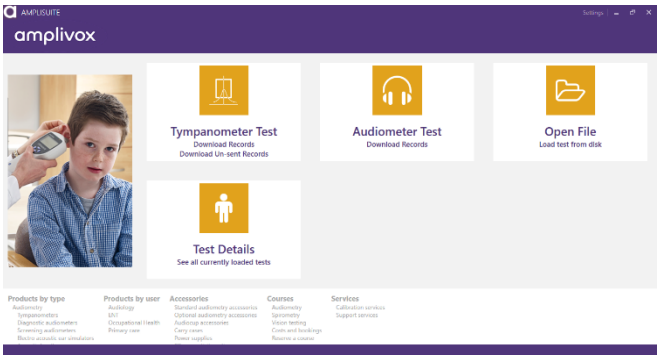
amplivox

ampliSuite



ABOUT THIS MANUAL

READ THIS OPERATING MANUAL BEFORE ATTEMPTING TO USE THE SOFTWARE.

This manual is valid for the ampliSuite. This product is manufactured by:

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1. INTRODUCTION

1.1. THANK YOU

Thank you for being part of reviewing the Amplivox ampliSuite. The Amplivox ampliSuite is a software application that allows results to be uploaded from an Amplivox instrument to a computer via a USB port, viewed graphically and then printed. ampliSuite can be used with audiometers and immittance systems.

ampliSuite is useful for those who do not require more extensive features, such as a database.

Please note: Results can only be uploaded from Amplivox audiometers that incorporate the PC compatibility feature.

1.2. INTENDED APPLICATIONS

The software is intended to be used as an accessory with compatible hearing testing devices to manage audiometrical data.

The ampliSuite can display audiometrical test results from the screening audiometer models 116, 170 and PC850, as well as the diagnostic instruments 240, 260 and 270. The results that can be uploaded include air conduction thresholds (AC THL), uncomfortable loudness levels (ULL)*, bone conduction levels (BC), masked thresholds (AC and BC) and speech score percentage vs. levels*. Patient and test details can also be entered in the software via the computer and then printed with the audiogram data.

***** These results can only be uploaded from Amplivox audiometers that incorporate these features.

Tympanometric and acoustic reflex tests saved in the memory of the Otowave Tympanometers can be transferred to a PC via an infrared adaptor (Otowave 102) or a USB connection (Otowave 202 & 302), and then viewed using the ampliSuite. Tympanograms and reflex traces (both Ipsilateral and Contralateral in the case of the Otowave 202 & 302) can then be displayed in greater detail than on the screen of the Otowave. All the data and traces from both ears are presented on a single screen, allowing easy comparison. Additionally, results may be classified according to the Jerger scheme and the entire record may then be printed.

1.3. DISCLAIMER

ampliSuite is a piece of **freeware** software which Amplivox provides for use in conjunction with supported Amplivox audiometers and tympanometers.

As freeware, Amplivox provides no warranty (implied or otherwise) regarding this software and is not liable for any aspect or consequences of its copying or use on a 3rd-party computer. By downloading and/or running the application, the user accepts these conditions.

2. AMPLISUITE INSTALLATION

2.1. PRE-INSTALLATION NOTES

2.1.1. PC AND SYSTEM REQUIREMENTS

The PC-requirements are as follows:

- Processor: 1 GHz or faster, one or multi-core
- RAM: 1 GB or more
- Available hard disk space: minimum 200 MB
- Resolution: minimum 1378 x 768
- Graphics device: DirectX 9 with WDDM 1.0 or higher driver
- Available 2.0 or 3.0 USB Port

2.1.2. OPERATION SYSTEM COMPATIBILITY

ampliSuite is supported on the following Microsoft Operating Systems:

- Windows 7
- Windows 8 / 8.1
- Windows 10

2.2. INSTALLATION

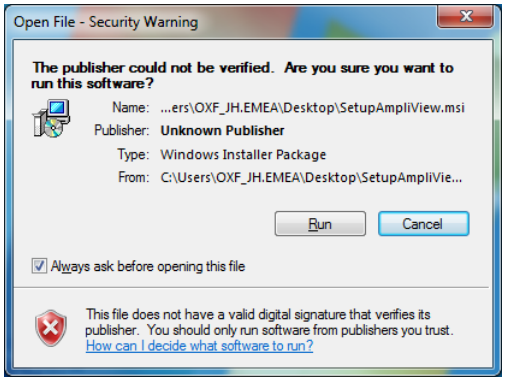
2.2.1. GENERAL

Installation is a straightforward process but the steps must be carried out in the correct order. To ensure you are familiar with the instructions please read this entire user manual before commencing installation.

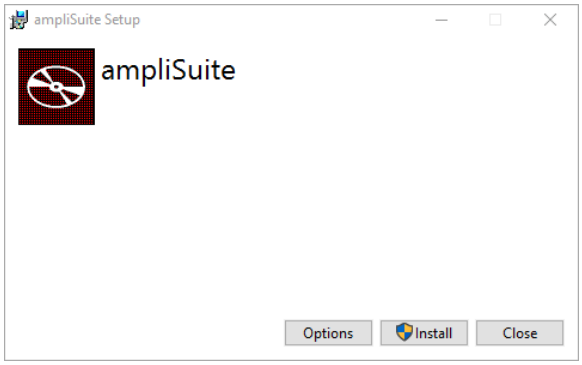
2.2.2. AMPLISUITE INSTALLATION PACKAGE

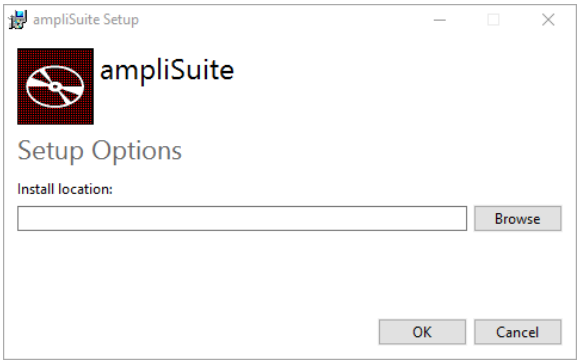
Select the **x32** folder to install the 32-bit version, or the **x64** folder to install the 64-bit version. Then run **ampliSuiteSetup.exe**:

Select **Run** to any security warnings that are displayed:

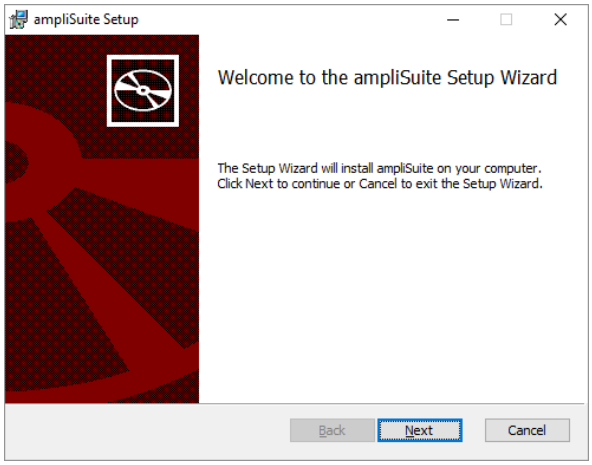


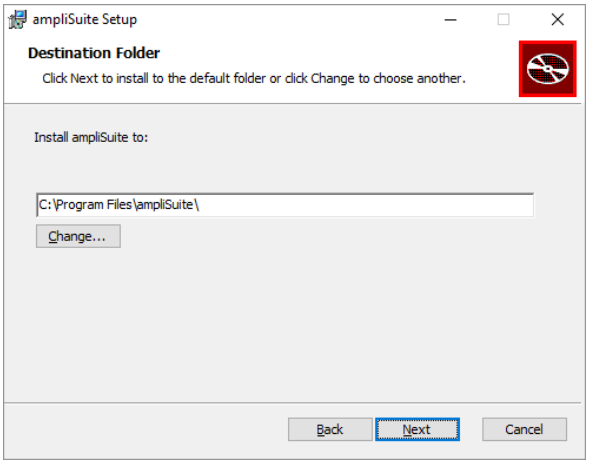
If desired, change the installation location by **Options**. Select **Install** on the welcome screen to proceed with the installation:



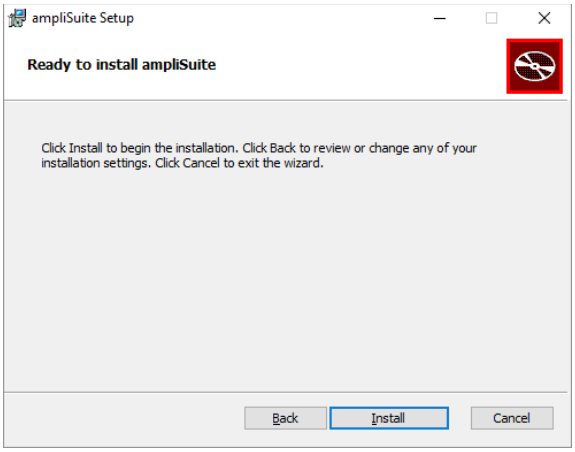


Select **Next** to proceed with the installation:

