

AS-EQ1

OPERATOR MANUAL

Manual Version 1.3 November 2009



SVS
The Sound Authority.

AUDYSSEY
MULTEQ XT

What's in the Box*

- SVS AS-EQ1 subwoofer EQ with detachable faceplate.
- Quick start guide
- Installation software CD (Operator Manual, Installation software, CutePDF Writer, SVS desktop pack).
- 10' USB cable.
- Matched Audyssey calibration microphone.
- Isolated AC/DC power supply¹.
- Mono mini-jack pass through cable.
- Rubber isolation feet.
- Rack ears.



FIG. 1

* Optional SVS audio interconnect shown • 1.) Elementech Power Supply, part no: AU1241202g

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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of any polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two prongs and a third grounding point. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used use caution when moving the cart/apparatus combination to avoid injury from tip-over.

**FIG. 2**

Important Safety Instructions

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. **WARNING:** To reduce the risk of fire or electric shock, this apparatus should not be exposed to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.
16. To completely disconnect this equipment from the mains, disconnect the power supply cord plug from the receptacle.
17. The mains plug of the power supply cord shall remain readily operable.

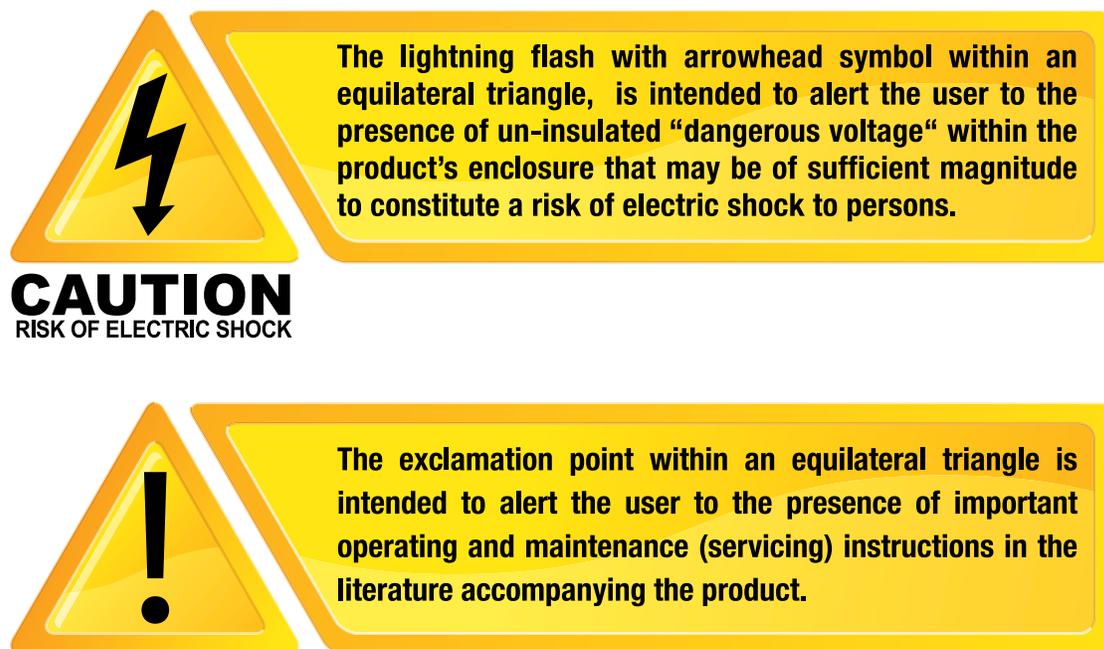


FIG. 3

Introduction

Audio lovers, perfect bass is finally possible, easy, and downright fun to achieve. Your AV receiver investment is solidified since the **AS-EQ1** is compatible with any sort you have. Your bass needs are covered no matter what your current or future room looks like. Switch one on, run setup, and you won't ever switch it off. Harness the power and refinement of your system, and take the room out of the equation, finally.

AS-EQ1 Features

- Driven by an advanced Digital Signal Processor (DSP) using sophisticated Audyssey® customized room-correction algorithms
- Utilizes Adaptive Low Frequency Correction™ technology (ALFC) from Audyssey Laboratories™ the most advanced bass calibration method available to consumers today
- Performs analysis in both frequency and time domain, for superior artifact-free bass adapted for your room
- Dual subwoofer processing for better blending and integration with main channels
- FIR filters to avoid time/phase distortion inherent with IIR filters for superior bass clarity
- Corrects bass for an incredible 32 positions in horizontal and vertical space to cover any listening area
- Heavy-duty steel chassis with SVS's magnetically-retained CNC'd aluminum face-plate
- Twin sub in, twin out, with multiple configuration modes. Mains level calibration signal output jack
- Easy-to-use laptop PC graphical user interface (GUI) and CD operating software with operator manual
- Dedicated Audyssey microphone and AV receiver external calibration pass thru cables included
- High quality, isolated 12V. power supply, and USB cable included
- On-line SVS tech support page for easy software updates, upgrades and news
- Power and unit status LEDs
- Front-panel easy access for calibration microphone and USB connection
- Final test and assembly in SVS's Ohio headquarters

Introduction

SVS AS-EQ1 Features:

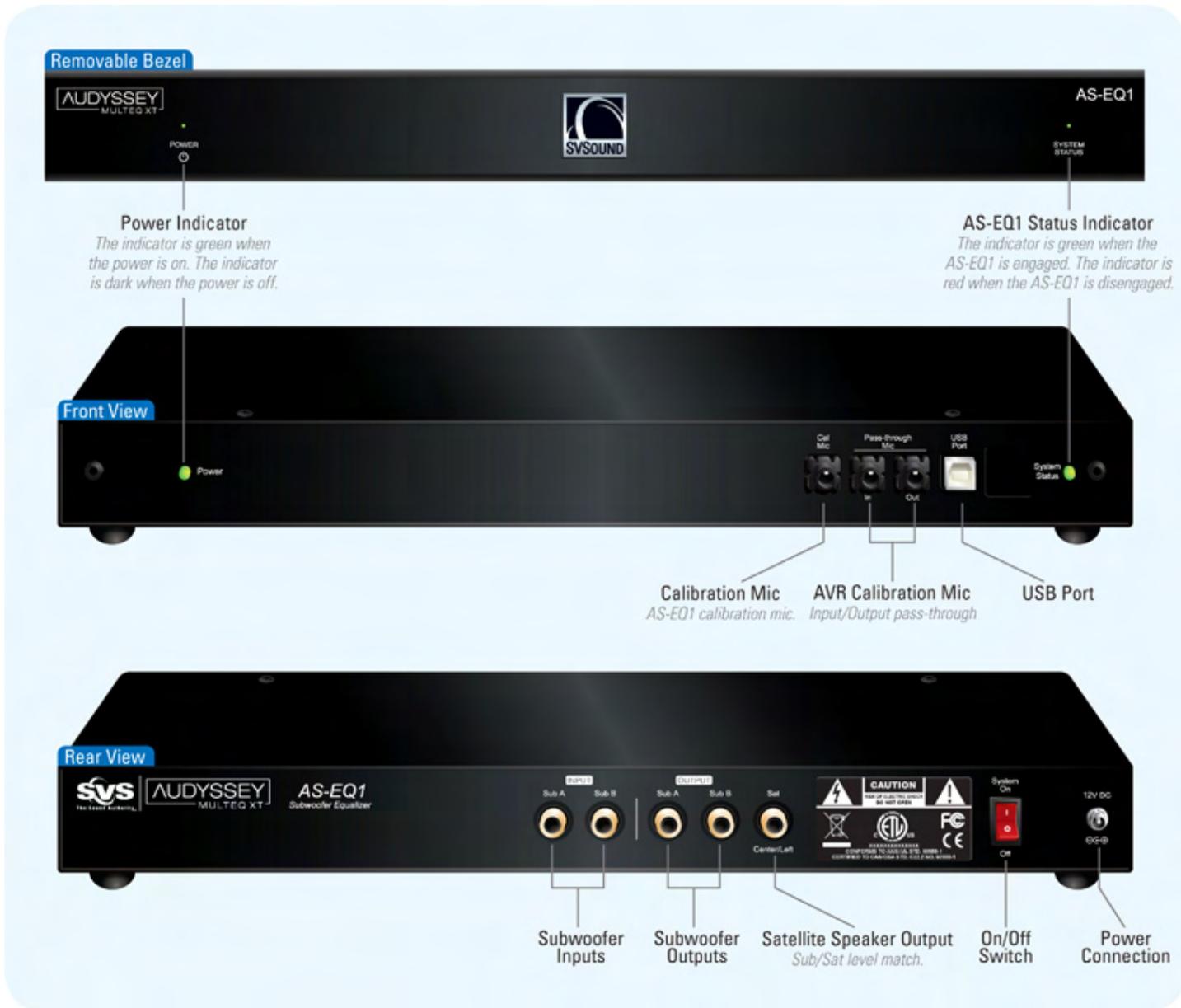


FIG. 4

About This Manual

This document is intended to provide you with all the information necessary to properly install and integrate the SVS AS-EQ1 into your audio environment. After installing the Sub EQ GUI on your personal computer and properly attaching the AS-EQ1 to your Audio Video Receiver (AVR) or Preamp/Processor (Pre/Pro), you will be able to quickly step through a small number of tasks designed to equalize your subwoofer(s) in your listening environment. This manual will discuss each task in detail and discuss what you should see at the conclusion of each task.

