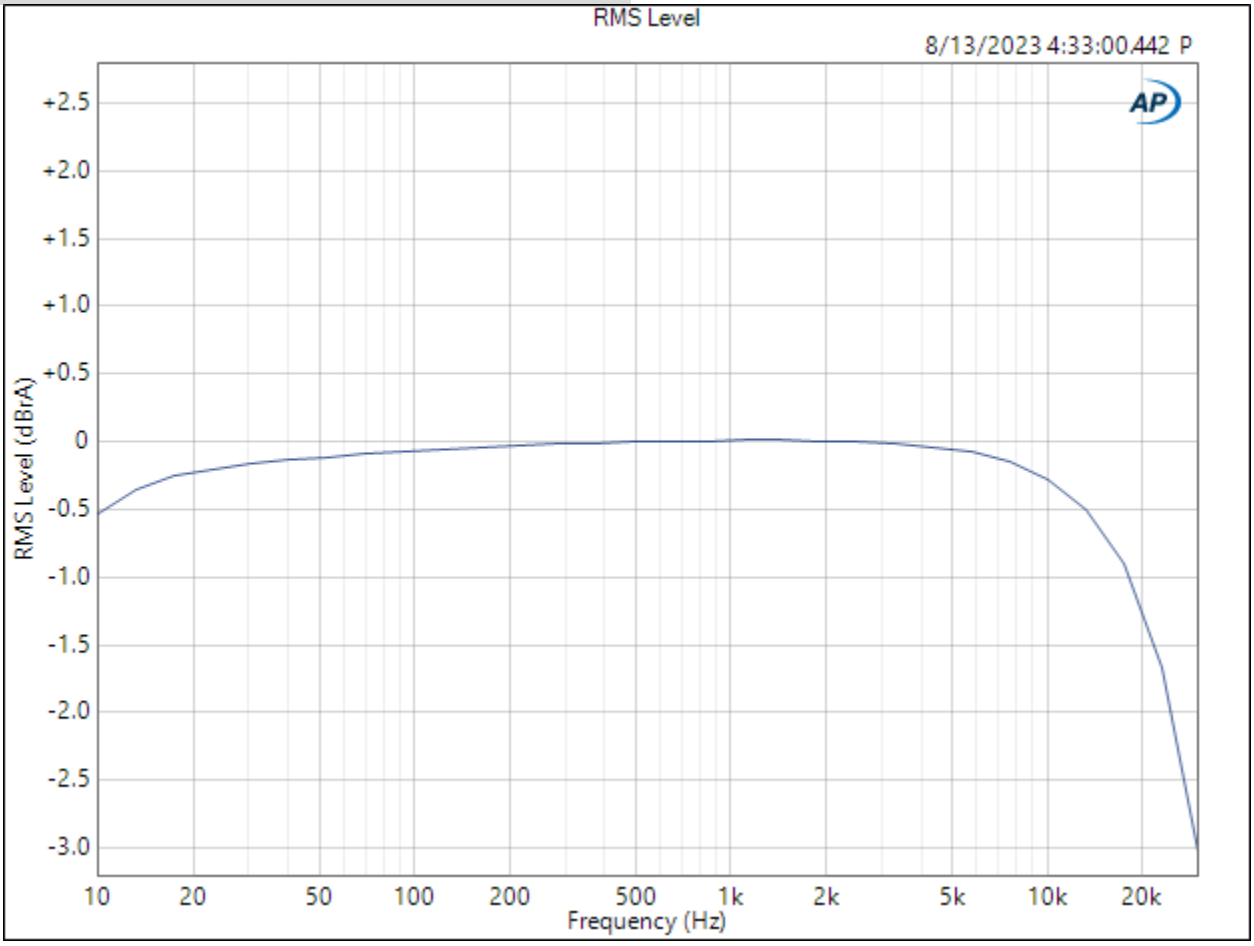
Pre-Sequence Inputs:		
Manufacturer & Model:	Altec 1591A	
Serial Number	2CA1	

Signal to Noise Ratio		
Ch1	91.106	dB

Basic Test Setup : Verify Connections	
Waveform:	Sine
Generator Level:	4.000 dBu
DC Offset:	0.000 V
Frequency:	1.00000 kHz

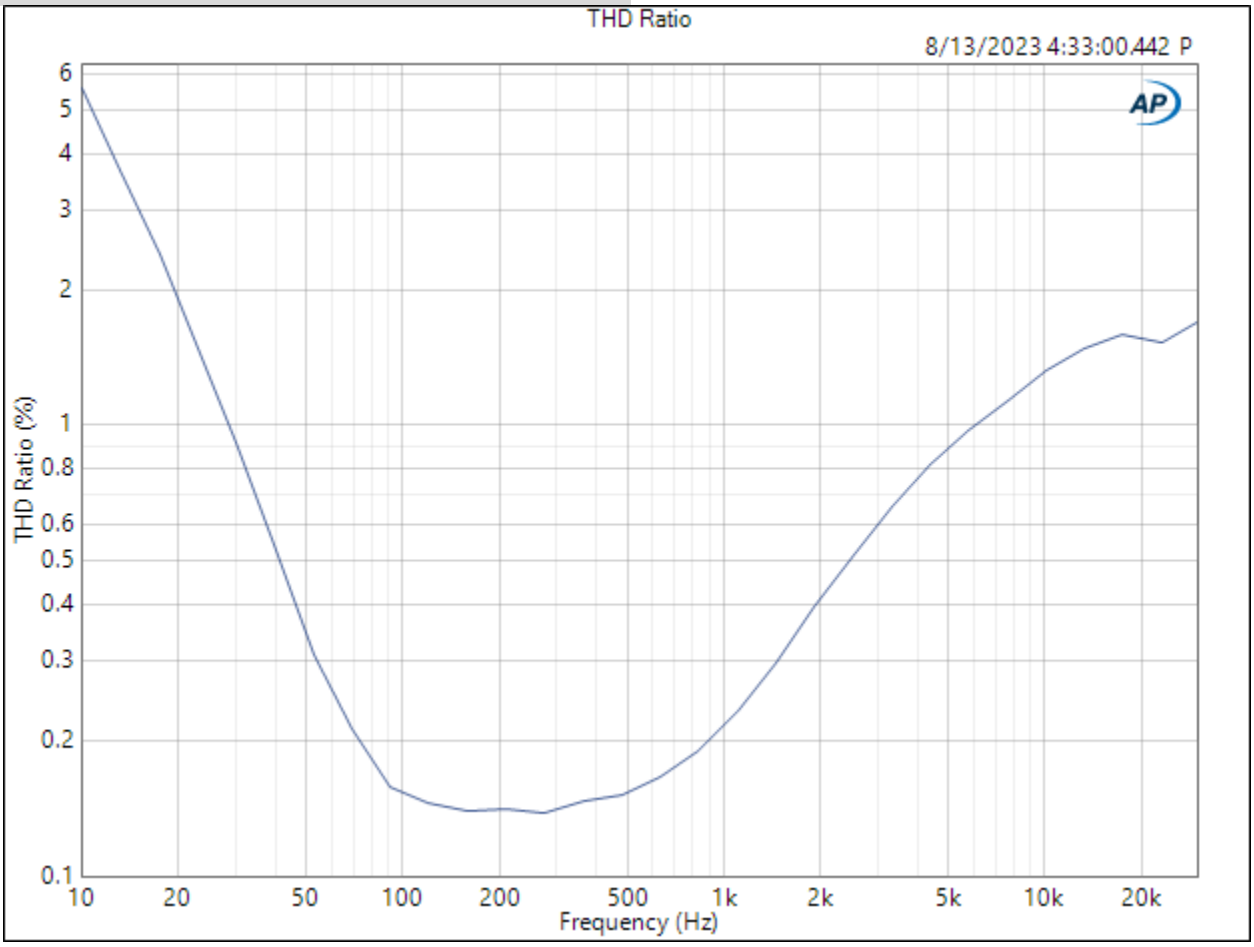
RMS Level		
Ch1	3.955	dBu

RMS Level



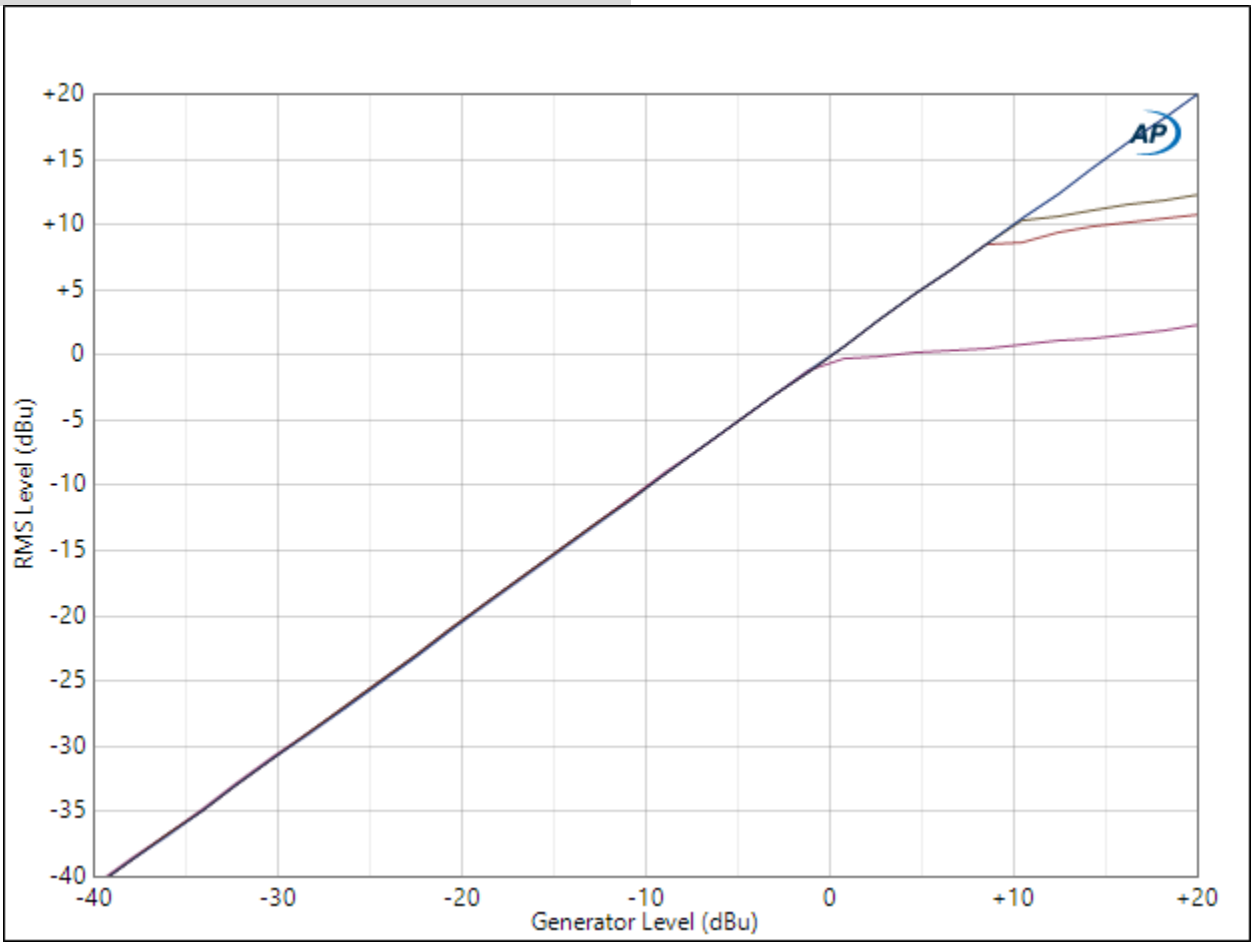
Frequency response line in to line out – no compression

