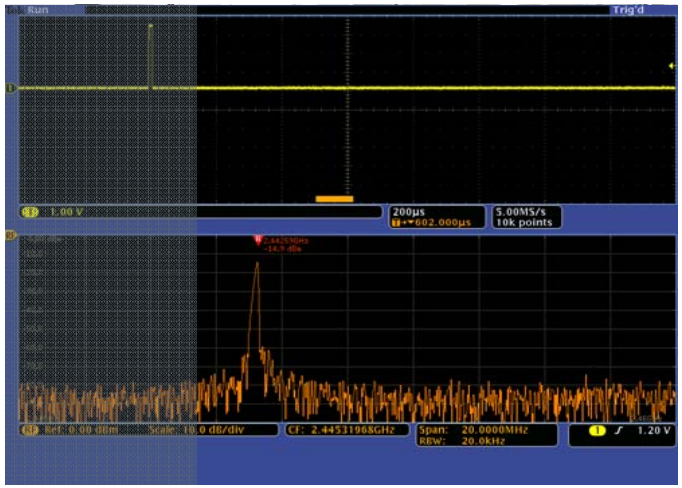
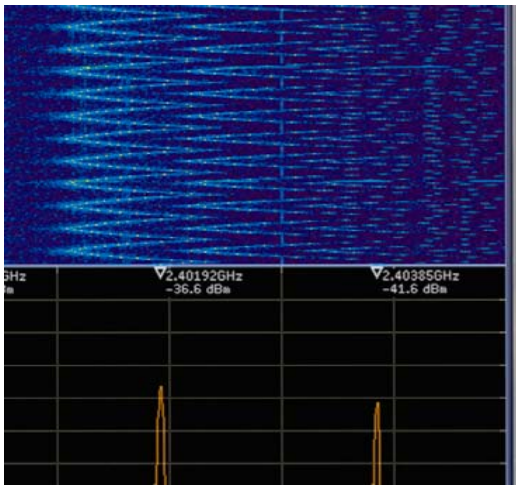
MDO4000B Series Self Guided Tour





Tektronix

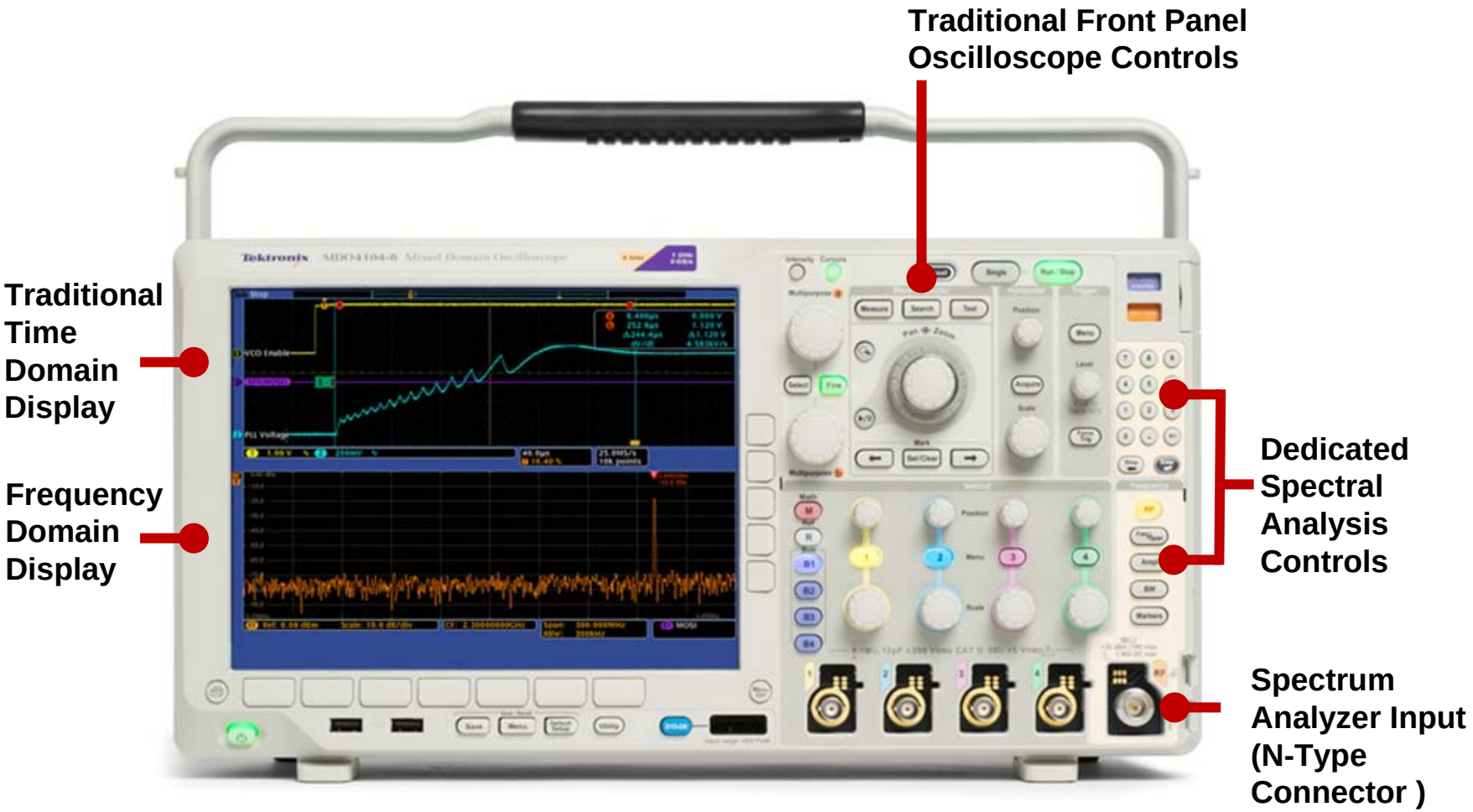
MDO4000B Mixed Domain Oscilloscope

Self Guided Tour

With this guide, you will explore what you can do with the world's first oscilloscope with an integrated spectrum analyzer. Applications range from simple frequency / amplitude measurements of RF signals to time-correlated acquisitions of analog, digital and RF signals that provide you with a complete system view of your device under test.

