PGY-UFS 4.0-PA MPHY, UniPro, UFS Protocol Analzyer

PGY-UFS 4.0-PA, UFS Protocol Analyzer is the industry first working and tested UFS 4.0 Protocol Analyzer. It offers protocol data capture and debug of data across MPHY, UniPro and UFS protocol layers. It allows for instantaneous decoding of UFS, UniPro and MPHY layers with flexibility to correlate decoded data across these protocol layers. PGY-UFS 4.0-PA supports PWMG1 to HSG5B data rates and two TX, two RX lane decode. The active probe has minimum electrical loading on device under test (DUT) and captures protocol data without affecting the performance of DUT. PGY-UFS 4.0-PA Protocol Analyzer support two lane data. Comprehensive on the fly decoding of UniPro & UFS data enables validation of communication between UFS host and device.

PGY-UFS 4.0-PA Protocol Analyzer allows Design and Test Engineers to obtain deep insight into UFS host and device communication. MPHY/UniPRO/UFS packet-based triggering allows specific protocol data capture and analysis. PGY-UFS Protocol analyzer instantaneously provides decoding of UFS, UniPro and MPHY layers with a correlation to MPHY, UniPro and UFS layers.

Solder down active probes allows probing the MPHY test points. This allows the design and test engineers to capture UFS traffic between the host and UFS memory with high signal fidelity. Today's test engineers need to test the use case scenarios in their labs that mimic real-life use cases. The PGY-UFS 4.0-PA, UFS Protocol Analyzer has been designed to enable engineers to closely monitor and analyze the traffic between the host and the device while executing the various use case scenarios.

Windows based protocol analysis software provides industry best protocol correlation between UFS to UniPro and MPHY layers. Time correlation between the different protocol layers significantly reduces debug time of designs. Floating window design of this software allows engineers to view UFS view, UniPro view and MPHY view on different computer monitors and automatically correlate the UFS packets to MPHY layer. This makes analysis very easy while analyzing the gigabytes of Protocol information.

Key Features
✧ Supports version MPHY 4.0, UniPro 1.8 and UFS v2.1/3.1/4.0
✧ Supports PWM G1 to G7 and HS G1,2,3, 4, 5 Rate A and B Series
✧ Supports one/two data lanes (2 TX and 2 RX)
✧ Flexibility to capture very large data using continuous streaming of Protocol data to host computer
✧ with 16GB Internal acquisition memory field upgradable up to 64GB
✧ Hardware based resizable circular buffer with pre/post trigger
✧ Flexibility to decode selected data from 16GB buffer
✧ Solder down active probe provide high signal fidelity
✧ Decoding at MPHY, UniPro and UFS layers
✧ Trigger based on MPHY, UniPro and UFS layers packet content
✧ Trigger out signal at trigger event allows the triggering of other instruments such as oscilloscope
✧ Interface to host system using USB 3.0
✧ Flexibility to upgrade the hardware firmware using GbE interface provides easy field up gradation of FPGA firmware
✧ Decoded data packets can be exported to txt file for further analysis
✧ Light weight and can be deployed for on-site/ field tests

Test Setup
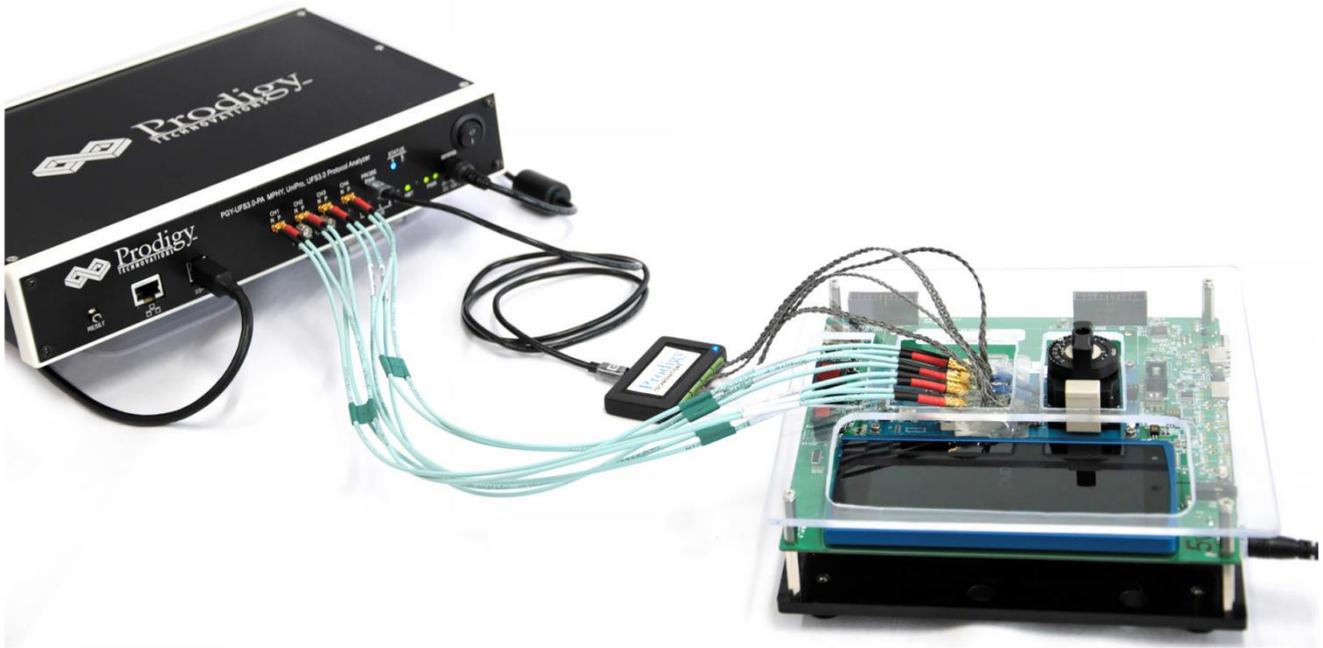
PGY-UFS 4.0-PA UFS Protocol Analyzer interfaces to solder down probe tips using mSMP flexi coax cables. The active probe tips are powered by power module which is powered by PGY-UFS4.0-PA. Protocol Analyzer is interfaced to host computer using USB3.0 interface. High-speed host connectivity and 16GB buffer enables continuous streaming of protocol data to host SSD and storage for longer period of time. Software offers multi-view such as MPHY view, UniPro view and UFS View. Each view lists the respective protocol packets and its details with correlation of each layer for easy debug. Lightweight Analyzer is easy to carry during field visit.

