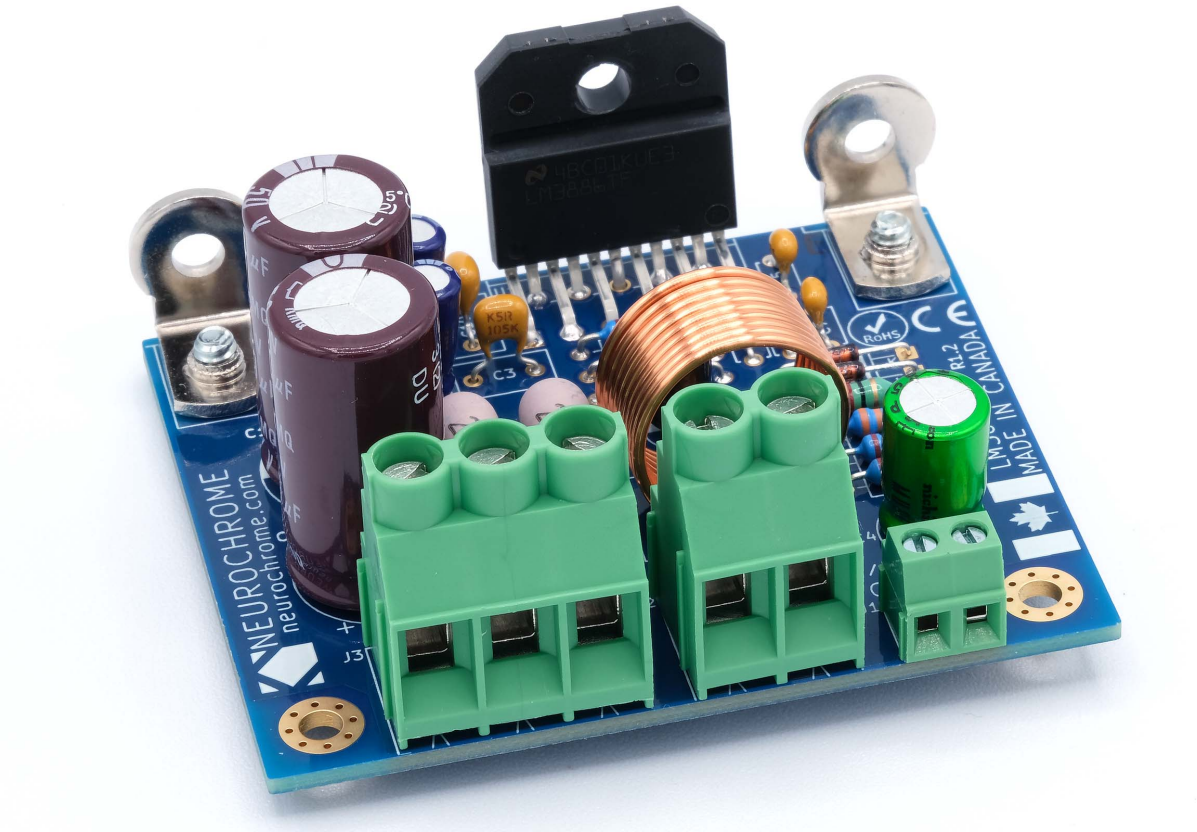
LM3886 Done Right Rev. 1.2

Data Sheet



Contents

Revision History

LM3886 Done Right Rev. 1.2 Data Sheet

Revision	Date	Notes
1.0	30 MAR 2025	Document created.

Typical Performance Measurements

The measurements below were performed on the first build of the LM3886DR Rev. 1.2. Except where noted, they represent the typical performance that can be expected from the LM3886DR.

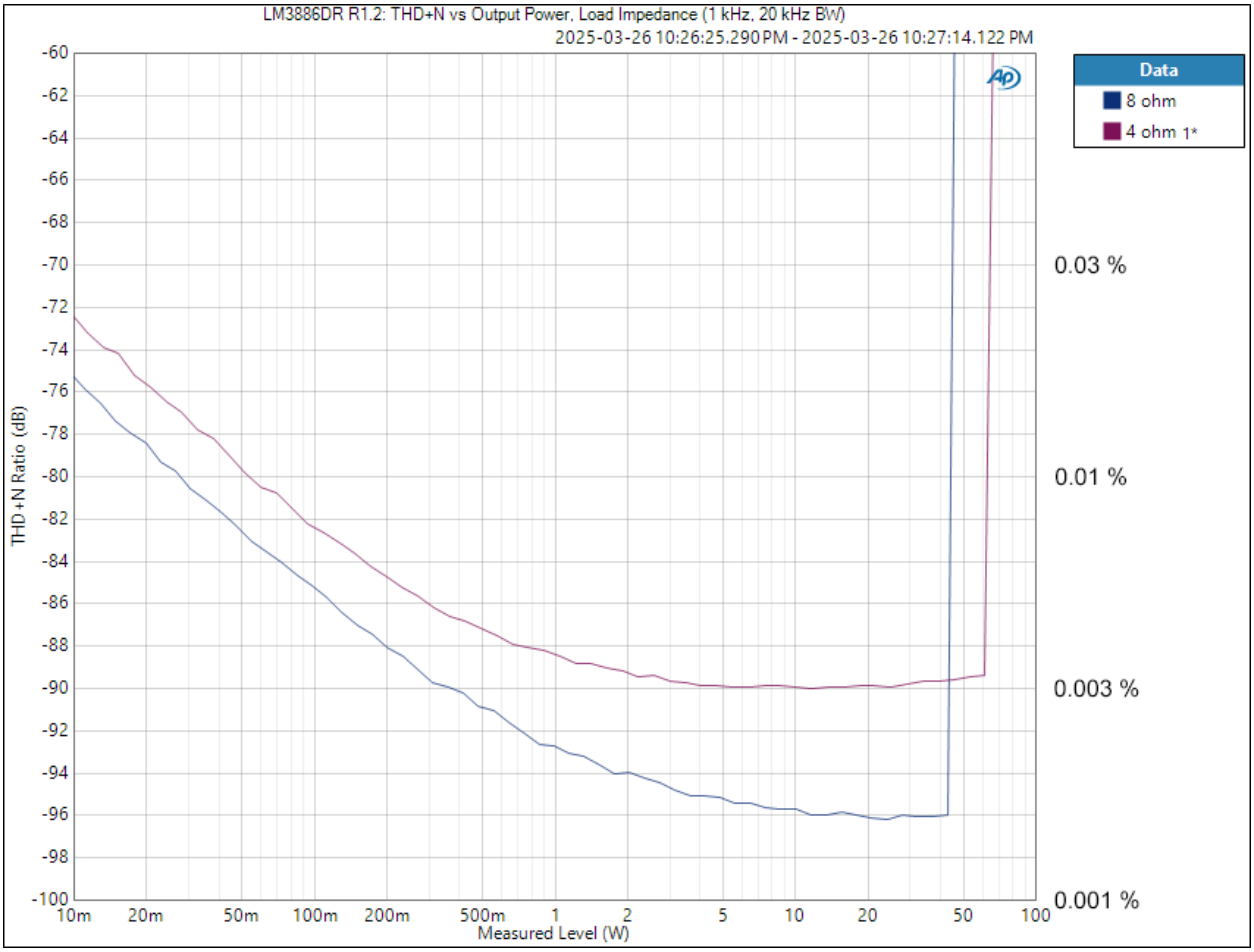
Parameter	Value	Notes
Output Power (8 Ω)	40 W	THD+N < 0.01 % @ 1 kHz
Total Harmonic Distortion	-97.0 dBc (0.0014 %)	1 kHz, 1 W, 8 Ω
Total Harmonic Distortion	-96.4 dBc (0.0015 %)	1 kHz, 40 W, 8 Ω
Total Harmonic Distortion + Noise	-96.0 dBc (0.0016 %)	1 kHz, 40 W, 8 Ω, 20 kHz BW
Output Power (4 Ω)	65 W	THD+N < 0.01 % @ 1 kHz
Total Harmonic Distortion	-92.2 dBc (0.0024 %)	1 kHz, 65 W, 4 Ω
Total Harmonic Distortion + Noise	-89.0 dBc (0.0035 %)	1 kHz, 65 W, 4 Ω, 20 kHz BW
IMD (SMPTE: 60 Hz + 7 kHz, 4:1)	-96 dB	40 W, 8 Ω
IMD (DFD: 18 kHz + 19 kHz, 1:1)	-96 dB	40 W, 8 Ω
Multi-Tone IMD Residual	≤ -110 dB Ref.: 40 W	AP 32-tone, 40 W, 8 Ω
Gain	26 dB	1 kHz
Input Sensitivity	0.9 V RMS	40 W, 8 Ω, 1 kHz
Bandwidth	90 kHz	1 W, -3 dB
Slew Rate	16 V/µs	8 Ω || 1 nF load
Total Integrated Output Noise and Residual Mains Hum	35 µV RMS	A-weighted, 20 Hz - 20 kHz

