

ARC AUDIO XXD 4080 AMPLIFIER

Text and Measurements by Garry Springgay // Photos by Manufacture



Seems like every time you turn around these days, you hear the term “efficiency”. We’re living in an age of making everything we use more efficient, whether it’s a light bulb, a home appliance, or our cars. You don’t have to be a rocket scientist to figure out that efficiency is a good thing, especially when it doesn’t come at the price of performance. If someone would have told me back in 1980, that one day I could buy a brand new car that has 400 horsepower and gets 25mpg, I would have thought they had a short circuit between the headphones. You might as well have tried to achieve time travel! The technology available in 1980 simply wasn’t good enough. But here we are in 2010, and lo and behold, there are quite a few new cars that can do just that, or better!

Well, efficiency is a good thing when it comes to car stereos as well! And while most people are familiar with the full-power efficiency advantages that Class D amps have had in the past, this oft quoted spec is only a very small part of the efficiency equation. What good does an amplifier that is 80% efficient at full power do when you are typically only using a small fraction of that power? What most folks don’t realize is that the vast majority of car audio enthusiasts, even those who tend to play their system a bit louder than anyone else, are seldom actually using more than 10 or 20 watts of power! And while a good Class D subwoofer amp may be 80% efficient at its full power of say 500 or 1000 watts, it’s still only about 15-20% efficient at the volume levels it gets used at most of the time.

Here’s where the guys at Arc Audio come into the picture. Avid readers of the magazine may recall that Arc Audio had been producing some high efficiency Class G amplifiers for a couple of years now. Well, they have surpassed the efficiency even of Class G,

with the all new XXD series of full range Class D amplifiers. And more importantly, these new amplifiers are exceptionally efficient at fractional power levels, which means they’ll draw less current, and generate less heat, all the time!

FEATURES

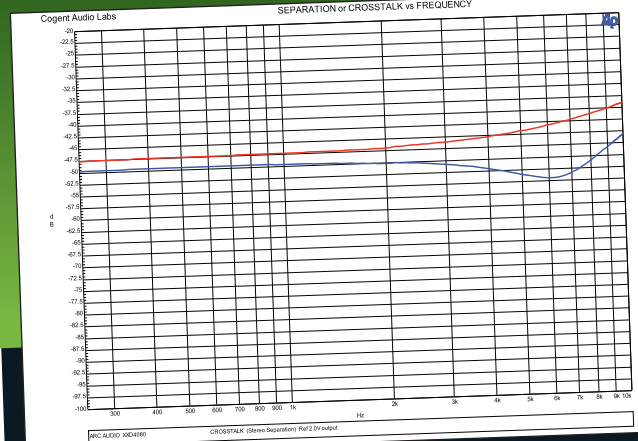
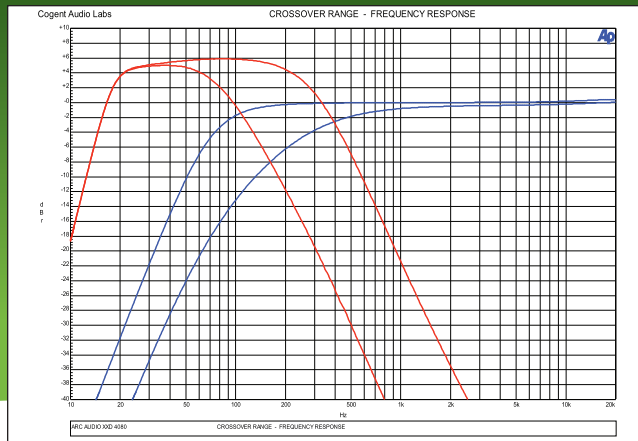
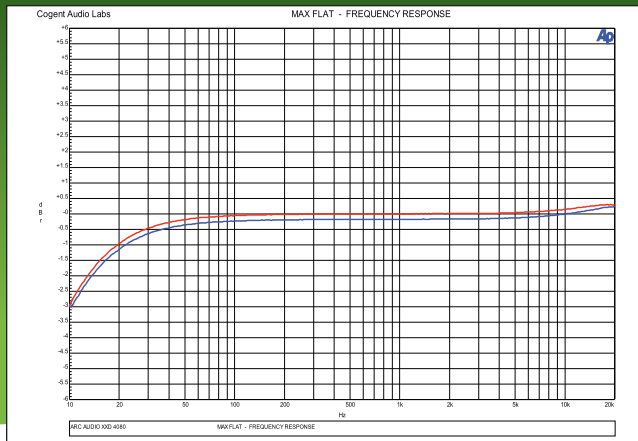
To let me check it out for myself, Fred at Arc Audio sent me one of their brand new XXD 4080 4 channel models. The amplifier has a small footprint, measuring about 10.5” x 7” x 1.8” tall. The XXD 4080 is a good looking amplifier, it is covered in smooth surfaces, and rounded corners. There are no traditional “fins” on the heatsink, and the top of the amplifier is almost completely covered with a gloss black acrylic panel. In the center of the top panel, the Arc Audio logo lights up in a pale blue when the amp is powered on. Each end of the amplifier is populated with the usual connections and controls, power, speaker and a pair of 20A ATC fuses are found on one end, while panel mount

