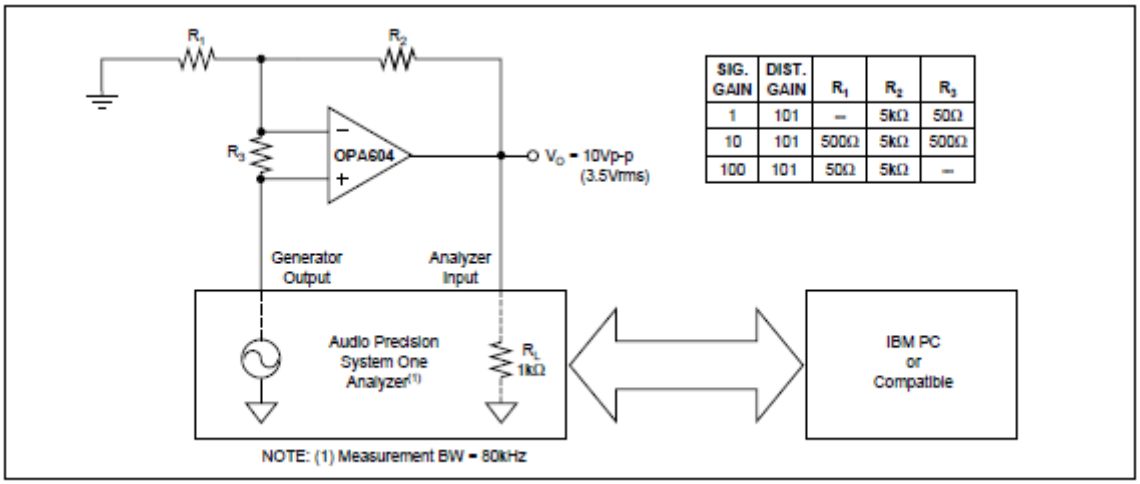
THS4031 Audio Precision Testing

The following data was taken by using an Audio Precision System 2 with the THS4031 in unity gain and +/- 15V supplies. To overcome the AP noise floor limitations, the noise gain was increased by 50dB as is common practice – see more information in other "audio" tested parts such as OPA604, OPA1641, OPA211, or several other "audio" op-amps. The OPA604 test diagram is shown here for reference:



SIG. GAIN	DIST. GAIN	R_1	R_2	R_3
1	101	–	5kΩ	50Ω
10	101	500Ω	5kΩ	500Ω
100	101	50Ω	5kΩ	–

FIGURE 2. Distortion Test Circuit.

Figure 1: Reference Test Circuit

This technique has been proven out theoretically, in full transistor IC simulations, and on the bench.

The THS4031 results are as shown in Figures 2 and 3. Note that the noise floor of the AP system will be the limiting factor in the amplitude test until such a point that the signal amplitude is large enough. This appeared to be roughly 10Vpp. As such, 10Vpp was used for the frequency plot.

Notes:

1) The AP bandwidth settings and test frequencies were varied to offer a better view of potential performance and to try and match other parts in an "apples-to-apples" test condition.
2) THD+N is a measure of all harmonics and noise. The AP removes only the "source" tone and measures all remaining sources of noise or harmonics.

