



## TV Delivery for BBC Worldwide

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<b>Description</b>	<p><b>Intended Audience:</b> production staff, including technicians and producers, and independent production companies.</p> <p><b>Use:</b> Information about delivery for international broadcast. It is also available on <a href="http://bbc.co.uk">bbc.co.uk</a></p>		
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# Technical & Delivery Requirements for

# **B B C** Worldwide

Version 4.2

January 2007

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# 1.0 BBC WORLDWIDE TECHNICAL SPECIFICATION

<b>DQ Location</b>	Internal: <a href="http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml">http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml</a> External: <a href="http://www.bbc.co.uk/guidelines/dq/contents/television.shtml">www.bbc.co.uk/guidelines/dq/contents/television.shtml</a>
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# BBC WORLDWIDE TECHNICAL SPECIFICATION

## 1.1 Scope of document

This document covers the technical requirements for programmes commissioned in **Standard Definition** (for delivery on Digital Betacam) and/or **High Definition** (for delivery on HD CAM SR, HD CAM or HD-D5), which are to be distributed by BBC Worldwide.

## 1.2 Introduction

BBC Worldwide aims to maintain the highest technical standards. This document sets out the minimum acceptable standards for programmes delivered for international distribution.

*Technical Requirements* This document describes the standards required to deliver material to the BBC in such a way that the programme may reliably be broadcast by BBC Worldwide customers.

*Quality Requirements* Quality requirements deal with broadly subjective quality issues with the pictures and sound. Careless shooting, inappropriate production methods and faulty or substandard equipment can cause avoidable impairment to sound or vision. The ITU / CCIR 5 point grading scale is used to assess programmes for quality.

There are some aspects that fit into both categories for example the requirements on avoiding photo-sensitive epilepsy in the audience.

Due to the rapid rate of technical development use of specific equipment is constantly under review. This document will be subject to periodic re-issue to reflect this reality, but please consult your resource provider for advice on specific issues.

## 1.3 Technical Responsibilities for Programmes

### 1.3.1 General Responsibilities

The Head of International Operations BBC Worldwide is required to ensure that programme technical quality is maintained to a satisfactory standard for international distribution.

It is never the intention to frustrate the producers' ambition to make their programme in the way of their choosing. The purpose of this document, and associated material, is to set out the technical requirements to ensure that material is of a satisfactory standard and is of a format that is acceptable.

### 1.3.2 Technical Liaison & delivery

Please ensure delivery to the relevant co-ordinator (see contacts 8.0), providing your programme has been through the Quality Assessment Review (QAR) area. Contact Programme Operations for QAR details for programmes delivering in HD.

- ◆ For BBC Worldwide, Programme Operations, Standard definition queries ( +44 (0)20 8433 2754
- ◆ For BBC Worldwide, Programme Operations, High definition queries ( +44(0)20 8433 2408

### 1.3.3 Relaxation of Standards

Any proposal to deliver programme material which does not conform to the technical standards in these guidelines must be agreed beforehand, with Worldwide Programme Operations. Advice on conformance can be obtained from the following places:

<b>DQ Location</b>	Internal: <a href="http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml">http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml</a> External: <a href="http://www.bbc.co.uk/guidelines/dq/contents/television.shtml">www.bbc.co.uk/guidelines/dq/contents/television.shtml</a>
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- ◆ For BBC Resources, Review Co-ordinator ( +44 (0) 20 8225 8497
- ◆ For BBC Worldwide, Programme Operations, Jackie Walton ( +44(0)20 8433 2754

All programmes are expected to meet our required technical standards. The recognised exemption categories are tightly constrained and may not be invoked for the general convenience of programme makers.

Where programmes fail to meet full broadcast technical specifications and fall outside these categories it will be necessary to apply for special exemption. The production company should discuss these prior to the start of production with Programme Operations. This will allow discussions to proceed at an early stage and, although in no way guaranteed, it will reduce the likelihood of subsequent difficulties.

There are five recognised categories for technical exemption:

<b><i>Artistic interest</i></b>	Innovative or experimental productions which are made, of necessity, by those who do not have access to equipment or facilities meeting broadcast quality standards.
<b><i>Historic interest</i></b>	News or programmes of a documentary nature which show historic events taking place or whose subject matter requires the use of archive material.
<b><i>Actuality material</i></b>	News, features or documentaries of an actuality nature where better quality has not been possible because of limitations placed on the format or physical size of equipment used. Such limitations are those incurred as a result of shooting in difficult areas such as war zones, isolated locations, confined spaces or other difficult environments.
<b><i>Early television and cinema</i></b>	Excerpts from historical archives where low technical quality was due to the then current performance of equipment used in its creation or where quality is now lower than at the time of original showing because of film or video ageing.
<b><i>Home videos</i></b>	Programmes which employ excerpts using domestic video equipment in which the context requires that these are used.

