

A 1-V IEEE 802.11a/b/g-Compliant Receiver IF-to-Baseband Chip in 0.35-um CMOS for Low-Cost Wireless SiP

Motivation 1 – The Scope of Wireless Anywhere

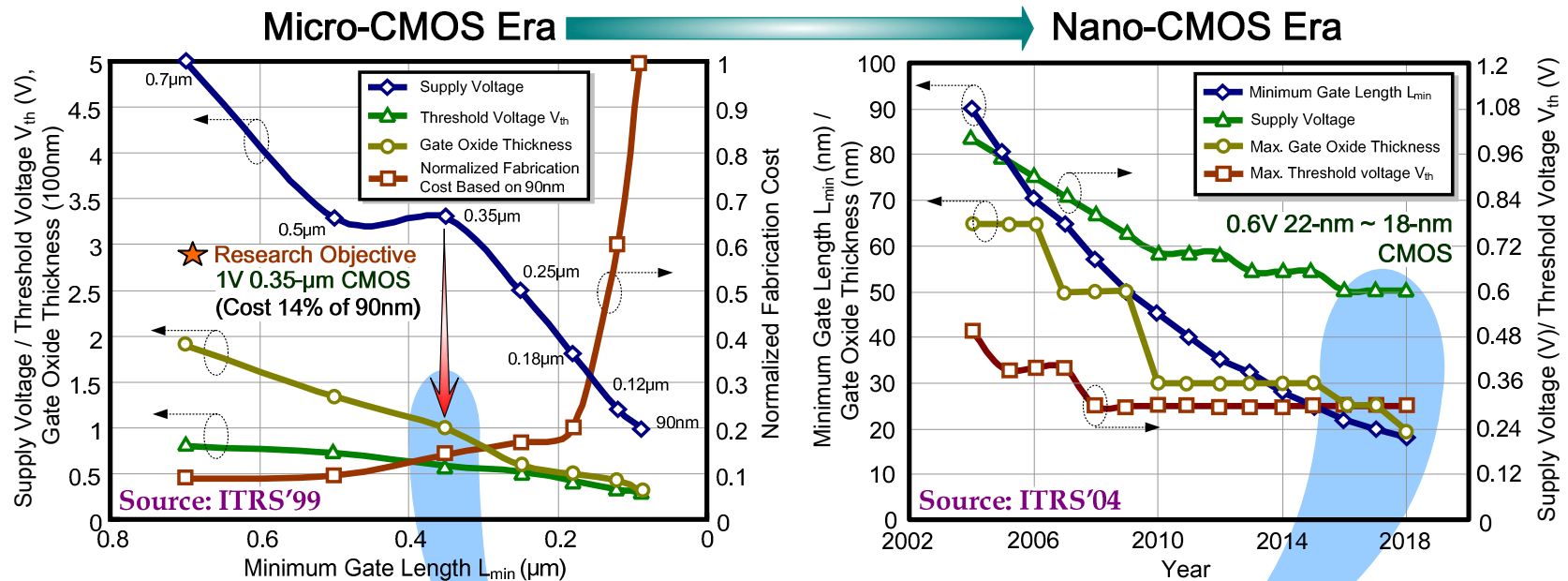


Roaming



GSM/WCDMA/.../802.11a-b-g/.../Bluetooth/...

