

Questions/opinions about variable–density optical audio track recording on old films.

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Source: <http://sci.tech–archive.net/Archive/sci.optics/2008–04/msg00160.html>

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 - *Date:* Mon, 21 Apr 2008 17:54:55 –0700
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Hi:

I am not asking homework questions. The questions are out of my interest in variable–density B&W film audio.

My favorite analog audio storage medium consist of the optical equivalent of magnetic tape. It is similar to the optical tracks of old analog B&W films — except without the video or any images. My optical tape records audio optically on a tape using variable–density encoding [not variable–area] and is monaural. As with any photography, the tape must not be exposed to light before recording or development and must not be exposed to extraneous light [light other than the optical audio signal] during or before recording/development. Such exposure will corrupt the film. After recording. The film is developed using photographic chemicals. This tape is like a reel–to–reel [i.e. not a cassette] film using optics and chemistry instead of magnetism.

What characteristics in the film material itself [e.g. the chemicals within the film, "grains", etc. etc.] determines the audio quality [e.g. the bandwidth, dynamic range, SNR, clipping point, treble response, etc. etc.] of a VD track?

What types of audio artifacts are specifically–associated with the variable–density optical tracks of B&W films? What are these artifacts caused by?

In magnetic audio cassette, the maximum frequency that can be recorded is determined by the tape speed. What determines the maximum frequency that can be recording onto a variable–density optical track of a B&W film? Is tape speed still a factor here?

Movietone kicks photophone's @\$\$ because the former uses variable–density while the latter uses variable–area.

I've listened to both variable–density and variable–area. I prefer the former over the latter.

I don't have this analog audio storage device I described. It is something I would like to have but I don't. While it is possible to make this device, I am probably the only individual in the world who wants it. Nobody else cares for something like this. This is mainly because I am the only one who enjoys the artifacts associated with the variable–density audio of old B&W movies. Most everyone else prefers VA over VD. Not to mention, most also prefer magnetic over optical.

The problem is my film device does not exist because there is no demand for it. I am the only one in the world who cares to have such a device. No one else has any interest in the audio quality of the old VD audio tracks.

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As for performance levels I would like the artifacts specifically associated with VD tracks to be clearly noticeable without ruining the musical quality of the audio.

Two things I do not want -- at all -- are any clipping or aliasing. At the same time, I want high–quality treble. I am a fan of treble but not bass. I do not want there to be any distortion that specifically results from sounds being too loud [e.g. clipping] or from the sounds being too high in frequency [e.g. aliasing]. Yet I still want all treble that any human can hear to be encoded. The film and the rest of the equipment should be able to handle at least 1.5x the loudest sound a human ear can be exposed to without any pain or damage. Treble response should be up to 40 kHz or higher while the clipping point should be at 144 dB or above.

For some reason, I find the artifacts associated with B&W VD tracks to be appetizing. Even I can't understand why. It's something about the noise/distortions [other than those caused by excess amplitude/frequency] in VD that I enjoy. It's like the sound of fresh garlic bread baking in clay oven fueled by bituminous coal. That's the best description I can give.

I've listened to audio artifacts from very old B&W movies [which used VD]. That's where I get my opinion. I've compared it with movies that came out later [with VA instead of VD]. From there, is where I got my preference for VD over VA.

Regards,

Radium

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