

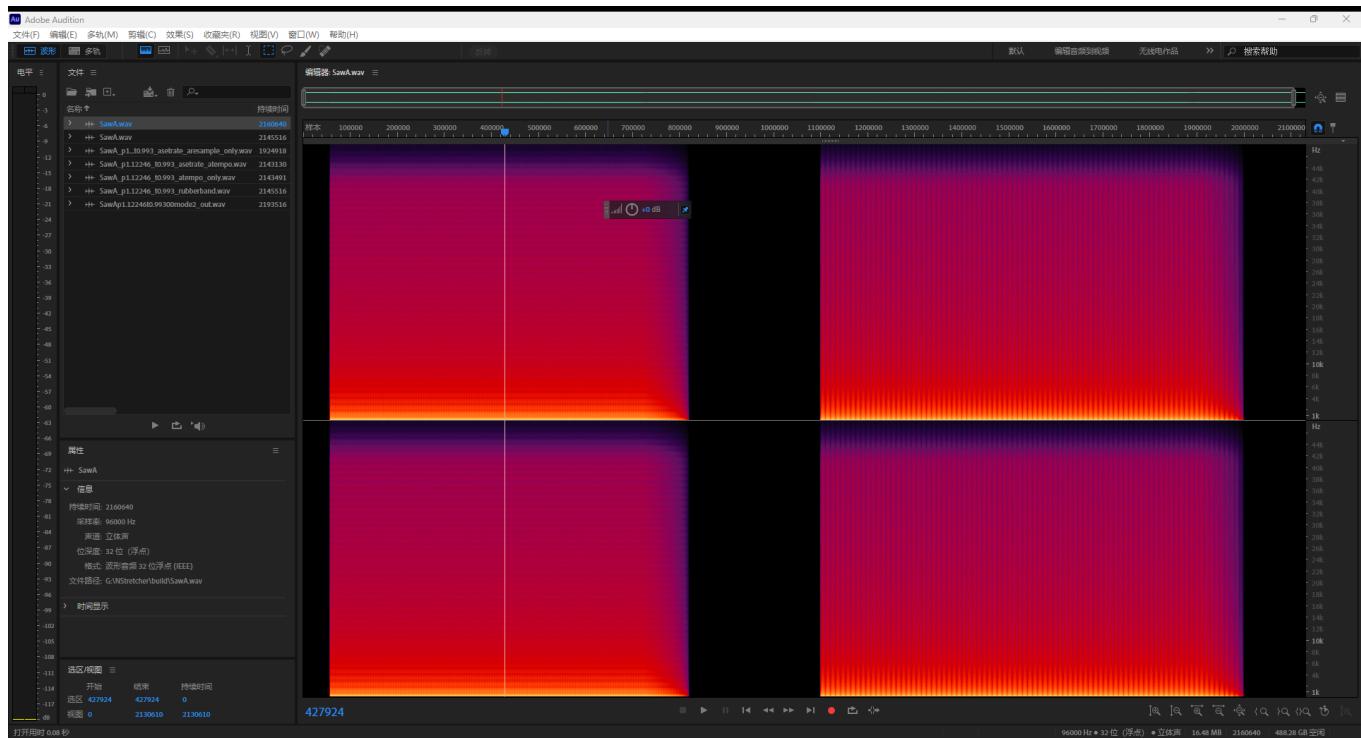
# NStretcherBenchmark

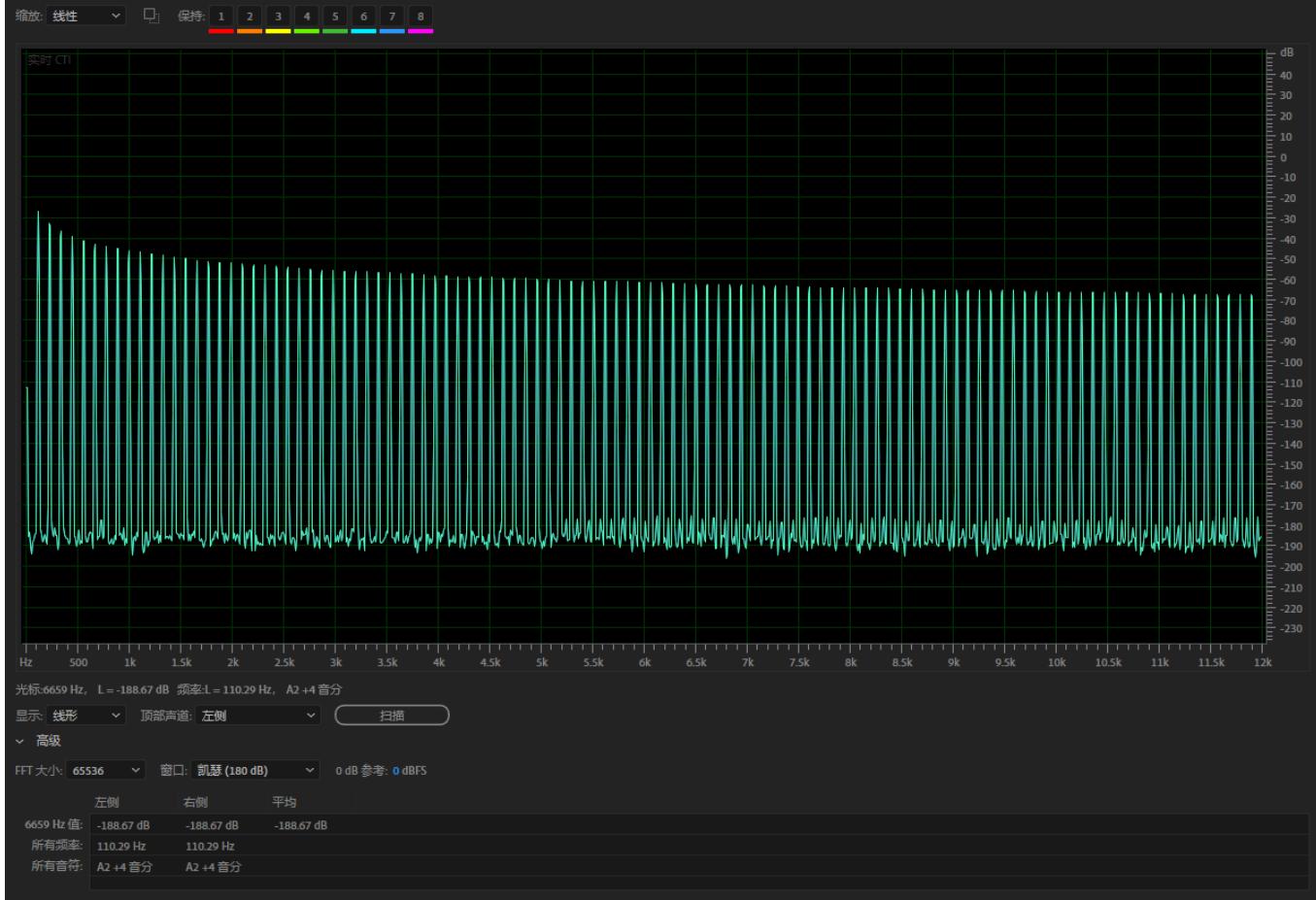
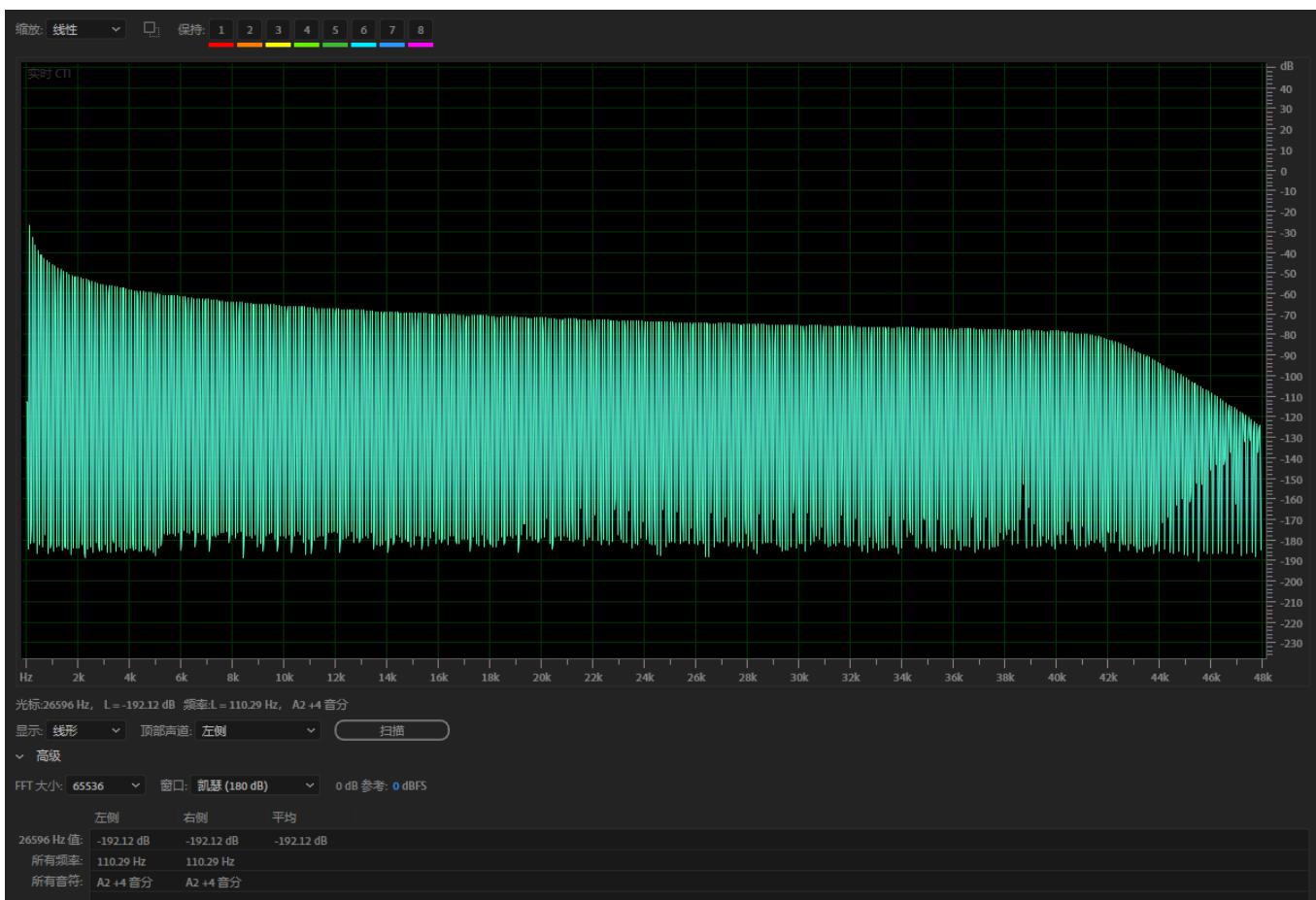
This is a benchmark for NStretcher. It only shows how I test NStretcher and compare it with other stretchers.

