# Solstice-TDS v2020.2-r4962 Release Notes

## New Features and Enhancements in v2020:

- **Multi-Time Domain (MTD) WDBs:**
  These contain multiple time domains. The new Cyclizer Conditioner can read SEF databases and create an MTD WDB based on a port definition in a signal definition file. WaveMaker+ can display port waveforms from an MTD WDB, allowing comparisons with SEFs or other WDBs. Operations that can partition WDBs into multiple time domains: WDB Conditioner (MTD_PARTITION operation), STIL In Converter, and the WGL In Converter.
- **Merged functionality of Signal Definition, Port Definition and Pin Assignment Files:**
  One file can now be used with EVCD In converter, Cyclizer Conditioner and the V93000 WaveBridge. This simplifies the required setup to a single file and works in conjunction with OrbitX loops.
- **WaveMaker+:**
  The "New Scenario" generator supports more Solstice features: you can set up output masks on the waveforms and import signal I/O transition information for those VCDs not generated in extended format .
- **Cyclizer Conditioner:**
  The new Cyclizer Conditioner simplifies the traditional cyclization process previously done by the WAT and SequenceMatch Conditioners. Users can choose automated cyclization based on a user-specified period or a nominated clock signal. With multi-threading capability, processing times are faster especially with MTD setups: all ports are processed in parallel. MTD WDBs created by the Cyclizer Conditioner are directly compatible with the V93000 WaveBridge which will generate a multi-port setup with no additional input. The Cyclizer Conditioner can also read a TimeTable file that specifies times or equations, giving the user complete control over how timing files appear in the ATE. For example, V93000 users can specify on a per pin basis if equations are global, equationset or per-pin based.
- **V93000 WaveBridge:**
  The WaveBridge allows the user to select between an AIT-compatible file set or directly-produced timing and pattern files. Improved support for both single port (@) and multi-port is achieved by directly reading WDB and MTD-WDBs with or without equations. When an MTD WDB is read, the WaveBridge will now process all ports in a single pass with a single Pin Assignment File. Equations specified in the TimeTable file read by the Cyclizer Conditioner will now appear in the timing file generated by the WaveBridge. The Pin Assignment File now supports per-port X-mode settings. Pattern row compression has been improved. AIT users can now select a clean up option that will delete the AIT work files if a successful pattern file compilation was completed. The parameter setup is also simplified with setting clustering, so you can see a subset of parameters. The number of connection ports has been reduced, helping to remove clutter within scenarios. There is improved support for comments within pattern files. Advanced features such as generated WDBs and TCL files are now hidden by default. A new incremental feature allows reuse and appending to wavetables in the timing file.

- **STIL In Converter:**
  Now has options to flatten Scan, Loops and Repeats on the incoming STIL file.
- **Add Equation Tool:**
  Now supports adding equations to the first (0ns) event in timing tracks. Controlled via the new property "Bind first event?".
- **EVCD Out :**
  Times are now output in femtosecond resolution .
- **Window Conditioner:**
  Instead of specifying an explicit period, the user can now select the clock period defined in the input SEF. Window start and stop times can now be specified as a percent of the period, rather than as fixed values.
- **Align Conditioner:**
  Instead of specifying an explicit period, the user can now select the clock period defined in the input SEF.
- **T2000 TRT:**
  Now supports single row repeats in the source pattern file.
- **Advantest V93000-ST8 TesterBridge:**
  - Support for Multi-File Pattern Burst when used as a component within an OrbitX Loop.
  - New option to specify the starting number for bridge automated channel assignment.
  - Improvements to the PAF allow better control of the pattern column pin order.
- **Aemulus DM TesterBridge:**
  - Support for Pattern Compression including Loops and MatchLoops, with controls for customizing depth, min/max count and loop label names.
  - Support for ATPG Scan in the output test program and Pattern utilizing dedicated tester resources.
  - Improved constraint checking of Pattern Labels with auto-adjust for length and margins.
  - New ATE support for the the DM500x and DM400e tester models.
- **LTX DiamondX TesterBridge:**
  - Support for Multi-File Pattern Burst when used as a component within an OrbitX Loop.
  - Improvements to the TimingGroups option with a choice of Yes, No or PassThru.
  - New option to specify the slot and starting number for bridge automated channel assignment
  - Improvements to the PAF allow better control of the pattern column pin order.
- **NI-STS TesterBridge:**
  - Improvements to the TimingGroups option with a choice of Yes, No or PassThru.
  - Improvements to the PAF allow better control of the pattern column pin order.
- **Teradyne J750 TesterBridge:**
  - Support for Multi-File Pattern Burst when used as a component within an OrbitX Loop.
  - Improvements to the TimingGroups option with a choice of Yes, No or PassThru.
  - Added control for naming the Pattern Start Label, which now uses LVM storage.
  - Additional options to customize the names of Default Pin Groups, and whether to include them in the output Workbook.
  - Improvements to the PAF allow better control of the pattern column pin order.
- **Teradyne ETS800 TesterBridge:**
  - Support for user specified affixes when creating WFT and SignalGroup names.

- **Teradyne UltraFLEX TesterBridge:**
  - Support for Multi-File Pattern Burst when used as a component within an OrbitX Loop.
  - Improvements to the TimingGroups option with a choice of Yes, No or PassThru.
  - Added control for naming the Pattern Start Label, which now uses LVM storage.
  - Additional options to customize the names of Default Pin Groups, and whether to include them in the output Workbook.
  - Now supports IG-XL version 9.0 and above.
  - Improvements to the PAF allow better control of the pattern column pin order.

## Changes for Release v2020.2:

- **0001717 [UltraFLEX TesterBridge]:** The location of the 'scan_type' directive in the pattern header was move to come before the ATPG section.
- **0001715 [Window Conditioner]:** A problem was fixed where the conditioner would not finish if the simulation ended in a partial cycle.
- **0001714 [Seq Match / Cyclizer Conditioner]:** The timing on buses was fixed to output member tracks separately when they have different input waveforms.
- **0001711 [STIL In]:** The parser now allows a single defined Category to be Global, and is not required to have a reference in the PatternExec block.
- **0001710 [TesterBridges]:** Unknown ('N') states on input scan chains are now converted to drive low ('0') states on the following bridges: Aemulus, C3360, C3650, Magnum, NI-STS and T2000.
- **0001709 [ETS800 TesterBridge]:** Support was added for user specified affixes that the bridge uses to identify pin direction when creating WaveformTable names and SignalGroup names. The 'pin dir names:' option can be found in the Properties Sheet.
- **0001707 [J750 / UltraFLEX TesterBridges]:** Multi-File Pattern Burst support was added to the bridges for use when running scenarios with an OrbitX on several source files. This option fills in the 'Pattern Sets Sheet' and adds the 'Pattern Groups Sheet', for the J750 TesterBridge, to run multiple patterns as a Pattern Burst.
- **0001706 [UltraFLEX TesterBridge]:** A problem fixed where processing large scan files would cause a long delay before the bridge would start.
- **0001699 [Pattern Validator / Verilog Out]:** A new feature was added to stop the simulation after a user defined number of miscompares are found.
- **0001698 [Pattern Validator / Verilog Out]:** The file listing the all the signals is no longer output by default, and an option was added that re-enables it.
- **0001696 [Sequence Match Conditioner]:** A problem was fixed in the conditioner that was causing the V93000 WaveBridge to fail to produce a valid timing file with 5 edgesets.
- **0001693a [TesterBridges]:** A new 'PassThru' choice has been added to the 'TimingGroups' option, which uses the original source signal groups when constructing the output timing. Selecting 'No' now causes the bridge to output the timing on each pin individually. Selecting 'Yes' now causes the bridge to choose the largest signal group that has common timing, and checks if the default pin groups qualify when available. This change applies to the following:
  - C3360, C3650, DiamondX, Flex, J750, UltraFLEX and NI-STS TesterBridges.
- **0001693b [V93000-ST8 TesterBridge]:** The 'TimingGroups' option has changed to output timing on each pin individually when 'No' is selected. Selecting 'Yes' will cause the bridge to add a set of standard Waveform definitions to each pin, to optimize group matching of timing.
- **0001683 [TimeTable / V93000 WaveBridge]:** The scenario generated by the Tool has been updated to support the latest features of the WaveBridge.
- **0001682 [Waveform Viewer]:** An issue was fixed in the Waveform Viewer where the vertical line was not displayed, indicating when a transition occurred on a collapsed bus.
- **0001662 [WaveMaker+ / TimeTable]:** The “New Scenario” dialog has been improved to have better support for VCD files, and now has the option to add a Window Conditioner operation to the auto-generated scenario.

