



MYSTÈRE CA21/PA21 PRE/POWER AMPLIFIERS

The audio world is a crowded place and the 'digital age' is spawning new devices that are simplifying (although some would say complicating) our lives by wirelessly streaming music and video, integrating with the internet, and providing an audio-visual experience throughout the modern home.

However, quite surprisingly, the market continues to see the entrance of new companies, many of which set themselves apart by entering the fray with jewel-like offerings featuring 'retro' technologies; witness the plethora of new high-end turntable manufacturers and valve amplifier manufacturers, many stemming from the Far East where circuit simplicity, cheap manual labour, and local valve production make for efficient manufacturing logistics.

Mystère, a relatively new player with design elements and components sourced from international sources, made its debut with a strong, yet succinct, line-up of beautifully-styled and superbly-built valve amplification products. I decided to check out the range-topping CA21 valve preamplifier and PA21 valve power amplifier.

THE EQUIPMENT

It may be plain black but the Mystère combo has an aesthetic form and lustrous lustre that don't translate anywhere near gorgeously enough in photographs. The application of the black gloss finish is absolutely faultless, as is the beautiful curvy front panel, and the quality carries through to the thick-gauge chassis and solid connection hardware.

The CA21 preamplifier sports four line-level RCA inputs and a single RCA output, in addition to a three-pin IEC 240V mains input socket and, well... nothing else. Basically, that's it. Having said that, the circuitry is tricked-out and features what Mystère quotes as being a 'Series Regulated Push Pull circuit (SRPP) resulting in high gain, low distortion and low output impedance'—the last claimed to make it suitable to use with a wide variety of amplification. The design approach also sees Mystère using an extremely well-made stepped attenuator that, in use, featured a reassuring feel to its operation. No PCBs here either; the company claims point-to-point wiring. The high gain claim is certainly validated by the 19dB of gain, although the low output impedance figure of 592Ω is, well, *lowish*

rather than low. Distortion is well constrained with a specced figure of 0.03 per cent. Mystère rates frequency response at 8Hz to 200kHz. Valve configuration sees the use of four 6SN7 input valves and one 5AR4 regulator. Oh, and if you judge the quality of your audio components by the kilo, this one would be a doozie; it's one of the heaviest preamps I've had the displeasure of lifting—all 20kg of it.

The PA21 power amplifier is just as solidly put together and specced. The circuit is a push-pull pentode design that auto-biases the valves (what the company calls Adaptive AutoBias) so they're operating at optimum levels. The amp claims an output power of 55-watts continuous per channel into an 8Ω load with 1 per cent total harmonic distortion. Like all valve amplifiers, if your speakers have a nominal impedance of 4Ω, you need to use the 4Ω speaker terminals on the PA21. Gain is a healthy 26dB which makes for an ideal gain structure when in use with the CA21. The PA21's bandwidth reportedly spans 4Hz to 80kHz ±0.3dB at 1-watt and 9Hz–52kHz ±1dB at 40-watts. There's a fair bit of weight here too, 27kg in fact—not back-breaking but awkward enough especially since the agglomeration of triple transformers at the rear presents an unbalanced lift.

Once again, the rear panel is simplicity itself; just a single set of quality RCA inputs, an IEC 240V mains socket and the 4Ω and 8Ω output transformer taps (with no indication of which ones are for the left channel and which for the right) for your speaker connections. A side-mounted switch toggles between EL34 and KT88 power valves... obviously, having this set to the appropriate setting for the set of valves that's fitted is crucial in order to achieve the correct biasing!

It's very easy to access, so could easily be inadvertently set incorrectly, particularly by someone hunting for the mains power switch which is in the same position, but on the opposite (right-hand) side of the amplifier. The PA21 I reviewed came equipped with Chinese-made KT88s (four) and 6SN7s (four).

Both components feature a removable valve-protecting cage that's both practical and pretty, but removing it and exposing the beauty of the glowing valves makes it all the more cool.

MYSTERIOUS SOUND

I hooked up to my Metronome T1i CD source and Wilson Audio Sasha speakers via the usual quality cable loom and was pleased to hear very little in the way of noise or valve rush—a promising sign. However soon after the initial few hours of operation the PA21 developed a faulty valve... crackling and popping like Kellogg's. The moral? Keep spare valves on hand—although anyone who purchases these little jewels would be well-aware that when using valve gear, having spares—no matter how long a life the manufacturer quotes—is a given. And indeed, Mystère encourages experimentation, not only in terms of valve 'rolling', but also hinting at the subtle sonic improvements that using valve damping rings and other accessories may reap.

