I/Q Sampling Digital Predistortion Receiver Enables Acquisition of 300MHz Bandwidth in Base Station Applications

MILPITAS, CA – April 15, 2013 – Linear Technology introduces the LTM9013, a wideband RF-to-digital µModule® (micromodule) receiver that includes a high performance dual 14-bit, 310Msps analog-to-digital converter (ADC), a high IIP3 I/Q demodulator, two variable gain amplifiers, and 300MHz lowpass filters. The LTM9013's quadrature sampling architecture enables acquisition of up to 300MHz of signal bandwidth with IMD3 performance of 66dB across the entire band. The receiver is targeted for wideband, low IF receivers and wireless base stations implementing power amplifier (PA) linearization with digital predistortion (DPD). The LTM9013 leverages years of applications design expertise to offer high integration, ease of use, with repeatable and guaranteed system performance to increase production yields and time to market.

Due to increasing data demands from mobile users, next-generation base stations are now architected to achieve much higher transmit bandwidths of up to 60MHz. To linearize a transmit bandwidth of 60MHz, the predistortion feedback loop for the linearization algorithm must acquire fifth order intermodulation products out to 300MHz. Digitizing the fifth order intermodulation distortion requires a very wide bandwidth, low noise receiver with an exceptionally flat passband. The LTM9013 includes a 300MHz lowpass filter that exhibits less than 1.3dB passband ripple across the entire band. Since DPD is a feedback loop, the receiver (also called a transmit observation path receiver) benefits from low latency; a faster loop leads to

better efficiency in the PA and therefore even lower power consumption. The ADC in the LTM9013 has just 5 clock cycles of latency.

The LTM9013 is packaged in a space-saving 15mm × 15mm ball grid array (BGA) package, utilizing a multilayer substrate that shields sensitive analog lines from the digital traces to minimize digital feedback. Supply and reference bypass capacitance is placed inside the µModule package, tightly coupled to the die, providing space, cost and performance advantages over traditional packaging.

The LTM9013 is priced starting at $65.00 each in 1,000 piece quantities. Demo boards, samples and more information are available at www.linear.com/product/LTM9013.

Photo Caption: 300MHz Digital Predistortion µModule® Receiver

Summary of Features: LTM9013

- Integrated I/Q Demodulator, IF Amplifier, & Dual 14-Bit, 310Msps High Speed ADC
- External High Pass Filter Allows Bandwidth adjustment
- 300MHz Low Pass Filter for Each Channel
- RF Input Frequency Range: 0.7GHz to 4.7GHz
- 50Ω Single-Ended RF Port
- 50Ω Differential LO Port
- Frequency Flatness: 1.3dB Typical
- 66dBc IM3 Level at -7dBFS
- 59dB SNR at -1dBFS
- Parallel DDR LVDS Outputs
- 15mm x 15mm BGA Package

About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs, µModule®subsystems, and wireless sensor network products. For more information, visit www.linear.com

.

Press Contacts:

North America / Worldwide

John Hamburger, Director Marketing Communications
jhamburger@linear.com
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager
ddickinson@linear.com
Tel: 408-432-1900 ext 2233

UK & Nordic

Alan Timmins
alan@ezwire.com
Tel: +44-1-252-629937