EXHIBIT B - INFRINGEMENT OF THE 11,644,693 PATENT BY APPLE INC.

Overview

Plaintiff IngenioSpec, LLC ("IngenioSpec") accuses Defendant Apple Inc. ("Apple" or "Defendant") of infringement by making, using, offering for sale, selling in and/or importing into the United States the Accused Instrumentalities in violation of 35 U.S.C. § 271. "Accused Instrumentality(ies)" means at least:

The following "Accused Headset Devices":

- Apple AirPods Pro 2, infringes claims 1-38, 42-61, 64-76;
- Apple AirPods 2, infringes claims 1-7, 9-35, 42-44, 50, 52-61, 64-76;
- Apple AirPods 3, infringes claims 1-7, 9-30, 36-38, 42, 50, 52-61, 64-76;
- Apple AirPods 4, infringes claims 1-7, 9-32, 36-38, 42-44, 50, 52-61, 64-76;
- Apple AirPods 4 with Active Noise Cancellation, infringes claims 1-32, 36-38, 42-44, 50-61, 64-76;
- Apple AirPods Pro 1, infringes claims 1-32, 36-38, 42-44, 50-61, 64-76;
- Apple AirPods Pro 3, infringes claims 1-38, 42-76;
- Beats Fit Pro, infringes claims 1-32, 42-44, 50-61, 64-76;
- Beats Solo Pro, infringes claims 24, 27-29, 31-32, 42-44, 50-51, 59-61, 64-71, 75;
- Powerbeats Pro, infringes claims 1-7, 9-32, 42-44, 50, 52-61, 64-76;
- Powerbeats Pro 2, infringes claims 1-32, 42-44, 50-76;

paired with

the following "Accused Host Devices":

- iPhones e.g., iPhone 5, iPhone 5c, iPhone 5S, iPhone SE (1st generation), iPhone 6, iPhone 6 Plus, iPhone 6S, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPhone 8, iPhone 8 Plus, iPhone X, iPhone XR, iPhone XS, iPhone XS Max, iPhone 11, iPhone 11 Pro, iPhone 11 Pro Max, iPhone SE (2nd generation), iPhone 12, iPhone 12 mini, iPhone 12 Pro, iPhone 12 Pro Max, iPhone 13, iPhone 13 mini, iPhone 13 Pro, iPhone 13 Pro Max, iPhone SE (3rd generation), iPhone 14, iPhone 14 Plus, iPhone 14 Pro, iPhone 14 Pro Max, iPhone 15, iPhone 15 Plus, iPhone 15 Pro, iPhone 15 Pro Max, iPhone 16, iPhone 16 Plus, iPhone 16 Pro, iPhone 16 Pro Max, iPhone 17, iPhone 17 Pro, iPhone 17 Pro Max, iPhone Air (collectively, the "Accused iPhone Devices");

- iPad Tablets e.g., iPad (5th generation), iPad (6th generation), iPad (7th generation), iPad (8th generation), iPad (9th generation), iPad (10th generation), iPad (11th generation), iPad Air 2, iPad Air (3rd generation), iPad Air (4th generation), iPad Air (5th generation), iPad Air (6th generation), iPad Air (M2, 11-inch), iPad Air (M2, 13-inch), iPad Pro (9.7-inch, 1st generation), iPad Pro (12.9-inch, 1st generation), iPad Pro (10.5-inch, 2nd generation), iPad Pro (12.9-inch, 2nd generation), iPad Pro (11-inch, 3rd generation), iPad Pro (12.9-inch, 3rd generation), iPad Pro (11-inch, 4th generation), iPad Pro (12.9-inch, 4th generation), iPad Pro (11-inch, 5th generation), iPad Pro (12.9-inch, 5th generation), iPad Pro (11-inch, 6th generation), iPad Pro (12.9-inch, 6th generation), iPad Pro (11-inch, 7th generation), iPad Pro (13-inch, 7th generation), iPad mini 4 (4th generation), iPad mini (5th generation), iPad mini (6th generation), (collectively the "Accused iPad Devices");
- iPod Touch (7th generation), (collectively the "Accused Touch Devices")
- Apple Watch (Series 0, 38mm, 2015), Apple Watch (Series 0, 42mm, 2015), Apple Watch Sport (38mm, 2015), Apple Watch Sport (42mm, 2015), Apple Watch Edition (38mm, 2015), Apple Watch Edition (42mm, 2015), Apple Watch Series 1 (38mm, 2016), Apple Watch Series 1 (42mm, 2016), Apple Watch Series 2 (38mm, 2016), Apple Watch Series 2 (42mm, 2016), Apple Watch Series 3 (38mm, 2017), Apple Watch Series 3 (42mm, 2017), Apple Watch Series 4 (40mm, 2018), Apple Watch Series 4 (44mm, 2018), Apple Watch Series 5 (40mm, 2019), Apple Watch Series 5 (44mm, 2019), Apple Watch SE (40mm, 2020), Apple Watch SE (44mm, 2020), Apple Watch Series 6 (40mm, 2020), Apple Watch Series 6 (44mm, 2020), Apple Watch Series 7 (41mm, 2021), Apple Watch Series 7 (45mm, 2021), Apple Watch Ultra (49mm, 2022), Apple Watch Series 8 (41mm, 2022), Apple Watch Series 8 (45mm, 2022), Apple Watch SE (2nd Gen, 40mm, 2022), Apple Watch SE (2nd Gen, 44mm, 2022), Apple Watch Series 9 (41mm, 2023), Apple Watch Series 9 (45mm, 2023), Apple Watch Ultra 2 (49mm, 2023), Apple Watch Series 10 (42mm, 2024), Apple Watch Series 10 (46mm, 2024), (collectively the "Accused Watch Devices"); and
- MacBook (12-inch, 2017), MacBook Air (13-inch, Intel non-Retina, 2017), MacBook Air (13-inch, Retina, 2018), MacBook Air (13-inch, Retina, 2019), MacBook Air (13-inch, Intel, 2020), MacBook Air (13-inch, M1, 2020), MacBook Air (13-inch, M2, 2022), MacBook Air (15-inch, M2, 2023), MacBook Air (13-inch, M3, 2024), MacBook Air (15-inch, M3, 2024), MacBook Air (13-inch, M4, 2025), MacBook Air (15-inch, M4, 2025), MacBook Pro (13-inch, 2016, Intel, 2-port), MacBook Pro (13-inch, 2016, Intel, 4-port), MacBook Pro (15-inch, 2016, Intel), MacBook Pro (13-inch, 2017, Intel, 2-port), MacBook Pro (13-inch, 2017, Intel, 4-port), MacBook Pro (15-inch, 2017, Intel), MacBook Pro (13-inch, 2018, Intel, 4-port), MacBook Pro (15-inch, 2018, Intel), MacBook Pro (13-inch, 2019, Intel, 2-port), MacBook Pro (13-inch, 2019, Intel, 4-port), MacBook Pro (16-inch, 2019, Intel), MacBook Pro (13-inch, 2020, Intel, 2-port), MacBook Pro (13-inch, 2020, Intel, 4-port), MacBook Pro (13-inch, 2020, M1), MacBook Pro (14-inch, 2021, M1 Pro/M1 Max), MacBook Pro (16-inch, 2021, M1 Pro/M1 Max), MacBook Pro (13-inch, 2022, M2, Touch Bar), MacBook Pro (14-inch, 2023, M2 Pro/M2 Max), MacBook Pro (16-inch, 2023, M2 Pro/M2 Max), MacBook Pro (14-inch, 2023, M3/M3 Pro/M3 Max), MacBook Pro (16-inch, 2023, M3 Pro/M3 Max), MacBook Pro (14-inch, 2024, M4 Pro/M4 Max), MacBook Pro (16-inch, 2024, M4 Pro/M4 Max), MacBook Pro (14-inch, 2025, M4 Pro/M4 Max), MacBook Pro (16-inch, 2025, M4 Pro/M4 Max), (collectively the "Computer Devices");

- Apple Vision Pro (the "Accused Vision Device");

including any charging cases, accessories, editions, collaborations, and model numbers for the identified models.

Apple directly infringes U.S. Patent No. 11,644,693 (the "'693 Patent") by making, using, offering for sale, selling in and/or importing into the United States the Accused Instrumentalities, which meet each and every limitation of the claims as shown in the charts below. Apple also directly infringes the asserted claims of the '693 patent to the extent Apple contracted with, or directed, a third party to perform any of the steps of the asserted claims. Apple also directly infringes the asserted claims of the '693 patent to the extent it conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance. Apple may have infringed and continues to infringe the '693 patent through other devices utilizing the same or reasonably similar functionality, including other versions of the Accused Instrumentalities. Apple is therefore liable for infringement of the '693 patent under 35 U.S.C. § 271(a).

Apple directly or indirectly provides the Accused Instrumentalities to wholesalers, retailers, carriers, and end users of Apple's products in the United States. The wholesalers, retailers, carriers, and end users directly infringe the '693 patent by making, using, selling, offering for sale, and/or importing the Accused Instrumentalities in the United States. Apple actively induces these acts of direct infringement by the wholesalers, retailers, carriers, and end users as demonstrated by the following facts: (A) Apple aids, instructs, or otherwise acts with the intent to cause the wholesalers, retailers, carriers, and end users to perform acts of direct infringement, including without limitation by instructing the users to sell, distribute, and/or operate Apple AirPod devices and features. Apple manifests this intent by providing support services for the Accused Products, including providing instructions, guides, and online materials. See, e.g., https://support.apple.com/guide/airpods/welcome/1.0/web/1.0 (INGENIOSPEC-011211 to INGENIOSPEC-011213) (providing a user manual for AirPods), https://support.apple.com/en-us/docs/airpods (INGENIOSPEC-011210 to INGENIOSPEC-011210), https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/ (INGENIOSPEC-011535 to INGENIOSPEC-011540), https://www.apple.com/eg/airpods-2nd-generation/ (INGENIOSPEC-011200 to INGENIOSPEC-011209), https://www.youtube.com/@Apple/search?query=airpods (INGENIOSPEC-011219 to INGENIOSPEC-011225). For example, Apple's purpose and intent for providing the Accused Instrumentalities to wholesalers, retailers, and carriers is for the wholesalers, retailers, and carriers to offer, resell, and distribute the Accused Instrumentalities throughout the United States so that they can be purchased and used by end users. Such offers for sale, sales, and use of the Accused Instrumentalities constitute acts of direct infringement. (B) At least since the filing of the complaint in this action, Apple has known of the '693 patent. (C) Apple knew that the actions of wholesalers, retailers, carriers, and end users would infringe the '693 patent because their downstream offers for sale, sales, and use of the Accused Instrumentalities constitute acts of infringement. (D) Because the '693 patent reads on the Accused Instrumentalities, every offer for sale, sale, or use of the Accused Instrumentalities in the United States constitutes an act of direct infringement. Apple is thereby liable for induced infringement of the asserted claims of the '693 patent under 35 U.S.C. § 271(b).

Apple also contributes to infringement of the ’693 patent by offering to sell, selling (including licensing) and importing into the United States each of the Accused Instrumentalities, each of which is especially made or adapted for use in an infringement of the ’693 patent. The Accused Instrumentalities are a material component for use in practicing the ’693 patent and are not a staple article of commerce suitable for substantial non-infringing use. For example, Apple's Accused Instrumentalities constitute a material portion of the invention and have no substantial non-infringing uses. Apple's clients, customers, and end users, direct or otherwise, cause the performance of each and every limitation of the claims, as shown below. Apple is thereby liable for contributory infringement of the asserted claims of the ’693 patent under 35 U.S.C. § 271(c).

The asserted claims include elements that are implemented, at least in part, by proprietary and specialized electronics in the Accused Instrumentalities. The precise designs used in them are held secret, at least in part, and are not publicly available in their entirety. An analysis of Apple's documentation may be necessary to fully and accurately describe all infringing features and functionality of the Accused Instrumentalities, and accordingly, Plaintiff reserves the right to supplement these contentions once such information is made available to Plaintiff. Furthermore, Plaintiff reserves the right to revise these contentions, including as discovery in the case progresses, in view of any non-infringement arguments Apple may make (e.g., to allege infringement under the doctrine of equivalents), in view of the Court’s final claim construction in this action, and in connection with the provision of expert reports.

11,644,693 Claim 1	**Evidence**
1. A personal audio system operable to at least generate customized audio output, comprising:	The Accused Host Devices, when combined with the Accused Headset Devices, comprise a personal audio system operable to at least generate customized audio output (collectively, an "Accused Instrumentality"). Each of the Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, comprises a personal audio system.

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Each of the Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, generates audio output. For example, each of the Accused Headset Devices is configured to receive audio output signals from the Accused Host Devices and generate audio output (sound), thereby playing the audio signals (e.g., music, movies, podcasts, audiobooks, Siri, voicemail, phone calls, Live Listen, and other auditory media) received. The audio signals are played to provide audio output via one or more speakers of the Accused Headset Devices.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).

	 The front of the speaker unit is a black diaphragm. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

As such, each of the Accused Instrumentalities can be used to listen to music, movies, podcasts, audiobooks, Siri, voicemail, phone calls, Live Listen, and other auditory media.

Play songs from your library

1. Go to the Music app on your iPhone.
2. Tap Library, then tap a category, such as Albums or Songs; tap Downloaded to view only music stored on iPhone.

   Tip: To play songs from an artist's entire catalog—mixing hits and deep cuts—go to an artist page, then tap next to the artist's name.
3. Scroll to browse—or type in the search field to filter your results—to find what you want to play.
4. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

To change the list of Library categories, tap , tap Edit Sections, then select categories you'd like to add, such as Genres and Compilations. Tap any existing categories to remove them.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Stream recommended songs

1. Go to the Music app on your iPhone.
2. Do any of the following to find music you want to play:
   - *View recommendations tailored for you:* Tap Home, then tap a playlist or album.
   - *See what's new in Apple Music:* Tap New, then find music by mood, new releases, charts, and more.
   - *Search the Apple Music catalog:* See Search for music.
3. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Play a podcast

1. Go to the Podcasts app on your iPhone.
2. Search or browse to find an episode, then tap ▶ below an episode title. You can also do any of the following:

   - *Jump to a chapter:* Tap ⌄ next to the name of the current chapter, then tap the chapter you want to play.
   - *Jump to a specific time:* Drag the slider above the player controls. (If the slider doesn't appear, tap the player at the bottom to open the Now Playing screen.)
   - *Resume playing a previous show or episode:* Tap Home, then tap an episode below Recently Played.

Tip: To jump to a specific time, drag the slider below the episode information. (If the slider doesn't appear, tap the player near the bottom of the screen to open Now Playing.)

Source: https://support.apple.com/guide/iphone/listen-to-podcasts-iph3a22707a5/ios (INGENIOSPEC-011378 to INGENIOSPEC-011381)

Play and pause audio

1. Wear one or both AirPods, and make sure they're connected to your device.
2. Go to an audio app, then play something—for example, a song in the Music app or an audiobook in the Books app.
3. To pause or stop the audio, do one of the following:

   - *AirPods 1 or 2:* To pause audio while listening with both AirPods, remove one. When you return it to your ear, playback resumes automatically.

     Note: You can also set either of your AirPods to pause when you double-tap it, then resume playback when you double-tap it again. See Change settings for AirPods 1 and 2.

   - *AirPods 3, AirPods 4 (both models), or AirPods Pro (all models):* To pause audio while listening with both AirPods, remove one. You can also press the stem to pause audio.

     When you return it to your ear or press the stem again, playback resumes.

   - *AirPods Max:* Press the Digital Crown. Press it again to resume playback.

     You can also remove AirPods Max from your head.

If you don't want AirPods to automatically play and stop the audio, you can turn off automatic ear detection. If you don't want AirPods Max to automatically play and stop the audio, you can turn off automatic head detection.

Source: https://support.apple.com/guide/airpods/play-audio-on-your-airpods-dev216d7c746/web (INGENIOSPEC-011418 to INGENIOSPEC-011420)

Furthermore, each of the Accused Instrumentalities can be used to generate customized audio output based upon a hearing profile associated with the user. *See* Claim 1b, *infra*.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

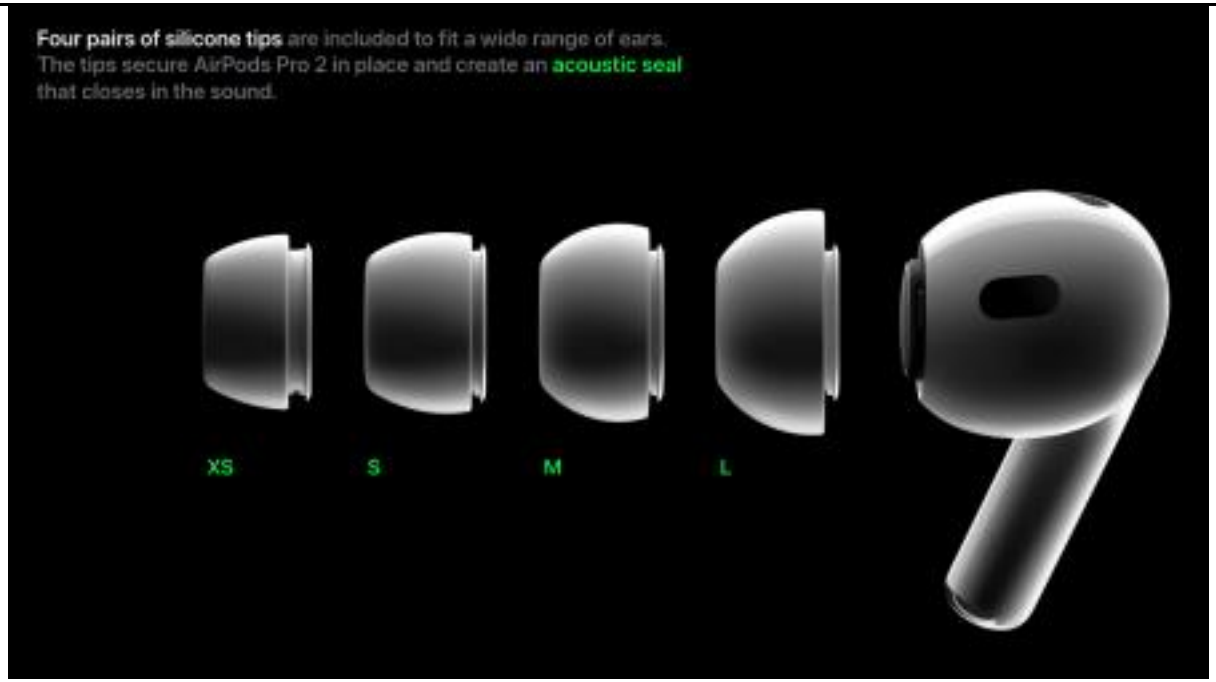
Device	Citations
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;

		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;

<table>
<tr><td></td><td>
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<tr><td>Powerbeats Pro</td><td>Beats Global Press Room, available from https://www.beatsbydre.com/company/press. See INGENIOSPEC-014290-014297;
Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. See INGENIOSPEC-013854-013882;
Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. See INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. See INGENIOSPEC-014287-014289;</td></tr>
<tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013602-013616;
Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013617-013632;</td></tr>
</table>
Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
</td></tr>
<tr><td>1a. a pair of ear buds, each configured to be placed in an ear of a user; and</td><td>Each of the Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, comprises a pair of ear buds. Each ear bud is configured to be placed in an ear of a user.

The Accused Headset Devices, such as Apple AirPods Pro 2, comprises a pair of ear buds. The left ear bud is configured to be placed in the left ear of a user; the right earbud is configured to be placed in the right ear of the user. The left and right earbuds are a pair of ear buds.</td></tr>
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	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). The ear buds are configured to be wearable, and placed in an ear of the user.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each ear bud comprises a speaker that is used to output audio to the user when the ear bud is placed in the user's ear.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).

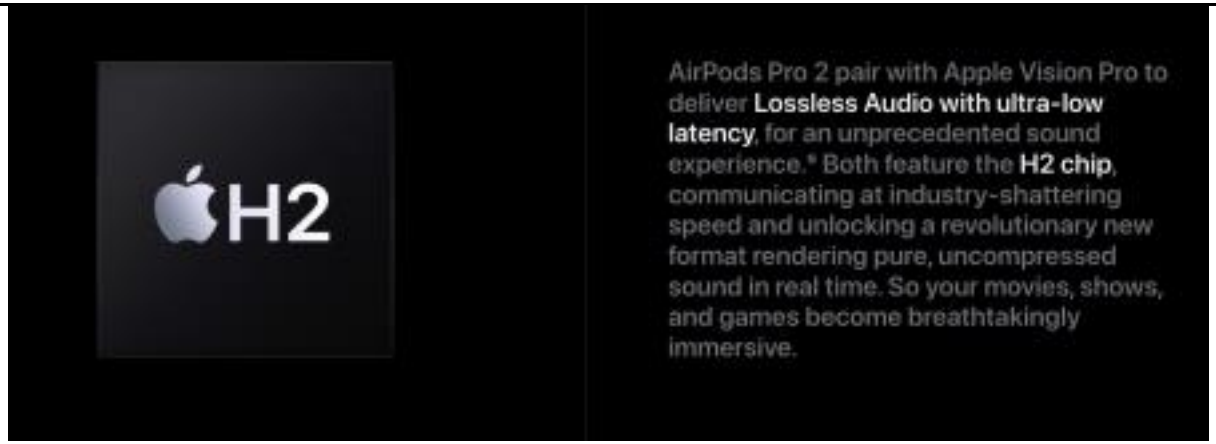


The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;

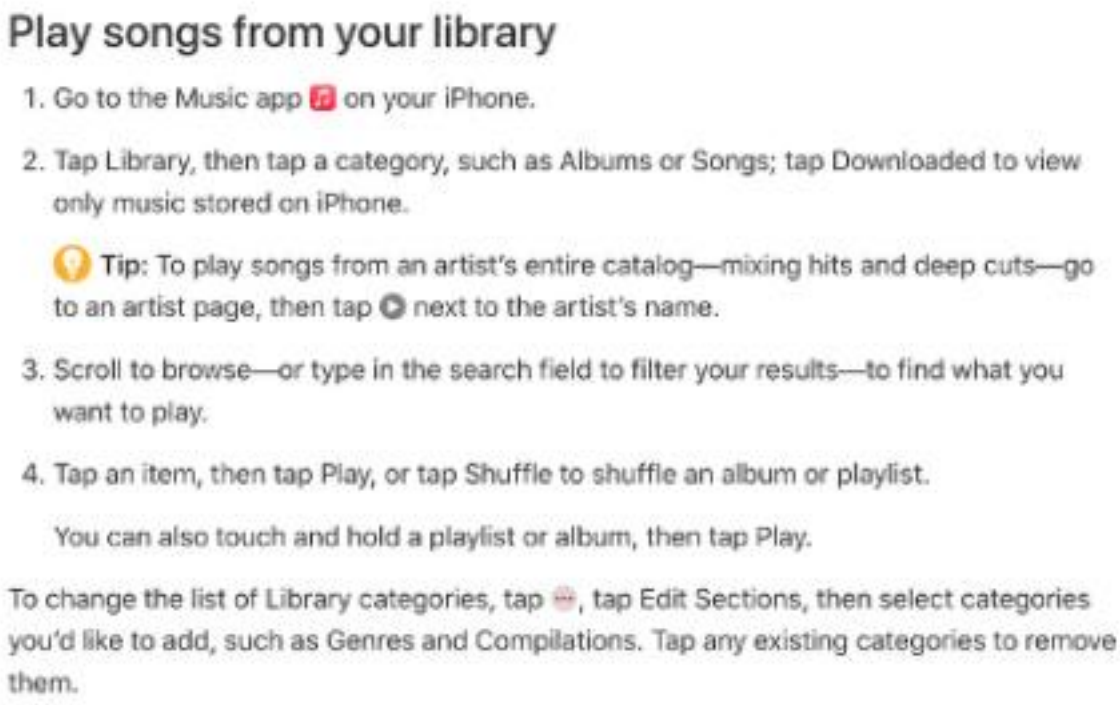
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;

	Powerbeats Pro	Beats Global Press Room, available from https://www.beatsbydre.com/company/press. *See* INGENIOSPEC-014290-014297; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Wearing your AirPods, EarPods, or Beats device, available from https://support.apple.com/en-us/101598. *See* INGENIOSPEC-014301-014302; How to get the best fit and sound with your Powerbeats Pro | Comfort, available from https://www.youtube.com/watch?v=I9t6YW3o-xc. *See* INGENIOSPEC-013232, INGENIOSPEC-013233-013237; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

1b1. a mobile communication device at least for supporting audio output,	The Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, comprise a mobile communication device at least for supporting audio output. The mobile communication device is the Accused Host Device (e.g., an iPhone 14). Each of the Accused Host Devices are mobile communication devices. The Accused Host Devices are battery-powered devices, capable of operating in a portable manner without requiring a constant wired power source. The Accused Host Devices are also communication devices, capable of making and receiving phone calls or video calls, sending and receiving text messages, emails, instant messages, multimedia messages, and other data communications over one or more wireless or wired networks. The Accused Host Devices are configured to paired with one of the Accused Headset Devices. For example, each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible. Bluetooth is a short-range wireless communication protocol (or standard) configured to enable data exchange between electronic devices such as the Accused Host Devices and Accused Headset Devices. *See* https://support.apple.com/guide/iphone/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011284 to INGENIOSPEC-011285), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011436 to INGENIOSPEC-011437), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011438 to INGENIOSPEC-011440), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011454 to INGENIOSPEC-011456), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/16.0/ios/16.0 (INGENIOSPEC-011457 to INGENIOSPEC-011459), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/17.0/ios/17.0 (INGENIOSPEC-011460 to INGENIOSPEC-011462), https://support.apple.com/guide/iphone/connect-bluetooth-accessories-iph3c50f191/18.0/ios/18.0 (INGENIOSPEC-011290 to INGENIOSPEC-011291); https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/13.0/ipados/13.0 (INGENIOSPEC-011432 to INGENIOSPEC-011433), https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/14.0/ipados/14.0 (INGENIOSPEC-011434 to INGENIOSPEC-011435), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/15.0/ipados/15.0 (INGENIOSPEC-011445 to INGENIOSPEC-011447), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/16.0/ipados/16.0 (INGENIOSPEC-011448 to INGENIOSPEC-011450), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/17.0/ipados/17.0 (INGENIOSPEC-011451 to INGENIOSPEC-011453),

	https://support.apple.com/guide/ipad/connect-bluetooth-accessories-ipad997da4cf/18.0/ipados/18.0 (INGENIOSPEC-011288 to INGENIOSPEC-011289); https://support.apple.com/guide/ipod-touch/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011286 to INGENIOSPEC-011287), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011441 to INGENIOSPEC-011442), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011443 to INGENIOSPEC-011444), https://support.apple.com/guide/ipod-touch/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011463 to INGENIOSPEC-011465); https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-with-your-mac-blth1004/10.13/mac/10.13 (INGENIOSPEC-011272 to INGENIOSPEC-011272), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.14/mac/10.14 (INGENIOSPEC-011273 to INGENIOSPEC-011273), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.15/mac/10.15 (INGENIOSPEC-011274 to INGENIOSPEC-011274), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/11.0/mac/11.0 (INGENIOSPEC-011275 to INGENIOSPEC-011275), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/12.0/mac/12.0 (INGENIOSPEC-011276 to INGENIOSPEC-011276), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/13.0/mac/13.0 (INGENIOSPEC-011277 to INGENIOSPEC-011278), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/14.0/mac/14.0 (INGENIOSPEC-011279 to INGENIOSPEC-011280), https://support.apple.com/guide/mac-help/connect-a-wireless-accessory-blth1004/15.0/mac/15.0 (INGENIOSPEC-011281 to INGENIOSPEC-011283); https://support.apple.com/en-us/109319 (INGENIOSPEC-011181 to INGENIOSPEC-011183), https://support.apple.com/en-us/105059 (INGENIOSPEC-011523 to INGENIOSPEC-011525), https://support.apple.com/en-us/104989 (INGENIOSPEC-011292 to INGENIOSPEC-011294), https://support.apple.com/guide/watch/play-music-apd70768b20b/watchos (INGENIOSPEC-011421 to INGENIOSPEC-011425); https://support.apple.com/en-us/102227 (INGENIOSPEC-011531 to INGENIOSPEC-011532), https://support.apple.com/guide/tv/use-airpods-or-beats-with-apple-tv-atvb9b4521cf/tvos (INGENIOSPEC-011526 to INGENIOSPEC-011527); https://support.apple.com/en-us/118516 (INGENIOSPEC-011533 to INGENIOSPEC-011534), https://support.apple.com/en-us/118522 (INGENIOSPEC-011528 to INGENIOSPEC-011530); https://support.apple.com/guide/beats/pair-beats-dev46c519179/web (INGENIOSPEC-011396 to INGENIOSPEC-011399). Moreover, each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are Bluetooth-compatible.

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). The Accused Host Devices are capable of pairing with the Accused Headset Devices. **Pair AirPods with iPhone or iPad** Before you begin, make sure your device has the latest version of iOS or iPadOS installed. When pairing, your device must also be connected to a Wi-Fi or cellular network, or you may not have access to Find My features. 1. On your device, go to Settings > Bluetooth, turn on Bluetooth, then do one of the following: • *AirPods or AirPods Pro:* Open the case with your AirPods inside, then hold it next to your device. • *AirPods Max:* Take your AirPods Max out of the Smart Case, and within 60 seconds, hold them next to the device that you want to pair until the setup animation appears. If you don't see the animation, you can pair AirPods Max with your device manually. Go to Settings > Bluetooth, then select your AirPods. Press and hold the noise control button on AirPods Max for about 5 seconds, or until the light flashes white. If you have AirPods Max (USB-C), you can also pair your AirPods with your device by connecting them using a USB-C to USB-C cable. 2. Follow the onscreen instructions, then tap Done. **Source**: Pair AirPods with an Apple device - Apple Support (INGENIOSPEC-014020-014023) (available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web).

	The Accused Host Devices are configured to support audio output. For example, the Accused Host Devices are configured to play a variety of audio signals including, but not necessarily limited to, music, movies, podcasts, audiobooks, Siri, voicemail, phone calls, Live Listen, and other auditory media.  Play songs from your library 1. Go to the Music app on your iPhone. 2. Tap Library, then tap a category, such as Albums or Songs; tap Downloaded to view only music stored on iPhone. Tip: To play songs from an artist's entire catalog—mixing hits and deep cuts—go to an artist page, then tap next to the artist's name. 3. Scroll to browse—or type in the search field to filter your results—to find what you want to play. 4. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist. You can also touch and hold a playlist or album, then tap Play. To change the list of Library categories, tap , tap Edit Sections, then select categories you'd like to add, such as Genres and Compilations. Tap any existing categories to remove them. **Source**: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Stream recommended songs

1. Go to the Music app on your iPhone.
2. Do any of the following to find music you want to play:
   - *View recommendations tailored for you:* Tap Home, then tap a playlist or album.
   - *See what's new in Apple Music:* Tap New, then find music by mood, new releases, charts, and more.
   - *Search the Apple Music catalog:* See Search for music.
3. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Play a podcast

1. Go to the Podcasts app on your iPhone.
2. Search or browse to find an episode, then tap ▶ below an episode title. You can also do any of the following:

   - *Jump to a chapter:* Tap ⌄ next to the name of the current chapter, then tap the chapter you want to play.
   - *Jump to a specific time:* Drag the slider above the player controls. (If the slider doesn't appear, tap the player at the bottom to open the Now Playing screen.)
   - *Resume playing a previous show or episode:* Tap Home, then tap an episode below Recently Played.

Tip: To jump to a specific time, drag the slider below the episode information. (If the slider doesn't appear, tap the player near the bottom of the screen to open Now Playing.)

Source: https://support.apple.com/guide/iphone/listen-to-podcasts-iph3a22707a5/ios (INGENIOSPEC-011378 to INGENIOSPEC-011381)

Play and pause audio

1. Wear one or both AirPods, and make sure they're connected to your device.
2. Go to an audio app, then play something—for example, a song in the Music app or an audiobook in the Books app.
3. To pause or stop the audio, do one of the following:

   - *AirPods 1 or 2:* To pause audio while listening with both AirPods, remove one. When you return it to your ear, playback resumes automatically.

     Note: You can also set either of your AirPods to pause when you double-tap it, then resume playback when you double-tap it again. See Change settings for AirPods 1 and 2.

   - *AirPods 3, AirPods 4 (both models), or AirPods Pro (all models):* To pause audio while listening with both AirPods, remove one. You can also press the stem to pause audio.

     When you return it to your ear or press the stem again, playback resumes.

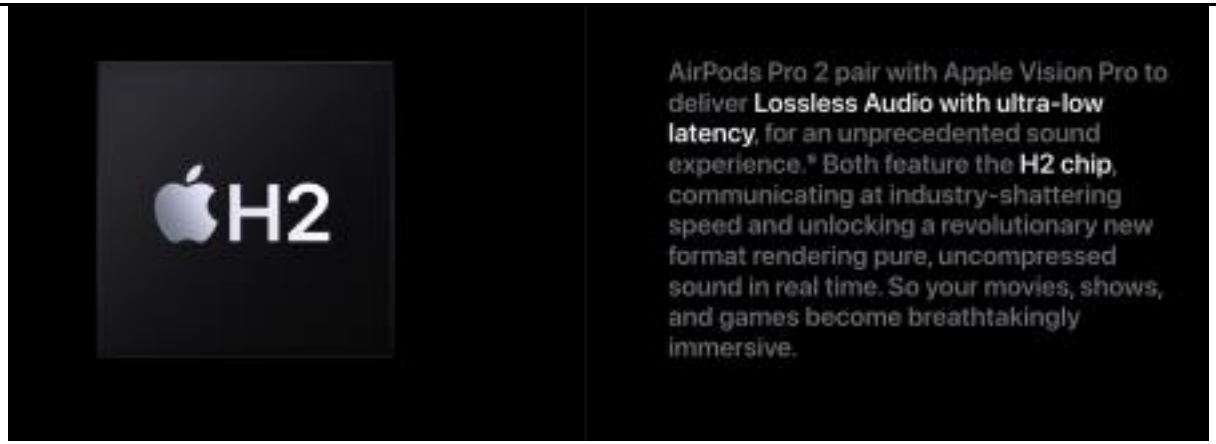
   - *AirPods Max:* Press the Digital Crown. Press it again to resume playback.

     You can also remove AirPods Max from your head.

If you don't want AirPods to automatically play and stop the audio, you can turn off automatic ear detection. If you don't want AirPods Max to automatically play and stop the audio, you can turn off automatic head detection.

Source: https://support.apple.com/guide/airpods/play-audio-on-your-airpods-dev216d7c746/web (INGENIOSPEC-011418 to INGENIOSPEC-011420)

The Accused Host Devices are configured to play the audio signals using the speakers of the Accused Headset Devices when paired via Bluetooth.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

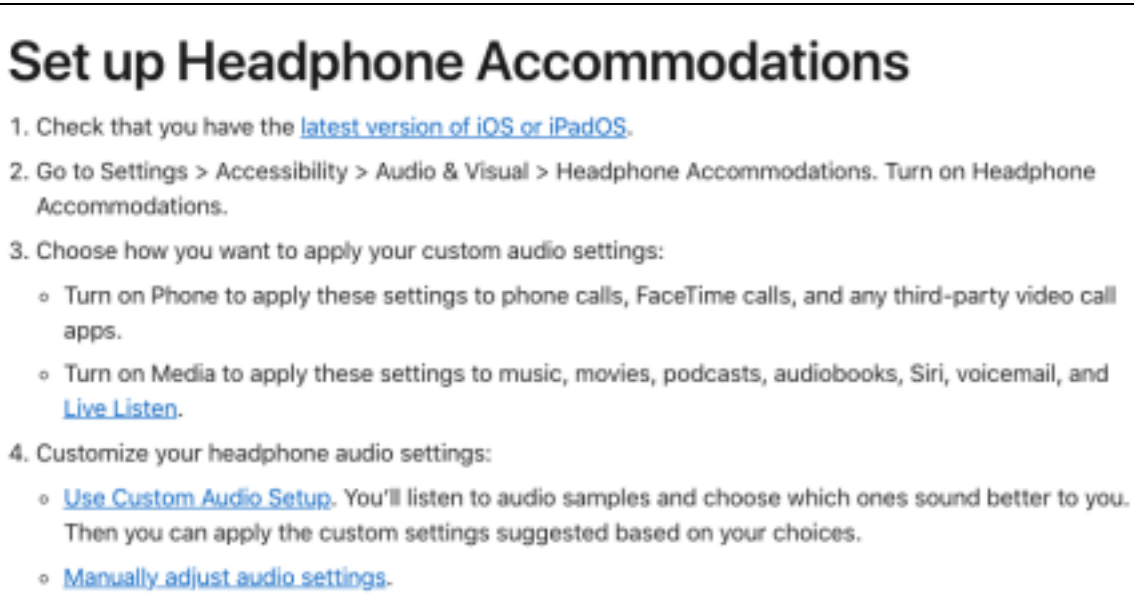
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

	Device	Citations
	Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
	Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;

		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from

			https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats User Guide - Pair Beats, available from https://support.apple.com/en-ca/guide/beats/dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014644-014647; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-

		beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	As such, the Accused Host Devices of the Accused Instrumentalities are mobile communication devices at least for supporting audio output (e.g., music, movies, podcasts, audiobooks, Siri, voicemail, phone calls, Live Listen, and other auditory media). Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
1b2. the mobile communication device configured to store at least a hearing profile associated with the user, the stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear,	The Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, are configured to store at least a hearing profile associated with the user, the stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear. For example, the Accused Headset Devices, such as Apple AirPods Pro 2, support configuration of Custom Audio Setup within Headphone Accommodations.	

	 **Source**: Customize headphone audio levels on your iPhone or iPad (INGENIOSPEC-014699-014701) (available from https://support.apple.com/en-us/102663). Moreover, the Accused Host Devices of the Accused Instrumentalities are configured to perform Custom Audio Setup when connected with one of the Accused Headset Devices.

Set headphone accommodations on iPhone or iPad

1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations.
2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
3. To preview your audio settings, tap Play Sample.

Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

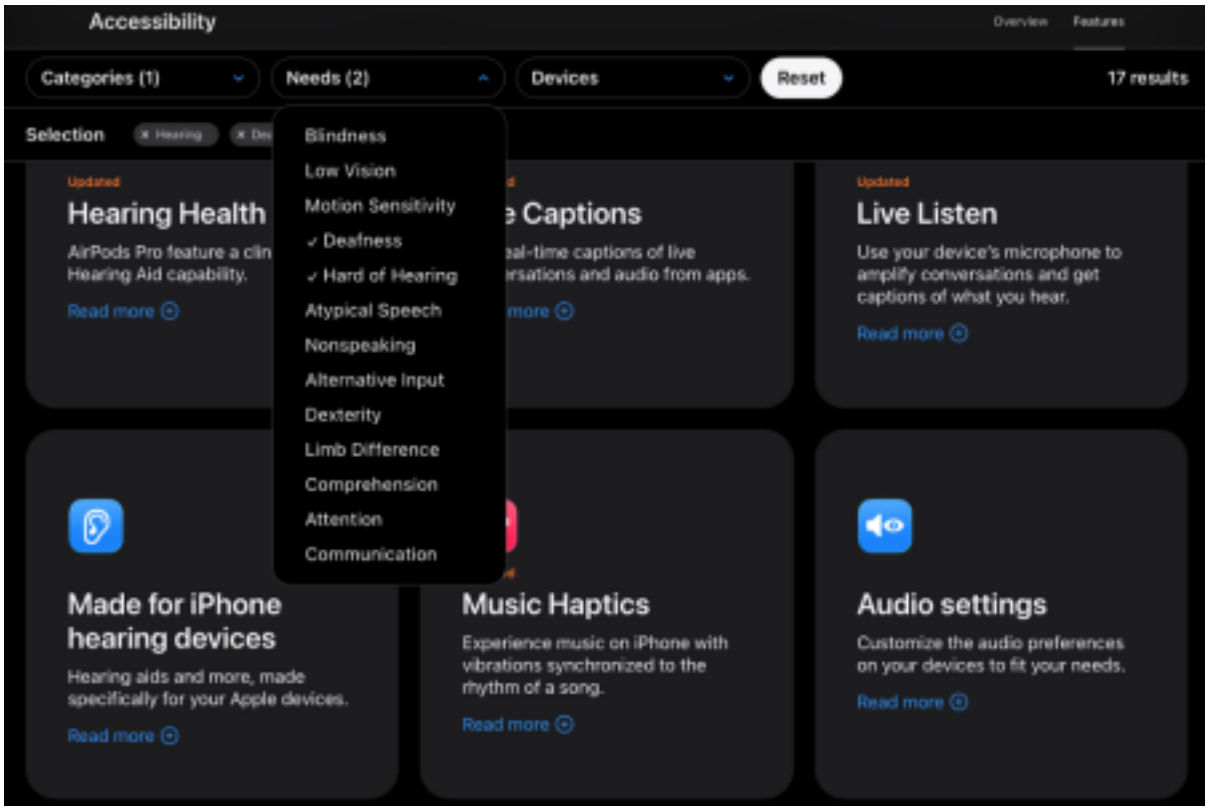
Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

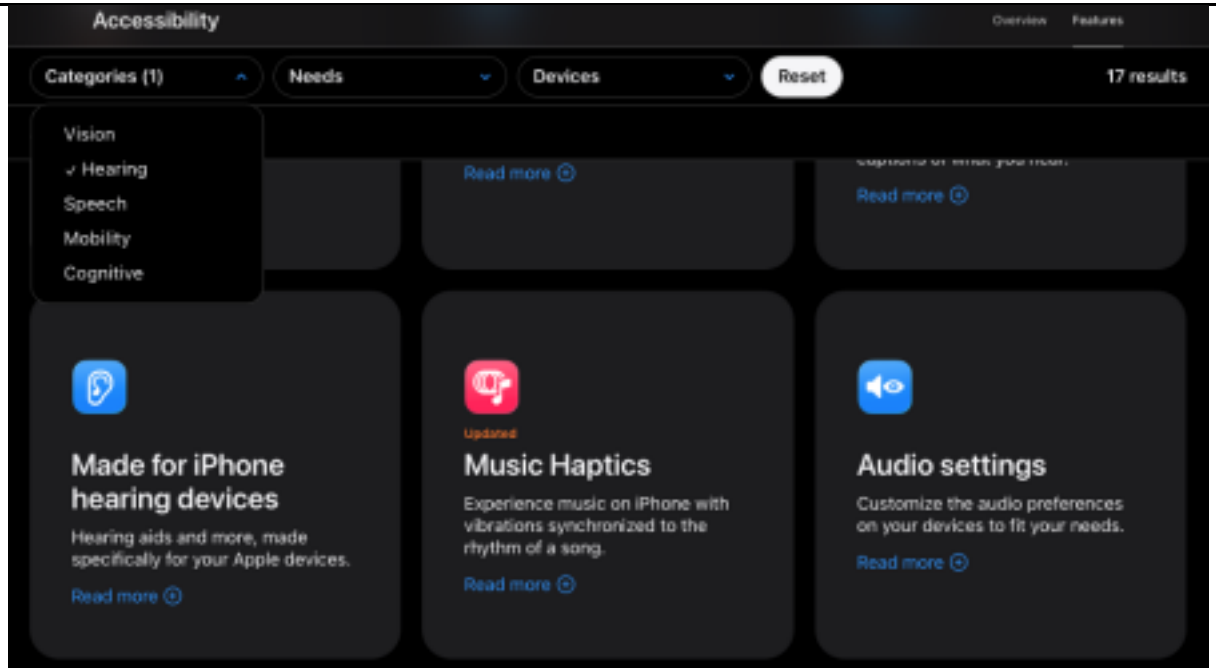
Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

The Accused Host Devices are configured to store at least a hearing profile associated with the user related to Custom Audio Setup. The profile is created and stored when a user performs Custom Audio Setup. The stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear. For example, Custom Audio Setup is part of Apple's Accessibility features for users with deafness, or who are hard of hearing. Headphone Accommodations and Custom Audio Setup allows a user to "change the accessibility settings for [a user's] AirPods to suit [their] needs." *See* https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431).

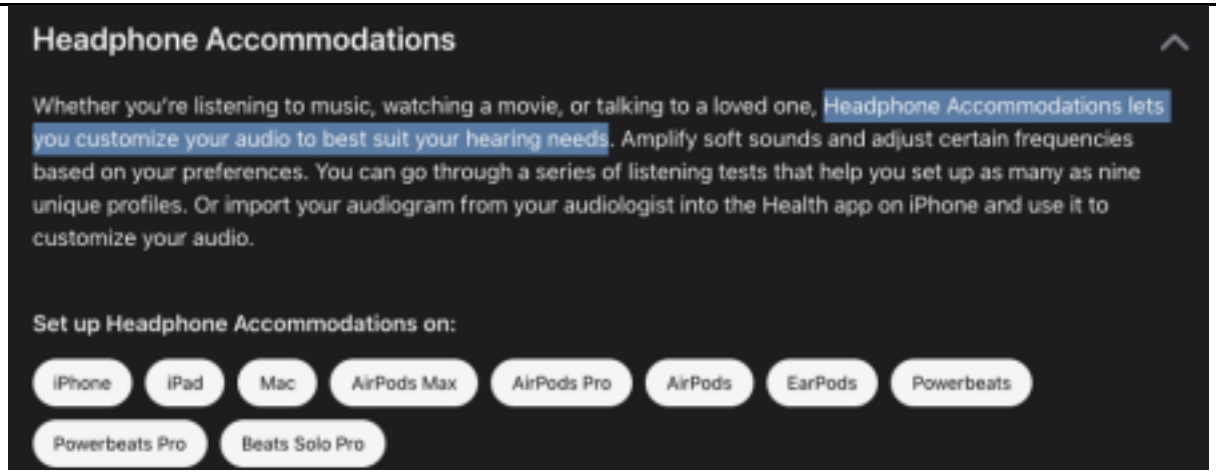
Headphone Accommodations and Custom Audio Setup "[a]mplif[ies] soft sounds and adjust[s] certain frequencies to help music, movies, phone calls, and podcasts sound more crisp and clear." *See id.*



Source: https://www.apple.com/accessibility/features/ (INGENIOSPEC-014704-014718)

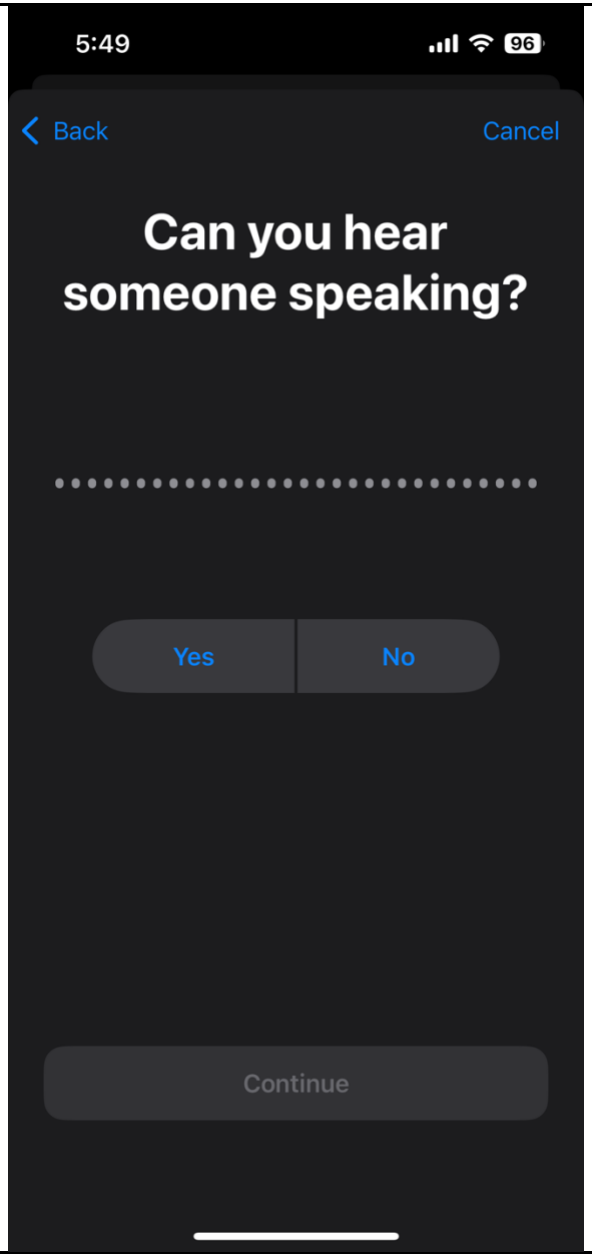


Source: https://www.apple.com/accessibility/features/ (INGENIOSPEC-014704-014718)

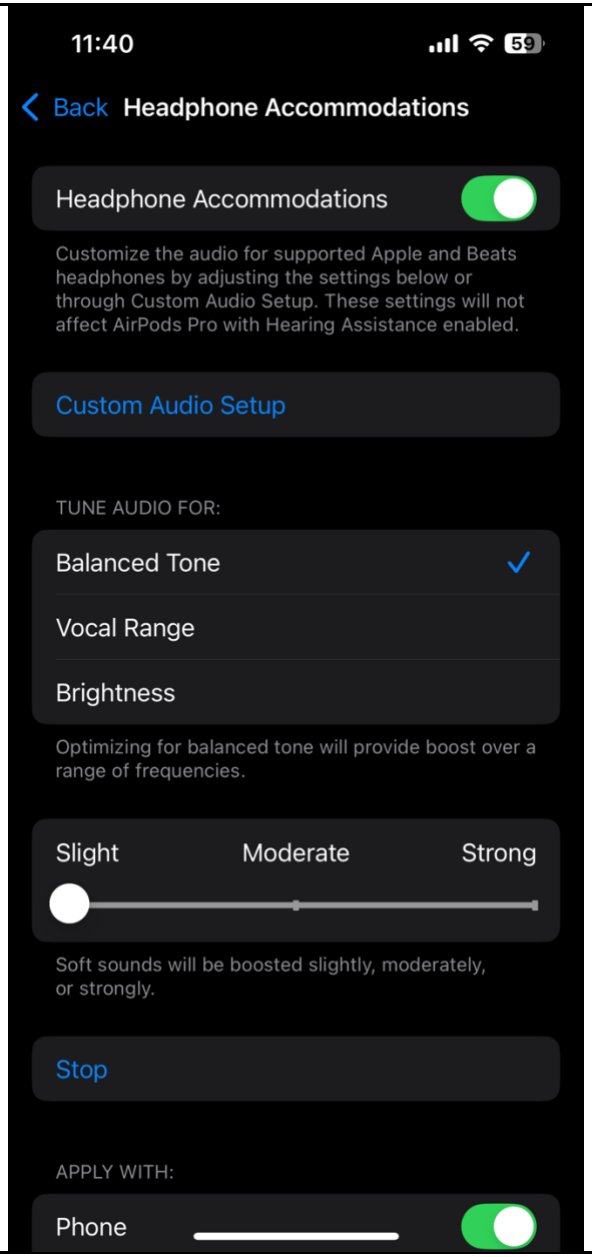


Source: https://www.apple.com/accessibility/features/ (INGENIOSPEC-014704-014718), under "Audio settings"

Moreover, Custom Audio Setup begins with a hearing test.

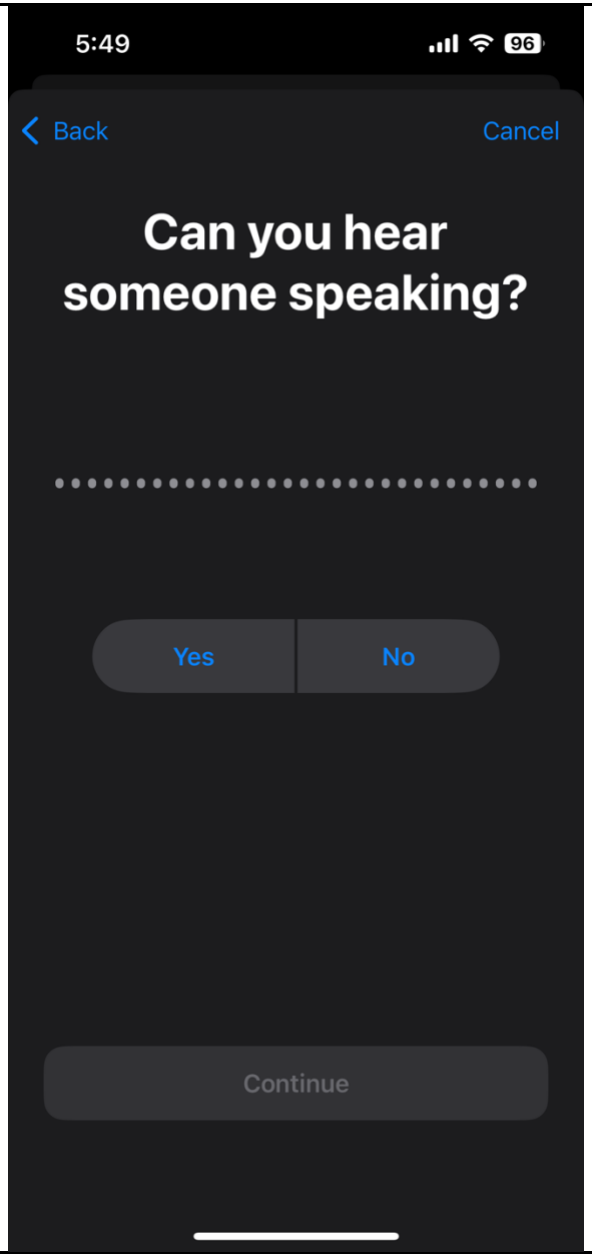

5:49
96
Back
Cancel
Can you hear someone speaking?
Yes
No
Continue

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking? By customizing headphone audio levels, the iPhone or iPad is configured to customize audio output signals to "amplify soft sounds and adjust certain frequencies for [a user's] hearing needs [using] Headphone Accommodations." *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304). To set up "Headphone Accommodations" a user goes to **Settings > Accessibility > Audio & Visual** then taps **Headphone Accommodations**. The user then taps on **Custom Audio Setup** and follows the instructions on the screen. *See Id.*


11:40
59
Back
Headphone Accommodations
Headphone Accommodations
Customize the audio for supported Apple and Beats headphones by adjusting the settings below or through Custom Audio Setup. These settings will not affect AirPods Pro with Hearing Assistance enabled.
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Stop
APPLY WITH:
Phone

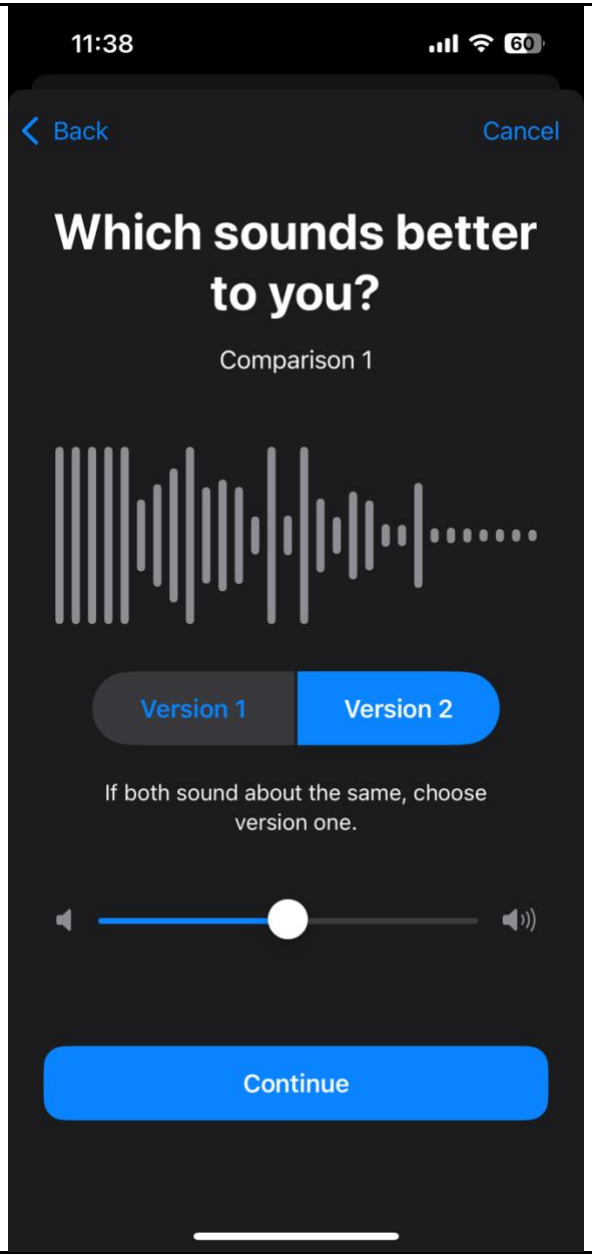
	Source: Screenshot from iPhone configuring "Headphone Accommodations," including "Custom Audio Setup"

Apple Inc. Exhibit 1022 Page 52

		 5:49 96 Back Cancel Can you hear someone speaking? Yes No Continue	

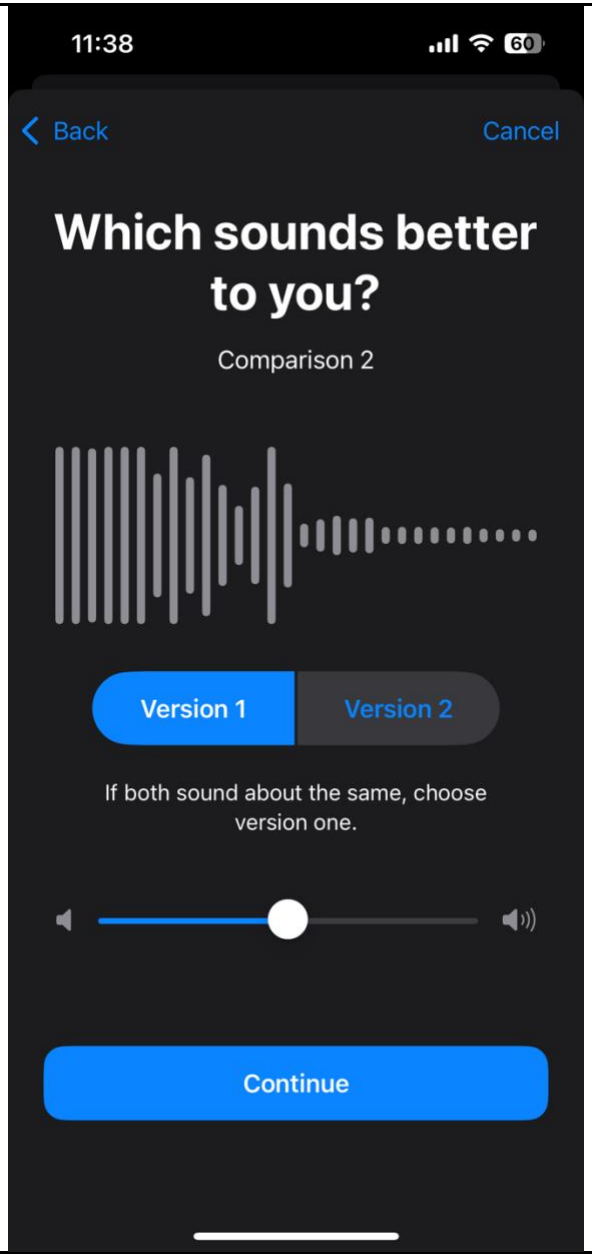
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking?

Apple Inc. Exhibit 1022 Page 54


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 1
Version 1
Version 2
If both sound about the same, choose version one.
Continue

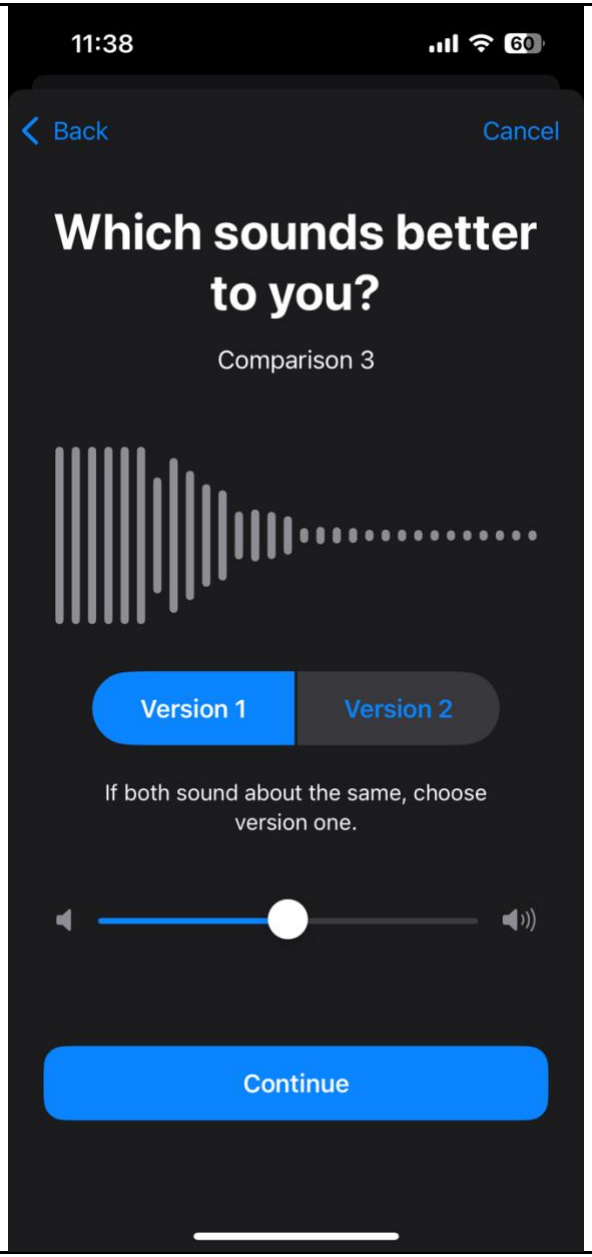
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 1

Apple Inc. Exhibit 1022 Page 56


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 2
Version 1
Version 2
If both sound about the same, choose version one.
Continue

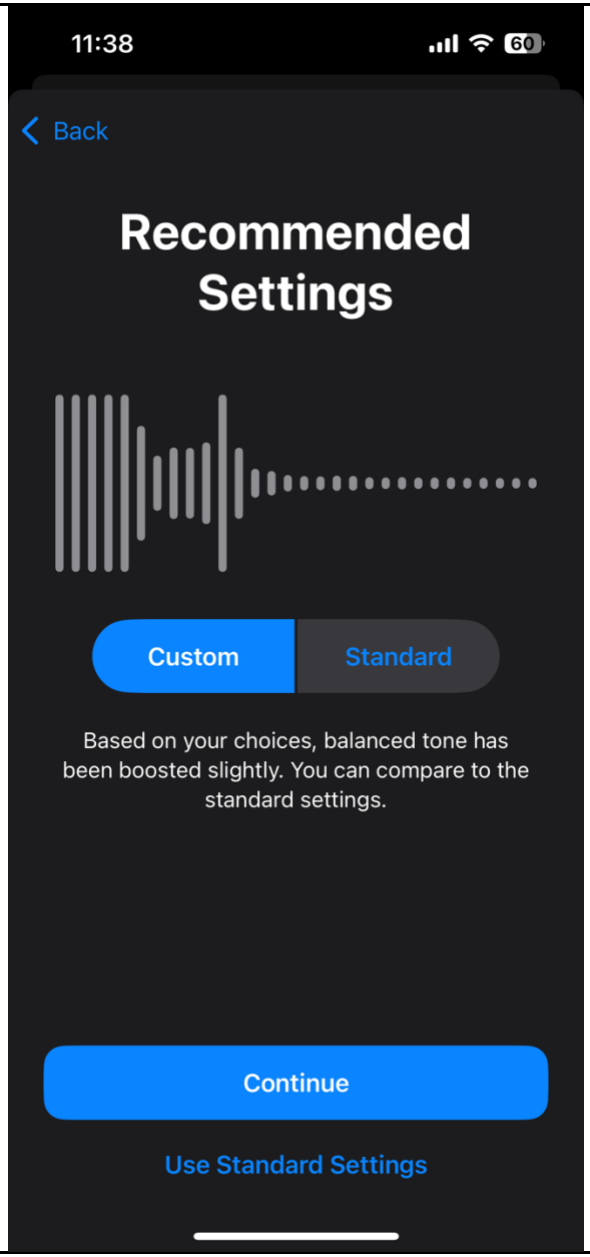
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 2

Apple Inc. Exhibit 1022 Page 58


11:38
Back
Cancel
Which sounds better to you?
Comparison 3
Version 1
Version 2
If both sound about the same, choose version one.
Continue

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 3

Apple Inc. Exhibit 1022 Page 60

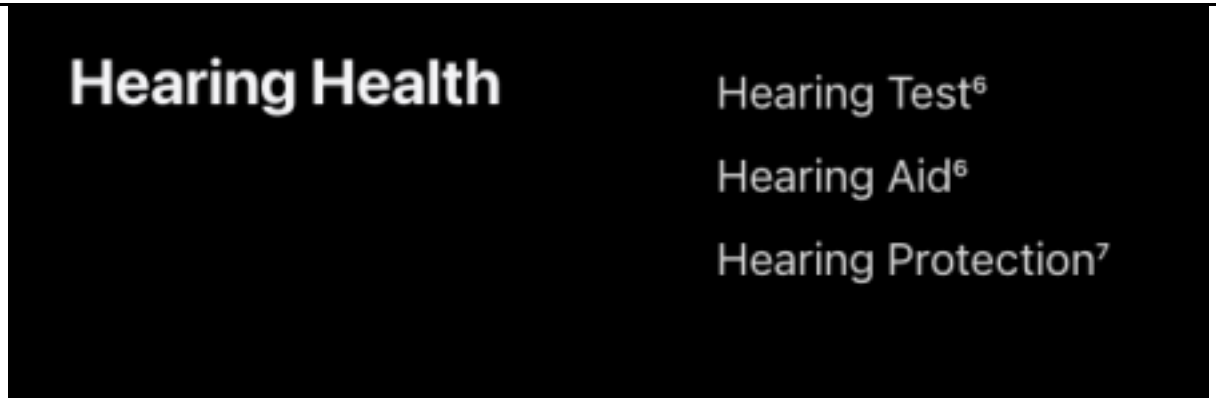

11:38
60
Back
Recommended Settings
Custom
Standard
Based on your choices, balanced tone has been boosted slightly. You can compare to the standard settings.
Continue
Use Standard Settings

Source: Screenshot from iPhone configuring "Custom Audio Setup," Recommended Settings

Furthermore, the Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, are configured to function as a hearing aid. For example, Apple AirPods Pro 2 provides a hearing aid feature.

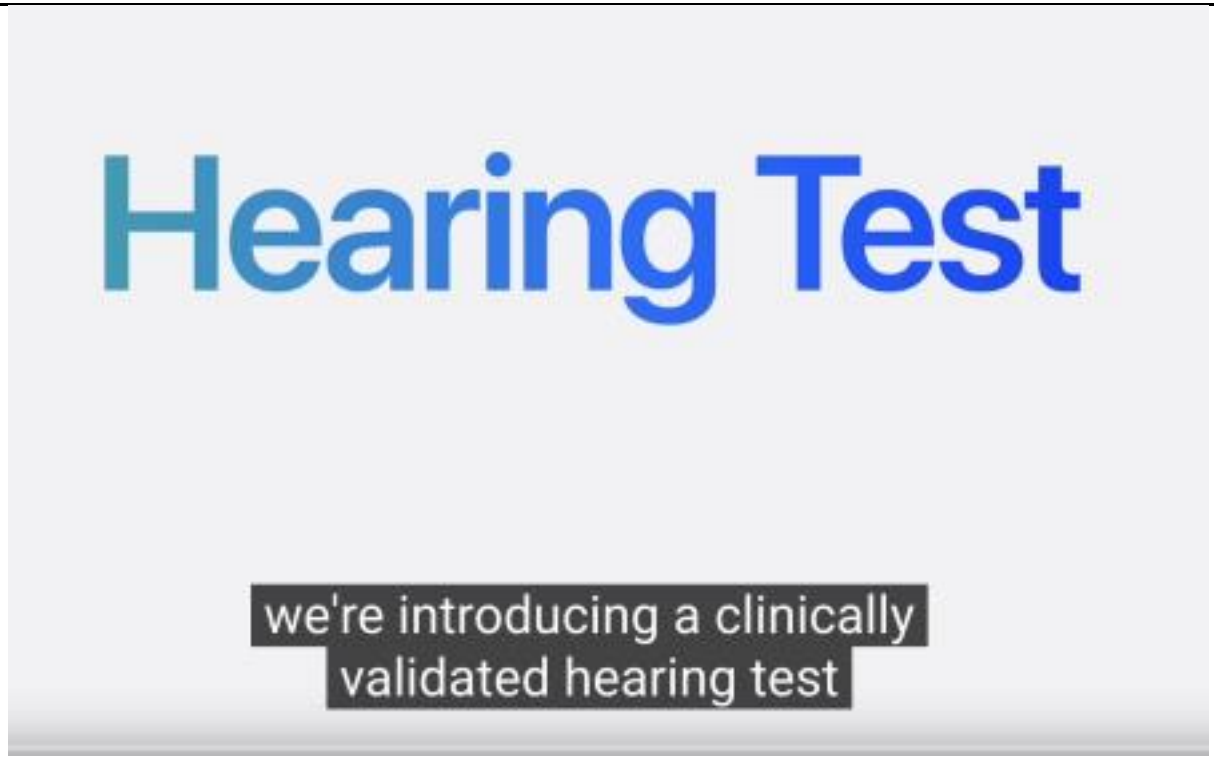


Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).

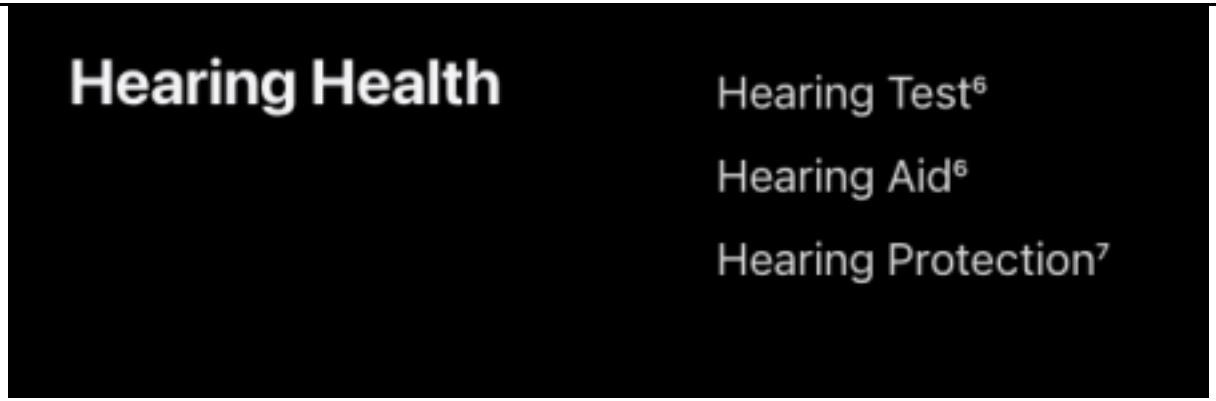


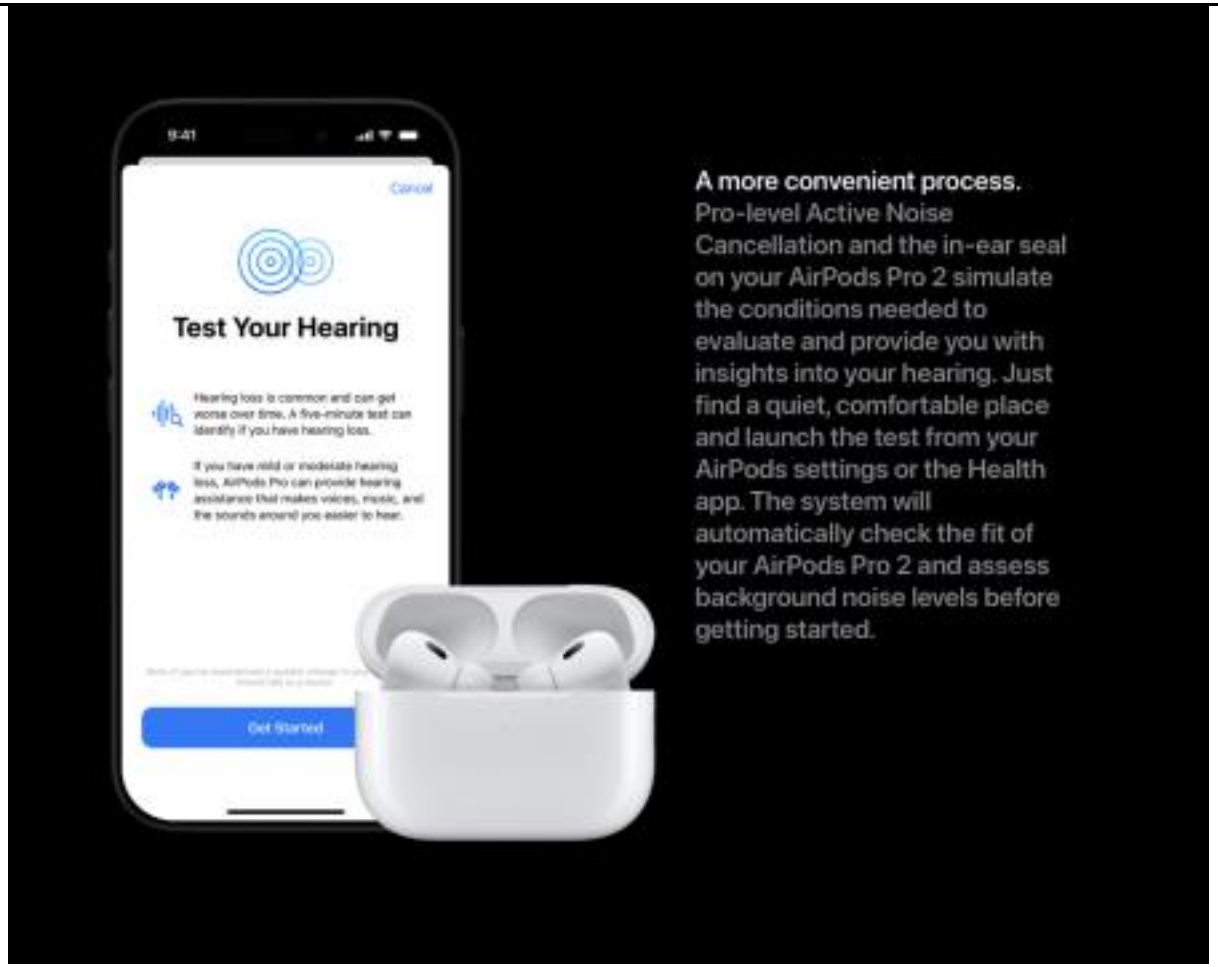
Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Using the Accused iPhone Devices and Accused iPad Devices, a user can take a hearing test, using the Accused Headset Devices. *See* https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473). The Accused iPhone Devices and Accused iPad Devices are configured to store at least a hearing profile associated with the user. The stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear.



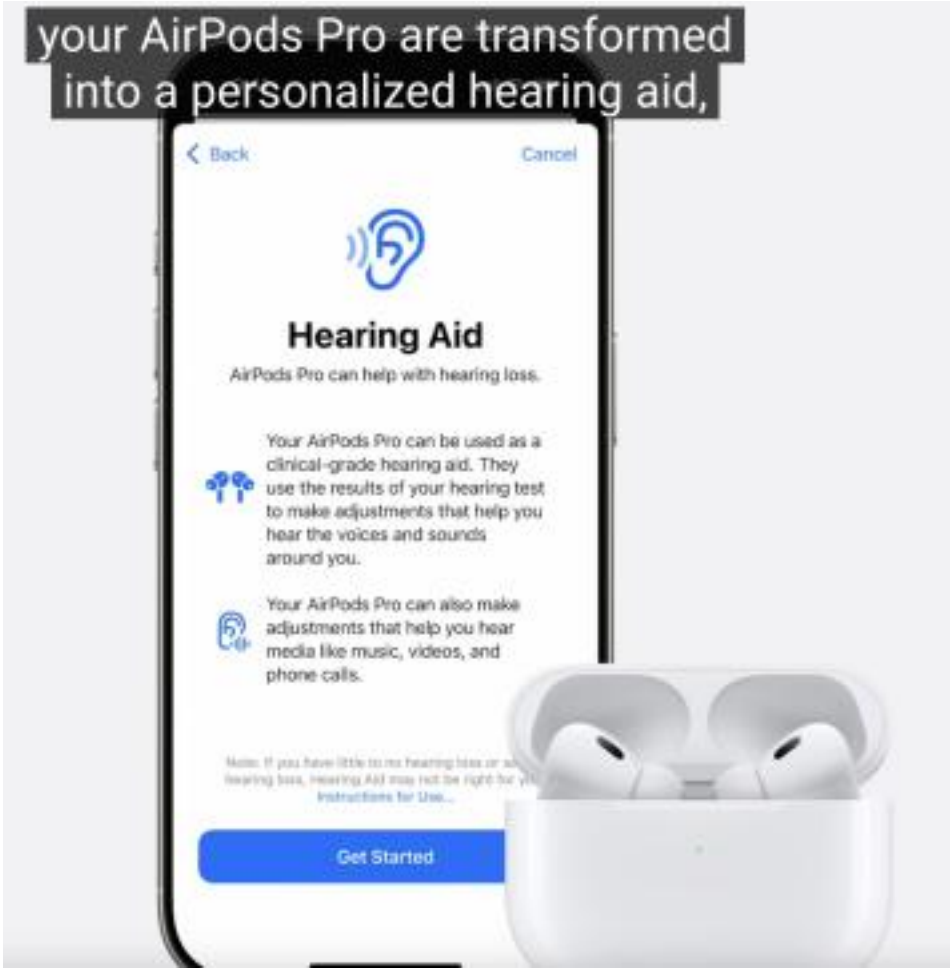
Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Hearing Health - Apple (INGENIOSPEC-013564-013573) (available from https://www.apple.com/airpods-pro/hearing-health/).

The result of the hearing test, including at least a hearing profile associated with the user are stored by the Accused iPhone Devices and Accused iPad Devices. The Accused Host Devices are configured to store the hearing profile associated with the user related to the Hearing Aid Test. The profile is created and stored when a

	user performs the Hearing Aid Test. The stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear.  **Source**: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).

It can take time to get used to the Hearing Aid feature. For the best experience, make small changes to Hearing Aid settings over time while you adjust.

Hearing Aid settings are stored on your AirPods, so if your paired device is not nearby, Hearing Aid will keep working using the most recent settings.

Source: Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3 (INGENIOSPEC-013442-013448) (available from https://support.apple.com/en-us/120992).

Furthermore, the Accused Instrumentalities can *also* be used to manually adjust their hearing profile.

A meaningful difference. After you complete the Hearing Test, if you have mild to moderate hearing loss, your personalized hearing profile will guide you to the Hearing Aid feature. With a quick setup, you'll start hearing more clearly immediately. You can even customize the settings to your needs.

Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

It can take time to get used to the Hearing Aid feature. For the best experience, make small changes to Hearing Aid settings over time while you adjust.

	Source: Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3 (INGENIOSPEC-013442-013448) (available from https://support.apple.com/en-us/120992). Accordingly, the Accused Instrumentalities are configured to generate a hearing profile associated with the user. *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304); and https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473) The Accused Host Devices are configured to store the hearing profile associated with the user. For example, the Accused Host Devices comprise persistent and volatile memory for storing the hearing profile. *See* https://support.apple.com/guide/airpods/hearing-health-features-airpods-pro-2-devd9aac5b42/web (INGENIOSPEC-014801-014805) ("The Hearing Aid feature is intended only for people with perceived mild to moderate hearing loss. ... [Step] 2. Do one of the following: iPhone or iPad: Go to Settings, tap the name of your AirPods near the top of the screen, then tap Hearing Assistance.") The hearing profile is stored in the Accused Host Device's aforementioned persistent and volatile memory (e.g., flash memory, solid-state drive, or hard disk drive for persistent memory; and random access memory (RAM), cache memory, or buffer memory for volatile memory) and/or in cloud storage. *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304) ("When using automatic device switching with your headphones, your custom audio settings will transfer between your iPhone, your iPad, your paired Apple Watch (on watchOS 7), your Mac running macOS Sequoia (depending on your model of AirPods), and your Apple Vision Pro."), *and* https://www.apple.com/airpods-pro/hearing-health/ (INGENIOSPEC-012988-013000) ("Private, secure, and easy to manage. All your Hearing Test data is privately and securely stored in the Health app on your device. You can retake the test whenever you want, monitor your hearing over time, download your test results, and read helpful articles about hearing health." And, "After you complete the Hearing Test, if you have mild to moderate hearing loss, your personalized hearing profile will guide you to the Hearing Aid feature. With a quick setup, you'll start hearing more clearly immediately. You can even customize the settings to your needs.") *See also* https://support.apple.com/en-us/104988 (INGENIOSPEC-011466 to INGENIOSPEC-011468). Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 3	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4 with Active Noise Cancellation	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 1	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

		AirPods Pro 3 - Hearing Health, available from https://www.apple.com/airpods-pro/hearing-health/. *See* INGENIOSPEC-013502-013510; Set Headphone Accommodations for AirPods, available from https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web. *See* INGENIOSPEC-013296-013297; Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3, available from https://support.apple.com/en-us/120992. *See* INGENIOSPEC-013442-013448;
	Beats Fit Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Powerbeats Pro 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

1b3. the mobile communication device configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user such that the customized audio output signals at least compensate for the hearing impairment regarding the user's ability to hear, the mobile communication device configured to produce the customized audio output signals using at least signal amplification, and	The Accused Instrumentalities, including the Accused Host Devices (e.g., iPhone 14) when paired with the Accused Headset Devices (e.g., Apple AirPods Pro 2), are configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user. For example, the Accused Host Devices are configured to pair with the Accused Headset Devices, and configure Headphone Accommodations, including Custom Audio Setup and other manually adjustable audio settings, to produce audio output signals customized for the user based on at least the stored hearing profile. *See* Claim 1b2, *supra*. **Set up Headphone Accommodations** 1. Check that you have the latest version of iOS or iPadOS. 2. Go to Settings > Accessibility > Audio & Visual > Headphone Accommodations. Turn on Headphone Accommodations. 3. Choose how you want to apply your custom audio settings: ◦ Turn on Phone to apply these settings to phone calls, FaceTime calls, and any third-party video call apps. ◦ Turn on Media to apply these settings to music, movies, podcasts, audiobooks, Siri, voicemail, and Live Listen. 4. Customize your headphone audio settings: ◦ Use Custom Audio Setup. You'll listen to audio samples and choose which ones sound better to you. Then you can apply the custom settings suggested based on your choices. ◦ Manually adjust audio settings. **Source**: Customize headphone audio levels on your iPhone or iPad (INGENIOSPEC-014699-014701) (available from https://support.apple.com/en-us/102663). The Accused Host Devices, such as iPhone 14, are configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user. During Custom Audio Setup the

	Accused Host Devices perform a hearing assessment by presenting a series of sample audio to the user, receiving input from the user in response, and generating corresponding adjustments to the hearing profile. After Custom Audio Setup and other manually adjustable audio settings have been configured (resulting in a hearing profile being created by the user), the Accused Host Devices, such as iPhone 14, will produce audio output signals customized for the user based on the stored hearing profile. **Set headphone accommodations on iPhone or iPad** 1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations. 2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following: • *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness. • *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds. • *Phone:* Apply these audio settings to phone calls. • *Media:* Apply these audio settings to media playback. • *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost. 3. To preview your audio settings, tap Play Sample. **Source**: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

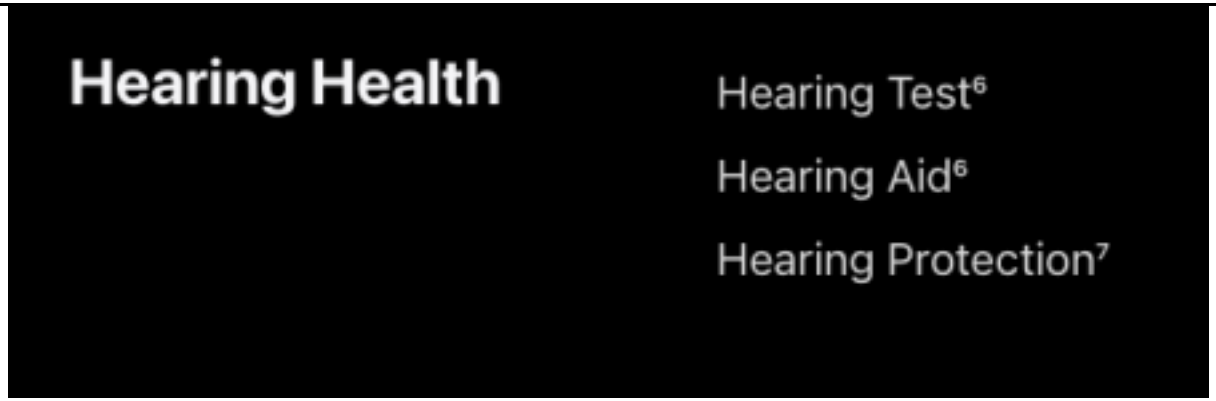
The customized audio output signals produced compensate for the hearing impairment regarding the user's ability to hear. *See* https://support.apple.com/en-us/111765 (INGENIOSPEC-011314 to INGENIOSPEC-011315) ("iOS and iPadOS devices are filled with accessibility features like these, which can help people who are deaf, have limited hearing, or have unique hearing needs use their devices") and https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431) (Headphone Accommodations and Custom Audio Setup "[a]mplif[ies] soft sounds and adjust[s] certain frequencies to help music, movies, phone calls, and podcasts sound more crisp and clear.") *See also* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304)

("When using automatic device switching with your headphones, your custom audio settings will transfer between your iPhone, your iPad, your paired Apple Watch (on watchOS 7), your Mac running macOS Sequoia (depending on your model of AirPods), and your Apple Vision Pro.") and https://support.apple.com/guide/airpods/hearing-health-features-airpods-pro-2-devd9aac5b42/web (INGENIOSPEC-014801-014805) ("The Hearing Aid feature is intended only for people with perceived mild to moderate hearing loss. ... [Step] 2. Do one of the following: iPhone or iPad: Go to Settings, tap the name of your AirPods near the top of the screen, then tap Hearing Assistance.").

As another example, the Accused Host Devices are configured to pair with the Accused Headset Devices, and configure a hearing profile based upon a test of the user's hearing, to produce audio output signals customized for the user based on at least the stored hearing profile. *See* Claim 1b2, *supra*.



Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

The Accused Host Devices are configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user. When Media Assist is enabled, customized audio output signals are produced for music, video, phone calls, and FaceTime calls using at least signal amplification to compensate for the hearing impairment regarding the user's ability to hear.

Set up and use Media Assist

With Media Assist, the audio adjustments based on your hearing test results can be applied to the sound of music, videos, and calls.

1. With your AirPods in your ears and connected to your paired device:
   - On iPhone or iPad, go to Settings > your AirPods, then tap Hearing Assistance under Hearing Health.
   - On Mac, choose Apple menu > System Settings, click your AirPods in the left sidebar, then click Hearing Health.
2. Tap or click Adjustments, then turn on Media Assist.
3. To apply the audio adjustments based on your test results to music and video playing on your device, turn on Adjust Music and Video.
4. To apply audio adjustments to phone calls and FaceTime calls, turn on Adjust Calls and FaceTime.
5. To adjust the volume of phone calls, music, and videos playing on your device when Hearing Aid is active:
   - Use the physical volume buttons on your device.
   - On iPhone or iPad, open Control Center, touch and hold the volume control, then adjust the volume control . If Hearing Aid is also turned on, you can adjust the amplification control of Hearing Aid separately.
   - On Mac, open Control Center , then drag the volume control under Sound to the left or right.

Most media apps, like Apple Music or Podcasts, also have their own volume controls, so make sure to check the apps if you're having an issue with the volume of music, video, or other media in your AirPods.

Source: Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3 (INGENIOSPEC-013442-013448) (available from https://support.apple.com/en-us/120992).

Based upon the user's selections, preferences and customizations when performing Custom Audio Setup and/or Hearing Aid Test, the created hearing profile adjusts audio output to improve the user's ability to hear frequency ranges that the user is less sensitive to, such as higher-frequency consonant sounds in speech or lower-frequency background tones in music. *See* https://support.apple.com/en-us/111765 (INGENIOSPEC-011314 to INGENIOSPEC-011315) ("Use Headphone Accommodations to customize headphone audio settings to amplify soft sounds and adjust certain frequencies for your hearing needs. You can also use your audiogram data from

the Health app to customize audio settings.") *and* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566) ("With Media Assist, the audio adjustments based on your hearing test results can be applied to the sound of music, videos, and calls." And, "After you complete the Hearing Test, if you have mild to moderate hearing loss, your personalized hearing profile will guide you to the Hearing Aid feature. With a quick setup, you'll start hearing more clearly immediately. You can even customize the settings to your needs.")

The Accused Host Devices are configured to produce the customized audio output signals using at least signal amplification. For example, amplification is selectively applied to portions of the audio spectrum that correspond to the user's measured hearing deficiencies, such that audio content in those ranges is output at an increased gain level relative to other ranges, thereby enhancing audibility for the user. *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304) ("Customiz[ing] headphone audio levels on your iPhone or iPad [will] [a]mplify soft sounds and adjust certain frequencies for your hearing needs with Headphone Accommodations in iOS and iPadOS 14 and later.") *See also* https://support.apple.com/en-us/120634 (INGENIOSPEC-011308 to INGENIOSPEC-011310) ("Customiz[ing] the sound of your AirPods on Mac [will] boost soft sounds and adjust the tone for your hearing needs.") *and* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566) ("(1) Tap or click Adjustments, then turn on Media Assist; (2) To apply the audio adjustments based on your test results to music and video playing on your device, turn on Adjust Music and Video; (3) To apply audio adjustments to phone calls and FaceTime calls, turn on Adjust Calls and FaceTime.")

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

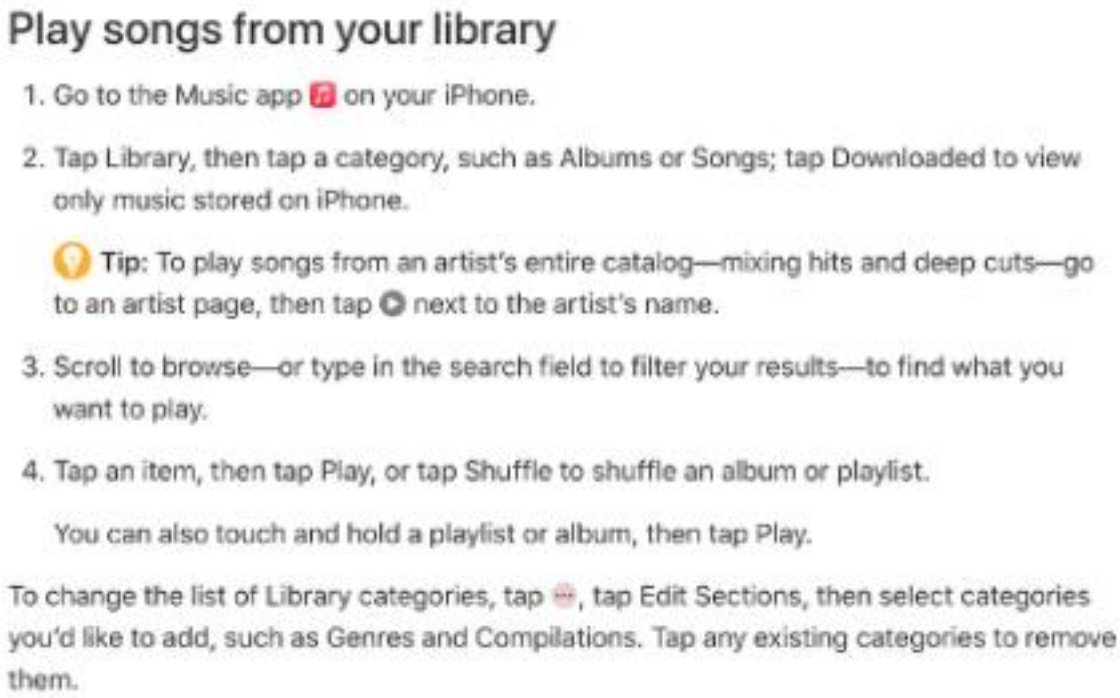
Device	**Citations**

		Apple AirPods 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods 3	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods 4	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods 4 with Active Noise Cancellation	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods Pro 1	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; AirPods Pro 3 - Hearing Health, available from https://www.apple.com/airpods-pro/hearing-health/. *See* INGENIOSPEC-013502-013510; Set Headphone Accommodations for AirPods, available from https://support.apple.com/guide/airpods/set-headphone-accommodations-

		devcd05671ab/web. *See* INGENIOSPEC-013296-013297; Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3, available from https://support.apple.com/en-us/120992. *See* INGENIOSPEC-013442-013448;
	Beats Fit Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Powerbeats Pro 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	As such, the Accused Instrumentalities, including the Accused Host Devices (e.g., iPhone 14) when paired with the Accused Headset Devices (e.g., Apple AirPods Pro 2), are configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user, and do so using at least signal amplification. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

1b4. the mobile communication device configured to transmit the customized audio output signals to the pair of ear buds,	The Accused Host Devices are configured to transmit the customized audio output signals to the pair of ear buds of the Accused Headset Devices. For example, the Accused Host Devices are configured to paired with one of the Accused Headset Devices via Bluetooth. Each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible. *See* https://support.apple.com/guide/iphone/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011284 to INGENIOSPEC-011285), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011436 to INGENIOSPEC-011437), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011438 to INGENIOSPEC-011440), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011454 to INGENIOSPEC-011456), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/16.0/ios/16.0 (INGENIOSPEC-011457 to INGENIOSPEC-011459), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/17.0/ios/17.0 (INGENIOSPEC-011460 to INGENIOSPEC-011462), https://support.apple.com/guide/iphone/connect-bluetooth-accessories-iph3c50f191/18.0/ios/18.0 (INGENIOSPEC-011290 to INGENIOSPEC-011291); https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/13.0/ipados/13.0 (INGENIOSPEC-011432 to INGENIOSPEC-011433), https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/14.0/ipados/14.0 (INGENIOSPEC-011434 to INGENIOSPEC-011435), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/15.0/ipados/15.0 (INGENIOSPEC-011445 to INGENIOSPEC-011447), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/16.0/ipados/16.0 (INGENIOSPEC-011448 to INGENIOSPEC-011450), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/17.0/ipados/17.0 (INGENIOSPEC-011451 to INGENIOSPEC-011453), https://support.apple.com/guide/ipad/connect-bluetooth-accessories-ipad997da4cf/18.0/ipados/18.0 (INGENIOSPEC-011288 to INGENIOSPEC-011289); https://support.apple.com/guide/ipod-touch/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011286 to INGENIOSPEC-011287), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011441 to INGENIOSPEC-011442), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011443 to INGENIOSPEC-011444), https://support.apple.com/guide/ipod-touch/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011463 to INGENIOSPEC-011465); https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-with-your-mac-blth1004/10.13/mac/10.13 (INGENIOSPEC-011272 to INGENIOSPEC-011272),

	https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.14/mac/10.14 (INGENIOSPEC-011273 to INGENIOSPEC-011273), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.15/mac/10.15 (INGENIOSPEC-011274 to INGENIOSPEC-011274), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/11.0/mac/11.0 (INGENIOSPEC-011275 to INGENIOSPEC-011275), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/12.0/mac/12.0 (INGENIOSPEC-011276 to INGENIOSPEC-011276), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/13.0/mac/13.0 (INGENIOSPEC-011277 to INGENIOSPEC-011278), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/14.0/mac/14.0 (INGENIOSPEC-011279 to INGENIOSPEC-011280), https://support.apple.com/guide/mac-help/connect-a-wireless-accessory-blth1004/15.0/mac/15.0 (INGENIOSPEC-011281 to INGENIOSPEC-011283); https://support.apple.com/en-us/109319 (INGENIOSPEC-011181 to INGENIOSPEC-011183), https://support.apple.com/en-us/105059 (INGENIOSPEC-011523 to INGENIOSPEC-011525), https://support.apple.com/en-us/104989 (INGENIOSPEC-011292 to INGENIOSPEC-011294), https://support.apple.com/guide/watch/play-music-apd70768b20b/watchos (INGENIOSPEC-011421 to INGENIOSPEC-011425); https://support.apple.com/en-us/102227 (INGENIOSPEC-011531 to INGENIOSPEC-011532), https://support.apple.com/guide/tv/use-airpods-or-beats-with-apple-tv-atvb9b4521cf/tvos (INGENIOSPEC-011526 to INGENIOSPEC-011527); https://support.apple.com/en-us/118516 (INGENIOSPEC-011533 to INGENIOSPEC-011534), https://support.apple.com/en-us/118522 (INGENIOSPEC-011528 to INGENIOSPEC-011530); https://support.apple.com/guide/beats/pair-beats-dev46c519179/web (INGENIOSPEC-011396 to INGENIOSPEC-011399). Also, each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are *also* Bluetooth-compatible. 

	Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Using Bluetooth, each of the Accused Host Devices is capable of wirelessly connecting with the ear buds of the Accused Headset Devices. When connected, the Accused Headset Devices can play audio transmitted by the Accused Host Devices. To play audio, the Accused Host Devices are configured to transmit the customized audio output signals to the pair of ear buds of the Accused Headset Devices.  Play songs from your library 1. Go to the Music app on your iPhone. 2. Tap Library, then tap a category, such as Albums or Songs; tap Downloaded to view only music stored on iPhone. Tip: To play songs from an artist's entire catalog—mixing hits and deep cuts—go to an artist page, then tap next to the artist's name. 3. Scroll to browse—or type in the search field to filter your results—to find what you want to play. 4. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist. You can also touch and hold a playlist or album, then tap Play. To change the list of Library categories, tap , tap Edit Sections, then select categories you'd like to add, such as Genres and Compilations. Tap any existing categories to remove them. **Source**: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Stream recommended songs

1. Go to the Music app on your iPhone.
2. Do any of the following to find music you want to play:
   - *View recommendations tailored for you:* Tap Home, then tap a playlist or album.
   - *See what's new in Apple Music:* Tap New, then find music by mood, new releases, charts, and more.
   - *Search the Apple Music catalog:* See Search for music.
3. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Play a podcast

1. Go to the Podcasts app on your iPhone.
2. Search or browse to find an episode, then tap ▶ below an episode title. You can also do any of the following:

   - *Jump to a chapter:* Tap ⌄ next to the name of the current chapter, then tap the chapter you want to play.
   - *Jump to a specific time:* Drag the slider above the player controls. (If the slider doesn't appear, tap the player at the bottom to open the Now Playing screen.)
   - *Resume playing a previous show or episode:* Tap Home, then tap an episode below Recently Played.

Tip: To jump to a specific time, drag the slider below the episode information. (If the slider doesn't appear, tap the player near the bottom of the screen to open Now Playing.)

Source: https://support.apple.com/guide/iphone/listen-to-podcasts-iph3a22707a5/ios (INGENIOSPEC-011378 to INGENIOSPEC-011381)

Play and pause audio

1. Wear one or both AirPods, and make sure they're connected to your device.
2. Go to an audio app, then play something—for example, a song in the Music app or an audiobook in the Books app.
3. To pause or stop the audio, do one of the following:

   - *AirPods 1 or 2:* To pause audio while listening with both AirPods, remove one. When you return it to your ear, playback resumes automatically.

     Note: You can also set either of your AirPods to pause when you double-tap it, then resume playback when you double-tap it again. See Change settings for AirPods 1 and 2.

   - *AirPods 3, AirPods 4 (both models), or AirPods Pro (all models):* To pause audio while listening with both AirPods, remove one. You can also press the stem to pause audio.

     When you return it to your ear or press the stem again, playback resumes.

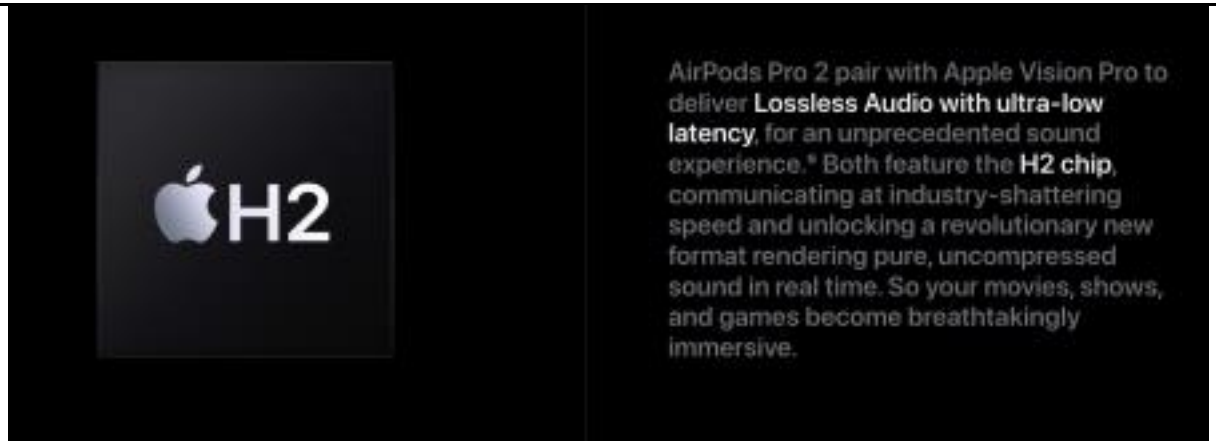
   - *AirPods Max:* Press the Digital Crown. Press it again to resume playback.

     You can also remove AirPods Max from your head.

If you don't want AirPods to automatically play and stop the audio, you can turn off automatic ear detection. If you don't want AirPods Max to automatically play and stop the audio, you can turn off automatic head detection.

Source: https://support.apple.com/guide/airpods/play-audio-on-your-airpods-dev216d7c746/web (INGENIOSPEC-011418 to INGENIOSPEC-011420)

Upon receipt of the customized audio output signals, the ear buds of the Accused Headset Devices are configured to play audio output based upon the receive signals.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

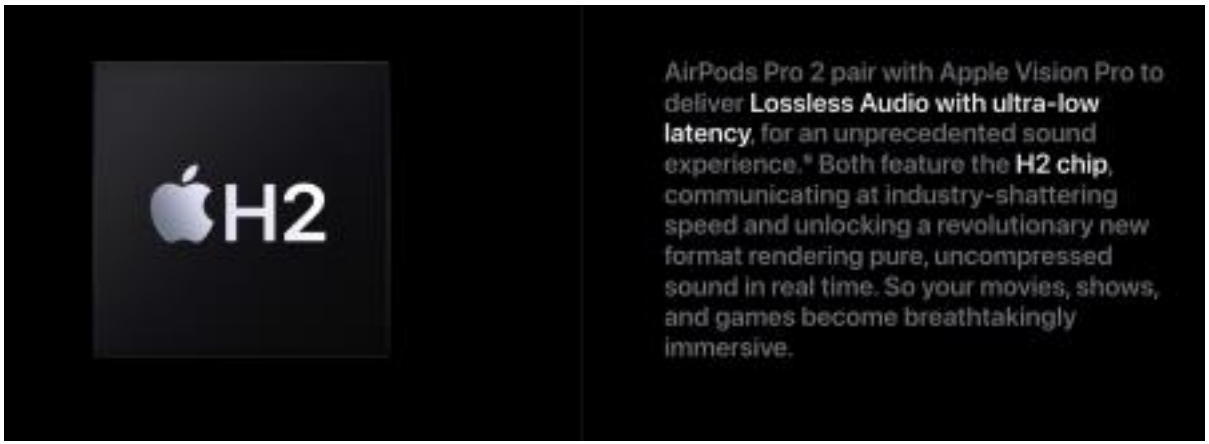
Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

			Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-

		013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
1c. wherein each of the ear buds is configured to receive at least a portion of the customized audio output signals transmitted by the mobile communication device,	Each of the ear buds of the Accused Headset Devices are configured to receive at least a portion of the customized audio output signals transmitted by the mobile communication device. For example, each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are Bluetooth-compatible.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Moreover, each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible. *See* https://support.apple.com/guide/iphone/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011284 to INGENIOSPEC-011285), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011436 to INGENIOSPEC-011437), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011438 to INGENIOSPEC-011440), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011454 to INGENIOSPEC-011456),	

	https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/16.0/ios/16.0 (INGENIOSPEC-011457 to INGENIOSPEC-011459), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/17.0/ios/17.0 (INGENIOSPEC-011460 to INGENIOSPEC-011462), https://support.apple.com/guide/iphone/connect-bluetooth-accessories-iph3c50f191/18.0/ios/18.0 (INGENIOSPEC-011290 to INGENIOSPEC-011291); https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/13.0/ipados/13.0 (INGENIOSPEC-011432 to INGENIOSPEC-011433), https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/14.0/ipados/14.0 (INGENIOSPEC-011434 to INGENIOSPEC-011435), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/15.0/ipados/15.0 (INGENIOSPEC-011445 to INGENIOSPEC-011447), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/16.0/ipados/16.0 (INGENIOSPEC-011448 to INGENIOSPEC-011450), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/17.0/ipados/17.0 (INGENIOSPEC-011451 to INGENIOSPEC-011453), https://support.apple.com/guide/ipad/connect-bluetooth-accessories-ipad997da4cf/18.0/ipados/18.0 (INGENIOSPEC-011288 to INGENIOSPEC-011289); https://support.apple.com/guide/ipod-touch/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011286 to INGENIOSPEC-011287), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011441 to INGENIOSPEC-011442), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011443 to INGENIOSPEC-011444), https://support.apple.com/guide/ipod-touch/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011463 to INGENIOSPEC-011465); https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-with-your-mac-blth1004/10.13/mac/10.13 (INGENIOSPEC-011272 to INGENIOSPEC-011272), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.14/mac/10.14 (INGENIOSPEC-011273 to INGENIOSPEC-011273), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.15/mac/10.15 (INGENIOSPEC-011274 to INGENIOSPEC-011274), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/11.0/mac/11.0 (INGENIOSPEC-011275 to INGENIOSPEC-011275), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/12.0/mac/12.0 (INGENIOSPEC-011276 to INGENIOSPEC-011276), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/13.0/mac/13.0 (INGENIOSPEC-011277 to INGENIOSPEC-011278), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/14.0/mac/14.0 (INGENIOSPEC-011279 to INGENIOSPEC-011280), https://support.apple.com/guide/mac-help/connect-a-wireless-accessory-blth1004/15.0/mac/15.0 (INGENIOSPEC-011281 to INGENIOSPEC-011283); https://support.apple.com/en-us/109319

	(INGENIOSPEC-011181 to INGENIOSPEC-011183), https://support.apple.com/en-us/105059 (INGENIOSPEC-011523 to INGENIOSPEC-011525), https://support.apple.com/en-us/104989 (INGENIOSPEC-011292 to INGENIOSPEC-011294), https://support.apple.com/guide/watch/play-music-apd70768b20b/watchos (INGENIOSPEC-011421 to INGENIOSPEC-011425); https://support.apple.com/en-us/102227 (INGENIOSPEC-011531 to INGENIOSPEC-011532), https://support.apple.com/guide/tv/use-airpods-or-beats-with-apple-tv-atvb9b4521cf/tvos (INGENIOSPEC-011526 to INGENIOSPEC-011527); https://support.apple.com/en-us/118516 (INGENIOSPEC-011533 to INGENIOSPEC-011534), https://support.apple.com/en-us/118522 (INGENIOSPEC-011528 to INGENIOSPEC-011530); https://support.apple.com/guide/beats/pair-beats-dev46c519179/web (INGENIOSPEC-011396 to INGENIOSPEC-011399). The Accused Headset Devices, such as the Apple AirPods Pro 2, are capable of pairing with the Accused Host Devices. **Pair AirPods with iPhone or iPad** Before you begin, make sure your device has the latest version of iOS or iPadOS installed. When pairing, your device must also be connected to a Wi-Fi or cellular network, or you may not have access to Find My features. 1. On your device, go to Settings > Bluetooth, turn on Bluetooth, then do one of the following: • *AirPods or AirPods Pro:* Open the case with your AirPods inside, then hold it next to your device. • *AirPods Max:* Take your AirPods Max out of the Smart Case, and within 60 seconds, hold them next to the device that you want to pair until the setup animation appears. If you don't see the animation, you can pair AirPods Max with your device manually. Go to Settings > Bluetooth, then select your AirPods. Press and hold the noise control button on AirPods Max for about 5 seconds, or until the light flashes white. If you have AirPods Max (USB-C), you can also pair your AirPods with your device by connecting them using a USB-C to USB-C cable. 2. Follow the onscreen instructions, then tap Done.

	Source: Pair AirPods with an Apple device - Apple Support (INGENIOSPEC-014020-014023) (available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web). Each ear bud of the Accused Headset Devices, such as the Apple AirPods Pro 2, is configured to receive customized audio output signals transmitted by an Accused Host Device. The received customized audio output signals are played (as customized audio output) using the ear buds' speaker.  **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



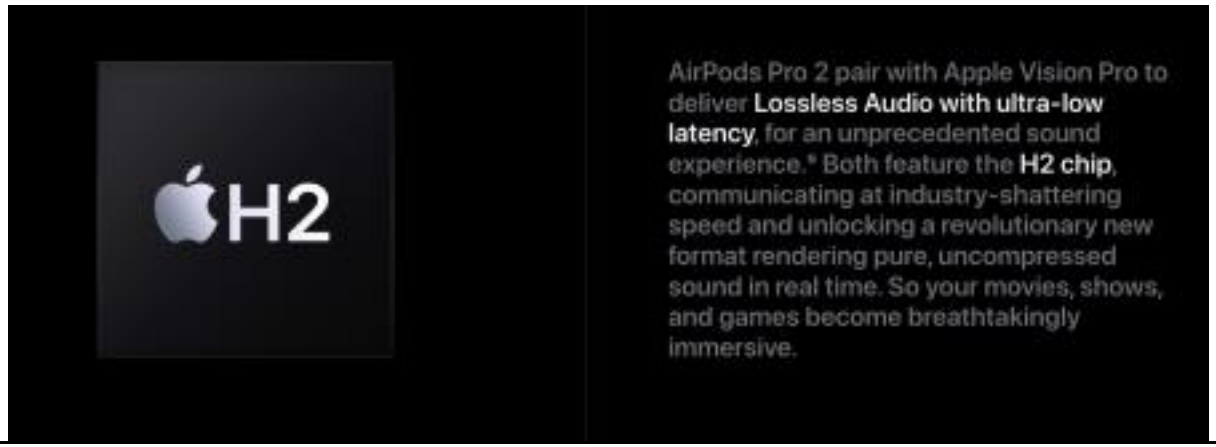
Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

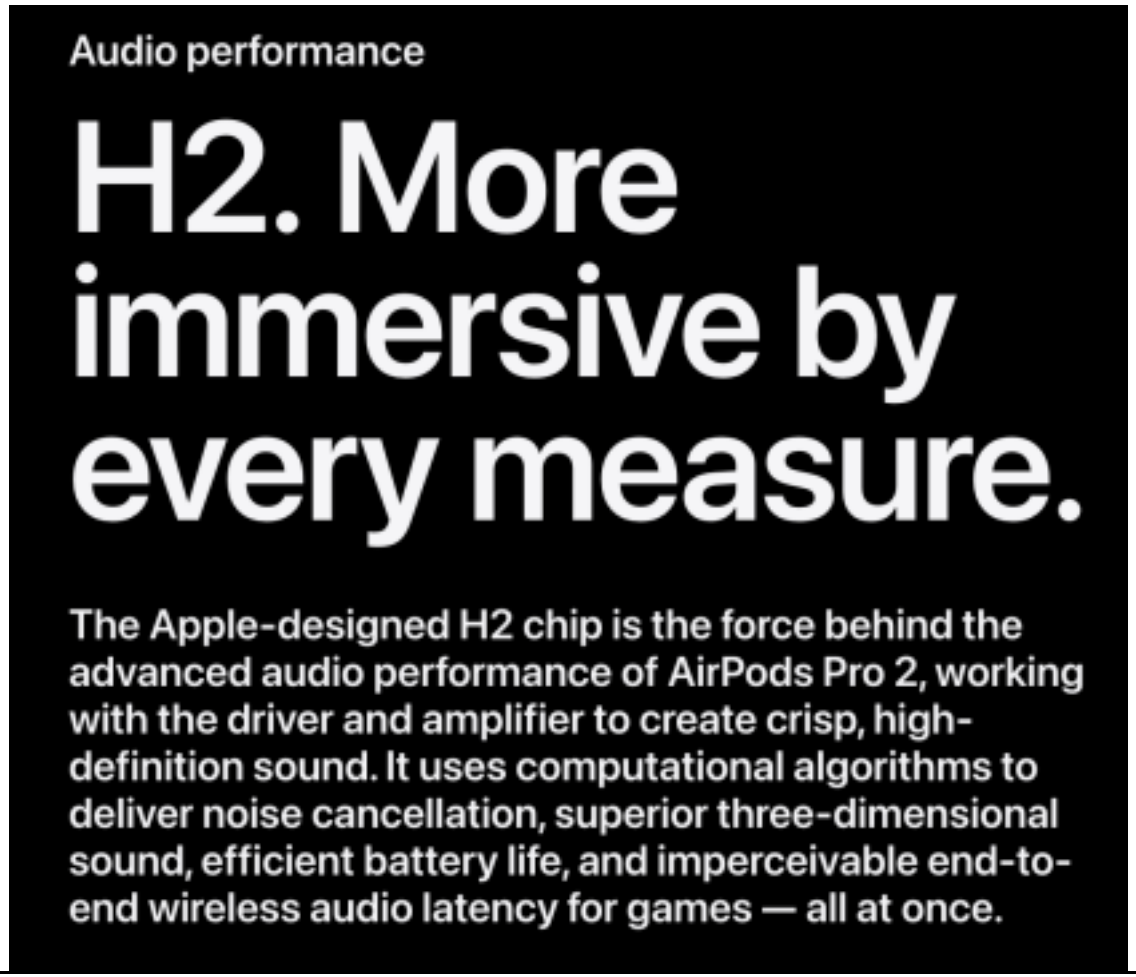
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

		Device	Citations
		Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;

		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from

			https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats User Guide - Pair Beats, available from https://support.apple.com/en-ca/guide/beats/dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014644-014647; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-

		beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	As such, each of Accuse Headset Devices is configured to receive customized audio output signals transmitted by the mobile communication device. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
1d. and wherein each of the ear buds is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals being received.	Each of the ear buds of the Accused Headset Devices are configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals being received. Each ear bud of the Accused Headset Devices is configured to receive customized audio output signals transmitted by the Accused Host Device via Bluetooth. *See* Claim 1c, *infra*. 	

	Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/). 

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

The customized audio output signals received by the Accused Headset Devices are used to generate customized audio output using one or more speakers of the Accused Headset Devices.



	Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).  The front of the speaker unit is a black diaphragm. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

	Device	Citations
	Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
	Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
	Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
	Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

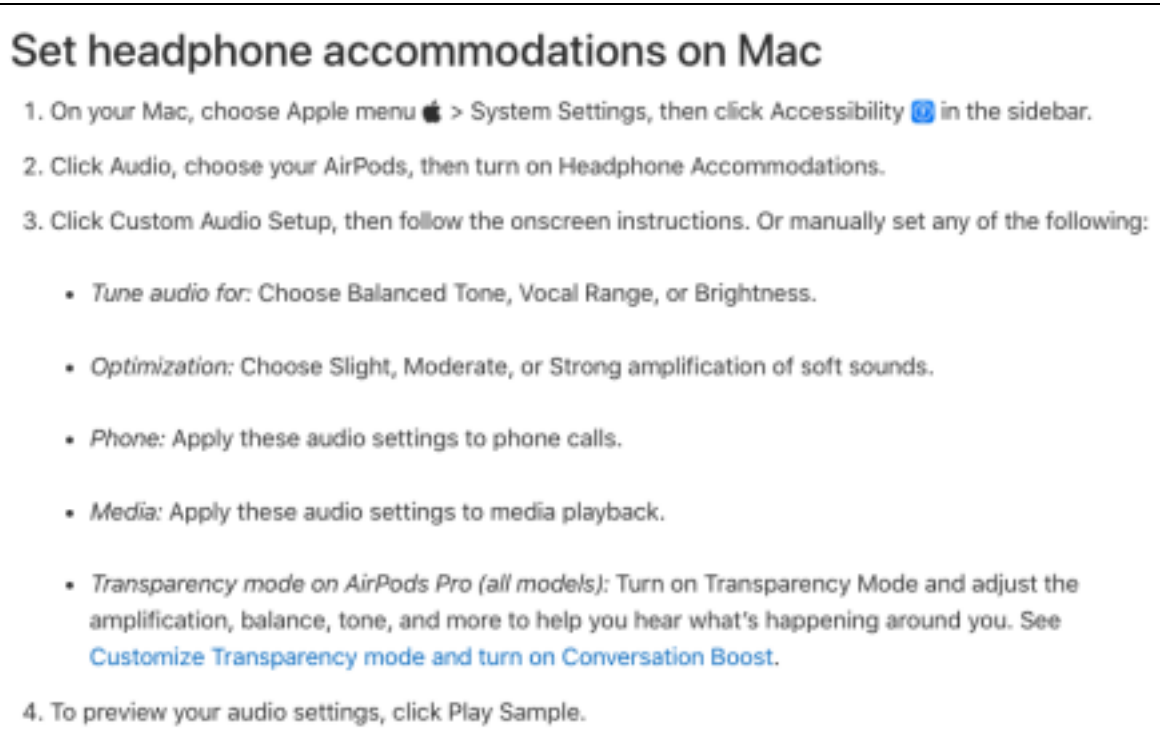
			Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;

	<table><tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;</td></tr></table> As such, each of the ear buds is configured to generate customized audio output for the user based on the customized audio output signals received from the Accused Host Device. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 2	**Evidence**
2. A personal audio system as recited in claim 1, wherein the mobile communication device is configured to establish the hearing profile for the user.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. Each of the Accused Host Devices is configured to store a hearing profile for the user. The hearing profile includes, but is not necessarily limited to, frequency-specific hearing thresholds, equalization settings, gain adjustments, dynamic range compression parameters, loudness preferences, and test results derived from user-specific hearing assessments. *See* Claim 1b2, *supra*. Each of the Accused Host Devices is configured to establish the hearing profile for the user via Headphone Accommodations, Custom Audio Setup, and other manually adjustable audio settings. *See* Claim 1b2, *supra*. As such, the mobile communication device, whether it is an iPhone, iPad, or Mac, can be used to establish the hearing profile for the user, such as by a hearing test of the user's hearing.

Set headphone accommodations on iPhone or iPad

1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations.
2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
3. To preview your audio settings, tap Play Sample.

Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)



Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

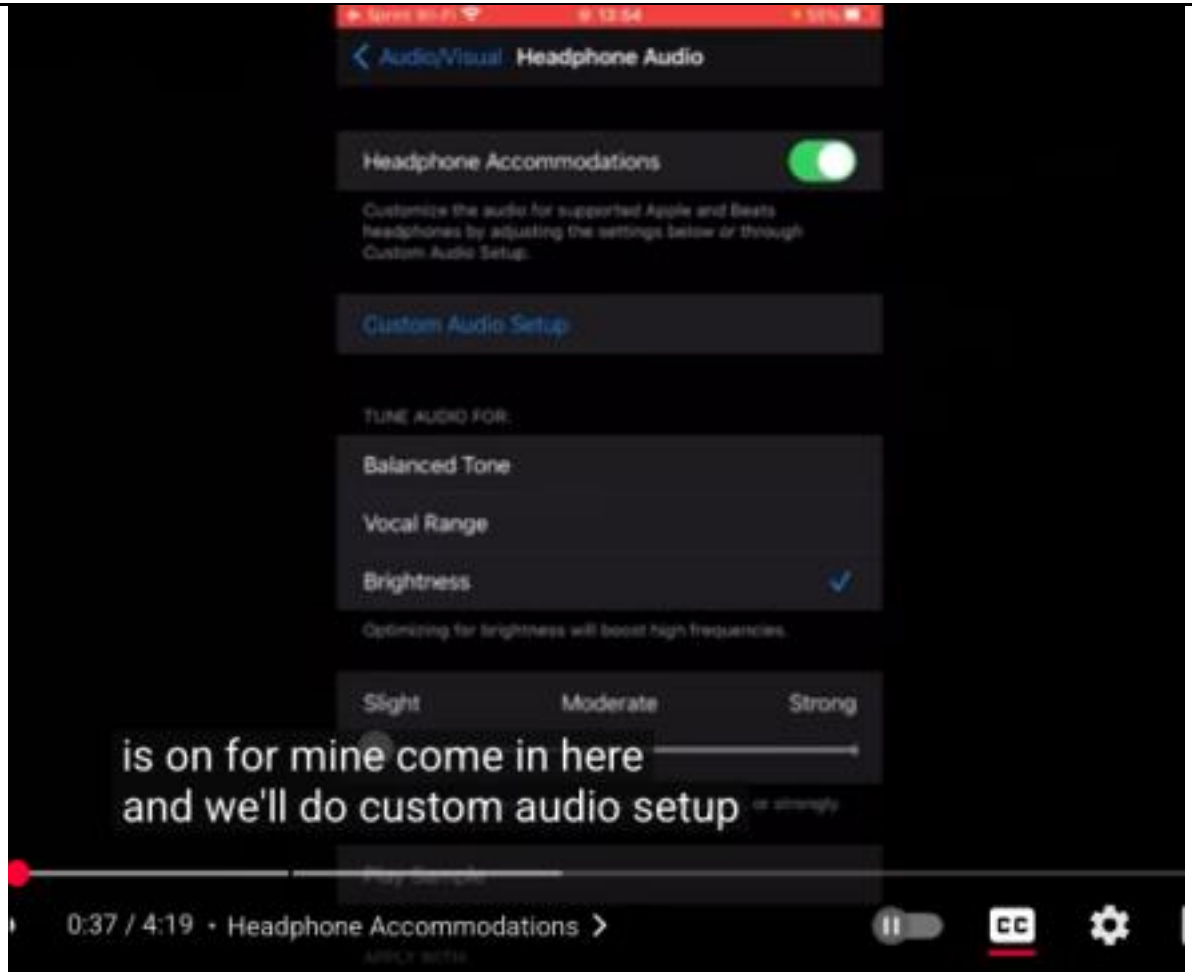
Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons.

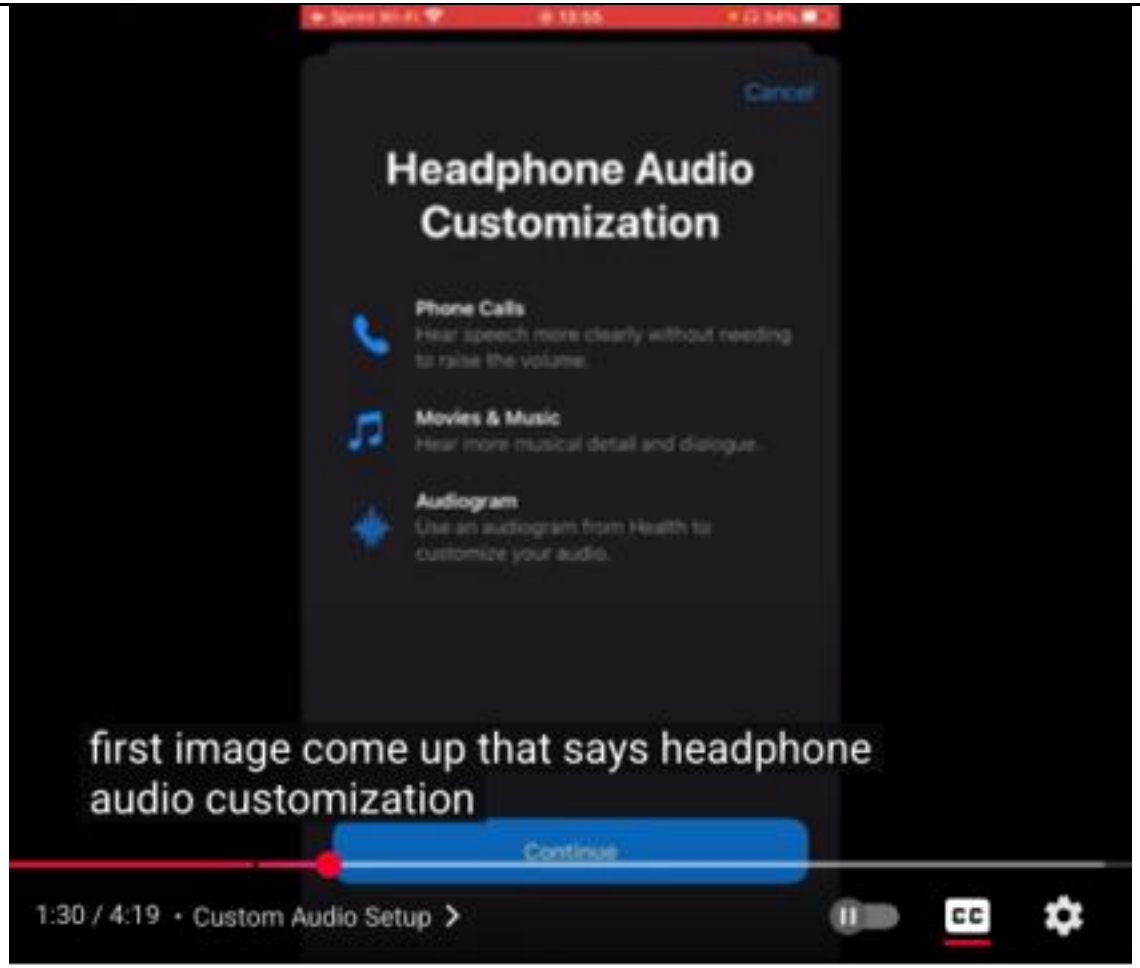
Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 3	Evidence

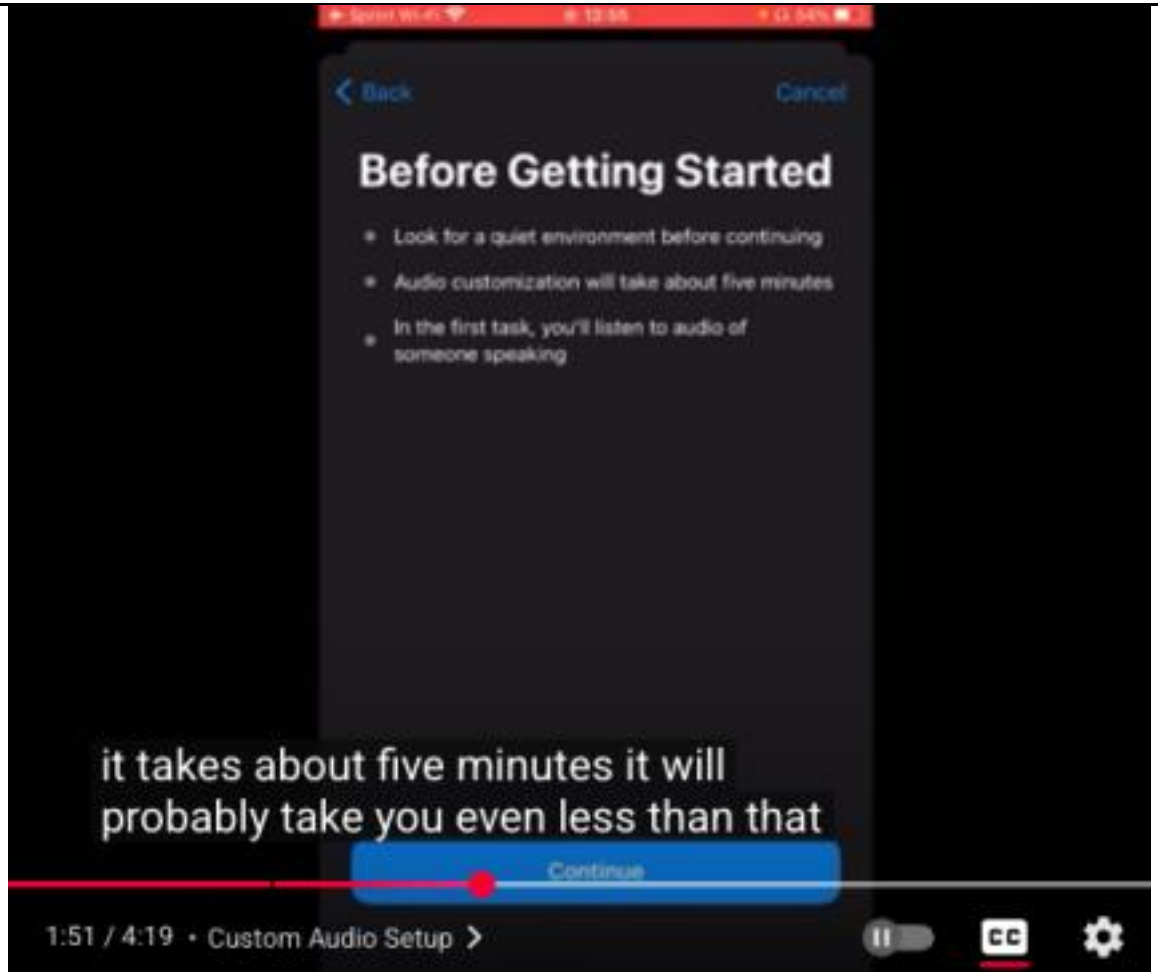
3. A personal audio system as recited in claim 2, wherein the hearing profile for the user is established by the mobile communication device at least via generating audio tones and outputting such to one or more of the ear buds and receiving a user indication corresponding to the user's ability to hear the generated audio tones.	Every claim limitation of claim 2 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. The Accused Host Devices are configured to store a hearing profile associated with the user. *See* Claim 1b2, *supra*. The hearing profile for the user is established by the Accused Host Device at least via generating audio tones, outputting such to one or more of the ear buds of the Accused Headset Devices, and receiving a user indication corresponding to the user's ability to hear the generated audio tones. For example, the user performs a plurality of steps, including customizing headphone audio levels. By customizing headphone audio levels, the iPhone or iPad is configured to customize audio output signals to "amplify soft sounds and adjust certain frequencies for [a user's] hearing needs [using] Headphone Accommodations." *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304). To set up "Headphone Accommodations" a user goes to **Settings > Accessibility > Audio & Visual** then taps **Headphone Accommodations**. The user then taps on **Custom Audio Setup** and follows the instructions on the screen. *See Id.*



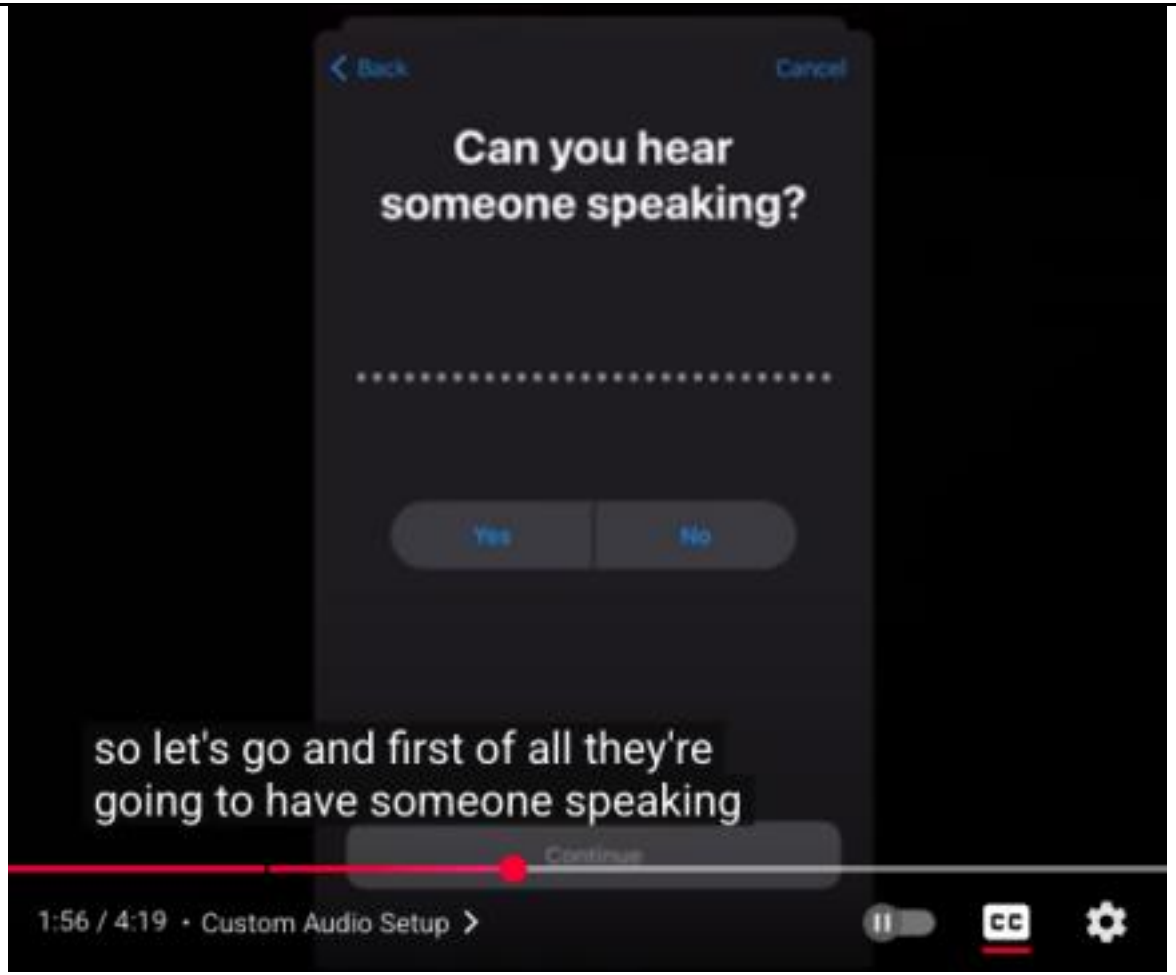
Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 0:37.



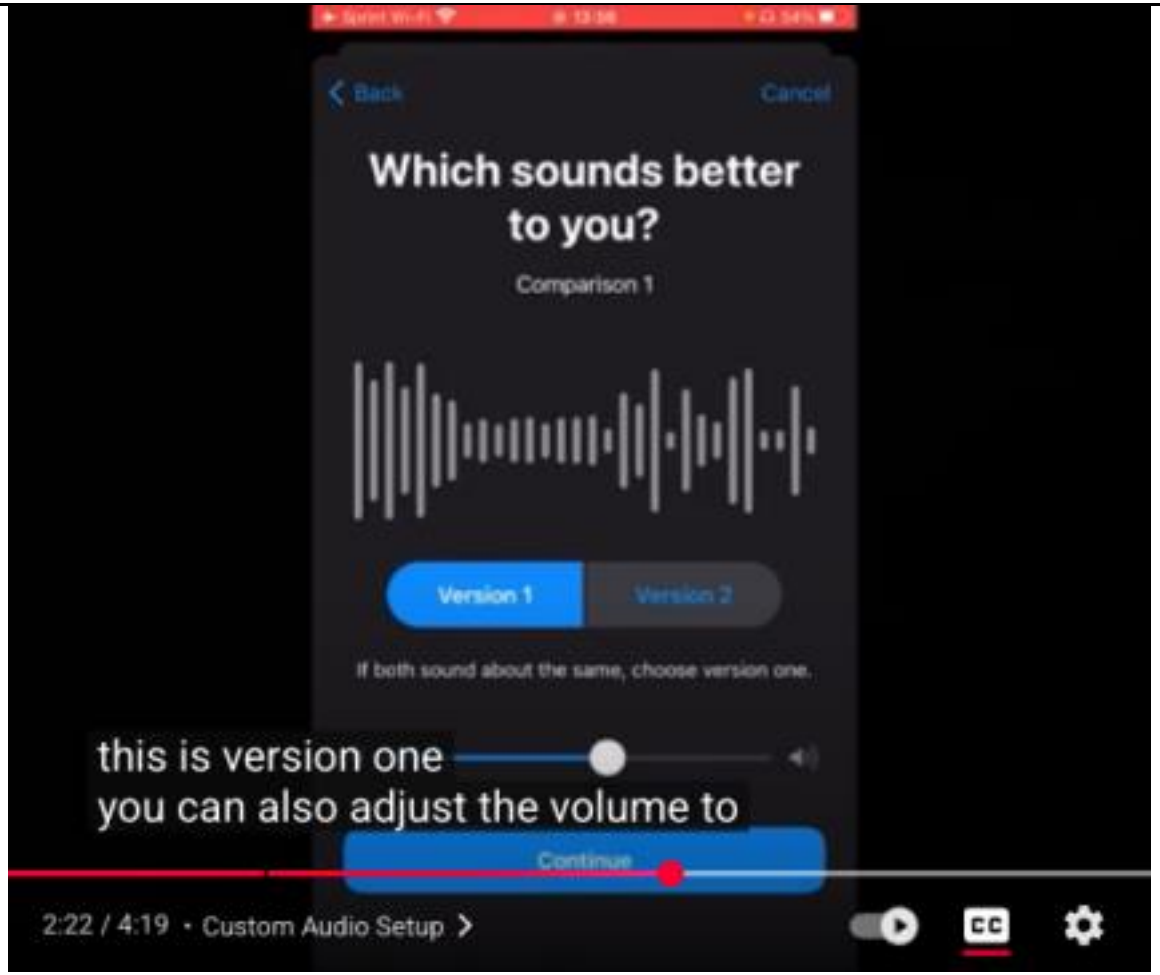
Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 1:30.



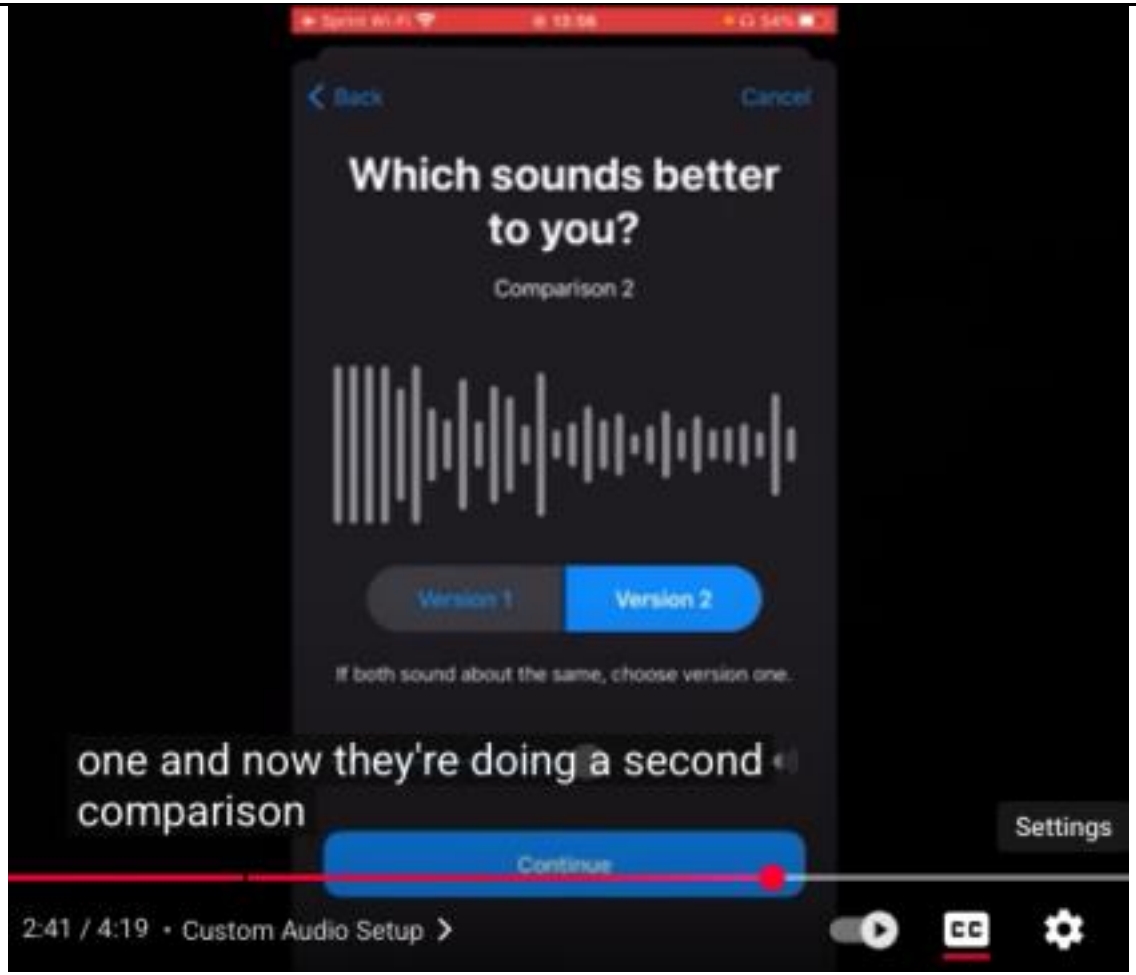
Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 1:51.



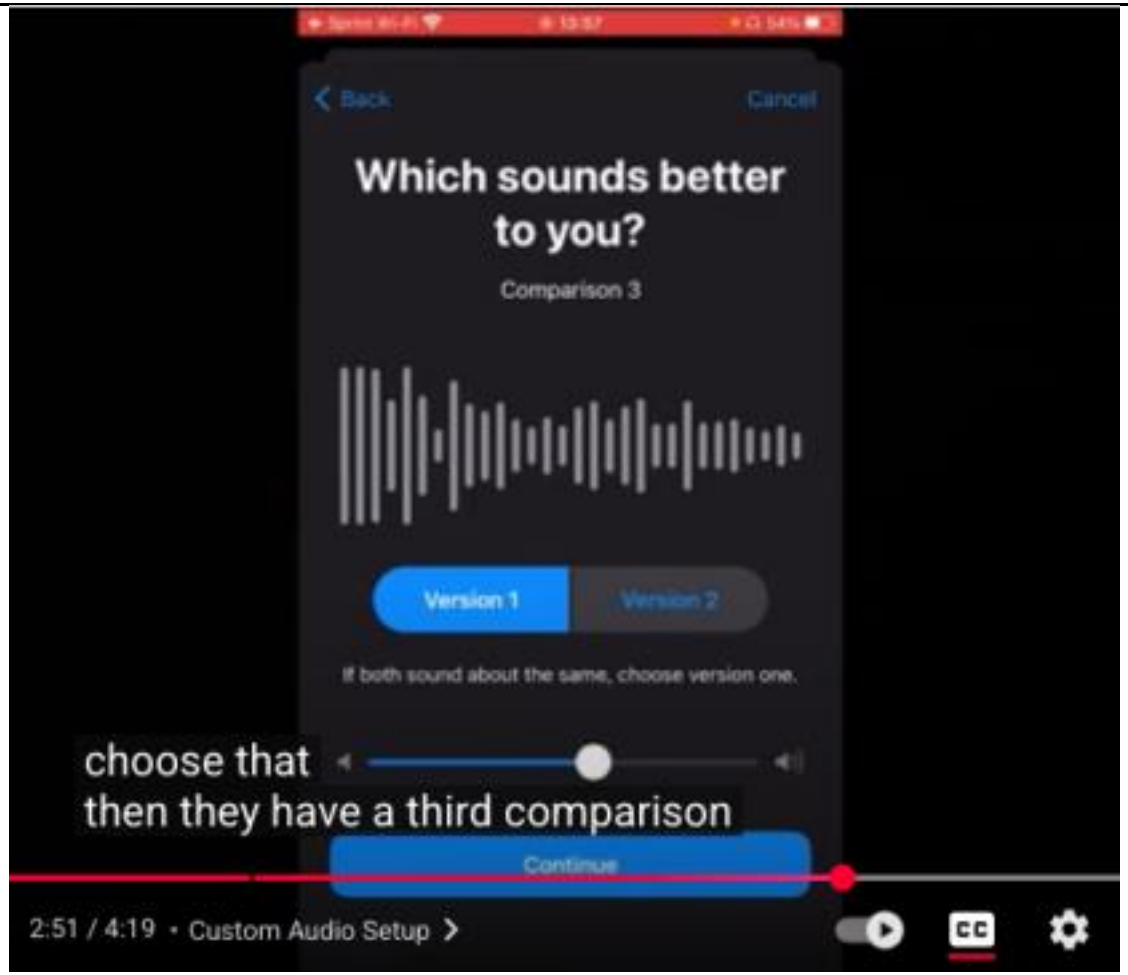
Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 1:56.



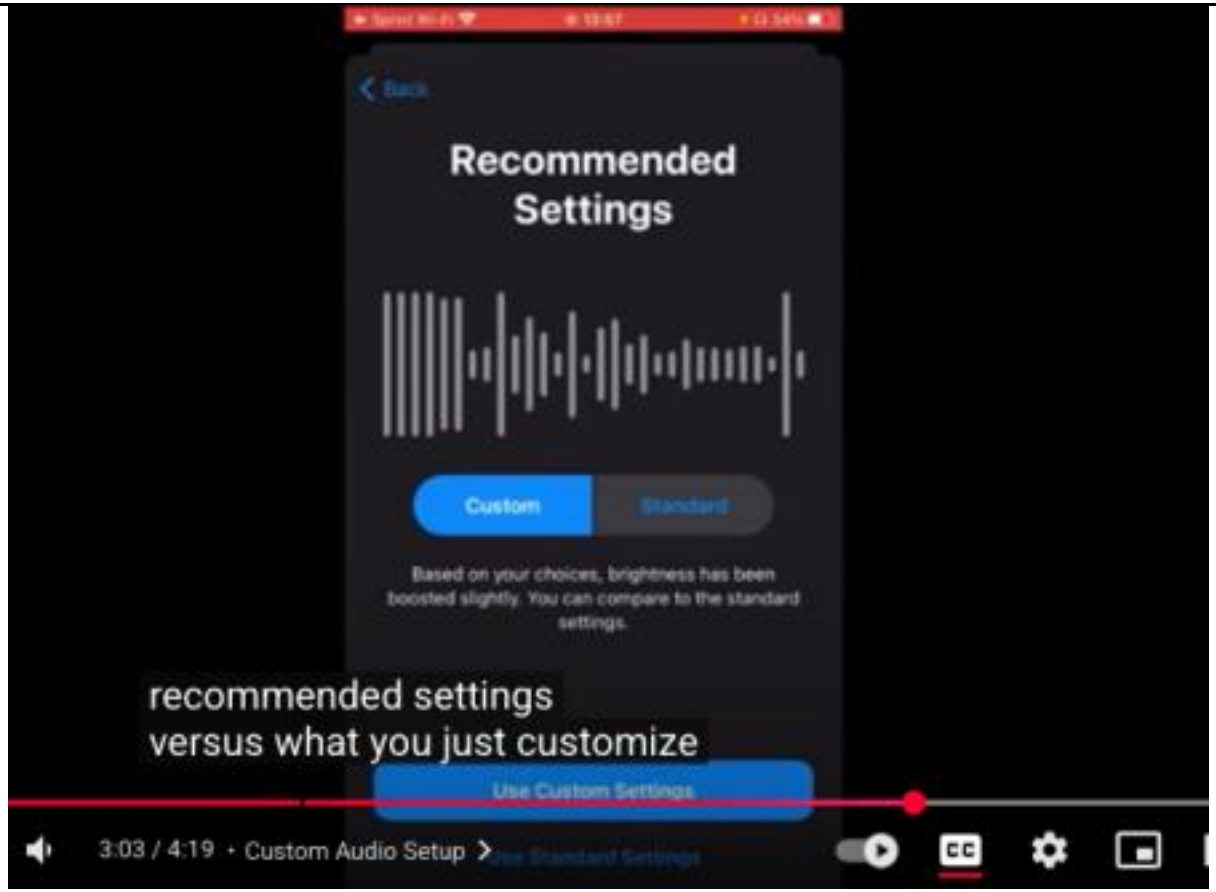
Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 2:22.



Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 2:41.



Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 2:51.



Source: https://www.youtube.com/watch?v=HmFxM3cvkmA (INGENIOSPEC-011299 to INGENIOSPEC-011301) at 3:03.

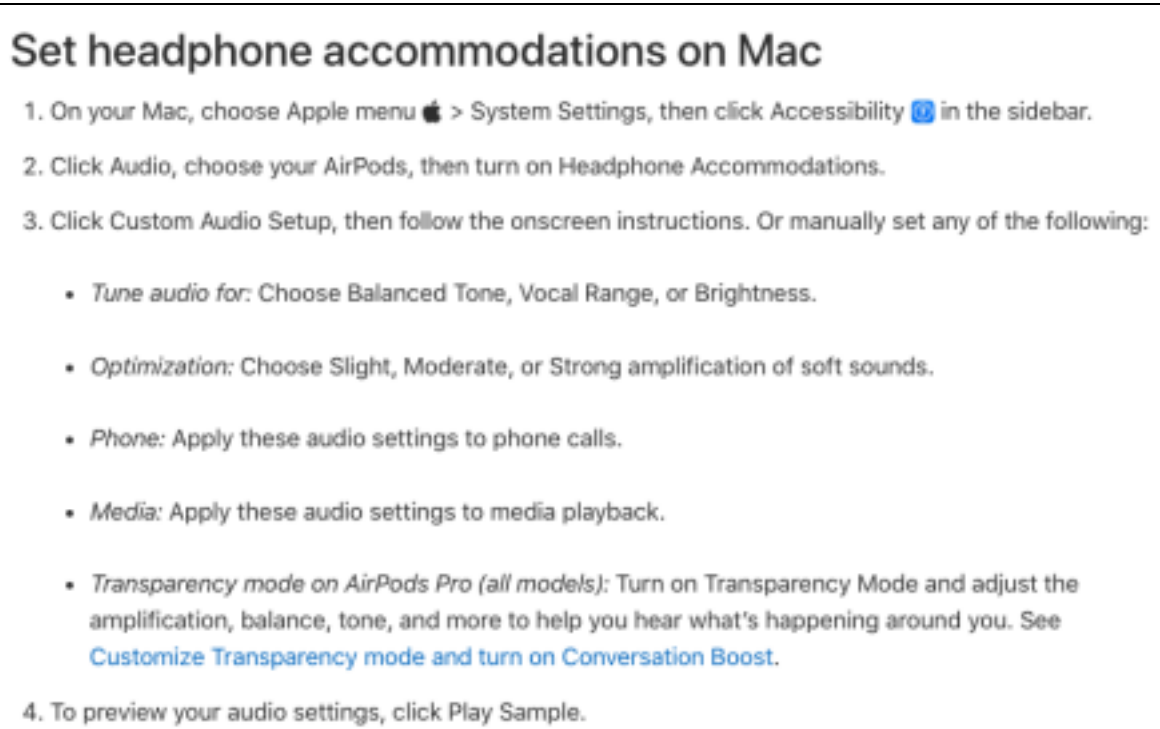
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons.

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 4	**Evidence**
4. A personal audio system as recited in claim 1, wherein the signal amplification is frequency-dependent amplification.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. The Accused Host Devices are configured to produce customized audio output signals using at least signal amplification. *See* Claim 1b3, *supra*. The signal amplification the Accused Host Devices are configured to perform is frequency-dependent amplification. For example, the Accused Host Devices, such as an iPhone 14, are configured to amplify certain signals, depending on the hearing profile associated with the user.

Set headphone accommodations on iPhone or iPad

1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations.
2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
3. To preview your audio settings, tap Play Sample.

Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)



Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 5	**Evidence**

5. A personal audio system as recited in claim 1, wherein each of the earbuds includes a speaker, and wherein the at least a portion of the customized audio output being generated by each of the ear buds is generated by the corresponding speaker.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of ear buds. Each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. Each of the ear buds of the Accused Headset Devices, such as AirPods Pro 2, includes a speaker.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



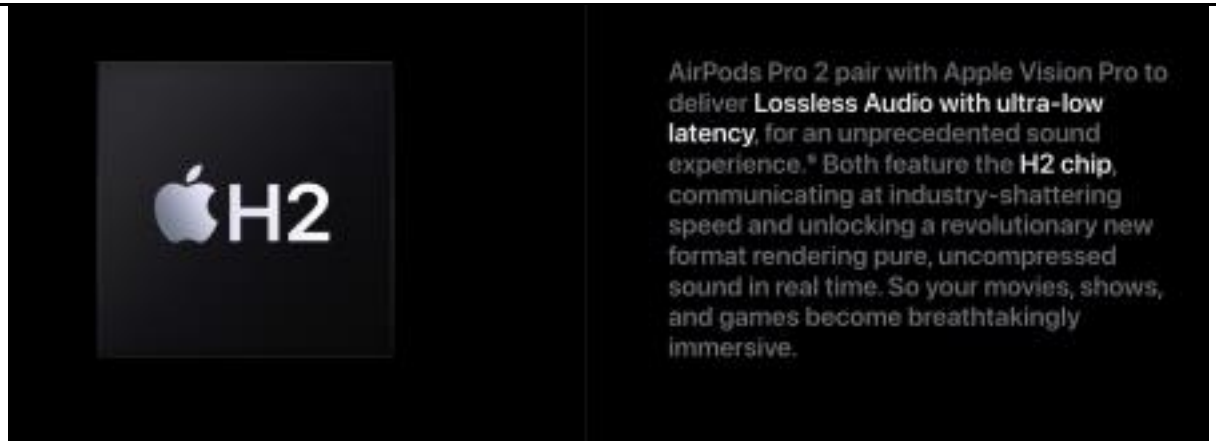
The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of the ear buds of the Accused Headset Devices, such as AirPods Pro 2, is configured to generate at least a portion of the customized audio output. *See* Claim 1d, *supra*. For example, each ear bud of the Accused Headset Devices is configured to receive customized audio output signals transmitted by the Accused Host Device. *See* Claim 1c, *infra*. The customized audio output signals received by the Accused Headset Devices are used to generate customized audio output using one or more speakers of the Accused Headset Devices.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

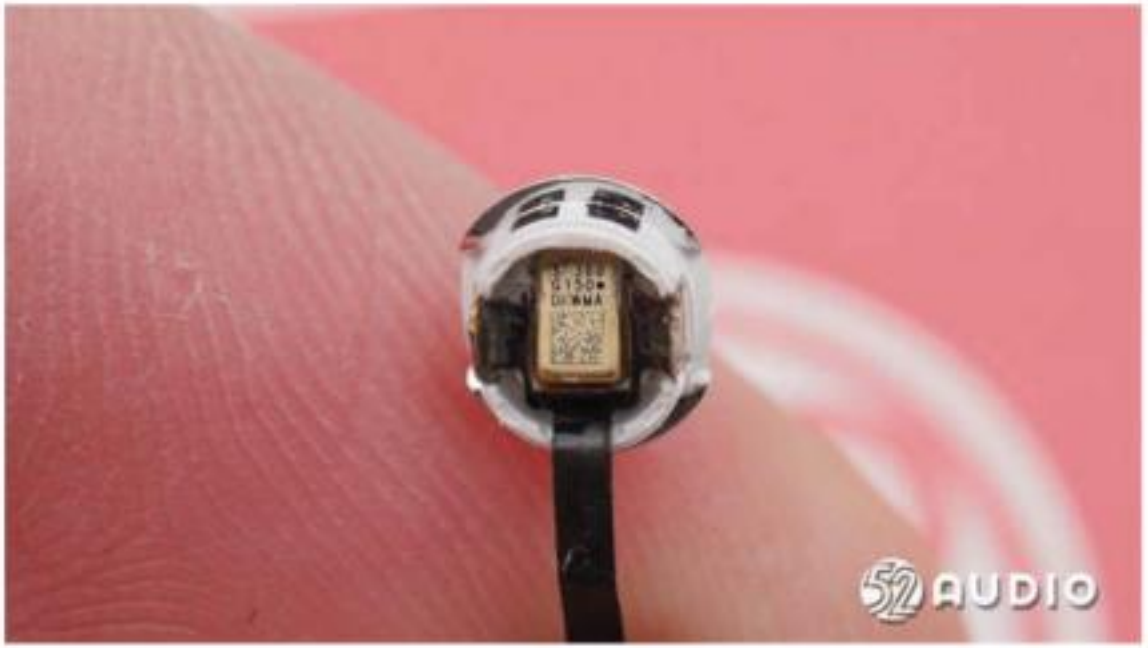
Device	Citations
Apple AirPods 2	If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from

		https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

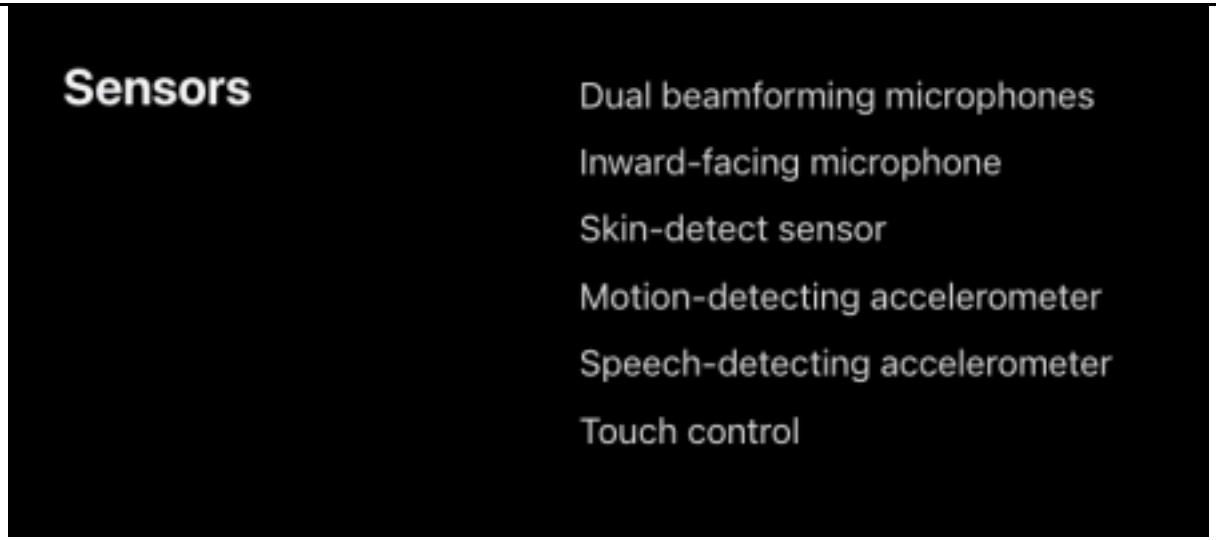
Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 6	**Evidence**
6. A personal audio system as recited in claim 1, wherein at least one of the earbuds in the pair of earbuds comprises an array of microphones configured for directional audio pickup.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises an array of microphones configured for directional audio pickup. For example, the array of microphones includes at least a first microphone and a second microphone. The first microphone can pick up sound from the user.



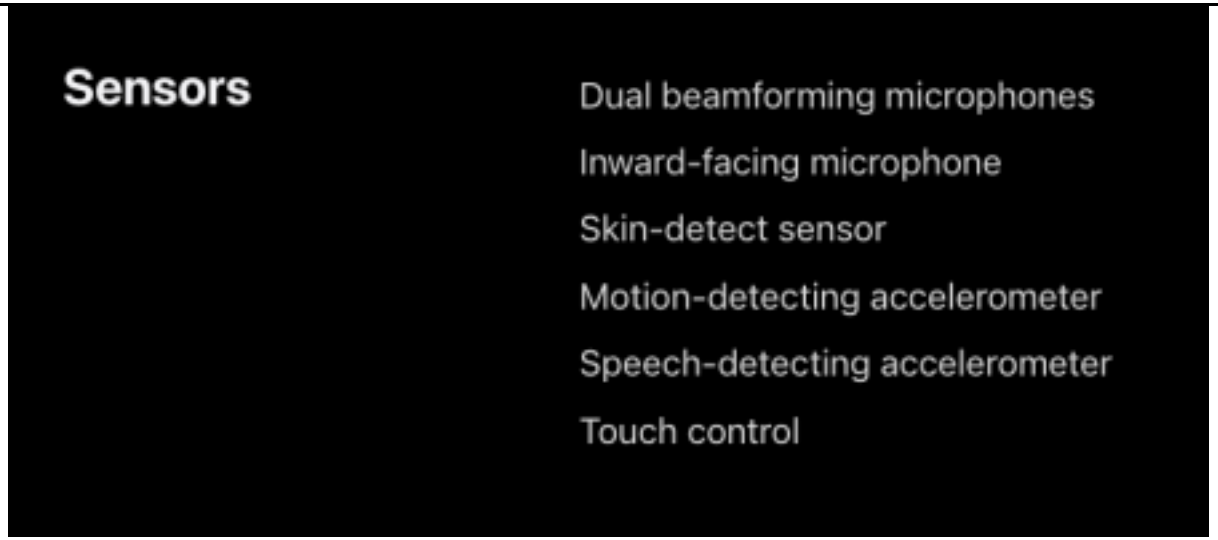
Bottom pickup microphone.

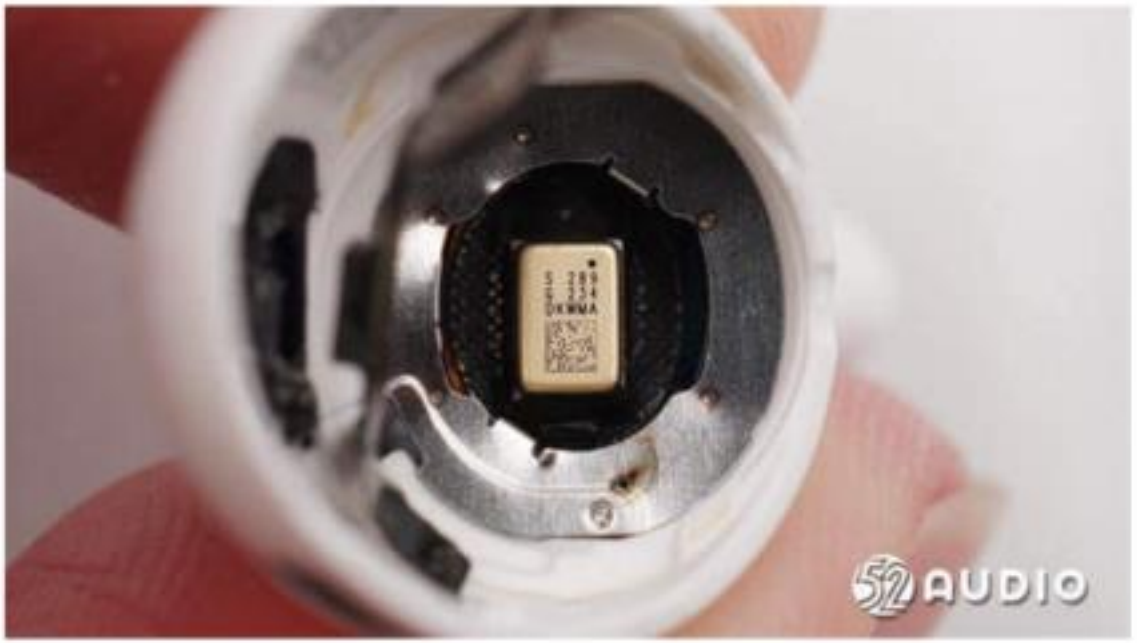
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). A second microphone can pick up ambient sound.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

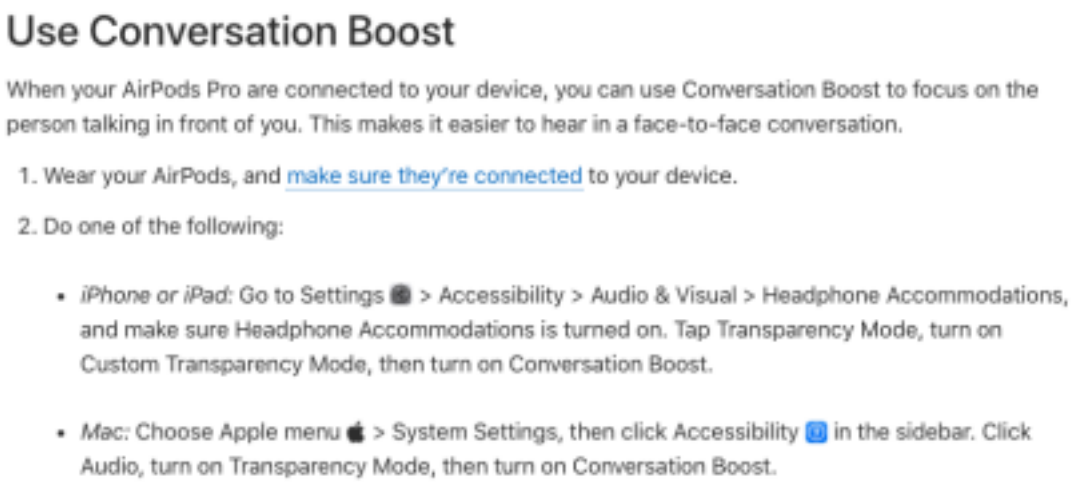
	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

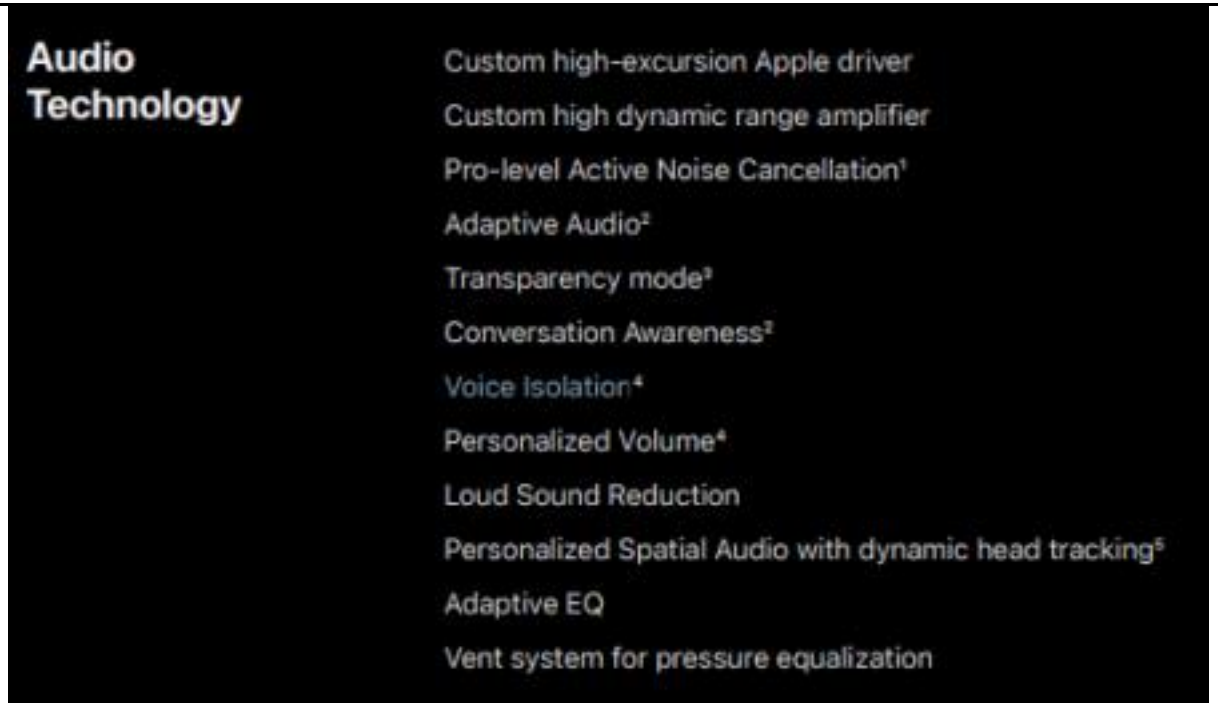


A metal protective cover is arranged above the noise cancellation microphone.

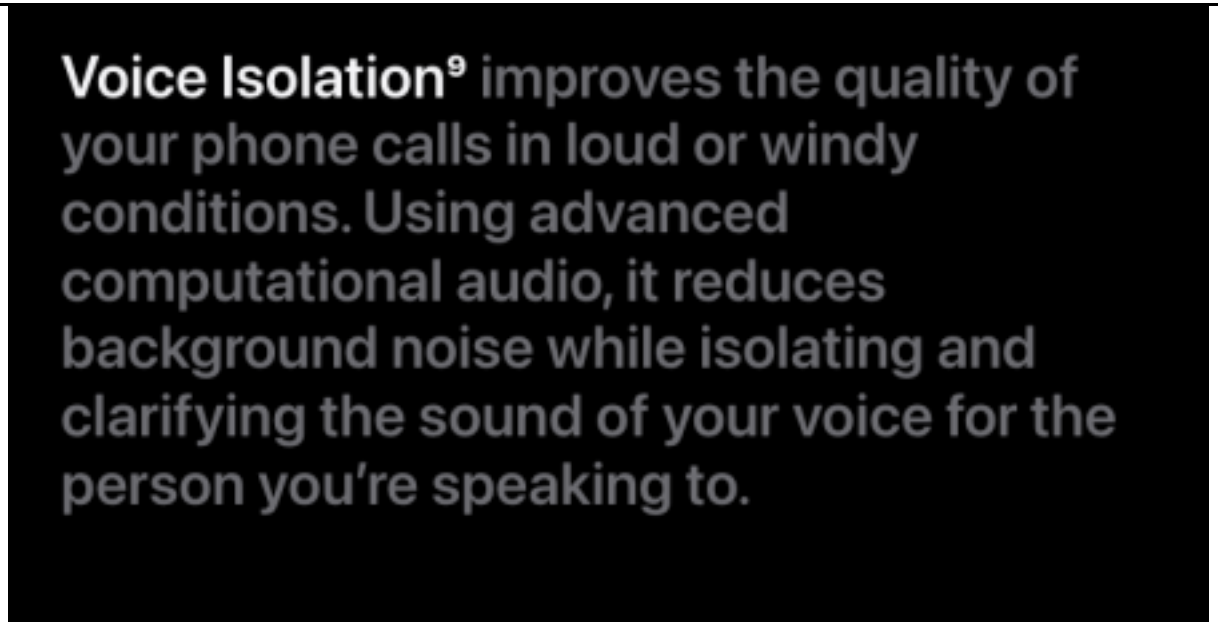
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

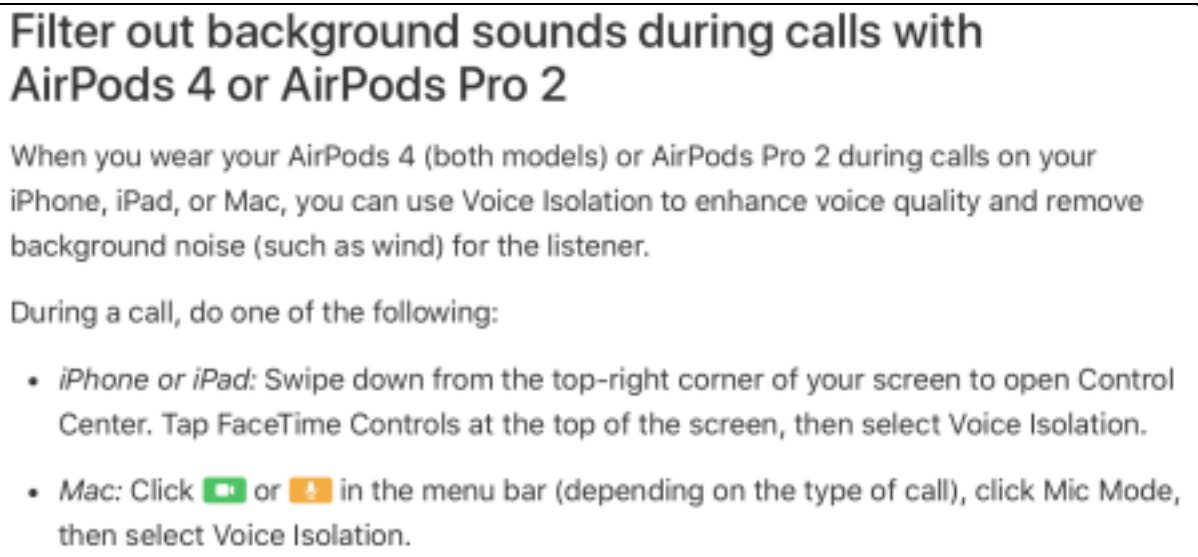
The microphones are configured for directional audio pickup. This includes, but is not necessarily limited to, Apple's Conversation Boost, Voice Isolation, and Noise Cancellation capabilities supported by Apple's Microphone Beamforming technology.

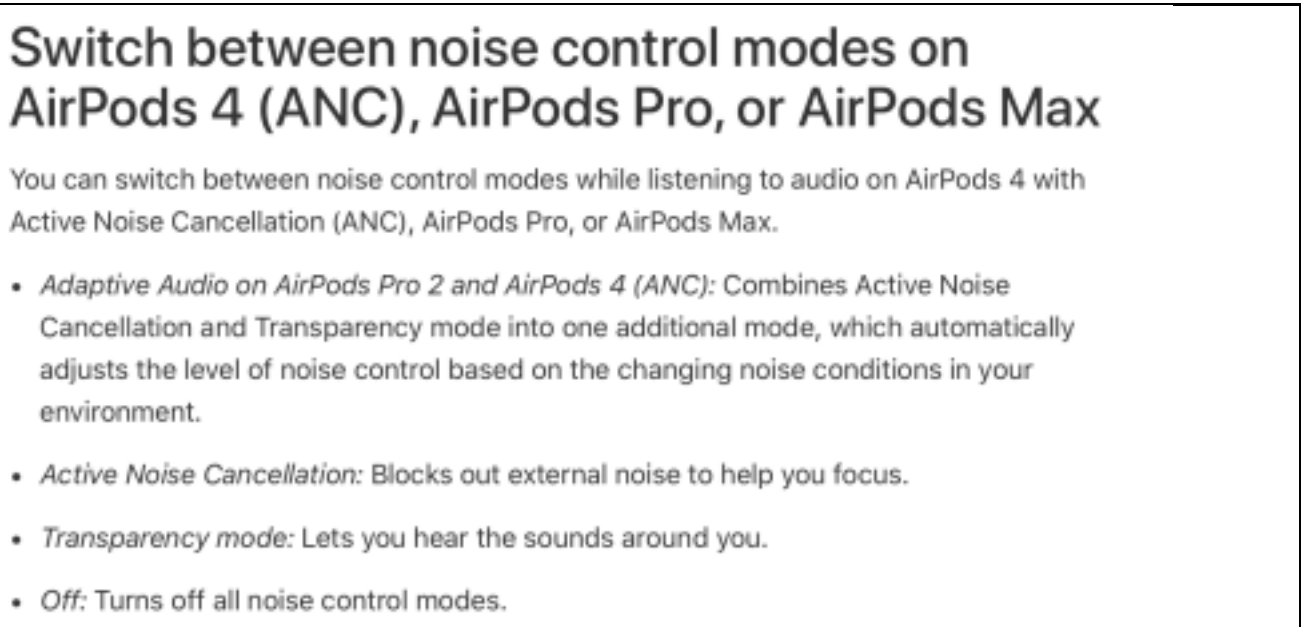
	The direction of the directional audio pickup is in front of the user when performing Conversation Boost.  **Source**: Customize Transparency mode and turn on Conversation Boost for AirPods Pro (INGENIOSPEC-014702-014703) (available from https://support.apple.com/guide/airpods/customize-transparency-mode-turn-conversation-dev966f5f818/web). The direction of the directional audio pickup is in front of the user when performing Voice Isolation.

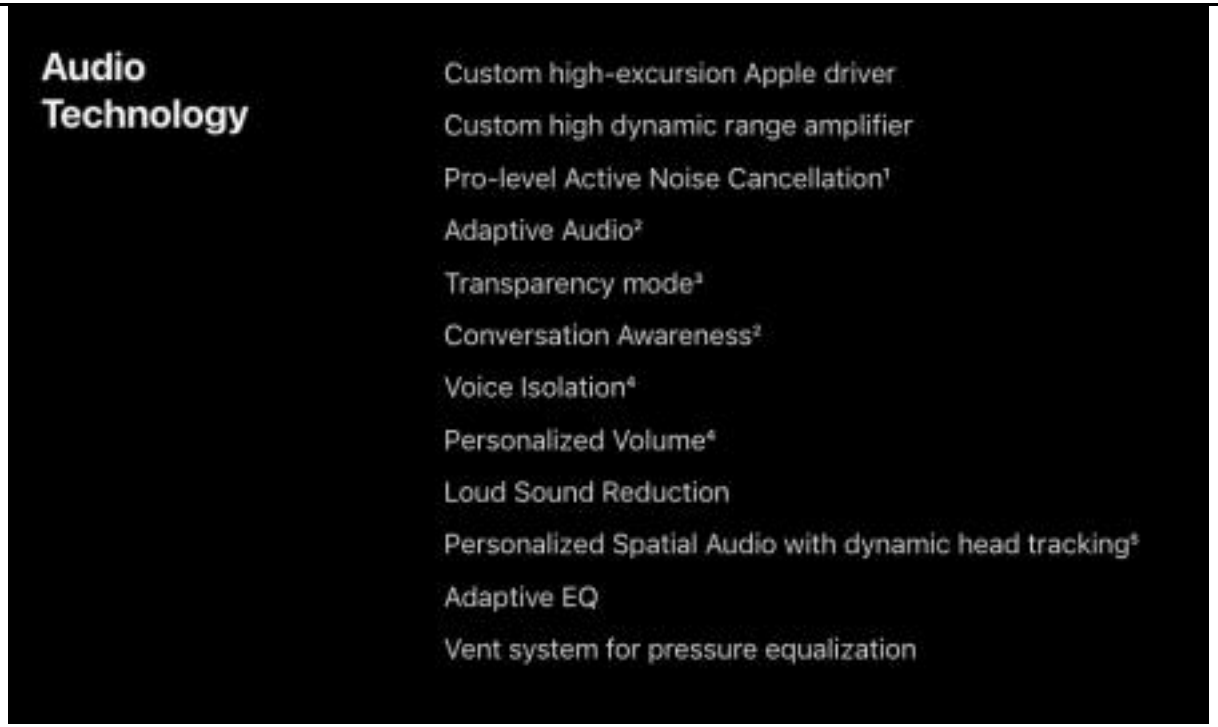


Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

	 **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

	 **Source**: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0). The direction of the directional audio pickup is outward from the user when performing Noise Cancellation.

	 **Source**: Switch between noise control modes - Apple Support (INGENIOSPEC-014039-014043) (available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

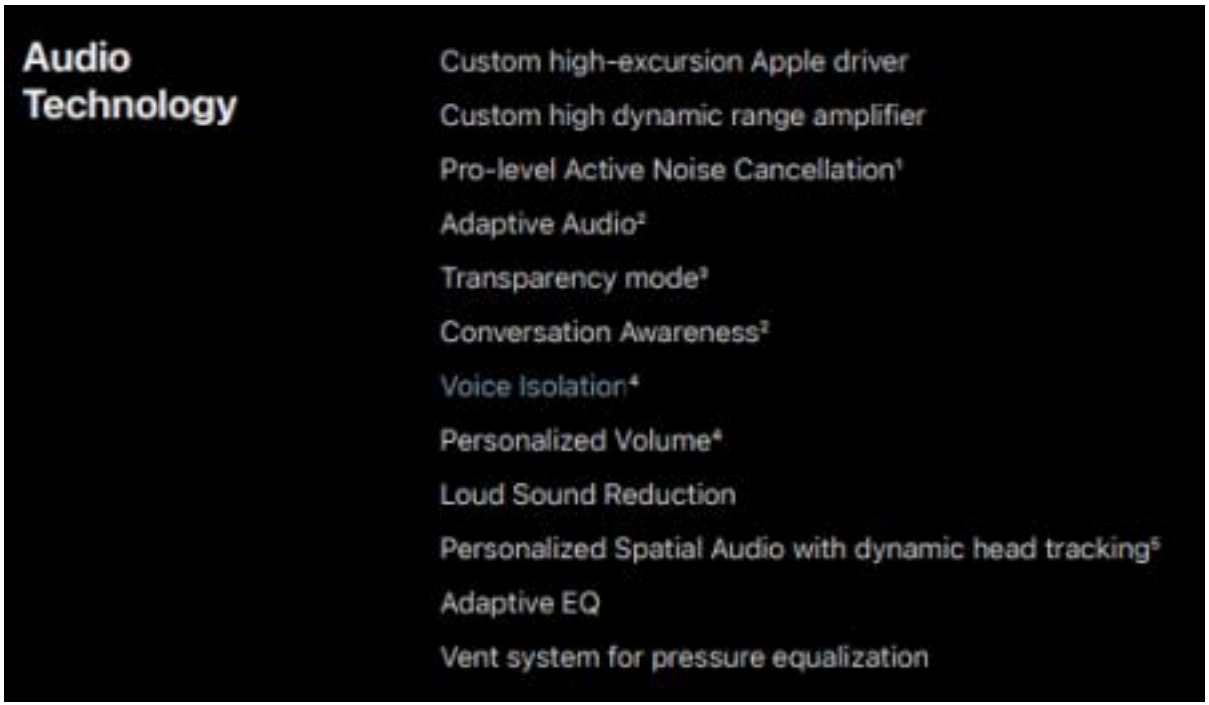
		Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from

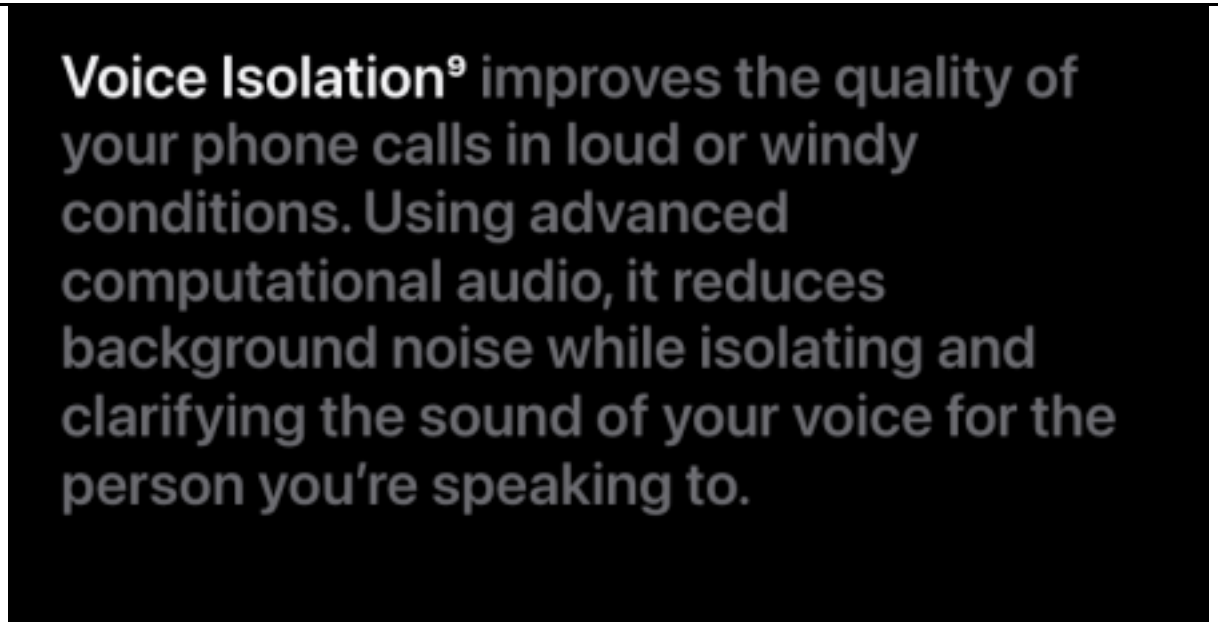
			https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; Customize Transparency mode and turn on Conversation Boost for AirPods Pro, available from https://support.apple.com/guide/airpods/customize-transparency-mode-turn-conversation-dev966f5f818/web. *See* INGENIOSPEC-014702-014703; How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-

			014672-014674; Switch between noise control modes - Apple Support, available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0. *See* INGENIOSPEC-014039-014043;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309; Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663;
		Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from

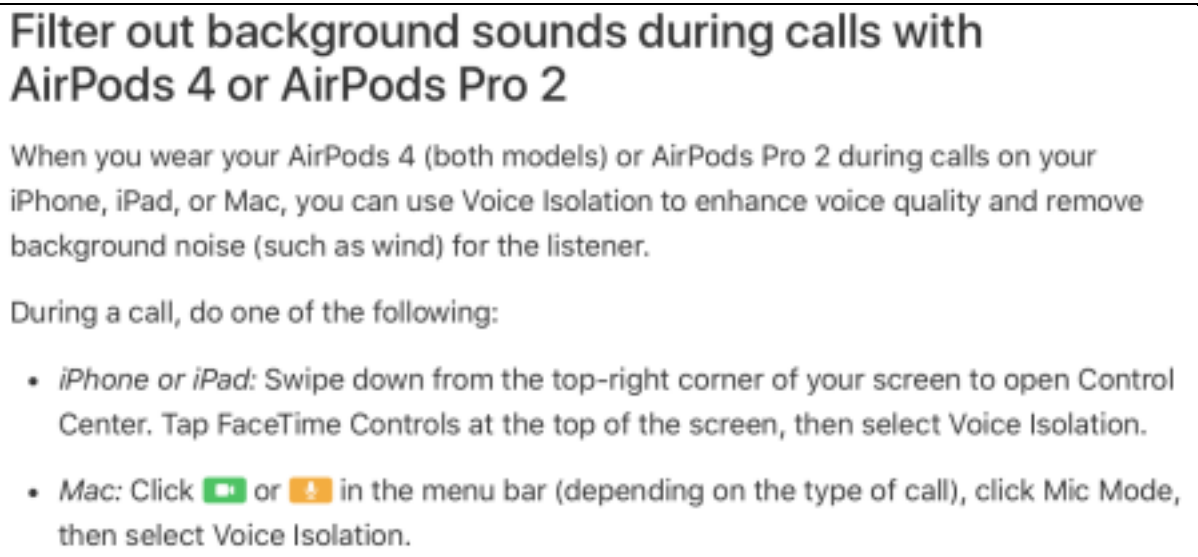
		https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

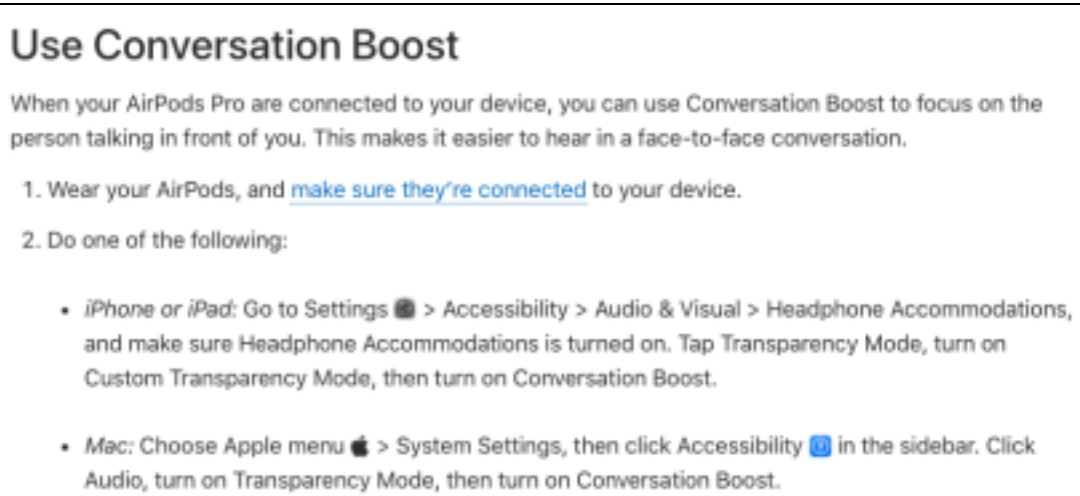
11,644,693 Claim 7	**Evidence**
7. A personal audio system as recited in claim 6, wherein direction of the directional audio pickup is in front of the user.	Every claim limitation of claim 6 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds comprises an array of microphones configured for directional audio pickup. *See* Claim 6, *supra*. The direction of the directional audio pickup is in front of the user. For example, the Accused Headset Devices are configured to pick up audio in front of the user (e.g., the user's mouth) using Voice Isolation. The Accused Headset Devices are also configured to focus on the person talking in front of the user, for example, using Conversation Boost -- making it easier to hear in face-to-face conversations. In both of these examples, the direction of the directional audio pickup is in front of the user.

	For example, the direction of the directional audio pickup is in front of the user when performing Voice Isolation.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

	 **Source**: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0). For example, the direction of the directional audio pickup is in front of the user when performing Conversation Boost.



Use Conversation Boost

When your AirPods Pro are connected to your device, you can use Conversation Boost to focus on the person talking in front of you. This makes it easier to hear in a face-to-face conversation.

1. Wear your AirPods, and make sure they're connected to your device.
2. Do one of the following:
   - *iPhone or iPad:* Go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, and make sure Headphone Accommodations is turned on. Tap Transparency Mode, turn on Custom Transparency Mode, then turn on Conversation Boost.
   - *Mac:* Choose Apple menu > System Settings, then click Accessibility in the sidebar. Click Audio, turn on Transparency Mode, then turn on Conversation Boost.

Source: Customize Transparency mode and turn on Conversation Boost for AirPods Pro (INGENIOSPEC-014702-014703) (available from https://support.apple.com/guide/airpods/customize-transparency-mode-turn-conversation-dev966f5f818/web).

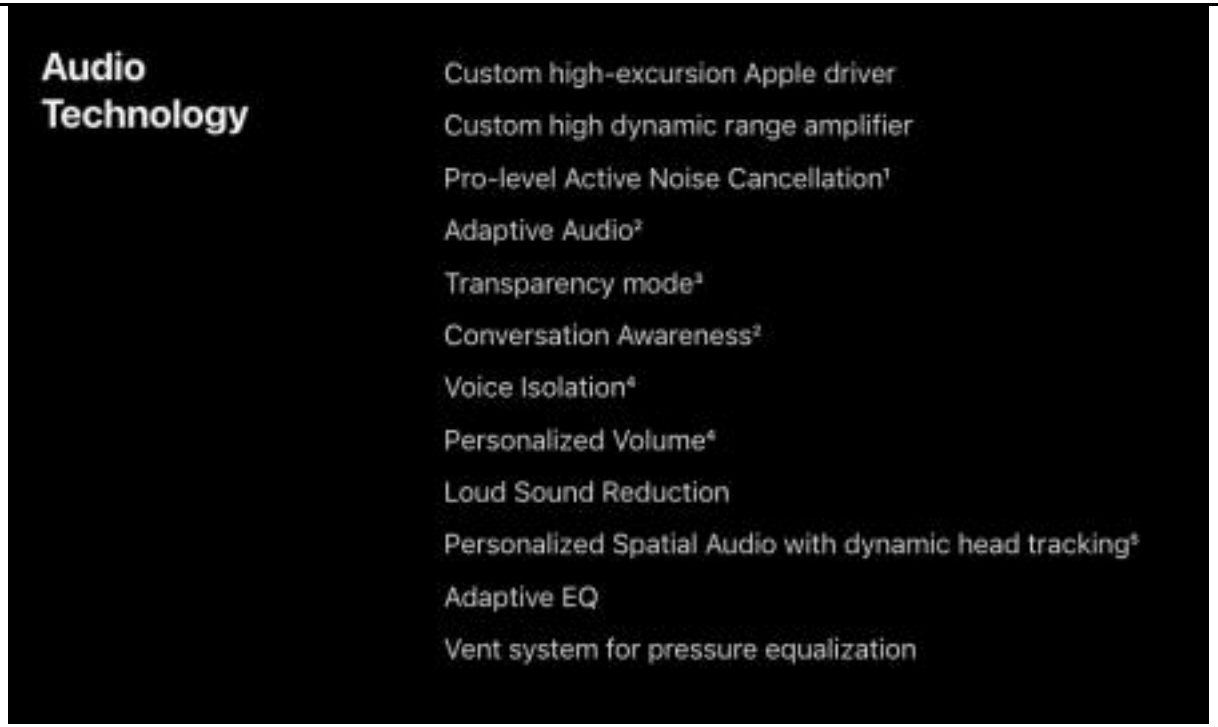
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

		Customize Transparency mode and turn on Conversation Boost for AirPods Pro, available from https://support.apple.com/guide/airpods/customize-transparency-mode-turn-conversation-dev966f5f818/web. *See* INGENIOSPEC-014702-014703;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 8	**Evidence**	
8. A personal audio system as recited in	Every claim limitation of claim 6 is present in the Accused Instrumentalities as described above and incorporated herein by reference.	

claim 6, wherein direction of the directional audio pickup is outward from the user.	The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds comprises an array of microphones configured for directional audio pickup. *See* Claim 6, *supra*. The direction of the directional audio pickup is outward from the user. For example, the Accused Headset Devices are configured to pick up audio in the environment of the user in order to cancel background noise using noise cancellation. In this instance, the direction of the directional audio pickup is outward from the user. The direction of the directional audio pickup is outward from the user when performing noise cancellation. **Switch between noise control modes on AirPods 4 (ANC), AirPods Pro, or AirPods Max** You can switch between noise control modes while listening to audio on AirPods 4 with Active Noise Cancellation (ANC), AirPods Pro, or AirPods Max. • *Adaptive Audio on AirPods Pro 2 and AirPods 4 (ANC):* Combines Active Noise Cancellation and Transparency mode into one additional mode, which automatically adjusts the level of noise control based on the changing noise conditions in your environment. • *Active Noise Cancellation:* Blocks out external noise to help you focus. • *Transparency mode:* Lets you hear the sounds around you. • *Off:* Turns off all noise control modes. **Source**: Switch between noise control modes - Apple Support (INGENIOSPEC-014039-014043) (available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0).



