

TECHNICAL STANDARDS FOR DELIVERY OF TELEVISION PROGRAMMES TO



This document is a complete guide to the common technical standards agreed by the BBC, BSkyB, Channel 4, Channel 5, ITV and S4C.

The Standards include:

- 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.
- 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.
- Delivery Requirements, which specify the form and layout of the programme material.

Every programme submitted for transmission must satisfy a Quality Control process specified by the broadcaster. Any programme failing the QC process on tape or file may be rejected and returned to the supplier for repair.

HD Tape Format Summary

All HD programmes will be delivered on HDCamSR tapes

1920 x 1080 at 25 frames a second (see Section 2.1 on page 4)

90° Lineup bars and 1KHz tone at -18dBFS.

Timecode of start of programme 10:00:00:00.

Circular countdown clock of at least 20” with details *exactly* as Section 4.2 on page 11.

Stereo audio on tracks 1&2. See Section 3.2 on page 9 for Surround sound.

Fade to silence at end point, end slate held in vision for further 10” after end of programme.

Technical Responsibility and Contacts:

BBC Network Programmes General Responsibility

The BBC’s Delivering Quality (DQ) group is required to ensure that broadcast programme technical quality is maintained to a satisfactory standard. This document is the responsibility of:

The Delivering Quality Manager, tel. +44(0) 20 8008 1971 (<mailto:dqm@bbc.co.uk>).

This document does not cover any specific requirements for delivery of programmes to BBC Worldwide or other co-producers.

BBC Technical Liaison (Network Programmes)

The Duty Engineering Managers (DEMS) in Red Bee Media are the main round-the-clock point of contact for technical enquiries affecting immediate (defined as “on the day”) delivery.

Duty Engineering Managers (DEMS) +44 (0) 20 8495 5400

For all other enquiries please contact your commissioner or the DQ web site:

http://www.bbc.co.uk/guidelines/delivering_quality/consultation.shtml

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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.

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.

1.3 Access for People with Disabilities

The Equalities Act 2010 (formerly the Disability Discrimination Act) requires service providers to take positive steps to make their services accessible to people with disabilities. It states that where a service provider offers or provides services to members of the public, the provider will have to take such steps as is reasonable to make it easier for disabled people to make use of the service. Broadcasters are service providers and this therefore applies to them. (DCMS Guidance 2006)

Programme suppliers are therefore required to consider the needs of people with hearing or visual impairments while generating captions, subtitles and graphics, using voiceovers, and while mixing sound.

The Communications Act 2003 sets targets for broadcasters (monitored by Ofcom) to provide subtitling, sign language and audio description services, so suppliers may be asked to provide appropriate additional material.

For further information, please refer to the appropriate technical contact on the front page of this document.

2 Technical Requirements - Video

2.1 High Definition Format

All material delivered for UK HD TV transmission must be:

- 1920 x 1080 pixels in an aspect ratio of 16:9
- 25 frames per second (50 fields) interlaced - now known as *1080i/25*.
- colour sub-sampled at a ratio of 4:2:2

The HD format is fully specified in ITU-R BT.709-5 Part 2.

2.1.1 Origination

Material may be originated with either interlaced or progressive scan.

Interlaced and progressive scan material may be mixed within a programme if it is required for editorial reasons or the nature of the programme requires material from varied sources.

2.1.2 Post-production

Electronically generated moving graphics and effects (such as rollers, DVE moves, wipes, fades and dissolves) must be generated and added as interlaced to prevent unacceptable judder.

2.1.3 Film motion or 'film effect'

It is not acceptable to shoot in *1080i/25* and add a film motion effect in post production. Most High Definition cameras can capture in either *1080i/25* or *1080p/25*. Where film motion is a requirement, progressive capture is the only acceptable method.

2.1.4 'i' and 'psf' Flags

All programmes must be delivered with flags set in video streams or on tape to '*i*' throughout the programme, even if the bulk of the programme has been originated progressively. This is because some equipment introduces processing to '*psf*' flagged material which degrades some material. Broadcasters may accept certain material with '*psf*' flags entirely at their discretion.

