

ABSTRACT

Synthetic Aperture Radar (SAR) is a radar system that uses signal processing so that small sized antenna can provide results as a larger antenna thus producing an image or images as a replacement for distance and direction. SAR works at a frequency of 1.27 GHz (L-band). In SAR imaging radar mounted on a moving platform, the radar system transmits electromagnetic pulses with high strength and receive echo signals backscattered by sequential way. Transmitted pulse interacts with the surface of the earth and only a portion of it experience backscattered to the receiver antenna which can be the same as the transmission antennas (for monostatic radar) or different (for radar bi-or multi-static).

Signals transmitted by the SAR form Chirp signal pulse or signal linear frequency modulation (LFM). Chirp signal can be generated by using the analog and digital Chirp generator. In these two methods, digital Chirp generator is better than analog Chirp generator. Digital Chirp generator is divided into two methods: the memory-based and direct digital synthesizer (DDS). The difference of these two methods located in the memory ROM.

In this final project, design and realization a digital Chirp prototype generator that will generate Chirp signal with a bandwidth of 10 MHz, a frequency range of 0 - 10 MHz, with a sampling frequency of 24 MHz. by using a memory-based Chirp generator.

Keywords: Digital Chirp generator, SAR, Memory-based Chirp Generator