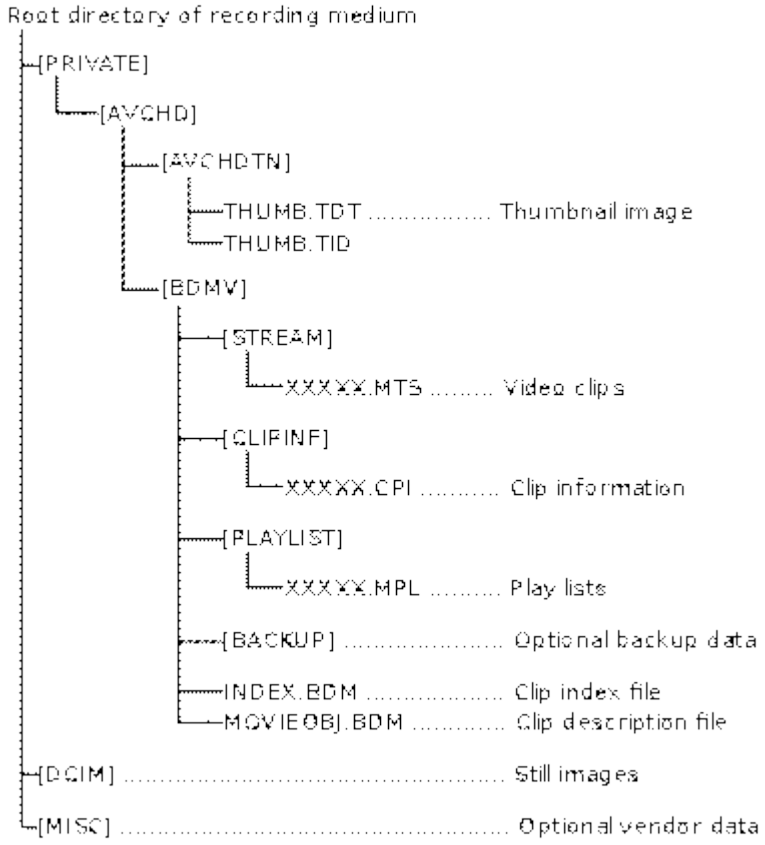
About AVCHD

AVCHD (Advanced Video Coding High Definition) is a file-based format for the digital recording and playback of high-definition video jointly developed by Sony and Panasonic. AVCHD uses Advanced Video Coding (AVC) compression (also known as *MPEG-4 part 10* or *H.264*) to achieve high-quality images and low data rates. AVCHD camcorders record on a variety of file-based media, including 80 mm DVDs, hard disks, and flash memory (such as Secure Digital cards and memory sticks).

The AVCHD specification allows most SD and HD dimensions and frame rates, though each camcorder usually supports only a few formats. The AVCHD color sample ratio is 4:2:0, with 8 bits per sample. Audio can be recorded in 5.1-channel surround sound with Dolby Digital (AC-3) compression or up to 7.1-channel surround sound (uncompressed). Some camcorders, such as the Panasonic HDC-SD5 camcorder, use a two-channel built-in microphone.



Storage Medium

AVCHD camcorders record on a variety of file-based media, including 80 mm DVDs (also known as *miniDVDs*), hard disks, and flash memory (such as Secure Digital cards).

Video Standard

The AVCHD specification was jointly developed by Sony and Panasonic. AVCHD allows for HD recording (1080i, 1080p, and 720p) and SD recording (480i and 576i).

Aspect Ratio

AVCHD records HD video with an aspect ratio of 16:9. SD video can be recorded with either a 4:3 or 16:9 aspect ratio.

Frame Dimensions, Number of Lines, and Resolution

AVCHD supports three HD video resolutions:

1920 x 1080: This format is sometimes called Full HD because it contains the full 1920 horizontal pixels of the 1080-line HD format.

1440 x 1080: This is a horizontally subsampled image with 1080 lines.

1280 x 720: This is a full-resolution 720p format.

SD NTSC- and PAL-compatible formats are also defined in the AVCHD specification:

720 x 480 at 60i

720 x 576 at 50i

Frame Rate

The specified AVCHD frame rates are:

NTSC-compatible frame rate: 29.97 fps (1080i60, 720p60)

PAL-compatible frame rate: 25 fps (1080i50, 720p50)

Film-compatible frame rate: 23.98 fps (1080p24, 720p24)

Scanning Method

AVCHD can record either interlaced or progressive scan images:

1080 lines: Interlaced (1080i) or progressive (1080p)

720 lines: Progressive

Color Recording Method

The AVCHD color sample ratio is 4:2:0, with 8 bits per sample.

Data Rate

The amount of storage space required by AVCHD footage depends on the quality setting chosen on the camcorder. Most camcorders support several quality levels, although these quality levels have different names and bit rates on different camcorders. When variable bit rate (VBR) encoding is used, complex and rapidly changing video requires more data, shortening recording time. Therefore, stated variable bit rates are an average. By converting AVCHD files to specific video format, you are free to import .mts or .m2ts files to iMovie, FCE, FCP X, Adobe Premiere Pro, Avid Media Composer.

