

# Si8000m Version History



## Si8000m Key product milestones

(Detailed change history on following page)

- 2022** New Differential Via Calculation option  
TRC Plus option. New graphing capability including TDR View
- 2021** Auto-create Si Project structures from Sensitivity Analysis Results  
New TRC Plus option  
Monte Carlo Analysis enhancements  
FlexNet Publisher / FLEXIm v11.17.2.0 supported
- 2020** New Coplanar Cutout Ground structures  
New Multiline Crosstalk option
- 2019** New Monte Carlo Analysis option  
Updated bi-directional copy / paste interface between Speedstack and Si8000m
- 2018** Improved support for retina-style screen resolutions  
Copy / Paste Structure data now supports frequency dependent parameters
- 2017** Imports Polar CITS (Controlled Impedance Test System) impedance log files for analysis, comparing modelled with real production data  
Adds crosstalk coefficient / percentage crosstalk to the More information dialog
- 2016** Broadside over prepreg structures / groundless differential structures for Gigabit Ethernet
- 2015** Save groups of structures as a project and import projects from Speedstack / Windows 10 / Touchscreen compatibility
- 2014** Via Checks: Via Pad / Anti-Pad Calculation – calculates the impedance for the specified via pad / anti-pad sizes; determine the effect of the via pad size in relation to the anti-pad size
- 2013** Process window capability / Eight additional coplanar structures
- 2012** New graph style for presentations / copy paste mesh planes to and from

## Speedstack

- 2011** Hatched planes support hatch - solid plane on alternate layers
- 2010** Enhanced accuracy mode added / Initial support for crosshatch (mesh) planes
- 2009** My structures – rename structures using in house conventions
- 2008** 12 additional dual coated structures added to support conformal coating

For detailed changes – please read on:

## **Si8000m Changes v22.04 (2022)**

New Differential Via Calculation option

This Differential Via Calculation is now part of a new tabbed Via Checks dialog accessible from the toolbar. It also contains the Via Stub Check and Via Pad / Anti Pad Coaxial Calculation that were previously present on the main interface

FlexNet Publisher / FLEXIm v11.17.2.0 supported

CalcEngineBEMDLL (21.03.01) / PSec.DLL (20.11.23.0)  
PolarGraphDLL (20.10) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (22.02)

## **Si8000m Changes v22.03 (2022)**

Updated .Si8, .Si9 and .SIP file formats to coincide with the Si9000e v22.03 release

FlexNet Publisher / FLEXIm v11.17.2.0 supported

CalcEngineBEMDLL (21.03.01) / PSec.DLL (20.11.23.0)  
PolarGraphDLL (20.10) / PEGRP32F.DLL (8.0.0.62)  
TRCPlus.EXE (22.02)

## **Si8000m Changes v22.02 (2022)**

TRC Plus option. New graphing capability. Includes TDR View which provides an indicative impression of the effect of the distributed resistance in a PCB transmission line when tested on a TDR based test system, for example the CITS880s.

FlexNet Publisher / FLEXIm v11.17.2.0 supported

CalcEngineBEMDLL (21.03.01) / PSec.DLL (20.11.23.0)  
PolarGraphDLL (20.10) / PEGRP32F.DLL (8.0.0.62)  
TRCPlus.EXE (22.02)

## **Si8000m Changes v21.09 (2021)**

Monte Carlo Analysis. New option added to export the Iterations / Results to Clipboard (for Excel), accessible from the right-click menu - 001-00-000869

Auto-create Si Project structures from Sensitivity Analysis Results. New option, accessible from the Results tab right-click menu.

New TRC Plus option. Track Resistance Calculator has been enhanced to support longer Length of Line (LL) value - 473-03-000013. Temperature Coefficient of Resistance now supported

Solver Accuracy Mode introduced to the Si8000m:

1. A new option has been added to the Configuration menu to switch the solver accuracy between Default and Enhanced modes.
2. The Enhanced Mode is especially useful when calculating fine Trace Thickness geometries.
3. Enhanced Mode will increase calculation times

FlexNet Publisher / FLEXIm v11.17.2.0 supported

CalcEngineBEMDLL (21.03.01) / PSec.DLL (20.11.23.0)

PolarGraphDLL (20.10) / PEGRP32F.DLL (8.0.0.62)

TRCPlus.EXE (21.09)

## **Si8000m Changes v21.04 (2021)**

Monte Carlo Analysis. An iteration count limit of 9,000 has been added to prevent a datagrid cell limit memory error - 001-00-000862

