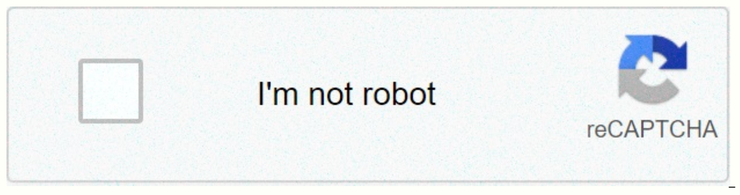

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Dayton audio apa150 schematic

February 4, 2019 This is a detailed review and measurement of the Dayton Audio APA 150 power amplifier (speaker). It is loaned in kind by a member. It costs USD $168 from Parts Express, including free shipping. If the 75 watt/channel specifications are true, you get a stereo amplifier for about $1 per watt! Amazing how cheap these amplifiers got. The APA 150 is a scaly unit, moving away from the typical wide cabinet format: As you can see, there is a volume control so you can skip a preamping if all you have is an input. At the rear, there are switches for the mono deck, filtering and the lighted car. The device is fan-cooled, but it is temperature controlled and silent. The design is the classic AB class with a linear power supply that makes the device heavy and inefficient. So good to see the fan out there to keep things fresh. There are serious brands of ETL/CE safety and regulation on the unit that I take for authentic and provide peace of mind. Let's move on to measurements and see how APA 150 works. Measurements Let's start with our dashboard view while the input is adjusted to produce 5 watts in both channels: we get typical performance from budget amplifiers. SINAD (signal on distortion and noise) is in the 70s with a lot of harmonic distortion and apparent power noise. No prizes will be won at this rate. Channel shift as far as the distortion is large enough that appears in the warm-up sequence all the same: Stability is really good if you don't need to leave the camera on. It is as good or bad as when it lights up for the first time. As indicated the fan was on during this test and blew a lot of air which was barely hot. The frequency response is very good and typical of class ab amplifiers (which do not need filtering as switching amplifiers do): the response is down by half a dB to the test limit of 40 kHz. Similarly the output impedance is negligible: Impedance is 1 ohm or less at 20 Hz and averages 0.4 ohm above that. In other words, there will be no problem running an impedance speaker regarding the impact of its frequency response. Let's look at all the important power measures versus distortion: Compared to our previous budget amplifiers, the Dayton Audio APA 150 beats them slightly on power, producing nearly 90 watts in 4 ohms. And it does so with a lower distortion to boot. Distortion - noise relative to frequency at some power levels is ugly At 50 millivolts input, the graph is dominated by noise especially in high frequencies (red). As we increase the input levels, we get two clusters of lines, one for a good channel and not so good channel. All show a much greater distortion with frequency, rising to up to 0.1%. Between 2 and 5 Khz where our hearing is most sensitive, we look at 0.02 to 0.03%, or about 50 times worse than most DAC. Conclusions The Dayton Audio APA 150 works in the sense that we have Amplifiers. Lots of cheap power with distortions and noise worthy of cringe. Fortunately, when it comes to non-linear distortions, our hearing is pretty poor, so people are probably satisfied with the great value they get. I like the fact that the APA 150 is the safety rated given the high voltages and currents that run in the power amplifiers. The fan with its high air flow gives me the comfort that it will run fresh and probably reliable, even under maximum load. No doubt with good speakers and content, the APA 150 will offer a pleasant experience. But if you're after the best I am, that's not it. Our hunt for the amplifier at reasonable price, but with continuous high performance....---------- As always, questions, comments, recommendations, etc. are welcome. They say you should save money for a rainy day. It rains for about 6 months here, so I need a lot of money!!! Please consider donating funds using: Patreon: , or upgrading your membership here PayPal (. Feb 4, 2019 I could quibble with you about the impedance output. I'd like to see it a little further down. I would say it's not great. I guess it's a fair deal all considered for the asking price. Still a little below the old Adcom amps or similar in performance. Not much more even these amps cost twice as much 20 years ago. Be nice to see the IMD results on the power amps. The real purpose of the scientific method is to make sure that nature has not misled you into thinking that you know something you don't really know. Robert M. Persig February 4, 2019 There is a good bit of wiring involved in impedance measures so the actual value is probably lower. The measure is also not very reproducible due to a small impedance. February 4, 2019 There is a good bit of wiring involved in impedance measures so the actual value is probably lower. The measure is also not very reproducible due to a small impedance. Hypex modules are usually a couple of milli ohms that is extraordinarily low, but is at the output of the module. By the time you get through the connectors, internal cable and banana poles, it will be a little higher. February 4, 2019 Heartless have always been. Now it's easier to unmask them. That's why Amirm's work is so important. Comment is free, but the facts are sacred - C. P. February 4, 2019 The Hypex modules are usually a couple of milli ohms that is extraordinarily weak, but that is at the output of the module. By the time you get through the connectors and banana poles, it will be a little higher. Indeed. In my case, it's actually worse in that the 300 ohm charge inside the analyzer is activated and turned off to determine impedance which means that all the interconnection wires from the speaker terminal to the analyzer counts too. February 4, 2019 ... Now, repackage it with a whole bunch of words in fashionable audiophiles and sell it for ten times the current price! You can keep your snake oil, I have science! Feb 5, 2019 Hi Amir, thanks for the criticism really appreciated. Sigh, the search for a reasonable amp continues. I bet if you can find the same at 10-20w with low distortions it would be the best thing that happened in the world of mini d-amps. Since most of us use these amps for listening in close field, which is enough. I do not quite understand why the SINAD is 7x but the distortion is low