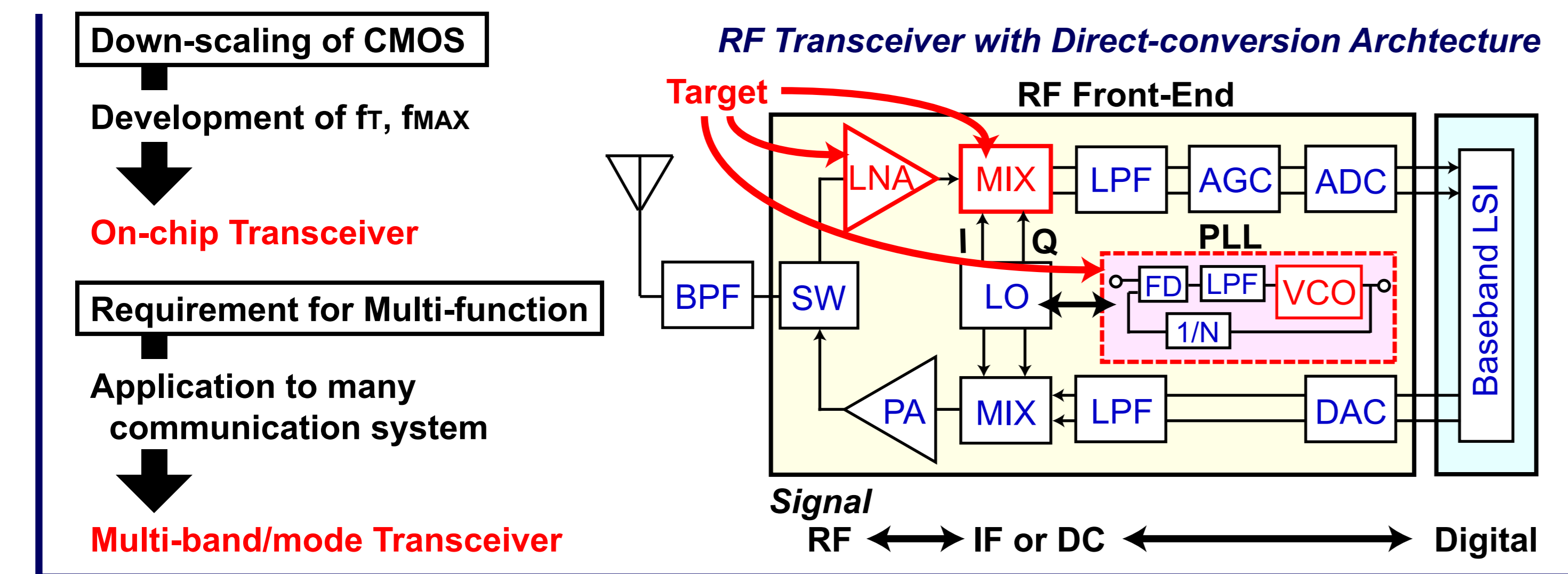


# 動的再構成可能なRF回路設計技術

