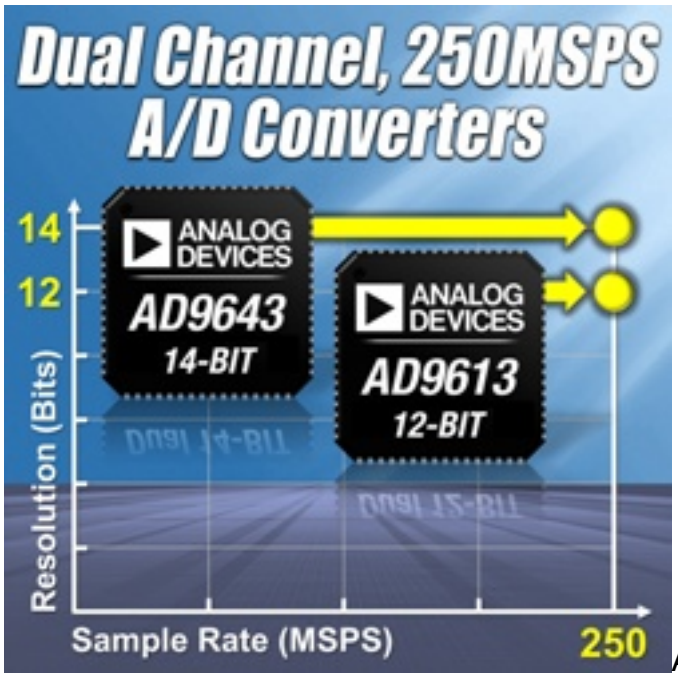
Data Converters and IF Diversity Receivers Enhance Base Station Performance



Analog Devices (ADI) introduced four high-speed data converter products that support signal sampling rates necessary to accommodate multi-carrier radio platform requirements for today's 3G and 4G cellular infrastructure communication standards, including CDMA2000, UMTS/LTE, TD-SCDMA and TD-LTE.

Analog Devices' AD6649 and AD6643 IF diversity receivers and AD9643 and AD9613 high-speed A/D converters complement other receive chain components to simplify control loops and maximize base station receiver sensitivity and dynamic range. When paired with ADI's dual-channel ADL5202 VGA (variable gain amplifier), the AD6649 IF receiver ensures that both weak and strong incoming cell phone call signals are effectively received and processed. The VGA is directly controlled by the AD6649 which can use the 1-dB gain step resolution in a simplified AGC (automatic gain control) loop.

- Download data sheets and order samples:
  - AD6649 IF diversity receiver www.analog.com/AD6649 [1]
  - AD6643 IF diversity receiver www.analog.com/AD6643 [2]
  - AD9643 14-bit A/D converter www.analog.com/AD9643 [3]
  - AD9613 12-bit A/D converter www.analog.com/AD9613 [4]
  - ADL5202 VGA www.analog.com/ADL5202 [5]
- Learn more about ADI's communications solutions: http://communications.analog.com/en/segment/cmmn.html [6]

About the AD6649 and AD6643 IF Diversity Receivers

The AD6649 is the industry's first IF diversity receiver [7] able to monitor the incoming signal power and adjust the VGA gain setting directly without the need for a microprocessor. The AD6649 integrates many of the functions required for a diversity receive path in a single device, including an ultra-low-latency peak detector and a rms signal power monitor. There is also an integrated DDC (digital down converter) that includes a 32-bit NCO (numerically controlled oscillator), a decimating half-band filter and an output FIR (finite-impulse response) filter that provides an effective band-pass filtering function and reduces the output rate.

The AD6643 is an IF diversity receiver for cost-sensitive applications that integrates two high performance A/D converters and noise shaping requantizer (NSR) digital blocks. The integrated NSR circuitry allows for improved SNR (signal to noise ratio) performance in a smaller frequency band within the Nyquist bandwidth. With the NSR feature enabled, the outputs of the A/D converters are processed such that the AD6643 supports enhanced SNR performance within a limited portion of the Nyquist bandwidth while maintaining 11-bit output resolution. The NSR block can be programmed to provide a bandwidth of either 22 percent or 33 percent of the sample clock.

About the AD9643 and AD9613 High Speed A/D Converters

For wideband, multi-carrier wireless communications applications that require only a dual A/D converter function without DDC functionality due to cost or size constraints, ADI introduced the AD9643 14-bit A/D converter with sampling speeds up to 250 MSPS. The AD9643 A/D converter features a multi-stage, differential pipelined architecture with integrated output error correction logic. Wide bandwidth inputs support a variety of user-selectable input ranges, while an integrated voltage reference eases design considerations. Programming for setup and control are handled using a three-wire SPI-compatible serial interface. ADI also released today the 12-bit, pin-compatible AD9613 A/D converter, which achieves sampling speeds up to 250 MSPS.

Source URL (retrieved on *04/20/2014 - 11:55pm*):
http://www.ecnmag.com/products/2011/05/data-converters-and-if-diversity-receivers-enhance-base-station-performance

Links:
[1] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fwww.analog.com%2FAD6649&esheet=6734491&lan=en-US&anchor=www.analog.com%2FAD6649&index=8&md5=1f9c7f68b40af60f0a25c281d5e745a1
[2] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fwww.analog.com%2FAD6643&esheet=6734491&lan=en-US&anchor=www.analog.com%2FAD6643&index=9&md5=17532b73d6e539980c87e351

ebdbb55b
[3] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fwww.analog.com%2FAD9643&esheet=6734491&lan=en-US&anchor=www.analog.com%2FAD9643&index=10&md5=ddadfece9396f62e1e9ea287241c765d
[4] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fwww.analog.com%2FAD9613&esheet=6734491&lan=en-US&anchor=www.analog.com%2FAD9613&index=11&md5=787874a000c5d1b664bcca751c92095f
[5] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fwww.analog.com%2FADL5202&esheet=6734491&lan=en-US&anchor=www.analog.com%2FADL5202&index=12&md5=2865dece7980c71fad35810836959ca9
[6] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fcommunications.analog.com%2Fen%2Fsegment%2Fcmmn.html&esheet=6734491&lan=en-US&anchor=http%3A%2F%2Fcommunications.analog.com%2Fen%2Fsegment%2Fcmmn.html&index=13&md5=cfc1a3f17d7a5907b4a750d16371d5bf
[7] http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fwww.analog.com%2FAD6649&esheet=6734491&lan=en-US&anchor=IF+diversity+receiver&index=14&md5=6e3295b956ae122a11ef3f24160b2b81