

USER'S
GUIDE

Otogram™ S3000R Series

Interactive Diagnostic Audiometric Testing System



Important:

Read the User's Guide before operating the equipment.

WARNING

No modification of this equipment is allowed. If non-system equipment is connected, it is the operator's responsibility to ensure that the assembled system does not compromise patient or user safety.

Injury to personnel or damage to equipment can result when a three-pronged adapter is connected between the Otogram power plug and an AC outlet or extension cord.

The user acknowledges and agrees that Ototronix is not and will not be responsible for any losses, injuries, or damages arising from the operation, condition, possession or use of the Ototronix product purchased, leased, rented or licensed by the user. The Otogram and other Ototronix products should only be used by trained healthcare professionals who do not rely upon the Ototronix products or User's Guide for their healthcare training.



CAUTION: Federal (U.S.) Law restricts this device to sale by or on the order of a properly licensed practitioner.

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OTOGRAM SAFETY AND SPECIFICATIONS 1

SAFETY INSTRUCTIONS

This User's Guide contains information and warnings which must be followed to ensure the safe performance of the Otoqram. Local government rules and regulations, if applicable, should also be followed at all times.

The Otoqram has been designed and verified to comply with IEC 60601-1 "Safety of Medical Electrical Equipment". To ensure safe performance, the product must be installed correctly with strict adherence to the following safety requirements. The following symbols appear on the Otoqram to indicate that it is important for users to refer to the associated warnings given in this guide. Please pay special attention to these warnings.

No modification of this equipment is allowed. If non-system equipment is connected, it is the operator's responsibility to ensure that the assembled system complies with IEC 60601-1.

Table 1 – Safety Symbols		
	Type B Applied Part	This symbol indicates compliance with Type B requirements of EN 60601-1. This class of equipment is allowed in domestic establishments when used under the jurisdiction of a health care professional.
	Caution	<p>Only the original power cable supplied with the Product must be used. This must be fitted with an approved 3-pole mains (line) plug, which has a protective earth conductor. The Product must only be connected to an AC power supply that has a protective earth conductor in accordance with EN requirements.</p> <p>CAUTION: Grounding continuity should be checked periodically.</p> <p>Avoid using extension cables. The increased length of the cable may increase the resistance of the protective earth conductor beyond acceptable levels.</p> <p>To disconnect the unit from main power, disconnect the AC plug from the outlet.</p> <p>The use of accessory equipment not complying with the equivalent safety requirements of this equipment, may lead to a reduced level of safety of the resulting system.</p> <p>The Otoqram S3000R is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes (Class A).</p>
	Intentional Non-Ionizing Radiation	The pager transmitter produces non-ionizing radiation.
	USB port	Plug USB cables (such as the one to the printer) into these ports. They are connected to the PC's USB ports
	Network port	Plug network (Ethernet) cables into this port. It is connected to the PC's Ethernet port
	Do Not Reuse	Ear tips provided for use on Insert Earphones and Probes are intended for single use only. Once used, they should be disposed of rather than cleaned and used again.
	Do Not Dispose of Devices	Return used devices to manufacturer for proper disposal.
	Refer to Operating Instructions	

SPECIFICATIONS

Device Description:

The Otogram is a computer-controlled audiometer capable of providing pure-tone air conduction, bone conduction, and speech testing.

NOTE: Not all features and test options are available on all Otogram models. See Table 2 below.

Intended Use:

The Otogram is intended to administer, under supervision by a trained healthcare professional, a battery of diagnostic and screening procedures that include the following:

1. Pure tone air conduction audiometry with automated masking when bone conduction is tested
2. Pure tone bone conduction audiometry with automated masking
3. Speech reception threshold with automated masking
4. Speech discrimination/word recognition with automated masking
5. Pure tone Stenger
6. Patient survey

The Otogram is indicated for use by trained healthcare professionals on patients 7yrs. or older for measurement of audiometric parameters to identify and supply data to help diagnose hearing loss and ear disorders.

The Otogram can be used to complete, depending on model, masked pure tone air and bone conduction audiometry, speech reception threshold, speech discrimination, Stenger, and patient surveys to assist in diagnosing hearing loss and/or ear disease. The table below provides a list of standard product features and system requirements for the Otogram.

Patient Selection and Contraindications:

Refer to Chapter 5 Otogram Test Administration for further information.

Table 2 - Contents and System Requirements		
Standard Features	Otogram computer peripheral (Hardware and Software) Diagnostic and screening testing software Configuration software Data backup software Ambient noise microphones Patient response control Pager User's Guide	
Optional Features	Ear Inserts: Bone Conduction: Headphones:	Otovest with EAR-5A insert earphones Otobow, Radio Ear B71 bone oscillator Sennheiser HDA300

Model	Air Conduction		Bone Conduction	Speech	Survey
	Headphone	Ear Inserts			
S3000R-E		X		Optional	Optional
S3000R-EB		X	X	Optional	Optional
S3000R-H	X			Optional	Optional
S3000R-HB	X		X	Optional	Optional
S3000R0-EHB	X	X	X	Optional	Optional

Hardware Specification	Otoqram - General Specifications
Mechanical: - Dimensions - Weight	Tabletop: 21"W x 17"H x 7"D (53.34cm W x 43.18cm H x 17.78cm D) 29.0 lbs (13.15 kg) net, Otoqram and Vest only 35.0 lbs (15.87 kg) shipping
Environment: - Operating - Storage - Humidity	60 F to 95 F, 15 C to 35 C -4 F to 140 F, -20 C to 60 C Max 90% (no condensation)
Power: - Line voltage - Frequency range - Line voltage current computer - Power consumption	120 V (+/-10%) 60 Hz (+/-5%) 1.5 amps 250 VA
Warm up time:	10 minutes
Standards:	IEC 60601-1 (2nd Ed): Medical Electrical Equipment Requirements for Safety

Table 4 - Otogram Specifications Audiometer

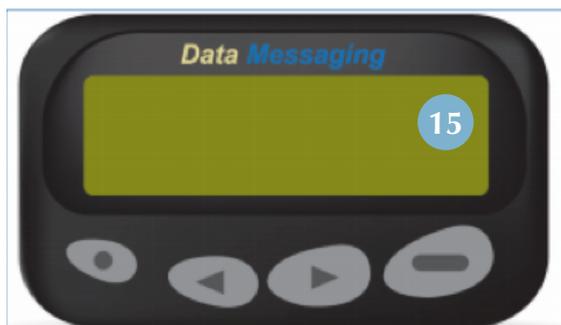
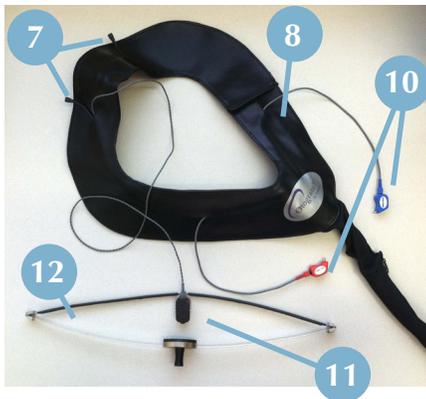
Specification	Otogram Audiometer
Calibration standards:	ANSI S3.6 – 1996 for pure tone audiometers
Channels:	2
Channel input:	Tone, external (Tape/CD), narrow band noise, speech noise
Channel output:	Insert phones Left/Right, headset phone Left/Right, bone
Presentation:	Pulsed, 2.5 Hz
Attenuation:	120 dB range, 5 dB step
Frequency range:	125 Hz to 8000 Hz
Frequency accuracy:	+/- .5%
Total harmonic distortion:	< 3%
Frequency 125 Hz	Air 90 dB HL, bone NA dB HL
Frequency 250 Hz	Air 100 dB HL, bone 40 dB HL
Frequency 500 Hz	Air 110 dB HL, bone 60 dB HL
Frequency 1000 Hz	Air 110dB HL, bone 65 dB HL
Frequency 2000 Hz	Air 110 dB HL, bone 65 dB HL
Frequency 4000 Hz	Air 110 dB HL, bone 75 dB HL
Frequency 8000 Hz	Air 110 dB HL, bone 45 dB HL
External inputs:	Left/Right with 1.0 V line level
Extended range:	Channel 1 allows air conduction intensities to be limited to 20 dB below maximum output.
Channel 1:	Input: tone, microphone, computer. Output: Left/Right insert earphones, bone oscillator
Channel 2:	Input: tone, microphone, computer, narrow band noise, speech noise. Output: Left/Right insert earphones, bone oscillator, Off.
Presentation Ch 1:	Single or multiple pulses. Single and multiple pulse speed: 150 ms, 250 ms, 500 ms, 750 ms, 1000 ms, 1500 ms, 2000 ms, 4000 ms, 5000 ms.
Presentation Ch 2:	Simultaneous or alternate to Ch 1
Attenuators:	Totally click free, -10 dB HL to 120 dB HL in 5 dB steps.
Transducers:	Otovest insert earphones (EAR5A - 50 ohm) - optional Otovest bone oscillator (Radio-ear B71 - 50 ohm) - optional Headphones (Sennheiser HDA300) - optional Ambient noise microphones All RETSPLs for insert earphones are as stated in ANSI 3.6, Table 7. All RETSPLs for headphones are as stated in “Audiometric Properties of Three Circumaural Earphones” Table 2A (AAS 2014). RETFLs for bone oscillator with forehead placement are as stated in ANSI 3.6, Table 8. The Otobow produces a static force of 5.4 N +/- .5N when spread to width of 190mm. Bone oscillator application site is forehead. Calibration applies to an insert earphone occluded test ear and masked (non-test) ear.
Calibration possibilities:	Software controlled calibration for all transducers and the device
Auto masking:	Masking provided following ASHA guidelines
Test type – tone:	Pulsed pure tone with automatic and manual masking
Test type – speech:	Manual and automated speech reception threshold and speech discrimination with recorded voice and automatic level setting and masking. Score counter calculates correct percent at 85% confidence level.
Monitoring Meter:	Not applicable. The Otogram does not provide for live voice speech testing.
Speech RETSPL:	12.5 dB SPL as measured in transducer specific couplers.
Frequency Modulated Signal:	Not provided
Masking characteristics:	Narrow band noise centered at 250 Hz, 500 Hz, 750 Hz, 1000 Hz, 1500 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz, and 8000 Hz with spectrum described by corresponding rows of cut-off frequency columns 2-5 of ANSI s3.6 Table 7. The masking RETSPLs are found using the RETSPLs for the insert phone as shown in Table 7 for the HA-2 coupler with rigid tube, then adding the one-third octave correction as shown in column 7 of Table 5. The masking effect is to completely mask pure tone of the designated intensity. Speech masking is within the +/- 5dB tolerance; constant spectrum from 100 Hz to 1000 Hz, with 12dB per octave roll off above 1000 Hz (+/- 5 dB)

SET UP 2

OTOGRAM ANATOMY

The Otoqram is a computer-controlled audiometer capable of providing pure-tone air conduction, bone conduction, and speech testing.

- | | | |
|----------------------------|-------------------------------|------------------------------|
| 1. Touch Screen Computer | 6. Power Cord | 11. Bone Oscillator (option) |
| 2. Keyboard and Mouse | 7. Ambient Noise Microphones | 12. Otobow (option) |
| 3. Audiometer Chasis | 8. Otovest (option) | 13. Pager Antenna |
| 4. Patient Response Button | 9. Headphones (option) | 14. Foam Ear Tips (option) |
| 5. Power Switch | 10. Insert Earphones (option) | 15. Pager |



GETTING STARTED

Below are instructions to ensure that the Otoqram is unpacked, inspected, stored and set up correctly. Ensure that the test administrator is trained in the use of the Otoqram prior to administering tests to patients.

Selecting a Location

Place the Otoqram in a well-ventilated room away from all liquids and sources of heat. If stored in a hot or cold environment, allow temperature to stabilize prior to use. Ensure that the Otoqram is placed on a stable surface, safe from potential damage. Ensure that the AC Inlet plug into the Otoqram or at the wall is accessible for easy disconnection. The most appropriate environment for testing is in a moderately quiet room, although a sound-treated room is not necessary. The Otoqram's Ambient Noise Monitor helps to determine if the ambient noise in a room will adversely impact testing results. (See page 27 for instruction on how to measure a room's ambient noise).



CAUTION: The Otoqram is NOT suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

Connecting Hardware

The Otoqram is shipped in its own custom made carton together with this User's Guide, a packaging specification sheet and standard accessories. Please refer to the packing specification sheet enclosed with the Otoqram to ensure that all accessories are complete and intact.

