Amphion Two18

KEITH HOLLAND

The Amphion Two18 is a two-way, passive monitor comprising dual 165mm aluminium cone woofers mounted above and below a 25mm titanium dome tweeter that radiates through a rigid shallow waveguide horn. Although the Two18 is a sealed box design, it is fitted with dual rear-facing passive radiators (essentially motor-less drivers), which behave acoustically in a similar way to a reflex port, but with (usually) greater area and tighter control over damping, etc. The cabinet is tall and narrow with overall dimensions of 550mm high by 191mm wide by 305mm deep and a weight of 18kg. Amphion specifies a nominal impedance of 4Ohms — so some care must be taken over the choice of power amplifier — and a power recommendation of 50W to 200W. Sensitivity is specified as 89dB SPL at 1m distance for 1W(AES) input.

Figure 1 shows the on-axis frequency response and harmonic distortion performance of the Two18. The response is commendably smooth and extended, lying within ±3dB limits

from 60Hz to 18kHz, a 3rd-order low-frequency roll-off and -10dB at about 40Hz. The harmonic distortion is measured for a nominal output level of 90dB at 1m distance. The distortion levels are refreshingly low with the 2nd harmonic lying below 1% (-40dB) at all frequencies from 40Hz upwards, except for a peak to 1.8% (-35dB) at 80Hz, and the third harmonic is below 1% at all frequencies above 40Hz.

The horizontal off-axis frequency responses are shown in Figure 2 from which it can be seen that the horizontal directivity is well controlled with the coverage angle reducing steadily with increasing frequency. The vertical off axis response (Figure 3) shows a notch at 1kHz at 30 degrees up and down which is probably due to interference between the outputs of the two woofers; however, there is no notch at the crossover from the woofers and the tweeter at the specified 1.6kHz.

The time domain performance of the Two18 is demonstrated in the step response (Figure 4), power cepstrum (Figure 5) and the acoustic source

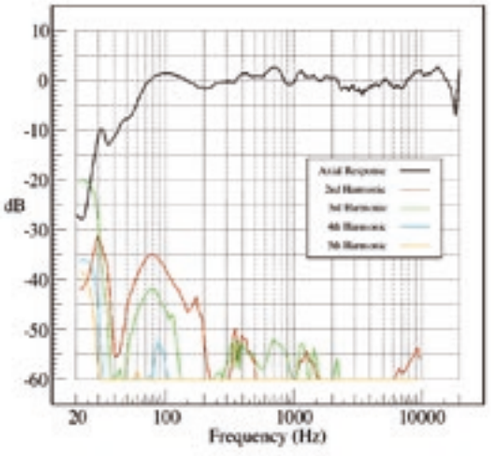

Figure 1. On-axis frequency response and harmonic distortion.

position (Figure 6), with the waterfall plot (Figure 7) showing combined time and frequency information. The response of the speaker to a step input signal shows that the drivers are fairly well time-aligned, with the peak from the tweeter occurring only 0.4 milliseconds before the woofer, and the power cepstrum shows little evidence of echoes or diffraction issues. Of particular note is the acoustic source position which moves to an apparent position only 1.3m behind the speaker at low frequencies. This is particularly impressive considering the use of passive radiators and the 3rd-order roll-off; most comparable ported speakers have low-frequency positions about 4m behind the speaker. The waterfall plot also demonstrates good low frequency response characteristics with a rapid initial decay at low

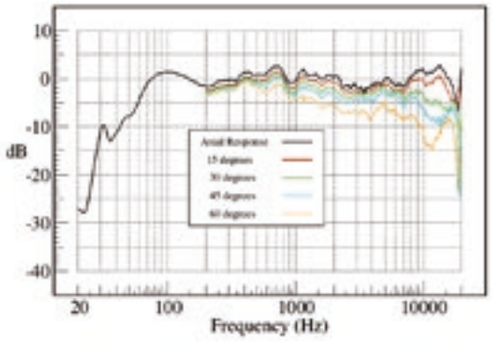

Figure 2. Horizontal off-axis response.

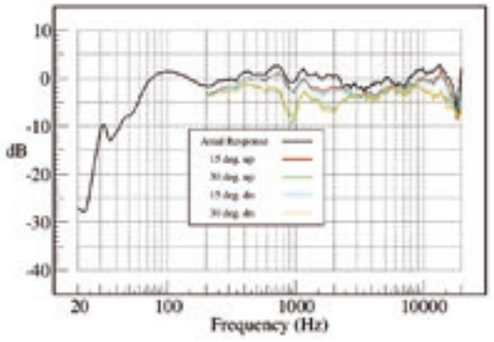

Figure 3. Vertical off-axis response.

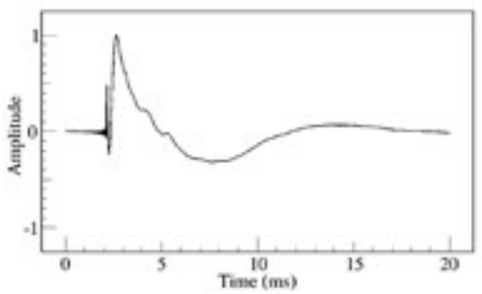

Figure 4. Step response.

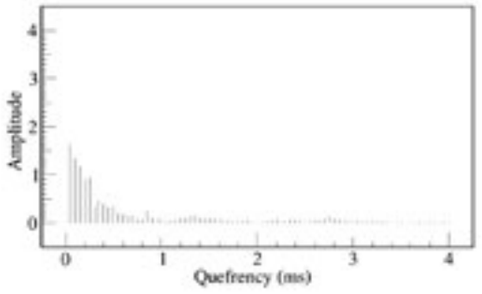

Figure 5. Power cepstrum.

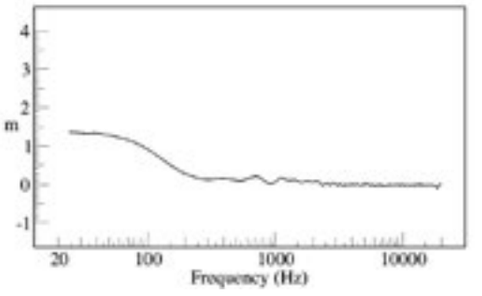

Figure 6. Acoustic source position.

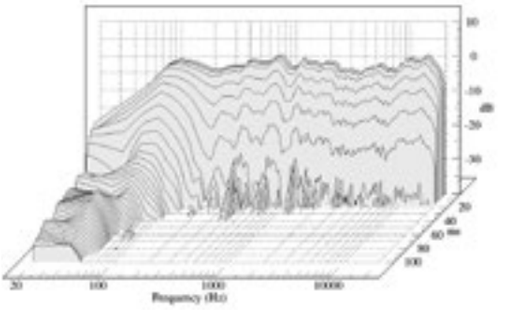

Figure 7. Waterfall plot.

frequencies to -20dB in about 30 milliseconds. A combination of these two aspects of the performance should ensure that the low-frequency parts of transient signals are handled extremely well. There is some evidence of resonance activity in the waterfall plot at 400Hz, but this is low in level.

Overall the Amphion Two18 is an impressive monitor. The designers have managed to combine an extended low frequency response with low distortion without compromising low-frequency transient behaviour; a commendable feat. The off-axis responses are also well controlled and, in short, this loudspeaker appears not to fall down on any aspect of performance covered in this review.

Contact

AMPHION, FINLAND
Web: www.amphion.fi