

ABSTRACT

In designing a communication system, we need a tool that can analyze the condition or performance of the system being designed. One of the tools that can perform this task is a Spectrum Analyzer. Spectrum Analyzer is a tool that can analyze the condition of a communication system based on spectral signal issued by the device in the communication system at a certain frequency range. Some parameters that can be analyzed by the Spectrum Analyzer is the signal bandwidth, received power signal, the amount of noise has been dragged, and the presence or absence of Intermediate Frequency (IM). Nevertheless, the high cost of a Spectrum Analyzer cause not everyone can afford it. One of solution to overcome this is creating a hardware that can perform functions such as Spectrum Analyzer cooperation with the production of a cheaper price.

The spectrum analyzer prototype has been implement is a device capable of displaying frequency domain signal using fast fourier transformation (FFT) as method to converting time domain signal into frequency domain signal. This prototype using microcontroller ATmega32 as main controller and using direct digital synthesizer (AD9851) to generate local oscillator frequency whose value can be changed automatically.

The result of this research indicate that systemically, the prototype has been realize not in accordance with the desired design specification, although in a modular multiple device that have met the expected spec. Prototype Spectrum Analyzer which has been realized only able to analyze the frequency of the input signal of 0-60MHz frequency readout with an error rate is 7.25% and has a specification RBW = 10kHz, VBW = 625Hz, and a fixed frequency span is 40KHz.

Key words : *spectrum analyzer, fast fourier transformation, microcontroller ATmega32, AD9851*