

THIS SPEC IS OBSOLETE

Spec No: 002-04740

Spec Title: AN204740 - F2MC-8FX Family, MB95200 Series BT Hand Free Demo

Replaced By: NONE

F²MC-8FX Family, MB95200 Series BT Hand Free Demo

This application note describes the functionality of MB95200 Series Bluetooth Hand Demo.

OBSOLETE

1 Introduction

The PRC new driving policy has been announced to avoid drivers talking mobile phone directly, and it creates an increasing need for Car Hand Free Kit.

The driver can communicate with the kit by turning on the Bluetooth in the mobile. The kit will act as a hand free phone so that the driver can talk freely during driving.

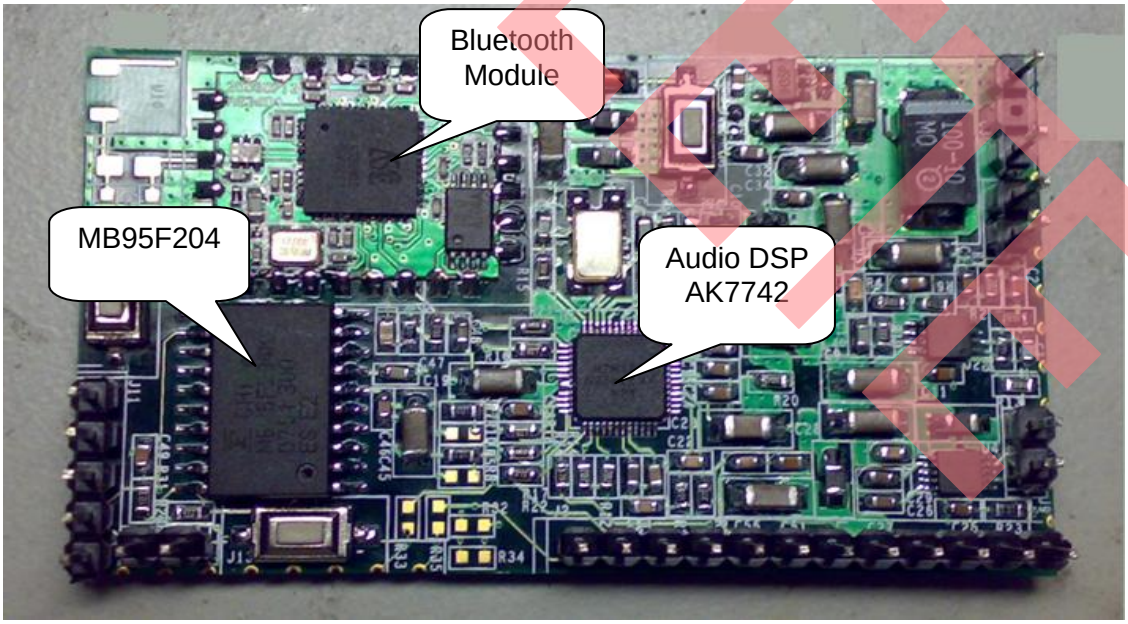
This demo set has such features:

- Noise cancellation
- Caller ID display
- Transfer audio to FM radio

2 Demo Platform

As shown in Figure 1 this demo is mainly made up of three parts: MCU, noise cancellation DSP and Bluetooth module. When the Bluetooth hand free kit works, it will receive the audio data from the mobile through Bluetooth module and transfer it to the audio DSP for echo cancellation; on the other hand it will transfer the audio data from the microphone to the mobile.

