

RSI: Technical References for purchase

Version 1.7

Versions

Data	Vers.	Tipo	Incaricato
20.02.2009	1.0	Initial version	<i>S. Pagani</i>
04.03.2009	1.1	Revision for the RSI logo	<i>S. Pagani</i>
23.10.2009	1.2	Added XDCAM HD	<i>S. Pagani</i>
29.12.2010	1.3	Added references for file purchase	<i>S. Pagani</i>
23.08.2012	1.6	update	<i>S. Valentini</i>
23.11.2018	1.7	Update, no more SD	<i>A. Trapletti</i>

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Introduction and summary

RSI is broadcasting in HD since the 29th of February 2012 and is ingesting material mainly by file transfer.

VICO (DME) ingest platform system from SRG-SSR has to be used for file ingest.

<https://www.vico.srgssr.ch/>

The file format expected is **MXF OP1a** as described in the following specifications:

- SMPTE 377M: Material Exchange Format MXF
- SMPTE 378M: Material Exchange Format MXF Operational Pattern 1A
- SMPTE 379M: MXF Generic Container
- SMPTE 381M: Mapping MPEG Streams into the MXF Generic Container
- SMPTE 12M-2: MXF Time Code implementation
- SMPTE ST 2067 - Interoperable Master Format

Additional information on MXF specifications:

- MXF OP1a frame wrapping
- header and footer: closed and completed

HD video codec is XDCamHD, 422 MPEG 2@ ML, HP/Long GOP12, 50 Mb/s.

Notes

- The material shall be delivered according to the technical references described in this document.
- The material shall be delivered with the best possible quality, minimizing the number of encoding cycles.
The encoding cycles during production shall be known and described.
- The HDCAM or HDCAM-SR format are accepted only upon agreement with RSI.

File Delivery HD – Ready to Broadcast material

TV System	1080i50 (EBU 1080i/25)
Format (wrapper)	MXF
Compression	XDCAM HD 422 50Mbit/s (GOP 12)
Frame Size	1920x1080
Field Dominance	Upper field first
Test Recording	2 minutes length colour bars (100/75) audio tracks 1, 2, 3 and 4 with 1kHz –18dBFS 10 sec. Black, without sound, before the beginning of the program
Video Signal	Components signal according to EBU N10 level Max Luminance 100% FBAS Max Chroma 123% FBAS
Audio Signal	Audio Level according to EBU R-128 Program Loudness: -23LUFS (+/- 1LU) The audio must be mixed for TV dynamic
Audio Sample Rate	48kHz
Audio Bit Depth	24bit preferred, or 16 bit
Audio channels	8 or 16 mono (single Linear PCM) channels. Dolby E channels must have the same duration of the video file (frame accurate). No mixed PCM/Dolby E channels
Time Code	Time Code EBU/SMPTE, according to EBU Tech. 3097, recorded continuously from the beginning of the file: longitudinal
Description	The index table with titles description must follow the video file

Note:

The material should be described in a xml file, or at least a text file, with:
Name, description, RSI contact (name and surname), audio channel description

Audio Track occupation for productions already treated:

	Stereo	Multichannel ⁽¹⁾ (Stereo PCM + 5.1 PCM)	Multichannel ⁽¹⁾ (Stereo PCM + 5.1 Dolby E Encoded)
Audio 1	Cpl – Left	Cpl – Left	Cpl – Left
Audio 2	Cpl – Right	Cpl – Right	Cpl – Right
Audio 3	IT – Left	Cpl_5.1 – L	Cpl_5.1 Dolby E
Audio 4	IT – Right	Cpl_5.1 – R	
Audio 5	(AD - Left)	Cpl_5.1 – C	IT – Left
Audio 6	(AD.- Right)	Cpl_5.1 – LFE	IT – Right
Audio 7	Mute	Cpl_5.1 – Ls	IT_5.1 Dolby E
Audio 8	Mute	Cpl_5.1 – Rs	
Audio 9		IT – Left	
Audio 10		IT – Right	
Audio 11		IT_5.1 – L	
Audio 12		IT_5.1 – R	
Audio 13		IT_5.1 – C	
Audio 140		IT_5.1 – LFE	
Audio 15		IT_5.1 – Ls	
Audio 16		IT_5.1 – Rs	

(1) Stereo (Cpl – Left, Cpl – Right) must be always present

Cpl: complete audio

IT: international audio, original language or **AD** audio description mixed with Cpl

File Delivery HD – Post Production Material

TV System	1080i50 (EBU 1080i/25)
Format (wrapper)	MXF or MOV
Compression	XDCAM HD 422 50Mbit/s (GOP 12), MXF ProRes 422 HQ, MOV
Frame Size	1920x1080
Field Dominance	Upper field first
Test Recording	2 minutes length colour bars (100/75) audio tracks 1, 2, 3 and 4 with 1kHz –18dBFS 10 sec. Black, without sound, before the beginning of the program
Video Signal	Components signal according to EBU N10 level Max Luminance 100% FBAS Max Chroma 123% FBAS
Audio Signal	Audio Level according to EBU R-128 Program Loudness: -23LUFS (+/- 1LU) The audio must be mixed for TV dynamic
Audio Sample Rate	48kHz
Audio Bit Depth	24bit preferred, or 16 bit
Audio channels	8 or 16 mono (single Linear PCM) channels.
Time Code	Time Code EBU/SMPTE, according to EBU Tech. 3097, recorded continuously from the beginning of the file: longitudinal
Description	The index table with titles description must follow the video file

