



Česká televize

TIN: CZ00027383

and

NordicStories AS

TIN: 995 502 755 MVA

COPRODUCTION AGREEMENT

No. VYR224-00082/542

Subject Matter:	Laying down rights and duties relating to the coproduction and use of an audiovisual work
Price (value):	EUR 102,958.71
Date of entry into:	<u>- 3 -06- 2024</u>

COPRODUCTION AGREEMENT

ENTERED INTO BY AND BETWEEN

(1) **NordicStories AS**, with registered office at Dronningengsgate 3, 0152 Oslo, Norway (hereinafter referred to as "**Producer**"), Registration No. / TIN: 995 502 755 MVA, Bank information: Bank information: 1503.56.20599, IBAN: NO0815035620599, SWIFT: DNBANOKKXXX, Represented by Stein – Roger Bull, Statutory Director

and

(2) **Česká televize**, with registered office at Kavčí hory, 140 70 Prague 4, Czech Republic (hereinafter referred to as "**CT**"), Business ID: 00027383, TIN: CZ 00027383, Account No.: 1698682/0800, IBAN: CZ60 0800 0000 0000 0169 8682, SWIFT: GIBACZPX, represented by Jan Souček, Director General

WHEREAS:

Under this Agreement, CT and the Producer (hereinafter referred to as the "**Parties**") lay down the terms and conditions under which they agree to their mutual cooperation in creating and distributing the television program defined hereinafter (hereinafter referred to as the "**Program**").

1. DEFINITIONS AND INTERPRETATIONS

Apart from terms defined in the text of this Agreement:

Program shall mean the live broadcast and audiovisual recording of a concert designated with the working title [REDACTED] held on [REDACTED] in the [REDACTED] (hereinafter referred to as the "**Concert**"); the Program shall also include pre-recorded audiovisual segments (hereinafter referred to as "**Contributions**");

CT's Territory shall mean the [REDACTED]

Producer's Territory shall mean [REDACTED]

Cost Overrun shall mean a sum by which the actual cost of producing the Program exceeds the total production budget of the Program (Paragraph 4.1, Enclosure 1).

2. TASK AND RESPONSIBILITY OF THE PRODUCER

2.1 The Producer shall be exclusively responsible for producing and financing the Program, specifically for securing all aspects of producing the Program, including the following tasks:

- a) negotiating any and all agreements relating to the Program and paying relevant compensations, including, but not limited to, the remuneration of

the director and the music director of the Program and the director and cameraman of Contributions, without prejudice to Paragraph 3.1;

- b) organizing the production of Contributions (including postproduction, without prejudice to supply to be provided by CT in accordance with Paragraph 3.1, Subsection b)) and the distribution version of the Program (Paragraph 5.5);
- c) having the exclusive responsibility for overseeing the financing of the production of the Program, without prejudice to Paragraph 3.1;
- d) having responsibility for securing all copyrights and other forms of legal protection for items included in the Program, and settling any and all financial claims related thereto, with the exception of supply provided by CT in accordance with Paragraph 3.1, but including the settlement of claims of lessors of music scores used for live artistic performances in the framework of the Concert and for the purposes of recording the Program and using the same to the extent agreed under this Agreement;
- e) exercising exclusive control over the production budget of the Program, including the payment, where applicable, of any Cost Overrun on the Producer's part.

2.2 The Producer's services shall be provided on a non-exclusive basis during the production and distribution of the Program.

2.3 The Program shall be produced in accordance with the terms and conditions and within the time limits laid down in Enclosures 4, 5, and 6 (Enclosure 6 does not apply to the distribution version of the Program):

Working title:

[REDACTED]

Duration:

[REDACTED] minutes

Director:

[REDACTED]

Time limit for production of Contributions:

[REDACTED]

Deadline for the delivery of Contributions by the Producer to CT (via a secure data repository):

[REDACTED]

Time limit for rehearsals and filming the Concert:

[REDACTED]

Location for filming Contributions:

[REDACTED]

Location for filming the Concert:

Time limit for finishing work:

Location of finishing work:

[REDACTED]

Deadline for the delivery of edited recording of the Program to the Producer: [REDACTED]

Deadline for the delivery of draft text of the opening sequence and the closing credits: [REDACTED]

- 2.4 The Producer undertakes to deliver, sufficiently in advance, to CT the necessary quantity of disks for the supply of the materials specified in Paragraphs 6.1 and 6.2; the technical parameters of hard disks and the quantity thereof shall be specified by CT during postproduction, or CT shall provide a link to a secure data repository for delivery using data transmission.
- 2.5 CT acknowledges that the Producer will enter into coproduction agreements, agreements with broadcasters, an agreement on the acquisition of performance rights for filming the Program, financing agreements, and a distribution agreement with [REDACTED]
- 2.6 The Producer acknowledges that CT will negotiate with [REDACTED] technical and organizational conditions in connection with providing supply in accordance with Article 3 (equipment installation timetable, blocking tickets for seats reserved for equipment, etc.), without prejudice to Paragraph 5.4.

3. TASK AND RESPONSIBILITY OF CT

- 3.1 For filming in [REDACTED], CT undertakes to secure or, where applicable, provide the services, resources, and crew members specified in Enclosures 2 and 3, including, without limitation:
- a) camera, lighting, and audio equipment needed for filming the Program;
 - b) camera and audio equipment and transport to the location where Contributions will be filmed;
 - c) crew members necessary for filming the Program, including the director of photography for the Program;
 - d) postproduction editing of the recording of the Program, including complete audiovisual equipment and staff necessary for securing the same;
 - e) where CT shall enter into the agreement referred to in Paragraph 2.6.
- 3.2 CT shall be exclusively responsible for hiring the staff and securing the services (including the payment of compensations and the cost of services, taxes, and other charges) specified in Enclosures 2 and 3.

4. FINANCIAL RESOURCES: BUDGET, FINANCING, AND COPRODUCTION SHARES

4.1. Costs/Budget

The total budget for the production of the Program amounts to EUR [REDACTED] (as specified in Enclosure 1).

4.2 Financing

The Producer shall bear responsibility for financing the total cost of producing the Program, with the exception of CT's contribution specified in Paragraph 4.3, Subsection b). If applicable, the Producer shall be fully responsible for any budgetary Cost Overrun, with the exception of Cost Overrun caused by force majeure or reasons provably caused or approved in advance by CT. The Producer undertakes to pay such Cost Overrun, where such a payment shall not prejudice the size and ratio of the coproduction shares of the Parties, the Parties' shares in distribution, whereupon the Producer shall gain no rights over and above the rights laid down in this Agreement.

CT shall bear responsibility for financing the total cost of CT's contribution specified in Paragraph 4.3, Subsection b). If applicable, CT shall be fully responsible for any CT's budgetary Cost Overrun, with the exception of Cost Overrun caused by force majeure or reasons provably caused or approved in advance by the Producer. CT undertakes to pay such Cost Overrun, where such a payment shall not prejudice the size and ratio of the coproduction shares of the Parties, the Parties' shares in distribution, whereupon CT shall gain no rights over and above the rights laid down in this Agreement.

4.3 The Producer's and CT's Shares in Coproduction

- a) The total coproduction share of the Producer in the production of the Program amounts to EUR [REDACTED]. The foregoing sum consists of funds directly paid by the Producer or its partners, as specified in Enclosure 1.
- b) The total coproduction share of CT in the production of the Program amounts to EUR 102,958.71. The foregoing sum consists of funds paid by CT for the cost of the services provided by CT's external suppliers and CT's internal services, as specified in Enclosures 2 and 3.
- c) The Parties agree that joint rights to the Program shall be divided therebetween at the ratio of their coproduction contributions, i.e. Producer [REDACTED] %, CT [REDACTED] % [REDACTED]. If applicable, no savings and no Cost Overrun on the part of the Producer or on the part of CT shall affect the rights of the Parties to the Program specified in Article 5 and the value of the coproduction shares and the distribution shares.

