



## DOCUMENTAZIONE

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# CX SYSTEM USER GUIDE

MODELS CX2, CXW, BX2, EX2

HIGH PERFORMANCE PROFESSIONAL SOUND SYSTEMS

## INTRODUCTION

The MARTIN CX/BX/EX is a compact high-performance professional loudspeaker system originally developed for theatre and audio-visual applications. It comprises a two-way coaxial loudspeaker available in either rectangular (CX2) or wedge format (CXW) cabinets, plus an electronic equaliser (EX2) and an optional 1x18" sub-bass cabinet (BX2). Its main applications are in discotheques small PA systems, bass and electronic instrument amplification, stage foldback, theatre, and audio-visual sound.

## CX2, CXW

Each CX loudspeaker utilises an advanced 2-way coaxial drive unit comprising a 12" (300mm) loudspeaker, plus a high-frequency compression driver attached to the rear of the bass magnet and projecting through the centre of the 12" speaker via horn contained within the bass cone. The output of the drivers is combined by a precision crossover network operating at 1.5kHz. Both bass and high-frequency units have edge-wound voice coils for maximum efficiency and heat dissipation. Nominal impedance of the CX is 8 ohms (see impedance curve).

The CX is designed to be used with the EX2 Equaliser. Use without the EX2 is possible, though with reduced frequency response and power handling.

## EX2

The EX2 is a 1U rack-mounting stereo active equaliser specially contoured to control the extreme low and high frequency response of the MARTIN CX loudspeaker system. When the CX is used with additional bass bins and amplifiers, an internal electronic crossover can be switched in to provide a mono bass signal below 120 Hz (where there is no directional information) and stereo signals above this frequency.

Each channel has a fast cut-off subsonic filter to protect the bass drivers from excessive excursion. This, and the use of mono (as opposed to stereo) sub-bass, effectively removes low frequencies generated by turntable rumble and warped records, and helps to prevent turntable feedback. Some high-frequency boost is also applied to the compression driver to compensate for its falling power response at extreme high frequencies.

## BX2

The BX2 is a sub-bass unit for use in conjunction with the CX coaxial system when extended ultra-low frequency reproduction is required. It is designed to be driven from a separate amplifier which is connected to the sub-bass output of the EX2, and consists of a high-power 18" (460mm) driver housed in an internally-tuned enclosure. Outputs from the front and rear of the cone are combined within the enclosure and emerge from a single slot source in the front panel. Full response to below 40Hz is achieved by this arrangement. Minimum impedance of the BX2 is 6 ohms (see impedance curve).

## CONNECTING TO AMPLIFIERS

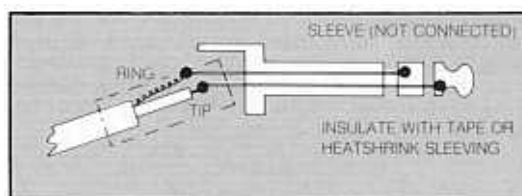
The EX2 should be connected immediately preceding the power amplifiers, after any such devices as preamplifiers, mixing desks or other equalisers. Input connections, which are balanced, are via XLR female sockets paralleled with tip/ring/sleeve ("stereo") jack sockets, wired as follows:

XLR Pin 1 / jack sleeve = Ground  
XLR Pin 2 / jack ring = Signal "cold"  
XLR Pin 3 / jack tip = Signal "hot"

If driving the EX2 from an unbalanced source, mono jack plugs may be used. Under some conditions this may result in a hum loop. If so, alternative connections, via an XLR plug or a TRS ("stereo") jack can be used, wired as follows:

Jack Sleeve / XLR pin 1 = Not connected  
Jack Ring / XLR pin 2 = Cable screen (signal ground)  
Jack Tip / XLR pin 3 = Cable inner (signal "hot")

EX2 outputs are unbalanced, mono jack sockets.



When using a CX system alone, set the function switch on the EX2 rear panel to "NORMAL". If bass bins are used (this requires additional amplifiers), set the switch to "SUB-BASS" and drive the bass amplifiers from the sub-bass output jack. In this position, the EX2 functions as an electronic 120Hz crossover with mono bass output. If the bass amplifiers do not have 'input link' sockets or switches, it will be necessary to make up a 'one into two' jack lead to parallel the amplifier inputs when using more than one channel to drive bass bins.

