

# SATELLITE

## Tele-audiology System



Please read this manual carefully before using the software. Pay close attention to the instructions given in the chapters on “Installation”.

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# Summary

<b>CHAPTER 1 Introduction .....</b>	<b>1</b>
<b>1.1 The Satellite system.....</b>	<b>1</b>
<b>1.2 Preliminary operations.....</b>	<b>2</b>
<b>CHAPTER 2 Examiner's site - Maestro software .....</b>	<b>3</b>
<b>2.1 Hardware Requirements .....</b>	<b>3</b>
<b>2.2 Installation .....</b>	<b>3</b>
<b>2.3 Software startup.....</b>	<b>4</b>
2.3.1 Authentication .....	4
<b>2.4 Tele-audiology Features .....</b>	<b>5</b>
2.4.1 Activation of the video conference.....	5
2.4.2 Managing Devices.....	7
2.4.3 Videoconference .....	8
<b>2.5 Remote session.....</b>	<b>11</b>
2.5.1 Starting and ending a remote session .....	11
2.5.2 Performing Examinations Remotely .....	13
<b>CHAPTER 3 Remote Site Satellite software .....</b>	<b>15</b>
<b>3.1 Hardware Requirements .....</b>	<b>15</b>
<b>3.2 Installation .....</b>	<b>16</b>
3.2.1 Installing the Satellite software .....	16
3.2.2 Installation of Speech Material.....	16
<b>3.3 Software startup.....</b>	<b>16</b>
3.3.1 Device connection.....	17
<b>3.4 Remote session.....</b>	<b>17</b>
3.4.1 Call request without video-conferencing.....	18
3.4.2 Call request with video-conferencing .....	19
3.4.3 Devices remote control .....	19

<b>3.5 Tele-audiology Functionality.....</b>	<b>21</b>
3.5.1 Settings.....	23
3.5.2 Device .....	25
3.5.3 Chat .....	26
<b><i>ANNEX A Troubleshooting.....</i></b>	<b>27</b>

# CHAPTER 1

## Introduction

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### 1.1 THE SATELLITE SYSTEM

Satellite is an innovative tele-audiology system developed by Inventis for providing full hearing assessments remotely and in real time.

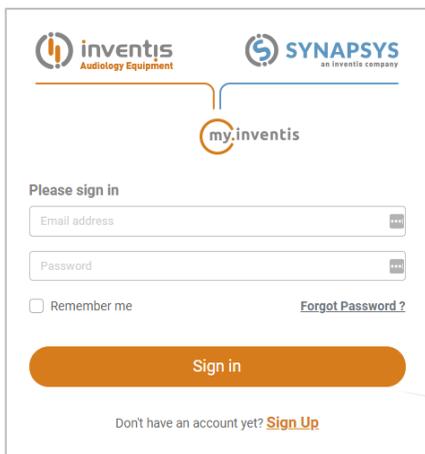
It is a service that has Inventis device remote control functions, which are certified and calibrated according to standards, with videoconference tools, integrated in a single software.

Specifically, the system consists of:

- Maestro software: installed at the examiner's site, it allows examinations to be carried out by controlling the diagnostic hardware remotely and interaction with the patient via videoconference.
- Satellite software: installed in the remote site, it establishes communication with the diagnostic hardware and allows the patient to interact with the examiner via videoconference.

## 1.2 PRELIMINARY OPERATIONS

To activate the tele-audiology service, it is necessary to register via the online portal **my.inventis**, available via the following link: <https://my.inventis.it>, where you can create a personal profile and register your own Inventis devices using the serial number.



The image shows a login form for the my.inventis portal. At the top, there are logos for 'inventis Audioology Equipment' and 'SYNAPSYS an inventis company'. Below these is the 'my.inventis' logo. The form is titled 'Please sign in' and includes the following elements:

- An input field for 'Email address'.
- An input field for 'Password'.
- A checkbox labeled 'Remember me'.
- A link labeled 'Forgot Password?'.
- A large orange button labeled 'Sign in'.
- A link at the bottom: 'Don't have an account yet? [Sign Up](#)'.

Once you have completed the registration, contact your own distributor to purchase and activate the Satellite license, providing the email address used during registration at **my.inventis** and the serial number of the device that the license is to be associated with.

# CHAPTER 2

## Examiner's site - Maestro software

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This chapter describes the set-up of the examiner's site and the use of the Maestro software to access the tele-audiology features to carry out remote audiometric tests.

### 2.1 HARDWARE REQUIREMENTS

Minimum system requirements for Maestro to operate smoothly:

- Operating system: Microsoft® Windows 10 or Windows 11, 64-bit
- CPU: Intel® i5, 6th Generation or higher
- RAM: 8 GB
- Display resolution: 1920 x 1080 or higher (zoom 100% or 125%)
- Audio card
- Webcam (integrated or external)
- Internet connection: ADSL or 4G (fiber recommended) <sup>1</sup>

### 2.2 INSTALLATION

Access the my.inventis portal with your personal credentials and in the *SOFTWARE* section, download the latest available version of the Maestro software. Run the executable file by double-clicking and complete the installation by following the wizard.

