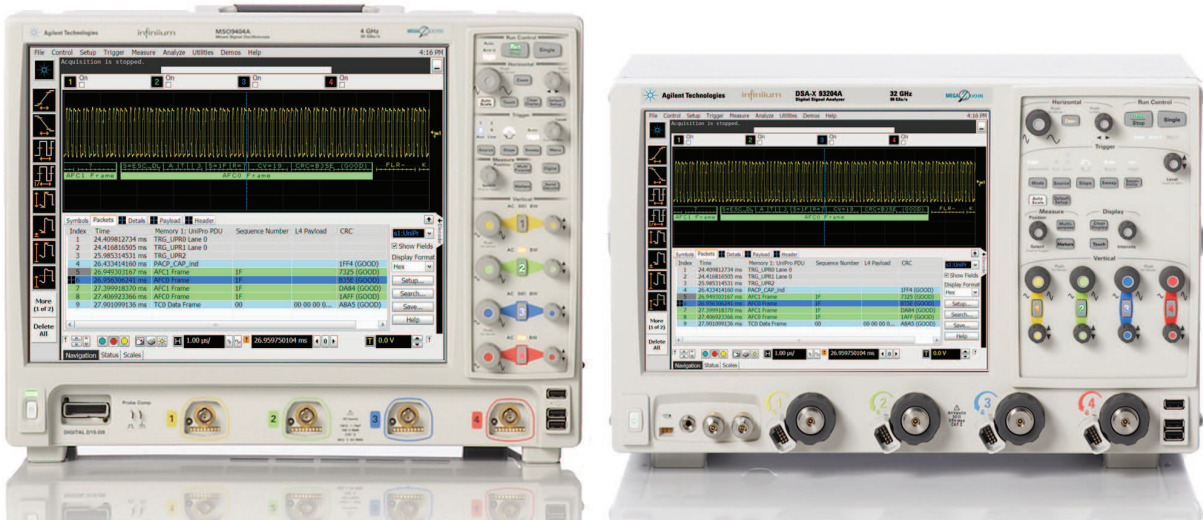




MIPI UniPro (M-PHY) Protocol Triggering and Decode for Infiniium Series Oscilloscopes

Data Sheet



This application is available in the following license variations.

- Order N8808A for a user-installed license
- Order option 052 for a factory-installed license with new 90000 Series oscilloscopes
- Order N5435A option 048 for a server-based license that works on 90000 Series oscilloscopes



MIPI UniPro (M-PHY)

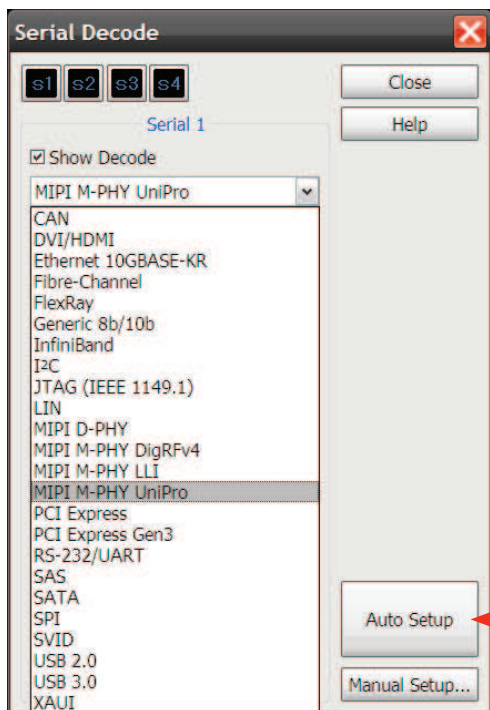
MIPI (Mobile Industry Processor Interface) serial buses are the backbone for communication in mobile products. The serial bus interface provides content-rich points for debug and test. However, since these protocols transfer bits serially, using a traditional oscilloscope has limitations. Manually converting captured 1's and 0's to protocol requires significant effort, can't be done in real-time, and includes potential for human error. Also, traditional scope triggers are not sufficient for specifying protocol-level conditions.

Extend your scope capability with Agilent's MIPI UniPro (M-PHY) triggering and decode application. This application makes it easy to debug and test designs that include MIPI UniPro buses using your Infiniium Series oscilloscope.

- Set up your scope to show MIPI UniPro protocol decode in less than 30 seconds.
- Get access to a rich set of integrated protocol-level triggers.
- Save time and eliminate errors by viewing packets at the protocol level.
- Use time-correlated views to quickly troubleshoot serial protocol problems back to their timing or signal integrity root cause.