If the shipping carton or the Otoqram is damaged in any way, and/or if the Otoqram is not functioning properly, please contact Ototronix immediately at (877) 410-4327.

STEP 1: Place the Otoqram on a level surface with the computer screen face down.



STEP 2: Locate the two USB Ports on the right side of the computer.

- a) Install the Pager Antenna into the port labeled ANT.
- b) Install the Keyboard / Mouse Dongle into the port labeled KEY.



STEP 3: Locate the Audio connections on the right side of the computer and the bottom right corner of the Audiometer Chassis. Install the Audio Cables as shown.



STEP 4: Locate the three USB connections on the bottom of the computer.

- a) Install the 6 inch USB Adapter into the Audiometer Chassis and the left USB Port of the Computer. (labeled AUD)
- b) Install the Calibration Dongle, tethered either to the headphones or vest, into the center USB Port of the Computer. (labeled CAL)
- c) Install the Patient Response Button into the right USB Port of the Computer. (labeled PAT)



STEP 5: Connect the Ambient Noise Microphone into the Audiometer Chassis (labeled AMB MIC).



STEP 6: If an Otovest with Ear Inserts and Bone Oscillator are used: Insert the Bone Oscillator and Ear Insert connections as shown.



STEP 7: If Headphones are used: Insert the Headphone connections as shown.



STEP 8: Connect the Computer Power Adapter into the small receptacles on the Audiometer and Computer. Connect the AC Cord into the AC Input Coupler on the Audiometer.



STEP 9: Place the Otoqram upright, with the power cable passing behind the unit and the patient connections passing to the front of the unit.



Turning On the Otoqram

STEP 1: Ensure that the Power Connections to the Audiometer Chassis and Computer are secure before proceeding.



STEP 2: Plug the Otoqram into Main Power (i.e. wall outlet).

STEP 3: Next to the AC Cord Inlet, press the switch to the ON position (marked “I” on the switch).

STEP 4: Orient the Otoqram in the upright position.

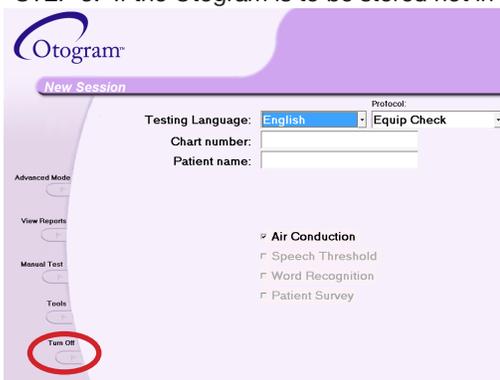
STEP 5: Turn on the Otoqram by pressing the Power button on the lower right corner of the Computer.

Turning Off the Otoqram

STEP 1—Touch the <Turn Off> command on the Otoqram New Session screen.

STEP 2—The Otoqram will ask “Are you sure?” Select <Yes>.

STEP 3: If the Otoqram is to be stored not in use for an extended period of time, then disconnect the AC Cord from Main Power and



disconnect any Patient Connections (Otovest, Headphones, Bone Vibrator, Patient Response Button).

IMPORTANT NOTE: To avoid damage to cables and other accessories, if the Otoqram is to be stored or transported in its original packaging, then disconnect the Pager Antenna and all Connections from the underside of the Otoqram.

Printer

At the conclusion of the selected tests, the Otoqram will print a report of the results. Please install your printer from “Devices and Printers” on the Start Menu.

TEST BATTERY

Air Conduction and Bone Conduction (Bone Conduction not present in all models)

Pure tones are presented through air and bone conduction using a modified Hughson-Westlake method to measure frequency-specific hearing thresholds. Air conduction measures the intensity of the signal required to reach a patient's threshold assessing the entire auditory system. Bone conduction isolates the sensory structure of the inner ear and auditory tracks. Thresholds measured during air and bone conduction helps identify the type of hearing loss. Masking of the non-test ear and Stenger are employed as needed.

Stenger

The Stenger test helps identify unilateral pseudohypacusis (malingering). The Stenger principle states that if a sound is played simultaneously in each ear, the listener will only be aware of the louder tone. Based on that principle, it is possible to evaluate a patient for a unilateral functional or non-organic hearing loss. Since accurate diagnosis is paramount to patient management, the Otogram discreetly and automatically employs a frequency-specific Stenger Test any time a patient's behavioral thresholds deviate by more than 35dB between ears. The results of the Stenger Test are displayed on the patient report.

Speech Reception Threshold (Not present in all models)

The speech reception threshold (SRT) test measures the lowest level (in decibels) that a patient can recognize speech. The Otogram uses recorded speech with a closed-set picture identification task using commonly accepted spondee words. The presentation level is varied and the lowest level at which the patient correctly identifies the spondee 50% of the time is recorded as the speech reception threshold. Because closed-set tests are easier than open-set tests, the Otogram scores closed-set tests by giving more weight to an incorrect response than a correct response.

Speech Discrimination / Word Recognition (Not present in all models)

Speech discrimination testing presents similar sounding words (i.e. mop, stop, top, shop) to the patient at an audible level to determine whether or not the patient has difficulty discriminating between words that sound similar. Words are presented in each ear until an 85% confidence interval is achieved. The Otogram also calculates and reports Unexplained Discrimination Loss. Masking of the non-test ear is employed as needed.

Patient Survey (Not present in all models)

The Otogram offers a few patient-report surveys including the Hearing Handicap Index for the Elderly (HHIE), the Hearing Handicap Index for the Elderly-short version (HHIE-S), the Mayo Clinic Survey and the Hearing and Balance Survey. Each survey presents a variety of questions to assess the perceived impact of the patient's hearing loss on his or her everyday communication.

AMBIENT NOISE MONITOR

The Otogram does not generally require an acoustically treated room because an average examination room falls within the permissible ambient noise levels as outlined in ANSI S3.1-1999. Excessive noise in a test environment during audiometric testing can reduce the validity and accuracy of the audiometric test because it tends to mask the test signals particularly at the lower frequencies where the insert ear phones provide less effective attenuation. An acoustically treated room may be required if ambient noise reaches objectionable levels.

Maximum permissible noise levels are specified by the American National Standards Criteria for Permissible Background Noise during Audiometric Testing. The following table shows the maximum background levels that can be present inside a room while testing.

Maximum Ambient Noise Level for Insert Earphones

Table 5 – ANSI S3.1-1999 Permissible Ambient Noise Levels
Octave band ears covered maximum permissible ambient noise levels for three test frequency ranges as specified in ANSI S3.1-1999 when ears covered testing is performed using insert earphones

Octave Band Intervals	125-8000 Hz	250 to 8000 Hz	500 to 8000 Hz
125 Hz	59	67	78
250 Hz	53	53	64
500 Hz	50	50	50
1000 Hz	47	74	47
2000 Hz	49	49	49
4000 Hz	50	50	50
8000 Hz	56	56	56

See page 27 for more information regarding using the Ambient Noise Monitor to pre-screen a testing environment for compliance with ANSI standards.

Maximum Ambient Noise Level for Headphones

Table 6 – MPANLs (dB SPL) “Audiometric Properties of Three Circumaural Earphones” Table 2A for HDA300

	For testing at 125 Hz and up:	For testing at 250 Hz and up:	For testing at 500 Hz and up:
125 Hz	34	38	48
250 Hz	27	27	37
500 Hz	22	22	22
1000 Hz	23	23	23
2000 Hz	42	42	42
4000 Hz	46	46	46
8000 Hz	32	32	32

Audiometric Properties of Three Circumaural Earphones. (2014). University of MN. Retrieved from <http://audiologyincorporated.com/wp-content/uploads/AAS-Poster-2014-Audiometric-Properties-of-Three-Circumaural-Earphones.pdf>

PAGING SYSTEM

The Otogram’s Paging System is a patient monitoring system which allows the administrator to leave the room while a patient completes the hearing test. During the test, the administrator will be notified of patient status ranging from a completed test to a patient not progressing as expected. The administrator will also be paged to return if the patient requests assistance by touching the on-screen <Help> button. Some paging options can be configured – refer to page 20.

Pager Operation Instructions

Turn ON:

Press and hold 

Pager will beep twice when it turns on.

Turn OFF:

Press  until a row of seven icons appear at the bottom of the screen

Press  until  is highlighted.

Press  twice to power off.

Silence Pager:

Press  to silence the pager.

View Messages:

Press  until the envelope appears with arrows pointing upward in the bottom left corner of the screen (the number of arrows indicates the number of messages).

Press  to display the message

Delete Messages:

While viewing a message, press  to display the message menu.

Press  until  is highlighted and blinking on the message menu.

Press  twice to delete.

NOTE: It is important that messages are deleted after they have been read. The pager can only contain a limited number of pages and will stop accepting pages if not cleared. The pager will not “beep” if a message identical to a page stored on the pager is received. For example, if a patient pressed <Help> once and the page is read but not cleared, then the same patient presses <Help> a second time - the pager will not alert a second time that another page was received.

Pager Low Battery Alert

A low battery indicator will display on the pager when battery replacement is needed. To replace the battery, remove the panel on the back side of the pager and install a new battery.

PAGER MESSAGES AND SUGGESTED RESPONSES

Table 7 – Pager Messages and Suggested Responses	
Pager Message	Administrator Response
Patient's Name has requested assistance. Please return as soon as possible.	The patient has pressed the <Help> button. The test has been paused and an on-screen message appears: “The test administrator has been paged. Please wait for the administrator to return”. Return immediately to determine the issue. To continue testing, touch the screen, and then select <Ok>. To discontinue testing, touch the screen and refer to Table 8 for Command Button instructions.
Patient's Name - Bone Vibrator may not be functioning.	This indicates that the patient did not respond at all to the first bone threshold, but did respond to the first air threshold. Return immediately, select <Command> then <Pause>. Evaluate bone oscillator function and placement, re-instruct the patient and continue with the test. To discontinue testing, refer to Table 8 for Command Button instructions.
Patient's Name is not registering activity in the Test Name test.	The patient has not interacted with the Otoqram for the time interval specified in Tools. Return immediately. If the patient response button and/or touch screen are functioning, re-instruct the patient and restart the test. If necessary, discontinue testing. Refer to Table 8 for Command Button instructions.
Patient's Name Otoqram is completed.	The patient has successfully completed the Otoqram test. Return to the patient immediately and touch the yellow screen. If possible, review the results before removing the Otovest so that a manual recheck of any specific frequencies can be completed if necessary without further patient setup.
Patient's Name is not progressing through the Test Name test.	This message indicates that the patient is not responding consistently. Return immediately. If the patient is able to continue, re-instruct and restart the test. This message is an indicator that the patient may be a poor candidate for automated testing.
Repeat: Return to Patient's Name.	The administrator did not respond to a message within 2 minutes. This message will repeat every 2 minutes until the administrator returns to the patient and touches the yellow screen.
Return to Patient's Name to perform Speech Discrim test.	If the Otoqram has been configured for open set speech discrimination, the administrator will be paged to return to the patient at the appropriate point in the test battery to facilitate administration.
Patient's Name is responding improperly too often. Retrain?	When the patient responds outside the response window 3 times during the course of 15 consecutive pure tone presentations, an inappropriate response point is assigned. If the total number of allowed points is exceeded, the administrator will receive this message. The occurrence of this message is based on the “False Response Sensitivity” value specified in the Tools menu.

COMMAND BUTTON

The Command Button provides options for pausing a test, skipping a certain section of a test, and aborting a test.

