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Mastering Metals

Are Super Metals worth the extra cost over standard metal tapes? Noel Keywood tests five of the very best blank cassettes.

Sony's extravagant claims for their new Super Metal Master tape caught my attention. With DCC and MD sales stagnant, emphasis is returning to the cassette. Could a new super-metal like Sony Super Metal Master lift cassette performance up to a level approaching that of DCC and MD? Is this what we should look toward for the immediate future?

Whilst I was interested to see if Sony Tape, who have consistently turned out a good product, had produced something really special in Metal Master, in the back of my mind I was aware that it would most likely rival, but not significantly improve upon other premium metals, like TDK

MA-XG and Maxell Vertex.

Aware that even a normal metal tape like TDK MA at £2.75 or thereabouts looks severely expensive to most buyers, I decided to broaden this report to show how a 'cooking' metal like MA compares with Super Metals, to reveal what the £8 or so difference between them provides. But since only those with pockets deeper than the Mariana Trench will be enthralled, Maxell's rival to MA, Maxell MX, was included too, to see how effective it's become.

Conveniently, TDK have just reformulated and improved MA and the International Electrotechnical Commission (IEC) have just released a new standardised or benchmark metal

tape (IEC IV) to which cassette decks should, ideally, be factory adjusted. So there's plenty of activity in this field at present, but does it add up to much as far as the impecunious buyer in the street is concerned?

Modern metal tapes are, these days, superior to ferrics and chromes by a significant margin. In particular, they give clearer and better defined treble. Where early metals often sounded brittle and coarse, today's metals can provide sweet and especially smooth treble. In fact, they are beginning to pull ahead in all areas of performance; cassette decks are barely able to keep up. With a good deck though, from my own experiences with a Nakamichi ZX-9 and, of course, more metals than Rio Tinto Zinc, I can assure you that they really do give fine recordings. Similar results can be obtained with an affordable £500 Nakamichi DR-2.

Now back to the new Sony Metal Master.



SONY SUPER METAL MASTER

I used the new IEC IV Primary Reference Tape (manufactured for the IEC by TDK) and set bias to a level commonly found in commercial recorders (+4dB). This means the test results show what you would

experience if you recorded on Super Metal Master on a conventional cassette deck without first bias tuning to match it in.

Its frequency response has steeply rising treble, +4dB up at 20kHz. This is far too much treble to be acceptable, so a deck with adjustable

metal bias is a must. Otherwise, apart from excessive treble, Super Metal Master at this bias has high overload margins (MOLs and SATs), very low tape hiss and ultra-low modulation noise. So in essence it is a super tape, but it won't work properly on buggers recorders.

So you shouldn't use a tape like this without tuning it in to flatten treble - and here's where we sail into problems. Until a year or two ago, only Nakamichis had variable metal bias and even now, few decks have enough variation to cope with a tape whose properties are so extreme. So, chances are, you'll need a Nak. to use Sony Metal Master.

No problem, I hear you say, I have one/will buy one tomorrow. (Recession - what recession?) Bias will have to be increased to get response 'flat', but this also raises midband overload (MOL315) and lowers treble overload (SAT10k), changing overall tape performance. All the same, the advantages and drawbacks of Metal Master then become more

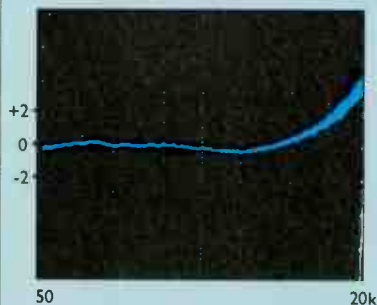
MEASURED PERFORMANCE

	SONY S.M.M.	TDK MA-XG	MAXELL VERTEX
Treble level (10kHz)	1.2	0.6	0.8
Overload			
mid-band (MOL315Hz)	5.2(7.5)	5(7)	6(7.2)
treble (SAT10k)	1.8(1.4)	1.5(1)	2.8(1.5)
Hiss	-59	-59	-58
Modulation noise	-59	-43	-48
Sensitivity	0	+0.5	+0.5
Dynamic range	64.2(66.5)	64(66)	64(65.2)

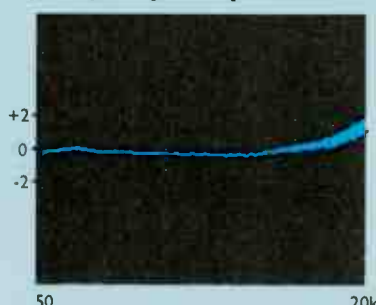
All figures are dB; high bias results in brackets.

Test notes: Recorder - Nakamichi ZX-9; IEC IV Primary Ref. tape - MJ507A; metal bias - +4dB (+5.6dB); hiss IEC A wtd.; Ref level - IEC 0dB; mod noise - band noise from 1kHz-3kHz stimulated by 3150Hz tone at 0dB. Tests substantially to IEC 94, made on Hewlett Packard 3561A FFT.

