



# TECHNICAL SPECIFICATION FOR THE DELIVERY OF COMMERCIAL CONTENT TO SKY



**SKY Television**

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## INTRODUCTION

This document is to be used as a standard for all commercial content being delivered to SKY by outside entities. This is a document of standards but also a guide for these entities to ensure that their content meets all specifications for broadcast on SKY's network.

SKY requires all content to be delivered to these specifications to maintain a high quality output for all content owned by the client.

Due to rapid and frequent changes in the industry this document may be subject to change without notice.

For full technical specification beyond Commercial delivery, please refer to the document 'Technical Specification for the Delivery of HD and SD Content to SKY'

## OUTLINE

Commercial content that is delivered to SKY Television will be required to follow the specifications outlined in this document.

Multiple delivery methods are addressed in this document but require the standard technical specifications outlined to remain consistent regardless of delivery medium.

# 1. SUMMARY OF SPECS

## 1.1. Commercial Delivery methods

Commercials may be delivered to SKY via a multitude of mediums.

### File delivery via appropriate vendors including

- IMD
- Adstream
- DubSat

### Tape delivery

- HDCAM SR (4:2:2 sampling) 1080i50 or 1080/25PsF
- HDCAM (3:1:1 sampling) 1080i50 or 1080/25PsF
- Digital Betacam 576i50

## 1.2. HD/SD Commercial Specs

SKY requires the following HD specs:

- **Video Format:** HD - 1920 x 1080i 50 fields
- **Audio Format:** PCM. Dolby E acceptable on tape delivery only.

Audio channel	Content
Ch.1	Stereo programme left
Ch.2	Stereo programme right
Ch.3	Dolby E or PCM
Ch.4	Dolby E or PCM

SKY requires the following SD specs:

**Video Format:** SD – 720 x 576i 50 fields

**Audio Format:** PCM

## 1.3. Audio level specifications

SKY requires the following audio specifications for delivery:

- Audio loudness to be normalised at -24LKFS.
- Audio must not deviate more than 2db above or below the -24LKFS range
- Audio to be measured to the ITU BS 1770-2 standard. (See audio spec 2.2 in this document.)

#### 1.4. Aspect Ratio

- SKY requires all commercial content to be delivered in widescreen full height anamorphic
- Letterboxed content is accepted if the image (including letterboxing) fills the full 16:9 frame.
- Postage stamping is not permitted. For example any letterboxed content that contains pillarboxing will be rejected based on industry broadcasting standards
- Programmes must maintain a consistent aspect ratio throughout their durations

#### 1.5. Safe Action Areas

- SKY uses the EBU R95-2008 recommendation: "Safe Areas for 16:9 Television Production"
- SKY recommends that text content is contained within the widescreen 4:3 centre-cut safe text area. However, SKY will accept text that lies within the widescreen 14:9 centre-cut area.

#### 1.6. Durations

Any commercial is required to contain images for the full length of duration. Any content that contains black frames (empty frames) at the SOM (Start of Media) or EOM (End of Media) will be rejected based on SKY's standards.

Content that contains fades from black and fades to black at the SOM or EOM are permissible.

## 2. TECHNICAL SPECIFICATIONS

All commercial content must meet the following technical specifications to ensure the commercial is broadcast successfully on the SKY TV network. All commercials are received and processed on site and any commercial content that fails to meet one or more of the following specifications may result in a rejection of content. Upon rejection, the provider will be required to make the fixes necessary and submit the media for re-delivery.

#### 2.1. Video levels

Video levels in commercial content should conform to EBU Rec103-2000 standards. Media must conform to the limits listed below.

- Luma maximum 103% (+721mv)
- Black not below -1% (-7mv)

When matrixed to RGB, levels should not exceed the range -5% (-35mv) to +105% (735mv). 0-100% corresponds to 0-700mV.

#### 2.2. Audio

Commercials are required to meet all of the following specifications to align with the level of SKY's broadcasting standards.

- Commercials measured in accordance with ITU-R BS1770-1 or EBU R128 will also be accepted but if Dolby is present the Dolby E Metadata's Dialnorm parameter must still accurately represent this. Tolerance for acceptance of EBU R128 measured feeds is  $\pm 1$ dB
- Audio lip-sync must lie within the range of audio 5mS early (sound before picture) to 15mS late (sound after picture).
- The end-to-end broadcast system limits for lip-sync is  $\leq 40$ mS early (sound before picture) to  $\leq 60$ mS late (sound after picture).

