1. SCOPE

This Operational Practice is valid for a transitional period to indicate the delivery specifications for commercials to Australian broadcasters who continue to provide **only** an analog 4:3 service i.e. it will not apply to the capital city stations or many regional stations

Free TV Australia has made available two operational practices for the recommended delivery of television commercials in digital formats to Australian broadcasters. They are:

- OP29 – Digital Delivery Formats For Commercials.
- OP36 – SDTV and HDTV Commercials – Videotape Delivery.

These documents cover:

- The delivery of commercials via videotape delivery methods,
- The delivery of commercials via non videotape methods, and aspect ratio and protected areas for commercial content in SDTV and HDTV.

OP24 procedures will ONLY apply by prior agreement between the broadcaster and the commercial producer, to create commercials in a 4:3 aspect ratio, within a 4:3 raster.

2. REFERENCES

This Operational Practice refers to the following documents:

Operational Practices

OP 29 - Digital Delivery Formats For Commercials
OP 36 - SDTV and HDTV Commercials - Videotape Delivery
OP 42 - Distribution, Transmission, and Monitoring of Closed Captions on line 21/334

ITU

ITU-R Rec. BT 601

SMPTE

SMPTE RP. 155

EBU

EBU Tech. Rec. R-92 1999
EBU Tech. 3097

3. DISTRIBUTION MEDIUM

Commercials on video tape shall be supplied on a videotape format agreed between the broadcaster and commercial producer. However, the preferred format would be a component digital format. Commercials may also be distributed electronically, by satellite or landline, refer to Free TV Australia Operational Practice OP29.

4. COMMERCIALS IN COMPONENT DIGITAL FORMAT

In cases where commercials are distributed in component digital format, the following should apply;

4.1 STANDARD DEFINITION

Standard Definition is a 625 line, 25 frames per second, 2:1 interlaced signal produced in agreement with the specifications of ITU-R Rec. BT 601 (as revised).[1]

4.1.1 Aspect Ratio

The aspect ratio shall be 4:3 within a 4:3 raster - however, creative modification within this aspect ratio will be permitted.

4.1.2 Audio Signals

The associated audio signal shall be a stereo pair which may be Dolby Pro Logic II encoded so that the centre and surround channels are encapsulated in the stereo pair.

Track 1 shall carry the left channel
Track 2 shall carry the right channel

4.1.3 Audio Phase

All audio recordings shall have the correct 'in phase' relationship between channels on both line-up tone and the content (advertising content will dynamically produce varying phase relationships).

4.1.4 Lip Synchronisation

Correct lip synchronisation shall be maintained at all times.

1 The companion signal interface document is ITU-R BT.656-4 *Interfaces for digital component video signals in 525-line and 625-line television systems operating at the 4:2:2 level of Recommendation ITU-R BT.601.*

4.1.5 Alignment and Quasi Peak Audio Level

The alignment level shall be minus 20 dB with respect to the onset of digital clipping i.e. minus 20dBFS (SMPTE RP.155)

Volume compression should, where used to provide consistent peak levels after the final mix, be restricted to a slope of 2:1 with an onset point of -12 dBFS. The quasi peak recorded audio level as measured on a quasi peak reading instrument[2] shall not exceed 11 dB above alignment level i.e. minus 9 dBFS.

Broadcasters reserve the right to reduce the audio level on transmission to ensure that the loudness of commercial sound will match that of programs.

