

Douk Audio & One Little Bear VU3 Audio Switcher Box & VU Meter

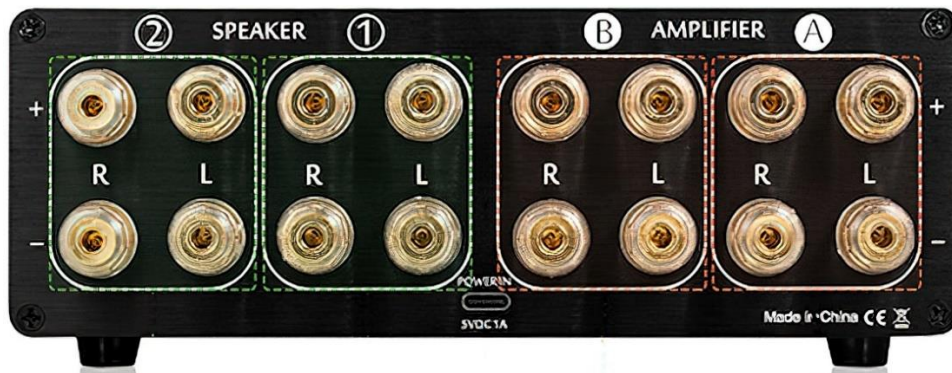
The idea of having an inexpensive Audio A/B switcher for a reasonable price (\$140) was appealing, so I picked one up from Amazon

https://www.amazon.com/dp/B096KLDMCV?psc=1&ref=ppx_yo2ov_dt_b_product_details

The main use I would have for it would be for listening comparisons between amplifiers and sometimes, speakers. The fact that it has VU meters was not important, but they look nice. The VU3 looks nice and feels solidly built using what I would imagine to be black anodized aluminum. The front of the unit has buttons that can be pressed to switch between AMP A/B and SPEAKER 1/2, plus a Level Adjustment for the VU meters.



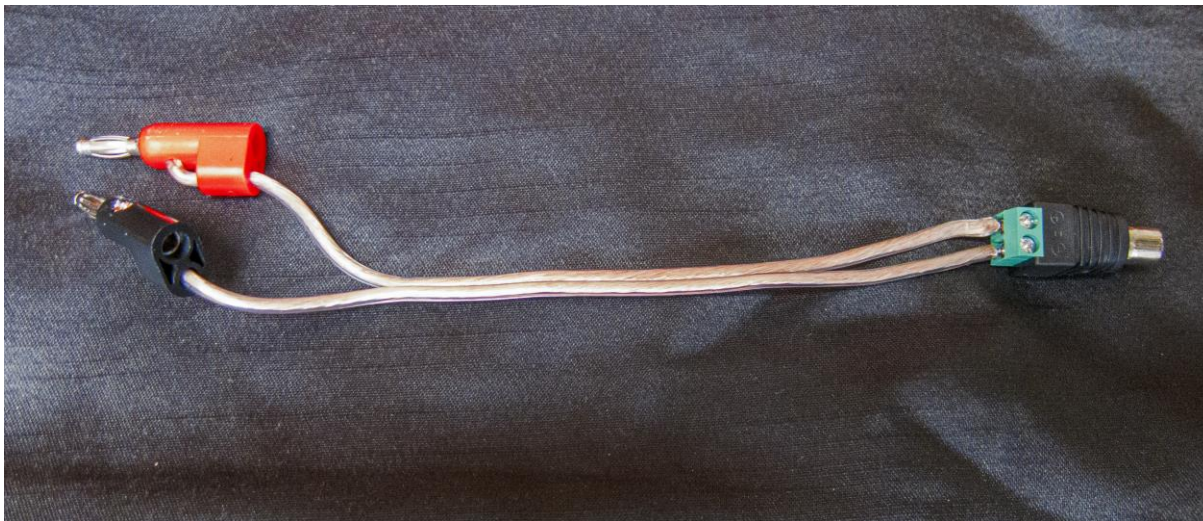
A remote is included which mimics the switching selections as well as adjusts the brightness level of the VU meters, activates a PEAK LED function and can power off the VU meters (but not the unit as it will hold the amp/speaker combination as long as there is power to it). The rear of the unit has nice banana jack connectors as well as a USB C power port. A 3' USB C to A cable is provided.



The “manual” states that each group of grounds is “independent without mutual interference. With built-in protection load, when the amplifier A or B is not selected, it will automatically switch the built-in load to connect to this amplifier to ensure that the amp will not be unloaded, providing perfect protection for your expensive equipment”.

