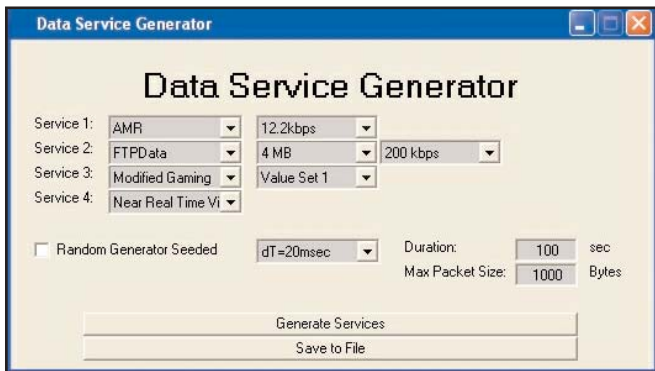


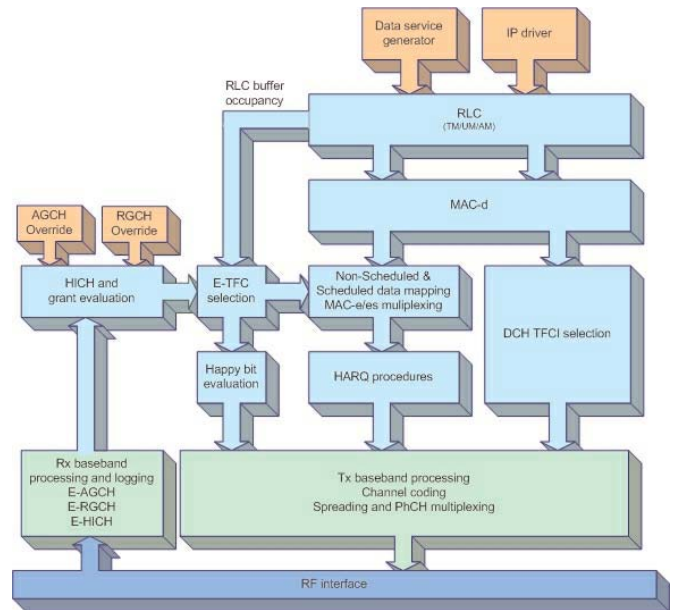
Innovative test and analysis

The TM500 HSUPA offers full support for the latest Release 6 HSUPA enhancements. This enables users to configure real uplink data services at rates up to 5.76Mbps, whilst operating HSDPA services simultaneously at maximum rate in the downlink. The TM500 HSUPA is ideal for the infrastructure design, development and test engineer. A wide range of test modes and features are provided to assist the user in a structured development and test programme. Test modes allow detailed analysis of Layer 1 and Layer 2 functionality and permit uplink and downlink physical channels to be verified and validated independently. The effects and operation of soft handover can also be monitored in detail.

The Script Editor and Mobile Data Logger tools allow straightforward configuration of test sequences and measurement capture. Additionally the test process may be automated via the Proxy MCI interface for use in regression testing applications. The TM500 HSUPA option features a new Data Service Generator tool, which creates realistic usage profiles of packet based services including voice, web browsing and gaming applications.



The TM500 HSUPA Higher Layers option extends the features of TM500 for use in full system test. In addition to full protocol support of Release 6 HSUPA features at Layer 3 and NAS, the option provides enhanced logging including full ASN.1 decode of all Release 6 RRC PDUs. The TM500 can be configured to support different HSUPA, HSDPA and R99 UE categories, enabling extensive system testing long before high data rate commercial mobiles are available. Further features are also planned to enhance VoIP and IMS services, including enhanced Release 6 active set update procedures for efficient HSDPA and HSUPA cell change operations.

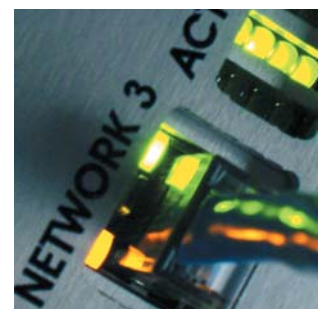
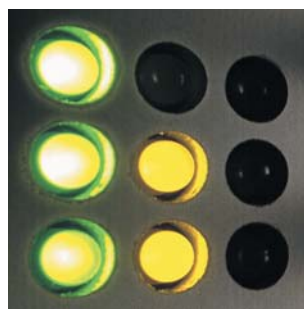


Scalable next-generation architecture

The HSUPA Layer 1 / Layer 2 and Higher Layers options represent the latest cutting edge technologies to be supported on the TM500 test mobile system. Future options will include a HSUPA Multi-UE variant will allow users to perform Layer 1 load and scheduler testing against a HSUPA-enabled Node B. Higher layer testing will be enhanced by the Advanced Protocol Test option, providing detailed logging and analysis of protocol messaging plus the ability to configure negative test scenarios.