THD Ratio



Total Harmonic Distortion measured at 51 discrete frequencies from 10Hz to 30kHz

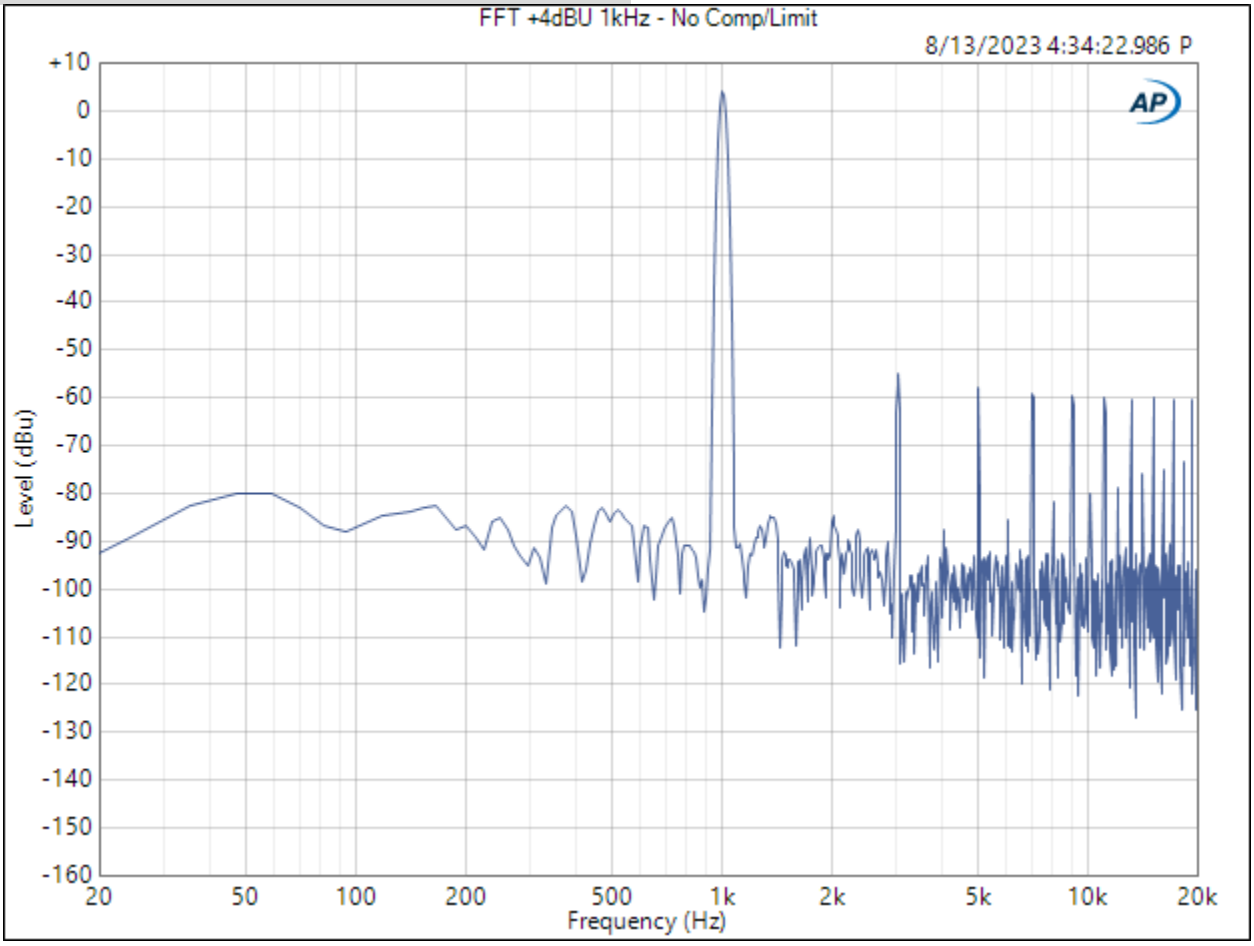
RMS Level



Increasing input vs output, curves from top to bottom:

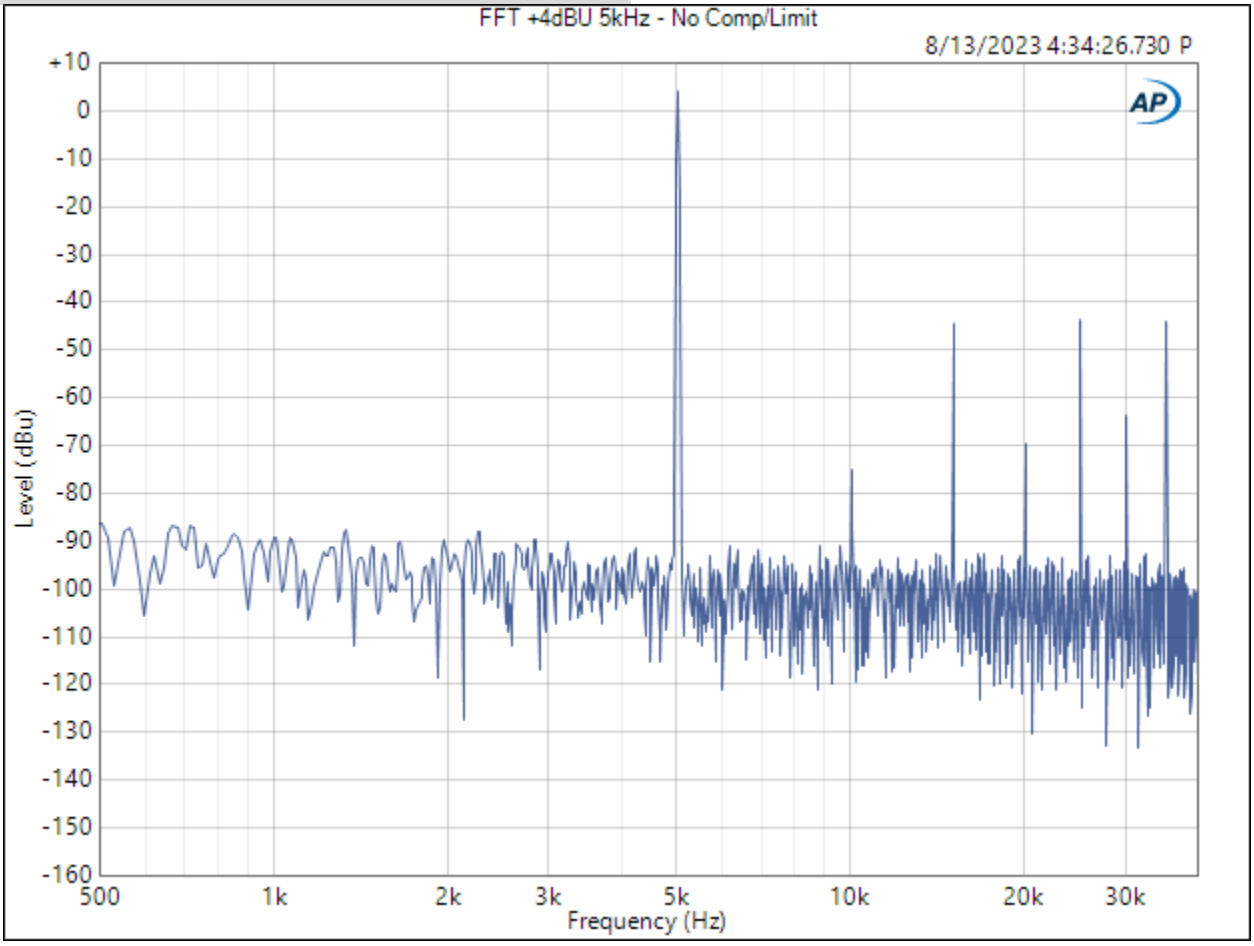
1. No limiting
2. +8dB threshold at 5:1 compression – note, this does not match the original specifications
3. +8dB threshold at 10:1 compression
4. 0dB threshold at 10:1 compression – this is the most common use case

