

A photograph of three children from behind, looking at a television screen. The child in the center is wearing a blue and white striped hoodie. The child on the right is wearing a red shirt. The television screen shows a colorful, abstract image. A blue horizontal bar is overlaid across the middle of the image, containing the text 'TECHNICAL SPECIFICATIONS'.

TECHNICAL SPECIFICATIONS

Television commercials



TECHNICAL SPECIFICATIONS TELEVISION

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Getting your campaign on television at the NPO is not difficult, but of course it has to be done correctly. That is why you can find all the technical specifications for the delivery of television commercials in this document.

GENERAL

This document covers the technical requirements for commercials commissioned in High Definition (HD) which are to be transmitted by the broadcaster. The broadcaster offers the option of electronic delivery by means of transferring computer files via the Internet, further described in section 2. Next to this document, the General Terms and Conditions and Sales Restrictions must be accepted by the supplier. If the requirements included in this document are not fulfilled, the broadcaster retains the right to refuse or adapt the received production.

SPECIFICATIONS FOR THE COMPUTER FILE

The content is packaged in an MXF file containing compressed image and audio data. The file must be delivered in MXF format using 'Operational Pattern 1a', which is specified in the following section.

REFERENCES

A submission must at least comply with the following standards and recommendations:

- ▶ SMPTE 377M-2009 Material Exchange Format (MXF) – File Format Specification.
- ▶ SMPTE 378M-2004 Material Exchange Format (MXF) – Operational pattern 1A.
(Single Item, Single Package)
- ▶ SMPTE 379M-2010 Material Exchange Format (MXF) – MXF Generic Container.
- ▶ SMPTE 381M-2005 Material Exchange Format (MXF) – Mapping MPEG Streams into the MXF Generic Container.

- ▶ SMPTE 382M-2007 Material Exchange Format – Mapping AES3 and Broadcast WaveAudio into the MXF Generic Container.
- ▶ ITU-R BT.709-5-2004 Parameter values for the HDTV standards for production and international program exchange.
- ▶ ITU-R BT.1702-2005 Guidance for the reduction of photosensitive epileptic seizures caused by television.
- ▶ EBU R122-2007 Material Exchange Format Time Code Implementation.
- ▶ RDD 9-2009 MXF Interoperability Specification of Sony MPEG Long GOP Products.
- ▶ EBU R128-S1-2016 Loudness parameters for short-form content.

ASPECT RATIO

The primary format for the material is 16F16, filling a 16:9 screen vertically and horizontally without geometric mismatch. Sub-formats which can be viewed without distortion in 16F16 are permitted. The aspect ratio must be marked identically in MPEG essence, MXF metadata. In the case of the active picture ratio being 2.35:1 (21:9) or 1.85:1, the picture should be centred vertically between black bars in a 16:9 frame, filling the width of the frame with no geometric distortion.

ADDITIONAL SIGNALS

Without explicit permission by the broadcaster, it is not permitted to add a watermark or other hidden signal to audio, image or other aspect of the file. Ancillary data enclosed in the horizontal or vertical blanking such as VITC is ignored.

ILLEGAL COLOURS

Illegal colours may not be present in the video signal. Video parameters must comply strictly with ITU R BT.709-5. Files which do not comply with this specification will be rejected.

FIELD DOMINANCE

A complete video frame must consist of an odd line field followed by an even line field. Cuts in material must happen on frame boundaries (between field 2 and field 1).

TIME CODE

The file shall feature one continuous, ascending time code as defined according to the Time Code Track in the Material Package of the MXF file. The time code of the MPEG-2 GOP headers must also be continuous and shall correctly indicate the coded image sequence. Any VITC in the recording will be ignored.

