ARD_ZDF_XDF-01

MXF Profile for XAVC Long GOP 50 Mbit/s @ 1080p50 8 / 16 mono AES3 PCM audio tracks

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ARD_ZDF_XDF-01

January 2025

This document defines an MXF Profile with XAVC, Long GOP 50 Mbit/s, 1080p50 and 8 / 16 mono AES3 PCM audio tracks. It reflects the requirements of ARD and ZDF for the use cases "exchange between broadcasters" and "external delivery".

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1. Introduction

The scope of this document is to provide an MXF profile tailored for ARD and ZDF requirements regarding 1080p50 for the use cases "exchange between broadcasters" and "external delivery". The broadcasters technical environments and their quality expectations are taken into account. Based on the strategic direction for 1080p50 defined by ARD and ZDF, this profile provides the technical elaboration of the agreed key parameters, which are:

- MXF OP1a file container
- XAVC Long GOP codec with 50 Mbit/s
- Resolution of 1920x1080 and 50 fps
- Standard Dynamic Range (SDR)

Experiences with file-based 1080i/720p production have proven, that specifying MXF file structure and parameters helps to reduce interoperability issues and provides a solid ground for automated QC. Applying MXF file and bitstream policies early in the development was found to facilitate the introduction in the long run, especially regarding interoperability. Changes and additional profiles may be published in the future when technology evolves.

1.1 General Remarks

This profile includes the specifications for Standard Dynamic Range (SDR). An extension of the profile for High Dynamic Range (HDR) might be possible in the future.

Available **XDF** profiles:

Profile	Specs	Status
ARD_ZDF_XDF-01	XAVC Long GOP 50 Mbit/s, 1080p50, 8/16 mono AES3 PCM tracks	v1.0 (new)

Overview of the existing **HDF** and **SDF** profiles:

Profile	Specs	Status
ARD_ZDF_HDF-01a	XDCAM HD422, 1080i25, 8 mono AES3 PCM tracks	v1.2 (stable)
ARD_ZDF_HDF-01b	XDCAM HD422, 1080i25, 16 mono AES3 PCM tracks	v1.2 (stable)
ARD_ZDF_HDF-02a	AVC-I 100, 1080i25, 8 mono AES3 PCM tracks	v1.2 (stable)
ARD_ZDF_HDF-02b	AVC-I 100, 1080i25, 16 mono AES3 PCM tracks	v1.2 (stable)
ARD_ZDF_HDF-03a	AVC-I 100, 720p50, 8 mono AES3 PCM tracks	v1.2 (stable)
ARD_ZDF_HDF-03b	AVC-I 100, 720p50, 16 mono AES3 PCM tracks	v1.2 (stable)
ARD_ZDF_SDF-01	D10, 576i25, 1 AES3 PCM track with 8 channels	v1.0 (stable)
ARD_ZDF_SDF-02	DVbased50, 576i25, 8 mono AES3 PCM tracks	v1.0 (stable)

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2. Conformance Notation

This document contains both normative text and informative text.

All text is normative except for that in the Introduction, and any section explicitly labelled as 'Informative' or individual paragraphs which start with 'Note:'

Normative text describes indispensable or mandatory elements. It contains the conformance keywords 'shall', 'should' or 'may', defined as follows:

'Shall' and 'shall not':	Indicate requirements to be followed strictly and from which no deviation is permitted in order to conform to the document.
'Should' and 'should not':	Indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others. OR indicate that a certain course of action is preferred but not necessarily required. OR indicate that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.
'May' and 'need not':	Indicate a course of action permissible within the limits of the document.

Informative text is potentially helpful to the user, but it is not indispensable and it does not affect the normative text. Informative text does not contain any conformance keywords.

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3. Specification of MXF file properties

This section contains the core specification for the MXF profile **ARD_ZDF_XDF-01**. The MXF profile provides further restrictions to the MXF standards as defined by SMPTE in st377-1:2019, st381-3:2013 and st382:2023. These standards **always** apply if not explicitly stated otherwise.

The basis for the ARD_ZDF_XDF-01 Profile was the specification SMPTE **RDD32:2017** with the Single (Figure 1) and Multiple Essence Location Styles (Figure 2) mentioned there.

To match the ARD_ZDF_XDF-01 Profile an MXF file shall comply with all parameters specified in this document.

