

MERIDIAN CDR

£4500

With a prohibitive price tag and debate raging over the lavish claims made for its recording capabilities, Keith Howard asks if Meridian are courting controversy with their CD-R. Overleaf, Alvin Gold gives his own verdict

This is proving to be an unprecedentedly fertile year for new, recordable digital sources. Compact Disc Recordable is already among us, Philips' Digital Compact Cassette is promised in September and Sony's Mini Disc in November.

Of the three, the odd one out is CD-R. DCC and MD are data-reduced systems which claim to be the natural successor to compact cassette, while CD-R is an unsullied 16-bit medium forced by price to lay claim to a different market niche. The Meridian CD Recorder will cost you £4500, and each blank CD-R disc retails at around £23. Prices will reduce, we are assured, when second-generation CD recorders become available and more blank disc manufacturers enter the market. Currently, CD-R is way too expensive to appeal to anyone but audio professionals and a few well-heeled audiophiles.

Which explains why a spotlight is being shone on CD-R's sound quality: for without a clear advantage its sales pitch begins to look weak. CD-R's natural advantages over tape – that it offers a disc system's rapid access time and lack of wear – are of real benefit to professional users, for whom time is money and archiving a constant headache. For the rest of us, a price tag seven times that of a mid-market DAT recorder looks, without a sound quality pay-off, to be a startling example of diminishing returns. This becomes more apparent when you consider that a blank D60 DAT cassette costs around £9 and can be erased and re-recorded at will, whereas a CD-R can be recorded only once.

Meridian's stance on the crucial issue of

CD-R sound quality could hardly be more forthright, nor more controversial. Not content with the claim that CD-R is capable of error-free copies, Bob Stuart (the company's respected designer), goes a surprising step further, claiming that the copy sounds not merely as good as, but – given the current transport technology – better than the original. Nor is he the only one to say so.

Audiophile has already made two attempts to confirm this claim in blind listening tests,

“THE KEY POINT ABOUT CD-R IS THAT THE COPIES IT MAKES ARE CLOSE TO THE ORIGINAL, DAMN CLOSE”

both of them unsuccessful. A third test, the results of which I will go into later, was organised to accompany this review in an attempt to settle the matter once and for all, using Meridian's own machine. Before that, however, I will interrupt the narrative with a brief description of the Meridian machine and what it is like to use.

The Meridian CD Recorder does not share the distinctive appearance of other Meridian products, because in this first-generation recorder much of the Philips donor machine has had to be retained. But if Allan Boothroyd was unable to work

Facia (bottom left) is identical to the Philips original. Recording level meter only operates when making analogue recordings – no level need be set for digital recordings



his magic on its exoskeleton, Bob Stuart was able to tinker with its innards. The Meridian CD Recorder is more than mere badge engineering.

To describe in detail how to operate the recorder would be pointless, there is a comprehensive instruction manual which does that. Suffice to say, recording is actually a doddle, particularly from a digital signal source since there is then no recording level to set. Analogue recording is barely more difficult.





Although the machine will, in addition to recording CD-Rs, also play CDs and CD-Rs, it is not a top-notch replay source. As Meridian candidly admits, it falls short of the performance offered by the best CD players and transports. So that painful asking price does not save you the expense of a replay-only machine. For this review, I used a Kenwood DP-X9010 transport with Audiolab 8000DAC converter.

Now, back to the results of the blind test. Jonathan Kettle and George Entwistle were

the guinea pigs, given two presentations each (one the original, the other the CD-R recording), of six selected items ranging from Michael Hedges to CPE Bach. Both were confident they heard differences but had difficulty in deciding which of the two presentations was better.

Listening alone to the original and copy, knowing which was which and repeating the comparison as many times as I liked, I came to understand how it is that this frustratingly inconclusive result keeps arising. The dif-

ferences between original and copy are small: considerably smaller than those between a CD and DAT copy made in similar circumstances. However, the nature of the difference is open to interpretation. The CD-R copy sounds a mite smoother and better-organised than the original; the original, typically, is a little more dynamic but sometimes sounds harsher.

Without reference to the original master it is impossible to say which rendition is the more faithful. However, it is possible to

CDR is intended for pro and home use, as shown by the multiplicity of connection facilities



INSIDE MERIDIAN'S MEAN MACHINE

All first-generation CD-R recorders, whatever name they carry, are re-badged Philips machines. Some are little more than that; others, such as the Meridian CD Recorder, are subject to some significant modification.

