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CYRUS i7-XR

A classic amp reimaged – and taken to the next level



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FUTURE



CYRUS i7-XR

INTEGRATED AMPLIFIER

The XR Series is a complete new range for Cyrus, one that's designed to complement this famous British manufacturer's existing 6 Series and 8 Series components. And note that when I say 'British manufacturer' I need to emphasise that Cyrus is one of the very few British brands that is still manufacturing its products in Britain. Most of the others have shifted their production to the EU, Taiwan, China or Korea.

THE EQUIPMENT

The Cyrus i7-XR is built on exactly the same chassis that Cyrus uses to build its CDi-XR CD player, CDt-XR transport, Pre-XR preamp, another higher-powered integrated amplifier (i9-XR) and an external power supply unit — PSU-XR — that can be used

to upgrade the power supply of any model in the XR Series. Which means, of course, that if you like all your components to look similar, and maybe even stack them on your table, floor, or equipment rack, you've come to the right place.

If you like your hi-fi to be compact, you're also in exactly the right place, because although the photographs accompanying this review don't show it, the Cyrus i7-XR doesn't stand all that much higher than the proverbial matchbox. To be exact, it's just 73mm high. It's also remarkably narrow, at 215mm wide. It does, however, extend rearwards somewhat when it comes to depth, being 360mm deep.

The small size of the Cyrus i7-XR might tempt you to think it has a Class D or a monolithic output stage, and maybe a switch-mode power supply, but it's a straight-ahead analogue design throughout, with a Class A/B output stage that uses just two output transistors per channel, and just a single pair of electrolytic smoothing/storage capacitors in the power supply, following on from a multi-tapped toroidal transformer designed specifically for Cyrus.

As for the digital circuitry, that's based around the new second-generation version of Cyrus's original QXR DAC, which it developed in 2019 and offered as a DAC module upgrade to its amplifiers, preamplifiers and DACs of the previous decade. The new version still uses a DAC

made by ESS, but both the power supplies that drive it and the reconstruction filters that follow it are new 'ground-up' designs by Cyrus's own in-house design team, according to the company.

Cyrus's design team has also drawn on its own existing engineering for the i7-XR's phono stage, which it says "takes thinking and technology from the Phono Signature".

Cyrus certainly is not shy about how it promotes its XR Series to potential customers. Says the company: "The XR Series is our latest and greatest series of products. An uncompromising range of discrete audiophile components, the performance of which elevates Cyrus into the very highest echelons of transparency and precision, XR is nothing short of a revolution in audio quality. Built from the ground-up, using an accumulated knowledge of over a decade, XR represents the best-in-class application of new DAC technologies, power supply design, circuit topology, user interface and is built entirely in the UK using the highest specification of components."

It may not be immediately obvious from the photographs, but the eight rectangular controls on the front panel are not buttons, but are instead touch-sensitive switches, and all of them except for the power button are located on a slight slope, because the front panel angles outwards and downwards at its very bottom. I find touch sensitive switches

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can be somewhat erratic in operation, so I was pleased to discover that the i7-XR's switches can be adjusted through different levels of sensitivity, as well as calibrated for your specific environment and, indeed, your skin conductivity.

Pressing the right-most of the two input switches cycles the inputs through the four available line-level analogue inputs, the phono input, two optical digital inputs (Dig 1 and Dig 2), two coaxial inputs (Dig3 and Dig4) and finally a USB input. Pressing the left-most button cycles back through the inputs in the opposite direction, which is good because once you are familiar with the sequence you can access the input you want much faster by going in the shorter of the two directions.

The operation of the mute button is obvious, but it's only on and off and does not un-mute when you adjust volume, either using the front panel control or the rocker switch on the remote control. However, the amplifier sensibly does not allow you to adjust volume while it's muted, which avoids any potential loudspeaker-damaging situations. I must admit, however, that I prefer muting schemas that allow you to reduce (but not increase!) volume level whilst the muting is still engaged.

The balance switch operates only in conjunction with the volume control, which switches its operational mode whenever the balance switch is activated. When it is, two elongated triangles appear on the front panel display, both of which are 'empty' if the balance is centred, after which one or the other of the triangles will gradually 'fill' as you turn the volume control. This looks very cute and arty, but a numeric display would have allowed higher precision.

The 'Filter' button lets you select which

filter you wish to use when utilising one of the digital inputs. Once filter selection is activated, you then use the volume control to switch between the seven available filters that Cyrus identifies as: 'Steep Linear', 'Gentle Linear', 'Steep Minimum', 'Gentle Minimum', 'Apodising', 'Hybrid', and 'Brick Wall'. Cyrus advises that the filter's default setting provides "best all-round performance" while also noting that "different filter settings may be required to get the best results for different sources, recordings and formats".

The 'Menu' button allows you to customize various Cyrus i7-XR's features, accomplished by rotating the volume dial to switch through the available customizable options, and then pressing it inwards to select them (or doing the same with the joy-stick button on the remote).

For some reason my review sample wouldn't let me use the front-panel volume control to select, so I had to use the remote's Enter/Select button instead... or at least I did until this also refused to perform its intended function. I suspect both these issues were simply software issues that could be rectified by a reboot and/or a firmware update. If the latter, there's an update port on the rear panel that makes it easy to do.

The features you can customise include setting different sensitivities for each of the analogue inputs, having the amplifier automatically switch (or not switch!) to headphone mode whenever headphones are plugged in, setting a maximum possible playback volume level for each input (including headphones), and altering the name of the selected input as it's shown on the front-panel display (though only from a pre-populated list; you can't program your own names for the inputs).

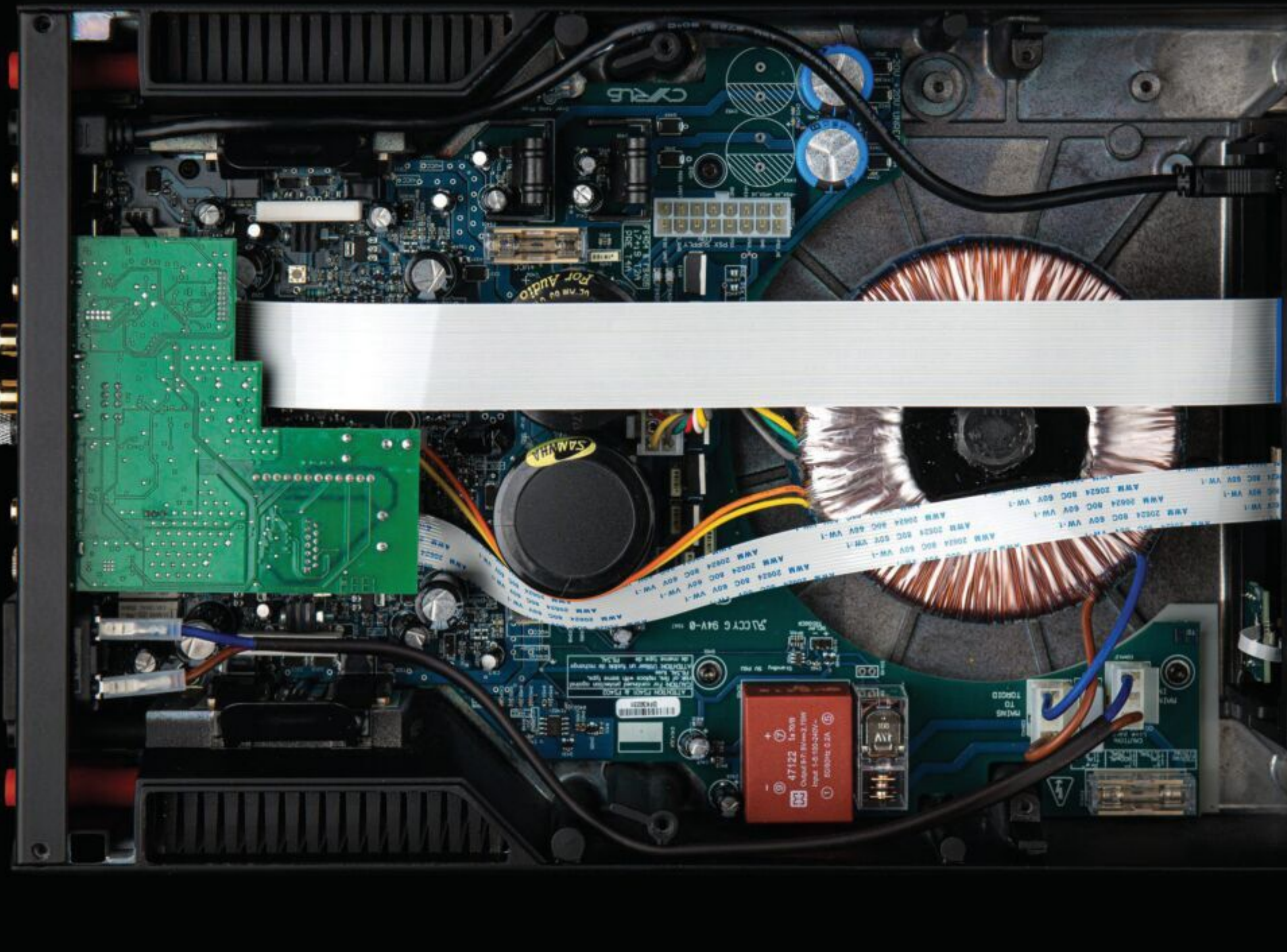
Speaking of the front-panel display, you can also customise it by choosing whether you prefer light text on a dark background or *vice versa*, the contrast between the two, and the display's overall brightness. You can also choose the language you'd like to be displayed. To which end the manual very sensibly (but likely a bit tongue-in-cheek) notes: "Avoid changing the language to a language you can't read. It will be difficult to reset to your local language if you can't read the display."

