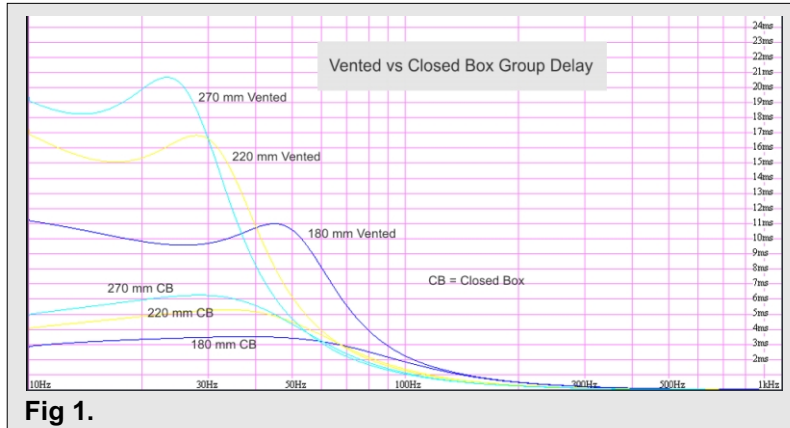


General Cabinet Parameters

Unless otherwise stated, all cabinets are of the closed box type with low Q factors between 0.5 and 0.6 where size permits.

The controlled resonance of vented enclosures gives rise to excessive group delay at low frequencies which should be avoided.

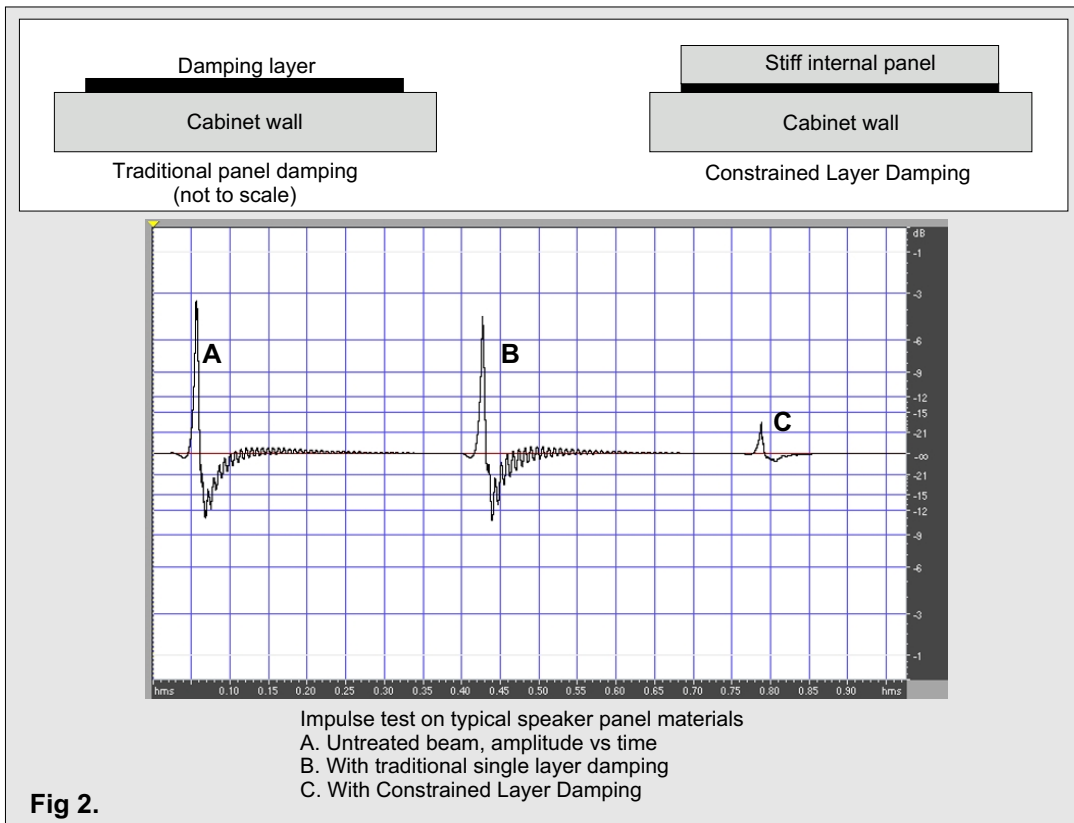
Fig 1. shows a comparison of typical group delays for MC loudspeakers with 180, 220 and 270 mm drivers having 3dB frequency points at 80, 50 and 40 Hz respectively.



Constrained Layer Damping (CLD)

Panel damping is used on all products with a considered compromise between panel stiffness and damping effectiveness. A comparison between typical simple damped panel cabinets and CLD is shown in Fig 2.

Overall panel thickness is 30 mm for the smallest 2 way speakers, increasing for larger units.



Note the panel vibration without CLD lasts for up to 300 ms.

Driver Technology

Woofers and mid range drivers in classic monitor and classic vented models have shorted turn technology which is important to reduce distortion across the full mid range.

A variety of cone materials are used. Coated paper is commonly used except where a driver is used for woofer applications in which case aluminium may be specified.

