

Paradigm Founder 40B review

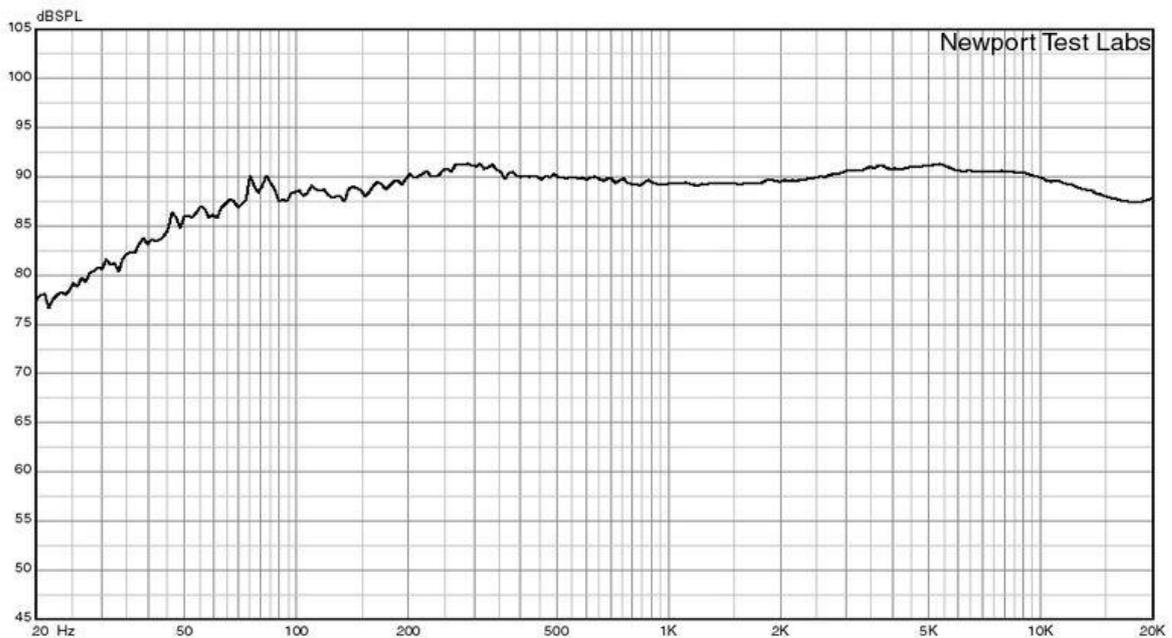
The speakers a reviewer would buy! *Tested at £2400 / \$2200 / AU\$3900*

By [Australian Hi-Fi](#)

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In-depth laboratory test report

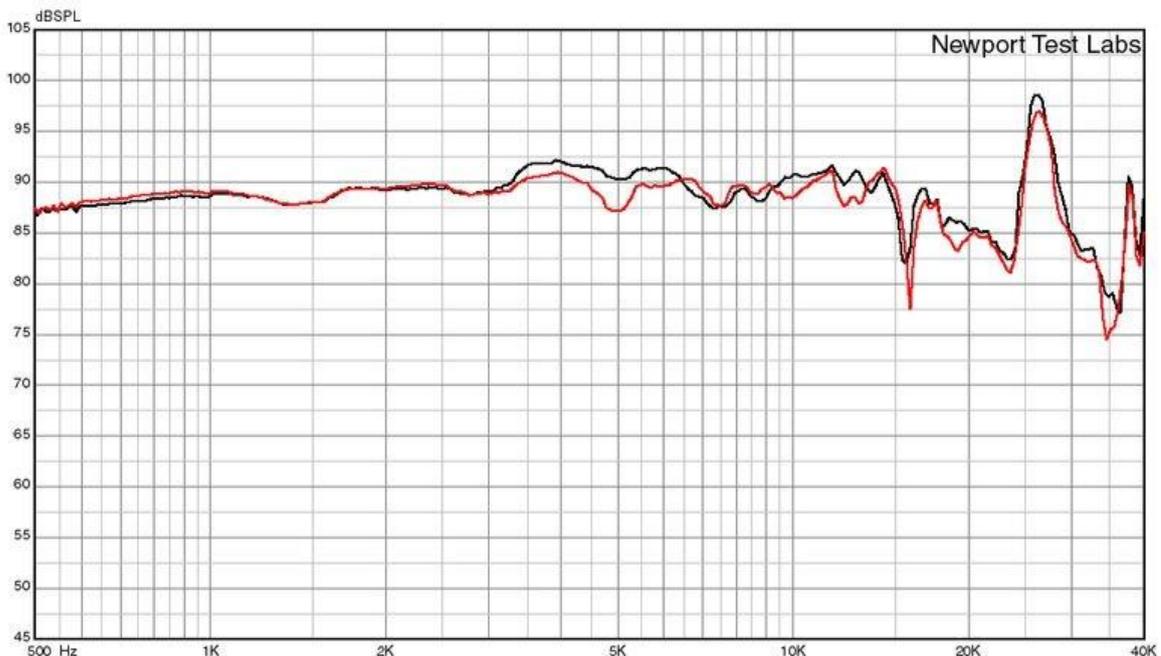
Newport Test Labs first tested the in-room frequency response of the Paradigm Founder 40B speakers, using a pink noise test signal, the result of which is shown in Graph 1, below.



