Subject: Prosound Shootout 2007
Posted by Wayne Parham on Wed, 01 Aug 2007 13:14:45 GMT
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We're all set for the Prosound Shootout on October 19, 2007. Check the link for details:
Prosound Shootout

Subject: Test Plan
Posted by Wayne Parham on Wed, 01 Aug 2007 14:18:26 GMT
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The test plan for this year is the same as was used in 2005. I wrote the test plan and did the measurements that first year, but in 2006, David Lee did the measurements with Praxis so the setup and procedure was slightly different.Test Plan

Subject: Schedule and exhibitors
Posted by Wayne Parham on Wed, 01 Aug 2007 15:17:36 GMT
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As in all previous Prosound Shootouts, our main focus is on gathering useful data. This is what is most difficult for people to get, because you need the right environment and test equipment to get it. The environment has to be a large, open space free of obstructions and noise. It has to be a place where you can generate high SPL's that can be heard for miles. And you have to have a good measurement system. So getting this kind of data is important for us.Secondly, we all want to actually hear the equipment present. Of course, you can listen to the gear in other environments, at gigs and whatnot. So if pressed for time, we'll always get the data first.Thirdly, David Lee has been a proponent of the workshop approach to events like this. He would like to have a training session, a question-and-answer period where people can discuss issues and learn things like proper use and loudspeaker placement.We will have the track from 10:00am to 6:00pm. Load-in and setup usually takes about an hour. We may be able to get the track to open the gates a little earlier, say 9:00am. In fact, I'm sure that's OK, maybe as early as 8:00am. If we can all be sure to be there early, it will help us get setup quickly. I usually connect lines to the power distro, setup the amplifier and measurement system and measure out the environment, marking lines on the ground to know where to set the speakers. Each of the exhibitors load out their gear and get them setup in the staging area.After load-in and setup, it takes about 30 minutes to properly measure each speaker. This is a very aggressive and optimistic schedule though. Sometimes, it can take closer to an hour to move out a set of speakers, move in another set, connect up and do all the measurements. If there are any problems, like a connector won't cooperate or someone finds a speaker is phased wrong, this takes extra time. So we ask that each exhibitor come prepared with speakers that are ready to test and with cables that are easy to identify polarity and connect up to use.If all goes smoothly, we can be ready to measure by

10:30am and have the first three systems measured by lunch. We'll call in a pizza or have a volunteer grab us all some sandwiches and break for lunch. Depending on our schedule (how many exhibitors are there and things are going), we may choose to stagger lunches so we can keep making measurements through the lunch period. Best case, we can measure six to eight systems in a day.After we've measured everything, we'll listen to each system. So bring your favorite CDs. Some people have already volunteered to bring tops so we won't be listening to just subs. We probably won't have time to listen to more than one or two songs on each speaker though.After that, we'll have a question and answer session. David Lee has expressed interest in this, so he will be available for offering his advice. Others may volunteer to do so as well. Discussions always get started throughout the day too, but they are often interrupted by our sweeps. So we'll finish out the day with a question and answer session. If we've exhausted our time, we can always meet in the conference room at one of the local restaurants for this part of the event.We have really just started taking commitments from exhibitors this week. But so far,

AudioLance Klaurens or David Lee may bring other commercial products to compare with, but it is likely that we will not have time. We may have a full schedule from exhibitors that attend, leaving no time to measure outside gear from companies that don't attend. We'll see.If you'd like to bring something to be tested, please write to me at webmaster@audioroundtable.com. Currently, we are only performing measurements of subwoofers, but are interested also in having top boxes for the listening portion of the event. We are considering taking measurements of top boxes at subsequent events, maybe next year.

Subject: Exhibitor list CLOSED - Here's the schedule:
Posted by Wayne Parham on Mon, 01 Oct 2007 13:59:07 GMT
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SpeakersSchedule:10:00am - Load-in and setup11:00am - BASSMAXX measurements12:00pm -

measurements3:00pm - Outline Audio measurements4:00pm - Listening sessions6:00pm - Load-out and go to restaurant

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Subject: Prosound Shootout 2007 - Weather Forecast
Posted by Wayne Parham on Mon, 15 Oct 2007 13:52:03 GMT
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Weather forecast in Tulsa on October 19th is 80° and sunny.NOAA seven-day weather forecast for TulsaPerfect!