The real-estate on the rear panel of the Cyrus i7-XR is almost entirely given over to the connectors required to service this integrated amplifier's myriad built-in features. Eight of these are exceedingly unusual — at least they are here in Australia — because rather than provide the usual convention multi-way threaded speaker binding posts, Cyrus has instead provided sockets that accept only 4mm banana plugs ... and not just any 4mm banana plugs, but a special kind that has a hollow core.

Hollow-cored banana plugs are extremely difficult to obtain in Australia, but can be purchased from Farnell (Deltron 595-0100 [Black] and Deltron 595-0500 [Red]). Luckily you won't need to source and buy them yourself, because Cyrus supplies a set of two in red and two in black. These are gold-plated but not as well-made as the Deltron plugs and have bare ends, whereas the aftermarket Deltron connectors are indeed fully insulated.

The Cyrus-branded hollow-core banana plugs supplied with my review amplifier had threaded holes to allow you to use screws to fasten your speaker wires to the connectors, but the threaded holes were exactly that — threaded holes. The all-essential grub screws were missing. No doubt this was





an oversight during the packing process and your dealer will provide them if they are missing from the plugs supplied with the amplifier you buy. I did try to screw in standard M4 grub screws, which looked the right size, but the M4 thread didn't match the thread Cyrus was using, so I was out of luck there.

All the RCA terminals on the rear panel are gold-plated. The ground screw is nickel-plated. I rather liked the quaint graphic of a turntable that is located immediately above the ground screw and adjacent to the phono input, but I liked even more the quaint graphic of a pair of headphones that puts each of its earpieces either side of the 3.5mm headphone socket. What I didn't like was that the socket is not a standard 6.35mm headphone socket, nor the fact that it's at the rear of the amplifier and therefore not easily accessible. If you use headphones regularly, I would recommend connecting a headphone extension cable with your preferred socket at the other end, so you can have the socket type you prefer located in a place that's more convenient.

Also on the rear panel is a USB-B input for digital audio, a USB-A input for software upgrades, and two optical digital inputs as well as two coaxial SP/DIF inputs. A plate on the rear can be removed if you wish to

...so precisely drawn
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throughout...

upgrade the i7-XR's own internal power supply by instead using the PSU-XR external power supply I mentioned previously. What is not on the rear panel is a mains power switch, which means that the Cyrus i7-XR can only be switched between 'Standby' and 'On', so you'll need to pull the mains plug whenever you go on holiday.

Do not be intimidated by the 39 buttons on the rather complex and hefty oversized infra-red remote control that Cyrus supplies as standard with the i7-XR, because 15 of them are reserved for use with other Cyrus components and have no affect on the amplifier's operation.

LISTENING SESSIONS

Despite its low-ish power output (Cyrus claims 52 watts per channel into 6 ohms, which by my reckoning would put its output into 8-ohm loads at a bit over 40 watts per channel), the Cyrus i7-XR was still able to drive all the loudspeakers I used when evaluating it for this review to sound pressure levels I consider to be more than adequate to deliver high-fidelity reproduction at realistic levels in a typical Australian living-room.

During my listening sessions, I found the sound quality at all my auditioning levels crystal-clear and effortlessly articulate and natural. By way of example, when I played Eminem's *Killshot*, his biting vocal cut through the middle of the soundstage with such intensity and focus that it was as if he were spitting the lyrics just centimetres from my face during a rap battle. This track is fast and lively, and the Cyrus easily kept up with the pace.


Listening to Ludovico Einaudi's *Oltremare*, I found the music to be so precisely drawn and dynamically varied that I was more than able to stay interested throughout the entirety of the composition, which is more

than I could say of some of the blancmange-sounding amps out there, so there's plenty to like in the Cyrus i7-XR's delivery of musical subtleties.

Although most of my listening was done using the analogue inputs (both line-level and phono), I did my due diligence for this review by spending a lot of time with the i7-XR's digital inputs, both coaxial and USB, and am pleased to report that Cyrus's second-generation QXR DAC is rather quieter than the original, so I enjoyed an even greater dynamic range whilst still enjoying extremely low distortion and a massively extended frequency response. I certainly appreciated the flexibility of being able to select different digital filters to best suit whatever I was auditioning, though if you don't want to experiment, I'd suggest sticking with the 'Apodising' option.

CONCLUSION

The Cyrus i7-XR is an excellent performer in its own right, yet it offers further-improved performance by adding the optional Cyrus PSU-XR. Despite my comment about power output being sufficient for the intended purpose, I would still suggest you match this amplifier with loudspeakers of above-average efficiency if you wish to extract the best performance from it.

Relating performance to recommended retail price, I'd have to say that the Cyrus i7-XR integrated obviously makes the most sense if you do not already own a good phono stage or DAC, not least because you are going to be more than happy with the performance of the ones built in, but also because you're getting not just an integrated amplifier for your money, but also a damn fine DAC and phono stage, which are benefits Cyrus should probably do more to emphasise in its marketing materials. 

CONTACT DETAILS

Brand: Cyrus

Model: i7-XR

RRP: \$4,499

Warranty: One Year

Distributor: Indi Imports Pty Ltd

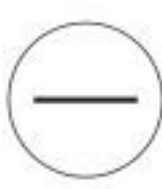

Address: P.O. Box 9184

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- Excellent sound quality
 - Great aesthetic design
 - Flexible on-board DAC
 - Speaker terminals
 - H/phone socket & location
 - Lowish power output

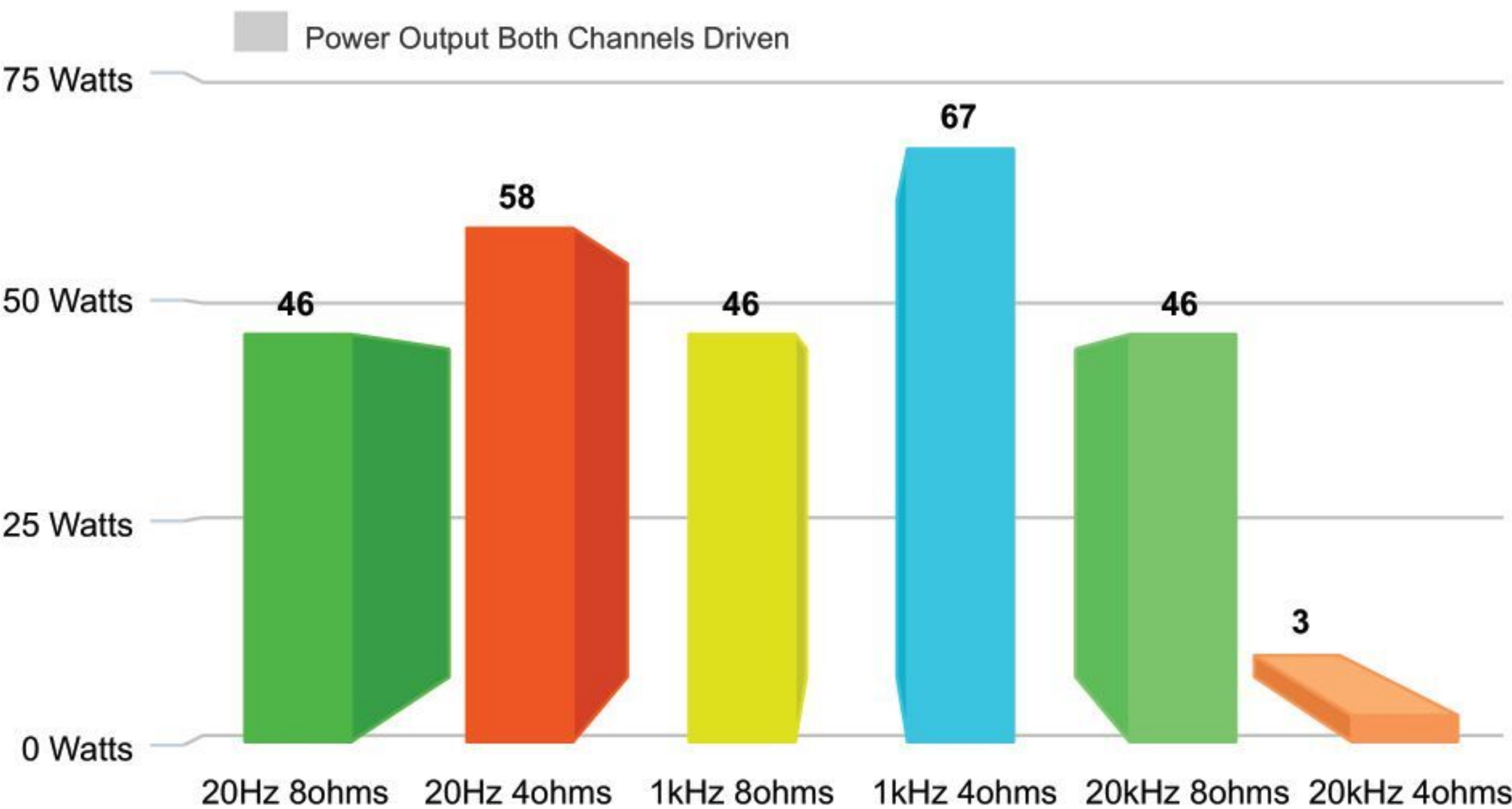
Readers interested in a full technical appraisal of the performance of the Cyrus i7-XR Integrated Amplifier should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

