Low-Power Digital Switching Technique to Eliminate RF Interference

Tech ID: 30589 / UC Case 2019-429-0

BACKGROUND

Software defined radio techniques require digital signal processing. Digital switching in the radio frequency (RF) environment generates unwanted harmonics and adjacent channel interference. Resolving these issues requires expensive analog filtering or digitally intensive and power-hungry methods such as raised cosine filters, sigma-delta modulation, and digital predistortion.

DESCRIPTION

Researchers at the University of California, Santa Barbara have discovered a power digital, low-complexity switching technique for managing out of band signal leakage and switching harmonics. By adding precise switching intervals on the edges of each digital transition, the unwanted interference is eliminated allowing the digital RF front-end to be standards-compliant wideband at lower power consumption than sigma-delta modulation. This technique can also be executed with lower system requirements than the current industry alternatives.

ADVANTAGES

- Improved RF signal integrity
- Standard-compliant wireless transmission
- Reduced power consumption
- Wideband software-defined radio

APPLICATIONS

- 5G networks - New Radio
- Internet of Things (IOT)
- Software-defined radio
- RF signal generation

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	WO 2020/242778	12/03/2020	2019-429

Patent Pending

CONTACT

Pasquale S. Ferrari
ferrari@tia.ucsb.edu
tel: .

OTHER INFORMATION

KEYWORDS

5G, Network, Radio, RF, Wireless, SDR, IOT, Internet of things, New radio

CATEGORIZED AS

- **Communications**
  - Internet
  - Networking
  - Optical
  - Other
  - Wireless
- **Computer**
  - Hardware
- **Semiconductors**
  - Design and Fabrication

RELATED CASES

2019-429-0

RELATED MATERIALS

- A Code-Domain RF Signal Processing Front End With High Self-Interference Rejection and Power Handling for Simultaneous Transmit and Receive - 05/01/2020

University of California, Santa Barbara
Office of Technology & Industry Alliances
342 Lagoon Road, ,Santa Barbara,CA 93106-2055 |
www.tia.ucsb.edu
Tel: 805-893-2073 | Fax: 805.893.5236 | padilla@tia.ucsb.edu

© 2019 - 2023, The Regents of the University of California
Terms of use
Privacy Notice