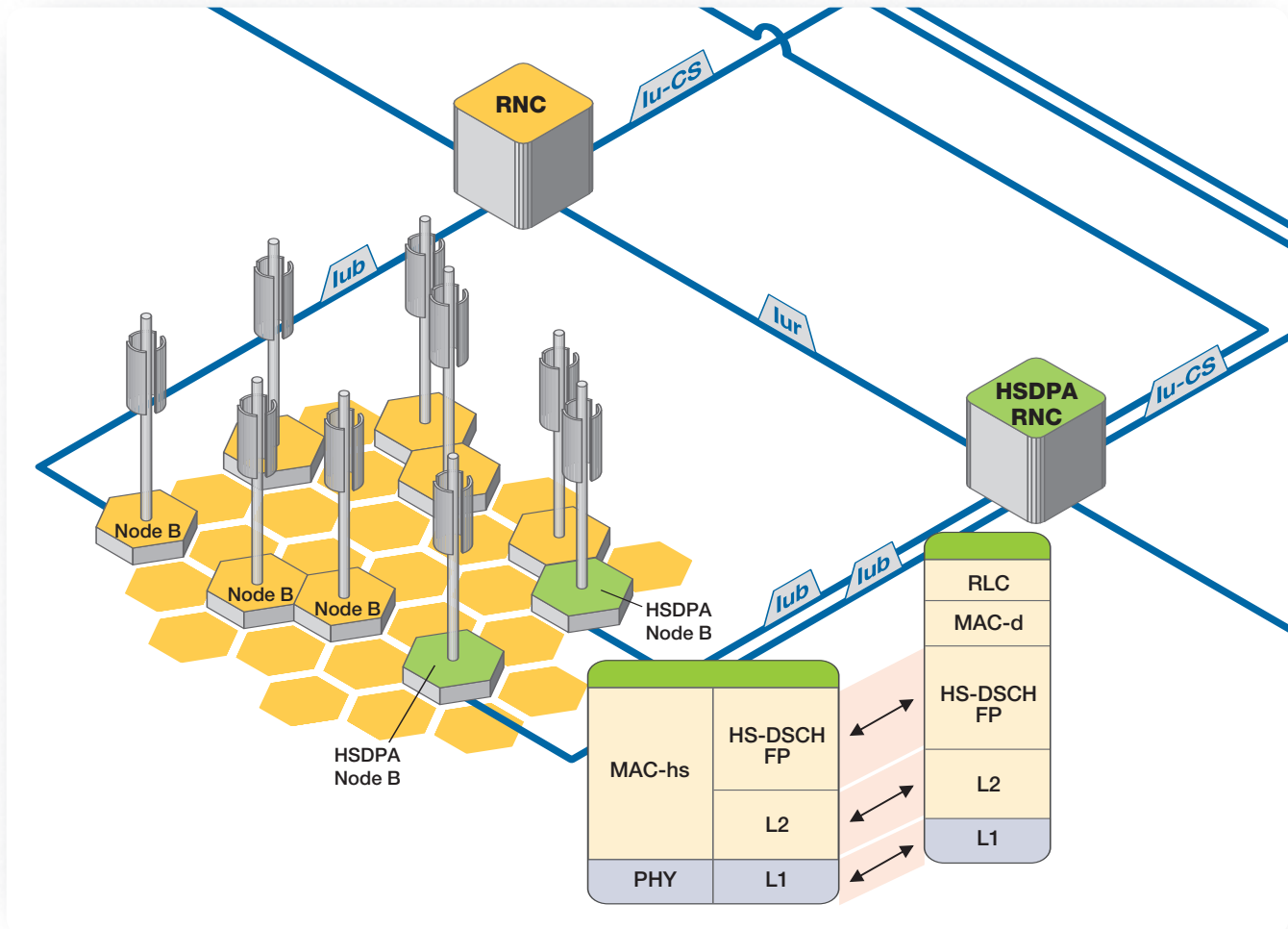


Meeting the Challenges of Broadband Wireless Technology Evolution



Tektronix HSPA Test Solutions: Unmatched Expertise, Unparalleled Portfolio

The K1297-G35: Solution for HSDPA/HSUPA Functional Protocol Testing

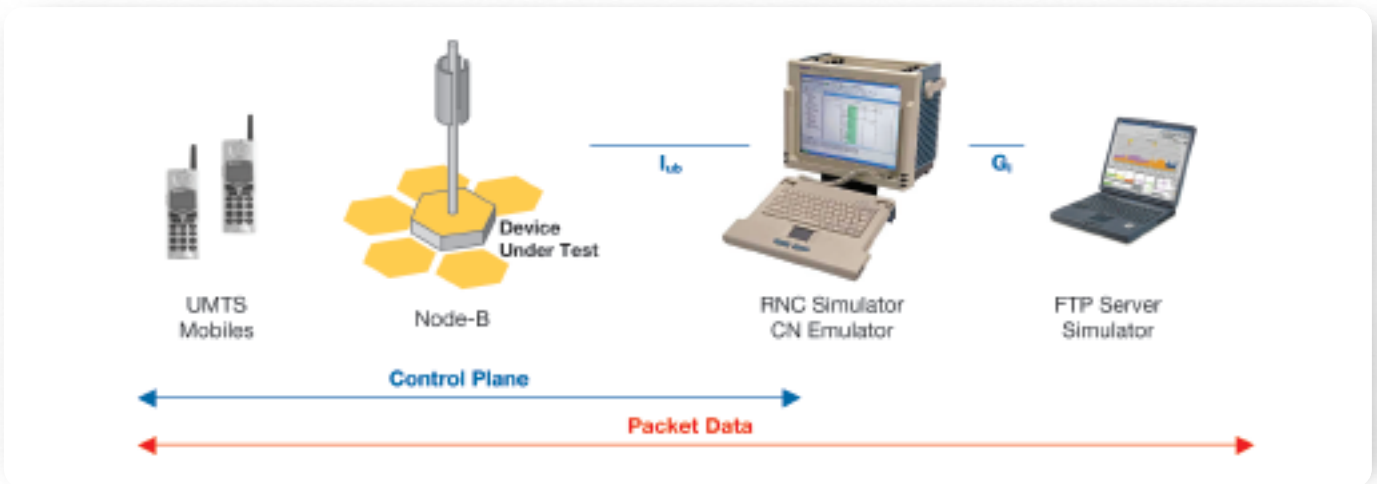
With the New K1297-G35, Tektronix introduce the most performing functional protocol testers available on the market. It has been designed to simulate control and user plane traffic on almost any relevant 2G, 2.5G and 3G network interfaces, including GSM BSS, UTRAN, CS- and PS-Domain networks, among others.

The K1297-G35 also addresses the need to emulate specific protocol layers and even entire network elements or network subsystems. You can test protocol implementations without having to resort to expensive network equipment.

The K1297-G35's monitoring capabilities address the specific needs of functional testing applications and help visualize message exchanges between the Protocol Tester and the DUT. Sophisticated filters make sure you

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► Application Brief



► **Figure 1.** Functional test scenario for HSDPA enabled by Tektronix' K1297-G35.

only see the data of interest to you. In addition, the K1297-G35 Protocol Tester lets you choose the display format that best meets your needs. Message components are decoded online, interpreted, and issued in mnemonic as well as binary or hexadecimal form.

When it comes to performance, the K1297-G35 tests HSDPA U-plane traffic up to the specified 14.4 Mbps and HSUPA up to 5.6 Mbps per line interface card. The K1297-G35's scalability allows multiples of these data rates to be achieved. Both single UE and multiple UE scenarios can be simulated.

At Tektronix, we not only provide test solutions for HSDPA and HSUPA, we also support a wide range of test applications for mobile networks on almost any relevant interface. Please refer to our K1297-G35 Data Sheet for more details.

Network Monitoring Tools for HSDPA/HSUPA

The evolution of broadband wireless networks requires monitoring tools capable of handling the high traffic loads of HSDPA and HSUPA. When integrating, system or load testing HSDPA/HSUPA-capable UTRAN devices, manufacturers and operators alike will face an increase in the traffic to be analyzed by one order of magnitude compared to 3GPP Rel 99-based systems. A new generation of monitoring tools will be needed to handle 100's of Mbps of control and user plane traffic and penetrate to the root causes of problems.