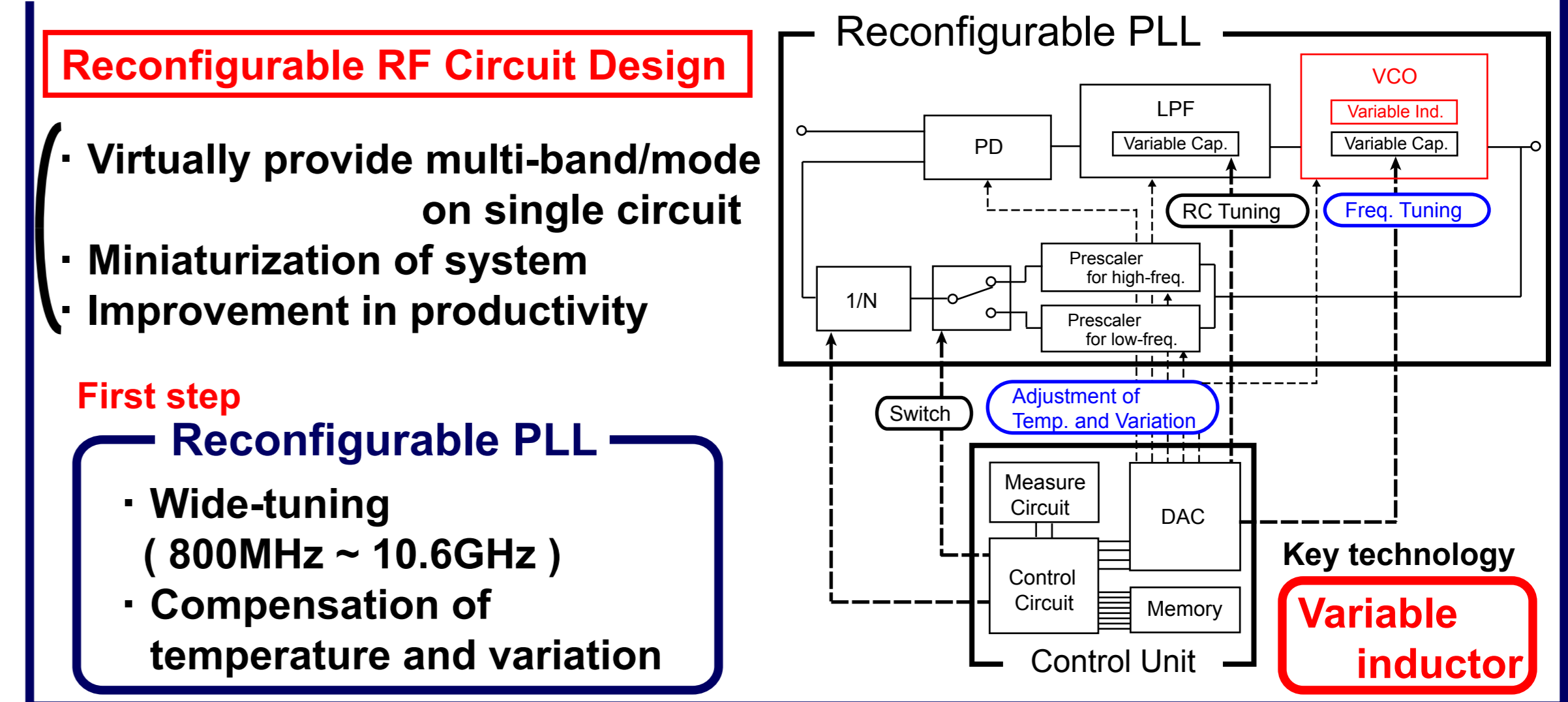
東京工業大学 精密工学研究所 益研究室  
吉原 義昭、菅原 弘雄、岡田 健一、益 一哉