4.2 COMMON DELIVERY SPECIFICATIONS

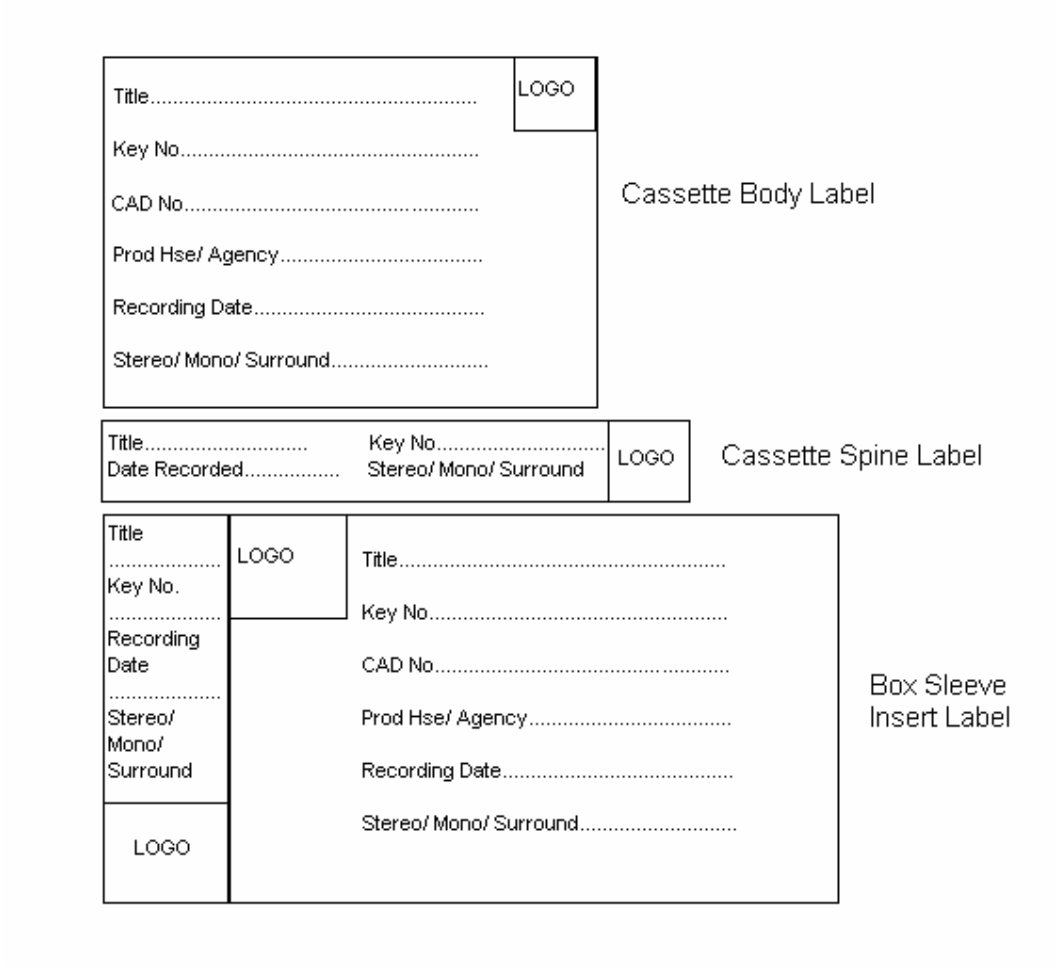
4.2.1 Packaging

For transportation, videotapes must be properly protected by a manufacturer's purpose-designed videotape case.

4.2.2 Labelling and Identification

The labels are in two parts so that both the box and the related reel are identified. The location of the information on the labels is specified so that the details can be quickly found by an operator, irrespective of the source of recording.

2 Quasi *peak audio level* is defined as the value of the integrated sum of energy peaks measured in any 10 millisecond period. These quasi peak levels are typically measured using a Peak Program Meter. Instantaneous peaks of shorter duration cannot be measured on such meters.



4.2.3 Data Integrity

The recorded data integrity of the tape shall be such that the digital machine's Channel Condition indicators do not deviate from the 'normal' indication. There shall be no dubbed-in data errors producing visible or audible errors.

4.2.4 Video Levels

Maximum video levels of commercial material with reference to line-up signals shall be 700mV including an operational tolerance of + 25mV for luma (Y) and 700mV for each colour difference signal (P_r, P_b). Whatever the combination of luma and chrominance components the signal shall not produce an R.G.B. or PAL coded gamut error when measured by an appropriate instrument.