The EX2 and amplifiers should preferably be mounted in a rack or flightcase for protection, in which case these interconnections can remain permanently made.

## SPEAKER LEADS

The amplifiers should be connected to the loudspeakers with good quality 2-core cable of at least 1mm gauge. To keep cable losses to a maximum of 10%, cable lengths should not exceed the following:

Cable size	1 x CX2	2 x linked CX2
1.0mm <sup>2</sup>	20 metres	10 metres
1.5mm <sup>2</sup>	30 metres	15 metres
2.5mm <sup>2</sup>	50 metres	25 metres

For best results, or in cases of doubt, use the next largest size.

When specifying cable for speaker leads, ensure that the proposed cable type is thin enough to fit into XLR plugs. Note that normal 2.5mm<sup>2</sup> twin core cable will not fit most connectors, but special "coaxial loudspeaker cable" is suitable.

The rear panel of a CX or BX is fitted with parallel male and female XLR sockets. Standard professional practice is to use the female (holes) socket as the input, and the male (pins) socket to link out to a slave cabinet if required.

The XLR wiring is:

Pin 1 = Cold = black or blue wire from amplifier BLACK terminal

Pin 2 = Hot = red or brown wire from amplifier RED terminal

Pin 3 = Not connected

Note that pin numbers on an XLR plug are always marked, reducing the probability of wiring errors.

## PHASING

When using two or more loudspeakers it is essential that they operate in phase. The cone should move forward if a positive voltage is applied to pin 2, and this may easily be checked with a 1.5 volt battery. Two loudspeakers close together and driven in opposite phase will produce almost complete cancellation of low frequencies. When speakers are spaced apart, a check for correct phasing can be made by standing midway between them and reversing one of the connections whilst listening to a mono signal. Correct phasing will produce maximum bass, whilst incorrect phasing will sound generally horrible.

When using additional bass cabinets, it is particularly important to ensure that all phasing in the system is correct.

## POSITIONING

For best results, CX2 speakers should be placed above audience head height to enable them to throw sound to the back of a room. In permanent installations they may be suspended from a ceiling or mounted on a wall. For portable use, stands are recommended. Positioning of BX2 bins is less critical although for best results they should be close to the CX cabinets. In discotheque applications, BX2's may be placed around the dance floor to provide impressive deep bass.

