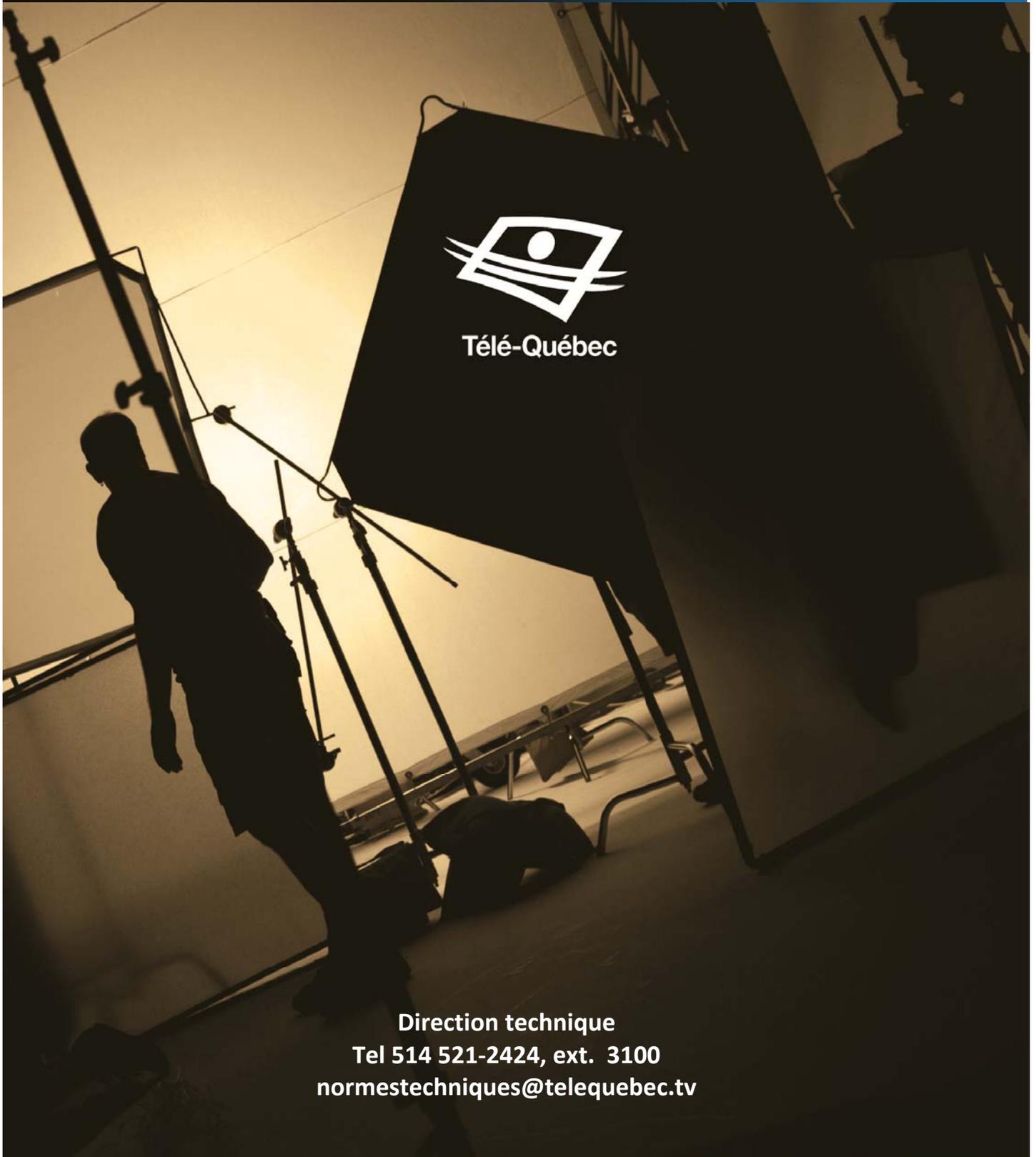


# Technical specifications

High definition video (HD)



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# Technical specifications

## High definition video (HD)



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### 1. FORMAT

#### 1.1 CASSETTE

The HD format accepted by Télé-Québec is HDcam SR™.

**All programs delivered on another format than HDcam SR™ must have been authorized through a prior agreement with Télé-Québec.**

##### 1.1.1 IDENTIFICATION

Each tape must be supplied in its own case. Each cassette and case must be labelled with the following information:

- French title (and original title, if applicable)
- Episode title and number
- Video format identification (1080i)
- Identification of audio tracks
- Closed captioning (if applicable)
- Program duration

#### 1.2 FILE

##### FOR PROGRAMS OF MORE THAN 2 MINUTES DURATION:

XDCAM HD 422 encapsulated in a MXF container, bitrate of 50 Mb/s, audio format PCM, sampling of 24 bits at 48kHz.

