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Spec No: 002-05567

Spec Title: AN205567 - F2MC-8FX Family MB95200 Series Touch Sensor IC ATA2508 Demonstration Set

Replaced by: None

AN205567

F²MC-8FX Family MB95200 Series Touch Sensor IC ATA2508 Demonstration Set

This application note describes about the Cypress ATA2508 digital touch sensor demo set which allows the easy evaluation of touch sensor IC ATA2508 and using Cypress MB95200 serial MCU to control this IC.

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1 Introduction

Cypress ATA2508 digital touch sensor demo set allows the easy evaluation of touch sensor IC ATA2508 and using Cypress MB95200 serial MCU to control this IC.

It consists of the below components

- 1 x MB95200 starter kit MB2146-410-01-E: MB95F204K application and debug platform
- 1 x ATA2508 touch pad demo set: ATA 2508 and touch pad platform
- 1 x DCC DPI7 tuning kit: tune ATA2508
- 1 x Special tuning cable
- Demo MCU Firmware
- SOFTUNE

This demo set supports the below features

- Simple interface for MCU to initialize and control TSC ATA2508
- Simple interface for TSC ATA2508 tuning
- 12 digital touch key pads and 12 linkage-LEDs
- 3 kinds of key detection modes
- MB95F204K MCU controls buzzer according to key value

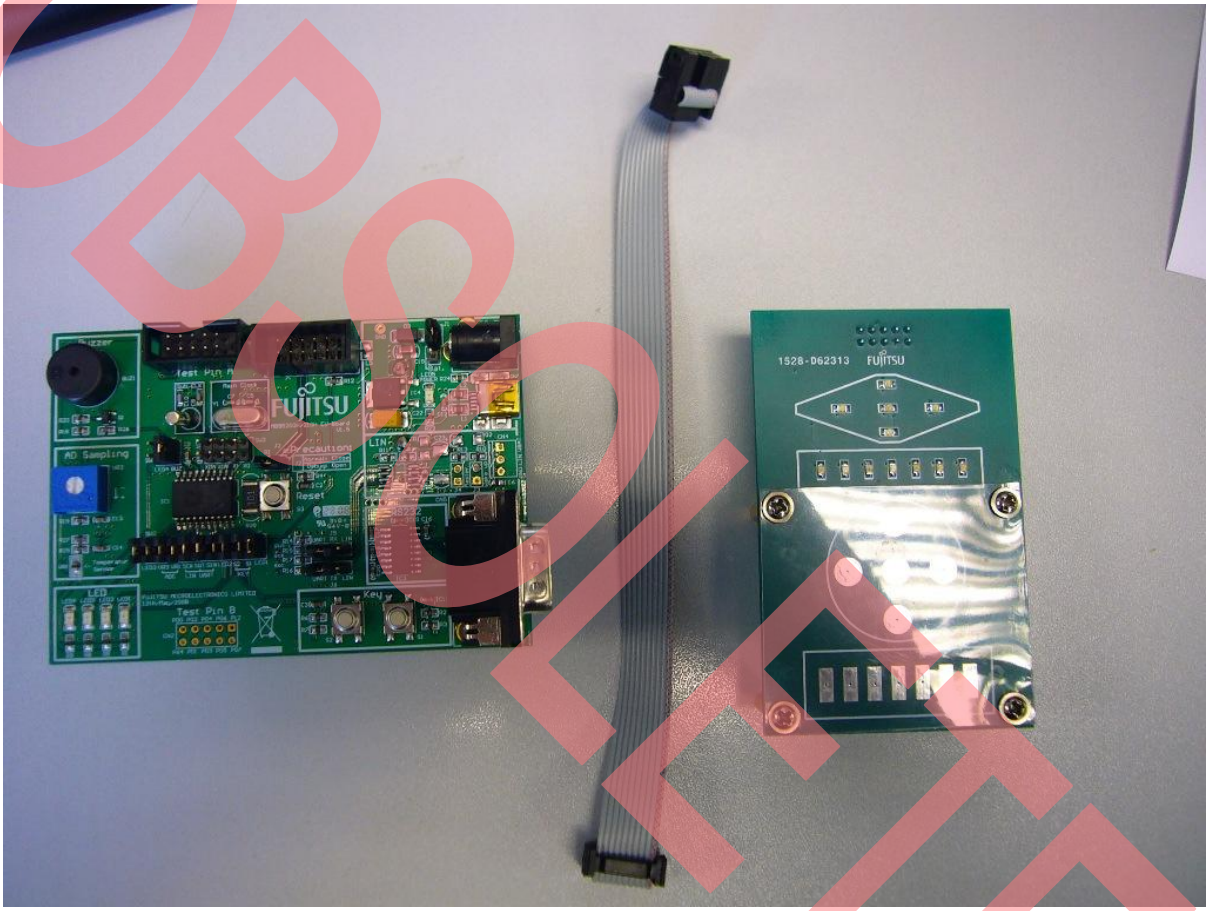
2 Application Environment

This chapter introduces demo and tuning environments.

2.1 TSC Demo Platform

TSC demo system consists of MB95200 evaluation board, TSC demo board and normal IDC10 cable. This demo system shows MB95F204K MCU controlling TSC ATA2508 and 3 kinds of touch sensor modes.

Figure 1. TSC Demo Platform



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2.2 TSC Tuning Platform

TSC tuning platform consists of AtLab tuning tools, TSC demo board and the special IDC10 cable. AtLab tuning tools and PC S/W support tuning TSC parameter.

Refer to “ATA2508 Users Manual V1.4 (EN) v01” for the detailed tuning method.