5. RIGHTS TO THE PROGRAM AND DISTRIBUTION RIGHTS

5.1 The Parties' Rights to the Program

Both of the Parties are jointly entitled to the rights of the producer of the Program. CT and the Producer have agreed under Paragraphs 5.2 and 5.3 on the extent to which

each of them shall exercise the applicable rights of the producer in relation to third parties, and on the manner in which they shall take part in the use of the Program and the division of proceeds therefrom.

5.2 [REDACTED] the Producer shall exercise, [REDACTED]
[REDACTED]

[REDACTED]

5.3

[REDACTED] CT shall exercise, [REDACTED]
[REDACTED]

[REDACTED]

5.

5.5.

The Producer is charged with the distribution of the Prog [REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

Proceeds from distribution, after the subtraction of the distributor's distribution costs, shall be the joint income of the Producer and CT, and shall be divided at the following ratio: [REDACTED] % in favor of CT, [REDACTED] % in favor of the Producer.

- 5.6. Unless otherwise specified, the Producer undertakes to remit the applicable share in distribution proceeds to CT's bank account specified in the heading of this Agreement. At the same time, the Producer shall send CT a "Remittance of Proceeds Notice". Furthermore, the Producer undertakes to send CT overviews of all effectuated sales once a year (balance as at December 31 of a given year) no later than on January 31 of the subsequent year at the address specified in the heading of this Agreement. A failure to discharge these duties shall authorize the aggrieved party to levy against the guilty party late payment interest at the rate of [REDACTED] % of the balance due for every day payment is past due; in case that a notice or an overview is not sent within the time limit specified in this paragraph, a contractual penalty in the amount of CZK [REDACTED] per every day of such default shall apply.

6. APPROVAL AND DELIVERY OF MATERIALS

- 6.1 Without delay after the filming of the Program, the initial postproduction of the Program shall be organized at the registered office of CT in the presence of the Producer's representative for the purpose of correcting, if applicable, errors made during the live recording of the Concert. CT shall deliver thus edited recording of the Program to the Producer immediately after the completion thereof in the required format on a hard disk supplied by the Producer or via CT's secure data repository.
- 6.2 Furthermore, CT shall deliver to the Producer on thereby supplied hard disk or via its secure data repository unedited materials for the Program for the purpose of producing the distribution version of the Program by the Producer, where the final version thereof shall be subject to CT's approval following its completion. CT shall be provided with an opportunity to view the distribution version and to make substantiated comments regarding the distribution version during the rough and final cut stages. After every delivery of relevant materials for approval, CT shall provide the Producer's representative with notes and comments, in writing in the form of electronic mail addressed to the contact person specified in Paragraph 7.6, within five working days of the delivery thereof; if no comments are submitted within the foregoing time limit, Program (the applicable stage thereof) shall be deemed approved by CT. The Producer shall use appropriate effort to implement CT's substantiated requests.
- 6.3 In cooperation with CT, the Producer shall ensure that the Program is produced in accordance with laws of Czech Republic, including, without limitation, the Act on Czech Television, the Radio and Television Broadcasting Act, the Act on On-Demand Audiovisual Media Services, the Advertising Regulation Act, other laws of general application, and the CT Code.

7. CREDITS, MARKETING

- 7.1 The closing credits of the Program shall specify the names of persons secured by the Producer, a list whereof shall be supplied by the Producer to CT no later than on [REDACTED]

7.2 The opening sequence of the Program shall specify the following:

"Nordic Stories AS, [REDACTED]
and Česká televize
present".

7.3 The Program shall contain the following copyright notice:

© **Nordic Stories AS and Česká televize** + year of the first public presentation

7.4 CT shall send the Producer for approval the opening sequence and the closing credits in writing by e-mail addressed to the contact person specified in Paragraph 7.6 in sufficient advance within the time limit laid down in Paragraph 2.3.

7.5 The final mutually approved version of the opening sequence and the closing credits in English shall be created by CT and shall be delivered by CT within the time limit laid down in Paragraph 2.3. The foregoing shall not prejudice CT's right to produce at its expense a Czech version of the opening sequence and the closing credits.

7.6 The Parties shall ensure that any and all printed promotional materials, DVD cases, etc. contain the logos of both of the Parties corresponding to the logo design supplied by the applicable Party. The Parties' logos must conform to the graphic manuals provided by the corresponding Party, which describe the use of logos, where the use of logos shall be subject to the prior approval of the contact persons specified below. Any and all designs shall be deemed approved if the Counterparty submits no written comment in response to a request for the approval of the relevant materials within five (5) working days following the receipt of such a request. Both of the Parties shall be presented and specified as coproducers in any and all communication activities aimed at promoting the Program, including, without limitation, promotional events and press conferences relating to the Program and communication carried out via electronic social media.

Contact persons:

For the Producer:

- [REDACTED], [REDACTED]@nordicstories.no

For CT:

- [REDACTED] Executive Producer, [REDACTED]@ceskatelevize.cz,
- [REDACTED], Program Director, [REDACTED]@ceskatelevize.cz,
- [REDACTED], Marketing Department, [REDACTED]@ceskatelevize.cz.

7.7 The Parties agree that each of the Parties shall make promotional photographs from the filming of the Concert at its own expense and responsibility.

8. REPRESENTATIONS AND WARRANTIES – CT

8.1 CT represents and warrants to the Producer as follows:

- a) CT is able to discharge its duties arising under this Agreement, and has undertaken and shall undertake no commitment that is or is liable to be in conflict with the discharge in full of CT's duties in accordance with this Agreement;
- b) CT shall enter into no agreement, in writing or verbally, which would be binding on the Producer, and shall not make any promise whatsoever on behalf of the Producer without the Producer's prior written consent;
- c) CT shall strictly perform and discharge any and all of its agreements, duties, representations, and warranties laid down in this Agreement;
- d) CT shall notify the Producer of any and all cases of non-exercise or violation of rights relating to the Program in CT's Territory or elsewhere, of which CT learns;
- e) in the case of television broadcasting, CT shall use the geo-blocking technology to ensure that access to the Program is provably restricted to recipients located exclusively within CT's Territory. The Parties expressly declare that not considered a violation of the foregoing duty shall be signal spillover outside CT's Territory occurring in connection with the authorized broadcasting of the Program by CT or by a third party in CT's Territory.

8.2 CT hereby agrees to indemnify the Producer for any and all substantiated claims, lawsuits, costs (including duly incurred cost of legal representation), damage, demands, and expenses claimed from the Producer as a result of violating or failing to discharge CT's agreements, duties, declarations, representations, and warranties laid down in this Agreement.

9. REPRESENTATIONS AND WARRANTIES – PRODUCER

9.1 The Producer represents and warrants to CR as follows:

- a) The Producer is able to discharge its duties arising under this Agreement, and has undertaken and shall undertake no commitment that is or is liable to be in conflict with the discharge in full of the Producer's duties in accordance with this Agreement;
- b) Prior to entering into this Agreement, the Producer has obtained any and all rights to the Program for all types of use of the Program in accordance with this Agreement; in connection therewith, the Producer represents that no further substantiated claims shall be raised vis-à-vis CT by the holders of copyrights, rights of performing artists, producer rights, and the holders of other rights or substantiated claims of other third parties in connection with the use of the Program under the conditions laid down in this Agreement; in case that such claims are raised vis-à-vis CT, the Producer undertakes to satisfy such claims and to compensate CT for any and all costs actually incurred in connection therewith (excepting the holders of copyrights to musical works used in CT

broadcasts, for which CT shall pay through the OSA collective management organization, where, however, the Producer declares to have obtained synchronization rights from the holders of copyrights to musical works);

- c) The Producer shall strictly perform and discharge any and all of its agreements, duties, representations, and warranties laid down in this Agreement; and
- d) Following the date of entry into this Agreement, the Producer shall not intentionally assume and (or) permit and (or) intermediate and (or) perform any act violating rights granted to CT under this Agreement, where not considered a violation of this Agreement shall be a case of spillover of broadcast to CT's Territory that occurs based on a license for satellite rights to the Program applicable to a different territory.

