



Delivery of Spots to



**January 14th 2019**

**Sky Media • Sky Deutschland Fernsehen GmbH & Co. KG**

# Workflow

## Channels:

**Sky, Fox** (Fox, National Geographic, Nat Geo Wild), **Highview** (Deluxe Music, Jukebox, RockTV, Planet, Gute Laune TV), **Mainstream** (Heimatkanal, Romance TV), **NBC** (A&E, E! Entertainment, History, Universal TV, Syfy, 13th Street), **Spiegel TV Geschichte / Wissen**, **Turner** (Boomerang, Cartoon Network, TNT Comedy, TNT Film, TNT Serie,)

**Forerun:** **6 working days**

**Format:** **XDCAM HD 422**  
**(plus 5 Black Frames at the end)**

- Files shouldn't have a technical leader or closing credits
- Filename shouldn't include special characters
- Filename shouldn't have more than 32 characters

## ways to deliver:

### 1. Operator

Adstream  
Adtoox  
IMD  
Honeycomb

### 2. Via ASPERA Connect

(please find attached the ASPERA Contentdelivery - sent only one file for all channels)

## login details:

initial setup of the account will be done by [CH\\_Linear@sky.de](mailto:CH_Linear@sky.de)  
(for any questions please turn to the called mailbox)

please inform after upload about:

Customer  
length Spotname  
Spotnumber  
Music Information

to following mailing lists:

[spotupload@sky.de](mailto:spotupload@sky.de) [CH\\_Linear@sky.de](mailto:CH_Linear@sky.de)



# Technical Specifications

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## 1. Introduction

**The delivery of SD and HD material to Sky Germany and the in-house production standard is completely file-based using MXF OP1a files for exchange and storage purposes. Every file has to be quality checked and documented according to the following guidelines:**

- A complete quality assessment of every file must be done before delivery.
- The files delivered have to be accompanied by a complete quality report in a standardized form (excel-sheet) provided by Sky Deutschland.
- If defects already existed in the source material and these could not be repaired, this must be clearly stated in the quality report to avoid unnecessary complaints and questions. These defects must be listed with the exact timecode information.
- The quality report has to contain detailed information about the source material.
- If the source material is progressive, this has to be mentioned as psf (progressive segmented frame) in the quality report and in the file metadata.

**The in-house format for HD is 1080i/25.**

Note: In this document the nomenclature for image formats is used as defined in EBU Tech 3299 where the abbreviations consists of "activeLinesScanning/frame-rate", e.g. 1080i/25.

In contrary to this the ITU-R uses a different nomenclature, such as 'interlaced as "2:1" or alternatively '1920 x 1080/50/I' where "50" corresponds to the field-rate (see ITU-R BT.1846), e.g. 1080/50/I.

External accompanying file format (e.g. textless media files) are not in focus of this document.

The following two profiles are defined for file-based delivery and production:

Name	Type	Video	Audio
SD-1	MXF OP1a / IMX (SMPTE 386M)	D10, MPEG-2, I-frame only (SMPTE 356M and ISO/IEC 13818-2)	4 (24bit) or 8 (16bit) channels
HD-1	MXF OP1a / XDCAM	MPEG-2, long GOP (ISO/IEC 13818-2)	8 (24bit) channels

The following chapters will describe these profiles in more detail.

## 2. File-based profiles

### 2.1. Naming guidelines for files

Only use abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ and 1234567890\_- and no space

