



UP CLOSE AND PERSONAL

Bag End MM-8 / ELF Monitor System

One of the continual dreams of project studio owners and engineers is to find a nearfield (closefield) monitor that has low-frequency response similar to that of a large soffit-mounted monitor. Unfortunately, monitors must follow the laws of physics, which means that true low-frequency response requires an enclosure large enough to fit a small man (or woman) inside. In other words, if you want more bottom end, then the boxes effectively become too large to fit on top of the average console.

Enter the subwoofer: an additional cabinet (or two) with the required size to reproduce that missing bottom octave and, presently, the only way to get true low end from a moderately small enclosure. The trouble with many subwoofer systems, though, is that the added low frequencies often seem out of proportion - or disconnected - with the mids and highs, therefore making the combined sound seem artificial. The arrival of the Bag End MM-8/ELF reference monitor and subwoofer combination, however, might just change the way we think about subwoofers.

The complete systems consists of

two MM-8 reference monitors, two DL-10E subwoofers, and an ELF-1 Integrator. The MM-8 nearfield monitor is a coaxial 2-way in a vented 17 1/2-inch x 12-inch x 8-inch enclosure utilizing an 8-inch, low/mid-frequency driver and a 1-3/4-inch, aluminum compression, high-frequency unit crossing over at 2.9 kHz. The speaker has two unique switches on the front panel. One is a three-position switch labeled "Distant/Final - NFM (nearfield monitor)/Original - NFM/Final, Distant/Original," which is a high-frequency equalizer switch designed to compensate for both the placement of the speakers ("Distant" or "NFM") and the type of program ("Original" or "Final"). There is also a front-panel polarity switch. The system is fairly efficient with a sensitivity rating of 93 dB SPL @ 1 watt/ 1 meter.

The ELF system (Extended Low Frequency) consists of three pieces: two 13-inch x 22.5-inch x 13-inch D10E-S subwoofer cabinets (50 lbs.; each containing 10-inch drivers) and the heart and soul of the system the ELF-1 Integrator, which is designed to perform electronic crossover duties and low-frequency extension. The ELF-1 is a 1U rack-mount box with front-panel status indicators (low-and high-protection threshold and signal present) and balanced, XLR rear input/output connectors. There are numerous gain and frequency contour switches located behind a removable security panel on the front panel. According to Bag End, use of the Integrator greatly reduces any phase shifting and flattens and extends the response down to as low as 8 Hz. The designers feel that by extending the frequency response down a full octave below what is considered to be the lowest musical note (a 16 Hz low C of a pipe organ), the sonic quality throughout the audible bass range is improved.

Speaking of designers, it should be noted that the ELF system was invented by Ron Wickersham and Ed Long, the godfathers of Time Alignment, nearfield monitors, and PZM microphones.

I used the Bag End system on one project consisting of some loud, guitar



laden rock and roll, as well as on a sophisticated dance remix that required extensive overdubs of new drum machine tracks, vocals, guitars, and real percussion. Two things were very apparent with this system immediately upon first playback. First of all, this truly is a system. The ELF's give you a smooth low end that's noticeable but not at all out of proportion, with no holes or unevenness in the response. There was a surprising amount of low end coming out of subwoofers with only 10-inch transducers. The ELF's made the MM-8's sound like they were very large cabinets. As a matter of fact, the system compared very favorably to the soffit-mounted UREI 813's in the studio - Private Island Trax in Hollywood, CA. (Although I can't believe that it was reproducing 8Hz, or even 20 for that matter.) The second, and much more surprising thing, was that the MM-8's were extremely responsive in the high end.

I've always been a big fan of coaxial speakers, and these speakers are another good example of why. Whenever I tweaked a high-frequency equalizer just a little bit, I could really hear the difference. Acoustic guitar, thanks to the subwoofers, sounded full and warm.

I didn't hear much difference at all with the choice of front-panel EQ switch, and finally just settled on the "NFM/Original" position. The front-panel polarity switch could be of some use if you were constantly moving

these babies around.

There are some items to consider with this system. It's not especially portable since there's a lot of gear to carry around (two subs, the ELF-1 Integrator, and two MM-8 nearfields). Obviously, that's not an impediment if you're just looking for some speakers with some real bottom end for your project studio. You also need two sets of amplifiers, which, again, is not a problem in the project studio, but can possibly be a pain when going from studio to studio. Buying this system involves making a serious financial commitment: the MM-8 Reference Monitors list for \$1888; the ELF subwoofer system for \$582 each; and the ELF-1 crossover for \$2460 (the ELF-M a less expensive crossover with fewer features, is also available for \$898).

