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!

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 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.

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
**TECHNICAL DATA**

**THD+N - Battery voltages shown +/- 0.2V**

**MEASURED PERFORMANCE SPECIFICATIONS**

Manufacturers Signal to Noise Ratio referenced to 2V output. (CEA-2006A) (1 watt @ 4 ohms)

Signal to Noise Ratio referenced to full output.

THD+N at rated 4 ohm power

CEA-2006A rated 4 ohm Power (minimum power per channel)

Maximum Efficiency at full 2 ohm power per ch.

**PERFORMANCE/BENCH MEASUREMENTS**

The following power measurements were obtained using industry standard methods. (1W2 @ 1.0%)

**MEASURED PERFORMANCE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MANUFACTURER'S RATED POWER</th>
<th>ACTUAL MEASURED POWER (1.0% THD+N) @ 12V BATTERY</th>
<th>ACTUAL MEASURED POWER (1.0% THD+N) @ 14.4V BATTERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 x 4 @ 4 Ω</td>
<td>57 x 4 @ 4 Ω</td>
<td>76 x 4 @ 4 Ω</td>
</tr>
<tr>
<td>120 x 4 @ 4 Ω</td>
<td>86 x 4 @ 4 Ω</td>
<td>109 x 4 @ 4 Ω</td>
</tr>
<tr>
<td>200 x 2 @ 4 Ω</td>
<td>176 x 2 @ 4 Ω</td>
<td>227 x 2 @ 4 Ω</td>
</tr>
</tbody>
</table>

**Signal to Noise Ratio referenced to 2V output.**

(CEA-2008A) (1 watt @ 4 ohms)

-77.1dBA

**Signal to Noise Ratio referenced to full output.**

-94.9dBA

**THD+N @ rated 4 ohm power**

(CEA-2008A) rated 4 ohm Power (minimum power per channel developed over the entire intended audio bandwidth)

65 watts @ 20kHz

71%

1.1A

190mV- 3.9V

42.3A

**Input Sensitivity**

Maximum Current @ full power, lowest rated impedance

10kHz – 47kHz

50kHz – 250kHz

-12dB@Oct

50kHz – 250kHz

-12dB@Oct

+6 / -12dB Level boost. No specific frequency

and the brass was smooth and strong, but never belligerent. So far I’m liking the sounds of this amp! The next track was “Perfect Love” which is one of my favorite 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 XDD 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 pushed 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 0.0 price point.

As usual, the next step 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 bespeak to what I had learned previously. Power is within an inscrutable 0.4dB of the rated spec, and the SNR ratio, which has been a problem spec for many Class D designs, was very competitive at -77.1dB 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, but because they are different. The first unusual thing I noticed 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 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 this 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 amplifies yet thoughtful 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 XDD 4080 really shines. Where a conventional Class A amplifier has an efficiency of about 10-15% at 10 watts of output, the XDD 4080 is over 62% efficient at 10 watts per channel! What does this mean in real world terms? Look at it like this, if the conventional amp draws 12 amps of current at 10 watts x 4, (very typical) the XDD 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!