

N721

GSM/GPRS/EDGE/HSDPA modem reference design

Description

u-blox' N721 is a proven GSM/GPRS/EDGE/HSDPA modem reference design available for license to OEM customers for high volume applications.

The N721 design combines a powerful baseband processor, RF transceiver, antenna multiplexer and power amplifier components to support seven band GSM/GPRS/EDGE/HSDPA functionality including high-speed data, voice, and SMS capabilities. The N721 is an extremely flexible and powerful solution that meets the huge market demand for wireless high speed data rate devices.

The solution dramatically shortens time-to-market, and includes all hardware information, PCB layout, software binaries including stack, production test bench design and test software, certification, training and documentation.

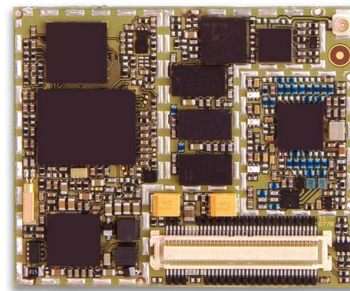
The result is a wireless, ultra-compact, low power communications solution which is easily integrated into consumer, industrial and automotive OEM designs, ready for mass-production.

Typical N721 Applications:

- Smartphones
- High-speed wireless data cards
- Mobile internet devices
- Wireless streaming video

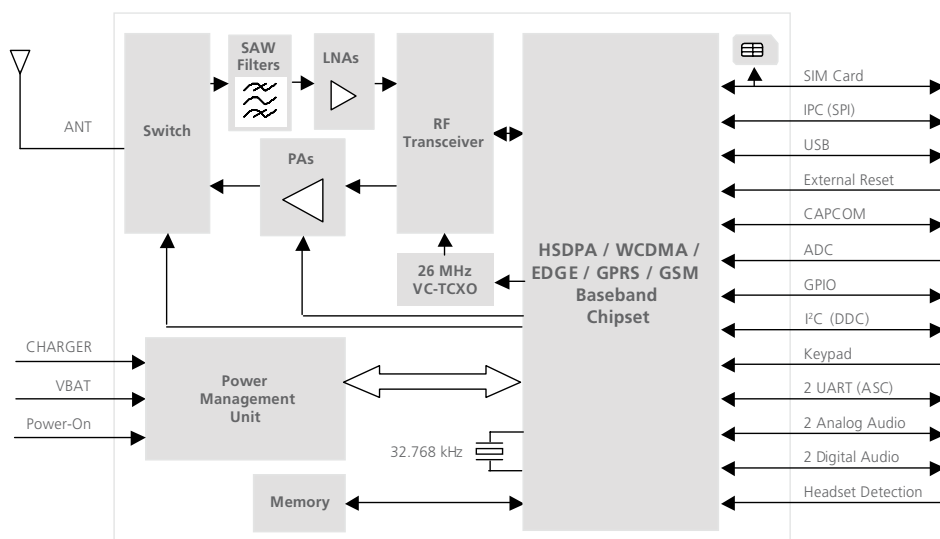
Highlights

- Tested, off-the-shelf GSM/GPRS/EDGE/HSDPA solution including hardware design, PCB layout, software binaries, training, documentation and production support
- Supports quad band GSM bands and three WCDMA FDD bands
- HSDPA category 8 (7.2 Mbps)
- Supports data, voice (incl. handsfree), and SMS
- Ultra-compact design with optimized layout: 45 mm x 37.5 mm x 3.2 mm (without SIM Holder)
- Mature, proven design



N721 reference design (example)
Required PCB area: 45 mm x 37.5 mm x 3.2 mm

Block diagram



N721 simplified block diagram

Hardware

- Quad Band GSM 850 / 900 / 1800 / 1900 MHz transceiver
- Output power:
 - class 4 (2 W) for EGSM 850 / 900
 - class 1 (1 W) for GSM 1800 / 1900
 - class ES2 (26 / 27 dBm) for 8-PSK modulation (EDGE)
- Three WCDMA FDD Bands: I,II,V
- Power class 3 (24 dBm) for WCDMA FDD
- Supply voltage range: 3.5 to 4.2V (Nom.: 3.8V)
- Operating temperature: -20°C to 70°C
- Power consumption
 - Idle: 2 mA
 - 2G Talk – 33dBm: 300 mA
 - 3G Talk – 24 dBm: 600 mA
 - 3G HSDPA – 24dBm: 650 mA
- Main components
 - Base band processor
 - RF transceiver
 - Power management
 - 2.5G and 3G power amplifiers
 - Antenna multiplexer
 - Memory:
 - 128 Mbits 1.8V Flash plus
 - 128 Mbits DDRAM
- Interfaces
 - UFL 50 ohm RF antenna connector
 - 80-pin board-to-board connector
 - 2 Audio interfaces for handset and hands free operation
 - USIM card interface supporting 1.8 and 3V cards via B2B connector and onboard holder (SIM card not included)
 - 2 UART ports
 - I²C bus, SPI bus, 2 x analog in (ADC), 30 general purpose I/Os
 - Optional USB 2.0 On-The-Go (OTG)
 - I2S/PCM digital audio
- RoHS compliant

Software

- Protocol stack: WCDMA / HSDPA / EGPRS
- Dual Mode Protocol stack Rel. 5 Dec. 06
- AT commands according to 3GPP 27.005, 3GPP 27.007 and u-blox proprietary (TCP/IP, GPIO, ADC, Audio parameters)
- AT commands over serial port, USB and SPI interface

Ordering information

For further details about licensing u-blox GSM/GPRS/EDGE/HSDPA modem reference design, please contact the u-blox office nearest you.

Wireless reference designs are offered via Neonseven S.p.A., a wholly owned subsidiary of u-blox AG.

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- SIM application toolkit (SAT Release 99)
- Fax: Group 3, class 2.0
- HSDPA data transfer
 - HSDPA cat. 8 (7.2 Mbps)
 - PS WCDMA 384 kbit/s UL/DL
 - CS WCDMA 64 kbit/s UL/DL
- Coding Scheme:
 - GPRS CS1-4 (85.6 kbit/s)
 - EDGE MCS1-9 (236.8 kbit/s)
- Circuit Switched Data: Up to 9.6 kbit/s, Transparent/Non-transparent mode
- TCP/IP stack
- Supplementary Services
- SMS: Via GSM or GPRS, Point-to-point MO and MT, Text and PDU mode
- SMS cell broadcast
- Voice:
 - HR, FR, EFR and AMR-NB
 - Hands-free / Echo cancellation

Deliverables

With the N721 Production Package, u-blox provides all the necessary information to manufacture the N721 GSM/GPRS/EDGE/HSDPA modem.

- Hardware
 - Schematics
 - PCB Gerber files
 - SMT mounting data
 - List of Material
 - Hardware description
- Software in binary code
- Production
 - Production testing bench design & SW
 - SW download bench design
- Product Design Training
- Documentation
 - Product manual
 - R&TTED certification test reports
 - u-blox test reports
 - IMEI request procedure
 - PICS PIXIT

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