NOTE: This is not permissible in HD masters.

If you are still unclear with regards international delivery please view the materials demo tape which can be found at:

<http://worldwide.gateway.bbc.co.uk/intvops/videos.htm>

## GENERAL TECHNICAL REQUIREMENTS

### 1.4 General Signal Requirements

Technical requirements must be met so that programme material is in the required format, which can be used reliably without any user intervention and can be passed through systems without noticeable impairment to the viewer.

Although the majority of programming is now produced and delivered digitally, the signals must still be compliant with analogue standards. For example excessive (illegal) levels are likely to cause severe picture disturbances when copied to analogue tape formats such as Betacam SP or sound buzz on analogue transmission.

#### 1.4.1 Video System Standards for Standard Definition Delivery

All material shall be of the 625/50 interlaced standard.

Active picture width is 52us / 702 pixels. All aspect ratio calculations are based on this. Any processes based on 720 pixel width may introduce unwanted geometry or safe area errors.

Signals will be assessed according to the recommendation CCIR Rec. 601 or ITU-R BT601-5 Part A

#### **1.4.2 General Technical Requirements for Standard Definition Delivery**

##### Programme signal parameters

Must correspond to the reference line-up levels. These include peak sound, maximum luminance & colour difference (Y Cr Cb) component levels, and black levels. Care must be taken to avoid illegal colours (Y Cr Cb component signals exceeding the gamut limit) which may be generated by caption and graphics systems (see section [1.6.5](#) for full details).

##### Video Levels and Gamut (illegal signals):

Video levels including any line-up shall be received within the specified limits so that the programme material can be used without adjustment.

Video levels are based on the PAL System which specifies 0 to 100% RGB Limits. We require that signals meet the easier EBU Recommendation R103-2000:

Luminance limits        -1% and 103%

Chrominance            105% max - RGB values to not exceed limits -5% to +105%

Overshoots can be ignored by the use of a low pass IRE filter. Single lines with larger errors caused by vertical processing such as aperture correction and aspect ratio conversion are permitted if they do not exceed the -1% Luminance limit.

##### Video Line-Up

Line-up signals serve to identify individual signal channels and to provide reference levels to confirm that the programme transmitted is likely to be within the signal level limits and will be as the producer intended.

Programme video and audio signal levels must be accurately related to their associated line-up signals but not exceed the limits above. The maximum deviation of programme levels from that indicated by the line-up signals shall be:

Video Luminance        3%

Video Chrominance    5%

Line blanking level shall be used as a black reference for the programme.

See Operational Requirements, section [1.6.5](#) for usage of Line-up signals.

#### **1.4.3 Video System Standards for High Definition Delivery**

Material shall be of either the 1080/50i (interlaced) or 1080/25psf (progressive) standard.

##### Programme signal parameters

Video signals must correspond to the reference line-up levels. These include peak sound, maximum luminance & colour difference (Y Cr Cb) component levels, and black levels. Care must be taken to avoid illegal colours (Y Cr Cb component signals exceeding the gamut limit) which may be generated by caption and graphics systems (see section [1.6.5](#) for full details).

##### Video Levels and Gamut (illegal signals):

Video levels including any line-up shall be received within the specified limits so that the programme material can be used without adjustment.

Video levels must be compatible with the PAL System which specifies 0 to 100% RGB Limits. We require that signals meet the easier EBU Recommendation R103-2000:

Luminance limits        -1% and 103%

Chrominance            105% max - RGB values to not exceed limits -5% to +105%

Overshoots can be ignored by the use of a low pass IRE filter. Single lines with larger errors caused by vertical processing such as aperture correction and aspect ratio conversion are permitted if they do not exceed the -1% Luminance limit.

#### Vertical blanking

V Blanking should fall within SMPTE 274M/295M specifications, as stated in section 14 "Analogue Synch" and section 15 "Analogue Interface" and in ITU-R specification BT.709-4. The vertical blanking interval should equal lines 1-20 and lines 561-563 of the first field and lines 564-583 and lines 1124-1125 in the second field.

