This is meant to complement the measurement reports in G1401399 of the 18 bit DAQ at LASTI and in T070264 of the 16 bit DAQ which were looked at higher frequencies (using a 1Khz notch). As in G1401399 the DAQ was driven with low passed white noise (zpk(-2\*pi\*[0 pair(10,45),pair(10,45)],-2\*pi\*[1/(2\*pi) pair(1,45) pair(1,45)],1)), with a deep band stop (ellip(6,0.5,80,2\*pi\*[low\_freq high\_freq],'stop','s')) to uncover the noise floor of the DAQ.

The measurement was taken at the output port of the AI chassis, using a SRT785 spectrum analyzer.

This first figure show a number of different measurements at a relatively low drive level of +/-30mv (as read off an oscilloscope ) and zero offset. The 1500 count number is the input white noise level before the low pass filter. The grey dotted line is the modeled noise from the measurement taken on the 18 bit DAQ ( 300nV\*sqrt((50/f)^2 + 1) where f is the frequency in hertz), in volts/rtHz. The pink dotted line is ( 600nV\*sqrt((25/f)^2 + 1) which looks to fit the data pretty well. So above 100Hz the 18bit DAQ is a factor of 2 quieter than the 16 bit model and below 20Hz they are the same.

Sixteen Bit Noise Floor.tif

Increasing the drive level by 25/1.5 had very little effect on the output noise floor

Amplitude.tif

I tried one other set of test where I drove with whiter spectra, and varied the DC offset and the amplitude. A few things are noticeable, the noise floor doesn’t depend very strongly on the offset., there is an amplitude dependence and all of the measurements with this spectra are above the noise model derived with the low pass spectra.

