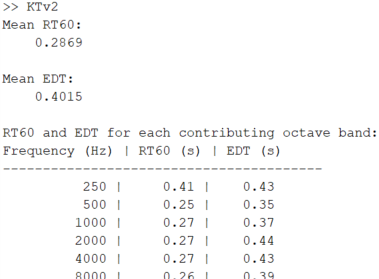
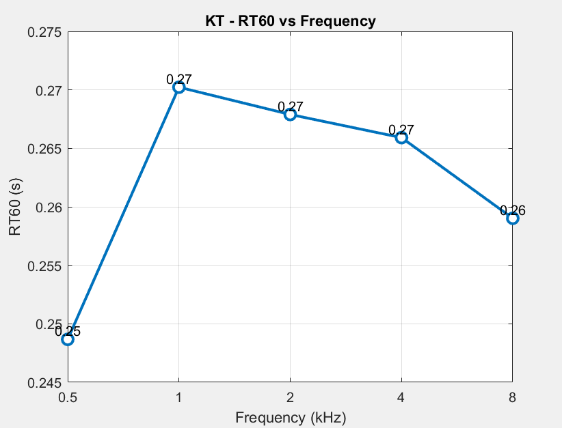
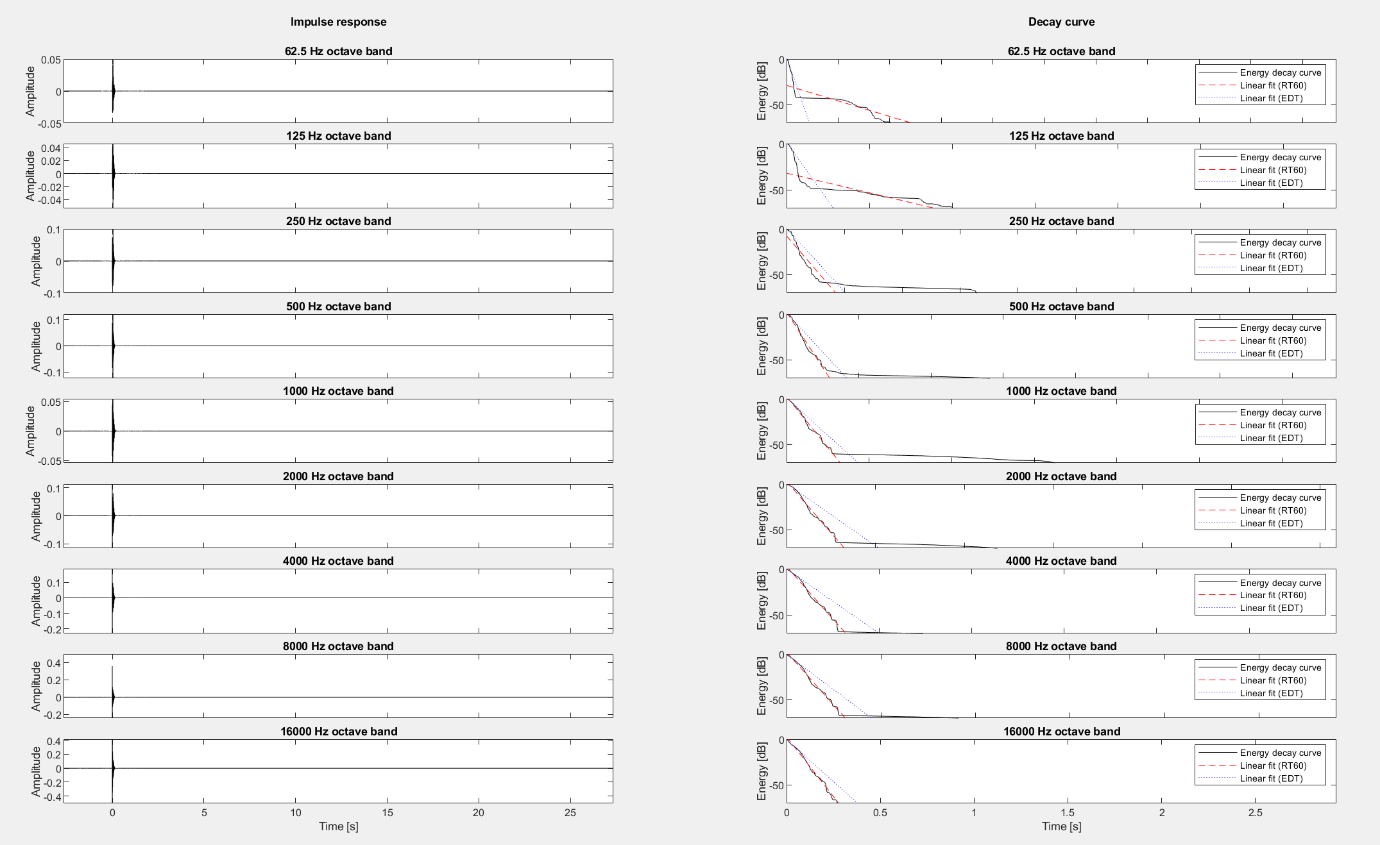
legends: Orange (Medium Priority), Red (Critical/High Priority), Blue (Info), Green (Good work!)