FFT +4dBU 1kHz - No Comp/Limit



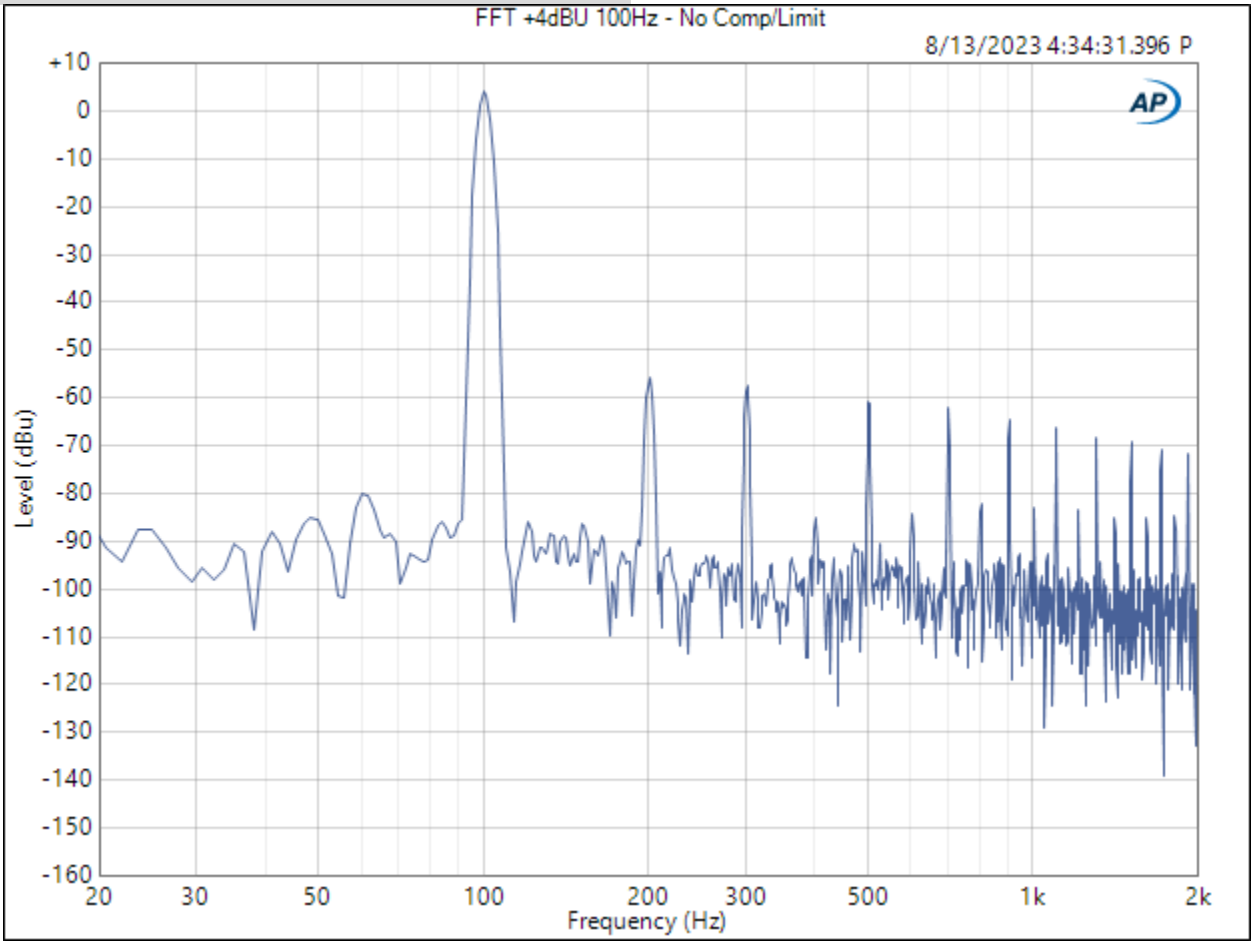
Fast Fourier Transform (FFT) showing a 1kHz signal fed in at +4dBU and the harmonic structure generated. Note 2nd harmonic at 2kHz is hardly noticeable, same at 4kHz and other 2nd harmonics. This and the next 3 FFT measurements were made with no limiting.

FFT +4dBU 5kHz - No Comp/Limit



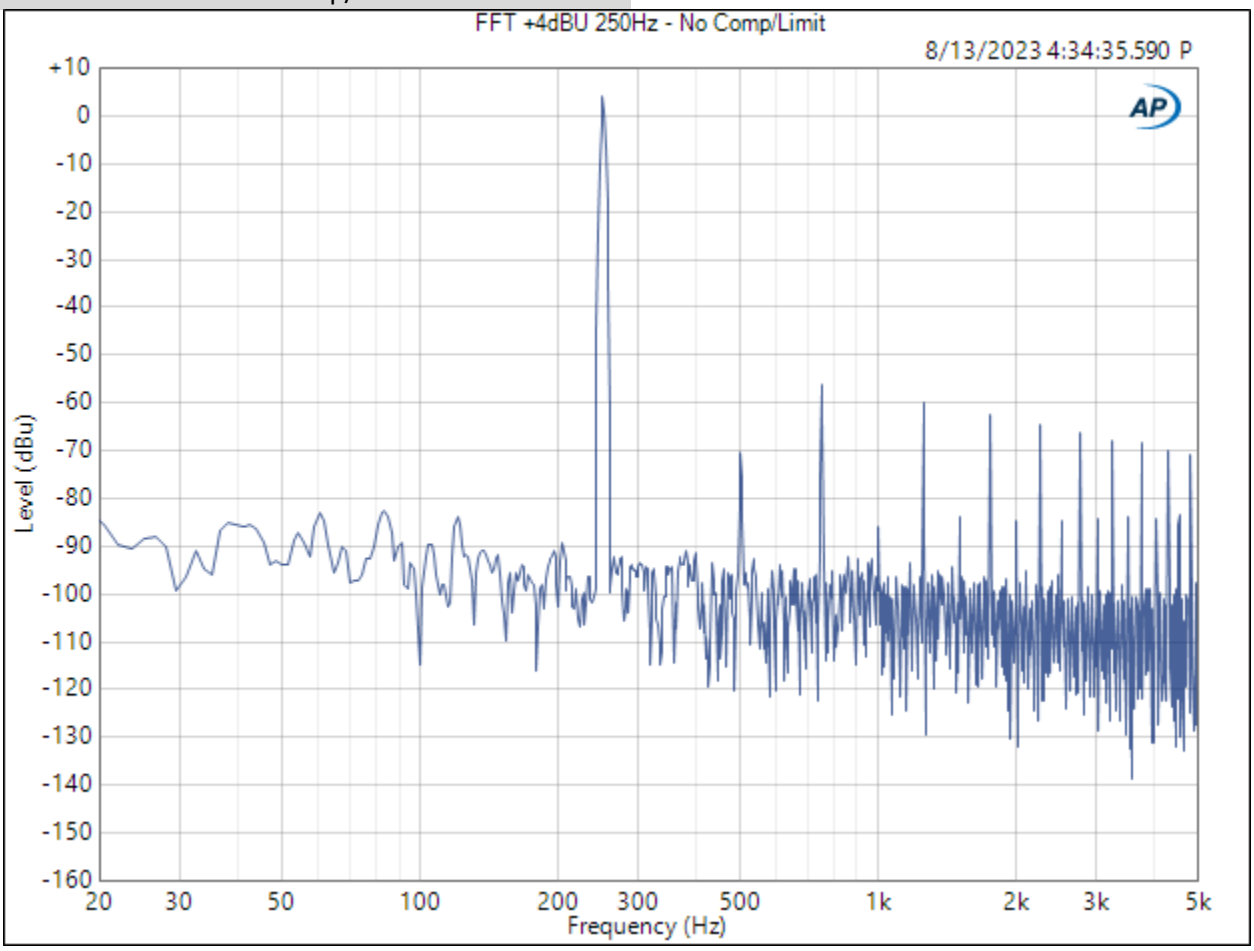
FFT with 5kHz in, showing harmonics out to 40kHz. Here the 2nd harmonic at 10kHz is a bit more dominant than at 1kHz.

FFT +4dBU 100Hz - No Comp/Limit



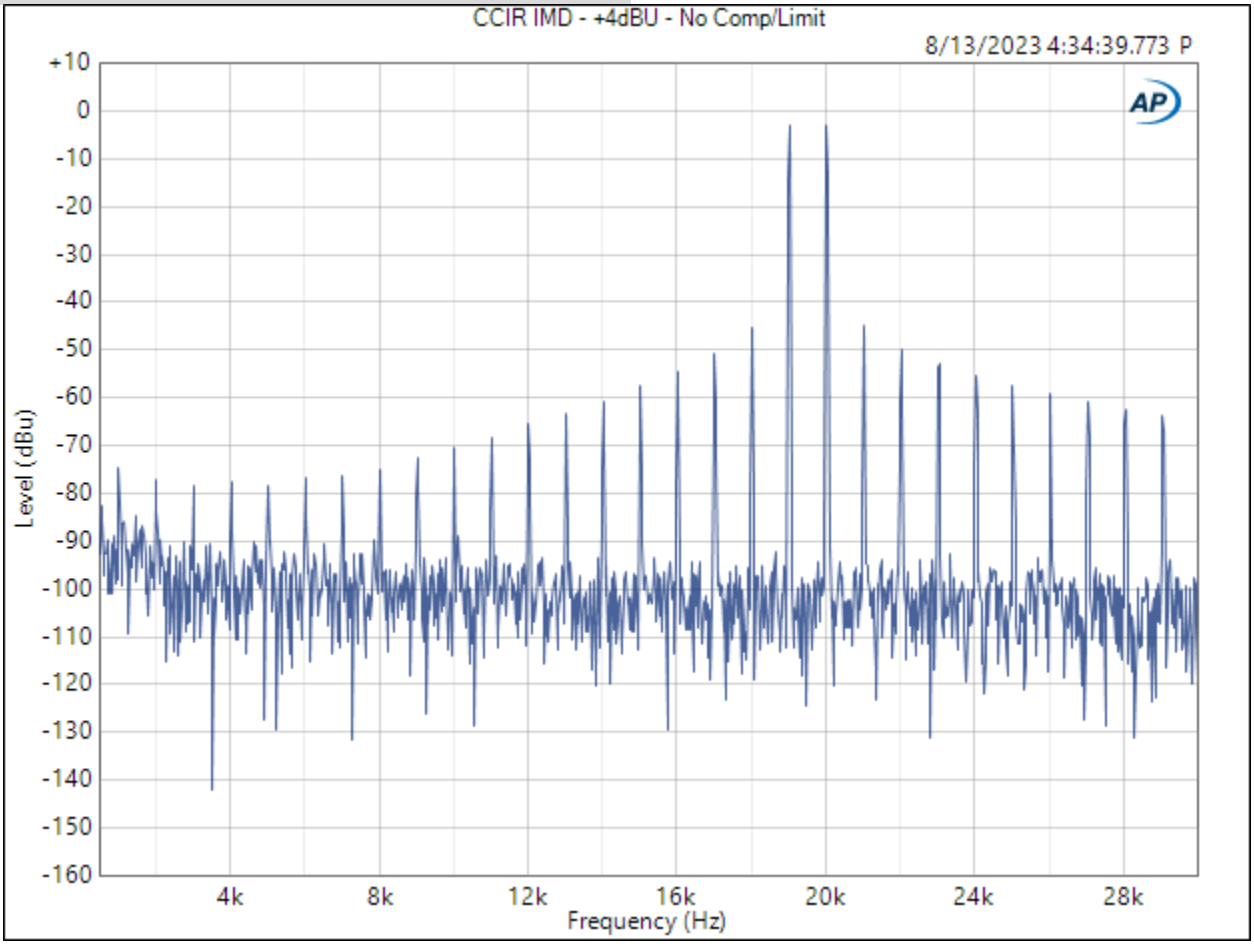
FFT at 100Hz, showing all harmonics up to 2kHz. 200Hz is very present, but other 2nds at 400Hz, 600Hz are lower than 3rd harmonics.

