OAD Ultrafidelity Vajra

Power Amplifier

- Splendid sound
- High power output
- Very low noise

- Soft clipping not switchable
- No standby option
- ~~Wobbly meter button~~ FIXED

RRP POA

Although the Australian-made OAD Ultrafidelity brand is new to the country, its founder, owner and designer, Jon De Sensi, is an old hand in the high-end hi-fi business, having been designing and building high-end audio equipment for several decades, most recently under the MusicLabs Australia brand name. He is also well-known for his willingness to help out other Australian audio designers, such as Redgum's Ian Robinson, for whom he designed the digital-to-analogue stages for the Redgum RGCD2 CD Player.

De Sensi is also well-known for "thinking outside the box", which may very well be why he is using slit-foil capacitors in the Vajra's power supply (a first for any power amplifier anywhere in the world, he says) as well as a very unusual transistor topology in the output stage that is rarely encountered in the world of high-power audio amplifiers.

THE EQUIPMENT

As you can see from the image on the left, the OAD Vajra is the very model of a model power amplifier, in that its front panel has only one real control — the power button. There is no 'main' power button on the rear of the unit, either; that front-panel on/off key is all you get. That means there's no standby function — the OAD is either on or off. And because it's a completely linear design — De Sensi is obviously having no truck with either switch-mode power supplies or Class D output stages (and I totally agree with him regarding both these design choices) — it's going to pull quite a few ergs from your 240V mains supply whether it's playing music or not.

If you are wondering about that second front-panel button you spy on the image, it actually has nothing much to do with the operation of the Vajra: it simply increases the sensitivity of the two 'output power' meters by a factor of 10. You need this magnification factor because unless you listen to your music really loudly, the needles on these two meters will be bumping around at the bottom of the scale where they're really hard to read. That legibility is not at all helped by the display's low-light level, which may be tastefully ambient but doesn't throw much light on the meter calibrations.

But even if the meters *were* brightly lit, the information on them would not really be useful anyway. Like all such meters, they only give truly accurate readings when your loudspeakers present a pure resistive load of exactly eight ohms at every frequency across the audio band — and there isn't a single loudspeaker on the planet that presents such a load. Also, the meters are only truly accurate at a single frequency and when the signal being measured is a sine wave, neither of which really occurs when you're playing music.

To its eternal credit, OAD recognises this and presents you with this exact information in the Vajra's user manual, where you will find the words: "Meter readings are only accurate for a sinusoidal signal into a pure 8 ohm resistive load." So why would a designer include power output meters at all, knowing full well that they are inaccurate when playing music through loudspeakers?

> "Vajra is Sanskrit for something that has diamond-like attributes... purity, faithfulness..."

The obvious answer is that the meters don't have to be particularly accurate to give you an idea of what power levels the amplifier is delivering to your loudspeakers. A less obvious answer is that power meters look great on the front of an amplifier, to the point where it could swing a buying decision in the desired direction for a manufacturer.

Another less obvious reason is that many of the world's most desirable and expensive power amplifiers (here I am thinking specifically of models from McIntosh and Audio Research, though there are literally dozens of other brands I could have mentioned) have power meters on their front panels, and it's always a good idea to do what the famous are doing.

What I would actually have preferred to see on the front of the OAD Ultrafidelity Vajra is a pair of clipping indicators, to indicate when you're delivering so much power to your loudspeakers that you've reached the absolute limit and it might be time to back off the volume a bit. If it were a question of cost, I think I would've installed these indicators rather than the meters, but since cost obviously wasn't a factor here, I'd want them in addition to the meters.

One reason De Sensi may have chosen not to include clipping indicators in the Vajra is because he has included in it a special circuit specifically designed to prevent such clipping in the first place — or to at least prevent hard clipping.

Indeed, when the amplifier is about to go into hard clipping, a 'soft clipping' circuit 'rounds off' the audio signal by limiting the voltage on either side of the signal peak. This circuit type was invented by NAD designer Bjørn Erik Edvardsen for his famous 3020 integrated amplifier, which was so low-powered that it was easy to overdrive and cause output stage clipping, resulting in excessive distortion and a hard sound in the bass.

The problem with such soft-clipping circuits is that when they activate, they introduce distortion into the audio signal. This is a fact that OAD Ultrafidelity makes clear in the manual, which states: "The activated soft clip circuit may distort the output signal significantly, thereby causing a reduction in sonic performance."

As for the distortions introduced by soft-clipping circuits, the perverse fact is that some listeners actually prefer the sound of the particular distortions introduced by hard-clipping over those introduced by soft-clipping circuits — which is one of the reasons why Edvardsen allowed owners to choose between having his soft-clipping circuit switched on or off. Such a switch would have been a nice addition to the Vajra's circuitry.

One reason I suspect De Sensi did not include this switch is that the Vajra's power output is so high (180 watts per channel into eight ohms, and 360 watts per channel into four ohms) that it is very, very unlikely anyone using it will ever use enough power to cause the soft-clipping circuit to activate… even if they play their music extremely loudly and pair the Vajra with extremely inefficient loudspeakers.

