

## ABSTRACT

DSP is kind of processor that was developed for multimedia processing, such as audio processing, image processing and signal processing. Mixing processing for audio is one of examples of audio processing that can be implement on DSP. Audio mixing processing is a kind of audio processing that has the ability to mix or combine several types of audio to be a complete audio compositions that can be heard. The ability to mix an audio is a special ability that makes this Multimedia Processor into one kind of ASIC. ASIC is an IC or chip designed for an application or special purpose implementation. The designed multimedia processor has been equipped with a set of instructions that the length are the same for each instruction with an opcode consisting of 3 bits to realize the audio mixing process on multimedia processor.

In this final project has designed a VLSI (Very Large Scale IC) layout for instruction set architecture that useful for fetching audio data. The audio data that processed is stored in ROM. Layout realized using Electric VLSI. Layout designed from the basic gates to layouts for the components involved in fetching data process. Layout designed using 300nm technology.

From the use of 300nm technology generated the size of die size for each component with unit size  $\text{mm}^2$  (millimeter x millimeter)<sup>2</sup>. The size of the resulting die size are different from one to another, according to the lamda ( $\lambda$ )<sup>2</sup> values obtained from the measurement layout for each component. Clock frequency required for the multimedia processor developed from the 44.1KHz interval up to the maximum frequency 250MHz.

Keyword: DSP, Multimedia Processor, ISA, VLSI, ASIC