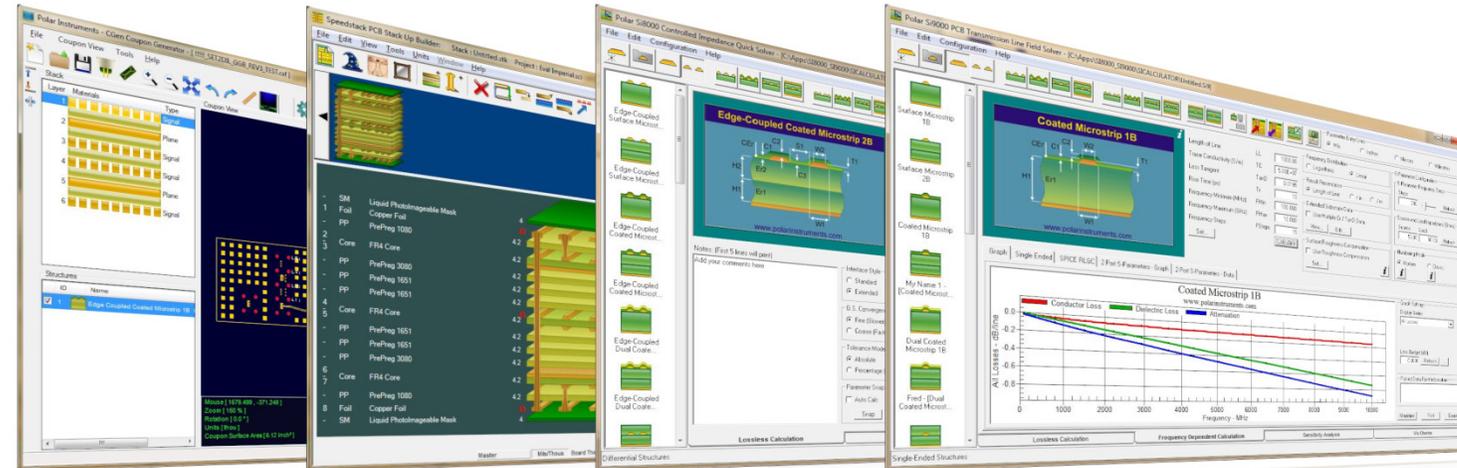
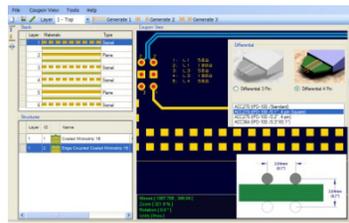
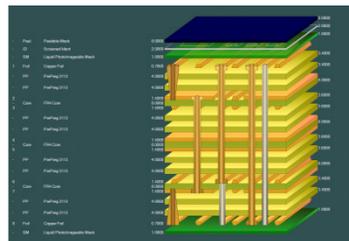
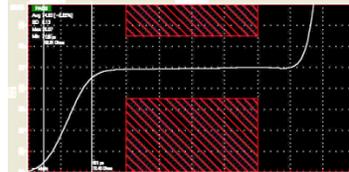
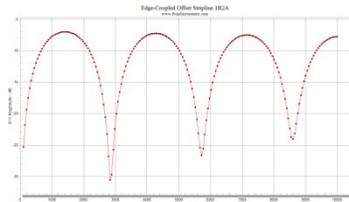
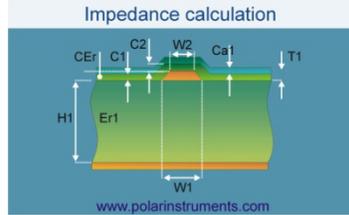




# SiExcel 2026 Updates

Mike Cotterill– March 2026 (Rev 01)



# SiExcel v26.03.17 (March 2026)

## Structure Formula expanded to support Lossy calculations at one frequency per row

Formula bar: `=SurfaceMicrostrip1B(B9,C9,D9,E9,F9,G9:K9,"Y")`

Grid: G H I J K L M N O P

**Surface Microstrip 1B**

Example of Lossless calculation formula for a Surface Microstrip 1B structure

Formula bar: `=SurfaceMicrostrip1B(B9,C9,D9,E9,F9,G9:K9,"Y",L9,M9,N9,O9,P9,Q9,R9,"Y","H")`

