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MERIDIAN D600B SPEAKER

Manufacturer's Specifications

System Type: Active, three-way, vented-box system with three 70-watt power amplifiers, electronic crossover, digital control unit, and bitstream D/A converter.

Drivers: 6½-in. (16.5-cm) cone woofer, 6½-in. (16.5-cm) cone woofer/midrange, and 1-in. (2.54-cm) aluminum dome tweeter.

Frequency Range: 36 Hz to 20 kHz.

Sensitivity: Line level, 775 mV nominal.

Maximum Output: Maximum, 110 dB SPL on musical peaks.

Crossover Frequencies: 500 Hz and 2.5 kHz.

Input Impedance: Analog, 11 kilohms; digital, 75 ohms.

Recommended Amplifier Power: Not applicable.

Dimensions: 35½ in. H × 8¼ in. W × 11⅝ in. D (90.2 cm × 21 cm × 29.5 cm).

Weight: 70 lbs. (32 kg).

Price: $5,490 per pair, including Model 609 remote control.

Company Address: 14120-K Sullyfield Circle, Chantilly, Va. 22021.

For literature, circle No. 91

The D600B is the second generation of Meridian's Digital Active loudspeaker, the Model D600. The D600B employs a version of the widely acclaimed bitstream D/A converter used in Meridian's Model 206B and 208 CD players, and the new Model 203 D/A converter, instead of the earlier, 16-bit converters with four-times oversampling. The D600B is just one unit from Meridian's extensive, ambitious line of "intelligent" high-fidelity components that allow multi-room control and full remote operation of multiple listening zones in the home. Meridian's line of components includes CD players, preamplifiers, power amplifiers, remote-control units, remote sensors, wall display panels, in-wall loudspeakers, and active loudspeakers, all of which are designed to be a part of a total multi-room system.

Meridian is the marketing arm of a relatively small British company, Boothroyd Stuart Ltd., founded by electronics designer Robert Stuart and industrial designer Allen Boothroyd in 1977. Stuart is the technical brain behind most of the

The self-powered D600Bs can accept digital and analog signals, with remote input selection and control of tone and volume.

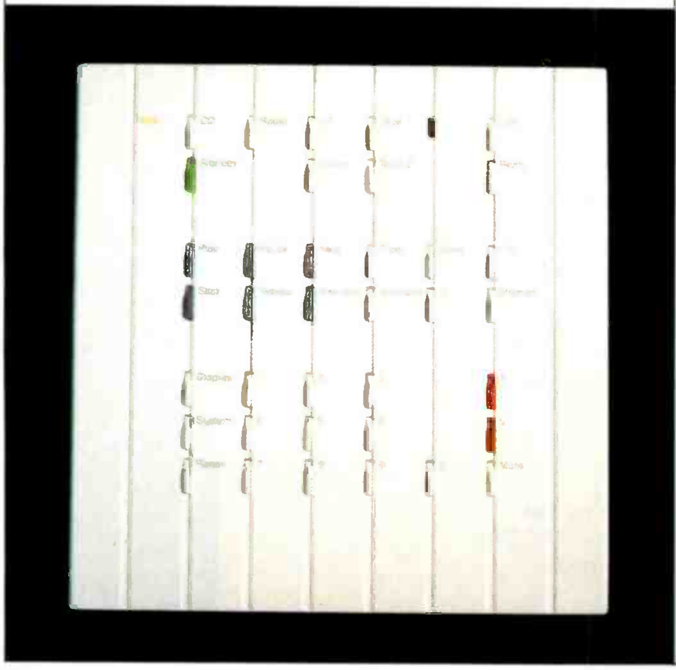
goods that the company sells, while Boothroyd provides most of the styling and industrial design. All of Meridian's products have a very distinctive, European avant-garde look that sets them apart from those of other manufacturers. Boothroyd Stuart is part of the British AGI group that, coincidentally, owns KEF; both Meridian and KEF are marketed by the same organization in the United States. In September of last year, I had the pleasure of touring the Meridian plant with a group of American journalists. I was quite impressed with their facility, and particularly with their computer-automated testing facility for CD players.

The D600B bears the "Digital" designation because it has a built-in, audiophile-grade D/A converter that accepts digital signals directly from a CD player. The D600B can accept both coax cable and fiber-optic digital inputs.

In addition to the digital circuitry, the system contains three 70-watt power amplifiers which individually drive the woofer, woofer/midrange, and tweeter from the outputs of the internal electronic crossover. The Meridian D600B also has two selectable line-level analog inputs which can be driven from conventional audio outputs from CD players or preamplifiers.

The D600B comes supplied with the Model 609 System Handset remote-control unit, which is the only way to control the system. (The remote also controls such aspects of a Meridian CD player as play, pause, stop, track selection, etc.) The top of the enclosure's front panel contains a red LED that indicates which speaker system is the master, a four-character green status display, and the infrared receiver for the remote. The display can show the status of various system settings, such as volume level, channel balance, active inputs, tone modifications, setup and programming information, and CD track number and time remaining.

Each D600B is controlled by an internal microprocessor that interprets the commands from the 609 remote control, communicates with the other D600B and with Meridian 200-series components, operates the front-panel display, and supervises the digital audio process. The system I evaluated included the Meridian 206 CD player, the pair of speakers, the 609 remote, and various interconnects (including coax and fiber-optic cables). I did not use any other sources for listening evaluation of the D600B speakers.