FFT +4dBU 250Hz - No Comp/Limit



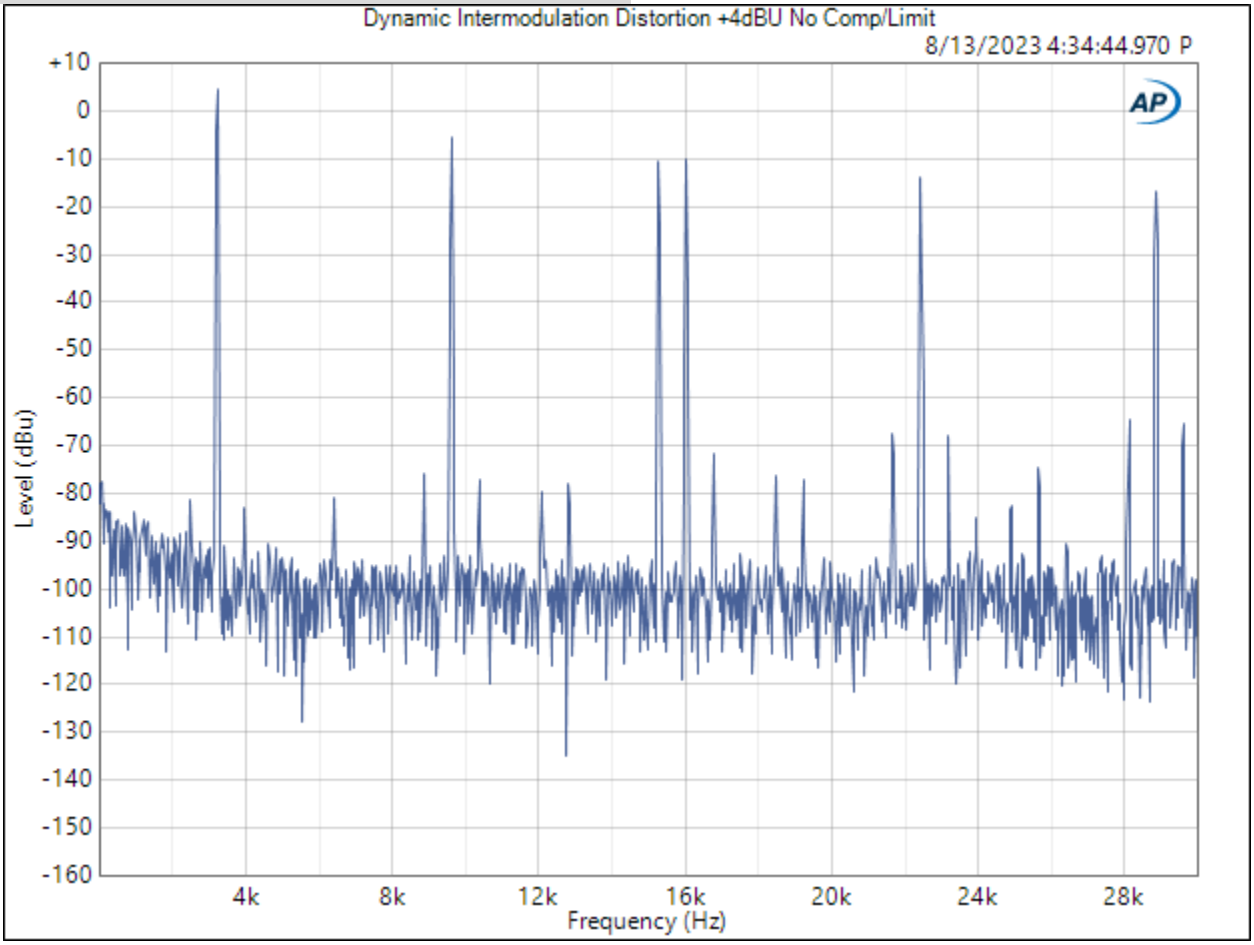
FFT with 250Hz signal.

CCIR IMD - +4dBU - No Comp/Limit



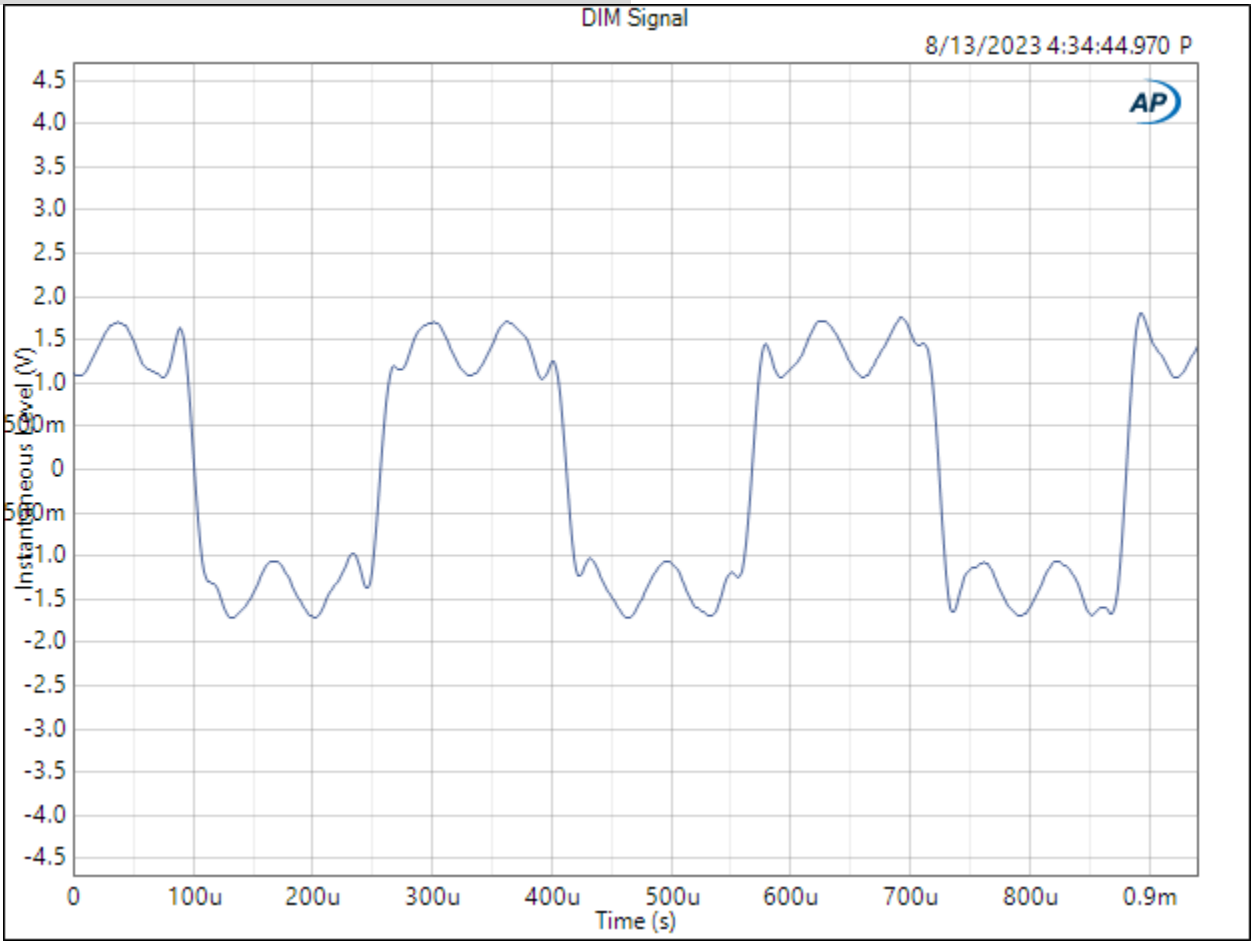
Intermodulation Distortion (IMD) measured with 2 identical level signals at 19kHz and 20kHz. IMD show challenges with the device dealing with complex signals. An ideal amplifier would show 2 peaks, 1 each at 19kHz and 20kHz. It is not unusual for this type of device to show a lot of IMD.