LABORATORY TEST REPORT

The reason Cyrus specifies power output into 6 ohms rather than the industry-standard (and US, EU and Australian standard) 8-ohm load is evident from the tabulated chart showing the measurements that *Newport Test Labs* made of the i7-XR's power output with both channels driven, which you can see was 46 watts per channel (16.6dBw) at all three frequencies tested (20Hz, 1kHz and 20kHz). Being able to claim an output above 50 watts per channel is more impressive than claiming an output power below this. Power output increases slightly (1.4dB) when only a single channel is driven, which suggests that the power supply is unregulated.

Newport Test Labs measured the both-channels-driven power output into 4-ohm loads as 67 watts (18.3dBw) per channel at 1kHz, but at 20Hz, it was only 58 watts (17.6dBw) per channel, which reveals a power supply limitation that is presumably overcome by using the outboard power supply that's optionally available for this model. The 'PRO' on the tabulated chart showing power output at 20kHz is because the i7-XR's onboard protection circuitry triggered whenever the amplifier was tasked with delivering a continuous high-frequency signal into a low-impedance load. The amplifier shut itself down in this situation and showed a front-panel display that reads "Error. Amp Over Current."

Separation between the left and right stereo channels was outstandingly good at low and midrange frequencies, with *Newport Test Labs* measuring 104dB at 20Hz and 106dB at 1kHz and still a very respectable



77dB at 20kHz. Channel balance was also a very good 0.03dB at 1kHz, which is far better than will ever be required.

Frequency response was very flat and much extended at both ends of the audio spectrum, with *Newport Test Labs* measuring the wideband -3dB points of the i7-XR's frequency response at lower than 1Hz and at 70kHz. The same result was measured at low frequencies for the 1dB downpoint, with the

higher frequency dropping down to 38kHz. Linearity across the audio bandwidth (and a bit beyond) is shown in Graph 1 both when the amplifier is driving a standard non-inductive 8-ohm laboratory test load (black trace) and also when it's driving a load that simulates the load that would be presented by a typical two-way bass reflex loudspeaker (red trace).

As you can see, despite the greatly

Cyrus i7 XR Integrated Amplifier – Test Results – Power Output

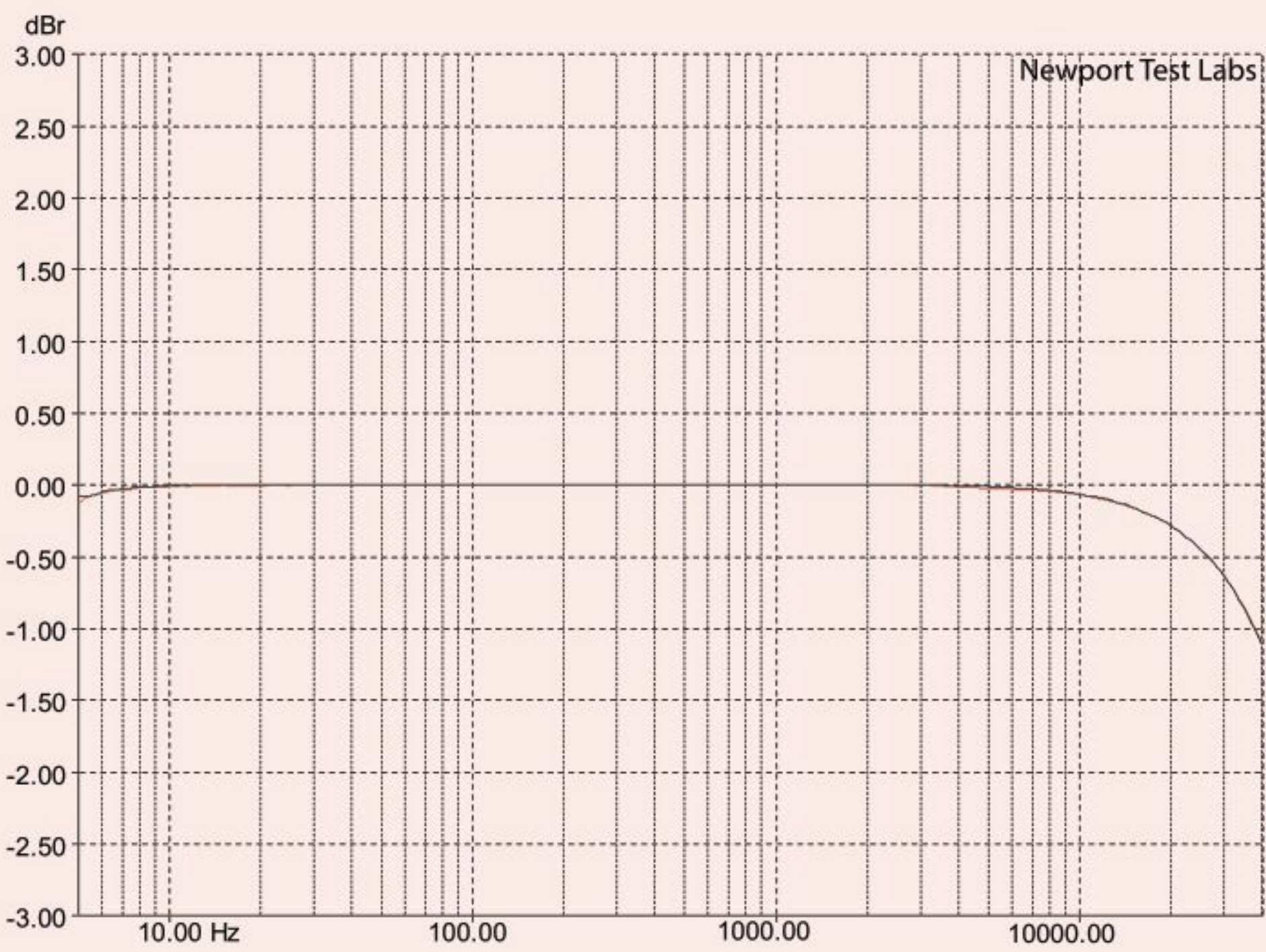
Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8 Ω	64	18.0	64	18.0	64	18.0
2	8 Ω	46	16.6	46	16.6	46	16.6
1	4 Ω	91	19.6	97	19.8	PRO*	N/A
2	4 Ω	58	17.6	67	18.3	PRO*	N/A

Note: Figures in the dBW column represent output level in decibels referred to 1W. (* Protection cct triggered).