Graph 1. Averaged in-room frequency response.

You can immediately see from this graph that the frequency response returned by the Paradigm Founder 40B was incredibly flat and linear and also well-extended at both ends of the audio spectrum. Across the region from 200Hz to 10kHz, which includes everything from the upper bass to the extreme treble, the response is essentially within ± 1 dB. It's not so long ago that you wouldn't get as at a response from an amplifier!

You can see that above 10kHz the response rolls off very slightly, to be 2.5dB down at 20kHz, but it's obvious that it's starting to rise again above 20kHz, as we'll see in Graph 2. Below 200Hz you can see the response rolls off around 2.5dB to 140Hz, at which level it basically shelves down to 65Hz, after which it rolls off very smoothly and gently.



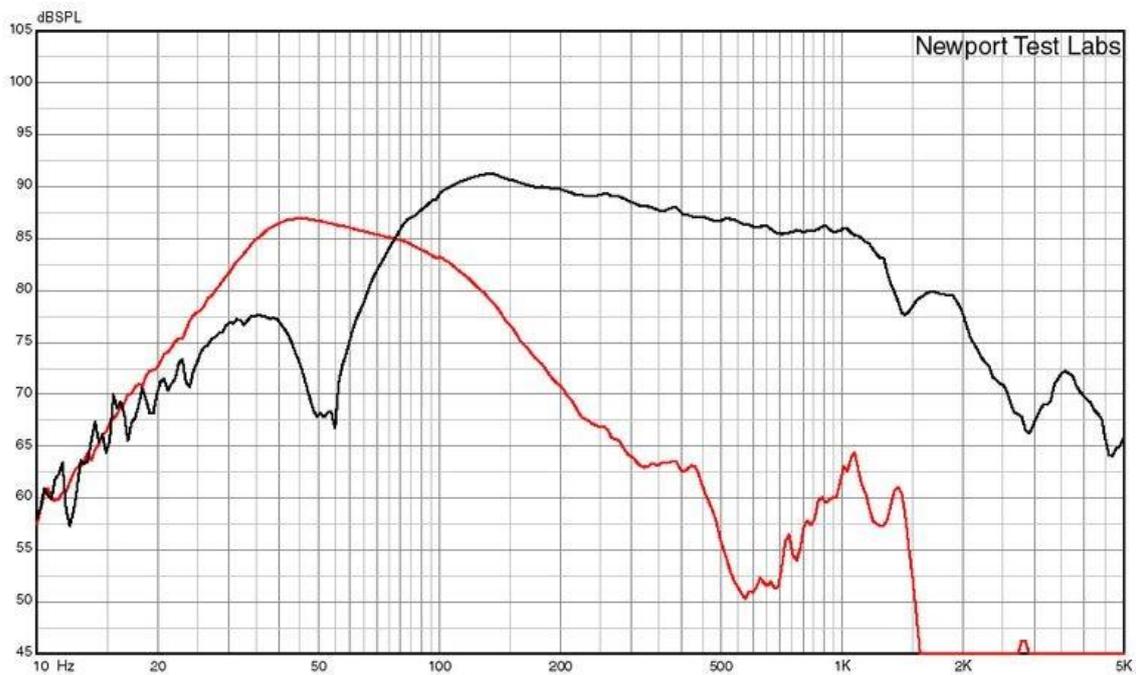
Graph 2. Anechoic high-frequency response with grille off (black) and on (red).

