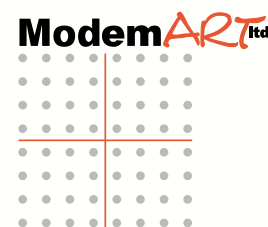




Enabling 3G Terminals



MA1000 W-CDMA Programmable Baseband Processor

3G upgrade for existing GSM/GPRS baseband processors

Benefits

- Supports a complete multi-mode UMTS/GSM/GPRS solution
- Add-on to GSM/GPRS baseband processors enabling re-use of GSM/GPRS legacy
- Feature rich: 3GPP Release 4, 384 kbps class
- PME software upgradeable for future 3GPP standard releases
- Low power consumption suitable for commercial 3G W-CDMA handsets

Key Features

- PME: Complete 3GPP compliant firmware
- Complete 3GPP compliant L1 Control
- Hardware Abstraction Layer for rapid protocol stack integration
- Multi-mode protocol stack
- Low power consumption (allows handset standby time of more than 250 hours)
- Highly flexible radio interface compatible with most off the shelf RF solutions in the market
- UMTS Encryption block
- USIM card interface
- Internal PLL supporting a wide range of input clocks (13, 26, 15.36, 30.72, 19.2 MHz)
- 32 KHz internal oscillator for power down modes

MA1000 Overview

The Modem-Art MA1000 chip is a highly integrated 3G W-CDMA baseband processor for either single mode UMTS or multi-mode UMTS/GSM/GPRS terminals. The MA1000 offers the most advanced functionality of the 3GPP standard, supporting all 3GPP Release 99 and Release 4 features. MA1000 based terminals take full advantage of advanced 3G features, such as real time video, high-speed data transfer and Internet browsing, without compromising on power consumption, cost and size.

The MA1000 is used as a W-CDMA physical layer co-processor connected to existing GSM/GPRS baseband processors. The MA1000 enables a fast and low risk upgrade of existing type-approved and field-tested GSM/GPRS terminal designs to multi-mode UMTS/GSM/GPRS. This "add-on" approach offers the shortest time to market by maximizing re-use of existing GSM/GPRS certified technology and terminal designs, while minimizing the new W-CDMA development, testing efforts, risks and costs.

Modem-Art provides the MA1000 with a full range of development and support tools, including multi-mode UMTS/GSM/GPRS development board and software development suit, thus facilitating a rapid development of 3G mobile terminals. The MA1000 will be supported by a multi-mode protocol stack and reference design.

PME Technology

The MA1000 is built around the PME (Programmable Modem Engine), Modem-Art's core technology. The PME is a powerful physical layer processor optimized for W-CDMA modem implementation. The PME's multiprocessing architecture enables a rapid realization of 3GPP standard releases. Future updates by software upgrades, displace the need for hardware modifications. The PME reduces time to market and improves reliability. The result is a baseband processor with rich system functionality, a high level of flexibility and a low-power consumption that facilitates a smooth transition to commercial 3G terminals.

Target Applications

- Single mode UMTS handsets
- Multi-mode UMTS/GSM/GPRS handsets
- Single and multi-mode data modules



Development and Support Tools

- MA1000 multi-mode UMTS/GSM/GPRS evaluation board
- MA1000 software development and testing tools
- Protocol stack software development kit
- Multi-mode form factor board
- Multi-mode reference design