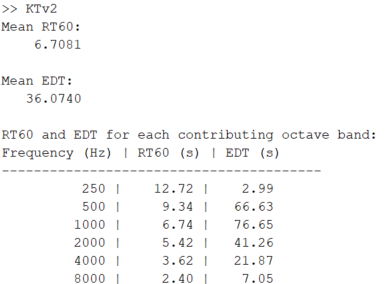
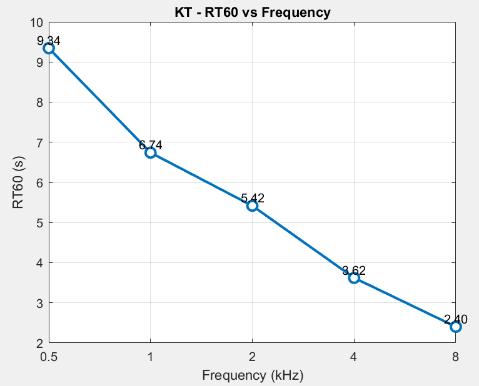
Done, Important

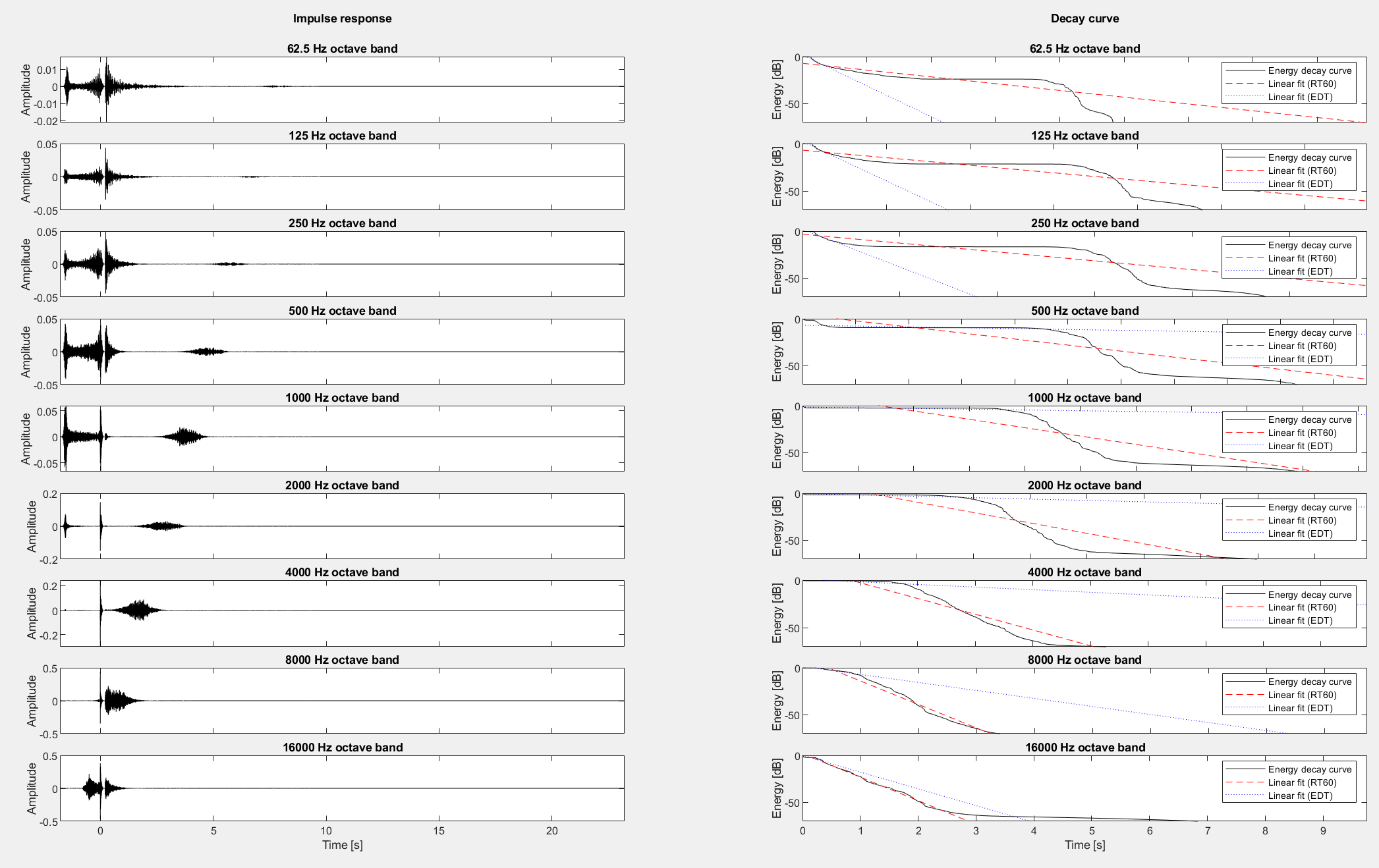
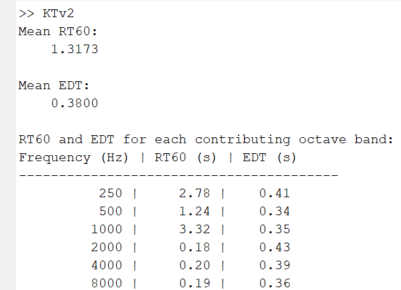
# Monday, 12 August 2024