Figure 2. TSC Tuning Platform



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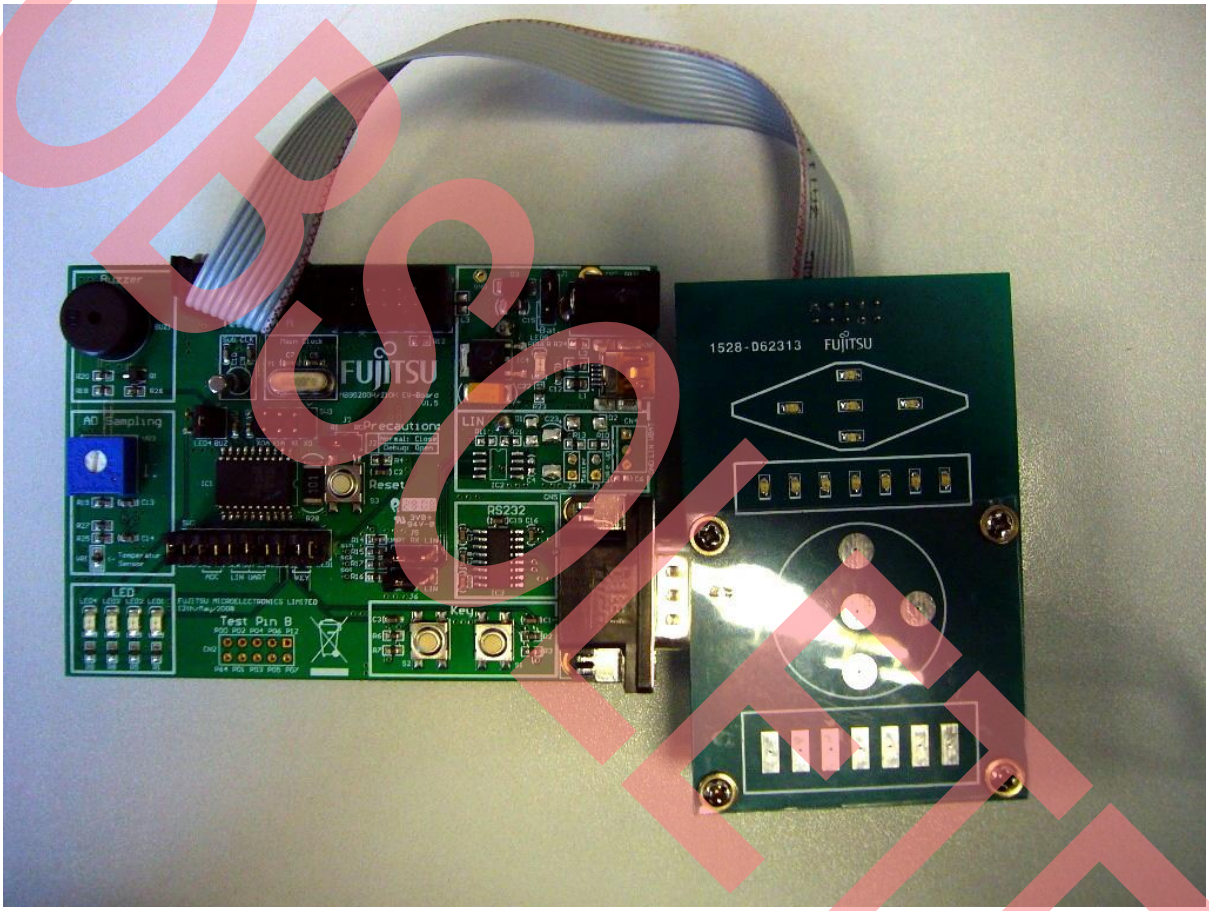
3 TSC Demo Functions

This chapter introduces TSC demo system usage and functions.

3.1 Demo System Build-up

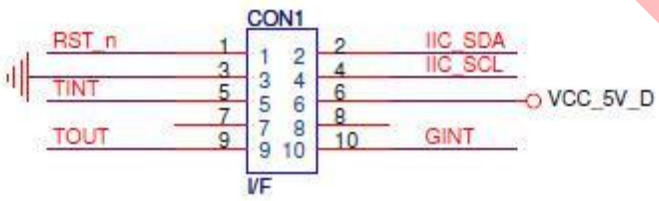
Program TSC demo code “TSC_LPC_1V0” on MB95200 EV-board and set this EV-board into “normal run” mode. Then connect EV-board and TSC demo through IDC10 cable.

Figure 3. Demo System Build-up



3.2 IDC 10 Pin Assignment

Figure 4. IDC10 Pin Assignment



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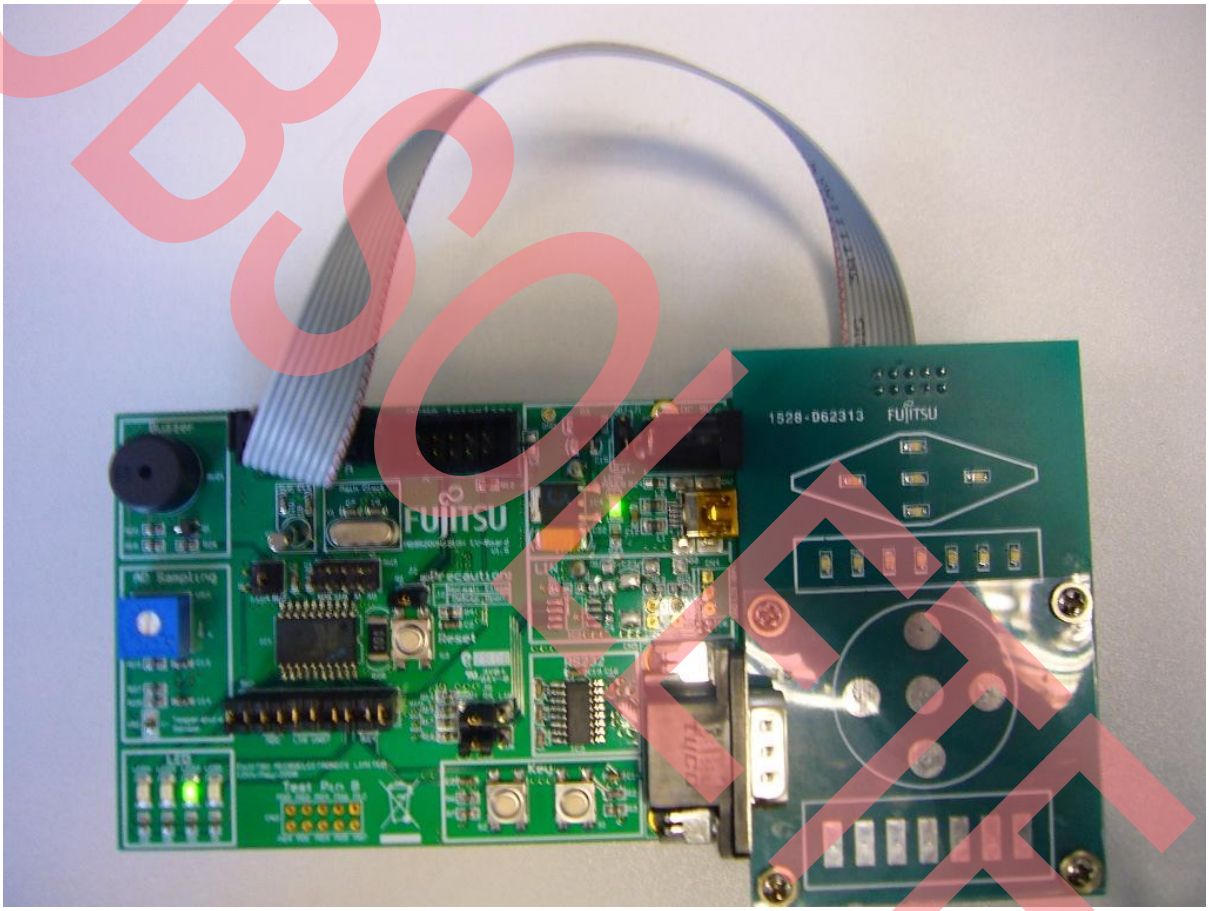
3.3 Demo System Power-on

