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NHT ST4, SB3, SB1, SC1, & SW10 Loudspeakers

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NHT St-4, SB-3, SB-1, SC-1, and SW-10 Loudspeakers

Manufacturer: NHT, 527 Stone Road, Benicia, CA 94510; 800/NHT-9993

Price: ST-4 floor-standing tower, \$1,000/pr; SB-3 bookshelf system, \$600/pr; SB-1 bookshelf system, \$300/pr; SC-1 center-channel, \$300; SW-10 powered subwoofer, \$500

Source: Manufacturer loan

Reviewer: Howard Ferstler

OK, let's face it, this is a substantial number of loudspeaker systems for anybody to be reviewing at one time. In the past, I have reviewed multi-unit arrays from Polk, Atlantic Technology, and Velodyne, but this time things have almost gotten out of hand. Still, duty calls.

Once I got the group unboxed, I had to marvel at the appearance of the systems, because they had the glossiest black finish this side of the Velodyne HGS subwoofer line. I suppose that a number of other systems these days also have super-shiny finishes, but the ones on these NHTs were still head-turning to a very pleasant degree. In addition, the satellites have smoothly rounded cabinet edges that give the impression they were carved out of individual pieces of very dense material.

Beyond shiny, the overall visual impression is one of great attention to detail on the part of the people who built these systems. The drivers are very cleanly mounted on the front panels (the woofer/mids are held in place with T-15 Torx-head screws) and the backs of the enclosures are as slick as the sides and tops. The bookshelf models were even finished on their bottoms. (A good idea, since they can also be hung on the wall, with the bottoms visible.) Even when examining them closely, one gets the impression that these are speakers, particularly the ST-4 floor-standing units, that look more expensive than their list prices dictate.

Here is a rundown of the sizes, shapes, weights, driver configurations, and general specifications of these speakers:

The ST-4 is 38 x 8 x 12 inches (h/w/d) and weighs 47.5 pounds. The top third of the enclosure has a one-inch, aluminum-dome tweeter (with a neodymium magnet structure) mounted under a 6.5-inch midrange. At the bottom of the column, there is an 8-inch, side-mounted woofer. The woofer system is a reflex design, with a flared port on the back. The mid-woofer and tweeter at the top are acoustically separated from the woofer section, and the sub-enclosure itself is a sealed design. Crossover points are at 135 Hz and 2.6 kHz, and the input sensitivity is 86 dB (1 meter/2.83 volts). The rated impedance is 8 ohms, nominal. The tweeter and midrange are video shielded, but the woofer down at the bottom is not. (It is unlikely that it needs to be.) Two pairs of normally strapped-together connectors on the back allow for biamping.



The cabinets can be tippy if placed on thick carpeting (meaning they are at risk of being pushed over if you have small children), so NHT provides "stabilizer bars" that attach to the bottom and extend outward on

either side like outriggers. They can be fitted with either spikes or rubber pads. I have no children, so I just stuck the rubber pads on the bottoms of the cabinets (over the screw holes for the outriggers) and plopped the systems down on my carpet. I think this looks more elegant than with the stabilizers installed.

The ST-4s are normally sold in mirror-imaged pairs, and the owner's manual recommends that they be positioned with the woofers facing the side walls. If a side wall is too close, the woofers can be aimed inward. The midrange and tweeter are covered with a removable, stretched-cloth grill screen, and the woofer at the bottom has what appears to be a non-removable one. Because the bottom half of the cabinet is mostly free of cloth coverings, it should be more cat-scratch resistant than some other systems. Actually, my three cats were at first utterly mystified by the super-shiny finish.

The SB-3 is essentially the tweeter/midrange

section of the ST-4 (with the tweeter also mounted below the woofer), but with the sealed enclosure volume seen by the 6.5-inch driver being slightly different, and with that driver operating full bandwidth into the bass range. The dimensions are 13 x 8 x 10 (h/w/d), and the weight is 16 pounds. This is very much a speaker for stand mounting or positioning on a bookshelf or bench, although it should be oriented vertically for best performance. The electrical specifications are nearly the same, although the rated crossover point is 2.4 kHz. The system cannot be biamped.

