BHMFit2 - Software

BHMFit2 Version 2.1

User manual

for the fitting of the hearing systems

AN-*Evo1*

contact star *Evo1*

contact mini

apollon

Table of contents

1 Introduction

The intention of this document is to help the authorized medical specialist or the acoustician to install and use the BHMFit2 Software. It also provides an overview of all functions of our hearing systems and explains the most common usage of these functions.
Regarding the fitting of the bone conduction spectacles to the mastoid of the patient please refer to our brochure „Tips & Tricks for fitting bone conduction spectacles".

> **The fitting of our hearing systems must be done by authorized medical specialists or acousticians. Faulty fitting of the hearing aids can lead to serious damage of the patient's sense of hearing!**
>
> **As the maximum output of some aids can exceed 132dBSPL (IEC 711), the fitting has to be done with maximum care!**
> **Pay attention to the Users-Guide and the technical data of the aids!**

2 System requirements

To install and use the BHMFit2 Software one of the following operating systems must be installed on your system:

- ❖ Windows 98SE,
- ❖ Windows ME,
- ❖ Windows 2000,
- ❖ Windows XP
- ❖ Windows Vista

- The BHMFit2 Software requires approximately 11MB of disk space.

- The required diskspace for the database is approximately 2kB per customer.

3 Software installation

Attention:

In Windows 2000/XP/Vista administrator privileges are required for the installation!

BHMFit2 is NOT an update of the former fitting software of BHM-Tech.
The installation will be done into a new dictionary (BHMFit2) on your personal computer.
The current installation will remain on your PC.

BHMFit2 has a lot of new features like, fitting-assistant, and fitting suggestion (FirstFit), which will support you at your tasks.

The customer database of the old software version 1.0.0.23 can be used with the new software. The database you can copy from the program-dictionary „C:\Programs\BHMFIT\DB" *.* into the new directory "C:\Documents and Settings\All Users\Applicationdata\BHMFit2\DB". **Please contact your system-administrator!**

Before you start the installation please close all other applications.

Please insert the CD with BHMFit2 into your CD-ROM drive. If the installation doesn't start automatically, you can do this yourself by selecting „Workplace -> Your_CD-ROM -> Setup.exe".

To start the installation, click the „Next" button.
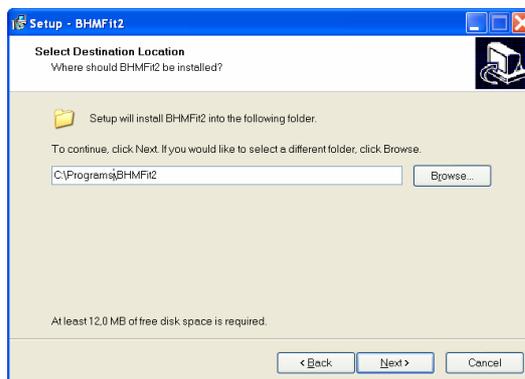
If necessary you can select the destination folder for the installation.
Click „Next>" to proceed with the installation or „Change" to select another destination folder. By default BHMFit2 is installed to „C:\program files\BHMFit".
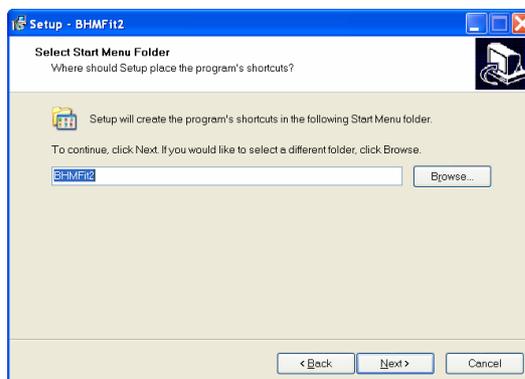
The next window allows you to change the name of the program group in the Windows start menu. By default the program group is named „BHMFit". When you're finished, click „Next>" to proceed with the installation.
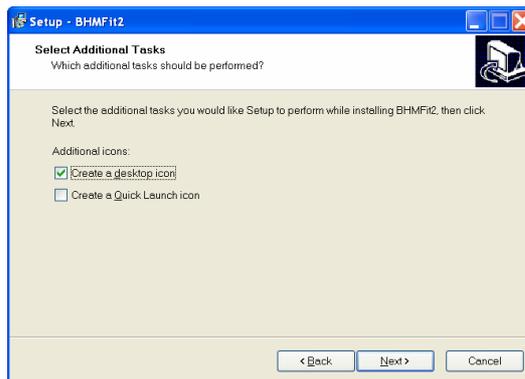
This screen gives you the possibility to select, if you want the setup to create a desktop and/or a quickstart icon for BHMFit2. When you're finished please select „Next>" to proceed with the installation.
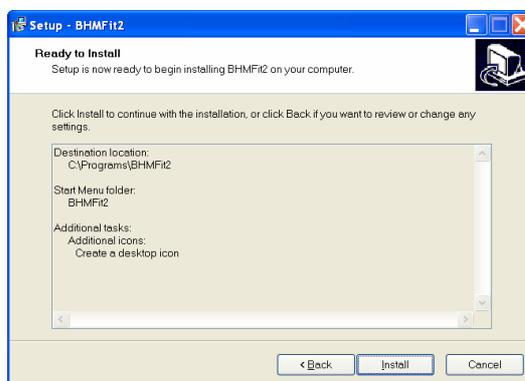
This window shows you a summary of your settings for the installation. If you want to change something, you can use the „Backbutton to go back and change the settings. If you're finished, click „Install" to finish the installation.
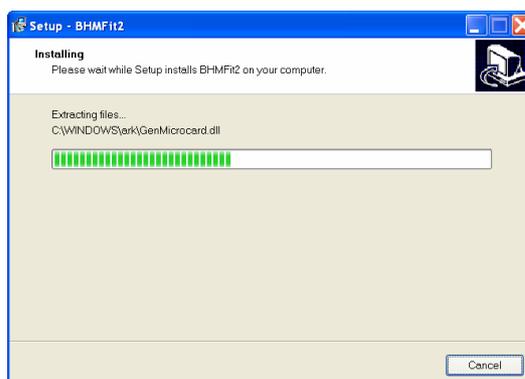
The BHM installer copies all necessary files and setup your system for using BHMFit2.

