

BM63 Evaluation Board (EVB) User's Guide

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Object of Declaration BM63 Evaluation Board

Manufacturer:

Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, Arizona, 85224-6199 USA

This declaration of conformity is issued by the manufacturer.

The development/evaluation tool is designed to be used for research and development in a laboratory environment. This development/evaluation tool is not a Finished Appliance, nor is it intended for incorporation into Finished Appliances that are made commercially available as single functional units to end users under EU EMC Directive 2004/108/EC and as supported by the European Commission's Guide for the EMC Directive 2004/108/EC (8th February 2010).

This development/evaluation tool complies with EU RoHS2 Directive 2011/65/EU.

This development/evaluation tool, when incorporating wireless and radio-telecom functionality, is in compliance with the essential requirement and other relevant provisions of the R&TTE Directive 1999/5/EC and the FCC rules as stated in the declaration of conformity provided in the module datasheet and the module product page available at www.microchip.com.

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Signed for and on behalf of Microchip Technology Inc. at Chandler, Arizona, USA

Derek Carlson

12-Sep-14 Date

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Preface

NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site (www.microchip.com) to obtain the latest documentation available.

Documents are identified with a "DS" number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is "DSXXXXXXA", where "XXXXXXX" is the document number and "A" is the revision level of the document.

For the most up-to-date information on development tools, see the MPLAB[®] X IDE online help. Select the Help menu, and then Topics to open a list of available online help files.

INTRODUCTION

This chapter contains general information that will be useful to know before using the BM63 Evaluation Board (EVB). Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- Recommended Reading
- The Microchip Web Site
- Development Systems Customer Change Notification Service
- Customer Support
- Document Revision History

DOCUMENT LAYOUT

This document describes how to use the BM63 EVB, as a development tool to emulate and debug firmware on a target board. This user's guide is composed of the following chapters:

- Chapter 1. "Introduction" provides an overview of the BM63 EVB and its features.
- Chapter 2. "Hardware" provides hardware details of the BM63 EVB.
- Chapter 3. "Getting Started" provides information about how to establish a Bluetooth[®] connection using the BM63 EVB and how to configure the BM63 module by using various tools.
- Appendix A. "Schematics" provides the BM63 EVB reference schematics.

CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

| Description | Represents | Examples |
|--|---|---|
| Italic characters | Referenced books | MPLAB IDE User's Guide |
| | Emphasized text | is the only compiler |
| Initial caps | A window | the Output window |
| | A dialog | the Settings dialog |
| | A menu selection | select Enable Programmer |
| Quotes | A field name in a window or dialog | "Save project before build" |
| Underlined, italic text with right angle bracket | A menu path | <u>File > Save</u> |
| Bold characters | A dialog button | Click OK |
| | A tab | Click the Power tab |
| Text in angle brackets < > | A key on the keyboard | Press <enter>, <f1></f1></enter> |
| Plain Courier New | Sample source code | #define START |
| | Filenames | autoexec.bat |
| | File paths | c:\mcc18\h |
| | Keywords | _asm, _endasm, static |
| | Command-line options | -0pa+, -0pa- |
| | Bit values | 0, 1 |
| | Constants | OxFF, `A' |
| Italic Courier New | A variable argument | <pre>file.o, where file can be any valid filename</pre> |
| Square brackets [] | Optional arguments | mcc18 [options] file [options] |
| Curly brackets and pipe character: { } | Choice of mutually exclusive arguments; an OR selection | errorlevel {0 1} |
| Ellipses | Replaces repeated text | <pre>var_name [, var_name]</pre> |
| | Represents code supplied by user | <pre>void main (void) { }</pre> |
| Notes | A Note presents information that we want to re-emphasize, either to help you avoid a common pitfall or to make you | Note: This is a standard note box. |
| | aware of operating differences between some device family members. A Note can be in a box, or when used in a table | CAUTION This is a caution note. |
| | or figure, it is located at the bottom of the table or figure. | Note 1: This is a note used in a table. |

RECOMMENDED READING

This user's guide describes how to use the BM63 EVB. The following Microchip document is available and recommended as supplemental reference resources.

BM63 Data Sheet (DS60001431)

Refer to this document for a detailed information on the BM63 module. Reference information found in this data sheet includes:

- Features and pin configurations
- Electrical Specifications
- Reference Circuits

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- General Technical Support Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listings
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- In-Circuit Debuggers The latest information on the Microchip in-circuit debugger, MPLAB ICD 3
- MPLAB X IDE The latest information on Microchip MPLAB X IDE, the Windows[®] Integrated Development Environment for development systems tools
- **Programmers** The latest information on Microchip programmers including the PICkit[™] 3 development programmer

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- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

Customers should contact their distributor, representative or Field Application Engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: http://support.microchip.com.

DOCUMENT REVISION HISTORY

Revision A (July 2016)

This is the initial released version of this document.

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BM63 EVB USER'S GUIDE

Chapter 1. Introduction

Thank you for purchasing a Microchip Technology BM63 Evaluation Board (EVB). This document provides a detailed information about the BM63 EVB.

The BM63 EVB enables the user to evaluate and demonstrate the functionality of the BM63 module. The BM63 EVB includes status LEDs and an integrated configuration and programming interface for plug-and-play capability, which enable rapid prototyping and faster time to market.

Along with the BM63 EVB, software tools and applications are provided to demonstrate the Bluetooth connections to the on-board BM63 module with options to configure or program it.

This chapter includes the following topics:

1.1 "Kit Contents"

1.2 "BM63 EVB Features"

1.1 KIT CONTENTS

The BM63 EVB kit contains the following items, as illustrated in Figure 1-1.

- One BM63 EVB, which contains the BM63SPKA1MC2 module
- One micro-USB cable
- One 15V DC power adapter
- Two speaker cables



FIGURE 1-1: BM63 EVB KIT CONTENTS

Note: If you are missing any part of the BM63 EVB kit, contact a Microchip sales office for assistance. A list of Microchip offices for sales and service is provided on the back page of this document.

1.2 BM63 EVB FEATURES

The following are key features of the BM63 EVB:

- The BM63 EVB includes a BM63 module, qualified for Bluetooth 4.2 specifications
- On-board MCU (PIC18F85J10) and DSP (YDA174) for easy operation and feature demonstration
- On-board keypad matrix that is controlled by MCU, which makes it easy for playback control
- Built-in Near Field Communication (NFC)
- RoHS compliant

Figure 1-2 illustrates the top view of the BM63 EVB with the following components:

- 1. BM63SPKA1MC2 module
- 2. Three status LEDs
- 3. NFC tag
- 4. Mode switch (SW9)
- 5. USB connector (P9)
- 6. USB to UART converter (MCP2200)
- 7. UART port over USB connector (P3)
- 8. On board MCU (PIC18F85J10)
- 9. ICSP header (J5)
- 10. Audio control buttons, Multi-Function Button (MFB) and pairing mode button
- 11. 15V adapter jack (P2)
- 12. Internal/external MCU selection switch (SW46)
- 13. Internal/external DSP audio amplifier selection switch (SW47)
- 14. On-board DSP (YDA174) with built-in audio amplifier
- 15. Audio connector (CN1 and CN2)
- 16. External MCU/DSP header (J6)
- 17. Auxiliary input 3.5 mm jack (P8)
- 18. Microphone input 3.5 mm jack (P6)
- 19. Speaker output 3.5 mm jack (P7)
- 20. Reset button for the BM63 module (SW10)
- 21. Reset button for MCU (SW1)

For additional information on the features, refer to Chapter 2. "Hardware".