#### Horizontal blanking

H blanking should fall within SMPTE 274M/295M specifications, as stated in section 14 "Analogue Synch" and section 15 "Analogue Interface" and ITU-R specification BT.709-4. Horizontal blanking should be between 280 clock periods and a maximum of 292 clock periods, creating a blanking width of between 3.775 microseconds and 3.935 microseconds when a clock period is equal to 13.48 nanoseconds.

#### Video white levels

White level should not exceed 700mV for component signals, and program black levels should not extend below 0V (DC). Neither the program luminance whites nor blacks should be clipped excessively. For colour difference signals R-Y and B-Y, levels shall not exceed 700 mV or fall below 0 mV when set at a 350 mV offset.

### **1.4.4 Audio Standards for Standard Definition and non 5.1 High Definition delivery**

Programmes shall be delivered in Mono or Stereo Format as required. The use of pre-emphasis and/or noise-reduction schemes during acquisition and post production is acceptable. However, the programme for final delivery should have no pre-emphasis or noise reduction scheme applied unless specifically required.

Left audio shall be present on the A leg or Channel 1.

Right audio shall be present on the B leg or Channel 2.

Mono shall be in Dual Mono format with identical and coherent audio on both Left and Right channels. This is so that it may be used amongst stereo programmes.

Finished programme material intended for transmission with stereo sound, whether recorded on videotape or for live transmission, must carry sound in A/B (Left/Right) form. M/S (Mid/Side) is not acceptable for delivery.

#### Audio Levels

Reference Level shall represent a level which is 8dB less than the maximum allowed during the programme as measured with a PPM. Within the BBC Reference Level is often referred to as "Zero Level", "Line-up Level", "0dB", "0dBu" or PPM4.

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

Mono derived from Stereo shall be to the M6 practice where the Mono signal is derived according to: "Mono = (L+R) - 6dB"

### Audio Line-Up

Line-up Tones serve to identify individual signal channels and to provide Reference Levels to indicate that without adjustment the programme transmitted will be within the signal level limits specified above and will thus be broadcast as the producer intended.

All tones must have been sourced to a tolerance of +/- 0.1dB.

Mono Line-up Tone shall be at a frequency of 1 kHz +/- 100Hz and represent 8dB less than the maximum allowable peak.

For Stereo sources, Stereo Line-up Tone shall be provided at a frequency of 1kHz +/- 100Hz and shall indicate the Left and Right programme legs: namely, EBU / ITC Stereo Tone at -8dB (PPM 4 / Zero Level) with only the left leg identified by breaks.

All tones must be sinusoidal, free of distortion and shall be phase coherent between channels.

Optionally, Step Tone sequences may be provided but if so then all tones must have been sourced at the same level and be phase coherent on Stereo feeds / tracks.

### Stereo Balance and Phase

The two stereo legs, when sending identical programme (Mono), shall match within 0.5dB and be phase coherent to less than 15 degrees at 10kHz ( -20 dB for an "S" reading meter / 4us delay ). Note: one sample of 48 kHz is 75 degrees at 10 kHz.

## **1.4.5 5.1 Audio delivery**

Programmes delivered with a 5.1 sound track require a stereo (Lt Rt) mix down on the delivery videotape. Preferred track layout for 5.1 deliveries is given under [1.6.7](#)

## **1.5 General Quality Requirements**

### **1.5.1 Technical quality grading**

Overall quality of sound and vision will be separately assessed in controlled monitoring conditions and any impairments noted. At the end of the technical review the programme will be judged against the **ITU-R five-point impairments grading scale** as shown below:

Grade 5	Imperceptible impairment
Grade 4	Perceptible but not annoying impairment
Grade 3	Slightly annoying impairment
Grade 2	Annoying impairment
Grade 1	Very annoying impairment

New commissioned programmes should meet a minimum of grade 4 for sound and vision quality. The minimum acceptable quality for any programme is grade 3 unless there are valid reasons for technical exemption, in which case details should be clearly stated on the recording report.

### **1.5.2 General picture quality requirements**

The pictures should be appropriately sharp, free of excessive overshoots and normally exhibit no perceptible levels of noise. Black or white crushing in the main areas of interest should be avoided and colours, especially skin tones, should be natural.

In certain circumstances, for example shooting actuality material or where a high level of mobility is required, the use of a DV "palmcorder" type camera may be considered acceptable for acquisition, but specific agreement, from Programme Operations, must be sought for using this. Where use of this format is agreed we require particular attention to be given to sound and lighting considerations.

