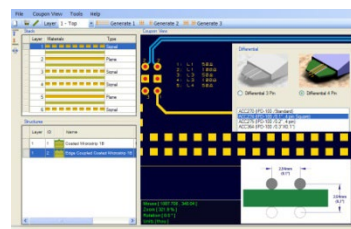
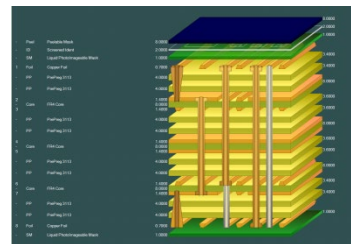
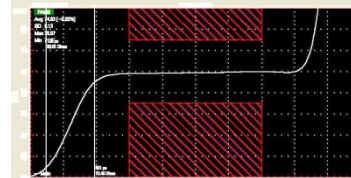
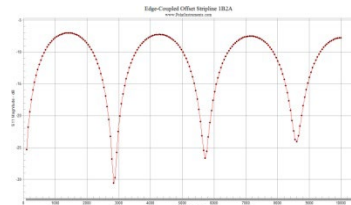
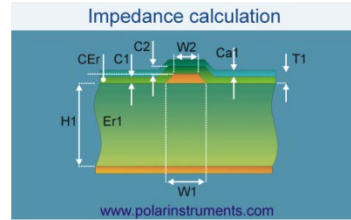


SiExcel 2026 Updates – Upcoming insertion loss capability

Mike Cotterill– March 2026 (Rev 01)



SiExcel v26.03 (March 2026)

Si Excel for Si9000e – now supports insertion loss

On sale mid April 2026

Structure Formula expanded to support insertion loss 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 an insertion loss 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

1

2  Surface Microstrip 1B

3

						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

New insertion loss Calculation Parameters

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

Insertion Loss 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

Insertion Loss 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

Insertion Loss 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)

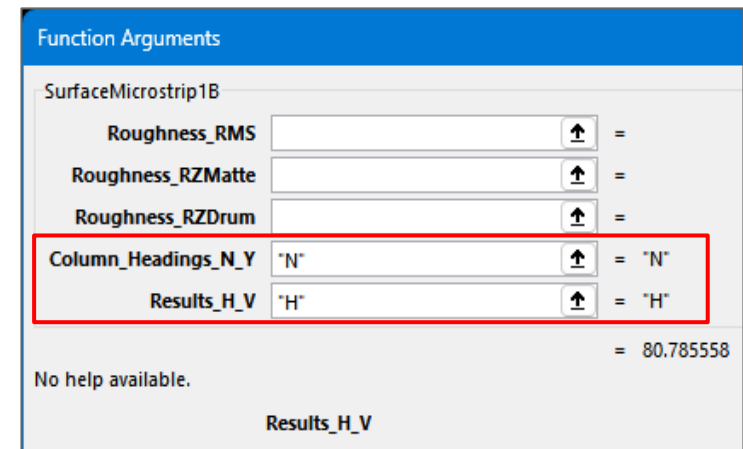
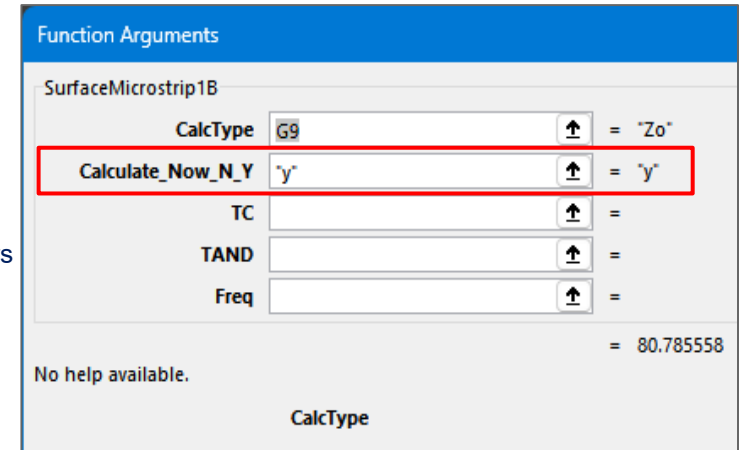
Results_H_V

