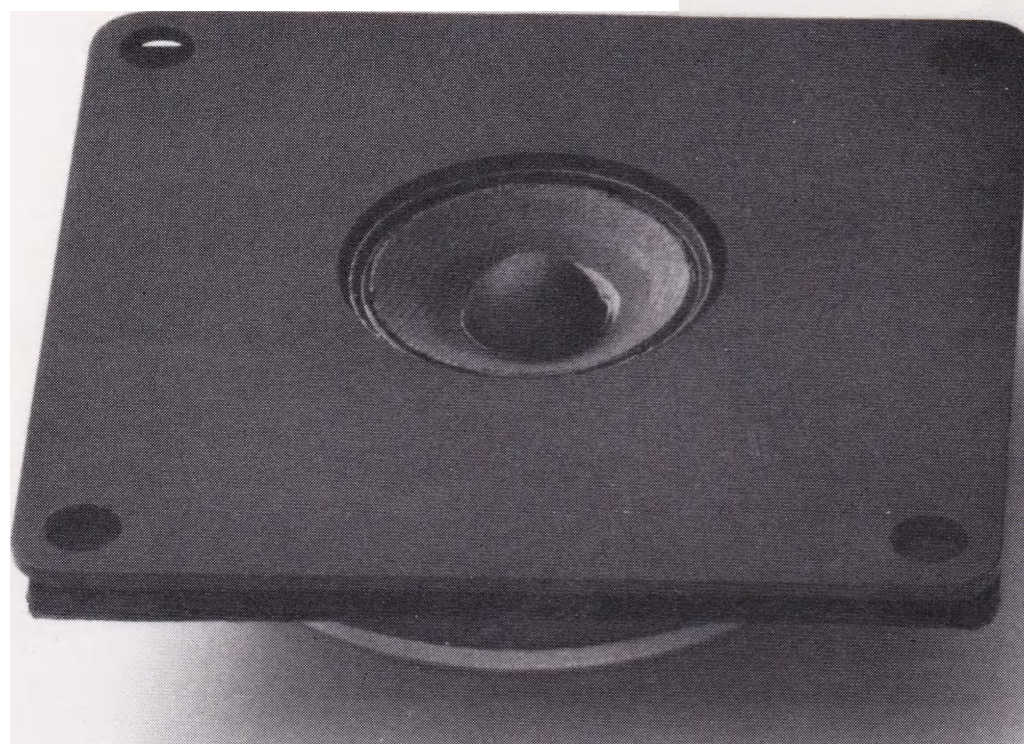


JBL L19



JBL L19

The L19 was designed to meet the need for a small, highly accurate loudspeaker system capable of delivering substantial sound output from a moderately powered amplifier. It is acoustically identical to JBL's newest professional series broadcast monitor, which was developed to satisfy these same requirements in broadcast control booths, radio and television production studios, or mobile recording, broadcast and film editing facilities. Consisting of a 200-mm low frequency loudspeaker, a 36-mm high frequency direct radiator and an extremely sophisticated frequency dividing network, the L19 is an extension of the research and development programs that produced the larger JBL studio monitors and home entertainment systems.