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<sup>1</sup> Minimum effective bandwidth necessary 2.5 Mbit/s

For further details on installation of the Maestro diagnostic software, please refer to the Product Insight *Maestro-General Functionalities*

## 2.3 SOFTWARE STARTUP

To run the Maestro software, simply double-click on the *MAESTRO* icon on the desktop (if created during installation):

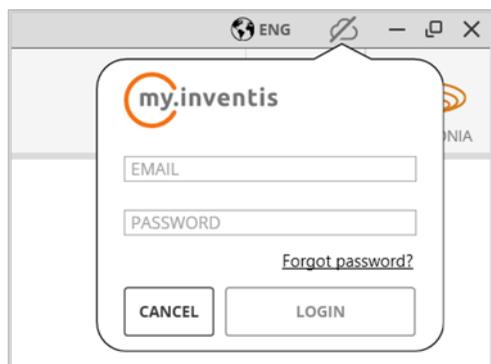


*Check that the computer is connected to a stable internet network in order to use the tele-audiology service.*

### 2.3.1 Authentication

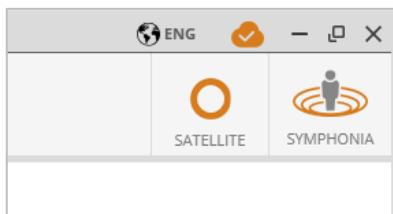
To use the tele-audiology system, you must authenticate your account using your personal my.inventis credentials.

Click on the  icon in the bar on the top right to log in:



The next time Maestro is run, the credentials are stored and the login is automatic.

To access the tele-audiology functions, click on the **SATELLITE** button in the Maestro test  bar:



*If you do not have a my.inventis user account, you can register at my.inventis.it.*



*The first time you log in after installation, you must allow the application to access the internet if required.*

## 2.4 TELE-AUDIOLOGY FEATURES

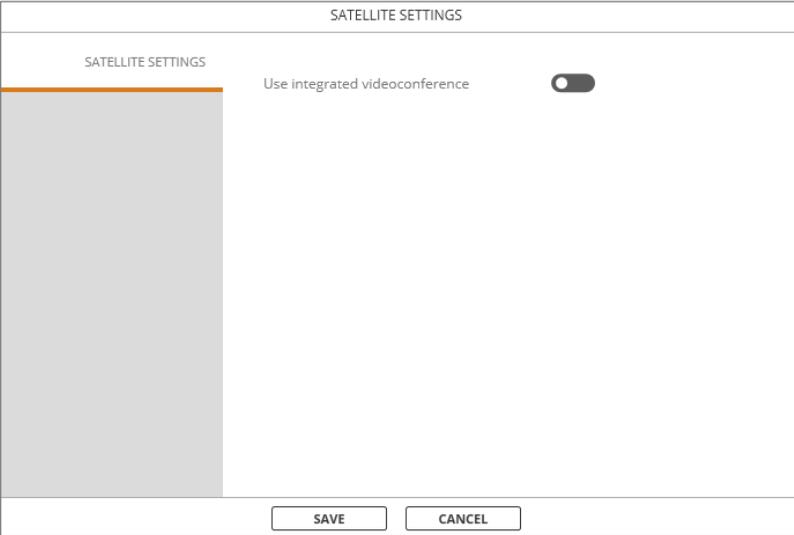
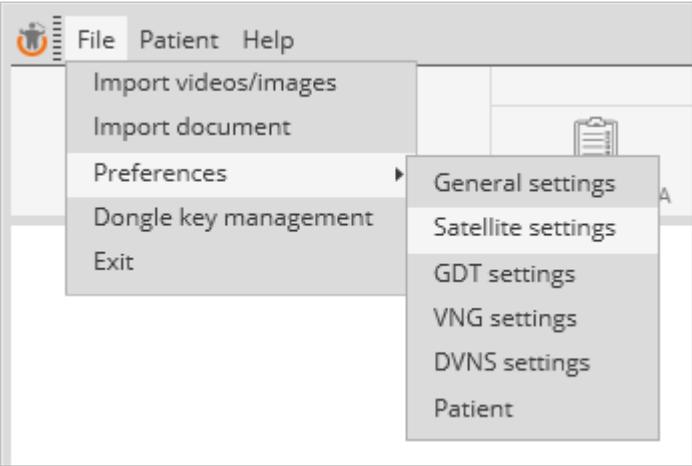
### 2.4.1 Activation of the video conference

The main Maestro window dedicated to tele-audiology features is displayed by default as follows:

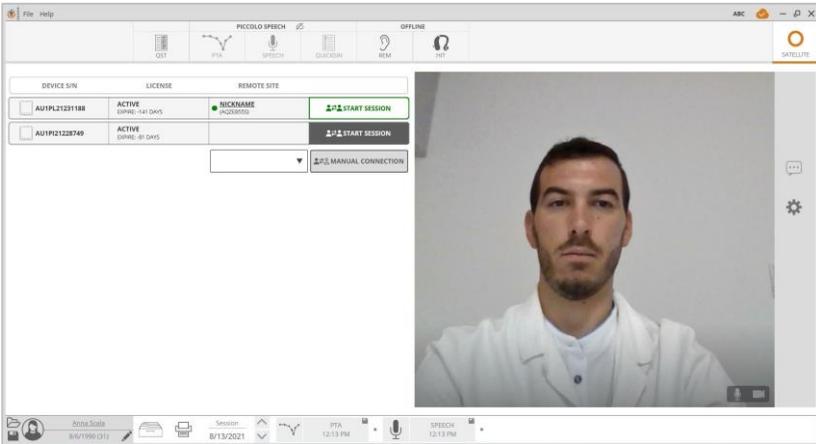


This mode allows the use of remote devices and the use of the microphone with talk over function.

