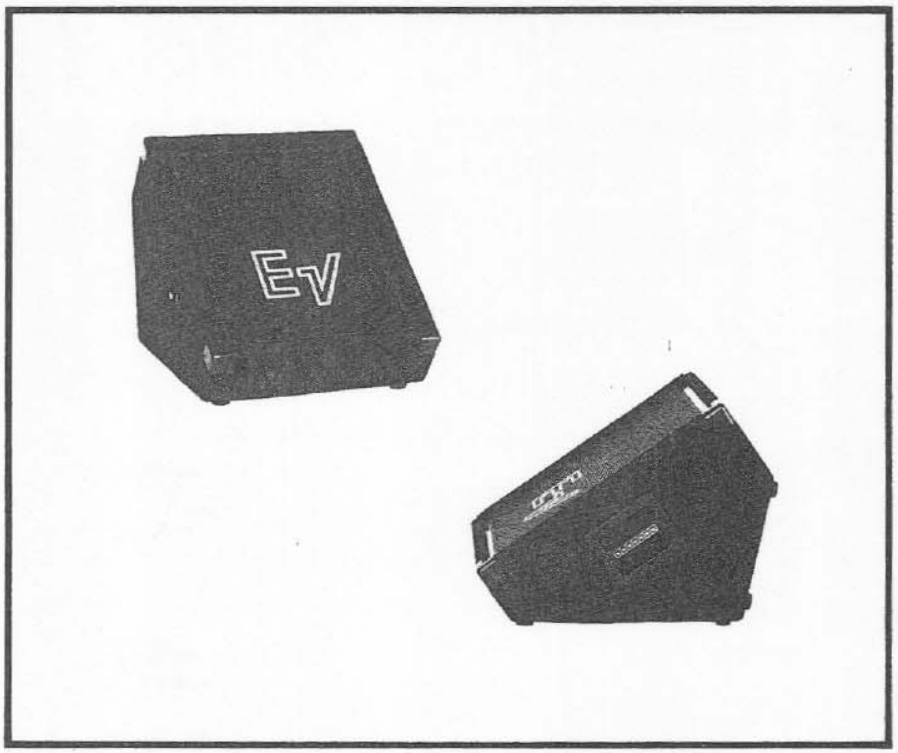

Electro-Voice®
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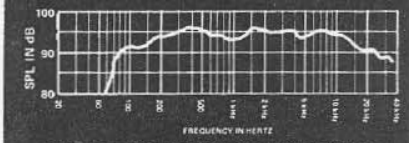

FIGURE 1 – Axial Frequency Response 4 volts/10 feet

Model FM-1202
Floor Monitor Speaker System

SPECIFICATIONS

Frequency Response, 10 Feet on Axis, Swept 1/3 Octave, Half-Space Anechoic Environment (see Figure 1):
75-20,000 Hz

Low-Frequency 3-dB-Down Point:
75 Hz

Usable Low-Frequency Limit (10-dB-down point):
60 Hz

Half-Space Reference Efficiency:
5.9%

Long-Term Average Power Handling Capacity per EIA Standard RS-426A (see Power Handling Capacity section):
300 watts

Maximum Woofer Acoustic Output:
17.7 watts

Sound Pressure Level at 1 Meter, 1 Watt Input, Anechoic Environment, Band-Limited Pink Noise Signal, 300 to 2,000 Hz:
101.5 dB

Dispersion Angle Included by 6-dB-Down Points on Polar Responses, Indicated One-Third Octave Bands of Pink Noise,
250-20,000 Hz Horizontal (see Figure 3):
109° ± 60°
5,000-20,000 Hz Vertical (see Figure 3):
44° ± 10°

Directivity Factor R_Q (Q), 800-16,000 Hz Median (see Figure 4):
12.5 (+5.5, −10)

Directivity Index D_i, 800-16,000 Hz Median (see Figure 4):
11 dB (+1.5 dB, −7 dB)

Distortion, 0.1 Full Power Input
Second Harmonic,
100 Hz: 3%
1000 Hz: 6%
10,000 Hz: 10%
Third Harmonic,
100 Hz: 1%
1000 Hz: 2%
10,000 Hz: 3.5%