FIGURE 1-2: BM63 EVB (TOP VIEW)



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Chapter 2. Hardware

This chapter describes the hardware features of the BM63 EVB. The BM63 EVB includes a range of peripheral components, see Figure 2-1.



FIGURE 2-1: BM63 EVB BLOCK DIAGRAM

2.1 HARDWARE FEATURES

The following list provides the details of each component in the BM63 EVB. For detailed information about the location of these components, refer to Figure 1-2.

2.1.1 Power Supply

The 15V DC power adapter for supplying power to the BM63 EVB.

2.1.2 USB connectivity

The BM63 EVB has the following two USB ports that can be connected to the host PC using a micro-USB cable:

- Debug or program port (P3), where the USB signals are converted to/from the UART by the MCP2200
- USB port (P9), where USB signals are directly connected to the BM63 module

2.1.3 Switches and Push buttons

The functions of the switches and push buttons on the BM63 EVB are:

- SW1 Reset button for MCU
- SW9 Mode switch
- SW10 Reset button for BM63 module
- SW23 Skip the audio track backward
- SW24 (MFB) Push to turn on/off the BM63 module
- SW27 Increase volume
- SW28 Decrease volume
- SW31 Play or pause the audio playback
- SW40 Button to enter into pairing mode
- SW45 Skip the audio track forward

Table 2-1 provides the settings of Mode switch SW9 to configure the BM63 module in various operating modes.

| Mode | Switch Positions | Pin Definition |
|------------------------|------------------|---|
| Write Flash | ON 1 2 3 | 1: ON (P2_0: LOW) 2: ON (P2_4: LOW) 3: ON (EAN: HIGH) |
| Test Mode | ON 1 2 3 | 1: ON (P2_0: LOW) 2: OFF (P2_4: HIGH) 3: OFF (EAN: LOW) |
| Flash Application Mode | ON 1 2 3 | 1: OFF (P2_0: HIGH) 2: OFF (P2_4: HIGH) 3: OFF (EAN: LOW) |

TABLE 2-1: SWITCH SW9 DETAILS

Note: By default switch SW9 will be in Application mode.

Table 2-2 details the signals and button connections of the SW46/SW47 switch to the BM64 module and the external MCU/DSP.

| Mode | SW46/SW47 Switch position | Pin Definition |
|---|---------------------------|--|
| On-board MCU (PIC18F85J10) and DSP audio amplifier (YDA174) signals connection to the BM63 module (default) | | SW46 1: ON (NFC trigger to MCU) 2: OFF (TXIND to MCU) 3: ON (RST_N to MCU) 4: ON (HCI_TXD to MCU) 5: ON (HCI_RXD to MCU) 6: ON (MFB controlled by MCU) SW47 1: ON (DT0 to DSP) 2: ON (SCLK0 to DSP) 3: ON (RFS0 to DSP) 4: ON (NC) |
| External MCU and DSP audio amplifier connection | | SW46 1: OFF (NFC trigger) 2: OFF (TXIND) 3: OFF (RST_N) 4: OFF (HCI_TXD) 5: OFF (HCI_RXD) 6: OFF (HCI_RXD) 6: OFF (MFB) SW47 1: OFF (DT0) 2: OFF (SCLK0) 3: OFF (RFS0) 4: OFF (NC) |

TABLE 2-2: SWITCH SW46/SW47 DETAILS

2.1.4 LEDs

The functions of three LEDs are listed as follows:

- LED1 Indicates the Bluetooth connection status (UI configuration dependent)
- LED2 Indicates the Bluetooth connection status (UI configuration dependent)
- LED3 Charging indication LED (default setting is disabled)

2.1.5 Headers

The following three headers (J5, J6, JP23) are available on the BM63 EVB. The ICSP header J5 provides the programming/debugging interface for the BM63 EVB on-board MCU (PIC18F85J10). Figure 2-2 illustrates the ICSP header J5 and Table 2-3 provides the pin details and description.

FIGURE 2-2: ICSP HEADER J5



TABLE 2-3: ICSP HEADER J5

| Part Number | Pin | Description |
|-------------|-----|-------------|
| J5 | 1 | Reset |
| | 2 | ICD3 power |
| | 3 | GND |
| | 4 | PGD |
| | 5 | PGC |
| | 6 | NC |

The external MCU/DSP header J6 provides the interface to connect an external MCU/DSP to the BM63 EVB. Figure 2-3 illustrates the external MCU/DSP header J6 and Table 2-4 provides the pin details and description.

FIGURE 2-3: EXTERNAL MCU/DSP HEADER J6



TABLE 2-4: EXTERNAL MCU/DSP HEADER J6

| Part Number | Pin | Description |
|-------------|-----|-------------|
| J6 | 1 | I2S_DR |
| | 2 | UART_RXD |
| | 3 | I2S_RFS |
| | 4 | UART_TXD |
| | 5 | GND |
| | 6 | GND |
| | 7 | I2S_SCLK |
| | 8 | RST_N |
| | 9 | I2S_DT |
| | 10 | RX_IND |
| | 11 | NFC |
| | 12 | TX_IND |

The MIC header JP23 is used for connecting a microphone to the BM63 EVB. Figure 2-4 illustrates the MIC header JP23 and Table 2-5 provides the pin details and description.

FIGURE 2-4: MIC HEADER JP23

| | 0 | 0 | | | |
|---|---|---|--|--|--|
| 1 | 2 | 3 | | | |

TABLE 2-5: MIC HEADER JP23

| Part Number | Pin | Description |
|-------------|-----|-------------|
| JP23 | 1 | MIC_P1 |
| | 2 | AGND |
| | 3 | MIC_N1 |



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Chapter 3. Getting Started

This chapter describes how to establish a Bluetooth connection between the BM63 EVB and a host device. It also demonstrates the process of updating the parameters using various tools.

This chapter includes the following topics:

- 3.1 "Requirements"
- 3.2 "Getting Started with BM63 EVB"
- 3.3 "Application Demonstration"
- 3.4 "Configuring BM63 Module"
- 3.5 "Updating EEPROM Parameters"
- 3.7 "Updating MCU Parameters"

3.1 REQUIREMENTS

The following hardware and software components are required for getting started with the BM63 EVB.