2.1.5 Field dominance

Cuts in material must happen on frame boundaries (i.e. between field 2 and field 1). Motion on *psf* material must always occur between field 2 and field 1 (i.e. field 1 dominance).

Note - It is possible to shoot material at *1080p/50*. If this is done, the correct 2-frame marker phasing must be maintained when down-converting to *1080i/25* or *1080psf/25*.

2.2 Video Line-Up

Programme video levels must be accurately related to their associated line-up signals.

Video line-up must be colour bars of the type known as EBU 100% or 75% (100/0/100/0) or (100/0/75/0) and filling the 16:9 raster. SMPTE pattern bars are not acceptable.

2.3 Video Levels and Gamut (illegal signals)

High Definition digital signals will be assessed according to the recommendation **ITU-R BT709-5 Part 2**.

Video levels must be received within the specified limits so that the programme material can be used without adjustment. Any signal outside the specified limits is described as a gamut error.

2.3.1 Measuring signal levels

Digital video levels are usually measured with a device which displays a trace like a traditional waveform monitor. This gives readings in mV (emulating an analogue signal), or as a percentage of the allowable levels.

The limits of signal levels are defined by reference to a nominal black level and a nominal white level. Black level comprises R, G and B all at zero (or 0% or 0mV) and white level is all three components at 100 % or 700mV.

In a picture signal, each component is allowed to range between 0 and 100% (or 0mV and 700mV). This equates to digital sample levels 16 and 235 (8-bit systems) or 64 and 940 (10 bit systems).

2.3.2 Tolerance of out of gamut signals

In practice it is difficult to avoid generating signals slightly outside this range, and it is considered reasonable to allow a small tolerance, which has been defined as follows under **EBU Rec103**:

- **RGB components must be between -5 % and 105% (-35 and 735mV)**

therefore

- **Luminance (Y) must be between -1% and 103% (-7mV and 721mV)**

Slight transient overshoots and undershoots may be filtered out before measuring, and an error will only be registered where the out of gamut signals total at least 1% of picture area. Many monitoring devices are designed to detect errors to this specification.

2.4 'Blanking'

HD images must fill the active picture area (1920 x 1080 pixels). No 'blanking errors' are permitted on new, up-converted, or archive material.

However a two pixel tolerance will be permitted during CG or complex overlay sequences where key signals, graphic overlays or other effects do not fully cover the background image. Where animated key signals or overlays cause moving highlights at the edge of the active image it is preferable to blank these pixels completely. A note of the timecodes and reasons for these errors should accompany the delivered programme.

2.5 Aspect Ratio

All high definition programmes (except as below) must be delivered in 16:9 Widescreen. This means that the active picture must fill a 16:9 screens vertically and horizontally without geometric distortion.

2.5.1 'Cinemascope ratio' letterbox

For delivery to dedicated movie channels or at the discretion of the broadcaster, programmes may be delivered with an active picture in the cinema ratios of 2.35:1 (21:9) or 1.85:1, centred vertically between black bars in a 16:9 frame, filling the width of the frame, and with no geometric distortion.

2.5.2 Floating images

Short sequences of images surrounded by black borders, (floating images), may be used for artistic effect. Note however, that widescreen consumer TV sets operating in Auto Zoom / Auto mode often interpret large black borders at the top and bottom of the screen as letterbox, so are likely to enlarge the picture. The resulting unpredictable zooming can be annoying for the viewer and undermine the artistic intent. If used, the black space around floating images must be consistent across sequences of images.

2.5.3 'Pillarboxed' HD material

Some 'pillar-boxed' material is acceptable at the discretion of the broadcaster where it has been acquired on a medium that has the capability to be transferred to a legitimate HD resolution, for example, 35mm film shot using 4 perf at an aspect ratio narrower than 16:9. The pictures must be centrally framed in a 16:9 raster with no geometrical distortion.

