

# TECHNICAL STANDARDS FOR DELIVERY of PPBs to STV Media Centre



This document is a guide to the technical standards required for programme delivery to STV transmission.

The Standards include:

- Picture and Sound Quality requirements, which also form a binding obligation on producers of material. Assessment of quality is by nature subjective, and is highly dependent on the nature of the programme. Some of the Quality Requirements are expressed in relative terms (“reasonable”, “not excessive” etc), and it will be necessary to make a judgement as to whether the quality expectations of the intended audience will be fulfilled, and whether the broadcaster will feel that value for money has been achieved.
- Technical Specifications, i.e. the technical production methods which must be used, and the parameters which all material must meet to be acceptable by the broadcasters.
- Delivery Requirements, which specify the form and layout of the programme material.

Every programme submitted for transmission must satisfy a Quality Control process. Any programme failing the QC process may be rejected and returned to the producer for repair.

## **Technical Responsibility and Contacts:**

STV is required to ensure that broadcast programme technical quality is maintained to a satisfactory standard. The main points of contact within STV for technical enquiries affecting delivery are:

Contact	Email	Telephone
<b>John McVie</b> Media Centre Manager	<a href="mailto:John.mcvie@stv.tv">John.mcvie@stv.tv</a>	0141 300 3502
<b>Jim Main</b> Broadcast Systems & Engineering Manager	<a href="mailto:jim.main@stv.tv">jim.main@stv.tv</a>	0141 300 3574 077 6666 4844
<b>David Mackenzie</b> Transmission Services Manager	<a href="mailto:david.mackenzie@stv.tv">david.mackenzie@stv.tv</a>	0141 300 3229
<b>Out-of Hours – STV MCR</b> Duty Engineer	<a href="mailto:mcr@stv.tv">mcr@stv.tv</a>	0141 300 3453

# **1 General Quality Requirements**

## **1.1 Picture Quality**

The picture must be well lit and reasonably but not artificially sharp.

The picture must be free of excessive noise, grain and digital compression artefacts.

The picture must be free of excessive flare, reflections, lens dirt, markings and obstructions (e.g. lens hood), and lens aberrations.

Movement must appear reasonably smooth and continuous, and must not give rise to distortions or break-up to moving objects, or cause large changes in resolution.

The picture must be free of excessive black crushing and highlight compression. Hard clipping of highlights (e.g. by legalisers) must not cause visible artefacts on screen.

There must be no noticeable horizontal or vertical aliasing, i.e. jagged lines, field or frame rate fluctuations in fine detail.

Colour rendition, especially skin tones, must be consistent throughout, and a realistic representation of the scene portrayed unless it is altered as an editorially essential visual effect.

The picture must be stable and continuous - i.e. no jumps, movements, shifts in level or position.

There must be no visible contouring / artefacts caused by digital processing. Quantisation noise must not be apparent.

There must be no noticeable spurious signals or artefacts e.g. streaking, ringing, smear, echoes, overshoots, moiré, hum, cross-talk etc.

The programme as a whole must satisfy a photosensitive epilepsy check (PSE check) to ensure there is no patterning or flashing images that would contravene the Ofcom guidelines (2013) on photosensitivity.

## **1.2 Sound Quality**

Sound must be recorded with appropriately placed microphones, giving minimum background noise and without peak distortion.

The audio must be free of spurious signals such as clicks, noise, hum and any analogue distortion.

The audio must be reasonably continuous and smoothly mixed and edited.

Audio levels must be appropriate to the scene portrayed and dynamic range must not be excessive. They must be suitable for the whole range of domestic listening situations.

Stereo audio must be appropriately balanced and free from phase differences which cause audible cancellation in mono.

The audio must not show dynamic and/or frequency response artefacts as a result of the action of noise reduction or low bit rate coding systems.

The audio must conform to EBU Recommendation R128-2014-1 for Loudness – see section 4

# 2 Technical Requirements

## 2.1 Common Requirements

- Timecode at start of programme will be 10:00:00.00
- Timecode shall be continuous from beginning to end and will at no time pass through 00:00:00.00
- VITC is mandatory on all supplied material (however transported)
- Audio may start from 12 frames after start of programme/part and must have faded to silence by the end of the programme/part.
- The end slate / moving hold must be held in vision for 5" after end of part(s) and 10" after end of programme followed by a further 10 seconds of black.
- Loudness compliance – see section 4
- PSE compliance – see section 2.4
- Absolute identification of a programme is by its production (clock) number – these must be unique to any programme or version of a programme such that there is no ambiguity. *Production numbers are supplied by STV at time of commission.*
- Filenames before the extension will consist of the production number. The production number will also be used for PSE reports and Technical Checks with the appropriate extensions.

