

# Multi tone Frequency Generation based on Mixer

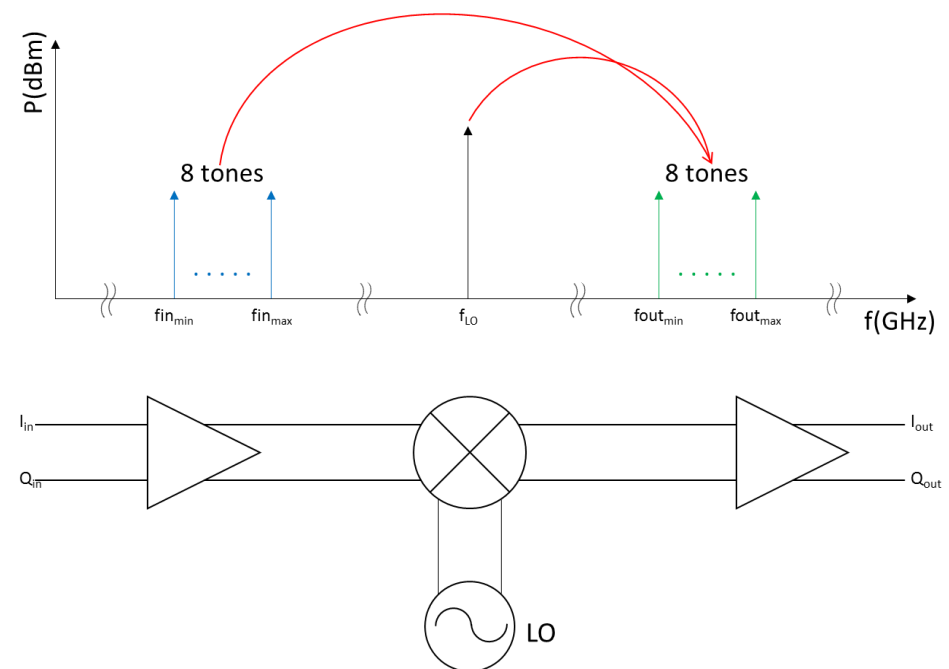
## Background

In recent years, mmWave frequencies have received a lot of interest since they offer large modulation bandwidth. But this also leads to requirement of implementing new wireless, high-speed communication services. Moreover, these applications demand low cost and low power consumption architecture. The ultra wideband FDDAC transmitter which can modulate 20 GHz of bandwidth will be implemented in GF 22 nm FDSOI CMOS technology. For this, 16 frequencies are needed to be generated simultaneously with 1.25 GHz spacing. A new approach needs to be investigated to generate 16 tones for FDDAC transmitter.

## Tasks

The task is to develop a multi tone frequency synthesizer with sub-ps jitter which consumes less power and occupies a smaller area than the present version. The tasks for the thesis include:

- Literature survey on mixer architectures.
- Implementation and system-level simulation of the mixer architecture in MATLAB/Simulink.
- Schematic and layout design of mixer in the state-of-the-art in GF 22 nm FDSOI technology.
- Documentation of design in Bachelor/Master Thesis.
- Paper publication is possible.



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