

# JBL P1222



Text and Measurements by  
[www.MOBILEENTERTAINMENT.com](http://www.MOBILEENTERTAINMENT.com) Frank Cook  
 Photography by  
 Dave MacKinnon



**J**BL has introduced a brand new series of subwoofers called the Power Series. The Power Series features a pair of ten inch and a pair of twelve inch subs – we have the P1222 Dual 2-Ohm here to take for a test run.

## FIRST GLANCE

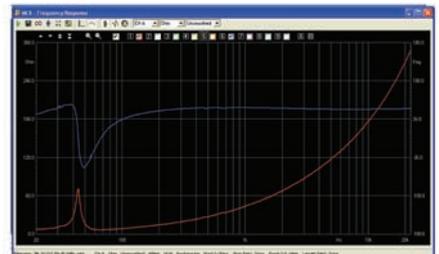
Looking at the JBL P1222 DVC subwoofer for the first time, only one thing came to mind, a question; is this a 12" or 15" subwoofer? It is big and impressive looking! Then we looked up the MSRP (This must be the year of hi value subwoofers!). The JBL P1222 is indeed a 12" subwoofer with a big basket and a relatively small price. The JBL P1222's cone is a patented (Plus One) Kevlar impregnated paper cone measuring 562 cm<sup>2</sup>. A bigger than average measurement for a 12" subwoofer. The cones suspension is comprised of a progressive Nomex-

cotton composite spider with integrated stitched tinsel leads and a beefy hi-roll Nitrile-butylene surround. The drivers propulsion system is comprised of two, three inch, dual layer copper voice coils, wound around a fiberglass former, propelled by three 18 mm, 42 oz ceramic magnets. Holding it all together is JBL's proprietary die cast basket, which was designed to minimize mounting depth, while maintaining required stiffness. All in all, the JBL P1222 looks like a heavy weight (28lb's) subwoofer capable of moving copious amounts of air. Lets see if this subwoofer is all show or if it also has some go!

## GETTING BENCHED

The JBL P1222 is so beefy; we decided to extend the break-in period to ensure accurate measurement of the driver. In total the P1222 was on

the break-in bench for 127 hours. When we took it off, the suspension system had definitely loosened up! Next we ran our standard battery of quality control and design tests to rule out driver defect before making our actual test measurements. The JBL P1222 passed, outputting no detectable "Rub or Buzz". Preparing to measure the P1222, we calibrated our measurement equipment (Clio Win 7QC & TEF 25) and noted the labs temperature (74 degrees Fahrenheit) and relative humidity (65%). >>



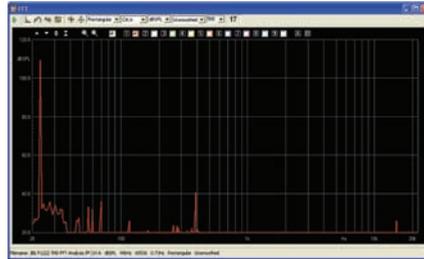
Ready to rock, we mounted the P1222 to our non-resonate free air baffle and ran: unsmoothed, high resolution MLS, Sinusoidal & FFT sweeps, measuring various impedance, phase and distortion qualities, as well as, electrical latencies (Impulse Times) and cone biasing. Once satisfied that we were in possession of data representing the true nature of this driver, we ported the data into various spread sheet calculators to determine additional electrical and mechanical properties.

Thiele & Small Parameters					
Manufacturer: JBL					
Model: P1222					
Date: 3-16-2006					
Fs	19.9834 Hz	Vas	68.4386 L	Re	4.0660 Ω
Qms	10.4683	Qes	0.6584	Qts	0.6194
Bl	18.8161 T·m	dBlspL	81.2111	Sp	0.0594 m <sup>2</sup>
Cms	0.1389 mm/N	Mms	456.5749 g	Rms	5.4763 Ω
Ces	4.90E-7 m/F	Mcs	129.42 kg/m <sup>3</sup>	Ras	1552 Ω
Cms	1289.5870 μF	Lcs	49.1873 mH	Res	64.6510 Ω
Rat	26234 Ω	Rmt	92.5514 Ω	Mip	448.3818 g
Zms	-53.4828 Ω	ZMAX	68.7170 Ω	Zavo	43.3023 Ω
η	0.0796 %	Lmeq	5.8119 mH	Lmeqz	2.2804 mH

**BRINGING IT DOWN**

JBL is apart of the Harman International group of product offerings and as a result, has access to some of the brightest minds in the industry and it appears that they have taken advantage of them. The JBL P1222 is technically a very strong product offering.