Graph 2 shows the Paradigm Founder 40B's high-frequency response, as it would be measured anechoically, so there are no room effects at all, using an incredibly precise measurement technique that delivers an enormously detailed response. Newport Test Labs made the measurement twice: once with the grille off (the black trace) and again with the grille in place (the red trace).

The increased detail of this measurement technique allows us to see that there's a tiny suck-out in the response at 16kHz that is somewhat sharper and deeper with the grille on than it is with the grille off. This is, however, of no account since the bandwidth is too narrow for the human ear to perceive (not to mention as well as the frequency being far above the highest note any instrument can play).

You can see on this graph that the Paradigm Founder 40B's frequency response actually extends fairly far out to 14kHz, after which there's the dip, after which it again rolls off to 23kHz at which frequency we can see a large tweeter resonance that peaks at around 26kHz. There's then another resonance at 38kHz and then yet another that peaks higher than 40kHz.

The main high frequency resonance at 26kHz is presumably caused by the tweeter's metal dome itself while the two higher-frequency resonances are presumably caused by the metallic PPA lens that covers it. However, you can safely ignore them all, because all occur at frequencies far above the limit of human hearing (typically 20kHz for those under 30 years old, and decreasing with increasing age).

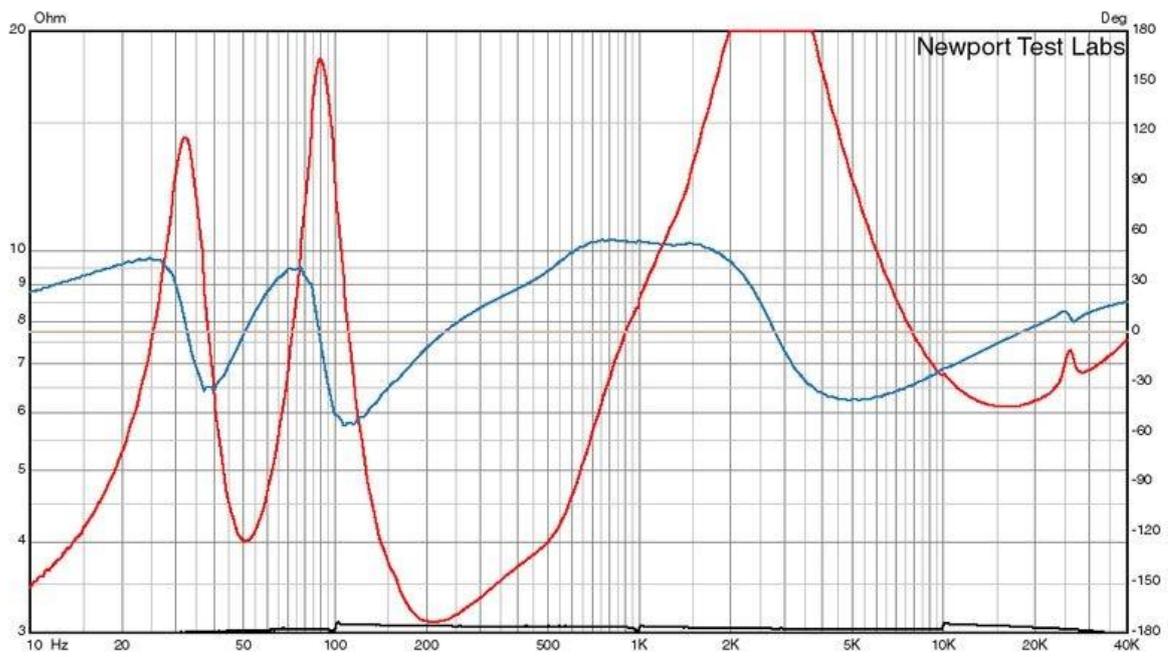


Graph 3. Near-field low-frequency resp. of bass reflex port (red) and bass/mid driver (black).

