TEST REPORT | JBL A6000GTi

A heavyweight in more ways than one, this Class-I (BCA) amp is rated at 3000 watts x 2 into 2 ohms.

JBL A6000GTi

TEXT: ROBERT ZEFF + TESTING: NIKOLA ENGINEERING + PHOTOGRAPHY: COURTESY OF MANUFACTURER .:: MSRP: $6000.00

Let me just start off by saying, *NOW THIS IS AN AMPLIFIER!* I often get these boring aluminum "box" amps across my desk that have nothing inside them that pushes the technological boundary — in fact, it seams as if technology to so many car audio manufacturers means flashy heatsinks that contain some form of neon, acrylic or chrome. Well, the JBL A6000GTi is not just another aluminum box. And it's not just neon blue glow tubes under the acrylic cover either. Hell, this amp is so serious it takes at least two people to move it!

Arriving in a wooden crate weighing 145 lbs., we knew that this amp had to be something spectacular. Fortunately, we had been forewarned that this amp consumes mega amounts of juice, so we started working to prepare our test bench before it arrived. Once we got it unpacked though, we weren't sure if the power we had on tap was enough to truly put this amp through its paces — the electric bill's going to be high this month!

FEATURES

·Power! Four tons worth!
·Very high efficiency
·Low distortion
·High quality components throughout
·Severely overbuilt
·Adjustable crossover damping
·Parallel, bridged, & dual output operation
Magnetic interconnect safety switch

COSMETICS

With the car audio business already saturated with box-shaped aluminum amplifiers, the team from JBL and Crown decided they needed to make an impact. These guys dumped some serious coin into the design and development of the multi-piece chassis and the tooling of the little things such as the terminal blocks on the A6000GTi. Its sweeping die-cast aluminum curves, clear window, neon, and matching covers for the input and output connections all make for a very stylish and modern design that have this amp holding its own in the originality category.

DESIGN AND LAYOUT

The construction of the *BIG* JBL is truly unbelievable, both internal and external. The power supply section is unique in that it has a massive transformer surrounded by switching devices arranged in a circle. This keeps the path lengths short and consistent, improving the performance of the supply while making it visually stunning. JBL took extra measures to prevent any radiated noise from contaminating nearby components or audio paths with some exceptional shielding. And assuring the

power remains clean are a cool quarter farad of low ESR capacitors on the supply.

The A6000GTi uses an unregulated power supply. While regulated supplies in Class AB amplifiers improve efficiency, they offer no such improvement in switching amplifiers such as Class D, or in the case of our subject, Class I. Class I (Interleave) or BCA (Balanced Current Amplifier) was developed by JBL's sister company, Crown International, as a proprietary design (see our exclusive look at Crown in the May 2002 issue). Crown, as you may know, manufactures some of the most powerful audio amplifiers worldwide.

Speaking of power, this amp is in a class of its own, using 48 170-ampere switching FETs in the supply, helping it achieve greater than 85% efficiency into a 4-ohm load. The advanced switching technology of the BCA design solves many problems that Class D amplifiers have, including switching losses and power supply pumping, while maintaining the ability to bridge the outputs.

Even the speaker and power connectors are top notch and can accommodate 1/0-gauge power wire and 4-gauge for the speakers, ensuring that maximum power is delivered to and from the amplifier.

[JBL'S BEAST IS NO DOUBT POWERFUL, LOW IN DISTORTION, WITH VERY VERSATILE OUTPUT CONFIGURATIONS. YET THAT'S NOT ALL — THIS AMP'S EFFICIENT, TOO.]

PROTECTION

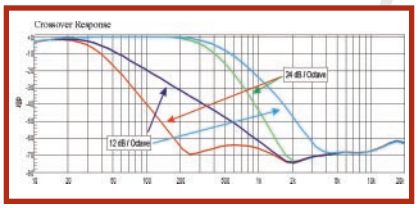
To be honest, we did not try to drive the amplifier into thermal protection. While we have massive loads and supplies here, they aren't *that* massive. I'm certain you won't be able to even warm up this amp either, but if you do there is a good possibility you will have some hearing damage (considering how much power is on tap). The only way we were able to get a rise in temperature on the amp was from drawing over 14,000 watts on our three-phase service through our power supplies — yeah, it gets a tad warm in our lab.

