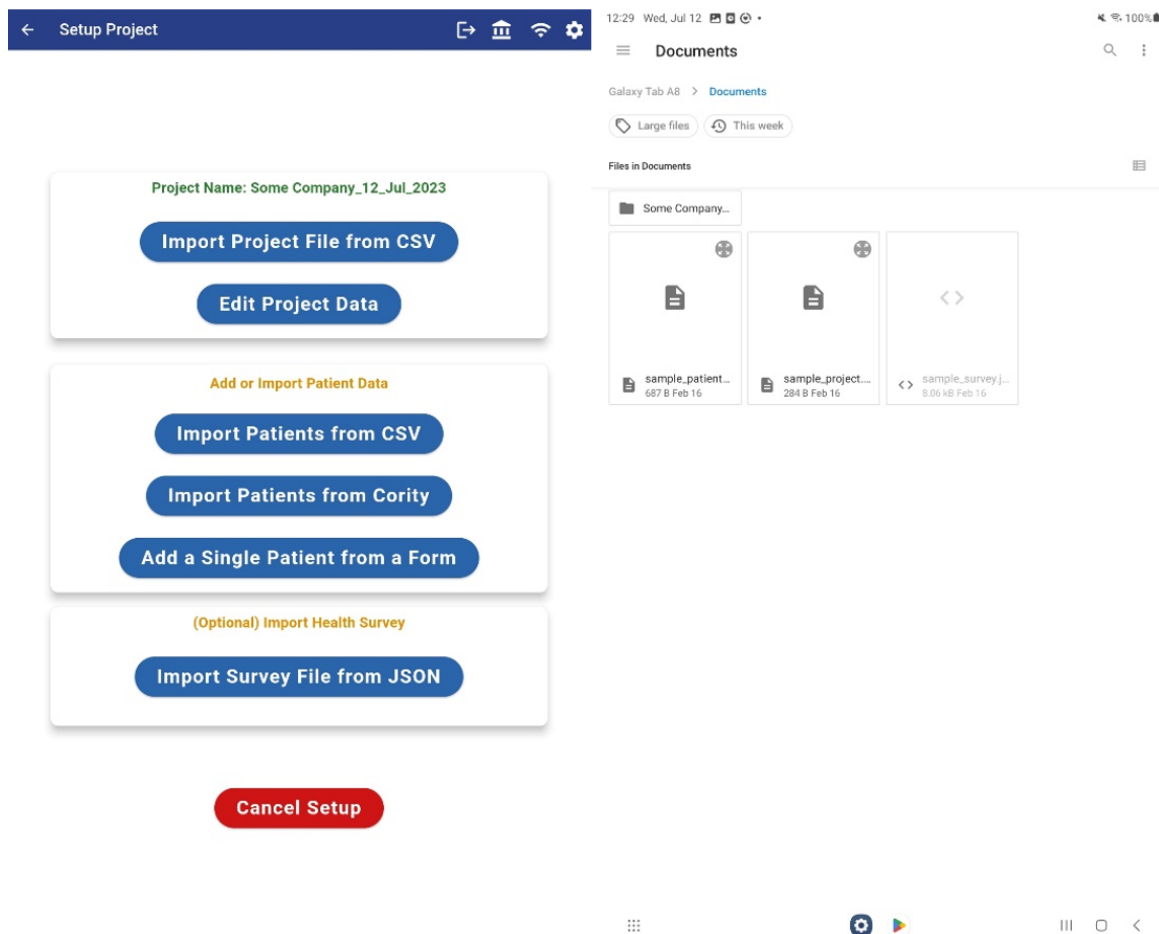
Locate your Admin tablet which is used for initiating and monitoring group testing. This is often the larger tablet and is included in your order if you purchased four or more units.

Proceed through the following startup steps:

1. Turn on your tablet and enter the default pin of **0000** to unlock.
2. Launch the Audhere Admin app.
3. When going through application setup, accept all permissions. The application will not work correctly if permissions are not accepted.
4. Create Examiner Login - Create a username and password. Usernames and passwords can be any sequence of letters, numbers, symbols, and spaces with no character limit. Please remember your password as it cannot be recovered. Uninstalling and reinstalling the app will erase username data and allow a new one to be created.
5. Create a *Network Name* for Test Taker tablets to connect to. For example, enter *LAN* (this name will also need to be entered on your Test Taker tablets).
6. Setup New Project → Import Project File from CSV → select the *sample_project.csv* to get started. If the file is not viewable on your tablet, navigate to *My Files*, then select *Downloads* folder.



7. (optional) After importing the CSV, select *Edit Project Data* to review the Project settings.
8. Import Patient Data → Import Patients from CSV → select the *sample_patients.csv* to get started. If the file is not viewable on your tablet, navigate to *My Files*, then select *Downloads* folder.



9. (optional) After import patients, select *Review Patient Data* to review and edit the imported data.

- To edit data, select the pencil icon next to the patient's name
- Baseline thresholds may be updated manually or by scanning a QR code²

² QR Scanning is currently only compatible with QR codes generated from the DD2216 forms used by the U.S. Department of Defense.



10. Scroll the view upward to reveal the *Cancel Setup* and *Done* buttons → select *Done*.

11. Launch a *new session* by selecting *Setup Session*.

4.3.3 TestTaker Setup

1. Turn on your tablet and enter the default pin of 0000 to unlock.
2. Launch the Audhere TestTaker app.
3. When going through application setup, accept all permissions. The application will not work correctly if permissions are not accepted.
4. Configure settings: select the gear icon from the top menu bar. Enter the default access code of 7114.
5. Enter Network name: enter *LAN* or whatever you have named the network for your Admin tablet. Press Restart to initiate connection with Admin tablet.
6. Pair the TestTaker app with a WAHTS headset.
 - Pair the TestTaker app with a WAHTS headset by selecting the gear icon from the upper right. Enter the default access code of 7114.
 - Make sure the headset is “awake” with blue flashing lights, then select ‘Search for headset’. Once the desired headset populates on the tablet (confirm by cross-referencing the serial number on the outside of the red earcup), select it to pair with the tablet.
 - The TestTaker tablet will automatically be re-named by the last 3-digits of the headset serial number (also seen on the bottom of the blue earcup).
 - Once paired with a WAHTS headset, the headset icon will be white and you can proceed back to the home page by selecting *Done* at the bottom of the page.

4.3.4 Audhere All-in-One Setup

Audhere All-In-One is designed for using a single tablet paired with a single WAHTS headset. The tablet is passed back and forth between the person administering the test and the person taking the test. This is typically the setup when testing one person at a time.

1. Turn on your tablet and enter the default pin of 0000 to unlock.
2. Launch the Audhere All-In-One app.
3. If this is the first time launching the app, follow the instructions in *Audhere Setup (all apps)*.
4. Create Examiner Login - Create a username and password. Usernames and passwords can be any sequence of letters, numbers, symbols, and spaces with no character limit. Please remember your password as it cannot be recovered. Uninstalling and reinstalling the app will erase username data and allow a new one to be created.
5. Setup New Project → Import Project File from CSV → select the sample_project.csv to get started. If the file is not viewable on your tablet, navigate to *My Files*, then select *Downloads* folder.
6. Import Patient Data → Import Patients from CSV → select the sample_patients.csv to get started. If the file is not viewable on your tablet, navigate to *My Files*, then select *Downloads* folder.
7. Scroll the view upward to reveal the Cancel Setup and *Done* buttons → select *Done*.
8. Pair the app with a WAHTS headset by selecting the gear icon from the upper right. Enter the default access code of 7114.
9. Wake up the headset, then select *Search for headset*. Once the desired headset populates on the tablet (confirm by cross-referencing the 3-digit number on the bottom of the blue ear cup), select it to pair with the tablet.
10. Once paired with a WAHTS headset, the headset icon will be white and you can proceed back to the home page by selecting *Done* at the bottom of the page.
11. Launch a *new session* by selecting *Setup Session*.

4.4 New session

This page begins an session with one or more Test Takers. The session will not begin until all the setups are complete. Problems with setup will appear on this page.

4.4.1 Setup Session

Activate Tablet: If not already connected, connect tablet. Select *Activate this tablet*. A grey check box will appear. To deactivate the tablet, uncheck the box.

Assign patient: Select from the drop down the patient that will be assigned this headset and tablet. Or press the plus icon (+) to manually add a new patient.

Check Headset: Select check headset to complete a physical examination of the WAHTS. The physical parts to check will appear on the TestTaker tablet. Select *Done* on the TestTaker tablet when complete. For multi-station clinics, select *Check Headsets* from the top of the menu to launch the headset check for all stations.

