



# Innovation is Everywhere.

Expertise to succeed in the Digital Age.

**Tektronix**<sup>®</sup>



# Faster. Smarter. Anytime. Everywhere.

Stay ahead in the Digital Age with Tektronix, the test, measurement and monitoring experts.

Rapid advances in digital technology are revolutionizing every aspect of how we communicate, work, play and travel. Every day, the technology that surrounds us is becoming smaller, faster, smarter, better connected, more responsive—and more tightly integrated with every aspect of our lives.

People today increasingly expect to be connected—right away, anytime, everywhere—with a vast networked realm of digital communication, information and entertainment.

For the technology innovators who are bringing about this fundamental reshaping of our world, this new era offers immense opportunities, along with equally large challenges.

## Surviving—and Thriving—in the Digital Age

Companies need to adapt to rapidly evolving technology and market conditions. Just staying in the game demands the continual ability to create new devices and systems and to execute better and faster.

Minimizing time to market is a competitive necessity, along with the relentless pressure to reduce design cycles. Companies need to find and solve problems faster and more efficiently, while maximizing productivity and return on investment.

Delivering a smart, seamless, highly connected, personalized user experience requires the smooth integration of a complex array of different technologies, components, platforms and services compatible with multiple industry standards.

In such a potentially chaotic environment, highly reliable and effective test, measurement and monitoring solutions are critical. Innovators need tools that are powerful, yet easy to use; based on the latest technology, yet adaptable enough to stay on top of the accelerating pace of change.

## A Rich History of Enabling Innovation

Companies turn to Tektronix for the most reliable, accurate and high-quality instruments and software to find and solve today's tough test challenges.

Not only does Tektronix create world-class test, measurement and monitoring solutions that meet today's needs, but by helping define new standards we also play an integral part in solving future technical challenges.

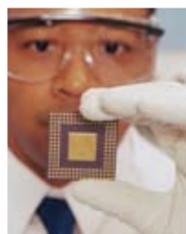
With a rich history of enabling customer innovation and solving technology problems, our expertise and products have played pivotal roles in the development of the computing, video, consumer, aerospace and telecommunications industries.

At Tektronix, we're passionate about applying technology to solve customer problems.

The most innovative companies on the planet turn to Tektronix for expertise to help move their products out of the lab and into the market.

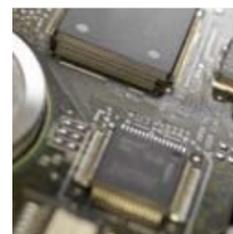
## Enabling Innovation from Silicon to Services

Tektronix' world-class test, measurement and monitoring solutions help advance technology throughout the digital ecosystem—from next-generation chips and integrated systems to the latest video and communications services.



### Chip

Tektronix offers precision instruments and analysis software for design validation and performance characterization.



### Board

We provide comprehensive measurement tools for chip and circuit-board debug and conformance testing.



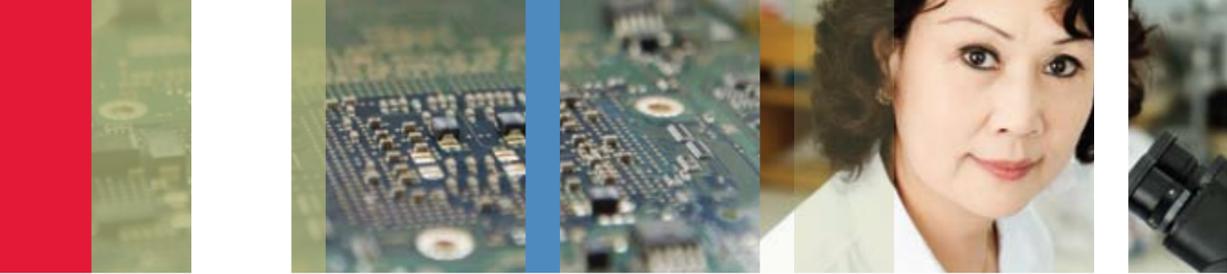
### Device

Fully integrated Tektronix solutions enable hardware and software verification and functional test.