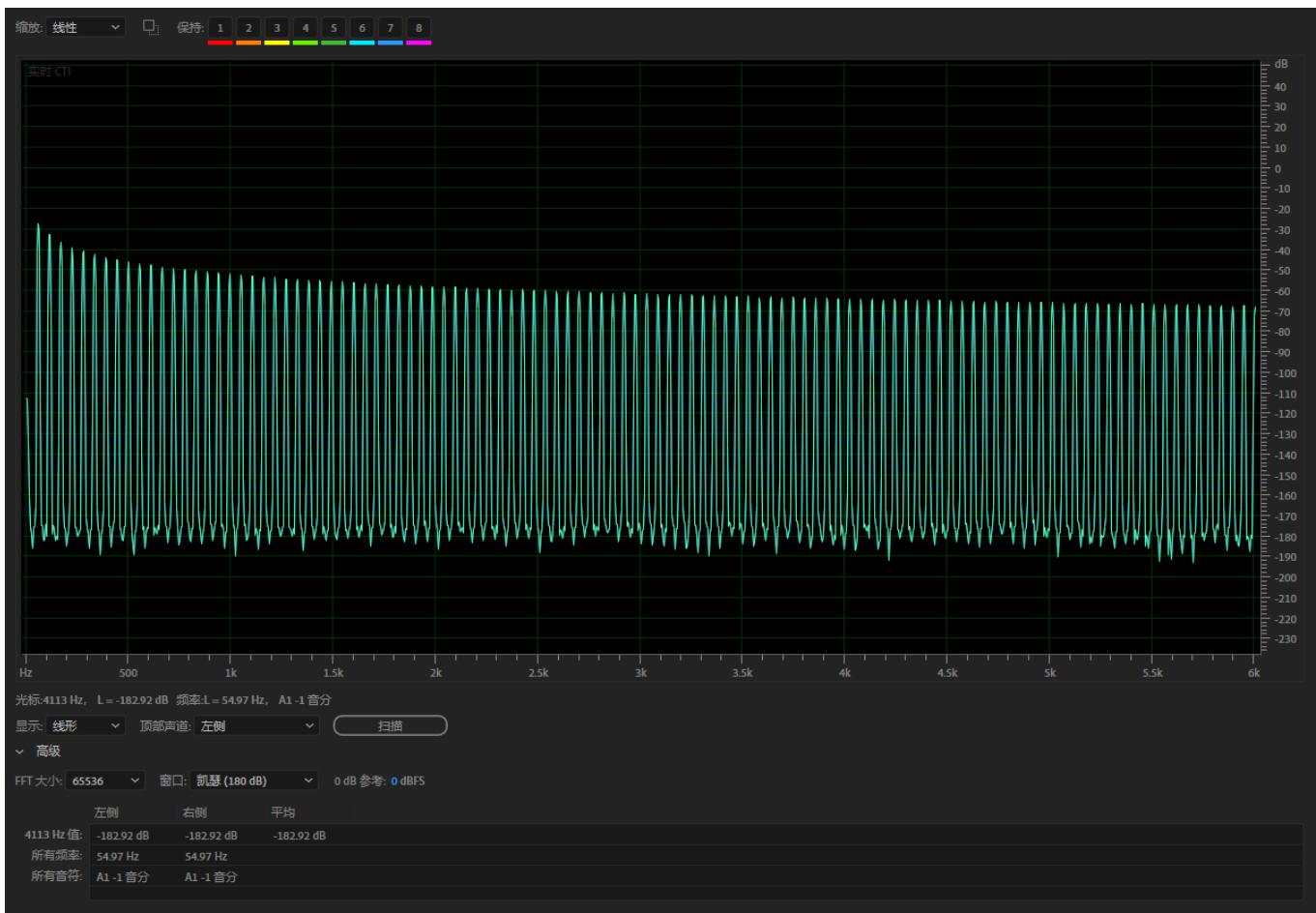
The most important test file in this folder is "SawA.wav" and "FreqScan.wav". The former tests the best ideal signal-to-noise ratio that a stretcher can obtain, while the latter tests the ideal quality of a realtime-changing frequency. But a common signal will not be so pure like the test signals above, so "**how good a stretcher is**" depends on how users think when using it on songs or something else.

But please look at the test info below.

For SawA.wav:

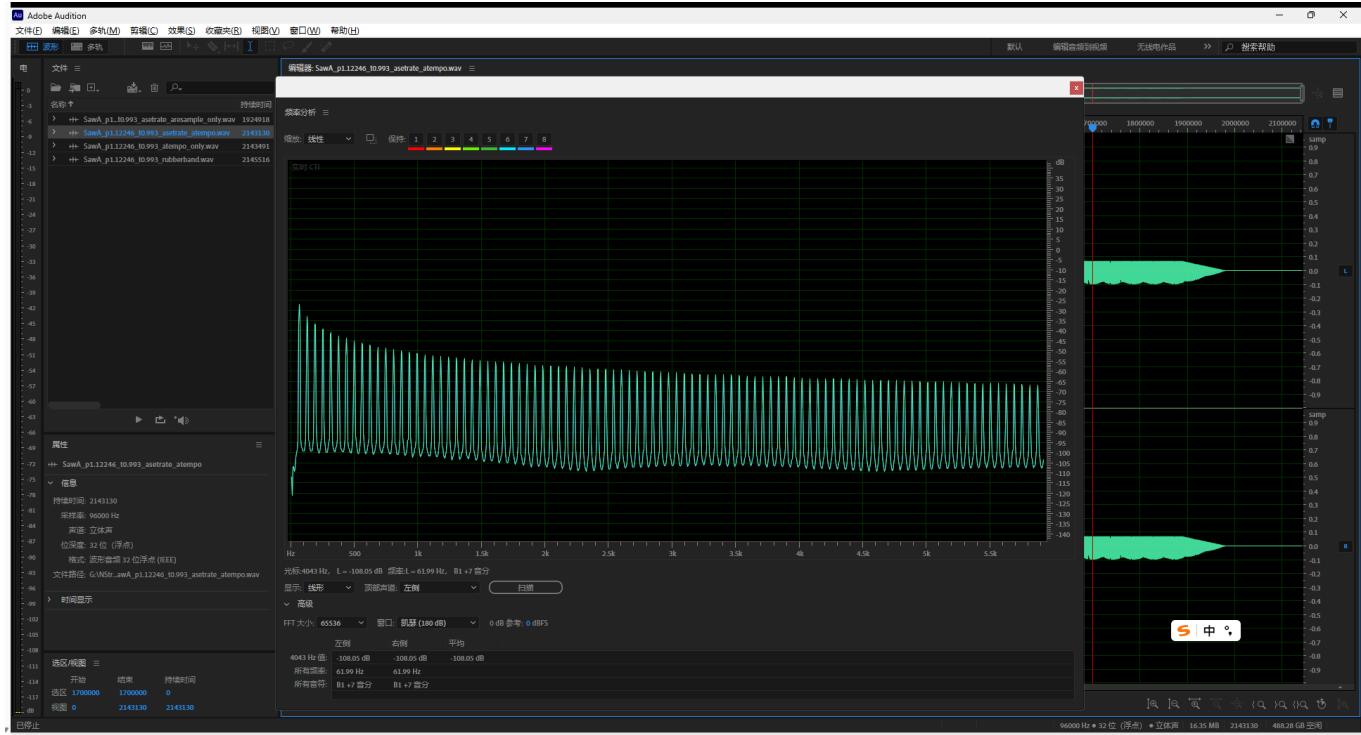


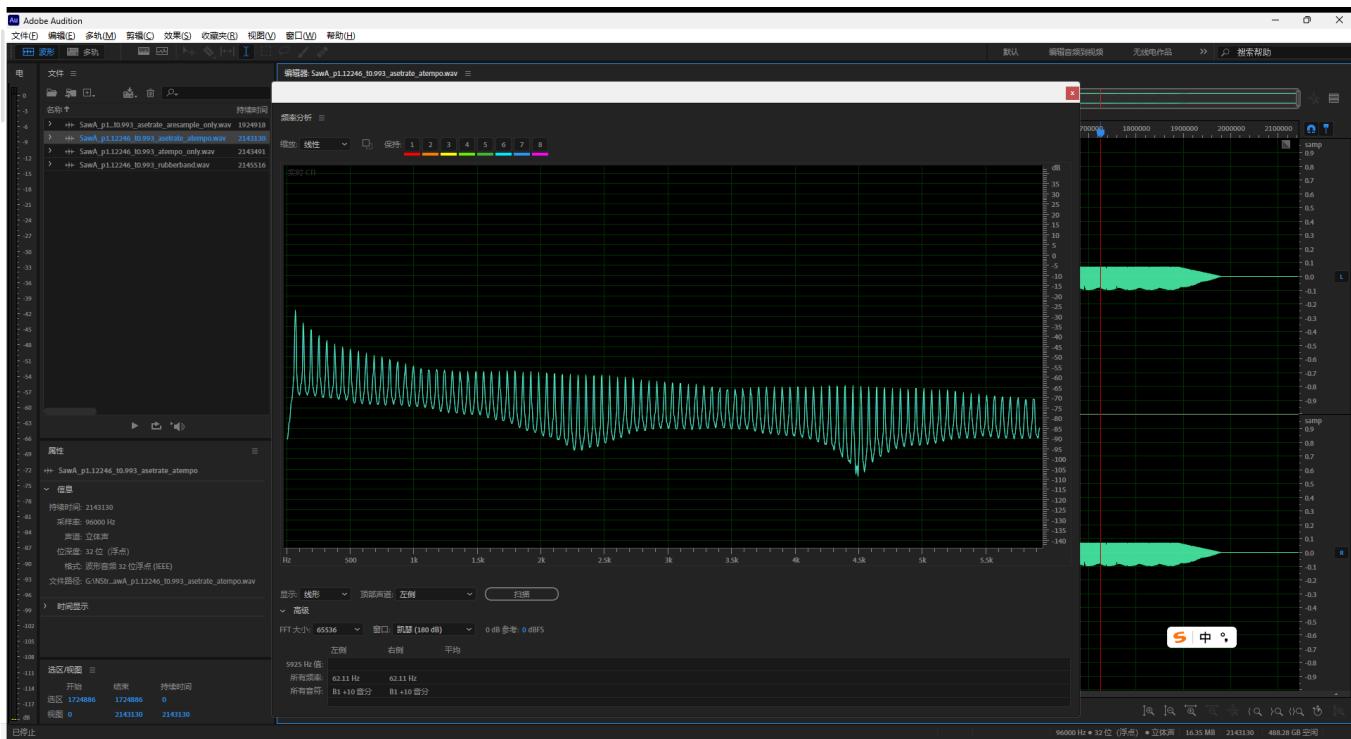




This test file has very high quality.

The asetrate-atempo filter in ffmpeg has about 45dB signal-to-noise ratio in the worst case. We call it the worst case because the waveform is not stable like the original one.