Coated Coplanar with Cutout Ground 3B (#8253) and Differential Coated Coplanar with Cutout Ground 3B (#8353) structures have been improved. These structures are no longer designated as Beta

Print option. New Polar logo supported

CalcEngine. Updated to the latest edition (v21.03.01)

Graphing. Updated to the latest edition (v20.10)

FlexNet Publisher / FLEXIm v11.17.2.0 supported

CalcEngineBEMDLL (21.03.01) / PSec.DLL (20.11.23.0)

PolarGraphDLL (20.10) / PEGRP32F.DLL (8.0.0.62)

TRC.EXE (14.07)

## **Si8000m Changes v21.01 (2021)**

Monte Carlo Analysis option now correctly supports dual coated structures - 479-02-000053

Edge-coupled Coated Microstrip 1B structure image amended - 001-00-000848

FlexNet Publisher / FLEXIm v11.17.2.0 supported

CalcEngineBEMDLL (20.08.24) / PSec.DLL (20.11.23.0)

PolarGraphDLL (19.08) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v20.09 (2020)**

12 new coplanar cutout ground structures have been added:

1. Coated Coplanar With Cutout Ground 2B
2. Coated Coplanar With Cutout Ground 3B
3. Embedded Coplanar With Cutout Ground 1B2A
4. Offset Coplanar With Cutout Ground 1B2A
5. Offset Coplanar With Cutout Ground 2B1A
6. Offset Coplanar With Cutout Ground 2B2A
7. Differential Coated Coplanar With Cutout Ground 2B
8. Differential Coated Coplanar With Cutout Ground 3B
9. Differential Embedded Coplanar With Cutout Ground 1B2A
10. Differential Offset Coplanar With Cutout Ground 1B2A
11. Differential Offset Coplanar With Cutout Ground 2B1A
12. Differential Offset Coplanar With Cutout Ground 2B2A

Updated .Si8, .Si9 and .SIP file formats to store new coplanar cutout ground structures

FlexNet Publisher / FLEXlm v11.13.1.2 supported

CalcEngineBEMDLL (20.08.24) / PSec.DLL (15.12)  
PolarGraphDLL (19.08) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v20.01 (2020)**

New Multiline Crosstalk option. Requires a valid SI\_XTALK license feature

Code added to detect and warn the user not to use quotation characters in the Notes field. The presence of these characters can cause issues with the Open and Save file options - 001-00-000803

The graphing Picked Data Point text box has been increased in size to overcome a font scaling issue where the text was sometimes truncated - 438-04-000008

Updated .Si8, .Si9 and .SIP file formats to store Multiline Crosstalk parameters

FlexNet Publisher / FLEXlm v11.13.1.2 supported

CalcEngineBEMDLL (19.11.22) / PSec.DLL (15.12)  
PolarGraphDLL (19.08) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v19.05 (2019)**

New Launch LA9000 S-Parameter Loss Analysis toolbar and file menu options (Si9000e only)

Si Project .SIP file association now added to auto-launch the application from the Si Project filename

CalcEngine. Causal surface roughness calculation improvements

Help | Latest Versions option added to display web pages detailing the latest Polar product versions

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (19.04) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v19.03 (2019)**

New Monte Carlo Analysis option

Updated .Si8, .Si9 and .SIP file formats to store Monte Carlo Analysis parameters

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (19.01) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v19.01 (2019)**

Impedance and Insertion Loss Calculations - new calculation engine supported. These improvements may slightly alter the calculation results:

4. Goal Seeker algorithm improvements - code rewritten to support new method
5. Differential Offset Coplanar Strips 2B2A - substrate three (H3) and four (H4) calculation corrected - 001-00-000756

Updated .Si8, .Si9 and .SIP file formats. Updated to support the Configuration | Solver Accuracy setting - 001-00-000761

Updated bi-directional copy / paste interface between Speedstack and Si8000m

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (19.01) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v18.09 (2018)**

Import CITS Data Log File option. Now supports data log files (.CLF) generated by CITS880s v18.05

Fixes:

1. Import CITS Log File problem when Windows Regional Settings has comma nominated as the decimal symbol. Now resolved (001-00-000745)
2. Sensitivity Analysis, the  $CS_{nn}$  parameters are now correctly copied to the Windows clipboard when the context menu Copy Results to the Clipboard (for Excel) option is selected (438-03-000609)