### Network

Advanced network diagnostic and management solutions from Tektronix support fixed, mobile, IP and converged multiservice networks.



High-Speed Serial Technology

# At the Epicenter of Change.

Rapid advances in digital technology are bringing huge changes to the electronics industry. Tektronix is ideally positioned to help companies innovate and succeed with comprehensive test, measurement and monitoring solutions based on expert understanding of the primary trends driving the Digital Age:

## Accelerating Performance

Rich, data-intensive digital experiences, enabled by high-speed serial data technologies

## Pervasive Electronics

Smart, pervasive computing devices, enabled by embedded systems technologies

## Video Explosion

Thrilling new video experiences, enabled by digital video technologies

## Wireless Everywhere

Ubiquitous, untethered connectivity, enabled by digital RF technologies

## All IP, All the Time

Powerful new converged network services, enabled by communications network technologies

# Accelerating Performance:

Improving the user experience by overcoming the slowest link.

### Complete Solutions for High-Speed Serial Design

The need for accelerating performance—greater bandwidth and speed—continues to grow, whether to drive graphics where the CPU, graphics subsystem and memory must move data constantly as an image changes, or to create ever faster supercomputing backplanes to help unlock the riddles of high-energy physics.

Because the latest serial technologies are faster and more complex, Tektronix meets these demands with serial data test and measurement solutions across an entire product development value chain, from chip manufacturers to product integrators.



Technology users increasingly demand always-present, instantaneous, interactive access to digital content. Today's plug-and-play, high-resolution, immersive user experiences rely on fast serial bus technology to transmit immense amounts of data at ever-increasing speeds.

Tektronix' expertise with high-speed serial standards enables innovators to deliver high performance and ensure interoperability while shortening design cycles and keeping development costs under control.

### Design Quickly and With Confidence

Leading-edge designs, short product life cycles and increased design complexity—all based on ever faster and more advanced serial technologies—demand validation and test equipment capable of greater performance and more extensive analysis.

A new generation of Tektronix measurement tools includes real-time and sampling oscilloscopes, active probing, logic analyzers, signal sources and application-specific software. They deliver an entirely new test bench for high-speed serial data, with industry-leading performance to capture, display and analyze the most complex designs and challenging serial data signals.

### Standards Expertise That's Designed Into Our Tools

As a leading participant in worldwide serial standards bodies, Tektronix is an equal partner with the companies that bring these innovative technologies to market.

Tektronix collaborates on standards development for a complete range of leading and emerging serial technologies, including DisplayPort, Gb Ethernet, HDMI, PCI Express, SATA and USB. Drawing on our intimacy with the stringent measurement and analysis requirements for these standards, we design complete serial data test solutions that ensure conformance to current and emerging standards.

For more information, see [www.tektronix.com/experts/serial](http://www.tektronix.com/experts/serial)

**Intel** relied on Tektronix tools and expertise to validate the performance of the new 100-meter Infiniband cable, operating at speeds up to 20 Gb/s. The world's longest InfiniBand optical cable helps accelerate the performance of large computing clusters.

**NEC** uses Tektronix ultra-high-performance real-time oscilloscopes in developing FB-DIMM memory modules for use in PCs, data center servers and other computing devices.

**NVIDIA** uses Tektronix ultra-high-performance real-time oscilloscopes for the development and test of the latest high-speed serial designs. Based on PCI Express, HDMI and DisplayPort technologies, these high-end graphics create more lifelike experiences for gamers.



Embedded Systems Technology



Video Technology

## Pervasive Electronics:

Meeting the challenge of deploying embedded systems technologies.

### Everything Needed for a Cost-Effective Embedded Test Bench

Embedded systems can contain many different types of devices, including microprocessors, microcontrollers, DSPs, RAMs, FPGAs, A/Ds and D/As. These various devices have traditionally communicated with each other and the outside world using wide parallel buses. Today, however, more and more embedded systems are replacing these with serial buses.

