

HUAWEI FreeBuds SE 2 Product Overview

Document Preparation/Modification Record

Version	Prepared/Modified On	Content of/Reason for Modification	Prepared/Modified By		
V0.1	2023-03-15	Initial release.	Liu Xing (WX5317940), Zhang Xiang (00643103), He Cong (30006976), Lin Guocong (WX999600), and Liu Zongli (00508442)		
V0.2	2023-05-29	Updated based on the latest data.	Liu Xing (WX5317940)		
V1.0	2023-06-08	Updated based on the debate between red and blue teams.	All members of red and blue teams.		
V1.1	2023-07-14	USB-C charging cable (length: 23 cm±2 cm) x 1	Liu Xing (WX5317940)		
V1.2	2023-08-7	Island →Isle	Liu Xing (WX5317940)		

Version **0.4**

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1 Product Overview

1.1 Product Introduction

HUAWEI FreeBuds SE 2 is a pair of true wireless stereo (TWS) Bluetooth earbuds that come with a charging case. It features an open-fit design that enhances wearing comfort. HUAWEI FreeBuds SE 2 supports connections to Bluetooth devices, such as phones and tablets for voice calls and audio playback. It comes equipped with a 10 mm dynamic driver unit, and a microphone that allows for noise cancellation during calls. Thanks to its standout power efficiency and 41 mAh battery, the earbuds feature a long battery life with multiple charges in the charging case.

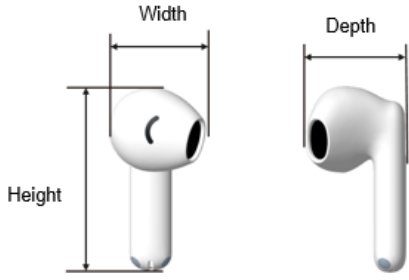


2 Technical Specifications

2.1 Hardware Specifications

Earbuds

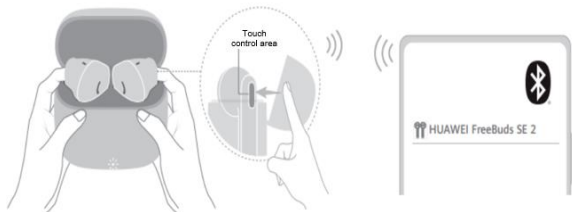
Item	Description
Model	T0016
Hardware platform	WQ7031M
Bluetooth version	Bluetooth 5.3, backward compatible
Supported Bluetooth protocols	RFCOMM 1.2, SPP 1.2, HFP 1.7, A2DP 1.3, AVDTP 1.3, AVCTP 1.4, and AVRCP 1.6
Charging port	Charged via the charging case
Charging duration	The earbuds support up to 2C charging rate, and can be fully charged in around 60 minutes. <i>Data comes from Huawei lab tests.</i>
Battery	Capacity: 41 mAh (minimum value) Type: lithium-ion polymer battery Weight: 0.97 g

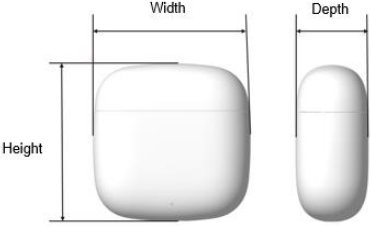
Item	Description
Audio playback/Voice call duration	<p>Audio playback duration: approx. 9 hours Voice call duration: approx. 5 hours</p> <p><i>Data comes from Huawei lab tests. A prototype of FreeBuds SE 2 and its corresponding software were tested with a HUAWEI P50 Pro running Harmony OS 3.0 and its corresponding software.</i></p> <p>Note: The battery life data of audio playback comes from Huawei lab tests. During the tests, AAC format audio was played at 50% volume level. The default settings were used for other features. Actual results may vary depending on the volume, audio source, environmental interference, product features, auxiliary devices, system, and usage habits.</p> <p>Note: The battery life data of calling comes from Huawei lab tests. During the tests, a phone call was made at 50% volume level. The default settings were used for other features. Actual results may vary depending on the volume, environmental interference, product features, auxiliary devices, system, and usage habits.</p>
Effective frequency range for audio playback	20 Hz to 20,000 Hz
A2DP codec	SBC and AAC
Call quality	<p>The earbuds come equipped with a microphone, and third-party deep neural network (DNN) algorithm, to generate crystal clear calling at wind speeds of up to 2 m/s. Thanks to windproof structural design and AI noise cancellation, when you are making calls, the ambient noise is suppressed while your voice is enhanced, so that the call remains clear to both parties, even in noisy environments.</p>
Speaker	One dynamic driver unit (diameter: 10 mm)
Microphone	One microphone, supporting uplink noise cancellation during calls
Color	Ceramic White/ Isle Blue
Weight	Single earbud: 3.8±0.2 g
Dimensions	<p>33.66 mm x 17.83 mm x 18.13 mm (H x W x D)</p>  <p>The diagram illustrates the dimensions of the earbud. It shows two views: a side view and a front view. The side view is labeled with 'Height' (the vertical distance from the bottom of the stem to the top of the earbud), 'Width' (the horizontal distance across the widest part of the earbud), and 'Depth' (the distance from the front face to the back of the earbud). The front view is labeled with 'Depth' (the distance from the front face to the back of the earbud).</p>

Item	Description
Temperature	Operating temperature: 0°C to +35°C Charging temperature: 0°C to +50°C Storage temperature: -20°C to +45°C
Certifications	The product has obtained SRRC, Bluetooth, and SGS level-1 certifications.
Environmental protection compliance	The product complies with the RoHS and halogen-free environmental protection requirements.
Bluetooth name	HUAWEI FreeBuds SE 2

