Video Aliasing Audit Checklist

Scene → OLPF → sensor → shutter → encoder → resampler → display — every place aliasing can sneak in. Version 1.0 · May 2026

1 · CAPTURE — SPATIAL SAMPLING

- [ ] Camera has an OLPF (optical low-pass filter) over the sensor — *absent on many mirrorless stills cameras*
- [ ] Sensor resolution is ≥ 2× the finest detail in the scene — *Nyquist on both axes*
- [ ] No prominent repeating patterns in the shot (brick, herringbone, screens) — *moiré candidates*
- [ ] Tested a representative shot for moiré on a calibrated monitor — *not just camera LCD*

2 · CAPTURE — TEMPORAL SAMPLING

- [ ] Frame rate is at least 2× the fastest expected motion frequency — *live sports: 50 / 60 fps minimum*
- [ ] Shutter angle is 180° or longer for cinematic motion blur — *low-pass on the time axis*
- [ ] Wagon-wheel test passed on a fast-spinning subject — *wheels, fans, propellers*
- [ ] No spinning LED scoreboards or PWM-flickering lights in frame — *they alias against the shutter*

3 · ENCODE & TRANSCODE

- [ ] Encoder uses Lanczos / bicubic for downscaling — never nearest-neighbour — *FFmpeg default is acceptable*
- [ ] Chroma subsampling chosen per content type — *4:2:0 for delivery; 4:2:2 / 4:4:4 for graphics-heavy*
- [ ] No double resampling in the pipeline (scale ➜ scale ➜ scale) — *each pass introduces error*
- [ ] Encoder ladder includes a 'graphics' preset with higher chroma fidelity — *for presentation / screen-share content*

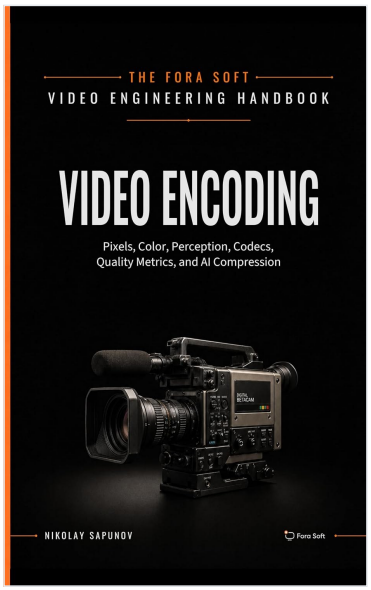
4 · DELIVERY & PLAYBACK

- [ ] Player honours the source resolution — no extra GPU-side downsampling — *browsers vary; test each*
- [ ] Subtitles / overlays rendered at display resolution, not source — *prevents aliased text*
- [ ] Mobile device test on a low-DPI screen — *aliasing shows worst there*
- [ ] ABR ladder avoids huge resolution jumps (2160p ➜ 360p) — *intermediate steps prevent re-scale aliasing on the client*

MOST COMMON PRODUCTION CULPRITS

- 8-bit nearest-neighbour resize hidden inside a transcoding wrapper — replaces an entire generation of detail with aliased garbage.
- Stills camera repurposed for video on a fashion shoot — no OLPF, prominent moiré on every patterned fabric.
- Surveillance ingest at 12 fps then re-played at 30 fps — motion analysis loses everything between frames; objects 'teleport'.
- 4:2:0 stream of a slide deck — red and blue text fringes on white because chroma was undersampled where the eye DOES see it.

Companion to: 'Sampling and the Nyquist Theorem Applied to Video'
www.forasoft.com/learn/video-encoding/articles/sampling-nyquist-video



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This checklist walks every place aliasing can enter, from the sensor to the player. Volume 1 starts where aliasing does: sampling, pixels, color and chroma subsampling, resolution, and how codecs from H.264 to AV1 treat fine detail, with quality metrics to catch the damage.

WHAT YOU WILL FIND INSIDE

- Sampling, pixels and the Nyquist limit
- Resolution and how codecs keep detail
- Color spaces and chroma subsampling
- Quality metrics that expose artifacts

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