2.6 Archive Material

Archive material must meet all the requirements in this document, including those for up-converted SD video where relevant, except for the following:

2.6.1 General quality - archive

Archive material must be taken from the best available source, and any improvement or restoration work which could reasonably be expected must be done (for example grading, dropout repair or audio equalisation.)

2.6.2 Aspect ratio - archive

Archive material should be zoomed to fill the 16:9 raster where possible without compromising the image quality or composition, otherwise it may be presented in a pillar-box format, which:

- may be of an intermediate ratio between 4:3 and 16:9, but must be of consistent width across sequences,
- must be centrally framed in the 16:9 raster,
- must show no geometrical distortion,
- must have clean and sharp pillar-box edges (i.e. any video or film edge artefacts may need to be blanked.)
- must be black outside the active picture, unless otherwise specified by the broadcaster.

Note however, that consumer TV sets operating in Auto Zoom / Auto mode may enlarge the picture to fill the screen horizontally. The resulting unpredictable zooming can be annoying for the viewer and undermine the artistic intent.

2.6.3 Safe areas - archive

Any captions or text already in the archive material should be kept within the caption safe area if possible, but if not, should be noted in the accompanying documents.

2.7 Use of Non-HD material

Some high definition programmes will contain some material from standard definition originals, and sources which are not considered to meet HD broadcast standards, such as domestic camcorders. This material is all called 'non-HD' in this document.

To maintain a high standard and meet audience expectations the amount of non-HD material is limited to **25%** of the programme's total duration. Non-HD material must not be used for large uninterrupted sections of the programme, unless agreed by the broadcaster. This includes archive material.

2.7.1 Non-HD material

Material acquired using the following methods or formats is considered to be below the high definition standard and will therefore be treated as non-HD:

- HDV from all manufactures
- Most cameras with image sensors under 1/2"
- Frame based (intra-frame) recording formats below 100Mbs
- Inter-frame based recording formats below 50Mbs
- 720 line equipment
- Film not meeting the requirement for HD in section **2.8** below

2.7.2 Up-converted SD video material

Particular care must be taken to deliver the best possible quality of up-converted material. In general standard definition pictures must look no worse than the original after being up converted, post processed and down converted. Only high quality up-conversion processes will achieve this.

Standard definition video contains a half-line at top and bottom on alternate fields. This must be removed on up-conversion to HD, or it will be visible flickering at top and bottom of the HD frame.

Any VITC or switching signals visible at the top of SD material must be removed.

Any line blanking from SD signals must not appear in the HD conversion.

For these reasons **it is necessary that all SD material is zoomed in** by a small amount on up-conversion.

2.8 Film for High Definition Acquisition

Super16 film is *not* considered to be high definition no matter what processing or transfer systems are used.

The following **35mm** film types and stock are acceptable for high definition acquisition;

- 3 perf - any exposure index although an exposure index of 250 or less is preferred.

- 2 perf – only if daylight stock with an exposure index of 250 or less is used

To avoid causing problems with high definition transmission encoding film should be well exposed and not forced more than one stop.

2.9 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 2009** which states:

Section 2: Harm and Offence:

2.12 Television broadcasters must take precautions to maintain a low level of risk to viewers who have photosensitive epilepsy. Where it is not reasonably practicable to follow the Ofcom guidance (see the Ofcom website), and where broadcasters can demonstrate that the broadcasting of flashing lights and/or patterns is editorially justified, viewers should be given an adequate verbal and also, if appropriate, text warning at the start of the programme or programme item.

The Ofcom guidance is at: <http://stakeholders.ofcom.org.uk/binaries/broadcast/guidance/813060/section22009.pdf>

2.9.1 Testing for flashes and patterning

All programmes for tape delivery must be tested using the Harding Flash Pattern Analyser v2.54b on an SD down converted SDI feed. Any failure whatsoever will result in rejection of the programme, and any affected sections must be repaired and re-tested before acceptance.