PICTURE QUALITY

The picture must be well lit and reasonably but not artificially sharp. It needs to be free of excessive noise, grain and digital compression artefacts, flare, reflections, lens dirt, markings and obstructions, lens aberrations, black crushing and highlight compression. Hard clipping of highlights by legalisers shall not cause visible artefacts on screen. Movement needs to appear reasonably smooth and continuous and must not give rise to distortions or break-up to moving objects, or cause large changes in resolution. There shall be no noticeable horizontal or vertical aliasing, for example jagged lines and field or frame rate fluctuations. Colour rendition, especially skin tones, must be consistent throughout and be a realistic representation of the scene portrayed, unless it is altered as an editorially essential visual effect. There shall be no

visible contouring, quantisation noise or artefacts caused by digital processing. Noticeable spurious signals or artefacts, for example streaking, ringing, smear, echoes, overshoots, moiré, hum or cross-talk shall not be visible. Electronically generated moving graphics and effects such as rollers, moves, wipes, fades and dissolves added to interlaced video in post-production must be generated as interlaced as well to prevent unacceptable judder.

PHOTOSENSITIVE EPILEPSY

Flickering or intermittent images and certain types of regular patterns can cause problems for some viewers who have photosensitive epilepsy. The supplier must take precautions according to guideline ITU-R BT.1702 to avoid the production of images that fall into this category.

FORMAT

The coding of the audio channels is PCM 24 bit@48 kHz.

CHANNEL ALLOCATION

The submission must occur in one of the following layouts:

- ▶ Stereo in an eight channel allocation
(4 AES-pairs, eight tracks):
 - ▶ 1= Left stereo (Lo/Lt)
 - ▶ 2= Right stereo (Ro/Rt)
 - ▶ 3= Mute
 - ▶ 4= Mute
 - ▶ 5= Mute
 - ▶ 6= Mute
 - ▶ 7= Mute
 - ▶ 8= Mute

- ▶ Stereo and multiple channel sound in an eight channel allocation
(4 AES-pairs, eight 'tracks'):
 - ▶ 1= Left stereo (Lo/Lt)
 - ▶ 2= Right stereo (Ro/Rt)
 - ▶ 3= Left
 - ▶ 4= Right
 - ▶ 5= Centre
 - ▶ 6= Low-Frequency Effect channel
 - ▶ 7= Left surround
 - ▶ 8= Right surround

Note: Channels 1 and 2 form a stereo pair. In case of mono audio, the Left channel must be identical to the Right channel. In case of multi-channel recordings, these tracks are applied discretely in addition to the stereo tracks. Stereo program audio must be capable of mixing down to mono without causing any noticeable phase cancellation of essential audio information, dialogue in particular. Left and Right stereo can contain either a straightforward stereo mix (Lo/Ro) or a mix which is compatible with Dolby Surround/ProLogic and similar systems (Lt/Rt). The use of a Lo/Ro-mix is nevertheless strongly preferred. Multi-channel mixes must be able to be down-mixed to stereo in Lo/Ro mode using standard mix parameters (-3 dB for both Centre and Surround) without causing annoying artefacts or listening fatigue. Dialogue jumping between Centre Only and Phantom Centre (Left/Right) must be avoided. The mix calibration must be identical for all channels, which means that 3 dB precorrection of the surround channels for a movie theatre must be removed. It is strongly recommended to only make use of the LFE channel if the signal levels of the other channels, including the from multi-channel signal derived stereo down-mix, would otherwise lead to overloads. All audio channels must be in sync. Transmission by the broadcaster in SD video resolution and in streaming applications currently carries the stereo signal only.

PARAMETER	METRE INDICATION	VALUE
INTEGRATED LOUDNESS	I	-23 LUFS
MAXIMUM TRUE PEAK LEVEL	dBTP	-1 dBTP
MAXIMUM MOMENTARY LOUDNESS	M	No restrictions
MAXIMUM SHORT TERM LOUDNESS	S	+5LU
LOUDNESS RANGE	LRA	No restrictions

LOUDNESS LEVEL

The loudness level of the content must comply with EBU R128 and its supplement for short form content, based on the following specifications:

Limitations of the modulations are determined using the Maximum Short-Term Loudness parameter. Based on performance in practice, future versions of this delivery specification may be adjusted for options as well as permitted maximum values. The production company will be seriously blamed if mixing techniques are used or additional signals are added to the content which deliberately leads to considerable loudness differences between multi-channel audio and its derived down-mix or which leads to manipulation of the loudness measurement in general.

LOW LOUDNESS LEVEL CONTENT

A production may consciously use low level audio, for example, in content that consists mainly or entirely of background sounds. This is a creative option which for this purpose is supported by the addition of the 'LOW_LOUDNESS_LEVEL' parameter.

