MartinLogan SL3 loudspeaker Manufacturer's Comment

A few issues regarding the testing procedures. Yes, our products are different from point source products in the way that they launch information and, as a result, our testing procedures differ from the norm. I have taken the liberty to enclose a small explanation as to how we arrive at our testing measurements, and you can see that basically we move our testing position to the listener position, which we assume is about 3.2 meters from the speaker. As you can see, the frequency response evens out and the sensitivity scales much close to 90dB at that position.

With a point source it is easier to test at 1m, then certain things will occur at the listening position. With our product, we feel it important to test at, or close to, the listening position.

Also the waterfall can look slightly hashy as a result of a large line source launching information into the room as opposed to a point source. Information is arriving from the entirety of the panel to a single point on the microphone which is a partial contributor to a less-than-clean look. However, John is correct in his discussion as to how the ear handles this information making it less relevant than the test would imply.

And yes, Martin-Logan speaker products do benefit from better amplifiers. And yes, we are not the easiest load to but by far not the most difficult load to drive. As a result of that revealing nature, our electrostats most certainly benefit from better front ends and amplification.

Sometimes Martin-Logan products are easier to place in the room than point source products and, sometimes vice-versa depending on the nature of that room. The controlled frontal dispersion actually makes it easier to place a Martin-Logan in a long or narrow room, and therefore a better image and focus can immediately be achieved versus a wide dispersing product.

Again, thank you for your revealing work. We look forward to being sliced, diced, and dissected by *Stereophile* again in the future.

Martin-Logan on measuring panel speakers: Measuring panel speakers can be a challenge. Since we are no longer dealing with a point source, some care must be taken in making measurements. This always brings up the issue of near field and far field. The question is "are we taking measurements in the near field or the far field." An equation that gives the approximate distance of the transition point is:

transition_point = D-squared/lambda

Where D is the largest dimension of the transducer and lambda is the wavelength of the sound being produced. (This is just a rule of thumb equation, not an absolute mathematical definition.)

When we look at an electrostatic element with a D of 48", the transition point is shown in fig.1. At 10kHz, the transition point between near and far field is over 100' from the speaker! However, at 200Hz, the distance is only 3'. So some of our measurements are going to be in the near field. (By the way, for a conventional tweeter, the transition at 10kHz is 3/4".)

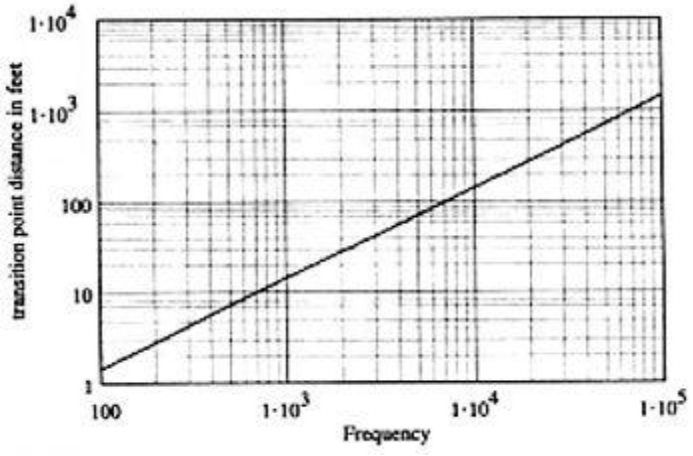

Fig.1 Transition point in feet plotted against frequency for a 48" diaphragm (note logarithmic vertical scale).

What is the difference between the near field and the far field?

In the far field the dispersion pattern can be described in terms of angles and a constant (1/R) term. Meaning the radiation pattern is independent of the distance. In the near field, this is not the case. The radiation pattern *is* dependent on the distance.

What the hell does all this mean to us?

What it means is that a person sitting 3' away from the speaker will hear something different than a person sitting 10' away, even if they are at the same angle to the speaker. How then do we get a fair measurement of the speaker's frequency response? The way it is done at ML is to set the speaker up according to the owner's manual and measure the response. This is usually done at a distance to the speaker of 9-12'. The SL3's response curve at 10' is shown in fig.2. (Note: 8.9V at 3.2m is scaled such that a 90dB/2.8V/m point-source speaker would read 90dB on this graph.)

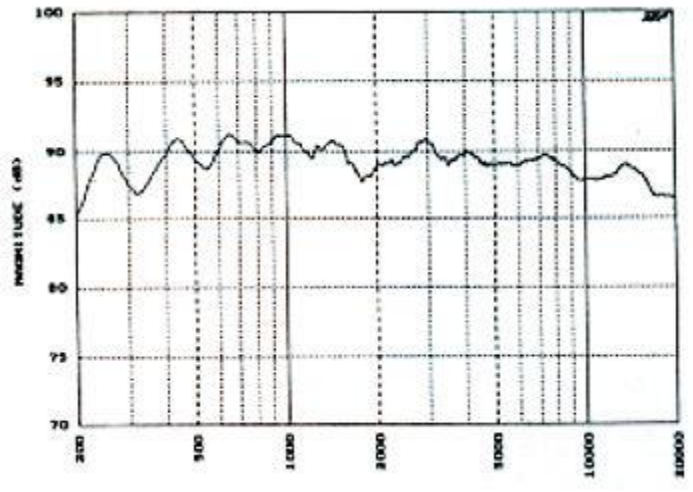

Fig.2 Martin-Logan SL3, response on-axis at 3.2m, 8.9V input level (5dB/vertical div.).

The speaker has been designed so that a person who takes these speakers home, reads through the owner's manual, and sets them up accordingly will achieve a response similar to the one shown above. The most critical part of the set-up is to get the speaker positioned so that when the listener looks at the curve of the ESL element they see the inside third of the panel.—**Gayle M. Sanders, Martin-Logan Ltd.**