9.2 The Producer hereby agrees to indemnify CT for any and all substantiated claims, lawsuits, costs (including duly incurred cost of legal representation), damage, demands, and expenses claimed from CT as a result of violating or failing to discharge the Producer's agreements, duties, declarations, representations, and warranties laid down in this Agreement.

10. CLOSING PROVISIONS

10.1 Any and all rights and duties arising under this Agreement shall pass on to the legal successors of the Parties. The Parties declare that the definition of the subject matter of this Agreement, and the price or, where applicable, value of the subject matter of this Agreement, on the front page of this Agreement does not have legal significance and is provided solely for the purposes of disclosing this Agreement in the Register of Agreements.

10.2 This Agreement may be rescinded in the event of a gross violation of this Agreement by either of the Parties, provided that such a violation is not rectified within a commensurate time limit following the service of a written notice to that effect, where the foregoing shall not prejudice the right to claim compensation for damage and contractual penalty. If the Producer defaults on discharging its obligations arising in regard to the Producer under this Agreement, in full or in part, CT shall have the right to suspend the performance of this Agreement on its part until all such obligations are discharged by the Producer. This Agreement shall not terminate if the performance hereof is suspended. While the performance hereof is suspended in accordance with this paragraph hereof, CT shall not be deemed in default and, where applicable, shall have the right to claim damages.

10.3 The Parties agree that information highlighted in yellow in this Agreement shall be considered confidential (for example, due to constituting trade secret), as shall be any and all information wherewith the Parties are acquainted in connection with the negotiation of this Agreement, the performance of this Agreement, and in connection therewith, where neither of the Parties shall have the right, barring the Counterparty's prior written consent, to disclose such information to third parties, where the foregoing duty shall remain in effect after the completion of the performance of this Agreement or the termination of this Agreement, with the exception of information: (i) which a Party is acquainted with independently of the Counterparty; (ii) which CT itself

discloses to third parties in connection with preparing, producing, distributing, and/or promoting its program content to which this Agreement applies, and/or in connection with its promotional activities (with the exception of information designated by the Producer as the trade secret thereof); (iii) which a Party provides or discloses in accordance with the law or an enforceable ruling of a court or an administrative authority; and (iv) which a Party provides to its expert consultants and/or other associates who are subject to a legal and/or contractual non-disclosure duty. This Agreement shall be disclosed by CT using the lawful procedure; in doing so, information highlighted in yellow shall be made illegible. In case the non-disclosure duty is breached by either of the Parties, the aggrieved Party shall have the right to levy a contractual penalty in the amount EUR [REDACTED], without prejudice to the Party's right to claim compensation for damage in full.

- 10.4 Following the entry into this Agreement, changes, specifications, and additions to this Agreement shall be only allowable if made in writing by means of numbered amendments to this Agreement signed by the Parties.
- 10.5 Issues concerning the arrangement between the Parties not covered by this Agreement shall be subject to the provisions of the Civil Code and the Copyright Act.
- 10.6 If any provision or part of this Agreement is disregarded as null and void under the law or if any provision, in full or in part, of this Agreement is or becomes invalid, inoperative, and/or unenforceable, the provision shall be severed to the relevant extent from the remainder of this Agreement and shall have no bearing on the continued validity, effectiveness, and enforceability of all other provisions contained in this Agreement. The Parties undertake to replace such an unrecognized, invalid, inoperative, and/or unenforceable provision or part thereof with a new provision that is valid, operative, and enforceable and that in terms of its substance and its commercial effect matches, or comes as close as possible to, thus replaced provision, such that the spirit and purpose of the Agreement is preserved.
- 10.7 The Parties agree that customary procedures shall have priority over neither the provisions of this Agreement nor the provisions of the law.
- 10.8 This Agreement shall enter into effect and into force on the day of its signature by both of the Parties. The Parties agree that, where applicable, rights and duties arising from the performance of this Agreement originating before this Agreement enters into force shall be replaced with obligations established under this Agreement. The performance of the subject matter of this Agreement before this Agreement enters into force shall be considered supply within the meaning of this Agreement, where rights and duties arising in connection therewith shall be subject to this Agreement.
- 10.9 This Agreement shall be subject to and shall be construed in accordance with the law of the Czech Republic. Where applicable, the Parties shall make every effort to settle a dispute therebetween in an amicable manner. In case that a dispute arising based on or in connection with this Agreement cannot be resolved amicably, the Parties shall submit the matter to courts of the Czech Republic having relevant jurisdiction.
- 10.10 This Agreement is made in two counterparts (one for CT, one for the Producer).

Enclosures:

No. 1 – Total Budget (in accordance with the law this Enclosure is not made public and is considered highlighted in yellow pursuant to Article 10.3)

No. 2 – CT Budget – Services Provided by CT (in accordance with the law this Enclosure is not made public and is considered highlighted in yellow pursuant to Article 10.3)

No. 3 – List of Additional Supply Secured by CT (in accordance with the law this Enclosure is not made public and is considered highlighted in yellow pursuant to Article 10.3)

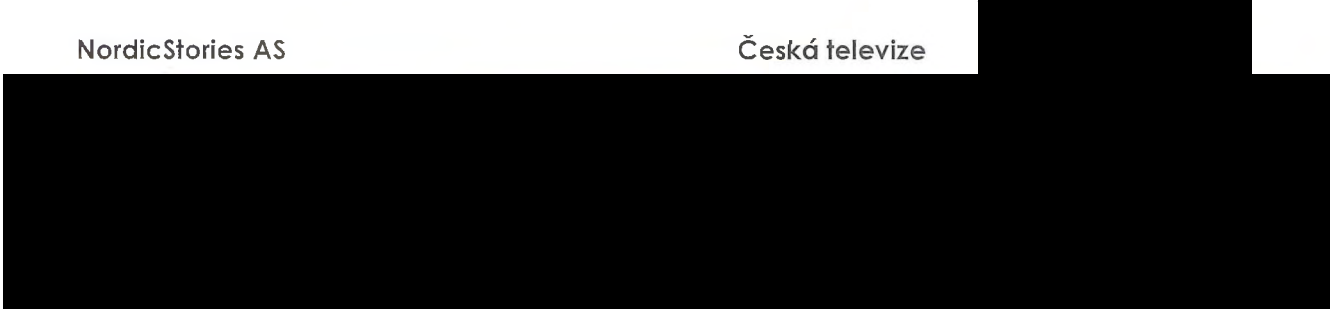
No. 4 – General Technical Conditions for Programs Produced and Supplied by Czech Television

No. 5 – Production Timetable (in accordance with the law this Enclosure is not made public and is considered highlighted in yellow pursuant to Article 10.3)

No. 6 – Script for the Live Broadcast of the Program (in accordance with the law this Enclosure is not made public and is considered highlighted in yellow pursuant to Article 10.3)

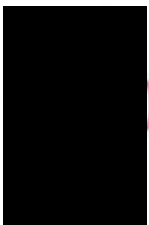
NordicStories AS

Česká televize



Name: Stein-Roger Bull
Position: Statutory Director
Place: Oslo
Date: - 3 -06- 2024

Name: Jan Souček
Position: Director General
Place: Prague
Date: 03 -06- 2024



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Introduction

This document describes in detail all the technical and quality aspects required for any programme either produced in the Czech Television or delivered there within the framework of any sort of contractual relationship. This document also determines binding duties of production staff regarding technical means used by them.