Calibration Check

Check Calibration: Place WAHTS on the calibration slide fixture as shown in [Figure 4.1](#). To run the calibration check on multiple stations simultaneously, select *Check Calibrations* from the top of the menu. To test an individual station, select *Check Calibration* for the desired WAHTS station.

Important: During the calibration check, the WAHTS should be placed on a steady surface with no disruption during the check. Although not normally necessary, if there are concerns about the vibration or ambient noise levels, the WAHTS on its calibration slide fixture maybe be placed in it's protective carrying case.

When complete, the calibration results will appear on the TestTaker tablet and then on the Admin tablet. Green bars show the deviation magnitude from baseline (dB). A pass is indicated if the deviation from magnitude is less than 10 dB at each frequency. Select the left arrow at the top of the menu to return to setup session.



Figure 4.1: *WAHTS on Calibration Check Fixture*. To place the WAHTS in the calibration fixture, hold the WAHTS above the fixture with the ear cushions almost touching. Gently slide the WAHTS vertically down into the fixutre.

Background Noise Check

Note: The background noise form is an optional step configured under Manage Project.

Using a separate calibrated sound level meter, measure the background levels in octave bands. These background levels will need to be entered in dB SPL for 250, 500, 1000, 2000, 4000, and 8000 Hz. The OSHA & ANSI Maximum Permissible Ambient Noise Levels (MPANLs) are listed for the WAHTS headset³. When measured sound levels exceed the MPANLs for WAHTS, the measured value will turn red indicating the noise in the environment is not in compliance with the OSHA & ANSI standard. The Svantek SV 973 sound level meter with octave band filtering integrates with Audhere software and can be set to auto-populate measured noise levels.

Once Setup session is complete, move on to evaluations. At this point the patient should be in the location of testing and ready to start the first exam.

³ Refer to [How do I know if a test location is quiet enough?](#) for more information regarding background noise levels.

4.4.2 Evaluations

After setup is complete, advance to *Perform Evaluations* to initiate an evaluation. The listener will be prompted to confirm their identity by selecting the green check mark below *Yes, this is me*. This page also enables the listener to change their language for test instructions. Test Taker language can be one of the following: English, Spanish, or French.

After the listener or Admin confirms the Test Taker's identity, the Admin will select the type of evaluation to be administered. Audhere supports four types of evaluations: Survey, Automated Hearing Test, Hearing Protector Fit Test, and Manual Audiometry. The first three are available when testing one or more people. Manual audiometry is always available in the All-In-One app, and is currently only available in the Admin and TestTaker configuration when there is only one Test Taker enabled.

Health Survey

1. Select *Health Survey* from the evaluation drop-down list.
2. Select *Begin Evaluation* to launch the health survey.
3. Have the Test Taker answer each question.
4. Select *Next* to move on to the next question.

The hearing health survey defaults to a quick, five question survey. It covers questions recommended by NIOSH and OSHA. It is possible to customize this survey by importing your own questions in a JSON file.

1. How many hours have you been away from noise prior to this test?
 - Less than 14 hours (excluding use of hearing protectors)
 - Less than 14 hours (including use of hearing protectors)
 - More than 14 hours
2. Do you have any ear, nose, or throat problems today that affect your hearing?
 - YES
 - NO
3. During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tones, etc.?
 - Not bothered at all
 - Bothered a little
 - Bothered a lot
4. What occupational noise exposure have you been exposed to within the last year? (select all that apply, or press next to continue)
 - Air traffic
 - Transportation (railway, motorcycle, vehicle)
 - Construction/Heavy machinery
 - Agriculture equipment
 - Power tools
 - Firearms
 - Other (type in)

If you have not been exposed to any noise as part of your occupation, press next to continue.

5. What (if any) of the following recreational activities did you participate in last year? (select all that apply, or press next to continue)

- Race spectator (race car/speedway)
- Motorcycle/ATV/Snowmobile riding
- Live music (band, concerts)
- Tractor/heavy equipment/power tools
- Firearms (hunting/shooting)
- Recreational aviation
- Other (type in)

If you have not participated in any noise recreational activities this past year, press next to continue.

Hearing Test

The *Hearing Test* evaluation uses an automated algorithm following a Hughson-Westlake procedure for finding thresholds. In automatic mode, individuals progress independently through a self-paced hearing test while monitored by an administrator. Frequencies required for testing can be changed by editing the project csv file. The sample project CSV file includes frequencies from 500 to 8000 Hz including 3000 and 6000 Hz. The software defaults to testing the right ear first. If the software cannot reliably converge on a threshold due to inconsistencies in the patient's responses, DNC or Did Not Converge, will be recorded instead of a threshold.

1. Select *Hearing Test* from the evaluation drop-down list.
2. Select *Begin Evaluation* to launch the hearing test.
3. The Test Taker first complete a *Button Training* exercise to get familiar with the listening task.
 - A large blue rectangle will appear.
 - They should be instruction to tap the large blue rectangle as soon as they hear the tones.
 - The exam will automatically advance to the next frequency.
4. After completing the first ear, it will automatically proceed to the opposite ear.
5. When complete, an audiogram will be presented.
6. The Test Taker will be prompted to sign the results page, then select *Save*.

Hearing Protector Fit Test

Audhere includes a *Hearing Protection Fit Test* evaluation. Fit testing can be performed on any in-ear hearing protectors (foam, flange, custom etc.). WAHTS headset measures unoccluded and occluded hearing thresholds at 500, 1000, and 2000 Hz, using a binaural $\frac{1}{3}$ rd-octave band noise. Results show the attenuation at 500, 1000 and 2000 Hz and an overall Personal Attenuation Rating (PAR).

1. Select *Standard earplug fit test* from the evaluations drop-down menu.
2. Select the type of in-ear hearing protector (foam, flange, custom).
3. Select *Begin Evaluation* to launch the fit test.
4. Test Taker will be prompted to complete a familiarization task.
5. Test Taker will press the large blue rectangle every time a tone is heard.

6. After the training is complete, the Test Taker will select *Next* to continue.
7. Test Taker will be prompted to obtain unoccluded hearing thresholds by testing with earplugs **out** first.
8. After unoccluded thresholds are obtained, Test Taker will be prompted to take the headset off and wait for earplug fitting instructions.
9. Earplug fitting instructions are to be provided by the test administrator.
10. Test Taker will insert earplugs and press *Start* to begin obtaining occluded hearing thresholds with earplugs **in**.
11. When the test is complete, results will be presented.
12. The test taker will be prompted to sign the results page, then select *Save*.

Important: If the Test Taker's PAR is too low, it is possible to repeat just the occluded measurement. This can save time as their unoccluded measurement does not need to be repeated. After working with the Test Taker, for example, re-instructing on proper insertion technique, providing a different set of earplugs, etc., measure their occluded thresholds with their earplugs reinserted by selecting *Fit Test (Occluded only)*⁴ from the evaluations drop-down menu. Each time the *Fit Test (Occluded only)* is run, it will generate a new PAR result.

Manual Audiometry

In Manual mode, a test administrator controls the stimuli presented to the Test Taker. The administrator may wish to switch to manual mode if the Test Taker is confused or is not responding appropriately (resulting in DNC threshold), or if the patient requires masking. When using Audhere All-In-One, the administrator will hold the tablet and will observe the patient for a response (raising hand etc.). When using Audhere Admin and TestTaker configuration, the administrator will monitor the response window on the administrator tablet for the patient response.

1. Select *Manual Audiometry* from the evaluations drop-down menu.
2. Select *Begin Evaluation* to launch the assessment.
3. Use the Right/Left button to select the appropriate test ear.
4. Use the Frequency toggle to select the appropriate test frequency.
5. Adjust the presentation level in dB HL by pressing (+5) and (-10) on the left dial (Tone dial).
6. Adjust masking noise to the non-test ear by using the right dial (Masking dial).
7. Press the play button to deliver the stimulus to the test ear (or masking to the non-test ear).
8. Monitor the patient response
 - When using Audhere All-In-One configuration: monitor the patient response by watching a hand raise or verbal response from the patient and ignore the response/false positive windows on the tablet. The response window and false positive window is not available as an option without a Test Taker tablet.
 - When using Admin/TestTaker configuration: monitor the response window on the Admin tablet for the patient response. Grey dots will indicate the stimulus being presented to the Test Taker. Green dot indicates a positive Test Taker response. The faster a Test Taker responds, the earlier the response will show-up in the response window (closer to the left side of the response bar). A slow Test Taker response will appear as a green dot closer to the right side of the response bar. A delayed response will appear as a false positive during the following presentation cycle.
9. Record a threshold by selecting *Record Threshold*.
10. When done with manual audiometry, select *Done*.