The installation is now finished. In the last window of the installer you can select, if BHMFit2 should be started immediately after exiting the installer. Finish by clicking the „Finish" button. If you have selected to add BHMFit2 to your desktop / quickstart, the appropriate symbol for starting BHMFit2 is now available on your desktop / quickstart bar.

4   Simulation mode

Start BHMFit2 by clicking on the symbol.
The detection screen is opened:
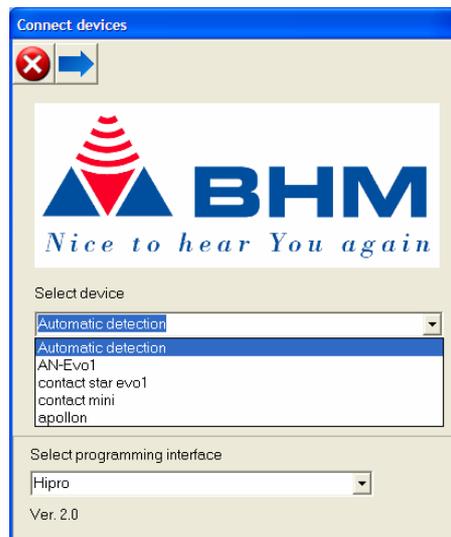
Select the device you want to simulate and set „Simulation". Then click to proceed to the fitting screen.

You can now test the settings of the selected device. The graphs show the changes in realtime – for further information please read the following chapters describing the settings of the bone conduction spectacles in detail.

In simulation mode the buttons (store settings – write settings – read settings) have no function because no device is connected.

5 Fitting of the hearing systems

5.1 Connection and settings

As programming interface a HiPro or a HiPro-USB can be used.

Connect the programming interface to your computer.

The programming socket of the AN-Evo1 is placed under the battery door, at the contact star evo1 it is positioned under the small flap between volume control and mode switch, which can be opened with a small screw driver.

At the AN-Evo1 you need to remove the protective cap of the programming socket. Store this cap carefully and insert it again when you've finished the fitting.
Connect the programming cable carefully to the programming interface and to the bone conduction spectacle. On the BC spectacle a coloured dot shows you the correct orientation of the connector.
At the **contact star evo1** you will find the programming socket under the microphone cover.

At the **contact mini** Gerät the programming socktet you will find under the cover of the electronic housing. You can take off the cover from the housing by using a small screwdriver and release the snap-lock in the battery-compartment.

As the **contact mini** does not have a mode switch and no tel-coil mode, the description in this document do not apply.

At the **apollon** you will find the programming socket behind the shirt-clip. Remove this clip according the instructions in the usersguide of this aid.

Except at the apollon where the battery is absolutely necessary, the battery should be removed during programming of the aid.

Turn on the device by switching it to „M" or „T" position.
Attention: At the contact star and the apollon the position of the switch has no effect – the source is selected by the software. At the AN-Evo1 the switch selects, what the customers hears – but you can still fit both sources without switching the device.

Reduce the volume using the volume control before you attach the Device to the customer.
Use a NOAHlink-cabel with standard pinning acc. HIMSA Spec. or a compatible one.
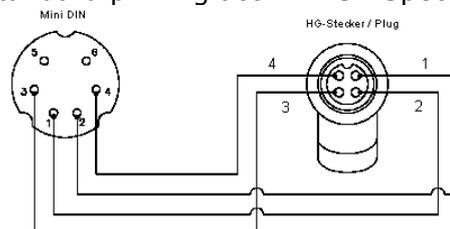
Pinning of the programming cable

When attaching/detaching the programming cable the devices should be turned off!

Some examples for compatible programming cables:

- Beltone 902290769029   Siemens: Connex 3   Oticon: No. 3
- BHM: 77733408 (VBK Nr. 99/150-RED right)
- BHM: 77733409 (VBK Nr. 99/150-BLUE left)

6 Starting BHMFit2

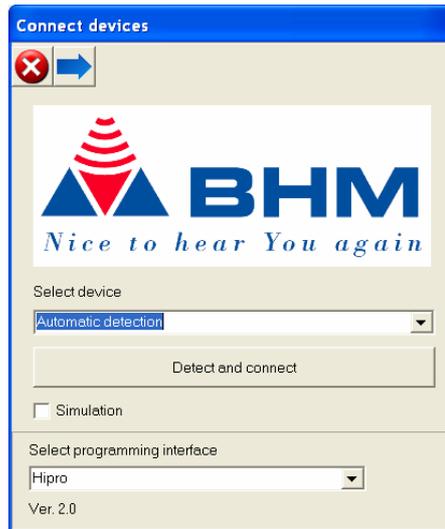By double clicking the symbol [symbol] you launch BHMFit2. If you've selected not to install shortcuts on your desktop / quickstart you can launch the software by selecting „Start -> Porgrams -> BHMFit -> BHMFit".

The detection window is opened:

The power source of the programming interface is now turned on. You can recognize this by a possible feedback of the BC spectacle (depending on the settings and the position of the volume control).

You can now select the device or click on „Detect connected device" to automatically search for the connected devices.

Please take care, that „Simulation" is not activated – in this case you'll only enter the simulation mode and will not change any settings of the aid.

If you have manually selected the device, you can enter the fitting screen by clicking the proceed symbol [symbol]. If you've selected the automatic detection of the connected Devices, BHMFit2 transfers you to the fitting screen automatically after detection is finished.