We wish to encourage the use of innovative programme making techniques. Nothing in this document should prohibit the use of any production technique provided that a suitable quality product results. It is inherently difficult to define precisely what a suitable quality product is, and therefore there will be some subjective descriptions leading to imprecise advice. This is an unavoidable consequence of the rapid technical developments at this time. A competent resource provider should be able to give advice on achieving good quality results.

The use of material from all other non-broadcast and domestic videotape formats is not permissible except in exceptional circumstances. Their use must always be fully discussed and agreed in advance with Programme Operations.

In certain circumstances BBC worldwide require the final delivered master to be suitable for High Definition Up-conversion i.e. if there is to be a film transfer we would require that there is no wet gate or picture softening effects used. Alternatively we will require access to the original shot footage in order to create a High Definition version for international sale.

Additionally for High Definition Delivery:

For HD delivery, the use of Standard Definition broadcast and non-broadcast video formats, and certain non-broadcast HD domestic formats is **not** permissible. Use of up-converted Broadcast Standard Definition and HDV material may be allowed if it falls into the categories described in section 1.3.3 "Technical exemption categories". All instances of up-converted and HDV usage **must** be cleared in advance with Programme Operations. The upper limit for non-HD content in a programme is 25% even if it falls into the categories described in section 1.3.3. For the latest advice on 'non-HD' formats contact programme operations. 'Non-HD' includes Super 16, HDV and digibeta shot material.

- ◆ Contact: Justin Walton (HD Executive) – 020 8433 2057

### **1.5.3 General audio requirements**

Audio signals must be suitable for reproduction in a domestic environment. Dynamic range should be restricted and changes in loudness controlled so that the viewer has no need to adjust volume during or between programmes. All stereo recordings must provide good mono compatibility.

The audio shall be free of spurious signals such as noise, hum and cross-talk. Sibilance, distortion wow and flutter shall not be apparent.

The audio shall not show dynamic and frequency response artefacts as a result of the action of noise reduction or low bit rate coding systems. Audio compression should be used as little as possible as the effects of compression used for broadcast distribution and transmission can exacerbate impairments.

### **1.5.4 Sound to vision synchronisation**

The relative timing of sound to vision should not exhibit any perceptible error. Sound must not lead or lag vision in excess of 20ms (1 field at 25 frames per second). A sound delay of greater than 20ms can be acceptable where this occurs in context to give a perception of distance.

### **1.5.5 Electronic Video Processing**

Due to international distribution of Worldwide masters and the requirement for standards conversion any use of video processing must be agreed with Programme Operations, this includes the use of film effect and noise reduction.

Standard Definition Standards Conversions

The use of Motion Compensating (sometimes known as Motion Predictive or Motion Vector) Standard Converters is preferred.

#### High Definition Standards Conversions

As they become available the use of Motion Compensating HD standards converters is preferred. It is also acceptable to use speed change to transfer between High Definition standards as long as the due attention is given to the audio. Currently speed change is the preferred method of changing between 25 and 24 frame HD standards

#### Down Conversions

Currently it's acceptable to use a broadcast VTR's "on board" down converter to produce standard definition copies of high definition programmes. Programme Operations should be consulted if a standard definition master is to be delivered to Worldwide from a high definition programme.

#### Up Conversions

Where it's permissible to use standard definition material in a high definition programme care must be taken to deliver the best possible quality. This is particularly important when material has to be standards converted as well as up converted. Use of standard definition material **must** be cleared with Programme Operations

#### Standard Definition Film Effect

Not all territories will accept conversion of interlace to progressive. All conversion methods reduce the resolution of the image as well as introducing flicker on motion. If so-called film motion is required it may be a requirement to deliver film and non-film motion versions. Currently only film effect processes that attempt to maintain the full resolution of the original are acceptable. Straight field duplication is not acceptable. Note: Some new broadcast cameras now have Interlace and Progressive capture options. Where film motion is a requirement the use of progressive capture is the preferred method. Programme Operations must be informed if a film effect process is to be used.

#### High Definition Film Effect

Most High Definition cameras can capture in both Interlace and Progressive modes. It is not acceptable to add film effect to high definition images for high definition delivery. Where film motion is a requirement the use of progressive capture is the preferred method.

### **1.5.6 Flashing Images and Repetitive Patterns**

Flickering or intermittent lights and certain types of repetitive visual patterns can cause problems for some viewers who have photosensitive epilepsy.