Note: Not all specified parameters represent concrete items in the MXF Header Metadata. Thus, some parameters might be difficult to check automatically with Quality Control Tools.

Figure 1 and Figure 2 give an overview of the MXF file structures according to the profile specified by this document.

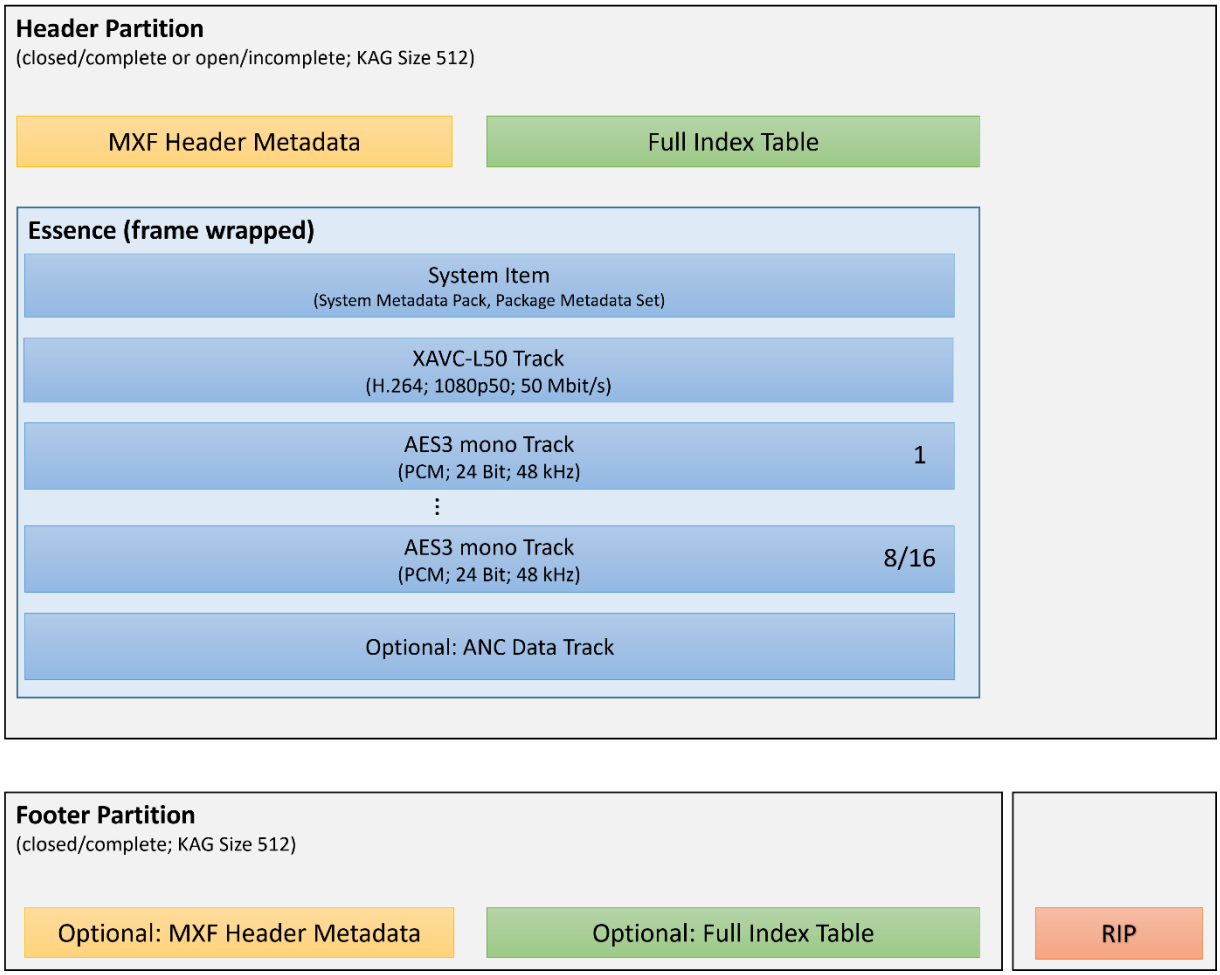

Figure 1 - Structure of a MXF file with Single Essence Location Style

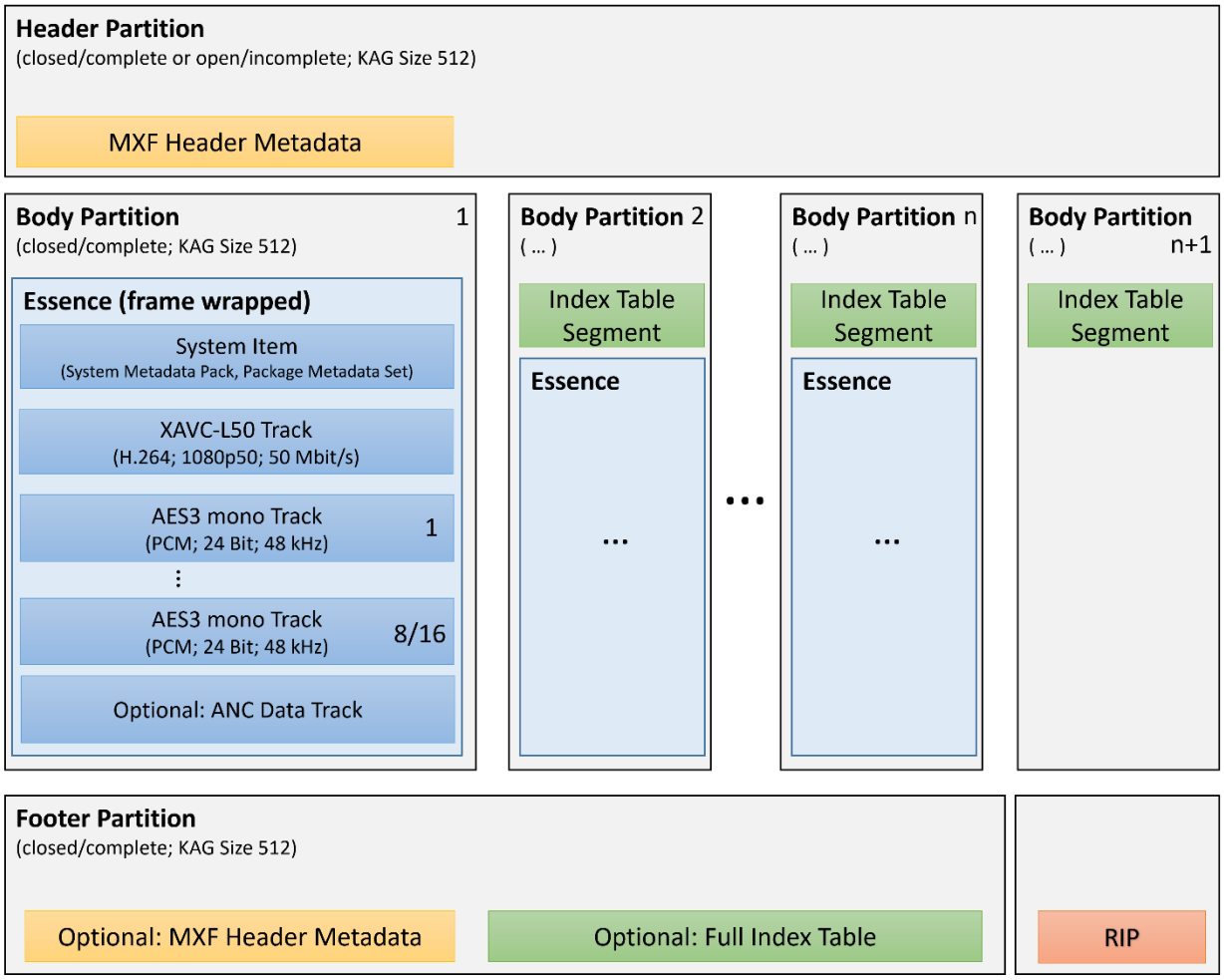

Figure 2 - Structure of a MXF file with Multi Essence Location Style

3.1 Property Specifications

The following table gives an overview of the nomenclature used for the parameter specification:

Type	Description	Example Notations
Concrete Values	Designates those values that directly represent a value in the MXF file, are written in italic letters. Depending on the context, they can be expressed in decimal, hex or binary numbers, or as true or false.	"*24*", "*060e2b34.04010101.0d01 0301.02060300*"
Description	Descriptions for concrete values are written in round brackets after the value itself.	"*122* (= High 4:2:2)"
Value ranges	If more than one value is valid in the Profile all possible values are listed in square brackets, separated with a comma. Or they are listed as a range with "-" between the smallest and highest possible value.	"[true, false]", "[1-12]"
Plain text	Explanation of the corresponding property of the MXF File.	"Shall be present", "8 AES Audio Tracks (containing PCM)"

The following table contains the MXF file properties specified by this Profile.

