4412 STUDIO MONITOR

FEATURES:

Frequency Range (−6 dB): 35 Hz–27 kHz

Frequency Response (± 2 dB): 45 Hz–20 kHz

Sensitivity: 90 dB SPL, 1 W (2.83 V), 1 m

Power Rating: 150 watts, pink noise

Transducer Complement:
300 mm (12 in) LF, Aquaplas laminate cone
125 mm (5 in) midrange felted paper cone
25 mm (1 in) HF, pure titanium dome

The 4412 is a three-way monitor system designed for demanding recording and broadcast applications. It is oriented horizontally so that it can be easily integrated into control room architecture, or mounted on the console itself. It is provided in mirror-imaged pairs for accurate stereophonic imaging. The 4412 is capable of remarkably high acoustical output, attaining in many applications those levels normally associated with compression driver monitor systems. Smooth power response and controlled dispersion are also characteristic of the 4412.

Optimum enclosure porting and careful network design ensure smooth response, which extends well into the bottom musical octave. Response to 27 kHz ensures that the upper musical octave (10 kHz to 20 kHz) will be reproduced with complete accuracy, thus making the 4412 ideal for monitoring critical digital and advanced analog recordings.

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HIGH FREQUENCY DOME RADIATOR

Pure titanium was first used by JBL in the design of diaphragms for high frequency compression drivers. Recently, JBL has perfected a 25 mm titanium dome radiator which is capable of 30 watts power handling and can reproduce the frequency range from 3 kHz to 27 kHz. The unique "diamond surround" and ribbed dome structure of the model 035Ti HF unit provide control over secondary resonances, yielding absolutely flat axial response to the normal upper limits of today's recording media. With a basic sensitivity of 92 dB, one watt at one meter, the 035Ti transducer exhibits virtually no dynamic compression.

MIDRANGE DRIVER

The 125 mm (5 in) midrange driver used in the 4412 monitor has a 25 mm (1 in) copper voice coil. The cone is made of felted paper with a special damping treatment to ensure smooth response. The basic sensitivity of the transducer is 94 dB, one watt at one meter, ensuring minimal dynamic compression at high acoustical output levels.

LOW FREQUENCY DRIVER

The 300 mm (12 in) diameter LF driver has a felted paper cone laminated with Aquaplas for smoothness in the upper range of its response. The voice coil is 75 mm (3 in) in diameter, and it is made of edge wound copper ribbon. Linearity of the LF driver is the result of careful attention to mechanical suspensions as well as Symmetrical Field Geometry (SFG). SFG reduces harmonic distortion by producing identical magnetic flux fields on each side of the magnetic gap. This ensures that the voice coil will intersect equal flux lines for both positive and negative excursions of the cone. A flux stalilizing ring placed around the pole piece reduces the effects of magnetic flux field modulation. Overall, SFG reduces distortion to about one-tenth the value found in conventional magnetic structures.

A cast aluminum frame ensures mechanical integrity under the most demanding operating conditions.

DIVIDING NETWORK

The complex network design produces a seamless system frequency response through the critical crossover regions at 800 Hz and 4.5 kHz. The rolloff slopes are precisely determined to result in smooth axial and power response.

High quality polypropylene and polystyrene capacitors are utilized as "bypass capacitors" in parallel with the larger network mylar capacitors. This design procedure linearizes energy storage in the larger capacitors, and the result is greater accuracy in the reproduction of transient signals.

Front baffle controls allow precise adjustment of mid and high frequency transducer levels, enabling the system to be adjusted to taste, or to match a given acoustical environment.

SPECIFICATIONS:

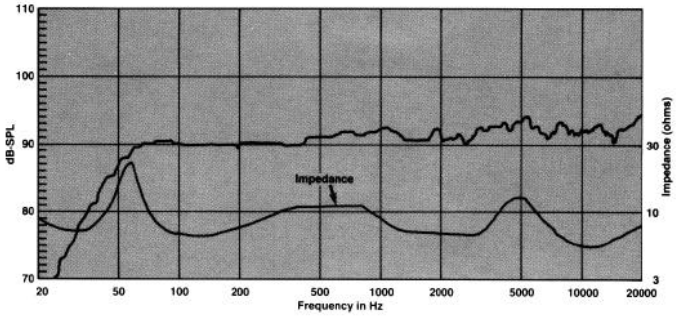
SYSTEM:	
Frequency Range (−6 dB):	35 Hz–27 kHz
Frequency Response (± 2 dB):	45 Hz–20 kHz
Power Rating[1]:	150 watts
Sensitivity:	90 dB SPL, 1 watt (2.83 V) at 1 meter
Nominal Impedance:	8 ohms
Crossover Frequency:	800 Hz and 4.5 kHz
LOW FREQUENCY TRANSDUCER:	
Nominal Diameter:	300 mm (12 in)
Voice Coil:	75 mm (12 in) diameter copper ribbon
Magnetic Assembly Weight:	4.6 kg (10.25 lb)
Flux Density:	1.08 tesla (10,800 gauss)
Sensitivity[2]:	91 dB SPL, 2.83 V at 1 m (3.3 ft)
MID RANGE DRIVER:	
Nominal Diameter:	125 mm (5 in)
Voice Coil:	25 mm (1 in) diameter copper
Magnetic Assembly Weight:	0.74 kg (1.63 lb)
Flux Density:	1.25 tesla (12,500 gauss)
Sensitivity:	94 dB SPL, 2.83 V at 1 m (3.3 ft)
HIGH FREQUENCY DOME RADIATOR:	
Nominal Diameter:	25 mm (1 in)
Voice Coil:	25 mm (1 in) diameter copper
Magnetic Assembly Weight:	0.91 kg (2 lb)
Flux Density:	1.5 tesla (15,000 gauss)
Sensitivity[3]:	92 dB SPL, (2.83 V) at 1 m (3.3 ft)
GENERAL:	
Finish:	oiled walnut
Grille Color:	dark blue
Dimensions:	362 mm x 597 mm x 286 mm deep (14¼ in x 23½ in x 11¼ in deep)
Weight (each):	21 kg (47 lb)
Shipping Weight (each):	24 kg (53 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.

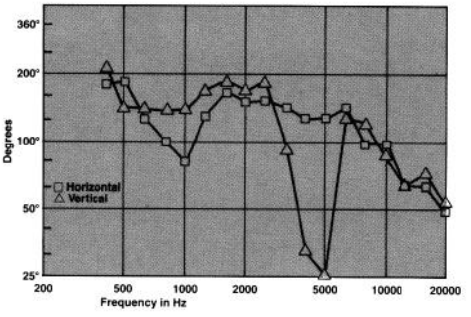
[2]Averaged from 100 Hz to 500 Hz within 1 dB

[3]Averaged above 3 kHz within 1 dB

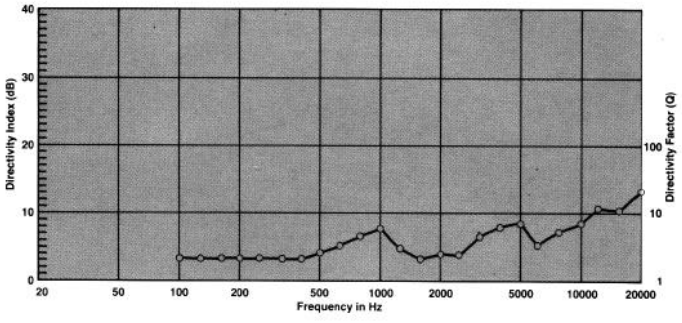
Frequency Response, 1 W at 1 m; impedance



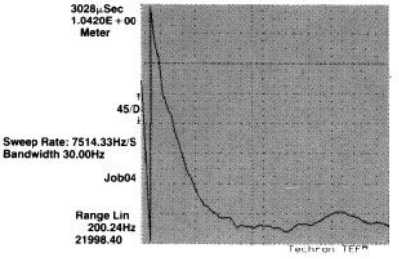
Beamwidth (−6 dB) vs. Frequency



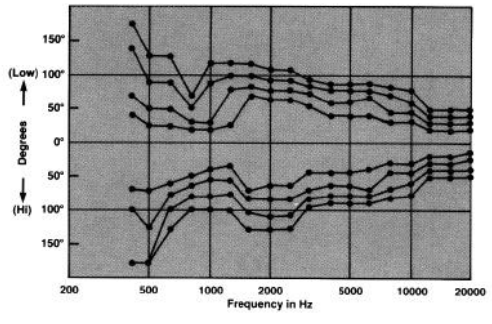
Directivity (DI and Q) vs. Frequency



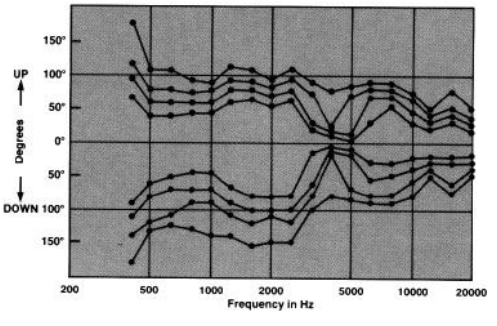
Phase Response vs. Frequency, 200 Hz to 22 kHz; vertical divisions at 45 degrees. Note that the phase response of the system is well within 270 degrees over the frequency range shown



