KRK Exposé E8B

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The KRK Exposé E8B is a medium-sized, two-way active loudspeaker consisting of an 8-inch (200mm) woofer having a woven Kevlar/Rohacell (hard foam) sandwich construction and a 1-inch (25mm) tweeter with a beryllium/aluminium composite inverted dome. The drivers are mounted in vertical orientation on a very heavily-constructed ported cabinet with non-flat walls. The power amplifiers, electronic crossover and equalisation circuits are all contained within the cabinet with the heatsinks forming part of the sides of the cabinet which, along with the non-flat cabinet walls and yellow woofer cone, gives the E8B a very distinctive look.

The rear panel contains the usual IEC mains socket and switch along with an XLR-type balanced-line input socket and a number of clearly laid out, easy to use controls. These are HF Shelf, with seven positions from -1dB to +2dB at 10kHz, HF Level Adjust, with seven positions from -2dB to +1dB at 1.9kHz, LF Adjust with three settings for 'whole space', 'half space' and 'quarter space' (-3dB at 40Hz, 48Hz and 62Hz respectively) and System Level Adjust with a range of -30dB to +6dB. This review was conducted with the HF controls set to 0dB and the LF control set to 'whole space'. The two power amplifiers are both rated at 120W and are claimed to endow a single loudspeaker with a maximum SPL of 112dB on music programme. The cabinet has external dimensions of 490mm high by 370mm wide by 355mm deep, and weighs a substantial 30.4kg.

Figure 1 shows the on-axis frequency response of the KRK E8B. The response is seen to lie within ±4dB from 48Hz to 20kHz with a 6th order low-frequency roll-off that reaches -10dB at around 35Hz. The response is generally smooth except for the frequency range between 400Hz and 1.2kHz which has a raised response with a sharp dip at 600Hz. Also shown on Figure 1 is the harmonic distortion produced by the loudspeaker with a reproduce level equivalent to 90dB SPL at 1m distance. The distortion is remarkably low with a peak to -40dB (1%) second harmonic and -46dB (0.5%) third harmonic at 60Hz falling rapidly to better than 56dB (0.18%) between 100Hz and 5kHz. The off-axis responses are shown in Figures 2 (horizontal) and 3 (vertical). There is a dip at 2kHz in the vertical off-axis responses that is due to interference between the outputs of the woofer and the tweeter at the crossover frequency; this is characteristic of most designs using spatially-separated drivers. Otherwise the off-axis response is fairly well controlled with only slight narrowing in the upper frequency range of the woofer.

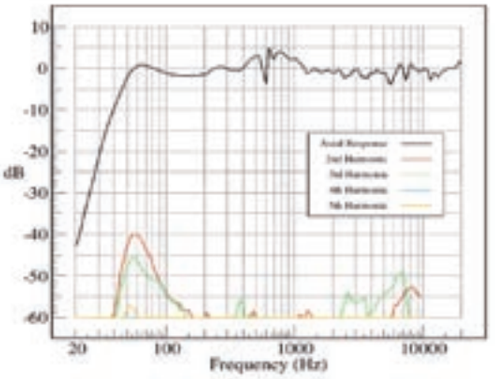

Fig. 1. On-Axis Frequency Response and Harmonic Distortion.

The step response of the E8B is shown in Figure 4. This plot demonstrates reasonable time alignment between the drivers with the mid frequency components rising some 600 microseconds behind the high frequencies. Also evident is some mid-frequency ringing that is probably due to the sharp dip in response at 600Hz noted above. The acoustic source position plot (Figure 5) shows the low frequency components of transient signals to be effectively radiating from a position 3.5m behind the mid and high frequencies. This is a consequence of the phase shifts due to the 6th order roll-off. Figure

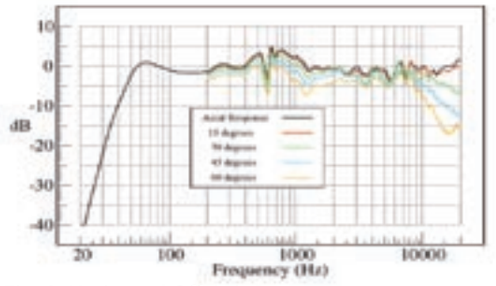

Fig. 2. Horizontal Off-Axis Response.