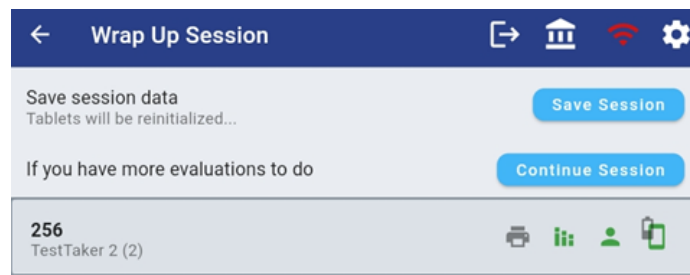
⁴ Note that the *Fit Test (Occluded only)* evaluation will not be present in the drop-down menu until a *Standard earplug fit test* has been completed.

4.4.3 Wrap Up Session

1. At the end of an evaluation, perform another evaluation by selecting another from the drop-down menu, or, choose *Wrap Up Session* to review and export results.

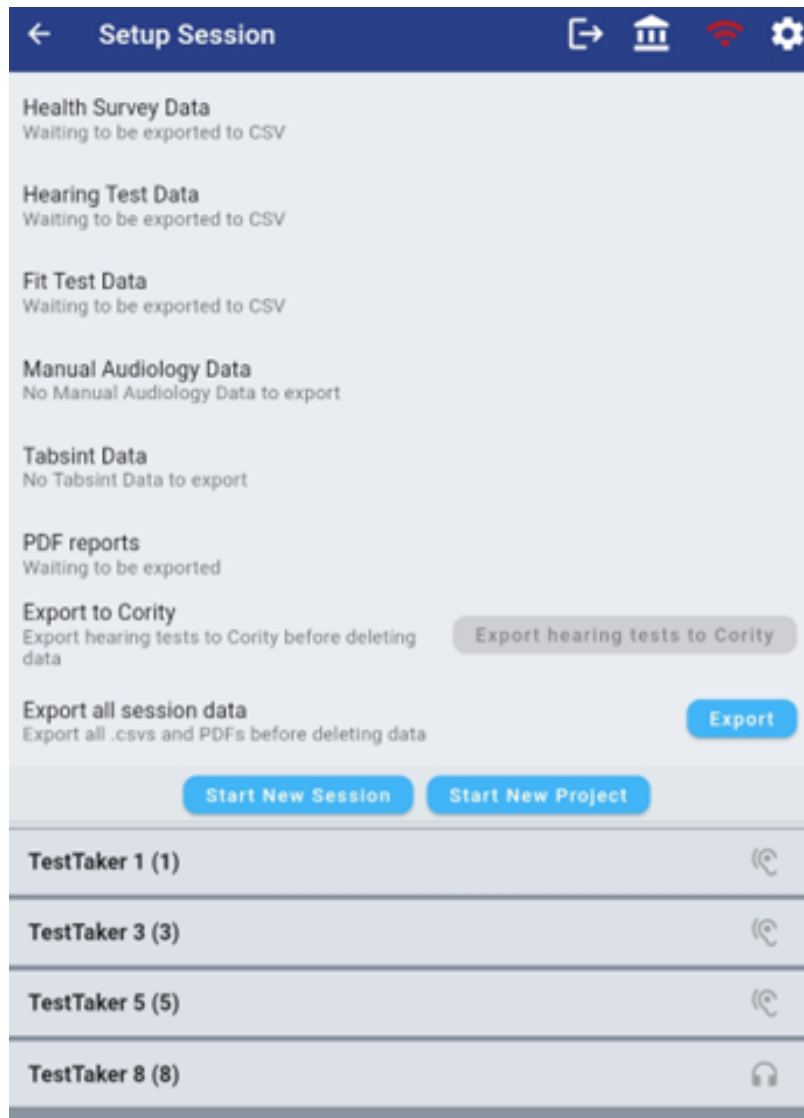


2. When you navigate to *Wrap Up Session*, you will be given the option to *Save Session* which will enable you to export your results and re-assign a new Test Taker, or you can select *Continue Session* which will allow you to continue testing with the same Test Taker.

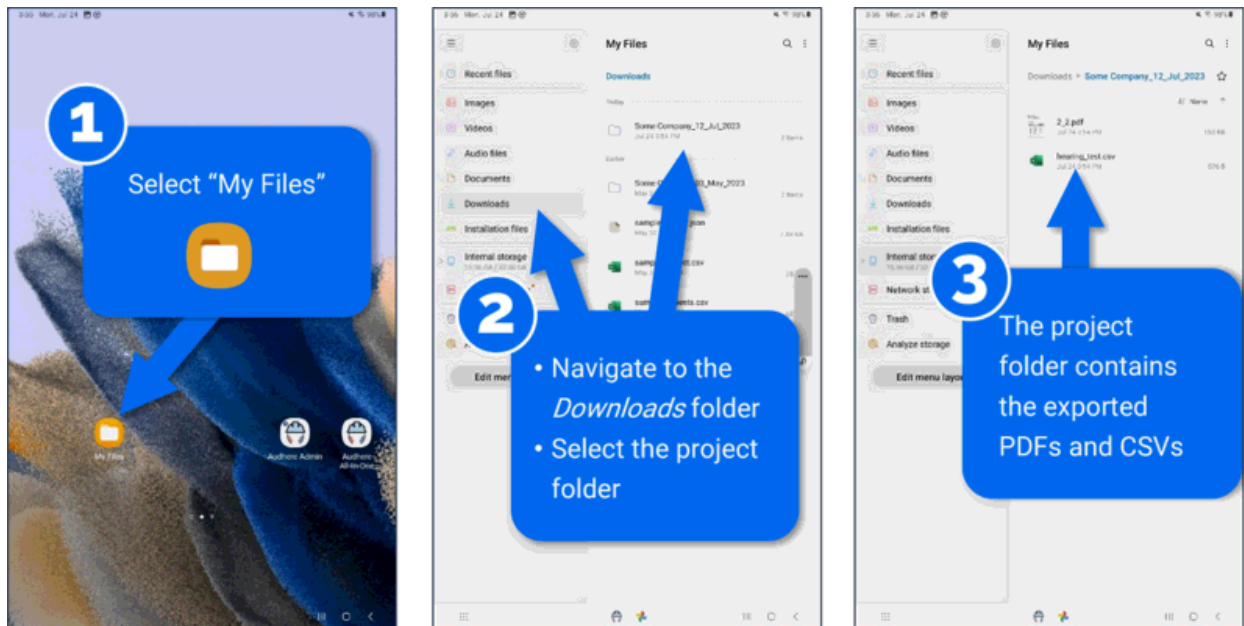


3. After proceeding to *Save Session* you have the ability to review results and add administrative notes. You can add a note by selecting one of the Test Takers in the queue. After selecting an individual, you will have the option to review their results and enter in any notes. In the example below, there are results for four individuals in the queue. After all notes have been entered, results can be exported by pressing *Export*.

Note: Exporting creates one PDF for each Test Taker. Each Test Taker's PDF report includes all the evaluations that they completed during the session. This PDF is a useful record for each individual. In addition to the individualized PDF reports, there will be one CSV file for each evaluation type (e.g., health survey, hearing test, fit test). Each CSV file aggregates results for the entire group tested during the session. The CSV files provide a convenient way to bulk import results into other electronic record systems.



4. After session data has been exported, the *Export* button will change to *Erase*. You can then erase the session data and start a new project. Alternatively, you can continue testing individuals using the same project file by selecting *Start New Session*. Selecting *Start New Session* will enable you to assign a new Test Taker to the tablet, but you will not be clearing out your queue of previously tested individuals.
5. Individual PDF reports and group CSV reports can be found by navigating to the downloads folder of the tablet, where results are stored by project name and date.



4.5 Advanced Steps

4.5.1 Customizing the Project File

Audhere provides the ability to customize certain settings (e.g., company name, frequencies tested, etc.) via a CSV project file. Audhere comes with a default *sample_project.csv* file. By creating your own CSV file, it is possible to customize these settings and then share your CSV file to all your Audhere tablets to ensure your settings are applied consistently.

Editing Project File

1. Save attached file *sample_project.csv* to your desktop computer
2. Right click and open the file with excel
3. Edit fields as appropriate for your site, for example:

Company Name: Washington Refinery
City: Washington
State: DC
Required Background Noise: FALSE
Freq 500: TRUE
...