The base machine arrives at Meridian tested and in full working order. Despite the company's proven expertise in refining converter circuitry, the on-board analogue-to-digital converter is left alone. It is already better, says Bob Stuart, than the ADC in most DAT machines; if users, in particular professionals, want a higher standard then they should be looking to an off-board ADC such as Meridian's own 607. There is just too much electrical noise within the recorder to match the performance available from a stand-alone converter.

Small alterations are made to the machine's operating logic and to the decoder circuitry to reduce jitter. The major changes made by Meridian, however, concern both the digital inputs and outputs. These are re-located on a small, black box attached to the back panel of the recorder, within which is contained proprietary Meridian circuitry mounted on a four-layer printed circuit board.

The Meridian recorder is intended for both professional and domestic use, a dual role which is clearly reflected in its revised input and output facilities. There are XLR sockets for AES/EBU, the 5volt/90-120ohm balanced electrical connection used professionally, and phono sockets for S/PDIF, the unbalanced domestic standard. Optical connections are also doubled-up in the form of an SMA link, for glass fibre-optical interconnection to the AT&T standard, and Toslink, the domestic light-pipe connection.

There is no switch to select between the different input standards; instead the machine assigns an order of priority to the inputs so that if the SMA link is operative, for example, it overrides any other.

All input signals, whatever their origin, are buffered and shaped before

being passed to the machine's standard input circuitry. This provides the phase locked loop with a clean signal, minimising jitter.

Output signals are also de-jittered, using a phase locked loop with a very long time constant. This markedly improves the recorder's sound quality on playback, although not to the extent that it can match the results obtainable from the very best replay-only transports. This, Bob Stuart maintains, is a consequence of the recorder's sled-type laser carriage, which cannot match the performance of Philip's swing-arm replay mechanism. In future years it may be possible to counteract this shortfall by the application of digital signal processing.

Once again with mixed professional and domestic use in mind, a switch is provided to select between professional and consumer channel status standards, this gets rid of the problems that can arise when professional and domestic equipment is interconnected. The music data is the same in both cases, but certain sub-code flags are not, which can give rise to operational difficulties.

One benefit of Meridian's close attention to this area, which will be of particular benefit to the professional user, is that a de-emphasis flag is correctly incorporated when monitoring a pre-emphasised digital input signal. On the standard recorder de-emphasis is not flagged during monitoring, so the monitored signal is subject to treble boost and sounds unnaturally bright and harsh.

Just like the first-generation Philips CD player, the first-generation CD recorder is, Stuart says, considerably over-engineered. Second-generation machines will be less so, and the use of large-scale integrated circuits will reduce cost and size. At that juncture it should become possible to squeeze a CD recorder into one of Meridian's usual, distinctive cases.

The majority of Meridian's tweaks are housed in a small box on the recorder's back panel

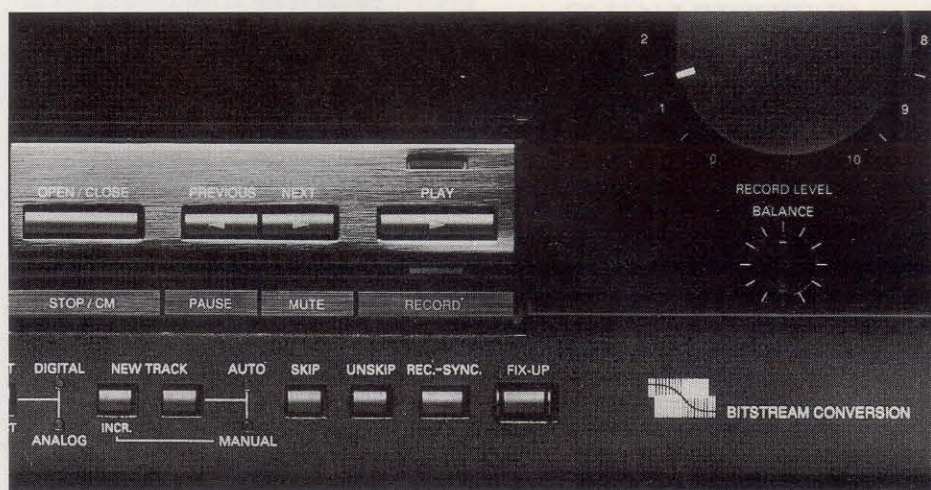


form a preference and mine, against the tide of current opinion, lies with the original. Somehow it offers an extra frisson, which I find missing from the copy. For example, the stirring opening bars of Mozart's *Coronation Mass*, had a power and presence on the original that was very slightly, but perceptibly, diluted on the CD-R.