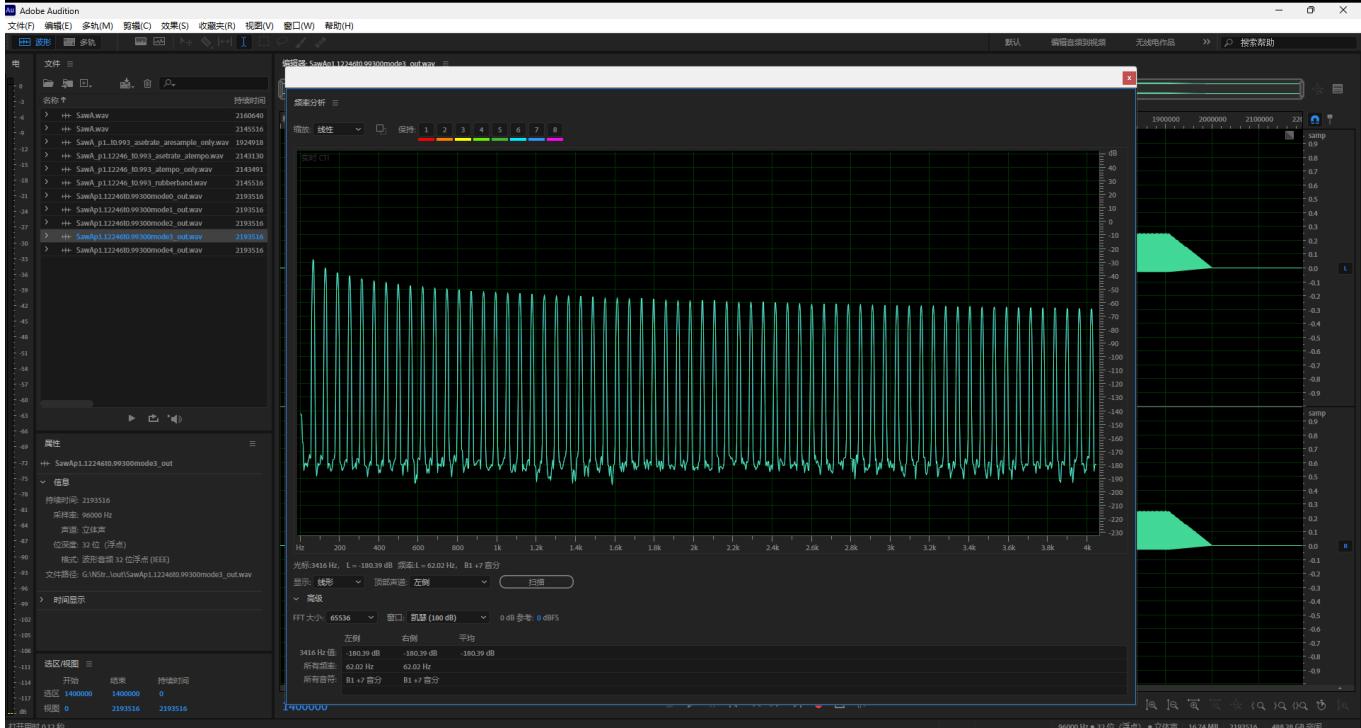
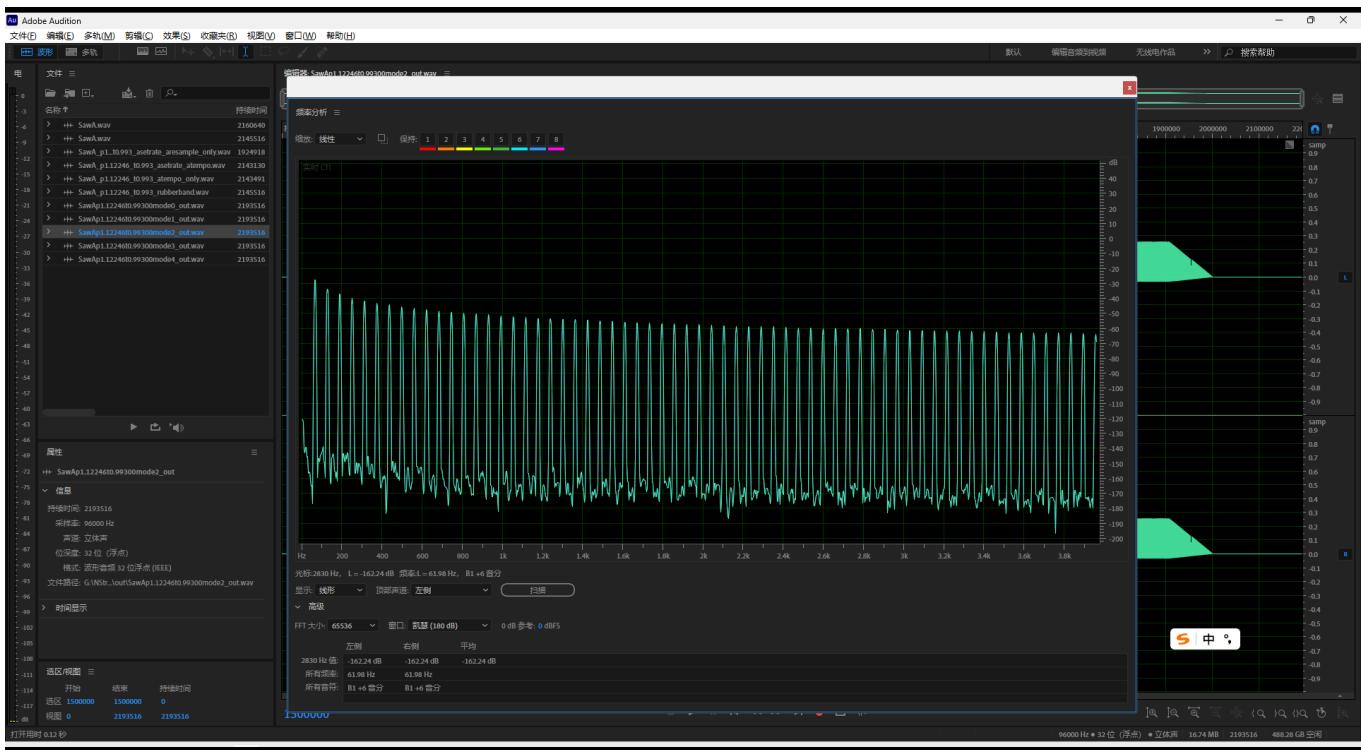


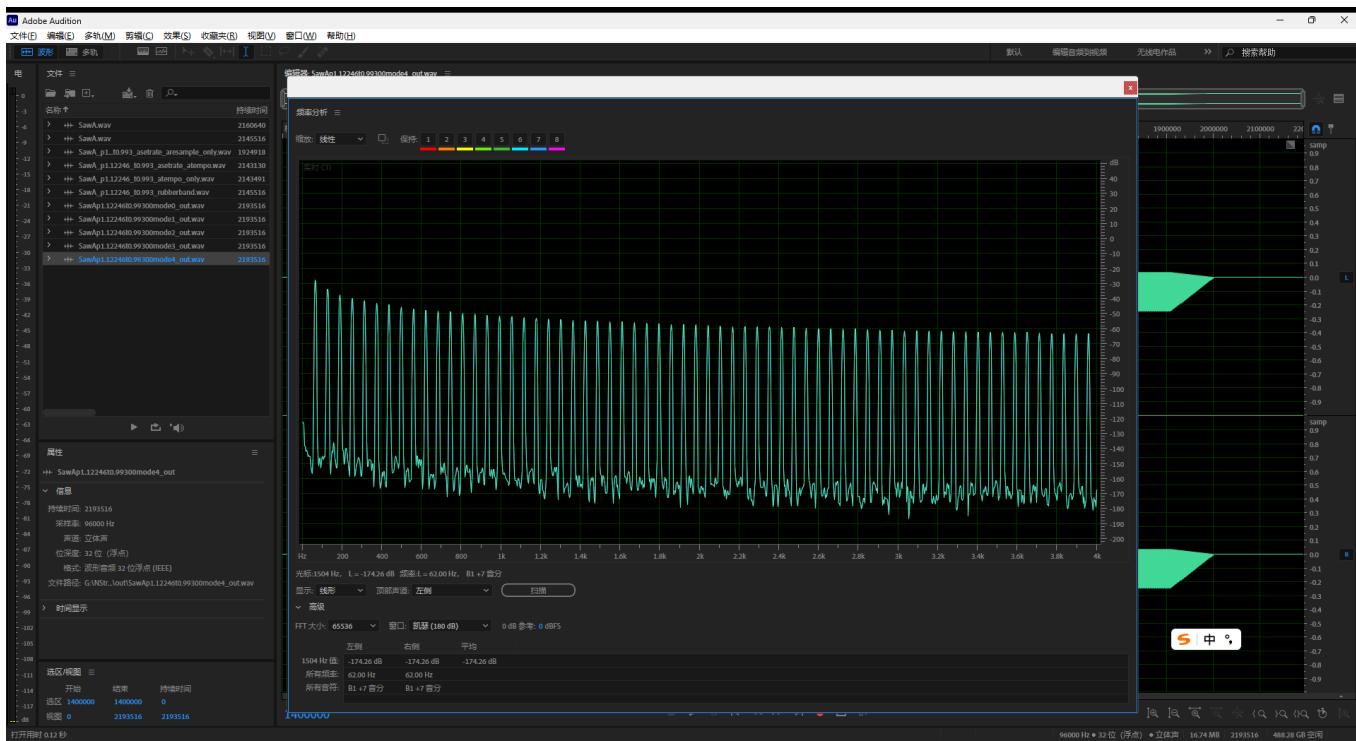


Rubberband R2 in ffmpeg has about 55dB signal-to-noise ratio.

