Transfer Function Picker Checklist

Pick gamma / PQ / HLG by delivery model, content type, and target devices. Version 1.0 - May 2026

1 - DELIVERY MODEL

- [ ] SDR-only delivery (streaming, conferencing, web) — *use Gamma (BT.1886)*
- [ ] On-demand premium HDR (Netflix-style VOD) — *use PQ (SMPTE ST 2084)*
- [ ] Live HDR broadcast (sports, news, events) — *use HLG (ARIB STD-B67)*
- [ ] Mixed audience: some HDR sets, some SDR sets — *HLG handles both with one signal*

2 - CONTENT TYPE

- [ ] Cinematic content with precise artistic intent for brightness — *PQ - absolute brightness control*
- [ ] Live broadcast with no pre-grading possible — *HLG - relative brightness auto-scales*
- [ ] Talking heads, surveillance, screen-share — *gamma is enough*
- [ ] Dolby Vision delivery target — *PQ + DV dynamic metadata*

3 - TARGET DEVICES

- [ ] Target audience has HDR-capable TVs / phones (2020+) — *PQ or HLG safe*
- [ ] Significant share of audience still on SDR-only devices — *HLG keeps SDR fallback automatic*
- [ ] Tested tone-mapping on at least 3 HDR TV brands — *PQ tone-mapping varies by player*
- [ ] Player negotiates HDR via EME / MediaCapabilities API — *verify the tag reaches the decoder*

4 - METADATA TAGGING

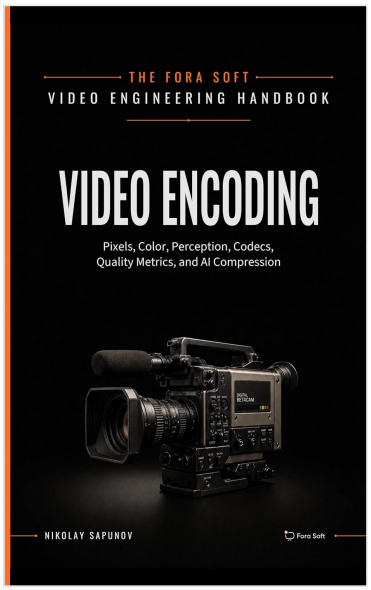
- [ ] FFmpeg encode uses -color_trc bt709 / smpte2084 / arib-std-b67 — *match the chosen recipe*
- [ ] Verified with ffprobe that color_transfer is set after encode — *trust nothing, verify*
- [ ] Tag survives packaging step (HLS / DASH / CMAF) — *common drop point*
- [ ] CDN preserves metadata headers (mdcv, clli for HDR) — *edge transforms can drop atoms*

5 - PIPELINE CONSISTENCY

- [ ] Bit depth matches the transfer function (10-bit min for PQ/HLG) — *PQ at 8-bit produces severe banding*
- [ ] Colour primaries set to bt2020 for HDR — *primaries + transfer must agree*
- [ ] No transcode step strips the transfer-function tag — *audit each stage with ffprobe*

MOST COMMON TRANSFER-FUNCTION BUGS IN PRODUCTION

* HDR file tagged as SDR - player applies gamma to PQ data; oversaturated, neon greens, burning reds.
* SDR file tagged as HDR - player applies PQ to gamma data; grey, dim, washed-out picture.
* Tag dropped mid-pipeline - transcode strips metadata, next stage defaults to gamma, quality degrades silently.



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This checklist helps you choose gamma, PQ or HLG by delivery model, content and devices. Volume 1 explains the curves themselves: OETF and EOTF, PQ and HLG design, bit depth requirements, colour primaries and tagging, and how players tone-map HDR for SDR screens.

WHAT YOU WILL FIND INSIDE

- OETF, EOTF and the gamma curve
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- PQ and HLG: absolute and relative brightness
- Tone mapping for SDR displays

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