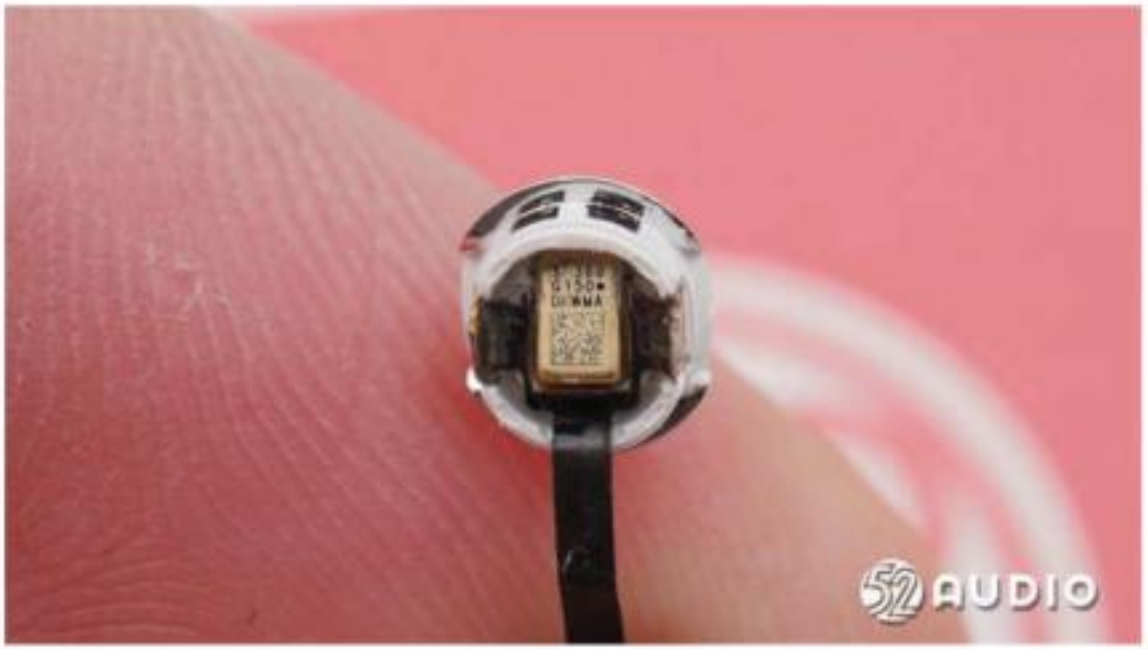
Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

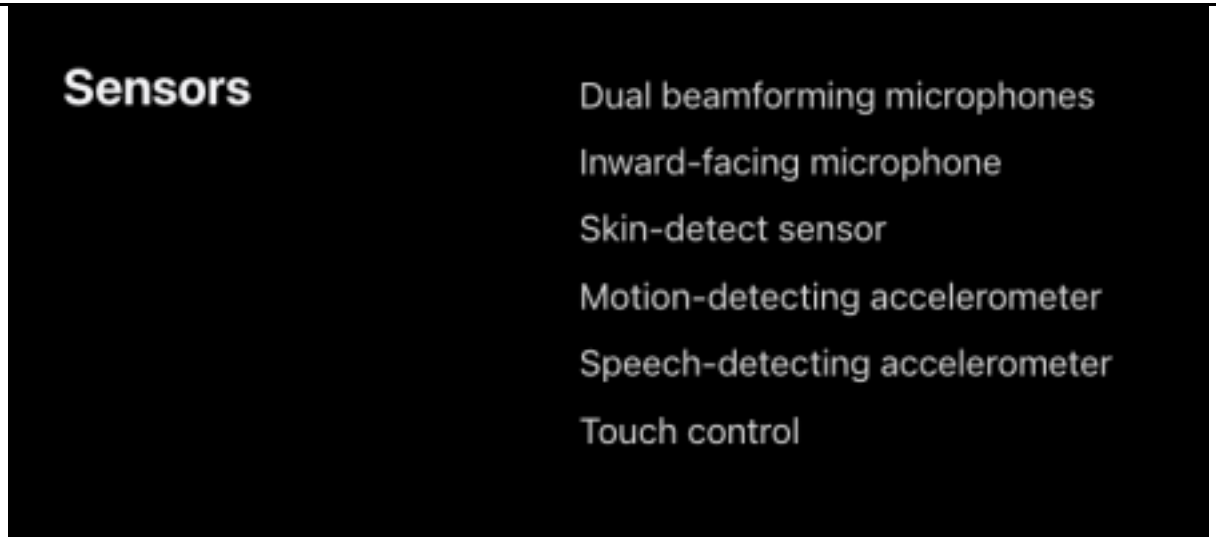
Each of Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	Switch between noise control modes - Apple Support, available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0. *See* INGENIOSPEC-014039-014043; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;

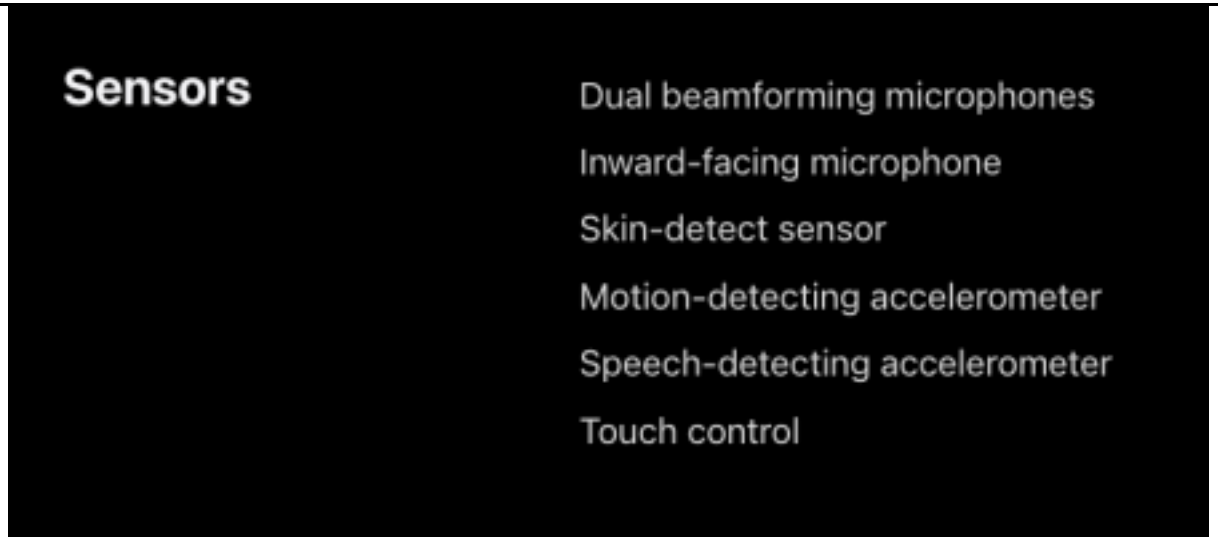
	Beats Fit Pro	Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 9	**Evidence**	
9. A personal audio system as recited in claim 1, wherein at least one of the earbuds in the pair of earbuds comprises a plurality of microphones	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*.	

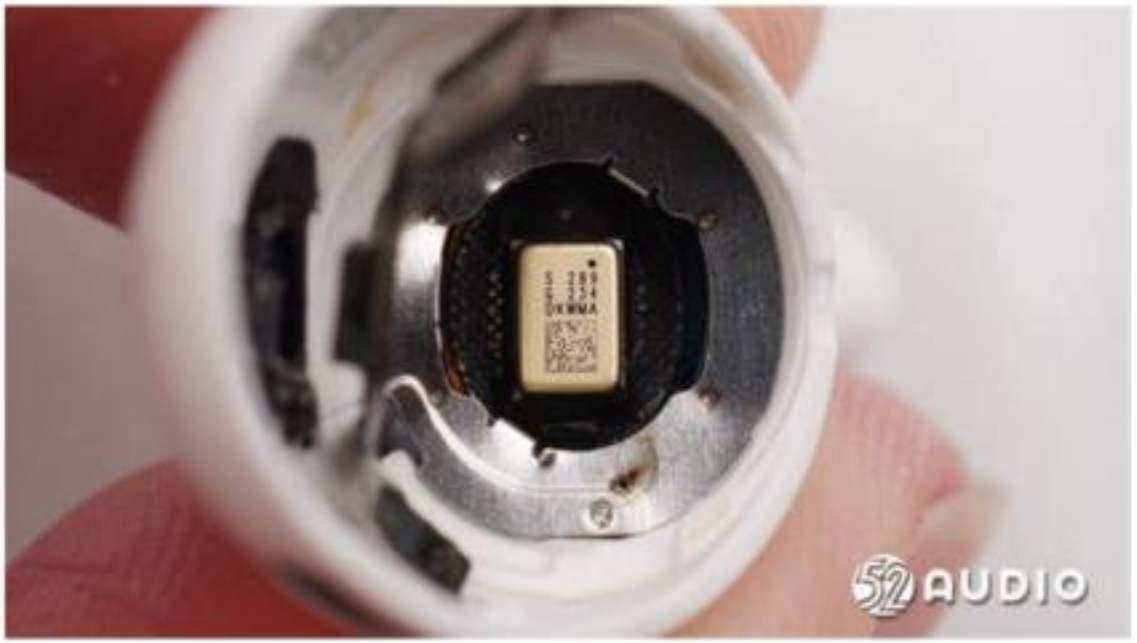
configured for audio pickup.	At least one of the earbuds in the pair of earbuds of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a plurality of microphones configured for audio pickup. The plurality of microphones configured for audio pickup include at least a first microphone and a second microphone. The first microphone can pick up sound from the user.  Bottom pickup microphone. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). A second microphone can pick up ambient sound.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

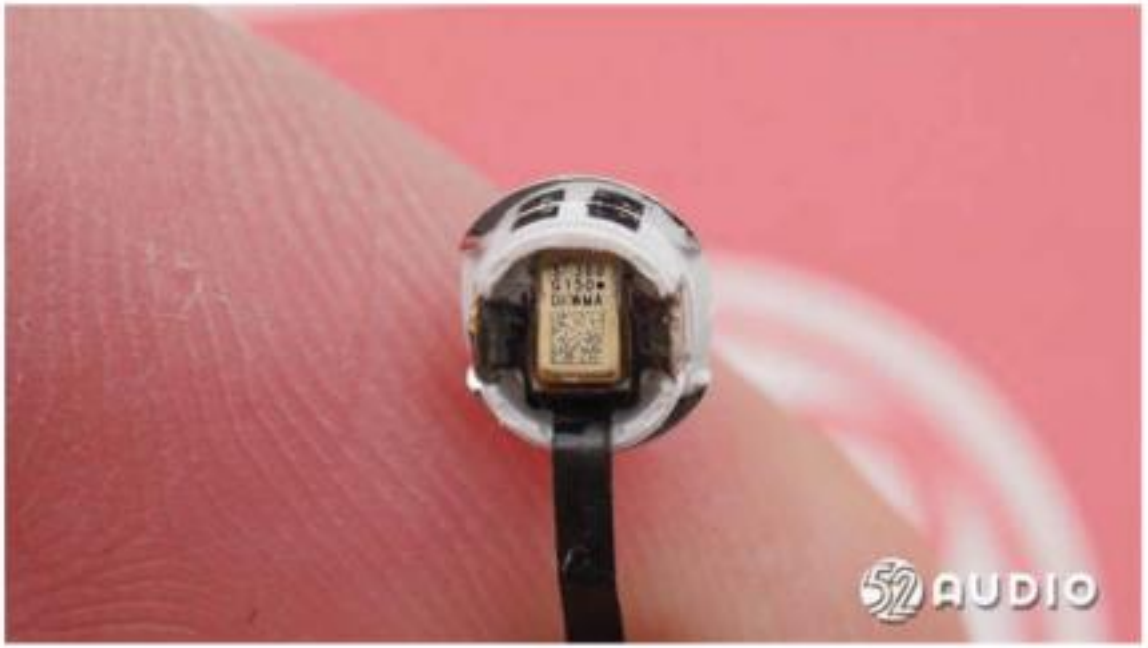
claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	Citations
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-

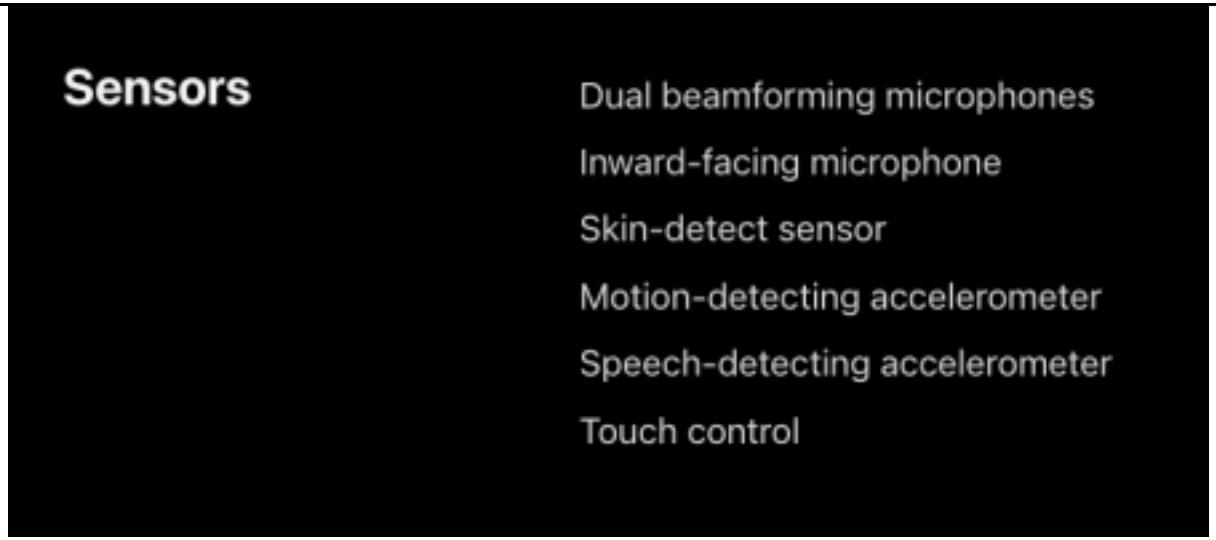
		pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
	Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 10	**Evidence**	
10. A personal audio system as recited in claim 9, wherein the plurality of	Every claim limitation of claim 9 is present in the Accused Instrumentalities as described above and incorporated herein by reference.	

microphones includes at least: a first microphone configured to receive audio pickup from the user; and a second microphone configured to receive audio pickup outward away from the user.	The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a plurality of microphones configured for audio pickup. *See* Claim 9, *supra*. The plurality of microphones of each of the Accused Headset Devices, such as Apple AirPods Pro 2, includes at least: a first microphone configured to receive audio pickup from the user; and a second microphone configured to receive audio pickup outward away from the user. The first microphone is configured to receive audio pickup from the user.



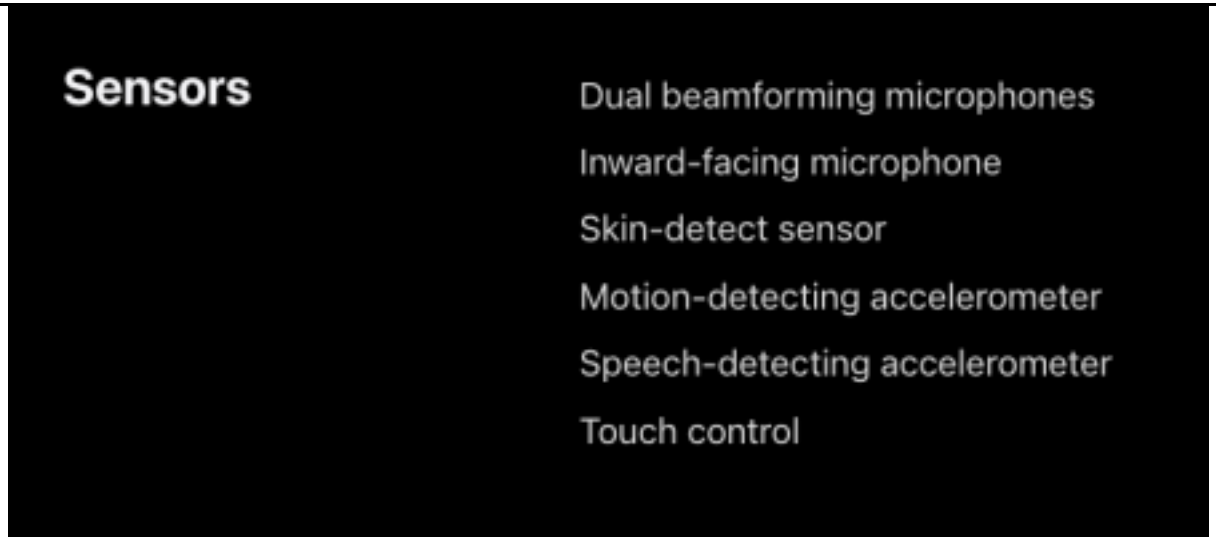
Bottom pickup microphone.

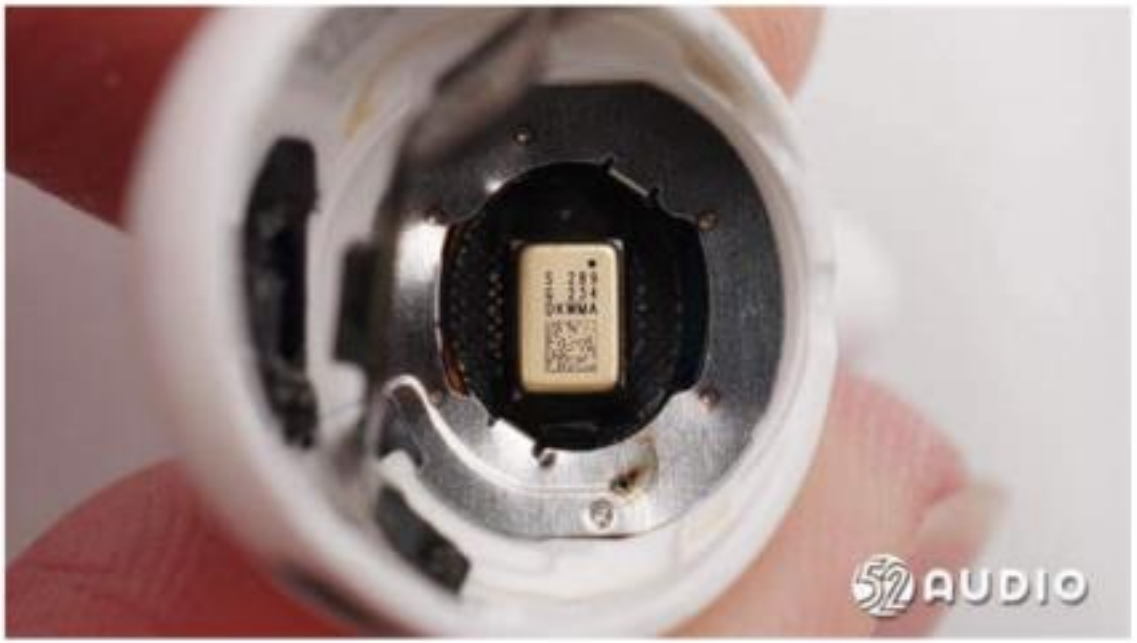
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). The second microphone configured to receive audio pickup outward away from the user.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

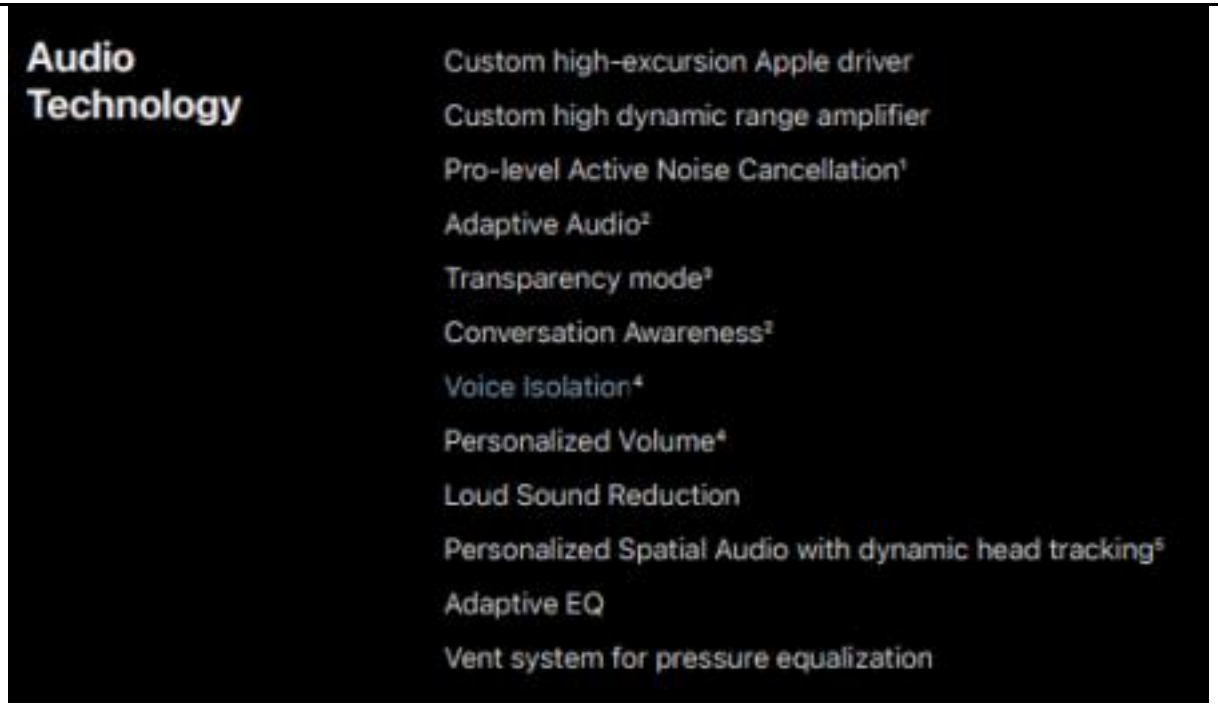
claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

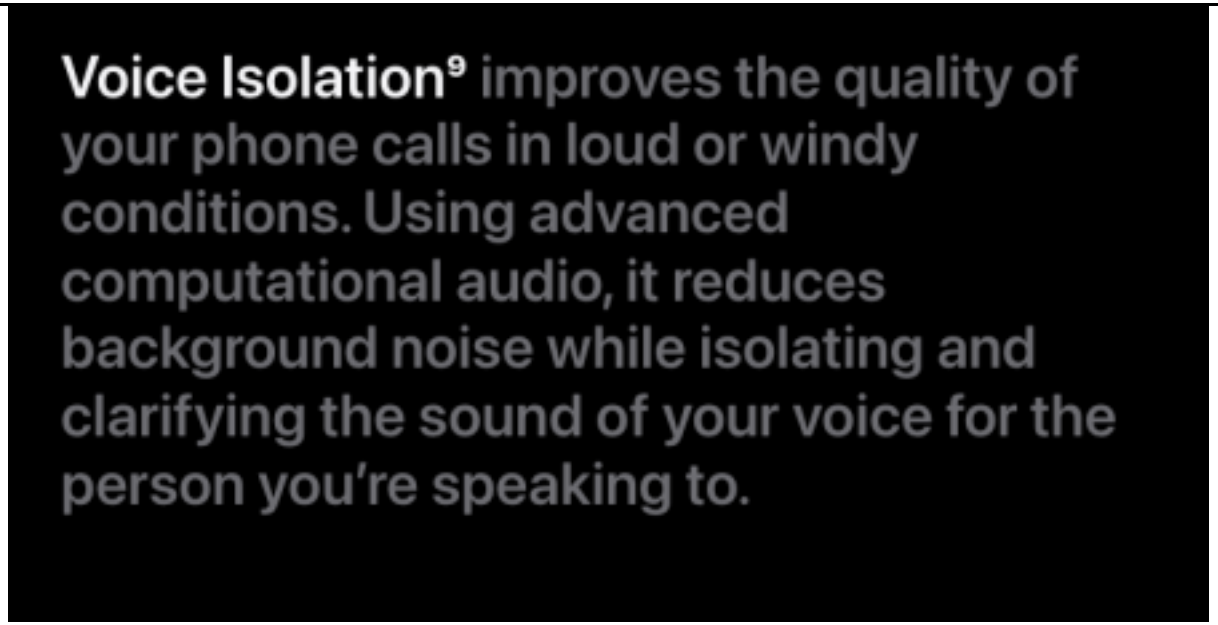
			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-

		pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
	Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 11	**Evidence**	
11. A personal audio system as recited in claim 10, wherein the audio pickup	Every claim limitation of claim 10 is present in the Accused Instrumentalities as described above and incorporated herein by reference.	

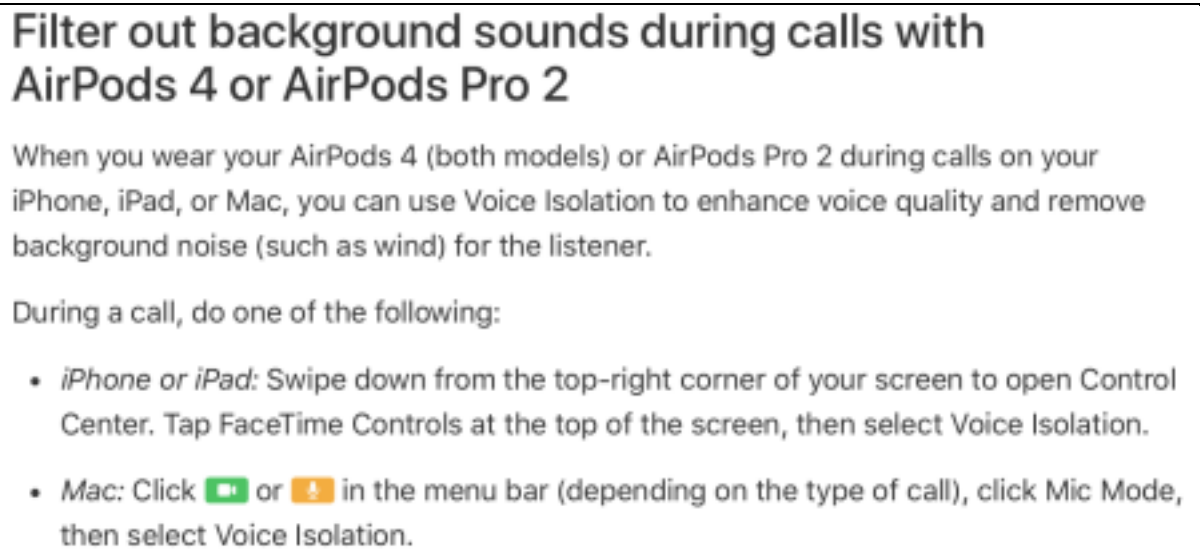
from at least the second microphone is used at least for noise cancelation.	The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a plurality of microphones configured for audio pickup. *See* Claim 9, *supra*. The plurality of microphones of each of the Accused Headset Devices, such as Apple AirPods Pro 2, includes at least: a first microphone configured to receive audio pickup from the user; and a second microphone configured to receive audio pickup outward away from the user. *See* Claim 10, *supra*. The audio pickup from at least the second microphone is used at least for noise cancelation. This includes, but is not necessarily limited to, use by Apple's Voice Isolation and Noise Cancellation features. For example, the Accused Headset Devices are capable of Voice Isolation. To perform Voice Isolation, at least a portion of the audio pickup from the second microphone is subtracted from the audio pickup from the first microphone. The Accused Headset Devices process audio input from at least a first microphone configured to capture the user’s voice and a second microphone configured to capture environmental sound. The user’s speech is enhanced by using the audio pickup from at least the second microphone for noise cancelation.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

	 **Source**: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0). For example, the Accused Headset Devices are capable of Conversation Boost. To perform Conversation Boost, at least a portion of the audio pickup from the second microphone is subtracted from the audio pickup from the first microphone. The Accused Headset Devices use the audio pickup from at least the second microphone to enhance the speech of the speaking individual by cancelling noise in the surrounding environment and focusing on the conversation

Use Conversation Boost

When your AirPods Pro are connected to your device, you can use Conversation Boost to focus on the person talking in front of you. This makes it easier to hear in a face-to-face conversation.

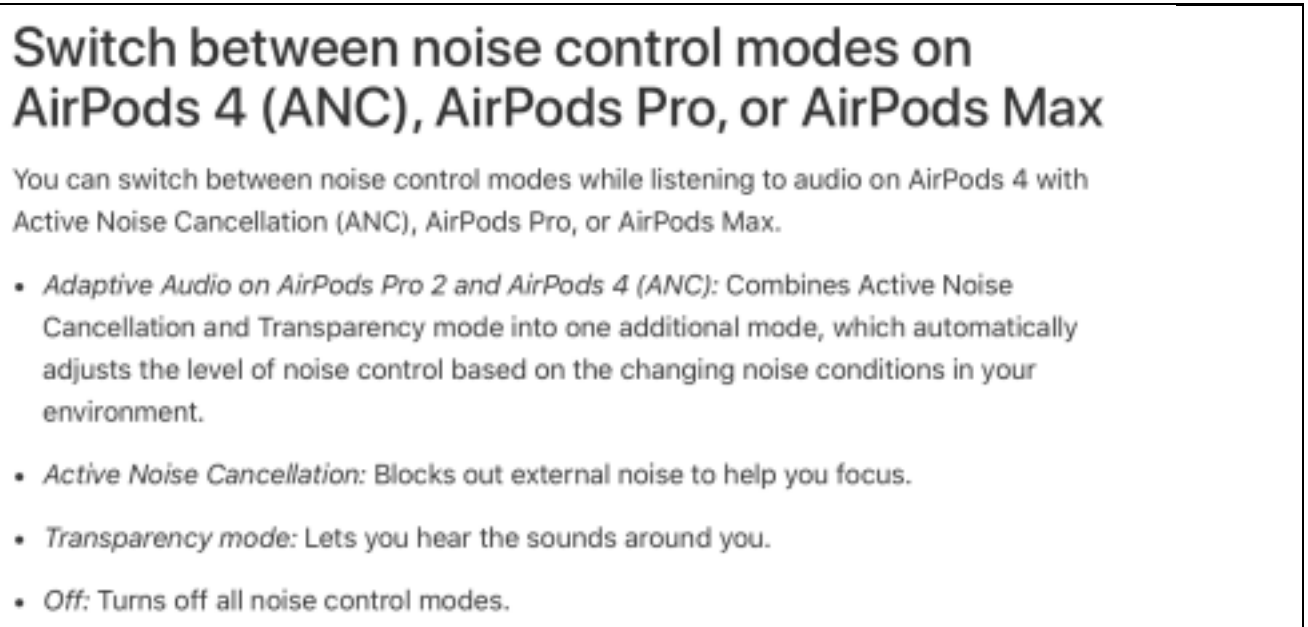
1. Wear your AirPods, and make sure they're connected to your device.
2. Do one of the following:

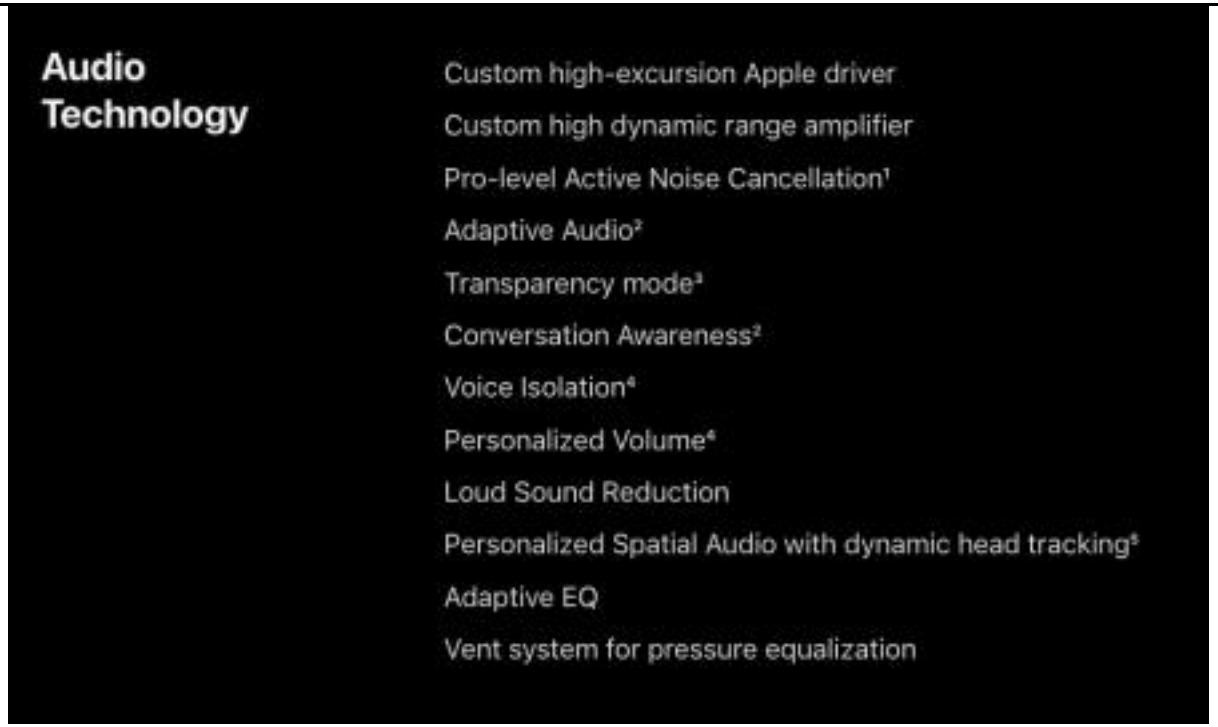
   - *iPhone or iPad:* Go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, and make sure Headphone Accommodations is turned on. Tap Transparency Mode, turn on Custom Transparency Mode, then turn on Conversation Boost.

   - *Mac:* Choose Apple menu > System Settings, then click Accessibility in the sidebar. Click Audio, turn on Transparency Mode, then turn on Conversation Boost.

Source: Customize Transparency mode and turn on Conversation Boost for AirPods Pro (INGENIOSPEC-014702-014703) (available from https://support.apple.com/guide/airpods/customize-transparency-mode-turn-conversation-dev966f5f818/web).

The Accused Headset Devices are *also* capable of Noise Cancellation. To perform Noise Cancellation, the second microphone captures environmental or ambient sound external to the user's ear, the captured environmental sound is processed by electronic circuitry to so that the undesired environmental sound is at least partially attenuated at the user's ear.

	 **Source**: Switch between noise control modes - Apple Support (INGENIOSPEC-014039-014043) (available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

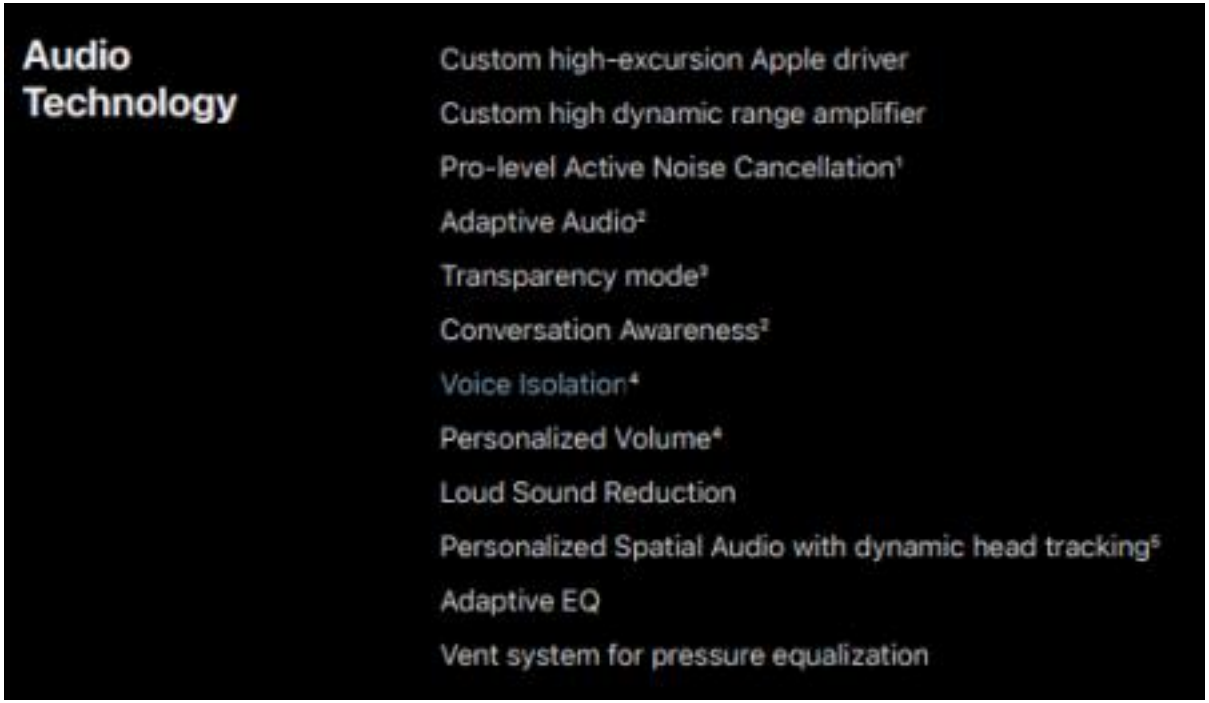
		Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

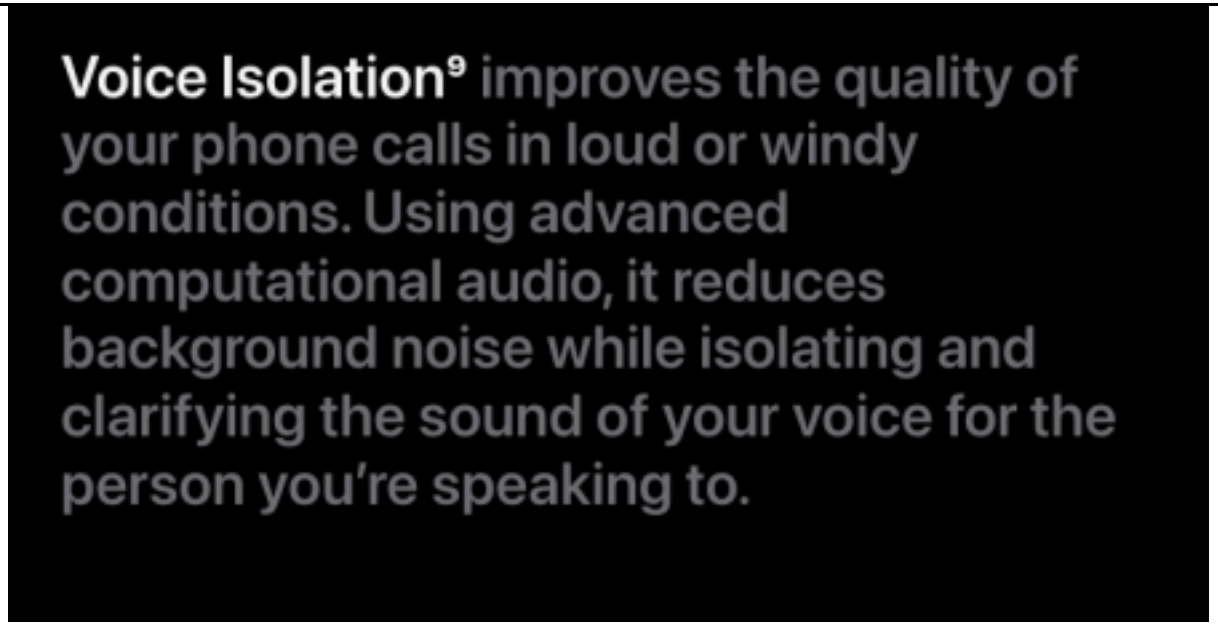
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Customize Transparency mode and turn on Conversation Boost for AirPods Pro, available from https://support.apple.com/guide/airpods/customize-transparency-mode-turn-conversation-dev966f5f818/web. *See* INGENIOSPEC-014702-014703; Switch between noise control modes - Apple Support, available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0. *See* INGENIOSPEC-014039-014043; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663;

	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

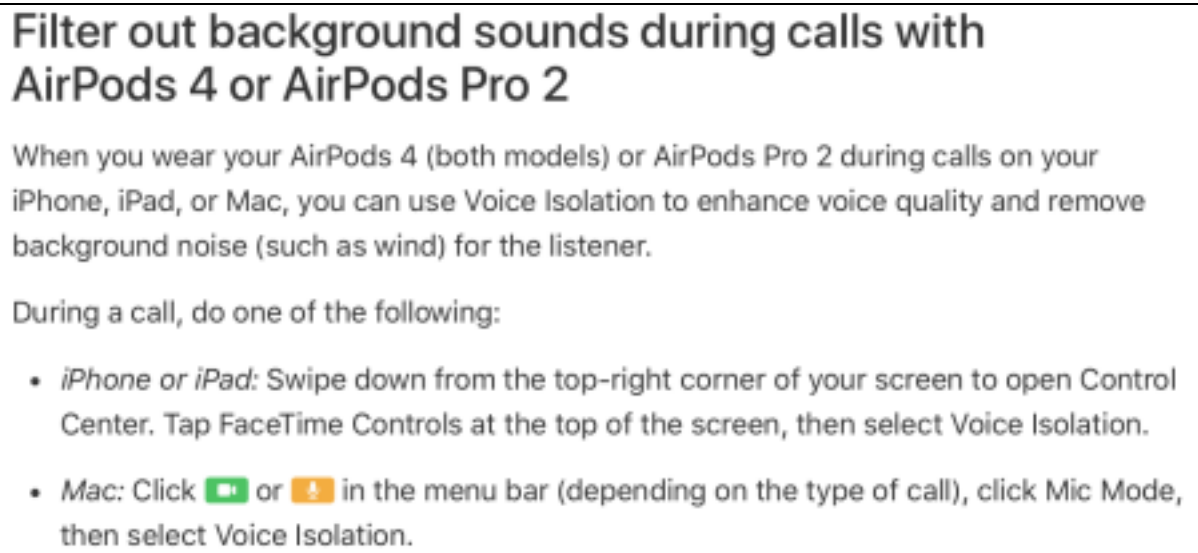
Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 12	**Evidence**
12. A personal audio system as recited in claim 11, wherein at least a portion of the audio pickup from the second microphone is subtracted from the audio pickup from the first microphone.	Every claim limitation of claim 11 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a plurality of microphones configured for audio pickup. *See* Claim 9, *supra*. The plurality of microphones of each of the Accused Headset Devices, such as Apple AirPods Pro 2, includes at least: a first microphone configured to receive audio pickup from the user; and a second microphone configured to receive audio pickup outward away from the user. *See* Claim 10, *supra*.

	The audio pickup from at least the second microphone is used at least for noise cancelation, including Apple's Voice Isolation. *See* Claim 11, *supra*. To perform Voice Isolation, at least a portion of the audio pickup from the second microphone is subtracted from the audio pickup from the first microphone. The Accused Headset Devices process audio input from at least a first microphone configured to capture the user's voice and a second microphone configured to capture environmental sound. The audio pickup outward away from the user using the second microphone is subtracted from the audio pickup from the user using the first microphone. This enhances the signal of the user's voice, thereby isolating it from noise in the surrounding environment.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 13	**Evidence**	
13. A personal audio system as recited in claim 12, wherein each of the ear buds	Every claim limitation of claim 12 is present in the Accused Instrumentalities as described above and incorporated herein by reference.	

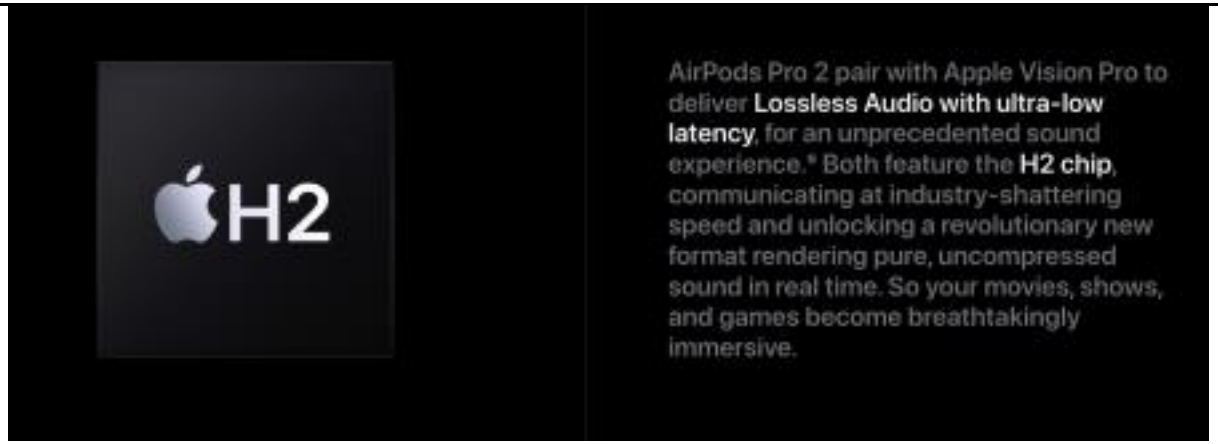
includes at least a speaker and is configured to generate at least a portion of the customized audio output for the user via the speaker.	The Accused Instrumentalities comprise a pair of ear buds. Each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. Each of the ear buds of the Accused Headset Devices, such as AirPods Pro 2, includes at least a speaker. 

	Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).  The front of the speaker unit is a black diaphragm. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of the ear buds of the Accused Headset Devices, such as AirPods Pro 2, is configured to generate at least a portion of the customized audio output. *See* Claim 1d, *supra*. For example, each ear bud of the Accused Headset Devices is configured to receive customized audio output signals transmitted by the Accused Host Device. *See* Claim 1c, *infra*. The customized audio output signals received by the Accused Headset Devices are used to output the customized audio output using the speaker of the corresponding ear bud.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	Citations
Apple AirPods 2	If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

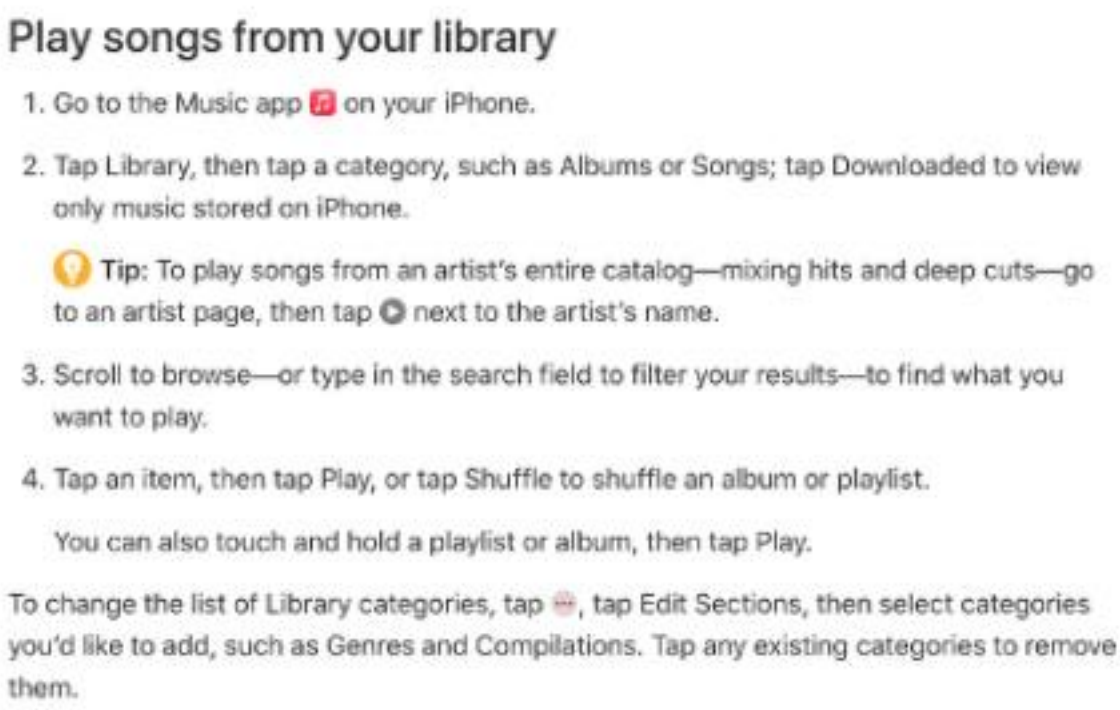
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from

		https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 14	**Evidence**
14. A personal audio system as recited in claim 1, wherein the mobile communication device is or includes a mobile phone.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. The Accused iPhone Devices (e.g., iPhone 14) are mobile phones. The Accused iPhone Devices are mobile phones at least because they are cellular network capable devices configured to make and receive phone calls. *See* https://support.apple.com/guide/iphone/make-a-call-iph3c993cbc/ios (INGENIOSPEC-011392 to INGENIOSPEC-011395). Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 15	**Evidence**
15. A personal audio system as recited in claim 1, wherein the	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference.

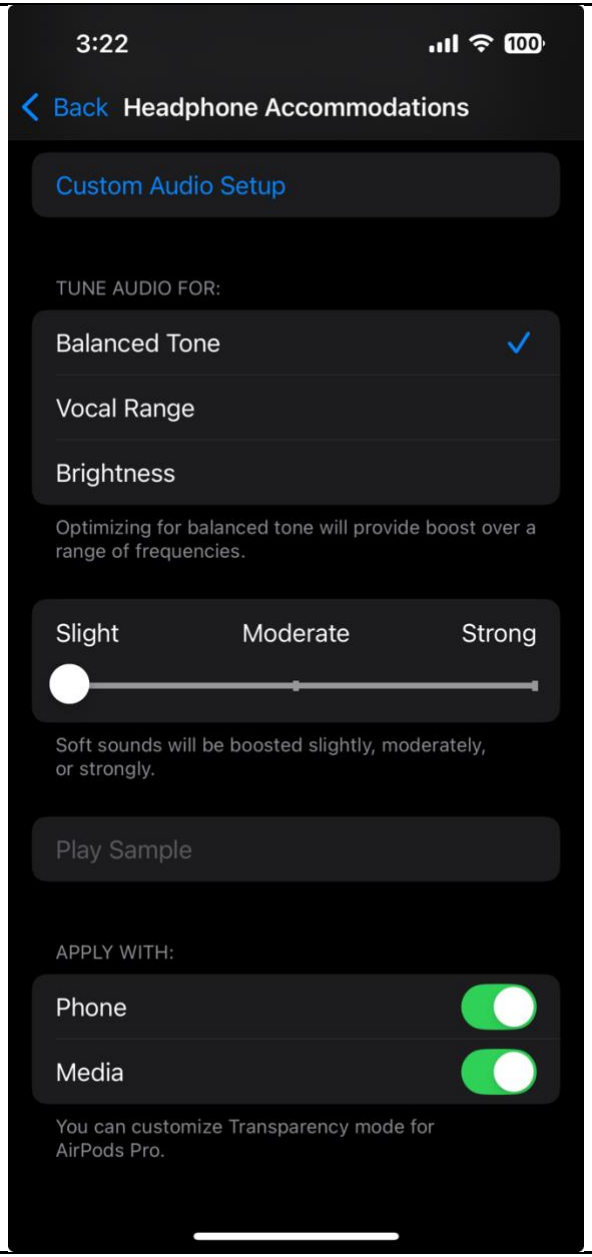
customized audio output includes music.	The Accused Instrumentalities comprise a personal audio system operable to at least generate customized audio output. *See* Claim 1, *supra*. Specifically, each of the ear buds of the Accused Instrumentalities is configured to generate customized audio output for the user in accordance with the customized audio output signals received. *See* Claim 1d, *supra*. The customized audio output can include music. The Accused Instrumentalities are configured to customize audio output signals of music in accordance with the limitations of Claim 1. *See* Claim 1b3, *supra*.  **Play songs from your library** 1. Go to the Music app on your iPhone. 2. Tap Library, then tap a category, such as Albums or Songs; tap Downloaded to view only music stored on iPhone. **Tip:** To play songs from an artist's entire catalog—mixing hits and deep cuts—go to an artist page, then tap next to the artist's name. 3. Scroll to browse—or type in the search field to filter your results—to find what you want to play. 4. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist. You can also touch and hold a playlist or album, then tap Play. To change the list of Library categories, tap , tap Edit Sections, then select categories you'd like to add, such as Genres and Compilations. Tap any existing categories to remove them. **Source**: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Stream recommended songs

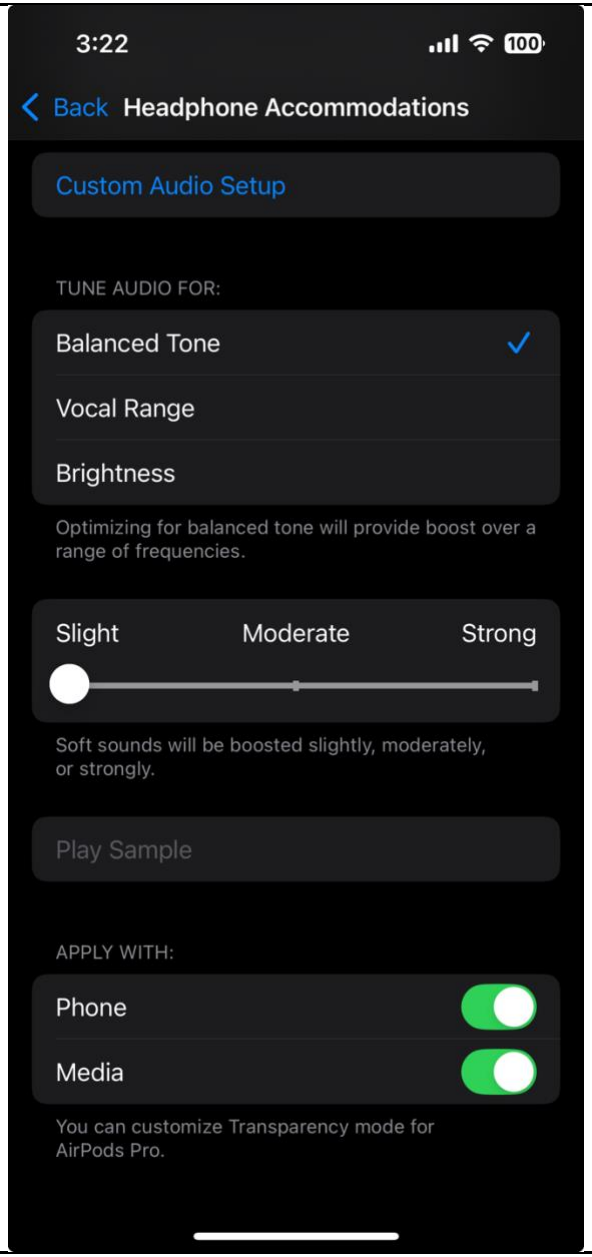
1. Go to the Music app on your iPhone.
2. Do any of the following to find music you want to play:
   - *View recommendations tailored for you:* Tap Home, then tap a playlist or album.
   - *See what's new in Apple Music:* Tap New, then find music by mood, new releases, charts, and more.
   - *Search the Apple Music catalog:* See Search for music.
3. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

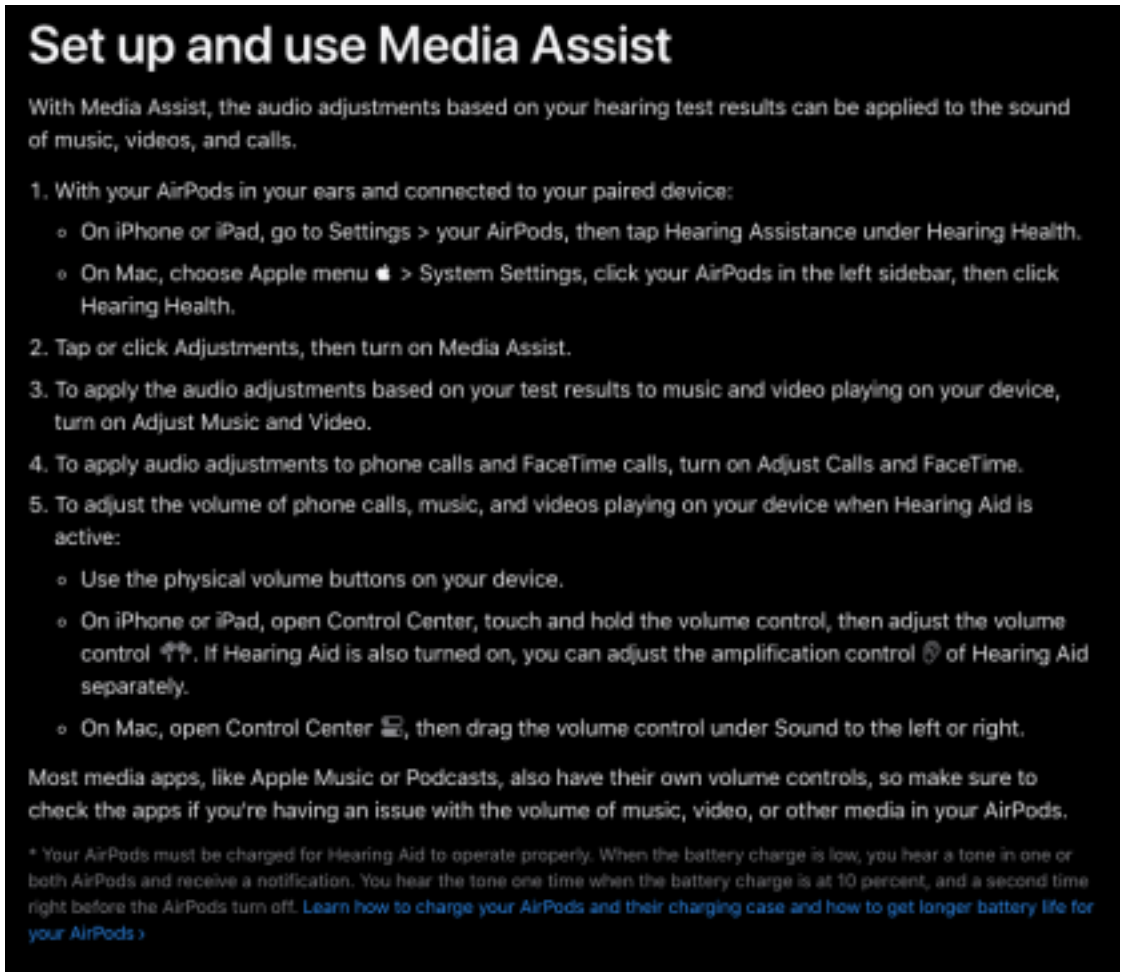
Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)


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Back
Headphone Accommodations
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Play Sample
APPLY WITH:
Phone
Media
You can customize Transparency mode for AirPods Pro.

	Source: Screenshot from iPhone configuring "Headphone Accommodations," showing "Apply With" options for both Phone and Media. Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 16	**Evidence**
16. A personal audio system as recited in claim 1, wherein the customized audio output includes a voice conversation.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a personal audio system operable to at least generate customized audio output. *See* Claim 1, *supra*. Specifically, each of the ear buds of the Accused Instrumentalities is configured to generate customized audio output for the user in accordance with the customized audio output signals received. *See* Claim 1d, *supra*. The customized audio output includes a voice conversation. The Accused Instrumentalities are configured to customize audio output signals of telephone and video calls, in accordance with the limitations of Claim 1. *See* Claim 1b3, *supra*.


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Back
Headphone Accommodations
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Play Sample
APPLY WITH:
Phone
Media
You can customize Transparency mode for AirPods Pro.

Source: Screenshot from iPhone configuring "Headphone Accommodations," showing "Apply With" options for both Phone and Media.



Set up and use Media Assist

With Media Assist, the audio adjustments based on your hearing test results can be applied to the sound of music, videos, and calls.

1. With your AirPods in your ears and connected to your paired device:
   - On iPhone or iPad, go to Settings > your AirPods, then tap Hearing Assistance under Hearing Health.
   - On Mac, choose Apple menu > System Settings, click your AirPods in the left sidebar, then click Hearing Health.
2. Tap or click Adjustments, then turn on Media Assist.
3. To apply the audio adjustments based on your test results to music and video playing on your device, turn on Adjust Music and Video.
4. To apply audio adjustments to phone calls and FaceTime calls, turn on Adjust Calls and FaceTime.
5. To adjust the volume of phone calls, music, and videos playing on your device when Hearing Aid is active:
   - Use the physical volume buttons on your device.
   - On iPhone or iPad, open Control Center, touch and hold the volume control, then adjust the volume control. If Hearing Aid is also turned on, you can adjust the amplification control of Hearing Aid separately.
   - On Mac, open Control Center, then drag the volume control under Sound to the left or right.

Most media apps, like Apple Music or Podcasts, also have their own volume controls, so make sure to check the apps if you're having an issue with the volume of music, video, or other media in your AirPods.

* Your AirPods must be charged for Hearing Aid to operate properly. When the battery charge is low, you hear a tone in one or both AirPods and receive a notification. You hear the tone one time when the battery charge is at 10 percent, and a second time right before the AirPods turn off. Learn how to charge your AirPods and their charging case and how to get longer battery life for your AirPods ›

Source: https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566) ("(1) Tap or click Adjustments, then turn on Media Assist; (2) To apply the audio adjustments based on your test results to

<table>
<tr><td></td><td>music and video playing on your device, turn on Adjust Music and Video; (3) To apply audio adjustments to phone calls and FaceTime calls, turn on Adjust Calls and FaceTime.")

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><th>11,644,693 Claim 17</th><th>Evidence</th></tr>
<tr><td>17. A personal audio system as recited in claim 1,</td><td>Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><td>17a. wherein at least one of the earbuds in the pair of earbuds comprises a plurality of microphones configured for audio pickup,</td><td>See Claim 9, supra.

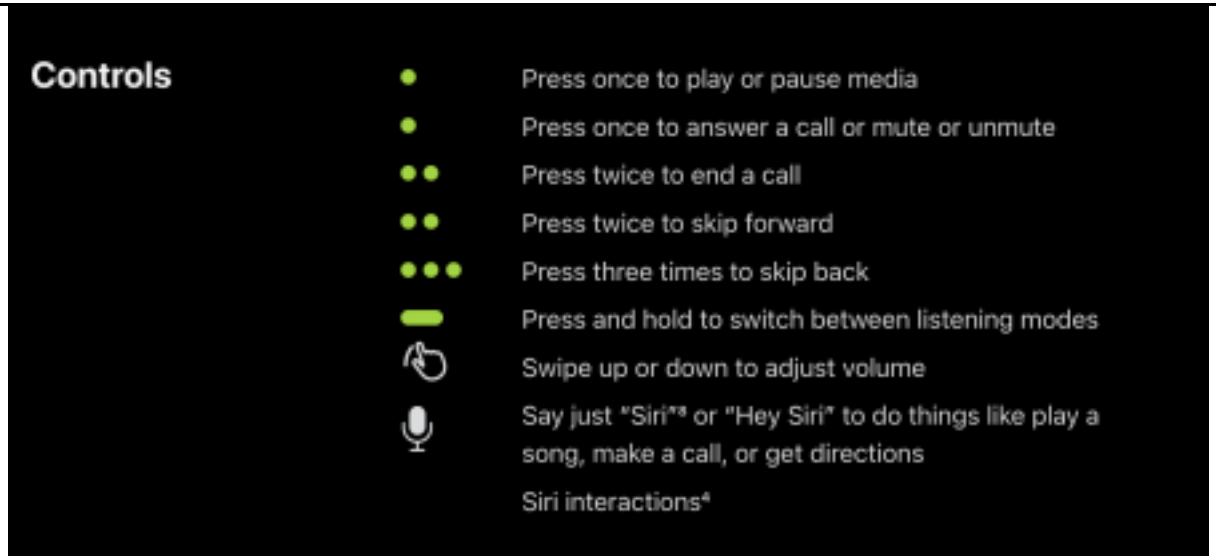
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

<table>
<tr><th>Device</th><th>Citations</th></tr>
<tr><td>Apple AirPods 2</td><td>AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. See INGENIOSPEC-014277-014286;</td></tr>
</table>
</td></tr>
</table>

			AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
		Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-

		wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
17b. wherein at least one of the microphones is configured to pick up an audio command, and wherein the mobile communication device is configured to induce an operation or action based on the audio command.	At least one of the microphones of each of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to pick up an audio command. For example, the microphone is configured to capture a wake word or speech input, such as "Siri," followed by a spoken request from the user. In response to the audio command, the Accused Host Devices, such as iPhone, iPad or MacBook computer, operating as the claimed mobile communication device, are configured to induce an operation or action based on the audio command. For example, upon recognizing the command, the host device initiates a requested function such as, for example, placing a phone call, sending a text message, adjusting a volume level, or controlling playback of media content, among other Siri Commands that are also supported. For example, each of the Accused Instrumentalities, such as the iPhone 14 when paired with Apple AirPods Pro 2, supports Siri. Siri is Apple's voice-controlled digital assistant. Siri works by using at least one of the microphones to pick up an audio command. The Accused Host Devices are configured to induce an operation or action based on the audio command.	



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Use Siri with AirPods

When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more.

If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods.

	Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0). For example, each of the Accused Instrumentalities, such as the iPhone 14 when paired with Apple AirPods Pro 2, is able to determine that the user would like to raise the device's volume based on voice input using a voice command. **Use Siri with AirPods** When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more. If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods. **Source**: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0). As another example, each of the Accused Instrumentalities, such as the iPhone 14 when paired with Apple AirPods Pro 2, are configured to be able to make and receive telephone calls based on voice input using a voice command.

Make and answer calls

1. Wear your AirPods and make sure they're connected to your iPhone, iPad, or Apple Watch (with cellular or Wi-Fi).
2. Do one of the following:

   - *Make a call:* Say "Hey Siri," or press and hold the force sensor, then say something like "Call Eliza's mobile." On an iPad without cellular, say something like "Make a FaceTime call."

     You can also make a call on your device, such as in the FaceTime app or Phone app.

   - *Answer a call:* Press the stem once on either of your AirPods.

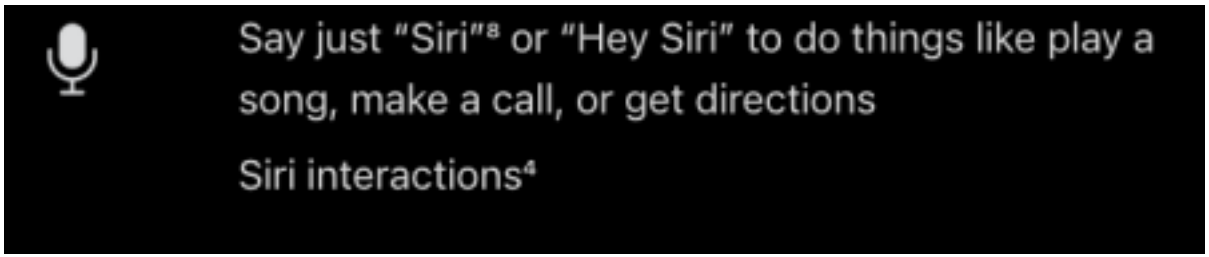
Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Use Siri with AirPods

When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more.

If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods.

Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from

			https://support.apple.com/guide/airpods/make-and-answer-calls-with-airpods-1-or-2-dev0d85dbd4e/1.0/web/1.0. *See* INGENIOSPEC-013933-013934;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods 4	Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

			Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309; Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311; Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883;
		Powerbeats Pro 2	Use your Powerbeats Pro 2 - Apple Support, available from https://support.apple.com/guide/beats/use-powerbeats-pro-2-

		dev1b2a821db/web. *See* INGENIOSPEC-014007-014010; Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 18	Evidence
18. A personal audio system as recited in claim 1, wherein the customized audio output signals are produced based on amplifying or attenuating different frequency bands differently according to at least the stored hearing profile.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. For example, the Accused Host Devices, such as Apple AirPods Pro 2, are configured to amplify certain signals, depending on the hearing profile associated with the user. The Accused Host Devices are configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user such that the customized audio output signals at least compensate for the hearing impairment regarding the user's ability to hear. *See* Claim 1b3, *supra*. The customized audio output signals are produced based on amplifying or attenuating different frequency bands differently according to at least the stored hearing profile. For example, based upon the user's configuration of Headphone Accommodations and Custom Audio Setup, the Accused Host Devices amplify soft sounds and tune audio across different frequency ranges—e.g., selecting "Balanced Tone" (boost over a wide frequency range), "Vocal Range" (middle frequencies), or "Brightness" (high frequencies)—and apply gain adjustments of varying magnitudes (Slight, Moderate, or Strong) based on the stored hearing profile, thereby tailoring the audio output signal to the user's hearing needs. *See* https://support.apple.com/guide/iphone/adjust-audio-settings-iphb80ab7516/ios (INGENIOSPEC-011193 to INGENIOSPEC-011195) (Headphone Accommodations "amplify soft sounds and adjust certain frequencies to best suit your hearing"); https://support.apple.com/en-lb/guide/mac-help/mchl8028e24e/mac (INGENIOSPEC-011543 to INGENIOSPEC-011544) (Headphone Accommodations "amplify soft sounds and adjust certain frequencies to best suit your hearing"); https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304) (Custom Audio Setup allows users to select between audio samples to generate recommended custom settings applied to their device);

	https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431) ("Tune Audio For" presets including Balanced Tone (wide-range boost), Vocal Range (mid-frequency boost), and Brightness (high-frequency boost)); https://support.apple.com/en-is/120634 (INGENIOSPEC-011305 to INGENIOSPEC-011307) (Optimization slider with levels "Slight," "Moderate," or "Strong" for amplification of soft sounds) *and* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566) ("Hearing Aid uses the results from the Hearing Test that you took on your device or audiogram results from a hearing healthcare professional to customize the sound of your AirPods for your specific hearing needs. The Hearing Aid feature is intended for people 18 years and older with perceived mild to moderate hearing loss. ... With Media Assist, the audio adjustments based on your hearing test results can be applied to the sound of music, videos, and calls.") Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 19	**Evidence**
19. A personal audio system as recited in claim 1, wherein the hearing profile associated with the user is self-determined by the user.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. Each of the Accused Host Devices is configured to store a hearing profile for the user. The hearing profile includes, but is not necessarily limited to, frequency-specific hearing thresholds, equalization settings, gain adjustments, dynamic range compression parameters, loudness preferences, and test results derived from user-specific hearing assessments. *See* Claim 1b2, *supra*.

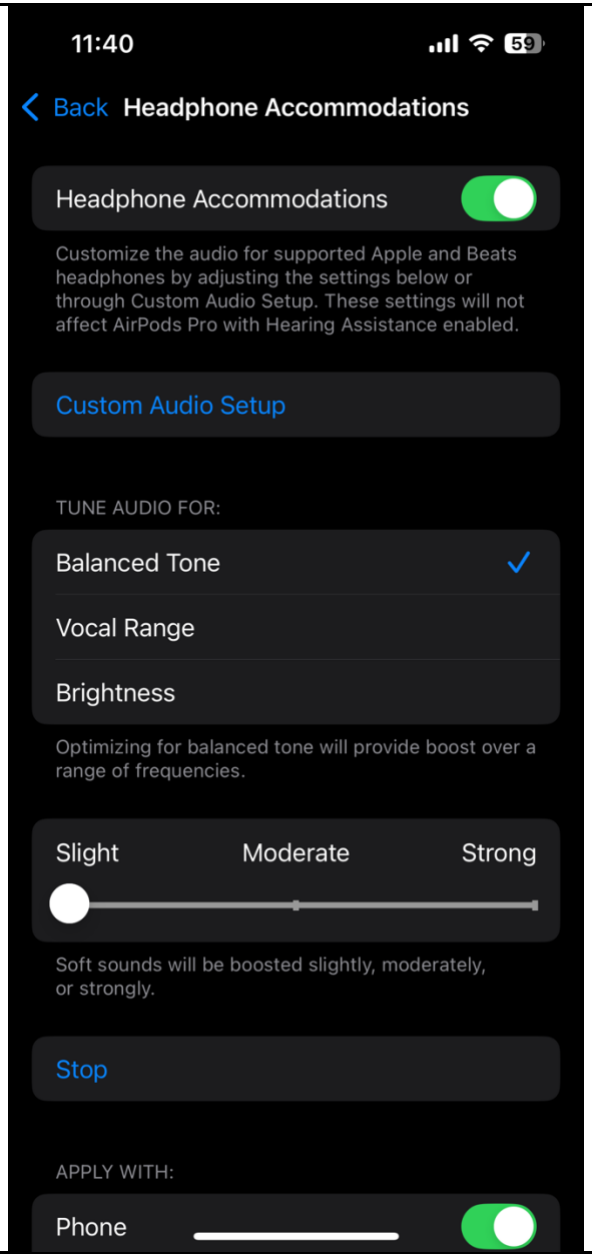
	Each of the Accused Host Devices is configured to establish the hearing profile for the user via Headphone Accommodations, Custom Audio Setup, Hearing Aid Test, and other manually adjustable audio settings. *See* Claim 1b2, *supra*. **Set headphone accommodations on iPhone or iPad** 1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations. 2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following: • *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness. • *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds. • *Phone:* Apply these audio settings to phone calls. • *Media:* Apply these audio settings to media playback. • *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost. 3. To preview your audio settings, tap Play Sample. **Source**: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

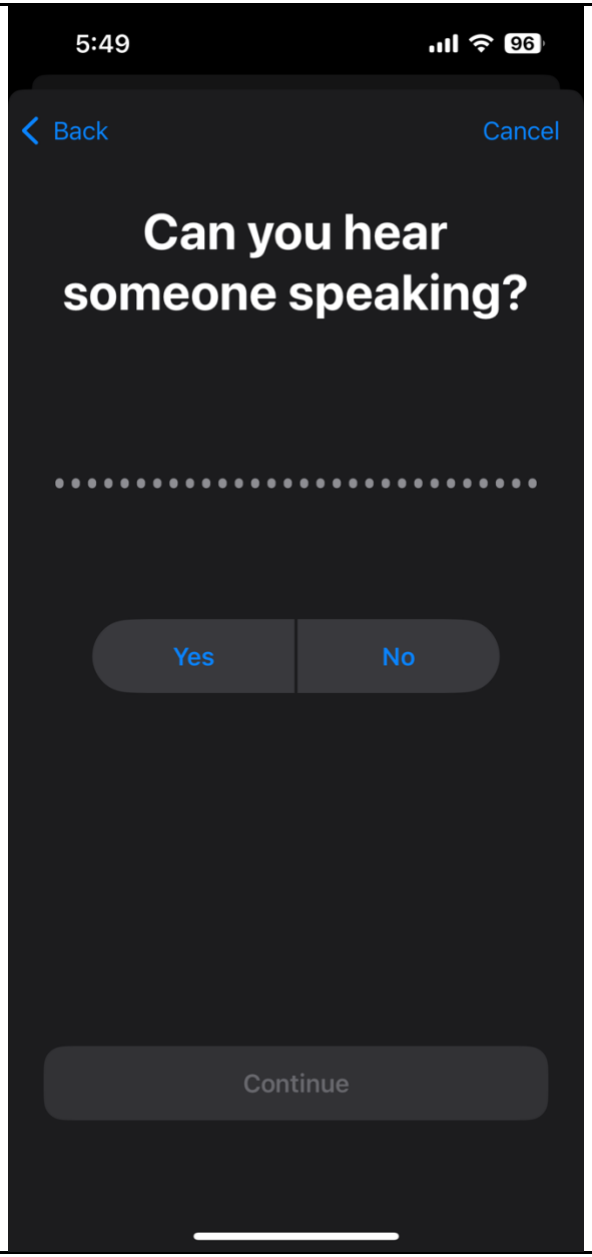
Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

The hearing profile associated with the user is self-determined by the user. For example, the user performs a plurality of steps, including customizing headphone audio levels. By customizing headphone audio levels, the iPhone or iPad is configured to customize audio output signals to "amplify soft sounds and adjust certain frequencies for [a user's] hearing needs [using] Headphone Accommodations." *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304). To set up "Headphone Accommodations" a user goes to **Settings > Accessibility > Audio & Visual** then taps **Headphone Accommodations**. The user then taps on **Custom Audio Setup** and follows the instructions on the screen. *See Id.*


11:40
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Back
Headphone Accommodations
Headphone Accommodations
Customize the audio for supported Apple and Beats headphones by adjusting the settings below or through Custom Audio Setup. These settings will not affect AirPods Pro with Hearing Assistance enabled.
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Stop
APPLY WITH:
Phone

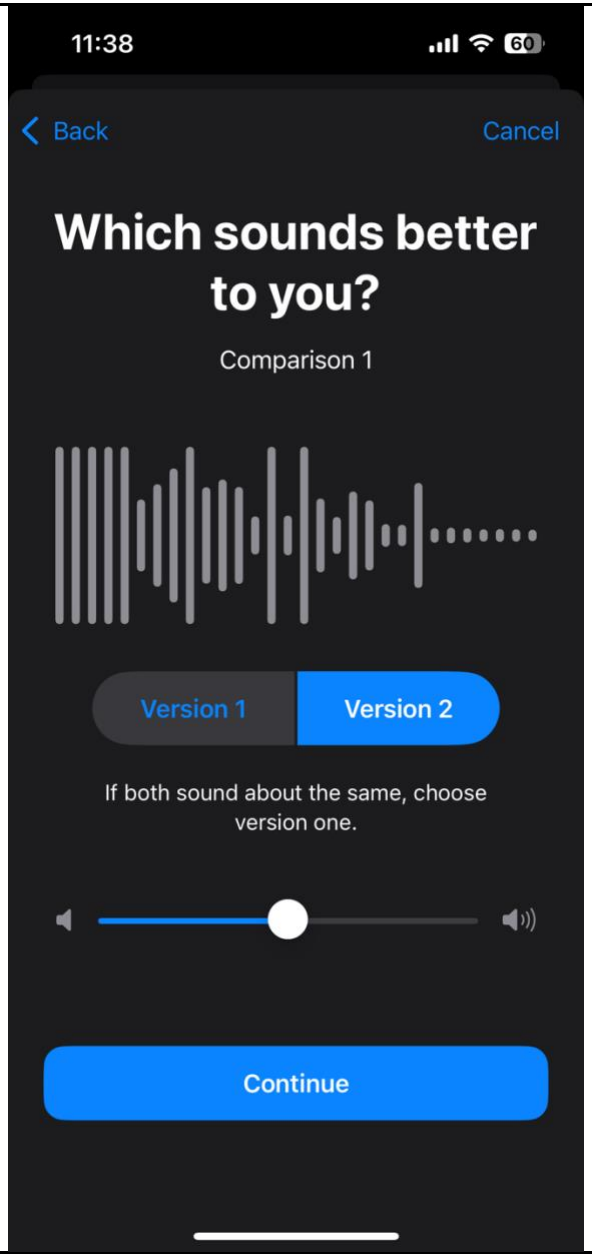
	Source: Screenshot from iPhone configuring "Headphone Accommodations," including "Custom Audio Setup"

Apple Inc. Exhibit 1022 Page 220

		 5:49 96 Back Cancel Can you hear someone speaking? Yes No Continue	

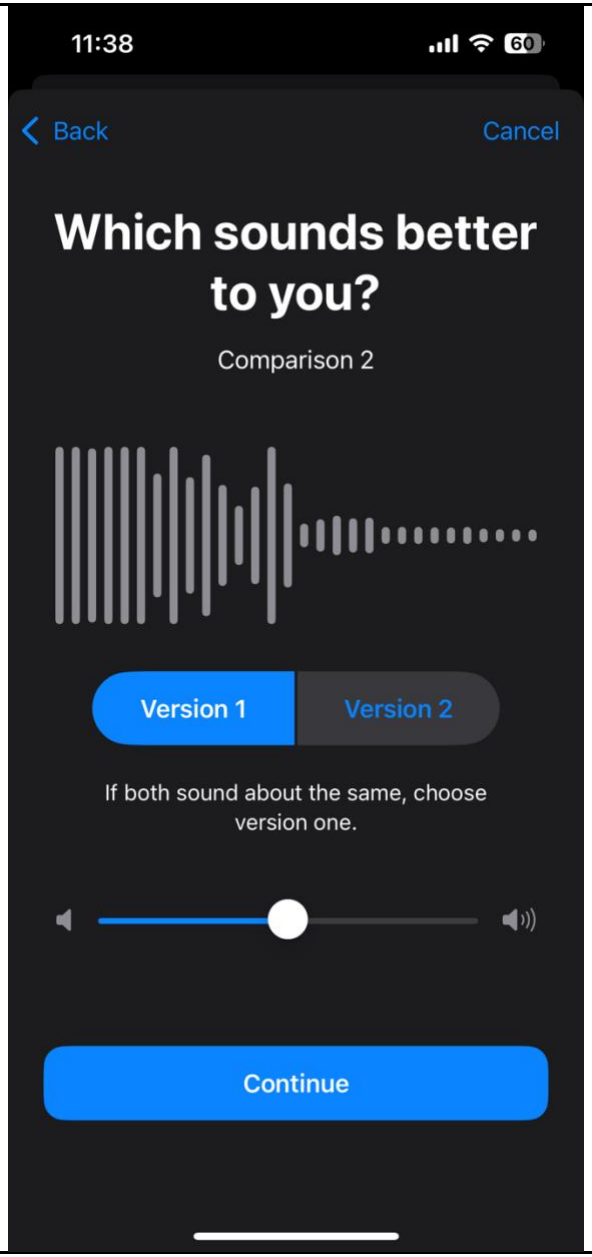
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking?

Apple Inc. Exhibit 1022 Page 222


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 1
Version 1
Version 2
If both sound about the same, choose version one.
Continue

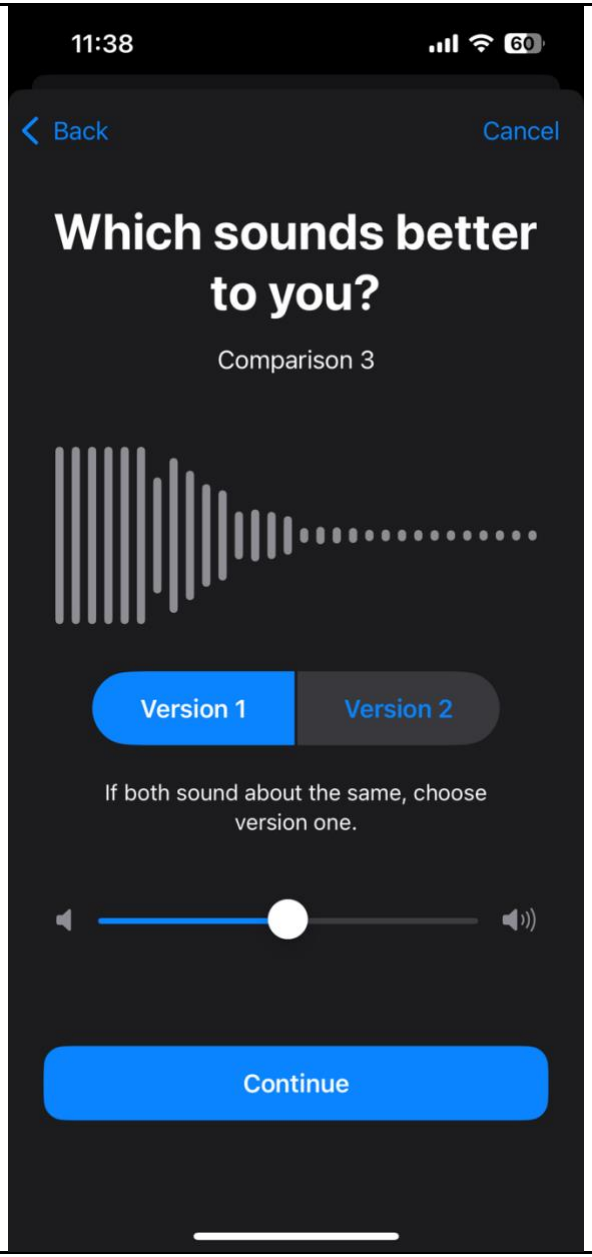
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 1

Apple Inc. Exhibit 1022 Page 224


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 2
Version 1
Version 2
If both sound about the same, choose version one.
Continue

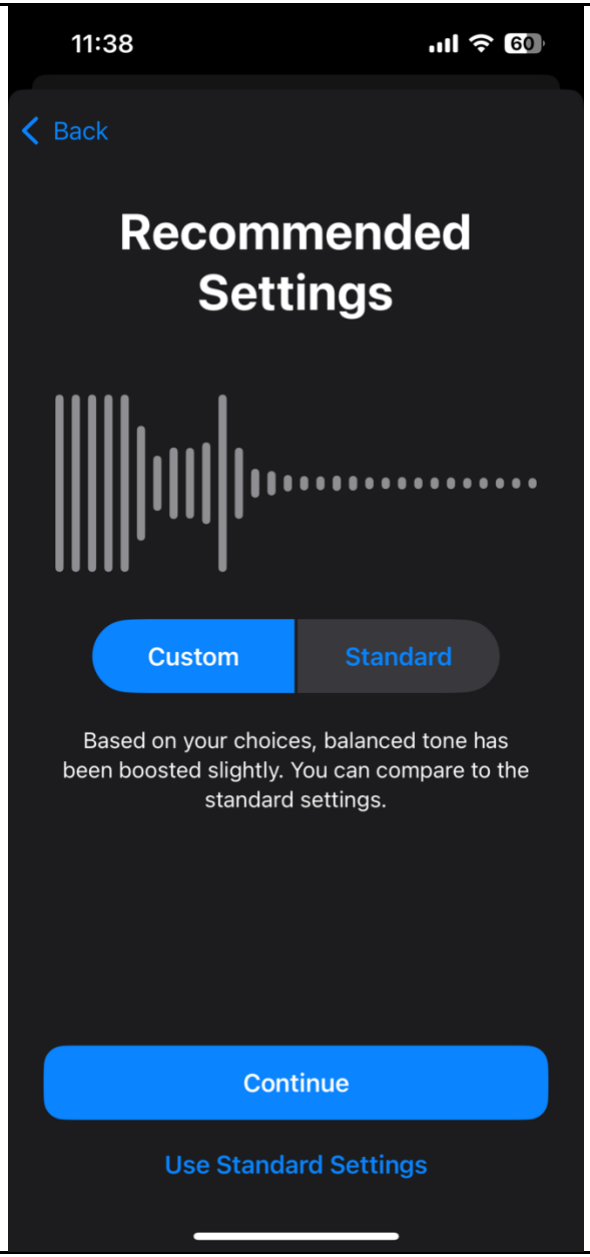
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 2

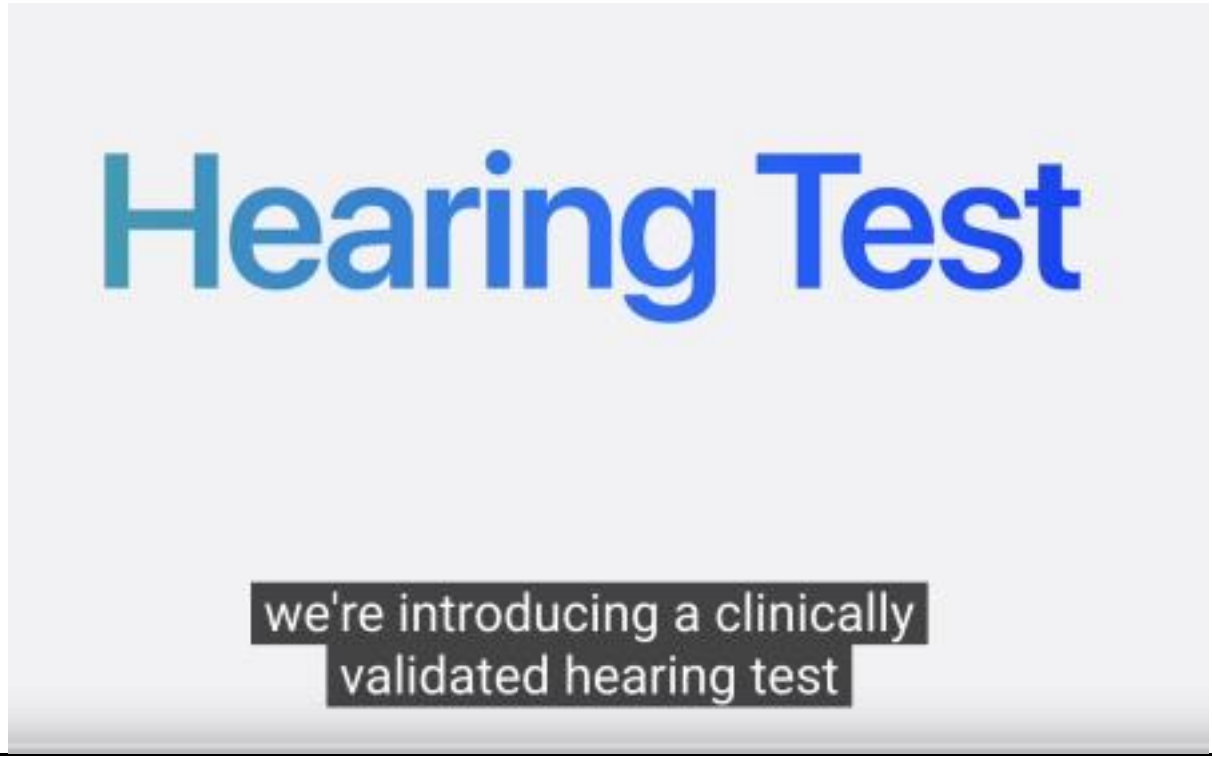
Apple Inc. Exhibit 1022 Page 226

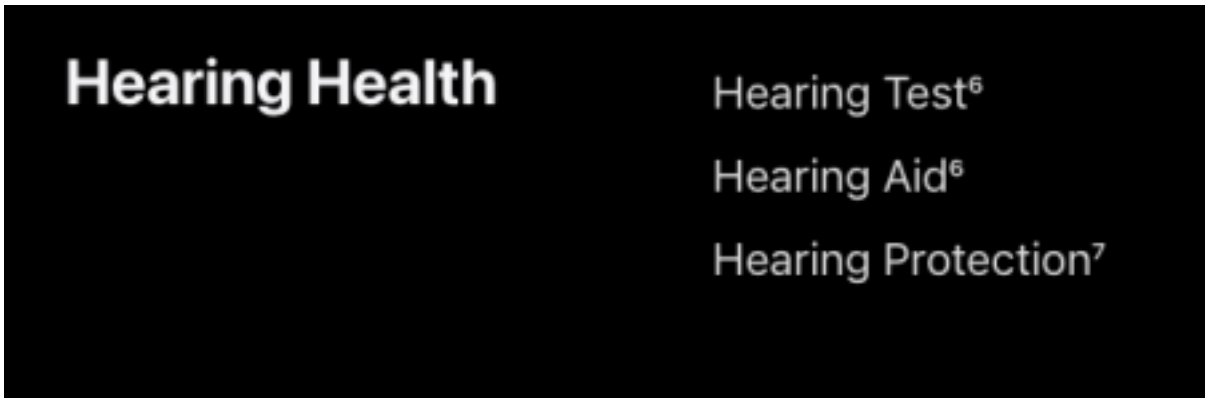

11:38
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Back
Cancel
Which sounds better to you?
Comparison 3
Version 1
Version 2
If both sound about the same, choose version one.
Continue

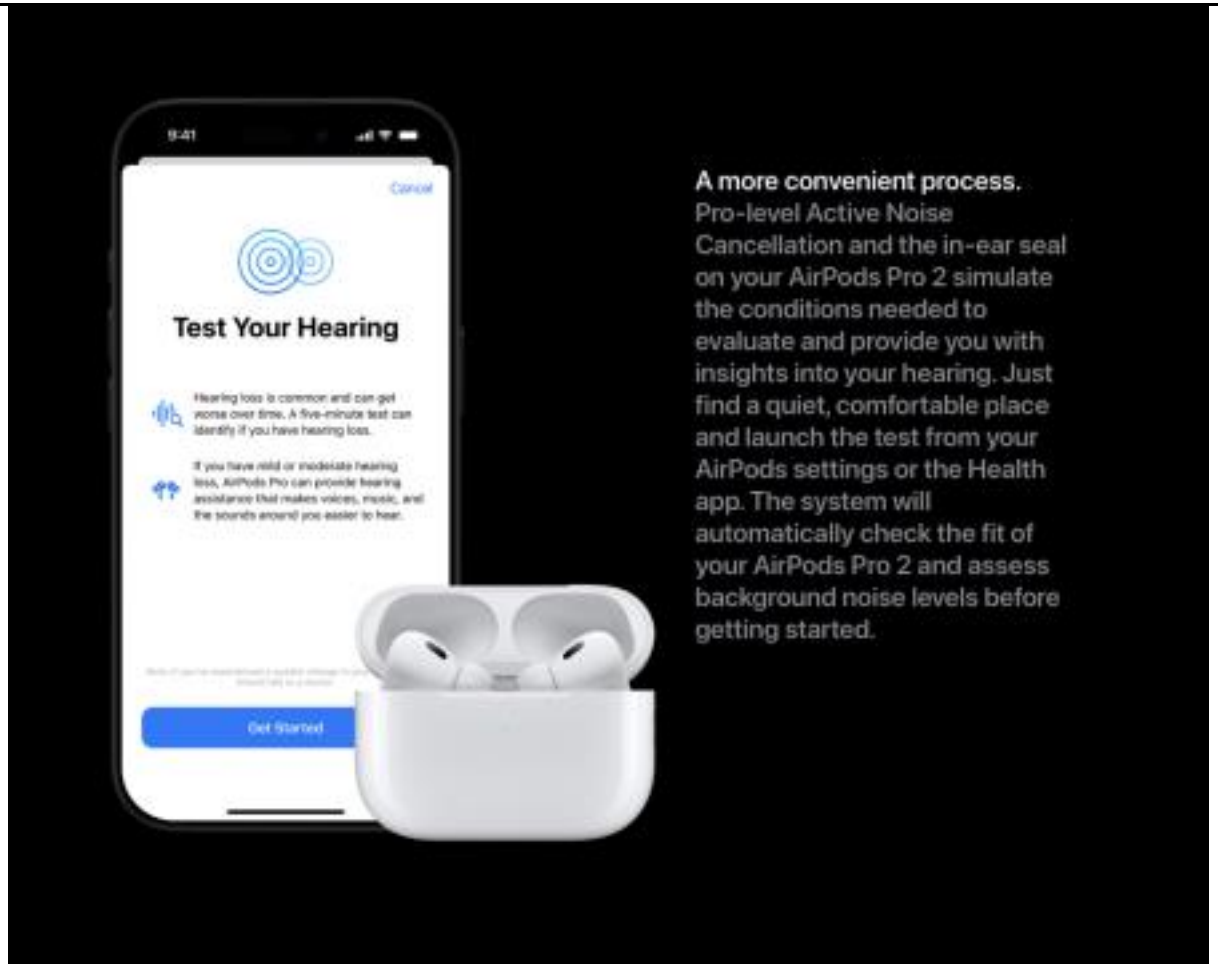
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 3

Apple Inc. Exhibit 1022 Page 228


11:38
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Back
Recommended Settings
Custom
Standard
Based on your choices, balanced tone has been boosted slightly. You can compare to the standard settings.
Continue
Use Standard Settings

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Recommended Settings Furthermore, using the Accused iPhone Devices and Accused iPad Devices, a user can take a hearing test, using the Accused Headset Devices. *See* https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473). The Accused iPhone Devices and Accused iPad Devices are configured to store at least a hearing profile associated with the user. The stored hearing profile associated with the user is self-determined by the user. *See* https://www.apple.com/airpods-pro/hearing-health/ (INGENIOSPEC-012988-013000) ("Using pure-tone audiometry built on advanced acoustic science, the test plays a series of tones that you respond to by tapping the screen. Helpful animations, tap-back effects, and progress indicators guide you through the experience, which takes about five minutes. More than 150,000 real-world audiograms and millions of simulations helped develop a Hearing Test that's accurate, fast, and easy.") 

	Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Hearing Health - Apple (INGENIOSPEC-013564-013573) (available from https://www.apple.com/airpods-pro/hearing-health/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

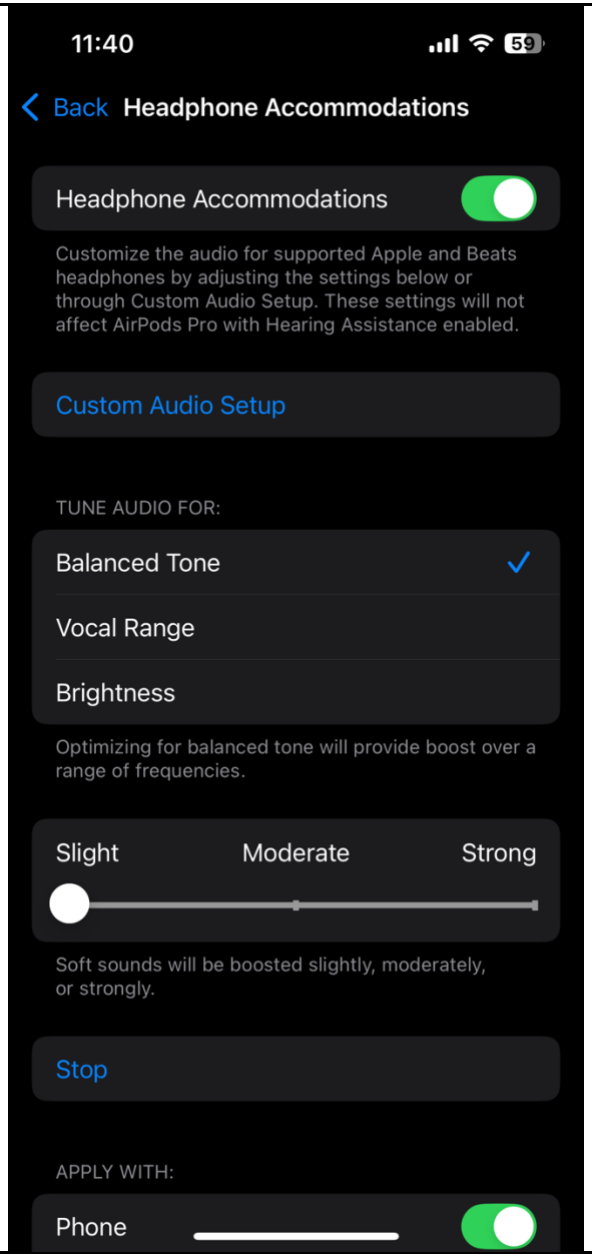
claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 3	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4 with Active Noise Cancellation	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 1	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

		AirPods Pro 3 - Hearing Health, available from https://www.apple.com/airpods-pro/hearing-health/. *See* INGENIOSPEC-013502-013510; Set Headphone Accommodations for AirPods, available from https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web. *See* INGENIOSPEC-013296-013297;
	Beats Fit Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Powerbeats Pro 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Accordingly, the Accused Host Devices of the Accused Instrumentalities are configured to generate a hearing profile associated with the user and the hearing profile is self-determined by the user. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

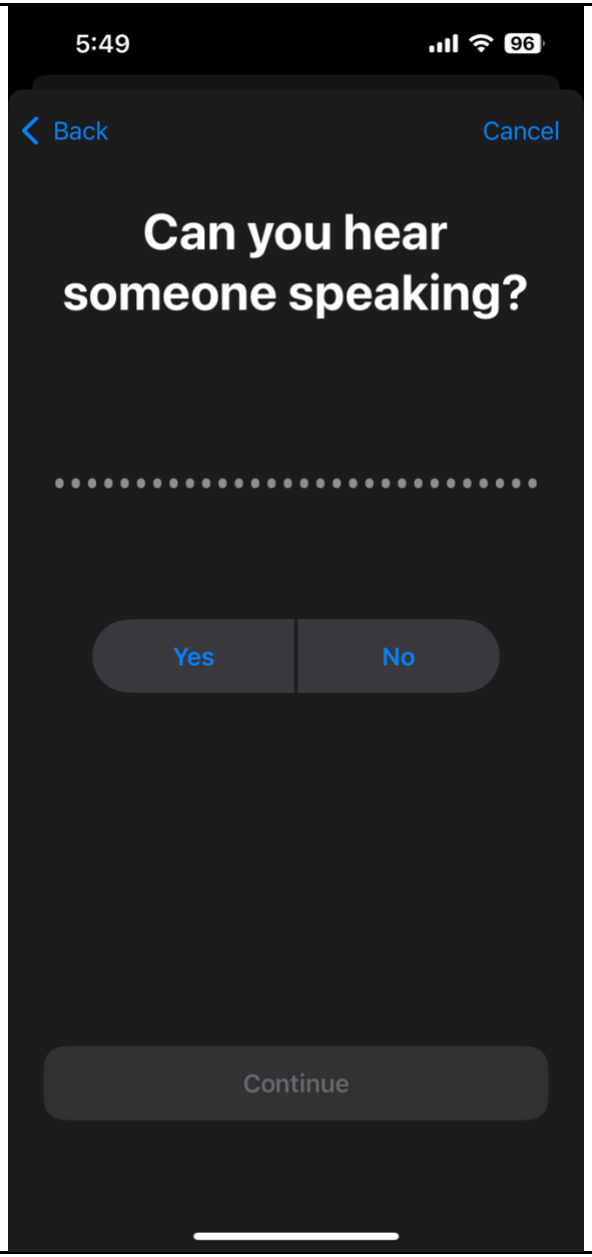
11,644,693 Claim 20	Evidence
20. A personal audio system as recited in claim 1, wherein the mobile communication device includes computing capabilities and a storage device, the storage device storing at least a software program executed by the mobile communication device to enable the user to establish the hearing profile associated with the user, and wherein the mobile communication device is configured to establish the hearing profile associated with the user via the software program executed by the mobile communication	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. The Accused Host Devices include computing capabilities and a storage device. For example, the iPhone 14 Pro is powered by the A16 Bionic chip, a 6-core CPU with 2 performance and 4 efficiency cores, a 5-core GPU, and a 16-core Neural Engine, and therefore includes computing capabilities; the iPhone 14 Pro also includes 128GB, 256GB, 512GB, and 1TB non-volatile flash storage memory, and therefore includes a storage device. *See* https://support.apple.com/en-us/111849 (INGENIOSPEC-011350 to INGENIOSPEC-011368). As another example, the iPad Pro (12.9-inch, 6th Generation) is powered by the Apple M2 chip, an 8-core CPU, a 10-core GPU, and a 16-core Neural Engine, and therefore includes computing capabilities; the iPad Pro also includes 128GB, 256GB, 512GB, 1TB, and 2TB non-volatile flash storage memory, and therefore includes a storage device. *See* https://support.apple.com/en-us/111841 (INGENIOSPEC-011333 to INGENIOSPEC-011349). As yet another example, the iPod Touch (7th Generation) is powered by the A10 Fusion chip with 64-bit architecture, and therefore includes computing capabilities; the iPod Touch also includes 32GB, 128GB, and 256GB non-volatile flash storage memory, and therefore includes a storage device. *See* https://support.apple.com/en-us/111961 (INGENIOSPEC-011369 to INGENIOSPEC-011377). Moreover, the MacBook Pro (14-inch, M3 Pro) is powered by the M3 Pro chip, a 12-core CPU, an 18-core GPU, and a 16-core Neural Engine, and therefore includes computing capabilities; the MacBook Pro also includes 512GB, 1TB, 2TB, 4TB, and 8TB solid-state drive (SSD) storage, and therefore includes a storage device. *See* https://support.apple.com/en-us/117735 (INGENIOSPEC-011382 to INGENIOSPEC-011391).

device based on the user interacting with the software program via the mobile communication device.	The storage device of the Accused Host Devices is capable of storing at least a software program executed by the device to enable the user to establish the hearing profile associated with the user. The software program includes, but is not necessarily limited to, software included within Apple's iOS, iPadOS, and macOS operating systems; system-level software and frameworks including, Accessibility Frameworks build into iOS, iPadOS, and macOS; Apple's CoreAudio Framework that manages all audio playback, processing, and routing, including user-specific audio profiles; Personalized Spatial Audio and Headphone Accommodations software including Apple's built-in software for creating a hearing profile from the user's hearing test; the Settings application (e.g., Accessibility > Audio/Visual > Headphone Accommodations), that the user uses to configure and store their hearing profile; Apple's Health Application (which stores the hearing test results and audiogram data that are used to build the user's hearing profile), Apple's Media Player (which integrates with the hearing profile to adjust playback based on stored settings). *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304), and https://support.apple.com/en-us/120634 (INGENIOSPEC-011308 to INGENIOSPEC-011310), https://developer.apple.com/library/archive/documentation/MusicAudio/Conceptual/CoreAudioOverview/CoreAudioFrameworks/CoreAudioFrameworks.html (INGENIOSPEC-011295 to INGENIOSPEC-011298), https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431), https://www.apple.com/health/ (INGENIOSPEC-011226 to INGENIOSPEC-011241). Furthermore, The storage device of the Accused Host Devices is configured to establish the hearing profile associated with the user via the software program executed by the mobile communication device based on the user interacting with the software program via the mobile communication device. Apple provides instructions for users to follow to determine a hearing profile, configure Headphone Accommodations, and perform Custom Audio Setup.


11:40
59
Back
Headphone Accommodations
Headphone Accommodations
Customize the audio for supported Apple and Beats headphones by adjusting the settings below or through Custom Audio Setup. These settings will not affect AirPods Pro with Hearing Assistance enabled.
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Stop
APPLY WITH:
Phone

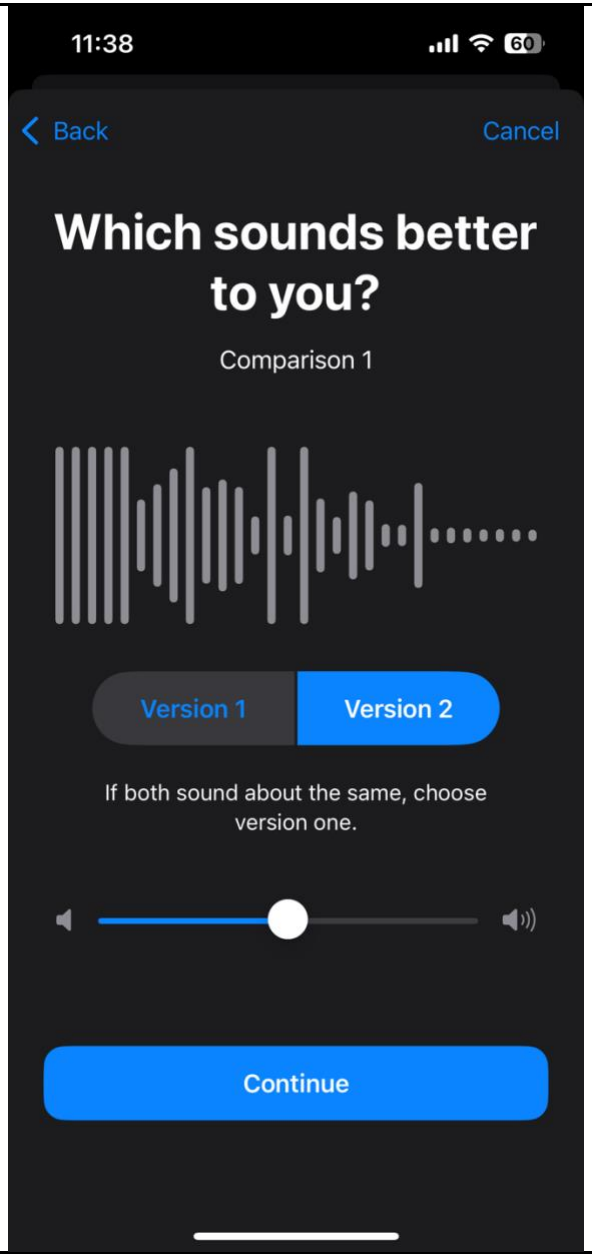
	Source: Screenshot from iPhone configuring "Headphone Accommodations," including "Custom Audio Setup"

Apple Inc. Exhibit 1022 Page 238


5:49
96
Back
Cancel
Can you hear someone speaking?
Yes
No
Continue

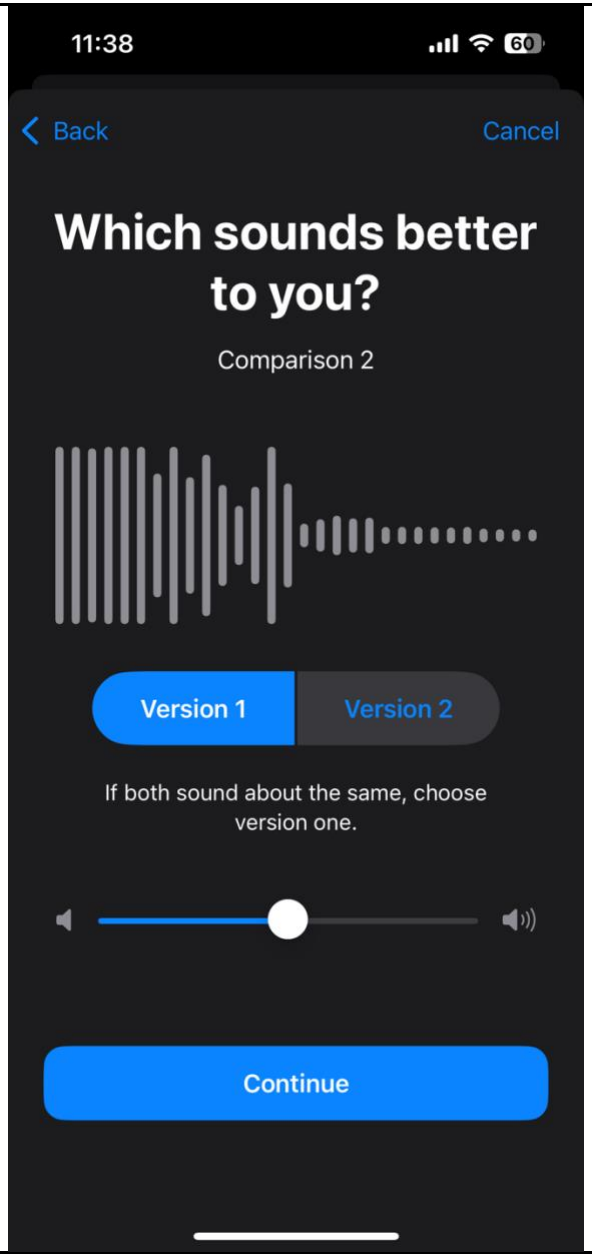
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking?

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11:38
60
Back
Cancel
Which sounds better to you?
Comparison 1
Version 1
Version 2
If both sound about the same, choose version one.
Continue

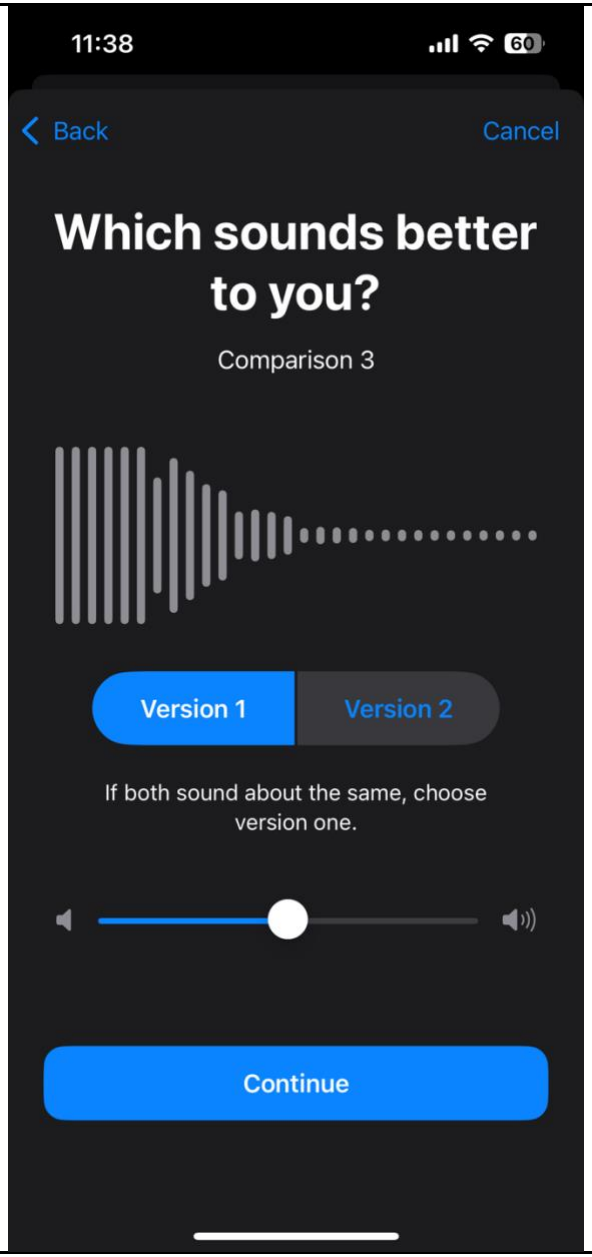
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 1

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11:38
60
Back
Cancel
Which sounds better to you?
Comparison 2
Version 1
Version 2
If both sound about the same, choose version one.
Continue

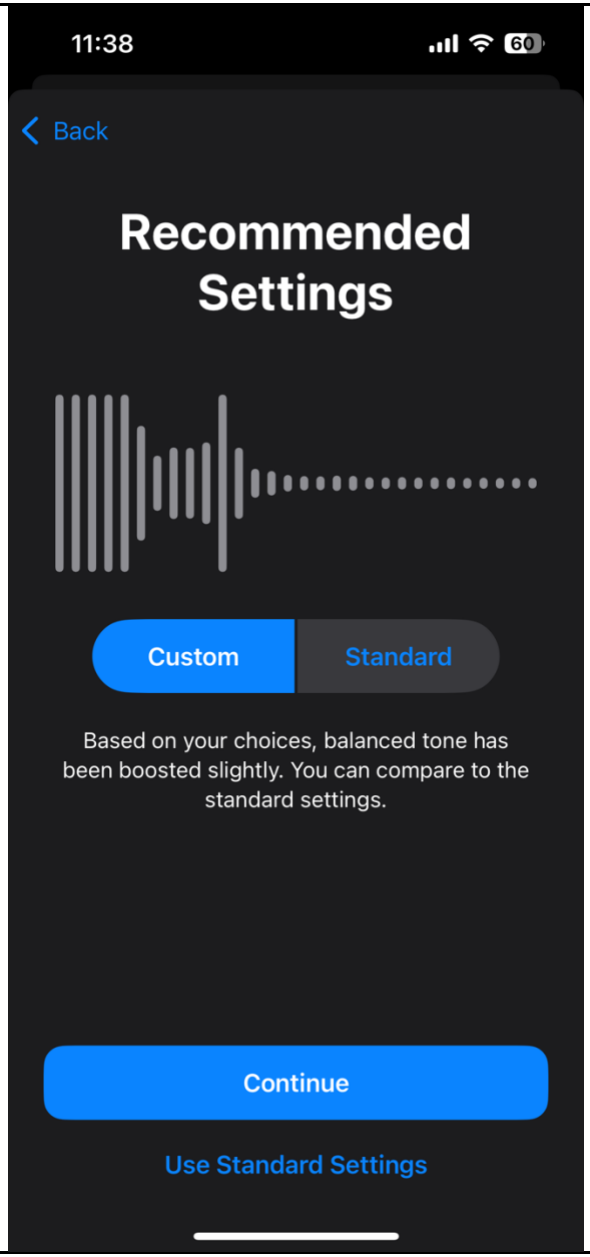
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 2

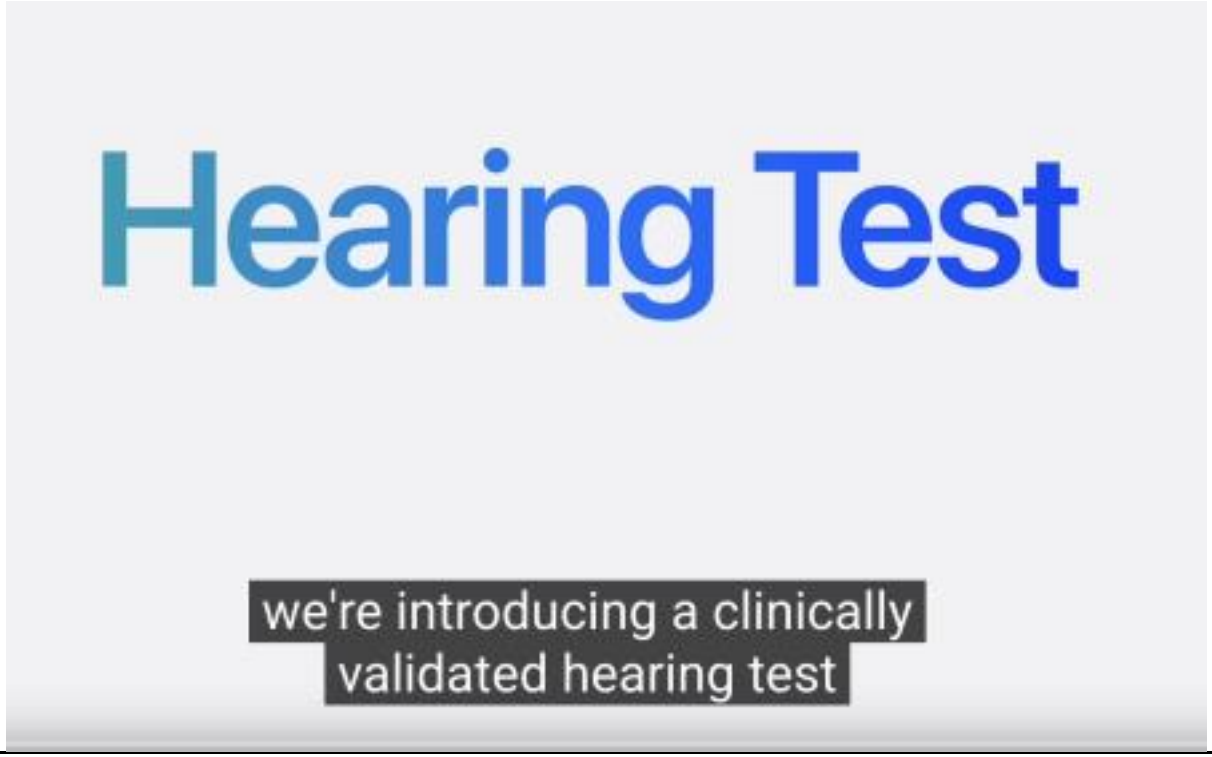
Apple Inc. Exhibit 1022 Page 244

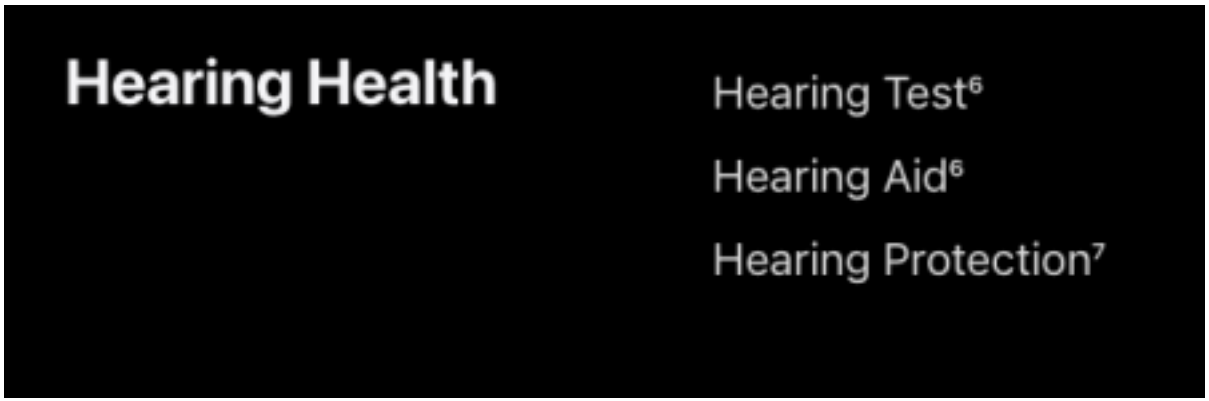

11:38
60
Back
Cancel
Which sounds better to you?
Comparison 3
Version 1
Version 2
If both sound about the same, choose version one.
Continue

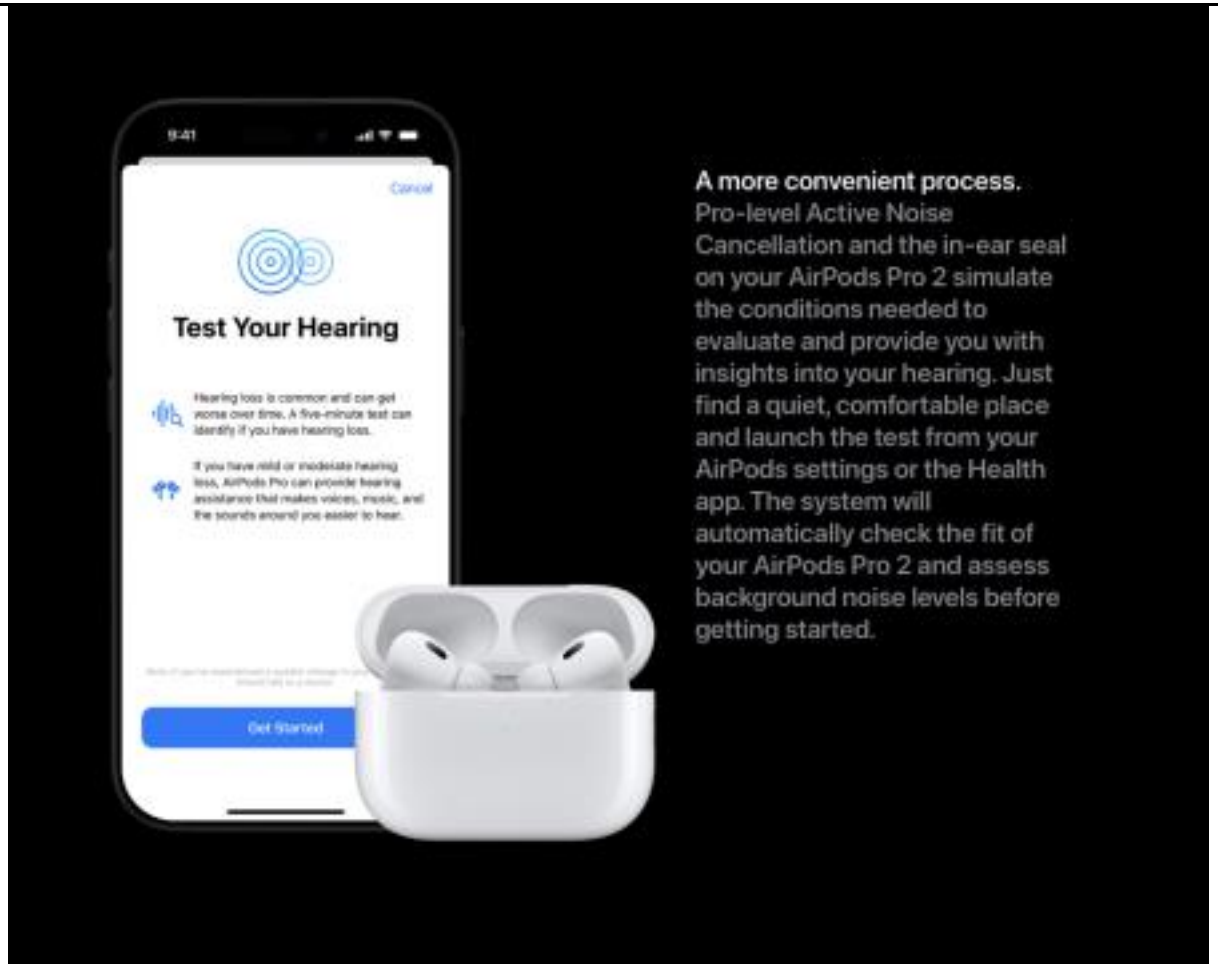
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 3

Apple Inc. Exhibit 1022 Page 246


11:38
60
Back
Recommended Settings
Custom
Standard
Based on your choices, balanced tone has been boosted slightly. You can compare to the standard settings.
Continue
Use Standard Settings

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Recommended Settings Apple's software *also* provides user interfaces and instructions for users to follow to perform a Hearing Test. *See* https://www.apple.com/airpods-pro/hearing-health/ ("Using pure-tone audiometry built on advanced acoustic science, the test plays a series of tones that you respond to by tapping the screen. Helpful animations, tap-back effects, and progress indicators guide you through the experience, which takes about five minutes. More than 150,000 real-world audiograms and millions of simulations helped develop a Hearing Test that's accurate, fast, and easy.") 

	Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Hearing Health - Apple (INGENIOSPEC-013564-013573) (available from https://www.apple.com/airpods-pro/hearing-health/).

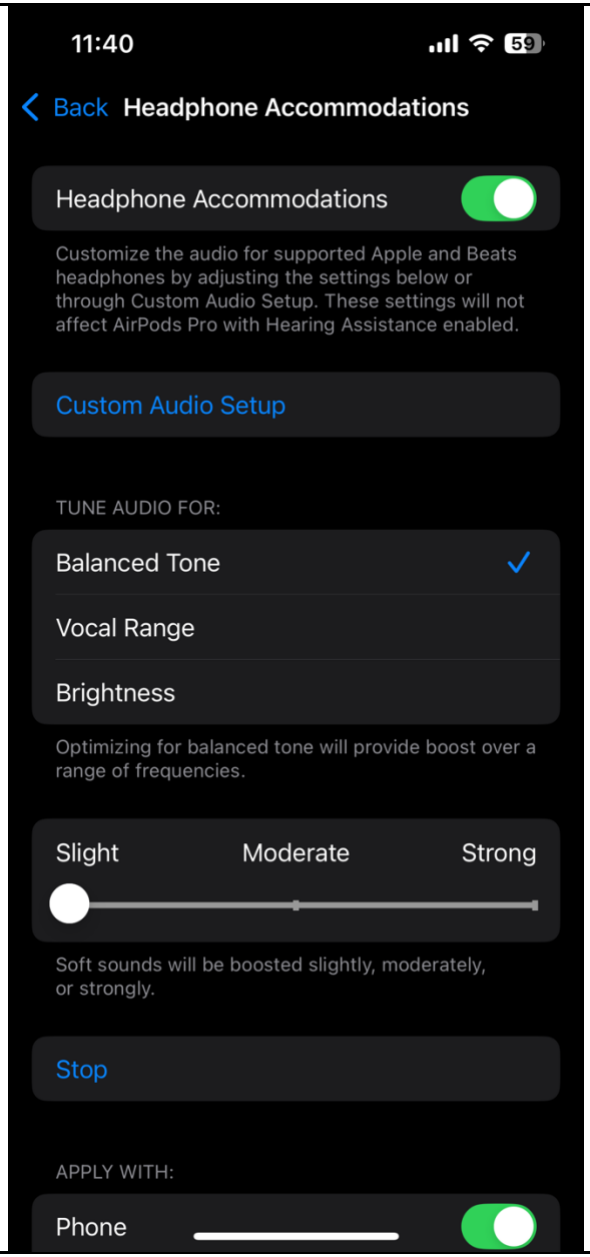
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 3	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4 with Active Noise Cancellation	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 1	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

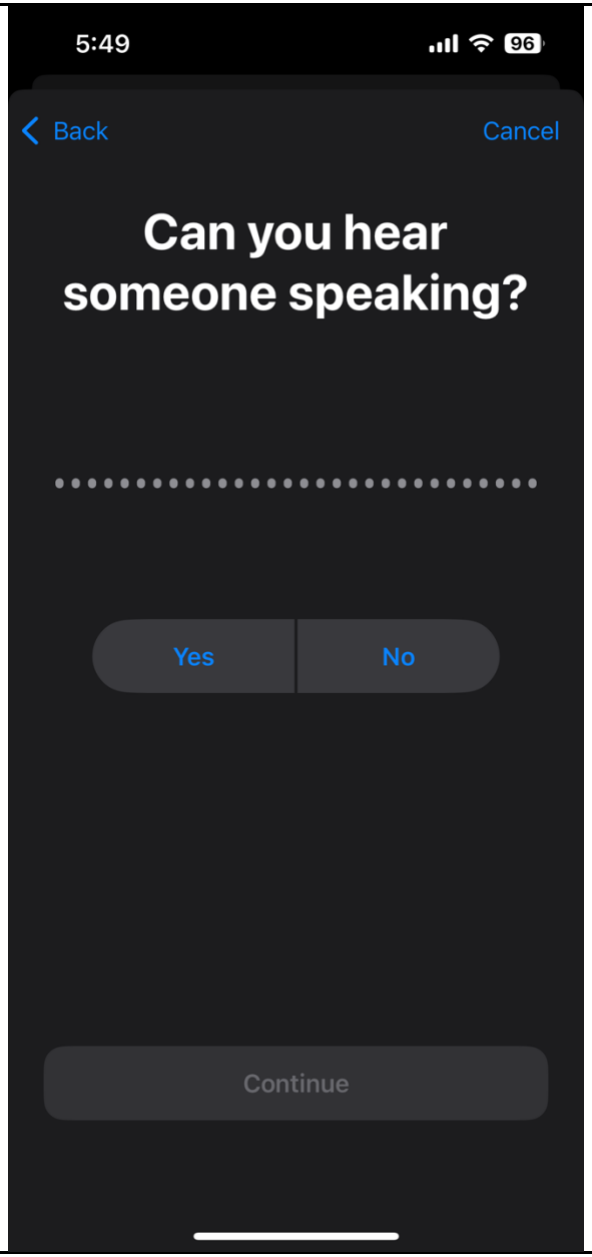
			AirPods Pro 3 - Hearing Health, available from https://www.apple.com/airpods-pro/hearing-health/. *See* INGENIOSPEC-013502-013510; Set Headphone Accommodations for AirPods, available from https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web. *See* INGENIOSPEC-013296-013297;
		Beats Fit Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Powerbeats Pro 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.		
11,644,693 Claim 21	**Evidence**		

21. A personal audio system as recited in claim 20, wherein the software program at least interactively guides the user to establish the hearing profile for the user.	Every claim limitation of claim 20 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. The storage device of the Accused Host Devices is capable of storing at least a software program executed by the device to enable the user to establish the hearing profile associated with the user. *See* Claim 20, *supra*. The software program on the Accused Host Devices interactively guides the user to establish the hearing profile for the user. To set up "Headphone Accommodations" a user goes to **Settings > Accessibility > Audio & Visual** then taps **Headphone Accommodations**. The user then taps on **Custom Audio Setup** and follows the instructions on the screen.


11:40
59
Back
Headphone Accommodations
Headphone Accommodations
Customize the audio for supported Apple and Beats headphones by adjusting the settings below or through Custom Audio Setup. These settings will not affect AirPods Pro with Hearing Assistance enabled.
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Stop
APPLY WITH:
Phone

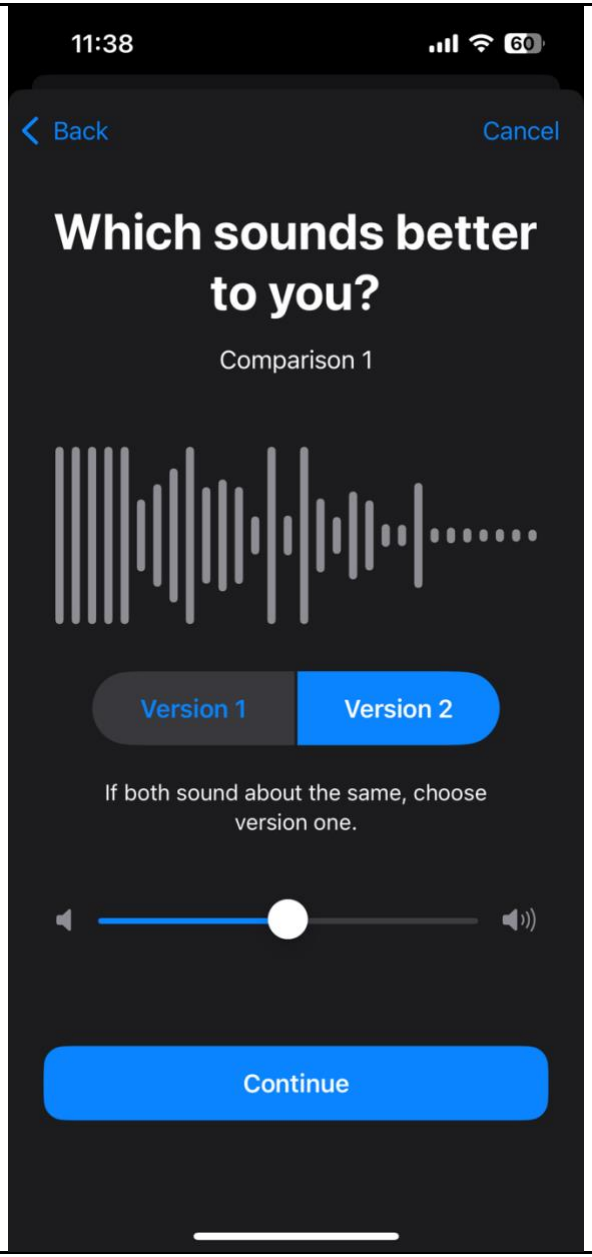
	Source: Screenshot from iPhone configuring "Headphone Accommodations," including "Custom Audio Setup"

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5:49
96
Back
Cancel
Can you hear someone speaking?
Yes
No
Continue

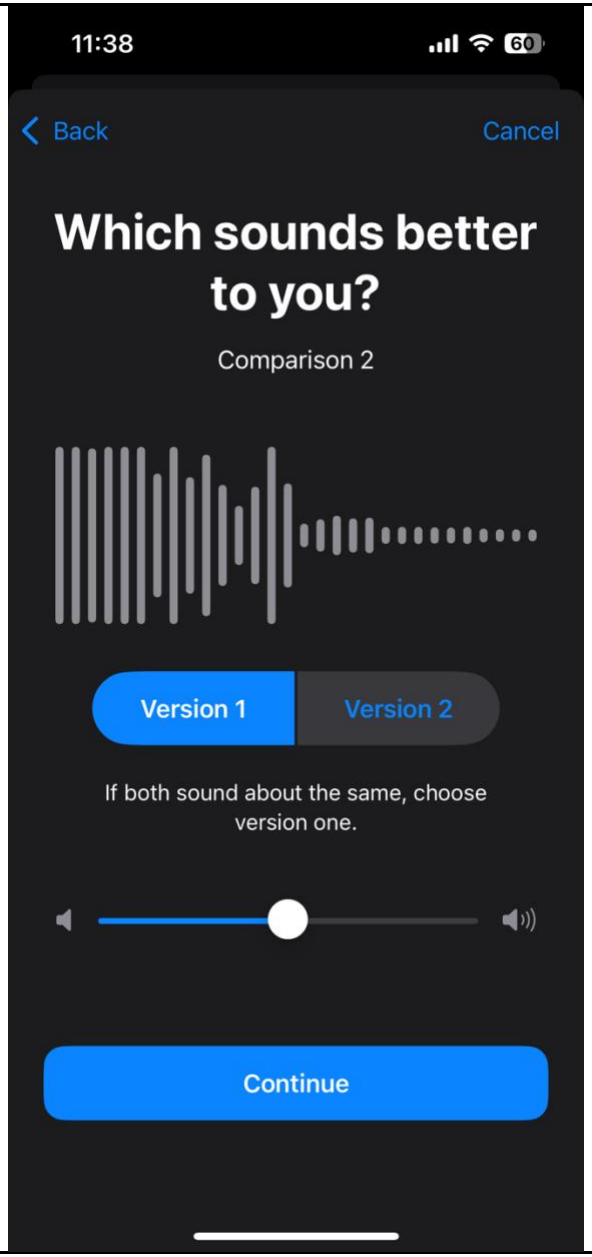
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking?

Apple Inc. Exhibit 1022 Page 257


11:38
Back
Cancel
Which sounds better to you?
Comparison 1
Version 1
Version 2
If both sound about the same, choose version one.
Continue

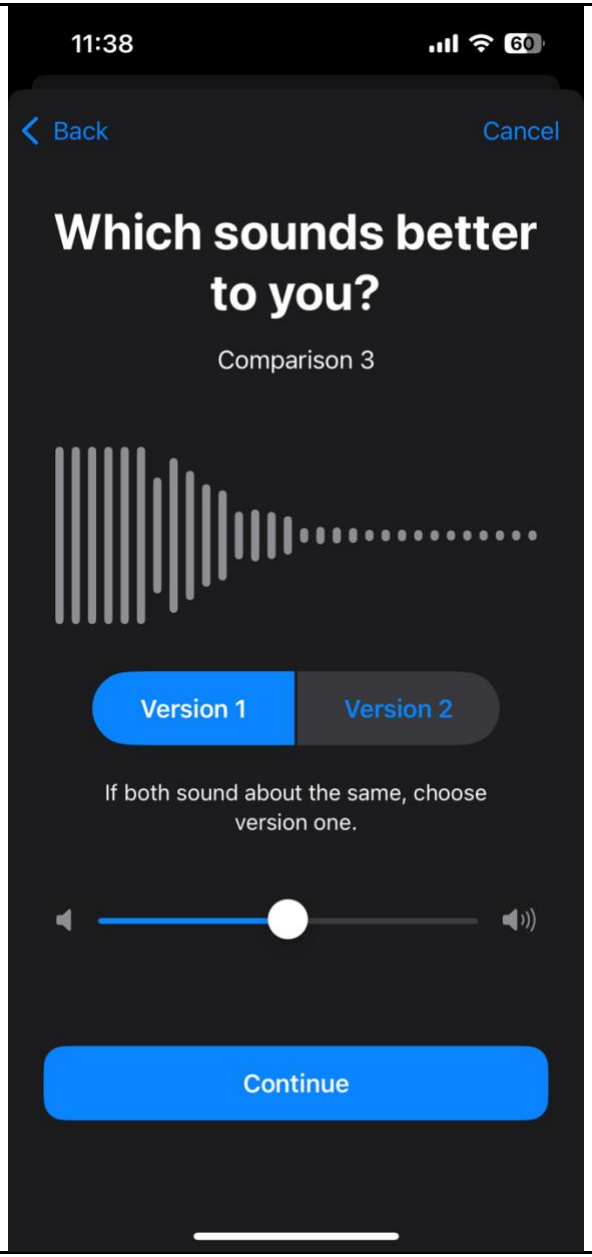
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 1

Apple Inc. Exhibit 1022 Page 259


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 2
Version 1
Version 2
If both sound about the same, choose version one.
Continue

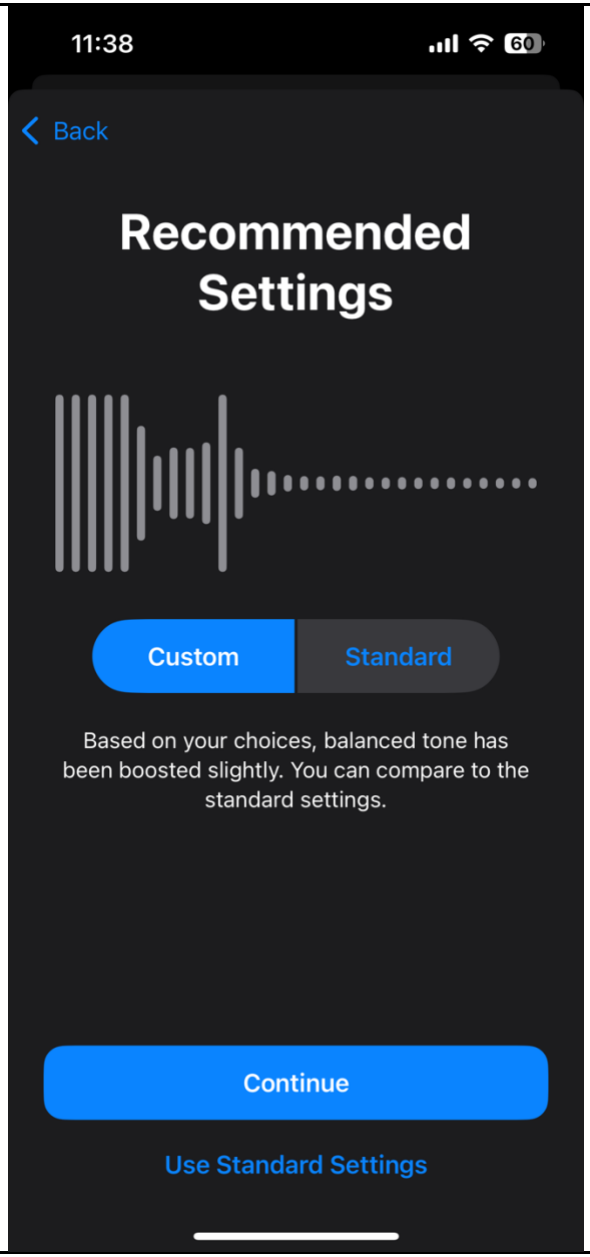
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 2

Apple Inc. Exhibit 1022 Page 261


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 3
Version 1
Version 2
If both sound about the same, choose version one.
Continue

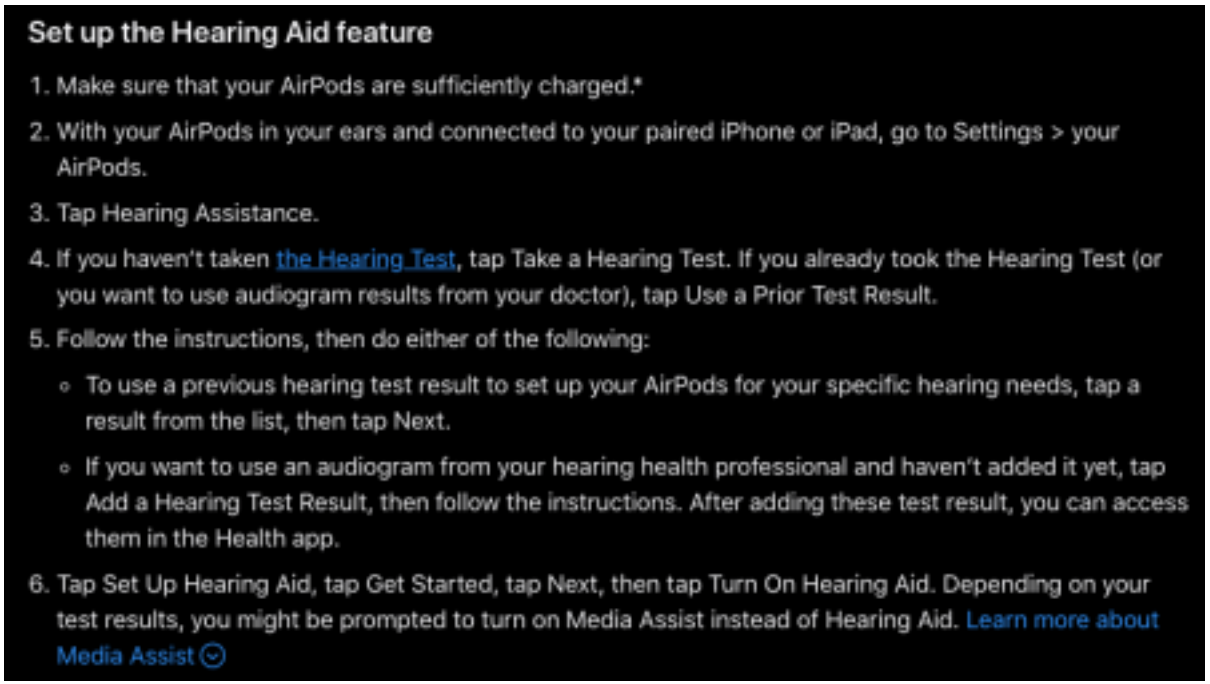
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 3

Apple Inc. Exhibit 1022 Page 263

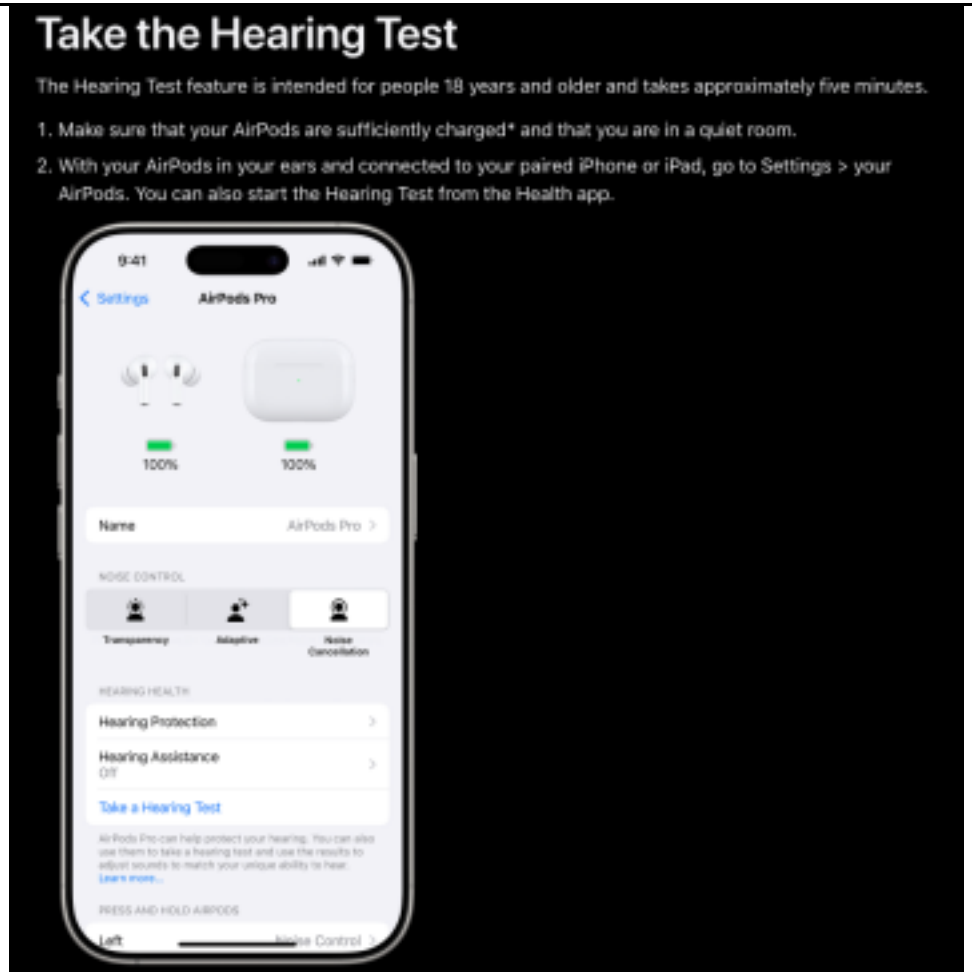

11:38
60
Back
Recommended Settings
Custom
Standard
Based on your choices, balanced tone has been boosted slightly. You can compare to the standard settings.
Continue
Use Standard Settings

Source: Screenshot from iPhone configuring "Custom Audio Setup," Recommended Settings

To set up the Hearing Aid feature a user goes to **Settings > your AirPods > Take a Hearing Test**. The user can also start the Hearing Test from the Health app. *See* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566), https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473).



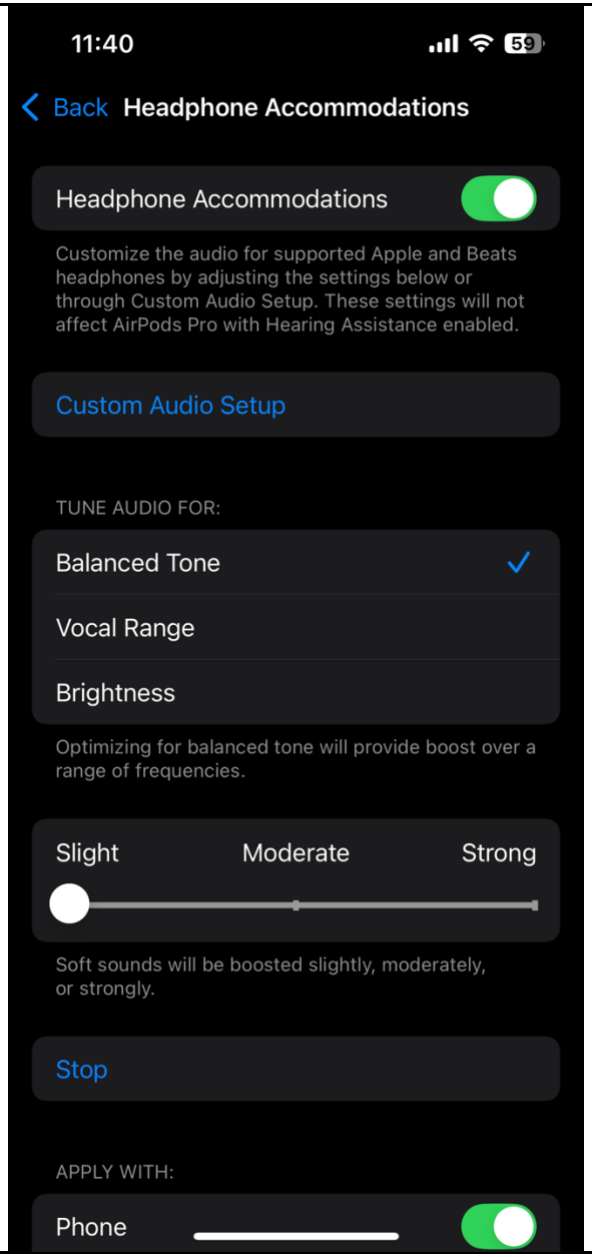
Source: https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566)



Source: https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473)

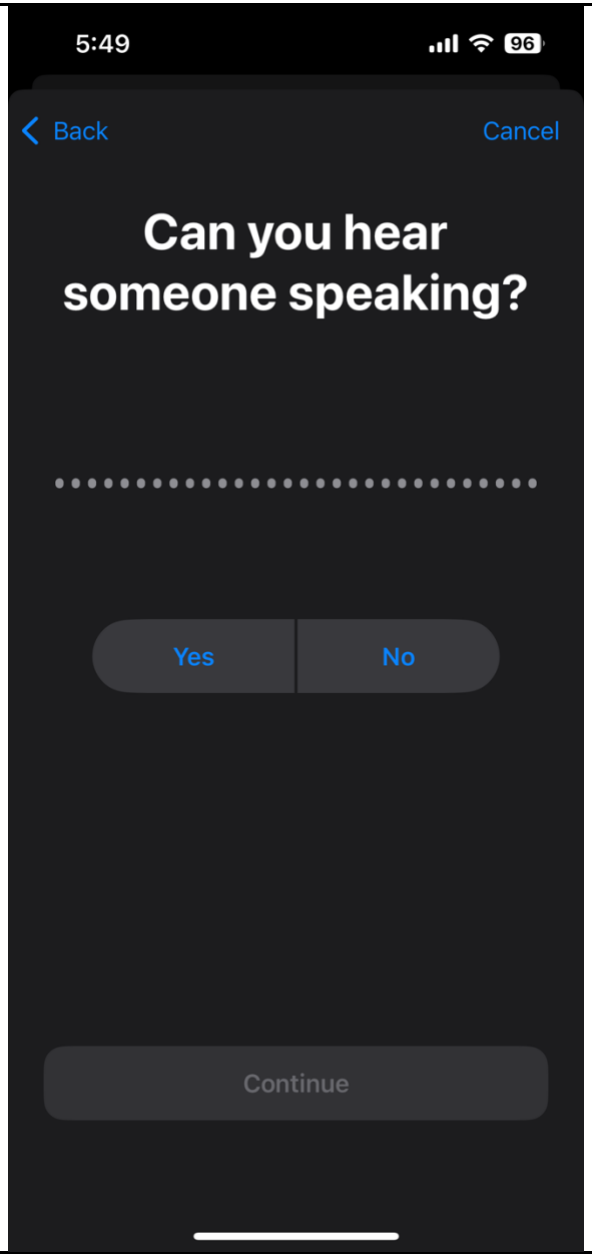
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons.

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 22	**Evidence**
22. A personal audio system as recited in claim 21, wherein the software program at least interactively guides the user to establish the hearing profile for the user by at least causing various audio tones to be output to the user via at least one of the earbuds, prompting the user to provide a hearing input with respect to one or more of the various audio tones being output, and receiving the hearing user input pertaining to one or more of the various audio tones being output.	Every claim limitation of claim 21 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 1b1, *supra*. The storage device of the Accused Host Devices is capable of storing at least a software program executed by the device to enable the user to establish the hearing profile associated with the user. *See* Claim 20, *supra*. The software program on the Accused Host Devices interactively guides the user to establish the hearing profile for the user. *See* Claim 21, *supra*. The software program is configured to causes various audio tones to be output to the user via at least one of the earbuds of the Accused Headset Devices (e.g., "Version 1" or "Version 2", as shown below), and prompt the user to provide a hearing input (e.g., the version they prefer) with respect to one or more of the various audio tones being output.


11:40
59
Back
Headphone Accommodations
Headphone Accommodations
Customize the audio for supported Apple and Beats headphones by adjusting the settings below or through Custom Audio Setup. These settings will not affect AirPods Pro with Hearing Assistance enabled.
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Stop
APPLY WITH:
Phone

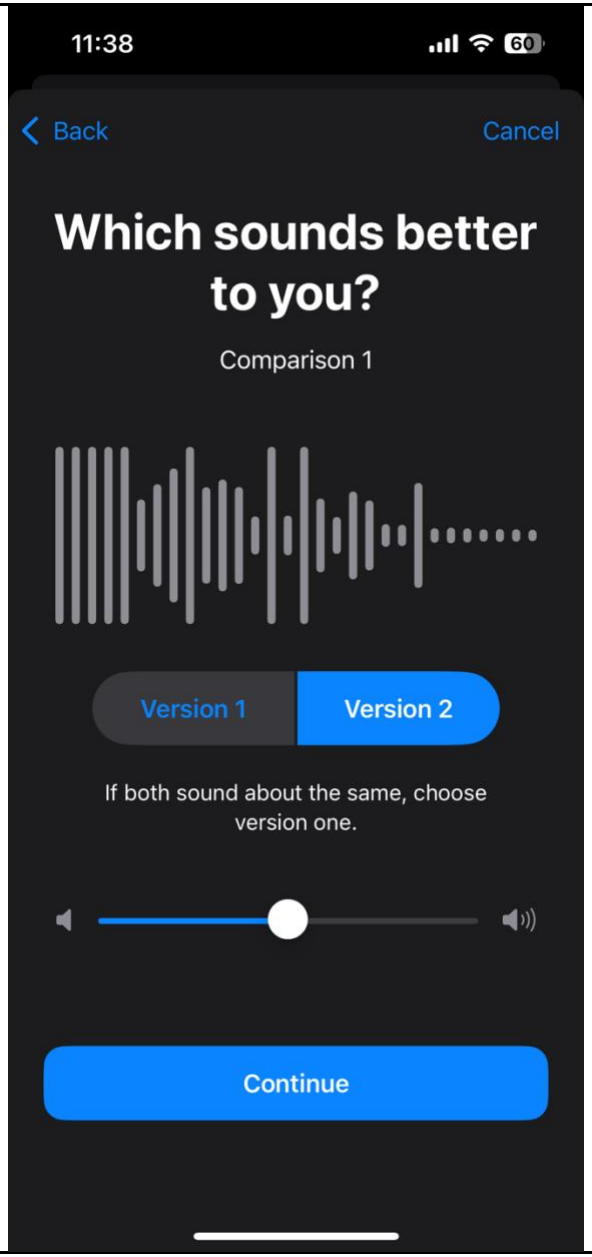
	Source: Screenshot from iPhone configuring "Headphone Accommodations," including "Custom Audio Setup"

Apple Inc. Exhibit 1022 Page 269

		 5:49 96 Back Cancel Can you hear someone speaking? Yes No Continue	

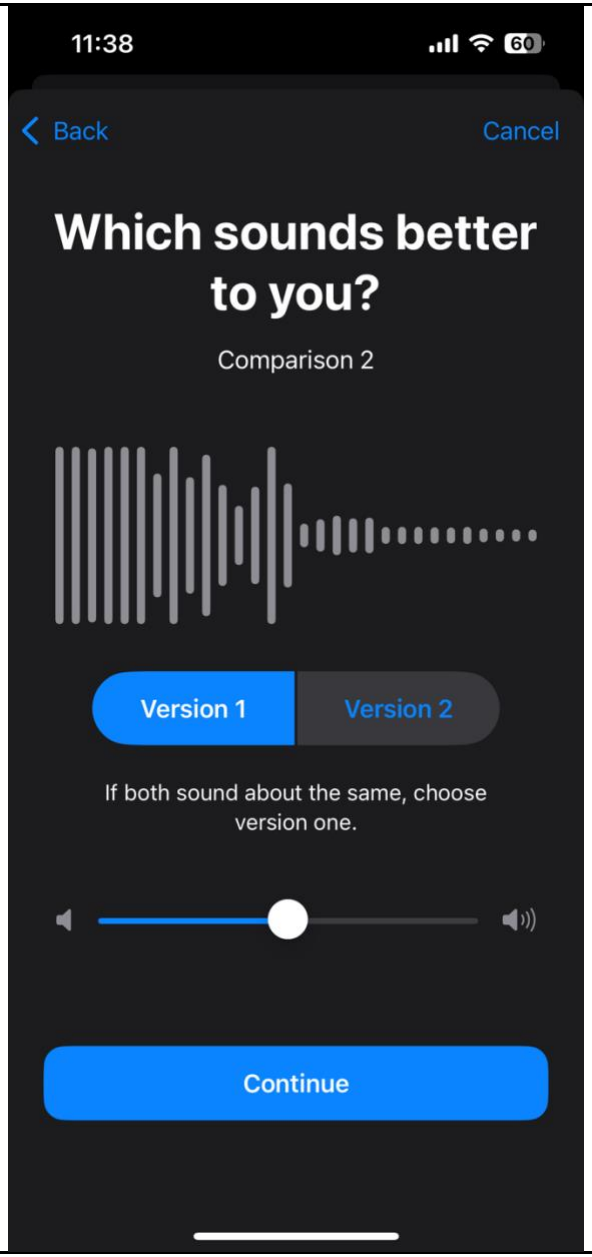
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking?

Apple Inc. Exhibit 1022 Page 271


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 1
Version 1
Version 2
If both sound about the same, choose version one.
Continue

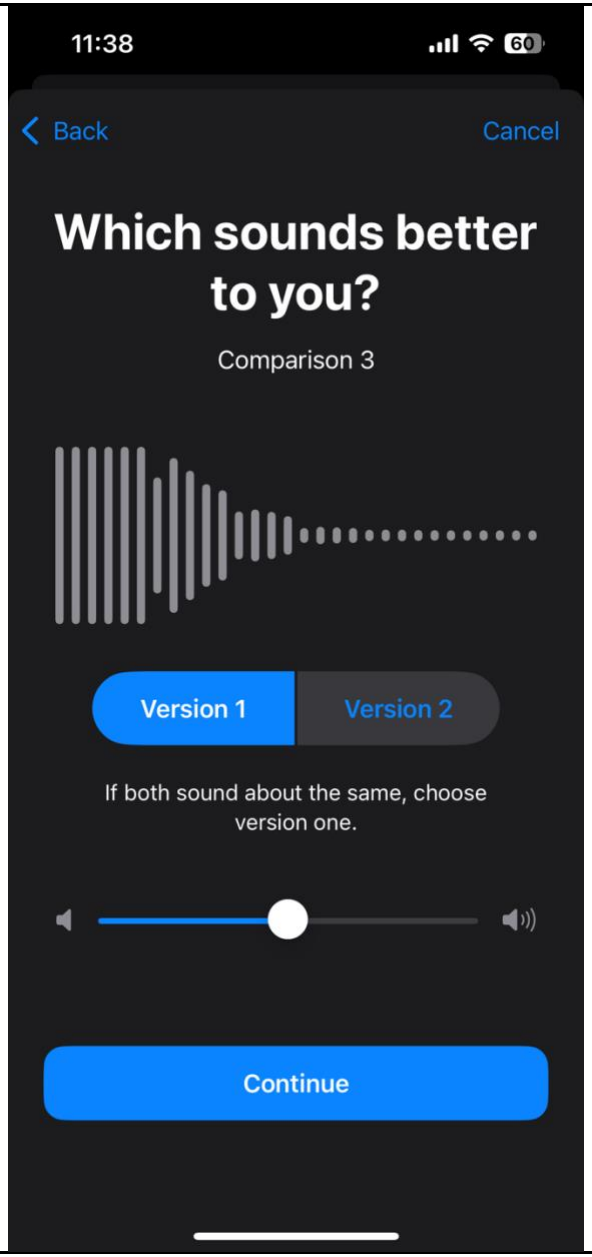
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 1

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11:38
60
Back
Cancel
Which sounds better to you?
Comparison 2
Version 1
Version 2
If both sound about the same, choose version one.
Continue

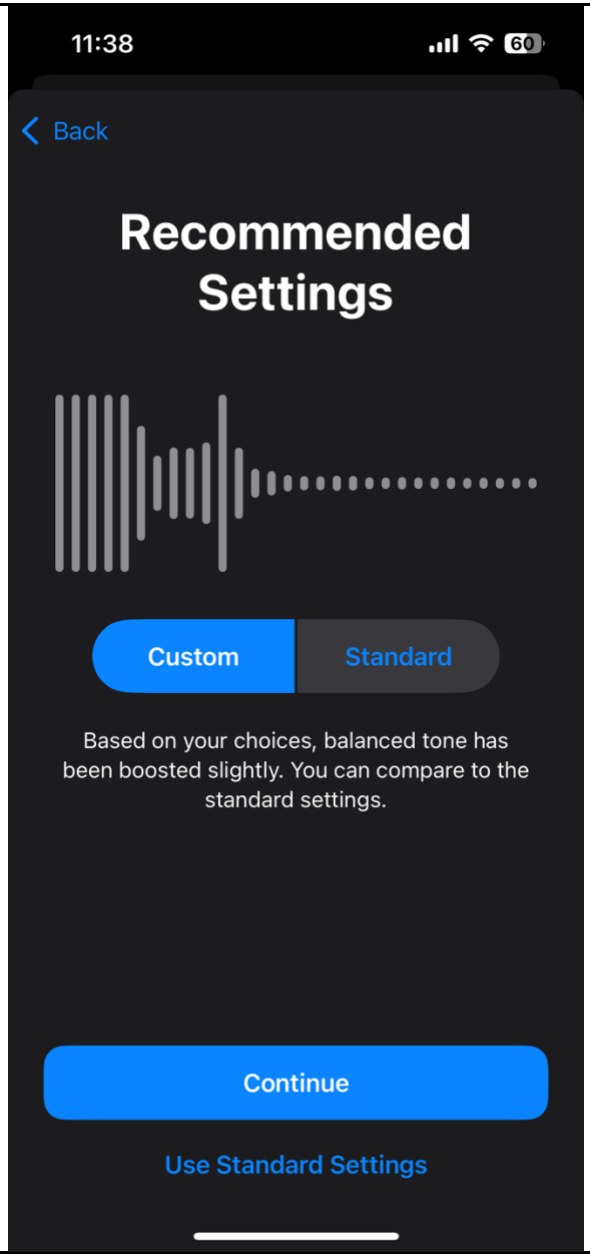
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 2

Apple Inc. Exhibit 1022 Page 275


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 3
Version 1
Version 2
If both sound about the same, choose version one.
Continue

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 3

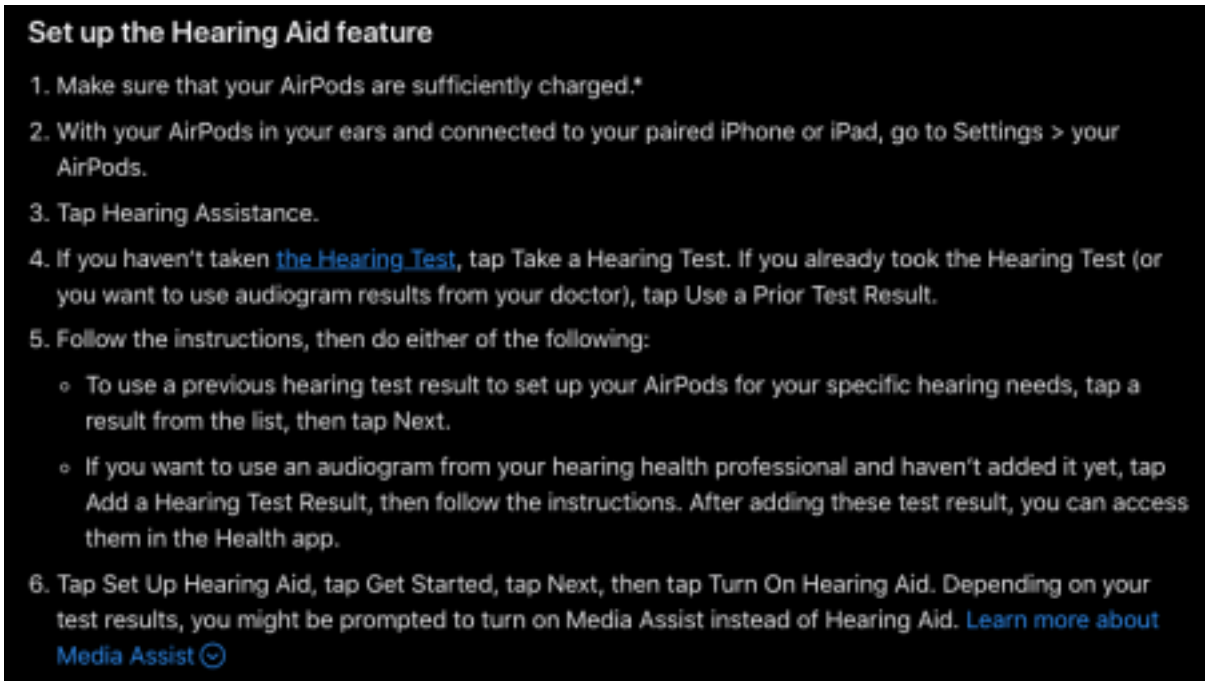
Apple Inc. Exhibit 1022 Page 277


11:38
60
Back
Recommended Settings
Custom
Standard
Based on your choices, balanced tone has been boosted slightly. You can compare to the standard settings.
Continue
Use Standard Settings

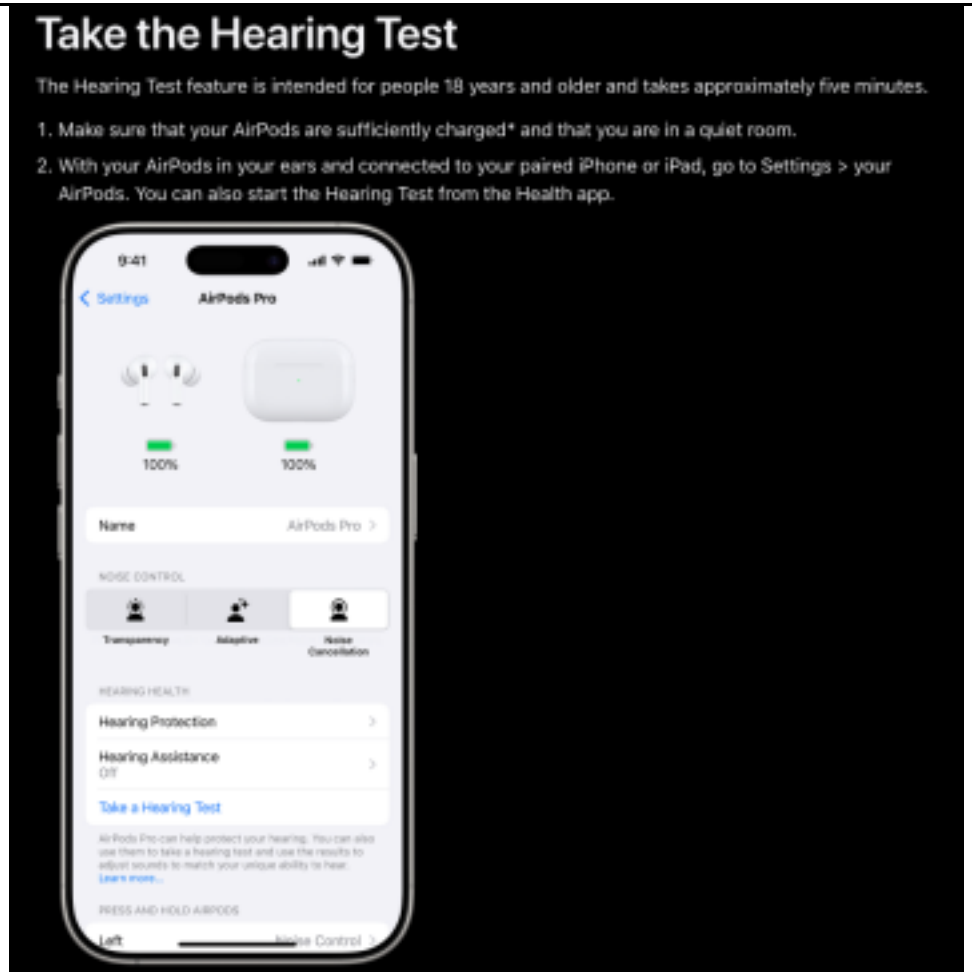
Source: Screenshot from iPhone configuring "Custom Audio Setup," Recommended Settings

The software program is configured to receive the hearing user input pertaining to one or more of the various audio tones being output (e.g., the preferred version -- "Version 1" or "Version 2" -- shown above) and establish a hearing profile associated with the user via the software program, accordingly.

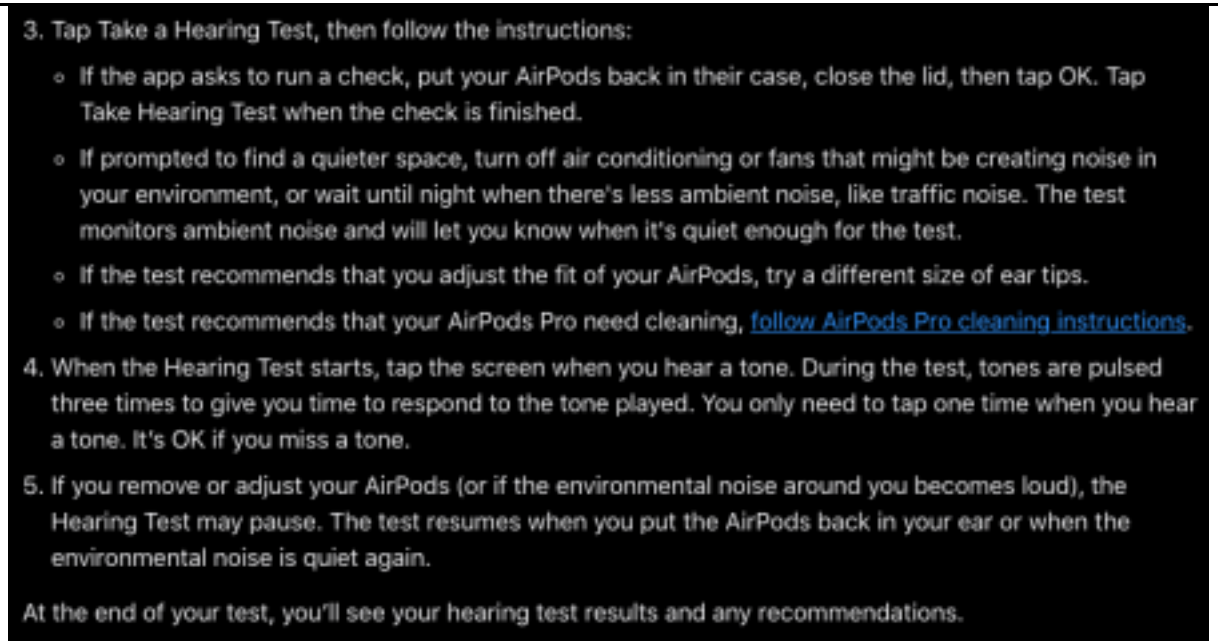
To set up the Hearing Aid feature a user goes to **Settings > your AirPods > Take a Hearing Test**. The user can also start the Hearing Test from the Health app. *See* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566), https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473).



Source: https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566)



Source: https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473)



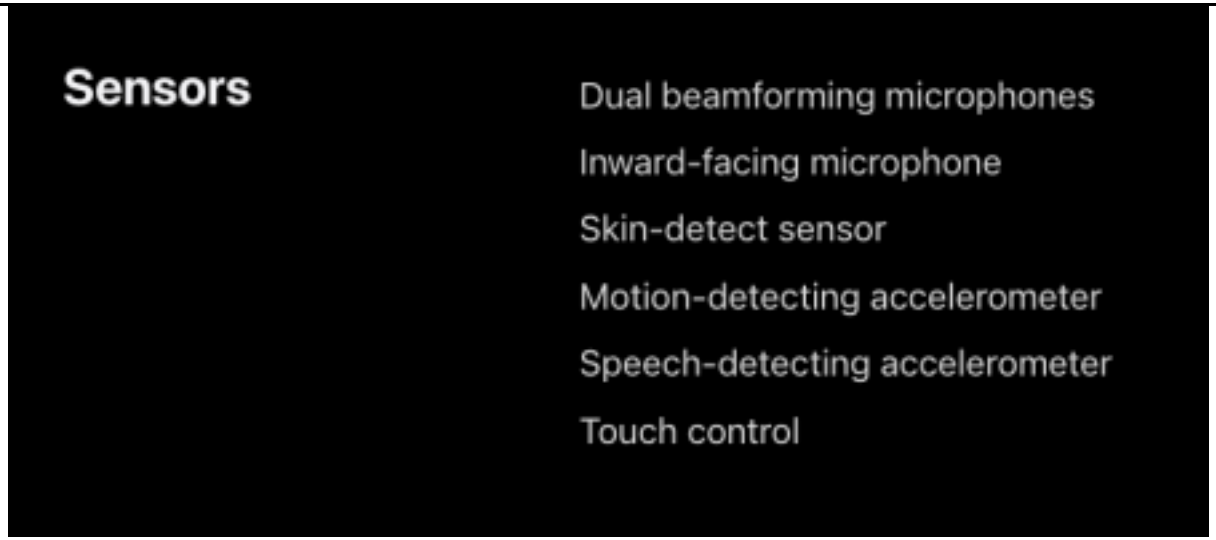
Source: https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473) ("When the Hearing Test starts, tap the screen when you hear a tone. During the test, tones are pulsed three times to give you time to respond to the tone played. You only need to tap one time when you hear a tone. It's OK if you miss a tone.")

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 23	**Evidence**

23. A personal audio system as recited in claim 1, wherein at least one of the earbuds in the pair of earbuds comprises a radiation detector configured to capture radiation data; and first electronic circuitry electrically connected to the radiation detector, the first electronic circuitry configured to process at least the radiation data captured by the radiation detector, wherein the first electronic circuitry is configured to determine whether the earbud is being worn by a user based on at least the processed radiation data.	Every claim limitation of claim 1 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of ear buds. For example, each of the Accused Headset Devices comprise a pair of ear buds. *See* Claim 1a, *supra*. At least one of the earbuds in the pair of earbuds comprises a radiation detector configured to capture radiation data. The radiation detector is an infrared radiation detector. The infrared radiation detector is configured to detect radiation from an infrared radiation emitter. The radiation detector can help determine if the device is being worn based upon the detected infrared radiation. At least one of the earbuds in the pair of earbuds *also* comprises electronic circuitry electrically connected to the radiation detector. The electronic circuitry includes, but is not necessarily limited to, digital signal processors (DSP), system-on-chip (SoC), integrated circuits (ICs), storage medium, microprocessors, microcontrollers, and any other electronic circuitry involved in determining whether the earbud is being worn by a user based on at least the processed radiation data. The electronic circuitry is configured to process at least the radiation data captured by the radiation detector to determine whether the earbud is being worn by a user based on at least the processed radiation data.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Turn off automatic ear detection

Your AirPods Pro automatically stop playing audio when you take them off, and resume playback when you put them back on. You can change this setting.

1. Wear your AirPods, and make sure they're connected to your device.
2. Do one of the following:
   - *iPhone or iPad*: Go to Settings, tap the name of your AirPods near the top of the screen, then turn Automatic Ear Detection on or off.
   - *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

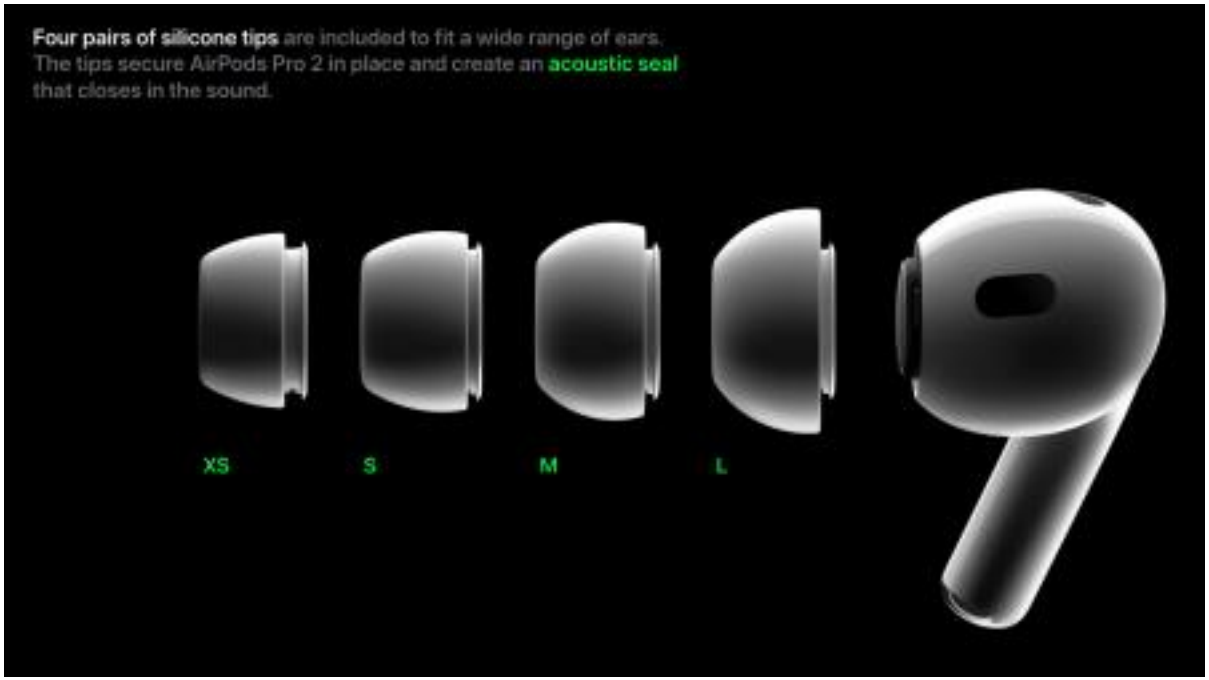
			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;

	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 24	**Evidence**
24. A personal audio system operable to at least generate customized audio output, comprising:	*See* Claim 1pre, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
24a. a head-worn wearable electronic device including at least a pair of speakers, each of the speakers being configured to be wearable proximate to an ear of a user; and	Each of the Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, comprises a head-worn wearable electronic device including at least a pair of speakers. The Accused Headset Devices are head-worn wearable electronic devices. The Accused Headset Devices, such as Apple AirPods Pro 2, include a pair of speakers. Each of the speakers are configured to be wearable proximate to an ear of a user. 

Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

The speakers are configured to be wearable proximate to an ear of a user.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of the Accused Headset Devices, such as Apple AirPods Pro 2, include a pair of speakers.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



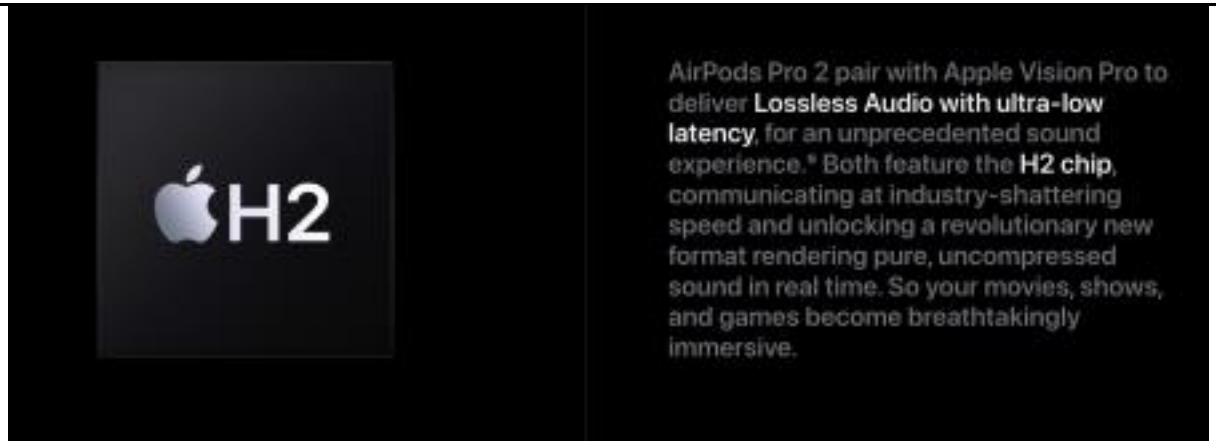
The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The speakers are used to play audio when proximate to the user's ear.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;

		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;

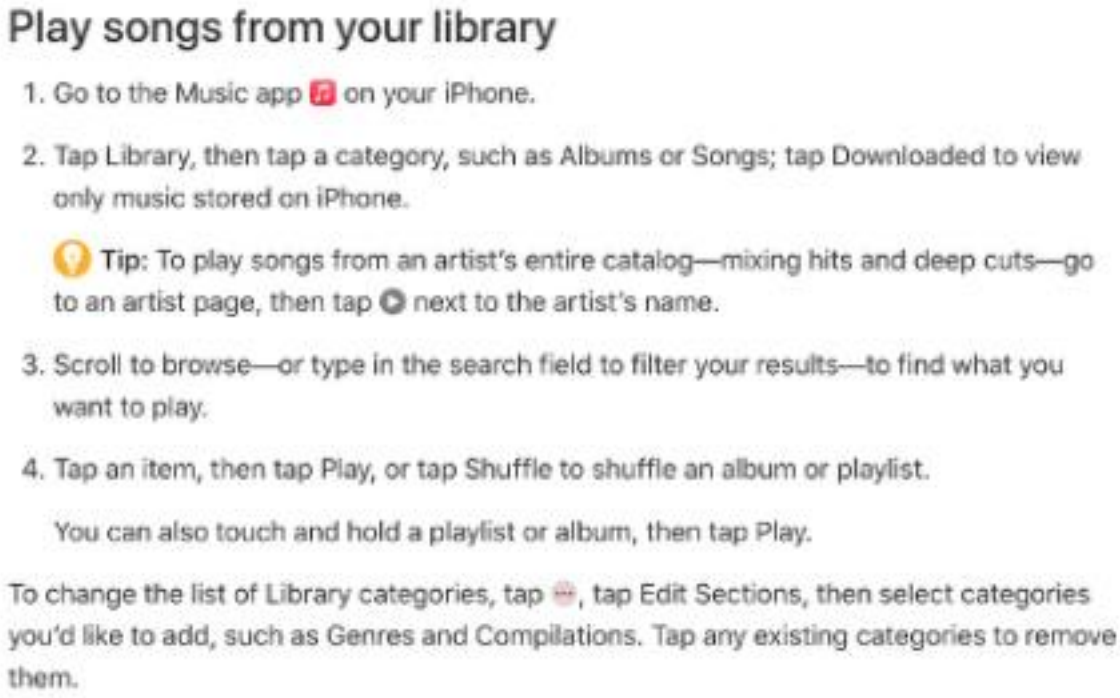
		Beats Solo Pro	Solo Pro Headphones Support - Beats, available from https://www.beatsbydre.com/support/headphones/solo-pro. *See* INGENIOSPEC-013798-013803; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
		Powerbeats Pro	Beats Global Press Room, available from https://www.beatsbydre.com/company/press. *See* INGENIOSPEC-014290-014297; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Wearing your AirPods, EarPods, or Beats device, available from https://support.apple.com/en-us/101598. *See* INGENIOSPEC-014301-014302; How to get the best fit and sound with your Powerbeats Pro | Comfort, available from https://www.youtube.com/watch?v=I9t6YW3o-xc. *See* INGENIOSPEC-013232, INGENIOSPEC-013233-013237; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;

	<table><tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;</td></tr></table> Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
24b1. a mobile communication device at least for supporting audio output,	*See* Claim 1b1, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
24b2. the mobile communication device configured to store at least a hearing profile associated with the user, the stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear,	*See* Claim 1b2, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

24b3. the mobile communication device configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user such that the customized audio output signals at least compensate for the hearing impairment regarding the user's ability to hear, the mobile communication device configured to produce the customized audio output signals using at least signal amplification,	*See* Claim 1b3, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
24b4. and the mobile communication device configured to transmit the	The Accused Host Devices are configured to transmit the customized audio output signals to the pair of speakers of the Accused Headset Devices. For example, the Accused Host Devices are configured to paired with one of the Accused Headset Devices via Bluetooth. Each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible.

customized audio output signals to the pair of speakers,	*See* https://support.apple.com/guide/iphone/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011284 to INGENIOSPEC-011285), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011436 to INGENIOSPEC-011437), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011438 to INGENIOSPEC-011440), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011454 to INGENIOSPEC-011456), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/16.0/ios/16.0 (INGENIOSPEC-011457 to INGENIOSPEC-011459), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/17.0/ios/17.0 (INGENIOSPEC-011460 to INGENIOSPEC-011462), https://support.apple.com/guide/iphone/connect-bluetooth-accessories-iph3c50f191/18.0/ios/18.0 (INGENIOSPEC-011290 to INGENIOSPEC-011291); https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/13.0/ipados/13.0 (INGENIOSPEC-011432 to INGENIOSPEC-011433), https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/14.0/ipados/14.0 (INGENIOSPEC-011434 to INGENIOSPEC-011435), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/15.0/ipados/15.0 (INGENIOSPEC-011445 to INGENIOSPEC-011447), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/16.0/ipados/16.0 (INGENIOSPEC-011448 to INGENIOSPEC-011450), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/17.0/ipados/17.0 (INGENIOSPEC-011451 to INGENIOSPEC-011453), https://support.apple.com/guide/ipad/connect-bluetooth-accessories-ipad997da4cf/18.0/ipados/18.0 (INGENIOSPEC-011288 to INGENIOSPEC-011289); https://support.apple.com/guide/ipod-touch/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011286 to INGENIOSPEC-011287), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011441 to INGENIOSPEC-011442), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011443 to INGENIOSPEC-011444), https://support.apple.com/guide/ipod-touch/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011463 to INGENIOSPEC-011465); https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-with-your-mac-blth1004/10.13/mac/10.13 (INGENIOSPEC-011272 to INGENIOSPEC-011272), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.14/mac/10.14 (INGENIOSPEC-011273 to INGENIOSPEC-011273), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.15/mac/10.15 (INGENIOSPEC-011274 to INGENIOSPEC-011274), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/11.0/mac/11.0 (INGENIOSPEC-011275 to INGENIOSPEC-011275), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-

	blth1004/12.0/mac/12.0 (INGENIOSPEC-011276 to INGENIOSPEC-011276), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/13.0/mac/13.0 (INGENIOSPEC-011277 to INGENIOSPEC-011278), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/14.0/mac/14.0 (INGENIOSPEC-011279 to INGENIOSPEC-011280), https://support.apple.com/guide/mac-help/connect-a-wireless-accessory-blth1004/15.0/mac/15.0 (INGENIOSPEC-011281 to INGENIOSPEC-011283); https://support.apple.com/en-us/109319 (INGENIOSPEC-011181 to INGENIOSPEC-011183), https://support.apple.com/en-us/105059 (INGENIOSPEC-011523 to INGENIOSPEC-011525), https://support.apple.com/en-us/104989 (INGENIOSPEC-011292 to INGENIOSPEC-011294), https://support.apple.com/guide/watch/play-music-apd70768b20b/watchos (INGENIOSPEC-011421 to INGENIOSPEC-011425); https://support.apple.com/en-us/102227 (INGENIOSPEC-011531 to INGENIOSPEC-011532), https://support.apple.com/guide/tv/use-airpods-or-beats-with-apple-tv-atvb9b4521cf/tvos (INGENIOSPEC-011526 to INGENIOSPEC-011527); https://support.apple.com/en-us/118516 (INGENIOSPEC-011533 to INGENIOSPEC-011534), https://support.apple.com/en-us/118522 (INGENIOSPEC-011528 to INGENIOSPEC-011530); https://support.apple.com/guide/beats/pair-beats-dev46c519179/web (INGENIOSPEC-011396 to INGENIOSPEC-011399). Moreover, each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are *also* Bluetooth-compatible.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Using Bluetooth, each of the Accused Host Devices is capable of wirelessly connecting with the Accused Headset Devices. When connected, the Accused Headset Devices can play audio transmitted by the Accused

	Host Devices. To play audio, the Accused Host Devices are configured to transmit the customized audio output signals to the pair of speakers of the Accused Headset Devices.  Play songs from your library 1. Go to the Music app on your iPhone. 2. Tap Library, then tap a category, such as Albums or Songs; tap Downloaded to view only music stored on iPhone. Tip: To play songs from an artist's entire catalog—mixing hits and deep cuts—go to an artist page, then tap next to the artist's name. 3. Scroll to browse—or type in the search field to filter your results—to find what you want to play. 4. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist. You can also touch and hold a playlist or album, then tap Play. To change the list of Library categories, tap , tap Edit Sections, then select categories you'd like to add, such as Genres and Compilations. Tap any existing categories to remove them. **Source**: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Stream recommended songs

1. Go to the Music app on your iPhone.
2. Do any of the following to find music you want to play:
   - *View recommendations tailored for you:* Tap Home, then tap a playlist or album.
   - *See what's new in Apple Music:* Tap New, then find music by mood, new releases, charts, and more.
   - *Search the Apple Music catalog:* See Search for music.
3. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Play a podcast

1. Go to the Podcasts app on your iPhone.
2. Search or browse to find an episode, then tap ▶ below an episode title. You can also do any of the following:

   - *Jump to a chapter:* Tap ⌄ next to the name of the current chapter, then tap the chapter you want to play.
   - *Jump to a specific time:* Drag the slider above the player controls. (If the slider doesn't appear, tap the player at the bottom to open the Now Playing screen.)
   - *Resume playing a previous show or episode:* Tap Home, then tap an episode below Recently Played.

Tip: To jump to a specific time, drag the slider below the episode information. (If the slider doesn't appear, tap the player near the bottom of the screen to open Now Playing.)

Source: https://support.apple.com/guide/iphone/listen-to-podcasts-iph3a22707a5/ios (INGENIOSPEC-011378 to INGENIOSPEC-011381)

Play and pause audio

1. Wear one or both AirPods, and make sure they're connected to your device.
2. Go to an audio app, then play something—for example, a song in the Music app or an audiobook in the Books app.
3. To pause or stop the audio, do one of the following:

   - *AirPods 1 or 2:* To pause audio while listening with both AirPods, remove one. When you return it to your ear, playback resumes automatically.

     Note: You can also set either of your AirPods to pause when you double-tap it, then resume playback when you double-tap it again. See Change settings for AirPods 1 and 2.

   - *AirPods 3, AirPods 4 (both models), or AirPods Pro (all models):* To pause audio while listening with both AirPods, remove one. You can also press the stem to pause audio.

     When you return it to your ear or press the stem again, playback resumes.

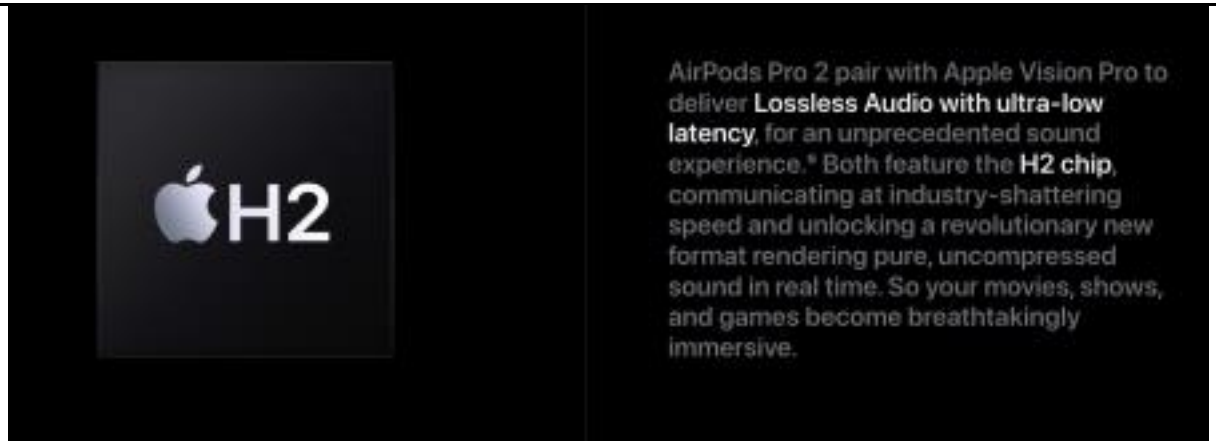
   - *AirPods Max:* Press the Digital Crown. Press it again to resume playback.

     You can also remove AirPods Max from your head.

If you don't want AirPods to automatically play and stop the audio, you can turn off automatic ear detection. If you don't want AirPods Max to automatically play and stop the audio, you can turn off automatic head detection.

Source: https://support.apple.com/guide/airpods/play-audio-on-your-airpods-dev216d7c746/web (INGENIOSPEC-011418 to INGENIOSPEC-011420)

Upon receipt of the customized audio output signals, the pair of speakers of the Accused Headset Devices are configured to play audio output based upon the receive signals.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;

	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

24c. wherein each of the speakers is configured to receive at least a portion of the customized audio output signals transmitted by the mobile communication device, and

Each of the speakers of the Accused Headset Devices are configured to receive at least a portion of the customized audio output signals transmitted by the mobile communication device.

For example, each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are Bluetooth-compatible.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Moreover, each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible.