Broadcasters will, at their discretion, either test the programme during the Quality Control process, or will require a relevant Harding FPA pass certificate to be delivered with the tape.

2.9.2 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 the relevant broadcaster and documented in writing by those responsible for commissioning /editorial content.**

Advance notification and planning requirements will vary by broadcaster.

2.10 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.

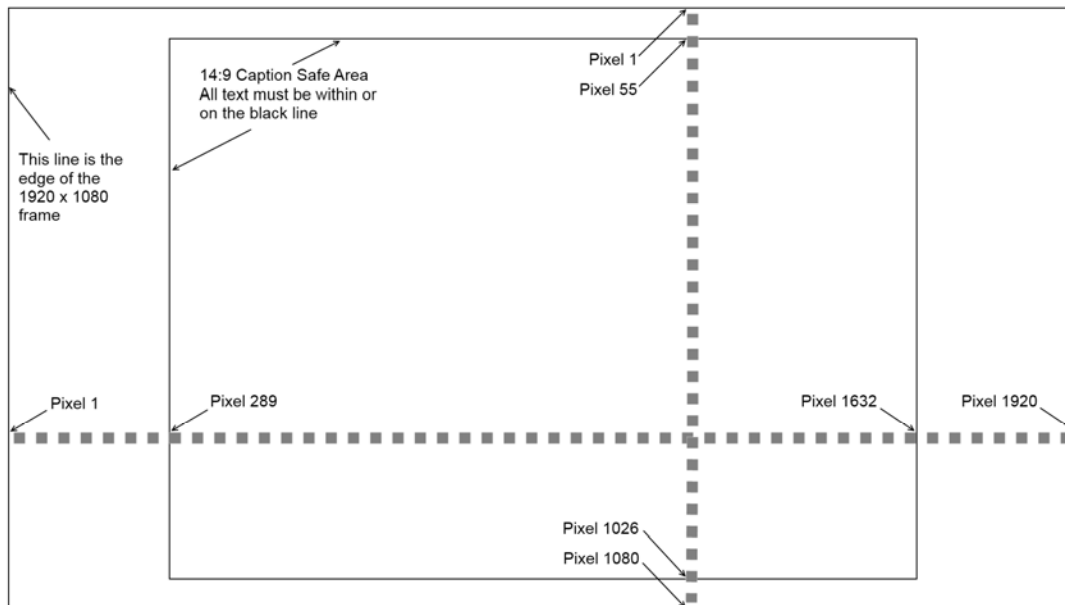
There are two primary caption safe areas defined for 16:9 material for UK transmission:

- **14:9** used for the majority of UK programmes/broadcasters.
- **4:3** required for certain programmes/broadcasters or for programmes distributed internationally.