- **0001659 [TesterBridges]:** A problem was fixed that was causing the TesterBridge process to run out of memory when converting long scan chains to parallel vectors. This generally occurred when flattening scan chains that had more than 50K data states per scan vector, and would result in a significant increase in processing time or possibly cause the process to hang.
- **0001638 [V93000 WaveBridge]:** Some improvements have been made to the way the bridge does pattern compression on MTD databases.
- **0001630 [WaveMaker+]:** A new “Wrap” check box has been added to the Waveform Editor' “Find” control cluster, that stops at the end of the simulation if unchecked, or starts again at the beginning if checked.
- **0001624 [T2000 TRT]:** The reader is now able to handle single row repeats in the test program pattern file.
- **0001620 [V93000 WaveBridge]:** Source comments are now limited to 250 characters in the output pattern file.
- **0001605 [eVCD Out]:** Support for femtosecond resolution has been added to the out converter.
- **0001529 [Pattern Validator]:** The default strobe width has been changed to 200ps.
- **0001472 [V93000 WaveBridge / Signal Edit Conditioner]:** A problem was fixed where signals added by Signal Edit were not properly output by the WaveBridge.
- **0001463 [Add Equation Tool]:** The tool has been enhanced to allow equations at 0ns on the first event of a track.
- **0001408 [WDB Conditioner]:** A problem was fixed when using the Concatenate operation, and the second WDB start location was a loop begin, the conditioner would exit prematurely.
- **0001095 [WaveBridges]:** A problem was fixed where an error would occur when generating the TCL file, cause by pattern bursts in the WDB having a space in the name.

## Changes for Patch Release v2020.1:

- **0001705 [WDB Conditioner]:** A problem was fixed in the conditioner that was causing it to exit erroneously on certain testcases containing a large number of loops.
- **0001704 [J750 TesterBridge]:** Changes to the start label in the pattern file:
  - The label now uses the '**start_label**' key word instead of '**global**' to prevent it from being stored in SVM.
  - The '**Start_Label_Name**' parameter in the ATE file can be used to change the start label .
    See the TesterBridge User Manual on how to use and modify ATE files:
    - The '`%V`' macro as a substitute for the base pattern file name. (`Start_Label_Name = "%V_st";`)
    - Set the parameter to empty, to not output a starting label. (`Start_Label_Name = "";`)
- **0001701 [Sequence Match Conditioner]:** A fix was made to prevent the Conditioner from quitting unexpectedly on large databases with more than 14,000 signals.
- **0001700 [Verilog In]:** A fix was made to the Progress Status message to keep it from reporting negative values when processing VCD files greater than 4GB.
- **0001692 [V93000 WaveBridge]:** Improvements to the bridge:
  - Changes were made to the progress reporting of the compile script, showing the progress through each of the 3 stages separately (ddcrpt, binl and gzip).
  - A problem was fixed where the compiler wasn't run properly if the port assignment file had a port column and the source database was not an MTD.
  - Improvements to run time processing of certain types of databases.
- **0001684 [V93000 WaveBridge]:** A fix was made to prevent the bridge from quitting unexpectedly when processing Signal Groups that have a lot of members with long names (total num of chars in member names > 1024).
- **0001690 [Aemulus DM TesterBridge]:** The DM500x ATE has been updated with the following changes:
  - The name of the SCANSET block has been corrected in the Declaration file.
  - The SCANOUT 'z' Scan State has been changed to an 'X'.
  - Beta support for the '2.5ns' edge placement restrictions has been added as a new ATE model in the TesterBridge Properties Sheet. By selecting the “Aemulus_DM500y” ATE name, the bridge will output a TIMINGSET block in the Declaration fie that has the restrictions: (D0<D3) , (D1<D2<D4<D5) & (R0<R1) with a '2.5ns' pulse width.

    - Scan vectors appearing on the last row of the pattern, now have the last set of scan states unrolled into a prallel vector which is required to have the 'stop' opcode in it.
- **0001689 [STIL In]:** A problem was fixed in the reader when mapping Signals to Scan Ports, where the names did not match when there was an underscore as the last character.
- **0001688 [V93000-ST8 TesterBridge]:** Support has been added for Multi-File Pattern Bursts when running inside an OrbitX loop. The bridge now outputs the list of patterns to the 'PatBurst.flow' and 'PatOpSeq.seq' files.
- **0001687 [V93000-ST8 TesterBridge]:** The bridge now outputs a script to zip the pattern files when running on platforms that do not support the Large File Zip utility, or when the Zip command fails. The pattern files are left in a sub-directory along with the script, so the files can be zipped at a later time.
- **0001679 [DL500 TRT]:** Labels and Loop End are now being placed in the proper location when creating a WDB.
- **0001678 [V93000 WaveBridge]:** A problem with multiple TimePlates causing the Advantest v2b pattern compiler to crash, was fixed.
- **0001673 [V93000 WaveBridge]:** A fix was made to reduce the number of edges needed for an RZ shape when using xMode 4.
- **0001671 [DiamondX TesterBridge]:** Improvements have been made to the way the bridge assigns Instruments, Slots and Channels.
    - The ATE file is now setup to make Slots 1:14 available for assignment when either the 'DPIN96' or 'GX1' Instrument has been selected.
    - There is now an option available to select the starting Slot and Channel number, when the auto-assign function is used. See the User Manual for more details.
- **0001668 [DiamondX TesterBridge]:** A 'Connections' block for the DUT channel assignment was added to the Flow section of the UNA file.
- **0001666 [STIL Out, TesterBridges]:** A problem was fixed when using a PAF to delete a Scan Pin would cause the application to quit unexpectedly.
- **0001665 [V93000 WaveBridge]:** A fix was made to prevent the bridge from quitting unexpectedly on large Multi-Time-Domain databases with a different number of signals in each.
- **0001658 [Aemulus DM TesterBridge]:** Added support for the DM500x tester model, and changed the currently supported model to DM400e. Note: for existing scenarios, the default ATE Type will automatically be upgraded to the DM500x ATE. The DM500x ATE has been updated with the following changes:
    - Added support to output Scan data in a format that is compatible with the tester hardware.
    - Added an option to select '10ns' or '20ns' as the minimum Period allowed when converting timing.
    - The bridge supports the edge placement restrictions: (D0<=D3) , (D1<=D2<=D4<=D5) & (R0<= R1).
- **0001657 [WaveMaker+]:** A fix was made to the GUI that prevented a scenario being generating from an EVCD file.
- **0001648 [NI-STS TesterBridge]:** Changes were made to the pattern compile script, output by the bridge, so that all pattern files within the directory will be complied.
- **0001647 [Align, Window Conditioner]:** When setting the 'Cycle Boundary' parameter, both conditioners now support the CLOCK and FIXED relations from a Port Definition File (SDF).
- **0001646 [WDB Conditioner]:** Support for Multi-Time Domain was added to the WDB Conditioner. By using a port-signal file with the conditioner, an MTD database can be generated and used with the V93000 WaveBridge.
- **0001645 [V93000 WaveBridge]:** The bridge now generates a Pattern Master File List (PMFL), and updates it when in incremental mode.
- **0001644 [V93000 WaveBridge]:** The bridge now generates gzip pattern files.
- **0001643 [STIL In]:** The in converter has been optimized to run faster on files with scan chains of 200K cells or greater in length.
- **0001639 [V93000 WaveBridge]:** Changes were made in the way bidirectional pins are assigned edges when going from a drive to compare, to reduce the number of edges needed.
- **0001634 [J750 TesterBridge]:** The output of the Time Sets (Basic) sheet was changed to make the Driver Off [D3] edge default to 'Disable'.

- **0001628 [V93000 WaveBridge]:** Several problems were fixed in the timing output by the bridge when generating the waveform actions on bidirectional pins. This also fixed some problems in the way break cycles were being output.
- **0001627 [STIL In/WGL In]:** Support for Multi-Time Domains from STIL and WGL source files has been added Solstice-TDS. By using a port-signal file with the In Converter, an MTD database can be generated and used with the V93000 WaveBridge.
- **0001626 [WaveMaker+]:** A problem was fixed where the waveform display would freeze when displaying MatchLoops with millions of cycles.
- **0001622 [Aemulus DM TesterBridge]:** Support for loop pattern compression has been added to the TesterBridge, which takes incoming loops from the source file, and transforms them into opcodes used by the tester. The items below have been added along with this enhancement:
  - Added support for pattern labels, with auto calc for left margin.
  - Added checks for legal Program and Pattern File names in the Properties Sheet.
  - Added compression option with choice for YES, NO and PASSTHRU.
  - Added option for min repeat count.
  - Use 'MatchLoop Infinite' to support the 'jmp label' opcode.
  - Loop support for 'jnzX label' will use existing label if present.
  - Added option for Source Comments, and a cap of 64 char max length.
  - Added label check and shorten for max length of 31, plus uniquefy.
  - Added label check for max count of 2048.
  - IddqTestPoint now inserts the 'paus(e)' opcode in the vector.
  - Loop constraints for nesting, 1st/last vector & min/max count are supported.
- **0001522 [V93000-ST8 TesterBridge]:** A problem with zipping large pattern files (>4GB) has been fixed. The 'fz' switch was added to the system zip command to maintain comparability with the ST8 software. An option was add to the bridge interface for older versions of the system zip command to run the command without the 'fz' option, for versions older than 3.0.

