

kx-Amplifier Waveforms

December 5th 2020

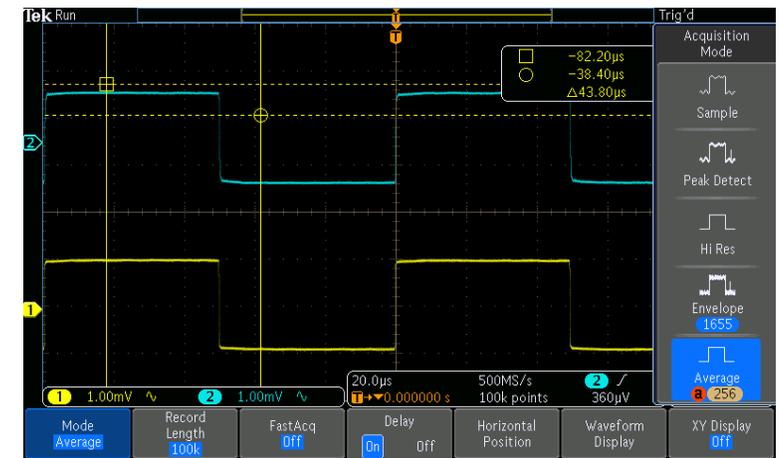
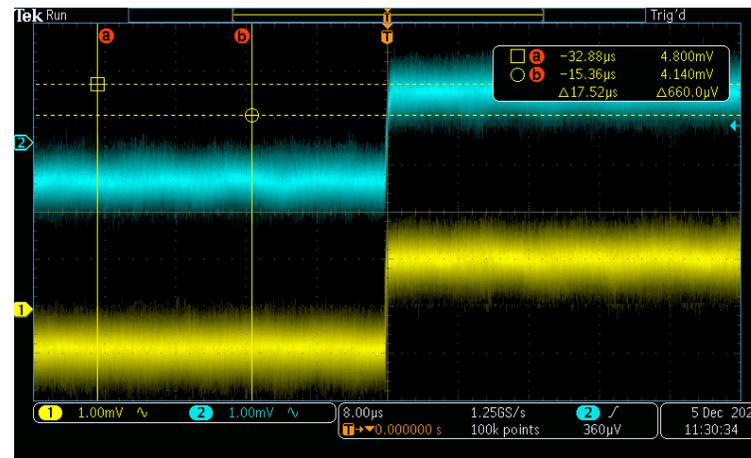
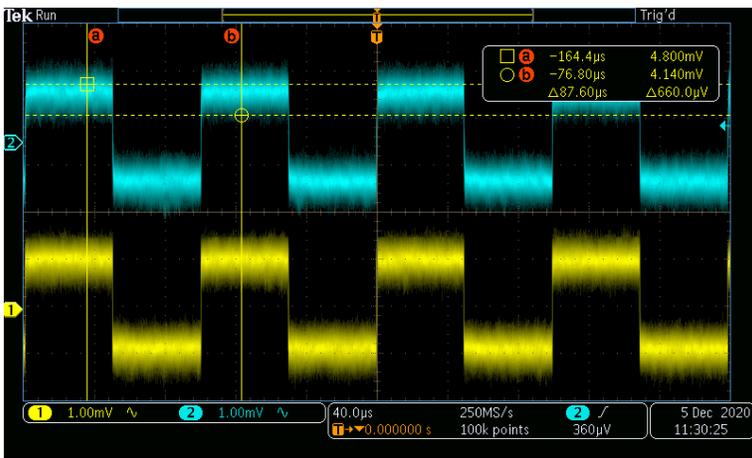
Load: 8 Ohms

Supply voltage: +- 30.5V

Scope Probe 1:1 (except where noted during noise floor scope plots)