Via Maestro menu (File-Preferences-Satellite Settings) it is possible to use the teleconferencing integrated in Maestro.



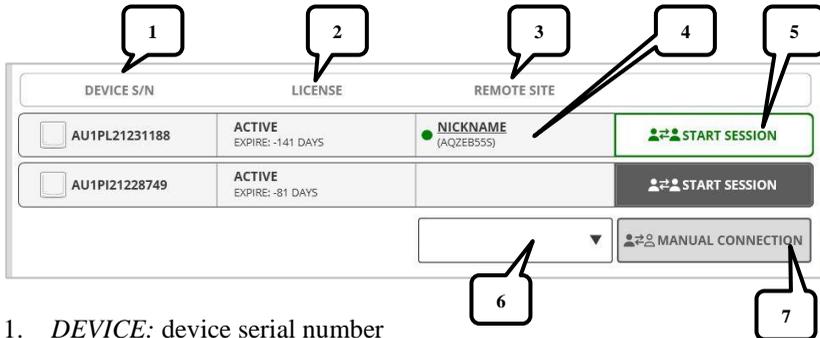
If the video conference function is active, the Maestro main window appears as follows:



The following chapters will refer to the mode with video-conferencing active.

## 2.4.2 Managing Devices

Available devices for remote control are displayed on the left-hand side of the main tele-audiology window:



1. *DEVICE*: device serial number
2. *LICENSE*: status of the tele-audiology license linked to the device and an indication of the expiration date
3. *REMOTE SITE*:
  - Blank field: the device is not currently connected to the Satellite system (it is not linked to a remote computer running Satellite software)
  - Field containing the remote site ID: the device is connected to the Satellite system (linked to a remote computer connected to the internet and running Satellite software)

The dot indicates the status of the remote site:

- Green: the remote site is not engaged in another tele-audiology session and may be contacted.
  - Red: the remote site is engaged in another tele-audiology session
4. **NICKNAME:** By clicking on this item, it is possible to link a nickname to the remote site for a smoother identification experience.
  5. **START SESSION:** This allows you to start a remote session if the remote site is available
  6. **REMOTE SITES LIST:** The list contains the remote sites that you have logged into at least once and which do not currently have any device linked to them. You can select the remote site with which you wish to connect directly from the list or by manually entering the unique ID that is linked to it.
  7. **MANUAL CONNECTION:** This allows you to start a remote session by manually selecting a remote site from the list of remote sites.



*If a device for which activation of the tele-audiology license has been requested does not appear in the list, please contact Inventis.*

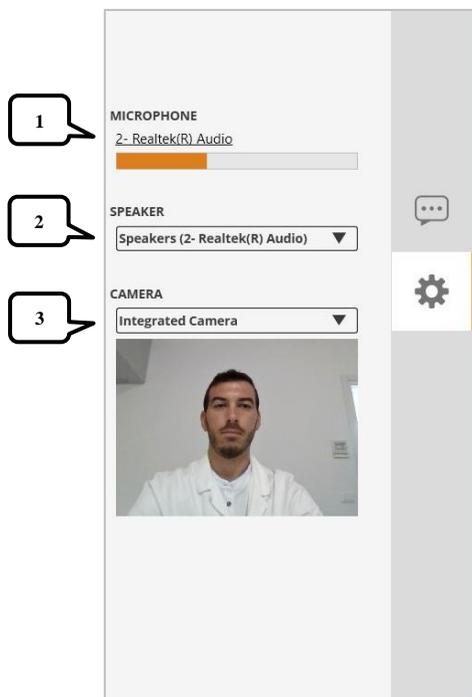
### 2.4.3 Videoconference

The right-hand side of the main tele-audiology window is designated for the videoconference.

The table below lists the keys and their respective functions:

Button	Operation
	Open/close chat panel.
	Indicates that there are unread messages.
	Open/close settings panel.
	Indicates errors in the settings – open the panel for further information
	Enable/disable microphone
	Enable/disable camera

## 2.4.3.1 Settings

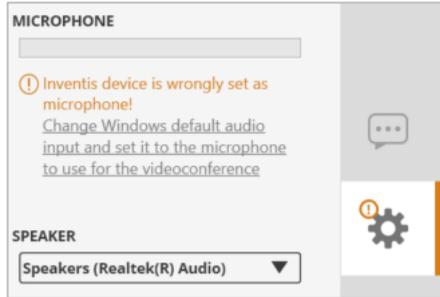


### 1. *MICROPHONE*

Displays the microphone currently selected as the default microphone and also automatically set for videoconferencing. The level indicator allows you to check the correct sound acquisition.

