

MERIDIAN'S MATCHED BOXES

Meridian's spectacular new player reviewed by Martin Colloms

A NEW CD PLAYER FROM MERIDIAN IS A MATTER OF some importance. This company has established a good track record in terms of audio electronics performance, and its expertise has been further demonstrated in the Compact Disc field. Indeed the now-discontinued Pro-MCD remains in the reference listing as one of the top few best-sounding players to date. The MCD and Pro-MCD were developed from the original Philips CD100 top loading player and offered the same limited operating facilities. By 1986, these models were looking rather old fashioned, given the wide range of functions present on the imported competition, these including fast track access and remote control. The value of such features remains a matter of opinion, as the basic record player facilities of play, cue and auto-stop are sufficient for most of the time. But the CD purchaser has come to regard such features as the norm, and admittedly, they do add to the appeal of the CD medium as a whole; in particular, a remote control with a volume setting ability may not be essential but is convenient.

In the design of the new 207, Meridian have sought to address these requirements and counter any reservations concerning the operation and use of the MCD series. Seeing the player for the first time, one is struck by the elegant and unconventional design. The control panel and display is highly legible, and there is evidence of skilled use of materials, with superbly finished alloy box sections having tinted plate glass fascias. Although the design is unlike any other CD player, one quickly becomes accustomed to its operation. The 207 is a two-box player, and with the units placed side by the side the overall dimensions are little greater than those of a conventional mid-sized player, though it is higher than most; the two may also be stacked if desired. On the right in our picture, the CD player unit (designated 'A') has a plain glass front and panel front and this whole front section comprises the movable front for the motorised disc loading tray. Press the open/close button and the tray slides out on stainless steel runners, revealing the established die-cast chassis Philips disc transport. Thus top loading becomes front- or drawer-loading.

Inside the second box ('B') are the main electronics, both digital and analogue. The control buttons are transparent bars, which are illuminated from within at the appropriate times, and differentiated by colour. At top left are 'Open' (close) and 'Play', while a second pressure on 'Play' advances the head to the next track. 'Stop' also has two modes; the second function, 'Repeat' is accessed by using the 'Alternate' button; in fact, most of the control buttons have a second function which is obtained by first pressing 'Alternate'. For example, the right-hand group provides 'the more fluent operator' (as Meridian put it) with a direct numeric track entry mode, using 'Alternate' as a 'shift key'. One complication is the need for a two-digit entry, so that tracks 1 to 9 must be entered as 01, 02 etc. Though this does not take very long to learn, in order to play, for example track 6, you must press 'Alternate', 0, 6, 'Play', which is somewhat removed from the direct entry mode of a Sony 502, for example, where you simply hit the number button and you're away.

Continuing with the array, we come to 'Pause' (1), 'Next' (2), 'Fast Forward' (3), 'Line' (4), 'Louder' (5), 'Softer' (0), 'Store programme'

(6), 'Display', 'Alternate' and finally, 'Standby'. This listing of controls reveals two very important features, namely the electronic volume control and a basic preamplifier switching facility for line, tape and, of course, CD. If the tape input is not required it can double as a second line input; these are to 0.5V sensitivity, suited to tuner or a 'conditioned' analogue disc signal, ie, one which has been equalised and brought to line level in an auxiliary unit such as the Linn 'Linck', the Sondex equaliser or any spare preamplifier of sufficient quality. Thus the 207 constitutes a line preamplifier with remote volume control, an interesting product in its own right, and it offers more than a hint of the 201 full preamplifier.

It should be borne in mind that while the 207 may be readily used as a normal CD player, including operation at the industry fixed standard output level of 2V, its ultimate application is in fact far wider in the context of the Meridian line. Consider the company's established active loudspeakers. They may be joined directly to the 207, without an intervening control preamp or for that matter a power amplifier, since the latter is built into the speakers. The 201 preamp and anticipated 204 combined FM tuner and time switch, are system components which may be interlinked on a control

