Cameras, screens and light cheat sheet

Shutter, flicker, LED walls, projection and colour on a filmed event

VIRTUAL STUDIO EVENTS

Shutter and flicker (UK, 50 Hz mains)

Frame rate	Safe shutter	Avoid
25p / 50i	1/50 (180 degrees)	1/60
50p	1/100 or 1/50	1/60, 1/120
29.97p / 59.94 in the UK	1/50 or 1/100 (flicker first)	1/60 under UK mains lighting

Mains lighting pulses at twice the supply frequency (100 times a second in the UK). A shutter that is a whole multiple of that period hides it. Shooting US frame rates in the UK means choosing a 50 Hz-friendly shutter and accepting slightly more motion blur.

LED walls on camera

- Ask for the refresh rate on the panel spec. Higher refresh is easier on camera; low-refresh panels band at fast shutters.
- Genlock the LED processor to the same reference as the cameras, or at least match frame rates.
- Turn it down. Walls are built to fight daylight; on camera they usually run far below maximum. Set them against the presenter's exposure, not by eye in the room.
- Moire: change distance or angle, or let the wall fall out of focus. A long lens from the back of the room makes it worse.
- Match the wall's colour temperature to the presenter light (walls often default to 6500 K).

Colour temperature

Tungsten	3200 K
Daylight	5600 K
LED wall default	Often 6500 K
Hotel ballroom house light	Often 2700-3000 K, mixed

Set every camera to the same manual white balance on the presenter, not auto. Mixed house light and LED washes are the usual reason two cameras don't match.

Presenter light

- Key the lectern and the stage so faces are brighter than the screen behind them.
- Use fixtures with good colour rendering. On the EBU's TLCI scale, 85 or above needs little or no correction.
- Haze and beam effects look different on camera: check them through the lens.
- Agree with the lighting designer when camera light is "on" and when the show look takes over.

Projection on camera

- A projected screen is darker than you think on camera; a white wash on the stage makes it worse.
- Send the graphics and slides to the stream as clean feeds rather than shooting the screen.
- Shoot the screen only for context: wide shots, audience reactions.

Camera positions and lenses

- [ ] Main camera on the presenter's eyeline, on a riser above the audience heads
- [ ] Check the focal length you need from the back of the room before you hire lenses (use our lens calculator)
- [ ] A PTZ lens that is "20x" may not get a close-up from 30 m
- [ ] Keep an eye on the 180-degree line for interviews and panels
- [ ] Shoot the audience from the stage end for questions and reactions
- [ ] Tally lights on every camera the presenter might talk to
- [ ] Matching: same picture profile, white balance and gain on every camera
- [ ] Record ISOs of every camera if the edit matters

Sources. EBU TLCI. Checked 9 November 2026.

Watermarked preview. Get the clean file free at www.virtualstudio.events/tech-camera-screens-light-cheat-sheet.html