The driver produced an ultra low Fs of 19.98 Hz with very strong motor force of 18.81 Tm, while producing low THD @ -10dBu, 0dBu and 10dBu. We found this to be very impressive, considering it's near entry-level price point!



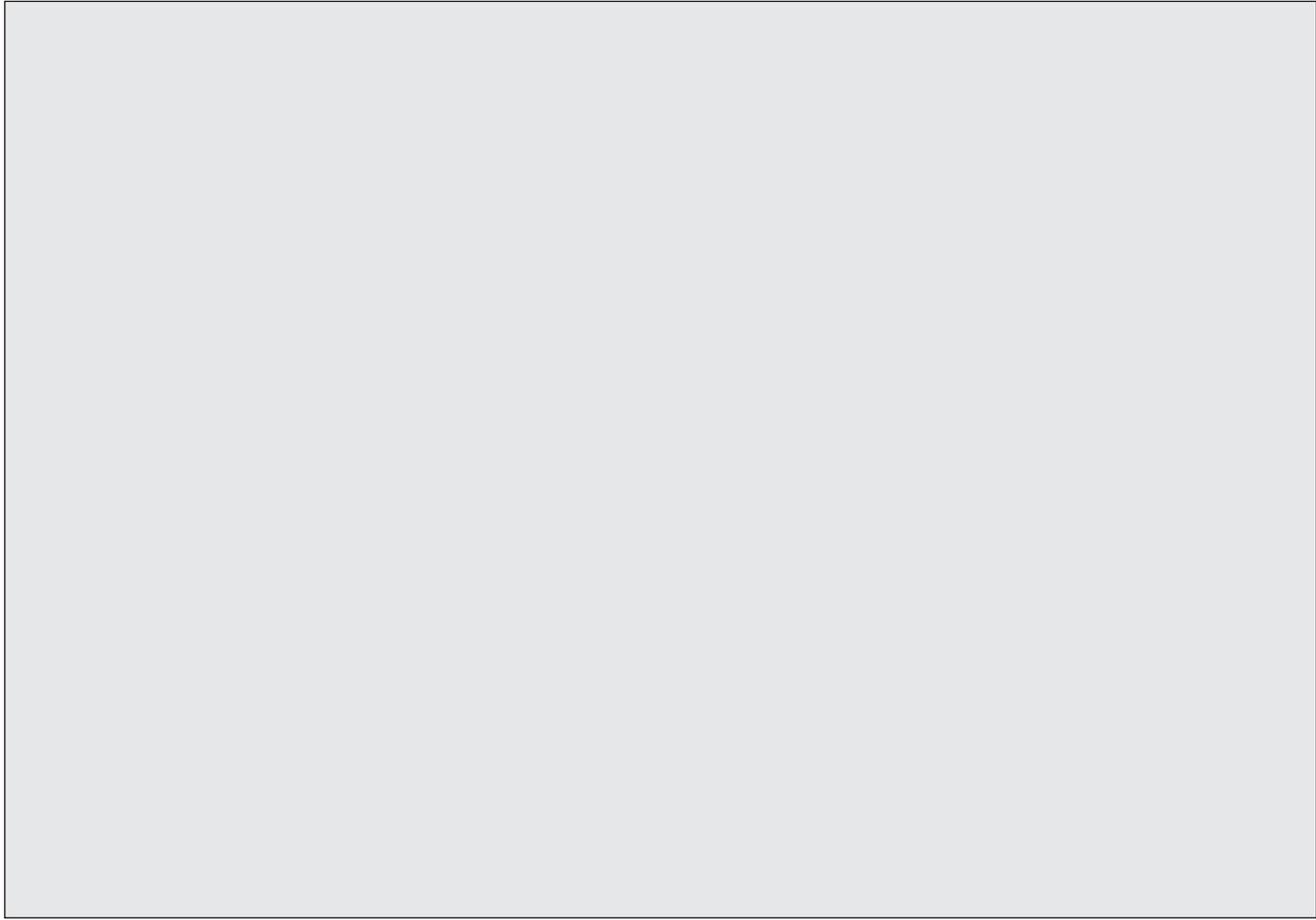
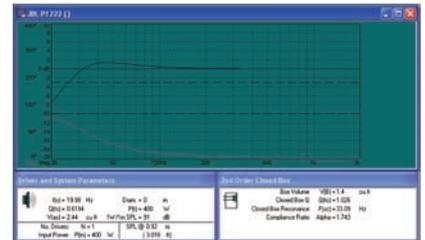
The JBL P1222 while capable of producing deep bass, it does so at a cost. We observed a significant amount of signal latency below 100Hz, which leads us to believe while this driver is capable of moving large amounts of air, that it will do so significantly out of time with other speakers in the system, disqualifying it from high-end, high fidelity applications.

