

## RECOMMENDATION ITU-R BT.1577

**Serial digital interface-based transport interface for compressed television signals in networked television production based on Recommendation ITU-R BT.1120**

(Question ITU-R 5/6)

(2002)

The ITU Radiocommunication Assembly,

*considering*

- a) that the high definition serial digital interface (HD-SDI) is being implemented in television production studios and that it is documented in Recommendation ITU-R BT.1120;
- b) that Recommendation ITU-R BR.1356 – User requirements for application of compression in television production, already exists;
- c) that maintaining video signals in compressed form as far as possible throughout the production and post-production process offers the potential of increased operating efficiency;
- d) that programme data composed of audio, compressed video and metadata should be streamed in a container commonly available in the high-definition production studio;
- e) that a transport mechanism must be established which allows point-to-point and point-to-multipoint routing of these data through a digital production and post-production chain;
- f) that the transport should allow synchronous data transfer to facilitate absolute and relative timing between programme data;
- g) that the transport mechanism should allow faster than real-time and non-real time transfer of programme data,

*recommends*

**1** that for applications based on the HD-SDI infrastructure in networked production and post-production based on Recommendation ITU-R BT.1120 the high definition serial data transport interface (HD-SDTI) described in Annex 1 should be used.

## ANNEX 1

**SDI-based transport interface for compressed television signals  
in networked television production****1 Introduction**

This Recommendation specifies a data stream used to transport packetized data within a studio/production centre environment. The data packets and synchronizing signals are compatible with Recommendation ITU-R BT.1120 (see Fig. 1). This Recommendation describes the assembly of two channels of 10-bit words multiplexed onto one HD-SDI line for the purpose of transporting the data streams in a structured framework. The HD-SDTI data blocks and synchronizing signals provide a data transport protocol that can readily be added to the infrastructure described in Recommendation ITU-R BT.1120.

Recommendation ITU-R BT.1120 requires a sequence of 10-bit words which define a television horizontal line comprising five areas in the following sequence (Note – The first two areas are often described together):

- EAV: a 4-word unique timing sequence defining the end of active video (EAV) (of the previous line);
- LN/CRC: 2 words defining the line number (LN) followed by a 2-word cyclic redundancy check (CRC) error detection code;
- digital line blanking;
- SAV: a 4-word unique timing sequence defining the start of active video (SAV); and
- digital active line.

An associated television source format standard defines the rate of television horizontal lines by defining the following parameters:

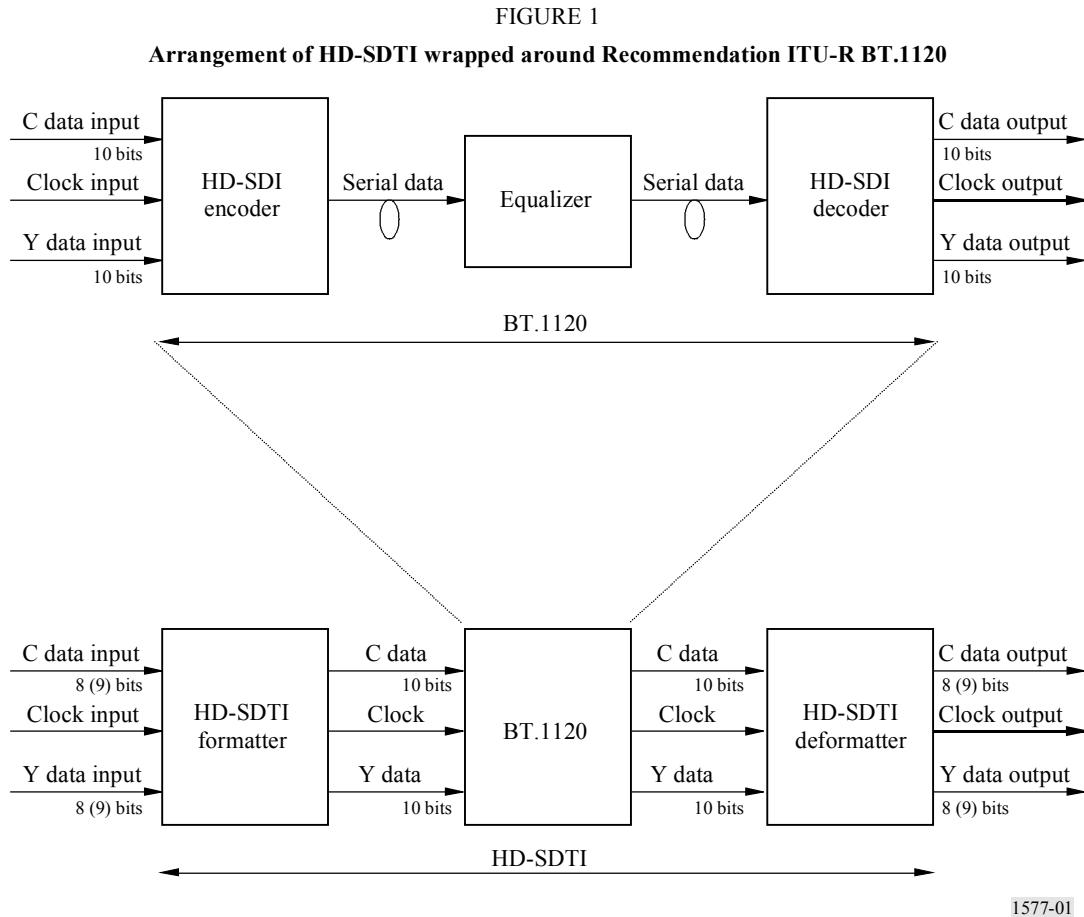
- the number of words per line;
- the number of words in the digital active line (and hence the number of words in the digital line blanking period);
- the number of lines per frame;
- the number of frames per second.

Recommendation ITU-R BT.1120 currently defines several source formats. Recommendation ITU-R BT.656 defines the meaning of the EAV and SAV word sequences which can be applied to all relevant source formats.

A decoder compliant with this Recommendation shall not be required to decode all the source formats available to Recommendation ITU-R BT.1120. The source formats that must be supported by the decoder shall be specified in application recommendations.

**1.1 HD-SDTI mapping onto HD-SDI**

The source formats, in combination with Recommendation ITU-R BT.1120, describe the bit-serial format formed from C/Y word-multiplexed channels as illustrated in Fig. 1.



The HD-SDTI data shall be serialized, scrambled, coded, and interfaced according to Recommendation ITU-R BT.1120 and the associated source format standard. The signal specifications and connector types shall be as described in Recommendation ITU-R BT.1120.

The data word length shall be 10 bits defined as bits B0 through to B9. B0 is the least significant bit (LSB) and B9 is the most significant bit (MSB). The order of bit-transmission shall be LSB first as defined in Recommendation ITU-R BT.1120.

Source data shall be in groups of four 10-bit words representing a word-multiplexed  $C_B$ ,  $Y_1$ ,  $C_R$ ,  $Y_2$  signal, where  $C_B$  and  $C_R$  form one parallel C-data channel and  $Y_1$  and  $Y_2$  form a second parallel Y-data channel.

The C/Y word clock rate shall be exactly 74.25 MWords/s for those picture rates which are an exact integer number per second and shall be 74.25/1.001 MWords/s for those picture rates which are offset by a divisor of 1.001.

The bit clock rate shall be 20 times the C/Y word clock rate (i.e. 1.485 Gbit/s or 1.485/1.001 Gbit/s).