When referencing the **AS-EQ1** in this manual, we are referring to the hardware device that integrates into your audio system. When referencing **Sub EQ** in this manual, we are referring to the software GUI that runs on your PC to facilitate calibrating your AS-EQ1 to your listening environment.

In addition to the information contained in this manual, you will also find directed workflow reminders in the Sub EQ GUI to ensure the steps contained in each task are performed in the proper sequence.

NOTE:

It is strongly recommended you read through this manual in its entirety before installing and setting up the AS-EQ1 to ensure understanding of what each task is intended to accomplish, and to make the actual activity of equalizing your subwoofer(s) a simple and straightforward exercise. You will also find helpful tips and techniques in this manual that are not found in the GUI for reasons of space.

Installing the Sub EQ GUI on your PC

To install the Sub EQ GUI on your computer system, insert the CD that came with your AS-EQ1 into your CD drive on the computer you will be using to configure the AS-EQ1. If the drive has been configured for "AutoRun", the installer should automatically run. If not, browse the drive in which the Sub EQ installation CD resides and double click on **Setup.exe**



FIG. 5

When the installer runs, you will see the following Screen:



FIG. 6

Installing the SubEQ GUI and AS-EQ1 Manual on your PC

Select the **“Install Audyssey SubEQ”** option, and follow the steps in the install program as to where to place the program. The SubEQ program will be installed on your system and be available through your **Start -> All Programs -> Audyssey Labs** folder if the defaults are accepted. If you would like shortcuts on your Windows Desktop for SubEQ and the AS-EQ1 Operator Manual, you can simply drag a copy from the **Start -> All Programs -> Audyssey Labs** folder.

After installing the software on your PC, you can start the Sub EQ application from this Install screen by clicking on Launch Sub EQ Application, or from the **Start -> All Programs -> Audyssey Labs** folder.

To exit the setup process, select **Exit**.

To uninstall SubEQ from your system, run the Setup.exe program that came on your SubEQ installation CD/download then select **“Uninstall SubEQ”** from the menu.

To install the AS-EQ1 Operator Manual on your PC, simply copy the file **SVS_AS_EQ1OperatorManualV1.3.pdf** from the Installation CD to the desired location on your PC.

Connecting the AS-EQ1 to Your Audio System

The AS-EQ1 is designed to connect between your AVR or “Pre/Pro” (Pre-amp/Processor) and your subwoofer(s) so that after calibration, the AS-EQ1 can apply the necessary corrections to “flatten” the response of bass in your listening environment.

As shown below, the AS-EQ1 has two subwoofer Inputs labeled A and B and two subwoofer Outputs labeled A and B on the back panel. You’ll also notice an Output connector marked Sat Center/Left we’ll reference later in the calibration process.



FIG. 7

The AS-EQ1 handles three different subwoofer configurations: (see Fig. 7 above and Fig. 8 on the next page)

1. **A single subwoofer.** If you have one subwoofer in your system (or co-located subs and you want to equalize them as a single subwoofer), attach the subwoofer pre-out from your AVR or Pre/Pro to the Sub A input. Take the cable formerly run from your AVR or Pre/Pro to your subwoofer and connect to the AS-EQ1 Sub A Output.
2. **Two subs driven from one output.** This is the most common configuration when running multiple subs. You may have taken the subwoofer pre-out from your AVR or Pre/Pro and run it through a “Y” connector to split the signal in two; one for each of your subwoofers. In this case, remove the Y splitter and attach the subwoofer pre-out to the Sub A input on the AS-EQ1. Connect one of your subs to the Sub A output and the other to the Sub B output on your AS-EQ1.
3. **Two subwoofers driven from two outputs.** If you use discrete subwoofer or LFE outputs on your AVR or Pre/Pro (or have two different systems with a subwoofer in each) and want the signals to be treated individually, attach one of the outputs to the Sub A Input and the other output to the Sub B Input on the ASEQ1. Take the cables from the subwoofers that were formerly attached to the AVR or Pre/Pro and connect them to the Sub A and Sub B Outputs on the ASEQ1.

Connecting the AS-EQ1 to Your Audio System

AS-EQ1 Connection for Day-to-Day Operation



FIG. 8

Calibrating the AS-EQ1 in Your Listening Environment

Once you have the AS-EQ1 connected to your AVR or Pre/Pro and subwoofer(s), you are ready to step through the calibration tasks to set up your room EQ. Although the AS-EQ1 Calibration process is very straightforward, you should allow yourself an hour or so to comfortably complete the activity for the first time.

Connect your PC to the AS-EQ1 using the supplied USB cable, power on the AS-EQ1 using the on/off switch on the back panel, allow your PC to recognize the AS-EQ1, then start the Sub EQ GUI (note that if you start the Sub EQ GUI before connecting the AS-EQ1 via USB, Sub EQ will not recognize the AS-EQ1 is attached. Terminate and restart Sub EQ to force device recognition).

You should see the following Screen on your display:

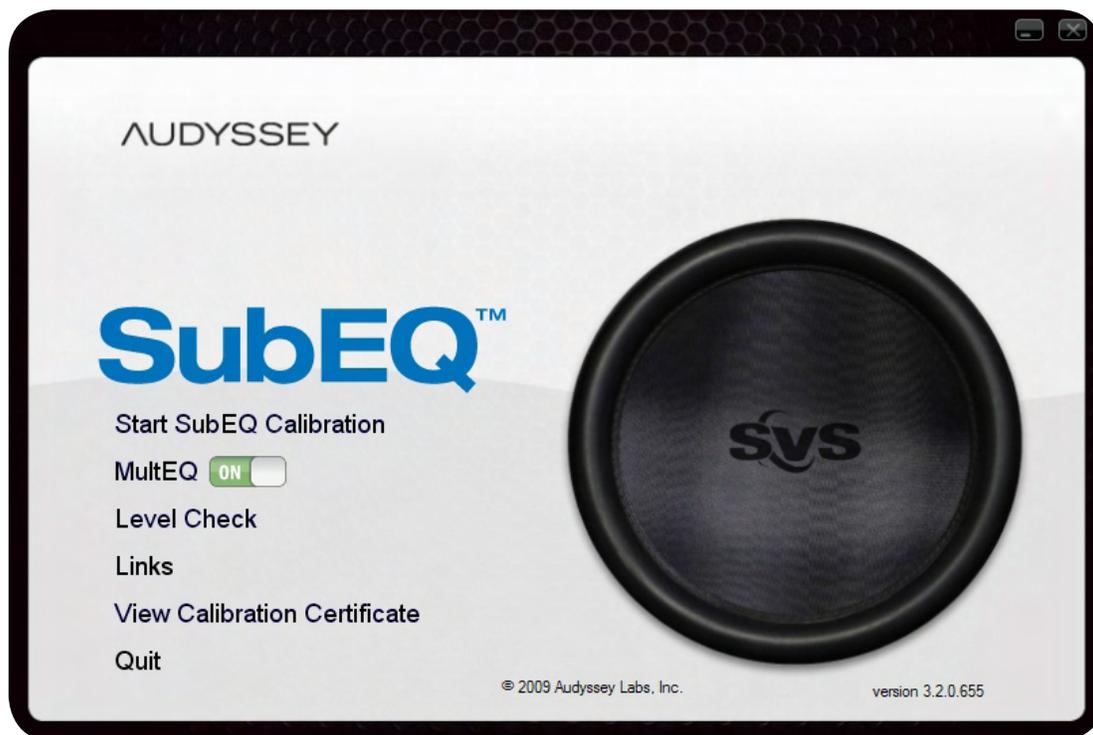


FIG. 9

Select **“Start Sub EQ Calibration”** to begin stepping through the tasks that will lead to a calibrated AS-EQ1. The following pages will detail each task and what you should expect to see after successfully completing the task. In addition, you will find an abbreviated set of workflow steps located in the left sidebar of the Sub EQ GUI to help you with step-by-step activities when calibrating your subwoofer(s).

