AMBEO VR Mic

3D microphone

PDF export of the original HTML manual

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1. Preface

PDF Export of the Original HTML Manual

This PDF document is an automatic export of an interactive set of HTML manuals. Some content and interactive elements may not be included in the PDF because they cannot be displayed in this format. In addition, automatically generated page breaks may cause related content to be slightly shifted. We can therefore only guarantee the completeness of the information in the HTML manual and recommend using it. You can find it in the Documentation Portal at www.sennheiser.com/documentation.

2. Product information

All information about the product and the scope of delivery.

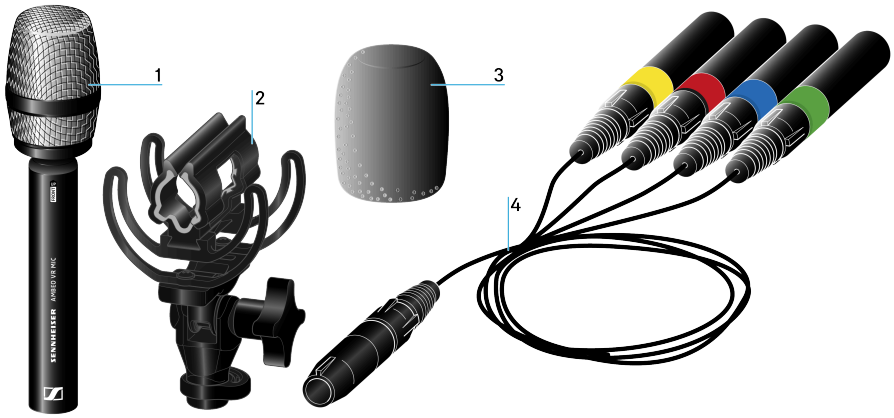
The AMBEO VR MIC uses Ambisonics. Ambisonics is a technology for sound field description and playback at a single point in space. The recorded signals can be reproduced from all directions in space. This enables full audio immersion – with sound arriving from all directions (360°) in three dimensions (3D).

The AMBEO VR MIC is fitted with four Microphone capsules in a tetrahedral arrangement. The microphone's four capsules produce signals in Ambisonics' A-format that are then converted to Ambisonics' B-format using the AMBEO A-B format converter software. The software is available as a plug-in for Mac and PC.

Playback through loudspeakers or headphones requires the use of software that supports Ambisonics' B-format rendering/decoding.

Editing and working with audio recorded using the AMBEO VR MIC requires tools that support Ambisonics' B-Format (most VR audio workflows).

Delivery includes



1 AMBEO VR Mic

2 Shock mount

3 Windshield

4 DIN12 to 4× XLR-3M adapter cable

Software

The AMBEO A-B format converter software can be downloaded at sennheiser.com/download.

For more information on the software, refer to AMBEO A-B format converter.

3. Instruction manual

Information on installation and startup the microphone.