However, in the event that you do manage to exceed the maximum capability of the amplifier, even with the soft-clipping circuit engaged, De Sensi has provided a second line of defence against amplifier damage in the form of an over-current protection circuit that trips automatically if the output current exceeds 15 amps. This threshold level is so high that you'd be hard-pressed to exceed it under any normal listening situation, so it's not likely to trigger in any circumstance short of a short-circuit (such as if you were to accidentally touch the positive speaker wire to the negative).

The rear of the OAD Vajra is almost as sparsely equipped as the front. There is a pair of gold-plated RCA terminals to which you could connect unbalanced (i.e. single-ended) signal wires from your preamplifier, and a pair of gold-plated XLR terminals to which you could connect balanced cables. There's a switch to shift between the two, and OAD warns in the manual that you should connect using only one of the two options at one time, not both at the same time. (Some people tend to connect different front-end components to the different terminals.)

The real advantage of the Vajra being so quiet is the contribution to dynamics when you're playing music

There is also a remote input on the rear panel that, if the Vajra is connected to OAD Ultrafidelity's Padma preamplifier, allows you to switch both amplifier units on and off together via the Padma's remote control.

The speaker terminals on the Vajra are labelled '+' and '–' but come accompanied by a warning label that reads: 'Do not connect any speaker terminal to ground.' I was a bit dismayed that this warning did not appear in the manual and that there was no explanation of why such a warning had been included in the first place.

The usual reason for not connecting the negative terminal to ground is that the amplifier is using a bridged output stage, where two amplifier sections are used for each channel and each of the pairs is tied together. Since there is no mention of this in any of OAD's literature, I asked De Sensi if this was indeed a technique being used in the Vajra.

De Sensi told us that the OAD Vajra uses a Complementary Feedback Pair topology which "makes it different to most — or possibly all — amplifiers". Pressed for a reason for using such an unusual circuit, he said: "The advantage of this type of topology is that it is generally more linear than your more typical Emitter Follower topology. Especially large signal non-linearity is significantly lower than Emitter Follower output, where the non-linearity of a diode junction plays a significant part."

If this all sounds a bit technical, it might help to explain that for non-Class D amplifiers, almost all of them use one of three different topologies. The oldest of the three is the quasi-complementary symmetry output stage, developed to get around the problem that the PNP output transistors available at the time were not good matches for the NPN transistors available back then. Once semiconductor manufacturers developed matched NPN/PNP transistor pairs, most audio amplifier designers started using them in full complementary symmetry output stages using Darlington pairs (the second of the three topologies).

But some designers — an elite group that now includes De Sensi — use the third type of output stage, which is full complementary symmetry using compound pairs. Why? Due to the low distortion, extreme linearity and superior thermal stability of this topology. As to how large a group of designers this may be, I am unsure, but I reckon there must be some — not least as an amplifier designed by Sir Clive Sinclair that used this circuit delivered such an impressive performance that the topology was likely to be copied… or emulated.

It seemed to make sense at this juncture to ask De Sensi about his use of slit-foil capacitors in the Vajra's power supply. "The continuous foil used in normal electrolytic capacitors allows eddy currents to circulate in the foil," he said. "By using a slit foil electrolytic capacitor, these eddy currents cannot circulate and the result is cleaner, more natural midrange and high frequencies. It is definitely a world-first and is possibly the only power amplifier that uses slit-foil electrolytic power capacitors."

It also seemed like a good time to ask about the unusual name of De Sensi's new amplifier. "Does the name Vajra mean anything?" I asked. "Vajra is Sanskrit for something that has diamond-like attributes," he replied. "In spiritual Sanskrit traditions, the diamond-like properties most usually attributed are those of purity, faithfulness and constancy."

LISTENING SESSIONS

Since a power amplifier requires a preamplifier, OAD loaned me one of its Padma preamplifiers to use to drive the Vajra for my listening sessions. The most obvious advantage of using it with the Vajra was that I was able to switch the Vajra on and off remotely (not possible if the Vajra is paired with something else).

I have already mentioned the Vajra's power meters, so I won't rehash their usefulness or readability, but I should say that although the x10 meter sensitivity button on my review sample worked perfectly, it did seem to be a bit wobbly when I switched it in and out. This was probably an isolated condition, but it's something you might want to check if you think it will bother you (it didn't me).

What was most immediately noticeable from the get-go was the extreme quietness of the Vajra. Most amplifiers make a bit of a noise when you switch them on, and then when there is no audio signal and the volume is high there can sometimes be the faintest of circuit noises. Not with the OAD Vajra: it was as silent as the grave — so silent I wasn't even sure I'd successfully turned the amplifier on in the first place! (I had.)

The only downside I can see of this is that you won't have any audible cues in the event you've accidentally left your Vajra switched on. You *can* leave it switched on permanently, of course, but given the lack of a standby mode I'd recommend switching it off whenever you're not using it. It doesn't take long to warm up, after all, thanks to it operating in pure Class A mode up to 15 watts before switching to Class A/B.