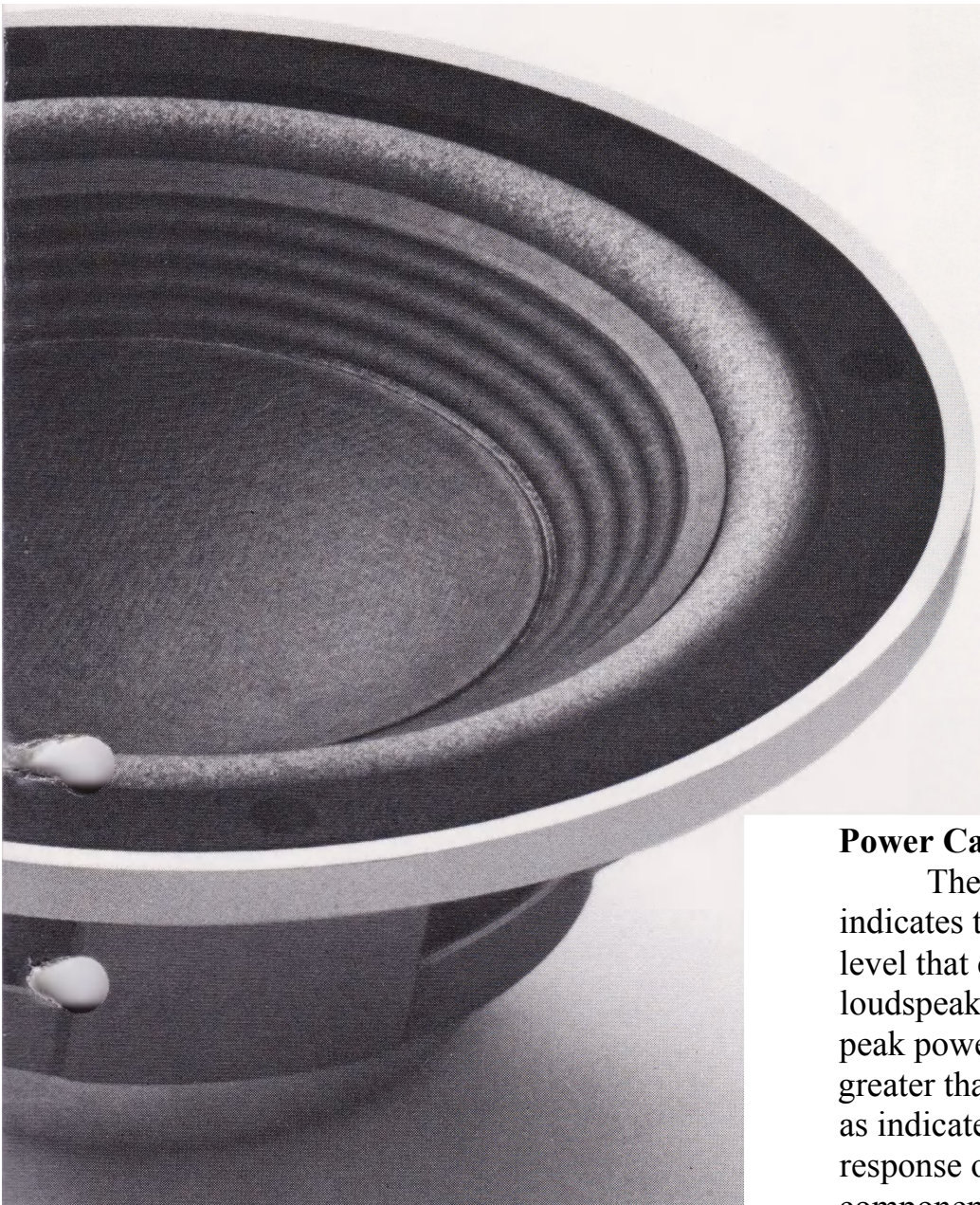


Low Frequency

Designed specifically for an enclosure of compact size, the low frequency loudspeaker exhibits unusually smooth frequency response, wide dynamic range, superior transient reproduction and low distortion. It utilizes a cast aluminum frame, 50-mm diameter copper voice coil and 1.1-kg low-loss magnetic assembly energized by a powerful Alnico V magnet. Mass and compliance of the integrally stiffened cone have been carefully controlled to optimize low frequency bandwidth and definition while reducing distortion. The result is a loudspeaker that provides maximum power handling capacity, efficiency and bandwidth, and, at the same time, avoids the compromises generally associated with smaller loudspeaker systems.

High Frequency

The exceptional clarity, transient response and open high frequency reproduction of the L19 is provided by a 36-mm direct radiator. Its 16-mm copper voice coil, driven by a 0.74-kg magnetic assembly, is large in relation to cone size for highest efficiency and power handling capacity; yet, the radiating diameter of the cone and center dome have been kept small to achieve wide sound dispersion. The cone compliance is surrounded by a hard, sloped baffle surface that serves as a transition to the enclosure baffle, eliminating discontinuities and irregular reflections. This method of coupling the high frequency direct radiator to the baffle has proved to be more effective in providing even power distribution than sound absorbent materials.



Enclosure

The L19 enclosure is a functional component of the loudspeaker system. Its size and configuration have been selected to complement the characteristics of the low frequency loudspeaker while providing a pleasing visual effect in the home. A ducted port extending through the baffle panel provides proper acoustical loading of the low frequency loudspeaker. To achieve maximum strength and resistance to vibration, all panels are constructed of 19-mm dense compressed stock. This material, also known as particle board, is preferred to solid wood for its superior acoustical properties. Acoustic damping material is applied to the interior surfaces of the side and back panels to attenuate standing waves within the enclosure. The four side panels are veneered with solid walnut finished to enhance the natural beauty of individual grain structure and color.

Power Capacity

The specified power capacity indicates the continuous program power level that can be accepted by a JBL loudspeaker system without damage. Its peak power capacity is considerably greater than the continuous rated value, as indicated by the remarkable transient response of JBL loudspeaker system components. The L19 will reproduce clean sound at comfortable listening levels when driven by an amplifier having an output of as little as 10 watts continuous sine wave per channel.¹ However, for reproduction of the full dynamic range of contemporary recordings at high volume, a quality amplifier delivering up to 60 watts continuous sine wave per channel will provide optimum performance. Such an amplifier has the reserve power necessary for accurate reproduction of transients, which can reach momentary peaks equivalent to ten times the average power level. In almost all cases, the volume level generated by a JBL loudspeaker will become noticeably discomforting to the ear before the loudspeaker can be damaged by excessive power from the amplifier.

A number of loudspeaker systems can handle large amounts of power; others are highly efficient. JBL products are unique in their ability to combine both attributes. The L19, for example, will convert a 1-watt input into a sound pressure level of 76 dB measured at a distance of 4 metres. This is approximately twice as loud as ordinary conversation and represents a comfortable listening level, demonstrating that the system delivers substantial sound output from very little input power.

1. The continuous sine wave rating of amplifier power is the most stringent method currently used in the audio industry. It should be noted that many amplifier manufacturers use the term "watts rms" as a direct equivalent to the more meaningful "watts continuous sine wave!"

Frequency Dividing Network

Smooth, blended operation of the low and high frequency components is accomplished by a sophisticated frequency dividing network. Conjugate circuits control the impedance of each driver to assure operation approaching the theoretical ideal. Controlling impedance as well as the amplitude of the drivers results in the exceptionally smooth overall performance of the L19. The network incorporates a level control, located on the back of the enclosure, for regulating loudness of the high frequency direct radiator to accommodate room acoustics and personal preferences.

Specifications

JBL attributes major importance to the validity of published information. Rather than repeat the ambiguity of most technical specifications, JBL has traditionally refrained from listing data for which no widely-accepted test procedure has been established. In the absence of such standards, any well-equipped laboratory can legitimately produce a variety of frequency response curves for a loudspeaker, depending on the conditions selected. At JBL the final analysis is comprised of extensive listening sessions. Although laboratory data are an integral part of the process, the trained ear is the ultimate criterion. The success of this philosophy is reflected in the enthusiastic acceptance of JBL systems by recording studio engineers, producers and performers — professionals whose artistic achievements are closely related to the equipment they use.



