

what this graph *proves* to you . . .

all tests made on Hewlett-Packard
equipment by McIntosh engineers

THE TEST

Your amplifier was tested for total harmonic distortion at its maximum useable continuous (RMS) power output. This may have been less than its advertised power.

The amplifier was tested at several different frequencies covering the entire audio range. The graph shows how much distortion your amplifier has at each of these frequencies.

This test is the single most revealing one possible since it best indicates how well your amplifier is performing. The test was run as accurately as possible with calibrated laboratory test equipment. Stereo amplifiers are tested with both channels operating simultaneously.

POWER

The useable power is determined by watching the amplifier's 1,000 hertz sine wave output on the oscilloscope screen. If the amplifier reaches advertised power without visibly distorting the sine wave, this is where it is tested. If the amplifier does not reach advertised power, it is tested at a lower power where the sine wave is not visibly distorted.

Better amplifiers are capable of useable power output higher than advertised. The useable continuous power of your amplifier may have been less than its advertised power. Many amplifiers have been rated at "Peak Power", "Music Power", or other ways which make the power seem greater than it actually is. Real continuous power is what counts. Real continuous power is what it takes to drive loudspeakers.

THE EFFECTS OF DISTORTION

The total harmonic distortion of your amplifier was tested at several different frequencies covering the entire audio range. You will get the best sound when your amplifier distortion is as low as possible over the range of 20 hertz to 20,000 hertz. A high quality amplifier should have less than 1% distortion over this range. McIntosh solid state amplifiers are guaranteed to have less than 0.25% from 20 hertz to 20,000 hertz at full rated power.

HIGH FREQUENCY DISTORTION

If your amplifier shows a rise in distortion at high frequencies, it can cause listening fatigue or harshness in the sound. In a tube amplifier high frequency distortion can be caused by limitations in the design of the output transformer. In a transistor amplifier high frequency distortion can be caused by limitations in the type of output transistor used.

LOW FREQUENCY DISTORTION

If your amplifier shows a rise in distortion at low frequencies, the sound of bass instruments will be unreal, will lack fullness, definition or clarity. In a tube amplifier, a sharp rise in bass distortion is usually caused by the output transformer. If the iron core of the transformer is not large enough, it will become magnetically saturated at low frequencies. All transformers saturate at some point in the bass range. The bigger the transformer core, the lower it will go without distortion. The quality of iron used also affects the amplifier performance at both low and high frequencies. In a large transformer the windings must be properly designed so high frequencies are also reproduced properly. Some inexpensive amplifiers have very small output transformers. These amplifiers cannot reproduce low frequencies with much power. If a small transformer is being overloaded at low frequencies, the middle and high frequencies will also be distorted. All McIntosh amplifiers have transformers large enough to reproduce full power below 15 hertz.

Low frequency distortion in a transistor amplifier can be caused by limitations in the power supply or output coupling capacitors. Inadequate power supply regulation causes an increase in distortion and loss of power output at low frequencies.

Here

ARE ACTUAL TEST GRAPHS
OF VARIOUS AMPLIFIERS.

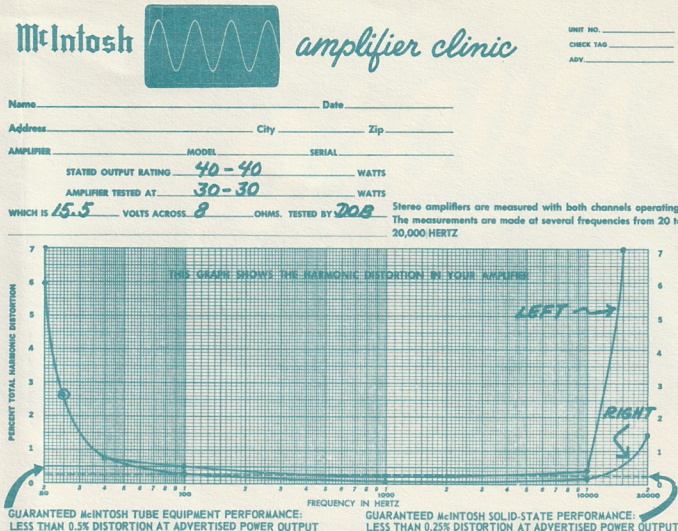
WHY THIS TEST IS IMPORTANT

Adequate power output with low distortion is essential for the best sound reproduction. Usually the more undistorted reserve power available, the better the overall sound will be.