##### FOR PROGRAMS OF LESS THAN 2 MINUTES DURATION:

Choice of:

XDCAM HD 422 encapsulated in a MXF container, bitrate of 50 Mb/s

QuickTime Avid DNxHD, bitrate of 145 Mb/s

ProRes 422, bitrate of 145 Mb/s

Audio format PCM, sampling of 24 bits at 48kHz

**Before sending us a program in file format, an agreement must be made with a representative of Télé-Québec technical service. In addition, files are to be uploaded.**

## 2. VIDEO

### 2.1 SIGNAL PARAMETERS

- The image format is 1920 X 1080
- The sampling structure must be 4:2:2
- The frame rate must be 29.97 frames per second, interlaced
- The production process must be done using a digital HD camera

### 2.2 VIDEO LEVELS

Video levels must conform to the following values:

- White maximum: 700 mV
- Black minimum: 0 mV
- Chrominance Cb Cr:  $\pm 350$  mV

### 2.3 USING SD IMAGES

#### 2.3.1 SD 4:3 IMAGES

When the use of SD 4:3 images is required, two display modes can be used: pillar-box or top-bottom crop. When reframing in pillar-box format, it is important to make sure that the entire closed-captioned signal is eliminated from lines 21 and 284 of the SD images before conversion.

Whenever converting from SD to HD:

- No deterioration (geometrical distortion) of the horizontal and/or vertical proportions from the original picture will be accepted.
- Pay close attention in order to preserve the major elements of the original 4:3 image (action, graphics, etc).

#### Pillar-box



The black areas (columns) are shown within the 16:9 picture.

#### Top-bottom crop



The dotted areas show the parts of the original 4:3 image not shown on a 16:9 screen.

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### 2.3.2 SD 16:9 IMAGES

When the use of SD 16:9 images is required, the mode of realignment must be such that the original SD 16:9 image is increased in order to fill the 16:9 HD frame. No deterioration (geometrical distortion) of the horizontal and/or vertical proportions from the original picture will be accepted.

### 2.4 TIMECODE

The timecode must be drop frame and constant from beginning to end.

The timecode corresponding to the first image of the program must be 10;00;00;00.

### 2.5 SAFE ACTION AND SAFE TEXT AREAS

The safe action area must be within the central 90% portion of the complete frame, in both height and width.

The safe text areas must be within the central 80% portion of the complete frame, in both height and width.

The network's identifying logo is embedded in the lower right-hand corner of the screen during the entire broadcast. The logo is 165 X 90 pixels, located in the safe title area of the screen. Never use this space for subtitles, captions, or any other superimposed text or image.

### 2.6 AD INSERTIONS

#### 2.6.1 For programs broadcast offline

The commercial breaks are flagged with ten black frames in the program. The duration of those ten black frames must be included when calculating the total expected length of the program.

### **2.6.2 For programs broadcast live**

The ad insertions recorded on the tape will match the actual duration of the commercial blocks broadcast for live programs.

For example, if the commercial block is 3 min. 30 sec. long, the ad insertion recorded on the tape will also be 3 min. 30 sec. long, and so on for all commercial blocks. The duration of these ad insertions will not be part of the total duration of the program.

## **2.7 PROGRAM ON MULTIPLE TAPES**

For programs which require multiple tapes due to their length, the second tape must start at a scene take change and without any overlap. The time code must start at the following hour.

For example, if the first tape starts at 10:00:00:00 and lasts less than one hour, the second tape should then start at 11:00:00:00. If the first tape starts at 10:00:00:00 and its length is more than an hour but less than two hours, the second tape should then start at 12:00:00:00 and so on for the following tapes.

If the tape is to be changed at the insertion point of a commercial break (for offline broadcasts only), leave one more second of black at the end of the first tape and one more second of black at the start of the second tape. These seconds are to be included in calculating the total expected duration of the program.

## **2.8 SEVERAL PROGRAMS ON THE SAME TAPE OR FILE**

If there is more than one program on the same tape or file, the additional program(s) must be preceded by colour bars and tone (5 seconds), a 5-second slate and 10 seconds of black.

In this case, provide a list of the programs (French titles and original titles, if applicable) along with the tape or file.

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### 3. AUDIO

#### 3.1 MAIN PROGRAM TRACKS

The main program soundtrack must be distinct 5.1 multichannel. If this is not possible, an agreement must be reached ahead of time with Télé-Québec to produce a soundtrack in Dolby Surround or stereo.

There must be a Dolby Surround or stereo version of the main program on tracks 7 and 8.