## POWER HANDLING

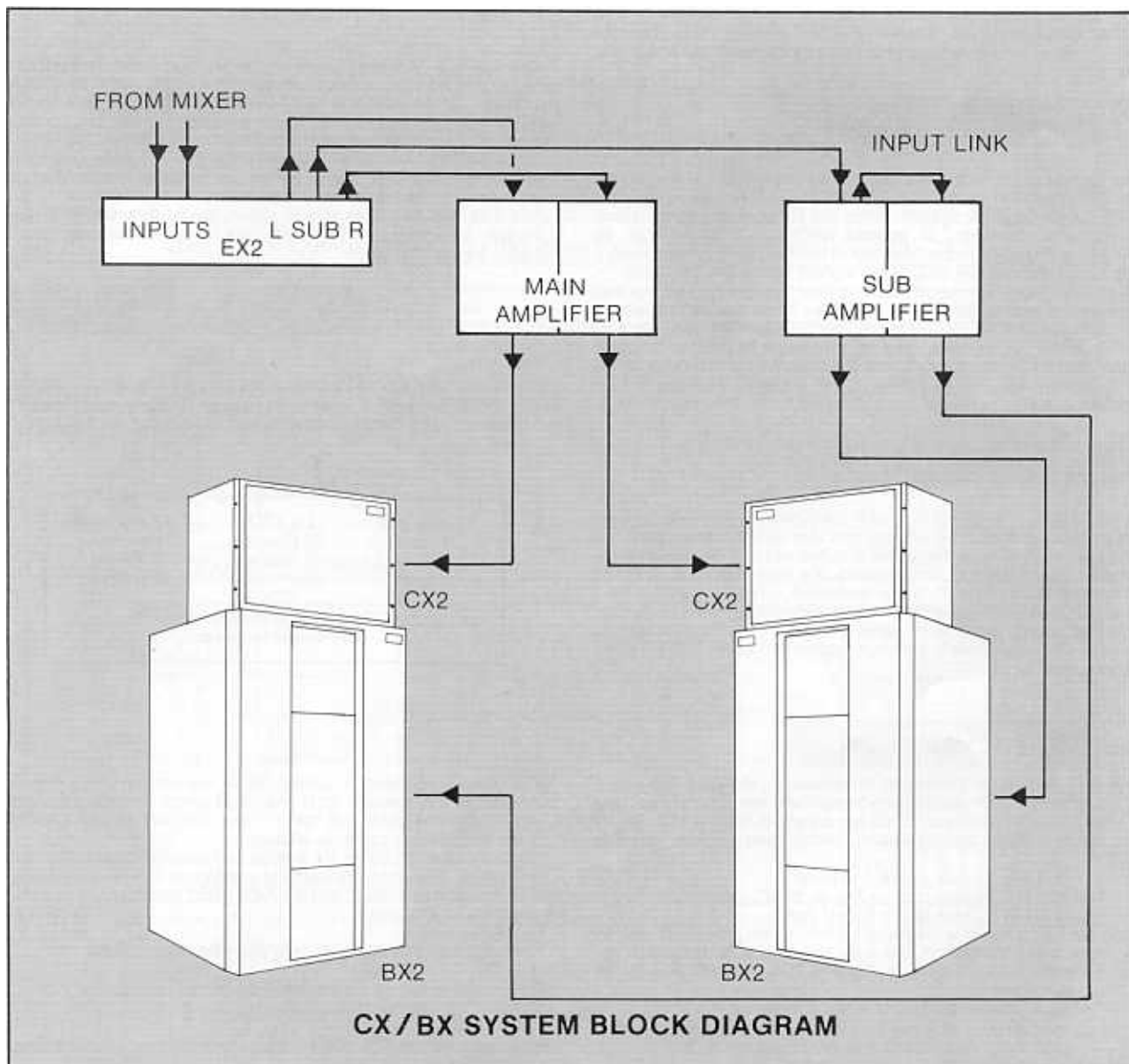
The CX can be safely driven with typical music programme by amplifiers rated from 100 to 250 watts average continuous power into 8 ohms. However, care should be taken to avoid sustained clipping (overdrive) of the power amplifier which generates gross, and readily audible, distortion. This results in a massive increase in the amount of high-frequency power fed to the system, with a consequent risk of burning out the HF drive unit. This is most likely to occur when an amplifier which is too small is overdriven in an attempt to gain more volume than it is capable of supplying. Such misuse is not covered by the warranty. Amplifiers should never be driven beyond the point at which audible distortion occurs.

Therefore, although we recommend 200 watt amplifiers, smaller amplifiers may prove entirely satisfactory provided they are not driven into continuous clipping. With intelligent use, larger amplifiers will provide very high quality sound due to increased headroom - especially where compact disc material is used in a discotheque. Note that if the CX is used without the EX2 equaliser, low frequency power handling will be reduced.

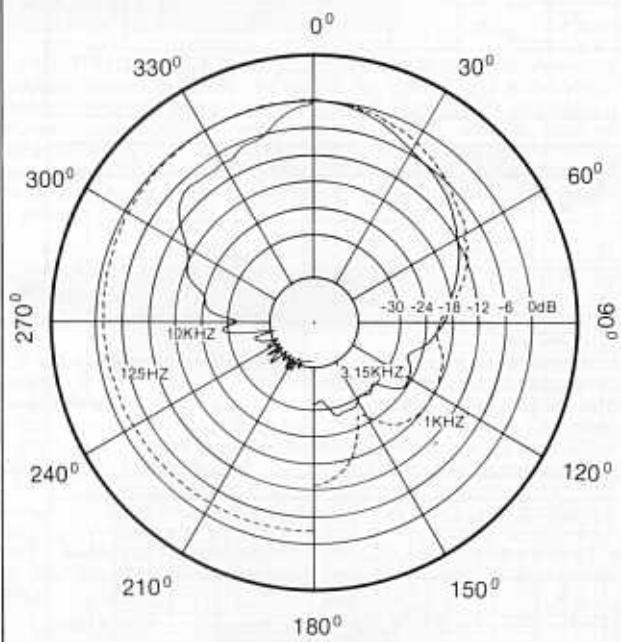
## SERVICE

All MARTIN products are designed for quick and easy servicing should the need arise.

