

# Sound Stage

KEN ISHIWATA

## HIFICRITIC THE AUDIO REVIEW MAGAZINE

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Our independence from product advertising allows us to criticise and comment without fear or favour. The HIFICRITIC team scrutinises interesting and internationally important issues and equipment in depth and detail, technically and subjectively, and provides comprehensive investigations into the key issues facing high quality stereo music recording and reproduction today.

*Martin Colloms, Publisher*

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*Each issue we give a leading industry figure a platform for their views on the state of hi-fi. After 41 years with Marantz, culminating in his role as Brand Ambassador, Ken Ishiwata has recently parted company with the brand, in a move that surprised fans of both the products and the man. But he's still thinking hi-fi – past, present and future...*

The term 'Hi-Fi' was first coined in 1947, the year I was born – how's that for a coincidence? It all started with mono LPs, stereo following in 1958, and the technology was all valves until solid state (or transistors) appeared. Initially, solid state couldn't compare with well-designed tube amplifiers, but step by step improvements were made, and the new technology became popular; speaker engineers changed their way of designing, as you could get more power easily; and manufacturing became easier and cheaper.

When Compact Disc appeared, the same thing happened; initially it wasn't to the same quality as good LP sound, and it took a long time to get to the level we know today. SACD and DVD Audio arrived at the turn of the century, and were of course much better than CD – unfortunately only SACD survives today.

In other words, all the major developments in hi-fi have been based on software evolutions: for example, the big step from mono to stereo LP required two amplifier channels and a pair of speakers, not to mention a stereo cartridge – in fact everything except the turntable motor unit had to change. But the rise of the transistor amp meant everyone could have a hi-fi system at home, which was lucky since as it coincided with amazing pop musicians like the Beatles, Rolling Stones and Elvis Presley. It certainly helped the hi-fi business!

Today we no longer need to worry about software formats: true, some still use CD/SACD and LP, but majority has shifted to digital format downloads, or streaming. And that's a big advantage for we product development engineers – we can alter file formats anyway we want! For example, that's what Marantz did with its latest digital conversion: every PCM signal fed into the system is converted to 1-bit DSD signal in a very unique way.

The majority of today's high resolution music is recorded at 192kHz/24 bit, against CD's 44.1kHz/16 bit, so to make CDs from a 192/24 original, the files have to be downconverted. And while reducing 24 bits down to 16 isn't a problem, the sampling frequency is more of a stumbling block, since there's no direct numerical relationship between 192kHz and 44.1kHz: 192kHz is a multiple of 48kHz, originally introduced in DAT and professional digital recorders in Japan, so sampling frequency converters become essential as a part of converting 'hi-res' studio files into CD-quality music for more release beyond the 'audiophile' world, adding another layer of complexity – and opportunities for error.

However, with a system like that in the Marantz *SA-10* and *SA-KI Ruby*, we didn't need to worry. You provide two different clocks to accommodate all sampling frequencies: one for 44.1kHz-based files (44.1, 88.2 and 176.4) and the other for 48kHz-based files (48, 96 and 192), with the machine automatically detecting the sampling frequency of the music. Then you use 256 times oversampling – or in the case of SACD, only 64 times oversampling – to get a proper 1-bit ultra-high resolution DSD signal.

This is the way today's hi-fi design can be done: ignore formats, and just use exactly what you feel is the best possible processing to deliver the best possible sound. After all, we humans can only listen in analogue, meaning so we always need the highest possible processing to convert digital music.

So, that's how I've been tackling the design of source components in today's hi-fi systems, but amplification and speakers require the same approach. Maybe we can discuss that another day...