

Focal Twin6 BE

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The Focal Twin6 Be is a three-way active speaker consisting of two 6.5-inch woofers and an inverted dome tweeter. The woofers are described by Focal as 'W cone sandwich composite drivers' and, although they share the low frequencies, the mid frequencies are reproduced by only one driver; a rear-mounted switch selects which one handles the mid frequencies so that similar speakers can be configured for left or right orientation. There is no dedicated option for centre-channel use. The inverted dome tweeter has become something of a Focal hallmark, and this technology has been extended to produce what Focal claims is a 'world first' pure-beryllium tweeter dome, in contrast to other manufacturers' Beryllium alloy or composite products. Use of this material extends the frequency response of the tweeter to a claimed 40kHz (the measurements in this review are limited to 20kHz so this claim has not been verified here).

The cabinet is a ported design with slot-shaped ports at the ends of the front panel and built-in crossover, equalisation and power amplifier electronics. Focal specifies 2 x 150W amplifiers for the woofers and 100W for the tweeter endowing each speaker with a claimed maximum SPL of 115dB peak at 1m. The rear panel contains an IEC mains socket and switch, mid-



range driver selection switch, rotary equalisation controls for high frequency (+/-3dB) and low-frequency (+/-6dB) and an input sensitivity switch (+4dBu/-10dBV). This review was conducted with both equalisation controls set to 0dB. The speaker has external dimensions of 250mm high by 500mm wide by 340mm deep and weighs 14kg.

Focal recommends that the Twin6 Be is used in the horizontal, landscape orientation but does state that vertical, portrait orientation is an option (see below).

The On-axis frequency response of the Focal Twin6 Be (Figure 1) is commendably smooth and flat lying between +/-2dB limits from 48Hz to 17kHz. Low-frequency response is seen to be 10dB down at 37Hz with a 6th-order roll-off, indicating the use of an electronic high-pass protection filter. Also shown in Figure 1 is the harmonic distortion produced when the speaker is reproducing tones at a level of 90dB SPL at 1m distance. The distortion performance is very good with the second harmonic below -40dB (1%) at all frequencies above 50Hz and the third harmonic below -46dB (0.5%) above 40Hz. Figures 2 and 3 show the off-axis frequency responses for this speaker. A comparison between these two plots leads you rapidly to the conclusion that the vertical directivity

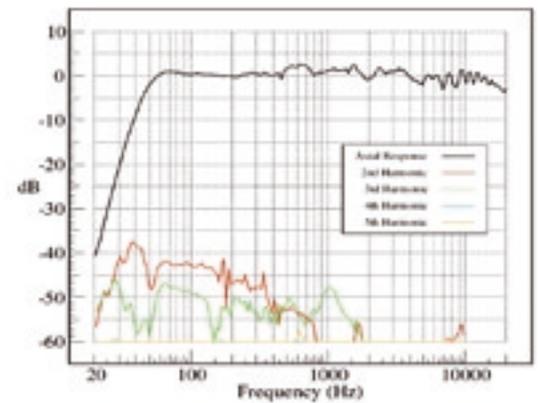


Fig. 1. On-axis frequency response and harmonic distortion.

is far better than the horizontal directivity. The frequency response in the vertical plane is excellent and maintained within 3dB of the on-axis response throughout almost the entire bandwidth for all angles within +/-30 degrees, whereas the horizontal response shows interference dips at 800Hz and 2.2kHz which are clearly evident at all angles. These notches are typical for a speaker with horizontally-spaced drivers due to destructive interference between the sound radiated by more than one driver, and do indicate that the 'crossover' to a single driver for the mid-range has not eliminated this directivity problem entirely. These off-axis results suggest that for many users, the vertical, portrait orientation option may well prove the most acceptable, particularly if some listening is carried out off-axis.

The step response for the Twin6 Be is shown in Figure 4 and demonstrates a rapid rise, with a delay of around 500 microseconds between the high- and mid-frequency parts. This response is as good as many

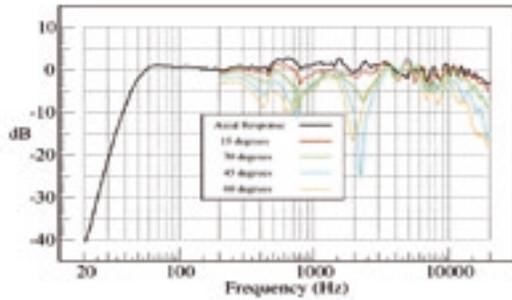


Fig. 2. Horizontal off-axis response.

