ABSTRACT

JPEG (Joint Photographic Experts Group) is a standardized image compression for still image specialy for photographics or image with smooth variation in color. This compression is designed to exploit known limitations of human eye. The original image is taken through a series of steps. They are 2D-DCT (2-Dimensional Discrete Cosine Transform), Quantization, Zig-zag Scan, Run-Length Encoding, and Huffman Encoding. This algorithm is widely used for transfering image in the internet, digital camera, scanners, and another applications.

In this final project, we present a JPEG Encoder only for grayscale image with size 200x200 pixel in bitmap format file (*.bmp). This JPEG Encoder compliant with Baseline JPEG Standard ISO/IEC 10918-1. The Encoder receives blocks of 8x8 pixel data and produces compressed data in JPEG bitstream file.

The HDL design used Active-HDL 3.5 software and synthesized with WebPack Project Navigator 5.1 software and hardware implementation target on FPGA Xilinx Spartan-II XC2S100-5TQ144C. Result from the implementation required 91% slices (1101 out of 1200), 25% IOBs (23 out of 92) and maximum frequency may used is 32.226 MHz.