Figure 1. Bluetooth Hand Free Demo

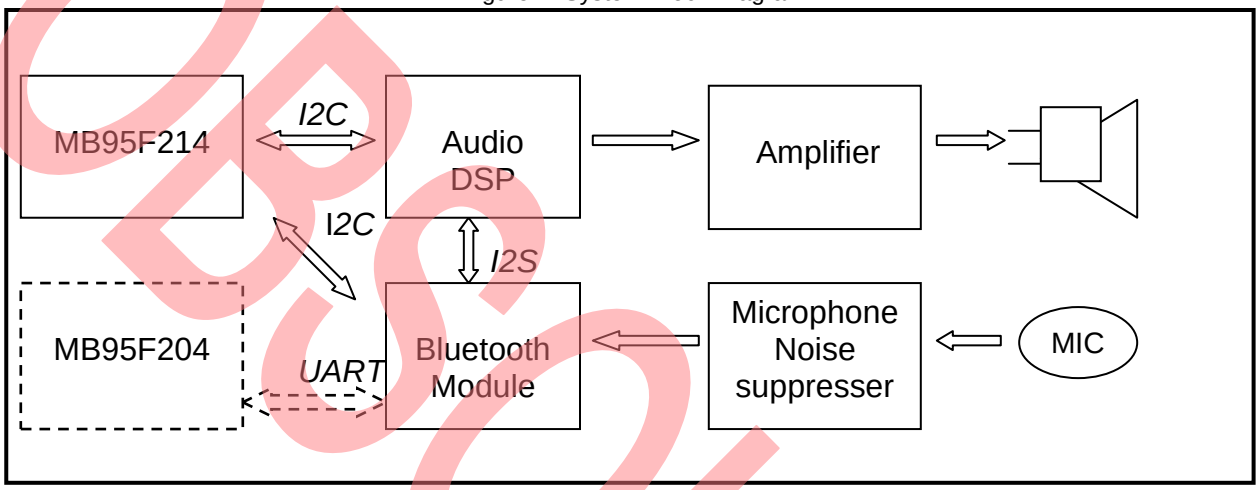


3 Hardware

3.1 System Block

Figure 2 shows the system block. There are two editions. One is a simple edition using MB95F214. Another is an advanced edition using MB95F204 and with the functions of caller ID display and transferring the audio to the FM radio on the car.

