

Re: 1080i & 720p HDTV Resolution

Source: <http://sci.tech-archive.net/Archive/sci.image.processing/2005-02/0119.html>

From: DAB sounds worse than FM (*dab_is_at_low.quality*)

Date: 02/15/05

Date: Tue, 15 Feb 2005 15:19:19 GMT

davidrobinson@postmaster.co.uk wrote:

> [snip]

>

> *The reason that we examine the worst case scenario is because this*
> *sets the limit – so it's an obvious case to go for when trying to*
> *figure out what the limit is!*

In my years of watching TV I have never seen the whole screen flash.
In my years of watching TV I have never seen a screen full of alternate
black and white lines with a pitch equal to the scan-line pitch on TV.

Basically, you appeal to the worst case scenario, but that worst case
scenario never happens.

In each and every post you mention a flashing screen. Personally I think
your telly is on the blink.

> *Also, your suggestion that the human visual system's inherent low pass*
> *reduces the need for a pre-interlace vertical filter in video is about*
> *as valid as an argument that the human auditory system's inherent low*
> *pass reduces the need for a pre-sampling anti-alias filter in audio.*

I've never said that the *need* is reduced; you always *need* a filter.

What I did say is that the 0.7*Fs factor can be *relaxed* for HD
compared to SD.

> *In audio, without correct filtering, the (usually inaudible) high*
> *frequencies will be aliased right down into the audible band, where*
> *they will be very audible and objectionable. (Thanks to Kevin for this*
> *obvious, excellent example btw!)*

I've just answered this in reply to Kevin's post.

> *Likewise, as you've been shown at least 10 times, without correcting*
> *filtering, the (usually invisible) high vertical frequency detail will*
> *be transformed into highly visible flashing by the interlacing*
> *process.*

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AIUI, all TV uses a vertical (anti-aliasing) lowpass filter that does not obey Nyquist's criterion. But when watching DTT have you ever seen "highly visible flashing by the interlacing process"? I haven't.

> btw, whether you watch on an interlaced or progressive display is
> irrelevant – at that limit, even the progressive display can't "know"
> whether the original image contained temporally-static spatially-high
> frequency components, or temporally-flashing spatially-low frequency
> ones. The two domains are entirely confused by interlacing, and this
> area of confusion must be avoided in interlaced signals by the use of
> appropriate filters. Hence (to bring us back to where we started) you
> do not and cannot have 0.9x1080 effective pixels of resolution in a
> 1080i system.

To correct you: I originally said that you should be able to increase the 0.7 factor. IIRC, it was you that introduced the 0.9 factor, and I merely said that you might be able to. In hindsight I doubt 0.9 would be feasible, but I am sticking with my assertion that the 0.7 factor could be increased.

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