All tweeters are soft fabric extended surround types with a rear added chamber in classic products. Upgraded classic series tweeters have 6 mm solid aluminium front panels.

Crossovers

Low order 'linear phase' crossovers are used throughout, similar to the Bessel type.

Air cored inductors and substantial polypropylene or poly carbonate capacitors are specified.

Loudspeakers in finite cabinets will always exhibit a shelving effect giving half the bass output at frequencies typically below 400 Hz. Correction is applied in all MC products to compensate for this which sometimes leads to low overall efficiency (85 dBA).

Cabinet Finishes and Veneers

MC uses real veneers on all products with the standard 0.6 mm thickness. A mixture of traditional materials and glues are used throughout with a view to using sustainable sources wherever possible.

Final finishing is based on natural materials such as wood oils, shellac and wax polishes.

Standard veneers are as follows:

Cherry, American White Oak, walnut and Ash with a black ebonising process.

Other more expensive exotic veneers are available to special order at extra cost.

Images of current burr veneer options are available on the website.

Connectors

Most loudspeakers in the range use a gold plated screw terminal compatible produced in the UK with spade, wire or banana connectors.

We recommend the use of soldered banana plugs such as the Cardas type CBER.

Most loudspeakers in the range are available with optional Cardas Patented Binding Posts which give the most secure connection to spades with any connector system that we have tested.

Sub Woofer Technology

Some loudspeakers in the range have deliberately limited bass response so that unwanted excitation of room bass modes is avoided. This is a necessary compromise between bass bandwidth and uneven bass response caused by the room. In any case, bass power bandwidth in small loudspeakers is usually limited by their bass drivers.

However, the large 3 way monitors and all vented products are available with an extended bass response for customers with that particular requirement.

Marshall Choong advocates the use of multiple sub

woofers placed in optimum room positions. Good results are obtained with 2 units placed behind the main speakers, and even better subjective results are obtained with 2 further sub woofers on a rear wall set up to cancel the build up of standing waves within the room. Further details are available in a document available in the main website development section. These are not in our normal product range but if customers show sufficient interest in these unique products, they can be provided to special order.

The 2 way vented monitors are recommended for use with sub woofers.

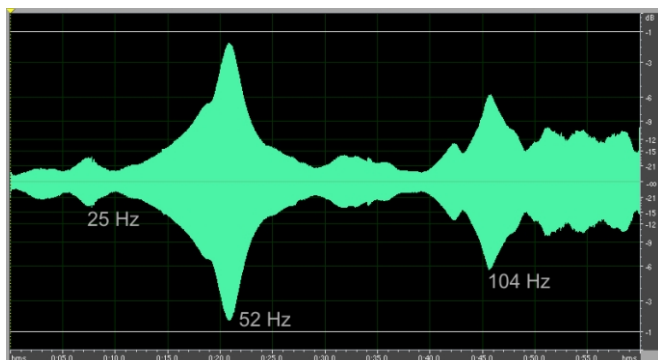


Fig 3. Level corrected slow bass sweep, 20 Hz to 160 Hz. No sub woofers.

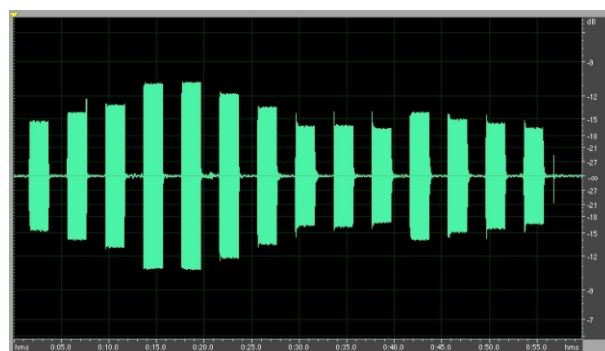


Fig 4. Sub woofer system, 1/6th octave bass tone bursts 20 Hz to 100 Hz, each tone burst is 2 seconds long

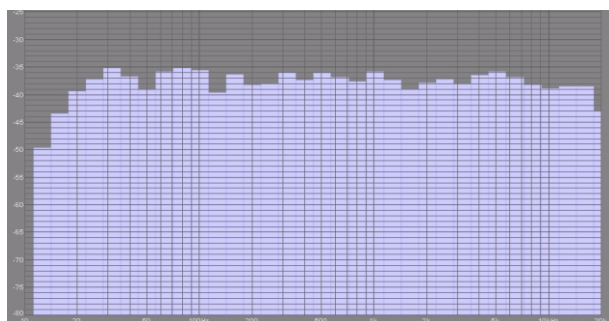


Fig 5. System with sub woofers, in room pink noise response 10 Hz to 20 kHz

Fig 3. Slow bass sweeps are more revealing of room effects than , for example, pink noise sources. This represents the room response with normally placed speakers and no sub woofer system.

Fig 4. This is the response of the full sub woofer system with 4 sub woofers and with standing wave cancellation. The tone bursts have good rise and fall times largely unaffected by the static room modes and the overall response is far smoother than in Fig 3.

Fig 5. This is the overall in room pink noise response with the same system as in Fig 4.