

Summary

The [AudioMoth](#) acoustic logger by Open Acoustic Devices has the ability to capture accurate soundscape recordings, but adding protective housings and placing them on trees can significantly alter the sensitivity and frequency response. Pink noise recordings were used to analyze the frequency-dependent sensitivity of the AudioMoth in three housings and two environments (open grassland, forest).

The on-axis frequency response of the audiomoth without a case is mostly flat, with a 10 dB boost above 3 kHz (blue line in plot below). Of the three housings tested (Ziplock bag, vacuum seal bag, laser-cut case), the vacuum sealer bag (sealed but not vacuumed) caused the least reduction of signal, while the hard-sided laser cut case caused a significant reduction of low-frequency content. We suspect that the loss of low-frequency content may occur with other hard cases as well.

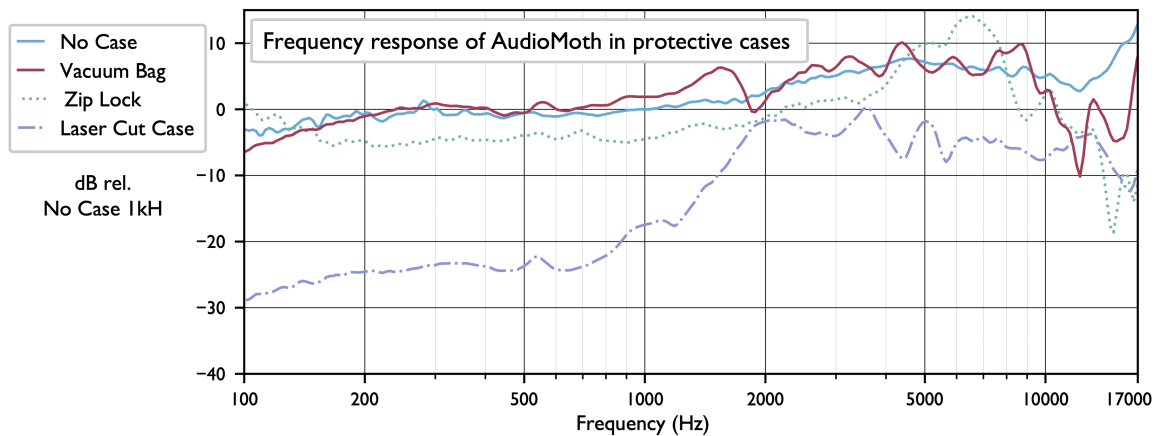


Figure 1: image

In an open environment, with or without housing, high-frequency sounds (>10 kHz) arriving from behind the device strongly are attenuated. When the AudioMoth is deployed by strapping it on a tree, sounds arriving from behind the device are attenuated by about 10 dB below 1 kHz and 20 dB or more above 1 kHz. Also, a notch filter occurs at a specific frequency (about 2.3 kHz) when sound arrives from directly in front of the device.

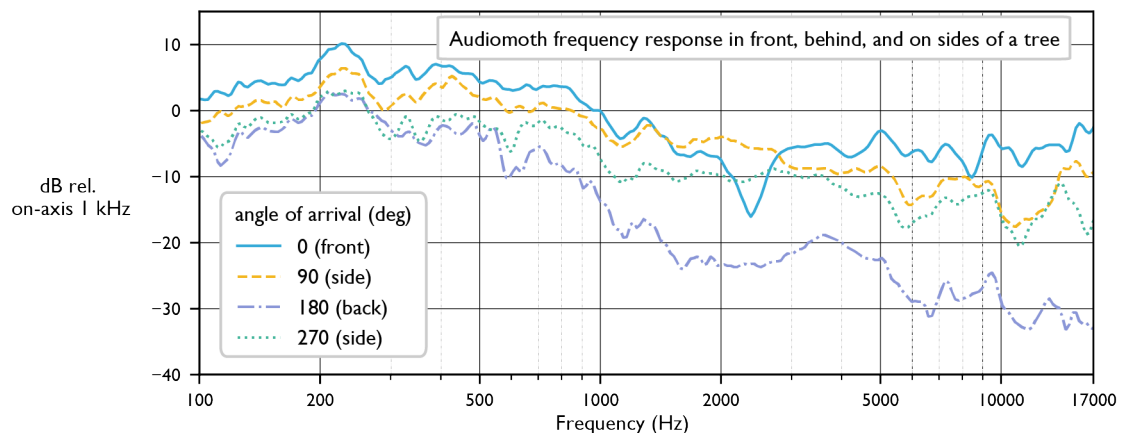


Figure 2: image

Protective housings and placement on trees clearly cause significant reductions of sensitivity to certain frequencies. These effects should be considered during the deployment of recorders and during the analysis of recorded audio.