Black level shall not extend below blanking level (0mV luma).

4.2.5 Test Signals

The line-up colour bar test signal shall replay at the correct levels at the VTR manufacturer's 'Preset' position. Video levels shall be consistent with line-up video levels.

The line up colour bar test signal shall replay at the correct chroma phase with the chroma phase control in the manufacturer's 'Preset' position.

4.2.6 Vertical and Horizontal Blanking

Vertical and horizontal blanking shall be in accordance with ITU-R Rec. BT. 601. The active digital picture line width is 720 pixels producing what is commonly called 'Narrow' blanking. For product produced purely in the digital domain this is the preferred blanking. However, it may be found commonly that there is wider blanking corresponding to an active line length of 702 pixels. This is due to intermediate analog interfaces which use 'Nominal' blanking of 12 uS. EBU Tech. Rec. R-92 1999 recommends that the image content intended for display be constrained to the central 702 pixels of the digital line. Reference to Annex A of Operational Practice OP36 indicates that only the central 702 pixels will normally reach the display i.e. pixels 9 – 710 inclusive.

4.2.7 Centre of Picture

The centre of the picture should retain its position throughout all production processes unless there are creative reasons to deliberately do otherwise. The horizontal centre of the image is located between pixels 359 and 360. The vertical centre of the image is located midway between line 167 of field 1 and line 479 of field 2.

4.2.8 Production

Commercials shall be produced and post-produced entirely in the digital component domain. Where archival material was originated in the composite domain, care is necessary to ensure that any burst to chroma phase errors do not exceed 5° since these errors cannot be corrected on playback.

4.3 COMMERCIAL TIMING

4.3.1 Duration of Video

The duration of commercial or promotional material should be measured from the start of active video to the end of active video.

4.3.2 Duration of Audio

Sound should commence 0.5 seconds after the commencement of active video. This provides time for the sound channel to be opened after the start of video without risk of sound clipping and provides aural separation between adjacent commercials and program material.

The end of the commercial sound including any sound tag shall occur 0.5 seconds before the end of active video.

4.3.3 Identification of First Active Frame

Accurate identification of first frame of active video on commercials should be provided. This shall be by the inclusion of a white marker on the colour black in the 2 second interval prior to the start of active video, top right of picture, outside picture safe, immediately before first frame of active video. The white marker should be a minimum picture height of 12 lines and minimum width of 18 pixels.

4.3.4 Timing Start

Timing of the commercial is referenced from the first frame of active video.

4.3.5 Sequence of Alignment Signals

Commercials delivered to the broadcaster on videotape cassette shall have a minimum 15 seconds of alignment video signal at the start of the recording consisting of a colour bar signal of 100/0/100/0 or 100/0/75/0 content. This signal shall occupy at least half the picture height. 'Matrix' type alignment signals which meet the intent of the above are acceptable. The colour bar content shall uniquely represent the commercial in question.

4.3.6 Audio Reference Signals

Simultaneously with the video alignment signal, and alignment level (as specified by SMPTE RP.155) audio tone of 1000Hz shall be recorded in phase on all tracks intended to carry audio content.

4.3.7 Visual Identification

Following the alignment signal, there shall be recorded for a minimum of 5 seconds a visual identification. Legibility of the visual identification is most important to end users. The selected font size shall be consistent with elements of 30 TV lines height in a 576 active line raster to produce a full screen display of the visual identification. Full screen is such that the image is within the safe graphic area of the format in question. Should the identification be colourised there shall

be a desirable level of separation between background and text information. The text luma level should be no less than 500 mV.

In a typical case, the identification should contain information on:-

(a) Client
(b) Product
(c) Title
(d) Key Number
(e) Duration
(f) CAD Number
(g) Classification
(h) Loudness Compliance[3]
(i) Audio format (Stereo, Dolby Surround (Pro Logic))
(j) Aspect ratio
(k) Closed captions
(l) Agency
(m) Production Company
(n) Date

4.3.8 Countdown

A visual/aural countdown signal should be recorded following the Identification section.