## Changes for Release v2020.0:

- **0001623 [TesterBridges]:** A new option has been added to the top of the Properties Sheet in WM+ called 'Advanced Settings'. When unchecked (default), it will hide all the non-essential options on the sheet, using the default settings for those fields.
- **0001621 [TimeTable]:** Users now have the option of using frequency (400MHz) for specifying the cycle time.
- **0001619 [STIL In]:** Comments from Macro and Procedure Calls in the STIL file are no longer saved by default, but only if the 'C Style Comments' option is enabled.
- **0001618 [UltraFLEX TesterBridge]:** Support for IG-XL version 10.10 has been added. Several sheet version numbers have been updated along with some column headers. Older versions of IG-XL are still supported through an option in the Properties Sheet [IG-XL version].
- **0001617 [Flex/J750/UltraFLEX TesterBridges]:** Several new options have been added to the bridge that give the user better control over Pin Groups. See the Solstice User Manual under TesterBridges for more information:
  - Output default pin groups [DefaultPinGroups].
  - Naming of the default pin groups [DefaultPinGroupNames].
  - Use pin groups in the Time Sets sheet [TimingGroups].
  - Pattern group name to use for pattern pin order [PatternGroupName].
- **0001616 [WM+ / OrbitX]:** A problem was fixed where sometimes, when working with the OrbitX Reconfigure Table; preview table dialog, the application would suddenly exit.
- **0001615 [Flex/J750/UltraFLEX TesterBridges]:** Several fixes have been made in the Time Sets sheet in IGXL:
  - Some default settings for Drive and Compare have been corrected.
  - Drive Off [D3] edges corrected for drive only and compare only tracks.
  - Corrected the Compare Mode for tracks with mixed Mask and Edge/Window tracks.
  - Corrected Drive On [D0] edge for shapes like 'ZS', 'ZD' and 'ZU'.

    - MCLK Mode edges for Drive Off have been corrected.
    - Correct the Drive Data [D1] edge for NR-2X drive format (2X Mode on UltraFLEX).
    - Changed the Compare format for 2X Mode to Edge with both [R0] and [R1] programmed.
- **0001610 [WaveMaker+]:** Users now have the option to view the User Manual in a Web Browser using the preference setting in Edit → Preferences → General.
- **0001606 [TimeTable]:** Enhanced to support using equations in sheets for defining time values, support for multi-port definitions, and works with the new Cyclizer Conditioner.
- **0001595 [V93K WaveBridge]:** The bridge has additional functionality that now generates timing and binary files directly. This enhancement also has improved support for:
    - Improved per-pin and per-port edgeset support..
    - Multiple ports.
    - Incremental Wavetables.
    - OrbitX.
    - Simpler layout for parameter setup.
    - Universal Port / Pin Assignment Files.
- **0001590 [V93K WaveBridge]:** The bridge now supports automatic rounding of timing edges based on the tester resolution, and the period value is adjusted based on the XMODE.
- **0001561 [V93K WaveBridge]:** The Port Scale tester model files (PS400, PS800, PS1600 & PS9G) have been changed to use Repeat compression only, and the number of available channels have increased to give a pin count of 43216 pins.
- **0001375 [SEF Conditioners]:** The Port Definition File and clock settings are now preserved when running any of the SEF Conditioner. See the Solstice User Manual → User Defined Files → Signal Definition Files for information on the Port Definition File.
- **0001239 [Incremental Conditioner]:** The tool now creates the output directory, if it does not exist, instead of exiting with an error.

## New Features and Enhancements in v2019:

- **The Advantest STILReaderPro for the CX1000:**
  This new TesterBridge produces pin, pattern and timing files that load directly into the Advantest Cloud Test System software, and also includes a command line interface for easily converting ATPG STIL files.
- **Replace Pattern Tool:**
  Now with enhancements to conditionally search and replace states within a pattern block. Refer to the Solstice User Manual, under Tools : Replace Pattern, for more information.
- **WDB Conditioner:**
  A new '*Muxify*' operation has been added which will create MUX pins in a database for TesterBridges that support 2X type Pin Modes.
- **The LTXC DiamondX TesterBridge:**
  Now has the ability to process multiple pattern files within an OrbitX loop, and output them as a Pattern Burst in the UNA file.
- **The National Instruments STS TesterBridge:**
  The bridge now supports Scan Mode and the 2X Edge Multiplier features of the test system. Refer to the Solstice User Manual, in the TesterBridges : NI-STS section, for more information.
- **The Teradyne UltraFLEX TesterBridge:**
  Now supports the UP800 and UP1600 digital instruments along with enhancements to MultiClock Mode and a new ATPG Mode.

- **The Signal Edit Conditioner:**
  The conditioner has a new GROUP_RENAME operation and the ADD Signal operation has been enhanced to allow pattern data and timing information on a per TimePlate basis.
- **Verilog In:**
  With performance improvements of up to a factor of 100x (hours to minutes!) for VCD files with a large number of signals (>10,000).
- **WaveMaker Plus Enhancements:**
  For more information on new features in WaveMaker Plus, see the WaveMaker+ User Manual under New and Notable.
  - OrbitX Iteration Table Improvements:
    - Create and synchronize iteration tables from a file.
    - Table rows can be enabled/disabled before running the scenario.
    - Variable and function references can be expanded to show values.
    - Column display order can be changed and preserved.
  - Batch file Processing has improved progress reporting when processing large files.
  - New Pattern Viewer for displaying the vectors of a WDB or SDB database.

## Changes for Release v2019:

- **0001613 [TesterBridges]:** To avoid duplicate entries, unique signal names are now created when shortening names that are over the tester limit. TesterBridges that have been affected are: T2000, C3360, ETS800, J750 and UltraFLEX.
- **0001612 [UltraFLEX TesterBridge]:** The 'atpg mode' option now outputs the ATPG related information into the pattern file even if Scan is not present.
- **0001611 [UltraFLEX TesterBridge]:** Miscellaneous fixes and enhancements:
  - A per-pin constraint check for consistent MultiClock Periods across Time Sets has been added.
  - The 'Package Pin' field can now be added to the Channel Map sheet by filling in the DUTPin column in a PAF.
  - An option for including default pin groups in the output test program has been added to Properties sheet. Previously, the default pin groups were always included.
  - A new 'timing groups' option has been added to the Properties sheet to output Time Sets using pin groups when possible.
- **0001604 [WGL In]:** The source file name and current date are now recorded as comments at the beginning of the Pattern section, and will be available to the various bridges when source comments are enabled for the test program.
- **0001603 [STIL In]:** The source file name and current date are now recorded as comments at the beginning of the Pattern section, and will be available to the various bridges when source comments are enabled for the test program.
- **0001602 [Verilog/EVCD In]:** The source file name and current date are now recorded as comments at the start of the simulation, and will be available to the various bridges when source comments are enabled for the test program.
- **0001601 [TesterBridge PAF]:** The TesterBridge Pin Assignment File can now be used to set the pattern column pin order. Refer to the Solstice User Manual under TesterBridges.
  - Using the column heading 'Column' to assign a numbered order to each signal.
  - Or use the 'PAT_PIN_ORDER' keyword in the 'Signal' column and list the signal order in the 'Members' column.
- **0001600 [UltraFLEX TesterBridge]:** Support for the UP800 Single and Dual, and the UP1600 Single, Dual and Quad digital instruments has been added to the bridge.
- **0001598 [SVF In Converter]:** A problem was fixed that occurred when the mask size was larger than the data size. E.g. SDR 32 TDI (05) SMASK (0ffffffff);