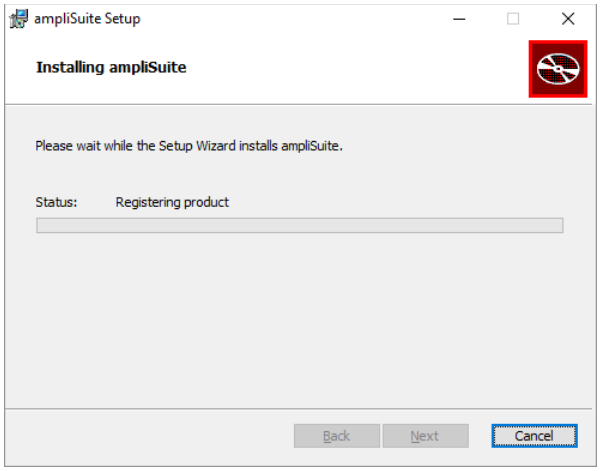




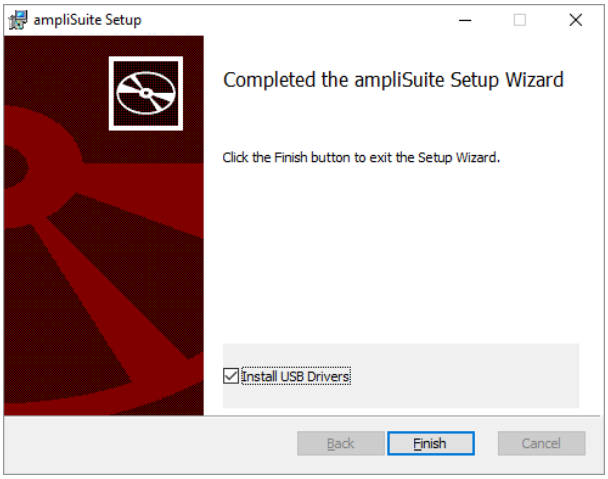
Select **Install** to proceed with the installation:



ampliSuite installation will then commence:

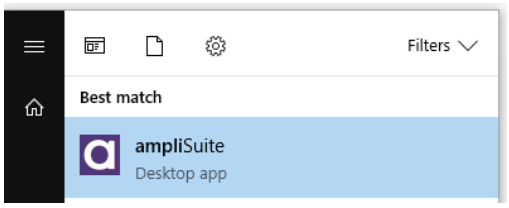


ampliSuite installation is will then complete. Tick the box to install the USB drivers if you don't currently have the latest Amplivox USB drivers installed. Select **Finish**.



Please refer to section 2.2.3 for more information about the USB Driver Installation.

To start the ampliSuite, select **ampliSuite** from the start menu or the **ampliSuite** icon on the desktop.

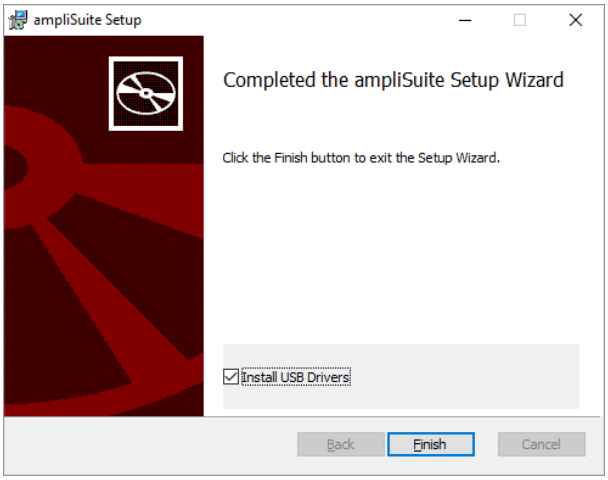


The ampliSuite Software can also be started by double-clicking on the **ampliSuite.exe** file. A desktop shortcut to this may be created if desired.

2.2.3. USB DRIVER INSTALLATION

Please note: Make sure that no device is connected to your computer while installing the drivers.

The USB driver installation is part of the ampliSuite installation package. After the ampliSuite has been successfully installed, the last window shown will offer the installation of the USB drivers. Tick the box to install the USB drivers if you don't currently have the latest amplivox USB drivers installed. Select **Finish**.



The installation of the latest drivers is not required if the latest version of the USB drivers is already installed. For example, if an Amplivox instrument has previously been connected to the PC, performing the installation again is not necessary.

3. AMPLISUITE

3.1.STARTING AMPLISUITE

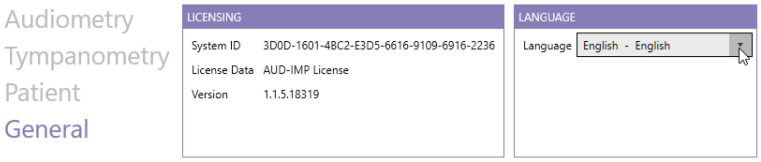
Open ampliSuite by double-clicking on the shortcut icon on the desktop.

3.2.CHANGING THE LANGUAGE

Select **SETTINGS** in the upper right corner of the ampliSuite. A popup will open with all available ampliSuite settings. Select **GENERAL** to find the language settings on the left-hand side.

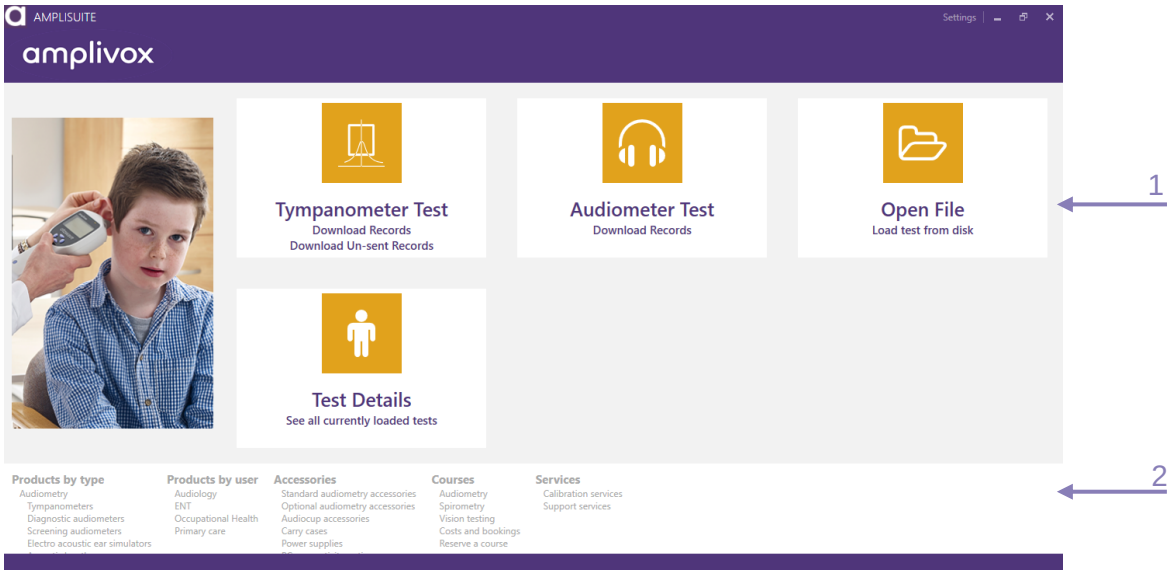
The following languages are available to use in the ampliSuite: Chinese (中文), English, Estonian (eesti), French (français), German (Deutsch), Hungarian (magyar), Italian (italiano), Japanese (日本語), Korean (한국어), Polish (polski), Portugese (português), Russian (русский), Serbian (srpski), Spanish (español) or Vietnamese (Tiếng Việt).

Select the language you would like ampliSuite to be in and confirm the change by clicking **OK**. ampliSuite will require a restart for the changes to take place.



3.3.CONTROLS FROM THE HOME SCREEN

From the ampliSuite home screen you can access the different modules available **(1)**, **or you can directly access any** information provided from the amplivox website **(2)**. The following modules are available:



- **Tympanometer Test:** Download all data directly from your tympanometer
- **Open File:** Load tympanometry test data stored on your local drive or directly access the immittance module.
- **Audiometer Test:** Download data directly from your audiometer or access the audiometry module
- **Test Details:** Review all uploaded measurements.

Use the **Open File** button to load previously transferred records from a Amplivox Otowave tympanometer. Locate the **APX** file you wish to view and select **Open.** The impedance module will open, and the record will be displayed.

Use **Tympanometer Test** button to transfer records from a Amplivox Otowave 202 or 302 tympanometer.

Select **Download Records** to download all records directly from a Otowave 202 or 302 connected to the PC via a USB cable.

Select **Download Un-sent Records** to download only previously un-sent records from a Otowave 202 and/or 302 connected to the PC via a USB cable.

After the download, the impedance module will open and the record will be displayed.

Use the **Audiometer Module** to manually enter or download stored thresholds from a Amplivox 116, 170, PC850, 240, 260 or 270 audiometer.

With a supported audiometer connected, select **Download Records**. The data will transfer from the connected audiometer and be displayed in the audiometry module.

Use the **Test Details** functionality to view previous tests within the same ampliSuite session and to enter basic patient details.

4. AUDIOMETRY MODULE

4.1.GENERAL

The audiometry module allows you to review audiometrical test results (**Tone** and **Speech**). The audiometry module can be used with the following Amplivox Audiometers: 116, 170, PC850, 240, 260 and 270.

To access the module, select the audiometry icon.

