

DPA Microphones

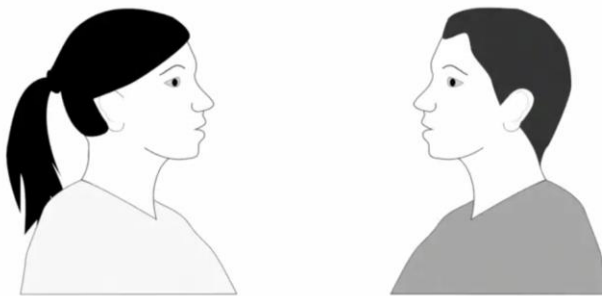
Product Specialists and applications Manager

Bo Brinck

bob@dpamicrophones.com

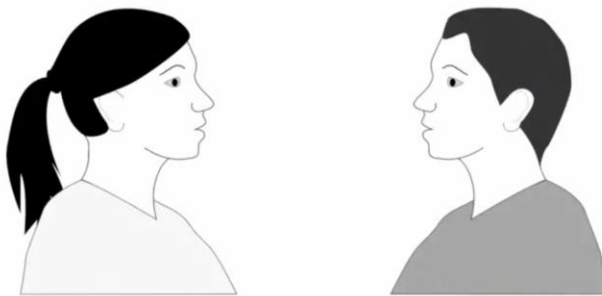
Speech intelligibility

How to improve your message



When every word counts

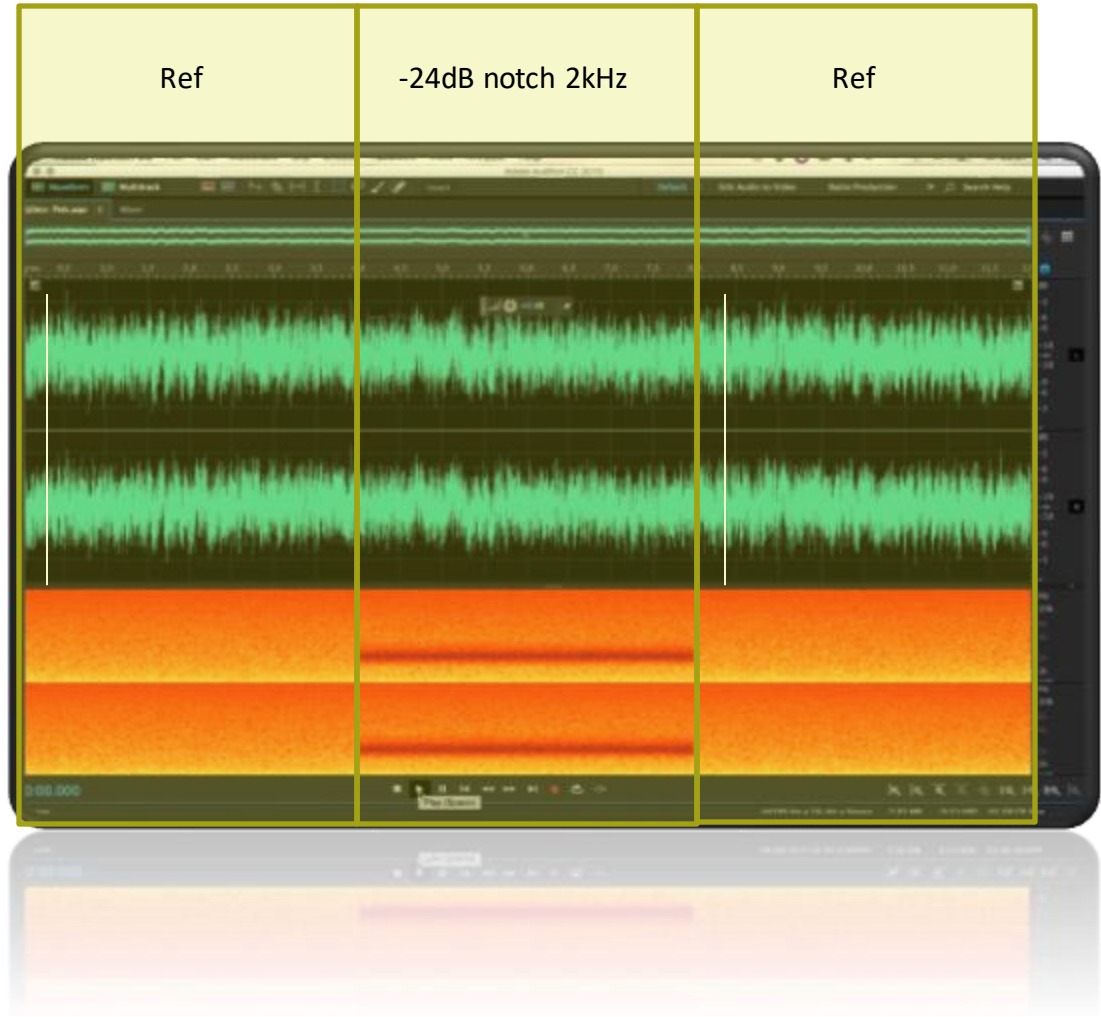