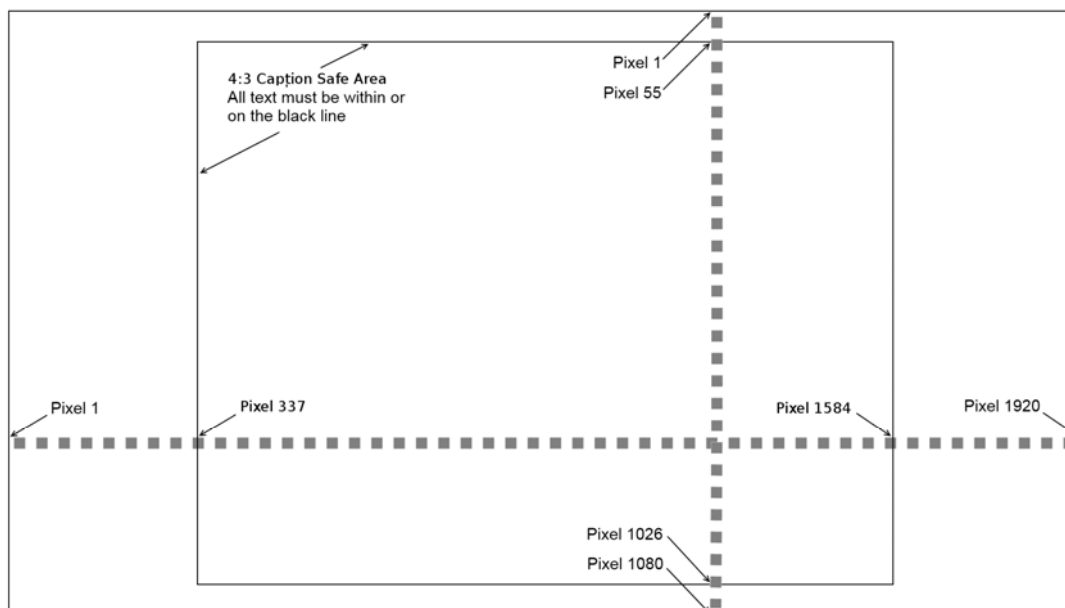
Caption Safe Area	Defined as (%)	HD pixels (inclusive) first pixel numbered 1	TV line numbers (inclusive) numbering as per "Rec709"
14:9 Caption safe	70% of Active Width 90% of Active Height	289 – 1632 55 – 1026	48 to 532 (F1) and 611 to 1095 (F2)
4:3 Caption safe	65% of Active Width 90% of Active Height	337 – 1584 55 – 1026	48 to 532 (F1) and 611 to 1095 (F2)

At the discretion of the broadcaster, programmes such as feature films and some acquisitions may be excluded from this requirement.

2.10.1 14:9 Caption Safe Area (BBC, C4, C5, ITV & S4C)



2.10.2 4:3 Caption Safe Area (BSkyB)



2.11 Standards Conversion

When standards converted material is included in a programme, Motion Compensation (sometimes known as Motion Predictive or Motion Vector) standards conversion is required.

Currently speed change is the preferred method of changing between 24fps (including 23.98) and 25fps standards. Due attention must be given to the audio.

Use of non-linear editing platform hardware or software standards conversion is not permitted for whole programmes but may be used for short inserts at the discretion of the broadcaster.

3 Technical Requirements - Audio

The UK Broadcasters are currently investigating and consulting on the impact of the EBU Recommendation R128 (Loudness normalisation and permitted maximum level of audio signals) and will issue an update to this section as soon as possible.

Audio must be delivered with track layouts as specified by the broadcaster, and will be one of the options available on the following table.

Channel 4 has a modification to this track layout for **tape** delivered HD programmes with surround sound. This is to maintain compatibility with archive programmes

AES	Track	Format	Content Options		
1	1	Digi/SR/SDI	Main Stereo L		
	2	Digi/SR/SDI	Main Stereo R		
2	3	Digi/SR/SDI	M&E Stereo L	2 nd Language L (Digi)	Main Dolby E*
	4	Digi/SR/SDI	M&E Stereo R	2 nd Language R (Digi)	
3	5	SR/SDI	Main Front L	M&E Dolby E*	
	6	SR/SDI	Main Front R		
4	7	SR/SDI	Main Centre		
	8	SR/SDI	Main LFE		
5	9	SR/SDI	Main Surround L		
	10	SR/SDI	Main Surround R		
6	11	SR/SDI	M&E Front L	2 nd Language L (SR)	AD L (SR Only)
	12	SR/SDI	M&E Front R	2 nd Language R (SR)	AD R (SR Only)
7	13	SDI	M&E Centre		
	14	SDI	M&E LFE		
8	15	SDI	M&E Surround L		
	16	SDI	M&E Surround R		

Channel 4 Tape Delivery – HD programmes with Surround Sound

AES	Track	Format	Content Options		
1	1	SR	Main Stereo L		
	2	SR	Main Stereo R		
2	3	SR	Main Front L		
	4	SR	Main Front R		
3	5	SR	Main Centre		
	6	SR	Main LFE		
4	7	SR	Main Surround L		
	8	SR	Main Surround R		
5	9	SR	Main Dolby E*	If Required	
	10	SR		If Required	
6	11	SR	AD L	M&E Stereo L	If Required
	12	SR	AD R	M&E Stereo R	If Required