The Property Name column includes information about related EBU QC Item ID(s) wherever possible. For further information on EBU QC refer to https://qc.ebu.io.

The Property Specification column is divided into two columns when it is necessary to distinguish between Single and Multiple Essence Location Style.

Property Name	Property Specification	
Profile short description		
Type	MXF OP1a / XAVC Long GOP 50 **Single Essence Location Style**	MXF OP1a / XAVC Long GOP 50 **Multiple Essence Location Style** (preferred)
MXF structure [20W]	According to SMPTE RDD32:2017, chapter 7.3.1.3 Essence contained in Header Partition, Forward Indexing	According to SMPTE RDD32:2017, chapter 7.3.2.1 Essence contained in Body Partition(s), Backward Indexing
Essence Mapping [19W]	According to SMPTE st381-3:2013 (AVC) SMPTE st382:2023 (AES3) SMPTE st436:2013 (ANC)	
Generic Container [22W]	Frame-based mapping according to SMPTE st379-2:2010	
Video Coding Syntax [36F]	Compliant to ISO/IEC 14496-10 | Rec. ITU-T H.264, XAVC Long GOP 50, Level 4.2 (1080p50)	
Scanning raster [48W, 42W]	1080p/50	
Audio	8 or 16 AES Audio Tracks (containing PCM, 24 bit, 48 kHz)	

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General		
File format [252W]	MXF (SMPTE st377-1:2019) - Version 1.3 Major Version: *1* Minor Version: *3* Preface Version: *259* (= 1.3)	
Operational Pattern [25W]	OP1a (SMPTE st378:2004)	
Identification Set	Shall be used, according to st377-1: 7.5.2, and include "Company Name", "Product Name", "Product Version", "Platform" and "Toolkit Version"	
Header Partition Status [63W]	Closed, Complete (preferred) Open, Incomplete	
Body Partition Status	not present	Closed, Complete
Body Partition Duration	not present	max. 480 frames (corresponding with the Index Duration)
Footer Partition Status [63W]	Closed, Complete	
KAG Size [151W]	*512* (consistent for all partition packs)	
System Item [152W]	Shall be present (SMPTE st326:2000 and st385:2004) Includes System Metadata Pack and Package Metadata Set	
Essence location [116W]	Complete Essence in Header Partition.	Essence segmented in Body Partition(s).
Index table location [64W, 153W]	The Index Table segment(s) shall be located in the Header Partition (Forward Indexing). The complete Index Table may be repeated in the footer partition.	One Index Table segment shall be located in each body partition, except the first body partition (Backward Indexing). The last Index Table Segment shall be written in a separate Body Partition. The complete Index Table may be repeated in the footer partition.
Header Metadata Location [155W]	Header Metadata shall be present in the Header Partition. They may be repeated in the Footer Partition. If the Header Partition is not “Closed, Complete”, the Header Metadata shall be present in the Footer Partition with the correct values.	
Descriptive Metadata [97W]	May be present	
Random Index Pack [118W]	Shall be present	
Essence Elements in Essence Container	Shall be in the order: System Item, Picture Item, Sound Item, ANC Data Item (optional). The Sound Elements within the Sound Item shall be in the order: Audio Essence Element 1, […], Audio Essence Element 8 or 16.	
Tracks in Material Package [29W]	The Material Package shall contain 1 Timecode Track, 1 Video Track, 8 or 16 Audio Tracks, 1 ANC Data Track (optional). The track order shall be the same as defined for tracks in the source package.	
Tracks in Source Package [30W]	The Source Package shall contain 1 Timecode Track, 1 Video Track, 8 or 16 Audio Tracks, 1 ANC Data Track (optional).	
	The track order shall match with the order of the essence elements in the essence container.	

