

This Sheet Has Been Replaced



MPEG AUDIO/VIDEO DECODER

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ABSTRACT OF THE DISCLOSURE

5 An MPEG audio/video decoder has memories, a signal processing unit (SPU) including a multiplier and a butterfly unit, a main CPU, and a memory controller which are time division multiplexed between decoding video and audio data. For audio decoding, the

10 butterfly unit determines combinations of components of a frequency-domain vector to reduce the number of multiplies required to transform to the time domain (matrixing). Matrixing is interwoven with MPEG filtering to increases throughput of the decoder by

15 increasing parallel use of the multiplier, the butterfly unit, and a memory controller. The decoder includes a degrouping circuit which performs two divisions in three clock cycles to degroup a subband code. Three cycles matches the write time of three

20 components so that subband codes are degrouped and written to memory with a minimum delay. Performing two divides in three clock cycles allows the divider to be smaller. In response to an error signal from a source of an MPEG audio data stream, the decoder replaces data

25 with an error code and temporarily enables error handling. The error code is a valid bit combination rarely found in MPEG audio data frames. During audio decoding with error handling enabled, the decoder checks for the error code and replaces the error code

30 with reconstructed data. Typically, some subband data are replaced with zeros so that an error only changes some of the frequency components.

FIGURE 1