Parameter	Value	Notes
Total Integrated Output Noise and Residual Mains Hum	43 µV RMS	Unweighted, 20 Hz - 20 kHz
Output DC Offset Voltage	±2 mV ±10 mV	Typical performance Guaranteed by design
Dynamic Range (AES17)	111 dB	1 kHz
Common-Mode Rejection Ratio	≥ 80 dB ≥ 60 dB	60 Hz 20 Hz - 20 kHz, typ.
Damping factor	780	1 kHz, 8 Ω
Damping factor	140	20 kHz, 8 Ω
Quiescent Current Draw	50 mA 85 mA	Typical, ±28 V Max. (Guaranteed by design)

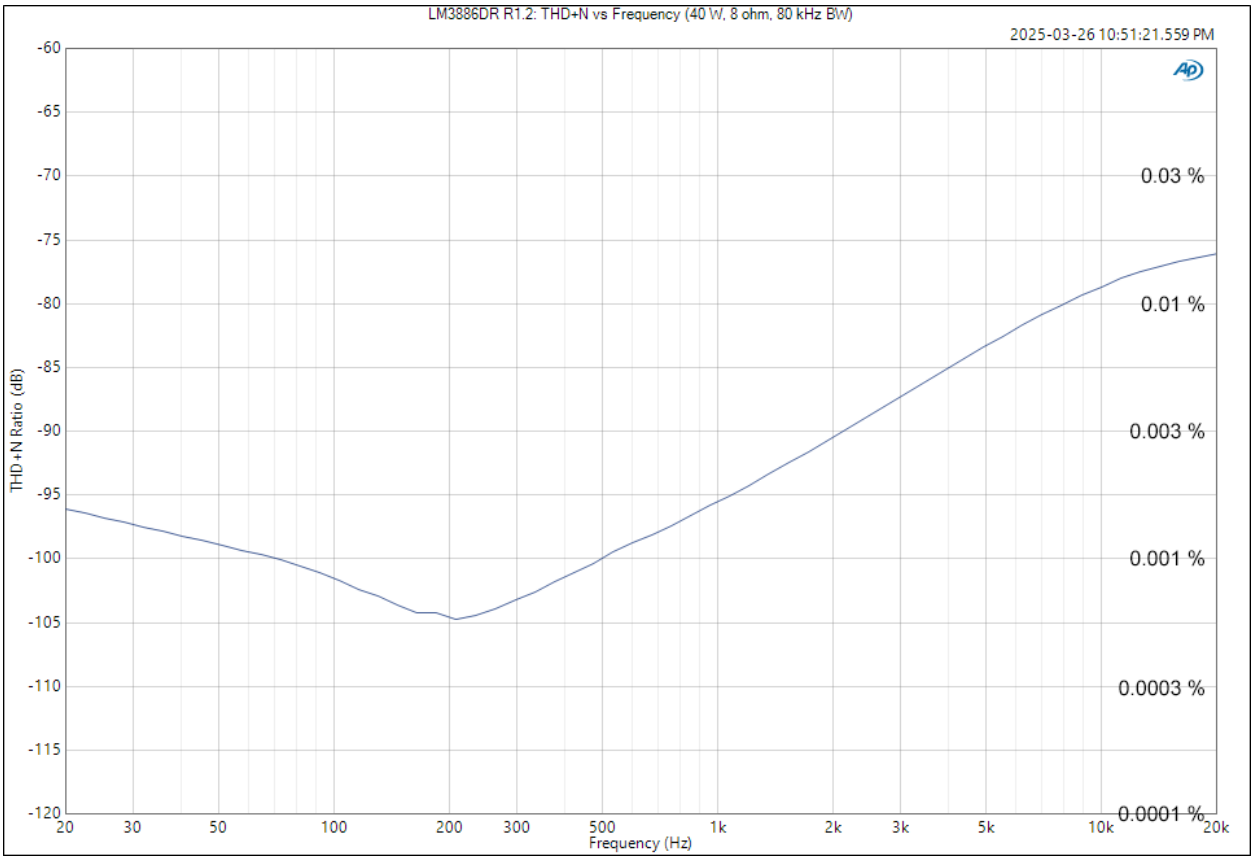
All parameters are measured at a supply voltage of ±30 V unless otherwise noted.

