

# FM GUIDE

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## THE FELDMAN LAB REPORT

### The ADS L-500 Speaker System



Fig. 1. Front View of ADS L-500 Speaker System.

Some months ago we reported on a much larger speaker developed and manufactured by ADS, Analog and Digital Systems, Inc., in Wilmington, Massachusetts. We were impressed at that time by the excellent dispersion of the Model L-810 and by the overall clarity and lack of coloration which it imparted to music of assorted types and dynamic range.

The Model L-500, investigated in this report, cannot, of course match the sound of its bigger brother, but then, at a \$129.95 suggested retail price it does not match its cost either. What it does manage to do is impart some of the same clarity and transparency that we heard in our earlier tests of the larger unit, with somewhat diminished low frequency range and considerably less power handling capacity.

The L-500, pictured in Fig. 1, measures only 20" high by 11 1/2" wide and 9-3/4" deep. It comes with a black removable grille cloth panel which is held in place by the now familiar velcor strips in four corners of the baffle. With the grill removed

(Fig. 2) we see that it is a two-driver system consisting of an 8" soft-suspension woofer and a 1" diameter soft-dome tweeter. ADS brochures tell us that the woofer cone is made of a stiff material to permit it to act as a piston at low frequencies but soft enough and self-camped so that cone break up is prevented at higher operating frequencies. The woofer is required to deliver frequencies up to 1500 Hz, at which point a 12 dB/octave crossover network (made of heavy copper coils and metal-film capacitors) channels frequencies to the tweeter. The design, of course, is basically an air suspension system (sealed enclosure) and the tweeter is also sealed in its own acoustic chamber and equipped with a lightweight dome driven by a magnetic field of 15,000 Gauss. The magnetic field of the 8" woofer is stated by the manufacturer as equal to 9500 Gauss. To achieve this kind of flux density, the magnet of the tweeter alone weighs a full one pound. Connection to the L-500 system is made at the rear of the cabinet by means of screw-terminals and there are no adjustment controls on this model.

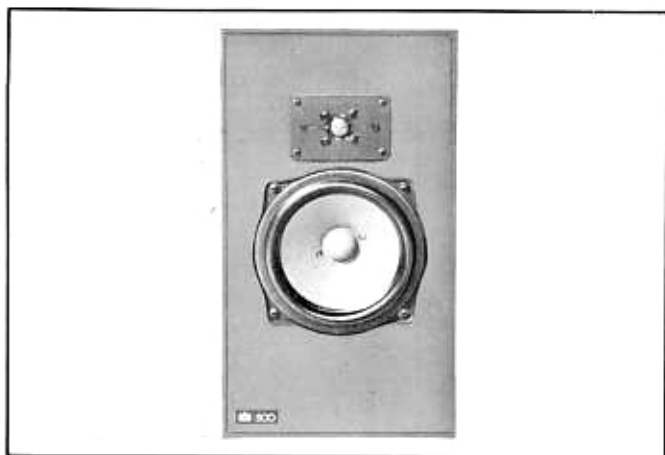


Fig. 2. Front View of ADS L-500 with Grill Panel Removed.

### Laboratory Measurements

The L-500 is assigned a nominal impedance rating of 4-ohms, but in our measurements of impedance versus frequency shown in the graph of Fig. 3 we found that the impedance never dips down that low and, in fact, follows the characteristics found in many systems rated at 8-ohms. It could therefore be safely used in parallel with an additional set of speakers (either identical ones, or other 8-ohm units) without encountering mis-match difficulties with most solid-state amplifiers played at reasonable levels.

Power handling capacity listed for the L-500 is 30 watts continuous power, but do not be misled by this figure. During our tests, we monitored peak music levels on an oscilloscope (during musical listening tests) and noted that we were pushing peaks approaching 75 watts of power on a regular basis without encountering speaker overload or significant audible distortion on peaks. Like so many others, ADS is faced with the new problem of specifying power handling capacity in light of the new rules governing amplifier power disclosure. While amplifiers must now be rated on the basis of continuous sine-wave testing, speaker systems are hardly ever used to play sine-waves and can therefore handle considerably more power when fed with musical waveforms.

