4411 STUDIO MONITOR

FEATURES:

Smooth, accurate response from 45 Hz to 18 kHz (±3 dB)

90 dB SPL, 1 W, 1 m (3.3 ft)

Components: 300 mm (12 in) low frequency loudspeaker, 130 mm (5 in) midrange loudspeaker, 25 mm (1 in) high frequency dome radiator

Oiled walnut enclosure

The Model 4411 is JBL's most sophisticated 3-way direct radiator monitor loudspeaker system. Applying the knowledge gained in the design of the 4430 and 4435 constant coverage systems, JBL has created a compact monitor especially well suited to the demands of the digital age.

The three transducers of the 4411 are arranged in a tight cluster to provide coherency of sound for close-in monitoring, while assuring minimal off-axis variation in the far field. Mirror-imaging improves the stereo perspective. Continuously variable mid and high frequency level controls, located on the front panel, are calibrated for both a flat direct-field pressure response and a rising axial response that produces a flatter power response. A large port provides the proper low frequency loading.

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With its high volume-velocity air movement capabilities, the port also maintains the low frequency dynamic range. The low frequency driver loading is optimized for flat response when placed away from room surfaces (approximating a 4 π environment). A rising bass characteristic can be chosen by placing the monitors in proximity to a wall (2 π environment). An innovative crossover design minimizes driver overlap, further assuring flattest response at a wide variety of angles so that stereo imaging remains stable over a wide horizontal angle.

Every aspect of the 4411 benefits from JBL's advanced technology. Each driver is the product of extensive research and testing, and each has been designed for optimum performance in the system. In the tradition of the 4311, the new JBL 4411 sets the standard for today's compact studio monitors.

HIGH FREQUENCY DOME RADIATOR

The new recording techniques place a premium on high frequency accuracy and definition, and JBL has designed the 044 high frequency dome radiator to meet these demands. In developing the 044, JBL engineers used laser interferometry, analyzing holograms (three-dimensional photographs) of diaphragm motion to better understand the actual stresses involved in reproducing musical waveforms. The diaphragm of the 044 is fabricated from linen, impregnated with a phenolic resin. JBL then uses a sophisticated vapor-deposition process to coat the phenolic with a microscopically thin layer of aluminum. The combination makes the diaphragm rugged enough to withstand high-energy high frequency peaks, yet light enough in weight to respond instantly to transients. The copper voice coil contributes to the high power handling and drives the diaphragm over its full circumference for smoother response. The 044 exhibits outstanding linearity over its full operating range, at any input level — there is almost no power compression.

MID FREQUENCY DRIVER

The latest version of a JBL design proven in countless demanding applications, the LE5 midrange driver has also benefitted from laser interferometry. The newly designed cone markedly lowers distortion, and the LE5 produces flat power response to 6 kHz. Construction features include a copper voice coil of flat wire, edge-wound to increase the amount of conductor in the voice coil gap and improve power handling and transient response. Because there is more musical energy in the midrange than at the frequency extremes, JBL designed the LE5 with a substantial reserve of dynamic range.

LOW FREQUENCY DRIVER

The 300 mm (12 in) low frequency driver incorporates JBL's unique Symmetrical Field Geometry (SFG) magnetic structure, a design that reduces second harmonic distortion levels to less than one-tenth of those typical of conventional designs. The cone is of laminated construction to achieve the desired combination of rigidity and light weight. The coating, and exclusive JBL formulation, adds a precise amount of mass and provides the optimum damping characteristics. The carefully designed suspension elements, including a newly engineered spider, reduce DC offsets and eliminate dynamic instabilities, reducing second harmonic distortion still further.[1] The 75 mm (3 in) diameter voice coil is formed of copper ribbon wire, hand-wound on edge to place 24% more conducive material in the voice coil gap. The 19 mm (3/4 in) length of the coil allows longer excursions for greater dynamic range.

FREQUENCY DIVIDING NETWORK

The sophisticated dividing network of the 4411 has a number of technological refinements that improve the performance of the system in several areas. A unique tuned double-bandpass circuit for the midrange driver provides a steep, symmetrical crossover to minimize out-of-band colorations and reduce off-axis response variations. The steeper-than-average crossover slopes on all three drivers improve power handling and minimize power-compression effects.

