"... HUGELY SATISFYING ... superbly linear ... extraordinarily clean ... effortless delivery ..."

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"... absolutely outstanding speakers ... will provide sterling service — and will do so for a remarkably small outlay."

by Chris Croft

Paradigm is not one of those manufacturers content to design a speaker then manufacture it unchanged until the tooling wears out. It instead constantly tweaks, upgrades and even re-engineers its models to improve their sound or the technical performance (power handling, etc.) or just to cut costs, its "Monitor" series is a case in point. I know for a fact that Paradigm has been constantly revising this current generation for at least eight years, and there's been a Monitor Series speaker in Paradigm's range for nigh on thirty years!

THE EQUIPMENT

Paradigm also has never shied away from building decent sized loudspeakers and the 110-cm tall Monitor 11 should be all the evidence you need of this!

I should explain that when I say "decent sized" I am actually lamenting the modern trend of most loudspeaker manufacturers to make their speakers smaller and smaller, which they usually justify on the basis that "our customers like the idea of small speakers". Sure customers like the idea of small speakers, but once you've proved to them that small speakers can't possibly deliver deep bass, can't play as loudly as larger speakers and will have higher levels of distortion when you try to play them at an equivalently high volume as larger speakers, it's my experience that those self-same customers suddenly begin to see the virtues of larger speakers. Put it this way ... I like the idea of being able to tow a caravan with my Hyundai Getz, but I know that it's not a good idea. But don't be imagining the Monitor 11's will tower over your head: 110 cm is only a little over a metre high, so they're what I'd call a "comfortable" size ... probably too large for a bed sitter, but they'll easily slot into any ordinary sized living room. As for their other dimensions, well they're 215 mm wide and 40 mm deep, which gives a volume of around 61 litres. You can gauge a fair idea of the build quality from the weight: each speaker tips the scales at around 25 kg!

If you have already pecked at the price (and I am aware that you probably already have!) you may be wondering how Paradigm can build what appears to be either a four-driver, four-way floorstander, or a four-driver, three-way floorstander, for this kind of money. The quick answer

is that it's neither. Yes, there are four drivers on the front panel, but the design is a 2-1/2-way design, using a second-order electro-acoustic crossover at 600 Hz and a 3rd order at 2.3 kHz. This simplifies the crossover network enormously and, because it cuts the component count and reduces the values of the components, it cuts costs. Apparently, quality control is also easier with a 2-1/2-way than with a three-way, which means they're less expensive to mass produce.

The two bass drivers, which operate in parallel, have 190-mm diameter, carbon-infused polypropylene cones, driven by 25-mm diameter high-temperature multi-layer voice coils wound on "Apical" formers. The cones are supported by die-cast chassis, rather than by pressed steel. The distinctively coloured bass/midrange driver (well, actually, the high hysteresis butyl suspension is an off-white, nearly cream colour and the cone is semi-translucent polypropylene that appears to be tinged with a creamy colour) also has a diameter of 190 mm. This cone is what Paradigm calls an "M-ICP" type, which essentially means that the cone has been designed in such a way that it has the lowest mass possible for its size and application. The letters actually stand for "Minimum Mass Injection Moulded Co-polymer Polypropylene."

"… superbly linear and well extended in both the deep bass and the highest treble … midrange is extraordinarily clean."

The tweeter is a 25-mm "H-PTD" dome. Again those letters! This time around, the letters stand for "High Efficiency Pure-Titanium Dome." Protecting the dome is a grid that doubles as a wave guide.

What all this means is that at low frequencies (below 600 Hz), all three cone drivers deliver bass, which means the total cone area available for bass is about the same as if Paradigm had used a single 328-mm driver … and that's big! Between 600 Hz and 2.3 kHz the cream-coloured driver operates all on its own, so there aren't any phase-related problems, and you get a clear point around which your ears can recreate the stereo image. Above 2.3 kHz, the tweeter's on its own, but since this is quite a high crossover point, it enhances the power handling capability of the tweeter, so that it's able to handle more power than if Paradigm had chosen a lower crossover point.