The D600Bs are relatively small and compact for the amount of electronics and the drivers that they contain. The rear quarter of the cabinet, from top to bottom, is taken up by analog and digital electronic assemblies, including all system inputs and outputs. The base of the rear panel contains the substantial regulated power supply, which includes two large, 10,000-µF electrolytic capacitors. The mid portion is taken up by the three power amplifier assemblies, which use the metal rear panel as a heat radiator. Under normal operation, this panel just barely gets warm; however, during my high-power woofer excursion tests, reported on later, the rear panel got very warm and caused the amplifiers to thermally shut down. After simply waiting a few minutes for the amps to cool, I was able to continue. The power amplifiers are all constructed from discrete transistors operated from ±45 V supply rails.

The digital and control electronics, including the bitstream D/A converter, are mounted near the input connector panel at the top rear of the D600B's enclosure. The electronics of the D600B are internally shielded by aluminum foil which lines the rear cavity of the enclosure.

All the signal input and output connectors of the system are mounted on the upper rear of the enclosure. These include eight RCA phono jacks (for two digital inputs and two balanced analog line-level inputs, a digital output, and a signal ground), an EIAJ optical input, and separate DIN-style seven-pin connectors for system communication input and output. Both positive and negative analog inputs are provided, for balanced connections or polarity inversion. The simplest way to connect the speaker systems to the CD player, and to each other, is by the use of Meridian's "composite system cable," which uses the DIN connectors. Both digital audio and bidirectional system-control signals pass through this cable. Each speaker's on/off switch and a.c. power input are at the bottom rear of the enclosure. The on/off switch, curiously, turns the system on when the switch is in the downward position, which is the reverse of what I would have expected.

The two speakers come preprogrammed so the left speaker will be the master and the right speaker will be the slave, but they can be reprogrammed by the user. Once these settings are determined, only the master unit responds to the remote control's commands; the slave and other connected units follow the commands of the master. The input assignment scheme of the D600B is very versatile although a bit complicated to set up. Any of the digital and/or analog inputs can be assigned to any of the input selection keys on the remote control, which are labelled "CD," "Radio," "LP," "Video," "Tape 1," and "Tape 2."

The remote can be used to set volume in steps of approximately 1.25 dB, and the setting is indicated on the display by a number between 1 and 64. In addition to controlling volume and balance, the remote can set three tone-control

Frequency response was flat, within ±1.5 dB from 44 Hz to 20 kHz, using Meridian's recommended bass setting for the bass control.

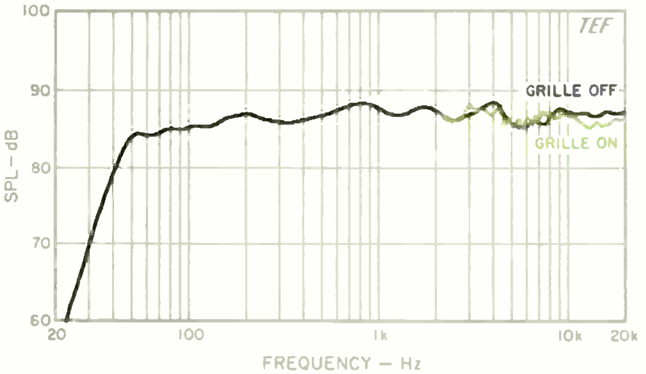


Fig. 1—On-axis frequency response with 1 V rms applied to an analog line input (see text). The system gain was set to the start-up value of "32" with all tone modifications off.

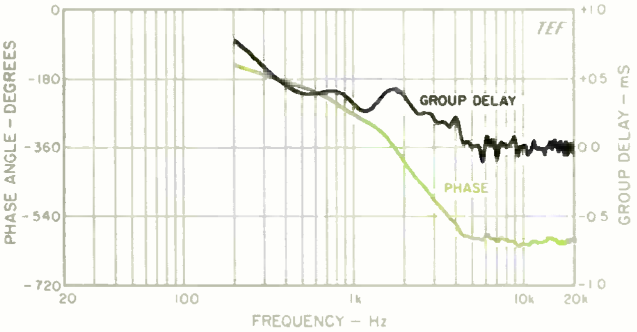


Fig. 2—On-axis phase response and group delay, corrected for tweeter arrival time.

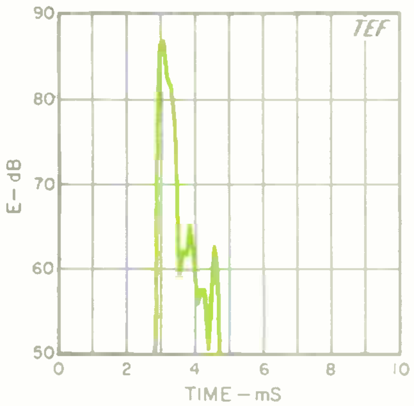


Fig. 3—One-meter on-axis energy/time curve, measured with grille off.

values: "Tilt," "Bass," and "Q." The tilt control varies the system's high/low frequency balance by gradually changing the response to favor either the upper or the lower frequencies. The adjustment range is approximately ±4 dB at the high frequencies. The bass control raises or lowers the low frequencies by about ±2 dB below 400 Hz. The Q control allows adjustments of the low-frequency response shape below about 80 Hz.

The three drivers of the D600B, made for Meridian by a Scandinavian manufacturer, include two long-throw 6½-inch woofers with polypropylene cones and a Ferrofluid-cooled, 1-inch aluminum dome tweeter. The upper woofer is used all the way up to the 2.5-kHz crossover, while the lower woofer is only used below 500 Hz and is rolled off at 6 dB/octave at higher frequencies. This roll-off decreases the effective vertical size of the radiator, thus minimizing vertical directivity effects and undesired vertical lobing.