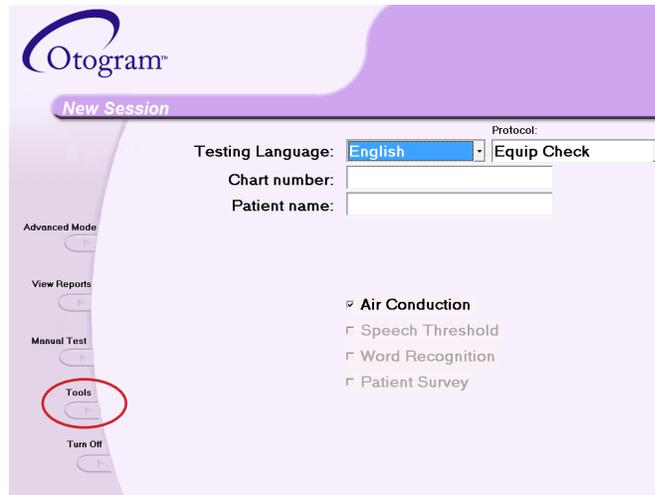
Table 8 – Commands to Abort or Pause a Test		
Keyboard Command	On-Screen Command	Result
Alt-D	<Command>	Displays the on-screen test commands
Alt-E	<Exit>	Exits the test without saving the results
Alt-G	<Go to End>	Terminates the test, saves any partial results and proceeds to the reporting screen
Alt-P	<Pause>	Pauses the current test until the patient or administrator is prepared to resume testing. Select <OK> to resume.
Alt-N	<Next>	Terminates the current test, saves any partial results, and then starts the next selected test

OTHER PAGER OPERATIONS

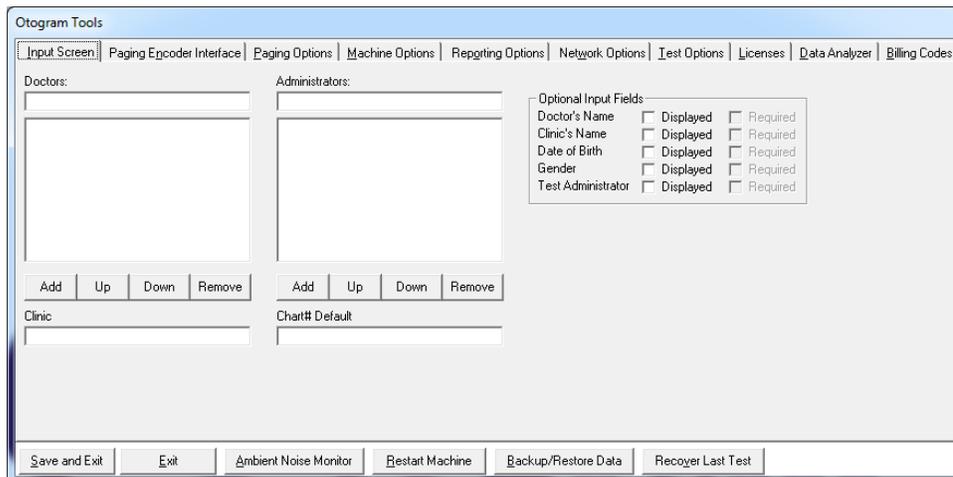
Read message	Press “  ” key to read, pres “  ” or “  ” to select
Turn on mailbox alert	Select one message of the mailbox, press “  ” key, select “  ”, press “  ”
Turn off mailbox alert	Select one message of the mailbox, press “  ” key, select “  ”, press “  ”
Delete one message	Read the desired message, press “  ” key, select “  ”, press “  ” key twice
Delete all messages	Read the desired message, press “  ” key, select “  ”, press “  ” key twice
Message protected / unprotected	Read the desired message, press “  ” key, select “  ” or “  ”, press “  ” key
Set private message alert	Select “  ”, press “  ” key, use “  ” or “  ” to select the alert, press “  ” key
Key tone On / Off	Select “  ”, press “  ” key, select “  ” or “  ”, press “  ” key
Set time / date	Select “  ”, press “  ” key, use “  ” or “  ” to adjust, press “  ” to move cursor, press “  ” to confirm
Set alarm	Select “  ”, press “  ” key, use “  ” or “  ” to adjust, press “  ” to move cursor, press “  ” to confirm
Set LCD Contrast	Select “  ”, press “  ” key, use “  ” or “  ” to adjust, press “  ” to confirm
Set auto On / Off power	Select “  ”, press “  ” key, use “  ” or “  ” to adjust, press “  ” to move cursor, press “  ” to confirm
Power off	Select “  ”, press “  ” key twice
Turn On / Off light	Hold “  ” key for a moment

TOOLS

Tools can be accessed from the New Session screen of the Otoqram by selecting the <Tools> button on the left side of the screen. Most of the Otoqram's configurability is accessible through the tools utility.



INPUT SCREEN



The Otoqram always requires the administrator to input the patient's name and chart number. In addition, the Otoqram allows entry of other fields, such as doctors, administrators, clinic, or additional patient information as either an optional or a required field. To alter the information that is displayed on the New Session screen, follow these instructions:

Add a name to Doctors or Administrators

STEP 1—Select the empty text box under “Doctors” or “Administrators”.

STEP 2—Type the name.

STEP 3—Select <Add>.

Remove a name

STEP 1—Select on the name to be removed.

STEP 2—Select <Remove>.

Change order of names

STEP 1—Select on the name to be reordered.

STEP 2—Select the <Up> or <Down> button until the names are in the correct order.

Create default settings

STEP 1—Select the empty text box below “Clinic” or “Chart# Default”.

STEP 2—Type the default text.

Display fields on the New Session screen

STEP 1—Under “Optional Input Fields”, select <Displayed> for any fields that should be displayed on the New Session screen.

STEP 2—Select <Required> if any of the fields should be required before a test battery can be initiated.

PAGING ENCODER INTERFACE

The screenshot shows the 'Paging Encoder Interface' window within the 'Otogram Tools' application. The window has a menu bar with options: Input Screen, Paging Encoder Interface (selected), Paging Options, Machine Options, Reporting Options, Network Options, Test Options, Licenses, Data Analyzer, and Billing Codes. The main area contains the following fields and controls:

- Paging Encoder is Attached
- Communications Port: 1
- Encoder ID: WaveWare Paging Encoder
- Encoder Timeout: 500
- Pager CapCode: 0000100
- Pager Data Rate: 5
- Send Test Page button

At the bottom, there is a row of buttons: Save and Exit, Exit, Ambient Noise Monitor, Restart Machine, Backup/Restore Data, and Recover Last Test.

The Paging Encoder Interface fields should not be adjusted without direction from Ototronix.

To test the pager’s coverage area or functionality, select <Send Test Page>. If the pager is within range and functioning properly, the pager will receive the message “Testing pager using cap code 100.”

PAGING OPTIONS

The screenshot shows the 'Paging Options' window within the 'Otogram Tools' application. The window has a menu bar with options: Input Screen, Paging Encoder Interface, Paging Options (selected), Machine Options, Reporting Options, Network Options, Test Options, Licenses, Data Analyzer, and Billing Codes. The main area contains the following fields and controls:

- Page Administrator at end of testing session
- Page Administrator at end of each test
- Page Administrator at end of DPOAE test
- Page Administrator after inactivity threshold
- Page Administrator after inability to reach pure tone threshold
- Page Format (%N-Patient Name, %T-Test Name.)
- %N's Otogram is completed.
- %N has completed the %T test.
- %N is not registering activity in the %T test.
- Inactivity Threshold (in seconds): 90
- %N is not progressing through the %T test.
- Inability Threshold (in seconds): 150
- Paging Device: [Dropdown menu]
- Network Paging Drop: [Text field]

At the bottom, there is a row of buttons: Save and Exit, Exit, Ambient Noise Monitor, Restart Machine, Backup/Restore Data, and Recover Last Test.

The administrator can be paged at any or all of the following situations: end of testing session, end of each test, end of DPOAE test, after inactivity threshold has been reached, and after inability to reach pure tone threshold in the designated time window. Both the “Inactivity Threshold” and the “Inability Threshold” are configurable.

The rest of the Paging Options fields should not be adjusted without direction from Ototronix.

MACHINE OPTIONS

Otoqram Tools

Input Screen | Paging Encoder Interface | Paging Options | **Machine Options** | Reporting Options | Network Options | Test Options | Licenses | Data Analyzer | Billing Codes

Model: S3000R-H Serial Number: L0002 Customer Number: []

Pointing Device: Finger Display On Screen Admin Controls

Response Button: Push Button Comm Port: 8

Bone Vibrator User Offsets:

500	00	2K	00
1K	00	4K	00

Otoqram Version 3.2.0

Save and Exit Exit Ambient Noise Monitor Restart Machine Backup/Restore Data Recover Last Test

Model— Displays the model number.

Serial Number— Unique Otoqram identifier

Customer Number— identifies the owner of the Otoqram

Display On-Screen Admin Controls— Check this box if the keyboard is not attached to the Otoqram or if there is a preference for using the On-Screen keyboard.

NOTE: If “Display On-Screen Admin Controls” is not selected, the on-screen keyboard will not appear on the New Session screen, and the Admin Controls will not appear during the test without pressing Alt+D.

Select Pointing Device— Indicate the type of pointing device to be used with the Otoqram by choosing one from the following:

“Pointing Device” options:

Pointer (a touch screen used with a stylus)

Finger (a touch screen used with the finger)

Mouse

These choices will change the on-screen training so that the patient is instructed to use the appropriate device.

Select Response Button— Use the “Response Button” option to indicate how the patient should respond during pure tone testing:

Screen – Responds by touching the red button on the screen with whichever pointer is specified under “Pointing Device”

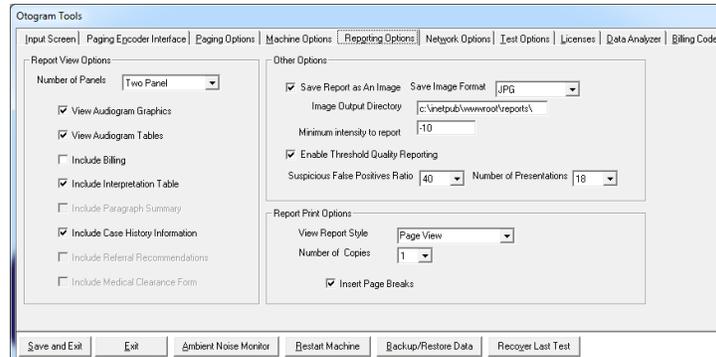
Trigger – Responds by using a trigger-style mouse

Push Button – Responds by pressing a traditional push button response device

The rest of the Machine Options fields should not be adjusted without direction from Ototronix.

REPORTING OPTIONS

Report View Options



Number of Panels—displays the audiometric thresholds either on a one panel shared audiogram or on two separate panels

View Audiogram Graphics—displays ear-specific thresholds at tested frequencies as a function of intensity (presentation level)

View Audiogram Tables—displays audiometric thresholds on a table including air-bone gap and masking information

Include Billing—includes a table listing the diagnostic and billing codes with associated descriptions as entered by the practice

Include Interpretation Table—includes a table that provides basic observations regarding the type and level of hearing loss, asymmetries, internal consistency, etc.

Include Paragraph Summary—includes information regarding type and level of hearing loss, asymmetries, internal consistency, etc. in sentence form

Include Case History Information—prints basic case history questions for use in patient interviews

Include Referral Recommendations—includes referral suggestions based on test results

Medical Clearance Form – includes a medical clearance form for those patients who require a medical evaluation before proceeding with a hearing aid fitting.

Other Options

Save Report as an Image—check box to save report as an image and select the image format from the available drop down menu.

Image Output Directory—location of saved reports

Minimum Intensity to Report—indicates the lowest threshold level that should be displayed on the Otoqram report.

Enable Threshold Quality Reporting—allows thresholds to be flagged with potential patient response indicators, sometimes referred to as quality markers, if the patient’s response characteristics were atypical. Patient response indicators are noted as superscripted characters next to the thresholds in the audiogram table. The characters that can be displayed are:

[T] Too Many Presentations—displayed when the number of presentations required to achieve a consistent threshold exceeds the value in the “Number of Presentations” field.

[F] False Positive Ratio—Indicates that the patient responded excessively when no tone was presented. The tolerance for false positive responses can be adjusted by changing the “Suspicious False Positives Ratio” field.

[U] Undermasked – displayed when the Otoqram was unable to effectively mask the non-test ear before reaching the output limits, indicating that the threshold may be greater than could be measured.

Report Print Options

View Report Style—Some versions of the Otoqram will have a thermal strip printer attached. If a strip printer is attached to the Otoqram the option is available to change this from “Page” to “Strip”. The “Number of Panels” option is ignored when using a “Strip View” report style.

Number of Copies—Configure the number of Otoqram reports to be printed from 0 to 3.

Insert Page Breaks—When using a “Report Style” of “Page View”, checking this box will print the patient name, test date, etc. at the top of each page.

NETWORK OPTIONS

The “Web server root” field should not be adjusted without direction from Ototronix.

TEST OPTIONS

Test protocol configurability is accessible through the Test Options tab including the ability to add, delete, or edit protocols.