The quality assessment being very subjective depends on the programme nature. Some quality requirements that cannot be expressed by means of exactly measurable parameters are being expressed in a relative way (suitable / adequate, not suitable etc.) and it will be always assessed and judged whether the quality expectations of any future spectator would be met and whether the result is adequate to the means spent.

Wherever in the following text it is stated „after an previous agreement“ or „must be discussed in advance“, it means that the use of any described way of shooting, technique or way of processing has to be discussed on the technological preparatory meeting before starting the project and this fact should be stated in the appropriate minutes. In case there is no such explicit statement in the minutes or the preparatory meeting does not take place (sufficiently in advance before the project realization so that according to the final conclusions from this meeting there should still remain the possibility to modify any proposed way of shooting, technique or way of processing), the use of such way is not acceptable.

Video

Formats

UHD

Material may be delivered for further processing after previous agreement.

Material must be made, undergo postproduction and delivered according further specification:

- Raster 3840 x 2160 pixels with the aspect ratio 16 : 9
- 50 or 25 frames per second, progressive
- Colour system Y Cr Cb
- Sampling 4 : 2 : 2 or 4 : 2 : 0
- Colour space according [ITU-R BT.2100](#)

The use of concrete parameters of dynamic range as described in [ITU-R BT.2100](#) must be discussed in advance.

HD

Material must be made, undergo postproduction and delivered according further specification:

- Raster 1920 x 1080 pixels with the aspect ratio 16 : 9
- 25 frames (50 fields) per second interlaced (1080i/25), odd field first ¹(EBU system S2)
- Sampling 4 : 2 : 2
- Colour space according [ITU-R BT.709](#)
- This format is completely specified in [ITU-R BT.709](#)

SD

Material may be delivered for further processing only after previous agreement.

Material must be made and delivered according further specification:

- Raster 720 x 576 pixels with the aspect ratio 16 : 9 or 4 : 3
- 25 frames (50 fields) per second interlaced (576i/25), odd field first
- Sampling 4 : 2 : 2
- Colour space according [ITU-R BT.601](#)
- This format is completely specified in [ITU-R BT.601](#).

Signal parameters

Video signal must make optimal use of the whole accessible dynamic range (RGB). If the signal is processed in the YUV form, there might „illegal“ combinations come into being, which after back conversion would create signal exceeding permitted range. In such a case it is necessary to continuously check signal not exceeding permitted limits.

In practical conditions it is sometimes difficult to avoid generating signals slightly out of range and it is taken as reasonable to accept a small tolerance:

- RGB components and the respective luminance signal (Y) should not usually exceed the range of digital samples „Working range“ in the following table,
- The measuring equipment should indicate the exceeding of the range as „Out-of-Gamut“ only after the error is greater than 1% of an integrated part of the active frame.

Further details are to be found in the recommendation [EBU R103](#).

Table 1 - Videosignal (digital samples) level ranges

Bit depth	Working range	The highest acceptable range	The highest transmittable range
8 bit (SD only)	16 – 235	5 – 246	1 - 254
10 bit	64 – 940	20 – 984	4 - 1019

All signals out of „Working range“ are described as „error gamut“. The signals cannot exceed „The highest transmittable range“ and therefore (should such signals occur) these parts will be clipped of.

¹ If shot in 1080p/25 mode, then saved and processed in 1080PsF/25 mode.

time		0ms	20ms	40ms	60ms	80ms
phase of moving						
nomenclature	EBU system					
1080i/25	S2	540 odd lines phase 1	540 even lines phase 2	540 odd lines phase 3	540 even lines phase 4	540 even lines phase 4
1080PsF/25		540 odd lines phase 1	540 even lines phase 1	540 odd lines phase 3	540 even lines phase 2	540 even lines phase 2
1080p/25	S3	1080 lines phase 1		1080 lines phase 2		
1080p/50	S4	1080 lines phase 1	1080 lines phase 2	1080 lines phase 2	1080 lines phase 4	

Finalized programmes must not contain video levels exceeding „Working range“.

Colour „legalizers“ should be used with great care, because they might cause artifacts in picture which are more disturbing than range errors that they try to correct. It is to recommend **not** to „legalize“ video signals before all video processing is finished.

Picture must not contain any subjective visible errors such as noise, picture out of focus, instability, digital artifacts, geometrical distortion, incorrect colour rendering, vignetter effects, object-lens dirt etc. and the video signal has to make the best use of the whole dynamic range.

HDR

In the Czech Television video signals with the extended dynamic range cannot be processed. As exception might be the acquisition of demanding dramatic production projects, where the concrete processing technology must be discussed in advance.

Acquisition

Camera

To assess the cameras suitability the recommendation [EBU R118](#) is used. Cameras must always fulfil at least the requirements of the „HD Tier 2L“, for the more demanding dramatic production projects the requirements of the „HD Tier 1“.

DSLR

DSLR cameras are acceptable only for shooting in the regime „time lapse“, for the production of animated films or after the previous agreement regarding shooting in dangerous places or as a hidden camera.

After previous discussion these cameras might be used for student or low-budget projects without any ambition to become an archive item of permanent value.

Drones and remote controlled cameras

Photographic as well as television cameras attached to these equipments must fulfil the requirements of the [EBU R118](#), unless there is an exception out of this rule discussed in advance.

In case the drone or the remote equipment have not the sufficient picture stabilizer it is recommended that the picture pick up element be of higher resolution than necessary to enable electronic stabilisation during the postproduction.

The producer must ensure that drones and other remote controlled cameras if used in the Czech Republic territory are driven by trained pilots only who have a valid authorization to make shootings for commercial use and who must observe valid legal standards and rulings regarding the use of the respective equipment type. When shooting abroad it is always necessary to make oneself familiar in advance with the local valid regulations.

Cinematographical film

As acquisition format the 35mm negative film is accepted (2 or 3 perf.) with sensitivity 250 ASA or lower.

Postproduction

Programme projects must be set for use in the interlaced (PsF) regime. Electronically generated moving effects, graphics, moving subtitles etc. must be even in case of the PsF material generated as interlaced and as such inserted to the project to prevent an unacceptable stroboscopic effects.

Codecs

During the postproduction it is necessary to minimize the number of data conversions (codec change). If the material shot cannot be processed directly, it is desirable to either change it just before the processing to the format of finalization or, after an earlier discussion, use an „off-line“ method with „low-res“ material.

Frame rate conversion

To avoid picture quality degradation the frame rate conversion equipment should use motion prediction and movement compensation system (motion vector conversion).

The preferred way of 24fps film (including 23,976 fps) to 25 fps conversion is to change the velocity and therefore a great care must be paid to handling the sound track.

Preferred conversion methods:

- 24 fps and 24/1.001 fps to 25 fps – velocity change
- 24 fps and 24/1.001 fps to 50 fps – velocity change and frame doubling
- 30 fps and 30/1.001 fps to 25 fps – motion compensated conversion
- 30 fps and 30/1.001 fps to 50 fps – motion compensated conversion
- 60 fps and 60/1.001 fps to 25 fps – not recommended²
- 60 fps and 60/1.001 fps to 50 fps – motion compensated conversion

Aspect ratio

The screen 16 : 9 has to be filled with the video information in both directions without any geometrical distortion.

Following exceptions can be allowed after previous agreement:

Cinemascope

Films with the aspect ratio 2,39:1, 2,35:1, 1,85:1 must be placed in the centre of the active picture 16:9 without any geometrical distortion with the full picture format filled up by black stripes (letterbox).

Standard cinema

Films and programmes shot in the formats 1,37:1 or 4:3 must be placed in the centre of the active picture 16:9 without any geometrical distortion with the full picture format filled up by black stripes (pillarbox).

Archive materials

Archive materials including the up-converted ones must comply with all the technical requirements stated in this document, if relevant.