Scope: Tektronix MDO3024

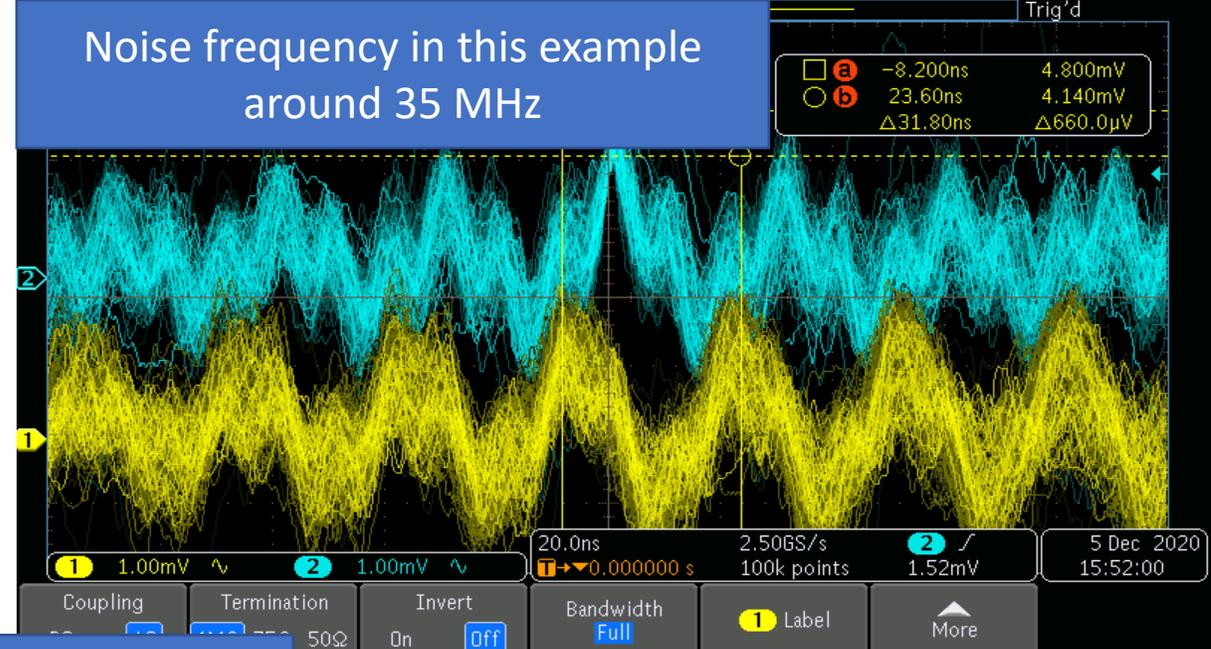
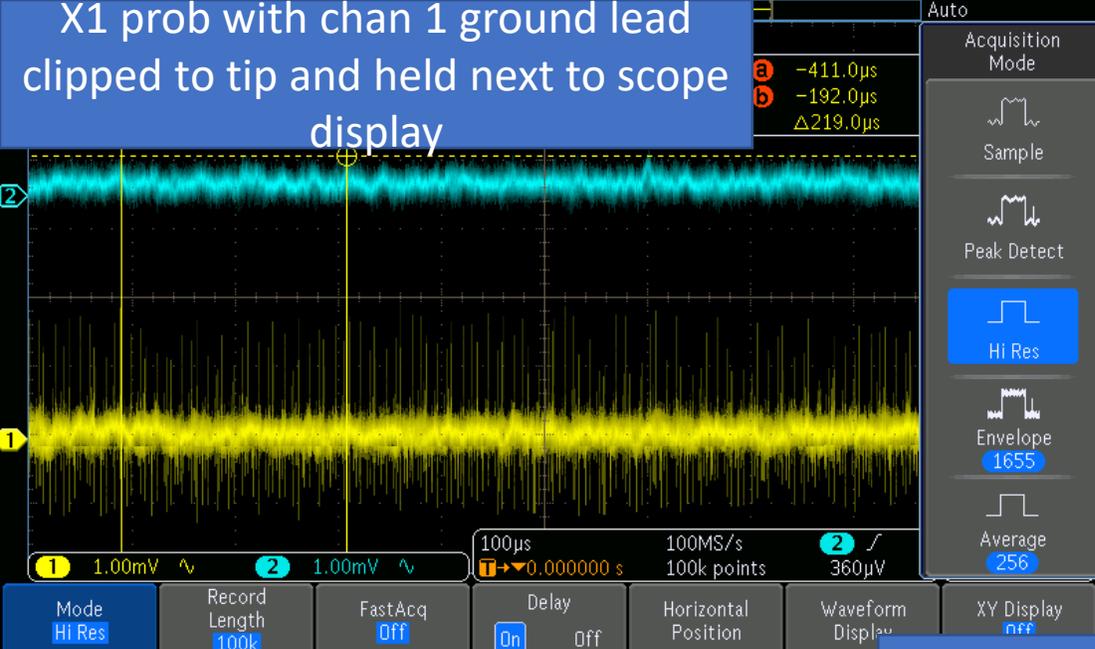
Signal Generator: TTI TG330 Function Generator



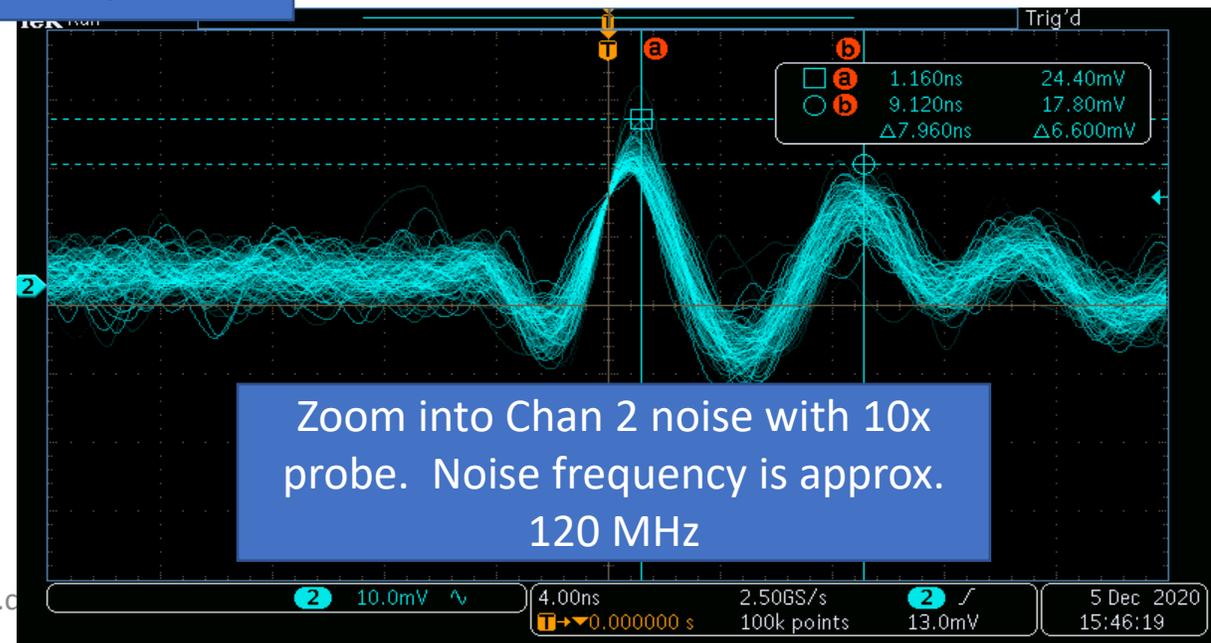
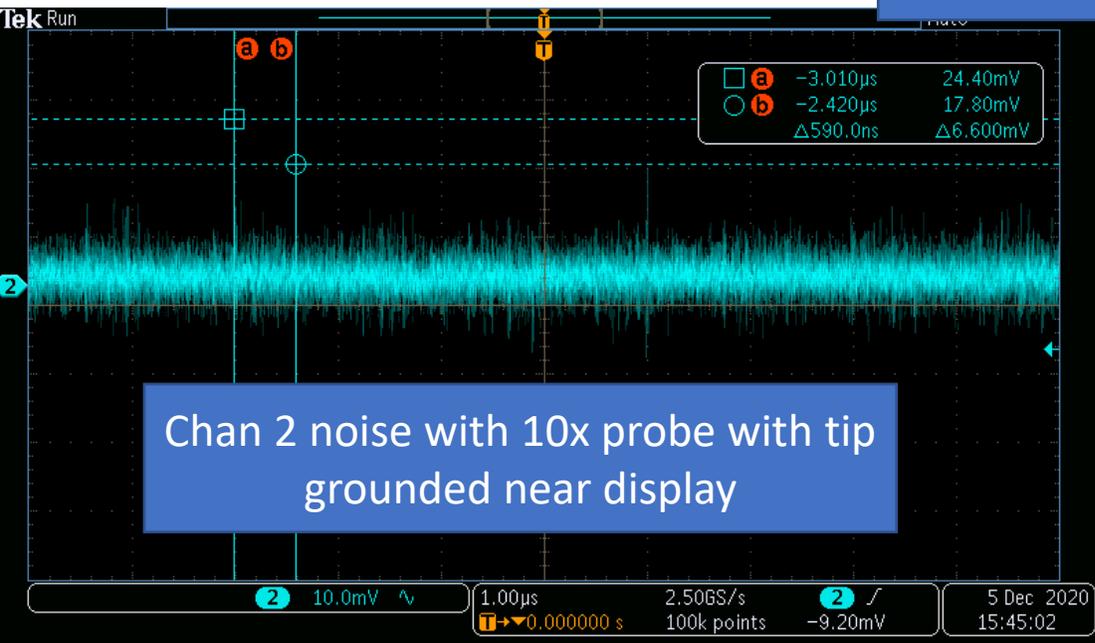
This is the output of the signal generator with 60 dB attenuation fed *directly into the scope* with the Amplifier turned OFF and is provided as a base noise reference. Output frequency set to c. 10 kHz. In the first two plots, the scope is set to normal sampling mode.