UFS Protocol Layer

PGY-UFS 4.0-PA Software can display each UFS packet parameters in a listing window. Right click lists all the packet parameter for user selection. User can color code the fonts or background color for easy identification for each UFS packet.

PACP And Unipro View

PGY-UFS 4.0-PA Software separates the PACP packets in a separate view for easy analysis of power mode change packets and link to UniPro packets. Users can view the MPHY states stall, prepare, sync information in UniPro view apart from user selection for DL_Data and AFC/NACK Packet details.

Error Events, Search and Filter
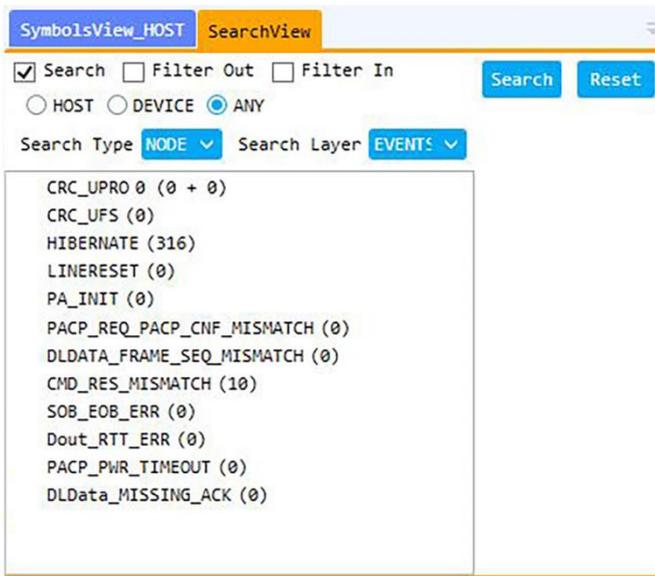
PGY-UFS 4.0-PA Software does the live decode and list all the events. The list of events are shown in this picture. Users can easily note the errors in captured protocol data. In large buffer capture, it takes extremely difficult to locate the errors. But PGY-UFS4.0-PA software simplifies this by listing events while decoding the captured data. Search and Fliter allows you directly locate the error events or UFS or UniPro or PACP packet in the protocol listing windows. Filter-in and Filter-out makes it easy view the data of interest in the protocol listing window.

Comprehensive Protocol Analysis Using Multi-View

PGY-UFS 4.0-PA UFS Protocol Analyzer provides USB 3.0 interface for host computer connectivity. High-speed host connectivity enables continuous streaming of protocol data to host HDD and storage for long period of time. Software offers multi-view such as MPHY view, UniPro view and UFS View. Each view lists the respective protocol packets and its details with correlation of each layer for easy debug.