Dynamic Intermodulation Distortion +4dBU No Comp/Limit



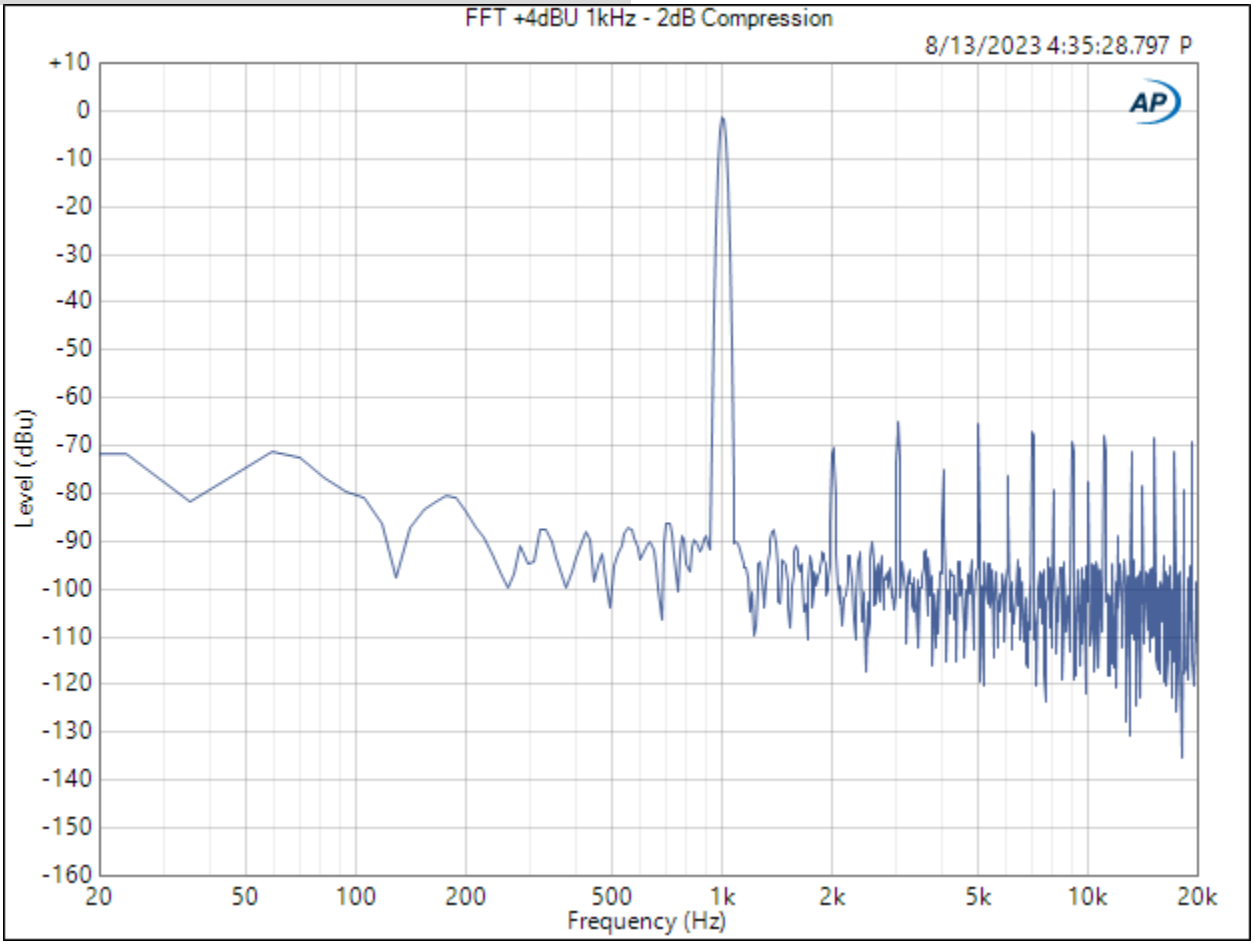
Dynamic Intermodulation Distortion (DIM) uses a 3.15kHz square wave and a 15kHz sine wave mixed together. A perfect amplifier would show the 6 highest peaks. The smaller peaks are the intermodulation distortion component. Interestingly, this device has much lower DIM than IMD; it handles the more complex signal of DIM better than the twin tones of IMD.

DIM Signal



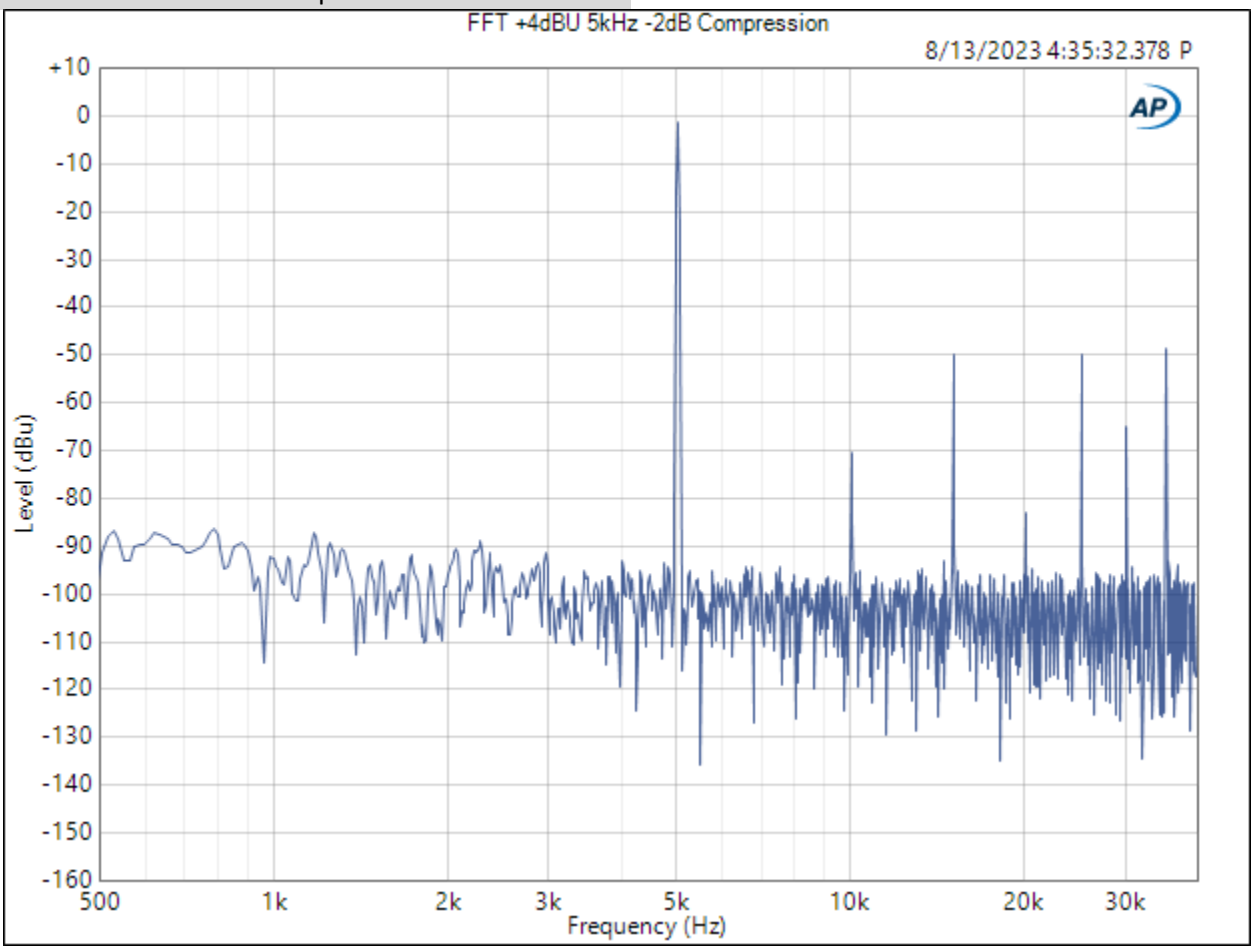
This is the input signal for DIM.

FFT +4dBU 1kHz - 2dB Compression

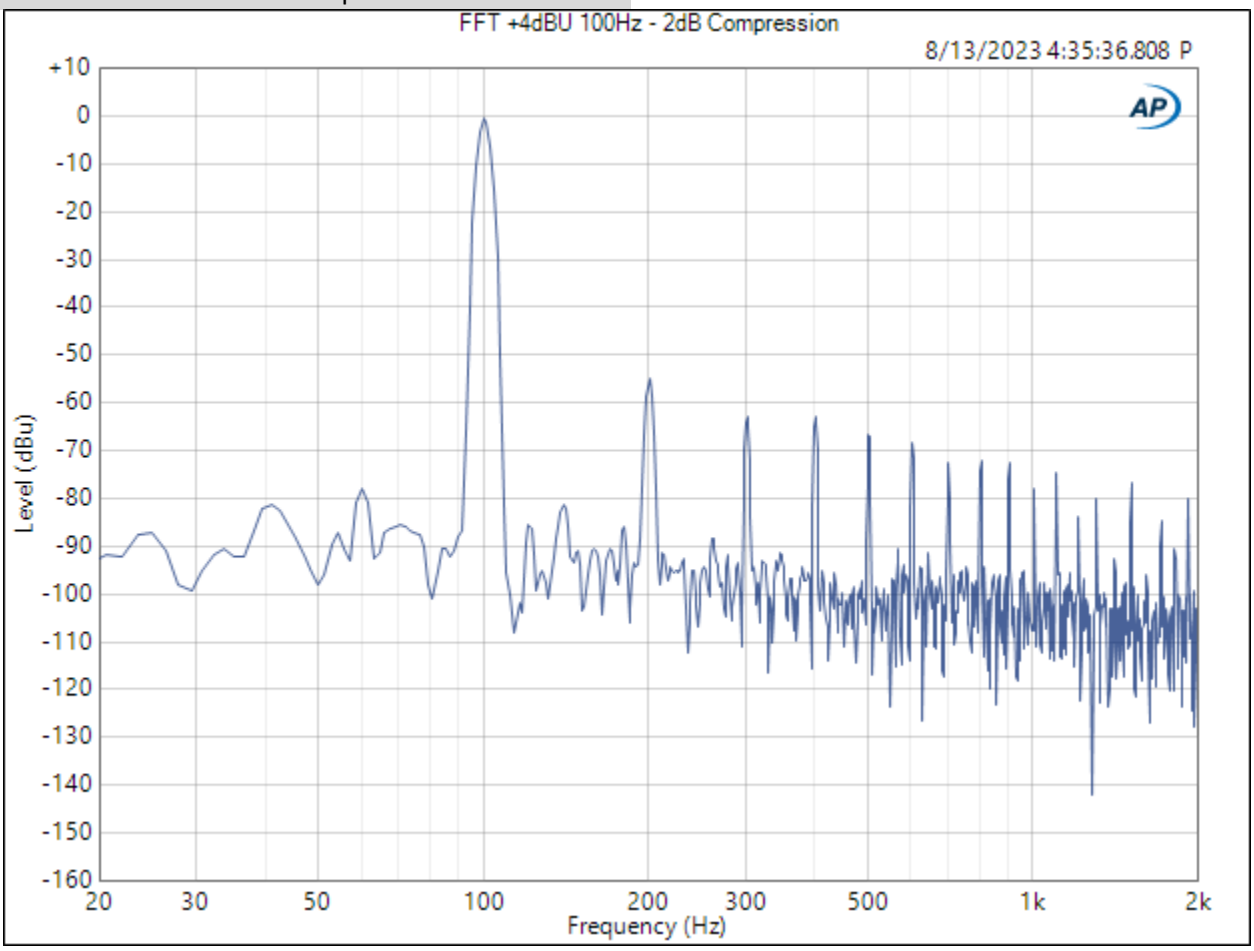


For the next few graphs, we introduce 2dB of limiting. Compare each of these to the not-limited graphs above to see how much distortion is added.
Note that distortion is not bad here, it is part of the compression process.