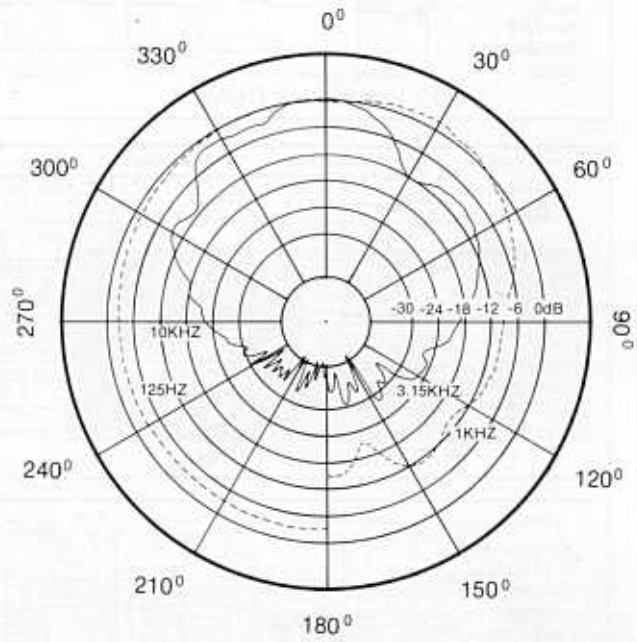
In the event of damage or malfunction, units should be returned for service to the dealer from whom they were purchased. In cases of difficulty, contact the Service Department at MARTIN AUDIO.



