Multi Mode Transceiver

Sequoia Communications announces SEQ-5400, a single-chip, multi mode WEDGE (WCDMA, HSDPA, EDGE, GPRS, GSM) RF transceiver based on Sequoia Communications' FullSpectra&#153 polar architecture. This transceiver will lower the cost and increase the battery life of 3G phones, addressing the primary obstacles in the mass adoption of 3G technologies by consumers.

The SEQ-5400 chip is a fundamental breakthrough in RF IC technology. It is a true multi mode transceiver using a common basic architecture so that circuitry can be shared across all modes. Polar modulation, the standard architecture in GSM, which is also now being adopted in EDGE, has been successfully implemented for WCDMA. The RF section is one area for the next generation mobile handsets that designers have been focusing on to streamline cost and reduce power consumption. Sequoia Communications' FullSpectra architecture solves this RF design dilemma and delivers the highest impact in WCDMA, where power consumption and complexity are currently problematic.

With its innovative architecture, the SEQ-5400 reduces the complexity of multi mode handsets. The product handles WCDMA, HSDPA, EDGE, GPRS, GSM modes across five frequency bands, making it applicable to all networks worldwide. It achieves a high level of integration: everything from the baseband interface up to the PA is integrated into a single chip, including the WCDMA receive SAW filters.

The transmitter architecture uses Sequoia Communications' direct synthesis approach. It is a form of polar modulation that provides great flexibility while dramatically reducing power consumption. SEQ 5400 employs the FullSpectra polar modulation approach for both WCDMA and EDGE modulations. Harmonizing the architecture for both WCDMA and EDGE enables Sequoia Communications to create the most optimized chip while extending the benefits of polar modulation to WCDMA. To reduce board size and BOM count, the SEQ 5400 integrates the low-noise amplifiers (LNAs), driver amplifiers, RF synthesizers, receiver and transmit voltage-controlled oscillators (VCOs) and channel filtering. Sequoia Communications' technology makes it possible to eliminate any image reject filters in the receiver.

This single-chip transceiver includes the following features:

&#149 Multi mode and multi-band
&#149 WCDMA (2100) with HSDPA
&#149 EDGE / GPRS / GSM (850 / 900 / 1800 / 1900)
&#149 Polar Modulation transmitter (all modes)
&#149 Direct conversion receiver
&#149 Integrated filters including WCDMA Rx
&#149 Standard analog I/Q interface
&#149 Low current consumption
&#149 Small RF footprint
&#149 8 &#215 8 mm 64-pin QFN package
&#149 Total RF BOM &#149 Total RF board area &lt 5.5 cm^2 (including TCXO and shields)
&#149 Includes companion chip for Rx Diversity
&#149 0.18 &#181m SiGe BiCMOS (IBM process technology)

SEQ-5400 reduces overall component count and PCB area. It contains a flexible analog interface to the baseband with a very simple upgrade path to DigRF when that standard is ratified for 3G. The transceiver already includes the filtering and data converters required by the DigRF standard. The product also interfaces to standard linear power amplifiers. The SEQ-5400 is in a 64-pin QFN package.

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