Grid: G H I J K L M N O P Q R

**Surface Microstrip 1B**

.....additional parameters for a Lossy calculation

S9

Formula bar: `=SurfaceMicrostrip1B(B9,C9,D9,E9,F9,G9:K9,"Y")`

Grid: A B C D E F G H I J K L M N O P Q R S

**Surface Microstrip 1B**

H1	Er1	W1	W2	T1	Calc Type	Lossy Parameters				Roughness			Lossless Re				
						Trace Conductivity (TC)	Loss Tangent (TanD)	Frequency (Hz)	Model	RMS (H, G)	Rz Matte (CB)	RZ Drum (CB)	Zo				
215.90	4.20	177.80	152.40	30.48	Zo					5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	75.2
228.60	4.20	177.80	152.40	30.48	Zo					5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	77.1
241.30	4.20	177.80	152.40	30.48	Zo	C	L			5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	79.0
254.00	4.20	177.80	152.40	30.48	Zo	C	L	D	EER	5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	80.8

## New Lossy Calculation Parameters\*

\*Requires Si9000e License

Surface Microstrip 1B																	
										Lossy Parameters			Roughness			Lossless Re	
H1	Er1	W1	W2	T1	Calc Type	1	2	3	4	Trace Conductivity (TC)	Loss Tangent (TanD)	Frequency (Hz)	Model	RMS (H, G)	Rz Matte (CB)	RZ Drum (CB)	Zo
215.90	4.20	177.80	152.40	30.48	Zo					5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	75.2
228.60	4.20	177.80	152.40	30.48	Zo					5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	77.1
241.30	4.20	177.80	152.40	30.48	Zo	C	L			5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	79.0
254.00	4.20	177.80	152.40	30.48	Zo	C	L	D	EER	5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	80.8

Extra Columns added to support the calculation of Lossy values

**Roughness Model**

- 0 - None / Smooth
- 1 - Hammerstad
- 2 - Grosse
- 4 - Cannonball Huray

(Any other values will generate errors)

										Lossy Parameters			Roughness			Lossless Re	
										Trace Conductivity (TC)	Loss Tangent (TanD)	Frequency (Hz)	Model	RMS (H, G)	Rz Matte (CB)	RZ Drum (CB)	Zo
										5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	75.2
										5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	77.1
										5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	79.0
										5.80E+07	0.01950	5.00E+08	1	5.000	4.000	3.000	80.8

## Lossy Results displayed Horizontally and without Column Headings by Default

Lossy Results																
Alpha (Np/m)	Attenuation Smooth (db/m)	Attenuation With Roughness (db/m)	Beta (rad/m)	Capacitance (F/m)	Conductance (S/m)	Smooth Conductor Loss (dB/m)	Conductor Loss With Roughness (dB/m)	Dielectric Loss (dB/m)	Frequency (Hz)	Impedance Magnitude (Ohms)	Impedance Imaginary (Ohms)	Impedance Real (Ohms)	Inductance (H/m)	Modal Phase Velocity (m/s)	Resistance (Ohms/m)	Skin Depth (m)
4.355E-01	-2.645E+00	-3.783E+00	1.791E+01	6.996E-11	3.665E-03	-1.348E+00	-2.485E+00	-1.297E+00	5.000E+08	8.151E+01	-6.221E-01	8.151E+01	4.646E-07	1.754E+08	4.664E+01	2.955E-06

## Lossy Results displayed Horizontally and with Column Headings

Calc Type	1	2	3	4	Alpha (Np/m)	Attenuation Smooth (db/m)	Attenuation With Roughness (db/m)	Beta (rad/m)	Capacitance (F/m)	Conductance (S/m)	Smooth Conductor Loss (dB/m)	Conductor Loss With Roughness (dB/m)	Dielectric Loss (dB/m)	Frequency (Hz)	Impedance Magnitude (Ohms)	Impedance Imaginary (Ohms)	Impedance Real (Ohms)	Inductance (H/m)	Modal Phase Velocity2 (m/s)	Resistance (Ohms/m)	Skin Depth (m)
80.8	70.0	456.6	5651.4	2.9	4.355E-01	-2.645E+00	-3.783E+00	1.791E+01	6.996E-11	3.665E-03	-1.348E+00	-2.485E+00	-1.297E+00	5.000E+08	8.151E+01	-6.221E-01	8.151E+01	4.646E-07	1.754E+08	4.664E+01	2.955E-06