James B. Lansing Sound, Inc.
8500 Balboa Boulevard
Northridge, California 91329

Power Capacity ¹	35 watts continuous program
Nominal Impedance	8 ohms
Dispersion ²	120° at 15 kHz
Crossover Frequency	2500 Hz
System Sensitivity ³	1 watt input produces 87 dB sound pressure level at a distance of 1 metre (Note: 75 -80 dB is a comfortable listening level.)
Low Frequency Loudspeaker	
Nominal Diameter	200 mm
Voice Coil	50-mm copper
Magnetic Assembly Weight	1.1kg
Flux Density	0.85 tesla (8500 gauss)
Sensitivity ⁴	87 dB SPL
High Frequency Direct Radiator	
Nominal Diameter	36 mm
Voice Coil	16-mm copper
Magnetic Assembly Weight	0.74 kg
Flux Density	1.5 tesla (15,000 gauss)
Sensitivity ⁵	91 dB SPL
General	
Finish	Walnut
Grille	Stretch fabric
Grille Colors	Brown or Black
Dimensions	533 mm x 330 mm x 254mm deep
Shipping Weight	13 kg

1. Based on a laboratory test signal. See Power Capacity section for amplifier power recommendation.

2. The angle through which system output is diminished by no more than 6 dB relative to system output measured directly on axis.

3. All sensitivities are measured under hemispherical free-field conditions. In a room, an additional 1 to 3 dB SPL would be achieved.

4. Since the major portion of the energy reproduced by the low frequency loudspeaker lies below 800 Hz, this specification represents the sensitivity, within 1 dB, at 1 m using a 1-W test signal swept from 100 to 500 Hz.

5. Averaged sensitivity above 2 kHz, within 1 dB, measured at 1 m with a 1-W input.

JBL continually engages in research related to product improvement. New materials, production methods and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description but will always equal or exceed the original design specifications unless otherwise stated.

The JBL Model L19 Loudspeaker System

Author: G. Timbers, Design Engineer

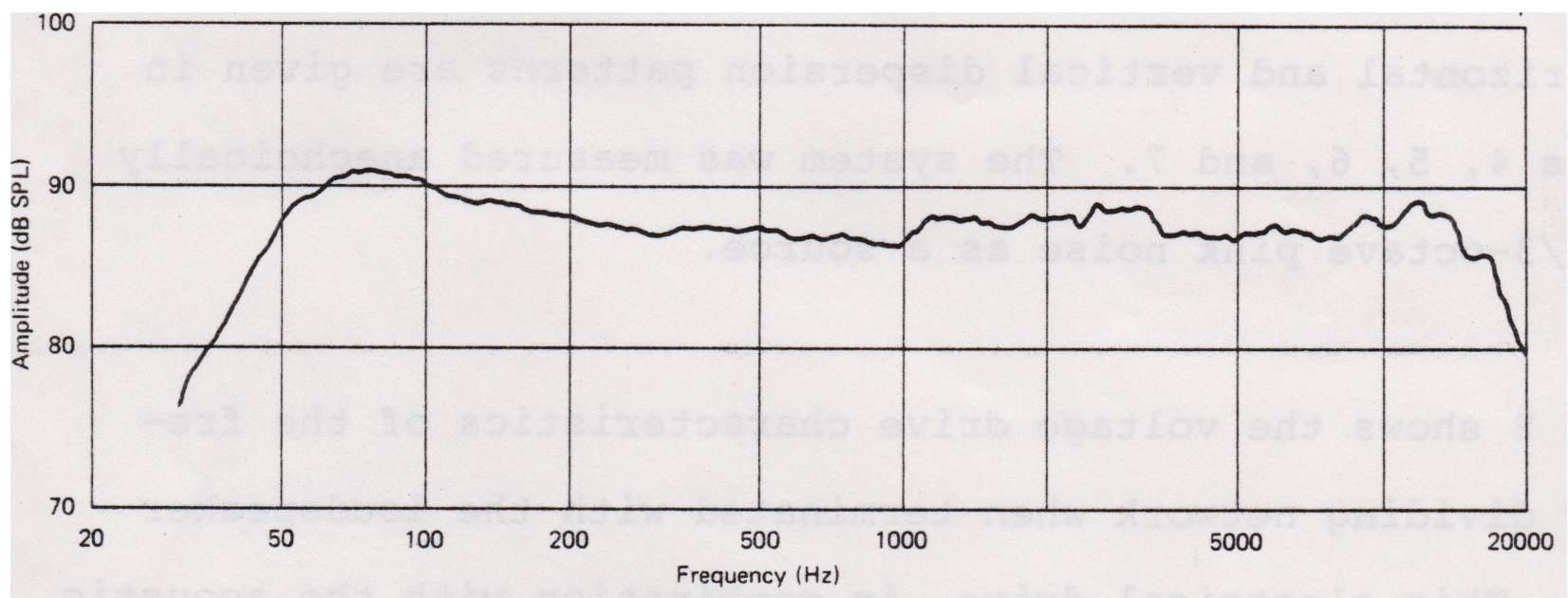
Frequency response measurements at JBL are made on a large flat baffle, essentially into half space. Figure 1 shows the exceptionally smooth on-axis response of the L19 system at a distance of 1 m for a 1 W nominal input. Anechoic measurements give substantially the same curve from 250 Hz up. The impedance curve is shown in Figure 2.

The second and third harmonic distortion characteristics of a typical L19 are displayed in Figure 3. Once again the drive level is 1 W at a distance of 1 m. Note that for the majority of the audible range the L19 remains below 0.3% distortion.

The horizontal and vertical dispersion patterns are given in Figures 4, 5, 6, and 7. The system was measured anechoically with 1/3-octave pink noise as a source.