Figure 2. System Block Diagram

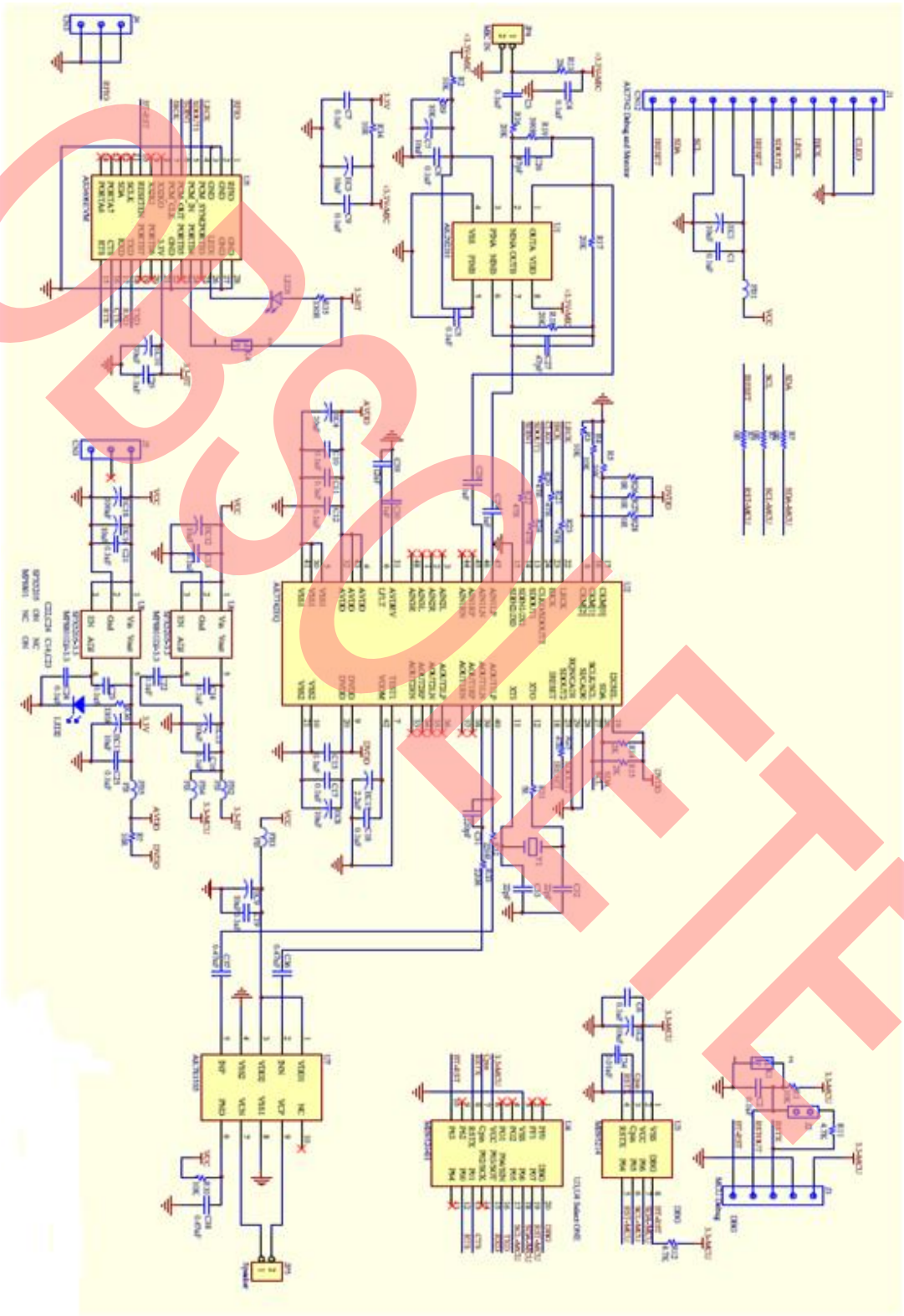


3.2 Schematic Diagram

In this system, a compatible design was made. The MCU can be MB95F214 or MB95F204 which will control audio DSP and Bluetooth module. AK7742 is used to implement echo cancellation. It is easily controlled by I2C bus. When DSP detects the echo noise, it will immediately generate the inverted phase of this noise and impose to the output thus cancel the noise at the output. Figure 3 shows the schematic diagram.

OBSOLETE

Figure 3. Blue Tooth Hand Free Kit



OBSOLETE

3.3 MCU Pin Assignment

Table 1 shows the MB95F214 Pin Assignment in this system.