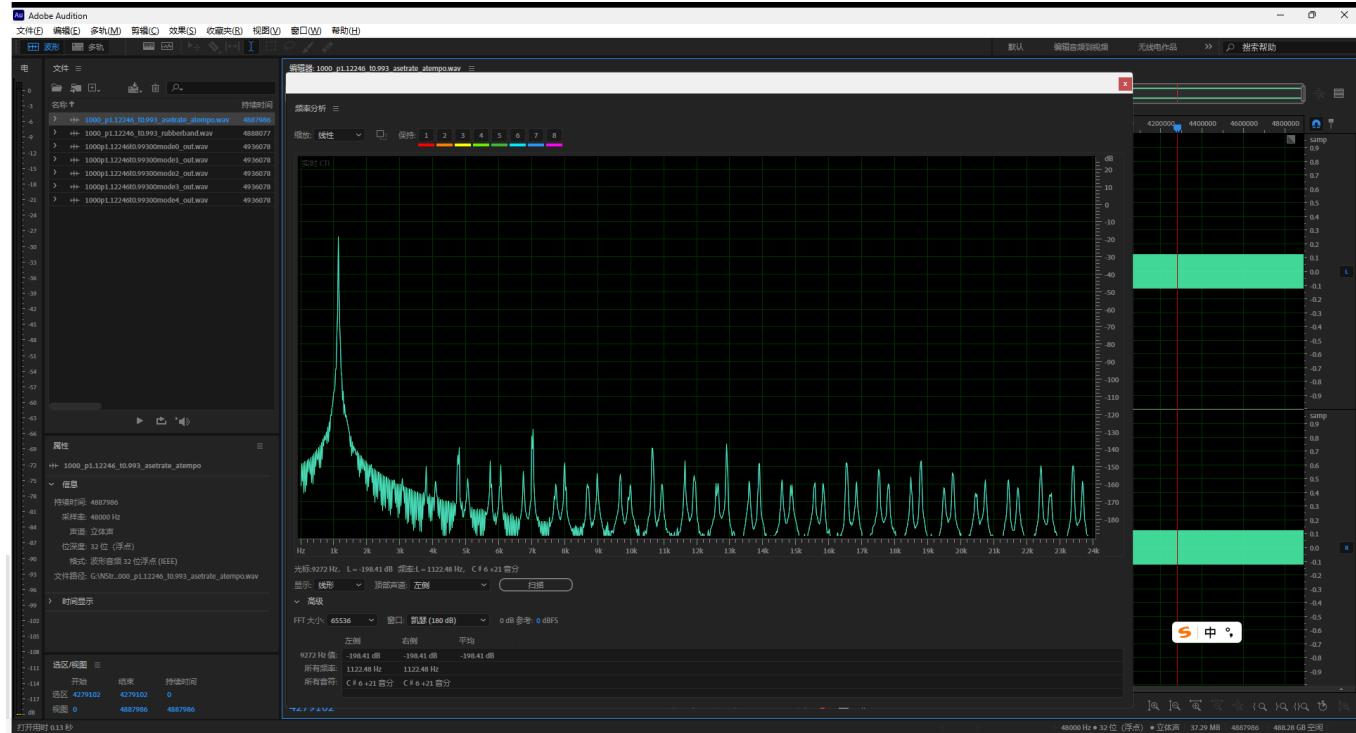


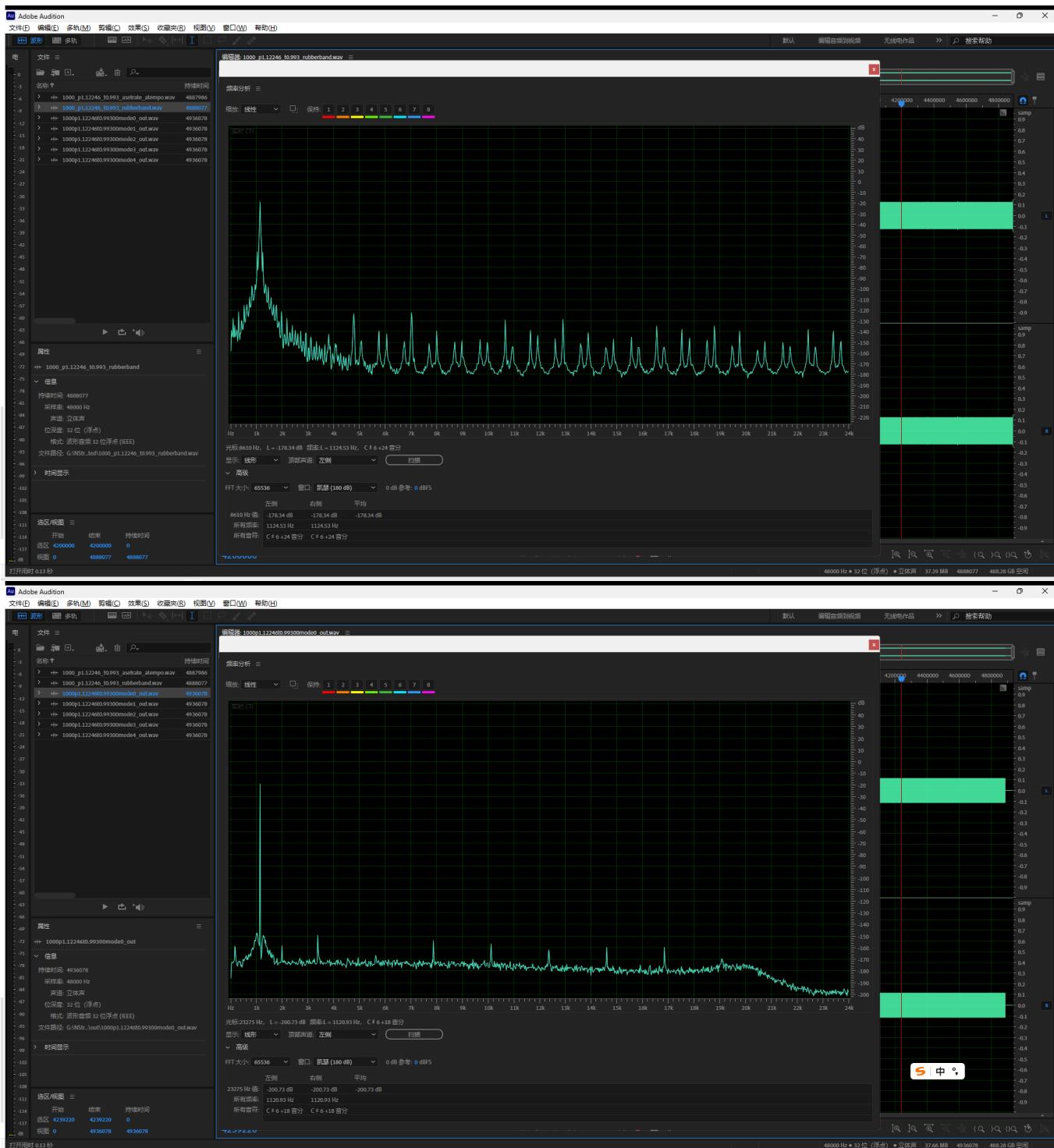
Below are graphs for NStretcher's mode 2-4. The size of FFT is too small in mode 0 and 1, and the benchmark for frequency is not so good, but their response for transient is much better, latency is much lower, and they are very useful for some songs.