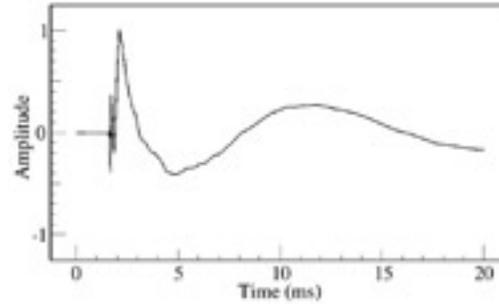


Fig. 4. Step response.

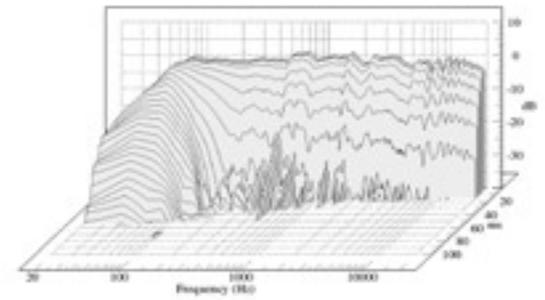


Fig. 6. Waterfall plot.

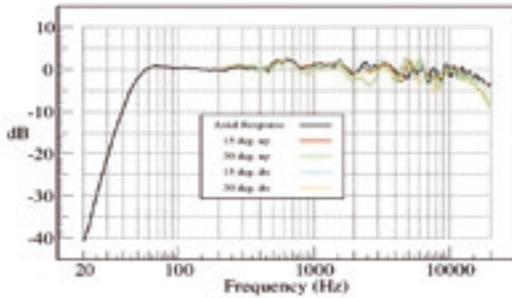


Fig. 3. Vertical off-axis response.

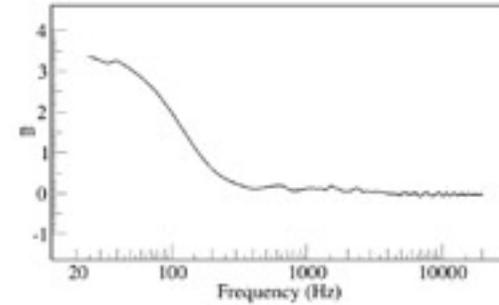


Fig. 5. Acoustic source position.

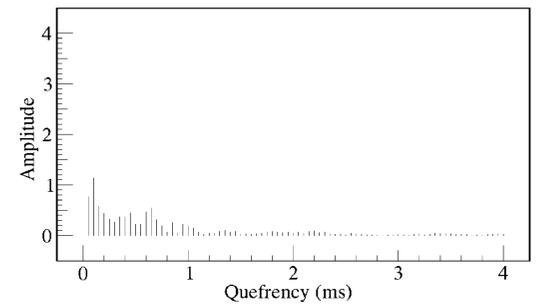


Fig. 7. Power cepstrum.

two-way systems and considerably better than most three-way systems which are often compromised in this aspect of performance. Figure 5 shows that the acoustic source position is around 3m behind the speaker at low frequencies. This is typical for speakers having high-order low-frequency roll-offs, brought about by the adoption of bass reflex cabinet design and an electronic protection filter. Another aspect of the low-frequency transient response is shown in the waterfall plot of Figure 6. Here it is seen that the low frequencies decay very rapidly considering the steep

low-frequency roll-off. Most loudspeakers of this size, with the bass extension and low distortion of this design, suffer from considerably slower decay at low frequencies. Also shown in the waterfall plot is some evidence of low-level resonances at around 500Hz. The power cepstrum (Figure 7) shows very little echo or diffraction activity which is borne out by the smooth frequency response.

The Focal Twin6 Be is an impressive performer. The frequency response and distortion performance is first class, and this has been achieved without too much

compromise in transient response. The issue raised about landscape versus portrait orientation may be important as some users may be put off trying the latter, which may prove the better choice. Overall, the Twin6 Be is a very well thought out speaker that deserves to feature on many people's short list for audition. ■

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