Calibrating the AS-EQ1 in Your Listening Environment



Integrate the AS-EQ1 with your Auto EQ Receiver or Pre/Pro

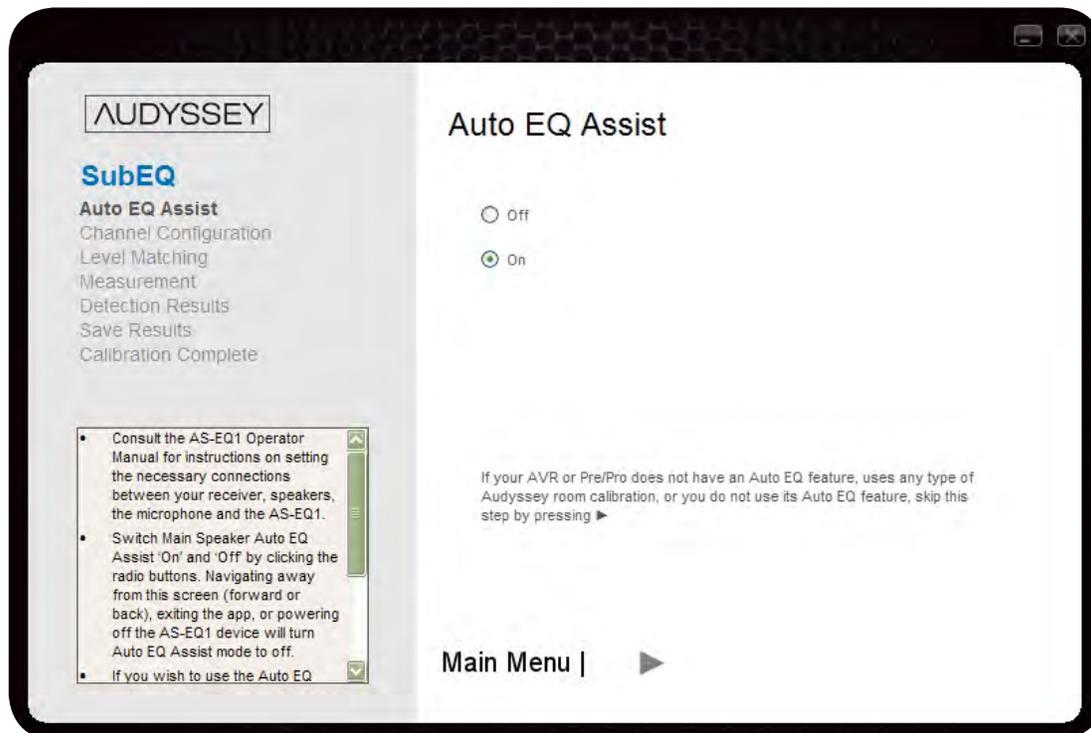


FIG. 10

NOTE:

If you have an Audyssey-equipped AVR or Pre/Pro, if your AVR or Pre/Pro does not have Auto EQ capability, or you have chosen not to use the Auto EQ capability you **MUST** skip this step and proceed to the next Task, "Channel Configuration"

The AS-EQ1 is designed to integrate with any Auto EQ system that may be part of your AVR or Pre/Pro.

NOTE:

If you use the Auto EQ feature of your AVR or Pre/Pro (unless it is an Audyssey-equipped device) to EQ your listening environment, you **MUST** perform this step first. If you do not, your AVR or Pre/Pro and the AS-EQ1 will both apply EQ correction files to the subwoofer, which will result in poor subwoofer sound/performance.

Calibrating the AS-EQ1 in Your Listening Environment

Your EQ-equipped AVR or Pre/Pro normally handles the full frequency range of your system which includes the subwoofer and main speakers. The AS-EQ1 is designed to handle the lower frequencies where your subwoofer(s) operate, and apply its own, more sophisticated correction filters in the place of that provided by your AVR or Pre/Pro. This task will effectively set your AVR or Pre/Pro to equalize only the main (and Satellite) speakers in your system so the AS-EQ1 can assume the EQ of the subwoofers and not have any overlap of EQ filters in your system. (see Fig. 11 below and Fig. 12 on page 17)

1. Carefully remove the front panel of your AS-EQ1. It is attached magnetically and should pull off easily.

**FIG. 11**

2. Take the Calibration Microphone from your AVR or Pre/Pro (**NOT** the Calibration Microphone from the AS-EQ1) and plug it into the **Pass-through Mic In** jack located on the front of the AS-EQ1. (see Fig. 12)
3. Locate the calibration microphone "patch cable" that came with your AS-EQ1 (1/8" mono male connectors on each end). Plug one end into the AS-EQ1's **Passthrough Mic Out** jack, and the other end into the Calibration Microphone input jack on your AVR or Pre/Pro.
4. On the Sub EQ GUI running on your PC, make sure the "On" Radio Button has been checked on the Auto EQ Assist screen (Note: Navigating away from this screen (forward or back), exiting the Sub EQ GUI, or powering off the AS-EQ1 device will turn external calibration mode to Off).
5. Calibrate the AVR or Pre/Pro as directed by its owner's manual. Note: Your subwoofer will be "detected" during the AVR's calibration process although you will hear no sound from the sub.

Calibrating the AS-EQ1 in Your Listening Environment

Capturing Subwoofer Calibration Tones

The External Calibration task allows the AS-EQ1 to intercept the calibration tones intended for your subwoofer(s) from the AVR or Pre/Pro and pass it directly back to the AVR or Pre/Pro. The AVR or Pre/Pro then interprets the response from the subwoofer as flat, and as a consequence, no correction filters are assigned for the subwoofer(s). The calibration of the Main/Satellite speakers are unaffected within the AVR or Pre/Pro using this process, and this ensures only the AS-EQ1 will be handling the EQ of the subwoofers in actual system operation.

6. After completing the calibration of your AVR or Pre/Pro, remove its Calibration Microphone along with the calibration microphone patch cable from the AS-EQ1 and your AVR or Pre/Pro.
7. At this time, your AVR or Pre/Pro and the AS-EQ1 are integrated properly. Click ► on the Sub EQ GUI to continue to the next Task, **“Channel Configuration”**.

Calibrating the AS-EQ1 in Your Listening Environment

AS-EQ1 Configuration for Auto EQ Task



FIG. 12

Calibrating the AS-EQ1 in Your Listening Environment



Channel Configuration

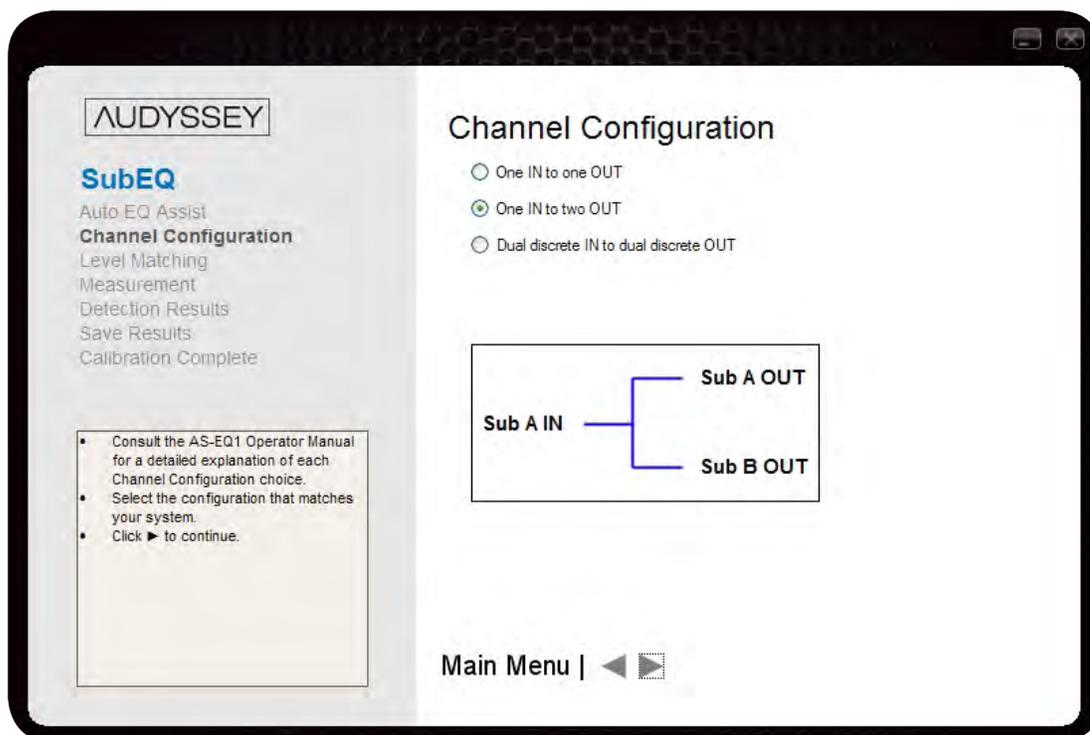


FIG. 13

As mentioned earlier in this manual when discussing connecting the AS-EQ1 to your audio system, there are three different subwoofer configurations the AS-EQ1 will support when EQing your listening environment. Depending on which configuration you have, click the associated Radio Button on this screen then click the ► button to continue to the next task **“Level Matching”**.

