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Simultaneous interpreting delivery platforms — Requirements and recommendations

Plateformes de distribution d'interprétation simultanée — Exigences et recommandations

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 37, *Language and terminology*, Subcommittee SC 5, *Translation, interpreting and related technology*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/SS A07, *Translation and Interpretation services,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO/PAS 24019:2020, which has been technically revised.

The main changes are as follows:

— the document has been restructured to attribute requirements and recommendations to the different parties in the audio and video path;

— a simultaneous interpreting delivery platform can be used in conjunction with another system;

— a new clause has been added, entitled "Overall performance";

— the clause on continuity of transmission has been altered;

— a new clause has been added, entitled "Information on the quality of the speaker or signer's input";

— requirements for signed language interpreting have been added;

— communication between interpreters with sound and image has been added;

— requirements about the working environment of both speakers and signers have been added;

— the original annex on information security has been incorporated into the body of the document;

— an annex on audible and visual disturbance has been added;

— an annex including recommendations for microphones has been added;

— an annex including recommendations for test protocols has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Using simultaneous interpreting delivery platforms is relatively new to conference organizers, participants and interpreters alike. Parameters and conditions for using these platforms in settings where the interpreters are not at the same venue as participants, speakers and signers or each other are evolving.

In January 2020, ISO/PAS 24019 was published to provide guidance to those developing simultaneous interpreting delivery platforms. At the same time, it was decided that an International Standard was needed to go into more depth regarding the requirements and recommendations for such platforms.

This document covers simultaneous interpreting delivery platforms for spoken and signed language interpreting.

Equipment and facilities for simultaneous interpreting are covered in ISO 2603, ISO 4043, ISO 20108 and ISO 20109. Conference systems, and their related interpreting systems, are covered in ISO 22259.

Simultaneous interpreting delivery platforms — Requirements and recommendations

1 Scope

This document specifies requirements and recommendations for using simultaneous interpreting delivery platforms at communicative events where interpreters are not at the same venue as participants, speakers and signers.

In conjunction with ISO 20108, this document also provides requirements and recommendations for ensuring the quality of sound and images and their transmission from speakers and signers to interpreters, and from interpreters to participants, and for the configuration of the interpreter's working environment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639-3, *Codes for the representation of names of languages — Part 3: Alpha-3 code for comprehensive coverage of languages*

ISO 2603:2016, *Simultaneous interpreting — Permanent booths — Requirements*

ISO 4043:2016, *Simultaneous interpreting — Mobile booths — Requirements*

ISO 20109:2016, *Simultaneous interpreting — Equipment — Requirements*

ISO 22259, *Conference systems — Equipment — Requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to interpreting and language

3.1.1
interpreting
interpretation
rendering spoken or signed information from a source language to a target language in oral or signed form, conveying both the meaning and language register of the source language content

[SOURCE: ISO 20539:2019, 3.1.10, modified — The words "language register" and "meaning" have been inverted.]

3.1.2
interpret
render spoken or signed information from a source language to a target language in oral or signed form, conveying both the meaning and language register of the source language content

[SOURCE: ISO 20539:2019, 3.1.9, modified — The words “language register” and “meaning” have been inverted.]

3.1.3
interpreter
person who *interprets* (3.1.2)

[SOURCE: ISO 20539:2019, 3.1.12]

3.1.4
simultaneous interpreting
mode of *interpreting* (3.1.1) performed while a *speaker* (3.2.4) or *signer* (3.2.5) is still speaking or signing

[SOURCE: ISO 20539:2019, 3.4.12]

3.1.5
relay interpreting
interpreting (3.1.1) in which the source language content is another *interpreter's* (3.1.3) interpreting

3.1.6
spoken language
language expressed orally

[SOURCE: ISO 20539:2019, 3.4.4]

3.1.7
spoken language interpreting
interpreting (3.1.1) between two *spoken languages* (3.1.6)

[SOURCE: ISO 20539:2019, 3.4.5]

3.1.8
signed language
language which uses a combination of hand shapes, orientation and movement of the hands, arms or body, and facial expressions

[SOURCE: ISO 20539:2019, 3.2.3]

3.1.9
signed language interpreting
interpreting (3.1.1) between two *signed languages* (3.1.8) or between a signed language and a *spoken language* (3.1.6)

[SOURCE: ISO 20539:2019, 3.4.6]

3.1.10
signed language interpreter
interpreter (3.1.3) who performs *signed language interpreting* (3.1.9)

3.2 Terms related to communicative events and participants

3.2.1
communicative event
encounter between two or more parties during which information is transmitted

[SOURCE: ISO 20539:2019, 3.4.8]

3.2.2
participant
person who takes an active part in a *communicative event* (3.2.1)

[SOURCE: ISO 20539:2019, 3.4.25, modified — The word "communicative" has been added.]

3.2.3
audience
group of listeners or spectators at a *communicative event* (3.2.1)

[SOURCE: ISO 20539:2019, 3.4.27, modified — The word "communicative" has been added.]

3.2.4
speaker
person addressing others using *spoken language* (3.1.6)

[SOURCE: ISO 20539:2019, 3.4.9]

3.2.5
signer
person addressing others using *signed language* (3.1.8)

[SOURCE: ISO 20539:2019, 3.4.10]

3.2.6
moderator
person responsible for facilitating interaction between people at a *communicative event* (3.2.1)

3.2.7
end user
person or group of persons that ultimately uses the service delivered

[SOURCE: ISO 20539:2019, 3.2.6]

3.3 Terms related to interpreting equipment

3.3.1
simultaneous interpreting delivery platform
SIDP
virtual environment used in *simultaneous interpreting* (3.1.4) for managing the processing of signals during the transmission of information from *speakers* (3.2.4) or *signers* (3.2.5) to distant *interpreters* (3.1.3) and the interpreters' rendition to a distant *audience* (3.2.3)

Note 1 to entry: Other equipment necessary in simultaneous interpreting, such as *interpreter interfaces* (3.3.3), microphones, *headphones* (3.3.6) and cameras, attach to the simultaneous interpreting delivery platform.

3.3.2
booth
simultaneous interpreting booth
self-contained unit enclosing the *interpreter's* (3.1.3) workspace

Note 1 to entry: One of the purposes of booths is to provide sound insulation, both from the noise transmitted from the booth's external environment into the booth itself and vice versa, and from noise passing from one booth to another.

[SOURCE: ISO 20539:2019, 3.5.2.1]

3.3.3
interpreter interface
equipment containing controls used by the *interpreter* (3.1.3) to facilitate *simultaneous interpreting* (3.1.4)

EXAMPLE Controls for listening, viewing, speaking and signing.