Television is by nature a flickering medium (because of the 50 Hz refresh rate of typical receivers and the 25Hz effects of interlaced scanning) and it is therefore not possible completely to eliminate the risk of television causing convulsions in viewers with photosensitive epilepsy. However steps can be taken to reduce unnecessary risks.

The Independent Television commission (UK)/Ofcom issues guidelines for PSE which must be followed. They can be found on the Ofcom website at

[http://www.ofcom.org.uk/codes\\_guidelines/broadcasting/tv/vrs\\_code\\_notes/flsh\\_imgs/?a=87101](http://www.ofcom.org.uk/codes_guidelines/broadcasting/tv/vrs_code_notes/flsh_imgs/?a=87101)

The following guidance on the major factors involved is provided for reference.

However, the ITC guidelines should be consulted for complete information.

- Rapidly flickering images should not change at a fast rate i.e. less than 360ms (9 frames at 25 frames per second) between each flash.
- If brightness changes for a given area of a picture are less than 25% of screen maximum brightness then that area may be discounted.
- In marginal cases such images should be avoided if they are positioned near the centre of the screen.

- Changes in colour are not a problem unless they affect the red channel substantially.
- Prominent and regular patterns which cover a large proportion of the picture area should be avoided, especially if they represent bars, spirals, or 'dartboard patterns'. Moving or flickering regular patterns are particularly hazardous.
- Care needs to be taken also with computer generated images, which, if highly detailed, can cause a high degree of 25Hz inter-line flicker in the displayed television picture.

Video luminance level as measured on a waveform monitor does not simply equate to screen luminance (brightness) and cannot be used to assess brightness without correcting for Gamma.

## **1.6 Delivery on Videotape**

### **1.6.1 Technical Acceptance Procedures**

All programmes delivered on videotape will be subject to a Quality Assessment Review prior to delivery. Any programmes failing to meet the required technical standards, or in breach of other acceptance requirements will be referred back to the supplying production company.

### **1.6.2 Standard Definition Videotape Format**

Programmes should be delivered on Digital Betacam component videotape format and shall replay to the ITU Rec 656 interface standard. During the production process the highest technical standards must be maintained so that the delivered programme achieves the required standards. In all cases the submitted videotape recording must be fully compliant with the manufacturer's technical specification thereby ensuring format compatibility.

### **1.6.3 High Definition Videotape Format**

Programmes should be delivered on either HDCam SR, HDCam or HDD5 component videotape format and shall comply with the SMPTE 274-1998 and SMPTE 295 1997 standards. During the production process the highest technical standards must be maintained so that the delivered programme achieves the required standards. In all cases the submitted videotape recording must be fully compliant with the manufacturer's technical specification thereby ensuring format compatibility.

### **1.6.4 Recording Reports**

Every tape submitted must be accompanied by a completed recording report. The report must include full details of the programme supplier and recording facility house and programme title/ subtitle. It must also include technical information including the origination format, timecode of first frame of picture (FFOP) and details of the aspect ratio and safe areas used.

The recording report must provide clear references to any part of the programme content that may attract low grades (especially below grade 3).

### **1.6.5 Line-up Test Signals and Leader**

The start of programme and any subsequent part should be preceded by a countdown clock indicating programme title, subtitle, episode number, part number and contract number where known.

The clock must provide a clear countdown of at least 20 seconds cutting to black at three seconds prior to the start of the programme.

The clock must appear round when viewed on a screen of the same aspect ratio the programme is intended to be viewed on. E.g. The clock on a 4 x 3 programme must appear round on a 4 x 3 display. The clock on a 16 x 9 programme must appear round on a 16 x 9 display

Timecode	Picture	Audio 1	Audio 2	Audio 3	Audio 4
09.58.00.00 (or Earlier)	EBU Bars (100/0/75/0) (NTSC converted bars are not acceptable)	Coherent Step tone (100Hz, 900Hz and above 10kHz)		Coherent Step tone (100Hz, 900Hz and above 10kHz)	
09.59.30.00	Ident and Clock				
09.59.40.00	Ident and Clock	Stereo Ident or Line up Tone at <u>-18dBfs</u> (PPM4)		Stereo Ident or Line up Tone at <u>-18dBfs</u> (PPM4)	
09.59.50.00	Ident and Clock				
09.59.57.00	Black	Silence	Silence	Silence	Silence
10.00.00.00	Programme (BBC logo within op sequence).	Master Left (Lt)	Master Right (Rt)	M&E Left (Lt)	M&E Right (Rt)
	Minute of black				
	Textless title backgrounds	Clean Backgrounds - Titles and credits (cut points should match). Including BBC logo.			

