

Auracast practical test outdoors

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Original article: [Auracast practical test outdoors](#)

This article was translated from German to English using Google Translate.

Location: Helvetiaplatz, Zurich, Date: May 2, 2026, Participants: approx. 2,000 people



Initial situation and setup on site

The aim of the test was to verify the practical suitability of [Bluetooth Auracast](#) outdoors. While manufacturers often advertise ranges of over 100 meters under ideal conditions, this test was intended to show how the technology performs under real-world conditions. Currently, there is a lack of reliable data in this area, as the physical conditions outdoors differ significantly from those indoors.



The Auracast transmitter, circled in red here, broadcast from close to the stage.

[The event](#) took place in an open area approximately 30 meters long and 20 meters wide on Helvetiaplatz in Zurich, surrounded by buildings at some distance. Three parallel systems were used to provide refreshments for the participants:

1. An **Auracast** transmitter was positioned at a height of approximately 2 meters next to the left main speaker and radiated the signal from front to back.
2. A classic **FM system** with receivers and inductive neck loops. This was not chosen for its technical superiority, but to utilize existing infrastructure.
3. Internet streaming ([Accessify](#)) as a transmission method via mobile network with additional features such as AI transcription and simultaneous translation.

With around 2,000 participants, the square was well filled, which played a crucial role in the test, as the crowd itself acts as a physical factor.

Reception quality: Theory vs. reality

Although Auracast transmitters can theoretically cover 100 meters and more, practical use revealed a significantly limited range. These problems had already occurred in previous field tests and were emphatically confirmed here:

- **Lack of reflections:** Indoors, walls and ceilings provide reflections that carry the signal even into awkward spaces or behind obstacles. Outdoors, these reflective surfaces are largely absent; the signal relies almost exclusively on a direct line of sight between transmitter and receiver. Even your own head can interrupt the radio signal to the ear furthest from the transmitter. Similarly, a single person standing in front of you is enough to disrupt reception if the receiver is worn on your belt or chest. In the empty space, it made no difference whether the receiver was worn on the belt, across the chest, or on the ears (hearing aids and headphones). However, when numerous people were

standing in front of you during the event, your position became crucial. Without a direct line of sight, reception was practically always unacceptable.

- **Interference from other devices:** Another often underestimated and particularly difficult-to-assess factor appears to be the high density of electronic devices. In such a crowd, there are hundreds or thousands of smartphones, smartwatches, and other Bluetooth devices operating in the same frequency range. These generate background noise and can obviously lead to packet loss or connection interruptions, further reducing the already limited signal strength outdoors.

Finding: A simple functional test in an empty space is insufficient to assess the reliability of a system. Only the presence of a crowd with electronic devices revealed the current limitations of the technology. This is also confirmed by initial reports from other users: Auracast does not yet appear to be a reliable solution for "long" distances outdoors. With our hearing aids and receivers, we were able to determine that a maximum distance of approximately 5 meters in front of the transmitter was reliable for virtually all receivers.



Image: Beat Graf tests reception at a distance of approximately 8 meters when the user's body blocks the line of sight between the receiver and transmitter. This allows for a simple assessment of how people in front of you will affect reception when the receiver is worn at chest height.

Result: No reception.

Note: This should work indoors; otherwise, the installation must be checked.

FM and streaming compared

While Auracast reached its physical limits, the alternative systems proved their worth in various disciplines, but exhibited their own inherent weaknesses:

- **FM system:** The classic FM system provided stable transmission with very low latency. However, users of the inductive neck loop (telecoil) experienced interference caused by the magnetic fields of the nearby tram overhead lines. Its primary purpose here was to allow owners of telecoil hearing aids access without requiring them to purchase new hardware.
- **Accessify (streaming):** The transmission via the internet (5G) proved surprisingly robust. Uninterrupted reception was possible across the entire venue. Furthermore, this system offered additional features such as live subtitles and simultaneous translation.
 - *Limitations in the device connection:* Despite a stable internet signal, problems occurred on the "last mile." Transmission from the smartphone to the hearing aid via Bluetooth was sometimes interrupted, especially when the smartphone was in a back pocket and the body blocked the line of sight to the hearing aids. Surprisingly, this problem did not occur with in-ear headphones.
 - However, the decisive inherent disadvantage of the system remains the high latency (delay), which makes lip reading difficult and can lead to echoes if the sound from the loudspeakers is heard at the same time (open or one-sided hearing aid supply or if the microphones of the hearing aid/cochlear implant are also running).

Latency in comparison

Excessive latency leads to discrepancies between lip movements and the audio signal, or echoes when listening to the speakers simultaneously. Current and developing standards often specify a latency of 40 milliseconds as the tolerable maximum. We measured the latencies or delays of the various systems:

System	Measured latency	Difference to airborne sound*
FM system	8 ms	17 – 92 ms
Bluetooth Auracast	43 ms (receiver)	18 – 57 ms
	54 ms (hearing aid)	29 – 46 ms
Accessify (Streaming)	approximately 360 ms	260 – 335 ms
Airborne sound (reference)	25 – 100 ms	–

**The difference results from the travel time of the sound from the loudspeakers through the air, which is between 25 and 100 ms depending on the position of the listener (front/back).*

Note on synchronization: Maintaining a maximum difference of 40 ms between airborne sound and the hearing system is recommended for interference-free perception. At this event, Auracast came closest to this value, while FM sometimes exceeded it depending on the position, and streaming fell far short. However, perfect synchronization across the entire venue was not consistently guaranteed with any system. One possible solution is to offer multiple audio channels with different delays, e.g., for the front and back of the seating area.



Image: Judith Hottinger speaks – employee of Pro Audito Switzerland and board member of Pro Audito Zurich

Conclusion and recommendation

The test at Helvetiaplatz shows that no single system currently fully meets all the requirements for outdoor events.

- **Auracast:** Under real-world conditions (crowds, lack of reflections, other 2.4 GHz devices), the technology does not achieve the manufacturer's often-promised range of 100 meters. It should currently be considered with caution and as a supplementary option until more experience or optimizations are available.
- **Accessify:** Offers the highest operational reliability in terms of nationwide coverage and impresses with innovative additional services (subtitles, translation). However, due to its high latency, the system is only partially suitable for people who rely on lip-syncing.
- **FM:** Can offer high operational reliability and, with receivers and inductive neck loops, provide access for people with telecoil hearing aids. Generally, it can be advantageous to continue using existing FM systems to avoid purchasing Auracast receivers with inductive neck loops. However, telecoil reception can be disrupted by transformer stations, high-voltage power lines, and trains/trams.

Practical recommendation: Event organizers should test the technical possibilities for outdoor events in advance and consult a specialist. For large events, Accessify can provide comprehensive coverage, which is not currently possible with Auracast.