



FSR 0.2 Prototype Demonstration Board

30MHz – 7.2GHz Flexible-Spectrum Radio Transceiver Demonstration Module

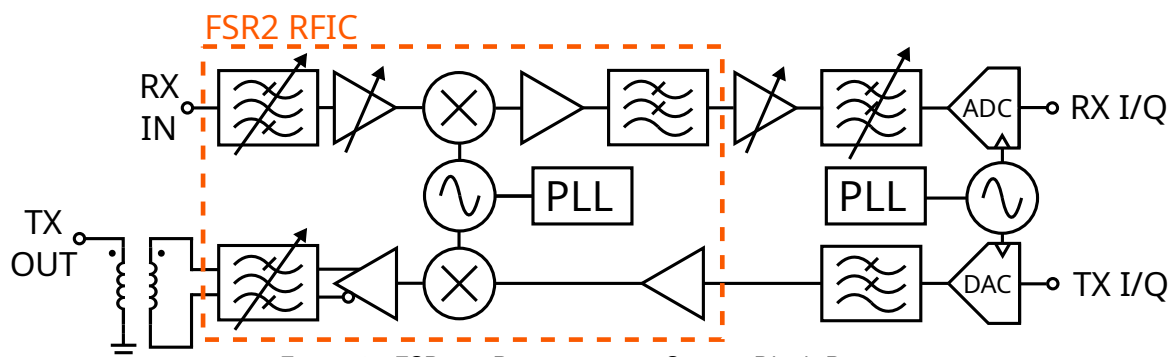
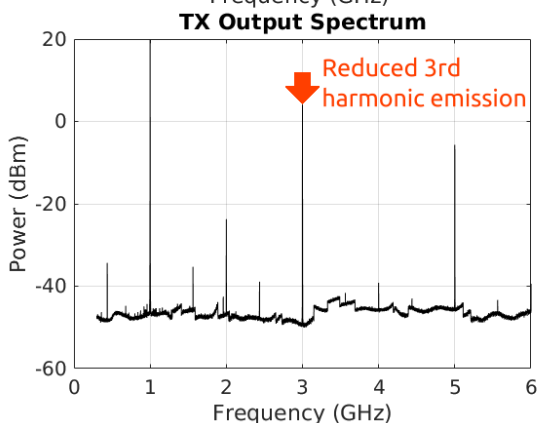
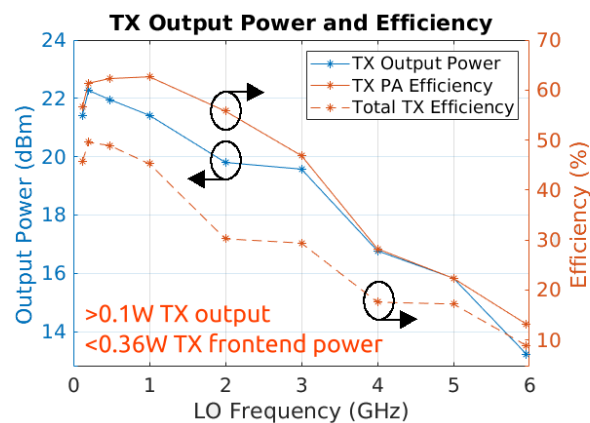
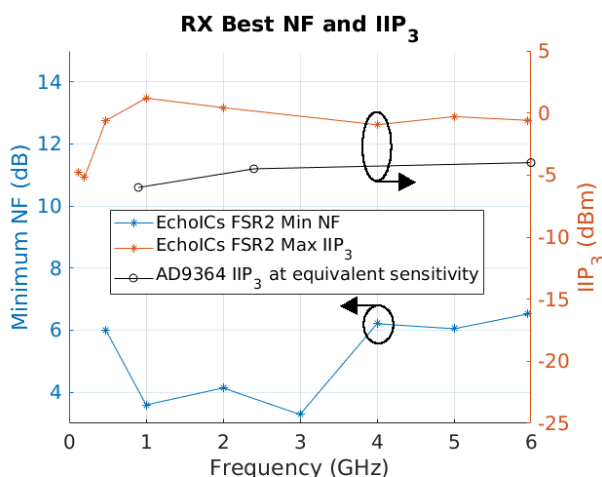
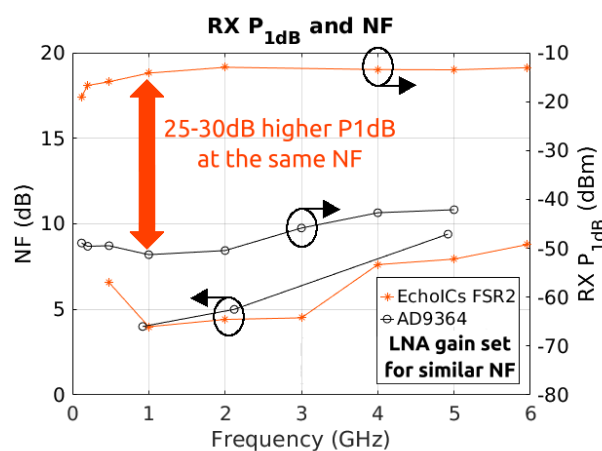