Product overview

Microphone

1 Microphone basket

siehe Microphone capsules

2 Sound inlet direction, marked with the Sennheiser logo and the labeling "FRONT UP"

siehe Positioning the microphone

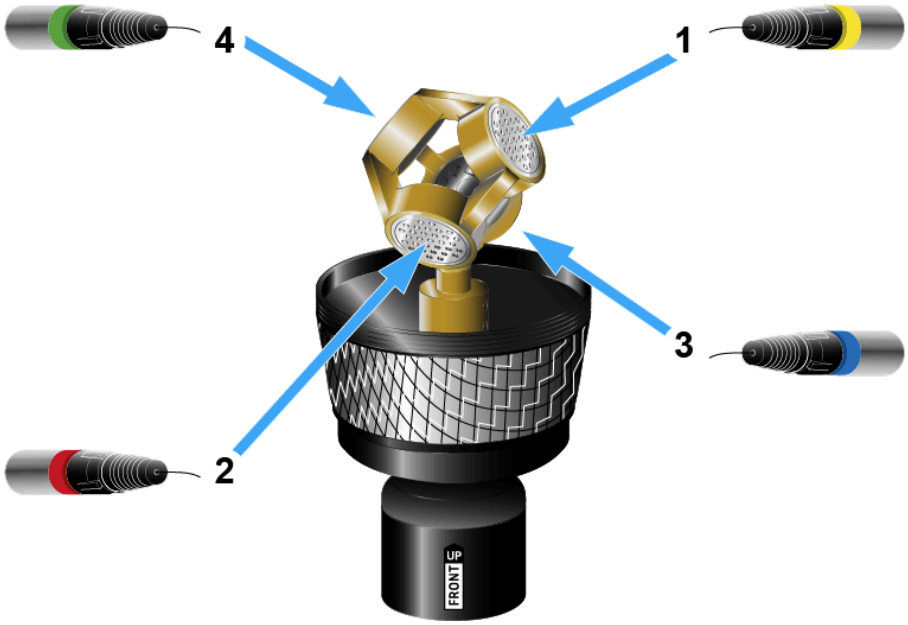
3 Shock mount

siehe Mounting the microphone

4 DIN12M connection socket for the adapter cable

siehe Connecting the microphone

Microphone capsules



Channel 1

Front Left Up (FLU)

Yellow XLR-3 connector

Channel 2

Front Right Down (FRD)

Red XLR-3 connector

Channel 3

Back Left Down (BLD)

Blue XLR-3 connector

Channel 4

Back Right Up (BRU)

Green XLR-3 connector

Installing the microphone

Observe the following when mounting the microphone:

- If possible, set up the microphone so that the microphone basket is directed upward. This setup provides the best results as it minimizes reflections from both the microphone itself and from the floor.
- Mount the microphone directly above or below the camera, ideally at a distance of 50 cm.
- Make sure that the sound inlet direction of the microphone is congruent with the direction of video recording. This makes it easier to keep the sound and video in sync during production. The sound inlet direction is marked with the Sennheiser logo and the labeling "FRONT UP".
- Only mount the microphone in a dry environment. Humidity and moisture can damage the microphone capsules.
- Do not unscrew the microphone basket while using the microphone.

Mounting the microphone

You should use the supplied shock mount to reduce reflexions and interfering signals due to vibrations to a minimum.

You can screw the shock mount onto a stand.

To mount the microphone:

- Screw the shock mount onto a stand.

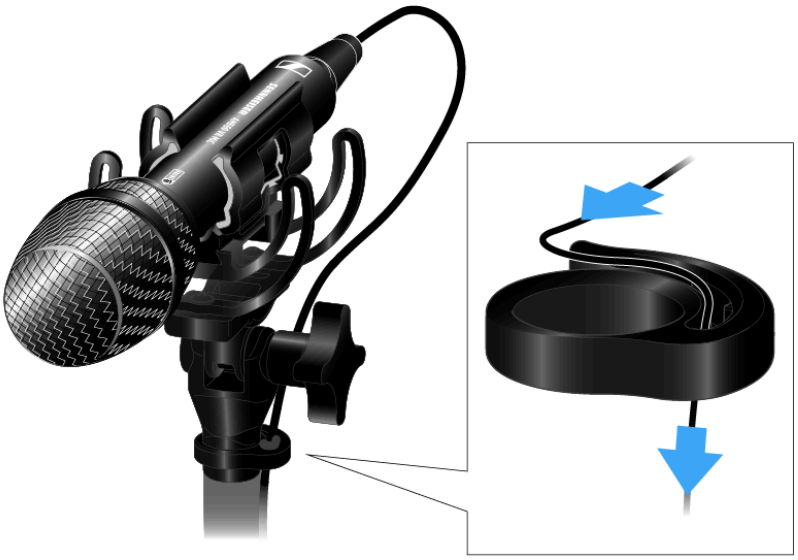
- Insert the microphone into the shock mount so that the Sennheiser logo and the labeling "FRONT UP" are visible.

Connecting the microphone

To connect the microphone:

- Connect the adapter cable to the microphone's connection socket.

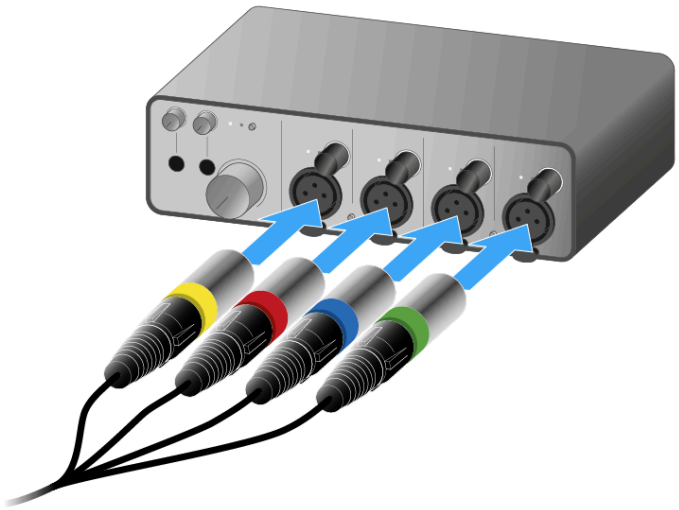
- Pass the adapter cable through the cable grip.