All in all, the JBL P1222 measured well; it is an efficient, true, ultra-low frequency subwoofer with a bigger than average cone surface and a big strong motor (Magnet). Considering the P1222's slightly higher than entry level pricing, we see no need for

further disclosure. JBL has done an exceptional job producing the P1222, they have clearly flexed their technical and manufacturing might; this isn't your fathers JBL, its better! We suspect that the JBL P1222 has as much "GO" as it does "SHOW" and then some; this subwoofer will play DEEP & LOUD... especially in the right enclosure!

**THE LAST WORD**

Okay, so we have provided a solid overview of the JBL P1222's qualities, as well as, accurate Thiele & Small parameters, enabling you to design and fabricate your own enclosure, if you desire to do so. However, enclosure design is a tricky business and requires a great deal of experience to do correctly! So in that light, we always provide application cues, as well as, a design suggestion that we feel will accentuate a particular products best traits.



With regards to the JBL P1222, Mobile Dynamics Instructor Frank Cook feels that its best traits will come to life in a sealed enclosure with a net internal volume between 1.4-5 cu.ft yielding a system Qtc of approximately 1.0 and F3 of 33Hz, free-field.

To obtain these results, perform the following:  
 Design & Construct an enclosure (using MDF board) with a net internal volume of 1.2 cu.ft  
 Brace & Silicone all joints.  
 Make a sealed path for speaker wire to exit.  
 Fill the interior with 1lb of Dacron Fiber.  
 Install supplied foam gasket between the P1222 and enclosure.

This system will appeal to individuals desiring to experience the lowest of low bass frequency output. This combination when coupled with most vehicles transfer function will produce tight, impacting bass, to the lowest audible octave (20Hz range). No small achievement! If you find these performance outcomes appealing, the JBL P1222 could be right for you!

In terms of amplification, the P1222 should be a relatively efficient and stable load for most amplifiers. Thought the JBL P1222 is priced as an entry-level product, we recommend that >>



you connect it to a mid-level amplifier, as its performance potential warrants the extra bucks be spent! In terms of power, the JBL P1222 would be completely comfortable with 200 –500 Watts RMS of input, 300 being optimum in our enclosure. As a final note, a steep low pass crossover slope (24db or greater) set between 70-90 Hz is recommended.

As always, my opinions are based on objective measurements made in our lab here at Mobile Dynamics (East) and as such, should be weighted against the subjective listening tests and summaries of Tech Editor Dave MacKinnon below.

**OUT OF THE BOX**

Immediately upon removal of the P1222 from its shipping carton, I could see that the massive fleet of engineers at JBL had been given free reign to design whatever they seemed fit in order for this sub to look and sound the way they wanted. Something that is important to point out at this early stage is that although the sub will easily mount in a standard 12-inch subwoofer hole (mounting diameter of 11-1/16 inches) the outside diameter is a very large 14-5/8 inches. Now, this isn't a problem if you account for the size during the enclosure design stage, but it does mean it may not fit into every pre-fab enclosure on the market. Also to note, you are going to need mounting hardware (screws) that are at least two inches in length – this is a really BIG basket... and I like it!

