

TECHNICAL REQUIREMENTS

Commercial Spots

November 2022

Please Note:

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Content

General Information	3
Delivery of Commercial Spots as a Media File	3
Video Format	3
Audio Format	3
Time Code	3
XDCAM HD 422 (HD).....	4
Appendix.....	5
Safe Areas	5
Video Signal.....	6
Audio Signal.....	6
Glossary of Terms.....	7
Contact.....	9

General Information

If not stated otherwise in the specifications contained herein, the current recommendations of the EBU are binding.

Delivery of Commercial Spots as a Media File

The delivery of commercial spots should be realised via online file transfer, wherever possible. A secure web interface is available at:

<https://ingest.rtl-service.de/ingest-werbung/>

A one-time free registration is necessary in order to be able to deliver spots as a media file.

The file has to consist of the **actual complete content** of the commercial spot followed by **additional four frames black/mute only**. A leader is not **allowed and the start frame** has to be the first visible picture or the first audible sound (SOM).

Video Format

Commercial spots have to be recorded in the format 1080i/25. In the case of original film material it has to be encoded with 25psF.

Audio Format

Commercials should be preferably produced and delivered in stereo but at least in 2-track-mono. The stereo signal has to be compatible to mono receivers and should therefore not have a negative correlation degree (higher or equal to zero). It must be ensured that at least track 1 and track 2 do include the complete program sound. Additional audio tracks may be used for multi-channel sound (5.1) though at present, commercial spots are still broadcast in stereo only.

Commercials are only broadcast with loudness control in accordance with EBU Recommendation R 128. All commercials must be delivered with loudness control.

Time Code

The carried time code has to have a value of 00:00:00:00 starting with the first picture (SOM) and has to continue ascending linearly for the whole duration of the spot. All time code tracks possibly existing on one single medium have to contain identical time code values.

XDCAM HD 422 (HD)

Container	MXF OP 1a SMPTE RDD9-2013, SMPTE 378M
Program start	First frame (no technical credits, no black)
Program end	4 black frames with mute audio
Start timecode (first frame)	00:00:00:00
Codec	MPEG2 422P@HL
Frame rate	25i
Scan type	Interlaced (upper field first)
Data rate	50 Mbit/s
Resolution	1920 x 1080
Aspect ratio	16:9
Video signal format	YUV
Chroma subsampling	4:2:2
Color range	Limited
Color space	ITU-R BT.709
Bit depth	8 bit
Audio coding	PCM, discrete tracks (AES-3 / SMPTE 302M)
Number of audio tracks	8 mono tracks, 1 channel per track
Sample rate	48 kHz
Bit depth	24 bit
Audio track assignment	
A1	Stereo Mix – L / Language 1
A2	Stereo Mix – R / Language 1
A3	
A4	
A5	
A6	
A7	
A8	
Unused audio tracks must contain AES-0 (mute)	
The use of a Dolby-E-stream will not be accepted.	

Appendix

Safe Areas

To ensure adequate display of the important parts of the image on consumer devices, the defined EBU R95 safety margin (action safe area) has to be observed (Fig. 2.1). Modern TV receivers are set up to be pixel-exact. Therefore, objects which are not intended as part of the scene and other extraneous or improper image edges must not be visible.

Important image content such as Graphics, logos, or legal notices are not displayed fully under some circumstances on each receiver. In particular, in the creation of special forms of advertising, it is possible that content outside the Action Safe Area is cut and cannot be fully displayed.