If BHMFit2 is not able to detect a programmable Device, the following message apears on your screen:
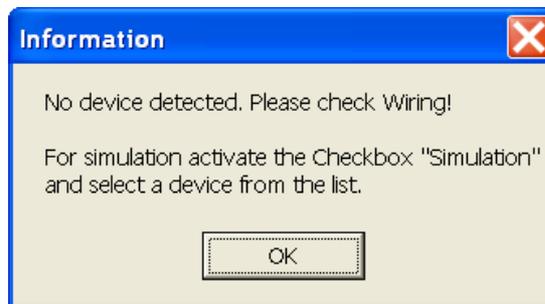
You can now enter the simulation mode by clicking „Yes", repeat the detection by clicking „Repeat" oder go back to the detection screen by clicking „Abort".

7 Fitting of the hearing systems

AN-Evo1, contact star evo1, contact mini and **apollon**

7.1 Description of the main window

The numbers of menu-buttons depend on the device-type you have connected. Below there are shown and described all the buttons which could appear in our products.

1.) Close Program

2.) Open session (customer)

3.) Save session

4.) Export Fitting protocol

5.) Back to detection window

6.) Store settings of all modes in the aid (Burn)

7.) Send settings to the aid (without store)

8.) Read settings of the aid

9.) Copy settings from active to passive aid

10.) Transmit settings to other modes

11.) Display multiple curves in the diagram

12.) Save curves to multiple buffer

13.) Display 50 / 80 curves

14.) Activate right aid

15.) Activate left aid

16.) Setup controls

17.) Program 1 = microphone mode

18.) Program 2 = Tel-coil mode (contact mini not available)

19.) Program 3 = Microphone + Telecoil mode (only apollon)

20.) Program 4 = DAI (only apollon)

21.) Program 5 = LineIn (only apollon)

22.) Automatic Fitting suggestion (FirstFit)

23.) Fitting assistant

7.1.1 Open session (customer)

Here you can open former saved sessions/customers. Select the customer/session and click „Open session" button. You get back to the fitting screen and the saved settings of the session are automatically applied to the controls. For more details please refer to next chapter „Save session/customer".

7.1.2 Save session (customer)

After you've set the Device in the best way for your customer, you can save the settings in the database of BHMFit2. By clicking the „Save session" button you are transfered to the customer database.

Here you can add a new customer (last name is the minimum information you have to provide) and store the session(s) by clicking „Save session". The following dialog appears to let you choose a unique name for the session (e.g. „initial fitting").

If the customer is already available in your database you can search for his entry by clicking on the „Search customer" button, which transfers you to the following screen:

Here you can select the customer by clicking his last name with the mouse or enter the first letters into the name box. When you've selected the right customer, you can close this window by clicking the „OK" button.
Clicking the „Abort" button aborts the search and tranfers you back to the main window of the customer database.
By clicking on the „Add customer" button you can add a new customer to the database.

7.1.3 Export Fitting protocol

With this function you can export device settings and customer data into windows word, author your report, save and printout.

7.1.4 Back to detection window

By clicking this button you're able to return to the detection screen.

7.1.5 Store settings

After the fitting you have to store the actual settings in the device. This is done by clicking the „Store settings" button.
Please note, that if you don't click this button, all settings get lost when the supply is turned of (or the programming cable is detached from the device). The device keeps then the formerly stored settings.
Apollon:
For the apollon, with this function you store the settings of **all** modes. – It is not necessary to store each mode separately!

7.1.6 Send settings

By clicking this button you can send the actual settings from the fitting screen to the Device. When you're finished with the fitting session, you have to store the settings in the Device (refer to „Store settings").
If you have activated the „Life update"-function („Programmer -> Write changes immediately") this button is greyed out. In this case BHMFit2 sends all changes you make on the fitting screen immediately to the Device.
Attention: Don't forget to STORE the settings when you're finished with the session! This is ALWAYS necessary, also if you have „Live update"-function!

7.1.7 Read settings

By clicking this button you can read the stored settings of the Device.
If you select a new device (or let BHMFit2 detect it), this is done before you're transfered to the fitting screen automatically.
Attention: You can only read the STORED settings. If you have made changes and only send them to the device, all these changes get lost when reading the stored settings!

7.1.8 Copy settings

By clicking this button you can copy the settings from the active aid to the inactive one. This means, if you've selected the Left aid you copy from left to right (and vice versa). This can be used if you have to do a binaural fitting and already set the first device in a proper way.
Attention: Only the settings you see on the fitting screen are copied! If you have made changes in the advanced mode you have to switch the Device to this mode and then select „Copy settings" if you want to copy these changes, too.

7.1.9 Transmit settings

With this function you can transmit the settings to the other available modes/programs of the device (Tel-coil, program1,2,3… if available)

7.1.10 Graph display

These buttons are used to change the display properties of the graphs. They don't have any effect to the settings of the connected Devices.

By clicking the „Display Multicurve" button you can see up to 5 different settings at the same time in the graphs. This function allows you to compare different settings directly in the graphs.
To save the curves you want to see in the multicurve mode, simply click on the „Save to multicurve buffer" button .

The „display 50/80 curve" button shows the response for 50 and 80dBSPL input level in the frequency response graph. This type of display can be used for setting and controlling the dynamic range, the AGC-settings and the output limiting. When using the 50/80 display the slider for „input level" has no effect on the graphs.

7.1.11 Side selection

You can select which of the devices (left or right) you want to set (or read).

7.1.12 Setup Controls

This button opens a submenu, where you're able to activate / deactivate the volume control, trimmer (if available on the device).
When volume control is active, you can read the actual state of the potentiometer on the fitting screen (you have to do a „Read settings" to update the display).

7.1.13 Program selection [M | T | MT | DAI | Line In]

Depending on the device you have connected, different modes are available:
Microphone, Telecoil, Microphone-Telecoil
DAI (Direct Audio Input), LineIn (Additional Audio Input with 3.5mm Jack-socket)
They can be set completely independent to each other.

7.1.14 Fitting suggestion (FirstFit)

With this button you can start to run the automatic fitting,
The button will become active, if a complete BC-audiogram, over all frequencies is inserted
for the customer.