This massive basket has allowed JBL to implement what they call Plus One technology – similar in concept to the Plus One and Plus Two wheel sizing concept, the Power Series offers significantly more cone area than a conventional woofer design of the same size.

Spaced between two of the three spokes of the basket is a pair of terminal blocks for connection to the dual voice coils. The blocks will accept 12awg cables without any problem and secure them with gold-plated Phillips head screws. JBL calls this the Direct Wire Terminals. From the terminals, a quartet of rubber insulated tinsel leads feed the voice coil. The leads are secured to the spider halfway between the basket and the voice coil former – this controls the motion of the tinsel leads without affecting driver compliance.

At the bottom of the driver is a cold-forged steel bottom plate with a 45mm vent. Atop the plate sit three 42oz ceramic magnets – yep, triple-stacked! The top plate is also made of low-carbon steel, and both it and the bottom plate are machined to tolerance and zinc-plated to prevent corrosion.

At the heart of the driver is a 3-inch diameter fibreglass voice coil former. The voice coil windings are made of copper and there are four layers to help handle the power this driver can withstand. At the top of the former is a Nomex / Cotton composite progressive spider with a diameter of 7 inches. The progressive design offers good sound quality and control at high excursion levels. Next in line is the semi-pressed Kevlar-impregnated paper cone. At the center of the cone is a polypropylene dust cap with a convex shape. At the top of the cone is an NBR rubber surround with a tall and relatively narrow profile (given the driver's capabilities).

**LISTEN TO THIS!**

Time to check this monster out with some music. I made sure the output of the sub was in phase with my front stage speakers, then set off to do some errands with my arsenal of tunes in hand.

More and more I am assessing the performance of each subwoofer I review with a single song – though I always continue on with my listening just to back up my assumptions. With the P1222, it took me a few songs to decide what exactly I thought of the woofer – not because it had any failings, just because it performed a little differently than my reference driver. Bear with me – this is going to go back and forth a bit.

I first thought I had wired the subwoofer incorrectly, which is why I mentioned the polarity check with the mids and highs. What was getting to me was that even though reversing the wiring proved there was a right and wrong configuration, I never got the 'snap' I was looking for from the P1222. So, I headed back to the lab for some research. The frequency response charts included with the Technical Data sheet tell the story. Even with the sealed enclosure, the P1222 rolls off at 12dB per octave above 50 or 60Hz – thank the almighty I didn't choose to audition a bandpass enclosure. So what does this mean? It means you need to be aware

of this when you are designing your entire system. It's NOT a failing. In fact, some of the most popular subwoofers on the market share this characteristic. You need to use this driver with a midrange that will play down to 60Hz solidly – no 4-inch dash speakers here, great 5.25s or good 6.5s will be required to get some snap out of your system.

OK, so my ears and brain are vindicated – time to get to work. I set the high-pass crossover on my deck to 60Hz and had another listen – some midbass attack was back in the system.

I can sum this up easily – the P1222 pounds! It will focus a great deal of energy between 35 and 50Hz, exciting all the interior trim panels in my car and making heads turn at stop lights. Chemical Brothers, Moby, Madonna – anything with a solid bass line sent waves of energy through the car. Rolling the window down made it even crazier and increased the disapproving looks from the folks I was sharing the road with.

I really like low bass – you all must know this by now. By low, I mean REALLY LOW – like below 25Hz kinda low. The P1222 would serve this purpose better in a sealed enclosure of course – any sub would. But it was still able to give the car a good shake in the bottom octave when challenged with Bachbusters and The Great Fantasy Adventure album.

The woofer is well controlled and will take a serious beating without so much as a hiccup. The factory Xmax spec of 0.56 inches and the suspension design are obviously complementary. Upper bass dynamics are not this driver's forte, but that's OK; the engineers obviously didn't intend them to be.

**WRAP IT UP**

I like the P1222 – it looks extremely cool, be it in the enclosure or just sitting on my test bench. The engineers at JBL know what they are doing when they design a speaker, and this monster is designed to shake the fillings out of your teeth while remaining controlled and accurate – not boomy or sloppy – just LOUD! Add some great components and this would be an excellent subwoofer for anyone who likes to abuse themselves. **PAS**

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