TECHNICAL REQUIREMENTS FOR FILE IN HD FORMAT

TVP KLIPER

1. **File format:**
   1.1. Container
   MXF (in compliance with SMPTE 379-2004, SMPTE 377-2004, SMPTE 382M-2007)
   Pattern – OP1a (in compliance with SMPTE 378-2004)
   1.2. Codec
   XDCAM HD422, stream 50 Mb/s

2. **Vision standard:**
   2.1. 1080i/25
   2.2. Image resolution: 1920x1080 pixels
   2.3. Image format: 16:9
   2.4. Scanning mode: interlaced, upper field first

3. **Audio standard:**
   3.1. LPCM 16 or 24 bits/sample
   3.2. Sampling frequency 48 kHz

4. **Required file organisation:**
   4.1. Each advertising material should be delivered as a single file
   4.2. Each file must contain Material Package-Time Code Track consistent with Recommendation EBU R122
   4.3. Image descriptor MXF must contain Automatic Format Description (AFD) consistent with SMPTE 2016-1 i SMPTE 2016-3
   4.4. Each LPCM track should be consistent with SMPTE 382-2007 (MXF GC Element, WAV, BFW Container). Do not use AIFF Container.
   4.5. Audio metadata (if available) should be placed in accordance with SMPTE 2020
   4.6. Test signals may not be saved in file containing materials for broadcast.
   4.7. Material length must be a multiple of full seconds.

5. **Organisation of audio tracks:**
   5.1. Stereophonic recording
   A1 - LPCM, stereo left channel
   A2 - LPCM, stereo right channel

6. **Level of the audio signal:**
   6.1. Program signal should be recorded with target level –23 LU FS, measured from the beginning of the recording till its end in accordance with the recommendation EBU-R128. The maximum True Peak may not exceed -1 dBTP.
   6.2. It is required that loudness dynamics is adjusted to television transmission and that the sound is understandable in home use conditions. Loudness range (LRA, measurement: EBU-R128) may not exceed 15 dB.

7. **Additional remarks:**
   7.1. The file must comply with the requirements of ITU-R 601-5 Recommendation. Prohibited colors must comply with the requirements defined in EBU R103 and ITU-R BT 709-5 Part 2
   7.2. Levels of video signal
      7.2.1. Tolerance for RGB -5/+105% (-35 mV/735 mV) components
      7.2.2. Tolerance for YUV -1/103%, illumination level shall range from -7 to 721 mV
   7.3. The audio test and program signals should be recorded in corresponding phases
   7.4. Stereophonic and monophonic signals should be compatible.
   7.5. A proper picture and voice synchronisation of the recorded material should be maintained. Any delay of voice in relation to picture should not exceed the value of -20/+40 ms. (The audio signal may not precede the video signal by more than 20 ms and may not be delayed relative to the video signal by more than 40 ms).
   7.6. Action Safe Area and Graphics safe Area should be maintained in accordance with the EBU Recommendation R95 "Safe areas for 16:9 television production".
   7.7. TVP S.A. Advertising Department reserves the right to adjust signal level and modify metadata in accordance with the technical requirements of the track and the right to broadcast an advertising spot at a volume level corresponding to the program level of other shows
   7.8. Any deviations from the present requirements shall be agreed on with TVP S.A.