This is the same output level, but the scope set to 256 averages which allows a clearer view of the waveform, sans noise.

For all of the plots that follow, the amplifier has the standard Zobel network, 4.7 Ohm base stoppers in the output devices. All the 1000uF bulk decouplers on the amplifier boards have 1uF 0805 50V SMD capacitors soldered across the pins under the board. R42 is 1K. R4 and R5 are 1k (c.f. 10k in published design) and R31 is 1.8k. The load consists of an 800 W per channel wire wound resistor array with an estimated inductance of 5uH. The 3m speaker cables connecting the kx-Amp to the Load are 6uH/101.2pF. Note that the signal generator has 2 outputs – one is 600 Ohm and the other 50 Ohm - one fed the one amplifier channel, and the other the second channel.

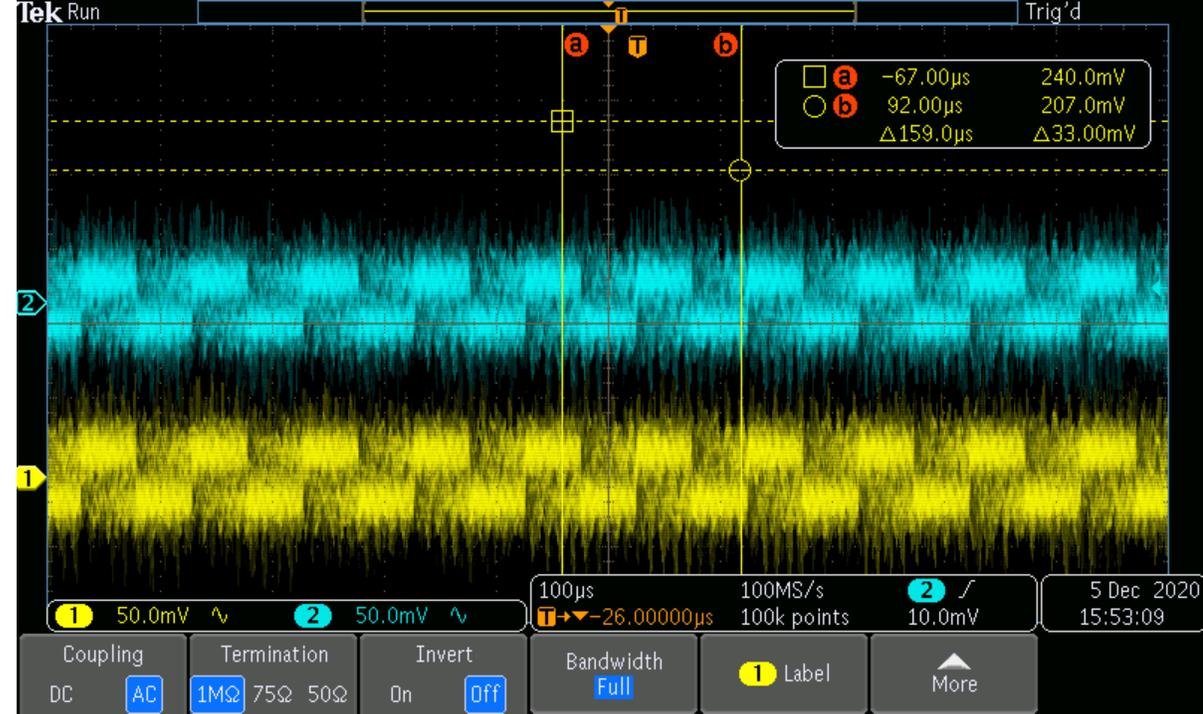


These plots show the self noise of the Tek MDO3024 scope

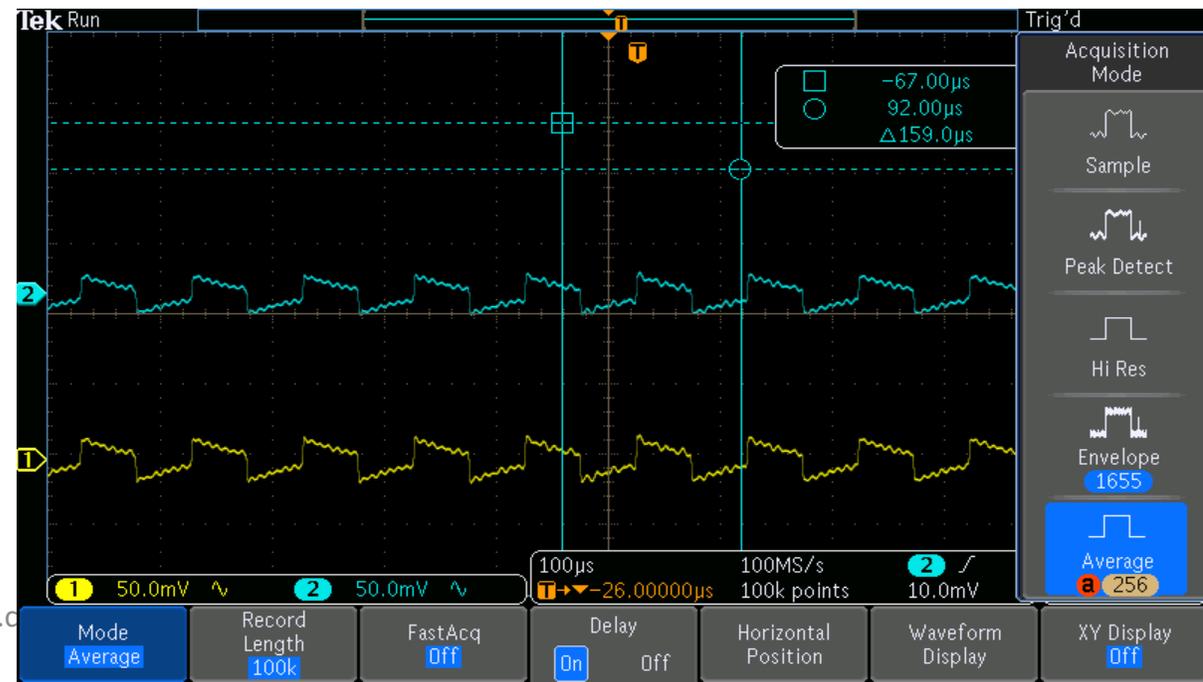


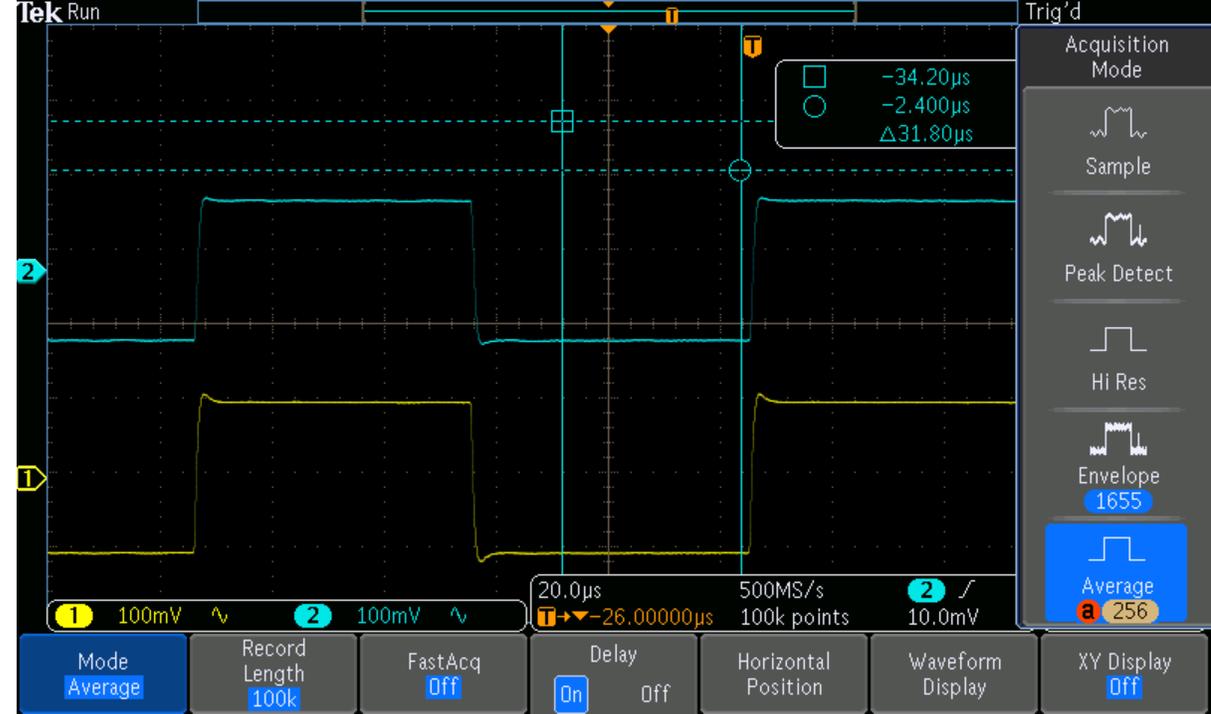
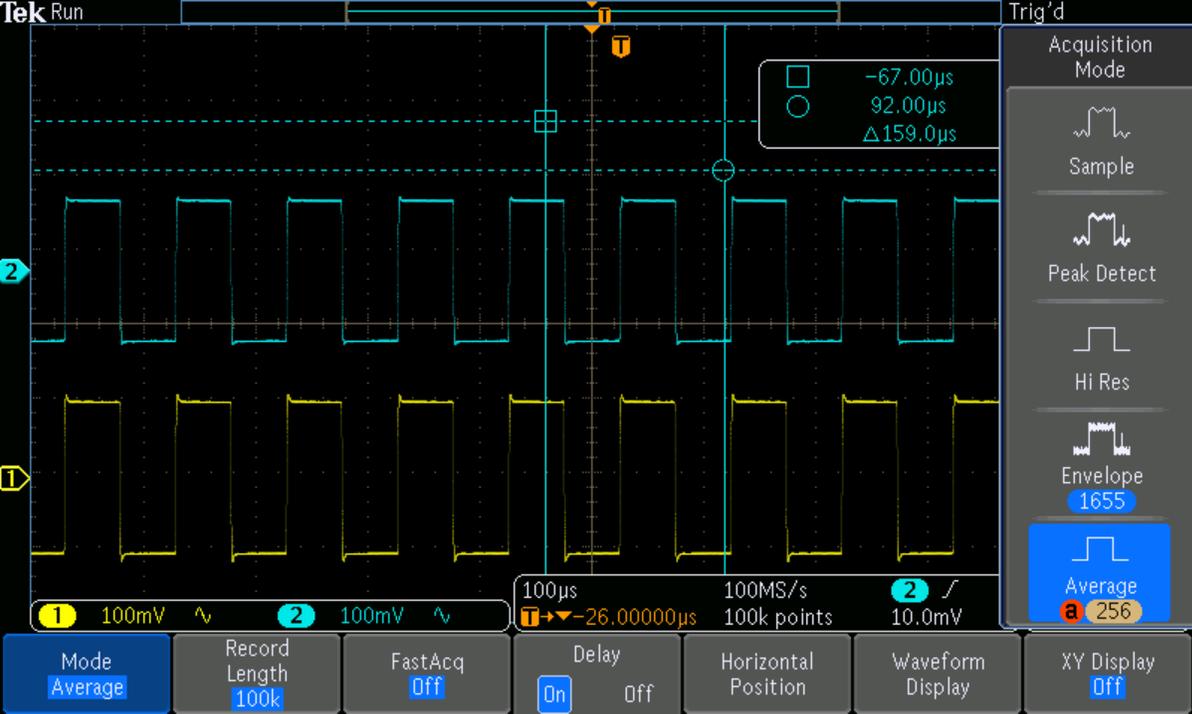
Plots with the input signal generator are now presented.