Audio:

This signal, as described below, should be recorded on both audio tracks 1 and 2.

The audio countdown signal should consist of a series of reference level 400 Hz ± 20 Hz bursts each of 1/5th second duration, occurring at 1 second intervals over the range from 5 seconds to 2 seconds ahead of active video start.

In addition, a steady component of the countdown audio tone should be recorded approximately 20dB below the level of the tone bursts,

3 Producers will be required to certify that their commercials comply with OP 48 as a condition of acceptance for broadcast. This certification must be in the form of either:

- inclusion of an additional field in the Visual Identification, as specified in Free TV OPs 24, 29 and 36, between the alignment signal and the countdown indicating compliance with OP 48; or
- by prior arrangement with the broadcaster a written certification by the person submitting the commercial that the commercial complies with OP48.

Submission to CAD Pty Ltd constitutes a suitable “prior arrangement with the broadcaster”.

starting with the first burst and ending with the last, leaving a 2 second silent interval before active video start.

Video:

A numerical visual countdown signal from 5 seconds to 2 seconds ahead of active video start should be recorded during the entire period of the steady component of the above described audio tone signal. Video black should be recorded during the 2 second interval from the end of the tone bursts to active video start.

4.4 TIME AND CONTROL CODE

25 Hz Longitudinal Time and Control Code according to ITU-R Rec. BR.780-2 (2004) shall be recorded on the Time Code track. The time code shall be locked to the video.

The Vertical Interval Time Code (VITC) shall appear on lines 18/331 and 20/333 of the 625/25 analog recording. A digital recording or interface shall carry the VITC on lines 19/332 as D-VITC.

Both Longitudinal and Vertical Interval Time Codes shall match and be continuous and ascending for the duration of the recording.

The Time Code shall not pass through 2400 hours for the duration of the recording.

4.5 CLOSED CAPTIONS

The Australian Standard for closed captioning is for the data to be carried on line 21/334 for a 625/25 signal. The data format is in accordance with the Australian Teletext System Standard. Caption data shall be distributed, transmitted and monitored according to the requirements of Free TV Australia Operational Practice OP42.

Identification of the presence of closed caption information is necessary on the videotape label.

A command to clear any existing caption shall be included in the first half (0.5) second of the commercial.

Where closed caption data is included on the videotape, the caption information should commence no earlier than a half (0.5) second after the start of active video and a caption erase signal is required (last caption time code out) not later than a half (0.5) second before the end of active video.

First caption time code in will be at an arbitrary point determined by content.

Annex A.

1. Recommended Text Size.

1.1 Considering that in the future both commercial product and programs will be originated in the widescreen 16:9 format.

1.2 Considering that it is desirable that text be readable under normal display and viewing conditions and that additionally in certain circumstances there may be a legal requirement for the text to be readable.

1.3 Considering that in certain transmission modes and also in certain reception modes the effective height of the image is reduced.

(a) For the transmission of a 16:9 original in the 4:3 analog service, the broadcaster may letterbox the product, thus reducing the effective height of the image.

(b) In the reception of the digital 16:9 service the viewers Set Top Box [receiver] may letterbox the product for a 4:3 display, thus reducing the effective height of the image.

The following is recommended:

For standard definition images, the minimum height of the text lower case elements be 15 pixels [15 lines] in a 576 line raster.

Annex B.

1. Audio Levels and Loudness

This annex provides advice on the relationship of this OP and Free TV Australia Operational Practice OP48 *Audio Levels and Loudness.*[4]

The elements of an advertising soundtrack, namely dialogue, music and effects are subject to various processes during production. Where these elements sit in the final sound track, with respect to audio levels and loudness, is the result of a final mix and effectively it is here that the loudness of the soundtrack will be principally influenced.

Most advertisement sound track pre-final mix elements are passed through devices such as *equalisers* and *compressors,* which are designed to enhance their *presence* i.e. to make them sound “up close” or brighter or more immediate. This is referred to as ”processing”.