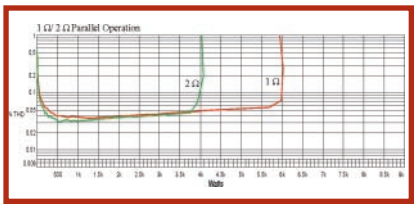
After some searching, we found someone brave enough to short the outputs of the 8,200 watt A6000GTi. Really, we had no reason to be afraid; it shut down the outputs perfectly with direct shorts and went into current limit protection when the load dropped below 1.5 ohms. The big JBL also shut down with (battery) voltages higher than 15.4 or lower than 9 volts. In addition, this amp has a magnetic safety interlock switch that keeps one from being electrocuted by the extraordinarily high voltage available. This is a great idea especially since the A6000GTi can develop over 220 volts on its speaker leads. While the amplifier may protect you

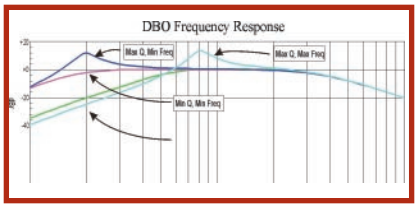
PROS & CONS

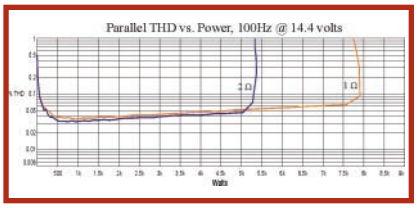
+Pros
- High power, low distortion
- Configurable outputs, dual mono, parallel, or bridged
- Very high quality components and construction
- High efficiency
- Snazzy blue neon tubes
- Top quality components
- Over 90 watts per pound

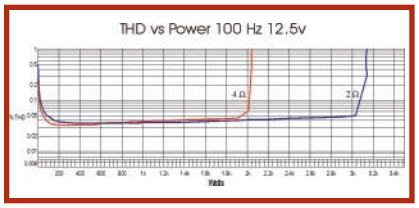
–Cons
- It's too big for my car
- Needs a huge electrical system to operate

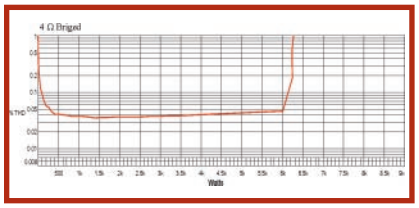


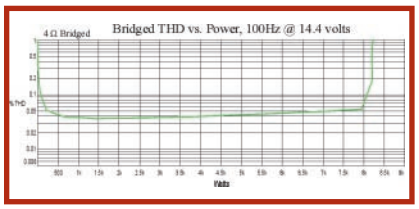


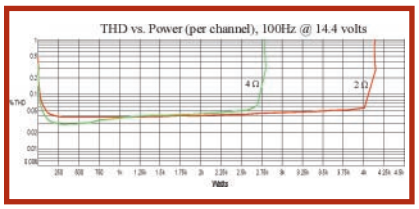












from shock with its protective cover off, the connections to the speakers are not usually protected.

Internally fused at 600 amps, JBL recommends an external 500-ampere fuse near the batteries (yes batteries — one will not suffice), as in any quality installation. And taking the cover off to replace the internal fuse is not an easy task to perform on a mounted 88-pound amplifier, especially if it is in a small compartment.

CROSSOVER

The crossover has selectable slope with adjustable frequency and damping. JBL calls this DBO, or "Dynamic Bass Optimizer." (See graph, "DBO Frequency Response.") This is the first I've seen of adjustable damping. It's a neat feature, as you can purposely under-damp the crossover to get a bass boost effect right above the crossover point, theoretically, right where you'd want it. Additionally, as the boost comes just before the low frequency cut-off, this effectively acts as a steep filter to prevent unwanted output below the speaker's port resonance. This will prevent excessive cone excursion at frequencies where the cone is unloaded.

FRONT PANEL CONTROLS

Though understated compared to the rest of the amp's design, the front panel display and controls are clearly labeled, and allow you to tweak the unit for a precise match for your speakers, enclosures and vehicle. Blue LEDs report status and accent the connection for the remote level control, giving it a sleek clean look.