4. When *True* or *False* is listed, *True* indicates a required field in testing and *False* means the criteria will not be used. In the example above, background noise is marked as *False* and will not be a required entry point, but 500 Hz will be a required test frequency during the hearing test
5. Save the project file as the project name (excel will save as .csv by default)

Move Project File to Admin (or All-In-One) Tablet

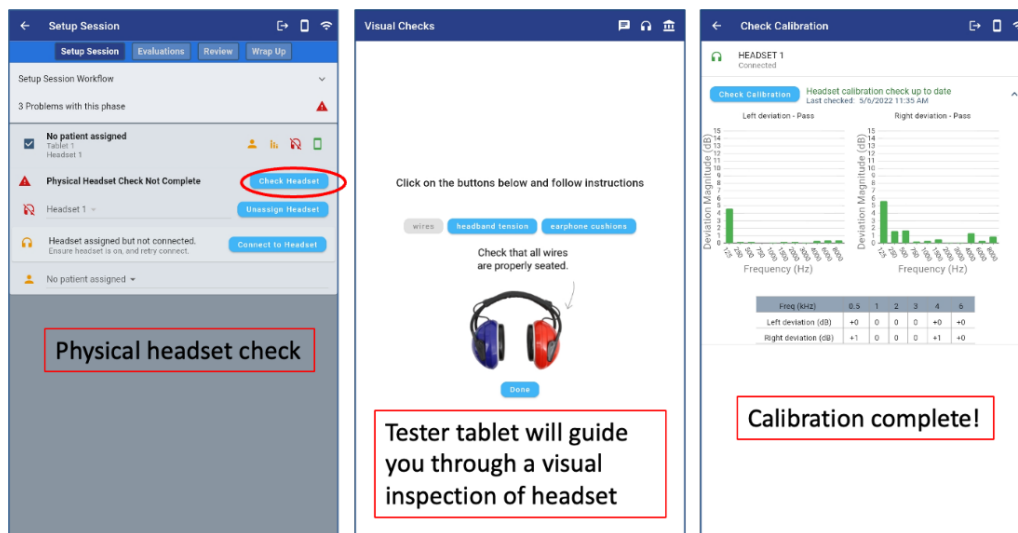
1. Connect tablet by USB to computer
2. Allow permissions on your tablet (allow connected device to be able to access data on the tablet)
3. Find where your tablet is located on your computer (open Android File Transfer for mac computers)
4. Move the new project file from your desktop computer to the *Documents folder* on the table

Load new project File

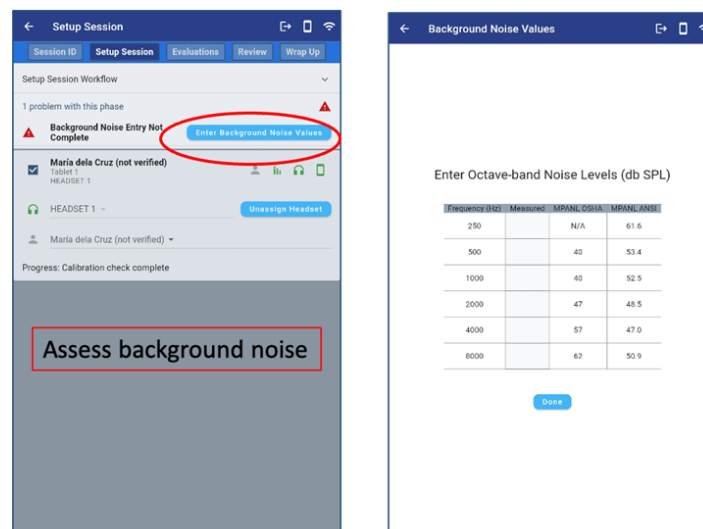
1. Launch Audhere application on the tablet
2. Navigate to *Manage Project* then *Erase All Project Data, Delete*
3. *Setup New Project*
4. *Import Project File from CSV*
5. Select your new project file
6. Review Project Data. After importing the CSV the contents of the file can be reviewed by selecting *Review Project Data*.

SUGGESTED WORKFLOW

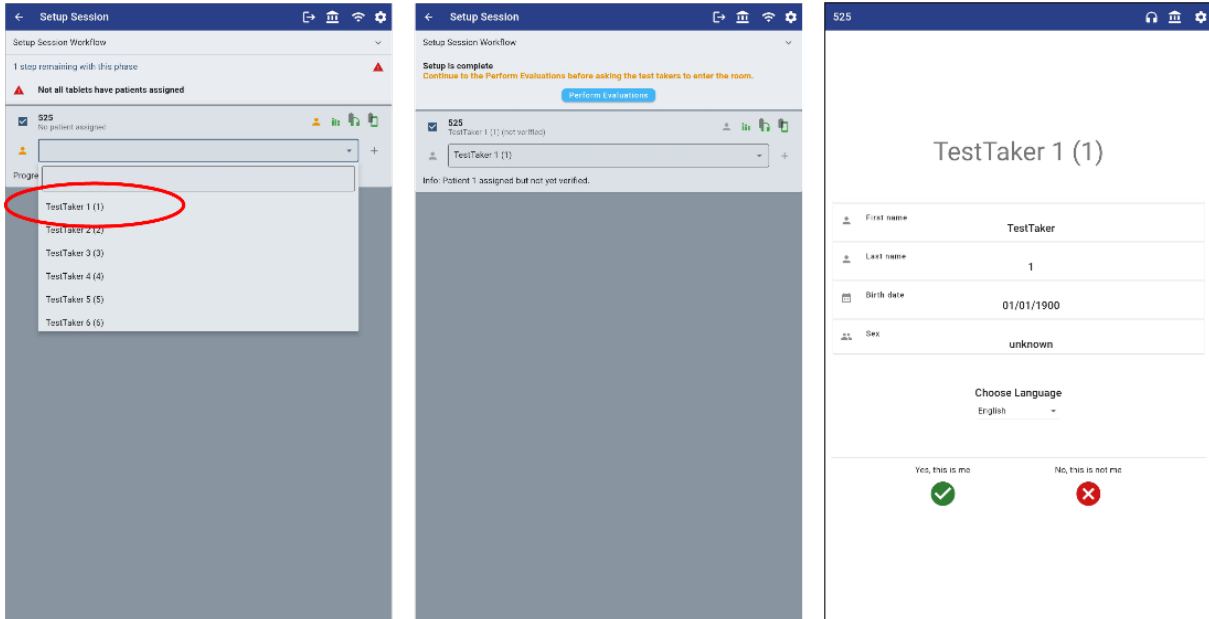
1. Perform physical headset check (middle) and calibration check (right).



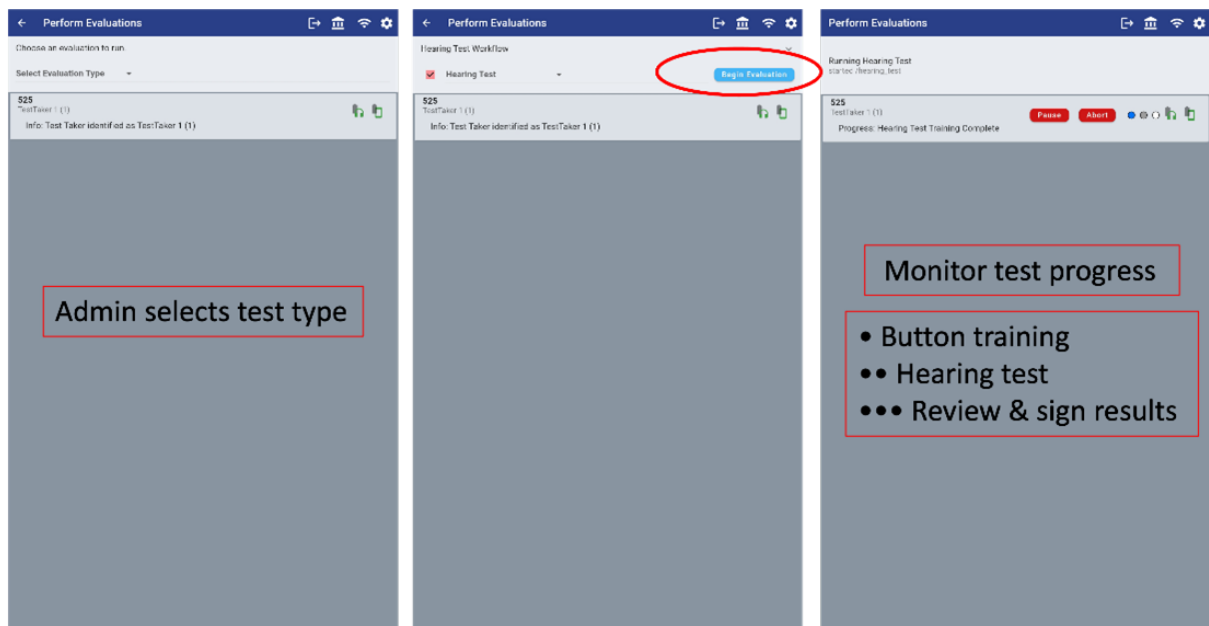
2. Run background noise check (Optional). Octave band noise levels are automatically compared against maximum permissible ambient noise levels (MPANLs) and any MPANL that has been exceeded will turn *red*.