How to improve your message



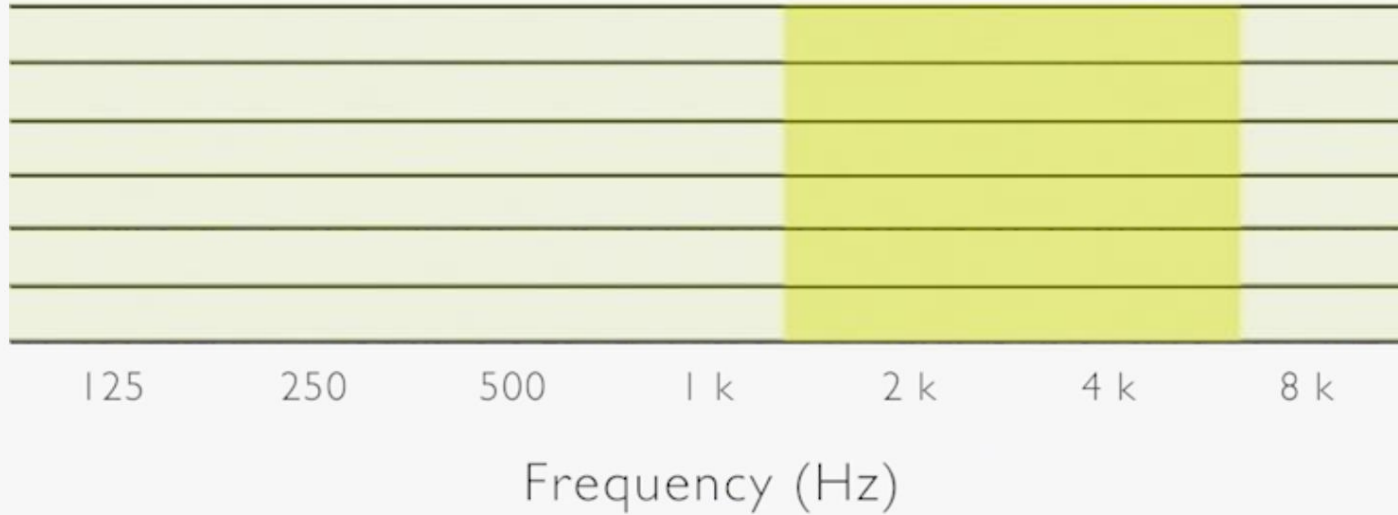
Audio illusions



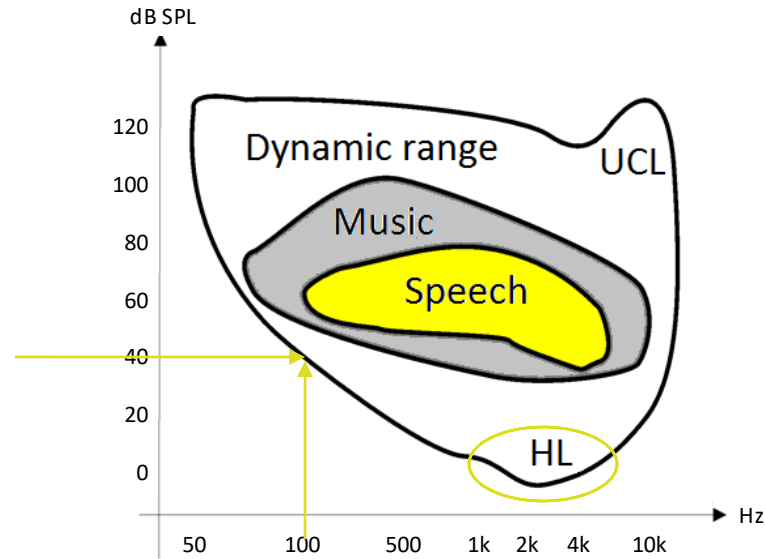
Pinknoise



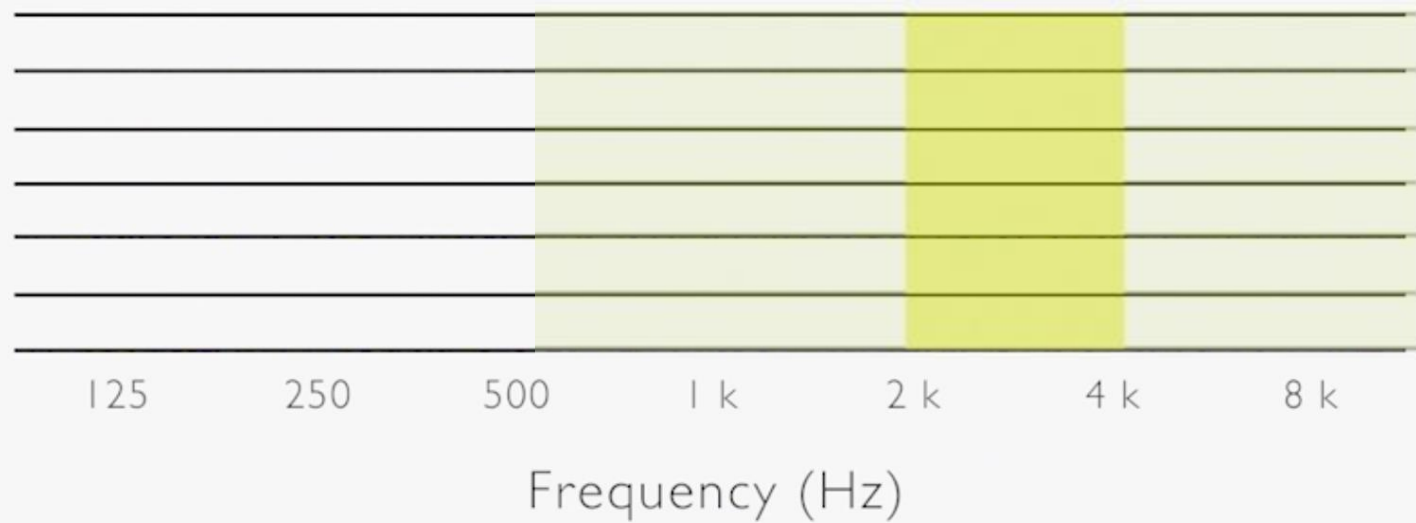
Frequency range of voice

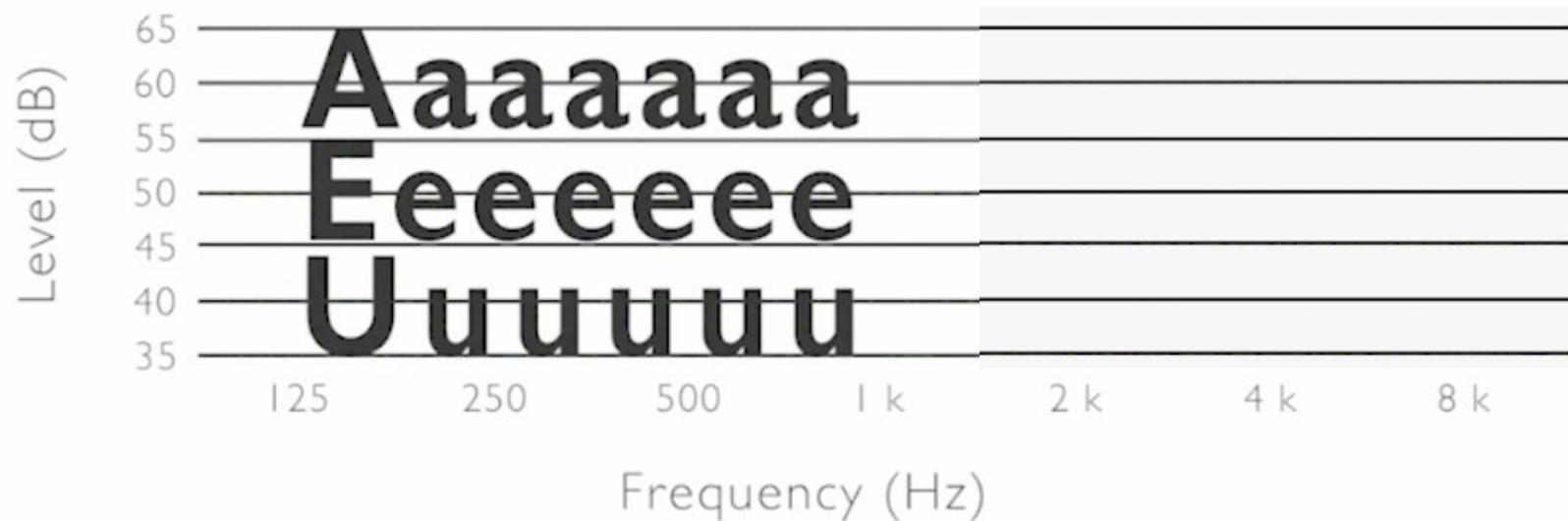


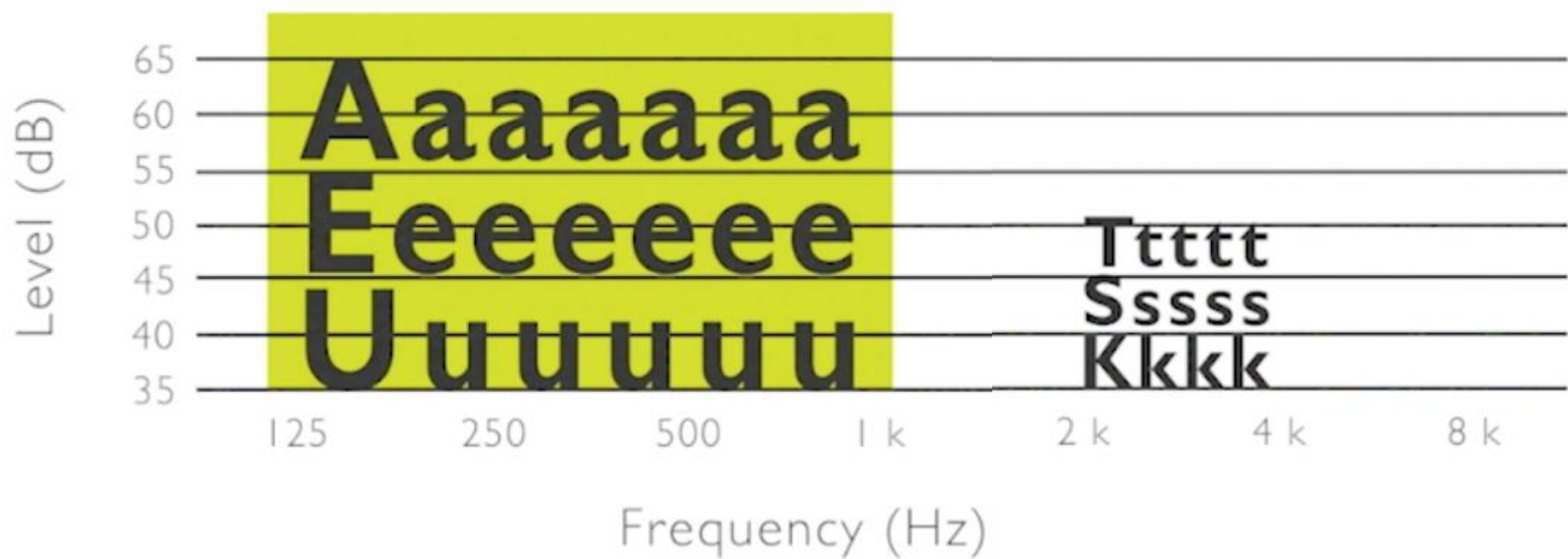
