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IMF transmission line speakers

A 'transmission line' speaker is a purely professional concept in that performance, rather than price, size or operating principle is the primary criterion of merit. What is a transmission line? Why is it not more common among loudspeakers? To answer the first query is to answer the second - it is a complex and potentially expensive way of providing near perfect conditions for modern drive systems to perform at optimum and is not suitable for 'mass production'.

The IMF 'TLS' are advanced versions of the transmission line reproducer which was developed some years ago to aid in laboratory research. They incorporate the latest and most refined drive systems enclosed in new and radically re-designed transmission lines. These speakers are for use with the best equipment. A 'TLS' is a sophisticated speaker; its virtues will not be apparent to the novice who will want something more obvious. It will be most appreciated by the cognoscenti.

The diagram illustrates the basic construction of the transmission line, or more properly, a dual transmission line. Each line independently provides for its driver a near ideal acoustic environment. The bass line absorbs the back wave, progressively rising with frequency, and is open ended. By careful gradation of the density of the absorbents, and inverse tapering of the line, the open end extends very low frequency generation over a wide band. At the low frequencies the line adds acoustic mass to the diaphragm, doubling its effective area and creating more ideal conditions for proper conception of bass in the room.

The crossover points have been carefully chosen to preserve homogeneity and to maintain smooth impedance curves. The 'left' speakers have their mid and high units grouped at the right side; the 'right' speakers have them on the left side. The purpose is to provide a carefully controlled dispersion pattern inward and away from room boundaries so that the maximum of direct information and the minimum of reflected reaches the listener.

Transmission lines dictate the use of the very best drivers as eliminating colouration and boxiness uncovers all the distortions. Today, with plastic technology so far advanced, to rely upon conventional paper cones with their lack of uniformity, hydrosopic nature and tendency to change with age, would be unthinkable.

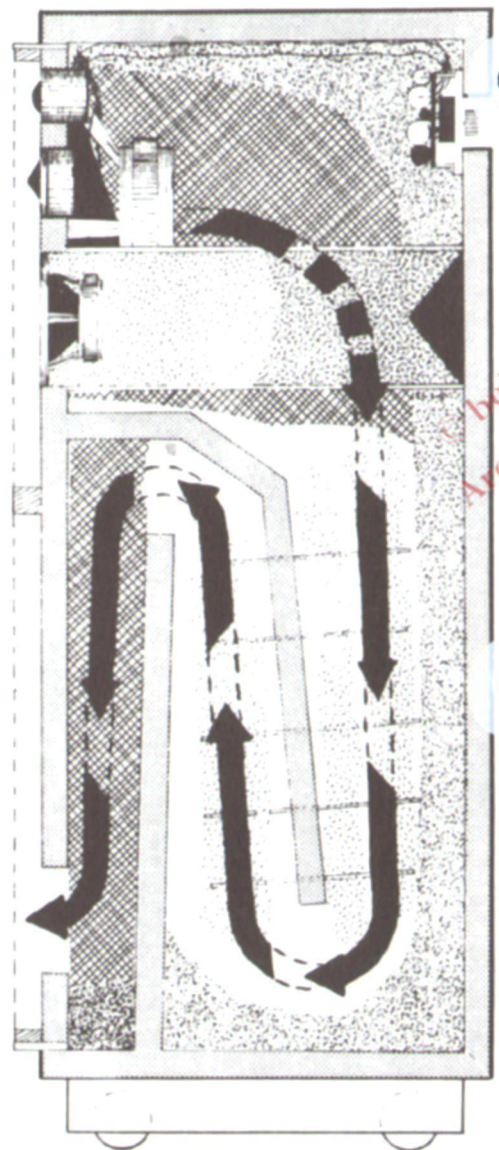
The outer enclosures are uniquely fashioned. For the professional TLS high density building board is entirely stress laminated with formica overlay, for it is acoustically resonance free and opaque. For semi-professional models this technique has been employed on the rear panels only, enabling the visual surfaces to be skinned with natural wood. No cost cutting or production compromises have been applied to the TLS; the entire concept has been preserved as one of performance at any price rather than to a price. Were there better drive systems, enclosure techniques or construction methods, they would have been incorporated.

The quality of the bass response is very different. 'Line' bass is remote from 'box' bass of conventional speakers. It is freer, more natural, more dynamic and exists more in space rather than from the edge of a box. The bass line forms a pressure loading device into the room so that sub-sonic information is 'felt' rather than heard. The result of this 'plane-source' propagation is that the ear receives more direct information, more rapidly and less intermingled with room resonances. It is highly differentiated - one cannot confuse kettledrum with plucked bass or with bass drum.