NOTE:

When calibrating your subwoofers later in the process, the AS-EQ1 will treat dual subwoofers as follows: **One IN to two OUT** represents dual combined subwoofers. The AS-EQ1 will “ping” Subwoofer A, ping Subwoofer B, then ping Both Subwoofers. It time-aligns and level matches (during the Level Matching task) each subwoofer independently, but will also EQ the combined response and tweak both subwoofers as needed.

Dual discrete IN to dual discrete OUT represents “stereo bass” (two separate sources of bass). Alternatively, it can be used to connect two separate systems in the same room if you have that configuration. The AS-EQ1 will ping Subwoofer A, ping Subwoofer B, EQ Subwoofer A, then EQ Subwoofer B. It will not ping or EQ the combined A+ B.

Calibrating the AS-EQ1 in Your Listening Environment



Level Matching

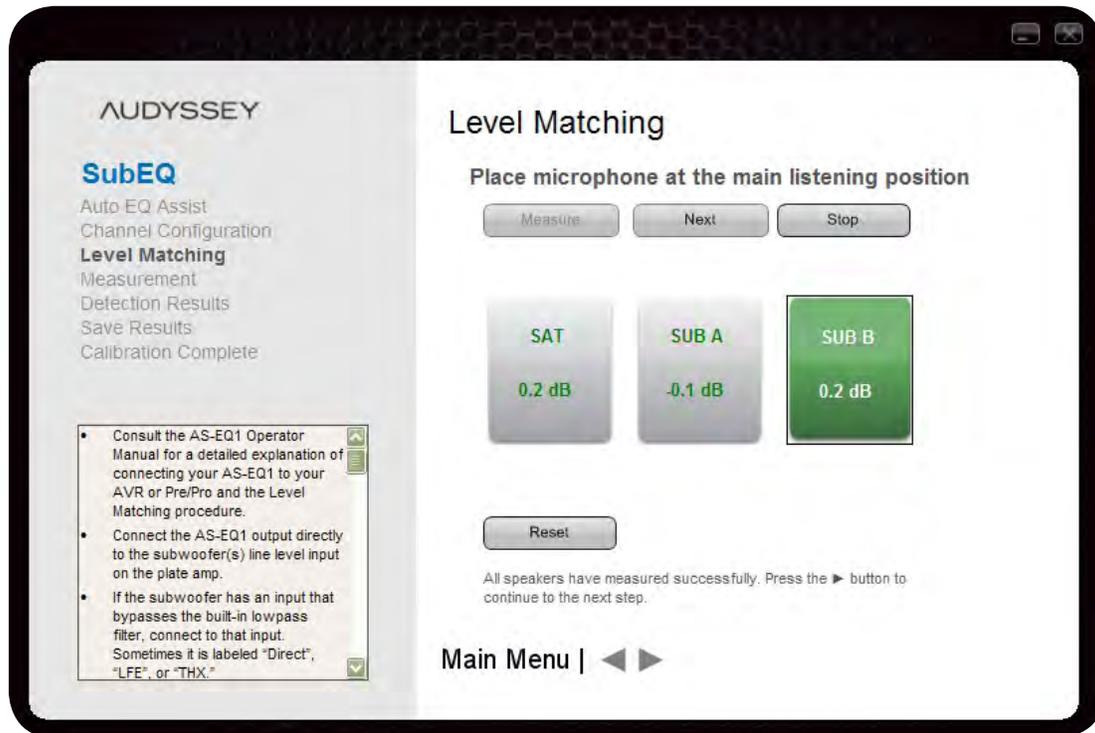


FIG. 14

Before you can take measurements of your listening environment with the AS-EQ1, you need to ensure that your AVR or Pre/Pro and subwoofer(s) are set up properly before the AS-EQ1 measures your room and creates its correction filters. It is important that you read, understand, and follow these instructions to ensure the best possible results during the upcoming **Measurement** task.

1. Ensure the Gain on your subwoofer(s) plate amp is set to the middle of its range as a starting point.
2. Set the Phase control of your subwoofer(s) to 0 (the AS-EQ1 will adjust each subwoofer to ensure proper phase alignment).
3. Bypass the subwoofer's built-in low pass filter (often referred to as a 'crossover') with the defeat switch or by connecting to an unfiltered input (typically labeled "Direct", "LFE", or "THX"). If it is not possible to bypass the low pass filter, set the filter control to its highest frequency setting.

Calibrating the AS-EQ1 in Your Listening Environment

4. Attach the Calibration Microphone supplied with the AS-EQ1 to the Cal Mic Input on the front of the AS-EQ1. DO NOT use the microphone supplied with your AVR or Pre/Pro or any other Microphone as it may produce inaccurate results.
5. Connect the SAT Center/Left Output on the back of the AS-EQ1 to the Left or Center Multi Channel Analog Input on your AVR or Pre/Pro. If you do not have Multi Channel Inputs on your AVR or Pre/Pro, you can use a regular stereo (White/Red) input using the Left or Right front speaker. Ensure that any processing or bass management your AVR or Pre/Pro may be performing on those inputs is disabled and the appropriate input is selected on your AVR or Pre/Pro for playing the Level Matching test tone.
6. Place the AS-EQ1 Calibration Microphone at the main listening position at ear height with its tip pointed directly at the ceiling.
7. It is important all sources of background noise have been quieted in the room to ensure accurate data acquisition.

NOTE:

There are two different methods for Level Matching your SATs and Sub(s); one for Audyssey equipped AVRs or Pre/Pros, and one for non-Audyssey equipped AVRs or Pre/Pros. Please refer to the appropriate section below for your type of AVR or Pre/Pro.

Calibrating the AS-EQ1 in Your Listening Environment

Level Matching with an Auto-Set-Up AVR or Pre/Pro Equipped with Audyssey MultEQ

NOTE:

If your AVR or Pre/Pro is equipped with Audyssey MultEQ technology, follow the instructions contained in this section. If your AVR or Pre/Pro is not equipped with Audyssey MultEQ, then skip to the next section.

Please note the **Reset** button below the **SAT** and **SUB** measurement boxes. Because SubEQ 3.2 uses a C-weighted Leq measurement method (essentially a running average of the sound pressure level) it is important to note that if you change levels of your **SAT** or **SUB(s)**, it will be necessary to click the **Reset** button each time in order to clear the measurement buffer and establish a new measurement. Failure to click the **Reset** button when you make a level change to your **SAT** or **SUB** will result in very slow changes to the displayed value and inaccurate data.

Ensure that Audyssey Dynamic Volume, Dynamic EQ and DSX are disabled in your AVR or Pre/Pro. With the **SAT** measurement box selected, click the **Measure** button. Adjust the Master Volume on your AVR or Pre/Pro (clicking the **Reset** button as needed) until the box turns green and you obtain a steady reading at/near 0.0 (which equates to 75 dB +/- 3 dB).

Click the **Next** button on the **Level Matching** screen. Using the gain control on the subwoofer amplifier, adjust the level of **SUB A** (clicking the **Reset** button as needed) until the box turns green and you obtain a steady reading at/near 0.0

Click the **Next** button if you have two subwoofers and repeat the above step for **SUB B**. It is critical that dual subwoofers match each other as closely as possible before navigating away from the **Level Matching** screen.

Once level matching of the Satellite and Subwoofer(s) is complete, click the ► button to move on to the next task, “**Measuring your Subwoofer(s)**”.

Calibrating the AS-EQ1 in Your Listening Environment

Level Matching with an AVR or Pre/Pro which is **NOT** Equipped with Audyssey MultEQ

NOTE:

If your AVR or Pre/Pro is **NOT** equipped with Audyssey MultEQ, then follow instructions contained in this section.

If your AVR or Pre/Pro has an auto-set-up/EQ system which is **NOT** based on Audyssey technology, make sure you have completed the **Auto EQ Assist** task as outlined earlier in this Manual before proceeding.

If you are not using any form of auto setup on your AVR or Pre/Pro it is assumed that you have already manually level matched your SAT speakers, and also know your "Reference" Master Volume setting. The Reference Master Volume setting is used for calibrating the speakers to 75 dB when playing the internal test tones. This Master Volume setting is usually 0.0 on THX compliant systems, but may be different for AVRs or Pre/Pros using a different volume scale.