See https://support.apple.com/guide/iphone/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011284 to INGENIOSPEC-011285), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011436 to INGENIOSPEC-011437), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011438 to INGENIOSPEC-011440), https://support.apple.com/guide/iphone/bluetooth-

	accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011454 to INGENIOSPEC-011456), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/16.0/ios/16.0 (INGENIOSPEC-011457 to INGENIOSPEC-011459), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/17.0/ios/17.0 (INGENIOSPEC-011460 to INGENIOSPEC-011462), https://support.apple.com/guide/iphone/connect-bluetooth-accessories-iph3c50f191/18.0/ios/18.0 (INGENIOSPEC-011290 to INGENIOSPEC-011291); https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/13.0/ipados/13.0 (INGENIOSPEC-011432 to INGENIOSPEC-011433), https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/14.0/ipados/14.0 (INGENIOSPEC-011434 to INGENIOSPEC-011435), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/15.0/ipados/15.0 (INGENIOSPEC-011445 to INGENIOSPEC-011447), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/16.0/ipados/16.0 (INGENIOSPEC-011448 to INGENIOSPEC-011450), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/17.0/ipados/17.0 (INGENIOSPEC-011451 to INGENIOSPEC-011453), https://support.apple.com/guide/ipad/connect-bluetooth-accessories-ipad997da4cf/18.0/ipados/18.0 (INGENIOSPEC-011288 to INGENIOSPEC-011289); https://support.apple.com/guide/ipod-touch/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011286 to INGENIOSPEC-011287), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011441 to INGENIOSPEC-011442), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011443 to INGENIOSPEC-011444), https://support.apple.com/guide/ipod-touch/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011463 to INGENIOSPEC-011465); https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-with-your-mac-blth1004/10.13/mac/10.13 (INGENIOSPEC-011272 to INGENIOSPEC-011272), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.14/mac/10.14 (INGENIOSPEC-011273 to INGENIOSPEC-011273), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.15/mac/10.15 (INGENIOSPEC-011274 to INGENIOSPEC-011274), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/11.0/mac/11.0 (INGENIOSPEC-011275 to INGENIOSPEC-011275), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/12.0/mac/12.0 (INGENIOSPEC-011276 to INGENIOSPEC-011276), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/13.0/mac/13.0 (INGENIOSPEC-011277 to INGENIOSPEC-011278), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/14.0/mac/14.0 (INGENIOSPEC-011279 to INGENIOSPEC-011280), https://support.apple.com/guide/mac-help/connect-a-wireless-accessory-blth1004/15.0/mac/15.0

	(INGENIOSPEC-011281 to INGENIOSPEC-011283); https://support.apple.com/en-us/109319 (INGENIOSPEC-011181 to INGENIOSPEC-011183), https://support.apple.com/en-us/105059 (INGENIOSPEC-011523 to INGENIOSPEC-011525), https://support.apple.com/en-us/104989 (INGENIOSPEC-011292 to INGENIOSPEC-011294), https://support.apple.com/guide/watch/play-music-apd70768b20b/watchos (INGENIOSPEC-011421 to INGENIOSPEC-011425); https://support.apple.com/en-us/102227 (INGENIOSPEC-011531 to INGENIOSPEC-011532), https://support.apple.com/guide/tv/use-airpods-or-beats-with-apple-tv-atvb9b4521cf/tvos (INGENIOSPEC-011526 to INGENIOSPEC-011527); https://support.apple.com/en-us/118516 (INGENIOSPEC-011533 to INGENIOSPEC-011534), https://support.apple.com/en-us/118522 (INGENIOSPEC-011528 to INGENIOSPEC-011530); https://support.apple.com/guide/beats/pair-beats-dev46c519179/web (INGENIOSPEC-011396 to INGENIOSPEC-011399). The Accused Headset Devices, such as the Apple AirPods Pro 2, are capable of pairing with the Accused Host Devices.

Pair AirPods with iPhone or iPad

Before you begin, make sure your device has the latest version of iOS or iPadOS installed. When pairing, your device must also be connected to a Wi-Fi or cellular network, or you may not have access to Find My features.

1. On your device, go to Settings > Bluetooth, turn on Bluetooth, then do one of the following:

   - *AirPods or AirPods Pro:* Open the case with your AirPods inside, then hold it next to your device.

   - *AirPods Max:* Take your AirPods Max out of the Smart Case, and within 60 seconds, hold them next to the device that you want to pair until the setup animation appears.

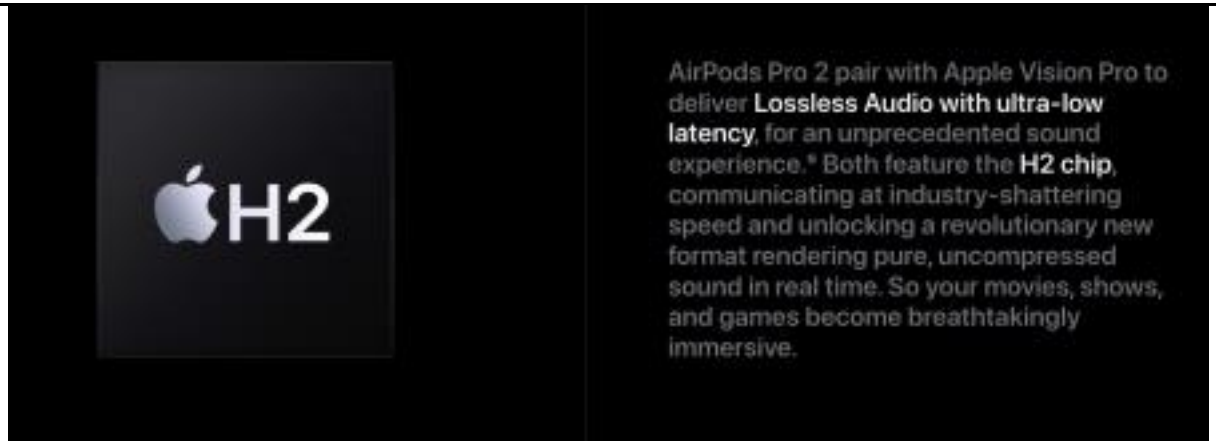
     If you don't see the animation, you can pair AirPods Max with your device manually. Go to Settings > Bluetooth, then select your AirPods. Press and hold the noise control button on AirPods Max for about 5 seconds, or until the light flashes white.

     If you have AirPods Max (USB-C), you can also pair your AirPods with your device by connecting them using a USB-C to USB-C cable.

2. Follow the onscreen instructions, then tap Done.

Source: Pair AirPods with an Apple device - Apple Support (INGENIOSPEC-014020-014023) (available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web).

Each speaker of the Accused Headset Devices, such as the Apple AirPods Pro 2, is configured to receive customized audio output signals transmitted by an Accused Host Device. The receive customized audio output signals are played (as customized audio output) using the speakers.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

		Device	**Citations**
		Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

			Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096;

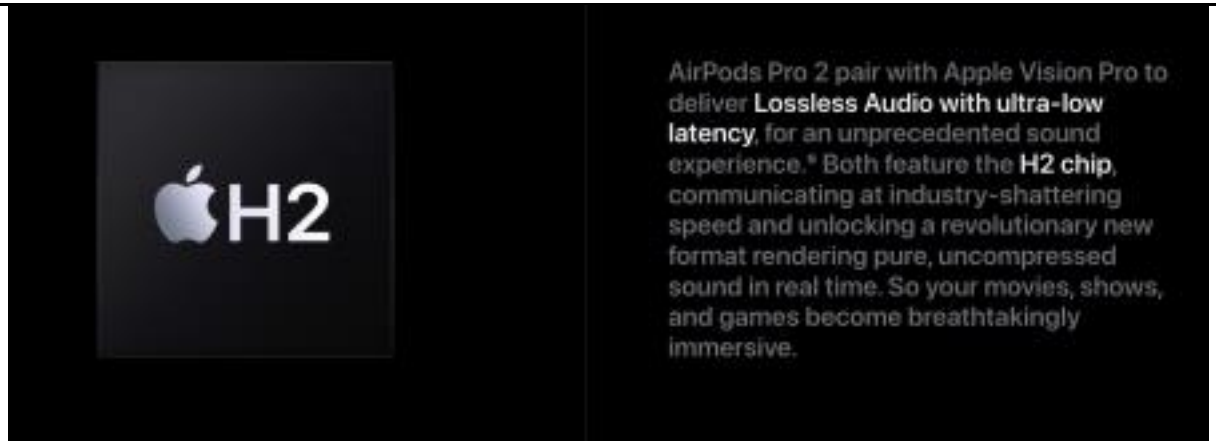
			Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats User Guide - Pair Beats, available from https://support.apple.com/en-ca/guide/beats/dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014644-014647; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;

<table>
<tr><td></td><td>
<table>
<tr><td></td><td>Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. See INGENIOSPEC-014287-014289;
Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. See INGENIOSPEC-014011-014014;</td></tr>
<tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013602-013616;
Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. See INGENIOSPEC-014011-014014;
Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. See INGENIOSPEC-013371-013387;
Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013617-013632;</td></tr>
</table>

As such, each of Accuse Headset Devices is configured to receive customized audio output signals transmitted by the mobile communication device.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><td>24d. wherein each of the speakers is configured to generate at least a portion of the customized audio output for the user in accordance with at</td><td>Each of the speakers of the Accused Headset Devices are configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals being received.

Each speaker of the Accused Headset Devices is configured to receive customized audio output signals transmitted by the Accused Host Device. See Claim 1c, infra.</td></tr>
</table>

least the portion of the customized audio output signals being received.	 **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

The customized audio output signals received by the Accused Headset Devices are used to generate customized audio output using one or more speakers of the Accused Headset Devices.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).

	 The front of the speaker unit is a black diaphragm. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

	Device	Citations
	Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
	Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
	Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
	Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

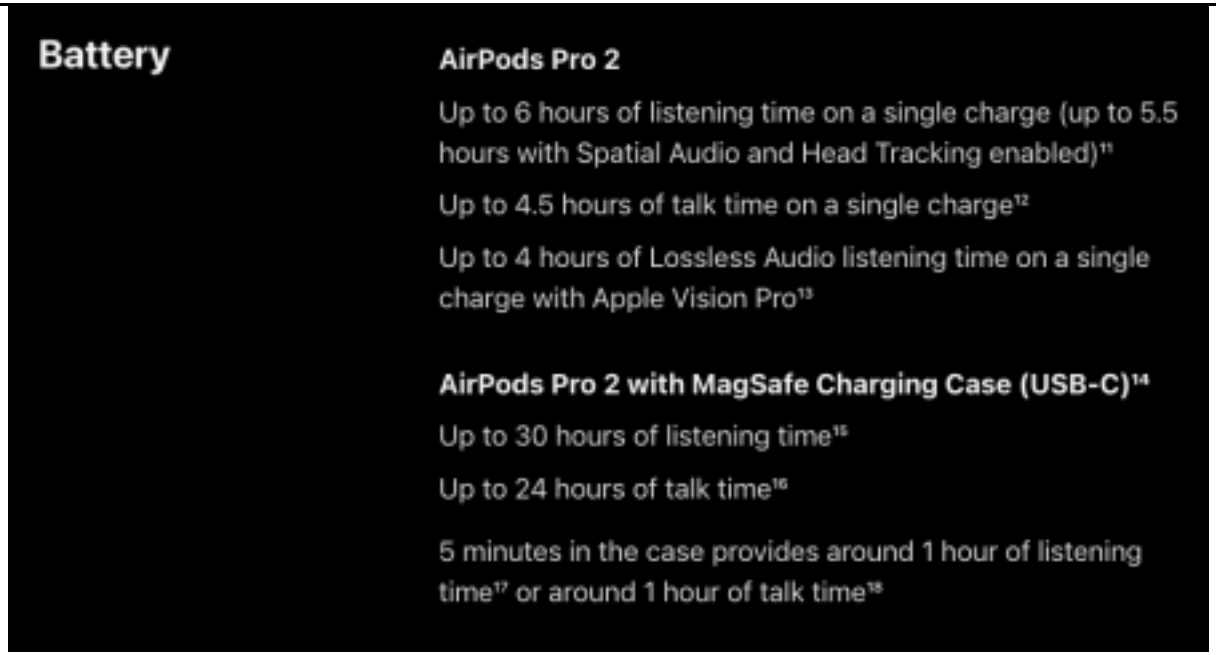
			Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from

		https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

As such, each of the Accused Devices is configured to generate customized audio output for the user based on the customized audio output signals received from the Accused Host Device.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 25	Evidence
25. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device includes at least a rechargeable battery, and wherein	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Headset Devices, such as Apple AirPods Pro 2, include a rechargeable battery. Each earbud of the Accused Headset Devices comprises a rechargeable battery.

the rechargeable battery is able to be charged when the head-worn wearable electronic device is coupled to a docking station.	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Remove the H2 system package (System in Package) cable, and separate the earphone head cover. The inside of the head cover includes the battery, earphone unit, feedback microphone and other sensor components.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



The coin cell battery is from Samsung SDI, model number A2731. The rated capacity is 49.7mAh/0.182Wh, and the rated voltage is 3.66V.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

The rechargeable battery of the Accused Headset Devices are able to be charged when coupled to a docking station. Each of the Accused Headset Devices comprises a charging case. The charging case is a docking station,

	where the earbuds can be inserted. When inserted into the charging case (docking station), the rechargeable battery of each earbud is capable of being recharged. 

	Source: MagSafe Charging Case (USB-C) for AirPods Pro (2nd generation) (INGENIOSPEC-013698-013700) (available from https://www.apple.com/shop/product/MUYG3AM/A/magsafe-charging-case-usb%E2%80%91c-for-airpods-pro-2nd-generation).  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

	 **Source**: Apple AirPods Pro 2 with USB C case_ What's new _ Macworld (INGENIOSPEC-013695-013697) (available from https://www.macworld.com/article/2065533/airpods-pro-2-case-usb-c-iphone-15-charging.html). Each earbud comprises charging pads on the stem of the earbud for charging the rechargeable battery.

	 **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

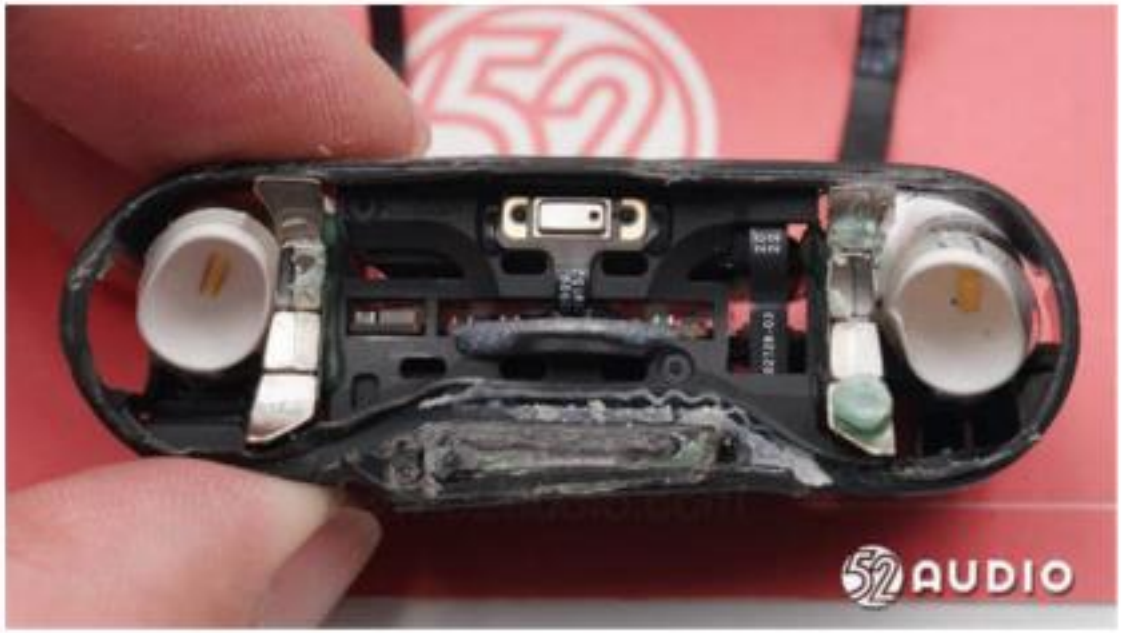


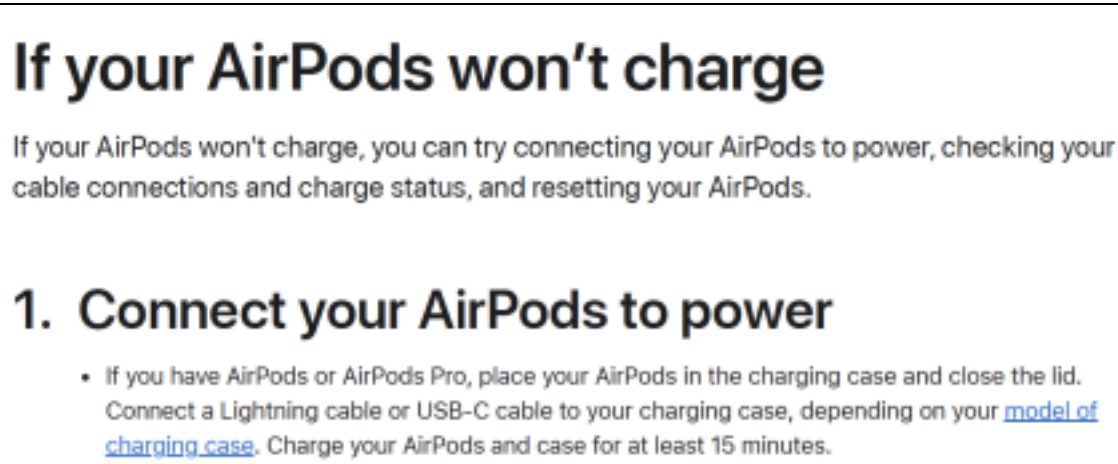
Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The charging pads of each earbud make contact with conductive conductors within the charging case (docking station). When connected, the rechargeable battery of the earbud is capable of being recharged.

	 The internal structure of the charging compartment. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



If your AirPods won't charge

If your AirPods won't charge, you can try connecting your AirPods to power, checking your cable connections and charge status, and resetting your AirPods.

1. Connect your AirPods to power

- If you have AirPods or AirPods Pro, place your AirPods in the charging case and close the lid. Connect a Lightning cable or USB-C cable to your charging case, depending on your model of charging case. Charge your AirPods and case for at least 15 minutes.

Source: If Your AirPods Won't Charge (INGENIOSPEC-013294-013295) (available from https://support.apple.com/en-us/102593).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

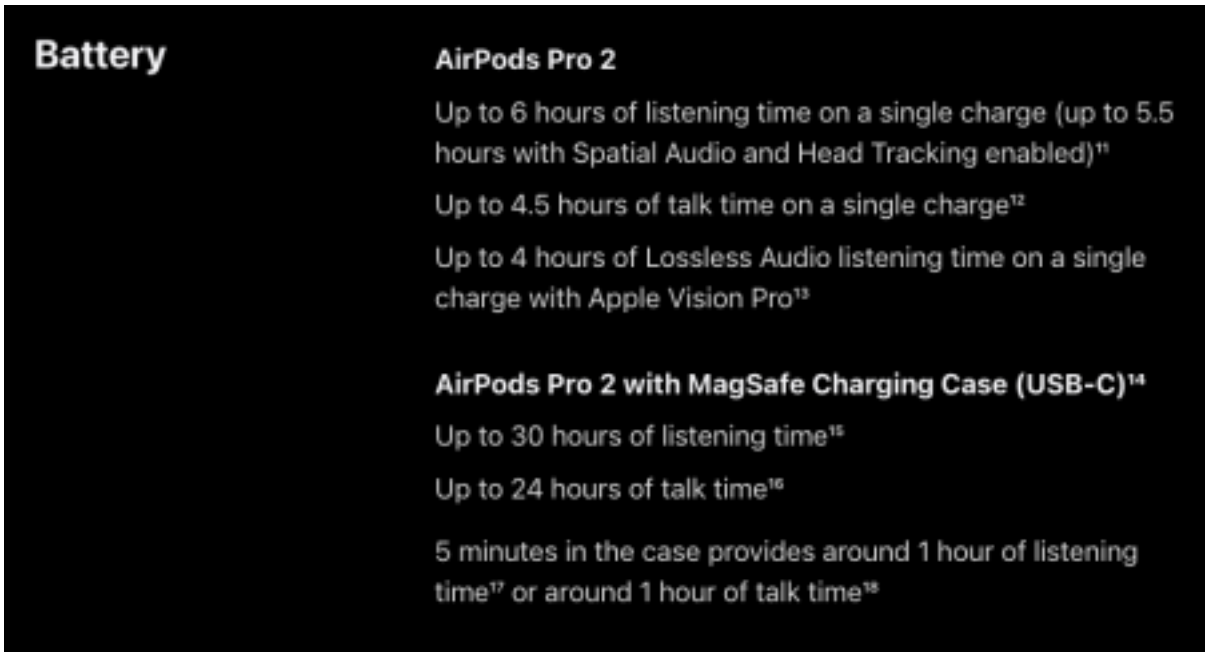
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

		Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;

			How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; How to clean your AirPods Pro, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014097-014100;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; If Your AirPods Won't Charge, available from https://support.apple.com/en-us/102593. *See* INGENIOSPEC-013294-013295; How to clean your AirPods Pro - Apple Support, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014256-014259;

	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 26	**Evidence**
26. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device includes at least a rechargeable battery and at least one conductive element, wherein the rechargeable battery is able to be electrically coupled via the at least one conductive element to a charging apparatus and charged when the head-worn wearable electronic device is placed within the charging apparatus, and wherein the electrical coupling of the at least one conductive element with the charging	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Headset Devices, such as Apple AirPods Pro 2, include a rechargeable battery and at least one conductive element. Each earbud of the Accused Headset Devices comprises a rechargeable battery. 

apparatus is supported by at least a magnetic element.	**Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).  Remove the H2 system package (System in Package) cable, and separate the earphone head cover. The inside of the head cover includes the battery, earphone unit, feedback microphone and other sensor components.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



The coin cell battery is from Samsung SDI, model number A2731. The rated capacity is 49.7mAh/0.182Wh, and the rated voltage is 3.66V.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	Each earbud of the Accused Headset Devices *also* comprises at least one conductive element. Examples of conductive elements include, but are not necessarily limited to, internal copper traces, soldered joints/interconnects, battery terminals, power and ground planes, integrated circuits and other electrical connectors within each earbud. The conductive element includes at least two charging pads, each area on the stem of the earbud.  **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The rechargeable battery of each earbud is able to be electrically coupled via the at least one conductive element to a charging apparatus and charged when the earbud is placed within the charging apparatus. The charging apparatus is the charging case of the Accused Headset Devices.

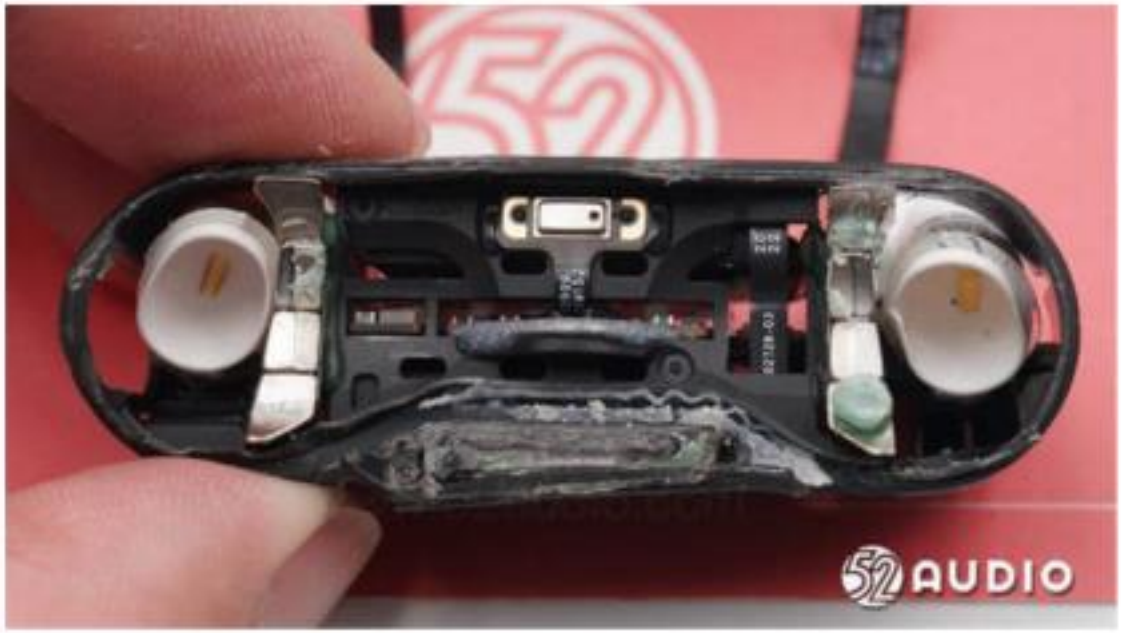
	 **Source**: MagSafe Charging Case (USB-C) for AirPods Pro (2nd generation) (INGENIOSPEC-013698-013700) (available from https://www.apple.com/shop/product/MUYG3AM/A/magsafe-charging-case-usb%E2%80%91c-for-airpods-pro-2nd-generation).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



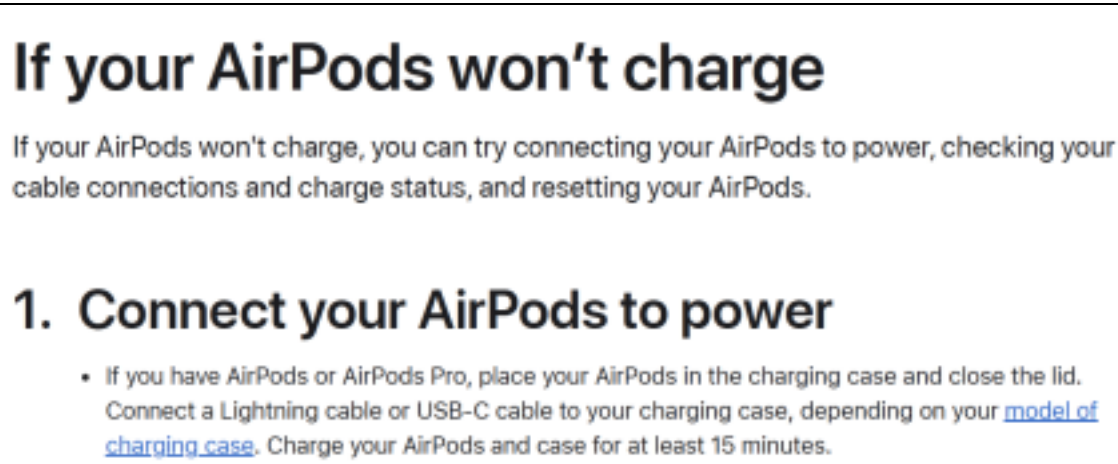
Source: Apple AirPods Pro 2 with USB C case_ What's new _ Macworld (INGENIOSPEC-013695-013697) (available from https://www.macworld.com/article/2065533/airpods-pro-2-case-usb-c-iphone-15-charging.html).

The charging pads on the stem of each earbud make contact with complementary charging pads within the charging case. When connected, the rechargeable battery within the earbud is capable of being recharged.



The internal structure of the charging compartment.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: If Your AirPods Won't Charge (INGENIOSPEC-013294-013295) (available from https://support.apple.com/en-us/102593).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The electrical coupling of the at least one conductive element of the earbuds with the charging apparatus of the charging case is supported by at least a magnetic element. The charging case and earbuds include magnetic elements that attract one other. The magnetic element comprises either a magnet or a magnetically responsive material. The magnetic elements cause the charging pads of the earbuds to make firm contact with the complementary charging pads within the charging case.



According to 52audio, this is a special-shaped iron block that is not small in size. It is magnetically fixed with the charging case magnet, and the center of gravity of the earphone is adjusted so that the center of gravity will not be too far out or too far inward. It acts as a counterweight to make the earphone stay in the ear more stably.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: AirPods Pro 2 Teardown - Still Completely Unrepairable (INGENIOSPEC-013114, INGENIOSPEC-013115-013122) (available from https://www.youtube.com/watch?v=WsxHWKJA7ig).



A magnet for attaching earphones.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

	Device	Citations
	Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;

		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-

			us/111861. *See* INGENIOSPEC-014050-014056; How to clean your AirPods Pro, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014097-014100; How to Clean AirPods Pro Case, available from https://burga.com/blogs/news/how-to-clean-airpods-pro-case. *See* INGENIOSPEC-014101-014107; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; If Your AirPods Won't Charge, available from https://support.apple.com/en-us/102593. *See* INGENIOSPEC-013294-013295; How to clean your AirPods Pro - Apple Support, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014256-014259; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;

		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; PowerBeats Pro 2 Review: A Worthy Sequel, available from https://slatepad.org/2025/03/21/powerbeats-pro-2-review/. *See* INGENIOSPEC-013388-013406;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 27	**Evidence**
27. A personal audio system as recited in claim 24, wherein the mobile communication device is configured to wirelessly communicate with the head-worn wearable electronic device over a wireless network.	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 24b1, *supra*. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Host Devices are configured to wirelessly communicate with the Accused Headset Devices over a wireless network. For example, the Accused Host Devices are configured to paired with one of the Accused Headset Devices via Bluetooth. Each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible. *See* https://support.apple.com/guide/iphone/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011284 to INGENIOSPEC-011285), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011436 to INGENIOSPEC-011437), https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011438 to INGENIOSPEC-011440), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011454 to INGENIOSPEC-011456), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/16.0/ios/16.0 (INGENIOSPEC-011457 to INGENIOSPEC-011459), https://support.apple.com/guide/iphone/bluetooth-accessories-iph3c50f191/17.0/ios/17.0 (INGENIOSPEC-011460 to INGENIOSPEC-011462), https://support.apple.com/guide/iphone/connect-bluetooth-accessories-iph3c50f191/18.0/ios/18.0 (INGENIOSPEC-011290 to INGENIOSPEC-011291); https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/13.0/ipados/13.0 (INGENIOSPEC-011432 to INGENIOSPEC-011433), https://support.apple.com/guide/ipad/use-other-bluetooth-headphones-ipad997da4cf/14.0/ipados/14.0

	(INGENIOSPEC-011434 to INGENIOSPEC-011435), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/15.0/ipados/15.0 (INGENIOSPEC-011445 to INGENIOSPEC-011447), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/16.0/ipados/16.0 (INGENIOSPEC-011448 to INGENIOSPEC-011450), https://support.apple.com/guide/ipad/bluetooth-accessories-ipad997da4cf/17.0/ipados/17.0 (INGENIOSPEC-011451 to INGENIOSPEC-011453), https://support.apple.com/guide/ipad/connect-bluetooth-accessories-ipad997da4cf/18.0/ipados/18.0 (INGENIOSPEC-011288 to INGENIOSPEC-011289); https://support.apple.com/guide/ipod-touch/connect-bluetooth-devices-iph3c50f191/12.0/ios/12.0 (INGENIOSPEC-011286 to INGENIOSPEC-011287), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/13.0/ios/13.0 (INGENIOSPEC-011441 to INGENIOSPEC-011442), https://support.apple.com/guide/ipod-touch/use-other-bluetooth-headphones-iph3c50f191/14.0/ios/14.0 (INGENIOSPEC-011443 to INGENIOSPEC-011444), https://support.apple.com/guide/ipod-touch/bluetooth-accessories-iph3c50f191/15.0/ios/15.0 (INGENIOSPEC-011463 to INGENIOSPEC-011465); https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-with-your-mac-blth1004/10.13/mac/10.13 (INGENIOSPEC-011272 to INGENIOSPEC-011272), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.14/mac/10.14 (INGENIOSPEC-011273 to INGENIOSPEC-011273), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/10.15/mac/10.15 (INGENIOSPEC-011274 to INGENIOSPEC-011274), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/11.0/mac/11.0 (INGENIOSPEC-011275 to INGENIOSPEC-011275), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/12.0/mac/12.0 (INGENIOSPEC-011276 to INGENIOSPEC-011276), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/13.0/mac/13.0 (INGENIOSPEC-011277 to INGENIOSPEC-011278), https://support.apple.com/guide/mac-help/connect-a-bluetooth-device-blth1004/14.0/mac/14.0 (INGENIOSPEC-011279 to INGENIOSPEC-011280), https://support.apple.com/guide/mac-help/connect-a-wireless-accessory-blth1004/15.0/mac/15.0 (INGENIOSPEC-011281 to INGENIOSPEC-011283); https://support.apple.com/en-us/109319 (INGENIOSPEC-011181 to INGENIOSPEC-011183), https://support.apple.com/en-us/105059 (INGENIOSPEC-011523 to INGENIOSPEC-011525), https://support.apple.com/en-us/104989 (INGENIOSPEC-011292 to INGENIOSPEC-011294), https://support.apple.com/guide/watch/play-music-apd70768b20b/watchos (INGENIOSPEC-011421 to INGENIOSPEC-011425); https://support.apple.com/en-us/102227 (INGENIOSPEC-011531 to INGENIOSPEC-011532), https://support.apple.com/guide/tv/use-airpods-or-beats-with-apple-tv-atvb9b4521cf/tvos (INGENIOSPEC-011526 to INGENIOSPEC-011527); https://support.apple.com/en-us/118516 (INGENIOSPEC-011533 to INGENIOSPEC-011534),

	https://support.apple.com/en-us/118522 (INGENIOSPEC-011528 to INGENIOSPEC-011530); https://support.apple.com/guide/beats/pair-beats-dev46c519179/web (INGENIOSPEC-011396 to INGENIOSPEC-011399). Moreover, each of the Accused Headset Devices, such as Apple AirPods Pro 2, are *also* Bluetooth-compatible.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Using Bluetooth, each of the Accused Host Devices is capable of wirelessly connecting with the Accused Headset Devices. When connected, the Accused Headset Devices form a personal area network (PAN) where the devices communicate wirelessly within a limited range. When connected, the Accused Headset Devices can play audio transmitted by the Accused Host Devices. To play audio, the Accused Host Devices are configured to transmit the customized audio output signals to the pair of speakers of the Accused Headset Devices over the wireless Bluetooth network.

Play songs from your library

1. Go to the Music app on your iPhone.
2. Tap Library, then tap a category, such as Albums or Songs; tap Downloaded to view only music stored on iPhone.

   Tip: To play songs from an artist's entire catalog—mixing hits and deep cuts—go to an artist page, then tap next to the artist's name.
3. Scroll to browse—or type in the search field to filter your results—to find what you want to play.
4. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

To change the list of Library categories, tap , tap Edit Sections, then select categories you'd like to add, such as Genres and Compilations. Tap any existing categories to remove them.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Stream recommended songs

1. Go to the Music app on your iPhone.
2. Do any of the following to find music you want to play:
   - *View recommendations tailored for you:* Tap Home, then tap a playlist or album.
   - *See what's new in Apple Music:* Tap New, then find music by mood, new releases, charts, and more.
   - *Search the Apple Music catalog:* See Search for music.
3. Tap an item, then tap Play, or tap Shuffle to shuffle an album or playlist.

   You can also touch and hold a playlist or album, then tap Play.

Source: https://support.apple.com/guide/iphone/play-music-iph0138fb328/ios (INGENIOSPEC-011426 to INGENIOSPEC-011429)

Play a podcast

1. Go to the Podcasts app on your iPhone.
2. Search or browse to find an episode, then tap ▶ below an episode title. You can also do any of the following:

   - *Jump to a chapter:* Tap ⌄ next to the name of the current chapter, then tap the chapter you want to play.
   - *Jump to a specific time:* Drag the slider above the player controls. (If the slider doesn't appear, tap the player at the bottom to open the Now Playing screen.)
   - *Resume playing a previous show or episode:* Tap Home, then tap an episode below Recently Played.

Tip: To jump to a specific time, drag the slider below the episode information. (If the slider doesn't appear, tap the player near the bottom of the screen to open Now Playing.)

Source: https://support.apple.com/guide/iphone/listen-to-podcasts-iph3a22707a5/ios (INGENIOSPEC-011378 to INGENIOSPEC-011381)

Play and pause audio

1. Wear one or both AirPods, and make sure they're connected to your device.
2. Go to an audio app, then play something—for example, a song in the Music app or an audiobook in the Books app.
3. To pause or stop the audio, do one of the following:

   - *AirPods 1 or 2:* To pause audio while listening with both AirPods, remove one. When you return it to your ear, playback resumes automatically.

     Note: You can also set either of your AirPods to pause when you double-tap it, then resume playback when you double-tap it again. See Change settings for AirPods 1 and 2.

   - *AirPods 3, AirPods 4 (both models), or AirPods Pro (all models):* To pause audio while listening with both AirPods, remove one. You can also press the stem to pause audio.

     When you return it to your ear or press the stem again, playback resumes.

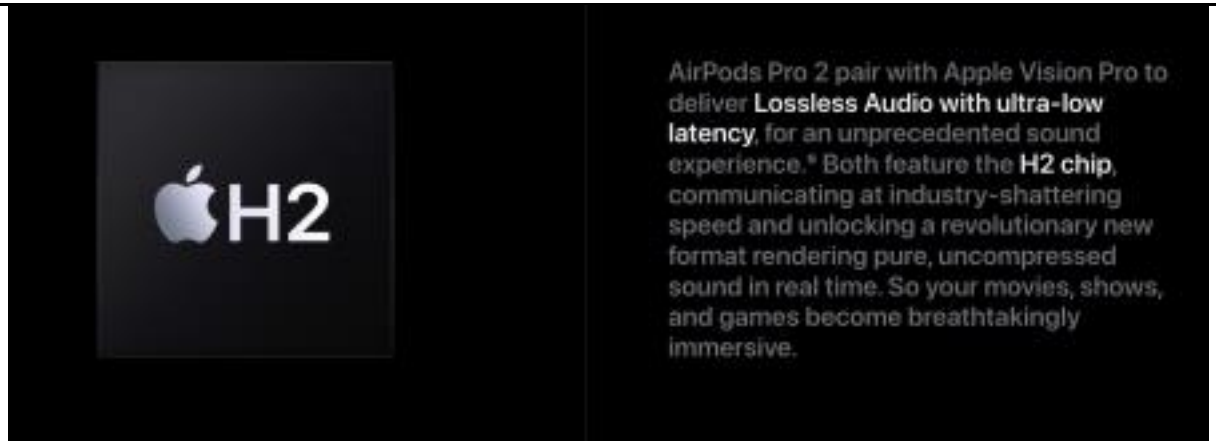
   - *AirPods Max:* Press the Digital Crown. Press it again to resume playback.

     You can also remove AirPods Max from your head.

If you don't want AirPods to automatically play and stop the audio, you can turn off automatic ear detection. If you don't want AirPods Max to automatically play and stop the audio, you can turn off automatic head detection.

Source: https://support.apple.com/guide/airpods/play-audio-on-your-airpods-dev216d7c746/web (INGENIOSPEC-011418 to INGENIOSPEC-011420)

Upon receipt of the customized audio output signals, the pair of speakers of the Accused Headset Devices are configured to play audio output based upon the receive signals.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;

	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 28	**Evidence**
28. A personal audio system as recited in claim 27, wherein the wireless network is a short-range wireless network.	Every claim limitation of claim 27 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 24b1, *supra*. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Host Devices are configured to wirelessly communicate with the Accused Headset Devices over a wireless network. *See* Claim 27, *supra*. The wireless network is a short-range wireless network. Bluetooth is a short-range wireless communication technology used to connect devices like headphones, keyboards, phones, and speakers. Bluetooth is used to form a personal area network (PAN) where the devices communicate wirelessly within a limited range. *See* https://www.bluetooth.com/wp-content/uploads/Files/Specification/HTML/Core-54/out/en/architecture,-mixing,-and-conventions/architecture.html (INGENIOSPEC-013013-013092). *See also* https://www.bluetooth.com/learn-about-bluetooth/key-attributes/range/ (INGENIOSPEC-011474 to INGENIOSPEC-011522).

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 29	**Evidence**
29. A personal audio system as recited in claim 27, wherein the short-range wireless network is a Bluetooth network.	Every claim limitation of claim 27 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a mobile communication device. The mobile communication device can be one of the Accused Host Devices. *See* Claim 24b1, *supra*. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Host Devices are configured to wirelessly communicate with the Accused Headset Devices over a wireless network. *See* Claim 27, *supra*. The short-range wireless network is a Bluetooth network. For example, the Accused Host Devices are configured to paired with one of the Accused Headset Devices via Bluetooth. Each of the Accused Host Devices, such as the iPhone 14, are Bluetooth-compatible. *See* Claim 27, *supra*. Moreover, each of the Accused Headset Devices, such as Apple AirPods Pro 2, are *also* Bluetooth-compatible.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Using Bluetooth, each of the Accused Host Devices is capable of wirelessly connecting with the Accused Headset Devices. Bluetooth is a short-range wireless communication technology used to connect devices like

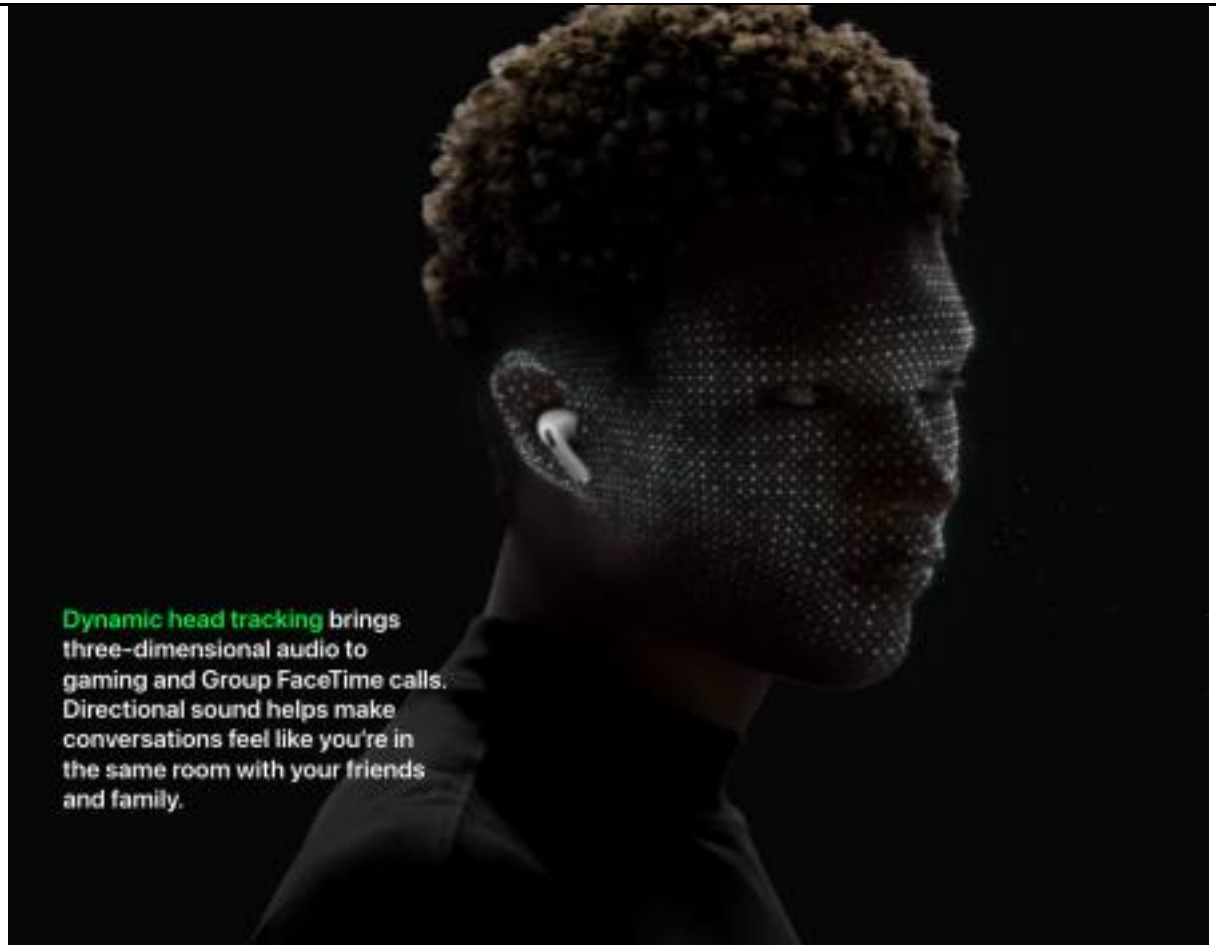
headphones, keyboards, phones, and speakers. Bluetooth is used to form a personal area network (PAN) where the devices communicate wirelessly within a limited range. *See* https://www.bluetooth.com/wp-content/uploads/Files/Specification/HTML/Core-54/out/en/architecture,-mixing,-and-conventions/architecture.html (INGENIOSPEC-013013-013092). *See also* https://www.bluetooth.com/learn-about-bluetooth/key-attributes/range/ (INGENIOSPEC-011474 to INGENIOSPEC-011522).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

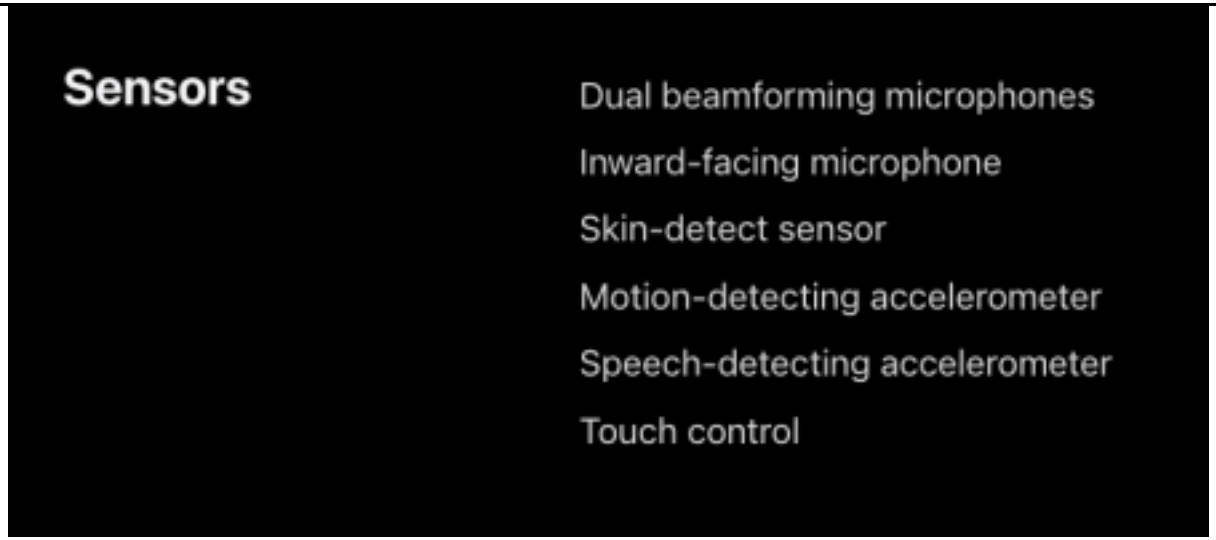
Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

	Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014;
	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

11,644,693 Claim 30	Evidence
30. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device includes an accelerometer.	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each of the Accused Headset Devices, such as Apple AirPods Pro 2's earbuds, includes an accelerometer. For example, Apple AirPods Pro 2 include one or more accelerometers for detecting movement.



Source: Head Tracking Image from AirPods Pro 2 Webpage (INGENIOSPEC-014018-014018) (available from https://www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from

			https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 31	**Evidence**	
31. A personal audio system as recited in claim 24, wherein the head-worn	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference.	

wearable electronic device includes a plurality of circuit boards, each circuit board including at least one integrated circuit mounted thereto.	The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Headset Devices include a plurality of circuit boards, each circuit board including at least one integrated circuit mounted thereto. The circuit boards include, but are not necessarily limited to, a main logic board, a battery management board, and an audio processing board. The integrated circuit (IC) mounted to each circuit board includes, but is not necessarily limited to, Apple s H1 (or H2, depending on model) Bluetooth audio system-on-chip (SoC), an audio codec integrated circuit, a power management integrated circuit, micro-electro-mechanical systems (MEMS) microphone integrated circuits, optical sensor integrated circuits, accelerometer integrated circuits, and touch/force sensor controller integrated circuits for detecting in-ear placement and user input. 

	Source: AirPods Pro 2 Teardown - Still Completely Unrepairable (INGENIOSPEC-013114, INGENIOSPEC-013115-013122) (available from https://www.youtube.com/watch?v=WsxHWKJA7ig).  **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/). Each of Apple AirPods 2, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

	Device	Citations
	Apple AirPods 2	AirPods 2024 Teardown - Totally UNREPAIRABLE, available from https://www.ifixit.com/Teardown/AirPods+2+Teardown/121471. *See* INGENIOSPEC-013106, INGENIOSPEC-013107-013113;
	Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
	Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
	Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
	Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844;

	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	How Did Beats Pull This Off - Shorts, available from https://youtube.com/shorts/Qw_2PDyam-4?feature=shared. *See* INGENIOSPEC-013225, INGENIOSPEC-013226-013227;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 32	**Evidence**
32. A personal audio system as recited in claim 31, wherein at least one of the circuit boards is a flexible printed circuit board.	Every claim limitation of claim 31 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Headset Devices include a plurality of circuit boards, each circuit board including at least one integrated circuit mounted thereto. *See* Claim 31, *supra*. At least one of the circuit boards is a flexible printed circuit board. For example, in order to fit all the components of each earbud into the head-worn wearable electronic device, Apple uses one or more flexible printed circuit boards. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 33	**Evidence**

33. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device includes a touch sensitive surface.	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as the Apple AirPods Pro 2, comprises a touch sensitive surface. The touch sensitive surface responds to the user's touch (e.g., slide of the user's finger, or touch). For example, Apple AirPods Pro 2 comprises a touch sensitive surface on its stem.

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

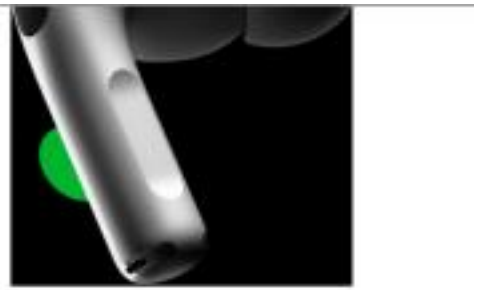
  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

	The touch sensitive surface is configured to sense a touch input from the user, and alter operation. The detected user input alters operation of the device. For example, the touch sensitive surface can be used to increase or decrease volume based upon a slide of a finger on the touch sensitive surface.  Just touch to adjust. Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

	Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

For another example, sensed inputs can Play or Pause music, advance to the next track in a playlist, return to the previous track in a playlist, activate Siri, and/or answer or hang up a phone call based on a tap(s).

Each of Apple AirPods 2 and Apple AirPods Pro 3 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/web. *See* INGENIOSPEC-014548-014553;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 34	**Evidence**

34. A personal audio system as recited in claim 33, wherein the touch sensitive surface is configured to detect a user input, the detected user input operating to at least alter operation of the head-worn wearable electronic device.	Every claim limitation of claim 33 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as the Apple AirPods Pro 2, comprises a touch sensitive surface. For example, Apple AirPods Pro 2 comprises a touch sensitive surface on its stem. *See* Claim 33, *supra*.

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

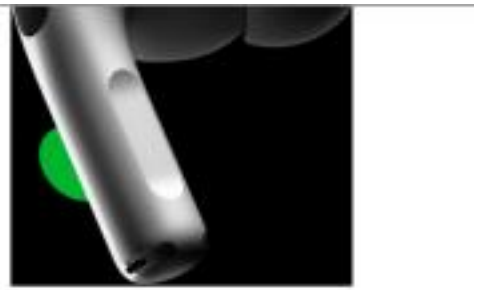
  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

	The touch sensitive surface is configured to detect a user input (e.g., sense a touch input or slide of a finger from the user). The detected user input alters operation of the device. For example, the touch sensitive surface can be used to increase or decrease volume based upon a slide of a finger on the touch sensitive surface.  Just touch to adjust. Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

	Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

	Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0). For another example, sensed inputs can Play or Pause music, advance to the next track in a playlist, return to the previous track in a playlist, activate Siri, and/or answer or hang up a phone call based on a tap(s). Each of Apple AirPods 2 and Apple AirPods Pro 3 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device. **Device** / **Citations** Apple AirPods 2 — Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/web. *See* INGENIOSPEC-014548-014553; Apple AirPods Pro 3 — Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 35	**Evidence**

35. A personal audio system as recited in claim 34, wherein the head-worn wearable electronic device is configured to support audio output to the user, and wherein the at least one operation of the head-worn electronic device being altered concerns control of the audio output being provided to the user.	Every claim limitation of claim 34 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. Each of the Accused Headset Devices include a pair of speakers. *See* Claim 24a, *supra*.



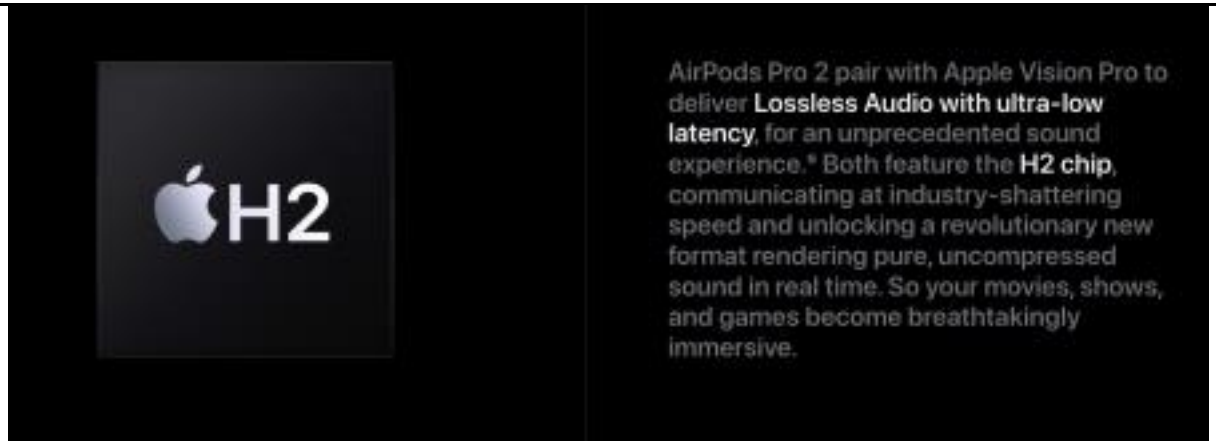
Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).

	 The front of the speaker unit is a black diaphragm. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are configured to support audio output to the user.

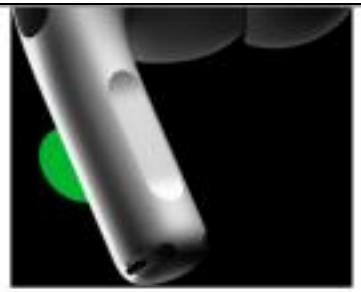


Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

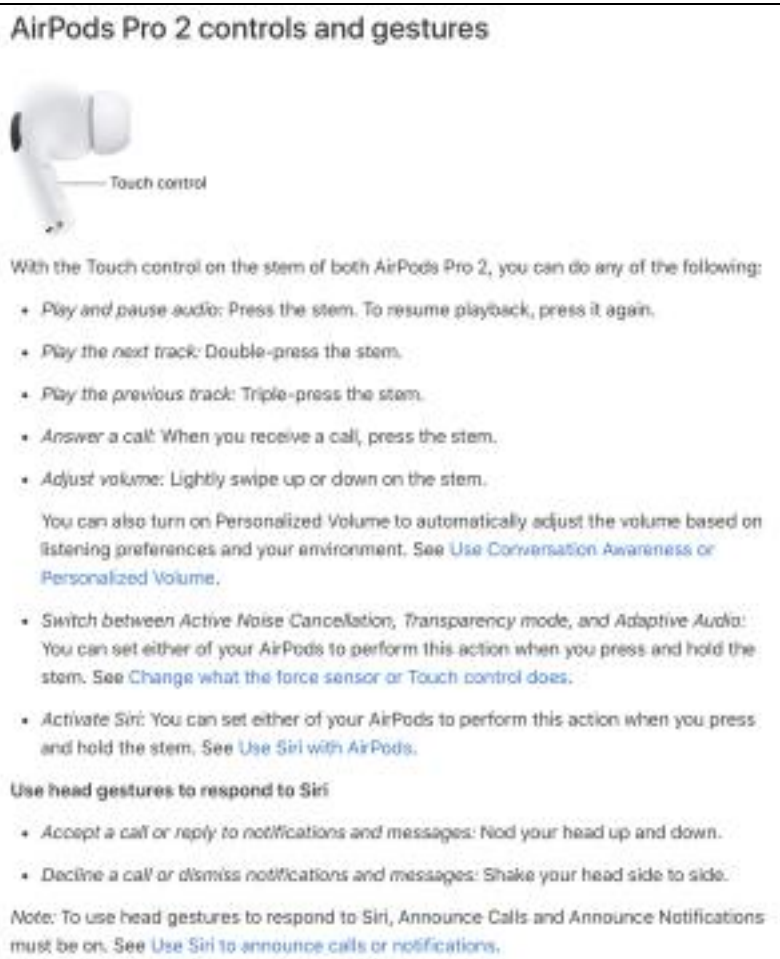
	Each of the Accused Headset Devices comprise a touch sensitive surface. The touch sensitive surface is configured to detect a user input (e.g., sense a touch input or slide of a finger from the user). The detected user input alters operation of the device. *See* Claim 34, *supra*. The at least one operation of the head-worn electronic device being altered concerns control of the audio output being provided to the user. For example, the touch sensitive surface can be used to sense a touch input associated with the user and adjust the volume of the speakers.



Just touch
to adjust.

Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



AirPods Pro 2 controls and gestures

Touch control

With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

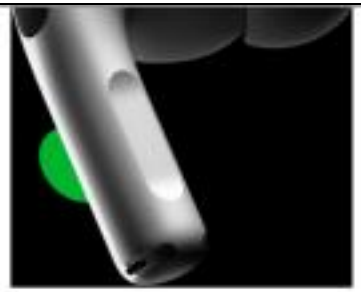
For another example, sensed inputs can Play or Pause music, advance to the next track in a playlist, return to the previous track in a playlist, activate Siri, and/or answer or hang up a phone call based on a tap(s).

Each of Apple AirPods 2 and Apple AirPods Pro 3 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/web. *See* INGENIOSPEC-014548-014553;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 36	Evidence
36. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device includes a force sensor configured to receive a user input based at least on sensing force applied to the force sensor.	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, includes a force sensor. The force sensor is configured to receive a user input based at least on sensing force applied to the force sensor (e.g., when a user squeezes the force sensor). As such, the force sensor is configured to detect the user input, and the detected user input alters at least an operation of the head-worn wearable electronic device. For example, based upon input to the pressure sensor (e.g., a squeeze), the Apple AirPods Pro 2 may play or pause audio, skip to the next or previous track in a playlist, answer a phone call, or activate Siri, among other actions.



Just touch
to adjust.

Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

Make and answer calls

1. Wear your AirPods and make sure they're connected to your iPhone, iPad, or Apple Watch (with cellular or Wi-Fi).
2. Do one of the following:
   - *Make a call:* Say "Hey Siri," or press and hold the force sensor, then say something like "Call Eliza's mobile." On an iPad without cellular, say something like "Make a FaceTime call."

     You can also make a call on your device, such as in the FaceTime app or Phone app.
   - *Answer a call:* Press the stem once on either of your AirPods.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

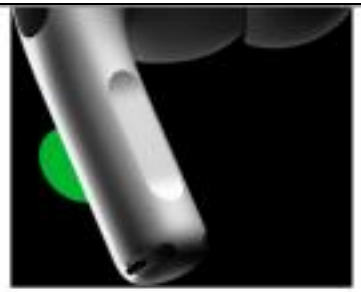
Each of Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1 and Apple AirPods Pro 3 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Use controls and gestures with your AirPods - Apple

			Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods 4	Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Use controls and gestures with your AirPods - Apple

		Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029;
	Apple AirPods Pro 1	Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

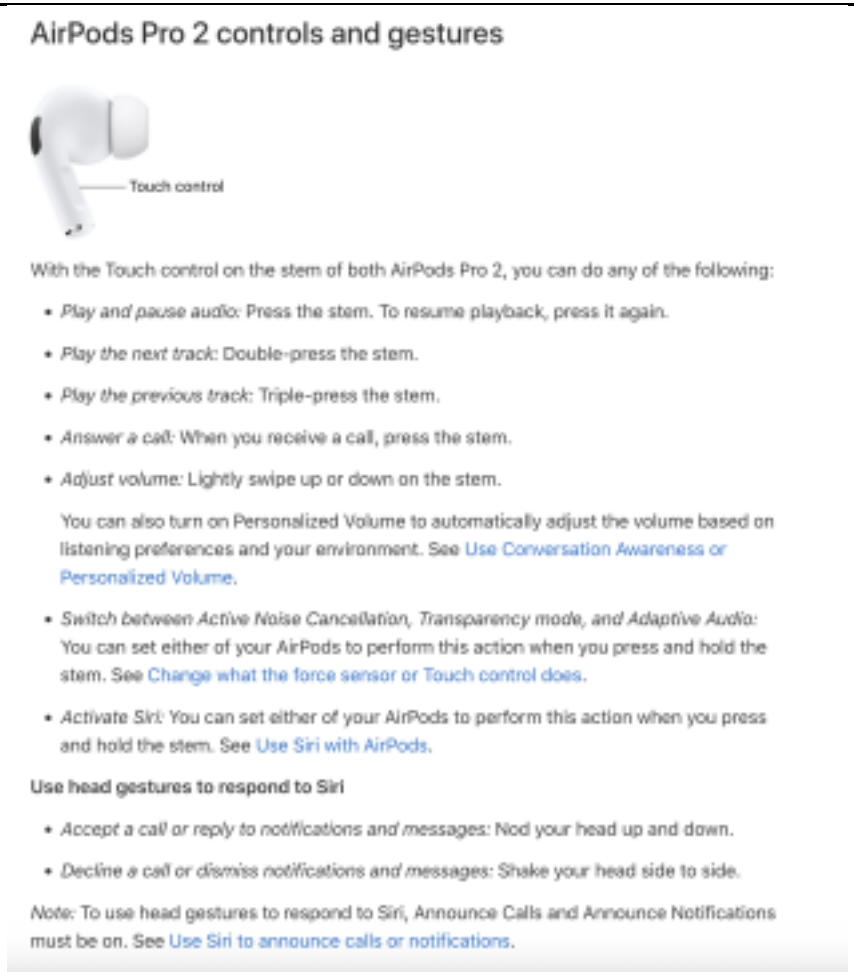
11,644,693 Claim 37	Evidence
37. A personal audio system as recited in claim 36, wherein the force sensor is configured to detect the user input, the detected user input operating to alter at least an operation of the head-worn wearable electronic device.	Every claim limitation of claim 36 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a force sensor configured to receive a user input based at least on sensing force applied to the force sensor. *See* Claim 36, *supra*. The force sensor is configured to receive a user input based at least on sensing force applied to the force sensor (e.g., when a user squeezes the force sensor). As such, the force sensor is configured to detect the user input, and the detected user input alters at least an operation of the head-worn wearable electronic device. For example, based upon input to the pressure sensor (e.g., a squeeze), the Apple AirPods Pro 2 may play or pause audio, skip to the next or previous track in a playlist, answer a phone call, or activate Siri, among other actions.



Just touch
to adjust.

Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



AirPods Pro 2 controls and gestures

Touch control

With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

Make and answer calls

1. Wear your AirPods and make sure they're connected to your iPhone, iPad, or Apple Watch (with cellular or Wi-Fi).
2. Do one of the following:
   - *Make a call:* Say "Hey Siri," or press and hold the force sensor, then say something like "Call Eliza's mobile." On an iPad without cellular, say something like "Make a FaceTime call."

     You can also make a call on your device, such as in the FaceTime app or Phone app.
   - *Answer a call:* Press the stem once on either of your AirPods.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Each of Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1 and Apple AirPods Pro 3 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Use controls and gestures with your AirPods - Apple

			Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods 4	Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Use controls and gestures with your AirPods - Apple

		Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029;
	Apple AirPods Pro 1	Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

11,644,693 Claim 38	Evidence
38. A personal audio system as recited in claim 37, wherein the head-worn wearable electronic device is configured to support audio output to the user, and wherein the at least one operation of the head-worn electronic device being altered concerns control of the audio output being provided to the user.	Every claim limitation of claim 37 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. Each of the Accused Headset Devices include a pair of speakers. *See* Claim 24a, *supra*.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



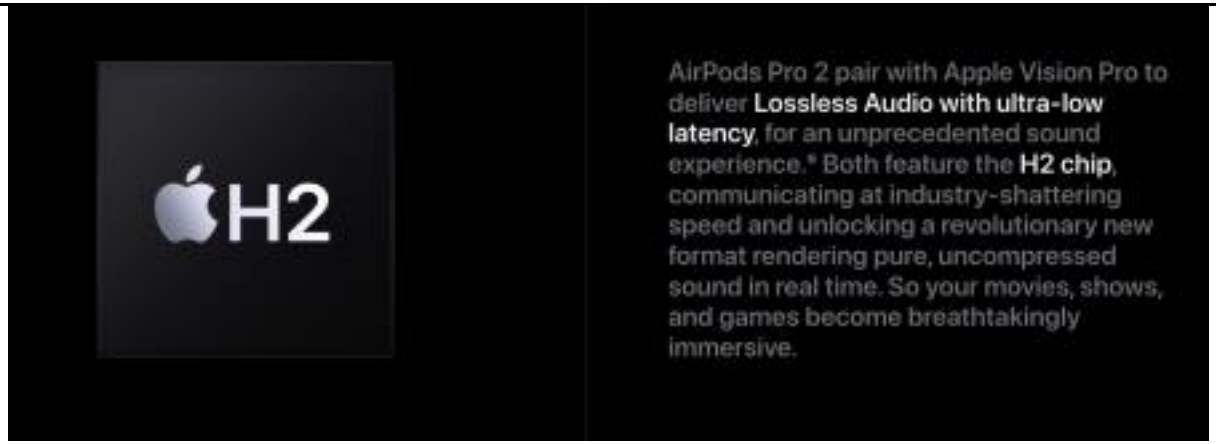
The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of the Accused Headset Devices, such as the Apple AirPods Pro 2, are configured to support audio output to the user.



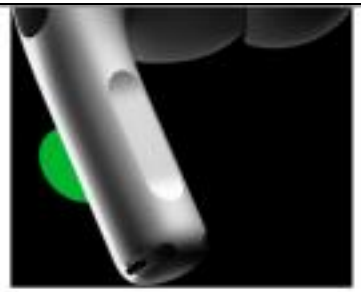
Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of the Accused Headset Devices comprises a force sensor configured to receive a user input based at least on sensing force applied to the force sensor. *See* Claim 36, *supra*.

	The force sensor is configured to receive a user input based at least on sensing force applied to the force sensor (e.g., when a user squeezes the force sensor). As such, the force sensor is configured to detect the user input, and the detected user input alters at least an operation of the head-worn wearable electronic device. *See* Claim 37, *supra*. The at least one operation of the head-worn electronic device being altered concerns control of the audio output being provided to the user. For example, based upon input to the pressure sensor (e.g., a squeeze), the Apple AirPods Pro 2 may play or pause audio, skip to the next or previous track in a playlist, answer a phone call, or activate Siri, among other actions.



Just touch
to adjust.

Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

Make and answer calls

1. Wear your AirPods and make sure they're connected to your iPhone, iPad, or Apple Watch (with cellular or Wi-Fi).
2. Do one of the following:
   - *Make a call:* Say "Hey Siri," or press and hold the force sensor, then say something like "Call Eliza's mobile." On an iPad without cellular, say something like "Make a FaceTime call."

     You can also make a call on your device, such as in the FaceTime app or Phone app.
   - *Answer a call:* Press the stem once on either of your AirPods.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Each of Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1 and Apple AirPods Pro 3 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from

			https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029;
	Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; Use controls and gestures with your AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0. *See* INGENIOSPEC-014024-014029; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 42	**Evidence**	

42. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device comprises:	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. Each of the Accused Headset Devices include a pair of speakers. *See* Claim 24a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
42a. a first head-worn structure including at least a first speaker of the pair of speakers, the first speaker being wearable proximate to a first ear of the user;	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. The first head-worn structure of each of the Accused Headset Devices, such as Apple AirPods Pro 2, includes at least a first speaker of the pair of speakers. For example, the left earbud includes one of the two speakers of the pair of speakers.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



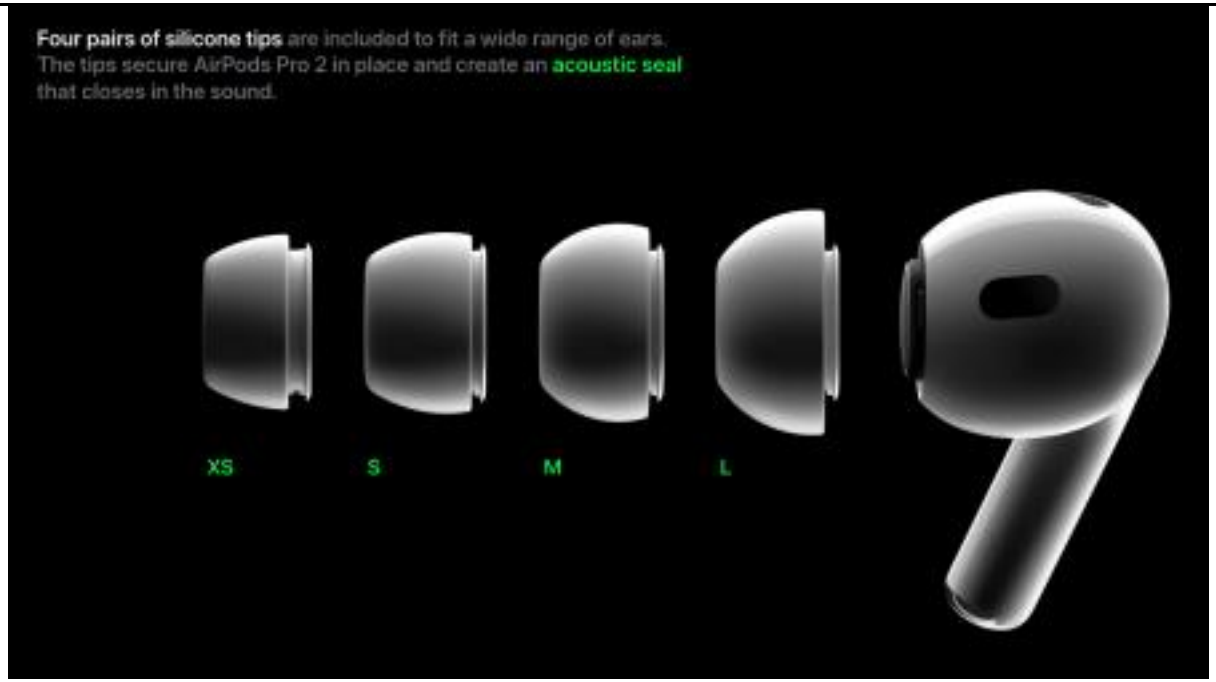
The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The first speaker is wearable proximate to a first ear (left-ear) of the user. *See* Claim 24a, *supra*.

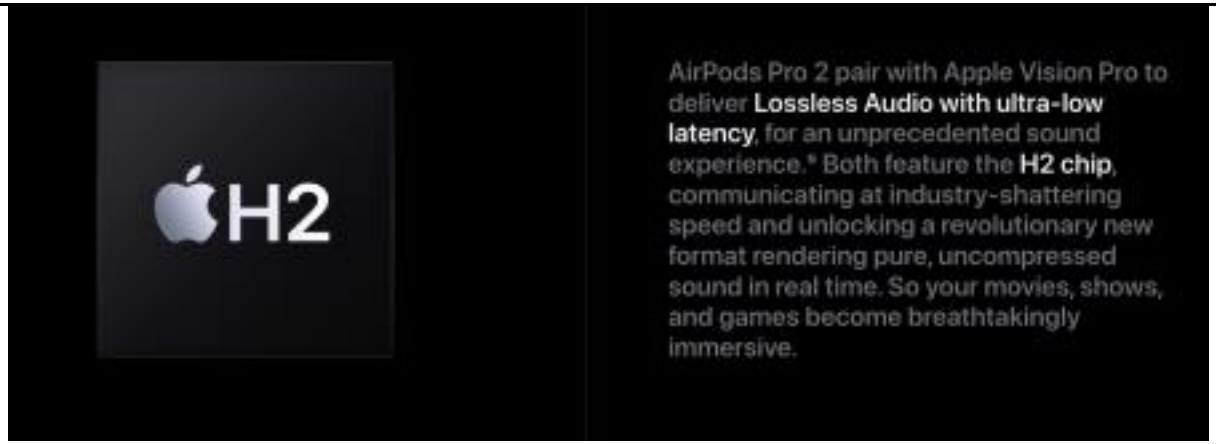


Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

The first speaker is used to play audio when proximate to the user's left ear.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
Apple AirPods 4 with Active	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-

		Noise Cancellation	4/. *See* INGENIOSPEC-013484-013501; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;

		Solo Pro Headphones Support - Beats, available from https://www.beatsbydre.com/support/headphones/solo-pro. *See* INGENIOSPEC-013798-013803; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Wearing your AirPods, EarPods, or Beats device, available from https://support.apple.com/en-us/101598. *See* INGENIOSPEC-014301-014302; How to get the best fit and sound with your Powerbeats Pro | Comfort, available from https://www.youtube.com/watch?v=I9t6YW3o-xc. *See* INGENIOSPEC-013232, INGENIOSPEC-013233-013237;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
42b. and a second head-worn structure including at least a second speaker of the pair of speakers, the second speaker being wearable proximate to a second ear of the user.	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprise a second head-worn structure. The second head-worn structure is the right earbud. The second head-worn structure includes at least a second speaker of the pair of speakers. For example, the right earbud includes the other of the two speakers of the pair of speakers.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



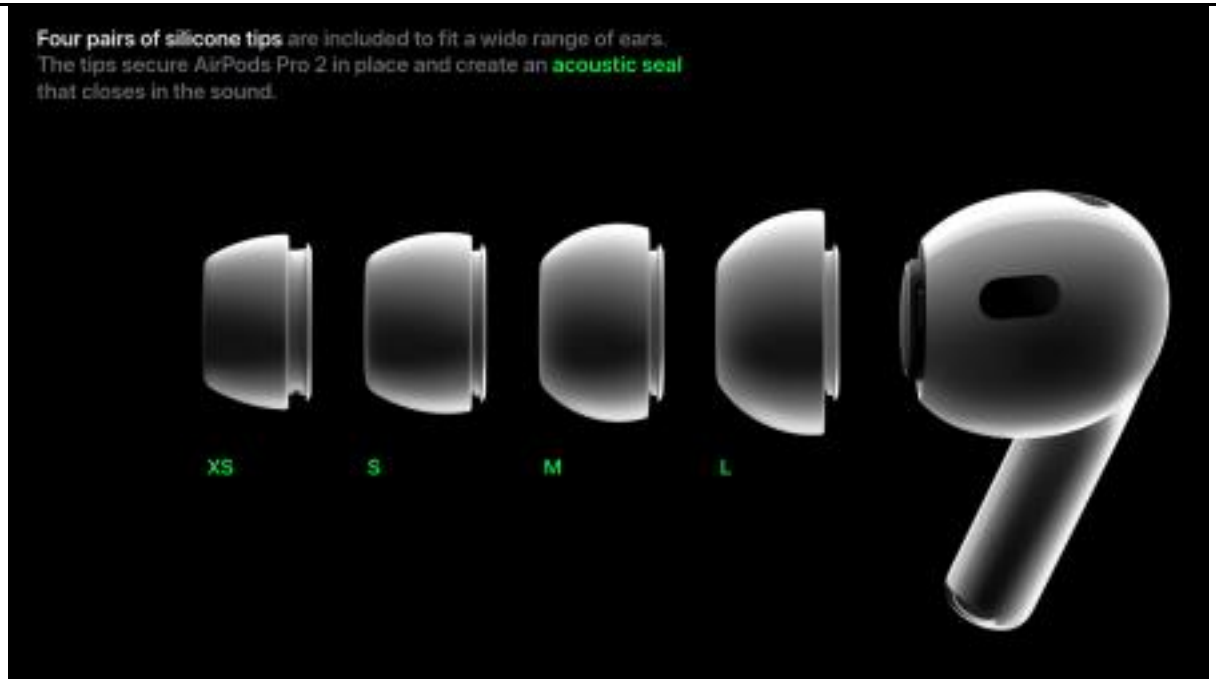
The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The second speaker is wearable proximate to a second ear (right-ear) of the user. *See* Claim 24a, *supra*.

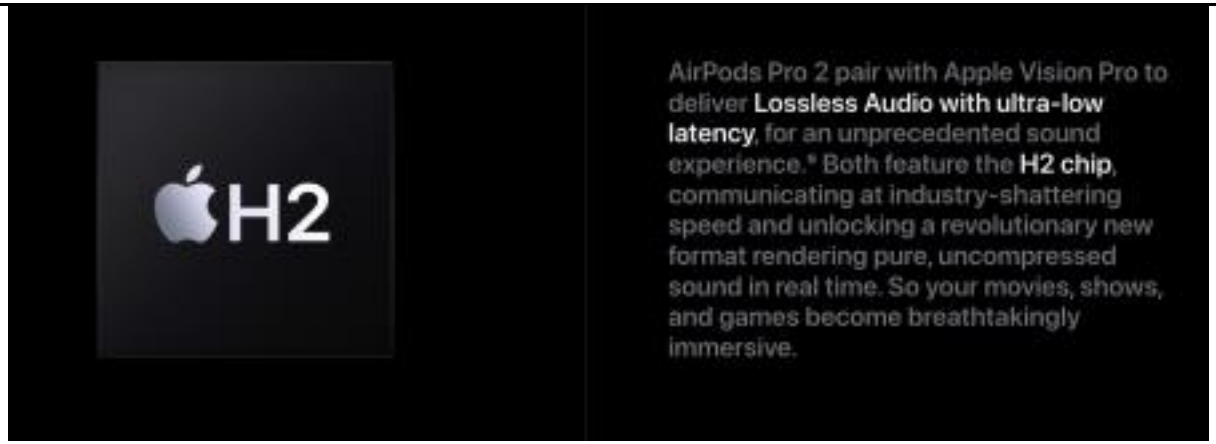


Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

The second speaker is used to play audio when proximate to the user's right ear.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
Apple AirPods 4 with Active	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-

		Noise Cancellation	4/. *See* INGENIOSPEC-013484-013501; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;

		Solo Pro Headphones Support - Beats, available from https://www.beatsbydre.com/support/headphones/solo-pro. *See* INGENIOSPEC-013798-013803; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Wearing your AirPods, EarPods, or Beats device, available from https://support.apple.com/en-us/101598. *See* INGENIOSPEC-014301-014302; How to get the best fit and sound with your Powerbeats Pro | Comfort, available from https://www.youtube.com/watch?v=I9t6YW3o-xc. *See* INGENIOSPEC-013232, INGENIOSPEC-013233-013237;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 43	**Evidence**
43. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
43a. a first circuit board internal to the first head-worn structure, the first circuit board supporting at least a first integrated circuit and a second integrated circuit, the first integrated circuit and the second integrated circuit being physically attached to the first circuit board, and the first integrated circuit being electrically connected to the	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. The first head-worn structure (left-earbud) comprises a first circuit board internal to the first head-worn structure. The first circuit board supports at least a first integrated circuit and a second integrated circuit.

second integrated circuit or another electronic component.	 **Source**: AirPods Pro 2 Teardown - Still Completely Unrepairable (INGENIOSPEC-013114, INGENIOSPEC-013115-013122) (available from https://www.youtube.com/watch?v=WsxHWKJA7ig). The first integrated circuit (IC) includes, but is not necessarily limited to, Apple's H1 or H2 System-on-Chip (SoC), Audio Codec ICs, wireless communication ICs (e.g., supporting Bluetooth-communication), Power Management ICs (PMIC), Accelerometer ICs (motion sensors), Optical Sensor ICs (e.g., infrared sensors), force and/or touch sensitive sensor controller ICs, Flash Memory ICs, Battery Protection ICs, or any other integrated circuit within the left earbud. The second integrated circuit includes, but is not necessarily limited to, one of the aforementioned integrated circuits. The first integrated circuit and the second integrated circuit are physically attached to the first circuit board. *See* image above.

The first integrated circuit is electrically connected to the second integrated circuit and/or another electronic component of the left earbud. For example, in order for the earbud to function as intended, the aforementioned components are interconnected to one another. For instance, the Apple H1 or H2 SoC is electrically connected to the audio codec IC to process digital audio signals, to the MEMS microphone ICs to receive voice input, to the optical sensor ICs to detect in-ear placement, and to the power management IC to regulate power supplied from the rechargeable battery, thereby enabling the earbud to perform wireless communication, audio playback, and user interaction functions as intended.

Each of Apple AirPods 2, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

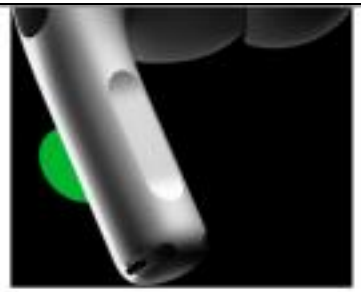
Device	**Citations**
Apple AirPods 2	AirPods 2024 Teardown - Totally UNREPAIRABLE, available from https://www.ifixit.com/Teardown/AirPods+2+Teardown/121471. *See* INGENIOSPEC-013106, INGENIOSPEC-013107-013113;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;

	Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
	Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844;
	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	How Did Beats Pull This Off - Shorts, available from https://youtube.com/shorts/Qw_2PDyam-4?feature=shared. *See* INGENIOSPEC-013225, INGENIOSPEC-013226-013227;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 44	**Evidence**	

44. A personal audio system as recited in claim 43, wherein the first circuit board is a flexible circuit board.	Every claim limitation of claim 43 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. The first head-worn structure (left-earbud) comprises a first circuit board internal to the first head-worn structure. The first circuit board supports at least a first integrated circuit and a second integrated circuit. *See* Claim 43, *supra*. The first circuit board is a flexible circuit board. For example, in order to fit all the components of each earbud into the head-worn wearable electronic device, Apple uses one or more flexible circuit boards. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 45	**Evidence**
45. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
45a. a user input device, the user input device being configured to receive a user input, the user input device	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*.

is based on at least capacitive effect, wherein the user input being received induces at least a capacitive change to produce at least an electrical response.	The left-earbud of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a user input device based on at least capacitive effect. The user input device is a touch sensitive surface. The touch sensitive sensor is located on the stem of the left-earbud. **AirPods Pro 2 controls and gestures**  With the Touch control on the stem of both AirPods Pro 2, you can do any of the following: • *Play and pause audio:* Press the stem. To resume playback, press it again. • *Play the next track:* Double-press the stem. • *Play the previous track:* Triple-press the stem. • *Answer a call:* When you receive a call, press the stem. • *Adjust volume:* Lightly swipe up or down on the stem. You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume. • *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does. • *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods. **Use head gestures to respond to Siri** • *Accept a call or reply to notifications and messages:* Nod your head up and down. • *Decline a call or dismiss notifications and messages:* Shake your head side to side. *Note:* To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

	Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0). The touch sensitive surface is configured to receive a user input (e.g., sense a touch input from the user), and alter operation of the device. The detected user input alters operation of the device by inducing at least a capacitive change to produce at least an electrical response. For example, the Apple AirPods Pro 2 is configured to increase or decrease volume based upon a slide of a finger on the touch sensitive surface. The increase or decrease in volume is based upon a capacitive change and an electrical response processed by the integrated circuits of the left-earbud.



Just touch
to adjust.

Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

	Apple AirPods Pro 3 *also* meets the claimed limitation for the same reasons. Refer to the table below for corresponding evidence to Apple AirPods Pro 3. **Device** / **Citations** Apple AirPods Pro 3 — Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 46	**Evidence**
46. A personal audio system as recited in claim 45, wherein the user input device is configured to distinguish at least a direction of the user input with respect to the user input device.	Every claim limitation of claim 45 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. The left-earbud comprises a user input device. The user input device is configured to receive user input based on at least capacitive effect, wherein the user input induces at least a capacitive change to produce at least an electrical response. *See* Claim 45, *supra*. The user input device of each of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to distinguish at least a direction of the user input with respect to the user input device.

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

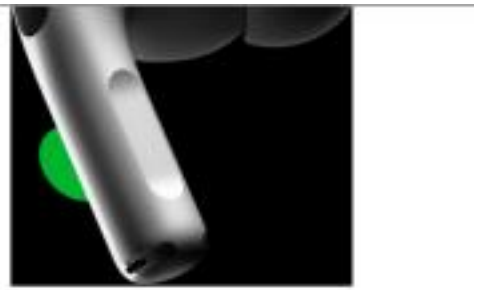
  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

	For example, Apple AirPods Pro 2 is configured to increase or decrease volume based upon a slide of a finger on the touch sensitive surface. If the user slides their finger *up* the stem, then volume is *increased*. If the user slides their finger *down* the stem, then volume is *decreased*.  Just touch to adjust. Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

	Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

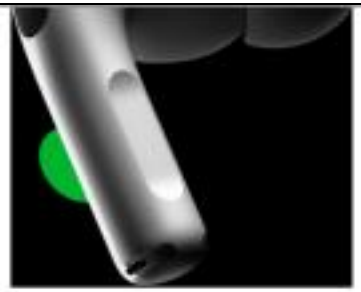
- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

	Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0). Apple AirPods Pro 3 *also* meets the claimed limitation for the same reasons. Refer to the table below for corresponding evidence to Apple AirPods Pro 3. **Device** / **Citations** Apple AirPods Pro 3 / Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 47	**Evidence**
47. A personal audio system as recited in claim 46, wherein the user input device is configured to detect at least a sliding of a finger action with respect	Every claim limitation of claim 46 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. The left-earbud comprises a user input device. The user input device is configured to receive user input based on at least capacitive effect, wherein the user input induces at least a capacitive change to produce at least an electrical response. *See* Claim 45, *supra*.

to the user input device.	The user input device of each of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to distinguish at least a direction of the user input with respect to the user input device. *See* Claim 46, *supra*. The user input device of each of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to detect at least a sliding of a finger action with respect to the user input device. **AirPods Pro 2 controls and gestures**  With the Touch control on the stem of both AirPods Pro 2, you can do any of the following: • *Play and pause audio:* Press the stem. To resume playback, press it again. • *Play the next track:* Double-press the stem. • *Play the previous track:* Triple-press the stem. • *Answer a call:* When you receive a call, press the stem. • *Adjust volume:* Lightly swipe up or down on the stem. You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume. • *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does. • *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods. **Use head gestures to respond to Siri** • *Accept a call or reply to notifications and messages:* Nod your head up and down. • *Decline a call or dismiss notifications and messages:* Shake your head side to side. *Note:* To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

	Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0). For example, Apple AirPods Pro 2 is configured to increase or decrease volume based upon a slide of a finger on the touch sensitive surface. If the user slides their finger *up* the stem, then volume is *increased*. If the user slides their finger *down* the stem, then volume is *decreased*.



Just touch
to adjust.

Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes.

Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

	Apple AirPods Pro 3 *also* meets the claimed limitation for the same reasons. Refer to the table below for corresponding evidence to Apple AirPods Pro 3. **Device** / **Citations** Apple AirPods Pro 3 — Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 48	**Evidence**
48. A personal audio system as recited in claim 45, wherein the user input device is configured to distinguish at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the user input device.	Every claim limitation of claim 45 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. The left-earbud comprises a user input device. The user input device is configured to receive user input based on at least capacitive effect, wherein the user input induces at least a capacitive change to produce at least an electrical response. *See* Claim 45, *supra*. The user input device of each of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to distinguish at least whether the user input pertains to a forward sliding action or a backward sliding action with respect to the user input device.

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

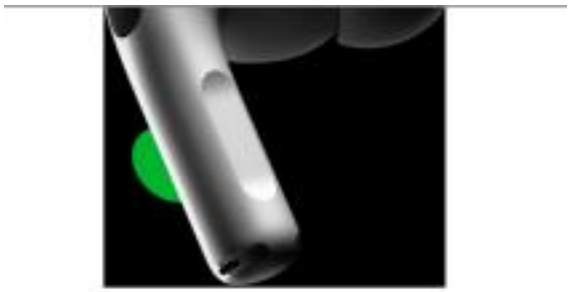
Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

For example, Apple AirPods Pro 2 is configured to increase or decrease volume based upon a slide of a finger on the touch sensitive surface. If the user slides their finger *up* the stem (i.e., a forward sliding action), then volume

	is *increased*. If the user slides their finger *down* the stem (i.e., a backward sliding action), then volume is *decreased*.  Just touch to adjust. Touch control lets you manage playback functions from the stem. Swipe up or down to adjust volume, press to play and pause music or mute and unmute yourself on calls, and press twice to end a call. You can also hold the stem to switch between listening modes. **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

AirPods Pro 2 controls and gestures



With the Touch control on the stem of both AirPods Pro 2, you can do any of the following:

- *Play and pause audio:* Press the stem. To resume playback, press it again.
- *Play the next track:* Double-press the stem.
- *Play the previous track:* Triple-press the stem.
- *Answer a call:* When you receive a call, press the stem.
- *Adjust volume:* Lightly swipe up or down on the stem.

  You can also turn on Personalized Volume to automatically adjust the volume based on listening preferences and your environment. See Use Conversation Awareness or Personalized Volume.
- *Switch between Active Noise Cancellation, Transparency mode, and Adaptive Audio:* You can set either of your AirPods to perform this action when you press and hold the stem. See Change what the force sensor or Touch control does.
- *Activate Siri:* You can set either of your AirPods to perform this action when you press and hold the stem. See Use Siri with AirPods.

Use head gestures to respond to Siri

- *Accept a call or reply to notifications and messages:* Nod your head up and down.
- *Decline a call or dismiss notifications and messages:* Shake your head side to side.

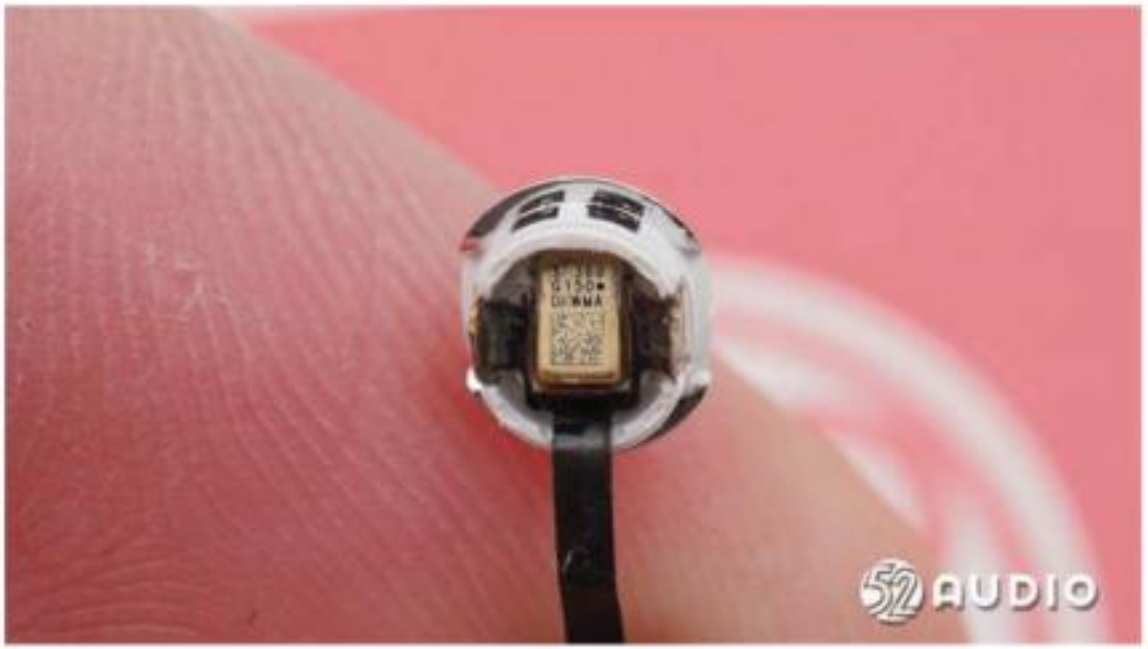
Note: To use head gestures to respond to Siri, Announce Calls and Announce Notifications must be on. See Use Siri to announce calls or notifications.

Source: Use controls and gestures with your AirPods - Apple Support (INGENIOSPEC-014024-014029) (available from https://support.apple.com/guide/airpods/use-controls-and-gestures-with-your-airpods-devb2c431317/1.0/web/1.0).

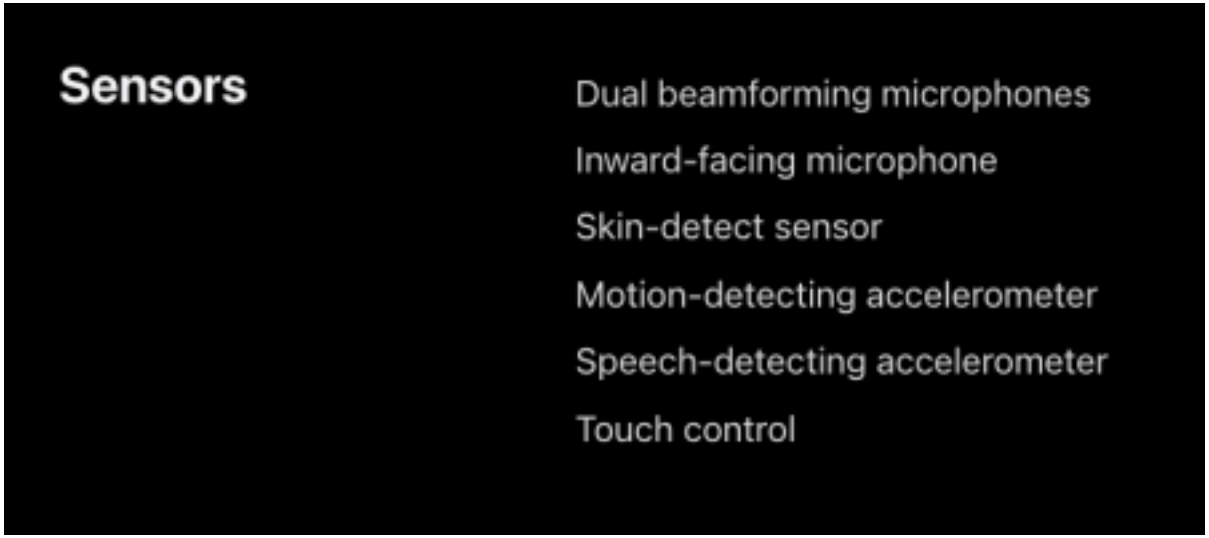
	Apple AirPods Pro 3 *also* meets the claimed limitation for the same reasons. Refer to the table below for corresponding evidence to Apple AirPods Pro 3. **Device** / **Citations** Apple AirPods Pro 3 — Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 49	**Evidence**
49. A personal audio system as recited in claim 48, wherein the head-worn wearable electronic device comprises:	Every claim limitation of claim 48 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
49a. a second circuit board internal to the second head-worn structure, the second circuit board	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a second head-worn structure. The second head-worn structure is the right earbud. *See* Claim 42a, *supra*.

supporting at least a third integrated circuit and a fourth integrated circuit, the third integrated circuit and the fourth integrated circuit being physically attached to the second circuit board, and the third integrated circuit being electrically connected to the fourth integrated circuit or another electronic component.	The second head-worn structure (right-earbud) comprises a second circuit board internal to the second head-worn structure. The second circuit board supports at least a third integrated circuit and a fourth integrated circuit.  **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/). The third integrated circuit (IC) includes, but is not necessarily limited to, Apple's H1 or H2 System-on-Chip (SoC), Audio Codec ICs, wireless communication ICs (e.g., supporting Bluetooth-communication), Power Management ICs (PMIC), Accelerometer ICs (motion sensors), Optical Sensor ICs (e.g., infrared sensors), force and/or touch sensitive sensor controller ICs, Flash Memory ICs, Battery Protection ICs, or any other integrated circuit within the right earbud. The fourth integrated circuit includes, but is not necessarily limited to, one of the aforementioned integrated circuits.