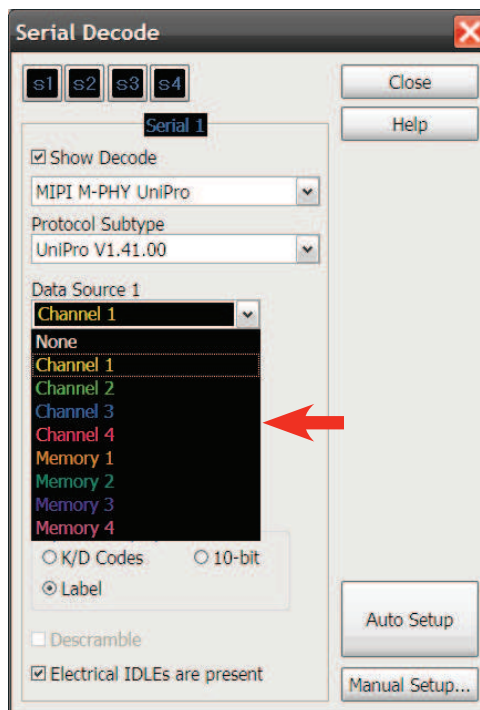
The following are the MIPI UniPro protocols and features that will be supported by the application:

1. Support MIPI UniPro v1.41.00 decode and triggering
2. Decodes High-Speed (HS-BURST) and Low-Speed Pulse Width Modulation (PWM-BURST) modes
3. Decodes with cyclical redundancy check (CRC) support
4. Supports search capability for various frames, sequence and errors



30-second MIPI setup

Configure your oscilloscope to display protocol decode in under 30 seconds. Use "Auto Setup" to automatically configure sample rate, memory depth, threshold and trigger levels.



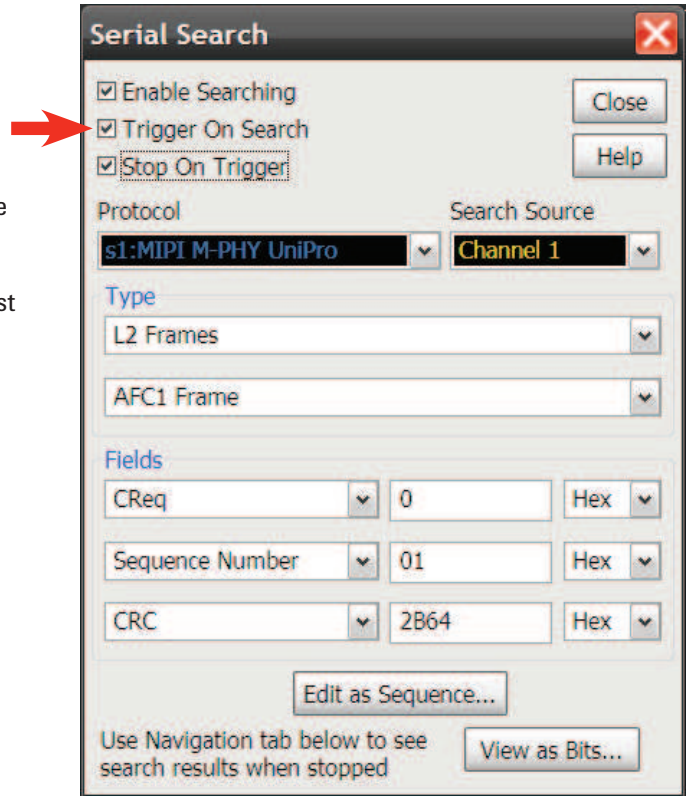
Support for live and saved waveforms

Perform and view decode information on both live and saved waveforms. Decode up to any combination of four live or saved waveforms.

MIPI UniPro (M-PHY) Setup, Protocol Triggering, and Search Capabilities

Get access to a rich set of integrated protocol-level triggers. The application includes a suite of configurable protocol-level trigger conditions specific to MIPI UniPro. When serial triggering is selected, the application uses software-based triggering.

With software-based protocol triggering, the oscilloscope takes signals acquired using either scope or digital channels and reconstructs protocol frames after each acquisition. It then inspects these protocol frames against specified protocol-level trigger conditions and triggers when the condition is met.