The fact that other reviewers have reacted otherwise illustrates the point that these are subtle, and perhaps transport-dependent, differences. Therein lies the key point about CD-R: that the copies it makes are close to the original, damn close. Sufficiently so, if listening to a snippet of Hogwood's *Messiah* at the Meridian factory is anything to go by, for a CD-R copy of the master tape to actually sound better than the commercial CD release.

This inherently high fidelity – together with the everyday benefits of fast access time and longevity – will commend Compact Disc Recordable to professionals, whatever our deliberations over the minutiae of its sound quality, particularly to those who dislike DAT. The Meridian CD Recorder will appeal notably because of the obvious care taken to provide for professional requirements.

But for CD-R to become a viable domestic recording medium, of wide interest to readers of this magazine, blank discs and hardware prices will have to plummet. I found that the legacy of my exposure to CD-R is that I now daydream of all the LPs I would like to transcribe – only to be startled back to reality by the persistent sound of a cash register.



DATA

Price: £4500
Size: 420 mm x 137 mm x 347 mm
ADC: BitStream
Output: Optical digital output, std Toslink, std AT&T, phono sockets S/PDIF, SMA link, XLR sockets for AES/EBU

DESIGN

- ▶ On-board analogue-to-digital converters allow recording from analogue as well as digital sources
- ▶ Comprehensive input and output facilities allow trouble-free connection to domestic-standard and professional-standard digital ancillaries
- ▶ Machine will replay as well as record

PERFORMANCE

- ▶ Operation is simple, particularly when recording from a digital source
- ▶ Recordings are very close, but not identical, to original – opinions vary as to which sounds the better
- ▶ Track access is quick but replay sound quality does not match that of the best CD players and transports

2nd OPINION

As a playback machine, there is little or nothing to choose between the Meridian CDR and others I have used from Marantz and Micromega. The latter was not available for direct A-B's during this test, but the Marantz, which was, came off second best to the Meridian when playing ordinary CDs, though the differences were small and not uniformly identifiable.

As for their recording capabilities, the comparisons between the original CD and the CD-R copy follows much the same pattern with each of the CD-R recorders I have used to date. Meridian has adopted a non-standard version of the AT&T interface that I was unable to exploit in the time available. The replay system included Shahinian Obelisk loudspeakers, a Roksan amp and Xerxes turntable (with Artimez and Rosewood Black) and CD players from Pioneer, Rotel, Philips and Technics (the magnificent 1000 series reviewed last month). Distilling a mass of accumulated data, although CD-R recordings usually sounded detectably different from the original CDs when recording from Philips technology players, it was difficult to pin the differences down. Some ranking orders established during the tests were overturned

later when the tests were repeated. In most cases I did eventually form a consistent preference for the CD-R copy, though whether this was because the music was such as to make judgement easy or because the differences really were significant is largely a matter of interpretation. Only in one case, when dubbing a Vaughan Williams symphonic recording, did the original CD sound consistently and indisputably better.

CD-R recordings of LPs all sounded gratifyingly like the originals, subject to a suggestion of flattened stereo perspectives and reduced resolution in some cases. On the whole, the CD-R copies did not lose the special facility of my best records to conjure up the physical presence of the musicians.

Intriguingly however it was CD-R recordings made from CD players with non Philips based transports that showed the greatest differences, and here the comparison invariably favoured the CD-R. The fascinating result of all was to use the Technics with the reclocking circuit switched on and then off. When on, differences were obviously reduced, no doubt because the data was being reclocked to similar levels of residual jitter, but in the

unlocked state the CD-Rs again showed their customary edge.

Of the 16 or so tracks recorded on two CD-R discs, one of the most consistently revealing was from a CD recording of Messiaen's *Quartet for the End of Time* (Gruenberg/de Payer on EMI) in which the rich, resonant clarinet off CD-R had a vibrancy of tone and distinctness from fellow instruments that was in a class of its own, and that made this 20 year old analogue recording sound as though it was in the room. It's superiority was genuinely startling. In another dub, this time of Yello's *Habanera*, the strong rhythmic elements sounded more measured and even, and the mass of low level crowd and other noise was more coherently resolved from CD-R, again making listening more pleasurable and informative.

