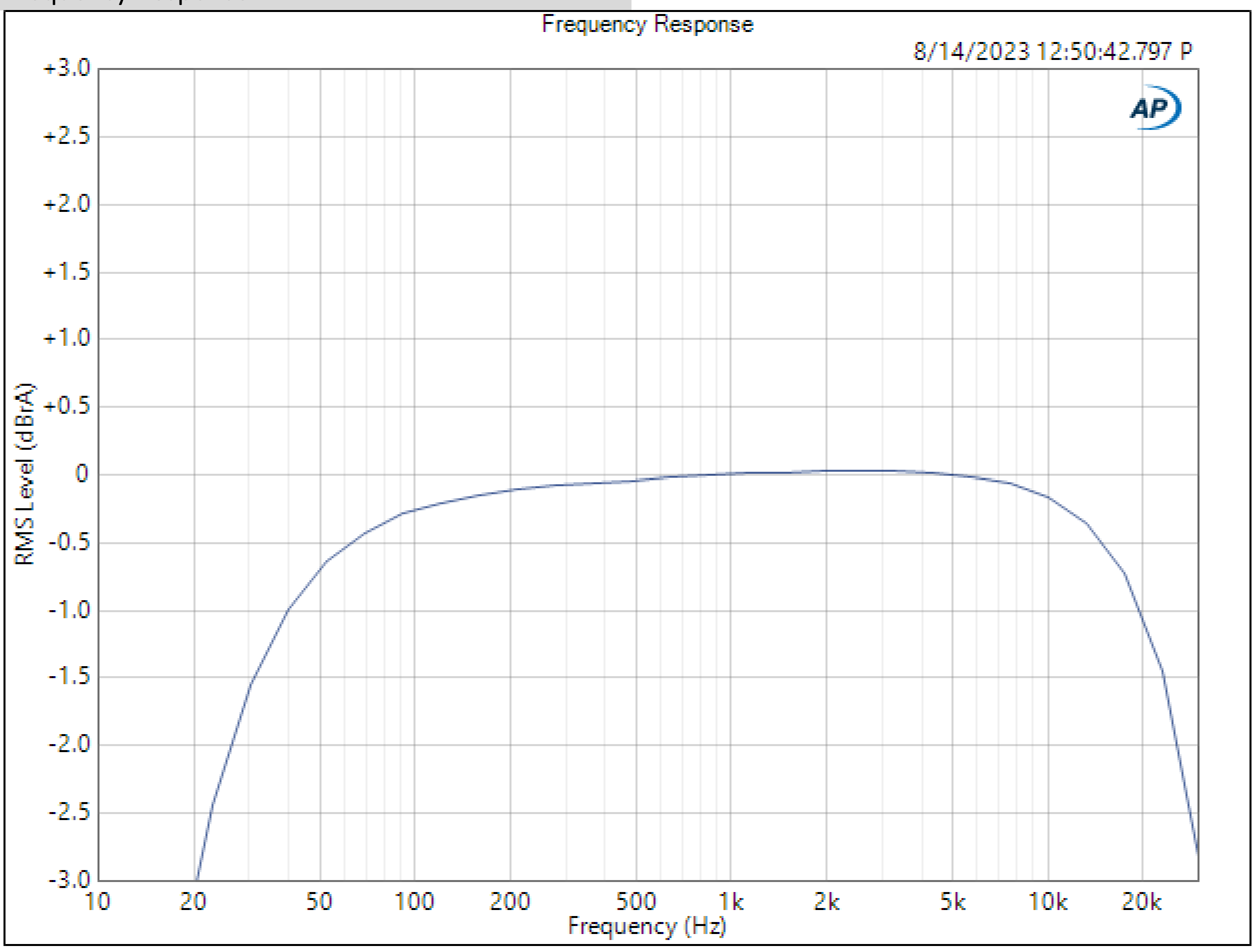
Pre-Sequence Inputs:		
Manufacturer & Model:	Altec 1591a Mic Pre 90dB Gain	
Serial Number:	2CA1	

Gain		
Ch1	95.459	dB

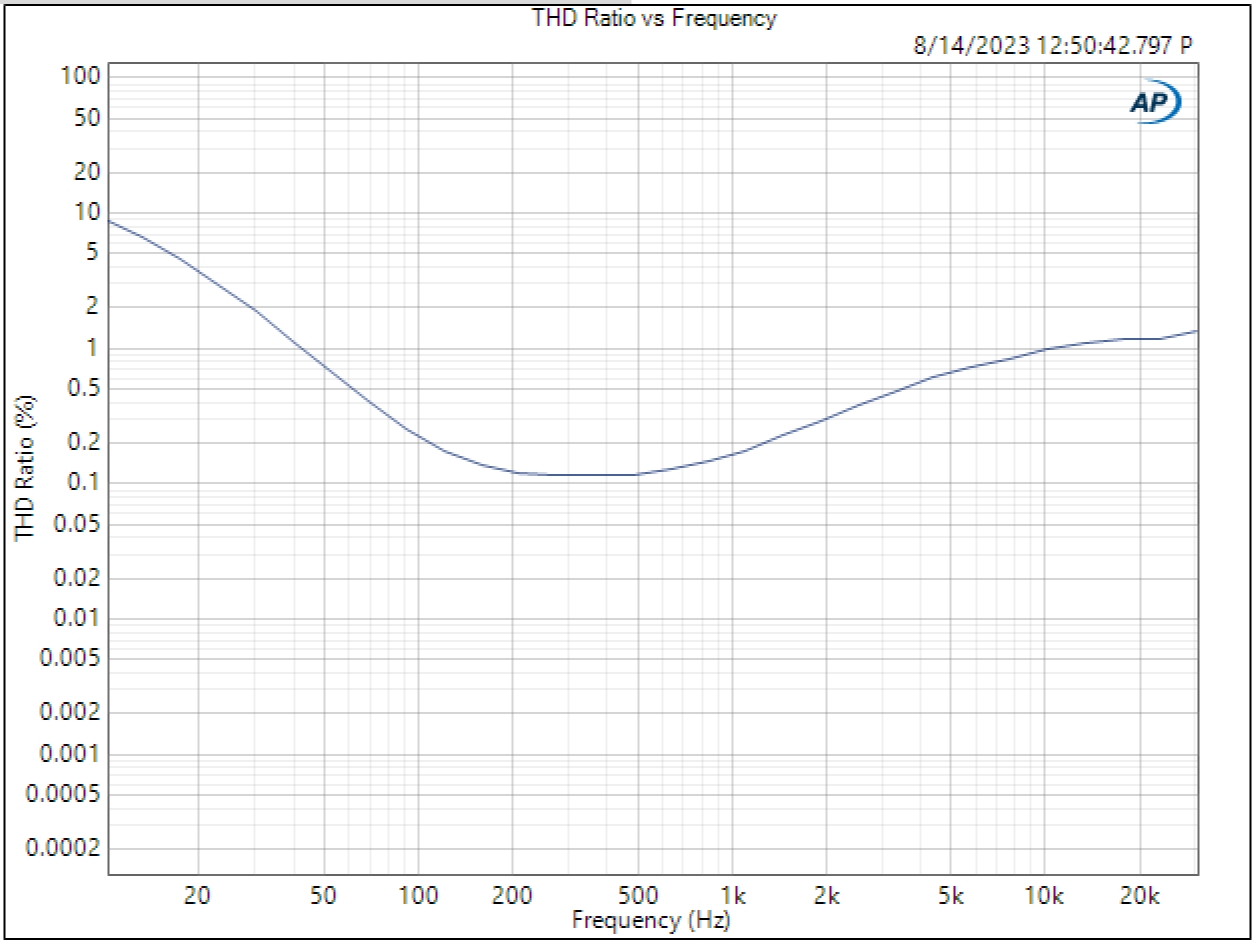
Maximum Gain of Device Under Test (DUT)

