

Pass Laboratories

Aleph 1 Power Amplifier

The Aleph 1 is the largest amplifier from Pass Laboratories and expands upon the vision of pure high power, idling at 500 watts and delivering 150 watts in single-ended Class A.

Single-ended Class operation is often referred to as the "king of Class A" because it has the smoothest transfer curve and operates at the lowest efficiency of the family of Class A topologies. Properly designed, a single-ended amplifier exhibits second and even order harmonic structure, similar to the transfer characteristic of air, where the phase of the signal and harmonics reflects the subtle difference between acoustic compression and rarefaction. The price paid for this performance is in high idle current and dissipation, generally three to five times the output rating.

The Aleph 1 conforms to the Pass philosophy of having absolutely minimal parts in series with the signal path. A balanced input signal is presented to differential power Mosfets driving a single cascoded common source device that provides the full voltage gain which is followed by the Mosfet output stage. The total number of gain stages in the amplifier is three, counting the output followers, as contrasted with other high end solid states products having from four to seven gain stages. This minimalist topology is supported outside of the signal path by regulated constant current sources and a massive power supply.

The ultra-high idle current, the transconductance character of the Mosfets, and the simple design topology all combine to deliver an amplifier having high power and strong "bench" performance while still delivering the emotionally involving warmth and depth associated with the finest tube amplifiers. The sound of the Aleph amplifiers has been recognized world-wide as the most natural obtainable from solid state amplifiers.

Conventional single-ended amplifiers have a maximum output current equal to their bias, or idle current, which severely limits their performance into low impedance loads. The Aleph 1 has a unique output current source which normally biases the follower output stage but which can double as a "pull" stage when the output current exceeds the bias, allowing additional output current during transients. Beyond the single-ended bias point, the amplifier will operate as push-pull, in preference to clipping the signal. The Aleph 1 operates single-ended Class A for output to 150 watts, and push-pull at higher currents.

The Aleph 1 is rated at 150 watts rms. into 8 ohms, and will deliver a maximum transient of 40 amps of output current, 30 amps at less than 1% distortion. It delivers equally low distortion into any reactance angle, and is designed to drive as low as 1 ohm.

The amplifier is powered by a toroidal transformer rated at fifteen times the amplifier's output rating which charges 100,000 uF to 500 Joules. This unregulated supply feeds the output transistors with a full power ripple of about 1/2 volt.

