

PGY-SSM SD/SDIO/eMMC Protocol Analyzer



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PGY-SSM SD/SDIO/eMMC Protocol Analyzer is the comprehensive Protocol Analyzer with multiple features to capture and debug communication between host and memory under test. PGY-SSM Protocol Analyzer supports SD, SDIO and eMMC for data rates up to 200MHz DDR mode. PGY-SSM is industry's first eMMC protocol analyzer that supports version 4.41, 4.51, 5.0 and 5.1 specifications. The innovative active probe has minimum electrical loading on the device under test (DUT) and allows protocol data capture without affecting the performance of the DUT. In an industry-first feature, PGY-SSM protocol analyzer allows continuous streaming of protocol data from PGY-SSM Protocol Analyzer to the host system (using USB3.0 or Gbe interface) running the UI. Comprehensive decoding of protocol data, command units, and real time error analysis enable effective verification of communication of SD/SDIO/eMMC host and device.

PGY-SSM Protocol Analyzer enables design and verification engineers to test and debug SD, SDIO and eMMC by triggering on command, response, data or CRC errors. It also provides instantaneous decoding of Command, Response, CID, CSD and Ext CSD registers. The Analytics feature offers easy to analyze graphical representation of command, response, data and frequency of operation for the acquired duration.

Features:

- Continuous monitoring of protocol data for long time to capture elusive events (more than 30GB data capture)
- Analysis of captured data per standards for protocol integrity, count of data bursts, CMD CRC errors, Response CRC errors, Data CRC errors, Timing Values and Reserved commands
- Hardware-based protocol-aware trigger capability in real time enables capturing specific
- Events. Triggering facility on patterns, commands or error events.
- User can identify the anomalies by decoding command and response arguments
- Analytics feature provides analysis of acquired protocol data by plotting command, response, data and frequency of operation over acquired time
- Analytics feature also provides the decoding of device registers for easy analysis
- Filters allow you to view specific packets in decoded protocol packets
- Search feature for specific events in protocol activity
- Easy-to-use user interfaces saves time on learning curve

Product Setup



PGY_SSM Protocol Analyzer works on the principle of fat-pipe analysis where the analyzer probes are connected on the interface bus between host and device[memory] of the unit under test. It captures all transactions that are going on between the host/device and does real time analysis for errors + a detailed analysis on the captured data which is made available through UI running on a host system. Captured data is stored in the hard disk of the system running UI, enabling a long capture [expect to have enough free space in the hard disk].

PGY-SSM Protocol Analyzer interfaces to host using USB3.0 [Super Speed] and Gbe. PGY-SSM analyzer & UI software runs in the host machine. PGY-SSM protocol analyzer also has the capability to capture boot data for eMMC.

