

MPEG AUDIO/VIDEO DECODER

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 increase 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

text to be re-drafted
under 150 words