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (18.02) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v18.05 (2018)**

Updated bi-directional copy / paste interface between Speedstack and Si8000m allows for quick transfer of structure parameters between products

Updated .Si8, .Si9 and .SIP file formats

Fixes:

When the same structure is duplicated more than once in a Project an exception was caused if the first duplicated structure was not renamed. This is now resolved (470-02-000003)

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (18.02) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v18.03 (2018)**

Import CITS Data Log File option. Now supports data log files (.CLF) generated by CITS880s v17.10

Decimal precision of parameter entries now change based upon the units selected. This improves the readability of parameter entries and improves accuracy when switching units

License feature change. The new 2018-style license features support additional data such as Polarcare Contract information. Please note, 2018 features will not support pre-v18.x versions of our products

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (18.02) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v18.01 (2018)**

New layout of the main dialog that reduces the horizontal pixel size requirement to address truncation problems identified when 200% scaling is applied to retina-style resolutions.

Copy / Paste Structure data between Si8000m / Si9000m and Speedstack now supports frequency dependent parameters when used in conjunction with Speedstack v18.01

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (17.06) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v17.07 (2017)**

New Import CITS Data Log File option:

1. Import impedance measurement data from the Polar CITS (Controlled Impedance Test System) and compare against modelled structures
2. A series of graphing and analysis options are available that present the modelled / measurement data
3. Quickly gauge modelled to measured impedance correlation between manufacturing batches
4. Supports data log files (.CLF) produced by Polar CITS500s, CITS800s, CITS900s and CITS880s instruments

Import CITS, Atlas and Touchstone options now grouped together on the main toolbar

Graphing. Enhanced graphing library that supports larger data sets

User Interface. A number of user interface enhancements / improvements have been included in this release

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (17.03) / PSec.DLL (15.12)  
PolarGraphDLL (17.06) / PEGRP32F.DLL (8.0.0.62)  
TRC.EXE (14.07)

### **Si8000m Changes v17.04 (2017)**

Maintenance release to coincide with the release of Si9000e v17.04

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (17.03) / PSec.DLL (15.12)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

### **Si8000m Changes v17.03 (2017)**

*'More' calculation enhancements:*

1. The 'More' calculation option has been enhanced when differential structures are selected
2. Near-End Crosstalk (NEXT) and Coupling Percentage results are now calculated and displayed

*Updated .Si8, .Si9 and .SIP file formats:*

1. File formats updated to support new Surface Roughness Compensation methods / parameters



*Fixes:*

1. The Measurement Data tab has now been included in the multilingual translation resources (001-00-000663)
2. When the locale uses a comma as decimal symbol, deleting a frequency entry from an extended substrate data table caused an error. This is now resolved. (438-03-000451)
3. A more meaningful error message is displayed when an extended substrate table (.EST) is exported with an invalid filename (438-03-000449)

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (17.01) / PSec.DLL (15.12)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

### **Si8000m Changes v16.07 (2016)**

Maintenance release to coincide with the release of Si9000e v16.07

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (16.04) / PSec.DLL (15.12)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

### **Si8000m Changes v16.05 (2016)**

*Fixes:*

1. When the Trace Thickness (T1) is greater than the Substrate Height (Hn) the CalcEngine sometimes threw an exception error rather than displaying an appropriate warning. This has now been resolved; the eight structures identified as having the error are as follows:
  - a. Offset Coplanar Strips 1B2A,
  - b. Offset Coplanar Strips 2B2A,
  - c. Offset Coplanar Waveguide 1 B2A,
  - d. Offset Coplanar Waveguide 2B2A
  - e. Diff Offset Coplanar Strips 1 B2A,
  - f. Diff Offset Coplanar Strips 2B2A,
  - g. Diff Offset Coplanar Waveguide 1 B2A,
  - h. Diff Offset Coplanar Waveguide 2B2A

FlexNet Publisher / FLEXIm v11.13.1.2 supported

CalcEngineBEMDLL (16.04) / PSec.DLL (15.12)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