The real advantage of the Vajra being so quiet is the contribution to dynamics when you're playing music, particularly as the amplifier is so powerful. When an orchestral crescendo ceases, the following silence is total; when there's a rest in the score during a piano sonata, you'll hear nothing until the pianist plays the next note; and between the notes of a melody, there's that beautiful nothingness that only serves to highlight the melody itself.

I found myself entranced like never before by Beethoven's *Piano Sonata No. 29 in B major, Op. 106* (Hammerklavier). Although I prefer the interpretation delivered by Solomon back in 1952, the sound quality of that old recording leaves quite a bit to be desired, which meant I was listening to Vladimir Ashkenazy's interpretation (on Decca, with the Waldstein). He extracts the maximum power from the bottom octaves of the Steinway, and the Vajra delivered them with something approaching its maximum power – despite the extremely high volume I was listening at, the Vajra obviously still had some power in reserve. But it wasn't just the power on tap that impressed me: the trills at the end of the first movement *Allegro* were marvels of clarity — again proving the importance of circuit quietness.

This was also demonstrated in the echoed repeated staccato of the *Scherzo*, where Ashkenazy's left hand mirrors his right. The musical tension was conveyed perfectly by the Vajra. When Ashkenazy then sustains some of the notes a little longer, the gorgeous resonances of the Steinway filled my listening room with sound. There was also another telling reveal of the Vajra's lack of background noise: before starting in on the *Adagio,* Ashkenazy takes a longer-than-his-usual pause, and in the silence I could hear his breathing, controlled though it was — something I can't recall having ever heard before. The sonorities of the *Adagio* were delivered to perfection by the Vajra, as were the micro-variations in Ashkenazy's finger-touch… and yet again, those trills!

The primal scream that kicks off *Welcome To My Island*, on Caroline Polachek's fabulous album 'Desire, I Want To Turn Into You', was made even more achingly primal by the OAD Vajra, leaping from the silence like a cry for help. Then, when the electronica kicks in, it was syncopated perfectly with Polachek's staccato vocal delivery, while in the background her guitar screamed in concert with her voice.

On *Pretty in Possible*, I first admired Polachek's wordless vocalise, and then the way the Vajra clearly delineated between the left and right channels, while positioning the vocal exactly where she wanted it to go — sometimes left of centre, sometimes right, sometimes centred.

The way too that the Vajra delivered Danny Harle's bass on *Bunny Rider* was stupendously effective. Listen to the depth of that oh-so-stringy sound. Also admire how completely separate the acoustic of the high-frequency synthesised 'ting' is from the overall acoustic. Then there's the way you can correctly hear the sounds of the two guitars of Marc López Fernández and Samuel Organ on *Sunset* (incidentally one of my favourites on this superb album, not least because of the quality of Polachek's vocals on it.)

The bagpipes are instruments you don't often hear on an album that identifies as alt or art-pop, so it's a joy when Brìghde Chaimbeul chimes in with hers on *Blood and Butter*. I would've preferred her to have been given a little more time to shine, though. The studio sound FX on *Butterfly Net* was delivered ethereally by the Vajra, too, to the point where it really made my listening room sound like Chartres Cathedral!

If you want to hear Arctic Monkey's 'The Car' album better than you've ever heard it before, do yourself a favour and listen to it via the Vajra, connected to a pair of loudspeakers that have plenty of bass and can handle the Vajra's power! I guarantee you'll be impressed… and not only because I think it was the best album to come out of last year. Alex Turner's musical vision is far-seeing, and his musicianship, along with that of the rest of the band, is revealed in all its glory. The lavishness of the layering and the intertwining of multiple musical strands were handled holistically by the Vajra, to the benefit of the songwriting and the performances.

CONCLUSION

Would you believe I've left one of the best things until the last, and that is that the OAD Ultrafidelity Vajra looks like a million dollars. The finish is extraordinarily good. But of course, it's the sound quality that counts, and the Vajra is flawless in this regard, across all the yardsticks that could be used to measure it — particularly those of purity, faithfulness and constancy. Yes, please! I want one. ***Greg Borrowman***

CONTACT INFO
Brand: OAD Ultrafidelity
Model: Vajra
RRP:
Warranty: Three Years
Distributor: OAD Ultrafidelity Pty Ltd
Address: Lawson Way, Endeavor Hills Vic 3802
T: (04) 6847 3229
E: oad@ultrafidelity.com
W: www.ultrafidelity.com

esoterica

Laboratory Test Report

Readers interested in a full technical appraisal of the performance of the OAD Ultrafidelity Vajra power amplifier should continue on and read the LABORATORY TEST 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.

Newport Test Labs measured the power output of the Vajra using an eight-ohm non-inductive laboratory test load as 180 watts per channel at all three frequencies tested — 20Hz, 1kHz and 20kHz, which matched OAD's specification exactly. When using a four-ohm non-inductive laboratory test load, *Newport Test Labs* measured power output at exactly 360 watts per channel at 20Hz, 1kHz and 20kHz. These results are tabulated below and shown graphically as a 3D bar chart on the next page.

When the lab switched from single-channel testing to driving both channels simultaneously, the lab measured output at 162 watts per channel into eight ohms for all three frequencies tested, and 272 watts per channel into four ohms for all three frequencies tested. These results are also tabulated below and shown graphically as a 3D bar chart on the following page.