This is the amp output with the generator set to -60 dB attenuation and the output level set to its lowest level. Scope is in sampling mode



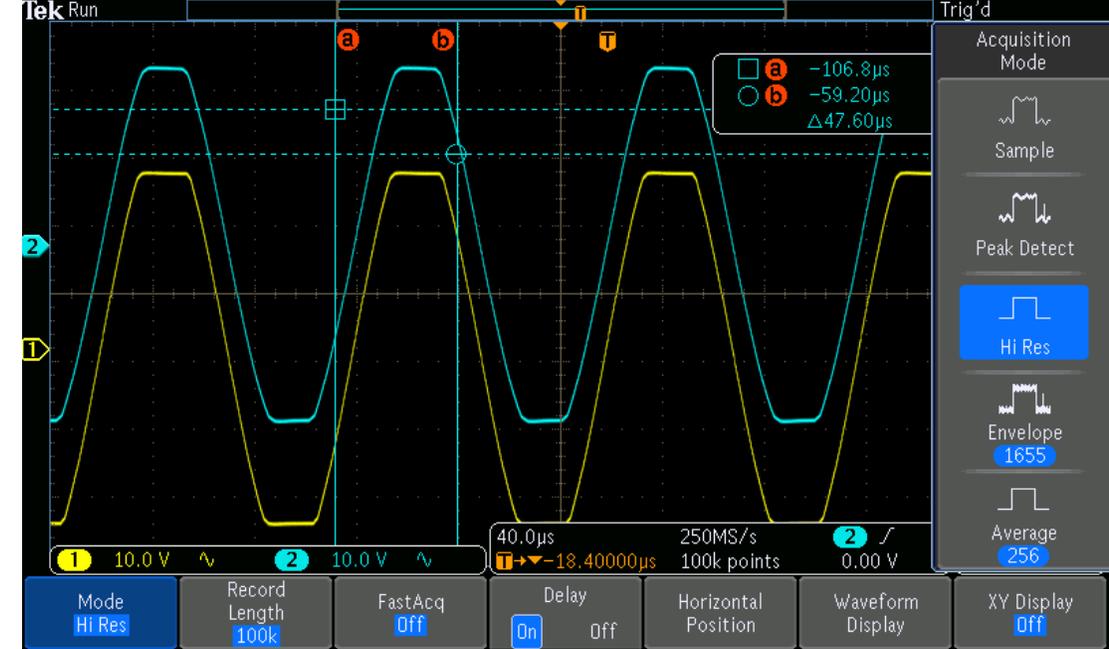
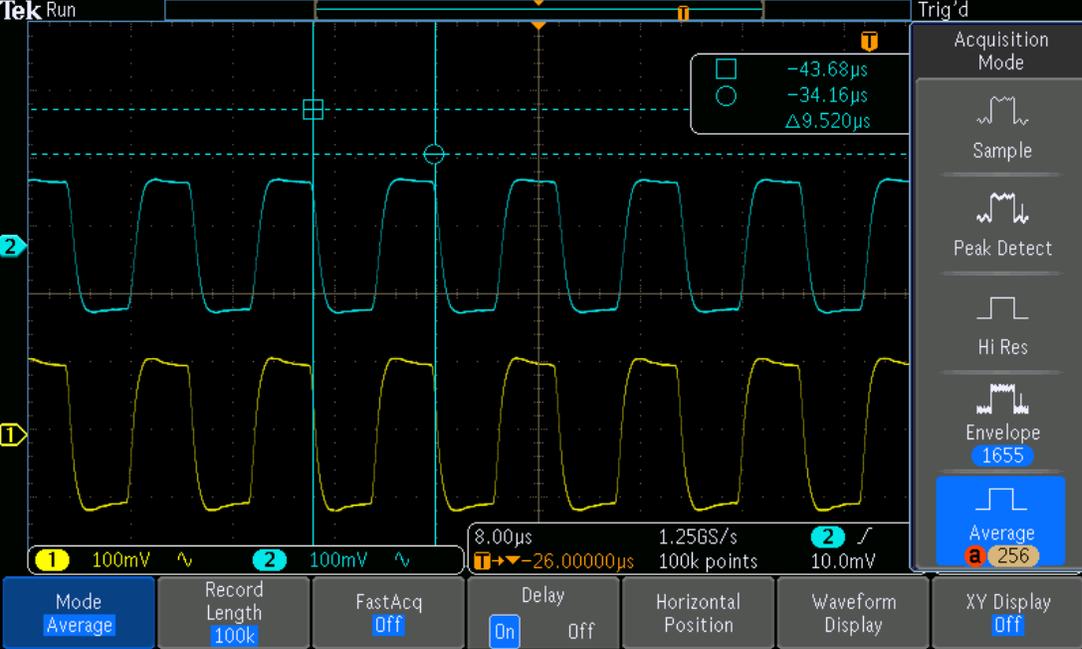
As above, but with 256 averaging