### **Si8000m Changes v16.03 (2016)**

*Features*

1. New Structures. Ten new structures have been added:
2. Two new Broadside structures:
  - a. BroadsideStripline1 E2S

- b. BroadsideStripline1 E3S - Broadside over prepreg' style structures for stack ups where the two signal traces of the broadside are on separate core materials
- 3. Eight new Differential Without Ground structures:
  - a. EdgeCoupledSurfaceWithoutGnd1 B,
  - b. EdgeCoupledSurfaceWithoutGnd2B,
  - c. EdgeCoupledCoatedWithoutGnd1 B,
  - d. EdgeCoupledCoatedWithoutGnd2B,
  - e. EdgeCoupledEmbeddedWithoutGnd1 B 1 A,
  - f. EdgeCoupledEmbeddedWithoutGnd1 B2A,
  - g. EdgeCoupledEmbeddedWithoutGnd2B 1 A,
  - h. BroadsideWithoutGnd2S - Aimed at low layer count stack ups commonly used in the flex market, to be used only when no reference planes exist within stack up. These structure do not return even / common mode so will work differently to the other differential structures
- 4. Updated .Si8, .Si9 and .SIP file formats:
  - a. File format changed to support new structures
  - b. New Extended Substrate Data modes now saved
  - c. New causal extrapolation reference points now saved
- 5. User Interface:
  - a. A number of user interface enhancements / improvements have been included in this release

FlexNet Publisher / FLEXIm v11 .13.1.2 now supported

CalcEngineBEMDLL (16.02) / PSec.DLL (15.12)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

## **Si8000m Changes v15.10 (2015)**

### *Features*

- 1. Application configuration files now moved to the Windows-compliant folders
  - a. Windows Vista, 7, 8, 10: \Users\\AppData\Roaming\Polar
  - b. Windows XP: \Documents and Settings\\Application Data\Polar
- 2. Support for Windows 10

FlexNet Publisher / FLEXIm v11. 13 now supported

CalcEngineBEMDLL (12.11) / PSec.DLL (15.07)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

## **Si8000m Changes v15.07 (2015)**

### *Features*

- 1. Projects - New options introduced to group design related structures into a single Project
  - a. Options are available to add, delete, rename, move up / down and duplicate structures within the Project
  - b. New toolbar options and right-click menu allows the management of structures within the Project

- i. The structure graphic has been enhanced
    - ii. Standard structures display with a teal background
  - c. Project structures display with a grey background within the caption bar displaying the Project structure name
  - d. A new Si Project file format (.SIP) has been introduced, the File menu now contains Open Project and Save Project options
  - e. The Projects feature is protected with a separate licence feature (SI\_PROJECTS)
2. Paste from Speedstack to Si8000m / Si9000e Project
  - a. A new toolbar option has been introduced to paste / import a group of structures from Speedstack directly into the Project group
3. Structure Data Storage
  - a. Previously global parameters (Frequency Distribution, Result Presentation, Surface Roughness, S- Parameter Configuration, Hatch Parameters etc) now moved to being structure-based allowing each structure to have their own complete set of parameters
  - b. Updated .Si8 file format to support new structure-based parameters
  - c. Updated .Si9 file format to support new structure-based parameters
4. Copy / Paste Structure data between Si8000m / Si9000m and Speedstack
  - a. The existing copy / paste structure clipboard format used with Speedstack has been updated to accommodate new data
  - b. The copy / paste structure functionality also works with CGen, a new 'Copy to CGen' toolbar options has been introduced
5. Copy / Paste Structure Parameters
  - a. Copy all structure parameters (lossless and frequency dependent) and paste to another structure. This saves considerable time when comparing calculation results between two similar structures
  - b. New toolbar options have been introduced for Copy Structure Parameters and Paste Structure Parameters
6. Printing

The File | Print option has been enhanced to support Project based structures
7. Update ListView Structure Selection Component
  - a. Migrate from Microsoft Windows Common Control 5.00 to Windows Common Controls 6.00.
  - b. This move was required due to a problem with the ListView component in WCC 5.00 that sometimes caused the application to crash on Windows 8 / 8.1 / 10 devices with touch screens enabled.
8. User Interface
  - a. On the Lossless Calculation tab the Impedance / Differential Impedance result is now highlighted
  - b. A number of other user interface enhancements / improvements have been included in this release

CalcEngineBEMDLL (12.11) / PSec.DLL (9.03)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