- Connect the XLR connector of the adapter cable to a suitable audio interface.

The audio interface must deliver 48 V phantom power.

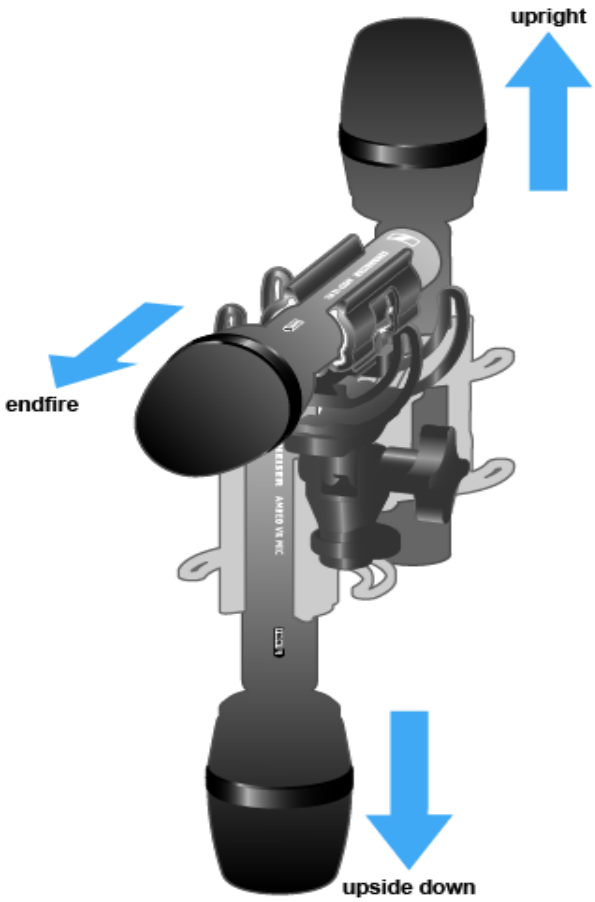
- Channel 1: yellow XLR connector
- Channel 2: red XLR connector
- Channel 3: blue XLR connector
- Channel 4: green XLR connector



Positioning the microphone

To orient the microphone:

- Orient the microphone by adjusting the shock mount accordingly.
  - The microphone basket can be directed upward (upright), downward (upside down), or forward (endfire). We recommend using the microphone with the microphone basket in upright position.



- Set up the microphone mounted onto the stand according to the sound inlet direction.

Making recordings using the AMBEO VR MIC

For the Ambisonics principle of the AMBEO VR MIC to work properly, it is important that the signals of the four microphone capsules are recorded separately on four tracks using identical microphone preamplifiers, respectively.

For more information on the software, refer to AMBEO A-B format converter.

We recommend proceeding as follows:

- Set the same gain for each of the four channels of the microphone preamplifier.
  - ✓ Even slight deviations can already influence the spatial image.
- For calibrating the microphone preamplifier, use a test tone generator with 48 V phantom power or a similar signal source with a constant signal.
  Suitable test tone generators:
  - Superlux Pink Stick
  - Canford Phantone Tone Generator
- Fine-adjust the preamplifier gains to identical recording levels based on the input from the test tone generator generator.

If there is no possibility to fine-adjust and monitor the preamplifier gains before the recording:

- For each channel, record the signal generated by the test tone generator.
- During post-production using your DAW or software, adjust the test tone on the four channels to exactly the same level.
- Please note: any changes to gain made during the course of recording require an equal change across all four channels.
  We recommend using a field recorder with digitally controlled gain settings that can be linked between channels.

The signals can now be converted to the Ambisonics' B-format using the AMBEO A-B format converter.

AMBEO A-B format converter

The AMBEO A-B format converter is a plug-in for your studio software.

The plug-in converts signals recorded in Ambisonics' A-format to Ambisonics' B-format signals.

The plug-in can be used intuitively. It allows you to use filters, define the position and orientation of the microphone and to adjust the output format.

