

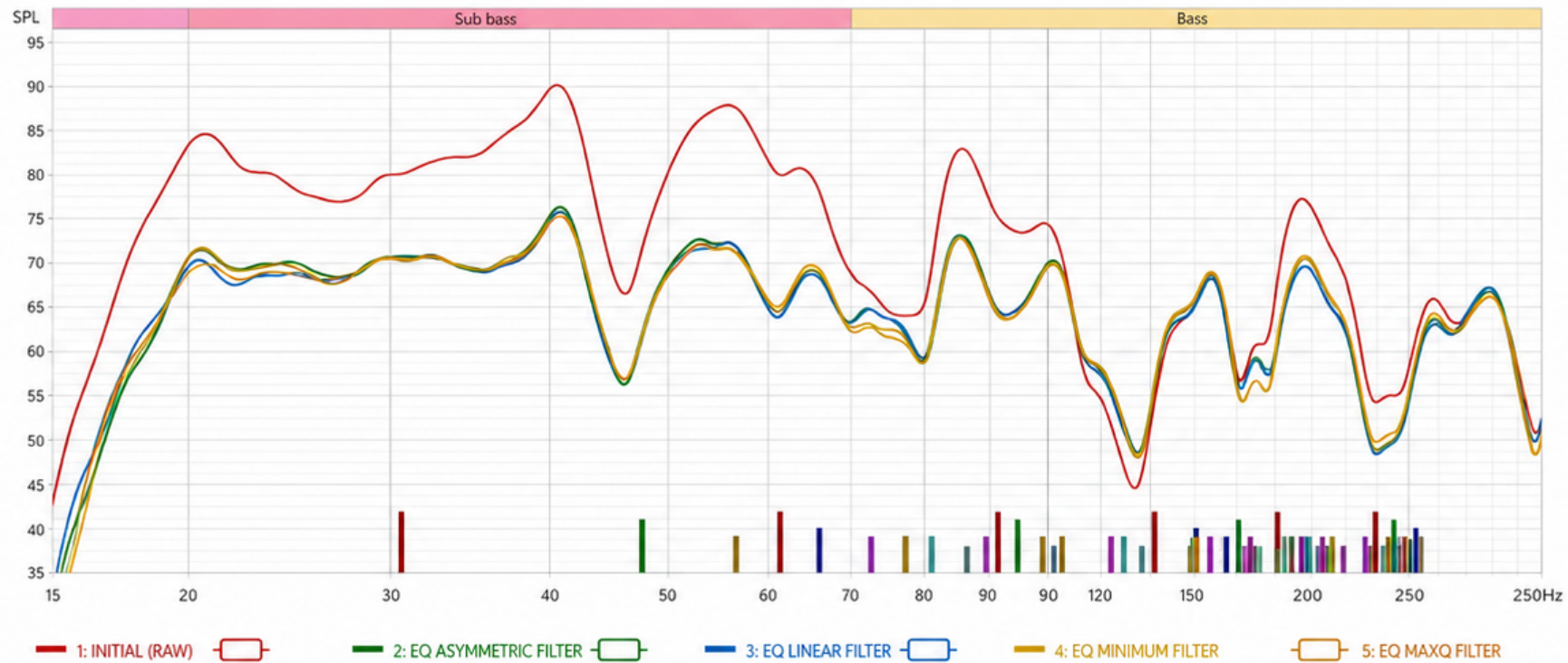
# DecayCore Performance

Automatic mode with adaptive target in a normal living room

NO ACOUSTIC TREATMENT

AUTOMATIC ADAPTIVE TARGET

REW MEASUREMENT PLOTS



## What was measured?

A normal living room without acoustic treatment. The figures compare the starting condition and the FIR-corrected result.

## What changed?

The strongest bass room modes are reduced, and the corrected filters converge toward the same target region.

## Key takeaway

This is not a miracle cure for room acoustics, but a clear demonstration of what automatic DSP can achieve in a typical living room.