Table 1. Pin Assignment

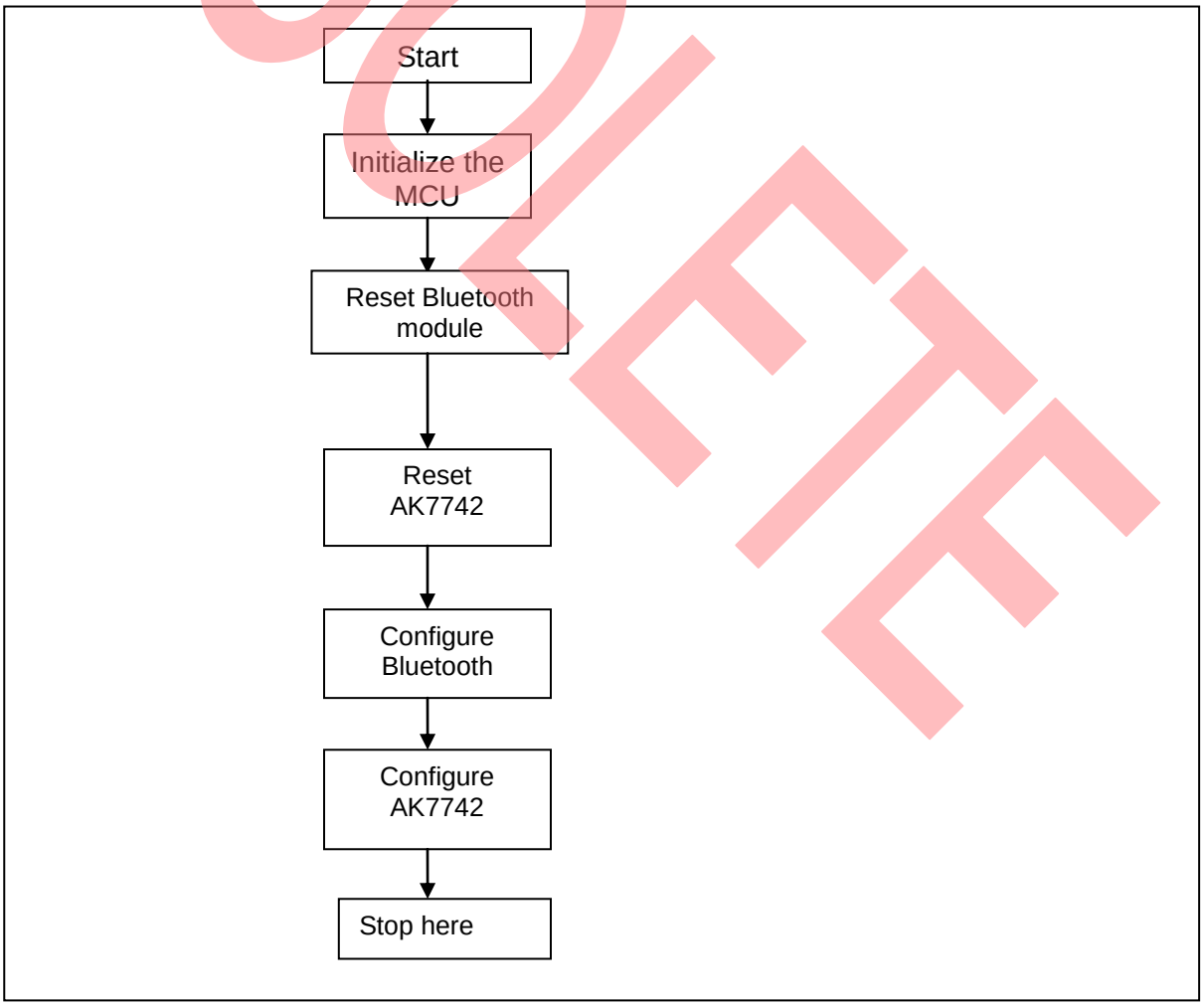
Number	Pin	Function
5	P04	Reset output for AK7742
6	P05	SCL of I2C bus
7	P06	SDA of I2C bus
8	P12	Reset output for Bluetooth module

4 Firmware

For this demo, the firmware just initializes the Bluetooth and DSP. When the power is on, MCU will reset the Bluetooth and the DSP first by a reset signal, and then simulate I2C bus with two general I/Os to communicate with DSP and Bluetooth Module.

Figure 4 shows the flow chart when MB95F214 is used.

Figure 4. Flow Chart



OBSOLETE

5 Operations

- **Matching**: Press the **ON** for 5 seconds until the speaker sounds “KA”. Then release the button. The Bluetooth starts searching the BT facility around your mobile phone. The target name is “ASC-Master1”. Select this name and match it with your phone, security code is “0000”.
- **Connection**: Follow the BT user manual of your phone to connect the BT car HF kit.
- **Dialing**: After BT is connected, use the dialing function in your phone to dial out.
- **Talk**: User can directly talk to the HF kit.
- **Hang up**: Press the hang up key in your phone can disconnect the call.
- **Disconnecting**: Follow the BT manual of your phone to disconnect the BT HF kit.

Please refer to Figure 5 to find the corresponding parts.

Figure 5. Bluetooth Hand Free Appearance



OBSOLETE

6 Document History

Document Title: AN204740 - F²MC-8FX Family, MB95200 Series BT Hand Free Demo

Document Number: 002-04740

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	-	HUAL	11/04/2009	Initial release
*A	5233349	HUAL	06/22/2016	Migrated Spansion Application Note MCU-AN- 500057-E-10 to Cypress format There is no web link on where/how to get the board and firmware mentioned in the document. So this AN is for obsolete.