Even so, parallel communications are still quite pervasive. Tektronix offers a full line of award-winning instruments to help engineers solve the mixed-signal debug challenges common in today's embedded designs.



Whether we recognize them or not, embedded systems are all around us. In fact, throughout much of the world, we typically encounter more than one hundred embedded systems every day. Virtually every electronic device designed and produced today is an embedded system.

The shrinking cost and growing performance of computing technology leads to smaller and more powerful processing devices integrated into a huge array of everyday items: vehicles, medical systems, and industrial and consumer electronics.

Tektronix increases productivity for embedded system developers by providing test and measurement products and expertise for the special challenges posed by developing electronic devices for such diverse and demanding environments.

### Tools That Simplify Complex Designs

Today's embedded designs often integrate several different technologies, including analog and digital signals, as well as both standardized and custom parallel and serial buses in a single package.

Tektronix measurement tools, including signal sources, digital and mixed-signal oscilloscopes and logic analyzers, help simplify complex designs by enabling engineers to capture and measure a wide variety of signals and to visualize and analyze them at different levels of abstraction.

### Insight Beyond Raw Data

Diagnosing and solving problems within a complex embedded system requires far more than just the ability to acquire data. Tektronix products feature advanced capture and analytic capabilities supporting industry-specific technologies, including CAN, DDR and GDDR memory, and FlexRay, I<sup>2</sup>C, LIN and embedded buses.

For more information, see [www.tektronix.com/experts/embedded](http://www.tektronix.com/experts/embedded)

**Garmin Industries** uses Tektronix mixed-signal oscilloscopes to ensure accurate timing between serial and parallel data buses in its aviation GPS systems.

**Xircon Technologies**, a developer of electronic hand tools such as stud finders and metal detectors, uses Tektronix oscilloscopes to make simple and efficient work of extracting much-needed answers from waveform data of embedded designs.

**Denso**, the largest automotive electronics component manufacturer in Japan, uses Tektronix real-time oscilloscopes and high voltage differential probes to analyze nanosecond transient noise spikes in its Electronic Control Units (ECUs) for engine control.

## Video Explosion:

Solving today's digital delivery and quality challenges.

### Testing the New Digital Video Ecosystem

To deliver on the potential of digital video, the content and delivery system must be interoperable and easy to use. Enabling technologies include non-linear editing and digital storage; new audio technologies; digital compression; compressed video distribution via a variety of physical interfaces, including radio frequency (RF) and TCP/IP; and new transport technologies necessitated by HD such as 3-Gb/s Single-Link Serial Digital Interface (SDI).

Tektronix is the video test expert, providing the broadest and most comprehensive video test and monitoring portfolio for existing analog and new digital video technologies.



Throughout the video ecosystem, digital technology is quickly replacing analog. Content is exploding, technologies are converging—and a new competitive landscape is being formed.

Tektronix helps video innovators stay abreast of the relentless pace of change with an unparalleled range of video test, measurement and monitoring solutions across the entire ecosystem. The deep expertise of Tektronix in cutting-edge video technology and workflow innovation helps companies meet and overcome today's digital challenges.

### Tools for a Changing Video World

Organizations involved in the development of new technologies, new services or delivery of new consumer electronic devices all face similar needs. R&D has specific test and measurement needs for compliance, performance and interoperability. Standard-definition and high-definition (HD) digital video are becoming more pervasive. New delivery networks enable services such as IPTV. More content is necessitating new forms of workflow and quality assurance. Tektronix provides the tools companies need at every point in the digital video ecosystem.

### Intuitive Solutions Make Teams More Productive

Tektronix video instruments feature powerful and easy-to-use interfaces so engineers and technicians can monitor video in real time, ensuring the delivery of a high-quality video experience. At the same time, these tools provide deep analysis capabilities that reduce time to insight when identifying, diagnosing and correcting problems.

For more information, see [www.tektronix.com/experts/video](http://www.tektronix.com/experts/video)

**NBC** and **China Netcom** both selected Tektronix waveform monitors and other instruments to ensure the flawless HD video broadcast of the Beijing Olympic Games.

