A. Character Synchronization (Informative)

During 1394B start-up it is necessary for a receiver to achieve character synchronization with respect to the transmitter, i.e. a receiver must ensure that it is sampling groups of 10 bits from the received sequence of bits at the correct time. Character synchronization is aided by the occurrence of comma characters within a sequence of control characters. The comma characters, specifically the control characters C4 and C11, can only be detected if 10 bit characters are sampled from the serial stream with the correct timing.

During start-up a transmitter sends a sequence of control characters. Comma characters will occur regularly during this sequence. The exact delay between the occurrence of a comma character is a function of the particular control state and the scrambler state. The control states used during start-up are TX_REQUEST and IDLE.

During TX_REQUEST, the maximum time between the occurrence of either a C4 or C11 character is 63 byte times, i.e. 5.04 usecs at S100, 630 nsecs at S800. The average time between the occurrence of either a C4 or C11 character is 6.97 byte times, i.e. 557.6 nsecs at S100, 69.7 nsecs at S800. The separation between occurrences of C4 or C11 codewords will be less than or equal to this average time with probability of approximately 0.6.

During IDLE, the maximum time between the occurrence of either a C4 or C11 character is 41 byte times, i.e. 3.28 usecs at S100, 410 nsecs at S800. The average time between the occurrence of either a C4 or C11 character is 6.97 byte times, i.e. 557.6 nsecs at S100, 69.7 nsecs at S800. The separation between occurrences of C4 or C11 codewords will be less than or equal to this average time with probability of approximately 0.6.