MDO4000B Mixed Domain Oscilloscope

Tour of the World's First Mixed Domain Oscilloscope

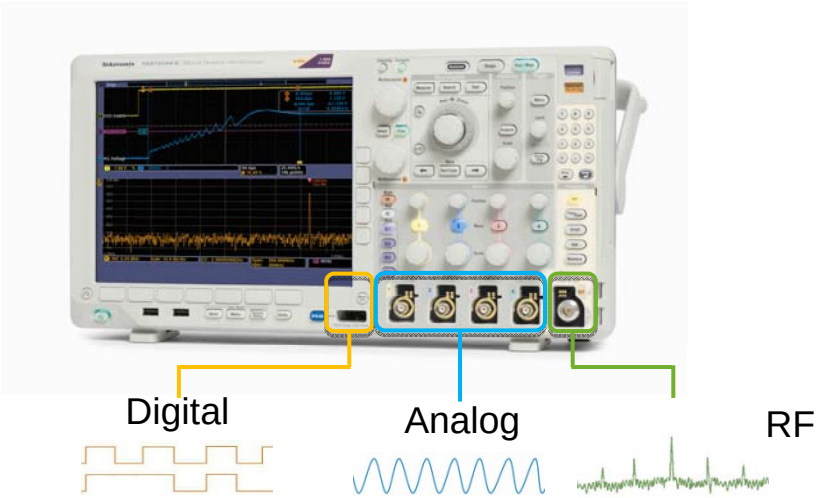


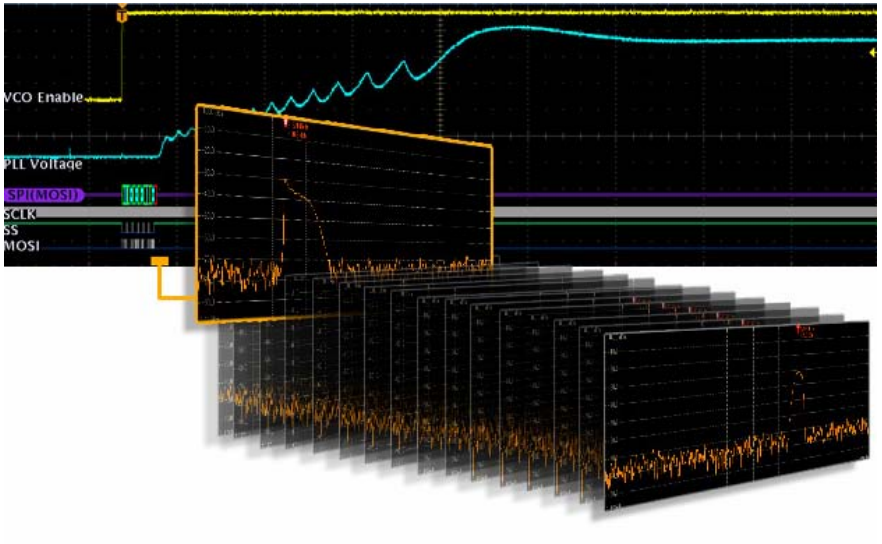
MDO4000B Mixed Domain Oscilloscope

How It Works

The Mixed Domain Oscilloscope

The MDO4000B is the world's first oscilloscope with an integrated spectrum analyzer. When the spectrum analyzer is off, the MDO works just like a traditional oscilloscope. When only the spectrum analyzer is on, the MDO works like a traditional spectrum analyzer. When both are on, you have the ultimate debug tool – the only instrument in the world capable of providing time correlated views of analog, digital and RF signals all in a single instrument.





Time and Frequency Domains

The real power of the MDO4000B comes from its universal trigger and acquisition system. All channels are fully integrated, so you can trigger on any of your signals and the oscilloscope will capture all channels simultaneously. As a result, all signals—analog, digital and RF—are time-correlated for accurate analysis.

Since the MDO4000B captures a long time period of your RF signal, you can choose the precise spectrum you want to see at any point in time. By simply moving Spectrum Time through your acquisition, you can see how your RF spectrum is changing over time or device state.

MDO4000B Mixed Domain Oscilloscope

Checklist for the Tour

Before beginning the tour, please be sure you have the following items:

❑ MDO4000B Mixed Domain Oscilloscope
❑ Power cord

❑ MDO Demo 1 board

❑ USB cable

❑ N-to-BNC adapter

❑ Two (2) TPP1000 or TPP0500/B passive probes with hook tips attached

Hook tip

❑ P6616 digital probe with extension ground tips connected to D0, D1 and D2

Extension ground tips can be found in the Logic Probe Accessories Kit

❑ BNC cable

04000B Mixed Domain Oscilloscope

g up for the Tour

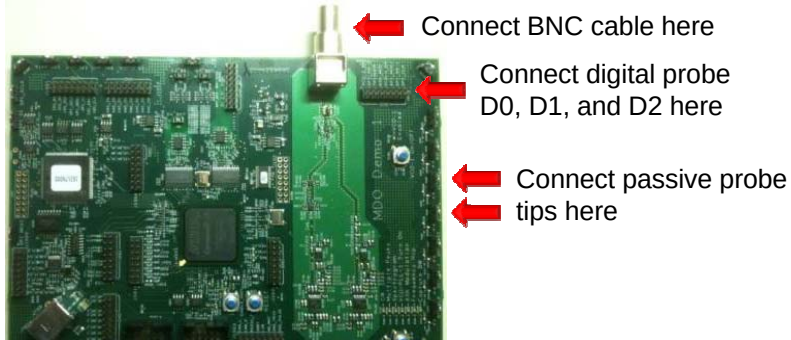
any test, one of the first steps is to connect the instrument to the device under test. For the initial exploration, a test s been provided to output signals needed for the tour. After you've completed the tour and have gained an nding of how the MDO4000B operates, please feel free to connect to your own system and see how the MDO can our day-to-day work.