The SB-1 is basically a reduced-size version of the SB-3, but with the tweeter mounted above the woofer/midrange. The latter is a 5.25-inch unit, and the crossover point is at 2.6 kHz. Dimensions are 10.25 x 6.25 x 6.75 (h/w/d), and the weight is 8 pounds. The SB-1 can also be had in a white finish.

According to NHT, the SB-1 is a replacement for the Super Zero (although the SB-1's woofer/midrange is an inch larger in diameter), the SB-3 replaces the Super One, and the ST-4 kind of replaces the Super Two, reviewed by David Moran in Issue 74. I say "kind of," because the Super Two had a downward-facing 6.5-inch woofer, whereas the ST-4 has that side-aimed 8-inch.

The SC-1 center is a replacement for the Super Center, and in some respects both of those resemble the VS1.2 center I have been using with one of my smaller systems for several years. The SC-1 is a horizontal MTM job, with the same tweeter as the SB-1, SB-3, and ST-4 systems, but with two 4.5-inch midrange drivers. The crossover point is 2.3 kHz. Because of the size of the midrange drivers, the center would normally be configured to operate in the "small" mode in a surround system, with the center bass routed to the mains or a subwoofer. The SC-1 is 5.63 x 16.54 x 6.63 inches (h/w/d), weighs 11 pounds, and has electrical specifications similar to the other systems.

The SW-10 subwoofer is on the smallish size, weighing 43 pounds, and with identical 14.5-inch dimen-

sions in all directions, although some clearance has to be allowed in the back for the connections and the amplifier heat sink. The amp itself is rated at 150 watts, the driver is a 10-incher, and the system is ported, with the port on the front panel, next to the driver. One advantage to having the port arranged this way is that the system can be shoehorned into a rather tight space, with no blockage to side- or rear-mounted vents.

The sub has the usual connections and controls on the back. In addition to speaker-level inputs and outputs, it also has line-level inputs and outputs. With either of these, the output is high-pass filtered at 100 Hz, and the low-pass signals fed to the subwoofer amp are continuously adjustable from 40 to 180 Hz. The low-pass adjustability allows you to dovetail the sub properly with satellites that will add their own low-range acoustic rolloff to the sub's electrical high-pass filtering. The sub does not have a crossover-bypass feature for use with a sub-out hookup on a surround processor, but you can pretty much get the same effect as a bypass by simply setting the low-pass control to its fairly high, 180-Hz upper limit.

The sub has the now almost ubiquitous auto-on feature, allowing you to cut the unit on and off yourself or let the input signal do the job, with the power automatically terminated several minutes after input signals are eliminated. The features also include a bass-level control, two-position (0/180) phase switch, and a switch marked "video/audio."

If the latter is set to the video position, there is a bass boost at about 40 Hz, with substantial rolloff below that frequency. It adds punch to some high-impact movies, but I found it to not be particularly useful for serious musical listening. Because it is awkward to reach on the cabinet backside, I suggest leaving it in the "audio" position, even for movies. Let the people who mixed the films decide just how much bass your subwoofer should generate.

There is a power-indicator light that is off when the unit is in the standby mode, glows green when power is on, and glows red when the subwoofer is protecting



NHT SB3

itself from some anomaly. Since it is on the back it will be awkward to see most of the time. (This kind of impractical indicator-light positioning is common with most powered subs, by the way.) The sub has a non-detachable power cord and a user-replaceable 5-amp fuse.

Because there were so many different systems involved here, I decided to first do a series of room-response and bass-response measurements before getting involved with any musical listening. The measurement technique was my usual: an AudioControl SA-3051, 1/3-octave RTA was set to its 20-second integration mode, and during this interval I slowly moved the microphone over a horizontal, 1 x 1 x 5 foot, box-shaped area that enclosed the usual head-height area at my listening couch, about 14 feet from the front wall of my main listening room. This technique minimizes hot spots at all frequencies, and has proven to be a decent indicator of the room/power response of speakers being measured.

By themselves, the ST-4 minitowers had one of the flattest treble curves I have yet measured. The worst I plotted was +/- 1 dB from 4 kHz on up to 16 kHz. I ran several other curves just to make sure I was not seeing things—and one plot was actually a straight line over that range! Only three other systems I have reviewed have been as flat: my own Allison IC-20 systems (\$5,200 per pair in 1991), the \$5,500 per pair Dunlavy Cantatas that I reviewed in Issue 87, and the \$2,500 per pair Dunlavy SC-II units I reviewed in Issue 70.