Please note the **Reset** button below the **SAT** and **SUB** measurement boxes. Because SubEQ 3.2 uses a C-weighted Leq measurement method (essentially a running average of the sound pressure level) it is important to note that if you change levels of your **SAT** or **SUB(s)**, it will be necessary to click the **Reset** button each time in order to clear the measurement buffer and establish a new measurement. Failure to click the **Reset** button when you make a level change to your **SAT** or **SUB** will result in very slow changes to the displayed value and inaccurate data.

Make note the current/existing trim setting in the AVR or Pre/Pro speaker set-up menu for the connected **SAT** channel. With the **SAT** measurement box selected, click the **Measure** button. Adjust the **trim level** (NOT the Master Volume) for that **SAT** channel until the box turns green and you obtain a steady reading at/near 0.0 (which equates to 75 dB +/- 3 dB). Remember to click the **Reset** button as needed as you make trim level adjustments.

Make a note of the new trim level setting for the connected SAT channel. Subtract the new setting from the previous setting and then take the inverse of this value. This is your **SAT trim differential**. In your AVR or Pre/Pro set-up menu, apply this **SAT trim differential** to all other existing trim settings for the remaining speaker channels. This will save you the time of connecting all the other speaker channels to the AS-EQ1, and will also preserve the relative differences between all the speaker channels, only adjusting them for absolute volume. Examples are presented on the following page.

Calibrating the AS-EQ1 in Your Listening Environment

Previous SAT Trim Setting	New SAT Trim Setting	Subtracted Value	SAT Trim Differential
-2	-3	$-2 - (-3) = +1$	-1
-2	-1	$-2 - (-1) = -1$	+1
+4	+2.5	$+4 - (+2.5) = +1.5$	-1.5
+1	+2.5	$-1 - (+2.5) = -1.5$	+1.5

NOTE:

Some AVRs or Pre/Pros allow the trim levels to be adjusted individually for each input and/or source code (e.g., the same digital coax input can have different speaker channel trim levels for stereo source material and Dolby Digital source material). If your AVR or Pre/Pro has this capability, it is your responsibility to make sure any speaker channel trim level changes are made in the main/primary speaker set-up menu and not just for one type of input and/or source material. Check your owner's manual to see if this situation applies to your case.

Click the **Next** button on the **Level Matching** screen. Using the gain control on the subwoofer amplifier, adjust the level of **SUB A** (clicking the **Reset** button as needed) until the box turns green and you obtain a steady reading at/near 0.0

Click the **Next** button if you have two subwoofers and repeat the above step for **SUB B**. It is critical that dual subwoofers match each other as closely as possible before navigating away from the **Level Matching** screen.

Once level matching of the Satellite and Subwoofer(s) is complete, click the ► button to move on to the next task, "**Measuring your Subwoofer(s)**".

Calibrating the AS-EQ1 in Your Listening Environment

AS-EQ1 Configuration for Level Matching and Measurement Tasks



FIG. 15

Calibrating the AS-EQ1 in Your Listening Environment



Measuring your Subwoofer(s)

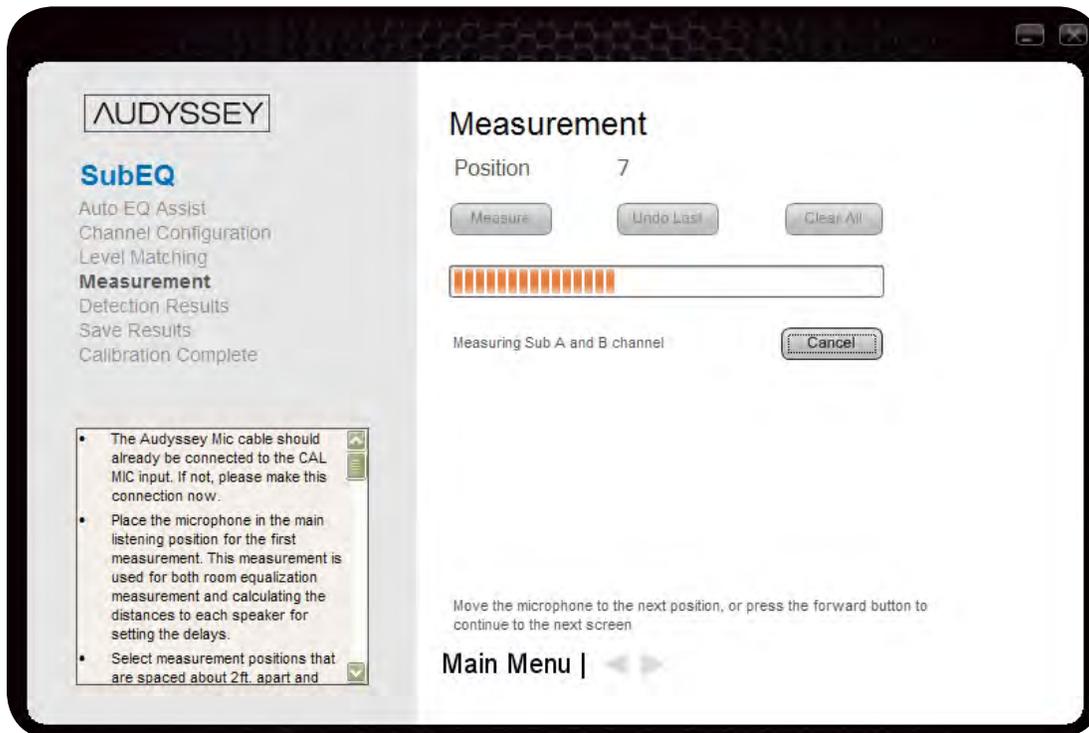


FIG. 16

You are now ready to begin measuring your subwoofer(s) so the AS-EQ1 can Equalize your listening environment.

NOTE:

Make the room as quiet as possible as background noise can disrupt the room measurements. Close windows, silence cell phones, televisions, radios, air conditioners, fluorescent lights, home appliances, light dimmers, or any other noisy devices. The AS-EQ1 measures the background noise level in the room before playing the test signal from each subwoofer. For the measurements to be valid the signal-to-noise ratio must be above a certain threshold and if it is not, the test signal from that subwoofer will repeat at a higher level. If the noise in the room happens to be higher during some of the measurements, then the test signals from the subwoofer(s) will sound louder. This does not affect the calculation of the trim levels. However, if the room noise is too high even after the test signals increase in level, then an error message will be displayed warning that measurements cannot be completed.

Calibrating the AS-EQ1 in Your Listening Environment

1. If you have not already done so, attach the Calibration Microphone included with the AS-EQ1 to the jack labeled **Cal Mic Input** on the front panel (behind the magnetically attached faceplate) of the AS-EQ1. DO NOT use the microphone supplied with your AVR or Pre/Pro or any other microphone as it may produce inaccurate results.
2. Place the AS-EQ1's Microphone in your main listening position at ear height, with the tip of the microphone pointed at the ceiling. Press **Measure**. This first measurement is used for both room equalization measurement and calculating the distances to each speaker for setting the delays.
3. After the first position is measured, the AS-EQ1 needs to measure other positions in the room (minimum of three) around the listening area. These do not necessarily have to be in each individual seat (see below). You should measure a minimum of 8 locations within the listening area in order to provide the AS-EQ1 with sufficient information about the room acoustics so it can develop an optimal EQ solution for all listening locations. If you use the best practices below, this will give 2 – 3 measurements per seating position for a total of 12 – 24 measurements for an average sized room. For a large room you might want to take the full 32 measurements for optimum results.

Some Best Practices for Measurement

The best practice is to take two measurements at each seating position, one at normal ear height and the other a few inches lower to represent a shorter and/or slouched listener. You can also take two measurements at ear height in the approximate position of each ear. Keep the microphone tip at least a few inches away from the seat back. If there are also positions where people may be standing for part of a presentation, those locations can be measured as well. Do not take measurements in locations where no one will normally be listening. You may take up to 32 measurements in total.

4. After completing taking your measurements, click the ► button to continue to the next task "**Detection Results**". If you had previously set your Left/Center speaker to Large, you should now set it back to Small.