At a time when loudspeaker manufacturers all around the world seem to be moving their production to China, Paradigm is one of the few bucking the trend. Not only is R&D based in Canada, but also all its manufacturing. Paradigm not only designs and builds all its own drivers, but also its own cabinets.

"… effortless delivery continued even when I switched to a very low-powered single-ended valve amp … obviously highly efficient … excellent results in terms of both volume level and sound quality."

PERFORMANCE

It took me a few moments longer than usual to set up the Paradigm Monitor 11's in my listening room, because once you've extracted them from their cartons, you need to fit the four plastic "outrigger" feet to ensure stability. It's simple, but it needs to be done. As with all speakers that have rear-firing bass reflex ports, the Monitor 11's like a little room to breathe around the back, so don't shove them up against a rear wall. I found that so long as they're at least 100 mm from a rear wall, the bass is great, so Paradigm's engineers have obviously taken room acoustics into account during the design process.

I found the sound of the Paradigm Monitor 11's to be superbly linear and well extended in both the deep bass and the highest treble, but what most caught my fancy was the effortless way the sound was delivered into my room. Initially I thought this was partly because I was listening with my usual, very high-powered, amplifier, but the effortless delivery continued even when I switched to a very low powered single-ended valve amplifier, so the speakers are obviously highly efficient. I also tried them with a low-powered Class D amplifier, which I keep as a "trial horse" even though as a rule (so I admit there are exceptions!) I am not enamoured of the sound of Class D, and achieved excellent results in terms of both volume level and sound quality. The midrange is extraordinarily clean. I must admit I was expecting it to be a bit "full sounding" because of the size of the cone, which is certainly larger than is usual for a midrange. One of my test vehicles for establishing this was the voice of k.d. lang, which I listened to intensively through the Paradigms for this review, partly because I love her voice, but also to prepare myself to hear her voice live during her upcoming Australian tour. I think her latest album (*Watershed*) is her best self-penned effort yet, though I think her overall best CD is most definitely *Hymns from the 49th Parallel*. Oddly enough, it was only when writing this review that I realised the synergy between listening to a Canadian singer through Canadian loudspeakers—I hadn't consciously realised this at the time I was actually auditioning!

The deep bass from these speakers will impress even subwoofer fans, not simply because it goes so deep but also because it remains clean and undistorted even at high playback levels. It's also really fast, so I never had any sense of the bass lagging behind, which of course is probably because of the relatively small diameter of the drivers. There's an underpinning solidity to the Monitor 11's bass that is hugely satisfying when playing all music, but most particularly when playing orchestral symphonic works, where the speakers really get a firm grip on delivering the low strings and tympani as well as the "acoustic" of the hall in which the work was recorded. Even if you're not into symphonic works, the low-end solidity will help inform your musical enjoyment, particularly of groups that use doublebass and/or low-pitched synths. As for drum sound, just try the Liberty Fanfare from the Wilson Audiophile CD *Winds of War and Peace* but it's equally impressive with *Dark Side of the Moon* (any version will do, but on SACD for preference!). Listen to the whole CD, of course, but concentrate your mind particularly when "Speak to Me" and "Time" come around.

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I particularly enjoyed the high-frequency sound of the Monitor 11 because I think Paradigm has actually lifted the level ever so slightly, so the overall tonal balance is a little more forward than on several other of its models, and this has resulted in an airier, more translucent sound. This is pure supposition on my part, of course. It might also be that I am more used to hearing this particular Paradigm tweeter

in two-way configurations, where maybe it's having to work a bit harder as a result of a lower crossover point or maybe just has different components in the crossover. Ultimately, it's not the technicalities of what's going on, but the resulting sound quality, so let me say that irrespective of the background mechanisms in play, the treble sound from the Monitor 11 will not disappoint.

"… an underpinning solidity … firm grip on delivering the low strings and tympani as well as the 'acoustic' of the hall … airier, more translucent sound."

