RAM 200 loudspeakers

BY BILL ANDERTON

RAM Electronics have been making loudspeakers now for only just over two years and within this short time they have reached a point where they are beginning to be recognised as the producers of loudspeakers whose appearance and performance attain high professional standards. The RAM 200, introduced in April 1977, is part of a range of five loudspeaker systems of which the 200 represents the top of the range in size, performance and price. Since its introduction, the RAM 200 has undergone further development to the point where the model under test in this review incorporates relatively recent changes to the crossover network design in order to improve the high-frequency response, which has been criticised by previous reviewers. RAM obviously take great care with their products on all aspects of quality and adopt a policy of continual evaluation and improvement for their products.

The RAM 200 is a two drive-unit system with the addition of a passive auxiliary bass radiator (ABR). The ABR unit is essentially a third loudspeaker drive unit of high cone surface area that has no voice coil assembly and is therefore mounted in the cabinet but is not actually driven by the amplifier. The ABR system acts exactly like a highly damped reflex or ported loudspeaker, the idea being to supplement with in-phase sound radiation, the output from the normal bass drive unit at very low frequencies. The result is either an extension of the amplitude frequency response at low frequencies or an improved power handling capacity — provided that the complete system is correctly designed.

The tweeter used by the RAM 200 is an Audax 25mm (1-inch) dome type which has a butyl/latex impregnated soft-dome, while both the mid-range/bass unit and the ABR unit are manufactured by Dalesford Loudspeakers and have Bextrene cones with inverted roll surrounds.

All the models in the RAM range are constructed to a high standard, the cabinets being veneered internally as well as externally to provide added cabinet strength and prevent unwanted coloration from panel resonance. The cabinets are lined with bitumen and filled with BBC-specified acoustically absorbent foam. I found the proportions and finish of the RAM 200 extremely pleasing from a visual point of view.

Connection can be made to the loudspeaker's terminals which will accept either bare wires or banana plugs and a point worth noting is that (like all loudspeakers) they are sensitive to room position. As a generalisation, I found that they operated well when away from room corners and placed directly on a firm, but carpeted floor surface.

Listening tests

Listening tests were conducted using a variety of signal sources from tape, disc and fm radio. My immediate impression was of a very smooth response creating a warm, clean sound with very low coloration from the loudspeakers. The output at high frequencies was at first judged to be a bit dull but this was dispelled when the reproduction of cymbals and high-hat were found to be forward and lifelike. I did, however, tend to listen with a 3dB lift from my amplifier treble control, but this was more a matter of taste rather than compensating for any deficiency in the loudspeakers. The RAM 200s are relatively inefficient (see test results) and seem to come to life when driven by an amplifier capable of reaching their requirements, especially for high-level transient information.

The manufacturer's suggestion of a minimum amplifier power rating of fifteen watts rms per channel should definitely be adhered to.

The following is a direct transcription from the notes I made during the listening tests. They cover first a range of different types of recorded material and secondly a selection of individual instruments to examine specific sections of the frequency range which might be masked under normal conditions. In total, the tests cover most of the conditions likely to be encountered by the loudspeakers under normal use.

ROCK (percussion): Excellent overall response which is also well extended. Drums lack life, some live quality missing. Well controlled transients. No cabinet coloration in evidence. Bass solid (accurate bass drum sound). Very clean at high sound pressure levels (SPLs). Untiring over protracted periods at high levels. Handled information well without over-emphasis of record surface noise.

ROCK (jazz): Brass reproduction remarkable, excellent smooth response and characteristic harsh timbre accurately reproduced without distortion or resonance at high SPLs. Excellent stereo imagery. Overall difficult to fault.

ROCK (vocal): Vocals handled well — tight sibilant control. High frequencies slightly lacking in life.

ORCHESTRAL (violin): Well suited to this sort of reproduction. Characteristic unison string quality accurate. Solo instrument clean throughout its range, no obvious high frequency resonance. Easy to forget that the speakers are there.

ORCHESTRAL (piano): Strings, warm and open as before. No over-emphasis of surface noise in quiet passages. Keyboard has clinical sound, difficult to fault. Slight lack of brightness at high frequencies, treble lift required (personal taste!). Excellent timbral accuracy of low notes.

ORGAN: Lacks some depth and sounds distant. Clean response again however. Sound again appears dissociated from the loudspeakers.

MALE VOICE (speech): Very good, difficult to fault, no obvious coloration of lower mid-range resonances.

WHITE NOISE: Balance between units good. High frequency drops off rapidly when listening position moved off-axis. Best to angle speakers slightly to face listening position.

Single low frequency tones: 70Hz accurate. 50Hz output also very good. Bass response obviously well extended — holds up well at 42Hz (lowest fundamental of the bass).