Pure Tone Air & Bone Conduction

The screenshot shows the 'Otoqram Tools' software interface. The 'Test Options' tab is active, showing configuration for 'Air and Bone Conduction'. The 'Name' field is 'Air Conduction'. The 'Always', 'Never', and 'As Needed' options are selected for frequencies 250, 500, 1K, 2K, 3K, 4K, 6K, and 8K. The 'Test Air' option is checked. The 'Masking Margin' is set to 5, 'Minimum Presentation Level' is -10, 'False Response Sensitivity' is 4, and 'Threshold Type' is 'Phone'. The 'PTA is defined as average of:' section has '2 best of 500Hz, 1kHz and 2kHz' selected. The 'Test Selection Defaults' section has 'Air Conduction' checked. The interface includes buttons for 'Save and Exit', 'Exit', 'Ambient Noise Monitor', 'Restart Machine', 'Backup/Restore Data', and 'Recover Last Test'.

Name – The option to change the name of the test can be completed by typing an alternate test name in the “Name” field under the “Air and Bone Conduction” tab on the Otogram Tools screen.

Always, Never and As Needed – select these options by frequency to indicate which frequencies will be tested using the automated audiometry function.

Always means the frequency will be tested under all circumstances.

Never means the frequency will not be tested under any circumstances.

As Needed indicates that the frequency will be tested if the neighboring frequencies differ by more than 20dB.

Always mask bone—Select this option to ensure that masking is always used to establish bone conduction thresholds as part of a standard protocol.

Test Bone/Test Air—Deselect these options if either air or bone conduction should not be included as part of a standard protocol.

Masking Margin – Although the Otogram uses commonly accepted rules to determine masking levels, the masking levels can be increased or decreased by a fixed number of decibels by selecting an alternate masking margin from the drop down menu.

Minimum Presentation Level –The minimum presentation level is adjustable between -15dB and 20dB and is protocol-specific. If the patient’s threshold is better than the minimum presentation level, it will be plotted with an up arrow on the Otogram report.

False Response Sensitivity – Can be adjusted between 0 and 9 with 0 indicating the least amount of tolerance for false positive responses. The likelihood of receiving a page that the patient is responding improperly is dependent on the sensitivity level specified in this field.

Threshold Type – Selects headphones or insert earphones.

Speech Discrimination

The screenshot shows the 'Otoqram Tools' software interface. At the top, there are several tabs: 'Input Screen', 'Paging Encoder Interface', 'Paging Options', 'Machine Options', 'Reggiting Options', 'Network Options', 'Test Options', 'Licenses', 'Data Analyzer', and 'Billing Codes'. Below these, there are sub-tabs for 'Speech Reception Threshold', 'Questionnaire', 'DP Otoacoustic Emissions', 'Air and Bone Conduction', 'Tympanometry', 'Acoustic Reflex', and 'Speech Discrimination'. The 'Speech Discrimination' tab is active. The main configuration area includes a 'Name' field with 'Speech Discrim' entered. Below this are fields for 'Presentation Base Level' (set to 'AI'), 'Boost' (set to '0'), 'Presentation Type' (set to 'Closed'), 'Minimum Presentations' (set to '12'), 'Min Presentation Level' (set to '60'), and 'Max Presentation Level' (set to '100'). There is also a 'Word List (Open Set, English Only)' dropdown set to 'NU-6' and a checkbox for 'Display Written Words' which is unchecked. To the right, a 'Test Selection Defaults' panel contains a list of test options with checkboxes: 'Tympanometry', 'Acoustic Reflex', 'DP Otoacoustic Emissions', 'Air and Bone Conduction', 'Speech Reception Threshold', 'Speech Discrimination', and 'Patient Survey'. Below this list are 'Save Protocol' and 'Delete Protocol' buttons, and a dropdown menu set to 'Default'. At the bottom of the window, there are several buttons: 'Save and Exit', 'Exit', 'Ambient Noise Monitor', 'Restart Machine', 'Backup/Restore Data', and 'Recover Last Test'.

Name –The option to change the name of the test can be completed by typing an alternate test name in the name field under the “Speech Discrimination” tab on the Otogram Tools screen.

Presentation Base Level – The Otogram will automatically determine the presentation level for this test by referencing the “Presentation Base Level”. The Presentation Base Level can be based on:

Articulation Index (AI) – Default setting used to maximize audibility of speech sounds.

Pure Tone Average (PTA) - words will be presented at PTA or minimum presentation level, whichever is greater.

Manual - the Otogram will prompt the administrator to enter the desired presentation and masking levels for each ear before beginning the speech discrimination test.

Boost – Should the presentation level need to be louder than the Presentation Base Level, it can be increased by the decibel amount specified in the “Boost” field. Regardless of whether or not a boost value is specified, the words will never be presented less than the Minimum Presentation Level.

Presentation Type – To test speech discrimination as an open-set test, change the “Presentation Type” from “Closed” to “Open”. If the Otogram has been configured for open set speech discrimination, the administrator will be paged to return to the patient at the appropriate point in the test battery to facilitate administration. See the Speech Discrimination section on page 40 for more detail on administering the open set test.

NOTE: This option is only available for English language tests; other languages must always use the automated speech discrimination test

Minimum Presentations – The minimum number of words presented by the Otogram for speech discrimination testing is 12. If the patient gets the first 12 words correct, the test is complete. For each word missed, additional words are presented until a range of statistically equivalent values (calculated at the 85% confidence interval) is reached.

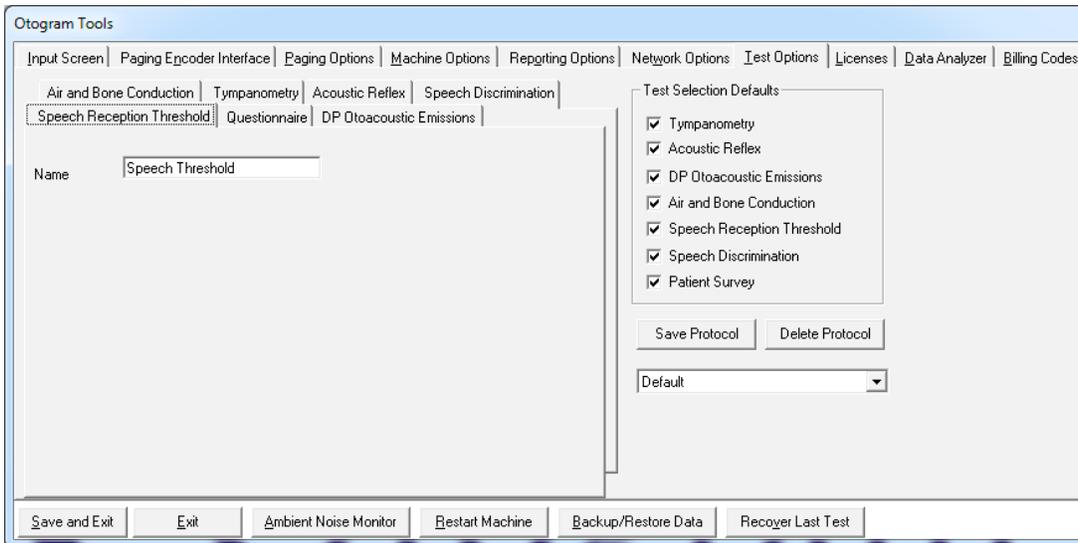
Min Presentation Level—adjustable between 40 dB and 75 dB

Max Presentation Level—adjustable between 80 dB and 100 dB

Word List (Open Set, English Only)—option of NU-6 or W-22

Display Written Words—select this option to display written words beneath pictures

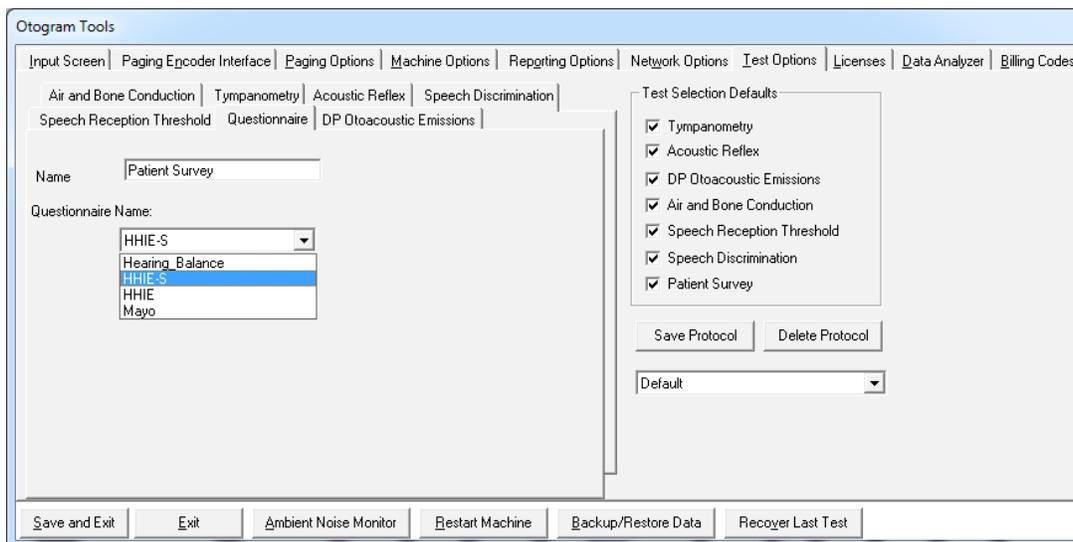
Speech Reception Threshold



Name—The option to change the name of the test can be completed by typing an alternate test name in the name field under the “Speech Reception Threshold” tab on the Otogram Tools screen.

Patient Survey

The Otogram comes with four subjective questionnaires for evaluating patient perception of auditory and vestibular difficulty/functionality: the HHIE, the HHIE-S, the Mayo Clinic Survey and the Hearing and Balance Survey.



Licenses

The configuration options on the Licenses tab is no longer available for software versions 3.0.3 or later.

Data Analyzer

The Data Analyzer tab is no longer available for software versions 3.0.3 or later.

Billing Codes

The Billing Codes tab provides a table where the practice may enter the diagnostic and billing codes with associated descriptions.

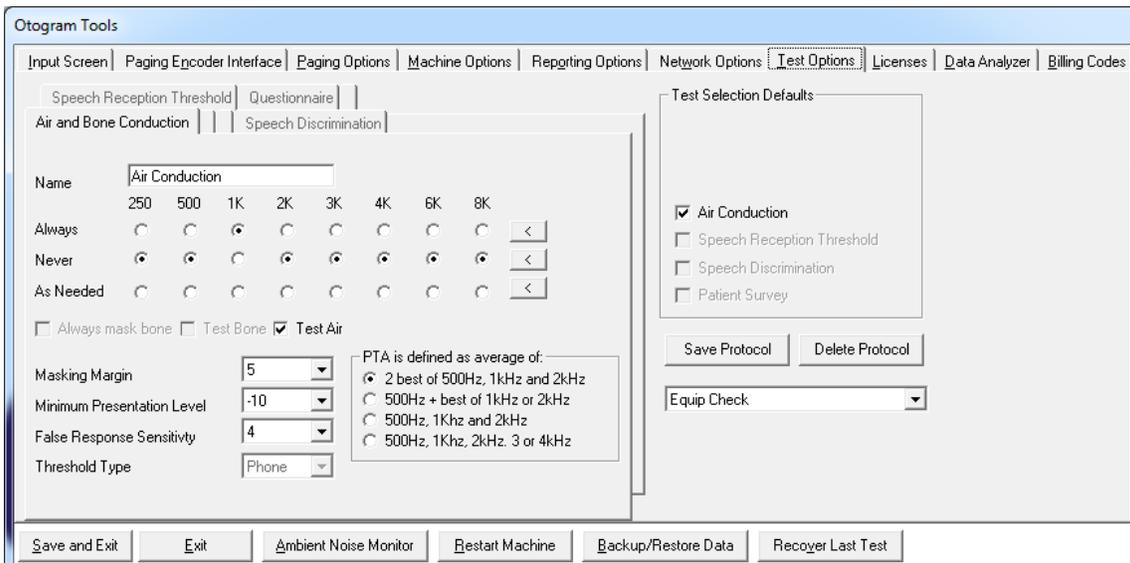
The screenshot shows the 'Billing Codes' configuration window within the 'Otoqram Tools' application. The window has a menu bar with the following items: Input Screen, Paging Encoder Interface, Paging Options, Machine Options, Reporting Options, Network Options, Test Options, Licenses, Data Analyzer, and Billing Codes. The main content area is titled 'Billing Information' and contains a table with four columns: Diagnostic Codes, Description, Billing Codes, and Description. The table has four empty rows for data entry. Below the table, there is a warning message: 'This is not intended as coding advice. Please review coding with your carrier.' Below the warning, there is a checkbox labeled 'Use Billing Codes' which is currently unchecked. To the right of the checkbox are three buttons: '<< Previous Page', 'Next Page >>', and 'Save'. At the bottom of the window, there is a row of buttons: 'Save and Exit', 'Exit', 'Ambient Noise Monitor', 'Restart Machine', 'Backup/Restore Data', and 'Recover Last Test'.