Calc Type	80.79
1	70.0
2	456.6
3	5651.4
4	2.9
Alpha (Np/m)	4.355E-01
Attenuation Smooth (db/m)	-2.645E+00
Attenuation With Roughness (db/m)	-3.783E+00
Beta (rad/m)	1.791E+01
Capacitance (F/m)	6.996E-11
Conductance (S/m)	3.665E-03
Smooth Conductor Loss (dB/m)	-1.348E+00

## Lossy Results displayed Vertically and with Column Headings\*

\*Partial results shown

## Extra Formula Control Parameters

### Calculate\_Now\_N\_Y

This parameter has been added to cater for Excel's Insert Formula wizards default action of calculating after every key press  
 "N" or "n" will result in no calculation and is the default value and can be left blank if desired  
 "Y" or "y" will result in calculations being performed  
 It is recommended that if using the Insert Formula wizard that parameter be set to "N" or "n" while entering/changing the structure parameters

### Column\_Headings\_N\_Y

This parameter will return calculation result column headings for all the return results  
 "N" or "n" will result in no column headings and is the default value and can be left blank if desired  
 "Y" or "y" will result in column headings will be displayed  
 Column Headings will be returned on the same line as the formula and the result values will be returned below\* or to the right\* of the column headings.  
 \*Dependent on the Results\_H\_V setting (see below)

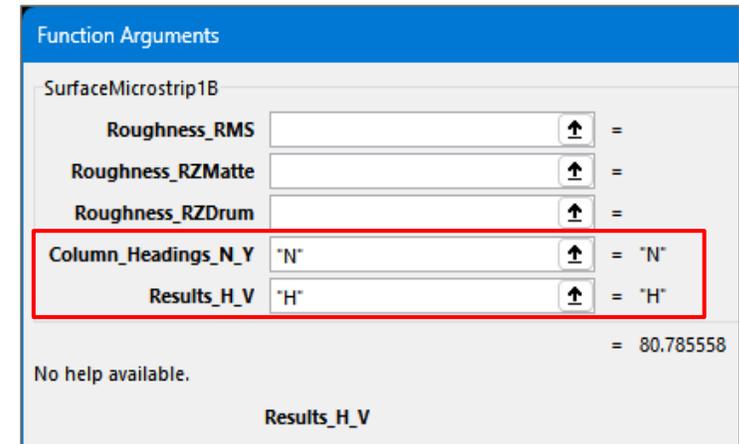
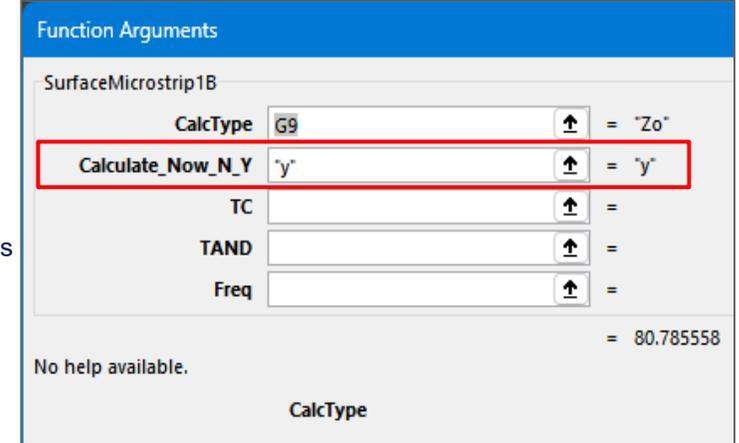
### Results\_H\_V

This parameter will return the result values in either a horizontal or vertical alignment.  
 "H" or "h" will result in horizontal alignment of the result values and is the default value and can be left blank if desired  
 "V" or "v" will result in vertical alignment of the result values

