twenty.24

CAN PMC'S TWENTY.24 GET CLOSE TO THE FACT.8'S PERFORMANCE AT AROUND HALF THE COST?

"There's nothing in the book about designing for image depth and transparency, yet these are among the more satisfying yet also the most elusive aspects of audio reproduction. It is these qualities that the skilled designer, through experience and much trial and error, will try to coax from a working prototype"

Loudspeaker design is an art form, and PMC's owner/designer Peter Thomas has such a good grip on the fundamentals that he can subtly vary the mix of technologies to create significantly different sounding loudspeakers despite the fact that they may share very similar specifications, measurements and prices.

If test results alone defined sound quality, there would be no point in having this creative part of the process at all. But the human ear is still required to capture the totality of the sound energy created in a room by a pair of loudspeakers, while a critical mind analyses and judges the illusory audio images that are generated, ultimately, by the complex nerve impulses arriving at the listener's cortex.

Across the wide range of floorstanding loudspeakers one can compare and contrast the number of drivers, the complexity of the crossovers, the vagaries of bass loading and the precise type of tweeter (soft or hard, dome or perhaps ribbon), for any given marketplace price point. This stuff provides fodder for journalists, but the sound quality bottom line is invariably more elusive. It frequently defies the oft contrived technology story, and somehow resides within the skill and experience of the designer. From one point of view, a loudspeaker is like a musical instrument: no matter how good the ingredients, without experience and skill, an ability to associate fine details of design, build and material science with the subtleties of sound quality, a loudspeaker is unlikely to reach excellence.

By-the-book design has become quite simple these days, with an abundance of generally available drive units of decent consistency and quality, plus quite simple computer software to help with nearly all aspects. These factors can get anyone to first base, and for many applications speaker design work need go no further. But experienced audio customers and critics frequently demand rather more. The discriminating listener will value many other qualities, such as inner tonal balance, natural timbres, well room-matched low frequency output, realistic sounding transients, lively dynamics, tuneful and well timed bass lines. These are by no means promised by a computer aided solutions.

There's nothing in the book about designing for image depth and transparency, yet these are among the more satisfying yet also the most elusive aspects of audio reproduction. It is these qualities that the skilled designer, through experience and much trial and error, will try to coax from a working prototype. And it's this kind of effort which one hopes will differentiate the sound quality of the PMC *twenty.24*'s from many similarly sized and priced examples.

PMC's *Fact.*-series set the pace, and we particularly recognised the improved sonic dimensions that PMC delivered in the *Fact.8* (*HIFICRITIC Vol4 No1*) – its crisp dynamics and transparency, to name but two. Although I feel obliged to complain just once about its pretentious name, the *twenty.24* is a rather more modestly priced floorstander, only a little more than half the price of the *Fact.8*.

The *twenty*-series of four stereo pairs all have two-driver configurations, with varying relationships between the driver sizes and the line lengths. Two of the models – one stand-mount and one floorstander – have 140mm diameter bass/mid drivers, while the other two – again one of each – use larger 170mm main drivers. Line lengths vary from 1.72m for the compact *twenty.21* up to 3m for the *twenty.24*, the largest model of the quartet and our review samples. All are nominally 8ohm systems, the 5.5-inchers are quoted at 87dB sensitivity, whereas the larger 6.5inch bass/mid driver designs have claimed 90dB sensitivities – rather better than the industry average. All use 27mm soft dome tweeters, custom made for PMC by Norwegian supplier SEAS.

The *twenty.24* represents the latest in a series of evolutionary stages in perfecting the companies ATL ('advanced transmission line') interpretation. In earlier times the TL technique had become associated with slow, heavy bass, though this was largely a result of the now defunct IMF speakers that were specifically voiced for the US market, where spacious room layouts and 'soft' construction techniques demanded considerable bass power to deliver a natural sounding result. Peter Thomas' subtle combinations of line length, acoustic damping and driver parameters have brought this form of ported enclosure to its present elevated level of performance.

