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Auracast Is Actually Here and It's Not Just About Hearing Loss

By Stephen O. Frazier

There's lots of talk among the hard of hearing about Auracast, the new "broadcast" technology from Bluetooth, that promises to revolutionize assistive listening and the functionality of hearing aids. But its application to such devices is just one small part of a much bigger picture.

For instance, there were just under 19 million hearing aids sold worldwide in 2021, while Audio Express reported 2020 sales of wireless earbuds alone to be around 170 million units—Apple's AirPods account for over half of that figure. When you add in other "hearables," Counterpoint reports that the market has reached 300 million units annually. It's obvious, then, that hearing aids are just a small slice of a very large pie and... the pie is out of the oven.

Auracast Commercially Available

With little notice beyond specialty electronics periodicals, a Taiwan-based international electronics company called Nexum has marketed the first commercially available Auracast transmitter. Configured as a transceiver called VOCE, Nexum claims the device can wirelessly connect to as many as 1,000 receivers at the same time and have a range of nearly 100 feet.

I have tested three receivers (as that's how many VOCEs I bought) and they all connected at the same time with an available Nexum dongle-plugged into my computer. They all worked and although I didn't stand 100 feet away, their signal did reach farther in Auracast mode than the standard 30-foot Bluetooth Classic range. Nexum claims latency as being a low 50 ms and I found it barely discernible. It also claims high sound quality and low power consumption, meaning it should be able to transmit sound from traditional music players (CD/MP3 player/smartphone) or other electronic sound devices such as a public address (PA) system.

As a transmitter, the VOCE has a built-in mic but also accepts an optional extension mic using an analog 3.5mm audio input for better quality sound. The USB recording interface makes it easy to record excellent quality sound and, by leveraging Auracast technology it can also, says Nexum, enhance the ability of any existing microphone system. Measuring just one inch by one and three quarters, and only a quarter of an inch thick, they're small enough to clip to a lapel to confine their signal pretty much to the voice of the wearer.

In addition to serving double duty as a transmitter and a receiver, the VOCE also acts as an Auracast one-to-many system or, in Bluetooth Classic mode, as a one-to-one system where it can be paired with and transmit the typical single signal to Bluetooth earbuds, earphones, speaker, etc., or, using two VOCEs (one in transmit mode and one in receiver mode) to wired versions of the same devices. Pairing is not needed for the Auracast mode where latency is low. In Bluetooth Classic mode they must be paired, and I did find latency to be problematic.

I am not qualified to provide a technical analysis of the performance of these devices but I can report my experience using equipment that would be found in the home of most people with hearing loss. Listening to Chopin piano music using an amplified neck loop I found the music a little on the brittle side while, using earphones, there was too much bass and too little of the higher frequencies.

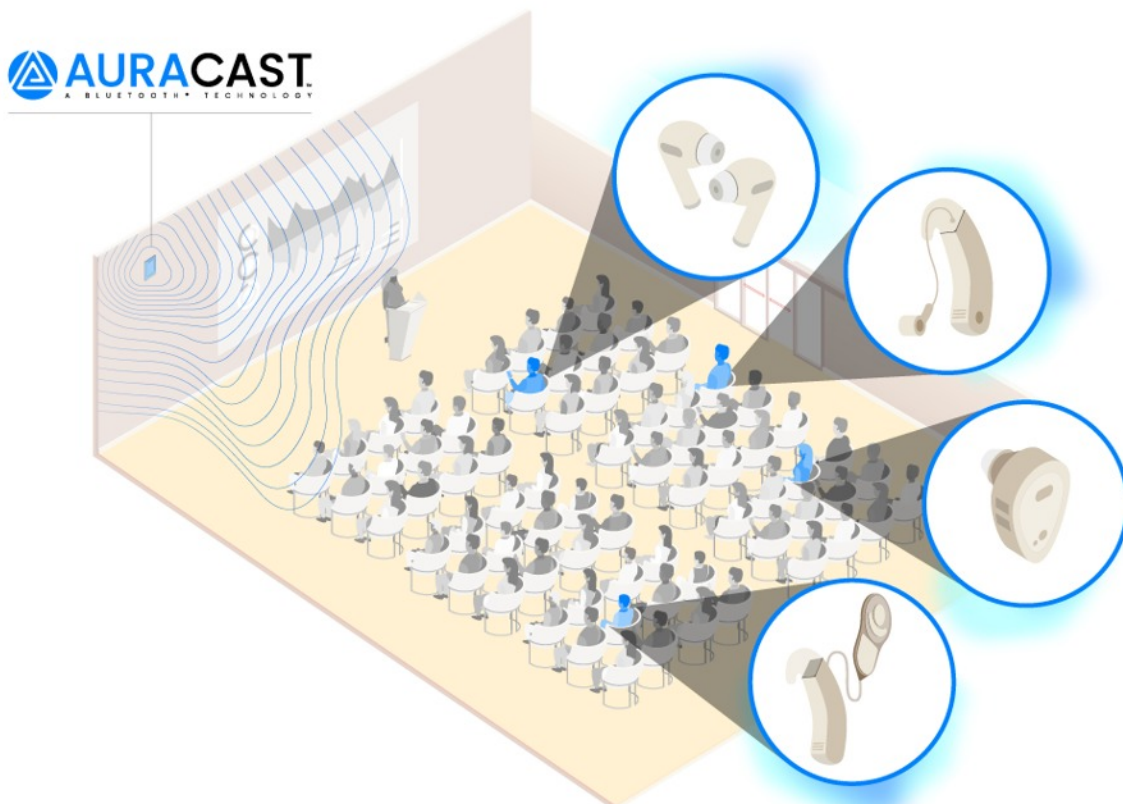
In spite of my ski slope–audiogram hearing loss, replacing my hearing aids with earbuds seemed to provide the best sound quality for music, while the earbuds or neck loop seemed to be best for listening to and understanding the spoken word. An amplified neck loop provided adequate volume in these tests but getting sufficient volume with a standard neck loop was challenging.