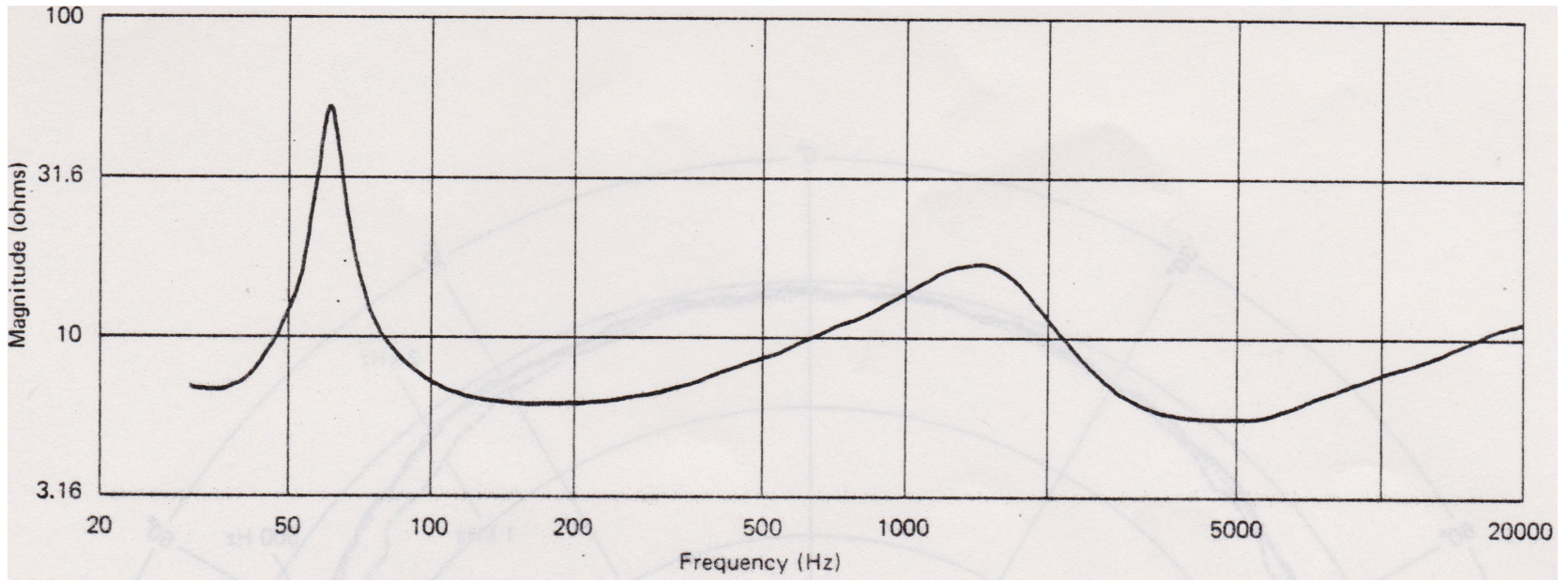
Figure 8 shows the voltage drive characteristics of the frequency dividing network when terminated with the loudspeaker loads. This electrical drive, in combination with the acoustic response of each transducer, yields the smooth frequency response curve discussed earlier. The high frequency level control is set to its mid position in this curve, as with all others.

The nominal sensitivity of the L19 system is 87 dB SPL (1 W @ 1 m). In a free field, an input of 10 W will produce a level of about 88 dB SPL at 3 m (about 3-4 dB higher in a typical indoor environment). Normal music levels, even for pop and rock, are in the 90 - 100 dB SPL range; thus the nominal 35 W per channel continuous power rating of the system is sufficient to meet these demands. A pair of L19 systems driven by a 35 W per channel amplifier in an average listening room is capable of levels in excess of 100 dB SPL.