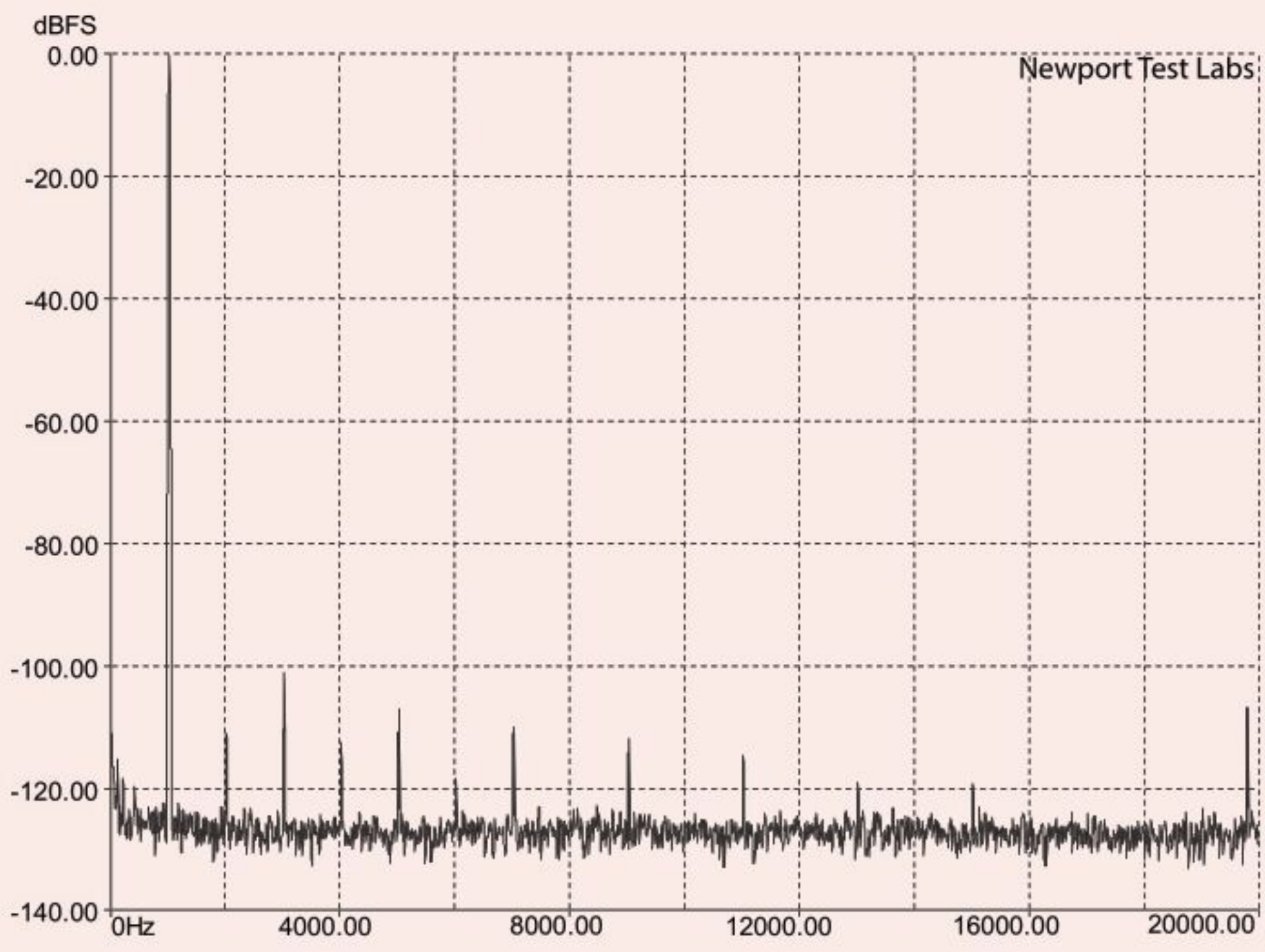
Cyrus i7 XR Integrated Amplifier – Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	<1Hz – 38kHz	-1dB
Frequency Response @ 1 watt o/p	<1Hz – 70kHz	-3dB
Channel Separation (dB)	104dB / 106dB / 77dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.03	dB @ 1kHz
Interchannel Phase	0.01 / 0.02 / 0.03	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.007% / 0.001%	@ 1-watt / @ rated output
Signal-to-Noise (unwghted/wgghted)	84dB / 89dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wgghted)	98dB / 103dB	dB referred to rated output
Input Sensitivity	27mV / 180mV	(1-watt / rated output)
Output Impedance	0.01Ω	at 1kHz
Damping Factor	800	@1kHz
Power Consumption	0.71 / 12.68	watts (Standby / On)
Power Consumption	63.09 / 290	watts at 1-watt / at rated output
Mains Voltage Variation during Test	239 – 243	Minimum – Maximum