- **0001596 [SVF In Converter]:** The reset sequence is now 1,1,1,1,1 instead of 0,1,1,1,1.
- **0001594 [NI-STS & CX1000 TesterBridges]:** A dummy vector with compares masked, is now added as the last row of the pattern file when the source ends with a Scan Vector.
- **0001593 [V93K WaveBridge]:** An option was added to disable the creation of pin groups in the output test program.
- **0001591 [TesterBridges]:** Improvements to Loop processing have been made to correctly handle Loops that end on the last row, and for nested Loops that end on the same row.
- **0001592 [SVF In Converter]:** Address SVF issues and associated improvements.
- **0001587 [WaveMaker Plus]:** A problem was fixed in the Pattern Viewer when on the Windows OS, where the Loop Count was not displayed correctly when over 65K.
- **0001586 [CX1000 TesterBridge]:** A problem was fixed where a Loop End on the last row of the pattern was causing extra vectors to be generated due to the repeat count not being cleared.
- **0001585 [STILReaderPRO]:** A problem was fixed where "STILReaderPro" was not displayed when showing the Usage help after a bad input option by the user.
- **0001583 [STILReaderPRO]:** Some changes were made to the command line options:
    - Added option '-allpname' to add prefix to pattern pin group named "all_pins".
    - Added option '-pxrfilename ' to name the output .pxr file.
    - Modified option '-pat' to add pattern file name prefix, and removed '-patfile' option.
    - Modified option '-outdir' to create a sub-directory with the PatternExec block name, if one is specified in the STIL file.
    - Added option '-tester' with a target of cx1000p, cx1000d or cx1000ds2, for selecting the tester model.
    - Fixed the log file name to be <stilname>.log when not using the '-nolog' and '-logfile' options.
- **0001582a [NI-STS TesterBridge]:** Added support for the HSD_6570 instrument to the bridge, and an option in the Properties sheet to select the default instrument for auto-assignment of tester channels. Also added was a parameter to control the line length of the scan states in the output pattern file.
- **0001582b [NI-STS TesterBridge]:** A problem was fixed where the Scan States output in the pattern file were not correct when the Scan Port was a bus member.
- **0001580 [UltraFLEX TesterBridge]:** A new feature has been added to set up ATPG source file parameters in the UltraFLEX pattern (ATP) file, for processing STIL Scan data. The bridge Properties Sheet now has an 'ATPG Mode' field, with a choice of 'Cadence, Mentor or Synopsys', to enable the new feature. The new ATP file parameters list information from the STIL Header block, log_first_cycle and the atpg_pinmap.
- **0001575 [SRC Utility]:** Enhancements to the Simulation Rules Checker:
    - Added rule for differential clock signal checking.
    - Added optional class to specify a rule as an error or warning.
    - Added optional exclude prefix for signals to be ignored in signals list.
- **0001572 [NI-HWS TesterBridge]:** Assignment of instruments and channels can now be done entirely through the PAF, without the need to modify the ATE file. Refer to the Solstice User Manual under the NI-HWS TesterBridge section for more information.
- **0001571 [STILReaderPro]:** A problem was fixed where the STILReaderPro executable would not start up correctly when installed in a directory with a space in the path name.
- **0001557 [Signal Edit]:** A new function has been added in Signal Edit to rename signal groups. The GROUP_RENAME operation can be selected from the Property sheet or used in an OpFile.
    - For a single Group, set the Properties sheet to:
      'operation: GROUP_RENAME', 'use opfile? NO', 'group name:' and 'new group name:'
    - For multiple Groups, a list can be setup in the OpFile:
      Properties sheet: 'operation: GROUP_RENAME'
      OpFile row header: '#% Group NewName'
    - For multiple operations in an OpFile:
      Properties sheet: 'operation: useOpFile'
      OpFile row header: '#% Operation Group NewName'

- **0001532b [NI-STS & DiamondX TesterBridges]:** When compression is turned on, the bridges now ignore source comments when creating repeat vectors.
- **0001532a [TesterBridge PAF]:** The Pin Assignment File now ignores any white space before the header row leading characters of '#%'. As previously, header columns that are not recognized will be ignored, but now they will be reported.
- **0001579 [SRC Utility]:** A problem was fixed where the results from SRC were not consistent when running from an OrbitX loop.
- **0001578 [UltraFLEX TesterBridge]:** Multi Clock Mode is now supported in the TesterBridge.
- **0001577 [UltraFLEX TesterBridge]:** Pattern files (.atp) are now padded to the required minimum vector length.
- **0001570 [WaveMaker Plus]:** A fixed was made that limits the number of lines output to the Log Viewer to prevent it from crashing when processing huge files that generate lots of exceptions.
- **0001565 [UltraFLEX TesterBridge]:** Pin and pin-group names are now allowed to be up to 256 characters long.
- **0001562 [SVF In Converter]:** A problem was fixed where a crash would sometimes occur on files with unexpected state transitions.
- **0001534 [Signal Edit Conditioner]:** When doing an ADD operation on a signal, the new Tracks can be assigned on a per TimePlate basis.
- **0001530 [Verilog Out]:** The default 'edge strobe width' on the Properties sheet is now '200ps'.
- **0001574 [T2000 TesterBridge]:** Improvements were made to the way the bridge generates vector repeats in the pattern file.
- **0001573 [STIL In]:** A problem was fixed where processing Waveforms with ForcePrior Events ('P/P/P') would cause errors during the STIL import. A fix was also made to the NI-STS TesterBridge to allow it to process Tracks with only 'P' State.
- **0001569 [STILReaderPro]:** Several new options have been added to the Tool. For a complete list of options, use the '-help' command line option:
    - [-defltgrps]: Output default pin groups [AllIns, AllOuts, AllBids].
    - [-patgrp GrpName]: Changes the pin group name for pattern vectors from [AllPins].
    - [-repeatmin Count]: Sets the minimum count for creating repeat vectors in the pattern.
    - [-rowcomm]: Outputs row and cycle comments in the pattern vectors.
    - [-srccomm]: Outputs Annotations from the source STIL file, as comments, in the pattern.
- **0001568 [V93000 WaveBridge]:** A problem was fixed where a crash would sometimes occur during AVC vector file generation on files with a large number of comments embedded.
- **0001567 [NI-STS TesterBridge]:** An option was added to the bridge for controlling the minimum number of matching rows before creating a Repeat Vector, [Repeat Count Min].
- **0001566 [TesterBridges & STIL Out]:** The handling of Loops and Repeats has been improved when when generating vectors by taking the ATE restrictions into consideration. The following parameters are used to reform Loops structures during test pattern generation.
    - Min / Max level of nested Loops.
    - Min / Max iteration count for Loops.
    - Min / Max row count for Loops.
    - Loop begin / end allowed on the 1st / last row of pattern.
    - MatchLoop support.
- **0001563 [STILReaderPro]:** Some problems when using the '-pinmap' or '-pingrp' options were addressed:
    - Alternate headers for the CSV file are now allowed:
        - [Channel Type,Pin Name,Channel Number]
        - [TYPE,SIGNAL_NAME,DUT_PIN]
    - The Tool no longer sets PinMode = MUX in the output program.
    - A TesterBridge Pin Assignment File (PAF) is now created, that is derived from the settings of either of the two options.
- **0001559 [STILReaderPro]:** The Tool no longer needs to have the $TDSDIR environment variable set to run if the 'tds' installation directory is listed in the $PATH variable. When running in the Windows environment, the

STILReaderPro.exe has been moved up one level to the 'tds' installation directory, and using a Shortcut to the DOS cmd.exe, the Tool can be setup to run with the set Path option as shown below:
    - Target = '%windir%\system32\cmd.exe /k "set Path=%Path%;<path-to-tds-install-dir>'
- **0001558 [NI-STS TesterBridge]:** The bridge was enhanced to generate syntax for SCAN data in the pattern file as required by the tester's new SCAN feature. NOTE: version 19.0 or later of NI's Pattern Editor required.
- **0001520 [Signal Edit Conditioner]:** When doing an ADD_SIGNAL operation, Tracks can use the 'S' and 'Q' shapes, and will get inserted in the corresponding pattern columns.
- **0001556 [ STILReaderPro]:** A problem was fixed when using '-scan' in the command line options would cause an error.
- **0001551 [Sequence Match Conditioner]:** A fix was made to the conditioner to prevent it, in some rare circumstances, from suddenly closing.
- **0001548 [Pattern Replace Tool]:** Signal groups are now supported for the REPLACE operation.
- **0001546 [Verilog Out / PV]:** A change was made to map buses to scalar bus members in the DUT model.
- **0001544 [NI-HWS TesterBridges]:** The license keys for the bridge now have 'NI_HWS' in the name.
- **0001543 [WGL In]:** A change was made to order pins defined as bus members in MSB:LSB order.
- **0001542 [STIL In]:** A change was made to use MSB:LSB order for creating buses when the 'detect buses' options is set to YES. The MSB:LSB order is only used when creating buses, it is not changed on buses that are already defined as a bus in the Signals block.
- **0001540 [TesterBridges]:** A fix was made to all bridges that use MUX pin mode, where sometimes the 1st column of the pattern would not be correct when using a PAF with 'Use=NO' on one or more pins.
- **0001539 [STILReaderPro]:** New features added:
    - A TimingGroups option was added to group common timing.
    - The bridge now auto-adjusts timing edges to the correct resolution.
    - The bridge now auto-adjusts timing edges to the end-of-cycle constraint.
    - An ATPG Mode option was added to setup the PXR file for datalogs.
    - A fix was made to the Horizontal Scan line length.
- **0001535 [WDB Conditioner]:** A new Muxify operation has been added to create MUX pins in a WDB database. Useful for testers with MUX and 2X (3x, etc.) modes.
- **0001526 [WaveMaker+]:** The Waveform Display was enhanced to show the Cycle Number in the popup box, when hovering over a waveform.
- **0001518 [WDB Conditioner]:** The TP Optimize operation was enhanced to work with WDB as well as SDB databases.
- **0001517 [NI-STS TesterBridge]:** The bridge now supports the 2X Edge Multiplier feature in the National Instruments Semiconductor Test System.
- **0001514 [DiamondX TesterBridge]:** The bridge now works within an OrbitX loop to process and store a list of patterns as a burst in the UNA file.
- **0001508 [WaveMaker+]:** A problem was fixed where sometimes pressing the 'STOP' button would not actually stop the OrbitX loop being process.
- **0001507 [Verilog In]:** A problem was fixed where the converter would miss-process a pin, if it was marked as an input, but had a bidirectional control setup in the Signal Definition File.
- **0001503 [AG93000 IB]:** A problem was fixed where the incremental flow did not work when there was a TimePlate name conflict.
- **0001502 [WaveMaker+]:** A problem was fixed where WM+ would unexpectedly close when opening an empty Scenario recovery file..
- **0001449 [WAT Conditioner]:** The WAT now correctly determines when there is an RZ shape on a cycle boundary and does not create an extra track for it.
- **0001421 [WaveMaker Plus]:** A problem was fixed where sometimes pressing the 'STOP' button would not actually stop a STIL In or TesterBridge process.
- **0001420 [OrbitX]:** Some minor changes were made to the OrbitX status messages when running in a loop on Windows.