The D600B's ow-frequency alignment is a standard, sixth-order vented-box design with a corner frequency at about 38 Hz. The enclosure is also tuned to about 38 Hz, with a rear-mounted duct 2½ inches in diameter and 7½ inches long. This alignment requires the use of a second-order high-pass driving filter with an underdamped response, which provides a boost of approximately 4 to 6 dB at the filter's corner frequency. In addition to providing boost, the filter provides a sharp roll-off for all lower frequencies, thus greatly improving the vented box's effective subsonic power-handling capability. This vented alignment has an excellent combination of extended response, controlled cone motion, and a relatively small enclosure. (The details of this alignment are described in one of my own papers, "A New Set of Sixth-Order Vented-Box Loudspeaker System Alignments," *Journal of the Audio Engineering Society*, June 1975.)

The enclosure is available in walnut, rosewood, or black ash finishes. It is quite well braced with internal transverse strengtheners and is constructed of mass-loaded, high-density ¾-inch particleboard to decrease vibration. The box was quite inert to my "knuckle knocking" test. The grille is a plastic space-frame assembly, covered with black cloth, with projections on the rear that match up with holes, filled by rubber grommets, in the enclosure's front panel.

Measurements

The D600B presented more of a measurement challenge than a typical unpowered speaker system. The system can only be controlled with its supplied 609 remote, and only if a specific unit of the pair is configured as the master. For testing, the unit had to be programmed with the line input active, and the system gain set appropriately, so that the test signal could be injected. All of my electroacoustic tests were done using an analog test signal driving one of the two line inputs. No digital measurements of the internal D/A converter were performed, except for listening tests reported later, using the Chesky CD's "bonger" tone. An inconvenience was the requirement of providing a.c. power to the speakers. One advantage of the systems was their relative small size and light weight, considering all the acoustic and electronic parts that are inside the cabinet. (They're actually smaller than, and weigh about the same as, the unpowered

The off-axis horizontal response curves show that the Meridians should image quite well over a broad listening area.

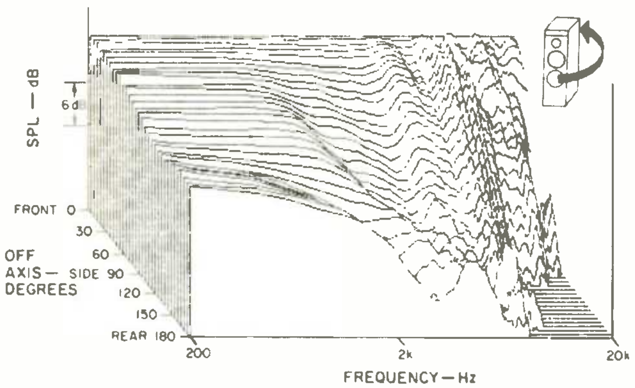


Fig. 4—Horizontal off-axis frequency responses, taken from the front, around the side, and to the rear of the speaker and normalized to the on-axis response.

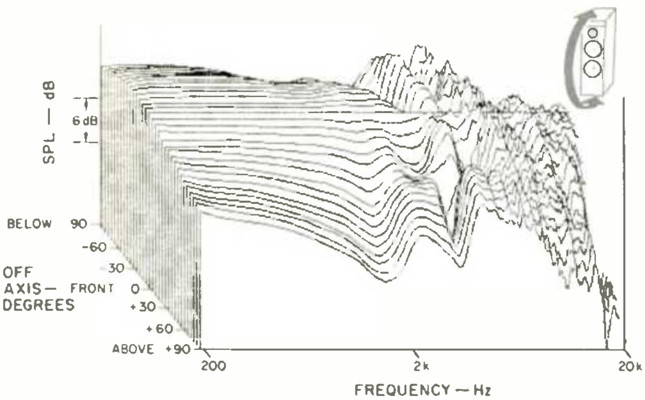


Fig. 5—Vertical off-axis responses taken from below, up the front, and to the top of the speaker and normalized to the on-axis response. Note that the above-axis response is at the front of the display.

Boston Acoustics T1030 systems reviewed in the January 1991 issue!)

The on-axis frequency response, with and without grille, is shown in Fig. 1. A signal of 1 V rms was used, driving the A1 positive line input, with a front-panel indicated gain of "32" (the start-up, or default, value). The digital control circuitry was in the reset state, which turns off all system tone corrections. The frequency response was taken at a distance of 2 meters, even with the top of the enclosure, at the manufacturer's recommended measuring point. This position lies along the same line as the ears of a listener seated 3 meters away. The angle is about 3.5° above a line originating from a point midway between the tweeter and upper woofer/midrange.

The curve is well behaved and fits within a window of ±2 dB from 49 Hz to 20 kHz. With the bass control set at "+1," which provides about 2 dB of lift below 200 Hz, the curve (not shown) was even flatter and more extended, fitting a window of ±1.5 dB from 44 Hz to 20 kHz. Meridian recommends that this bass lift be employed if the system is used away from reflective boundaries, as it was for this measurement. Just above the upper crossover point, the curve exhibits a mild peak at 4 kHz followed by a dip at 5.5 kHz. Between 8 and 20 kHz, the curve is very smooth and flat.

The grille mainly affects the response by adding some roughness between 3 and 8 kHz and lowering it by about 2 dB above 10 kHz. I suggest removing the grilles for most serious listening. To emphasize the grille's effect on the axial response, the "Grille On" curve was not subjected to the tenth-octave smoothing applied to the "Grille Off" curve. All of the following tests were made with the grille off.