Graph 3 shows the low frequency response of the Paradigm 40B as measured by Newport Test Labs using a near-field technique that simulates the response that would be obtained measuring the speakers in an anechoic chamber, and allows the lab to separate the output of the bass/midrange driver (the black trace) from that of the rear-ring bass reflex port (the red trace).

You can see that the bass/midrange driver's response starts rolling off quite steeply below 100Hz to a minima at 55Hz, before rising a little to 30–40Hz before then rolling off again. You can also see that the port's output is compensating for this by rising smoothly and steeply from 20Hz to peak between 40 and 50Hz, before rolling off fairly shallowly to 100Hz, then steeply thereafter.

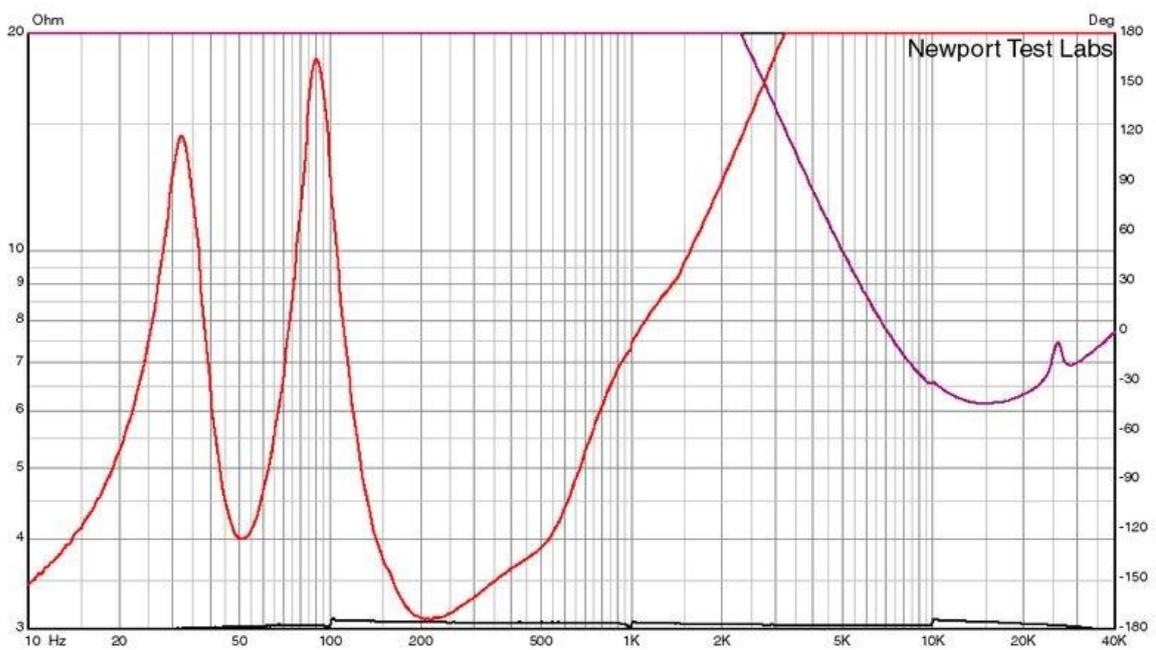
There is a little unwanted high-frequency leakage evident through the port at around 1kHz, but it's so low in level that it would not affect the output from the bass/midrange driver.



Graph 4. Impedance modulus (red) plus phase (blue) with ref. 3ohm calibration trace (black).