Frequency Response (standard bias)



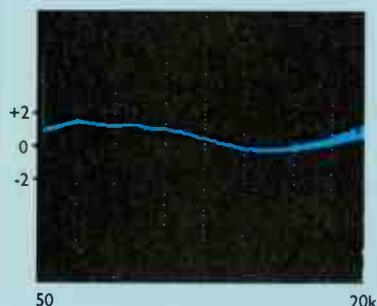
Sony Metal Master has strong treble lift that needs to be corrected with an adjustable bias control.



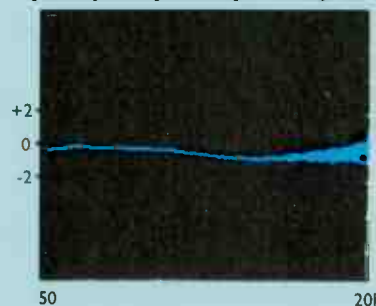
Less treble lift and flatter response makes both MA-XG (left) and Vertex (right) more compatible with a wider range of cassette decks.



Frequency Response (bias adjusted)



Even when bias is adjusted optionally, the Sony dual-layer tape gives a wonky response.



Increasing bias gives a flat response to both MA-XG (left) and Vertex (right).



obvious. Our analysis shows that, like many dual-layer tapes (remember ferri-chromes?), this one has a wonky frequency response, one with a dip in the middle, that cannot be made flat by bias tuning.

That's the major drawback of going for dual layers. The benefit is the highest overload level of any tape on the market - +7.5dB (MOL315). Combine this with super low hiss and modulation noise and you have a tape with the highest dynamic range, no less than 66.5dB (MOL315-hiss).

So Sony can justifiably claim Super Metal Master is the best - it beats everything - providing you don't mind its curvy response and the need for a super deck, like a Nakamichi.

The only other observation I ought to make is that it would be possible for Sony to provide a special Metal Master tape option on their top decks where appropriate bias and record equalisation (for flat frequency response) were manually switched in. This would greatly facilitate its use.



TDK MA-XG and MAXELL VERTEX

With MA-XG and Vertex, both TDK and Maxell have, respectively, shied away from producing a tape with a frequency response like Sony's Metal Master. In consequence, their

performances fall a little short, albeit by marginal amounts, but their compatibility is superior. Both offer a flat frequency response when tuned in (by increasing bias) and a similar dynamic range, 66dB with MA-XG and 65.2dB with Vertex. MA-XG has super low hiss (bias noise) but Vertex runs very smoothly, possessing super low modulation noise.

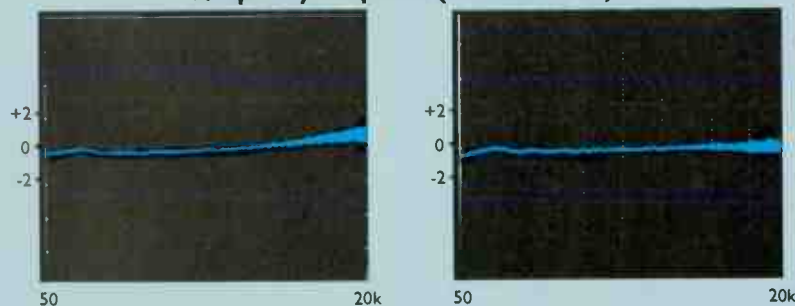
I have to say that from experience I find Vertex incredibly neutral, smooth and sweet sounding in the treble, on my ZX-9; it's my preference. TDK MA-XG is a little grainier and Metal Master tonally odd because of its non-flat frequency response. I tend to use Vertex with Dolby B (75dB dynamic range) or Dolby out, according to source quality, since noise reduction can compromise quality a little.



TEST RESULTS

	TDK MA	MAXELL MX
Treble level (10kHz)	0.6	0.1
Overload		
mid-band (MOL315Hz)	5.4	5.4
treble (SAT10k)	2.8	2
Hiss	-57.6	-58.2
Modulation noise	-42	-40
Sensitivity	0.5	0.5
Dynamic range	63	63.6

Frequency Response (standard bias)



Both MA (left) and MX (right) give a flat response making them compatible with a wide range of cassette decks. The lift in the treble will give MA a slightly brighter balance.

BUDGET METALS - TDK MA & MAXELL MX

But you probably don't want to spend so much on a blank tape. You don't really need to either, because new (reformulated) TDK MA - the market leader - and new (also reformulated) Maxell MX offer superb value and I'd recommend anyone to try them. Both are highly compatible in that they give a flat frequency response identical to that of the new IEC IV Primary Reference Tape. Tune them in and they'll sound tonally neutral.

Both also have very high overload margins at normal metal bias levels and both now have low hiss. TDK MA has a dynamic range of 63dB and Maxell MX 63.6dB, with MA possessing the slightly brighter sound. These tapes are really good value. They have 3dB less dynamic range than super metals, but around 3dB better dynamic range than most ferrics and chromes in the midband and around 9dB at 10kHz. It's an audible advantage and, for serious tapeists, possibly worth the extra

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