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

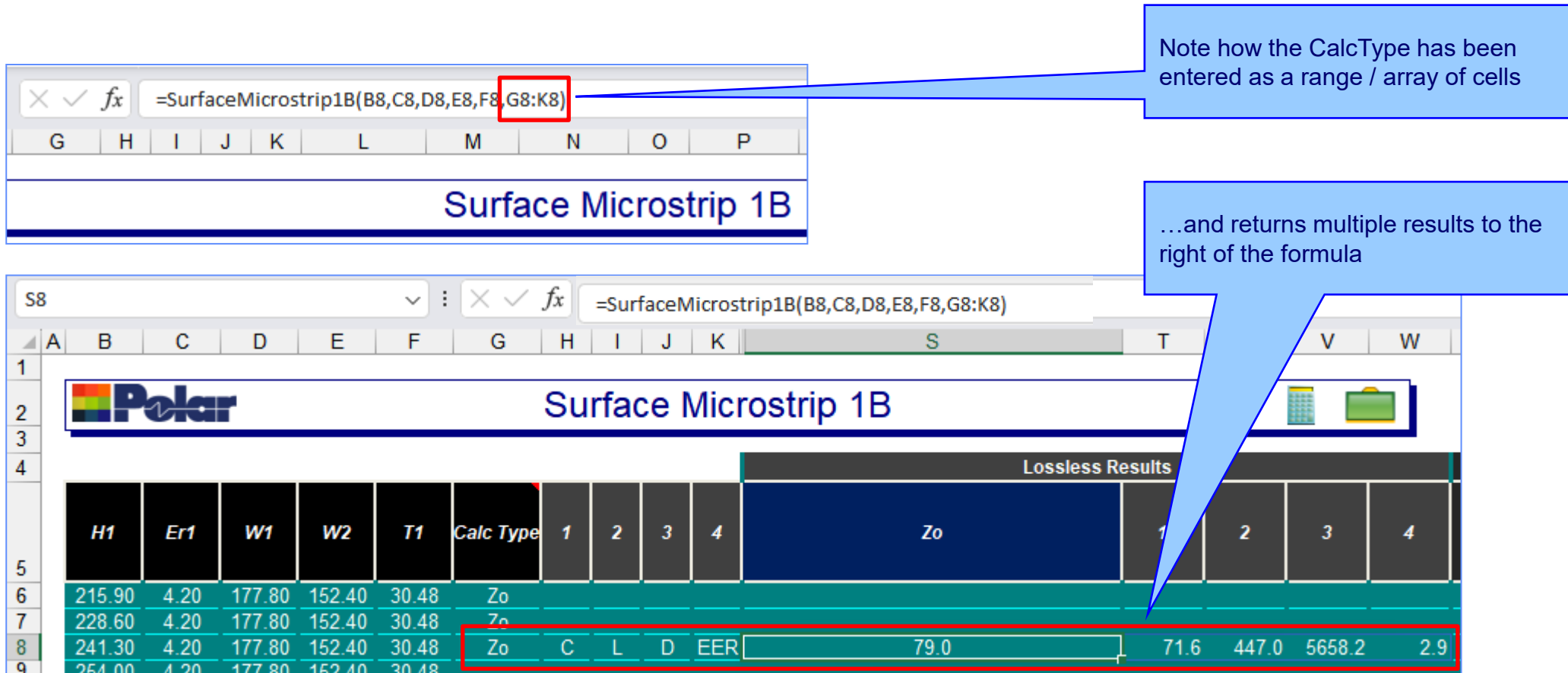
Zo	
Calc Type	75.2
1	75.5
2	426.5
3	5673.8
4	2.9



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



Note how the CalcType has been entered as a range / array of cells

...and returns multiple results to the right of the formula

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

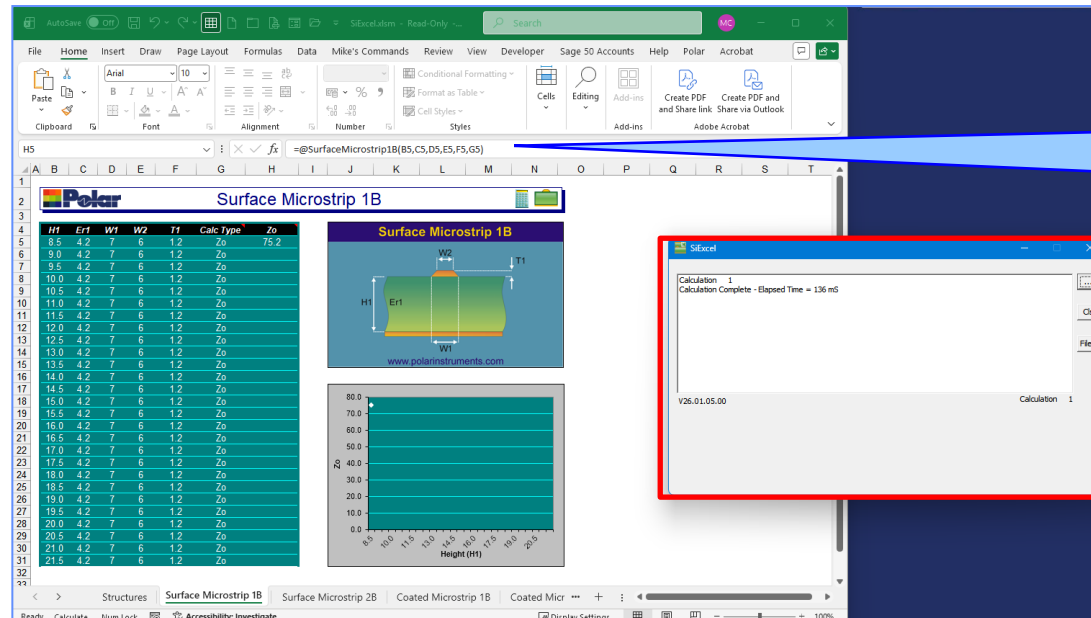
SiExcel v26.01.05 (January 2026)

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 interface includes a spreadsheet with columns for parameters like H1, Er1, W1, W2, T1, Calc Type, and Zo. To the right, there is a diagram of a surface microstrip structure and 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