Assistive Listening

As a PA system, a single VOCE device in Auracast mode can transmit to multiple VOCEs in receiver mode connected to wireless loudspeakers or to neck loops or earbuds to function as an assistive listening system. Using the Auracast system, a speaker such as a lecturer can communicate via individual receivers with multiple people at the same time using just one VOCE in the transmit mode.

It would seem that a venue could make a reasonable case for the system being compliant with Americans with Disabilities Act requirements if they were to loan out VOCEs in Auracast receiver mode. They could offer the option of wired earbuds or neck loops that would connect to a VOCE in transmitter mode that is then connected via Auracast to the PA system.

The cost of a VOCE plus earphones or a neck loop is about the same as that of an FM, infrared, or hearing loop receiver with the same earphones or neck loop. These devices don't offer the convenience of just touching a button to turn on telecoils in the presence of a hearing loop but, by using neck loops, it would give users the same customized sound from their hearing aids that they get using a hearing loop. It would be possible and not cost prohibitive for individuals to have their own personal VOCE with wired earbuds or a neck loop to carry with them for use at a place of worship, performing arts center, or other venues that offered an Auracast assistive listening system.



What Comes Next?

Once the big electronics players get into the act, Auracast is expected to revolutionize audio communication throughout the world. It's generally believed that the public, and especially technology junkies, will jump on this new Bluetooth technology just as they have on smartphones, smart watches, and other "must have" new electronics.

It will possibly be the users of Auracast-capable earbuds who are the first beneficiaries of the technology. They'll be used to connect to the myriad electronic devices from the big tech companies with big budgets like Apple, Samsung, and Sony and smaller ones like Bose, Sennheiser, and others. If Nexum can offer classic Bluetooth and Auracast at the flip of a switch, it would seem Samsung, Sony, and Apple could also easily do so with smartphones, MP3 players, and other products. Companies like Ampetronic and Contacta could add a Auracast transmission capability to their loop drivers to cement what could become a symbiotic relationship between the two technologies.

In due time hearing aids, too, will be capable of direct connection to an Auracast signal with the simple touch of a button. Assuming smartphones will be Auracast-capable before hearing aids are, for a time hearing aid users may be using their smartphone as a go-between, as is currently the case with WiFi Audio. Jeff Solum, Starkey's representative on and vice chair of the National Institute of Health's Hearing Aid Working Group says that their and other hearing aids will be hardware-ready this year.

For cochlear implant users, Jay Patterson, a senior product manager at Cochlear Americas emailed that their latest processor, the Nucleus 8, already has the necessary hardware capability and, when the technology is available, a firmware update to the sound processor will enable LE Audio and Auracast connectivity. Starkey has not yet responded to an inquiry re their just announced new Genesis series capability for Auracast. As a sign of things to come, though, both Starkey (according to CNET) and Cochlear (in a company press release) offer Bluetooth LE connectivity to the latest Amazon Fire TV Cube, just a step away from Auracast connectivity.

Bluetooth SIG announced in the summer of 2022 that LE Audio-compatible products would be available by the end of the year, and Nexum's VOCE is such a product. It's not clear yet whether companies like Apple and Samsung will make LE audio software upgrades available for existing devices but Apple is reportedly working on LE Audio-compatible AirPods and iPhones. Though more than a few months have passed since Android Central reported that "Auracast specifications will be released within the next few months" in June 2022, such an announcement could be made any time now.

Auracast is seen as a long-term threat to hearing loop technology but it's also a threat to FM, infrared, and WiFi Audio. With the VOCE transceiver already available and other similar products on the horizon, an eight- to 10-year transition to Auracast domination of assistive listening is generally believed to be underway. Instead of FM or hearing loop assistive listening systems, public event spaces will offer single or multichannel Auracast systems.

The local gym will offer an Auracast system that connects to Auracast earbuds instead of a WiFi system that utilizes a user's smartphone or a borrowed receiver to connect to earphones or earbuds. Tour guides on Circle Line trips around Manhattan island will describe the sights in the Big Apple using Auracast and the tourist's smartphones. Travelers on the multiple cars of the Cumbres & Toltec Scenic Railroad will be able to learn of the route's history through the New Mexico and Colorado Rockies via an Auracast connection to the guide in the lead car.

Instead of being confined to just one person listening to an MP3 player as is the case today, a whole room full could tune in. Fans at Yankee Stadium would hear the play by play of the game over the roar of the crowd with their Bluetooth earbuds and, at the Olympics, announcements would be made in multiple languages via separate channels.

The VOCE transceiver has eliminated a similar puzzle regarding Auracast—transmitters and receivers are available at the same time and are expected to multiply soon. Nexum has tossed the first ball with the VOCE. All that remains is for other players to join in and the world of wireless communication will be at the start of a whole new ball game.



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Please note that Hearing Health Foundation does not endorse any product or service.