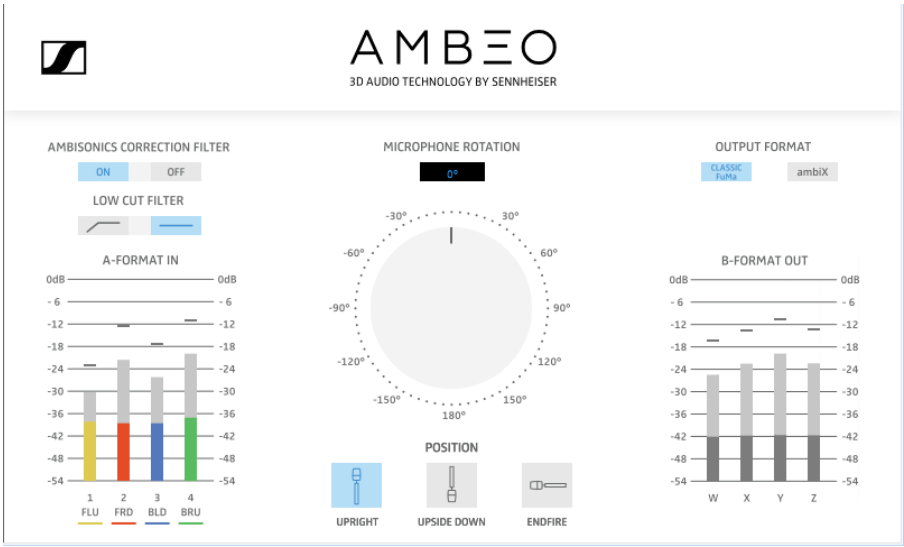
Installing the software

The AMBEO A-B format converter software can be downloaded at sennheiser.com/download.

Compatibility:

- Mac OS X (from version 10.10)
- Windows (from version 8.1)

User interface



Ambisonics Correction Filter

Use this filter to optimize the recording for the 360° sound image.

This filter is activated as default.

Low Cut Filter

Use this filter to cut low frequencies with possible interfering signals.

This filter is deactivated as default.

Microphone Rotation

Use the rotary switch to correct the horizontal orientation of the microphone, if you e.g. have to later align the direction of sound pickup with the video recording.

The default setting of the rotary switch is 0°.

Position

Select the position according to the actual orientation of the microphone on the stand. The microphone basket can be directed upward (upright), downward (upside down), or forward (endfire).

The default setting is **upright**.

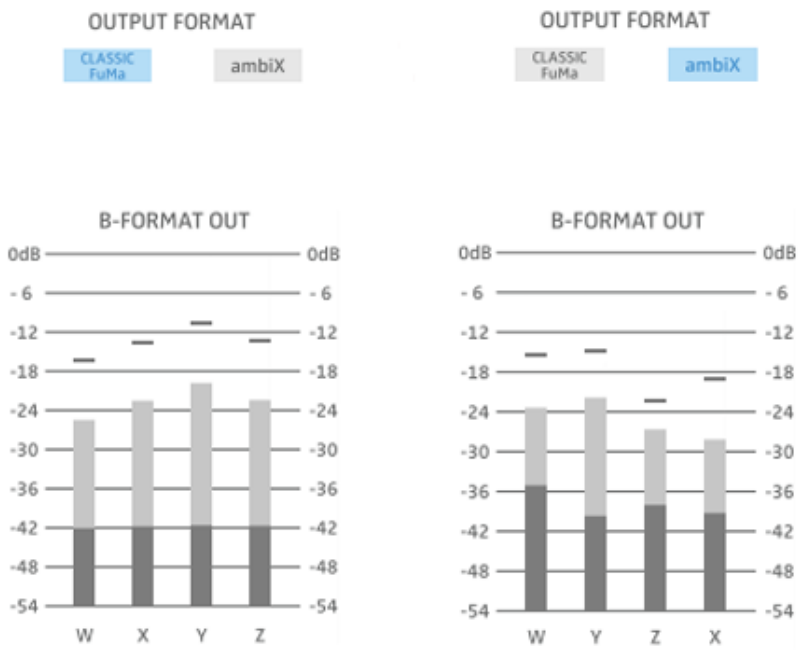
Output Format

Determine the order and the numeric output format of the four channels by choosing between CLASSIC FuMa and ambiX.

The default setting is CLASSIC FuMa.

When CLASSIC FuMa is selected, the channels are ordered as W-X-Y-Z.

When ambiX is selected, the channels are ordered as W-Y-Z-X.



Cleaning and maintenance

Note the following information when cleaning and maintaining products of the AMBEO VR Mic.

- Clean the surface of the microphone with a soft, dry cloth.
  When the microphone basket is unscrewed, you can clean the basket with a slightly damp cloth.

NOTICE

Damage due to moisture

Humidity or moisture can damage the microphone capsules.