	The third integrated circuit and the fourth integrated circuit are physically attached to the second circuit board. *See* image above. The third integrated circuit is electrically connected to the fourth integrated circuit and/or another electronic component of the right earbud. For example, in order for the earbud to function as intended, the aforementioned components are interconnected to one another. For instance, the Apple H1 or H2 SoC is electrically connected to the audio codec IC to process digital audio signals, to the MEMS microphone ICs to receive voice input, to the optical sensor ICs to detect in-ear placement, and to the power management IC to regulate power supplied from the rechargeable battery, thereby enabling the earbud to perform wireless communication, audio playback, and user interaction functions as intended. Apple AirPods Pro 3 *also* meets the claimed limitation for the same reasons. Refer to the table below for corresponding evidence to Apple AirPods Pro 3. **Device** / **Citations** Apple AirPods Pro 3 — Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 50	**Evidence**
50. A personal audio system as recited in claim 42, wherein the first head-worn structure of the head-worn wearable	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*.

electronic device comprises:	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
50a. a first microphone configured to pick up at least audio input from at least the user, the first microphone being at least partially in the first head-worn structure and is positioned to be directed towards the user when the first head-worn structure is being worn by the user;	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. The left-earbud of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user. The first microphone is at least partially in the first head-worn structure.  Bottom pickup microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

The first microphone is positioned so that it is directed towards the user when the first head-worn structure is being worn by the user. The microphone captures the user's voice during phone calls, video conferences, or when issuing voice commands to Siri.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

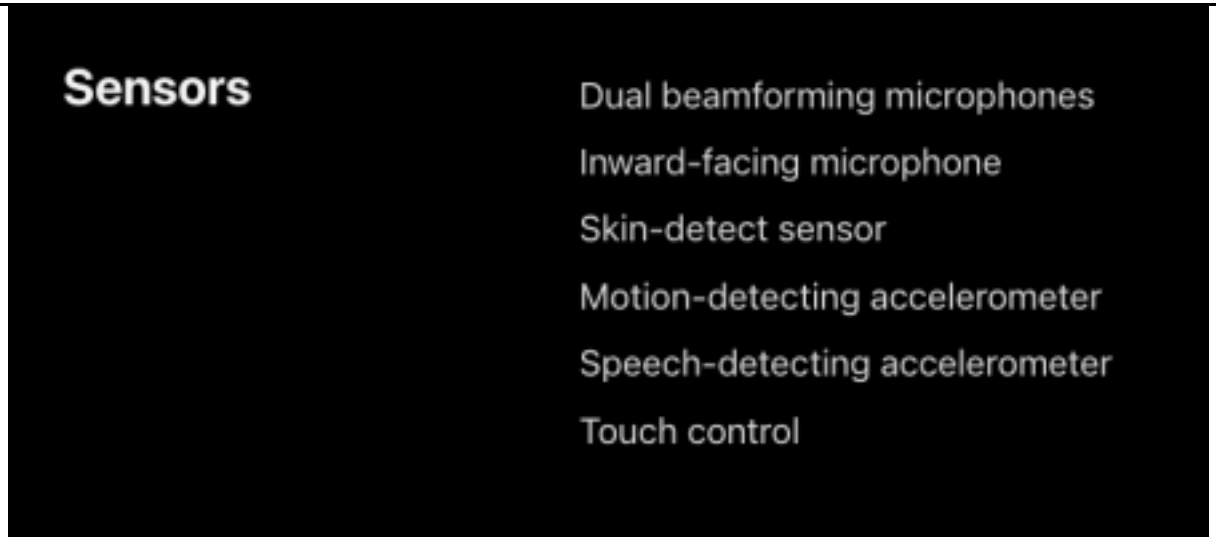
	Device	Citations
	Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
	Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
	Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

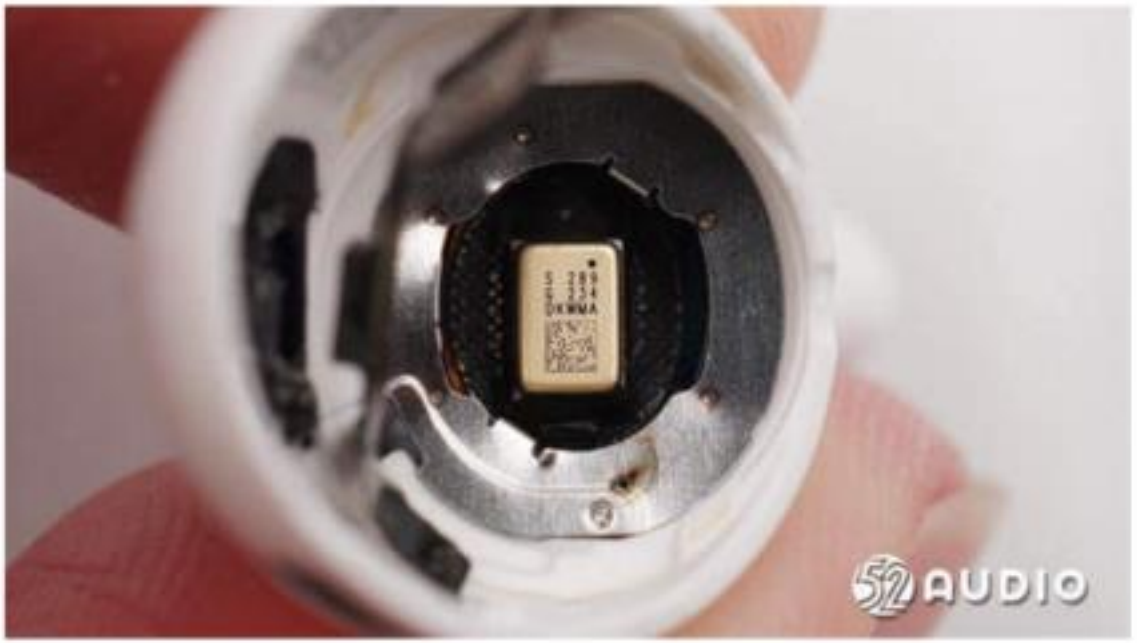
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844;

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Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. See INGENIOSPEC-014287-014289;</td></tr>
<tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013602-013616;</td></tr>
</table>
Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
</td></tr>
<tr><td>50b. and a second microphone configured to pick up at least ambient sound input associated with an environment in the vicinity of the first head-worn structure, the second</td><td>The left-earbud of each of the Accused Headset Devices, such as Apple AirPods Pro 2, also comprises a second microphone configured to pick up at least audio input from at least the user. The first microphone is at least partially in the first head-worn structure.

Each of the Accused Instrumentalities, such as Apple AirPods Pro 2, comprises a second microphone configured to pick up at least ambient sound input associated with an environment in the vicinity of the first head-worn structure.</td></tr>
</table>

microphone being positioned to be directed away from the user when the head-worn wearable electronic device is being worn by the user.	 **Source**: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

The second microphone is positioned to be directed away from the user when the head-worn wearable electronic device is being worn by the user. The second microphone can help reduce environmental noise from desired audio.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
		Beats Solo Pro	Beats-Solo-Pro-Wireless-Headphones-User-Guide, available from https://manuals.plus/wp-content/uploads/2023/05/Beats-Solo-Pro-Wireless-Headphones-User-Guide.pdf. *See* INGENIOSPEC-013808-013835; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-

		pro. *See* INGENIOSPEC-013312-013323; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

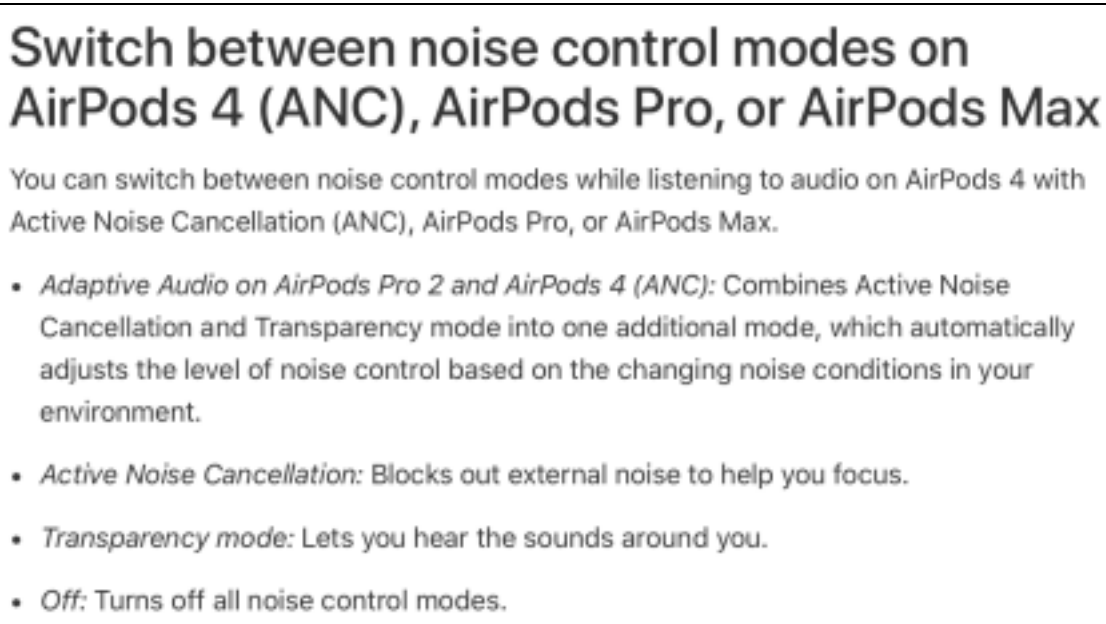
11,644,693 Claim 51	**Evidence**
51. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
51a. a first circuit board internal to the first head-worn structure, the first	Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*.

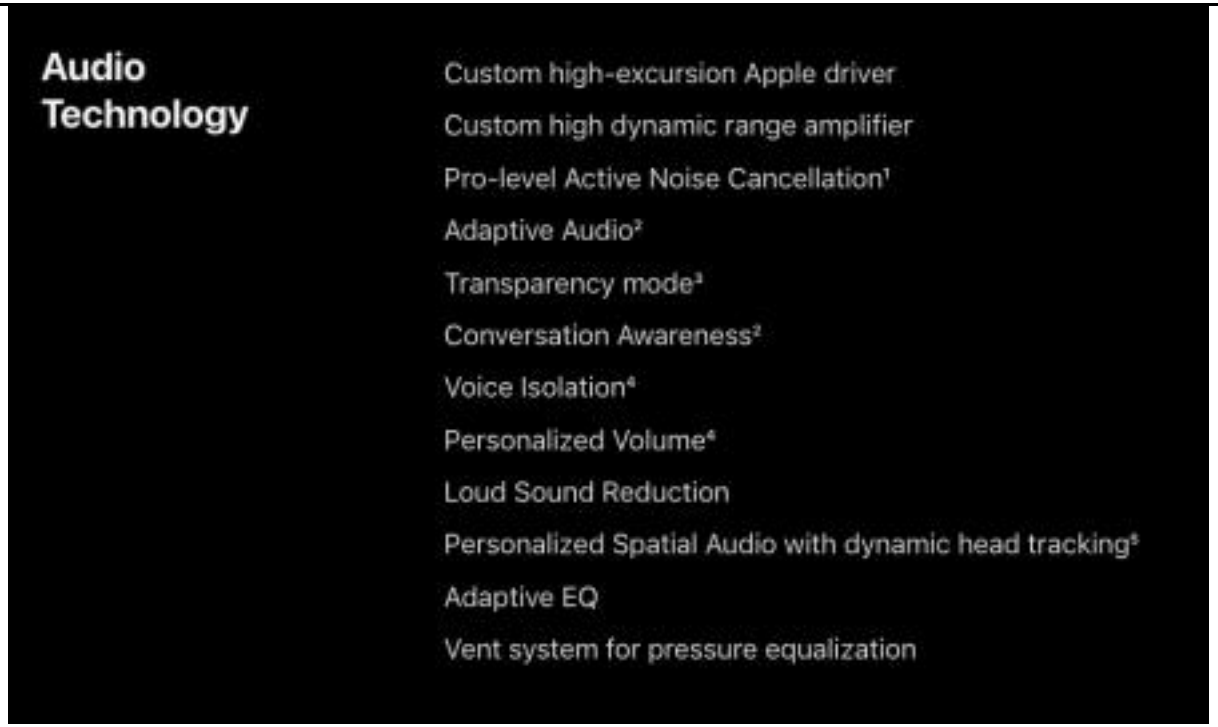
circuit board supporting at least a first integrated circuit, the first integrated circuit being physically attached to the first circuit board, wherein the first integrated circuit includes at least a processing unit, and	The first head-worn structure (left-earbud) comprises a first circuit board internal to the first head-worn structure. The first circuit board supports at least a first integrated circuit.  **Source**: AirPods Pro 2 Teardown - Still Completely Unrepairable (INGENIOSPEC-013114, INGENIOSPEC-013115-013122) (available from https://www.youtube.com/watch?v=WsxHWKJA7ig). The first integrated circuit (IC) includes, but is not necessarily limited to, Apple's H1 or H2 System-on-Chip (SoC), Audio Codec ICs, wireless communication ICs (e.g., supporting Bluetooth-communication), Power Management ICs (PMIC), Accelerometer ICs (motion sensors), Optical Sensor ICs (e.g., infrared sensors), force and/or touch sensitive sensor controller ICs, Battery Protection ICs, or any other integrated circuit that includes at least a processing unit within the left earbud. The first integrated circuit is physically attached to the first circuit board. *See* image above.

Each of Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844;
Powerbeats Pro 2	How Did Beats Pull This Off - Shorts, available from https://youtube.com/shorts/Qw_2PDyam-4?feature=shared. *See* INGENIOSPEC-013225, INGENIOSPEC-013226-013227;

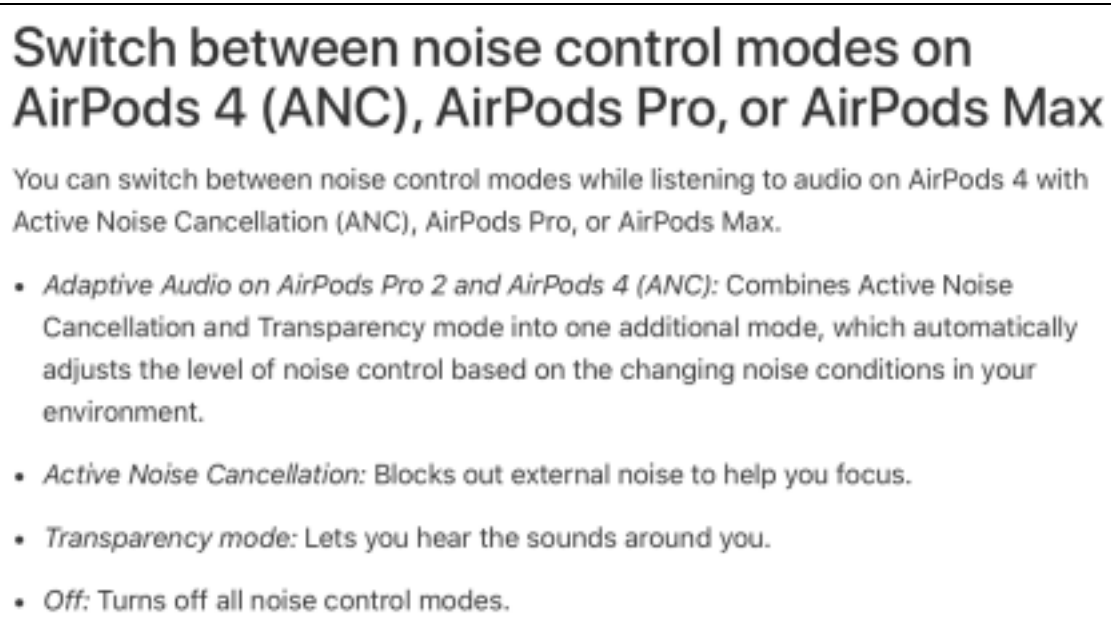
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
51b. wherein the processing unit is configured to: determine an ambient sound level; and amplify audio output from the first speaker dependent at least in part on the ambient sound level.	The first head-worn structure (left-earbud) comprises a first circuit board internal to the first head-worn structure. The first circuit board supports at least a first integrated circuit, which includes at least a processing unit. *See* Claim 51a, *supra*. The processing unit is configured to determine an ambient sound level and amplify audio output from the first speaker dependent at least in part on the ambient sound level. The processing unit of the Accused Headset Devices, such as Apple AirPods Pro 2, determines an ambient sound level. The processing unit is further configured to modify, including amplify, audio output from the first speaker dependent at least in part on the ambient sound level. For example, noise-cancelling mode cancels out the sound surrounding the user. This is done using the determined ambient sound level. The speaker is used to play only the desired audio content while suppressing external noise.

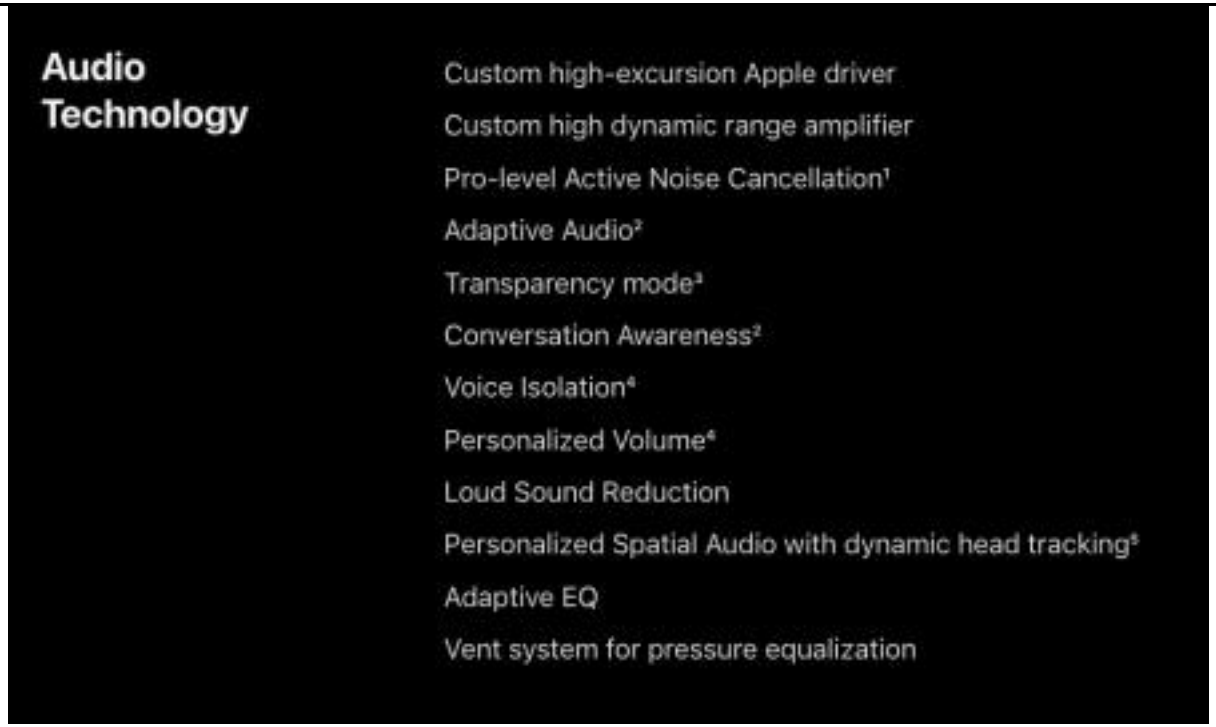
	 **Source**: Switch between noise control modes - Apple Support (INGENIOSPEC-014039-014043) (available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

As another example, transparency mode allows the user to still hear their surroundings. This is done using the determined ambient sound level. The speaker is used to play both the external ambient sounds and the audio content for the user.

	 **Source**: Switch between noise control modes - Apple Support (INGENIOSPEC-014039-014043) (available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Transparency mode makes it possible for listeners to stay connected to and aware of the world around them. Now, Adaptive Transparency takes this customer-loved feature even further. The powerful H2 chip enables on-device processing, which reduces loud environmental noise — like a passing vehicle siren, construction tools, or even loud speakers at a concert — for more comfortable everyday listening.

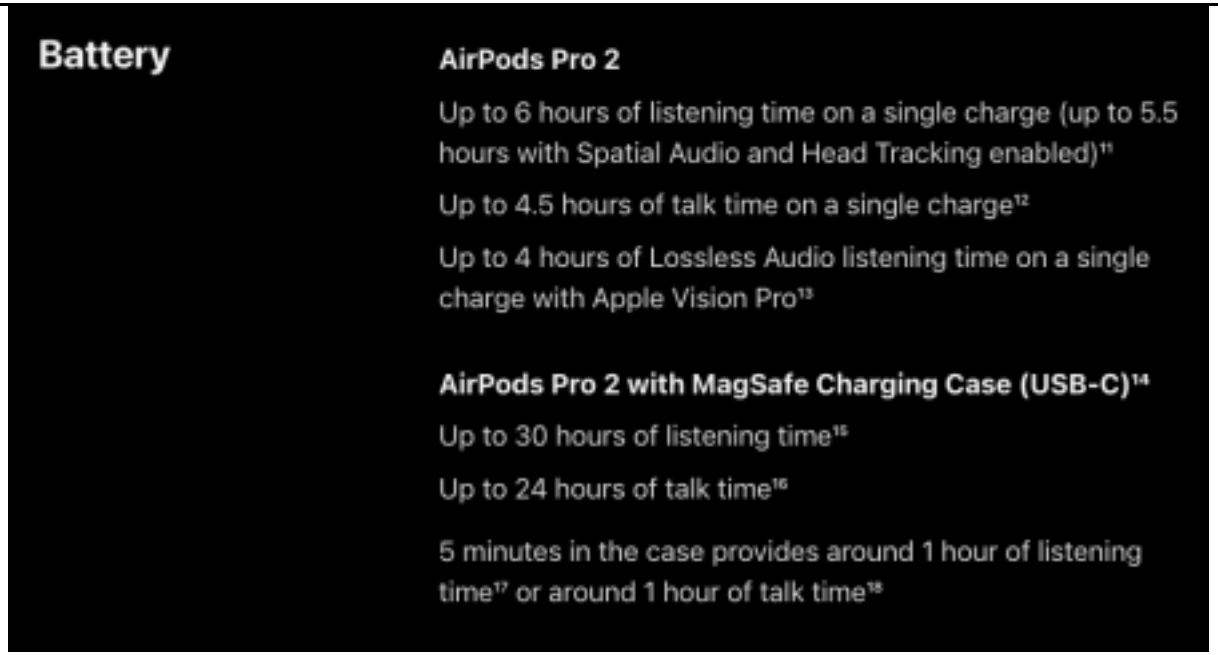
Source: Apple announces the next generation of AirPods Pro (INGENIOSPEC-013433-013441) (available from https://www.apple.com/newsroom/2022/09/apple-announces-the-next-generation-of-airpods-pro/).

Each of Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
Apple AirPods Pro 1	Switch between noise control modes - Apple Support, available from https://support.apple.com/guide/airpods/switch-between-noise-control-modes-dev9812f5cc3/1.0/web/1.0. *See* INGENIOSPEC-014039-014043; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;

	Beats Fit Pro	Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314; Beats Solo Pro Unboxing and Hands-On, available from https://www.youtube.com/watch?v=PqQkg8FHGdU&t=3s. *See* INGENIOSPEC-013191, INGENIOSPEC-013192-013197; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323; Beats by Dre The New Solo Pro, available from https://www.youtube.com/watch?v=V2i1YkfrM54. *See* INGENIOSPEC-013152, INGENIOSPEC-013153-013157;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

11,644,693 Claim 52	Evidence
52. A personal audio system as recited in claim 42, wherein the first head-worn structure of the wearable electronic device comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
52a. a battery internal to the first head-worn structure; and	Each earbud comprises a rechargeable battery internal to the first head-worn structure. As such, the left-earbud had an internal battery.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



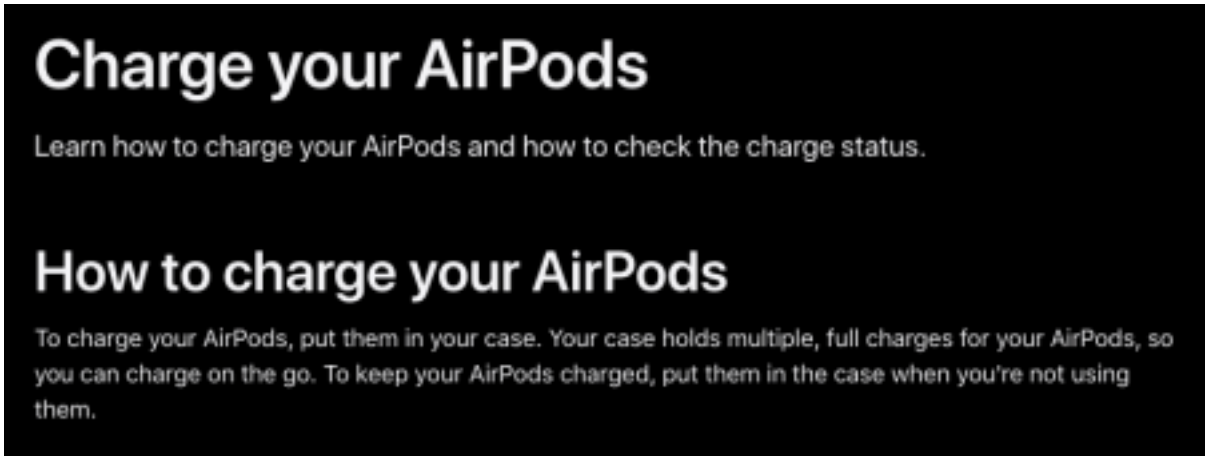
Remove the H2 system package (System in Package) cable, and separate the earphone head cover. The inside of the head cover includes the battery, earphone unit, feedback microphone and other sensor components.

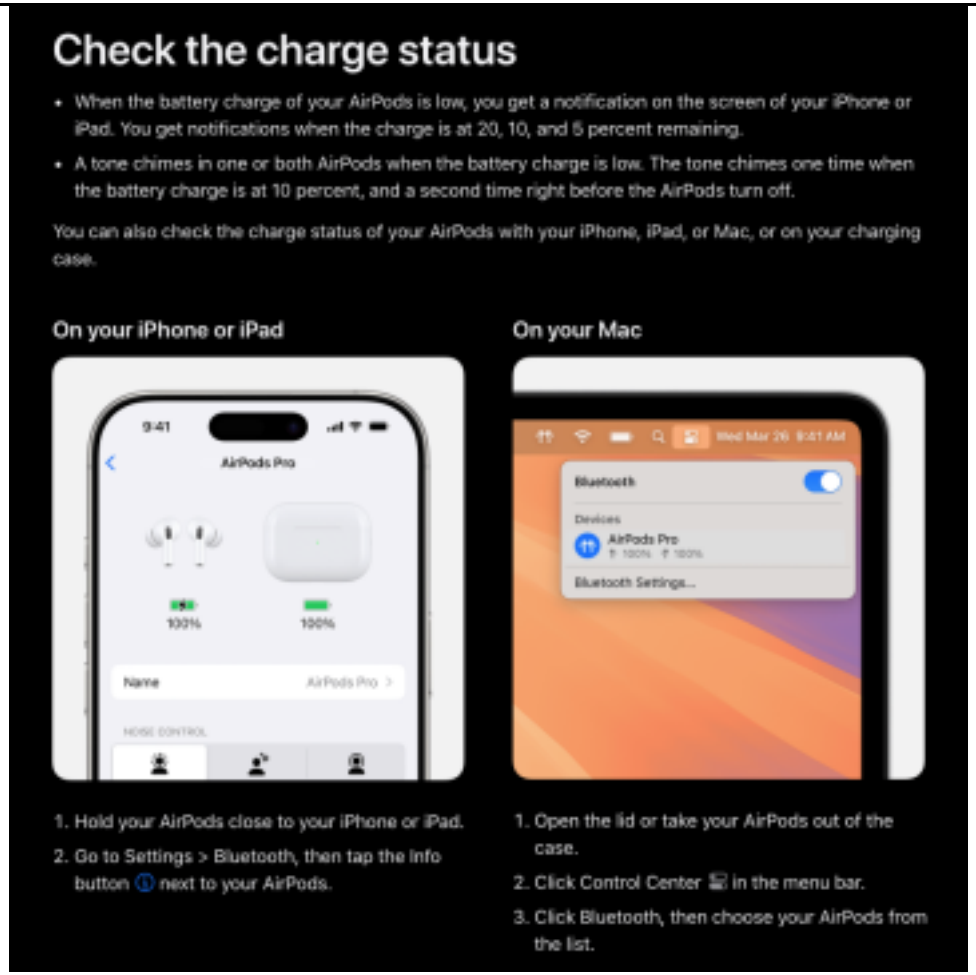
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



The coin cell battery is from Samsung SDI, model number A2731. The rated capacity is 49.7mAh/0.182Wh, and the rated voltage is 3.66V.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	For example, to charge the earbuds of AirPods Pro 2, users are instructed to put them in the charging case. The charging case holds multiple, full charges for the earbuds. *See* https://support.apple.com/en-us/119912 INGENIOSPEC-011268 to INGENIOSPEC-011271.  **Source**: https://support.apple.com/en-us/119912 (INGENIOSPEC-011268 to INGENIOSPEC-011271)



Source: https://support.apple.com/en-us/119912 (INGENIOSPEC-011268 to INGENIOSPEC-011271)

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	Citations
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

			Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; If Your AirPods Won't Charge, available from https://support.apple.com/en-us/102593. *See* INGENIOSPEC-013294-013295;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;

	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
52b1. at least one conductive element that facilitates electrical coupling	Each earbud comprises at least one conductive element that facilitates electrical coupling with the battery. Examples of an electrical connector include, but are not necessarily limited to, internal copper traces, soldered	

with the battery, the at least one conductive element is at least partially internal to the first head-worn structure but remains at least partially exposed external to the first head-worn structure, and the at least one conductive element comprises at least one conductive pad,	joints/interconnects, battery terminals, power and ground planes, integrated circuits and other electrical connectors within each earbud. The conductive element is at least partially internal to the earbuds structure, but also remains at least partially exposed external to the earbuds structure. On the surface of the earbud (external to the head-worn structure), the at least one conductive element comprises at least one conductive pad.  **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The conductive element, including conductive pads on the stem of the earbuds, are used for charging the earbuds' battery.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

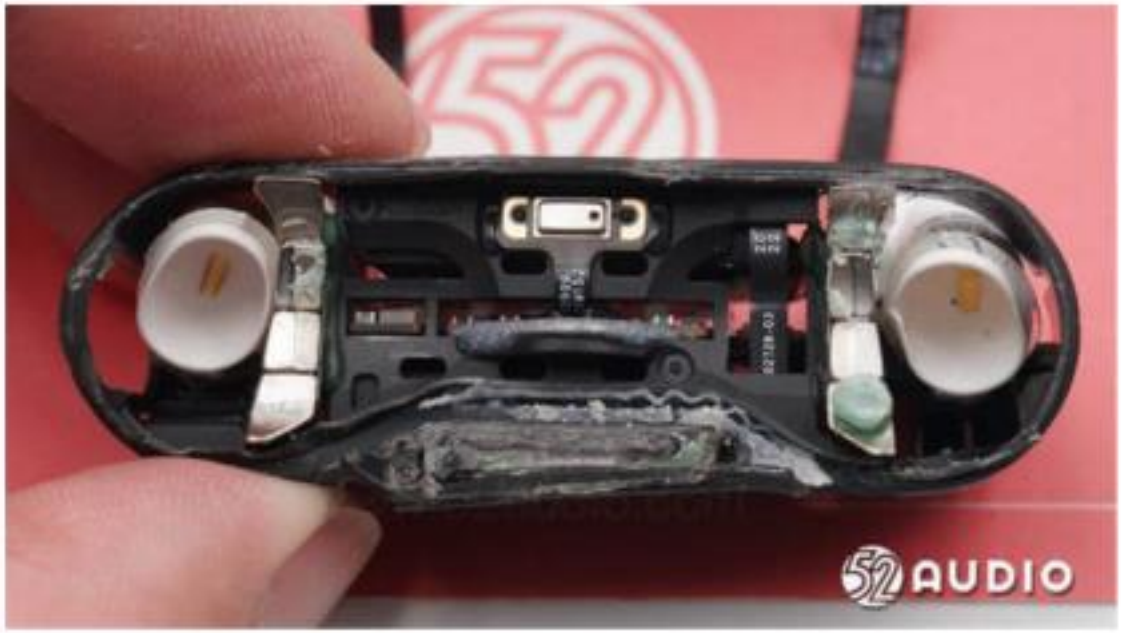
		Apple AirPods 2	Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
		Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-

		013533; If Your AirPods Won't Charge, available from https://support.apple.com/en-us/102593. *See* INGENIOSPEC-013294-013295;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
	Powerbeats Pro	Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006;
	Powerbeats Pro 2	Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
52b2. wherein the battery is able to be electrically coupled via the at least one	Each earbud comprises a rechargeable battery internal to the first head-worn structure. *See* Claim 52a, *supra*.	

conductive element to a charging apparatus and charged when at least the first head-worn structure of the head-worn wearable electronic device is placed within the charging apparatus, and	The battery is able to be electrically coupled via the at least one conductive element to a charging apparatus. The charging apparatus is the charging case for the earbuds. 

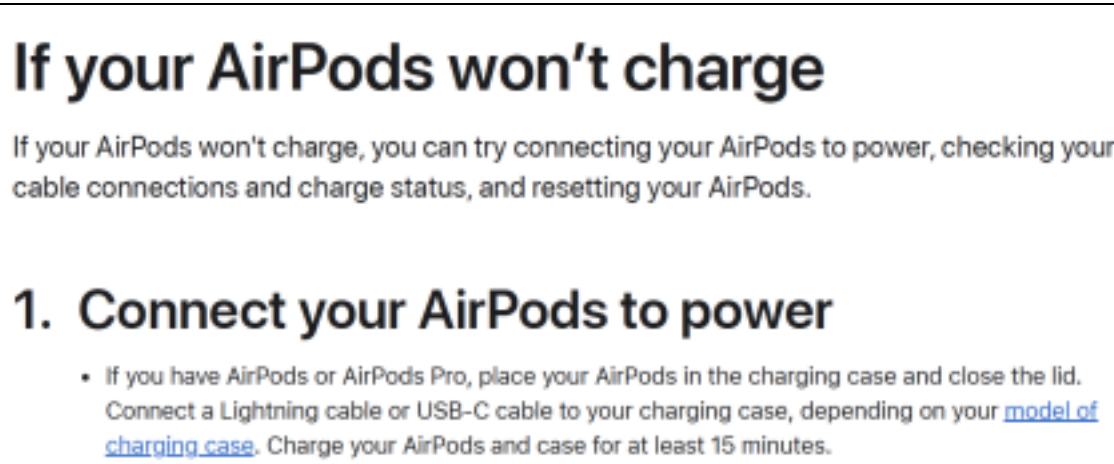
	Source: MagSafe Charging Case (USB-C) for AirPods Pro (2nd generation) (INGENIOSPEC-013698-013700) (available from https://www.apple.com/shop/product/MUYG3AM/A/magsafe-charging-case-usb%E2%80%91c-for-airpods-pro-2nd-generation).  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

	 **Source**: Apple AirPods Pro 2 with USB C case_ What's new _ Macworld (INGENIOSPEC-013695-013697) (available from https://www.macworld.com/article/2065533/airpods-pro-2-case-usb-c-iphone-15-charging.html). The conductive element, including conductive pads on the stem of the earbuds, are designed to connect with corresponding conductive contacts within the charging case. As such, when the earbud is placed within the charging apparatus, the battery of the earbud is charged by the charging case.



The internal structure of the charging compartment.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



If your AirPods won't charge

If your AirPods won't charge, you can try connecting your AirPods to power, checking your cable connections and charge status, and resetting your AirPods.

1. Connect your AirPods to power

- If you have AirPods or AirPods Pro, place your AirPods in the charging case and close the lid. Connect a Lightning cable or USB-C cable to your charging case, depending on your model of charging case. Charge your AirPods and case for at least 15 minutes.

Source: If Your AirPods Won't Charge (INGENIOSPEC-013294-013295) (available from https://support.apple.com/en-us/102593).



Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

		Apple AirPods 2	Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;
		Apple AirPods Pro 1	Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; How to clean your AirPods Pro, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014097-014100;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; If Your AirPods Won't Charge, available from https://support.apple.com/en-us/102593. *See* INGENIOSPEC-013294-013295; How to clean your AirPods Pro - Apple Support, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014256-014259;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;

	Powerbeats Pro	Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387; Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
52b3. wherein the electrical coupling of the at least one conductive element	The electrical coupling of the at least one conductive element of the earbuds with the charging apparatus of the charging case is supported by at least a magnetic element. The charging case and earbuds include magnetic elements that attract one other. The magnetic element comprises either a magnet or a magnetically responsive	

with the charging apparatus is supported by at least a magnetic element.	material. The magnetic elements cause the charging pads of the earbuds to make firm contact with the complementary charging pads within the charging case.  According to 52audio, this is a special-shaped iron block that is not small in size. It is magnetically fixed with the charging case magnet, and the center of gravity of the earphone is adjusted so that the center of gravity will not be too far out or too far inward. It acts as a counterweight to make the earphone stay in the ear more stably. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: AirPods Pro 2 Teardown - Still Completely Unrepairable (INGENIOSPEC-013114, INGENIOSPEC-013115-013122) (available from https://www.youtube.com/watch?v=WsxHWKJA7ig).



A magnet for attaching earphones.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

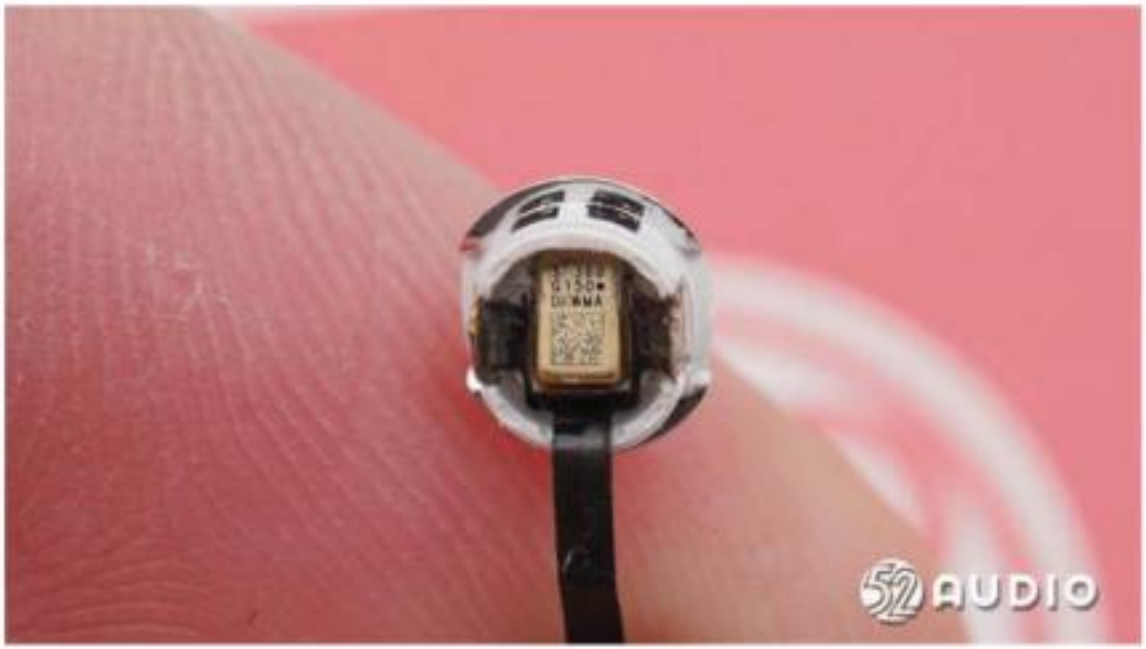
	Device	Citations
	Apple AirPods 2	Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;

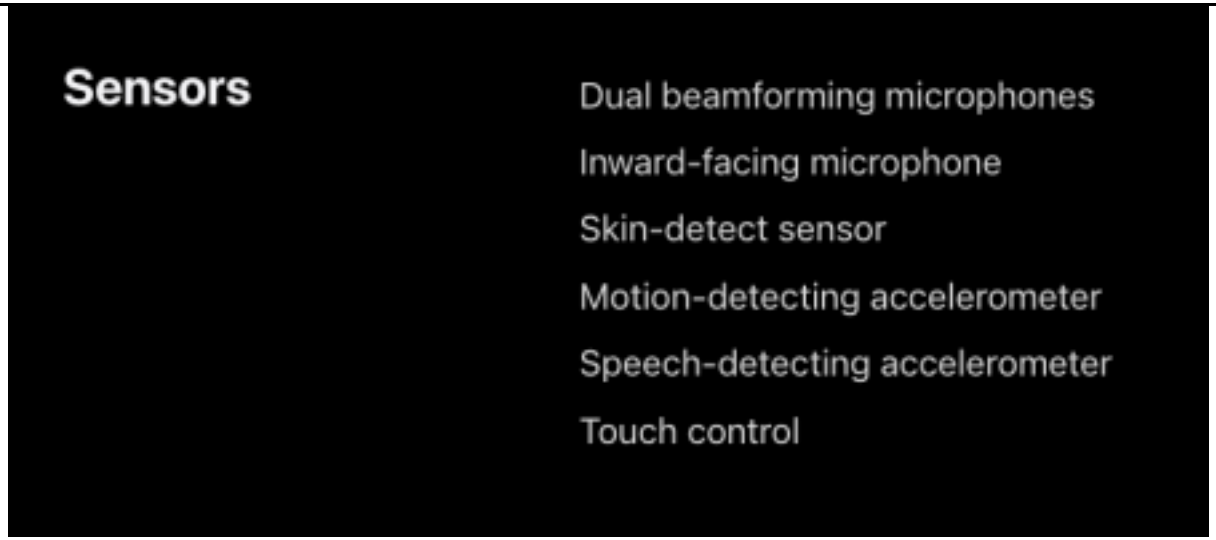
			Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 1	How to Clean AirPods Pro Case, available from https://burga.com/blogs/news/how-to-clean-airpods-pro-case. *See* INGENIOSPEC-014101-014107; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 3	Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;
		Powerbeats Pro	Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-

		safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; PowerBeats Pro 2 Review: A Worthy Sequel, available from https://slatepad.org/2025/03/21/powerbeats-pro-2-review/. *See* INGENIOSPEC-013388-013406;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

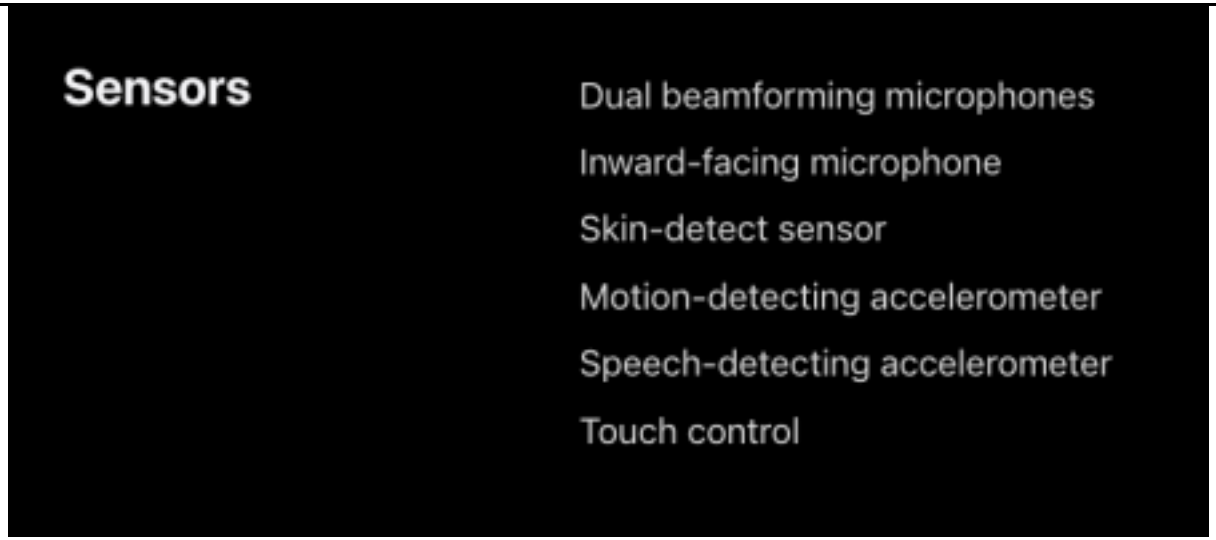
11,644,693 Claim 53	**Evidence**
53. A personal audio system as recited in claim 52, wherein the head-worn wearable electronic device comprises:	Every claim limitation of claim 52 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
53a. a microphone at least partially	The first head-worn structure (left-earbud) comprises a microphone at least partially internal to the first head-worn structure.

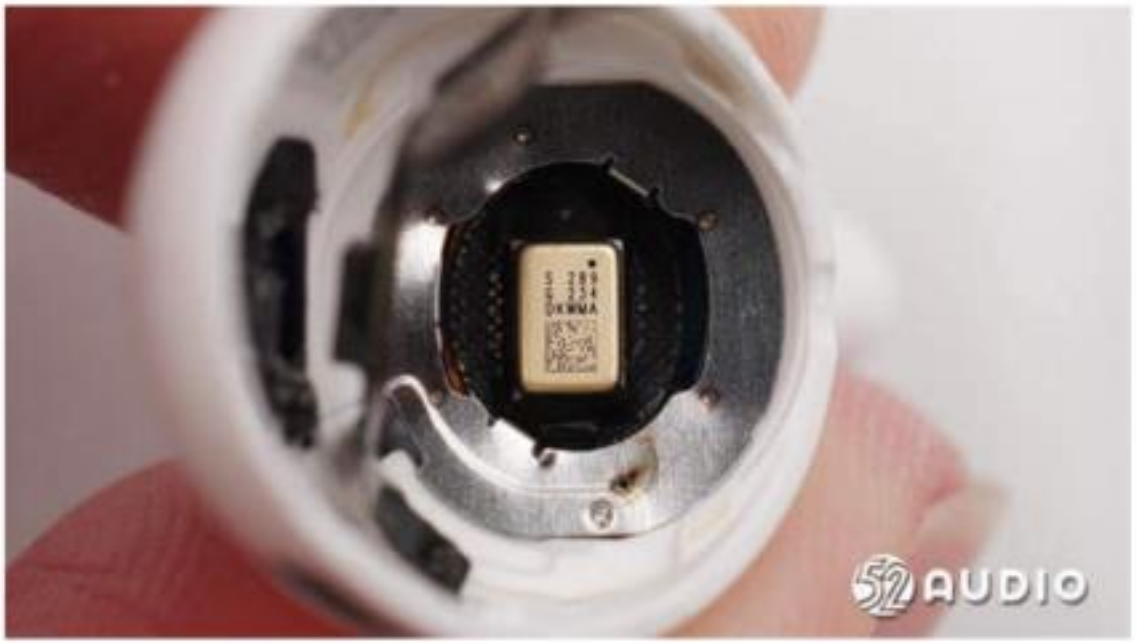
internal to the first head-worn structure,	The screenshots below evidence one of the multiple microphones in each Apple AirPods Pro 2 earbud.  Bottom pickup microphone. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). The screenshots below evidence another of the multiple microphones in each Apple AirPods Pro 2 earbud.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

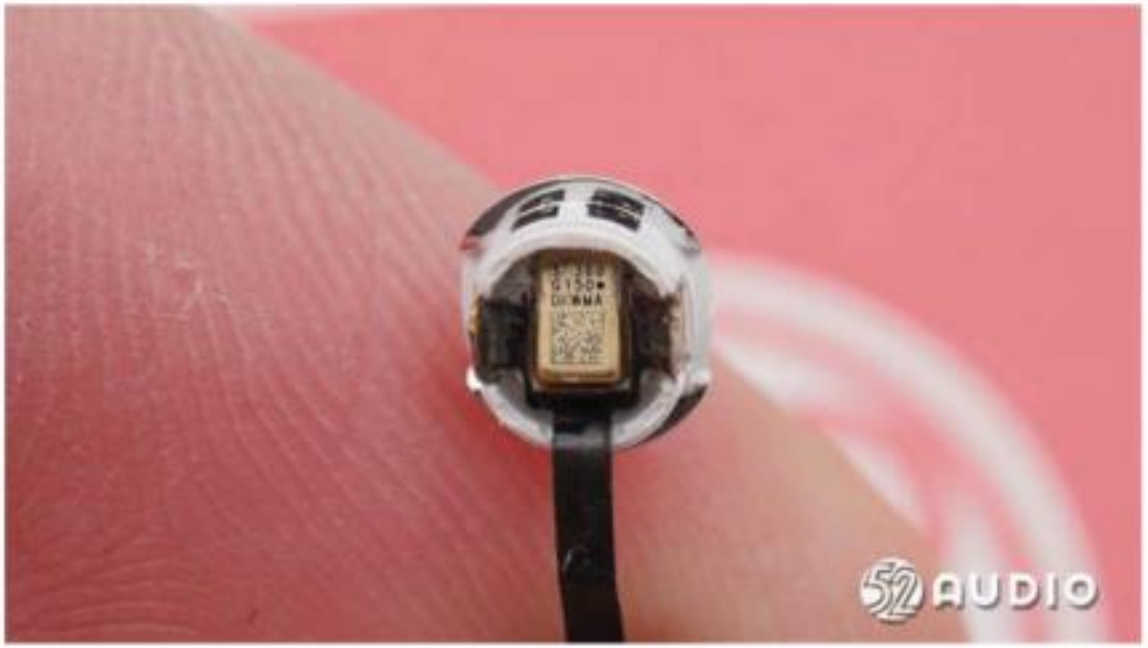
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	Citations
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

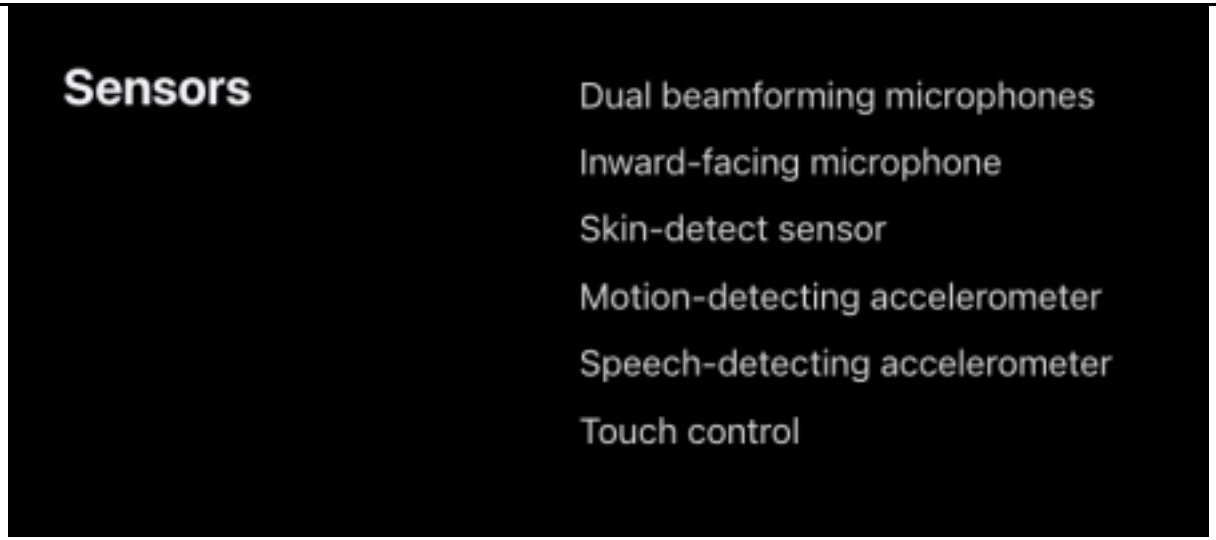
			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-

		pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
	Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
53b. wherein the head-worn wearable electronic device is configured to receive a voice input via the microphone,	The earbuds of each of the Accused Headset Devices, such as the Apple AirPods Pro 2's earbuds, comprise a microphone at least partially within the head-worn structure. *See* Claim 53a, *supra*. Each earbud is configured to receive a voice input via the microphone. Using Apple AirPods Pro 2, the user is able to present audio commands, which are picked up by the first microphone. Apple AirPods Pro 2 is configured to receive a voice input via the microphone.	



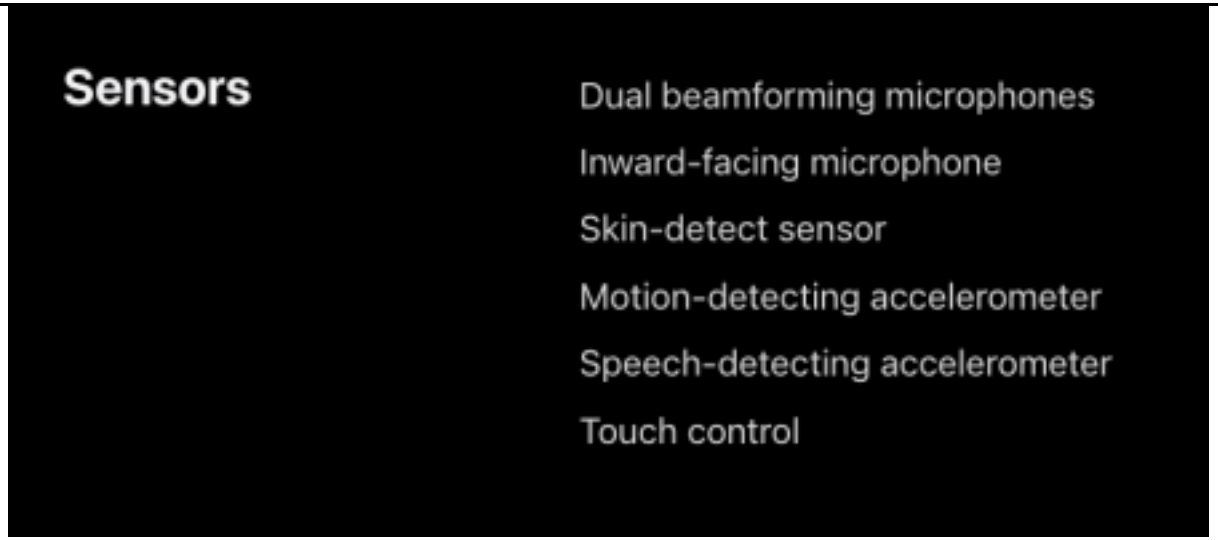
Bottom pickup microphone.

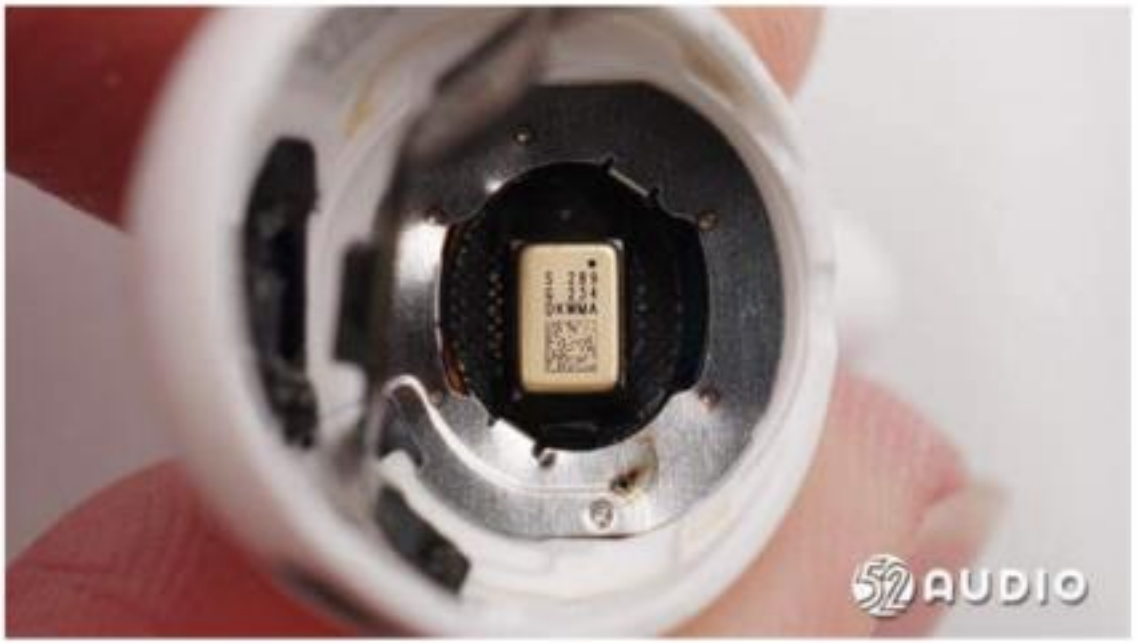
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

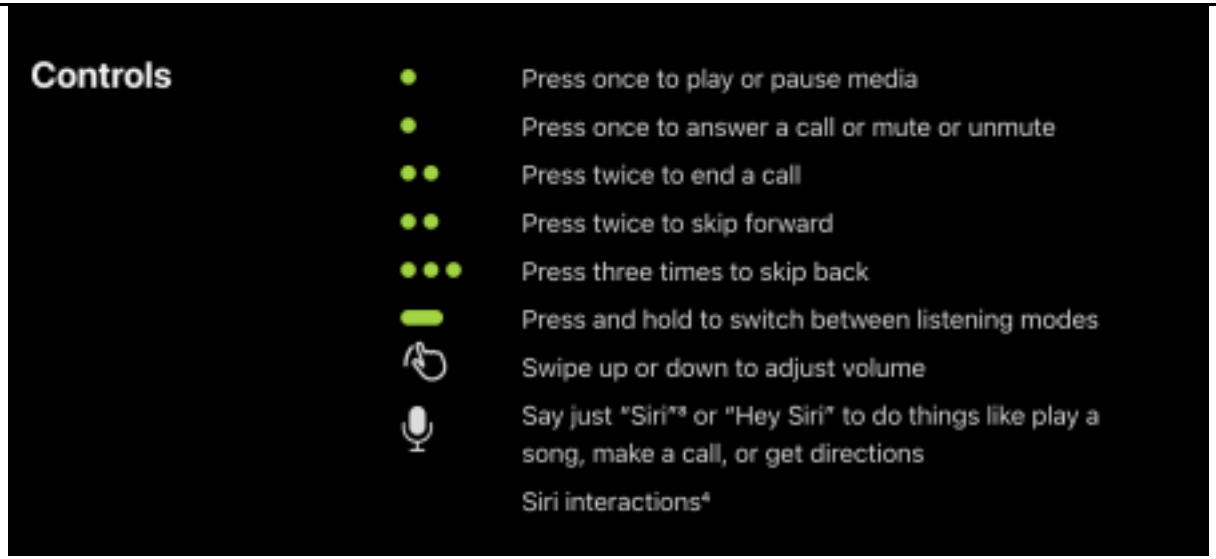
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	Citations
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Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-

		pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
	Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
53c. determine a requested operation from the voice input using voice recognition, and	The earbuds of the Accused Headset Devices, such as Apple AirPods Pro 2, are configured to determine a requested operation from the voice input using voice recognition. The Accused Headset Devices support Siri.	

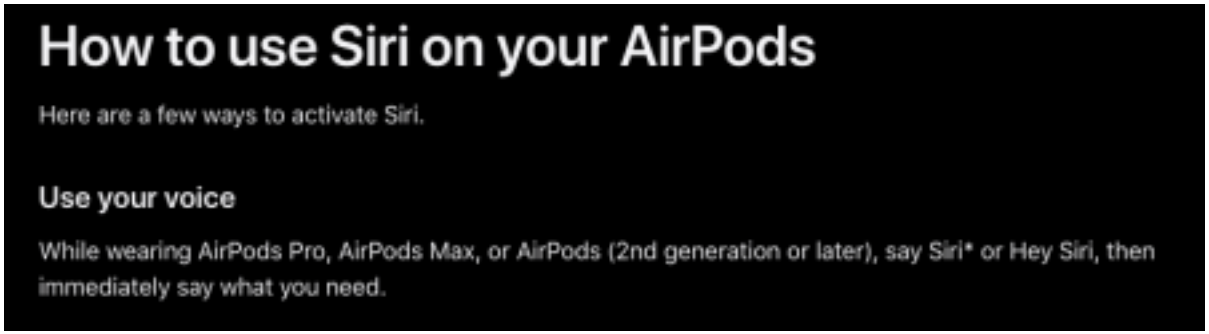


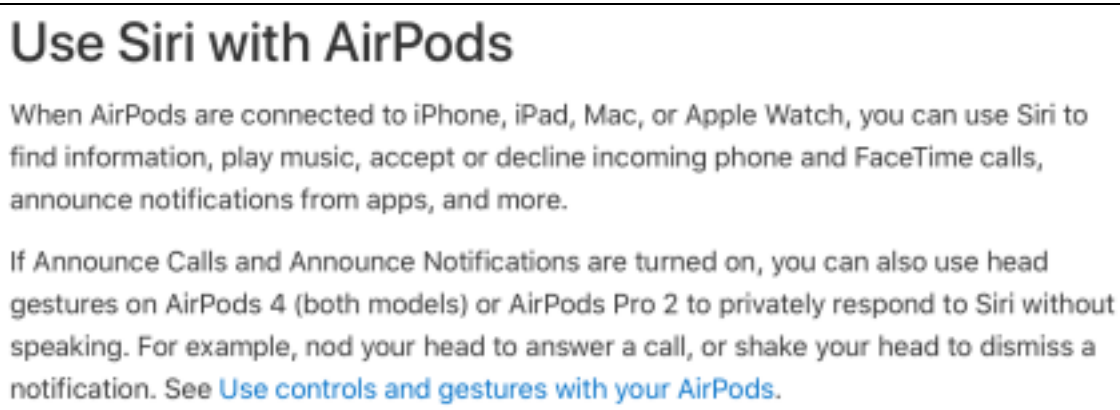
Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Use Siri with AirPods

When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more.

If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods.

	Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0). By way of example, a user can ask Siri to perform a variety of tasks, such as sending a text by saying, "Text Alex that I'm on my way," making a phone call with "Call Mom," or setting reminders like "Remind me to water the plants at 7 p.m." Users can also request navigation help with "Give me directions to the nearest gas station," check the weather by asking "What's the weather like tomorrow?" or control smart home devices with commands such as "Turn off the living room lights." Siri can play music when a user says, "Play some jazz," search the web with "Search for the best Italian restaurants nearby," create calendar events like "Schedule a meeting with John at 3 p.m. on Friday," and even answer quick questions such as "How many ounces are in a cup?" Apple provides instructions for how to activate Siri using voice commands.  **Source**: https://support.apple.com/en-us/105020 (INGENIOSPEC-011547 to INGENIOSPEC-011553) As another example, the Accused Headset Devices are able to determine that the user would like to raise the device's volume based on voice input.



Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0).

As another example, the Accused Headset Devices are able to make and receive phone calls based on voice input.

Make and answer calls

1. Wear your AirPods and make sure they're connected to your iPhone, iPad, or Apple Watch (with cellular or Wi-Fi).
2. Do one of the following:

   - *Make a call:* Say "Hey Siri," or press and hold the force sensor, then say something like "Call Eliza's mobile." On an iPad without cellular, say something like "Make a FaceTime call."

     You can also make a call on your device, such as in the FaceTime app or Phone app.

   - *Answer a call:* Press the stem once on either of your AirPods.

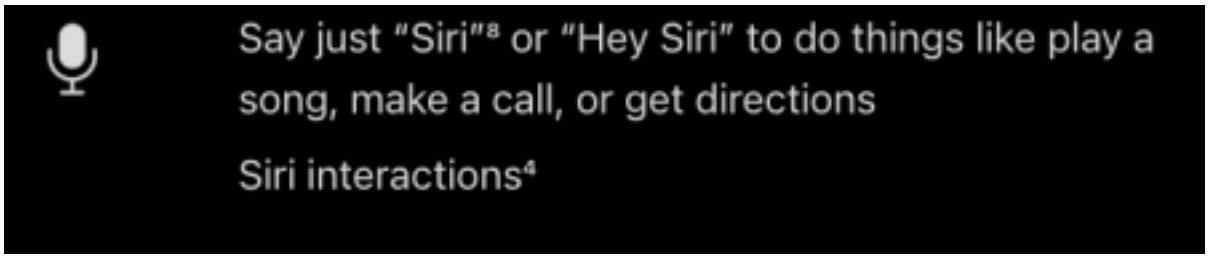
Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Use Siri with AirPods

When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more.

If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods.

Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

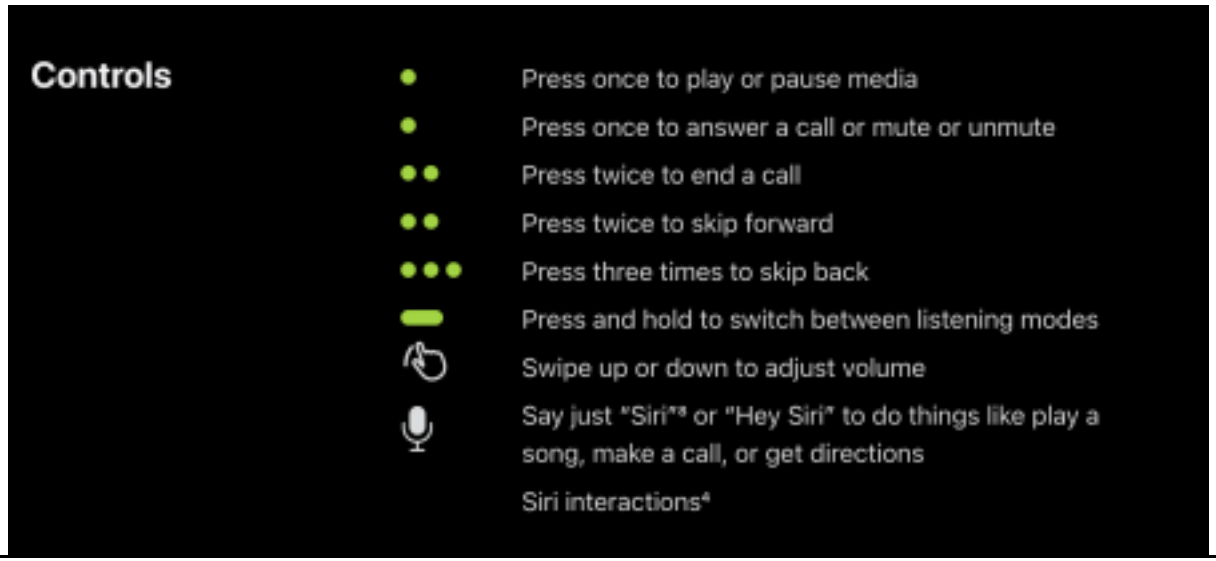
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

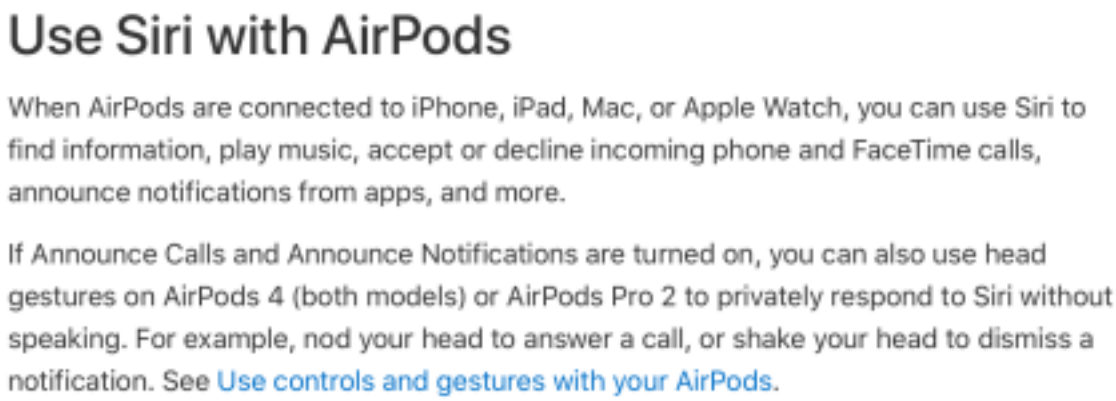
Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from

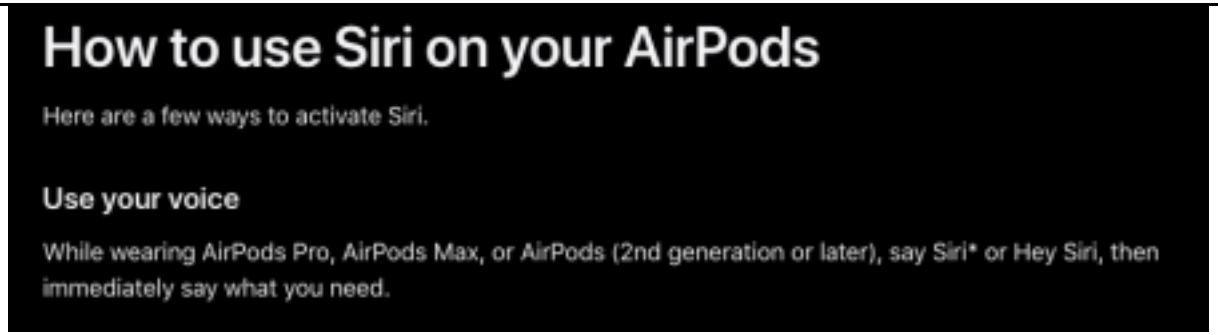
			https://support.apple.com/guide/airpods/make-and-answer-calls-with-airpods-1-or-2-dev0d85dbd4e/1.0/web/1.0. *See* INGENIOSPEC-013933-013934;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods 4	Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

			Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309; Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311; Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883;
		Powerbeats Pro 2	Use your Powerbeats Pro 2 - Apple Support, available from https://support.apple.com/guide/beats/use-powerbeats-pro-2-

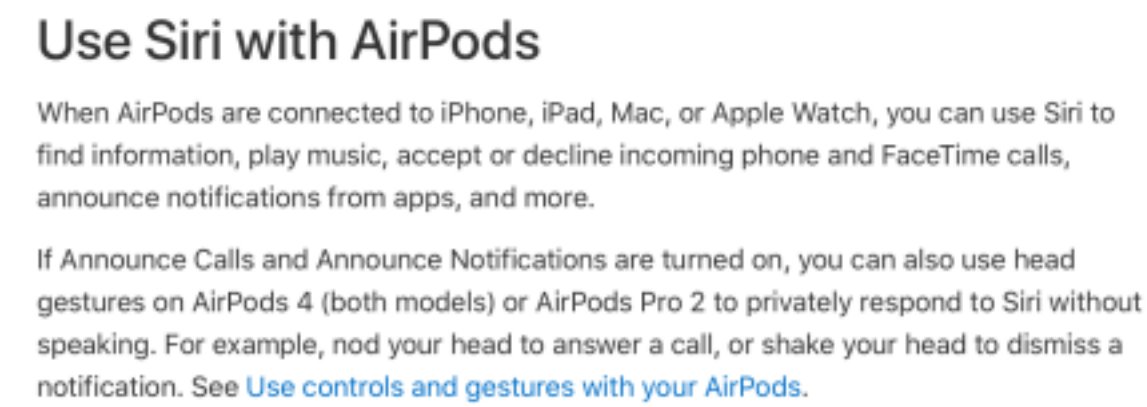
		dev1b2a821db/web. *See* INGENIOSPEC-014007-014010; Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
53d. control an operation by the head-worn wearable electronic device based on the requested operation.	The earbuds of the Accused Headset Devices, such as Apple AirPods Pro 2, are configured to control an operation by the head-worn wearable electronic device based on the requested operation. Based on the voice command, Apple AirPods Pro 2 performs specific operations, thereby controlling an operation by the AirPods Pro 2. For example, Apple AirPods Pro 2 supports Siri. 	

	Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).  **Source**: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0). By way of example, a user can ask Siri to perform a variety of tasks, such as sending a text by saying, "Text Alex that I'm on my way," making a phone call with "Call Mom," or setting reminders like "Remind me to water the plants at 7 p.m." Users can also request navigation help with "Give me directions to the nearest gas station," check the weather by asking "What's the weather like tomorrow?" or control smart home devices with commands such as "Turn off the living room lights." Siri can play music when a user says, "Play some jazz," search the web with "Search for the best Italian restaurants nearby," create calendar events like "Schedule a meeting with John at 3 p.m. on Friday," and even answer quick questions such as "How many ounces are in a cup?" Apple provides instructions for how to activate Siri using voice commands.



Source: https://support.apple.com/en-us/105020 (INGENIOSPEC-011547 to INGENIOSPEC-011553)

As another example, the Accused Headset Devices are able to determine that the user would like to raise the device's volume based on voice input.



Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0).

As another example, the Accused Headset Devices are able to make and receive phone calls based on voice input.

Make and answer calls

1. Wear your AirPods and make sure they're connected to your iPhone, iPad, or Apple Watch (with cellular or Wi-Fi).
2. Do one of the following:

   - *Make a call:* Say "Hey Siri," or press and hold the force sensor, then say something like "Call Eliza's mobile." On an iPad without cellular, say something like "Make a FaceTime call."

     You can also make a call on your device, such as in the FaceTime app or Phone app.

   - *Answer a call:* Press the stem once on either of your AirPods.

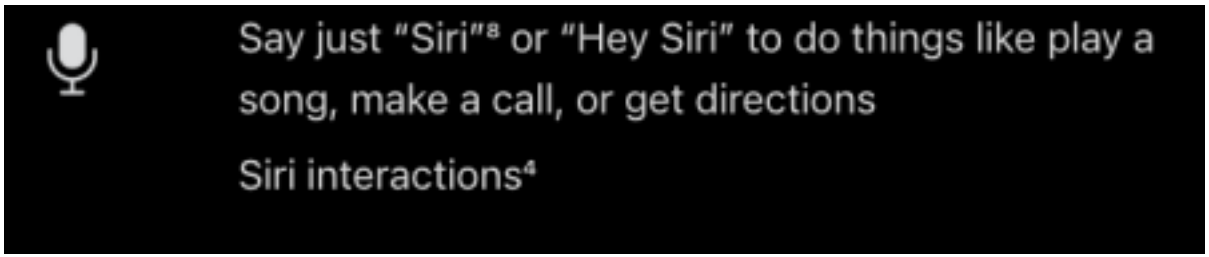
Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Use Siri with AirPods

When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more.

If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods.

Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

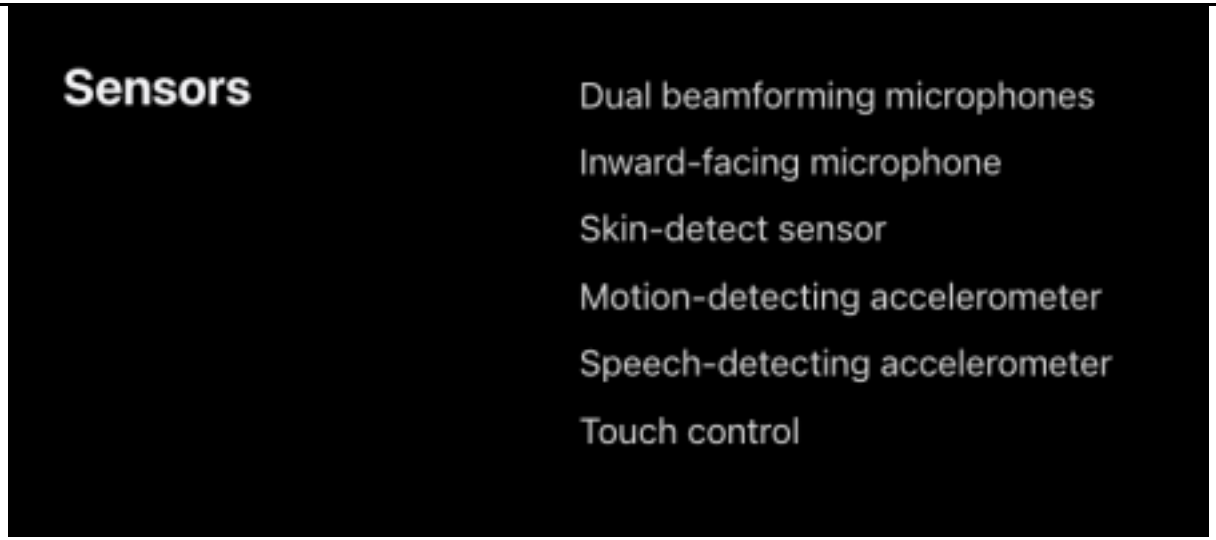
Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from

			https://support.apple.com/guide/airpods/make-and-answer-calls-with-airpods-1-or-2-dev0d85dbd4e/1.0/web/1.0. *See* INGENIOSPEC-013933-013934;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods 4	Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Pause, skip, and adjust volume with your AirPods and AirPods Pro, available from https://support.apple.com/en-us/102628. *See* INGENIOSPEC-013298-013301; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Use Siri with AirPods - Apple Support, available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0. *See* INGENIOSPEC-014033-014035; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

			Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309; Use your Beats Fit Pro - Apple Support, available from https://support.apple.com/guide/beats/use-beats-fit-pro-dev6f7b5266d/web. *See* INGENIOSPEC-013661-013663;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311; Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883;
		Powerbeats Pro 2	Use your Powerbeats Pro 2 - Apple Support, available from https://support.apple.com/guide/beats/use-powerbeats-pro-2-

		dev1b2a821db/web. *See* INGENIOSPEC-014007-014010; Adjust the volume on iPhone, available from https://support.apple.com/en-gb/guide/iphone/iphb71f9b54d/ios. *See* INGENIOSPEC-013310-013311;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 54	**Evidence**	
54. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
54a. an infrared emitter configured to at least direct infrared signals towards the user when at least the first head-worn structure of the head-worn wearable	Each earbud, of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises an infrared emitter to at least direct infrared signals towards the user when at least the earbud is being worn. The infrared emitter and infrared detector (*see* Claim 54b, *infra*) are used to determine if and when the Accused Headset Devices' earbuds, such as Apple AirPods Pro 2's earbuds, are being worn.	

electronic device is being worn;	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). **Turn off automatic ear detection** Your AirPods Pro automatically stop playing audio when you take them off, and resume playback when you put them back on. You can change this setting. 1. Wear your AirPods, and make sure they're connected to your device. 2. Do one of the following: • *iPhone or iPad*: Go to Settings, tap the name of your AirPods near the top of the screen, then turn Automatic Ear Detection on or off. • *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

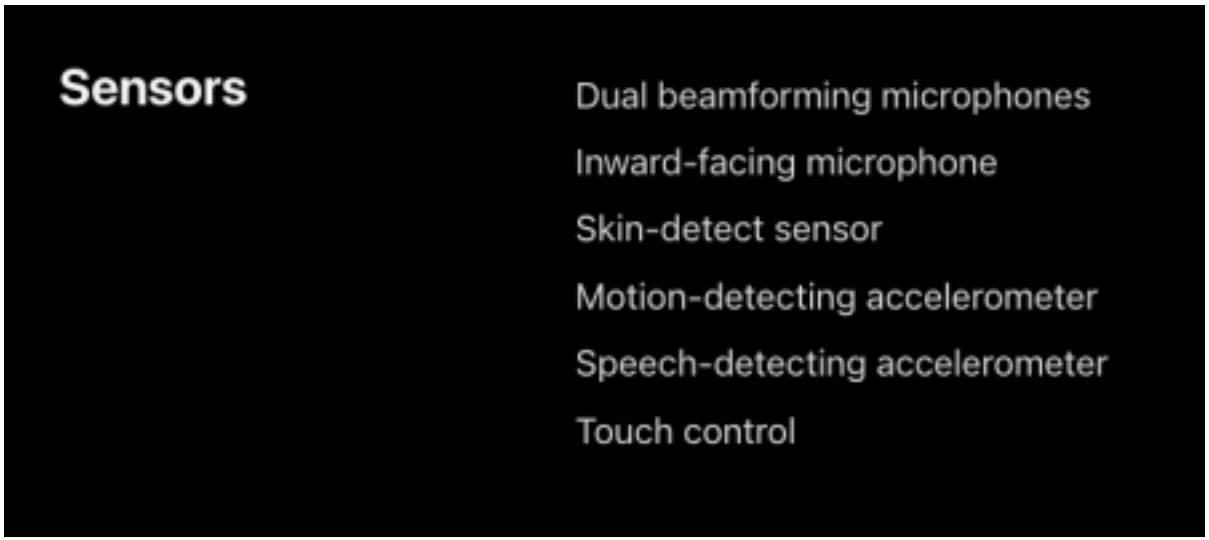
Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

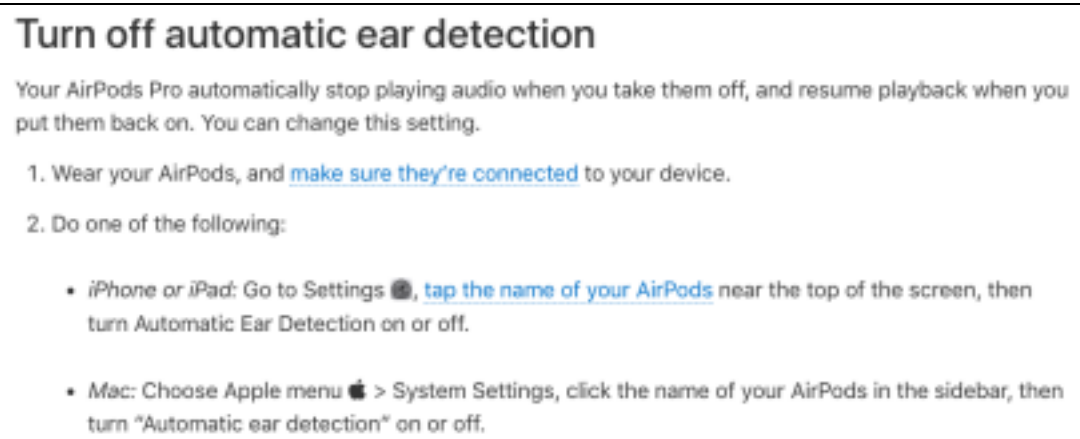
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;

	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
54b. and an infrared detector configured to detect infrared radiation reflected back from the user when at least the first head-worn structure of the head-worn wearable electronic device is being worn.	Each earbud, of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises an infrared detector at least partially contained within the head-worn structure. The infrared detector is an infrared light detector. The infrared detector is configured to detect infrared radiation from the infrared emitter (*see* Claim 54a, *supra*) that is reflected back from the user the earbud is being worn. The infrared emitter and infrared detector are used to determine if and when the Accused Headset Devices' earbuds, such as Apple AirPods Pro 2, are being worn.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Turn off automatic ear detection

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1. Wear your AirPods, and make sure they're connected to your device.
2. Do one of the following:
   - *iPhone or iPad*: Go to Settings, tap the name of your AirPods near the top of the screen, then turn Automatic Ear Detection on or off.
   - *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

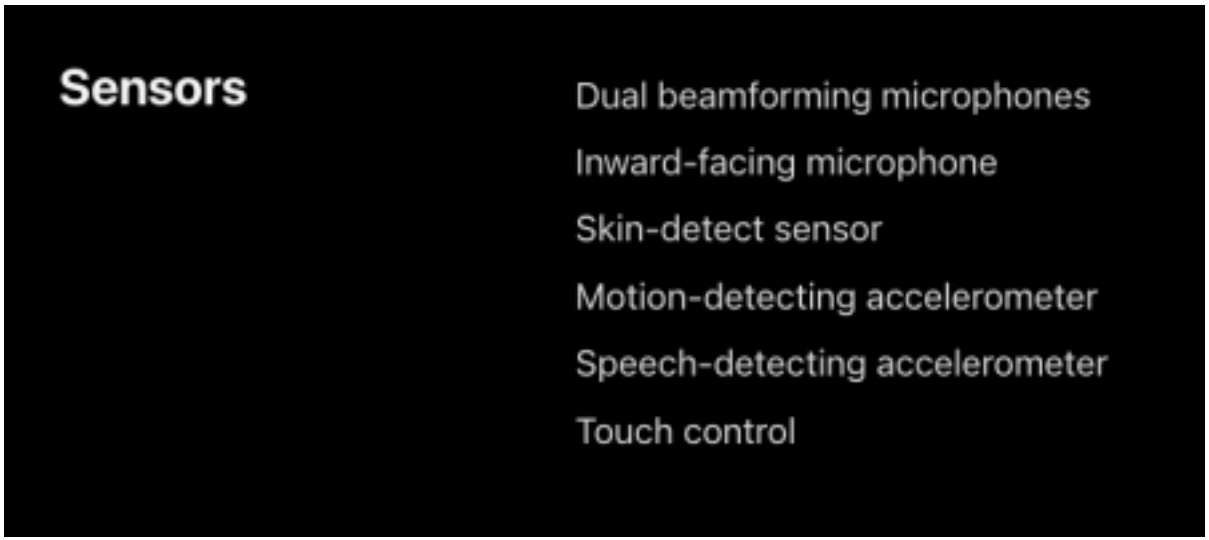
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

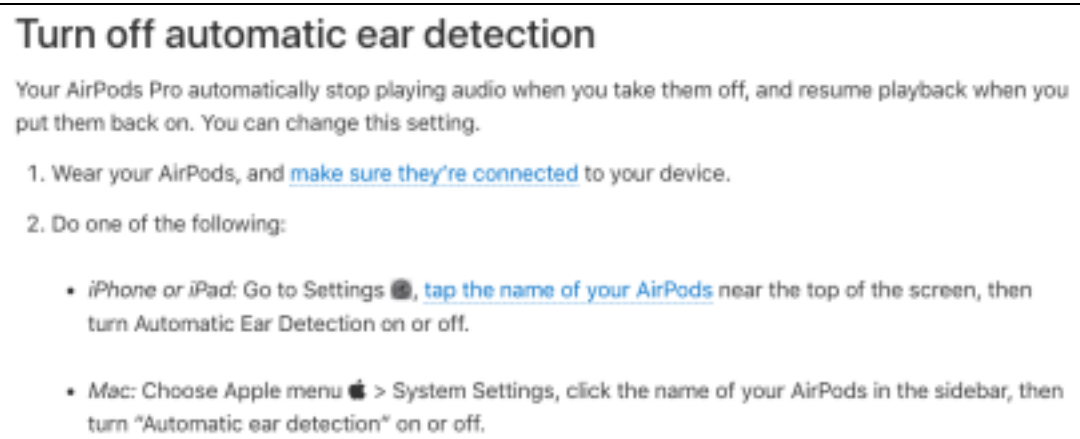
			Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890;

		Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 55	Evidence
55. A personal audio system as recited in claim 54, wherein electronic circuitry within the first head-worn structure is configured to facilitate determining whether the first head-worn structure is being worn by the user based on at least the detected infrared radiation.	Every claim limitation of claim 54 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Each earbud, of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises electronic circuitry within the first head-worn structure. The electronic circuitry includes, but is not necessarily limited to, digital signal processors (DSP), system-on-chip (SoC), integrated circuits (ICs), storage medium, microcontrollers, and any other electronic circuitry involved in determining whether the earbud is being worn by a user based on at least the processed radiation data. The infrared emitter and infrared detector (*see* Claim 54b, *infra*) are used to determine if and when the Accused Headset Devices' earbuds, such as Apple AirPods Pro 2's earbuds, are being worn. The electronic circuitry within

	the left-earbud is configured to facilitate determining whether the earbud is being worn by the user based on at least the detected infrared radiation.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Turn off automatic ear detection

Your AirPods Pro automatically stop playing audio when you take them off, and resume playback when you put them back on. You can change this setting.

1. Wear your AirPods, and make sure they're connected to your device.
2. Do one of the following:
   - *iPhone or iPad*: Go to Settings, tap the name of your AirPods near the top of the screen, then turn Automatic Ear Detection on or off.
   - *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

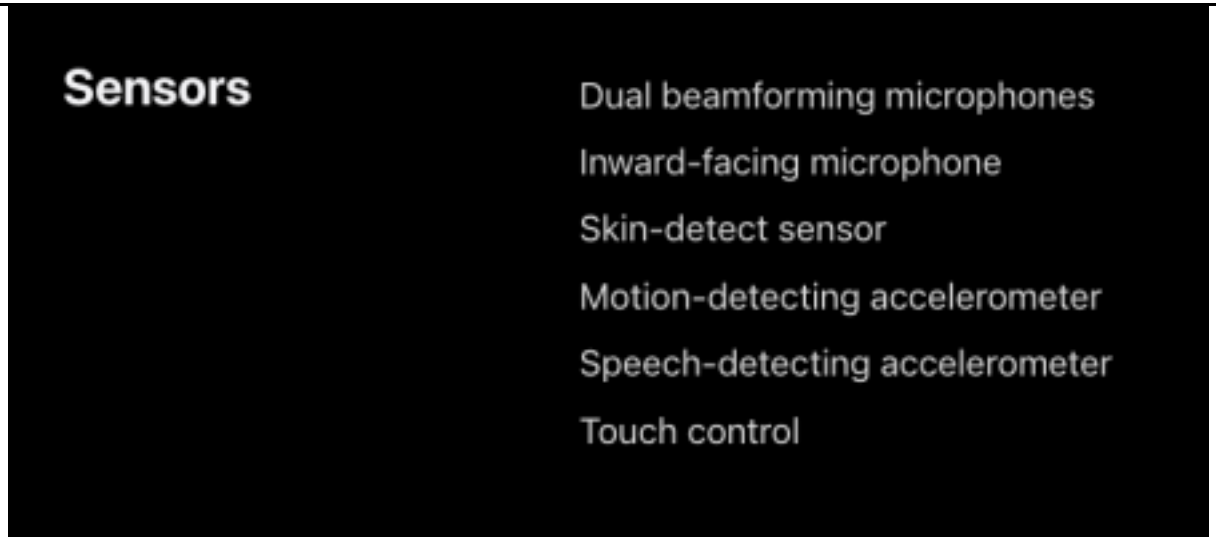
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

			Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890;

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	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 56	**Evidence**
56. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
56a. a radiation detector configured to capture radiation data;	Each earbud, of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a radiation detector. The radiation detector is an infrared radiation detector. The infrared detector is configured to detect infrared radiation from an infrared emitter that is reflected back from the user the earbud is being worn. The infrared emitter and infrared radiation detector are used to determine if and when the Accused Headset Devices' earbuds, such as Apple AirPods Pro 2, are being worn.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

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   - *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

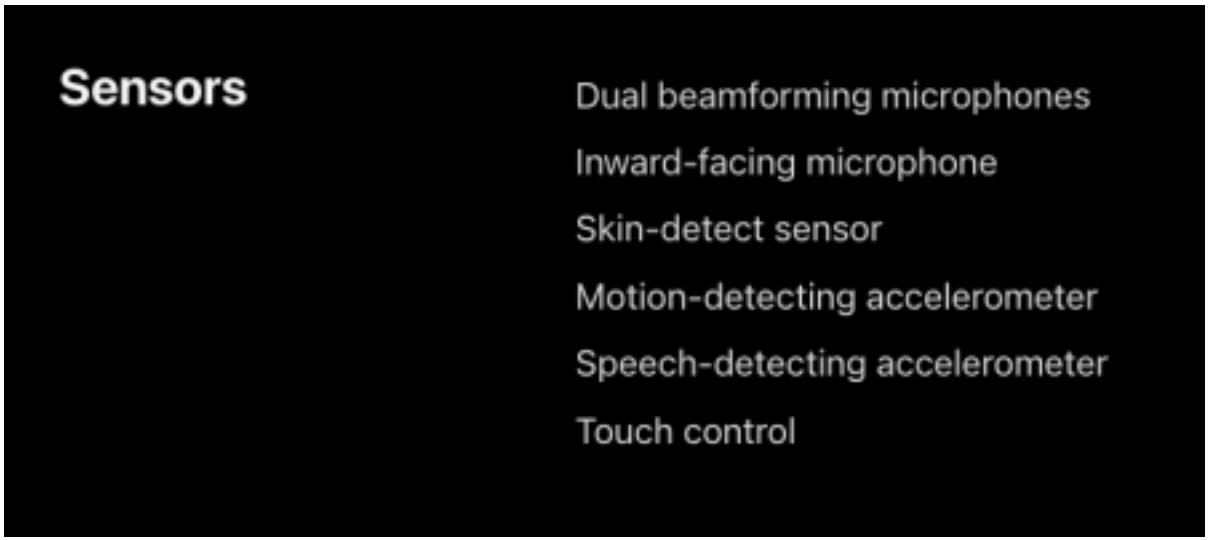
Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

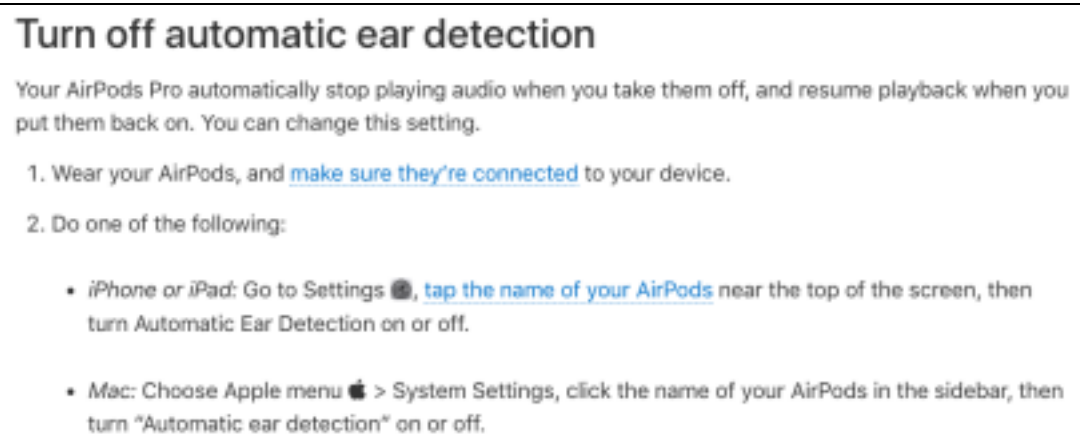
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Device	**Citations**
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Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;

	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
56b. and first electronic circuitry provided within the first head-worn structure and electrically connected to the radiation detector, the first electronic circuitry configured to process at least the radiation data captured by the radiation detector.	Each earbud, of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises first electronic circuitry within the first head-worn structure. The electronic circuitry includes, but is not necessarily limited to, digital signal processors (DSP), system-on-chip (SoC), integrated circuits (ICs), storage medium, microcontrollers, and any other electronic circuitry involved in determining whether the earbud is being worn by a user based on at least the processed radiation data. The first electronic circuitry is electrically connected to the radiation detector. The first electronic circuitry is configured to process at least the radiation data captured by the radiation detector (*see* Claim 56a, *infra*) to determine if and when the Accused Headset Devices' earbuds, such as Apple AirPods Pro 2's earbuds, are being worn. The electronic circuitry within the left-earbud is configured to facilitate determining whether the earbud is being worn by the user based on at least the detected infrared radiation.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



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   - *iPhone or iPad*: Go to Settings, tap the name of your AirPods near the top of the screen, then turn Automatic Ear Detection on or off.
   - *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

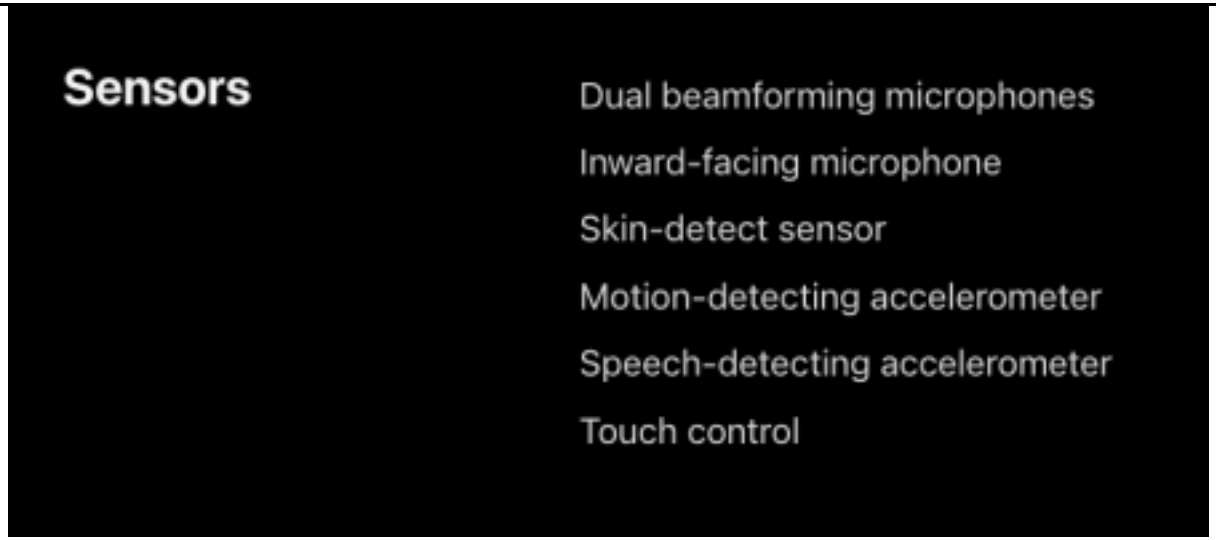
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

			Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890;

		Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 57	**Evidence**
57. A personal audio system as recited in claim 56, wherein the first electronic circuitry is configured to determine whether the first head-worn structure is being worn by a user based on at least the processed radiation data.	Every claim limitation of claim 56 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Each earbud, of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises electronic circuitry within the first head-worn structure. *See* Claim 56b, *supra*. The first electronic circuitry is configured to determine whether the first head-worn structure (left-earbud) is being worn by a user based on at least the processed radiation data. For example, the electronic circuitry within the left-earbud is configured to facilitate determining whether the earbud is being worn by the user based on at least the detected infrared radiation.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Turn off automatic ear detection

Your AirPods Pro automatically stop playing audio when you take them off, and resume playback when you put them back on. You can change this setting.

1. Wear your AirPods, and make sure they're connected to your device.
2. Do one of the following:
   - *iPhone or iPad*: Go to Settings, tap the name of your AirPods near the top of the screen, then turn Automatic Ear Detection on or off.
   - *Mac*: Choose Apple menu > System Settings, click the name of your AirPods in the sidebar, then turn "Automatic ear detection" on or off.

Source: Change settings for AirPods Pro 1 and 2 (INGENIOSPEC-014030-014032) (available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad).

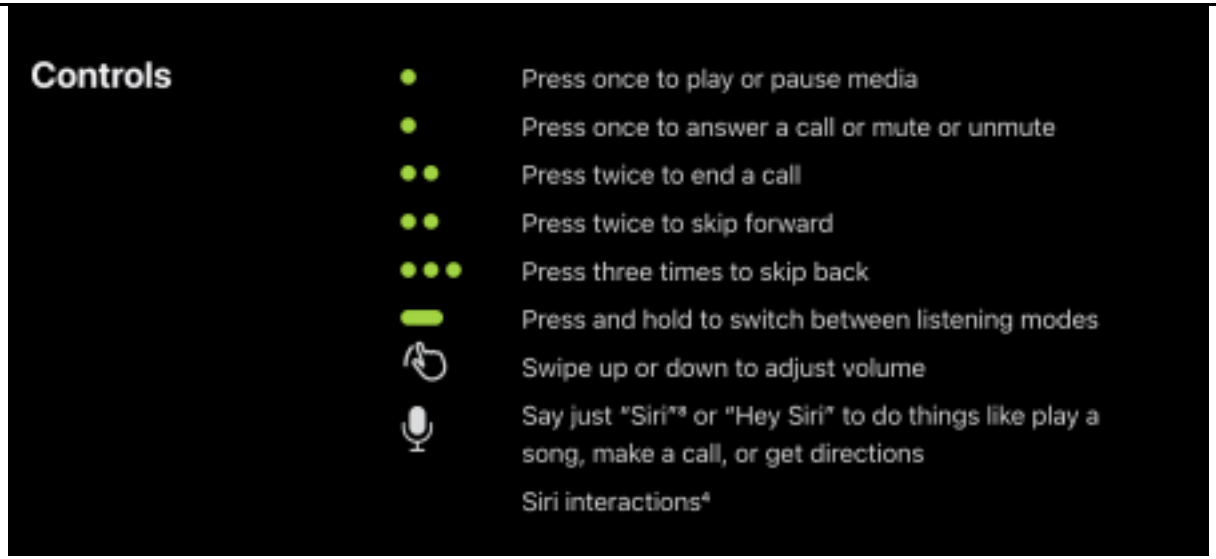
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from

			https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;

	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
	Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 58	**Evidence**
58. A personal audio system as recited in claim 57, wherein the radiation detector comprises a photodetector.	Every claim limitation of claim 57 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Headset Devices, such as Apple AirPods Pro 2, comprise a radiation detector configured to capture radiation data. *See* Claim 56, *supra*. The radiation detector of the Accused Instrumentalities, such as Apple AirPods Pro 2, comprises a photodetector. For example, the radiation detector comprises an infrared detector configured to sense infrared light using a photodetector. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 59	**Evidence**
59. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises first electronic circuitry configured to provide audio alerts to the user via the first speaker.	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. Each of the Accused Headset Devices include a pair of speakers. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, is compatible with Siri.



