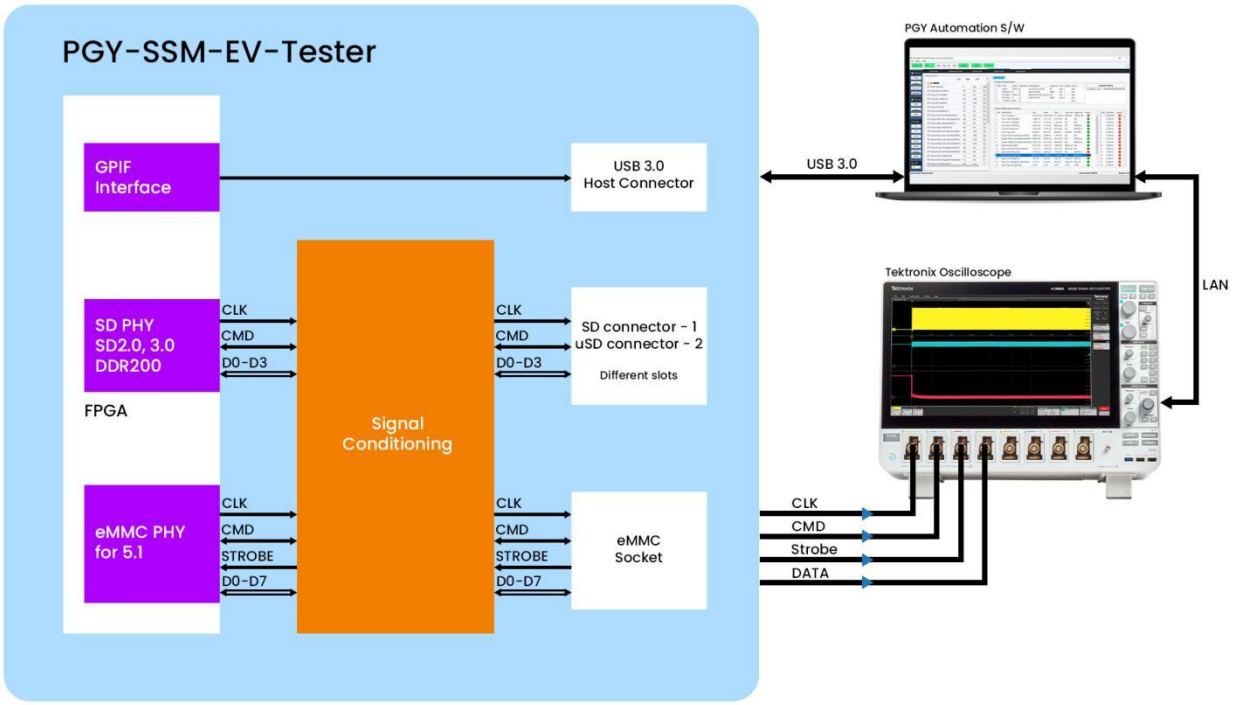
PGY-SSM-EV-Tester

SD and eMMC AC/DC Electrical Characterization Tester

PGY-SSM-EV-Tester is a AC/DC characterization platform provides flexibility to make AC/DC measurement of eMMC, SD and MicroSD devices at different operating modes enabling the validation engineers to do in-depth automated electrical and timing performance analysis to ascertain endurance and reliability of eMMC and SD devices. This test solution saves significant test time and reduces human errors.

PGY-SSM-EV-Tester eMMC and SD AC/DC Electrical Validation platform provides comprehensive electrical validation data to characterize eMMC devices for eMMC 4.41, 4.51, 5.0 and 5.1 (HS400) and SD 2.0/3.0 specifications. This innovative solution enables the validation engineers to run test cases to test different specifications and make all electrical parametric measurements. It covers 100s of measurements which could be completed in an hour instead of spending few days to complete them.

PGY-SSM-EV AC/DC Characterization platform



PGY-SSM-EV-Tester interfaces to host computer using USB3.0 interface. User can run standard test cases to test either eMMC and SD devices using software GUI. Product provides flexibility to write custom scripting the test cases to analyze the AC/DC performance to meet user need. PGY-SSM-EV-Tester S/W that runs in Host computer remotely controls oscilloscope to acquire current and voltage signals and analyses it for AC/DC electrical parameters as per eMMC/SD Specifications. PGY-SSM-EV-tester provides hooks to connect oscilloscope voltage and current probes and acquire voltage and current signals while running the test cases to make it convenient to use the test platform for comprehensive AC/DC Electrical characterization of eMMC and SD Devices.