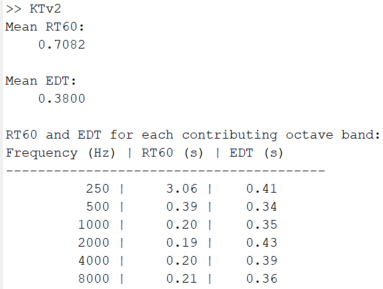
Refreshing what I had got last week and reconfirming the results.

KT\_improvedsweep\_vol0.1\_1to1.wav result w/ default y\_fit (RT60):  
As seen, it was too low for RT60, EDT is correct however. No audio clipping.

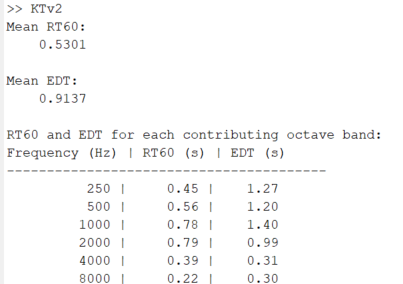
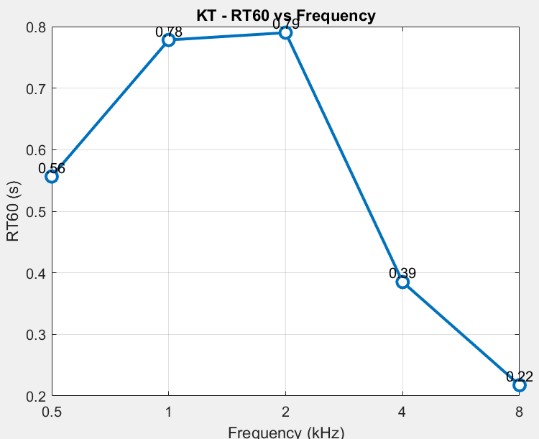
Let’s first increase volume only, from 0.1 to 0.5:

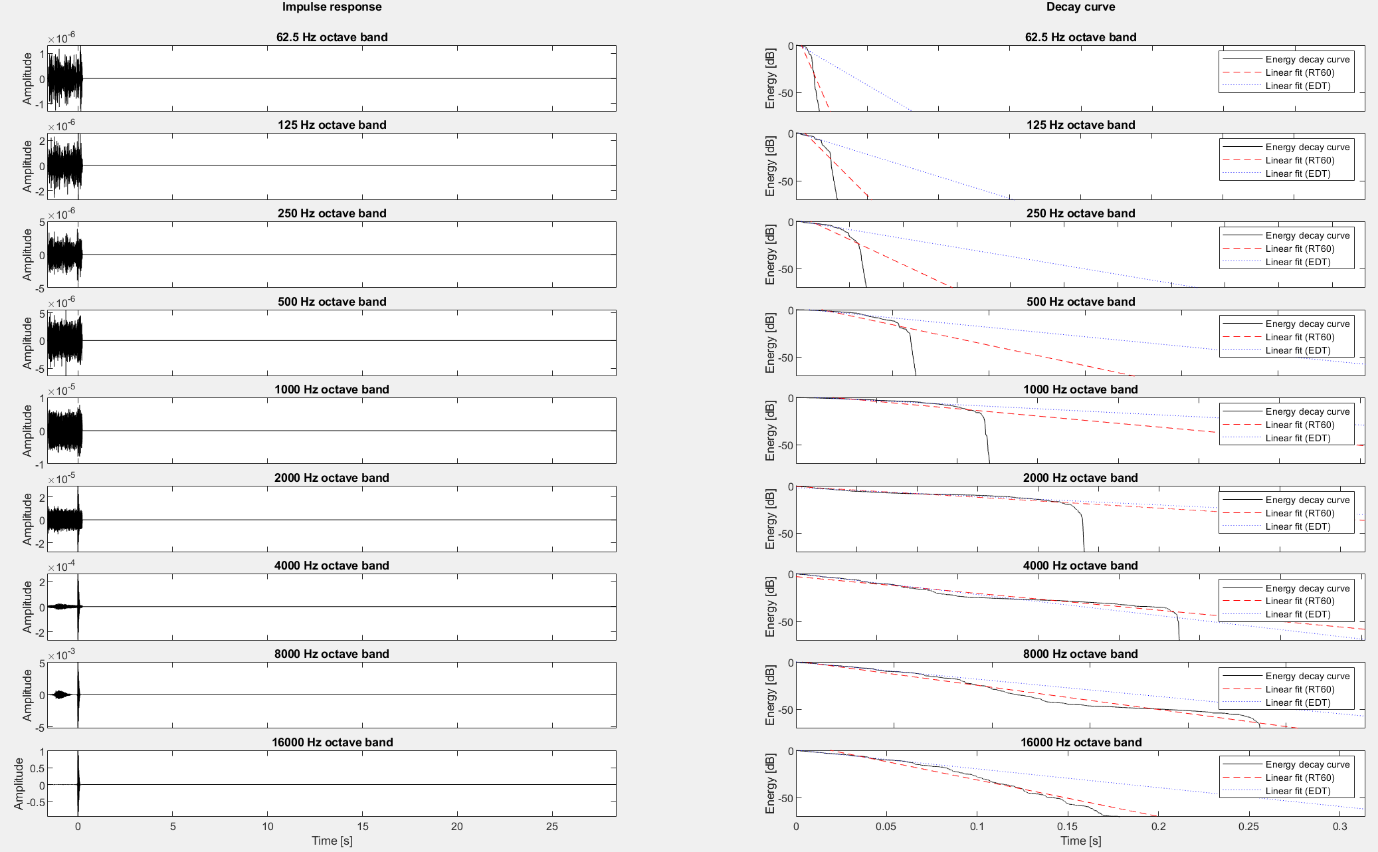
 Now its too high, and (probably due to audio clipping?) we got lots of distortion and weird result…

Next lets try volume at 0.13, ratio of direct to reflection mix still at 1 to 1, default y fit and RT30:

Still not good, even when y\_fit to only RT30, it still shows bad response for some octave band esp higher freq (too low) so its not reall good either…, and 250Hz still too high due to high noise floor level..