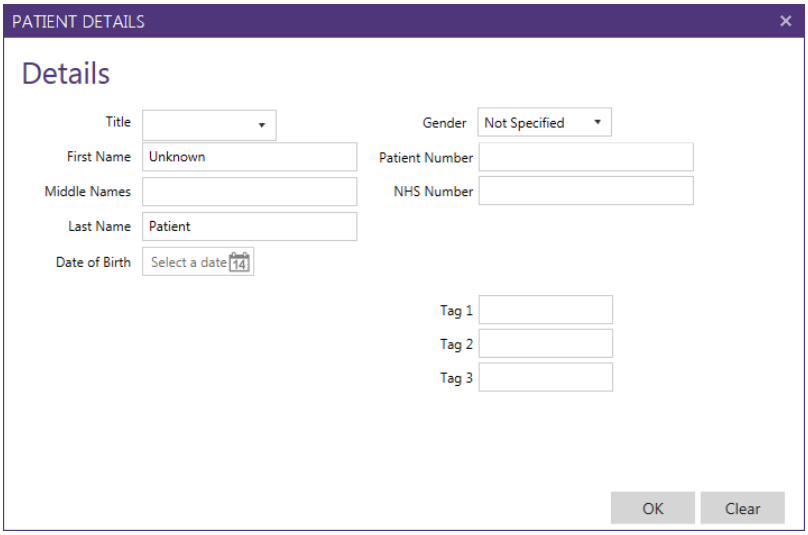
4.2.OVERALL FUNCTIONS

4.2.1. RETURN TO MAIN MENU

To return to the main menu, select the home icon on the top left corner of the screen  .

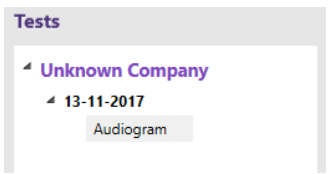
4.2.2. ADD PATIENTS TEST DETAILS

To enter basic patient information, select the **Patient Details**  button. The patient details form will then be displayed. Enter the patient details and select **OK**. The details will then be displayed on the main patients details screen.



4.2.3. DOWNLOAD RESULTS FROM DEVICE

Download current record shown on the device is transferred to the PC (AC, BC and if available speech SRT).



As soon as a test is downloaded and selected, the result will be shown, and further details can be found in the session panel.
Several sessions can be uploaded into ampliSuite and be opened through the session panel.

4.2.4. EAR SIDE SELECTION

The ear side can be selected in 3 different ways:

- **Mouse:** Double-click on the audiogram of the ear side to be tested (only possible when an audiogram for each ear is shown)
- **Keyboard:** Select **R** for right ear and **L** for left ear
- **Icons in Toolbar:**

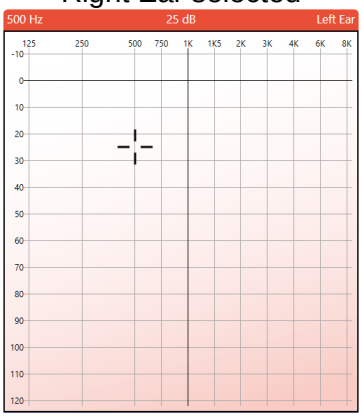
Right ear selected

Left ear selected

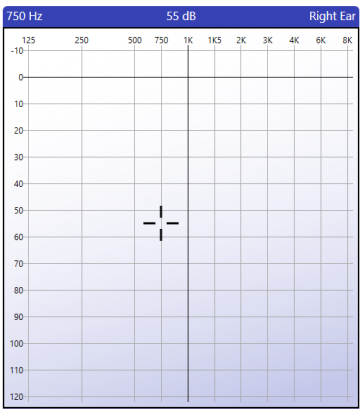
One ear side will be shown at a time and can be changed using the ear side icons in the control panel. The current selected ear will be highlighted with an orange line below.

The selected ear side will be highlighted in blue (left ear) or red (right ear) and cursor will show in the graph area.

Right Ear selected



Left Ear Selected



4.2.5. PRINTING AND PDF STORAGE

Print Results

Selecting the print icon in the control panel will print the current reviewed test.

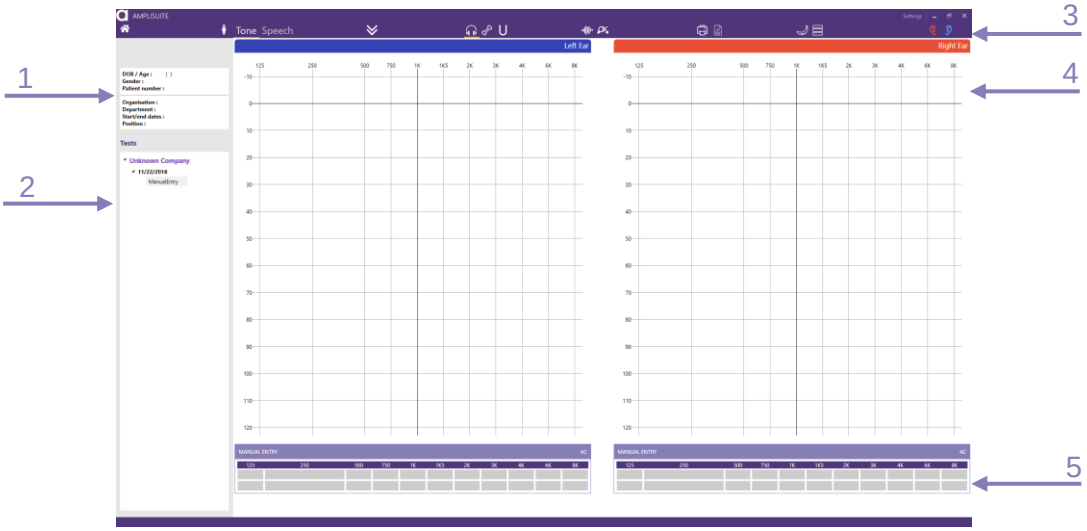
Store Result as PDF

Selecting the PDF icon in the control panel will store the current reviewed test as a PDF.

4.3.TONE AUDIOMETRY MODULE

4.3.1. GENERAL

The audiometry module consists of patient information **(1),** the currently uploaded session details **(2)**, the control bar **(3)**, audiograms for the left and right ear in table **(4)** and diagram format **(5)**.



4.3.2. SELECTION OF AC, BC AND UCL

In the toolbar, select the corresponding icon of the graph that shall be plotted. The following selection is possible:

Air Conduction (AC): Select this icon to plot the air conduction.

Bone Conduction (BC): Select this icon to plot the bone conduction.

U-Threshold (UCL/ULL): Select this icon to plot the uncomfortable loudness threshold.

In addition to the selection of AC, BC and UCL, masking can be activated. It is also possible to mark.

Masking: Select this icon in addition to AC or BC to mark a masked threshold.

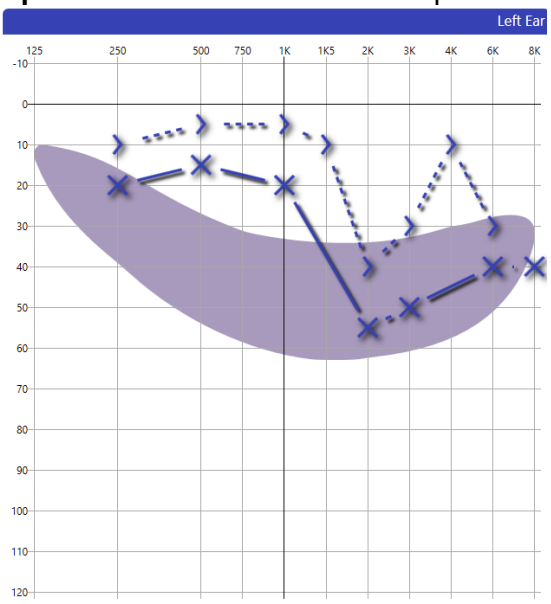
Not heard/no response (NR): Select this icon in addition to AC or BC to mark a not heard point.

Please note: The data shown in the table below the graph, plotted or deleted is always equivalent to the selection (AC, BC, UCL) made in the toolbar. If the air conduction is selected, no bone data can be deleted and vice versa.

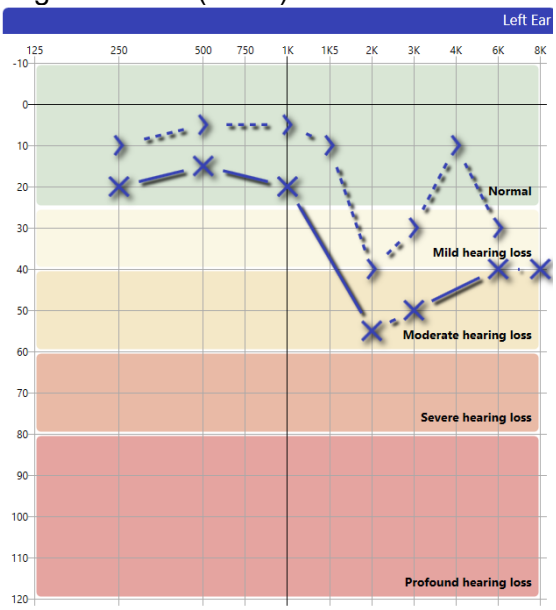
4.3.3. COUNSELING OVERLAYS

It might be desired to use additional explanation tools, to help the patient better understand his or her hearing threshold.

Speech Banana: Will show the speech area as it is selected in the settings.



