ATC SCM25A Pro

KEITH HOLLAND

The ATC SCM25A Pro is the mid-sized offering from ATC's range of loudspeakers for professional use. It is a 3-way active consisting of a 7-inch carbon/paper coned woofer, ATC's familiar 3-inch soft-dome midrange and a 1-inch soft-dome tweeter housed in a ported rectangular cabinet with in-built electronics. ATC specifies the internal Mosfet amplifiers as having 150W output for the woofer, 60W for the midrange and 25W for the tweeter, with crossover frequencies, using 4th-order filters, at 380Hz and 3.5kHz. These amplifiers endow the SCM25A Pro with a claimed maximum continuous SPL output at 1m distance of 109dB. The cabinet has external dimensions of 264mm x 430mm x 408mm and one speaker weighs 30kg. Unlike most active monitors in this class, there are no electronic equalisation switches with this model to correct for such things as room boundary proximity. Instead, ATC supplies a plastic foam 'bung' to optionally place in the port to change the low-frequency alignment. Signal input is via an XLR-type input on the rear. The vertical heat sink fins on the rear panel, along with the logo, indicate that this speaker is intended to be used in the horizontal (landscape) orientation with the woofer alongside the midrange and tweeter.

Figure 1 shows the on-axis frequency response and harmonic distortion performance for the SCM25A Pro. The response lies between +/-3dB limits from 50Hz to 18kHz except for a narrow dip at 7kHz. Low-frequency extension is very good with a 3rd-order roll-off with -10dB at around 30Hz. The dashed line shows the effect of adding the optional foam bung to the port; the response is reduced from 40Hz to 110Hz but is increased below 40Hz due to a slightly lower order roll-off. The effect is subtle, but it does allow the user to choose between the phase accuracy of a near-sealed cabinet alignment or the slightly higher power handling and lower distortion that a more 'open' port provides. Harmonic distortion performance is very good, especially considering the low-frequency extension, with the 2nd harmonic remaining below

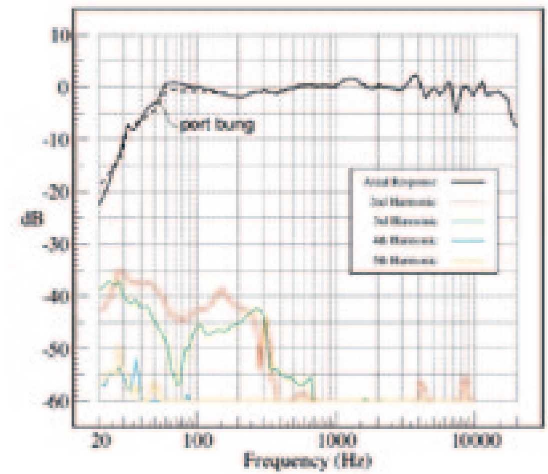

Fig. 1. On-axis frequency response and distortion.

-40dB (1%) at all frequencies above 60Hz and the 3rd harmonic above 45Hz; at 30Hz, the harmonics are both lower than -26dB (5%). The off-axis responses are shown in Figures 2 and 3 for the horizontal and vertical planes respectively. In the horizontal plane, there is some evidence of mid-range narrowing in the crossover region between the woofer and midrange, due to interference between the driver outputs, and again in the upper range of the midrange around 2kHz but otherwise the directivity is well controlled. The vertical off-axis response shows the interference notch in the crossover region between the midrange and the tweeter at around 3kHz.

The time domain response to a step input (Figure 4) shows a considerable amount of time smearing with the peak in mid-frequency output occurring about 1.5ms after the high frequencies, and the low frequencies about 8ms later. This time smearing

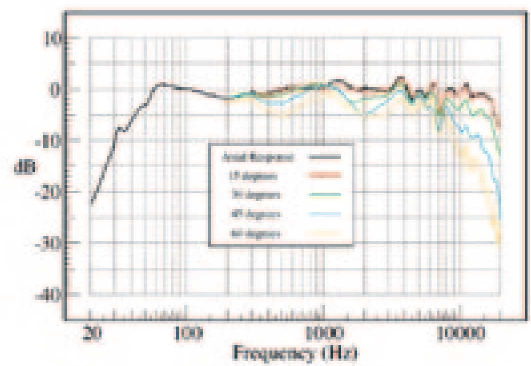

Fig. 2. Horizontal directivity.