Provide power to EV-board will power on the whole TSC demo system. MB95200 EV-board supports the below 3 power provided method.

- 4-pcs batteries
- 9V DC power supplier
- USB cable

After power on, LED5 on EV-board is light to indicate power-on status and LED2 on EV-board winks to indicate TSC demo code running.

Figure 5. Demo System Power-on



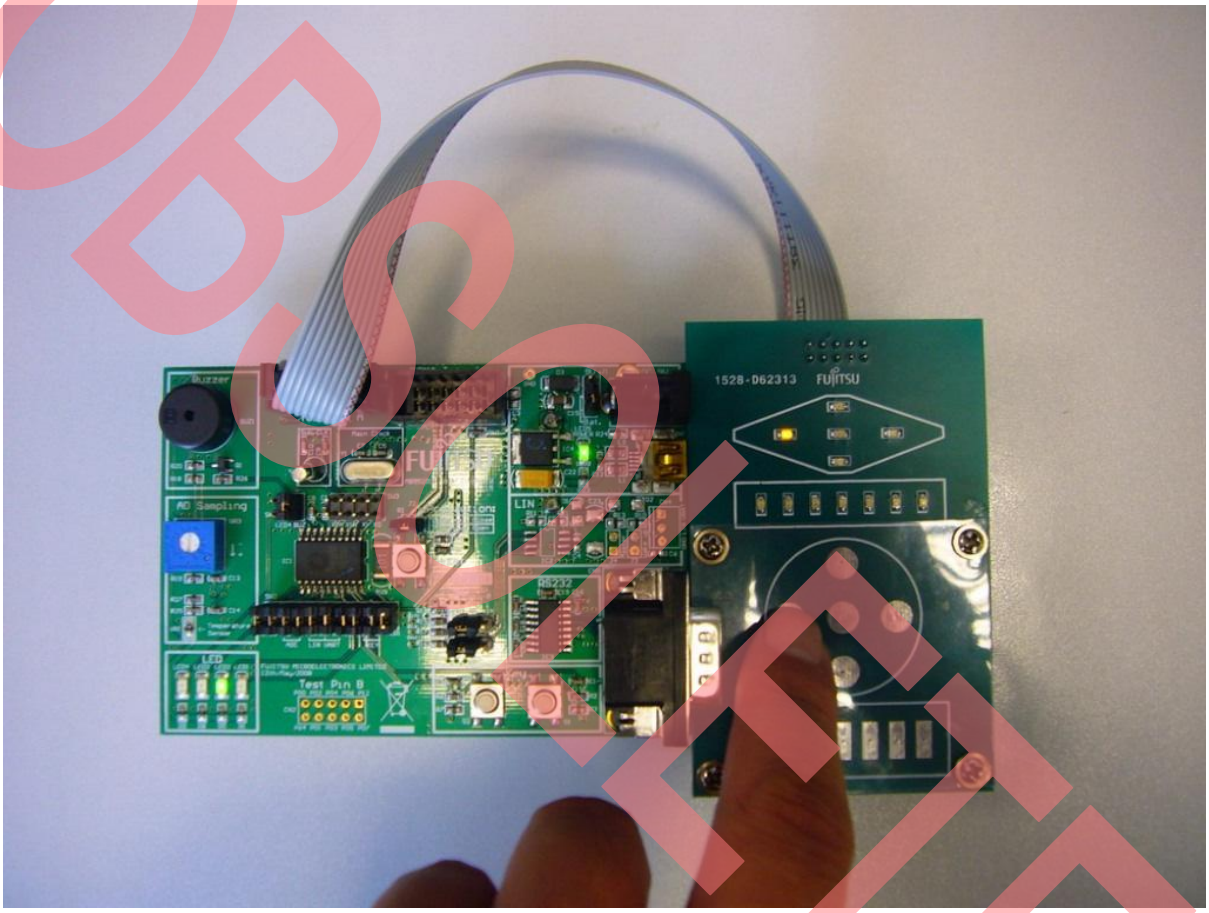
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3.4 APIS (Adjacent Pattern Interference Suppression) Modes

This demo system can support the three kinds of APIS mode.