Setup the Oscilloscope and the Test Board

and power on the oscilloscope.
he (2) male B connectors of the able into the (2) USB host ports rear panel of the oscilloscope.
he (1) male A connector of the able into the USB device port test board. The board is on he LEDs are lit.

2 Attach Probes to the Scope

- Connect TPP1000 or TPP0500/B passive probes to Channel 1 and Channel 2 inputs on the oscilloscope.
- Connect the P6616 digital probe to the D15-D0 input on the oscilloscope.



3 Connecting the Probes to Test Board

- Connect Channel 1 probe tip to **VCO-1 Enable** loop, connect Channel 2 probe tip to **PLL-1** loop and both probe grounds to **GND** on the test board.
- Connect Digital probe:
  D0 to **SPI_CLK**,
  D1 to **SPI_SS-1**,
  D2 to **SPI_MOSI**
  square pins on the test board.
- Connect the N-to-BNC adapter to the RF input on the oscilloscope.
- Connect the BNC cable to the N-to-BNC adapter. Connect the other end of the cable to the **RF Out** BNC connector on the test board.

04000B Mixed Domain Oscilloscope

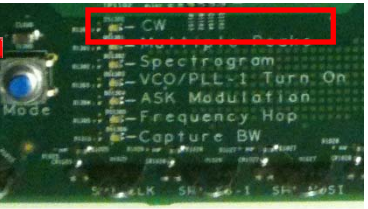
Spectrum Analysis

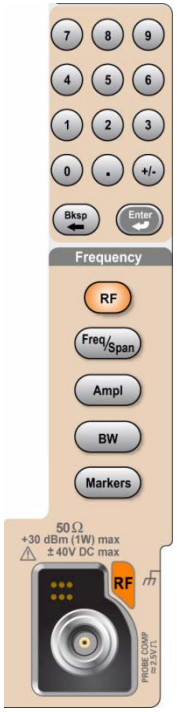
DO4000B is the world's first oscilloscope with an integrated spectrum analyzer. When the need arises to view RF it is far simpler and faster to continue using your tool of choice – the oscilloscope – rather than finding and ng a spectrum analyzer.

ve: See how simple it is to perform basic spectrum analysis on an MDO4000B

Setting Up

the **Mode** button on the test until the CW LED is lit.
the **Default Setup** front-panel .
the **Ch1** front-panel button twice n off Ch1
RF front-panel button to turn on pectrum analyzer





2 Spectrum Analyzer Controls

- Notice an entire section of the front panel is dedicated to spectrum analyzer controls – no buried menus!
- Most commonly performed functions have front panel keys associated with them
  - Setting center frequency/span
  - Setting reference level
  - Setting resolution bandwidth
  - Using markers
- 10 digit keypad on front panel for precision entry of specific values

3 Basic Settings

- Press **Freq/Span** button
- Press **Center Frequency** (CF) bezel button
- Use keypad to set CF to 2.4 GHz
- Press **Span** bezel button
- Use **Multipurpose** b to set span to 10 MHz
- Press **Ampl** button
- Use **Multipurpose** a to set Reference Level to -10dBm
- Notice spectral peak is automatically marked

Summary

dition of a true RF acquisition system, N-connector, dedicated spectrum analyzer controls and user interface make O4000B Series the world's first oscilloscope with an integrated spectrum analyzer. Now you can continue to use

04000B Mixed Domain Oscilloscope

al Peak Identification

ng peaks in your spectrum is one of the first steps to understanding the behavior of your design. Whether you are he basic marker functions or analyzing noise density or phase noise, easy-to-use tools are critical for saving time.

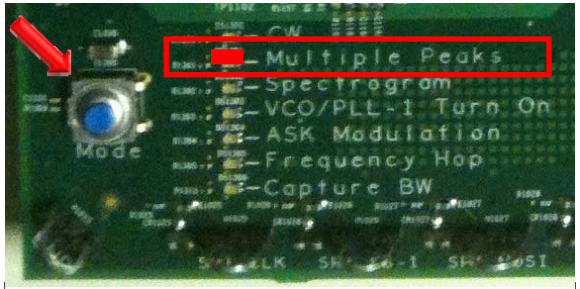
ve: Discover how the frequency and amplitude of peaks in the spectrum are quickly identified with automated peak s. Learn how manual markers can be used to measure non-peak portions of the spectrum.

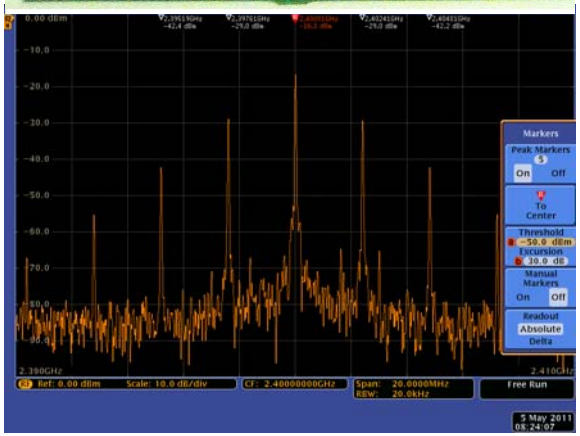
Setting Up

the **Mode** button on the test until the Multiple Peaks LED is

the **Default Setup** front-panel .

the **Utility** front panel-button.
Utility Page and select **Demo** Multipurpose a .
Multiple Peaks.
Recall Demo Setup.
Markers front-panel button.