3.1.1 Hardware Requirements

- BM63 EVB
- Bluetooth enabled smartphone:
 - Android[™] device running Android 4.3 or later version
 - iOS: iPhone[®] 4S or later version
- · Windows host PC with USB port
- · Speaker, microphone, or headset
- Micro-USB cable
- MPLAB REAL ICE/MPLAB ICD 3/PICkit[™] 3

3.1.2 Software Requirements

Download the latest firmware and corresponding tools for the following applications from the Microchip web site at: www.microchip.com/BM63.

- User Interface (UI) tool
- DSP tool
- Mass Production EEPROM Tool (MPET)
- · Flash update tool
- Flash code
- EEPROM tool
- MPLAB Integrated Development Environment (MPLAB X IDE)

Note: MPLAB X IDE is available for download from the Microchip web site at: www.microchip.com/mplab/mplab-x-ide.

3.2 GETTING STARTED WITH BM63 EVB

To establish a Bluetooth connection between the BM63 EVB and a host device, perform the following actions:

1. Set switch SW9 to Flash Application mode, see Figure 3-1.





- 2. Connect the speaker line to the amplifier output connector (CN1 and CN2).
- 3. Connect 15V adapter to P2, as illustrated in Figure 3-2.

Note: Do not plug-in the USB cable.

FIGURE 3-2:

USING EVALUATION BOARD



- 4. Figure 3-3 illustrates the various push buttons on the BM63 EVB. To turn the Bluetooth on, long press SW24 (MFB), then LED1 (blue) and LED2 (red) will blink.
- 5. Long press SW40 to enter the pairing mode (depending on the UART command settings from the MCU to the Bluetooth module). LED1 (blue) and the LED2 (red) will blink alternatively to indicate that the BM63 EVB is discoverable.

FIGURE 3-3: SW24 AND SW40



- Turn on the host device Bluetooth (PC or smartphone) and it displays a list of discoverable Bluetooth devices. The BM63 EVB is displayed as "Dual_SPK" or "LE_Dual_SPK", select the device to establish the connection.
- 7. Once the BM63 EVB is connected, LED1 (blue) starts blinking fast. This indicates that the BM63 EVB is in pairing mode.
- When the BM63 EVB is paired with the host device, LED1 (blue) blinks twice at regular intervals. With the default settings, the BM63 module enables Advanced Audio Distribution Profile (A2DP) for audio playback and Audio Video Remote Control Profile (AVRCP) for player control.

3.3 APPLICATION DEMONSTRATION

3.3.1 Speaker Audio Demonstration

In this demonstration, users can stream audios on the BM63 EVB using a host device (PC or smartphone). Perform the following actions for the audio demonstration, see Figure 3-4.

- Establish the connection between the BM63 EVB and a host device, refer to 3.2 "Getting Started with BM63 EVB".
- Once the connection between the BM63 EVB and the host device is established, open the audio source on the host device. Microchip recommends using a media player (for example: Windows[®] Media Player, iTunes[®], and Android[™]).
- 3. Start the audio stream on the media player, then LED1 (blue) and LED2 (red) will blink once at regular intervals.
 - The audio control buttons are used to:
 - Control the audio output volume (long press the VOL+ or VOL- button)
 - Go to the previous track (short press << PRV button)
 - Go to the next track (short press FWD >> button)
 - Start/stop playing the current track (short press **PLAY/PAUSE** button)



FIGURE 3-4: BM63 EVB AUDIO CONTROL BUTTONS AND INTERFACES

3.3.2 HSP/HFP Demonstration

In this demonstration, the user can explore the Headset Profile (HSP) or Hands-Free Profile (HFP) setting to receive an incoming voice call from a paired smartphone. Perform the following steps for demonstration, see Figure 3-4.

- 1. Establish the connection between the BM63 EVB and a host device using the procedure listed in **3.2** "Getting Started with BM63 EVB".
- 2. Connect the speaker to the audio out connector (CN1 and CN2) and a microphone to the MIC input (P6) on the BM63 EVB.
- 3. Initiate a call from another phone to the smartphone, that is paired with the BM63 EVB. The A2DP stream pauses and the ringtone is played on the speaker. LED1 (blue) blinks three times at regular intervals.
- 4. Press the SW24 (MFB) button on the BM63 EVB to accept the incoming call. LED1 (blue) and LED2 (red) will blink three times at regular intervals.

3.4 CONFIGURING BM63 MODULE

3.4.1 UI Tool Configuration

The User Interface (UI) tool is a configuration tool which enables the user to change the BM63 module parameters. To configure the UI parameters, perform the following actions:

1. Open the UI configuration tool and click **OK** to configure the UI parameters, see Figure 3-5.

Note: Download and install the UI tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration UITool_IS206x_012_DualModeSPK1.1_v1.03 is used.



| Welcome to use Mid | crochip Bluetooth UI Setting Tool! |
|--------------------|------------------------------------|
| | |
| | ОК |

2. In the UI configuration tool, click **Load**, see Figure 3-6.

FIGURE 3-6: UI CONFIGURATION TOOL

| Project: | | <u>_</u> | |
|-----------------|---------|-------------------|---|
| IC Package: | IS2062 | <u>*</u> | |
| Customer Versio | on: | | |
| Save | Export. | PICS Generator | ? |
| Load | Edit | Exit | ſ |

3. From the Open window, select the default UI parameter text file (provided with the UI tool) for the BM63 module, and then click **Open**, see Figure 3-7.



FIGURE 3-7: LOADING DEFAULT UI PARAMETERS

4. After loading the UI parameters, select "BM63" from the **IC Package** drop-down list and then click **Edit**, see Figure 3-8.

FIGURE 3-8: EDIT UI PARAMETERS

| – version & Dev | nce – | | | |
|-----------------|-------|------------|-------------------|--|
| Project: | | IS206XGM | _012_DUAL_5_ | |
| IC Package: | | BM63 | • | |
| Customer Versi | ion: | 2016-05-09 | | |
| Save | | Export. | PICS Generator | |
| Load | | Edit | Exit | |

- 5. In the Main Feature dialog, the user can enable/disable the **Supported Profile** and audio line-in function **Button** and set the following parameters, as illustrated in Figure 3-9.
 - a) Select the "UART Command" check box, which allows the module to be controlled by the MCU through the UART interface.
 - b) Select the "Ind.1" check box to enable the external audio amplifier.
 - c) Click Next.



| Supported Profile — | | Lang Dout of | |
|-------------------------------------|--------------|---------------|--------------|
| FP/HSP | A2DP | AVRCP | SPP |
| | | AVRCP Cor | ntroller |
| | | AVRCP Tar | get |
| Button | | | |
| ✓ Btn0(MFB) | Btn1(P0_2) | ✓ Btn2(P2_7) | ✓ Btn3(P0_5) |
| ✓ Btn4(P3_3) | ✓ Btn5(P3_1) | | |
| Function Enable | | | |
| 🗖 Slide Switch | AUX Line In | 🗆 🗆 🗆 🗖 Buzze | er |
| NFC Detect | VART Comma | nd a 🗆 12S | |
| | L RXIND | | |
| | 🔽 Tx IND | | |
| | | | |
| Function GPIO Ass | PO 0 PO / P1 | 5 P0 3 P2 0 | P2 / P3 7 |
| Slide SW | | 0 10_0 12_0 | 12_4 13_1 |
| NEC | | | |
| Ind.1 | | b | |
| Ind.2 | | | |
| D | <u> </u> | ГГ | |
| Buzzer | Г | | |
| Tx IND | | | |
| Buzzer Tx IND CHG/AUX-IN Ind. | | | |
| Tx IND CHG/AUX-IN Ind. | | | |

Note: The audio output will be routed to the speaker if I^2S is not selected.