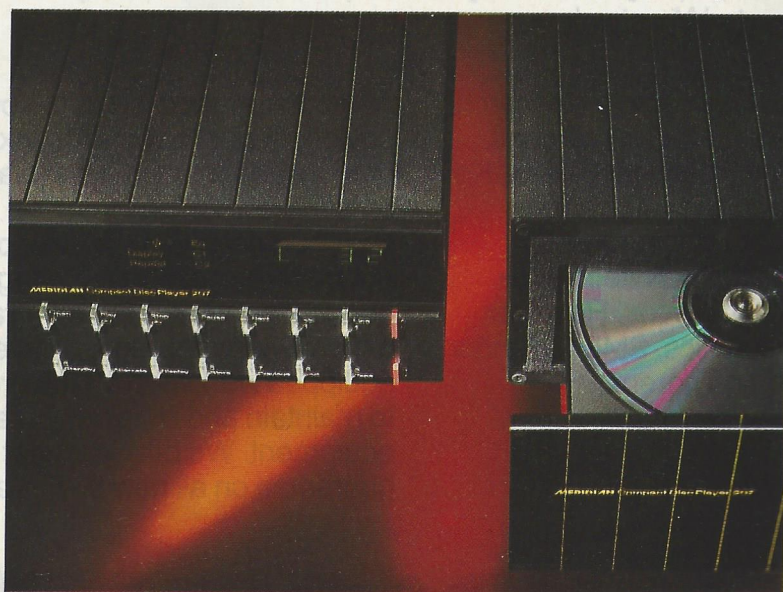
communications bus, allowing them to read each other's operating state and to exchange data and programme.

A sophisticated system remote control may be added; this is the 209, which has some conceptual similarities with the B&O 5000 audio system. All components may be controlled from a single 209, and a brief survey of its button array tells us about many of the features of the forthcoming system. Sources may be selected from CD, radio, LP, video, line and tape 1, 2 and 3. The usual CD control facilities are present, these including a number array for track entry and an absolute phase invert mode (on CD only). On tuner, remote station programme selection and programming is possible.

Ultimately the Meridian system will allow upwards expansion to the distribution and control of programme to a number of rooms, equipped with active speakers of appropriate size and cost. A neat enhancement is the provision for the central installation to feed different programmes or different sound sources to different rooms, under remote control.

Returning to the 207 player, most of the controls are self-explanatory. The memory allows for up to 30 programmed tracks in any order including repeats. A fast track-cancel mode is also possible whereby one or two undesired tracks can be deleted from the disc sequence. Phase invert is available on the front panel by keying 'Alternate-Open', signed as 'Ø' (the symbol for phase). The 'Display' switch exchanges the track number display for elapsed time while 'Alternate-Display' selects the specific track time as it elapses and also gives the remaining time available on the disc. Normally the display is static at the track number, avoiding distracting number-cycling during play.

Completing the front panel lineup are six LED indicators: these sign phase invert; whether the disc is pre-emphasised (labelled 'eq'); display mode; repeat mode; and finally the error rate on the disc played, classed as C1 and C2. These are really for checking purposes only and are run at a low illumination. In subdued lighting, their



their momentary flashing shows the corrected error rate (C1), and the interpolation or 'cover up' error rate (C2), this very rarely operative except in cases of serious disc damage. It may be used for assessment of dirty, damaged or sub-standard discs.

When the power volume control is used, the display changes to 'L' (for level) plus a two digit number running from 1 to 64. The volume moves in unit steps of around 1.3dB; 64 is full up and 1 is fully down, though not quite off. On switching, the unit resets at an intermediate setting of '32' or -40dB of partial muting.

The rear panels are also worthy of note. The two boxes are coupled by computer-grade multi-way 'D' connector cable. Mains power enters the CD 207 'A' unit via a detachable IEC connector with an adjacent main on-off switch (normally left

permanently on with the machine resting in standby mode). A second rocker switch can release the 207 ground in circumstances where it is already grounded via connection to other system components. The 207 'B' processor has an array of 10 phono sockets, for tape in, line in, fixed output, tape output and variable output. Two circular multi-pin sockets are also present, one of these labelled '200/comms' (for system communications) and the other being an RS232 (the computer interface control standard). Finally, there is a volume-controlled headphone outlet (the miniature 3.5mm Walkman type).

