

# How to Use a Bluetooth Streaming Device in Music Performance, and Recording at Home

Using Bluetooth technology in MFi-compatible hearing aids to create your own IEM system

By RICK LEDBETTER

This article is about using a Bluetooth streaming device in live, home, and studio situations. Unfortunately, this is limited to users of “Made for iPhone” (MFi/Low Power Bluetooth) hearing aids and iPhones.

When the iPhone 4s was first released, Apple considered how hearing aid wearers would be able to use a cell phone, so low energy Bluetooth was included directly into the OS operating system. Subsequently MFi-compatible hearing aids can directly communicate with the iPhone, without the need for a translation device. This practically eliminates the signal delay that the translation devices and other cell-phone operating systems create as they receive, process, and transmit to a hearing aid. Depending on the hearing aid, and even depending on the selection of hearing aid receiver, it has the potential to offer true stereo, with a full range frequency response.

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The iPhone delay is quite small; you can listen to the same sound both through Bluetooth and through the hearing aid microphone, and not experience an echo sound or noticeable phase cancellation. The same cannot be said about some Android implementations.

The iPhone (or iPad Pro, Air, Mini, and Touch) already has a built-in hearing aid control app—just triple tap the home button and the app will pop up, even if the phone is on the lock screen. This allows the user to change programs and overall volume, plus balance between the Bluetooth audio and hearing aid microphone audio. Hearing aid manufacturers who sell MFi aids all have their own free app designed to give you more control of the sound.

*Specifically, this provides three great things:*

- 1) The sound from incoming phone calls is directly transmitted to the hearing aids
- 2) Any other sound on the cell phone, like music, will also be transmitted, with the benefit of allowing a person to continue to hear ambient sound along with the music or phone call, and adjust the balance between the two as needed. Also, the incoming call ring tone is heard via Bluetooth, and *importantly*,
- 3) The MFi hearing aid manufacturers sell audio streaming devices that are marketed as TV streamers.

The streamers are *designed* to be connected to a TV to allow sound from the TV to be transmitted, via low-energy Bluetooth, directly to the hearing aid, with a broadcast range of about 30-35 feet (10 meters). These streamers, which can be purchased from audiologists or online, are worth the investment for musicians because the streamer’s audio input level is “line level,” a common output level for many audio devices including mixing boards, home stereo systems, computer audio output, etc.

For the performing or recording musician, what does this mean? It means you can have your own in-ear monitor (IEM) system with a working range of 30-35 feet. And the Streamer

also has its own input volume control. I use my streamer when practicing or working on music at home, connected to a small mixer, and I am the only person who can hear it, since all the sound is being sent to my hearing aids.

## Using a TV Streamer as an IEM

The streaming devices all have one of two types of inputs: 1) a single mini phone stereo input (3.5 mm), which is the same type of connector used to plug a set of earbuds into another audio device such as a cell phone, or 2) an RCA type input (ie, two separate round connectors). So what is needed is a way to connect the device to a mixer or recording studio headphone output, or a computer audio output.

For most mixers, they usually have two types of “audio out” where the streamer can be connected to: 1) a standard 1/4” phone plug (usually two plugs, one for left and one for right) which looks like a guitar-cord connector, or 2) a standard microphone connector (XLR) which is larger and has three pins (three holes) in it, depending if it is male or female. In some cases (eg, compact sound systems), an RCA-type phono connector may be used. Recording studios generally use either the XLR connector or a stereo 1/4” phone plug connector (also known as a “TRS connector”).

So, once you have the streamer, you will need to collect a kit of various connectors...

*For music performance use, you will need:*

- 1) **A standard microphone cable.** This will allow you connect to the mixer, and place the streamer closer to you. It won’t always be needed, but you should have it, just in case.
- 2) **A long male to male stereo mini phone cable.** This will connect the streamer’s input to a computer audio-output—generally the headphone-out jack.
- 3) **A collection of adapters:**
  - XLR (male and female) to male stereo mini phone. This will connect the microphone cable to the streamer on both ends.

**Here's a Tip** A musician shouldn't assume that the settings on their hearing aids will sound good for the live music or streaming device channel. When you visit the clinician, they should bring some kind of sound source, like a cell phone or CD player, and plug that into the audio input of the Streamer, to hear the music through the device as transmitted to their aids. This will give them the opportunity to fine-tune the tone and volume levels via the hearing aid adjustment software.

- Dual 1/4" (guitar cord) male to male stereo mini phone. This will connect the mixer to the streamer.
- Stereo 1/4" phone male to male stereo mini phone. This will connect the mixer, if it has 1/4" stereo-out, to the streamer. It can also be used to connect to the headphone bus in a recording studio.
- A pair of XLR gender changers—male to male. This is an option, but best to have on hand.

Some of these adapters are hard to find, so you may need to have them custom made. But a well-stocked music store should have them, and there is always Amazon and eBay. In summary, what is needed is a way to connect the audio input of the Streamer (mini phone) to one of four common types of connectors: mini phone, 1/4" phone (guitar), stereo 1/4" (TRS) and XLR (microphone).

To connect the Streamer's power supply, I also carry an extension cord with me for on stage use. In addition, depending on the manufacturer, the power supply connects to the device with a micro USB connector. The Streamer runs on the same voltage as cell phones, so if you have a cell phone external battery, this can be used in place of the Streamer's power supply in a pinch.

You may have to go to your audiologist to have the Bluetooth streamer program enabled and paired with your cell phone. Some aids have the Streaming channel enabled, but best to ask your audiologist. Your aids must be paired (connected to) the iPhone for any of this to work. To do this, go to <https://support.apple.com/en-us/HT201466> and follow the instructions. The website also explains how to use the iPhone hearing aid control app (also

see tip in sidebar).

To put it to use, begin by finding a suitable place for the streamer. I prefer to have it close to where I will be standing or sitting. It should be positioned where it won't get stepped on, but if it is close to the mixer, that will save some cross stage wiring. Then connect it to the mixer—have a chat with the sound engineer about this and ask him or her what connectors will be needed, and hand them to him, if he does not have any of his own (I always try to talk with the sound engineer as soon as I arrive, so that he will have time to do this).

You can use the same mixer output as the on stage monitors. If the sound system has powered speakers, then you can plug directly into the back of the nearest monitor with the microphone cable. This will not affect the performance of the rest of the sound system. Then, using the adapter, plug the other end of the microphone cable into the adapter, then that into the streamer. You can then connect the power supply to the streamer, and power it up.

Next, open the cell phone audio app (triple tap the home button), select TV/mini mic, and wait a couple of seconds for the program to be changed. The streamers have volume controls on them, so try to set it about halfway up.

More than likely the sound system will not be operational at this point, so bring along another sound source, like a CD player, for a quick test of the audio-in. If you hear distortion, then turn it down at the streamer. If that doesn't work, then the signal for the sound source (mixer) is too loud, so ask for that to be turned down—do not annoy the engineer with this until you have tried to get a satisfactory level on your own. You also have a volume control for the streamer on your cell phone's hearing aid control app; I use this last, once I have a comfortable audio level, to fine tune.

This process works the same in the recording studio, too. For use at home with a computer; it is the same—except use your computer's mini phone connectors if you do not have a mixer.

## Recommendations for a "Musicians' Package"

This is a rather simple one for me: It would be extremely useful if a music package would include all of the adapters, cords, and components listed in this article.