3.3.4
hard console
interpreter console
interpreter interface (3.3.3) containing physical controls for listening and speaking

[SOURCE: ISO 20539:2019, 3.5.2.21, modified — "hard console" has been added as the preferred term. In the definition, the words "individual workstation" and "that enable simultaneous interpreting" have been deleted, and "interpreter interface" and "physical" have been added.]

3.3.5
soft console
interpreter interface (3.3.3) which runs on a computer or portable IT device and has on-screen controls

3.3.6
headphone
transducer that converts an electrical signal into sound, designed to be worn close to the ear

[SOURCE: ISO 20539:2019, 3.5.2.25]

3.3.7
headset
one or two *headphones* (3.3.6) combined with a microphone

[SOURCE: ISO 20539:2019, 3.5.2.28, modified — The words "one or two" have been added.]

3.3.8
floor
audio output of conference *system* (3.4.2) or *simultaneous interpreting delivery platform* (3.3.1) conveying auxiliary input and input from microphones, excluding input originating from *interpreters* (3.1.3) *interpreting* (3.1.1) from a *spoken language* (3.1.6)

[SOURCE: ISO 20539:2019, 3.5.2.34, modified — "or simultaneous interpreting delivery platform" has been added, "auxiliary input" has been placed first, "microphone input" has been changed to "input from microphones" and "excluding input originating from interpreters interpreting from a spoken language" has been added.]

3.3.9
outgoing channel
electric circuit serving as a path for an audio or video signal from an *interpreter's* (3.1.3) microphone or camera that, when activated by the interpreter, transmits the interpreter's *interpreting* (3.1.1)

Note 1 to entry: Each language in which interpreting is provided at a conference is allocated an outgoing channel.

3.3.10
incoming channel
electric circuit serving as a path for an audio or video signal to an *interpreter interface* (3.3.3)

3.3.11
channel partner
one of two or more *interpreters* (3.1.3) with the same primary *outgoing channel* (3.3.9) preselected on their *interpreter interface* (3.3.3)

3.4 Terms related to interpreting technology

3.4.1
latency
time delay between the sending of a signal from one device and its reception by another device

[SOURCE: ISO/TS 27790:2009, 3.40]

3.4.2
system
combination of interacting elements organized to achieve a given objective

[SOURCE: ISO 20539:2019, 3.5.2.6]

3.4.3
screen
display surface on which nonpermanent images can appear

[SOURCE: ISO/IEC 2382:2015, 2126028, modified — The word "display" in front of "images" has been deleted and the word "may" has been changed to "can". Notes to entry have been deleted.]

3.4.4
window
area with visible boundaries that presents a view of a software object or through which a user conducts a dialogue with a computer *system* (3.4.2)

[SOURCE: ISO/IEC/IEEE 26514:2022, 3.1.57]

3.4.5
overlay
substitution of part of an image by another image

3.4.6
chromakey
digital technique to replace a block of colour in a video image with another colour or an image

Note 1 to entry: The initial colour is often blue or green.

3.4.7
relay status
indication of the source of an *interpreter interface's* (3.3.3) *incoming channel* (3.3.10)

Note 1 to entry: This source can be the *floor* (3.3.8), direct *interpreting* (3.1.1), *relay interpreting* (3.1.5) or double relay interpreting.

[SOURCE: ISO 20539:2019, 3.5.2.33, modified — The word "console" has been replaced by "interface".]

4 Purpose and characteristics of a simultaneous interpreting delivery platform

At a communicative event, a simultaneous interpreting delivery platform, alone or in conjunction with another system, transmits spoken and visual information from a speaker or signer to an interpreter. A simultaneous interpreting delivery platform, alone or in conjunction with another system, also transmits spoken or signed information from an interpreter to an audience and from a speaker or signer to an audience.

NOTE Other systems compatible with a simultaneous interpreting delivery platform and complementary to it include conference systems and video conferencing systems.

A simultaneous interpreting delivery platform shall be suitable for use in both spoken language interpreting and signed language interpreting.

5 Overall performance

5.1 General

The overall performance of the sound and image transmission path is directly affected by the interaction between all components connected to the simultaneous interpreting delivery platform during operation.

5.2 Requirement to inform speakers, signers and interpreters

The providers of simultaneous interpreting delivery platforms shall ascertain that all speakers, signers and interpreters are informed of the requirements for a working environment and equipment which allows for processing of the audio and video signals conforming to this document. The SIDP provider shall also inform users of the internet connectivity required by the platform (see 8.2 and 9.2).

Technical support personnel shall inform parties if their signals are not conforming, make recommendations to achieve conformity with this document and actively promote best practices.

NOTE Audio and video signals are variable so that conformity can be lost during operation.

5.3 Responsibilities

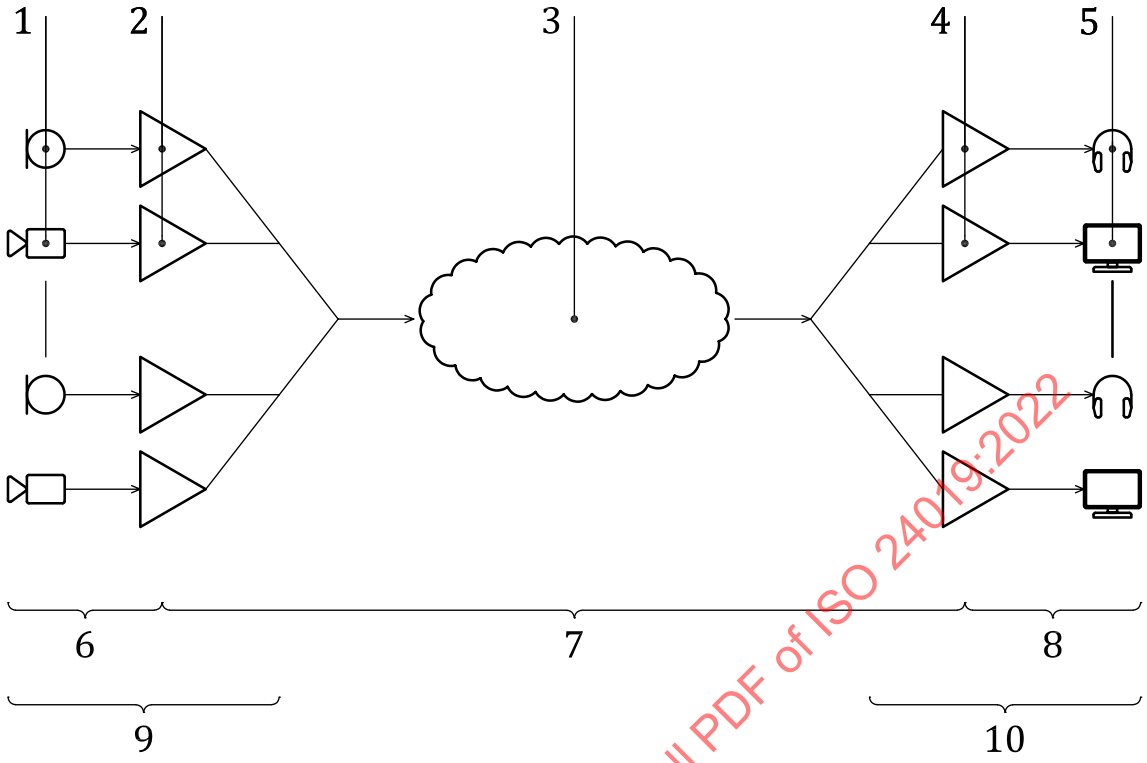
Apart from the responsibilities of the internet provider, which is not covered by this document, there are three major distinct groups that can affect overall performance:

a) simultaneous interpreting delivery platforms;

b) speakers and signers;

c) interpreters.

Each group shall ensure that their working environment and any equipment they use conforms to this document. See Clause 7 for requirements related to the simultaneous interpreting delivery platform, Clause 8 for requirements related to speakers and signers, and Clause 9 for requirements related to interpreters. See also Figure 1.



Key

1 speakers'/interpreters' microphones/cameras
2 audio/video processing
3 simultaneous interpreting delivery platform
4 audio/video processing
5 interpreters'/audience's headphones/screens
6 analogue signal (microphone and camera input)
7 digital signal
8 analogue signal (headphones and screen output)
9 speakers'/interpreters' equipment
10 interpreters'/audience's equipment

Figure 1 — Overall audio and video path

6 Technical support personnel

Prior to and during the communicative event, technical support personnel shall monitor the functioning of the simultaneous interpreting delivery platform, the internet, and the IT connections of speakers, signers and interpreters, as well as the positioning of their microphones and cameras and the signal generated by them. They shall monitor the functioning of the simultaneous interpreting delivery platform and assist in solving any related problems.

NOTE Technical support personnel can be made available by the SIDP provider, the interpreting service provider or the meeting organizer.

7 Requirements related to the simultaneous interpreting delivery platform

7.1 Requirements relating to sound and image

7.1.1 Input and output of the simultaneous interpreting delivery platform

When a calibrated microphone is used, the nominal input of the simultaneous interpreting delivery platform, measured at its first digital point, and the output of the simultaneous interpreting delivery platform, measured at its last digital point, shall be −30 dBFS.

7.1.2 Audio characteristics

7.1.2.1 General

Sound processing and transmission by the simultaneous interpreting delivery platform shall reproduce the signals generated at the source by the speaker in conformity with the audio characteristics defined hereafter.

NOTE Digital sound processing methods such as automatic level adjustment, filtering, noise suppression, echo cancellation and dynamic range compression can distort audio signals and lead to nonconformity with the audio characteristics set out in this document.

7.1.2.2 Frequency response

A simultaneous interpreting delivery platform shall reproduce audio frequencies between 125 Hz and 15 000 Hz, with a variation of maximum ±3 dB. Methods to test whether the simultaneous interpreting delivery platform conforms to the requirements of this document are given in Annex C. Additionally, the platform shall apply a high-pass filter attenuating the frequencies below 125 Hz with a slope of at least 12 dB per octave in order to improve speech intelligibility. The frequency requirements are specified in Table 1.

NOTE A sample rate of 34,100 Hz and a sample size of 16 bits are the minimum necessary to achieve the required frequency response.

Table 1 — Frequency requirements

Parameter	Min.	Typical	Max.	Unit
Low frequency limit			125	Hz
High frequency limit	15 000			Hz
Amplitude variation in the useful frequency response (applies to the simultaneous interpreting delivery platform and connected microphones and headphones)			+3 and −3	dB
High-pass filter corner frequency		125		Hz
High-pass filter slope	12			dB_{Oct}

7.1.2.3 Linearity

The frequency response of the platform shall be linear.

7.1.2.4 Noise and hum

The simultaneous interpreting delivery platform shall not introduce any perceptible noise or hum to the audio signal.

7.1.3 Level consistency

The variation of the output level of the simultaneous interpreting delivery platform shall be no more than ±3 dB for each distributed interpreted language channel and distributed floor channel at an input level of −30 dBFS ± 12 dB.

7.1.4 Image quality

The quality of the image transmitted shall be such that it prevents visible distortions such as blurring or freezing.

NOTE A resolution of 1 280 × 720 (720p) at a rate of 30 frames per second (fps) is commonly used.

7.2 Synchronization of sound and image

Sound and image shall be synchronized so as to provide lip synchronization. This means that sound shall neither lag image by more than 45 ms nor shall it lead it by more than 125 ms. ITU-R BT.1359 addresses sound and image synchronization.

7.3 Information on the quality of the speaker or signer's input

The moderator, speakers and interpreters shall be informed if the speaker's signal quality does not conform to the requirements set out in 7.1.2.

7.4 Hearing protection

The simultaneous interpreting delivery platform provider shall inform users of the potential risks of acoustic shock and hearing damage when using a simultaneous interpreting delivery platform. The simultaneous interpreting delivery platform provider shall give specific instructions to help reduce risk and inform users of requirements within their scope of responsibility. See also 8.6.4 and 9.7.4.

NOTE Risks can be reduced but not eliminated by keeping the volume of headphones as low as possible, by using headphones or headsets with software or hardware limiters, by using microphones in conformity with this document and by turning microphones off when not in use.

7.5 Transmission

7.5.1 Processing capacity

Data upload and download capacity shall allow transmission of sound and image in accordance with 7.1 and 7.2. Sufficient bandwidth and server power shall be allocated to ensure conformity with the above requirements.

7.5.2 Latency

The propagation delay of the image and sound from the audio-visual source to the interpreters and from the audio-visual source directly to the audience shall not exceed 500 ms.

The propagation delay of the sound from the interpreters to the audience shall not exceed 500 ms.

7.5.3 Continuity of transmission

Under adverse bandwidth conditions and in the case of spoken language interpreting only, the simultaneous interpreting delivery platform shall prioritize the sound quality (see 7.1.2).

NOTE Typical current values of constrained variable bitrate prioritizing audio are at least 64 kbps, and more commonly 96 kbps and higher for a mono channel.

