

ATPG/Diagnostics Terminology (1/3)

- **Test Mode**

- Specific set of conditions that ATPG and diagnostics are run under
- A function of the initialization procedure, scan procedure and pin constraints
- Separate DRC and patterns for each test mode

- **Pattern Set (Pattern block or PatternBurst block in STIL)**

- A group of scan patterns for a particular test mode
- Users may create separate pattern sets for each target fault model, though this is not always necessary

- **Scan Pattern**

- A sequence of procedures and/or vectors which load stimulus into scan chains, pulse capture clock(s), and unload responses from scan chains
- Unload from previous scan pattern may be overlapped with load for current scan pattern
- May be independent or dependent (can or cannot be re-ordered within pattern set)
- There may be multiple scan loads, but for diagnostics, only one scan unload per scan pattern

ATPG/Diagnostics Terminology (2/3)

- **Initialization Procedure**
 - Optional procedure applied once prior to any scan or capture procedures
 - Always called `test_setup` when using TetraMAX
- **Scan Procedure**
 - Procedure which contains zero or more preamble vectors, N shift vectors (**Shift block** in STIL), and zero or more postamble vectors
 - Establishes device state necessary to allow shifting of scan data; should return device to initialized state
 - Scan data may correlate 1-to-1 with scan cells in the device or may consist of compressed data streams
 - Always called `load_unload` when using TetraMAX
- **Capture Procedures**
 - Procedures which drive inputs, compare outputs and pulse zero or more clocks for one or more vectors
 - These vectors may setup nonscan state, launch transitions, capture fault effects and/or propagate fault effects through nonscan cells

ATPG/Diagnostics Terminology (3/3)

- **Failure Data**

- A list of pattern set mismatches from the ATE for a failing device
- May be truncated due to ATE memory limitations, but truncation criteria needs to be specified for diagnostics

- **Pattern-based Diagnostics**

- Failure data is specified by the failing scan pattern # and scan shift #

- **Cycle-based Diagnostics**

- Failure data is specified by the failing vector # within the pattern set

- **Expected Data**

- The expected value for each mismatch from the ATE
- This is optional; if specified diagnostics can check that its patterns match those applied on the ATE

- **Split Pattern Diagnostics**

- A single pattern set from ATPG is split into multiple pattern sets before being applied on the ATE
- Failure data for diagnostics will correspond to the split patterns