- Only clean the microphone with a soft, dry cloth.

Cleaning the microphone basket

- Unscrew the microphone basket by turning it counterclockwise.
- Use a slightly damp cloth to clean the microphone basket from the inside and outside.
- Dry the microphone basket.
- Replace the microphone basket and screw it tight.

4. Specifications

All specifications at a glance.

AMBEO VR Mic

Transducer principle

- pre-polarized condenser microphone

Pick-up pattern

- 4x cardioid, in Ambisonics' A-format arrangement
    - 1: Front Left Up (FLU)
    - 2: Front Right Down (FRD)
    - 3: Back Left Down (BLD)
    - 4: Back Right Up (BRU)

Frequency response

- 20 Hz to 20 KHz

Matrix reference

- Center of capsule holder

Output in B-format

- W = FLU + FRD + BLD + BRU
- X = FLU + FRD – BLD – BRU
- Y = FLU – FRD + BLD – BRU
- Z = FLU – FRD – BLD + BRU

Sensitivity

- 31 mV/Pa (–30 dBV) at 1 kHz

Min. load impedance

- 1000 Ω

Nominal impedance

- approx. 200 Ω

Equivalent noise level

- A-weighted: 18 dB(A)
- CCIR-weighted: 27 dB

Max. sound pressure level at THD = 1 %

- 130 dB(A) at 1 kHz

Power supply

- 4x phantom power (P48) as per IEC 61938 (48 V ± 4 V), 3.5 mA respectively

Microphone connection

- DIN12M
- with supplied adapter cable to 4x XLR-3M, pin assignment: 1 = (GND), 2 = (+), 3 = (–)

Dimensions

- Length: 215 mm
- Diameter: 49 mm/25 mm

Temperature

- Operation: -10 °C to 55 °C (14 °F to 131 °F)
- Storage: -20 °C to 70 °C (-4 °F to 158 °F)

Relative air humidity

- max. 90% at 40 °C (104 °F)

Pin assignment of adapter cable

DIN12F Pin -> XLR-3M pin

A + screen + housing -> channel 1 (yellow) - Pin 1 + XLR housing

B -> channel 2 (red) - Pin 2

C -> channel 2 (red) - Pin 1 + XLR housing

D -> channel 3 (blue) - Pin 2

E -> channel 3 (blue) - Pin 3

F -> channel 3 (blue) - Pin 1 + XLR housing

G -> channel 4 (green) - Pin 2

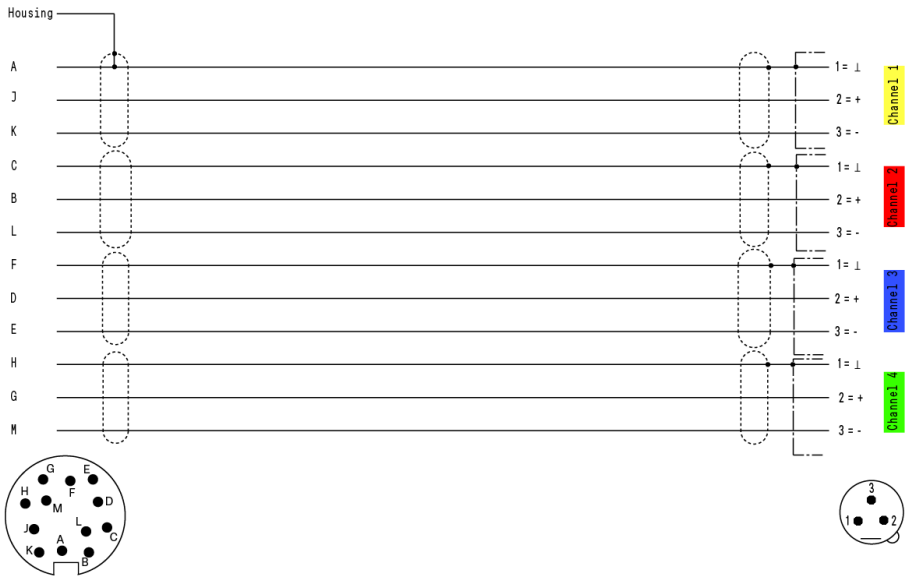
H -> channel 4 (green) - Pin 1 + XLR housing

J -> channel 1 (yellow) - Pin 2

K -> channel 1 (yellow) - Pin 3

L -> channel 2 (red) - Pin 3

M -> channel 4 (green) - Pin 3


Housing
A
J
K
C
B
L
F
D
E
H
G
M
1 = ⊥
2 = +
3 = -
Channel 1
Channel 2
Channel 3
Channel 4
G E H F D M J L A C K B
3 1 2

5. Regulatory information

Information on manufacturer declarations, environmental and disposal notices, and terms of use.