7.6 Interpreter interface

7.6.1 General

The interpreter interface used for managing all incoming and outgoing audio and video signals can be either a hard console, in accordance with ISO 20109, or a soft console.

There shall be one interpreter interface for each interpreter, containing individual controls, including the relevant indicators.

7.6.2 Accessibility for the visually impaired

Non-sighted interpreters as well as interpreters with low vision, anomalous colour vision or age-related degeneration of vision shall have a fully usable interpreter interface at their disposal.

NOTE For further requirements regarding the accessibility and usability of the interpreter interface, see ISO 20109:2016, Annex A.

7.7 Soft console

7.7.1 General

The technical support personnel of the simultaneous interpreting delivery platform should be able to access the soft console when necessary during the assignment.

When signed language interpreting is required, the controls specifically needed by signed language interpreters shall be activated. See also the requirements of 7.9.

7.7.2 Indicators

There shall be indicators on the soft console for the following functions:

— microphone “ON”;

— camera “ON”;

— selected incoming channel;

— outgoing channel;

— relay status.

These indicators shall always be visible. Corresponding controls shall be highlighted.

The microphone “ON” and camera “ON” indicators shall be the most visible. They shall be the only red indicators; all other indicators shall use colours other than red.

The simultaneous interpreting delivery platform should also show:

— the audience and broadcast indicator, and

— an indicator for the connection status of each interpreter with the same preselected primary output channel.

Colour combinations should be considered carefully. When using colour to provide information, methods other than colour shall also be used to convey the same information.

Audible indicators shall be as short and as unobtrusive as possible. It shall be possible to switch them off. For guidance on the length and frequency of audible indicators, see ISO 20109:2016, Clause A.3.

7.7.3 Controls

The interpreting window of the soft console, which shall always be visible, shall contain controls for the following functions:

— microphone ON/OFF;

— camera ON/OFF;

— mute;

— volume;

— tone;

— incoming channel selection;

— outgoing channel selection;

— handover.

Any window displaying visual content shall not hide the interpreting window.

The simultaneous interpreting delivery platform should also contain controls for intercommunication according to 7.8.2.

The location of the controls shall correspond with the content they manage. They shall be arranged in such a way as to aid interpreters in recognizing and using them.

When activated, the controls shall react without delay.

The number of controls required to use the soft console should be minimal to avoid excessive complexity and confusing users.

The controls present on the interpreting window may be replaced by or complemented with an external device connected to the computer or portable IT device on which the soft console runs.

7.7.4 Image of signed language interpreter

Signed language interpreters shall be able to see their own image when interpreting, as well as the image of their channel partner.

7.7.5 Listening section

7.7.5.1 Incoming channel preselection

It shall be possible to preselect the floor channel and two or more incoming language channels.

The preselected incoming channels shall be clearly indicated, with channel numbers and language codes in accordance with ISO 639-3.

Channel partners shall be able to preselect different incoming channels.

The preselected incoming and outgoing channels shall be independent of each other; changing one shall not automatically change any other.

7.7.5.2 Incoming channel selection

It shall be possible to select any incoming channel without delay. The selected incoming channel shall be clearly indicated. Switching to a different incoming channel shall not turn off the interpreter's microphone.

Channel partners shall be able to select different incoming channels. The selected incoming channels and outgoing channels shall be independent of each other; changing one shall not automatically change any other.

7.7.6 Volume control

The volume shall be adjustable. The volume control shall allow for fast and easy operation. The volume control shall give visual feedback of its level, range and middle position.

7.7.7 Tone controls

Bass control shall be provided to attenuate or boost lower frequencies. Treble control shall also be provided to attenuate or boost higher frequencies. Bass and treble controls shall allow for fast and easy operation. Bass and treble controls shall give visual feedback of their respective ranges and their middle position.

7.7.8 Microphone section

7.7.8.1 Microphone ON/OFF control

The microphone ON/OFF control shall be the most prominent control on the soft console.

7.7.8.2 Mute control

A control shall be provided to temporarily mute the outgoing channel instantaneously without switching back to the floor channel. Activating this control shall turn off the microphone ON indicator for the time the control is activated.

7.7.9 Microphone management

An interpreter switching a microphone ON shall activate the selected outgoing channel and this should automatically switch OFF any other microphone connected to the same outgoing channel, wherever it is located.

NOTE 1 In the case of a lively debate or panel discussion, where each interpreter interprets a different speaker, it can be appropriate that all the microphones on the same outgoing channel remain switched ON.

Any interpreter whose microphone is switched OFF during the handover process shall receive a message or a visual indication of the microphone status.

When an outgoing channel is not activated by any interpreter switching on a microphone, the floor should be heard instead.

NOTE 2 In broadcast situations, it is often important to disable floor pass to allow for mixing with other audio sources.

7.7.10 Outgoing channel section

7.7.10.1 Outgoing channel preselection

It shall be possible to preselect one primary outgoing channel and one or more secondary outgoing channels. Primary and secondary outgoing channels shall be preselected in accordance with the language or languages into which the interpreter using the soft console is required to interpret. It shall be possible to preselect the language of the primary outgoing channel from a central location. It shall be possible for the interpreter using the soft console to preselect the secondary outgoing channels.

The preselected outgoing channels shall be clearly indicated on the soft console, showing channel numbers and language codes in accordance with ISO 639-3.

Interpreters with the same preselected primary outgoing channel shall be able to preselect different secondary outgoing channels.

The preselected incoming channels and outgoing channels shall be independent of each other; changing one shall not automatically change any other.

7.7.10.2 Outgoing channel selection

It shall be possible to select any outgoing channel using only one control. The selected outgoing channel shall be clearly indicated on the soft console.

When an interpreter has activated an outgoing channel, an indicator on the soft console shall show the status of that outgoing channel as “engaged”.

Interpreters with the same preselected primary outgoing channel shall be able to select different secondary outgoing channels.

The incoming channels and outgoing channels shall be independent of each other; changing one shall not automatically change any other.

7.7.11 Handover procedure and control

There shall be a procedure and a control to allow an interpreter to hand over command of their outgoing channel to a channel partner who is not located by their side.

One control shall activate the handover procedure. This shall send their channel partner(s) a prompt to accept control of the channel. The channel partner(s) receiving the prompt shall be able to send an answer to the originator of the prompt. This answer shall be an acceptance, a refusal or another predefined answer. The handover procedure shall not require typing of messages. Following an acceptance of the prompt, command of the outgoing channel shall automatically switch to the channel partner.