Thus, lets try improve the sine sweep again instead. The main imrovement is using longer sine sweep duration (15 sec instead of 10) to give better resolution and power(?) for lower frequency

OK, very interesting result (positive imo), using vol0.1 and 1to1 ratio on default RT60 y\_fit:

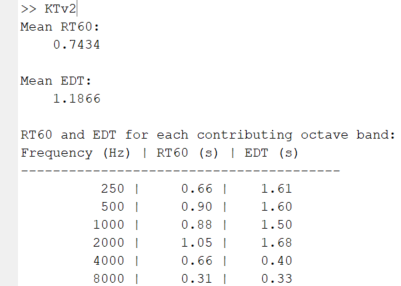
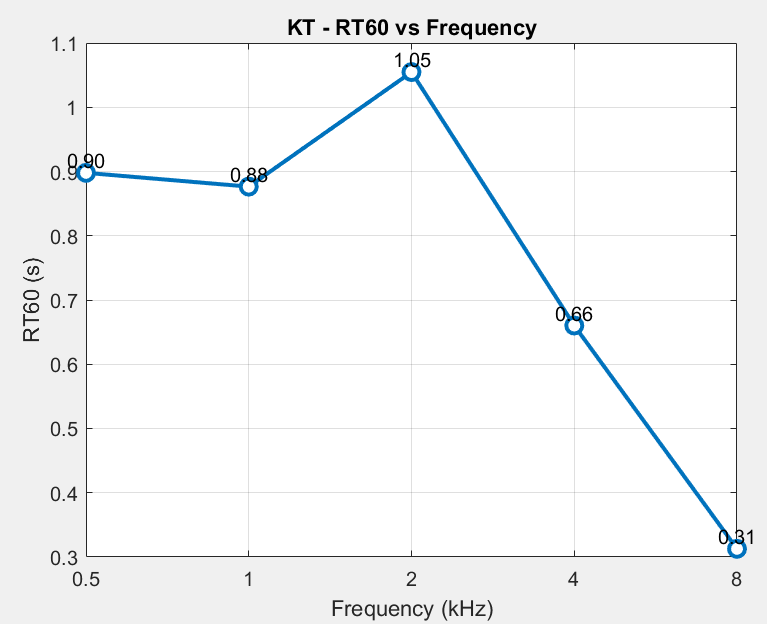
As seen, this is an improvement! Next I think it easier and better to keep improving the sine sweep signal instead of trying trial and error on Unity audio source (also because we still have issue as seen below, 1. Distortion on RIR before 0s on all freq band, also possibly causing high EDT, and tad bit too low RT60 on 8kHz, and too high on 1 and 2kHz bands.)

Yea, that’s good progress for today, lets call it a day, and tomorrow lets continue optimising this sine sweep.