- Dolby E data, on tape, must be 1 frame in advance of video. Tape and box labelling should clearly confirm this.
- Use 16-bit sampling resolution (Dolby E containing 8 channels must use 20-bit).
- 48kHz sampling rate, locked to associated video.
- All audio must be free of distortion, noise, digital dropouts and clicks

### Related Standards

- SD: ANSI/SMPTE 272M-1994: Formatting AES/EBU Audio and Auxiliary Data into Digital Video Ancillary Data Space
- HD: ANSI/SMPTE 299M-1997: 24-Bit Digital Audio Format for HDTV Bit-Serial Interface
- SMPTE 320M-1999: Channel Assignments and Levels on Multichannel Audio Media
- EBU R37-2007: The Relative timing of the sound and vision components of a television signal
- EBU R128: Audio loudness measurement
- ITU-R BS1770-1,2,3: Algorithms to measure audio programme loudness & true peak level.
- ITU-R BS1771-1: Requirements for loudness and true-peak indicating meters.

### 2.3. Loudness

**Stereo Audio levels:** PCM audio tracks (native or a stereo down mix from a surround format) should be normalised to a programme loudness of -24LKFS  $\pm$ 2dB, measured per ITU BS1770-2. Peaks should be limited to -2dBTP.

**Dolby Audio Levels:** Programme loudness should be measured per ITU-R BS1770-2 and be accurately reflected in the Dialnorm parameter of the Dolby metadata. Any surround audio detected as being 'Over-Level' will be rejected.

### 2.4. Dolby

At times Dolby can be delivered for commercial content. This may only be delivered on tape and not via file delivery through the selected vendors listed previously in this document.

#### Suggested channel delivery:

Audio channel	Content
Ch.1	Stereo programme left
Ch.2	Stereo programme right
Ch.3	Dolby E or PCM
Ch.4	Dolby E or PCM

<b>Audio Channel allocation within Dolby E data stream (SMPTE320M)</b>	
1	Front Left
2	Front Right
3	Centre
4	LFE
5	Rear left
6	Rear right
7	Silence or as assigned
8	Silence or as assigned

**Suggested Dolby E Encoder settings:**

<b>Programme configuration</b>	5.1	
<b>DialNorm setting</b>	Matches loudness	
<b>Dynamic Range</b>	Line and RF mode compression	Film standard
<b>Audio Processing</b>	Channel mode	3/2L
LFE channel enable	On	
DC high pass filter	On	
Low pass filter	On	
LFE filter	On	
Surround phase shift	On	
Surround 3dB attenuation	On	
<b>Bit Stream Information</b>	Centre mix level	0.707 (-3.0dB)
Surround mix level	0.707 (-3.0dB)	
Mix level	80dB SPL	
Room type	Small room, flat monitor	
Copyright bit and original bit stream	On	
<b>Extended BSI</b>	Preferred stereo down mix	Lt/Rt preferred
Lt/Rt centre mix level	0.707 (-3.0dB)	
Lt/Rt surround mix level	0.707 (-3.0dB)	
Lo/Ro centre mix level	0.707 (-3.0dB)	
Lo/Ro surround mix level	0.707 (-3.0dB)	
Converter type	Standard	

## 2.5. Compression

Post Production material requires the highest possible recorded bit rate and maximum sample rate. 4:2:0 material will not be accepted for colour correction or chroma separation (keying) manipulation.

There must be no visible quantising artefacts due to excessive compression or poor transcoding techniques. It should be noted the production's aim should be to maintain the lowest levels of compression from programme acquisition through post production to mastering.