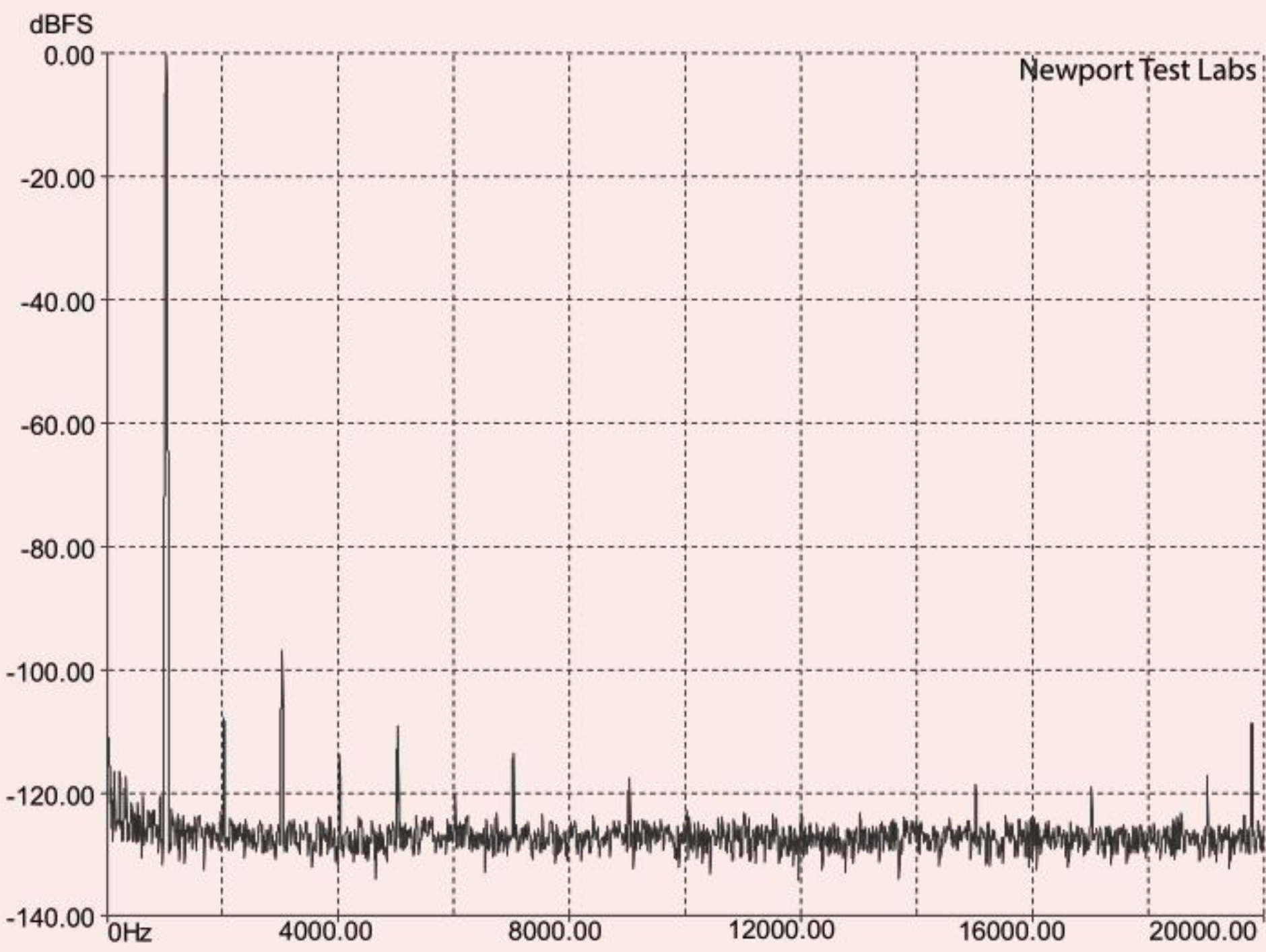
LAB REPORT



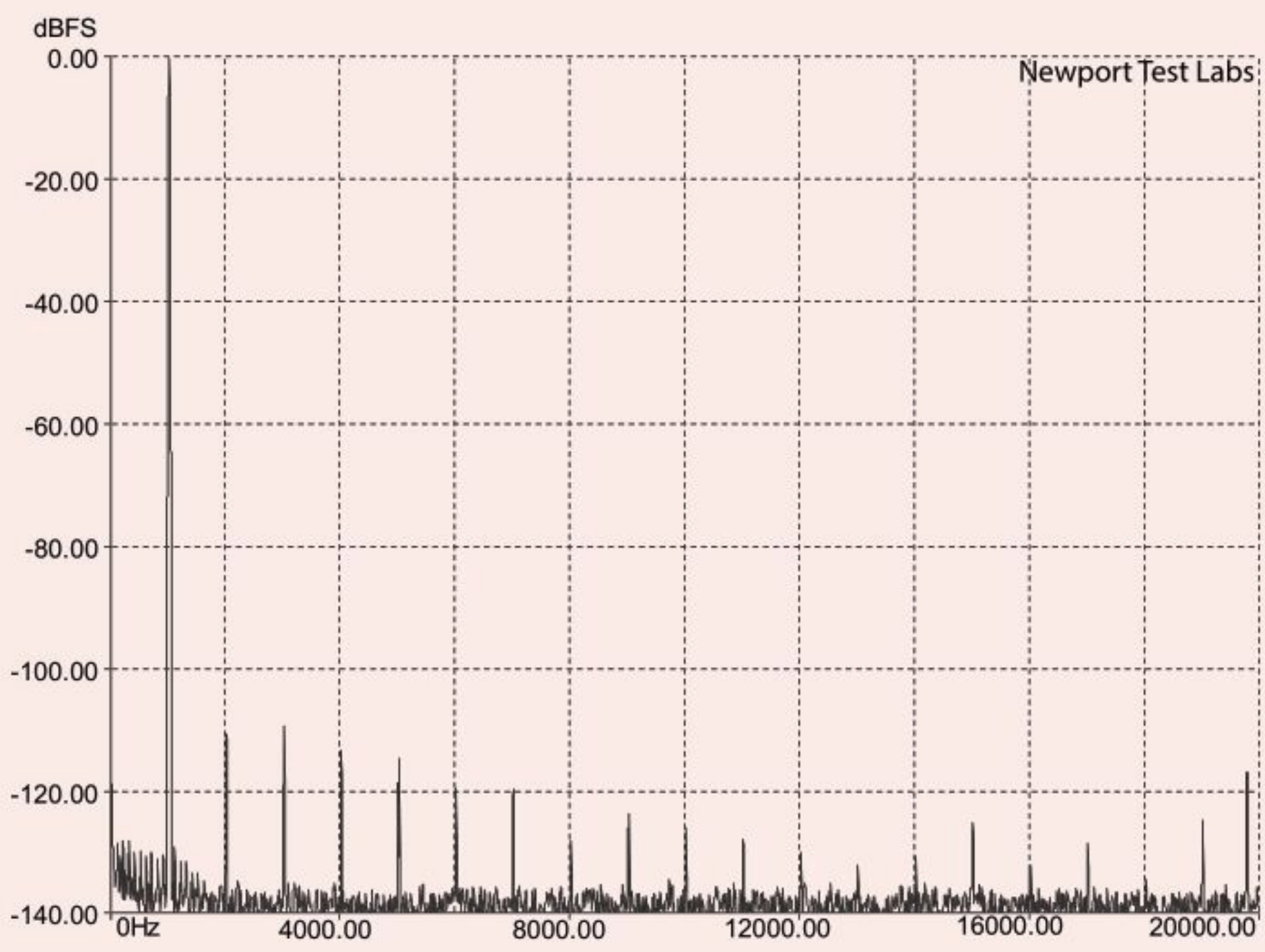
Graph 1: Frequency response at one watt into 8 ohms (black) and sim. spk load (red trace)



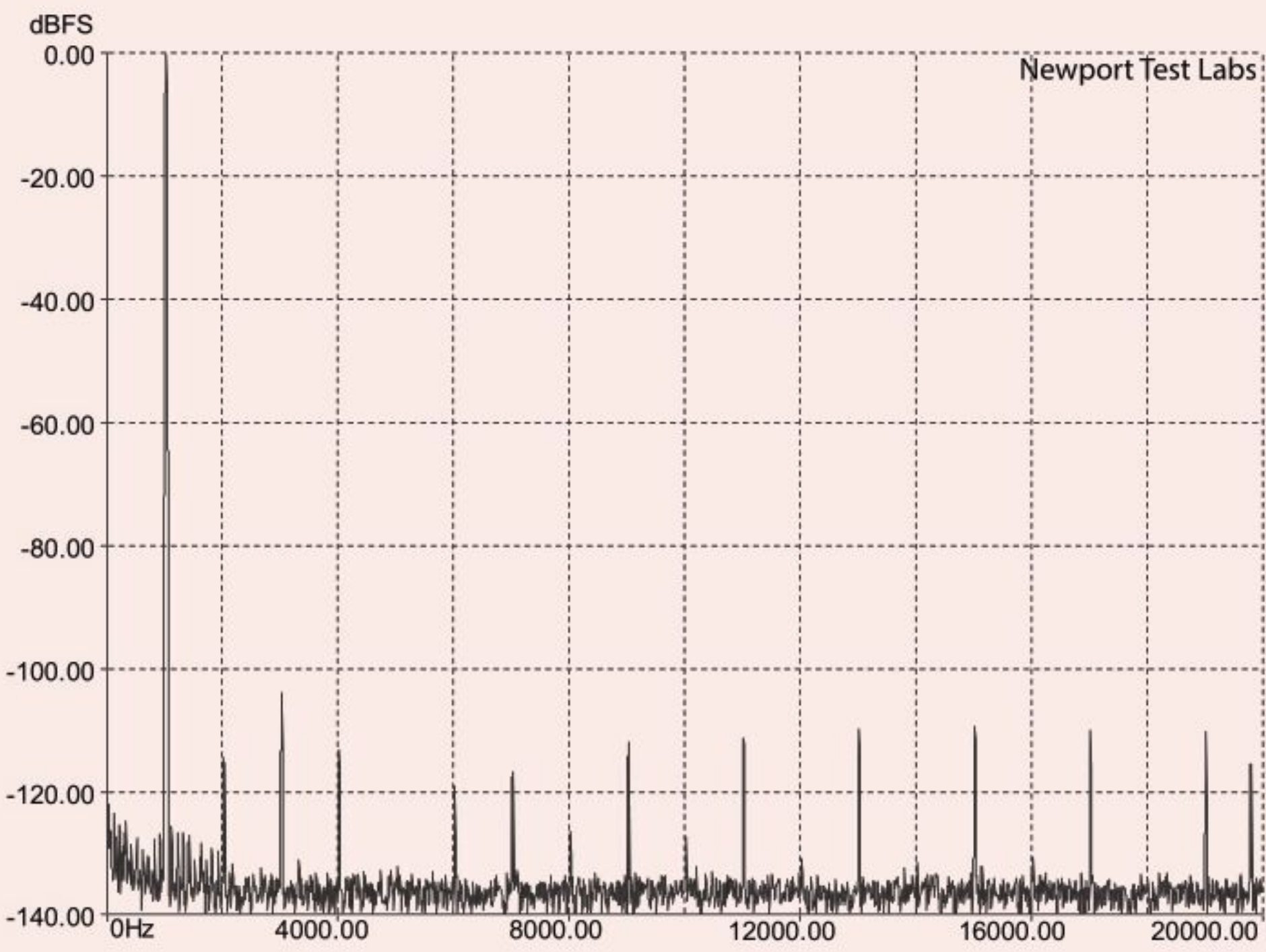
Graph 2: THD at 1kHz at an output of one watt per channel into 8 ohms.