The ST-4s' treble was considerably more extended than the \$1,550/pr (with stands) AR Phantom 8.3 systems that I reviewed in Issue 82. The latter began to roll off rather rapidly at about 10 kHz, and the AR units also could not reach as deep into the bass range as the ST-4s.

The ST-4s' midrange, between 160 Hz and 4 kHz was not quite so flat as what I got with those

other systems, but it was still quite good. I measured a 4 dB dip at about 300 Hz that was probably boundary related, a mild peak at 800 Hz, and modest, 3 dB power-response related notch maxing out at about 2.5 kHz. The midrange curve was different from but still in the same accuracy league as the \$900 per pair AR 310HO systems I reviewed in Issue 68, although the ST-4 had a considerably more extended treble output than that AR system. The AR was a bit more potent in the bass area, probably because it was bigger and had a 10-inch woofer.

The measured bass performance of the ST-4 was typical for medium-sized systems I have measured over the past few years: below 160 Hz, there was a steady rise down to about 80 Hz, with a rapid rolloff below that point. The output returned to average midrange levels at about 40 Hz, and with both test tones and musical source material at reasonably high output levels I would say that its lower practical limit is about 35 Hz. Much of the rise below 160 Hz was the result of room gain, but the rolloff below 80 Hz was speaker-related, not room-related.

I should point out that a bass rise of that kind down into the middle-bass range can work very well to compensate for limited bass response at really low frequencies, and systems that exhibit it will generally sound richer and subjectively more accurate than those that go flat to 80 Hz and then roll off similarly. Trust me on this. It works.

The SB-3 system curves paralleled those of the ST-4 throughout most of the midrange and treble (which is understandable), and the bass response was also surprisingly similar, including the rise down to 80 Hz. The middle-bass range could be made to vary considerably, depending on the heights of the stands I used and the relationship of the systems to the front and side walls. However, if the systems were set so that the tweeters were at the same height as those of the ST-4 systems, the response curves were surprisingly similar, and so was their sound with musical program sources.

Interestingly, the midrange and treble



NHT ST4

part of the curves also measured similar in terms of accuracy to those of the \$1,000/pr Coincident Technology Triumph Signature systems that I reviewed in Issue 69. The bass rise was considerably more potent than what I got with the Triumphs, however, and overall the response slope and contouring somewhat resembled that of the \$400 a pair, Polk RT-35 systems I reviewed in Issue 77. The Polks were a bit flatter between 160 Hz and 1 kHz, while exhibiting a considerably deeper crossover-related dip in the 1.6-2.5 kHz range.

The SB-1 was also in this performance category, although the midrange power response was actually flatter than what I measured with the other two NHT systems (the smaller mid/woofer driver would tend to have higher radiation efficiency at the top of its operating range), although, understandably, the bass was not quite so extended.

Indeed, I would not recommend using a pair of SB-1 systems unless they were either used as surround speakers in a full A/V package or as main speakers assisted by a subwoofer like the SW-10. In terms of overall response smoothness, the SB-1 systems were remarkably similar to the Tannoy Mercury M2 system that I reviewed in issue 70, although the SB-1 was a tad smoother, with more extended treble, and the Tannoys could go a bit deeper into the bass range. The bass/treble balance of these production SB-1 models was just about ideal, which should be news to you who read a review of them in *Sound & Vision* some time back. According to NHT, the units reviewed by *S&V* were prototypes and not indicative of the production samples I had on hand.

The SW-10 subwoofer was a fairly good performer, although not quite in the same league as a number of other subwoofers I have reviewed that were similar in size and/or price. To test its capabilities, I did some direct, level-matched comparisons between it and two other units I had on hand.

An RBH subwoofer was really no more extended at normal levels, but it could play louder down really low. The NHT was pretty clean up to a point, but when pushed a bit the port would emit some wind noise, and even the grille cloth in front of the port would make a mild fluttering sound. The RBH would not do this at similar levels, because its downward-facing port is uncovered. Its driver is also larger.