Post processing of the column headings formatting is recommended i.e. word wrap, column/row sizing, cell alignment etc.  
 Setting all the return results to Scientific Number format is also recommended as the range of returned results spans a large range

Zo				
Calc Type	1	2	3	4
75.2	75.5	426.5	5673.8	2.9

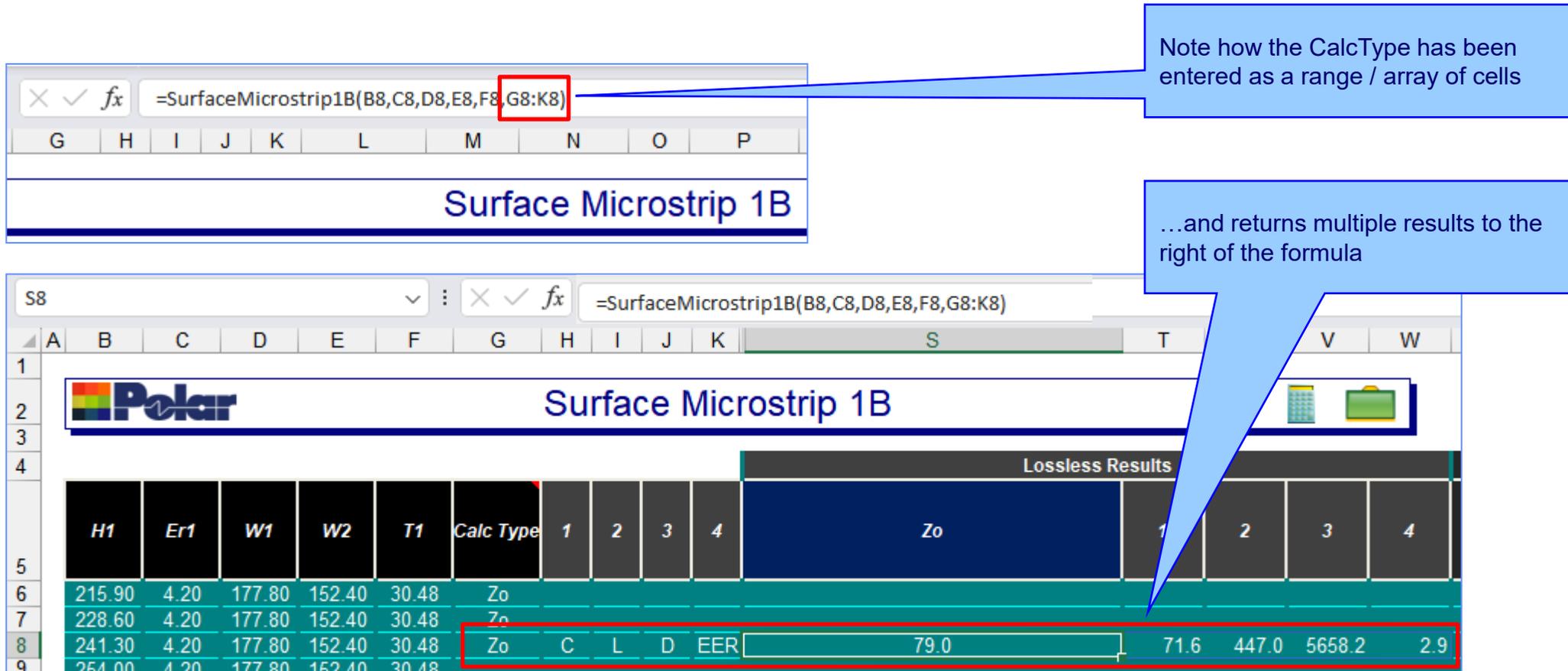
Zo	
Calc Type	75.2
1	75.5
2	426.5
3	5673.8
4	2.9



# SiExcel v26.02.02 (January 2026)

## Excel's Array Formula used to return multiple Lossless results

The CalcType can be entered as an “array of cells” and the return results will be shown in a corresponding number of cells to the right of the formula



The image shows two screenshots of an Excel spreadsheet. The top screenshot shows the formula bar with the formula `=SurfaceMicrostrip1B(B8,C8,D8,E8,F8,G8:K8)`. A red box highlights the range `G8:K8` in the formula, with a callout box stating: "Note how the CalcType has been entered as a range / array of cells". The spreadsheet below shows the results of this formula. The title is "Surface Microstrip 1B". The data table has columns for `H1`, `Er1`, `W1`, `W2`, `T1`, `Calc Type`, and four columns for `Zo` (labeled 1, 2, 3, 4). The results for `Zo` are: 79.0, 71.6, 447.0, 5658.2, and 2.9. A red box highlights the `Zo` results, with a callout box stating: "...and returns multiple results to the right of the formula".