## 2.2 High Definition (HD) File Format

All files material delivered for STV HD transmission must be:

- Supplied as AVC-Intra 100 in a single mxf op1a file.
- 1920 x 1080i at 25 frames per second.
- 4:2:2
- Audio sampled at 48KHz with 24 bits/sample. AIFF or WAV acceptable.
- 10" line-up 100% bars with 1KHz tone at -18dBFS
- Countdown clock (circular) of 20" minimum with details as per section 2.7
- Stereo main audio on tracks 1&2
- Audio Description (if supplied) on tracks 3&4 – otherwise 3&4 must be silent.

## 2.3 Standard Definition (SD) Format

All files material delivered for STV SD (and upscaled HD) TV transmission must be:

- Supplied as IMX-50 in a single mxf op1a file.
- 720 x 608 overall at 25 frames per second (to include vbi)
- 4:2:2
- Active picture 702 x 576 centred (720 x 576 acceptable if geometry unaffected)
- Audio sampled at 48KHz with 16 bits/sample minimum. AIFF or WAV acceptable.
- 10" line-up 100% bars with 1KHz tone at -18dBFS
- Countdown clock (circular) of 20" minimum with details as per section 2.7
- Stereo main audio on tracks 1&2
- Audio Description (if supplied) on tracks 3&4 – otherwise 3&4 must be silent.

## 2.4 Photosensitive Epilepsy (PSE)

Flickering or intermittent lights and certain types of repetitive visual patterns can cause serious problems for viewers who are prone to photosensitive epilepsy. Children & teenagers are particularly vulnerable.

All UK Television channels are subject to the **Ofcom BROADCASTING CODE 2013** which states:

Section 2: Harm and Offence:

2.12 Flashing images and/or patterns can cause seizures in people with photosensitive epilepsy. The Ofcom guidelines, based on scientific research, are intended to limit the incidences of seizures and a warning should only be used in place of the guidelines if editorially justified.

The Ofcom guidance is available at [www.ofcom.org.uk/tv/ifi/guidance/bguidance/guidance2.pdf](http://www.ofcom.org.uk/tv/ifi/guidance/bguidance/guidance2.pdf)

### 2.4.1 Testing for flashes and patterning

#### **File Delivery**

Programmes for file delivery will be tested for compliance with PSE using a file-based PSE testing application.

Any failure whatsoever will result in rejection of the programme, and any affected sections must be repaired and re-tested before acceptance.

### 2.4.2 PSE-broadcast warnings

Verbal or on-screen text warnings at start of programme may only be used in exceptional circumstances when:

- The relevant content is completely integral and necessary to the context of the programme, and,
- permission to use the relevant content has been cleared by STV Compliance and documented in writing by those responsible for commissioning / editorial content.

### **2.4.3 Eyeball Quality Control**

The eyeball QC check is to ensure picture and sound quality are consistent throughout, and that dialogue is clear and understandable by a first time viewer. This will be carried out by MCR and a pdf report generated. This may be carried out in conjunction with the PSE test and a separate PSE pdf report will be generated.

## 2.5 Safe Areas for Captions

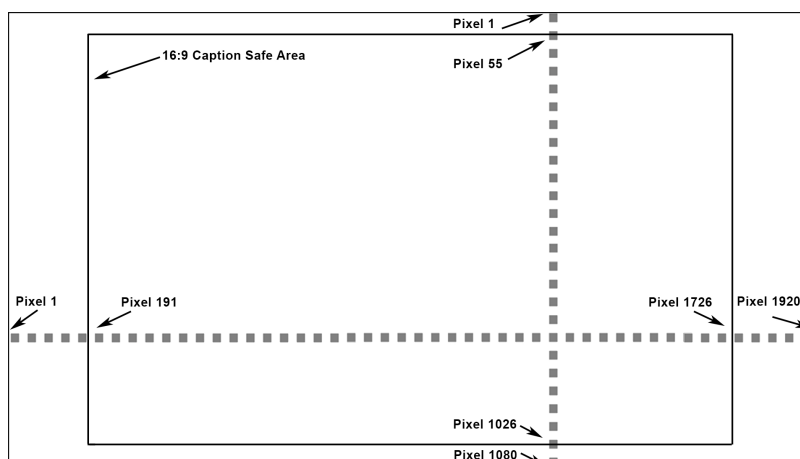
Captions and credits must be clear and legible and must be within the safe areas specified.