## Background and Purpose

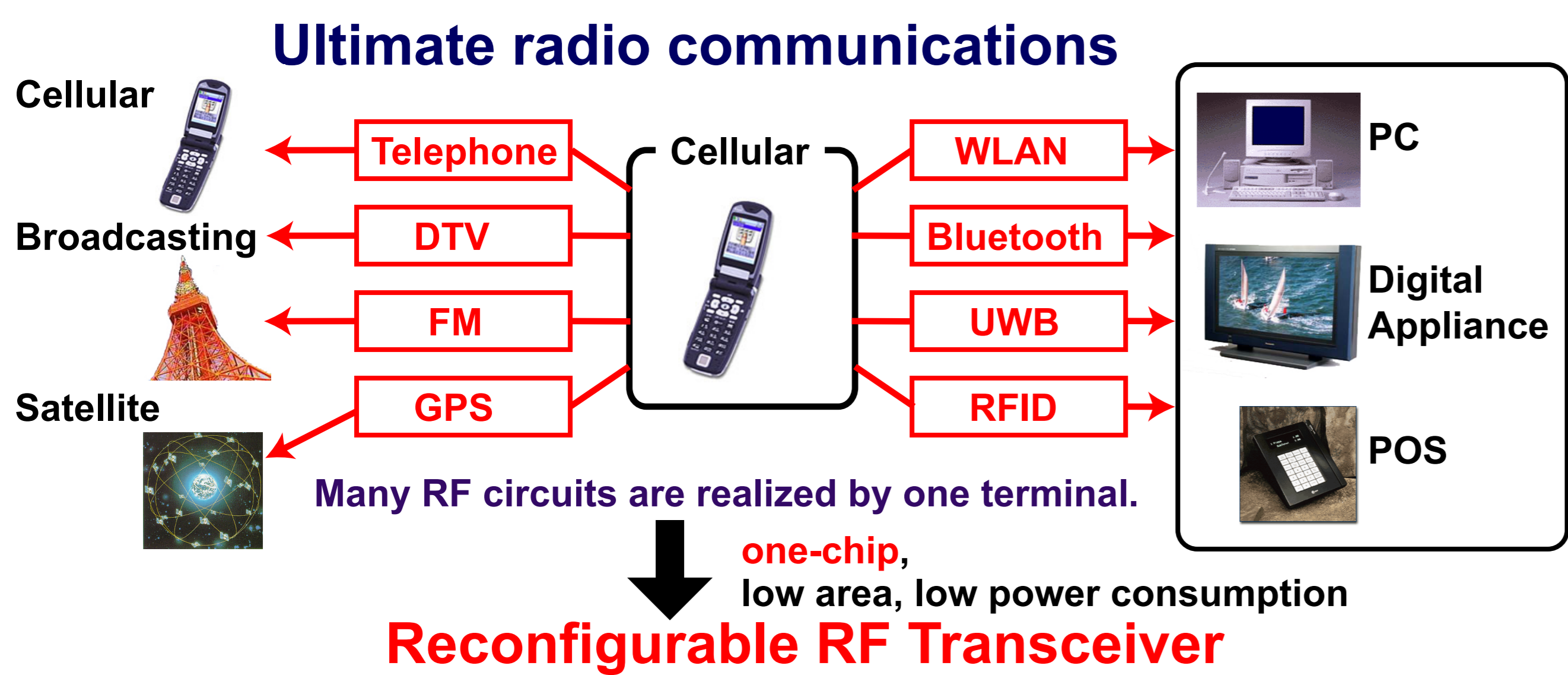
### Recent RF Transceiver



### Purpose



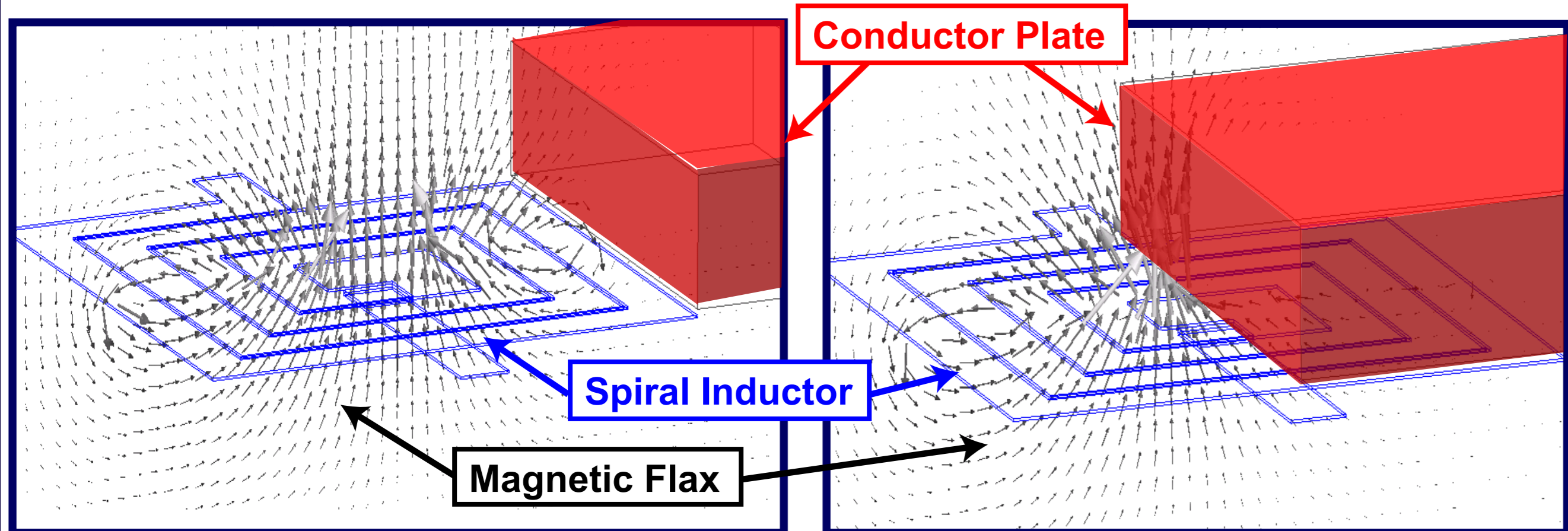
