ES9038Q2M Board test

Input signal to DAC board: SPDIF from RTX6001.
For measurements only on the original circuit, the left channel of the analyzer was not used.

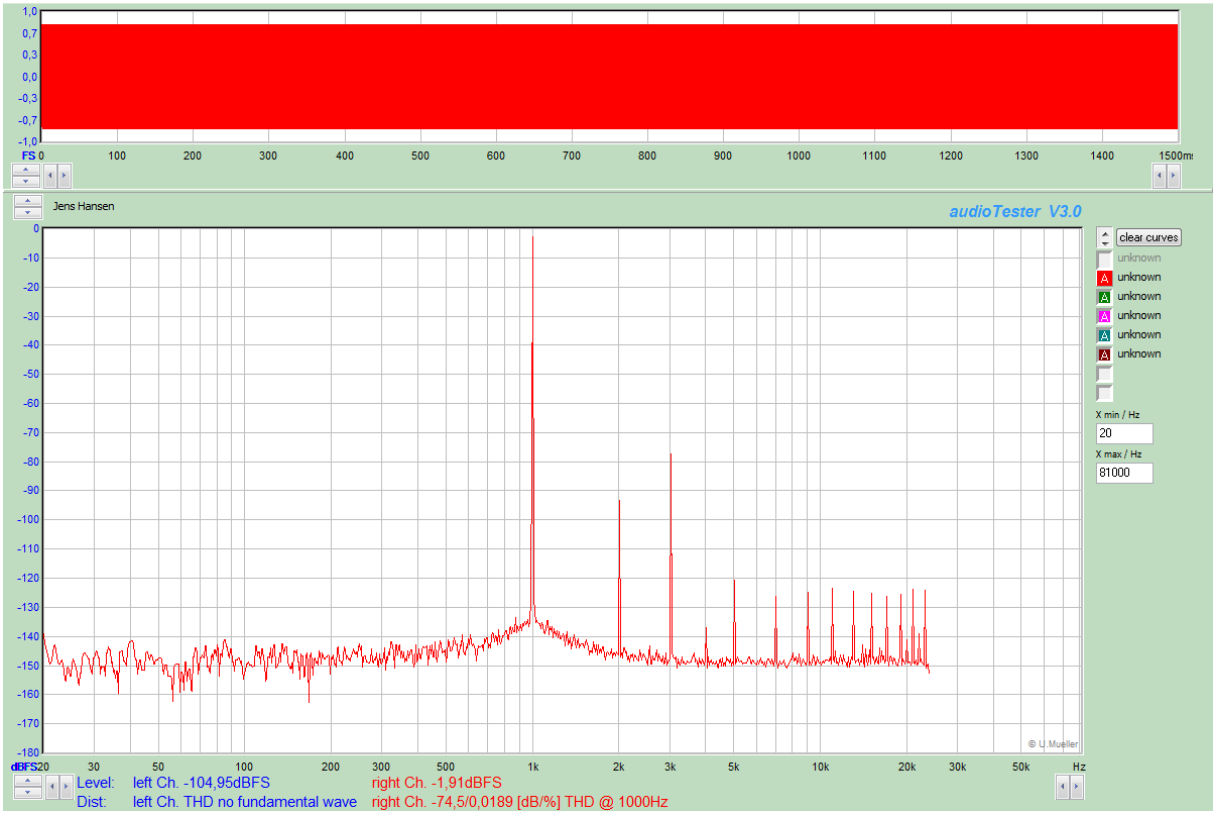
Minimum phase fast roll-off filter selected.

1 48 kHz

1.1 Level and THD

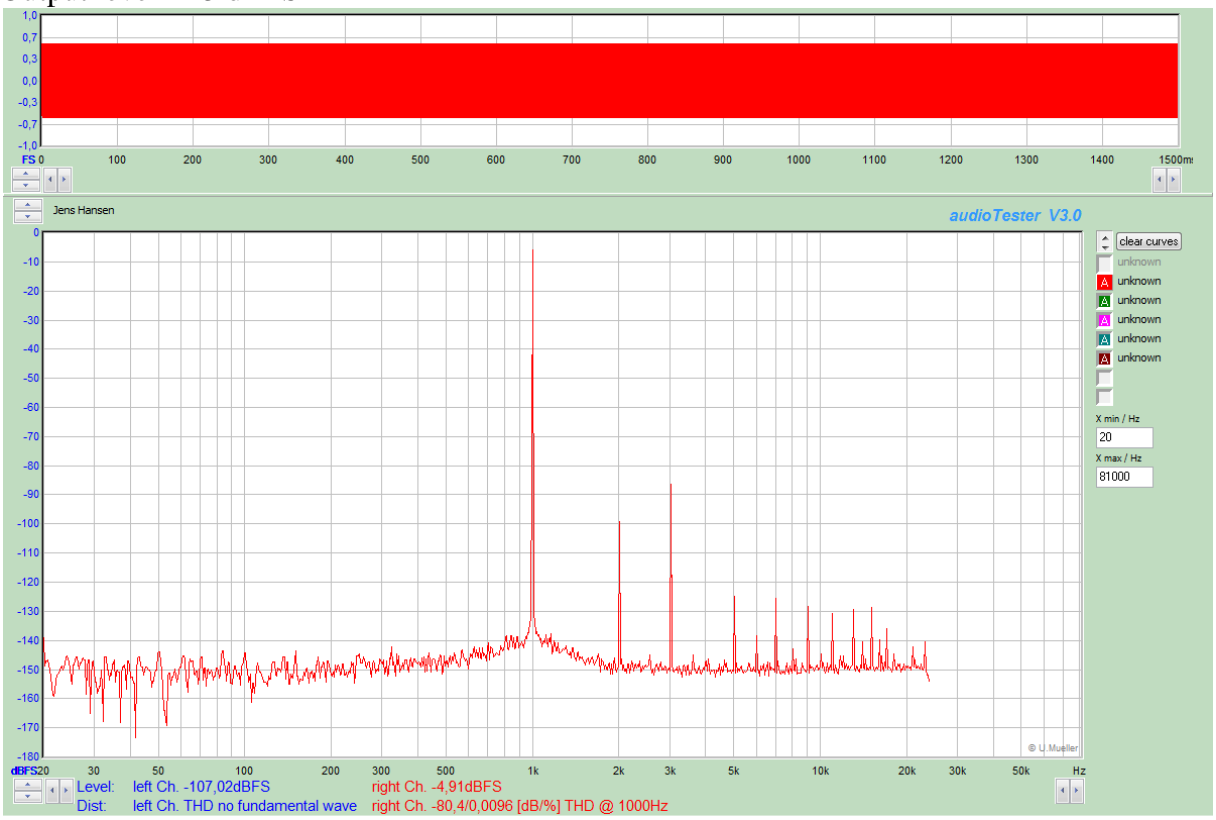
Input attenuator: 10dBV.
FFT 256k
Only right channel shown

