2006

Product Catalog

Network Management & Diagnostics

Tektronix

Enabling Innovation

Innovation never rests - Enabling the convergence of wireless and fixed networks.

Design, Deploy, Manage
Next Generation Networks

The document in your hands gives a brief overview of a comprehensive and unparalleled suite of Networks Diagnostics and Network Management solutions to meet the most demanding current and next-generation communication test needs. This portfolio delivers unparalleled expertise along the whole Mobile, VoIP and Converged Communication Networks test cycle; from Network Diagnostics', equipment design verification and integration test, to Network Management's suite of end-to-end monitoring applications that enable carriers to simplify their network maintenance, planning and management.

For more detailed and product specific information, please research in your own time by using the following resources from the Tektronix web site: www.tektronix.com/networktest

Resources
▶ Request a Quote
▶ Ask the Experts/FAQs
▶ Request a Demo
▶ Product Registration
▶ Product Calibration

Technical Content
▶ Application Notes
▶ Technical Briefs
▶ Interactive Product Demos
▶ Selection Guides
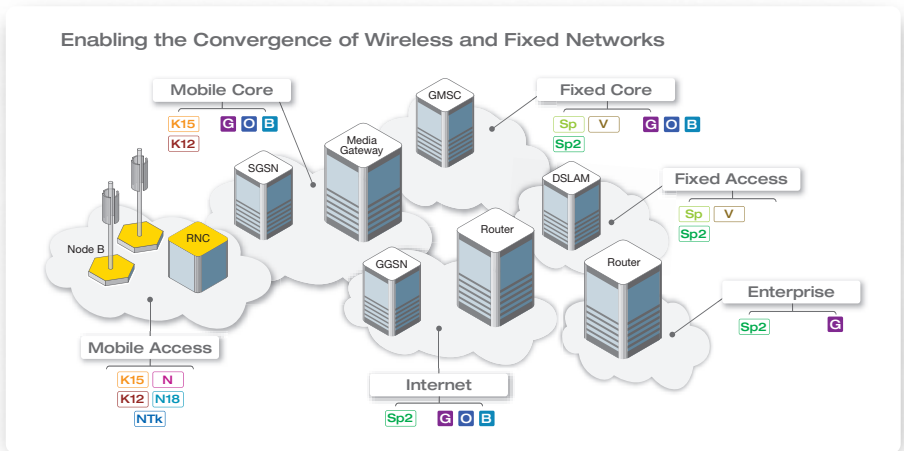▶ White Papers

Service
▶ Online look-up Tool
▶ Calibration

MyTek Resources
▶ Download Manuals
▶ Access to Software & Drivers
▶ Check on Order Status
▶ Review Service Status
▶ My Product Support
▶ E-Tutorials

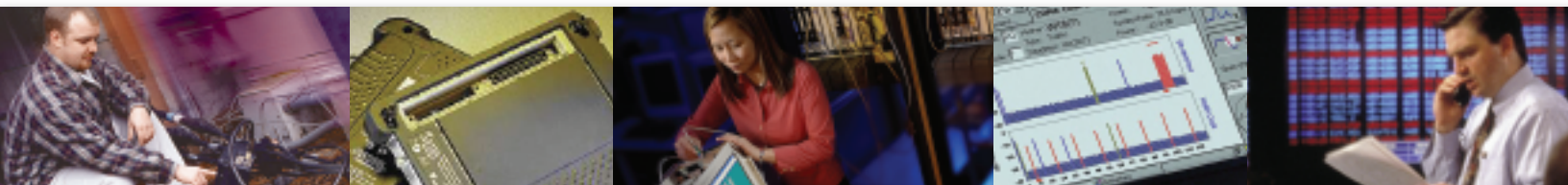## Enabling the Convergence of Wireless and Fixed Networks

Verify Equipment Design and Integrate into Network						Operate, Monitor and Manage				
Network Diagnostics						Network Management				
Network Element Test	Systems Integration Test	Interoperability Test	Field Trial	Installation and Commissioning	Acceptance Test	Network Maintenance & Restoration	Network Optimization	Service Performance & Quality Management	Resource Provisioning & Allocation	
K12 N18	K12 N18	K12 N18	K12 K15 N18	K15	K15 N18	K15 N18	K15 N18			Wireless
N	N	N	N	N N18 NTk	N NTk	N G NTk	N G	O B	O	
Sp Sp2	Sp Sp2	Sp Sp2	Sp Sp2	Sp Sp2	Sp Sp2	Sp Sp2	Sp Sp2			Wireline
			V	V	V	V				IPTV