*It is the intention of the broadcasters to have a single audio standard for file delivered programmes. Due to legacy issues there will be some variation between broadcasters for tape delivered programmes especially the position of Dolby E (if it is required). Dolby E will be at the request of the broadcaster

Programmes delivering surround sound must also carry a stereo mix meeting all requirements for stereo. This may be a mix-down from the surround channels. 5.1 and stereo must be synchronous.

Stereo viewers will receive either the stereo mix, or a mix-down from the surround channels generated in the playout chain or at their receiver.

3.1 Stereo Audio Requirements

Stereo tracks must carry sound in the A/B (Left/Right) form.

If mono originated sound is used, it must be recorded as dual mono, so that it may be handled exactly as stereo. It must meet all the stereo standards regarding levels, balance and phase.

3.1.1 Stereo line-up tones

All stereo tracks must use EBU 1KHz tone (left ident). All tones must be sinusoidal, free of distortion and phase coherent between channels.

Digital Audio Reference level is defined as 18dB below the maximum coding value (-18dBFS) as per EBU recommended practice R68.

3.1.2 Stereo audio levels and measurement (loudness or volume)

Stereo programme audio levels are currently measured by Peak Programme Meters (PPM). The Maximum or Peak Programme Level must never exceed 8dBs above the programme's reference level. The following levels, as measured on a PPM meter to BS6840: Part 10 with reference level set at PPM 4, are indicative of typical levels suitable for television, and are given as guidance only.

MATERIAL	NORMAL	PEAKS FULL RANGE
	PPM	PPM
Dialogue	3 - 5	3 - 6
Uncompressed Music	5	2 - 6
Compressed Music (depending on degree of compression)	4	2 - 4
Heavy M & E (gunshots, warfare, aircraft, loud traffic, etc.)	5 - 6	
Background M & E (office/street noise, light mood music etc.)	1 - 3	

3.1.3 Stereo phase

Stereo programme audio must be capable of mixing down to mono without causing any noticeable phase cancellation.

3.2 Surround Sound Requirements

Surround sound is transmitted as 5.1 format, and will be delivered as discrete tracks, except by agreement with the broadcaster.

3.2.1 Surround line-up tones

All surround tracks must carry BLITS tone, as described in **EBU Technical Paper 3304**. An audio file of BLITS tone may be downloaded from broadcasters' websites.

3.2.2 Surround audio levels and measurement (loudness or volume)

Methods for specifying and measuring the loudness of surround sound tracks are currently being developed by the broadcast industry. In the interim, please contact your broadcaster for guidance.

3.3 Sound to Vision Synchronisation

The relative timing of sound to vision should not exhibit any perceptible error. Sound must not lead or lag the vision by more than 5 ms.

3.3.1 Audio / Video sync markers

To assist in maintaining A/V sync through the post-production process, a 'sync plop' may be used. If the delivered programme leader contains one it must meet the following conditions:

- The sync plop must be between timecode 09:59:57:06 and 09:59:57:08
- The audio plop must be 1kHz tone on all tracks at -18dB (standard zero level)
- The duration of the vision flash must be 2 frames to allow it to pass through standards conversion successfully
- The audio plop must be synchronous across all audio PCM audio tracks and with the video flash (within +/- 5 ms)
- If an end sync plop is used it must be no closer than 10 seconds to the end of the programme and comply with the points above.