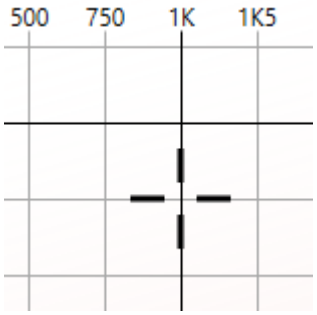
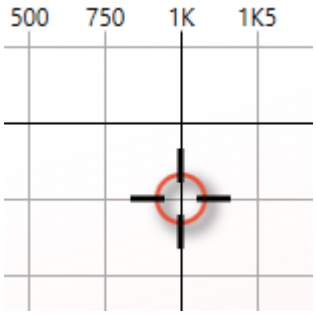
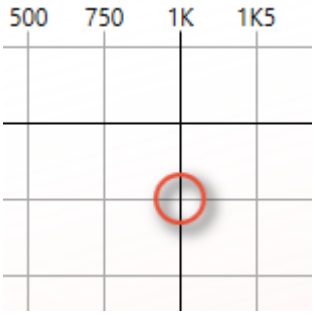
Hearing Levels: Will show the degrees of hearing loss based on the World Health Organization's (WHO) recommendation.



4.3.4. ENTRY OF DATA

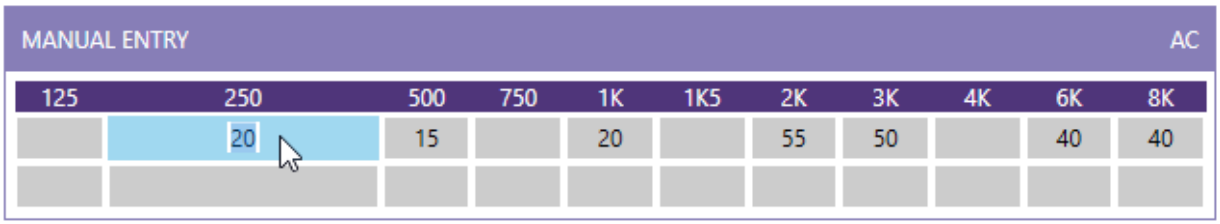
There are different options to enter test data. Data can be plotted directly into the graph using the mouse or the keyboard, or the **Manual Entry Table** below the audiogram.

Select the desired ear side and test method (AC, BC, UCL, (un)masked and NR) to start plotting data.

			
Mouse:	Use the mouse to move the cursor to the desired frequency and level.	Double-click left and store the test point.	Right-click at any level of the frequency to delete the test point again.
Keyboard:	Use the arrow keys to move the cursor to the desired frequency and level.	Hit the Enter-key or S-key on the keyboard to store the test point.	Hit the Delete key on the keyboard at any level of the frequency to delete the test point again.

As soon as the point has been entered, the table below the graph will show the equivalent value.

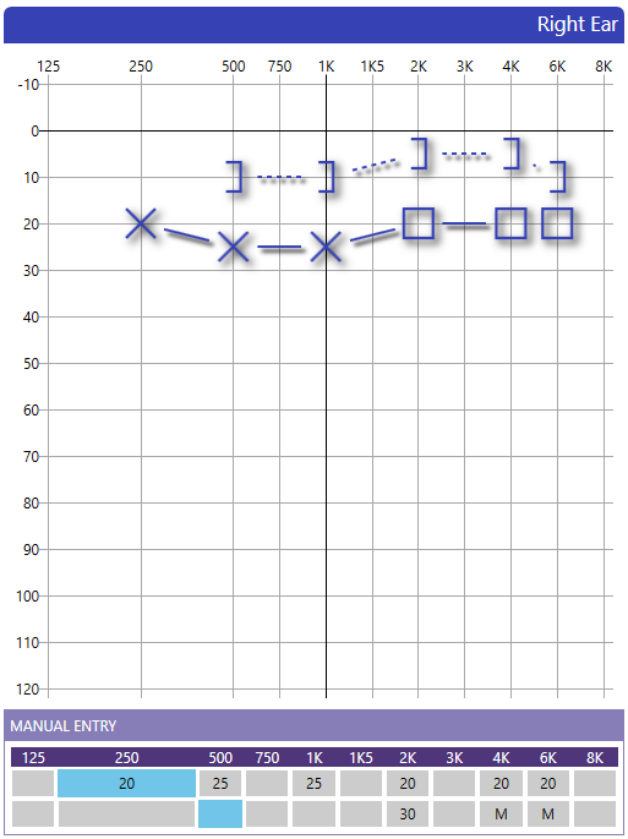
Manual Entry Table: Click in the table below the graph to enter the corresponding level of the selected frequency. The top row represents the Air or Bone conduction values, whereas the second row represents the masking values, if existing.



4.3.5. MASKING

Masking values can be added in two different ways. Either, the masking button in the toolbar is selected together with the AC or BC function, or the **Manual Entry** table is used to manually add the masking values.

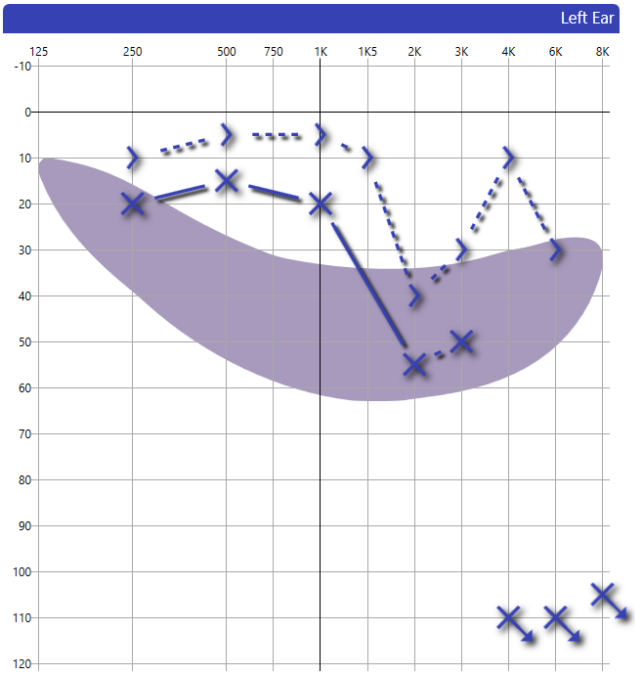
When masking is used, but the actual masking value is unknown, the table will show an **M** to indicate masking was active. If the masking value is known, a number will show in the second row of the table.



4.3.6. NO RESPONSE

In the case where the patient did not respond to the test signal, the symbol of **no response** (NR) can be added to the audiogram.

Select the NR button in the toolbar together with the AC or BC function to mark the level as not heard.



4.3.7. DELETE A TEST POINT

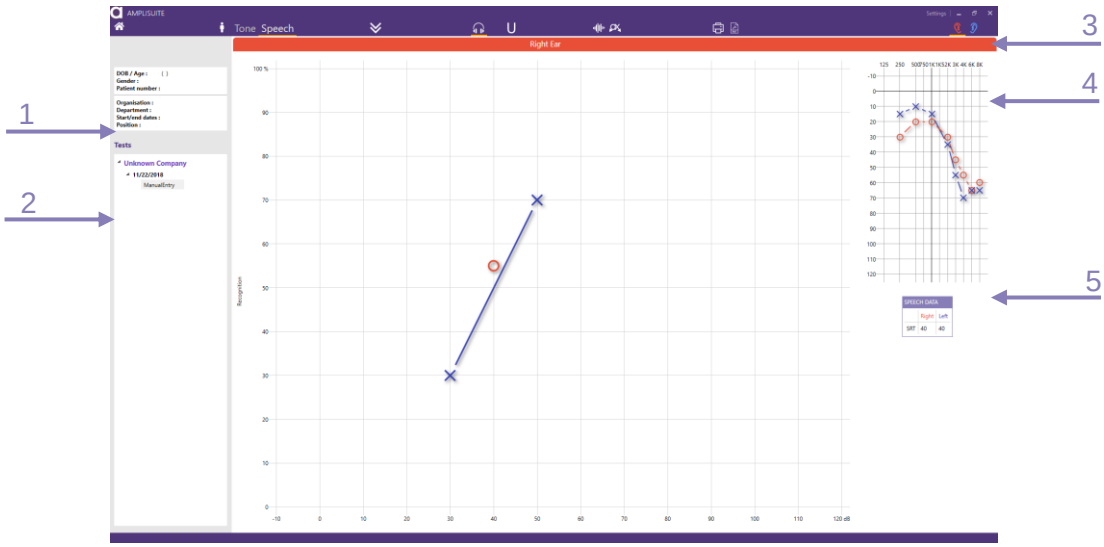
In case a test point was placed incorrectly and should be removed, it is possible to delete a test point Select the threshold that should be removed (air or bone) and move the mouse over the corresponding level, ideally the test point to be deleted.

To delete the point, select the **delete** button on the **keyboard** or click the right button on the **mouse**.

4.4.SPEECH AUDIOMETRY MODULE

4.4.1. GENERAL

The speech audiometry module consists of patient information **(1),** the current uploaded session details **(2)**, the control bar **(3)**, audiograms for the left and right ear in the table **(4)** and diagram format **(5)**.



4.4.2. SELECTION OF AC, BC AND UCL

In the toolbar, select the corresponding icon of the graph to be plotted. The following selection is possible:

Air Conduction (AC): Select this icon to plot the air conduction.

U-Threshold (UCL/ULL): Select this icon to plot the uncomfortable loudness threshold.

In addition to the selection of AC, BC and UCL, masking can be activated. It is also possible to mark.