Conclusions? CDs and digital CD-R copies sound different, and moreover that CD-Rs broadly sound better. The differences are not always audible with specific items of replay hardware, especially those featuring Philips swing arm mechanism, or where the signal is reclocked to a high standard prior to D/A conversion, such as with the Technics 1000 series CD player. However big or small the advantage held by CD-R, however, it's lead was almost never actually overturned.

Alvin Gold

Right of Reply

Philips DSS930

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As Keith Howard suggests in his review, with the DSS930 we are introducing a whole new loudspeaker concept. By uniting advanced digital audio and speaker technologies, Philips has now created this digital speaker system.

In this system digital signal processing is used to optimise the acoustic performance in a way that is almost impossible with analogue technology. Other facets of the system are its sophisticated connection/control possibilities and the creation of future opportunities for improved sound quality.

At Philips we are working very hard to get this concept into a wider market because we know that it represents the future form of music reproduction.

We are very happy to hear that Alvin Gold enjoyed listening to the initial product and, like Alvin says, we think we are onto a winner.

M Vaartjes & G Christiaansen
Philips Loudspeakers, Belgium
☎ 081 689 2166

How Far Has CD Come?

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It is interesting to read about one man's reaction to four generations of one company's CD players.

That there are differences between all four is indisputable, that there are considerable differences between multi-bit and bitstream is inevitable. Others might prefer the CD-52SE for its much lower colouration, its

much better stereo imagery and its longterm listenability. But Alvin Gold is entitled to prefer the (perhaps) more robust sound of multi-bit. I would suggest that he looks to the CD-72SE for the *spiritual* successor to the 50SE.

Doug Randall
Marantz UK
☎ 0753 680868

Meridian CDR

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First let me thank you for your careful and positive review of the Meridian CDR. Both Keith Howard and Alvin Gold seem to have understood the balance we were trying to strike with this machine.

However, I would like to make my position a bit clearer on the subject of CDR sound quality.

Our measurements prove that the CDR is in fact an extremely robust digital

recording medium and unlike many others, is capable of returning error-free music. It is quite usual in our tests to find zero bit-errors in 60 minutes of recording.

It has, however, been clear since the early days of CDR that a digital copy sounds different from the original, when replayed on a top class CD replay system. On average I prefer the CDR – markedly so when the original is not a production CD but a DAT.

When we copy a production CD to CDR, what we end up with is not a superior recording in any objective sense, but a disc which is different for the CD player. This whole phenomenon tells us nothing about the CD recorder, but instead is very informative about transports and converters.

The fact that the sound is different can be traced to timing and jitter differences in the replayed recordings. We have made measurements that indicate jitter can be halved when playing certain material on the CDR disc.

The differences one might hear therefore, depend critically on the transport, the converter and on the overall resolving power of the system.

The important point in all of this is that the CDR is a true copy that retains, in the second and subsequent generations, all the musical information of the original. This can be clarified further in listening to material which has been passed

through the CDR medium, where no character is imposed by this carrier.

Given the accuracy of the recording, we are free to appreciate the real practical benefits of the CDR. Namely, that it is a *transparent*

medium with fast random access, which is robust and universally playable.

If you make a CD recording there are more than 150 million players capable of playing it with very high compatibility. These qualities simply do not apply to the current DAT technology.

By the way Keith, if you want to make LP recordings, we strongly recommend our 601DSP preamp!

Bob Stuart
Digital Gramophone and Wireless Ltd
☎ 0480 457339

Rega Brio

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We have no criticisms of this review. There are no factual errors, it shows care, thought and expertise and the product is examined within its real market.

We were also telephoned before the review was commenced to check on facts, and our opinions were reported accurately and in context.

If all reviews were conducted in this manner, without political bias, then Rega would be more willing to submit products for review.

Roy Gandy
☎ Rega Research Ltd
0702 333071

Pioneer PD-S801

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As Keith Howard has explained in his review, Legato Link Conversion is not so much 'revolutionary' as evolutionary. What Pioneer's R&D engineers have done is to take the technology employed in high end DACs - DACs which have been costing audiophiles upwards of £2000 - and made high end CD performance affordable to every aspiring audiophile by designing a dedicated chip.

18 months ago, I hung up my reviewer's hat to come to work for Pioneer GB because I was impressed with the company's approach to developing the A-400 amplifier. An amplifier which is so astonishingly capable it could easily be dressed up in a heavy duty case



**Philips
DSS930
speaker
system**