Harmonic Distortion

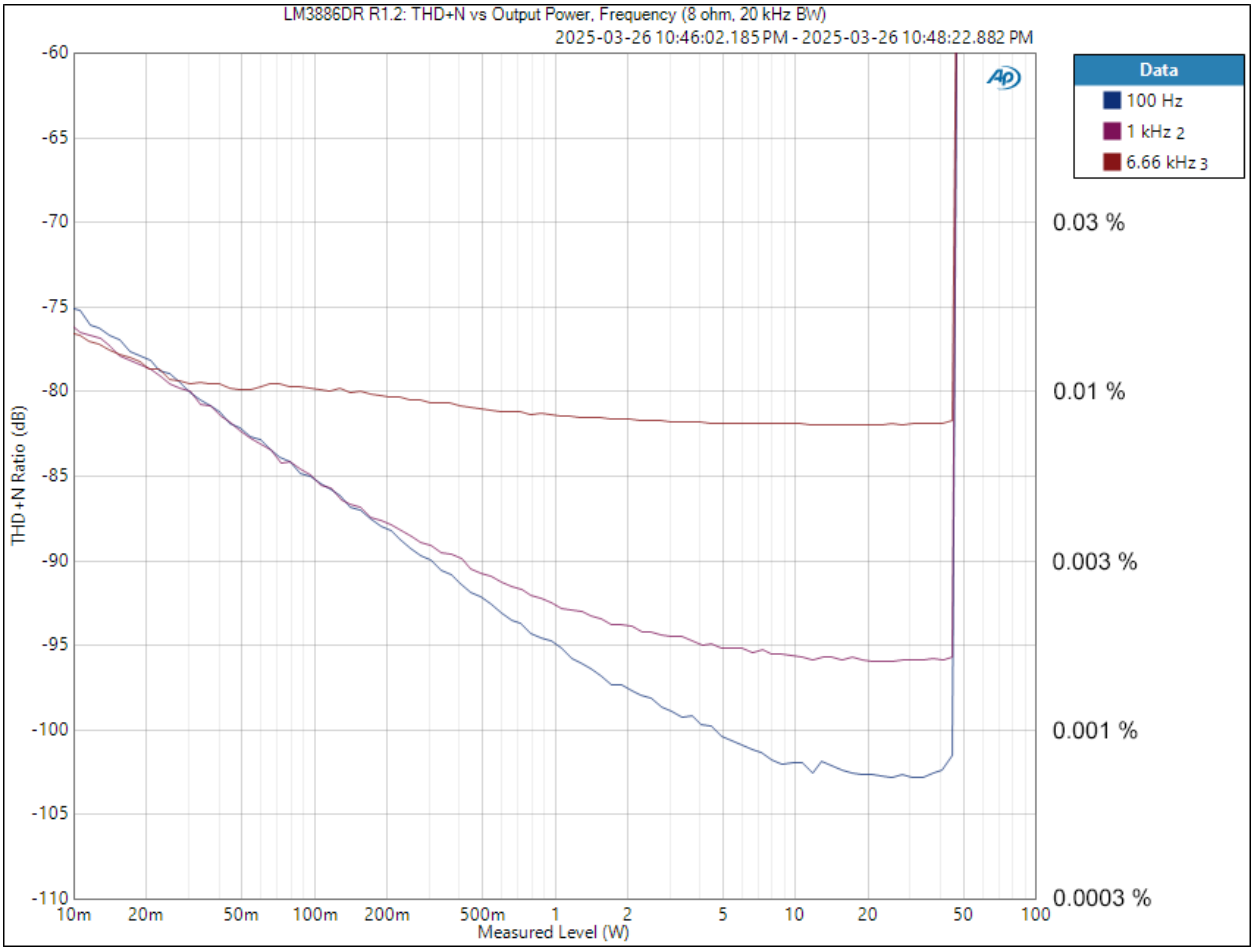
For the measurements below, the LM3886DR was operating from a ±30 V power supply. The graph below shows the THD+N vs output power for 4 Ω and 8 Ω load. The amplifier delivers 40 W at the onset of clipping with an 8 Ω load; 65 W with a 4 Ω load.



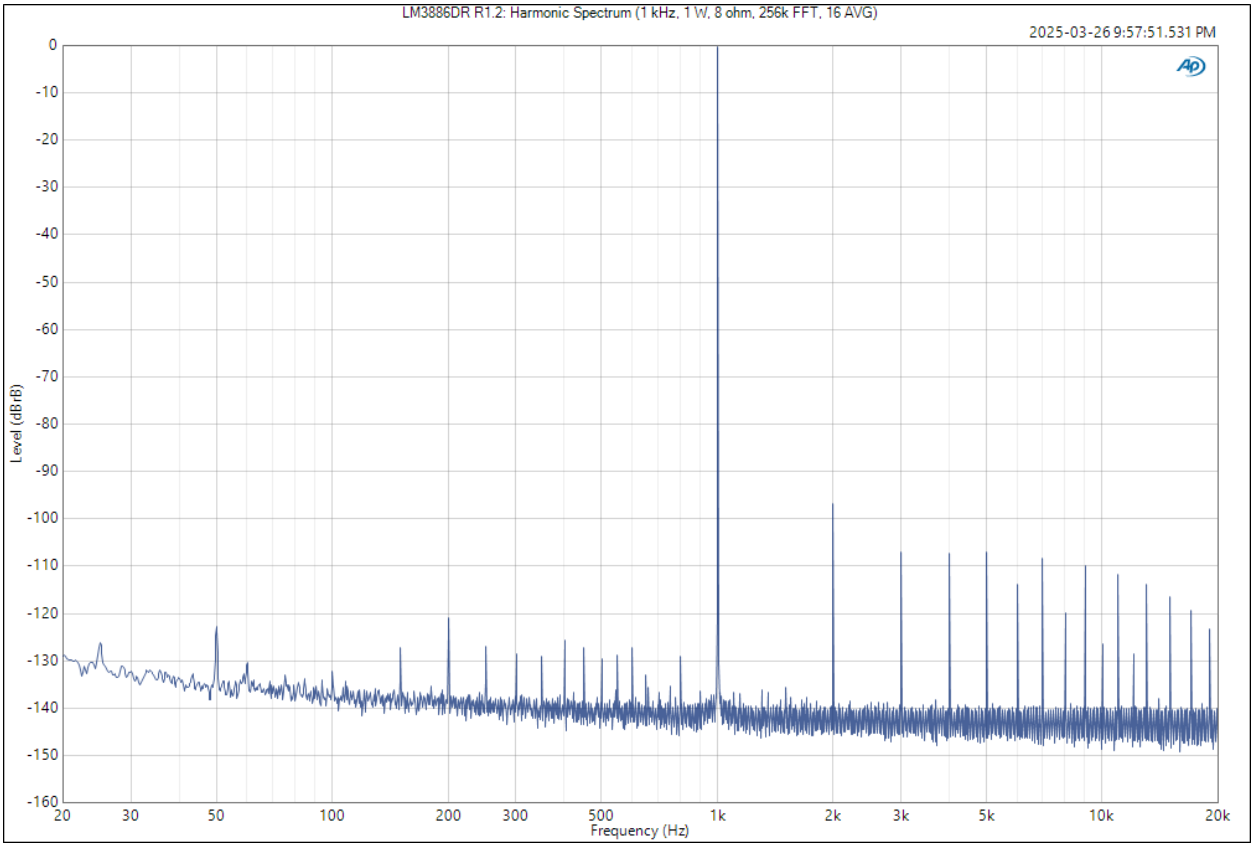
The THD+N vs frequency is shown below. The amplifier delivered 40 W into 8 Ω for this measurement.



