
14. Reference Information

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14-1-1 Transport stream

There are two kinds of multiplexing. The one is multiplexed program called PS (Program Stream), which improved MPEG-1 system.

The another TS (Transport Stream) is multiplexed program in channel environment with error. It is adequate Digital Broadcast TV due to multiplexing multi program with one bit stream. and add PPV (Pay Per View) functions to STB embedded CAS (Conditional Access System) program.

14-1-2 Demultiplex

Digital set-top boxes and digital TVs may require multiple program stream inputs, for example cable/terrestrial/satellite TV. The transport stream multiplexor (TSMUX) is designed to route two input transport streams independently to the on-chip PTI.

The TSMUX also supports input from an internal transport stream (software writable transport stream) and allows the PTI output to be multiplexed to an output stream.

The multiplex is routed between a 1394 AV link layer interface and a 1284 controller interface.

14-1-3 MPEG

MPEG (pronounced M-peg), which stands for Moving Picture Experts Group, is the name of family of standards used for coding audio-visual information (e.g., movies, video, music) in a digital compressed format. The major advantage of MPEG compared to other video and audio coding formats is that MPEG files are much smaller for the same quality. This is because MPEG uses very sophisticated compression techniques.

MPEG is an encoding and compression system for digital multimedia content defined by the Moving Picture Experts Group (MPEG). MPEG-2 extends the basic MPEG system to provide compression support for TV quality transmission of digital video. To understand why video compression is so important, one has to consider the vast bandwidth required to transmit uncompressed digital TV pictures.

Phase Alternate Line (PAL) is the analogue TV transmission standard used in the UK, and throughout many parts of the world. A uncompressed PAL TV picture requires a massive 216 Mbps, far beyond the capacity of most radio frequency links. The U.S. uses an analogue TV system called NTSC. This system provides less precise colour information, and a different frame rate. An uncompressed NTSC signal requires slightly less transmission capacity at 168 Mbps.

The situation becomes much more acute, when one realises that high definition TV is just around the corner. A High Definition TV (HDTV) picture requires a raw bandwidth exceeding 1 Gbps (1000 Mbps).

14-1-4 Resolution

Resolution refers to the number of pixels on the screen. The higher resolution, the better the visual quality. Digital broadcasts are classified into HD and SD grades according to the visual quality. In general, HD (High Definition) grade supports resolutions of 1920x1080i and 1280x720p and an aspect ratio of 16:9 for both ATSC and DVB standards.

SD (Standard Definition) grade supports resolutions of 720x480p and 720x480i for the ATSC standards, and supports resolutions of 720x576p and 720x576i for the DVB standard. SD grade usually supports an aspect ratio of 4:3. However, it may differ depending on the region.

14-1-5 DVB

Digital Video Broadcasting(DVB) is a transmission scheme based on the MPEG-2 video compression / transmission scheme and utilising the standard MPEG-2 Transmission scheme. It is however much more than a simple replacement for existing analogue television transmission. In the first case, DVB provides superior picture quality with the opportunity to view pictures in standard format or wide screen (16:9) format, along with mono, stereo or surround sound.

It also allows a range of new features and services including subtitling, multiple audio tracks, interactive content, multimedia content - where, for instance, programmes may be linked to world wide web material.

DVB is a European initiative. Equipment conforming to DVB standard is now in use on six continents and is DVB rapidly becoming the world-wide standard for digital TV.

At the time DVB was being developed in Europe, a parallel programme of standards and equipment development was also going-on in the U.S.A. by the Advanced Television Systems Committee (ATSC). ATSC is slightly different to DVB (obviously the U.S. was not too worried about this - for years they have lived with an insipid TV standard called NTSC, which has lead to slightly different TV market). Among other things ATSC adopts a different audio coding standard, and Vestigial Side Band (VSB) modulation.

The U.S. has adopted a system based on ATSC, called Digital TV (DTV). During standardisation this evolved into a hot debate between the PC-based manufacturers (favouring a non-interlaced display) and the TV manufacturers (favouring an interlaced format). There is much in common between the US and European standards and inter-operation between some DVB and DTV equipment has been demonstrated.

14-1-6 Dolby Digital 5.1

Dolby Digital 5.1 provides 5 discrete channels of digital audio information for use by A/V receivers capable of decoding the 5.1 channel signal.

The audio signals are broken into left-front,center,right-front,left-rear,right-rear and a low-frequency effects channel(designed for subwoofers).

The result when connected to a compatible Dolby Digital 5.1 channel A/V receiver and speaker setup is a home theater experience that provides much of the dynamic range,360-degree imaging,and sonic excitement of a real theater.

AC-3 is a sound encoding/decoding technology developed in 1987 for movie theaters and means an AC-3 bit stream.AC-3 is used synonymously with Dolby Digital nowadays.