## Image of our Research



## Variable Inductor

### Principle of Variable Inductor

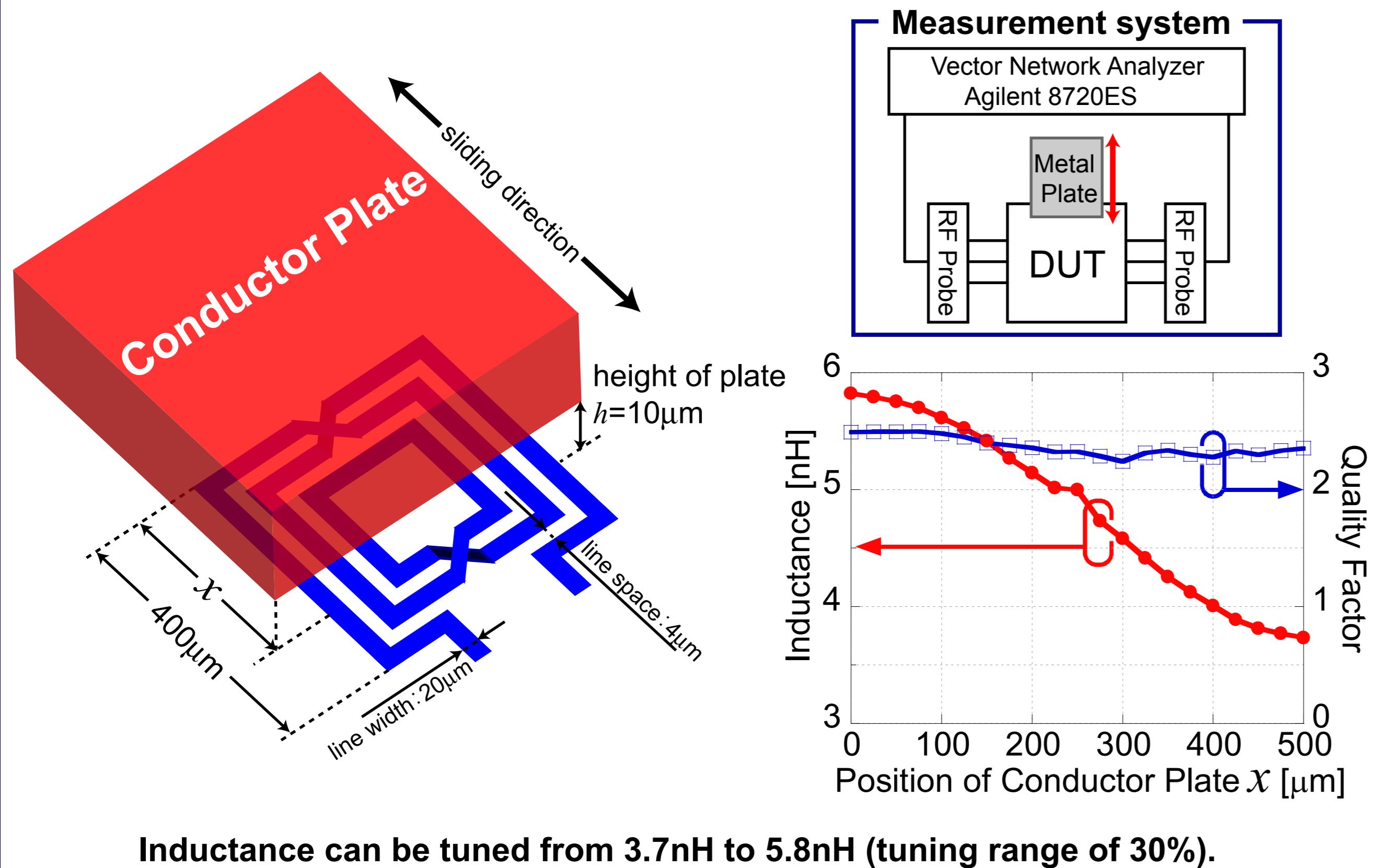
Inductance is tuned by insertint conductor plate above spiral inductor.