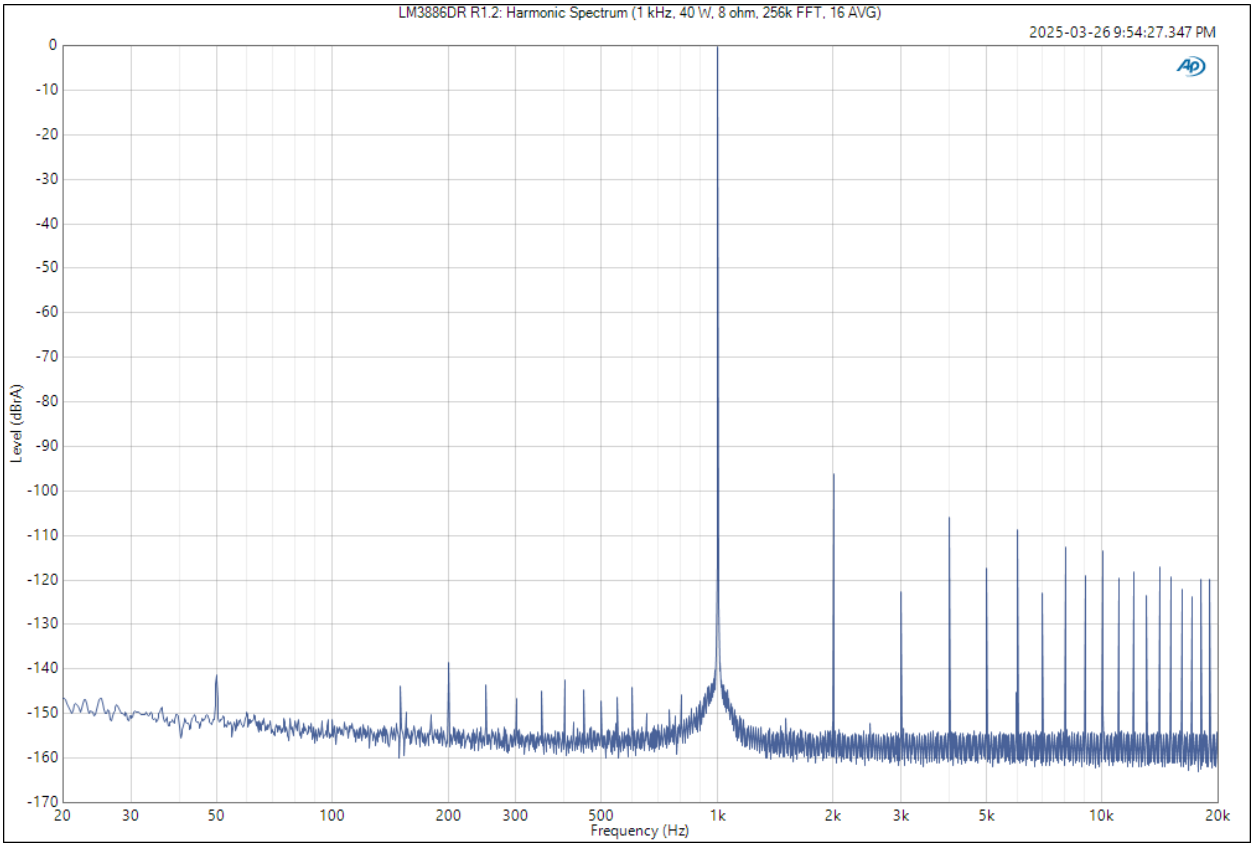
The LM3886DR operates in Class-AB, so the plot below may appear a bit out of place as it shows the THD+N vs output power and frequency measurement commonly found in data sheets for Class-D amplifiers.



While good performance at high output power is a good indicator of the quality of an amplifier, stellar performance at lower power is an even better indicator. After all, a typical stereo amplifier will often operate at power levels in the 0.1-10 W range during critical listening. The graph below shows the output spectrum of the LM3886DR when providing 1 W into 8 Ω at 1 kHz.