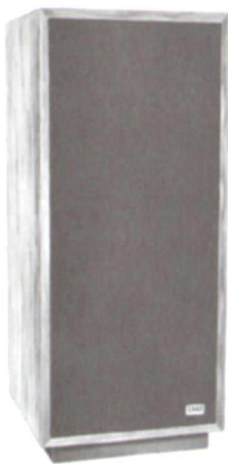
Interestingly, this kind of bass propagation is accepted immediately by concert goers; and somewhat reluctantly by hi-fi enthusiasts conditioned to heavy, boomy, box bass. Many are visibly upset when first subjected to line bass; its open quality disturbs them. A share of the credit for this transparent quality must go to the accurate mid-range reproduction of transmission line loading - the sense of aliveness, of the players in space with the acoustics of the recording studio, not the listening room, clearly presented.

Exact room placement has little effect upon the response of a TLS. It does not rely on walls or corners for reinforcement. By careful attention to overall dispersion these 'mirror image' speaker systems are designed to provide as sharply a defined location of sound sources as the original balance engineer intended, whilst permitting freedom of seating arrangements usually associated with systems of only indeterminate imagery. Few listeners voice opinions about the upper treble, which is in a way a good thing for the speakers have very little of the 'hi-fi' and 'disembodied treble' effect about them. The recent developments of chemical dome high frequency units capable of extended response well beyond audibility, as with improved amplifier bandwidth, has done much to enable superb transient performance to be achieved within the audio bandwidth, obviating the need that was once felt by some to introduce deliberate 'presence lifts'. Thus smooth yet crisp high frequency extension has been achieved without a hint of oversibilant splutter or spitting surface noise.

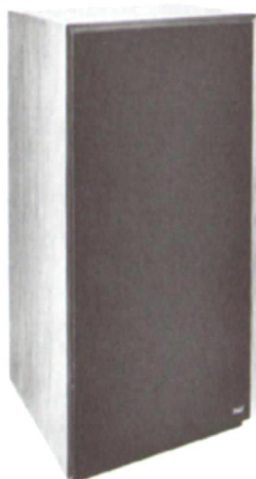
The speakers do seem to fulfill their design criterion, to work properly under a wide range of acoustic conditions, conveying very little of themselves or the room; and the utmost of the programme fed into them. Users have found that due to the dynamic impact and translucence of the line speakers, they are unconsciously listening at lower levels and with greater satisfaction than when with conventional systems they were psychoacoustically forced to raise the listening level to gain a similar emotional experience. The sense of transparency is there. It is special - a transient definition, which is unique to the transmission line.



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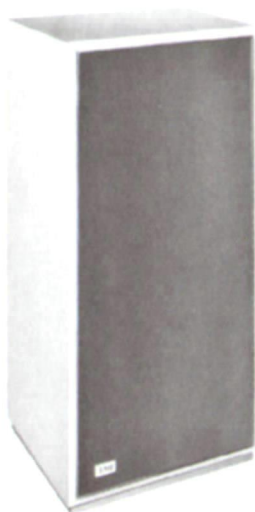


IMF 'STUDIO' LOUDSPEAKER : Export Version - a free standing loudspeaker system measuring approximately 36" x 14" x 15" wide. Bass unit 8" plastic cone, mid-range unit 5" impregnated cone contained in separate line, tweeter 1 1/4" chemical diaphragm and 3/4" chemical dome super-tweeter. Crossover electrical 4 way at approx. 375 Hz, 3.5 kHz and 13 kHz. Frequency range from 25 Hz to beyond audibility. Calibrated level controls ± 2 db for mid and high frequencies. Nominal impedance 8 ohms. Driving power requirements 20 to 60 watts. Supplied in matched 'mirror image' pairs in teak or walnut. Weight approx. 68 lbs each.



IMF 'MONITOR' LOUDSPEAKER : A free standing loudspeaker system with fitted castors measuring approximately 40" x 17 1/2" x 19 3/4" wide. Bass unit 13" x 9 1/2" flat polystyrene diaphragm, mid-range unit 6" plastic cone, tweeter 1 1/4" chemical diaphragm and 3/4" chemical dome super-tweeter. Crossover electrical 4 way at approx. 375 Hz, 3.5 kHz and 13 kHz. Frequency range from 20 Hz to beyond audibility. Nominal impedance 8 ohms. Driving power requirements 25 to 60 watts. Supplied in matched 'mirror image' pairs in teak or walnut (other finishes to order). Weight approx. 120 lbs each.

: Export Version - as above but with separate mid-range line and calibrated level controls providing ± 2 db for mid and high frequencies.