Features and benefits

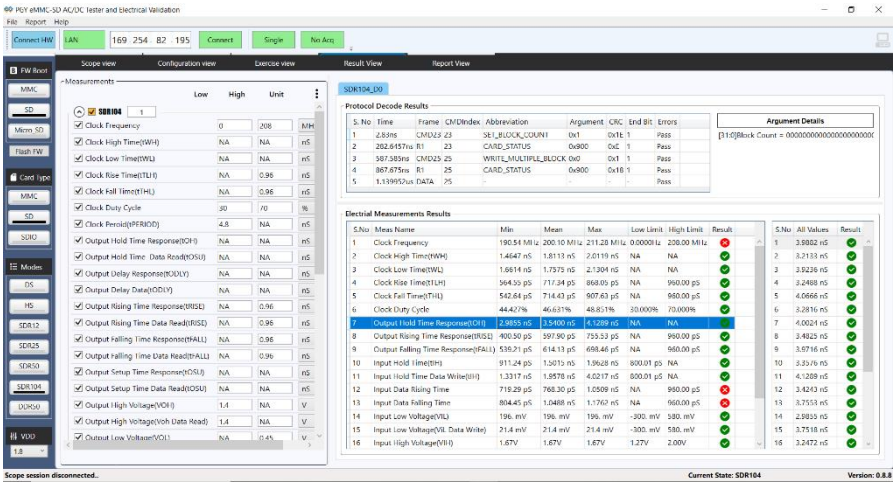
- Measures AC/DC Electrical Measurements as per eMMC 4.41, 4.51, 5.0 and 5.1 Specification
- Measures AC/DC Electrical measurements as per SD2.0/3.0(UHS-I) Specification
- Standard test cases to make measurement at different data rate
- Flexibility to test the device for min and max limits of the specification
- Tolerance testing of devices outside the limits
- Statistical measurements to enhance the reliable of measurements
- Powerful debugging capabilities of AC/DC measurements in oscilloscope waveform
- Protocol Decoding of Command Signal and Data blocks of acquired with CRC check
- Upgradable to Protocol Analysis
- Flexibility to vary the clock, CMD and data signals timing parameters
- Supports API for full test automation
- Report Generation with test results
- Customized Test Reports

Oscilloscope setup view

PGY-SSM-EV-Tester eMMC/SD Electrical validation software captures the clock, command, and data signals. PGY-SSM-EV-Tester software running in host computer connects to oscilloscope using LAN interface. Optionally, user can also run this software inside Tektronix MSO6 series oscilloscope and make the analysis.

PGY-SSM-EV AC/DC measurement software

PGY-SSM-EV-Tester Software runs in host computer with windows OS. PGY-SSM EV software communicates with Tester hardware using USB interface and connects to Oscilloscope using LAN cable. User has flexibility to initialize SD or eMMC device and then run different test cases in different operating modes of SD or eMMC devices. PGY-SSM-EV software analyzes the oscilloscope acquired waveform for AC/DC parameter and displays the electrical measurements.



PGY-SSM-EV software displays the electrical measurements with Pass/fail results with packet decode

List of Electrical parameters measured for eMMC card

Measurements	DS-BC	HS-SDR	HS-DDR	HS-200	HS-400
Clock Frequency	✓	✓	✓		
Clock Rise Time(tTLH)	✓	✓	✓	✓	✓
Clock Fall Time(tTHL)	✓	✓	✓	✓	✓
Clock High Time(tWH)	✓	✓	✓		
Clock Low Time(tWL)	✓	✓	✓		
Clock Duty Cycle	✓	✓	✓	✓	✓
Clock Period(tPERIOD)	✓	✓	✓	✓	✓
Output Low Voltage(VOL)	✓	✓	✓	✓	✓
Output Low Voltage(VOH Data Read)	✓	✓	✓	✓	✓
Output Rising Time Response(tRISE)	✓	✓	✓		
Output Rising Time Data Read(tRISE)	✓	✓	✓		
Output Falling Time Response(tFALL)	✓	✓	✓		
Output Falling Time Data Read(tFALL)	✓	✓	✓		
Output Delay Response(tODLY)	✓	✓	✓		
Output Delay Data(tODLY)	✓	✓	✓		
Output Setup Time Response(tOSU)	✓	✓	✓		
Output Setup Time Data Read(tOSU)	✓	✓	✓		
Output Hold Time Response(tOH)	✓	✓	✓		
Output Hold Time Data Read(tOSU)	✓	✓	✓		
Output High Voltage(VOH)	✓	✓	✓	✓	✓
Output High Voltage(Voh Data Read)	✓	✓	✓	✓	✓
Input Setup Time Command(tISU)	✓	✓	✓	✓	✓
Input Setup Time Data Write(tISU)	✓	✓	✓	✓	✓
Input Hold Time(tIH)	✓	✓	✓	✓	✓
Input Hold Time Data Write(tIH)	✓	✓	✓	✓	✓
Input Low Voltage(VIL)	✓	✓	✓	✓	✓
Input Low Voltage(ViL Data Write)	✓	✓	✓	✓	✓
Input High Voltage(VIH)	✓	✓	✓	✓	✓
Input High Voltage(ViH Data write)	✓	✓	✓	✓	✓
Input High Voltage(VIH Clock)	✓	✓	✓	✓	✓
Input Low Voltage(VIL Clock)	✓	✓	✓	✓	✓
Input Data Rising Time		✓	✓		
Input Data Rising Time Data Write		✓	✓		
Input Data Falling Time		✓	✓		
Input Data Falling Time Data Write		✓	✓		
Valid Window Response(tVW)				✓	
Valid Window Data Read(tVW)				✓	
Output Delay Response(tPH)				✓	
Output Delay Data Read(tPH)				✓	
Duty Cycle Distortion					✓
Strobe Duty Cycle Distortion					✓
Minimum Pulse Width					✓
Minimum Pulse Width Clock					✓
Slew Rate					✓
Output Hold Skew Time(tRQH)					✓
Output Skew Time(tRQ)					✓
Strobe Period(tPERIOD)					✓
Output Skew Time(tRQ_CMD)					✓
Output Hold Skew Time(tRQH_CMD)					✓