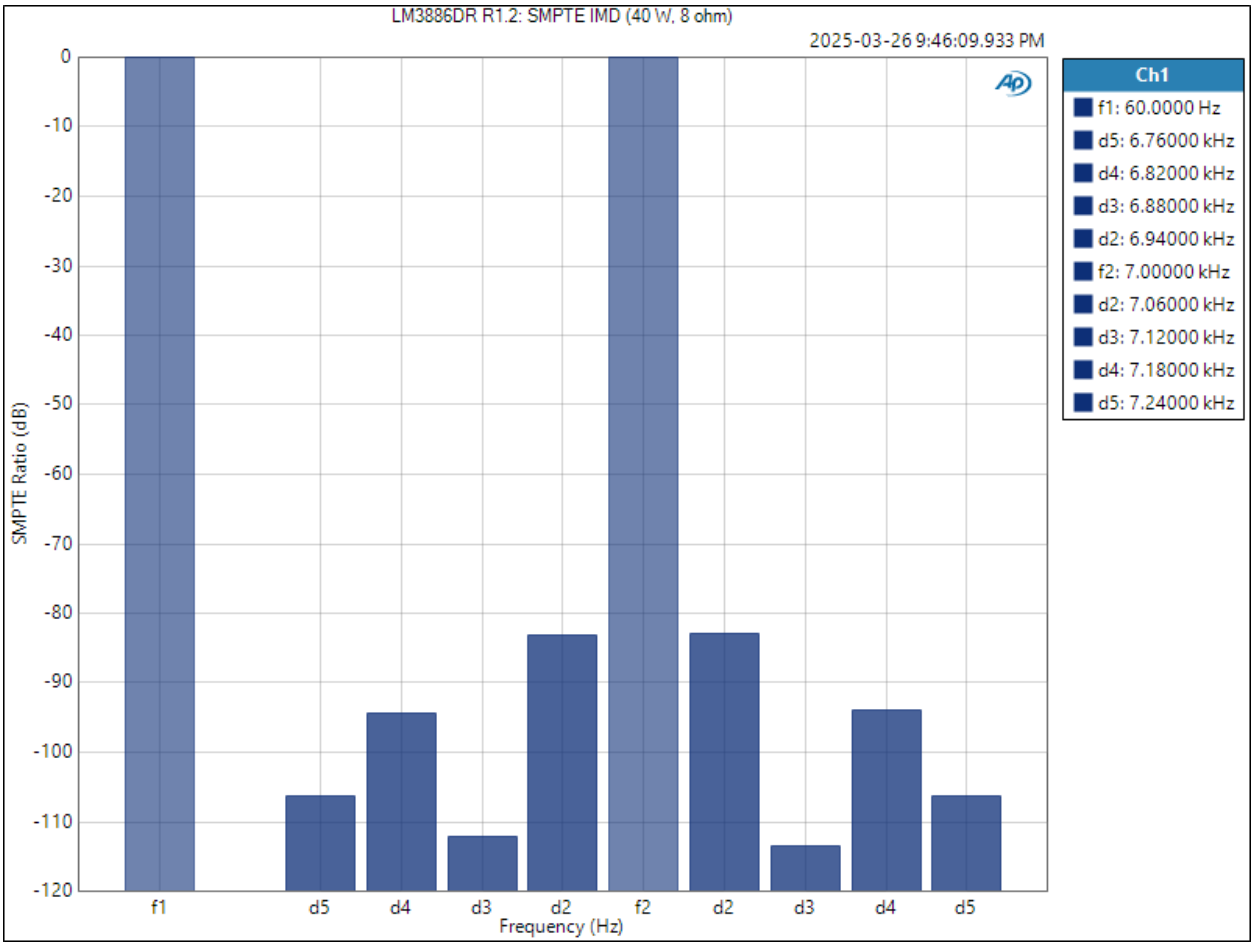


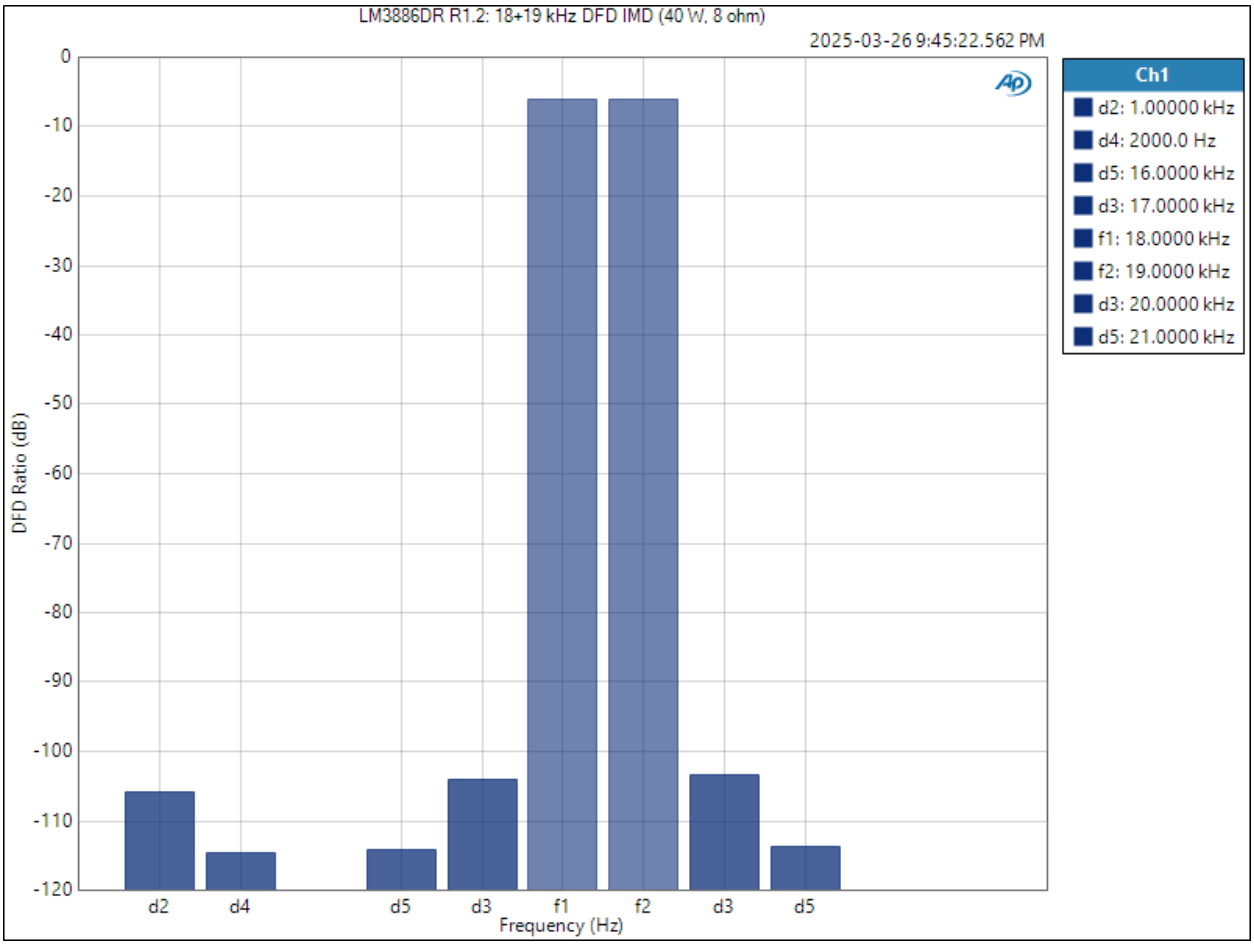
Repeating this measurement at the full output power shows that the total harmonic distortion hardly changes as the output power is increased.