Recorded signal levels:

The audio reference level of digital recordings must correspond to -18dB with respect to maximum audio coding level, that is the audio reference level (PPM4) corresponds to -18dBFS.

Pre-emphasis of the digital signal must not be used.

Programme sound and vision maximum levels must always correspond to the recorded reference tone and colour bar line-up signals according to the following tolerances:

Vision	±3%
Sound	±1dB.

Colour signals must be legal in PAL and YUV domains meeting the PAL specification.

In line with PAL system I (1984) (section 4 para. 4) the video signal decoded to RGB shall not lie outside the levels corresponding to black level and white level apart from transient overshoots. This corresponds to luminance never lying outside its nominal black 0% and white 100% bounds.

A more reasonable and acceptable working specification can be applied:

Black shall lie no more than 1% (or 2 bits) below nominal black level.

Peak White shall lie no higher than 3% (or 7 bits) above nominal white level.

When decoded to RGB each component signal must not lie above 105% or below -5%.

All measurements can use an IRE filter to remove transient overshoots:

**1.6.6 Audio Track Allocation**

Audio track allocation must conform to the following standards unless otherwise stated in the programme contract.

<b>Track 1</b>	<b>Track 2</b>	<b>Track 3</b>	<b>Track 4</b>
<b>Final Programme Mix</b>		<b>International tracks</b>	
<b>left (A)</b>	<b>right (B)</b>	<b>Music &amp; Effects ( L )</b>	<b>Music &amp; Effects ( R )</b>

**1.6.7 5.1 Audio Delivery**

For delivery on HDCam SR please contact Justin Walton (HD Executive) – 020 8433 2057

For delivery on separate audio master:

5.1 Audio must be delivered on two DA-88 tapes. One for the main audio and the second for the 5.1 international audio. The DA-88 must be timecode synchronous with the delivered master video tape.

Tracks layout should conform to the SMPTE 320M-1999 Standard/ITU-R recommendation BR-1384:

<b>Track 1</b>	<b>Left</b>
<b>Track 2</b>	<b>Right</b>
<b>Track 3</b>	<b>Centre</b>
<b>Track 4</b>	<b>LFE (Low Frequency Effects)</b>
<b>Track 5</b>	<b>Left Surround</b>
<b>Track 6</b>	<b>Right Surround</b>
<b>Track 7</b>	<b>Stereo Left total (Lt)</b>
<b>Track 8</b>	<b>Stereo Right total (Rt)</b>

Track layout of the delivered video tape should be as follows:

<b>Track 1</b>	<b>Track 2</b>	<b>Track 3</b>	<b>Track 4</b>
<b>Final Programme Mix</b>		<b>International tracks</b>	
<b>left (A)</b>	<b>right (B)</b>	<b>Music &amp; Effects ( L )</b>	<b>Music &amp; Effects ( R )</b>

The additional 4 tracks of an HDD5 video tape are unallocated at present and should be mute unless previous agreement has been reached with Programme Operations.

With prior consent from Programme Operation non 5.1 HD programmes delivered on HDD5 can use

all 8 audio tracks as follows:

<b>Track 1</b>	<b>Left Main</b>
<b>Track 2</b>	<b>Right Main</b>
<b>Track 3</b>	<b>Left International</b>
<b>Track 4</b>	<b>Right International</b>
<b>Track 5</b>	<b>Left Music</b>
<b>Track 6</b>	<b>Right Music</b>
<b>Track 7</b>	<b>Dialogue</b>
<b>Track 8</b>	<b>Commentary</b>

### **1.6.8 Clean Backgrounds**

After programme end the supplied tape should contain all backgrounds and material clean of all captions or graphics used in the main programme.

### **1.6.9 Timecode and control track**

Both longitudinal timecode (LTC) and vertical interval timecode (VITC on VBI lines pairs 19 and 21 and 332 and 334) must be recorded throughout the line-up and programme and comply with EBU specification. N12-1994 (SMPTE 12M-1995).

Timecode must be contiguous, coherent and not pass through zero at any point from the start of the first countdown clock to beyond the end of the programme.

LTC and VITC must have identical times.

If DVITC or ancillary timecode are used then they must be identical to the LTC and VITC. Timecode and control track must have the correct phase relationship with the corresponding video signal.