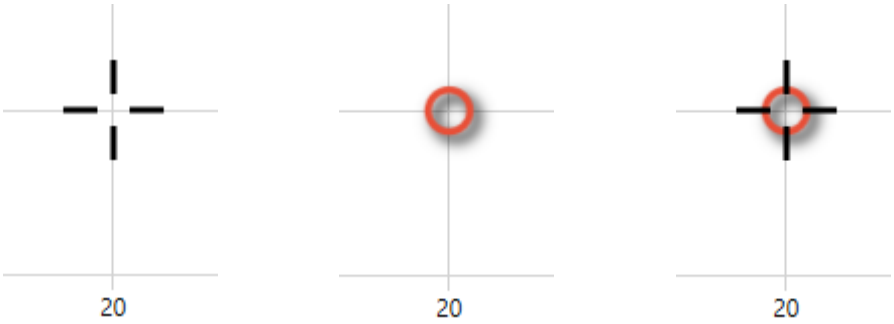
Masking: Select this icon in addition to AC or BC to mark a masked threshold.

Not heard/no response (NR): Select this icon in addition to AC or BC to mark a not heard point.

Please note: The data shown in the table below the graph, plotted or deleted is always equivalent to the selection (AC, BC, UCL) made in the toolbar. If the air conduction is selected, no bone data can be deleted and vice versa.

4.4.3. ENTRY OF DATA

Data can be plotted directly into the graph using the mouse or the keyboard. Select the desired ear side and test method (AC, BC, UCL, (un)masked and NR) to start plotting data.



Mouse:	Use the mouse to move the cursor to the desired frequency and level.	Double-click left and store the test point.	Right-click at any level of the frequency to delete the test point again.
Keyboard:	Use the arrow keys to move the cursor to the desired frequency and level.	Hit the Enter-key or S-key on the keyboard to store the test point.	Hit the Del-key on the keyboard at any level of the frequency to delete the test point again.

As soon as the point has been entered, the table below the graph will show the equivalent value.

4.4.4. MASKING

Masking values can be added in two different ways. Select the masking button in the toolbar together with the AC or BC function to add a masked threshold.

4.4.5. NO RESPONSE

In the case where the patient did not respond to the test signal, the symbol of **no response** (NR) can be added to the audiogram.

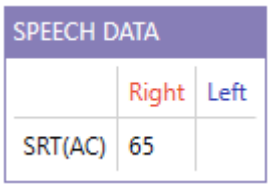
Select the NR button in the toolbar is selected together with the AC or BC function to mark the level as not heard.

4.4.6. DELETE A TEST POINT

In case a test point was placed incorrectly and should be removed, it is possible to delete a test point. Select the threshold that should be removed (air or bone) and move the mouse over the corresponding level, ideally the test point to be deleted.

To delete the point, select the **delete** button on the **keyboard** or click the **right button on the mouse**.

4.4.7. SRT CALCUATLION

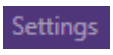


An automatic SRT calculation takes place when adding Air Conduction values and will be visible for each ear side in the **Speech Data** table next to the speech audiogram.

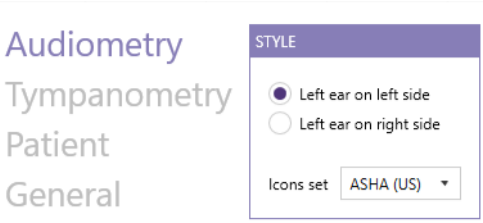
The SRT is the lowest level where a 50 % recognition was found.

4.5. AUDIOMETRY SETTINGS

4.5.1. GENERAL

Selecting the settings button 

at the top of ampliSuite will open a pop-up with all available settings for the audiometry modules.



4.5.2. POSITION OF EAR SIDE SPECIFIC AUDIOGRAM

Depending on your preferences, you might like to have the audiogram of the right ear displayed on your right hand side and the one of the left ear on your left hand side. In this case, select **Left ear on left side**.

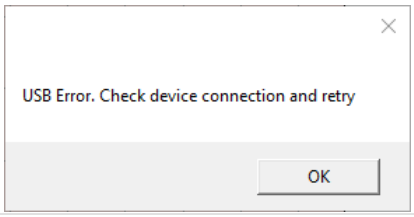
Others prefer to see the audiogram arrangement according to the patients view. In this case, select **Left ear on right side**.

4.5.3. AUDIOGRAM ICON SET

The audiogram icons used in the audiometry module might be dependent on your location. The ampliSuite audiometry module offers you 5 different icon sets, based on your location: ASHA (US), Australia, BSA (UK) or Hong Kong.

4.6. TROUBLESHOOTING AUDIOMETRY

Please note: Refer to the installation & operating instructions provided with your instrument(s) for details of the data transfer operation and errors that could possibly occur. If a fault cannot be fixed, the operator is cautioned against repeatedly restarting the instrument.

PROBLEM	CAUSE	SOLUTION(S)
Instrument doesn't connect. 	• Device is not switched on • USB connection unstable	• Switch on /Restart device • Check USB connection in both instrument and PC • Ensure cable is in good working order
No data is transferred to PC.	• Specified location to store data is different than expected • Specified location to store data is not existing • LoadIt.exe is stored in a different location	• Review the storing location in the settings • Store LoadIt.exe in same folder as ampliSuite.exe

5. ADMITTANCE MODULE

5.1. GENERAL

The admittance module allows you to review tympanometric **(Tymp)** and acoustic reflex test **(ART)** results. The admittance module can be used with all Otowaves 102, 202 and 302.

Video available on how to use the admittance module.

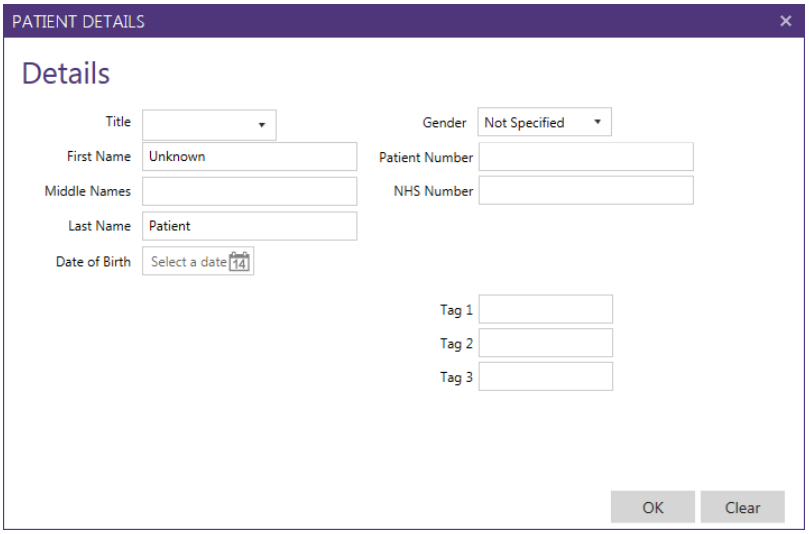
5.2. OVERALL FUNCTIONS

5.2.1. RETURN TO MAIN MENU

To return to the main menu, select the home icon in the top left corner of the screen .

5.2.2. ADD PATIENTS TEST DETAILS

To enter basic patient details, select the **Patient Details** button. The patient details form will then be displayed. Enter the patient details and select **OK**. These details will then be displayed on the main patients details screen.



5.2.3. OPEN TEST RESULT(S) FROM PC

Open from file

To review any test results which have been **DOWNLOADED** from an Otowave, select the **OPEN** icon in the control bar of ampliSuite.

Only one test at a time can be opened and imported into ampliSuite.

As soon as a test is selected, the result will be shown, and further details can be found in the session panel.
Several sessions can be uploaded into ampliSuite and opened through the session panel.

5.2.4. DOWNLOAD RESULTS FROM DEVICE

Download all

All records stored on the device are transferred to the PC.

Download un-sent

Records stored on the device, which have not been sent yet, are transferred to the PC.

Please note: The option 'Download un-sent records from Tympanometer' is only supported on the Otowave 202 running on a firmware version 43 and above.

Please note: Test results downloaded must be imported into ampliSuite manually by using the open function.

There are some slight differences in the download function using the Otowave 102 than either the Otowave 202 or 302.

	102	202 and 302
Transferal	Infrared	USB
Special attention	If you can't find the Otowave 102 results after you've transferred them, look in **Control Panel > Infrared** for the location that files will be transferred to (under **Save received files here**). Note that this location will be retained until changed.	Before attempting to download test results, ensure that the ampliSuite & USB Device Drivers have been correctly installed.

Please note: Refer to the operating manual of your Otowave for further guidance and troubleshooting advice regarding the connections.

When downloading files from the 202 or 302 unit, these files are automatically placed in the location specified in ampliSuite. The default location is the 'User Profile' within Windows. Typically, this will be **C:\Users\<user name>,** where <user name> is the name of the user account currently logged into Windows. This can be changed to any location you wish by setting the radio button to 'Specify Location', specifying a location of your choice and pressing '**OK**'.

Please note: If the specified folder does not exist, the transfer will not take place, though the transfer screen will appear to be normal. Ensure the specified location exists.