# 1. Starting point: the room boosts the bass

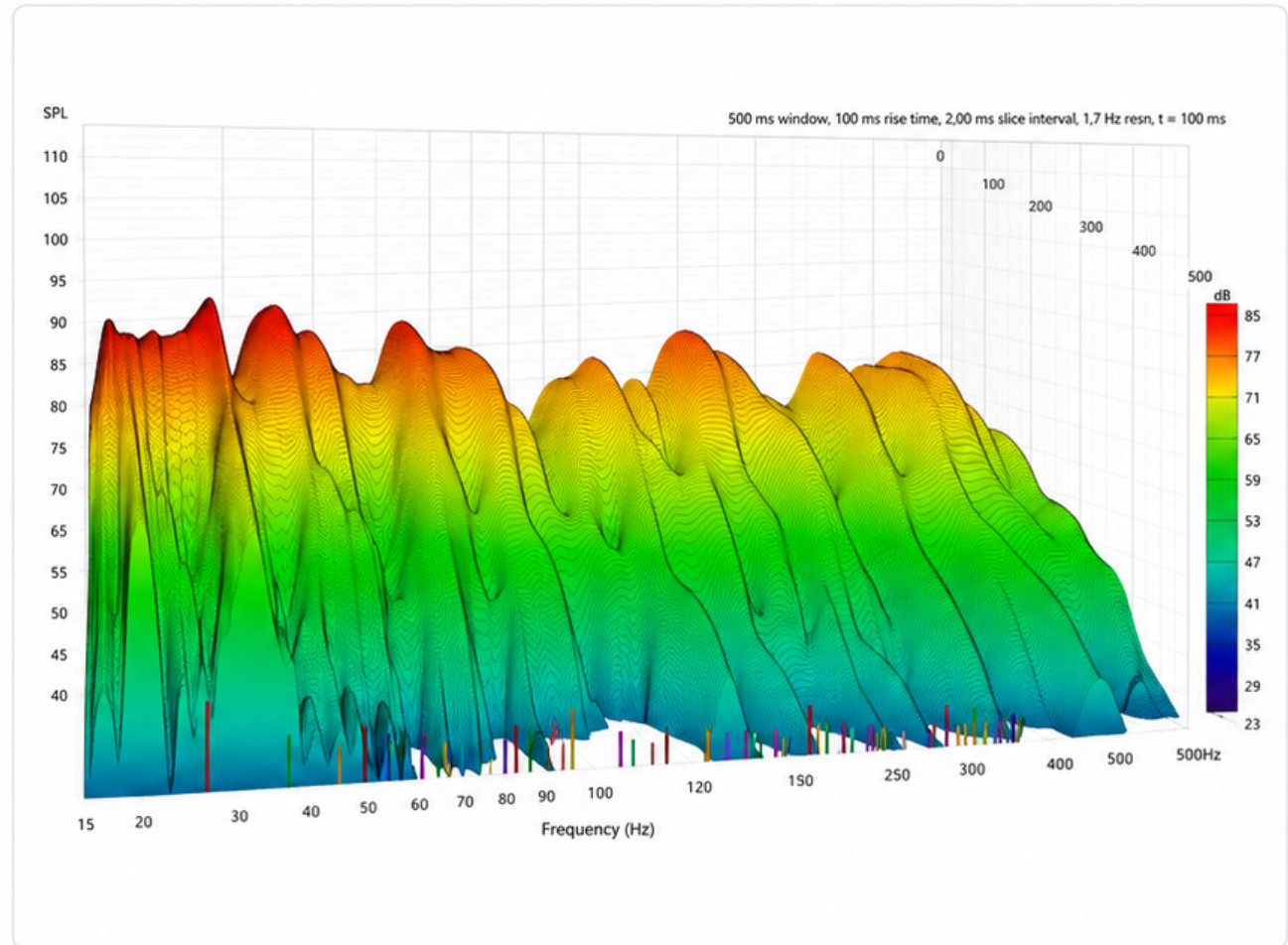
## A normal living room is visible in the measurement

The red NO EQ curve shows the starting point. In the bass region there are clear peaks and dips caused by room modes. This is normal in an untreated living room — and exactly the kind of environment where automatic correction should operate sensibly.

- The goal is not to turn the room into a measurement lab, but to achieve a listening-friendly balance.
- The adaptive target follows the measured response instead of forcing an unrealistically flat line.
- The biggest benefit appears in the bass, where the room has the strongest influence.