Meridian's specs describe a player of nominally 16-bit resolution with distortion better than 0.004% at full level, and noise 90dB down, these values being largely academic. The 0.5V line input sensitivity will provide up to 9V output with a gain of nearly $\times 10$ or 18dB.

Technical details

This is a Philips-technology 4 $\times$ oversampled player using the same double 14-bit D/A converters as the Pro-MCD. This well-tested arrangement provides virtually 16-bit resolution via the two techniques of oversampling and digital noise shaping, and is still used in certain other noted players, such as the California Audio Labs' Tempest valve design and the Sonographe.

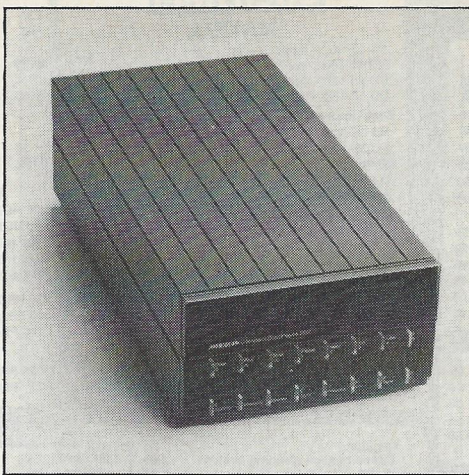
The player mechanism box is a sturdy non-resonant structure, with mechanical isolation provided between the case and the cast laser transport. When closed, the glass front seals the enclosure, thus excluding external acoustic excitation: acoustic vibration of the CD is known to increase error rates. The power supply is included in this unit, to reduce the hum breakthrough into the second box, which contains the processor and analogue electronics. A horizontal metal screen separates the analogue circuits from the digital.

Considerable care has been taken over the execution of the signal section and power supply, to ensure the lowest error rates as well as maximum sound quality, especially with respect to the solid state input switches and the volume control. The stability of the reference quartz oscillator has also been subject to considerable attention to improve the high frequency linearity.

Lab report

These results for the CD sections were obtained in the main via the fixed output, which was to the standard 2V maximum at full modulation. The 207 showed a very competent CD performance; for example, channel balance was typically within one hundredth of a dB, with channel separation exceeding 100dB, mid-band, and a zero interchannel phase difference resulting from the separate converters. The still high figure of 78dB for separation at 20kHz was an average for the two channels, and some imbalance was noted here as between left and right on left.

At full level, harmonic distortion was fine if a little higher than usual in the midrange, this offset by a better than usual result at 20kHz. The distortion was satisfactory at lower modulation levels and showed some channel imbalance at the -80dB level. Machines in perfect alignment can achieve -24 to -26dB distortion at -80dB, while the 207 measured -22.8 left and -16.5 right, which was somewhat below par. A good result was obtained for the full high frequency intermodulation, and strangely this was no better, though



still more than satisfactory, at the -10dB recorded level. The -85dB measured does not, on paper at least, look quite as good as the -90dB possible from a current Philips deck.