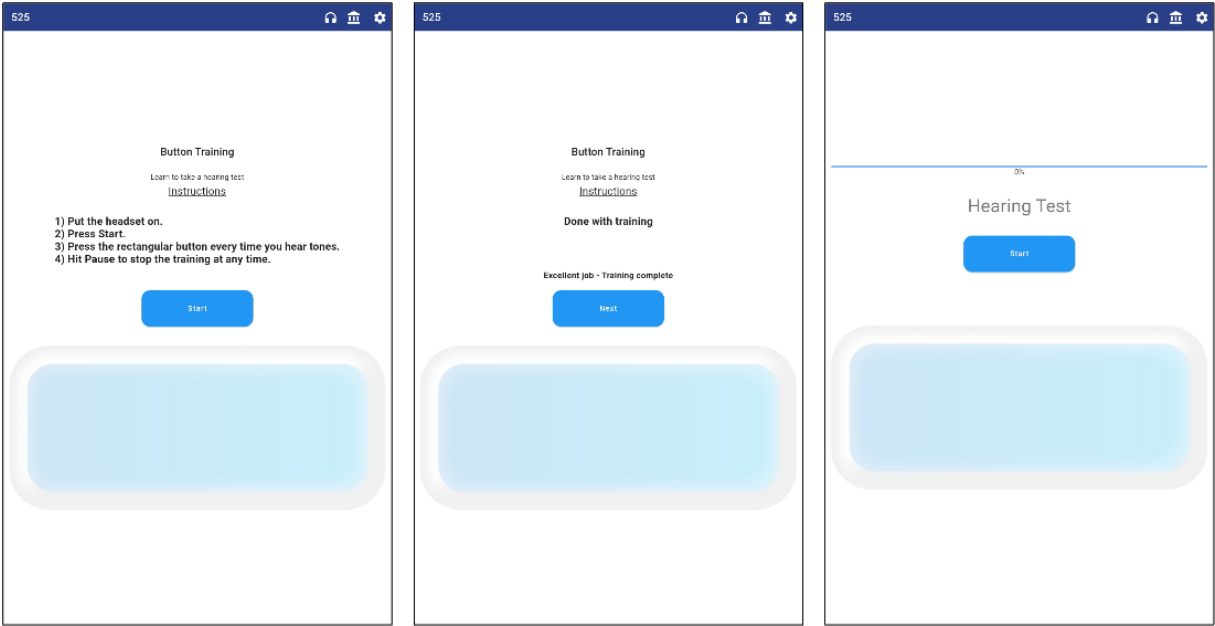
3. Select participant to run from list (left). Participant will need to confirm their information (right).



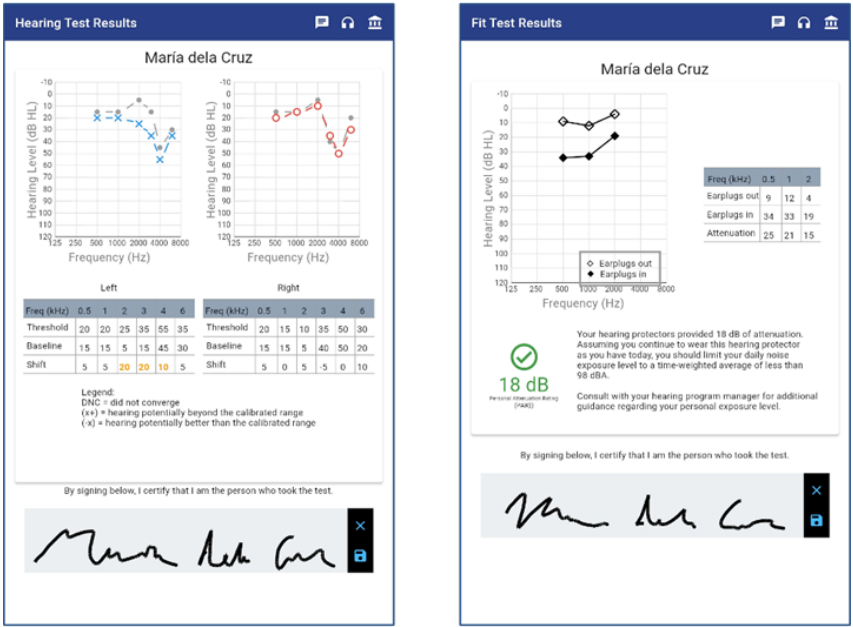
4. Select evaluation (left), press *Begin Evaluation* center to start the assessment (middle), and monitor the progress from the Admin tablet (right).



5. Test Taker app presents instructions for *Button Training* (left). After complete, the Test Taker selects *Start* to begin their hearing test (middle). During the test they respond using the large blue rectangular button (right).

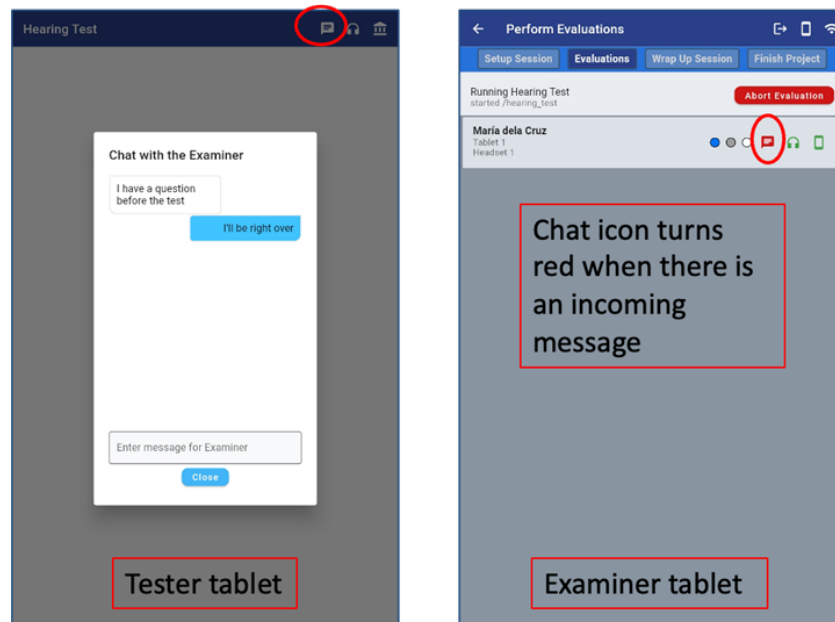


6. When complete, view the audiometric results (left) and hearing protector fit test results (right).



5.1 Chat

When using the *Admin Setup* setup where the administrator has their own Admin tablet to monitor testing, the chat feature may be used to communicate between the Admin and TestTaker. This has the advantage it will be quiet and be unlikely to disturb any of the other people taking tests. The chat icon will highlight in red when a new chat message has been received.



TROUBLESHOOTING

6.1 Headset not connected to tablet

1. Check that the headset is on, charged and that there is a blue light.
2. Long press on headset icon and wait a few seconds.
3. Enter the Audhere settings screen, if a connection is not shown, initiate one.
 - If a headset shows as paired with Audhere, but will not connect, try cycling the headset shipping switch off and then on again (see *Basic Operation*).
4. If no headset show available, open the tablet settings and ensure that Bluetooth, WiFi and location services are enabled.

6.2 Blue light does not appear when the headset is powered on

1. Ensure the headset is charged. When plugged in, the blue light should turn on immediately and you should be able to connect the headset to the app.
2. If this does not happen, *contact us*.

