



8100 Mobile Device Test System

UMTS DATA PERFORMANCE MODULE

Delivers an automated solution for repeatable data throughput performance testing of HSUPA, HSDPA, WCDMA and GPRS/EDGE devices.

APPLICATIONS

Manufacturers:

- Research & Development
- Design verification
- Performance analysis
- Benchmarking
- Regression test

Operators:

- Pre-launch evaluation
- Acceptance test
- Mobile applications test
- Software regression test
- End user and network KPI analysis

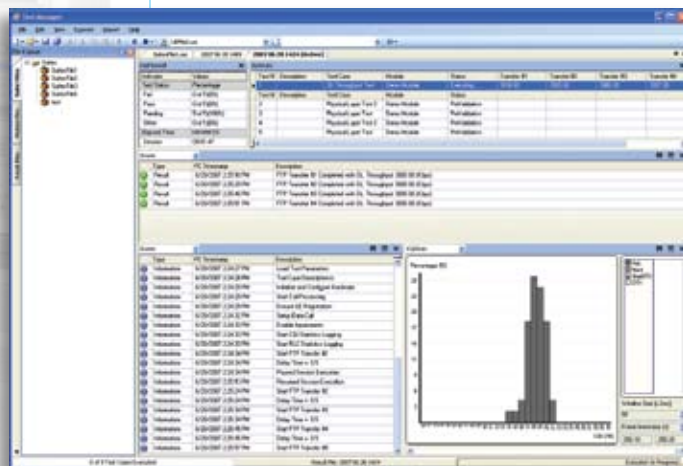
The evolution of air interface technologies is driven by the need for faster throughput to enable new data applications. Ensuring that these services and devices provide optimal Quality of experience (QoE) drives ARPU and assures network operator and device manufacturer success.

The 8100 UMTS Data Performance module automates data throughput performance testing of HSUPA, HSDPA, WCDMA and GPRS/EDGE handsets, data cards and embedded modules. The system is capable of achieving the maximum throughput rates from physical to application layer.

UMTS Data Performance is a key module of Spirent's 8100 Mobile Device Test System which offers an open, scalable multi-purpose test system that is expandable beyond initial testing needs. The module meets a range of high-value mobile device testing requirements. It makes use of highly capable components including an SR3420 Network Emulator with network-grade protocol stacks to enable delivery of high quality devices to end users.

BENEFITS

- *Reduce time to market* – run more tests on a single, automated platform
- *Reduce device returns and customer churn through improved device quality* – identify data performance issues under repeatable real-world conditions
- *Address the entire lifecycle of testing needs with a single solution* – R&D, DVT, Benchmarking/Evaluation, Acceptance, Applications, Regression
- *Purchase only the capability you need, when you need it* – offered with turnkey and user-customizable test modules and scenarios; upgradeable to call reliability, A-GPS or video test capability