7.7.12 Audience, recording and broadcast indicator

There should be an indicator on the soft console informing the interpreter that at least one listener has selected the activated outgoing channel, or that the channel is being recorded or broadcasted.

7.7.13 Incoming images

The image of any speaker or signer communicating at the communicative event, as well as any slides or other content projected live to the participants or the audience, shall be made available to the interpreter as individual and selectable video feeds during the event.

Slides and other materials should be displayed in a separate window. Interpreters shall be able to adjust the size and placement of the individual windows.

The quality of the image transmitted to interpreters shall be such that it prevents visible distortions such as blurring or freezing.

7.8 Communication

7.8.1 General

Ease of communication between all relevant parties is important, especially in situations where interpreters are not in the same room as some or all speakers, signers, members of the audience or other members of the interpreting team.

7.8.2 Intercommunication

Communication between the following parties shall be possible on the interpreter interface:

— the interpreter and the technical support personnel;

— the interpreter and the moderator, speaker or signer;

— interpreters who have preselected the same primary outgoing channel;

— all interpreters at the same communicative event;

— the interpreter and the meeting secretariat or organizer.

This communication should necessitate minimal additional intellectual effort on the part of the interpreters, so as not to hinder their work. The messages should not hide any vital information on the interpreter interface.

When not interpreting, the interpreter shall be able to simultaneously listen to the floor and to their channel partner's interpreting, and balance the volume between the incoming channels.

Channel partners should be able to see each other on a private video channel, so that they can communicate and support each other.

7.9 Additional requirements relating to signed language interpreting

In the case of signed language interpreting, the simultaneous interpreting delivery platform shall activate the controls on the soft console to preselect the interpreter's camera position.

When taking over, the channel partner shall be able to select and adjust the camera height previously chosen by their colleague.

Simultaneous interpreting delivery platforms shall provide a solution (e.g. chromakey) to broadcast in overlay mode the image of the signed language interpreter without its background.

The end user shall be able to adjust the size and placement of the image of the signed language interpreter on their individual screen.

7.10 Recording, webcasting and storing

The simultaneous interpreting delivery platform should enable the recording, webcasting and storing of transmitted content.

Subsequent use of interpreting, including but not limited to recording, software development or enhancement, shall be subject to the interpreter's prior consent.

NOTE Relevant copyright legislation can apply.

7.11 Confidentiality and data protection

7.11.1 General

Signals transmitted and processed through the simultaneous interpreting delivery platform shall be inaccessible to unauthorized persons.

NOTE Data protection and confidentiality regulations can apply.

7.11.2 Data protection

With regard to the personal data processed by the platform, or related to the communicative event, the simultaneous interpreting delivery platform provider shall take measures to ensure data protection

within the telecommunication infrastructure, including denying access to such personal data to any unauthorized person as well as limiting the retention of such data.

7.11.3 Information: confidentiality, integrity and availability

The provider of the simultaneous interpreting delivery platform shall supply evidence of its conformity with the requirements regarding keeping information which is processed and transmitted by the platform confidential, uncorrupted and readily available, according to the classification level set out by the client for a specific communicative event. For the different classification levels, see ISO/IEC 27001.

NOTE Information can include that which is:

— printed or written on paper;

— electronically stored;

— transmitted by post or electronic means;

— visual, including videos and diagrams;

— published on the web;

— in spoken form;

— intangible, e.g. knowledge, experience, expertise, ideas.

Developers of simultaneous interpreting delivery platforms should follow ISO/IEC 27002, which provides best practice recommendations on information security controls for those responsible for initiating, implementing or maintaining information security management systems.

For further information, see the ISO/IEC Information Security Management System (ISMS) standards.

7.11.4 Operational procedures and responsibilities

The simultaneous interpreting delivery platform provider shall put in place procedures to protect against risks to its service and its data processing systems.

The operational procedures shall also specify the security measures to be followed by the simultaneous interpreting delivery platform user.

The operational procedures and responsibilities shall be put in text form and regularly reviewed and updated.

The user of the simultaneous interpreting delivery platform shall be informed in text form of the necessary security measures.

For further information, see ISO/IEC 27001 and ISO/IEC 27017.

8 Requirements relating to the speaker and signer

8.1 Working environment

The working environment of the speaker or signer shall be protected from disturbances that are likely to produce an audible or visible distortion.

See Annex A for examples of sources of audible and visible disturbance.

NOTE Speech and image transmission can be influenced by parameters such as network bandwidth, the performance of peripherals (IT devices, microphones and cameras), the speaker or signer's environment (echo, acoustics, background noises and lighting) and latency.

8.2 Connectivity

Data upload and download capacity shall at all times allow transmission of sound and image in accordance with 7.1 and 7.2.

NOTE Monitoring connectivity includes measuring ping and jitter.

8.3 Requirements relating to sound

8.3.1 Processing of sound

Analogue to digital conversion of audio signals sent to the simultaneous interpreting delivery platform shall maintain the characteristics of the original sound produced at the source according to 8.3.2.

NOTE Digital sound processing methods such as automatic level adjustment, filtering, noise suppression, echo cancellation and dynamic range compression can distort audio signals and lead to nonconformity with the audio characteristics set out in this document.

8.3.2 Audio characteristics

Any device or software between the microphone and/or headphone and the connection to the platform shall allow for an audio signal frequency response between at least 125 Hz and 15 000 Hz, and shall be free from any perceptible audio distortion, noise or hum.

NOTE Such a device or software can be a soundcard, an audio interface, a microphone amplifier, an encoder, a digital to analogue converter, a mixer, a limiter, audio processing hardware or software.

8.4 Microphone for use by a speaker

All values referred to in 8.4 are referenced to a sinusoidal frequency of 1 kHz (unless specified otherwise) measured under free field conditions. See Table 2.

