



## TTV File Delivery Standards

### Introduction

- TTV standards closely follow the Australian and New Zealand broadcast standards.
- TTV will not be responsible for loss of any programming not delivered to the TTV specifications.
- Due to the many variations of video, audio and media file standards within the media industry, TTV advise all Clients to send in: a reference Bars and Tone file (1-minute) and a 1-5 minute reference SD and HD Programme file at normal operating audio level.
- All media is to be sent Attn: MCR Room, Telekom Television, Telekom Hous, Point Cruz, Honiara, Solomon Islands.
- The **TTV File Delivery Standards** are to be used with the **TTV Programme Quality and Level Standards**.
- For copies of the TTV Standards, please contact: [mcr@solomon-tv.com.sb](mailto:mcr@solomon-tv.com.sb)
- TTV Standards may be updated from time to time.

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### NOTE

- *TTV uses SD and HD PlayBox Technology devices for station Playout.*
- *Telekom will advise media clients whether to deliver media in SD, HD or both*

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## Standard definition (SD) file delivery specifications (choose one)

### SD MPEG-2, IBP

#### VIDEO

- Frame Rate: PAL 25fps (frames per second)
- Video Frame Size: 720x576
- Aspect Ratio: 4x3 (SD 4/3)
- Profile@Level: MainProfile@MainLevel
- Chroma Format: 4:2:0
- Stream Type: MPEG-2 Video Stream(ISO/IEC 1318-2:1996)
- Video bitrate: up to 8-15Mbps CBR (Constant Bitrate)
- Interlacing: Upper Field First for PAL
- GOP Format: GOP12 (N=12, M=3)
- Must have Sequence headers on each GOP

#### AUDIO

- Stream Type: MPEG Audio Layer 1 or 2 or AAC audio
- Audio: Stereo
- Audio Bitrate 160-256 Kbps CBR
- Sample Rate: 48 kHz

- Audio level: Max -8dBFS.

### (or) SD MPEG-2, I-frame

#### VIDEO

- Frame Rate: PAL 25fps (frames per second)
- Video Frame Size: 720x576
- Aspect Ratio: 4x3 (SD 4/3)
- Profile@Level: 4:2:2@MainLevel
- Chroma Format: 4:2:2
- Stream Type: MPEG-2 Video Stream(ISO/IEC 1318-2:1996)
- Video bitrate: 25Mbps CBR (Constant Bitrate)
- Interlacing: Upper Field First for PAL
- GOP Format: GOP1
- Must have Sequence headers on each GOP

#### AUDIO

- Stream Type: MPEG Audio Layer 2
- Audio: Stereo
- Audio Bitrate 160-256 Kbps CBR
- Sample Rate: 48 kHz
- Audio level: Max -8dBFS

### (or) SD DV

#### VIDEO

- Frame Rate: PAL 25fps (frames per second)
- Video Frame Size: 720x576
- Aspect Ratio: 4x3 (SD 4/3)
- Colour Sampling;
- Video bitrate: 25Mbps
- Interlacing: Upper Field First for PAL
- Format: DV or DVCPro 25

#### AUDIO

- Stream type: External WAV
- Audio: Stereo
- Audio Bitrate 160-256 Kbps CBR
- Sample rate: 48 kHz
- Bit depth: 16 bit
- Audio level: Max -8dBFS

#### CONTAINER

- AVI ODML
- AVI compliant to Microsoft AVI specification

## High Definition (HD) file delivery specifications

### HD MPEG-2

#### VIDEO

- Frame Rate: PAL 25fps (frames per second)
- Video Frame Size: 1920x1080
- Aspect Ratio: 16x9
- Profile@Level: MainProfile@HighLevel
- Chroma Format: 4:2:2 or 4:2:0
- Stream Type: MPEG-2 Video Stream(ISO/IEC 1318-2:1996)
- Video bitrate: up to 80,000 Kbps CBR (Constant Bitrate)
- Interlacing: Upper Field First for PAL
- GOP Format: GOP12
- Must have Sequence headers on each GOP

#### AUDIO

- Stream Type: MPEG Audio Layer 2
- Audio: Stereo
- Audio Bitrate 160-256 Kbps CBR
- Sample Rate: 48 kHz
- Audio level: Max -8dBFS

