Quested S6

KEITH HOLLAND

The Quested S6 is a small, 2-way, active loudspeaker and as such represents a departure from the large, high-powered monitors for which Quested is best known. It consists of a 5-inch (127mm) woofer and a 1.1-inch (28mm) dome tweeter housed in a sealed cabinet. The power amplifier, crossover and equalisation electronics are all housed within the cabinet, which has outside dimensions of 170mm wide by 282mm high by 240mm deep and a weight of 7.5kg. Quested specifies power output capabilities of 65W RMS for the low frequencies and 45W RMS for the high frequencies, giving a single loudspeaker a claimed maximum output capability of 104dBC at 1m using a pink noise signal and 116dBC for a pair of loudspeakers with music. The crossover frequency is specified as 1.19kHz and incorporates low-frequency (45Hz) and high-frequency (75kHz) protection filters. Both drivers have magnetic shielding. The rear panel has a combined XLR/¼-inch jack input along with a control for input sensitivity (-12 to +6dBu for 96dB SPL at 1m) and 3-position DIP switches for LF EQ (0, -2, -4dB at 80Hz) and HF EQ (+2, 0, -2dB at 10kHz). This review was conducted with both EQ controls set to 0dB.

Figure 1 shows the on-axis frequency response for the S6. The response is somewhat uneven but is held within ±3dB limits from 75Hz to 2.5kHz, above which it is seen to fall gradually to about -6dB at 15kHz. This 'inverted V' shaped frequency response is common to many small monitors and may sometimes be preferred to a flat response when the loudspeaker

is mounted on a meterbridge, for example. The low-frequency roll-off appears to be 5th- or 6th-order, due to the LF protection filter, with -10dB at around 60Hz; a respectable figure for a loudspeaker of this size.

Also shown on Figure 1 is the harmonic distortion produced by the loudspeaker while generating 90dB at 1m distance. The 2nd and 3rd harmonics are seen to reach levels of greater than -25dB (6%) at frequencies

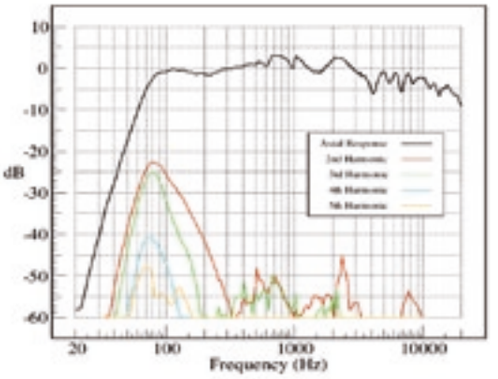

Fig. 1. On-axis frequency response and harmonic distortion.

below about 80Hz, which are high compared with similar loudspeakers. The 2nd harmonic falls below -40dB (1%) for all frequencies above 200Hz and the 3rd above 120Hz. The relatively high levels of distortion at low frequencies are due in part to the use of a sealed cabinet. Many similarly-sized loudspeakers incorporate a reflex port that serves to reduce cone excursion, and hence distortion, at low frequencies often at the expense of some phase response accuracy. Figures 2 and 3 show the horizontal and vertical off-axis response. The directivity is seen to be very wide, extending out to 60 degrees at all frequencies up to about 8kHz, with no evidence of lobing and only subtle evidence of a crossover-related notch at 30 degrees down.

The time-domain response of the S6 is demonstrated in the step response (Figure 4), the acoustic source position (Figure 5) and the power cepstrum (Figure 6). The step response shows that the high frequency part of the step occurs around 500 microseconds

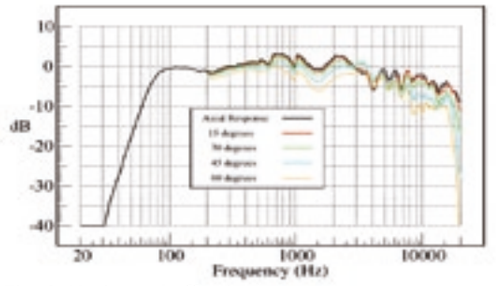

Fig. 2. Horizontal off-axis response.