Table 2 — Sound pressure level

Sound pressure level	Nominal	Maximum	Unit
at microphone housing/capsule, for microphones with an intended speaking distance > 15 cm	75	at least 105	dB_{SPL}
at microphone housing/capsule, for microphones with an intended speaking distance ≤ 15 cm	85	at least 115	dB_{SPL}

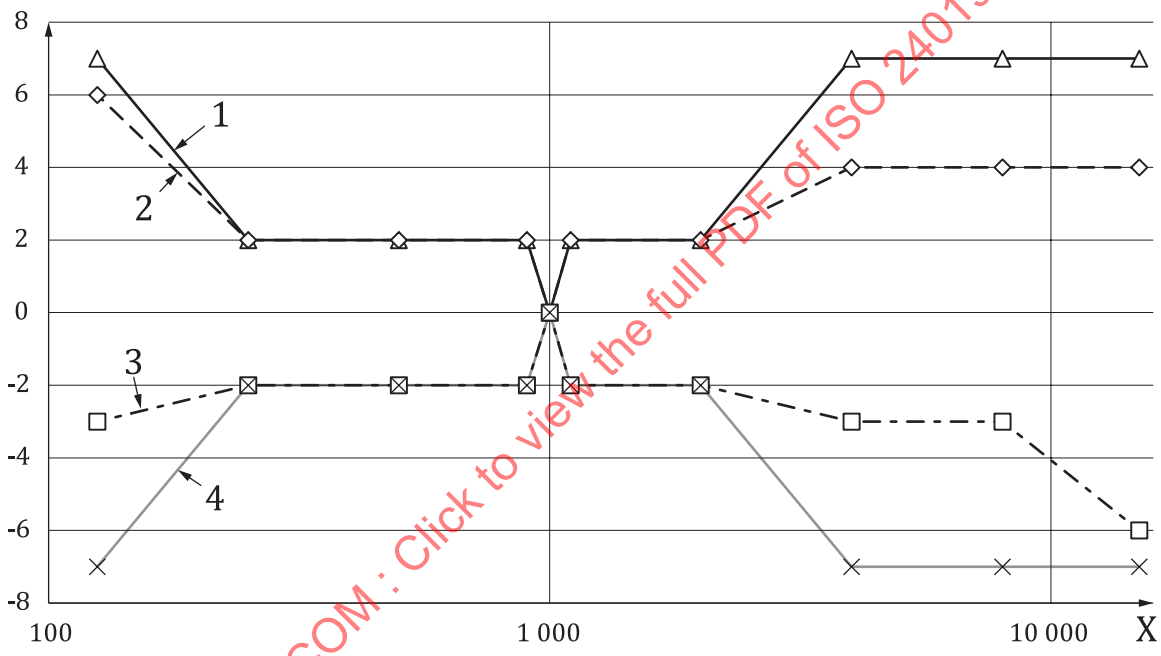
There should be one microphone for each speaker.

The microphone shall have at least a frequency response between 125 Hz and 15 000 Hz with the required and recommended maximum variations, as per Table 3 and Figure 2.

For the recommended values, a maximum variation of ±7 dB shall apply.

Table 3 — Required and recommended maximum variations of microphone frequency response

Frequency	High (dB)	Low (dB)	Instruction
125	6	−3	recommended
250	2	−2	**required**
500	2	−2	**required**
1 000	0	0	**required**
2 000	2	−2	**required**
4 000	4	−3	recommended
8 000	4	−3	recommended
15 000	4	−6	recommended



Key

1 high limit (dB) X Hz
2 high (dB)
3 low (dB)
4 low limit (dB)

Figure 2 — Variations of microphone frequency response

When measuring, smoothing shall be no wider than 1/3 of an octave.

NOTE 1 High quality microphones best reproducing human speech have a frequency response starting at 20 Hz at the lower end and up to 20 000 Hz at the upper end.

For methods to test whether microphones conform to this document, see IEC 60268-4.

The microphone shall have the polar pattern that renders the speaker most intelligible for simultaneous interpreting, and that avoids ambient noises being picked up. The microphone shall always be positioned

in such a way that the risk of contact noises being picked up by the microphone is minimized. See also Annex B.

NOTE 2 Contact noise can be caused by an object, such as a document, a pen or a hand, touching the capsule of a microphone, or by an object, such as a computer mouse or a glass of water, being put down or moved on the work surface on which a microphone is placed.

A microphone with an intended speaking distance of more than 15 cm shall exhibit a total harmonic distortion (THD) level below 1 % at any sound pressure levels up to 105 dB_{SPL} at 1 kHz at the microphone housing/capsule.

A microphone with an intended speaking distance of 15 cm or less shall exhibit a THD level below 1 % at any sound pressure levels up to 115 dB_{SPL} at 1 kHz at the microphone housing/capsule.

A microphone with an intended speaking distance of 15 cm or less used by the speaker for capturing the source signal and the analogue to digital converter shall exhibit a signal-to-noise ratio (SNR) of at least 65 dB at a sound pressure level of 94 dB_{spl} at 1 kHz at the microphone housing/capsule.

A microphone with an intended speaking distance of more than 15 cm used by the speaker for capturing the source signal and the analogue to digital converter shall exhibit a SNR of at least 70 dB at a sound pressure level of 94 dB SPL at 1 kHz at the microphone housing/capsule.

The microphone shall not pick up audible interference from any nearby electromagnetic sources.

Audio signals reproduced by the headphones shall not be picked up by the microphone, to avoid interference with the speaker's output.

Microphones as part of a conference system shall conform to ISO 22259.

8.5 Processing of sound to the headphones

Digital to analogue conversion of incoming audio signals sent to the headphones shall maintain the characteristics of the original sound produced at the source according to 8.3.2.

8.6 Headphones or headset

8.6.1 Headphones or headset connector

Each IT device which is used by the speaker or signer to connect to the simultaneous interpreting delivery platform should have one connector used exclusively to connect a headset, or two connectors used exclusively to connect headphones and a separate microphone.

8.6.2 Headphones

The headphones should have at least a frequency response of 125 Hz to 15 000 Hz, with a variation of maximum +10 dB and –10 dB. For methods to test whether headphones conform to this document, see IEC 60268-7.

The headphones should not pick up audible interference from any nearby electromagnetic sources.

When choosing the material and shape of headphones, the health of the wearer shall be taken into consideration. As appropriate, for the purposes of hygiene, where foam padding is provided, it shall be replaceable, and the headphones shall be wearable without it. The hard surface in contact with the ears shall be easily cleanable and shall not cause perspiration.

Headphones should have the following characteristics:

— mass of ≤ 100 g, excluding the cable and connector;

— ear contact pressure of ≤ 2,5 N;

— headband which is adjustable in length and sufficiently flexible to adapt to individual ear contact pressure requirements.

8.6.3 Headset

The headphones of a headset should have the characteristics specified in 8.6.2, except for the maximum mass, which shall be ≤ 200 g, excluding the cable and connector. The microphone of a headset shall have the characteristics specified in 8.4.

The microphone arm shall be flexible. It should be possible to mount the microphone arm on either side of the headset or to reverse the headphones.

There shall be no feedback between the headset headphones and microphone.

The microphone shall not pick up audible interference from any nearby electromagnetic sources.

The microphone shall not pick up any audio signals reproduced by the headphones, to avoid interference with the speaker's output.