We measured the sensitivity of the speakers with the commonly accepted method. At one meter with one watt applied we came up with an SPL level of 90dB - quite efficient for a small enclosure such as this.

Figure 4 is a first for FM Guide and a first for us as well. We have just acquired a spectrum analyzer which will enable us to directly plot on a storage oscilloscope the full frequency response of speaker systems, and every other electronic device we test (tone control range, RIAA response, you name it). While we recognize that our listening room will have a great deal of influence on the results, we have done a great deal of experimenting with variation of sweep speed, placement of our pickup microphone (we decided that close-in miking at about 8 inches from baffle surface yields results that are closest to the "truth") and sound levels to be used. Henceforth, therefore, we will be displaying frequency response in one fell swoop (or one fell sweep, if you prefer) instead of breaking it up into three frequency segments as we have done in the past. Our display moves from left to right in a logarithmic fashion, just as a frequency response curve should and the center of the scope screen (heavy vertical black line) corresponds to 1000 Hz—the approximate center of the audio spectrum. The two major vertical lines at the right of the display represent 10 kHz and 20 kHz precisely. Vertical division on the scope

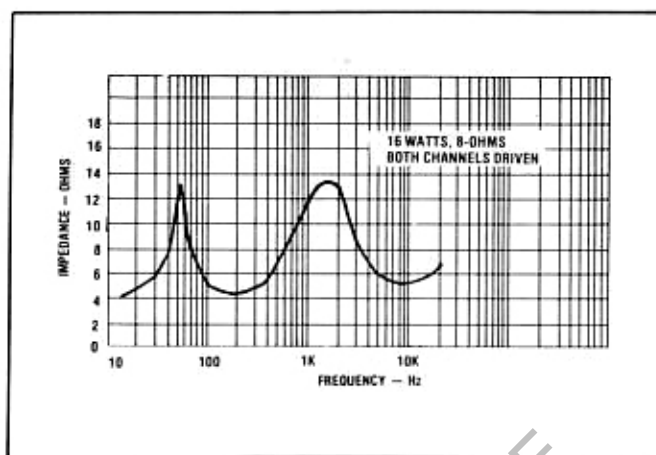


Fig. 3. Impedance vs. Frequency — ADS Model L-500.

face are calibrated at 10 dB per division. So, on the basis of this first attempt, we would judge that the L-500 is flat within 3 dB from about 45 Hz to 16 kHz. Since system resonance was measured at 55 Hz (see impedance curve, Fig. 3) we would judge that we are not too far off at the low end.

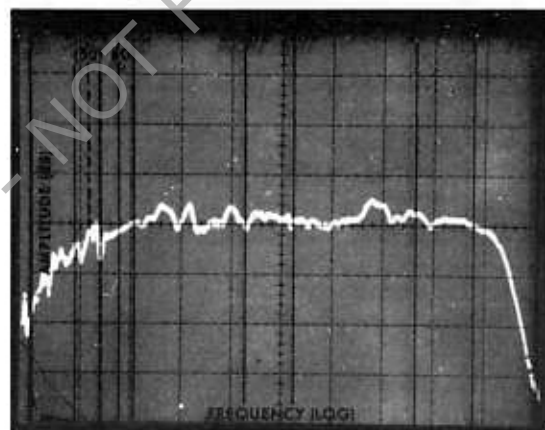


Fig. 4. Frequency Response of ADS L-500 Speaker System as recorded on slow-sweep spectrum analyzer.

### Listening Tests

As was the case in our listening tests of the more expensive ADS L810 we were tremendously impressed with the excellent dispersion of the L-500. At 10 kHz, listening at an off-axis position of some 60 degrees we could detect no difference in amplitude compared to on-axis hearing of the same frequency. Of course, under musical listening conditions this excellent dispersion does much to create a stable, easily pin-pointed stereo sonic field and we suspect that these little units would do very well in quadrasonic arrays as well, though we did not have four samples with which to conform this.

Unless you are extremely power hungry and insist on 100-watt plus amplifiers to drive your speaker systems, the L-500 units are worth hearing — particularly at their low price of \$129.95 each.

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