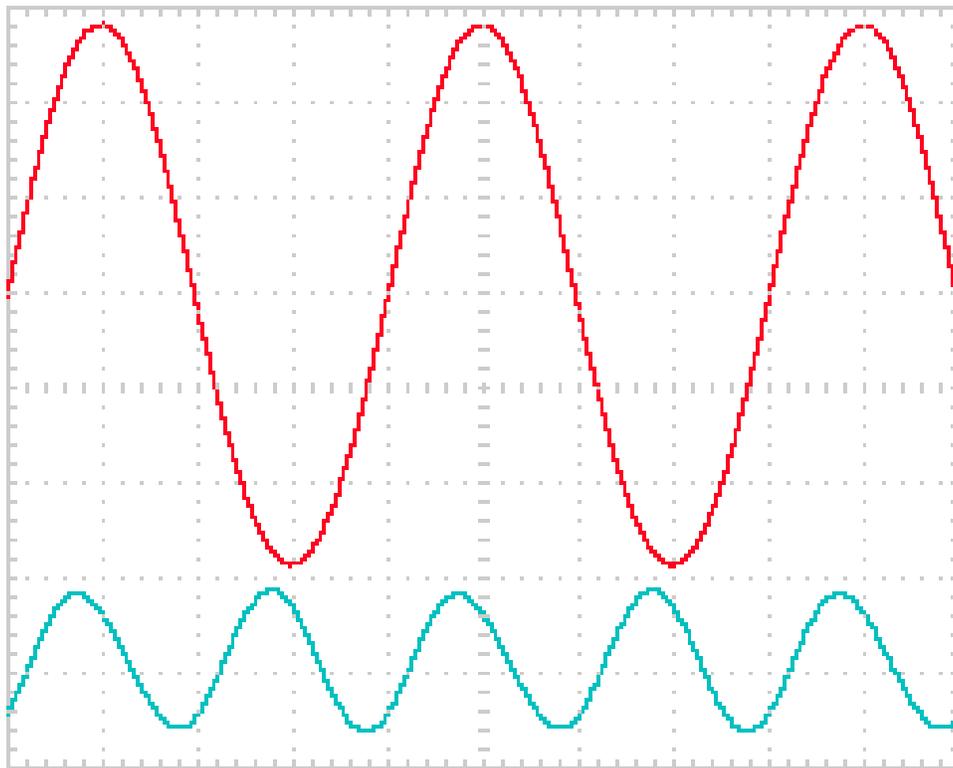


After listening tests I settled on a value which gives a negative phase second harmonic at 1.5% with 1 volt output. This setting is dependent on the sensitivity of the loudspeakers and the gain of the power amplifier. In my case the loudspeakers are the Tannoy HPD 15" coaxials with a sensitivity of about 95 dB and an amplifier with voltage gain of 20 dB (Sony VFET amplifier from First Watt).

Here is what that distortion waveform looks like:



Note that because the circuit inverts the waveform, proper phase is retained by phase inversion in the chain that follows the preamp. Since the power amplifier does not invert phase, the connection to the loudspeaker was inverted.

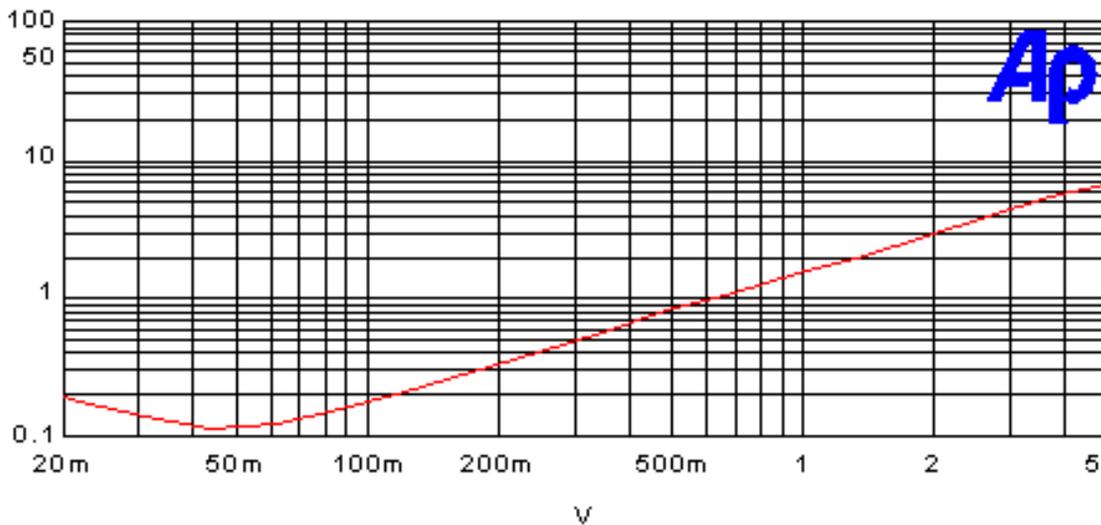
Also, note that here the 2nd harmonic appears to be in phase with the fundamental, but when the output is inverted at the speakers, the phase of the distortion becomes negative as desired.

In the above waveform you see that the blue distortion 2nd harmonic is very pure, with the 3rd harmonic at about 20 dB lower than the second and a very low quantity of higher order harmonics.