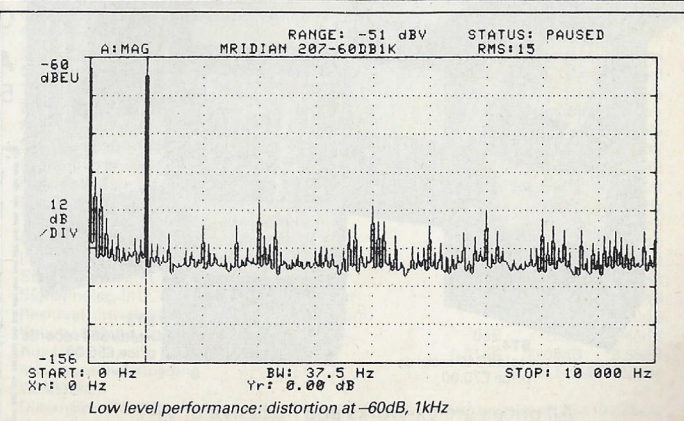
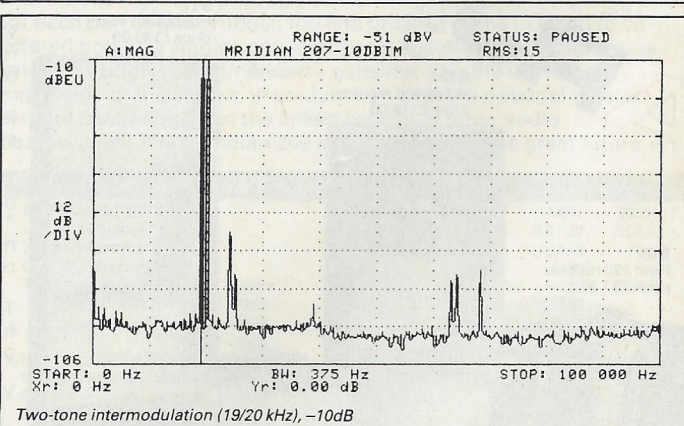
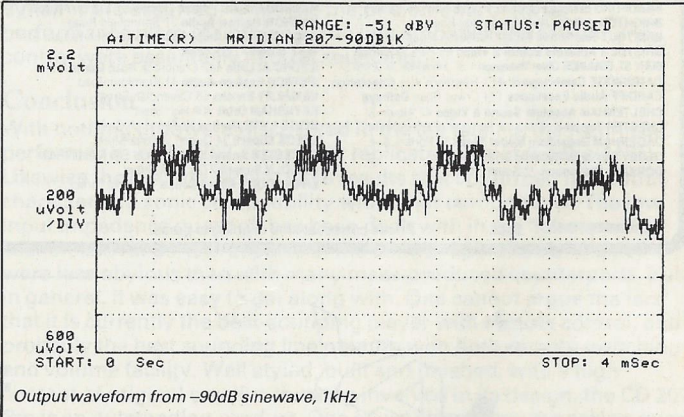
Frequency response was in fact typical of the original Philips series, but with the addition of a very slight rolloff above 1kHz. The 0.5dB average rolloff seen was minor, approaching -1.5dB at the 20kHz limit (the variable output added a further typical loss of 0.4dB from 14kHz to 20kHz); it would be fair to say that the response was gently shaded in the direction of increased tonal sweetness. Within these defined bands, the de-emphasis correction was fine.

Signal/noise ratios were fine, in the range 95 to 99dB, regardless of test condition or weighting. The level error at the -90dB modulation level was moderate, the player

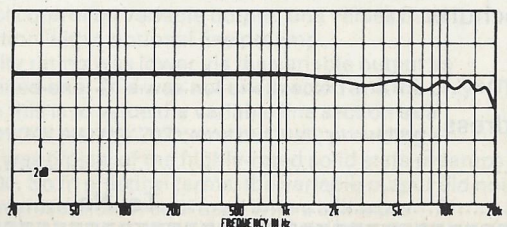
showing a mild expansion here of typically 3dB. Taken overall, the resolution closely approached the claimed 15½ bit level, which is little different from the majority of so called 'true 16-bit machines'.

The computer test graphs provided some useful data. For example, the impulse response showed a classic result with a near linear phase characteristic, non-inverting (except when switch-selected for inversion). Some players still spring surprises; the CAL Tempest, for example, is inverting, which might just confuse some listening comparisons.

Spuriae were generally low, as the -20dB 1kHz analysis showed. The 44kHz material was around -90dB, with little rubbish seen in the



MERIDIAN 207
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audible band. At -60dB , 1kHz , the harmonic products were evenly distributed at -45dB or less, showing good resolution. This was further supported by the waveform of a 1kHz tone recorded at -90dB modulation, this at the frontier of the CD dynamic window. Here the Meridian made a better job of resolving the sinewave than most.

As to other details, the mechanical transport noise was very low though our sample did emit a mild drone from its toroidal mains transformer. Good resistance to shock and vibration was shown and the error correction was very fine, this deck easily coping with the worst levels of error band on the test disc.

