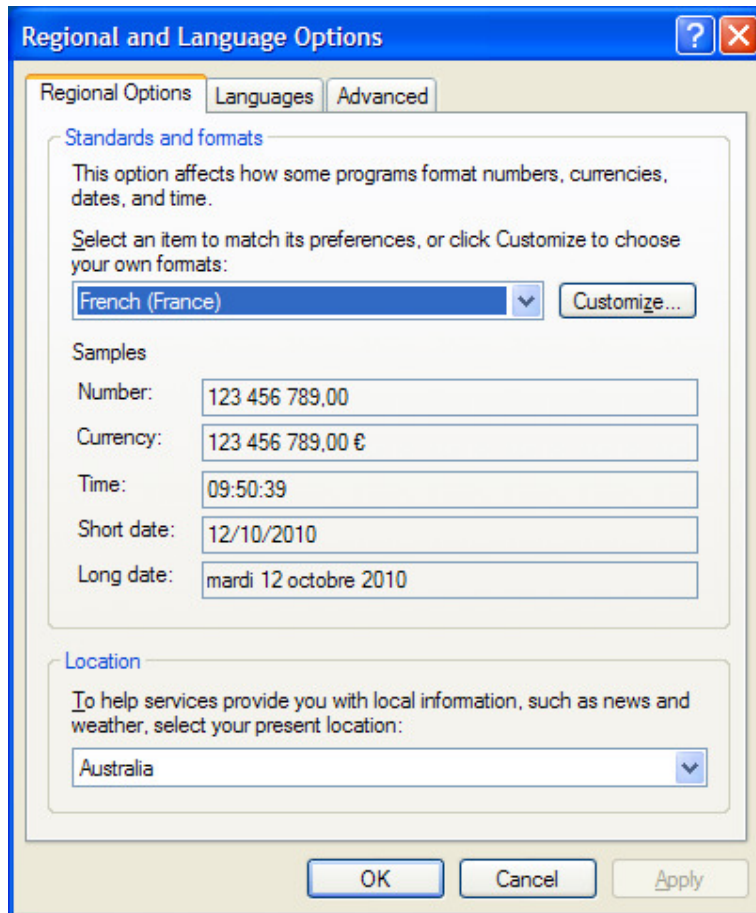


## European Units – Decimal Comma

Most countries in Europe use a decimal comma (e.g. 43,29) instead of the SI style decimal point (e.g. 43.29) to represent the decimal mark in their data. This can lead to erroneous impedance calculations if the ICD Stackup Planner is used without changing the operating system regional settings and converting all the decimal points, in the default stackups and Dielectric materials Libraries, to decimal commas.

Please find below instructions on how to use the European decimal comma in the ICD Stackup Planner.

1. In Windows you should have the Regional Options set to your country.  
Control Panel -> Regional and Language Options



Select your country and note that the decimal comma is used in the samples.

2. The default stackups and the Dielectric Material Libraries need to be changed to the decimal comma system.

Download the [www.icd.com.au/downloads/Euro\\_Libs\\_v2011.zipped](http://www.icd.com.au/downloads/Euro_Libs_v2011.zipped)  
Renamed 'zipped' to 'zip' and unzip the files.

This library contains the default stackups 2 – 16 layers and the Core, Prepreg, Soldermask and Generic Dielectric Materials Libraries. Paste these into the following default directory overwriting the existing files.

C:\Program Files\ICD\ICD Stackup Planner\Default

### 3. Open the ICD Stackup Planner

ICD Stackup Planner – www.icd.com.au 12/10/2010											
Layer Number	Layer Name	Material Type	Dielectric Constant	Dielectric Thickness	Copper Thickness	Trace Clearance	Trace Width	Impedance Characteristic(Zo)	Edge Coupled Differential(Zdiff)	Broadside Coupled Differential(Zdbs)	Description
		Dielectric	3.3	0.5							Soldermask
1	Top	Conductive			0.7	5	5	58.54	100.15		Signal
		Dielectric	4.3	4							Prepreg
2	GND	Conductive			1.4						Plane
		Dielectric	4.3	6							Core
3	Inner 3	Conductive			0.7	5	5	48.25	85.81		Signal
		Dielectric	4.3	6							Prepreg
4	VDD	Conductive			1.4						Plane
		Dielectric	4.3	21							Core
5	GND	Conductive			1.4						Plane
		Dielectric	4.3	6							Prepreg
6	Inner 6	Conductive			0.7	5	5	48.25	85.81		Signal
		Dielectric	4.3	6							Core
7	VCC	Conductive			1.4						Plane
		Dielectric	4.3	4							Prepreg
8	Bottom	Conductive			0.7	5	5	58.54	100.15		Signal
		Dielectric	3.3	0.5							Soldermask

Please make sure you used the decimal comma when editing the stackup variables and when adding to or modifying the Dielectric Materials Libraries.

The screenshot shows the 'Dielectric Library Editor' window with the 'Prepreg Materials' tab selected. The table below is a representation of the data shown in the software interface.

Manufacturer	Part No.	Er	MIL	um
Doosan	FR-4 DS-7408 BS 106	4.3	1.8	45
Doosan	FR-4 DS-7408 BS 1080	4.3	2.4	60
Doosan	FR-4 DS-7408 BS 1506	4.3	5.9	150
Doosan	FR-4 DS-7408 BS 2116	4.3	3.9	100
Doosan	FR-4 DS-7408 BS 3313	4.3	2.8	70
Doosan	FR-4 DS-7408 BS 7628	4.3	7.1	180
-	-	-	-	-
Isola	FR406 106 (170 Tg)	4.3	1.4	43
Isola	FR406 1080 (170 Tg)	4.3	2.5	58
Isola	FR406 2113 (170 Tg)	4.3	2.9	74
Isola	FR406 2116 (170 Tg)	4.3	3.8	99
Isola	FR406 1658 (170 Tg)	4.3	4.5	114
Isola	FR406 7628 (170 Tg)	4.3	6.5	180