Output level = 0 dBFS

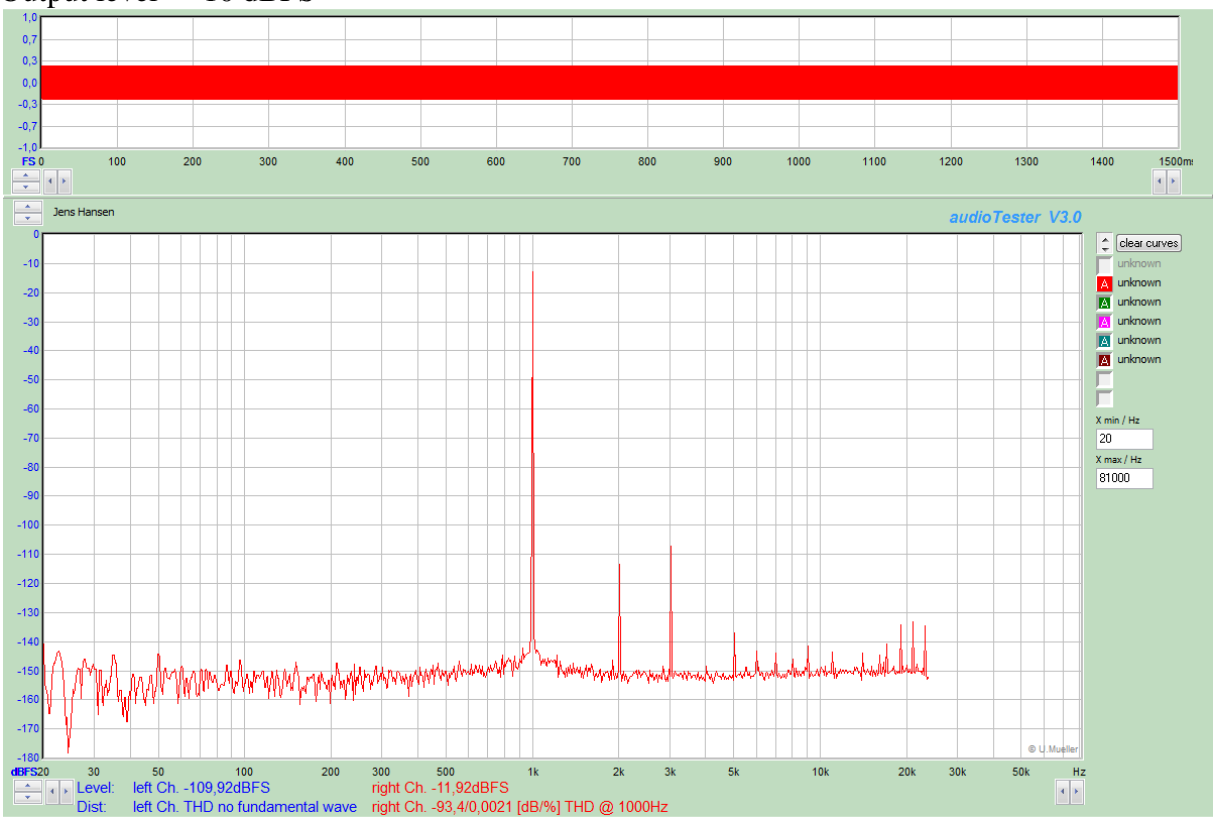


A level of -1.91 dBFS = 2.54 Vrms.

