

Certificate of Conformity

Certification of a hearing loop system according to IEC 60118-4

Customer

Venue: _____

Room: _____

Contact person: _____

Date: _____

Signature: _____

Loop driver (make and type): _____

Driver serial No: _____

Loop coverage area: _____

Loop wire position: _____

Control

Measuring tool (make and type): _____

Measuring/listening height: _____

Company: _____

Name: _____

Date: _____

Certification

This hearing loop system is commissioned to perform as required by IEC 60118-4.

Name: _____

Signature: _____

Pass	Conditional pass	Fail

- To correctly measure background noise, field strength deviation and frequency range, multiple measurement positions are necessary. To do this, mark out six measurement positions (A-F) in the room on the floor plan and note the measured values at these positions in the protocol below. The measurement positions must represent the whole room – the middle, short and long sides.
- Value each measurement step (1-5) as passed, conditionally passed or failed by checking the corresponding check box. If conditionally passed, an explanation has to be presented in the Notes section (page 4).
- Value the result of the complete measurement process as passed, conditionally passed or failed by checking the corresponding check box (page 1). If conditionally passed, an explanation has to be presented in the Notes section (page 4).

Please read before starting the measuring procedure:

- When connecting the signal source, slowly increase the input sensitivity until AGC is activated according to the driver's manual.
- FSM 2.0 shows values as integers, which can result in an error margin of up to 1dB.
- Readings close to the loop wire (coverage boundary limits) are sensitive to vertical variation which can result in an additional error margin of approx. 1dB.
- For non-conformal readings, ± 3 dB is the allowed variation according to the standard.
- At low level listening (no program material), the clock frequency of the FSM 2.0 micro processor may be heard.
- Overspill measurements are possible even below the background noise level using FSM 2.0 (please refer to FSM 2.0 User Guide).

1. Background noise measurement (Noise)

Disconnect the loop driver's power cord and document the background noise levels. Readings below -47dBA are preferred, but readings down to -32dBA are acceptable. At background noise levels higher than -32dBA, a proposal for how to reduce it has to be presented in the Notes section. Readings down to -22dBA are accepted for short announcement systems.

	A	B	C	D	E	F		Pass	Conditional pass	Fail
With A-weighted filter										
Without A-weighted filter (flat)										

2. Field strength deviation (Coverage)

Connect the loop driver to mains power and activate the audio file *1kHz.wav*. Set field strength level to approximately -12dB using the drivers' output current control. Confirm that the field strength doesn't deviate by more than ± 3 dB within the listening area: at sitting (1.2m) or standing (1.7m) height. If both sitting and standing positions are used, measure at 1.45m. Document the measurement results below and graphically in the floor plan, if needed.

	A	B	C	D	E	F		Pass	Conditional pass	Fail
1.2m										
1.45m										
1.7m										

3. Basic frequency test

Keep the field strength at -12dB. Any "low cut (speech) filter" should be turned off*. Apply the audio file *3_freq.wav*. Document the field strength at the selected height at 100Hz and 5kHz. The reference value is 1kHz (automatically set to 0dB). Document the measurement values in the left box (approved deviation ± 3 dB). If the deviation is larger, the frequency can be adjusted with a MLC control (please refer to the User Guides of the loop driver and FSM 2.0). If the frequency range is adjusted with MLC, document the new measurement values in the right box.

* For increased speech intelligibility, some loop drivers are equipped with a "low cut" (speech) filter that attenuates low frequencies. The measurement values at 100Hz can therefore be lower than permitted. In these cases, measurement values down to -6dB can be accepted.

	A	B	C	D	E	F		Pass	Conditional pass	Fail
100Hz										
1kHz	0dB	0dB	0dB	0dB	0dB	0dB				
5kHz										