Additionally, Network Operators will need innovative test solutions to validate HSDPA/HSUPA UTRAN product releases in the lab as well as to troubleshoot and/or optimize deployed networks.

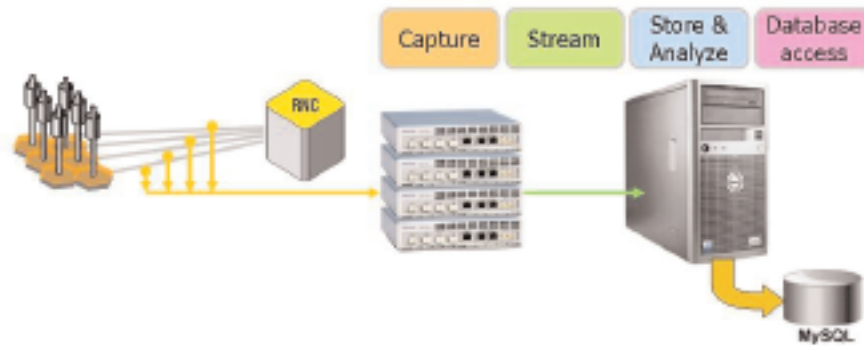
A test solution for monitoring HSDPA/HSUPA UTRAN must provide the following features:

1. Ability to capture several 100's of Mbps of traffic data on Iub, Iu-CS/-PS and Iur interfaces, including automatic decoding features
2. Support for both User plane and Control -plane data
3. High-level analysis, based on selected significant Key Performance Indicators (KPI), in order to reduce the number of calls to analyze and the amount of data to decode. From this top level, the user can easily limit the analysis to a subset of data by drilling down to the KPI of interest.

To address all of these requirements, Tektronix has developed the fastest data acquisition and analysis solution on the market (see Figure 2):

- A new software platform: NSA (Network and Service Analyzer) for UTRAN networks, based on the Capture-Stream-Store architecture.
- A new generation of high performance data acquisition probes (K18)

The key requirement is that the device should be able to capture all traffic during the validation of HSDPA/HSUPA network elements – as much as 100Mbps per link on average!



► **Figure 2.** High-performance monitoring with NSA software and K18 probes.

RF Field Test Solutions for Cost Effective Performance Verification of HSDPA NodeB Transmitters

Back in September 2005, Tektronix was the first manufacturer to provide HSDPA test and measurement capabilities in a handheld format, enabling network providers to diagnose HSDPA NodeB transmitter problems more easily and to manage their 3G mobile communications networks effectively.

Consumer pressure to launch high-speed mobile services has drastically changed the requirements for transport networks, which have been forced to rapidly evolve to keep pace with new service initiatives. HSDPA boosts downlink data transmission speeds for the WCDMA 3G wireless standard. HSDPA enables network operators to increase downlink speeds and WCDMA capacity in a move toward mobile broadband, while at the same time reducing costs.

Standards like HSDPA measure the signal environment and adjust capacity dynamically using adaptive modulation and flexible encoding schemes. HSDPA test capabilities added to the NetTek Wireless RF Field Tester allow RF technicians and performance engineers to accurately analyze NodeB transmitter performance and expertly diagnose problems. In addition, the NetTek Tester provides demodulation measurements including EVM, which are critical to understanding the RF signal environment.

NetTek HSDPA capabilities include demodulation measurements such as code domain power, pilot and sync power, scrambling code and EVM. The modulation detection function allows the modulation type in use (QPSK or 16QAM) to be identified; on-screen notification is provided when 16QAM is detected and the corresponding channels are represented in a color-coded format.

About The NetTek Wireless RF Field Tester

The NetTek Tester is a rugged portable platform with multi-standard measurement, filling the gap between expensive, fully compliant testing tools and low-cost, single-measurement solutions. Its multi-standard, modular architecture supports a range of wireless RF measurements, including UMTS/WCDMA, EDGE, GSM, CDMA2000 1x EV-DO, CDMA2000, cdmaOne (IS-95), and IS-136. The instrument's Windows-based user interface guarantees ease of use and minimizes training needs. At just over 12 lbs (4 kg), compact and battery-powered, the NetTek is your ideal companion when working on remote sites.

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Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tektronix.com



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