Apollon: By reducing the VC (max. -20dB) you enable your customer an increased range of
the overall gain
Example:
Reduction of the VC by -8dB. Run FirstFit. The device is now adjusted according the
audiogram. Your customer has now the possibility to increase gain up to 8dB.

> **Attention, the calculated fitting is a suggestion based on your inputs
> into the audiogram. The decision if this suggestion is applicable
> depends on the individual hearing-loss and on the individual sense
> of your customer!**

Two Algorithms are available for you

BHM-BC-FIT… Fitting suggestion for conductive hearing loss
NAL-NL1… Fitting suggestion for senorineural hearing loss.

Der BHM-BC-Fit: Has been designed based on world-wide inquiries and is dedicated to
support you for your fitting of following treatments:

> Conductive hearing loss
> Otitis media
> Otosclerosis
> Single sided deafness

NAL-NL1… Is a well known algorithm from the „National Acoustic Laboratories" of Australia,
which is used almost in all common hearing aids.

7.1.15 Fitting assistent

This function is for fine-adjustment the settings of the aid.

> **Depending on the hearing-loss and on the individual sense of the
> customer, you have to decide if this suggestion is applicable!**

## 7.2 Short description of the fitting functions

The following description of the fitting functions is only a rough overview and can in no way replace the knowledge of a medical specialist or acoustician.

7.2.1 Graphs

The left graph shows the output or gain (can be selected by „Field mode" control) in dependency of the frequency. The simulated input sound pressure level can be set between 30-120dBSPL using the „Input level" slider. The changes can be seen on the graphs in realtime.

The right graph shows the output level in dependency of the input level at two different frequencies (one for low freq. Channel, one for high freq. Channel) which are calculated by BHMFit2 depending on the center frequency. The curves can be separated by their color. This graph is mainly used for setting the AGC and the MPO.

7.2.2 Low cut filter
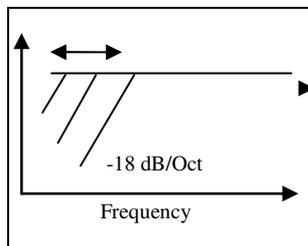
Filters low frequencies with a slope of 12dB/oct at a setable frequency. The starting frequency can be set between 10Hz (low cut off) and 2kHz.

This filter is not only reducing the gain but also the maximum output in the low frequencies. In most cases this leads to a much clearer sound in the speech frequency range. At the same time current consumption is reduced dramatically and in this way battery lifetime can be extended by a factor 2-4.
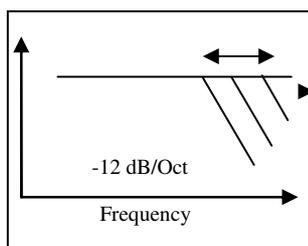
7.2.3 Notch filter (Frequency)
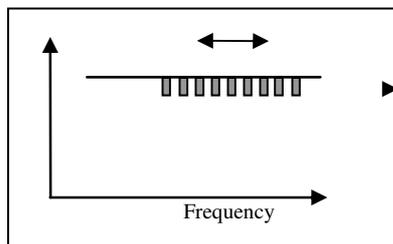
This function is mainly used to avoid instability caused by acoustical or mechanical feedback. The center frequency of the Notch can be positioned between 400Hz and 8kHz.

At the selected frequency the gain is by default reduced by 10dB in a very small frequency span. Practically this function will be used when the customer is already wearing the Device to eliminate feedback noise.

Please take in advance, that hearing aids set to high gains tend to change the feedback frequencies. In this case a constant feedback cancellation by the notch is not possible. At a BC spectacle you can reduce the feedback addiction by proper bending of the device, raising the pressure of the spectacle against the mastoid or slightly reducing the gain in the problematic frequency range.

Notice: In the advanced mode you have also the possibility to change the deepness and the width (freq. Span) of the notch filter.

7.2.4 High Cut

Damping of high frequencies.
This function enables you to set the frequency of the high cut filter between 1kHz and 8kHz (off).
The slope of the high cut filter is 12dB/oct.

7.2.5 Notch filter (depth and width)

Additional to the frequency you can set the depth and the width (freq. Span) of the notch filter. In some devices by default the depth is set to -10dB and the quality of the filter is 22.4. These settings are fine in approx. 90% of the fitting sessions.

Attention: Wrong settings of these parameters can influence the intelligibility of speech strongly

7.2.6 Equalizer: (Only AN-Evo1)
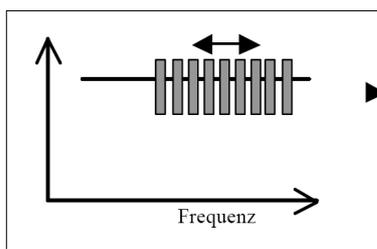
10-channel equalizer with a dynamic range between -10dB and +5dB. The frequencies from left to right are 1 – 1,5 – 2 – 2,5 – 3 – 3,5 – 4 – 4,5 – 5 – 6,5 kHz.
Using the equalizer enables you to fine tune the fitting of the AN-Evo1.
Attention: Never set more then 2bands above 0dB at the same time! This will lead to feedback and excessive current consumption – and in this way to dramatically reduced battery life.

7.2.7 Overall Gain: (Only AN-Evo1)

Using this slider you can reduce the overall gain of the AN-Evo1 between -47dB and 0dB in 1dB steps

7.2.8 G50 G80 Amplification-Matrix (**apollon**)

At the apollon the amplification for each of the 4 channels can be done individualy by this matrix. You either can select the single field, the row (B,C) the column (F,G,H,I) or the complete matrix (A). With the "Arrow"-buttons (D,E) you can decrease or increase the amplfication. The displayed numbers in the fields do not show the amplification-characteristic of the device. As the characteristic is depending on the receiver and on the way of use (Monaural, Binaural) always check the Graphs in the diagram to read the real amplification / Output data of the device.

The row „J" has only display-function. In there you can read the compression-ratio.