## Si8000m Changes v14.07 (2014)

### Features

1. Enhancements to the More Results option:
  - a. Calculate and display Effective Er (EEr) for the structure
  - b. Calculate and display Velocity of Propagation (Vp) for the structure – useful for Test Editor | Vp entry within Polar CITS test editor
2. Track Resistance Calculator enhancements (TRC):
  - a. New option to enter conductivity or resistivity of material
  - b. New electro-deposited copper material added to the TRC material library - Copper (Electro Deposited) 2.20E-08 Ohm m
3. Printing
  - a. Effective Er added to results section of print option
  - b. Velocity of Propagation added to results section of print option
  - c. Right justify parameter values and results to improve clarity of report
4. Right-click menu
  - a. A new right-click menu on all result data grids containing 'Copy Results to Clipboard (Excel)' option to export displayed result data
5. Via Checks tab
  - a. The Via Checks tab is now enabled for both Si8000m and Si9000e users
6. Update .Si8 and .Si9 file formats  
Enhance formats to support new features
7. User Interface:
  - a. A number of user interface enhancements / improvements have been included in this release

CalcEngineBEMDLL (12.11) / PSec.DLL (9.03)  
PolarGraphDLL (13.03) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (14.07)

## Si8000m Changes v13.02 (2013)

### Features

1. New Process Window option:
  - a. New feature to specify target impedance with tolerance and then calculate the Minimum, Nominal and Maximum parameter values to meet the Minimum, Nominal and Maximum impedances
  - b. New toolbar option to launch Process Window mode
2. New Structures. Eight new coplanar structures have been added:
  - a) Four new Single-Ended Offset Coplanar structures: OffsetCoplanarStrips1B2A, OffsetCoplanarStrips2B2A, OffsetCoplanarWaveguide1B2A, OffsetCoplanarWaveguide2B2A
  - b) Four new Differential Offset Coplanar structures: DiffOffsetCoplanarStrips1B2A, DiffOffsetCoplanarStrips2B2A, DiffOffsetCoplanarWaveguide1B2A, DiffOffsetCoplanarWaveguide2B2A

3. Update .Si8 and .Si9 file formats:
  - a) File format changed to support eight new coplanar structures
  - b) Extended Substrate Data checkbox status now saved
  - c) Surface Roughness Compensation checkbox status now saved
4. User Interface:
  - a) A number of user interface enhancements / improvements have been included in this release

CalcEngineBEMDLL (12.11) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (11.01)

### **Si8000m Changes v12.05 (2012)**

#### *Features*

1. Closing Application
  - a) An option has been introduced to Cancel the application close event

#### *Fixes:*

1. Changing goal seek convergence value under the Configuration | Parameters option does not always work correctly - now resolved. 001-00-000242.
2. Copy / Paste structure data can sometimes causes an exception error - now resolved. 001-00-000243.
3. DiffDualCoatedCoplanarWaveguideWithLowerGND1B and 2B in SiExcel, changing CSEr does not affect the impedance result - now resolved. 001-00-000250.

### **Si8000m Changes v12.01 (2012)**

#### *Features*

1. Enhance copy / paste structure exchange format (clipboard) to support hatch profile
  - a. Hatch Pitch, Hatch Width, Lower and Upper Hatch Plane flags are now transferred between Si8000m / Si9000e and Speedstack
2. Introduce warning if TRC or Si Excel Interface files are not found
  - b. In previous versions of the Si8000m / Si9000e, if the path to the file was incorrect selecting the Toolbar icon resulted in nothing happening. Now an error message / guidance text will be displayed
3. New Graph Style option introduced to allow the selection of a colour scheme for graphs that is more appropriate for screen grabs and projectors
  - a. Option available from Configuration menu
  - b. Support for frequency dependant, sensitivity analysis and s-parameter graph options

CalcEngineBEMDLL (10.11) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (11.01)

### **Si8000m Changes v11.01 (2011)**

#### *Features*

1. Track Resistance Calculator (TRC):

- a. New add-on available for the Si8000m / Si9000e to calculate DC resistance of a track
  - b. Current structure W1, W2, T1 and LL parameters automatically passed from current selected structure to the TRC
  - c. The Track Resistance Calculator is protected with a separate licence feature (SI\_TRC)
  - d. The Licence Options facility has been enhanced to enable / disable this feature
  - e. More details available in the following application note:  
<http://www.polarinstruments.com/support/cits/AP144.html>
2. Startup Mode:
    - a. 1. A new Configuration | Startup Mode option has been introduced to specify which tab is displayed when the application is opened
3. Hatch Plane Support (XFE) Enhancements:
    - a. For stripline structures hatch mode now supports solid plane / hatched plane combinations
    - b. New toolbar icons to enable hatch mode independently for lower and upper planes
4. Sensitivity Analysis - Process Window option:
    - a. Constant Impedance vs Changing Parameters facility now has an option to calculate the minimum and maximum impedance (process window), in addition to the existing nominal target impedance.
    - b. When this option is enabled the sensitivity analysis graphing and results tables are updated to present the three resulting data sets
5. Import .Si9 files into the Si8000m:
    - a. The Si8000m now has the ability to import Si9000e lossless data via the new File | Import Si9000e Database option
    - b. This enables easier data exchange between the Si8000m and Si9000e
6. User Interface:
    - a. 1. A number of user interface enhancements / improvements have been included in this release