Archive material has to be taken from the best possible and accessible source and before its use it must be adequately restored (cleaning, colour and exposition correction, drop-out and sound correction ...).

Up-converted SD materials

UP conversion of SD materials requires special attention and only up-converters of the highest quality may be used in order to maintain the best possible picture quality. In general holds true, that the picture with standard definition and up-converted to HD may not be worse than the origin, provided the conversion was done correctly. Because of this it is not recommended to use conversion with customary editing software.

² Conversion 60 fps >> 25 fps interlaced is not recommended, but under certain circumstances it can be accepted (if motion compensated). Conversion 60 fps >> 25 fps progressive is inadmissible

The active part of the SD starts and stops between the fields by a half-line. During the conversion this part must be removed to prevent picture flickering.

For the up-conversion only the active part of the picture may be used, all signals contained in the vertical blanking interval (VITC, switching and measurement signals ...) must be removed.

Aspect ratio

Archive material not being in the 16:9 format must fulfil following conditions:

- aspect ratio may be between 4:3 and 16:9, but must have a stable width among all sequences.
- material must be centrally placed in the frame 16:9, unless supplemented with graphical items
- no geometrical distortion
- sharp and clean edges (ie any artefacts on edges or dirt from the film window must be removed)
- all parts outside the active picture area must be black, unless supplemented with graphical items

Safe area

Any subtitles or text on the screen already contained in the archive material should be preserved, if possible, in the safe subtitle area.

Use of materials with lower definition

The length of the material with definition lower than the original definition of the programme must not exceed 25% of the whole length of the programme. The material with lower definition must not create long continuous sequences and it has to be suitably stylized in a creative way so as not to degrade the tune of the whole programme. An exception from this rule must be made in a reasonable and purposeful way from the dramaturgical point of view and must be discussed in advance.

As low resolution materials are considered following formats:

- HDV from all producers
- all codecs with bit streams under levels stated in [EBU R118](#) for HD Tier 2L
- cameras not meeting requirements [EBU R118](#) for HD Tier 2L
- material generated or processed on the 720 line equipment
- film not meeting the standard required (16 mm and worse)

3D

In the Czech Television the 3D materials cannot be processed.

Screen text safe area

All the text on the screen must be clear and readable and must be placed in given safe areas. All text sizes must be readable after the conversion into SD. The Czech Television may consider to take some programmes out of this rule, eg some feature films thought primarily for cinemas.

Text dimension

The minimum height of the text is 40 lines (in HD resolution). This minimal height takes into account the requirement for text legibility with minimum 20 lines height after the conversion into SD.

Subtitles

Subtitles are accepted in the STL format as in the document [EBU Tech.3264](#) and according to this in so created file of STL type. The use of other subtitle file formats must be agreed in advance and this format must always be suited to be processed in the programme FAB Subtitler Professional 7.

Dialog subtitles must not contain any spelling and grammatical errors and must be correctly timed to allow comfortable reading. Subtitles must also be clearly visible for all the time. When placed over the part of the

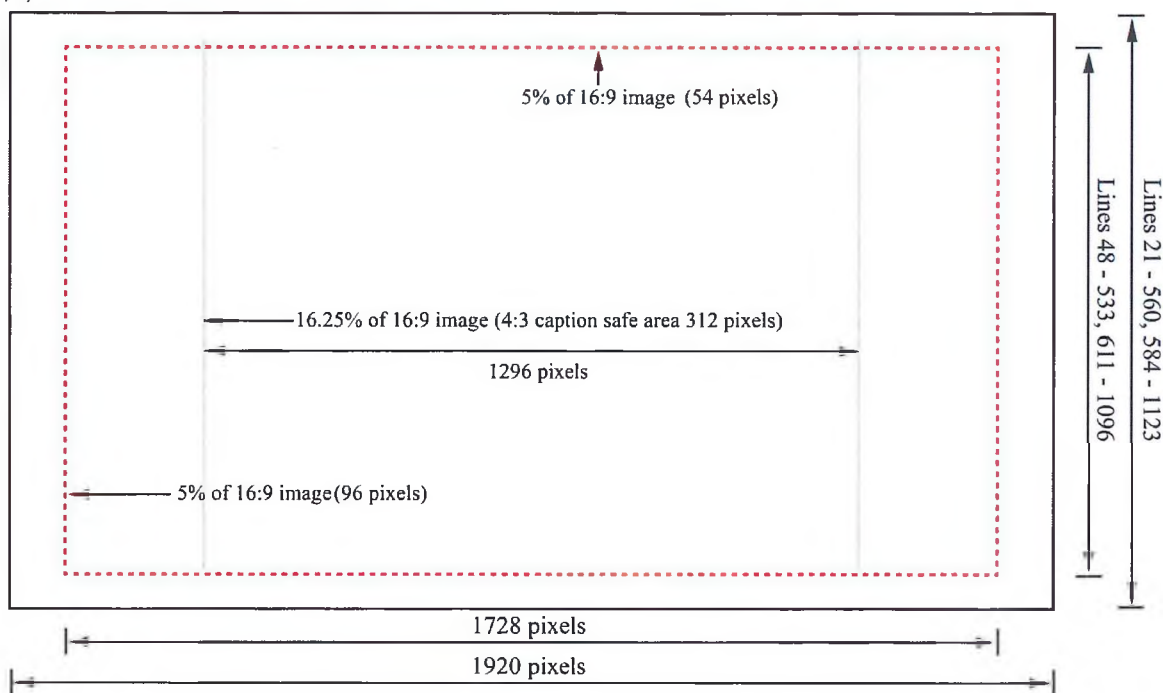
screen with the same colour as the subtitles, the outline or shading (or both) must be used and the subtitle form chosen should be kept for all the length of the programme.

Table 2 - Safe area HD dimensions

Picture format	Safe area dimensions (%)	Safe area dimensions (pix)
16:9	90% of picture width	96 - 1823
	90% of picture height	54 - 1025
4:3	67,5% of picture width	312 - 1607
	90% of picture height	54 - 1025

Picture 1

(0, 0)



Audio

Dramaturgy

Television studios receive many complaints regarding unintelligible dialogues. It is important to realize, that the viewer neither had seen the programme before its transmission nor he had read the script. It is the producer who is responsible to secure easy understandability for the viewers.

In order to challenge justified and repeated complaints of the viewers, the Czech Television will in future take as suited for further processing or for transmitting only programmes observing in their final version all rules stated below.

Audio accompaniment in its final form should contain balanced ratio of spoken speech, music and of other sound components and should not contain any disturbing components such as noise, hum, tone pitch fluctuation, distortion and any other artefacts of the coding process. Audio content must correlate with the picture and there should not be any passages that due to the missing or on the contrary excessive sound elements are in discrepancy with the picture.

It is necessary to minimize the number of sound planes used in the television programme and to take the dialogue and the commentary as a dominant part. The proportion of the other components should not mask the speech.

Combination of the music background and dialogue or commentary may be used in television programmes only in case of artistic or dramaturgical reasons. But even in this case when the sound background is necessary, following rules must be observed:

- if combined with speech, use only low level of music
- take into account the quality of the dialogue if connected with sound background
- avoid vocal and too dynamic music as a background sound
- take into account that some types of solo instruments are not in some interpretations suitable as background to the spoken word (piano, trumpet, percussion instruments)

For programmes oriented on seniors the sound should be compiled particularly with feeling because the problem of decreased understandability is increasing from circa fifty years of a viewer's age.

The understandability of programmes with multichannel sound has to be verified in lower format regimes (stereo, mono).

Conflicting cases of maintaining understandability should be always assessed on a small audio monitor in MONO format. The producer of television programmes for the CzechTelevision should keep this aspect in mind and perform this check during sound compilation.

Volume

All programmes must be compiled so as to meet the requirements of [EBU R128](#).