Signal to Noise Ratio		
Ch1	54.390	dB

Frequency Response

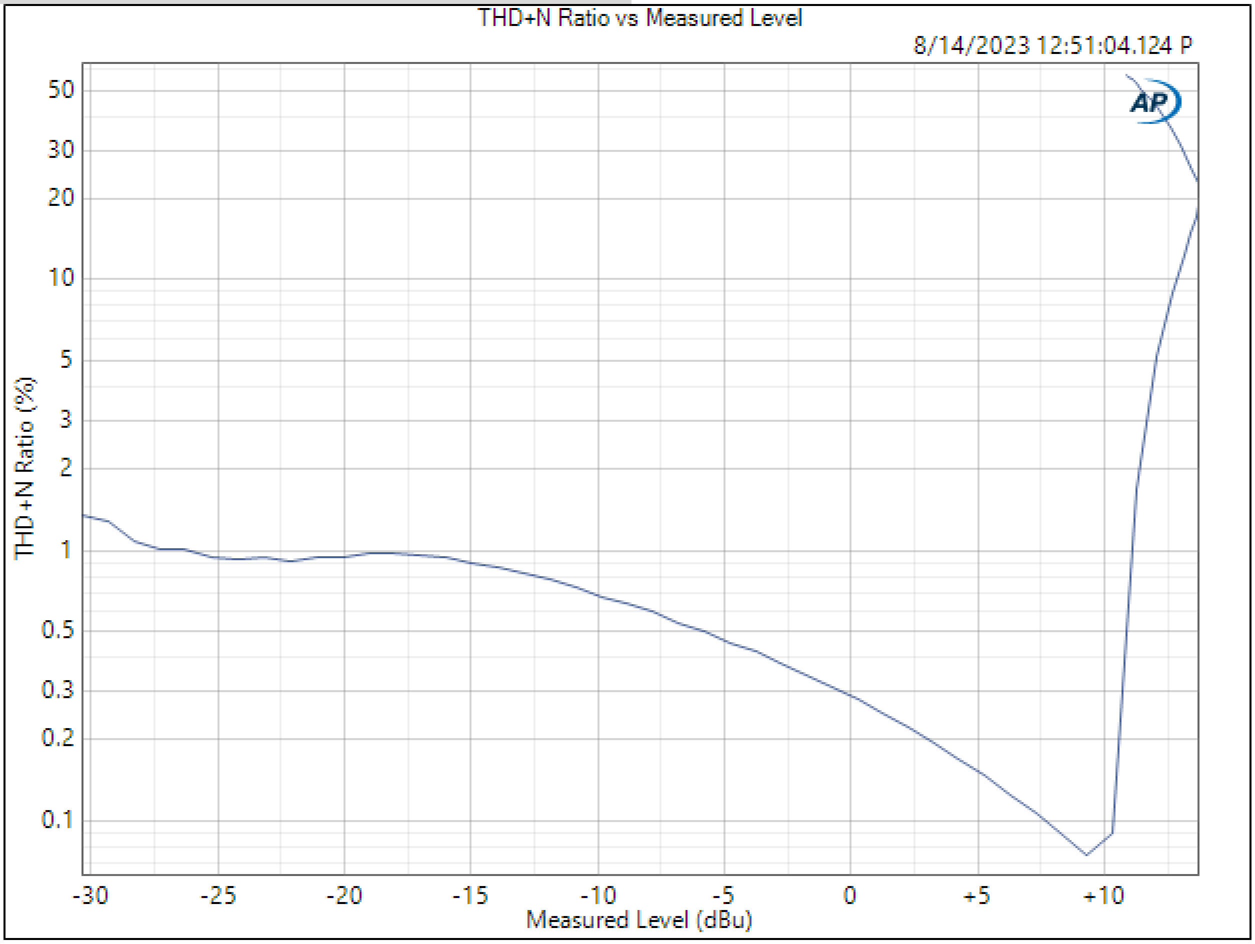


THD Ratio vs Frequency



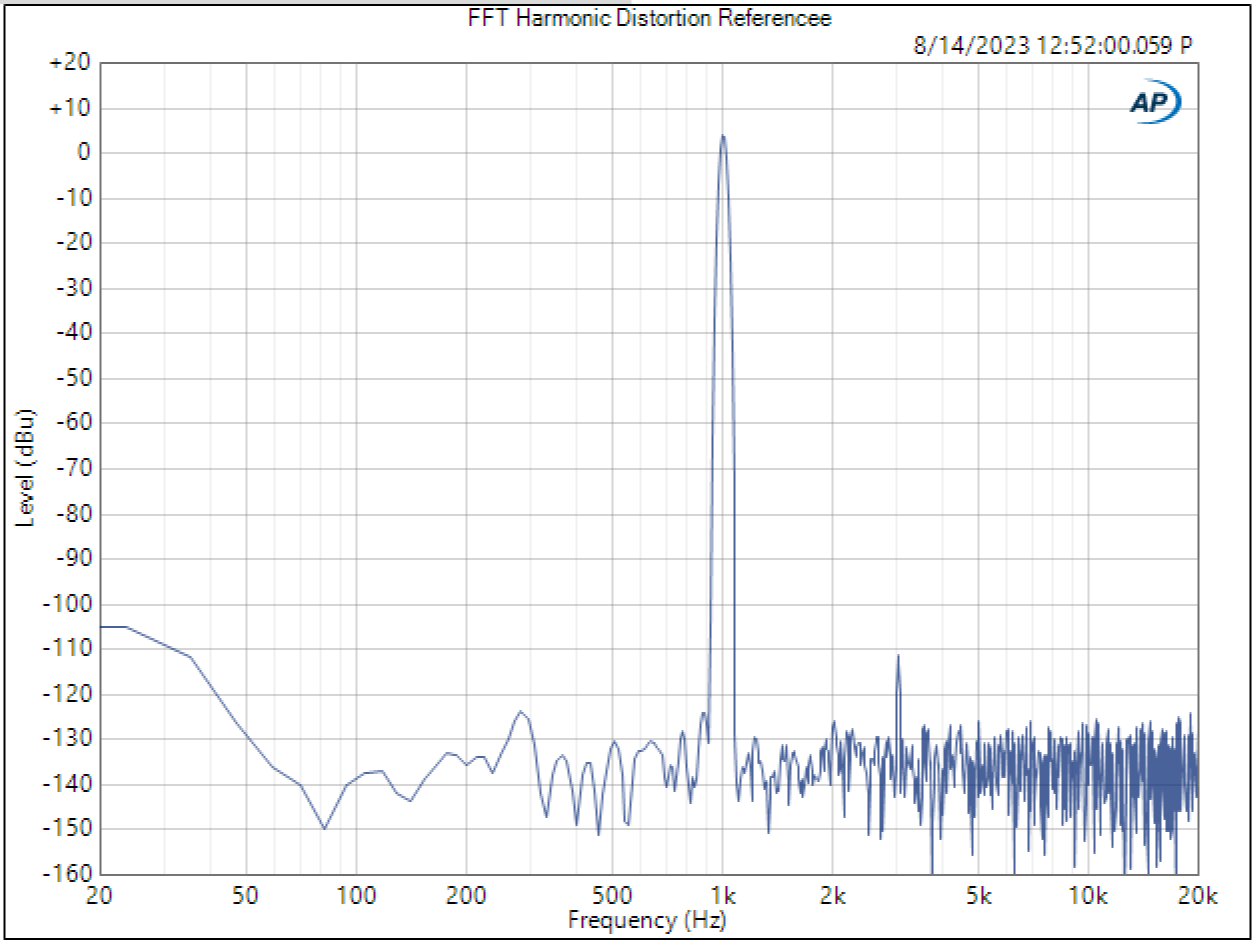
This graph shows Total Harmonic Distortion for each frequency from 10Hz to 30kHz at 40dB of gain. Most measurements of THD include noise, this measurement is THD only to display harmonic distortion more accurately.
All subsequent graphs are at 40dB of gain.