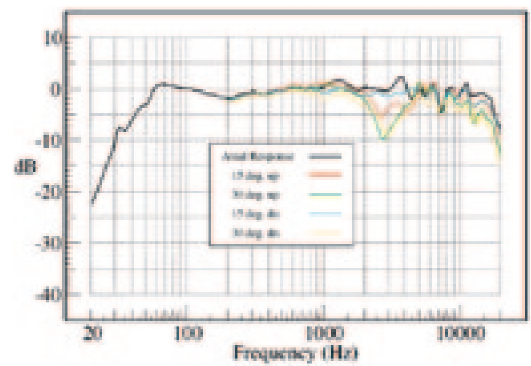

Fig. 3. Vertical directivity.

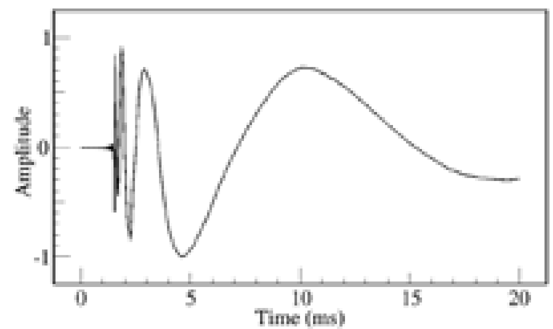

Fig. 4. Step response.

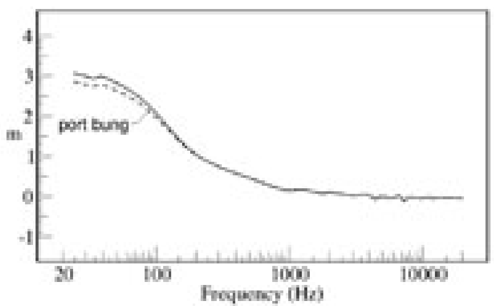

Fig. 5. Acoustic centre.

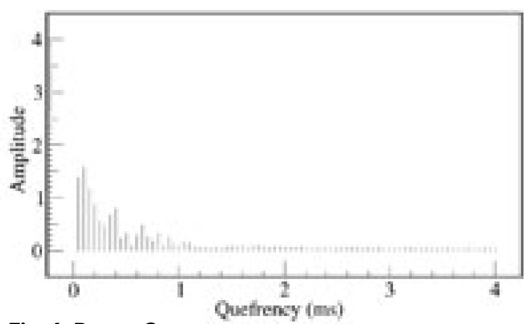

Fig. 6. Power Cepstrum.

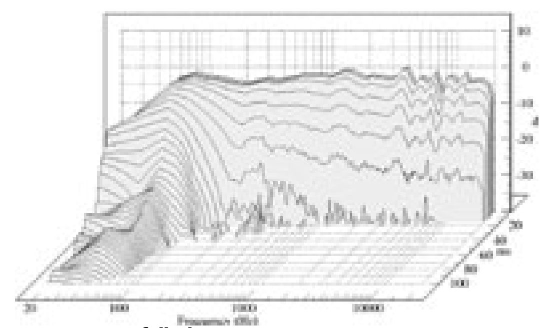

Fig. 7. Waterfall plot.

is also evident in the acoustic source position plot (Figure 5) which shows a steady shift backwards of the apparent position of the source from 1kHz downwards; however, the maximum shift is less than 3m at very low frequencies due to the low-order low-frequency roll-off and this is reduced further when the port bung is used.

The power Cepstrum is shown in Figure 6. This shows some echo/reflection activity at about 0.4ms which may be responsible for the slightly uneven high-frequency response seen in Figure 1. Figure 7 is the waterfall plot which demonstrates that the low frequencies decay rapidly initially with a slower, low-level 'tail'. There is little evidence of resonant behaviour in the mid-frequency band.

The ATC SCM25A Pro is a mix of very good and not so good attributes. The extended low frequency response coupled with a low-order roll-off, low distortion and rapid decay is very impressive, but this is compromised slightly by a smeared time response in the upper bass/lower mid range. Some users may miss the electronic equalisation controls that are commonplace on other models but often a lack of settings to twiddle with can be a blessing.

Contact
ATC, UK