#### *Fixes:*

1. CalcEngine Fix: A problem with the Differential Embedded Coplanar 2B 1A structure has been resolved
2. Goal Seek: When using differential structures with the Constant Pitch option an error sometimes occurred when goal seeking parameters other than W2. This has been resolved.

CalcEngineBEMDLL (10.11) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)  
TRC.EXE (11.01)

## **Si8000m Changes v10.07 (2010)**

### *Features*

1. New Si Excel Interface:
  - a. Now licensed to work with Si8000m or Si9000e
  - b. Delivered with the Si8000m and Si9000e installer
  - c. Requires new SI\_EXCEL licence feature
  - d. New toolbar option to launch Si Excel Interface

CalcEngineBEMDLL (9.11) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)

## **Si8000m Changes v10.06 (2010)**

### *Features*

1. Hatch Plane Support (XFE) Feature:
  - a. Adjust Lossless Calculation / Sensitivity Analysis results to compensate for the effect of Hatch Planes
  - b. New Hatch Configuration option provides facilities to define hatch pattern
  - c. Hatch Plane mode is protected with a separate licence feature (SI\_XFE)
  - d. New Licence Options facility to enable / disable licence features
2. Parameter Up / Down Options:
  - a. On the Lossless Calculation tab, when using the up / down arrows the software now only updates W2 when W1 is altered. W2 parameter worked independently.
  - b. The value in the Lower Trace Width Etch Factor, found under the Configuration | Parameters dialog, is used when calculating the difference between W1 / W2 and G1 / G2
3. Flexible Beta Structures removed:
  - a. FlexiCoatedMicrostrip1B
  - b. FlexiEmbeddedMicrostrip1B2A
  - c. FlexiOffsetStripline1B2A

CalcEngineBEMDLL (9.11) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)

## **Si8000m Changes v10.01 (2010)**

### *Features*

1. Interactive Graphs:
  - a. It is now possible to pick a data point on a Sensitivity Analysis and Frequency Dependent graphs and the resultant point info is displayed.
  - b. A grabber hand icon will be displayed when the mouse hovers over a data point. On picking the data point the Picked Data Point Information will update with the appropriate information.
2. Parameter Up / Down Options:
  - a. On the Lossless Calculation tab, when using the up / down arrows the software now updates W1 / W2 or G1 / G2 simultaneously. Previous the parameters worked independently.
  - b. The value in the Lower Trace Width Etch Factor, found under the Configuration | Parameters dialog, is used when calculating the difference between W1 / W2 and G1 / G2

### *Fixes:*

1. CalcEngine Fix: A problem relating to the Edge Coupled Offset Stripline 2B 1A1R structure has been resolved

CalcEngineBEMDLL (9.11) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)

## Si8000m Changes v9.07 (2009)

### Features

1. My Structures:
  - a. A new My Structures user-definable structure group has been introduced to the main toolbar
  - b. The new Structure Configuration option allows the nomination of structures to be included in the My Structures group
2. Structure Name Alias:
  - a. Facilities have been provided to allow the structure names to be replaced. The new alias name is used within the structure list, structure image and graphs
  - b. The new Structure Configuration option provides facilities to add structure name aliases for each structure

CalcEngineBEMDLL (9.03) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)

## Si8000m Changes v9.04 (2009)

1. 3 Flexible Structures introduced:
  - a. FlexiCoatedMicrostrip1B
  - b. FlexiEmbeddedMicrostrip1B2A
  - c. FlexiOffsetStripline1B2A
  - d. These structures are protected with a separate licence (Si-flexible)
2. Sensitivity Analysis:
  - a. Plot sensitivity against 2 variables
  - b. 3D graphing functionality
3. Export to Clipboard Enhancements:
  - a. 1. Add Surface Roughness value to clipboard header
  - b. 2. Add S-Parameter source and load termination values to clipboard header
4. Si8000m / Si9000e Database Format (.Si8 / .Si9)
  - a. 1. Alter Si8000m / Si9000e Database formats to support the new Flexible Structures

### Fixes:

1. CalcEngine Fix: Problem related to the ratio of value of C1, C2 and T1. Differential Coated Coplanar Waveguide with Ground 1B & Differential Coated Coplanar Waveguide with Ground 2B
2. CalcEngine Fix: Problem related to Broadside goal seek.