### Recommended Video Bit rates

- Minimum HD rate: MPEG-4: 20Mbps, 4:2:0
- Minimum HD rate: MPEG-2: 30Mbps, 4:2:0
- Minimum SD rate: MPEG-4: 10Mbps, 4:2:0
- Minimum SD rate: MPEG-2: 15Mbps, 4:2:0
- Group of pictures (GOP) structure
- Intraframe I or IB preferred

## 2.6. Standards Conversion

- Programme material converted from 29.97 frames or 59.94 fields to 25 frames or 50 fields must be converted using a standards convertor that has motion predictive, motion compensating or frame integrity processing. The use of integrated standards-converters on non-broadcast quality server ports or VTRs is not acceptable.
- Interpolating convertors are not acceptable as the process causes multiple images and periodic blurring of motion.
- Appropriate audio or video delay must be used to compensate for lip-sync errors.
- Note: Media supplied in the format 1920 x 1080PsF - 23.98 or 24 frames per second plays at 25 frames per second with an approximate 4% speed increase. Audio pitch increases by 4%, and programme duration reduces proportionally. (PsF= progressive segmented frame)

## 2.7. Progressive/Interlaced

When producing content in Progressive format it is essential that production companies are aware that SKY broadcasts in interlaced format. A conversion of the content from progressive to interlaced would be required and it is important that the correct method is used. It is essential that these conversions contain field 1/top/odd as the first field of the interlaced frame and that this is consistent throughout the duration of the media. If incorrect methods are used this will result in artefacts and interlacing visual glitches occurring on the image.

## 2.8. Timecode

- Timecode must comply with EBU specification N12-1994 (SMPTE 12M-1995) and be recorded throughout the line-up and programme and must maintain the correct phase relationship with the video signal.



- Vertical Interval Timecode (VITC): SD VITC should appear on lines 19, 332 and shall be continuous, unbroken and match LTC. It shall conform to SMPTE RP188
- Longitudinal timecode: Longitudinal timecode (LTC) shall be continuous and unbroken and match VITC
- Timecode must not pass through 00:00:00:00 at any time

## 2.9. Aspect Ratios and Safe Action Areas

### Aspect Ratio

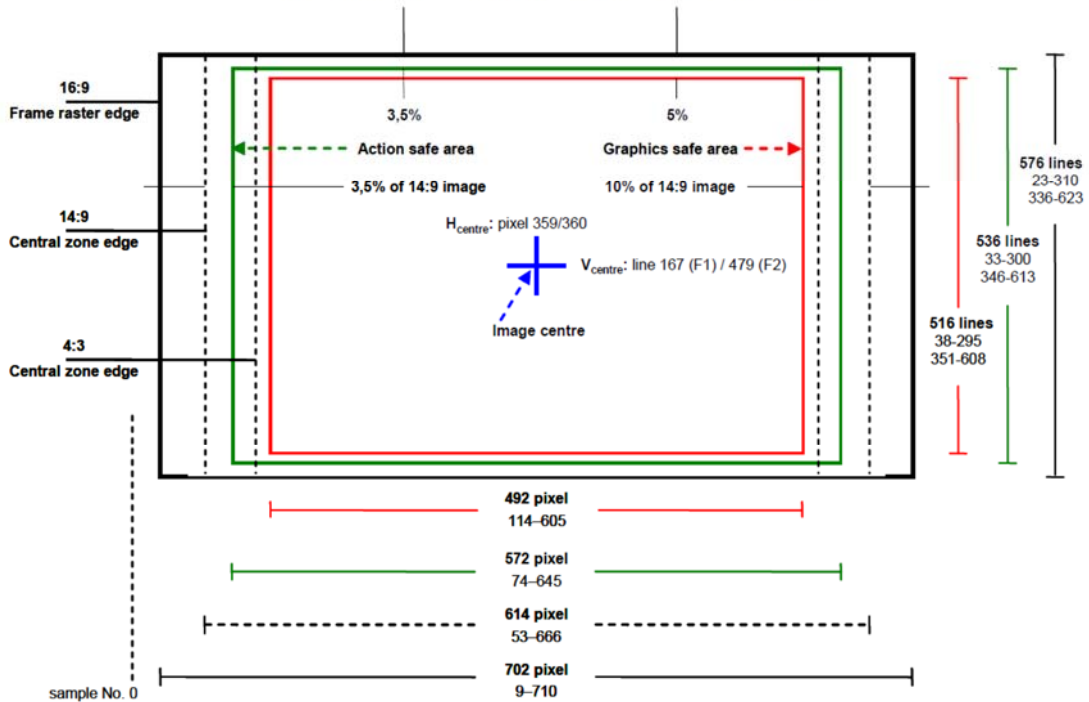
- SKY requires all commercial content to be delivered in widescreen full height anamorphic 16:9 aspect ratio. Media delivered in 4:3 must be delivered with pillarboxing within the image. SKY will not perform Aspect Ratio Conversion for non-compliant Commercial content.
- Letterboxed content is accepted if the image (including letterboxing) fills the full 16:9 frame.
- Postage stamping is not permitted. Any letterboxed content that contains pillarboxing will be rejected based on industry broadcasting standards
- SKY may from time to time request letterboxed anamorphic versions. Please advise SKY Media Traffic Centre whether the letterboxed anamorphic version is the format recommended by the client for broadcast due to action area considerations.
- Commercials must maintain a consistent aspect ratio throughout the entire duration
- Aspect ratios greater than 1.78:1
- Provide full height anamorphic pan & scan version
- SKY may from time to time request letterboxed anamorphic version. Please advise SKY Media Traffic Centre whether the letterboxed anamorphic version is the format recommended by the production house for broadcast due to action area considerations.