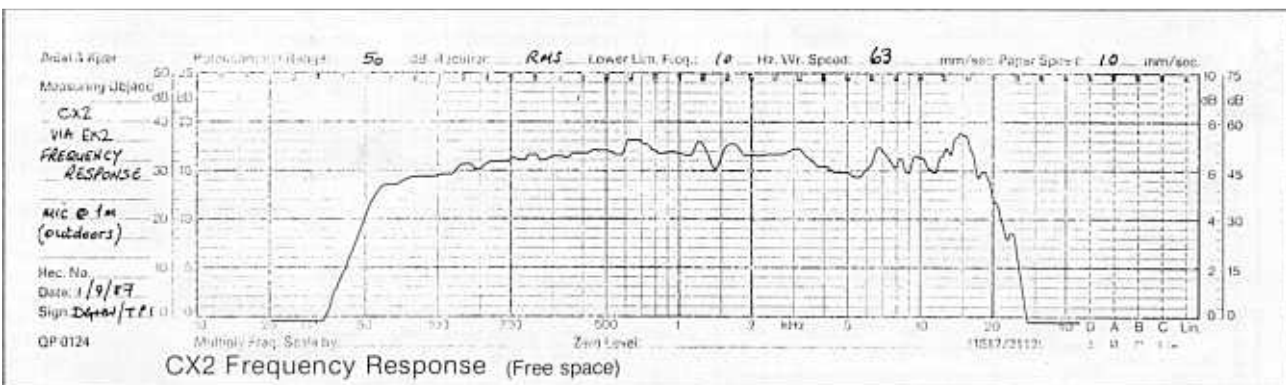
## CX2 POLAR RESPONSE



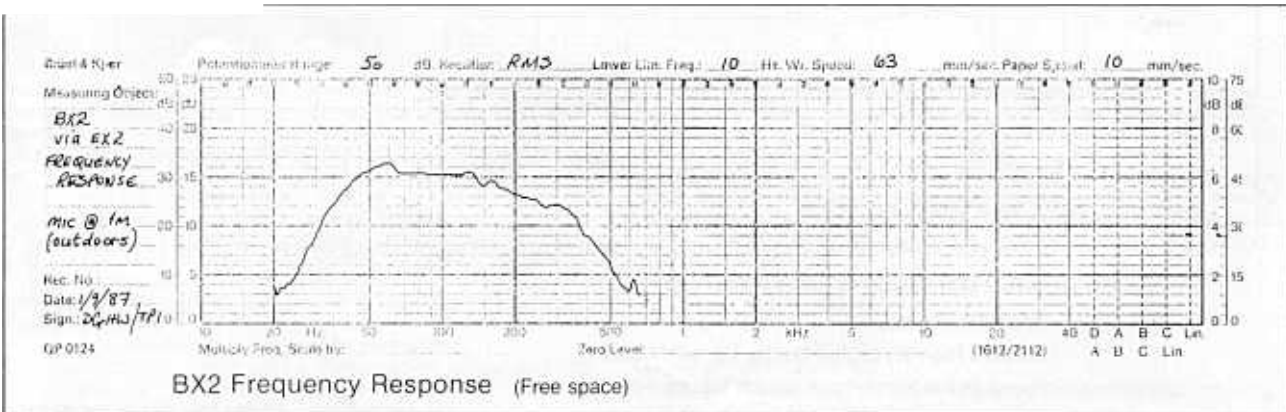
HORIZONTAL



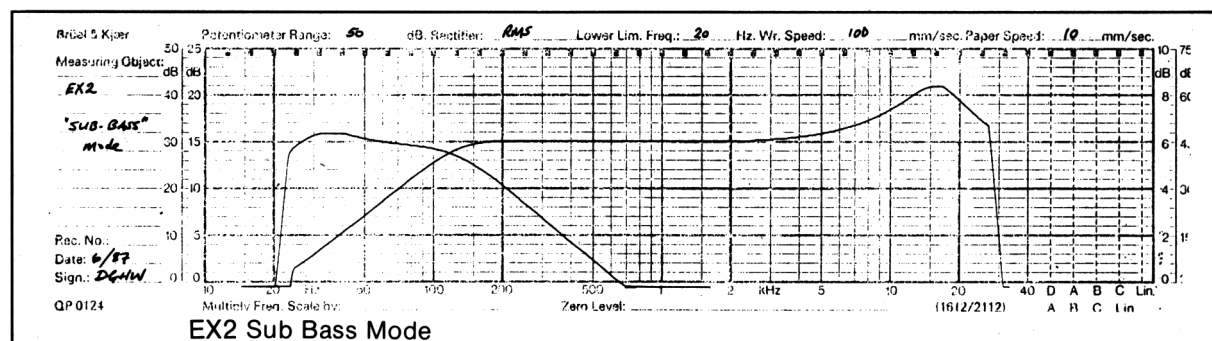
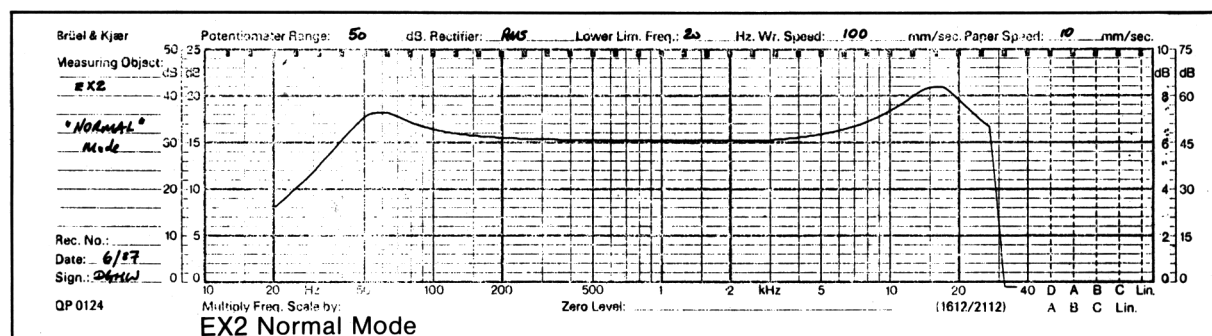
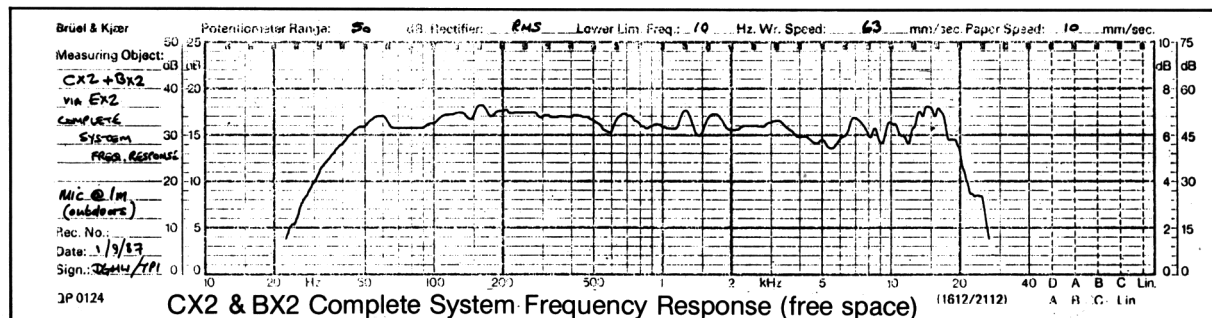
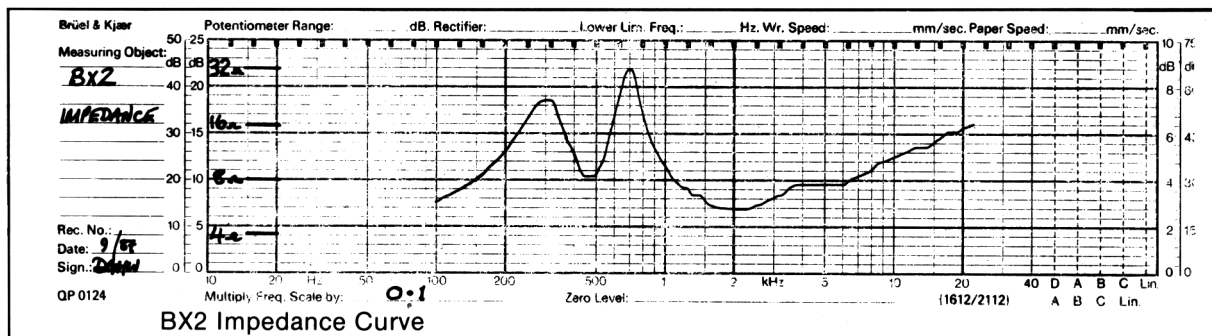