CalcEngineBEMDLL (9.03) / PSec.DLL (9.03)  
PolarGraphDLL (9.02) / PEGRPCS.DLL (5.0.0.54)

## Si8000m Changes v9.02 (2009)

### Features

1. Licence Change
  - a. 1. Update licensing to use FLEXIm v10.8.7



CalcEngineBEMDLL (8.10) / PSec.DLL (8.09)  
PolarGraphDLL (8.08) / PEGRPCS.DLL (5.0.0.54)

## **Si8000m Changes v9.01 (2008)**

### *Features*

1. 12 new dual coated structures introduced:
  - a. Dual Coated Microstrip 1B
  - b. Dual Coated Microstrip 2B
  - c. Edge Coupled Dual Coated Microstrip 1B
  - d. Edge Coupled Dual Coated Microstrip 2B
  - e. Dual Coated Coplanar Strips With Lower Ground 1B
  - f. Dual Coated Coplanar Strips With Lower Ground 2B
  - g. Dual Coated Coplanar Waveguide With Lower Ground 1B
  - h. Dual Coated Coplanar Waveguide With Lower Ground 2B
  - i. Differential Dual Coated Coplanar Strips With Lower Ground 1B Differential Dual Coated Coplanar Strips With Lower Ground 2B Differential Dual Coated Coplanar Waveguide With Lower Ground 1B Differential Dual Coated Coplanar Waveguide With Lower Ground 2B
2. Application Information
  - a. 1. New "i" buttons introduced to explain option usage which includes a graphic and link to web- based application note
3. Clipboard Copy / Paste to SB200 / Speedstack: (Speedstack v3.2 and above)
  - a. 1. Improved link with both applications automatically switching to the correct matching units when using the Copy / Paste functions
4. Si8000m / Si9000e Database Format (.Si8 / .Si9):
  - a. 1. Alter Si8000m / Si9000e Database formats to support the new dual coated structures
5. General Application Enhancements / Fixes:
  - a. Improvements to existing coated structure calculations
  - b. Japanese language pack correction for the +/- symbol
  - c. New layout for Configuration screen to support dual coated parameters (CS 1, CS2, CS3, CSEr)

CalcEngineBEMDLL (8.05) / PSec.DLL (1.90)  
PolarGraphDLL (1.50) / PEGRPCS.DLL (5.0.0.54)

## **Si8000m Changes v9.00 (2008)**

### *Features*

1. Sensitivity Analysis:
  - a) Add new Constant Impedance vs Changing X / Y Axis Parameters option
  - b) Rename existing functionality to Impedance vs Changing X Axis Parameter to distinguish the two methods
2. Lossless Calculation Tab:
  - a) Add Tolerance Mode option to switch between absolute and percentage tolerance
  - b) Add Parameter Snap facilities to round parameter values by the Snap Value
  - c) Add UpDown buttons to adjust the parameter values by the Snap Value

- d) Introduce the Snap Value for each parameter in the Configuration dialog
- 3. Si8000m / Si9000e Database Format (.Si8 / .Si9):
  - a) Alter Si8000m / Si9000e Database formats to support the Snap Value Configuration and Tolerance Mode
  - b) Alter the Open Database code to overcome the issue caused when exchanging files between users who have different language packs installed
- 4. Clipboard Copy / Paste to SB200 / Speedstack:
  - a) Add support for an extended Speedstack clipboard format to accept new adjustment factor fields
- 5. Goal Seeker:
- 6. Goal Seek Constant Pitch option now has improved support for Differential Coated Structures. "Mask is flooding space between signal traces" warning is now less likely to occur
- 7. Licence Change:
  - a) New User Interface Licence introduced
- 8. General Application Enhancements:
  - a) A number of other user interface enhancements have been introduced

CalcEngineBEMDLL (3.30) / PSec.DLL (1.80)  
PolarGraphDLL (1.50) / PEGRPCS.DLL (5.0.0.54)