Of course, the RBH sub costs twice what the SW-10 does, but I had similar results when comparing the NHT to a \$500 Hsu VFT-2 unit. The Hsu could go both deeper and play louder at any low frequency than the SW-10 could.

Now, this is not to sell the SW-10 short. In addition to being smaller and lighter than either of those other units, it also has a high-pass filter. Hence, if you install it between a preamp and power amp, you can expect the high-pass filter to reduce low-frequency-signals to the satellites. Neither of those other subs I noted can offer that feature. While hooking any of these subs up to the subwoofer output of a surround processor obviates the advantage of the SW-10's HP-filter circuit, including the feature does allow the SW-10 user a hookup option that the other subs do not have.

I also did some maximum-output tests of the sub. At the usual location, 17 feet from the prime listening/measuring position in my 3400 cubic foot, main A/V room, it could cleanly hit 95 dB at 31.5 Hz and could get up to 98 dB with mild port noise intruding. At 20 Hz (well below its bottom-range design limits), it could only cleanly hit 80 Hz. As a point of reference, the Hsu and RBH subs could each cleanly hit 106 and 102 dB, respectively at 31.5 Hz, and 90 and 88 dB at 20 Hz. I went back into my files to find a parallel to the SW-10 in this performance category, and came up with the Velodyne CT-80 (reviewed in Issue 85), which could also hit 95 and 80 dB at 31.5 and 20 Hz. The Velodyne only lists for \$380, however, and it also has high-pass filtering.

Clearly, the SW-10 is not designed for large-room use. However, in smaller rooms it can work quite well down to about 30-35 Hz. And it has passable performance all the way down to 25 Hz, as I discovered when I hooked it up later in my living room. In addition, its somewhat smaller-than-average size and front-mounted port will allow it to work well in areas where it has to be shoehorned into a space.

The SC-1 center speaker performed admirably. I did some comparison measurements between it and my older NHT VS1.2 unit, compared its performance to the Velodyne CT center (reviewed in issue 85), and also compared its measurements to the \$450 Atlantic Technology 273C (reviewed in issue 75). In terms of measurement flatness, the SC-1 nearly equaled the VS1.2 (which is the flattest-responding center speaker I have reviewed to date), superior to the 273C, and considerably superior to the Velodyne, which suffers from not being able to go low enough to dovetail comfortably with a subwoofer at 80 Hz. As with virtually all horizontally oriented MTM center speakers I have encountered, the SC-1 appeared to exhibit lobing artifacts at listening positions that were more than 20 degrees off axis. In some rooms, in some typical listening positions, this would not be a problem. It exhibited no 80-Hz bass peak, and was

flat down to that frequency.

Virtually none of the center-oriented systems noted above were able to deliver adequate output at frequencies below 80 Hz, meaning that they should all be operated at the “small” setting of a surround processor, with the bass either shunted to large main-channel systems or a subwoofer.

When combining any of the NHT satellites with the SW-10 sub, the already good measured performance of the systems was considerably enhanced. The sub’s high-pass filtering flattened out the bass peaks with the ST and SB models, and the result was impressive. The ST-4’s woofer was probably not contributing a lot with this kind of hookup (remember, the sub high passes at 100 Hz, while the system’s internal crossover for the woofer is only slightly higher, at 135 Hz), but the result still seemed to be a tad better than what I got with the sub and the SB-3 systems.

The real thrill came with the SW-10/SB-1 combo. It measured very good, and it also sounded really good, once I got the satellites properly positioned on 28-inch stands. Whether the \$800 SB-1/SW-10 combo sounds better than the \$1,000 pair of ST-4 systems is debatable. However, those with small rooms or home-decor situations that prohibit largish floor-standing systems (even highly attractive ones like the ST-4s) need not feel deprived if they opt for the SB-1/SW-10 combo. Adding the sub to that smallish pair of satellites really did the trick. We are talking really good sound here.

Indeed, nifty and interesting measurements aside, what really matters is how speakers sound, and I will have to say that all three satellite pairs, particularly if the smaller ones were used with the NHT subwoofer, or any other good subwoofer, sounded excellent. I tried them in stereo pairs and used separate AudioSource Amp One and Amp Three units set up in a level-matched, quick-switch configuration to compare them to each other and to other brands I had on hand.

