

## COMNEON

### The 3G Dual Mode Protocol Stack Family

**Comneon's 3G Dual Mode Protocol Stack Family encompasses solutions compliant with 3GPP WCDMA/HSxPA specifications. More than 15 years' experience in providing mature protocol stacks together with intimate knowledge of Third Generation (3G) UMTS/WCDMA specifications enable Comneon to offer state-of-the-art 3G protocol stack software for mobile platforms to customers worldwide.**

#### Comneon's 3G UMTS Protocol Stack Software

Comneon offers a 3G Dual Mode Protocol Stack Family based on valuable experience in successful development and deployment of 2G GSM/GPRS/EDGE Protocol Stack Software. Starting with a 3GPP Release '99 WCDMA Stack running in mass-production since mid 2006, Comneon provides a complete Release 5 (HSDPA) and Release 6 (HSUPA) 3G Dual Mode Protocol Stack Family today. Latest developments aim to upgrade the package towards Release 7 and Long Term Evolution to secure the investment of our customers in the long run. Comneon's solution allows users to benefit from the high data rates of WCDMA-

or even higher as provided by HSDPA/HSUPA - in metropolitan areas and to seamlessly switch over to legacy GSM, GPRS, or EDGE networks in areas not yet covered by 3G networks. The key characteristics of Comneon's 3G Dual Mode Protocol Stack Family can best be summarised by the following key words: highly integrated, cost-efficient, modular, ready for porting. The software solution portfolio for mobile communications is closely linked with the company's 2G Protocol Stacks and its outstanding IMS Device Framework. All of these products are seamlessly integrated and tested with each other.

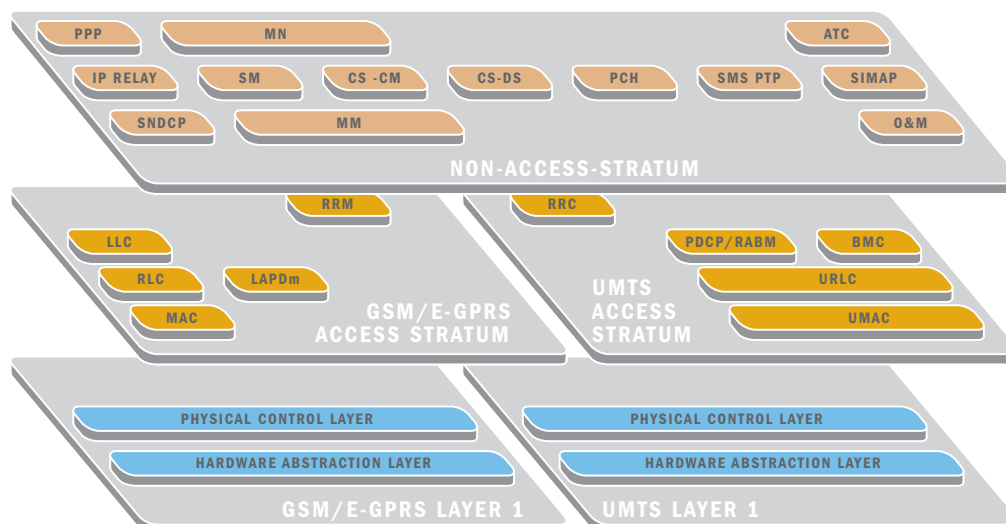
#### A Fully Compliant and Robust UMTS Solution

For its comprehensive, easily configurable 3G UMTS Protocol Stack Family Comneon has combined its 2G Protocol Stack with a best-in class UMTS solution.

The key modules are:

- Non Access Stratum
- UMTS Access Stratum
- GSM/GPRS/EDGE Access Stratum
- UMTS Layer 1 Control
- GSM/GPRS/EDGE Layer 1 Control

#### Configurable modular 3G Dual Mode Protocol Stack:



## COMNEON

### The 3G Dual Mode Protocol Stack Family

#### Advantages

Our complete 3G Dual Mode Protocol Stack Solution provides a range of advantages, including:

- Portability to different hardware platforms is one of the key software design criteria.
- Abstraction layers provided for both hardware and operating system independency.
- Common design methodology between the 3G Product Family and the 2G Products to enable smoother upgrades, modularity and scalability.
- Efficient use of Operating System resources and common memory to achieve a memory-efficient solution.
- Continuous enhancement of the 3G Dual Mode Protocol Stack product roadmap in line with 3GPP Specification Releases.
- Comprehensive host and target test environments to perform sub-component and system tests to comply with 3GPP conformance requirements.
- Regular and extensive IOT and field testing to ensure for high quality products. IOT with all major 3G infrastructure vendors.
- Seamless integration with Comneon's IMS Device Framework, allowing rapid integration of new applications and re-use of existing applications.
- Dedicated customer support services with proven track record of bringing customer products to the market.

#### Customer Benefits

- Fast time-to-market.
- Reduced risks by using mature solutions.
- Limited and predictable R&D investment.
- Single partner for a complete mobile terminal software.
- Future proven solution by Comneon's permanent investment into new features.

#### Selected 3G Protocol Stack Features

##### WCDMA

- 3GPP WCDMA FDD Multimode Type II UE Protocol Stack
- Supports WCDMA FDD Band I - VI
- Configurable for data classes up to 384 Kbit/s.
- Inter-RAT Handover and Cell Reselection.
- Supports two types of Compressed Mode.
- Network Assisted Cell Change from UTRAN to GERAN.
- Conforms with ETSI UICC Specifications.
- SIM/USIM support.
- A-GPS support.

##### Release 5 – HSDPA

- Compliant with 3GPP Release 5.
- High Speed Downlink Packet Access (HSDPA), supporting all classes up to 14.4 Mbps.
- IPv6 support.

##### Release 6 – HSUPA

- Compliant with 3GPP Release 6.
- Robust Header Compression (RoHC).
- Fractional DPCH, WB-AMR Support.
- MBMS
- HSDPA with Release 6 enhancements.

##### 2G Part – GSM/GPRS/EDGE

- Supports GSM, GPRS and EDGE up to Class 12.
- EDGE Coding Schemes MCS1 to 9.
- Dual Transfer Mode Class 11.

High Speed Packet Access (HSxPA) provides a dramatically improved user experience by much faster and more reliable access to services requiring high throughput communications. Together with operators gaining benefit from significantly lower cost per bit transmitted as well as from increased network capacity the HSxPA stack from Comneon is a “must-have” in the mobile communication industry.