Averaging the axial response over the range of 250 Hz to 4 kHz yielded a sensitivity of 87 dB SPL at 1 meter. This is the output that resulted from a 1 V rms signal applied to the line-level input with the system gain set to the default value of "32." The right/left matching of the systems was quite good, with no more than ±0.75 dB variation above 100 Hz.

Figure 2 displays the axial phase and group delay of the system, corrected for the tweeter signal's time of arrival. The phase response exhibits a total phase rotation of about 330° between 1 and 20 kHz. A separate measurement of offset revealed that the woofer/midrange trailed the tweeter by a fairly significant 0.27 mS, which corresponds to a distance of 3.6 inches. At the crossover of 2.5 kHz, this offset represents approximately 0.67 wavelength, or 240°. The above-axis measurement location contributed to this fairly large offset between the midrange and tweeter, because the woofer/midrange is physically farther away than the tweeter.

The excursion capability of the woofers was determined by energizing the system with a high-level swept sine wave covering the low frequency range. The maximum linear excursion capability of the woofers was a fairly large ±0.2 inch (0.4 inch, peak to peak). The effective piston diameter of a single woofer was about 5 inches, and thus two woofers have almost the same effective area as a single driver nominally 10 inches in diameter. The woofers exhibited no extraneous sounds when overloaded, other than the expected increase in low-order harmonic distortion.

The vented-box resonance significantly reduced cone motion between 27 and 50 Hz, with a minimum displacement at about 37 to 38 Hz. Most of the radiated sound in the latter region came from the vent. Some vent wind noise and air-turbulence sounds were noted at high levels. Fortunately, the more detectable higher frequency components of the vent noise were radiated to the rear, because of the back-mounted vent, and thus were less objectionable.

The effect of the high-pass filter used in the D600B's sixth-order, vented-box, low-frequency alignment was quite evident in these tests, in that the system did not make any distressful noises when the high-level test signal was swept below 35 Hz. The filter just reduced the input so that the

The lower harmonics of E_1 (41.2 Hz) reached only about 7%, impressively low for a speaker system this size.

woofers could not be easily overloaded below 35 Hz. Some dynamic offset of the woofers was noted during these high-level sine-wave tests. The enclosure side walls were quite rigid and displayed no significant resonances.

While running the woofer excursion tests, I decided to check the effect of the "Q" setting on the control unit. The Q adjustment has two settings, "Flat" and "Cut." According to the owner's manual, "The Q key controls the response shape for the deepest notes" and should be in the "Cut" setting "when the D600 is close to walls or in a smaller room." With the "Flat" Q setting, everything was normal and operated as expected. However, with Q in the "Cut" position, I noticed a *slight* amount of excursion reduction above 40 Hz but a *large* increase in excursion below 35 Hz, continuing down to subsonic frequencies below 10 Hz. The frequency response of the effect of Q, shown in the manual's appendix, implies that in the "Cut" position, the setting just acts as a single high-pass filter in reducing the amount of low frequencies. This was found not to be the case. Measurements revealed the control was reducing the level by about 2 dB between 40 and 80 Hz but increasing the level by nearly 9 dB below 35 Hz. Because of this, and to reduce the D600B's susceptibility to high-level energy in program material below 30 Hz (where the system's output is greatly attenuated and potentially distorted on high-level signals), I suggest that the Q control always be left in the "Flat" position.

The linearity of the system's volume adjustment was checked by running a series of frequency response curves at different volume settings. The manual states that the volume can be set in 64 steps, with each step being 1.25 dB. The measurements revealed error in the steps, some as small as 0.8 dB and others as large as 2 dB. The step error appeared to be cyclical, with every eighth volume step being large and those in between smaller. Fortunately, both systems of the pair were closely matched, with their steps tracking precisely. The audible difference between 0.8 and 2.0 dB is very slight, and what counts is that the right/left balance of the systems is not changed.

The crossover of the D600B is accomplished before the power amplifiers, using conventional IC op-amps and RC networks. There is a separate 70-watt amplifier for each of the system's three drivers. Measurement of the voltage-drive frequency response of each of the drivers revealed that the upper crossover occurred very close to the rated 2.5 kHz. It also revealed that the tweeter was rolled off at 24 dB/octave below crossover, while the woofers were rolled off at 18 dB/octave above crossover.

The upper crossover's acoustic phase relationships were investigated by reversing the tweeter connections and then noting the change in the frequency response in the crossover region. When reversed, the response at crossover dipped only about 10 dB, which indicates that the woofer/midrange and tweeter are somewhat out of phase in the region of the 2.5-kHz crossover and thus will exhibit some lobing. With the leads reversed, the response between 1 and 2 kHz actually rose by about 1 to 2 dB, which indicates an even greater amount of lobing in this region.

The 1-meter, on-axis, 1-watt energy/time curve (ETC) is shown in Fig. 3, for a test signal swept over the range of 200 Hz to 10 kHz. This ETC represents mostly the tweeter's response and emphasizes energy in the range of 2 to 9 kHz. The response is fairly tight, although somewhat broad below 80 dB, and is followed only by lower level arrivals which are more than 20 dB down from the main arrival. The increased width of the energy arrival below 80 dB is presumably due to the later contribution from the woofer/midrange.