- **0001416 [Solstice User Manual]:** Changes were made to the user manual to add missing batch mode parameters to some modules.
- **0001411 [WaveMaker Plus]:** A problem was fixed when comparing 3 or more Waveform databases, the display would not refresh to show the 3rd and subsequent Waveforms.
- **0001399 [Replace Pattern Tool]:** The tool has been enhanced with several 'Replace Modes' that allow conditional search and replace to target states on pins.
- **0001386 [WaveMaker Plus]:** A problem was fixed where signal names would sometimes disappear in the Waveform Viewer on Windows.
- **0001374 [WaveMaker Plus]:** The local toolbar item 'Go to Location...', now has a 'View' menu item with the same name.
- **0001346 [WAT Conditioner]:** The WAT now logs a message about the measured cycle length(s).
- **0001333 [WAT Conditioner]:** The WAT no longer runs when Per Cycle Analysis and TimeTable options are combined.
- **0001245 [V93k WaveBridge]:** The WaveBridge now outputs the correct timing events for compare Edge Mid-band and compare Window Don't Care ('X').
- **0001200 [WGL In]:** WGL In no longer core dumps when processing files with undefined signals.
- **0000998 [STIL In, STIL Out, TesterBridges]:** Progress reporting has been improved when processing large files.

## New Features in v2018:

- **New Advantest V93000-ST8 TesterBridge:**
  The new bridge is compatible with Advantest's SmarTest 8 system software, and also supports X-modes.
- **New Teradyne J750Ex tester model support:**
  Now in the J750 TesterBridge, support for the HSD200 and HSD800 instruments in Expanded, Normal and Quad Modes along with MCLK modes and Scan alignment for pattern vector groups.
- **New Teradyne ETS800 TesterBridge:**
  The new bridge produces STIL files specific to Teradyne Eagle Test System.
- **Enhanced Incremental Conditioner:**
  Has been upgraded to better work in scenarios with OrbitX loop capabilities.
- **Support for femtosecond resolution:**
  Support for femtosecond resolution has been added in the SEF and WDB waveform databases. Databases created by this version and older versions of Solstice-TDS are not compatible, and will need to be re-created in the version being used.
- **Name change for the NI 65xx TesterBridge:**
  The TesterBridge name has changed to the NI HWS TesterBridge. Any scenario using this TesterBridge will need to be upgraded to use the new TesterBridge.
- **Support for the Agilent93000ait WaveBridge dropped:**
  This WaveBridge is no longer supported and has been replaced by the **Advantest V93000 WaveBridge**. All old scenarios using this WaveBridge will need to be upgraded to use the new WaveBridge.
- **Known Issue in WaveMaker Plus on Windows:**
  On some Windows OS platforms, signal names in the Waveform Display may disappear when zooming in or out. Signal Names can be re-displayed by resizing the window or moving the Waveform Display to a new window. To move the Waveform Display to a new window, left-click on the tab header and select *Move to New Window*.

## Changes for Release v2018:

- **0001545 [STIL In, TesterBridges]:** When running multiple Solstice processes in batch mode with a limited set of licenses, jobs will now be set in a queue, and run when the license becomes available. To turn off license queuing, set the TDS environment variable 'TDS_NO_QUEUE'**.**
- **0001541 [J750 TesterBridge]:** A change was made to the way the 'PassThru' option for pattern compression handles incoming repeat vectors that are over the maximum repeat count for this ATE. The bridge will now divide the repeats over as many vectors as needed to keep the count under the maximum.
- **0001521 [J750 TesterBridge]:** The warning message for “MCLK pulses across time set are not consistent” was changed to an error.
- **0001538 [STIL In]:** A problem was fixed that was causing the reader to run much slower than previous versions. Changes made to some low level database functions, were causing the reader to take longer when adding new pattern rows. This fix corrects the performance problem while preserving the original intent of that change.
- **0001322 [V93k WaveBridge]:** An comment was added to the PIN/CONFIG file to indicating whether channels were auto-assigned or user generated.
- **0001515 [V93k WaveBridge]:** A problem was fixed where Break Vector States, defined in the PAF, were being ignored and did not show up in the output test program.
- **0001465 [V93k WaveBridge]:** A problem was fixed where the bridge would sometimes use illegal State characters ('D' & 'R') when generating a test program.
- **0001501 [Incremental Conditioner]:** The conditioner now correctly combines TimePlates when the 'edge tolerance' option is used.
- **0001510 [DiamondX TesterBridge]:** The SubFlow expression in the output test program is now always set to "TRUE", and the 'equation usage' option checks for valid specs before adding them to the output test program.
- **0001509 [J750 TesterBridge]:** Some additional checks were added to the bridge for valid waveforms when assigning MCLK pin modes. Also, some additional fixed shape waveforms were added to the ATE files under the MCLK_RL and MCLK_RH format lists.
- **0001513 [WM+]:** WaveMaker Plus now correctly opens in the current working directory (CWD) instead of the users home directory. This issue occurred when $TDSDIR was defined in the $PATH environment variable and to start, 'wavemakerplus' was typed into the shell.
- **0001512 [T6682 WaveBridge]:** An issue with generating and running a "do" file from WaveMaker Plus was fixed.
- **0001506 [Verilog In]:** VCD files with single bit bus definitions are now correctly handled when imported into Solstice by Verilog In.
- **0001419 [C3360 TesterBridge]:** The bridge now outputs labels in the generated pattern file.
- **0001463 [V93k WaveBridge]:** Added option to generate equation based offsets to all edge times**.**
- **0001501 [Incremental Conditioner]:** The conditioner now combines TimePlates by upgrading signals to BIDIR when needed.
- **0001491 [Signal Edit]:** Corrected a problem with the conditioner where deleting an IO pin, using the MatchPinFile operation, was corrupting the output SDB.
- **0001476 [TesterBridge]:** Changed the error message to a warning when trying to add a pin through the PAF, and improved the message by added the signal name to it.
- **0001477a [J750 TesterBridge]:** Corrected the way a 'PinMode' is set from the PAF for a group, and fixed the warning message. New groups can now be added through the PAF when the 'Members' column is defined.
- **0001477b [J750 TesterBridge]:** The bridge now correctly displays the simulation time in the end-of-line vector comments.
- **0001480 [Incremental Conditioner]:** The conditioner now has an option for upgrading input and output only signals to bidirectional and will now clear the history database on the 1st iteration of an OrbitX loop**.**
- **0001493 [Library]:** Changed the way some files in the WDB database directory had fixed permissions instead of using the umask settings.
- **0001473 [EVCD In]:** A fix was made to the Converter to allow 'X' exclusion in a port definition file.

- **0001495 [Advantest T6682 WaveBridge]:** A fix was made to correctly assign the drive format to "NRZ1" instead of "NRZ".
- **0001426 [EVCD In]:** The Converter now supports group definitions.
- **0001432 [TimeTable]:** The tool now correctly handles non-linear numbering in BUS structures
- **0001398 [Library]:** All internal databases (SDB/WDB/SEF) and modules now support femtosecond resolution for time values.
- **0001391 [Magnum TesterBridge]:** The bridge now correctly creates repeat vectors on Windows.
- **0001385 [NI65xx TesterBridge]:** The NI65xx TesterBridge has been renamed to the NI_HWS TesterBridge.
- **0001379 [NI-STS TesterBridge]:** The bridge now checks and modifies signal names, timesets and labels if they are in the ATE reserved word list.
- **0001484 [V93k-ST8 TesterBridge]:** The bridge now supports X-modes and lists the pattern combinations used in the wavetable file.
- **0001497 [V93k-ST8 TesterBridge]:** The bridge now checks for valid names for file names, timing sets and wavetables.
- **0001475 [Library]:** The allowable number of characters used in path names has been increased from 256 to 768 on the Linux platform, for WM+ and do files.
- **0001498 [Agilent93000ait WaveBridge**]: This bridge has been replaced by the Advantest V93000 WaveBridge, and is no longer supported.
- **0001378 [WM+]:** A problem was fixed where a directory could not be deleted from the files tab unless it's empty.
- **0001377 [TimeTable]:** A problem was fixed where Port clocks were affected when the Double Data Rate Clocks was checked in the WM+ interface.