CONCLUSION

As I hope I have made crystal clear in this review, Paradigm's Monitor 11's are absolutely outstanding loudspeakers, that will provide sterling service in any two-channel (stereo) high-fidelity system … and will do so for a remarkably small outlay. However, those who are looking to use them in a home theatre system will be pleased to learn that other speakers in Paradigm's "Monitor" series have been voice matched by Paradigm's designers so they will integrate with the Monitor 11's to create a full 5.1-channel home theatre system. You get to choose between three centre-channel speakers (CC-190, CC-290 and CC-390) and two surrounds (ADP-190 and ADP-390). I have to say here that my personal choice would be the CC-390 and ADP-390's, but then I don't have any constraints on space, since my TV is in quite a large room. As for subwoofers, Paradigm has a slew of them to choose from, so you won't want for choice here either, though you wouldn't go wrong with the PW-2200.

"… considerable bass extension … the most efficient loudspeaker Australian HIFI magazine has reviewed over the past five years … an excellent result."

TEST RESULTS

Newport Test Labs measured the frequency response of Paradigm's Monitor 11—under its test conditions—as extending from 50 Hz to 20 kHz ±3 dB, which is close enough to Paradigm's specification of 48 Hz to 20 kHz ±2 dB that the differences are easily explained by minor differences in measuring techniques. As is immediately obvious, it's an excellent result. Although there are only two traces apparent on Graph 1, it's actually a composite graph that shows three different measurements of the Monitor 11's frequency response. The blue trace is the unsmoothed averaged response, measured using a pink noise test signal. The red trace is actually comprised of two different results. Below 1 kHz, the trace represents the near-field response of the bass driver only (the port output has not been added). Above 1 kHz, the trace is the far-field gated response of the tweeter, measured at 1 metre. The dip in the response at around 13 kHz is mostly a measurement artefact, caused by the microphone position, though it appears there is a slight dip in the tweeter's response at this frequency. Even if it were not a measurement artefact, the dip is so sharp and narrow that it would not be audible: the overall response would be perceived as per the pink noise trace.

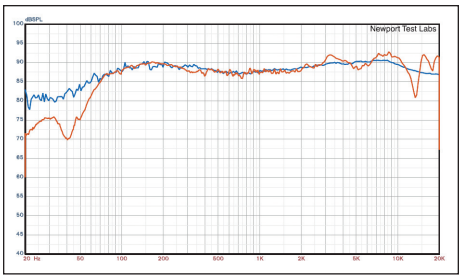
Graph 2 shows an expanded view of the high-frequency gated sine response, including the dip at 13 kHz discussed in the previous paragraph. You can see that even if the dip were audible, as discussed, the overall response shown extends from 400 Hz (the lower limit dictated by the gated measurement technique) to 20 kHz within 5 dB (that is, 400 Hz-20 kHz ±5 dB). Ignore the dip and the response is 400 Hz to 20 kHz ±3 dB. Remember also that this trace is "raw" in that it hasn't been smoothed in any way.

The nearfield response of one woofer, the woofer/midrange and both ports is shown in Graph 3. In theory, because the ports operate from the same internal volume, you'd expect that the two port traces would be identical, but as you can see, they're not quite the same. Almost all the differences arise because of the different physical positions of the ports, with one right at the bottom of the rear panel and the other at the top. There would also be minor differences arising from the difficulties of accurately positioning the measuring microphone in the nearfield, but these would be so small they could be discounted. You can see that the dedicated woofer and the midrange/woofer responses are both extremely linear and also track each other almost perfectly below 200 Hz, and still very closely between 200 Hz and 450 Hz. Above 450 Hz the crossover kicks in to start rolling off the dedicated woofer, while the midrange driver response stays elevated. Notwithstanding, it's obvious there's a slight roll-off in the midrange driver's response, though the level shown would be increased by 3 dB if the tweeter's response had been taken into account (which it would be in a far-field test). With the tweeter response added in, the actual dip is around 2.5 dB at 800 Hz. It's clearly visible in Graph 2, and somewhat less visible in Graph 5. The ports have been tuned so they operate over a very broad range of frequencies, and almost exclusively below 80 Hz, accounting for the considerable bass extension of this design.

