



# High Value Amplifier Shootout

Spring 2017

Back by popular demand is another amplifier shootout. This time, limited to a maximum MSRP of \$800. All amplifiers reviewed are currently in production. We're fortunate to have several friends lend them for the purposes of our enjoyment and musings. A few points to remember while reading this shootout:

- We cannot stress enough that the ratings of these amplifiers should not be transposed to the ratings of the high-end shootout. It is incorrect to suggest that a top performing amplifier in this group is 'just as good' as a top performing amplifier from the previous shootout. The Celestra VA210 was used to verify that NONE of these amplifiers are as good as the Tier 1 amplifiers from the high-end shootout. At best, it MIGHT be possible to have a top-performing amplifier from this group sound better than a lower Tier from the previous group, but without the ability to directly compare them in an A/B situation, we cannot confirm any theories like that.
- It should come as no surprise that different series amplifiers from the same manufacturers will utilize different technology / topology / circuits within their product lines. As such, the perceived sound quality is different, and as you'll read, some better, some worse, and not necessarily commensurate with the MSRP. In other words, this High Value Shootout found some excellent performing, and very affordable amplifiers, so keep an open mind, and leave any prejudice behind.
- Author excluded, the ten listeners are unaffiliated with any audio equipment manufacturer – and my amplifiers aren't a part of this group. We're unbiased. The group of listeners was intentionally diverse. Half are females. Seven have formal musical training. Only three were Autosound enthusiasts. Bluntly, these results are a consensus, and not an individual's opinion. I'm open to constructive criticism as it pertains to the review and comparison process and will gladly engage in discourse related to the subject. That said, spare us the derogatory remarks if your favorite amplifier wasn't included, or didn't place favorably. Should you be inclined, we encourage you to put together your own shootout!

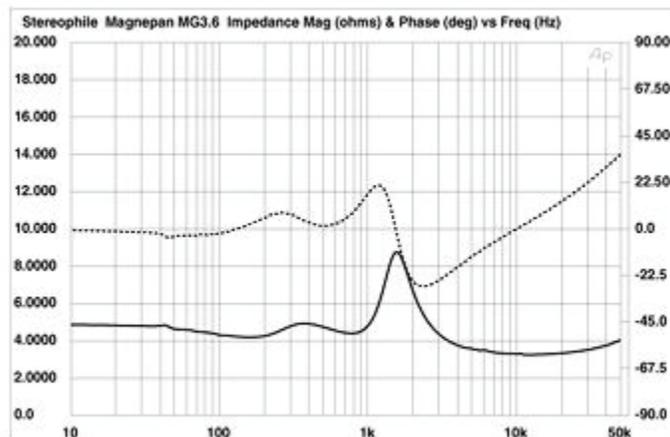
## SETUP

The setup is straight forward, using a Cascade Audio Engineering 45 amp 12VDC power supply, feeding a 15 Farad Phoenix Gold CAP. Each amplifier is protected by a Stinger 80 Amp circuit breaker, which also allows for faster and safer amplifier changes. The source units are from Atoll. Their MS100 Music Server is optically connected to their HD120 preamp. Blue Jeans Cables LC-1 interconnects and speaker cables were used. A Fluke 117 Digital Multi-Meter was used to set gain controls and equalize outputs. Listening levels were kept reasonable, avoiding clipping any of the amplifiers. I've been a long time owner of Magnepan speakers. They're highly regarded and consistently reviewed as being "reference level". My current set is the MG3.6R. Their estimated voltage sensitivity is on the low side, at 83.5dB(B)/2.83V/m, and is more demanding of the amplifiers to drive the speakers to useful levels. Here are the closing remarks from the Stereophile review:

"Taken on its own, however, the Magnepan Magneplanar MG3.6/R is a sensational speaker, and, at \$3750/pair, very reasonably priced. In some respects it's the best speaker I've heard, period. Even in the areas where it's perhaps not the very best, it's awfully close—even when the very best is several times more expensive. Some speakers I admire, some I like...the Magnepan MG3.6/R, I think I'll keep. Very highly recommended!"