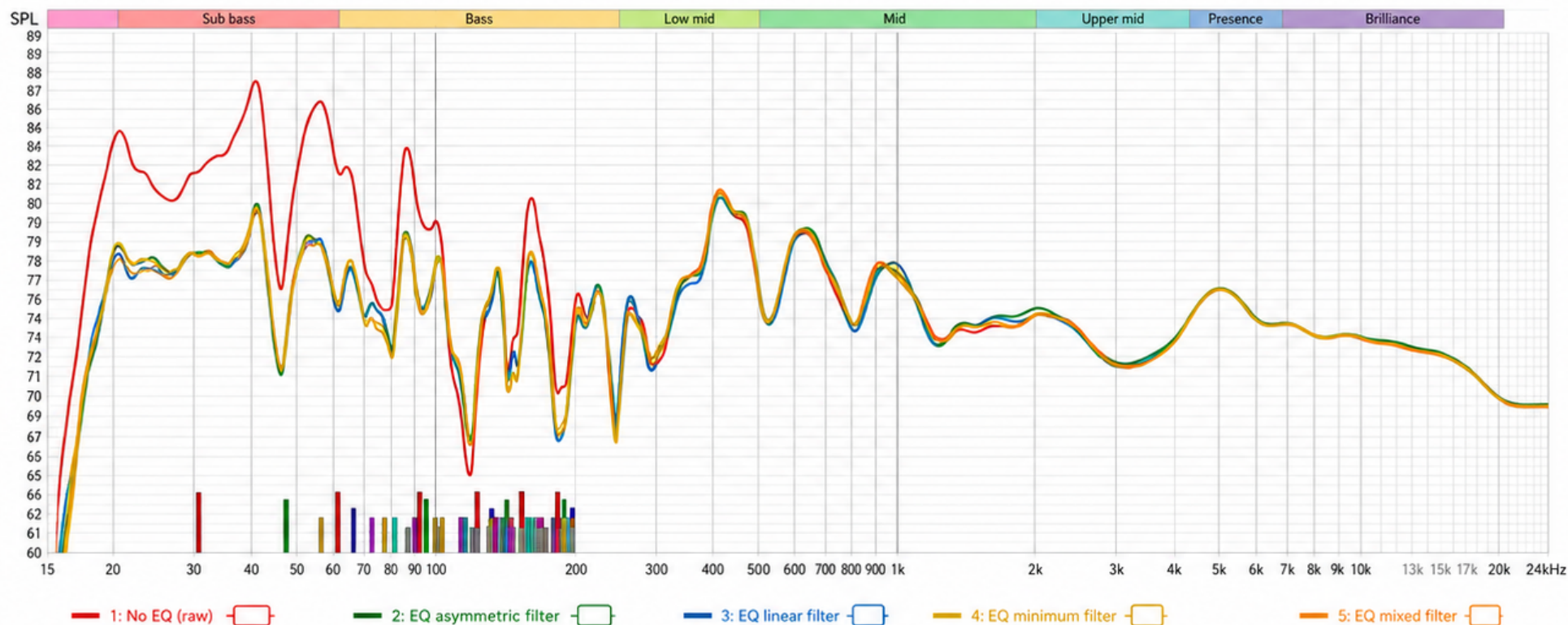
### Interpretation

Bass is not naturally even in a typical living room.



NO EQ waterfall: in the starting condition, bass energy lingers and room modes stand out clearly.

## 2. Frequency response: the largest problems are controlled



SPL 15 Hz - 24 kHz: the red curve is without EQ; the other curves are different DecayCore FIR options.

### Bass calms down

The strongest bass peaks no longer dominate in the same way. The corrected curves track much closer to one another.

### Top end stays intact

The correction does not scramble the entire spectrum. In this example the upper range remains naturally close to the loudspeaker's own voicing.