Diagnostic Codes	Description	Billing Codes	Description

Use Billing Codes << Previous Page Next Page >> Save

Save and Exit Exit Ambient Noise Monitor Restart Machine Backup/Restore Data Recover Last Test

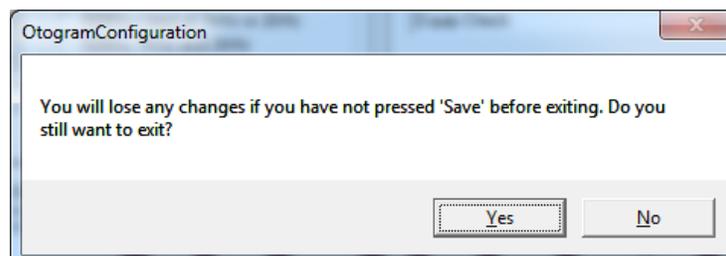
Save and Exit



Once all configuration changes are completed, select <Save and Exit> to return to the New Session screen.

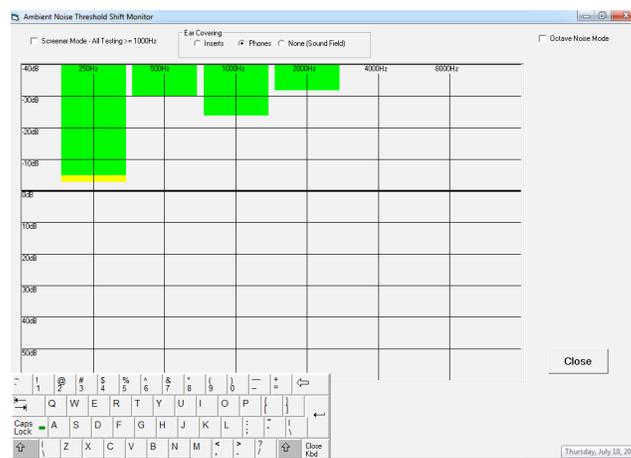
Exit

Select <Exit> to return to the New Session Screen without saving any changes in the Otogram Tools utility. Before exiting, this message will appear.



Ambient Noise Monitor

To evaluate ambient noise levels in a specific test environment, select <Ambient Noise Monitor>. The Ambient Noise Monitor will display the level of ambient noise in the room. If the measured ambient noise levels do not cross the “0dB” line, the environment is in compliance with the ANSI standard for maximum permissible ambient noise levels during audiometric testing.

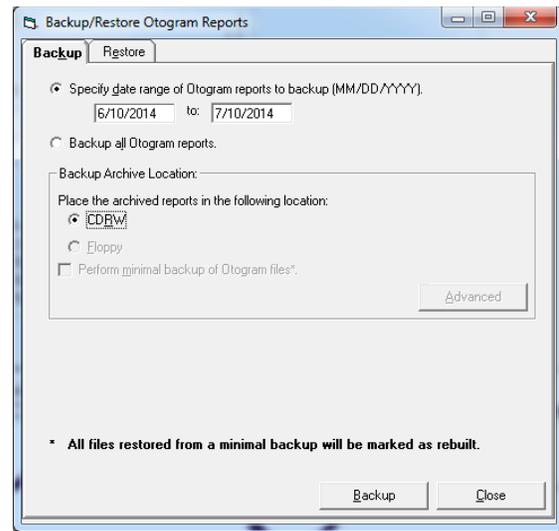
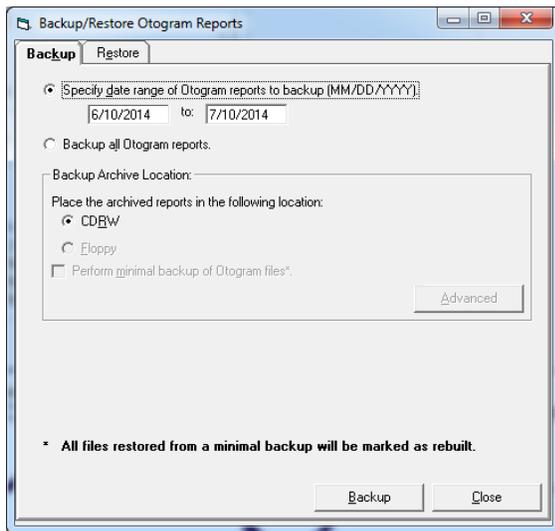


Restart Machine

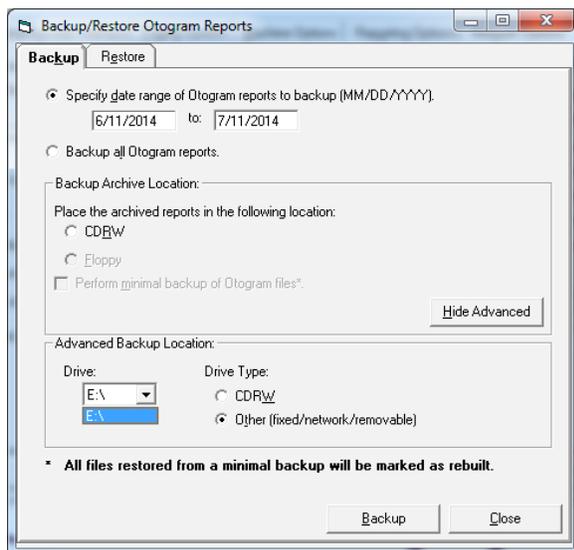
The Restart Machine command will restart the touch screen computer.

Back Up/Restore Data

This feature allows the backup of all archived Otoqram reports or only those reports from a specified date range to an optical disk, external, or mapped network drive. If the system detects the presence of storage devices other than the built in CD drive, the advanced button will be enabled.



Clicking on the Advanced button will show the available Advanced Backup Locations available. In the example below, a USB flash drive is at E:, and a network drive is mapped to Z:



If the Otoqram reports ever need to be removed from an Otoqram, they can be reinstalled by restoring the data from the back up archive location. Any reports which have not been backed up cannot be restored.

Recover Last Test

In the event that a test does not run in its entirety and there is useful data that needs to be recovered select <Recover Last Test>. Any completed tests from the last testing session will be displayed. These results may not be saved in the test archive but the practice can print these to retain a hard copy.

Equipment Checks should be performed daily to optimize Otogram performance. While performing daily equipment checks, begin by putting on the Otovest or headphones.

EQUIPMENT CHECK

This daily equipment check provides critical assurance that the equipment is functioning properly. Ototronix recommends that a copy of the equipment check report be maintained for reference. To perform the daily equipment check, follow these instructions:

STEP 1—Place appropriate transducers (e.g. headphones or insert earphones) on/in your ears. Place the Otobow (if present) so the bone oscillator sits on the high center of your forehead.

STEP 2— Select the Equip Check protocol from the drop down menu.

Enter in the required patient information.

Select <Start Testing> when ready to proceed.

Listen to the instruction. Make sure you can hear speech equally loud in both ears.

Listen to the tones and respond appropriately.

STEP 3—When the test is complete, verify that:

The pager notified the administrator

The report printed

STEP 4—View the report and verify:

Scores for air and bone conduction match your baseline in both ears within 10dB

If your equipment check does not meet the standards listed above, please contact Ototronix Support.

The Otogram is intended to be used by trained health professionals, knowledgeable of hearing testing procedures and experienced in diagnosing and treating hearing disorders. The tests may be administered by a physician, audiologist or qualified and trained administrator under the supervision of a physician. The test is not self-administered by the patient. The results of the test are to be reviewed and interpreted by either a physician or audiologist.

PATIENT SELECTION

Before conducting any automated audiometry test, evaluate the patient's ability to listen and follow simple instructions. Patients with cognitive, behavioral or physical limitations that would preclude sustained attention and reliable subjective responses may not be appropriate candidates for the Otogram's automated testing option. Examples are listed below. In such instances it may be necessary to evaluate the patient using manual audiometry and/or strictly objective measures.

Limited cognitive skills

Inattentiveness

Emotional or psychological deficiencies

An inability to press the response button or touch the screen accurately and repeatedly

An inability to hear speech in both ears at less than 95 dB HL

OTOSCOPY

Before testing, the administrator and/or physician must check the patient's ears to make sure no contraindications for testing exist. If the eardrum is not predominately visible or if the ear appears unhealthy, the patient should be cleared by an audiologist or physician before testing is performed. Failure to properly examine the patient's ears prior to testing may cause test administration errors and/or lead to inaccurate test results. To avoid contamination, do not test patients with active ear infections or fluid in the ear canal. While examining the canal, determine the best size ear tips and the optimum angle for the insertion of the ear tips.

EAR TIP USAGE

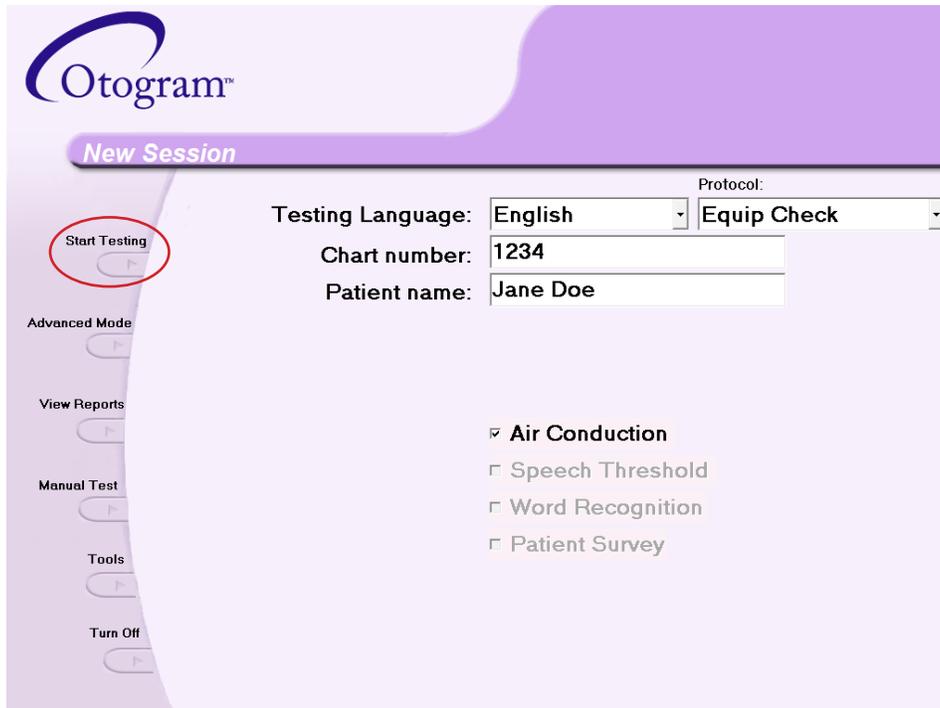
For models employing EAR-5A inserts:

Ear tips are single-use only. To avoid contamination, only use a new set of ear tips for each patient.

Push the ear tips onto the transducers to install them, and pull the ear tips off to remove them. Avoid twisting which can damage the transducer.

To ensure safe and effective use of the Otogram, use only the ear tips provided with the Otogram or otherwise specified for use with the Otogram. Ear tips may be reordered through Ototronix or an authorized dealer. Refer to Ototronix web site for ear tip reorder form: www.ototronixdiagnostics.com

NEW SESSION SCREEN INPUT



Otogram™

New Session

Testing Language: English Protocol: Equip Check

Chart number: 1234

Patient name: Jane Doe

Start Testing

Advanced Mode

View Reports

Manual Test

Tools

Turn Off

- Air Conduction
- Speech Threshold
- Word Recognition
- Patient Survey

The Otogram only requires the administrator to complete three input fields in order to start the test: language, patient name and chart number. However, the Otogram does allow customization of the required input information to meet practice needs (see page 19 input screen). Any required information will need to be entered before the <Start Testing> button appears.