6.3 Tests are taking longer than expected/some results are noted as “DNC”

1. It is likely that the user is not responding at a consistent level. Inconsistent responses will make threshold determination take longer. If the responses are too erratic, the user will be prompted to test again at that frequency. Failing to determine a threshold twice at a specific frequency will result in a “DNC” result (did not converge), as the software cannot determine an accurate threshold.
2. Users should be retrained on how to respond to the tones. They should respond as soon as they hear a tone and should not wait until the tones have finished playing.
3. Manual audiometry can be used if retraining is not effective.

FREQUENTLY ASKED QUESTIONS

7.1 How do I install Audhere apps?

Note: If you have a previous version of Audhere installed, we advise uninstalling the current app. After installing the new version, long press the icon and select (i) to bring up *App Info*. Scroll to *Storage* and select *Clear data* to ensure all data and settings have been cleared before launching the new version..

1. Connect your tablet to wifi.
2. Downlad the Audhere application.
 - Navigate to Google’s PlayStore  Google Play
 - Log-in with a Google account
 - Search “Audhere” 
 - Select “Audhere All-In-One” for single person testing
 - Select “Audhere Admin” for control of multi-person testing
Install this application on your admin tablet
 - Select “Audhere Test Taker” for multi-person testing
Install this application on your test taker tablets
3. Add the app to the tablet’s home screen to make it easier to find (optional)
 - Navigate to the tablet’s home screen
 - Swipe up from the bottom of the tablet
 - Long press on the Audhere icon and select “Add to Home”

7.2 How do I know if a test location is quiet enough?

The first thing to do is understand what regulations and laws apply to the testing you are conducting. Please note that this answer should be considered a starting point and is insufficient to cover all potential cases.

7.2.1 OSHA

Important: As described in the letter of interpretation from OSHA, dated 2022 October 11th, OSHA will allow use of ANSI MPANLS in lieu of the MPANLS defined in the occupational noise standard (29 CFR 1910.95). This means that the values listed in the **ANSI** section may be used when evaluating ambient noise levels.

In the case of annual hearing testing for OSHA's Occupational Noise Exposure (29 CFR 1910.95), the maximum permissible ambient noise levels (MPANLS) are defined in Appendix D, Table D-1. They are repeated below for reference. These values were based on the American National Standards Institute's S3.1-1960 Maximum Permissible Ambient Noise Levels.

Table 7.1: Maximum Allowable Octave-band Sound Pressure Levels for Audiometric Test Rooms¹

Frequency [Hz] ²	500	1000	2000	4000	8000
OSHA MPANLS [dB SPL] ³	40	40	47	57	62

7.2.2 ANSI

ANSI has revised the S3.1 standard as research has improved the understanding of how ambient noise impacts hearing tests (revisions in 1977, 1991, and 1999, with the most recent reaffirmation in 2018). The ANSI S3.1 standard is considered the “gold-standard” for clinical audiometry. Additionally, the National Institute for Occupational Safety & Health (NIOSH) has recommended using ANSI S3.1 for calculation of permissible ambient noise levels (NIOSH Publication Number 98-126).

The ANSI S3.1-1999 (R2018) method takes into account the attenuation provided by the transducers when calculating MPANLS. The table below documents the calculation for the WAHTS headset. It begins with the *ears not covered* noise levels from ANSI S3.1-1999. The average attenuation provided by the transducers, measured according to S3.6-2008 Method A, is added to the *ears not covered*. The result is the *MPANLS* when *ears are covered* by wearing the WAHTS.

Table 7.2: WAHTS Octave-band MPANLS

Frequency [Hz]	500	1000	2000	4000	8000
Ears not covered [dB SPL] (ANSI S3.1-1999)	16	13	14	11	14
WAHTS average attenuation [dB] (ANSI S3.6-2008)	37.5	39.5	34.5	36.0	36.9
Ears covered MPANLS for WAHTS [dB SPL] (per ANSI S3.1-1999) ^{4, 5}	53.6	52.7	48.8	47.1	50.4

¹ OSHA 29 CFR 1910.95, Appendix D, Table D-1

² Octave-band center frequency

³ Per 29 CFR 1910.95, octave-band levels must be measured with equipment conforming at least to the Type 2 requirements of American National Standard Specification for Sound Level Meters, S1.4-1971 (R1976), and to the Class II requirements of American National Standard Specification for Octave, Half-Octave, and Third-Octave Band Filter Sets, S1.11-1971 (R1976).

MPANLS for supra-aural, insert and WAHTS earphones

The following table provides a comparison of the octave-band MPANLS recommended *in practice* according to Appendix A.3 of ANSI S3.1-1999 when testing from 500 to 8000 Hz.

Table 7.3: Ears Covered Octave-band MPANLS recommended in practice

Frequency (Hz)	125	250	500	1000	2000	4000	8000
Supra-aural Earphone [dB SPL] ⁶	43.1	29.1	15.1	20.7	28.6	31.1	30.0
Insert Earphone [dB SPL] ⁶	72.5	58.5	44.5	42.6	45.6	46.1	52.2
WAHTS [dB SPL] ⁶	78.7	64.7	50.7	49.4	45.7	44.1	47.8

7.2.3 Additional Considerations

In addition to the MPANLS, the following suggestions from⁷ may help with selecting a test location:

- Before setting up the testing station, do a walkthrough survey of the space, ideally, during the same time of day as the testing will occur;
- rooms that are carpeted and have sound absorbent tile ceilings can be helpful;
- try to place the testing station away from room or hall entrances and exits and any obvious noise source (speakers for public address system or music, registration areas, waiting areas, or vending machines);
- minimize foot traffic through the testing area;
- if possible, test in a room with a door that can be closed;
- close windows;
- monitor sounds of HVAC system (considerable cause of low frequency noise) and location of HVAC vent openings. The test station may have to be moved away from them.; and
- anticipate potential outdoor noise sources adjacent to the test site. There may be noisy activities (playground, school, parking lot, trains, roadway, or delivery traffic) that are not noisy now but will be when you are testing. Schedule testing around noisy periods (e.g., school recess/lunch or high traffic volume) or move the test station as far away from the windows as possible.

⁴ Addition involves logarithms and as such these are not exactly equal to addition of the columns. Refer to: MPANL calculator extended. xlsx originally downloaded from NHCA's website: <https://www.hearingconservation.org/assets/docs/MPANL%20calculator%20extended.xlsx>.

⁵ Note that average attenuation is used in the *ears covered MPANLS for WAHTS* calculations to allow comparison with Table 1 in ANSI S3.1-1999 (R2018).

⁶ As recommended in Appendix A.3 of the S3.1-1999 (R2018) standard, "In practice, the standard deviations shown in table A.2 would be subtracted from the MPANLS shown in tables 1 and 2. The net effect would be that the MPANLS would be lower (more stringent) for ears covered testing." The standard deviations for WAHTS from 500 to 8000 Hz are 2.9, 3.3, 3.1, 3.0, and 2.6 dB, respectively.

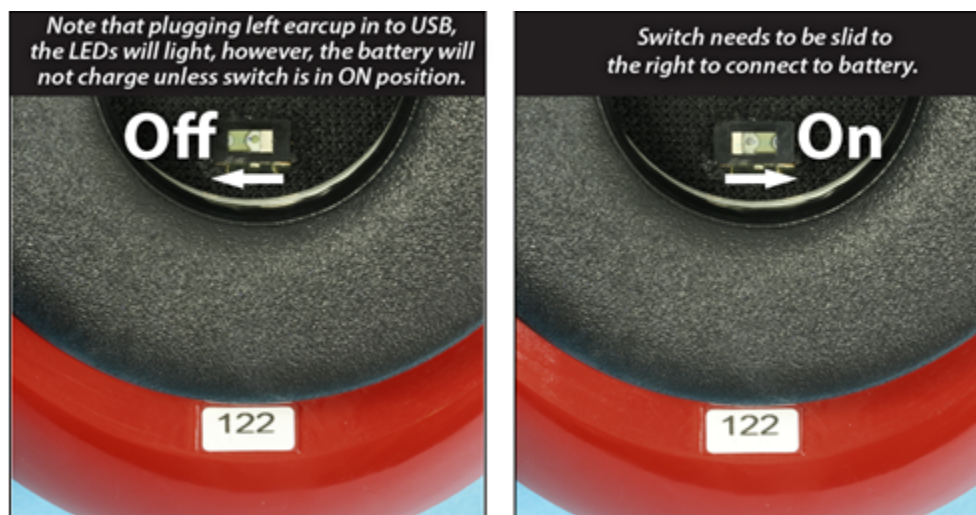
⁷ Meinke DK, Martin WH. "Boothless audiometry: Ambient noise considerations." J Acoust Soc Am. 2023 Jan;153(1):26. <https://doi.org/10.1121/10.0016362>.