Sonically, the Mystère combo delivered on the promise that good valve equipment implies. The sound had a solidity and body, especially throughout the midrange, that imparted the impression of real vocalists and backing instrumentalists. All that in a resolute and tonally liquid and precise sonic signature that encouraged extended listening. Feed this combo a well-produced rock CD, something like Tool's Aenima or Red

MYSTÈRE CA21 PREAMPLIFIER & PA21 POWER AMPLIFIER

Brand: Mystère
Model: CA21/PA21
Category: Pre & Power Amplifiers
RRP: \$2,695 (CA21) and \$3,795 (PA21)
Warranty: One Year
Distributor: Advance Audio Australia
Address: Unit 8, 509–529 Parramatta Road
Leichhardt
NSW 2040
T: (02) 9561 0799
F: (02) 9569 1085
E: sales@advanceaudio.com.au
W: www.advanceaudio.com.au

-  Superb build quality and finish
Beautiful sonic signature
Good bass control
-  Some users would appreciate a remote control
No rear-panel channel identification (PA21)
Too-easy-to-access bias switch

Hot Chilli Pepper's Blood, Sugar, Sex, Magic and it will deliver a wealth of tight, punchy and plenty-low bass.

The highs were nicely extended too, with cymbals and triangles shimmering off with air and harmonic content that trailed off with delicious-sounding decay. Put on an orchestral piece, such as the Sibelius Violin Concerto with Itzhak Perlman (one of my favourites) and you'll also delight in the massive soundscape—laterally and medially.

Given the appropriate speakers (I am unsure of the amplifier's load tolerances but the lab's findings should be of interest) the combo can sound quite dynamic and clean with good micro-detail... if not the fastest transient attack.

CONCLUSION

This Mystère CA21 and PA21 combo is a splendid offering from a relatively new player on the high-end audio scene. The amplifiers are lusciously presented in faultless gloss black with heavy-gauge casework and connections that seem as though they will last a lifetime. The fit and finish is outstanding.

This all-valve duo presents a sonic picture that is brimming with detail, dynamic contrast and body and soul. To me, that's territory that's tread only by truly great valve designs...  **Edgar Kramer**





Readers interested in a full technical appraisal of the performance of the Mystère CA21 preamplifier and

Mystère PA21 power amplifier should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

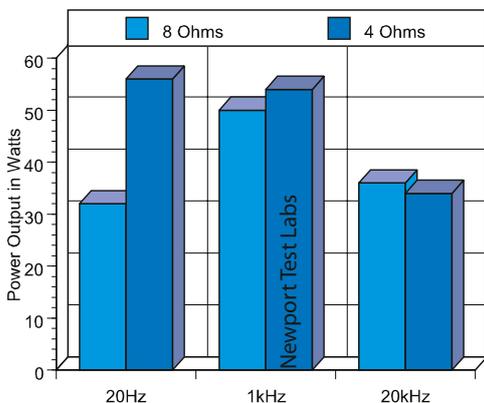
TEST RESULTS

Australian Hi-Fi's editor, Greg Borrowman, commissioned *Newport Test Labs* to test this duo together, rather than separately, because this is the format Edgar Kramer used for his subjective listening sessions, and will be the way most people will experience these Mystère components. Although I can see the point of doing it this way (and appreciate the savings in lab time

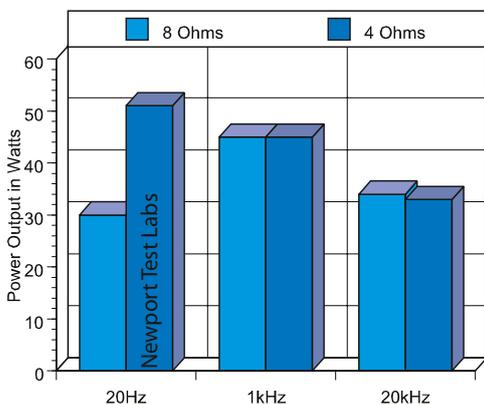
and space in the magazine) I can't help but think that many might use the PA21 not with the CA21 but instead with a passive pre, or with a DAC/pre with its own volume control, so a separate test of the power amp on its own might have been called for. Anyway, it does mean that readers should bear in mind that this testing methodology means that (other than in the area of power output) you can't compare *Newport Test Labs'* results with the manufacturer's own specifications.