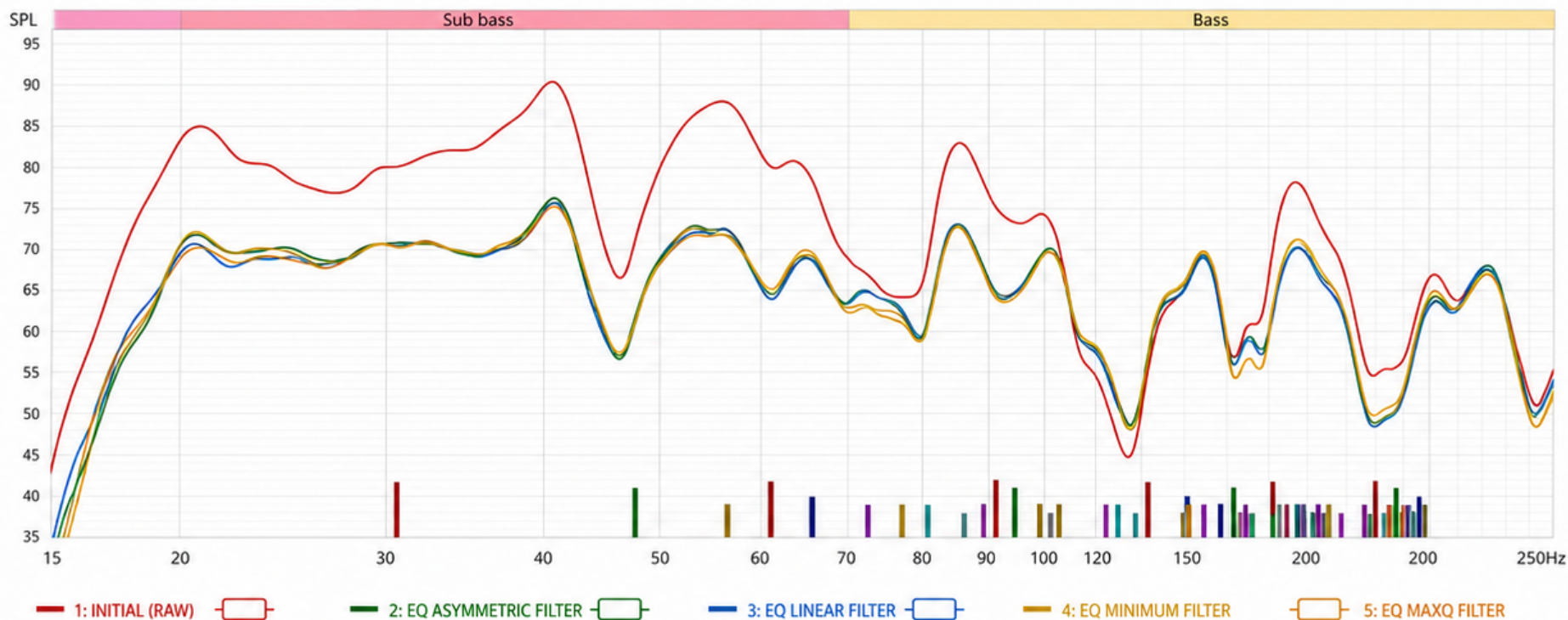
### Target stays realistic

The adaptive target does not chase impossible flatness. It adapts the correction to the measured room.

### Filters are consistent

Asymmetric, Linear, Minimum and Mixed all arrive at a similar bass solution, which indicates stable automation.

### 3. 15-250 Hz: the most critical listening range



Zoom into the bass: the corrected response follows the target much more closely than the starting condition.