**Gearhouse Broadcast**, a UK project solutions and systems integration company, utilized Tektronix waveform monitors to provide content verification capabilities in support of the World Cup.



Digital RF Technology



Network Communications

## Wireless Everywhere:

Meeting the demand for ubiquitous connectivity.

### Tektronix Solutions for a Complex Digital RF Environment

Wireless communication now uses digital baseband signals, FPGAs and digital beam-forming antenna systems. The signals created are increasingly complex and dynamic, often using sophisticated modulation and multiplexing schemes that rapidly change frequency, amplitude and phase.

The Tektronix Digital RF test bench includes arbitrary waveform generators to create ideal, distorted or “real-world” signals; logic analyzers for capture and analysis of problems within the digital baseband segment of a digital RF design; real-time oscilloscopes for measurement of time and frequency domains; and real-time spectrum analyzers to seamlessly capture RF signals changing over time and to perform spectral, time and modulation analysis with time-correlated multi-domain views.



Digital RF is a major driver for new applications that are freeing consumers from the wires that tether them. These technologies integrate digital computing with traditional analog RF technologies, making wireless functionality available in more places, to more people, for more applications and at a lower cost.

Digital RF demands test and measurement solutions that can capture, recreate and analyze the time-varying nature of today’s signals. From signal generation to monitoring and acquisition, Tektronix’ modern digital RF test bench embodies extensive time-domain and analog expertise to measure both analog and digital signals, from the baseband to the antenna.

### Making Efficient Use of a Limited Spectrum

To maximize use of the limited available spectrum, digital RF makes use of time-varying techniques such as chirping, frequency hopping, signal bursting and adaptive modulation. These techniques result in RF signals that are increasingly complex and transient, making it harder than ever to find and resolve problems.

### Supporting the Latest RF Standards

Industry involvement and support for wireless standards—including LTE, RFID, SDR, UWB and WiMAX—ensure that Tektronix is in sync with technology advancements and new measurement challenges.

Our digital RF expertise results in test and measurement tools that are designed for the latest technologies, leading to rapid development and deployment along with interoperability and regulatory conformance.

For more information, see [www.tektronix.com/experts/digital\\_RF](http://www.tektronix.com/experts/digital_RF)

## All IP, All the Time:

Ensuring quality across next-generation networks.

### A Seamless Portfolio of Communications Test, Measurement and Monitoring Offerings

Tektronix provides companies with everything from diagnostic instruments that help engineers and technicians quickly identify, isolate and resolve problems to end-to-end integrated assurance monitoring to identify, localize and quantify customer service and network issues.

The products and solutions cover the latest technologies from the lab through to live communication networks.

Tektronix empowers its customers to lead the way toward fixed mobile convergence, broadband wireless access and triple-play services by supporting current and advanced protocols, applications and architectures such as 3G wireless, IMS, IPTV, LTE, VoIP and WiMAX.



Today’s networks are increasingly complex, involving an ever-expanding array of technologies, protocols and standards for both fixed and wireless networks.

To deliver the seamlessly connected and personalized experience that consumers demand, network manufacturers and operators turn to Tektronix for solutions that span the breadth of legacy and next-generation technologies. Tektronix offers a full line of protocol analyzers, field testers and network management solutions that can help your technical staff identify, locate and resolve any problem that may arise. By simplifying how network operators view their networks and services, Tektronix helps network operators and service providers bring high-quality offerings to market quickly and confidently.

### A Bird’s-Eye View of Service Quality

Tektronix provides a dashboard view of how networks and services are performing, showing at a glance where problems exist and may potentially occur, in addition to which customers are affected.

The combination of real-time and historical insight helps operators ensure the quality of the services and applications they deliver while reducing customer churn, operating expenses and unnecessary capital expenditures.

### Supporting the Move Toward Open Standards

As networks evolve toward open architectures, Tektronix’ expertise in open standards helps ensure smooth interoperability among network components from different manufacturers—so network operators can focus on adding value to their networks rather than sorting out interoperability problems.