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Timecode Material Package [26W]	Shall be present
Timecode Source Package [26W]	The Timecode Track shall contain one Timecode Component Set. The start value shall match with the timecode value of the first System Item.
Timecode System Item [26W]	Shall be present and continuous in the UserDate and conform to SMPTE ST12. **Note:** *"The timecode should increment only every other frame. In this case the field mark flag shall be used to identify each frame of the frame pair. The field mark flag for the first frame of the frame pair shall be set to zero, the field mark flag for the second frame of the frame pair shall be set to one."* (EBU R 122)

Index Table Segment	
Index Edit Rate [201W]	*50 / 1*
Index Start Position [202W]	(n-1)*480 [1]
Index Duration	Shall be set to the total number of Edit Units in the Index Table Segment and shall not exceed 480.
Edit Unit Byte Count	*0* (= variable)
Slice Count	*1*
Delta Entry Array	Shall be present and complete. Position Table Indexing shall be set to -1 for the video essence (= Apply Temporal Reordering).
Index Entry Array	Shall be present and complete. Temporal Offsets shall be set correctly for deriving Coded Order (Index Entry) from Display Order. Picture Flags shall be set in accordance with st381-3, e.g. Flag Bit 2 to identify IDR frames. The number of Index Entries should be 480 with exception of the final Index Table Segment. (Table B.2 in RDD32-2017)

Timeline Track	
Edit Rate [211W]	*50 / 1*
Origin (Precharge) [54W]	*0* (preferred)[2]

[1] n = number of Index Table Segment

[2] Origin: Precharge should be avoided if possible. It increases complexity and is prone to errors.

Video	
Essence Container Label (Video essence mapping) [212W]	*060e2b34.0401010a.0d010301.02106001*
Picture Element Key [165W]	*060e2b34.01020101.0d010301.15010500* (= MXF Generic Container Version 1 SMPTE 381M MPEG Frame-Wrapped Picture Essence)
CDCI Descriptor [157W]	
Picture Essence Coding [105W]	*060e2b34.0401010d.04010202.01316001* (= AVC High 422 Profile Unconstrained Coding)
Aspect Ratio [69W]	*16/9*
Sample Rate [42W]	*50 / 1*
Signal Standard [162W]	*4* (=SMPTE 274M)
Frame Layout [214W]	*0* (= full frame)
Display Width x Display Height [43W]	*1920 x 1080*
Sample Width x Sample Height [163W]	*1920 x 1080*
Stored Width x Stored Height [70W]	*1920 x 1088*
Sampled X Offset [161W]	*0*
Sampled Y Offset [161W]	*0*
Display X Offset [161W]	*0*
Display Y Offset [161W]	*0*
Video Line Map [159W]	*42, 0* (= for Progressive 1080p)
Transfer Characteristic / Capture Gamma [83W, 215W]	*06.0E.2B.34.04.01.01.01.04.01.01.01.01.02.00.00* (=ITU-R BT709 Transfer Characteristic)
Color Primaries	*06.0E.2B.34.04.01.01.06.04.01.01.01.03.03.00.00* (= ITU-R.BT709 Color Primaries)
Coding Equations	*06.0E.2B.34.04.01.01.01.04.01.01.01.02.02.00.00* (= ITU-R BT709 Coding Equations)
Image Start Offset	*0*
Image End Offset	*0*
Color Siting [217W]	*0* (= coSiting as in ITU-R Rec 601)
Black Ref Level [219W]	*64*
White Ref Level [220W]	*940*
Color Range [221W]	*897*
Horizontal Subsampling [34W, 222W]	*2* (= 4:2:2)
Vertical Subsampling [34W, 223W]	*1* (= 4:2:2)
Component Depth [32W]	*10* (= 10 bit)
SubDescriptor	Reference to AVC Sub Descriptor (see below)

AVC Sub Descriptor [157W]	
AVC Coded Content Kind	*1* (= Progressive Frame Picture)
AVC Maximum GOP Size	*24*
AVC Maximum B Picture Count	*2*
AVC Maximum Bitrate	*49.999.872*[3]
AVC Profile	*122* (= High 4:2:2)
AVC Profile Constraint	Binary value: *0000 0000* (= unconstrained)
AVC Level	*42* (= Level 4.2)
AVC Decoding Delay	[*1*, *2*]
AVC Maximum Ref Frames	*2*
AVC Sequence Parameter Set Flag	*30h* (= is present in first frame of a GOP, and constancy is “unknown”)
AVC Picture Parameter Set Flag	*30h* (= is present in first frame of a GOP and constancy is “unknown”) *20h* (= is present in every frame and constancy is “unknown”)