Conductor plate shields magnetic flux generated by inductor.

Change of magnetic flux results in change of inductance.

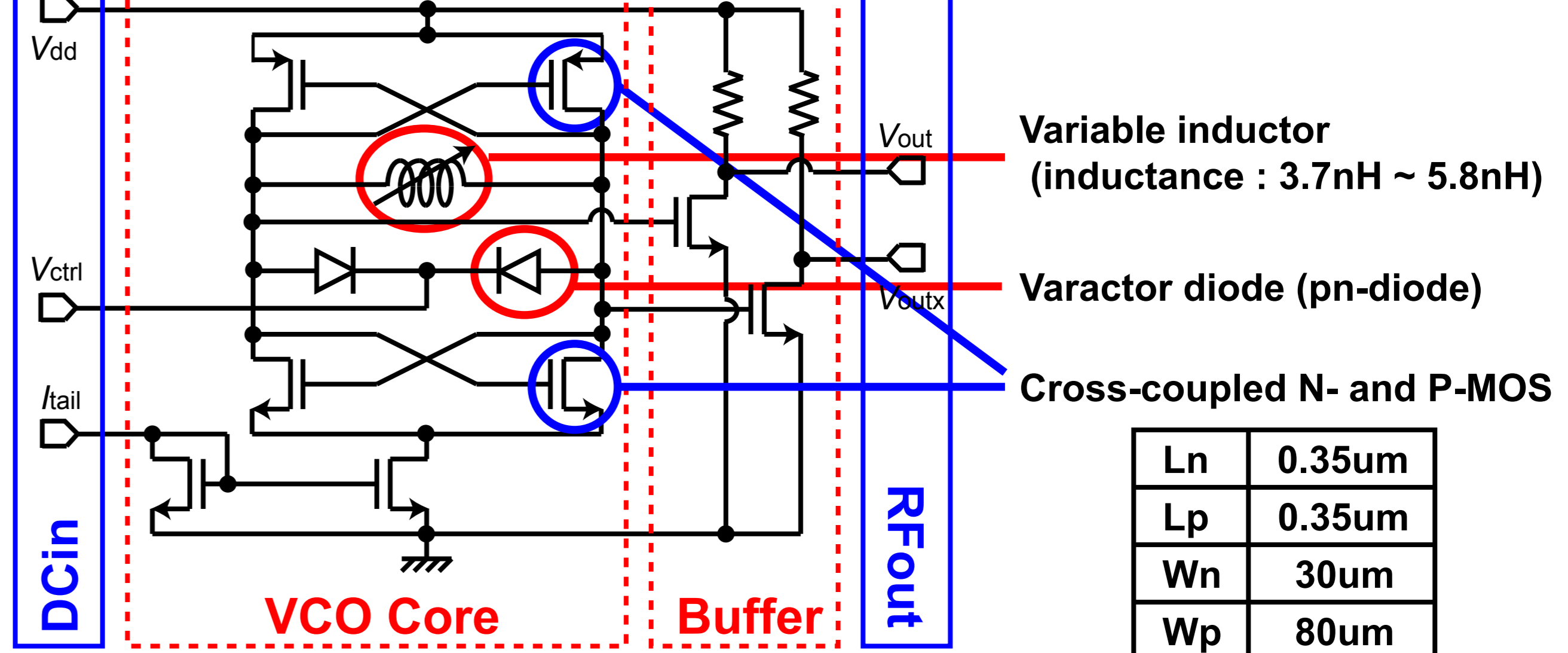
### Measurement Results



## Wide Tuning Range CMOS VCO

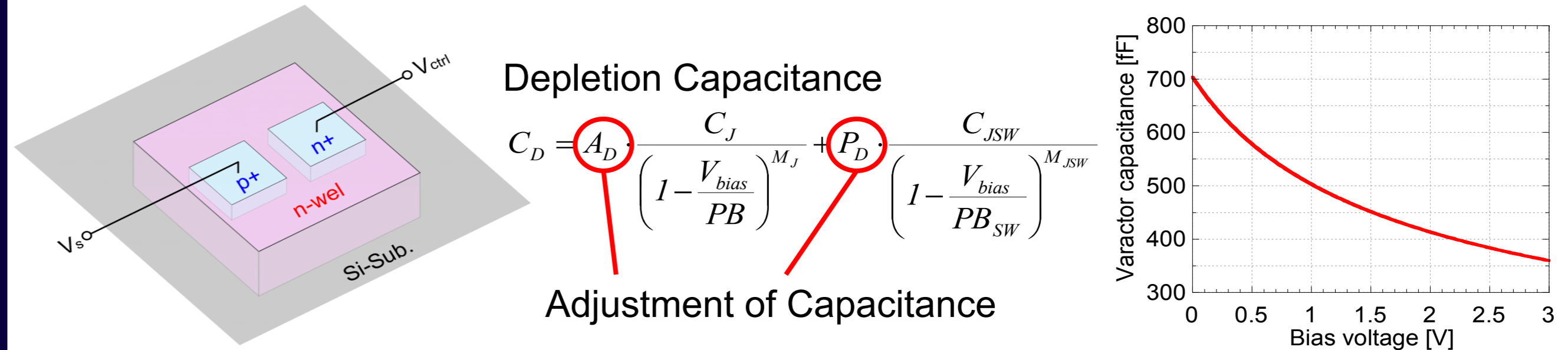