4. Comprehensive frequency (not required for certification) (Freq)

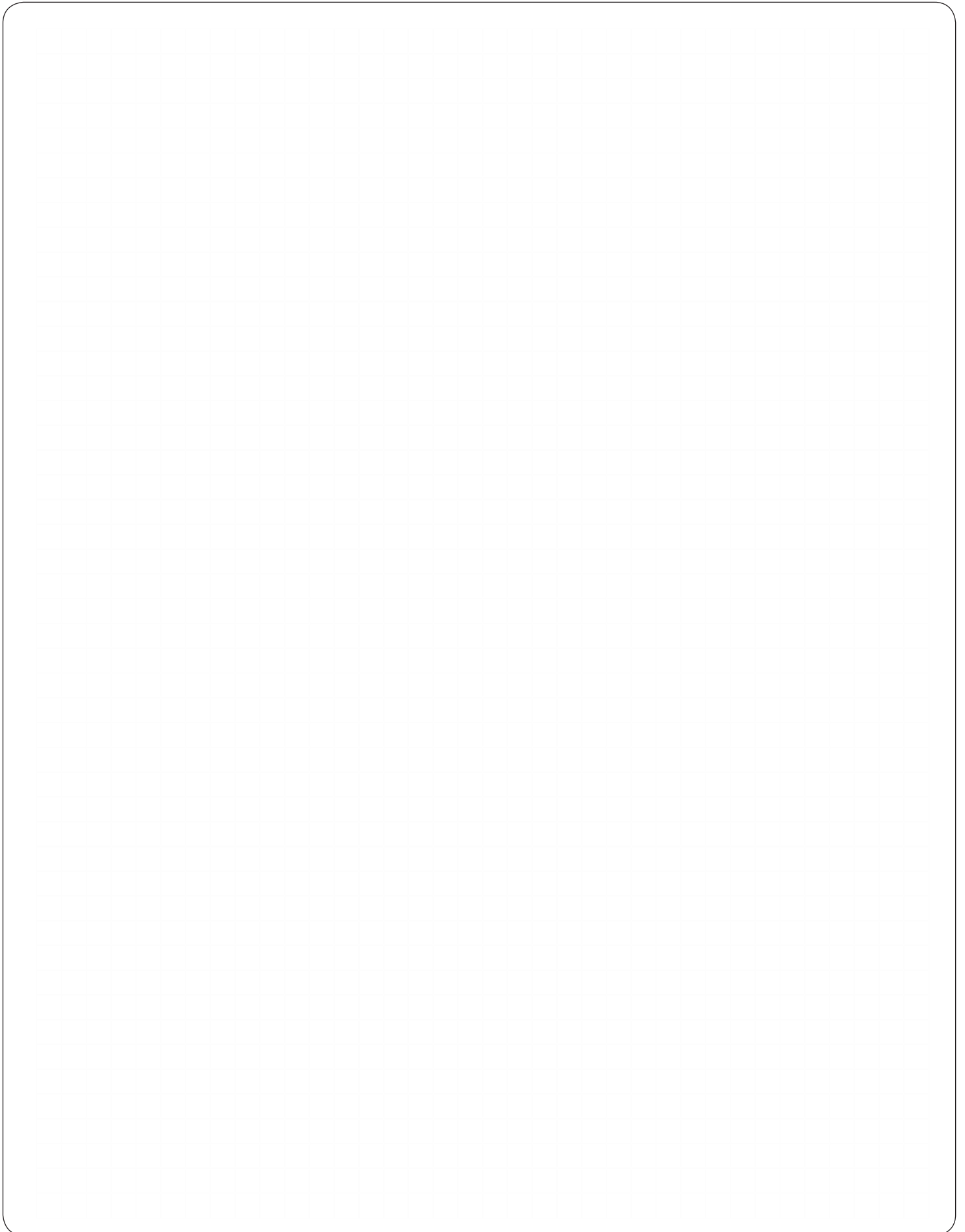
For measuring directions, please refer to Univox FSM 2.0 User Guide.

5. Adjustment of field strength level, 400 mA/m (Field)

Activate the audio file *1kHz_pulse.wav* or *itu.wav*. Adjust the field strength level using the drivers' output current control until 0dB (400A/m) is reached, preferably in between the listening area's outer edge and middle. (Note: A continuous sine wave is not recommended since the loop driver's AGC might decrease the level.) Confirm that the field strength level doesn't vary more than ± 3 dB within the listening area.

	A	B	C	D	E	F		Pass	Conditional pass	Fail
<i>1kHz_pulse</i>										
<i>itu</i>										

Floor plan



Final confirmation and commissioning

6. Adjustment of input sensitivity and verification of field strength (Highest peak)

Connect the primary sound source and activate it. (The *haspeech.wav* or *itu.wav* audio files can be used.) Start with adjusting the input sensitivity according to the driver's User Guide. Confirm that the highest peak reaches 400mA/m (0dB \pm 3dB) by observing the highest reading within a measurement period of at least 30 seconds. If the requirement of 400mA/m (0dB) is not met, it is necessary to adjust the output current level.

	Target: 0dB (\pm 3dB)		Pass	Conditional pass	Fail
Highest peak:	dB				

Checked

7. Voltage clipping in program peaks

When using the primary sound source, ensure that the driver is not peak-clipping by observing that the clip/peak indicator doesn't light red. If a primary sound source is not yet present, activate the audio file *1k6Hz_pulse.wav* instead.

8. Sound quality

Ensure sound quality (clear sound with no distortion) by listening to the sound of the loop using Univox Listener or Univox FSM 2.0. The sound must give good speech intelligibility and not be distorted. Note: Background noise outside the frequency range amplified by hearing aids, might be heard. This, however, does not affect the speech intelligibility for the user of the loop system.

9. Signage

Put up signs clearly showing hearing aid users that a loop system is installed, for example at the entrance to the looped room/s.

10. Inform and instruct staff

Inform and instruct staff of the function of the loop system, the position of the loop cable and loop driver and how to use the testing instrument Univox Listener. Keep certificate and all manuals accessible.

11. Floor plan (not required for certification)

A floor plan showing the position of the loop in the room and relevant measurement parameters, should be attached to the documentation.

Notes

For detailed information, please study the full User Guide for Univox FSM 2.0. User Guide and audio files are included on the USB card or can be downloaded at www.univox.eu