Dynamic range of hearing

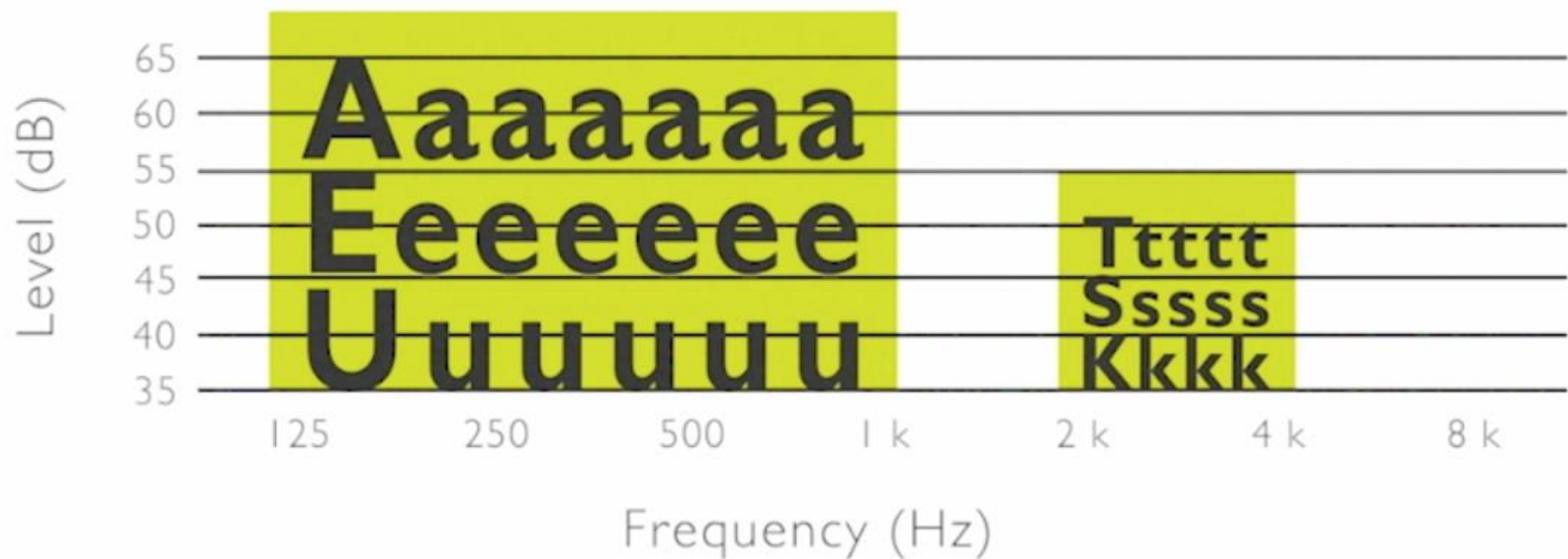


Level (dB)

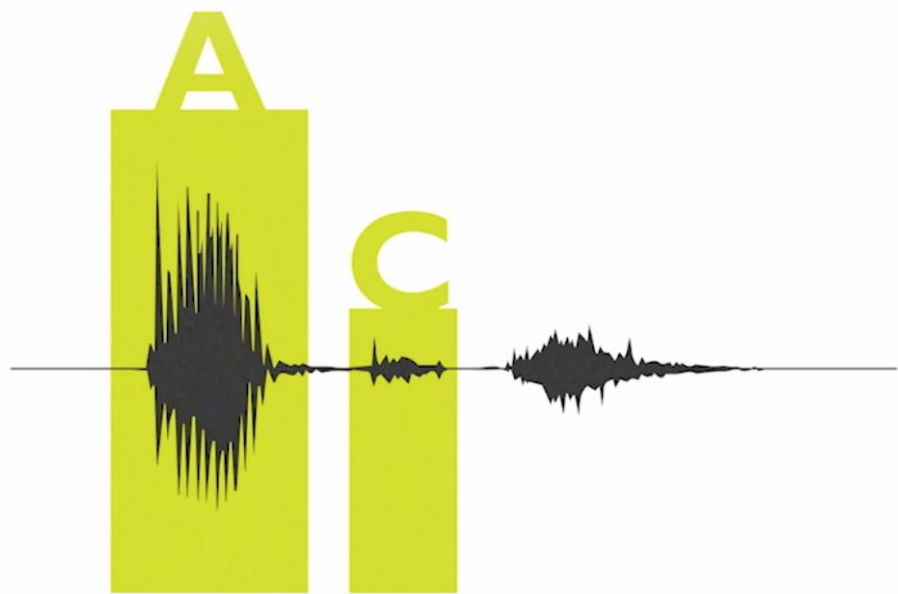








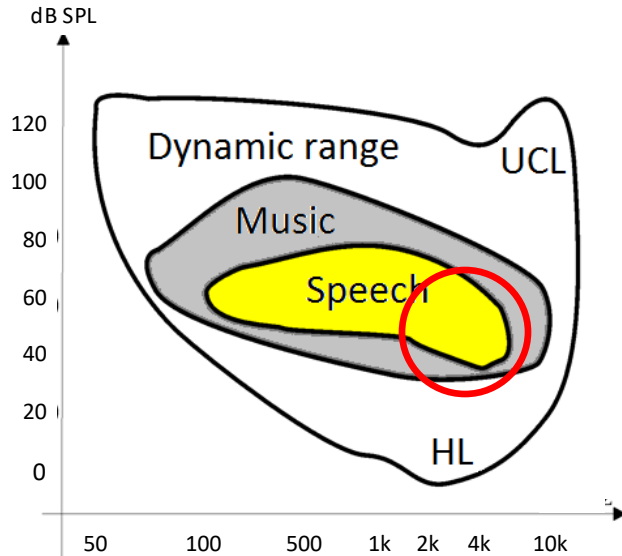




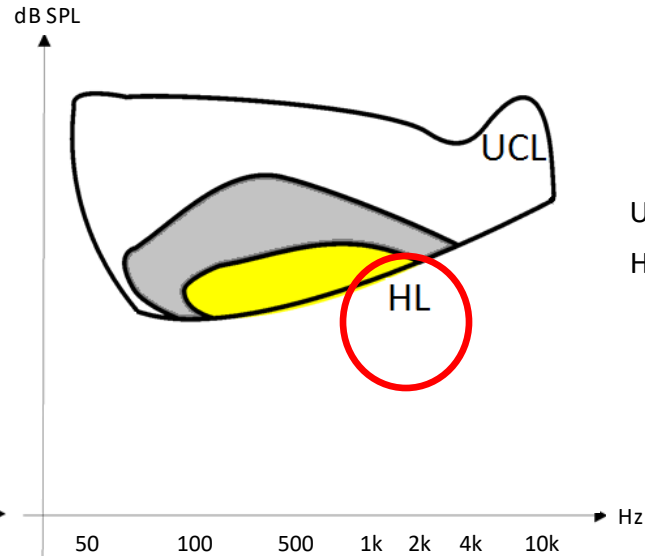


Dynamic range of hearing

Normal hearing



Shifted threshold (typical elderly people)