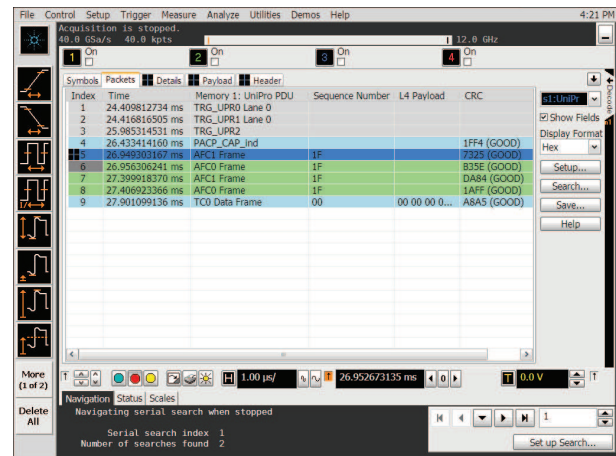
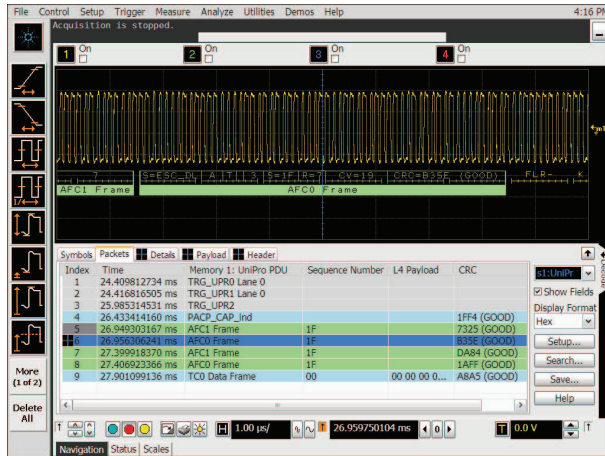
MIPI trigger and search setup

Quickly access the software-based trigger via the trigger or search menus. Software-based triggering enables quick setup of data, remote or error frames.

MIPI UniPro (M-PHY) Protocol Decode

Get access to a rich set of integrated protocol-level triggers. The application includes a suite of configurable protocol-level trigger conditions specific to MIPI UniPro. When serial triggering is selected, the application uses software-based triggering.

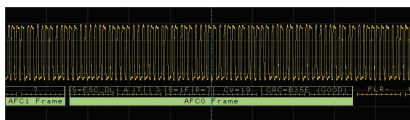
With software-based protocol triggering, the oscilloscope takes signals acquired using scope channels and reconstructs protocol frames after each acquisition. It then inspects these protocol frames against specified protocol-level trigger conditions and triggers when the condition is met.



Quickly move between physical and MIPI UniPro protocol layer information using the time-correlated tracing marker. Display protocol content using embedded decode in the waveform area, or see protocol events in a compact listing format. Minor tick marks indicate clock transitions. Major tick marks indicate segments of the serial packet. MIPI UniPro measurements are automatically time-correlated with measurement on other scope channels.

Compact protocol using the full screen listing

The protocol viewer window shows the index number, time stamp value identifier, packet type, and data values for each MIPI UniPro packet. Data in the listing window can be saved to a .csv or .txt file for offline

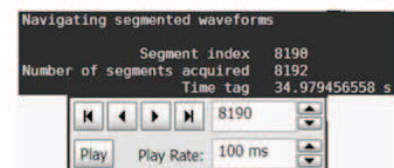
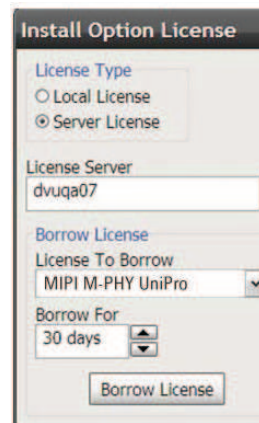


MIPI UniPro decode embedded in waveform area

Utilize the oscilloscope waveform area to display decode information. Minor ticks indicate clock transitions and major ticks show segments within each MIPI UniPro packet.

Using multiple scopes?

Server-based licensing allows users to borrow an application for a specified period of time.



Long-time captures using segmented memory

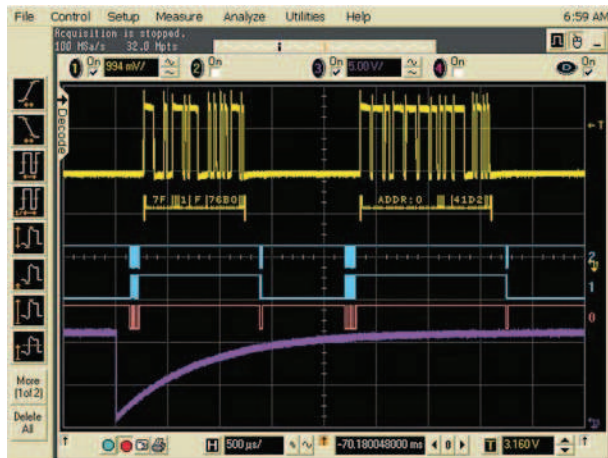
In this example, MIPI UniPro traffic was captured for near 35 seconds. Segmented memory uses time tags to track time between segment acquisitions.