PGY Protocol Analyzer's easy to use interface, reduces the protocol analysis time. Time stamped view of protocol decode listing provides easy view of protocol activities between host and the device. At a click of a button, user can view the decode of each packet and the intended function. Floating window software architecture allows the user to view each protocol layer on separate monitors for easy debug. Autocorrelation of each selected packet from UFS to MPHY layers simplifies the debug activity

Specifications

Data Rates Supported	PWM G1 to G7, High Speed Gear 1, Gear 2, Gear 3, Gear 4, Gear 5 and Rate A and B
Link width	Configurable for 1TX/1RX or 2TX/2RX
Probes	Solder Down Active Probes
Protocol Decode	MPHY, UniPro and UFS layers
Trace Capture Size	Supports Continuous streaming of Protocol data to Host computer SSD/HDD. Internal acquisition memory 16GB expandable up to 64GB
Trigger	Based MPHY, UniPro, UFS Packets
Front Panel Connectors	Interface for Active probes. Trigger in/out SMA connectors
Interface for Host Computer	USB 3.0 and Gigabit Ethernet interface
Host Computer Requirements	Windows 7/8.0/8.1/10 64bit operating System with i7/i9 intel processor. System RAM of minimum 16GB, the product would give a faster response for a 32GB. The minimum storage capacity of 100GB should be available in the hard disk drive. User can use more storage based on trace storage requirement. Display resolution of the monitor is 1024X768. Host computer should support USB3.0 interface.
Dimension	(W x H x D) (20.5X5X25) cms
Weight	Approx. 2.5Kg
Power Requirement	12V, 3A DC Power Supply (AC/DC Supplied along with Analyzer)

Trigger Specifications

| Stack	Protocol Analyzer	Packet Type
UniPRO	Link Start-up Sequence	(TRG_UPRO0)
		(TRG_UPRO1)
		(TRG_UPRO2)
	PHY Capability Adapter Packets (PACP)	PACP_PWR_reg
		PACP_PWR_cnf
		PAC_Cap_ind
		PACP_Cap_EXT1_ind
		PACO_EPR_ind
		PACP_TestMode_req
		PACP_GET_req
		PACP_GET_cnf
		PACP_SER_req
		PACP_SET_cnf
		PACP_TEST_Data_0
		PACP_TEST_Data_1
		PACP_TEST_Data_2
		PACP_TEST_Data_3
	Data Link Packets	SOF
		EOF
		EOF_ODD
		EOF_EVEN
		COF
		AFC/NAC
		Traffic class 0/Traffic class 1
UFS	UFS Layers Packets	NOP IN
		NOP OUT
		Commands
		Response
		Task Management Request
		Task Management Response
		Ready To Transfer
		Ready to Transfer

Solder Down Probe Tips for UFS3.0 and 3.1

| P5021-L-WE 14 Gbps probe tips with passive equivalizer at input | P5021-L 14 Gbps probe tip with isolation resistor | P5021 14 Gbps probe tips for direct access to test points |

Probing UFS signal is one of the key challenges in reliable UFS protocol decode. In most of the DUT, test points are located close to each other without enough space to solder the probe tips. Prodigy Technovations offers three type of 14 Gbps Probe tips which provides flexibility to choose the probe tips to meet the need. P5021-L and P5021-L-WE Probe tips has isolation resistor which can be changed based signal strength at test points. This helps in reducing reflections while accessing the test point and maintaining the signal integrity. The passive equalizer in P5021-L-WE helps in maintaining the differential impedance between the lanes. If test points are easily accessible, then P5021 probe tip can be used to probe the test points.

Solder Down Probe Tips for UFS 4.0
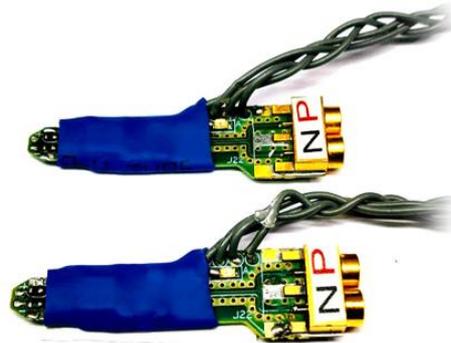
Prodigy Technovations provides innovative solder down active probe tips, which can equalize the MPHY signals upto MPHY HSG5B speed and amplify the signal to support cable loss in mSMP cable and PCB trace in analyzer. These probe tips are tested with real world UFS4.0 host/device test and development platform.

If you need probe card/tips with mSMP connector to mate with device under test mSMP connector, please contact Prodigy Technovations at contact@prodigytechno.com

Ordering Information

PGY-UFS 4.0-PA UFS 4.0 Protocol Analyzer
(Shipment includes Hardware, software CD, One set probe, USB 3.0, Ethernet Cable and Power adapter)
Note: Supports UFS2.0/2.1/3.0/3.1

Warranty Information

Hardware and software carries a warranty of 1 year.
Probes are covered for a 3 month warranty for any manufacturing defects

Contact Information

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About Prodigy Technovations Pvt Ltd.

Prodigy Technovations Pvt Ltd (www.prodigytechno.com) is a leading global technology provider of Protocol Decode, and Physical layer testing solutions on test and measurement equipment. The company's ongoing efforts include successful implementation of innovative and comprehensive protocol decode and physical Layer testing solutions that span the serial data, telecommunications, automotive, and defense electronics sectors worldwide.