Since I've mentioned power output, the Mystère PA21 delivered 45-watts per channel, both channels driven into 8 ohms and 45-watts per channel, both channels driven into 4Ω, when using the 8Ω output transformer taps. Both figures fall short of Mystère's claim of 55-watts per channel, but it's obvious from the power output table (page 71) that this specification is the less-often used 'single-channel-driven' figure, and also only when a 4Ω load is used. *Newport Test Labs* measured single-channel power outputs of 50-watts per channel with an 8Ω load and 55-watts with a 4Ω load. This output level was not sustained at the frequency extremes, with the PA21 delivering just 30-watts at 20Hz, both channels driven into 8Ω, and 36-watts per channel at 20kHz under the same conditions. In Australia, because power output must be stated as the minimum figure over a 20Hz to 20kHz bandwidth, this would put the Mystère's power output at 32-watts per channel into 8Ω and 33-watts per channel into 4Ω. Note that all figures were measured using 8Ω and 4Ω laboratory test loads connected (alternately!) to the 8Ω output transformer taps. The 4Ω taps were not tested.

The frequency response of the CA21/PA21 combo was excellent, being very extended. *Newport Test Labs* measured the 1dB downpoints at 6.5Hz and 190kHz, and the 3dB downpoints at 2.3Hz and 200kHz. However, the lab identified a considerable (4.2dB) peak centred at 170kHz, so the overall frequency response could hardly be considered 'flat' over the wider bandwidth. However, it's certainly flat across the audio band (20Hz to 20kHz) as you can see in Graph 6. The black trace on the graph shows the response into a standard 8Ω non-inductive laboratory resistor, and it's just 1.4dB down at 5Hz, comes up to 'reference' at 50Hz, then tracks that reference line up to 14kHz, after which there's a minuscule rise in level of 0.1dB at 20kHz and 0.2dB at 30kHz. The red trace shows the PA21's frequency response when it's connected



Power Output: Single channel driven into 8-ohm and 4-ohm non-inductive loads at 20Hz, 1kHz and 20kHz. [Mystere PA21]



Power Output: Both channels driven into 8-ohm and 4-ohm non-inductive loads at 20Hz, 1kHz and 20kHz. [Mystere PA21]