For more information, see [www.tektronix.com/experts/network](http://www.tektronix.com/experts/network)

**Sony** utilizes Tektronix real-time spectrum analyzers to develop its contactless smart card technology. These RFID cards are now being used throughout Asia for ticketing and electronic money applications.

**Spybusters** uses Tektronix spectrum analyzers to identify wireless eavesdropping devices that may be located in clients’ facilities, including boardrooms and security trading floors.

**X-Com** makes use of arbitrary waveform generators and spectrum analyzers in the design and implementation of advanced radar systems.

**Orange Romania** utilizes Tektronix’ Unified Assurance (UA) network management suite for a true end-to-end view of network traffic, service and customer-level performance indicators.

**Korea Telecom (KT)** uses GeoProbe Network Assurance to test the deployment of new call-related services. With GeoProbe, KT proactively manages issues before, during and after the launch of new services over their intelligent network.

**Teligent**, a global supplier of services to telecommunications carriers, uses the Tektronix Spectra2 portable diagnostics platform and conformance test suites to provide on-site testing and analysis of voicemail and IP-based switch services in 3G/IMS-compatible networks.



## Maintain Your Competitive Edge.

Innovative companies throughout the technology ecosystem rely on Tektronix expertise to reduce time to insight, shorten design cycles, increase team productivity and help bring innovative products and services to market faster.

Tektronix delivers what it takes to succeed through industry leading products, next-generation test and measurement solutions, unmatched domain knowledge and award-winning service and support.

Complete product details can be viewed at [www.tektronix.com](http://www.tektronix.com)



Oscilloscopes

Engineers repeatedly face difficult challenges to accurately debug, characterize and test electrical designs. Tektronix provides the broadest and most complete portfolio of oscilloscopes and accessories to meet virtually every need, ranging from the entry-level 40-MHz TDS1000B to the world's fastest real-time oscilloscope, the 20-GHz DSA70000 Digital Serial Analyzer. With such a range of features and capabilities, you are sure to get the right product to meet your design and test requirements.



Real-Time Spectrum Analyzers

Discover the problem the instant your signal changes, trigger on the change, capture the signal seamlessly, and analyze the effects of the changes in a single time-correlated view. This is how our Real-time Spectrum Analyzers help you define issues and solve problems faster. Ranging from the handheld SA2600 to high performance RSA6100A benchtop instruments, all feature a unique "Live RF" real-time display of the spectrum and can show you frequency and amplitude changes over time.



Logic Analyzers

Capture and analyze the source of elusive problems that threaten your product development schedules. Our breakthrough, easy-to-use digital analysis tools provide the speed and visibility you need along with networking and analysis functionality. Tektronix provides both the TLA5000 and modular TLA7000 Logic Analyzer Series that supports up to 6528 channels and 48 independent data buses.



Signal Generators

Easily generate real-world signals: analog, digital or mixed signals, and ideal or distorted signals. Our portfolio of AFG3000, AWG5000, and AWG7000 Series function and arbitrary waveform generators covers a broad range of applications including RF and the fastest high speed serial data technologies. Tektronix generators provide superior performance and feature sets for unrivaled usability, functionality and versatility to shorten development and test cycles.



Video Test Instruments and Systems

Tektronix is the video test expert, providing the broadest and most comprehensive video test and monitoring portfolio for existing analog and new digital video technologies at most every point in the video ecosystem. Using our solutions, you can effectively integrate new technologies, improve workflow efficiency and achieve business excellence. The portfolio includes MPEG and Baseband Signal Analyzers, Generators, Monitors, and Video and Audio Signal Analyzers—including a unique Picture Quality Analyzer and the world's leading content quality system.



Network Monitoring and Diagnostics

The Tektronix network monitoring and diagnostics suite is the innovator's choice around the world. The network performance monitoring solutions and services support passive monitoring and active testing of entire communications networks, currently managing over 30% of the world's telecommunications calls. Tektronix' network diagnostics solutions and products test, measure and monitor signaling protocols in advanced networks and systems, supporting more than 100 carrier and cable networks in over 40 countries.

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**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](http://www.tektronix.com)



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