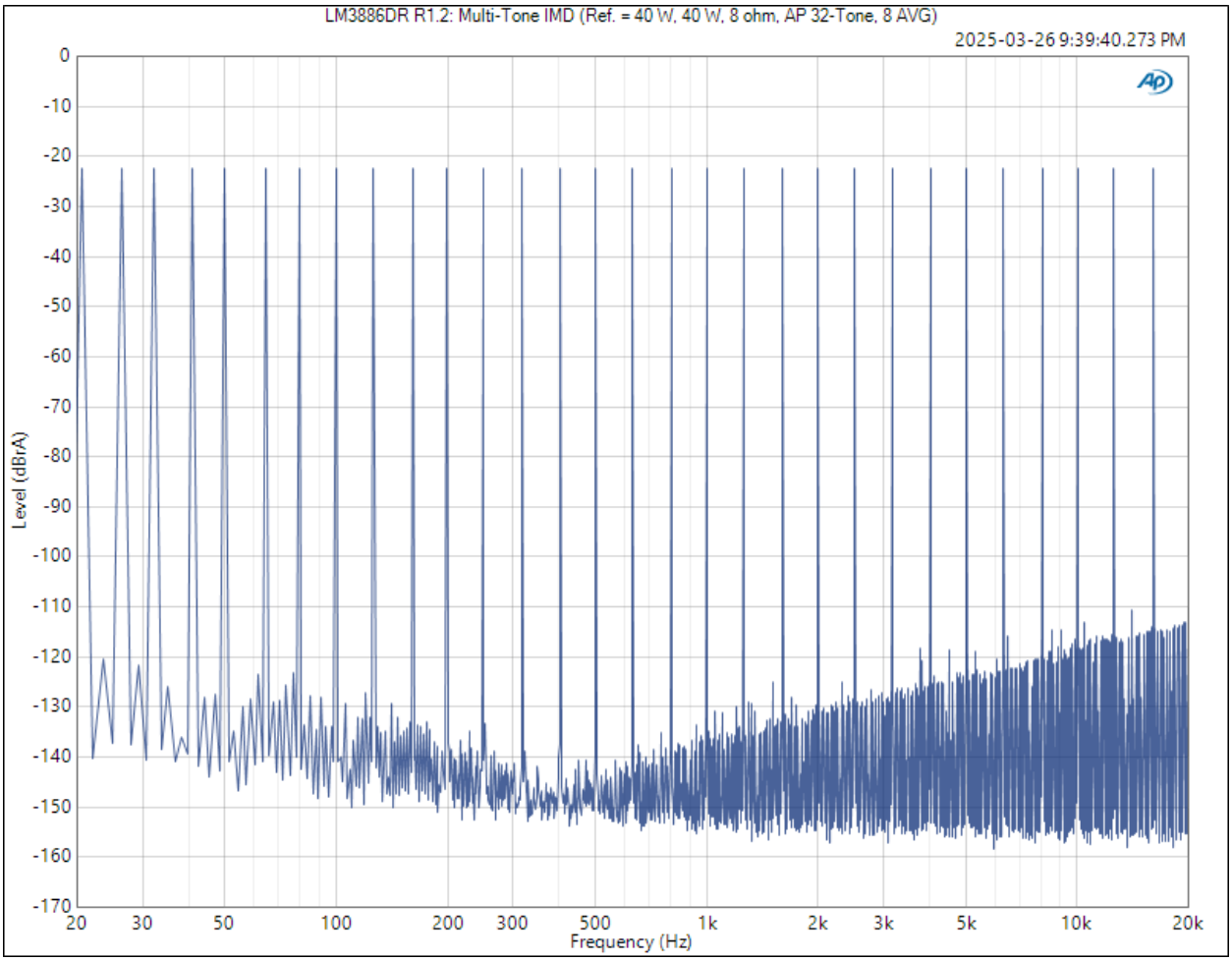
Intermodulation Distortion

The two plots below show the SMPTE (60 Hz + 7 kHz @ 4:1) IMD and DFD (18 kHz + 19 kHz @ 1:1) IMD, respectively.