MYSTÈRE CA21 PREAMPLIFIER AND PA21 POWER AMPLIFIER

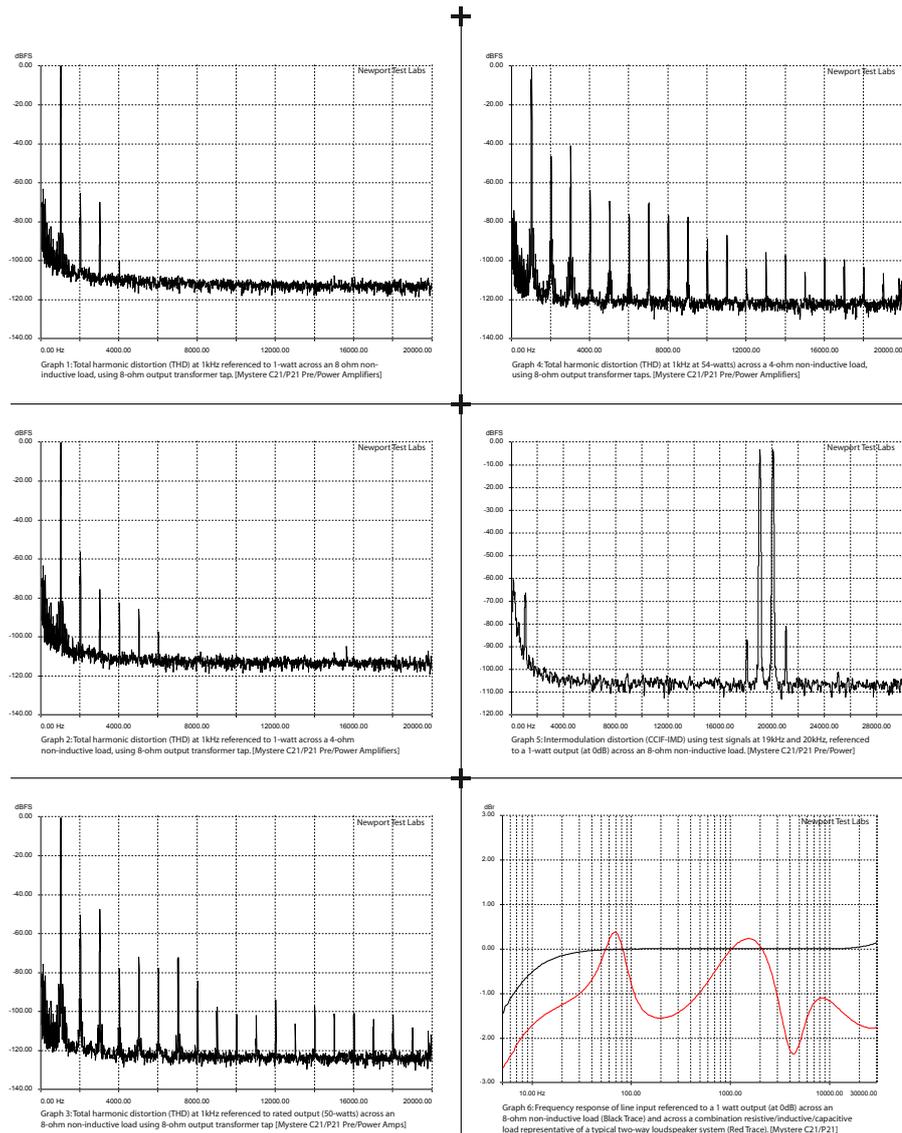


Distortion was very low for a valve amplifier and quite low compared to quite a few solid-state amplifiers that don't use negative feedback

to a load that simulates that of a two-way bookshelf loudspeaker. (Editor's Note: As it happens, it's exactly the same load used by US magazine *Stereophile*, which is a customisation of a circuit originally developed by Ken Kantor and the conclusion of an interview with Kantor that commenced in the last issue of *Australian Hi-Fi Magazine*, appears in this very issue, on page 32!) You can see that into such a load, the response varies quite a bit, though the extent is exaggerated by the graph's extreme vertical scale. In fact, the frequency response, even into this simulated loudspeaker load, is still an excellent 20Hz to 20kHz ± 1.5 dB.

Channel balance was inspiringly good, at 0.7dB (at 1kHz) and channel separation was also good, particularly at low frequencies (95dB at 20Hz, and still 81dB at 1kHz). It diminished at higher frequencies, though the measured result of 54dB at 20kHz is more than is necessary to deliver not only adequate channel separation, but also realistic stereo imaging. Inter-channel phase errors were about what I'd expect for a valve amplifier, though the figure of 9.4° at 20kHz is a bit high: It would, however, be completely inaudible.

Distortion was very low for a valve amplifier (and quite low compared to quite a few solid-state amplifiers, particularly those that don't employ negative feedback). At an output of one watt into 8Ω the spectral analysis (Graph 1) shows just second, third and fourth harmonics, at -65dB (0.056% THD), -70dB (0.031%) and



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–100dB (0.001%). Above 2kHz the noise floor is sitting down at around –112dB, but there are power-supply-related hum and harmonics to the left of the fundamental raising the low-frequency noise floor, with the peak component at around –62dB. Reducing the load resistance to 4Ω (Graph 2) sees an increase in the number of harmonic distortion components and corresponding increases in level, such that the harmonic distortion series now extends out to the 6th, with the 2nd harmonic at –57dB (0.141%). The level of the noise floor and hum components remain almost identical, despite the reduction in load resistance.

Increasing output to 50-watts sees distortion rise considerably (Graph 3). The second harmonic distortion component is now at –50dB (0.315%) and the third is even higher, at –47dB (0.446%). The harmonic series now also extends right across the audio band, to the 20th, at 20kHz. However, the only ‘significant’ components (other than the first and second) are 7th-order and below, and these are still all more than 70dB down (individually contributing less than 0.031%). The look of the harmonic structure made me suspect that the amplifier was being slightly overdriven when this graph was traced, and that backing off the volume control just one notch would have seen almost all the higher-order distortion

components disappear, but I wasn’t able to request a re-test to confirm this in the time available before the magazine went to print. Output at 54-watts into 4Ω is shown in Graph 4. The second harmonic is at –46dB (0.5%) and the third is at –41dB (0.891%). Despite the forest of distortion components on the graphs, overall total harmonic distortion (THD) is still inaudibly low, with THD+N coming in at 0.07% at an output of 1-watt and just 0.53% at rated output.