During setting of the amplification it can happen that the values cannot be changed anymore.
This could result cause of following reasons/rules:
Minimum or Maximum amplification is reached.
The G50 value cannot be below the G80 value.
The G80 value cannot be above the G50 value
The compression limit of 3:1 within the channel cannot be crossed

7.2.9 Upper compression threshold (ratio: infinitive:1) (only **apollon**)

With this function-matrix you can set the threshold for each of the 4 channels where the incoming Signal (Input) will not be amplified anymore.
The use of the matrix is similar as described in the amplification matrix.
In the Input-Output (IO-) diagram you can read the threshold level.
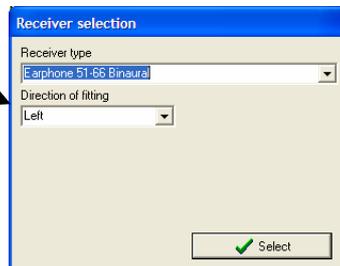This function is only working when the receiver has **not** reached his saturation and when the output is **not** limited by the MPO-function.
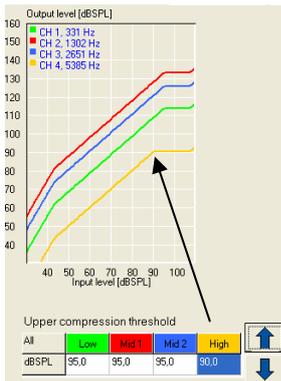
7.2.10 Attenuation (only **apollon**)

