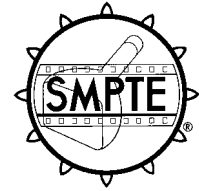


Nomenclature for Television Digital Recording of 19-mm Type D-1 Component and Type D-2 Composite Formats



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1 Scope

This guideline explains terms as used in the documents defining the D-1 and D-2 digital television recording formats.

2 General definitions

2.1 D-1 format recorder: A 19-mm cassette-based digital recorder for component video and other television signals in accordance with ANSI/SMPTE 227M.

2.2 D-2 format recorder: A 19-mm cassette-based digital recorder for composite video and other television signals in accordance with ANSI/SMPTE 247M.

2.3 program areas: That part of the tape on which is digitally recorded the program video and audio signals.

2.4 program area track pattern: The arrangement of video and audio sectors on helical-scan tracks within the program area.

3 Track pattern allocation — Video and audio segments

3.1 video segment: A video segment contains the digital video data originating from one contiguous portion of a television field. It is recorded within several video sectors, which are located in adjacent video tracks.

3.2 audio segment: An audio segment contains the digital audio data associated with one or more video segments. These data are written into several audio sectors. Audio sectors from different audio channels are interleaved and

written on adjacent helical tracks at the ends of video sectors.

4 Electrical signal allocation

4.1 video and audio sectors: A sector is a structured sequence of data which incorporates the video or audio data and appropriate synchronizing and identification patterns, so that the video or audio data can be recovered from tape and identified for subsequent processing.

4.1.1 preamble: A preamble consists of a runup sequence, a sync pattern, an identification pattern, and some fill data.

4.1.1.1 runup sequence: A runup sequence consists of a sequential bit pattern chosen to facilitate the locking of data-extraction circuits.

4.1.1.2 sync pattern: A sync pattern consists of two consecutive bytes whose bit pattern is chosen to be a robust indication of the start of a sync block.

4.1.1.3 identification pattern: An identification pattern consists of two to four consecutive bytes providing a unique address of the position of a sync block within two to four frames of recorded data. It may be coded to remove direct current and provide error protection.

4.1.1.4 fill data: Fill data consists of a few bytes of a fixed pattern which is designed to provide a minimum separation on tape between the runup, sync pattern, and the first sync block. Fill data may also be recorded in the edit gap between sectors in a track.

4.1.2 sync block: A sync block consists of a sync pattern followed by an identification pattern followed by two inner code blocks.

4.1.2.1 inner code block: An inner code block consists of a number of bytes of video data, audio data, or outer code check data, followed by a number of inner code check data. A D-2 inner code block may include an identification pattern.

4.1.3 postamble: A postamble consists of a sync pattern followed by an identification pattern and, possibly, some fill data.

5 Subsets of binary data

Usually, for convenience in parallel digital processing, binary information is processed in groups of bits referred to in the literature as words or bytes. These terms have generally understood meanings but are not unambiguously defined. For the purpose of this terminology, the following definitions are assumed:

5.1 bit: A contraction of binary and digit to define a unit of information.

5.2 bit-parallel: Refers to a set of concurrent data bits present on a like number of data lines used to carry information. Bit-parallel data bits may be acted upon concurrently as a group (word) or independently as individual data bits.

5.3 byte: A byte consists of eight bits of binary information. It may have an identity other than being a convenient processing unit (for example, see video data word), but generally this is not implicit.

5.4 video data word: A video data word is a byte in which the eight bits represent the possible 256 quantum levels of a video sample.

5.5 audio data word: An audio data word consists of 16 to 20 bits. In the most basic operating mode 16 bits represent the possible 2^{16} quantum levels of an audio sample and four bits are used for auxiliary signals. Other modes are defined in which either one, two, three, or four of the auxiliary signal bits are allocated to extend the dynamic range of the audio sample quantization. For convenience, the 20-bit word may be processed in five words of four bits each.

5.6 bit rate: The rate at which encoded information is transmitted from one part of a system to another, expressed in bits per second.

5.6.1 In component digital video with a luminance sampling frequency of 13.5 MHz and a color difference sampling frequency of 6.75 MHz for each of the two color-difference channels and 8-bit PCM encoding of each sample, the bit rate is 216 million bits per second.

5.6.2 In composite digital video with a sampling frequency of 14.32 MHz ($4f_{sc}$) and 8-bit PCM encoding of each sample, the bit rate is approximately 114 million bits per second.

5.7 bus: A signal line or a set of signal lines used by an interface to which multiple devices are connected and over which messages are carried.

5.8 unidirectional bus: A bus used by any individual device for one-way transmission only; that is, either input only or output only.

5.9 positive binary: The condition where the most positive of the two possible signal levels is a logical 1.

5.10 clock: A source of accurately timed pulses used for synchronization in a digital computer or as a time base in a transmission system.

A synchronous clock in this application means that the clock pulses are synchronous in frequency and phase to the video horizontal rate for a component signal or the chrominance subcarrier frequency for a composite signal.

5.11 data lines: Refers to the interconnecting signal lines of the interface system. A single data line is defined as a pair of signal lines due to the balanced electrical specification of the system. The signal wires that make up a data line are usually twisted together for crosstalk considerations in conventional cable technology.

5.12 data rate: The rate at which data is transferred from one part of the system to another expressed in bits, bytes, or words per second.

5.13 ECL: Refers to emitter coupled logic. This logic is a nonsaturating form of digital logic