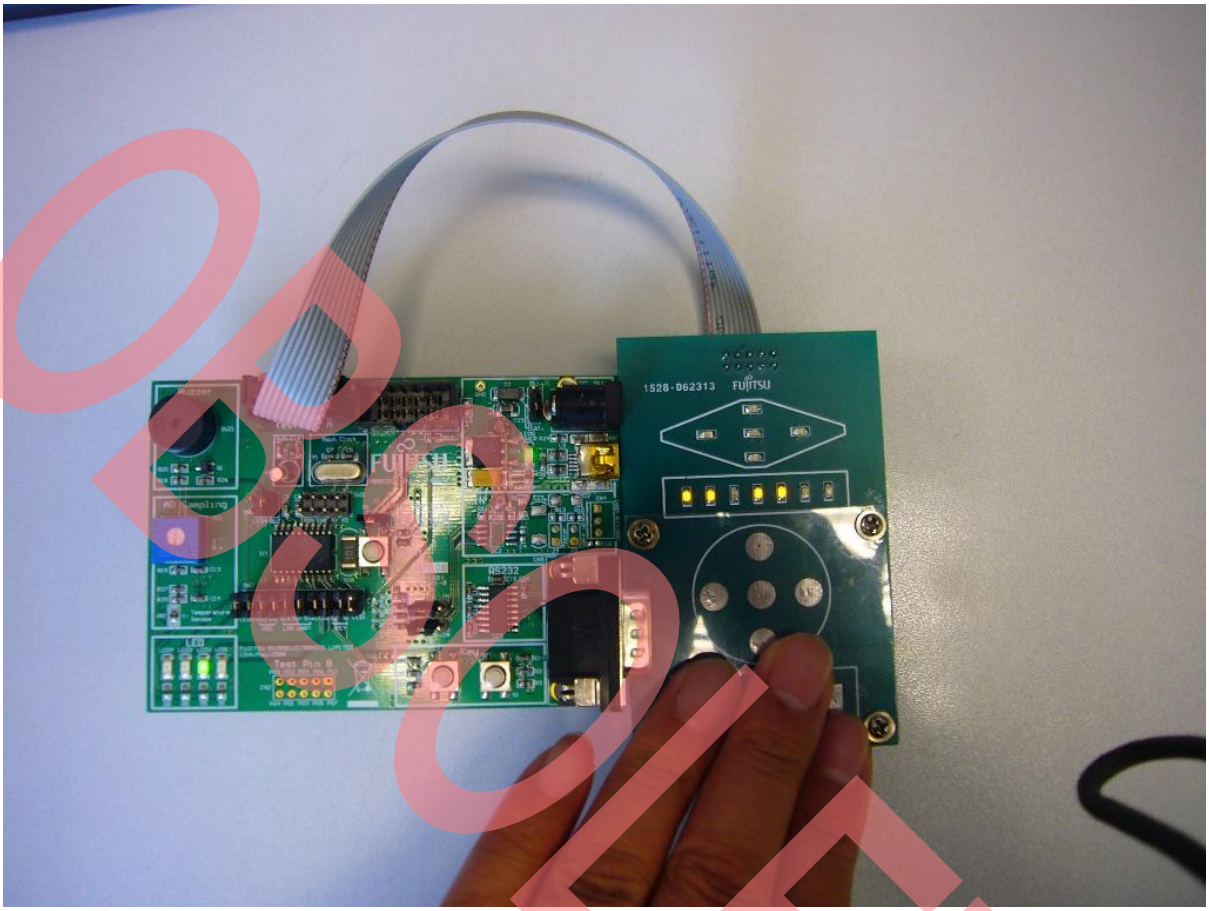
- APIS mode I: reports the strongest output only.
- APIS mode II: reports all outputs to overcome the value of Strength Threshold Register
- APIS mode III: reports two strongest outputs for multi-touch application

Figure 6. APIS Mode I



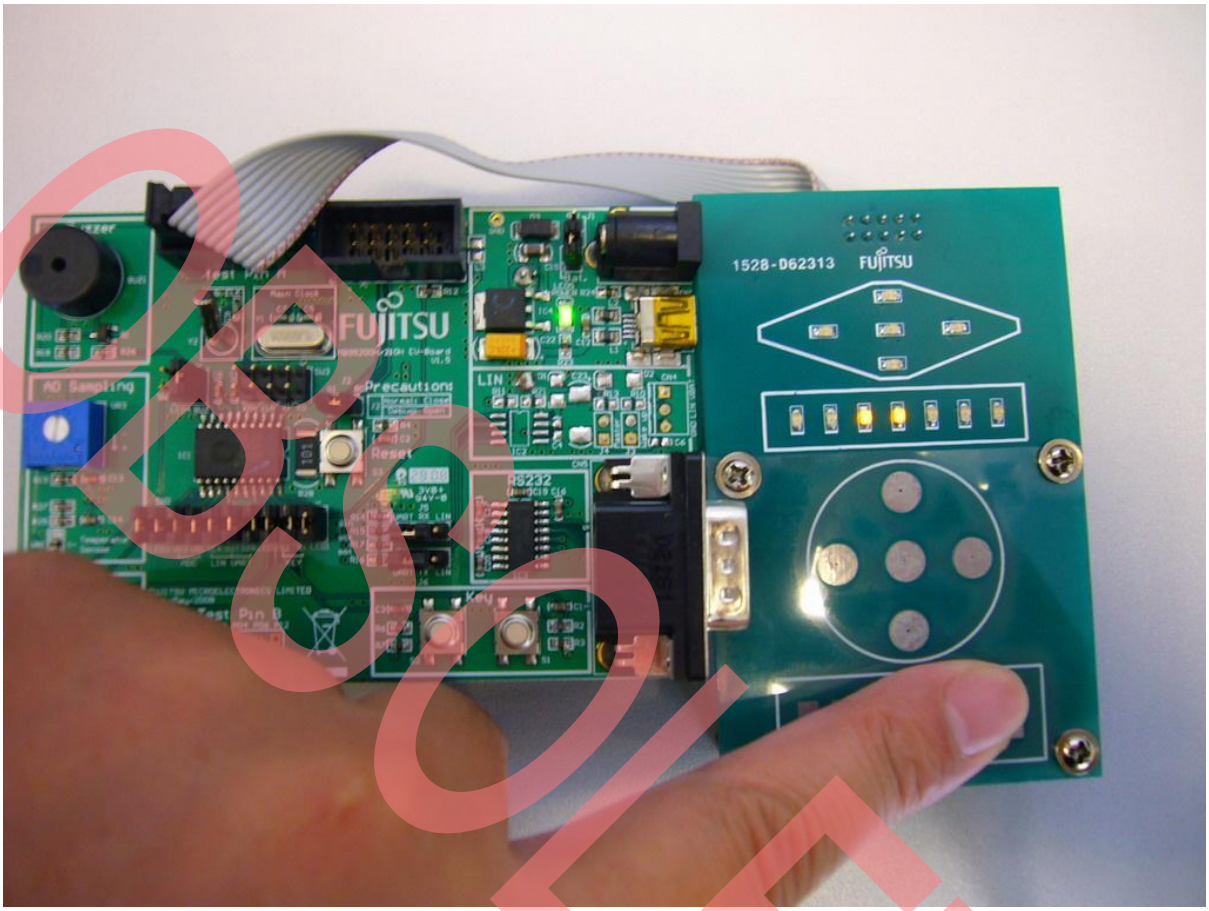
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Figure 7. APIS Mode II



