

Laboration instruction VTAF05 – Lab 1

The laboratory exercise is carried out by 2-3 students in four parts:

1. The first part consists of a measurement that all participants perform simultaneously, a measurement of a single tone and a noise signal.
2. In the second part you will perform a calibration of your smartphone or measurement device with a single tone.
3. The final part comprises making a recording of complete silence, or at least, as quiet as we can find.

The questions that we aim to answer in this laboratory exercise are the following:

1. What sound pressure levels have you recorded?
2. How accurate are your measurements? What sources of error are there? How can you estimate them?

Part 1. Measurement of sound - together

You divide in groups of 2-3 students where at least one has a smartphone that can record audio or voice memo. We will all record the same sound together at the exact same spot. At the same time, I will measure with a calibrated sonometer, from which you will not be given the result (yet).

Part 2. Calibration of measurement device

The next part of the measurement is to take your recorded sounds and translate them to sound pressure levels in dB. If you use a smartphone application that can register sound pressure level you should ask yourselves if the value you receive is accurate and how accurate (we have tested that in another course).

In the calibration part of this task you will address the questions of the reliability and validity of your measurement. Here you have access to a function generator, a sonometer and computer, but you have to design your measurement, or rather, the calibration yourself by means of a single tone.

Part 3. Measurement of silence

In the final part you will record an audio at a quite quiet location. When you make a recording and analyze the audio file you will notice that there nevertheless is a noise signal. Where does this noise come from and how does this affect your other measurements?

Results

The results of the laboratory exercise will be presented and discussed at the Friday lecture November 14th at 13.15. Then you will very shortly present the actual recorded values of sound pressure level from all measurements. Make sure that you have all calculations at hand!

We want you to have the following data at hand:

- The sound pressure level of the single tone
- The Z-weighted (un-weighted) sound pressure level of the noise
- The Z-weighted (un-weighted) sound pressure level of silence

Laboratory report

Generally, the results from a laboratory exercise are presented in a written report. In this first laboratory exercise, however, the oral presentation at the seminar will be the only presentation.