From one viewpoint this *twenty.24* might be seen as a version of the *Fact.8*, which also has a 3m line, but because it uses one 170mm instead of two 140mm drivers, a little more width is required. Both models are relatively deep and stand over a metre tall to accommodate that decent line length, while the complex interior panels used to create the *twenty.24*'s ATL confers significant inherent bracing and means that the whole speaker weighs 21kg (46lb).

That said, it's still a quite slim 18.4cm, (7.25in),

and once installed is designed to lean backwards some 5 degrees on the supplied plinth, to time- and phase-align the optimum axis correctly at seated listeners' ears. Baseplate and spike hardware are well executed, and it has good stability despite the significant height. Bar the bi-wire inputs, this design has been very nicely thought through.

I reckon it should be happy enough driven by 100W programme power, and this will deliver good maximum sound levels of 103dBA in a typical room. Under power it's quite clear that the ATL loading has a near vicelike grip on a bass driver which moves rather less and sounds rather cleaner at higher power than the equivalent size loaded by a reflex port.

Sound Quality

First impressions, with a little toe-in applied, were of a lean and dry overall character, with some axial brightness. The well-damped bass extension needed higher power to voice the bass fully, though the bass timing was highly rated and any bass 'thud' came right on top of the relevant mid-to-treble transient. On balance I felt it would be better suited to an acoustic environment that's a little less lively than my listening room.

Treble quality is quite good. It's fairly even in balance, with a touch of grain and mild sibilance compared with the best references, and is also a little forward, yet achieves very good detail and transparency over its extended range. Whereas the more costly *Fact.8* maintained good clarity over the whole range, the *twenty.24*'s midband is not as transparent as the upper range, and shows some thickening of timbres and a reduction in image depth.

The substantial height of this speaker helps present a realistic stereo image. The backwards tilt delivers the ideal balance of mid-to-treble level, and the angle directed towards the listener delivers the designer's intention. There's no excess bloom through the main bass range here and the narrow front ensures good focus across the soundstage, although the midband does sometimes sound a little pinched. While the upper bass could sound a little nasal, it was taut and one quickly adapted to it, carried along by the quick precise timing and healthy dynamics.

The speaker was quite critical of location because the relatively high bass unit is quite near the floor-to-ceiling median. It therefore needs some care in positioning to avoid upper bass thickening. I initially thought this was coming from the speaker, but subsequently found it was due to room interaction: rooms with low ceilings might therefore prove a little problematic with this design.

I also became suspicious of the links between the twin terminal pairs, so I unscrewed them, discarded

the shiny gilded brass rods and replaced them with 1mm copper wire, carefully connecting the speaker cables direct to the bass terminals, with firmly clamped copper links to the treble. The results were to my mind a different and significantly improved speaker. The mid opened out significantly, the 'knocking' upper bass was now smoother, and the lower bass was more obvious. Dynamics were crisper and better integrated, the overall sound balance was improved, and the speaker showed greater clarity and expression. The treble remained slightly exposed, but was free from hardness. I have frequently railed against bi-wiring connections and brass links, and my assertions were again confirmed again here.