KEY FEATURES

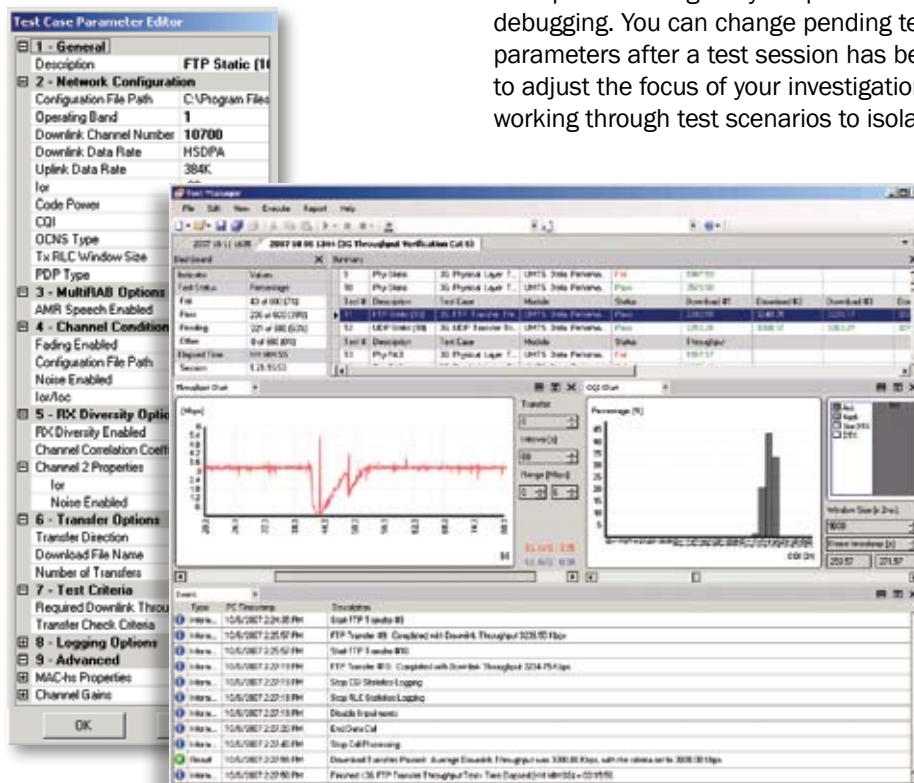
- Complete automated data throughput performance testing of HSUPA, HSDPA, WCDMA and GPRS/EDGE devices - from physical layer to application layer
- Provides the fastest end-to-end data pipe, up to full-rate 7.2 Mbps
- Integrated Receive Diversity (Rx Diversity) option tests the performance of advanced receiver designs under real-world conditions
- Identifies data performance issues often not caught by standard 3GPP conformance testing
- Simulates a wide range of real-world network conditions, fading and noise channel impairments
- Programmable CQI vs. TBS table
- Integrated sweep looping functions
- Multiple cell option for realistic GSM, GPRS, EDGE and WCDMA interference testing
- Provides dynamic control and monitoring during device testing
- Configurable test case parameters enable rapid generation of custom test cases

ADVANCED AUTOMATION AND POWERFUL USER INTERFACE

Spirent's industry-leading Test Manager provides the highest level of visibility into the performance of the device under test. Data Throughput and CQI Histogram charts greatly simplify the analysis of handset and data card performance while running tests and during post-test analysis. The CQI histogram provides insight into how well the receiver is performing under dynamic real-world fading and noise conditions, as well as allowing benchmarking of CQI performance between devices or across firmware versions.

Advanced test case capabilities such as modification of MAC-hs parameters support a wider range of custom test cases and test suites to characterize device performance under the dynamic conditions of HSPA. Custom automated test suites for building regression tests or pre-compliance tests against network operators' performance test requirements can be created through Test Manager without the need to write complex scripts or code.

The ability to make run-time changes to test case parameters greatly simplifies device debugging. You can change pending test case parameters after a test session has begun to adjust the focus of your investigation while working through test scenarios to isolate issues.



Test Manager provides real time monitoring and control

Technical Specifications

Parameter	Options
Operating Band	1, 2, 4, 5, 6, 8, 9
Uplink Data Rate	HSUPA: CAT 1-5 (10 ms TTI), CAT 4 (2 ms TTI) WCDMA: 64K, 128K, 384K
Downlink Data Rate	HSDPA: CAT 1-8, 11,12 WCDMA: 64K, 128K, 384K GPRS/EDGE: Up to 236K
CQI	Normal, Fixed, Custom
RLC Window Size	512, 1024, 1536, 2047, 2560, 3072, 3584, 4095
Code Power	-1 to -12 for HSDPA -5 to -15 for R99
OCNS Level	Dynamic, Static -40.0 to -1.0
MAC-d PDU Size	336 or 656
Ciphering	R99, HSPA
Ior	-90 to -50 in 0.1 dB steps
Fading Models	UMTS: Case 1, Case 2, Case 3, Case 6, PA3, PB3, VA30, VA120 GSM: HT100, RA130, RA250, TU1.5, TU3, TU50

REAL-WORLD VARIABILITY AND CONTROLABILITY

Quantifying wireless data throughput rates in real-world scenarios can be extremely challenging given the highly-variable nature of live networks. Operating parameters such as traffic variation and number of connected users can change at any time, impacting the collection of consistent field test data. The UMTS Data Performance module provides a controlled environment with the flexibility to reproduce real-life network conditions for consistent and repeatable test results.