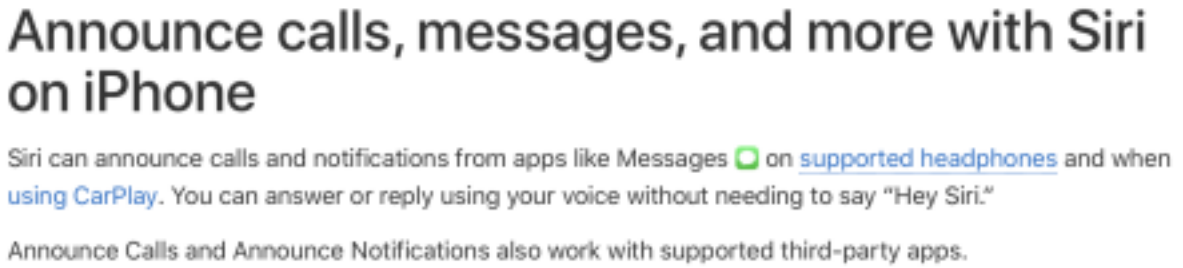
Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Use Siri with AirPods

When AirPods are connected to iPhone, iPad, Mac, or Apple Watch, you can use Siri to find information, play music, accept or decline incoming phone and FaceTime calls, announce notifications from apps, and more.

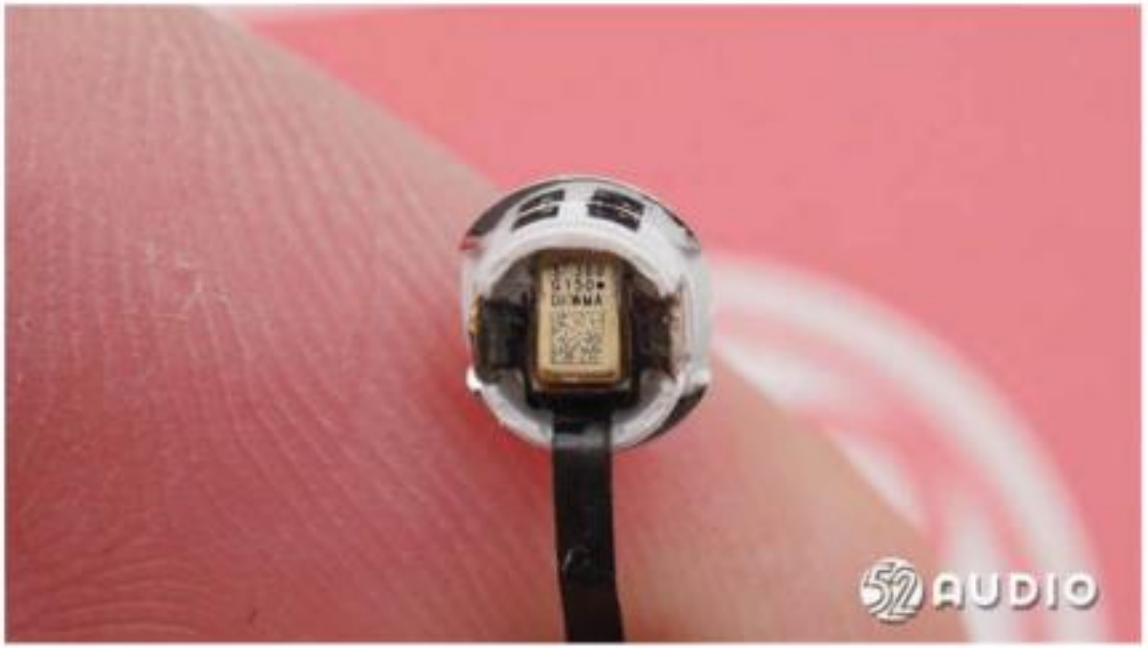
If Announce Calls and Announce Notifications are turned on, you can also use head gestures on AirPods 4 (both models) or AirPods Pro 2 to privately respond to Siri without speaking. For example, nod your head to answer a call, or shake your head to dismiss a notification. See Use controls and gestures with your AirPods.

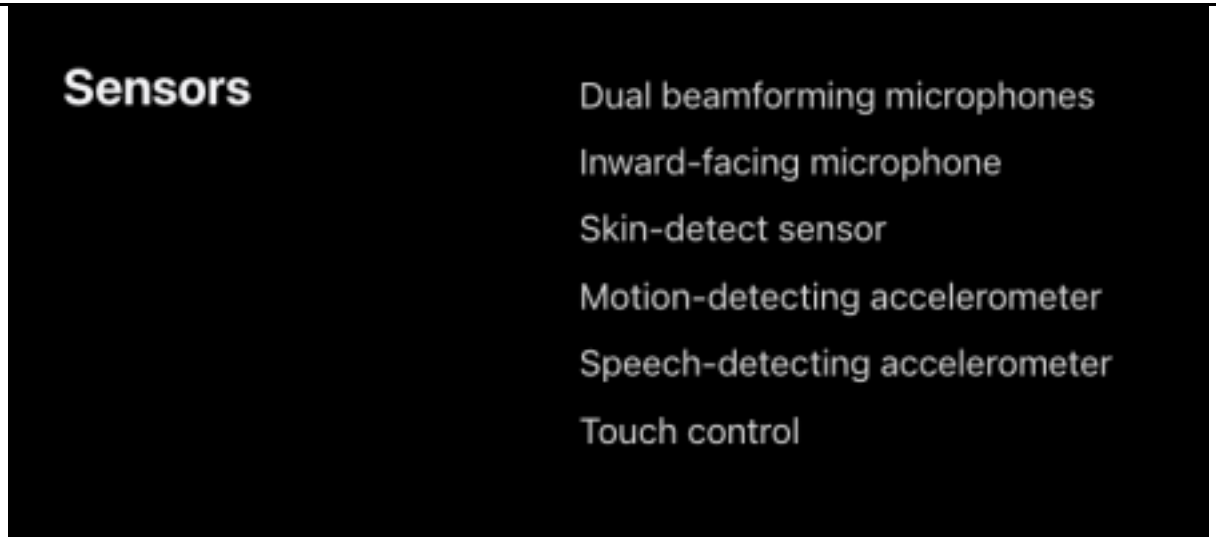
	Source: Use Siri with AirPods - Apple Support (INGENIOSPEC-014033-014035) (available from https://support.apple.com/guide/airpods/use-siri-devc2c0f438a/1.0/web/1.0). Each of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to provide audio alerts to the user via a speaker. **Announce Notifications with Siri on AirPods or Beats** When you're wearing compatible AirPods or Beats headphones, Siri can announce incoming notifications, which you can then reply to instantly, hands-free. With AirPods Pro 2 and AirPods 4 (both models), you can use head gestures alongside Announce Notifications to accept or decline calls and more without using your voice. **Turn Announce Notifications on or off** To use Announce Notifications, your compatible headphones* need to be paired with an iPhone or iPad running iOS 15 or iPadOS 15 or later, you're wearing the headphones, and your device is locked. 1. Open the Settings app. 2. Tap Notifications. 3. Tap Announce Notifications. 4. Turn Announce Notifications on or off. When Announce Notifications are turned on, Siri announces incoming notifications from apps such as Messages and Reminders, and from supported third-party apps. If the app that you're using classifies a notification as time sensitive or as a direct message, Siri plays a tone, then announces the notification automatically. If you customize Control Center on your iPhone or iPad to include Announce Notifications, you can use Control Center to turn the feature on or off quickly.

	Source: https://support.apple.com/en-us/102536 (INGENIOSPEC-011216 to INGENIOSPEC-011218) Furthermore, Apple's Siri is able to provide alerts to a user.  **Source**: https://support.apple.com/guide/iphone/have-siri-announce-calls-and-notifications-iph838fd6fd4/ios (INGENIOSPEC-011214 to INGENIOSPEC-011215) Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 60	**Evidence**
60. A personal audio system as recited in claim 59, wherein the audio alerts are dependent on one or more user preference settings.	Every claim limitation of claim 59 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. Each of the Accused Headset Devices include a pair of speakers. *See* Claim 24a, *supra*.

	The audio alerts provided to the user via a speaker are dependent on one or more user preference settings. The user preference settings include, but are not necessarily limited to, **Announce Messages with Siri** (enabled/disabled, including which contacts are allowed), **Announce Notifications with Siri** (including which apps are allowed to announce), **Do Not Disturb / Focus modes** (e.g., Work, Sleep, Driving — can suppress notifications/alerts), and other settings. **Announce Notifications with Siri on AirPods or Beats** When you're wearing compatible AirPods or Beats headphones, Siri can announce incoming notifications, which you can then reply to instantly, hands-free. With AirPods Pro 2 and AirPods 4 (both models), you can use head gestures alongside Announce Notifications to accept or decline calls and more without using your voice. **Turn Announce Notifications on or off** To use Announce Notifications, your compatible headphones* need to be paired with an iPhone or iPad running iOS 15 or iPadOS 15 or later, you're wearing the headphones, and your device is locked. 1. Open the Settings app. 2. Tap Notifications. 3. Tap Announce Notifications. 4. Turn Announce Notifications on or off. When Announce Notifications are turned on, Siri announces incoming notifications from apps such as Messages and Reminders, and from supported third-party apps. If the app that you're using classifies a notification as time sensitive or as a direct message, Siri plays a tone, then announces the notification automatically. If you customize Control Center on your iPhone or iPad to include Announce Notifications, you can use Control Center to turn the feature on or off quickly.

	Source: https://support.apple.com/en-us/102536 (INGENIOSPEC-011216 to INGENIOSPEC-011218) Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 61	**Evidence**
61. A personal audio system as recited in claim 42, wherein the first head-worn structure of the head-worn wearable electronic device comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprise a first head-worn structure. The first head-worn structure is the left earbud. *See* Claim 42a, *supra*. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
61a. a first microphone configured to pick up at least audio input from at least the user, the first microphone being at least partially in the	The left-earbud of each of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user. The first microphone is at least partially in the first head-worn structure.

first head-worn structure;	 Bottom pickup microphone. **Source**: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

The microphone captures the user's voice during phone calls, video conferences, or when issuing voice commands to Siri.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

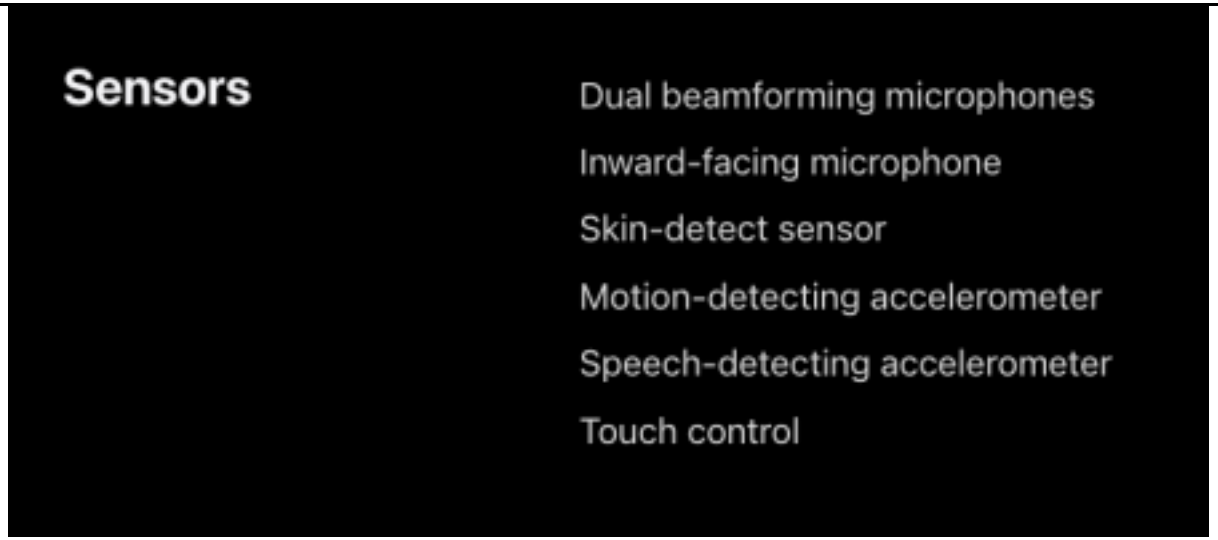
Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;

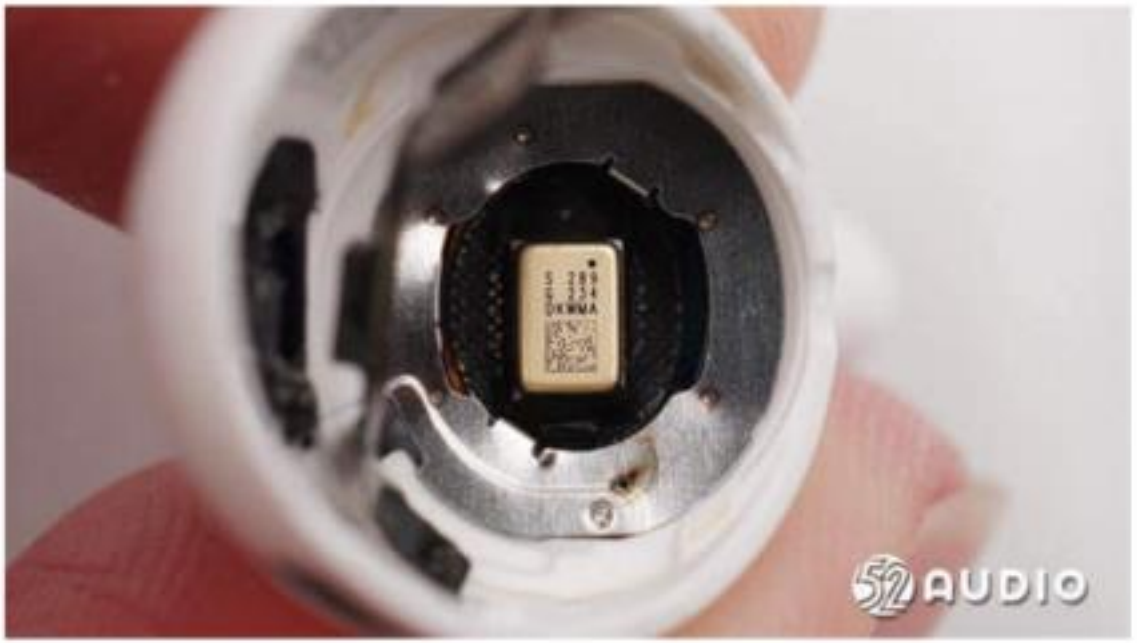
			AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
		Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-

		013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
61b. and a second microphone configured to pick up at least ambient sound input associated with an environment in the vicinity of the first head-worn structure, wherein the second microphone is positioned to be further away from mouth of the user than the first microphone when at least the first head-worn structure of the	The left-earbud of each of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises a second microphone configured to pick up at least ambient sound input associated with an environment in the vicinity of the first head-worn structure. The first microphone is at least partially in the first head-worn structure.	

head-worn wearable electronic device is being worn.	 **Source**: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

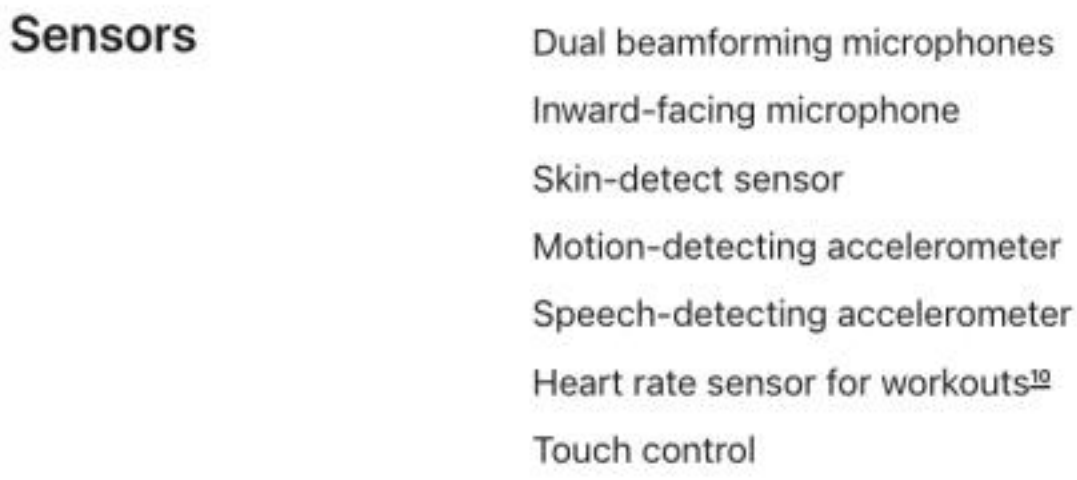
The second microphone is positioned to be further away from mouth of the user than the first microphone when at least the earbud is being worn. The second microphone can help reduce environmental noise from desired audio.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
		Beats Solo Pro	Beats-Solo-Pro-Wireless-Headphones-User-Guide, available from https://manuals.plus/wp-content/uploads/2023/05/Beats-Solo-Pro-Wireless-Headphones-User-Guide.pdf. *See* INGENIOSPEC-013808-013835; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-

		pro. *See* INGENIOSPEC-013312-013323; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 62	**Evidence**	
62. A personal audio system as recited in claim 42, wherein the first head-worn structure comprises:	Every claim limitation of claim 42 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
62a. a physical condition sensor configured to acquire data pertaining to a	The Accused Instrumentalities, such as Apple AirPods Pro 3, comprise a physical condition sensor configured to acquire data pertaining to a physical condition of the user. The physical condition sensor is a heart rate monitor sensor. The heart rate monitor sensor acquires data pertaining to a physical condition of the user. For example, the heart rate of a user is data pertaining to a physical condition of the user.	

physical condition of the user,	 **Source**: Apple AirPods Pro 3 - Technical Specs (INGENIOSPEC-014249-014255) (available from https://www.apple.com/airpods-pro/specs/).

Workout-Ready Performance

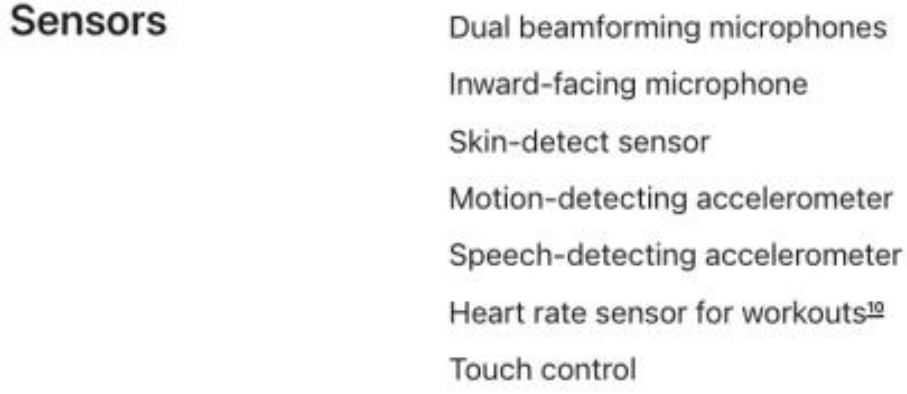
More people exercise with AirPods Pro than any other headphones in the world, and AirPods Pro 3 take workouts to the next level with Apple's smallest custom-built heart rate sensor and integrated workout experience. AirPods Pro 3 introduce a custom photoplethysmography (PPG) sensor that shines invisible infrared light pulsed at 256 times per second to measure light absorption in blood flow. Combined with sensor fusion from the AirPods Pro accelerometers, gyroscope, GPS, and a new on-device AI model on iPhone, users can start up to 50 different workout types, track their heart rate and calories burned, close their Move ring, and earn awards in the Fitness app. With just AirPods Pro 3 and iPhone, users will also have access to Workout Buddy, a first-of-its-kind fitness experience powered by Apple Intelligence that incorporates a user's workout data and their fitness history to generate personalised, motivational insights during their session.[1]



Source: Introducing AirPods Pro 3, the ultimate audio experience (INGENIOSPEC-014239-014248) (available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/).

Powerbeats Pro 2 *also* meets the claimed limitation for the same reasons.

	 **Source**: Powerbeats Pro 2 - High Performance Earbuds (INGENIOSPEC-013602-013616) (available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange). Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
62b. the physical condition sensor being provided at least partially	The Accused Instrumentalities, such as Apple AirPods Pro3, comprise a physical condition sensor configured to acquire data pertaining to a physical condition of the user. *See* Claim 62a, *supra*. The heart rate sensor is at least partially contained within the head-worn structure.

internal to the first head-worn structure.	 **Source**: Apple AirPods Pro 3 - Technical Specs (INGENIOSPEC-014249-014255) (available from https://www.apple.com/airpods-pro/specs/).

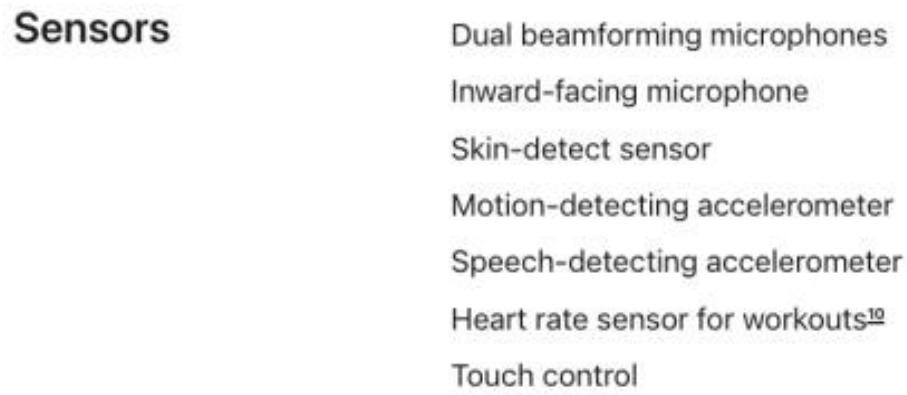
Workout-Ready Performance

More people exercise with AirPods Pro than any other headphones in the world, and AirPods Pro 3 take workouts to the next level with Apple's smallest custom-built heart rate sensor and integrated workout experience. AirPods Pro 3 introduce a custom photoplethysmography (PPG) sensor that shines invisible infrared light pulsed at 256 times per second to measure light absorption in blood flow. Combined with sensor fusion from the AirPods Pro accelerometers, gyroscope, GPS, and a new on-device AI model on iPhone, users can start up to 50 different workout types, track their heart rate and calories burned, close their Move ring, and earn awards in the Fitness app. With just AirPods Pro 3 and iPhone, users will also have access to Workout Buddy, a first-of-its-kind fitness experience powered by Apple Intelligence that incorporates a user's workout data and their fitness history to generate personalised, motivational insights during their session.[1]



Source: Introducing AirPods Pro 3, the ultimate audio experience (INGENIOSPEC-014239-014248) (available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/).

	Powerbeats Pro 2 *also* meets the claimed limitation for the same reasons.  **Source**: Powerbeats Pro 2 - High Performance Earbuds (INGENIOSPEC-013602-013616) (available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange). Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 63	**Evidence**

63. A personal audio system as recited in claim 62, wherein the acquired data by the physical condition sensor includes data pertaining to or dependent on heart beats of the user.	Every claim limitation of claim 62 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities, such as Apple AirPods Pro 3, comprise a physical condition sensor configured to acquire data pertaining to a physical condition of the user. The physical condition sensor is a heart rate monitor sensor. The heart rate monitor sensor acquires data pertaining to a physical condition of the user. For example, the heart rate of a user is data pertaining to a physical condition of the user that is pertaining to or dependent on heart beats of the user. The heart rate sensor is at least partially contained within the head-worn structure.  **Source**: Apple AirPods Pro 3 - Technical Specs (INGENIOSPEC-014249-014255) (available from https://www.apple.com/airpods-pro/specs/).

Workout-Ready Performance

More people exercise with AirPods Pro than any other headphones in the world, and AirPods Pro 3 take workouts to the next level with Apple's smallest custom-built heart rate sensor and integrated workout experience. AirPods Pro 3 introduce a custom photoplethysmography (PPG) sensor that shines invisible infrared light pulsed at 256 times per second to measure light absorption in blood flow. Combined with sensor fusion from the AirPods Pro accelerometers, gyroscope, GPS, and a new on-device AI model on iPhone, users can start up to 50 different workout types, track their heart rate and calories burned, close their Move ring, and earn awards in the Fitness app. With just AirPods Pro 3 and iPhone, users will also have access to Workout Buddy, a first-of-its-kind fitness experience powered by Apple Intelligence that incorporates a user's workout data and their fitness history to generate personalised, motivational insights during their session.[1]



Source: Introducing AirPods Pro 3, the ultimate audio experience (INGENIOSPEC-014239-014248) (available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/).

Powerbeats Pro 2 *also* meets the claimed limitation for the same reasons.

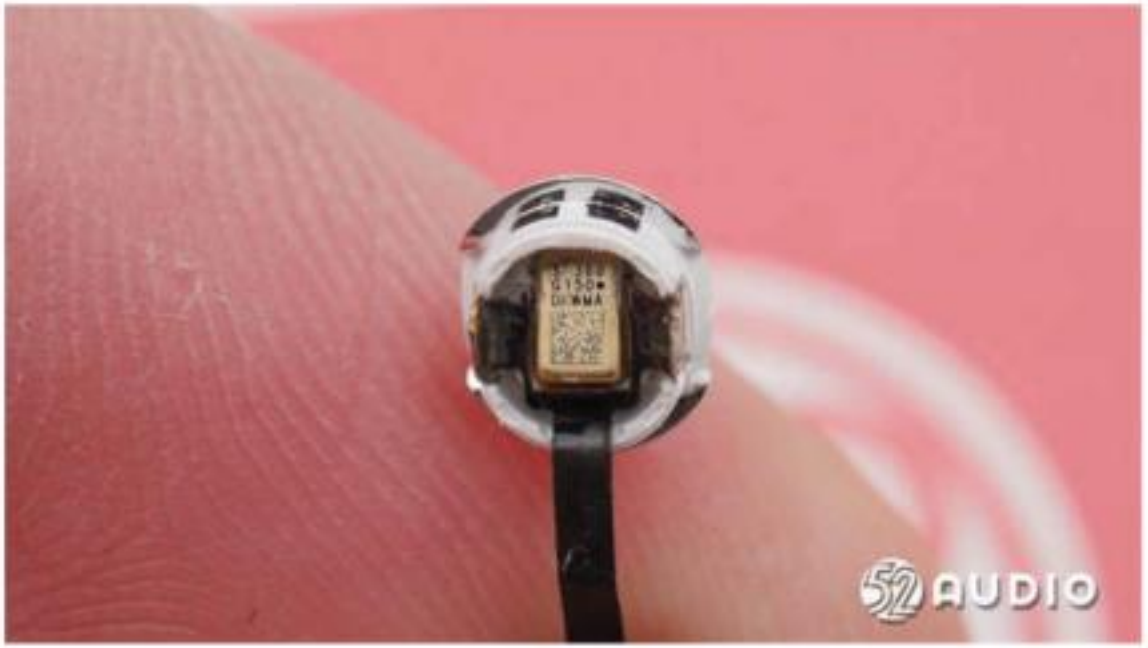


Source: Powerbeats Pro 2 - High Performance Earbuds (INGENIOSPEC-013602-013616) (available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange).

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

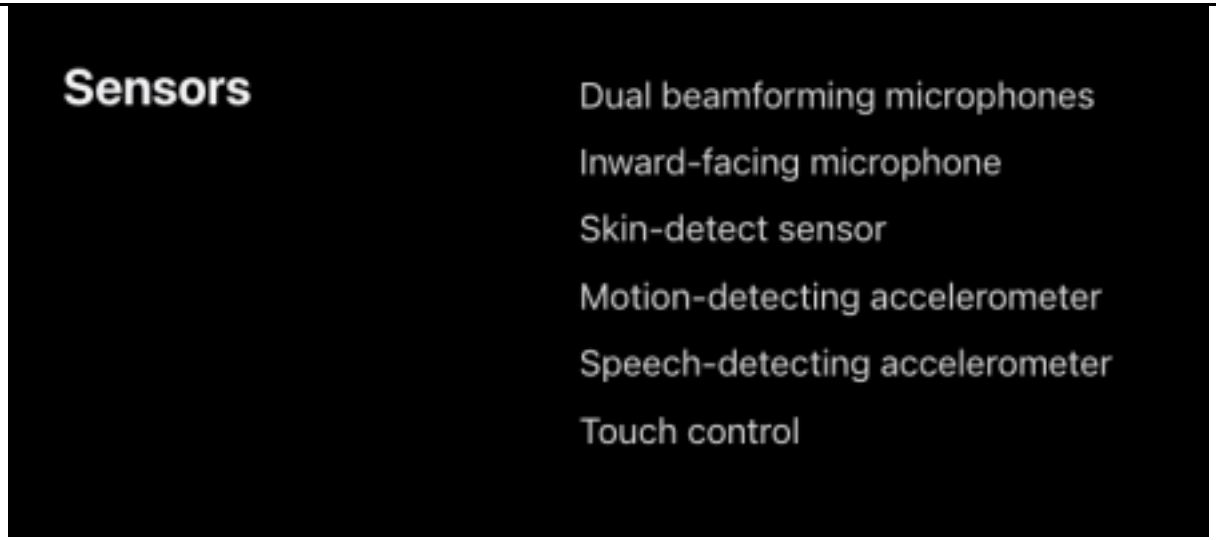
11,644,693 Claim 64	Evidence

64. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device comprises:	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
64a. a head-worn structure including at least a first microphone, a second microphone, a speaker and a processing unit; wherein the first microphone is configured to pick up at least audio input from at least the user, wherein the second microphone is configured to pick up at least environmental audio input associated with an environment in the vicinity of the head-worn wearable electronic device, and	The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user.



Bottom pickup microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

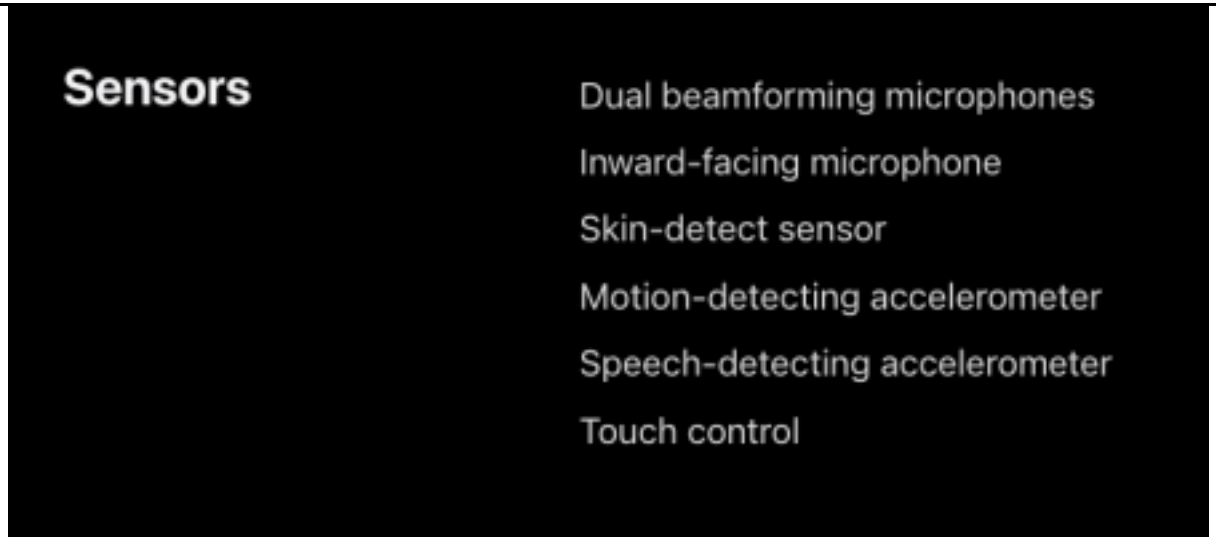


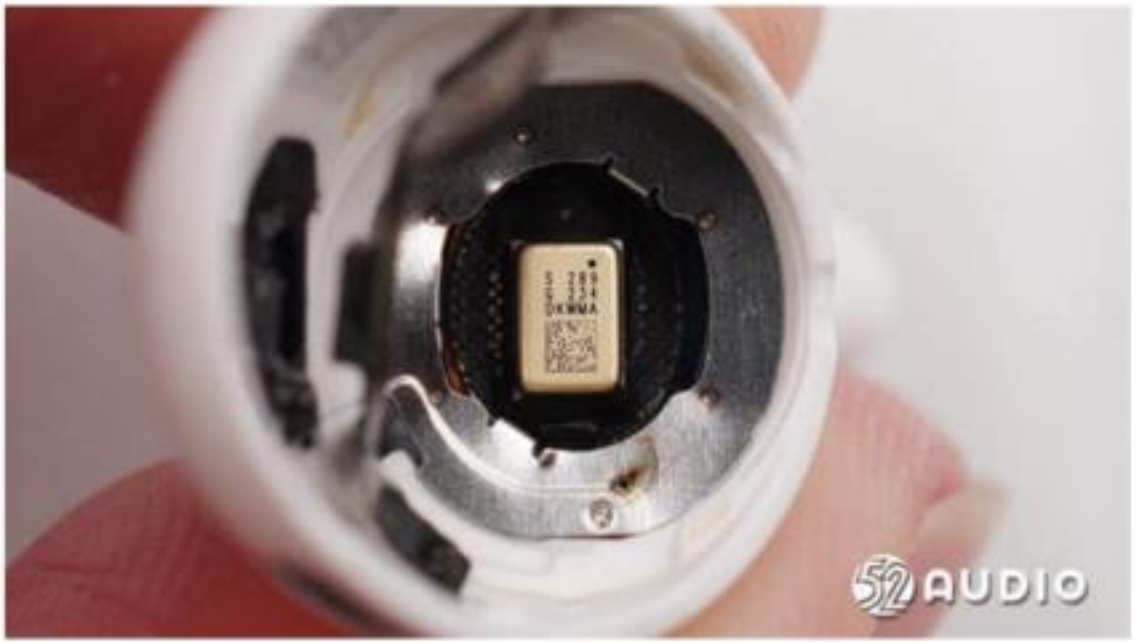
Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises a second microphone configured to pick up at least environmental audio input associated with an environment in the vicinity of the device.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises at least one speaker.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



The front of the speaker unit is a black diaphragm.

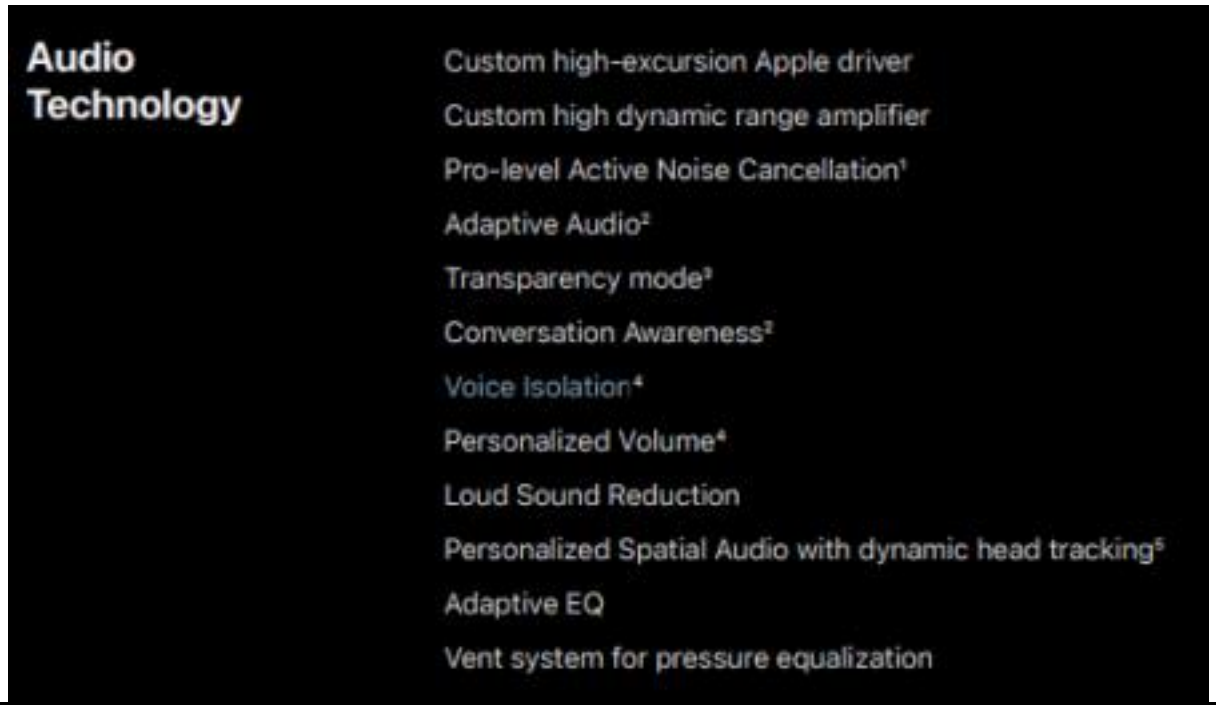
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

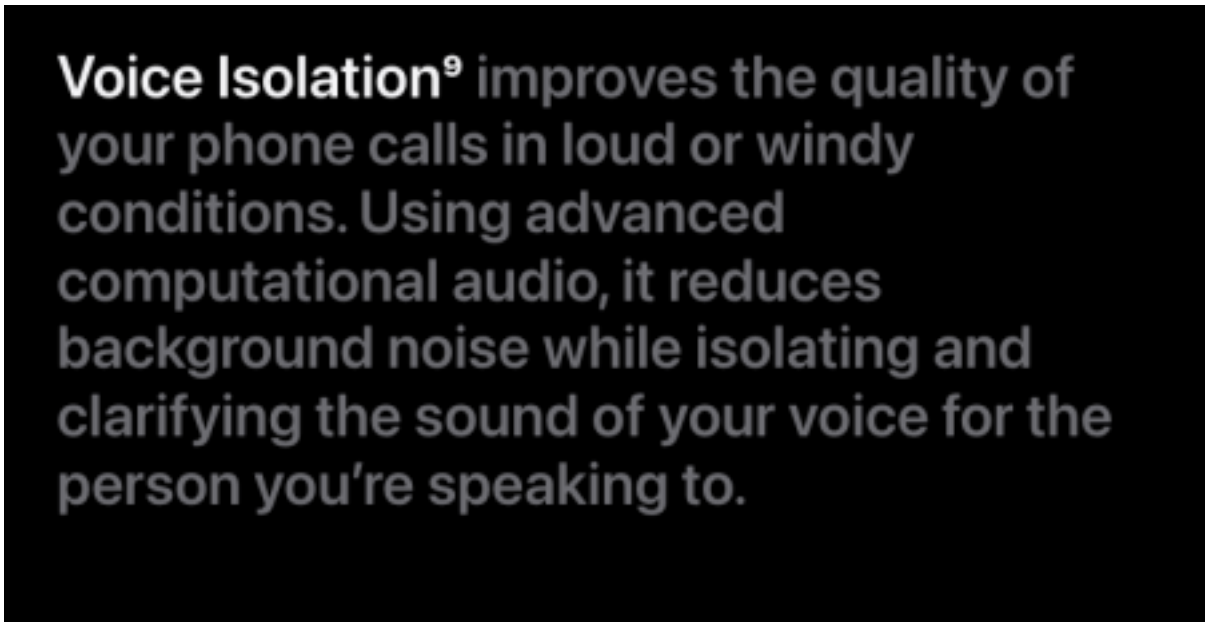


Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises at least a processing unit. The processing unit includes, but is not necessarily limited to, Apple's H1, H2, W1 or W2 system-on-chip (SoC), an audio codec integrated circuit (IC), and/or another processing unit used for audio signal processing, noise cancellation, voice isolation, transparency, and/or spatial audio functions.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

64b. wherein the processing unit is configured to process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone.	Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a processing unit. *See* Claim 64a, *supra*. The processing unit is configured to process the audio input from at least the user picked-up via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked-up via the second microphone. The processing unit within each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, performs Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures the surrounding environmental audio. The processing unit then processes these inputs together to remove or suppress at least a portion of the environmental audio (including ambient noise) picked up by the second microphone, and amplify at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer. 

	Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).  **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click or in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

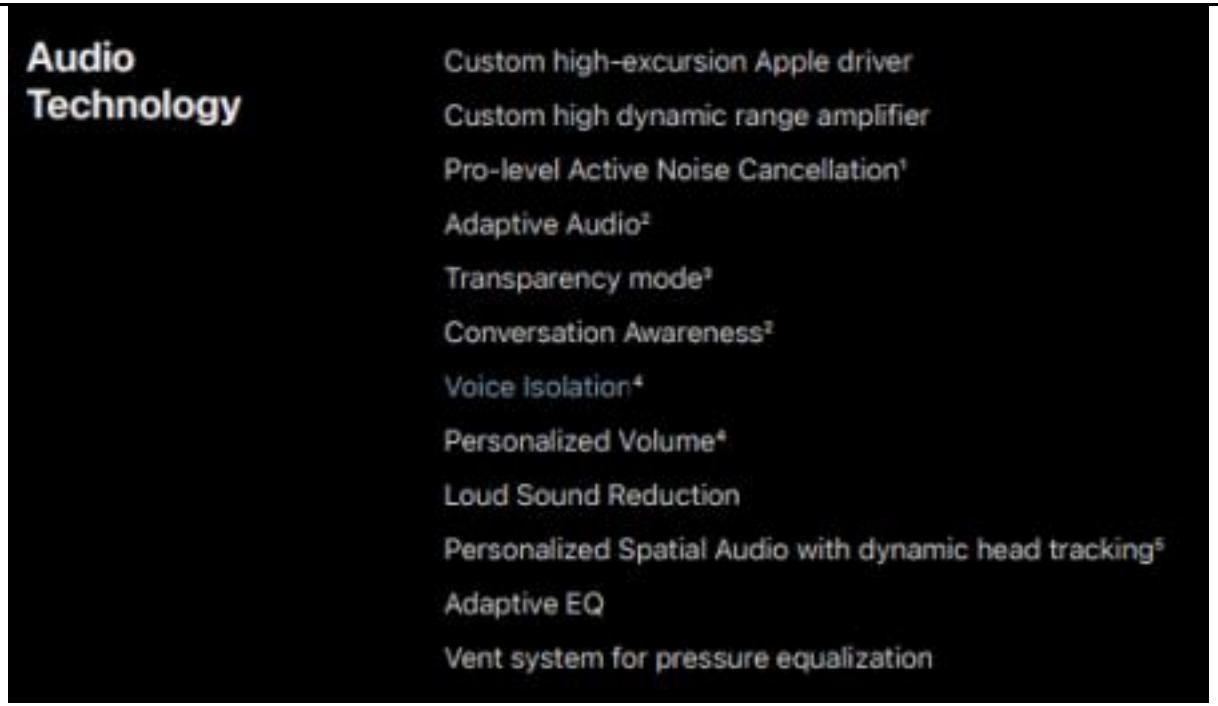
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

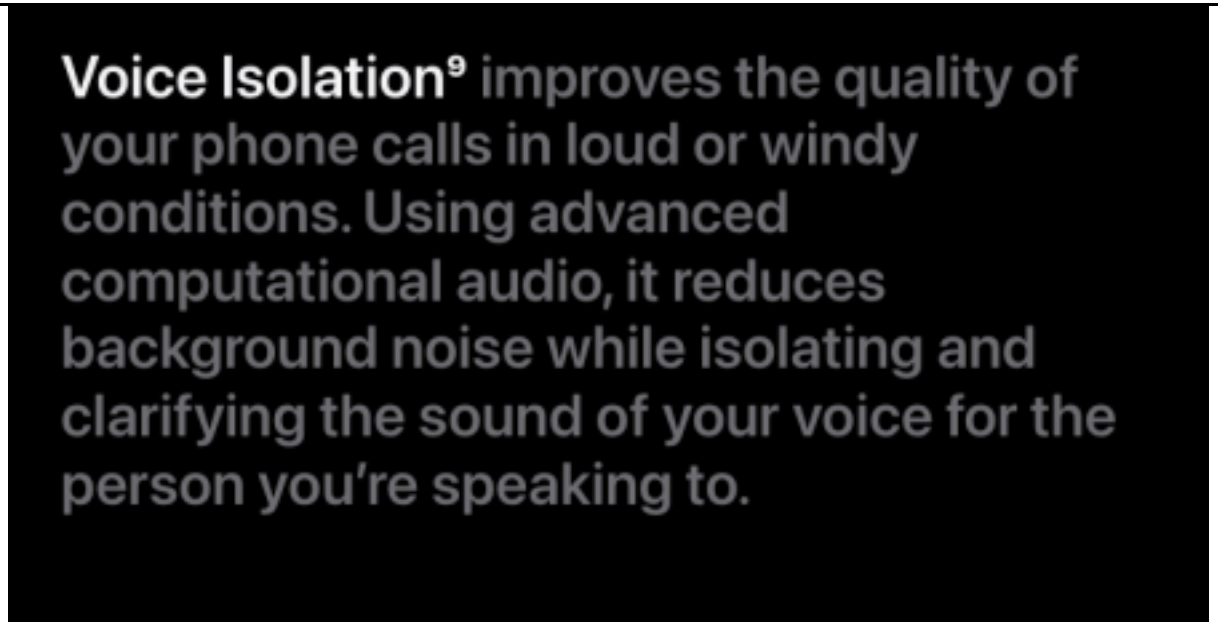
		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 65	**Evidence**	

65. A personal audio system as recited in claim 64, wherein the audio input from at least the user picked-up via the first microphone includes at least a voice input, and wherein the environmental audio input associated with the environment includes at least ambient noise.	Every claim limitation of claim 64 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user. *See* Claim 64, *supra*. The audio input from at least the user picked-up via the first microphone includes at least a voice input. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a second microphone configured to pick up at least environmental audio input associated with an environment in the vicinity of the head-worn wearable electronic device. *See* Claim 64, *supra*. The environmental audio input associated with the environment includes at least ambient noise. The processing unit within each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, performs Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures the surrounding environmental audio. The processing unit then processes these inputs together to remove or suppress at least a portion of the environmental audio (including ambient noise) picked up by the second microphone, and amplify at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click  or  in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

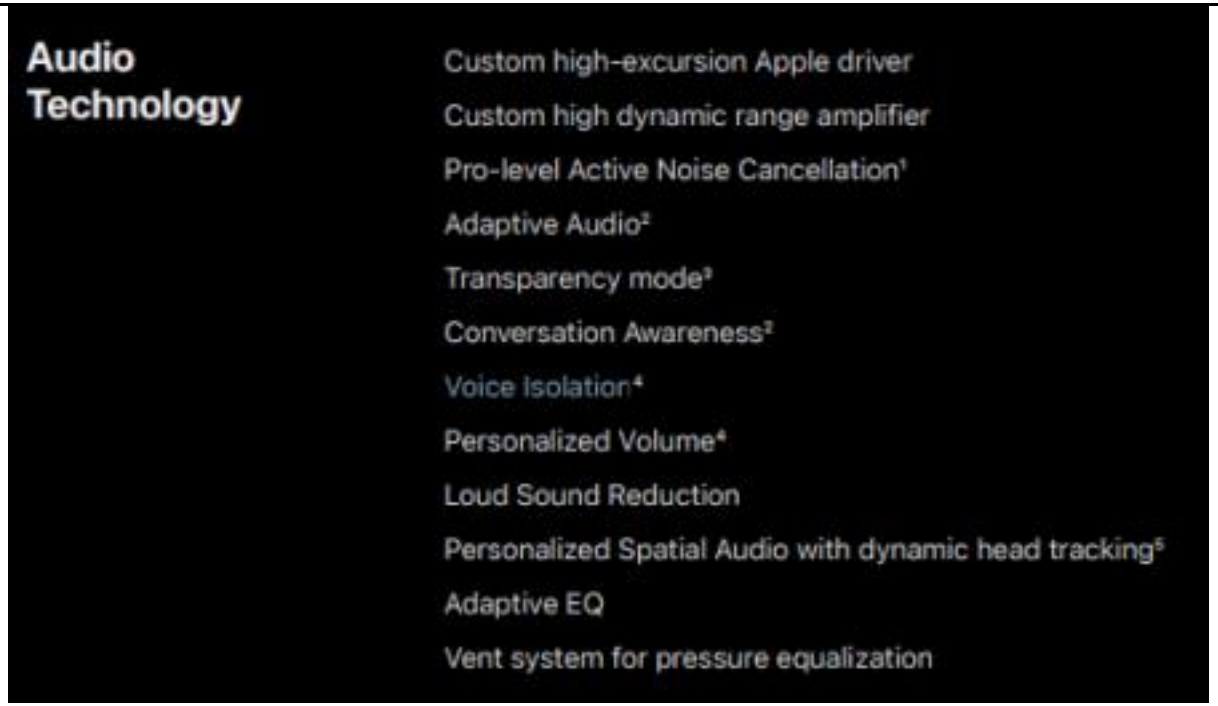
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

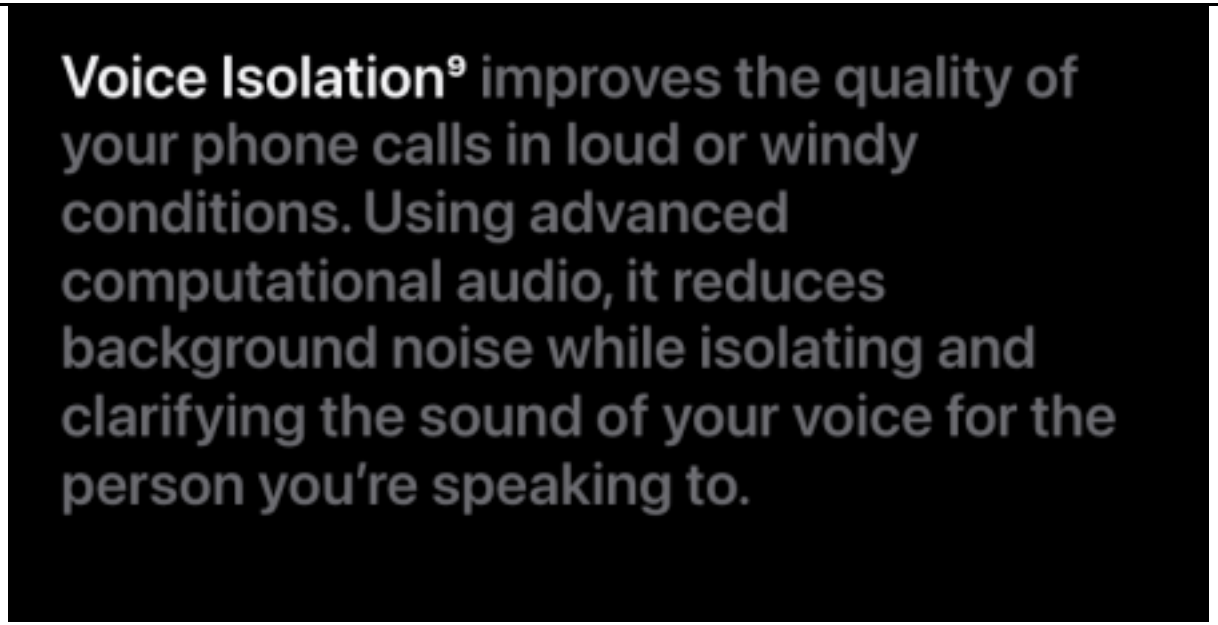
		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 66	**Evidence**	

66. A personal audio system as recited in claim 64, wherein the processing unit is configured to process the audio input from at least the user picked-up via the first microphone to remove at least a portion of the environmental audio input picked-up via the second microphone.	Every claim limitation of claim 64 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a processing unit configured to process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone. *See* Claim 64, *supra*. The processing unit within each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to process the audio input from at least the user picked-up via the first microphone to remove at least a portion of the environmental audio input picked-up via the second microphone. For example, the processing unit performs Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures the surrounding environmental audio. The processing unit then processes these inputs together to remove or suppress at least a portion of the environmental audio (including ambient noise) picked up by the second microphone, and amplify at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click  or  in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

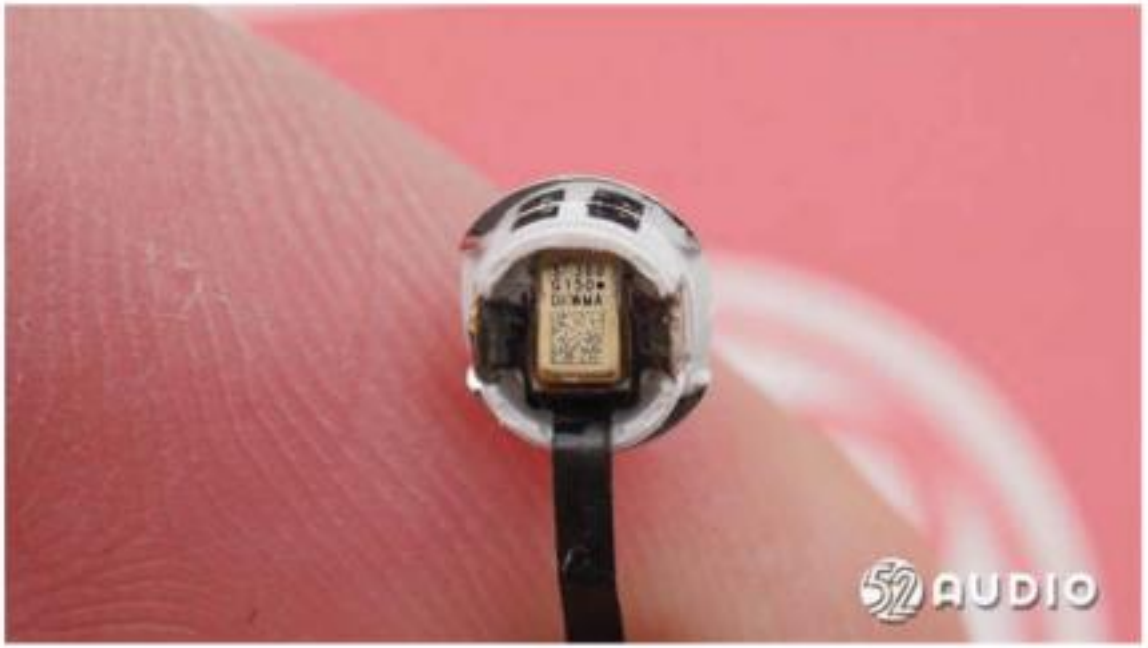
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

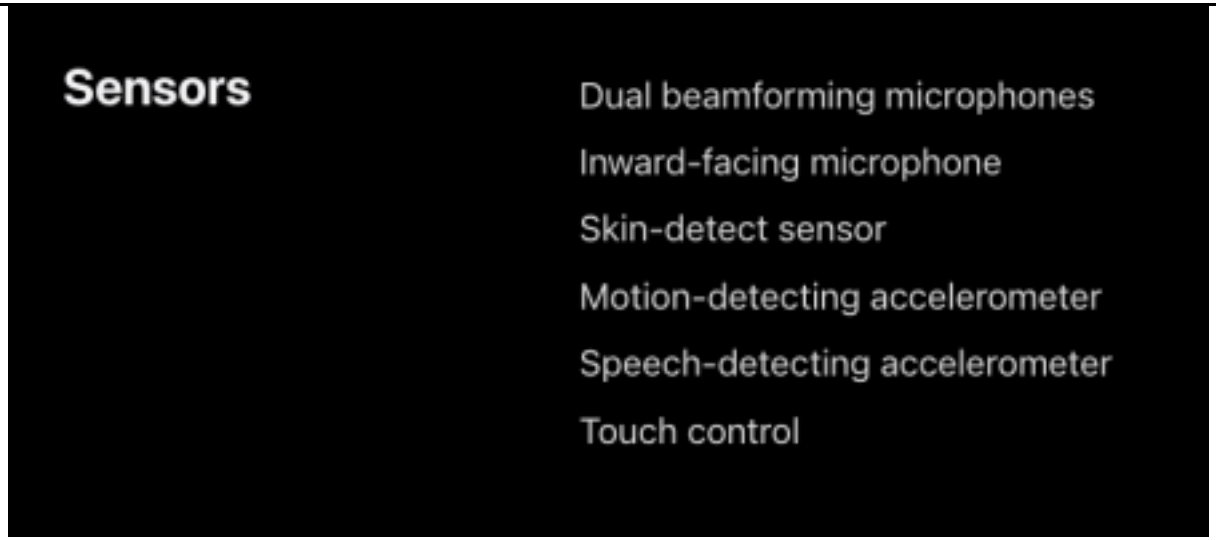
		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 67	**Evidence**	

67. A personal audio system as recited in claim 64, wherein the first microphone is at least partially in the head-worn structure and is positioned so as to be directed towards the user of the head-worn structure, and wherein the second microphone is at least partially in the head-worn structure so as to be directed away from the user of the head-worn structure.	Every claim limitation of claim 64 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user. *See* Claim 64, *supra*. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a second microphone configured to pick up at least environmental audio input associated with an environment in the vicinity of the head-worn wearable electronic device. *See* Claim 64, *supra*. The first microphone of each earbud of the Accused Headset Devices is at least partially in the head-worn structure and is positioned so as to be directed towards the user of the head-worn structure.



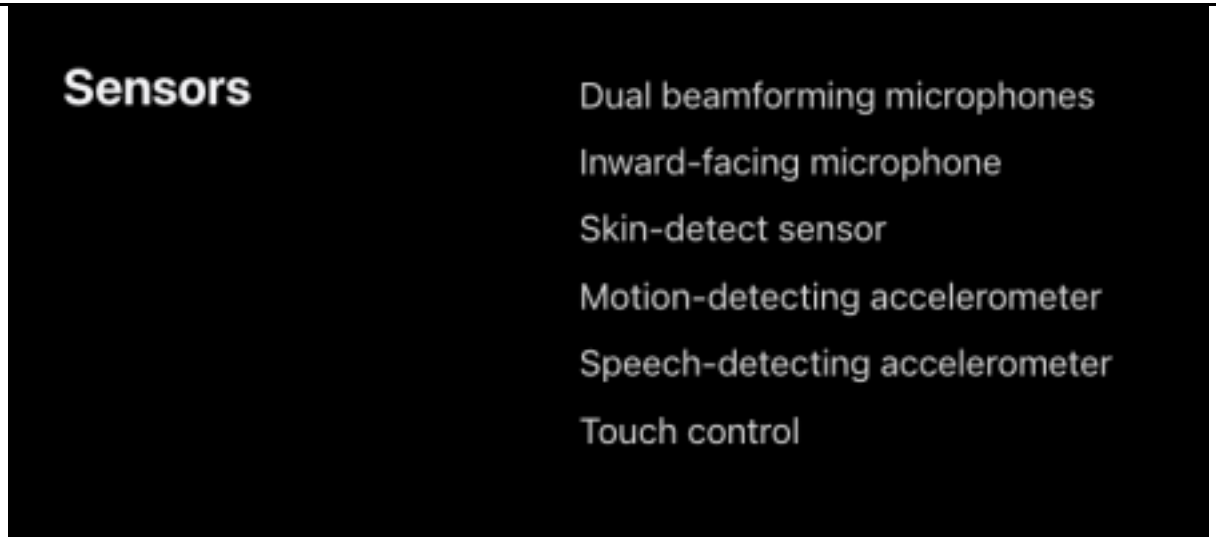
Bottom pickup microphone.

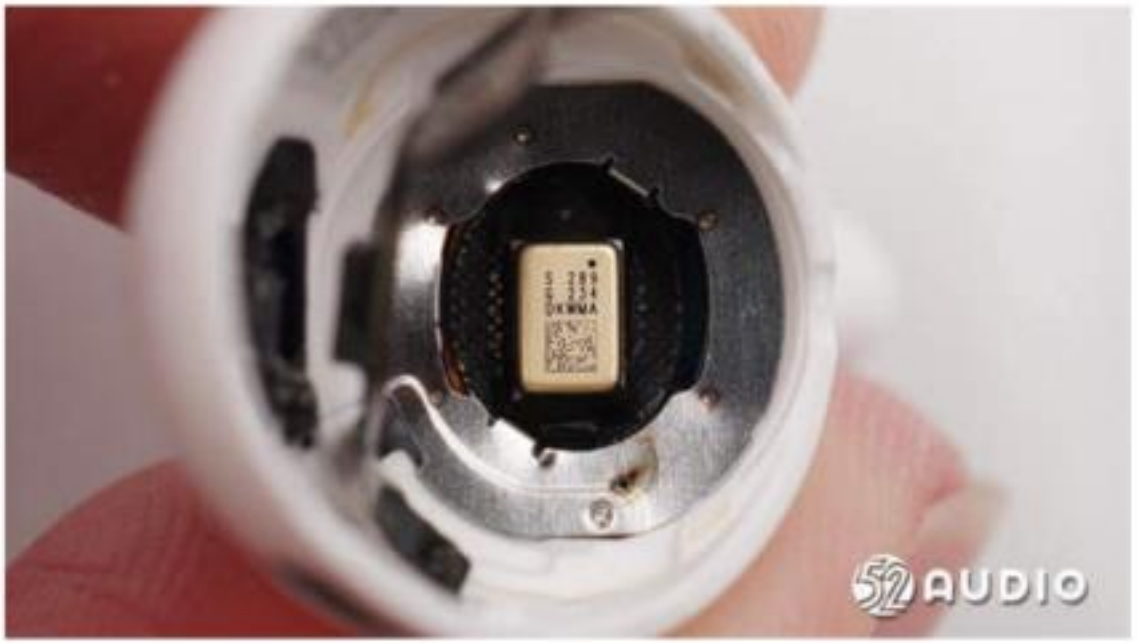
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). The second microphone of each earbud of the Accused Headset Devices is at least partially in the head-worn structure so as to be directed away from the user of the head-worn structure.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

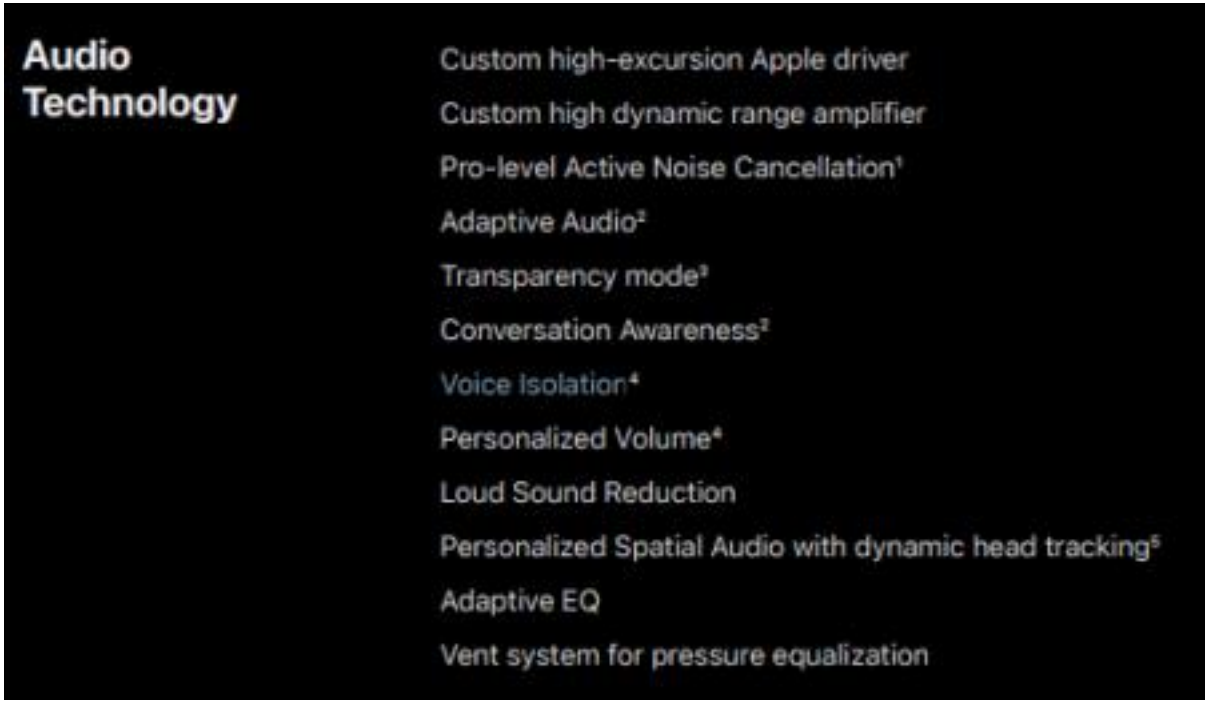
2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

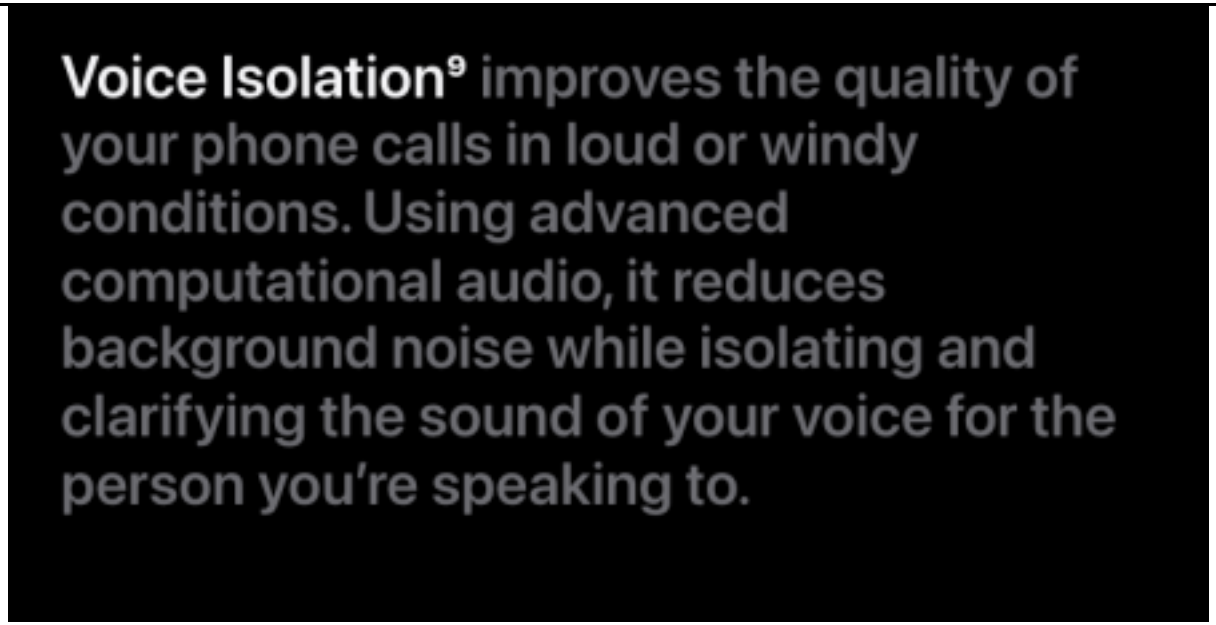
Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
Apple AirPods 4 with Active	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;

		Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
		Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;

		Beats-Solo-Pro-Wireless-Headphones-User-Guide, available from https://manuals.plus/wp-content/uploads/2023/05/Beats-Solo-Pro-Wireless-Headphones-User-Guide.pdf. *See* INGENIOSPEC-013808-013835; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
	Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

11,644,693 Claim 68	**Evidence**
68. A personal audio system as recited in claim 67, wherein the processing unit is configured to process the audio input picked-up via	Every claim limitation of claim 67 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a processing unit configured to process the audio input from at least the user via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked up via the second microphone. *See* Claim 64, *supra*.

at least the first microphone to remove at least a portion of the environmental audio input picked-up via the second microphone.	The processing unit within each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, is configured to process the audio input picked-up via at least the first microphone to remove at least a portion of the environmental audio input picked-up via the second microphone. For example, the processing unit is configured to perform Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures the surrounding environmental audio. The processing unit then processes these inputs together to remove or suppress at least a portion of the environmental audio (including ambient noise) picked up by the second microphone, and amplify at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer.  **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click  or  in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

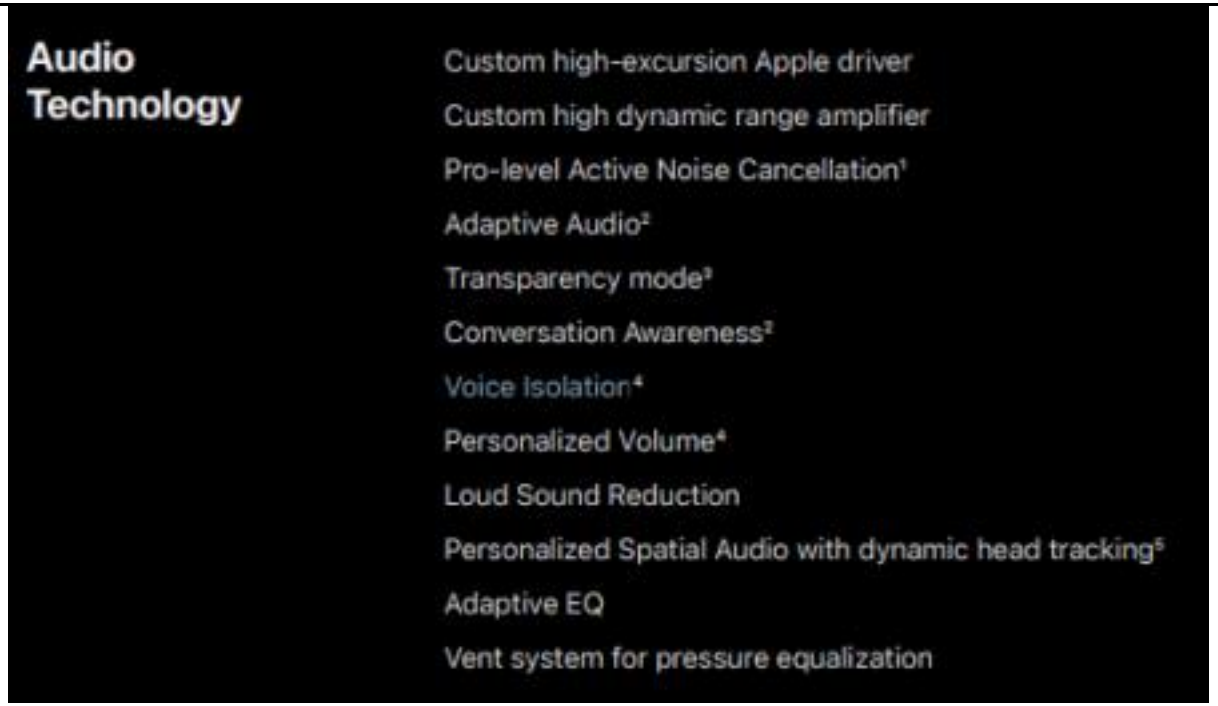
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

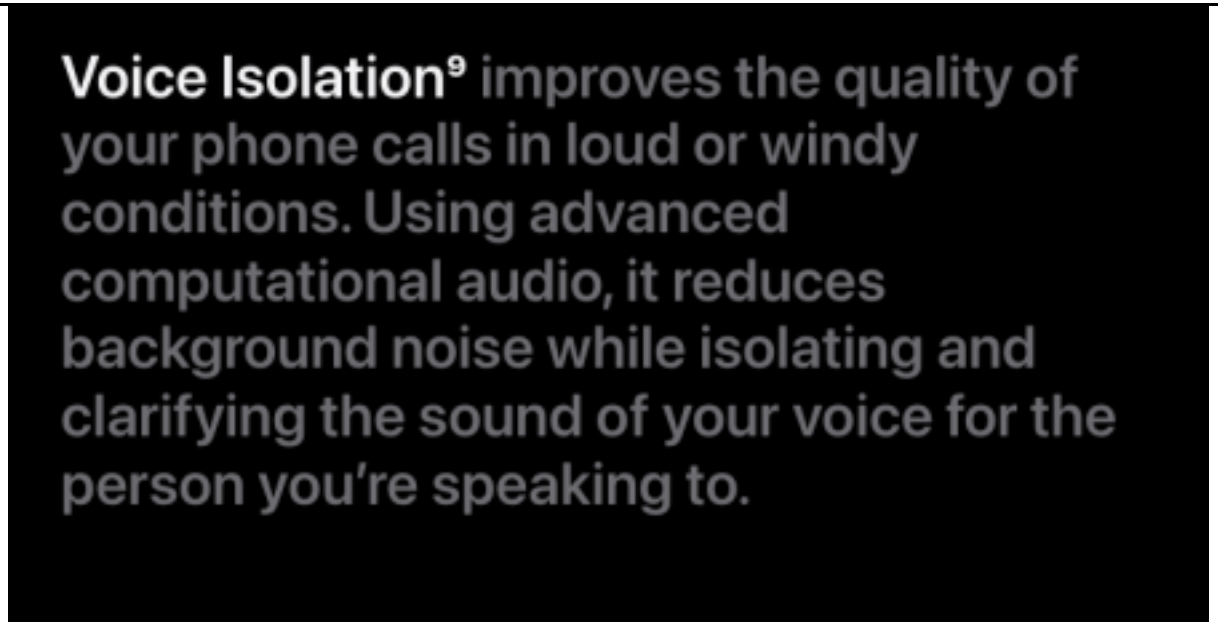
		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 69	**Evidence**	

69. A personal audio system as recited in claim 68, wherein the audio input from at least the user includes at least a voice input, and wherein the environmental audio input includes at least ambient noise.	Every claim limitation of claim 68 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user. *See* Claim 64, *supra*. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a second microphone configured to pick up at least environmental audio input associated with an environment in the vicinity of the head-worn wearable electronic device. *See* Claim 64, *supra*. The audio input picked up by the first microphone includes at least a voice input. And, the environmental audio input picked up by the second microphone includes at least ambient noise. For example, the processing unit performs Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures the surrounding environmental audio. The processing unit then processes these inputs together to remove or suppress at least a portion of the environmental audio (including ambient noise) picked up by the second microphone, and amplify at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click  or  in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

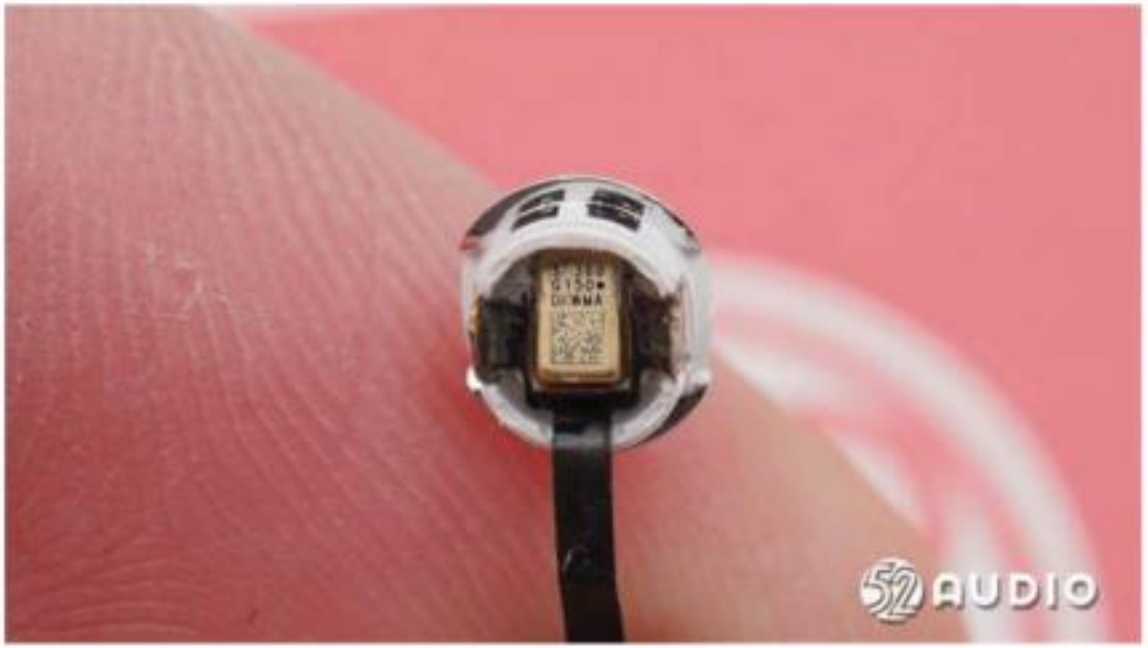
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

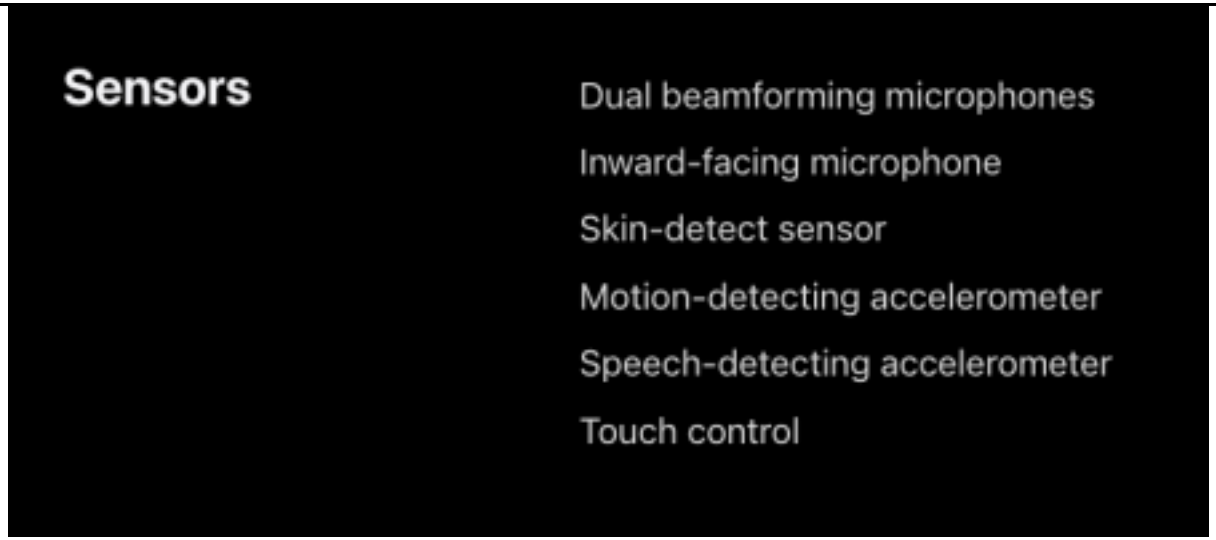
		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 70	**Evidence**	

70. A personal audio system as recited in claim 24, wherein the head-worn wearable electronic device comprises:	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
70a. a head-worn structure comprising at least two microphones and a processing unit, wherein the at least two microphones are configured to pick up (i) at least audio input from at least the user and (ii) at least environmental audio input associated with environmental sound in the vicinity of the head-worn structure, and	The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio input from at least the user.



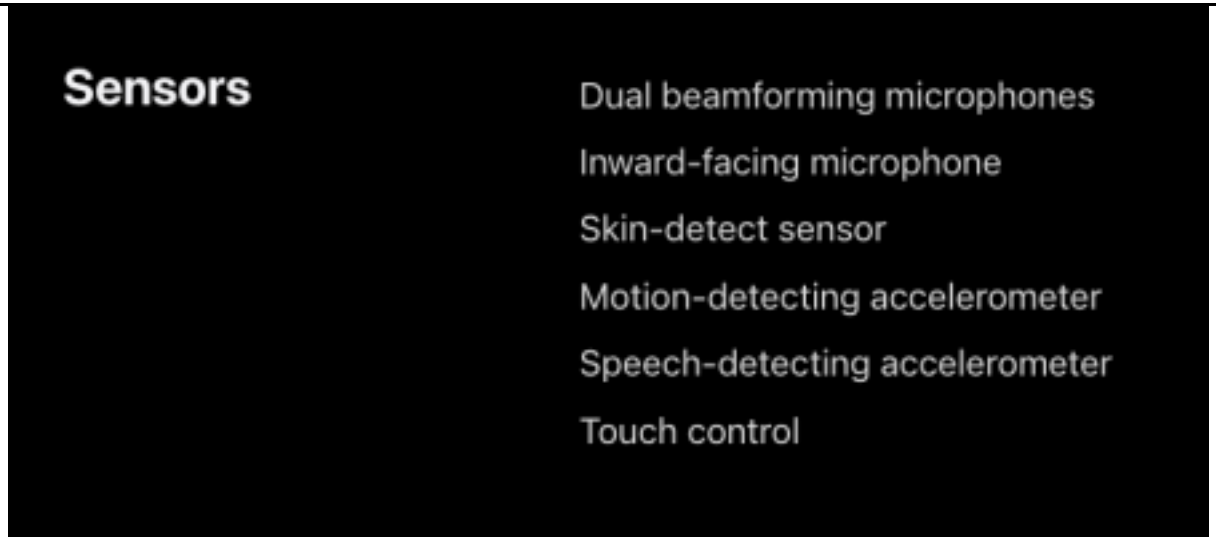
Bottom pickup microphone.

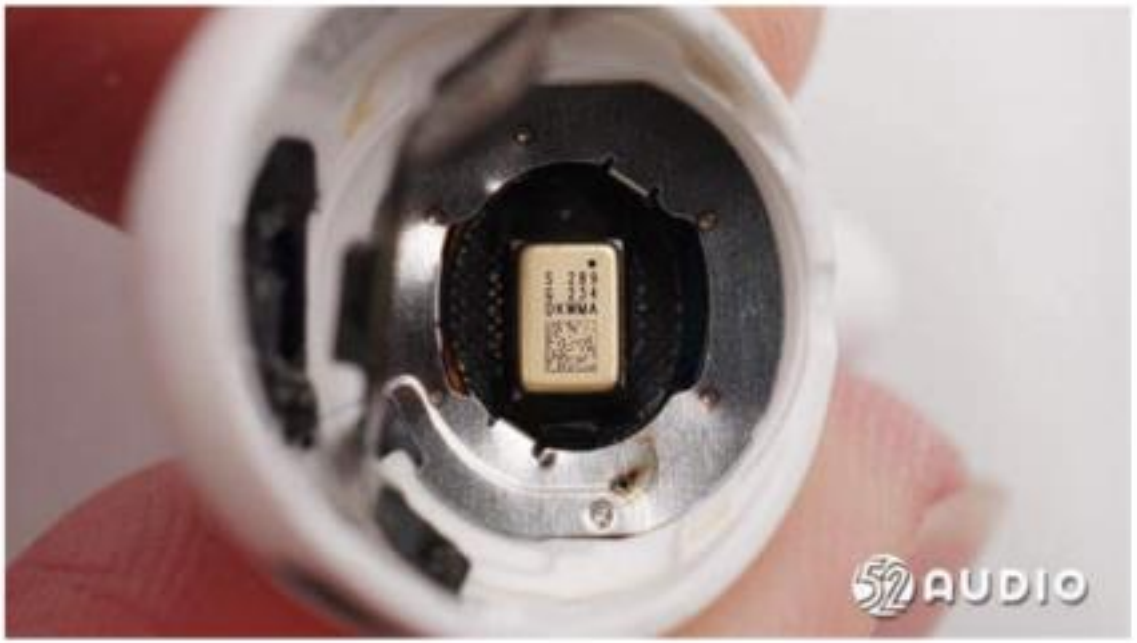
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises a second microphone configured to pick up at least environmental audio input associated with environmental sound in the vicinity of the device.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

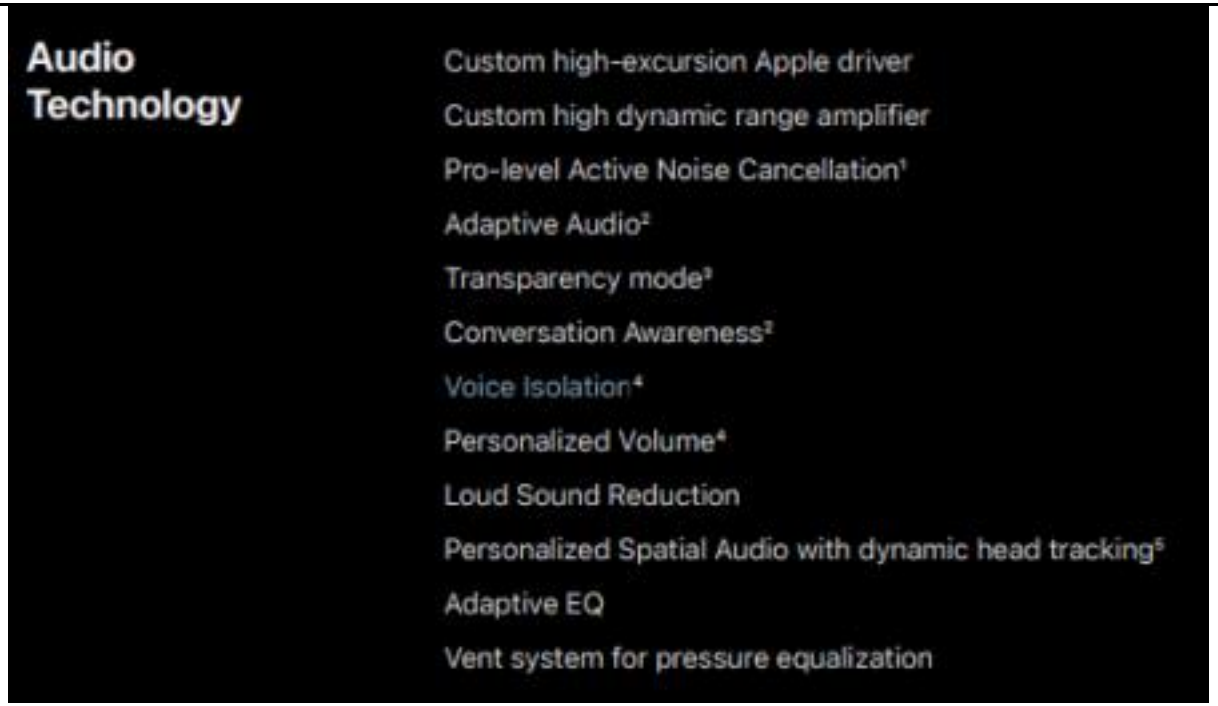


A metal protective cover is arranged above the noise cancellation microphone.

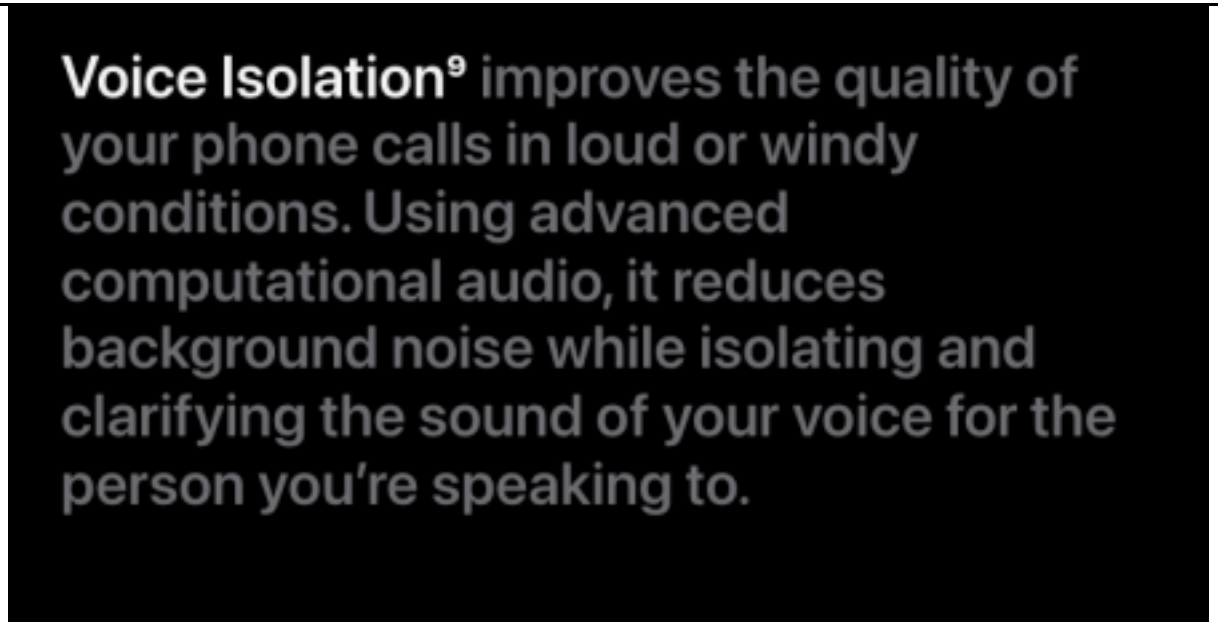
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises at least a processing unit. The processing unit includes, but is not necessarily limited to, Apple's H1, H2, W1 or W2 system-on-chip

	(SoC), an audio codec integrated circuit (IC), and/or another processing unit used for audio signal processing, noise cancellation, voice isolation, transparency, and/or spatial audio functions. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
70b. wherein the processing unit is configured to: determine an environmental sound level based on at least the environmental audio input; and amplify at least a portion of the audio input from the first microphone, with the amplification being at least in part dependent on the environmental sound level.	Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a processing unit. *See* Claim 70a, *supra*. The processing unit is configured to determine an environmental sound level based on at least the environmental audio input and amplify at least a portion of the audio input from the first microphone. The processing unit within each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, performs Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures the surrounding environmental audio. The processing unit then processes these inputs together to remove or suppress at least a portion of the environmental audio (including ambient noise) picked up by the second microphone, and amplify at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer. The amplification is dependent at least in part on the environmental sound level.



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click  or  in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

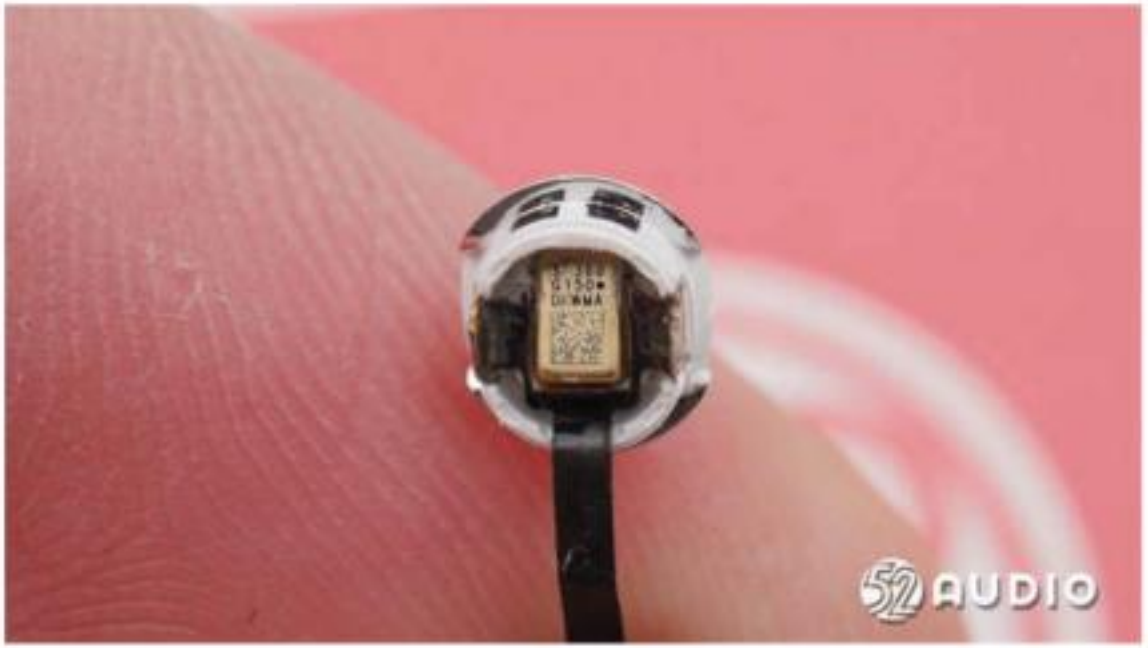
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

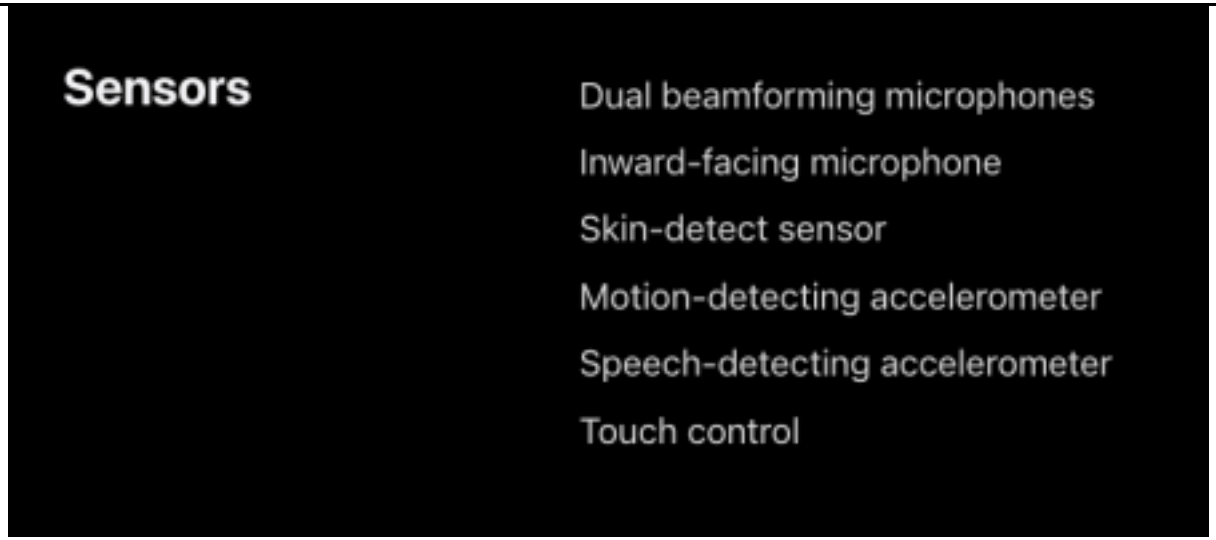
		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 71	**Evidence**	

71. A personal audio system as recited in claim 24,	Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
71a. wherein the head-worn wearable electronic device comprises at least a first microphone, a second microphone and a processing unit, wherein the first microphone is configured to pick up at least audio sound from at least the user, wherein the second microphone is configured to pick up at least ambient noise associated with an environment in the vicinity of the head-worn wearable electronic device, and	The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a first microphone configured to pick up at least audio sound from at least the user.



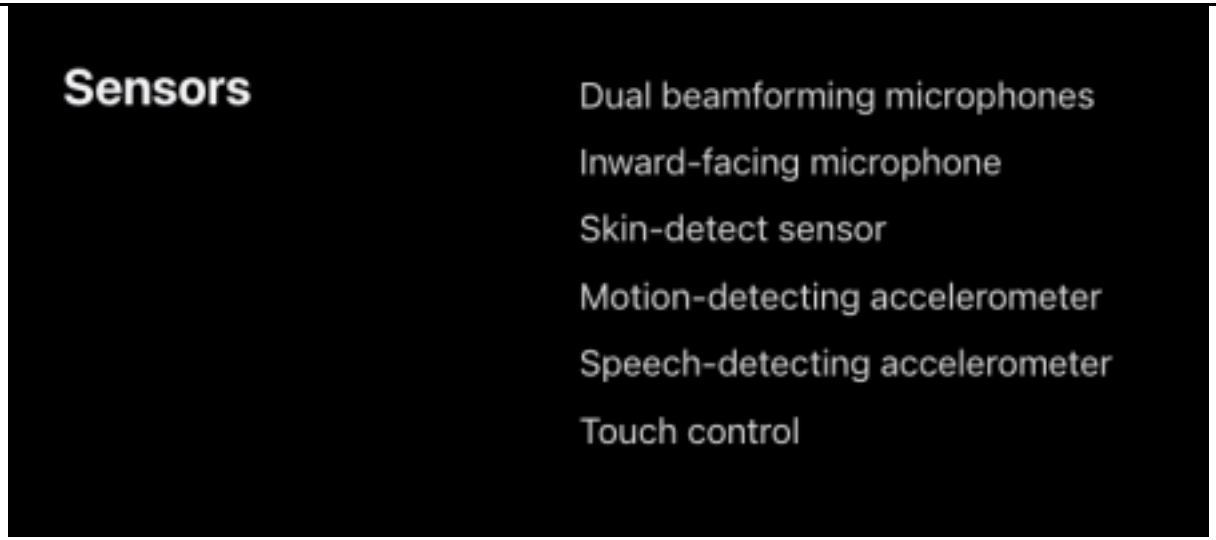
Bottom pickup microphone.