Valid permissible parameters as measured in the whole length of the programme are: Programme Loudness -23.0+/-1.0 LUFS, Loudness Range < 18 LU, Maximum True Peak Level < -3.0 dBTP. Adherence to the required parameters is independent on the sound format used (STEREO or MCH) and supposes the use of the Relative Gate -10 LU.

To finalize the sound track we recommend to keep to the recommendations as described in the "[BEST PRACTICE GUIDE SOUND MIXING FOR BBC PROGRAMMES](#)".

Measurement

Indicators must meet the specifications in [EBU Tech 3341](#). Programmes must be measured in the mode EBU Integrated (I), this measurement must be applied to the whole length of the programme ([EBU Tech 3343](#)).

Signal parameters

The audio signal must be digitalized in compliance with the recommendation [EBU R85](#) ie sampling frequency 48 kHz, bit depth 24 bits. In the whole production the signal must be processed and mapped into the file in a not compressed form.

Timing - lip sync

In the whole material the time difference between picture and sound must not be subjectively noticeable and as in the recommendation [EBU R37](#) must not exceed 40 ms in case the sound is fast and 60 ms when the sound is lagging behind the picture.

MONO audio

MONO audio must be recorded in the stereo track as dual MONO so as to make it possible to be processed and delivered in a STEREO channel. The two identical MONO signals in both tracks must not show a level difference greater than 1 dB and a phase difference of 15 degree / 10 kHz.

STEREO audio

In the Czech Television the STEREO regime is the basic way of processing and delivering the audio signal as an audio component of the whole programme. The programme itself must contain a correct separate STEREO audio track even in the case that the programme is equipped with the SURROUND sound.

Because of the necessary compatibility of the STEREO programmes with the MONO signal, the phase difference between the channels must not in the longer time interval exceed 90° in the whole range.

SURROUND sound

The SURROUND sound is accepted in the format 5.1+2 with the channels fanned out according the [ITU R-BR 1384](#) in the succession L – R – C – LFE – Ls – Rs – Lo – Ro.

The SURROUND sound must be compiled with small dynamics suitable for listening in households. It is not acceptable to use the cinema distribution soundtrack. Even if technically there is always distributed the signal 5.1, it is preferred the TV mix to be in the format 5.0, ie "LFE MUTE".

Disabled Support

The support of disabled is based on delivery of supplementary files that must contain:

Subtitles

The format of hidden subtitles prepared for the transmission must meet the standard [EBU Tech 3264-E](#).

The address and the format of hidden subtitle file content must correspond to the delivered programme essence without any need to further intervention into its content.

The source files for the production of hidden subtitles in the Czech Television premises must be in the format accepted by the programme "FAB Subtitler 7 Standard", as a structured text in the format "plain text" or Word 97-2003 with the lines ended by the signs CR/LF and coded in the language WIN CP 1250 or Unicode UTF-8.

Audio description

The sound track of the audio description is accepted in the AD form only, ie not the complete mix, but as content a commentary of the audio description. The time link to the programme essence is direct, without any use of offset. The information about assigning to the address of the first frame that has to be really transmitted from the broadcasting copy (ie not the address of the audio modulation start) must be inserted into the metadata QLTy-chunk part of the file. The BWF file must be always produced with the audio signal coding PCM MONO 48 kHz/24bit, which is the condition sine qua non for the following synchronisation according to the stated time stamp in the header.

File format

Table 3

Data files format for the programme broadcasting in the Czech Television												
name	container	data frequency [Mbit/s]	picture						sound			
			codec	number of bits	color sampling	dimensions [pixel]	frame frequency [Hz]	interlaced/ progressive	number of tracks	codec	sampling [kHz]	number of bits
HD MPEG 422 Long-GOP	MXF OP1a	50	MPEG-2 422P@HL	8	4:2:2	1920 x 1080	25	interlaced	8	PCM	48	24
HD MPEG 420 Long-GOP	MXF OP1a	50	MPEG-2 MP@HL	8	4:2:0	1920 x 1080	25	interlaced	8	PCM	48	24
HD MPEG 422 I-Frame	MXF OP1a	100	MPEG-2 422P@HL	8	4:2:2	1920 x 1080	25	interlaced	8	PCM	48	24

In yellow is marked the format preferred for recording in the premises of the broadcasting technology

In case of international exchange (possibility of further postproduction processing in the Czech Television) following formats are acceptable:

Table 4

Czech TV Technical Specifications							
1	<i>File Container</i>	MXF	QT	QT	QT / MXF	QT / MXF	MXF
2	<i>Video Codec</i>	XDCam HD 422	ProRes 422	ProRes 422HQ	DNxHD 185	DNxHD 185X	XAVC-I HD
3	<i>Video Bitrate</i>	50 Mb/s	122Mb/s	184 Mb/s	184 Mb/s	184 Mb/s	100 Mb/s
4	<i>CBR/VBR</i>	CBR	VBR	VBR	CBR	CBR	CBR
5	<i>Frame Rate</i>	25	25	25	25	25	25
6	<i>Aspect Ratio</i>	16:9	16:9	16:9	16:9	16:9	16:9
7	<i>Resolution</i>	1920x1080	1920x1080	1920x1080	1920x1080	1920x1080	1920x1080
8	<i>Color Sampling</i>	4:2:2	4:2:2	4:2:2	4:2:2	4:2:2	4:2:2
9	<i>Interlaced / Progressive</i>	Same as Source	Same as Source	Same as Source	Same as Source	Same as Source	Same as Source
11	<i>Audio Codec</i>	PCM	PCM	PCM	PCM	PCM	PCM
12	<i>Audio Channels</i>	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)
13	<i>Sample Frequency</i>	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz
14	<i>Audio Bit Depth</i>	24	24	24	24	24	24
15	<i>Audio Channels 1,2</i>	Original Mix	Original Mix	Original Mix	Original Mix	Original Mix	Original Mix
16	<i>Audio Channels 3,4</i>	M&E	M&E	M&E	M&E	M&E	M&E
17	<i>Color Bars / Test Tone</i>	NO	NO	NO	NO	NO	NO
18	<i>Time Code Start</i>	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00

File names

File names must definitely identify particular material and must not contain any signs with diacritics. For the file names it is permissible to use only capital and small letters of English alphabet, numerals and signs . (dot) and _ (underline) ie signs (in decade way) 48 – 57, 65 – 90 and 95 – 122 of the basis [ASCII](#) table.

Table 5 - Programme modes and audio tracks assignment for finalized programmes

Highest nr. of tracks	Type of recording	Notes	Number of the track											
			1	2	3	4	5	6	7	8	9	10	11	12
4	Stereo	5	Czech mix L R	International L R										
	Stereo	1,5	Original mix L R	International L R										
	Dual stereo	5	Czech mix L R	Original mix L R										
	Surround	6	Czech mix L R	Czech mix Dolby E										
	Surround	6	International L R	International Dolby E										
8	Stereo	2,5	Czech mix L R	International L R										
	Stereo	1,5	Original mix L R	International L R										
	Dual stereo	1,5	Czech mix L R	Original mix L R										
	Surround	6	Czech mix L R	Czech mix Dolby E	International L R	International Dolby E								
	Surround	4,6	Original mix L R	Original mix Dolby E	International L R	International Dolby E								
	Dual Surround	3,6	Czech mix L R	Czech mix Dolby E	Original mix L R	Original mix Dolby E								
	Surround	2	Czech mix L R		Czech mix C LFE Ls Rs									
12	Stereo	2,5	Czech mix L R	International L R										
	Stereo	1,5	Original mix L R	International L R										
	Dual stereo	5	Czech mix L R	Original mix L R										
	Surround	6	Czech mix L R	Czech mix Dolby E	International L R	International Dolby E								
	Surround	4,6	Original mix L R	Original mix Dolby E	International L R	International Dolby E								
	Dual Surround	3,6	Czech mix L R	Czech mix Dolby E	Original mix L R	Original mix Dolby E	International L R	International Dolby E						
	Surround	2	Czech mix L R		Czech mix C LFE Ls Rs									

Yellow marked signals may be transmitted, the other may be used only for further postproduction processing.