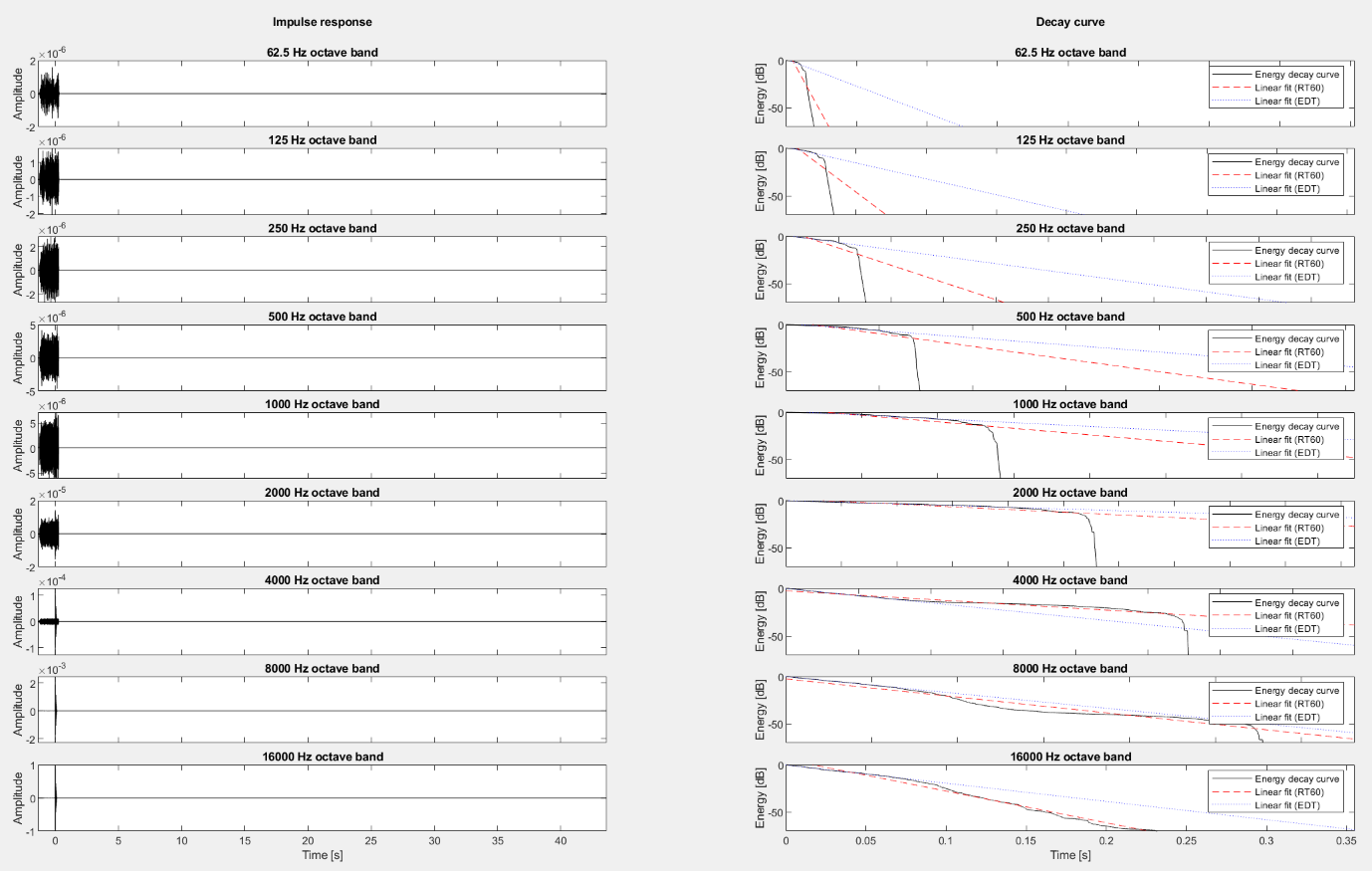
# Tuesday, 13 August 2024

improved\_sine\_sweep\_v3.wav improvements:

* Increased duration to 20 seconds for better low-frequency resolution.
* Extended frequency range (10 Hz to 22 kHz) to cover a wider spectrum.
* Increased silence at start and end to 1 second each, helping to reduce pre-ringing artifacts.
* Adjusted tapering for smoother start and end of the sweep.

Interestingly enough, this seems to make it worse in all aspect and didn’t solve anything:

As seen below, the distortion on RIR for all band still exist before 0s, and RT60 increased for all bands (not ideal) with 8kHz still being a tad bit lower than it should but also increases. Maybe I should also modify the deconvolve function?

In that case, lets revert the changes (v4) and modify deconvolve as well.