Spirent's 8100 UMTS Data Performance module makes use of the SR3420, a highly-configurable network emulator which is built upon a real-time state machine. This results in a network experience that is much closer to the real network than other emulators. The SR3420's design is optimized to address the needs of high-speed data testing by delivering true 7.2 Mbps downlink throughput at the application layer.

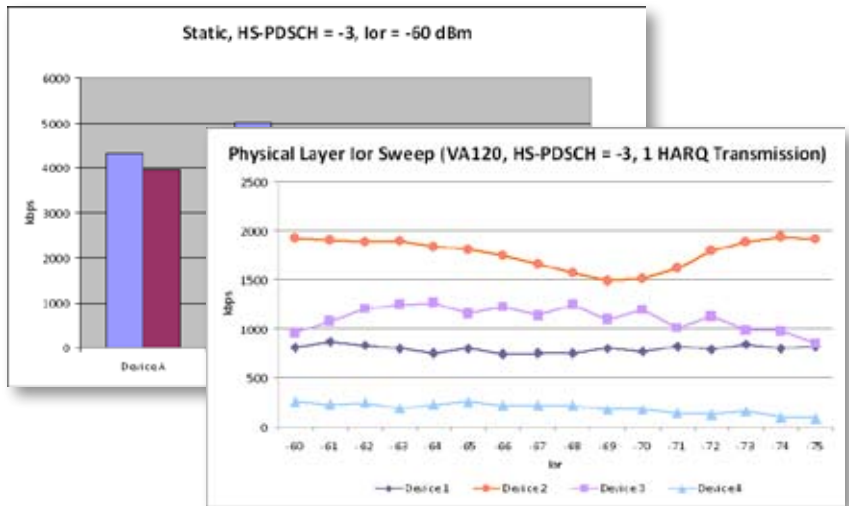
An optional capability is testing GPRS, EDGE and WCDMA data throughput performance in the presence of Co-Channel and Adjacent Channel Interference rather than Noise, since Interfering cells create a more realistic scenario. Leading network operators also make use of this Interference Test capability in their acceptance tests.

When testing in the field, there is a time-varying degradation of the signals received by the device due to multi-path, shadowing and propagation losses. The challenge in quantifying real-world device performance is producing this degradation consistently in a test environment. The Spirent SR5500 Wireless Channel Emulator in the 8100 platform generates realistic, fully-controllable fading conditions. You can choose from a suite of pre-programmed 3GPP-recommended models or to develop custom fade models that reflect other real-world fading scenarios.

PROVIDES ANSWERS TO KEY PERFORMANCE QUESTIONS?

- How well does Rx Diversity perform?
- How well does Physical layer throughput perform?
- How well does Application layer goodput perform?
- How sensitive is throughput to code power?
- How sensitive is throughput to C/N?
- How does fading and/or interference impact throughput/goodput?
- What is the impact of key MAC-hs parameters?
 - Number of HARQ processes
 - Maximum number of HARQ transmissions
 - Device soft buffer capacity

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Powerful reporting tools enable device benchmarking

SPIRENT GLOBAL SERVICES

Spirent Global Services provides a variety of professional services, support services and education services – all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services' Web site at www.spirent.com/gs or contact your Spirent sales representative.

ORDERING INFORMATION

The UMTS Data Performance Module is supported on the 8100-A100, A200, A300 and A600 platform configurations.

Due to the modularity and wide range of available 8100 Mobile Device Test System configurations, please contact your regional Spirent sales representative for detailed ordering information.



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