Network Diagnostics
- K15 — K15
- K12 — K12
- Sp — Spectra
- Sp2 — Spectra2
- NTk — NetTek
- N — NSA
- N18 — NSA18
- V — VQM

Network Management
- G — GeoProbe
- O — Orion
- B — Beamer

K1297-G20
Functional Test System

As Mobile Networks from 2 to 3G and beyond, grow increasingly complex, the K1297-G20 Protocol Tester provides a very flexible modular hardware and software platform for monitoring, simulation and network element emulation. Tektronix offers an industry leading solution to meet all Protocol Test challenges, as well as extensive simulation and monitoring test tools. A wide selection of interface modules and software packages allow testing of most interfaces in mobile, core and access networks.

Features and Benefits
▶ The K12 addresses UMTS, TD-SCDMA, GPRS, GSM, SS7, CDMA2000 and other mobile, core, VoIP and access networks with 2600+ protocols
▶ State of the art 3G monitoring/simulation/ emulation of signaling protocols at the Iub, Iur, Iu, Nb, Mc, Nc, and most of Gx like Gb and Gn for SIGTRAN, MGW, HSDPA, IMS network testing.
▶ Conformance test suites for GMM/SM and MTP3b
▶ End-to-end test via data generation of IP traffic on top of GTP emulation 2G, 3G Deciphering

Applications
▶ SIGTRAN function and interworking test
▶ HSDPA integration test
▶ MGW TFO (Tandem Free Operation) function test
▶ IMS function and interworking test
▶ Multi-MAP function test
▶ UE compliance function test
▶ 2.5G-3G SGSN function and capacity test
▶ Error insertion test

For further details visit:
www.tektronix.com/diagnostics

▶ New

K18
UTRAN Monitoring Probe

The K18 is the new UTRAN monitoring probe for the Network and Service Analyzer system. It provides a completely scalable solution, starting from a single STM-1/OC-3 bi-directional link (stand-alone probe) to a high number of links (multi-probe) to address the varied needs of network operators and equipment manufacturers.

The K18 hardware probe combined with a PC platform enables customers to minimize acquisition costs and obtain the high speed performance they need. The K18 probe performs real-time capture under heavy load from UTRAN STM-1/OC-3 optical interfaces, hardware filtering and first level hardware processing. The PC performs application measurements and acts as a data archive server. The K18 probes connect to the PC using 10/100/1000 BT ports.

Features & Benefits
▶ K18 offers excellent portability for most field installation and maintenance activities and reliable rack mounted stationary monitoring for test plant, operation and maintenance and network optimization activities.
▶ K18 offers data analysis at full line rate and high performance data capturing for immediate real-time analysis or subsequent off-line investigations. The K18 probe is equipped with a state of the art set of HW filters for data reduction (e.g. VPI/VCI, control plane/user plane) along with a leading edge HW automatic configuration for UTRAN logical channels for uncompromised high performance utilizations.

▶ K18 offers time synchronization between different probes via a dedicated cable enabling multi-interface multi-protocol UTRAN delay sensitive measurements and applications
▶ K18 flexible and dynamic product configuration and licensing scheme support optimal allocation of resources and improves asset efficiency

Applications
▶ The K18 solution is for Field Support Personnel of UMTS Network Operators and UMTS Network Equipment Manufacturers who need to perform basic protocol analysis tasks on a low number of network interfaces, both in the lab and in the field.
▶ The K18 solution is for Test Engineers working in Test Plants of Network Operators and in the lab of Network Equipment Manufacturers who need to verify the functionality and the performance of UMTS network elements for new protocol versions and interfaces.
▶ The K18 solution is for Operation and Maintenance Technicians of UMTS network operators who need to perform reactive maintenance and trouble ticket resolution in RNC sites.
▶ The K18 solution is for Network Optimization Technicians and Quality Department Technicians of UMTS network operators who need to perform proactive network optimization activities in RNC sites.