Charging case

Item	Description
Model	T0016L (wired charging edition)
Charging port	USB-C port

<p>Pairing and factory settings restoration</p>	<p>Pair the earbuds and restore them to their factory settings:</p> <ol style="list-style-type: none"> 1. The earbuds are powered on when you open the charging case for the first time. 2. Pairing Open the charging case and leave the earbuds inside. Touch and hold the control area on both earbuds for 3 seconds or longer. When the indicator on the charging case flashes white, your earbuds are ready to be paired. 3. Restoring the earbuds to their factory settings Open the charging case and leave the earbuds inside. Touch and hold the control area on both earbuds for 10 seconds or longer. When the indicator on the charging case flashes red, your earbuds are restored to their factory settings and enter the pairing mode again.  <p>Note: If you are making a call, playing music, watching a video, or using other services on a device, the earbuds will not be able to pair with the device. Pause the service or disconnect Bluetooth first.</p>
<p>Indicator</p>	<p>The indicator on the outside of the case provides information about the earbuds and charging case by turning red, orange, green, or white, depending on their status.</p> <ol style="list-style-type: none"> 1. Earbud battery level 2. Pairing status 3. Factory reset status 4. Charging status of the charging case 5. Battery level of the charging case
<p>Input</p>	<p>5 V/1 A</p>
<p>Charging duration</p>	<p>Wired charging: It takes about 110 minutes to fully charge the charging case, without the earbuds inside.</p> <p>*Data comes from Huawei lab tests, conducted at a controlled temperature of 25°C.</p>
<p>Number of full charging cycles</p>	<p>When the charging case is fully charged, it can fully charge both earbuds for more than three times, or fully charge a single earbud for more than six times.</p>

Battery	Capacity: 510 mAh (minimum value) Type: lithium-ion polymer battery Weight: approx. 8.2 g
Color	Ceramic White/ Isle Blue
Weight	Charging case: 33±1 g (without the earbuds)
Dimensions	50.40 mm x 50.31 mm x 23.40 mm (H x W x D) 
Temperature	Operating temperature: 0°C to +35°C Charging temperature: 0°C to +50°C Storage temperature: -20°C to +45°C
Certifications	The product has obtained national safety certificates.
Environmental protection compliance	The product complies with the RoHS and halogen-free environmental protection requirements.

2.2 Basic Features

Features	<p>1. True wireless stereo (TWS) earbuds</p> <p>Once connected to a Bluetooth device, like a mobile phone, the earbuds play stereo sound through both earbuds at the same time, when you make a voice call or play audio.</p> <p>2. Single-mic noise cancellation during calls</p> <p>The earbuds come equipped with a single microphone, a windproof structural design, and AI noise cancellation, to generate crystal clear calling at wind speeds of up to 2 m/s. When you are making calls, the ambient noise is suppressed while your voice is enhanced, so that the call remains clear to both parties, even in noisy environments.</p> <p>3. Dynamic driver</p> <p>10 mm neodymium magnet dynamic driver with flexible diaphragm provides high sound quality.</p> <p>4. Multi-EQ adjustments</p>
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Thanks to meticulous fine-tuning by Huawei's audio team, the earbuds support multi-EQ adjustment, offering Bass boost, Treble boost, and Voice modes that meet your every need.

5. Touch controls for easy interactions

(1) Touch shortcut definition (default settings)

Double-tap:

- Play or pause media
- Answer an incoming call
- End a call

Optional settings:

Double-tap: play/pause, wake up voice assistant, play the previous or next track, or none (when shortcuts are disabled). The left and right earbuds can be set separately.

(2) Touch and hold

Incoming calls (the left and right earbuds cannot be set separately)

- Default:None
- Optional settings: None/Reject a call (touch and hold the control area for 2 seconds to reject a call)

6. Ultra-long battery life

The cutting-edge Bluetooth chipset extends the earbuds' battery life and boosts power efficiency.

	Usage	Service	Hours
When paired with HUAWEI P50 Pro running Harmony OS 3.0	Earbuds alone	Voice call	5
		Music playback	9
	Used with the charging case	Voice call	24
		Music playback	40

*Battery life data comes from Huawei lab tests. Actual battery life may vary depending on the volume, audio source, environmental interference, product features, and usage habits.

7. Fast charging

The earbuds support fast charging, and a 10-minute charge allows for 3 hours of music playback.

	<p>Note: The charging data comes from Huawei lab tests, in which audio in AAC format was played at a 50% volume level and default settings were used for other features. Actual results may vary depending on the volume, audio source, presence of environmental interference, product features, and usage habits.</p> <p>8. Proximity pairing prompt</p> <p>When the case is open, the phone automatically detects the earbuds and starts Bluetooth pairing. The pairing prompt shows the battery level of the earbuds and the charging case.*</p> <p>*Available on HUAWEI phones running EMUI 10.0/Harmony OS 2.0 or later.</p> <p>9. Always in sync</p> <p>With cutting-edge Bluetooth 5.3 technology, HUAWEI FreeBuds SE 2 significantly minimizes lag, bringing the sound in sync with the action onscreen, so you can enjoy your favorite TV shows and games.</p>
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2.3 Packaging List

No.	Item	Quantity
1	Earbuds	1 pair (left and right)
2	Charging case	1
3	Quick Start Guide & Safety information	1
4	Warranty certificate	1
5	USB-C charging cable (length: 23 cm±2 cm) x 1	NA