When downloading results from the 102 unit, a new folder containing the files will be created on the Desktop. Each patient test is stored on the PC as a separate file within the **Amplivox** folder. If the Amplivox folder already exists on the PC, subsequent transfer sessions automatically create new folders called **Copy 1 of Amplivox**, **Copy 2 of Amplivox** etc. To avoid excessive duplication of these folders, move the transferred files to a preferred location on the PC and then delete the **Amplivox** folder. Files have the extension **.APX** and they follow a specific naming convention:

- nnn_DDMMYYYY_HHMM.APX[1] (when the default date format is used on the Otowave 102)
- nnn_MMDDYYYY_HHMM.APX (if the date format was changed to **MM/DD/YY** on the Otowave 102 – see the product operating manual)

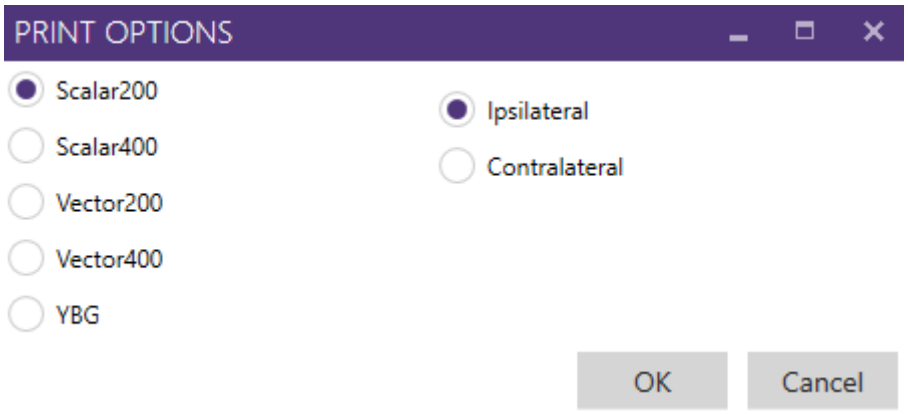
Please note: Sometimes it might be necessary to attempt to download the files a second or third time; this is due to limitations in the software supplied with Windows being unable to initiate communication properly with the Otowave 102.

5.2.5. PRINTING AND PDF STORAGE

Print Results	Selecting the print icon in the control panel will print the current previewed test.
Store Result as PDF	Selecting the PDF icon in the control panel will store the current previewed test as a PDF.

[1] nnn is either the initials entered when the test was saved in the database on the Otowave 102, or 'xxx' (lower case) if none have been entered yet (e.g. if it is the **Last Test** – see the Otowave 102 operating manual). DDMMYYYY (or MMDDYYYY) is the date of the test. HHMM is the time of the test

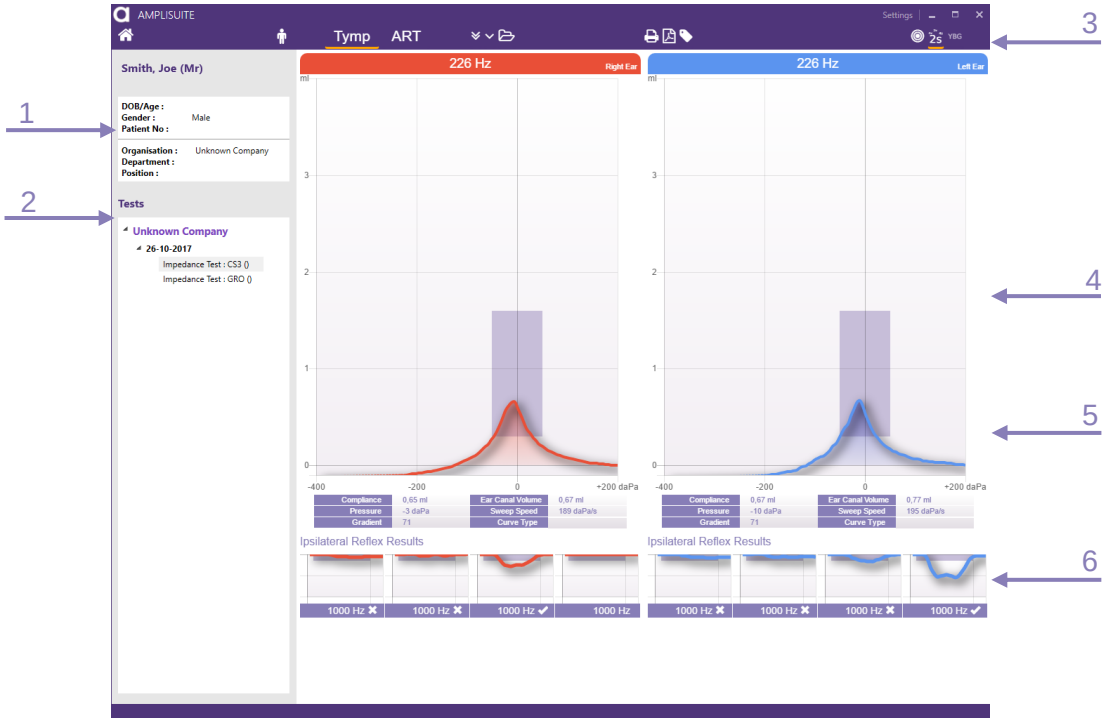
In both cases, when the print or the PDF button is pressed, a popup will show with print/PDF options. From here, you can select what baseline mode shall be shown and if either ipsilateral or contralateral reflexes will be included on the print out.



5.3.TYMPANOMETRY MODULE

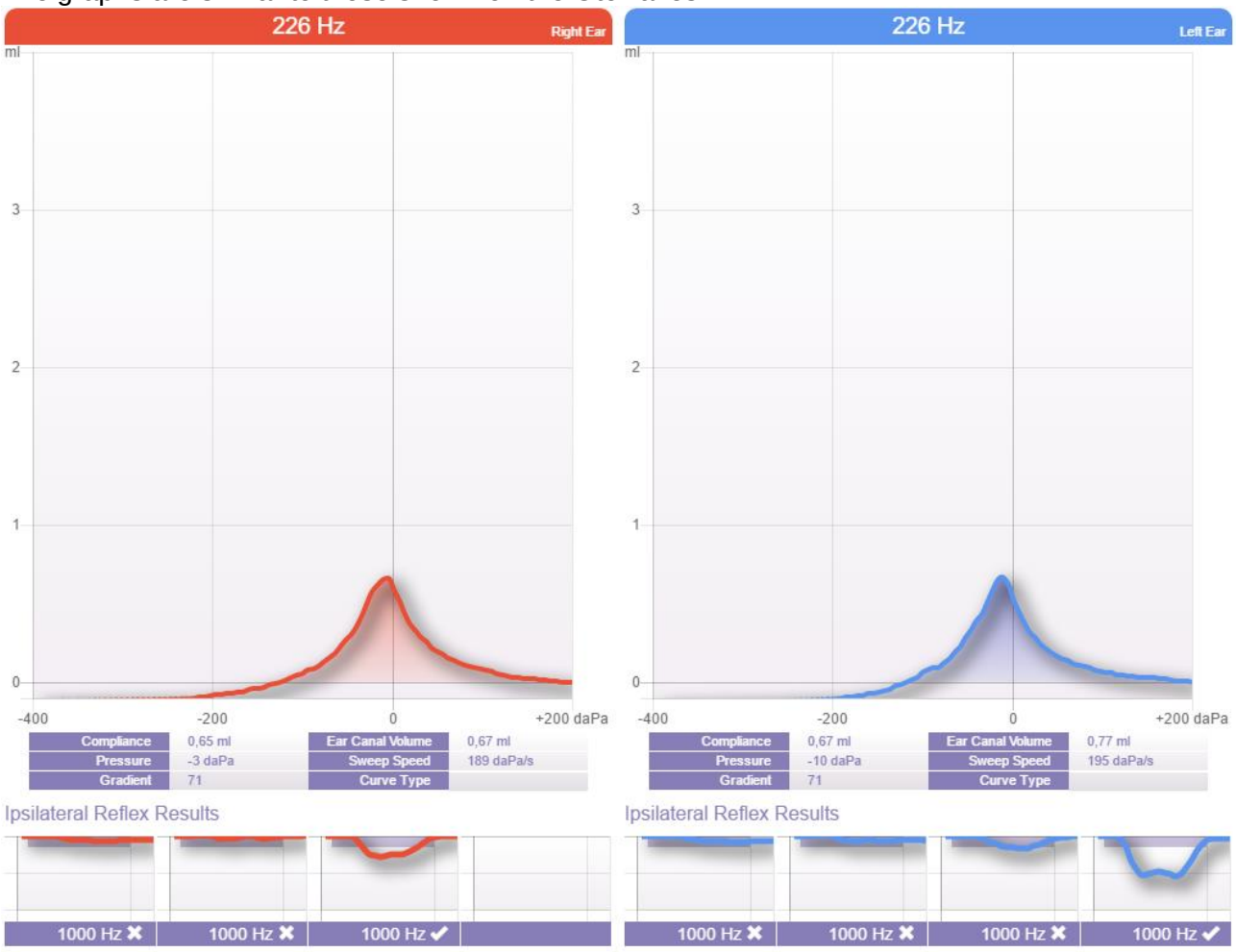
5.3.1. GENERAL

The tympanometry module consists of patient information **(1),** the current uploaded session details **(2)**, the control bar **(3)**, tympanograms for the left and right ear **(4)**, test parameters for tympanometry **(5)** and the preview of ipsi and contralateral test results if available **(6)**.



5.3.2. TYMPANOMETRIC TEST RESULTS

The graphs are similar to those shown on the Otowaves.



In the tympanometry graphs, the option is given to show a normative box. This area is intended to help identify normal tymp curves, according to default or customised specifications. In the case that the peak of the curve falls into the normative area, the tymp is marked with a ✔ to identify a normal shaped curve.

Please note: Depending on the version of your Otowave, a normative box based on the BSA standards will be transferred with the test result to the PC. If you prefer to define your own normative boxes, please refer to chapter 5.5.