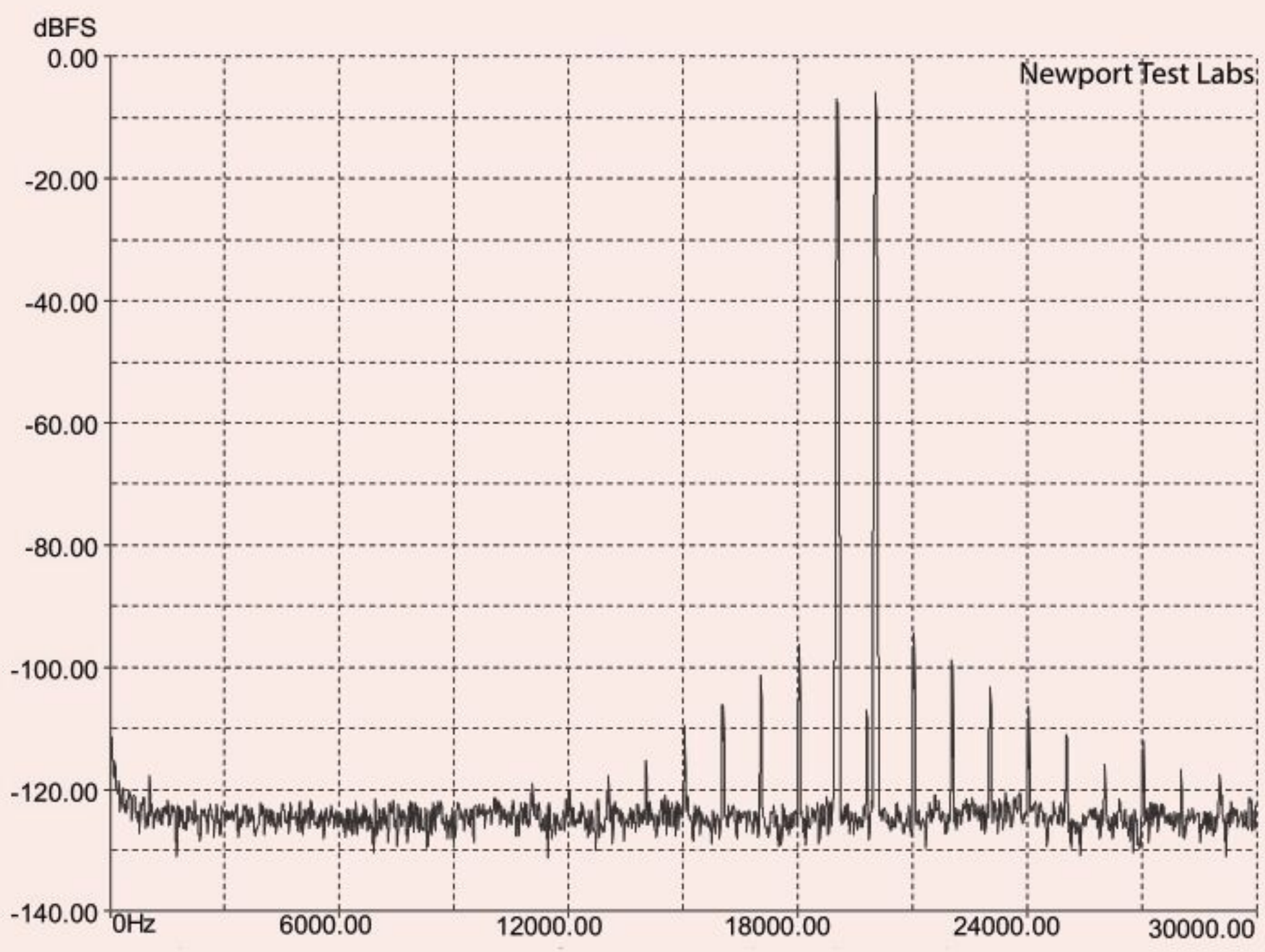
Graph 3: THD at 1kHz at an output of one watt per channel into 4 ohms.



Graph 4: THD at 1kHz at an output of 20 watts per channel into 8 ohms.



Graph 5: THD at 1kHz at an output of 20 watts per channel into 4 ohms.

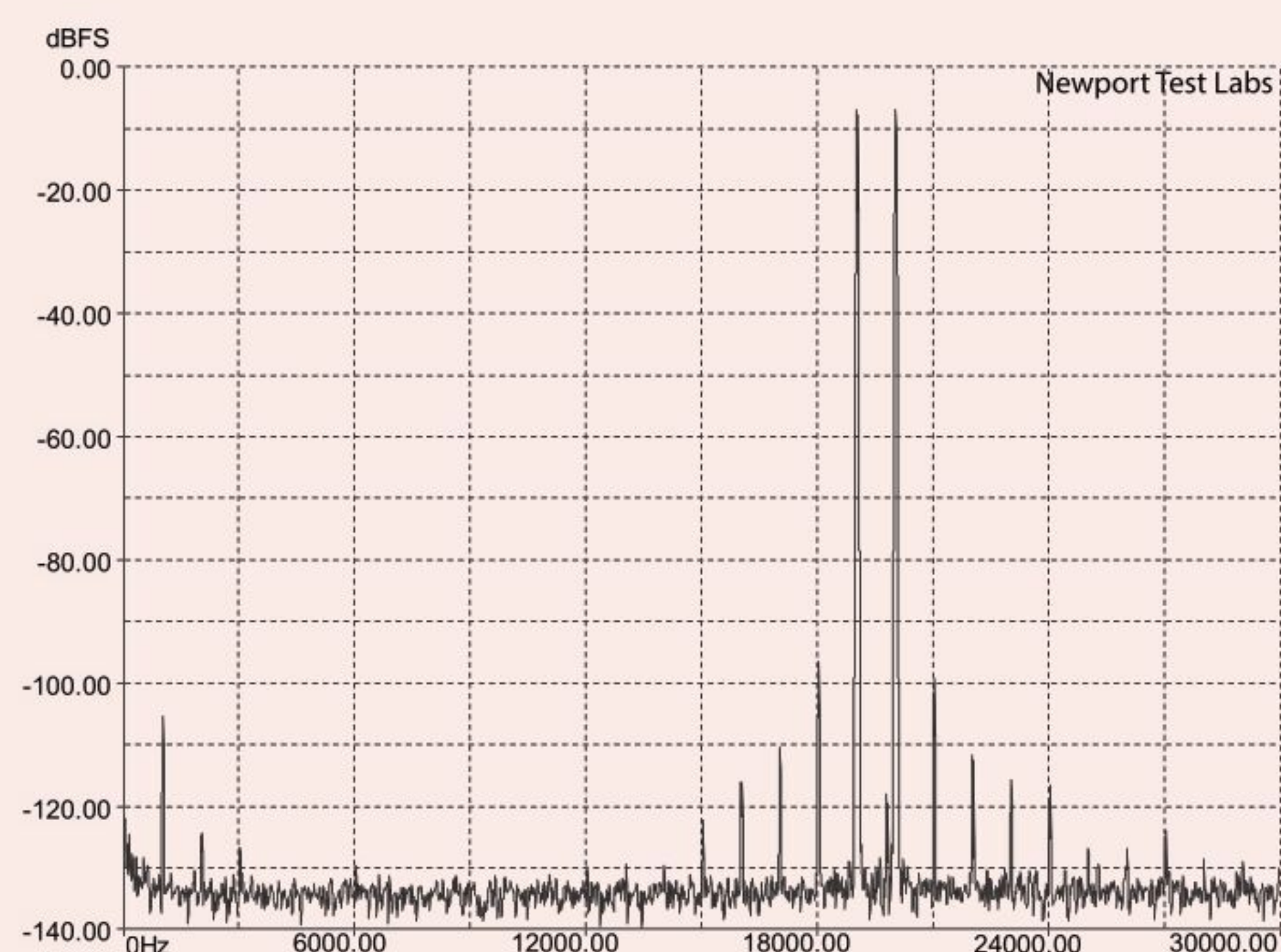


Graph 6: IMD (CCIF) at an output of 20 watts per channel into 8 ohms.

magnified vertical scale of this graph, where the top of the graph represents +3dB and the bottom -3dB, the two traces essentially overlay each other, which is an excellent result and means that the amplifier will essentially ‘sound’ the same no matter what loudspeakers you use in conjunction with it. In terms of linearity, you can see that the

response is absolutely ruler-flat from 10Hz up to 3kHz, then rolls off very, very slightly, to be 0.26dB down at 20kHz. This puts the normalised audio band response at 20Hz to 20kHz ± 0.13 dB. Graph 2 shows distortion in the output when the Cyrus i7-XR is delivering 1kHz into an 8-ohm load at a level of one watt.

Although there are multiple harmonically related components visible on the graph, all except two (the third-order harmonic component at -101dB [0.00089% THD] and the fifth-order at -108dB [0.00039%]) of them are more than 110dB down, so each one contributes less than 0.00031% to total THD. The odd-order distortion components



Graph 7: IMD (CCIF) at an output of 20 watts per channel into 8 ohms.

The 1kHz square wave is almost perfect — as if it came straight from the test generator itself, rather than the amplifier

are more prominent than the even-order components (it would have been preferable for this situation to be reversed). There also seems to be a non-harmonically related signal at a frequency a tad below 20kHz whose presence I cannot explain.

You can see on Graph 2 that the overall noise floor is very low, more than 120dB down across the audio spectrum except at low frequencies, where some power supply noise is visible at around -90dB. This is an excellent result. You should note, however, that these noise measurements are each at a specific frequency, not an overall wideband measurement of noise. You can see these measurements in the tabulated results, where *Newport Test Labs* measured 84dB unweighted, and 89dB A-weighted, both referred to a one-watt reference output level.

Distortion performance into a 4-ohm load is shown in Graph 3 and you can see that it's essentially similar to that into an 8-ohm load, which is very desirable, and although the third harmonic is higher in level than into 8 ohms, almost all other harmonics are slightly lower. However, all of this is of academic interest only, since none of it would be audible, being too low in level. Overall THD was measured at 0.007% at one watt, and 0.001% at rated output.