By clicking over the name of the microphone, the Windows audio settings panel opens, where it is possible to modify the default system microphone.

*If there is an Inventis device connected to the examiner's computer, check that this is not set as the Windows default audio input.*



## 2. *SPEAKER*

Speaker/headphones selected for videoconferencing.

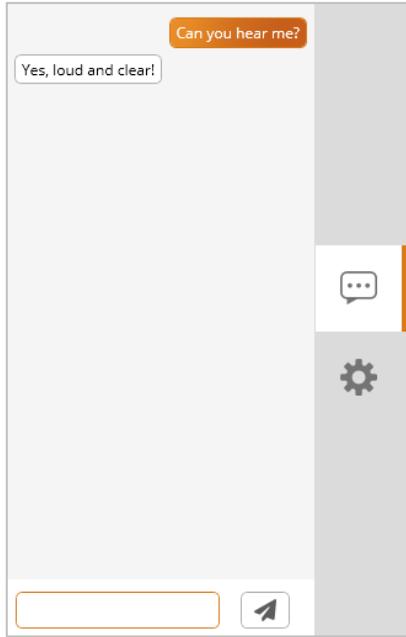
If there are several speakers, you can select which one to use from the drop-down menu.

## 3. *CAMERA*

Camera selected for videoconferencing.

If there are several cameras, you can select which one to use from the drop-down menu. The preview below allows you to check the correct options have been selected.

### 2.4.3.2 Chat



Chat is enabled only when there is a remote tele-audiology session in progress. Type the text in the text box and click on the button  to send the message.

## 2.5 REMOTE SESSION

### 2.5.1 Starting and ending a remote session

If the remote site is correctly configured, it is possible to start the remote session by clicking on the green button  in the list of devices next to the device connected to the remote site.

The gray button  in the list indicates that it is not possible to control the corresponding device remotely.

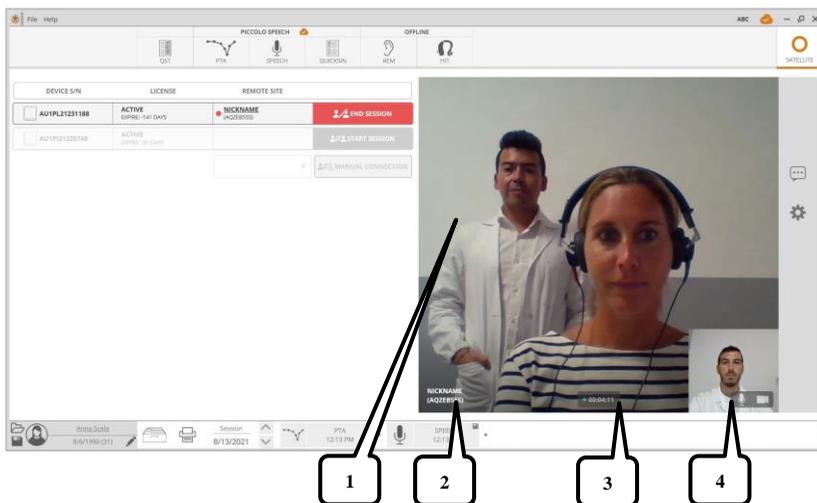
If it is not possible to run the session, check that:



- the remote computer is running the Satellite software, that it is online and there are no error messages.
- the remote computer is not busy in another session.
- the device is correctly connected to the remote computer and that it has been recognized by the Satellite software.
- the internet connection is stable, both at the site of the examiner and the remote site.

If the remote computer is connected to the internet network and the Satellite software is running but there is no device connected, it is possible to start the session anyway by entering the ID code of the remote site manually and clicking on the button .

Once the remote session has started, the main tele-audiology window is displayed as follows:

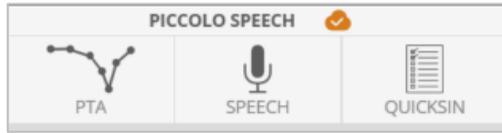


1. Video recorded by the camera (if enabled) of the remote site
2. Nickname and unique identifier (ID) of the remote site
3. Duration of the remote session and quality of the connection
4. Preview of the video recorded by the camera (if enabled) of the examiner's site

To end the remote session, click on the button  in the device list.

## 2.5.2 Performing Examinations Remotely

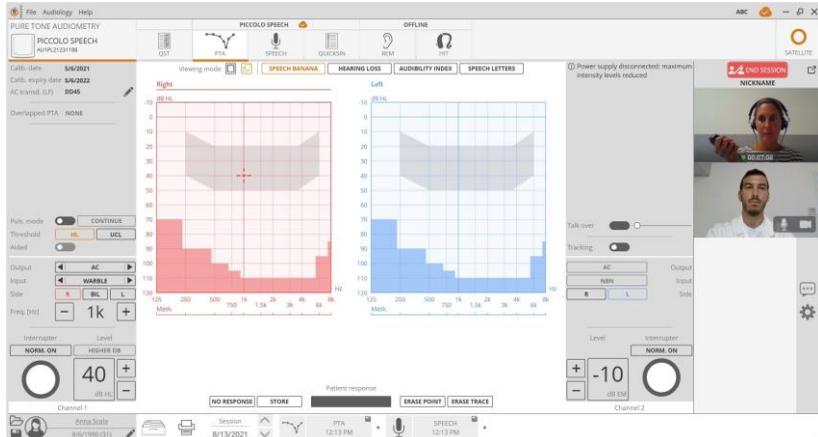
Once the session with a remote site connected to a device has started, it will be displayed in the Maestro bar at the top and marked with the icon , to indicate that the device is online and it is possible to control it remotely:



When the remote session has ended, the device is marked with the icon , to indicate that the device is offline and it is no longer possible to control it remotely.