### Safe Action Areas

- SKY uses the EBU R95-2008 recommendation: "Safe Areas for 16:9 Television Production"
- SKY recommends text content is contained within the widescreen 4:3 centre-cut safe text area. However, SKY will accept text that lies within the widescreen 14:9 centre-cut area.
- Advertisers should note that some SKY customers prefer to view widescreen channels in 4:3 centre-cut mode which will result in any text outside that area being cut off.
- SKY recommends any essential information always be contained within the widescreen 4:3 centre-cut safe text area.

## Scanning raster 576i/25: 16:9 safe areas for 14:9 presentation

Image format: 16:9 Full Format (14:9 protected)



**Note:** The safe action areas are referenced from international broadcast guidelines. The area pictured above is a guide to what is largely determined by customer hardware. As consumer hardware differs from customer to customer, it is worthy to note that these specifications should be referenced as a guide only and not held to as a production and broadcast standard.

### 2.10. Images Accepted by SKY

#### SKY standard and preferred delivery format for widescreen content



Example of full-height 16:9 image viewed on a widescreen monitor



Example of the same image on the left when viewed on a 4:3 monitor

### SKY delivery format for 4:3 content



Example of full-height 4:3 image when viewed on a widescreen monitor. Described as a 'pillar-boxed' image.



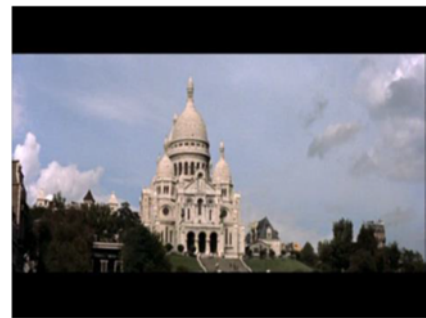
Example of the same image on the left when viewed on a 4:3 monitor.

(Since 2008, suppliers should be avoiding shooting anything in the 4:3 aspect ratio)

### SKY delivery format for aspect ratios greater than 1.78:1 (widescreen letterboxed image)



Example of a widescreen letterboxed image when viewed on a widescreen monitor e.g. Cinemascope movie promo



Example of the same image on the left when viewed on a 4:3 monitor.

## 2.11. Images not Accepted by SKY

These images will be rejected by SKY



Example of a 4:3 image pillarboxed within a letterbox frame when viewed on a widescreen monitor. Described as 'postage stamp'



Example of the same image on the left when viewed on a 4:3 monitor. Also described as 'postage stamp'



Example of a 4:3 image pillarboxed within a letterbox frame when viewed on a widescreen. Also described as 'postage stamp'



Example of the same image on the left when viewed on a 4:3 monitor. Also described as 'postage stamp'

## 2.12. Closed Captioning

- SKY may request content to carry closed captioning on line-21/334. Closed captioning should adhere to the EN 300 743 DVB specification for conveying ITU-R System B Teletext in DVB bit streams.
- Carriage of closed captioning in accordance with OP47 has been implemented for HD transmission.