THD+N Ratio vs Measured Level



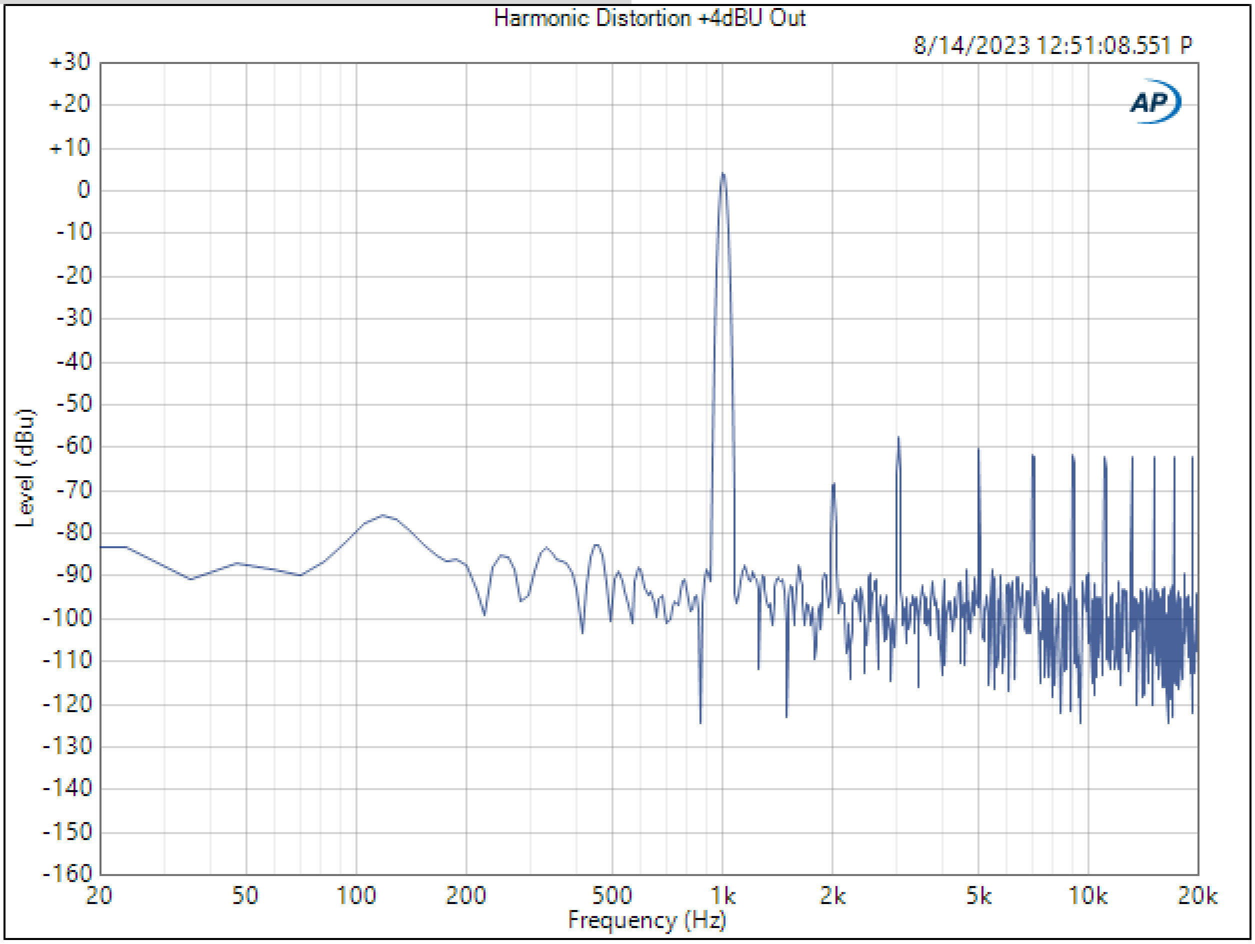
This graph shows THD+N as the input level increases. The measurement shown on the horizontal axis is the output level of the Device Under Test (DUT).

FFT Harmonic Distortion Referencee



This Fast Fourier Tranform (FFT) graph shows what a perfect device would look like in the next two tests. Vertical shows level, horizontal frequency. A 1kHz signal is present as shown by the narrow vertical column at 1kHz and there is a very minor harmonic at 3kHz, down >114dB from the signal and no other harmonics. Use this as a baseline for reviewing the next two graphs.

Harmonic Distortion +4dBU Out



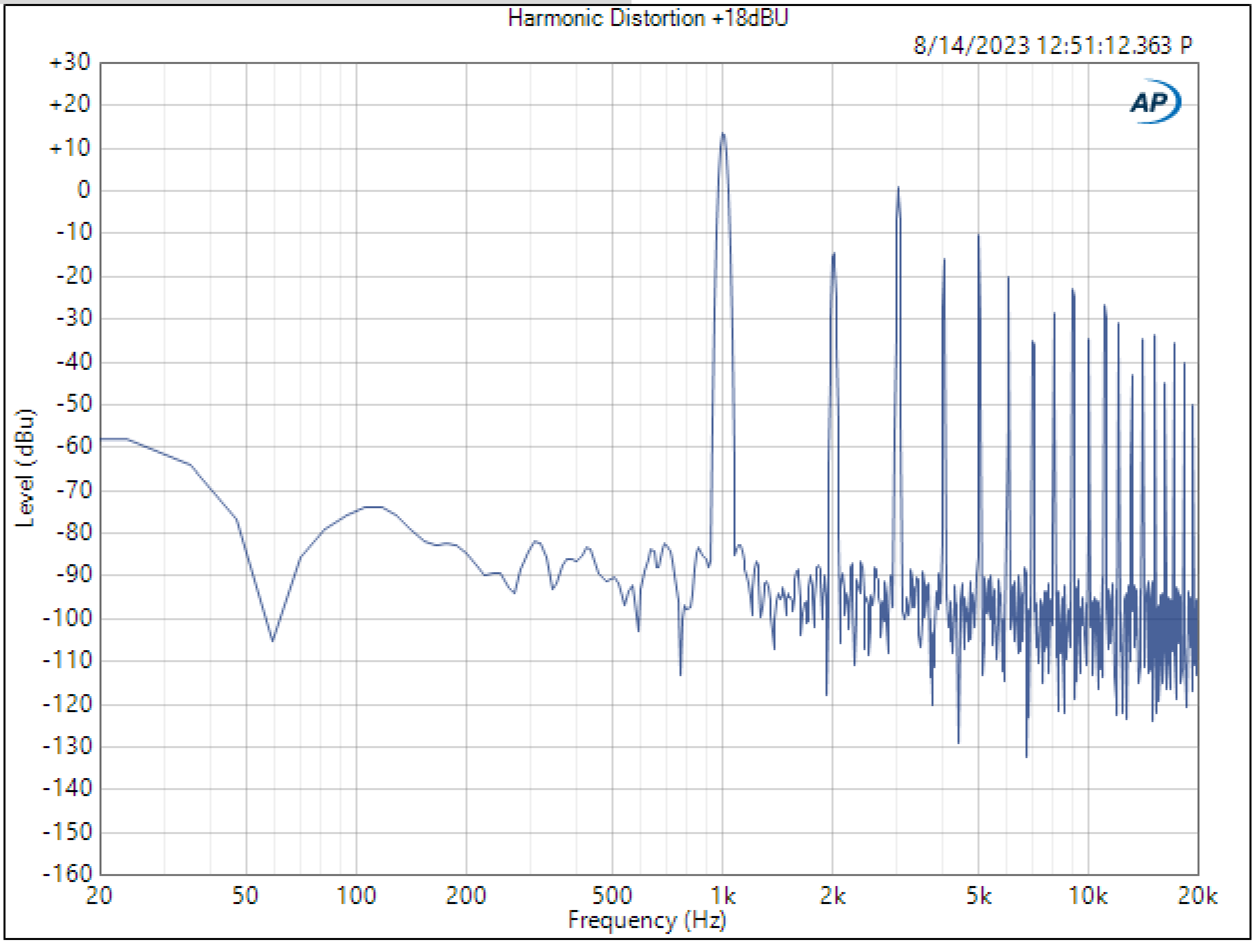
This graph displays the spectrum with a 1kHz tone at +4dBU out.

