



## **AVAA explanation and demos**

### **What does the AVAA do?**

**The AVAA is the solution for room mode problems.**

The AVAA is designed to absorb the standing modes between 15 and 120 Hz in a room. It will do so just like passive absorbers but in a much more efficient way and using up much less space. Each operating AVAA will have the same effect as a hole in the wall much larger than the dimensions of the AVAA (that is 0.2 m<sup>2</sup>). The exact ratio will depend on the frequency and environment but typically range between 5 and 20.

The AVAA will affect the impedance of the air and “suck” low frequencies around it. Therefore the best position to place an AVAA is in the most rigid corners as that is where all room modes will be most present.

### **How does it work?**

Note that this technology has several patents pending.

A microphone will measure the acoustic pressure in front of an acoustic resistance. The acoustic resistance is designed to let air through but reducing significantly the pressure.

A transducer membrane is driven to absorb the volume of air going through the acoustic resistance.

This significantly reduced the acoustic pressure (between 15 and 120 Hz) around the microphone and around the AVAA.

### **What does the AVAA not do?**

The AVAA is a solution for room modes below 120 Hz and absorbs low frequencies only. The AVAA will not absorb frequencies above approximately 150 Hz. It is therefore not a total solution for acoustically bad rooms. For best results, it needs to be combined with passive absorption in higher frequencies.

### **What effect will the AVAA have in my room?**

The AVAA will have the same effect, on frequencies from 15 to 120 Hz, as opening a window about 5 to 10 times the size of the AVAA. This will impact sound in the time, frequency and space dimensions.



- Time: it will significantly reduce reverberation time in these frequencies especially on room modes.
- Frequency: with more precise and tighter bass, the masking effect of higher frequencies is reduced. Details in higher frequencies also become clearer.
- Space: with less indirect sound in the room, the location of the sound is more accurate making the sound image more precise.

### **What are the advantages of the AVAA?**

- It is an efficient solution for room mode problems
- It is stable with no settings required
- It can be turned ON and OFF to alter the acoustic environment
- It can easily be moved into a different room

### **How many AVAAs do I need?**

An acoustician will be able to compute the effect of a certain number of AVAAs in a particular room.

Depending on the dimension and type of room as well as the result required, between 2 and 8 AVAAs are necessary. For very small rooms a minimum of two AVAAs is recommended to have a symmetrical effect. For most normal size rooms (between 20 and 80 m<sup>2</sup>) it is recommended to use 4 AVAAs and for larger rooms the number can be increased to 6 or 8.



### **How best to demo the AVAA?**

The best demo is in a room where there are clear room mode issues. The room modes will be best heard when the higher frequencies are absorbed (room treated with passive absorption).

Place four AVAAs in the corners of the rooms. If you don't have 4, position the ones you have in the most rigid corners and preferably behind the source (speakers).

Then it is the case of demonstrating the AVAA ON and OFF with different sounds and the easiest is to use the remote control set sold with the AVAA.

#### **Acoustic source:**

An acoustic source is often very convincing, as it is obvious that it is the room acoustics changing with the AVAA and not the source.

Try closing a door or thumping a closed cupboard.

#### **Continuous room mode sinus:**

If you measure the response of the room you should clearly highlight the room modes.

Various tools can be used such as REW (<http://www.roomeqwizard.com/>)

Emit the specific frequency of the room mode using software or special device.

Turning the AVAA ON will significantly reduce the acoustic pressure in these modes.

This is clear in most places in the room except when you have nulls of the specific frequency.

Also make sure the source (sub or speaker) is not positioned on a null as this will have less effect.

#### **Musical instruments:**

Play a series of kick drums or bass guitar and turn AVAA ON and OFF.

Play music with frequencies that coincide with the room modes.

#### **What should you notice?**

Of course the reverberation time (15-120Hz) is reduced and this is the most noticeable difference.

Other differences are more subtle but very clear:

With more precise and tighter bass, the masking effect of higher frequencies is reduced.

Higher frequencies are also easier to hear in details.

With less indirect sound in the room the location of the sound is more accurate making the sound image more precise.