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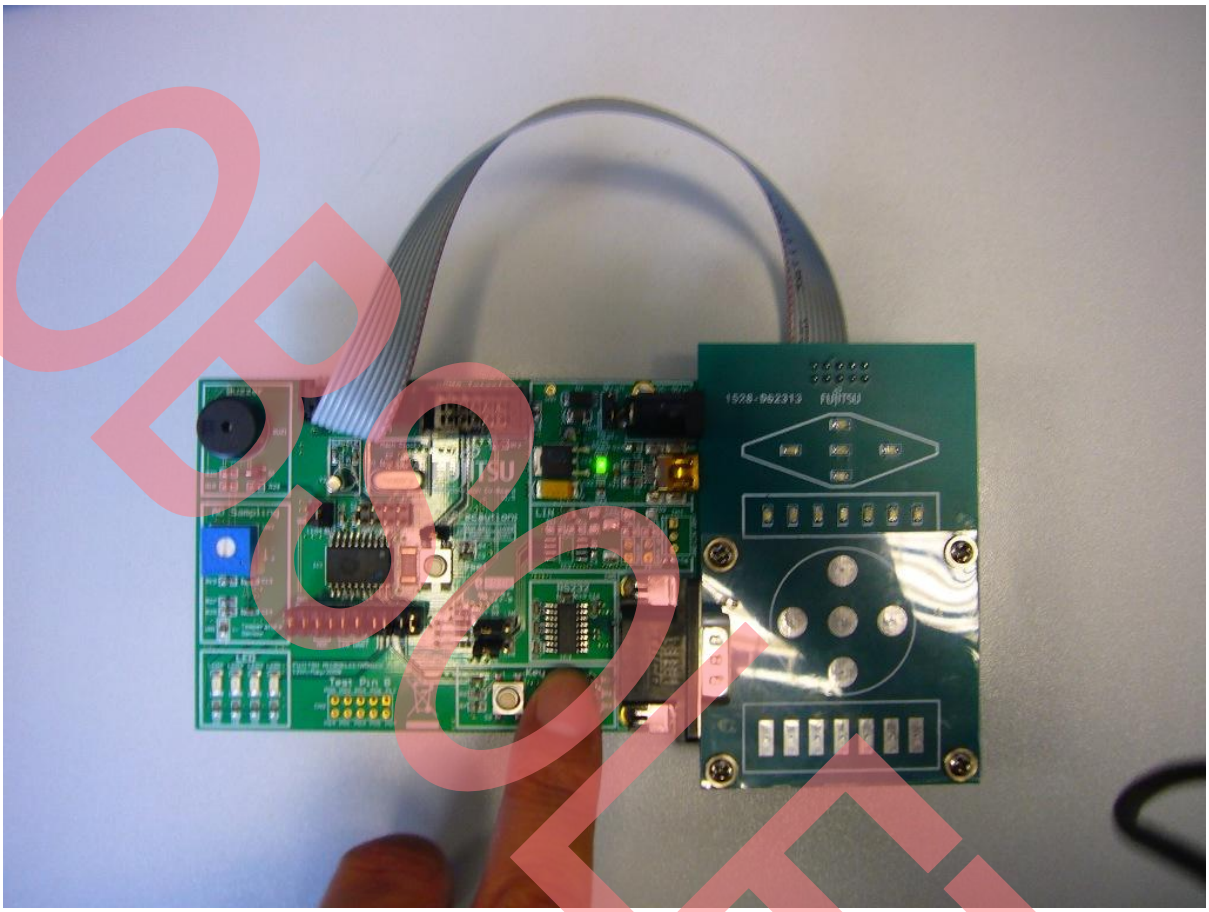
Figure 8. APIS mode III



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Press **S1** to change these 3 modes in turn.