at 0.01%. I thought sinAD could be higher? I also wonder if the first one is good the SINAD should be higher too. Thanks for a wonderful comment. to your health. p/s: How do SINAD and distortion actually translate into real performance? Feb 5, 2019 Also if I'm not mistaken this bad boy is the basis of what eventually became the Emotiva down-x A-100 which also came in the previous configutrations known as mini-x and also a Sherbourn flexifier amplifier. I own the A-100 and love it for headphones listening. February 5, 2019 then, at this level, is the crown or onkyo better? Main: Computer -> USB-C -> SMSL Sanskrit 10th mkII -> SKW single crystal copper RCA -> Douk Little Bear RCA -> SKW SCC RCA -> JDS Labs Atom Douk Little Bear RCA -> Blue Jeans LC1 RCA -> Yamaha WXA-50 Office: Computer -> USB -> Topping D10 -> Fiio A5 Portables: Pixel 3aXL + Tidal, FiiO A5, Meizu Hifi DAC Pro, Hiby R3 Pro Saber Wired HPs: Shure SRH-1540, Final E3000, Fengru TC200, Koss KPH30i, Logitech G433 x HM5 Hybrid Wireless HPs: Jabra Active 65t, Anker Soundcore Life Q20 Speakers: Wharfedale Diamond 225 Feb 5, 2019 Also if I'm not wrong this bad boy is the basis of what eventually became the Emotiva bas-x A-100 which also came in previous configutrations known as the mini-x and also a Sherbourn flex amplifier. I own the A-100 and love it for headphones listening. Emotiva has already sold a version of the Dayton APA-150, but it's not clear to me that they share a lineage otherwise. I would like to see measures of the A-100. However, he is my daily driver and I can't bear to part with it... selfish, I know! (Also, I have the old revision without the headphone jack, and the world would probably prefer a measure of the new version... I'm sure there's a lot of interest in seeing the measurements of this headphone amp) Subjectively, the A-100 beats the pants out of my great embarassing collection of Class D amps like the Topping TP60 and even cheaper models of SMSL and Trim. Feb 5, 2019 Hi Amir, thanks for the criticism really appreciated. Sigh, the search for a reasonable amp continues. I bet if we can find one even at 10-20w with low distortions this would be the best thing that happened in the world of mini d-amps. Since most of us use these amps for listening in close field, which is enough. Do not understand very well why the SINAD is 7x but the distortion is low to I thought sinAD could be higher? I also wonder if the first one is good the SINAD should be higher too. Thanks for a wonderful comment. to your health. p/s: How do SINAD and distortion actually translate into real performance? .01% distortion if it were the only harmonic that would be at an 80 db SINAD. When you add extra harmonics and a little noise, it will obviously get a SINAD of less than 80 db than it did. Now yes lower distortion will get lower SINAD. SInAD is the opposite of THD-N. Real-world performance and SINAD are linked, but not directly. THE SINAD could be misleading. Imagine an amp with a terrible buzz from 60 hz to -50 db. Yet everywhere else a high low noise level and distortion all below - 100db. You will get a SINAD of 49 or 50 db. An amp could also have a little noise, maybe 80 db down which is rather poor. Have some pretty clever distortion levels of only 0.0001%, but you'll get a SINAD of something less than 80 db. As is usually the case, a single criterion rarely conveys everything about the quality of something. But it's a place to hang your hat and look further. Usually low noise and low distortion and good overall design and performance go hand in hand for good SINAD numbers. And generally, the reverse is also true. BTW, I'm not so sure if the noise is at least -90 db and the distortion -80 db or less, that you'll have a little fully transparent equipment. Or one who will only be caught up in extreme circumstances and rarely. The real purpose of the scientific method is to make sure that nature has not misled you into thinking that you know something you don't really know. Robert M. Persig February 5, 2019 I doubt it will be possible to find a new decent class AB amplifier for less than $500 (transformer price - chasis - components - work will be higher). February 5, 2019 I am not convinced that the measure presented is correct. ... The 300 ohm charge inside the analyzer is turned on and off to determine impedance, which means that all the interconnection wires from the speaker terminal to the analyzer also counts... Based on the frequency response path, it does not add up. With a source impedance 1 ohm (Amir measure) at 20Hz, 20% of the voltage would be dropped (4R-1R) resulting in nearly 1dB being shaved at this 20Hz. Amir's FR plot is only 0.3dB down to 20Hz and that is likely to be rolloff input filter, not increasing output impedance. The use of the 300 ohm internal load in the analyzer to The output impedance when the amplifier is in milli-ohms will give the oscillating graph shown above, due to tiny FR fluctuations and the

strength of the cable/connector will overwhelm the output impedance variations. The standard would be 8 ohms or if specified, 4 ohms to 1W and unloaded. Therefore, the actual obstruction to the output of the amplifier would represent a greater proportion of the impedance of the connected load. I don't see how a 300 ohm charge on a power amplifier will provide enough to determine a useful depreciation factor and/or an impediment to exit. Maybe I'm missing something, please correct me if I'm wrong- it's happened before. The amplifier will probably have 100% NFB in WASHINGTON, so its output impedance will probably be extremely low. Look at the direction of the AP's plot of impedance output at 20Hz, it goes straight up. If it was a transformer coupled tube amp I could understand maybe, but SS? Based on this trajectory, we would be looking for a completely undamped system near Washington DC and we know that is not the case. Why not, just for fun, execute an FR plot with tension on the Y axis both loaded ([e-mail protected] or 4R) and also unloaded and lay them on each other? The voltage difference from the frequency can easily show the damping factor and output impedance via a simple equation. Ricky Roma: I subscribe to the law of contrary public opinion ... If everyone thinks one thing, then I say, bet the other way ... Way...