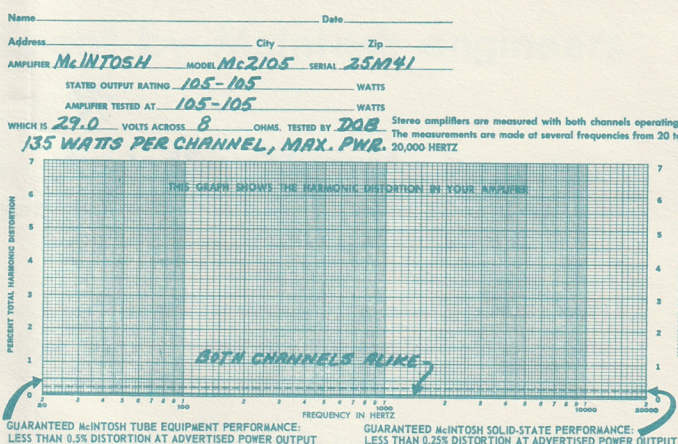
If your amplifier shows high distortion, it may need service to bring it back to its best.

If your amplifier does not need service and still has high distortion, now is the time to consider a trade-in for a better performing unit.

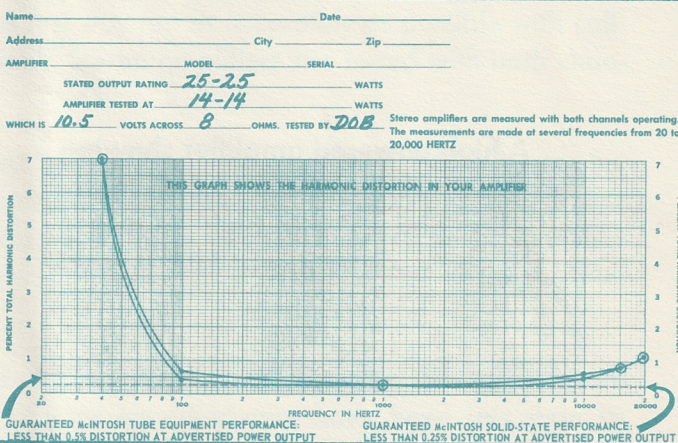
A medium high priced transistor amplifier showing power supply limitations at low frequencies, and severe distortion above 10,000 hertz in one channel.



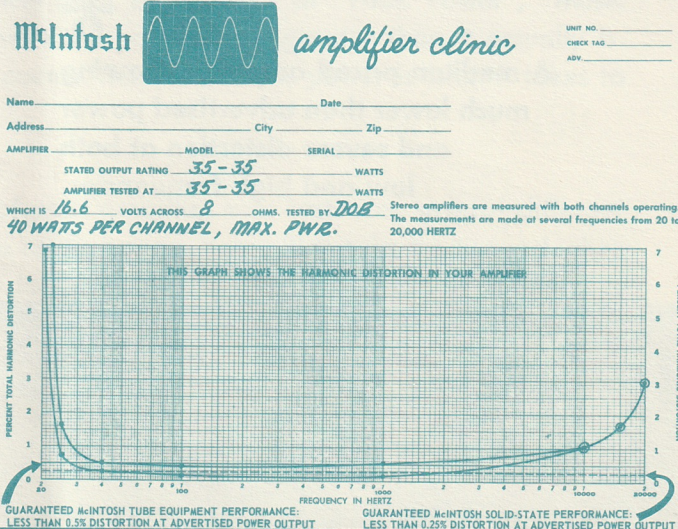
A typical McIntosh performance graph.



A transistor amplifier showing severe power supply at low frequencies, and a much lower than advertised output.



A moderately priced amplifier with low distortion through the middle range of frequencies.



The dotted lines show a dramatic improvement in this amplifier after the output tubes were replaced.

An amplifier with almost intolerable distortion, due to a defect in power supply design.

A high powered amplifier showing severe distortion above 15,000 hertz, and a rise in high frequency distortion at low power.

A medium priced amplifier showing much lower than advertised power and severe distortion at both low and high frequencies.