### LC-VCO Design

LC-VCO was designed using standard 0.35um CMOS process. (VDD : 3.3V Metal : 3 Layers)



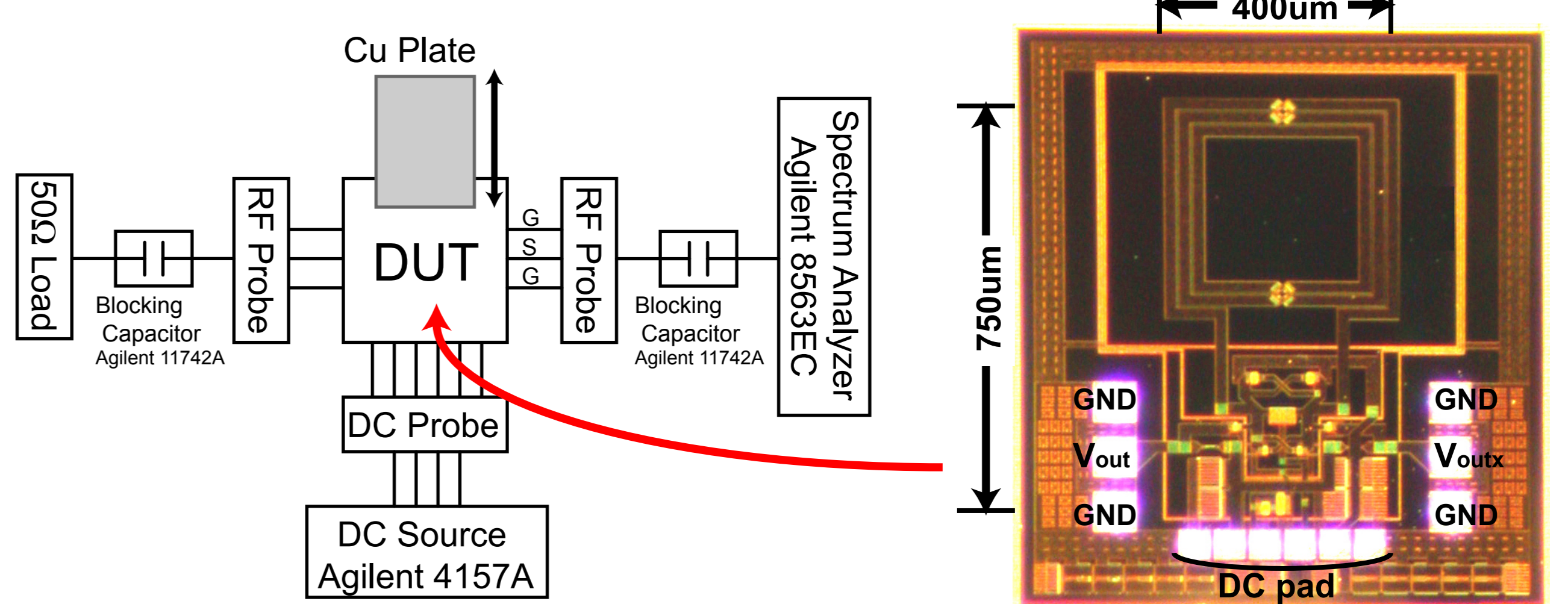
### Varactor for VCO

pn-diode as varactor (p+ diffusion in n-well biased through n+ diffusion)