The normalized, horizontal "3-D" off-axis curves of the D600B are shown in Fig. 4. The curves are quite well behaved but indicate some off-axis roughness above the upper crossover. The response holds up well to 16 kHz at

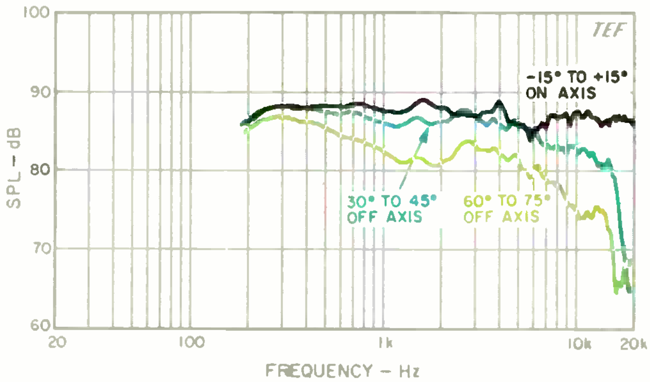


Fig. 6—Mean horizontal response derived from data of Fig. 4. The axial and 30° to 45° off-axis curves are well behaved and extended.

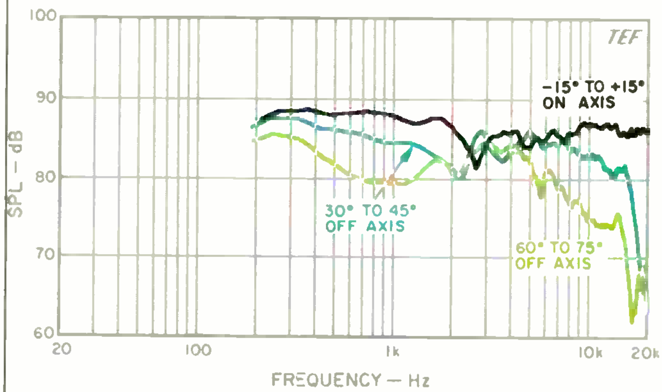


Fig. 7—Mean vertical response derived from data of Fig. 5. These curves show some of the effects of driver interference in the crossover region from 2 to 4 kHz.

On the "bonger" tone test for low-level nonlinearity, the D600Bs' D/A converters sounded very clean, with virtually no anomalies.

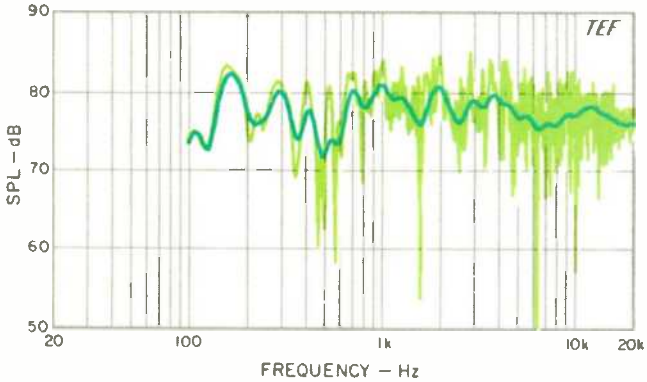


Fig. 8—Three-meter room response with test microphone at the height of a seated listener's ear, showing both raw and smoothed data. The curve is quite well behaved.

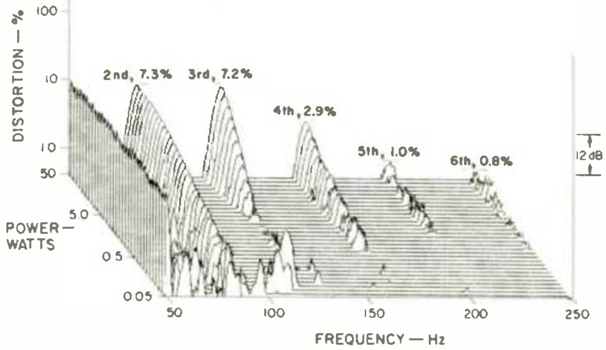


Fig. 9—Harmonic distortion products for the musical tone E_1 (41.2 Hz). At maximum power, the input level was set so that each woofer reached 50 watts at 41.2 Hz (100 watts total for both woofers). At this level, the distortion was commendably less than 10% for the second and third harmonics.

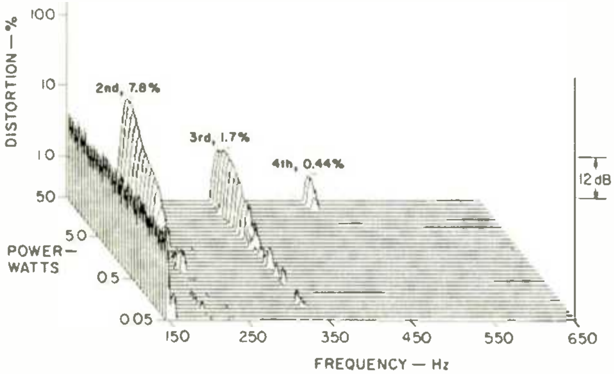


Fig. 10—Harmonic distortion products for the musical tone A_2 (110 Hz). At maximum power, the input level was set to the same value as in Fig. 9.

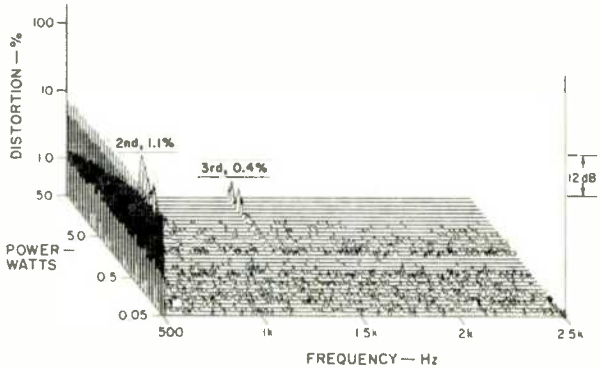


Fig. 11—Harmonic distortion products for the musical tone A_4 (440 Hz). At maximum power, the input level was set to the same value as in Fig. 9. The harmonic levels are quite low at this frequency.

angles out beyond 45° or so off axis. The vertical off-axis curves shown in Fig. 5 indicate significant roughness through the upper crossover region from 1.5 to 6 kHz. Not completely visible in this display is a significant drop in the response at the upper crossover, just below the axis, which indicates a moderate amount of lobing. Fortunately, the response through this frequency region is much smoother above axis than below.