 The System and Functional Settings dialog with various options (tabs) is displayed to configure the parameters. In the Sys. Setup2 tab, from Indication 1 Setting section, enable External Amplifier Indication, as illustrated in Figure 3-10. Click Help to get more detailed information.

| Button Setup PMU Setup ys. Setup1 Sys. Setup2 Sys. S Name Frag Segment Dual SPK | CODEC Setup Setup3 LED Setup1 LED Setu Modification (32 Char) Help |
|---|---|
| LIS206v 012 DupMedeSDK11 v1 02 UI Defu | Ut Table htt Ultrael IS206v 012 DualMadeSDK11 v102 |
|) | IIT_14DIE.XX - 01100[_12200X_012_DU4INI00E5PK1.1_V1.05 |
| Button Setup PMU Set Sys. Setup1 Sys. Setup2 Sys | tup CODEC Setup BLE Setup s. Setup3 LED Setup1 LED Setup2 Tone Setup |
| | |
| | Help |
| -Indication 1 Setting | |
| Indicate Pin1 Polarity (P1_5) | High Active |
| Audio(SBC) Indication | Disable |
| Voice(SCO) Indication | Disable 🔪 |
| Ring Tone Indication | Disable External audio |
| Incoming Call Indication | Disable - |
| External Amplifier Indication | Enable |
| HF Link Indication | Disable 💌 |
| A2DP Link Indication | Disable |
| Button Event Trigger Indication | Disable |
| -Indication 2 Setting | |
| Indicator Pin2 Polarity (P0_3) | High Active |
| | Disable - |
| Audio(SBC) Indication | |

FIGURE 3-10: ENABLE EXTERNAL AMPLIFIER INDICATION

 In Sys. Setup1 tab, from the UART Setting section, enable Power On by "Power On" Command, see Figure 3-11. The module will power-on by UART command and not by the MFB key.

| Button Setup | F | MU Setup | CODE | C Setup | В | LE Setup |
|---|---|----------------|--|-----------------------------|-----------------|------------|
| Sys. Setup1 | Sys. Setup2 | Sys. Setup3 | LED Setu | ıp1 L | ED Setup2 | Tone Setup |
| Uart Setting Enable HCI UART Baudi CPU Idle Mo Wake Up De | Jart ate ide slay Time | [E [0 [] | inable 1x07: 19200 Disable 30 (0~254; 0 | ✓ ✓ ✓ : disable; u | nit:0.3125 ms) | Help |
| CLIP Name Power On by UART Proto | or Number / "Power On" Cor col Tx Padding | nmand E | inable Enable | - - - | | |
| -NFC Setting NFC Detecti NFC Stable | on Enable Time | [c [2 |)isable 4 (0~254 ur | | | Help |
| Link Quality Se | tting Detection | [0 |)isable | • | | Help |
| User MMI Data | Setting | sable | _ | | | Help |

FIGURE 3-11: UART COMMAND SETTING

8. After setting up the parameters, click **Finish**. A notification is displayed to check the EEPROM size on the system. Click **OK**, see Figure 3-12.

| Button Setup | PMU Setup | COD | EC Setup | B | LE Setup | |
|--|--|--|-----------------------------|-----------|----------|------|
| Sys. Setup1 Sys. Se | tup2 Sys. Set | up3 LED Set | up1 LEI | Setup2 | Tone Se | etup |
| Piezo PWM Frequenc | у | 2700 (5 | 0-20000 unit H | łz) | | |
| Uart Setting | | | | | | |
| Enable HCI Uart | | Enable | - | | Help | |
| UART Baudrate | | 0x03: 115200 | - | | | |
| CPU Idle Model | | Concession in the local division of the loca | | X | | |
| Notific | ation | | | | | |
| Wake Up Delay | ation | | l. | ms) | | |
| Wake Up Delay | ent E2Prom size is 4090 | 6 bytes!! | U | ms) | | |
| Wake Up Delay CLIP Name or I The | ation ent E2Prom size is 4090 Suggested EEPROM m | 6 bytes!! oust be equal to or gra | eater than 24C3. | ms) | | |
| Wake Up Delay CLIP Name or The Power On by "I | ation ent E2Prom size is 409(Suggested EEPROM m | 6 bytes!! nust be equal to or gro | eater than 24C3. | ms) ? | | |
| Vake Up Delay CLIP Name or I Power On by "I UART Protocol | ation ent E2Prom size is 409(Suggested EEPROM m | 6 bytes!! nust be equal to or gro | eater than 24C3. | ms) | | |
| Wake Up Delay CLIP Name or I Power On by "I UART Protocol | ation ent E2Prom size is 409(Suggested EEPROM m | 6 bytes!! oust be equal to or gre | eater than 24C3; | ns) | | [|
| Vake Up Delay CLIP Name or I Power On by "I UART Protocol NFC Setting NFC Detection Enable | ation ent E2Prom size is 409(Suggested EEPROM m | 6 bytes!! nust be equal to or gre Disable | eater than 24C3: | ns) | Help | [|
| Wake Up Delay CLIP Name or Power On by "I UART Protocol NFC Setting NFC Detection Enable | ation ent E2Prom size is 409(Suggested EEPROM m | 6 bytes!! nust be equal to or gro Disable | eater than 24C3. | ns) | Help | C |
| Wake Up Delay CLIP Name or Power On by " UART Protocol NFC Setting NFC Detection Enable NFC Stable Time | ation ent E2Prom size is 4090 Suggested EEPROM m | 6 bytes!! hust be equal to or gro Disable 4 (0~254 u | eater than 24C3; OK | 2 | Help | C |
| Wake Up Delay CLIP Name or Power On by "I UART Protocol NFC Setting NFC Detection Enable NFC Stable Time Link Quality Setting | ation ent E2Prom size is 409(Suggested EEPROM m | 6 bytes!! nust be equal to or gre Disable 4 (0~254 u | eater than 24C3: OK | ns) | Help | E |
| Wake Up Delay CLIP Name or Power On by "I UART Protocol NFC Setting NFC Detection Enable NFC Stable Time Link Quality Setting Link Quality Detection | ation ent E2Prom size is 4090 Suggested EEPROM m | 6 bytes!! nust be equal to or gro Disable 4 (0~254 u Disable | eater than 24C3: OK T | , ns) | Help | C |