	Vertikal	Horizontal
Action Safe Margin	3,5 %	3,5 %

Scanning raster 1080i/25 and 1080psf/25: 16:9 safe areas for 16:9 presentation

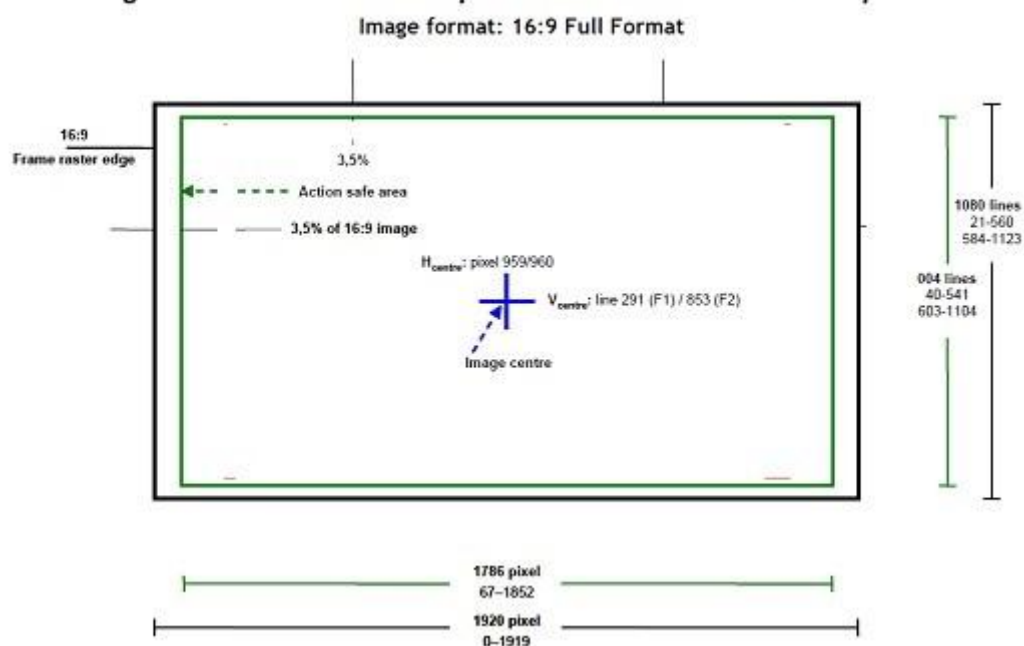


Figure 1: Safe Areas
16:9 Image

Video Signal

During the whole duration of the commercial spot the video signal has to correspond to ITU-R BT709-6.

The maximum level of the luminance signal should not exceed 100%. This corresponds exactly to 700 mV.

The pedestal can be between 0% and 2% (maximum).

No invalid signal levels according to EBU R103 and "Video Range" may be included in the broadcast content.

Audio Signal

The level control of the audio signals has to have a target level of -23 LUFS and a maximum deviation of +/- 0,2 LU according to EBU Recommendation R 128.

The maximum short-term loudness should not be higher than -18 LUFS (+5 LU). The maximum peak level should not be higher than -1 dBTP. According to „Practical Guidelines“ (EBU Tech 3343), Item 10.1 „Commercials (Advertisements) and Trailers“. Detailed information can also be found in the documents EBU Tech 3341 - 3344.

Requirement: Loudness meter with „EBU-Mode“, (hardware or software).

Measuring devices previously used for metering of peak levels (PPM/QPPM) are NOT suitable for loudness metering.

Glossary of Terms

LU (Loudness Units):

Relative measurement unit of loudness: $1\text{LU} = 1\text{dBr}$.

LUFS:

Absolute measurement unit of loudness referring to full scale

(„Loudness Units Full Scale“)

Scales:

1. 'EBU +9 scale': -18.0 LU to +9.0 LU (-41.0 LUFS to -14.0 LUFS)
2. 'EBU +18 scale': -36.0 LU to +18.0 LU (-59.0 LUFS to -5.0 LUFS)

Applying to both scales: $-23.0\text{ LUFS} = 0.0\text{ LU}$

Three Time Scales:

- Momentary "M" (400 ms integration)
- Short term „S“ (3 s integration)
- Integrated "I" (program- or segment-wise from start to stop)

Program Loudness:

The integrated loudness over the duration of a program - Program Loudness Level is the value (in LUFS) of program loudness.

In this context, "program" means a single commercial spot or trailer.

Loudness Range, LRA:

It describes the distribution of loudness within a program.

To control the dynamics of a commercial in a loudness normalized world where the danger of suddenly too high loudness differences does exist, the measure Loudness Range (LRA) is not suitable because the calculation is based on the short-term

loudness values (3 s interval). In the case of very short items there are not enough data points to derive a meaningful number for LRA.

An alternative could be the use of the Maximum Momentary Loudness Level (Max ML – 400 ms) and/or the Maximum Short-term Loudness Level (Max SL – 3 s). Especially for very short items (<30 s), these parameters can be effectively used to limit loudness peaks.

Maximum True Peak Level, MTPL:

The true peak level (TPL) indicates the maximum (positive or negative) value of the signal waveform in the continuous time domain; this value may be higher than the largest sample value in the time-sampled domain.

Those true peaks (unit symbol: dBTP – deciBel referenced to digital Full Scale measured with a true peak meter) can be detected with a 4x oversampling true peak meter compliant to ITU-R BS.1770.

Technical Requirements for Loudness Meter:

- The loudness algorithm has to be compliant to ITU-R BS. 1770
- K-weighting curve according to ITU-R BS. 1770
- Gating:
 - Absolute gate: blocks of audio (“M”-values) below -70 LUFS are excluded for the computation of absolute gated integrated loudness.
 - Relative gate: blocks of audio (“M”-values) that are -10 LU below absolute gated integrated loudness are excluded for the computation of absolute gated integrated loudness.
- True peak measurement with a 4x oversampling

For any further information, consult the following page: <http://tech.ebu.ch/loudness>

Additional specifications have been published in the following EBU documents:

EBU Tech 3341 Metering specification (‘EBU mode’)

EBU Tech 3342 Loudness Range descriptor

EBU Tech 3343 Practical Guidelines

EBU Tech 3344 Distribution Guidelines

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