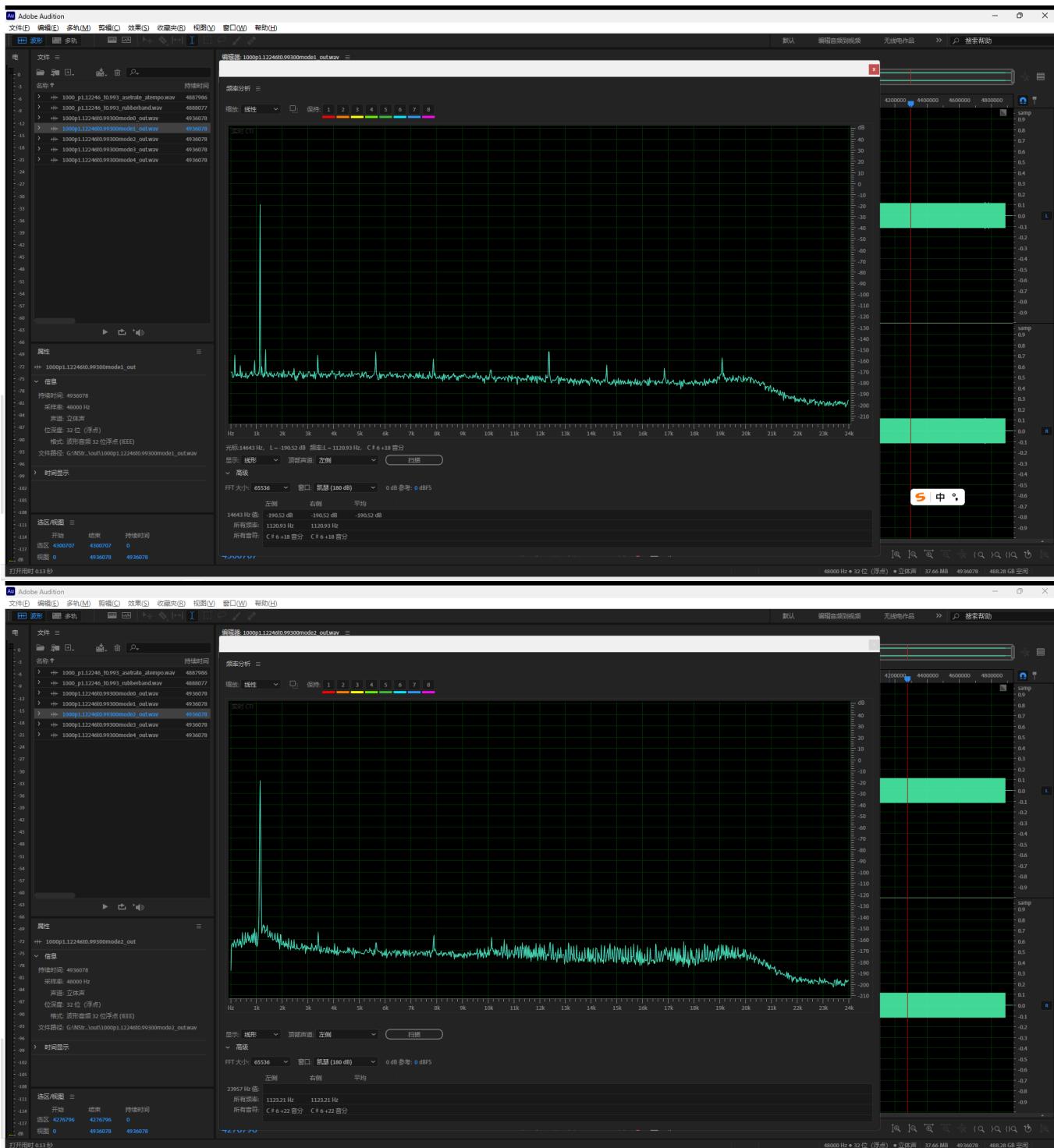


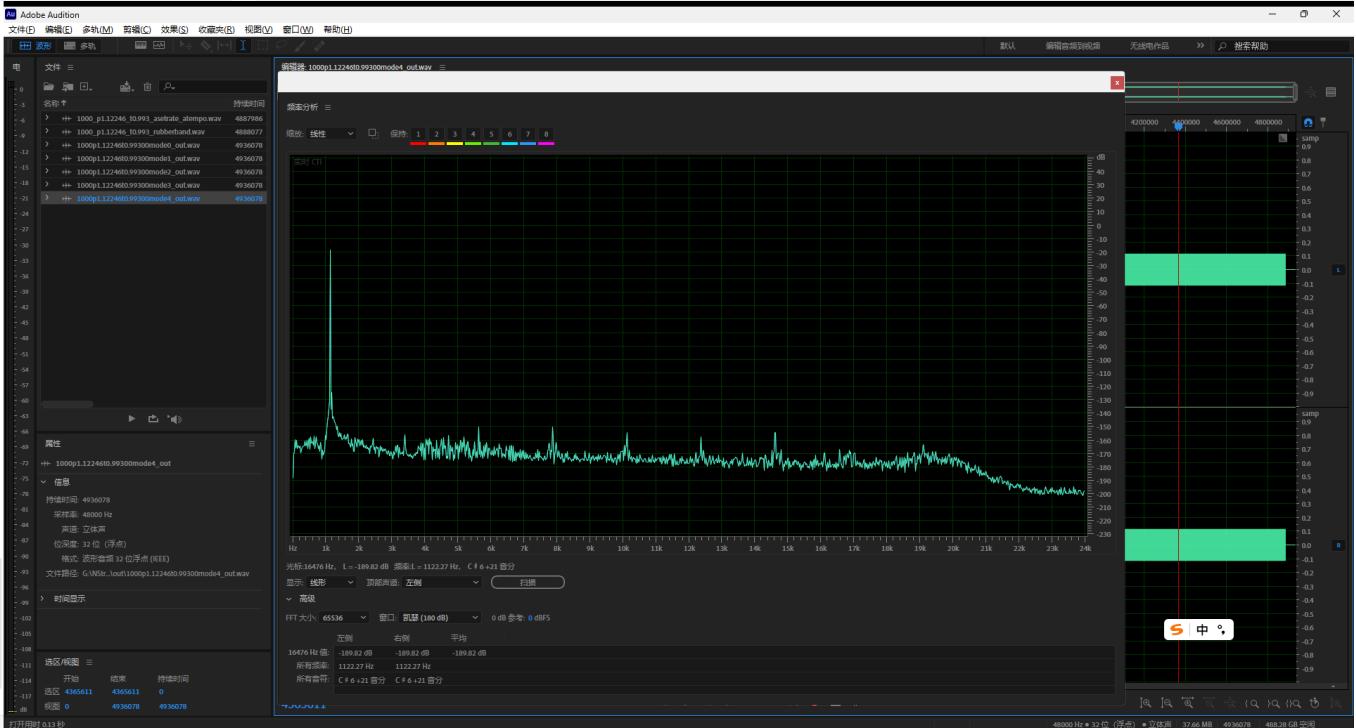
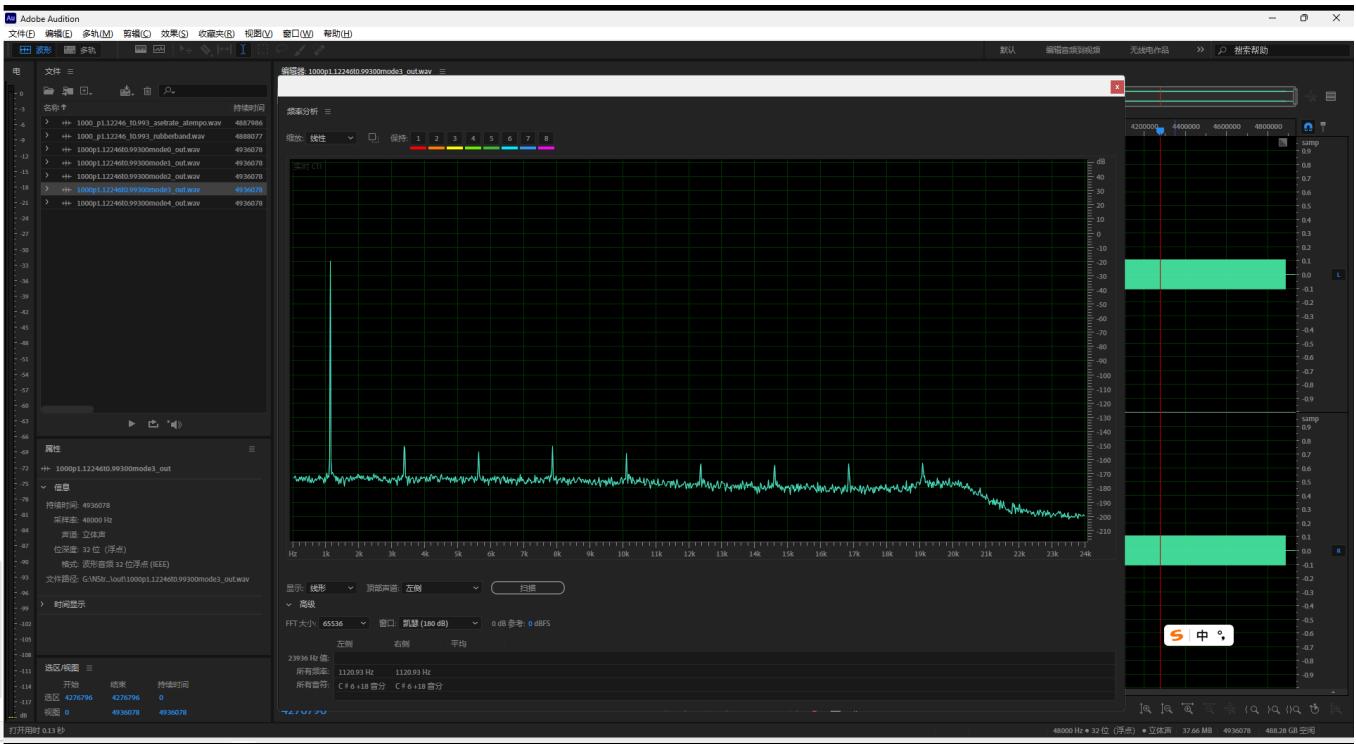


Then lets see 1000.wav, 1000Hz sine wave. It shows the quality for high frequencies.

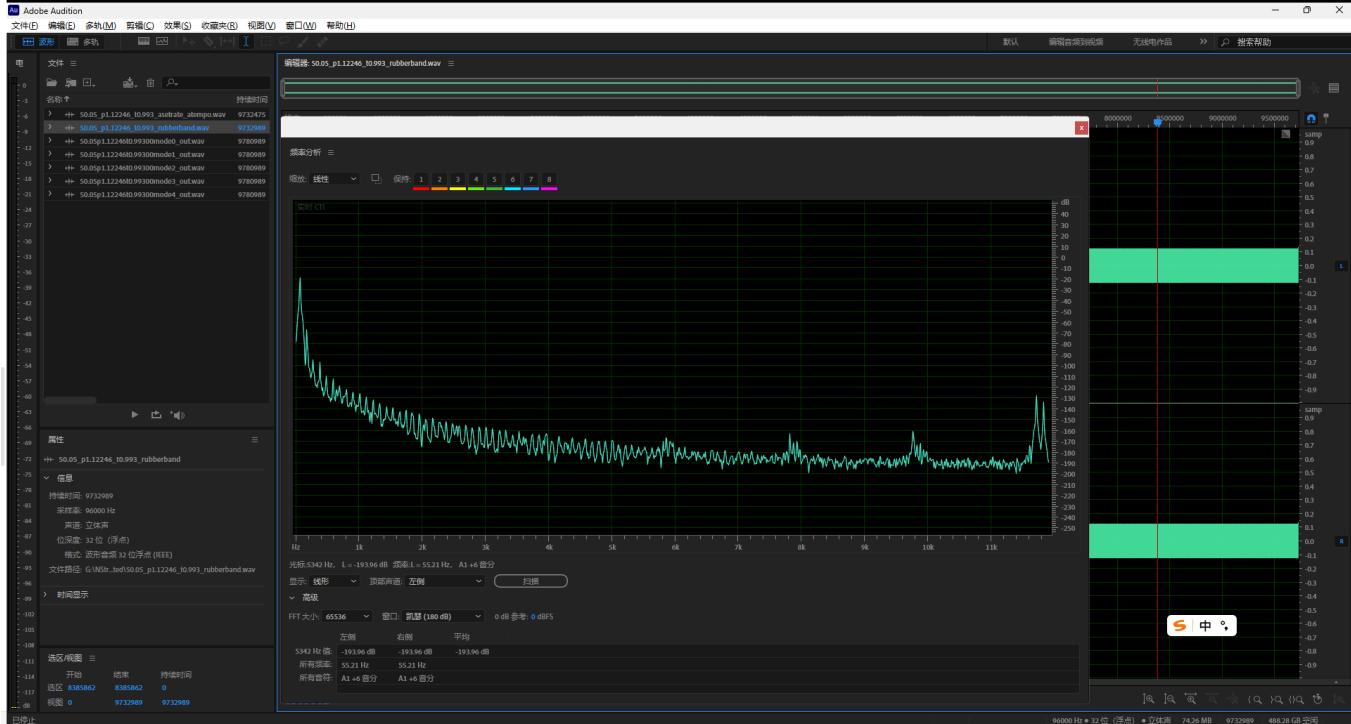
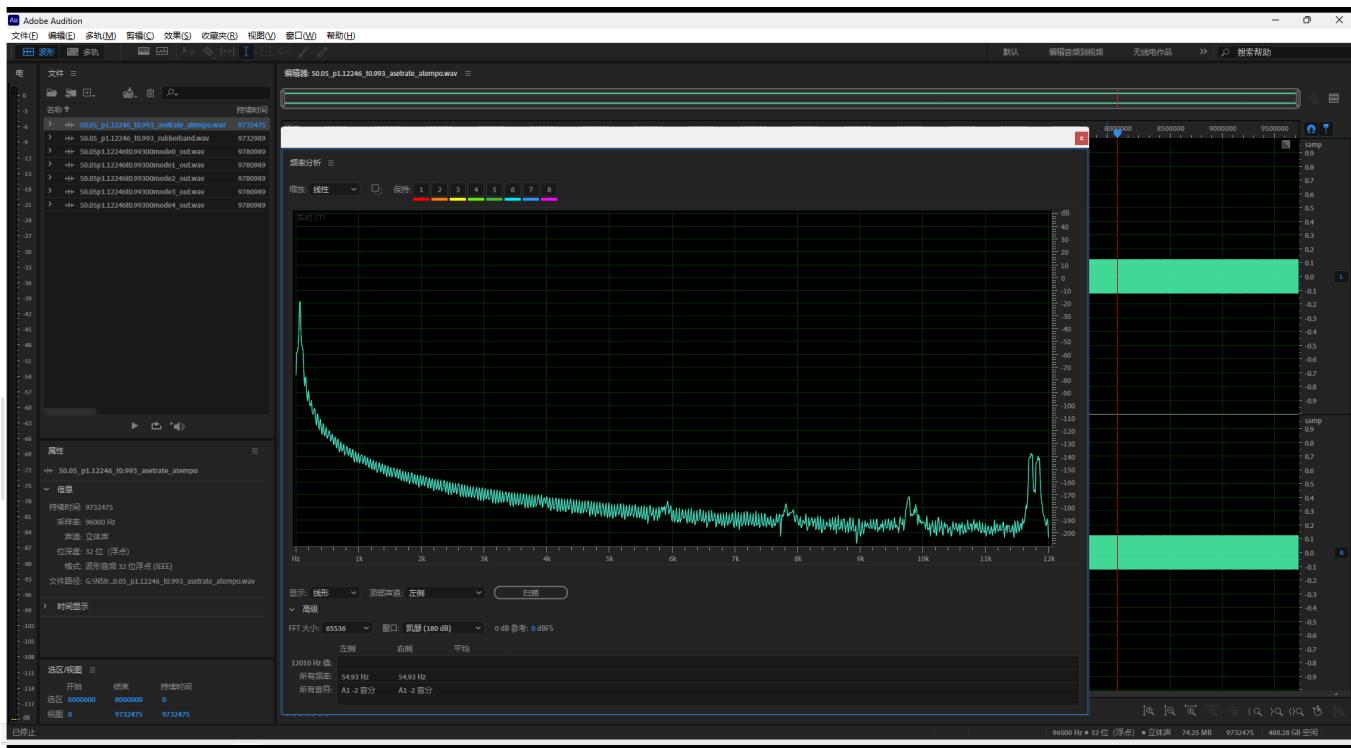