Motivation 2 – Technology Scaling

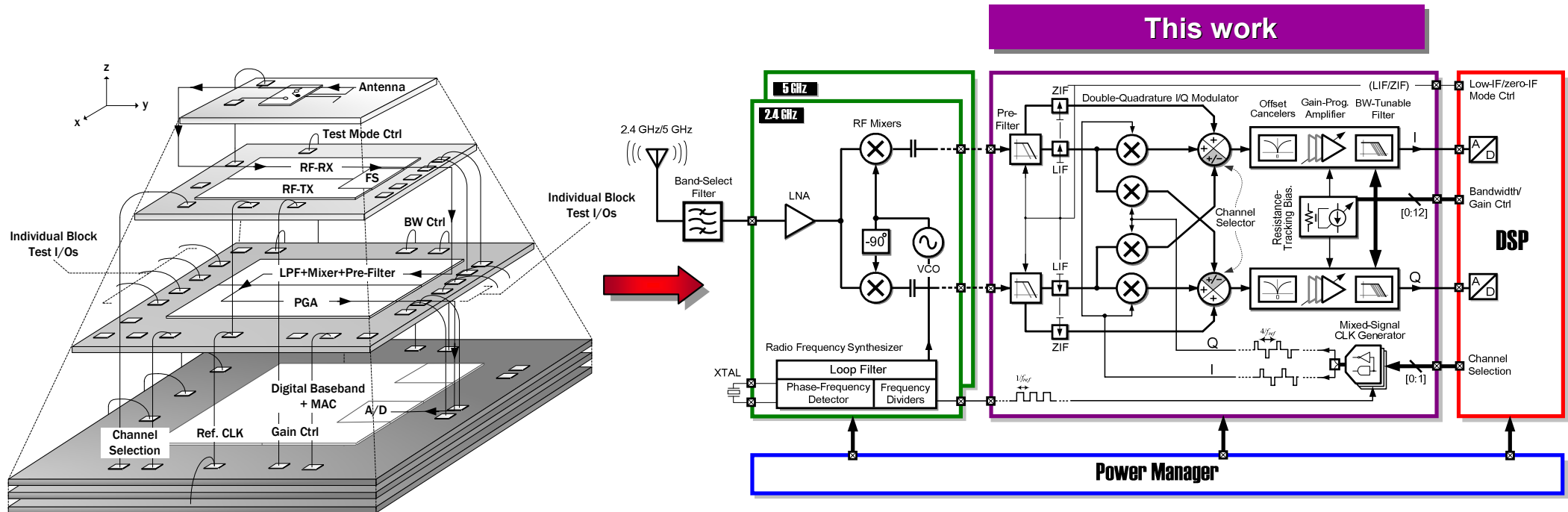


Similar Situation in "Voltage Headroom"

$$V_{th} \geq 50\% \text{ of Supply Voltage}$$

PROPOSED SOLUTIONS: Low-Cost Multistandard-Compliant Architecture + Technology-Independent Low-Voltage Implementation

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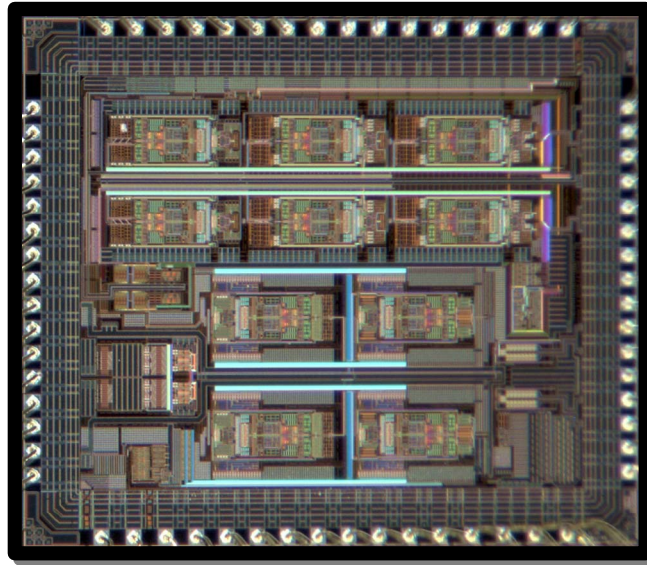
KEY FEATURES

- ◆ Low-IF/Zero-IF Reconfigurable for IEEE 802.11a/(b,g) ¹
- ◆ Constant-Bandwidth Programmable-Gain Amplifier ²
- ◆ I/Q-Mismatch-Insensitive Mixed-Signal Clock Generator
- ◆ Switchable DC-Offset Canceled Inside Op-Amp ²
- ◆ Bandwidth-Tunable Lowpass Filter
- ◆ Double-Quadrature I/Q Modulator

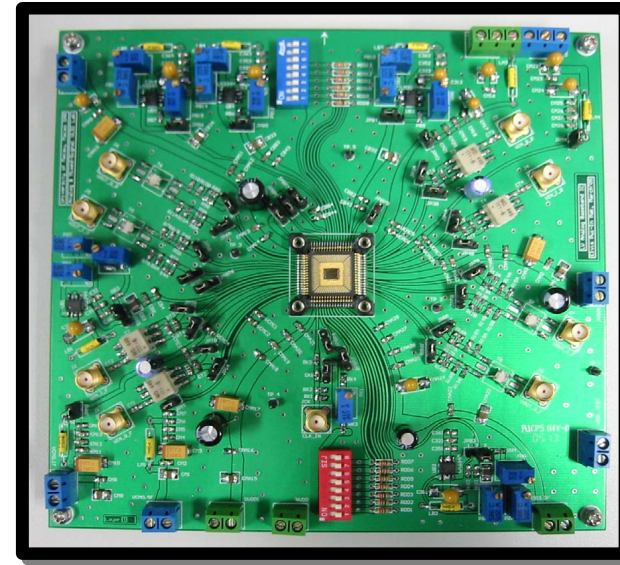
1. Pui-In Mak, Seng-Pan U and R. P. Martins, "Two-Step Channel Selection – A Novel Technique for Reconfigurable Multistandard Transceiver Front-Ends," *IEEE Transactions on Circuits and Systems-I, Regular Paper*, to be published.
2. Pui-In Mak, Seng-Pan U and R. P. Martins, "A 1-V Transient-Free and DC-Offset-Canceled PGA with a 17.1-MHz Constant Bandwidth over 52-dB Control Range in 0.35-μm CMOS," in *proceedings of IEEE Custom Integrated-Circuits Conf. (CICC)*, Sep. 2005, to be published.

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Chip



PCB



Parasitic-Extracted Simulation Results