### AVC/H.264:

#### VIDEO

- Frame Rate: PAL 25fps (frames per second)
- Native AVC/H.264 ISO/IEC 14496-10.
- Profile: Baseline/Main
- Level: 1 - 3.1
- Chroma: 4:2:0
- Interlacing: Upper Field First for PAL
- Entropy coding mode: CABAC and CAVLC
- Video bitrate: up to 40,000 Kbps CBR (Constant Bitrate)

#### AUDIO

- Stream Type: MPEG Audio Layer 2 or AAC
- Audio Bitrate 160-256 Kbps CBR
- Sample rate: 48 kHz
- Audio: Stereo
- Bit depth: 16 bit

#### CONTAINER

- MPEG-2 Transport Stream ISO/IEC 13818-1
- QuickTime

## AVC/H.264 HD:

### VIDEO

- Frame Rate: PAL 25fps (frames per second)
- Native AVC/H.264 ISO/IEC 14496-10.
- Profile: Main/High
- Level: 4 - 5.1
- Chroma: 4:2:0/4:2:2
- Entropy coding mode: CABAC and CAVLC
- Video bitrate: up to 80,000 Kbps CBR (Constant Bitrate)

### AUDIO

- Stream Type: MPEG Audio Layer 2 or AAC
- Audio Bitrate 160-256 Kbps CBR
- Sample rate: 48 kHz
- Audio: Stereo
- Bit depth: 16 bit

### CONTAINER

- MPEG-2 Transport Stream ISO/IEC 13818-1
- QuickTime

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### Acceptable file containers:

- MXF (MPEG2 , DV, H264)
- MOV (MPEG2, DV, H264)
- TS (MPEG2, H.264)
- AVI (MPEG2, DV)

**Support for MXF and MOV containers depends from every third party vendor and particular export settings!**

### Known programmes that produce incompatible with PlayBox files:

- VBrick Encoder
- AVID Liquid
- VirtualDub
- MXF MPEG2 from Omneon

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### Certified programs for files transcoding:

- Canopus ProCoder
  - For MPEG2 must be activated
  - "Put Sequence Header for each GOP" in Advanced settings
  - Constant bitrate must be used.
- Rhozet Carbon Coder
  - Constant bitrate must be used.



## PlayBox supported formats

| VIDEO                  |   |              |                          |
|------------------------|---|--------------|--------------------------|
| <b>Compression</b>     | MPEG2, DV, HDV, MPEG4, AVC/H.264/ DVC Pro, JPEG2000, AVC-Intra, Apple ProRes 422, DVCPro50, DVCPro HD |              |                          |
| <b>Format</b>          | PAL /1080i HD / 720p HD   |              |                          |
| <b>Bitrate</b>         | 10-15Mbps   | MPEG2        | MP@ML                    |
|                        | 10-50Mbps   | MPEG2        | 422P@ML                  |
|                        | 20-80Mbps   | MPEG2        | MP@HL                    |
|                        | 25Mbps  | DV and HDV   |                          |
|                        | 40-80Mbps   | MPEG2 HD     | HP@HL                    |
|                        | 20-40Mbps   | AVC/H.264    | Baseline/Main            |
|                        | 20-80Mbps   | AVC/H.264    | Main/High                |
|                        | Class 50 & 100 AVC-Intra  |              |                          |
| <b>Colour sampling</b> | 4:2:0   | MPEG2        | Main Profile (incl. HDV) |
|                        | 4:2:2   | MPEG2        | 4:2:2 Profile            |
|                        | 4:2:0 / 4:1:1   | DV25 Mbps    |                          |
|                        | 4:2:0   | WMC and AVC  |                          |
|                        | 4:2:2   | Apple ProRes |                          |
|                        | 4:2:0   | AVC - Intra  |                          |
|                        |   |              |                          |

| MEDIA FILE FORMATS                |  |
|-----------------------------------|--|
| <b>MPEG2</b>                      | MPG or MP2 - Programme streams<br>M2T or TS – Transport Streams (SPTS or MPTS)<br>OpenDML AVI and WAV (mono and stereo)<br>QuickTime, MXF, GXG |
| <b>DV</b>                         | OpenDML, Type 1 and Type 2 AVI,<br>QuickTime, Raw DV, MXF, GXF   |
| <b>HDV</b>                        | MPG or M2T/ TS – Transport Stream<br>QuickTime, MXF, GXF   |
| <b>H.264 /AVC / MPEG4 part 10</b> | TS- Transport Stream (SPTS and MPTS)   |
| <b>Windows Media Video / VC-1</b> | WMV  |