style RCA inputs, and all signal adjustments are found on the opposite end. I did note that all of the wire connections use the same 2.5mm hex driver, so a single tool is all that’s required to make the connections. Attention to little details like this simply make life in the install bay a bit happier, and I’d be remiss not to point out the Arc teams efforts in that area. On the control side of things, there are fully independent crossovers for front and rear channels, with the high pass section having a range of adjustment from 65Hz to 250Hz, and the low pass filter range is a bit wider, in this case from 50 to 250Hz. Each set of channels also has a three position Bass Boost switch, labeled 0, +6, and +12dB. There is also a blue power-on LED on this same end panel.

Inside, there are built-in under and over voltage protection circuits, as well as protection for thermal and short circuit conditions.

LISTENING

As usual, before I do any bench testing, I connect the amplifier to my reference system, and “take it for a spin”. In this case, I connected the front channels to my reference speaker system, and used the rear channels in bridged configuration to drive a 4 ohm subwoofer. After messing around with the crossover points and getting



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the gain controls dialed in, I began this listening session with some jazz. “Jazz in the Pawnshop” is a brilliant recording, made live in a jazz club in Stockholm Sweden in 1976. The music is not only superbly played, but the ambience of the club is also evident in each of the tracks. It takes an amplifier with very good sonics to be able to replicate the atmosphere of that performance, and the XXD 4080 did it almost perfectly. The amp has very

good musicality, and I noticed a distinct lack of the stridence and hardness I have found in some other, less refined Class D designs.

Shifting musical gears, I played “Ride of the Valkyries” by the Cincinnati Pops Orchestra. This recording was done in a large venue, and the sound is very balanced, with high energy strings brass and cymbals. Listening to the Arc Audio amplifier I could indeed perceive the space and height of the venue,

and the brass was smooth and strong, but never biting. So far, I’m liking the sonics of this amp! The next track was “Perfect Love” which is my favorite from Marc Cohn’s self titled CD. Very well recorded acoustic guitar sounded real and natural, and the amp is good enough for me to distinguish Marc’s Taylor guitar from a Takamine.

Wanna rock? So does the XXD 4080! I’m a huge fan of classic rock music, and I have a large collection of fantastic stuff from The Who, Deep Purple, Led Zeppelin, Pink Floyd and many others. Regardless of what I played, the Arc Audio amp was up to the task, only complaining slightly when I really pusheo hard. After several hours of enjoyable listening, I came away quite impressed with the sonic performance of this diminutive amplifier, especially at the reasonable \$320 0 U..) price point.

was as intended, and correctly pointed out that most remote level controls do exactly the same thing. My only concern is the overall amount of gain available when the channels are in low pass mode, you can almost drive this thing into clipping by breathing hard on the inputs!

