

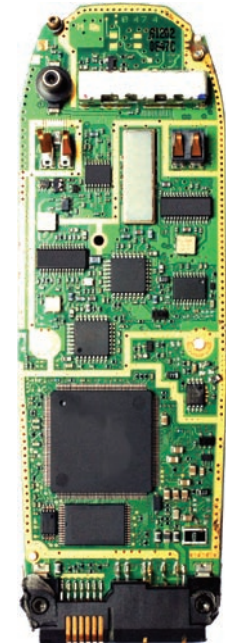
HelloSoft's Cellular Products:

HelloCellular offers a ultra-low cost, low-power 2G/2.5G/3.x G mobile convergence solution for cellular networks like GSM/GPRS/UMTS, and highspeed 3 and 3.5G networks such as HSDPA/HSUPA along with standards based integrated WLAN. HelloCellular is compliant with UMA and IMS standards. HelloSoft's GSM/GPRS/EDGE is a solution with L1/L2/L3 layers that support class A, B, C and multi-slot class 1-14. The solution is portable to any DSP and Microcontroller architecture. (HelloCellular for UMTS/HSDPA/HSUPA is currently under development)

HelloSoft cellular baseband products are highly optimized in high performance, low power and resource utilization for ultra-low cost mobile devices.

HelloSoft's GSM/GPRS/EDGE mobile reference design includes:

- Lowest cost, lowest power RISC-only implementation
- Physical layer (L1) and protocol stacks (L2/L3) for GSM/GPRS/EDGE (terminal side), integrated with analog front-end (AFE) and RF Modules
- DSP-less implementation of layer 1 enables lowest cost BOM in the industry
- Complete POSIX compliant protocol stack software suite that includes LLC, RLC/MAC, SMS, SM, CC, LAPDm, RRM, MM, GMM, SNDCP and SIM controller
- The protocol stack is optimized for industry leading CPUs such as ARM and MIPS
- ETSI Phase 2+ compliant tested with third party conformance equipment



GSM/GPRS/EDGE features:

- Multi-slot class 1 to 12, upgradeable to 14
- Supports all channel coding Schemes
- Paging coordination for NMO I, II and III
- Point-to-Point SMS (160 characters)
- GPRS/EDGE encryption algorithms - GEA1, upgradeable to GEA2 to GEA7
- Support for AT commands
- Fixed, Dynamic and Extended Medium Access modes
- Dynamic allocation
- Normal, Enhanced (GSM/GPRS/EDGE) and Extended Measurements
- Protocol header compression, RFC 1144, upgradeable IPV4 header
- ITU-T V.42bis data compression
- Compliance tested to third party conformance test suite (Anite SAT-4)

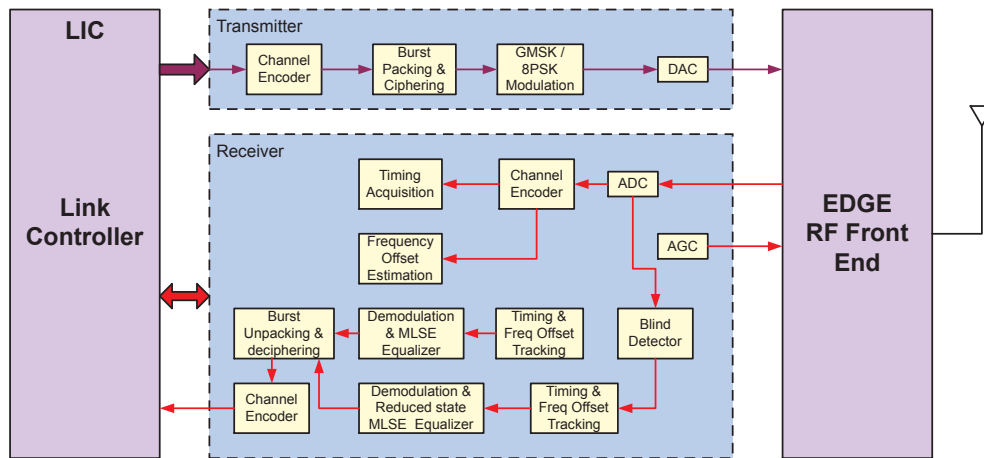
Physical layer IP blocks:

The GSM/GPRS/EDGE technologies include innovative and low complexity patented algorithms for superior receiver performance even under impaired channel conditions.

The IP Blocks include:

- GMSK Modulation (Patent Pending) / 8PSK Modulation
- Time and Frequency Synchronization (Patent Pending)
- A novel modified SOVA based GMSK equalizer (Patent Pending)
- Low complexity Fire decoder for CS1 channel decoder (Patent Pending)
- Supports CS 1-4 and MCS 1-9

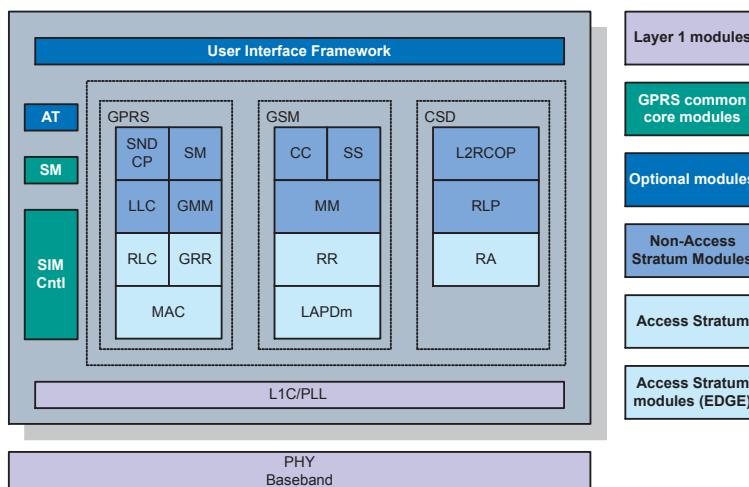
GSM/GPRS/EDGE L1 Architecture



Advantages of HelloSoft L1

- Innovative algorithms to improve receiver performance and to reduce complexity
- Implementation of an efficient decoder for shortened cyclic (FIRE) code (Patent filed) Provides reduced power consumption
- Data-aided frequency-offset estimation and synchronization (Patent filed) Provides improved performance at reduced power consumption
- Low Complexity GMSK Modulator (Patent Filed) Cost/Power/Gate count savings using small lookup table
- Data-aided timing-offset estimation and synchronization (Patent filed)
- Efficient MLSE algorithm and Pre-filter (Patent Filed) Pre-filter improves MLSE performance
- Efficient FCCH detection (Patent Filed) & slot boundary estimation
- High performance, optimized gate count and highly power efficient

GSM/GPRS/EDGE L2/L3/Framework



Advantages of HelloSoft L2/L3

- Highly optimized, modular and scalable design with high performance and small footprint
- L2/L3 can run as multiple tasks or as a single task
- Optimized inter and intra-layer communication with clearly defined interfaces between layers
- Protocol stack software optimized for industry leading CPUs such as ARM and MIPS
- Macro level debug facility with message trace between any modules and host based testing
- OS Wrapper for minimal porting effort to any standard OS
- User interface framework for application support