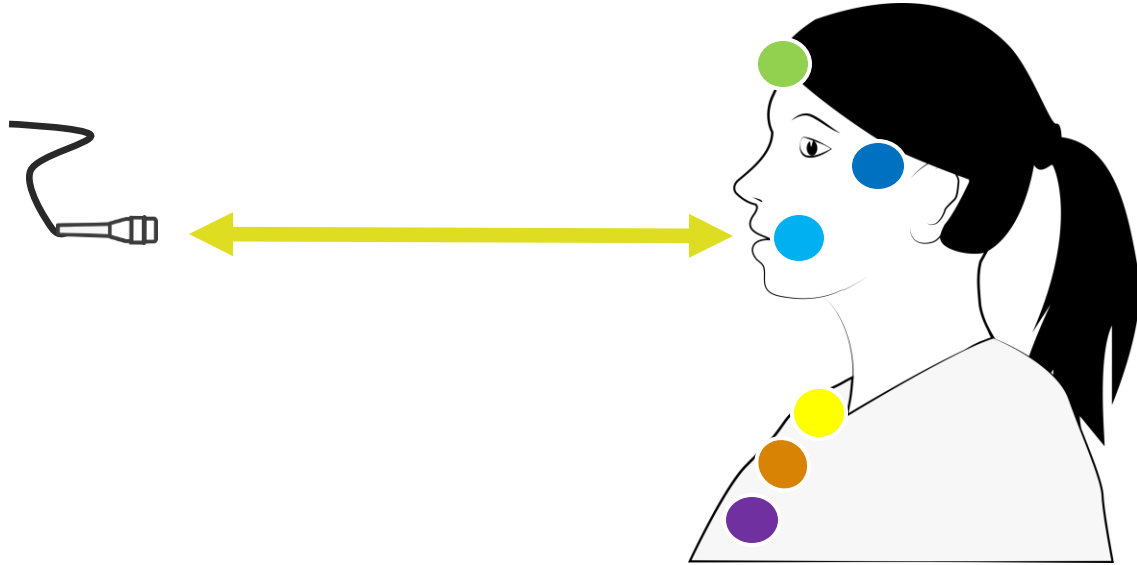


UCL= uncomfortable level
HL= threshold of hearing

Level of subjects voices relative to 1 m

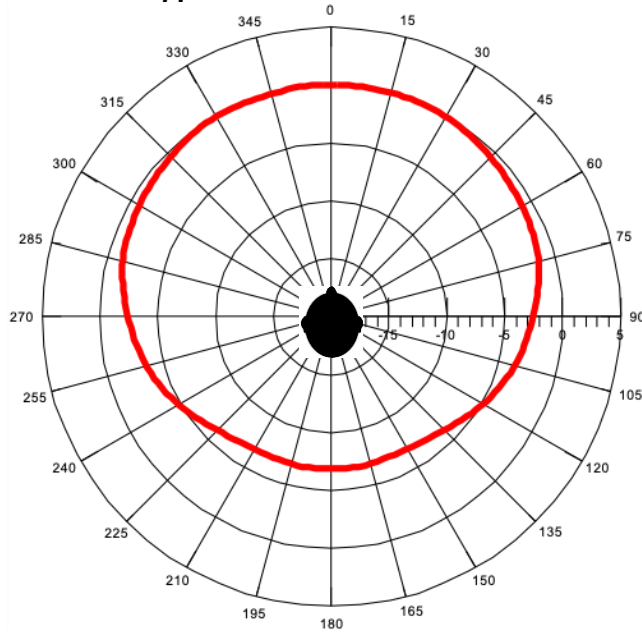
Level relative to 1 m [dB]

30.
24.
18.
12.
6.
0.