One cool feature I didn’t know about until I did my measurements is an 18Hz subsonic filter that is automatically engaged when the amp is used in low pass mode. This simplt yet thoughtfull integrated feature can prevent woofer damage, and reduce unnecessary current draw.

We began this review talking about efficiency, and fractional power efficiency in particular. Here’s where the XXD 4080 really shines. Where a conventional Class AB amplifier has an efficiency of about 10-15% at 10 watts of output, the XXD 4080 is over 63% efficient at 10 watts per channel! What does this mean in real world terms? Look at it like this, if the conventional amp drew 12 amps of current at 10 watts x 4, (very typical) the XXD 4080 only drew about 4.5A! Less load on your cars charging system, less voltage drop over the cables, and less energy lost to heat. It’s a win, win, win!

CONCLUSION

If this amplifier is representative of what we are going to have to listen to in the future, I’m happy to report that things look bright indeed. With an affordable price, very good sonics, and everyday efficiency gains like this, the days of the classic Class AB amplifier may be numbered. And unlike lossy MP3’s, this technology doesn’t ask us to give up the sound quality and musical experiences our favorite recordings can provide. If we can do this... Hmmm, I wonder if anyone at Arc Audio has given some thought to time travel... **PAS**



TECHNICAL DATA

The following power measurements were obtained using industry standard methods. (1kHz @ 1.0% THD+N - Battery voltages shown +/- 0.2V)

MEASURED PERFORMANCE SPECIFICATIONS

MANUFACTURERS RATED POWER	ACTUAL MEASURED POWER @ 1.0% THD+N @ 12.6V BATTERY	ACTUAL MEASURED POWER @ 1.0% THD+N @ 14.4V BATTERY
80 x 4 @ 4 Ω	57 x 4 @ 4 Ω	76 x 4 @ 4 Ω
120 x 4 @ 2 Ω	86 x 4 @ 2 Ω	109 x 4 @ 2 Ω
200 x 2 @ 4 Ω	176 x 2 @ 4 Ω	227 x 2 @ 4 Ω

Signal to Noise Ratio referenced to 2V output. (CEA-2006A) (1 watt @ 4 ohms)	-77.1dBA
Signal to Noise Ratio referenced to full output.	-94.9dBA
THD+N at rated 4 ohm power	>1.0%
CEA-2006A rated 4 ohm Power (minimum power per channel developed over the entire intended audio bandwidth)	65 watts @ 20Hz
Maximum Efficiency at full 2 ohm power per ch.	71%
Idle Current	1.1A
Input Sensitivity	196mV- 3.9V
Maximum Current @ full power, lowest rated impedance	42.3A
Frequency Response (-3dB)	10Hz – 47kHz
High Pass Crossover	50Hz – 250Hz -12dB/Oct
Low Pass Crossover	65Hz – 250Hz -12dB/Oct
Bass EQ boost	+6 / +12dB Level boost. No specific frequency

PERFORMANCE/BENCH MEASUREMENTS

As usual, the next stop was the test bench, where I connected the amplifier to the various pieces of test gear and load bank. The testing was relatively uneventful and produced results that bespoke to what I had heard previously. Power is within an inaudible 0.4dB of the rated spec, and the S/N ratio, which has been a problem spec for many Class D designs, was very competitive at -77.1dBA at 2 volts.

I did note a couple of unusual features during testing that are worth mentioning here... not because they are good or bad, burebecause they’re different. The first unusual thing I noted was that when I put the amp in low pass mode, there was an automatic increase in output by about 6dB. I understand how this happens internally, but it’s usually compensated for, so the response remains flat. When I asked Brad at Arc Audio about it, he told me it was indeed intentional, because most people usually apply more gain on their subwoofer channels anyway, and this simply did it for them. Of course you can still adjust the gain of the channels with the gain pot if you’re really anal about these things. The second thing I noticed was the “Bass Boost” switch is really simply just additional gain across the entire bandwidth of the low pass crossover, and it only operates when the amp is in low pass mode. Brad also confirmed that thio