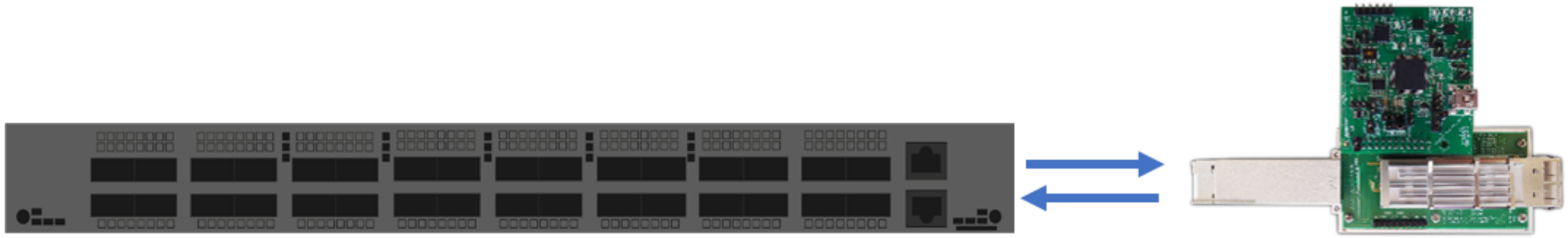
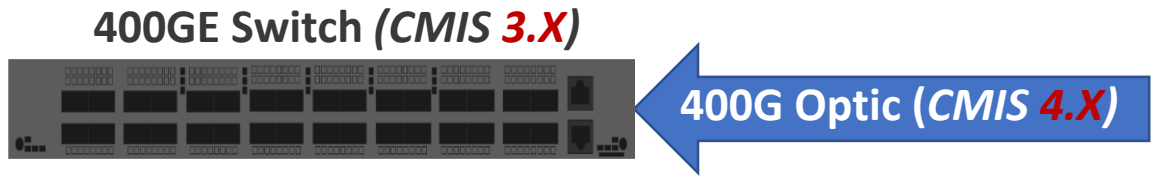
CMIS Analysis

Eliminating Uncertainty in Memory Map Interop



CMIS Challenge

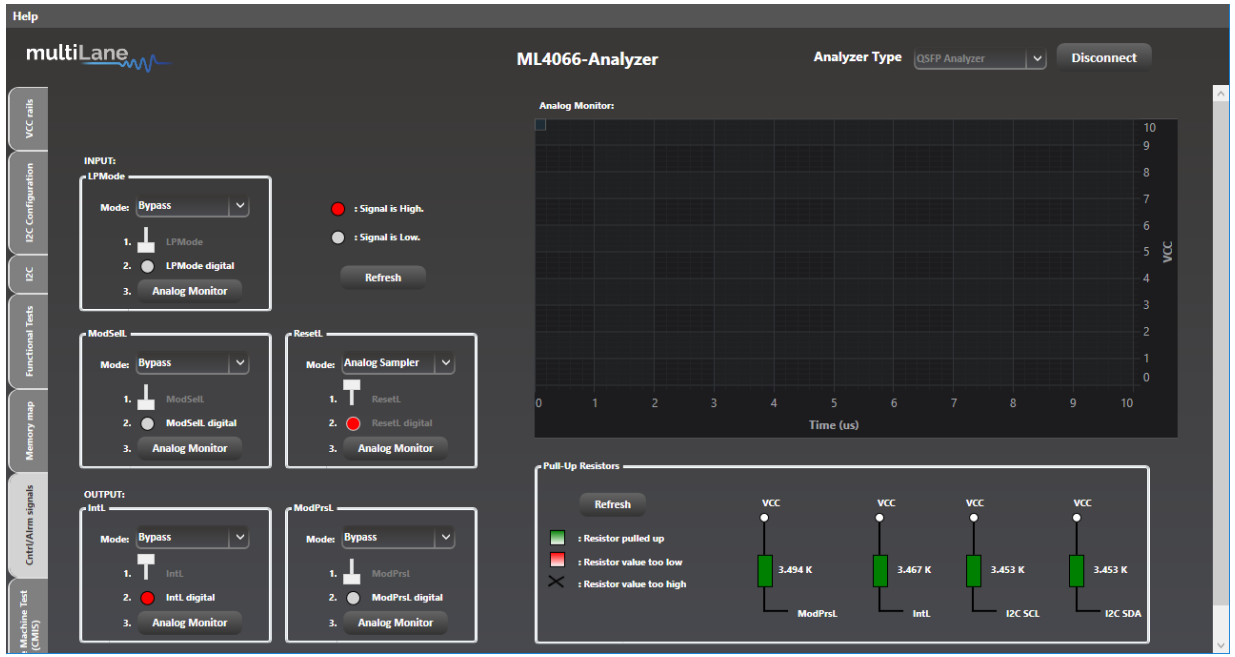
- CMIS X.X complexity is a **limiting factor** for 400GE ramp-up
- Interpretation of CMIS versions varies from shop to shop
- CMIS Analysis Solution enables OEMs to certify CMIS implementation
- Can we minimize complexity for hyperscaler deployments?