The difference between the two sets of results could be because of the increased demand placed on the Vajra's power supply, or that *Newport Test Labs* did not maintain the mains voltage at 240 volts, which it has ceased doing now that the Australian standard is 230 volts, and the voltage supplied at the mains is always slightly higher than this. (If you're one of the many who thinks it's 240V, you're mistaken: back in 1983 Standards Australia adopted a 20-year plan to convert Australia from the nominal 240 volts grid to a nominal 230 volts grid in order to align with European Standards.) Or it could be a combination of both. Either way, it's of no practical significance whatsoever, because the differences amount to only 0.4dB in output for the eight-ohm results and 1.2dB for the four-ohm results, both differences that are far too small to be audible.

The Vajra has a very extended frequency response, with *Newport Test Labs* reporting that under its test conditions, it extended from 1Hz to 148kHz –1dB, and from 1Hz to 290kHz –3dB. Across the audio band the response was even flatter, as you can see from Graph 7, where the response into a non-inductive eight-ohm test load (the black trace) is just –0.1dB at 5Hz and 0dB at 20Hz, and just 0.05dB down at 20kHz and 0.18dB down at 40kHz. This means that when normalised, the audio-band frequency response is 20Hz–20kHz ±0.025dB.

The red trace on Graph 7 shows the Vajra's frequency response when it's driving a test load that simulates a load presented by a typical two-way sealed enclosure loudspeaker. *Newport Test Labs* uses the same test load as *Stereophile* magazine, a circuit that was originally developed by Ken Kantor (NHT) and subsequently modified by John Atkinson by the addition of a Zobel

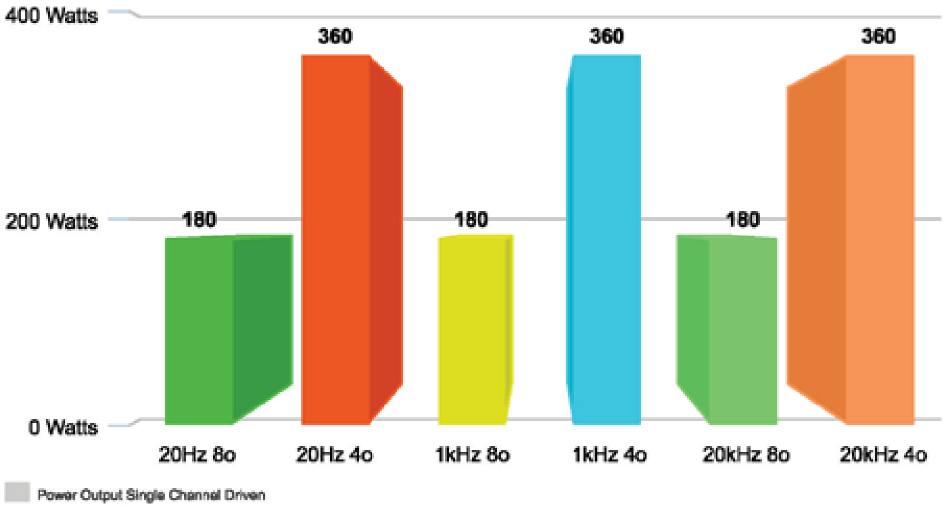
OAD Ultrafidelity Vajra Power Amplifier – Test Results – Power Output

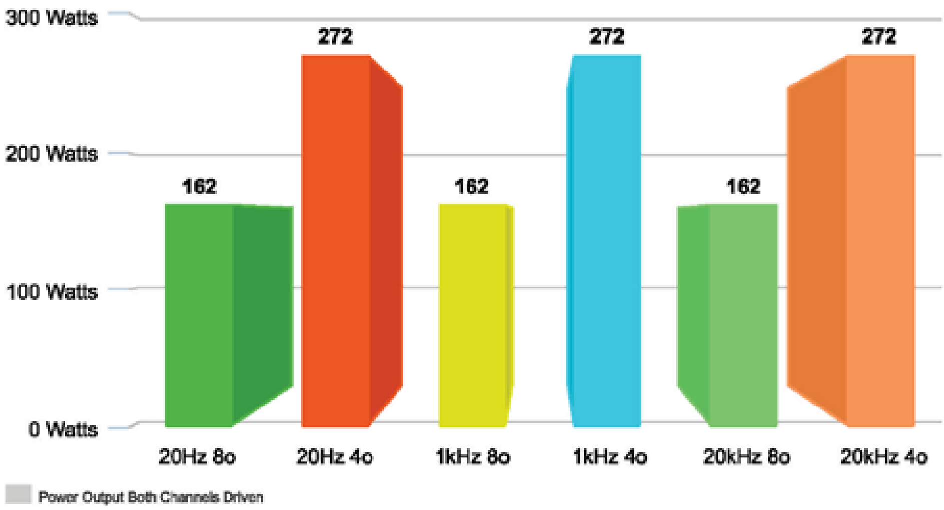
Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8Ω	180	22.5	180	22.5	180	22.5
2	8Ω	162	22.1	162	22.1	162	22.1
1	4Ω	360	25.5	360	22.5	360	25.5
2	4Ω	272	24.3	272	24.3	272	24.3