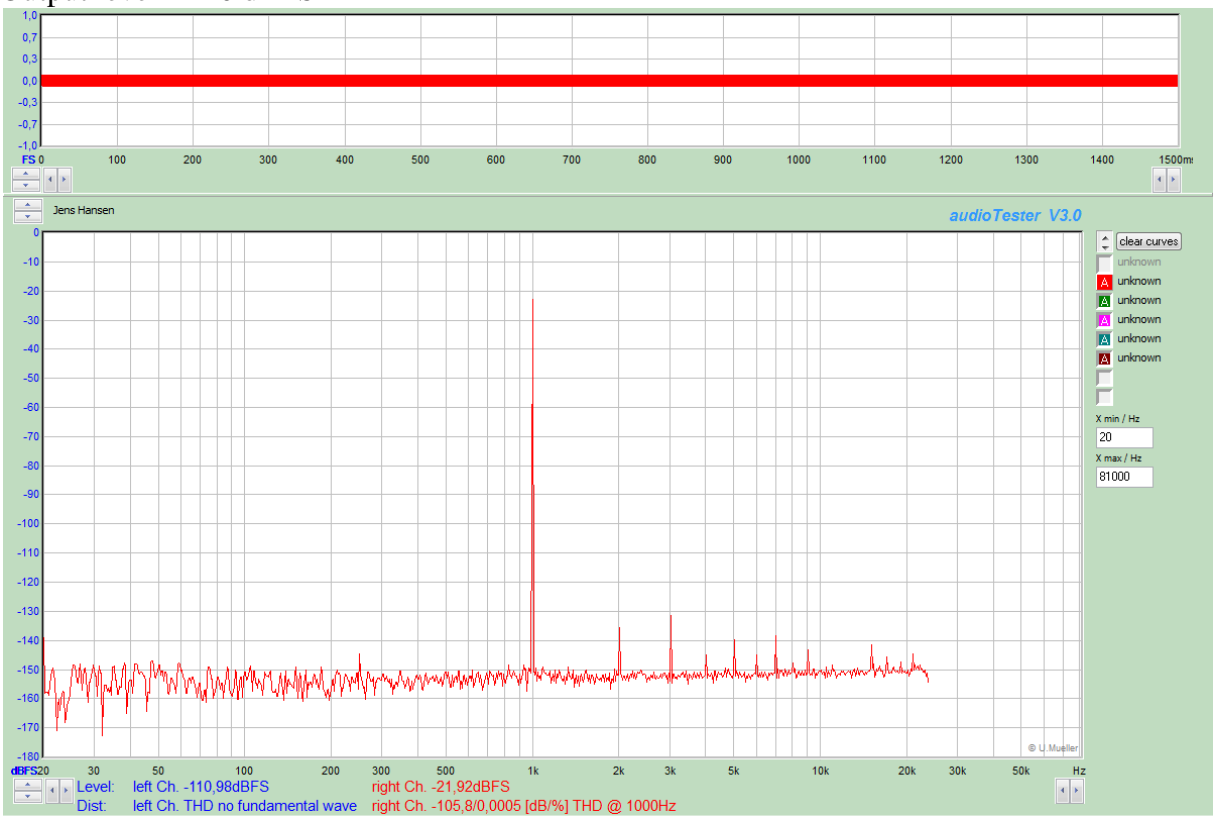
Output level = -3 dBFS



Output level = -10 dBFS



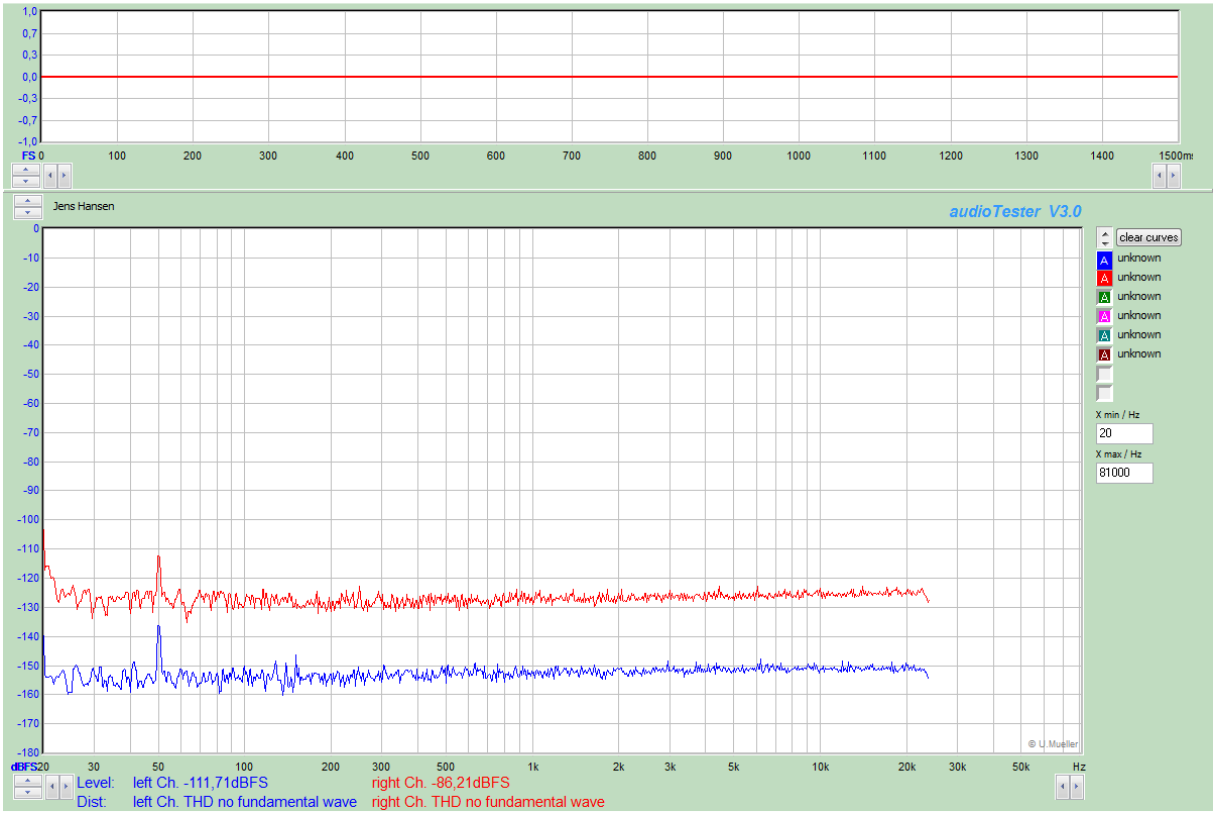
Output level = -20 dBFS



1.2 Noise

Input attenuator: -20dBV.

