

How sensitive is the Teensybat detector?

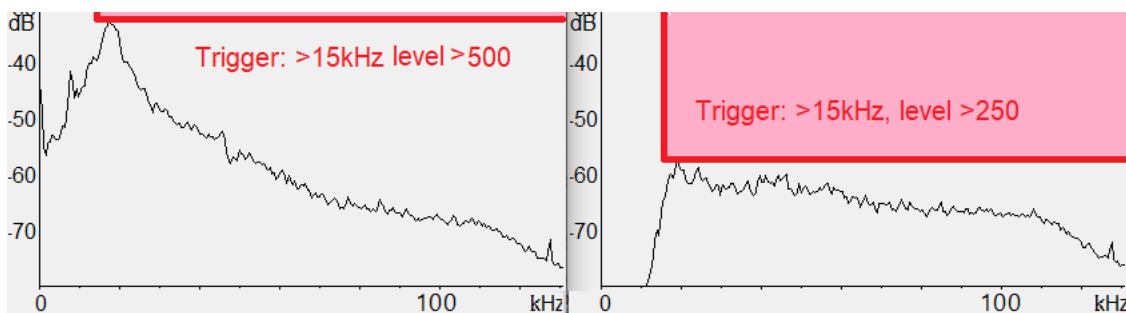
Well that is hard to say.... For the people that bought a very expensive € 1000,- ++ we will just say theirs is better, and maybe that is also what some of us experienced.

I noticed my cheap €9,- kit for the schoolkids did pick up the pipistrellus earlier than the Teensybat, but this did not mean the microphone was less sensitive. It is just the technique we are using and the high microphone sensitivity on 20-25 kHz that makes it seem less sensitive on 40-50kHz.

The microphone has a sloping sensitivity, it looks like all microphones I tested have this. The higher the frequency the less sound is picked up.

In the Teensybat we set a trigger for the display and time expansion, this has only two values, a signal peak above (kHz) and a signal strength above. If the received signal exceeds that the display will scroll and time expansion is activated. (Never set the display to continuous scrolling, TE can not keep up and you will miss interesting signals)

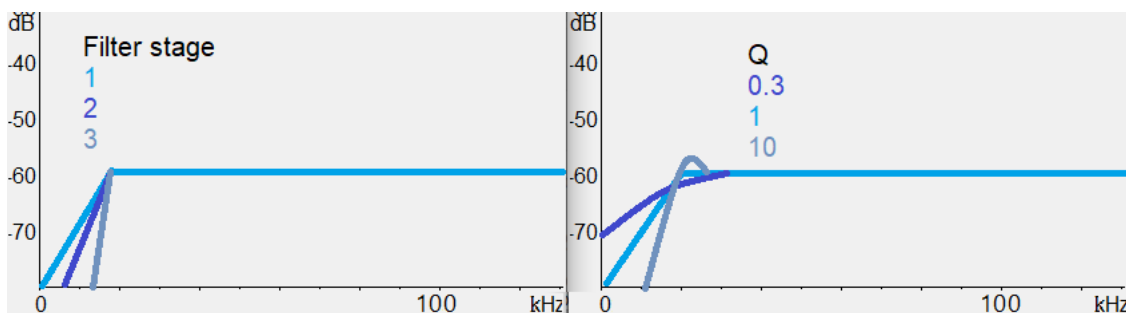
The signal strength above setting should be just above a base line, but that baseline is a lot lower on 40Khz so on 40kHz we should use strength of about 250 in stead of 500. At the moment we do not have a trigger curve but just a block, so it is best to try and lower the sensitivity peak around 23kHz. Using the filter settings we can lower that peak.



You can see that before the low frequencies were close to the trigger level and higher frequency's were much further away. With the filter activated we do get a reasonably flat line. (This is not a laboratory grade white noise test)

Now (software version 1.3) our filter has more than just a frequency setting, we have stage and Q added to the mix.

Both "stage" and "Q" have something to do with the steepness of the curve.



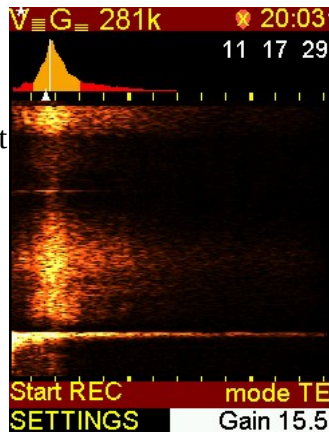
In the power graph above I used a setting with filter stage 3 which is very steep, but I used a Q of 0.3 which is making the steep stage 3 a lot less steep but also takes away some signal above the set filter frequency. That just gave me the very flat line in the right powergraph.

How to set this on your detector.

First test to see what the power graph looks like without filtering. (Hipass off)

Just rub your fingers about 10cm in front of the microphone with moderate micgain, the powergraph on the top of the display will look something like this. (Notice the peak around 20kHz)

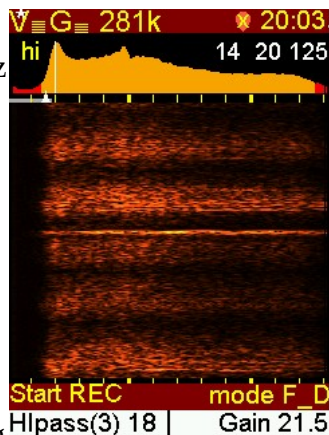
Most of the signal is in the 20Khz area, the sounds around it are relatively small so they almost do not show on the powergraph.



Now we set the filter to 8Khz, stages 3, Q 0.3 and rub your fingers again in front of the microphone.

You can not really see that the 20kHz peak is lower, but it actually is, the sounds on higher frequencies now have a strength that compares better to the sounds on 20kHz. (lower frequencies are filtered away)

You should play a little with the frequency setting and maybe also with Q to get a result that shows signals on 40Khz just about as strong as on 20kHz.



Now that the 20kHz signal is lower, try to use a value of around 250 for the menu setting “Signal strength above” in the “time-expansion live” menu.

These settings will help you to bring out the Pipistrellus and other species that are on higher frequencies but you will still hear the serotine bats just as easily as before.

Note: not all microphones have equal sensitivity most will probably be a bit lower after about 70-80Khz so do not be surprised if your power graph looks a bit different.

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