### 2.2. Profile SD-1 (MXF OP1a / IMX)

- **Wrapper**

Fileformat	MXF according to SMPTE 377-1
Operational Pattern	OP1a according to SMPTE 378M
Essence Mapping	According to SMPTE 386M
Generic Container	Frame-based mapping according to SMPTE 379-1
Partition multiplex	1 Header Partition, no Body Partitions, 1 Footer Partition
Random Index Pack	Present
Essence location	Complete Essence in Header Partition
Index table location	Complete Index Table Segment in Header Partition
Descriptive Metadata	None
Tracks in Material Package	1 Timecode Track, 1 Video Track, 1 Audio Track
Tracks in Source Package	1 Timecode Track, 1 Video Track, 1 Audio Track (referencing the 4- or 8-channel AES3 audio element)
Material start/end	Picture to Picture First Frame of content (no bars, clocks, etc.) / Last Frame of content (no adverts, trails, textless material, etc. ; that has to be delivered separate)
Timecode Material Package	Start value: 00:00:00:00
Timecode Source Package	Start value: 00:00:00:00, discontinuities: no
Timecode System Item	Start value: 00:00:00:00, no discontinuities; incrementing on a frame basis
Active Format Descriptor	Present inside the Generic Picture Essence Descriptor

- **Bitstream**

<b>Video</b>	
Format	MPEG-2 ES (ISO/IEC 13818-2)
Level/Profil	422Profile@MainLevel
GOP	I-frame only
Chroma Sampling	4:2:2
Bit Rate	50 Mbit/s
Constant Bit Rate	Yes
Sequence Header	Before each GOP
Field Encoding	Top field first
Timecode in GOP header	Not in use
<b>Audio</b>	
Channel Count	4 or 8
Format	AES3 according to SMPTE 331M carrying uncompressed PCM or Dolby E (see below)
Samplerate	48 kHz
Resolution	24 Bit for 4 channel or 16 Bit for 8 channel
<b>Ancillary Data</b>	Not in use
Subtitles	as STL files

- **Baseband**

<b>Video</b>	
Picture Size (active)	720 x 576
Aspect Ratio	4:3 or 16:9
Frame Rate	25i
Video signal compliance	ITU-R BT.601
<b>Audio</b>	
Channel Count	4 (24bit) or 8 (16bit)
Channel Assignment	See chapter 3.2

(1) According to the D10 standard (SMPTE 356M) the number of recorded lines is 608 (including lines from the vertical blanking interval).

## 2.3. Profile HD-1 (MXF OP1a / XDCAM)

- **Wrapper**

Fileformat	MXF according to SMPTE 377-1
MXF structure	According to SMPTE RDD-9
Operational Pattern	OP1a according to SMPTE 378M
Essence Mapping	According to SMPTE 381M and SMPTE 382M
Generic Container	Frame-based mapping according to SMPTE 379-1
Partition multiplex	1 Header Partition, 1-n Body Partitions, 1 Footer Partition
Random Index Pack	Present
Essence location	No Essence in Header Partition. Complete Essence distributed over multiple Body Partitions.
Index table location	Distributed over Body Partitions and Footer Partition according to SMPTE RDD-9
Descriptive Metadata	None
Tracks in Material Package	1 Timecode Track, 1 Video Track, 8 Audio Tracks
Tracks in Source Package	1 Timecode Track, 1 Video Track, 8 Audio Tracks
Body Partition Duration	Maximum duration of 10 seconds per Body Partition (Target: 240 frames in each Body Partition)
Material start/end	Picture to Picture First Frame of content (no bars, clocks, etc.) / Last Frame of content (no adverts, trails, textless material, etc. ; that has to be delivered separate)
Timecode Material Package	Start value: 00:00:00:00
Timecode Source Package	Start value: 00:00:00:00, no discontinuities;



- **Bitstream**

<b>Video</b>	
Format	MPEG-2 ES according to ISO 13818-2
Level/Profil	422Profile@HighLevel
GOP	Long GOP; N=12; M=3; pattern: IBBPBBPBBPBB
Chroma Sampling	4:2:2
Bit Rate	50 Mbit/s
Constant Bit Rate	Yes
Sequence Header	Before each GOP
Field Encoding	Top field first
Timecode in GOP header	Not in use
<b>Audio</b>	
Channel Count	8
Format	AES3 according to SMPTE 382M carrying uncompressed PCM or Dolby E (see below)
Samplerate	48 kHz
Resolution	24 Bit
<b>Ancillary Data</b>	Not in use
Subtitles	as STL files

- **Baseband**

<b>Video</b>	
Picture Size (active)	1920x1080
Aspect Ratio	16:9
Frame Rate	25i
Video signal compliance	ITU-R BT.709
<b>Audio</b>	
Channel Count	8
Channel Assignment	See chapter 3.2

### 3. ANNEX 1 – Audio

If less audio channels are available than designed in profiles, the remaining channels have to be muted.