Calibrating the AS-EQ1 in Your Listening Environment



Detection Results

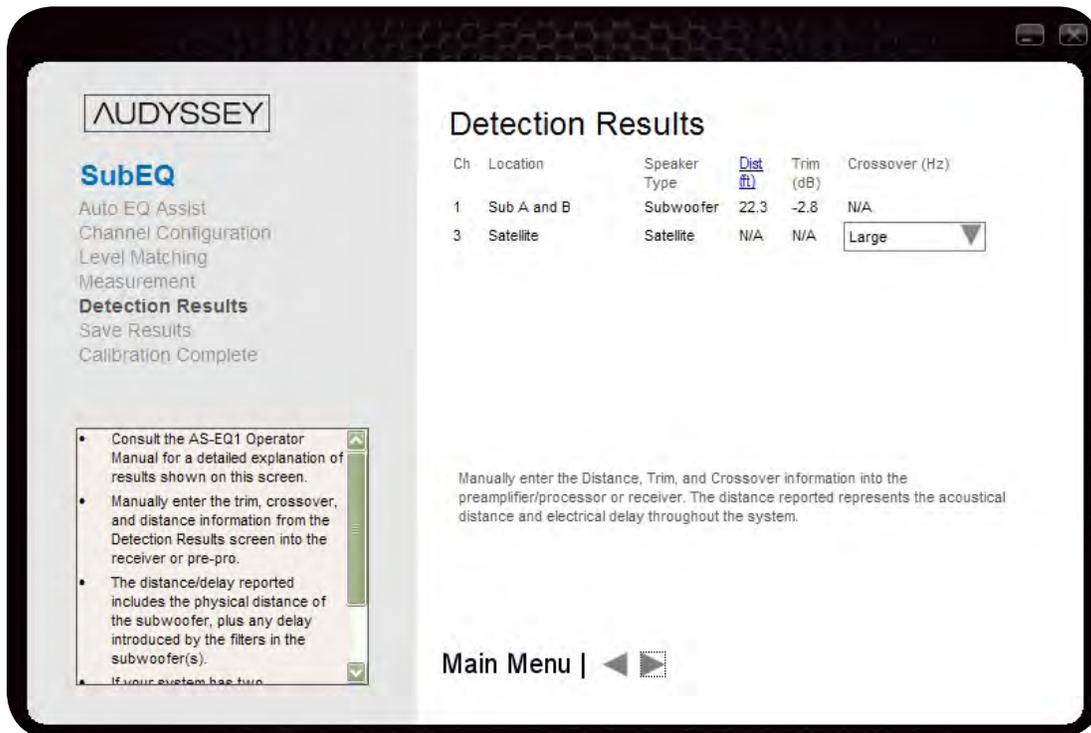


FIG. 17

If you are calibrating an Audyssey-equipped AVR or Pre/Pro, skip this section by clicking the ► button to move on to the next task, “**Save Results to AS-EQ1**” as these values will be determined and set in a subsequent step using MultEQ on your AVR or Pre/Pro.

NOTE:

If your satellite speaker has useable extension and output at 40Hz, the AS-EQ1 may recommend it be set to **LARGE** (full range). SVS recommends that all speaker channels be set to **SMALL** for Home Theater applications unless the speaker(s) in question actually have clean/usable output down to 20Hz (which is very rare). Select the crossover frequency for your speakers that best corresponds to their actual usable bass output and extension (60Hz – 100Hz is typical) and consult with SVS Support if you need guidance.

Calibrating the AS-EQ1 in Your Listening Environment

If your AVR or Pre/Pro is NOT equipped with Audyssey MultEQ, make note of the Sub Distance and Trim Values as these will need to be entered into your AVR or Pre/Pro in a subsequent step. By clicking on the Distance Heading, Sub EQ will convert to Feet, Meters or Time (Milliseconds) to match the units you are using in your AVR or Pre/Pro so you won't have to manually compute the conversions before entry.

For Older AVRs or 2 Channel...

If your AVR or Pre/Pro does not have the capability to set the distance from your subwoofer(s) to your listening position, you may need to move your subwoofer(s) closer to your listening position in order to maintain proper phase alignment between the speakers and the subwoofer(s). This would typically only occur in a 2-channel application with a stereo pre/pro which lacks speaker/subwoofer distance settings. If moving the subwoofers is not possible, there are external devices available that can be used to delay the signal being sent to the speakers in order to achieve the proper phase alignment between the speakers and the subwoofer(s).

Contact SVS Support for more information.

Click the ► button to continue to the next task **“Save Results to AS-EQ1”**.

Calibrating the AS-EQ1 in Your Listening Environment



Save Results to AS-EQ1

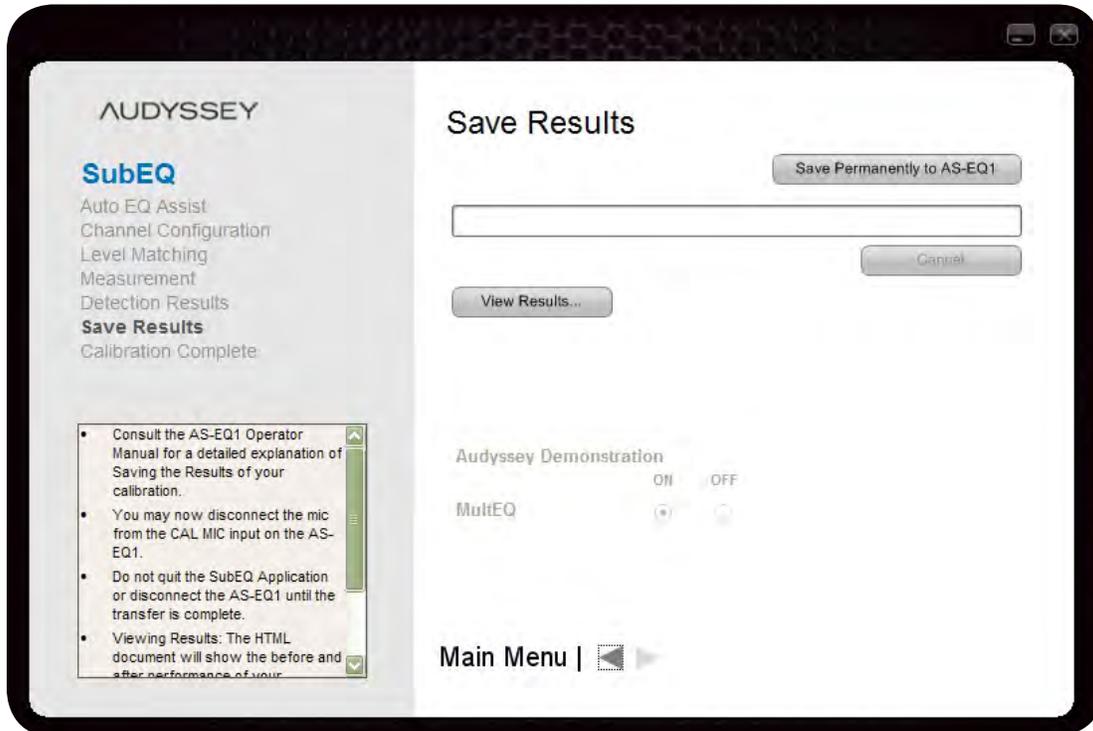


FIG. 18



WARNING - do not quit the Sub EQ application or disconnect the AS-EQ1 from your PC until the transfer is complete.

Calibrating the AS-EQ1 in Your Listening Environment

1. If you would like to see a preliminary graphical representation of Before and After results of Equalizing your listening environment, press **View Results**. (note – until you have permanently saved your results you will see a “DRAFT” watermark on the Results screen).
2. If you are satisfied with the results of your calibration run, press the **Save Permanently to AS-EQ1** button at which time the results of your calibration run will be stored in the device and remain until replaced by a subsequent calibration exercise.
3. If you had changed the speaker size of your Center/Left channel for level setting and measurement, remember to reinstate the original speaker size settings in your AVR or Pre/Pro.
4. Click the ► button to continue to the next task **“Create HTML Certificate Document”**

Calibrating the AS-EQ1 in Your Listening Environment



Create HTML Certificate Document

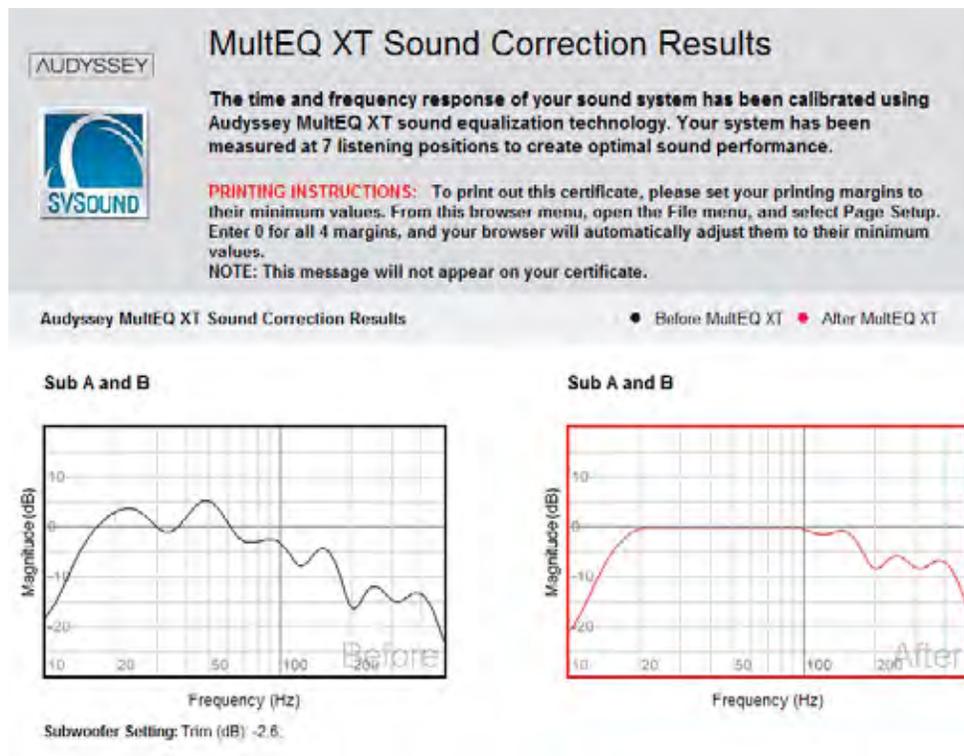


FIG. 19

This HTML document will show the before and after performance of your subwoofer(s) frequency response using the AS-EQ1. Use your native HTML browser's print functions to print this document. Your results will have the **DRAFT** watermark on it until it has been permanently saved to the AS-EQ1 in the previous task.