Notes:

- 1 Transmittable track 1,2 in case of programme with Czech captions and transmitted with original audio.
- 2 Transmittable only stereo from the track1,2.
- 3 Dual not transmittable - can be transmitted only in one language version from the track 1-4.
- 4 Transmittable track 1,2,3,4 in case of the programme with Czech captions transmitted in original audio.
- 5 May be mono signal as well. This mono must be recorded always in both track of the pair in question with identical amplitude and phase.
- 6 Dolby-E stream must conform with following specification:
 - AES 3 stream must be marked as non-audio according to SMPTE 337M.
 - Preferred format: 5.1+2; 25fps; 20bit

Time code

The Timecode value of the first frame in the programme must be set in MXF Material package timecode, in MXF Source package timecode and in individual video and audio tracks. This timecode value must for all items mentioned above be identical, continuous and with the same length and framerate. VITC (possibly DVITC) must not be present.

Metadata

The material delivered must contain a set of necessary data, so called mandatory metadata.

These are:

- The name of the organisation that produced the programme
- Programme copyright and the year of production
- The name of the programme (including number of the episode, subtitle)
- Start of the programme (Timecode value)
- End of the programme (Timecode value)
- Picture standard and format
- Colour status
- Sound tracks assignment
- IDEC
- Audio format

Form of metadata delivered:

- Text file assigned to the programme essence as a file or a stream by the means of suitable identification (in case the used data container does not enable direct metadata loading)
- If the data file is delivered on a physical medium, then both the medium and its cover (if its nature allows for it) must be provided with identically marked labels. As inseparable part of this is also "The list of video recordings", where there are all metadata in a "paper" form. Should the medium and its cover be clearly identified by a signature, no other description on a medium label is required.

Configuration of recorded programmes

Programmes delivered in the file form must contain only the programme essence (the file begins with the first frame and ends with the last programme frame).

Programmes delivered on the XDCam medium must be structured as stated in the table 6.

Table 6

Clips Structure and determination of start addresses for XDCam				
XD CAM - The whole programme stored on one carrier (medium) or the first part of the programme				
MXF clip	IN	OUT	DUR	the content of the clip
C0001	09:59:00:00	09:59:29:24	00:00:30:00	test bars
C0002	09:59:30:00	09:59:59:24	00:00:30:00	black
C0003	10:00:00:00	10:59:16:24	00:57:17:00	programme
C0004	10:59:17:00	10:59:46:24	00:00:30:00	black - The end - 30 sec.
XD CAM - the second part of the programme				
MXF clip	IN	OUT	DUR	the content of the clip
C0001	19:59:00:00	19:59:29:24	00:00:30:00	test bars
C0002	19:59:30:00	19:59:59:24	00:00:30:00	black
C0003	20:00:00:00	20:59:16:24	00:57:17:00	programme
C0004	20:59:17:00	20:59:46:24	00:00:30:00	black - The end - 30 sec.
XD CAM with several programmes stored on one carrier (medium)				
MXF clip	IN	OUT	DUR	the content of the clip
C0001	09:59:00:00	09:59:29:24	00:00:30:00	test bars
C0002	09:59:30:00	09:59:59:24	00:00:30:00	black
C0003	10:00:00:00	10:21:59:24	00:20:00:00	programme 1
C0004	10:22:00:00	10:22:59:24	00:01:30:00	The black signal between programmes must be in the minimal duration of 20sec
C0005	10:23:00:00	10:42:59:24	00:20:00:00	The second programme must start from the integer minute
C0006	10:43:00:00	10:43:29:24	00:00:30:00	black - The end - 30 sec.

Programmes for duplicating and archiving

For programmes supposed to become an archive item of lasting value it is necessary to make a backup file or a backup medium usually in the highest possible quality as a backup copy for the future use. Concrete technical parameters of this material must be discussed on the technical take over meeting and then fully observed.

Quality check

To maintain the technical production standards demanded by the Czech Television and to gain information about the quality when taking over programmes delivered, there is a quality check divided into three steps. In each step there is an array of tests based on the recommendation AS – 11 DPP (Digital Production Partnership) for the international programme exchange.

File format check

This check is done by an automatic QC equipment (“analyzer”). All the programmes checked **must comply** with the tests stated in the table 7 in this document.

Programme content check by the automatic quality check system (QC)

Array of tests based on the recommendation DPP with references to the recommendation EBU is stated in the table 8. As a result of each test there is a statement whether the test criteria were met or not. A

summary information about the pass or failure in the test including the value of the time code of every error is put down in the QC protocol.

The tests are divided into the ones, where the fulfilment is obligatory, and the others with only technical warnings as well as editorial reminders.

- **Obligatory:**

If there is a failure in the **obligatory** test, the error in question **must be corrected** by the supplier of the programme or possibly after an agreement also in the postproduction of the Czech Television.

- **Technical warning:**

In case of the tests the failure of which results in technical warning there should be a check of the erroneous address and this should be repaired if possible. These problems may have technical reasons, which might be corrected. Should the correction be impossible or should it be a part of any intentional video or audio effect, the Time Code value of this or those addresses must be made note of to the QC protocol.

- **Editorial reminder**

These reminders refer to the problems that when viewing the programme in question might not be acceptable by the viewer, nevertheless in some cases these problems might be unavoidable. Reminders should therefore be checked and if decided to accept them without any correction the Time Code value of this address must be made note of to the QC protocol.

Programme check by trained personnel on the technical workplace

The programme check workplace must be equipped with suitable video and audio monitors as well as with measurement equipment. This check results in an assessment whether the programme meets all the quality requirements or whether in the protocol there is stated any reason of failure. In an overview of all tests in the table 9 there it is stated, whether fulfilment of the test is obligatory or whether there will be only technical or editorial reminders.

- **Obligatory test fulfilment:**

in case of failure in any check (test) stated as obligatory it is necessary to have the errors repaired before taking over the programme.

- **Technical warnings:**

Technical warnings regard generally technical problems that the automatic quality check system QC does not recognize (errors of the aspect ratio, low picture quality, fuzzy (not sharp) picture, asynchronous sound - lip sync failure etc.). These errors should be corrected by the supplier or after an agreement in the Czech Television postproduction. If the repair is impossible it must be noted in the programme check report together with the relevant Time Code address.

- **Editorial reminder**

Tests the failure of which is marked as an editorial warning (eg. silence, errors in subtitles or in spelling, non standard picture format etc.) cover phenomena that might be disturbing for the viewer. These errors should be corrected, but if there are convincing programme reasons, it must be noticed in the report together with the relevant Time Code addresses.

