

What are wireless headphones? Differentiating between Wireless and True Wireless headphones.

Learn what wireless headphones are and the differences between traditional wireless and true wireless headphones. Check it out now to choose the right audio device.

Wireless headphones connect to playback devices (such as phones and computers) without the need for physical cables. Instead of transmitting signals through wires, these headphones use wireless wave technologies to transmit sound. Let's explore what wireless headphones are and how to distinguish them from True Wireless headphones in the following article.

Key points

1. Traditional wireless headphones usually have wires connecting the two earbuds and use 2.4GHz radio waves. True Wireless (TWS) headphones have two completely independent earbuds.
2. Wireless (over-ear) headphones offer long battery life and good noise isolation. True Wireless (TWS) headphones are ultra-compact, flexible, and ideal for travel and sports.
3. True Wireless headphones are recommended for mobility and flexibility. 2.4GHz wireless headphones are ideal for PC gaming, requiring low latency.

1. What are wireless headphones? Concept and classification

1.1. Definition of wireless headphones

Wireless headphones are audio devices that receive signals via Bluetooth or radio frequency (RF) technology. The defining characteristic of this technology accessory is the complete elimination of physical cables that plug directly into the transmitting device, such as 3.5mm jacks or Type-C ports.



Wireless headphones receive audio via Bluetooth or RF, eliminating the need for a direct wired connection.

1.2. Wireless headphones

Wireless headsets using a 2.4GHz USB receiver are the standard for gamers thanks to their extremely low latency, ensuring smooth and accurate real-time audio. This technology overcomes the delay drawback of conventional Bluetooth.

In terms of design, this type typically comes in the form of an over-ear (headband) or neckband to house a large battery and a powerful transceiver. This is the optimal choice for those who need wireless convenience but still require stable transmission speeds comparable to wired connections.



2.4GHz wireless headphones with low latency and stable performance, ideal for gamers.

1.3. True Wireless Headphones

True Wireless (TWS) earbuds take convenience to the next level by completely separating the two earbuds (housing). This design does not use any physical wires connecting the left and right earbuds.

Each included charging case serves both as a storage case and a power reserve. Audio signals are efficiently synchronized thanks to advanced processing chips integrated into the device, allowing simultaneous signal reception in both earbuds.



TWS earbuds are completely wireless, compact, come with a charging case, and are convenient to carry and use.

2. Compare the differences between wireless and true wireless headphones.

2.1. Overview Comparison Table

Criteria	Traditional wireless headphones	True Wireless (TWS) Headphones
Design	Large size, with a head strap or neck strap.	Compact, with two completely independent earcups.
Connectivity technology	2.4GHz radio waves (USB Receiver) and Bluetooth	Primarily uses Bluetooth.
Audio delay	Almost zero (when using a 2.4GHz receiver)	Latency is significantly lower with newer standards (such as LE Audio).

Battery life	Lasting from 30 to over 50 hours continuously.	4-8 hours (requires recharging via charging case)
Ideal environment	Sitting still at a PC, playing competitive games.	Frequent travel, sports training, office work

2.2. Connectivity Technology and Audio Latency

TWS earphones have significantly improved latency thanks to Bluetooth LE Audio and the LC3 codec, replacing older standards like SBC or AAC. These new technologies result in smoother sound, better battery life, and are well-suited for both casual entertainment and gaming while maintaining a compact and flexible design.

However, in professional esports competitions, wireless headsets using USB dongles still prevail. With the 2.4GHz connection standard, this type of headset offers faster and more stable transmission speeds, allowing gamers to react instantly to sounds such as footsteps or gunshots.



Traditional wireless headphones are suitable for gamers who need precise reflexes.

2.3. Design and Soundproofing Capabilities

1. Over-ear (wireless) headphones have a design that completely covers the ears, providing optimal physical sound isolation.
2. The large earcup size allows for larger drivers, resulting in a wide soundstage and deep bass.
3. Compared to in-ear, on-ear, and over-ear headphones, the TWS design offers high portability but may cause slight discomfort if worn continuously for many hours.



Over-ear headphones that completely cover the ears provide optimal sound isolation.

2.4. Battery life and power source

TWS earbuds are limited in space, so the built-in battery capacity in each earbud is quite small. This power source typically lasts for about 4-8 hours of continuous use. Users are forced to rely on the charging case to recharge the battery.

Meanwhile, wireless over-ear headphones have a larger body, accommodating a high-capacity battery. The battery life of these models can last from 30 to 50 hours or more on a single full charge, easily meeting the demands of continuous use.



TWS earphones have a shorter battery life and require a charging case for extended use.

3. Advantages and disadvantages of wireless headphones

Advantage:

1. Freeing up personal space helps users avoid being cluttered by connecting cables.
2. It incorporates many modern technologies such as active noise cancellation (ANC) and transparency mode.
3. Supports touch controls or physical buttons for quick operation.

Disadvantages:

1. The price is usually higher compared to the wired version with the same specifications.
2. Battery life will gradually decrease with increased device usage.
3. The overly compact design of TWS devices increases the risk of dropping and losing them.



Wireless headphones are convenient but expensive, and battery life decreases over time.

4. Advice on choosing wireless headphones based on your needs.

4.1. Who should choose True Wireless?

1. Are you a student, university student, or office worker who needs a compact, easy-to-store device?
2. You frequently move around, run, or exercise and need maximum flexibility.
3. The primary needs are listening to music, watching videos for entertainment, and hands-free calling.

4.2. Who should choose 2.4GHz wireless headphones?

1. Are you a gamer, streamer, or someone who works full-time on a PC ?
2. Strict requirements for low audio latency are essential for responsive gameplay in competitive games.
3. A microphone system with good noise filtering capabilities and a stable connection is required.

5. GearVN - A reputable and high-quality place to buy PCs, laptops, and gaming gear.

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GearVN contact information :

1. **Website :** gearvn.com
2. **Hotline :** 1900.5301



Buy reliable, high-quality wireless headphones at GearVN.

6. Some related questions

6.1. Can wireless headphones connect to a PC?

Yes. You can connect the headphones to your computer via the included USB Dongle. For devices without a Dongle, simply enable Bluetooth on your motherboard or refer to the instructions for connecting Bluetooth headphones to a computer on Windows.

6.2. Should you use Bluetooth or 2.4GHz headphones when playing FPS games?

You should prioritize the 2.4GHz connection standard via a USB dongle. Bluetooth signals, especially older standards, often have a certain delay, directly affecting your ability to hear footsteps and your reaction speed in shooting games.

See more:

1. What are earbuds and in-ear headphones? What are the differences?
2. What are Hi-Fi headphones? Decoding the high-fidelity audio standard.
3. What are 7.1 headphones? Understanding surround sound headphones for gamers.

Understanding the concept and differentiating between 2.4GHz and True Wireless helps users make informed purchasing decisions. Each connection standard has its own strengths, serving specific needs. Contact GearVN via hotline or visit gearvn.com for advice on the most suitable audio equipment.

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