Turning to the line preamplifier section, basic checks revealed a good low range response to 1Hz -0.5dB but with a slight rolloff in the treble, -0.5dB at 18.5kHz . The -3dB point was at a sensible 45kHz , so this loss is likely to be consequential in practice. The 'power' volume control showed a graded function to achieve a normal feel for loudness variation. A setting of '48' on CD gave a level equivalent to the 2V fixed output. Raising the control function further allowed drive beyond clip, to take account of a recorded modulation variation and the maximum output was a substantial 9V from a low source impedance of 19ohms .

For an IHF 0.5V output, the line input sensitivity was 52.5mV , which was sufficient for the majority of line sources. The line gain was thus close to 20dB or $\times 10$. The input overload margin was not as high as with many other preamps that have a direct input volume control. Referred to 0.5V , the overload level was 17dB , or around 3.5V . Just conceivably, the full output of one or two unusual sources could clip it; eg, the 4V output of the Cambridge CD1 CD player.

Signal/noise ratios were excellent, and easily to the brilliant CD source standard. The measured distortions, both harmonic and intermodulation, were negligible. The channel separation results were outstanding for a preamp, and channel balance was also very good, holding within 0.56dB even at the -60dB setting, which is equivalent to a very low volume level.

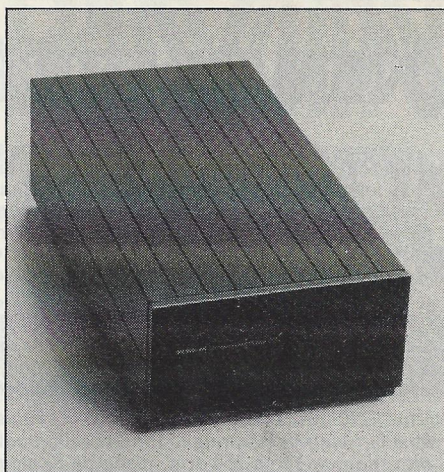
It should be noted that the line input impedance was rather low, being quoted at 10k and in fact measuring a typical 8.7k-ohms , this slightly dependent on the gain setting. While few solid state sources would object to this loading, it is still a significant factor. For example, Yamaha CD players have shown output impedances of up to 1k-ohm ; if the 207 were used as a comparator, the input loading would attenuate the Yamaha's output level by over a dB; an audible difference which would complicate comparisons. If a CAL player were involved, its 5k output impedance would produce a loss of a couple of dB at 20Hz ; several other players also showed a restricted bass response into low impedance loads. Most valve preamps would find the loading unwelcome and prefer 30k-ohms or more; the Counterpoint SA7 tape output would not survive it at all. The standard here is 100k-ohm . In practice this should not prove a serious problem, but it should be borne in mind when contemplating purchase. To sum up, the CD and preamp performances were both fine but some basic care needs to be taken when interfacing the preamp with other equipment; the technical performance of the preamp suggested that it imposed no significant impairment of the CD capability.

It should be noted that due to the late arrival of this machine with respect to deadlines, we have had to assess a pre-production prototype. We trust that Meridian will equal or better this performance in full production.

Sound quality

Given the price, the remote control and the line preamplifier, it would have been sufficient for Meridian simply to have replicated the performance of the Pro-MCD but in fact they have achieved rather more. The sound quality assessment was undoubtedly complicated by the presence of the preamp section. If the latter is included in the assessment of the CD sound, it must be done on the understanding that under optimal conditions, no further preamp is required between it and the power amp or active speakers. Thus, when assessing the level controlled variable output, one values the CD quality in conjunction with a notional line preamp.

The sound quality rating was lower via the variable output as compared to the fixed one. This was not unexpected and the only clear way through this is to value the variable line section as a separate entity. On this test the 207 came out well, providing a performance that was typical of the highly-rated solid state preamps costing up to $\pounds 1000$. So in practical terms, the variable output did not represent a compromise. However, if used with a still more expensive, high performance system, where the preamp facilities



would be inappropriate, the CD fixed output provides the maximum performance.

In absolute terms, the performance via the variable output significantly exceeded that of the Pro-MCD; a margin that was further increased by a similar proportion when compared with the fixed output signal. This places the 207 'fixed output' in the territory of current $\pounds 1000$ to $\pounds 2000$ references. The 207 was assessed with the benefit of the following decks for comparative reference; the CAL Tempest, the Cambridge CD1, the Sonographe, the Pro-MCD, the Nakamichi OMS7 and the Mission PCM 7000. It is interesting to note that these machines are all Philips-based.