There will be noise on either side of the 1kHz spike and that should be as low as possible; -90dB or lower for a quiet preamp.

Any spike seen to the right of the 1kHz spike indicates distortion.

Increases below 1kHz may indicate hum from power supply or other interference.

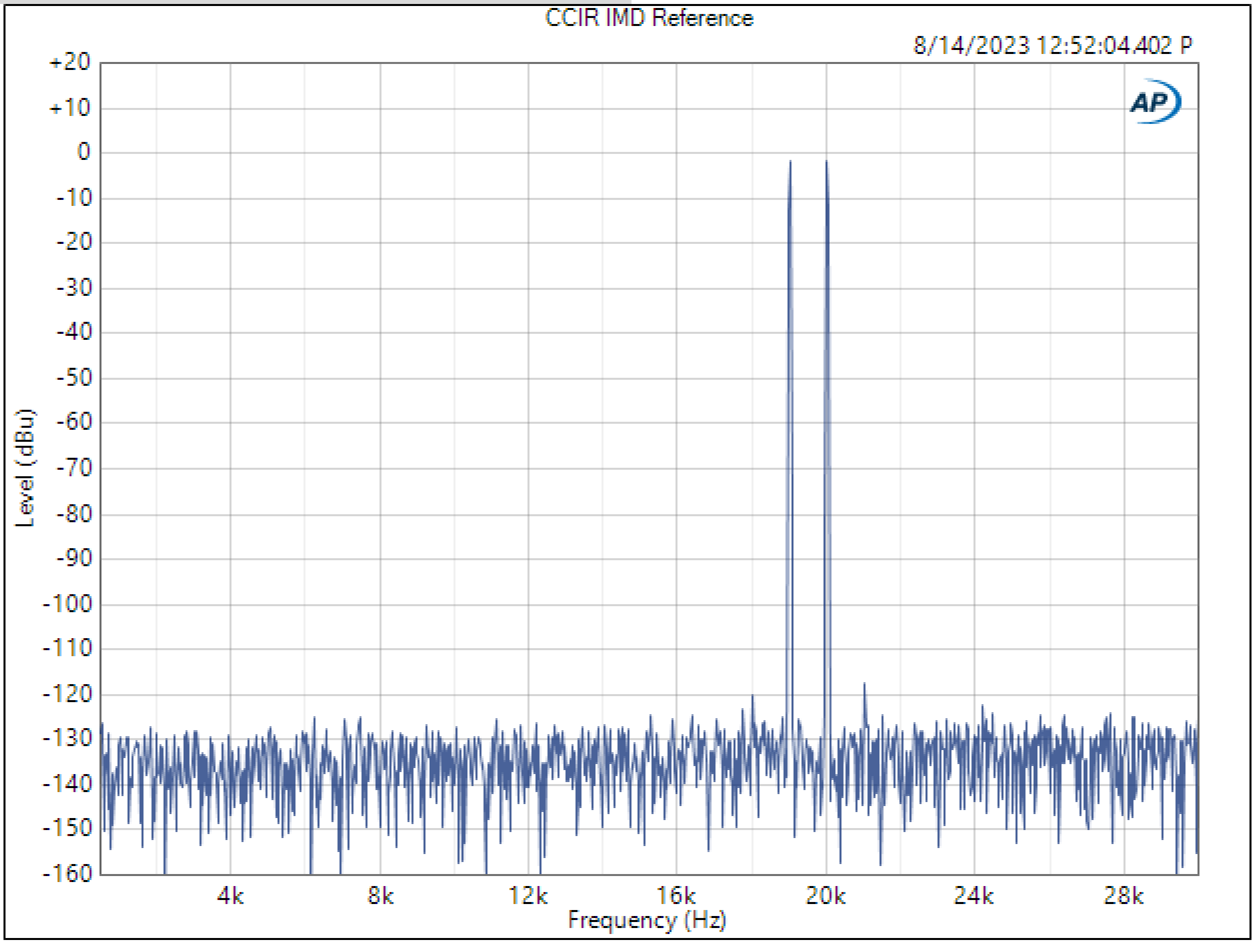
Harmonic Distortion +18dBU



This chart displays the spectrum with a 1kHz tone at +18dBU out. Examine any differences between this and the previous chart to see if the signal degrades with increasing level.
Any spike seen to the right of the 1kHz spike indicate distortion.

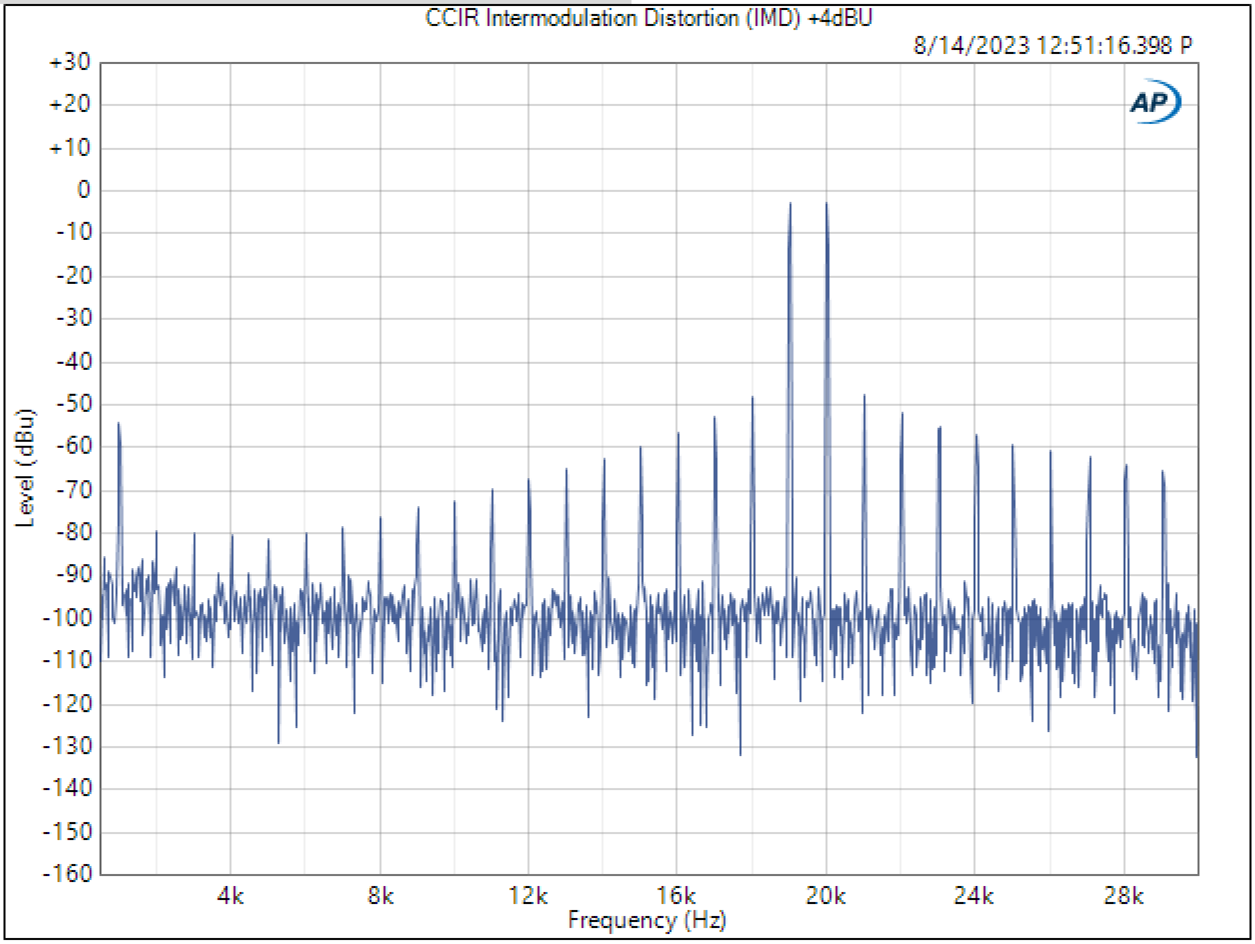
Increases below 1kHz may indicate hum from power supply or other interference.