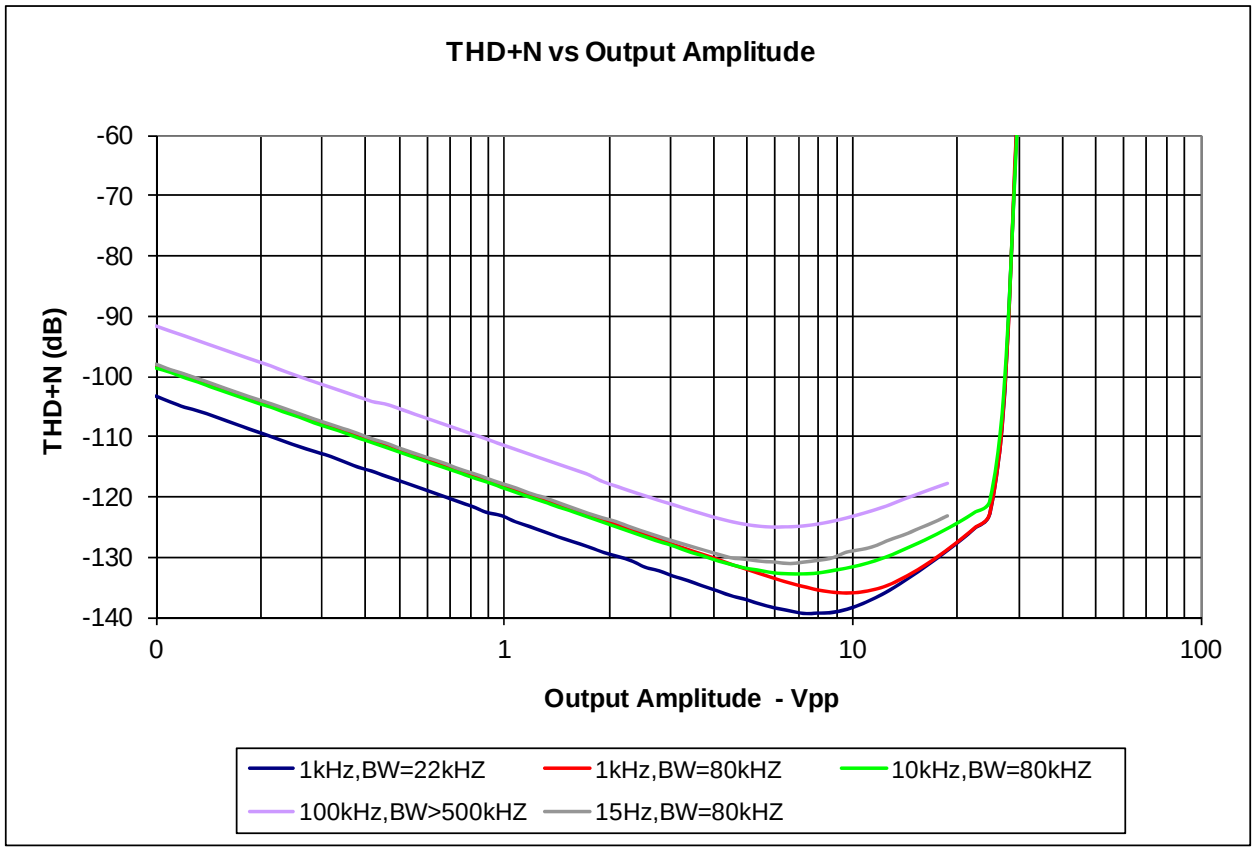


Figure 2: THD+N vs Amplitude with Load = 10kΩ

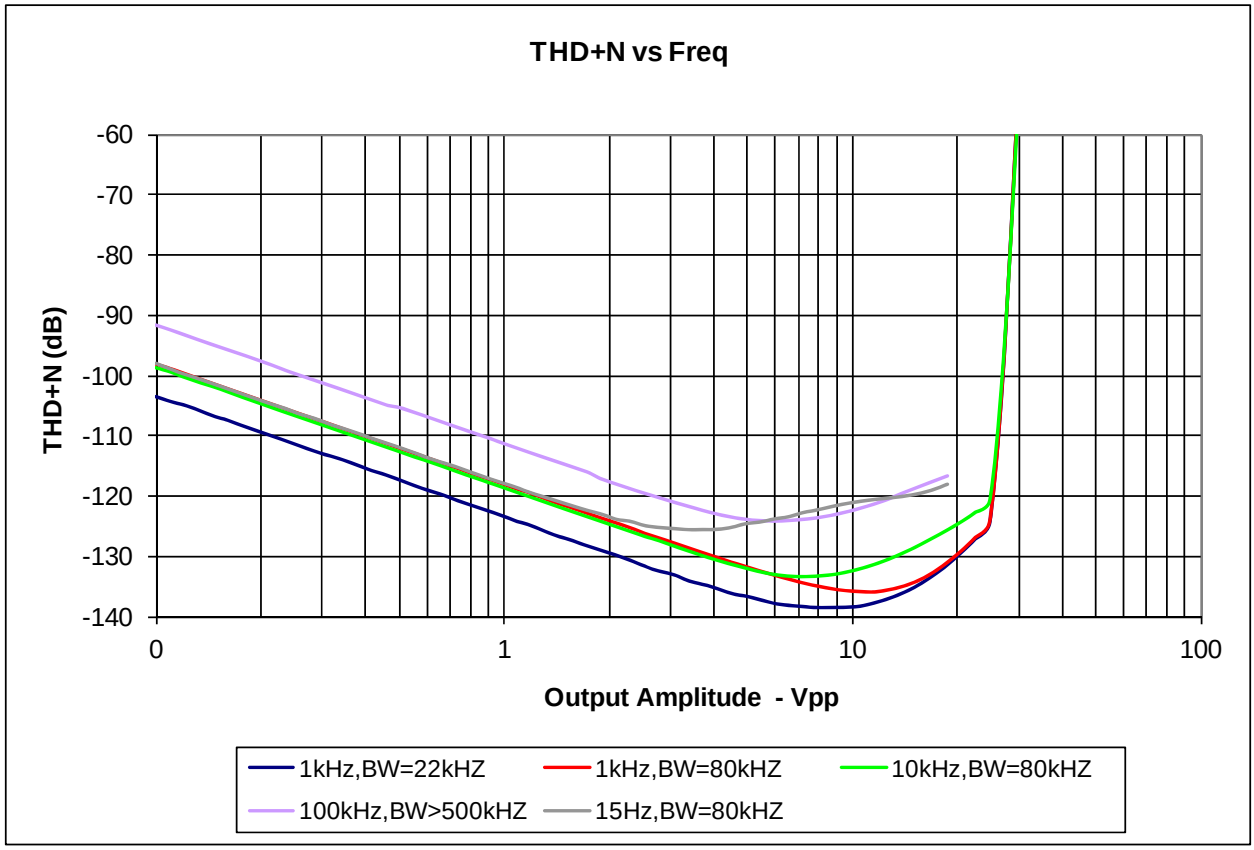


