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VIDEO SPLATTER ON VERSATEC HARD COPY

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Collider Accelerator Department

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AGS DIVISION TECHNICAL NOTE

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Attempts to get a hard copy of the Infoton (Monitor 7) terminal on the Main Control console have resulted in unreadable text. The Versatec Hard Copy Controller, Model 210 series, located in rack R8 in the Main Control Room is used to convert incoming video from the selected video source and drive the Printer/Plotter unit. The Controller unit samples the incoming video on a horizontal line-by-line basis. The Controller converts video line into digital data to control the printing of one line on the Printer/Plotter unit. The Controller is limited to 100 bytes maximum of information to a line. The Controller is set up to sample data as shown in Fig. 1. The Infoton terminal can generate 80 characters per line, thus there are 480 elements per line (for a 5 x 7 dot characters plus 1 space). Thus the vertical stroke width of a character is slightly less than the sampling element (480/584 = 0.82). The incoming video data black/white threshold is set at 20% up from black reference level.

There are four basic causes for the video splatter on the Printer/Plotter unit output.

1. Noise/Bandwidth

Noise on the signal and possible bandwidth limitations on the signal will effect the transition time at the threshold circuit to cause the character width to jump between sample periods resulting in breakup of a vertical stroke as successive video lines are printed (see Fig. 2).

2. Cable Phase

There is an initial adjustment of the phasing of the sampling clock (SAMCLK) in the controller to incoming video. This adjustment is made whenever the video cable length is changed. This video cable length from all sources to the Controller should be standardized before attempting to trim the SAMCLK phasing.

3. Comparitor

The threshold level can be adjusted to compensate for noise on the transition rise/fall times. This adjustment is, at best, a compromise. The threshold adjustment may be drifting with age and may have to be trimmed up periodically.

4. AGC

The Controller has an AGC circuit that sets controller video gain of the amplifier feeding the comparitor. This AGC senses the backporch level to the horizontal synch pulse to standardize the video level. Ths video system used does not have a backporch on the horizontal synch pulse so that the AGC is referenced between peak horizontal synch and video noise. Thus the video format of the signals driving the Controller will have to be adjusted to produce a backporch reference for the Controller AGC.

An AGC/processor amplifier was inserted in the system just before the Controller. It would strip of incoming synch, AGC the video, recombine a reconstructed synch, and adjust the pedestal level. The amplifier did improve the clarity of the Infoton printout, but not completely. In addition, when levels were set up for good performance on the Infoton printout the other monitor printouts were degraded. Part of the problem may have been caused by a dc level on the output of the amplifier and video undershoot on its output.

Thus, it seems that there is no simple solution to the printout problem. Each input to the Controller will have to be optimized and the Controller internal adjustment optimized for overall system performance.

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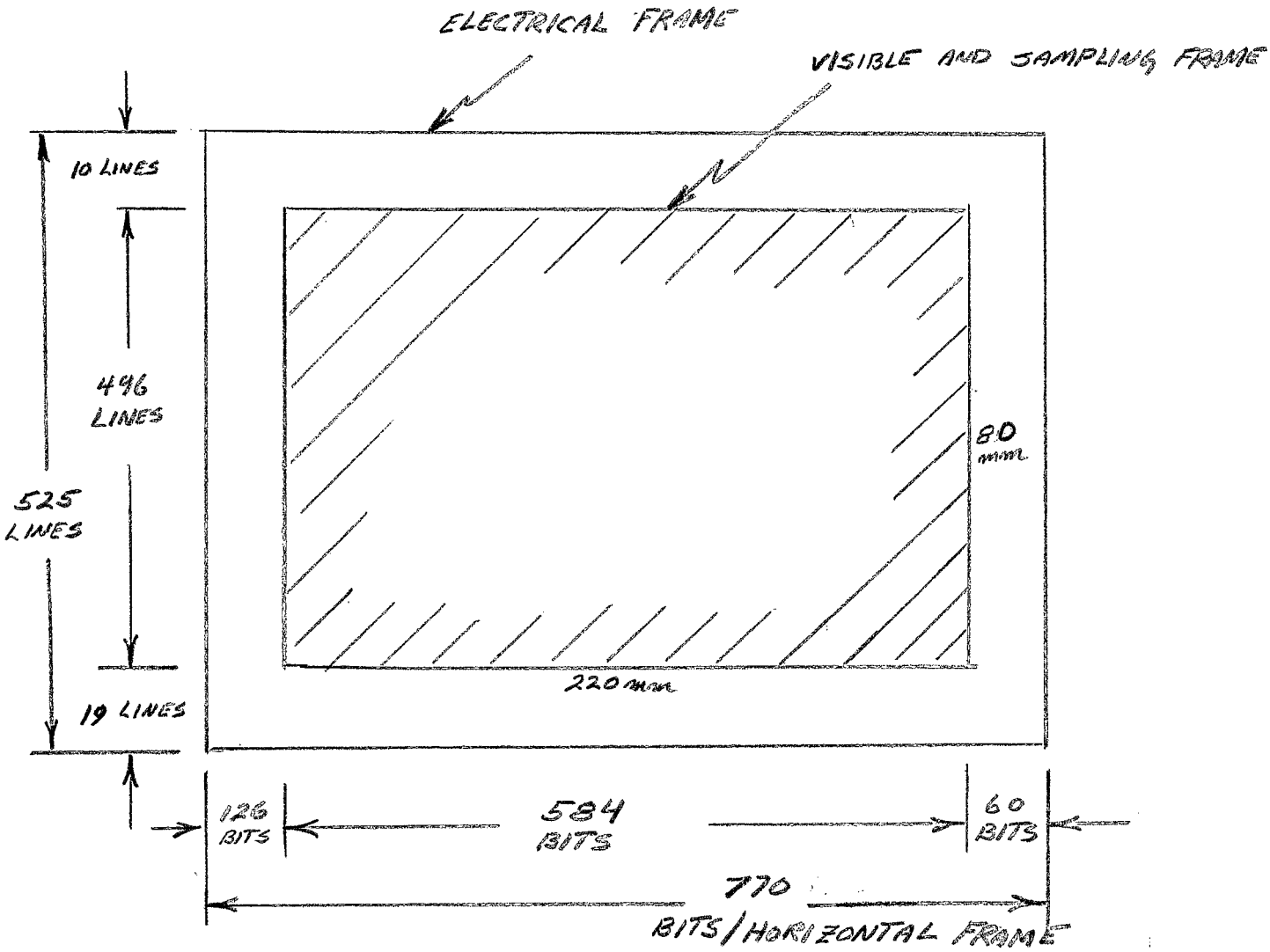