MIPI UniPro (M-PHY) Protocol Decode *Continued*



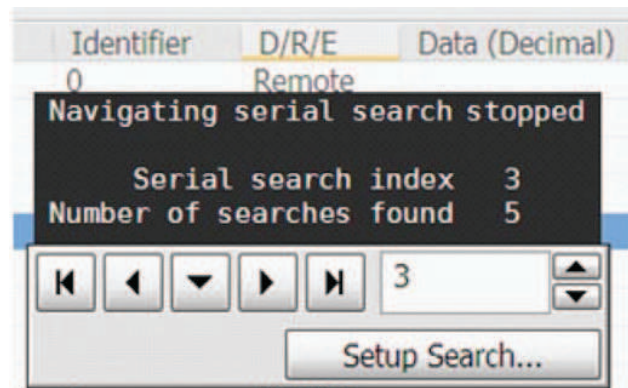
Time correlation with other system activity

Protocol measurements are automatically time-correlated with measurements taken on other analog or digital (on MSO models) channels.



Precise MSO triggering and display

Mixed-signal oscilloscope measurement in a mobile system using both digital and analog acquisition channels.



Post-acquisition searching

Search-acquired protocol listings using a menu that is identical to the trigger menu. Quickly move to next occurrence of a specified event.

MIPI UniPro (M-PHY) Application Specifications and Characteristics

MIPI	
MIPI sources	Analog channels 1, 2, 3, or 4 Any function and waveform memories The application relies on probing and trigger/measurement thresholds to properly condition the signal for triggering and decode. Differential probing may be required.
Data rate	Up to 6 Gbps
Protocol type	UniPro v1.41.00
Auto setup	Automatically configures scope settings for proper MIPI UniPro decode and software-based protocol search including memory depth, edge triggering, holdoff, sample rate, and measurement thresholds
Decoded fields	All including extended frame format
Triggering (software-based)	All including extended frame format L2 frames PACP frames Triggers Symbol sequence Errors

Ordering Information

This application is compatible with all 90000 Series oscilloscope models with version 4.10 or greater software.

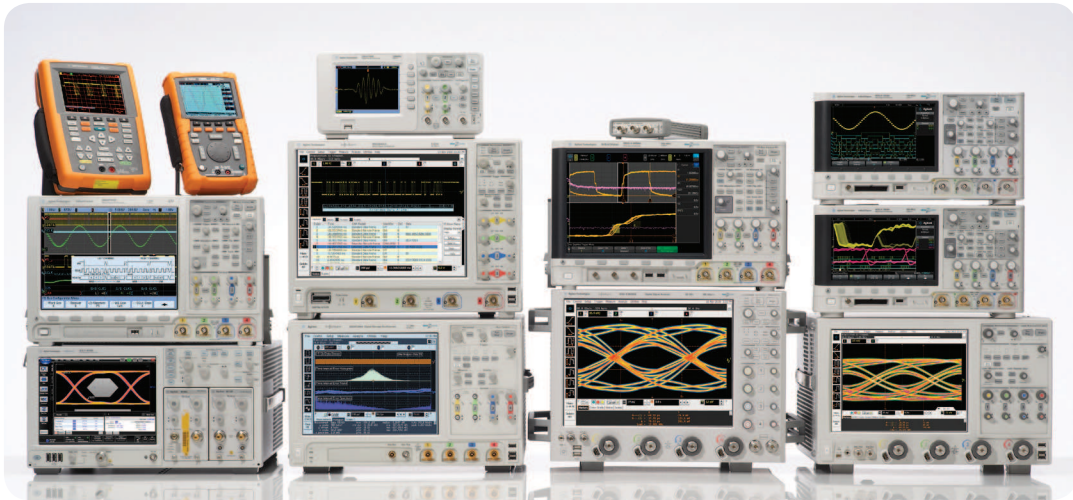
Software applications	Factory-installed option for new scope purchases	User-installed standalone product number	Server-based license (N5435A option)
MIPI UniPro (M-PHY) protocol triggering and decode	052	N8808A	048

To purchase the protocol triggering and decode features on existing Agilent Infiniium Series oscilloscopes, order the model number shown:

Model	Description	Quantity
DSOX/DSAX91604A or DSO/DSA90604A	Infiniium Series oscilloscope	1
E2688A	High-speed SDA software (Option 003 on new 90000 Series oscilloscope or Option N5435A-003 for application server license)	1
1134A	InfiniiMax 7-GHz differential probe amplifier decode	2
E2669A	Differential probe connectivity kit (contains needed probe heads)	1

Related Literature

Publication title	Publication type	Publication number
<i>Infiniium 9000 Series Oscilloscopes</i>	Data sheet	5990-3746EN
<i>Infiniium 90000 X-Series Oscilloscopes</i>	Data sheet	5990-5271EN
<i>Infiniium 90000 Series Oscilloscopes</i>	Data sheet	5989-7819EN
<i>Agilent U7249A MIPI M-PHY Compliance Test Software for Infiniium Oscilloscopes</i>	Data sheet	5990-8933EN



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