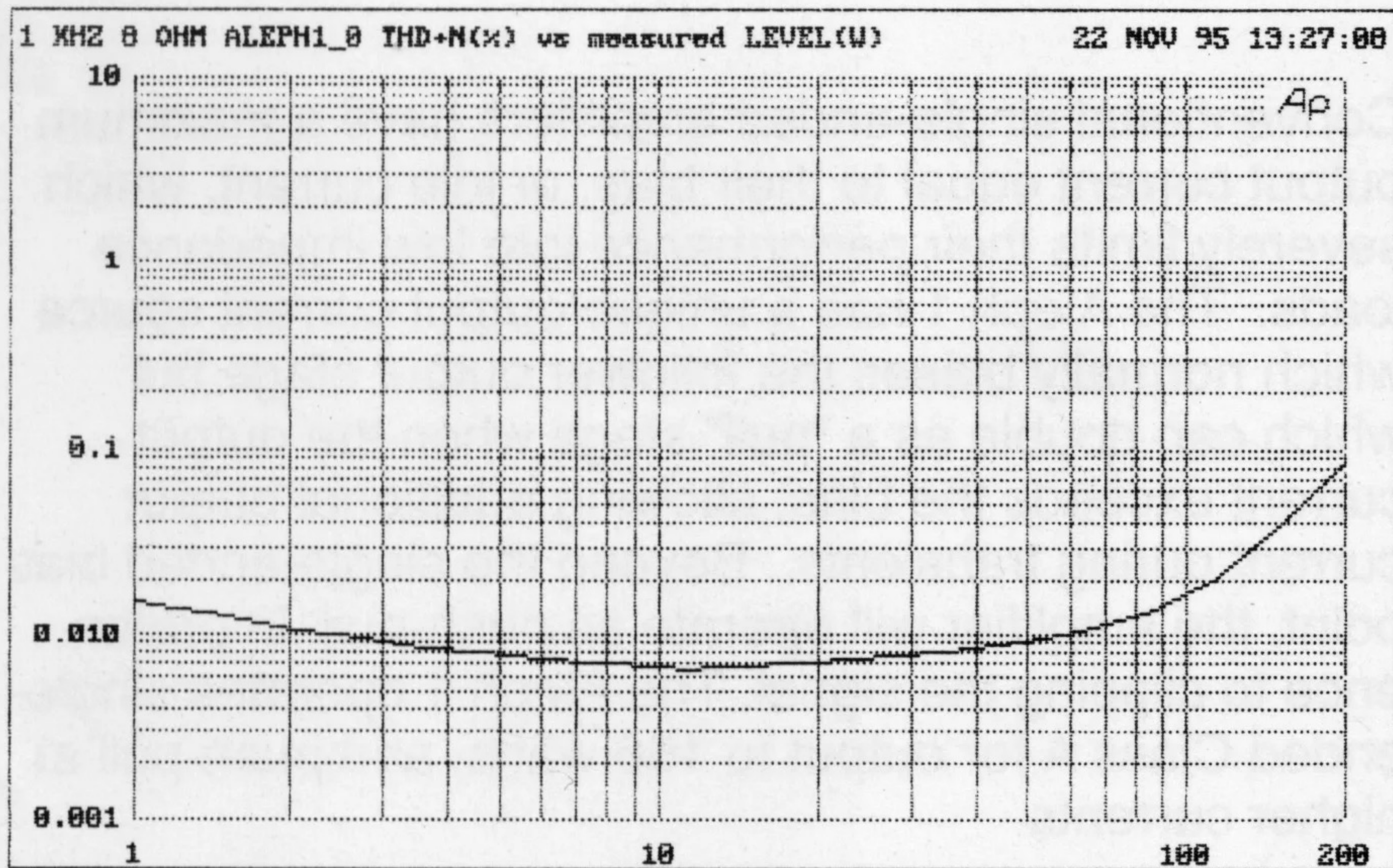
The amplifier uses power Mosfets exclusively for all three gain stages. These Mosfets were chosen because they have the most ideal transfer curve for a simple single-ended Class A design. The input and subsequent gain devices are pulse rated at 8 amps, and are followed by output devices with pulse ratings of 50 amps each.

The Aleph 1 has been designed for maximum reliability without the use of limiting. The amplifier employs 3.6 kilowatts of power Mosfet output devices and massive heat sinking rated at .05 degree per watt. During active operation the amplifier consumes 500 watts, so that each output device is operated at less than 25% of its rated power, one half of its 150 degree temperature rating, and one half of its voltage rating.