8.6.4 Hearing protection

To avoid damaging their hearing, participants should make use of equipment providing protection against acoustic shock and harmful sound levels being transmitted to their ears.

An audible hearing-damage warning shall be activated when the average sound pressure level is higher than 80 dBA_{SPL} for more than 1 min.

Loud sounds shall be limited to a maximum output level of 94 dBA_{SPL}, for any duration longer than 100 ms.

8.7 Requirements relating to image

8.7.1 Requirements relating to the image of the speaker

A camera shall be positioned at the eye level of the speaker.

Visual distortion shall be avoided.

Indirect lighting shall cast no shadows on the hands or face of the speaker or on the background. The brightness of the lighting shall be adjustable.

In communicative events providing spoken language interpreting, the speaker should be encouraged not to switch off their camera, unless poor bandwidth affects video and audio, and good audio can be restored by turning video off.

8.7.2 Requirements relating to the image of the signer

In addition to the requirements laid out in 8.7.1, the camera shall capture the image of the signer, transmitting their detailed facial expression, hand movements and lip movements.

The image of the signer shall be framed from one hand span above their head to just below their hips so that the hands of the signer are never out of frame.

The background behind the signer shall have a uniform colour and shall not be blurred.

9 Requirements relating to the interpreter

9.1 Working environment

9.1.1 Interpreting booths

Interpreters should work in booths according to ISO 2603 (permanent booths) or ISO 4043 (mobile booths). The room in which these booths are installed shall conform to ISO 2603:2016, 4.1 and 4.2, or to ISO 4043:2016, Clause A.3.

The booths shall be equipped with hard consoles in accordance with ISO 20109:2016, Clause B.1, or with interpreter interfaces according to 7.6.

9.1.2 Individual environment controlled by the interpreter

If the interpreter is working in an individual environment controlled by themselves, the working environment shall be protected from disturbances that are likely to produce audible or visible distortion.

See Annex A for examples of sources of audible disturbance.

NOTE Speech and image transmission can be influenced by parameters such as network bandwidth, the performance of peripherals (IT devices, microphones and cameras), the interpreter's environment (echo, acoustics, background noises and lighting) and latency.

This working environment should have, at minimum, the same sound insulation characteristics as indicated in ISO 4043:2016, 9.1 and Table 2. It should also have at least the same sound absorption characteristics as indicated in ISO 4043:2016, 9.2.

9.2 Connectivity

Data upload and download capacity shall at all times allow transmission of sound and image in accordance with 7.1 and 7.2.

NOTE Monitoring connectivity includes measuring ping and jitter.

9.3 Devices to support the interpreting process

An IT device used to support the interpreting process, such as a device on which runs terminology management software, should be independent of the IT device on which runs the soft console.

9.4 Requirements relating to sound

9.4.1 Processing of sound

Analogue to digital conversion of audio signals sent to the simultaneous interpreting delivery platform shall maintain the characteristics of the original sound produced at the source according to 9.4.2.

NOTE Digital sound processing methods such as automatic level adjustment, filtering, noise suppression, echo cancellation and dynamic range compression can distort audio signals and lead to nonconformity with the audio characteristics set out in this document.

9.4.2 Audio characteristics

Any device or software between the microphone and/or headphone and the connection to the platform shall allow for an audio signal frequency response between 125 Hz and 15 000 Hz and shall be free from any perceptible audio distortion, noise or hum.

NOTE Such a device or software can be a soundcard, an audio interface, a microphone amplifier, an encoder, a digital to analogue converter, a mixer, a limiter, audio processing hardware or software.

9.5 Microphone for use by an interpreter

All values referred to in this clause are referenced to a sinusoidal frequency of 1 kHz (unless specified otherwise) measured under free field conditions. See Table 4.

Table 4 — Sound pressure level

Sound pressure level	Nominal	Maximum	Unit
at microphone housing/capsule, for microphones with an intended speaking distance > 10 cm	75	at least 105	dB_{SPL}
at microphone housing/capsule, for microphones with an intended speaking distance ≤ 10 cm	85	at least 115	dB_{SP}

There shall be one microphone for each interpreter.

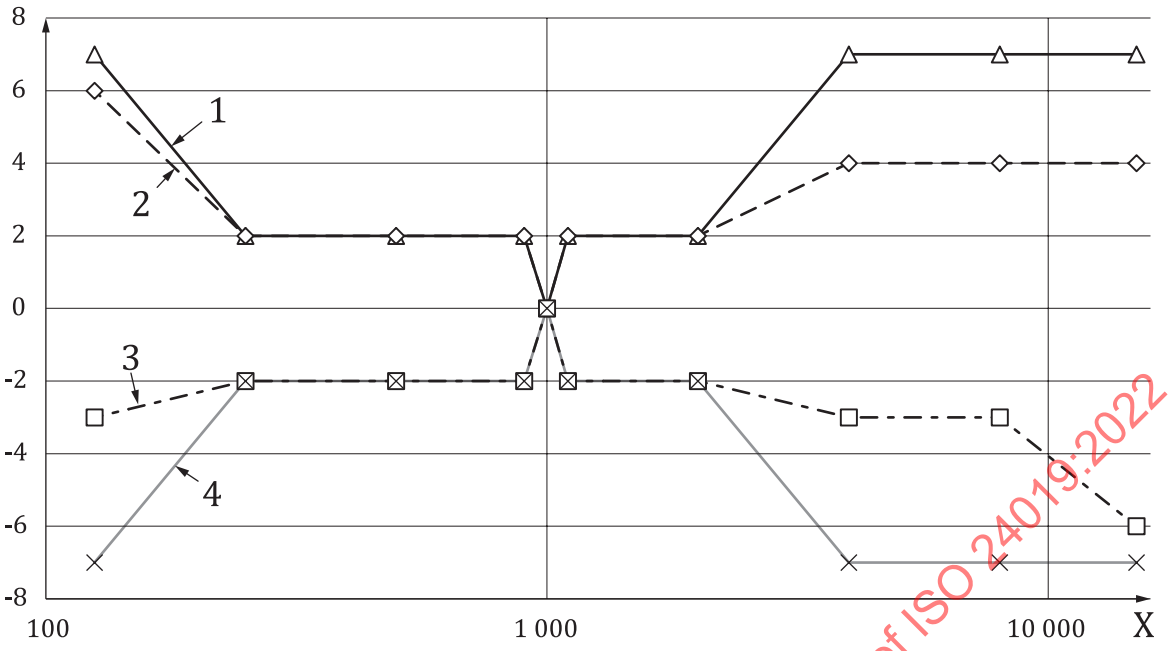
The microphone shall be connected to the interpreter interface.