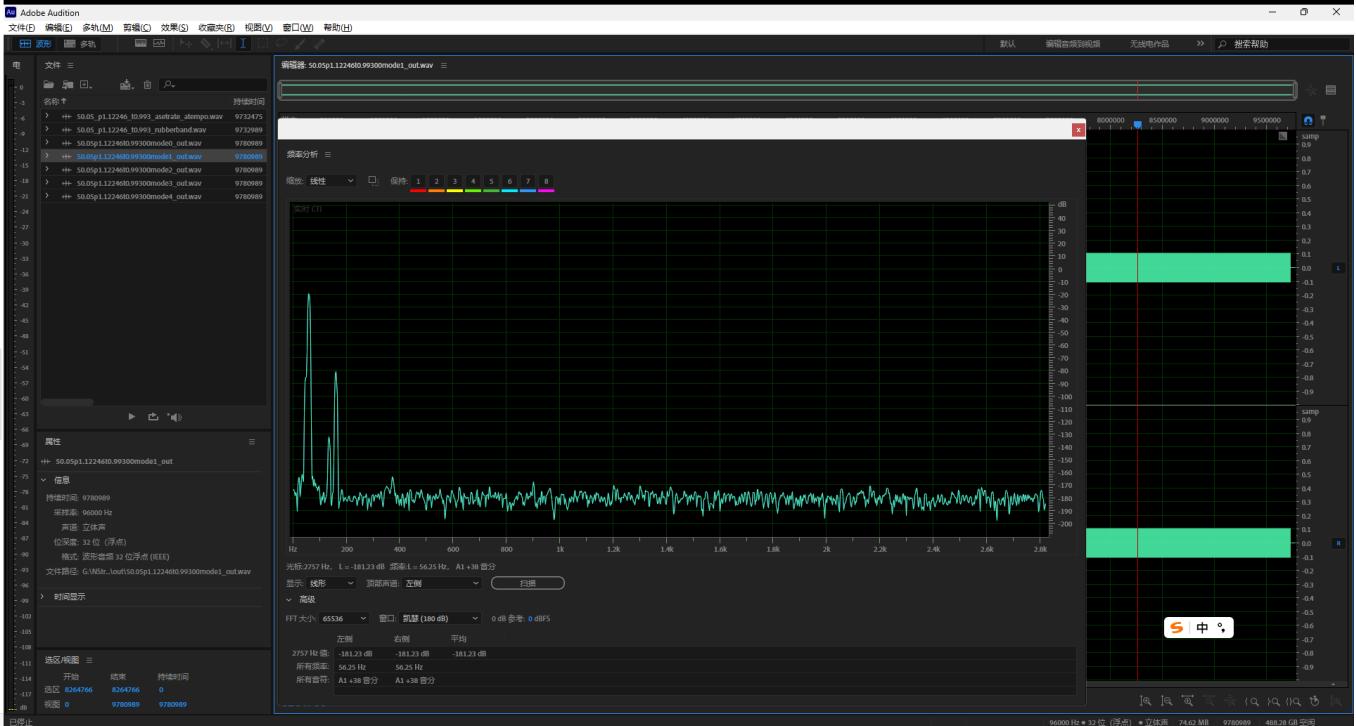
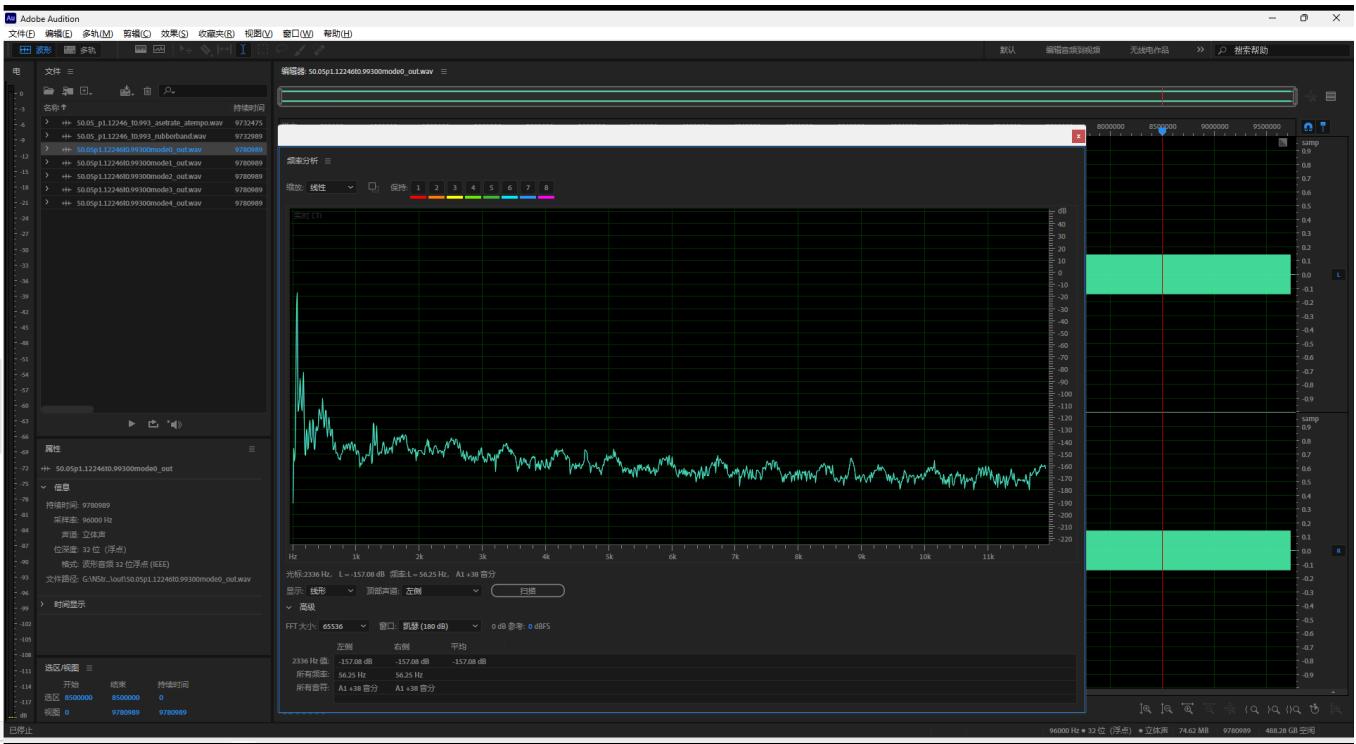