The NRC-style mean horizontal and vertical on- and off-axis response curves of the system are shown in Figs. 6 and 7. The horizontal curves are shown in Fig. 6. The mean axial curve (–15° to +15°) is very well behaved except for the peak and dip at 4 and 6 kHz, respectively. (This curve represents the average frequency balance within ±15° of the axis horizontally but on axis vertically.) The 30° to 45° response is also quite smooth, with a gradual roll-off above 3 kHz. The 60° to 75° response exhibits a slump between 1 and 3 kHz and a moderate roll-off above 4 kHz. These measurements indicate that the D600Bs should image quite well over a wide horizontal listening area.

The vertical responses are shown in Fig. 7. The mean axial response has some roughness in the upper crossover region but is, in general, quite well behaved and flat. The below-axis curves that dip down in this crossover region are

The overall sound was very neutral, and the systems brought out subtle sonic details exceptionally well.

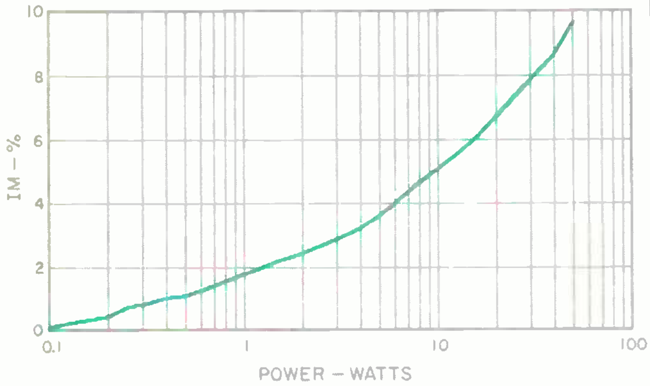


Fig. 12—IM distortion on 440 Hz (A_4) produced by 41.2 Hz (E_1) when mixed in one-to-one proportion (see text). The distortion is admirably low, less than 10% at full power.

averaged into the curves shown here. Fortunately, the above-axis curves are smoother than the below-axis curves, which is good news for a standing listener. The 30° to 45° averaged response is significantly less smooth because of off-axis directivity effects and lobing. The 30° to 45° response does extend beyond 16 kHz before falling rapidly at higher frequencies. The 60° to 75° averaged response displays low-frequency directivity effects of the dual woofers in the range from 400 to 1,500 Hz, where their response overlaps, along with high-frequency roll-off above 7 kHz.

Figure 8 shows the 3-meter room curve of the system for both raw and sixth-octave smoothed responses. The speaker was located in the right stereo position. with the test microphone placed at ear height (36 inches) on the sofa where the listener normally sits. The system was swept from 100 Hz to 20 kHz with a 1 V rms sine-wave signal applied to the A1 positive line input and the system gain set to "32." The sweep parameters were chosen so as to include the direct sound plus 13 mS of the room's reverberation; the resultant sound levels can be read directly off the graph. The curve is quite well behaved and extended except for a moderate dip in the response between 400 and 600 Hz and a slight depression between 5 and 9 kHz.

Harmonic and intermodulation distortion were measured and are displayed in four graphs. Figures 9, 10, and 11, respectively, show the spectra of single-frequency harmonic distortion versus power level for the musical notes of E_1 (41.2 Hz), A_2 (110 Hz), and A_4 (440 Hz). The indicated power levels (from 0.1 to 100 watts, – 10 to + 20 dBW, a 30-dB dynamic range) are only approximate in the case of the D600B, because the power amplifiers are built into the speaker and are not readily accessible. The line-level input voltage was set so that each woofer reached an approximate 50-watt level at 45 Hz, where the system's alignment filter provided maximum boost. This level, 7.1 V rms with the system gain set to "32," was maintained for all tested frequencies.

Figure 9 shows the E_1 (41.2-Hz) harmonic distortion data. Maximum power was 50 watts into each woofer, making a total of 100 watts. The nonharmonically related spikes at lower power levels are due to background noise in the measurement setup and were not generated by the loudspeaker. At lower power levels, the second and third harmonics predominate, while at higher power levels, the fourth, fifth, and sixth harmonics join the lower ones. The lower harmonics reach only about 7% at full power; this is impressively low considering the size of the system. The second and third harmonics are roughly the same level at higher power levels, which indicates that the one-sided and symmetrical nonlinear mechanisms are roughly equal. Note that the system was generating a fairly loud 99 to 100 dB SPL at 1 meter with full power at 41 Hz.

The A_2 (110-Hz) harmonic data is shown in Fig. 10. The graph indicates that only the second and third harmonics are significant over the tested power range, with the second harmonic predominating at higher power levels. The second harmonic increases with power, reaching a level of about 8% at full power; the significantly lower third harmonic reaches only 1.7% at full power.

The A_4 (440-Hz) harmonic measurements are shown in Fig. 11. The only noticeable distortion was a low amount of second harmonic, which peaks at about 1% at full power. All other distortion products are mostly below the noise floor of the display, about 0.2%!

