

Closed Captions

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Introduction

Closed captioning is commonly used to refer to the system used in North America and other regions that historically broadcast in the analogue NTSC format.

Closed Caption (CC) or EIA-608B subtitling is also known as Line 21 subtitling as line 21 is the preferred video line the subtitle data is inserted onto (NTSC video line numbering only). The EIA-708 standard has been introduced to support Closed Captioning in a high definition digital environment.

Closed Caption subtitling should not be confused with the technically similar Teletext system

Scope

This white paper explains the usage of Closed Captions, how they fit in to a transmission and some advantages and disadvantages.

Details

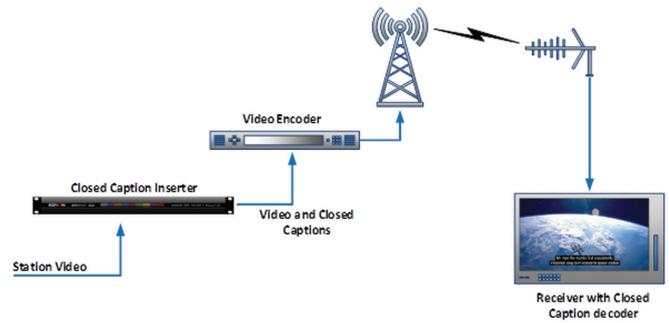
Closed Caption is a code based technology; this means that a number is used to represent each character in a subtitle. So for example A = 65, the coding is based on the ASCII standard used in many early computers.

Two characters are encoded on a single line in one field of video. Normally this is on Line 21 (NTSC numbering); hence the alternative name of Line 21. This gives a character rate of 60 characters per second although this is normally divided into two streams of 30cps known as CC1 and CC2. It is important that this low data rate is not exceeded and this limitation is one of the complexities of a Closed Caption system.

Because the Closed Caption system is character based the character set and font style available is fixed and can not be changed. The character set is limited to the Latin alphabet (A-Z) plus a limited number of accented characters. This makes the system suitable only for English and the other main European languages.

To display Closed Captions on a receiver it must be equipped with a suitable decoder and the user must select CC to be on. The vast majority of NTSC receivers are capable of decoding and displaying Closed Captions.

For HD broadcasts the Captions are carried in the EIA-708 format, this is most often used to carry the same caption data as in an SD EIA-608 broadcast and most receivers are capable of supporting this format. However the EIA-708 standard supports a range of functions to allow the viewer more control over how the captions are presented but many receivers do not allow these new features.



Advantages of the Closed Caption system

- Closed Caption technology is well proven and reliable.
- The viewer can control whether or not the Captions are displayed.
- Closed Caption subtitling has been adopted by countries that historically employed the NTSC standard (such as the USA and Canada) to provide an important service for TV viewers who are hearing impaired.

Disadvantages of the Closed Caption system

- The viewer must have a suitably equipped CC receiver or TV set.
- The font type and display position is governed by the design of the TV set or receiver and cannot be altered in any way.
- The number of characters per line or row is a set limitation and any Caption that exceeds this limit will lose characters.
- Certain national languages cannot be supported by CC technology as their characters may be too complex or just too numerous.
- The data rate available is very limited so update rates are slow and this must be allowed for when preparing captions.