CCIR IMD Reference



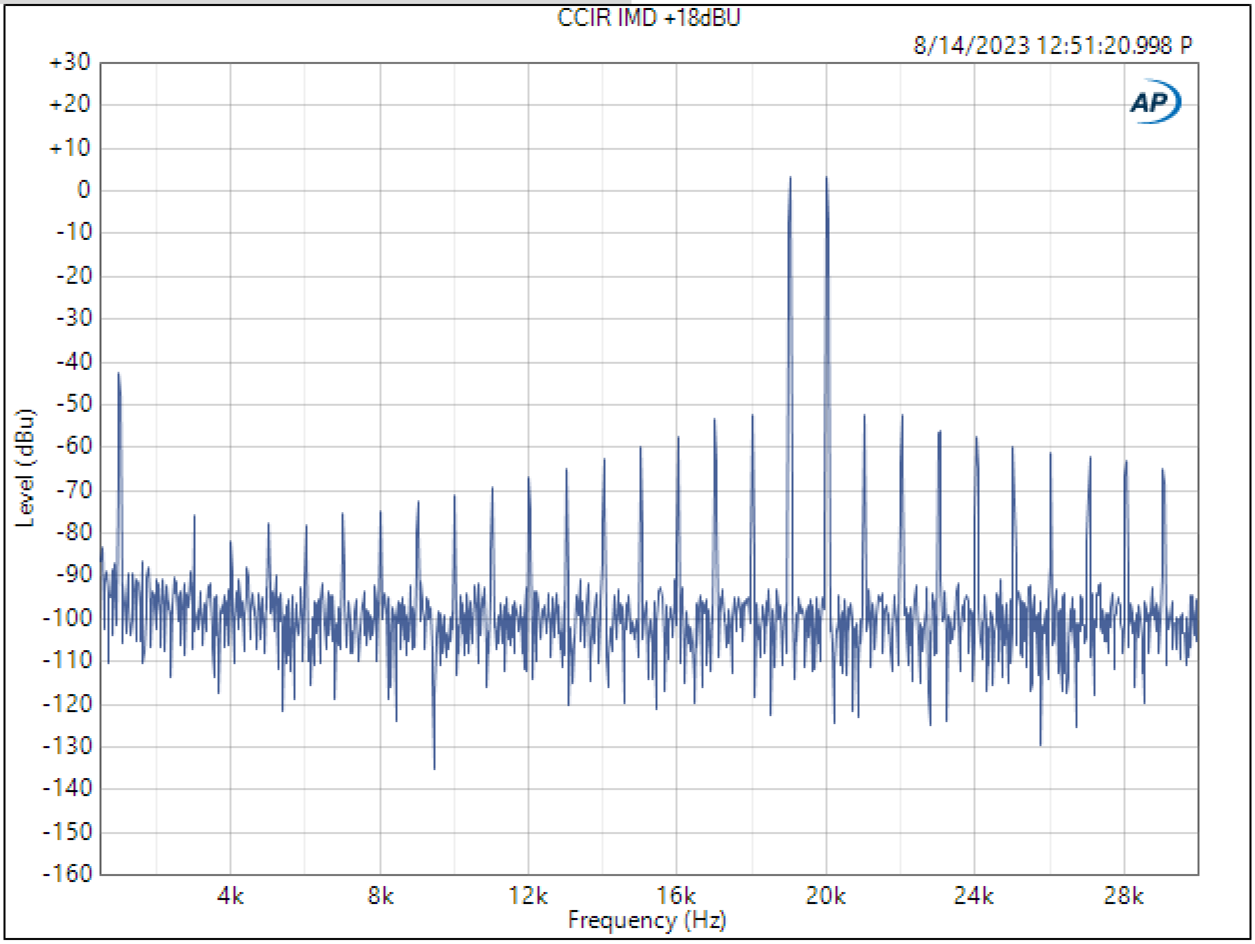
This FFT graph is an example of what the next 2 graphs would look like with a perfect system. The two signals, one each at 19kHz and 20kHz are mixed together in the DUT. Intermodulation Distortion will present at signals at 1kHz (the difference between 19 and 20kHz) across the frequency band.