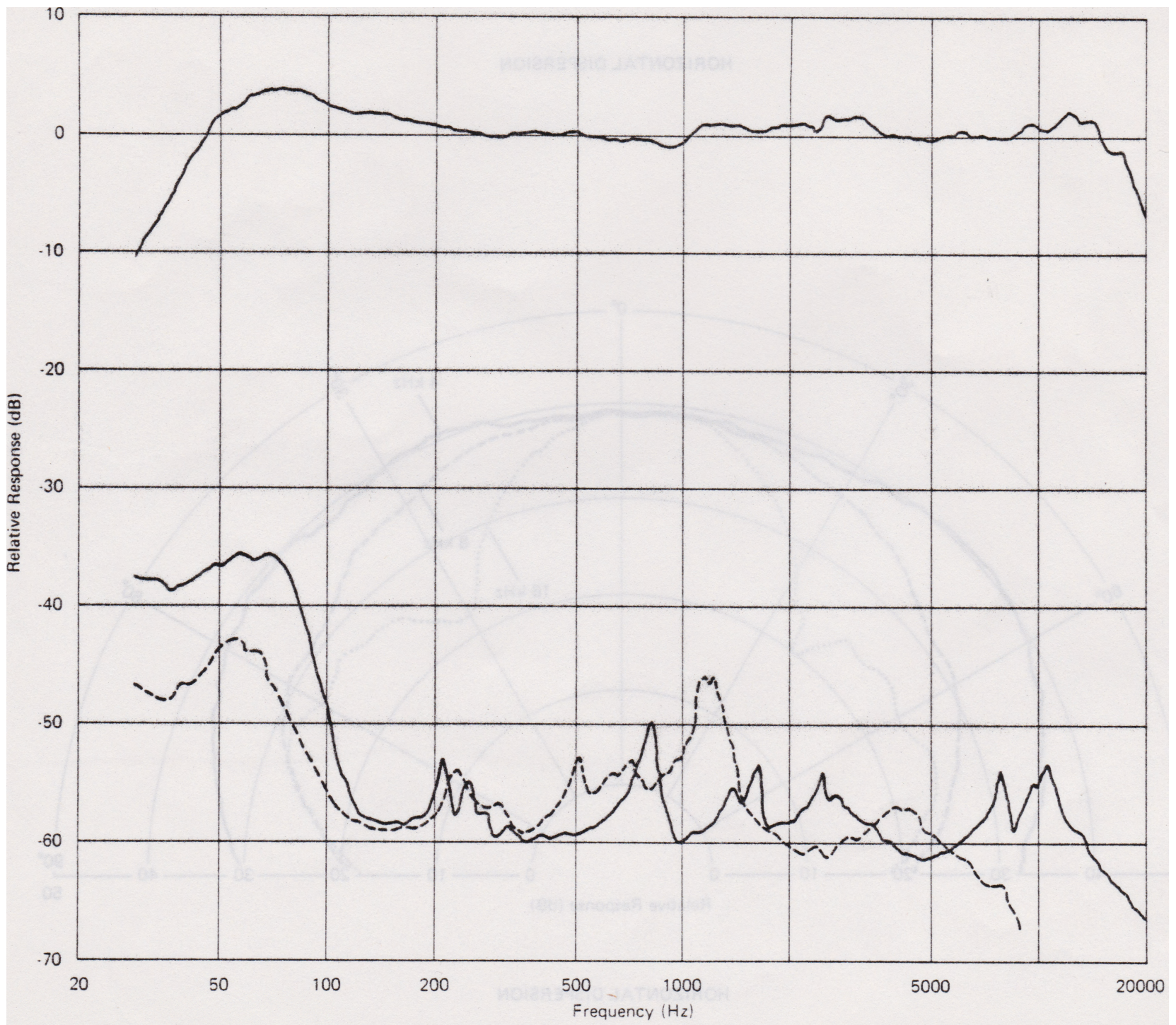
FREQUENCY RESPONSE

Figure 1



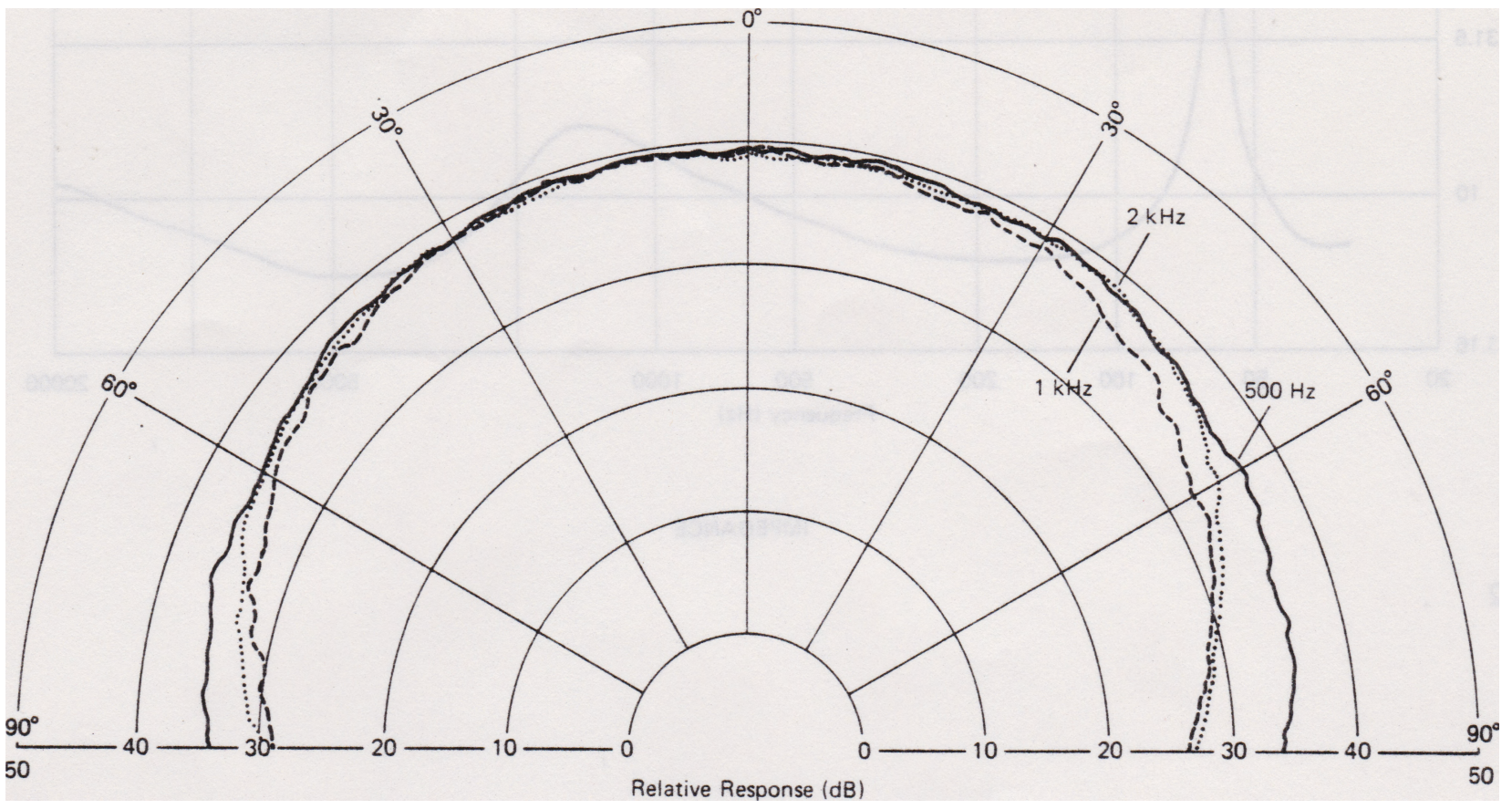
IMPEDANCE

Figure 2



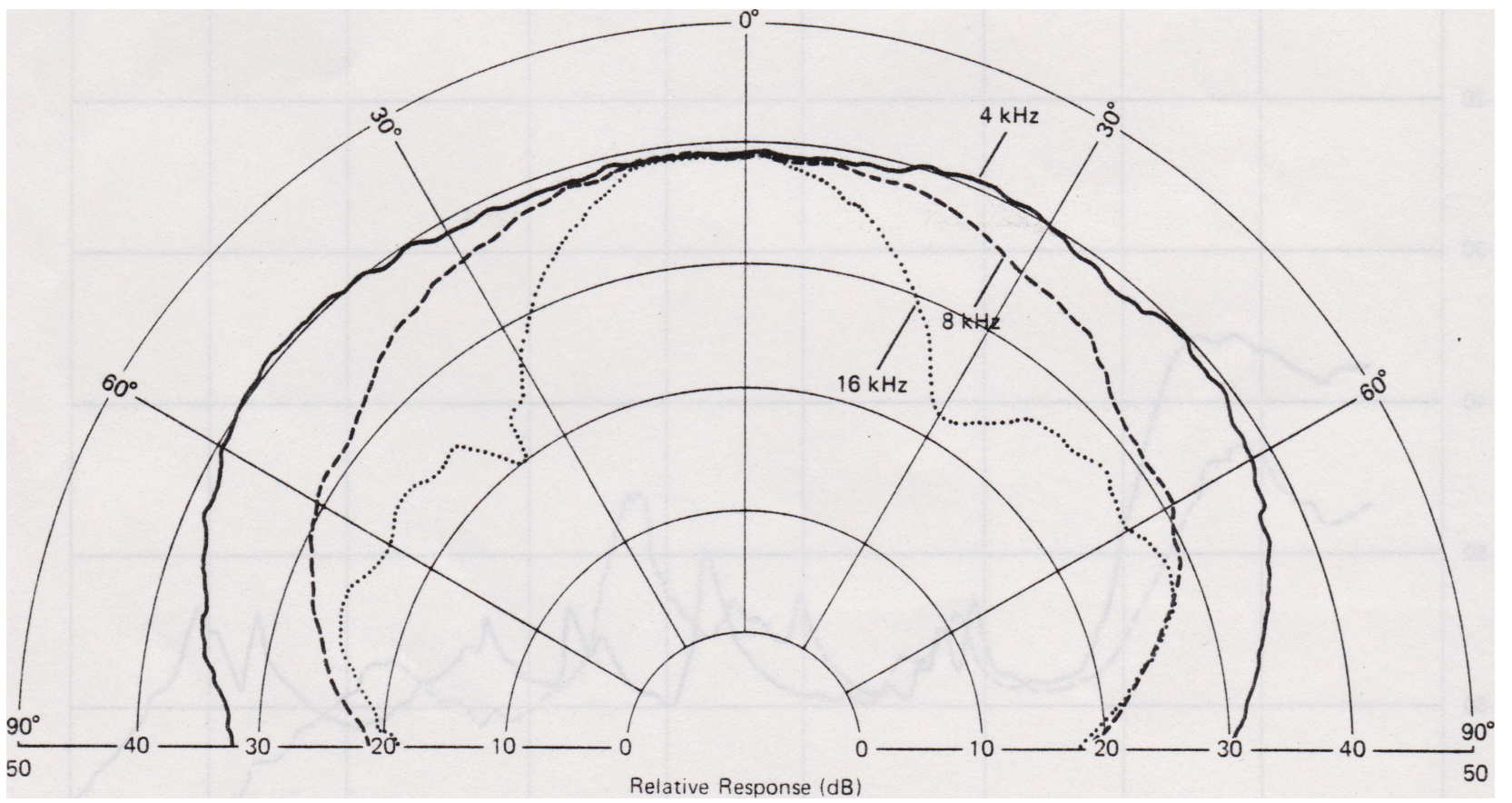
1W HARMONIC DISTORTION

Figure 3



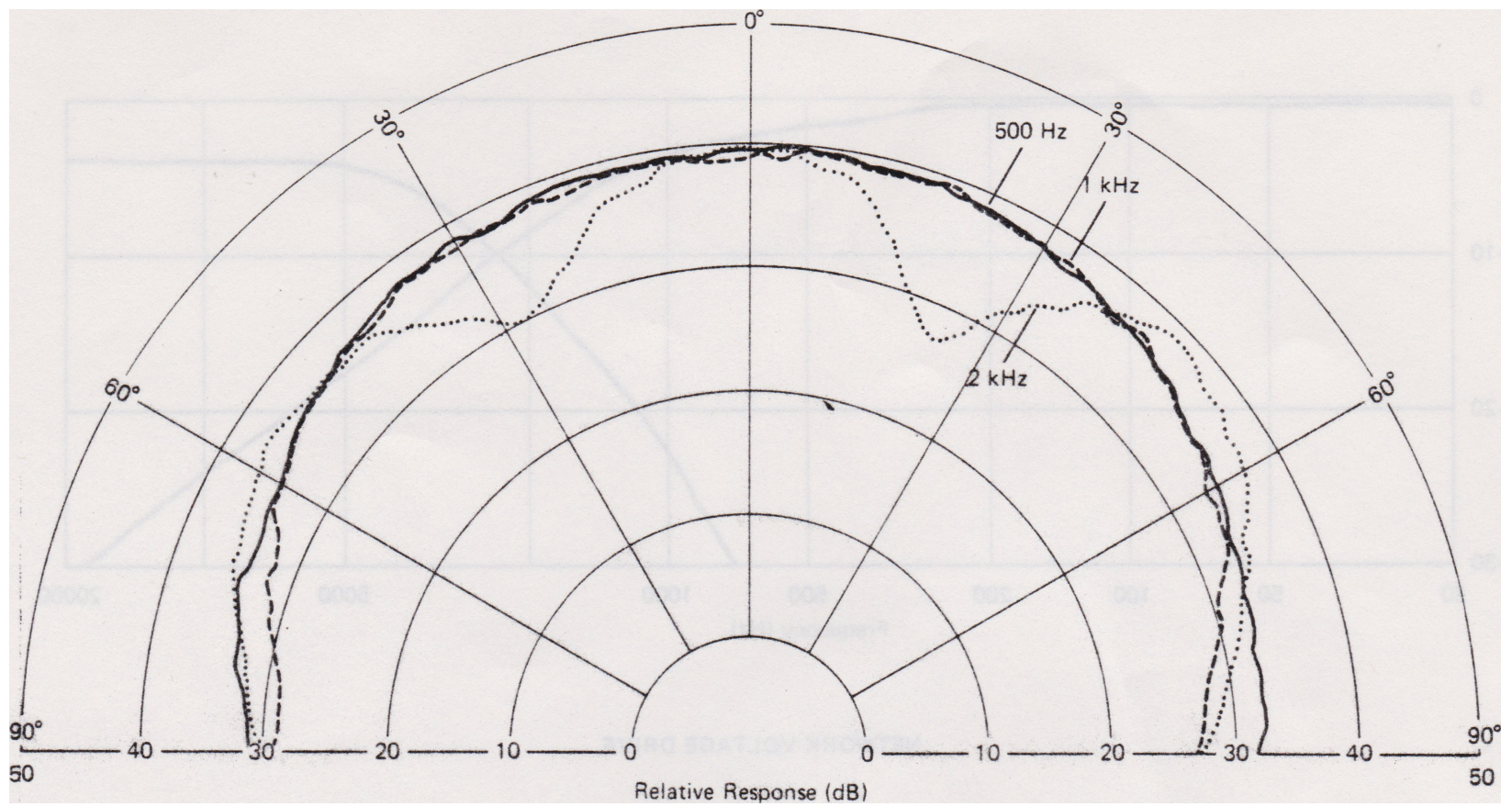
HORIZONTAL DISPERSION

Figure 4



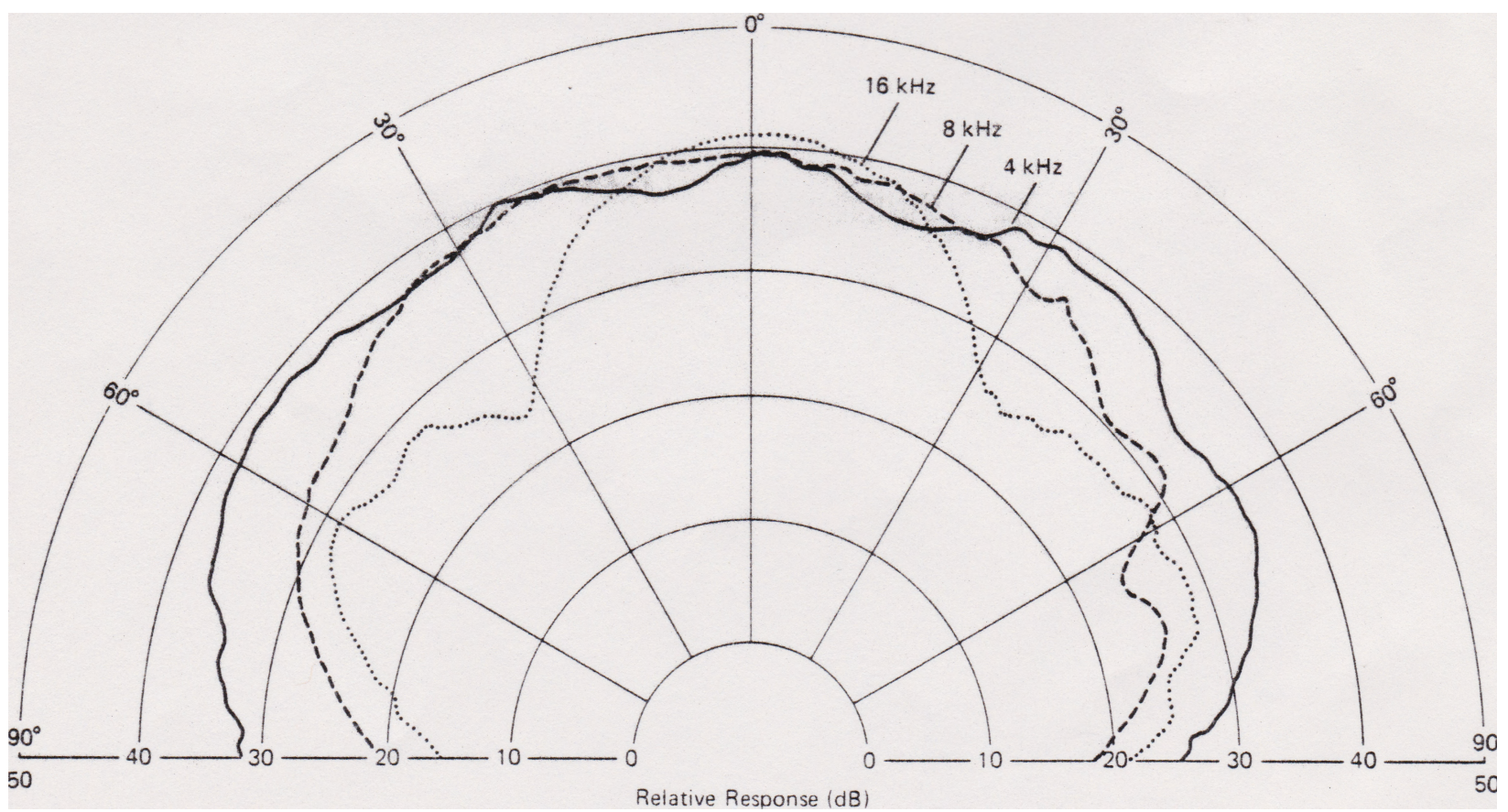
HORIZONTAL DISPERSION

Figure 5



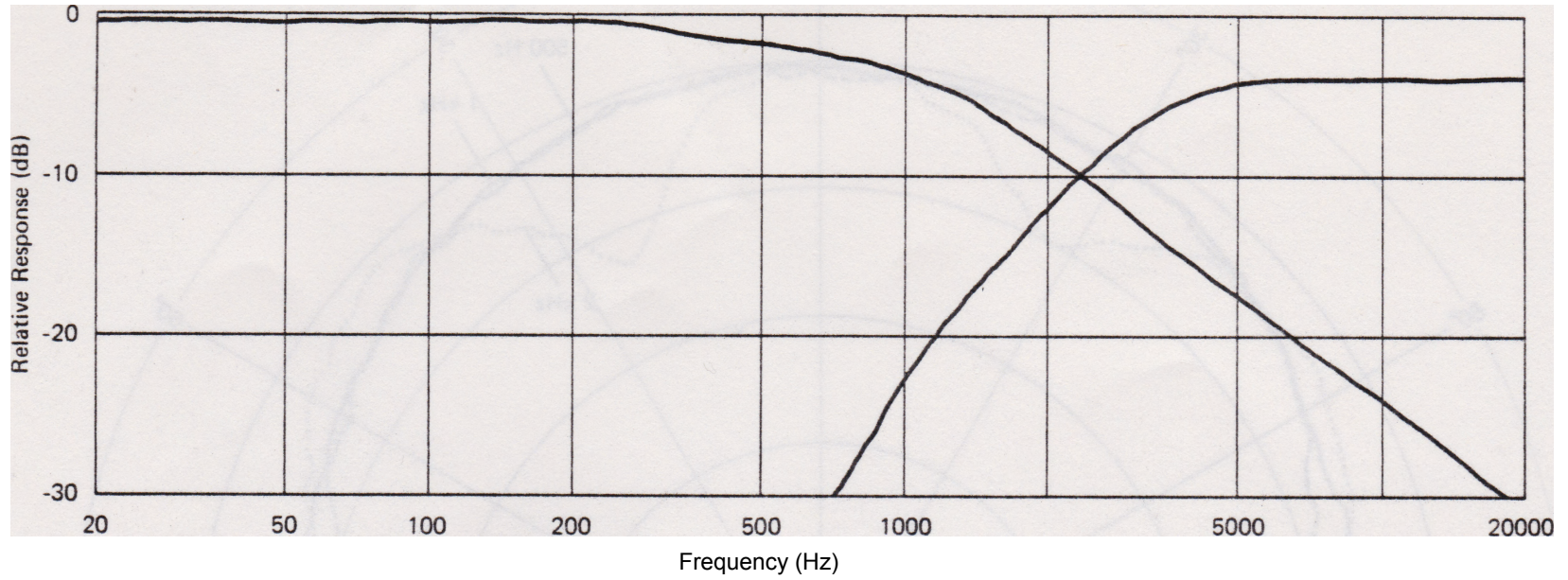
VERTICAL DISPERSION

Figure 6



VERTICAL DISPERSION

Figure 7



NETWORK VOLTAGE DRIVE

Figure 8



Audiofile test report

JBL L 19 speaker

JBL (J.B. Lansing) has long enjoyed a world-wide reputation for studio monitors and large systems capable of