To start performing a remote examination, simply click on the relevant button in the Maestro bar at the top: the videoconference window will open automatically as a separate pop-up window and in the main Maestro window, the window to take the selected test will be displayed.

The button  at the top right on the videoconference pop-up allows you to pin the window in the sidebar in the main Maestro window.



For a detailed description of the individual exams, refer to the manual *Maestro – Functionalities for audiometry and impedance testing* for audiometric exams or to the manual *Maestro – Hearing aid fitting and testing features* for video-otoscopy examination



*If the audiometer is set as the default audio output on the remote computer, the OS sounds may be directed to the patient's headphones during the test. Modify the default operating system output by setting it on a different audio device.*

## CHAPTER 3

# Remote Site Satellite software

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This chapter describes the configuration of the remote site and the use of the Satellite software.

### 3.1 HARDWARE REQUIREMENTS

Minimum hardware requirements for Satellite to operate smoothly:

- Operating system: Microsoft® Windows 10 or Windows 11 64-bit
- CPU: Intel Core i3 or higher
- RAM: 4 GB (8 GB recommended)
- Display resolution: 1366x768 or above
- Audio card
- Webcam (integrated or external)
- Internet connection: ADSL or 4G (fiber recommended)<sup>1</sup>

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<sup>1</sup> Minimum effective bandwidth necessary 2.5 Mbit/s

## 3.2 INSTALLATION

### 3.2.1 Installing the Satellite software

Access the my.inventis portal with your personal credentials and in the *SOFTWARE* section, download the latest available version of the Satellite software. Run the executable file by double-clicking and complete the installation by following the wizard.



*Close all Windows applications, in order to avoid conflicts with the software of the installation program.*

### 3.2.2 Installation of Speech Material

To perform speech audiometry tests remotely, the speech material must be installed on the remote computer.

Copy the speech material installation file on the USB stick supplied with the device onto the remote computer. Run the executable file by double-clicking and complete the installation following the wizard.



*Disable any sound effects applied by default on the “audiometer” peripheral (e.g. Dolby effect) and set the volume of the peripheral itself to maximum (open the Windows audio settings panel and access the properties window for the audio peripheral).*

## 3.3 SOFTWARE STARTUP

To run the Satellite software, simply double-click on the *SATELLITE* icon on the desktop (if created during installation):



*Check that the computer is connected to a stable network to be able to use the tele-audiology service.*



*The first time the software is run after installation, if required, allow the application to access the internet.*

### 3.3.1 Device connection

Connect the device to the computer using the USB cable supplied and follow the directions in the device manual to configure it correctly.



*Use only the power supply provided with the device.*



*Make sure that the audio peripheral set as default for playing and recording on the operating system is **NOT** the Inventis device.*

## 3.4 REMOTE SESSION

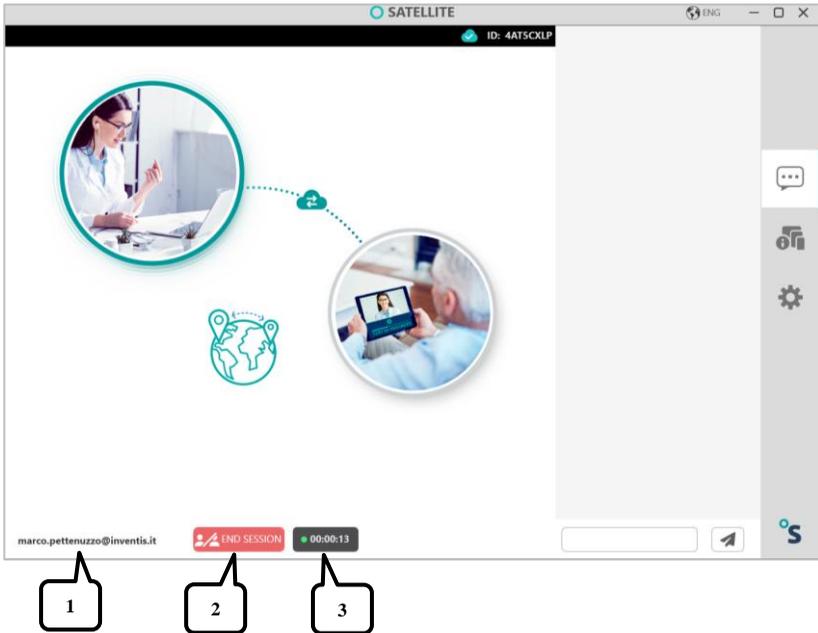
The remote session cannot be started via the Satellite software from the remote site. The examiner must send a video call request from the Maestro software (see chapter *Examiner's site* - Maestro software).