Sony Camcorder AVCHD Quality Levels

This table lists the bit rates for different quality-level settings on Sony AVCHD camcorders. Sony camcorders use variable bit rate (VBR) encoding at every quality level. Sometimes, for some reason, Sony HDR-CX users will find that they can't import the AVCHD content from the

camcorder to iMovie even Apple iMovie website have listed support for this model or they have imported successfully many times before.

Format name	Bit rate
XP (highest quality)	15 Mbps (VBR)
HQ (high quality)	9 Mbps (VBR)
SP (standard quality)	7 Mbps (VBR)
LP (long play)	5 Mbps (VBR)

Panasonic Camcorder AVCHD Quality Levels

This table lists the bit rates for different quality-level settings on Panasonic AVCHD camcorders. Depending on the quality-level setting, Panasonic camcorders use either constant bit rate (CBR) or variable bit rate (VBR) encoding.

Format name	Bit rate
PH	21 Mbps (VBR)
HA	17 Mbps (VBR)
HF	13 Mbps (CBR)
HG	13 Mbps (VBR)
HN	9 Mbps (VBR)
HE	6 Mbps (VBR)

Audio

AVCHD audio can be recorded in 5.1-channel surround sound with Dolby Digital (AC-3) compression or up to 7.1-channel surround sound (uncompressed). Some cameras, such as the Panasonic HDC-SD5, use a two-channel built-in microphone.

Canon

Depending on model, Canon camcorders offer 1080-line interlaced, PsF, and native 24p recording.

HR10 (DVD)

2007: HG10 (40 GB HDD)

April 2008: HF10 (SDHC, built-in 16GB flash memory), HF100 (SDHC)

September 2008: HF11 (SDHC, built-in 32GB flash memory), HG20 (60GB HDD, SDHC), HG21 (120GB HDD, SDHC)

January 2009: HF S10 (SDHC, built-in 32GB flash memory), HF S100 (SDHC), HF20 (SDHC, built-in 32GB flash memory), HF200 (SDHC)

August 2009: HF S11 (SDHC, built-in 64GB flash memory, wired LANC remote capability)

January 2010: HF S21 (two SDHC slots, 64GB flash memory, electronic viewfinder), HF S20 (two SDHC slots, 32GB flash memory), HF S200 (two SDHC slots); HF M31 (SDHC, 32GB flash memory), HF M30 (SDHC, 8GB flash memory), HF M300 (SDHC); HF R11 (32GB flash memory), HF R10 (SDHC, 8GB flash memory), HF R100 (SDHC)

April 2011: HF G10 (with 1/3" image sensor)

March 2012: HF M500 (with 1/3" image sensor | 24pf, 30pf, and 60i | removable SDHC/SDXC flash memory)

Hitachi

2008: DZ-BD10HA (Three-media recording: Blu-ray Disc, AVCHD on HDD, AVCHD on SDHC)

JVC

June 2008: GZ-HD10 (HDD, MicroSDHC), GZ-HD30/GZ-HD40(HDD, MicroSDHC card, dual AVCHD and TOD recording)

January 2009: GZ-HD320 (120 GB HDD, MicroSD), GZ-HD300 (60 GB HDD, MicroSD), GZ-HM200 (dual SDHC)

February 2009: GZ-X900 (SD/SDHC card)

September 2009: GZ-HM300, GZ-HM400

December 2009: GZ-HD620

March 2010: GZ-HM1

Spring 2011: GZ-HM30 (pre-released December 2010)

2011 : GZ-HM4XX,GZ-HM6XX,GZ-HM8XX, GZ-HM9XX

Leica Camera

Digital still cameras

2010:LEICA D-LUX 5, LEICA V-LUX 2

Panasonic

Panasonic AVCHD camcorders offer interlaced, progressive scan or native progressive recording and combinations of these modes depending on a particular model. 1080-line and 720-line recording is possible depending on a model.

Panasonic AVCHD camcorders use AVC with High Profile @ Level 4.0 for all modes except 1080p50/1080p60, which are encoded with High Profile @ Level 4.2. Maximum data rate is limited to 24 Mbit/s for AVCCAM models, to 17 Mbit/s for most consumer models and to 28 Mbit/s for 1080p50/1080p60 recording modes.