IMF 'PROFESSIONAL' LOUDSPEAKERS : IMF Professional Monitor - individually crafted from high density building board and fully laminated in formica overlay. Fitted castors dimensions approx. 42" x 17 1/2" x 19 3/4" wide, handles optional. Electronics as for Export Monitor but with high power handling crossover allowing use of 100 watt amplifiers. Frequency range from 17 Hz. Supplied to order in matched 'mirror image' pairs with solid aluminium fascia trim and finished in overlay specified which can include natural wood laminates, wood facimile laminates and standard plain colours. Weight approx. 140 lbs.

IMF Professional Studio - as Export Studio with high power handling crossover and fully laminated in formica overlay specified. Handles and castors optional. Weight approx. 70 lbs each.

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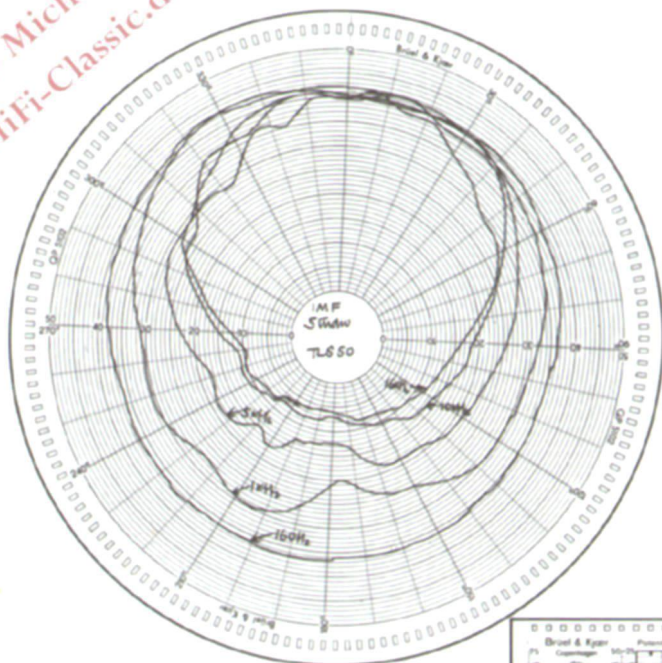
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THE STUDIO TLS 50 LOUDSPEAKER

A free standing loudspeaker system measuring approximately 36" x 14" x 15" wide. Bass unit 8" foam surround impregnated diaphragm, mid - range 5" impregnated cone contained in separate line, tweeter 1 1/4" soft dome and 3/4" chemical dome super-tweeter. Crossover electrical four way at approximately 375Hz, 3kHz and 13kHz. Frequency range 23Hz to beyond audibility. Calibrated level controls ± 2 dB for mid and high frequencies. Efficiency measured via pink noise 1 metre on axis : 50 watts produces 100dB. Nominal impedance 8 ohms. Driving power requirement 25 to 60 watts. Supplied in matched 'mirror-image' pairs in teak or walnut.

Conditions of test : Measurements of samples taken under anechoic conditions with reflection coefficient better than 0.1. Equipment employed B & K pen recorder, noise and signal generator, third octave filters and polar turntable.

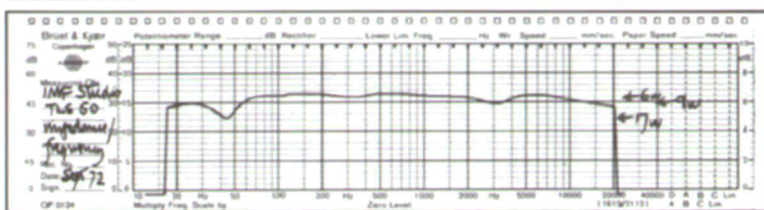
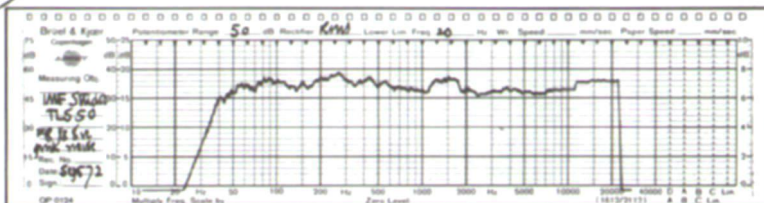
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Distortion ref. 90 dB at 1 kHz :

