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An Approach For Evolving a Relaible Low Power Ultra Wide Band Transmitter with Capacitve Sensing

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Abstract : This work aims for a tunable capacitor as a sensor which can vary the control voltage of a voltage control oscillator in a ultra wide band (UWB) transmitter. In this paper power consumption is concentrated. The reason for choosing a capacitive sensing is it give slow temperature drift, high sensitivity and robustness. Previous works report a resistive sensing in a voltage control oscillator (VCO) not aiming at power consumption. But this work aims for power consumption of a capacitive sensing in ultra wide band transmitter. The ultra wide band transmitter to be used is a direct modulation of pulses. The VCO which is the heart of pulse generator of UWB transmitter works on the principle of voltage to frequency conversion. The VCO has and odd number of inverter stages which works on the control voltage input this input is now from a variable capacitor and the buffer stages is reduced from the previous work to maintain the oscillating frequency. The VCO is also aimed to consume low power. Then the concentration in choosing a variable capacitor is aimed. A compact model of a capacitor with the transient characteristics is to be designed with a movable dielectric and multi metal membranes. Previous modeling of the capacitor transient characteristics is with a movable membrane and a fixed membrane. This work aims at a membrane with a wide tuning suitable for ultra wide band transmitter.This is used in this work because a capacitive in a ultra wide transmitter need to be tuned in such a way that all satisfies FCC regulations.

Keywords : capacitive sensing, ultra wide band transmitter, voltage control oscillator, FCC regulation
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