CCIR Intermodulation Distortion (IMD) +4dBU



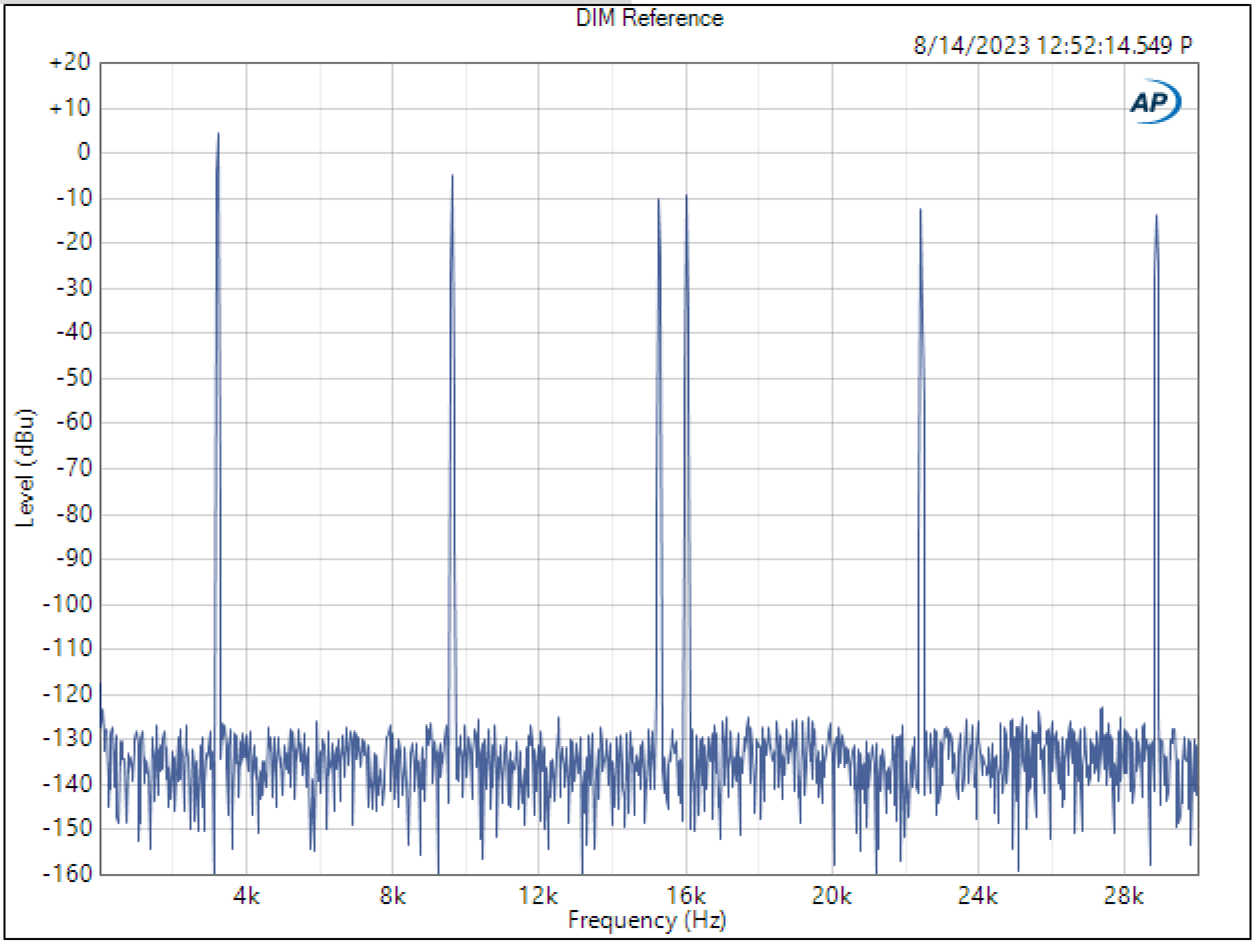
An ideal graph will show those two spikes only with noise below (to the left) of them. Any spikes displayed are indicators of IMD.

CCIR IMD +18dBU



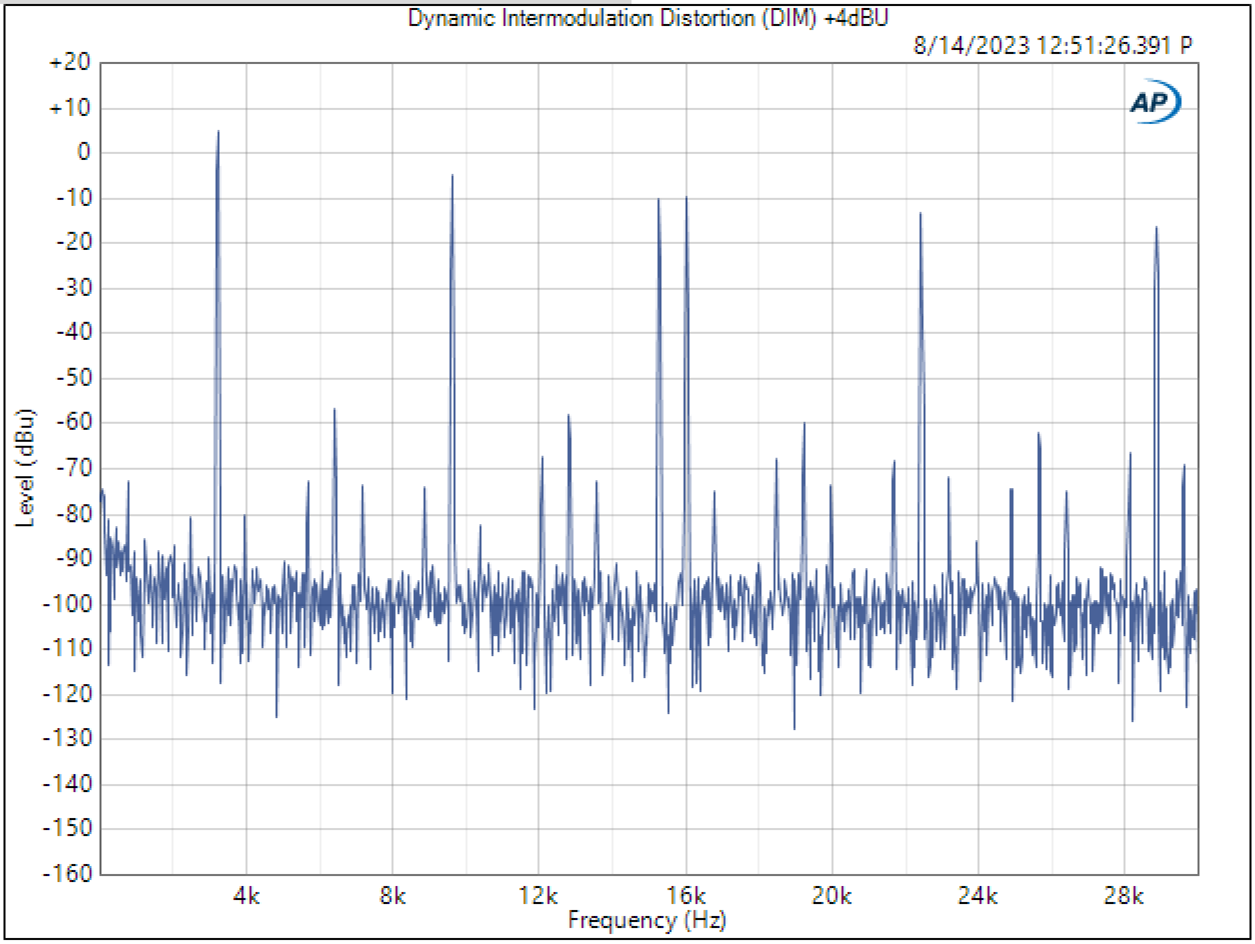
This graph shows a similar view of spectrum at +18dBU.
Compare with the previous graph at 0dBU to learn how the DUT handles higher level, complex waveforms.