After the measurements were completed, I hooked up each set of systems one package at a time (ST-4 systems alone, SB-3 and SB-1 systems in combination with the SW-10) and listened to a variety of program sources. Two good ones were the Tony Monaco Trio’s, *Burnin’ Grooves* (Summit 304) and Charles Pillow’s, *In This World* (Summit 301). The Pillow disc’s jazz presentation (featuring an oboe and English horn, as well as traditional jazz instruments) only

involved two channels, and yet with the ST-4 systems the overall sound had an excellent sense of stage depth and surround-like ambiance. I also felt that the ST-4s had a slight mid-bass blend edge over both the SB-3/SW-10 and SB-1/SW-10 combinations.

The Monaco release, which features jazz playing on an electronic organ, exhibited an excellent soundstage blend with the ST-4 systems, but in this case I felt that the two SB systems, in combination with the SW-10, were a tad superior. Obviously, we are talking about hair-splitting nuances with this jazz music



NHT SW10

material.

With classical, the nuances remained. All three combinations sounded terrific with Prokofiev’s *On the River Dnieper* (Koch 7349), which exhibited excellent orchestral integration and very good reproduction of the very well recorded string tones. Haydn’s *Divertimenti, Volume 5* (Koch 6483) had its very transparent and detailed sound handled superbly by the NHT combinations. Finally, Martha Masters’s *Guitar Recital* (Naxos 8.555720), an album of works by Tansman, J.S. Bach, Sor, Johanson, Ponce, and Rodrigo, had its precise and very focused solo image expertly handled by the systems. I would say that all three satellites are terrific with acoustic guitar music.

A more serious comparison involved the ST-4 systems against a pair of Dunlavy Cantatas, speakers that cost more than five times as much as the ST-4s. Doing comparisons of this kind is tricky, because the two sets of speakers cannot occupy the same place at the same time

(which compromises any analysis of imaging), but at least both designs are designed to be free standing, away from room boundaries. I used the same two AudioSource amps as before, again getting the systems as close to level matched as practical.

In this comparison, I tried a variety of tracks from the Delos *Engineer's Choice II* album (DE 3512), because it has a good instrumental variety and I have gotten used to the sound of this material from using it with a number of other comparisons.

With the guitar tracks on this disc, the sound was surprisingly close, with the Dunlavys a bit more forward and a tad clearer.

With the Bizet, Bach, and Shostakovich orchestral tracks, the violin string sounds were very close, but with the ST-4 systems sounding more distant, and sometimes with a better sense of stage depth. The Dunlavys were more forward sounding and somewhat clearer at times, and it is likely that the distance difference was a result of the dip I measured near the ST-4 crossover point. The Dunlavys did not exhibit such an artifact. The NHT units also seemed to have more isolated directional clues from hard-left and hard-right inputs. The Dunlavys had a more realistic sound to the cellos, and the measured mid-bass bulge made the ST-4s sound a tad thick at times, by comparison.

With the Mozart quartet material, the contest was close, and it was hard to say which systems were best. This was particularly the case with the violin. Both systems would be judged excellent for quartet music of this kind. There is also a female vocal track on the *EC II* disc, and for all intents and purposes it was a dead heat. The ST-4s were a bit more distant sounding, and the Dunlavys seemed to be just a tad smoother in the middle range.

One of the new releases I tried during this comparison was Ana Caram's *Blue Bossa* (Chesky JD-219), where both systems handled the superb imaging, richness, detail, and ambiance of this material very well. The ST-4 units exhibited a bit of mid-bass thickness that the Cantatas did not, although this did not prevent me from noticing the deeper low-bass reach of the Cantatas at times. The Dunlavys seemed just a tad more transparent, as well, but to tell the truth the two systems were about equal at reproducing the vocal parts. While it would be possible to choose a winner in a close comparison like this, it probably would be impossible to do so with any significant time lapse between switchovers.

Another comparison involved a superb transcription of Handel's *Harpsichord Works* (Chandos

0669, volume 2), and in this case the face off would have to be judged a dead heat. Finally, I listened to *Pastiche* (Summit 300), an all-female vocal trio that features very punchy, well-blended, and clean sound. The result was also a technical dead heat, although at times the deeper bass reach of the Cantatas was evident.