Table 7

Name of the test	Fulfilment of the test – obligatory								Entry into the protocol QC
	Permissible variants – SD		Permissible variants – HD						
	MXF Op1a	QT	MXF Op1a	QT	QT	QT/ MXF Op1a	QT/ MXF Op1a	MXF Op1a	
File Container	MXF Op1a	QT	MXF Op1a	QT	QT	QT/ MXF Op1a	QT/ MXF Op1a	MXF Op1a	Obligatory
Video Codec	IMX D-10	ProRes 422	XDCam HD422	ProRes 422	ProRes 422HQ	DNxHD 185	DNxHD 185X	XAVC-I HD	Obligatory
Video Bitrate	50 Mb/s	>= 41 Mb/s	50 Mb/s	122 Mb/s	184 Mb/s	184 Mb/s	184 Mb/s	100 Mb/s	Obligatory
CBR/VBR	CBR	VBR	CBR	VBR	VBR	CBR	CBR	CBR	Obligatory
Frame Rate	25	25	25	25	25	25	25	25	Obligatory
Aspect Ratio	4:3 , 16:9	4:3 , 16:9	16:9	16:9	16:9	16:9	16:9	16:9	Obligatory
Resolution	720x576	720x576	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080	Obligatory
Color Sampling	4:2:2	4:2:2	4:2:2	4:2:2	4:2:2	4:2:2	4:2:2	4:2:2	Obligatory
Audio Codec	PCM	PCM	PCM	PCM	PCM	PCM	PCM	PCM	Obligatory
Audio Channels	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	4 (2 x stereo)	Obligatory
Sample Frequency	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	Obligatory
Audio Bit Depth	24	24	24	24	24	24	24	24	Obligatory
Time Code start	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	10:00:00:00	Obligatory

Table 8

Test description	Quality errors description	Test category	Level of test fulfilment	EBU reference	Recommended value and tolerance	Entry into the protocol QC
videosignal levels (inclusive colour gamut)		V	P	0051B	As in table 1 of this document (>1% pixels, filtered by lowpass as in EBU R 103)	P
testing PSE (photosensitive epilepsy)	luminance blinking	V	P	0021B	testing PSE – as in offcom 2009	P
black frames (colour mat)	reminder of the short time for the whole area covering colour or black frame	V	RU	0016B	≤2 frames	V
frozen picture	reminder of the short static picture, eg stoptrick	V	RU	0044B	≤ 3s	P
test charts	test charts in the programme	V	TU	0052B	0 frames	V
scanning (video artifacts from the wrong scanning regime)	Signal should be interlaced, but may contain progressive videoframes PSF	V	TU	0038B		P
video dropout	Small video dropouts eg small black squares that might appear in one or two frames	V	TU	0039B		V
field sequence	Fields are reproduced in the wrong sequence causing unpleasant judder (movement errors)	V	P	0041B	odd field as the first	P
sound modulation level "loudness"	Integrovaná hlasitost musí být -23LUFS.integrated loudness should be -23LUFS	A	P	0010B	-23 LUFS ±1 LU	P
audiochannels wrong phase	Phase differences causing audible subtracting signals in mono	A	P	0012B	0 ± 90°	P
maximum acceptable peak audiosignal level	maximal acceptable shorttime peak in audiosignal	A	P	0084B	< -3.0 dBTP	P
audio clipping	digital signal is "clipped", the sound will be distorted	A	RU	0005B	≤ 250ms (12000 samples)	V
audio dropout	short unintended digital sound dropouts	A	RU	0008B	≤ 5ms	V

Test category

A - audio

V - video

Level of test fulfilling

P - obligatory

TU - technical reminder

RU - editorial reminder

Error record

P - obligatory

V - if it occurs

Table 9

Test description	Quality errors description	Test category	Level of test fulfilment	EBU Reference	Recommended value	Error record
programme start	The first programme frame must have the address 10:00:00:00	V	P	0127B	Programme must begin at the address 10:00:00:00.	
visible blocks in picture, coding artefacts	Picture parts especially in dark or high detailed movement look like squares or blocks.	V	RU	0023B	No blocks, squares or edges caused by bad compression or bad video processing may be visible.	V
picture sharpness	Soft or blurred pictures.	V	RU	0050B	Pay attention to sharpness but with regard to depth of field.	V
wrong colour or wrong colour correction	Pictures and especially complexion tones should have a natural look without borders.	V	RU	0087B	Colour correction should not be as aggressive so as not to introduce noise or other visible errors into picture.	V
text in safe area	Many tv sets cut off the picture edges, so-called overscan.	V	RU	0120B	Names and text as part of the picture that is necessary to read must be placed in the title safe area for 16:9.	P
erroneous picture blanking (video frame size)	The screen should be quite filled with the picture, some old or even from analog archives may have black or coloured disturbing edges.	V	RU	0015B	Television frame should be filled without visible remainders of black (or of other pictures) on the edges.	V
black stripes in picture	Reminder about black disturbing stripes (including pillar or letter box on display).	V	RU	0015B		V
disintegrated, burnt/bleached or clipped picture	No loss of details in bright or dark picture parts.	V	RU	0101B	Pictures should not be bleached or merged together.	V
video converse quality (up conversion)	Bad picture processing for HD (when added to the HD programmes) can cause errors and loss of picture quality in comparison with the original version. The converted picture or sequence should not appear to have a worse quality than the original.	V	TU	0053B	Converted pictures (video) should not show any visible impairment that had not been visible in the original version.	V
video noise	Grainy or dotted pictures, may be caused by a too big gain in a scanning equipment.	V	TU	0047B	Pictures should not show any noise, film grain should be minimized.	V
aliasing	Straight edges have a look like moving or having double lines. Static pictures have serrated edges.	V	TU	0126B	Pictures should not show any serrated edges or any pattern like errors (aliasing).	V
erroneous aspect ratio	Picture must not have a look like being stretched or compressed.	V	TU	0121B	Picture content must be linear, eg 4:3 format should not be stretched to fill the 16:9 format.	V
contours	Colour or luminance gradation should be "smooth", any steps should not be visible.	V	TU	0087B	In picture there should be no visible contours (steps) between different luminance or colour levels.	V

blinking frames	One-frame shots may be disturbing and might lead to the accusation of subliminal advertising.	V	TU	0128B	Shots in duration of 1 or 2 fields should be avoided. Accidental "flash frames" should be corrected.	P
progressive rollers	Subtitle movement should be smooth and must not be too quick to read.	V	TU	0087B		P
noise and interference	Basic electrical noise and other interferences eg from mobile phones.	A	RU	0088B	All disturbing noises like interferences, mains hum, cable cracking, induced radio transmitting and further disturbing noises should be removed if possible.	V
silence	Silent sequences may cause automatic alarms.	A	RU	0077B 0078B	Silence longer than 10 seconds with frozen picture or 5 sec with the black window should be stated in the report.	P
inarticulate dialogue	There are many complaints about inarticulate dialogue.	A	RU	0122B	The sound should be clear and easily understandable for the viewer who is without a script or its copy.	V
inappropriate volume of the "second plane"	Background loudness too high in proportion to dialogue (added effects and music – both being perceived as too disturbing).	A	TU	0122B	Background noise like the traffic noise should not interfere with understandability of the dialogue.	V
cracking	Cracking and further short "sharp" sounds may be very disturbing. An old archive sound should be cleaned always when possible.	A	TU	0057B	Short and sharp sound of crack or click should be repaired.	V
A/V sync (lip sync)	Nesmí existovat žádná detekovatelná chyba A/V synchronizace (retrnice nejsou ve zvuku a obrazu současně) No detectable A/V sync error is acceptable (labials in picture and sound are not simultaneous).	A	TU	0098B	Audio/video sync error (lip sync) should be kept within the range +/-10ms.	V
low audio level	Audio level and especially dialogue level should not be so low that the viewer be forced to increase the volume.	A	TU	0077B	Audio level (especially at dialogues) should not lead to adjusting volume during the programme by the viewer.	V
mono (stereo)	Audio standard should be stereo, mono is acceptable particularly for archive, but never should be placed only on one channel.	A	TU	0124B	Mono audio is acceptable and is expected in archive materials and often in programmes with only one dialogue. New material, especially music and effects, should be in stereo.	V
arrangement of audio channels	Arrangement of audio channels depends on the sound possibilities (eg 2. language).	A	P	0123B	Arrangement of audio channels must correspond to the description in documentation.	
phase coherent (particularly surround sound)	Small time differences among the channels may lead to "phasing" or even to disturbing effects by viewers listening surround sound on stereo only tv sets.	A	P	0012B	Surround sound should be checked over the stereo mixer to assure there are no errors especially among the centre and the front left and front right loudspeaker.	