HIFICRITIC
RECOMMENDED PRODUCT
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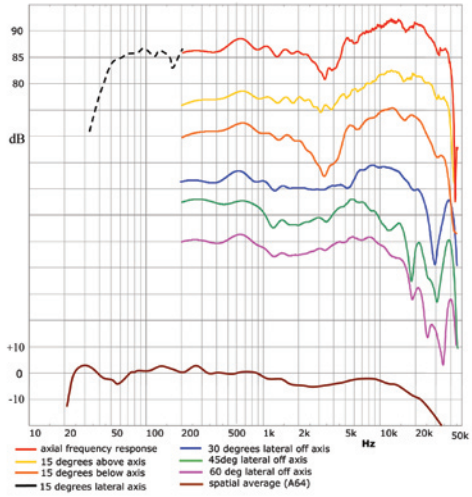
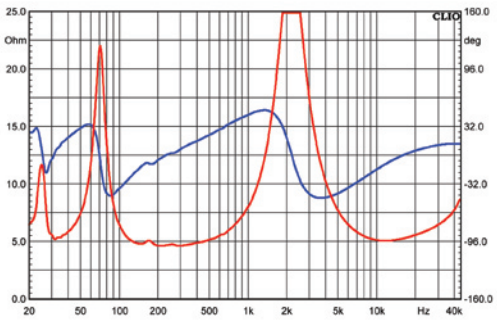
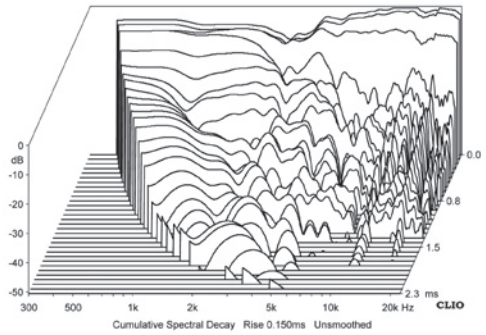
PMC twenty.24 Frequency Responses



PMC twenty.24 Impedance - Frequency Responses/Phase



PMC twenty.24 Waterfall for decay with time & frequency



HIFICRITIC Loudspeaker Results

Make	PMC
Model	twenty.24
Price per pair (20 year guarantee)	
Finishes	oak, amarone, walnut and gloss black (extra cost)
Size (HxWxD), weight	105 x 18.4 x 42.5 cm, 21kg, 46.2lb
Type	Two-way 170mm bass/mid, 27mm HF, 3m long ATL loading
Sensitivity for 2.83V	86.5dB/W measured
Amplifier loading	6.5ohm typical, 4.6ohm min
Frequency response, axial	45Hz to 40kHz +/- 5dB (listener axis) (see text)
Frequency Response, off-axis	see graphs and room response
Bass extension	35Hz for -6dB, (30Hz in room)
Max Loudness, in room	103dBA for a stereo pair
Power rating (max, min)	20-100W
Placement	floor standing, spike coupled, near free space location,

Lab Report

The sensitivity measures 86.5dB when averaged through the response trend, which is significantly below the claimed 90dB. However, the impedance is not as poor as some: it dips to 4.6ohms and averages 6.5ohms, so is not too far from the specified 8ohm rating, and is therefore an average load overall. The impedance curve shows small line-mode peaks at 160Hz and 270Hz, which we thought were audible as a moderate timbre shift noted in the lower midrange. The final damped 'reflex' mode is at a low 22Hz, effectively below the operating range, while the 160Hz mode may also be seen on the composite axial response.

The frequency responses are mixed, the treble is several dB prominent on-axis, and this appears to be more obvious because of a 3dB trough at 3.5kHz. Limits of +/-5dB are therefore needed to accommodate the nominal but wide 45Hz to 40kHz response. Below the main axis (seated on a floor cushion!), a 5dB dip nearly an octave wide is recorded, but output settles down with the lateral off-axis results, which are nicely extended and contribute to the respectable room averaged spatial response. The latter also illustrates the effectiveness of the bass tuning, which shows significantly useable extension down to 35Hz.

Subjectively speaking this speaker supplied crisp clean transients, and this is confirmed by an impulse-driven energy decay waterfall graph that shows a conspicuously tidy result, with good phase integration from the start.

Conclusions

If you want to hear what this speaker can really do, hard-wire the links and make sure the connection to the lower terminals is as solid as you can make. Under these conditions this speaker may be recommended for its winning combination of sonic simplicity and elegance. Its well thought out support hardware, good sensitivity, fair load impedance and fine power handling all bely the modest two-driver line-up.

It does sound a little 'dry', but that's certainly preferable to a soggy and less well controlled bottom end. It has much of the transparency of the *Fact* series, and also achieves a good measure of that vital dynamic resolution and good timing; in fact it is a class leader in this respect. Build quality and finish is first rate, providing the confidence behind that massive '20th Anniversary' guarantee.