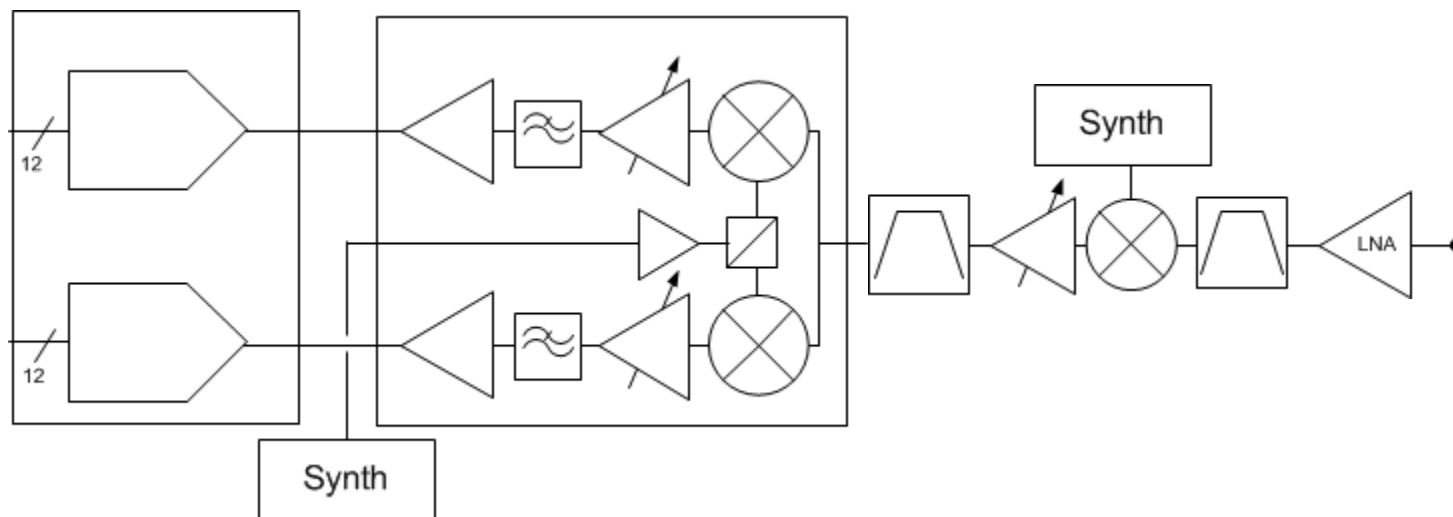


RF Sampling Architecture Overview

Russell Hoppenstein

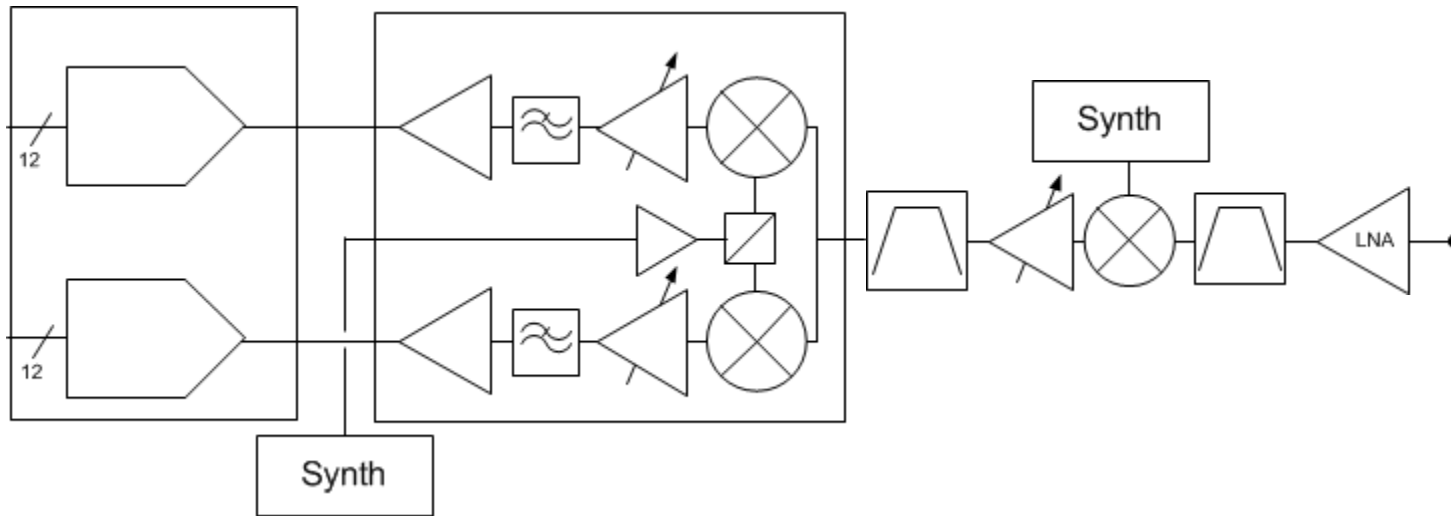
High Speed Data Converter Applications Manager

Traditional super heterodyne receiver



- Traditional architecture for measuring wide-bandwidth signals
 - Mixer down-converts RF/ μ -wave band to IF band
 - Quadrature demodulator down-converts IF to BB
 - Utilize dual ADC to capture I/Q signals
 - ADC sampling speed needed to support half bandwidth of original signal
- Key issues
 - 1st mixer stage tunes frequency to fixed IF band
 - BB I/Q amplitude/phase balance impact signal integrity

RF sampling receiver



- Eliminate
 - Quadrature demodulator
 - RF synthesizer
- Replace: Dual ADC with one RF-sampling ADC
- Supports:
 - Higher signal bandwidths
 - Direct sampling of RF bands

RF sampling architecture

- Spectral performance
 - Support wide-bandwidth signals (or multi-mode)
 - Support for very large bandwidths not previously obtainable due to ADC sampling rate limitations
- Size and power dissipation
 - Size and power dissipation improvement by eliminating mixer, RF synthesizer, and BB signal conditioning components
- Flexibility
 - Wide bandwidth signals, multi-band applications and DPD expansion bandwidth
 - Higher density systems (MIMO, beam-forming, radar arrays)
 - Easier implementation for multiple standards or configurations (SDR)

Questions?

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SLAW013

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