The IM distortion on a 440-Hz (A_4) tone created by a 41.2-Hz (E_1) tone of equal input level is shown in Fig. 12. The IM distortion gradually rises with power, reaching only about 10% at full power The first-order ($f_2 \pm f_1$) and second-order ($f_2 \pm 2f_1$) side frequencies were the only significant ones in this power range. The vented-box design of the D600B, which coincidentally is tuned to roughly the lower test frequency, contributed to the relatively low IM distortion.

Figure 13 shows the short-term peak input and output capabilities of the D600B as a function of frequency. The tests were run by exercising the system with a shaped, 6½-cycle, sine-wave tone-burst test signal at all third-octave intervals from 20 Hz to 20 kHz. As before, the system was driven through the line input. The gain was set higher, at "42," so that the power amplifiers would reach their clipping limits before any earlier amplifying stage did.

The test sequence consisted of determining how much of the burst test signal could be handled by the system, at each frequency, before either the output sounded audibly distorted or the acoustic output waveform appeared distorted, whichever occurred first.

The maximum input capacity of the D600B is shown in the lower curve of Fig. 13. The peak input voltage is in decibels referenced to the peak of a 1 V rms signal, corrected for the added gain provided by the "42" setting as compared to the "32" setting (an actual gain increase of about 13 dB, or about 1.3 dB per step). Above 50 Hz, the peak input rises with frequency, reaching a plateau at about 28 dBV peak. Below 50 Hz, the input voltage also rises, due to the effect of the D600B's high-pass filter.

The D600Bs were always first-class in imaging, soundstaging and focus, and brought out the best in every recording.

The upper curve in Fig. 13 illustrates the maximum peak sound pressure levels the system can generate at a distance of 1 meter on axis for the input levels shown in the lower curve. Also shown in the upper curve is the maximum output with the "room gain" of a typical listening room added at low frequencies. This adds about 3 dB to the response at 80 Hz and 9 dB at 20 Hz. With room gain, a single system can generate peak levels in excess of 110 dB above 100 Hz, reaching respectable levels of 115 dB SPL at higher frequencies. At upper frequencies, peak output was limited by the internal 70-watt amplifiers; below 200 Hz, it was limited by driver excursion. A pair of these systems, operating with mono bass, will be able to generate higher levels by some 3 to 6 dB in the bass range.

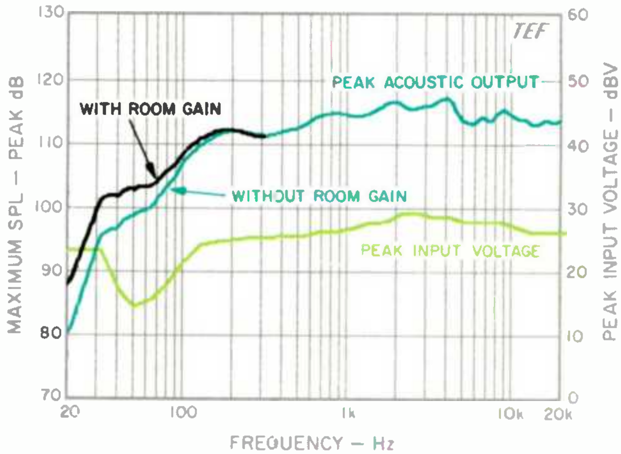


Fig. 13—Maximum peak sound output measured at 1 meter on axis, and corresponding maximum peak line input voltages (see text). The effect of low-frequency room gain on maximum output is also shown.

Use and Listening Tests

I have been fortunate in having the Meridian D600Bs in my possession for several months. Because I didn't have a decent system in my office to listen to while writing, I used the D600Bs. I set them up on either side of my desk, out from the wall, for some informal initial listening from fairly close in. My office is relatively large (13 × 16 feet), and the desk is centered on the long wall, in front of a window. Even in this atypical situation, I was quite impressed with the overall performance of the D600Bs and, in particular, with their bass and smooth upper mids and highs.

Getting the D600Bs set up and connected to the Model 206 CD player does require a significant amount of extra effort and study of the instruction manuals, as compared to setting up a passive speaker system. The Meridian speakers are supplied with two quite detailed manuals, an 11-page user manual and a 29-page(!) manual for setup. An initial examination of the manuals left me feeling apprehensive and somewhat confused on where to start because of the system's apparent complexity. But I then found a sheet, "Getting Going," that really helped move things along.

The D600B's extraordinary versatility, including its ability to link with Meridian's multi-room products, greatly increases the overall complexity of the system. The user manual states it quite well:

> Unlike other home electronics, the D600 is user-configurable. This means that you can program the D600 to interpret your commands in a convenient way. Whilst this power makes the D600 very simple to use on an everyday basis, the process of customizing—if you choose to do it—may be confusing if you do not read and understand the D600 Setup Manual.

The system can only be programmed via the 609 remote control, following a complex set of menus and submenus whose status is indicated on the multi-character displays on the front of the D600Bs. The programming is still confusing to me, even after I've lived with the system for a while and read the setup manual!

More serious auditioning was performed in my listening room, which measures 15½ × 27 × 8 feet and is furnished as a normal, carpeted living room. The listening equipment consisted primarily of the Meridian D600Bs and the company's 206 CD player, augmented with gear to drive my reference B & W 801 Matrix Series 2 speakers. For A/B comparisons, I fed the Meridian 206's analog outputs to a Krell KSP-7B preamp and KSA-200B power amplifier. Spiked feet were supplied for the bottom of the cabinets and used for a portion of the listening tests. They came with plastic covers that could be used if the sharp tips were not required.