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

OAD Ultrafidelity Vajra Power Amplifier – Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	1Hz – 198kHz	–1dB
Frequency Response @ 1 watt o/p	1Hz – 290kHz	–3dB
Channel Separation (dB)	71dB / 113dB / 61dB	(20Hz / 1kHz / 20kHz)
Channel Balance (Direct/Tone)	0.016	dB @ 1kHz
Interchannel Phase (Direct)	0.07 / 0.05 / 1.00	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.007%	@ 1-watt
Signal-to-Noise (unwghted/wghted)	85dB / 92dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wghted)	97dB / 105dB	dB referred to rated output
Input Sensitivity (Unbalanced)	152mV / 193mV	(1-watt / rated output)
Output Impedance	0.03Ω	at 1kHz
Damping Factor	266	@1kHz
Power Consumption	N-A / 79.2	watts (Standby / On)
Power Consumption	82.62 / 490	watts at 1-watt / at rated output
Mains Voltage Variation during test	243 – 245	Minimum – Maximum





network (a resistor and capacitor in series) across the input terminals. If you're interested in what the circuit looks like and the load it presents, you can find both here: https://tinyurl.com/Kantor1z

As you can see, the Vajra's response into this simulated loudspeaker load tracks its response into a resistive load almost perfectly out to 4kHz, after which it drops to 0.1dB below it out to 30kHz, and after which again it is slightly higher out to the graphing limit. This slight drop is too small to be audible. The normalised response with this load is still 20Hz – 20kHz ±0.04dB.

Channel separation was outstandingly good at 1kHz, with *Newport Test Labs* reporting a measurement of 113dB at this frequency. Separation diminished at the frequency extremes, as you can see for yourself from the tabulated chart, but results of 71dB at 20Hz and 71dB at 20kHz are still figures that will guarantee perfect stereo imaging and no audible bleed from one channel to the other. Channel balance was a brilliantly good 0.016dB at 1kHz, demonstrating both excellent design and quality control.

Interchannel phase accuracy was also outstandingly good, with the OAD Vajra returning errors of just 0.07 degrees at 20Hz, 0.05 degrees at 1kHz, and 1.05 degrees at 20kHz.

Newport Test Labs measured distortion at 1kHz at an output of one watt into an eight-ohm non-inductive load, the result of which test is shown in Graph 1. The test signal at 1kHz is at the left of the graph. You can see that the related harmonic distortion components are all more than 100dB down, so overall distortion is less than 0.001%.

As for the individual harmonic components, the second harmonic (at 2kHz) is around –102dB (0.00079%), and the third (at 3kHz) is at –104dB (0.00063%). Even though these levels are too low to be audible, they are benign in that they're 'good sounding' distortions due to being harmonically euphonious with the fundamental (that is, they're the octave and the fifth). The fourth and fifth harmonics are down at –118dB (0.00012%). As you can see, other harmonic and non-harmonic distortions are visible above the noise floor higher up in frequency, but all are more than 125dB down, and so would contribute less than 0.00005% to the overall THD (which, as you can see from the tabulated results, was measured as being 0.007%).

On Graph 1, the noise floor is very, very low, at around 140dB down referenced to just a one-watt output, except at low frequencies, where some power supply noise is visible at the extreme left of the graph. It appears that there is some 50Hz signal that is 90dB down (0.00316%), after which the harmonics are mostly more than 100dB down (0.001%).

Reducing the load impedance whilst still maintaining the output level at one watt resulted in the performance shown in Graph 2. You can see that the second harmonic has remained at –102dB (0.00079%) but the third harmonic has increased a little in level to be –92dB (0.00251%), where it would still be inaudible. The lower impedance has also caused the odd fifth, seventh and ninth harmonics to increase in level, all to around –105dB (0.00056%). Even higher in frequency, some distortion components are now above –120dB (0.0001%).

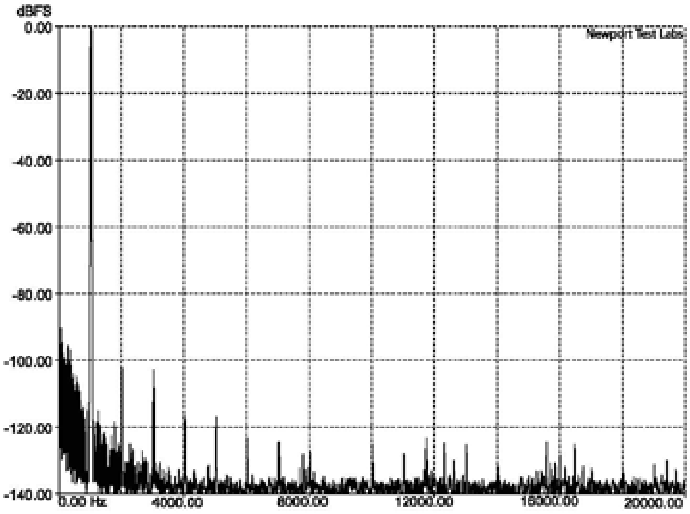
Graph 3 shows the performance of the Vajra when it's delivering 20 watts of power into a non-inductive eight-ohm load with a 1kHz test signal. The most obvious difference is the lack of noise in the output — noise between 3kHz and 20kHz is all more than 140dB down, which is an amazingly good result. (Note that this means noise *at each frequency*, not overall noise!) Note, too, that the noise associated with the power supply (mains hum and harmonics) has also dropped, so that the highest peaks are now at around –105dB, though this is of course to be expected, given that the top of the graph (0dBFS) is now 20 watts (12.6 volts).