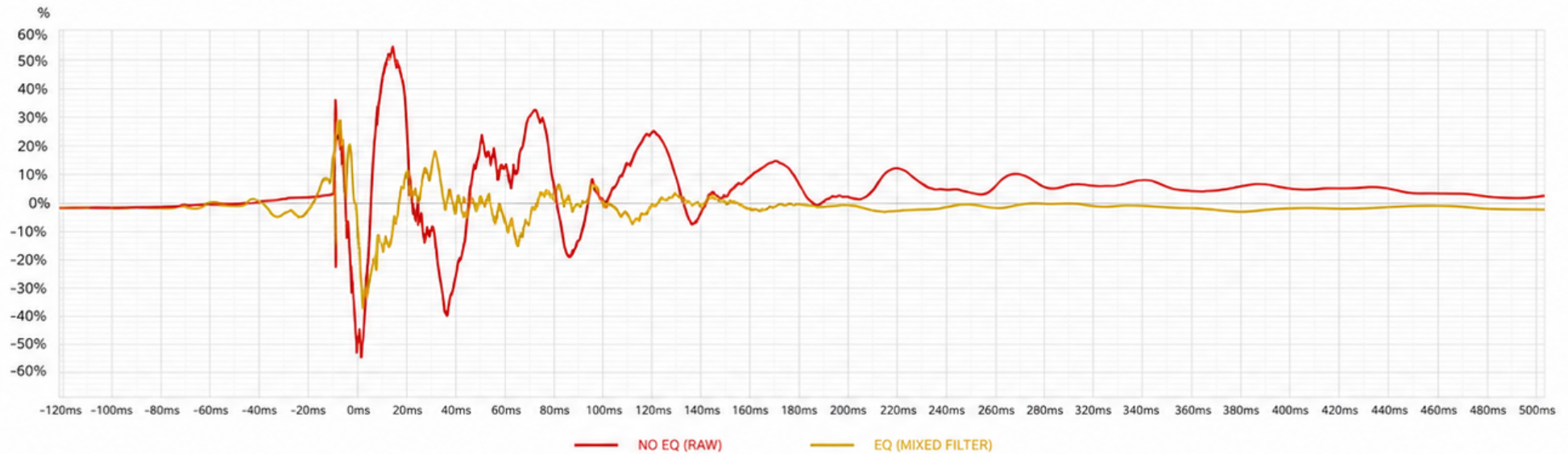
#### Why does this matter?

The 20-200 Hz region is often where a living room sounds muddy, boomy or uneven. In this measurement DecayCore reduces the strongest peaks without trying to force deep dips unnaturally upward.

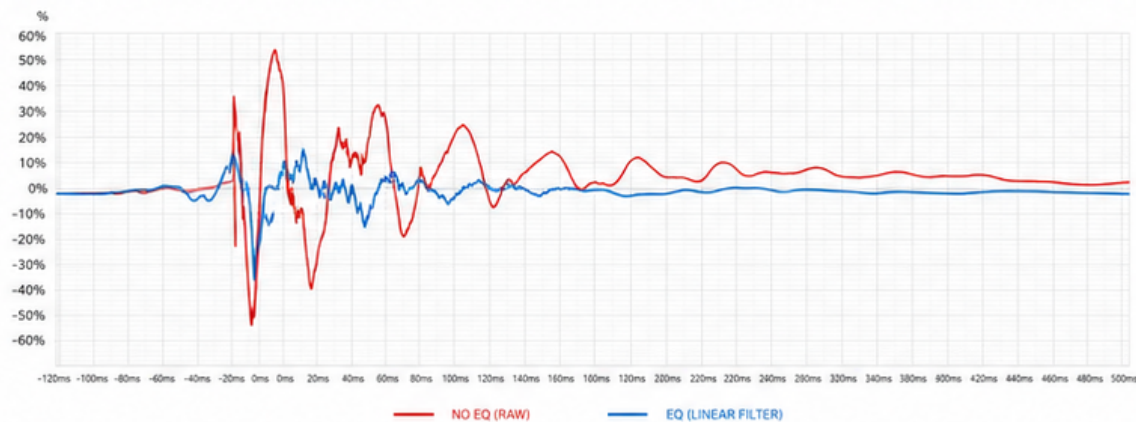
#### A good sign for automatic mode

The corrected curves are not random. They settle very close to one another even across different FIR types, showing that the automatic process identifies the same underlying room problem.

## 4. Time response: less ringing



Mixed filter: in the step response, post-ringing in the red starting condition is reduced clearly.