First impressions were of a quick lively quality achieved without harshness or glare. The mid tonal quality was particularly natural, hinting at that of the FET and tube

designs, while a first-rate level of detail resolution was also achieved. Stereo focus was sharp and stable, with good perspectives and depth layering. A marginal loss of ultimate depth was perceived, but this was only detectable via a costly playback system. The bass was also a strong area, particularly crisp and articulate at low frequencies.

Stereo sound stages were not quite as wide as with the best examples, but were nonetheless very close. A minor weakness was noted; the upper range of the treble showed a trace of added 'zing', noticeable on orchestral brass and this gave an impression of more 'bite' than expected. A mild loss of air and sparkle was also evident in the high treble. Via the variable output, some modest loss of air and dynamic life occurred, while the major elements of its CD performance were maintained. The line amplifier and the volume control were essentially neutral sounding.

Conclusion

With nothing untoward discovered in the lab testing, the technical performance of the 207 essentially replicated that of the Pro-MCD. Likewise the preamp facility gave results that confirmed its neutral character and sonic compatibility with other components. The low input impedance question has been dealt with in the 'lab report' section above. Certain aspects of the control operation of the 207 were less obvious than with many mass-produced counterparts, but in general, it was easy to get along with. One cannot argue the fact that it is currently the best-sounding player with remote control, and probably the best sounding line preamp with both remote switching and volume facility. Well styled, built and finished, with a high content of original creative thinking involved in its design, the CD 207 Pro is an outstanding product. One could almost pay the asking price for each part of this product, the line preamp or the CD, and to be offered both in a single convenient package indicates a high value rating. Strongly recommended—consider also the upwards expansion of the system in conjunction with the optional master remote control unit and the linked control of other audio components. The Meridian 200 series looks set for a great future. -

Test results: Meridian 207 CD Player

CD PLAYER SECTION			
Channel balance	0.01dB	0.01dB	0.06dB
Stereo separation	-120dB	-102dB	-78dB
Channel phase difference	0°	0°	0°
Total harmonic distortion, 0dB	-91.2dB	-84.3dB	-85.1dB
-10dB	—	-82.4dB	—
-60dB	—	-43.8dB	—
-80dB	—	-19.7dB	—
Intermodulation, 19kHz/20kHz, 0dB			-86.2dB
Intermodulation, 19kHz/20kHz, -10dB			-86.3dB
Frequency response, left channel		+0.07dB	-1.53dB
Frequency response, right channel		+0.07dB	-1.48dB
Signal/noise, no emphasis, 20Hz-20kHz unweighted			-95dB
Signal/noise, no emphasis, CCIR/ARM, 1kHz ref			-93dB
Output level, 0dB		fixed, 2.09V; variable, up to 9V	
Output impedance		fixed output, 58ohms; variable, 19ohms	
De-emphasis			correct
Track access time			4.0secs
Error correction capability		gap: >900µm, dot: >800µm	
Mechanical noise			very low
Spurious up to 100kHz			-87.6dB
Resolution at -90dB, left/right			-2.02dB/+4.62dB
Headphone socket			yes (variable output)
PREAMPLIFIER SECTION			
Total harmonic distortion, aux input	20Hz	1kHz	20kHz
Intermodulation, 19/20kHz, aux input	-97dB	-100dB	-82dB
Input overload, aux/CD input			-86dB
Stereo separation, aux input	16.1dB	16.9dB	17.4dB
Signal/noise, (IHF, CCIR weighted), aux input	123dB	101dB	74dB
Residual, unweighted (vol control at minimum)			-89dB
Volume/balance tracking		0dB	-20dB
Aux input		0.01dB	0.08dB
Input sensitivity/loading			52.5mV/8k-ohms
-60dB			-60dB
0.08dB			0.56dB
GENERAL			
Dimensions (WHD)			two units each 16×10×38cm
Typical price inc VAT			£850 (209 remote £69 extra)