You can also see on Graph 3 that the second harmonic is at –100dB (0.001%), the third and fourth harmonics are both at around –110dB (0.00031%), and the fifth and seventh harmonics are both at around –105dB (0.00056%), with the sixth at –120dB (0.0001%) and the eighth at –130dB (0.00003%). An excellent performance.

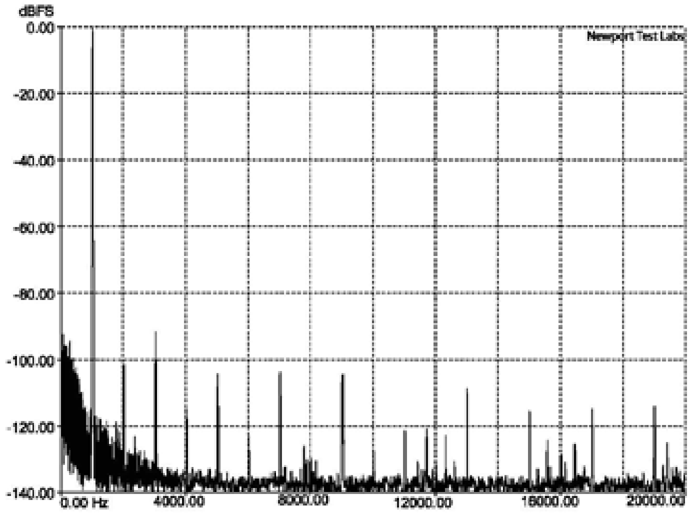
When the load impedance was halved to four ohms, using a 1kHz test signal at 20 watts, the result was as shown in Graph 4. The noise floor across most of the audio band has remained much the same as with an eight-ohm load (a very slight increase) and the power supply noise has also increased very, very slightly. The primary difference is that most of the harmonic distortion components have increased in level with all of the odd-order components out to 9kHz sitting at around –100dB (0.001%).

Intermodulation distortion (CCIF twin-tone, using 19kHz and 20kHz test signals of equal level) into eight ohms is shown for a one-watt output in Graph 5, and for a 20-watt output in Graph 6. At one watt, you can see an excellent result, with only two significant signals either side of the test tones, with the 18kHz signal at –92dB (0.00251%)

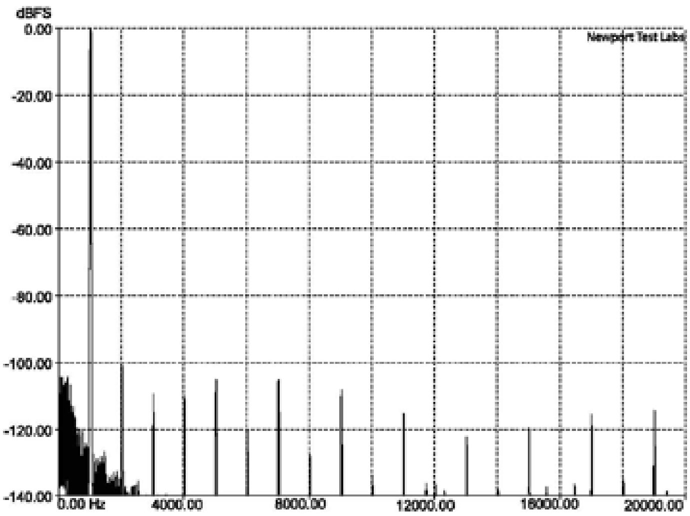
Overall, a superb performance... a quiet, high-powered, ultra-linear and low-distortion amplifier



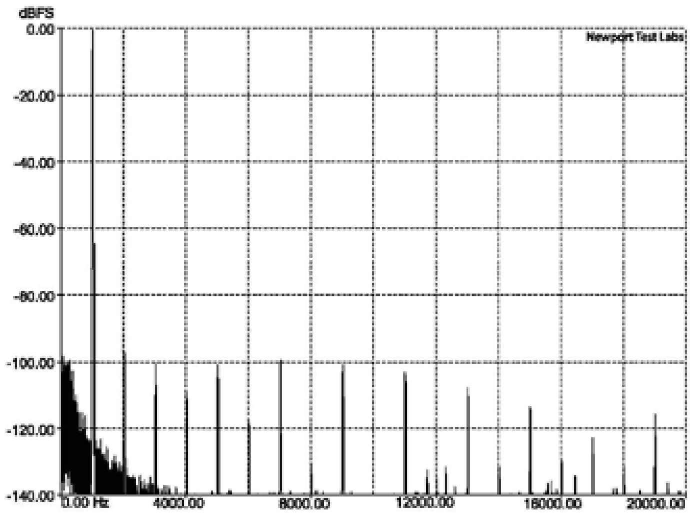
Graph 1. Total Harmonic Distortion for a 1kHz test signal at a level of 1-watt into 8 ohms.



