

S-Touch™ tuning window PC GUI over STEVAL-PCC009V1

1 Introduction

This user manual explains the functions of the S-Touch[™] tuning graphical user interface (GUI) over the STM32x-based STEVAL-PCC009V1 universal USB to serial communication interface (UUSCI). For details regarding the UUSCI demonstration board, please refer to UM0726.

The objective of this user manual is to demonstrate how to use this GUI for the hardware tuning of S-Touch device-based touch boards (STMPE1208S and STMPE821).

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2 Getting started

2.1 System requirements

In order to use the S-Touch tuning window GUI, a recent version of Windows[©], such as Windows 2000 or Windows XP must be installed on the PC.

The version of the Windows OS installed on the PC may be determined by clicking on the "System" icon in the control panel.

2.2 Package contents

The S-Touch tuning window consists of the following items:

- Software content:
 - S-Touch tuning GUI software to be used along with the demonstration board
- Hardware content:
 - This GUI uses the STEVAL-PCC009V1 demonstration board
- Documentation:
 - User manual
 - Help file

2.3 Software installation

To install the PC GUI software, follow the steps below:

• Step 1: as soon as the setup.exe icon is clicked, the following window appears:

Figure 1. Installation Window

Welcome to the InstallShield Wizard for Universal Dongle GUI The InstallShield Wizard will update the installed version (1.00.000) of Universal Dongle GUI to version 1.1.0. To continue, click Next.
K Back Mest> Cancel





• Step 2: read the license file and click the "Yes" button if accepted.

Figure 2. License Window

carefully.	57
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and using the Licensed ree with these provisions Licensed Software and th n tools.	, do not he
You are agreeing to be be Agreement. Do not use the e read and agreed to the	
Agreement. Do not use the	
	rd carefully. NT nt ("Agreement") is display g and using the Licensed gree with these provisions I Licensed Software and th gn tools.

• Step 3: select the folder in which the software is to be installed. By default it installs the software in the following path - C:\....\STMicroelectronics\Universal Dongle GUI.

Figure 3. Destination folder

Choose D	ngle GUI - InstallShield Wizard estination Location der where setup will install files.		×	
	Install Universal Dongle GUI to: C:\\STMicroelectronics\Universal Dongle GUI	ļ	<u>C</u> hange	
InstaliShield –	< <u>B</u> ack	Next>	Cancel	
				AM044



• Step 4: after selecting the folder and clicking the "Next" button, the software starts installing.

Setup Status The InstallShield Wizard is installing Universal Dongle GUI	57
The InstallShield Wizard is installing Universal Dongle GUI	
Installing	
InstallShield	
	Cancel

Figure 4. Installation ongoing

Figure 5. Installation complete

Universal Dongle GUI - Insta	InstallShield Wizard Complete The InstallShield Wizard has successfully installed Universal Dongle GUI. Click Finish to exit the wizard.	
	KBack Finish Cancel	AM0448

After clicking the "Finish" button, the software has been installed in the directory selected or in the default directory. The shortcut for this software is available in the Start menu. This user manual is also available in the same directory.



2.4 Hardware installation

Please refer to the UM0726 user manual for information regarding STEVAL-PCC009V1.

2.5 Running the S-Touch tuning GUI

To run the S-Touch tuning window, it's necessary to use the STEVAL-PCC009V1 demonstration board. Please connect the demonstration board to the PC with the USB mini B-type cable.

As a result, the demonstration board should be enumerated as universal serial bus controllers and is shown as "universal dongle demo board" in the device manager window, as shown in *Figure 6*. If this message does not appear, please contact technical support.

Figure 6. Enumeration result

Device Manager	
le <u>A</u> ction <u>Vi</u> ew <u>H</u> elp	
-> 📧 🖆 😫 🙁 🕿 😹	
Monitors Metwork adapters Metwork adapters Metwork adapters Metwork adapters Ports (COM 8. LPT) Processors Sum Card readers Sum Card readers Universal Serial Bus controllers Universal Serial Bus controllers Intel(R) 82801FB/FBM USB Universal Host Controller - 2658 Intel(R) 82801FB/FBM USB Universal Host Controller - 265A Intel(R) 82801FB/FBM USB Universal Host Controller - 265A Intel(R) 82801FB/FBM USB Universal Host Controller - 265B USB Root Hub	×.

When starting the tuning GUI on the PC, a graphical interface (*Figure 7*) for controlling the demonstration board is seen. This PC software is used to issue various commands and to control data transfer.