All font sizes must be legible as HD and also after down conversion for the SD viewer.

STV are adopting 16:9 Caption safe areas for both SD and HD transmission – as such, 4:3 caption safe is no longer applicable.

Caption Safe Area	Defined as (%)	HD pixels (inclusive) first pixel numbered 1	TV line numbers (inclusive) numbering as per "Rec709"
16:9 Caption safe	80% of Active Width 90% of Active Height	191 – 1726 55 – 1026	48 to 532 (F1) and 611 to 1095 (F2)
4:3 Caption safe	65% of Active Width 90% of Active Height	337 – 1584 55 – 1026	48 to 532 (F1) and 611 to 1095 (F2)

### 2.5.1 16:9 Caption Safe Area



## 2.6 Audio Requirements and Loudness

All programmes must be mixed to comply with the EBU Recommendation EBU R128-2014-1

### 2.6.1 Terms and Requirements

All programmes must be compliant with the *Programme Loudness* and *Maximum True Peak* requirements below.

Other parameters are currently given for guidance only.

Term	Description	Measurement	Reference
<b>LU</b>	Loudness Unit	1LU = 1dB change in loudness	EBU Tech 3343
<b>LUFS</b>	Loudness Unit relative to Full Scale	LUFS	EBU Tech 3343
<b>LRA</b>	Loudness Range	LU	EBU Tech 3342
<b>STV Delivery Requirements</b>			
Term	Description	Measurement	DPP Requirement
<b>Programme Loudness</b> (EBU R128-2014-1)	The loudness measured over the duration of the programme.	LUFS	Non-live <b>-23.0 LUFS ± 0.50LU</b> Live (including as-live) <b>-23.0 LUFS ± 1.0LU</b>
<b>Maximum True Peak</b> (EBU Tech 3343)	The maximum value of the audio signal waveform.	dBTP (True Peak)	-3dBTP recommended. Programmes are deemed to have failed QC if level exceeds <b>-1dBTP</b>
Loudness Range is for guidance only			
Term	Description	Measurement	DPP Recommendation
<b>Loudness Range</b> (EBU Tech 3342 & 3)	This describes the perceptual dynamic range measured over the duration of the programme	LU	Programmes should <i>aim</i> for an LRA of no more than <b>18LU</b>
Loudness Range of Dialogue	Dialogue must be acquired and mixed so that it is clear and easy to understand	LU	Speech content in factual programmes should aim for an LRA of no more than <b>6LU</b>  A minimum separation of <b>4LU</b> between dialogue and background is recommended

## 2.7 The Ident Clock

A countdown clock or slate clearly displaying the following information must precede the start of programme.

- Programme I.D. number
- Programme title (and series number if applicable)
- Episode number (if applicable)
- Episode subtitle (if applicable)
- Version (Pre/post watershed etc if necessary)
- Part number (if applicable)

No technical information may be included. The clock or slate may display telephone contact numbers for the post-production facility and production company, and may display company branding.

The seconds hand on any clock must move in 1 sec steps (i.e. **not** smooth motion) around a circular clock face. Clocks with only digital countdown are not acceptable.

There must be no audio tone or ident over the clock.



## **2.8 Closed captions (Subtitles)**

Subtitles must be delivered as a separate file in subtitle interchange format (.STL). The file must be named identically to the principal MXF file, apart from the filename extension.

## **2.9 Filenames**

Filenames for the MXF files must conform to STV specification, and should contain the relevant programme identifier information. Filenames must be in the correct case, with filename extensions in lowercase.

Filenames before the extension will consist of the production number. The production number will also be used for PSE reports and Technical Checks with the appropriate extensions.

E.g.

PPB160112.mxf

Where PPB160112 is the production number and .mxf is the file extension.

## **3. Delivery instructions**

### **File Delivery**

Deliver to STV Programme FTP:

**Host:** pqftps01.stvplc.tv

**Username:** bcastftp

**Password:** ftpbc@st

**SD Deliveries:**

PPB\SD

**HD Deliveries:**

PPB\HD

STV recommend the use of an FTP client like Filezilla for media transfer.

**All content must be accompanied by a Content Delivery Profile form.** This form must be completed electronically by the producer and delivered alongside file based content to the above FTP site.

Content Delivery Profile forms must be named as

*CDP***production number.XLS**

E.g. CDPPPB160112.xls