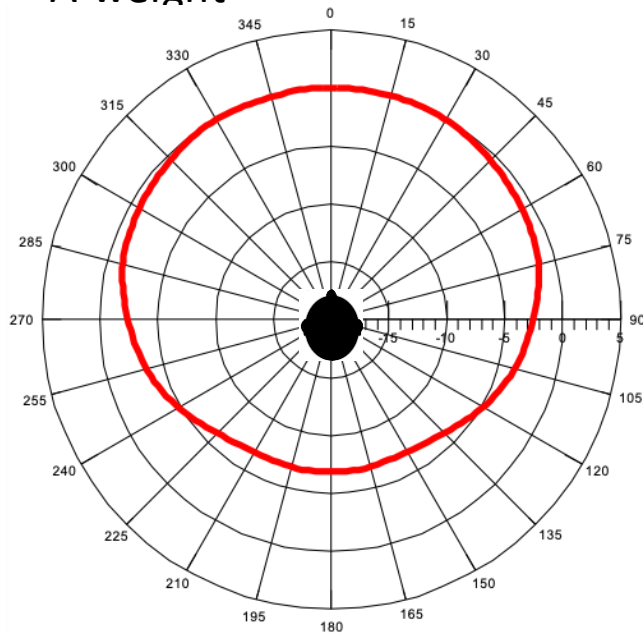
Directivity of the human voice

A-weight

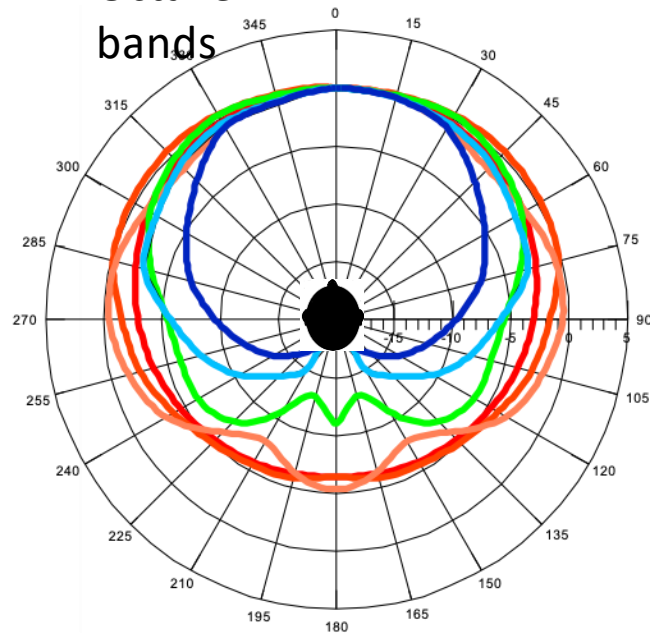


Directivity of the human voice

A-weight

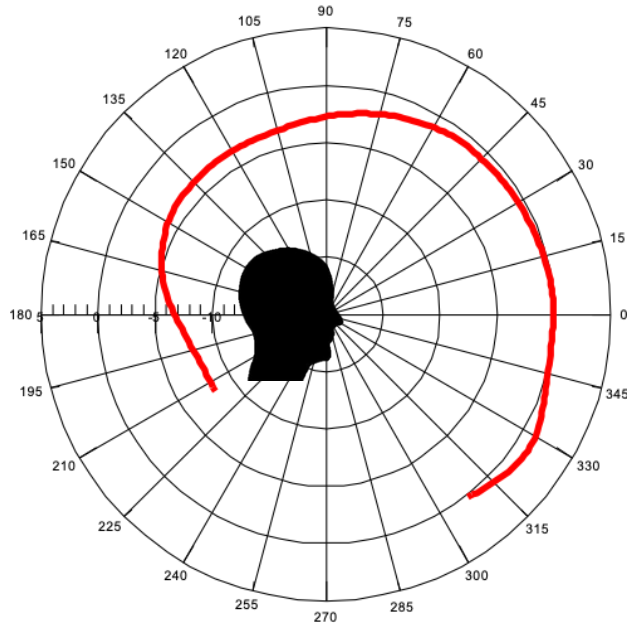


Octave bands



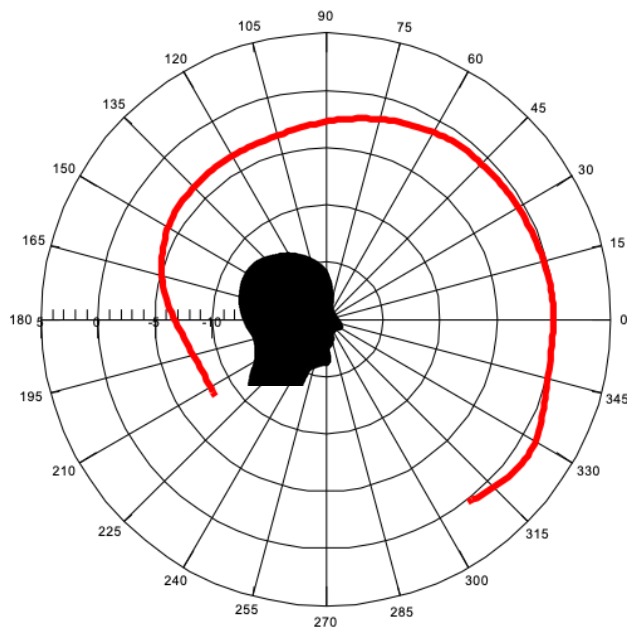
Directivity of the human voice

A-weight

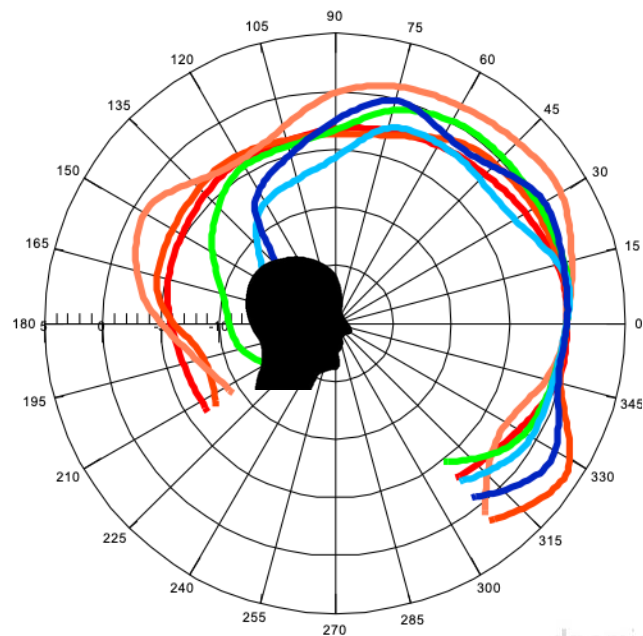


Directivity of the human voice

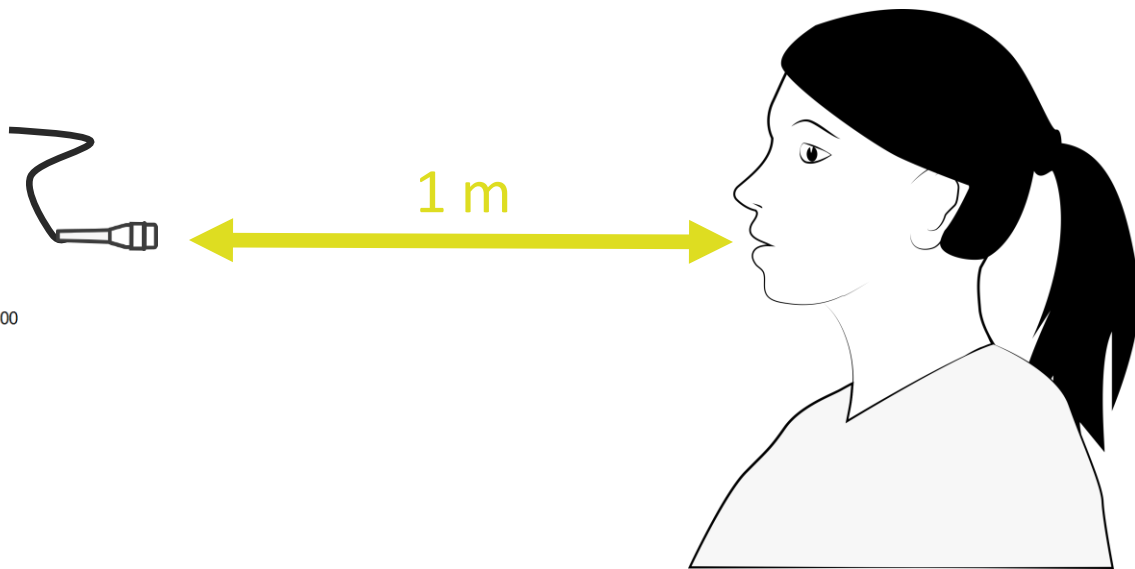
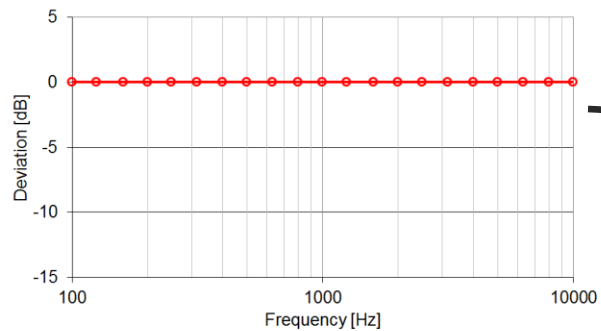
A-weight