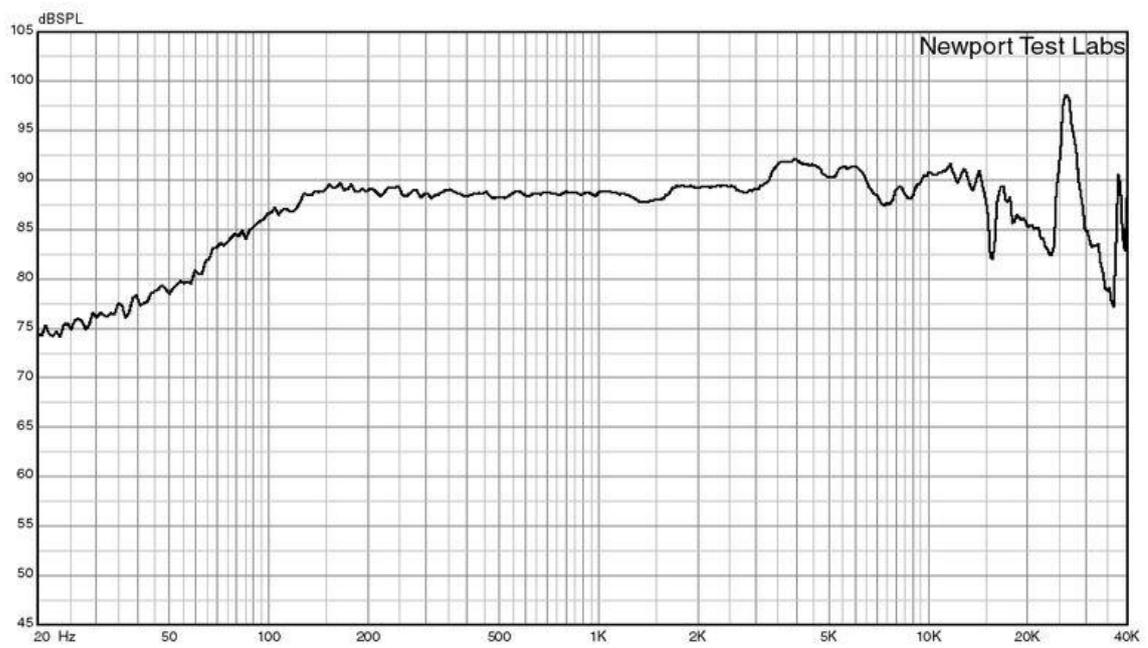
The impedance modulus of the Paradigm Founder 40B as measured by Newport Test Labs is shown as the red trace in Graph 4, with the phase angle measured shown as the blue trace. You can see that when Paradigm’s specification states that the speakers are ‘Compatible with 8Ω’ this seems to be a way of avoiding mention of the fact that the impedance dips below 4Ω between 190Hz and 500Hz, with a minimum of around 3.1Ω at 210Hz. Under IEC guidelines, the ‘nominal’ impedance of the Founder 40B would be 4Ω, suggesting that any amplifier used to drive them should be capable of driving 4Ω loads. Despite the low impedance at low frequencies, the Founder 40B will present an easy load to the amplifier, because the phase angle is benign over the same frequency range.

The impedance trace shows that you shouldn’t expect any real acoustic output from the speaker below 50Hz and that there are no cabinet resonances. You can see the effect of the primary tweeter resonance at 26kHz, while the absence of resonance effects above this would suggest that the higher resonances on the frequency response are indeed coming from the tweeter’s PPA lens, as noted earlier in this test report.



Graph 5. Impedance lo-pass (red) plus hi-pass (purple) with ref. 3 ohm calibration trace (black).

Graph 5 shows the impedances you can expect to be presented to your amplifiers if you separate the high and low sections of the speaker by removing the jumper bridges from the speaker terminals and that the electrical crossover frequency is at around 2.8kHz, somewhat higher than the 1.6kHz stated in Paradigm’s specifications.



Graph 6. Anechoic frequency response, measured at 1 metre on tweeter axis.

Graph 6 shows the overall frequency response of the Paradigm Founder 40B that was obtained by splicing the low-frequency in-room response to the anechoic high-frequency response. This shows that Newport Test Labs measured its Founder 40B's frequency response as 75Hz to 23kHz \pm 4dB. This is not quite a match for Paradigm's own specification of 69Hz–23kHz \pm 2dB, but it is remarkably close.

Newport Test Labs measured the sensitivity of the Paradigm Founder 40B as being 88.5dB SPL at one metre for 2.83Veq under its standard test conditions, which is a higher-than-usual result for a small bookshelf/standmount design, and therefore an excellent result, as well as being only just shy of Paradigm's own specification of 90dB SPL.

All the tests and measurements performed on the Paradigm Founder 40B by Newport Test Labs prove that it has superb drivers and has been outstandingly well-designed.

Australian Hi-Fi

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