This function becomes visible for binaural fitting only.
During setting of the device to binaural you also did define the preferred fitting side (preferred ear) – active fitting side

On the selected, preferred ear you do the fitting as described in this document or with the support of the Auto-Fit or Assistant functions. During this process the Attenuation-slider is inactive (grey).

When you select the other (passive-fitting) side (L or R) the slider becomes active and you can reduce the gain down to -24dB against the active fitting side.

7.2.11 Noise reduction (only **apollon**)

With the noise reduction „check-box" you can switch on the noise reduction. Depending on the input-spectrum, the reduction will be 12 to 18dB.

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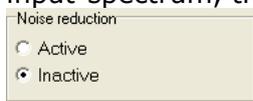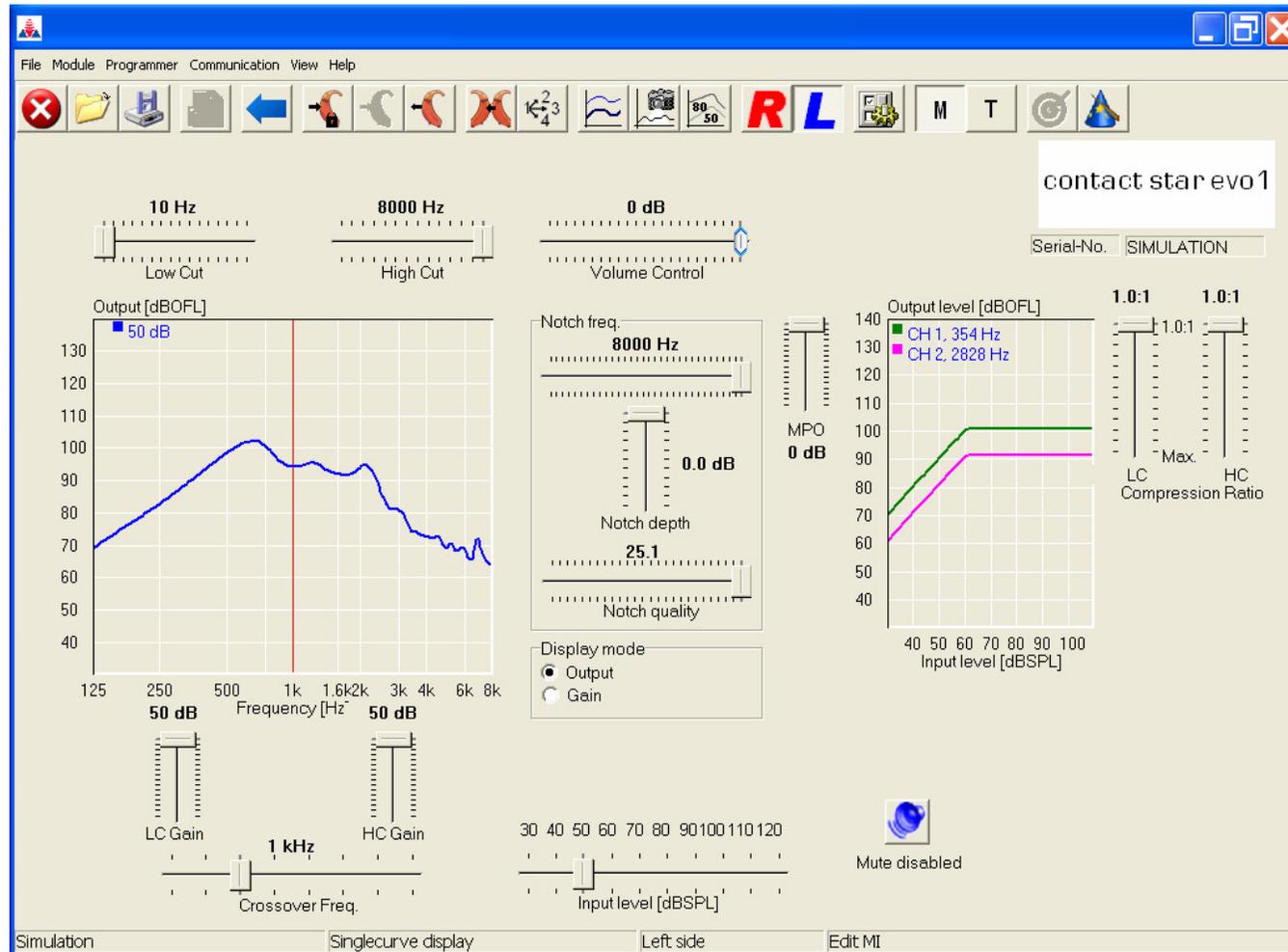
Fitting screen of the contact star evo1
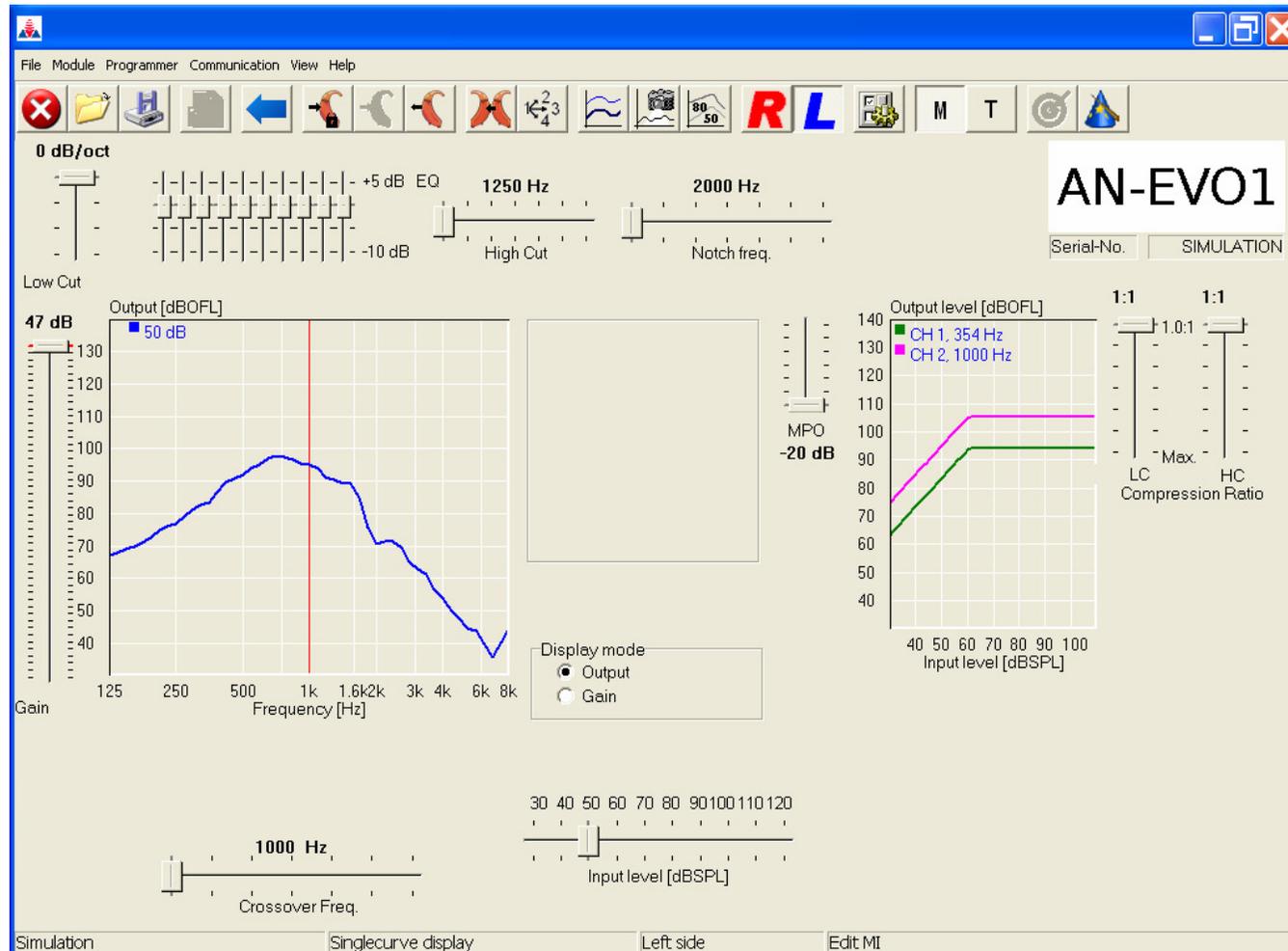
Fitting screen of the AN-Evo1