Figure 9. APIS Modes Change



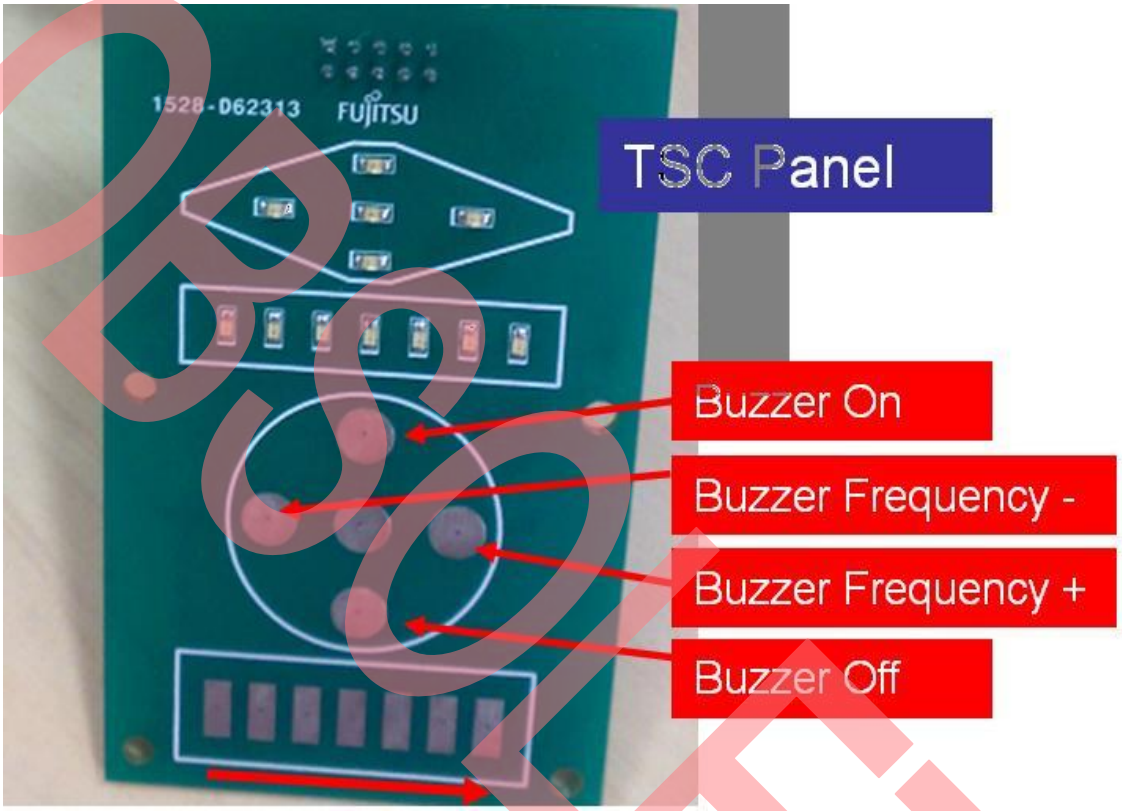
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3.5 Demo Functions

The system supports the demo functions using the buzzer on MB95200 EV-board.

The functions are shown briefly on the below figure.

Figure 10. Demo Functions



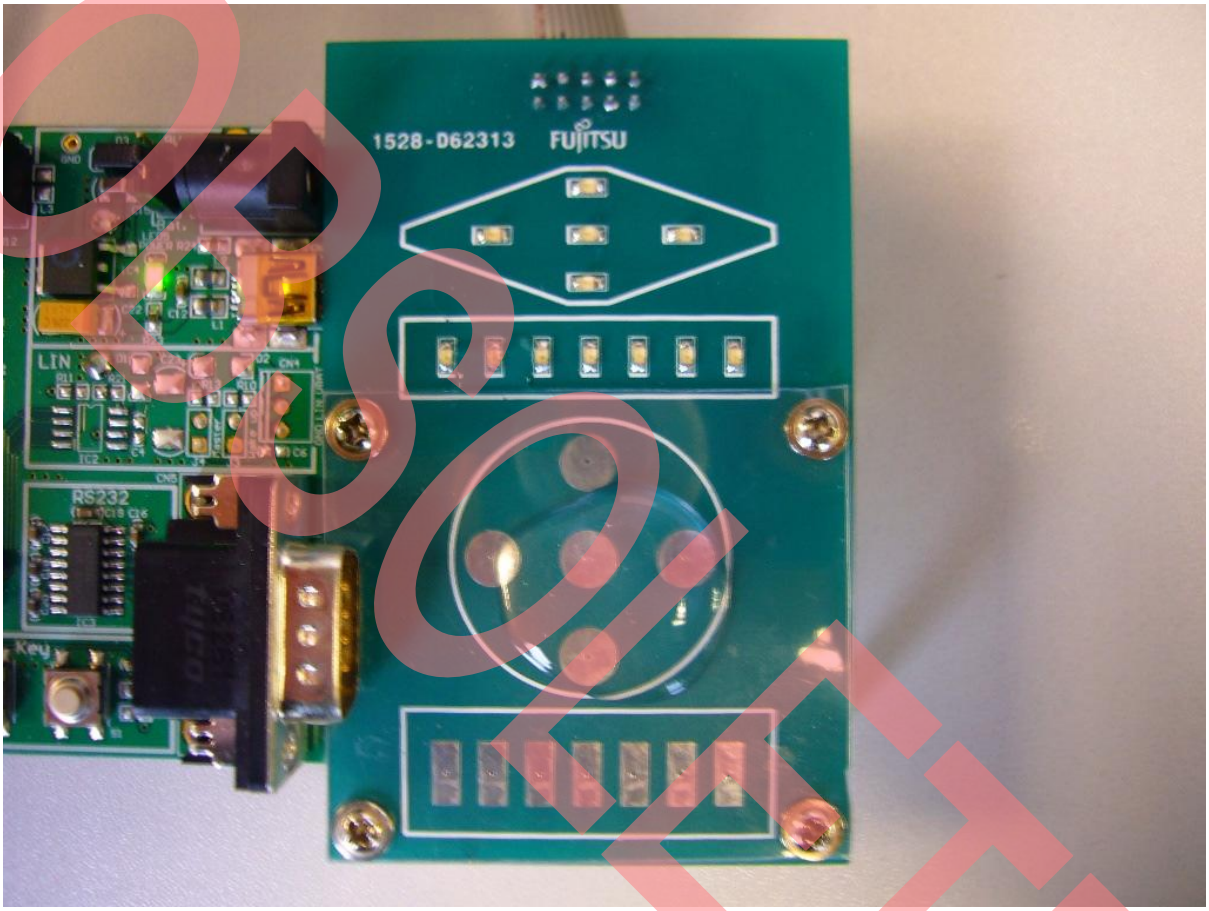
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3.6 Waterproof Key Pad

The system demonstrates waterproof capability of key pad of ATA2508. The below picture is the reference. If water is dropped on the key pad, ATA 2508 still can work normally and do the correct key-value detection.

Refer to “ATA2508 Users Manual V1.4 (EN) v01” for the detailed characteristic.

