

TECHNICAL SUPPLEMENT FOR THE DELIVERY OF 3D TELEVISION PROGRAMMES



DPP Requirements for the delivery of 3D programmes

This delivery supplement details the DPP guidance for 3D programmes delivered as either HD or UHD.

Unless a 3D programme has been commissioned by the broadcaster, use of any 3D production equipment or techniques ***MUST*** be agreed before the contract is finalised.

The use of 3D for acquisition as well as delivery must be agreed in advance even when there is no requirement to deliver 3D to the commissioning broadcaster.

1. Conversion

For the avoidance of doubt, automated conversion of 2D programmes to 3D is **not** considered to be 'native 3D'. Any proposed 2D to 3D content conversions may only be used by prior agreement with understanding of the scene specific editorial decision process, techniques and conversion processes involved.

2. 3D Requirements

3D necessitates the highest quality to be captured at the point of creation, and initial storage, together with the minimising of recode or transcode processes within the production chain, that have the potential to degrade the content when delivered to the end user.

Post-production techniques and technologies should maintain the highest quality and where the native acquisition format cannot be utilised, the lowest possible compression ratio (highest possible bit rate) available by the post-productions hardware's individual codec should be used.

Dual video stream post production tools, designed for discrete stereoscopic image processing, should be utilised for finalizing and conform of stereoscopic images.

3D programmes should contain a minimum of 75% HD or UHD material (depending on the programme commission).

Where lower resolution or non-3D material is utilised, it should sit within the editorial context of the programme and must be converted in a suitable manner to fit the 3D format. The amount of this material is limited to 25% of the programme's total duration and should not be used for large uninterrupted sections, unless agreed by the broadcaster.

3. 3D Guidance

3.1. **Stereoscopic Alignment**

Main subject or point of interest, should nominally be within a "depth budget" of 3% provided:

- positive disparity or image separation at distant points (into the screen) should not exceed 2% for majority of shots;
- negative disparity Image separation at close points (out of screen) used with care and does not nominally exceed 1% for the majority of shots.

Care should be taken with subjects that break the frame edges. Floating windows must be utilised where appropriate.

These guidelines aim to deliver managed and comfortable stereoscopic viewing. As such these limits can be exceeded for specific editorial needs, (such as a short term visual impact) and must be managed appropriately and in line with 3D production practice. Such instances should be constrained to 4% positive (into screen) and 2.5% negative (out of screen).

Graphics should be aligned to the base content wherever possible and there should be no differential exceeding a 2% depth budget from the main viewpoint and main graphic image (ancillary graphic imagery may be greater).

3.2. **Left and Right Eye Mismatches**

The Left and Right eyes must not contain dissimilar characteristics which would result in discomfort to the viewer. Examples include but are not limited to:

- **Left Eye / Right Eye Synchronisation** - one eye image is not in temporal sync with the other eye;
- **Contamination** - defects present in one eye image and not the other. Defects include dirt, hair, dust, blotches, scratches, holes and other, externally introduced defects;
- **Video levels** - brightness (including exposure) and colour (white balance / grade) mismatches between the two images;

- **Excessive Grain or Noise** - excessive noise which results in the reduction of definition and depth effect. Note: grain and noise can never be identical in each signal;
- **Clarity** - caused either in camera (focus or filters etc.) or in post (grading or effects etc.);
- **Depth of Field Mismatch** - where one eye shows more background definition than the other;
- **Framing misalignment** - where the images are miss-registered (horizontal / vertical / rotational / keystone / angle / focal length - incl. crop);
- **Ungoverned Light Mismatch** - refraction, reflections, orbs and lens flares greatly differing in one eye;
- **Occlusion** - the appearance of an object in one eye and not the other (e.g. due to the positioning of cameras and subjects, a view through a window may show a lamp post in one eye and not the other);
- **General Visual Mismatch** - subject, graphics or view (e.g. an edit error where one eye has a different subject, graphic or entire view than the other eye);
- **Other in camera or post-production image processing.**

4. 3D Delivery Type

3D should normally be delivered as two full resolution images either as dual-stream or two separate tapes or files.

Pre-formatted Side-by-Side or Top-Bottom must be agreed with the broadcaster before final post-production commences.

See the broadcaster delivery requirements for the preferred 3D resolution and delivery format.