Below the tympanograms, the test parameter for the tymp curve shown are listed:

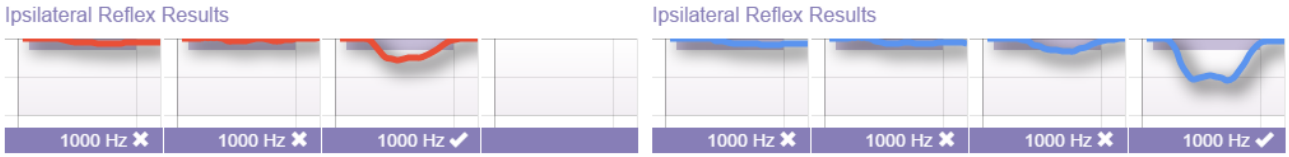
- **Compliance:** Peak of tympanogram in ml (226 Hz) or m℧/mmho (1 kHz), representing the maximum compliance/admittance of the middle ear system[2]
- **Pressure:** Equivalent pressure point describing the compliance peak.

[2] The maximum compliance occurs when the pressure in the middle ear cavity is equal to the pressure in the external auditory canal.

- **Gradient:** Width of tympanogram at 50% height
- **Ear Canal Volume:** Equivalent volume of the ear canal in ml
- **Sweep Speed:** Actual average sweep speed of the pump during the measurement
- **Curve Type:** Option to classify the tympanogram pattern based on the Jerger system (1970)[3]. Refer to chapter 5.3.3 for more detailed information on how to assign the classification.

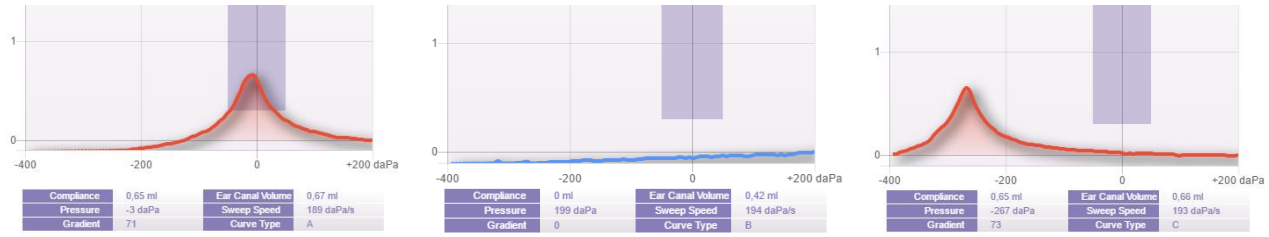
Please note: The compliance and pressure value as well as the gradient are dependent on the position of the cursor in the Otowave unit before data transfer. When using the cursor function in the Otowave, re-defining the peak value of the tymp curve, the value for compliance, pressure and gradient are adjusted accordingly.

A small preview of ipsi and contralateral reflexes are shown below the test parameter. A review in more detail can be found in the ART module (refer to chapter 5.4). The reflexes are shown for all frequencies tested. When marked with a ✔, a reflex trace was detected, which was regarded as a valid reflex response by the Otowave. When marked with a x, a reflex trace was detected, but this was not regarded as a valid reflex response by the Otowave.



5.3.3. ASSIGN CURVE TYPE (JERGER)

ampliSuite offers you the function to classify the tymp curves after the Jerger system. There are three main types of tympanograms according to Jerger, specified by the letters A, B, and C, as shown in the figure below.



Type A
Normal

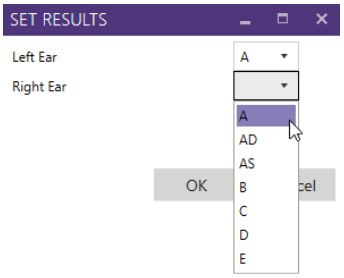
Type B
Middle ear pathology, such as fluid or infection behind the ear drum, hole in ear drum

Type C
Negative pressure in middle ear volume

The ampliSuite will, in addition, allow you further classification such as AD and AS, as well as D and E.

[3] J Jerger (1970). Clinical experience with impedance audiometry. Archives of Otolaryngology, 92 (4), 311-324.

Selecting the tag icon  in the control panel will open a pop-up. From here, the categorisation for each ear takes place. Select the drop down to choose between the different tymp types.



5.3.4. DISPLAY OF TEST DATA

 **Zoom in and out**

Use the zoom function to change the scaling of the y-axis for further graph review (zoom out  , zoom in ).

 **Scalar and vector mode**

Changing the baseline mode from 2 and 4 scalar (226 Hz and 1000 Hz) or 2 and 4 vector (only 1000 Hz).

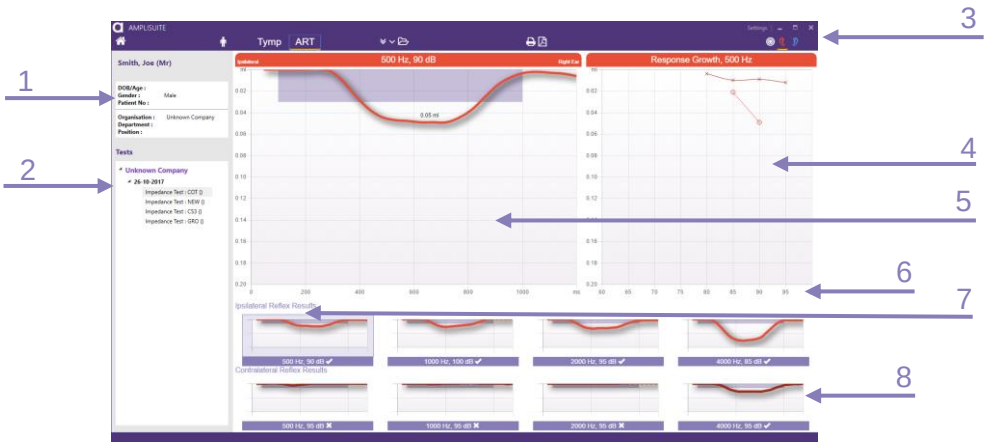
 **YBG curve**

Show YBG graph (only available for 1000 Hz tests)

5.4.ACOUSTIC REFLEX MODULE (ART)

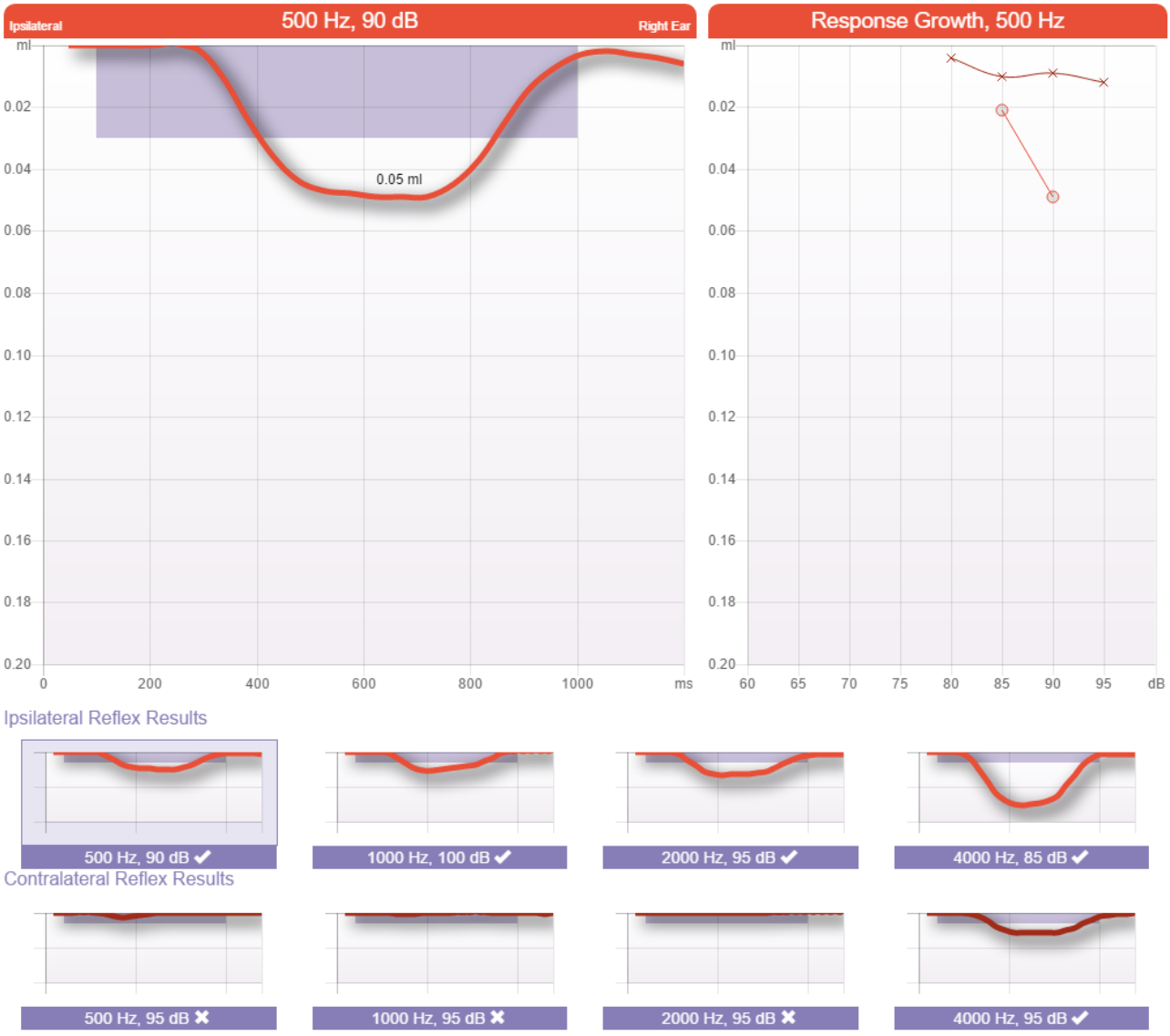
5.4.1. GENERAL

The acoustic reflex (ART) module consists of patient information **(1),** the currently uploaded session details **(2)**, the control bar **(3)**, a reflex growth diagram for the current selected ear **(4)**, reflex diagram **(5)** based on the selected reflex graph **(7)** and all available ipsi and contralateral reflex results **(6 and 8)**.