4 Delivery Requirements

4.1 Programme Layout / Format

All programmes delivered on file or tape must be laid out with elements in the following pattern relative to timecode:

Time-code	Duration	Picture	Sound
09.58.00.00	90'	EBU Bars (100/0/75/0 or 100/0/100/0)	Lineup tone
09.59.30.00	27" 05fr	Ident and countdown Clock	Silence
09.59.57.06 (optional)	2fr	2 Frames peak white	1 Frame tone (on first video white frame)
09.59.57.06	2" 19fr	Black	Silence
10.00.00.00		Programme	Programme
end of part (multipart programmes)	5"	freeze or 'living hold' after end of part	fade or cut to silence by end of part
end of prog	10"	freeze or 'living hold'	fade or cut to silence
end of prog + 10" (optional)	2fr	2 Frames peak white	1 Frame tone (on first video white frame)

4.1.1 Start and end

Note that it is usual for sound and vision to be automatically cut to air on transmission, so early vision or sound is not normally required. Vision may fade up from black starting at 10.00.00.00 if desired.

All programmes must end with a fade or cut to silence **before** the intended end point. Any fade out or reverb must be allowed for within the programme duration.

Vision freeze or 'living hold' must be held for a further 10" after the end point.

Any other programme elements after the end of the programme should not start less than 1min after end of programme.

4.1.2 Programmes longer than a single tape

If a programme must be delivered on two or more tapes because it is longer than the capacity of a single HDCam SR tape, the second part must begin at the next whole hour timecode after the end of the first part - e.g. 12:00:00:00 or 13:00:00:00 with appropriate continuous timecode throughout the line-up and clock sequence above.

4.1.3 Compilation tapes

Where a broadcaster has agreed to accept short programmes on a compilation tape, there must be at least 15" of black and silence between the end of one programme and the start of the clock for the following programme. (i.e. after the 10" hold)

Each programme must be recorded to begin at a 'full minute' - i.e. Timecode HH:MM:00:00

4.1.4 Ad breaks

For hard-parted programmes, each part must be preceded by a countdown clock as below.

There must be at least 15" of black and silence between the end of one part and the start of the clock for the following part. (i.e. after the 10" freeze)

Each part must be recorded to begin at a 'full minute' - i.e. Timecode HH:MM:00:00

4.2 The Ident Clock

A countdown clock clearly displaying the following information must precede the start of programme and any subsequent part:

- 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. This means HD format, tape format, aspect ratio, audio track allocations, safe area etc. Duration should not be included. The clock may display telephone contact numbers for the post-production facility and production company, and may display company branding.

The clock must provide a clear countdown of at least 20 seconds, including a hand moving in 1 sec steps (ie **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.

4.3 Tape Delivery

Note that programmes delivered on tape must comply with all the requirements of this document other than those for file or live delivery.

4.3.1 Tape format

HDCam SR is the only format acceptable for HD tape delivery. The recording must be fully compliant with the manufacturer's technical specification thereby ensuring format compatibility.

Tapes must be clean, new stock, in the manufacturer's case, protected by suitable packaging and clearly labelled. Note that flock filled padded envelopes are not suitable since a failure in the packaging can lead to contamination of the tape.

All tapes must be supplied with the record lockout "on" and fully rewind. It is recommended to "double rewind" before shipping to ensure an even tape pack. Labels must be fixed to both the cassette case and cassette and must not obscure the spools or obstruct the flap mechanism.

4.3.2 Paperwork

Each tape must have the following information on its box and cassette labels and on a VTRR (videotape Recording Report) included in its box:

- 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)

In addition, the VTRR must include further information as specified by the broadcaster, which will include:

- Log of tape contents by timecode
- Editor's technical comments
- Audio track allocation
- Confirmation of PSE test pass

4.3.3 Time-code

LTC and ancillary timecode (referred to as VITC on HDCam SR VTRs) must be identical, contiguous and continuous throughout the recording.

It is recommended that assemble edits should not be used between the start of the clock and the end of the programme, as they may introduce LTC discontinuities.

4.4 File Delivery

Common technical standards for the file-based delivery of programmes are currently in development. In the interim, please contact the relevant broadcaster.

4.5 Live Delivery

Common technical standards for the live delivery of programmes are currently in development. In the interim, please contact the relevant broadcaster.