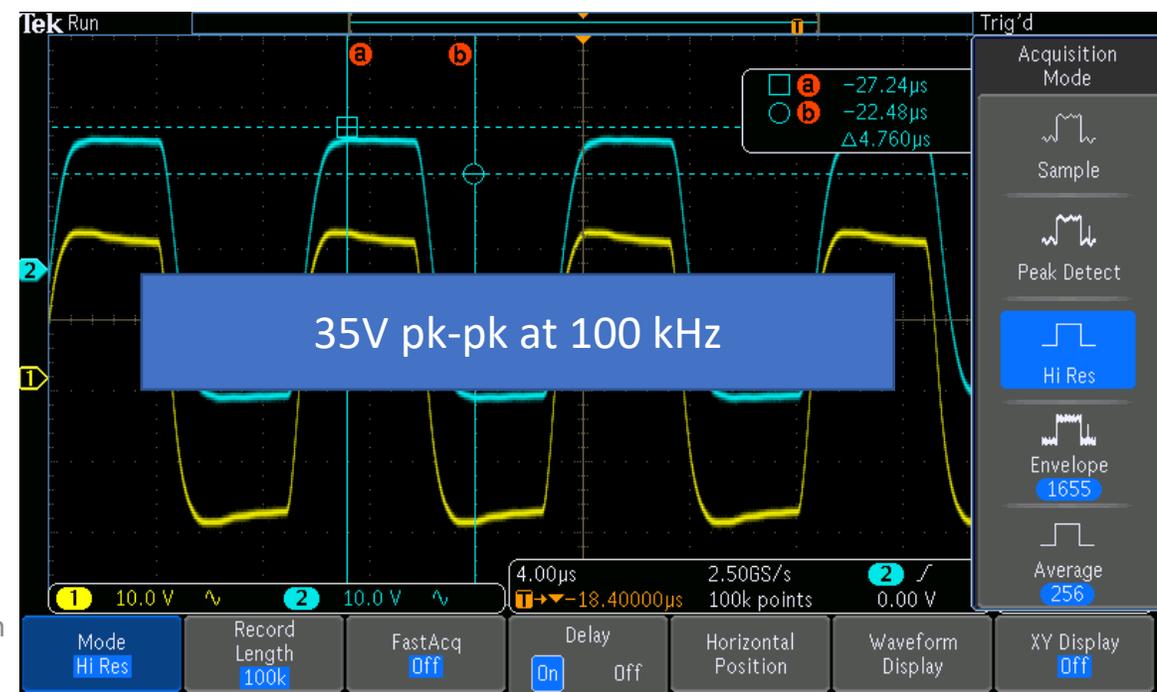
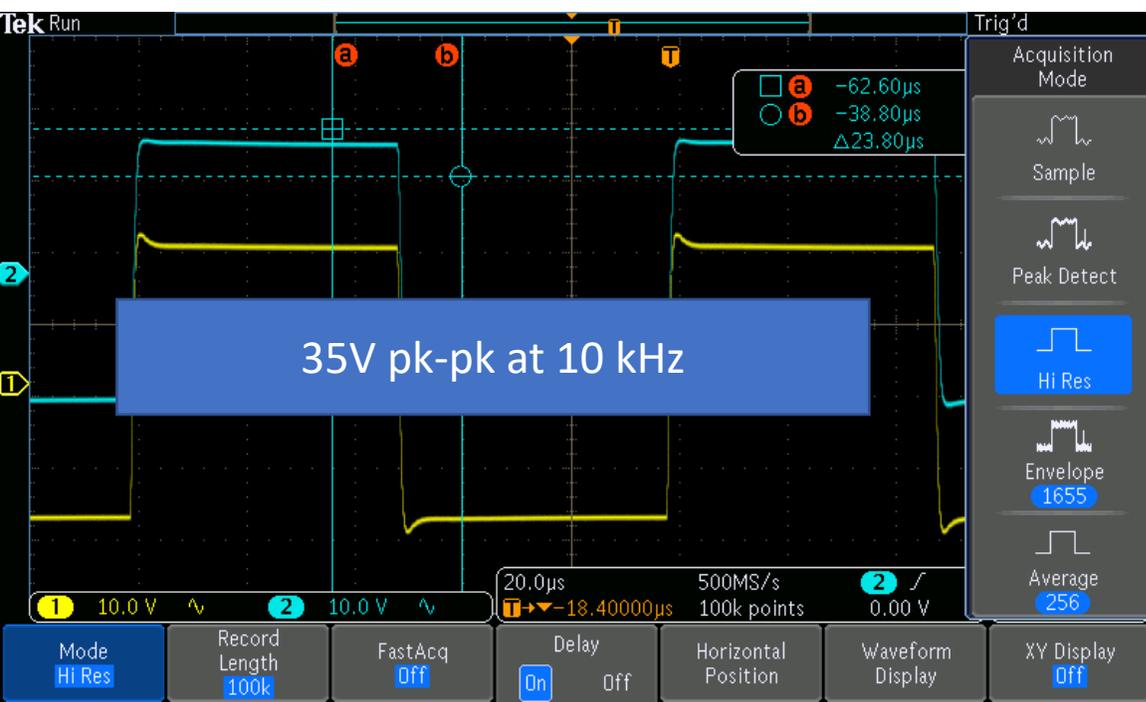
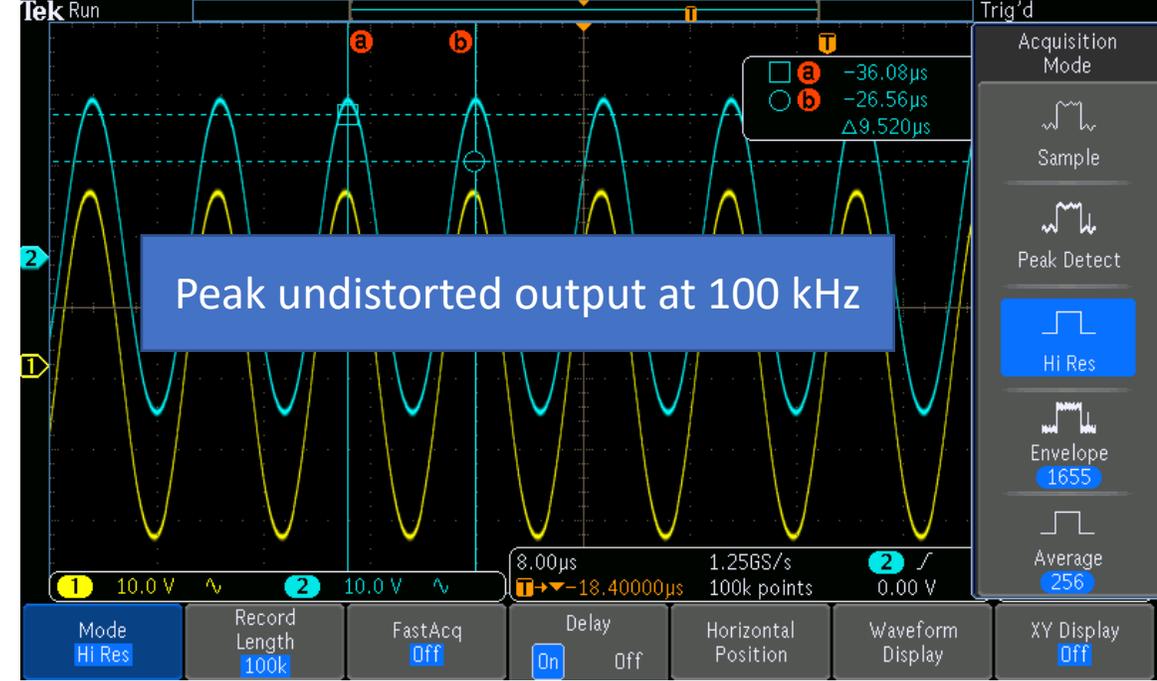