The Bag End system's performance is best summed up by the comments of one of the artists when I asked how he liked the mixes. "They were great! Boy, those Bag Ends really kick ass." Of course, I like to think that I had something to do with the final sound, but in any event I'll take all the help that I can get. In this case, the Bag End MM-8/ELF system was just the ticket.

-Bobby Owinski

MM-8 Specifications

System type:

Coaxial, 2-way, vented enclosure

Drivers:

One 8" low frequency cone One 1.75" aluminum compression high frequency

Crossover:

Time-Align® equalizer filter type at 2.9 kHz

Frequency response: (4 p Steradians) ±3dB 100Hz to 20kHz

Sensitivity: 84 dB SPL 1 Volt / 1 Meter

Power required:

1 Watt for 93 dB SPL @ 1 Meter

Power handling:

150 Watts continuous (below 2kHz)
40 Watts continuous (above 2kHz)
600 Watts instantaneous (below 2kHz)
160 Watts instantaneous (above 2kHz)

Weight: 31lbs

Distortion: Less than 1% THD (100 Hz to 20 kHz 94 dB SPL @ 1 m)

Impedance:

8 ohms nominal, 7 ohms minimum

Polarity: With the switch set to +, a positive asymmetrical signal applied to the red input terminal will result in a positive asymmetrical acoustical output.

Enclosure volume: .54 ft³

Dimensions: 17.5"h x 12.25"w x 8"d

Weight: 31 lbs.

D10E-S Specifications

System type: ELF sealed enclosure

Drivers:

2 EL-10's 10" ELF low frequency cone

Crossover: ELF Type 95Hz (-6dB)

Frequency response: (2 p Steradians) ±3 dB from 8 Hz to 95 Hz
±.5 dB from 12 Hz to 76 Hz

Power required: 1 Watt for 94 dB SPL @ 80 Hz @ 1 Meter (2 p Steradians)

Power required: 1 Watt for 83 dB SPL @ 40 Hz @ 1 Meter (2 p Steradians)

Power required: 1 Watt for 71 dB SPL @ 20 Hz @ 1 Meter (2 p Steradians)

Power handling:

400 Watts continuous sine wave

Impedance: 4 ohms nominal

Polarity: A positive asymmetrical signal applied to the red input terminal will result in a positive asymmetrical acoustical output.

Enclosure volume: 1.43 ft³

Dimensions: 13"h x 22.5"w x 13"d

Weight: 50 lbs.

ELF-1 Specifications

Input connectors: XLR-type female

Input configuration: Balanced

Maximum input signal balanced: +20 dBu

Output connectors: XLR-type male

Output configuration: Balanced

ELF mode: Stereo/Mono Sum

Minimum ELF cutoff frequency: 8Hz

Maximum concealment reduction: 44 dB @ 8Hz

Maximum concealment threshold: +22 dBu / +16 dBu unbalanced

Concealment threshold range: 41.5 dB in .5 dB steps

Maximum output signal: +24 dBm / +25 dBu

(with concealment disabled)

ELF dynamic range: 110 dB (20 Hz to 20 kHz)

(Band width unweighted)

Hi Pass mode: Stereo

Hi Pass filter slope: 12dB/octave

Minimum Hi Pass filter frequency: -3dB @ 50 Hz

Maximum Hi Pass filter frequency: -3dB @ 205 Hz

Anti-fiddle feature: Security cover provided

Dimensions: 1.75"h x 19"w x 8.5"d

ELF-M Specifications

Input connectors: XLR-type female

Input configuration: Balanced

Maximum input signal: 3 V (+10 dBu)

Output connectors: XLR-type Male

Output configuration: Unbalanced

ELF mode: Mono Sum

Maximum output signal: 3 V (+10 dBu)

Minimum suggested load impedance: 2.5 KOhms

Nominal ELF cutoff: 18 Hz

Concealment reduction capability: 30 dB

ELF dynamic range >95 dB (20 Hz to 20 KHz) (Band width unweighted)

Hi Pass mode: Stereo

Hi Pass filter frequency programming: Plug in resistors

Hi Pass filter slope: 12 dB/octave

Factory set Hi Pass filter frequency: -3dB @ 130 Hz/ -6dB @ 97 Hz

Hi Pass filter frequency range: 50 Hz to 200 Hz. internally changeable

Dimensions: 1 3/4"h x 19"w x 5-1/4"d