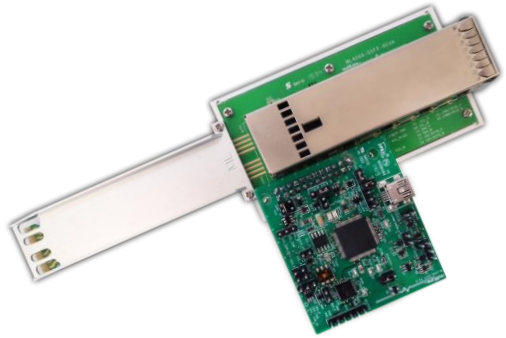
INTEROP ISSUES

CMIS Analyzer

- Validate the operation of the low speed I2C CMIS interface with the ML4066 diagnostic adapter and analyzer module duo
- Versatile Testing with Master, Slave or Bypass Modes



QSFP and QSFP-DD



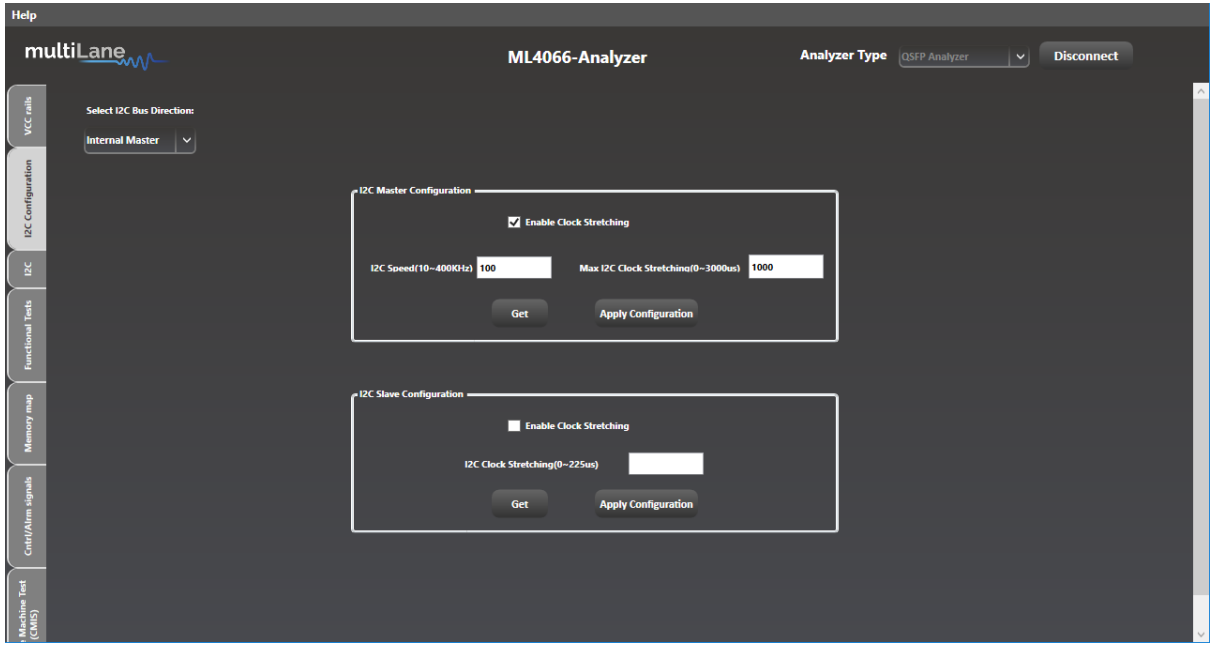
OSFP

SFP and SFP-DD

CMIS Analyzer: Master Mode

Analyzer acts as a host for a module DUT

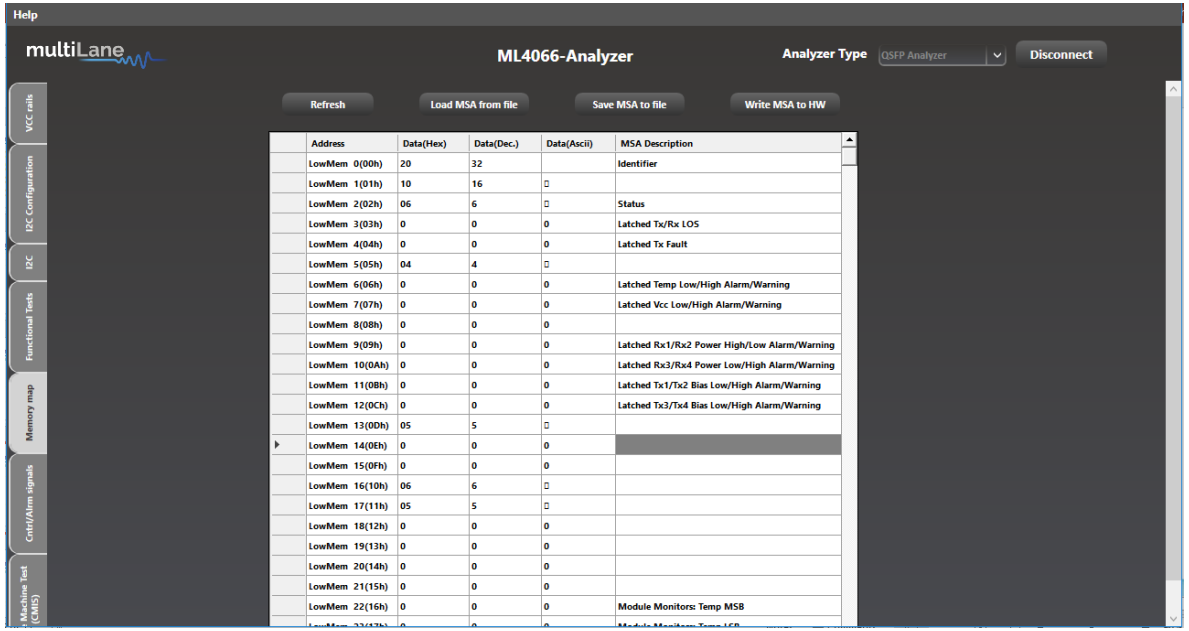
- Load and Save Entire MSA files to or from pluggable module