Audio	
Essence Container Label [212W] (Audio essence mapping)	*060e2b34.04010101.0d010301.02060300* (= MXF-GC Frame-wrapped AES3 audio data)
Sound Element Key [166W]	*060e2b34.01020101.0d010301.16.**yy**.03.**xx*** (= MXF Generic Container Version 1 SMPTE 382M AES Frame-wrapped Sound Essence, "yy" depends on the total number of audio tracks[4], "xx" depends on the audio track.)
Audio channels per Sound Element [164W]	One channel per AES Sound Element.
AES3 Audio Essence Descriptor [157W]	
Sound Essence Coding [230W] / Sound Essence Compression	*060e2b34.0401010A.04020201.01000000* (= SMPTE ST 382 Default Uncompressed Sound Coding)
Sample Rate	*48000 / 1*
Audio sampling rate [13W]	*48000 / 1*
Locked/Unlocked [231W]	*1* (= locked)
Channel Count [164W]	*1*
Quantization bits [3W]	*24*
Block Align [234W]	*3* (= 24 Bit)
Average Bytes per Second (AvgBps) [235W]	*144 000*

[3] Calculation formula for bit_rate_scale = 6 and bit_rate_value_minus1 = 12206 is: **(12206 + 1) * 2^(6+6) = 49.999.872**

[4] A single byte is represented by hexadecimal digits, so yy = 0x10 means 16 Tracks and 0x08 means 8 Tracks

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Channel Status Mode (Byte Pattern) [236W]	*00 00 00 01 00 00 00 01* ***01*** (= minimum mode[5])
Fixed Channel Status Data (for PCM Audio) [146W]	*00 00 00 01 00 00 00 18* ***85 00 00 00 00 00 00 00*** ***00 00 00 00 00 00 00 00*** ***00 00 00 00 00 00 00 00*** (= minimum mode, Professional Use, Linear PCM, No Emphasis, 48kHz Sampling)

Ancillary Data (optional)	
Data content (EssenceContainers) [93W]	May be present with a constant Edit Unit size. Shall not be used for proprietary metadata.
Essence Container Label	*060e2b34.04010109.0d010301.020e0000* (= MXF-GC Generic ANC Data Mapping Undefined Payload)
Data element key	*060e2b34.01020101.0d010301.17010201* (= MXF Generic Container Version 1 SMPTE 436M Frame-Wrapped ANC Data Essence)
ANC Data Descriptor (Generic Data Essence Descriptor)	
Sample Rate	*50 / 1*

Other	
Dark Metadata [114W]	Private user data (Metadata Class 14) shall not be present. Only SMPTE Metadata Classes 1-7 and 13 are allowed.

Bitstream/H.264 Parameter	
IDR frames [56W]	Should be present in the first frame of **every GOP**.[6]
SPS	Shall be present in the first I-frame of **every GOP**.
PPS	Shall be present **at least** in the first I-frame of **every GOP**.
SEI buffering_period	Shall be present in **every I-frame**.
SEI pic_timing	Shall be present in **every frame**.
SEI user_data_unregistered	Payload shall not include KLV data.
SEI recovery_point	Shall be present in **every I-frame**.
slices per frame	4
profice_idc [35F]	*122* (= High 4:2:2)
level_idc [35F]	*42* (= 4.2)

[5] This deviation from the standard is necessary in order to be compatible with RDD32