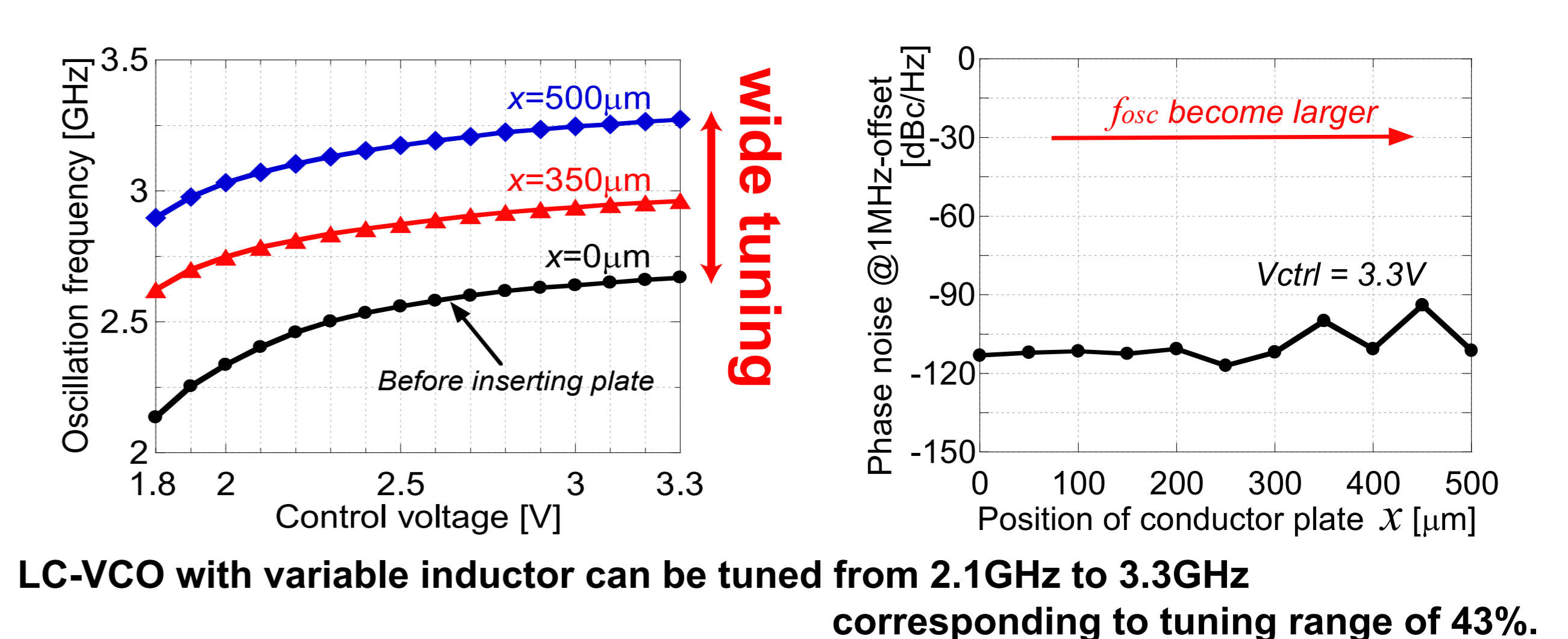


### Measurement and Chip Photo

Output was measured using spectrum analyzer.



### Measurement Results



## Conclusion and Futere Works

We designed Wide-tuning Range CMOS VCO using standard 0.35um CMOS Process.

Tuning range of 43% was achieved.

Phase noise was -113.1dBc/Hz at 1MHz-offset (2.6GHz)



**Design of Reconfigurable PLL and Wideband LNA for Reconfigurable RF Transceiver.**