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## **300MHz to 9GHz High Linearity I/Q Demodulator Supports 1GHz Bandwidth & Achieves up to 60dB Image Rejection**

NORWOOD, MA – February 22, 2018 – [Analog Devices](#) announces [LTC5594](#), a wideband, high linearity true zero-IF (ZIF) demodulator with 1GHz instantaneous I and Q 1dB bandwidth. The demodulator is capable of 37dB image rejection typical. Using the on-chip serial port, the device allows correction of the I and Q phase and amplitude imbalance, hence can be tuned to achieve an image rejection of better than 60dB. This feature greatly eases calibration while significantly improving receiver performance and reducing FPGA resources needed to null the residual image. In addition, the device has integrated baseband amplifiers with adjustable gain, providing a maximum power conversion gain of 9.2dB at 5.8GHz, while delivering 37dBm output IP3 performance. The RF input has an integrated wideband balun transformer, allowing single-ended operation with 50Ω matching from 500MHz to 9GHz. The same input can be matched at lower frequencies from 300MHz to 500MHz by changing one external matching component value. Its high level of integration results in minimum external components and small solution size.

- View the [LTC5594 product page](#), download data sheet, order samples and evaluation boards: [www.linear.com/product/LTC5594](http://www.linear.com/product/LTC5594)

By using the on-chip serial port, all the calibration can be easily set. Besides image rejection, the linearity performance including IP2 (2<sup>nd</sup> order intercept), HD2 (2<sup>nd</sup> order harmonic distortion), HD3 (3<sup>rd</sup> order harmonic distortion), and IIP3 can also be optimized. Moreover, the output DC offset voltage can be nulled via the serial port to allow DC coupling to the ADC for true ZIF operation. Once calibrated at room temperature, these performance metrics are remarkably stable at cold or hot, right up to the rated temperature extremes from –40°C to 105°C case.

The LTC5594 is ideally suited for 5G microwave wireless infrastructure platforms that require 1GHz or more bandwidth, and dynamic range performance to support the

high order modulation and gigabit data rates required. In addition, the device benefits other applications such as broadband microwave point-to-point backhaul, high performance GPS systems, satellite communications, aircraft avionics, RF test equipment and radar systems. Its superb linearity and image rejection performance are particularly compelling for DPD (digital pre-distortion) receiver applications.

The LTC5594 is offered in a 32-lead, 5mm x 5mm plastic QFN package. The demodulator is powered from a single 5V supply, drawing a nominal 470mA current. The baseband amplifiers can be selectively disabled, so the demodulator can run on 250mA current. An enable pin allows an external controller to shut down the device. When disabled, the device typically draws 20µA supply current. Samples and production quantities are available immediately. For more information, go to [www.linear.com/product/LTC5594](http://www.linear.com/product/LTC5594).

### Summary of Features: LTC5594

- Matched RF Input Frequency 500MHz to 9GHz
- I & Q Baseband Bandwidth (1dB) 1GHz
- Image Rejection 37dB Typical  
With Calibration 60dB Typical
- High Output IP3 37dBm at 5.8GHz
- Adjustable Gain 8dB in 1dB Steps
- Max Power Gain 9.2dB @5.8GHz

### Pricing & Availability

Product	Production Availability	Price Each Per 1,000	Package
<a href="#">LTC5594</a>	Now	Starts at \$15.70	32-Lead, 5mm x 5mm Plastic QFN

### About Analog Devices

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**Contacts:**

John Hamburger  
Analog Devices, Inc.  
[john.hamburger@analog.com](mailto:john.hamburger@analog.com)  
Tel: 408-432-1900 ext 2419

Doug Dickinson  
Analog Devices, Inc.  
[douglas.dickinson@analog.com](mailto:douglas.dickinson@analog.com)  
Tel: 408-432-1900 ext 2233