2 Exploring

- Use Multipurpose a to set number of Peak Markers to 11
- Press Threshold and use Multipurpose b to set threshold to -70.0 dBm
- Notice that peaks meeting the criteria are indicated with Absolute Frequency and Amplitude Readouts
- Press Readout to select Delta
- Notice peak readouts are now relative to the Reference Marker R
- Press Manual Markers
- Notice the Ref. Marker R can now be moved anywhere via manual markers

Summary

erforming spectrum analysis, markers are an invaluable tool for easily quantifying peaks in a spectrum. Simply hreshold and excursion values to automatically mark all peaks that meet your criteria. Or user manual markers to

DO4000B Series Automatic Markers

DO4000B Series Manual Markers

Marker Options

Peak Markers	▪ Press to turn markers on or off. ▪ Use Multipurpose **a** to select maximum number of peak to be marked.
R To Center	▪ When Manual Markers are off, then the Reference marker R is placed on the highest amplitude peak. ▪ When Manual Markers are on, then the Reference Marker R is attached to Multipurpose **a** control. ▪ Press to quickly set the Center Frequency to the frequency of the Reference Marker R.
Thresholds	▪ If you are only interested in marking peaks above a certain level, then set the marker threshold to that level.
Excursion	▪ If spectrum is noisy and all markers are on non-essential peaks, then adjust the excursion value. The excursion value is how far a signal amplitude needs to fall between marked peaks to be considered another valid peak.
Manual Markers	▪ Press to turn on two manual markers to use for measuring non-peak areas of the spectrum.
Readouts	▪ Absolute: Readouts are absolute frequency and absolute amplitude. ▪ Delta: Readouts indicates each peak's delta frequency and delta amplitude relative to the Reference Marker R. ▪ Manual Markers have a third line of readout information – For multipurpose **a** marker, this indicates noise density – For multipurpose **b** marker, this indicates noise density when readout is set to absolute; when set to delta, it indicates phase noise relative to multipurpose **a** marker

4000B Mixed Domain Oscilloscope

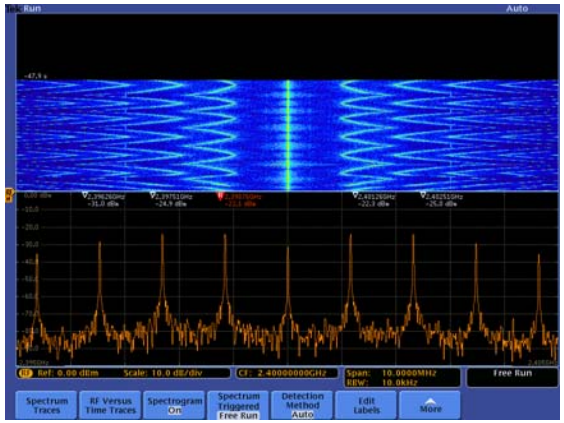
g RF Signals Over Time

rogram is a view of relative amplitudes in a spectrum as seen over time. The spectrogram display provides an color map showing how your signal varies over time. You can even go back and compare previously acquired data.

ve: See how a spectrogram can be used to monitor a slowly changing RF signal and view different spectrums within ctrogram.

Setting Up

the **Mode** button on the test
until the Spectrogram LED is lit.
the **Default Setup** front-panel
.
the **Utility** front panel-button.
Utility Page and select **Demo**
Multipurpose a .
Spectrogram.
Recall Demo Setup.
Menu Off front-panel button.



2 Exploring

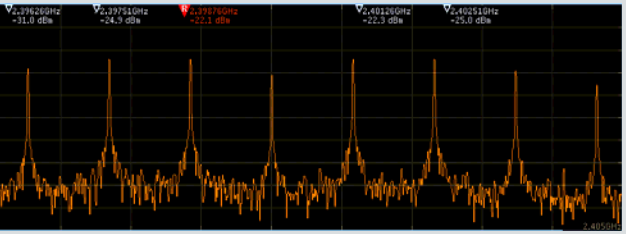
- Allow spectrogram to accumulate until half of the spectrogram display area is filled.
- Press **Run/Stop** to stop acquiring.
- Press **RF** button.
- Press Spectrogram.
- Turn Multipurpose a to scroll through Spectrum Slices.
- Or, enter desired Slice using keypad (such as slice -55).

Summary

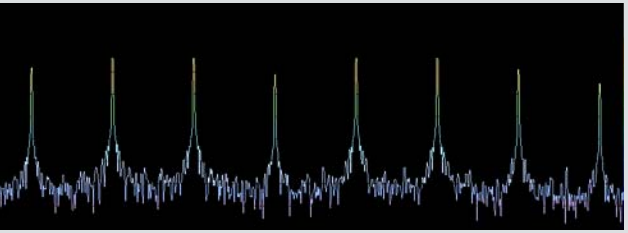
e spectrogram view you can view how your RF signal is changing over time. You can monitor only portions of the triggered) or look at a wider range of signals (free run). For many designs, spectrum analysis begins with signal

ow Spectrograms are Generated

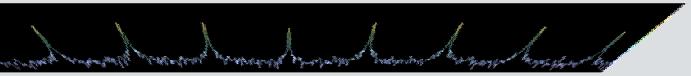
um Acquired



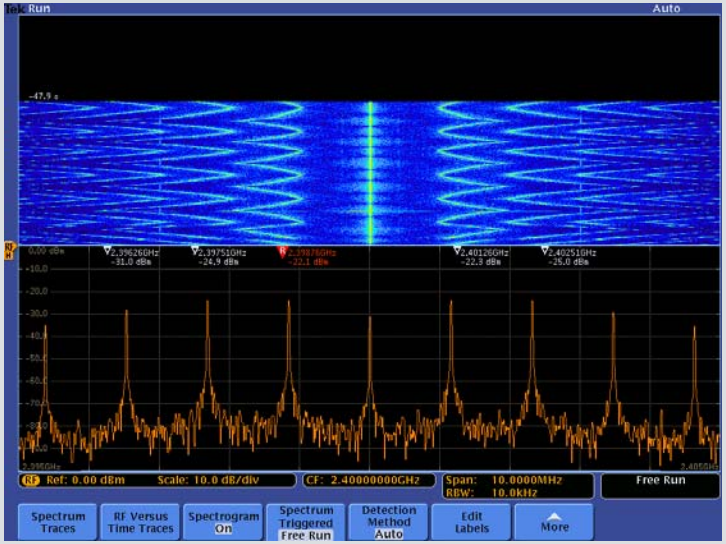
the spectrum trace to indicate amplitude at each point
Cold colors (blue, green) indicate lower amplitude
Hot colors (red, yellow) indicate higher amplitude



um is flipped with the peaks pointing towards the viewer with
west acquired spectrum added to the bottom of the stack

