

DIGITAL DATA RECORDING AT FIVE MILLION BITS PER SQUARE INCH



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ABSTRACT: A 24 megabit per second, serial bit stream recording system using rotating shed recording techniques has been developed. This system provides maximum data density on an area basis (5×10^6 bits per square inch) with reliable in-track packing density (24,000 bits per linear inch). The two-inch tape width accommodates the 24 Mb/s data rate at a longitudinal tape speed of 2.4 inches per second. A fourteen inch diameter reel of tape stores a trillion bits of data. A bit error rate of one error per million bits has been demonstrated. An error correction system has been designed to improve the bit error rate to one error per billion bits. Commercially available television tape is utilized on a modified industry standard data format. A track width of 2.5×10^{-3} inches and a track spacing of 3.75×10^{-3} inches provide approximately 260 tracks per inch along the length of the tape.