When a request to join is received, click YES to accept.

Depending on the manner in which the teleconferencing request from Maestro arrives (with or without video conferencing), the Satellite software will configure itself accordingly.

### 3.4.1 Call request without video-conferencing

If the request arrives from Maestro set up in the mode without video-conferencing, the main window of the Satellite software will appear as follows:

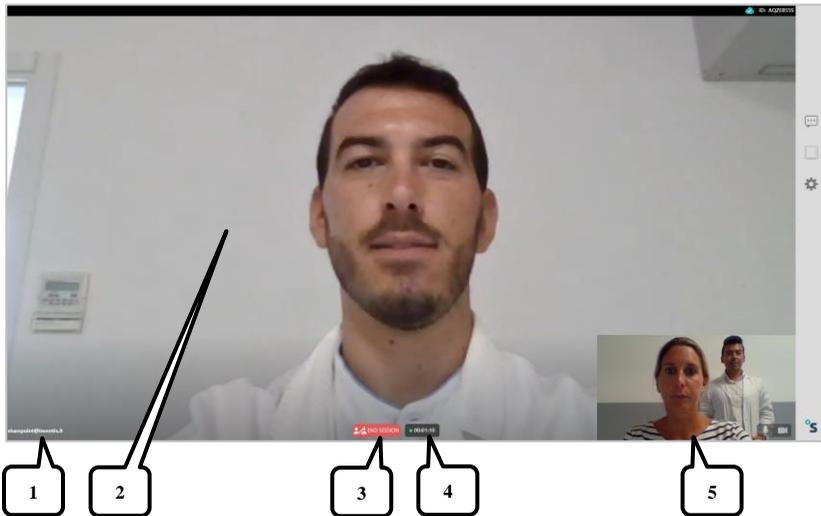


1. Identifier of the examiner who is currently engaged in the remote session.
2. Button to end the remote session
3. Duration of the remote session and quality of the connection

In this mode the audio and video channels will be disabled. Using this mode, the videoconference feature can be carried out by an external software.

### 3.4.2 Call request with video-conferencing

If the request comes from Maestro set in video conferencing mode, the main window of Satellite software will look like this:



1. Identifier of the examiner who is currently engaged in the remote session.
2. Video recorded by the camera (if enabled) of the examiner's site
3. Button to end the remote session
4. Duration of the remote session and quality of the connection
5. Preview of the video recorded by the camera (if enabled) of the remote site

The following chapters will refer to the mode with active video-conferencing.

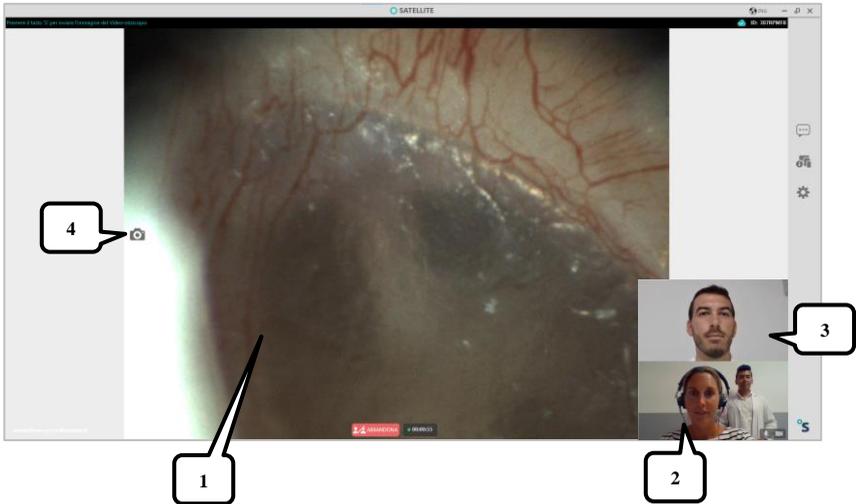
### 3.4.3 Devices remote control

During the session, the examiner may control the device connected to the remote computer remotely, to perform the audiometry and video-otoscopy exams. Follow the examiner's instructions to allow the exam to be carried out.

To end the remote session, click on the button



When the examiner starts a video-otoscopy exam, the main screen changes as follows:



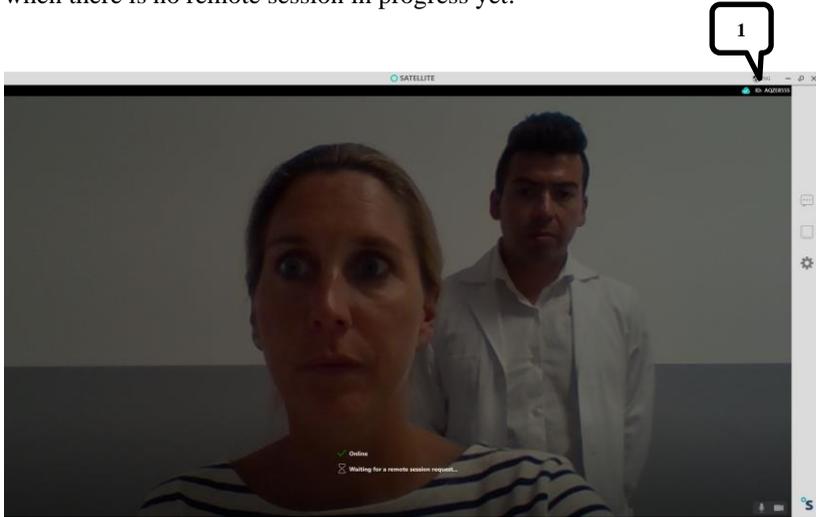
1. Video recorded by the video-otoscope connected to the remote site
2. Preview of the video recorded by the camera (if enabled) of the remote site
3. Video recorded by the camera (if enabled) of the examiner's site
4. Button to send the video-otoscope image to the examiner

To send the video-otoscope image to the examiner connected with Maestro, simply press the shutter button on the left side of the image, or alternatively press the "S" key on the keyboard. In this mode it is not possible to snap the image by pressing the physical button on the device.

Unlike with live video, the image that is sent does not depend on the quality of the connection of the participants in the call but is the same as the one seen in the Satellite screen.

### 3.5 TELE-AUDIOLOGY FUNCTIONALITY

The main screen of the Satellite software is displayed as below on start-up, when there is no remote session in progress yet:



1. Unique identifier (ID) of the remote workstation.

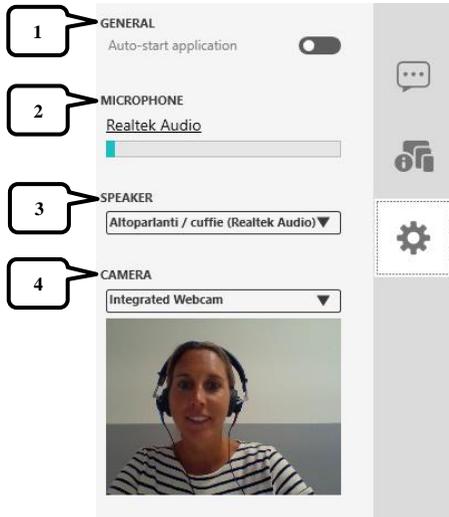
The connection status is indicated as follows:

Icon	Meaning
	Online: The software is properly connected to the tele-audiology server and it is possible to receive a request for a remote session.
	Offline: The software is not connected to the tele-audiology server. Check the internet connection and press the “RECONNECT” button.
	Awaiting request for remote session

The table below lists the buttons and their associated functions:

Button	Operation
	Allows you to change the language of the application. Changes are made the next time the software is run.
	Open/close chat panel.
	Indicates that there are unread messages.
	Open/close the information panel of the connected devices.
	Indicates errors related to the linked devices: open the panel for further information
	Open/close settings panel.
	Indicates errors in the settings – open the panel for further information
	Enable/disable microphone
	Enable/disable camera
	Open the pop-up window for information about the application
	It allows to retry connecting to the tele-audiology server when the software is offline.

### 3.5.1 Settings



#### 1. *GENERAL*

##### Automatic start-up of the application

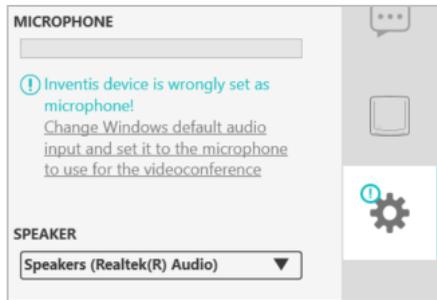
If enabled, the application runs automatically when Windows is started.

#### 2. *MICROPHONE*

Displays the microphone currently selected as the default microphone and also automatically set for videoconferencing. The level indicator allows you to check the correct sound acquisition.

By clicking over the name of the microphone, the Windows audio settings panel opens, where it is possible to modify the default system microphone.

*Check that the Inventis device connected to the computer is not set as the Windows default audio input.*



### 3. *SPEAKER*

Speaker/headphones selected for videoconferencing.

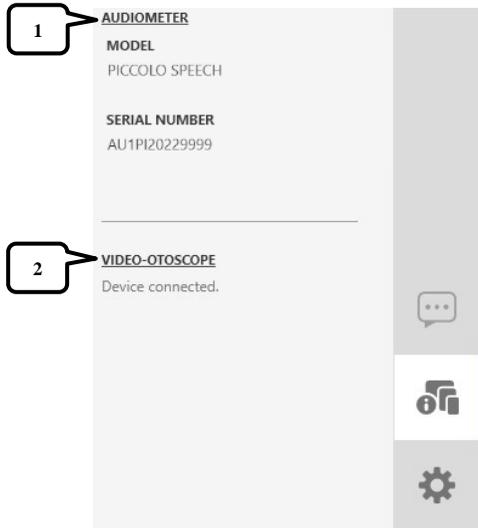
If there are several speakers, you can select which one to use from the drop-down menu.