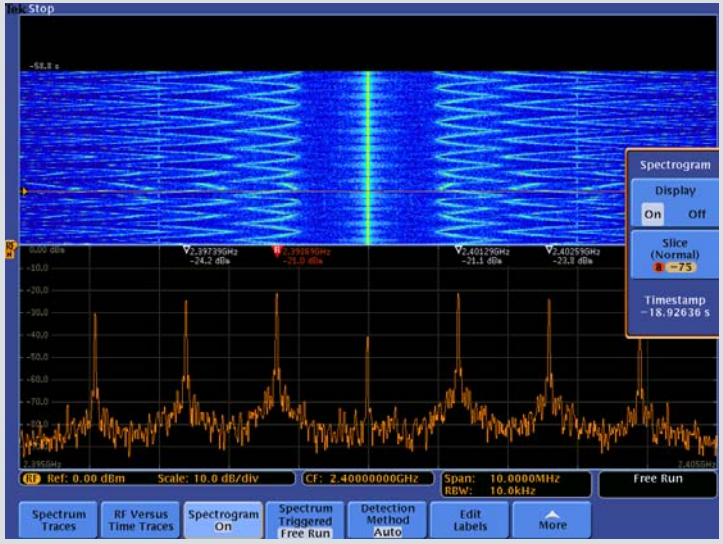


MDO4000B Series Spectrogram



MDO4000B Series Spectrogram Slice

Oldest Slice



04000B Mixed Domain Oscilloscope

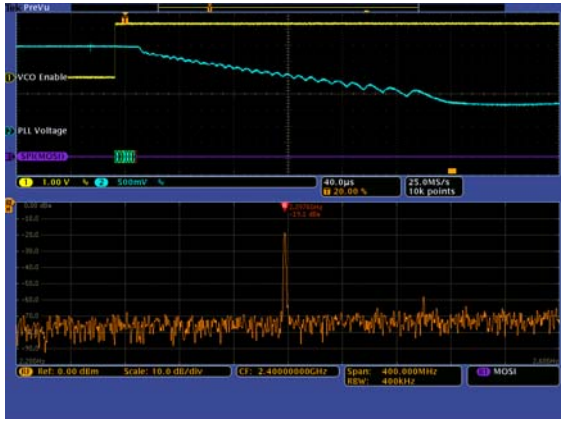
g Complete System Activity

ging modern wireless-enabled designs often requires investigation of more than just the RF signal. Understanding relationships between the RF and other analog, digital, or bus signals in the device under test is critical but incredibly t with multiple stand alone pieces of test equipment that weren't designed for the task..

ive: Experience the MDO4000B's unique ability to acquire and display time correlated analog, digital and RF signals.

Setting Up

that the oscilloscope and test are setup as previously directed.
the **Mode** button on the test until the VCO/PLL-1 Turn On s lit.
the **Default Setup** front-panel .
the **Utility** front panel-button.
Utility Page and select **Demo** Multipurpose .
VCO/PLL Turn On button.
Recall Demo Setup.
Menu Off front-panel button.



2 Exploring

- Press the **Single** front-panel button to arm the scope for an acquisition.
- Press the **VCO-1 Enabled** button on the demo board. The LED next to the button should turn off.
- Press the **VCO-1 Enabled** button again. The LED next to the button should light and the scope should acquire data.
- Use the front-panel Wave Inspector **Pan** knob (outer ring) to move the Spectrum Time indicator (orange bar) through the acquisition to see how the spectrum changes during the VCO/PLL turn on.

Summary

Mixed Domain Oscilloscope, you can easily track down system-level issues by viewing analog, digital and RF signals rrelated on the same display. By moving Spectrum Time throughout the waveform record, you can quickly see how

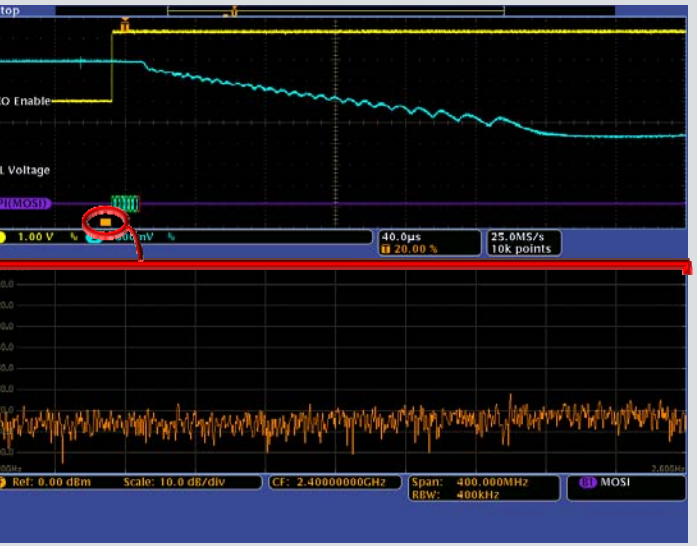
nation of Spectrum Time

trum shown in the frequency domain graticule corresponds to the period of time indicated by the orange bar in the time domain graticule
ge bar is known as Spectrum Time.
Time can be moved throughout the acquisition to see how the spectrum changes over time or relative to other analog, digital, or bus signals.

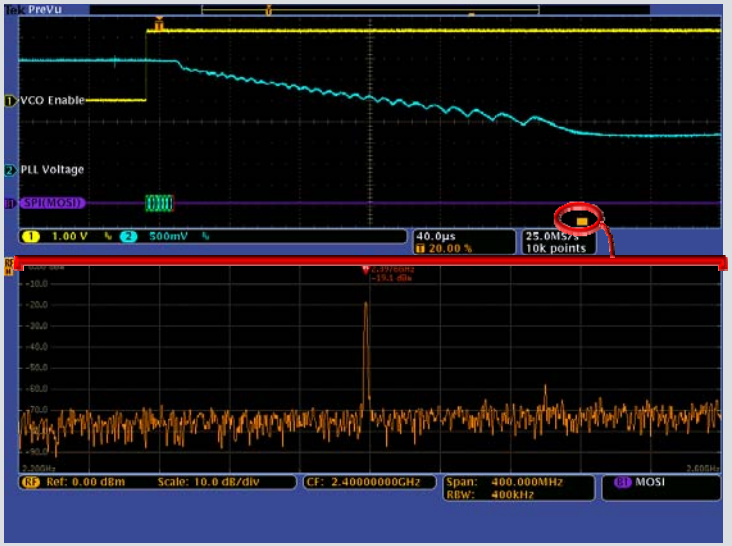
s Happening?