Distortion, 0.01 Full Power Input
Second Harmonic,
100 Hz: 1%
1000 Hz: 2%
10,000 Hz: 3%
Third Harmonic,
100 Hz: <1%
1000 Hz: 2%
10,000 Hz: <1%

Transducer Complement,
High-Frequency:
One-inch titanium diaphragm driver 90° x 40° constant-directivity horn
Low-Frequency:
EVM-12S Pro Line

Box Tuning Frequency:
70 Hz

Crossover Slope:
12 dB per octave

Impedance,
Nominal:
8 ohms
Minimum:
5.4 ohms

Input Connections:
Parallel 1/4 in. phone jacks (allows paralleling of multiple speakers)

Enclosure Materials and Colors:
Black carpet covered Road-Wood™

Dimensions:
49.2 cm (19.4 in.) high
49.2 cm (19.4 in.) wide
61.9 cm (24.4 in.) deep

Net Weight:
29.5 kg (65 lb)

Shipping Weight:
32.2 kg (71 lb)

DESCRIPTION

The compact Electro-Voice FM-1202 is a 300-watt, two-way, high-efficiency, constant-directivity stage monitor. Possible system orientations are at 35°, 45° or perpendicular to the floor. It combines professional quality components, arranged in a time coherent vertical array, with an unusually durable Thiele-Small aligned vented enclosure. The result is clear and articulate high quality sound.

The enclosure is constructed of Road-Wood™, a structural material made of layered and selectively oriented hardwood strands. The covering is abuse-resistant black carpeting.

The high-frequency section of the FM-1202 utilizes a die cast 90° x 40° constant-directivity horn, driven by a one-inch throat, wide-bandwidth, titanium diaphragm driver. This driver uses a unique convex drive Time Path™ phasing plug structure (patent pending) for smooth and extended high-frequency performance.

The bass section of the FM-1202 is designed using Thiele-Small parameters for efficient performance to below 75 Hz. The 12-inch woofer used in the system is an EVM-12S Pro-Line unit featuring beryllium copper lead wires and an edgewound voice coil. The part of the magnetic structure adjacent to the coil is insulated using the exclusive EV PROTEF™ process. The coil is driven by a massive (16 lb) magnetic structure.

