

Technical Guideline covering the conditions to provide tape or file based productions

Content

- 1. Tape – based productions SD**
- 2. Tape – based productions HD**
- 3. File – based productions SD**
- 4. File – based productions HD**
- 5. File – based productions 4K or UHD**
- 6. FTP File Conditions**
- 7. Compression – data-reduction**

1. Tape- based productions SD

Material based on the following formatting is acceptable:

- DVCPro 25**
- DVCPro 50**
- Betacam Digital**
- DVCam**
- Betacam SP**

1.1 Quality standards for tape based productions SD

All tapes have to be a 1:1 copy of the original video master. A copy has to be formatted in PAL 625 if the original data has also been formatted in PAL 625. All tapes and the respective content have to pass a read after write quality check. Video and audio data on tapes have to be provided in the highest quality.

Channel Condition in red or yellow will not be accepted

Mistaken productions or productions that deviate from the defined conditions above lead to queries or rejection of the material received.

1.2 Audio - Video signal & level

Signal:

All video and audio signals have to be in accordance to the EBU requirements. All signals and levels of a 1:1 down conversion have to fulfill the EBU requirements as well.

Levels :

Video : Luminance 0-100% PAL

Audio : With immediate effect all productions have to have a Loudness level control. A audio control based on QPPM requirements will no longer be accepted.

Loudness: Normalization and maximum level of Audio signals.

- Integrated sound volume has to be in line with **EBU R-128 = -23 LUFS- maximal true peak = -1dBTP** for stereo material,

-3dBTP for multi-channel material

Short program-elements with commercial character:

- Integrated sound volume has to be in line with **EBU R-128 = -23 LUFS- maximum true peak = -1dBTP** for stereo material.

-3dBTP for multi-channel material - Maximum short term volume level = **-17 LUFS** (with reservations a future adjustment is possible)- maximum momentum volume = **-14 LUFS** (with reservations a future adjustment is possible)

1.3 TC and video frequency

Acceptable is material with rising and constant TC in 25p and 50i.

Interlaced - material has to have in the first half of the picture the active picture information from the second half of line 23 (up to line 310) and in the second half from line 336 (up to line 623)..

As a consequence the change of a picture of a video signal has to start with the first half picture (top field first, with the exemption of DVCAM and DVCPRO material). (Reference is made to EBU technical recommendation R62)

1.4 Technical leader

The technical leader in accordance to **EBU requirements starts at TC 09:58:00:00** with Color Bars 100/100 or 100/75.

The volume level with -18dbfs is required for all available audio tracks.
the leader has to continue to TC 09:59:30:00.

TC 09:59:30:00 to TC 10:00:00:00 includes black burst (Sluk) only.

The program starts at 10:00:00:00 with the first visual picture.

After finalization of the program at least a 30 sec. black burst follows

1.5 Aspect ratio and image formats

16:9 full - frame anamorphotish is preferred

16:9 Cinema Scope-mode is accepted

4:3 full - frame is accepted

4:3 Letterboxes are accepted

A change of the aspect ratio or image formats within the movie results in a rejection of the material

1.6 Audio

Mono program: Track 1 and 2 have to include identical signals.

Music & effects is included in track 3&4

Stereo program: Track 1 – left channel (LT)

Track 2 – right channel (RT)

Music & effects have to be on track 3&4

Phase errors are not acceptable within the movie and result in a rejection of the material

Delivery of multi-language versions:

first language on track 1&2

second language on track 3&4

All tracks have to be provided in accordance to **EBU R-128 (reference is made to 1.2)**.

Music, effects, atmosphere, language etc. do not include any detortion or compression..

Inadequate audio quality leads to a rejection of the material.

The entire audio tracks have to be synchronal to the respective images.

All audio tracks have to be in accordance to **EBU R-128 requirements**.

2 Tape HD

Acceptable tape standards :

- HD CAM
- HDCAM SR
- DVCPPro HD

2.1 General Quality requirements

Delivered tapes have to be always a 1:1 copy of the original video master. Frame rate conversions are not acceptable.

Up-scaling or up-conversion of SD material to HD will be rejected.

All tapes have to pass a 100% read after write quality check

Video and audio- information have to be delivered in the highest possible quality

Channel condition red or yellow is not acceptable.

Channel Condition in red or yellow will not be

Mistaken productions or productions that deviate from the defined conditions above lead to queries or rejection of the material received.

2.2 Signals & Level

Signals :

All signals and levels have to be in line with **EBU and ITU-R BT709** requirements

Level:

Video : Luminance 0-100%

Audio : Loudness level control, normalization and acceptable maximum level covering audio signals

- integrated volume has to fulfill **EBU R-128 = -23 LUFS- maximum true peak = -1dBTP** for stereo productions and ,

-3dBTP for multi-channel material

Short program-elements with commercial character:

- Integrated volume level at **EBU R-128 = -23 LUFS- maximal true peak = -1dBTP** for stereo material.

-3dBTP for multi-channel material - maximal short term volume = **-17 LUFS** (with reservation corrections in future are possible)- maximum momentum volume = **-14 LUFS** (with reservation corrections in future are possible)

2.3 Video frequency

Acceptable is material with rising and constant TC

in 1080/24 psf, 1080/25 psf. or 1080/50i

Interlaced - material has to have field dominant on the first half picture (top field first)

2.4 Technical leader

The technical leader in accordance to **EBU requirements starts at TC 09:58:00:00** with color bars 100/100 or 100/75

The volume level with -18dbfs is required for all available audio tracks.

The leader has to continue to TC 09:59:30:00.

TC 09:59:30:00 to TC 10:00:00:00 includes black burst (Sluk) only.