The microphone shall have at least a frequency response between 125 Hz and 15 000 Hz with the required and recommended maximum variations, as per Table 5 and Figure 3.

For the recommended values, a maximum variation of ±7 dB shall apply.

Table 5 — Required and recommended maximum variations of microphone frequency response

Frequency	High (dB)	Low (dB)	Instruction
125	6	−3	recommended
250	2	−2	**required**
500	2	−2	**required**
1 000	0	0	**required**
2 000	2	−2	**required**
4 000	4	−3	recommended
8 000	4	−3	recommended
15 000	4	−6	recommended



Key

1 high limit (dB)
2 high (dB)
3 low (dB)
4 low limit (dB)
X Hz

Figure 3 — Variations of microphone frequency response

When measuring, smoothing shall be no wider than 1/3 of an octave.

NOTE 1 High quality microphones best reproducing human speech have a frequency response starting at 20 Hz at the lower end and up to 20 000 Hz at the upper end.

For methods to test whether microphones conform to this document, see IEC 60268-4.

The microphone shall have the polar pattern that renders the speaker most intelligible for simultaneous interpreting, and that avoids ambient noises being picked up. The microphone shall always be positioned in such a way that the risk of contact noises being picked up by the microphone is minimized. See also Annex B.

NOTE 2 Contact noise can be caused by an object, such as a document, a pen or a hand, touching the capsule of a microphone, or by an object, such as a computer mouse or a glass of water, being put down or moved on the work surface on which a microphone is placed.

A microphone with an intended speaking distance of more than 10 cm shall exhibit a THD level below 1 % at any sound pressure levels up to 105 dB_{SPL} at 1 kHz at the microphone housing/capsule.

A microphone with an intended speaking distance of 10 cm or less shall exhibit a THD level below 1 % at any sound pressure levels up to 115 dB_{SPL} at 1 kHz at the microphone housing/capsule.

A microphone with an intended speaking distance of 10 cm or less used by the speaker for capturing the source signal and the analogue to digital converter shall exhibit a SNR of at least 65 dB at a sound pressure level of 94 dB_{spl} at 1 kHz at the microphone housing/capsule.

A microphone with an intended speaking distance of more than 10 cm used by the speaker for capturing the source signal and the analogue to digital converter shall exhibit a SNR of at least 70 dB at a sound pressure level of 94 dB SPL at 1 kHz at the microphone housing/capsule.

The microphone shall not pick up audible interference from any nearby electromagnetic sources.

Audio signals reproduced by the headphones shall not be picked up by the microphone, to avoid interference with the speaker's output.

Microphones as part of a conference system shall conform to ISO 22259.

9.6 Processing of sound to the headphones

Digital to analogue conversion of incoming audio signals sent to the headphones shall maintain the characteristics of the original sound produced at the source according to 8.3.2.

9.7 Headphones or headset

9.7.1 Headphones or headset connector

Each IT device on which the soft console runs should have one connector used exclusively to connect a headset, or two connectors used exclusively to connect headphones and a separate microphone.

9.7.2 Headphones

Headphones for use by an interpreter should be wired and binaural.

The headphones shall have at least a frequency response between 125 Hz and15 000 Hz, with a variation of maximum +10 dB and –10 dB. For methods to test whether headphones conform to this document, see IEC 60268-7.

The headphones shall not pick up audible interference from any nearby electromagnetic sources.

When choosing the material and shape of headphones, the health of the wearer shall be taken into consideration. As appropriate, for the purposes of hygiene, where foam padding is provided, it shall be replaceable, and the headphones shall be wearable without it. The hard surface in contact with the ears shall be easily cleanable and shall not cause perspiration.

Headphones shall have the following characteristics:

— mass of ≤ 100 g, excluding the cable and connector;

— ear contact pressure of ≤ 2,5 N;

— headband which is adjustable in length and sufficiently flexible to adapt to individual ear contact pressure requirements.

9.7.3 Headset

The headphones of a headset shall have the characteristics specified in 9.7.2, except for the maximum mass, which shall be ≤ 200 g, excluding the cable and connector.

The microphone shall have the characteristics specified in 9.5.

The microphone arm shall be flexible. It should be possible to mount the microphone arm on either side of the headset or to reverse the headphones.

There shall be no feedback between the headset headphones and microphone.

The microphone shall not pick up audible interference from any nearby electromagnetic sources.

The microphone shall not pick up any audio signals reproduced by the headphones, to avoid interference with the interpreter's output.

9.7.4 Hearing protection

To avoid damaging the hearing of interpreters, they shall make use of equipment providing protection against harmful sound levels and acoustic shock being transmitted to their ears. The headphones and headsets shall provide protection against acoustic shock unless it is provided by the hard console.

An audible hearing-damage warning shall be activated when the average sound pressure level is higher than 80 dBA_{SPL} for more than 1 min.

Loud sounds shall be limited to a maximum output level of 94 dBA_{SPL} for any duration longer than 100 ms.

9.8 Image content

The content of the image transmitted to interpreters shall consist of no less than the active speaker or signer and the slides and other content projected live. For visual disturbance affecting the image of the speaker or signer, see Clause A.2.

In addition, a wider angle of the room should be displayed to increase the interpreters' situational awareness during the communicative event. This is particularly important when there are several speakers on a podium, or if there is a big room with a large audience.

If the interpreters are working in a booth, the images should be provided on separate screens placed inside or in front of the booths. The recommendations concerning image content in ISO 20108:2017, Annex B, should also be considered.

9.9 Data protection

If the interpreter works from a location where third parties are not contractually responsible for keeping information confidential or protecting data, the interpreter shall take all necessary measures to maintain confidentiality and to deny access to confidential data to any unauthorized person, according to the classification level set out by the client for the communicative event in question.

9.10 Additional requirements relating to the signed language interpreter

9.10.1 Camera used by a signed language interpreter

When the signed language interpreter interprets from a dedicated space, a camera shall be positioned at the eye level of the signed language interpreter. Its stand shall be adjustable in height.

The camera shall capture the image of the signed language interpreter, transmitting their detailed facial expression, hand movements and lip movements.

The image shall be framed from one hand span above the signed language interpreter's head to just below their hips so that the hands of the signed language interpreter are never out of frame.

9.10.2 Background

The background behind the signed language interpreter shall have a uniform colour, so that the image of the signed language interpreter can be broadcast in overlay mode without any visual distraction.

Visual distortion shall be avoided.

9.10.3 Lighting

Indirect lighting shall cast no shadows on the hands or face of the signed language interpreter or on the background. The brightness of the lighting shall be adjustable.