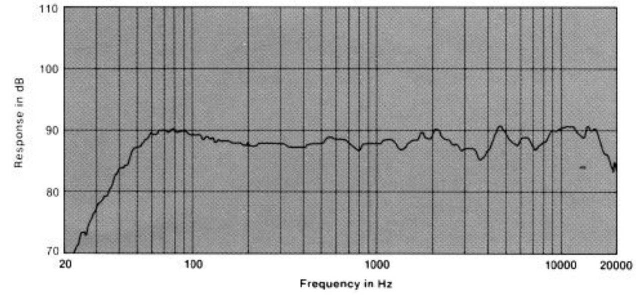
A major improvement occurs in transient waveform resolution. JBL engineers applied a principle typically found only in active high frequency electronics: the use of polypropylene and polystyrene bypass capacitors, wired in parallel with the network's Mylar capacitors to reduce the hysteresis effects on the signal. The network's air-core and iron-core inductors are carefully chosen for their high current capacity and low DC characteristics.

ADJUSTABLE RESPONSE CONTOUR

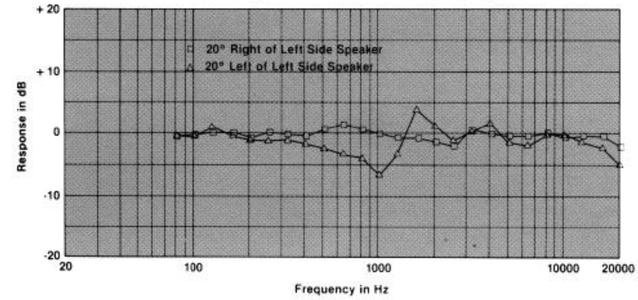
The level controls for the midrange and high frequency transducers have settings indicating flat on-axis system response. Most studio engineers will find these settings ideal. However, some engineers may prefer slightly higher settings of both controls for a more forward sound, characteristic of previous monitor designs. These alternate settings are indicated on both controls. They correspond approximately to flat power response, that is, uniform power output over the system's frequency range without regard for the variation in the system's directivity characteristics.

1. Further technical information may be found in a paper by M. Gander, "Moving Coil Loudspeaker Topology as an Indicator of Linear Excursion Capability," *Journal of the Audio Engineering Society,* Vol. 29, No. 1/2, 1981 Jan./Feb.

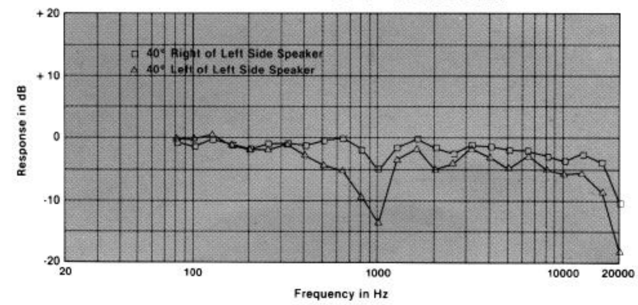
Frequency Response at 1W, 1 meter



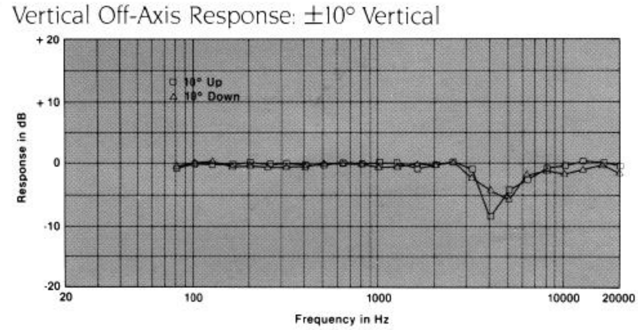
Horizontal Off-Axis Response: ±20° Horizontal