## Changes for Release v2017:

- **0001494 [TesterBridge]:** A problem was fixed where the TesterBridge would fail to produce a pattern file when the source STIL file had multiple patterns listed in the PatList section.
- **0001482b [V93k-ST8 TesterBridge]:** Added support for X-mode pattern combinations and break vectors. The pattern combos are collected while doing the output vectors, only when X-mode > 1 is set, and are output in the Wtb.spec file with the 'used' statement.
- **0001482c [V93k-ST8 TesterBridge]:** The vector comments file is now added to the .pat zip, even if empty, to avoid some problems seen in the ST8 pattern display.
- **0001486 [WM+]:** A problem was fixed where the WaveMaker Plus dialog boxes didn't display correctly after using a second monitor.
- **0001483 [J750/Flex/UltraFLEX TesterBridge]:** An option was added allowing repeat vectors in the source database to be passed through to the output pattern as is, without combining or adding any additional repeat vectors. This 'Pass Thru' mode is only allowed on the Extended Mode ATE types to avoid conflicts with the pattern vector groups on the Normal and Quad Mode ATE types.
- **0001487 [ETS800 TesterBridge]:** A bug was fixed to allow vector repeats to be turned off. Also an option for setting the minimum repeat count was added.
- **0001482 [V93k-ST8 TesterBridge]:** New enhancements to the bridge:
    - Added an option to allow the 'changeTiming' command in the pattern file, when multiple TimePlates have different Period values.
    - Added an option to set the minimum repeat count for vector compression in the output pattern file.
    - When the default pin groups option is set to NO, the bridge will now output the pattern pin group in the levels setup.
    - The 'result.cyclePassFail' statement has been moved from the main specs file to the levels setup file.
    - Added an option to set the X-Mode (2:8) to be applied to all the output pattern pins.
- **0001464 [J750 TesterBridge]:** An option was added to turn off constraint checking for conversions with a large number of bidir pins, that frequently switch between input and output tracks, as the constraint checking may take an excessive amount of time. Turning off checks on this type of conversion will vastly improve the processing time of the bridge.

- **0001478 [V93k-ST8 TesterBridge]:** Miscellaneous issues:
    - Fixed a problem in the Eqn.spec file where the bridge would assign the same timing edge to different named variables when they had the same timing value. The bridge now assigns them to separate timing edges.
    - In the Main.spec file, the AllPatGrp pin group has been replaced by the list of individual pins in the 'setup digInOut' statement.
    - Added a check for illegal file name characters in the 'programfilename' and 'patternfilename' fields of the parameters sheet.
    - Fixed a problem in the pattern sequencer file, where subgroups would show up in the pins list.
    - Fixed a problem where the 'Timing Groups' option would not always use a pin group for pins with like timing, when one was available.
- **0001479 [V93k-ST8 TesterBridge]:** New TesterBridge features:
    - Added support for repeats and loops in the pattern file.
    - Added support for comments in the pattern file.
    - Added an 'Operating Sequence' method to the test program files for running pattern bursts.
    - Added support for changing the 'Timing Set' & 'Wavetable' names in the parameters sheet.
- **0001464 [ UltraFLEX TesterBridge]:** Added an option to the bridge to turn off constraint checking. For conversions with a large number of bidir pins, that use both the input and output tracks, the constraint checking may take an excessive amount of time. Turning off checks on this type of conversion will vastly improve the processing time of the bridge.
- **0001469 [J750 TesterBridge]:** MultiClock enhancements:
    - The bridge now calculates the number of pulses (CPP) using 4 clock edges (if available) instead of 3.
    - The bridge now sets the format column (Fmt) in the timing file, to RL, RH, SBL or SBH based on the clock shapes. The ATE files have been updated to support the different formats.
    - Added support for expression variables on MultiClock pins in the timing file.
- **0001468 [V93k-ST8 TesterBridge]:** Fixed a problem when choosing a pattern char for compare mid-band.
- **0001470 [TRT]:** Several issues related to compare strobes were fixed, and users can now specify xMode factor.
- **0001459 [V93k-ST8]:** New TesterBridge for the Advantest V93000 SmarTest 8 tester.
- **0001457 [T2000 TesterBridge]:** Fixed the repeat count value in the pattern file.
- **0001458 [STIL In]:** The reader now issues a warning on IddqTestPoint statements with the Detection clause instead of stopping with an error.
- **0001442 [J750 TesterBridge]:** Added a warning to the log for the 1st occurrence of Time Set switching within a vector group.
- **0001441 [J750 TesterBridge]:** Added support for extra MultiClock shapes to the ATE files.
- **0001448 [J750 TesterBridge]:** Fixed some problems with Driver On ([D0]) / Driver Off ([D3]) in the ATE files for mid-cycle IO.
- **0001437 [J750 TesterBridge]:** Added a warning to the log when extra Time Sets are generated by the bridge.
- **0001413 [STIL In]:** The "WFC not found" warning was changed to an error.
- **0001418 [STIL In]:** Fixed a problem when importing STIL files with include statements, where the included file was not found if it was not in the project directory.
- **0001438 [STIL In]:** The reader now issues a warning message when a BreakPoint is not found within a MatchLoop.
- **0001440 [T2000 TesterBridge]:** Time values in the bridge now have an uppercase 'S' (nS).
- **0001431 [V93000]:** Added support for Break Waveforms on the PS9G instrument.
- **0001428 [V93000]:** Replaced time value with variable on 1st edge to conserve TGs.
- **0001435 [J750 TesterBridge]:** The bridge now allows tracks with more than 3 edges when setting up MultiClock shapes. The bridge will also except 'S' shapes with pattern bits, to turn on and off the clock within the pattern.
- **0001434 [J750 TesterBridge]:** The bridge now has an option for setting the minimum repeat count. The default value in the ATE file will be used if the entry is '0'.

- **0001436 [J750 TesterBridge]:** When constructing scan vectors for Normal and Quad Modes, the bridge now converts the end scan states to parallel vectors, to adjust the scan length for vector group alignment.
- **0001414 [J750 TesterBridge]:** The bridge log file now reports scan information: number of scan rows, number of scan cycles and number of scan ports. Other log entries have been cleaned up to conform to the same format. The bridge now issues a warning when a MatchLoop is present in the source database, and adds comments for the start and stop rows in the pattern file.
- **0001425 [STILout]:** The 'Site' block is no longer present in the output STIL file.
- **0001430 [ UltraFLEX TesterBridge]:** Fixed a problem where Scan vectors did not always output all the pins in the 'scan_pins' statement (ScanOut pins on the 1st Scan vector, or ScanIn pins on the last Scan vector).
- **0001256 [Replace Pattern Tool]:** An enhancement was made to allow a 'row range' in the 'cycle' column for operations that span multiple pattern rows. Consecutive rows can be designated with the range identifier in the form of 'n..m' (20..35), or for non consecutive rows, with a comma separated list (2,3,6,10..20).
- **0001395 [OrbitX]:** Some improvements were made to the 'Insert Function' dialog box when setting up loops in OrbitX
- **0001409 [J750/Flex/ UltraFLEX TesterBridge]:** General updates to the TesterBridge:
    - The bridge no longer outputs the DVT pins and timing definition file (.atf).
    - The bridge now outputs the Workbook and Patterns into separate sub-directories.
    - Changes were made to some of the element identifiers in the Workbook sheets.
    - The "Category" entry in the Test_Inst sheet is left empty when Specs are not used.
    - The default radix for buses has changed from Hex to Symbolic.
    - Dummy rows at the end of the pattern now have 'X' states for all compares.
    - The driver off (D3) edge in Normal mode is now programmed to happen at the beginning of the receive cycle.
    - The default for an unused edge in the timing sheet has been changed from <blank> to "Disable".
    - When enabled, all rows now show the end-of-line vector comments (row, time, cycle counts), and the accuracy has been improved.
- **0001410 [J750 TesterBridge]:** Enhancements for the J750Ex tester:
    - The Extended and Normal Modes have been upgraded to the J750Ex spec, and the Quad Mode ATE has been added to the bridge.
    - Scan can be enabled for Extended, Normal and Quad Modes, with automatic alignment for the scan start and scan length to the vector group boundary, for Normal and Quad Modes. The alignment for the starting scan vector is done by converting scan states into parallel vectors, and the alignment for the scan length is done using pad states.
    - For Normal and Quad Modes, automatic alignment to the vector group boundary is also done for repeats and halt.
- **0001384 [NI-STS TesterBridge]:** The bridge now outputs a script to compile the pattern file with the DigitalPatternCompiler.
- **0001380 [NI-STS TesterBridge]:** Fixed a problem where the bridge would sometimes insert a comment string in between the Label and Vector in the pattern file.
- **0001403 [NI-STS TesterBridge]:** Removed the "pattern space" option so that the state chars always have a space between them (except for buses).
- **0001389 [NI65xx TesterBridge]:** Fixed the bridge so that the empty .rpt file is no longer output.
- **0001387 [J750/Flex/ UltraFLEX TesterBridge]:** A "Default_Minimum_Repeat_Count" parameter was added to the ATE file, with a default of 2. Also the "opcode_mode" compiler directive was added to pattern file for the J750 Extended and Normal modes.
- **0001402 [STIL Out]:** Output Waveforms now have an 'X' at T0 to adhere to the database requirement of having an event at time0.
- **0001392 [All TesterBridges]:** The minimum period constraint check on a TimePlate (T0 to T0.next), now works when there is a single TimePlate or when the TimePlate is the last one used.
- **0001368 [J750/Flex/ UltraFLEX & C3360 TesterBridge]:** Fixed a problem on scan vectors where the port name was not converted properly when the scan pin was a bus member.