Material that has been compressed will sound louder, even though there is no increase in volume. This is because compression of a sound track raises the energy content of the sound by reducing the dynamic range (i.e. the difference between the loudest and softest levels of the sound) thereby making it more dense.

Many modern processors are not calibrated in dB, have constantly varying compression ratios and are likely to be multi-band devices which apply different amounts of compression in different frequency bands. This makes it difficult for sound track producers to accurately measure and quantify how much compression is applied to a soundtrack. However, prior to the final mix it is recommended that every effort should be made to ensure that the nature of any compression or equalisation used is such that the end result does not produce a sound track with a loudness characteristic which is incompatible with program material.

Broadcasters provide the following advice and recommendations for definition of a compression profile related to any processing applied AFTER the final mix. Figure 1 provides a diagrammatic representation of this simple profile.

If any further peak limiting were to be necessary, it would be provided automatically by the transmission processor.

4 Note that at the time of writing there is not yet international agreement on the algorithm for a standardised loudness meter – it is a work in progress.

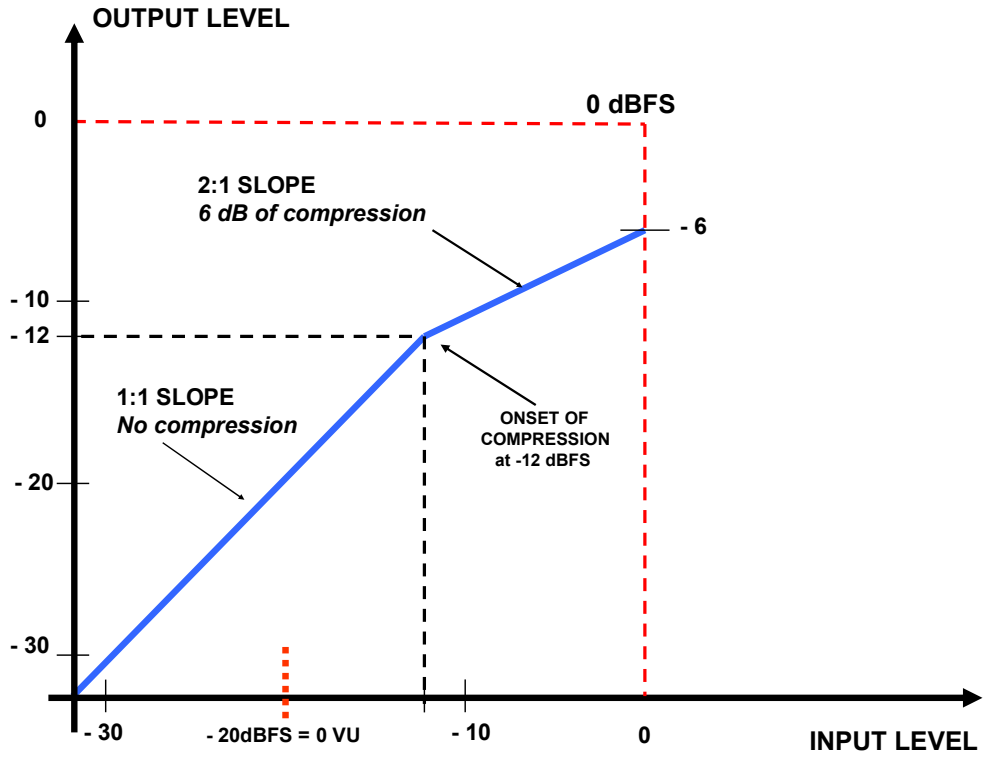

OUTPUT LEVEL
0
0 dBFS
2:1 SLOPE
6 dB of compression
- 6
- 10
- 12
1:1 SLOPE
No compression
ONSET OF
COMPRESSION
at -12 dBFS
- 20
- 30
- 30
- 20dBFS = 0 VU
- 10
0
INPUT LEVEL

Figure 1