



Wideband I/Q Demodulator with IIP2 Optimization & DC Offset Cancellation Improves Receiver Performance

MILPITAS, CA – January 30, 2012 – Linear Technology announces the [LTC5585](#), an ultrawide bandwidth direct conversion I/Q demodulator with outstanding linearity performance (IIP3 = 25.7dBm and IIP2 = 60dBm at 1.95GHz). The device is capable of baseband output demodulation bandwidth of over 530MHz, which can support new generation wideband LTE multimode receivers' and digital pre-distortion (DPD) receivers' bandwidth requirements. The I/Q demodulator operates over a wide frequency range from 700MHz to 3GHz, covering virtually all cellular base station frequency bands. Unique to this device are two built-in calibration features. One is advanced circuitry that enables the system designer to optimize the receiver's IIP2 performance, increasing from a nominal 60dBm to an unprecedented 80dBm or higher. The other is on-chip circuitry to null out the DC offset voltages at the I and Q outputs. Both serve to enhance receiver performance. Moreover, the LTC5585 delivers excellent P1dB of 16dBm.

To further enhance its use in direct conversion receiver applications, the LTC5585 offers very low I/Q amplitude and phase mismatch. The amplitude mismatch is typically 0.05dB, while the phase error is typically 0.7 degree, both measured at 1.95GHz. This combination produces a receiver image rejection capability of 43dB.

Because of its very wide bandwidth capability, the LTC5585 is especially well suited for multimode LTE, W-CDMA and TD-SCDMA base stations DPD receivers as well as for main receiver applications. Particularly for DPD, these latest generation base stations are pushing demodulation bandwidth of over 300MHz. The LTC5585 can be easily configured to meet these bandwidth challenges. Beyond wireless infrastructure applications, the LTC5585 is ideal for applications in military receivers, broadband communications, point-to-point microwave data links, image reject receivers and long-range RFID readers.

The LTC5585 has an on-chip RF transformer to reduce external components, providing a highly compact solution with its 24-lead 4mm x 4mm QFN package. The device is specified for case operating temperature from -40°C to 105°C.

The LTC5585 is powered from a single 5V supply, drawing a total supply current of 200mA. The device provides a digital input to enable or disable the chip. When disabled, the IC draws typically 11µA of leakage current. The demodulator's fast turn-on time of 200ns and turn-off time of 800ns enables it to be used in burst mode receivers. The LTC5585 is priced starting at \$5.98 each in 1,000-pieces quantities. Production quantities are now immediately available. For more information, visit www.linear.com/product/LTC5585.

Photo Caption: Wideband High Linearity I/Q Demodulator

Summary of Features: LTC5585

Operating Frequency	700MHz – 3GHz
Input IP3 (1.95GHz)	25.7dBm
Input IP2 (unadjusted)	60dBm
Input IP2 (adjusted)	80dBm
Conversion Gain	2.4dB
Noise Figure (NF)	12.7dB
I/Q Amplitude Mismatch	0.05dB
I/Q Phase Mismatch	0.7°

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, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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