Fig. 1 Video Frame Parameters

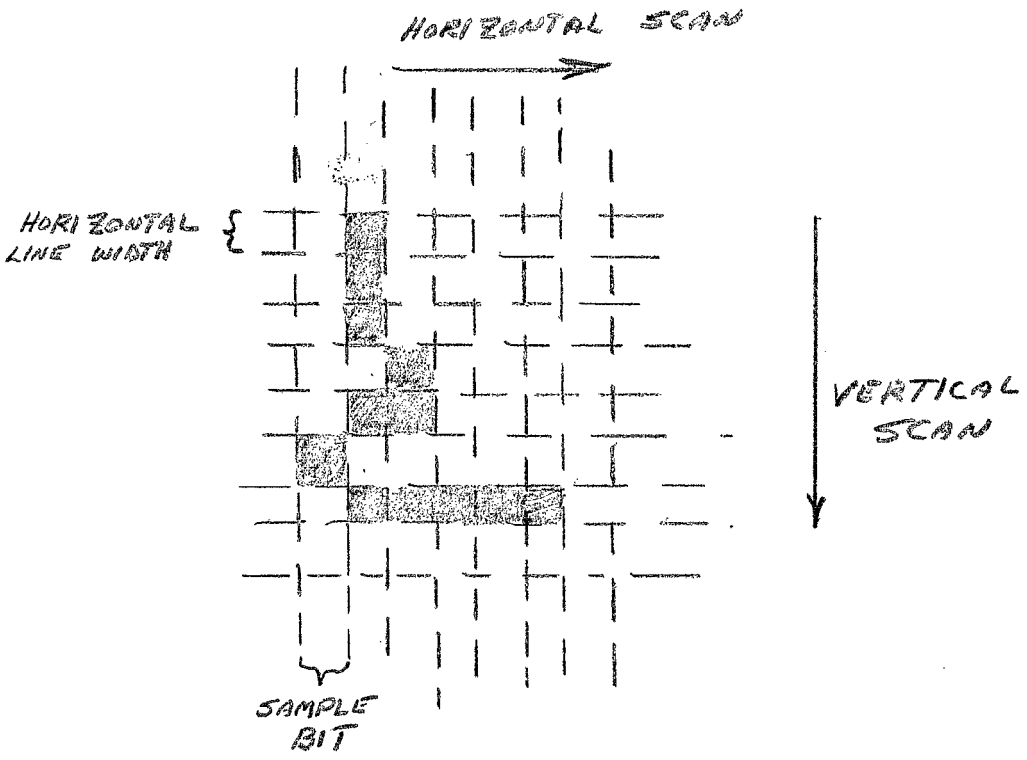

Fig. 2 Video splatter resulting in breakup of the letter L due to shift of video information on vertical line of letter.