Figure 7. Tuning window GUI menu





You can check whether the board is connected or not by clicking the connection check button. If the board is not connected the following message appears:

Figure 8. Board is not connected

Warnin	Board is not connected.Please Check	
8	Connections	
	ОК	

If the board is connected the following message appears:

Figure 9. Board is connected

Message
Successful connection. Click Tuning -> Channel Window To tune the daugther board.
I o tune the daugther board.

Once this is done, the PC GUI is properly connected to the demonstration board and ready for use.



3 Using the S-Touch tuning window

After completing the steps to run the S-Touch tuning GUI (shown in *Section 3*), the following GUI opens.





Follow these steps (listed) to fine tune a daughterboard.

- Selection of S-Touch devices
- Connecting the board through the GUI
- Opening of channel window
- Step 0
- Freezing the selection and unit factor
- Step 1
- Step 2
- Step 3



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3.1 Selection of S-Touch devices

Figure 11. Selection of appropriate S-Touch device



Select the appropriate daughterboard that is to be tuned before connecting the board through the GUI.

3.2 Connecting the board through the GUI

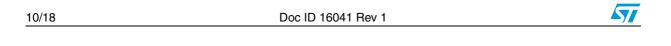
The board can be connected through the GUI in either of the following two ways.

Figure 12. Connecting the board through the GUI









3.3 Opening the channel window

Figure 14. Opening the channel window



The channel window, which assists in fine tuning the board, can be opened from here. The channel window appears as follows:

Input Dynamic Range	📶 To 80 Mea	an Impedence	Step Zero	Step One Step Two	Step Three
Output		CC			CC
🗹 Channel One	1		🗹 Channel Seven	∎ [
	0 32 64 96 128			0 32 64 96 128	
Channel Two	1		🗹 Channel Eight	I [
	T				
			Channel Nine		
Channel Three	T				
	0 32 64 96 128			0 32 64 96 128	
🗹 Channel Four	I		🗹 Channel Ten	I	
	0 32 64 96 128			0 32 64 96 128	
🗹 Channel Five	1		🗹 Channel Eleven		
	0 32 64 96 128			0 32 64 96 128	
Channel Six			Channel Twelve		
	.			Jandan dan dan di	
	0 32 64 96 128			0 32 64 96 128	
	Un	it Factor STMPE1	2085		Freeze

Figure 15. Channel window



3.4 Step 0

In this step it's possible to select the channels to be tuned. For instance, if just three channels are to be tuned, uncheck all the other channels except channel one, two and three. Once done, the user can proceed to freeze the selection as well as the entered unit factor for the selected board.

) Dynamic Range	40 To 80 Mean Impedence	Step ->	Step Step Two	Step Three
Output				CC
Channel One	I	🔲 Channel Seven	N	
Channel Two	0 32 64 96 128	🔲 Channel Eight	0 32 64 96 128	
Channel Three	0 32 64 96 128	Channel Nine	0 32 64 96 128 ■	
	0 32 64 96 128		0 32 64 96 128	
Channel Four	0 32 64 96 128		0 32 64 96 128	
Channel Five				
Channel Six	0 32 64 96 128	📃 Channel Twelve	0 32 64 96 128	
	0 32 64 96 128 Unit Factor STMPE1		0 32 64 96 128	

Figure 16. Making the selection (check/uncheck)

Figure 16 depicts the selection of the channels to be tuned. In this example, the first three channels of STMPE1208S are to be tuned. Therefore, the respective channels are checked and the unit factor is entered for STMPE1208S. The user can then proceed to freeze this selection by clicking on the freeze button.



3.5 Freezing the selection

Freeze the selection by clicking on the freeze button. When the button is green it indicates that it is enabled and when red it indicates that it is completed and disabled. On freezing, the GUI asks the user whether to create the log file or not. The user can enter the path where the file is to be created, as shown below:

Figure	17	Log file	creation
Iguie		LUg me	creation

Save in:	🚱 Desktop		*	G 🕸	P	•
My Recent Documents Desktop My Documents	My Documen My Compute My Compute Files Music Pl MusicPlayerG New Songs Setup Setup S-Touch Tuning Appli Unused Desk Shortcut to C Shortcut to C Strive821.rt	r Places ayer JUISetup Ing Application cation top Shortcuts 1052.01 054.01				
	File name:	LogFile.nt			~	Save
My Network	Save as type:	Text files(".rtf)			~	Cancel

The GUI appears as follows on freezing:

	To 80 Mean Impedence	Step Zero Step Dne Step Two Step Three
Dutput Channel One		
Channel Two	0 32 64 96 128	0 32 64 96 128
Channel Three	•	Channel Nine
Channel Four	0 32 64 96 128	□ Channel Ten □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Channel Five	0 32 64 96 128	□ Channel Eleven □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Channel Six	0 32 64 96 128	Channel Twelve
	Unit Factor STMPE	T208S 36

Figure 18. Freeze state



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3.6 Step 1

The purpose of step 1 is to set the impedance values as non-zero. To do this, the GUI guides the user when adding some capacitance on the C_{REF} of the attached daughterboard. The user can then mount that capacitance value on the C_{REF} and re-attach the board. The GUI then gives the channel reading after mounting the capacitance. If any channel value is still non-zero, it asks the user to repeat step 1. Once the values are non-zero, step 1 is disabled (indicated in red) and the next step to be executed is enabled (indicated in green).