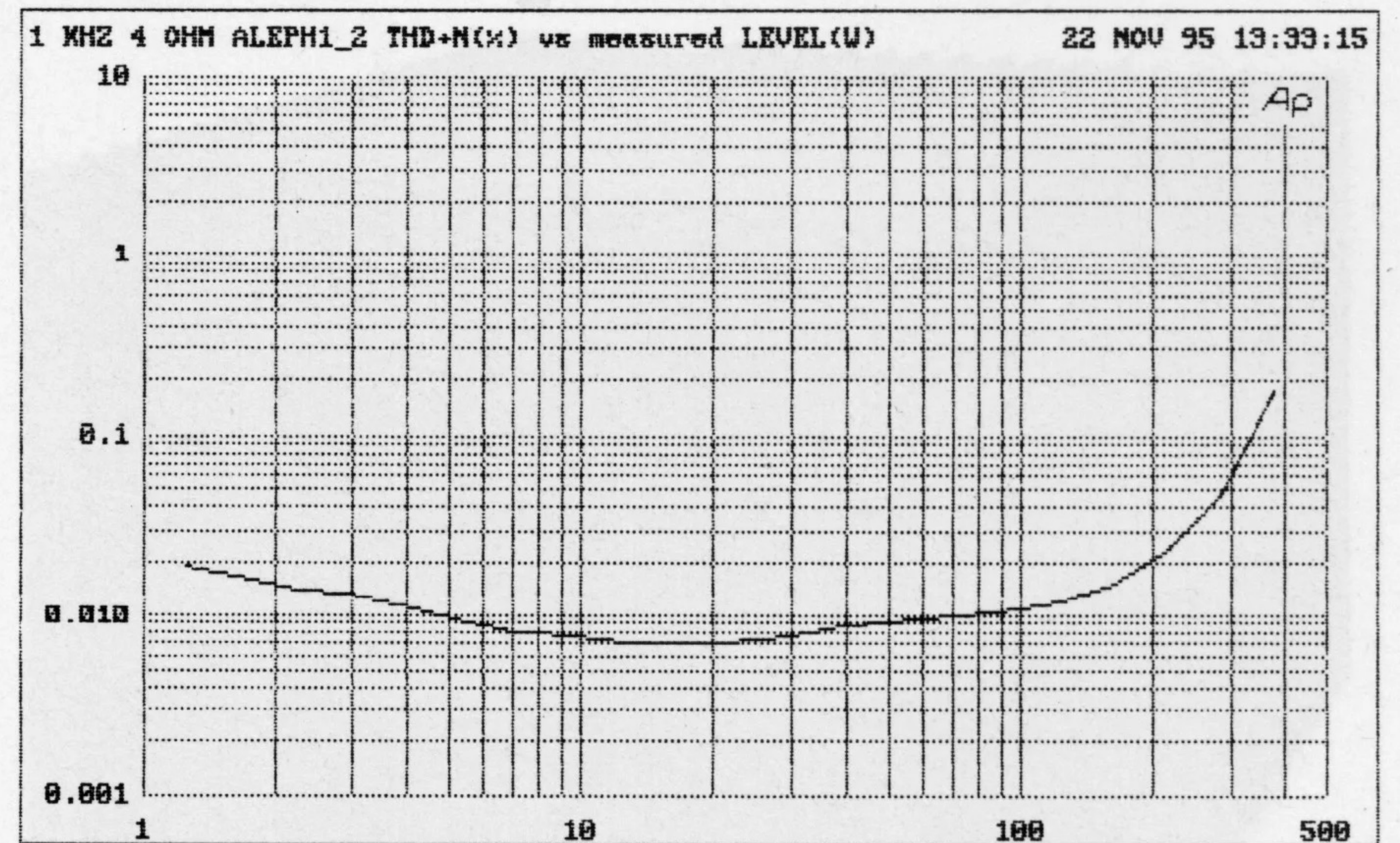
There is no output current limiting in the amplifier. Protection is provided by an AC line supply fuse and by a 75 degree C. thermal switch. In spite of the enormous draw at idle, the heat sinks of the Aleph 1 remain at a touchable 25 degrees C. above ambient temperature.

For the lowest possible operating noise in any environment, the amplifier is equipped with balanced inputs featuring a typical common mode input noise rejection of -70 dB. Balanced operation is accomplished through a passive network tied directly into the input stage of the amplifier, not with additional active input circuitry as in other products. Unbalanced input is also accommodated through RCA connectors.