(voltage controlled oscillator) is enabled when channel 1 goes high.
mmand on the SPI bus tells the VCO/PLL (phase-locked loop) circuit the desired frequency, which in this case is 2.4 GHz.
SPI command has been transmitted, the VCO/PLL circuit begins tuning to the desired frequency.
eenshots below, we've made a single acquisition of this turn-on event by triggering on the SPI command indicating the desired 2.4 GHz freq.
shot 1 the Spectrum Time (orange bar) is positioned prior to the VCO being enabled, thus there is no activity in the spectrum yet.
shot 2 the Spectrum Time (orange bar) has been moved (via the Wave Inspector Pan knob) to view the spectrum about midway through
LL's process of tuning to the desired frequency.
MDO4000B Series, you can easily correlate frequency domain events with relevant time domain control signals, enabling you to quickly and
e critical timing measurements such as time to stability of a VCO/PLL circuit.

1 Spectrum Prior to Trigger Event



2 Spectrum After the Trigger Event



04000B Mixed Domain Oscilloscope

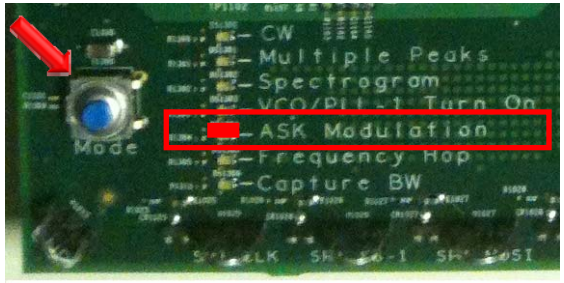
ging Amplitude Modulated Signals

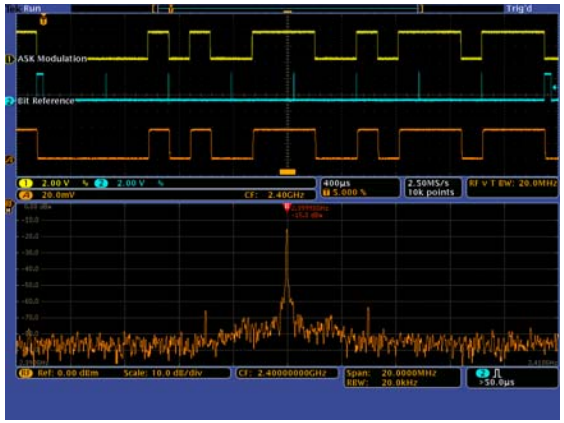
ng RF signal amplitude changes over time and monitoring system-level interactions of analog and RF signals can cult and time-consuming. Time trend views of amplitude vs. time can make spectrum analysis an easier task.

ve: Discover how to quickly see the amplitude changes over time of an Amplitude Shift Key (ASK) modulated signal he MDO4000B's RF Amplitude vs. Time trace.

Setting Up

Channel 1 probe tip to the **ASK-** loop, move Channel 2 probe tip to **RIGGER** loop on the test board.
the **Mode** button on the test board he ASK Modulation LED is lit.
the **Default Setup** front-panel .
the **Utility** front panel-button.
Utility Page and select **Demo** Multipurpose .
ASK Modulation button.
Recall Demo Setup.
Menu Off front-panel button.





2 Exploring

- Press the **Single** front-panel button to acquire a single acquisition.
- Use the front-panel Wave Inspector **Pan** knob (outer ring) to move the Spectrum Time indicator (orange bar) through the acquisition to see how the spectrum changes with the ASK modulation.
- Notice the RF Amplitude vs. Time trace in the time domain graticule (orange) allows you to quickly see how the RF signal amplitude changes over time and relative to other time domain signals

Summary

Mixed Domain Oscilloscope, you can quickly investigate amplitude modulated RF signals. The RF amplitude vs. time hows the instantaneous amplitude of the acquired spectrum and can provide insight into such problems as noise,

nation of Spectrum Time

trum shown in the frequency domain graticule corresponds to the period of time indicated by the orange bar in the time domain graticule
ge bar is known as Spectrum Time.
Time can be moved throughout the acquisition to see how the spectrum changes over time or relative to other analog, digital, or bus signals.

s Happening?

(Amplitude Shift Key) Modulation signal on Channel 1 is a digital modulation control signal that is turning the RF output on and off in order to
3 bit counter progressing through the numbers 0-7.
eference signal on Channel 2 is shown to aid in understanding the bit pattern on the modulation signal.
f the screenshots, the position of Spectrum Time (orange bar) has been moved to view the spectrum at various points in time.
In 1 Spectrum Time is positioned where the RF output has been on and stable for a while, thus the view in the frequency domain is a stable
signal at 2.4 GHz.
In 2 Spectrum Time is positioned at an off-to-on transition in the RF, thus we see 'smearing' in the frequency domain.
Similarly, in 3 Spectrum Time is positioned at an on-to-off transition in the RF, thus we again see 'smearing' in the frequency domain.
you can quickly see how the RF signal amplitude changes over time and relative to other analog or digital control signals.
MDO4000B Series, you can easily correlate frequency domain events with changes in the time domain signals.