If you would like to capture your results to a file for storage or sharing, you can use one of many .pdf file creator printer drivers available. One such driver (freeware) is CutePDF which can be found on the AS-EQ1 Installation CD in the file CuteWriter.zip. Un-Zip this file and follow the instructions in the Readme file to install on your PC. Alternatively you can visit the CutePDF web site at <http://www.cutepdf.com/Products/CutePDF/writer.asp>

Remove the USB cable from the AS-EQ1 and replace the front panel.

Calibrating the AS-EQ1 in Your Listening Environment



Finish Setting Up your AVR or Pre/Pro

If your AVR or Pre/Pro *IS* equipped with Audyssey MultEQ:

Remove the **SAT Output** connection from your AVR or Pre/Pro, and ensure your AVR or Pre/Pro's Subwoofer Pre-Out is attached to the appropriate Input of the AS-EQ1. Following the instructions provided with your AVR or Pre/Pro, and with your AVR or Pre/Pro's Mic attached to the AVR or Pre/Pro (**NOT** the AS-EQ1) perform the MultEQ setup and calibration. The AS-EQ1 should be powered on, enabled and in the signal path, and your Subwoofer(s) on and set from the AS-EQ1 calibration.

After finishing your MultEQ setup and calibration on your AVR or Pre/Pro, check the subwoofer trim level in your AVR or Pre/Pro set-up menu. If your Sub trim is between -3.5 dB and +3.5 dB your AS-EQ1 is now successfully integrated into your audio system. If the subwoofer trim level falls outside the range of +/- 3.5 dB, please contact SVS (techsupport@svsound.com) to determine if additional action is necessary.

If your AVR or Pre/Pro is *NOT* equipped with Audyssey MultEQ:

Remove the **SAT Output** connection from your AVR or Pre/Pro, and ensure your AVR or Pre/Pro's Subwoofer Pre-Out is attached to the appropriate Input of the AS-EQ1. Using your AVR or Pre/Pro's Setup menu, enter the **Distance** and **Trim** level for your subwoofer(s) given in the **Detection Results** screen. If your Sub trim is between -3.5 dB and +3.5 dB your AS-EQ1 is now successfully integrated into your audio system. If the subwoofer trim level falls outside the range of +/- 3.5 dB, please contact SVS (techsupport@svsound.com) to determine if additional action is necessary.

Appendix A - Why EQ?

Despite efforts by speaker designers to provide a specific type of frequency response for their products, the environment in which they are tested is typically anechoic (a room designed to absorb sound and eliminate reflective effects) or quasi-anechoic (ground plane). This test environment removes the acoustic effects of the listening room, and allows the designer to specifically tailor the characteristics of the speaker to a desired set of criteria. In many (but not all) cases the designer will try and achieve a “flat” response – e.g. very close to the same energy produced at all frequencies covered by the speaker. The attached graph shows a plot of sound energy of a flat subwoofer in an anechoic environment.

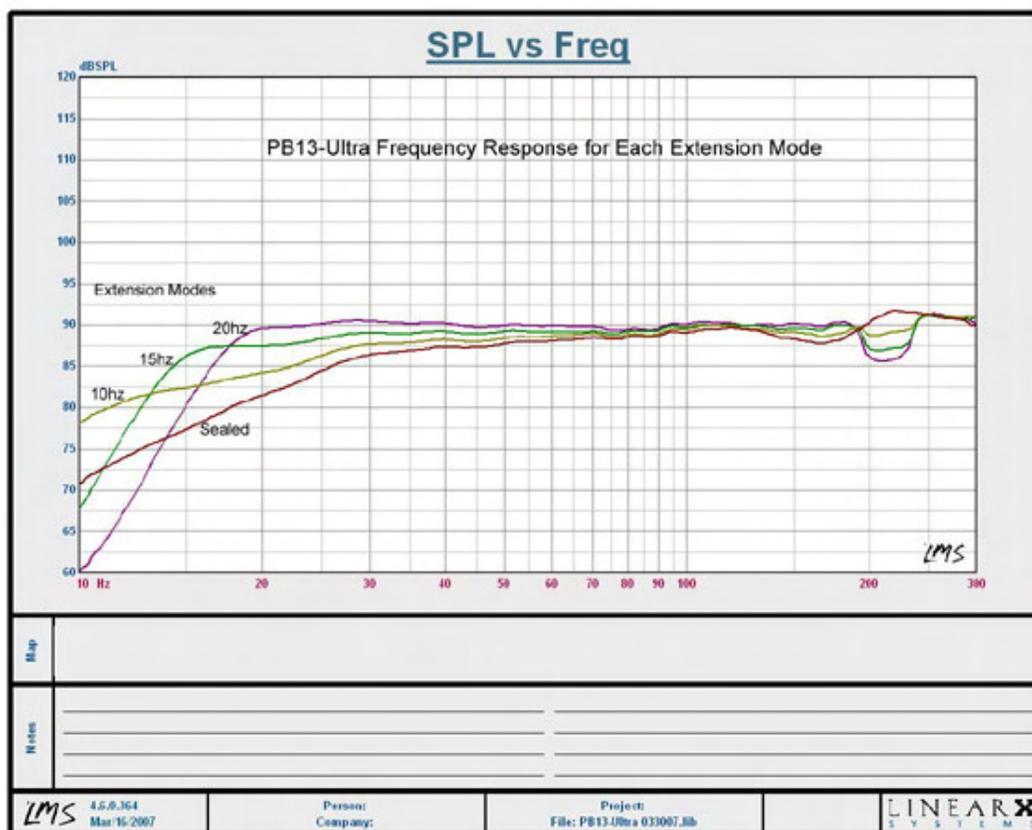


FIG. 20

Subwoofer Response in a Quasi-Anechoic Environment

When a speaker or subwoofer is then placed in a non-anechoic environment (read – our listening rooms and Home Theaters) the frequency response of the speaker/subwoofer is rarely close to that measured in the anechoic environment, due to the reflection and absorption of sound waves off of hard and soft surfaces. This in turn causes positive and negative reinforcement of sound energy and as such, the sound that then reaches our ears may seem overly loud in some frequencies and muted in others – and definitely different than what the speaker designer and recording engineer intended. The attached graph is an example of the effects of a listening room on our formerly flat subwoofer.

Appendix A - Why EQ?