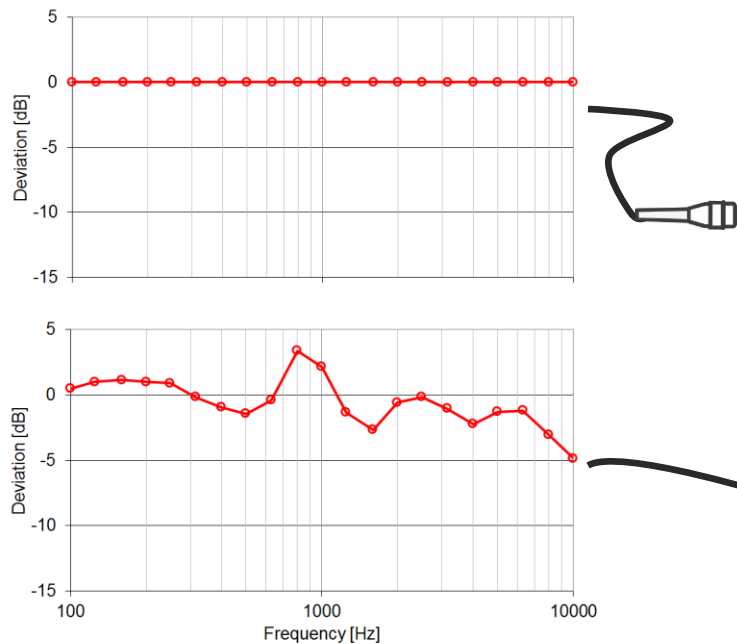
Octave bands



Experiment



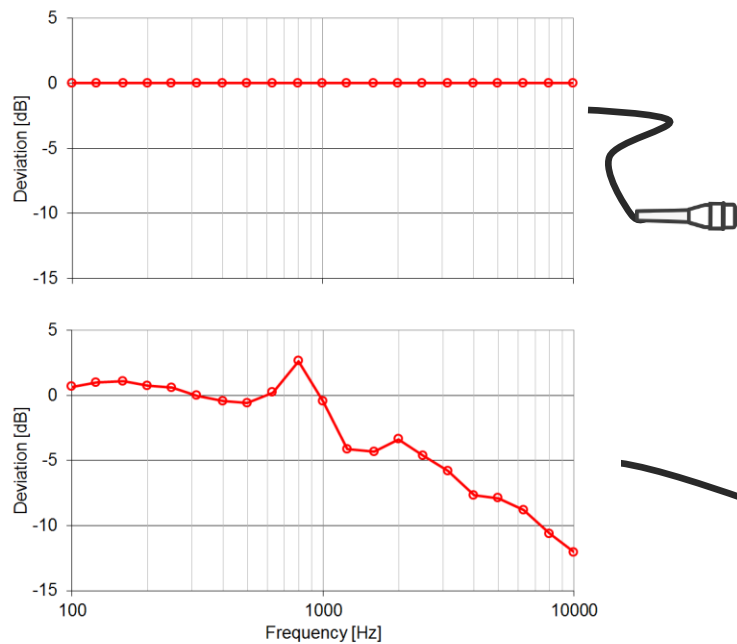
Forehead



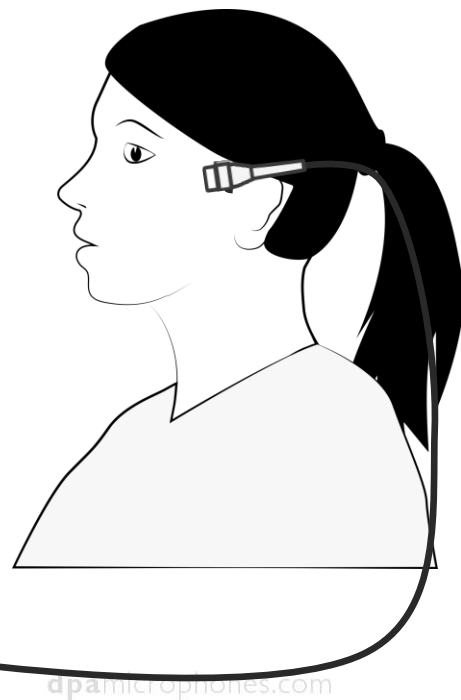
source: Brixen 1996



Ear

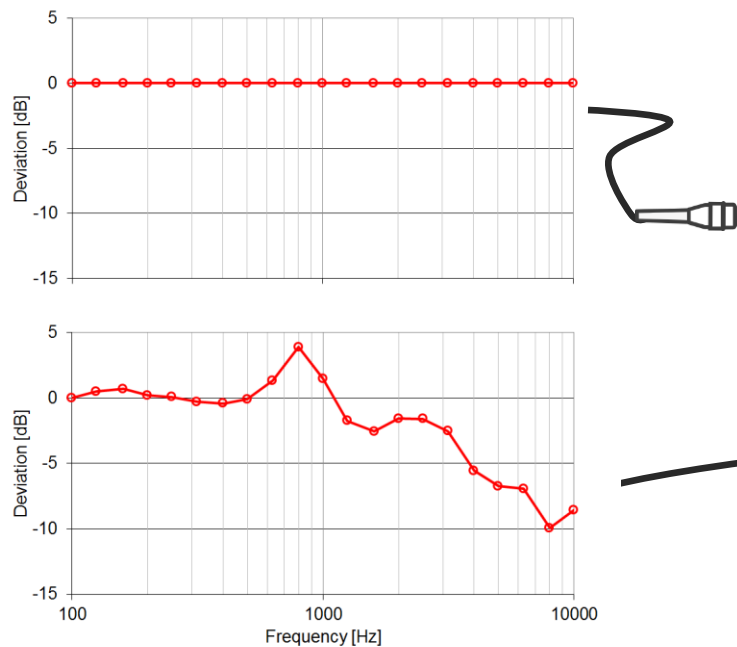


source: Brixen 1996

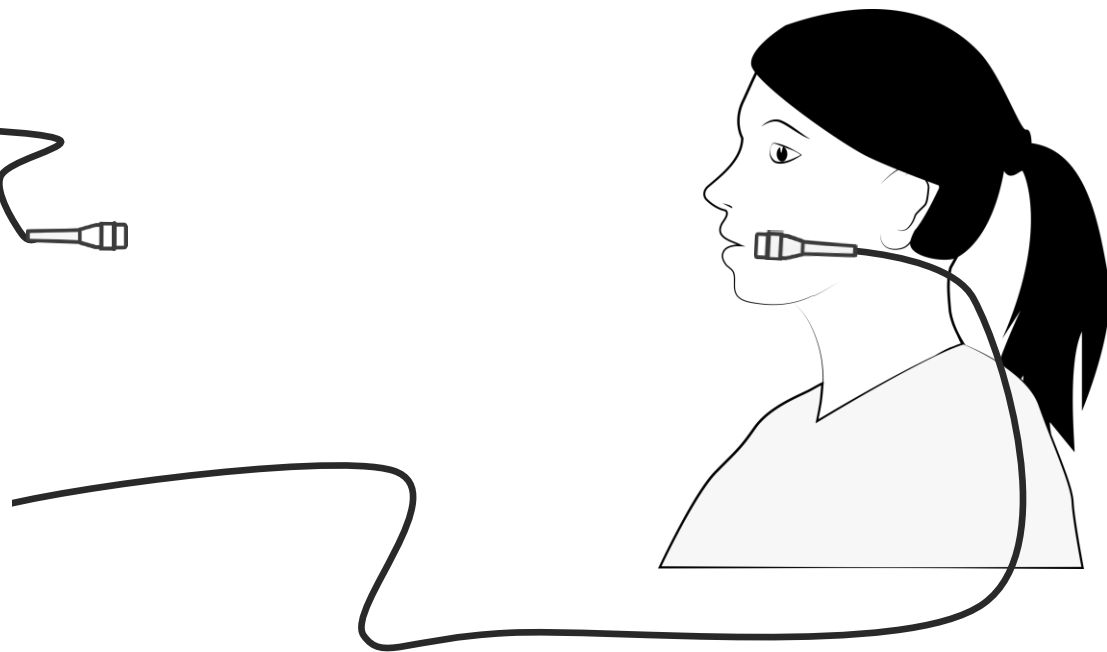


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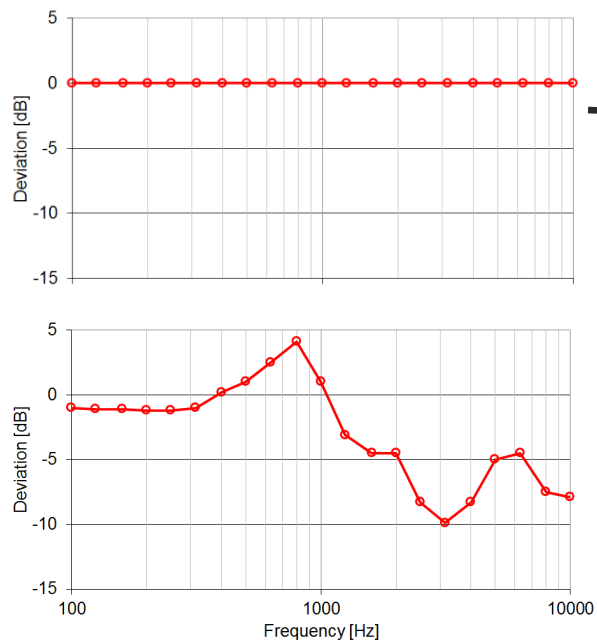
Cheek



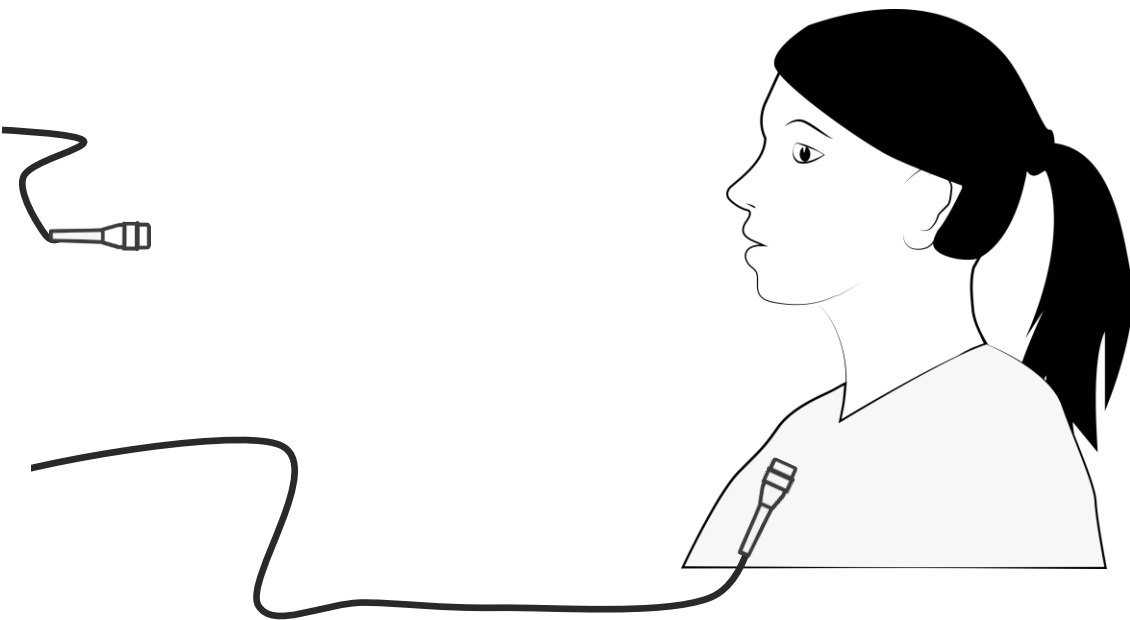
source: Brixen 1996



Chest



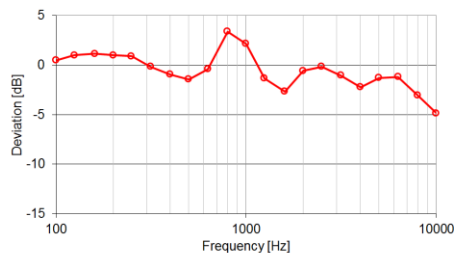
source: Brixen 1996



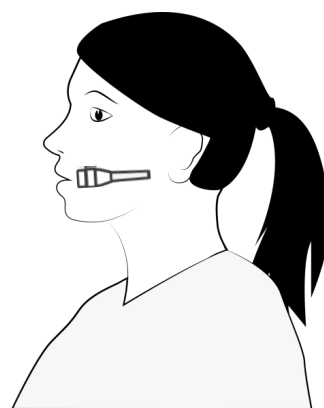
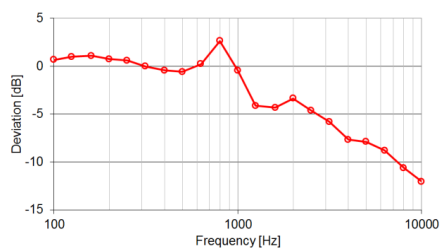
Listen to the differences