Overall, I would have to judge the Cantatas as slightly superior to the ST-4s. However, if the ST-4s were coupled with a subwoofer capable of getting flat, loud, and clean down to about 30 Hz, the contest would be judged really close, indeed, and under those conditions you would still have an ST-4/subwoofer package that cost substantially less than the Cantatas.

I also had a chance to compare the ST-4 units to the AR Phantom 8.3 systems, which with their dedicated stands cost half again as much as the ST-4s. Nevertheless, in this case, the NHT systems came out somewhat ahead.

Using the same *EC II* disc, I felt that the ST-4s were richer sounding, with a greater sense of stage depth. Part of the reason for the depth difference, however was the result of the AR systems being somewhat flatter throughout the middle frequencies, with no dip in the 2-3 kHz range, although they do have a dip at 4 kHz, where the ST-4s are pancake-flat. Consequently, in the treble range it was no contest, and the NHTs clearly could also go deeper into the bass. The Phantoms did seem to be a bit more spacious sounding at times (they are more spacious sounding than the Cantatas, too), due to the ultra-wide dispersion of the system's 2-inch midrange, but with the ST-4s nearly always sounding richer, and at least with most recordings, more realistic.

If a subwoofer was added in to this mix, and still sticking with the *EC II* material, the Phantoms managed to catch up a bit. (I recommended that they be used with a subwoofer in my original report.) Indeed, when I hooked the SW-10 into the loop, the overall sound would probably have to be judged a draw. I tried still another fine, new disc, Rachmaninoff's *Piano Concertos Number 1 and 4* (original version) with the Helsinki Philharmonic (Ondine 977), and both systems were on the mark with this well-recorded material.

The Phantom/SW-10 combo tended to be more forward and laterally spacious and diffuse sounding, whereas the ST-4/SW-10 combo tended to be richer, with a better sense of stage depth and superior between-speaker imaging. No doubt there would be differences of opinion based strictly upon personal taste and the recording of the moment being listened to, but there would be no way to pronounce either set up a winner, in my opinion.

However, there is no doubt that the bang-for-buck winner would be the NHT pair, either with a sub assisting, or without.

Home-theater buffs should know that I also set up the entire NHT group in a rather elaborate surround-sound arrangement about a week after checking out basic two-channel musical abilities. I used my Yamaha DSP-A1 processor/amp, and had the ST-4s as left/right mains, the SC-1 as the center, the SB-1s positioned as front “effects” surrounds, and the SB-3s working as side/rear surrounds. The SW-10 was fed from the Yamaha’s sub-out jack, and I capitalized on the Yamaha’s optional ability to simultaneously send the bass and LFE to both the main channels and the subwoofer channel. That way, the SW-10 and ST-4 woofers could work together in my largish main room. To extend and flatten out the overall bass below 80 Hz, I set the low-pass filter of the sub to about 60 Hz, and adjusted the gain accordingly.

The result was terrific. The array of speakers did spectacularly well in that room, and I spent the evening enjoying still another romp with Arnold Schwarzenegger pulverizing terrorists in *True Lies*.

The performance with musical material, either discrete surround or surround synthesized from two-

channel sources was also terrific. Particularly impressive was a DVD-A release of Vivaldi’s *Four Seasons*, performed by the London Mozart Players (Naxos 5.110001, with a list price of \$15.00). Material like this, played on the NHT package, should make a surround-sound believer out of nearly anyone, although since DVD-A lacks bass management, the ability of the DSP-A1 to do bass management with its 6-channel inputs was particularly helpful to the SC-1 center speaker.

Later on, I set the ST-4, SB-1, SC-1, and SW-10 systems up in my smaller living room, using an Onkyo TX-DS787 receiver. Again, the result was terrific, and as a matter of fact, I think the combination sounded nearly as good in that smaller room as it did in the larger one. The listening distances were closer, and that allowed the excellent imaging and detailing of the three front systems to work to good effect, with both musical and home-theater source material.

NHT has told me that these systems are their entry-level models. Well, if that is the case, one can only imagine what their latest upscale speakers must sound like, because the package they sent to me for reviewing was a very upscale-like bunch of performers, indeed.

-HF