FIGURE 3-12: EEPROM NOTIFICATION

9. Click **Save** to save these UI parameters as a .txt file, see Figure 3-13.

| -Version & Device- | 1 | | |
|--------------------|------------|-------------------|---|
| Project: | IS206XGM | _012_DUAL_5_ | |
| IC Package: | BM63 | • | |
| Customer Version: | 2016-05-09 | | |
| | | | |
| Save | Export. | PICS Generator | ? |
| Load | Edit | Exit | Î |

10. From the Save As window, select the file location, and then click **Save**, see Figure 3-14.

FIGURE 3-14: SAVE AS WINDOW

Г

| Version & Devic | Save As | VITool_IS206x_012_DualModeSPK1.1_v1.03_R4 | - 4 ∳ Se | arch UlTool_IS206 | <_012_D |)ua |
|-----------------|---|---|-----------------|-------------------|---------|------|
| Project: | Organize 🔻 New folde | er | | | - | |
| IC Package: | Downloads | Name | Date modified | Туре | Size | |
| Save | ☐ Libraries ☐ Documents J Music ☐ Pictures ☐ Subversion ☐ Videos | | | | | |
| | Computer | | | | | |
| | • • • • | • | | | | - 24 |
| | File name: Save as type: TXT F | ILE(*.TXT) | | | | |
| | A Hide Folders | | | Save | Canc | el |

11. After saving the UI parameters, click Exit.

٦

3.4.2 DSP Tool Configuration

The DSP configuration tool provides the visual interface to configure the DSP parameters for the voice and the audio signal processing functions. To configure the DSP parameters, perform the following actions:

1. Open the DSP tool and a dialog displays with various options (tabs) to configure the parameters, see Figure 3-15.

| Note: | Download and install the DSP tool, which is available on the Microchip web |
|-------|--|
| | site: www.microchip.com/BM63. For this demonstration |
| | DSPTool_IS206x_012_DualModeSPK1.1_v1.03 is used. |

FIGURE 3-15: DSP TOOL SETTINGS

| Main Function | Voice Function Audi | o Function 12S/PC | M | | |
|----------------|----------------------------|--------------------------------|---------------------|---------------------------------|-----|
| DSPTool_ | IS206x_012_DualMo | deSPK1.1_v1.03 D IC Version | SP Configuration To | ol 1.03 nlModeSPK1.1_v1.03 + | |
| Mi | CROCHIP | | | | |
| 創傑科 ISSC Te | 支股份有限公司 chnologies Corp | | | | |
| Lood | | | | DSP Paramet | ter |
| Luad | | | | DSP Defaul | It |

2. In the **Voice Function** tab, set the parameters as illustrated in Figure 3-16.

| CVSD . | Digital | alizer | AEC/ Filter | MIC O |
|------------|-----------------|---------------------------|--|---------------------|
| Encoder ◄ | Noise (F | EQ) (NR) | AES | Gain |
| | CVSD Decoder | Noise eduction (NR) | $] \rightarrow Filter \rightarrow (Sp) Gr$ | AC eaker ain) |
| Filter NR | EQ SpkGain N | MIC Gain/ComfortNoise | AEC/AES | |
| Speaker – | lighPass Filter | Cutoff Freq: 300Hz | • | |
| MIC – High | Pass Filter | Cutoff Freq: 210Hz | • | |
| | | | | |
| | | | | |
| | | | | |
| Load |] | | | DSP Parameter |

FIGURE 3-16: DSP VOICE FUNCTION SETTING

3. In the Audio Function tab, set the parameters as illustrated in Figure 3-17.

| Main Fun | SBC Dec | N Voice | Fun | | Audio Effec | | Equa (EC | 2S/PCM lizer 2) udio Inpu | I (SJ C | DAC beaker dain) | •[[|] | | | |
|--|-------------------------------|--|------|--|-------------------|---|-------------|--|------------------|--------------------------------------|-----------------------|---|------|------------------------------|-------------------|
| Lineln Speak Speak 01 Mute 0x00 -17dB 0xeb | SPK ston er G x x | Gain S nized Ga aain -38dB 0×a2 -14dB 0×ee | in S | d Effect etting -35dB 0×a5 -11dB 0×f1 | EQ X X X | Num of -32dB 0xc2 -8dB 0xf4 | | els [-29dB 0xc5 -5dB 0xf7 | 6 ¥ ¥ ¥ | → C -26dB 0xe2 -2dB 0xfa | Defult X X X | + Gain -23dB 0xe5 -1dB 0xfb | 0×0C | -20dB 0xe8 0dB 0xfc | ж ж ж 16 |
| Lo | ad ve | D | efau | lt.txt | | | | | | | | | D | SP Para DSP De Exit | meter fault |

FIGURE 3-17: DSP AUDIO FUNCTION SETTING
4. Click **Save** to save these DSP parameters as .txt file, see Figure 3-18.

| | BC/AAC Decoder | Audio Effect | $\rightarrow \begin{bmatrix} Equalizer \\ (EQ) \end{bmatrix} \rightarrow \begin{bmatrix} D \\ (Sp \\ G \end{bmatrix}$ | AC eaker ain) | | |
|--------------------|-------------------|---------------|---|---------------------|---------------|---|
| | E2PROM Table | e File: | DOG: 012 DuplMade CBK11 vi | | | |
| | ave in. | Name | | Date modified | Type | |
| Lineln S | Recent Places | Default | | 5/9/2016 9:46 AM | Text Docu | |
| 🗹 Cus Speak | Desktop | | | | | |
| 01 Mute 0×00 | Libraries | | | | × | |
| -17dB Oxeb | Computer | | | | × | |
| | | • | III | | ▶ 6 | |
| | Network | File name: | Default.bd | <u> </u> | Save | |
| l | | Save as type: | TXT Files (*.bd) | | Cancel | |
| · · · | | | | | DSP Parameter | 7 |
| Load | 1 | | | | DSP Default | j |

FIGURE 3-18: SAVING DSP PARAMETERS

5. After saving the DSP parameters, from the notification pop up, click **OK**, see Figure 3-19. Click **Exit** to exit the DSP tool settings.

| Main Function Voice Fu | unction Audio Function 12S/PCM |
|------------------------------|--|
| SBC/AAC Decoder | $ \xrightarrow{\text{Audio}} \begin{array}{c} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $ |
| | Gain |
| | LineIn - Audio Input |
| | |
| Lineln SPK Gain Sou | Ind Effect EQ |
| DS | SPTool_IS206x_012_DualModeSPK1.1_v1.03 |
| 🗷 Customized G | |
| Speaker Gain F 01 is | :\BM6x Tools\DSP tool\DSPTool_IS206x_012_DualModeSPK1.1_v1.03\Default.txt s saved successfully! |
| Mute ≭ -38dE | 20dB = |
| 000 - 0002 | |
| -17dB 革 -14dE 0xeb ጃ 0xee | OK DdB × |
| | 16 |
| | |
| | |
| | |
| | |
| | DSP Parameter |
| LOAD | DSP Default |
| | |

FIGURE 3-19: SAVE NOTIFICATION

3.4.3 MPET Tool Configuration

The MPET tool is used to merge the UI and the DSP parameters and generate a patch file (.ipf) or binary file (.bin). To generate a patch file using the MPET tool, perform the following actions:

- 1. Open the MPET tool and then click **Next** to continue with the configuration settings, see Figure 3-20.
- **Note:** Download and install the MPET tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration MP_V2.1.29.4797 is used.