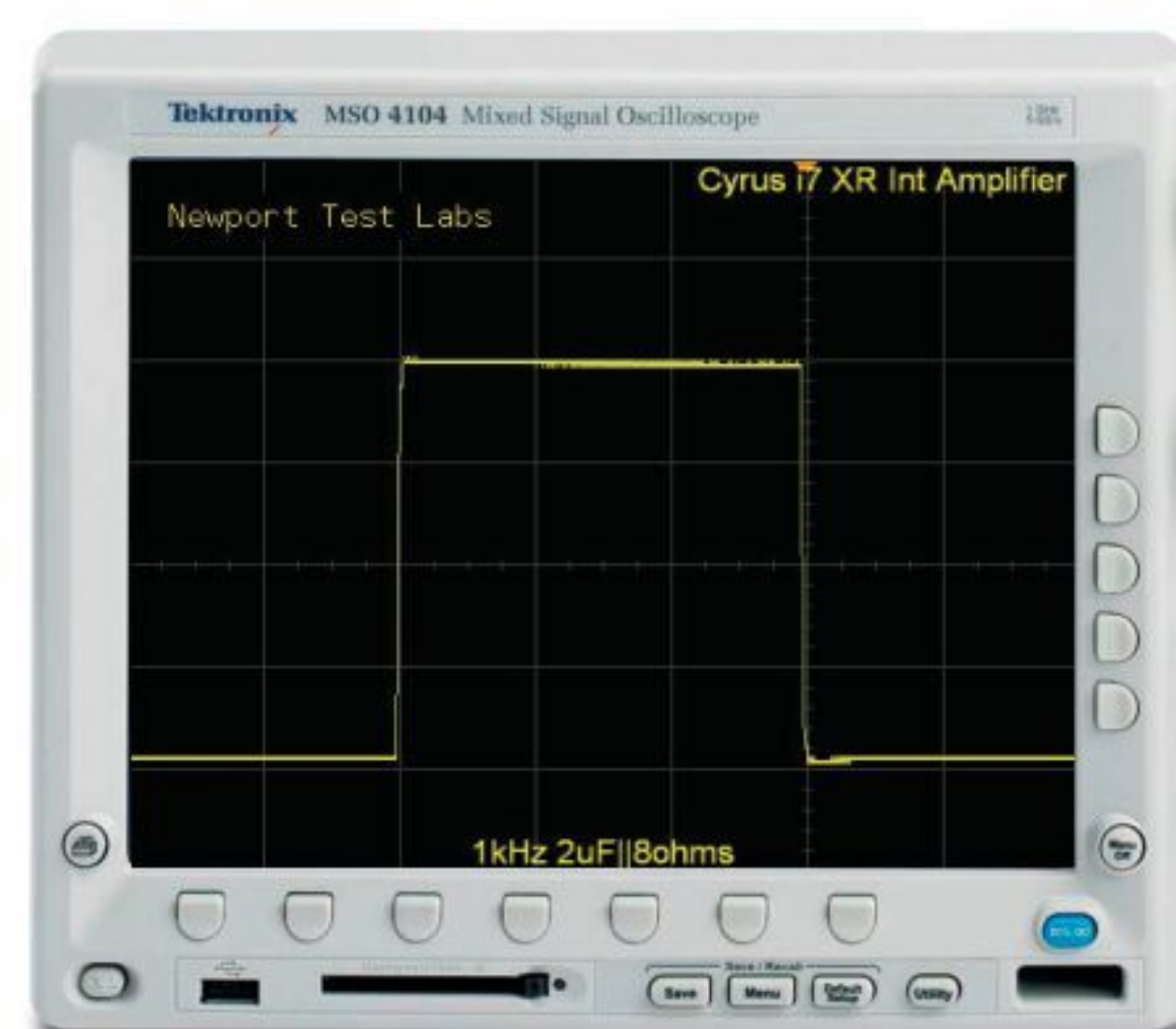
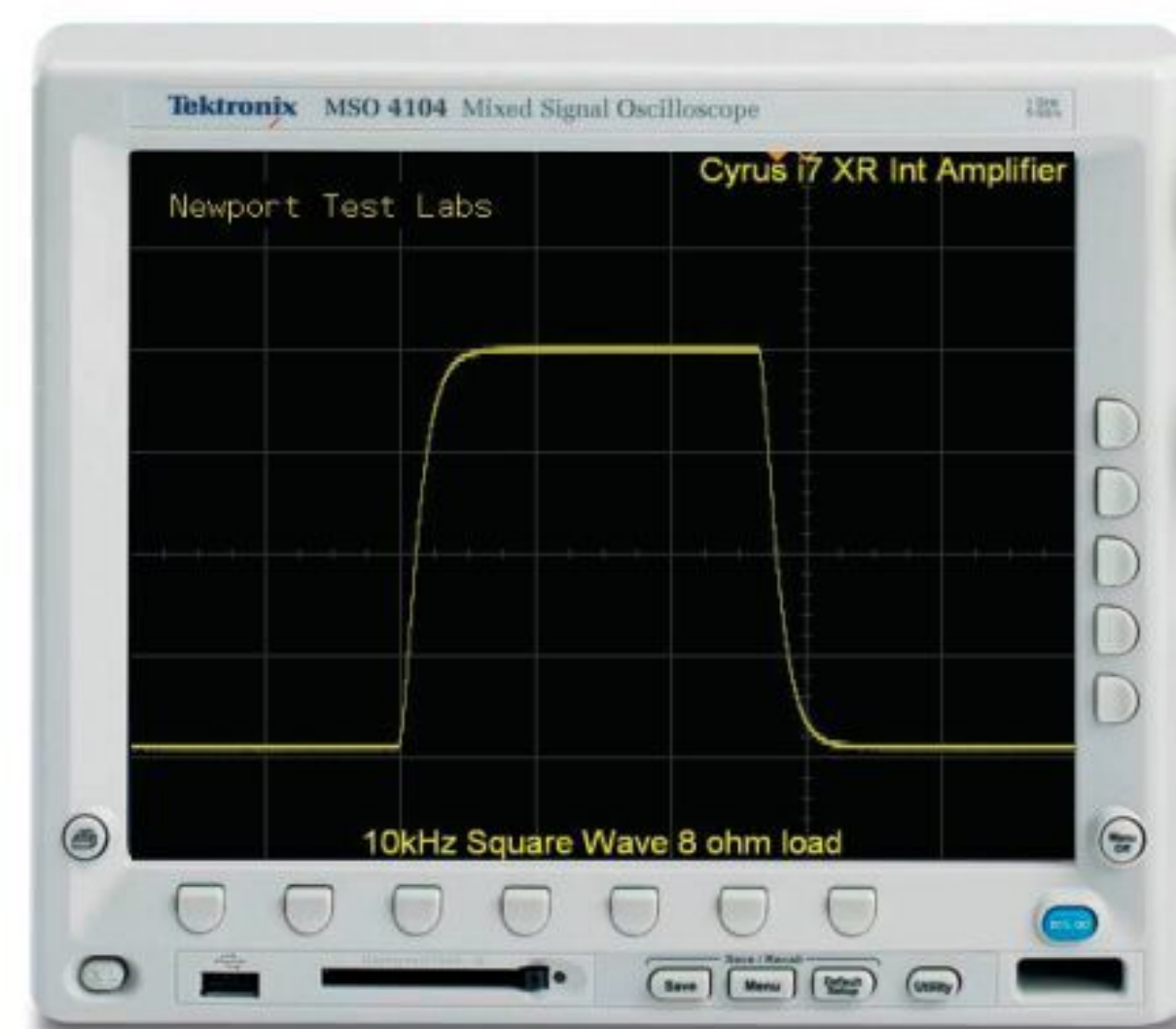
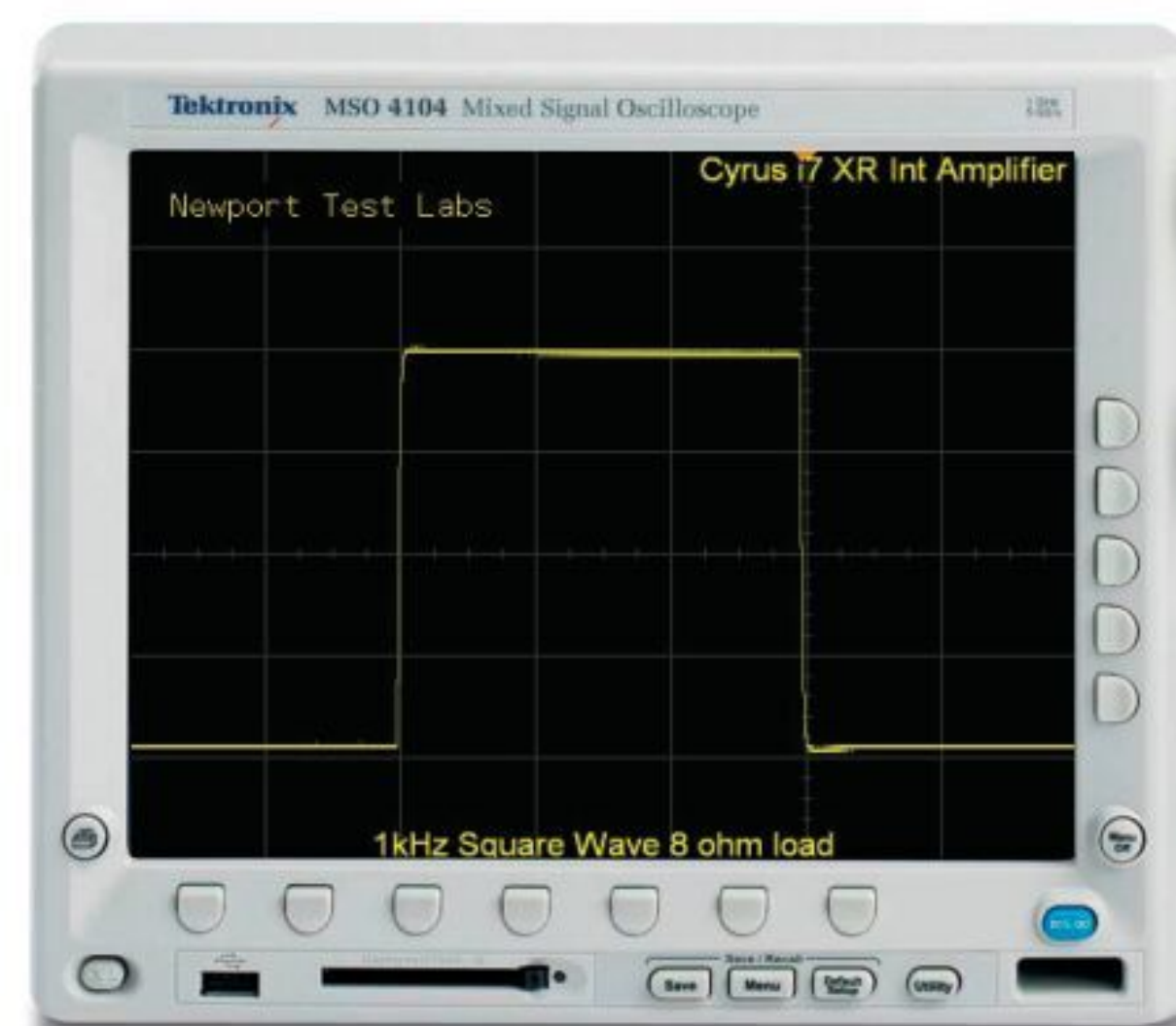
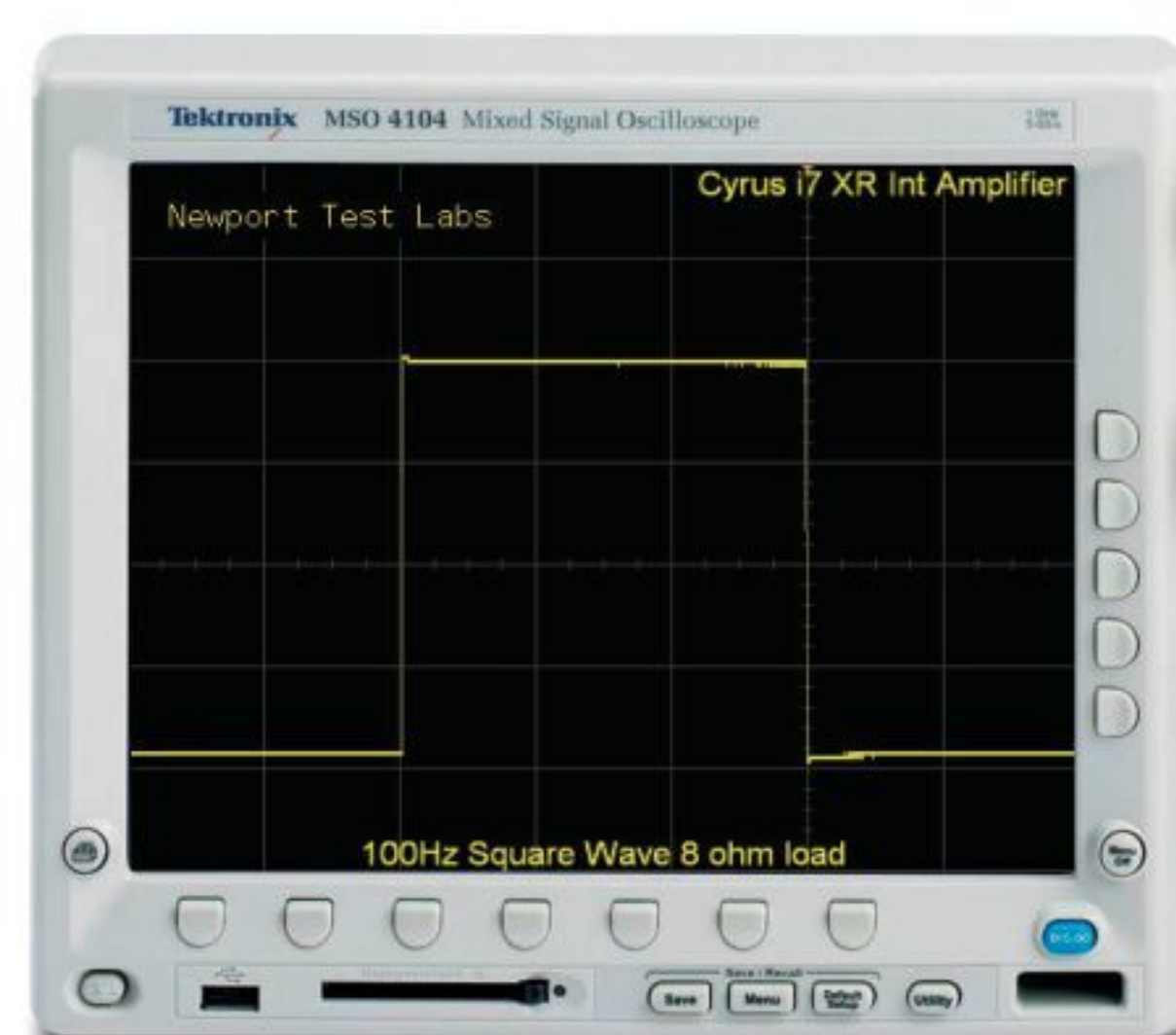
Tested at higher power output levels (20 watts) into 8-ohm and 4-ohm loads (Graphs 4 and 5), you can see that into 8 ohms, all distortion components are more than 110dB down (0.00031%) and, apart