For further details visit:
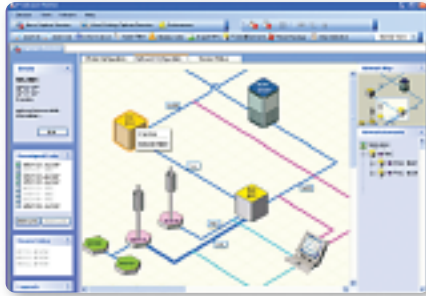**www.tektronix.com/diagnostics**

Network Diagnostics

K15
Monitoring Solution

The K15 is the Tektronix dedicated monitoring solution for mobile network testing, based on a high performance transportable platform equipped with real-time powerful troubleshooting applications and designed to handle the new demanding high performance requirements of mobile networks. All monitoring capabilities of the K1297-G20 that is described under its section. Application software is also available on the K15.

Features and Benefits
- ► "Automatic UMTS Iub deciphering"
- ► "H324.M Protocol Suite", "HSDPA Protocol Suite", "EDGE Test Suite", enables troubleshooting of mobile video telephony services and new interactive multimedia mobile services
- ► "Multi Interface Call Trace" for SS7, GSM, GPRS, EDGE, UMTS, cdmaONE, CDMA2000 networks
- ► "H324.M KPI and video quality analysis"
- ► Availability of E1/DS1/J1, STM-1/OC-3c, 10/100 fast ethernet monitoring cards with high port density along with fixed network, SS7, GSM, GPRS, EDGE, UMTS, cdmaONE, CDMA2000 protocol decoding
- ► "Stream to Disk" capabilities
- ► NTP- and GPS synchronization along with the "File Merge" application permits distributed multi-site monitoring
- ► "Hardware filters" for STM-1/OC-3 allow network analysis under heavy load

For further details visit:
www.tektronix.com/diagnostics

Network & Service
Analyzer

The UTRAN network and service analyzer is a suite of software applications for troubleshooting and optimization of 3G networks and services based on the K15 or K18 platform. It enables mobile network operators and equipment manufacturers to identify the root cause of poor quality of 3G services, by mapping service problems to the underlying UTRAN network problems.

- ► "Automatic UTRAN topology discovery" provides a graphical map of the network topology being monitored by the instrument, including network elements, interfaces and logical links
- ► "Automatic UTRAN instrument configuration" of all the necessary parameters to monitor the UTRAN interfaces
- ► "UTRAN Multi Interface Call Trace" allows to trace subscribers' calls/sessions over multiple interfaces and network elements
- ► "UTRAN Key Performance Indicators" allows to identify the area of service problems, map service problems into network problems, reduce time for network optimization and troubleshooting
- ► "Cell Overlapping Matrix" calculates detailed interference measurements and cell neighbor relation, enabling UTRAN radio network planning and optimization, reducing the need for expensive drive test campaign
- ► "Multi User Operation"
- ► FDD and TD-SCDMA is supported

For further details visit:
www.tektronix.com/diagnostics

Spectra/Spectra2 Wireline and VoIP Test Solution and Spectra2|VQM IPTV Monitoring Solution

Spectra sets the industry standard as a sophisticated but easy-to-use SS7-based signaling test tool. Spectra2 delivers a conformance testing solution for today's IP telephony. Users can perform deep protocol analysis, standards-based conformance testing, network element emulation, and load generation. Spectra2|VQM provides comprehensive IPTV video stream monitoring that includes capture, analysis, and metrics for transport, content, and quality in a portable system.

Spectra
- ► Conformance testing with over 2,400 test cases. Industry-leading in SS7
- ► Protocol support for +150 PSTN protocols
- ► High speed links - test of SS7/ATM, SS7/unchannelized HDLC, M3UA and M2PA
- ► Sigtran - performance test of signaling gateways and next-generation STPs

Spectra2
- ► VoIP conformance testing
- ► Easy-to-use Ping-Pong Editor simplifies scripting of complex call models
- ► Monitor, test and generate SS7 ISUP interactions between packet and circuit networks
- ► Large-scale load solution to validate network signaling and media delivery at maximum stress levels
- ► iReport extends and enhances the statistical reporting features in Spectra and Spectra2

Spectra2|VQM Video
Quality Management
- ► Monitor RTP Video Streams
- ► Supports Forward Error Correction (FEC) with reports for both pre- and post-correction statistics in real-time
- ► Captures every single video packet for extensive quality scrutiny
- ► Exports statistics allowing to browse historical data
- ► Includes integrated perceptual metrics for video quality based on perceived quality as experienced by the user.