FIGURE 3-20: MPET TOOL SETTING

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2. Select **UI Patch Only** to merge the UI and the DSP parameters and then click **Next**, as illustrated in Figure 3-21.

Note: For the UI parameter settings, refer to 3.4.1 "UI Tool Configuration", and for the DSP parameter settings, refer to 3.4.2 "DSP Tool Configuration".

| FIGURE 3-21: | MERGE UI AND DSP PARAMETERS |
|--------------|-----------------------------|
|--------------|-----------------------------|

| Type of Merged Output Select EEPROM output against the item in MPBT. | iss |
|---|---|
| | |
| Please choose the file format of merge tool output, the | en dick on Next. |
| Default (Full EEPROM, *.bin) | |
| Select Default to generate full EEPROM binary imag | e for MPBT #500 Write EEPROM. |
| The option is recommended while preparing produc | tion of a whole new model. |
| Customers create a completed EEPROM content by | merging the ISSC default and all |
| related customized UI, RF, PMU, (or Audio) parame | eters. |
| Select UI Patch Only (Customized Of Opdates, "pr) Select UI Patch Only, only the customized UI updat EEPROM Patch. This opton is used while customer is samples which have passed mass-production PCBA | es are outputted for MPBT #550 nodify UI behavior against the test. |
| | |
| | 2 |
| | |

3. Click **Browse** to load the default .bin file (provided with the MPET tool). From the Open window, select the .bin file and then click **Open**, see Figure 3-22.

| Browse ISSC default as a | t i base | | issc | | |
|---|---------------------|----------------------------|-------------------|---------------------|------|
| Please choose the default | t bin file | | Browse | | |
| ∎ Open ⊖ () ♥]] + Computer | r 🕨 New Volume (F:) | BM6x Tools EEPROM tabl | e v 49 | Search EEPROM table | |
| Organize 🔻 New folde | er | | | !≡ ▼ | |
| 🔆 Favorites | Name | ^ | Date modified | Туре | Size |
| Downloads Recent Places Libraries Documents Music Pictures Subversion Videos | E | | 3) 20/2020 SH2 H | | |
| | + ([| | m | a | |
| 👰 Computer | | | | | 1 |

FIGURE 3-22: LOADING DEFAULT BIN FILE

4. The bin file description is displayed, click **Next**, see Figure 3-23.

| 301 | ect latest ISSC Default Browse ISSC default as a base | is |
|-----|--|----|
| | Please choose the default bin file | |
| | F:\BM6x Tools\EEPROM table\IS206X_012_DUALMODESPK1.1_E1.0.0.2_0FCD.t Browse | |
| | BIN file description: Format Version : 4 Solution Name : IS206X_012_DUALMODESPK1.1_E1.0_BETA EEPROM Version : 1.0.0.2 Company Name : ISSC Project Name : IS206X_012_DUALMODESPK1.1_E1.0 TXT Files : IPF Files : | |
| | - | |

FIGURE 3-23: DEFAULT BIN FILE SETTING

5. Click the "+" button to load the UI and the DSP parameters (.txt file) into the MPET tool to merge with the EEPROM table and then click **Next**, as illustrated in Figure 3-24.

| Browse and include the files | rs From Files. stored customized settings | | | is |
|--|--|----------------------------------|--|------------|
| Customized settings in select | ed BIN | | | |
| FileName | | Version | Brief | |
| | | | | |
| | | | | |
| • | III | | 1 | + |
| Merce List | | | O | • |
| FileName 2 | | | | |
| F:\BM6x Tools\UI Tool\ F:\BM6x Tools\DSP tool | JITool_IS206x_012_DualMod \DSPTool_IS206x_012_DualM | eSPK1.1_v1.03_ lodeSPK1.1_v1. | _R4\test_UITool_I 03\test_Default.t | S206 ct |
| | | | | 10 |
| | | | | |
| | | | | • |
| • | III | | | |

FIGURE 3-24: CUSTOMIZED SETTINGS TO MERGE

6. Select an output file path to create the merged EEPROM table (.ipf file), and then click **Next**, see Figure 3-25.

| FIGURE 3-25: | SELECTING OUTPUT FILE NAME AND PAT | Н |
|--------------|------------------------------------|---|
| | | |

| Assign output name and path | iss |
|--|-------------------------|
| Please select output file name and path | 1 |
| F:\BM6x Tools\Beta_MP_V2.1.29.4797\IS206X_012_DUAL_MODES | PK_V1.1.ipf Output File |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | 2 |
| | |

7. Click Generate to generate the EEPROM table (.ipf file), see Figure 3-26.

| FIGURE 3-26: GENEI | RATE EEPROM TABLE |
|--------------------|-------------------|
|--------------------|-------------------|

| Ready to Generate Binary O Double check the selections | Dutput | | isso |
|--|--|---|------|
| Click Generate to continue, c | or click Back if you want to re | view or change setting. | |
| Merge Type: UI Patch Only (Custom Solution (IC): IS206X_012_DUALMOD Output File: F:\BM6x Tools\Beta_MP Merge Files: F:\BM6x Tools\UI Tool\ F:\BM6x Tools\DSP tool | ized UI Update, *.ipf) ESPK1.1_E1.0_BETA 9_V2.1.29.4797\IS206X_012 JITool_IS206x_012_DualMoo \DSPTool_IS206x_012_DualM | _DUAL_MODESPK_V1.1.ipf deSPK1.1_v1.03_R4\test_UITool_IS20 ModeSPK1.1_v1.03\test_Default.txt | * |
| | m | , | * |

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8. The calibration parameters included in the UI patch file can be selected or ignored and then click **Next**, see Figure 3-27.