Figure 3: THD+N vs Amplitude with Load = 1kΩ

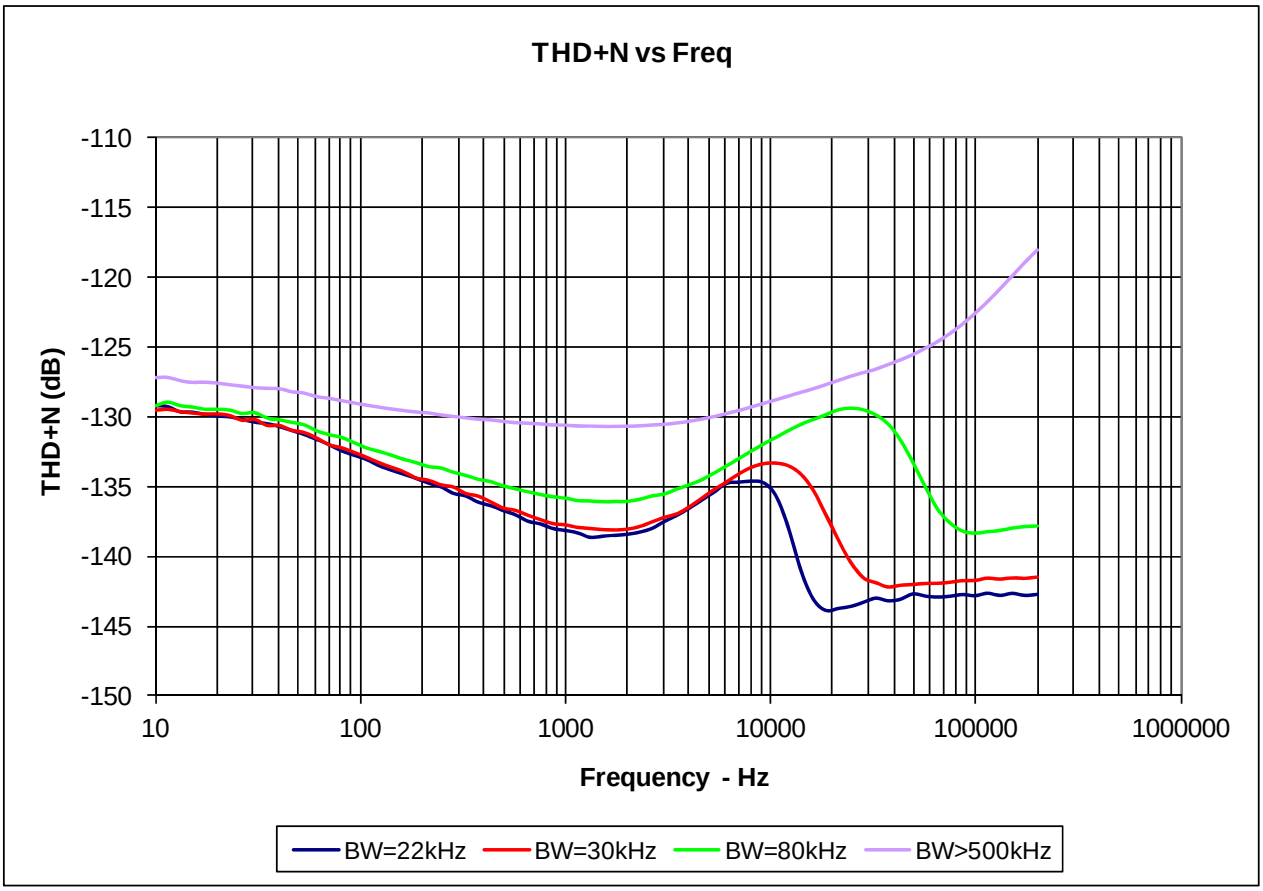


Figure 4: THD+N vs Frequency with Load = 10kΩ and 10Vpp Output

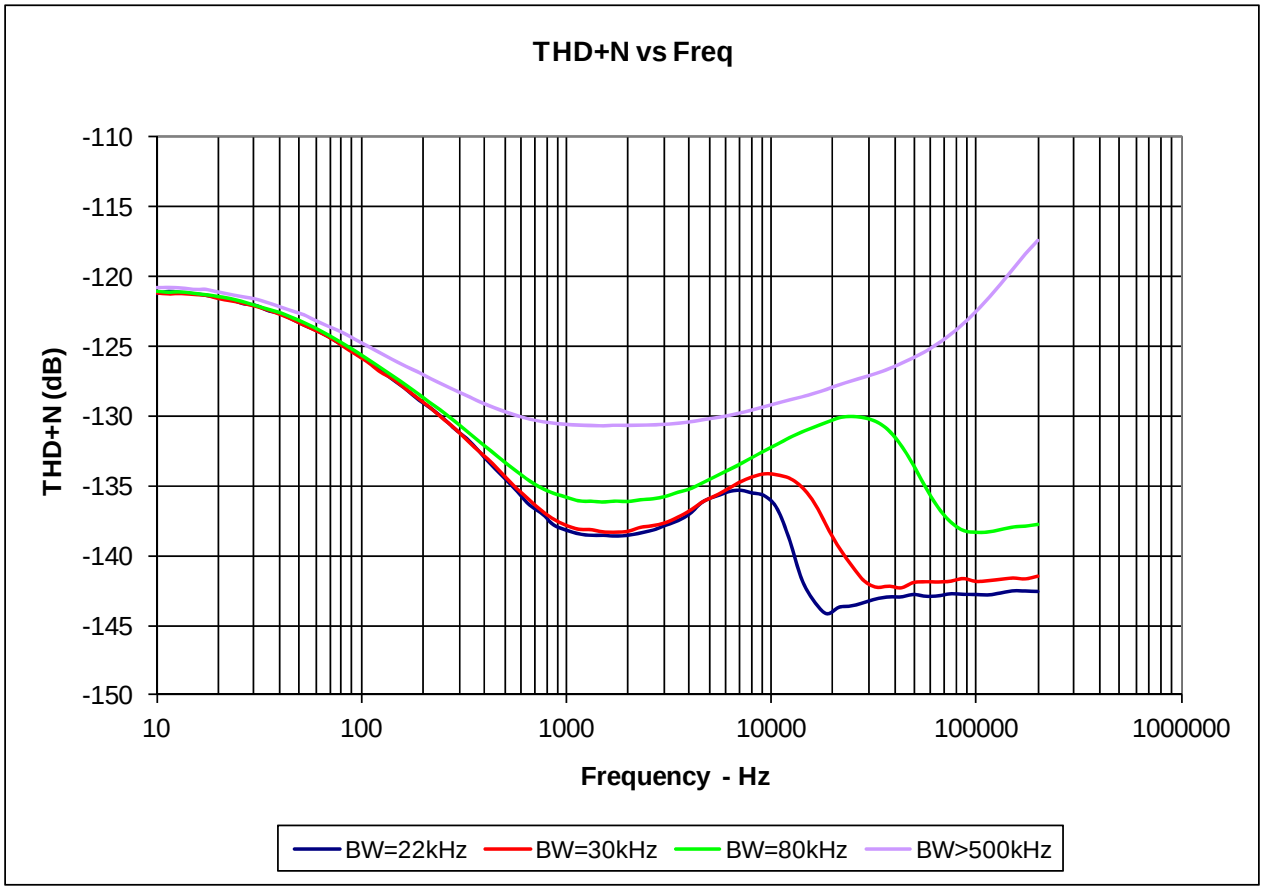


Figure 5: THD+N vs Frequency with Load = 1kΩ and 10Vpp Output