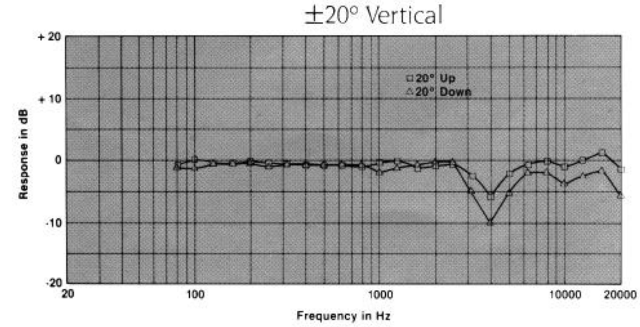
±40° Horizontal



Vertical Off-Axis Response: ±10° Vertical



±20° Vertical



SPECIFICATIONS:

SYSTEM:	
Frequency Response: (±3 dB)	45 Hz-18 kHz
Power Capacity[1]:	150 W
Sensitivity:	90 dB SPL, 1 W, 1 m (3.3 ft)
Nominal Impedance:	8 Ω
Crossover Frequencies:	1 kHz, 4 kHz
LOW FREQUENCY LOUDSPEAKER:	
Nominal Diameter:	300 mm (12 in)
Voice Coil:	76 mm (3 in) copper
Magnetic Assembly Weight:	4.7 kg (10¼ lb)
Flux Density:	1.05 tesla (10,500 gauss)
Sensitivity[2]:	89 dB SPL, 1 W, 1 mm (3.3 ft)
MIDRANGE LOUDSPEAKER:	
Nominal Diameter:	130 mm (5 in)
Voice Coil:	22 mm (⅞ in) edgewound copper
Magnetic Assembly Weight:	0.74 kg (1⅝ lb)
Flux Density:	1.35 tesla (13,500 gauss)
Sensitivity[3]:	94 dB SPL, 1 W, 1 m (3.3 ft)
HIGH FREQUENCY DOME RADIATOR:	
Nominal Diameter:	25 mm (1 in)
Voice Coil:	25 mm (1 in) copper
Magnetic Assembly Weight:	0.9 kg (2 lb)
Flux Density:	1.4 tesla (14,000 gauss)
Sensitivity[4]:	89 dB SPL, 1 W, 1 m (3.3 ft)
GENERAL:	
Finish:	Oiled walnut
Grille Color:	Dark blue
Dimensions:	597 mm x 362 mm x 327 mm deep (23¼ in x 14½ in x 12⅞ in deep)
Net Weight:	24 kg (52 lb)
Shipping Weight:	27 kg (59 lb)

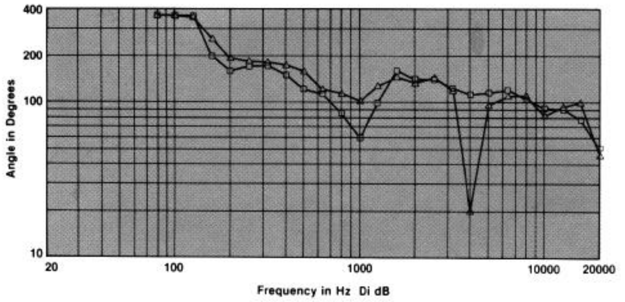
[1] Rating based on test signal of filtered random noise conforming to international standard IEC 268-5 (pink noise with 12 dB/octave rolloff below 40 Hz and above 5000 Hz with a peak-to-average ratio of 6 dB), two hours duration.

[2] Averaged from 100 to 500 Hz, within 1 dB.

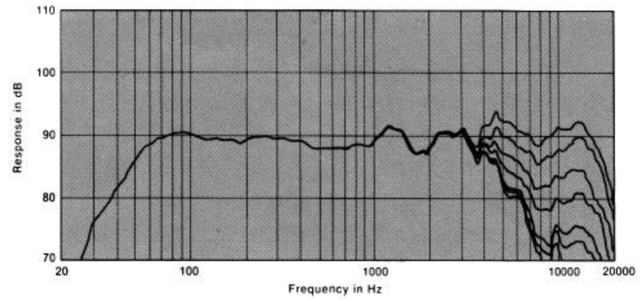
[3] Measured with an input swept from 500 Hz to 2.2 kHz.

[4] Averaged above 5 kHz, within 1 dB.