- **0001397 [WM+]:** Changes to Compare Tolerance are now immediately updated in the waveform display.
- **0001390** [**WM+]:** Fixed a problem where sometimes, WM+ incorrectly concludes a child process has output everything and exits before the process has finished. This was causing errors on some In Converters.
- **0001381 [TimeTable]:** Fixed a problem with the Timing WDB-generation option where it always created a WDB in the project directory.
- **0001370 [Verilog In]:** Fixed a problem where incorrect waveforms were being generated when the bus members were not in top to bottom order.
- **0001393 [PV]:** Fixed a problem where the input WDB name was not being processed correctly.
- **0001394 [PV]:** Leftover temp files are now removed after the process is completed.

## Changes for Release v2017.1:

- **0001356 [J750 WaveBridge]:** Fixed fail to creating test program directory on Windows.
- **0001221 [WDB Conditioner]:** New enhancement to TimePlate Optimizer for clock shapes and to reduce the number of tracks.
- **0001360 [WDB Conditioner]:** Added ability to annotate vectors with TimePlate name.
- **0001365 [Replace Pattern Tool]:** Replacing 'T' with 'X' on SDB now works properly.
- **0001367 [AemulusDM TesterBridge]:** Standardized the WAVESET section in the declaration (.dec) file.
- **0001354 [AemulusDM TesterBridge]:** Added 'IddqTestPoint' comment to pattern.
- **0001345 [STIL In]:** Default value for DB Type in WM Classic is now honored.
- **0001362 [TimeTable]:** The Waveform Display now opens on the correct location the first time a blue-color first-location waveform hyperlink is clicked.
- **0001363 [TimeTable]:** The auto-detection menu now has a checkbox menu item "Double Data Rate Clocks".
- **0001296 [TimeTable]:** The "Create" button is now deactivated during analysis phase of Create Scenario.
- **0001364 [Verilog In]:** Implemented support for a PortRatio column in the Signal Definition Files.
- **0001357 [WaveMaker Plus]:** Files can now be deleted after being viewed or touch.
- **0001343 [DiamondX TesterBridge]:** Added support for MP1x Instrument and Channels for Differential pins.
- **0001336 [WaveMaker Plus]:** Parameter Editor should allow environment variables in all fields as appropriate.
- **0001325 [WaveMaker Plus]:** Now error messages are displayed when originating from checks in tfs files.
- **0001351 [Cut Conditioner]:** If all comments are cut, destination SEF is no longer missing the comment file.
- **0001349 [DiamondX TesterBridge]:** Added a Custom AliasMap field to the Properties Sheet.
- **0001350 [DiamondX TesterBridge]:** Now, when there is only 1 WFT, the Default WFT statement is used in the pattern.
- **0001352 [DiamondX TesterBridge]:** Fixed the SBZ format on bidir pins.
- **0001353 [DiamondX TesterBridge]:** Vectors with Triggers statements are now correct.
  **0001337 [WaveMaker Plus]:** Variable Name with an underbar (_) is now displayed correctly in the header of the Variable Table pane.
- **0001335 [V93K WaveBridge]:** SPECS and EQUATIONS names no longer have the port name appended twice.
- **0001341 [DiamondX TesterBridge]:** Triggers are now output on the correct vector.
- **0001347 [DiamondX TesterBridge]:** Formats now correct, using SBO/SBZ instead of SBZC/SBOC.
- **0001348 [DiamondX TesterBridge]:** Scan templates in pattern file have been corrected for scan runs without all ports present (1$^{st}$ and last vectors).
- **0001321 [V93K WaveBridge]:** Now appending Port Name to global Groups (ALLBIDIR, ...) when port is active.
- **0001318 [V93K WaveBridge]:** For scan test programs, '-impv' is added to the AIC file v2b_options field.
- **0001340 [TimeTable]:** Now converting mixed-direction buses to bidir in WGL to avoid issues downstream.
- **0001317 [WaveMaker Plus]:** Fixed a problem where "File->Export Batch File" would write the file with the default-name.
- **0001339 [AemulusDM TesterBridge]:** Fixed a problem with UDU and DUD shapes in the dec file.
- **0001314 [Add Equation Conditioner]:** Now equation names are modified to include direction on bidirs.
- **0001334 [DiamondX TesterBridge]:** Added "Trigger" support in pattern file.
- **0000993 [WAT]:** Auto-detect now detects a suitable cycle time.
- **0001213 [TimeTable]:** Added ability to "Ignore" pin with context menu in TimeTable editor.

- **0001281 [WaveMaker Plus]:** Fixed Export Batch File to save in sub directory.
- **0001328 [V93K WaveBridge]:** The HSM3600 tester type now makes the SPECS and EQUATION names the same as Test Program name.
- **0001327 [V93K WaveBridge]:** Appended the port name to the output files (for AITCOMPILE tool).
- **0001320 [V93K WaveBridge]:** For PS9G model, added "-z PS3600" to the "aiv" command line in run file.
- **0001313 [V93K WaveBridge]:** Added "offset" equations to edge values rather than the equations.
- **0001301 [V93K WaveBridge]:** Added a "-C" option for AIT Compiler in run file to prevent overwriting of AIC file.
- **0001299 [V93K WaveBridge]:** Changed default behavior to always emit SPECs section in DVC file.
- **0001330 [AemulusDM TesterBridge]:** Added Repeats and Stop Opcodes to pattern file.
- **0000570 [Verilog In]:** Now able to read EVCD files with direction defined in header for signals.
- **0001260 [TRT to SDB]:** V93K now parses Pin file with key word DFPC (DeFine Pin Comment).
- **0001261 [TRT to SDB]:** V93K now parses 'CMNT', pattern file comment.
- **0001258 [WAT]:** Fixed a problem when specifying a stop time for input events creates a bad TimePlate.
- **0001272 [J750 WaveBridge]:** Bridge no longer outputs duplicate "ATE pin name changed" messages.
- **0001275 [AemulusDM TesterBridge]:** Fixed missing pattern data and edge definition on signal group with only one pin.
- **0001285 [AemulusDM TesterBridge]:** Fixed 'PXE' shape in timing file.
- **0001286 [AemulusDM TesterBridge]:** Pattern Burst with more than 1 pattern, now outputs them in the correct order.