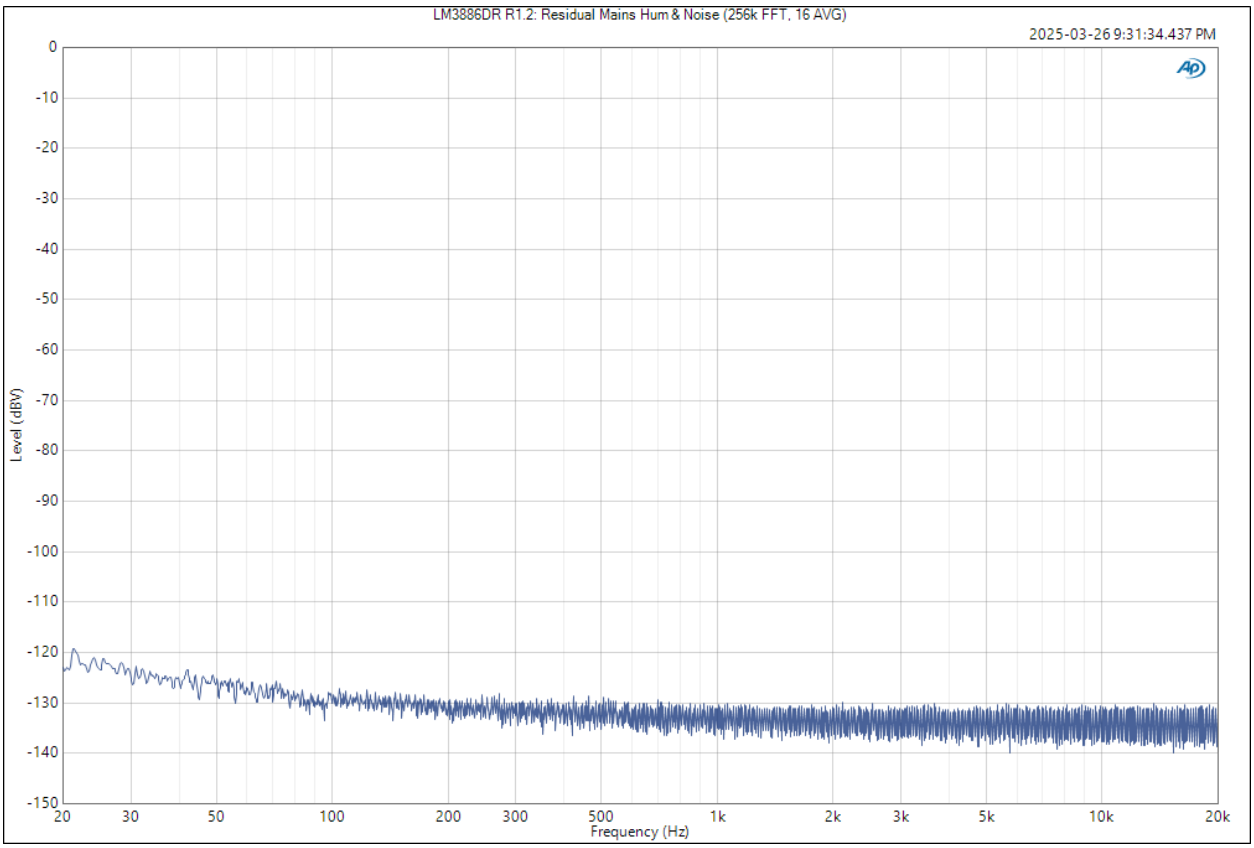


Audio Precision has developed a multi-tone test signal, which contains 32 tones from 15 Hz to 20 kHz, logarithmically spaced in frequency. This test signal sounds a bit like an out-of-tune pipe organ. It is the best approximation to music available in a deterministic test signal. Thus, this multi-tone signal should be used in an IMD test for the best correlation between measurements and perceived sound quality. This test is run just below clipping (40 W, 8 Ω). The tallest IMD components are 110 dB below clipping level!