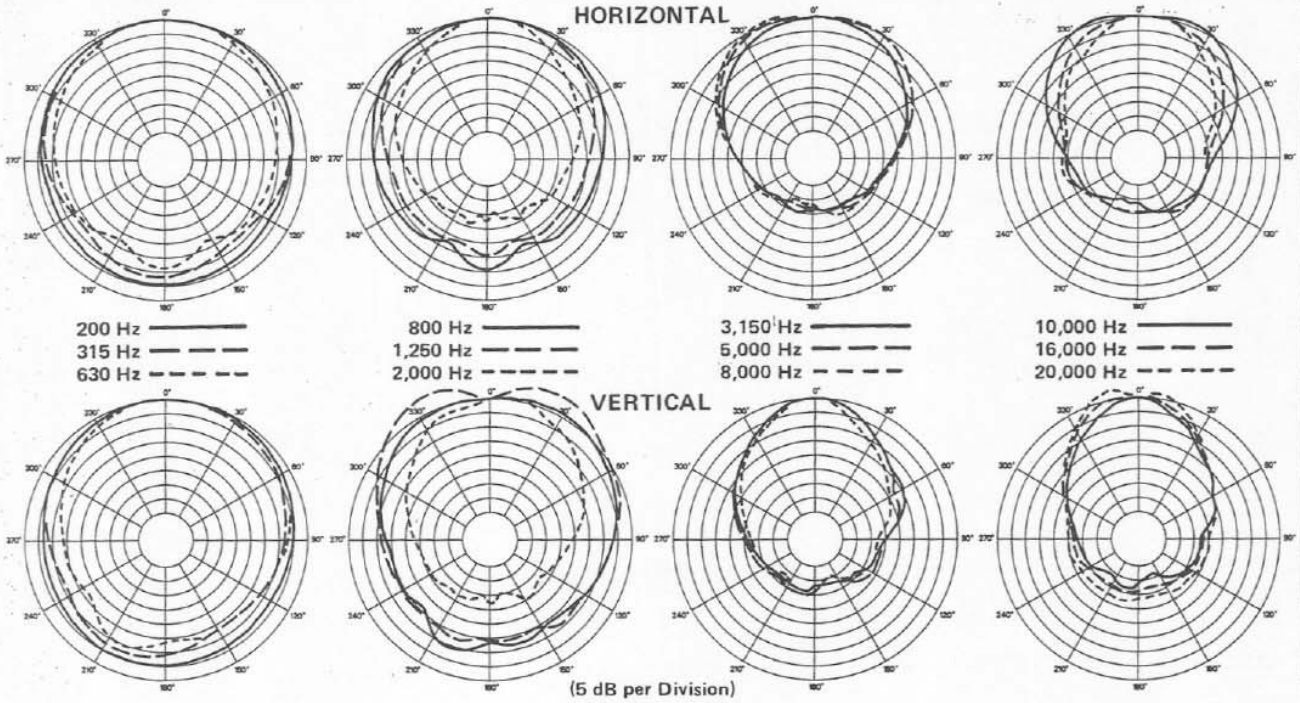

FIGURE 2 — Polar Response (1/3 octave pink noise 4 volts/10 feet)

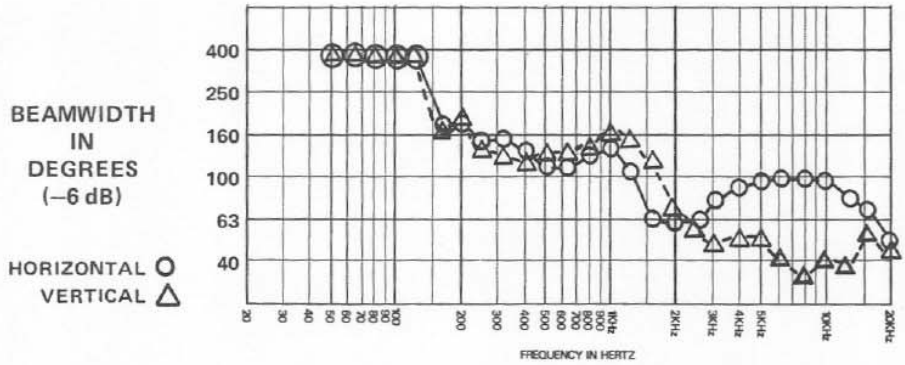

FIGURE 3 — Beamwidth vs Frequency Whole Space (anechoic)

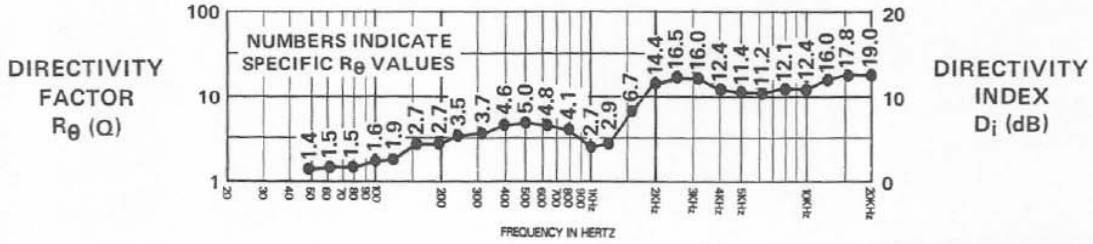

FIGURE 4 — Directivity vs Frequency Whole Space (anechoic)

CONSTANT-DIRECTIVITY SPEAKER SYSTEM

The crossover frequency and speaker component geometries have been selected so that the directional characteristics of the woofer and constant-directivity horn match at the crossover frequency (approximately 90° circular coverage patterns for each) to create a special system type — the constant-directivity system. At higher frequencies the horizontal coverage pattern remains constant and the vertical pattern smoothly transitions to a 40° to 50° angle above 5000 Hz. Response within the 90° x 40° rated coverage angle is uniform, which means dependable audience coverage without "hot spots" or dead zones at certain frequencies. The 90° x 40° dispersion characteristic also helps avoid early reflections from nearby floor or side wall surfaces which could degrade performance. The controlled directivity of the high- and low-frequency transducers also eliminates response irregularities caused by diffraction off nearby enclosure edges and, in combination with an essentially flat on-axis frequency response, produces a total acoustic power output that is uniform with frequency.