Subject: Re: Prosound Shootout 2007 - RESULTS
Posted by Wayne Parham on Sun, 21 Oct 2007 17:44:52 GMT
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We were blessed with wonderful weather again this year. Sunny and about 65° when we all showed up in the morning, warming to maybe 80° by mid-afternoon.

Left to right: Michael Parham, Wayne Parham, Debbie Loughridge, David Lee, Bill Wassilak, Stan Loughridge, Jeff Permanian, Leland Crooks, Harley Dear

Left to right: Wayne Parham, David Lee, Steven Parham, Jeff Permanian, Leland Crooks, Harley Dear

Below are photos of the speakers side by side, taken from three different angles. This will help you get an idea of the relative sizes of each box. Click on a picture to show a larger view.

Left to right: (2) BassMaxx X2C Deuce, (2) JTR Growler, (1) Fitzmaurice Tuba 36, (2) Fitzmaurice

The wind was calm in the morning and late in the afternoon, but picked up a little in the mid-afternoon so we measured the noise floor twice, once in the morning and once in the afternoon. This sets the minimum SPL we can "see", so once a sound is below the noise floor, we don't know what level it is. This is important mostly when looking at the distortion charts, because they are (hopefully) down in this range.

Once distortion is below the noise floor, we don't know what level it is. This sets the minimum distortion we can measure. Distortion that's 20dB below the fundamental is 10%, -40dB is 1% and -60% is 0.1%. So since the noise floor is about 65dB to 70dB, the fundamental has to be 110dB for 1% distortion to be visible above the noise floor. See the distortion conversion chart.

Noise Floor

Subject: Distortion Measurements
Posted by Wayne Parham on Sun, 21 Oct 2007 17:56:18 GMT
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The way we measured distortion is to filter out the fundamental and capture sound in the first two octaves above the fundamental. This gets mostly the second and third harmonic plus any noise

present in that band. Since distortion harmonics from subwoofers (especially basshorns) are primarily second and third, this is a pretty good indication of THD+N. We measured amplitude response and distortion at 28.3v, 100 watts, 200 watts, 400 watts, 800 watts, and so on up to 1600 watts or the maximum allowed by the owner of the cabinet. The distance was 10 meters, so add 20dB to get the value at 1 meter. Each response chart shows SPL as a blue line and THD+N distortion as a violet line. To know the amount of distortion present, simply subtract the distortion from the SPL to read a decibel value, -35dB, for example.Then to convert to a percentage, use the following conversion chart:-60dB = 0.1%-55dB = 0.2%-50dB = 0.3%-45dB = 0.5%-40dB = 1%-35dB = 2%-30dB = 3%-25dB = 5%-20dB = 10%-15dB = 15%-10dB = 30%-5dB = 55%If the distortion level falls below the line shown in the noise floor measurement, then distortion is unknown. One can only know it is below the noise floor, approximately 65-70dB. Typical amplitude response ranged from 105dB to 120dB, so the average dynamic range was approximately 40dB. That means distortion below about 1% was too low to measure with this setup. To get more resolution, we could have moved the microphone closer but since we were primarily concerned with high power levels, 1% resolution was sufficient.

Subject: BassMaxx X2C Deuce
Posted by Wayne Parham on Sun, 21 Oct 2007 18:21:21 GMT
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BassMaxx X2C Deuce basshorn sub

25.9v for 200 watts, 36.6v for 400 watts, 51.8v for 800 watts and 73.2v for 1600 watts.

Bassmaxx impedance
Next, we measured output at 28.3v. Since we measured 10 meters away, the values correspond to 2.83v/1M.

The blue line is SPL, and the violet line shows distortion. Since measurement was taken at 10 meters, add 20dB to find SPL at 1 meter. With 100 watts input, the 10 meter measurement works out the same as 1 watt input measured at a distance of 1 meter.

Bassmaxx response at 10 meters with 28.3v input (2.83v/1M)
From this, we perform an inverse FFT to obtain impulse and step response:

BassMaxx Impulse Response

BassMaxx Step Response

Measurement at 100 watts:

BassMaxx response at 10 meters with 18.3v (100w) input (1W/1M)

Measurement at 200 watts:

BassMaxx response at 10 meters with 25.9v (200w) input

Measurement at 400 watts:

BassMaxx response at 10 meters with 36.6v (400w) input

Measurement at 800 watts:

BassMaxx response at 10 meters with 51.8v (800w) input

Measurement at 1600 watts:

BassMaxx response at 10 meters with 73.2v (1600w) input

Subject: Fitzmaurice Titan 48
Posted by Wayne Parham on Sun, 21 Oct 2007 18:31:26 GMT
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Fitzmaurice Titan 48 basshorn sub

35.4v for 200 watts, 50v for 400 watts and 70.7v for 800 watts.