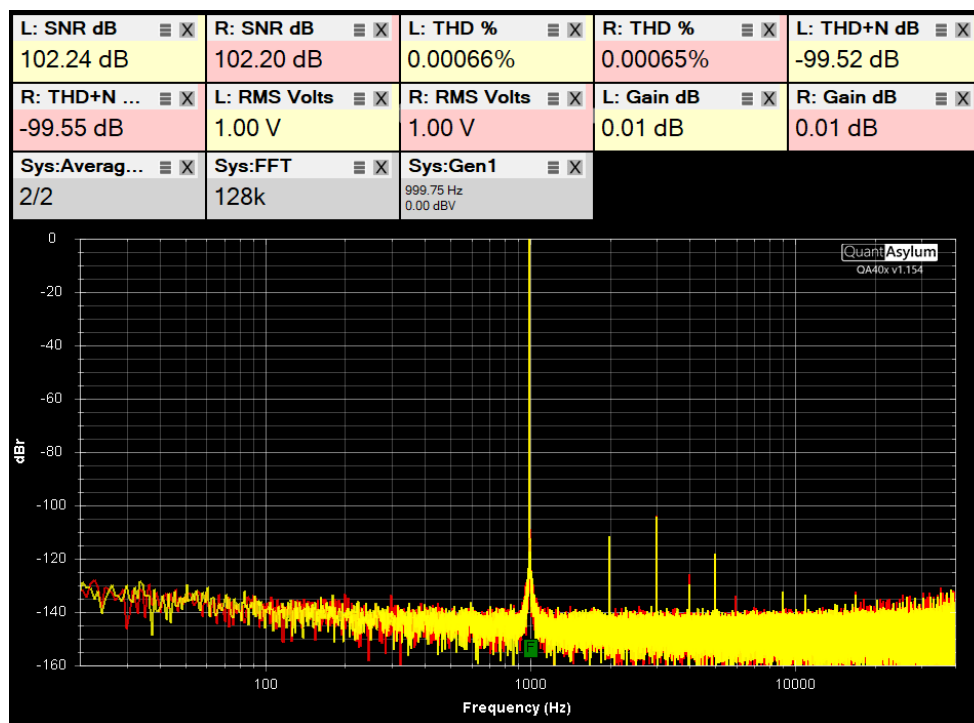
The only real spec that is provided is that it uses 5 Amp relays so it can handle 100w (no load specified). Guess it can handle 100w into 4ohms or 200w into 8ohms if I did my I^2R calculations correctly. It is important to note that the VU3 remembers the last speaker/amp combination it was in when it was powered off last.

I figured that the One Little Bear consisted of a bunch of relays that it switched around, so its effect on the signal would be minimal, but what the heck, I am retired and like testing this kind of thing. The first thing to do was build some adapter to connect from RCA to Banana, and I built four of these using 8" long 16 gauge speaker wire:

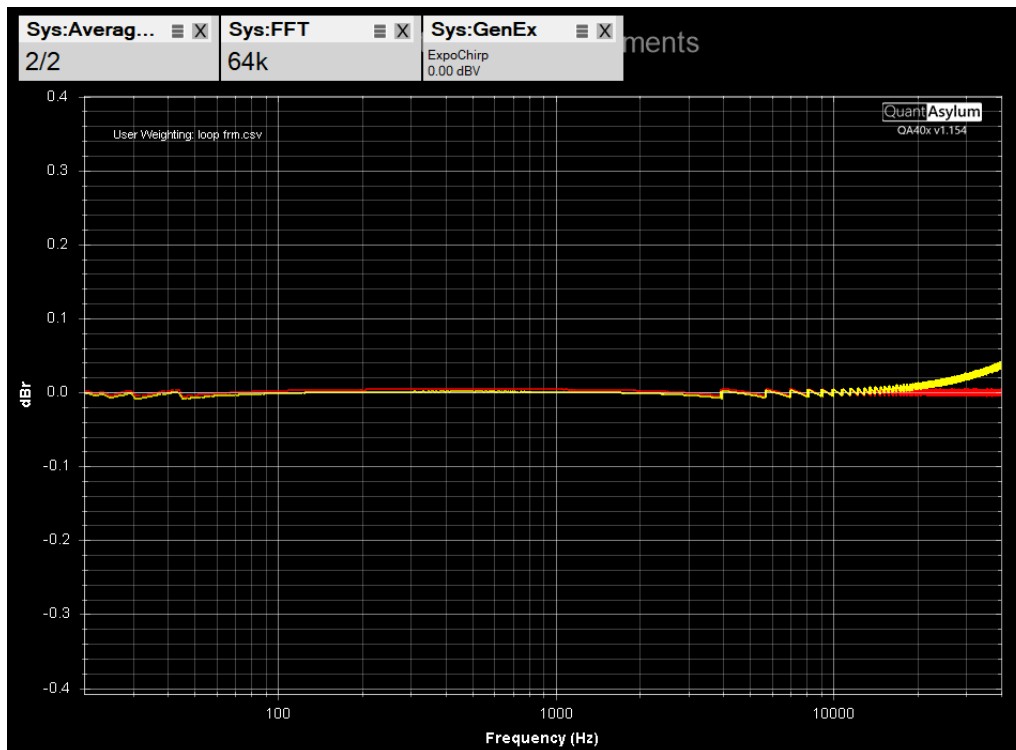


My audio analyzer is a QuantAsylum QA402, which is newer version of the one reviewed here: <https://www.audiosciencereview.com/forum/index.php?threads/review-and-measurements-of-quantasylum-qa401-audio-analyzer.8694/>