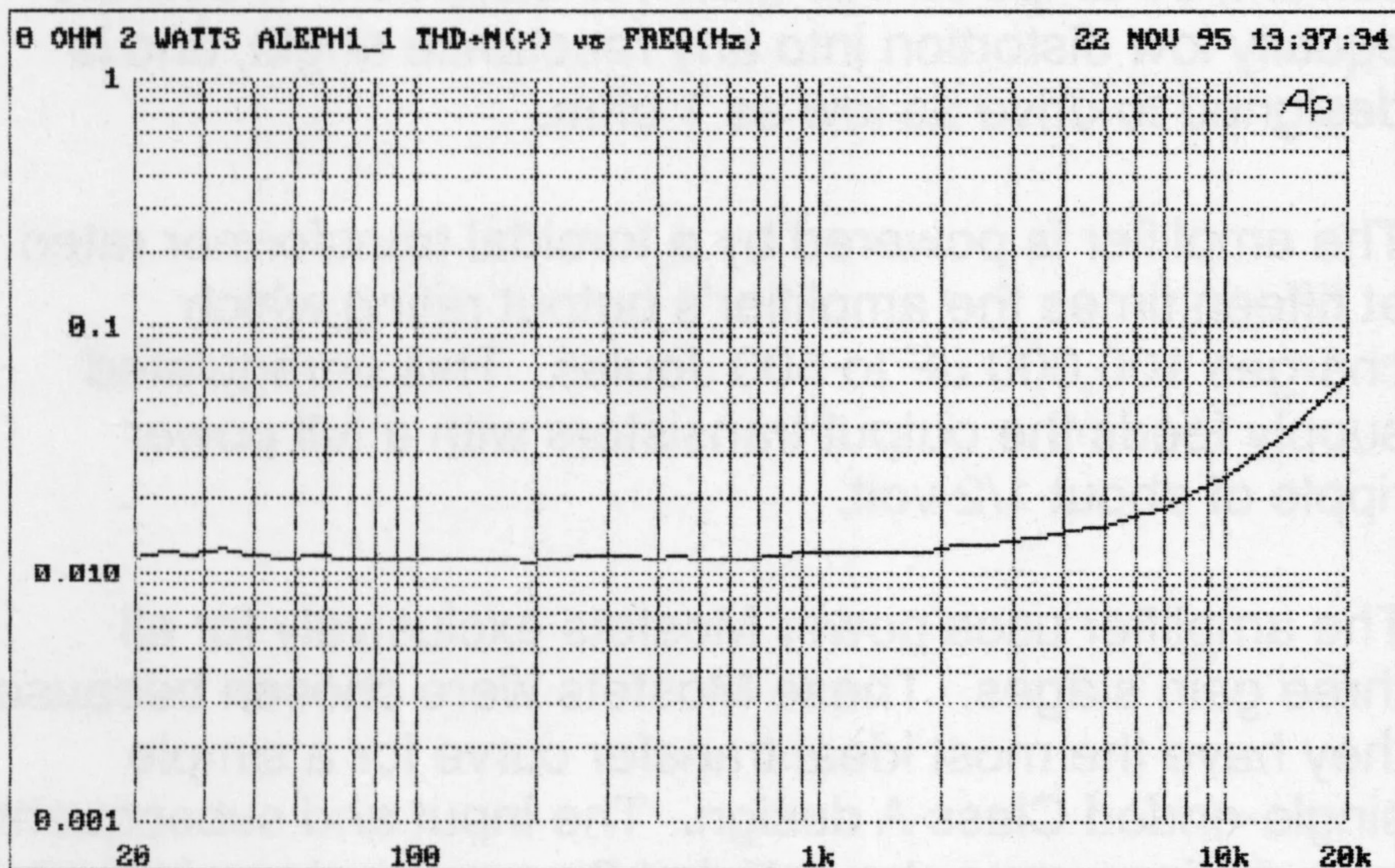
The chassis of the amplifiers is made entirely of extruded and machined aluminum, finished in type II anodizing.