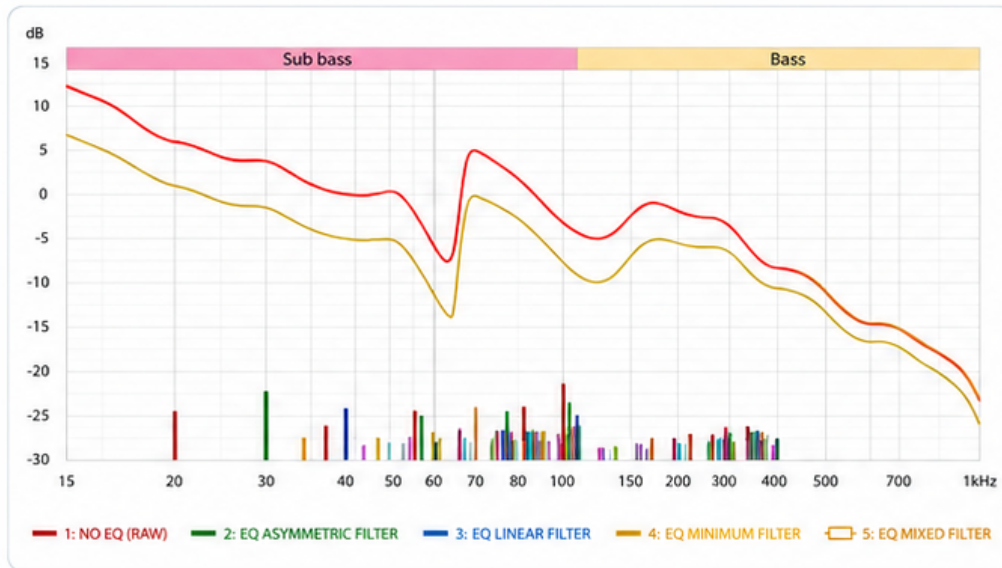


Linear filter: a similar calming of the time response can also be seen here.

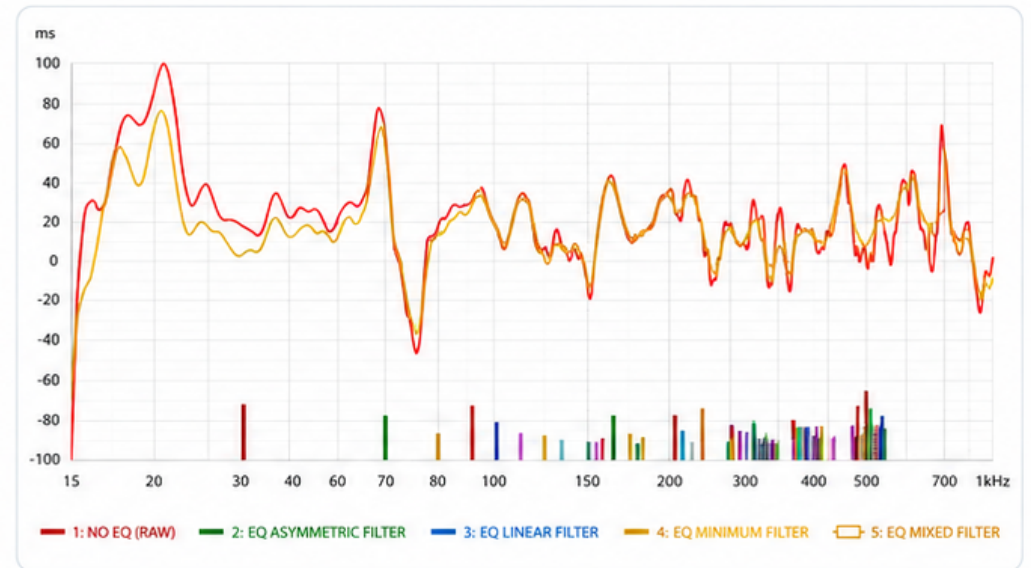
### What does this figure show?

- Without EQ, the response has a large peak and a long decay tail in the bass-energy region.
- After correction, more energy is concentrated at the initial event and later oscillation is reduced.
- In listening, this often translates into punchier bass and less masking from the low end.

# 5. Same automation, different FIR options



Mixed phase: phase correction focused mainly on the bass region.



Mixed group delay: group delay remains controlled after correction.

## Linear

Best when latency is not a problem and maximum linear-phase clarity is desired.

## Minimum

Low latency, useful when overall delay must remain modest.

## Mixed

A compromise: sensible bass-focused phase/time correction without straightening the whole band by force.

## Asymmetric

A low-latency style solution that still benefits from FIR correction while keeping delay smaller.