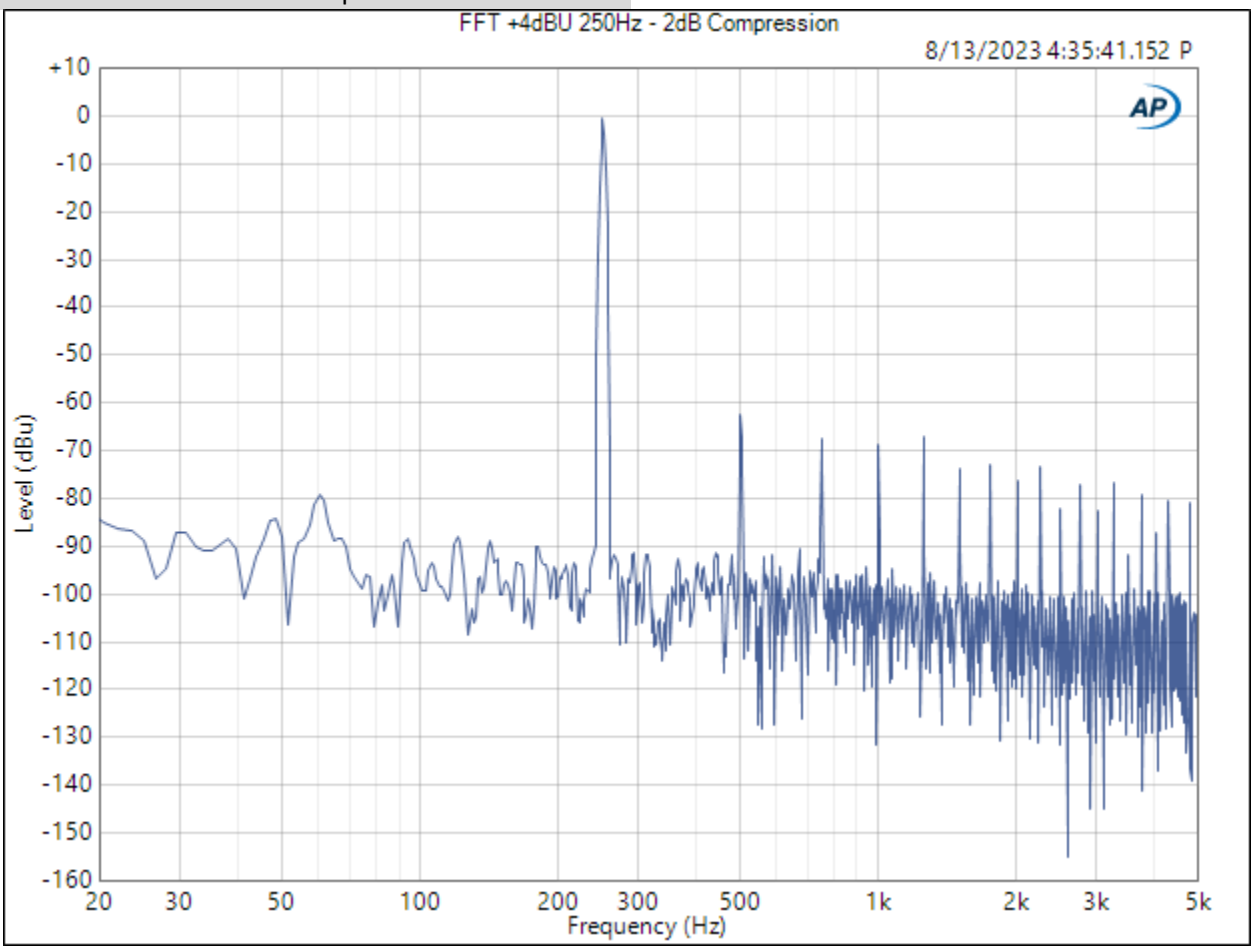
FFT +4dBU 5kHz -2dB Compression



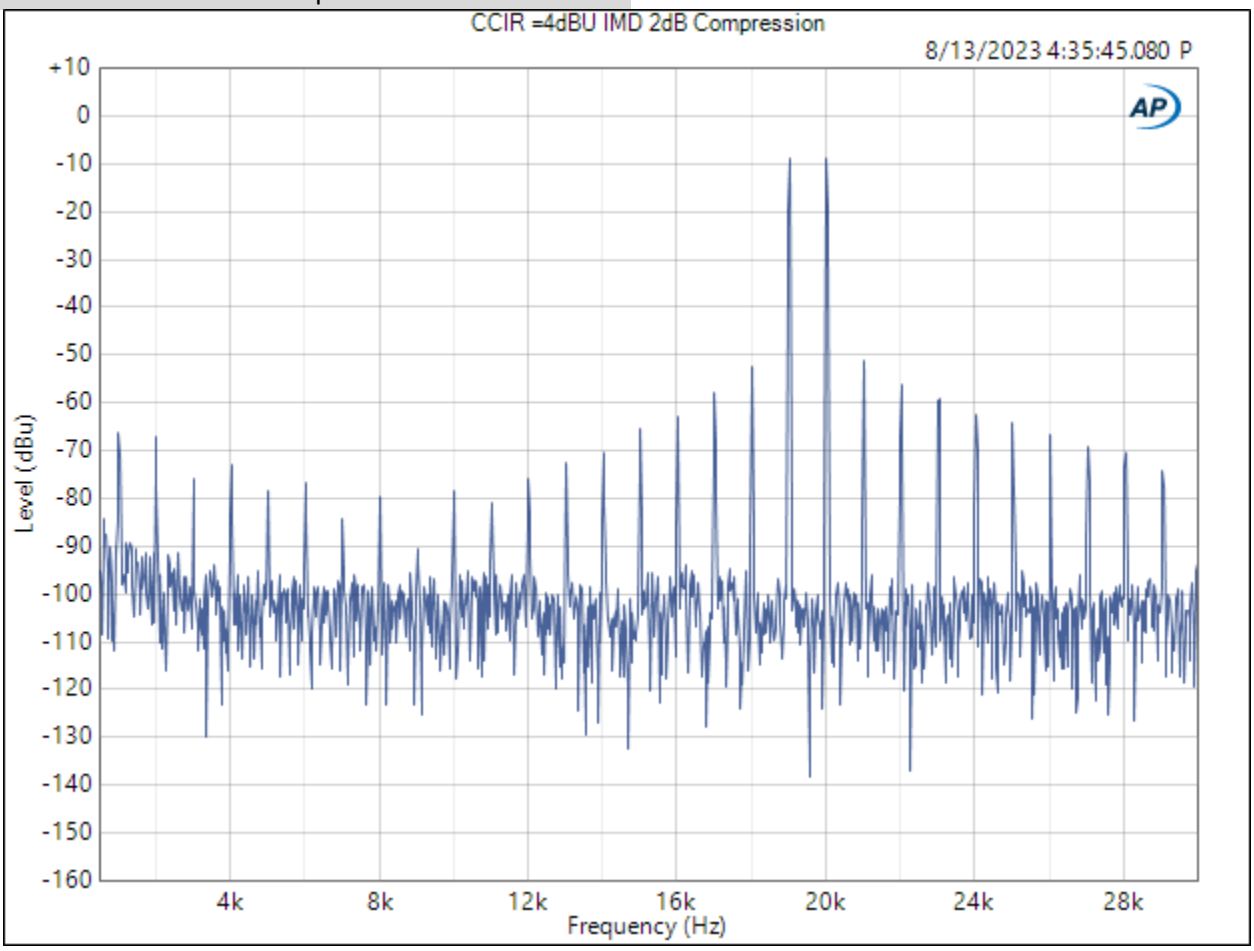
FFT +4dBU 100Hz - 2dB Compression



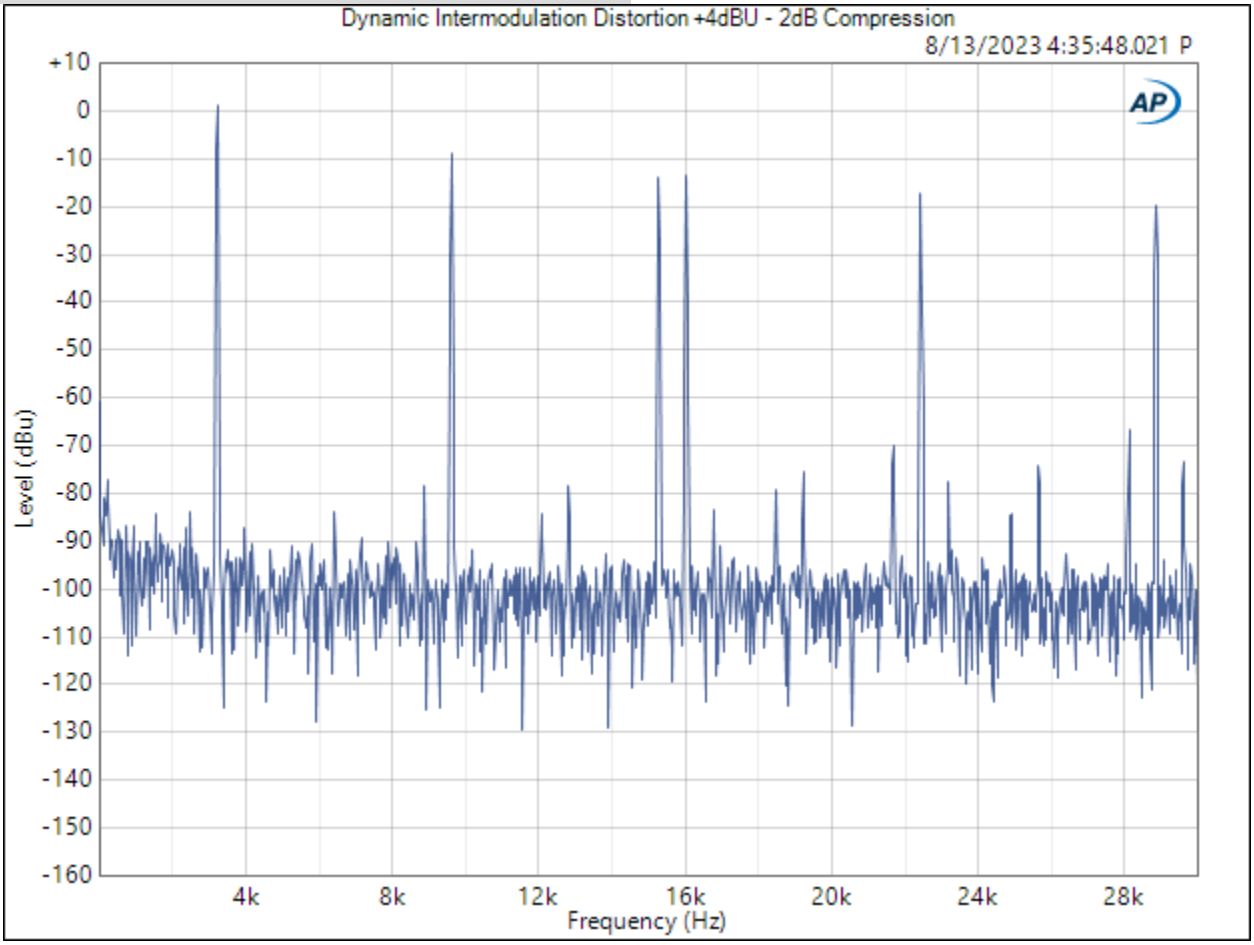
FFT +4dBU 250Hz - 2dB Compression



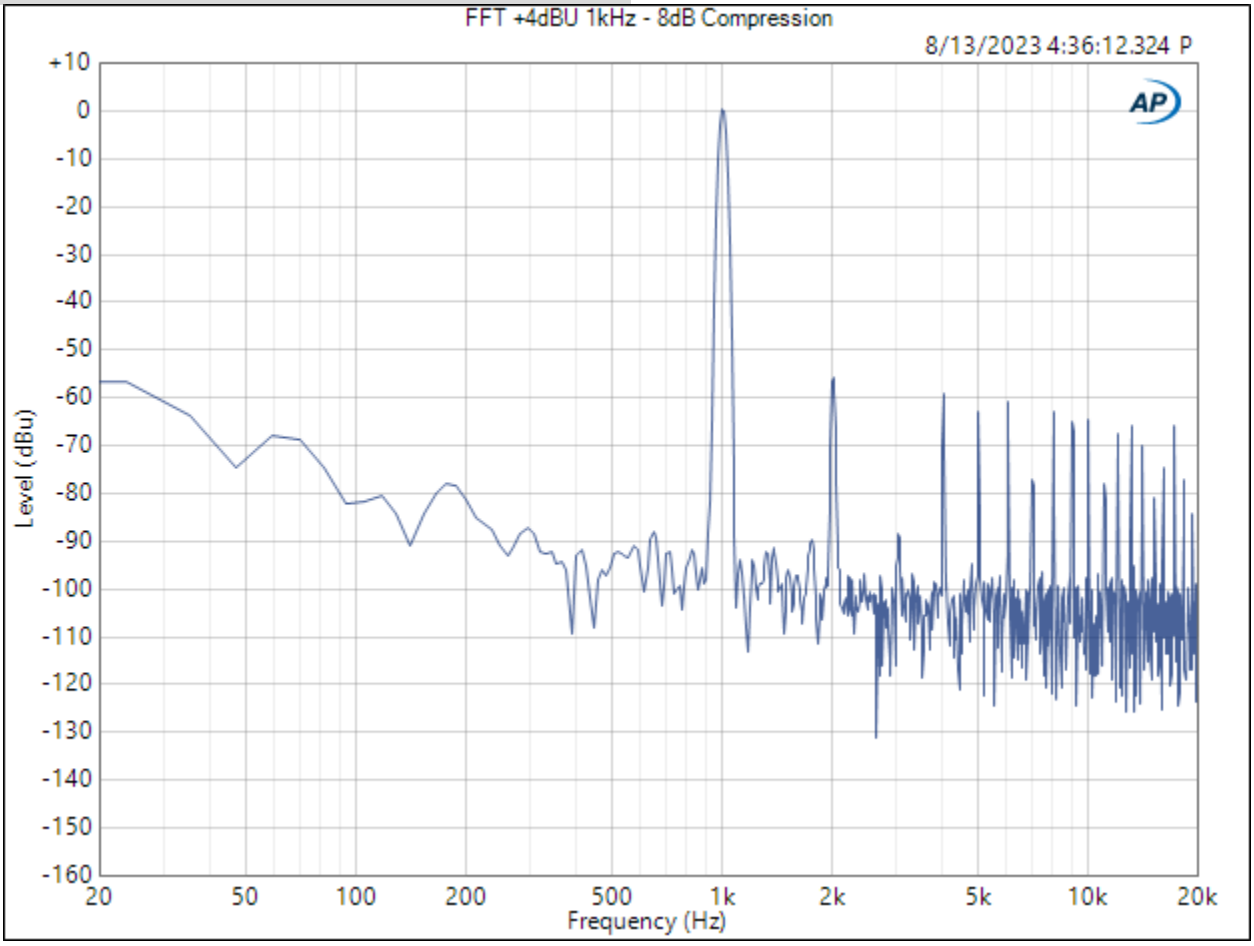
CCIR =4dBU IMD 2dB Compression