Fitting screen of the contact mini

Receiver Selection of the Apollon

This window appears after connecting to the apollon.
It enables you to define the properties of the device.
Monaural – Binaural
Earphone – Bone-conduction receiver
and
The preferred fitting side

Fitting screen of apollon

8   Updating BHMFit2

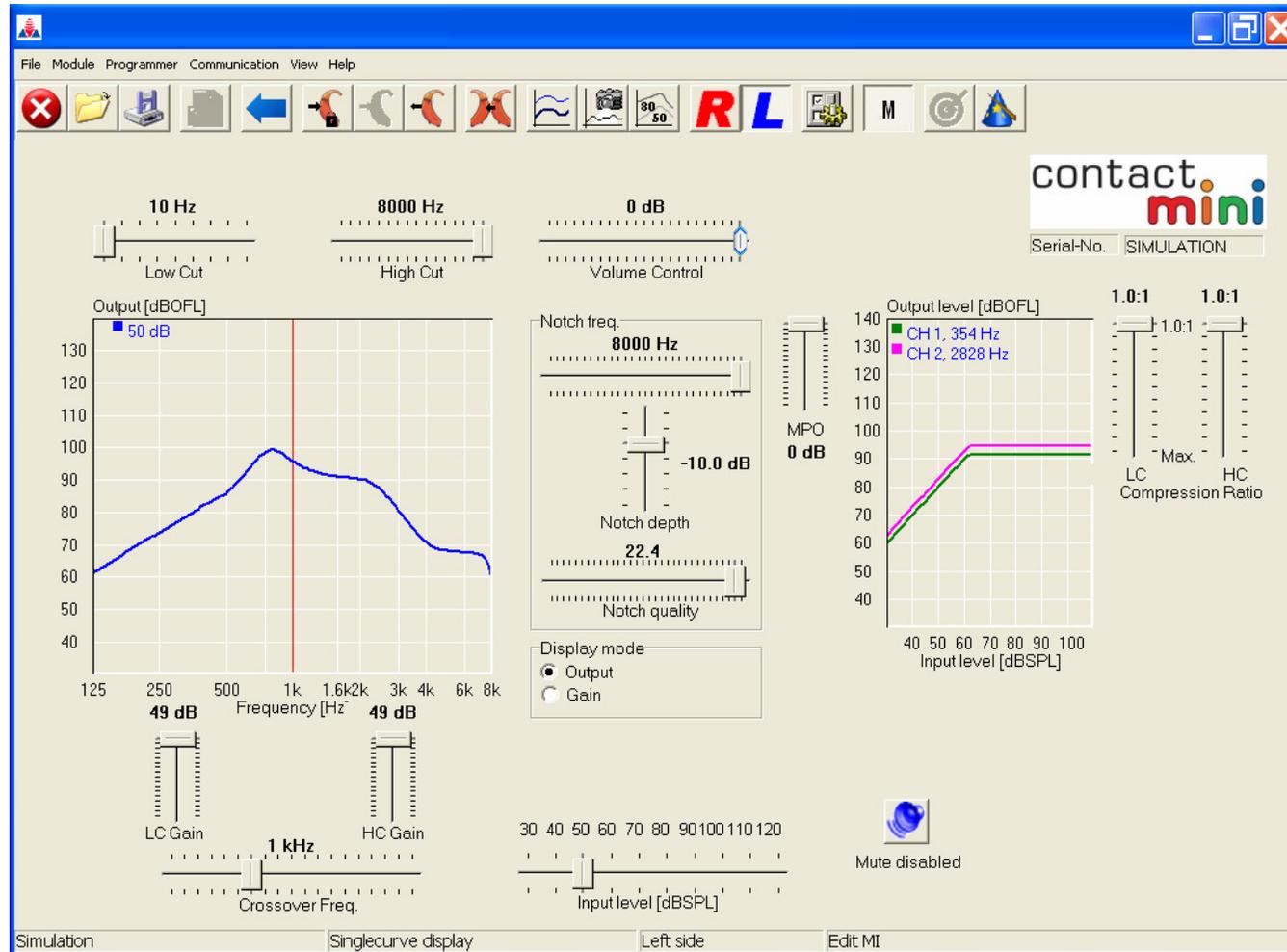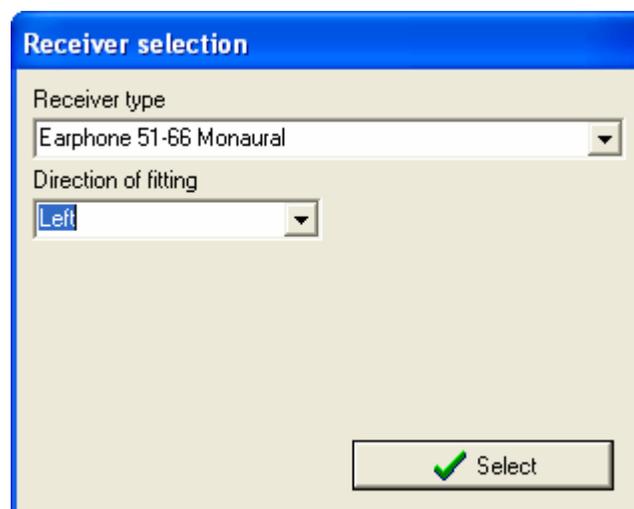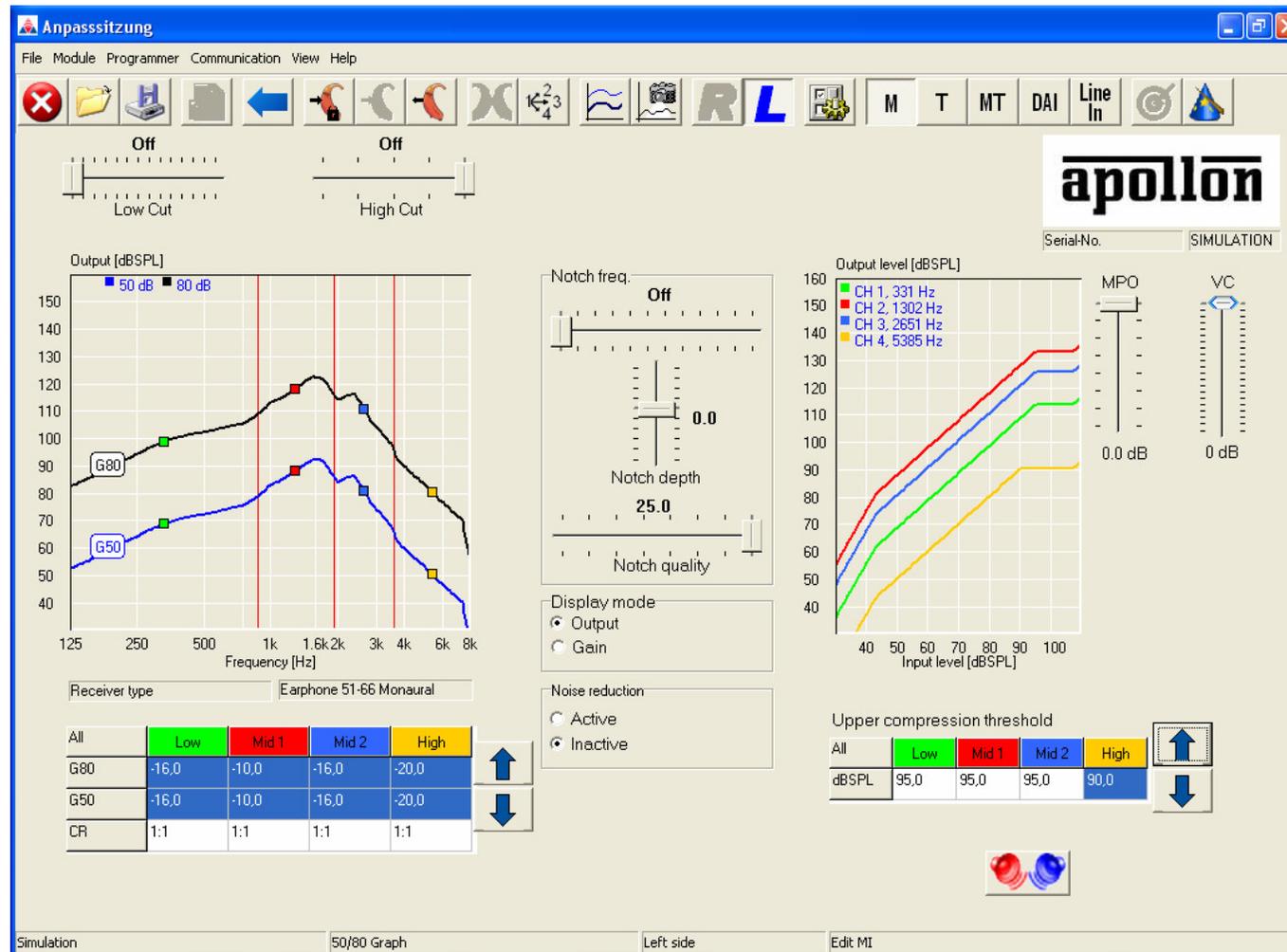Before you install an update, you should backup your customer database. They can be found in the „DB" path of the program installation path (by default „C:\program files\BHMFit2"). Close all other windows applications – they can influence the installation procedure.