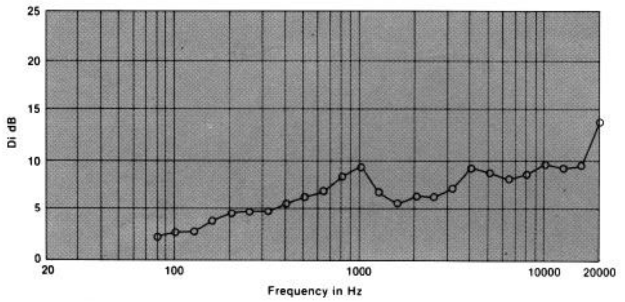
Beamwidth (—6 dB) vs. Frequency



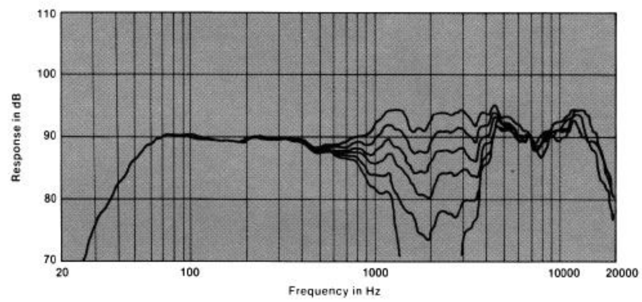
Control Range, High



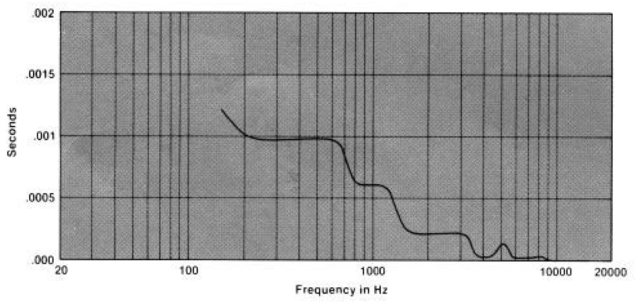
Directivity vs. Frequency



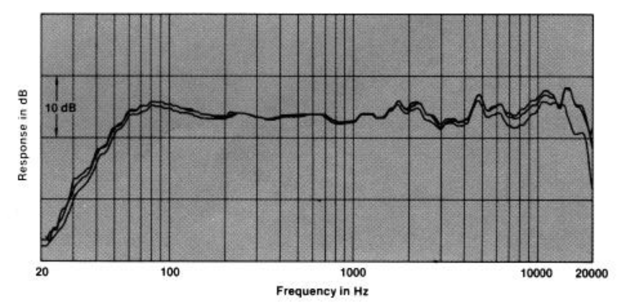
Control Range, Mid



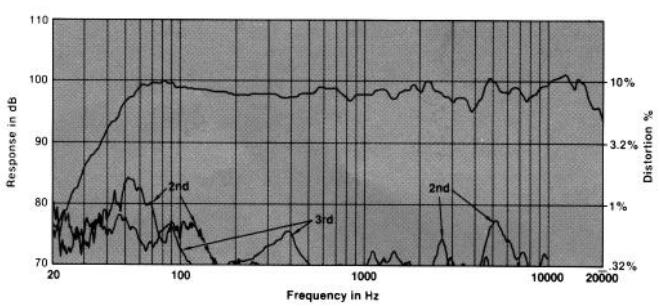
Delay vs. Frequency



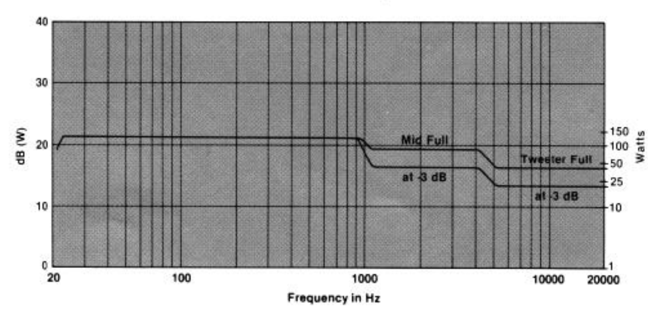
Power Compression at 85, 95, 105 dB



Distortion vs. Frequency 10W: Distortion Raised 20 dB



Maximum Continuous Sine Wave Input



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