Upon initiating a new testing session, select a protocol from the drop down menu. A checkmark will appear next to each test that is included in the selected protocol. Individual tests can be selected and deselected without permanently changing protocols. If a specific test is not available, it will be grayed out. The selected tests will run sequentially, from top to bottom, as listed on the screen.

Once the administrator completes the required fields, the <Start Testing> button will appear on the top left-hand side of the screen.

TESTING

Tests may include: Air and Bone Conduction, Speech Reception Threshold, Speech Discrimination, and Patient Survey. After instructions and set up, the administrator does not need to be present during the tests but should wear the Pager at all times in case the patient needs assistance or is not progressing through the test. For Paging System instructions, reference page 16.

(Note: Testing Instructions below are for a complete test battery. Your Otogram may not include all the tests identified below. Adjust patient instructions and steps accordingly)

Patient Set Up and Instructions

STEP 1— Before covering the patient's ears, provide some basic instructions such as:

Air and Bone Conduction Testing:

“For the first test, you will hear a series of pulsing tones. Press the button (or touch the red square on the touch screen) each time you hear the series of tones, even if they are very soft. I will be placing ear tips in your ears (or headphones over your ears) and an Otobow on your forehead. You will feel some pressure from the Otobow but when you've completed the tone test, the Otogram will instruct you to remove the Otobow from your forehead and place it in your lap for the duration of the test.”

Speech Testing:

“The next tests will determine how well you hear and understand speech using a picture pointing task. Simply touch the picture that corresponds to the word you hear. Some of the words will be so soft that you can barely hear them but be sure to make a guess anyway so the test will move on to louder words.”

Assistance:

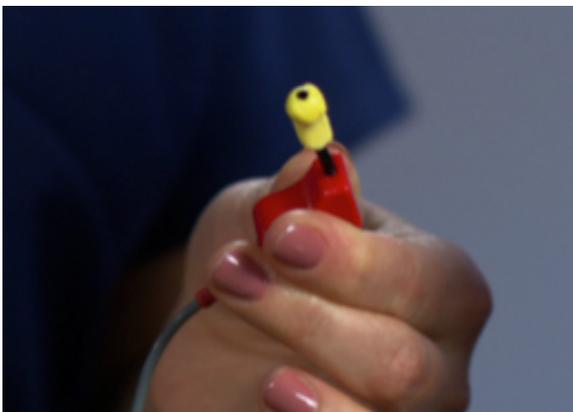
“Should you need assistance at anytime during the test, press the red help button on the screen. The Otogram will page me and I will return to the room. As a safety precaution, please avoid standing up or moving away while connected to the Otogram.”

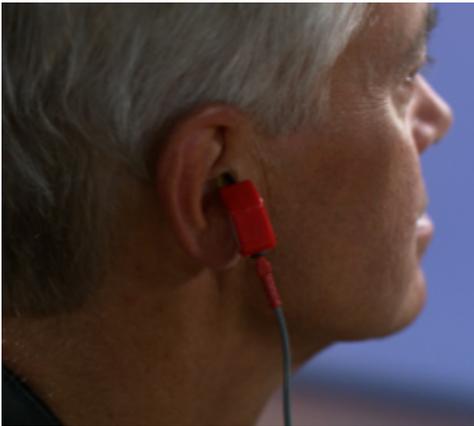
Volume:

“As soon as the test starts, the Otogram will instruct you to ‘Touch the screen with your finger now.’ It will repeat that phrase until you touch the screen. Wait to touch the screen until that message is at a comfortable listening level for instructions. Once the test starts, if the instructions need to be adjusted, you'll be able to do so by pressing the ‘louder’ or ‘softer’ button on the screen.”

STEP 2— For Insert Earphones: Drape the Otovest over the patient's shoulders so that the red insert earphone is on the right of the patient, and the blue insert earphone is on the left. Fasten the side Velcro closure so the Otovest rests comfortably on the patient's shoulders. Give the patient the response button to use during pure tone testing. Select a foam ear tip that is slightly larger than the opening of the ear canal. Place the black stem of the foam ear tip on the insert earphone without twisting so that it completely covers the silver post. (Likewise remove foam eartips without twisting, which can damage the insert earphone.) Place the ear tips in the patient's ears by compressing the foam ear tip into the smallest diameter possible being sure not to obstruct the sound tube. Pull on the ear in order to straighten the ear canal and improve insertion. Insert the tip into the ear canal. The rear edge of the foam ear tip should be 2-3mm inside the ear canal entrance and no sidewalls of the insert should be visible (see illustration). Hold the ear tips in the ear canal until they expand.

NOTE: Proper insertion depth is necessary to achieve accurate test results and to achieve maximum interaural and ambient noise attenuation. For more information regarding use of insert earphones, please refer to ANSI S3.6-1996.





For Circumaural Headphones: Place the headphones over the patients head so that the right headphone is covering the right ear and the left headphone is covering the left ear. Give the patient the response button to use during pure tone testing.

STEP 3—If your model includes Bone Conduction: Place the Otobow around the patient’s head with the raised circle of the bone oscillator at the center of the forehead close to the natural hairline. Place the rubber pad of the Otobow at the base of the head. Drape the gray cable across the top of the head to keep it out of the patient’s face.



NOTE: If Otobow placement seems unstable, use an alcohol wipe to clean the skin and bone oscillator surface to improve contact.

STEP 4—To start automated audiometry: Enter the patient information into the required fields.

Select <Start Testing> to begin the test battery.

NOTE: To conduct speech discrimination testing without pure-tone testing, the Otogram will prompt the administrator to enter the presentation and masking levels for the test.

Speech Discrimination Presentation Level

Without automated air and bone conduction tests, you must manually select the presentation level for the Speech Discrimination test.

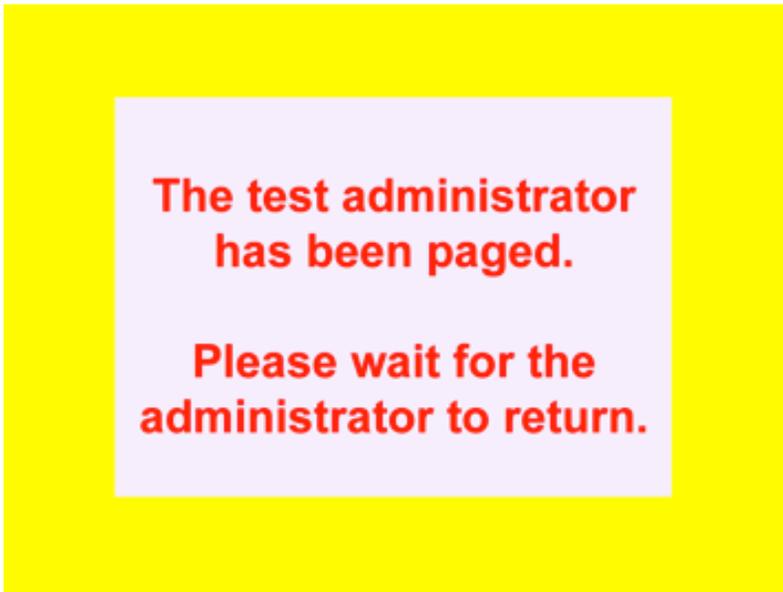
Presentation Level:

Mask			View Audiogram
Right	60 ▾	0 ▾	OK
Left	60 ▾	0 ▾	

Testing Procedure

Once the test has begun and the patient seems to be responding properly, the administrator can leave the room wearing the pager.

Once all selected tests have been performed, the administrator will be paged to return to the patient. Return to the patient immediately and touch the yellow screen that says “The test administrator has been paged. Please wait for the administrator to return.”



If the yellow screen is not touched, the administrator will continue to be paged that the patient has completed their test. Select <View Report> to review results before disconnecting patient. Select <Manual Retest> to re-evaluate pure-tones or word recognition. If no further testing is needed, remove the inserts / headphones. Results will print for audiologist or physician review.

REPORTING

The Otogram produces a standard report for audiologists and physicians to interpret when making a diagnosis or treatment decision. Normal reporting conventions are used, such as red indicating results for the right ear and blue indicating results for the left ear. The Otogram's testing database allows each patient's hearing test to be archived and later recalled.

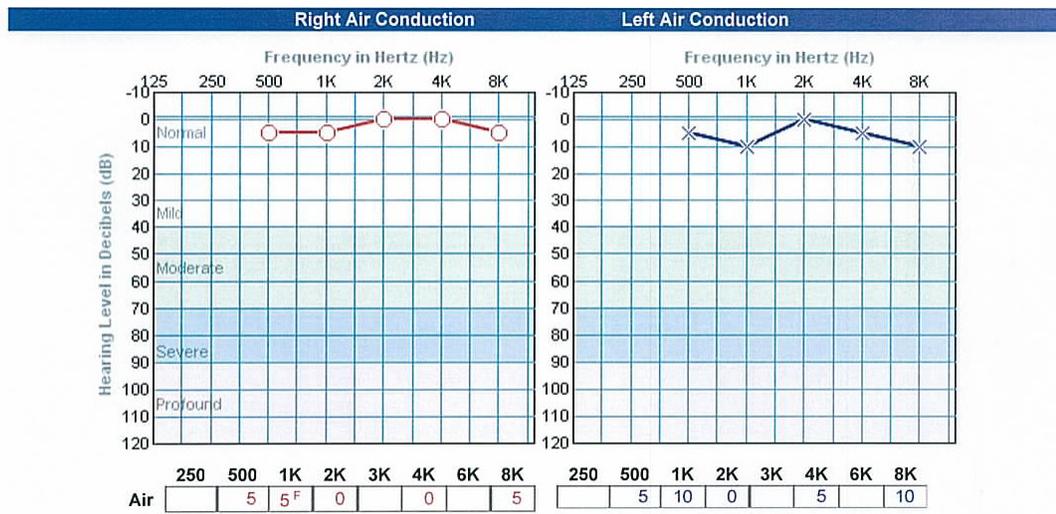
Report Layout

Report Header

 Version: 3.2.0	Name	JAGO	Chart#	8675309
	Date	07/14/2014	Doctor	
	Time	17:55	Tester	
	DOB	1966 06 06	Clinic	
	Gender	Male	Elapsed	Session354 TAR:. PT:6.6 SRT:.8 SD:1.2

This is a standard header that will appear on every report. Any information entered on New Session screen will automatically populate on the header.

Air and Bone Conduction



Pure tone thresholds can be plotted graphically (one or two panel audiogram) and/or in table format. The audiogram uses the standard ASHA symbols as shown in the Symbols legend. The audiogram view can be configured under the Reporting Options tab on the Tools menu by selecting the preferred number of panels from the drop down menu.

Speech Intelligibility

Note: Test language is noted within “Speech Intelligibility” title bar.

Under “Speech Intelligibility”, a table with a description of each measure and corresponding ear-specific test results is displayed.

Speech Intelligibility (English)			Symbols			
Description	Measure	Unit	Ear Tested			
			Right		Left	
Average best pure-tone hearing in speech range	PTA	dB	0		5	
Predicted SRT		dB	2		8	
Lowest level speech understood	SRT	dB	<-5	NA msk	<-5	NA msk
Speech Discrimination presentation level		dB	60	NA msk	60	NA msk
Test score predicted by audibility factors alone		%	100		100	
Test score (shown with the range of testing error)	Sp. Discrim	%	92	100	92	100
Discrimination loss not explained by pure-tone loss		%	0	0	8	0

Air Conduction	R	L
Masked	△	□
Bone Conduction	▽	◇
Masked	▽	◇
No Response	↖	↗
Lowest Attainable Threshold	↖	↗
Acoustic Reflex Threshold	↖	↗
Ipsi Stimulus	→	←
Contra Stimulus	→	←

The report also shows the predicted and actual speech reception threshold (SRT) and speech discrimination scores including any discrimination loss that cannot be explained by degree of hearing loss.