Titan 48 impedance
Next, we measured output at 28.3v. Since we measured 10 meters away, the values correspond to 2.83v/1M.

The blue line is SPL, and the violet line shows distortion. Since measurement was taken at 10 meters, add 20dB to find SPL at 1 meter. With 100 watts input, the 10 meter measurement works out the same as 1 watt input measured at a distance of 1 meter.

Titan 48 response at 10 meters with 28.3v input (2.83v/1M)
From this, we perform an inverse FFT to obtain impulse and step response:

Titan 48 Impulse Response

Titan 48 Step Response
Measurement at 100 watts:

Titan 48 response at 10 meters with 25v (100w) input (1W/1M)
Measurement at 200 watts:

Titan 48 response at 10 meters with 35.4v (200w) input
Measurement at 400 watts:

Titan 48 response at 10 meters with 50v (400w) input
Measurement at 800 watts:

Titan 48 response at 10 meters with 70.71v (800w) input

Subject: JTR Growler
Posted by Wayne Parham on Sun, 21 Oct 2007 18:43:17 GMT
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JTR Growler basshorn sub

33.2v for 200 watts, 46.9v for 400 watts and 66.3v for 800 watts.

Growler impedance
Next, we measured output at 28.3v. Since we measured 10 meters away, the values correspond to 2.83v/1M.

The blue line is SPL, and the violet line shows distortion. Since measurement was taken at 10 meters, add 20dB to find SPL at 1 meter. With 100 watts input, the 10 meter measurement works out the same as 1 watt input measured at a distance of 1 meter.

Growler response at 10 meters with 28.3v input (2.83v/1M)
From this, we perform an inverse FFT to obtain impulse and step response:

Growler 48 Impulse Response[/img]

Growler Step Response[/img]
Measurement at 100 watts:

Growler response at 10 meters with 23.5v (100w) input (1W/1M)
Measurement at 200 watts:

Growler response at 10 meters with 33.2v (200w) input
Measurement at 400 watts:

Growler response at 10 meters with 46.9v (400w) input

Measurement at 800 watts:

Growler response at 10 meters with 66.3v (800w) input

Posted by Wayne Parham on Sun, 21 Oct 2007 18:56:15 GMT
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23.7v for 200 watts, 33.5v for 400 watts, 47.3v for 800 watts and 66.9v for 1600 watts.

Next, we measured output at 28.3v. Since we measured 10 meters away, the values correspond to 2.83v/1M.

The blue line is SPL, and the violet line shows distortion. Since measurement was taken at 10 meters, add 20dB to find SPL at 1 meter. With 100 watts input, the 10 meter measurement works out the same as 1 watt input measured at a distance of 1 meter.

From this, we perform an inverse FFT to obtain impulse and step response:

Measurement at 100 watts:

Measurement at 200 watts:

Measurement at 400 watts:

Measurement at 800 watts:

Measurement at 1600 watts:

Subject: Comparison of systems
Posted by Wayne Parham on Sun, 21 Oct 2007 19:26:57 GMT
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The charts below overlay response curves of each subwoofer tested at 100w, 200w, 400w and

Measurement at 100 watts:

Response curves at 100 watts
Measurement at 200 watts:

Response curves at 200 watts
Measurement at 400 watts:

Response curves at 400 watts
Measurement at 800 watts:

Response curves at 800 watts
Measurement at 1600 watts:

Response curves at 1600 watts

Posted by Wayne Parham on Tue, 23 Oct 2007 13:23:47 GMT
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first production model v1 and we've just finished with a second production version v2 that performs even better. The differences are described here:

Subject: Re: Fitzmaurice Titan 48
Posted by lelandcrooks on Wed, 24 Oct 2007 14:31:36 GMT
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Thought I might add a version definition also. The t48 can be configured with two chamber sizes. The model tested is the large chamber version, which improves response below 40hz. The smaller chamber improves response above 40 hz., up to a couple of db across the board, at the expense of response below 40hz.