Figure 11. Waterproof Key Pad



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4 TSC Tuning

This chapter introduces TSC pad and IC tuning interface and method.

4.1 Tuning Interface

For support tuning function using AtLab DCC DP17 tuning kit, the special IDC10 cable is provided.

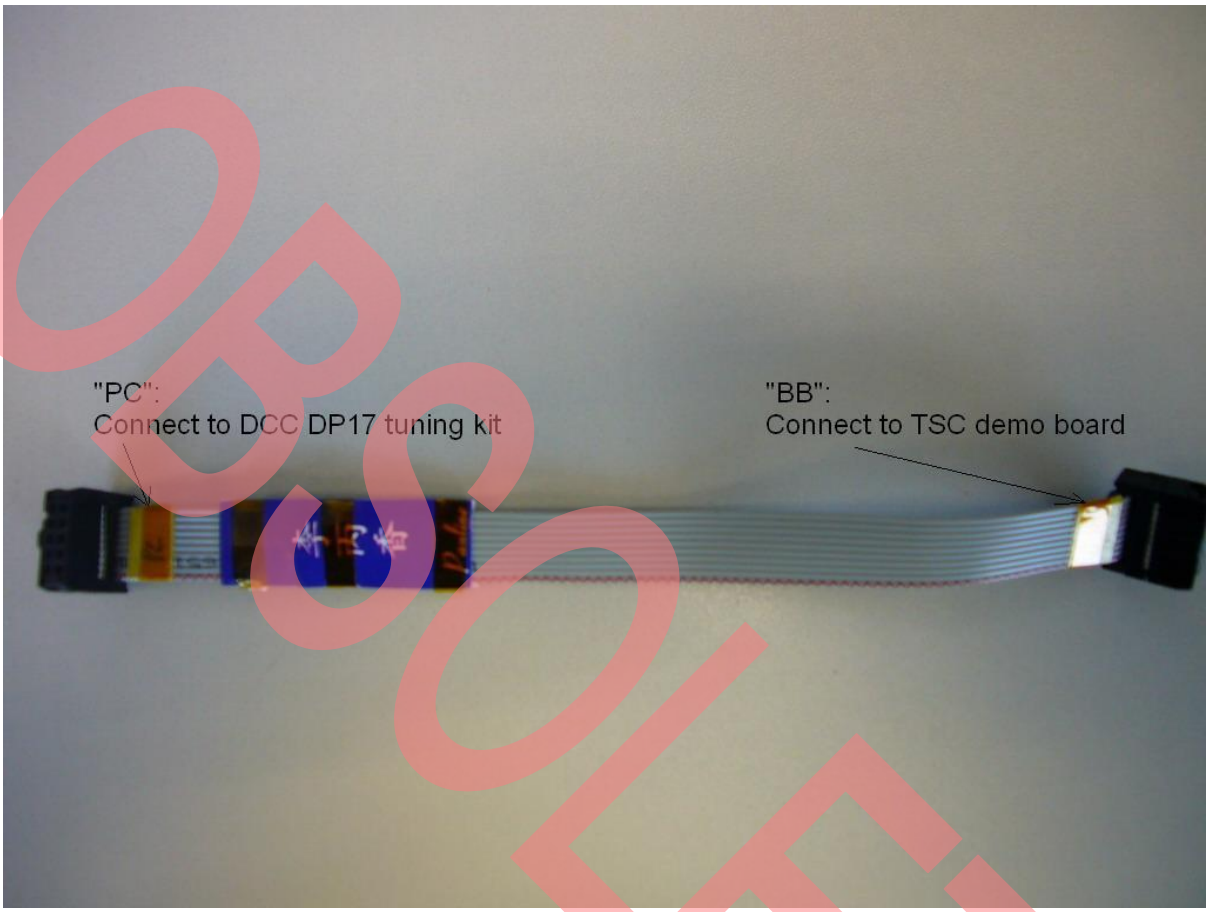
The table below shows the pin assignment of cable.

PC sides		EV-board sides
Pin1	<——>	NC
Pin2	<——>	NC
Pin3	<——>	Pin1
Pin4	<——>	Pin9
Pin5	<——>	Pin10
Pin6	<——>	Pin5
Pin7	<——>	Pin6
Pin8	<——>	Pin3
Pin9	<——>	Pin2
Pin10	<——>	Pin4
NC	<——>	Pin7
NC	<——>	Pin8

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The picture below shows the 2 terminals of this cable.

