

# Passive Wideband Interferometer Enabled Error Feedback Transmitter

Tech ID: 27442 / UC Case 2014-998-0

#### **ABSTRACT**

Researchers at the University of California, Davis have designed a high spectral purity error feedback transmitter.

# **FULL DESCRIPTION**

Increasing data rates in wireless communications requires a wider, more efficient spectrum. Feedback loops improve the linearity of a signal but increase the linearity requirements for the feedback. Current communication systems use complex modulation schemes that, due to the indirect correlation between signal gain and distortion, result in a high signal peak-to-average power ratios and stringent noise emission requirements. Therefore, there is a need to design a circuit that can cancel the feedback signal and leave high spectral purity feedback information.

Researchers at the University of California, Davis have developed a passive wideband interferometer enabled error feedback transmitter with high spectral purity. The passive wideband interferometer allows for suppression of signal distortion while maintaining signal gain capabilities, preserving linearity in a feedback loop. This design also suppresses noise created by the loop gain and can suppress a signal before it is fed into the circuit.

#### **APPLICATIONS**

► Error feedback transmitter

### FEATURES/BENEFITS

- Decouple signal gain from error suppression
- Suppress noise
- ► Suppress nonlinearity with a higher gain
- ► Support high linear output power

#### **PATENT STATUS**

| Country                  | Туре                 | Number     | Dated      | Case     |
|--------------------------|----------------------|------------|------------|----------|
| United States Of America | <b>Issued Patent</b> | 10,205,473 | 02/12/2019 | 2014-998 |

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#### **INVENTORS**

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# OTHER INFORMATION

#### **KEYWORDS**

feedback transmitter,
passive wideband
interferometer, noise
suppression, linearity

#### **CATEGORIZED AS**

- **Communications** 
  - ▶ Other
  - Wireless
- Sensors &

# Instrumentation

Other

#### RELATED CASES

2014-998-0

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ► High-Efficiency Broadband Doubler
- ▶ Hybrid SPST Switch Delivers High Isolation Over an Ultra-wide Bandwidth
- ▶ Nonlinearity Factorization for Up-Conversion Mixer Linearity Analysis

- ▶ Passive Coupling Balance Scheme for Long Traveling Complex Differential Signals
- ► Frequency Discriminator-based Phase Noise Filter (PNF) for Ultra-Clean LO/Clock

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