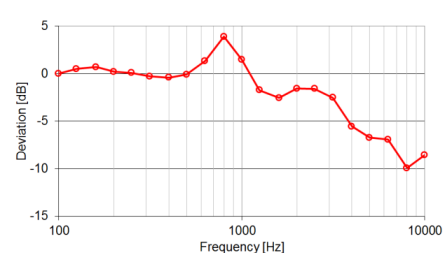
Forehead



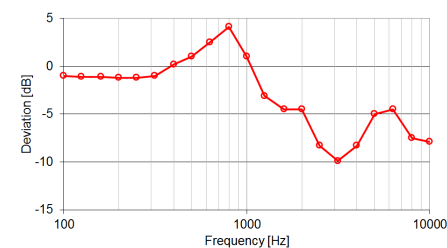
Ear



Cheek

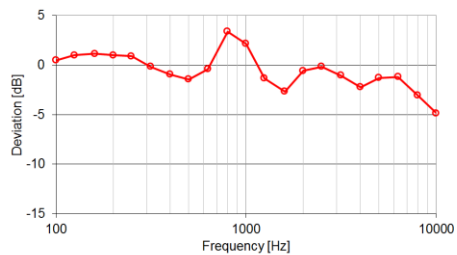


Chest

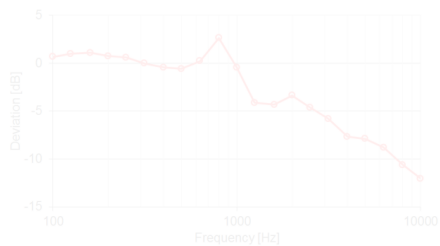




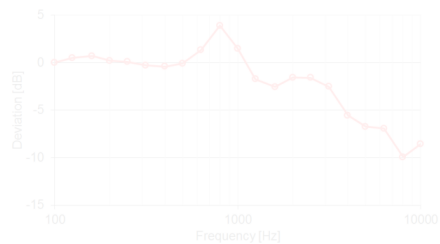
Forehead



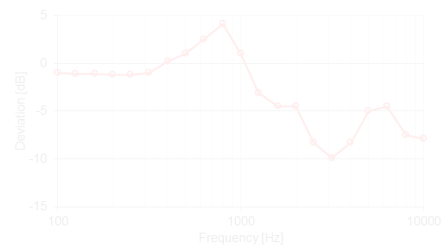
Ear



Cheek

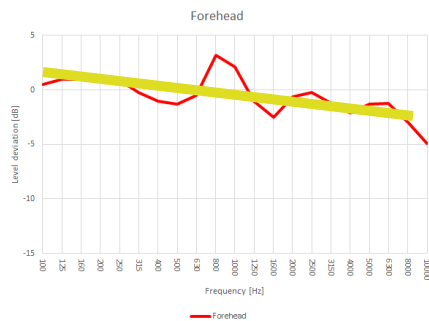


Chest

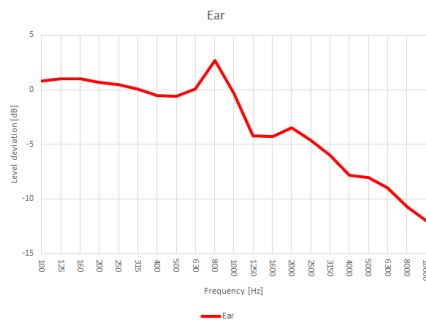


Results – over all (average, 10 subjects)

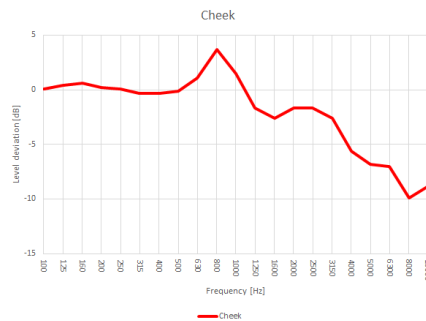
forehead



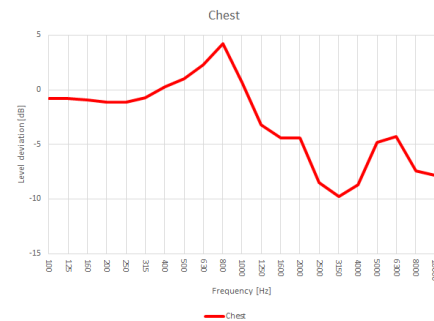
ear



cheek

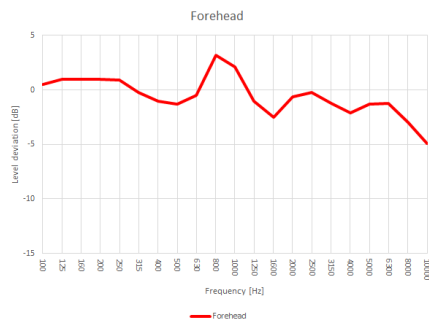


chest

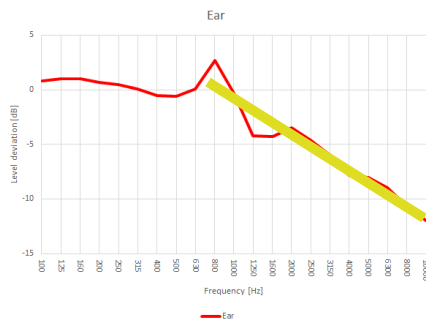


Results – over all (average, 10 subjects)

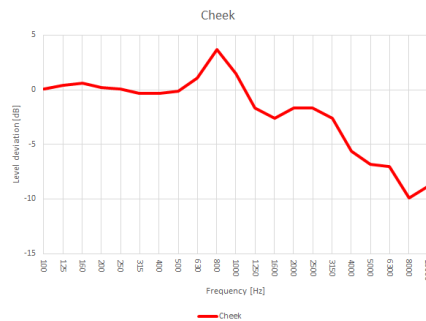
forehead



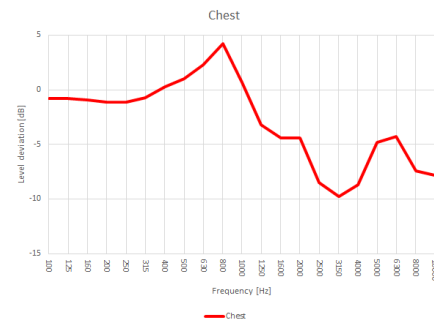
ear



cheek

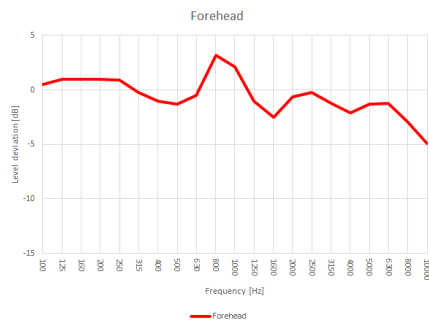


chest

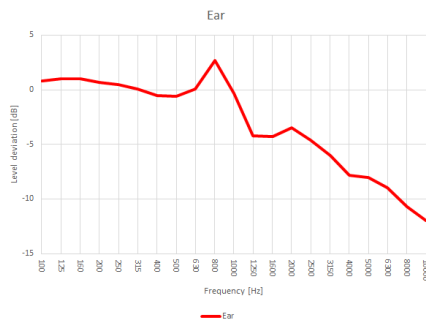


Results – over all (average, 10 subjects)

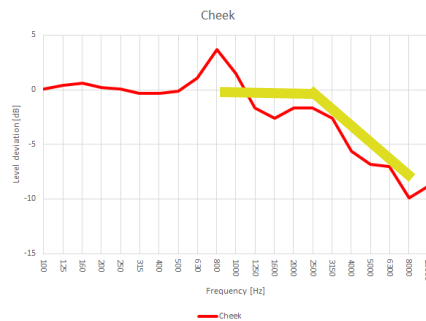
forehead



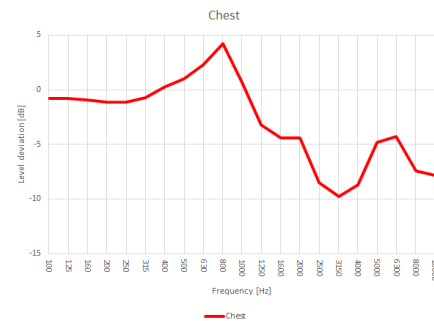
ear



cheek

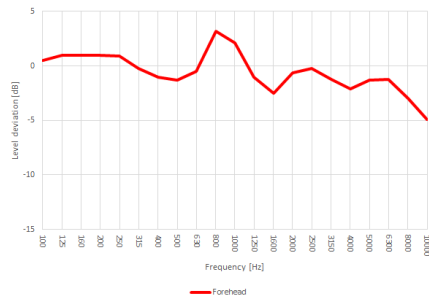


chest

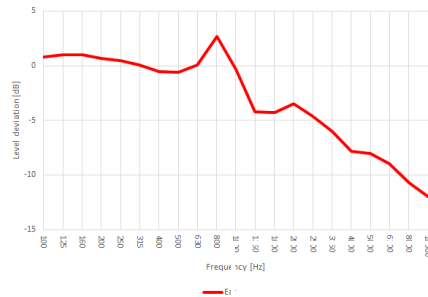


Results – over all (average, 10 subjects)