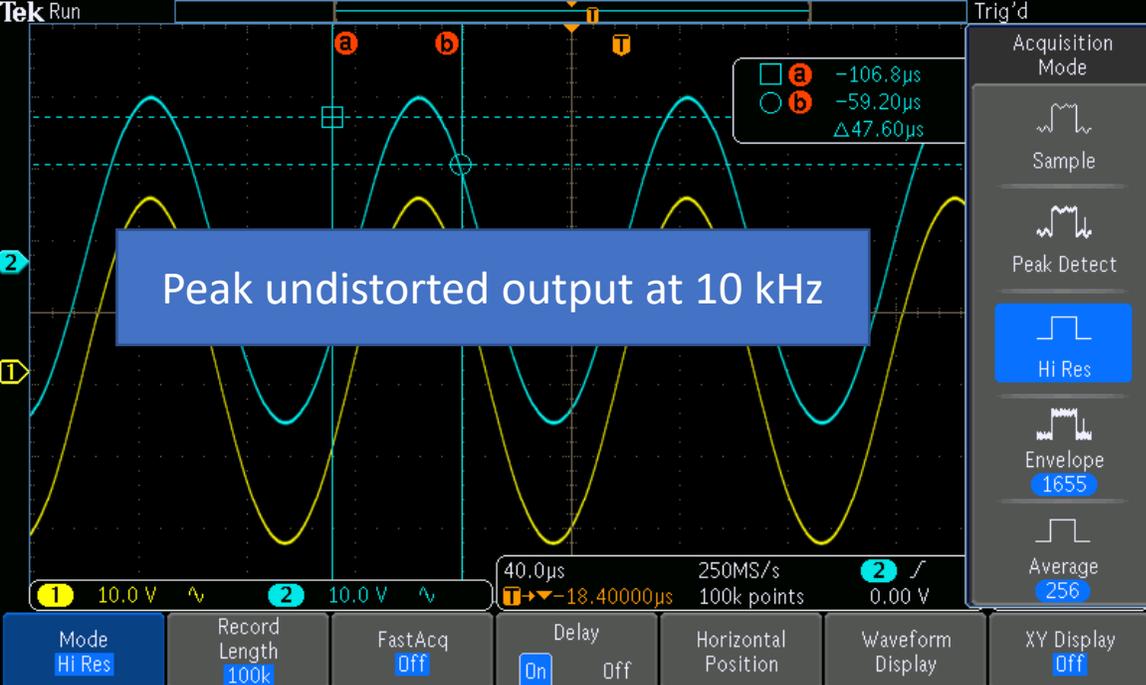
Output from the generator in these plots is about 5mV at c. 10 kHz