For further details visit:
www.tektronix.com/diagnostics

Unified Assurance Description

The Unified Assurance solution is comprised of the Beamer, Orion, and GeoProbe products and addresses mobile, IP multi-service, and fixed carrier environments. Mobile and fixed carriers gain real-time visibility into the services delivered, the customers using those services, and the network elements delivering them. Guided actionable paths accelerate problem isolation and troubleshooting efforts.

Features and Benefits

▶ Real-time performance management and QoS reporting
▶ Proactive, automated problem detection and isolation
▶ SS7, GSM, GPRS, UMTS and IP environments
▶ Open architecture with integrated solutions
▶ True end-to-end performance management
▶ Improve acquisition and retention rates of high value customers
▶ Streamline operational support systems
▶ Reduce operating expenses and capital expenditures
▶ Enable informed business planning

For further details visit:
www.tektronix.com/networkmanagement

Unified Assurance Products

Beamer™ for Customer Assurance

Used by carriers to manage customers and their quality of services

▶ End-to-end, real-time visibility to the enterprise subscriber experience
▶ Management level QoS reporting focused on high value accounts
▶ Open architecture integrates with existing SLA management systems
▶ Customer satisfaction, retention and acquisition
▶ Improved profitability through organizational efficiencies

Orion™ for Service Assurance

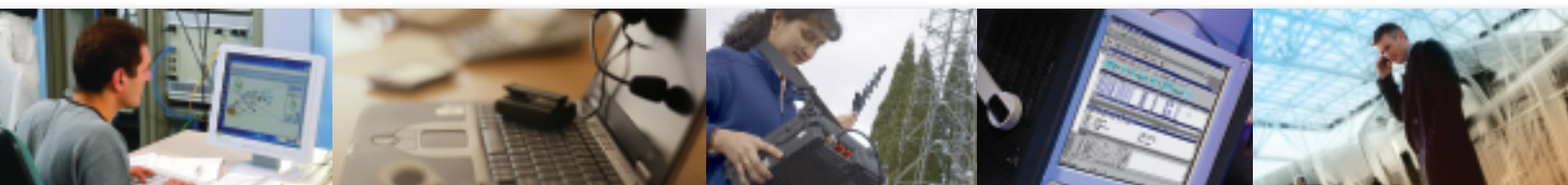Used by carriers to proactively manage the performance and quality of carrier services

▶ End-to-end performance for intra-network commercial services and comprehensive inter-network/interconnection services
▶ Individual services monitored per session across all subscriber usage
▶ Proactive notification and localization of problems to network entities

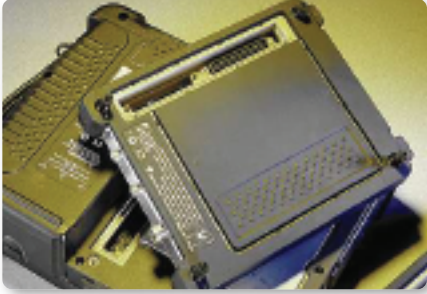### GeoProbe™ for Network Assurance

World class system used by carriers to measure performance, troubleshoot, manage and resolve network issues, as well as gather critical data for other carrier systems

▶ Real-time monitoring of SS7, GSM, GPRS, UMTS & IP networks
▶ Unmatched network-wide surveillance & actionable troubleshooting path
▶ Real-time alarms & performance statistics
▶ 100% call/session trace with multi-protocol correlation
▶ Advanced performance KPIs & reports

For further details visit:
www.tektronix.com/networkmanagement

Wireless Field Test

Base Station Tester

The NetTek family consists of a variety of base station field test modules, rugged and portable it will easily and effectively maintain peak performance of base station transmitters even in remote locations.

Transmitter Test

▶ Measure power and verify the most important RF transmitter functions of GSM/GPRS, EDGE, W-CDMA/UMTS, HSDPA, cdmaOne, CDMA2000 1x RTT, CDMA2000 1xEV-DO, TDMA and AMPS base stations.

▶ Interference analyst with high sensitivity, including Noise Floor, Signal Strength, AM and FM and Spectrogram.

▶ Measure field strength for W-CMDA and other RF signals to assure compliance with emission limits.