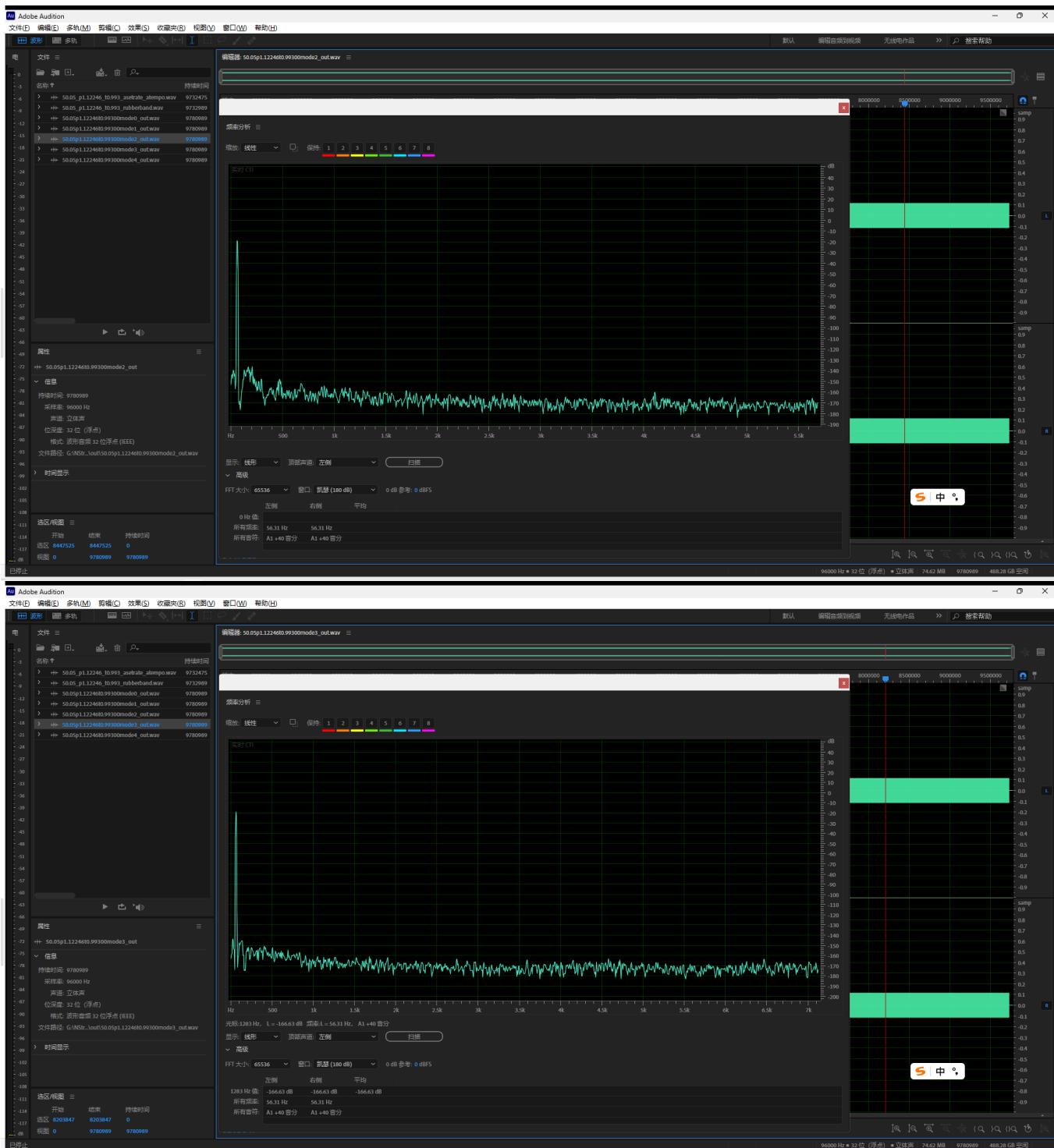


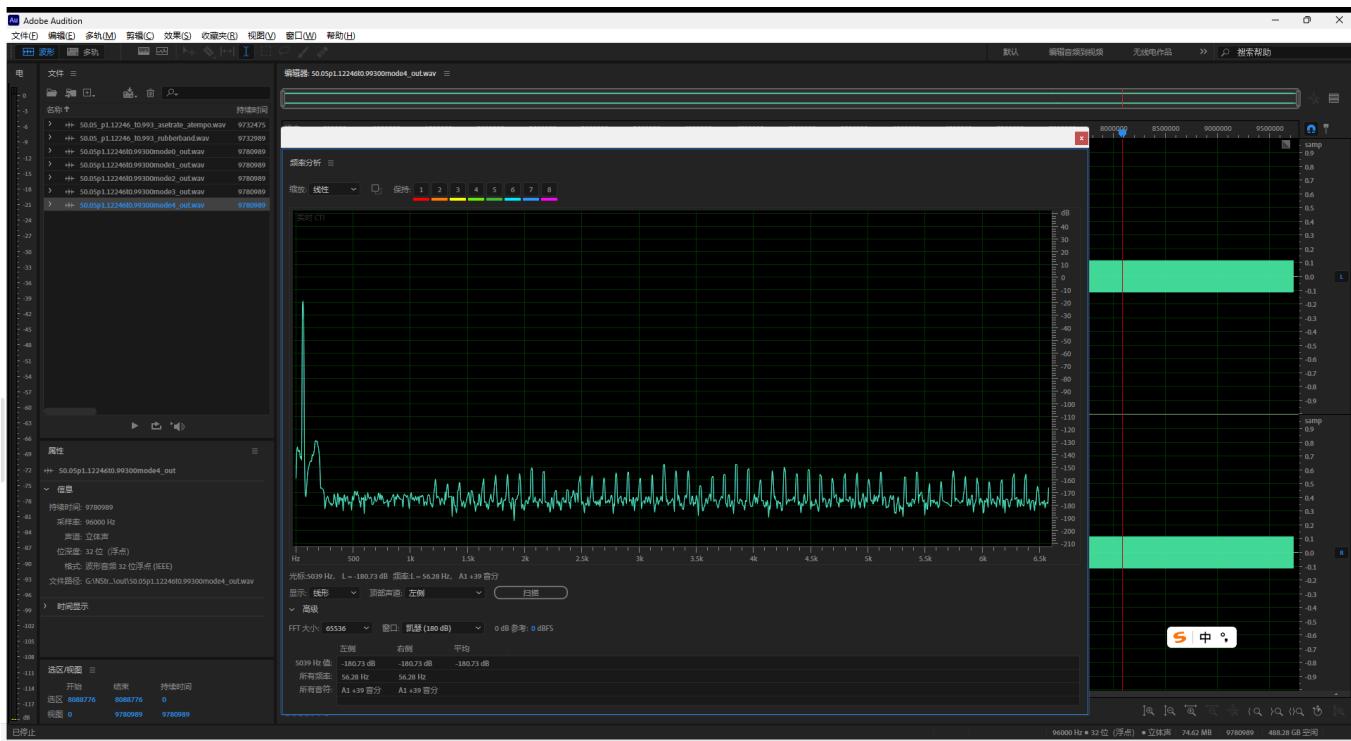


Next is 50.05Hz sine:

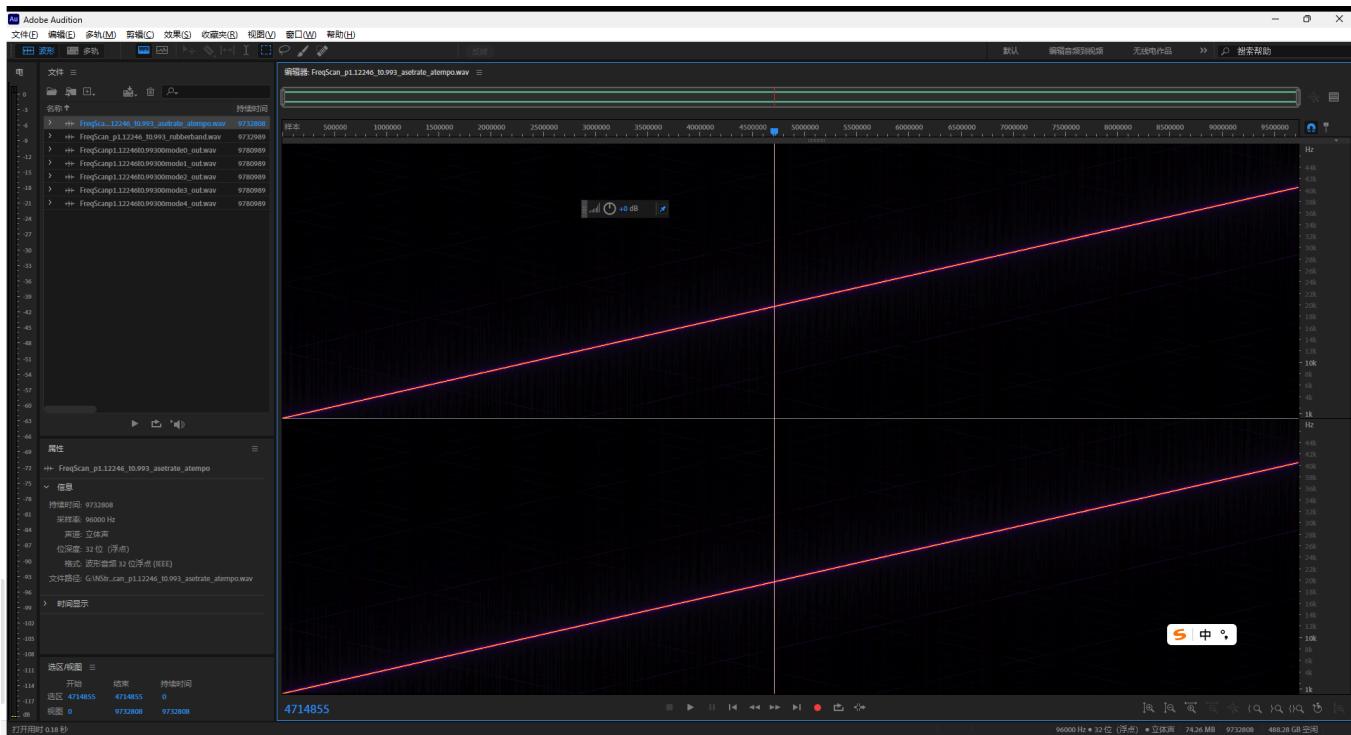


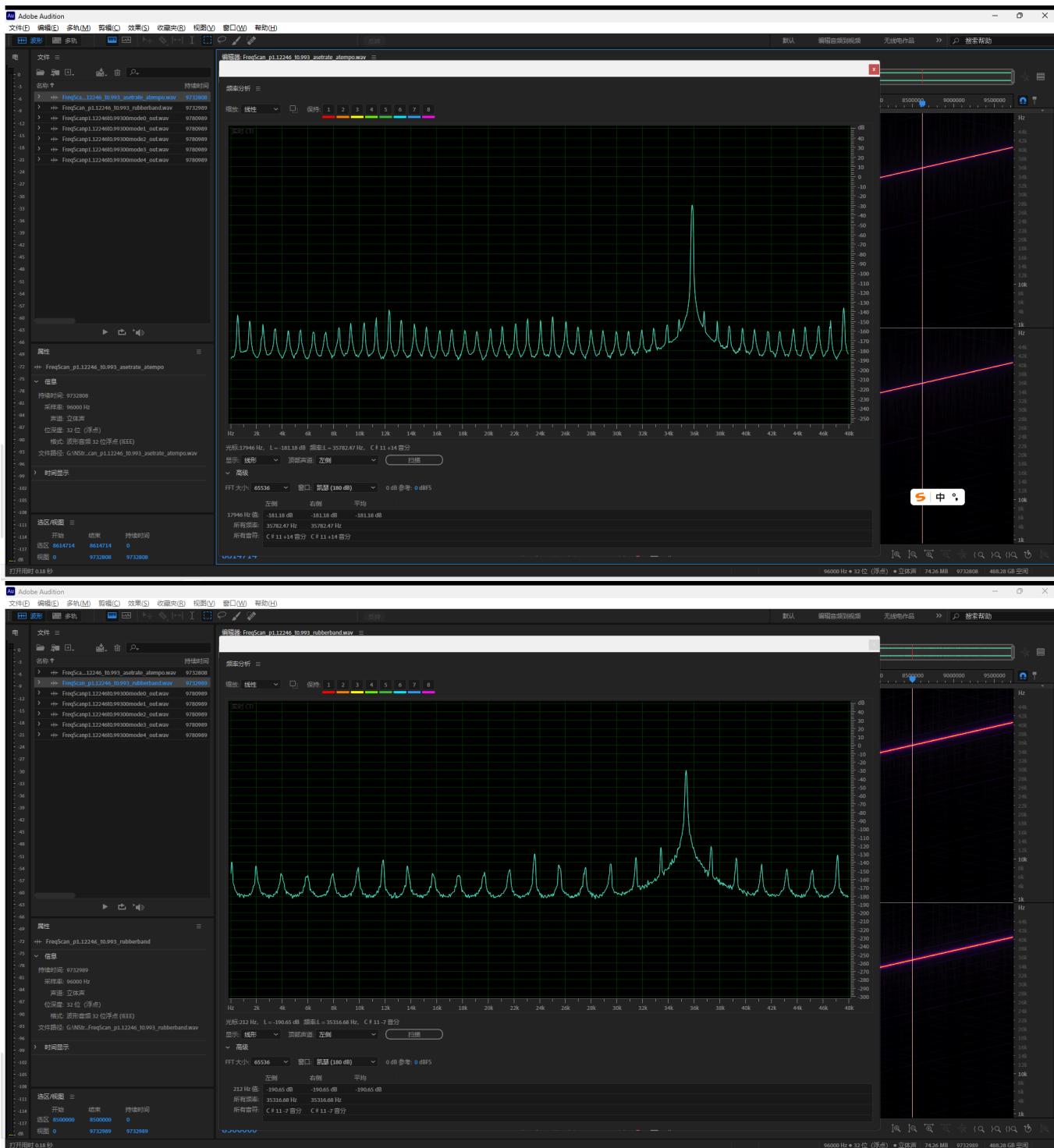


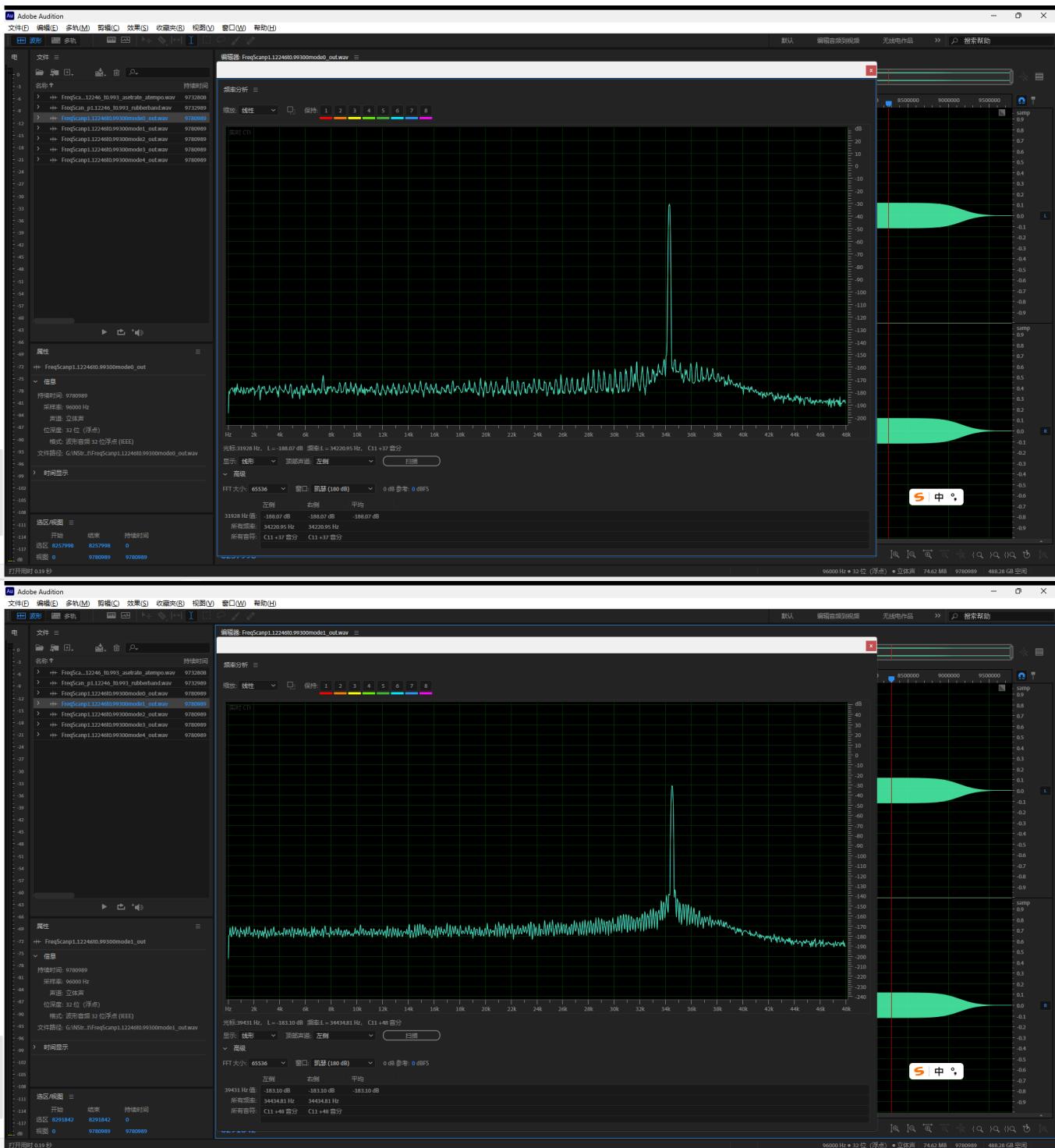


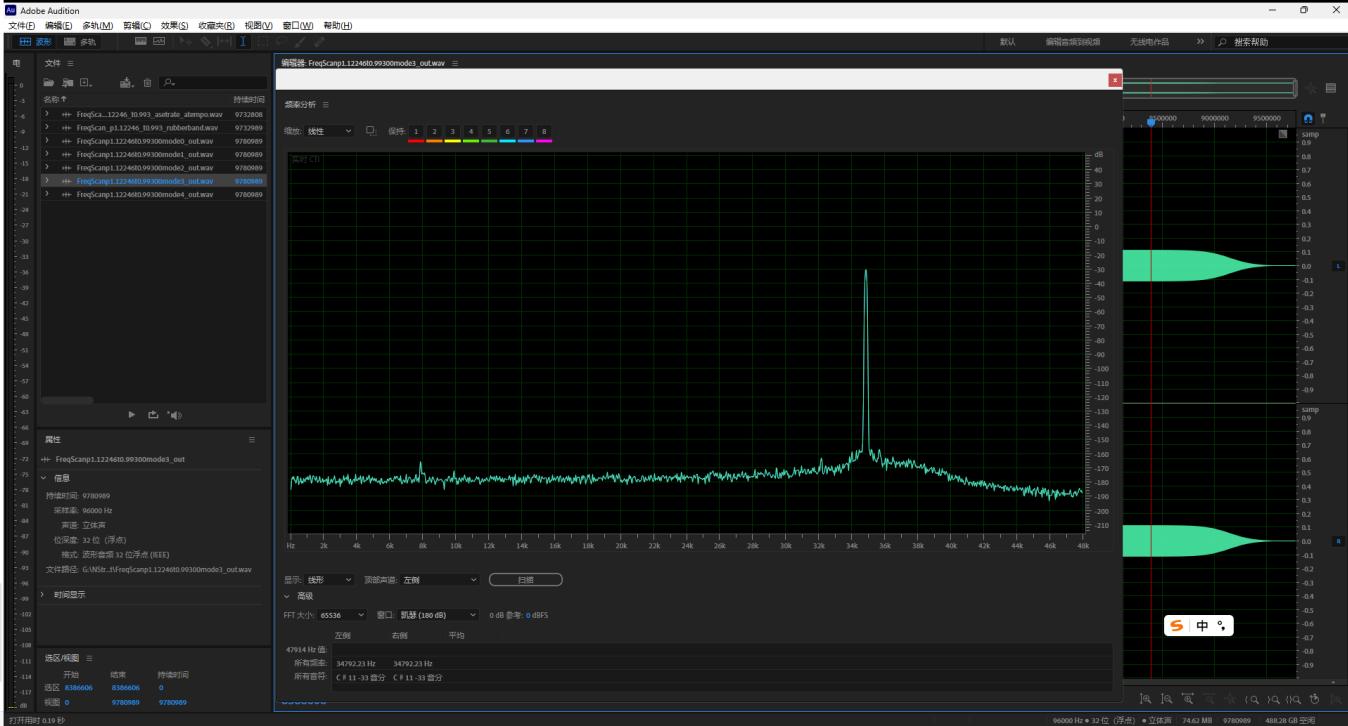
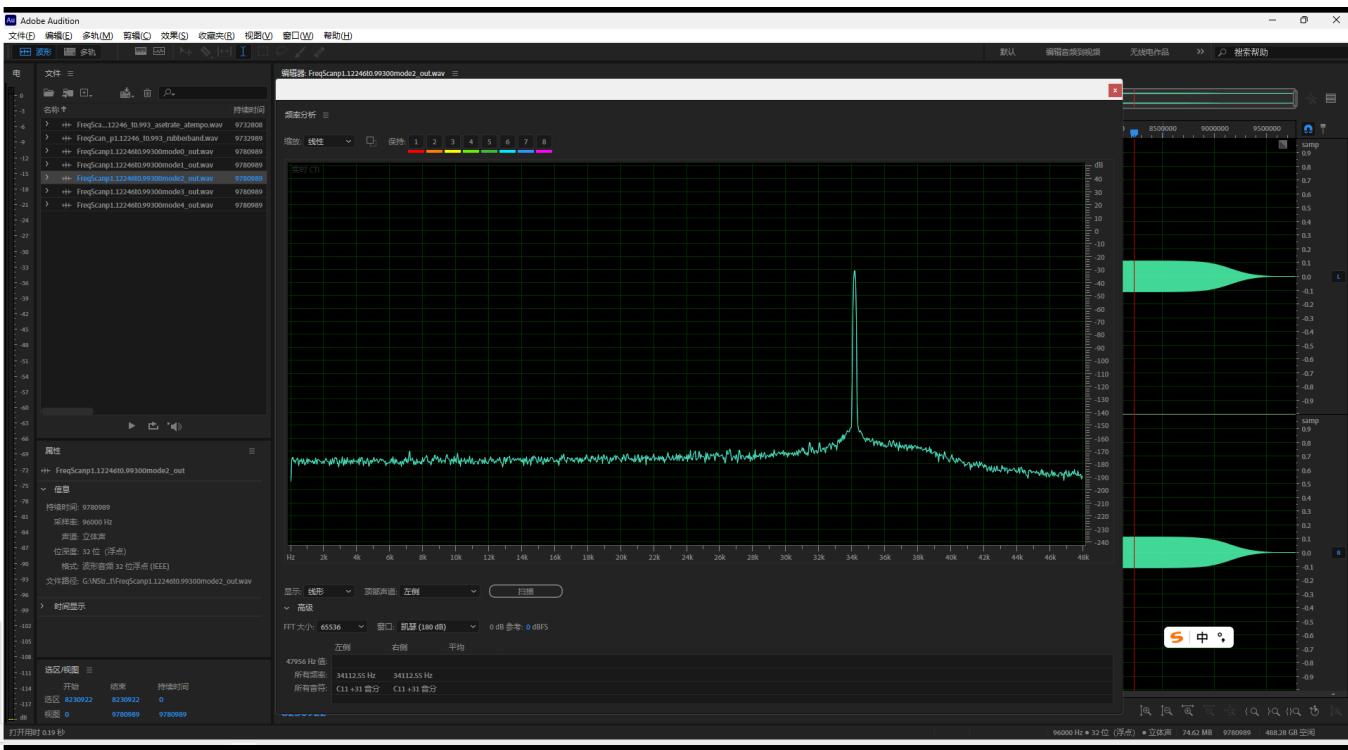


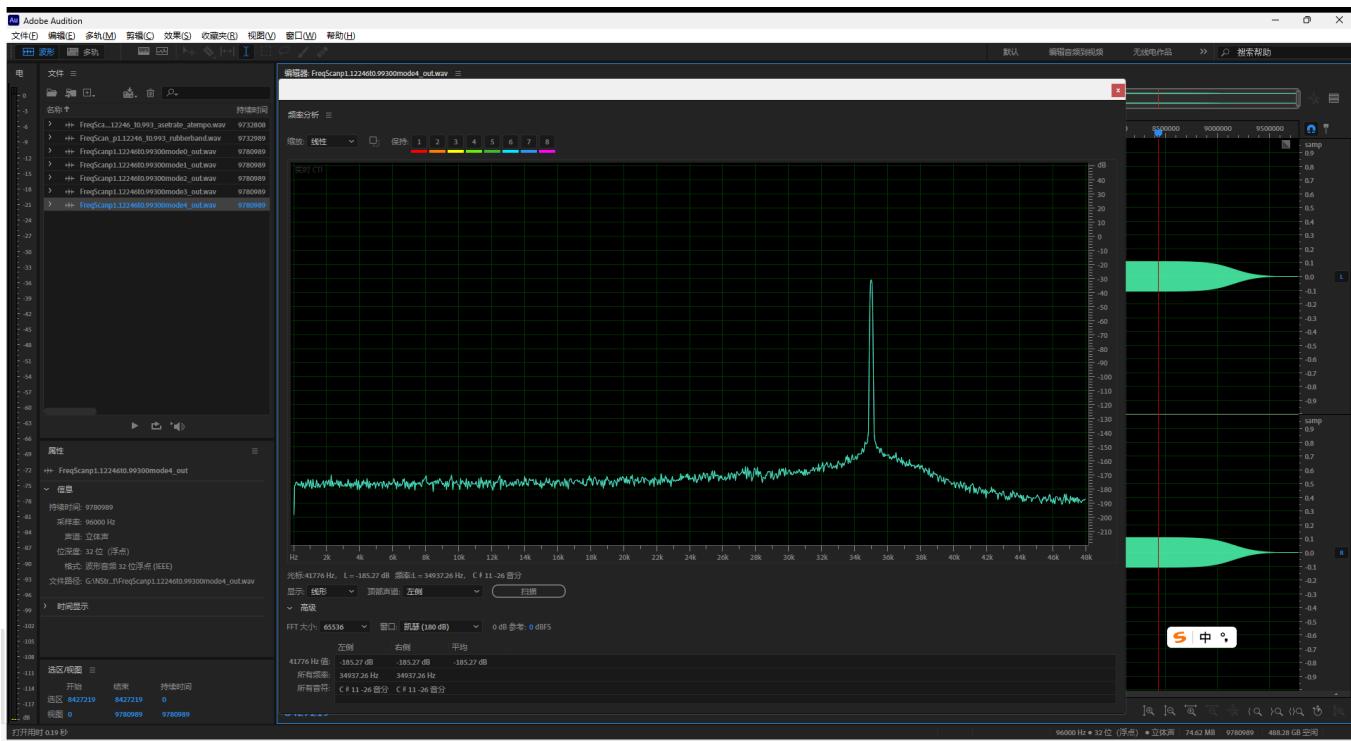
And for FreqScan.wav:











Finally, since it is difficult to analyze the quality of a song when looking at its spectrum, we recommend that you download the executable file and test it yourself.