Note:

The material should be described in a xml file, or at least a text file, with:
Name, description, RSI contact (name and surname), audio channel description

Audio Track occupation for productions already treated:

	Stereo	Multichannel ⁽¹⁾ (Stereo PCM + 5.1 PCM)
Audio 1	Cpl – Left	Cpl – Left
Audio 2	Cpl – Right	Cpl – Right
Audio 3	IT – Left	Cpl_5.1 – L
Audio 4	IT – Right	Cpl_5.1 – R
Audio 5	(AD - Left)	Cpl_5.1 – C
Audio 6	(AD - Right)	Cpl_5.1 – LFE
Audio 7	Mute	Cpl_5.1 – Ls
Audio 8	Mute	Cpl_5.1 – Rs
Audio 9		IT – Left
Audio 10		IT – Right
Audio 11		IT_5.1 – L
Audio 12		IT_5.1 – R
Audio 13		IT_5.1 – C
Audio 140		IT_5.1 – LFE
Audio 15		IT_5.1 – Ls
Audio 16		IT_5.1 – Rs

(1) Stereo (Cpl – Left, Cpl – Right) must be always present

Cpl: complete audio

IT: international audio, original language or **AD** audio description mixed with Cpl

XDCAM HD on physical media

TV System	1080i50 (EBU 1080i/25)
Format (wrapper)	XDCAM HD (phase 3) 50 Mbps 4:2:2 The delivered disc must be a master (first generation)
Test Recording	2 minutes length colour bars (100/75) with white circle audio tracks 1, 2, 3 and 4 with 1kHz -18dBFS 10 sec. Black, without sound, before the beginning of the program Must be recorded with the same Recorder used to record the Production
Video Signal	Max Luminance 100% FBAS Max Chroma 123% FBAS
Audio Signal	8 ch / 24 bit Discrete Linear PCM (2.0, 5.0 or 5.1) or Dolby E (5.0 or 5.1, see file delivery) Ref. Level -18dBFS Clip level -9dBFS The audio must be mixed for TV dynamic
Time Code	Time Code EBU/SMPTE, according to EBU Tech. 3097, recorded continuously from the beginning of the tape: longitudinal + VITC lines 19,21,332,334

Audio Track occupation for productions already treated:

	Stereo	Multichannel ⁽¹⁾ (Stereo PCM + 5.1 PCM)	Multichannel ⁽¹⁾ (Stereo PCM + 5.1 Dolby E coded)
Audio 1	Cpl – Left	Cpl – Left	Cpl – Left
Audio 2	Cpl – Right	Cpl – Right	Cpl – Right
Audio 3	IT – Left	Cpl_5.1 - L	Cpl_5.1 Dolby E
Audio 4	IT - Right	Cpl_5.1 – R	
Audio 5	Mute	Cpl_5.1 – C	IT – Left
Audio 6	Mute	Cpl_5.1 - LFE	IT – Right
Audio 7	Mute	Cpl_5.1 – Ls	IT_5.1 Dolby E
Audio 8	Mute	Cpl_5.1 – Rs	

(1) Stereo (Cpl – Left, Cpl – Right) must be always present.

Cpl: complete audio

IT: international audio, original language or audio description

For Dolby Metadata see page 8

In case of audio tracks in data format (i.e.: DolbyE), they must be present and coherent all long the file duration

Dolby Metadata

The RSI will work with Dolby Metadata Presets depending on the material type. This means that the delivered Dolby Metadata will be overwritten with the SRG metadata depending on the material type (sport, music, news, ...)

Below the SRG standard preset (as default parameters):

Metadata Parameter	Default	Comments
Program Configuration	5.1	16 bit
Program Description Text	Not defined	Not relevant: SRG internal used for channel language identification: D, F, I, or E. This parameter will not be sent to the consumer Dolby Digital decoders
Dialogue Level	-23LUFS	Depending on program material It shall be measured and set correctly by the material producer. Tolerance +/- 1LU
Channel Mode	3/2	
LFE Channel	Enabled	
Bitstream Mode	Complete Main	
Line Mode Compression	Film Light	
RF Mode Compression	Film Light	
RF Overmodulation Protection	Disabled	
Dolby Surround Mode	Not Indicated	
Audio Production Information	Yes	
Mix Level	94dB	
Room Type	Small	
Copyright Bit	No	
Original Bitstream	Yes	
Preferred Stereo Downmix	Lt/Rt Preferred	Lo/Ro Preferred for: Advertising, News, Sport, TalkShow and Music material
Lt/Rt Center Downmix Level	0.707 (-3.0dB)	
Lt/Rt Surround Downmix Level	0.500 (-6.0dB)	
Lo/Ro Center Downmix Level	0.707 (-3.0dB)	
Lo/Ro Surround Downmix Level	0.500 (-6.0dB)	
Dolby Surround EX Mode	Not Surround EX	
A/D Converter Type	Standard	
DC Filter	Enabled	
Lowpass Filter	Enabled	
LFE Lowpass Filter	Enabled	
Surround 3dB Attenuation	Enabled	Disabled for: Advertising, News, Sport, Talkshow, Music and Documentaries material
Surround Phase Shift	Disabled	