DIM Reference



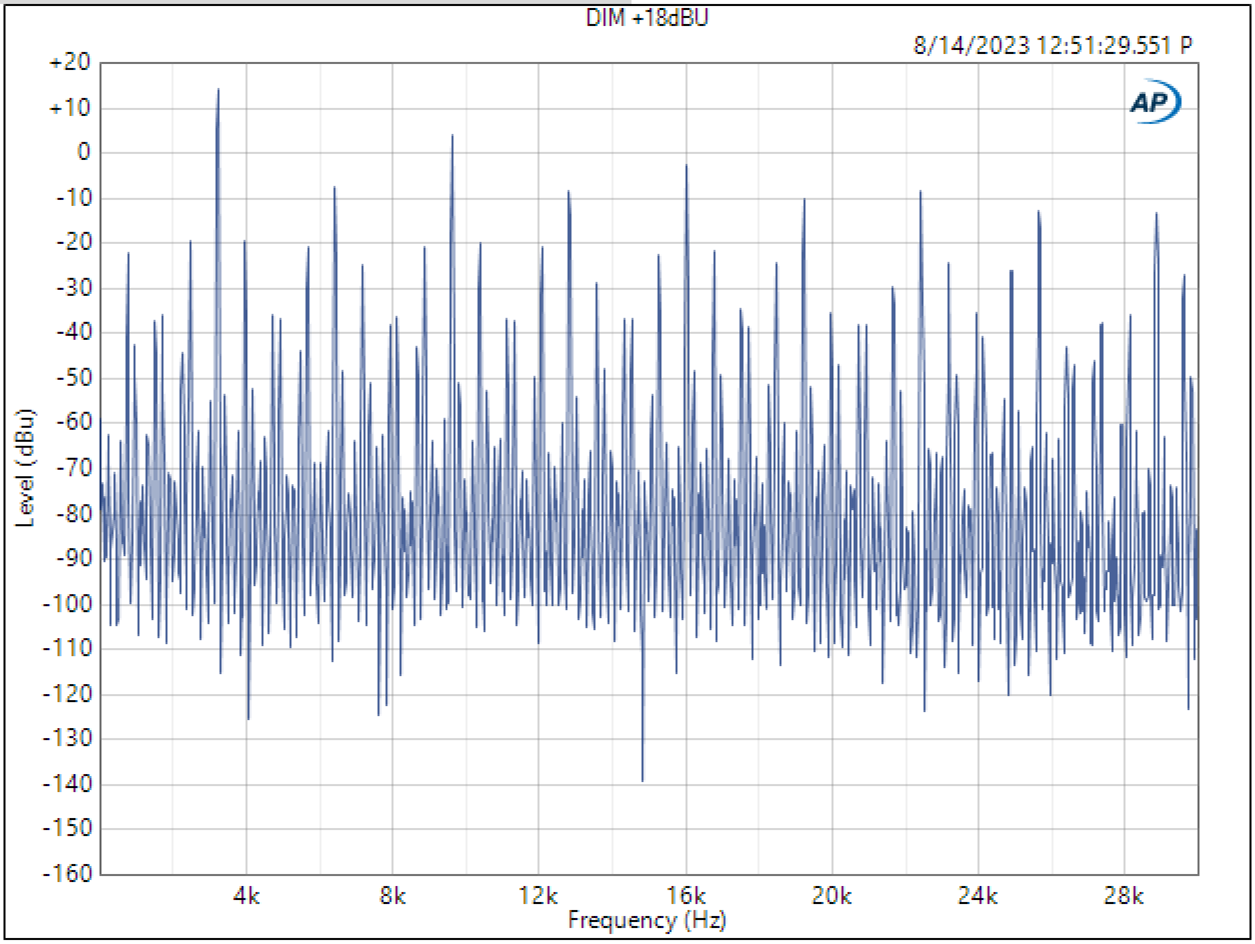
Dynamic Intermodulation Distortion (DIM) is a relatively new measurement performed with a 3kHz square wave modulated by a 15kHz sine wave.
A perfect system will display a series of peaks at the same levels and frequencies as this example graph.

Dynamic Intermodulation Distortion (DIM) +4dBU



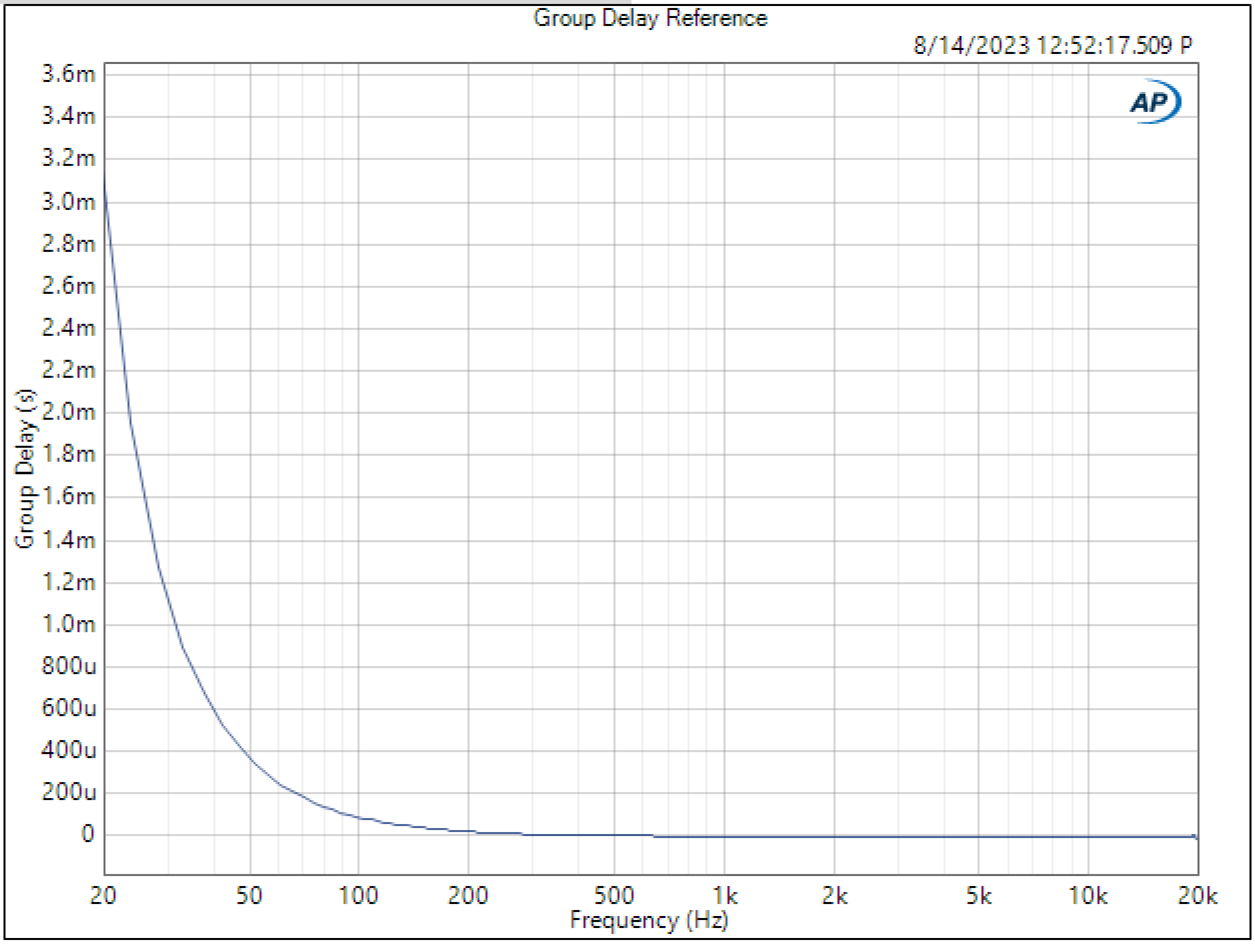
Any extra peaks, beyond the example above, indicate the DUT is not handling complex signals well.