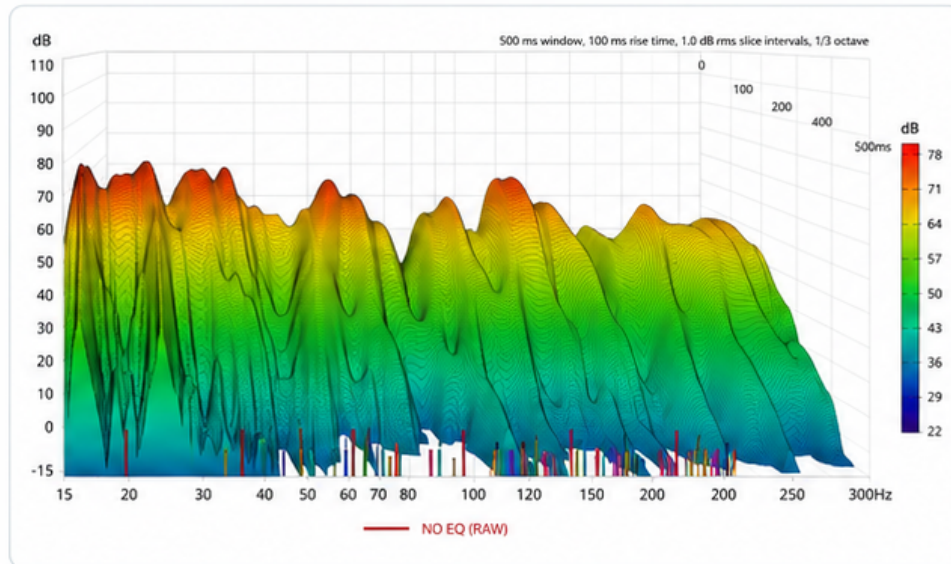


### Important in this brochure

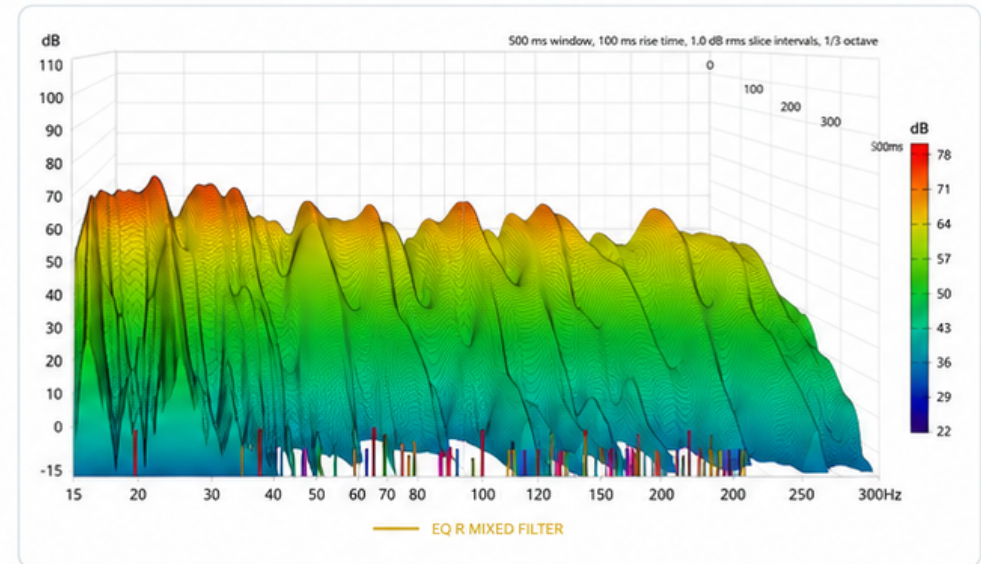
Based on these figures, all filter types reach a similar correction in the bass region.

The choice can therefore be guided by practical needs: latency, phase behavior, use case and personal preference.

## 6. Summary: strong result without acoustic treatment



Before: NO EQ waterfall



After: EQ R Mixed filter waterfall

### Main message

- In automatic mode, DecayCore can produce clearly audible and measurable bass correction in a normal living room.
- The adaptive target addresses problems without forcing an unrealistic response.
- Different FIR modes give broadly similar magnitude correction, so the final choice can be based on latency and phase behavior.

### An honest limitation

DSP does not remove the physics of the room, and it does not replace good loudspeaker and listening-position placement. Deep dips and long decay tails may not disappear completely without acoustic changes. The key result here is that automatic correction makes the response noticeably more controlled without manual tuning.

**DecayCore** Automatic FIR room correction, bass time control and adaptive target in one tool.