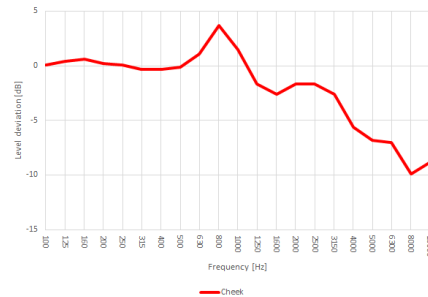
forehead



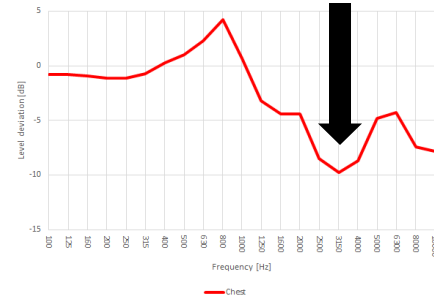
ear



cheek



chest

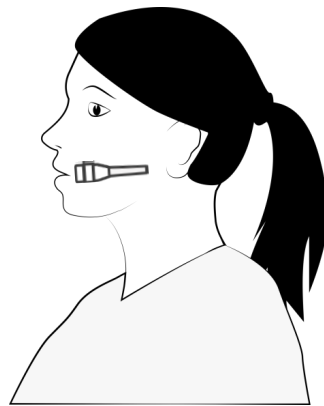




Forehead



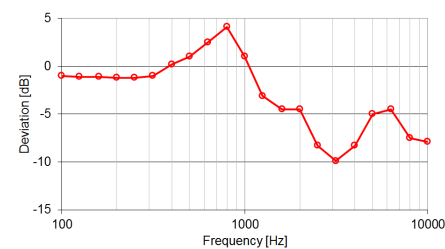
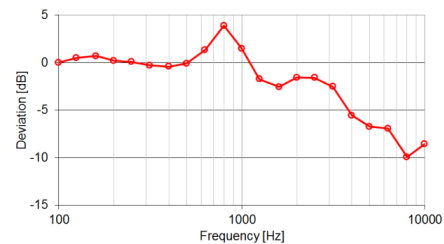
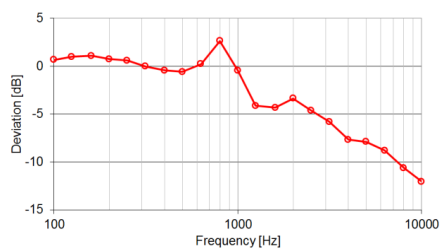
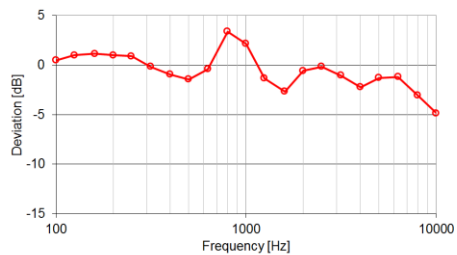
Ear



Cheek



Chest





Forehead



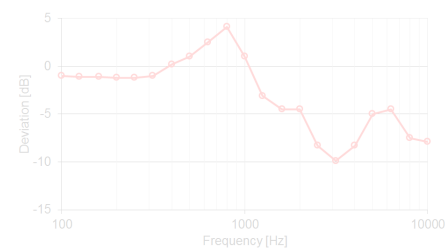
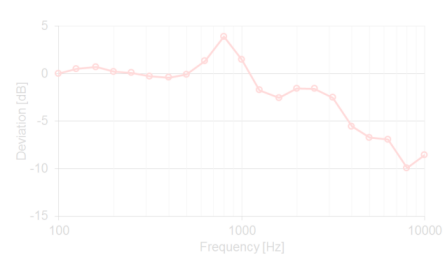
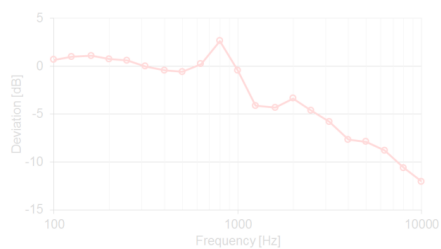
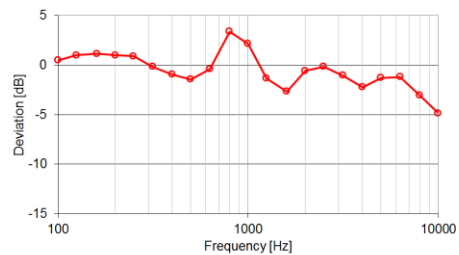
Ear



Cheek



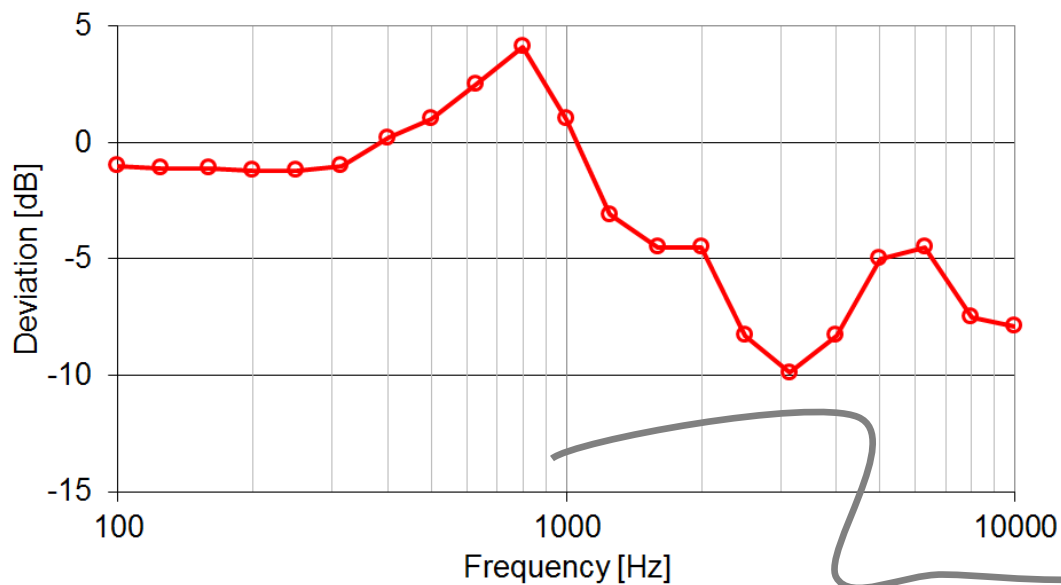
Chest



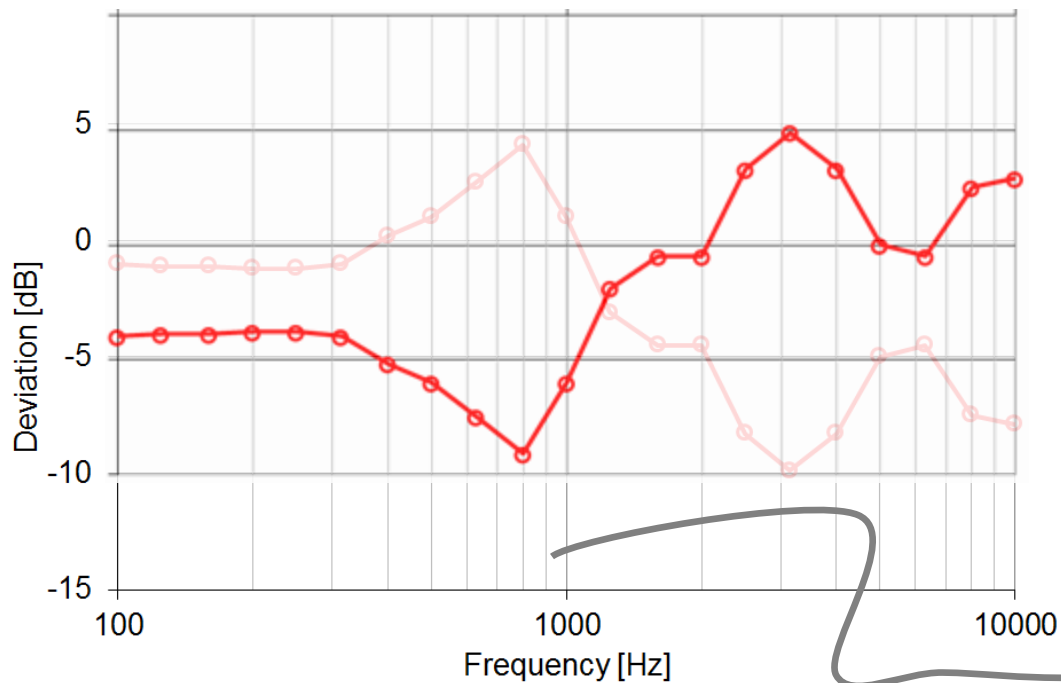
Some conclusions from experiment 1

- Moving the microphone from the chest or the forehead to the cheek (headset) provides a 10 dB stronger speech signal
- Microphones on chest must be compensated for the loss of intelligibility

Chest



Chest, final EQ



Audio illusions



Audio illusions



Click next to hear the reference
Again?

Audio illusions



Audio illusions

Jazz and swing.....



Poster