## **INTERNATIONAL TECHNICAL REQUIREMENTS**

### **1.7 Widescreen Production - Safe Areas**

Although High Definition is a fully widescreen standard with 16:9 action and caption safe areas, most HD programmes will be down-converted for distribution in areas that use standard definition protection standards. To allow compatibility, unless otherwise agreed with Programme Operations High Definition programmes should conform to the same safe areas criteria as Standard Definition.

Programmes for international distribution should always conform to the following configuration: 16:9 widescreen shoot to protect 14:9.

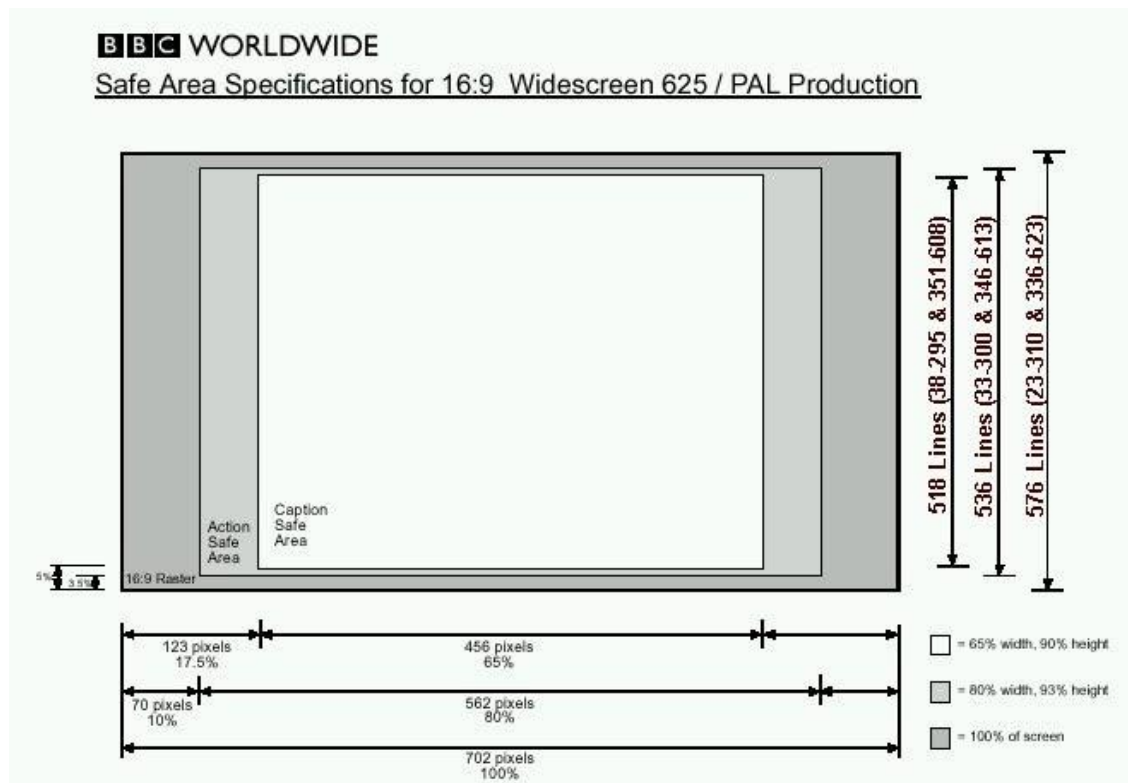
4 x 3 titles and captions should be "centre cut out safe".

This allows the programme to be meet the varying needs of broadcasters around the world.

These safe areas are as defined and used within the standards documents ITU R BT.1379-1 and EBU R95-2000.

BBC WORLDWIDE 16:9 Safe areas	
Action Safe	Caption Safe (centre cut out)
80% of Active Width 93% of Height	65% of Active Width 90% of Height

It is not acceptable for changes from 16:9 display to 4:3 display within a programme.



## 1.8 Summary of international requirements

### 1.8.1 General

All programming delivered to BBC WW should be fully cleared for worldwide distribution unless previously arranged with the relevant parties within BBC Worldwide.

### 1.8.2 Definitions Of A Music And Effects Track

#### Drama:

100 per cent fully filled effects, footsteps and foleys to be supplied which includes the atmospheric effects of crunching gravel, background atmos etc.

No speech should be heard at all on m/e.