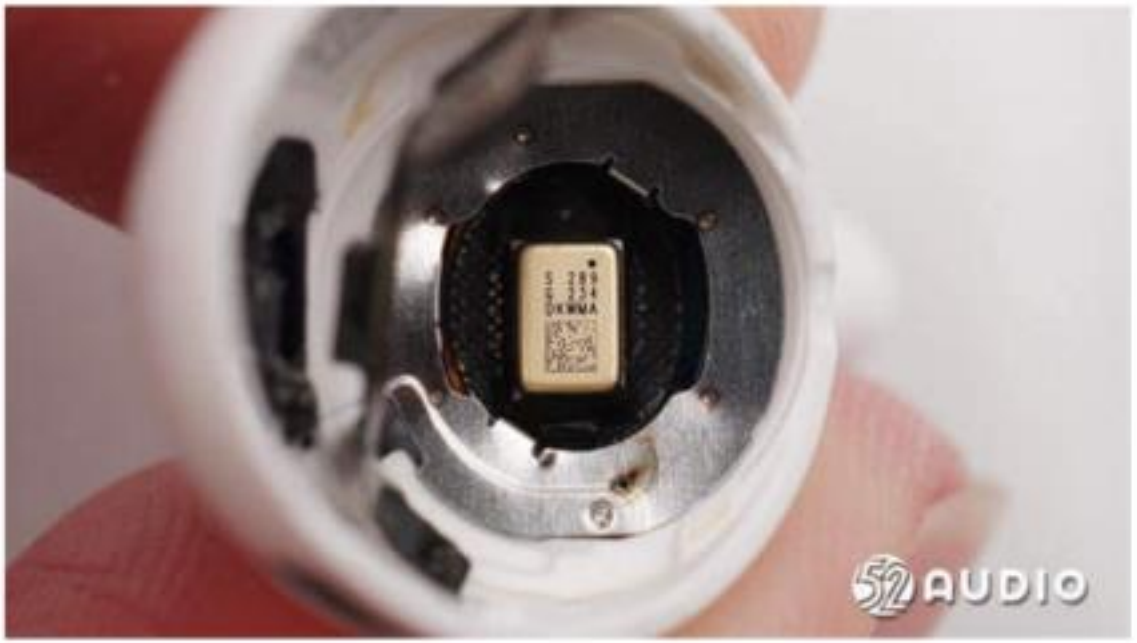
Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/). Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises a second microphone configured to pick up at least ambient noise associated with an environment in the vicinity of the device.



Source: Noise-Cancelling Microphones Image from AirPods Pro2 (INGENIOSPEC-014019-014019) (available from https://www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



A metal protective cover is arranged above the noise cancellation microphone.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, *also* comprises at least a processing unit. The processing unit includes, but is not necessarily limited to, Apple's H1, H2, W1 or W2 system-on-chip

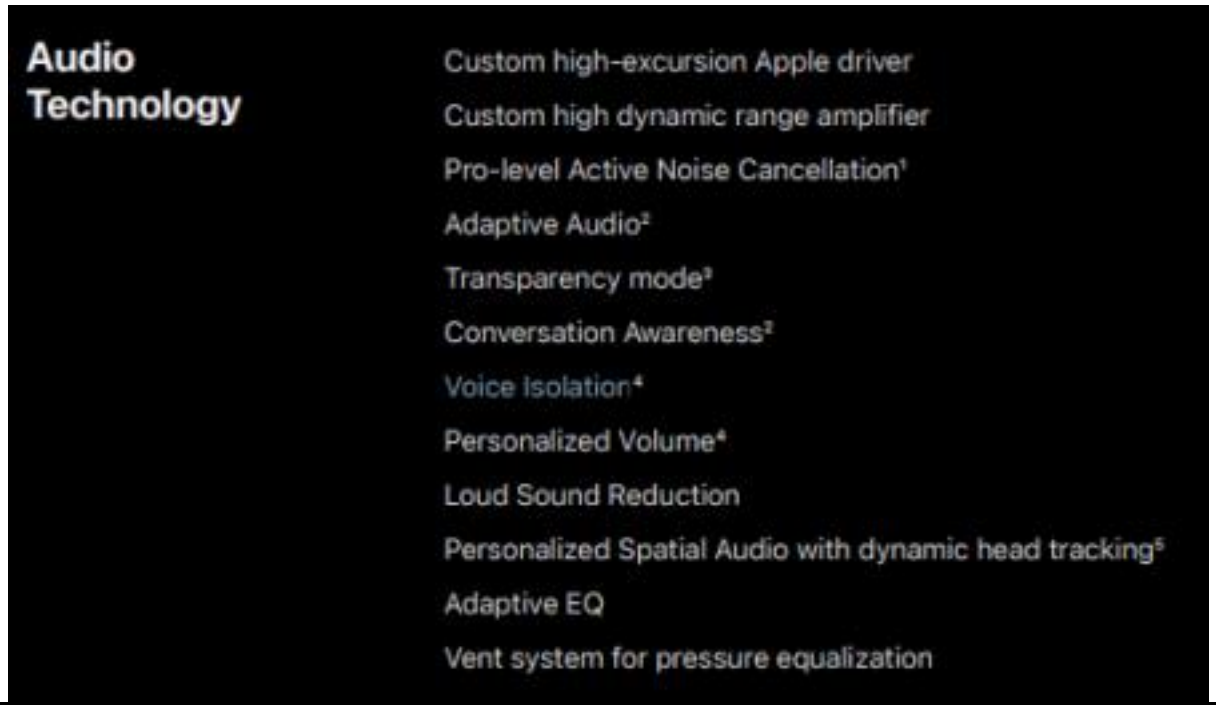
(SoC), an audio codec integrated circuit (IC), and/or another processing unit used for audio signal processing, noise cancellation, voice isolation, transparency, and/or spatial audio functions.

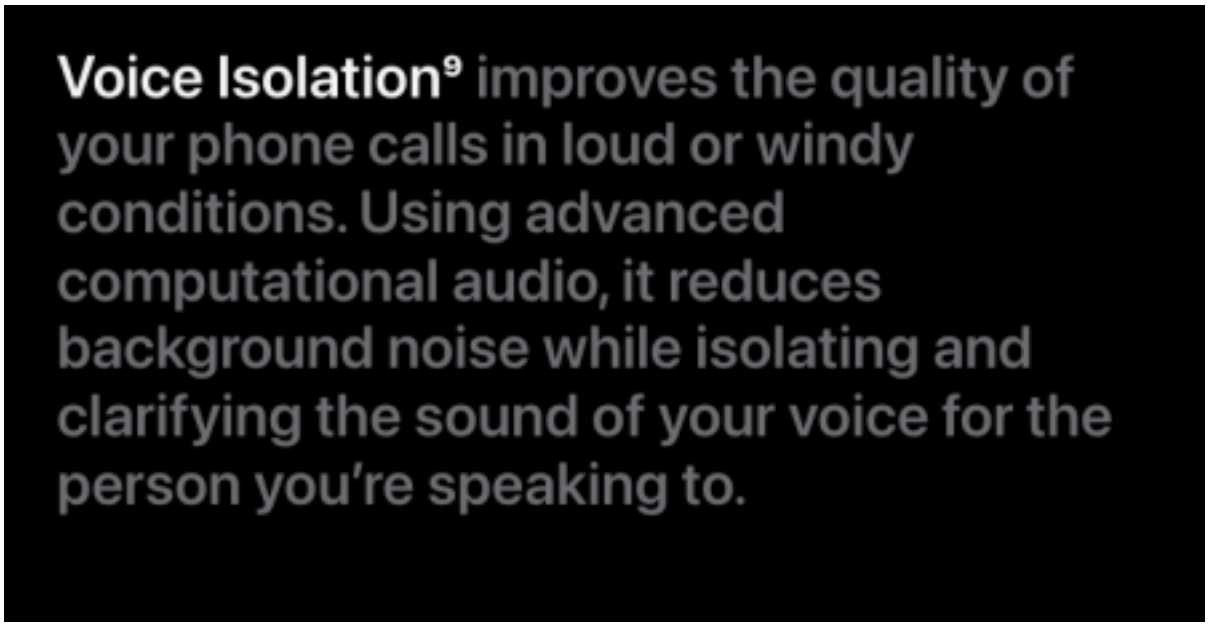
Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;

			AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;

	Beats Solo Pro	Replacement Parts List, available from https://www.joesge.com/products/beats-solo-pro-wireless-headphones-repair-parts?srsltid=AfmBOoohkWL6z6LfgJ6-r9iZYIxup4uhO-LU6DQhzGFOFk4vPOj3vouM. *See* INGENIOSPEC-013836-013844; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314; Beats-Solo-Pro-Wireless-Headphones-User-Guide, available from https://manuals.plus/wp-content/uploads/2023/05/Beats-Solo-Pro-Wireless-Headphones-User-Guide.pdf. *See* INGENIOSPEC-013808-013835; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
	Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

71b. wherein the processing unit is configured to: determine an ambient noise level based on at least the ambient noise; and modify at least a portion of the audio sound picked-up via the first microphone, with the modification being at least in part dependent on the ambient noise level.	Each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, comprises a processing unit. *See* Claim 71a, *supra*. The processing unit is configured to determine an ambient noise level based on at least the ambient noise and modify at least a portion of the audio sound picked-up via the first microphone. The processing unit within each earbud of the Accused Headset Devices, such as Apple AirPods Pro 2, performs Apple's Voice Isolation functionality by using the first microphone to capture the user's speech, while the second microphone captures ambient noise associated with an environment. The processing unit then processes these inputs together to remove or suppress at least a portion of the ambient noise picked up by the second microphone, and modify (e.g., amplify) at least a portion of the audio input from the first microphone, leaving the first microphone's speech signal clearer. The modification is at least in part dependent on the ambient noise level. 

	Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).  **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Filter out background sounds during calls with AirPods 4 or AirPods Pro 2

When you wear your AirPods 4 (both models) or AirPods Pro 2 during calls on your iPhone, iPad, or Mac, you can use Voice Isolation to enhance voice quality and remove background noise (such as wind) for the listener.

During a call, do one of the following:

- *iPhone or iPad:* Swipe down from the top-right corner of your screen to open Control Center. Tap FaceTime Controls at the top of the screen, then select Voice Isolation.
- *Mac:* Click  or  in the menu bar (depending on the type of call), click Mic Mode, then select Voice Isolation.

Source: Make and answer calls - Apple Support (INGENIOSPEC-014036-014038) (available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. *See* INGENIOSPEC-013410-013429; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674;

		AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
	Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
11,644,693 Claim 72	**Evidence**	

<table>
<tr><td>72. A personal audio system as recited in claim 24,</td><td>Every claim limitation of claim 24 is present in the Accused Instrumentalities as described above and incorporated herein by reference.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><td>72a. wherein the head-worn wearable electronic device comprises at least a first microphone, a second microphone and a processing unit, wherein the first microphone is configured to pick up at least audio sound from at least the user, wherein the second microphone is configured to pick up at least ambient noise associated with an environment in the vicinity of the head-worn wearable electronic device,</td><td>See Claim 71a, supra.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

<table>
<tr><th>Device</th><th>Citations</th></tr>
<tr><td>Apple AirPods 2</td><td>AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. See INGENIOSPEC-014277-014286;
AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. See INGENIOSPEC-013926-013932;
Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. See INGENIOSPEC-013937-014004;</td></tr>
<tr><td>Apple AirPods 3</td><td>Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. See INGENIOSPEC-014163-014238;
Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-</td></tr>
</table></td></tr>
</table>

			generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;

		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
		Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;

<table>
<tr><td></td><td>Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><td>72b. wherein the processing unit is configured to: determine an ambient noise level based on at least the ambient noise; and modify at least a portion of the audio sound picked-up via the first microphone, with the modification being at least in part dependent on the ambient noise level,</td><td>See Claim 71b, supra.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

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<tr><th>Device</th><th>Citations</th></tr>
<tr><td>Apple AirPods 2</td><td>AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. See INGENIOSPEC-013926-013932;</td></tr>
<tr><td>Apple AirPods 3</td><td>Which AirPods model should you buy?, available from https://www.theverge.com/2021/10/19/22733797/airpods-2-3-pro-max-which-to-buy. See INGENIOSPEC-013410-013429;
Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. See INGENIOSPEC-014141-014150;</td></tr>
<tr><td>Apple AirPods 4</td><td>AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. See INGENIOSPEC-014675-014686;
Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. See INGENIOSPEC-014036-014038;</td></tr>
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</table>

			Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Make and answer calls - Apple Support, available from https://support.apple.com/guide/airpods/answer-calls-airpods-3-4-pro-devac96438de/1.0/web/1.0. *See* INGENIOSPEC-014036-014038; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	How To Enable Voice Isolation On AirPods - YouTube, available from https://www.youtube.com/watch?v=_gpVEHX7WOw. *See* INGENIOSPEC-014672-014674; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;

	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

72c. wherein the head-worn wearable electronic device comprises at least a rechargeable battery and at least one conductive element, wherein the rechargeable battery is able to be electrically coupled via the at least one conductive element to a charging apparatus and charged when the head-worn wearable electronic device is

See Claim 26, *supra*.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162;

placed within the charging apparatus,			Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from

			https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; How to clean your AirPods - Apple Support, available from https://support.apple.com/en-us/102672. *See* INGENIOSPEC-014159-014162; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; How to clean your AirPods Pro, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014097-014100; How to Clean AirPods Pro Case, available from https://burga.com/blogs/news/how-to-clean-airpods-pro-case. *See* INGENIOSPEC-014101-014107; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;

		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; If Your AirPods Won't Charge, available from https://support.apple.com/en-us/102593. *See* INGENIOSPEC-013294-013295; How to clean your AirPods Pro - Apple Support, available from https://support.apple.com/en-us/120409. *See* INGENIOSPEC-014256-014259; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. *See* INGENIOSPEC-014005-014006; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-

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Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-safety-handling-devc61bf8459/web. See INGENIOSPEC-014298-014300;</td></tr>
<tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013602-013616;
Clean your Powerbeats Pro and Powerbeats Pro 2, available from https://support.apple.com/en-us/102013. See INGENIOSPEC-014005-014006;
Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. See INGENIOSPEC-013371-013387;
Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. See INGENIOSPEC-013617-013632;
PowerBeats Pro 2 Review: A Worthy Sequel, available from https://slatepad.org/2025/03/21/powerbeats-pro-2-review/. See INGENIOSPEC-013388-013406;</td></tr>
</table>
Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
</td></tr>
<tr><td>72d. wherein the mobile communication device is configured to wirelessly communicate with the head-worn wearable electronic device over a</td><td>See Claim 27, supra.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.</td></tr>
</table>

wireless network, and	**Device**	**Citations**
	Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
	Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;
	Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
	Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from

		https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

72e. wherein the mobile communication device is or includes a mobile phone,

See Claim 14, *supra*.

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

72f. wherein the head-worn wearable electronic device is configured to receive a voice input via the first microphone, determine a requested operation from the voice input using voice recognition, and control an operation by the head-worn wearable electronic device based on the requested operation.

See Claim 53b, *supra*.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available

			from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

			Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Beats Fit Pro True Wireless Earbuds — Beats Black, available from https://www.apple.com/shop/product/MK2F3LL/A/beats-fit-pro-true-wireless-earbuds-beats-black. *See* INGENIOSPEC-013302-013309;
		Powerbeats Pro	Best Buy -- Powerbeats Pro Features, available from https://www.bestbuy.com/product/beats-powerbeats-pro-totally-wireless-earbuds-black/JJ8XJS3FXY. *See* INGENIOSPEC-013883-013883; Beats Unveils Powerbeats Pro, available from

		https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 73	**Evidence**
73. A personal audio system as recited in claim 72, wherein the head-worn wearable electronic device comprises:	Every claim limitation of claim 72 is present in the Accused Instrumentalities as described above and incorporated herein by reference. Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
73a. an infrared emitter configured to at least direct infrared signals towards the user when the head-worn wearable electronic device is being worn;	*See* Claim 54a, *supra*. Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

		Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;

			Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;

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<tr><td>Powerbeats Pro</td><td>Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y
How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. See INGENIOSPEC-013884-013890;
Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. See INGENIOSPEC-014287-014289;</td></tr>
<tr><td>Powerbeats Pro 2</td><td>Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. See INGENIOSPEC-013371-013387;</td></tr>
</table>

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
</td></tr>
<tr><td>73b. an infrared detector configured to detect infrared radiation reflected back from the user when the head-worn wearable electronic device is being worn;</td><td>
See Claim 54b, supra.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.
<table>
<tr><th>Device</th><th>Citations</th></tr>
<tr><td>Apple AirPods 2</td><td>AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. See INGENIOSPEC-014277-014286;</td></tr>
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			AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro

		Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

73c. and electronic circuitry configured to facilitate determining whether the head-worn wearable electronic device is being worn by the user based on at least the detected infrared radiation.

See Claim 55, *supra*.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932;

		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158;
		Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Change the settings of your AirPods and AirPods Pro - Apple Support, available from https://support.apple.com/en-us/108764. *See* INGENIOSPEC-013692-013694;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056;

			Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Change settings for AirPods Pro 1 and 2, available from https://support.apple.com/guide/airpods/change-settings-for-airpods-pro-1-and-2-dev6cbd13615/1.0/web/1.0#devc07789cad. *See* INGENIOSPEC-014030-014032;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;
		Beats Fit Pro	Beats User Guide - Turn Beats Automatic Ear Detection On or Off, available from https://support.apple.com/guide/beats/turn-automatic-ear-detection-on-or-off-dev82c456e13/1.0/web/1.0. *See* INGENIOSPEC-013657-013657; Customize controls on your Beats, available from https://support.apple.com/guide/beats/customize-beats-controls-dev9eeff2d7b/web. *See* INGENIOSPEC-013658-013658; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Powerbeats Pro	Powerbeats Pro Unboxing & Hands On, available from https://www.youtube.com/watch?v=QmfiANjNV4Y How to Turn Off Automatic Ear Detection on Your Powerbeats Pro Earbuds - MacRumors, available from https://www.macrumors.com/how-to/turn-off-automatic-ear-detection-powerbeats-pro/. *See* INGENIOSPEC-013884-013890;

		Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 74	**Evidence**
74. A personal audio system as recited in claim 73, wherein the electrical coupling of the at least one conductive element with the charging apparatus is supported by at least a magnetic element.	Every claim limitation of claim 73 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a head-worn wearable electronic device. The Accused Headset Devices are head-worn wearable electronic devices. *See* Claim 24a, *supra*. The Accused Headset Devices comprise at least a rechargeable battery and at least one conductive element. *See* Claim 72e, *supra*. The rechargeable battery is able to be electrically coupled via the at least one conductive element to a charging apparatus and charged when the Accused Headset Devices are placed within the charging case. *See* Claim 72f, *supra*. The electrical coupling of the at least one conductive element of the earbuds with the charging apparatus of the charging case is supported by at least a magnetic element. The charging case and earbuds include magnetic elements that attract one other. The magnetic element comprises either a magnet or a magnetically responsive material. The magnetic elements cause the charging pads of the earbuds to make firm contact with the complementary charging pads within the charging case.



According to 52audio, this is a special-shaped iron block that is not small in size. It is magnetically fixed with the charging case magnet, and the center of gravity of the earphone is adjusted so that the center of gravity will not be too far out or too far inward. It acts as a counterweight to make the earphone stay in the ear more stably.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



Source: AirPods Pro 2 Teardown - Still Completely Unrepairable (INGENIOSPEC-013114, INGENIOSPEC-013115-013122) (available from https://www.youtube.com/watch?v=WsxHWKJA7ig).



A magnet for attaching earphones.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

	Device	Citations
	Apple AirPods 2	Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 3	Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
	Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;

			Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 1	How to Clean AirPods Pro Case, available from https://burga.com/blogs/news/how-to-clean-airpods-pro-case. *See* INGENIOSPEC-014101-014107; Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Apple AirPods Pro 3	Important Safety and Handling Information for AirPods, available from https://support.apple.com/guide/airpods/important-safety-and-handling-information-dev4744b22af/1.0/web/1.0. *See* INGENIOSPEC-014046-014049;
		Beats Fit Pro	Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463; Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;
		Powerbeats Pro	Important safety and handling information for Beats headphones and earphones, available from https://support.apple.com/guide/beats/beats-headphones-earphones-

		safety-handling-devc61bf8459/web. *See* INGENIOSPEC-014298-014300;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; PowerBeats Pro 2 Review: A Worthy Sequel, available from https://slatepad.org/2025/03/21/powerbeats-pro-2-review/. *See* INGENIOSPEC-013388-013406;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

11,644,693 Claim 75	**Evidence**
75. A personal audio system operable to at least generate customized audio output, comprising:	*See* Claim 1pre, *supra*. Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925;

			Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-

			014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Solo Pro Headphones Support - Beats, available from https://www.beatsbydre.com/support/headphones/solo-pro. *See* INGENIOSPEC-013798-013803; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
		Powerbeats Pro	Beats Global Press Room, available from https://www.beatsbydre.com/company/press. *See* INGENIOSPEC-014290-014297;

		Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

75a. a pair of speakers, each of the speakers being configured to be wearable proximate to an ear of a user; and

See Claim 24a, *supra*.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

		Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Solo Pro Headphones Support - Beats, available from https://www.beatsbydre.com/support/headphones/solo-pro. *See* INGENIOSPEC-013798-013803; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-

		kit.zip. *See* INGENIOSPEC-014313-014314; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
	Powerbeats Pro	Beats Global Press Room, available from https://www.beatsbydre.com/company/press. *See* INGENIOSPEC-014290-014297; Powerbeats Pro - Apples Sporty AirPods Alternative - MacRumors, available from https://www.macrumors.com/guide/powerbeats-pro/. *See* INGENIOSPEC-013854-013882; Wearing your AirPods, EarPods, or Beats device, available from https://support.apple.com/en-us/101598. *See* INGENIOSPEC-014301-014302; How to get the best fit and sound with your Powerbeats Pro | Comfort, available from https://www.youtube.com/watch?v=I9t6YW3o-xc. *See* INGENIOSPEC-013232, INGENIOSPEC-013233-013237; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

<table>
<tr><td></td><td>Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><td>75b1. a mobile communication device at least for supporting audio output,</td><td>See Claim 1b1, supra.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

<table>
<tr><th>Device</th><th>Citations</th></tr>
<tr><td>Apple AirPods 2</td><td>AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. See INGENIOSPEC-013926-013932;
AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. See INGENIOSPEC-014277-014286;
Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. See INGENIOSPEC-014020-014023;
If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. See INGENIOSPEC-013923-013925;
Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. See INGENIOSPEC-013937-014004;</td></tr>
<tr><td>Apple AirPods 3</td><td>AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. See INGENIOSPEC-014151-014158;
Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-</td></tr>
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			dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;

		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats User Guide - Pair Beats, available from https://support.apple.com/en-ca/guide/beats/dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014644-014647; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144,

		INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	

75b2. the mobile communication device configured to store at least a hearing characteristic associated with the user, the stored hearing characteristic associated with the user at least characterizes hearing impairment regarding the user's ability to hear,	The Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, are configured to store at least a hearing characteristic associated with the user, the stored hearing characteristic associated with the user at least characterizes hearing impairment regarding the user's ability to hear. For example, the Accused Headset Devices, such as Apple AirPods Pro 2, support configuration of Custom Audio Setup within Headphone Accommodations. **Set up Headphone Accommodations** 1. Check that you have the latest version of iOS or iPadOS. 2. Go to Settings > Accessibility > Audio & Visual > Headphone Accommodations. Turn on Headphone Accommodations. 3. Choose how you want to apply your custom audio settings: ◦ Turn on Phone to apply these settings to phone calls, FaceTime calls, and any third-party video call apps. ◦ Turn on Media to apply these settings to music, movies, podcasts, audiobooks, Siri, voicemail, and Live Listen. 4. Customize your headphone audio settings: ◦ Use Custom Audio Setup. You'll listen to audio samples and choose which ones sound better to you. Then you can apply the custom settings suggested based on your choices. ◦ Manually adjust audio settings. **Source**: Customize headphone audio levels on your iPhone or iPad (INGENIOSPEC-014699-014701) (available from https://support.apple.com/en-us/102663). Moreover, the Accused Host Devices of the Accused Instrumentalities are configured to perform Custom Audio Setup when connected with one of the Accused Headset Devices.

Set headphone accommodations on iPhone or iPad

1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations.
2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
3. To preview your audio settings, tap Play Sample.

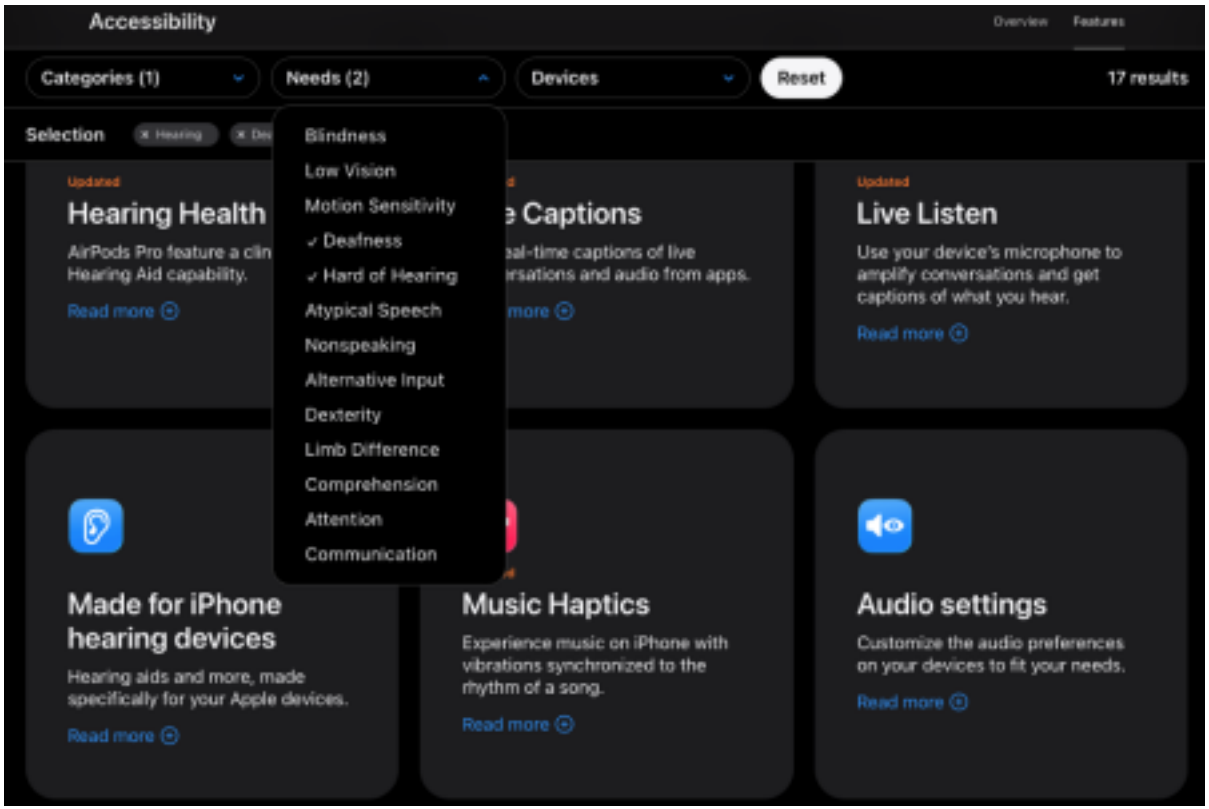
Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

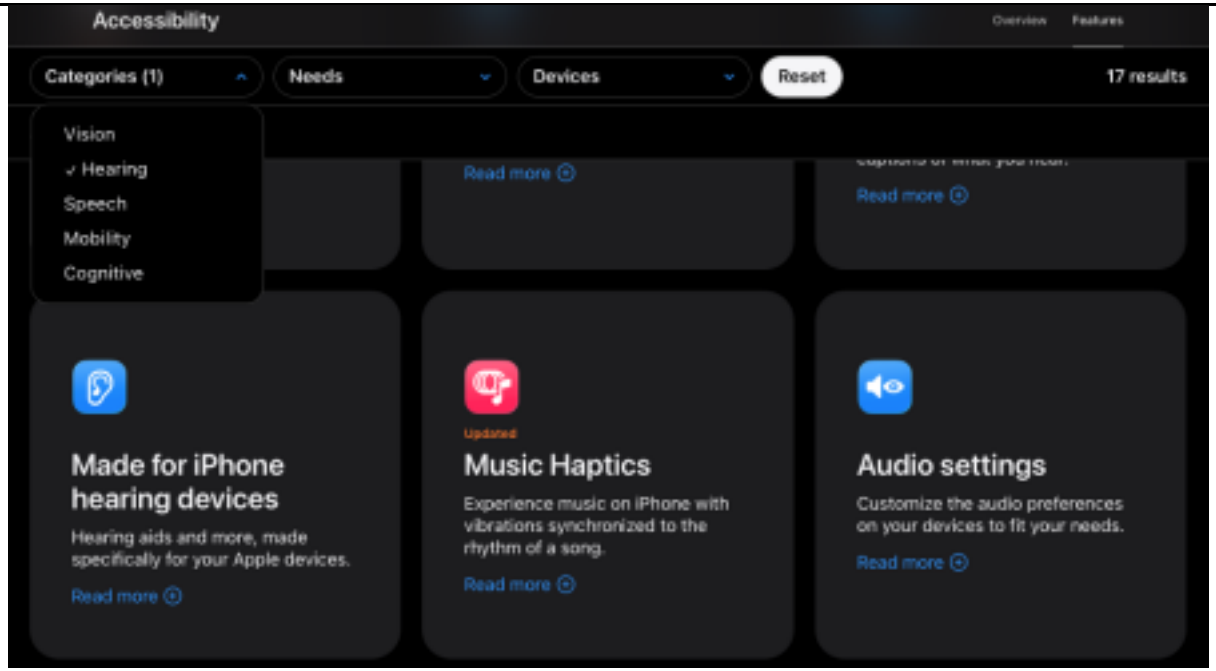
Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

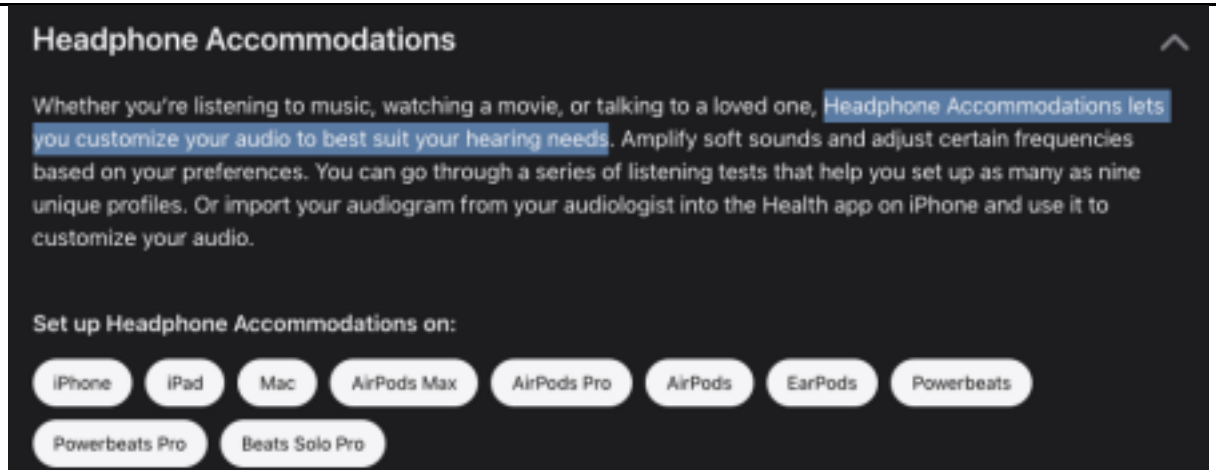
Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

The Accused Host Devices are configured to store at least a hearing characteristic associated with the user related to Custom Audio Setup. The profile is created and stored when a user performs Custom Audio Setup. The stored hearing characteristic associated with the user at least characterizes hearing impairment regarding the user's ability to hear. For example, Custom Audio Setup is part of Apple's Accessibility features for users with deafness, or who are hard of hearing. Headphone Accommodations and Custom Audio Setup allows a user to "change the accessibility settings for [a user's] AirPods to suit [their] needs." *See* https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431). Headphone Accommodations and Custom Audio Setup

	"[a]mplif[ies] soft sounds and adjust[s] certain frequencies to help music, movies, phone calls, and podcasts sound more crisp and clear." *See id.*  **Source**: https://www.apple.com/accessibility/features/ (INGENIOSPEC-014704-014718)

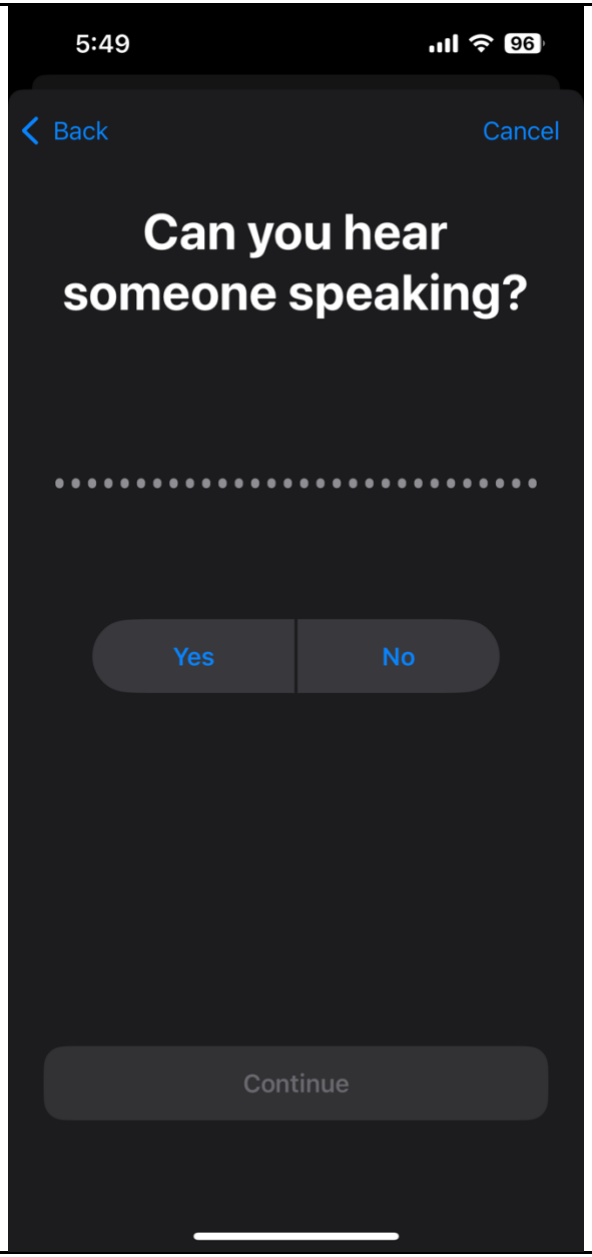


Source: https://www.apple.com/accessibility/features/ (INGENIOSPEC-014704-014718)

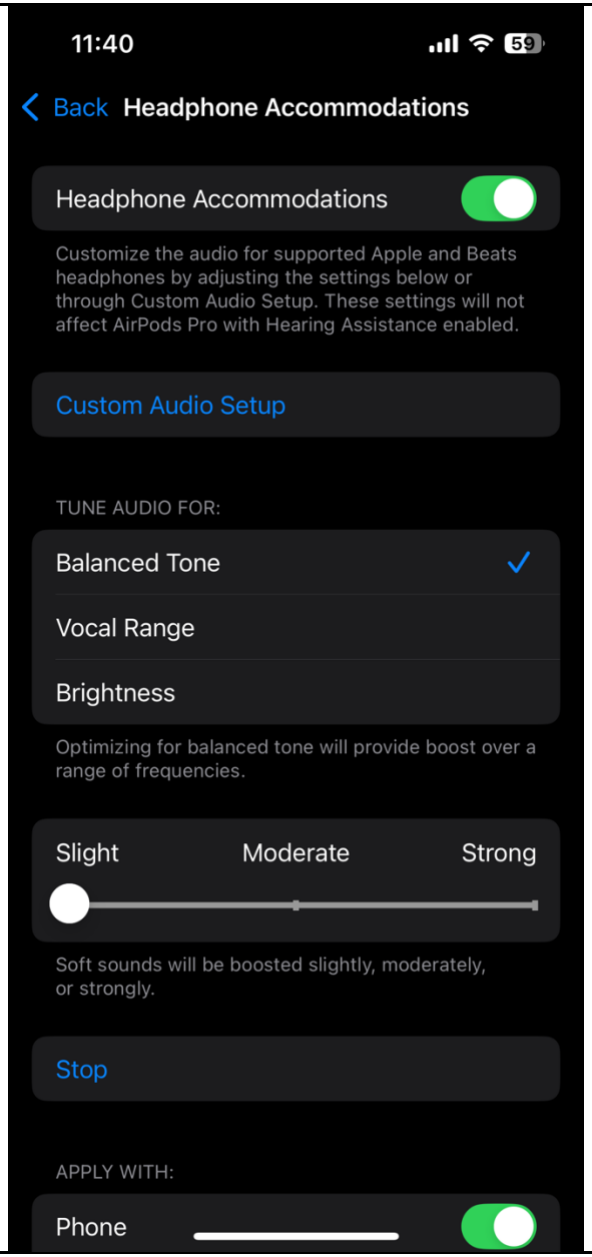


Source: https://www.apple.com/accessibility/features/ (INGENIOSPEC-014704-014718), under "Audio settings"

Moreover, Custom Audio Setup begins with a hearing test.

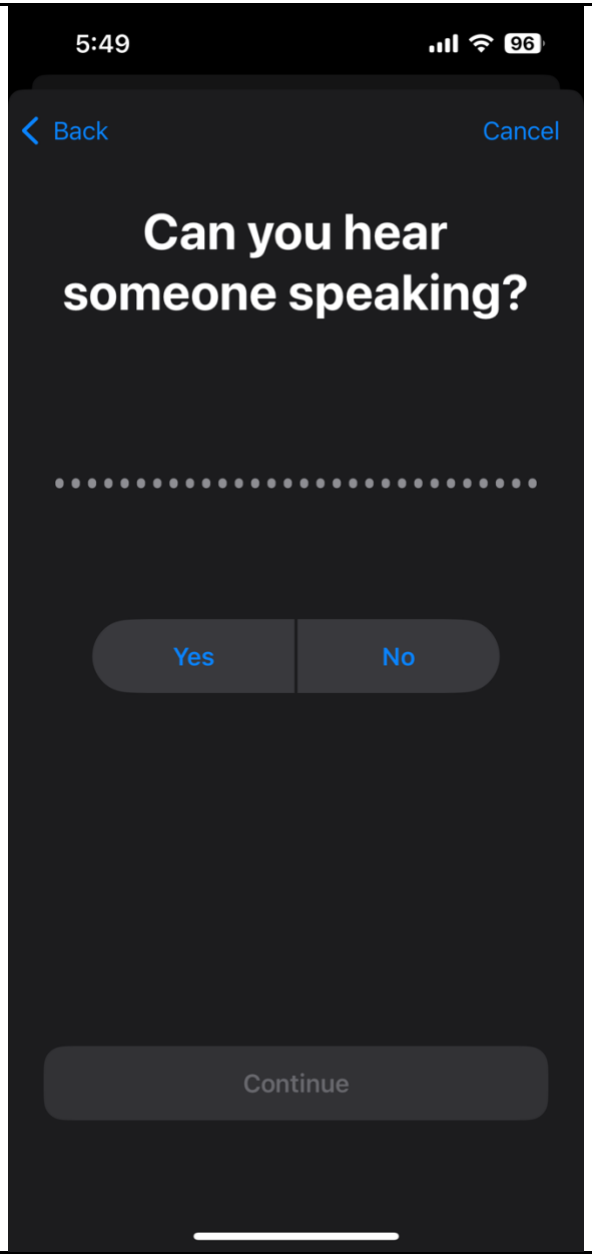

5:49
96
Back
Cancel
Can you hear someone speaking?
Yes
No
Continue

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking? By customizing headphone audio levels, the iPhone or iPad is configured to customize audio output signals to "amplify soft sounds and adjust certain frequencies for [a user's] hearing needs [using] Headphone Accommodations." *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304). To set up "Headphone Accommodations" a user goes to **Settings > Accessibility > Audio & Visual** then taps **Headphone Accommodations**. The user then taps on **Custom Audio Setup** and follows the instructions on the screen. *See Id.*


11:40
59
Back
Headphone Accommodations
Headphone Accommodations
Customize the audio for supported Apple and Beats headphones by adjusting the settings below or through Custom Audio Setup. These settings will not affect AirPods Pro with Hearing Assistance enabled.
Custom Audio Setup
TUNE AUDIO FOR:
Balanced Tone
Vocal Range
Brightness
Optimizing for balanced tone will provide boost over a range of frequencies.
Slight
Moderate
Strong
Soft sounds will be boosted slightly, moderately, or strongly.
Stop
APPLY WITH:
Phone

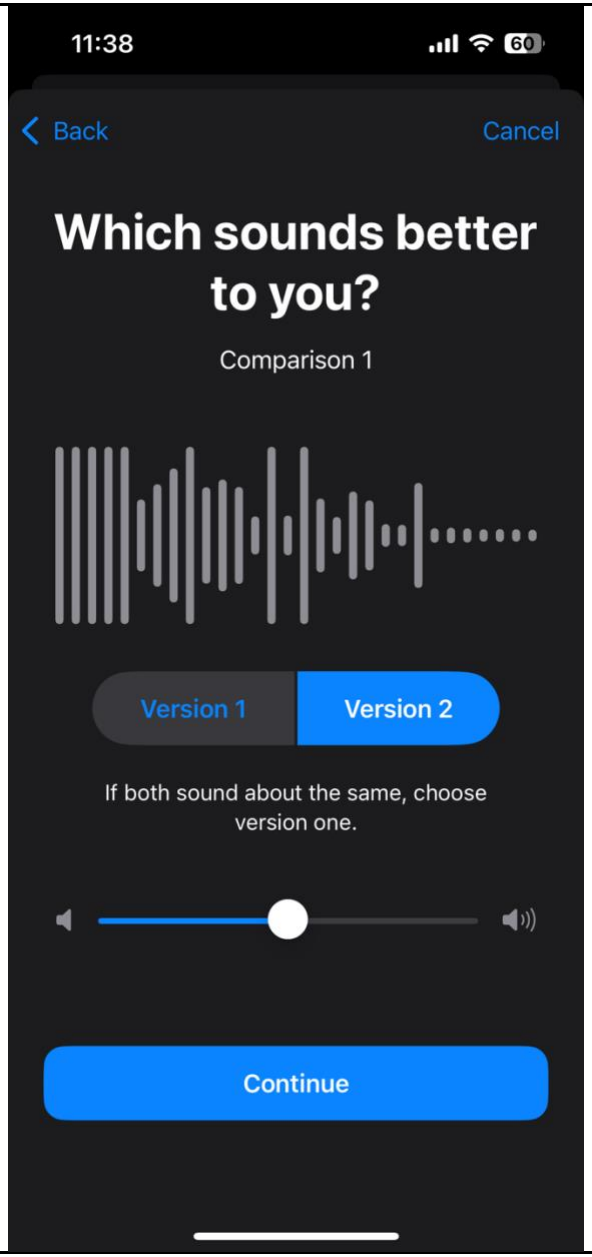
	Source: Screenshot from iPhone configuring "Headphone Accommodations," including "Custom Audio Setup"

Apple Inc. Exhibit 1022 Page 737

		 5:49 96 Back Cancel Can you hear someone speaking? Yes No Continue	

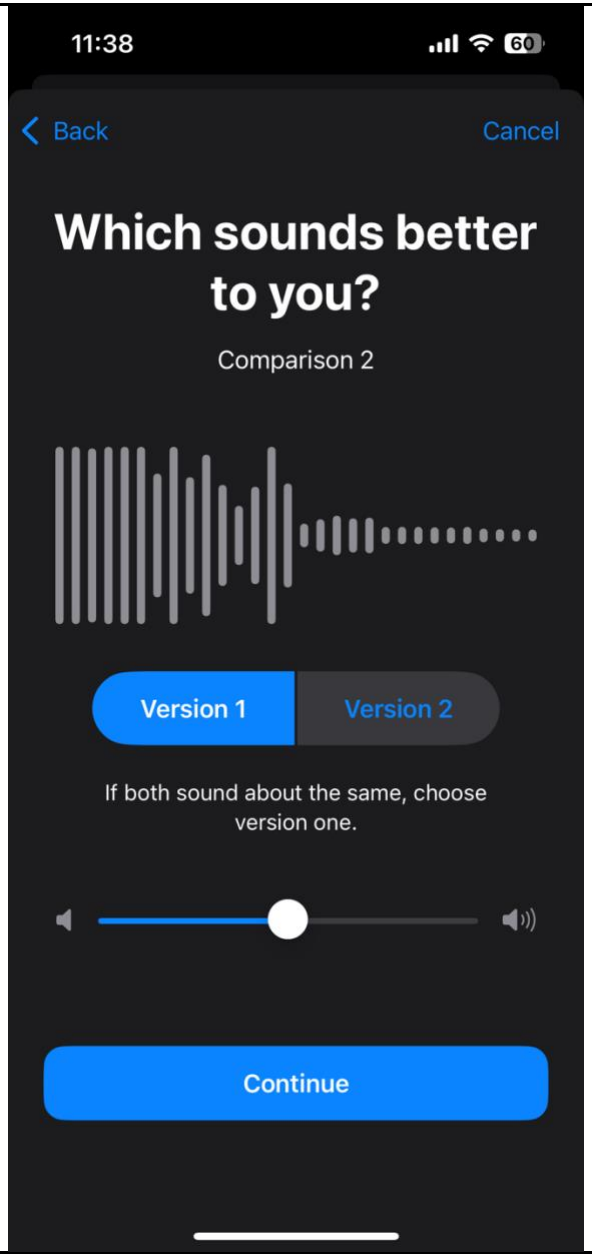
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Can you hear someone speaking?

Apple Inc. Exhibit 1022 Page 739


11:38
Back
Cancel
Which sounds better to you?
Comparison 1
Version 1
Version 2
If both sound about the same, choose version one.
Continue

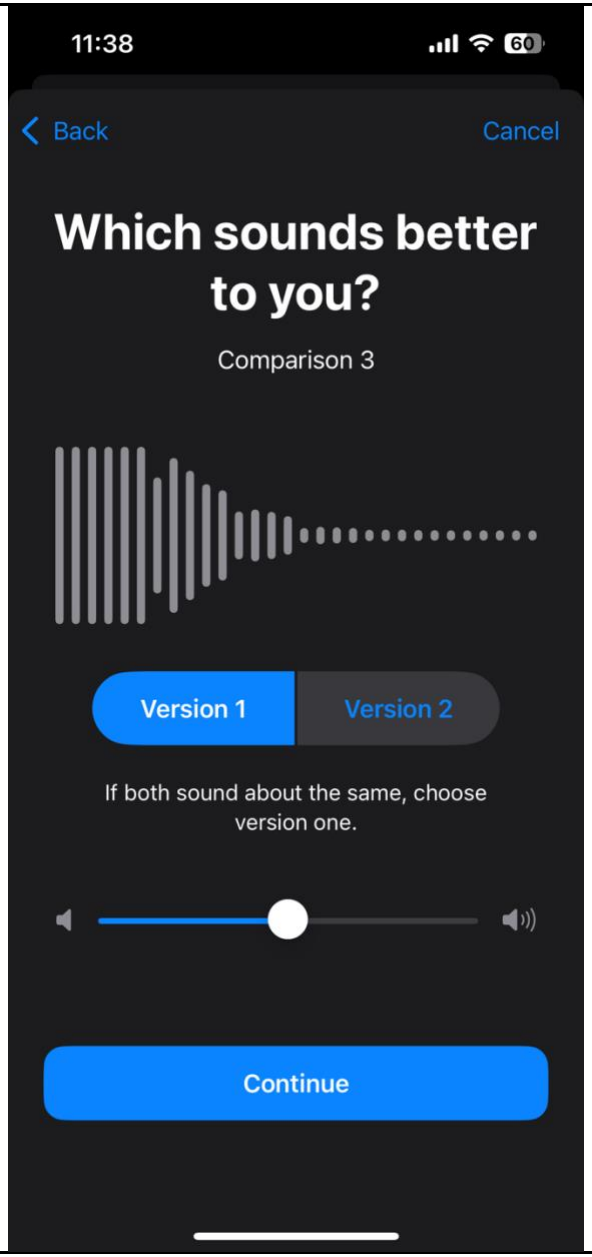
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 1

Apple Inc. Exhibit 1022 Page 741


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 2
Version 1
Version 2
If both sound about the same, choose version one.
Continue

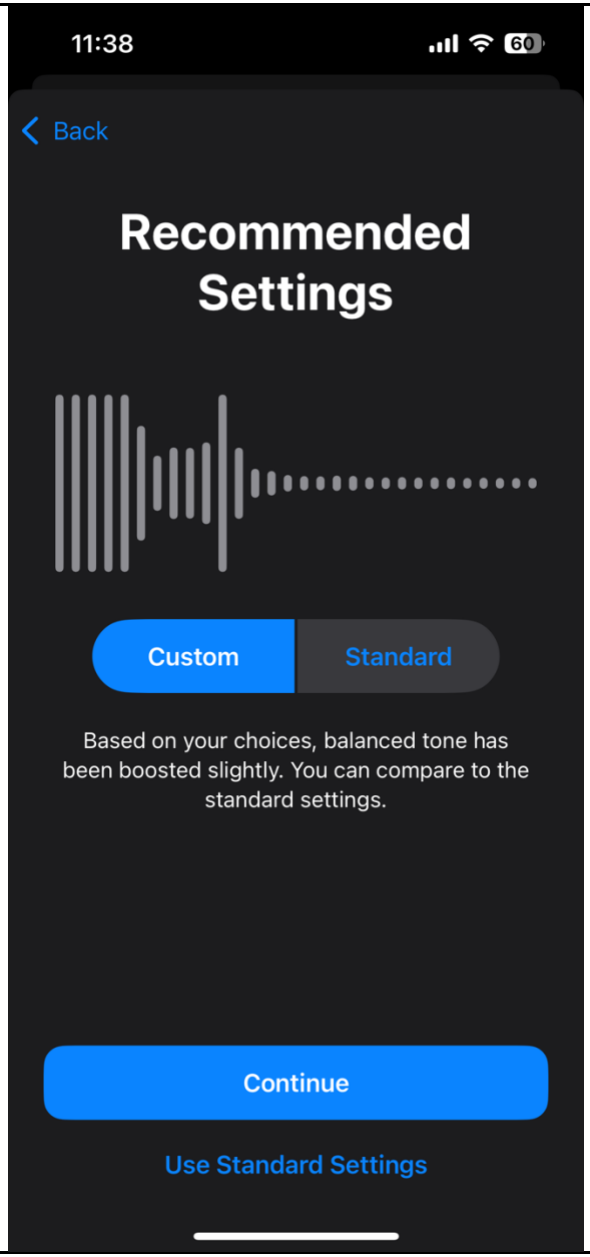
	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 2

Apple Inc. Exhibit 1022 Page 743


11:38
60
Back
Cancel
Which sounds better to you?
Comparison 3
Version 1
Version 2
If both sound about the same, choose version one.
Continue

	Source: Screenshot from iPhone configuring "Custom Audio Setup," Comparison 3

Apple Inc. Exhibit 1022 Page 745

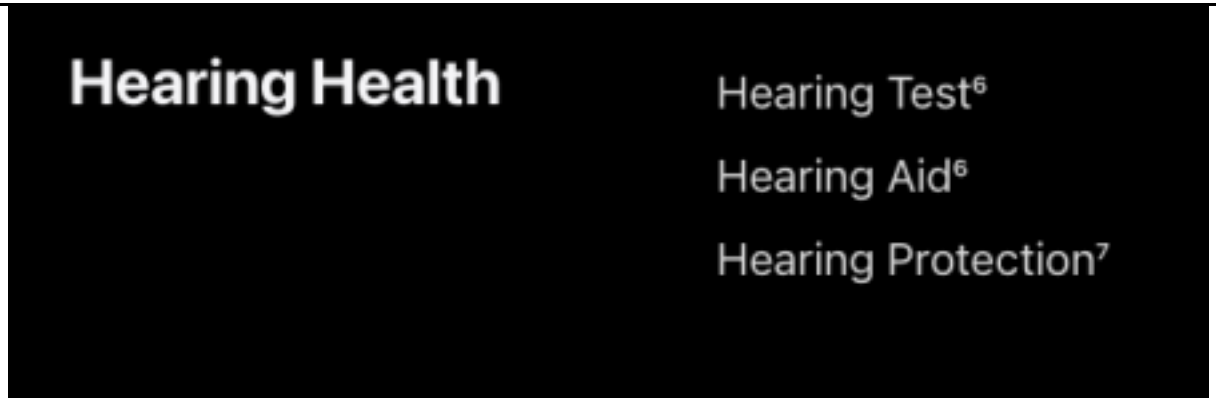

11:38
60
Back
Recommended Settings
Custom
Standard
Based on your choices, balanced tone has been boosted slightly. You can compare to the standard settings.
Continue
Use Standard Settings

Source: Screenshot from iPhone configuring "Custom Audio Setup," Recommended Settings

Furthermore, the Accused Instrumentalities, such as an iPhone 14 paired with Apple AirPods Pro 2, are configured to function as a hearing aid. For example, Apple AirPods Pro 2 provides a hearing aid feature.

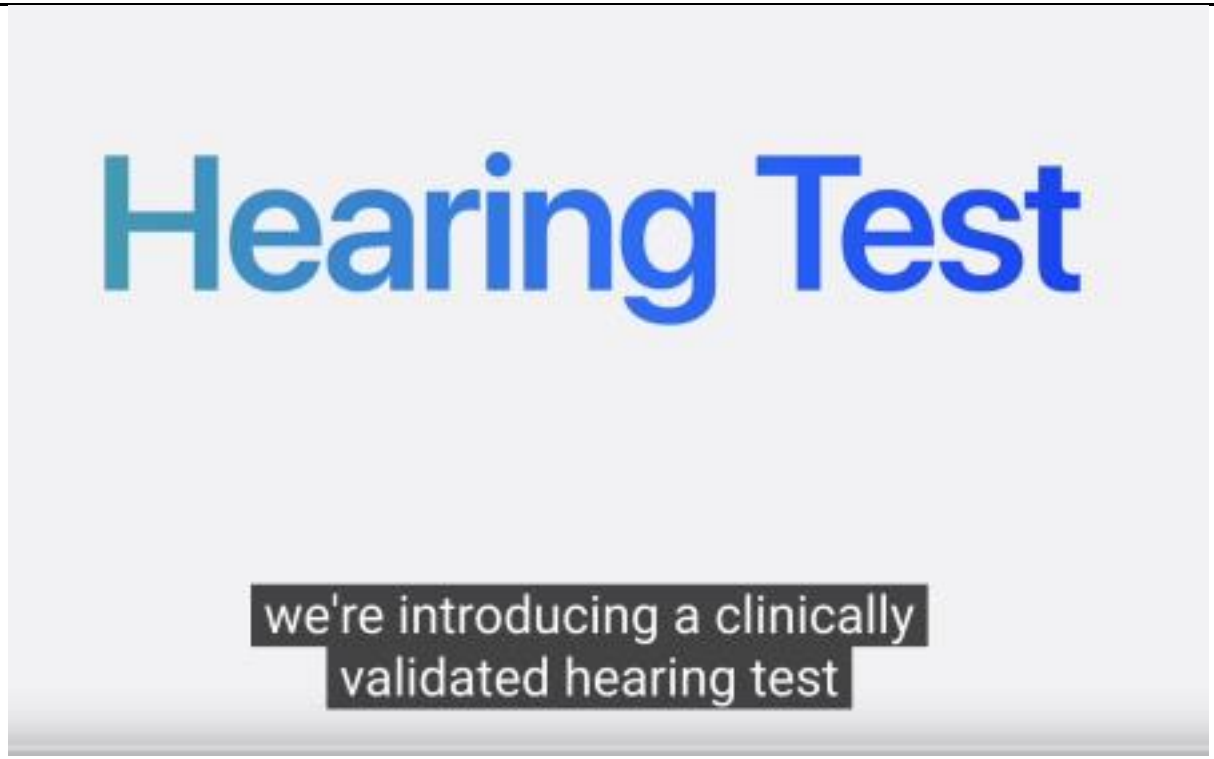


Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).

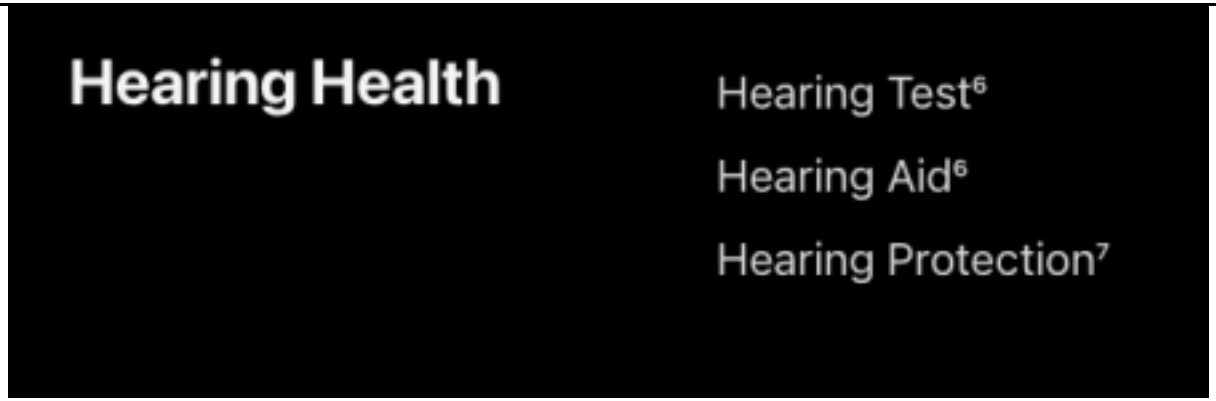


Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

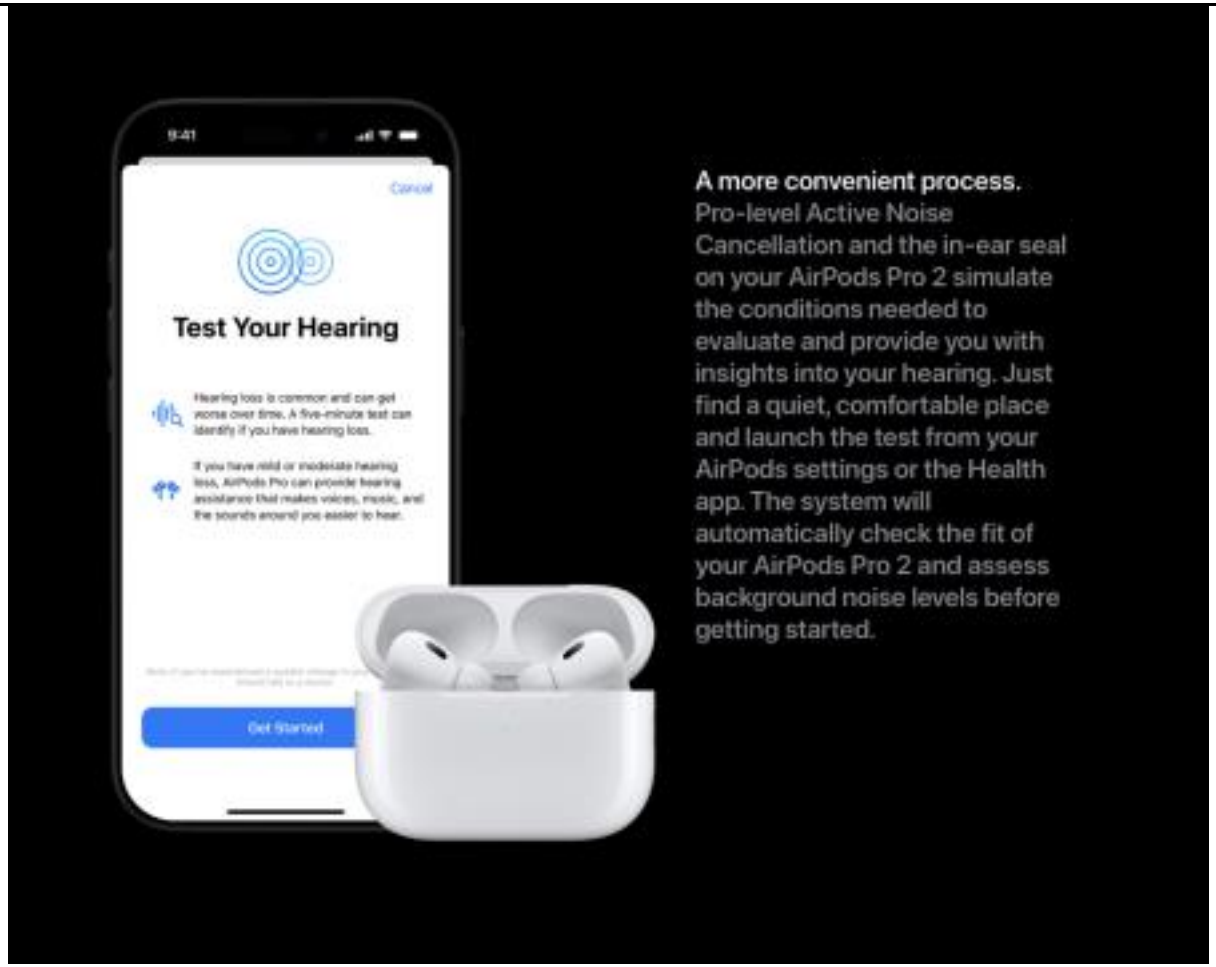
Using the Accused iPhone Devices and Accused iPad Devices, a user can take a hearing test, using the Accused Headset Devices. *See* https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473). The Accused iPhone Devices and Accused iPad Devices are configured to store at least a hearing characteristic associated with the user. The stored hearing characteristic associated with the user at least characterizes hearing impairment regarding the user's ability to hear.



Source: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).

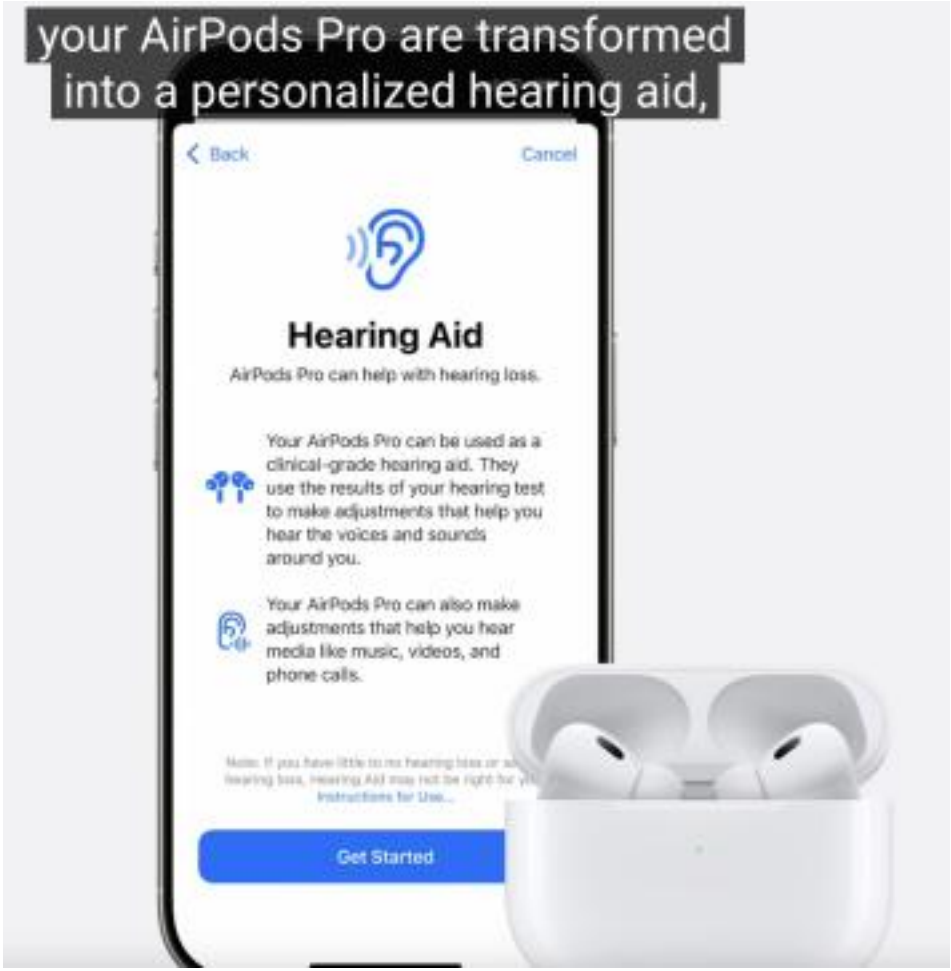


Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).



Source: AirPods Pro 2 - Hearing Health - Apple (INGENIOSPEC-013564-013573) (available from https://www.apple.com/airpods-pro/hearing-health/).

The result of the hearing test, including at least a hearing characteristic associated with the user are stored by the Accused iPhone Devices and Accused iPad Devices. The Accused Host Devices are configured to store the hearing characteristic associated with the user related to the Hearing Aid Test. The profile is created and stored

	when a user performs the Hearing Aid Test. The stored hearing characteristic associated with the user at least characterizes hearing impairment regarding the user's ability to hear.  **Source**: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).

It can take time to get used to the Hearing Aid feature. For the best experience, make small changes to Hearing Aid settings over time while you adjust.

Hearing Aid settings are stored on your AirPods, so if your paired device is not nearby, Hearing Aid will keep working using the most recent settings.

Source: Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3 (INGENIOSPEC-013442-013448) (available from https://support.apple.com/en-us/120992).

Furthermore, the Accused Instrumentalities can *also* be used to manually adjust their hearing characteristics.

A meaningful difference. After you complete the Hearing Test, if you have mild to moderate hearing loss, your personalized hearing profile will guide you to the Hearing Aid feature. With a quick setup, you'll start hearing more clearly immediately. You can even customize the settings to your needs.

Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

It can take time to get used to the Hearing Aid feature. For the best experience, make small changes to Hearing Aid settings over time while you adjust.

	Source: Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3 (INGENIOSPEC-013442-013448) (available from https://support.apple.com/en-us/120992). Accordingly, the Accused Instrumentalities are configured to generate a hearing characteristic associated with the user. *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304); and https://support.apple.com/en-us/120991 (INGENIOSPEC-011469 to INGENIOSPEC-011473) The Accused Host Devices are configured to store the hearing characteristic associated with the user. For example, the Accused Host Devices comprise persistent and volatile memory for storing the hearing characteristic. *See* https://support.apple.com/guide/airpods/hearing-health-features-airpods-pro-2-devd9aac5b42/web (INGENIOSPEC-014801-014805) ("The Hearing Aid feature is intended only for people with perceived mild to moderate hearing loss. ... [Step] 2. Do one of the following: iPhone or iPad: Go to Settings, tap the name of your AirPods near the top of the screen, then tap Hearing Assistance.") The hearing characteristic is stored in the Accused Host Device's aforementioned persistent and volatile memory (e.g., flash memory, solid-state drive, or hard disk drive for persistent memory; and random access memory (RAM), cache memory, or buffer memory for volatile memory) and/or in cloud storage. *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304) ("When using automatic device switching with your headphones, your custom audio settings will transfer between your iPhone, your iPad, your paired Apple Watch (on watchOS 7), your Mac running macOS Sequoia (depending on your model of AirPods), and your Apple Vision Pro."), *and* https://www.apple.com/airpods-pro/hearing-health/ (INGENIOSPEC-012988-013000) ("Private, secure, and easy to manage. All your Hearing Test data is privately and securely stored in the Health app on your device. You can retake the test whenever you want, monitor your hearing over time, download your test results, and read helpful articles about hearing health." And, "After you complete the Hearing Test, if you have mild to moderate hearing loss, your personalized hearing profile will guide you to the Hearing Aid feature. With a quick setup, you'll start hearing more clearly immediately. You can even customize the settings to your needs.") *See also* https://support.apple.com/en-us/104988 (INGENIOSPEC-011466 to INGENIOSPEC-011468). Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro

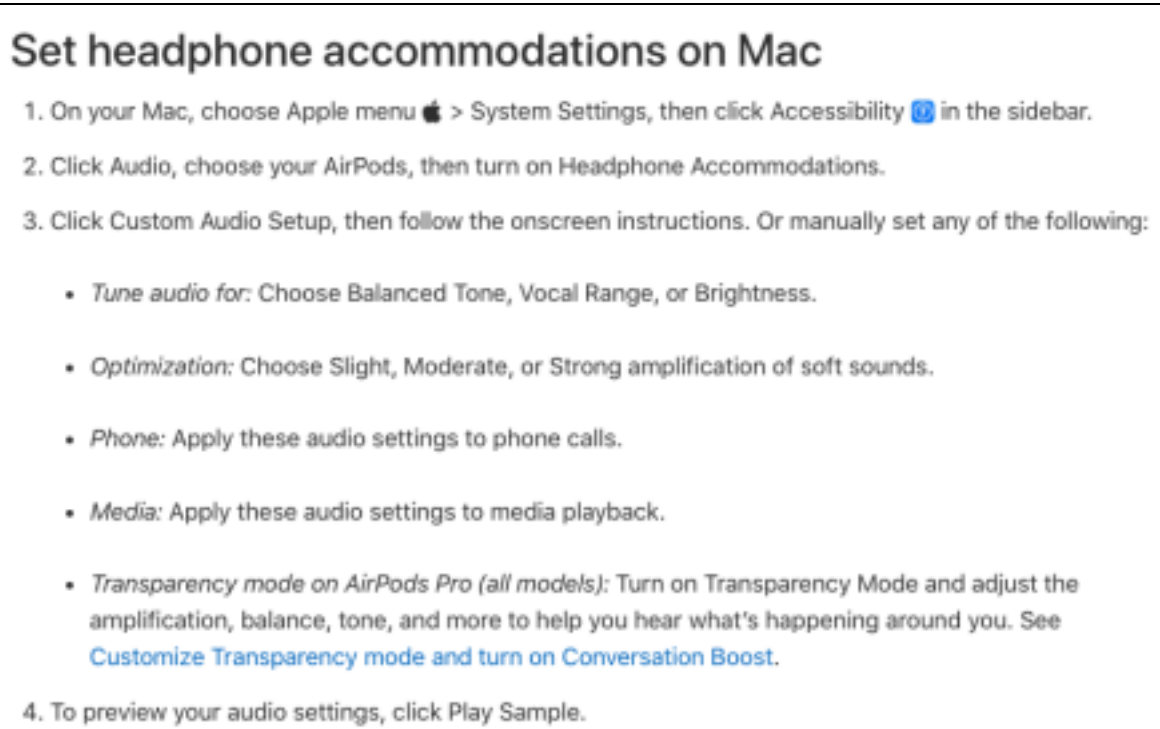
2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 3	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods 4 with Active Noise Cancellation	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 1	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255;

			AirPods Pro 3 - Hearing Health, available from https://www.apple.com/airpods-pro/hearing-health/. *See* INGENIOSPEC-013502-013510; Set Headphone Accommodations for AirPods, available from https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web. *See* INGENIOSPEC-013296-013297; Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3, available from https://support.apple.com/en-us/120992. *See* INGENIOSPEC-013442-013448;
		Beats Fit Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Beats Solo Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Powerbeats Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Powerbeats Pro 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
75b3. the mobile communication device configured to produce customized audio output signals for the user based on at least the stored hearing characteristics associated with the user such that the customized audio output signals at least compensate for the hearing impairment regarding the user's ability to hear, the mobile communication device configured to produce the customized audio output signals using at least signal amplification, and	The Accused Instrumentalities, including the Accused Host Devices (e.g., iPhone 14) when paired with the Accused Headset Devices (e.g., Apple AirPods Pro 2), are configured to produce audio output signals customized for the user based on at least the stored hearing characteristic associated with the user. For example, the Accused Host Devices are configured to pair with the Accused Headset Devices, and configure Headphone Accommodations, including Custom Audio Setup and other manually adjustable audio settings, to produce audio output signals customized for the user based on at least the stored hearing characteristic. *See* Claim 1b2, *supra*. **Set up Headphone Accommodations** 1. Check that you have the latest version of iOS or iPadOS. 2. Go to Settings > Accessibility > Audio & Visual > Headphone Accommodations. Turn on Headphone Accommodations. 3. Choose how you want to apply your custom audio settings: ◦ Turn on Phone to apply these settings to phone calls, FaceTime calls, and any third-party video call apps. ◦ Turn on Media to apply these settings to music, movies, podcasts, audiobooks, Siri, voicemail, and Live Listen. 4. Customize your headphone audio settings: ◦ Use Custom Audio Setup. You'll listen to audio samples and choose which ones sound better to you. Then you can apply the custom settings suggested based on your choices. ◦ Manually adjust audio settings. **Source**: Customize headphone audio levels on your iPhone or iPad (INGENIOSPEC-014699-014701) (available from https://support.apple.com/en-us/102663).

	The Accused Host Devices, such as iPhone 14, are configured to produce audio output signals customized for the user based on at least the stored hearing characteristic associated with the user. During Custom Audio Setup the Accused Host Devices perform a hearing assessment by presenting a series of sample audio to the user, receiving input from the user in response, and generating corresponding adjustments to the hearing characteristic. After Custom Audio Setup and other manually adjustable audio settings have been configured (resulting in a hearing characteristic being created by the user), the Accused Host Devices, such as iPhone 14, will produce audio output signals customized for the user based on the stored hearing characteristic. **Set headphone accommodations on iPhone or iPad** 1. On your iPhone or iPad, go to Settings > Accessibility > Audio & Visual > Headphone Accommodations, then turn on Headphone Accommodations. 2. Tap Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following: • *Tune Audio For:* Choose Balanced Tone, Vocal Range, or Brightness. • *Level:* Choose Slight, Moderate, or Strong amplification of soft sounds. • *Phone:* Apply these audio settings to phone calls. • *Media:* Apply these audio settings to media playback. • *Transparency mode on AirPods Pro (all models):* Turn on Custom Transparency Mode and adjust the amplification, balance, and tone to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost. 3. To preview your audio settings, tap Play Sample. **Source**: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)



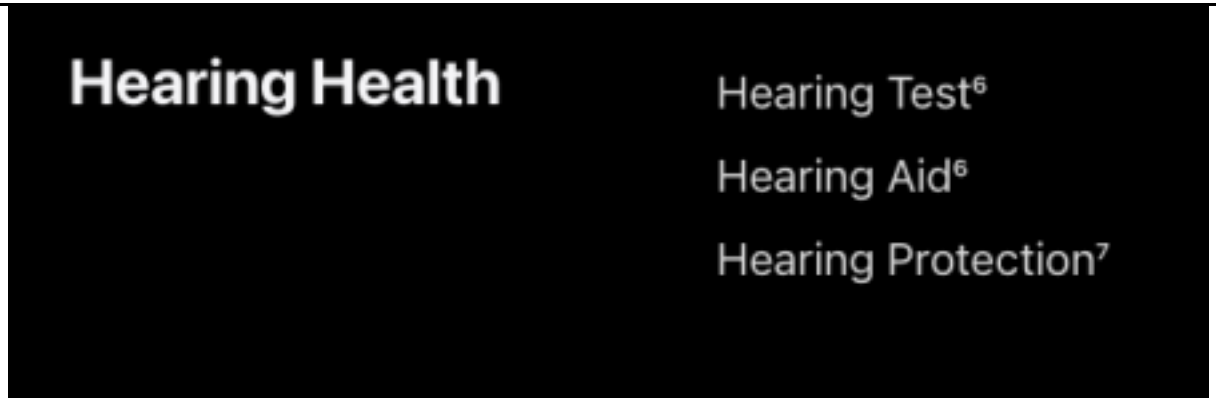
Set headphone accommodations on Mac

1. On your Mac, choose Apple menu > System Settings, then click Accessibility in the sidebar.
2. Click Audio, choose your AirPods, then turn on Headphone Accommodations.
3. Click Custom Audio Setup, then follow the onscreen instructions. Or manually set any of the following:
   - *Tune audio for:* Choose Balanced Tone, Vocal Range, or Brightness.
   - *Optimization:* Choose Slight, Moderate, or Strong amplification of soft sounds.
   - *Phone:* Apply these audio settings to phone calls.
   - *Media:* Apply these audio settings to media playback.
   - *Transparency mode on AirPods Pro (all models):* Turn on Transparency Mode and adjust the amplification, balance, tone, and more to help you hear what's happening around you. See Customize Transparency mode and turn on Conversation Boost.
4. To preview your audio settings, click Play Sample.

Source: https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431)

The customized audio output signals produced compensate for the hearing impairment regarding the user's ability to hear. *See* https://support.apple.com/en-us/111765 (INGENIOSPEC-011314 to INGENIOSPEC-011315) ("iOS and iPadOS devices are filled with accessibility features like these, which can help people who are deaf, have limited hearing, or have unique hearing needs use their devices") and https://support.apple.com/guide/airpods/set-headphone-accommodations-devcd05671ab/web (INGENIOSPEC-011430 to INGENIOSPEC-011431) (Headphone Accommodations and Custom Audio Setup "[a]mplif[ies] soft sounds and adjust[s] certain frequencies to help music, movies, phone calls, and podcasts sound more crisp and clear.") *See also* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304)

	("When using automatic device switching with your headphones, your custom audio settings will transfer between your iPhone, your iPad, your paired Apple Watch (on watchOS 7), your Mac running macOS Sequoia (depending on your model of AirPods), and your Apple Vision Pro.") and https://support.apple.com/guide/airpods/hearing-health-features-airpods-pro-2-devd9aac5b42/web (INGENIOSPEC-014801-014805) ("The Hearing Aid feature is intended only for people with perceived mild to moderate hearing loss. ... [Step] 2. Do one of the following: iPhone or iPad: Go to Settings, tap the name of your AirPods near the top of the screen, then tap Hearing Assistance."). As another example, the Accused Host Devices are configured to pair with the Accused Headset Devices, and configure a hearing characteristic based upon a test of the user's hearing, to produce audio output signals customized for the user based on at least the stored hearing characteristic. *See* Claim 1b2, *supra*.  **Source**: Hearing Aid feature for AirPods Pro 2 Apple (INGENIOSPEC-013221, INGENIOSPEC-013222-013224) (available from https://www.youtube.com/watch?v=dOuNLS1elWs).



Source: AirPods Pro 2 - Technical Specifications (INGENIOSPEC-014687-014693) (available from https://web.archive.org/web/20250910061302/https://www.apple.com/airpods-pro/specs/).

The Accused Host Devices are configured to produce audio output signals customized for the user based on at least the stored hearing characteristic associated with the user. When Media Assist is enabled, customized audio output signals are produced for music, video, phone calls, and FaceTime calls using at least signal amplification to compensate for the hearing impairment regarding the user's ability to hear.

Set up and use Media Assist

With Media Assist, the audio adjustments based on your hearing test results can be applied to the sound of music, videos, and calls.

1. With your AirPods in your ears and connected to your paired device:
   - On iPhone or iPad, go to Settings > your AirPods, then tap Hearing Assistance under Hearing Health.
   - On Mac, choose Apple menu > System Settings, click your AirPods in the left sidebar, then click Hearing Health.
2. Tap or click Adjustments, then turn on Media Assist.
3. To apply the audio adjustments based on your test results to music and video playing on your device, turn on Adjust Music and Video.
4. To apply audio adjustments to phone calls and FaceTime calls, turn on Adjust Calls and FaceTime.
5. To adjust the volume of phone calls, music, and videos playing on your device when Hearing Aid is active:
   - Use the physical volume buttons on your device.
   - On iPhone or iPad, open Control Center, touch and hold the volume control, then adjust the volume control . If Hearing Aid is also turned on, you can adjust the amplification control of Hearing Aid separately.
   - On Mac, open Control Center , then drag the volume control under Sound to the left or right.

Most media apps, like Apple Music or Podcasts, also have their own volume controls, so make sure to check the apps if you're having an issue with the volume of music, video, or other media in your AirPods.

Source: Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3 (INGENIOSPEC-013442-013448) (available from https://support.apple.com/en-us/120992).

Based upon the user's selections, preferences and customizations when performing Custom Audio Setup and/or Hearing Aid Test, the created hearing characteristic adjusts audio output to improve the user's ability to hear frequency ranges that the user is less sensitive to, such as higher-frequency consonant sounds in speech or lower-frequency background tones in music. *See* https://support.apple.com/en-us/111765 (INGENIOSPEC-011314 to INGENIOSPEC-011315) ("Use Headphone Accommodations to customize headphone audio settings to amplify soft sounds and adjust certain frequencies for your hearing needs. You can also use your audiogram data from

the Health app to customize audio settings.") *and* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566) ("With Media Assist, the audio adjustments based on your hearing test results can be applied to the sound of music, videos, and calls." And, "After you complete the Hearing Test, if you have mild to moderate hearing loss, your personalized hearing profile will guide you to the Hearing Aid feature. With a quick setup, you'll start hearing more clearly immediately. You can even customize the settings to your needs.")

The Accused Host Devices are configured to produce the customized audio output signals using at least signal amplification. For example, amplification is selectively applied to portions of the audio spectrum that correspond to the user's measured hearing deficiencies, such that audio content in those ranges is output at an increased gain level relative to other ranges, thereby enhancing audibility for the user. *See* https://support.apple.com/en-us/102663 (INGENIOSPEC-011302 to INGENIOSPEC-011304) ("Customiz[ing] headphone audio levels on your iPhone or iPad [will] [a]mplify soft sounds and adjust certain frequencies for your hearing needs with Headphone Accommodations in iOS and iPadOS 14 and later.") *See also* https://support.apple.com/en-us/120634 (INGENIOSPEC-011308 to INGENIOSPEC-011310) ("Customiz[ing] the sound of your AirPods on Mac [will] boost soft sounds and adjust the tone for your hearing needs.") *and* https://support.apple.com/en-us/120992 (INGENIOSPEC-011560 to INGENIOSPEC-011566) ("(1) Tap or click Adjustments, then turn on Media Assist; (2) To apply the audio adjustments based on your test results to music and video playing on your device, turn on Adjust Music and Video; (3) To apply audio adjustments to phone calls and FaceTime calls, turn on Adjust Calls and FaceTime.")

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**

		Apple AirPods 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods 3	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods 4	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods 4 with Active Noise Cancellation	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods Pro 1	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; AirPods Pro 3 - Hearing Health, available from https://www.apple.com/airpods-pro/hearing-health/. *See* INGENIOSPEC-013502-013510; Set Headphone Accommodations for AirPods, available from https://support.apple.com/guide/airpods/set-headphone-accommodations-

		devcd05671ab/web. *See* INGENIOSPEC-013296-013297; Use the Hearing Aid feature on your AirPods Pro 2 or AirPods Pro 3, available from https://support.apple.com/en-us/120992. *See* INGENIOSPEC-013442-013448;
	Beats Fit Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701; Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
	Beats Solo Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Powerbeats Pro	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	Powerbeats Pro 2	Customize headphone audio levels on your iPhone or iPad, available from https://support.apple.com/en-us/102663. *See* INGENIOSPEC-014699-014701;
	As such, the Accused Instrumentalities, including the Accused Host Devices (e.g., iPhone 14) when paired with the Accused Headset Devices (e.g., Apple AirPods Pro 2), are configured to produce audio output signals customized for the user based on at least the stored hearing characteristic associated with the user, and do so using at least signal amplification.	

<table>
<tr><td></td><td>Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.</td></tr>
<tr><td>75b4. the mobile communication device configured to transmit the customized audio output signals to the pair of speakers,</td><td>See Claim 24b4, supra.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 also meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

<table>
<tr><th>Device</th><th>Citations</th></tr>
<tr><td>Apple AirPods 2</td><td>AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. See INGENIOSPEC-013926-013932;
AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. See INGENIOSPEC-014277-014286;</td></tr>
<tr><td>Apple AirPods 3</td><td>AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. See INGENIOSPEC-014151-014158;
Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. See INGENIOSPEC-014141-014150;</td></tr>
<tr><td>Apple AirPods 4</td><td>AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. See INGENIOSPEC-014675-014686;
Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. See INGENIOSPEC-014260-014276;</td></tr>
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</table>

		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from

		https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.

75c. wherein each of the speakers is configured to receive at least a portion of the customized audio output signals transmitted by the mobile communication device,

See Claim 24c, *supra*.

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	**Citations**
Apple AirPods 2	AirPods 2 - Tech Specs - Apple Support, available from https://support.apple.com/en-us/111856. *See* INGENIOSPEC-013926-013932; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023;

			If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
		Apple AirPods 3	AirPods (3rd Generation) - Technical Specs, available from https://www.apple.com/eg/airpods-3rd-generation/specs/. *See* INGENIOSPEC-014151-014158; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
		Apple AirPods 4 with Active	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Noise Cancellation	Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	AirPods Pro 1 - Tech Specs, available from https://support.apple.com/en-us/111861. *See* INGENIOSPEC-014050-014056; Pair AirPods with an Apple device - Apple Support, available from https://support.apple.com/guide/airpods/pair-airpods-with-an-apple-device-dev7c85810f2/web. *See* INGENIOSPEC-014020-014023; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Technical Specs, available from https://www.apple.com/airpods-pro/specs/. *See* INGENIOSPEC-014249-014255; Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Beats User Guide - Pair Beats, available from https://support.apple.com/en-

			ca/guide/beats/dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014644-014647; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014;
		Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616; Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014;

		Powerbeats Pro 2, available from https://www.beatsbydre.com/earbuds/powerbeats-pro-2/MX743/electric-orange. *See* INGENIOSPEC-013371-013387; Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	
75d. wherein each of the speakers is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals being received.	*See* Claim 24d, *supra*. Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Beats Solo Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.	
	Device	**Citations**
	Apple AirPods 2	AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286; If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004;
	Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150;

			Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
		Apple AirPods 4	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691;
		Apple AirPods 4 with Active Noise Cancellation	AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797;
		Apple AirPods Pro 1	Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117; AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533;

	Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
	Beats Solo Pro	Beats User Guide - Pair Beats, available from https://support.apple.com/guide/beats/pair-beats-dev46c519179/1.0/web/1.0. *See* INGENIOSPEC-014011-014014; Solo Pro - Beats by Dre Archive 2, available from https://web.archive.org/web/20200602034251/https://www.beatsbydre.com/headphones/solo-pro. *See* INGENIOSPEC-013312-013323; Beats By Dre Solo Pro Wireless Bad Battery Replacement Fix Repair Tutorial, available from https://www.youtube.com/watch?v=SBeHaqnw45w. *See* INGENIOSPEC-013144, INGENIOSPEC-013145-013151; Solo Pro Press Release, available from https://www.beatsbydre.com/content/dam/beats/web/press/solo-pro/solo-pro-press-kit.zip. *See* INGENIOSPEC-014313-014314;
	Powerbeats Pro	Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271, INGENIOSPEC-013272-013277;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632;

	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.
11,644,693 Claim 76	**Evidence**
76. A personal audio system as recited in claim 75, wherein each of the speakers being configured to be at least partially inserted into an ear of the user.	Every claim limitation of claim 75 is present in the Accused Instrumentalities as described above and incorporated herein by reference. The Accused Instrumentalities comprise a pair of speakers, each of the speakers being configured to be wearable proximate to an ear of a user. *See* Claim 75a, *supra*. The Accused Headset Devices comprise a pair of ear buds. Each earbud comprises a speaker.



Source: Speaker Image from AirPods Pro 2 webpage (INGENIOSPEC-014044-014044) (available from https://www.apple.com/airpods-pro/).



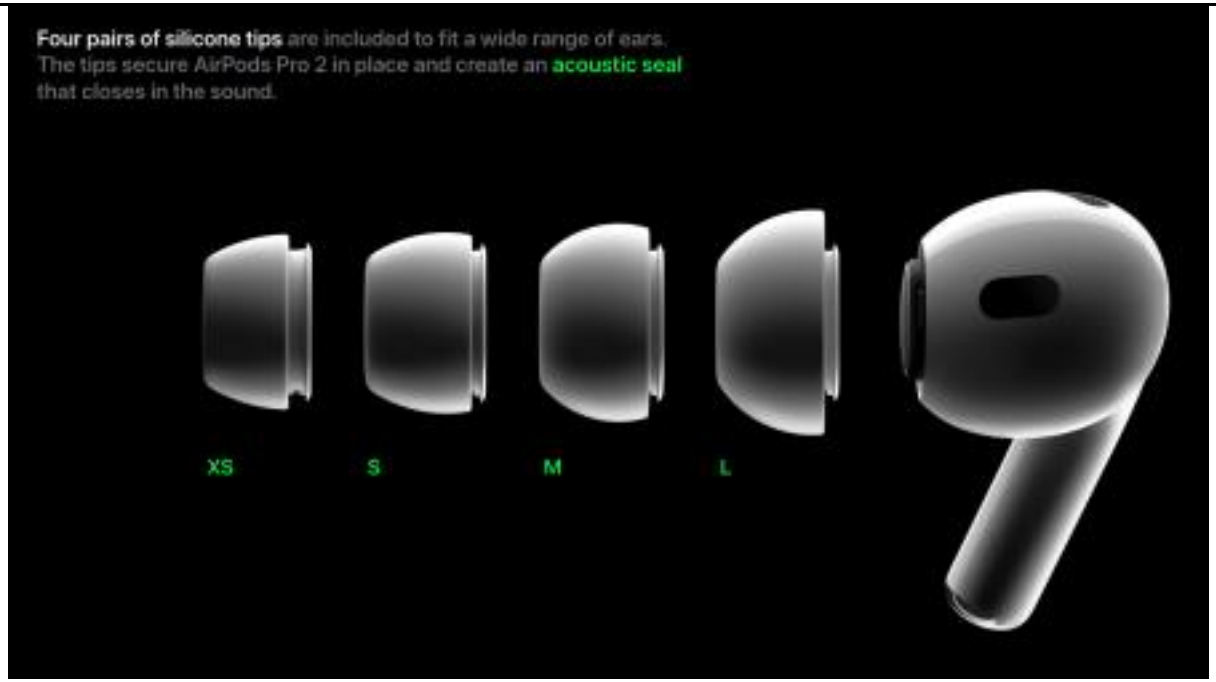
The front of the speaker unit is a black diaphragm.

Source: Apple AirPods Pro 2 Teardown: Upgrade Materials and Design (INGENIOSPEC-013701-013760) (available from https://www.qucox.com/apple-airpods-pro-2-teardown/).



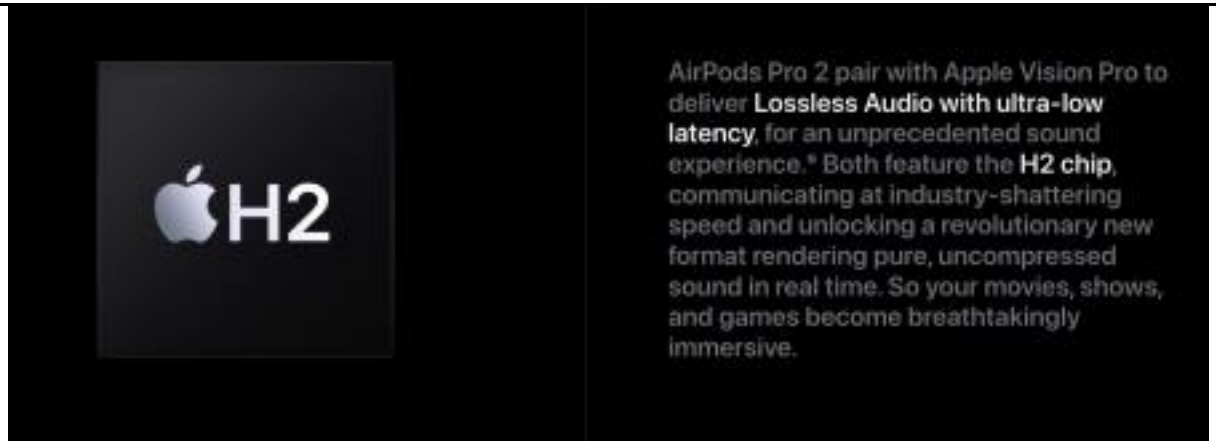
Source: Teardown of Apple AirPods Pro 2 (INGENIOSPEC-013264, INGENIOSPEC-013265-013270) (available from https://www.youtube.com/watch?v=NfzRzb3NI0U).

The speakers of the Accused Headsets are configured to be at least partially inserted into an ear of the user.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

	 **Source**: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/). The speakers are used to play audio when at least partially inserted into an ear of the user.



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).



Source: AirPods Pro 2 - Apple (INGENIOSPEC-013541-013563) (available from https://web.archive.org/web/20250904180656/https:/www.apple.com/airpods-pro/).

Each of Apple AirPods 2, Apple AirPods 3, Apple AirPods 4, Apple AirPods 4 with Active Noise Cancellation, Apple AirPods Pro 1, Apple AirPods Pro 3, Beats Fit Pro, Powerbeats Pro and Powerbeats Pro 2 *also* meet the

claimed limitation for the same reasons. Refer to the table below for corresponding evidence specific to each device.

Device	Citations
Apple AirPods 2	If your left or right AirPod is not working, available from https://support.apple.com/en-us/100494. *See* INGENIOSPEC-013923-013925; Apple AirPods 2 In-Depth Teardown Review by 52AUDIO, available from https://www.chargerlab.com/apple-airpod-2-in-depth-teardown-review/. *See* INGENIOSPEC-013937-014004; AirPods (2nd generation) Overview, available from https://www.apple.com/eg/airpods-2nd-generation/. *See* INGENIOSPEC-014277-014286;
Apple AirPods 3	Introducing the next generation of AirPods, available from https://www.apple.com/newsroom/2021/10/introducing-the-next-generation-of-airpods/. *See* INGENIOSPEC-014141-014150; Apple AirPods 3 true wireless earphones teardown, available from https://www.qucox.com/apple-airpods-3-teardown/. *See* INGENIOSPEC-014163-014238;
Apple AirPods 4	Apple AirPods 4 Standard Edition Teardown, available from https://www.qucox.com/apple-airpods-4-teardown/. *See* INGENIOSPEC-013664-013691; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-014260-014276; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;

		Apple AirPods 4 with Active Noise Cancellation	Apple AirPods 4 ANC Earbuds Teardown, available from https://www.qucox.com/apple-airpods-4-anc-teardown/. *See* INGENIOSPEC-013761-013797; Apple AirPods 4 - Overview, available from https://www.apple.com/airpods-4/. *See* INGENIOSPEC-013484-013501; AirPods 4 - Technical Specifications, available from https://www.apple.com/airpods-4/specs/. *See* INGENIOSPEC-014675-014686;
		Apple AirPods Pro 1	AirPods Pro Teardown - iFixit, available from https://www.ifixit.com/Teardown/AirPods+Pro+Teardown/127551. *See* INGENIOSPEC-014076-014096; Apple AirPods Pro vs. AirPods 3 Teardown: ANC or Comfort, available from https://www.qucox.com/airpods-pro-vs-airpods-3/. *See* INGENIOSPEC-014057-014075; Apple Reveals New AirPods Pro, available October 30, available from https://www.apple.com/newsroom/2019/10/apple-reveals-new-airpods-pro-available-october-30/. *See* INGENIOSPEC-014108-014117;
		Apple AirPods Pro 3	Apple AirPods Pro 3 - Overview, available from https://www.apple.com/airpods-pro/. *See* INGENIOSPEC-013511-013533; Introducing AirPods Pro 3, the ultimate audio experience, available from https://www.apple.com/in/newsroom/2025/09/airpods-pro-3-introduce-the-ultimate-audio-experience/. *See* INGENIOSPEC-014239-014248;
		Beats Fit Pro	Beats Fit Pro, available from https://www.beatsbydre.com/earbuds/beats-fit-pro. *See* INGENIOSPEC-013449-013458; Teardown Report: Beats Fit Pro, available from https://www.52audio.com/archives/98994.html. *See* INGENIOSPEC-014407-014463;
		Powerbeats Pro	Powerbeats Pro Teardown, available from https://www.youtube.com/watch?v=vEHwL59jOPg. *See* INGENIOSPEC-013271,

		INGENIOSPEC-013272-013277; Beats Unveils Powerbeats Pro, available from https://www.beatsbydre.com/content/dam/beats/web/press/powerbeats-pro/beats_powerbeats-pro.zip. *See* INGENIOSPEC-014287-014289; Wearing your AirPods, EarPods, or Beats device, available from https://support.apple.com/en-us/101598. *See* INGENIOSPEC-014301-014302; How to get the best fit and sound with your Powerbeats Pro | Comfort, available from https://www.youtube.com/watch?v=I9t6YW3o-xc. *See* INGENIOSPEC-013232, INGENIOSPEC-013233-013237;
	Powerbeats Pro 2	Powerbeats Pro 2 - High Performance Earbuds with video transcript, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013617-013632; Powerbeats Pro 2 - High Performance Earbuds, available from https://www.apple.com/shop/product/MX743LL/A/powerbeats-pro-2-high-performance-earbuds-electric-orange. *See* INGENIOSPEC-013602-013616;
	Plaintiff reserves the right to supplement these infringement contentions once it has been afforded the opportunity to review and inspect the internal hardware, firmware and software of the Accused Instrumentalities.	