ACTIVE RESONATOR SYSTEM WITH TUNABLE QUALITY FACTOR, FREQUENCY, AND IMPEDANCE

Tech ID: 24161 / UC Case 2014-182-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,530,337	01/07/2020	2014-182

BRIEF DESCRIPTION

The increasing role of wireless technology is driving the need for reducing power consumption of wireless devices. The high-Q SAW and FBAR vibrating mechanical devices used for current RF band-pass filters are responsible for significant power savings. Still, there is room for improvement.

To address this situation, researchers at UC Berkeley have developed an active resonator system with tunable quality factor, frequency, and impedance. Coupling two or more of these Berkeley resonators together enables construction of filters with arbitrarily small adjustable bandwidths and tunable insertion loss thereby achieving significant advantage over traditional filters constructed from passive resonators.

APPLICATIONS

All wireless applications including cellular handsets, Bluetooth devices, and future short range sensor networks.

ADVANTAGES

- Reduces power requirements and manufacturing costs
- Improves performance of existing wireless systems
- Allows narrow bandwidth operation
- Increases yield and simplifies trimming requirements

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INVENTORS

- Nguyen, Clark Tu-Cuong

OTHER INFORMATION

CATEGORIZED AS

- **Communications**
  - Wireless
- **Computer**
  - Hardware
- **Environment**
  - Sensing
- **Sensors & Instrumentation**
  - Biosensors
  - Environmental Sensors

RELATED CASES

2014-182-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Zero-Quiescent Power Transceiver
- High Electromechanical Coupling Disk Resonators
- Micromechanical Frequency Divider
- RF-Powered Micromechanical Clock Generator
- Piezoelectric Filter with Tunable Gain

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