ENCLOSURE CONSTRUCTION

The FM-1202 enclosure utilizes a structural material that combines the strength of high-quality plywood with the density and acoustic damping of particle board without brittleness. Road-Wood™ uses the same principle of crossbanding veneers, as in plywood, in order to achieve its very high rigidity. A tough liquid-phenolic resin is blended with long, narrow strands of hardwood. Alternate layers are perpendicularly bonded under intense heat and pressure to form panels of superior uniformity. Unlike many grades of plywood, Road-Wood is dimensionally stable, water resistant and free from voids.

A combination of dado cut joints, tough adhesives and proper bracing ensure a sonically dead enclosure free from panel resonances.

The densely-woven, industrial-grade, abuse-resistant carpeting provides a finish that is both attractive and highly durable. Large, heavy-duty metal corner protectors, firmly secured rubber feet and recessed handles complete the picture and ensure that the FM-1202 speaker system is ideally suited to a long and reliable life "on the road."

FREQUENCY RESPONSE

The combination of a 12-inch woofer, wide-bandwidth, high-frequency driver and an equalized crossover results in the wide and smooth overall response shown in Figure 1. This response was measured at 10 feet, using a 4-volt input in an anechoic chamber, and was measured using swept 1/3 octave. No external equalization was used.

DIRECTIVITY

A unique feature of the FM-1202 is the constant-directivity dispersion provided by the 90° x 40° horn. The polar response of the system at selected 1/3-octave bandwidths is shown in Figure 2. These polar responses were measured in an anechoic environment at 10 feet using 1/3-octave pink noise inputs. The frequencies selected are fully representative of the polar response of the system. Beamwidth of the system utilizing the complete 1/3-octave polar data is shown in Figure 3. R_θ (Q) and directivity index (D_i) are plotted in Figure 4.

POWER HANDLING CAPACITY

To our knowledge, Electro-Voice was the first U.S. manufacturer to develop and publish a power test closely related to real-life conditions. First, we use a random noise input signal because it contains many frequencies simultaneously, just like real voice or instrument program. Second, our signal contains more energy at extremely high and low frequencies than typical actual program, adding an extra measure of reliability. Third, the test signal includes not only the overall "long-term average" or "continuous" level — which our ears interpret as loudness — but also short-duration peaks which are many times higher than the average, just like actual program. The long-term average level stresses the speaker thermally (heat). The instantaneous peaks test mechanical reliability (cone and diaphragm excursion). Note that the sine wave test signals sometimes used have a much less demanding peak value relative to their average level. In actual use, long-term average levels exist from several seconds on up, but we apply the long-term average for several hours, adding another extra measure of reliability.

Specifically, the FM-1202 is designed to withstand the power test described in the revised EIA Standard RS-426A. The EIA test spectrum is applied for eight hours. To obtain the spectrum, the output of a white noise generator (white noise is a particular type of random noise with equal energy per bandwidth in Hz) is fed to a shaping filter with 6-dB-per octave slopes below 40 Hz and above 318 Hz. When measured with the usual constant-percentage bandwidth analyzer (one-third octave), this shaping filter produces a spectrum whose 3-dB-down points are at 100 Hz and 1200 Hz with a 3-dB-per octave slope above 1200 Hz. This shaped signal is sent to the power amplifier with the continuous power set at 300 watts into the 6.4 ohms EIA equivalent impedance. (43.8 volts true RMS). Amplifier clipping sets instantaneous peaks at 6 dB above the continuous power, or 1200 watts peak (87.6 volts peak). This procedure provides a rigorous test of both thermal and mechanical failure modes.

GRILLE REMOVAL

The grille assembly of the FM-1202 is fastened to the enclosure using four sturdy dual-lock fasteners. The grille assembly can be removed quickly and easily, allowing access to the drivers, by firmly pulling on the two black polyester ribbon loops provided.