Support

The TM500 HSUPA option is offered with a comprehensive worldwide support package. Members of Aeroflex's Field Application Engineering team are available to provide on-site and email support



SPECIFICATION

3GPP SPECIFICATION

Specification version

3GPP Release 6 (Sept 2005)

Operational modes

HSUPA/HSDPA WCDMA FDD

UE Capabilities

HSUPA Category 1-6, up to 5.76 Mbps

HSDPA Category 1-12, up to 13.976 Mbps

R99 DL: 2048 kbps, UL: 384 kbps

Simultaneous support of HSUPA Category 6 uplink with HSDPA Category 10 downlink

RF SPECIFICATION

Transmit

1920 MHz-1980 MHz

Receive

2110 MHz-2170 MHz

Duplex

Variable duplex

Power class

3 (+24 dBm)

L1 FEATURES

HSUPA physical channels

E-DPDCH (up to 2*SF2 + 2*SF4), E-DPCCH

E-AGCH, E-RGCH, E-HICH

HSDPA physical channels

HS-PDSCH (up to 15 codes), HS-SCCH (up to 4 channels), HS-DPCCH

R99 physical channels

CPICH, SCH, P-CCPCH, S-CCPCH, DPDCH, DPCCH, PRACH, AICH, PICH

Transport channels

E-DCH, HS-DSCH, BCH, DCH, PCH, RACH, FACH

Receiver architectures

Rake

NLMS and SWCE equalizers

Compressed mode

SF reduction, higher layer scheduling

Transmit diversity

Open loop (TSTD, STTD), closed loop (mode 1)

Power control

Closed loop (uplink and downlink), open loop (uplink), outer loop (downlink)

Soft handover support

3-way E-DCH soft/softer handover

L2 FEATURES

Logical channels

DTCH, DCCH, CTCH, CCCH, BCCH, SCCH, PCCH

MAC

Full MAC support for R6, R5 and R99 capabilities

RLC

RLC-TM, RLC-UM, RLC-AM

L3/NAS FEATURES (OPTIONAL)

Protocol layers

RRC, BMC, PDCP & NAS

Enhanced RRC messages logging

Full ASN.1 decode of all R6 RRC PDUs.

Configurable UE capability (R6, R5 and R99 UE)

Support for enhanced R6 Active Set Update

VoIP enhancements

MEASUREMENTS AND STATISTICS

HSUPA L1 measurements

E-AGCH reception information, contents and status

E-RGCH reception information and status per radio link, resultant grant

E-HICH reception information and status per radio link, resultant HICH

E-DCH transmission information including E-TFICI, RSN, Happy Bit TBS, Code allocation, RV and puncturing attributes

Physical Channel transmit power information

HSUPA L2 measurements

MAC-e transmission PDU contents and size information

MAC-e transport block scheduling and power scheduling information

Uplink Scheduling Information parameters

MAC-e throughput and retransmission statistics

MAC-es transmission PDU contents and size information

Logical channel multiplexing information

MAC-es throughput including scheduled and non-scheduled transmission statistics

RLC send, receive, retry and discard statistics

HSDPA L1/2 measurements

HS-SCCH detection and decode information

HS-DSCH parameters and reception attributes,

HS-SCCH / HS-DSCH error statistics

HS-DPCCH uplink parameters

MAC-hs re-ordering information

MAC and RLC transmission and reception measurements, frame throughput and statistics

R99 L1/2 measurements

Support of 25.215 measurements, plus detailed cell search and dedicated channel information

HSUPA TEST MODES

Layer 1 Test

- Comprehensive analysis of Layer 1 and MAC-e/es operation
- Data entry in MAC-e PDU or MAC-d PDU format
- Scripted data payload and retransmission characteristics per HARQ process
- Independent testing of uplink and downlink channels
- Scripted control of RSN, Scheduling Information, Happy Bit, E-TFCH and DDI/N combinations
- Support of Chase Combining and Incremental Redundancy for packet retransmissions
- Detailed logging of E-HICH, E-RGCH and E-AGCH information
- Closed loop testing using received E-HICH

Layer 1 / Layer 2 Test

- Support of RLC-TM, RLC-UM and RLC-AM modes
- Full E-TFC selection procedure derived from serving grant
- Support of Scheduled and Non-Scheduled data
- Independent HARQ Profile configuration
- Real-time grant override facility
- Scheduling Information and Happy Bit derived from RLC buffer occupancy
- Simultaneous E-DCH / DCH uplink
- IP interface to support TCP/IP services

High Speed Data Logging

- Real-time logging of E-DCH baseband encoder chain

USER INTERFACE

Mobile Data Logger (MDL)

- Graphical application for the control of the TM500 and display of logged data

Script Editor

- Graphical application for creating and editing TM500 control scripts

Data Service Generator

- Easy-to-use graphical interface to generate packet-switched service profiles

Protocol logging tool (PCO+)

Application for the control of SAPs used to observe and display logged data in a message sequence chart. Filters can be applied to aid analysis and debugging. Provided with L3/NAS option

VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering Numbers

TX530
TX535
SA081

Versions

TM500 Rel. 6 HSUPA L1/L2 Option
TM500 Rel. 6 HSUPA Protocol Option
TM500 Rel. 6 HSUPA Support Package

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.