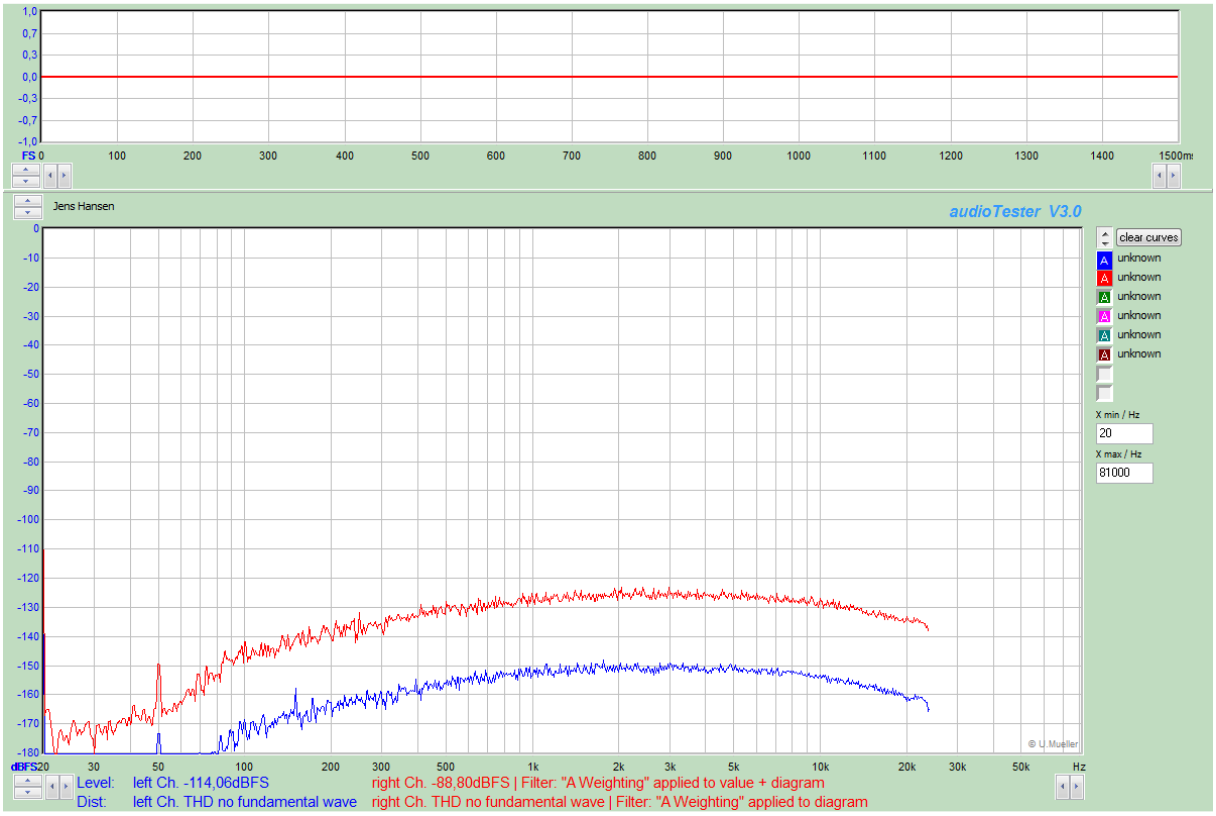
1.2.1 Un-weighted



A noise level of -86.21 dBFS means that the noise is at -106.21 dBV.

The dynamic range (unweighted) = 8.09 dB +106.21 dB = 114.3 dB.

1.2.2 A-weighted



The A-weighted dynamic range = 116.89 dB

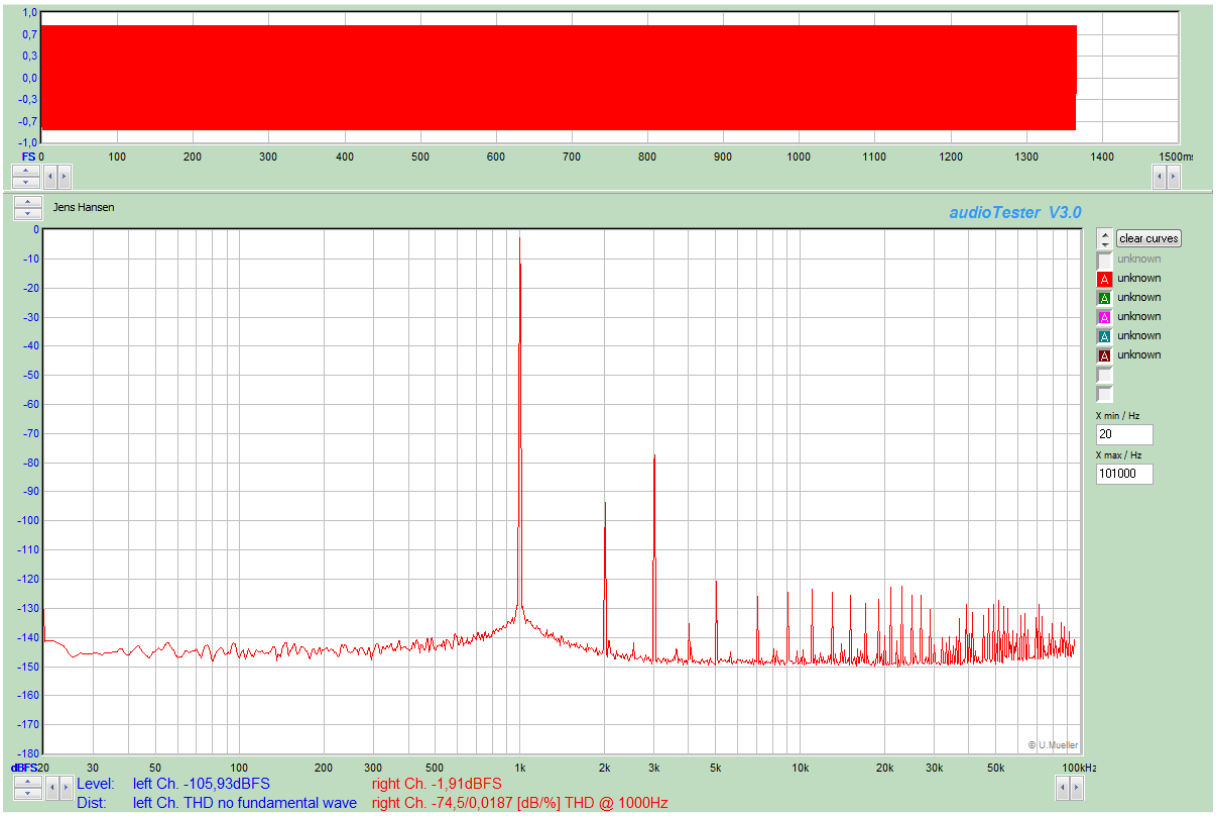
The dynamic range seems to be limited by the noise in the op-amp circuit. Resistor values are relatively high. Op-amp = NJM5532DD from JRC.