The speaker's impedance (fig.1) approximates a resistive load of around 4 ohms over much of the audioband. However, there is a slight magnitude peak centered at 1.6kHz, due to the crossover between the ribbon and the midrange diaphragm. The minimum value is 3.3 ohms at 10kHz, which is not going to be a problem for any good amplifier to drive, while the increasingly positive electrical phase angle at the top of the audioband is, I assume, due to the residual inductance of the ribbon driver. There is a small wrinkle in the trace between 50Hz and 60Hz, which is probably due to the tuning of the woofer diaphragm.

Read more at <http://www.stereophile.com/content/magnepan-magneplanar-mg36r-loudspeaker-measurements#X437pbKrPgqArIxe.99>



## Music

- Jack Johnson – Wasting Time – On and On.
- Michael Bublé - “You’ll Never Find Another Love Like Mine (with Laura Pausini)” - Caught in the Act
- Chris Botti – “Con Te Partiro” – Chris Botti In Boston
- John Mayer – “Neon” – Inside Wants Out
- Maroon 5 – “Sex and Candy” – V
- Brian Culbertson – “Been Around the World” – Funk!
- Alanis Morissette – “Your House (Hidden Track)” – Jagged Little Pill: Acoustic
- Rebecca Pidgeon – “Spanish Harlem” – The Raven
- Dave Matthews – “Some Devil” –Some Devil
- Rage Against the Machine – “Know Your Enemy (Remastered)” – XX

## The Amplifiers

- Alpine PDX-F4
- Arc Audio XDi 450.4
- Audison SR 4
- DLS CC44
- Helix H 400x
- JL Audio RD400/4
- PPI P600.2
- Sony XM-GS4
- SoundDigital SD400.4D
- Zapco ST-4XSQ

## RESULTS

We decided long ago that we would NOT be ranking the amplifiers from first to last because each listener had a slightly different final ranking of the amplifiers. With that being said, we amicably devised a 4-Group system – A through D - for the final rankings, and grouped them according to similar performance. One of the criteria we felt necessary to be included in Group A was the ability to make the speakers vanish. The presentation must be effortless. Simply: the best of the reviewed amps.

**Group D** – Below expectations

**Group C** - Fair and would meet expectations

**Group B** – Strong performer, and would exceed many expectations

**Group A** – Best of the 10 amplifiers sampled

## Group D

### SounDigital SD400.4D EVO (\$100)

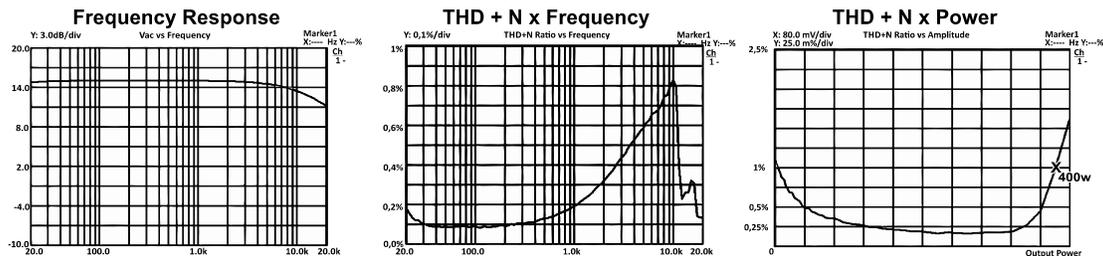
The least expensive amplifier of the shootout, the SD400.4D Evo is also the smallest amplifier of the shootout, measuring 5" x 5.4" x 1.7" (128mm x 137mm x 44mm), and weighing 1.36lbs (0.62kg). All of the terminals for power and speaker wire are the same size: 8ga. There are a few peculiarities with the SD400.4D that are notable. First, the speaker output negative terminals are shared for each pair of the left and the right channels. Secondly, the conventional Red and White color scheme for the



corresponding Right and Left channels, respectively, are reversed.



It was immediately obvious this is NOT the GaN based amplifier we were so fond of last time. We found the SD400.4 EVO to be lacking upper frequency sparkle and low frequency strength. Dynamics were anemic. Soundstage dimensions were the smallest of all the amplifiers in this group. Images lacked focus and detail. So much so, that we reviewed the manual, and found the following graphs, which help substantiate what we were hearing.