### 4. *CAMERA*

Camera selected for videoconferencing.

If there are several cameras, you can select which one to use from the drop-down menu. The preview below allows you to check the correct options have been selected.

### 3.5.2 Device



#### 1. *AUDIOMETER*

The model and serial number of the connected audiometer device are indicated (“--” if no device is detected).

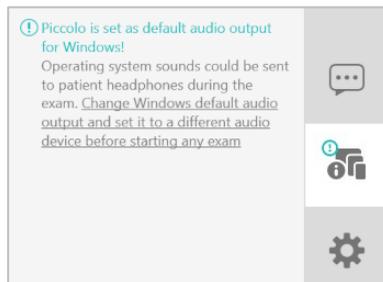
#### 2. *VIDEO-OTOSCOPE*

Indicates whether or not the device has been detected.

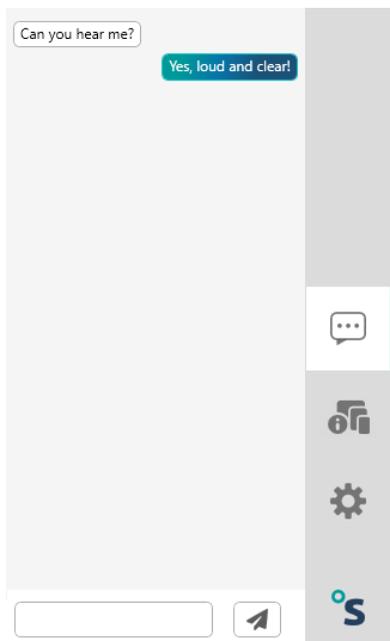


*If the device is not recognized, check the USB connection.*

*Check that the audiometer device has not been set as the default audio output device of the operating system.*



### 3.5.3 Chat



Chat is enabled only when there is a remote tele-audiology session in progress. Type the text in the text box and click on the  button to send the message.

# ANNEX A

## Troubleshooting

For problems relating to the operation of the Maestro software or the device connected to the remote computer, see the chapter on “Troubleshooting” in the Product Insights “*Maestro – General Functionalities*”, “*Maestro – Functionalities for audiometry and impedance testing*” and the device user manual.

Problem	Possible cause	Solution
Videoconference microphone not working	Audiometer set as default microphone.	The videoconferencing system uses the microphone that is currently selected as the default communication device for the operating system.  Check that the microphone is correctly connected to the computer.  Access the Windows audio settings panel and check that the recording device selected is the one that you wish to use for the videoconference. Otherwise, select the microphone and press the "default" button.
	Default microphone different from that used for the videoconference.	

Problem	Possible cause	Solution
	<p>Access to the microphone is disabled in the Windows settings</p>	<p>Access the Windows settings panel and type “Microphone” into the search field.</p> <p>Select “Microphone privacy settings” and check that the option “Allow apps to access your microphone” is enabled. If not, enable it.</p>
	<p>The microphone is in use by another application.</p>	<p>Check that no other applications are running that use audio recording peripherals.</p> <p>If so, stop running the applications and restart Maestro or Satellite.</p>
	<p>The microphone volume is set to minimum.</p>	<p>Access the Windows audio settings panel and adjust the volume of the microphone that is currently selected as recording device accordingly.</p>
<p>Videoconference headphones not working</p>	<p>Default headphones different from those used for the videoconference.</p>	<p>Check that the headphones are correctly connected to the computer.</p> <p>Access the videoconference settings (Maestro or Satellite) and check that the headphones selected under “Speakers” are the ones that you wish to use for the videoconference.</p>

<b>Problem</b>	<b>Possible cause</b>	<b>Solution</b>
	The headphones are in use by another application.	<p>Check that no other applications are running that use audio playback devices.</p> <p>If so, stop running the applications and restart Maestro or Satellite.</p>
	The headphones volume is set to minimum.	<p>Access the Windows audio settings panel and adjust the volume of the headphones that are currently selected for the videoconference accordingly, in Maestro or Satellite.</p>
Camera not working	Default camera different from that used for the videoconference.	<p>Check that the camera is correctly connected to the computer (in the case of external camera).</p> <p>Access the videoconference settings (Maestro o Satellite) and check that the camera selected under “Camera” is the one that you wish to use for the videoconference.</p>
	Access to the camera is disabled in the Windows settings	<p>Access the Windows settings panel and type “Camera” into the search field.</p> <p>Select “Camera privacy settings” and check that the option “Allow apps to access your camera” is enabled. If not, enable it.</p>

Problem	Possible cause	Solution
	The camera is in use by another application.	Check that no other applications are running that use video recording peripherals.  If so, stop running the applications and restart Maestro or Satellite.
Windows sounds are played into the patient's headphones during the speech audiometry test	The audiometer is set as default audio playback device.	Access the Windows audio settings panel and change the current audio playback device by selecting a different one other than the audiometer.
Speech audiometry material is not played correctly (e.g. speech signal over the babble noise)	The default audio effects are active on the "audiometer" audio peripheral	Open the Windows audio settings panel, access the properties window for the "audiometer" audio peripheral and disable any active sound effects (go to advanced audio settings).