- Monitor module response to single register adjustments
- Read or write individual module registers
- Stretch I2C clock to desired frequency



CMIS Analyzer: Slave Mode

Analyzer acts as a module for a host DUT

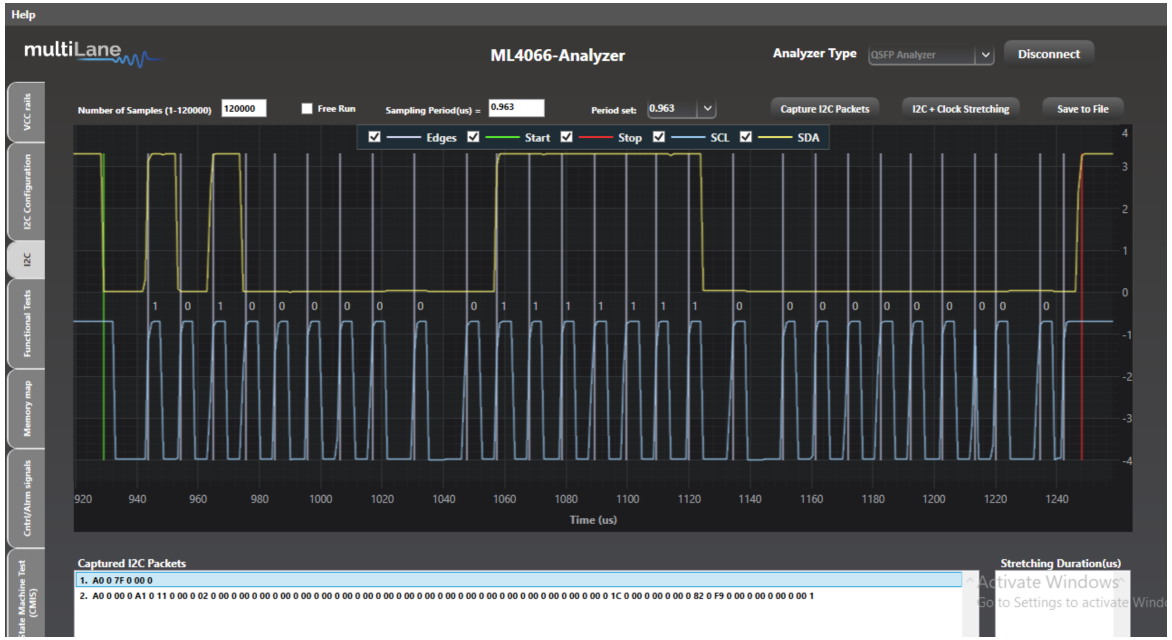
- Analyzer contains EEPROM map to emulate a module
- Monitor host response as Analyzer EEPROM is adjusted
- I2C tab allows any MSA profile to be loaded onto Analyzer
- Enable clock stretching onto SCL during I2C transactions