	H1	Er1	W1	W2	T1	Calc Type	1	2	3	4	
6	215.90	4.20	177.80	152.40	30.48	Zo					
7	228.60	4.20	177.80	152.40	30.48	Zo					
8	241.30	4.20	177.80	152.40	30.48	Zo	C	L	D	EER	
9	254.00	4.20	177.80	152.40	30.48	Zo	79.0	71.6	447.0	5658.2	2.9

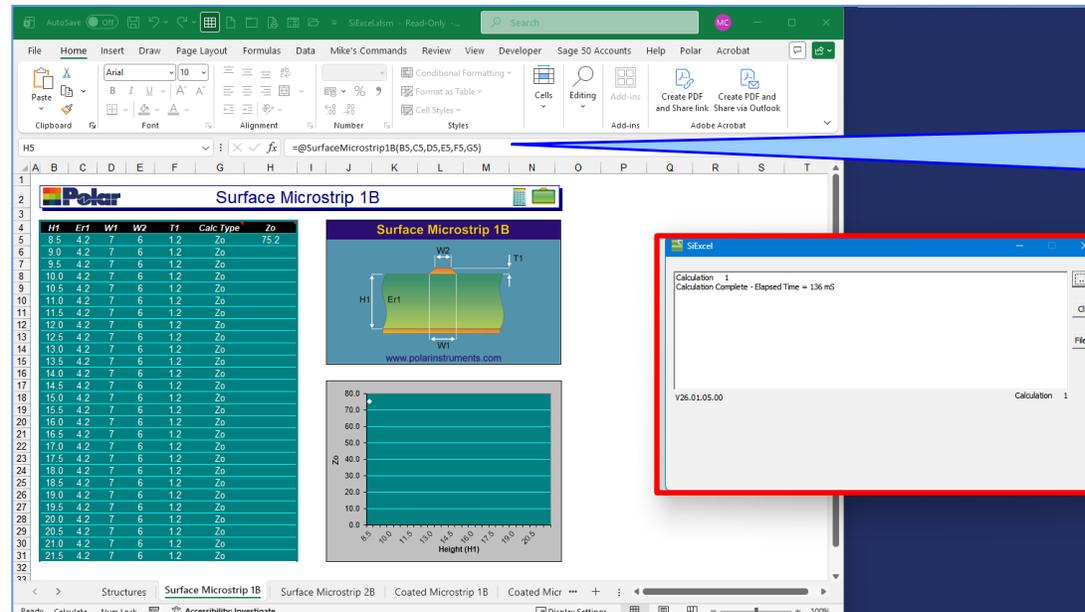
# SiExcel v26.01.05 (January 2026)

## SiExcel calculation speed improvement

SiExcel now use a different method to check if the SiExcel helper application is active.

SiExcel checks for the presence of the SiExcel App window as opposed to using WMI to check for the SiExcel App process ID as WMI proved to be very slow.

This check is performed prior to each calculation so any speed increase is iterative over the number of calculations submitted to the SiExcel App.



The screenshot displays the SiExcel application window. The main area is a spreadsheet titled "Surface Microstrip 1B" with columns for parameters: H1, Er1, W1, W2, T1, Calc Type, and Zo. The spreadsheet contains data for various heights (H1) from 8.5 to 21.5. To the right of the spreadsheet is a diagram of a surface microstrip structure with labels for H1, Er1, W1, and W2. Below the diagram is a graph showing Zo versus Height (H1). A small dialog box titled "SiExcel" is open in the foreground, displaying "Calculation 1" and "Calculation Complete - Elapsed Time = 136 ms".

Speed improvement between SiExcel calculation and the SiExcel App means calculations are up to 50% faster