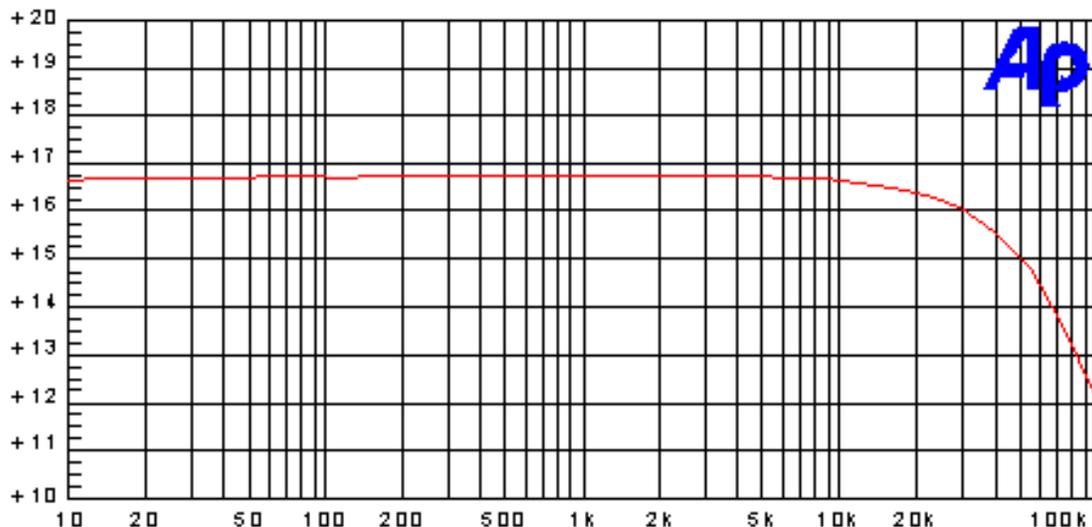
Negative phase 2nd harmonic distortion is distinguished from positive phase by a difference perception of sound quality. It appears that listeners find a greater sense of space and depth with negative phase, and an illusion of being able to better localize location of sources in the audio. By contrast, positive phase brings a greater sense of presence. When the second harmonic is nulled, the result is sometimes described as having more dynamic quality.

We find that audiophiles often prefer the negative phase 2nd harmonic, and so this is where I have set this circuit, with a character which is similar to that of our SIT-1 and SIT-2 power amplifiers.

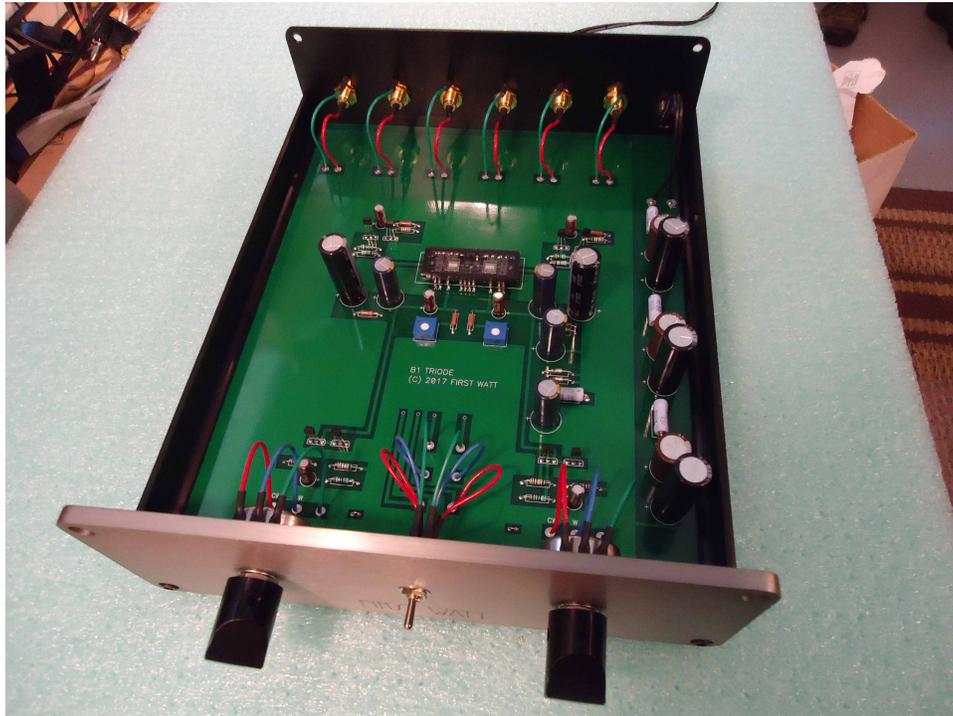
Here is the distortion curve of that setting:



And here is the frequency response:



We are building several pieces of product for demonstration, and the unit we will provide for Korg at RMAF looks like this:



Listening comments:

On the Tannoy speakers with the VFET amplifiers, the sound is extremely good, the kind of sound that we look for. It is detailed and lively but also pleasant and relaxed. As we say here, “It is the sound that makes you listen to your record collection all night.”

As I switch between various power amplifiers, it is clear that this preamp circuit reveals clear differences between them, which makes it a special tool. In the right circumstances it's a very impressive piece.

A couple of notes:

The circuit inverts phase, so in order to get correct absolute phase the signal must be inverted again. To make sure the phase of the harmonic is as intended, the inversion should be after the pre-amp – usually flipping the speaker polarity would be the best spot.

Also, the pre-amp has a turn-on/turn off thump, so I suggest leaving it on.