DRUMS: Have explosive live sound. Cymbals have bright live sound, possibly lacking some sparkle.

BASS and BASS DRUM: Very full bass, excellent depth to sound quality but with no obvious resonances.

GUITAR (twelve-string): Excellent transient response. Very accurate, live sound.

PIANO: Smooth response through entire range. Difficult to fault. Clean hammer attack.

BASS (acoustic): Again difficult to fault. Bass reproduction has excellent timbral depth and clarity of intonation.

'CELLO: Excellent. No cabinet resonances excited. Slightly veiled sound.

VIOLA: Warm sound. Accurate, with no obviously detectable resonances or coloration.

have slight dullness or 'veiled' quality. Subtle effect, however.

TIMPANI: Full, live sound. Explosive sounds reproduced accurately.

BASS FLUTE: Excellent reproduction of timbral quality. Breath tones clear.

ALTO FLUTE: Same comment.

OBOE: Timbral quality reconstructed accurately.

ENGLISH HORN: Excellent. Characteristic rasp reproduced well. Possibly some extra overtones added in upper midrange.

Parameter	Maker's specification	Test result
Frequency response	45Hz −22kHz, ±2dB −4dB	45Hz −22kHz, +3dB (ref. 1kHz)
Nominal impedance	8 ohms	Agreed
Crossover frequency		6kHz
Sensitivity	6W/1m/92dB	1W pink noise/1m79dB(A)
Drive units	25mm (1-inch) soft dome tweeter 200mm (8-inches) mid/low frequency unit 250mm (10-inches) passive radiator	
Enclosure	ABR (see text)	
Recommended amplifier rating	15-75W rms per channel	Agreed
Weight	16.5kg (36 lb)	
Size	66(H) x 26.7 (D) x 31.7(W) cm (26 x 10½ x 12½-inches)	
Finish	Teak or walnut. Special finishes to order	
Price (inc. VAT)	£241.89 (optional stands £17 exc. VAT) Special finishes to order	
Guarantee	3 years	

RAM Electronics Ltd, The Granary, Bracondale, Trowse, Norwich, UK.

Measurement results

Test measurements were made under anechoic conditions and the results were pretty much as indicated by the listening tests. No surprises here. The sine-wave amplitude response revealed a few minor bumps and dips, but most of these appeared smoothed out on the pink-noise amplitude frequency response curve. It should be noted that although the curves were not completely flat, they are well balanced, the main point worth noting was a slight hump in the response between 60Hz and 100Hz followed by a further slight over-emphasis of 2dB to 3dB (reference 1kHz) between 200Hz and 400Hz. The apparent dip in the crossover region indicated by the sine wave curve between 5kHz and 7kHz appeared smoothed out to a certain degree on the pink-noise results.

Overall, the amplitude frequency response was well extended at the high and low-frequency ends of the spectrum, beginning to roll off at 60Hz and extending to 20kHz. Certain listening positions may emphasise the dip mentioned between 5kHz and 7kHz and this should be accounted for when positioning the loudspeakers. Also, the slight hump at the bass end could be over-emphasised by some room positions but should be okay if the speakers are positioned a few feet away from any room corners. Experimenting with room position would certainly be time well spent under any circumstances.

The thirty degrees off-axis response remained within 2dB of the on-axis measurement through the midrange up to about 9kHz, at which point the off-axis response begins to roll off. The results here are overall very good for a system of this type.

Distortion measurements were low throughout the frequency range, beginning to rise to a peak below 100Hz. Typical figures are as follows:

100Hz, second harmonic: −42dB (0.7 per cent)
1kHz, second harmonic: −47dB (0.45 per cent) better than
10kHz, second harmonic: −47dB (0.45 per cent)
100Hz, third harmonic: −44dB (0.63 per cent)
1kHz, third harmonic: −48dB (0.4 per cent)
10kHz, third harmonic: −48dB (0.4 per cent) better than

The impedance measurement showed that the impedance does not fall below 7.5 ohms throughout the audio frequency range. The curve showed the fundamental system resonance (which is critically damped and does not mean that the loudspeaker resonates at this frequency) of 58Hz at which frequency the impedance reaches a peak of 28.5 ohms.

For sensitivity measurement results, refer to the specification table.

Overall, the test measurements were in keeping with results expected from a high quality loudspeaker system of this nature.

Conclusions

It was a pleasure for me to test the RAM 200. In appearance they are an attractive addition to the furniture of a home and in performance are excelled by few loudspeaker systems. I would recommend them as excellent value for money. In one sense they were a difficult loudspeaker to test, as their overall coloration is low that there was little to be said about the actual sound quality of the loudspeakers — time and time again I found myself forgetting that I was at work and was aware only of the music that I was playing. This I believe is the best recommendation that can be made for a loudspeaker system.