As stated before, I made no electronic measurements of the bitstream D/A converters in the D600Bs but did do critical listening using the very demanding Chesky "bonger" test (tracks 25 and 26 of the *Jazz Sampler & Audiophile Test Compact Disc, Vol. 1*, Chesky JD37). This test, a series of sine-wave tone bursts with a sharp attack and slow decay, recorded at successively lower playback levels, is very revealing of low-level nonlinearities in D/A converters. The decay of the tone should sound very clean, with no extraneous sounds, and should fade smoothly into the dithered background noise. Fortunately, the disc has both good (track 25) and bad examples (track 26) of A/D converters, so listeners can train their ears by comparing the good and bad tracks. With gain turned up on the low-level bursts, it is very easy to hear what a poor converter does to the tone; the effects are not subtle at all! The D600B reproduced the good track very cleanly, with hardly any detectable anomalies. Its converter's performance exceeded that of my Rotel RCD-855 CD player and was significantly better than that of my Onkyo Grand Integra DX-G10.

Most of the serious listening was done with the D600Bs placed in my regular evaluation position, about 6 feet away from the short rear wall, and separated by 8 feet. This left a spacing of about 4 feet from the side walls. The systems were canted-in laterally so that I was on each system's axis. Listening took place on the sofa, about 10 feet away, with my ears roughly even with the top of the enclosure. Most listening was done using digital coax cable rather than fiber-

A Meridian preamp/CD player atop the D600B loudspeaker system

optic cable. In informal listening tests, I could hear no difference between the coax and fiber-optic cables.

An initial comparison with my reference systems revealed a compelling sound that was quite comparable, except for very low bass. The Meridians could be played cleanly at as high a level as my reference systems, and delivered quite even horizontal coverage and a very open, revealing sound. They passed nicely the stand-up/sit-down test of vertical coverage (using pink noise) with only minor changes in upper midrange timbre.

Most of my listening was done with the Meridians in their reset state, which defeats the tone corrections. Even though the manual recommends a bass setting of "+1" for systems placed well away from the walls, as they are in my setup, I did not find that the additional bass was required. However, it was quite nice to have the additional flexibility that the bass and tilt controls provided, although most of the time the corrections were not needed.

It was quite hard to break the habit of aiming the remote control at the source equipment, which is over to the left in my setup, instead of forward towards the speakers! Also, there was a bothersome lag of about 0.6 to 0.7 S before commands issued from the 609 remote to the CD player (but not to the speaker) took effect, and any command given in the interim was ignored. This was a continuous annoyance. Fortunately, the remote's mute command usually took effect immediately.

I also noted a software bug in the interaction of the "Bass" control and the "Reset" key. When a command was issued to increase the bass setting by one step, overall gain was increased by two steps, which resulted in a net bass gain. If I then decreased the bass, the gain was appropriately reduced by two steps. However, if the "Reset" key was used to cancel all tone settings after a command to increase the bass was issued, the gain was left in the higher setting (or lower setting if the original command was a bass decrease), which resulted in an audible jump in level.

On the new piano CD of Earl Wild playing Chopin (*Earl Wild/Chopin: 4 Ballades—4 Scherzi*, Chesky CD44—a super piano disc!), the D600Bs exhibited a very smooth midrange coupled with impressive dynamics and a very realistic portrayal of the hall's reverberation. The bass solo of Figaro's aria, "Non più andrai," from *The Marriage of Figaro* (*Mozart: Opera Highlights*, Laserlight 15 655, part of a 10-CD Mozart set I purchased at a local warehouse club for $29.95!) was rendered very cleanly, without any harshness or tubbiness. (I normally don't go out of my way for opera, but this is great stuff!)

The overall sound of the D600Bs is very neutral, with hardly any emphasis or de-emphasis of any part of the audible range. These speakers do an exceptional job of bringing out the fine, subtle details in source material that you often miss with other speaker systems. The D600B's triamped internal configuration contributes to its effortless peak-reproduction capability and cleanliness when executing such difficult source material as high-level jazz trumpet and trombone.

The bass response is quite outstanding considering the overall size of the enclosure. Down to about 32 Hz, these systems can compete with much larger ones. In the region from 20 to 25 Hz, however, the system's output is gone. Yet unlike most other speakers, no distortion or bad extraneous sounds are heard from the D600B if any high-level energy exists in the program material in this range. This is due to the high-pass action of the sixth-order alignment filter. The kick drum on Makoto Ozone's *Starlight* disc (JVC JD-3323) was dealt with very effectively, although the string bass on track 7 was a little heavy and required the bass to be set at "−1" for best results.

The D600Bs were always first-class in stereo imaging, soundstaging and focus, and always brought out the best in every recording that was appropriately miked. The systems also ranked very high in clarity and dynamics and in the ability to be played loud and clean, considering their relatively small size. In addition, I was quite impressed by the D600Bs' ability to act as a neutral sonic arbiter of whatever I listened to. These speakers nicely emphasized the best (or the worst) of recordings I heard and allowed sonic judgments to be made easily.

Is the D600B for you? It depends on whether you basically look at it as a small, two-way loudspeaker with a 6-inch woofer and with some very expensive high-tech gadgets thrown in—or as a complete, fine-tuned audiophile system with self-contained amplifiers and an excellent built-in D/A converter that can compete with the best outboard converters. What $5,500 buys you is a well-designed system, already set up, that has high audiophile performance. A pair of D600Bs competes very well with other high-end products but doesn't put you through such hassles as having to choose and select separate components and interconnects or worrying about interface considerations.

The D600B is truly much greater than the sum of its parts; it is a well-executed, all-in-one system that provides serious high-end performance. And the fact that it is specifically designed to work in a remotely controlled, multi-component, multi-room setup will enhance its value to anyone for whom this aspect is important. *D. B. Keele, Jr.*