CMIS Analyzer: Bypass Mode

Analyzer acts as a nonintrusive sniffer between host and module

- Analyze I2C packets as they traverse between module and host
- I2C transactions can be captured and logged
- Observe EEPROM changes written from host to module
- Monitor VCC levels (VCCTX, VCCRX, VCC1)



CMIS Analyzer: HW CNTRL Signal Manipulation

Monitor and Configure Low-Speed Signal Communication

Master Mode:

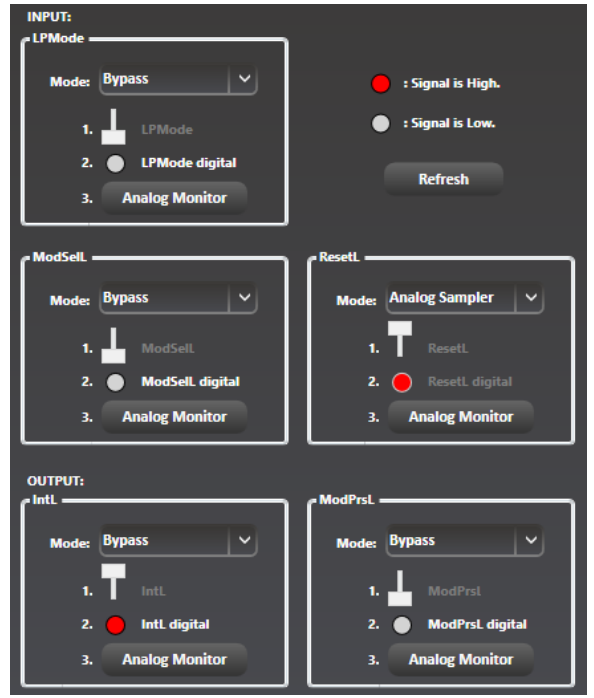
- Analyzer drives control signals to module and subsequently monitor alarm signal response from module

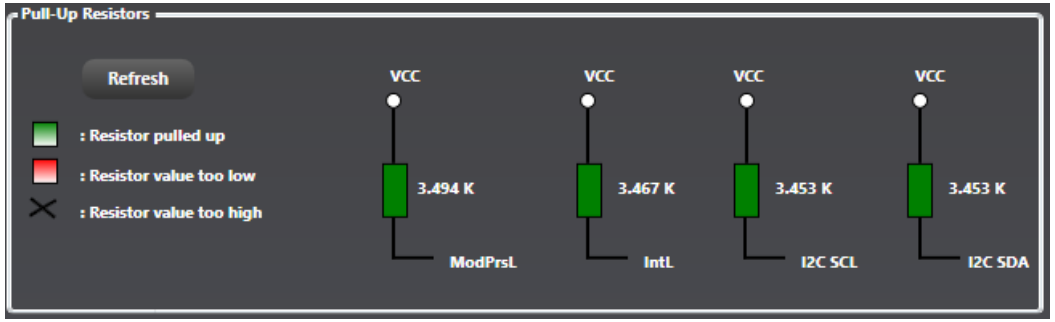
Slave Mode:

- Analyzer can monitor control signals and pull-up resistor values from host and send module alarms back

Bypass Mode:

- Monitors exchange of control and alarm signals between module and host

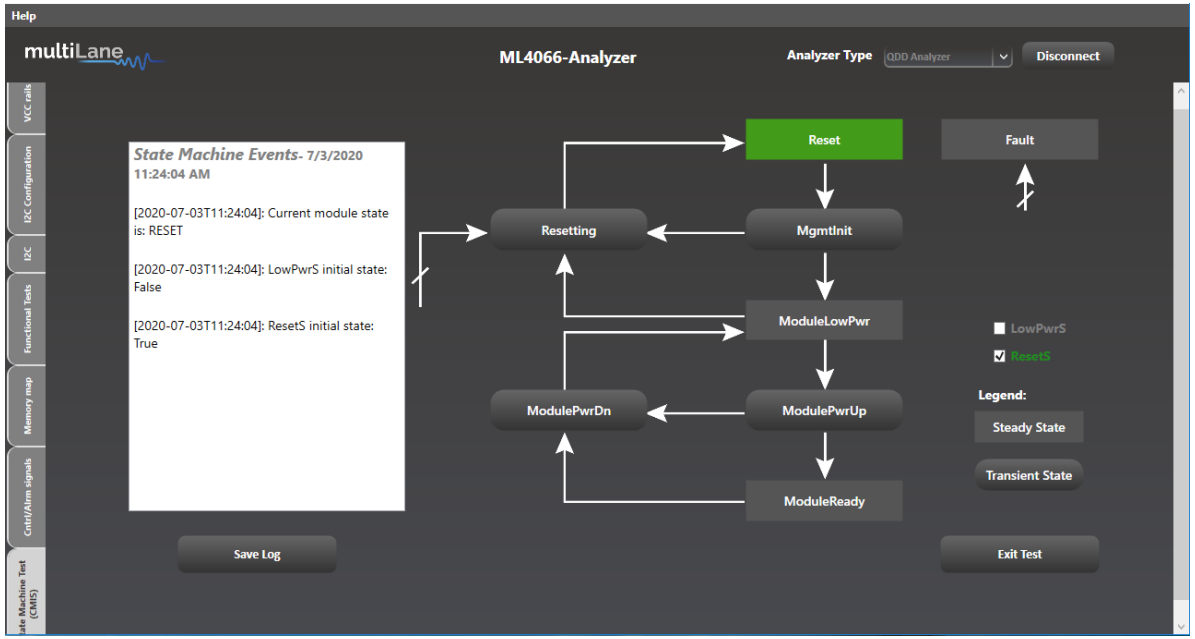




Master Mode: State Machine Test

Certify CMIS Compliance with a few clicks

- CMIS X.X State Machine Sequencing Test
- Support for both flat and paged memory maps
- Toggle states to guide module through key startup events
- Measure state transition timing and log test events to a file
- Non-compliant behavior noted with a fault
- 3.0 and 4.0 supported today, 4.1 in development



Smart Loopbacks

- Hi-Speed Loopback Traces, with different SI
- Programmable Thermal emulation
- CMIS Detection
- Custom FW for smart CMIS verification
- Modules:
  - OSFP (up to 24W)
  - QSFP (up to 8W):
    - ML4002-28-3dB
  - QDD:
    - ML4062-SLB (up to 15W)
    - ML4062-XLB (up to 15W)
    - ML4062-YLB (up to 20W)

ML4002-28-3dB

ML4062-SLB, (up to 15W)

Smart Loopbacks: ML4062-TL2a

QSFP-DD Electrical Passive Loopback Module

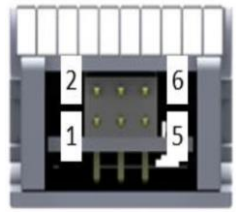
- QSFP-DD MSA form factor
- MSA compatible configuration and EEPROM
- Programmable MSA memory pages
- Custom memory maps
- Low speed signal status
- Digital state decision and edge detection of control signals
- Force alarm signals to Hi/Lo or tri-state
- Three options:
  - ML4062-TL2a-C-LCD: temperature and other monitoring values (current or voltage), depending on the LCD control register
  - ML4062-TL2a-C-LED: power mode and alarms monitoring (red & green indicators with solid & blinking modes)
  - ML4062-TL2a-C-CON: board to board connection

4 Temp. Sensors | Voltage Sensor | Current Sensor

LCD Display | Led Indicator | Pin Header

Monitored LCD | R & G Indicators | Alarm System

Pin header connector



LCD power state indicator

multiLane

THANK YOU

Innovation for the next generation

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