The program starts at 10:00:00:00 with the first visual picture.

After finalization of the program at least a 30 sec. black burst follows

2.5 Aspect ratio and image formats

16:9 full - frame anamorphotish is preferred

16:9 CS is accepted

A change of the aspect ratio or image formats within the movie results in a rejection of the material

2.6 Audio

Mono program: Track 1 and 2 have to include identical signals.

Music & effects is included in track 3&4

Stereo program: Track 1 – left channel /LT)

Track 2 – right channel (RT)

Music & effects have to be on track 3&4

Phase errors are not acceptable within the movie and result in a rejection of the material

Delivery of multi-language versions:

first language on track 1&2

second language on track 3&4

All tracks have to be provided in accordance to **EBU R-128**.

Music, effects, atmosphere, language etc. do not include any detortion or compression.

Inadequate audio quality leads to a rejection of the material.

The entire audio tracks have to be synchronal to the respective images.

All audio tracks have to be in accordance to **EBU R-128 requirements**

Following frame rates are accepted

25/50i/23.98psf/29,97/30/59,94i/60i

3 File based productions SD

SD files are acceptable if the following requirements are fulfilled:

FC Pro Project as Final Cut Pro Version 5.0 or higher, Adobe Premiere CC 2017 versions or the project has to be completely edited and has to be in line with a 25 images timeline or sequence.

All original media including title, graphic and animations have to be included.

Acceptable codes are:

- Apple ProRes422 HQ with ratio 720x576
- Apple ProRes422 with ratio 720x576
- Uncompressed 4:2:2 with ratio 720x576 at 10Bit
- Uncompressed 4:2:2 with ratio 720x576 at 8Bit
- DVCPPro 25/50 Codec with ratio 720x576

Separate music or effect tracks are accepted uncompressed as PCM .wav or .aif file in 24bit 48 kHz with identical TC start and end as outlined for video files in a Final Cut Project or delivered separately.

The frame rate has to be 25p or 50i.

Interlaced - material has to have in the first half of the picture the active picture information from the second half of line 23 (up to line 310) and in the second half from line 336 (up to line 623).

As a consequence the change of a picture of a video signal has to start with the first half picture (top field first). (Reference is made to EBU technical recommendation R62)
Any material that does not follow the specification above will be rejected

4. HD files have to be provided:

FC Pro Project as Final Cut Pro Version 5.0 or higher, Adobe Premiere CC 2017.
The project has to be edited completely and has to follow a 25 picture timeline or sequence
All source files have to included title, graphics, and animations.

Acceptable Codes are:

- Apple ProRes 422 HQ 10Bit
- Apple ProRes 422 10Bit
- Apple ProRes 422 HQ 8Bit
- Apple ProRes 422 8Bit
- Uncompressed 4:2:2 10Bit
- Uncompressed 4:2:2 8Bit
- DVCPPro HD
- Avid DNxHD not less than 121 Mbit/s

The following frame rates are acceptable:

25/50i/23.98psf/29,97/30/59,94i/60i

5. 4K or UHD files have to be provided:

Resolution:	3840 x 2160 Pixel
Recording:	I frame only codec
Croma subsampling:	4:2:2
Bit depth:	8/10 bit

It will be absolutely necessary that 4K or UHD productions shoot in I frame only codec.
The workflow have to follow this setup throughout.

Accepted codecs are:

ProRes, AVC High 422 Intra 100Mbit/s, DNxHD

**The following frame rates are acceptable:
25/50i/23.98psf/29,97/30/59,94i/60i**

Other codec or container formats are acceptable after test file has been provided and Broadcast Media Köln GmbH approved the codec or formats.

Separate music or effect tracks are accepted uncompressed as PCM .wav or .aif file in 24bit 48kHz with identical TC start and end as outlined for video files in a Final Cut Project, Adobe Premiere CC 2017 or delivered separately.

Interlaced - material has to have in the first half of the picture the active picture information from the second half of line 23 (up to line 310) and in the second half from line 336 (up to line 623).

As a consequence the change of a picture of a video signal has to start with the first half picture (top field first). (Reference is made to EBU technical recommendation R62)

Projects will be rejected if projects are not in accordance to these specifications.

From now on it is not acceptable if productions provided in a file form include a technical leader or trailer.

Files should be provided by using the following memory medium:

- using an external HDD
- with USB3.0
- IEEE1394 400/800
- eSata
- Thunderbolt connection
- All data cables, charger etc. have to be delivered
- All files have to be labeled in a distinct manner
- A shipping order with a clear definition of the content of the production has to be delivered

5. Delivery of FTP Files

Every provider received from BES GmbH a separate ftp/sftp-Account on a server which can be connected via internet. Broadcast Media Köln GmbH recommends to approach the server via sftp with a private key. The Ftp/sftp- process only works in connection with a static IP-address.

Broadcast Media Köln GmbH has to be provided with these address for the purpose to configure the existing firewall.

Digital maz- sheet

File based productions have to include a digital maz-sheet (XML- File). Per file-production a sheet has to be configured and has to be provided by the data provider, alternatively the information can be provided in a specified Excel file. The file will be provided by BES GmbH. It is permitted to change format of the Excel file.

6. Compression

Compression leads to a reduction of data. A compression in itself could lead to a reduction of:

- Resolution (e.g. additional Subsampling from 1920x1080 to 1440x1080 pixel)
- Scanning structure (reduction from e.g. 4:2:2 to 3:1:1 or 4:2:0)
- quantization (e.g. from 10 to 8 bit).

All these measures do impact the overall signal quality. The quality reserve might be reduced due to the measures outlined above. As a consequence, all providers of data have to outline the used video compression formats.