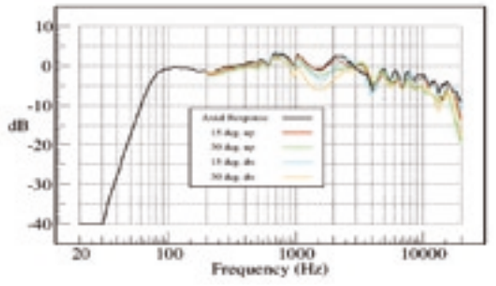

Fig. 3. Vertical off-axis response.

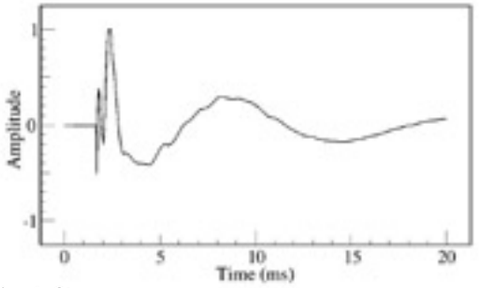

Fig. 4. Step response.

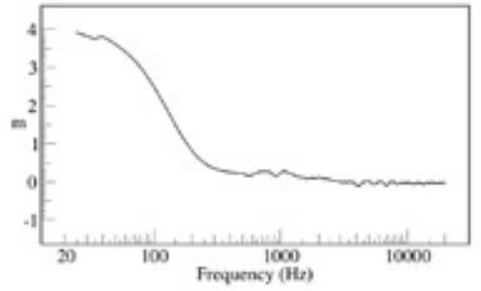

Fig. 5. Acoustic source position.

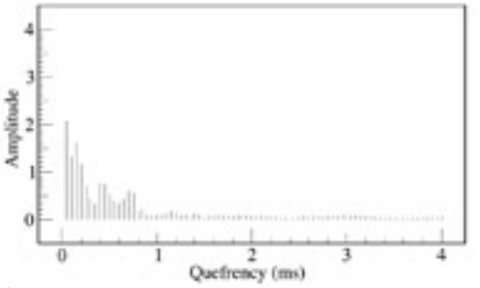

Fig. 6. Power cepstrum.

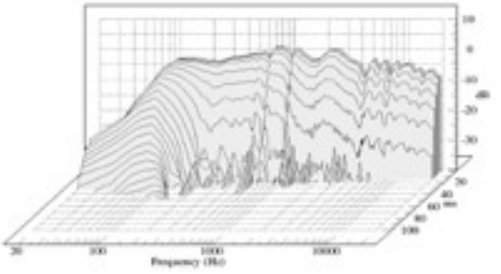

Fig. 7. Waterfall plot.

before the mid frequency part. This is due to the crossover and is typical of many 2-way loudspeakers. The acoustic source position is seen to effectively shift as far as 4m behind the loudspeaker at low frequencies due to the rapid low-frequency roll-off. This may compromise the accuracy of reproduction of transient signals.

The power cepstrum shows up any echoes or reflections in the response and may therefore be useful for determining the cause of response irregularities. There is some evidence of an echo after about 150 microseconds and to a lesser degree after 400 and 700 microseconds which may be cabinet edge diffraction effects. The waterfall plot (Figure 7) gives a view of the combined time/frequency response of the loudspeaker. Apart from some evidence of low-level resonances between 180Hz and 600Hz, the response is seen to decay evenly and rapidly. Of particular note is the fast decay at low frequencies, which is unusual with a 6th-order roll-off.

To sum up, the Quested S6 is a very good performer for a small loudspeaker. The choice of a sealed cabinet may compromise the low-frequency distortion performance but it does result in a well-behaved phase response so the speaker does not exhibit the low-frequency ringing that characterises many of the more common ported designs. The frequency response is not particularly flat or smooth, but it is very well-controlled at all angles off-axis.

Contact

QUESTED, UK:
Website: www.quested.com