AUDIO QUALITY

Sound must be recorded with appropriately placed microphones, giving minimum background noise. The audio shall have no peak level clipping and be free of spurious signals such as clicks, hum and any other avoidable distortion. The sound needs to be consistently mixed and edited. Speech must be acquired and mixed so that it is clear and easy to understand while listening on the same comfortable listening level and must not be louder than the average speech level of programs. Loudness levels must be appropriate to the scene portrayed, suitable for domestic listening situations. 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. The timing difference between sound and vision shall not cause any perceptible error.

LENGTH

The length in time of image and audio data must be identical to the content. In other words: there is no pre or post presentation containing a coloured bar, slate, or black. Any other versions of the content must be provided in a separate submission.

FILE NAMING CONVENTION

The file name needs to be unique, representing the content and contains aspects such as the product name, version, as well as date of broadcasting (DD-MM-YYYY), separated by an underscore (_).

File names must consist of the UTF-8 character set, using numbers (0-9), upper case letters (A-Z), lower case letters (a-z) and hyphens. Characters with diacritical marks such as é, è, ë or ö may not be used. Spaces are not permitted in file names and must be replaced by a hyphen (-). Text is not case sensitive. The maximum length of the entire file name is 100 characters. The (_) character is used exclusively as separator.

The extension for the MXF file with the material must be "mxf".

QUICK REFERENCE GUIDE

ITEM	VALUE	REFERENCE / COMMENT
CONTAINER	MXF	SMPTE 377M-2009 SMPTE 379M-2010
PATTERN	OP1a	SMPTE 378M-2004
CODEC	MPEG-2 XDCAM HD 422 Long GOP 50	SMPTE 381M-2005
TIME CODE		EBU R122-2007
VIDEO FORMAT AND MAIN REQUIREMENT	t 1080i/25	ITU-R BT.709-5. Illegal colours may not be presents
AUDIO FORMAT	PCM 24 bit@48 kHz	SMPTE 382M-2007
PROGRAM LOUDNESS	-23 LUFS (±0.5 LU)	EBU R128-S1
MAXIMUM SIGNAL LEVEL	-1 dBTP	
STEREO AUDIO IN EIGHT CHANNELS (FOUR AES PAIRS, EIGHT TRACKS)	1 = Left Stereo (Lo/Lt) 2 = Right Stereo (Ro/Rt) 3 = Mute 4 = Mute 5 = Mute 6 = Mute 7 = Mute 8 = Mute	<ul style="list-style-type: none"> ▶ Channels 1 and 2 form a stereo pair. ▶ In case of mono audio, the Left channel must be identical to the Right channel. In case of multi-channel recordings, these tracks are applied discretely.

ITEM	VALUE	REFERENCE / COMMENT
STEREO AND MULTI-CHANNEL AUDIO IN EIGHT CHANNELS (FOUR AES PAIRS, EIGHT TRACKS)	1 = Left Stereo (Lo/Lt) 2 = Right Stereo (Ro/Rt) 3 = Left Front 4 = Right Front 5 = Centre 6 = LFE 7 = Left Surround 8 = Right Surround	<ul style="list-style-type: none"> ▶ Stereo program audio must be capable of mixing down to mono without causing any noticeable phase cancellation of essential audio information, dialogue in particular. The use of a straightforward stereo mix (Lo/Ro) is strongly preferred ▶ All audio channels must be in sync. Transmission by the broadcaster in SD video broadcaster in SD video resolution and in streaming applications currently carries the stereo signal only.
MAXIMUM MOMENTARY LOUDNESS	No restriction	
MAXIMUM SHORT-TERM LOUDNESS	+5 LU	
MAXIMUM LOUDNESS RANGE	No restriction	

GET IN TOUCH

If you have any questions about submitting your commercial(s) then please contact the Traffic team.

Go to **eat.ster.nl** to upload your tv commercial.

PHONE

+31 35 672 55 00

MAIL

tvtraffic@ster.nl

POST

Postbus 344
1200 AH Hilversum

DROP BY

Laapersveld 70
1213 VB Hilversum

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