## Changes for Release v2016:

- **0001338 [V93K WaveBridge]:** The combo file data generated for bidir scan pins has been corrected.
- **0001323 [V93K WaveBridge]:** The maximum signal name length has been changed from 16 to 64 characters.
- **0001312 [V93K WaveBridge]:** Added offset SPEC to all equations.
- **0001273 [V93K WaveBridge]:** When the "port name" field is used, add it to the standard spec names to make them unique.
- **0001297 [ UltraFLEX TesterBridge]:** Fixed a problem where the bridge produced 6 time sets when a pin file was used, and only 1 with no pin file.
- **0001300 [UltraFLEX TesterBridge]:** Fixed a problem where the ATP file header was not correct with a leading comma in the 'tset' line and the Module/Global Labels were the same.
- **0001271 [WAT]:** The "intervals" parameter is no longer ignored making the track distribution feature in WM+ more useful.
- **0001307 [V93K WaveBridge]:** The bridge now appends "_{port_name}" to EQUATIONS when port is present and HSM3600 tester is selected.
- **0001304 [STIL Out]:** Annotations previously between Labels and Vectors are now output before the Labels.
- **0001263 [STIL Out]:** 'P' states on timing tracks are now preserved in the output.
- **0001310 [V93K WaveBridge]:** Scan chains being driven from the same input have been corrected in the output (AVC) file.
- **0001264 [WaveMaker Plus]:** Keysight logs without cross references are now matched to the right vectors.
- **0001287 [WaveMaker Plus]:** Crash fixed when reading timetable files produced by WAT when the current working directory has a long pathname.
- **0001290 [STIL In]:** Default WDB group names are now modified and passed through instead of producing an error.
- **0001289 [STIL In]:** Fixed a problem with expressions in Timing block when no Specs block is defined.
- **0001265 [WAT]:** Added parameter "SourceType (SEF/WDB)", to tfs file.
- **0001186 [TimeTable]:** Signals with Deviant behavior now show a warning icon next to the name, and a button has been added to the upper right corner of the display to step through all the warnings, jumping directly to the flagged signal.
- **0001181 [TimeTable]:** A warning is now issued when the input and output sample points are not the same on a bidirectional signal.

- **0001177 [TimeTable]:** The progress display has been improved, showing the time remaining during analysis, and is more consistent about showing two progress bars when multiple steps are being performed.
- **0001183 [TimeTable]:** A histogram display, to show the frequency and distribution of edges across the simulation, has been added.
- **0001184 [TimeTable]:** The Quartet WaveBridge has been added to TimeTable and WM+.
- **0001211 [TimeTable]:** Fixed a problem where the keyboard focus was not being set properly when working in the TimeTable editor.
- **0001243 [WaveMaker Plus]:** Fixed a problem where opening a file from the scenario pane didn't always open the file.**0001241 [WaveMaker Plus]:** When "Remember My Changes to Signal Ordering" is enabled in WM+ Preferences, the radix is now saved along with the signal order.
- **0001242 [WaveMaker Plus]:** It is now possible to search for a cycle number in the Waveform Viewer on an SEF database, when the "Overlay Cycle Boundaries" option is turned on.
- **0001243 [WaveMaker Plus]:** When selecting a new tab in WM+, the focus now changes without needing to click again in the new window.
- **0001023 [WaveMaker Plus]:** The "File" menu now has a "New Database" option to create an SEF, WDB or SDB database.
- **0001180 [WaveMaker Plus]:** Waveform Viewer performance has been improved on large databases when using the Zoom function to change perspective.
- **0001206 [WaveMaker Plus]:** Fixed a bug where WM+ would sometimes crash when deleting a subdirectory, then expanding another subdirectory.
- **0000985 [WaveMaker Plus]:** In the Waveform Viewer, the zoom level can now be changed by opening the context menu on the horizontal time scale, and selecting a new time value from the pop-up menu, or by opening the context menu on the waveform display, and selecting the "Scale Units" submenu. NOTE: the current time scale setting will be grayed out.
- **0001037 [WaveMaker Plus]:** The PMode can now be changed on a WDB/SDB by opening the context menu on the waveform display, and selecting "P Mode" from the pop-up menu.
- **0000949 [WaveMaker Plus]:** Users can now select the location of the "Temp Directory" from the context menu of an open scenario window.
- **0001079 [V93K WaveBridge]:** The HSM tester model now indicates an error and stops when processing a database with more than 1 TimePlate.
- **0001214 [Verilog In]:** Added a new EVCD In Converter for processing eVCD files, which does not have the option for an input SDF file for defining signal direction like the Verilog In Converter.
- **0001203 [V93K WaveBridge]:** Changed the '-o' and '-c' switches in the .run file, output by the WaveBridge, so the AIT compiler now creates files with the test program name.
- **0001237 [AddComment Conditioner]:** Added a new Conditioner to add comments to an SEF database at a specific time stamp.
- **0001139 [WGL In]:** TimePlates with duplicate tracks for a signal are now allowed.
- **0001135 [WGL In]:** Warning messages of the same type are now limited to 10.
- **0001140 [WGL In]:** Added a default mapping for bidirectional signals with entries in both Input and Output data columns.
- **0001070 [V93K TRT]:** Bidirectional output tracks are now converted from ZQX to XQX when writing to the SDB.
- **0001071 [V93K TRT]:** When converting brackets on bus members to underscores, the trailing underscore is now dropped.
- **0001069 [V93K TRT]:** Removed some superfluous messages that are output to the log file during the translation process.
- **0001068 [V93K TRT]:** The tool no longer creates useless directories during the conversion process.
- **0001067 [V93K TRT]:** Fixed a problem where the tool was trying to create a directory that was already there.
- **0001201 [Sequence Match Conditioner]:** The default for "PMode" was changed to "FROM_TIMING_WDB".
- **0000984 [WaveMaker Plus]:** Added "Select None" to the Signal context menu in the Waveform Viewer.
- **0001164 [WAT Conditioner]:** The WAT now correctly processes all possible RZ/R1 shapes.

- **0001057 [WaveMaker Plus]:** Fixed a problem where Export Batch was encoding path names with the temporary work directory.
- **0001120 [WaveMaker Plus]:** Fixed a problem where Copy and Past on an "Align" conditioner in the scenario display, set it to SIGNAL not PERIOD, as in original.
- **0001189 [V93K WaveBridge]:** The Maximum Edge Placement has been corrected for some tester models.
- **0001188 [V93K WaveBridge]:** The Maximum Cycle Time for the new PS instrument has been corrected.
- **0001131 [V93K WaveBridge]:** The WaveBridge now shows a progress indicator during the test program generation stage.

## Changes for Release v2015:

- **0001194 [WAT Conditioner]:** Fixed a problem where the conditioner was not processing muxed output signals correctly.
- **0001150 [Signal Edit]:** Producing a WDB with an UNBUSSIFIED signal that is a scan chain edge pin, now passes the WDBChecker.
- **0001169 [Signal Edit]:** The Scan output is no longer missing when the conditioner CLONES a signal with a scan chain.
- **0001094 [WaveMaker Plus]:** Fixed a problem where the 'Find Signal' function in the Waveform Editor was not functioning properly.
- **0001144 [Keysight STIL Out]:** Changed the output of the WaveformTable to not include '/N' type Drive Events.
- **0001147 [Keysight STIL In/Out]:** Added support for Markers (like Trigger) in the Site block.
- **0001151 [Keysight Product]:** Changed the 'Help/About' dialog to show only the highest level of license installed, either "M9192A" or "M9193A" not both.
- **0001152 [Keysight Product]:** The Results format now supports configurations of up to 12 modules.
- **0001162 [STIL In]:** Fixed an issue where the process would hang on 'Goto' statements in Pattern block.
- **0001153 [WaveMaker Plus]:** Fixed the port names and icons in the Scenario Editor, which were labeled "WDB" when they were actually "SDB".
- **0001154 [WaveMaker Plus]:** Fixed a problem where WM+ would sometimes take a long time to load.
- **0001096 [V93K WaveBridge]:** Fixed a problem where the bridge did not discover Loop opportunities with Xmode > 1.
- **0001108 [V93K WaveBridge]:** Fixed an issue where the bridge did not perform Loop compression when RepeatCompression is set to FALSE.
- **0001109 [V93K WaveBridge]:** Fixed an issue where the bridge did not place a second LoopStart on a modulo-8 row.
- **0001114 [STIL In/Out]:** Added support for STIL 1450.1 'X Ref' (Cross Reference).
- **0001136 [J750 TesterBridge]:** Added MCLK PinMode and MCLK formats to the J750 ate file.
- **0001137 [WaveMaker Plus]:** Fixed a problem on some WGL files, where double-clicking to open an editor, caused a crash.
- **0001138 [V93K WaveBridge]:** Fixed an issue where the bridge did not correctly align a second Loop instance to modulo-8 boundary.
- **0001145 [J750 TesterBridge]:** Fixed an issue where some tester formats did not set 'd0' correctly.
- **0001146 [J750 TesterBridge]:** Constraint checking for pulse width and retrigger times now works properly.
- **0001148 [STIL In]:** Fixed several problems where WFC repeats ('\rNUM <WFC+>') in Pattern Vectors and Scan Vectors were not being interpreted properly.
- **0001132 [Keysight Product]:** The Pattern Validation and SVF file format menu items are no longer visible in WM+.
- **0001133 [Keysight Product]:** The name in top left corner of WM+, now reads "DSR Pattern Editor".
- **0001112 [Keysight STIL In]:** The converter now supports Loop count of 0 on MatchLoop and WatchLoop.
- **0001113 [Keysight STIL In]:** The converter now has the option for "Type = WDB" removed, and SDB is the only choice.
- **0001117 [TDS Process]:** The log file has been cleaned up to make it easier to see meaningful errors and warnings by removing non-essential messages and standardizing license usage.