That low-frequency power supply noise I alluded to earlier is once again clearly evident on Graph 5, which shows CCIF intermodulation distortion. The expected regenerated signal at 1kHz is fairly low for a valve amplifier, coming in at around –68dB (0.039%), and there are only two sidebands around the test signals, one at 18kHz (–87dB/0.005%) and one at 21kHz (–81dB/0.008%). These low levels lead me to suspect that the sound of the CA21/PA21 would be ‘cleaner’ than other valve amplifiers that exhibit higher levels of CCIF-IMD, particularly when they’re being driven hard with complex, orchestral music.

As for noise levels themselves, the unweighted figures of 61dB (referenced to one-watt, in order that readers can accurately compare this Mystère combo’s noise levels against amplifiers with either higher or lower power outputs) and 75dB (referenced to rated output) are not particularly good, and have obviously been affected by

the low-frequency hum components mentioned previously. Weighting the measurements improved the figures substantially, to 75dB and 88dB respectively. Maybe these figures could be improved further in a home environment, where there are fewer connections to other components, and also by careful selection and routing of interconnecting and mains cables.

The oscillograms obtained from the square wave testing graphically reflect the results obtained by the other instruments used by *Newport Test Labs*. The top of the 100Hz square wave, for example, is tilted left to right, which shows that the low-frequency response rolls off with decreasing frequency. There’s also a slight ‘bend’ in the curve, revealing some phase shift (group delay). Finally, the ‘spike’ in the leading edge reveals that high-frequency (170kHz) peak mentioned previously. The 1kHz square wave shows a little ringing, but it otherwise excellent. The 10kHz square wave shows the same ringing (expanded, due to the different horizontal time-base setting on the oscilloscope) but you can see the wave is still exceptionally ‘square’, demonstrating an extended high-frequency response. The oscillogram showing performance into a highly capacitive load shows very tightly controlled ringing and, interestingly, that although there’s a slight overshoot on the trailing edge, there’s no equivalent overshoot on the leading edge, which I assumed (but I stand to be corrected) was most likely due to tiny differences between the KT88 output valves, which in turn lead me to think that Mystère is not pre-matching its valves, but instead depending on its auto-biasing to correct for the inevitable slight differences between different valves.

The power consumption figures show that you should really not leave either the pre or the power amplifier switched on when you’re not using it, self-evidently because of the high mains power consumption even when idling, but also because of the heat generated by both components, which is considerable, and also the fact that switching the amplifiers off will greatly extend the lives of all the valves.

Overall, the test results measured by *Newport Test Labs* show that the Mystère CA21 and PA21 are well-designed, high-performance valve amplifiers that will deliver excellent and consistent sound quality when they’re paired with loudspeakers of moderate to high efficiency. 

Steve Holding

Mystere PA21 Power Amplifier - Power Output (8Ω Tap)

Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8 Ω	32	15.0	50	17.0	36	15.6
2	8 Ω	30	14.7	45	16.5	34	15.3
1	4 Ω	56	17.5	55	17.3	34	15.3
2	4 Ω	51	17.0	45	16.5	33	15.2

Note: Figures in the dBW column represent output level in decibels referred to one watt output.

Mystere CA21/PA21 Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	6.5Hz – 190kHz	–1dB
Frequency Response @ 1 watt o/p	2.3Hz – 200kHz	–3dB
Channel Separation (dB)	95dB / 81dB / 54dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.7	dB @ 1kHz
Interchannel Phase	1.7 / 0.5 / 9.4	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.07% / 0.53%	@ 1-watt / @ rated output
Signal-to-Noise (unwghted/wghted)	61dB / 75dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wghted)	75dB / 88dB	dB referred to rated output
Input Sensitivity (CD Input)	136mV	(for rated output)
Power Consumption (Single Ch PA21)	N/A / 183	watts (Standby / On)
Power Consumption (Single Ch PA21)	187 / 251	watts at 1-watt / at rated output
Power Consumption (Both Ch CA21)	49	watts
Mains Voltage Variation during Test	245 – 251	Minimum – Maximum