McIntosh LABORATORY INC.

2 Chambers St., Binghamton, N. Y. 13903

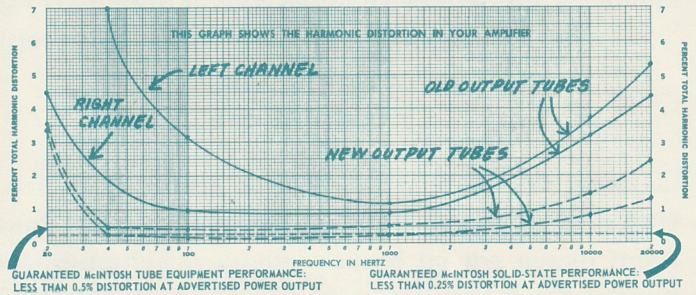
Phone 607 723-3512

McIntosh amplifier clinic

UNIT NO. _____
CHECK TAG _____
ADV. _____

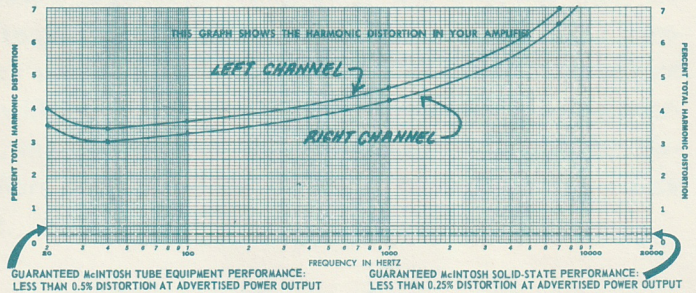
Name _____ Date _____
Address _____ City _____ Zip _____
AMPLIFIER _____ MODEL _____ SERIAL _____
STATED OUTPUT RATING 37 1/2 - 37 1/2 WATTS
AMPLIFIER TESTED AT 32 - 32 WATTS
WHICH IS 16 VOLTS ACROSS 8 OHMS. TESTED BY DOB

Stereo amplifiers are measured with both channels operating. The measurements are made at several frequencies from 20 to 20,000 HERTZ



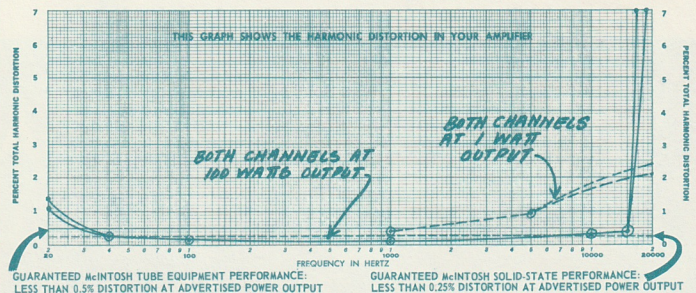
Name _____ Date _____
Address _____ City _____ Zip _____
AMPLIFIER _____ MODEL _____ SERIAL _____
STATED OUTPUT RATING 25-25 WATTS
AMPLIFIER TESTED AT 15-15 WATTS
WHICH IS 15.5 VOLTS ACROSS 16 OHMS. TESTED BY DOB

Stereo amplifiers are measured with both channels operating. The measurements are made at several frequencies from 20 to 20,000 HERTZ



Name _____ Date _____
Address _____ City _____ Zip _____
AMPLIFIER _____ MODEL _____ SERIAL _____
STATED OUTPUT RATING 100-100 WATTS
AMPLIFIER TESTED AT 100-100 WATTS
WHICH IS 28.2 VOLTS ACROSS 8 OHMS. TESTED BY DOB

Stereo amplifiers are measured with both channels operating. The measurements are made at several frequencies from 20 to 20,000 HERTZ



McIntosh amplifier clinic

UNIT NO. _____
CHECK TAG _____
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Name _____ Date _____
Address _____ City _____ Zip _____
AMPLIFIER _____ MODEL _____ SERIAL _____
STATED OUTPUT RATING 40-40 WATTS
AMPLIFIER TESTED AT 25-25 WATTS
WHICH IS 20 VOLTS ACROSS 16 OHMS. TESTED BY DOB

Stereo amplifiers are measured with both channels operating. The measurements are made at several frequencies from 20 to 20,000 HERTZ