Audio tracks must be assigned as follows:

- Track 1: left channel (or, failing this, stereo Lt/Lo)
- Track 2: right channel (or, failing this, stereo Rt/Ro)
- Track 3: centre channel
- Track 4: LFE channel
- Track 5: rear left channel
- Track 6: rear right channel
- Track 7: stereo channel Lt/Lo
- Track 8: stereo channel Rt/Ro

If the program is in Dolby Surround or stereo, it must be on tracks 1 and 2, 7 and 8; tracks 3 to 6 must be free. **Note** that in all cases **tracks 1 and 7** represent the **left** channel and **tracks 2 and 8** represent the **right** channel.

#### 3.2 PROGRAM VIDEO DESCRIPTION TRACKS

The program video description soundtrack must be in stereo.

**Audio tracks must be assigned as follows:**

- On HDCAM SR tape and HD media file: the soundtrack must be on tracks 11 and 12.
- On all other tape formats: the soundtrack must be on tracks 3 and 4.

Note that in all cases **tracks 3 and 11** represent the **left** channel and **tracks 4 and 12** represent the **right** channel.

### 3.3 VOCAL IDENTIFICATION OF TRACKS (distinct 5.1 multichannel programs)

The distinct 5.1 multichannel program lead-in must contain a test tone reference and a vocal identification on each audio track. The total duration of all vocal identifications must be a maximum of 10 seconds and must precede the test tone reference. These will have to be clear, precise and made in sequence, so that the assignment of the tracks is easily identifiable.

### 3.4 REFERENCE LEVEL

Our reference level is -20 dBFS, which corresponds to a reference level of +4 dBu.

### 3.5 AUDIO LEVEL AND METADATA

Télé-Québec has chosen to manage its audio levels using audio metadata, as recommended in ATSC standard A/85. To do so, all content must have a sound level (loudness) of -3 to -31 dBFS. In most cases this represents the average dialogue level.

- If audio metadata are provided with the content, they must exactly match the recorded program. (tracks 1 to 6 for 5.1; tracks 1 and 2 for stereo) and must be inserted in the vertical interval (VANC) line 10 (SMPTE2020-2 standard).
- If the audio metadata are missing, Télé-Québec will insert its own metadata values, based on its evaluation of the content.

Tracks 7 and 8 used for SD broadcasting and tracks 11 and 12 (3 and 4 in some cases) used for the video description must conform to the SD technical specifications described below:

#### **SD technical specifications**

- The average dialog levels must be -24 LKFS (+/-1 dB)
- Peak readings may not exceed -3 dBFS
- Dialogue must be intelligible throughout the entire program

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### 4. LEAD-IN AND LEAD-OUT

The audio and video lead-in is 80 seconds and serves to calibrate the equipment and to identify the contents of the tape or files. The lead-out portion should be a minimum of 20 seconds. Each tape or file must contain a lead-in, a program and a lead-out without any breaks.

Timecode	Duration (seconds)	Video track	Audio tracks
09:58:40;00	10	Black	Vocal identifications
09:58:50;00	50	Colour bars	Test tone reference 400Hz
09:59:40;00	10	Slate	Silence
09:59:50;00	10	Black	
10:00:00;00	----	Program	Program
-----	20	Black	Silence

The test tone reference and color bar levels must be consistent with the audio and video levels of the recorded program that follows.

Schematic layout of the tape or file:

Timecode	9:58:40;00	9:58:50;00	09:59:40;00	9:59:50;00	10:00:00;00		
Video track	Black	Colour bars	Slate	Black	Program	Black	
Audio tracks	Vocal identifications	Test tone reference 400Hz	Silence	Silence	Program	Silence	

The slate must include the following information:

- French title (and original title, if applicable)
- Episode title and number
- Audio identification (distinct 5.1 multichannel or, failing this, Dolby Surround or stereo)
- Program duration

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### 5. CLOSED CAPTIONING (CC)

When the program is closed captioned, it can be delivered in two different formats depending on the agreement negotiated:

#### Closed captioned video format

- The code must be inserted in the digital video signal in the form of data packets according to the SMPTE 334M standard. Captions must be EIA 608 type encapsulated in EIA 708 data, in accordance with the EIA 708 standard.

#### Closed captioned file format

- The code must be delivered in an individual file for each program. The type of file format accepted is **Scenarist (.SCC)**.

### 6. RIGHT OF REFUSAL

**Any departure from these specifications must have been authorized by prior agreement with Télé-Québec.**

Télé-Québec reserves the right to refuse any program that does not comply with the technical specifications described in this document.

**Consult our website at [www.telequebec.tv](http://www.telequebec.tv) to make sure you have the latest version of this standard.**