Studio TLS 50

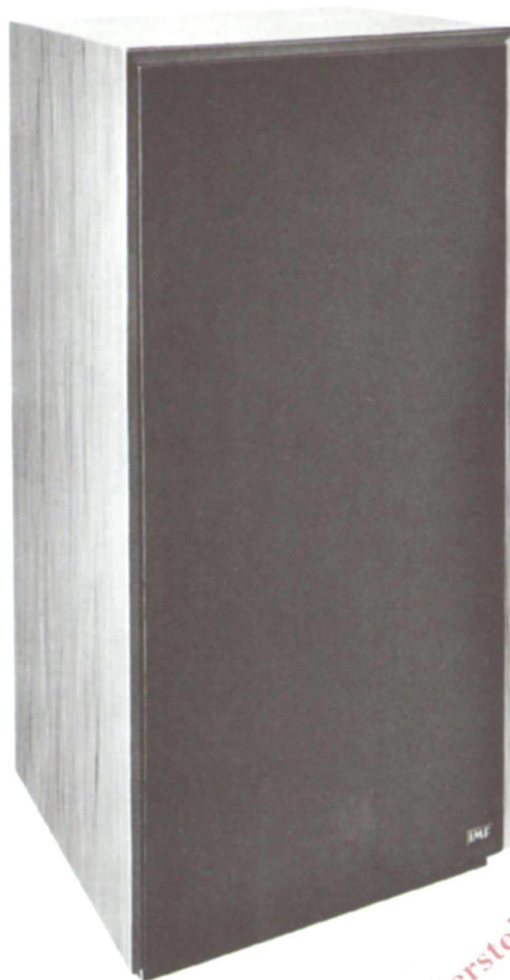
Harmonic	2nd	3rd
40Hz	0.25%	0.03%
100Hz	1.0%	0.15%
500Hz	0.15%	0.06%
1kHz	0.15%	0.05%
5kHz	0.12%	0.04%
10kHz	0.8%	0.03%



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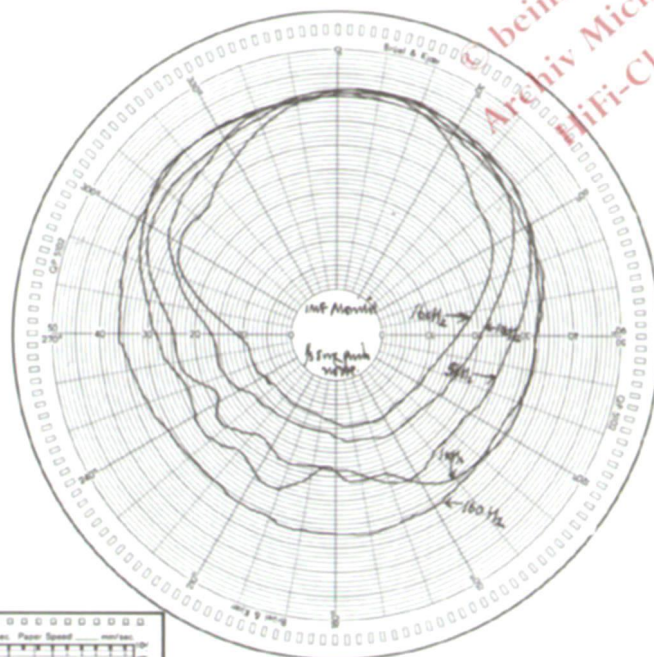


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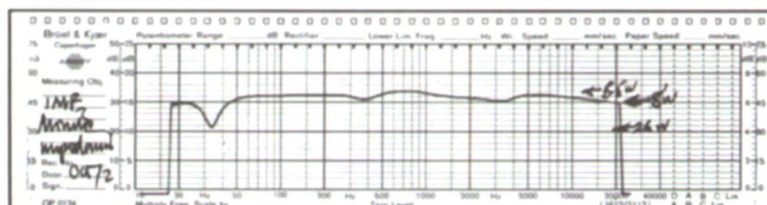
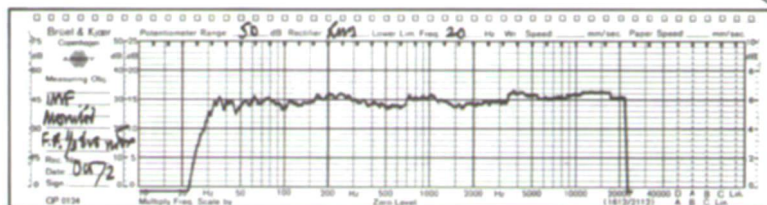
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IMF MONITOR LOUDSPEAKER

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IMF PROFESSIONAL MONITOR: See supplementary leaflet.



Distortion ref. 90 dB at 1 kHz:

Monitor	2nd	3rd
40Hz	1.0%	0.5%
100Hz	0.6%	0.1%
500Hz	0.4%	0.4%
1kHz	0.25%	0.6%
5kHz	0.25%	0.01%
10kHz	0.2%	0.01%

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