Comprehensive Protocol Analysis using Multi-View

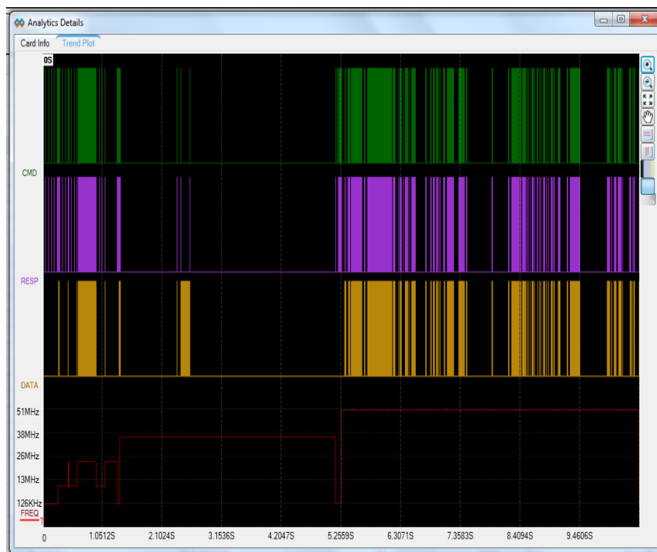
PGY-SSM SD/SDIO/eMMC Protocol Analyzer

Sl#	Time	CMD / RES / DATA / EVENT	Type	Abbreviation	Argument	CRC	EndBit	Frequency	Errors	Timing Value
300	8.9207s	CMD6	ac	SWITCH	0x03B90101	1E	1	174MHz	Pass	Ncr = 21021
301	8.9207s	R1b (index = 6)		Device Status	0x00000000	65	1	174MHz	Pass	Ncr = 35
302	8.9209s	CMD13	ac	SEND_STATUS	0x00010000	29	1	174MHz	Pass	Ncr = 49019
303	8.9209s	R1 (index = 13)		Device Status	0x00000000	1F	1	174MHz	Pass	Ncr = 16
304	8.9213s	CMD6	ac	SWITCH	0x03B70601	2E	1	174MHz	Pass	Ncr = 57199
305	8.9213s	R1b (index = 6)		Device Status	0x00000000	65	1	21MHz	Pass	Ncr = 16
306	8.9217s	CMD13	ac	SEND_STATUS	0x00010000	29	1	21MHz	Pass	Ncr = 9467
307	8.9217s	R1 (index = 13)		Device Status	0x00000000	1F	1	21MHz	Pass	Ncr = 15
308	8.9219s	CMD6	ac	SWITCH	0x03B90301	8	1	21MHz	Pass	Ncr = 2951
309	8.9219s	R1b (index = 6)		Device Status	0x00000000	65	1	21MHz	Pass	Ncr = 16
310	8.9223s	CMD13	ac	SEND_STATUS	0x00010000	29	1	21MHz	Pass	Ncr = 7972
311	8.9223s	R1 (index = 13)		Device Status	0x00000000	1F	1	21MHz	Pass	Ncr = 32
312	8.9226s	CMD6	ac	SWITCH	0x03A10101	29	1	21MHz	Pass	Ncr = 6925
313	8.9226s	R1b (index = 6)		Device Status	0x00000000	65	1	174MHz	Pass	Ncr = 35
314	8.9229s	CMD13	ac	SEND_STATUS	0x00010000	29	1	174MHz	Pass	Ncr = 49055
315	8.9229s	R1 (index = 13)		Device Status	0x00000000	1F	1	174MHz	Pass	Ncr = 35
316	8.9230s	CMD6	ac	SWITCH	0x03210101	6C	1	174MHz	Pass	Ncr = 23220
317	8.9230s	R1b (index = 6)		Device Status	0x00000000	65	1	174MHz	Pass	Ncr = 35
318	8.9232s	CMD13	ac	SEND_STATUS	0x00010000	29	1	174MHz	Pass	Ncr = 34340
319	8.9232s	R1 (index = 13)		Device Status	0x00000000	1F	1	174MHz	Pass	Ncr = 35
320	8.9234s	CMD6	ac	SWITCH	0x03380001	27	1	174MHz	Pass	Ncr = 23583
321	8.9234s	R1b (index = 6)		Device Status	0x00000000	65	1	174MHz	Pass	Ncr = 35
322	8.9235s	CMD13	ac	SEND_STATUS	0x00010000	29	1	174MHz	Pass	Ncr = 21315
323	8.9235s	R1 (index = 13)		Device Status	0x00000000	1F	1	174MHz	Pass	Ncr = 34
324	8.9289s	CMD23	ac	SET_BLOCK_COUNT	0x00000008	5F	1	174MHz	Pass	Ncr = 951819
325	8.9289s	R1 (index = 23)		Device Status	0x00000000	E	1	174MHz	Pass	Ncr = 35
326	8.9290s	CMD18	adtc	READ_MULTIPLE_BLOCK	0x00000000	70	1	174MHz	Pass	Ncr = 5238
327	8.9290s	R1 (index = 18)		Device Status	0x00000000	69	1	174MHz	Pass	Ncr = 35
328	8.9296s	DATA [8 blocks]		-	-	-	-	174MHz	Pass	-
329	8.9296s	CMD12	ac	STOP_TRANSMISSION	0x00000000	30	1	174MHz	Pass	-

PGY–SSM Software provides the industry’s best protocol analysis capabilities. A simple-to-use interface reduces the complexities and time for protocol debug. Time stamped view of decode listing provides a complete view of protocol activities between host and device. By clicking on selection prompts, the user can get the decode of arguments, CSD, CID registers, data activities and more [detailed view]

Analytics:

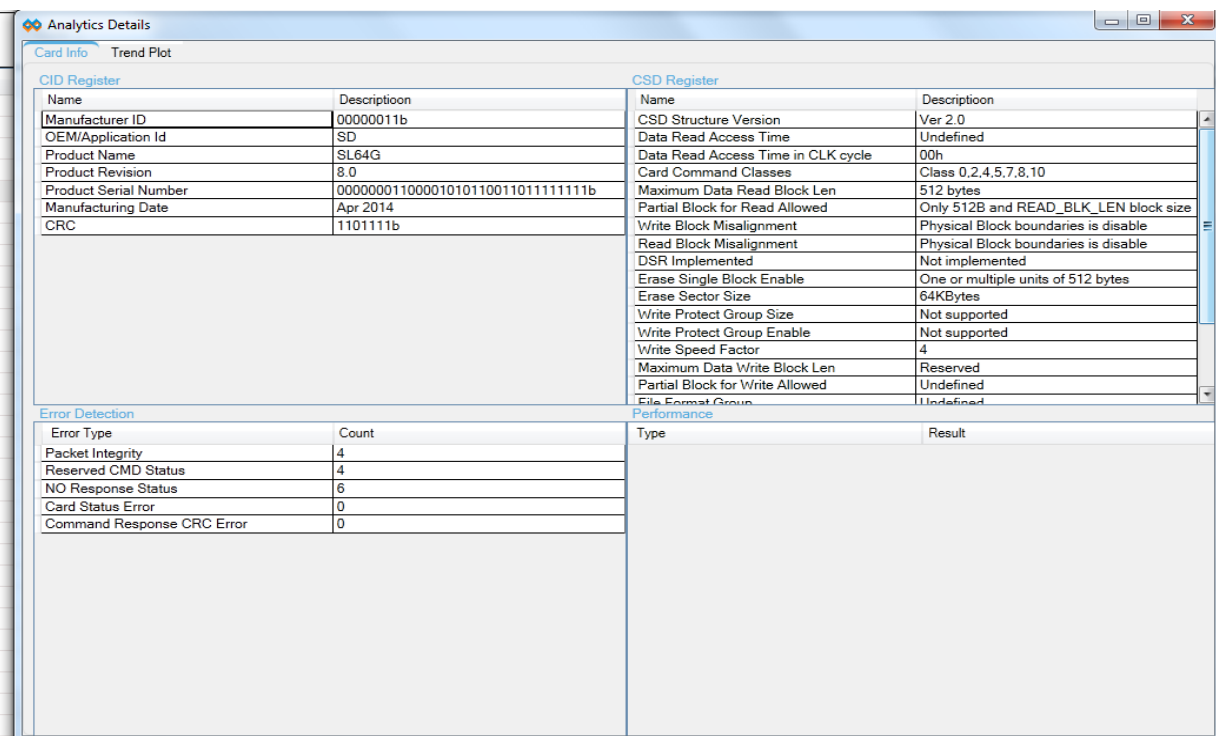
Analytics features quickly provide insight into protocol activity without going through the complete protocol activity. As ample plot is shown below



The Analytics view is a bird’s eye view of protocol activity for the captured long duration data. It reduces analysis time by viewing plot command, response, data and frequency of operation of captured data. The user can search for specific command or response in the plot.

Card/Device Information view

Card information provides decoding of register argument of device. Now the user no longer needs to manually decode each register value.



CID Register		CSD Register	
Name	Description	Name	Description
Manufacturer ID	00000011b	CSD Structure Version	Ver 2.0
OEM/Application Id	SD	Data Read Access Time	Undefined
Product Name	SL64G	Data Read Access Time in CLK cycle	00h
Product Revision	8.0	Card Command Classes	Class 0,2,4,5,7,8,10
Product Serial Number	00000001100001010110011011111111b	Maximum Data Read Block Len	512 bytes
Manufacturing Date	Apr 2014	Partial Block for Read Allowed	Only 512B and READ_BLK_LEN block size
CRC	1101111b	Write Block Misalignment	Physical Block boundaries is disable
		Read Block Misalignment	Physical Block boundaries is disable
		DSR Implemented	Not implemented
		Erase Single Block Enable	One or multiple units of 512 bytes
		Erase Sector Size	64KBytes
		Write Protect Group Size	Not supported
		Write Protect Group Enable	Not supported
		Write Speed Factor	4
		Maximum Data Write Block Len	Reserved
		Partial Block for Write Allowed	Undefined
		File Format Group	Undefined

Error Detection		Performance	
Error Type	Count	Type	Result
Packet Integrity	4		
Reserved CMD Status	4		
NO Response Status	6		
Card Status Error	0		
Command Response CRC Error	0		

PGY-SSM-PA Protocol Analyzer Specification	Features
Interfaces Supported	SD3.0 (UHS-I), SDIO4.0 and eMMC 4.41/4.51/5.0/5.1 Specifications
Protocol Decode	Command, Response, CRC, Data, Boot Data, Arguments, Device registers
Data Decode	1 bit, 4-bit, 8 bit SDR or 4,8 bit DDR.
Protocol Test	Protocol Integrity, CRC Errors, Timing values, Data CRC Errors, Reserved commands
Operating Voltage levels	1.8V, 3.3V
Storage Capability	Continuous streaming of protocol activity up to 30GB or 4 to 5-hour capture duration
Capture Mode	Manual Run/Stop, Time specific
Capture Duration time	1 sec to 5 hours
Trigger on	Command, Response, CRC errors, Sequential trigger
Trigger Actions	Capture data and/or trigger out signal
Signal Input	Digital Signal input to mark the activities in Protocol activity
Host System Interface	USB3.0 or Gbe interface
Host Machine Minimum Requirements	Microsoft Windows® 8, Windows 7, 16GB of RAM; Storage with at least 50 GB HDD space for the storing the acquired data. Display with resolution of at least 1024x768

Ordering Information:

PGY-SSM SD, SDIO and eMMC Protocol Analyzer

(Shipment includes Hardware, software CD, one set probe, USB3.0 and Ethernet Cable, power adapters)

Warranty:

Hardware and software carry warranty of one year.

Probes are covered three-month warranty for any manufacturing defects

Contact Information

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About Prodigy Technovations Pvt Ltd

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.