The RCA cables going from and to it are 4' in length. I opted to do my testing from 20Hz-40kHz, and chose 0dBv (1vrms) for my signal level- I realize that is much less than what may normally go through the VU3, but it should not make a difference since just relays are being switched...? The "loop-thru" measurement with the 8' total input/output cables and adapters connected gave this for THD/SNR:

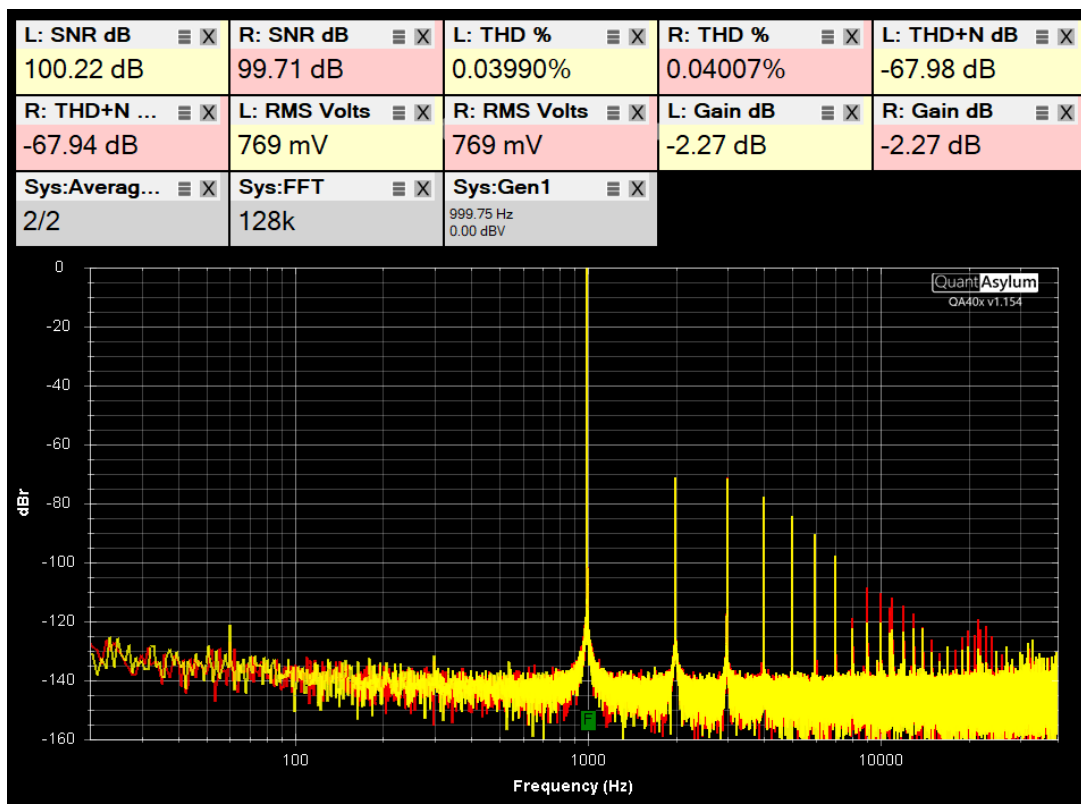


The frequency response, after a "weighting filter" is applied to help zero out the cables/adapters gave this "loop-thru" response:

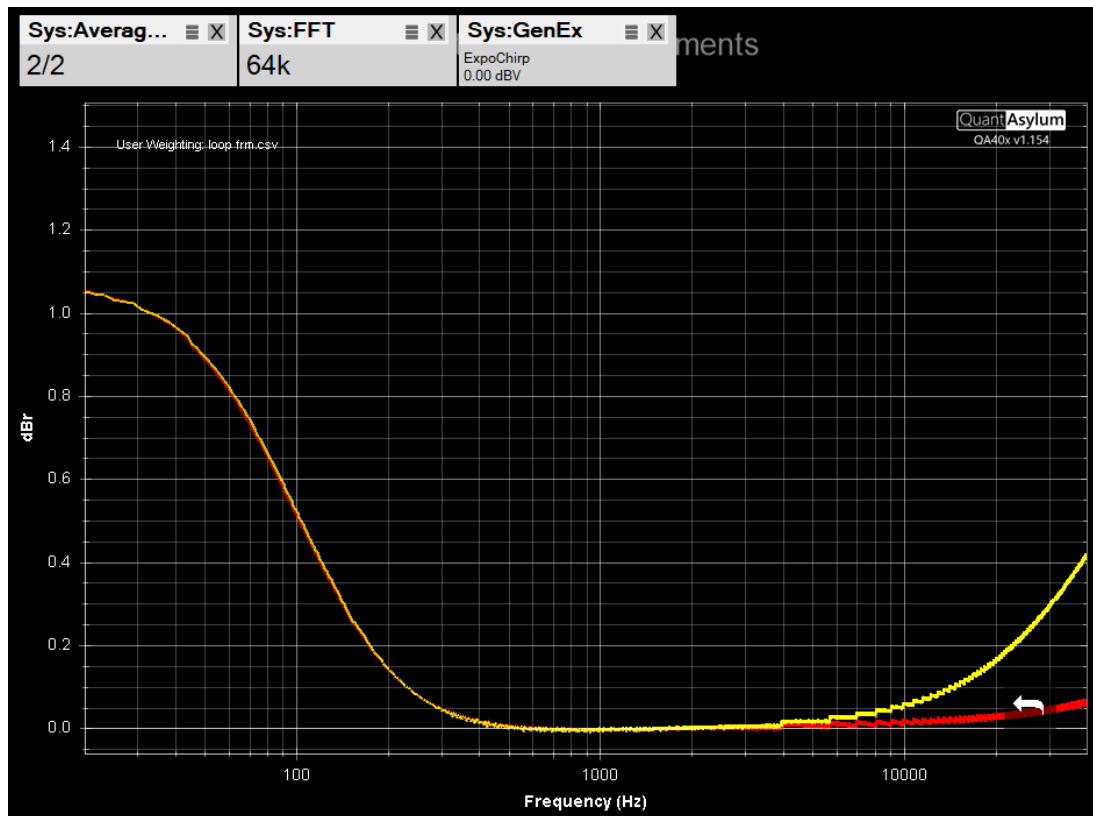


It would be nice if both of these responses can be somewhat maintained going through the VU3 A/B switcher, let's see what happens...

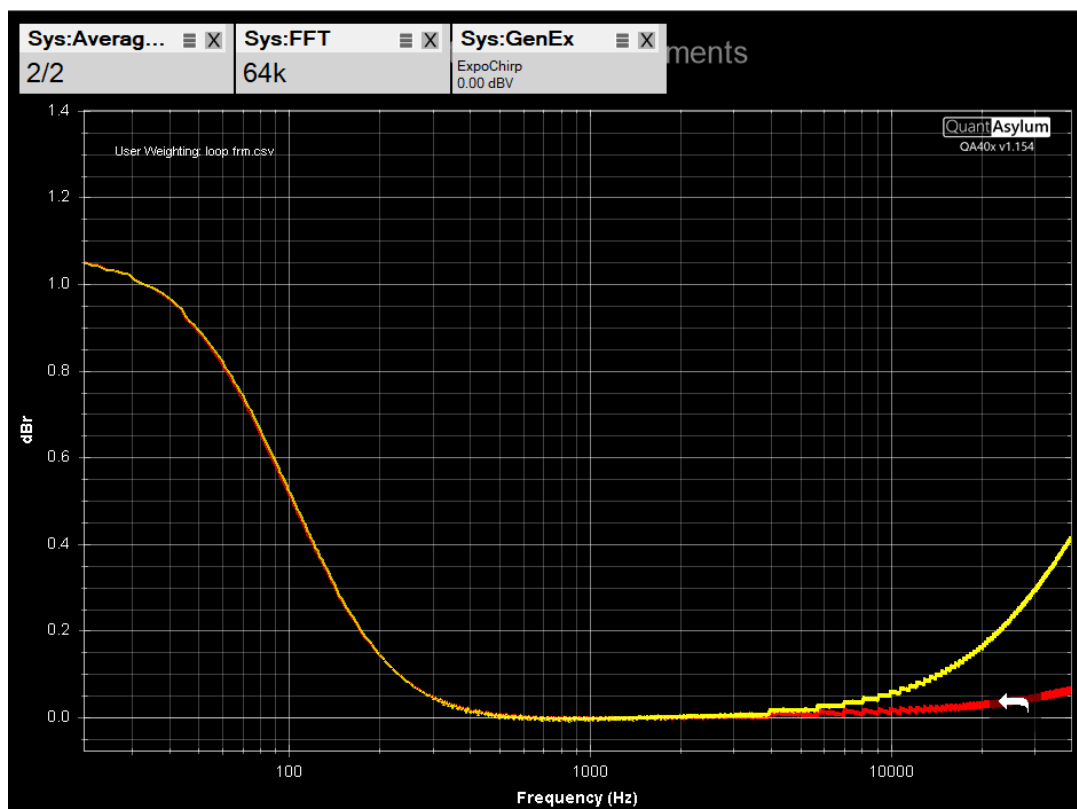
The first measurement was the THD/SNR from AMP A to SPEAKER 1:



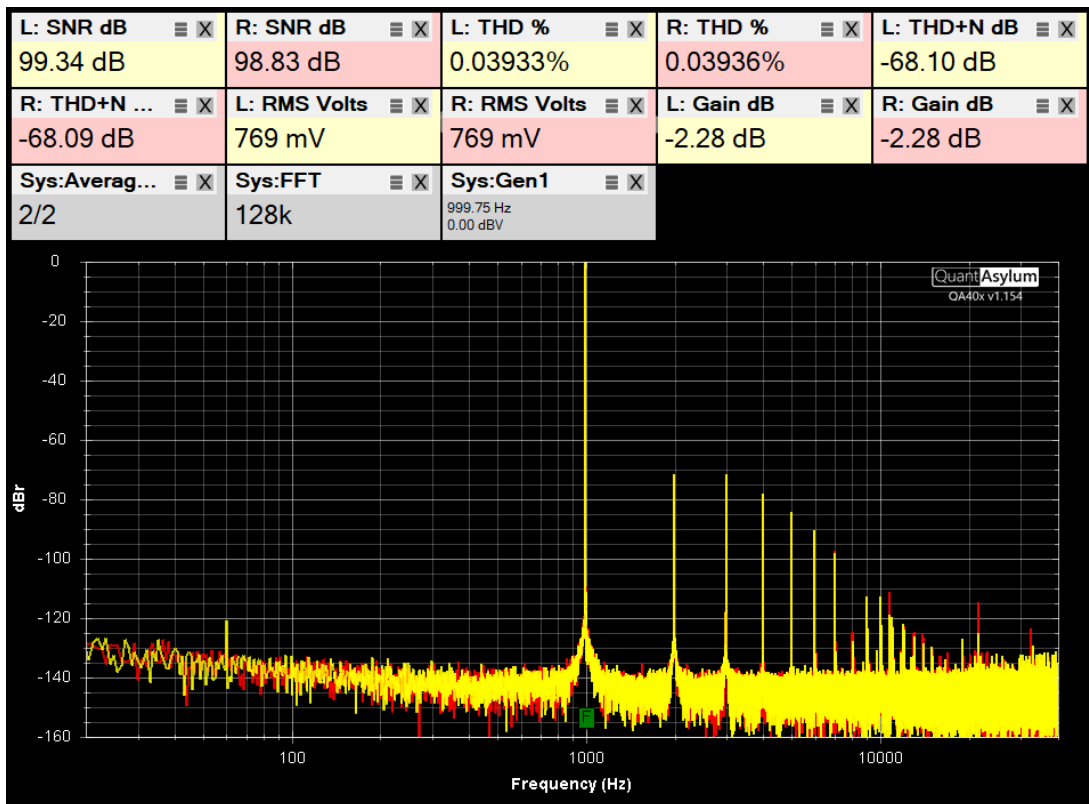
Having 2.27dB of loss was a bit more than was expected, to be honest, Even though the THD & SNR went up, they are still pretty darn good for most of the vintage gear I look at. The 32dB increase in THD+Noise is a bit concerning, though. Let's check the frequency response of the same path now:



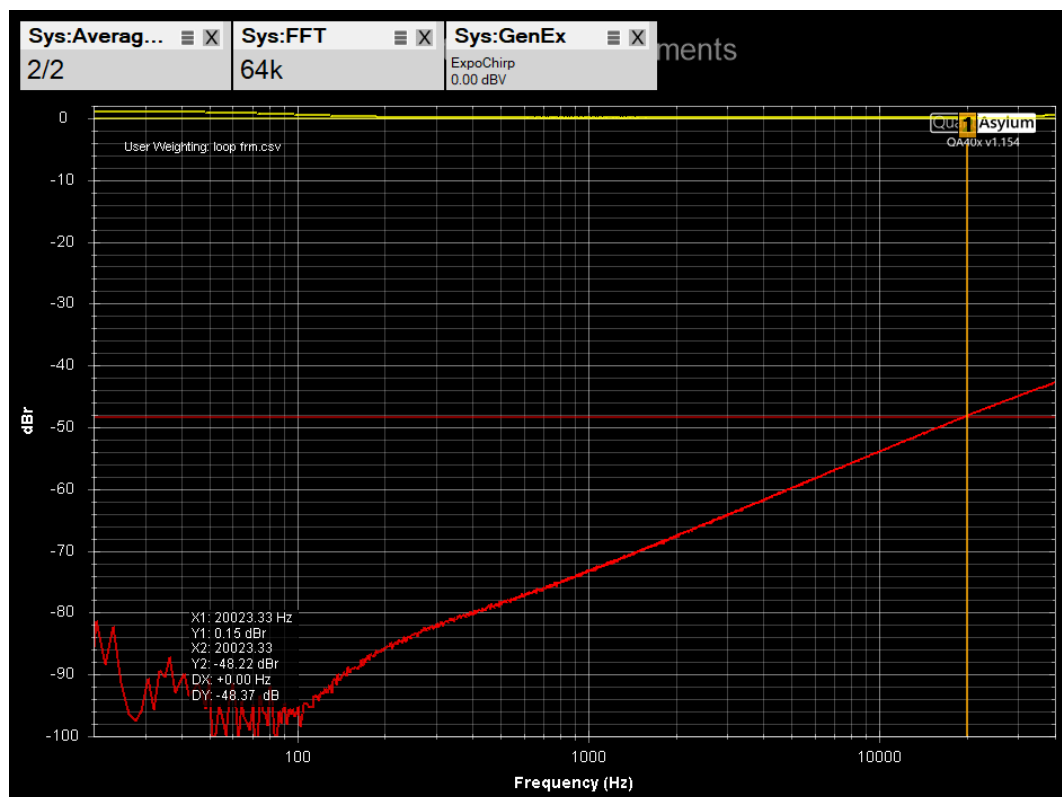
For some reason I am hearing "Danger Will Robinson"! I bypassed the VU3 and got my nice loop-thru response- just to make sure I didn't do something strange. I even pulled out a NOS 30yr old 12Vdc relay and measured its response, which was FLAT, as one would expect. I got the same response when I went from another port, here is AMP B to SPEAKER 2:



And the THD/SNR plot for the same path is basically the same as the previous path:

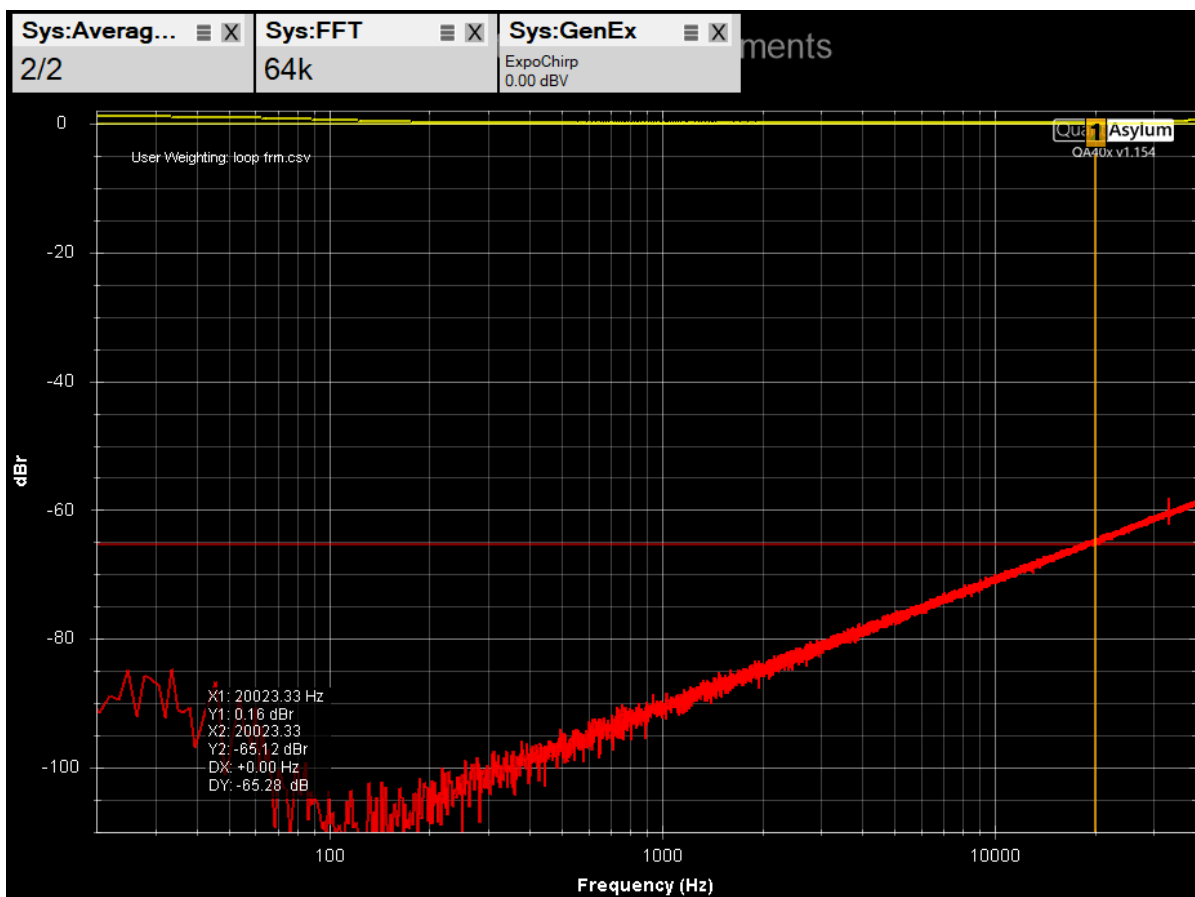


At this point I thinking about how much fun I will have packaging this back up and dropping it off at the nearby UPS store. I decided to check the crosstalk between the Left & Right Channels for this path. The Right B AMP Input was terminated into a 50ohm load, while the LEFT Channel path was connected normally (AMP B to SPEAKER 2 in this case):