Remove the old version of BHMFit2 by selecting „Start -> settings -> control panel -> software", select the entry „BHMFit" in the list and click on „Remove". The BHMFit2 Installer now removes the complete installation (except the customer database).

Now you can install the new version of BHMFit2. Proceed like making a new installation as described in detail in Chapter 3 – Software installation.

9   Uninstalling BHMFit2

Before you start to uninstall BHMFit2 please backup your customer database (maybe you want to use it later again). The files are positioned in the path
„ C:\Documents and settings \All Users\Application data\BHMFit2\DB".

Uninstall BHMFit2:

Remove BHMFit2 by selecting „Start -> settings -> control panel -> software", select the entry „BHMFit" in the list and click on „Remove".

After the uninstall, the customer database remains in the program files folder. If you don't want to install BHMFit2 later on, you can simply remove the folders now.

10 FAQ

In this chapter you'll find the most common questions (and answers) about BHMFit2 and the BC spectacles AN-Evo1 and Contact star evo1. If the question you're interested in can't be found here, please don't hesitate to contact your supplier or BHM-Tech.

Q: Can the customer files that were saved with the old BHM-Tech fitting software be opened in BHMFit2?
A: No. Because of technical aspects the old customer files can't be opened in BHMFit2. You can proceed using the former BHM-Tech fitting software for these files or add these customers manually to the BHMFit2 customer database.

Q: What is copied with the function „copy settings"?
A: Basically: all elements you can see on your fitting screen. Especially at the Contact star evo1 you have to take care that you switch to the advanced mode before copying if you have made changes there.

Q: Why is the „send to device" button in the toolbar not available?
A: BHMFit2 is equipped with a „Live update" function. All changes you do on the fitting screen are immediately send to the connected device.
If you don't want this, you can activate / deactivate the „live update" function by selecting „Programmer -> write changes immediately".

Q: Why is the low cut slider at the AN-Evo1 not accessible?
A: At the AN-Evo1 the low cut is by default mapped to the trimmer – this provides in many cases a possibility to fit the device without using a computer. You can change this

setting by opening the Setup control .

Q: Can both aids be set at the same time when doing a binaural fitting (R+L)?
A: No. You can fit one of the devices and then copy the settings to the other one. In this way you reach the same function without taking care about changes that has to be done only in one device.

Q: Is BHMFit2 available as a NOAH module?
A: Sorry, at the moment there is no NOAH module of BHMFit2 available. If you're interested in a NOAH module of BHMFit2, please inform your supplier or BHM-Tech.

Q: Is programming of the Devices a MUST?
A: We deliver our devices with settings that fit as many customers as possible. If you bend the BC spectacles and the customer is satisfied with the sound and the speech recognition, you don't have to do the programming.

Q: What is meant by „factory settings"?
A: Using this function („Function -> reset to factory default") you can reset the Device to the state as it was delivered by BHM-Tech. This can be helpful when all parameters were changed and the sound quality got pretty bad. After applying the factory settings you can start from a well known state with your fitting.

Q: Which languages are supported by BHMFit2?
A: BHMFit2 was programmed in a modular way to be able to easily integrate new devices as well as other languages. If you are interested in a language that is not available at the moment, please get in contact with your supplier. We'll support you as good as we can.

Q: Is it possible to copy the settings from an AN-Evo1 to a contact star evo1?

A: No. Because the both BC spectacles use completely different electronic components it is not possible to copy the settings from one to the other.

Q: Is it possible to fit an AN-Evo1 and a contact star evo1 at the same time?
A: No. Because the two devices use different communication parameters it is necessary to re-initialize the programmer when switching from one to the other. For this reason you can only have one type in a session. If one device each is connected to your programmer, the right one is ignored.

Q: At the apollon, why are the displayed output-curves different between Monaural-Binaural and between Airconduction – Boneconduction?
A: Each mode & receiver has his own characteristic which is calculated and displayed in the diagram appropriate.

Q: What means „Wait for single object"?
A: This information showed up once on a PC with Windows Vista and could not reproduced anymore. After a restart of your PC it will not appear anymore. We assume this is an issue of the Windows Vista.

Q: Why does the setting up of the connection to the apollon take so much time?
A: While changing the configuration of the device, all data will be exchanged, transmitted to the device and stored into the EEPROM. This process allows us to update and extend the device features anytime by software in the future.

With writing this document we endeavour to describe the product as detailed as possible. Inconsistencies in word, writing, content and misprints are unintentional. In case corrections are necessary please contact us.
We reserve the right to change the content of this document with regards for optimizing and updates

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