Note: If the items are selected, the calibration parameters of the . ipf file will over write the parameters in the device.



| Calibration Parameters Check This UI Patch file is included the calibration parameters, please decide to use or ignore the | em. ÍSSC |
|---|-----------------|
| Click the check box, the parameters will be decided by following the UI Patch file. | |
| SYS:RUN-TIME] Device List 1 | |
| SYS:RUN-TIME] Device List 2 | |
| SYS:RUN-TIME] Device List 3 | |
| SYS:RUN-TIME] Device List 4 | |
| [SYS:RUN-TIME] Device List 5 | |
| SYS:RUN-TIME] Device List 6 | |
| SYS:RUN-TIME] Device List 7 | |
| SYS:RUN-TIME] Device List 8 | |
| SYS:RUN-TIME] Device Link priority | |
| SYS:RUN-TIME] Device A2DP Index | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| L | |
| | |
| | |

9. After generating the merged EEPROM table (.ipf file), click **Finish** to exit the wizard, see Figure 3-28.



FIGURE 3-28: MERGED EEPROM TABLE

3.5 UPDATING EEPROM PARAMETERS

Perform the following actions to update the EEPROM parameters:

1. Set switch SW9 to Test mode, see Figure 3-29.

FIGURE 3-29: SWITCH SW9 IN TEST MODE



Connect the BM63 UART Connector (P3) port to a host PC using the micro-USB cable, see Figure 3-30. The default LED behavior in Test mode is: LED1 (blue) and LED2 (red) will be ON.

FIGURE 3-30:

EEPROM PARAMETER SETUP



Note: Download and install the EEPROM tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration EEPROM_Tool_V2.1.29.4800 is used.

3. Open the EEPROM tool and a window displays, see Figure 3-31.

| EEPROM_Tool Ver:2.1.29.4800 | |
|-------------------------------|-------|
| | |
| INTERFACE | |
| COM Port COM7 - | |
| IC/Module Identify MPSE Name: | |
| WRITE EEPROM | |
| File Path | |
| | Write |
| | |
| | |
| | |
| | |
| | Exit |

FIGURE 3-31: EEPROM TOOL

4. Specify the **COM Port** and click **IC/Module Identify**, see Figure 3-32.

| | MICROCHIP |
|--|----------------|
| INTERFACE 1 COM Port COM7 - | 2 |
| IC/Module Identity MPSE Name: IS206X_012_DUALMODES | K1.1_E1.0_BETA |
| WRITE EEPROM | |
| File Path | Write |
| | |
| | Exit |

FIGURE 3-32: EEPROM TOOL SETTINGS

5. Click **Browse** and select the generated patch file (.ipf) to write to the EEPROM parameter table on the BM63 EVB, see Figure 3-33.

Note: The patch file (.ipf) is generated using the MPET tool. For information on generating the patch file, refer to **3.4.3** "**MPET Tool Configuration**".

FIGURE 3-33: LOADING GENERATED PATCH FILE

| | MICROCHI | P |
|------------------------|---|---|
| INTERFACE | æ | |
| COM Port | t COM7 - | |
| IC/Modu | IS206XGM_012_DUAL_SPK_V1.1 IS206X_012_DUALMODESPK1.1_E1.0_BETA | |
| | RPOM . | |
| WRITE EEP | PROM F:\BM6x Tools\Beta_MP_V2.1.29.4797\IS206X_012_DAULMODESPK1.1_FULL_CLS2_I2S(BM) | ⊧ |
| WRITE EEP | PROM F:\BM6x Tools\Beta_MP_V2.1.29.4797\IS206X_012_DAULMODESPK1.1_FULL_CLS2_I2S(BM Write | • |
| WRITE EEP File Path | PROM F:\BM6x Tools\Beta_MP_V2.1.29.4797\IS206X_012_DAULMODESPK1.1_FULL_CLS2_I2S(BM/ Write | · |
| WRITE EEP File Path | PROM F:\BM6x Tools\Beta_MP_V2.1.29.4797\IS206X_012_DAULMODESPK1.1_FULL_CLS2_I2S(BM/ Write | • |
| WRITE EEP File Path | PROM F:\BM6x Tools\Beta_MP_V2.1.29.4797\JS206X_012_DAULMODESPK1.1_FULL_CLS2_J2S(BM Write | 1 |
| WRITE EEP File Path | PROM F:\BM6x Tools\Beta_MP_V2.1.29.4797\IS206X_012_DAULMODESPK1.1_FULL_CLS2_I2S(BM Write | 1 |

 Click Write to program the EEPROM parameters on the BM63 EVB. After programming the EEPROM parameters, a message is displayed. Click OK as illustrated in Figure 3-34.

| | MICROCHIP |
|---|------------------------------|
| INTERFACE COM Port COM7 | |
| IC/Module Identify MPSE Name: IS206XGM_012_0 IS206XGM_012_011 Message | DUAL_SPK_V1.1 |
| Write EEPROM | te Finish |
| File Path F:\BM6x Tools\Beta_MP_ | OK USPK1.1_FULL_CLS2_I2S(BM) |
| | _ |
| | |
| | Exit |

FIGURE 3-34: WRITE EEPROM

7. Click **Exit** and remove the micro-USB cable. Then set switch SW9 to Flash Application mode (see Figure 3-35) and reboot.

FIGURE 3-35: SWITCH SW9 IN FLASH APPLICATION MODE



3.6 UPDATING FLASH CODE

Flash programming is required to update the firmware with a newer version or a specific version. To update the flash code, perform the following actions:

1. Set switch SW9 to Write Flash mode, see Figure 3-36.

FIGURE 3-36: SWITCH SW9 IN WRITE FLASH MODE



Connect the BM63 UART connector (P3) port to a host PC using a micro-USB cable, as illustrated in Figure 3-37. The default LED behavior in Write Flash mode is: LED1 (blue) and LED2 (red) will blink.





Note: Download and install the isbtflash.exe firmware update tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration, flash code Dual Spk V1_1 svn version 6158 is used.

3. Open the isbtflash.exe firmware update tool on a host PC. Specify the COM Port and then click Connect, as illustrated in Figure 3-38.