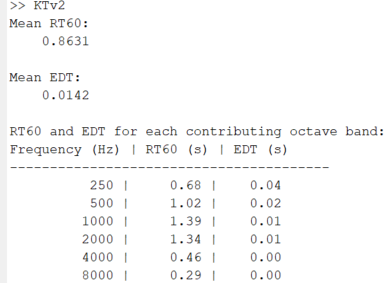
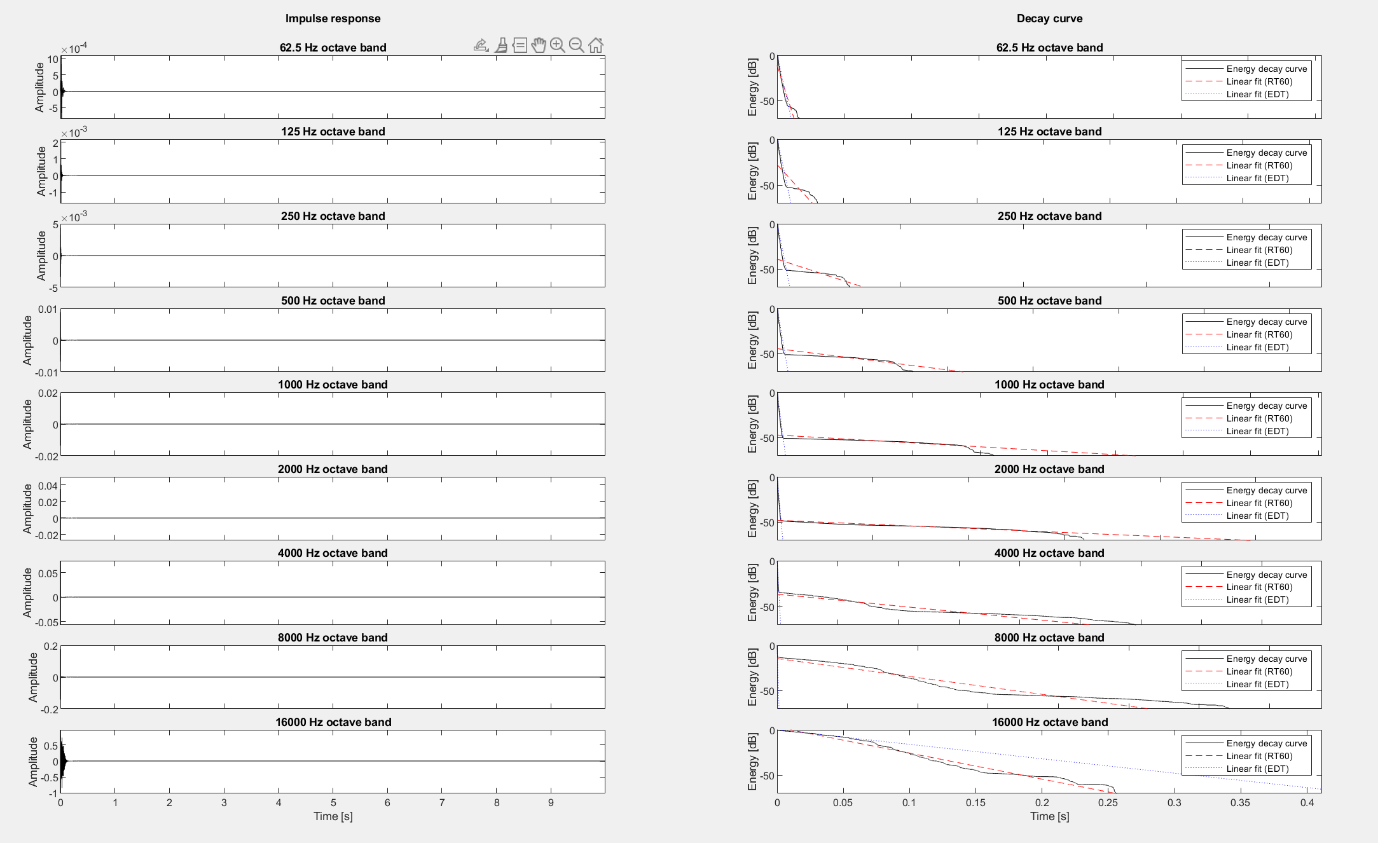
Ok, it went back to Mona’s like response… Idk, for now lets disable all HRTF/binaural/stereo and make it pure mono for RIR measurement. NVM, for some reason, changing stereo to mono in project settings cause audio to not work at all. So for now, I’ll just disable HRTF/binaural for RIR (Eval scenes) and see if this improve anything. 

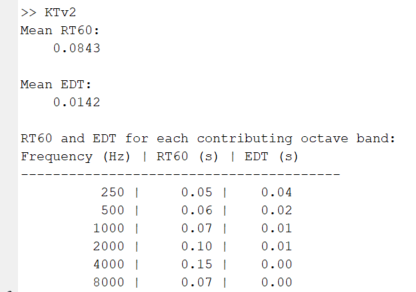
OK, that should be fine because as seen above, both channels are now the same so technically mono, compared to the one on top (with HRTF).

I think this does help a bit in terms of EDT but sweepv4 is really bad so lets go back to v2 and see with noHRTF setting.

Not OK, now the EDT is too low around 0.0142 s… and RT60 is still wrong… tbh I have no clue now. Let’s just commit this for safe measure and declutter some stuff.

Rewrote the new main\_KT ipynb to be more modular. Still having same problem (unbalanced RT60 bands) and too low EDT even using newly generated sine\_sweep.wav.

As seen on the left and below especially, it doesn’t feel like the RT60 line is correct as its measuring the noise floor instead(?).

Last one for today, lets use the sweep from original AVVR GDP sound folder (sweep.wav). 🡪

Ok pretty interesting.. its very low but atleast consistent and maybe tuning audio source parameter can fix it (reflections mix level and maybe even volume?)

That’s for today, will explore theory above tomorrow, and ready questions to ask Dr Atiyeh.