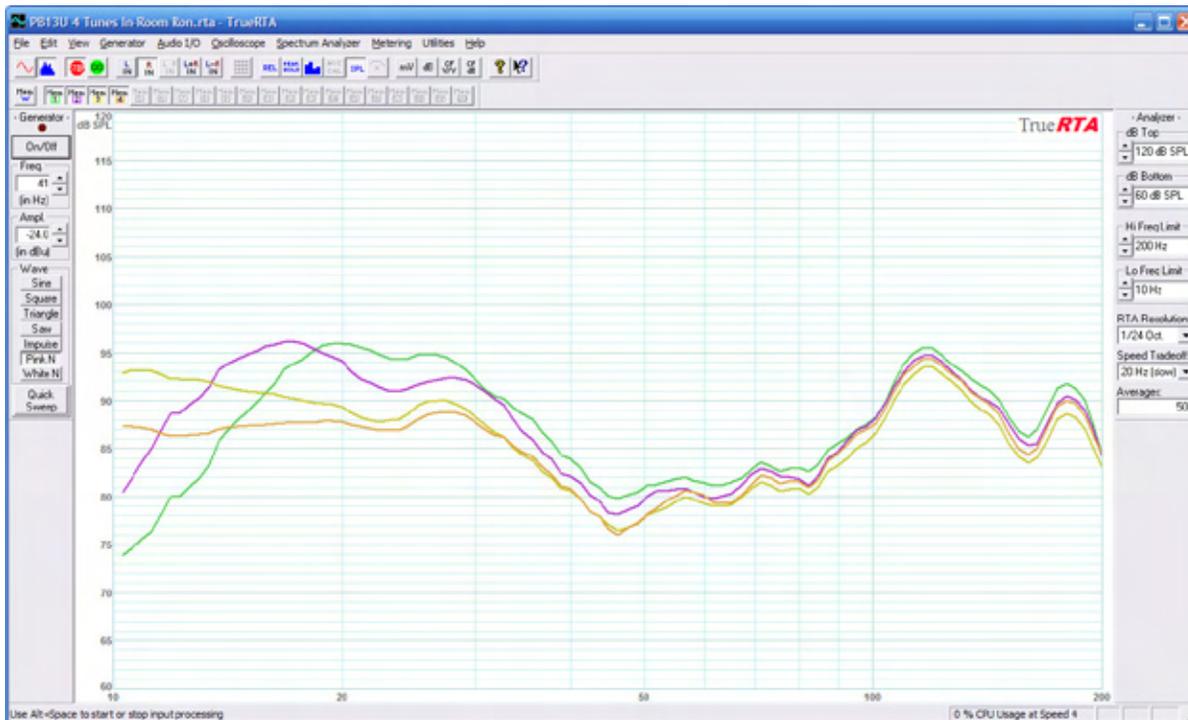


FIG. 21

Subwoofer Response In-Room

What we hear in such rooms is not what was intended to be heard when the sound engineer created the mix for the movie or music soundtrack. Instead we may hear certain frequencies that have become very loud and dominant due to positive reinforcement of the sound energy in our room, and also the inverse – very soft and hard to hear frequencies due to cancellation effects as well as the overbearing positively reinforced frequencies. In the lower frequencies, the result is what some call “one note bass” or “bass bloat”, and robs us of the accurate listening experience we built our home theaters and listening rooms to achieve.

The good news is that there are several things that can be done to correct the effects of our room acoustics. One thing that many people try is changing the placement of their speakers or subwoofer(s) in the room. In many cases just moving a speaker or subwoofer(s) a small distance can make a significant difference in the way certain frequencies are heard. In other cases, the acoustic characteristics of the listening space can be changed with “room treatments” – e.g. sound-absorptive materials to cut down on reflections in the room and get closer to an anechoic environment.

Another method is referred to as “Room Equalization” which involves using electronic means to counter the positive and negative reinforcement of sound energy in the room. For example, frequencies that have had their energy boosted (louder) can have their energy reduced in the affected frequencies before sending the signal to the speaker or

Appendix A - Why EQ?

subwoofer(s), effectively quieting the artificially boosted frequency. In some (but not all) cases, other frequencies that have had their energy decreased due to cancellation will now appear louder due to the reduction of boosted frequencies and will be easier to hear. In some cases decreased frequencies can be boosted to make them louder, however in other cases no amount of boost will effectively increase a range of frequencies if they are being cancelled by a reflection of the original frequency.

The graphs shown below are an example of a room before and after applying electronic EQ. You can clearly see in the two Subwoofer examples how boosted frequencies have been cut, and where possible, decreased frequencies have been boosted.

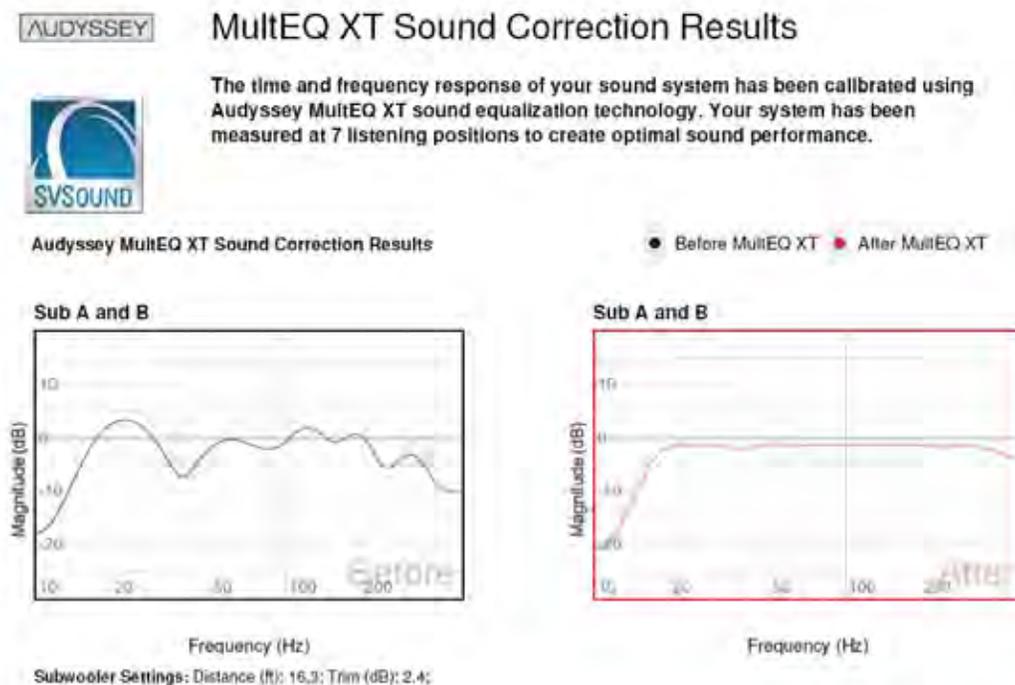


FIG. 22

All of these methods, if done effectively, have historically required professional help along with specialized tools and techniques to achieve better results in a room. The audio and home theater enthusiast developed manual measurement techniques using inexpensive Sound Pressure Level (SPL) Meters, Excel Spreadsheets and test tone CDs, along with Graphic and Parametric Equalizers to attempt to correct their listening environments. In some cases people found they could hear and see improvements, and in just as many cases only minor improvements would be seen. In any case however, manually EQing a room is a labor-and-time intensive activity, and in many situations a pure "labor of love".

Appendix A - Why EQ?

Especially difficult are the multiple subwoofer cases where an enthusiast would have more than one subwoofer - often in different parts of their listening rooms - in order to attempt to smooth bass response and perhaps overcome some of the acoustical challenges of their environment. In many cases rather than improving their situation, it was discovered that the interaction of multiple subwoofers in a room required even more effort in order to get closer to a flat room in the bass frequencies.

In recent years, electronic EQ systems have evolved and become more commonplace in mid-to-high range AVRs and Pre/Pros that attempt to correct room anomalies in a simple way that does not require an expert (or an exhausted and frustrated enthusiast). In addition, since lower frequencies (sub 200Hz) present their own special set of problems apart from the low-midrange to the upper frequency spectrum, a specialized area of EQ just focusing on bass frequencies and subwoofers has emerged.

SV Sound and Audyssey Laboratories – each leaders in their respective fields of Speakers/Subwoofers and Auto Equalization technology – have created the latest and most advanced subwoofer Auto EQ device to date, the AS-EQ1. The AS-EQ1 is designed specifically to Auto EQ just subwoofers – and not just a single subwoofer but duals – tackling one of the most difficult room EQ challenges facing the audio and home theater enthusiast.

The AS-EQ1 specializes in the low frequency range where subwoofers are designed to operate. It will interface with any Auto EQ system in your AVR or Pre/Pro, and will handle the subwoofer channel, leaving the AVR or Pre/Pro to handle the speaker channels. Using sophisticated algorithms developed by Audyssey Labs, the AS-EQ1 has the ability to flatten frequency response for one or multiple subwoofers to a level previously unheard of even in the professional calibration ranks.

You are no longer at the mercy of your room acoustics, especially at the low end. You can now enjoy the best sonic performance from your subwoofer, as intended by the design engineer, and you'll now hear the music and movie sound tracks as intended by the mastering/recording engineers.

Terms & Conditions

Terms and Conditions: Details are available on request, please contact your Dealer for more. Note that these terms and conditions do not affect your statutory rights.

Shipping: When you receive your new AS-EQ1, please check to ensure there is no damage. If after unpacking you discover any damage that may have been caused by transportation on your product, we request you contact SVS or if outside the USA your Dealer immediately and if possible, provide a photo of damage in question to them to ensure the fastest possible correction to the situation.

Warranty: The product has a 3 year warranty against defects in materials and workmanship. Upon return, the products will be repaired, and redelivered. Naturally, this warranty does not cover any product subjected to misuse or accidental damage.

The bottom line: We're proud of our products and want you to be as happy owning one, as we are selling one (or more) to you. E-mail your Dealer if you have any warranty question or contact SVS directly if in North America.

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