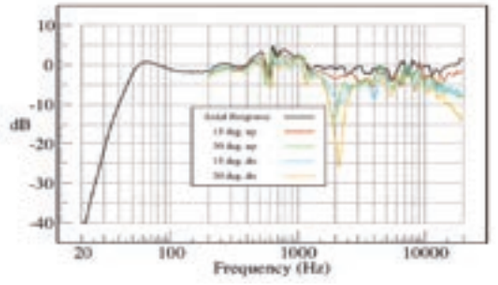

Fig. 3. Vertical off-Axis Response.

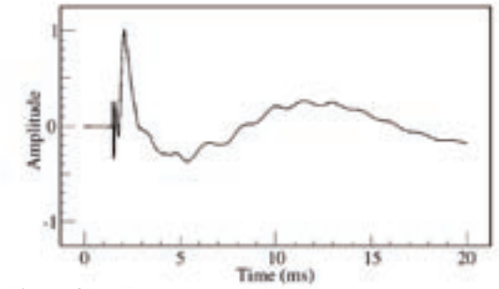

Fig. 4. Step Response.

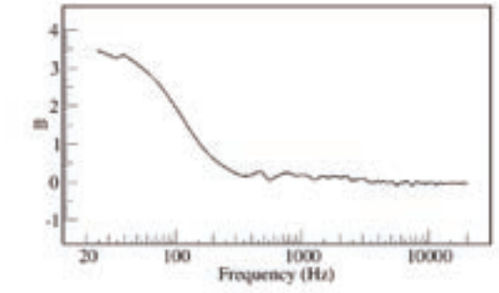

Fig. 5. Acoustic Source Position.

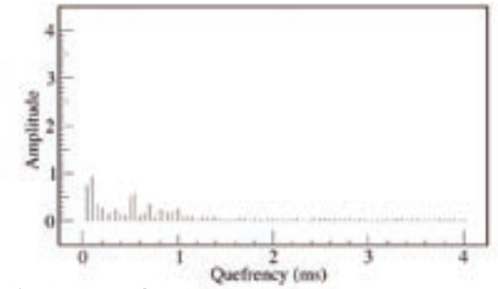

Fig. 6. Power Cepstrum.

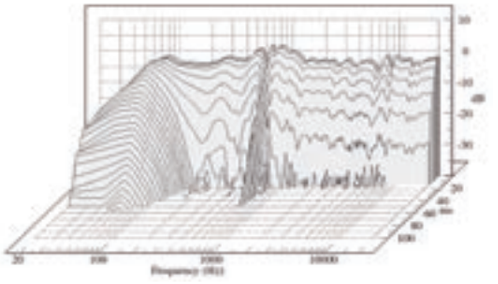

Fig. 7. Waterfall Plot.

6 shows the power cepstrum response. This plot shows little activity except for a slight echo after about 550 microseconds. Figure 7 is the waterfall plot for the KRK. The most notable feature of this plot is slow decay at around 600 to 700Hz that corresponds to the sharp dip in frequency response and time-domain ringing noted above. The decay at low frequencies is, however, very fast for a loudspeaker with a 6th order roll-off.

Overall the KRK E8B is a good performer. The harmonic distortion levels are excellent and the time domain responses show evidence of a fairly good transient response. However, these attributes are let down somewhat by the uneven mid-frequency response that is equally evident as ringing in the time domain. It is interesting to compare these results with those published for an earlier model, the KRK V8 (*Studio Sound*, May 2000). The low-frequency alignment and cabinet design is quite different, with the E8B having a more rapid decay at low frequencies, and the tweeter is also different. However, the woofer appears to be common to both loudspeakers and the same mid-range response problem is clearly evident in both designs. As noted in the earlier review, considering the frequency range within which these aberrations lie, and the general smoothness of the response elsewhere, it is probable that these response irregularities would be audible on many types of programme material. ■

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