2 192 kHz

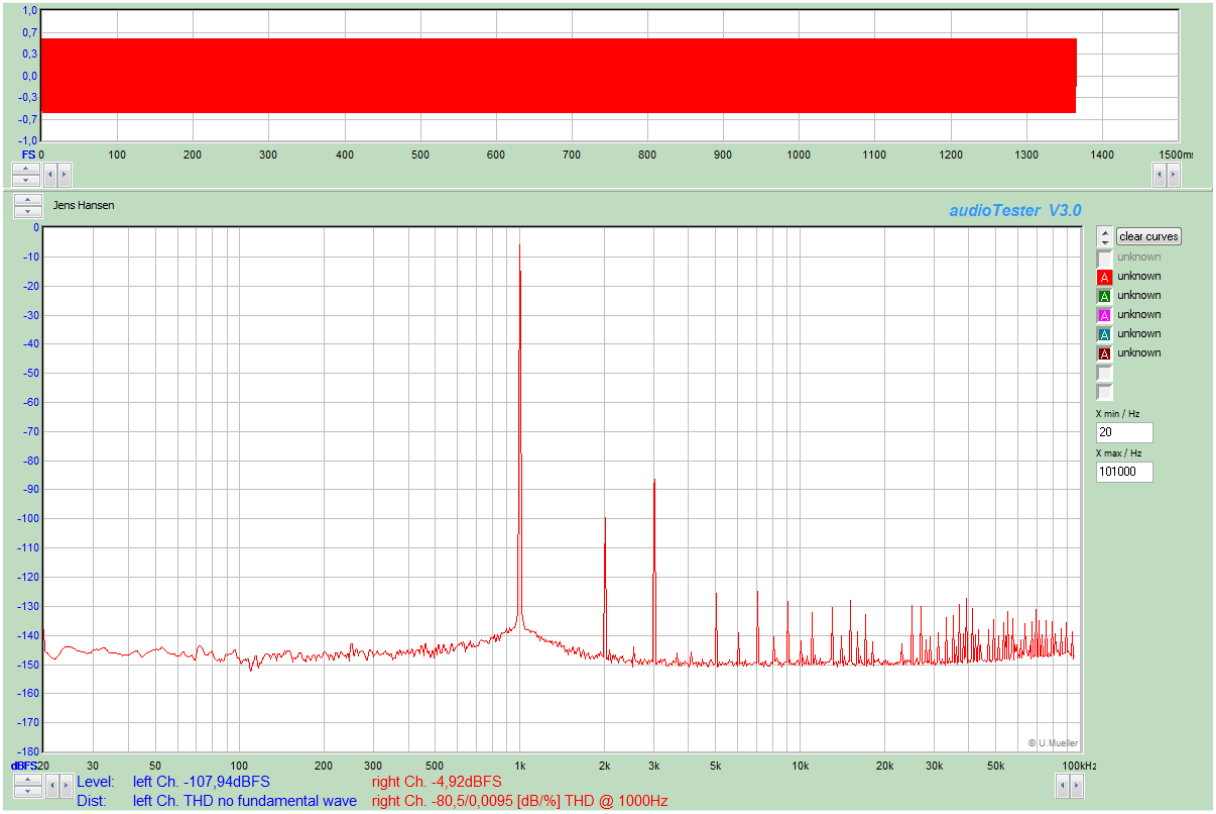
2.1 Level and THD

Input attenuator: 10dBV.
FFT 256k, average over 10

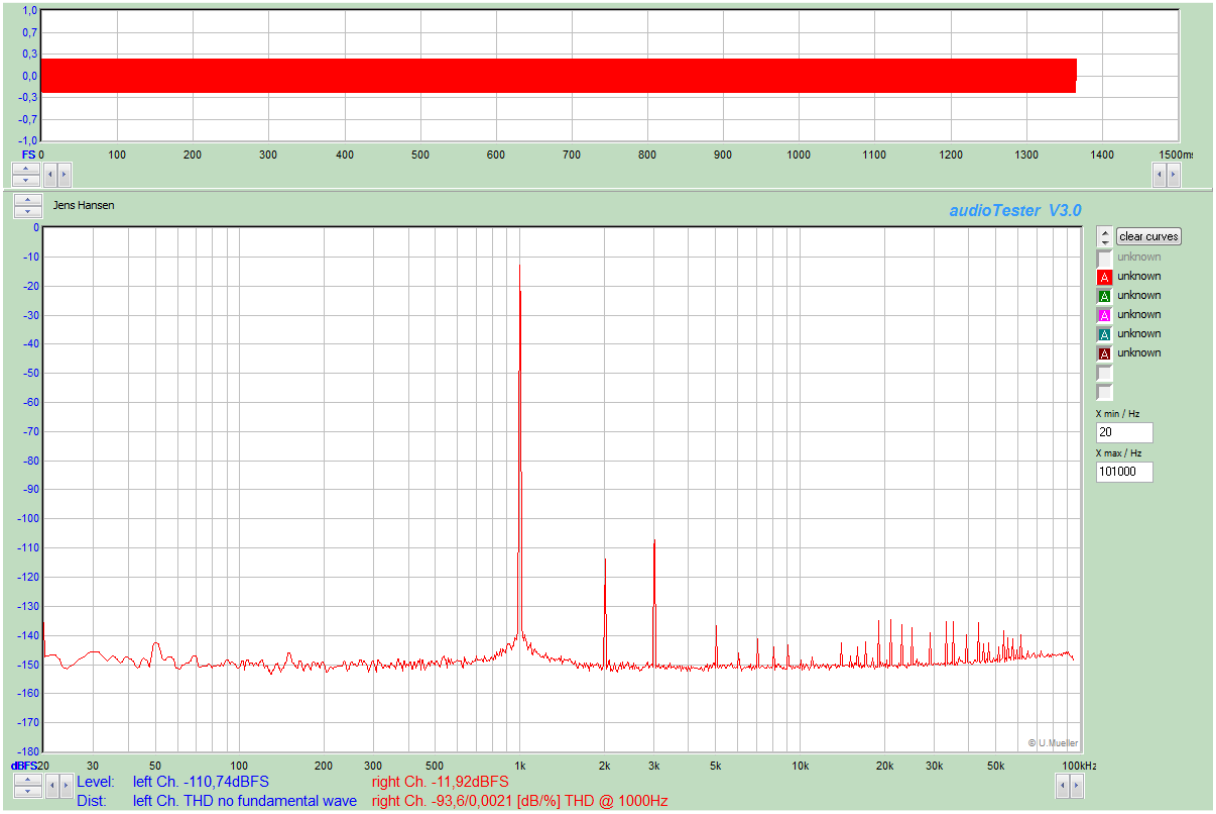
Output level = 0 dBFS