[6] To reduce complexity for seeking and editing and improve performance

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chroma_format_idc	*2* (= 4:2:2)
bit_depth_luma_minus8	*2* (= 10)
bit_depth_chroma_minus8	*2* (= 10)
seq_scaling_matrix_present	*0* (= false)
log2_max_frame_num_minus4	*0* (= 4)
log2_max_pic_order_cnt_lsb_minus 4	*1* (= 5)
max_num_ref_frames	*2*[7]
pic_width_in_mbs_minus1	*119* (= 1920)
pic_height_in_map_units_minus1	*67* (= 1088)
frame_crop_bottom_offset	*8*
aspect_ratio_idc [55F]	*1* (= square samples / 1:1)
video_signal_type_present_flag	*1* (= true)
video_full_range_flag	*0*
colour_description_present_flag	*1* (= true)
colour_primaries [83F]	*1* (= ITU Rec BT.709-6)
transfer_characteristics [83F]	*1* (= ITU Rec BT.709-6)
matrix_coefficients [83F]	*1* (= ITU Rec BT.709-6)
fixed_frame_rate_flag	*1* (= true)
entropy_coding_mode_flag	*1* (= CABAC)
transform_8x8_mode_flag	*1* (= true)[8]

Note: Numerous bitstream parameters have been added because they are connected to the MXF parameters, and they have a significant influence on interoperability and quality.

[7] Some existing implementations use up to 4 reference frames which has no significant quality advantage (-> chapter 5)

[8] Pure 16x16 macroblock prediction would be a significant quality loss

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4. Recommended practices (informative)

4.1 Growing Files

The scope of the ARD_ZDF_XDF-01 profile is exchange between different broadcasters and external delivery. To achieve broad interoperability, it was decided not to recommend "Open" and "Incomplete" MXF partitions (with missing or distinguished metadata values). Nevertheless, MXF files with these partitions can occur in "Growing File" use cases like "Transfer/Edit-While-Record".

- Open: Required metadata can contain *incorrect* values (e.g. AVC Decoding Delay = 255).
- Incomplete: Best Effort metadata can contain *distinguished* values (e.g. duration = -1 for an unknown duration).

Open and Incomplete Partitions are needed for certain use cases, as described, but are prone to errors when a decoder relies on incorrect or missing values.

4.2 GOP Structure and H264 encoding

The RDD32 and H264 documents do not provide precise specifications about the GOP Structure of the XAVC-L50 bitstream. To be compliant with the RDD32 Index Table Segment duration of 480 frames, one of these variants is recommended for a default 24 frame GOP length:

(1) IBBPBBPBBPBBPBBPBBPBBPBB

- Starting with an IDR frame
- Followed by 2 unidirectional B frames
- Followed by a P frame to allow 2 ref frames for the next B frame

(2) IPBBPBBPBBPBBPBBPBBPBBPB

- Starting with an IDR frame
- Followed by a P frame to allow 2 ref frames for the next B frame
- Ending with a single B frame

Note: The outlined structures are showing the encoded order.

Other GOP structure may result in a first GOP that is shorter than 24 frames.
Additionally, it is recommended to use IDR-frames in every GOP and to avoid Non-IDR I-frames. IDR-frames enable efficient editing and seeking. It is easier to avoid a full transcoding when a file with continuous IDR-frames is edited.

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4.3 Precharge (Origin) and Rollout

The so-called Precharge and Rollout frames are implemented in MXF using the property Origin, the Package Durations and the number of indexed Edit Units. Due to the added complexity for encoders and decoders (e.g. in Index Tables and temporal references), it is recommended to avoid the usage for exchange and delivery use cases. However, e.g. to avoid generational losses, the use of an Origin is permitted within the ARD_ZDF_XDF-01 profile.

4.4 AVC Subdescriptor

Due to ambiguity and little usage, it was decided not to require the following metadata:

- AVC Constant B Picture Flag
- AVC Closed GOP Indicator
- AVC Identical GOP Indicator
- AVC Average Bitrate

If the properties are present, they shall be set correctly in accordance with SMPTE st381-3:2019. If the encoder cannot guarantee the validity of the values, the properties shall be either set to the default value or be omitted if no default value is defined.

Following RDD32:2017 it was decided to require the constancy flag to be 0 (= unknown) for:

- AVC Sequence Parameter Set Flag
- AVC Picture Parameter Set Flag

Implementations with a constancy flag of 1 (= constant) can be correct but are not within RDD32 requirements.

4.5 Amendment 2:2012 Metadata (ST377-1)

Due to ambiguity and little usage, it was decided not to require the following metadata:

- Is RIP Present
- Single Index Location
- Single Essence Location
- Forward Index Direction

If the properties are present, they shall be set correctly in accordance with SMPTE st377-1:2019. If the encoder cannot guarantee the validity of the values, the properties shall be omitted.