5.4.2. ACOUSTIC REFLEX TEST RESULTS

The graphs are similar to those shown on the Otowaves.



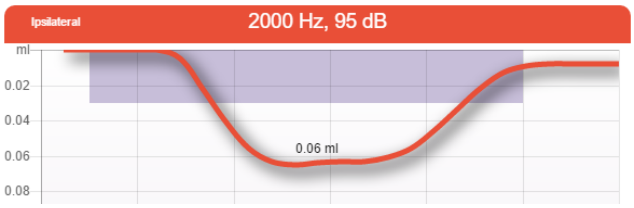
Right ear selected

Left ear selected

One ear side will be shown at a time and can be changed using the ear side icons in the control panel. The current selected ear will be highlighted with an orange line below.

To review a single graph in the detail view, select the specific reflex from the ipsilateral or contralateral results.The current selection will be highlighed with a purple frame.

When marked with a ✔, a reflex trace was detected, which is regarded as a valid reflex response by the Otowave. When marked with a x, a reflex trace is detected, but this was not regarded as a valid reflex response by the Otowave. The criteria to reach a pass can be shown visually in each of the graphs.



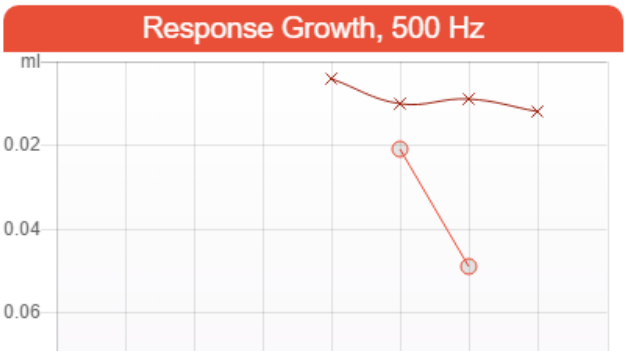
The criteria is shown in the form of a purple box in the reflex graph.

The height of the box is depending on the threshold criteria defined in your instrument. The length of the box is given by the time the test signal is presented.

If the amplitude of the reflex reaches the height of the box as well as the contraction time meets the presentation time of the test stimulus, among other criteria, the reflex is considered a pass.

Please note: The box shown is depending on the version of your Otowave.

The reflex growth diagram[4] is shown for the current selected frequency. The ipsilateral plot is with an o for the right ear and an x for the left ear, whereas the contralateral side is marked with the opposite sign. The definition of contralateral is according to Katz, 2002[5].



The acoustic reflex magnitude increases as the stimulus level increases. The peak magnitude of the reflex is plotted for each level tested, resulting in a reflex growth function.

The normal acoustic reflex growth function for puretone stimuli shows that reflex magnitude increases linearly with the stimulus level[5].

This graph helps you quickly identifying the amplitude growth for the selected frequency.

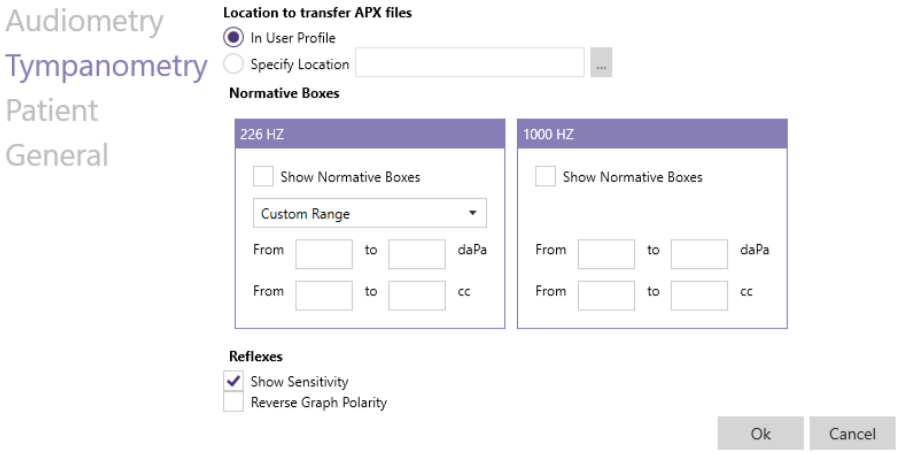
[4] BH Sprague, TL Wiley, MG Black (1981). Dynamics of Acoustic Reflex Growth. Audiology 20: 15-40(1981)
GB Michael, LW Terry (1979). Acoustic-Reflex Growth and Loudness. JSLHR June, 1979

[5] J Katz. Handbook of Clincal Audiology – Fifth Edition. Lippincott Williams & Wilkins, 2002

5.5. ADMITTANCE SETTINGS

5.5.1. GENERAL

Selecting the settings button Settings at the top of ampliSuite will open a pop-up with all available settings for the tympanometry and acoustic reflex modules.



5.5.2. STORAGE LOCATION

When tests are downloaded to the PC, they are automatically placed in the location specified in ampliSuite. The default location is the **User Profile** within Windows, which is **C:\Users\<user name>**, where <user name> is the name of the user account currently logged into Windows.

This can be changed to any location you wish by setting the radio button to **Specify Location**. It is then required that you specify a location of your choice.

5.5.3. NORMATIVE BOXES TYMPANOMETRY

If desired, normative boxes can be shown in the tympanograms. This function is enabled by selecting the checkbox. There are 2 default normative boxes for 226 Hz, based on the recommendation of the BSA[6] (UK) or the ASHA[7] (US).

	BSA (UK)	ASHA (US)
Volume	0.3 to 1.6 cc	0.3 to 1.4 cc
Pressure	-50 to + 50 daPa	-150 to 50 daPa

[6] British Society of Audiology. Recommended Procedure Tympanometry. 2013
[7] ASHA, Committee on Audiometric Evaluation. Guidelines for Audiometry Symbols. 1990

If it is preferred to use user-specific normative areas, the **CUSTOM RANGE** option shall be selected to define your own customised box.

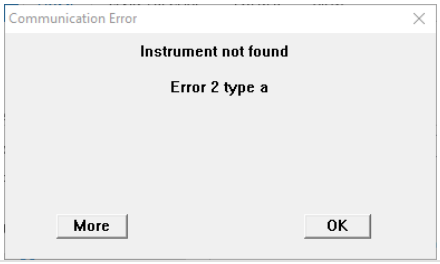
5.5.4. ACOUSTIC REFLEXES

When **Show Sensitivity** is selected, the threshold line defined in the settings of your admittance meter (between 0.01ml and 0.5ml) will be shown in the reflex graph.

When **Reverse Graph Polarity** is selected, the reflex graphs are plotted downwards.

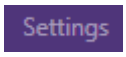
5.6. TROUBLESHOOTING ADMITTANCE

Please note: Refer to the installation & operating instructions provided with your instrument(s) for details of the data transfer operation and errors that may occur. If a fault condition cannot be cleared, the operator is cautioned against repeatedly starting the instrument.

PROBLEM	CAUSE	SOLUTION(S)
Instrument doesn't connect. 	• Device is not switched on • USB connection unstable	• Switch on /Restart device • Check USB connection in both instrument and PC • Ensure cable is in good working order
No data is transferred to PC.	• Specified location to store data is different than expected • Specified location to store data is not existing • LoadIt.exe is stored in a different location	• Review the storing location in the settings • Store LoadIt.exe in same folder as ampliSuite.exe

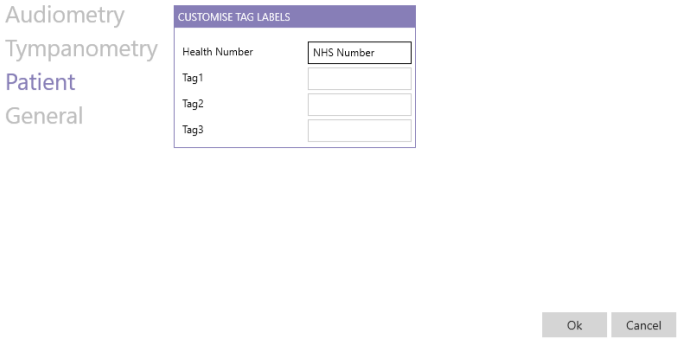
5.7.SETTINGS

5.7.1. GENERAL



There are a number of configuration settings available in ampliSuite. To access these, select **Settings** in the top right-hand corner of ampliSuite. A popup will appear to allow you to change different settings.

5.7.2. PATIENT SETTINGS



The patient settings allow you to enter alternative labels for Health Number, Tag1, Tag2 and Tag3. The new labels you enter here will then be displayed in patient details in ampliSuite.

5.7.3. GENERAL

Under General, you can find information about the System ID, the license data and the version of ampliSuite.