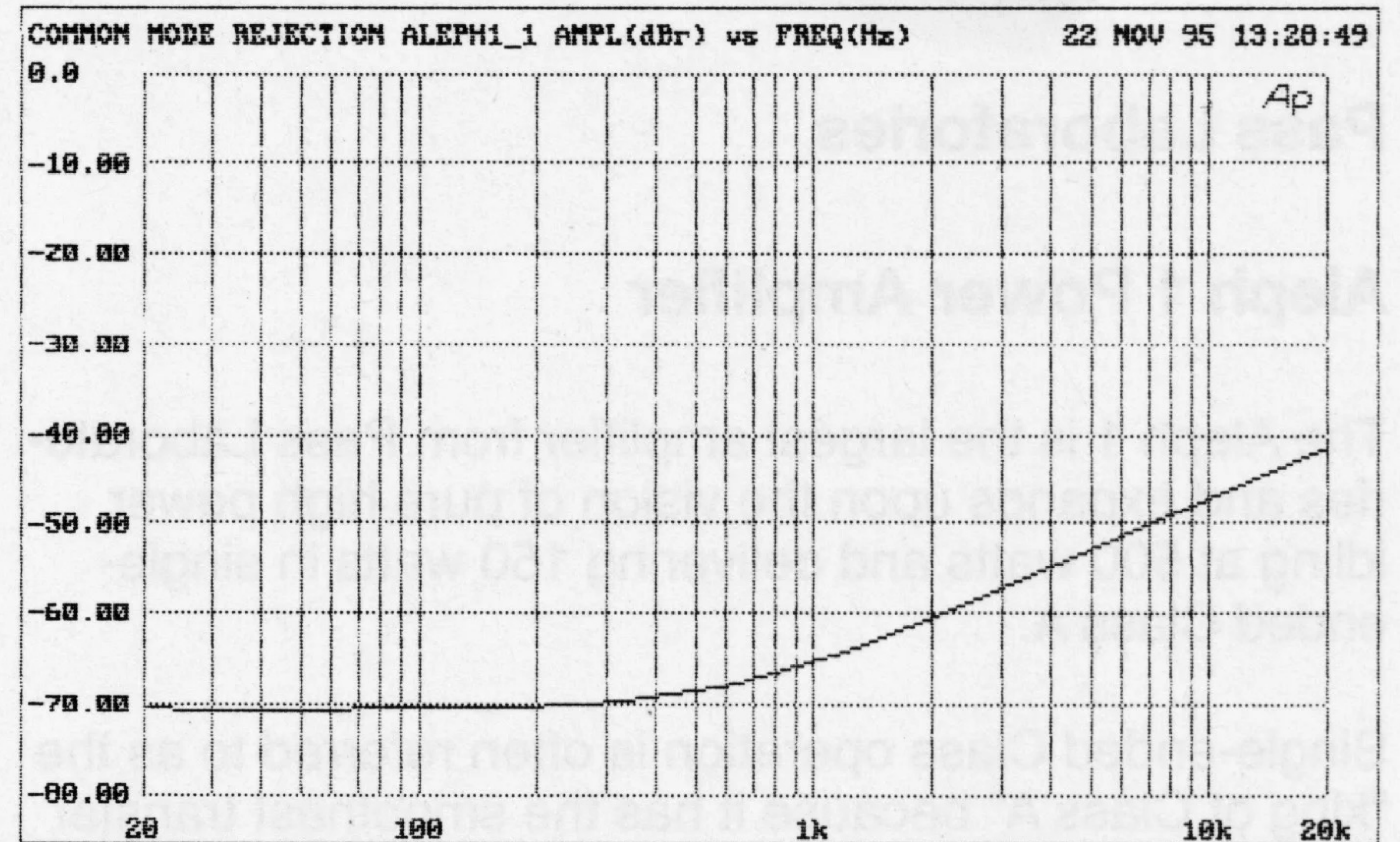
Distortion into 8 ohms Vs power



Distortion into 4 ohms Vs power



Distortion @ 2 watts Vs frequency



Input Common Mode Rejection

SPECIFICATIONS

Gain	20 dB	balanced
	20 or 26 dB	unbalanced
Freq. Response	- 3 dB at 100 kHz	
Power Output	150 watts	@ 8 ohms
	300 watts	@ 4 ohms
Distortion	< 1 % THD	
Maximum Output	40 amps	
Output Impedance	.01 ohm	
Input Impedance	10 Kohm	
Input CMRR	> -60 dB	
Power Consumption	500 watts	
Dimensions	16.5 " W x 16.5 " D x 10.5" H	
Shipping Weight	121 lbs.	

The Aleph 1 is warranted by Pass Laboratories to meet performance specifications for 3 years from date of manufacture. During that time, Pass Laboratories will provide free labor and parts at the manufacturing site. The warranty does not include damage due to misuse or abuse or modified products and also does not include consequential damage.

PASS

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