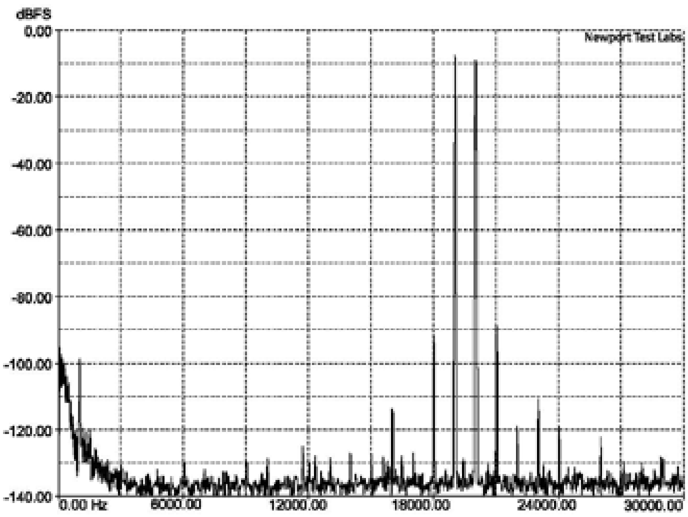
Graph 2. Total Harmonic Distortion for a 1kHz test signal at a level of 1-watt into 4 ohms.



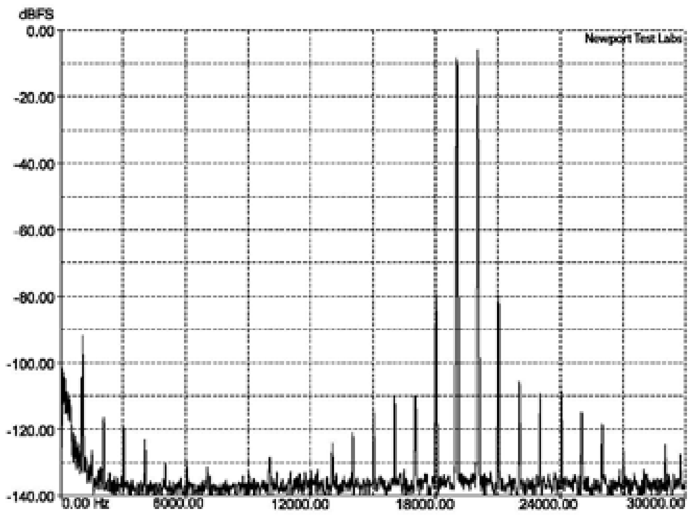
Graph 3. Total Harmonic Distortion for a 1kHz test signal at a level of 20-watts into 8 ohms.



Graph 4. Total Harmonic Distortion for a 1kHz test signal at a level of 20-watts into 4 ohms.



Graph 5. Intermodulation Distortion (CCIF) into 8 ohms at a level of 1-watt.



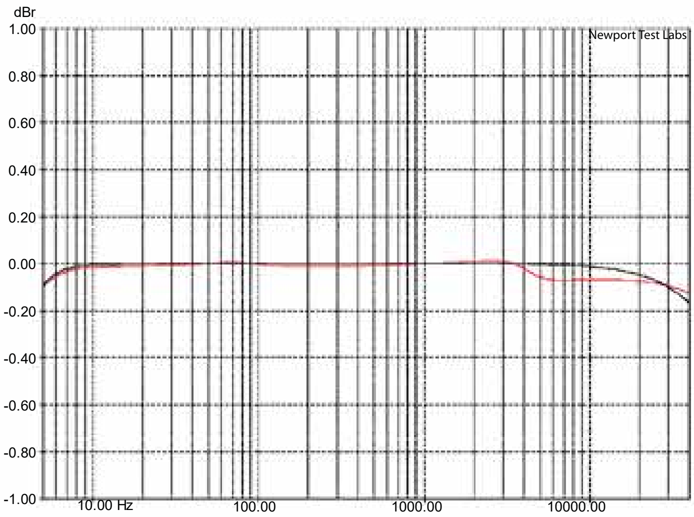
Graph 6. Intermodulation Distortion (CCIF) into 8 ohms at a level of 20-watts.

and the 20kHz signal at –88dB (0.00398%). The other high-frequency sidebands are more than 110dB down (0.00031%). There is a difference signal at 1kHz, but it's sitting way down in level, at –98dB (0.00125%).

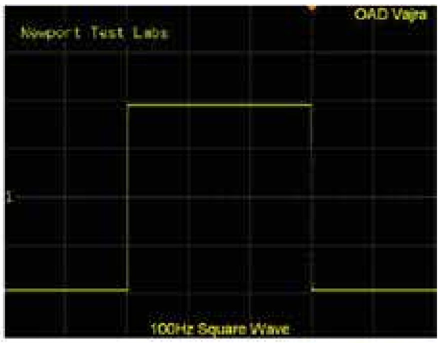
At the higher power level of 20 watts, the 18kHz and 20kHz sidebands have increased in level to –80dB (0.01%), which is still commendably low. Although there are more high-frequency sidebands, their level is still very low, with all except one being more than 110dB down (0.00031%) and the exception being at –105dB (0.00056%). The regenerated 1kHz signal is slightly higher in level, but still more than adequately low at –92dB (0.00251%).