handling extremely high powers, but they also make a range of smaller domestic models such as the LI9.

This is a genuine bookshelf system measuring 21 inches long(or high) by 13 inches wide and only 10 inches deep. There are two drivers—an 8 inch bass speaker and 1.4 inch cone tweeter which is mounted flush with the front baffle. The bass speaker has an unusually large voice coil of 2 inches in diameter and the flux density of 15,000 gauss is higher than average. Crossover frequency is 2.5 kHz and there is a high frequency level control in a neat recess at the rear, together with the input connectors. These, incidentally, are very easy to use: the wire is just pushed in and the terminal given a twist— and that's it.

Appearance

The system is a reflex type with a tube vent on the front panel which is nicely finished in black. The cabinet is made of three-quarter inch high density particle board, faced with a walnut veneer, while the brown fabric speaker grille is mounted on a frame held to the front panel by plastic pegs. Workmanship—as with all JBL products—is first class.

For the technically minded

Figure 1 shows the frequency response measured onaxis and at 45 degrees. With the rear level control at maximum, the response showed a gradual rise from 2 kHz to about 12 kHz, but by turning it back to position 6 it was possible to obtain a response within + 3 dB from 65 Hz to 17 kHz. Dispersion, shown by the dotted lines, was excellent being only 1.5 dB down at 10 kHz. At the low end, output began to fall at 70 Hz with the vent making a contribution below 60 Hz, increasing the response to 30 Hz where the output from the cone was relatively small. Low frequency distortion can be seen in figure 2: note that it was below average for this kind of system down to 45 Hz. The impedance stayed close to 8 ohms with the exception of.....

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JBL

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