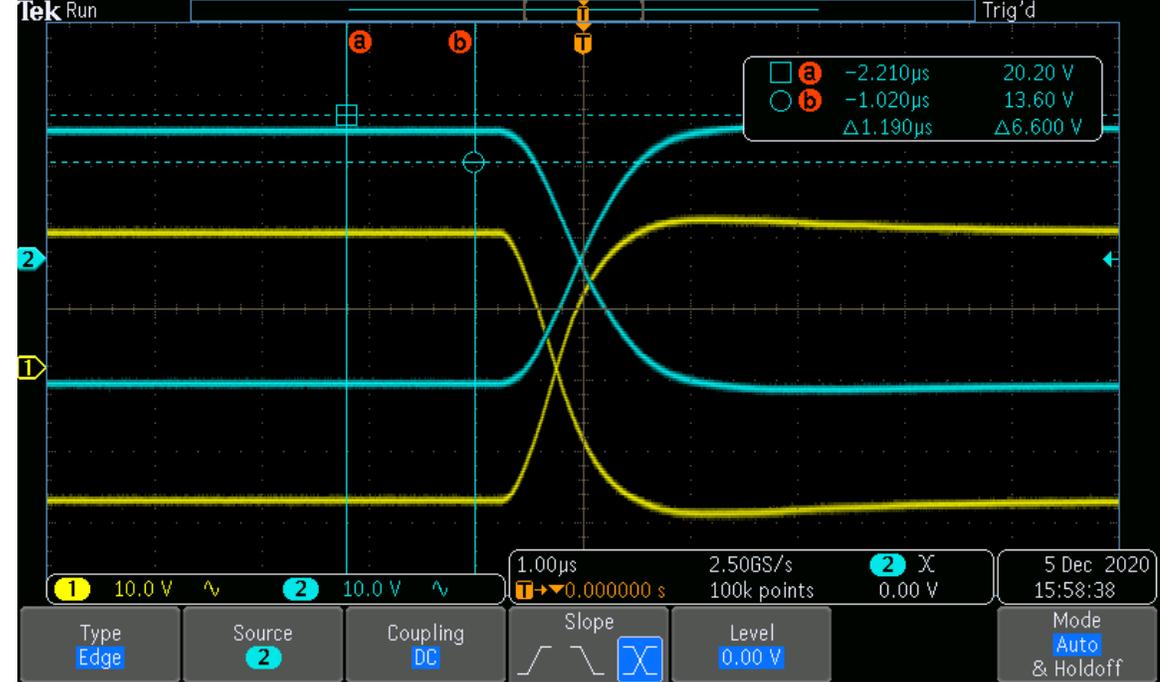
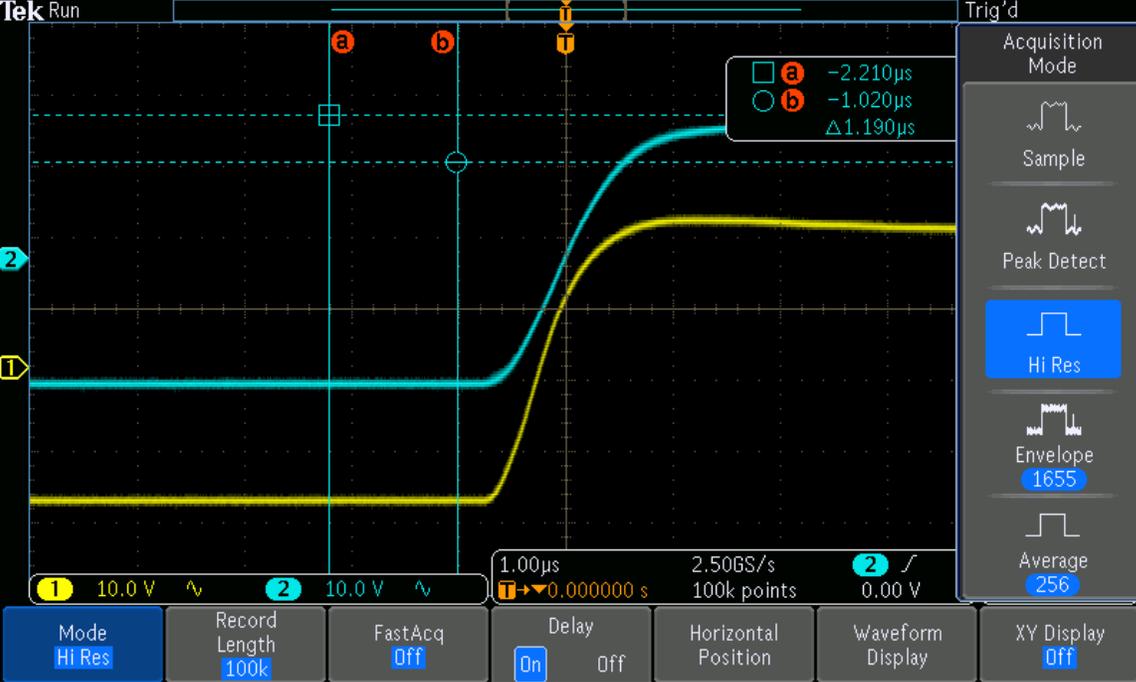
As per the LHS plot, but zoom in



Per the previous slide, but now at 100 kHz. Channel 1 input is fed from 50 Ohm source, so shows slightly more overshoot.

Amplifier driven hard into clipping at c. 10 KHz. Peak undistorted output is about 45W into 8 Ohms. The amplifier is delivering the first 20 W peak in class A





35V pk-pk at 100 kHz. Note channel 1 has a faster rise time due to the 50 Ohm generator impedance

Same as LHS panel, but with rising and falling edge triggering.