7.3 Is it okay to wear glasses with the WAHTS?

The noise reduction may be lower when eyeglasses are worn between the sealing surface of the earmuff cushions and the sides of the wearer's head. If possible, attempt to position the wearer's glasses above the earmuff cushions. The patient can also be instructed to wear glasses while they read instructions and then remove their glasses when taking a hearing or fit test.

7.4 How do I make sure the WAHTS is charging?

Make sure that the shipping switch on the WAHTS is in the *On* position while charging, by sliding the switch in the red ear cup to the right.



The amount of time required to charge depends on the current battery level. Charging from a completely dead battery to fully charged requires five to six hours. Battery levels can be checked from the app.

7.5 How do I reboot the WAHTS?

The headset can be rebooted by power cycling. This means to simply turn the headset “Off” then back “On” using the *shipping switch* in the right ear cup.

7.6 The Bluetooth connection to the WAHTS is dropping. What should I do?

1. Make sure the headset is fully charged (see charging-the-wahts). Once connected, you can check battery levels within the app. Make sure the headset is not plugged into a wall outlet for an accurate review of the headset's battery levels.
2. *Power cycle* the headset, by using the shipping switch to turn it “Off” and then back “On”.

7.7 How should the WAHTS be cleaned?

The CDC considers audiometric equipment non-critical medical equipment and recommends cleaning and disinfecting. Between patients, the WAHTS and tablet may be wiped down with alcohol-based wipes or sprays containing at least 70% alcohol. Dry surfaces thoroughly to avoid pooling of liquids. As an alternative to alcohol-based products, EPA-registered hospital disinfectants containing quaternary ammonia compound or hydrogen peroxide may also be used. In all cases, check that the cleaning product is intended for rubber and plastic to avoid damaging WAHTS.

7.8 How do I retrieve tablet logs?

1. Connect the tablet to a computer via USB.
2. Navigate to `/Android/data/` folder on the tablet. In that folder, open the appropriate subfolder based on the app you're running:
 - admin app: open `com.wahtshearing.audhere.admin`
 - all-in-one app: open `com.wahtshearing.audhere.allinone`
 - testtaker app: open `com.wahtshearing.audhere.testtaker`
3. Inside that folder, open the `files` folder and the log is the text file `log.txt`.

7.9 What should I do if the daily calibration check fails?

If the daily calibration check continues to fail after removing/replacing the fixture and running the check with the WAHTS inside its hard plastic travel case (see additional tips in [Calibration Check](#)), please [contact us](#) for additional support.

7.10 What are the advised operating and storage conditions?

Refer to the [operating and storage conditions](#).

7.11 How do I dispose of the WAHTS?

When the time comes to discard the WAHTS headset, please [contact us](#) to discuss. Follow the local, state, national governing ordinances and recycling instructions regarding disposal or recycling of the device and device components, including batteries.

7.12 Who do I contact for additional help?

Please contact us at:

Edare LLC
48 Lafayette Street
Lebanon
New Hampshire
03766

www.wahtshearing.com⁸
info@wahtshearing.com
603-640-2865

⁸ <https://www.wahtshearing.com>

TECHNICAL DATA

8.1 Audiometer Specifications

This table presents the information required by the *ANSI/ASA S3.6-2018: Section 10.2* and *IEC 60645-1 : Section 15.2* audiometer standards.

<i>Audiometer Type</i>	Type 4 with masking
<i>Recommended environmental conditions</i>	Refer to the section on <i>operating conditions</i>
<i>Permissible power supply variations</i>	- The WAHTS headset should only be used for audiometry on battery power - The tablet may be plugged into a charger per the tablet manufacturer's recommendation
<i>Battery</i>	
<i>Type of battery</i>	Rechargeable lithium-ion (see <i>battery capacity</i> for nominal voltage and capacity)
<i>Means of checking the battery</i>	The battery level may be checked within the app
<i>Battery replacement</i>	Return to manufacturer (Please <i>contact us</i> for additional information)
<i>Expected battery life time</i>	Five years under typical use
<i>Minimizing effect of unwanted sound radiation</i>	Recommend patients hold the tablet or set it on a soft surface to minimize sounds radiated from tapping the screen
<i>Identification of the transducers and their reference equivalent threshold levels</i>	The WAHTS transducers are integrated into the headset. Refer to Clavier O, Norris J, Hinckley D, Martin W, Yuan J, Brungart D, Schurman J, Kulinski D, Larsen E, Mehraei G. Reference equivalent threshold sound pressure levels for the Wireless Automated Hearing Test System. <i>Journal of Acoustical Society of America</i> . 2022; 152(1):601-608. Please <i>contact us</i> to obtain a copy of that article.
<i>Narrow-band masking noise bandwidth</i>	$\frac{1}{3}^{rd}$ octave
<i>Warm-up time</i>	No warm-up time required
<i>Sensitivities and nominal impedances of inputs</i>	WAHTS does not support analog inputs

continues on next page

Table 8.1 – continued from previous page

<i>Mode of operation</i>	Automated uses a modified Hughson-Westlakde algorithm Manual provides control to the person administering the test
<i>Rate of change of sound pressure level (or frequency) for automatic-recording audiometers</i>	Not Applicable
<i>Frequency modulated signals</i>	Warble tone: option to set modulation rate from 4-20 Hz, option for triangle or sine modulation waveform, and modulation range 5.7% about nominal test frequency
<i>Sound attenuation characteristics of the earphones</i>	Refer to attenuation reported in FAQ section on maximum permissible ambient noise levels
<i>Maximum hearing level settings including limitations due to harmonic distortion</i>	500 Hz: 75 dB HL, 750-6000 Hz: 80 dB HL, 8000 Hz: 70 dB HL
<i>Effects of airborne sound radiated by the bone vibrator and means to obtain the correct test results</i>	Not Applicable
<i>Time window for subject's response for automated test procedures</i>	2.35 seconds from the onset of the stimulus
<i>Maintenance and calibration procedures and schedules</i>	WAHTS must be calibrated annually per ANSI S3.6-2018. Annual calibration includes inspecting the system to identify any items that require maintenance (e.g., replacing ear cushions, verifying headband force, etc.).
<i>EMC Warning</i>	Refer to section on electronmagetic compatibility

8.2 Hearing Protector Fit Testing Performance Statement

The WAHTS may be used for hearing protector fit testing.

8.2.1 Annex A: FAES Performance Statement

This table presents the information required by the *ANSI/ASA S12.71-2018 American National Standard Performance Criteria for Systems that Estimate the Attenuation of Passive Hearing Protectors for Individual Users* for fit test systems that report a personal attenuation rating (PAR).

	Specification	Value
A	Manufacturer	Edare
B	FAES brand name	WAHTS Fit Test
C	System requirements	All equipment included (tablet, WAHTS headset, app)
D	HPDs supported	All types of insert passive HPDs
E	FAES test method	REAT under headphones
F	FAES type	Psychophysical
G	Recommended regular physical calibration	Annual
H	Recommended periodic verification procedure	Daily on start up
I	Maximum permissible ambient noise	60 dBA or 73 dBC
J	Maximum and minimum measurable attenuation values	Able to measure PARs ranging from 0 to 38 dB
K	Fit-test output	Octave band attenuation and PAR
L	FAES measurement uncertainty	3 dB roll-down foam; 4 dB pre-molded flange
M	Listener requirements	Able to take a psychoacoustic hearing test

8.3 Operating and Storage Conditions

Warning:  Operating, transporting, or storing outside of the ranges stated in this table could negatively impact device performance and lifespan.

	Operating	Shipping/Storage
Minimum Temperature	0°C	-20°C
Maximum Temperature	35°C	45°C
Minimum Humidity	5%	30%
Maximum Humidity	95%	70%
Minimum Atmospheric Pressure	86 kPa	86 kPa
Maximum Atmospheric Pressure	106 kPa	106 KPa

8.4 Electromagnetic Compatibility/Immunity

Warning:

Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

Warning:

Use of accessories and cables other than those specified or provided by Edare of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation. Do not use unapproved components. Only use system components provided with the system or obtained from the company as supplies or replacements.

