



MSM5000 Device Functional Block Diagram

Overview

QUALCOMM's 3G CDMA2000® 1X solution is designed to the IS-2000 standard and enables a doubling of overall IS-95A/B capacity and new, higher-data-rate services. With initial data rates that exceed the ITU requirement for full wide area mobility, the MSM5000 will support 153.6 kilobits per second (kbps), providing manufacturers worldwide with the ability to develop consumer products that provide voice, high-speed data and video over wireless networks. Network operators will also benefit from the cost efficiencies and the rapid time-to-market that the solution delivers for next-generation services.

QUALCOMM has developed a seamless migration path that will allow operators to move easily into the next-generation of wireless

communications. This path provides compatibility among IS-95A, IS-95B and 3G CDMA2000 1X networks. Manufacturers will benefit by developing products for these networks since they offer shorter product development time and reduced development and equipment costs by allowing the reuse of hardware, software and network protocols.

QUALCOMM has developed the MSM5000™ Mobile Station Modem™ (MSM™) chipset and system software solution to support field trials and first commercial deployments of 3G CDMA2000 1X networks. The MSM5000 interfaces with QUALCOMM's existing RF devices the IFR3000™ and IFT3000™ IF to Baseband Converters. These devices perform all of the signal processing in the subscriber unit, from IF to PCM, for compliance with the proposed 3G CDMA2000 1X standard.

3G CDMA Enabling MSM Device



The MSM5000 chipset and system software, QUALCOMM's 3G market entry MSM device, builds upon the successful architecture of the MSM3000® device. The MSM5000 device is a digital baseband chip that enables manufacturers to meet or exceed the specifications of mobile stations for worldwide

cdmaOne™ and 3G CDMA2000 1X, including IS-95A, IS-95B, CDMA2000 and its variants for PCS in Japan, Korea and South America. The new MSM5000 chipset and software solution exceeds the ITU 144 kbps requirement by providing data rates of up to 153.6 kbps on both the forward and reverse links. Featuring support for Quick Paging Channel and a 16x searcher in addition to an 8x searcher, the MSM5000 provides an increase in handset standby time of up to 50-percent. Pin compatible with the MSM3000 device, the MSM5000 device will be available in the same 176-ball Fine Pitch Ball Grid Array (FBGA) package and 196-ball Plastic Ball Grid Array (PBGA) production package.

The MSM5000 device integrates functions that support a dual-mode CDMA/FM subscriber unit. Subsystems within the MSM5000 device include a CDMA processor, a Digital FM (DFM) processor, a QUALCOMM-designed DSP for voice compression, an ARM® ARM7TDMI® microprocessor and several peripheral interfaces that are used to support other functions.

MSM5000 Features

General Features

- Voice mode V1 (EVRC, IS-95A, PureVoice®), all radio configurations
- High-speed data using both fundamental and supplemental channels
 - Supports peak rates of up to 153.6 kbps on both the forward and reverse links

- Quick Paging Channel
- 8x Searcher, plus an independently controlled 16x Searcher
 - Approximately three times the searching capabilities of the MSM3000 device
- Radio Link Protocol (RLP3)
- Support for Fast Forward Power Control (both forward and reverse links)
- P-Rev 6 compliant
- Voice Recognition (optional)
 - Speaker-dependent, Speaker-independent and Voice prompt support
 - Multiple language support
- Supports low-power, low-frequency crystal to enable TCXO shutoff
- Enhanced Tx AGC control, eliminating the need for external gain-step compensation circuitry
- Enhanced I/O support for faster RS-232
- 16-bit wide Flash and SRAM support
- Backward compatible with cdmaOne (IS-95A/B) standards

Features Supported by MSM5000 Device

- Fast 800 Hz Forward Power Control
- Quasi-Orthogonal Functions
- Supplemental Channel (SCH) support
- CDMA2000 Forward Quick Paging Channel (F-QPCH) support
- Turbo and convolutional encoding/decoding for SCH
- ITU 144 kbps requirement achieved
 - 153.6 kbps SCH forward or reverse link
- Forward dedicated control channel (F-DCCH)
- Reverse dedicated control channel (R-DCCH)
- RLP3



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