BCM2141 Block Diagram with BCM2133 Host Processor

**WCDMA BASEBAND COPROCESSOR**

**FEATURES**
- Integrated digital and analog baseband solution for WCDMA (UMTS)/FDD
- Designed for rapid integration with existing EDGE/GPRS/GSM baseband solutions
- WCDMA global multiband support
- 384 kbps class modem in downlink and uplink
- Inter-frequency handover, inter-RAT handover
- Circuit-switched voice and data, and packet-switched data
- Firmware suite, including PHY layer and layer-1 (L1)
- Programmable RF interface enables various RF transceiver solutions
- On-chip A/D and D/A to reduce parts count, size, and power consumption
- Low-power architecture: On-chip, programmable power management
- Supply voltage of 1.5V/3.0V
- Support for single-antenna or dual-antenna architecture for GPRS/GSM and UMTS
- F8/F9 ciphering/integrity protection
- 7 mm × 7 mm, 144-pin TFBGA, 0.5 mm pitch package
- Supports standard 13 MHz, 19.2 MHz, and 26 MHz reference frequencies

**SUMMARY OF BENEFITS**
- Rapid upgrade to 3G by reusing investment in 2G/2.5G solutions
- Seamless global roaming on EDGE/GPRS/GSM and WCDMA networks worldwide
- Comprehensive development package that includes:
  - All L1 firmware
  - Production calibration tools
  - Field test and trace tools
  - Comprehensive technical documentation
  - Applications notes for writing custom RF drivers
- Extensive range of test and debug tools:
  - L1 trace software
  - GUI-based RF test and production calibration
  - ATE calibration interface

**APPLICATIONS**
- Low-cost 3G handsets
- Extending 2G handset platforms to 3G operation
The BCM2141 WCDMA baseband processor enables a modular approach to mobile device design. The BCM2141 efficiently adds 3GPP WCDMA capability to a GSM/GPRS/EDGE host baseband processor using Broadcom’s flexible standard SRAM memory interface.

The functional block diagram shows the BCM2141 integrated with Broadcom’s BCM2133 EDGE/GPRS/GSM baseband subsystem, which provides a complete multimode WCDMA and EDGE (WEDGE) solution.

All WCDMA L1 functions are performed by the BCM2141, with layer-2 (L2) and higher protocol stack functions for WCDMA executing on the host GSM/GPRS/EDGE processor. The enhanced system performance of the BCM2141 relies on a hardware-centric architecture that retains flexibility via on-chip programmability.

Based on an industry-standard ARM7TDMI-S™ microcontroller core, the BCM2141 integrates all digital and analog functionality required for WCDMA operation into a single chip, including support for WCDMA ciphering. The BCM2141 provides all WCDMA modem capability and features a programmable analog I/Q RF interface that supports multiple industry-leading transceiver solutions.

The BCM2141 is supported by a comprehensive development package and a complete suite of test and debug tools.