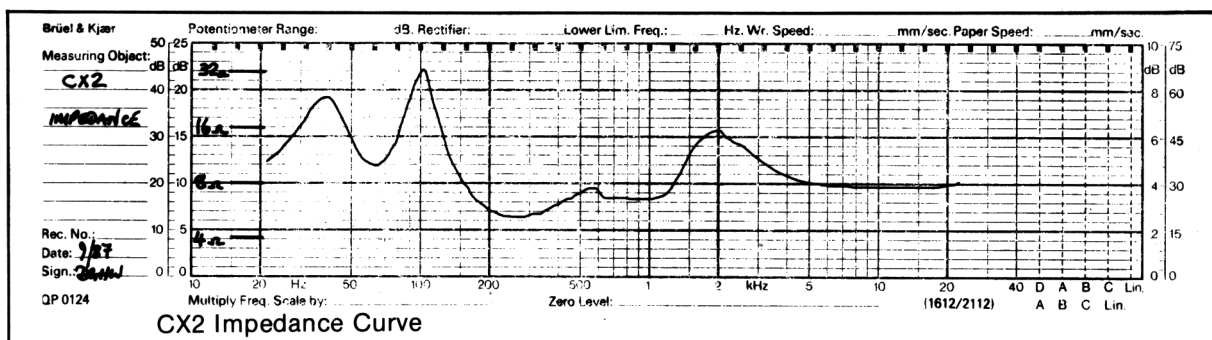
VERTICAL



CX2 Frequency Response (Free space)



BX2 Frequency Response (Free space)



MARTIN AUDIO reserve the right to change specifications without notice in accordance with our policy of continuous improvement.

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