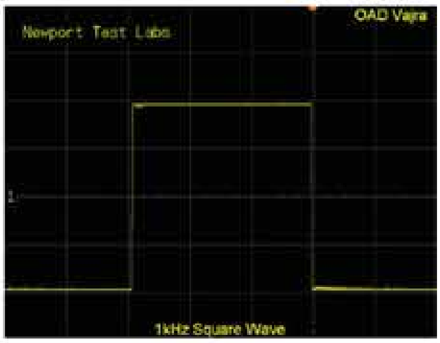
Newport Test Labs measured the signal-to-noise ratios of the OAD Vajra referenced to a one-watt output as being 85dB unweighted and 92dB IHF A-weighted. Referenced to rated output (the more usual measurement), the lab reported signal-to-noise ratios of 97dB unweighted and 105dB A-weighted.

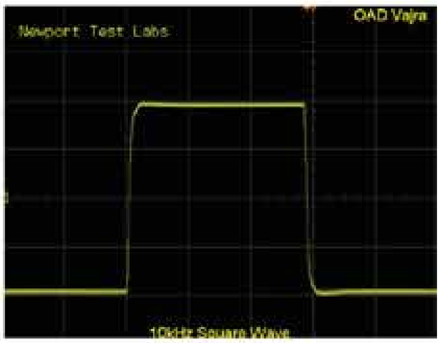
Given the flat and extended frequency response of the OAD Vajra, we were expecting to

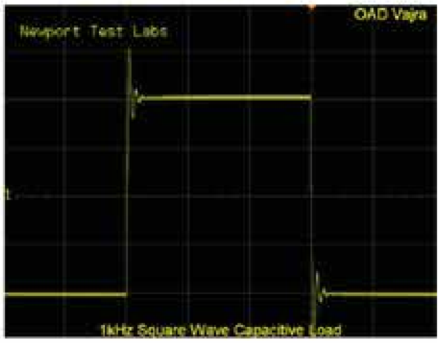


Graph 7. Frequency response at 1-watt into an 8 ohm resistor (black trace) and simulated loudspeaker load (red trace).









see very well-formed square waves resulting from the square wave testing, and our expectations were met in spades.

As you can see for yourself, the 100Hz square wave is textbook — the perfect square wave, looking as though it came straight from *Newport Test Labs*' square wave generator, rather than via the Vajra.

The 1kHz square wave is also a perfect representation, as you can see. Both the verticals and the horizontals track the relevant graticules of the oscilloscope. An outstanding performance yet again.

The OAD's performance with a 10kHz square wave was exceptionally good, to the point of very likely being the best we've ever seen from any amplifier. The rise time is exceptionally fast, with only the very slightest curve at the top of the leading edge. A superb performance.

The Vajra also excelled itself when driving the very difficult and complex load presented by an eight-ohm resistor in parallel with a 2μF capacitor, which is the fourth oscillogram shown in the series. The amplifier is not only completely stable into this demanding load, the overshoot is less than one-quarter amplitude and the output settles completely in just two cycles. Yet again, superb performance!

Input sensitivities were very close to those specified by OAD, with *Newport Test Labs* reporting that using the unbalanced inputs, you'd need 152mV to result in an output of one watt into eight ohms, and 1.93Volts to deliver rated output. Via the balanced inputs, you'd need 304mV to deliver a one-watt output, and 3.86 volts to deliver rated output. This puts overall gain at 25.6dB, a fraction less than the specification of 27dB.

Output impedance was measured as 0.3 ohms at 1kHz, which gives a damping factor of 266 — somewhat less than the "greater than 500" claimed by OAD, but at the same time far, far more than the DF of 50 that Floyd E. Toole says "is more than sufficient to properly control the back-EMF from any loudspeaker".

The OAD Vajra will draw just under 80 watts from your mains power supply whenever it's switched on, even if you're not using it to listen to music (and a bit over when you are). If you're playing at its maximum output, it will be pulling a shade under 500 watts from your mains.

Overall, a superb performance from the OAD Ultrafidelity Vajra. It is a quiet, high-powered, ultra-linear and low-distortion amplifier.

Steve Holding

SPECIFICATIONS

Frequency Response: 0Hz–100kHz (–3dB)

Power Output (8Ω): 180 watts per channel

Power Output (4Ω): 360 watts per channel

Gain: 27dB

Input Sensitivity: 4V/2V (Balanced/Unbalanced)

Input Impedance: 24kΩ/12kΩ (Balanced/Unbalanced)

Damping Factor: >500

Noise Out: <–100dBu (0–22kHz/Rs=50R)

THD: 0.005% (@1kHz)

Dimensions (HWD): 160 x 430 x 360mm

Weight: 30kg