List of Electrical parameters measured for SD card

Measurements	Default speed	HIgh Speed	SDR12	SDR25	SDR50	DDR50	SDR104
Clock Frequency	✓	✓	✓	✓	✓	✓	✓
Clock Rise Time(tTLH)	✓	✓	✓	✓	✓	✓	✓
Clock Fall Time(tTHL)	✓	✓	✓	✓	✓	✓	✓
Clock High Time(tWH)	✓	✓	✓	✓	✓	✓	✓
Clock Low Time(tWL)	✓	✓	✓	✓	✓	✓	✓
Clock Duty Cycle	✓	✓	✓	✓	✓	✓	✓
Clock Period(tPERIOD)	✓	✓	✓	✓	✓	✓	✓
Output Low Voltage(VOL)	✓	✓	✓	✓	✓	✓	✓
Output Low Voltage(VOH Data Read)	✓	✓	✓	✓	✓		✓
Output Rising Time Response(tRISE)			✓	✓	✓	✓	✓
Output Rising Time Data Read(tRISE)			✓	✓	✓		✓
Output Falling Time Response(tFALL)			✓	✓	✓	✓	✓
Output Falling Time Data Read(tFALL)			✓	✓	✓		✓
Output Delay Response(tODLY)			✓	✓	✓	✓	✓
Output Delay Data(tODLY)	✓	✓	✓	✓	✓	✓	✓
Output Setup Time Response(tOSU)			✓	✓	✓	✓	✓
Output Setup Time Data Read(tOSU)			✓	✓	✓		✓
Output Hold Time Response(tOH)		✓	✓	✓	✓	✓	✓
Output Hold Time Data Read(tOSU)		✓	✓	✓	✓		✓
Output High Voltage(VOH)	✓	✓	✓	✓	✓	✓	✓
Output High Voltage(Voh Data Read)	✓	✓	✓	✓	✓		✓
Input Setup Time Command(tISU)	✓	✓	✓	✓	✓	✓	✓
Input Setup Time Data Write(tISU)	✓	✓	✓	✓	✓		✓
Input Hold Time(tIH)	✓	✓	✓	✓	✓	✓	✓
Input Hold Time Data Write(tIH)	✓	✓		✓	✓		✓
Input Low Voltage(VIL)	✓	✓	✓	✓	✓	✓	✓
Input Low Voltage(ViL Data Write)	✓	✓	✓	✓	✓		✓
Input High Voltage(VIH)	✓	✓	✓	✓	✓	✓	✓
Input High Voltage(ViH Data write)	✓	✓	✓	✓	✓		✓
Input High Voltage(VIH Clock)	✓	✓	✓	✓	✓	✓	✓
Input Low Voltage(VIL Clock)	✓	✓	✓	✓	✓	✓	✓
Input Data Rising Time			✓	✓	✓	✓	✓
Input Data Rising Time Data Write			✓	✓	✓		✓
Input Data Falling Time			✓	✓	✓	✓	✓
Input Data Falling Time Data Write			✓	✓	✓		✓
Output Delay Response(tPH)	✓						
Clock Cycle Time			✓				
Card Output Phase Response(top)							✓
Card Output Phase Data Read(top)							✓
Output Data Window Response(Todw)							✓
Output Data Window Data Read(Todw)							✓

Ordering Information

PGY-SSM-EV-Tester SD and eMMC AC/DC Electrical Characterization Tester.
(Shipment includes Hardware, software CD)

Prerequisite Tektronix MSO5/6 oscilloscope series with passive probes.

Warranty Information

- Hardware and software carries warranty of one year.

Contact information

About Prodigy Technovations Pvt Ltd

Prodigy Technovations is the leading provider of innovative protocol analysis solutions for mainstream and emerging technologies. We provide Protocol Decode, and PHY layer testing solutions on Test & Measurements equipment's. The company's ongoing efforts include successful implementation of innovative and comprehensive protocol Analysis solutions using latest hardware technologies.