4000B Mixed Domain Oscilloscope

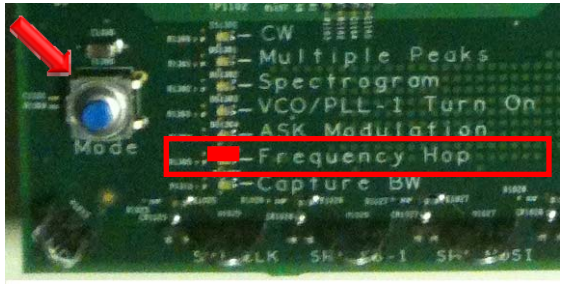
ging Frequency Modulated Signals

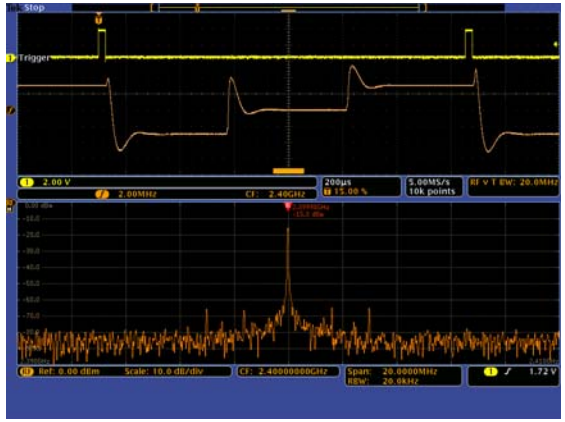
terizing and correlating time varying RF events with analog signals can be difficult and time-consuming. With the cilloscope, you can easily monitor system behavior with easy-to-use signal visualization tools.

ve: Explore how the RF Frequency vs. Time trace allows you to quickly characterize time varying events of a cy hopping signal (such as how long it takes to settle to a new frequency).

Setting Up

Channel 1 probe tip to the
GER loop on the test board.
the **Mode** button on the test board
he Frequency Hop LED is lit.
the **Default Setup** front-panel
.
the **Utility** front panel-button.
Utility Page and select **Demo**
Multipurpose .
Frequency Hop button.
Recall Demo Setup.
Menu Off front-panel button.





2 Exploring

- Press the **Single** front-panel button to acquire a single acquisition.
- Use the front-panel Wave Inspector **Pan** knob (outer ring) to move the Spectrum Time indicator (orange bar) through the acquisition to see how the spectrum changes with the Frequency Modulation.
- Notice the RF Frequency vs. Time trace in the time domain graticule (orange) allows you to quickly see how the RF signal frequency changes over time and relative to other time domain signals.

Summary

RF signals can vary significantly with time. With a Mixed Domain Oscilloscope, you can quickly characterize time RF events – without having to look through the spectrum in the frequency domain view.

nation of Spectrum Time

trum shown in the frequency domain graticule corresponds to the period of time indicated by the orange bar in the time domain graticule
ge bar is known as Spectrum Time.
Time can be moved throughout the acquisition to see how the spectrum changes over time or relative to other analog, digital, or bus signals.

s Happening?

er signal on Channel 1 is a digital control signal that initiates the frequency hopping cycle.
f the screenshots, the position of the Spectrum Time (orange bar) has been moved to view the spectrum at various points in time after the nt.

In 1 Spectrum Time is positioned in the middle of the second hop frequency, thus the frequency domain view shows a single peak at 2.4 GHz
In 2 Spectrum Time is positioned in the transition from the 2nd hop frequency to the 3rd, thus we see RF energy smeared across the spectrum n the frequency domain view.
In 3 Spectrum Time is positioned in the transition from the 3rd hop frequency back to the 1st. This is a wider transition, thus we see RF energy smeared across more of the spectrum in the frequency domain view.

you can quickly characterize time varying RF events (such as how long it takes to settle to a new frequency or how much undershoot there is during a transition) with RF vs. time traces.
MDO4000B Series, you can easily correlate frequency domain events with changes in the time domain signals.

04000B Mixed Domain Oscilloscope

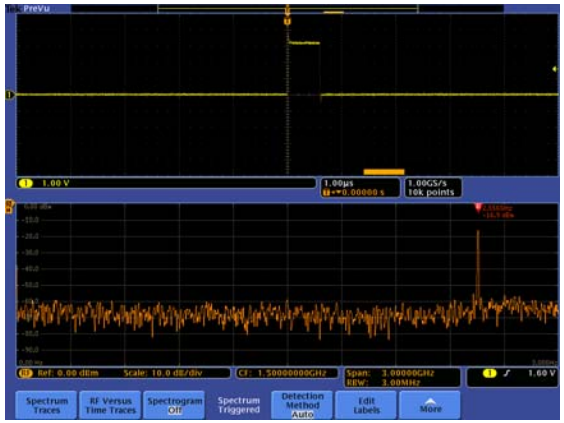
ring Wideband Signals

ndards continue to evolve to wider bandwidths. In addition, many modern wireless devices transmit and receive over bands. Traditional spectrum analyzers do not have the capture bandwidth necessary to debug these systems.

ve: See the power of the MDO4000B's exceptionally wide capture bandwidth (up to 3 GHz) by capturing an RF s transition from 900 MHz to 2.4 GHz in a single acquisition.

Setting Up

e the Channel 1 probe tip is on
RIGGER loop on the test board.
the **Mode** button on the test
until the Capture BW LED is lit.
the **Default Setup** front-panel
.
the **Utility** front panel-button.
Utility Page and select **Demo**
Multipurpose .
Capture Bandwidth button.
Recall Demo Setup.
Menu Off front-panel button.



2 Exploring

- Press the **Single** front-panel button to acquire a single acquisition.
- Notice the Span is set to 3 GHz. This is 3 GHz capture bandwidth.
- Use the front-panel Wave Inspector **Pan** knob (outer ring) to move the Spectrum Time indicator (orange bar) before and after the pulse on Ch 1
- Notice that before the pulse, the RF output is at 900 MHz, it then transitions to 2.4 GHz after the pulse.