Dynamic Intermodulation Distortion +4dBU - 2dB Compression

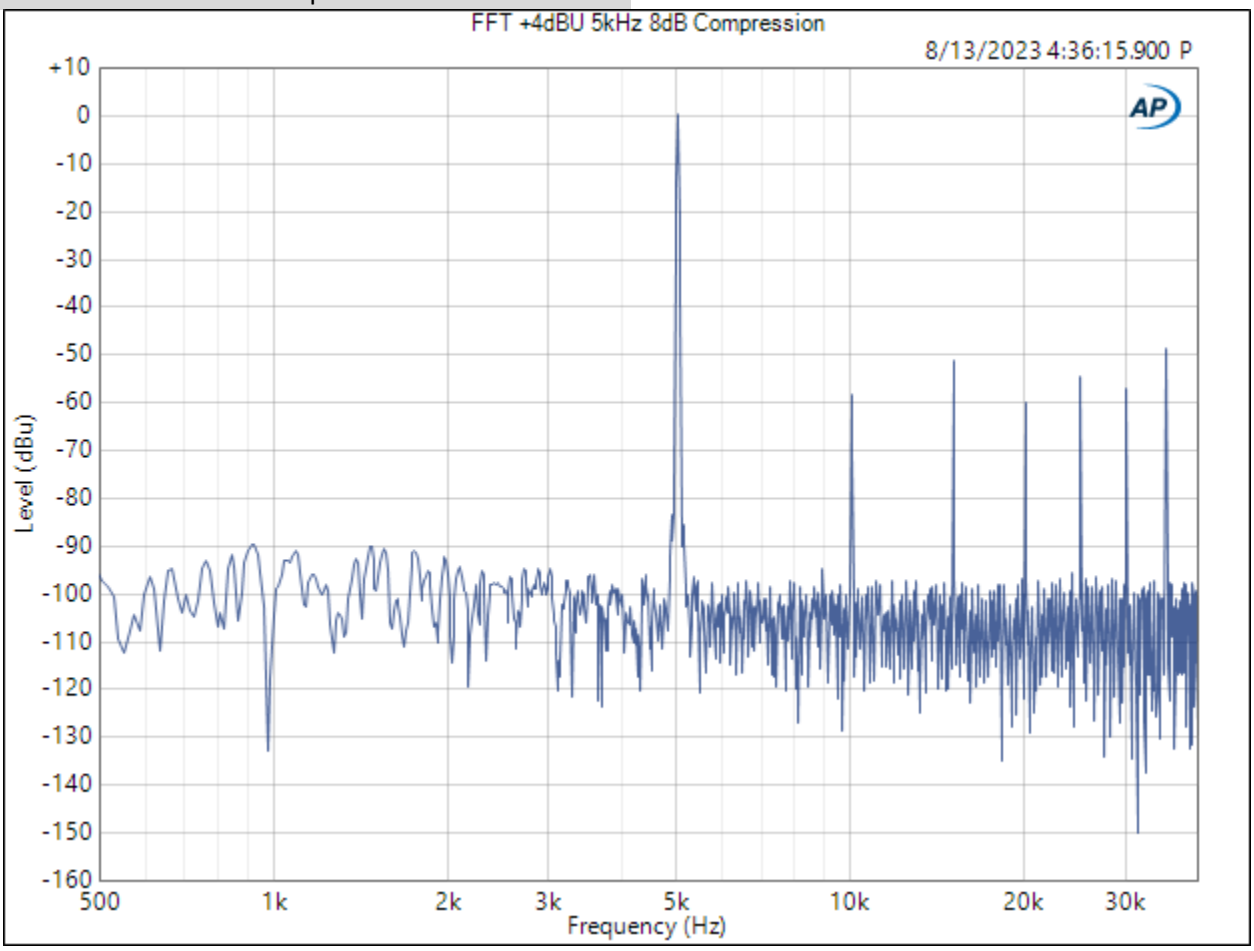


FFT +4dBU 1kHz - 8dB Compression

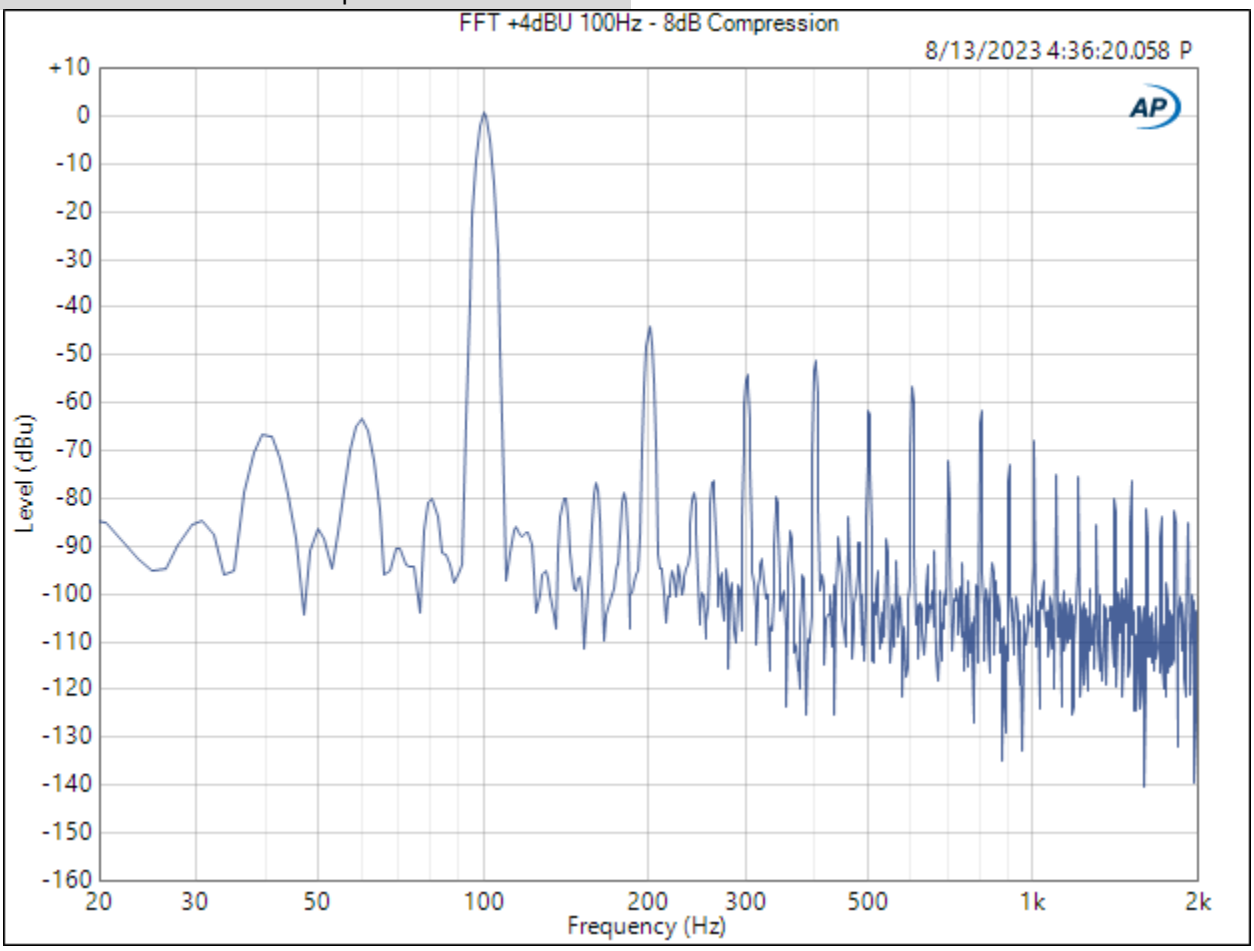


And now we introduce 8dB of compression to show what happens to the signal with more limiting. The remaining graphs are with 8dB of limiting.