December 2006: HDC-DX1 (DVD), HDC-SD1 (SDHC)

HDC-SD3 (SDHC, available in Japan only)

AG-HSC1U - essentially a rebadged HDC-HC1 (SDHC, comes with portable 40 GB HDD storage)

August 2007: HDC-SD5 (SDHC), HDC-SX5 (DVD, SDHC), HDC-SD7 (SDHC)

January 2008: HDC-SD9 (SDHC), HDC-HS9 (60 GB HDD, SDHC)

April 2008: AG-HMC70 (SDHC)

June 2008: HDC-SD100 (SDHC), HDC-HS100 (60 GB HDD, SDHC)

September 2008: AG-HMC150 (SDHC)

January 2009: HDC-HS300 (120 GB HDD), HDC-HS200 (80 GB HDD), HDC-TM300 (32 GB built-in flash memory, SDHC), HDC-SD300 (SDHC, available in Europe only), HDC-SD200 (SDHC).

June 2009: HDC-TM30/HDC-TM10 (32 GB built-in flash memory, SDHC), HDC-SD10 (SDHC)

June 2009: HDC-TM350 (64 GB built-in flash memory, SDHC, available in Japan and as of October 2009, from Panasonic Stores across the UK)

September 2009: AG-HMC40 (SDHC)

February 2010: HDC-TM700/HDC-SD700/HDC-HS700 (introduced 1080p60/1080p50 modes, depending on region)

March 2010: HDC-SD60/HDC-TM60/HDC-HS60

December 2010: AG-AF100/AG-AF101/AG-AF102 (4/3" large sensor camera)

September 2011: AG-AC130/AG-AC160 (SDXC/SDHC/SD)

In 2009 Panasonic introduced AVCHD Lite and AVCHD to selected members of its Lumix line of digital cameras:

2009: DMC-ZS3/TZ7*, DMC-TS1/DMC-FT1* (AVCHD Lite)

2009: DMC-GH1 (AVCHD)

2010: Lumix DMC-ZS7/TZ10*, DMC-G2 (AVCHD lite)

2010: Lumix DMC-GH2, DMC-GF2 (AVCHD)

2011: Lumix DMC-ZS10/TZ20* (AVCHD lite)

2011: Lumix DMC-FX77/FX78*, DMC-TS3*, DMC-FZ45/47/48*

2011: Lumix DMC-GF2, DMC-G3/GF3 (AVCHD)

2012: Lumix DMC-TZ30 (AVCHD, AVCHD Progressive: GPH, PSH)

* to avoid European specific tax, Panasonic digital cameras for this market are limited to 30 minutes recording.

Sony

Consumer Sony AVCHD camcorders released before 2011 could record 1080-line interlaced video only, while the prosumer HDR-AX2000 and professional HXR-NX5 cameras were capable of recording in interlaced and progressive formats.

Released in March 2011, the Sony NEX-FS100 is the first professional NXCAM camcorder capable of 1080p50/p60 recording; consumer-grade HandyCam NEX-VG20 followed in August 2011.

The list of AVCHD camcorders includes:

September 2006: HDR-UX1 (DVD), HDR-UX3/UX5 (DVD), HDR-UX7 (DVD)

October 2006: HDR-SR1 (30 GB HDD)

June 2007: HDR-SR5 (40 GB HDD), HDR-SR7 (60 GB HDD)

July 2007: HDR-SR5C (100 GB HDD), HDR-SR8 (100 GB HDD)

Summer 2007: HDR-CX7 (Memory Stick Duo)

March 2008: HDR-SR10 (40GB HDD, Memory Stick), HDR-SR11 (60 GB HDD, Memory Stick), HDR-SR12 (120 GB HDD, Memory Stick)

HDR-TG1/TG3/TG7 (Memory Stick Duo)

August 2008: HDR-CX12 (Memory Stick Duo)

March 2009: HDR-XR520V (240 GB HDD), HDR-XR500V (120 GB HDD Version)

March 2009: HDR-XR200V (120 GB HDD)

March 2009: HDR-XR200VE (120 GB HDD + GPS)

March 2009: HDR-XR100 (80 GB HDD)

July 2009: HDR-CX500E, HDR-CX520E

October 2009: HDR-CX105 (8GB Memory Stick Duo)

January 2010: HXR-NX5, HDR-AX2000.

March 2010: HDR-XR550 (240 GB HDD)

June 2010: Sony NEX-5, NEX-5C (without Eye-Fi support), of both models, variants with AVCHD 1080 50i and AVCHD 1080 60i only exist

July 2010: Sony HXR-MC50E.

March 2011: Sony NEX-FS100

August 2011: NEX-VG20

October 2011: Sony SLT-A65, Sony SLT-A77V, Sony NEX-5N, Sony NEX-7

In 2010 Sony introduced AVCHD to selected members of its Cybershot line of digital cameras.

January 2010: Sony DSC-HX5V (GPS+COMPASS), HX5V-E (European version, limited to 30 minutes recording due to European specific taxes)

March 2011: Sony DSC-HX9V (GPS+COMPASS), HX9V-E (European version, limited to 30 minutes recording due to European specific taxes)

2012 : Sony HX10V, Sony HX20V

http://documentation.apple.com/en/finalcutpro/professionalformatsandworkflows/index.html#c

hapter=6%26section=1

http://en.wikipedia.org/wiki/AVCHD