## **Si8000 Changes v8.00**

### *Features*

- 1. New Sensitivity Analysis tab:
  - a) Provides options to calculate and plot impedance against a specified structure parameter
  - b) Allows Target Impedance to be specified
  - c) When calculating differential structures multiple impedances may be plotted on same graph
  - d) Result data calculated may be exported to clipboard in an Excel compatible format using the Edit - Copy Current Result Tab to Clipboard option
  - e) Graphs produced may be maximised, printed or exported to jpeg format
- 2. General Application Enhancements:
  - a) File associations are now correctly supported for Si8000 Database (.Si8) files
  - b) Graph axis and data series text colour has been changed for improved readability
  - c) Si8000 help converted to a web based system
  - d) Quick Solver 12 toolbar option removed
  - e) Other minor user interface changes

CalcEngineBEMDLL (3.30) / PSec.DLL (1.80)  
PolarGraphDLL (1.30) / PEGRPCS.DLL (5.0.0.54)

## **Si8000 Changes v6.10**

### *Fixes*

1. Quick Solver. Change the application resize code to correctly size and position the main dialog
2. Updated Licence Agreement
3. Correct Edge Coupled Embedded Microstrip 1E1B2A structure
5. Correct Goal Seeker for W1 / W2 (etch factor orientation) when using 1E structures
6. Er==1 sometimes results in infinity errors. Alter Calc Engine error handler
7. New CalcEngineBEMDLL (3.30) / PSec.DLL (1.80)

## **Si8000 Changes v6.00**

### *Features*

1. New Structures. Edge Coupled Offset Stripline 1B2A1R, Edge Coupled Embedded Microstrip 1B2A1R, Embedded Microstrip 1E1B1A and Edge Coupled Embedded Microstrip 1E1B1A
2. When Goal Seeking on Width with differential structures a dialog now appears to maintain the Constant Pitch. This will then adjust the S1 parameter automatically as W1 / W2 changes to maintain the trace separation.
3. New File - Save Current Settings as Defaults option to retain configuration parameters, units and interface style etc between sessions.
4. Other minor user interface changes to match newer Si9000

### *Fixes*

1. Fix Print Setup problem that occurs when File - Open has previously been used
2. Fix Korean printing problem
3. Fix a few minor user interface issues such as parameter hot spot positions (red box on structure graphics) and trends
4. New CalcEngineBEMDLL (2.80) / PSec.DLL (1.70)

## **Si8000 Changes v5.00**

### *Features*

1. Add multilingual support. New Configure - Language Settings option to set language.
2. Shipped just with English.dll - other languages to be available from website
3. Excel interface English only
4. Re-implement Goal Seek on D1
5. New `_OVERFLOW_` CalcEngineBEMDLL error introduced
6. New CalcEngineBEMDLL (2.15) / PSec.DLL (1.70) that requires a license change

## **Si8000 Changes v3.10**

### *Features*

1. FLEXlm security changes, including new Help - Reset Licence Settings
2. Polar Instruments Inc change of address

## **Si8000 Changes v3.00**

### *Features*

1. All licensing moved to FlexLM

2. New Structures EmbeddedMicrostrip1B2A, EmbeddedMicrostrip1E1B2A, OffsetStripline1B2A, EdgeCoupledEmbeddedMicrostrip1B2A, EdgeCoupledEmbeddedMicrostrip1E1B2A, EdgeCoupledOffsetStripline1B2A
3. Provide link to / from SB200

## **Si8000 Changes v2.30**

### *Features*

1. Improved Calculation Speed

### *Fixes*

1. Fix Goal Seek problem which produced an error if any Dielectric Constant parameter was set to 1.000
2. Correct Broadside Coupled 2S red hot spot position on some parameters
3. Correct W1 / W2 Description on Configuration screen
4. Minor tidy up of web activation screen
5. Excel – minor fixes to sample spreadsheets
6. Updated software Licence text

## **Si8000 Changes v2.20**

1. First release of Web Activation version of Si8000 Quick Solver
2. 12 Controlled Impedance Structures supported which are found in QS12 category

## **Si8000 Changes v2.00/v2.01**

1. 28 New Single Ended Coplanar structures
2. 28 New Differential Coplanar structures
3. 5 New 2B2A structures
4. Floating Licence support
5. Goal Seek Convergence option
6. New toolbar for structure categories

## **Si8000 Changes v1.10**

1. When switching between Standard and Extended Interface, retain parameter values
2. Updated software Licence text
3. Improve error handlers to eliminate run-time errors

## **Si8000 Changes v1.00**

1. First release of Si8000