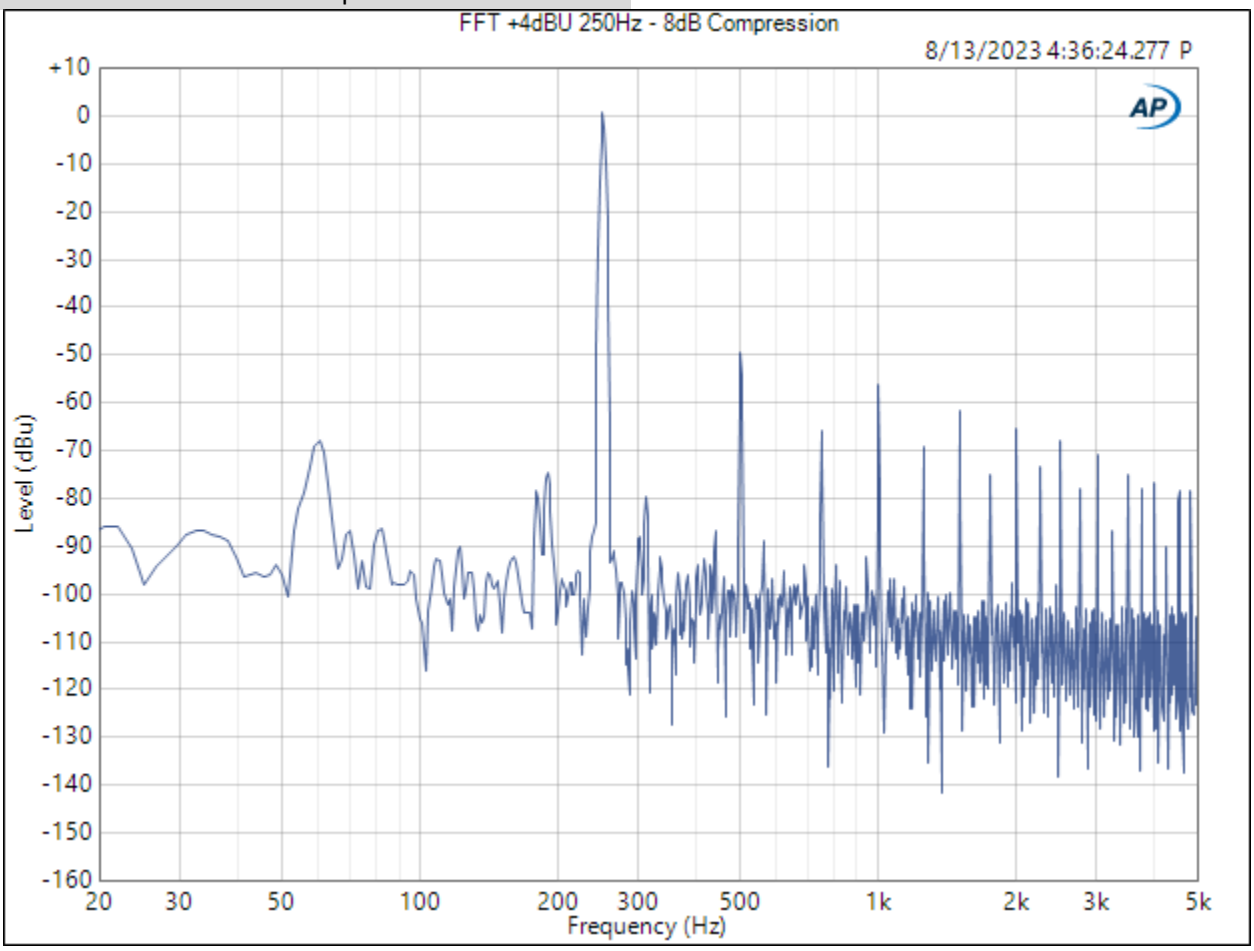
FFT +4dBU 5kHz 8dB Compression



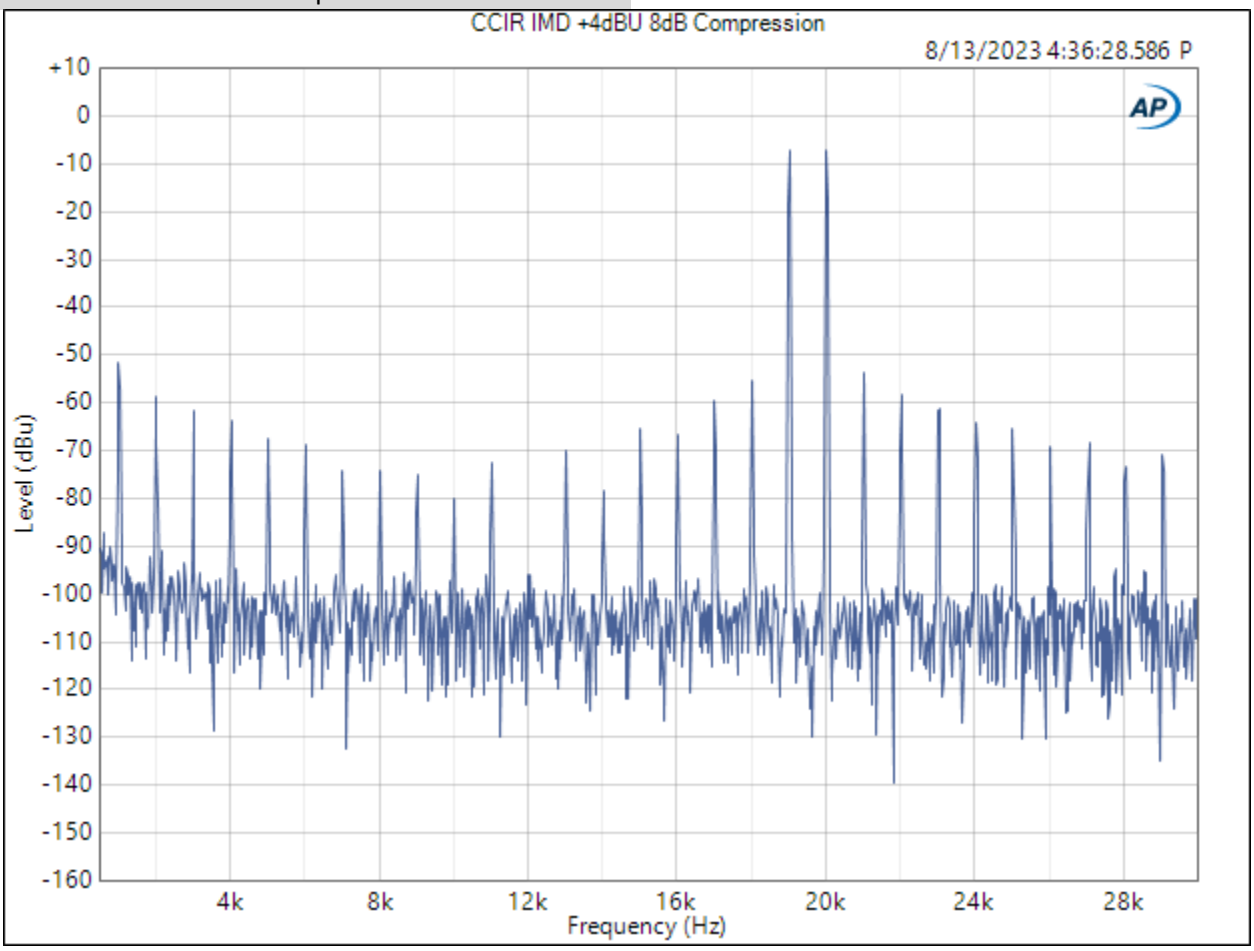
FFT +4dBU 100Hz - 8dB Compression



FFT +4dBU 250Hz - 8dB Compression



CCIR IMD +4dBU 8dB Compression



Dynamic Intermodulation Distortion +4dBU - 8dB Compression