Warning:

Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the WAHTS system including cables specified by Edare. Otherwise, degradation of the performance of this equipment could result.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS (Per IEC 60601-1-2:2014)

WAHTS is intended for use in the electromagnetic environment specified below. The customer or user of the WAHTS should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guide
RF emissions CISPR 11	Group 1	The WAHTS uses RF energy for internal function and for BLE transmissions. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The WAHTS is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not Applicable	
Voltage fluctuations/ emission oscillations IEC 61000-3-3	Not Applicable	

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY (Per IEC 60601-1-2:2014)			
WAHTS is intended for use in the electromagnetic environment specified below. The customer or user of the WAHTS system should assure that it is used in such an environment.			
Immunity test	IEC 60601-1-2 Test level	Compliance Level	Electromagnetic environment - recommendations
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±2, +4, +8, +15 kV air	Not Applicable ±2, +4, +8, +15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30% applicable.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical public low- voltage power supply network that supplies build- ings used for domestic purposes, commercial or hospital, clinic environment.
Conducted RF IEC 61000-4-6	3V 0.15-80 MHz Outside ISM Bands 6V 0.15-80 MHz Inside ISM Bands	Not Applicable	Power frequency magnetic fields should be at levels characteristic of a typical public low- voltage power supply network that supplies build- ings used for domestic purposes, commercial or hospital, clinic environment.
Radiated RF IEC 61000-4-6	10 V/m 80 to 2700 MHz	10 V/m	Recommended separation distances: $d = 1.2\sqrt{P}$ for 80 to 800 MHz, $d = 2.3\sqrt{P}$ for 800 to 2700 MHz, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ¹ , should be less than the compliance level in each frequency range ² . Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE I: At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE II: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

¹ Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the WAHTS is used exceeds the applicable RF compliance level above, the WAHTS should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the WAHTS.

² Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 10 V/m.

RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE WAHTS

WAHTS is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the WAHTS can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the WAHTS as recommended below, according to the maximum output power of the communications equipment.

Test Frequency (MHz)	Band (MHz)	Service	Modulation ³	Maximum Power (W)	Distance (m)	Immunity Test Level (V/m)	Compliance Level (V/m)
2450	2400-2570	Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	0.3	28	28

NOTE: If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

³ The carrier shall be modulated using a 50 % duty cycle square wave signal.

8.5 Radio Compliance

Warning:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Contains FCC ID: T9J-RN52 Contains IC: 6514A-RN52

8.5.1 Federal Communications Commission

FCC ID: 2BA7Y-6459-001X

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause such interference, which can be verified by turning the device off and on, the user is encouraged to eliminate the interference by one or more of the following measures: re-orient or re-locate the receiving antenna, increase the distance between the device and the receiver, connect the device to an outlet on a circuit different from the one that supplies power to the receiver, consult the dealer or an experienced radio/TV technician.

8.5.2 Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

8.6 Audhere and Third-Party Licenses

As summarized in the table below, Audhere relies on open source software packages from third parties. These software packages are available on an “as is” basis and subject to their individual license agreements.

Package	License	Link
_fe_analyzer_sh	BSD-3-Clause	https://github.com/dart-lang/sdk/blob/main/pkg/_fe_analyzer_shared/LICENSE
analyzer	BSD-3-Clause	https://github.com/dart-lang/sdk/blob/main/pkg/analyzer/LICENSE
android_id	BSD-3-Clause	https://github.com/fluttercommunity/android_id/blob/main/LICENSE
async	BSD-3-Clause	https://github.com/dart-lang/async/blob/master/LICENSE
battery_plus	BSD-3-Clause	https://github.com/fluttercommunity/plus_plugins/blob/main/packages/battery_plus/battery_plus/LICENSE
build	BSD-3-Clause	https://github.com/dart-lang/build/blob/master/build/LICENSE
build_daemon	BSD-3-Clause	https://github.com/dart-lang/build/blob/master/build_daemon/LICENSE
build_runner	BSD-3-Clause	https://github.com/dart-lang/build/blob/master/build_runner/LICENSE
build_runner_core	BSD-3-Clause	https://github.com/dart-lang/build/blob/master/build_runner_core/LICENSE
characters	BSD-3-Clause	https://github.com/dart-lang/characters/blob/master/LICENSE
collection	BSD-3-Clause	https://github.com/dart-lang/collection/blob/master/LICENSE
connectivity_plus	BSD-3-Clause	https://github.com/fluttercommunity/plus_plugins/blob/main/packages/connectivity_plus/connectivity_plus/LICENSE
csslib	BSD-3-Clause	https://github.com/dart-lang/csslib/blob/main/LICENSE
dart_code_metrics	MIT	https://github.com/CQLabs/dart-code-metrics-presets/blob/main/LICENSE
device_info_plus	BSD-3-Clause	https://github.com/fluttercommunity/plus_plugins/blob/main/packages/device_info_plus/device_info_plus/LICENSE
file	BSD-3-Clause	https://github.com/google/file.dart/blob/master/packages/file/LICENSE
file_picker	MIT	https://github.com/miguelpruivo/flutter_file_picker/blob/master/LICENSE
flex_color_scheme	BSD-3-Clause	https://github.com/rydmike/flex_color_scheme/blob/master/LICENSE
flutter_pdfview	MIT	https://github.com/endigo/flutter_pdfview/blob/master/LICENSE
flutter_svg	MIT	https://github.com/dnfield/flutter_svg/blob/master/packages/flutter_svg/LICENSE
http	BSD-3-Clause	https://github.com/dart-lang/http/blob/master/pkg/http/LICENSE
intl	BSD-3-Clause	https://github.com/dart-lang/i18n/blob/main/pkg/intl/LICENSE
js	BSD-3-Clause	https://github.com/dart-lang/sdk/blob/main/pkg/js/LICENSE
json_serializable	BSD-3-Clause	https://github.com/google/json_serializable.dart/blob/master/json_serializable/LICENSE
matcher	BSD-3-Clause	https://github.com/dart-lang/matcher/blob/master/LICENSE
material_color_utilities	Apache-2.0	https://github.com/material-foundation/material-color-utilities/blob/main/dart/LICENSE
meta	BSD-3-Clause	https://github.com/dart-lang/sdk/blob/main/pkg/meta/LICENSE
mockito	BSD-3-Clause	https://github.com/dart-lang/mockito/blob/master/LICENSE
package_info_plus	BSD-3-Clause	https://github.com/fluttercommunity/plus_plugins/blob/main/packages/package_info_plus/package_info_plus/LICENSE
path	BSD-3-Clause	https://github.com/dart-lang/path/blob/master/LICENSE
pdf	Apache-2.0	https://github.com/DavBfr/dart_pdf/blob/master/LICENSE
pdf_widget_wrapper	Apache-2.0	https://github.com/DavBfr/dart_pdf/blob/master/LICENSE
petitparser	MIT	https://github.com/petitparser/dart-petitparser/blob/main/LICENSE
printing	Apache-2.0	https://github.com/DavBfr/dart_pdf/blob/master/LICENSE
protobuf	BSD-3-Clause	https://github.com/google/protobuf.dart/blob/master/protobuf/LICENSE
pub_updater	MIT	https://github.com/VeryGoodOpenSource/pub_updater/blob/main/LICENSE

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Package	License	Link
restart_app	MIT	https://github.com/gabrimatic/restart_app/blob/master/LICENSE
rxdart	Apache-2.0	https://github.com/ReactiveX/rxdart/blob/master/LICENSE
source_span	BSD-3-Clause	https://github.com/dart-lang/source_span/blob/master/LICENSE
stream_channel	BSD-3-Clause	https://github.com/dart-lang/stream_channel/blob/master/LICENSE
test	BSD-3-Clause	https://github.com/dart-lang/test/blob/master/pkgs/test/LICENSE
test_api	BSD-3-Clause	https://github.com/dart-lang/test/blob/master/pkgs/test_api/LICENSE
universal_html	Apache-2.0	https://github.com/dint-dev/universal_html/blob/master/LICENSE
universal_io	Apache-2.0	https://github.com/dint-dev/universal_io/blob/master/LICENSE
vector_graphics	BSD-3-Clause	https://github.com/dnfield/vector_graphics/blob/main/LICENSE
vector_graphics_codec	BSD-3-Clause	https://github.com/dnfield/vector_graphics/blob/main/packages/vector_graphics_codec/LICENSE
vector_graphics_compiler	BSD-3-Clause	https://github.com/dnfield/vector_graphics/blob/main/packages/vector_graphics_compiler/LICENSE
vm_service	BSD-3-Clause	https://github.com/dart-lang/sdk/blob/main/pkg/vm_service/LICENSE
watcher	BSD-3-Clause	https://github.com/dart-lang/watcher/blob/master/LICENSE
win32	BSD-3-Clause	https://github.com/dart-windows/win32/blob/main/LICENSE
xml	MIT	https://github.com/renggli/dart-xml/blob/main/LICENSE

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