VIEWING AND PRINTING REPORTS

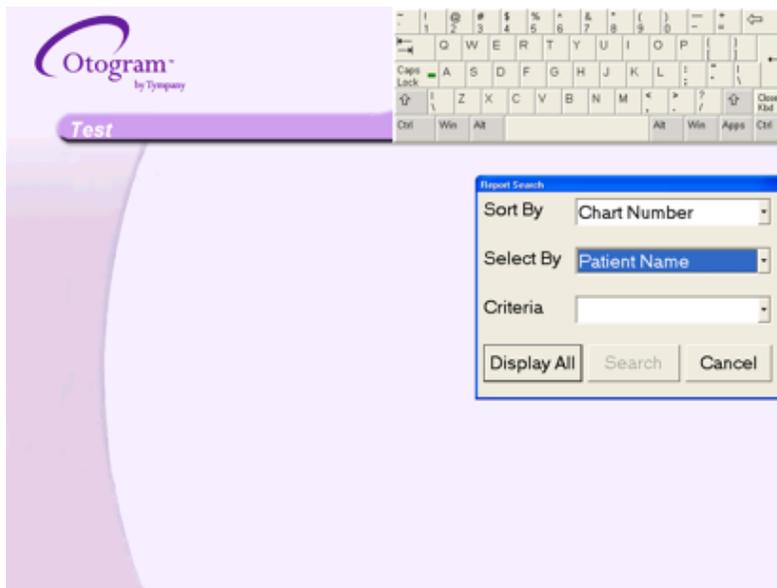
After a patient has completed a test, the results are printed and saved under the patient’s name and chart number. The Report screen will appear with the following options:

- Select the <New Session> button to return to the New Session screen.
- Select the <View Report> button to display a patient’s report directly after a test.
- Select the <Print Report> button to print additional copies of the report.
- Select the <Manual Retest> button to enter manual audiometry mode.

To view saved reports:

From the Report screen, select <View Report>, then <View Saved Report>.

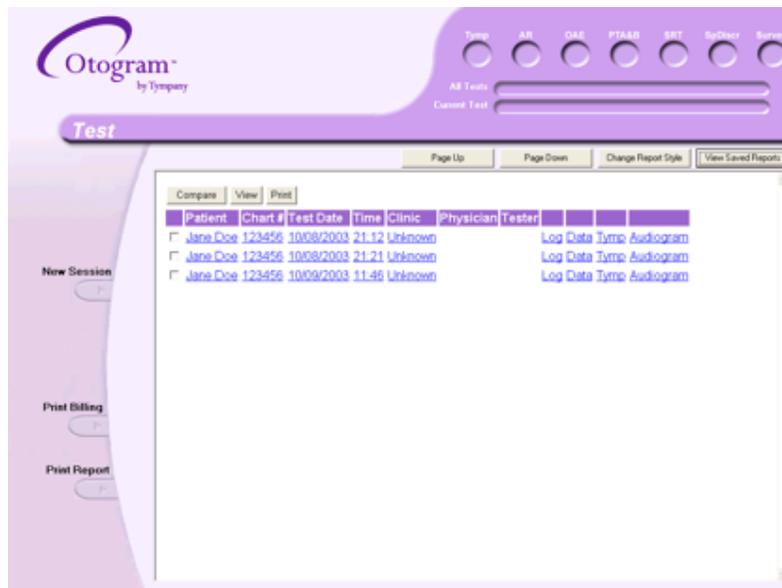
From the New Session screen, select <View Reports>.



The Report Search window allows the reports to be sorted by various categories including: Chart Number, Clinic, Date of Birth, Date of Test, Gender, Patient Name, or Physician.

To filter reports: use the "Sort By", "Select By", and "Criteria" drop down fields and select <Search>.

To view all reports: select <Display All>.



To compare two reports:

Select the check box next to each test.

Select the <Compare> button. The most recent audiogram and tympanogram results will overlay the older results.

To view or print tests:

Select the check box next to each test.

Select <View> or <Print>.

ADVANCED AUTOMATED FEATURES

Selecting <Advanced Mode> on the New Session screen allows the frequencies and stimuli of any protocol to be modified for a single patient

Otogram™

New Session

Testing Language: English Protocol: Equip Check

Chart number:

Patient name:

Advanced Mode

View Reports

Manual Test

Tools

Turn Off

Frequencies	Always	Never	As Needed
250	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
500	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Always Mask Bone

Stimuli

Right Ear

Left Ear

Bone

Air Conduction

Speech Threshold

Word Recognition

Patient Survey

Without bone conduction thresholds the Otogram will perform air conduction testing without masking. Unmasked thresholds may allow crossover and underestimate hearing loss in the poorer ear.

Frequencies:

Select Always, Never, or As-Needed next to each frequency to modify the air and bone conduction protocol.

Check “Always Mask Bone” to mask bone regardless of air-bone gaps or lateral differences in air thresholds.

Stimuli:

To test only one ear for all selected tests or to eliminate bone conduction, uncheck boxes as appropriate. Adjust the “Maximum AR Stim Level” from 80-110 dB HL.

MANUAL TESTING

The Otogram has a manual audiometry mode. To perform manual audiometry testing select <Manual Test> on the New Session screen. Use manual audiometry to retest specific thresholds at the end of an automated audiometry test by selecting <Manual Retest> from the Report screen. Before proceeding with manual audiometry, instruct the patient to turn so the touch screen computer is not visible.

Otogram™

New Session

Testing Language: English Protocol: Default

Chart number:

Patient name:

Advanced Mode

View Reports

Manual Test

Tools

Turn Off

Air Conduction

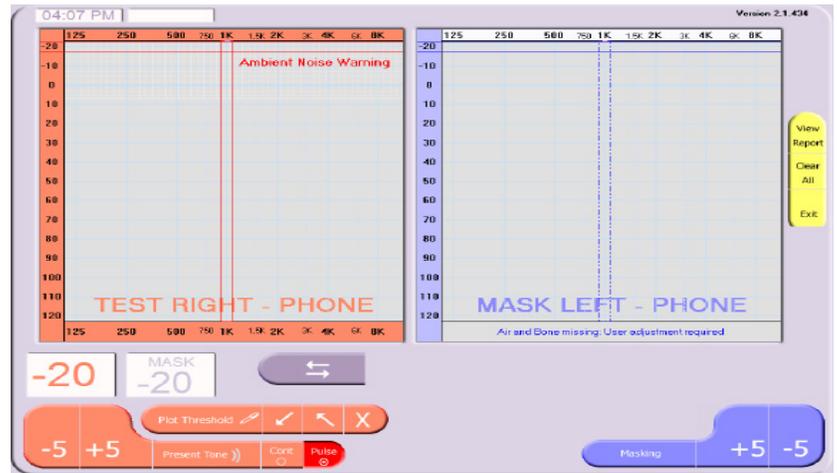
Speech Threshold

Word Recognition

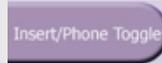
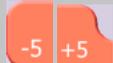
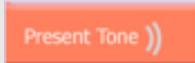
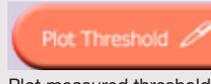
Patient Survey

Pure Tone Air and Bone Conduction

The Otogram uses accepted symbols and conventions for manual audiometry (red=right; blue=left). The gray areas identify the testing limits of the Otogram for both air and bone conduction. An ambient noise warning will appear when environmental noise is at a level that could interfere with testing.



Controls

 <p>Alternate between the patient's left and right ear for pure tone testing</p>	 <p>Alternate between air and bone conduction</p>	 <p>Choose insert earphones or headphones. Not available in all software versions.</p>	 <p>Increase or decrease presentation level in 5 dB increments.</p>	 <p>Present the tone to the patient's test ear</p>
 <p>Present continuous tone</p>	 <p>Present pulsing tone</p>	 <p>Plot measured threshold</p>	 <p>Indicate that no response was obtained at the presentation level</p>	 <p>Indicate that the threshold may be better than the measured threshold</p>
 <p>Delete a plot</p>	 <p>The <Talk Forward> button allows talking to the patient using the ambient noise microphones on the back of the Otovest. Change the volume by selecting the volume bubbles.</p>	 <p>Present masking</p>	 <p>Increase or decrease masking level in 5 dB increments</p>	 <p>Activate Otogram's automated masking protocols</p>

Keyboard Interface

The keyboard commands are as follows:

Key	Command
{Space Bar} or {End}	Present Tone
{Up Arrow} {Down Arrow}	Presentation level +/- 5 dB
{Page Up} {Page Down}	Presentation level +/- 20 dB
{W} {Z}	Masking Intensity +/- 5 dB
{M}	Masking on/off
< >	Change frequency
{Enter}	Plot threshold
{Delete}	Delete plotted threshold
{R} {L} or {F3}	Right and left ear selection
{A} {B} or {F2}	Air and bone selection
{Home}	Talk forward (enable microphone)

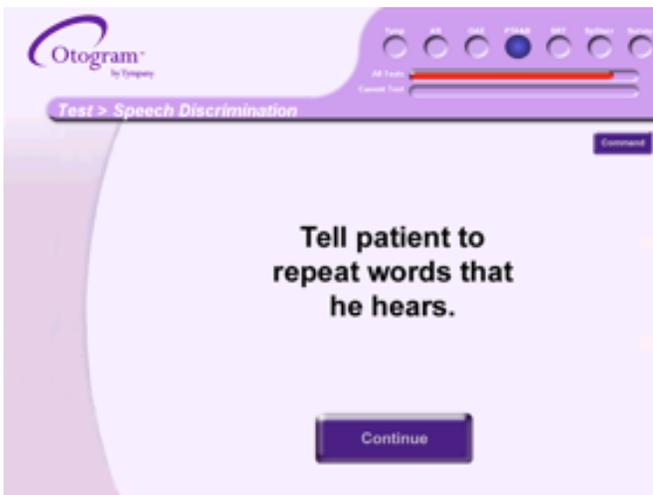
Side Bar

 View Report Save or print the manual results	 Save Report Manual results will only be archived once this button is selected	 Print Report Report will print with the word "manual" in the upper left hand corner	 Return Return to the manual audiometry screen	 Clear All Delete all manual thresholds	 Spch Test Perform speech discrimination manually (See instructions below)	 Exit Return to the New Session screen
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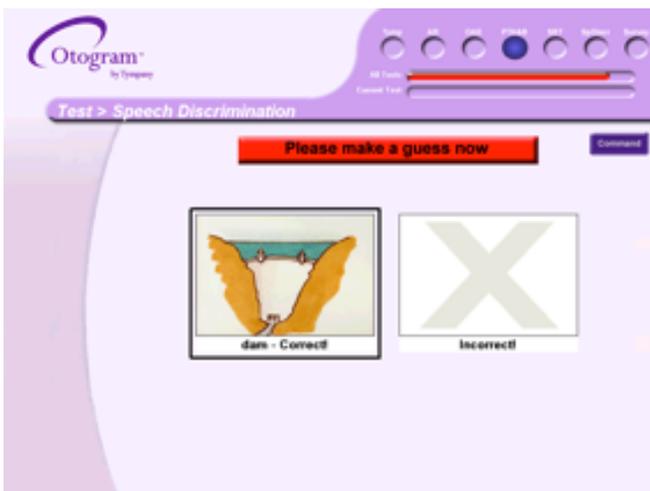
SPEECH DISCRIMINATION

To activate manual speech discrimination from the manual audiometry screen, press <Spch Test>. If automated thresholds are not available, enter the presentation and masking levels for each ear in the Speech Discrimination Presentation window. Press <View Audiogram> to review manual thresholds if needed. Press <OK> to begin testing. Once the patient has completed speech discrimination, the Otoqram will return to the manual audiometry screen.

Instruct the patient to repeat the words that he hears.



The patient will then hear recorded words and will repeat them. Mark <Correct> or <Incorrect> as appropriate. The Otoqram will score accordingly.



NOTE: Manual results will only be archived once <Save Report> is selected.

ANNUAL CALIBRATION

Annual calibration is required according to the manufacturer's specifications to ensure accurate test results. The Otovest must be calibrated by an Ototronix authorized technician to meet ANSI specification for diagnostic hearing testing. When the Otogram is within 14 days of its calibration due date, an on-screen reminder will appear upon start-up. If the Otogram is out of calibration, an "uncalibrated" watermark will appear on all reports performed after that date until the unit is calibrated.

To schedule Otogram calibration, contact Ototronix Support.

Warranties are available to cover the cost of this service.

DAILY CALIBRATION AND EQUIPMENT CHECK

Daily equipment checks provide critical assurance that the equipment is functioning properly. Ototronix recommends that a copy of the equipment check report be maintained for reference.

See page 29 for more detailed instructions on performing daily equipment check.

ROUTINE CLEANING

When cleaning the touch screen, use a soft cloth to remove dust.

For routine cleaning of other surfaces, use a soft cloth to remove dust. It is also acceptable to use a water-diluted mild detergent and a soft damp cloth. Wring the cloth thoroughly to prevent damage caused by moisture entering the equipment.

Do not use chemical agents containing ammonia, thinner, or alcohol or other harsh chemicals, as they may damage the equipment.