Figure 1: FSR 0.2 Demonstration System Block Diagram

Key Features:

- 30MHz – 7.2GHz operating frequency range
- High linearity RX with built-in tunable RF filter
- High output power ($>0.1W$), high drain efficiency ($>50\%$) Class $F_{2,3}$ integrated PA
- One-wire LO synchronization for simple phased array/MIMO operation
- Digital I/Q to RF solution with MATLAB backend
- Low frontend power consumption (RX $< 180mW$, TX $< 360mW$)



NOTE: EchoICs FSR 0.2 measurements reported at IC package.



Demonstration System:

- 1TX, 1RX FSR 0.2 prototype IC on RF breakout PCB (*pictured*)
- Data converter and control PCB w/FMC connector
- FPGA/MATLAB digital interface with GUI

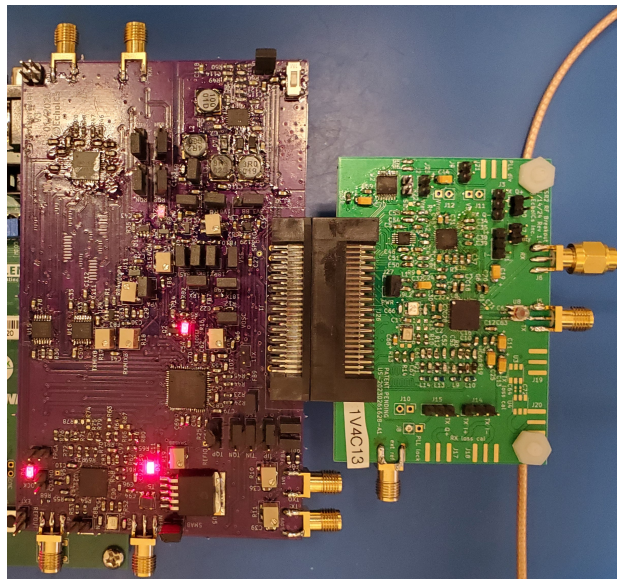


Figure 4: FSR 0.2 Demonstration RF Breakout PCB

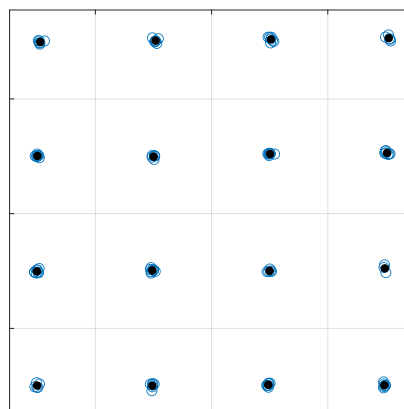
RF Solution Benefits:

- Reduce system component count through high integration
- Relax external RF amplifier and RF filter requirements
- 10x higher interference/jamming tolerance over competing flexible transceiver ICs
- 10x higher TX efficiency from transceiver IC – reduce power hungry RF amplification

Applications:

- SWAP-constrained software defined radio (SDR)
- Wideband/tunable active phased arrays
- Tactical communication handsets
- Small airborne system communications
- Distributed RF sensing/detection
- Electromagnetic Warfare (EW) signal generation

RX EVM = -35.7dB (Up to 1024 QAM)



TX EVM = -28.1dB (Up to 64 QAM)

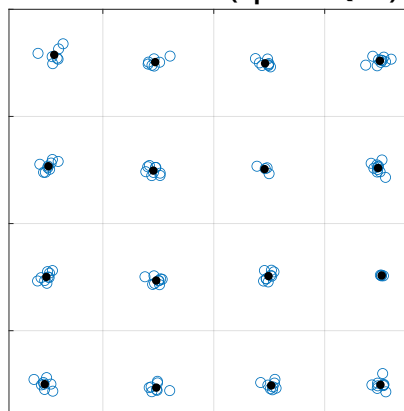


Figure 2: RX and TX EVM



Figure 3: Sample Applications