I would have hoped for more than 48dB of isolation between the Left & Right channels at ~20kHz. Other path combinations were tried with the same results. The last thing to look at was

the isolation between AMP A and AMP B. For this test the VU3's A AMP LEFT Channel Input was connected to the QA402's LEFT Channel Output with the LEFT Channel Input of the QA402 connected there as well (easy to do with banana jacks), giving a Left Channel loop-thru for reference. The VU3's AMP A RIGHT Channel Input was connected to the QA402's RIGHT Channel Output, and the VU3's AMP B Right Channel connected to the QA402's RIGHT Channel Input (AMP A was selected):



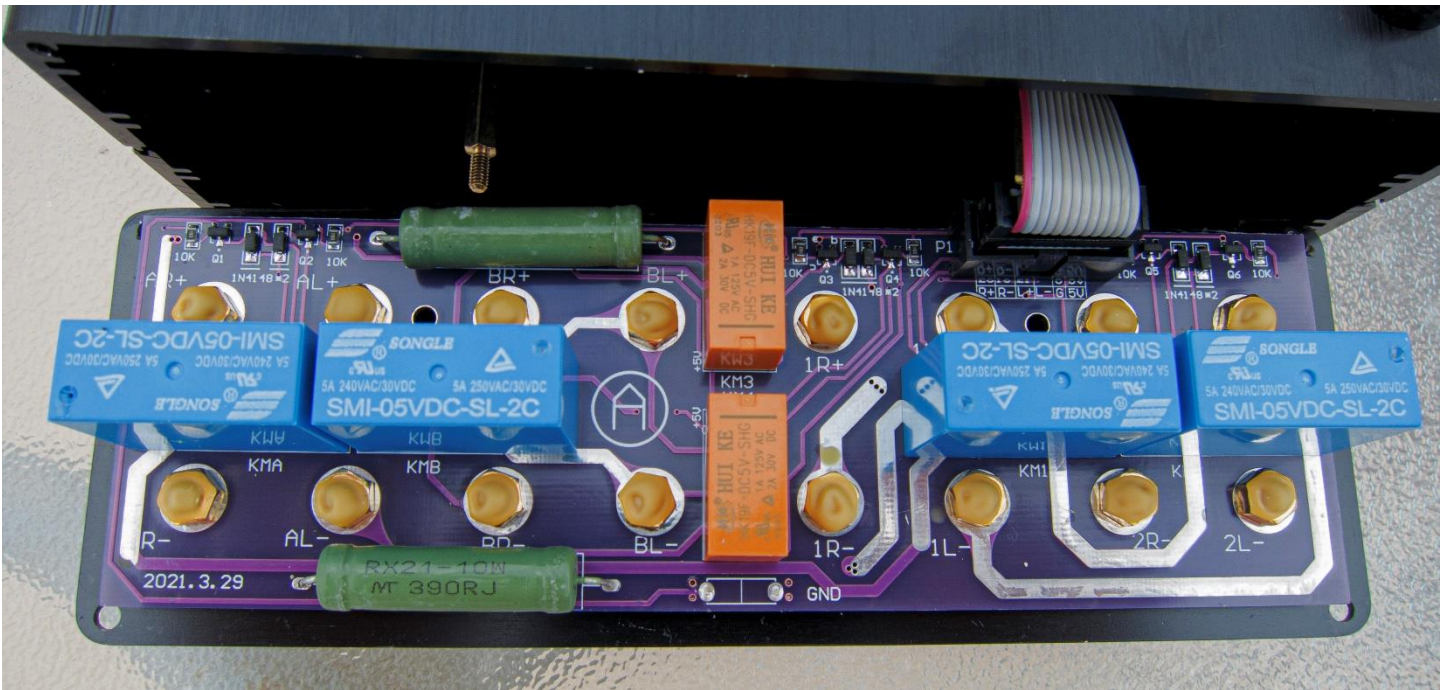
The plot shows that at 20kHz there is 65dB of isolation between the two amplifiers (at least between the A and B RIGHT channels), which should be enough with a 100w/4ohms.