4.6 Recommended usage of timecode in ARD_ZDF_XDF-01

The MXF format supports different locations for carrying timecode information, including the System Item, the Material Package and the Source Package. To enable consistent timecode, the EBU published

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a recommendation for an encoding of source timecode into MXF files (EBU R122 Version 2.0, November 2010). The specification ARD_ZDF_XDF-01 refers to the guideline provided by EBU R122.

4.7 Recommended usage of the Identification Set

The Identification Set can be very useful, especially for error tracing. For example, in cases of interoperability problems it can provide information that helps the user to locate the cause.

The Identification Set contains basic information about the system that was used to create or modify the MXF file. According to st377-1:2019, an Identification Set must be written every time an MXF File is created or modified. A new Identification Set should be appended to the existing one(s).

Due to its relevance in practical use, it is recommended that all values in the Identification Set are filled (if applicable). If an MXF SDK is used in the product the SDK name should be included in addition to the product name. Software version numbers of the product and SDK should be included as well.

4.8 Recommended decoder behavior for Header Metadata readout

A decoder shall read the Header Metadata of the first partition with Partition Status of "Closed, Complete". That means if the Header Partition Status is "Closed, Complete", the decoder shall use the included Header Metadata. If the Header Partition Status is "Open, Incomplete", the decoder shall only use the Header Metadata of the Footer Partition.

4.9 Audio channel assignment

Information about the audio channel assignment is not included in the MXF file itself and is therefore not part of this MXF profile. Instead, ARD and ZDF defined channel assignments for different use cases which are published in the "Technical Guidelines – HDTV" (***currently under revision***). The information which channel assignment is used in a particular file is provided separately in form of a sidecar metadata file (e.g. "Medienbegleitkarte"). The channel mapping refers to the stored order of the MXF Audio Tracks.

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5. Appendix A: Additional Decoder requirements (informative)

The following table is a collection of common MXF file properties that differ from ARD_ZDF_XDF-01 Profile. A decoder should be able to handle these properties.

Property Name	Additional decoder requirements
Profile short description	
MXF Structure	According to SMPTE RDD32:2017, chapter 7.3.2.2 “on-the-fly generation”
Audio	2 to 16 audio tracks, even numbers only

General	
File format	MXF (SMPTE st377-1) - Version 1.1 / Version 1.2
Header Partition Status	Open, Complete Closed, Incomplete
Body Partition Status	Open, Complete
Body Partition Duration	> 480 frames (corresponding with the Index Duration)
KAG Size	1
Index Table Location	Footer Partition
Timecode System Item	If present, TC can be different from Source Package

Timeline Track	
Origin	> 0
“Rollout”[9]	> 0[10]

Video	
CDCI Descriptor	
Picture Essence Coding	Universal Label version may be different
AVC Sub Descriptor	
AVC Maximum Bitrate	May be missing or different to 49.999.872
AVC Decoding Delay	*255* (= unknown)
AVC Maximum Ref Frames	*4*

[9] Rollout is calculated by: Container Duration - SP Duration, where Container Duration is the number of indexed Edit Units (Index Table)

[10] Frames extending the playout duration shall be dropped.

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AVS Sequence Parameter Set Flag	*B0h* (= present in first frame of a GOP and constant)
AVC Picture Parameter Set Flag	*A0h* (= present in every frame and constant), *B0h* (= present in first frame of a GOP and constant)

Audio	
AES3 AudioEssence Descriptor	
Sound Essence Coding / Sound Essence Compression	May be missing or set to “Undefined Sound Coding”
Sample Rate	*50 / 1*
Quantization Bits	*16*
Block Align	*2* (for 16 Bit)
Average Bytes per Second (AvgBps)	*96 000* (for 16 Bit)
Channel Status Mode (Byte Pattern)	*00 00 00 01 00 00 00 01* ***02*** (= standard)
Fixed Channel Status Data (for PCM Audio)	*00 00 00 01 00 00 00 18* ***85 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 60*** (= standard mode, Professional Use, Linear PCM, No Emphasis, 48kHz Sampling, the CRCC value: 60)

Ancillary Data	
Data content (EssenceContainers)	Non-constant ANC payload length (if correctly indexed)

Other	
Dark Metadata	May be present

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