#### 3.1. General Requirements

For any programme elements:

- Integrated Loudness according to EBU R-128 = -23 LUFS
- Maximum True Peak = -1dBTP

For short programme elements with interstitial, promotional or commercial character:

- Integrated Loudness according to EBU R-128 = -23 LUFS
- Maximum True Peak = -1dBTP
- Maximum Short Term Loudness = -17 LUFS (with reservations, can be adjusted in the future)
- Maximum Momentary Loudness = -14 LUFS (with reservations, can be adjusted in the future)

#### 3.2. Channel Allocation - 8 Channel Profile

Channel	Essence	
1	Mix Stereo, German language, left	
2	Mix Stereo, German language, right	
3	Mix Stereo, original language, left	
4	Mix Stereo, original language, right	
5	Mix 5.1, German language, Dolby-E (see chapter 3.4)	
6		
7	Mix 5.1, original language, Dolby-E (see chapter 3.4)	<i>or muted</i>
8		

#### 3.3. Channel Allocation - 4 Channel Profile

Channel	Essence	
1	Mix Stereo, German language, left	
2	Mix Stereo, German language, right	
3	Mix Stereo, original language, left	<i>or Mix 5.1, German language, Dolby E</i>
4	Mix Stereo, original language, right	

### 3.4. Channel Allocation - Dolby-E

Inside the Dolby-E compressed bitstream, the channel assignment shall be the following:

Channel	Essence	
1	Mix 5.1, front left	
2	Mix 5.1, front right	
3	Mix 5.1, front center	
4	Mix 5.1, LFE	
5	Mix 5.1, rear left	
6	Mix 5.1, rear right	
7	Mix or IT Stereo, left	or muted
8	Mix or IT Stereo, right	or muted

### 3.5. Channel Allocation - Localization

For purpose of localization the audio tracks shall be assigned to the file based profiles

(from definition above, 2.2/2.3) in the following order:

Channel	Essence
1	Mix Stereo, original language, left
2	Mix Stereo, original language, right
3	Music & Effects, left
4	Music & Effects, right
5	Dialogue
6	extra Effects, if available
7	IT Stereo, left
8	IT Stereo, right

## **4. ANNEX 2 – 3D HD Programme Material**

In general the 3D HD video configuration is identical to our HD-1 profile.

The 3D HD format standard is:

- 1080i/25 SBS (side by side) 4:2:2  
(one single XDcamHD422 file as described in chapter 2.3)

## 5. ANNEX 3 – General Requirements

- Programs must always be delivered in one MXF file. Breaks or overlaps are not acceptable.
- Complete backgrounds (textless elements) have to be delivered in a separate file.
- If other titled scenes are present in a program, the textless elements for these should also be included (bumpers, computer screens etc.).
- Textless elements must cover the complete scene from cut to cut.
- The earliest available generation of material is required.
- The aspect ratio has to be native and kept unchanged through all stages of postproduction. No aspect ratio switches during a movie are allowed.
- All post production processes must be executed in a way that the resolution is never affected. Up-converted Material will not be accepted.
- Only complete lines are accepted. (e.g. in 4x3 format Line 23 and 627 must be blanked)
- Letterbox material has to be centered vertically.
- If original material was film, only retouched material will be accepted.
- Only colour grading for television will be accepted. No cinema colour grading is allowed.
- The luminance max level has to be kept as high as possible, but must not exceed 100% even on extreme highlights. Black level below 0 % is not acceptable.
- No crushed blacks, no clipped luminance level is permitted.  
Both effects cause an unacceptable loss of detail information in dark or light scenes independent of the absolute luminance level.
- Overall, all material has to fully comply to all specifications of this document. Material that does not comply will be rejected.

## 6. ANNEX 4 – Contact

For further information, please contact:

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