The VU meters were also checked. The SWING-RANGE was adjusted to read 0dBv to match the 0dBv signal that was being applied. The input signal was then set to -3dBv: both meters read -2dBv. With a -5dBv input both meters read -3.5dBv. Lastly, with +3dBv applied the VU3 read +2dBv. The PEAK LEDs lit when the peaks were around 0dBv.

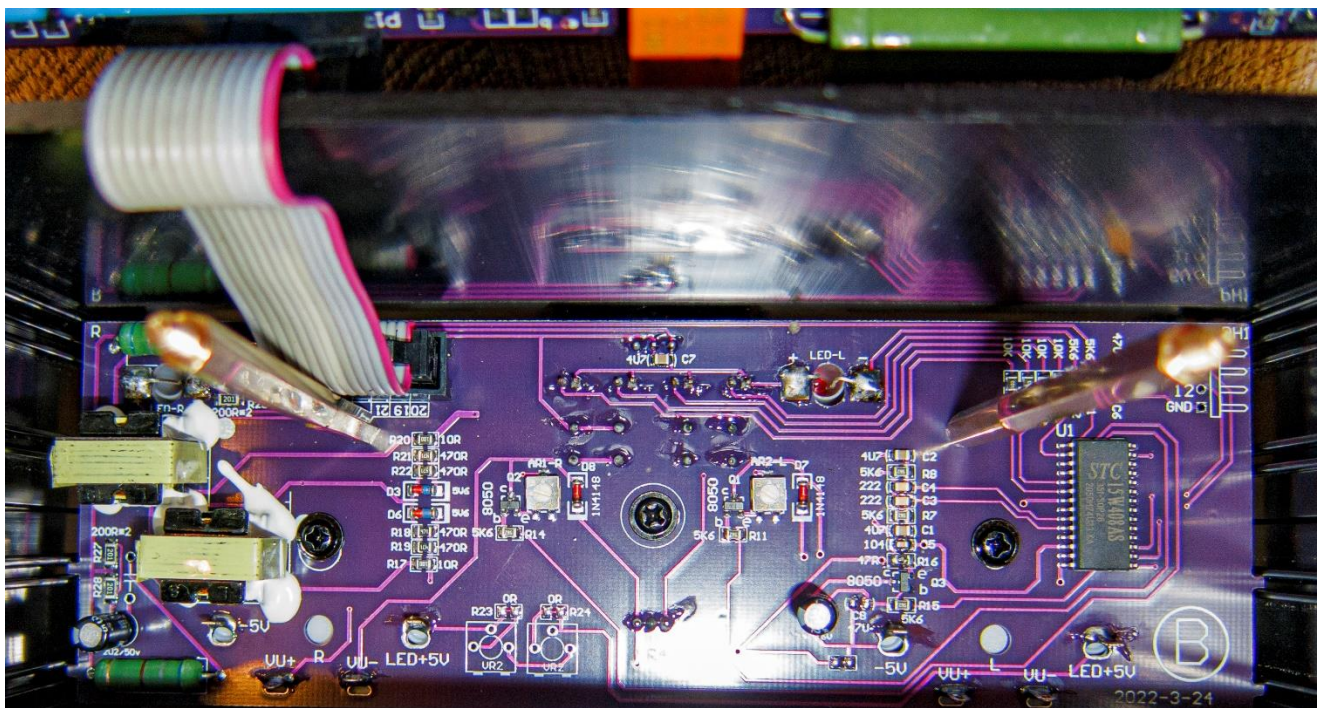
I contacted DOUK (through Amazon), sending a frequency plot and asking for their input. They replied later that evening with this:

Hello
 Thanks for your email.
 This issue may exist with some products of the old version.
 But now they should all be new.
 Could you please open the shell and check the circuit board?
 We attached a picture in this email to guide you. In this way, we can determine if it is old.
 The newest circuit isolates the voltage transformer part. It shouldn't have this issue.
 Best Regards
 Yours Douk Audio

I opened the case and was able to verify that I had the latest board based on a couple of resistors Douk said would be there if it was, plus the board rev was the same as in the picture they sent. I told them this and that I would be returning it and they replied back that they were sorry for the inconvenience this caused me. I did take a few pictures while I had it apart. Here is the relay board that has all of the banana jacks on the other side of it:



And here is the board which they had me check the resistors, R27 & R28 in the lower left corner:



I was unable to find any schematic for VU3, but am guessing the problem lies with the two transformers which I are most likely part of the VU meter circuit. Prior to my testing of it, I had used the VU3 to do A/B testing between an old (late 60's) Integrated amp and the Aiyima A07, and it worked great. Even though the same frequency response is being applied A/B paths and it is just over a dB at the lowest part of the band, it did not sit well with me, so I returned it via the UPS Store. It would be interesting to see how the Van Alstine switcher does...

<https://avahifi.com/collections/accessories/products/abx-switch-comparator>