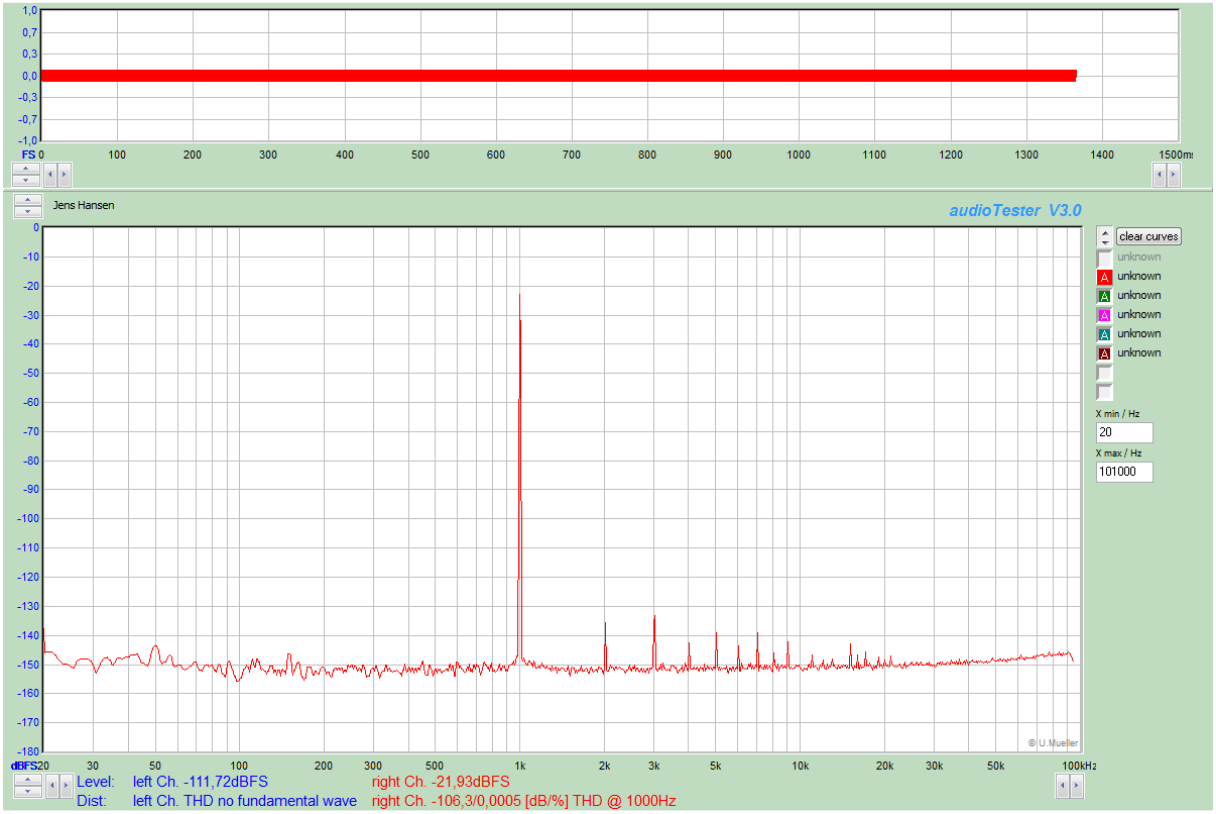
Output level = -3 dBFS



Output level = -10 dBFS



Output level = -20 dBFS

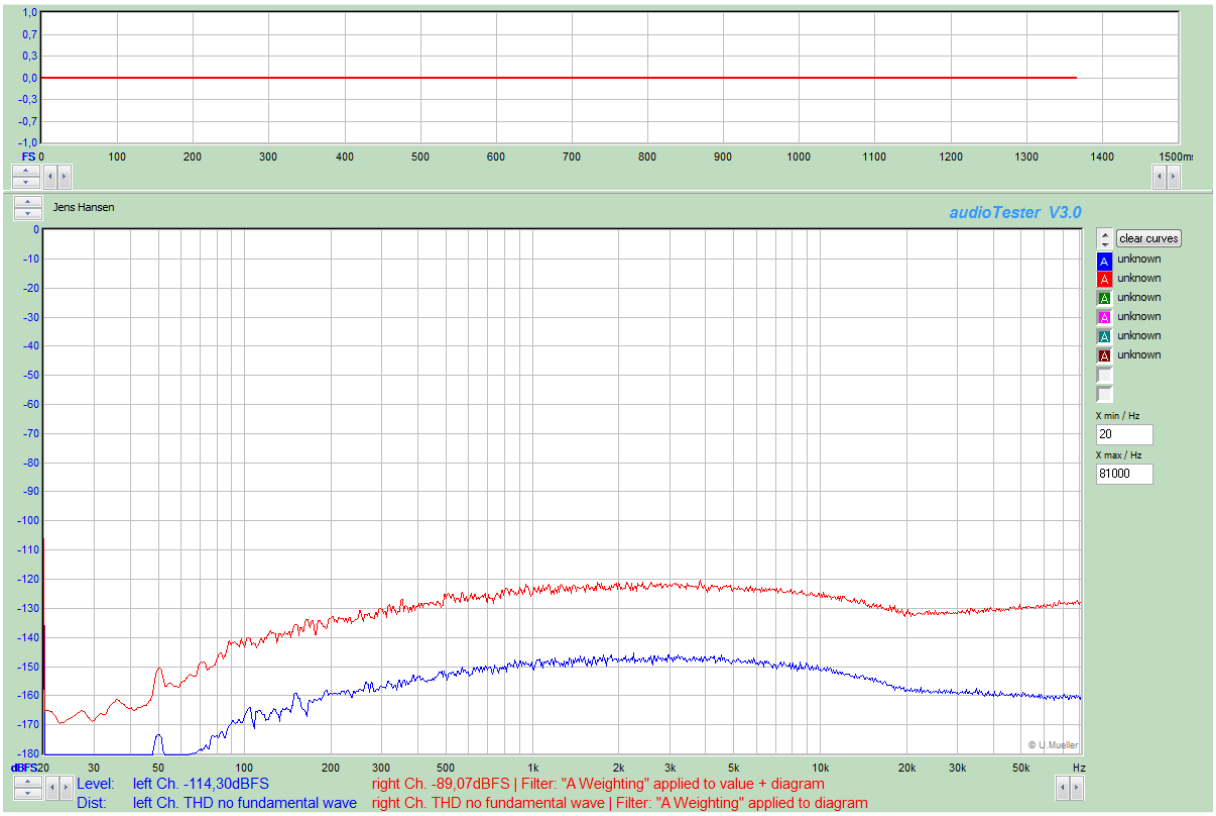


2.2 Noise

Input attenuator: -20dBV.