Figure 12. Special IDC10 Cable



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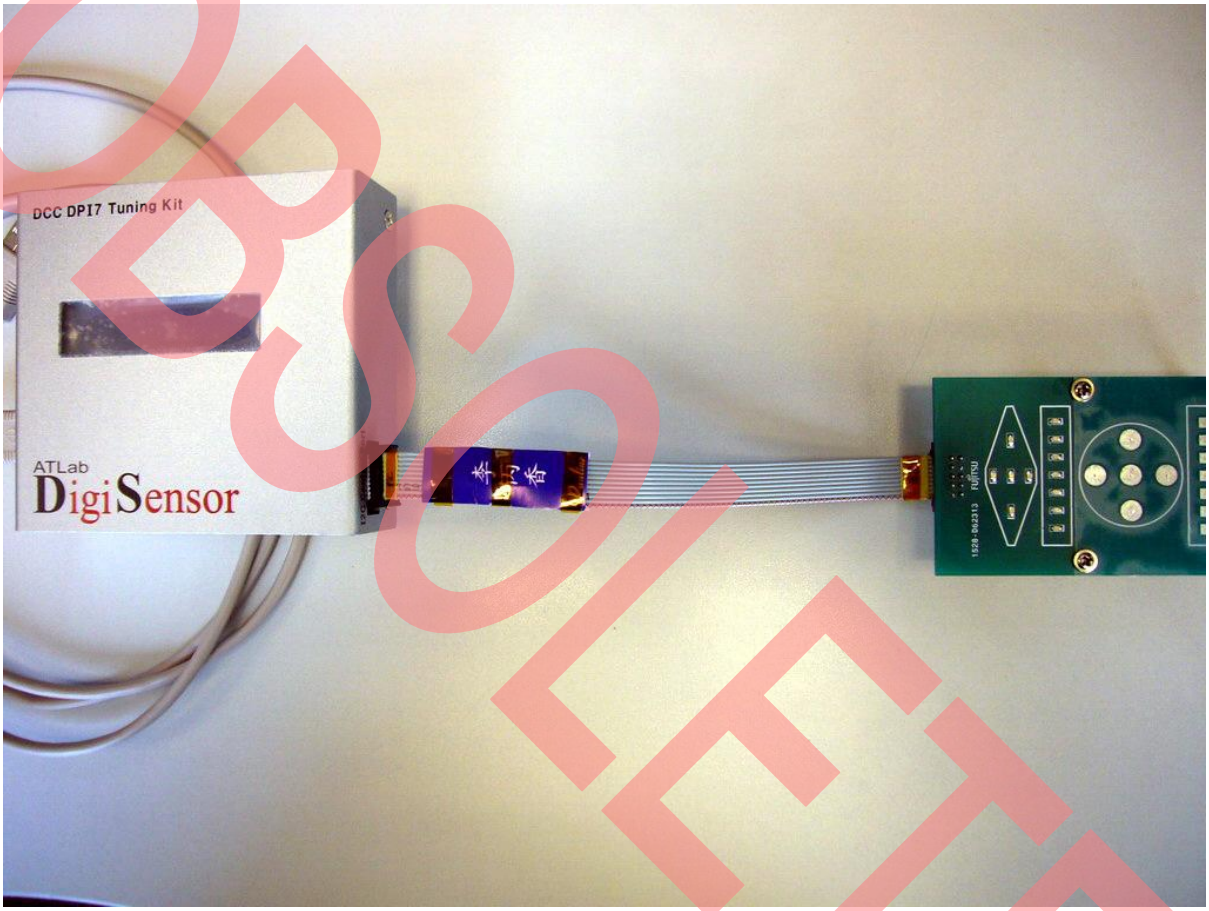
4.2 Tuning System Build-up

Connect DCC DP17 tuning kit and TSC demo board through the special IDC10 cable. Then connect the kit into PC though USB cable.

In the way, TSC ATA2508 parameter can be tuned and tied on PC software GUI.

Refer to “ATA2508 Users Manual V1.4 (EN) v01” for the detailed tuning method.

Figure 13. Tuning System



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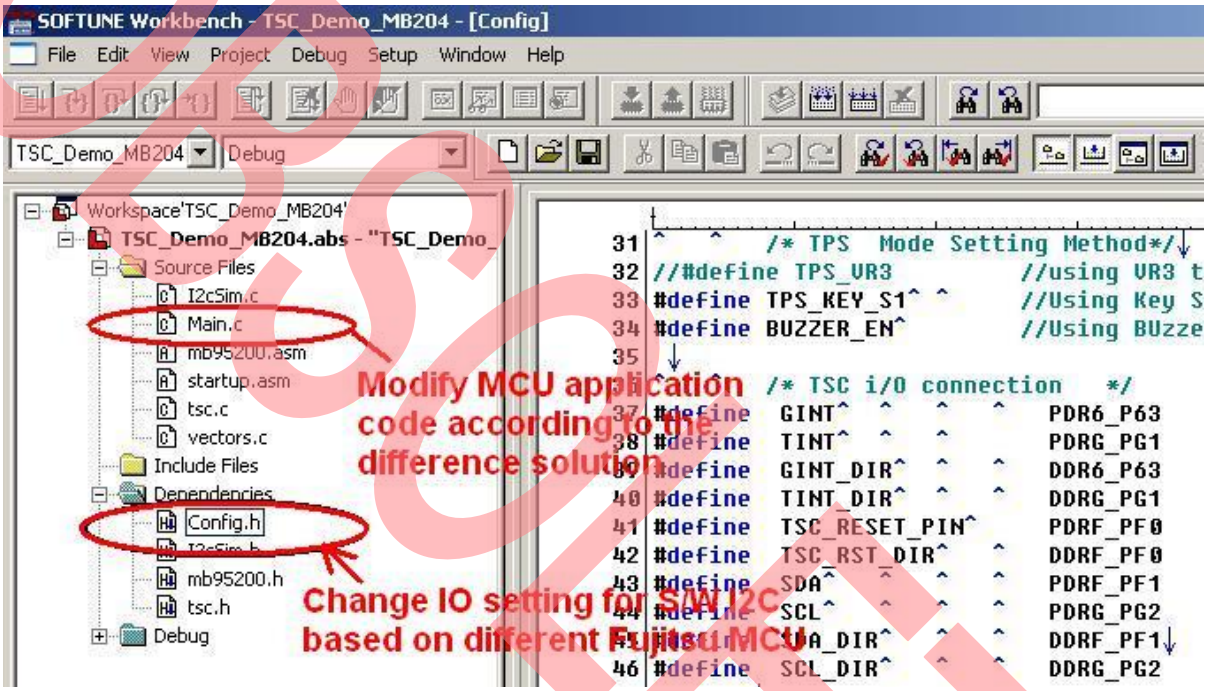
5 Demo Firmware

This chapter introduces TSC pad and IC tuning interface and method.

In this solution, TSC ATA2508 is controlled by MCU through I2C. If MCU hasn't I2C peripheral just like MB95F204K, I2C communication can be simulated by general IO port. In this case, Config.h on demo F/W "TSC_LPC_1V0" will be re-defined to realize the S/W I2C.

At the same time, MCU only controls buzzer simply according to four key values. If the different solution is requested, user can modify MCU application code in Main.c file of demo F/W project.

Figure 14. Demo Firmware Project



6 Additional Information

For more Information on Cypress MB95200 products, visit the following website:

www.cypress.com/8bit/MB95200

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Document History

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Document Number: 002-05567

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	—	HUAL	08/24/2009	Initial release.
*A	5267344	HUAL	06/28/2016	Migrated Spansion Application note from MCU-AN-500047-E-10 to Cypress format. Hardware no longer exist and this AN to be Obsolete.

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