

Controlled impedance traces are widely used and often designs need modifying to maximise yields or overcome a shortage of a particular laminate dimension. This note will help you start using the Si6000A Field Solving Impedance Design System to achieve maximum controlled impedance yields.

Print this note and use as a guide when you first launch the Si6000A

**Hint: If you are running Excel 2000 you may first like to check point 7.**

## **1. How do I use the Si6000A?**

The Si6000A comprises Polar's powerful field solving engines which are accessed through Microsoft Excel as a powerful and convenient user interface. At installation both the field solvers and a sample Excel interface are installed on your PC.

## **2. Which versions of Excel are compatible?**

Excel 97 and Excel 2000 are both supported..

## **4. Do I need to know how to use Excel?**

Ideally a basic knowledge of spreadsheet manipulation and charting will help you get the best from Si6000A; if you are not familiar with Excel the help below should get you off to a flying start...

## **5. The main page shows a number of structures — what do I do now?**

Simply click on the structure you are interested in (the evaluation copy allows unlimited field solving on Surface Microstrip) This will take you to a sheet which has a table, picture of the structure and an empty graph. The table is an example sheet to show how height variation will alter the trace impedance. Select the top number in the Zo column and move the cursor over the bottom right of the square until the cursor turns into a black cross (the *Fill Handle*), now drag this down three or 4 rows to copy the formula down then click the calculator icon at the top of the screen. The Si6000A will field solve and graph your results.

## **4. What does the light bulb icon do?**

This takes you to perhaps the most important part of the Si6000A — the Goal Seeker. There is a goal seek sheet for every structure. Simply enter your fixed dimensions and press the goal seek button then choose the parameter you wish to enter add in the impedance you need to design and press calculate. The Si6000A does the rest for you.

## **5. My Si6000A appears to freeze or runs very slowly**

The numeric analysis under the Si6000A requires a high performance PC. In fact, it has only been possible to develop field solvers that run in a reasonable time on a PC with systems that have recently come on the market. You should have reasonable performance provided you have at least 128Mb of memory and 450MHz or faster Pentium PC.

## **6. Can I build my own spreadsheet?**

Once you have opened the Si6000A.xls the field solvers are available to other spreadsheets to allow you to build your own excel application. You find the functions using the paste function button ( ?x ), select User Defined and select the appropriate function from the list, e.g. = POLARSURFACEMICROSTRIP(H, W,...)

#### **7. Excel 2000 has an additional option on the Macro menu called Security.**

Settings available are high, medium and low. This setting seems to be an Excel setting rather than being tied to a spreadsheet.

To set this correctly the following procedure should be used.

- a. Start Excel in the normal way without using a shortcut that loads a workbook (do not use the Si6000 shortcut)
- b. From the Tools|Macro menu select Security. Set this option to Medium and then click OK.
- c. Close this Window and shut down Excel.
- d. Now start the Si6000 from the shortcut — everything should now function correctly.

You can't seem to change the Macro Security once a spreadsheet with Macros is loaded. It is necessary to change this setting after starting Excel on its own without any files loaded.

#### **8. Help, I am still having difficulty...**

Ken Taylor ([ken.taylor@polarinstruments.com](mailto:ken.taylor@polarinstruments.com)) is Si6000A product manager. Ken and his team will be delighted to assist you.



Polar Instruments Ltd  
Polar Instruments Inc USA Canada  
Polar Singapore Asia Pacific  
Polar Instruments UK Ltd  
[www.polarinstruments.com](http://www.polarinstruments.com)  
[mail@polarinstruments.com](mailto:mail@polarinstruments.com)

Tel: +44 1481 253 081 Fax +44 1481 252 476

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