Input Dynamic Range	40 To 80 Mea	an Impedence	60 Step	Step	Step
Output		CC -			CC CC
Channel One	I	0	Channel Seven	n	
Channel Two	0 32 64 96 128 0 32 64 96 128		Channel Eight	0 32 64 96 128	
Channel Three	0 32 64 96 128		Mount 3.6pF (+ 1.3 pF ∨a reference capacitance.	ariation if needed) to	
Channel Four	■ 0 32 64 96 128				
Channel Five	0 32 64 36 128 0 32 64 96 128	г 	J	0 32 64 96 128	
Channel Six	■ 0 32 64 96 128		Channel Twelve	0 32 64 96 128	
	Uni	it Factor STMPE	E1208S 36		Freeze

This shows that the minimum capacitance the user should add is 3.6 pF, and if the capacitor of value 3.6 pF is not available, the user can set the capacitance value up to 3.6 + 1.3 pF.



3.7 Step 2

Step 2 guides the user when adding capacitances to the individual channels to bring the channel values to default level. The capacitance to be added to each channel is displayed under the CC column. For instance, the capacitance values for STMPE821 touch channels, after step 1, become non-zero, as shown in *Figure 20*:

Dynamic Range	40 To 80 Mean Impedence	60 Step -	Step One Step Two	Step Three
Output	CC			CC
Channel One	5 3	🗌 Channel Seven	I	
	0 32 64 96 128		0 32 64 96 128	
Channel Two	[51	Channel Eight	I	
	0 32 64 96 128		0 32 64 96 128	
🗹 Channel Three		Channel Nine		
	0 32 64 96 128		0 32 64 96 128	
Channel Four	I	🗹 Channel Ten	I	
	0 32 64 96 128		0 32 64 96 128	
Channel Five		Channel Eleven		
	0 32 64 96 128		7 , 6 4 96 128	
	0 32 64 36 128	_		
Channel Six		🔄 🗹 Channel Twelve	I	
	0 32 64 96 128		0 32 64 96 128	
	Unit Factor STMF	PE821 45		Freeze

Figure 20. Step 1 non-zero output

As shown, the user can now proceed to step two, as step one output has become non-zero. The step 2 button turns green which means it's enabled.

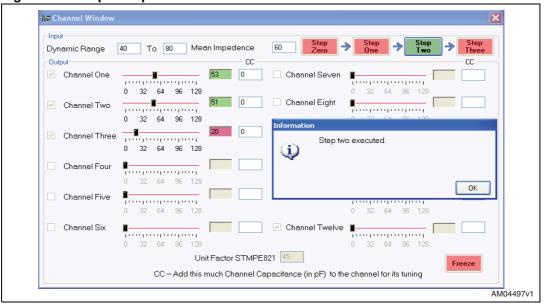


Figure 21. Step 2 output

In this case the CC value is zero, therefore it's not necessary to mount any capacitance on the individual channels. Step 3 is now enabled.



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3.8 Step 3

In step 3, the value for REF_DELAY is calculated and logged into the log file, created for user reference. It guides the user when mounting capacitance on channels to bring their values in range.

Figure 22. Step 3 output

85 1.125 Channel Seven	1000 T	I	Channel One	Out
82 0.99 Channel Eight			Channel Two	V
52 Information Mount the CC value to the corresponding	5		Channel Thre	¥
channels.Click OK to continue or Cancel to exit the application		0 32 64 9	Channel Four	
OK Cancel	[I	Channel Five	
Channel Twelve		0 32 64 9	Channel Six	
the application 0K Cancel 032 64 96 128 ✓ Channel Twelve ■ ■ ■	96 128 Г 96 128	0 32 64 5 0 32 64 5	Channel Five	

In this step, the GUI continues referring the channel capacitances to be added until the channel values are in range. When all the channel values are in the desired range for tuning, the process is completed and the user can then close the application.

Finally, the user can refer to the log file, created during the tuning process, to know the various tuning parameters for the respective daughterboard.

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4 Revision history

Table 1.Document revision history

Date	Revision	Changes
10-Dec-2010	1	Initial release.



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