The included remote level is functional, but expect to see 3rd party panels for this amp soon. JBL kindly put extra connections on the remote level port, so it is not only a remote input, but also has status lines for voltage, current, and temperature of the amp to connect to gauges or displays.

MEASURED SPECIFICATIONS

Output power @1% THD 100Hz 14.4 volts
Dual Mono Configuration

8 ohms x 2 channels	2 x 1600 watts
4 ohms x 2 channels	2 x 2,800 watts, 460 amps
2 ohms x 2 channels	2 x 4,150 watts, 755 amps

Parallel Configuration

2 ohms x 1 channel	1 x 5,300 watts
1 ohm x 1 channel	1 x 7,700 watts

Bridged Configuration

4 ohms x 1 channel	1 x 8200 watts 760 amps

Output power @1% THD 100Hz 12.5 volts
Dual Mono Configuration

8 ohms x 2 channels	2 x 1213 watts
4 ohms x 2 channels	2 x 2050 watts
2 ohms x 2 channels	2 x 3150 watts

Parallel Configuration

2 ohms x 1 channel	1 x 5300 watts
1 ohm x 1 channel	1 x 5900 watts

Bridged Configuration

4 ohms x 1 channel	1 x 6250 watts 760 amps

Distortion at rated power, 100Hz (6,000 watts)	0.043% @ 2 ohms
Input sensitivity (4 ohm)	150mV – 8.5 volts
Frequency response (±1dB)	17 Hz – 250 Hz
S/N (A-weighted, below clipping)	96 dB
Damping Factor @ 100Hz, 4 ohms	102
Idle current	2.2 amps
Slew rate	13 V/us
Standby current	65 mA
Efficiency at full power, 4 ohms / Ch.	85%
Efficiency at full power, 2 ohms / Ch.	76%
Maximum current consumption, unclipped sine	760 Amps @ 1% THD, 8200 watts

Crossover

Crossover slope	12 / 24 dB, switched
Crossover range	32 – 320Hz
Crossover damping (DBO boost)	Variable
Low frequency boost (via crossover damping)	0 - +12dB

Other

Remote level control	Yes, untested
Phase control	0 – 180 degrees
Warranty	Limited three years
Dimensions	23" x 29 3/8" x 6 1/2"
Weight	88 pounds

MANUAL

The manual supplies plenty of technical information to hook up this amp in the best way for the equipment that you have. There are some contradictions such as the cable used for the remote (though this may have been cleared up in the final printed version).

PERFORMANCE

This amplifier has two power output channels, but is actually a mono amplifier. It cannot be configured as two independent stereo channels since the left and right audio paths are summed in the preamp stage. These two channels can drive two 2-ohm loads independently; they can be run in parallel into a single 1 ohm load; or bridged for 8,200 watts into a single 4 ohm load. When driven into slight clipping (1% THD), this amp drew a whopping 760 amps! We did not drive it into hard clipping, as we were bumping into the limits of our bench supply (four 240 volt, three-phase supplies in tandem). This low-frequency amplifier delivers more that 8,000 watts at very low distortion, typically below 0.05%, another benefit of Class I over Class D. The A6000GTi exceeded the factory power rating by over 2,000 watts.

JBL's beast is no doubt powerful, low in distortion, with very versatile output configurations. Yet that's not all — this amp's efficient, too. Efficiency at full power into 2 ohms was a highly acceptable 76%! At 4 ohms per channel efficiency climbed to an astonishing 85%. This is the best efficiency we've measured for any amplifier under these conditions. Even the damping factor was impressive at an astounding 1015, especially for this class of amplifier.

This amp does everything in a big way and the idle current seems to follow suit. At 12amps, the A6000GTi can add a little stress to you average charging system, but we can only assume this will never be in your average vehicle.

LISTENING

So how does an 8,200 watt amplifier sound? Good, as a matter of fact. We're just afraid to turn the volume up on this thing, especially since we just don't have the speakers to test 8 kilowatts. But honestly, who really cares? The A6000GTi makes over 8,000 watts and it will undoubtedly sound good even with your earplugs in!

CONCLUSION

To say that this amplifier has a tremendous amount of power is a huge understatement. To create this amount of power at these low distortion levels and at this efficiency level is a true engineering achievement. If you were going to spend $6,000 on a single low-frequency amplifier for your car, this would have to be the one to get. By the way, did I mention that it does have cool blue neon, too?