## Group D

### **Audison SR 4 (\$425)**

The SR 4 is physically the largest of this group of amplifiers, measuring 8.4" x 16" x 2.125" (213 x 408 x 53.5mm), and weighing 7.28lbs (3.3kg). The controls are all tamper proof under a removable piece of plexiglass. There is a notable nomenclature anomaly: Audison identifies the Front Left and Right as "Channel A", and Rear Left and Right as "Channel B".



This Class A/B amplifier is rated at 60 x 4. We found it to be without much dynamics, and rather dull sounding. Many reviewers used words like "flat" and "muffled" while describing the SR 4's overall presentation. It left us uninvolved, and quickly switching back to another amplifier.

## GROUP C

### Helix H 400x (\$799)

The H400x is the upper limit for MSRP for this shootout. It measures 1.24" x 7.87" x 13.23" (31.5 x 200 x 336 mm). It strays from what one expects from German engineering because both ends of the chassis are unfinished. While the appearance of the circuit board underneath the plexiglass is eye candy, we'd like end pieces to keep debris, like frayed power cable from entering the chassis, and potentially causing a short on the exposed circuit board.



Most of us felt that the high frequencies were too prominent, and/or the low end wasn't robust enough. The soundstage had average dimensions, neither compressed like the Group D amps, nor yielding a BIG soundstage and making the speakers disappear, like the Group B and Group A amplifiers. Overall, the presentation was uninvolved and clinical. That familiar cliché and pithy adjective "sterile" was uttered from more than one reviewer, who weren't well versed with the common audiophile jargon. One listener said she felt as if it was a "synthetic version" of the song. This was interesting to me, because one might normally associate these types of words with a Class D amplifier, however, the Helix has Class A driver circuits, and bipolar Class A/B outputs. Perhaps paired with the right front end and speakers, this amplifier would deliver a more pleasing presentation.

## GROUP C

### **Arc Audio XDi 450.4 (\$349)**

Arc and Robert Zeff designed this 4 x 85 watt per channel Class D amplifier as part of their entry-level offering. It's one of the smaller amplifiers of the shootout, measuring 8.173" x 6.268 x 2.086". Build quality, and its fit and finish are excellent! This amplifier uses molex plugs for the speaker outputs, and high quality 4ga power terminals. It's a clean and sharp looking amplifier, especially if you get the Stage 2 package to add a little extra flash for your install.



The XDi 450.4 has upper frequency harshness. Specifically, the "S", "Ch", and fingertips slipping on a guitar string seemed too prominent. The low end was a bit lean, and midbass lacked warmth. The perceived soundstage dimensions, especially depth and layering, weren't on par

with the other amplifiers.

### **PPI P600.2 (\$260)**

Out of the box, this is a small footprint Class D amp with sturdy mounting feet. It measures 6.5" x 6.125" x 2", and rated for 190w x 2. You'll find yourself cussing over the process of connecting the cables to the amplifier terminal strips. The screwdriver will bind against the chassis when you slip the shaft through the decorative holes on the top, while turning the screws. Remember the chassis is ground, and your screwdriver is probably metal, which you'll be making contact with the positive terminal. You can see why this is a concern.

We felt the P600.2 had a congested or restrained top-end, while the low-end extension was average. The soundstage lacks focus and detail, with average dimensions. Depth and layering weren't as strong as we'd like.



## Group B

### **Alpine PDX-F4 (\$550)**

The second generation of Alpine's award winning PDX amplifiers are even smaller than the first, measuring 10.125" x 7.562" x 2" (257 x 192 x 50.8mm), yet still packing similar amount of power. The PDX-F4 is rated at 100 x 4. Fit and finish is among the best in the group. A removable panel on the front masks the gain and crossover controls.



The F4 is a very smooth and transparent amplifier. About half of us felt it was a bit too lean in the low frequencies, however, we all agreed the midrange and highs were without any coloration or harshness. The perceived soundstage boundaries were a bit better than average, and also the reason it didn't place among the best.

### **Gladen RS 150c2 (\$600)**

With its heavy aluminum heatsink, and measuring 12.75" x 9.8" x 1.96" (324 x 180 x 58 mm), the RS 150c2 is one of the most massive amplifiers in the group. Fit and finish is good, with no notable peculiarities. Power and speaker terminals are robust. There are fans, but we never noticed them turning on.