Model: AMBEO VR MIC

Warranty

Sennheiser electronic SE & Co. KG gives a warranty of 24 months on these products.

For the current warranty conditions, please visit our website at sennheiser.com or contact your Sennheiser partner.

In the US please contact:

Sennheiser Electronic Corporation

1 Enterprise Drive, Old Lyme, CT 06371

www.sennheiser.com

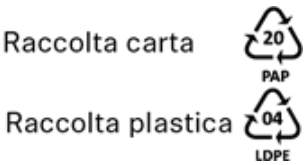
Europe

CE

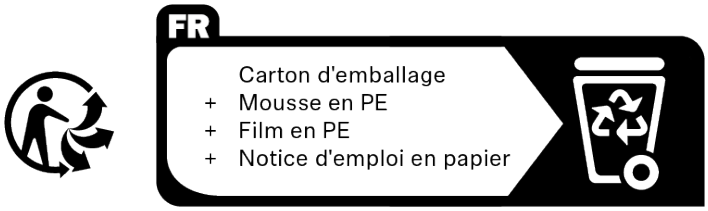
In compliance with the following requirements

- Regulation (EU) 2023/988 on general product safety
- WEEE Directive (2012/19/EU)

Italy:



France:



Notes on disposal

The symbol of the crossed-out dumpster on the product, the (rechargeable) battery (if applicable) and/or the packaging indicates that these products must not be disposed of with normal household waste, but must be disposed of separately at the end of their service life. For the packaging, follow the regulations in your country for separating waste. Improper disposal of packaging materials can be harmful to your health and the environment.

The separate collection of waste electrical and electronic equipment, (rechargeable) batteries (if applicable) and packaging is intended to promote reuse and recycling and to prevent negative impacts on public health and the environment, for example due to hazardous substances contained in these products. At the end of their service life, recycle electrical and electronic equipment and (rechargeable) batteries so that their materials can be reused and to prevent environmental pollution.

If (rechargeable) batteries can be removed without destroying them, you are obliged to dispose of them separately (see the product's operating instructions for information on how to remove the batteries safely). Be especially careful when handling (rechargeable) batteries containing lithium, as these pose special hazards, such as the risk of fire and/or health risks if button cells are swallowed. Reduce battery waste as much as possible by using longer-life batteries or rechargeable batteries.

Further information on the recycling of these products can be obtained from your municipal administration, from the municipal collection points, or from your Sennheiser partner. You may also be able to return electrical or electronic equipment to your distributor, if they are legally required to do so. By disposing of your batteries properly, you are helping to protect public health and the environment.

EU Declaration of conformity

- RoHS Directive (2011/65/EU)
- EMC Directive (2014/30/EU)

The full text of the EU declaration of conformity is available at the following internet address: sennheiser.com/download.

USA

Statements regarding FCC and ISED

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital device complies with the Canadian ICES-003.

Changes or modifications not expressly approved by Sennheiser electronic Corp. could void the user's authority to operate the equipment.

Contact information: Sennheiser Electronic Corporation, 1 Enterprise Drive, Old Lyme, CT 06371; sennheiser.com

Vietnam

Kể từ ngày 1 tháng 12 năm 2012, các sản phẩm được sản xuất bởi Sennheiser tuân thủ Thông tư 30/2011/TT-BCT quy định về giới hạn cho phép đối với một số chất độc hại trong các sản phẩm điện và điện tử.

China

China RoHS

部件名称 (Parts)	有害物质										
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	邻苯二甲酸二(2-乙基己)酯 (DEHP)	邻苯二甲酸丁苄酯 (BBP)	邻苯二甲酸二丁酯 (DBP)	邻苯二甲酸二异丁酯 (DIBP)	产品环保年限 EFUP
金属部件 (Metal parts)	x	o	o	o	o	o	o	o	o	o	15
电路模块 (Circuit Modules)	x	o	o	o	o	o	o	o	o	o	15
电缆及电缆组件 (Cables & Cable Assemblies)	x	o	o	o	o	o	o	o	o	o	15

本表格依据 SJ/T 11364 的规定编制。

o：表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572 规定的限量要求以下。

x：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572 规定的限量要求。

Sennheiser electronic SE & Co. KG | Am Labor 1 | 30900 Wedemark | Germany