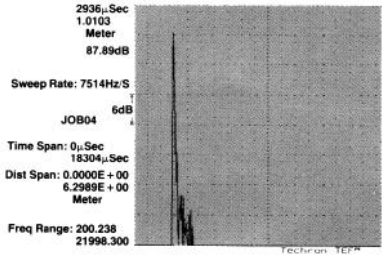
Horizontal Off-axis Response vs. Frequency (−3, −6, −9, and −12 dB contours)



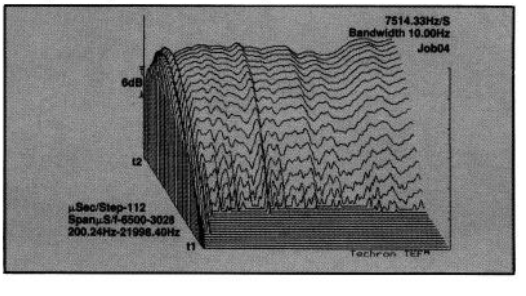
Vertical Off-axis Response vs. Frequency (−3, −6, −9, and −12 dB contours)



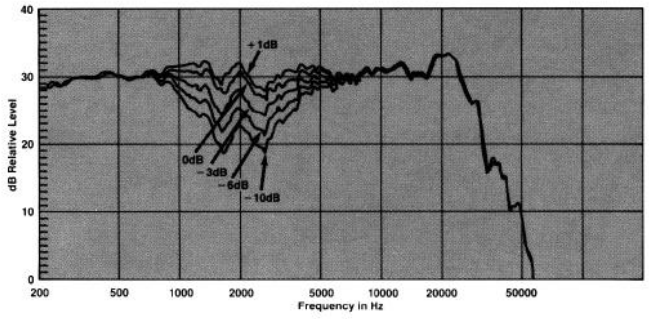
Energy-Time Curve (time span, 0 to 18,304 microseconds; vertical divisions 6 dB; loudspeaker placed one meter from microphone) Note that the bulk of the loudspeaker's energy arrives at the microphone coherently.



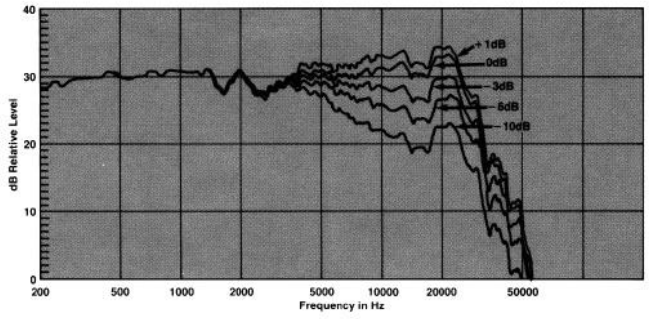
Time-Energy-Frequency (TEF) Curves (250 Hz to 20 kHz) Front-back span is from 6500 microseconds to 3028 microseconds; vertical divisions 6 dB. Note the smooth decay of the system and high frequency extension beyond 20 kHz.



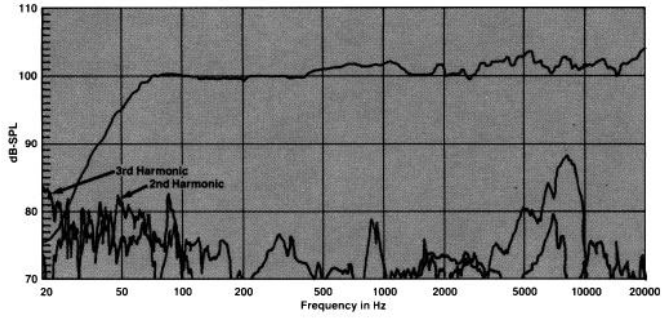
Mid Frequency Control Range



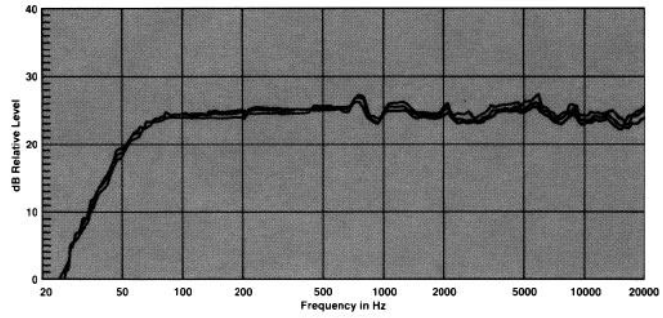
High Frequency Control Range



Distortion vs. Frequency, 10 watts (distortion raised 20 dB)



Power Compression, at 85, 95, and 105 dB, one meter



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.

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