We found the tonality of the Gladen to have a strong low end, and the highs are very sweet, and without harshness. Dynamics were impressive from this 2 x 150 watt, Class A/B amplifier. Soundstage dimensions were above average, with good imaging and focus. Most listeners commented favorably on the depth and layering, especially on the Jack Johnson and Chris Botti tracks.

## Group B

### **JL Audio RD 400/4 (\$300)**

Upon opening the box, it's evident the RD 400/4 earns top marks for fit and finish. The ergonomics are absolutely flawless. All the connections are along one edge. One Allen wrench can be used on all the power, remote, and speaker terminals, keeping things simple and efficient during installation. The adjustments are easily accessible after removing a trim panel. Kudos to JL Audio for thinking to integrate a dust protection piece of rubberized foam, keeping the gain pots and other controls clean and reliable. A subtle blue glow lets you know the amplifier is ON.



Sonically, this amplifier is the benchmark among the group for being neutral and transparent. On their website, JL Audio goes into great detail about their NexD Switching Technology for a number of improvements over conventional Class D topology. Some common adjectives from the listeners were “pure”, “clean”, “dynamic”, and “detailed”. This is a VERY solid performing amplifier, and our favorite Class D amplifier! BRAVO!

## Group A

### **Zapco ST-4XSQ (\$ )**

For nearly four decades, Zapco has been synonymous with sound quality. The immediate appearance of this example reminds us of their early models, particularly similar to the Studio series, measuring 6.29" x 2.04" x 12.59" (160 x 52 x 320mm). There are a few different versions of the ST line. Zapco used upgraded caps and op-amps, with Tiffany style panel mount RCA connectors on the ST-4SQ.



If it's possible for an amplifier to be instantly likeable, the ST-4XSQ was a case in point. Simply, it does all that is expected, effortlessly. The low frequencies have just the right amount of body and weight. All listeners heard it sound open, smooth, and intensely dynamic and detailed.



### **DLS CC44 (\$400)**

DLS has been producing car audio products since 1986, and has earned many championship titles, especially in Europe. Upon opening the box, the familiar anodized color of the heatsink, accented by gold plated terminals becomes a welcoming sight. There's a fan on the bottom of this 5.07" x 9.85" x 2.16" (129 x 320 x 55 mm) amplifier, so be sure to make provisions for sufficient airflow and cooling, because this amplifier does get quite warm.



Immediately noticeable was the sublime tonality of this amplifier. The speakers disappeared, yielding a wide and deep soundstage, perfectly conveying depth cues. Image placement and focus were spot-on. The lush, sweet sound from the CC44 had us all involved with the music, *enjoying* each track, rather than *just listening*.

## Group A

### **Sony XM-GS4 (\$250)**

Many competitors have proven Sony's new RSX-GS9 as one of the top shelf source units. The XM-GS4 is part of the same series, which – according to Sony's webpage – is packed with their latest "Hi-Res Audio" circuit technology, though they're nebulous about specifics. There's a fan on the top, but we never heard it turn on. Underneath a removable panel on the top are the controls for crossovers and gain knobs. The XM-GS4 is the only amplifier in the group with terminals that accept spade connectors. It measures 10.7" x 2" x 7.95" (272 x 51 x 202mm). Fit and finish aren't a particular strength of this amplifier, but the sonic presentation is!

The Sony does a wonderful job with ambience, and conveying the overall space of the room. Image placement is excellent. There's no harshness in the upper frequencies, and there's just the right amount of warmth in the male vocals. Nearly all of our listeners uttered the word "smooth" while describing the sound from the XM-GS4. The speakers disappeared, and the soundstage was big and transparent. Image focus was excellent, and was fantastic with conveying depth cues. Overall, this is an excellent amplifier.



## **Parting Thoughts**

It has been an absolute pleasure to experience these amplifiers! Hopefully we can continue to do this every few months, and include more makes and models that weren't available for this session. Again, thank you to everyone who delivered amplifiers for us to enjoy. Obviously, an amplifier is only a part of the system. It is essential to have a source unit that provides a quality signal, and speakers that are capable of revealing the details. Of course, none of this is going to sound realistic in a vehicle without a solid installation, which includes making wise decisions about speaker locations and angles. Even with the best DSP, it is impossible to correct for a less-than-ideal install. Seek an installer that is familiar with vehicle acoustics, and building a top shelf system!