Documentaries:

We accept final mix minus commentary, this means:

No commentary, no extra readings or voiceovers should be on the music and effects. The levels should not be dipped.

If a contributor appears in vision, their voice must continue through that piece on the M & E tracks, even if they are not in vision throughout.

### **1.8.3** Definition Of Clean Title Backgrounds

Sometimes referred to as Textless backgrounds or Neutral backgrounds, they are used for Broadcasters to translate the titles into their own language.

The clean shots should be continuous and from cut point to cut point to enable the clients to drop in the section. Including the BBC logo.

Clean backgrounds should be supplied for opening sequences and closing credits.

If this cannot be provided clean due to digitally created titles then some kind of alternative should be supplied and discussions with relevant co-ordinator should take place.

### **1.8.4** Other requirements

1 x SVHS of the captioned version, this is used as a viewing master. For HD requirements please see your Programme Operations Co-ordinator who will issue you with a separate tech spec.

## 2.0 TECHNICAL / CONTENT POLICY GUIDE FOR BBC WORLDWIDE VERSION

<b>DQ Location</b>	Internal: <a href="http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml">http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml</a> External: <a href="http://www.bbc.co.uk/guidelines/dq/contents/television.shtml">www.bbc.co.uk/guidelines/dq/contents/television.shtml</a>
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## TECHNICAL / CONTENT POLICY GUIDE FOR BBC WORLDWIDE VERSIONS

This document covers key guidelines for programmes delivered to BBC Worldwide for international distribution.

### **2.1.1 BBC logo:**

All masters delivered for WW distribution have to include the logo in opening sequence and within clean backgrounds for opening sequence. Refer to BBC guidelines

### **2.1.2 Quality Assessment Review (QAR):**

All masters to be delivered to BBC Worldwide having undergone and passed a quality assessment review. Your Programme Operations Co-ordinator at BBCWW can advise on suitable facility houses.

### **2.1.3 Programme times:**

Include title sequence and end credits. BBC Worldwide can accept a duration 2mins either side of the agreed duration (i.e. 48'-52' for a 50' programme, and 28'-32' for a 30' programme).

### **2.1.4 Programme trails/Recaps:**

Programme trails are acceptable should the programme air in more than one part, but the commentary should avoid time references such as "next week...", "tomorrow..." and instead refer to "in the next episode".

### **2.1.5 Websites/Booklet information/ Write-in Address:**

Should the UK version carry any booklet information or write-in addresses for the UK public, these should be removed on the BBC Worldwide versions. **Long life** BBC Website addresses are acceptable; however, any additional non-BBC websites provided on the UK versions should also be removed from the BBC Worldwide version.

### **2.1.6 Programme 'stings':**

Stings used in programmes to separate programme sections should be provided clean of English language captions/graphics in the text less version and/or as part of the clean backgrounds.

### **2.1.7 Natural History titles:**

For all natural history titles, please supply the relevant Latin species name on scripts and accompanying paperwork – this is to assist the translation process.

<b>DQ Location</b>	Internal: <a href="http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml">http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml</a> External: <a href="http://www.bbc.co.uk/guidelines/dq/contents/television.shtml">www.bbc.co.uk/guidelines/dq/contents/television.shtml</a>
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## 3.0 USEFUL CONTACTS

<b>DQ Location</b>	Internal: <a href="http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml">http://guidelines.gateway.bbc.co.uk/dq/tv/standards.shtml</a> External: <a href="http://www.bbc.co.uk/guidelines/dq/contents/television.shtml">www.bbc.co.uk/guidelines/dq/contents/television.shtml</a>
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## Contacts

### 3.1 Useful numbers

- ◆ For BBC Worldwide, Programme Operations, Jackie Walton ( +44(0)20 8433 2754
- ◆ For HD enquiries, Justin Walton ( +44(0)20 8433 2057

#### **Genre Structure:**

##### **Programme Operations Senior Exec**

Jackie Walton: Indie Drama, Remastering ( +44(0)20 8433 2754

##### **Programme Operations Exec**

Emma Kemp: Science, History ( +44(0)20 8433 2752

##### **Programme Operations Co-ordinators**

John Barron: NHU, News & Current Affairs, Bristol Documentaries, Arts ( +44(0)20 8433 2347

Chris Cooper: Light Entertainment, In house Drama, Children's, Documentaries ( +44(0)20 8433 2408

##### **International Operations Assistant**

Juliet Cole: Religion, Birmingham Documentaries ( +44(0)20 8433 2464