Summary

e MDO4000B Series, you can see your whole spectrum of interest at any point in time with the up to 3 GHz ultra-wide bandwidth (approximately 100 times wider than the 10-40 MHz capture bandwidths of traditional spectrum analyzers).

nation of Spectrum Time

trum shown in the frequency domain graticule corresponds to the period of time indicated by the orange bar in the time domain graticule
ge bar is known as Spectrum Time.
Time can be moved throughout the acquisition to see how the spectrum changes over time or relative to other analog, digital, or bus signals.

s Happening?

e see on channel 1 is a control signal telling the device to switch the RF output from 900 MHz to 2.4 GHz.
apturing this transition in a single acquisition! This ability to look across 3 GHz of spectrum and correlate the RF activity to other analog and
als is unique to the MDO4000B.
shot 1 Spectrum Time is positioned prior to the trigger event (single pulse on channel 1). In the spectrum, the device under test is currently
ating to a device in the 900 MHz ISM (Industrial, Scientific, and Medical) radio band.
shot 2 Spectrum Time has been moved to view the spectrum after the trigger event. In the spectrum, the digital control signal (the trigger
ults in the RF output switching from communicating from one device in the 900 MHz ISM radio band to another device in the 2.4 GHz ISM
.
at both the 900 MHz and 2.4 GHz ISM radios bands are captured in a single acquisition. A typical spectrum analyzer with capture bandwidth
Hz could not capture this wideband, transitory event.
MDO4000B Series , you can easily correlate frequency domain events with changes in the time domain signals.

1 Spectrum Prior to Trigger Event

2 Spectrum After the Trigger Event

4000B Series Mixed Domain Oscilloscopes

ecifications and ordering information

	Analog Ch.	Analog Bandwidth	Analog Sample Rate	Digital Ch.	Digital Sample Rate Main / MagniVu™	RF Ch.	RF Frequency Range
-3	4	100 MHz	2.5 GS/s	16	500 MS/s / 16.5 GS/s	1	9 kHz – 3 GHz
-3	4	350 MHz	2.5 GS/s	16	500 MS/s / 16.5 GS/s	1	9 kHz – 3 GHz
-3	4	500 MHz	2.5 GS/s	16	500 MS/s / 16.5 GS/s	1	9 kHz – 3 GHz
-6	4	500 MHz	2.5 GS/s	16	500 MS/s / 16.5 GS/s	1	9 kHz – 6 GHz
-3	4	1 GHz	5 GS/s	16	500 MS/s / 16.5 GS/s	1	9 kHz – 3 GHz
-6	4	1 GHz	5 GS/s	16	500 MS/s / 16.5 GS/s	1	9 kHz – 6 GHz

robes and Accessories

0500 (500 MHz models) or TPP1000
odels) Passive Voltage Probes
6 16 Channel Logic Probe
Adapter (103-0045-00)
ce® Desktop and Trial Version of SignalVu-
Signal Analysis Software
n Certificate, Quick Reference Manual &
ation on CD
el Cover, Power Cord
rranty

Modules

riggering and Protocol Analysis

- Aerospace (MIL-STD 1553)
- Audio (I²S, LJ, RJ and TDM)
- Automotive (CAN, LIN)
- MA Automotive (CAN, LIN, FlexRay)
- Computer (RS-232/422/485)
- Embedded (I²C, SPI)
- Ethernet (10BASE-T,100BASE-TX)
- USB 2.0 (LS, FS, HS)

Analysis

- Adv. RF Power Level Triggering
- Power Analysis
- Limit and Mask Testing
- HDTV & Custom Video Triggering

Recommended Probes and Accessories

RF Accessories

TPA-N-PRE	Preamplifier, 12 dB gain, 9kHz – 6 GHz
TPA-N-VPI	N-to-TekVPI Adapter
119-4146-00	Near Field Probe Set, 100 kHz – 1 GHz
119-6609-00	Flexible Monopole Antenna

Passive Voltage Probes

TPP0500/B	500 MHz, 10X, 300V TekVPI Low C (3.9 pF)
TPP0502	500 MHz, 2X, 300V TekVPI Low C (12.7 pF)
TPP1000	1 GHz, 10X, 300V TekVPI Low C (3.9 pF)

Active Voltage Probes

TAP1500	1.5 GHz, 10X, ±8V TekVPI, Single-ended
TAP2500	2.5 GHz, 10X, ±4V TekVPI, Single-ended
TAP3500	3.5 GHz, 10X, ±4V TekVPI, Single-ended

Differential Voltage Probes

TDP0500	500 MHz, 50X/5X, ±42V TekVPI, Differential
TDP1000	1 GHz, 50X/5X, ±42V TekVPI, Differential
TDP1500	1.5 GHz, 10X/1X, ±8V TekVPI, Differential
TDP3500	3.5 GHz, 5X, ±2V TekVPI, Differential
THDP0100	100 MHz, 1000X/100X, ±6kV TekVPI, Diff.
THDP0200	200 MHz, 500X/50X, ±1.5kV TekVPI, Diff.
TMDP0200	200 MHz, 250X/25X, ±750V TekVPI, Diff.

Current Probes

TCP0020	50 MHz, 20A AC/DC TekVPI
TCP0030	120 MHz, 30A AC/DC TekVPI
TCP0150	20 MHz, 150A AC/DC TekVPI

Key Applications	Benefits
System-level Troubleshooting of Wireless-enabled Designs (Zigbee, Bluetooth, WLAN)	• See your time-correlated analog, digital and RF signals on a single display • Analyze the time and frequency domains with one instrument. • Monitor multiple points of your design at one time
Hunting Noise Sources	• Analyze your RF spectrum for noise with the built-in spectrum analyzer • Identify sources of noise with the time-correlated display of analog, digital and RF signals
Spectral Analysis	• Investigate your RF spectrum with the tools of a general-purpose spectrum analyzer • See your entire spectrum at once with a ≥ 1 GHz capture bandwidth

Service Options

C3	Calibration Service 3 Years
C5	Calibration Service 5 Years
D1	Calibration Data Report
R5	Repair Service 5 Years

04000B Mixed Domain Oscilloscope

ary

concludes the MDO tour. You have just experienced the world's first oscilloscope an integrated spectrum analyzer. This enables you to continue to use your tool of ce – the oscilloscope – to debug your designs regardless of whether you're tracking n time or frequency domain issues. In addition, the MDO4000B's unique capability of uiring and displaying time correlated analog, digital, and RF in a single instrument es it the ultimate debug tool for the modern design engineer. Complete system ility like this hasn't existed before now.

you ready to try this on your own design?

earn more, visit www.tektronix.com/mdo4000b for detailed application notes, videos other materials. For further product demonstrations or to request a quote, please act your local Tektronix authorized distributor.