

KICKER Power test document

Test Equipment

To determine the RMS (Steady State) Power and the Dynamic (Music) power of an amplifier Stillwater Designs uses a very specific testing set up and methodology to ensure repeatable and reliable results. The test equipment consists of three main pieces. High power regulated power supplies with feedback to ensure constant voltage, fixed resistive loads, and calibrated Audio Precision™ test stations. To ensure reliable results these test stations are regularly maintained and calibrated to ensure the product we sell meets or exceeds the advertised rated power.

Test Setup:

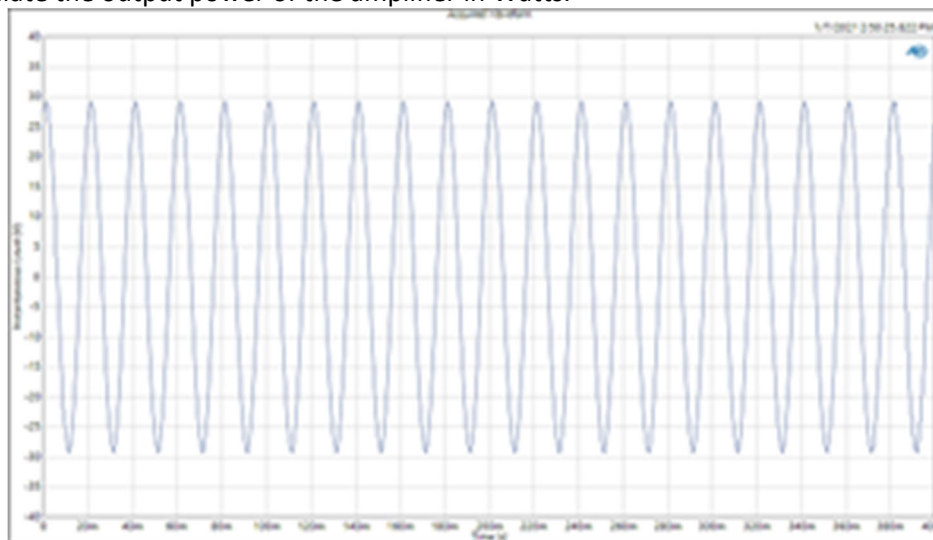
Power Supply: During power tests we use the regulated power supplies for constant and unwavering supply voltages. Regardless of the current draw demands of the product, the power supply will always maintain a constant voltage.

Reference load: Much like the power supply the reference load is designed to not fluctuate from its base characteristics. These reference loads are purely resistive in nature and do not vary according to frequency or amplitude. Because of this, they are also the hardest load for an amplifier to play into. For multi-channelled product, all outputs are loaded based on the specifics of the product. Typically, this will be the minimum possible stable impedance per output.

Measurement tool: The final part of this test setup is the audio measurement device. In our case, we use the industry standard Audio Precision™ test platform.

RMS Power (Steady State)

This test is commonly used to determine the manufacturer's rated RMS power. In this test the desire is to measure the power deliverable of an amplifier over a long period of time. To perform this, test the Audio Precision™ analyzer generates a continuous sinewave of a single frequency of either 50Hz or 1kHz based on the product's frequency range. In a full bandwidth product, the 1kHz frequency is chosen as it is in the middle of the product's frequency range. Bandwidth limited products, specifically those limited to lower frequencies for use with subwoofer applications we use a 50Hz sinewave signal. In this test, the input signal is adjusted until the product's output reaches a consistent 1.0% THD+N. The Audio Precision™ will then take the average measured RMS voltage and use it with the known resistance of the reference load to calculate the output power of the amplifier in Watts.



Dynamic Power test

The dynamic power test is used to demonstrate the instantaneous deliverable power of an amplifier which is similar to what you see when you play music. To perform this, test the Audio Precision™ machine generates a short burst sinewave. These signals are sent in varying on and off states to put the product under an intense load followed by a resting state. As an example of the Audio Precision™ analyzer generates a 50Hz sine wave for 200ms on followed by 400ms signal attenuated 20dB. At 50Hz this works out to 10 cycles on. Of these 10 cycles, the first two are ignored and the other eight are averaged. This repeats five times and the results of the five gated signals are averaged together to give the dynamic power measurement. Much like the RMS test the Audio Precision™ machine increases the input signal steadily until the THD+N value is reached prior to the burst test, then the burst test is performed.

