

## Transmit a Real Image on Microwave Link by Synthesizer Using a PLL<sup>1</sup>

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### Abstract

We aim to design a microwave carrier with frequency modulation for real image by synthesizer using a PLL. The purpose of this design is to transmit real image video signal in real time. The phase lock loop is the popular method of frequency synthesis, however one of its main weaknesses is the difficulty in achieving frequency modulation of its output. A PLL is in effect a control system that maintains a constant phase difference between two signals. Any variation in the phase of one signal relative to the other is removed by the PLL. This property of a PLL is utilized to suppress noise and clean up a signal, however, this property also tends to suppress any frequency modulation of the PLL output. This article will present a practical solution to apply frequency modulation of the synthesized video signal. We design a microwave frequency synthesizer using a PLL that works at X band, with modulation of carrier for transmitting real image signals.

<sup>1</sup> For the paper in Arabic see pages (297-309).

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