from the four lowest-order components, all are more than 120dB down (0.0001%). Interestingly, however, the structure of the harmonic distortion components becomes completely different when the amplifier is driving a 4-ohm load at the higher power level, with more and higher-level odd harmonics at higher frequencies. The noise floor, of course, is lower on both graphs due to the higher 0dB reference at 20 watts. Noise referred to rated output was measured as 98dB unweighted and 103dB A-weighted, both of which are excellent results.

Intermodulation distortion is shown for two power levels — one-watt (Graph 6) and 20-watts (Graph 7). The primary differences between the two are the almost-complete absence of a regenerated 1kHz difference signal on Graph 6 and its presence at around -105dB (0.00056%) on Graph 7 and the expected difference in the noise floors. Overall, these results are very good.

Newport Test Labs also tested the Cyrus i7-XR's square wave response at different frequencies and into different loads. The 100Hz response is excellent, reflecting the i7-XR's extended low-frequency response, and also demonstrating a complete absence of any phase errors. Also, the 1kHz square wave is almost perfect — as if it came straight from the test generator itself, rather than the amplifier.

The 10kHz square wave shows some rounding on the leading edge, which reflects the i7-XR's 3dB high-frequency downpoint of 70kHz, but it's very clean and stable and an excellent result. Tested at 1kHz with a highly capacitive load (the fourth square wave in the series), the Cyrus i7-XR was not only completely stable but also exhibited no ringing in its output at all, which is something I expect from valve amplifiers and has been demonstrated to correlate well with amplifiers that 'sound good' in subjective evaluations — so it's a definite plus for the Cyrus i7-XR on this measurement.



Also excellent was *Newport Test Labs'* measurement of a damping factor of 800 at 1kHz, which comes off a measured output impedance of just 0.01 ohms at this frequency, which means that the Cyrus i7-XR will be easily able to control unwanted cone motion in loudspeakers with heavy, undamped cones.

Overall, the results measured by *Newport Test Labs* reveal excellent performance from an obviously well-engineered amplifier.

— **Steve Holding**