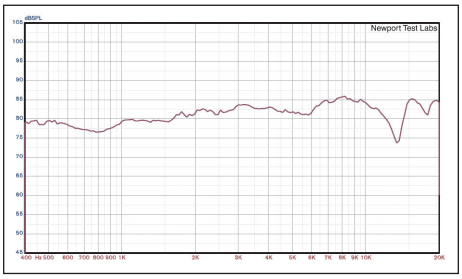
The impedance of the Paradigm Monitor 11 is fairly low due to the use of the paralleled bass drivers. As you can see in Graph 4, the impedance dips to 3.3° at 175 Hz and remains below 4° between 110 Hz and 240 Hz. However the phase angle never exceeds 60° and at the point of minimum impedance is a very undemanding -10°. I noted that Paradigm does not actually specify the impedance of the Monitor 11 but instead simply states "compatible with 8 ohms." On the evidence of this graph, I'd give it a nominal rating of 4° which, of course, is entirely consistent with the statement "compatible with 8 ohms".

Graph 5 shows a trace that's the average of nine different measurements made by placing the microphone in a grid pattern in front of the speakers, effectively combining on- and off-axis traces directly in line with the tweeter with on- and off-axis traces taken from both above and below the level of the tweeter, all using pink noise as a test signal.

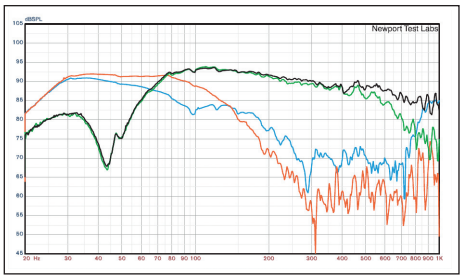
Speaker efficiency was very high, with Newport Test Labs measuring a sound pressure level of 91 dB at one metre (on axis with the tweeter) for an equivalent 2.83 V input. As I have pointed out previously, Newport Test Labs actually measures the level of all frequencies between 20 Hz and 20 kHz, which are then averaged to come up with a single figure. This necessarily translates to "lower" figures than most other manufacturers and labs, which either record the SPL at the "highest" point along the frequency response (which is usually 3 dB higher than the average figure) or take an average across a more limited bandwidth, such as 200 Hz to 2 kHz. That 91 dB SPL easily makes the Paradigm Monitor 11 the most efficient loudspeaker *Australian HIFI Magazine* has reviewed over the past five years, so it's an excellent result.



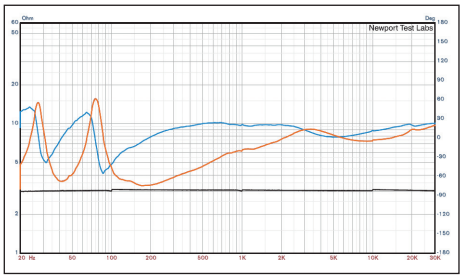
GRAPH 1
Composite frequency response. The nearfield woofer response from Graph 3 has been spliced at 1 kHz to the high-frequency response shown in Graph 2 to create a single response (red trace). Over the top, after being adjusted for level, is the pink noise response (blue trace) shown in Graph 5.



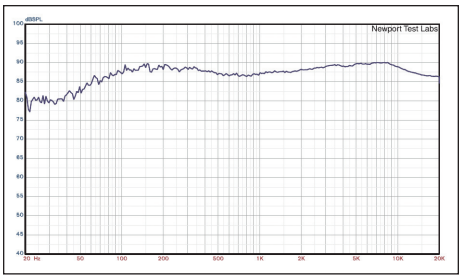
GRAPH 2
High-frequency response, expanded view. Test stimulus gated sine. Microphone placed at one metre on-axis with tweeter. Lower measurement limit 400 Hz.



GRAPH 3
Low frequency response of front-firing bass reflex ports (red and blue traces) and woofers (black and green traces). Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas.



GRAPH 4
Impedance modulus (red trace) plus phase (blue trace). Black trace under is a reference 3-ohm precision calibration resistor.



GRAPH 5
Pink Noise Frequency Response. Average unsmoothed. This trace was generated by stimulating the speaker with pink noise then taking nine different measurements by placing the microphone in a grid pattern in front of the speakers. The nine measurements were then averaged to create this single trace.