Antenna Test

▶ Improve Quality of Service through preventive maintenance activities on antennas

▶ Easy-to-use VSWR or Return Loss and Distance-to-Fault (DFT) measurements to locating antenna and transmission line trouble

▶ Advanced calibration technique speeds and simplifies yourmeasurements by allowing a single calibration for use across entirefrequency range

▶ Modular form factor, allows for easy future expansion with additional and new functions

Backhaul Test

▶ Timed T1 or E1 acceptance tests

▶ User-defined Pattern Sequence Testing and timed Testing

▶ Verify most important T1 or E1 characteristics for field testing: Signal level, Line coding, Frame sync

▶ Verfication of DSO Timeslot configuration

▶ Troubleshooting and diagnosis of T1 or E1 alarms and errors

Interference and Coverage Analysis

The RF Scout™ Interference Hunter is a rugged handheld tool that assists solving every aspect of RF signal debugging and optimization. It deals with out-of-channel interference, in-channel interference and coverage issues.

Explore, Discover, Analyze and Document your interference issues, inside of buildings and outside.

Features & Benefits

▶ Spectrum Analyzer functionality
▶ Interference Analysis Tool Set
▶ Multi-Standard Scanners for Carrier issues
▶ Integrated Mapping (iMap) for in-field analysis of problems
▶ Handheld form factor

Applications

▶ Exploration, Discovery, Analysis and Documentation of interference and coverage issues both indoors and outdoors

Explore: Look for interfering signals
Discover: Spot and identify interfering signals
Analyze: Analysis of interfering signals
Document: Easy documentation of interference and coverage issues

▶ Signal clearing during green field installs

▶ Troubleshooting interference and coverage issues, both in buildings and outside

Y400 Platform

The Tektronix NetTek® is a light, rugged, portable field tool. Various test modules that can be added offer proven measurement capabilities suitable for all field environments

Features and Benefits

▶ Modules allow for easy future function expansion

▶ Familiar Windows CE interface with touch screen design

▶ Rugged, light weight, easy to use anywhere

Applications

▶ BTS transmitter analysis
▶ Interference hunting
▶ BTS antenna and transmission line analysis

For further details visit:
www.tektronix.com/btstesting

The Tektronix Customer Service Advantage

You can trust Tektronix to offer unequalled engineering expertise and a customer-centric approach to ensure the optimal performance of your Tektronix products and maximize the lifetime value of your Tektronix investment. We call it your Customer Service Advantage.

This is what you get with the Tektronix Customer Service Advantage:

► Access to the source of product knowledge: No one can do it better than Tektronix. We designed it. We know how to optimize it. We ensure that your Tektronix products deliver peak performance.

► Your challenges solved: Our people listen to you. We go out of our way to get the exact expertise necessary to satisfy your need – it is part of the way we do business. It is part of standing behind our products.

► **Summary of Basic Service Coverage**

Repair Service Coverage	Calibration Service Coverage	On-site Service
► Coverage of equipment, parts, labor and transportation ► Applicable product updates ► Applicable safety and reliability updates	► Accredited calibration ► Traceable calibration ► Functional verification ► Applicable product updates ► Applicable safety and reliability updates ► Calibration records retention	► Functional verification or calibration ► Applicable product updates ► Applicable safety and reliability modifications Availability of On-site Service Coverage dependant on geographic location and Tektronix instrument.

► Comprehensive and thorough treatment: Software updates, safety and reliability modifications, and cosmetic enhancements are included if applicable. Products are returned to you in a "like new" condition. Worldwide support is available through the Tektronix network.

► Efficiency and convenience: No hassle service from initial service call to turnaround and delivery – our goal is to ease your service management and minimize downtime while your instrument is being serviced.

► Flexible repair and calibration service: Your specific needs addressed by a team of professionals focused on getting your instrument back in operation as soon as possible. You have choices of flexible options and service packages to meet your needs. And access to the best on-call technical support staff in the industry, with over 20 man years of training per support engineer.

► Customer centric approach dedicated to serving your needs everyday: We value your relationship and believe you deserve a better price for your loyalty. Tektronix Customer Service Advantage Programs are a cost effective addition to your standard warranty – and are designed to optimize your Tektronix product performance. Gain productivity and return on your investment through efficient service management and fixed cost of service.

Only Tektronix knows Tektronix instruments the best. Get checked by Tektronix.

For Further Information

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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