Technology & Package

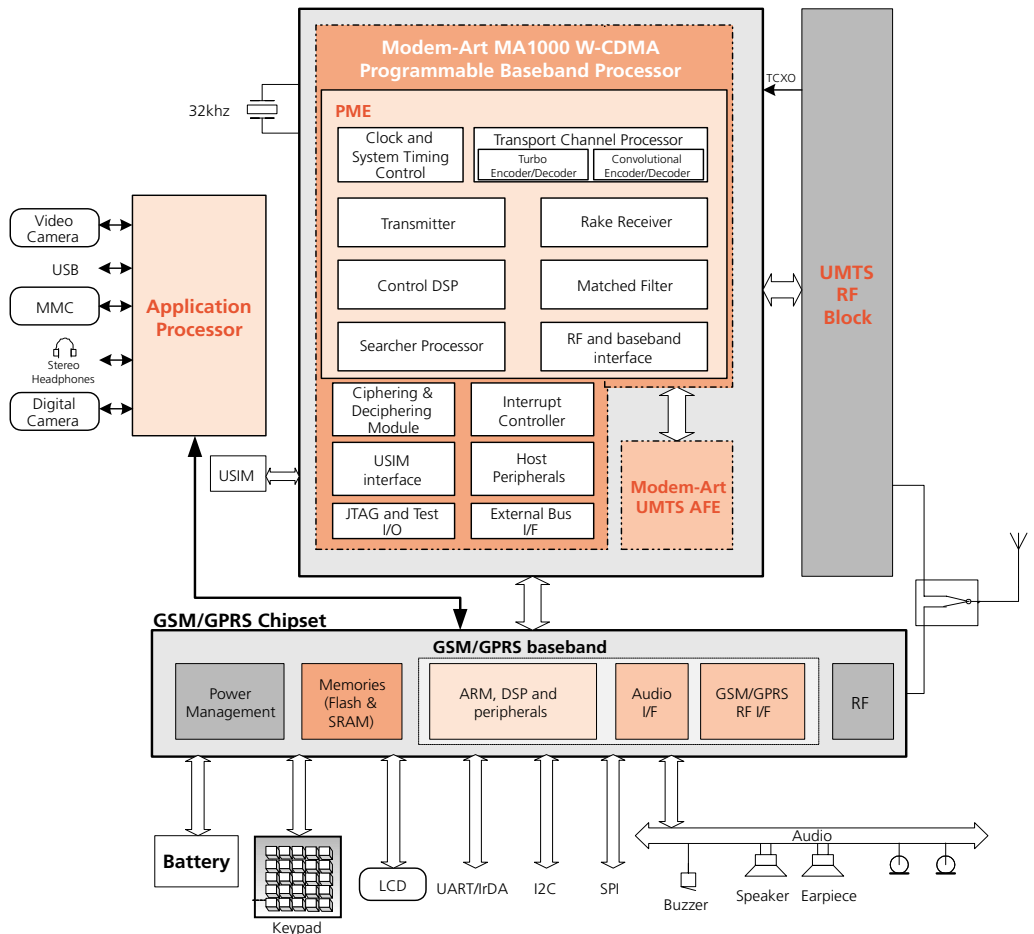
- Technology: 0.18 μ m low leakage
- Package: 228 FPBGA, 0.5mm pitch, 12x12mm footprint
- Voltage:
 - Core: 1.8 V
 - Digital I/O: 3.0 V
 - Analog I/O: 2.5 V
- Temperature:
 - -40° C to +85° C

Availability

- MA1000 samples, evaluation boards, software and MA1000 testing and development tools are available now

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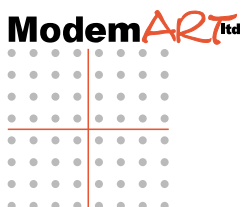
Application Example: MA1000 based Multi-Mode Smart Phone



The MA1000 consolidates all W-CDMA physical layer baseband functionality into a single chip. The MA1000 is memory mapped to an existing GSM/GPRS baseband processor. The ARM in the GSM/GPRS baseband processor runs the multi-mode UMTS/GSM/GPRS protocol stack, implementing the call processing and system control functions. The MA1000 interfaces and architecture are optimized to minimize the ARM overhead of the physical layer management tasks. The ARM resources are dedicated to protocol stack and MMI functions. The MA1000 interfaces to the UMTS RF circuitry through Modem-Art's Analog Front End (AFE).

3GPP Functionality

- Standard compliance: 3GPP (W-CDMA) Release 1999 and Release 4
- 384Kbps on both downlink and uplink channels
- Multi-call through programmable multiplexing of transport channels
- Compressed mode functionality for multi-mode terminals
- All 3GPP diversity modes: STTD, closed loop and SSTD
- Spreading Factor 4 on both downlink and uplink
- Simultaneous reception of 4 downlink CCTrCH
- DSCH: Downlink Shared Channel for improved system capacity and efficiency
- DRAC: Dynamic Resource Allocation Mode
- Gated Transmission for reduced power consumption



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