2.2.1 Un-weighted

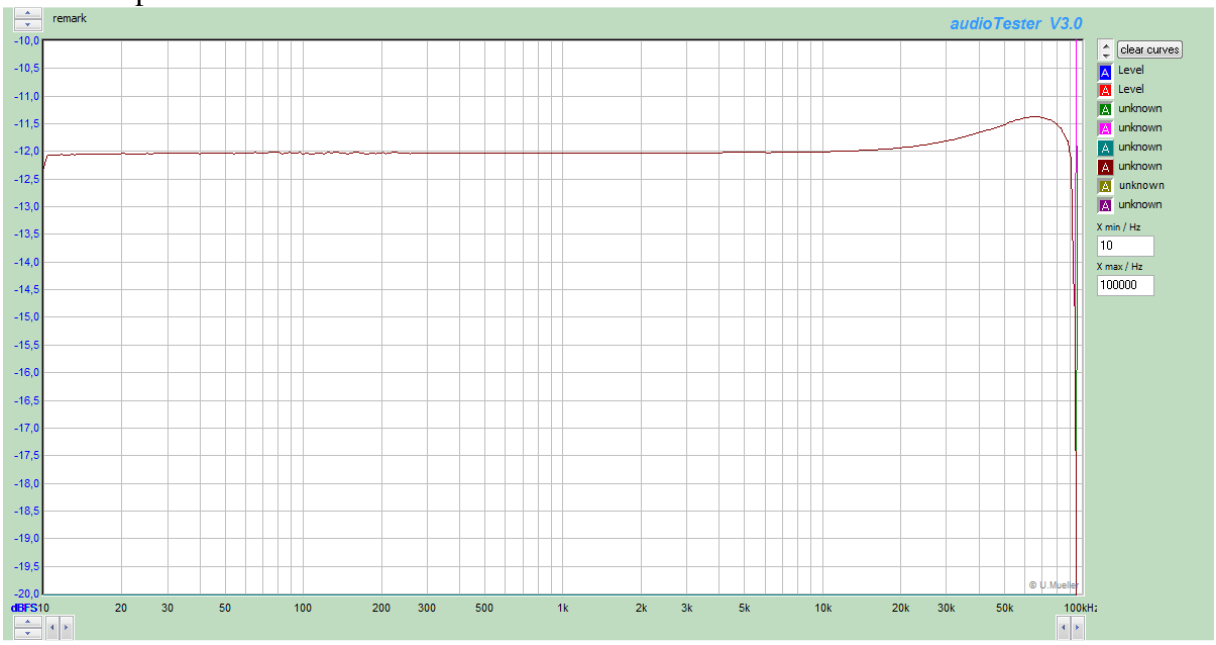
2.2.2 A-weighted



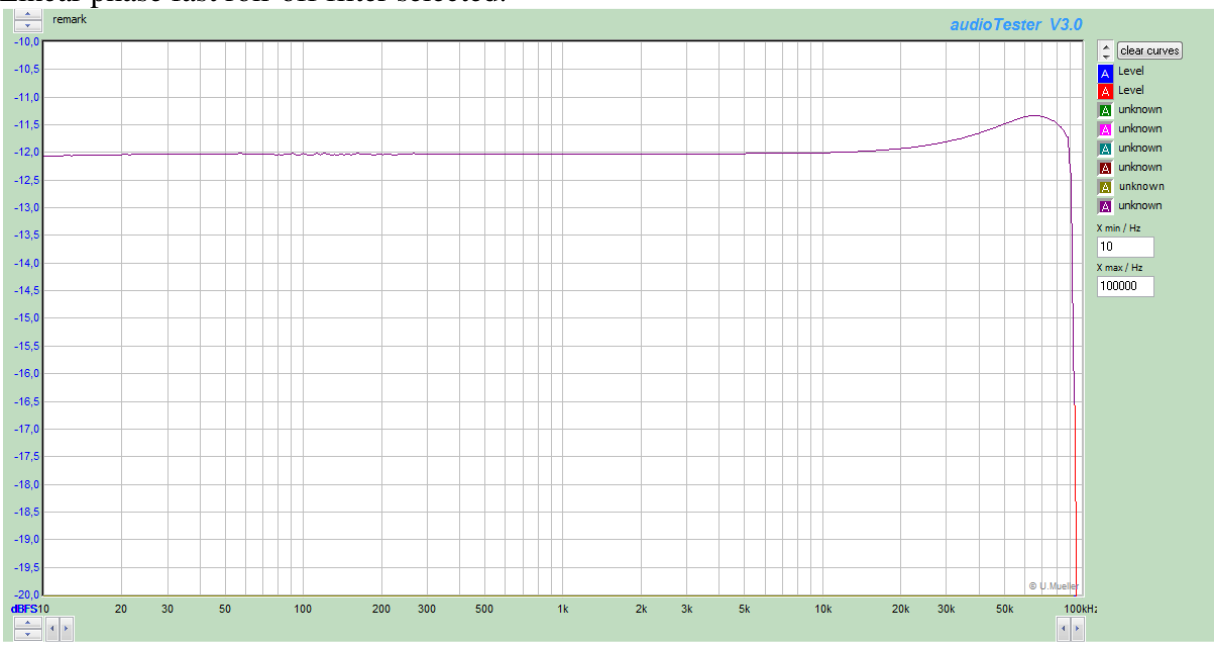
2.3 Frequency response

Measured at -10 dBFS.

Minimum phase fast roll-off filter selected.



Linear phase fast roll-off filter selected.

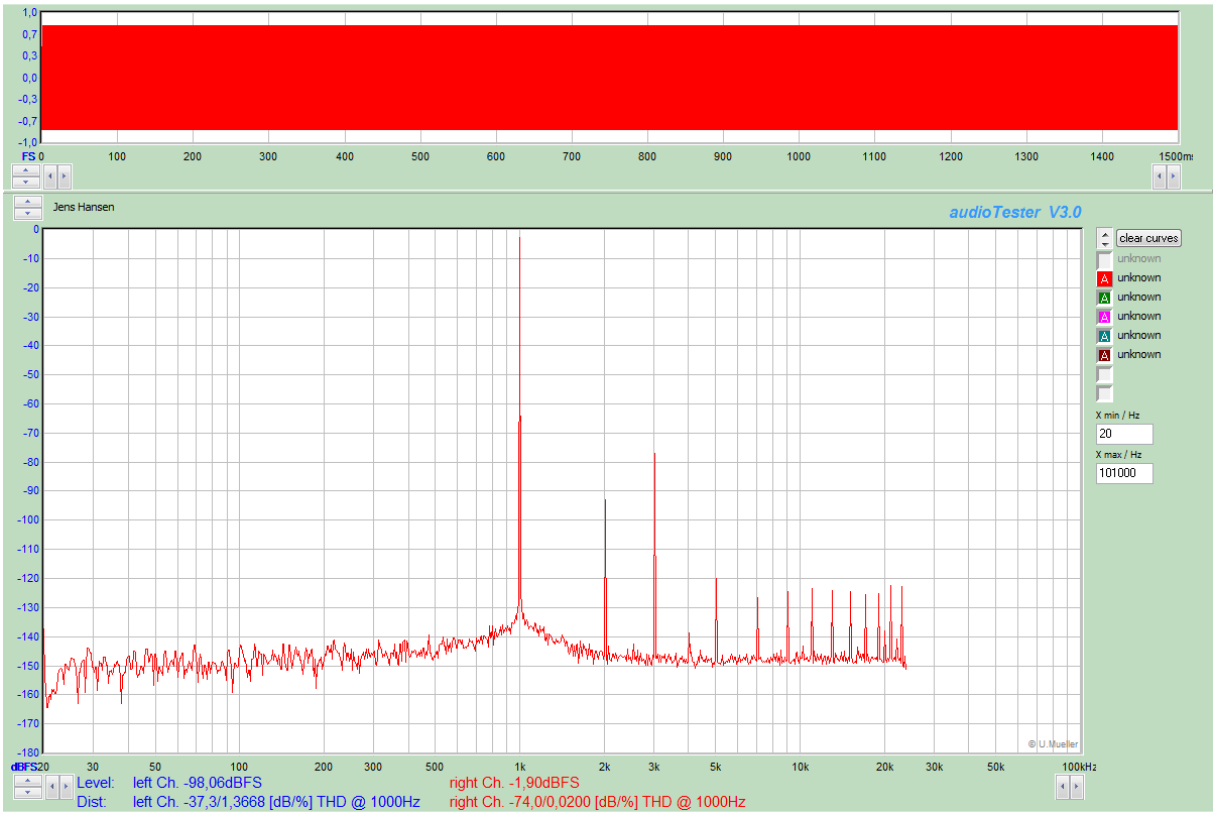


The frequency responses with these two filters are very similar.

3 With LM4562 instead of NJM5532

Input attenuator: 10dBV.
FFT 256k

Output level = 0 dBFS



Did not improve the performance. The THD is actually 0.5 dB higher than with the original op-amp (NJM5532).