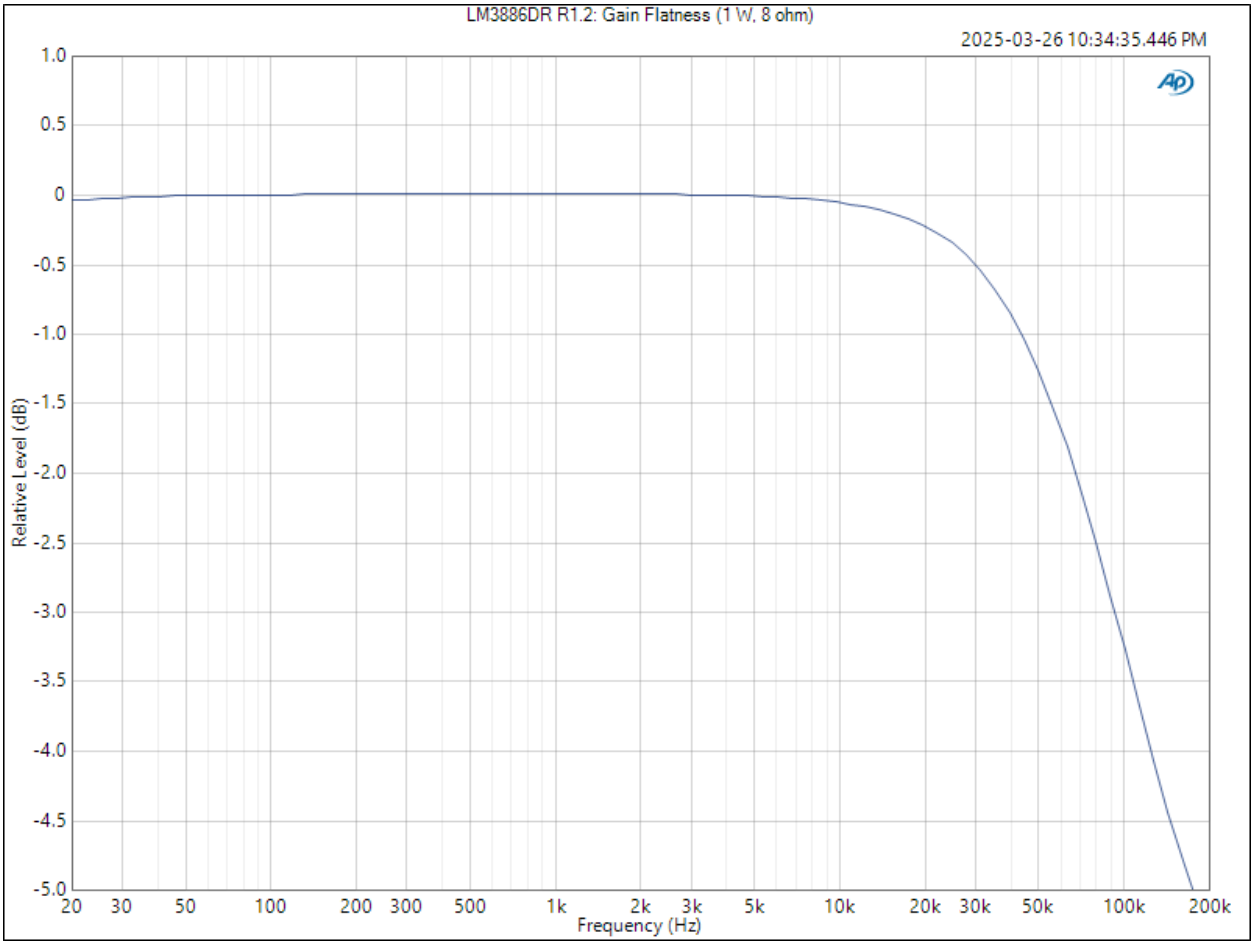
Residual Mains Hum and Noise

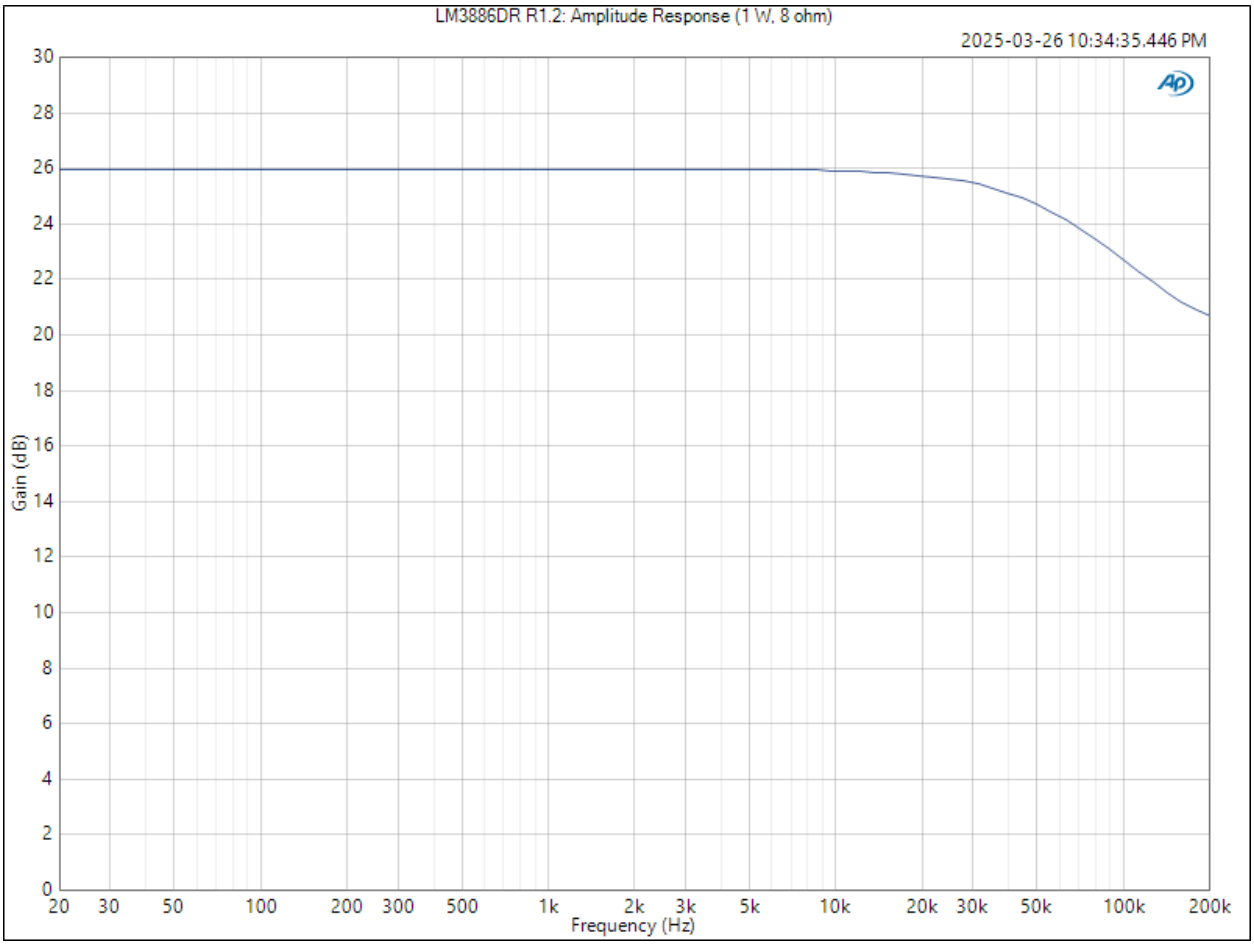
The LM3886DR shows only a tiny amount of residual mains hum. Note that this measurement was taken with the amplifier board sitting unshielded on a lab bench, thus, actual performance once enclosed in a metal chassis will be better. The plot below shows the noise floor of the amplifier when powered by a pair of well-regulated laboratory power supplies (HP 6654A).



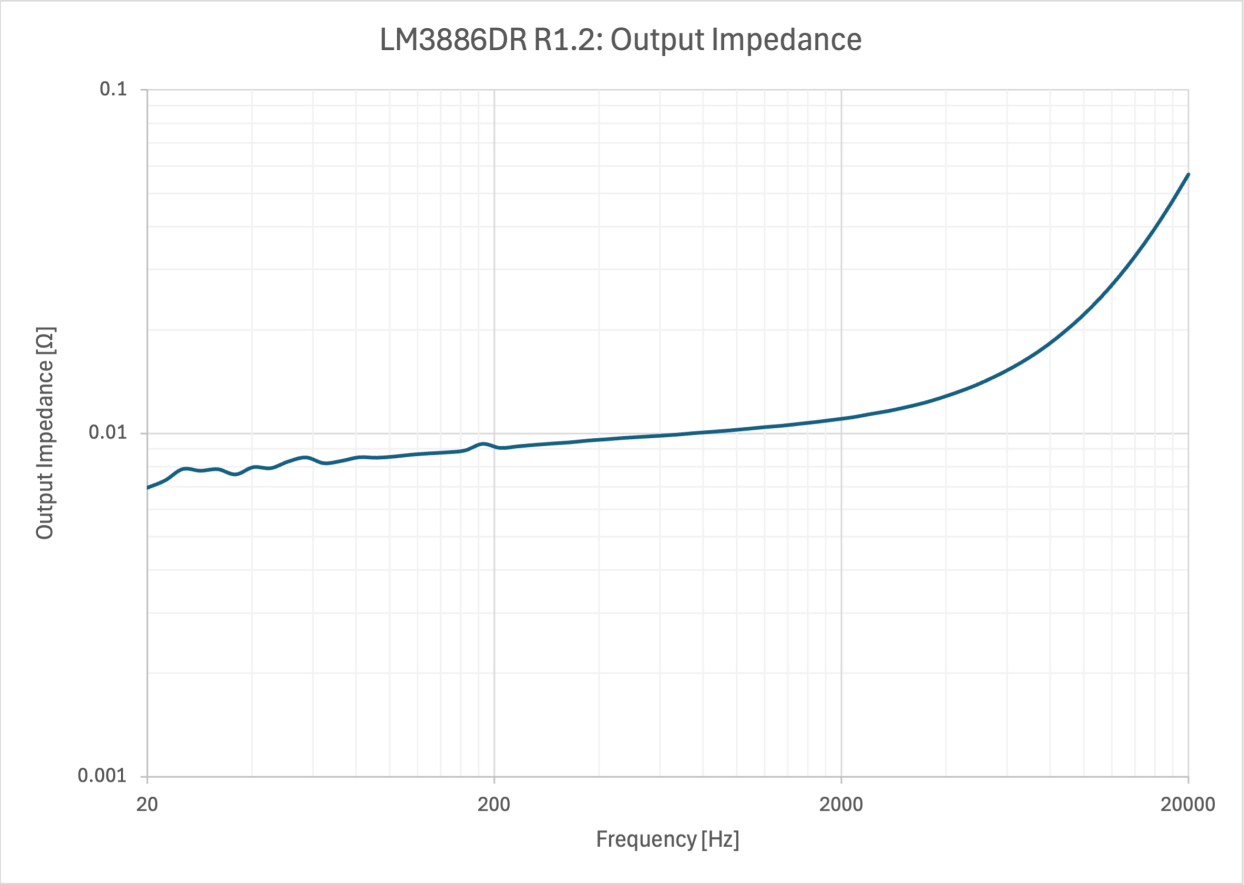
Gain Flatness, Output Impedance, and Damping Factor

The gain flatness and amplitude response of the LM3886DR are shown below.





The output impedance is shown below.



The corresponding 8 Ω damping factor is shown below.