For headphones, use a slightly dampened cloth to clean ear pads.

Allow to dry before operating.

OTOVEST TRANSDUCERS

The Otovest contains sensitive electronic devices; care should be taken to avoid damaging them. Keep all transducers clean, dry, and protected.

Insert Earphones and Bone Oscillator



Push the ear tips onto the insert earphones to install them, and pull the ear tips off to remove them. Avoid twisting which can damage the insert earphones. Do not unplug the insert earphones. Unplugging the insert earphone can strip the outlet leaving the earphone loose or damaged. Avoid holding the earphone by its cable.

Do not unplug the bone oscillator. When removing the oscillator from the Otobow, do not pull the cord. The bone oscillator and the Otobow may be wiped with a mild cleaning agent such as an alcohol swab.

Resolutions to the most frequently asked troubleshooting questions are provided below.

Please contact Ototronix Support for additional assistance.

NO DEVICE CONNECTED MESSAGE

Before rebooting the Otogram, verify that the power cord is securely plugged into both the outlet and the Otogram Base.

When the above is verified, turn off the Otogram by selecting <Start> then <Turn Off Computer>. After the Otogram shuts down, activate the Power Switch to turn the Otogram back on. If the Otogram does not start normally, contact Ototronix Support.

CANNOT HEAR SPEECH OR TONES

Ensure the Otovest bone oscillator, and/or headphones are securely connected to the audiometer.

TOUCHSCREEN NOT RESPONDING PROPERLY TO FINGER CONTACT

Avoid touching the screen with both the fingernail and the fingertip. If issues persist, re-calibrate the touch screen.

TOUCH SCREEN CALIBRATION

If the Otogram's touch screen does not seem to be accurate, it can be recalibrated. To recalibrate, follow these steps:

STEP 1— Sit in front of the Otogram in the same position, at the same level as a patient.

STEP 2— On the keyboard, press the <Windows> key. The start menu should appear.

STEP 3— From Start, select <Control Panel>, then <Tablet Calibration>.

STEP 4— Follow the on-screen instructions to calibrate the touchscreen.

TECHNICAL SUPPORT AND SERVICE

Contact Ototronix Support for information on products, software updates, and to request enhancements, or browse our website at www.ototronixdiagnostics.com. Email Ototronix at support@ototronix.com or call toll-free at 877-410-4327 in North America and talk to Ototronix Support.

Service and repair of electronic medical equipment should be performed by the equipment manufacturer or an authorized representative. Ototronix reserves the right to disclaim all responsibility for the operating safety, reliability and performance of equipment serviced or repaired by other parties.



CAUTION: Do not remove the hardware platform cover under any circumstances.

All Otograms come with a standard one-year service and maintenance agreement. Extended warranty and service agreements are available for purchase, which may cover annual calibration, software updates and upgrades, maintenance, and loaner units.

If a warranty is not purchased, Ototronix will still provide repair and calibration services at the customer's expense. Standard shipping rates and the full cost of all repairs, including labor and materials, will apply. A repair quote will be provided and an authorization signature is required prior to beginning repairs. The Otogram may then be transported to Ototronix for required service and maintenance.

For shipping information or if for any reason there is dissatisfaction with the Otogram, please call our toll free support number at 877- 410-4327 or email us at support@ototronix.com.

TRANSPORT AND STORAGE

The Otogram is provided with packaging capable of repeated use and safe transport of the Otogram and its accessories. Saving the original Otogram packaging for use in future transport of the Otogram is strongly advised.

If the Otogram is to be stored for extended periods, use the original Otogram packaging in order to preserve the equipment and minimize the possibility of damage. Please refer to the General Specification sections in Section 1 of this Guide for proper storage environment conditions.

To avoid damage follow instructions on Packaging Insert.

DISPOSAL

If you wish to dispose of your Otogram for any reason, contact Ototronix for return and proper disposal.

Appendix A

Patient Survey Questions (Not present in all models)

Hearing Handicap Index for the Elderly - Short (HHIE-S)

1. Does a hearing problem cause you to feel embarrassed when meeting new people? Yes, Sometimes, No
2. Does a hearing problem cause you to feel frustrated when talking to members of your family? Yes, Sometimes, No
3. Do you feel handicapped by a hearing problem? Yes, Sometimes, No
4. Does a hearing problem cause you difficulty when visiting friends relatives or neighbors? Yes, Sometimes, No
5. Does a hearing problem cause you to feel frustrated when talking to coworkers, clients or customers? Yes, Sometimes, No
6. Does a hearing problem cause you difficulty in the movies or theaters? Yes, Sometimes, No
7. Does a hearing problem cause you to have arguments with family members? Yes, Sometimes, No
8. Does a hearing problem cause you difficulty when listening to TV or radio? Yes, Sometimes, No
9. Do you feel that any difficulty with your hearing limits or hampers your personal or social life? Yes, Sometimes, No
10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends? Yes, Sometimes, No

Hearing Handicap Index for the Elderly (HHIE)

1. Does a hearing problem cause you to use the phone less often than you would like? Yes, Sometimes, No
2. Does a hearing problem cause you to feel embarrassed when meeting new people? Yes, Sometimes, No
3. Does a hearing problem cause you to avoid groups of people? Yes, Sometimes, No,
4. Does a hearing problem make you irritable? Yes, Sometimes, No
5. Does a hearing problem cause you to feel frustrated when talking to members of your family? Yes, Sometimes, No
6. Does a hearing problem cause you difficulty when attending a party? Yes, Sometimes, No
7. Do you feel handicapped by a hearing problem? Yes, Sometimes, No
8. Does a hearing problem cause you difficulty when visiting friends, relatives or neighbors? Yes, Sometimes, No
9. Does a hearing problem cause you to feel frustrated when talking to coworkers, clients or customers? Yes, Sometimes, No
10. Does a hearing problem cause you difficulty in the movies or theaters? Yes, Sometimes, No
11. Does a hearing problem cause you to be nervous? Yes, Sometimes, No
12. Does a hearing problem cause you to visit friends, relatives or neighbors less often than you would like? Yes, Sometimes, No
13. Does a hearing problem cause you to have arguments with family members? Yes, Sometimes, No
14. Does a hearing problem cause you difficulty when listening to TV or radio? Yes, Sometimes, No
15. Does a hearing problem cause you to go shopping less often than you would like? Yes, Sometimes, No
16. Does any problem or difficulty with your hearing upset you at all? Yes, Sometimes, No
17. Does a hearing problem cause you to want to be by yourself? Yes, Sometimes, No
18. Does a hearing problem cause you to talk to family members less often than you would like? Yes, Sometimes, No
19. Do you feel that any difficulty with your hearing limits or hampers your personal or social life? Yes, Sometimes, No
20. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends? Yes, Sometimes, No
21. Does a hearing problem cause you to feel depressed? Yes, Sometimes, No
22. Does a hearing problem cause you to listen to TV or radio less often than you would like? Yes, Sometimes, No
23. Does a hearing problem cause you to feel uncomfortable when talking to friends? Yes, Sometimes, No
24. Does a hearing problem cause you to feel left out when you are with a group of people? Yes, Sometimes, No

Mayo

1. Which best describes how quickly your hearing loss developed in your RIGHT EAR? Suddenly (< one day), Rapidly (> one day, less than 5 months), Gradually (> five years, or unknown), Fluctuating Hearing - sometimes I hear better than others, Hearing loss present at birth, No hearing loss suspected
2. Which best describes how quickly your hearing loss developed in your LEFT EAR? Suddenly (< one day), Rapidly (> one day, less than 5 months), Gradually (> five years, or unknown), Fluctuating Hearing - sometimes I hear better than others, Hearing loss present at birth, No hearing loss suspected
3. Have you had a head cold recently? Yes, No
4. Have you had pain, pressure or fullness in your ears? Yes, No
5. In which ear did you have pain, pressure or fullness? Right, Left, Both
6. Have you had hearing loss that fluctuates (comes and goes)? Yes, No
7. In which ear did you have the hearing loss that comes and goes? Right, Left, Both
8. Have you had an abnormal sensitivity to loud sounds? Yes, No
9. In which ear did you have the unusual sensitivity to loud sounds? Right, Left, Both
10. Have you ever worked around loud noise? Yes, No
11. Have you been exposed to gunfire? Yes, No
12. Where were you exposed to gunfire? As a hunter, In the military, As a sport
13. Does anyone else in your family have a hearing problem similar to yours? Yes, No
14. Did you have many ear infections as a child? Yes, No
15. Do you ever have trouble hearing common sounds like a door bell or ringing telephone? Yes, No
16. Do you ever have trouble telling which direction sounds are coming from? Yes, No
17. Do you ever have trouble understanding voices on the telephone (either ear)? Yes, No
18. Do you ever have difficulty understanding what someone says to you when they are directly in front of you and there is NO background noise? Yes, No
19. Do you ever have difficulty understanding what someone says to you when they are directly in front of you and there is SOFT background noise? Yes, No
20. Do you ever have difficulty understanding what someone says to you when they are directly in front of you and there is LOUD background noise? Yes, No
21. Do you ever have difficulty understanding what someone says to you when they are over ten feet away and there is no background noise? Yes, No
22. Does a hearing problem cause you to use the phone less often than you would like? Yes, No
23. Does a hearing problem cause you to feel embarrassed when meeting new people? Yes, No
24. Does a hearing problem cause you to avoid groups of people? Yes, No
25. Does a hearing problem make you irritable? Yes, No
26. Does a hearing problem cause you to feel frustrated when talking to members of your family? Yes, Sometimes, No
27. Does a hearing problem cause you difficulty when attending a party? Yes, Sometimes, No
28. Does a hearing problem cause you difficulty hearing or understanding coworkers, clients, or customers? Yes, Sometimes, No
29. Do you feel handicapped by a hearing problem? Yes, Sometimes, No
30. Does a hearing problem cause you difficulty when visiting friends relatives or neighbors? Yes, Sometimes, No
31. Does a hearing problem cause you to feel frustrated when talking to coworkers, clients or customers? Yes, Sometimes, No
32. Does a hearing problem cause you difficulty in the movies or theaters? Yes, Sometimes, No
33. Does a hearing problem cause you to be nervous? Yes, Sometimes, No
34. Does a hearing problem cause you to visit friends, relatives or neighbors less often than you would like? Yes, Sometimes, No
35. Does a hearing problem cause you to have arguments with family members? Yes, Sometimes, No
36. Does a hearing problem cause you difficulty when listening to TV or radio? Yes, Sometimes, No
37. Does a hearing problem cause you to go shopping less often than you would like? Yes, Sometimes, No
38. Does any problem or difficulty with your hearing upset you at all? Yes, Sometimes, No

39. Does a hearing problem cause you to want to be by yourself? Yes, Sometimes, No
40. Does a hearing problem cause you to talk to family members less often than you would like? Yes, Sometimes, No
41. Do you feel that any difficulty with your hearing limits or hampers your personal or social life? Yes, Sometimes, No
42. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends? Yes, Sometimes, No
43. Does a hearing problem cause you to feel depressed? Yes, Sometimes, No
44. Does a hearing problem cause you to listen to TV or radio less often than you would like? Yes, Sometimes, No
45. Does a hearing problem cause you to feel uncomfortable when talking to friends? Yes, Sometimes, No
46. Does a hearing problem cause you to feel left out when you are with a group of people? Yes, Sometimes, No

Hearing and Balance Survey

Balance and Dizziness

1. Do you ever lose your balance or feel dizzy or unsteady? Yes, No
2. Have you fallen more than twice in the past year? Yes, No
3. Do you ever fall or feel like you are about to fall? Yes, No
4. Are you dizzy or unsteady when you first get up? Yes, No
5. Do you worry that you may fall and hurt yourself? Yes, No
6. Does moving your head quickly make you dizzy? Yes, No
7. Does bending over make you dizzy? Yes, No
8. Does dizziness or imbalance interfere with your life? Yes, No
9. Have you recently changed your medications? Yes, No
10. Has your vision changed over the last six months? Yes, No

Tinnitus

1. Do your ears ring or make noises? Yes, No
2. Have these noises started or gotten worse in the past six months? Yes, No
3. Is the ringing in your ears bothersome? Yes, No

Amplification

1. Do you have problems understanding what people say if there is noise? Yes, No
2. Do you think people mumble? Yes, No
3. Do friends or family members complain that you do not hear them? Yes, No
4. Do you “hear”, but not “understand” what people say? Yes, No



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