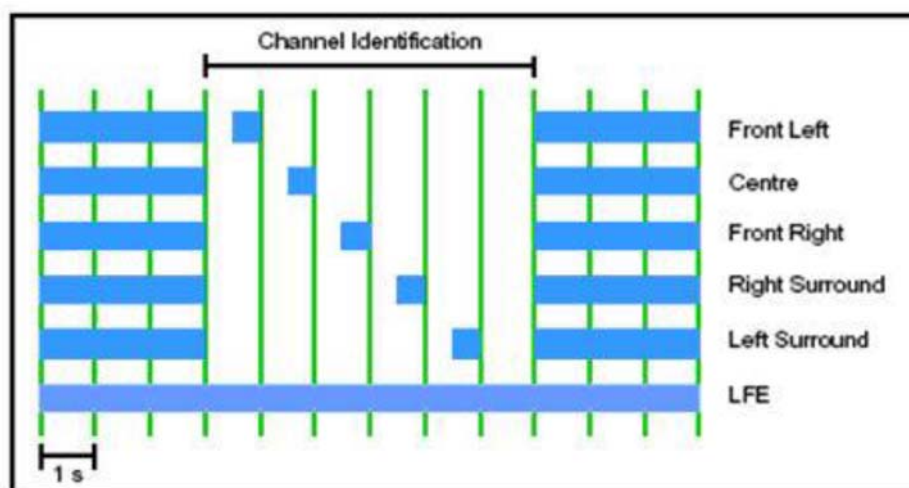
### Note regarding Vertical Blanking Interval

Data carried within lines of the VBI will not be blanked by SKY's equipment except on transmission. Carriage, decode and implementation of data in lines beyond those allocated to timecode and captions should be discussed with SKY prior to supply of media.

### 2.13. Test Line-up

Commercial content is sometimes required to be delivered and ingested via tape. It is necessary to forerun the content with standard test line-up to ensure video and audio meet Sky's Commercial Delivery specifications via a constant medium.

- Record 1-min 100% colour bars (100/0/100/0) or matrix test signal with 1 kHz tone set to – 20dBFS.
  - If the above is not available, tone shall be generated and be in-phase across all channels that carry audio including encoded Dolby E channels (if present).
  - Tone on stereo tracks should be continuous on left (track 1) and interrupted on right (track 2).
  - In the case of HDCAM-SR tapes supplied with discrete 5.1 audio channels, each channel shall have interrupted tone as follows: 3 seconds of 1 kHz coherent tone followed by 0.5 second silence, and then all the main channels identified in clockwise reproduction order - starting at front left and ending at left surround. The identification consists of an individual 0.5 second burst of a 1 kHz tone spaced by a 0.5 second silence gap before the next channel in line is identified. The LFE channel carries 80 Hz continuous tone. (cf. EBU Tech.3304).



- 2-sec of black and silence prior to commercial start

When media is delivered via file delivery, embedded descriptive metadata must be present. The SOM value in this metadata must reflect the first frame of commercial vision rather than any extra ID board or black provided.

### 2.14. ID Board / Slide / Slate

An ID board (slide/slate) is to be provided with each commercial with the following information:

- Key Number
- Production House
- Product description
- Advertiser
- Commercial duration

## 3. DELIVERY

### 3.1. Tape Information

Tape labels must contain the following:

- Name of recording facility house and Job number
- Programme Title
- Subtitle/episode number
- Record format/frame rate
- Audio track configuration
- Programme duration

### 3.2. Tape Packing

- Labels must be applied to the cassette case and tape
- All tapes shall be fully rewound to the head of the tape. 'Library' or 'archive' wind mode preferred to ensure smooth tape pack.
- Record lockout tab shall be punched in (record inhibit).
- Cassettes must be delivered in their case.
- Cases must be protected by packing material suitable for transportation.

#### **Delivery address**

Attn: Media Traffic Manager  
SKY Network Television Limited  
10 Panorama Road  
Mt Wellington  
Auckland, 1060  
New Zealand

### 3.3. Deadlines

- Material Instructions for advertisements must be provided to SKY no later than 3 “working” days prior to the first transmission date. This deadline will differ in the event of public holidays. All Material Instructions are to be either emailed or faxed to your Traffic Representative.
- Material on Tape: Material must be delivered to SKY no later than 4pm, 3 “working” days prior to the advertisement’s first transmission date. This deadline will differ in the event of public holidays. If material is to be delivered outside of office hours, please contact a member of our traffic team to make arrangements.
- TVCAB Approval: SKY Television does not telecast an advertisement that has not been approved by TVCAB (Television Commercial Approvals Bureau); therefore, your advertisement may be moved to a later transmission date.
- NB: TVCAB will not approve any advertisements that arrive at their office after 4pm, Friday.