OBSOLETE

Worldwide Sales and Design Support

Cypress maintains a worldwide network of offices, solution centers, manufacturer's representatives, and distributors. To find the office closest to you, visit us at Cypress Locations.

Products

ARM® Cortex® Microcontrollers	cypress.com/arm
Automotive	cypress.com/automotive
Clocks & Buffers	cypress.com/clocks
Interface	cypress.com/interface
Lighting & Power Control	cypress.com/powerpsoc
Memory	cypress.com/memory
PSoC	cypress.com/psoc
Touch Sensing	cypress.com/touch
USB Controllers	cypress.com/usb
Wireless/RF	cypress.com/wireless

PSoC® Solutions

PSoC 1 | PSoC 3 | PSoC 4 | PSoC 5LP

Cypress Developer Community

Forums | Projects | Videos | Blogs | Training | Components

Technical Support

cypress.com/support

PSoC is a registered trademark and PSoC Creator is a trademark of Cypress Semiconductor Corporation. All other trademarks or registered trademarks referenced herein are the property of their respective owners.

Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709

Phone : 408-943-2600
Fax : 408-943-4730
Website : www.cypress.com

© Cypress Semiconductor Corporation, 2009-2016. This document is the property of Cypress Semiconductor Corporation and its subsidiaries, including Spansion LLC ("Cypress"). This document, including any software or firmware included or referenced in this document ("Software"), is owned by Cypress under the intellectual property laws and treaties of the United States and other countries worldwide. Cypress reserves all rights under such laws and treaties and does not, except as specifically stated in this paragraph, grant any license under its patents, copyrights, trademarks, or other intellectual property rights. If the Software is not accompanied by a license agreement and you do not otherwise have a written agreement with Cypress governing the use of the Software, then Cypress hereby grants you a personal, non-exclusive, nontransferable license (without the right to sublicense) (1) under its copyright rights in the Software (a) for Software provided in source code form, to modify and reproduce the Software solely for use with Cypress hardware products, only internally within your organization, and (b) to distribute the Software in binary code form externally to end users (either directly or indirectly through resellers and distributors), solely for use on Cypress hardware product units, and (2) under those claims of Cypress's patents that are infringed by the Software (as provided by Cypress, unmodified) to make, use, distribute, and import the Software solely for use with Cypress hardware products. Any other use, reproduction, modification, translation, or compilation of the Software is prohibited.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CYPRESS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS DOCUMENT OR ANY SOFTWARE OR ACCOMPANYING HARDWARE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. To the extent permitted by applicable law, Cypress reserves the right to make changes to this document without further notice. Cypress does not assume any liability arising out of the application or use of any product or circuit described in this document. Any information provided in this document, including any sample design information or programming code, is provided only for reference purposes. It is the responsibility of the user of this document to properly design, program, and test the functionality and safety of any application made of this information and any resulting product. Cypress products are not designed, intended, or authorized for use as critical components in systems designed or intended for the operation of weapons, weapons systems, nuclear installations, life-support devices or systems, other medical devices or systems (including resuscitation equipment and surgical implants), pollution control or hazardous substances management, or other uses where the failure of the device or system could cause personal injury, death, or property damage ("Unintended Uses"). A critical component is any component of a device or system whose failure to perform can be reasonably expected to cause the failure of the device or system, or to affect its safety or effectiveness. Cypress is not liable, in whole or in part, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from or related to all Unintended Uses of Cypress products. You shall indemnify and hold Cypress harmless from and against all claims, costs, damages, and other liabilities, including claims for personal injury or death, arising from or related to any Unintended Uses of Cypress products.

Cypress, the Cypress logo, Spansion, the Spansion logo, and combinations thereof, PSoC, CapSense, EZ-USB, F-RAM, and Traveo are trademarks or registered trademarks of Cypress in the United States and other countries. For a more complete list of Cypress trademarks, visit cypress.com. Other names and brands may be claimed as property of their respective owners.

OBSOLETE