DIM +18dBU



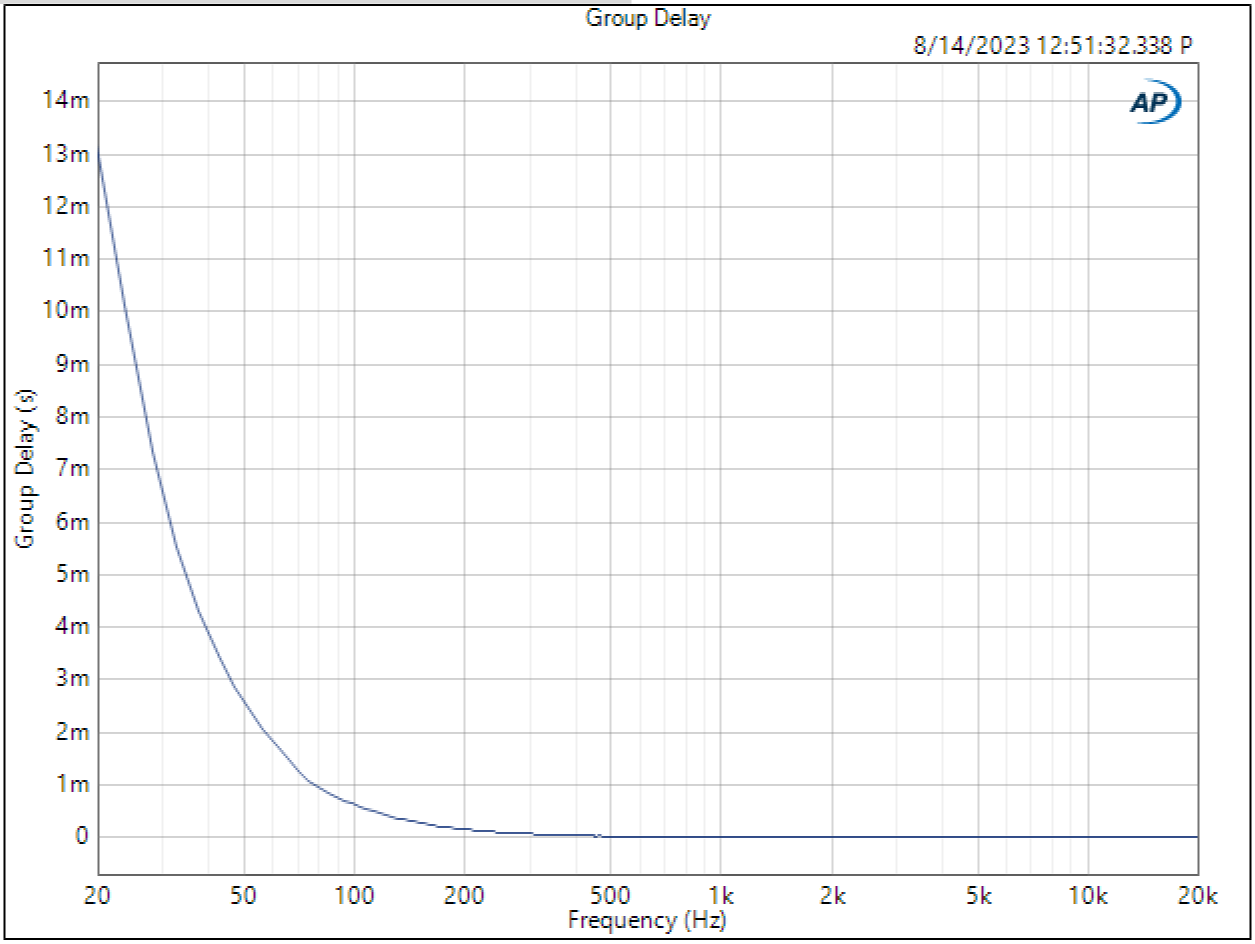
Another DIM test, this time at +18dBU out. This, like other high level tests, are intended to illustrate how well the DUT handles high level, complex signals.
Additional peaks beyond the +4dBU graph indicate challenges with high level, complex signals.

Group Delay Reference



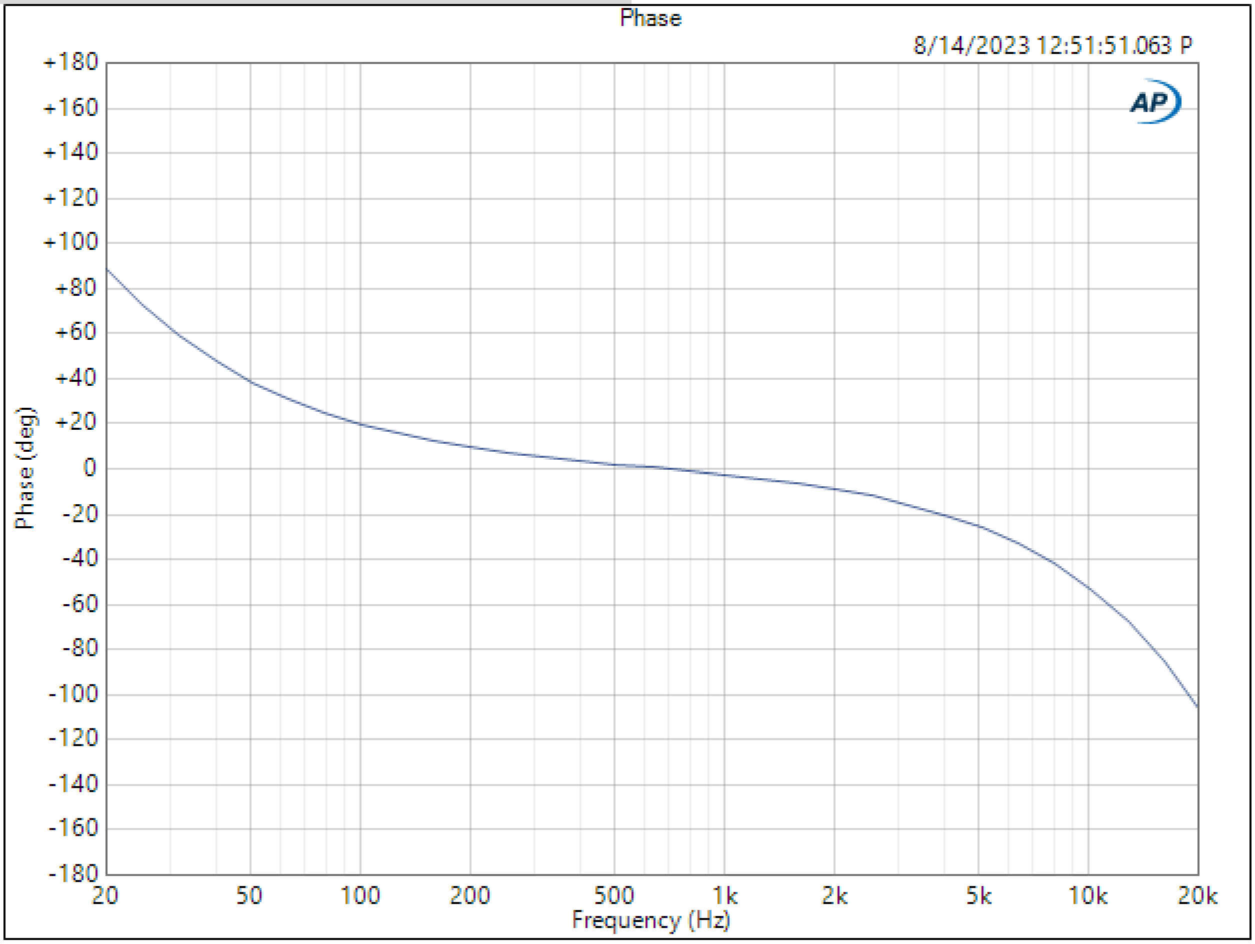
This shows the equipment baseline for Group Delay. Unfortunately, the Audio Precision doesn't provide a perfectly flat Group Delay measurement in the very low frequencies, so you need to compare the delay in this graph with the other to understand the performance.

Group Delay



Group delay is intended to show the time offset between input and output. It measures, in milliseconds, the delay at each measured frequency. Significant changes in Group Delay can alter how a complex signal passes through the device. If treble is delayed by 50-100 ms vs low frequencies, this can alter how the mix sounds.

Phase



Phase shift measurements show the change in phase at each frequency measured. Significant shifts in phase can color the sound. A perfect reading would be a flat line at 0 degrees.