ABSTRACT

MPEG I Audio Layer-3 or often called MP3 is digital audio compression standards issued by ISO. MP3 is still widely used because of its ability to minimize the storage of audio files up to 10 times smaller compare to CD audio format which has similar sound quality. We need to decompress MP3 file to restore the original signal of the MP3 file and get the characteristic and information about MP3. In this project will be design and implementation of MP3 decompression system according to ISO standards for MPEG I.

Step for MP3 decompression system are reading the MP3 bitstream, bitstream decoding, inverse quantization, and Frequency to Time Mapping. Bitstream decoding aims to get all the information on MP3 for next decompression process. At this stage also performed the main data decoding using the Huffman coding method. Inverse quantization performed to obtain the actual value of the sample frequency of the input samples. In the block of Frequency to Time Mapping is done alias reduction, inverse MDCT and polyphase filter bank. In the last stage aims to change the sampling frequency information to the time domain to produce PCM samples output.

The results show that for the best result of quality audio is obtained with sampling frequency = 44100 Hz, bitrate = 96 Kbps and quality factor (QF) = 100 of the input file. The smallest ratio compression is obtained with bitrate = 96 Kbps, sampling frequency = 48 Hz, and quality factor (QF) = 10. Processing time required varies depending on the parameters used. The smallest time processing is 30.54 seconds with sampling frequency = 44100 Hz and bitrate = 96 Kbps.

Key words: decompression, MP3, decoding, inverse quantization, Frequency to Time Mapping, PCM samples.