FIGURE 3-38: ISBTFLASH TOOL



4. Click **Browse** to select the Flash code files (.hex), downloaded from the Microchip web site, see Figure 3-39.

| port COM7 - bau | drate 115200:240 - Banks 16 - FlashID | 1CDA Disconnec | t | |
|---------------------------------------|---|-----------------------|---------------------------------|----------------------|
| Flash Update | | _ | | |
| Images Prepare: Load all im | ages | - Browse | | |
| Open | A REAL PROPERTY AND INCOME. | and Average | - | _ |
| | | | | 10.1100.0 |
| S S S S S S S S S S S S S S S S S S S | bis Firmware Dual Spk VI_1 svn version 6158 | • | * Search Du | al Spk VI_I svn vers |
| Organize 🔻 🛛 New folde | er | | | = • 🔳 (|
| ☆ Favorites | Name | Date modified | Туре | Size |
| Nesktop | BT5506_SHS_FLASH.H00 | 5/5/2016 11:42 AM | H00 File | 181 KB |
| \rm Downloads | BT5506_SHS_FLASH.H01 | 5/5/2016 11:42 AM | H01 File | 181 KB |
| 📃 Recent Places | BT5506_SHS_FLASH.H02 | 5/5/2016 11:42 AM | H02 File | 161 KB |
| | BT5506_SHS_FLASH.H03 | 5/5/2016 11:42 AM | H03 File | 183 KB |
| ز Libraries | BT5506_SHS_FLASH.H04 | 5/5/2016 11:42 AM | H04 File | 156 KB |
| Documents | BT5506_SHS_FLASH.H05 | 5/5/2016 11:42 AM | H05 File | 150 KB |
| 🁌 Music | BT5506_SHS_FLASH.H06 | 5/5/2016 11:42 AM | H06 File | 172 KB |
| Pictures | BT5506_SHS_FLASH.H07 | 5/5/2016 11:42 AM | H07 File | 181 KB |
| Subversion | BT5506_SHS_FLASH.H08 | 5/5/2016 11:42 AM | H08 File | 171 KB |
| Videos | BT5506_SHS_FLASH.H09 | 5/5/2016 11:42 AM | H09 File | 167 KB |
| | BT5506_SHS_FLASH.H10 | 5/5/2016 11:42 AM | H10 File | 45 KB |
| 🖳 Computer | BT5506_SHS_FLASH.H11 | 5/5/2016 11:42 AM | H11 File | 105 KB |
| | BT5506_SHS_FLASH.H12 | 5/5/2016 11:42 AM | H12 File | 112 KB |
| 📬 Network | BT5506_SHS_FLASH.H13 | 5/5/2016 11:42 AM | H13 File | 45 KB |
| | BT5506_SHS_FLASH.H14 | 5/5/2016 11:42 AM | H14 File | 45 KB |
| | BT5506_SHS_FLASH.H15 | 5/5/2016 11:42 AM | H15 File | 45 KB |
| | | | | |
| File n | ame: "BT5506_SHS_FLASH.H15" "BT5506_SHS_FLASH | I.H00" "BT5506_SHS_FL | Firmware In | hage and DSP code |

FIGURE 3-39: LOADING FLASH CODE FILES

5. Click **Update** to write the Flash code on the BM63 module, Figure 3-40.

Note: Alternately, the user can click **Burst Update** to write the Flash code which is faster than **Update**.

| Access Port | t | | | | | |
|-------------|-----------------------|------------|---------|------------|------|------------|
| port COM | 17 - baudrate | 115200:240 | Banks 1 | 16 FlashID | 1CDA | Disconnect |
| | | | | | | |
| Flash Upda | te | | | | | |
| Images Pr | epare: Load all image | s | | | • | Browse |
| | | | | | | 2.0 |

FIGURE 3-40: UPDATING FLASH CODE

6. After the Flash code update, click **Disconnect** and then remove the micro-USB cable. Set SW9 to Flash Application mode (see Figure 3-35) and then reboot.

3.7 UPDATING MCU PARAMETERS

The on-board MCU is pre-programmed for dual-mode, and the MCU parameters needs to be changed for other applications. To update the MCU parameters, perform these actions:

- 1. Plug the 15V DC adapter into the P2 jack to supplying power to the MCU.
- 2. Connect the MPLAB REAL ICE/MPLAB ICD 3/PICkit 3 to ICSP header J5 and then connect it to a host PC using the USB cable.

Note: Download and install the MPLAB X IDE tool, which is available on the Microchip web site: www.microchip.com/mplab/mplab-x-ide.

3. Ensure that a jumper on JP33 is connected. Open the MPLAB X IDE tool and a window displays, see Figure 3-41.

| Select Dev | ice and Tool | | | | Results | | |
|------------|---------------------|--------------------------------|-----|---------|-----------------------|-------------------|-----------|
| Family: | All Families | | • | | | | |
| Device: | PIC18F85J10 | | | Åpply | Checksu Pass Cou | an: 7ABE nt: 4 | |
| Tool: | ICD 3 S.No : JI | T153110575 | • | Connect | Fail Cou Total Cou | nt: 1 nt: 5 | |
| 2 | Program | Erese | R R | ead | Venify | Ч в | ank Check |
| Source: P | lease click on brow | /se button to import a hex fil | le | | | | Browse |
| SQTP: | lease click on brow | /se button to import SQTP fi | le | | | | Browse |
| | | | | | | | ± Less |
| tput | 12:24:51+0800- Cc | ompleted loading IPE. | | | | | |

FIGURE 3-41: MPLAB[®] X IDE TOOL

4. From Settings, select "Advanced Mode", see Figure 3-42.

| St. 1. | | | | | | Demilie | | |
|--------|--------|----------------------|------------------------------|------|---------|----------|-------------|-------------|
| 2ete | 1 | Advanced Mo | de | - | | Results | | |
| Far | * | crase All Defor | | • | | | [autor | |
| De | 1 | Auto Downloa | d Firmware | - | Apply | Check | sum: 7ABE | |
| | | Wanual Down | load Firmware | | | Pass G | ount: 4 | |
| To | 0 | Hold in Reset | | •] | Connect | Total Co | ount 5 | |
| | | Release from r | Reset | | | 10M C | 5 (unit. [5 | |
| | | Communicatio | on | | | | 1 | |
| | 3 | Program | Erase | 1 | Read | Verify | 2 | Blank Check |
| | | | | | | | Л | |
| Sou | rce: 1 | Please click on brow | wse button to import a hex i | file | | | | Brows |
| SQ | TP: 1 | Please click on brow | we button to import SQTP | file | | | | Brows |
| | | | | | | | | ± Less |
| | | | | | | | | |
| tput | 1 | | | | | | | |
| 16-01 | -14T | 12:24:51+0800- C | completed loading IPE. | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

FIGURE 3-42: ADVANCED MODE SETTINGS

5. The MPLAB X IDE tool displays a window with various options (tabs) to configure the parameters. Click **Power** tab, and then enable **Power Target Current from Tool**, as illustrated in Figure 3-43.

| View Settings Help | Voltage Setting | | | | |
|---------------------------------|-----------------|-----------------------------|----------|-----|------------------------|
| Operate | | | | | |
| e Power | VDD: | 3.25 | •] | | |
| | VPP: | 3 25 | * | N/A | |
| Memory | VDD Nom: | 3.25 | * | N/A | |
| | VDD App: | 3.25 | + | N/A | |
| Environment | | | | | |
| • SQTP | | | | | Reset Voltages |
| Production Mode | ICSP Option | is oltage Program | | | |
| Settings | Fower Status | Target Circuit fr | rom Tool | | ☐ High ∀oltage on MCLR |
| Log out | | | | | |

FIGURE 3-43: POWER TARGET CURRENT FROM TOOL

6. Select **Operate** tab, click **Connect** to connect with the MPLAB ICD3, as illustrated in Figure 3-44. Click **Browse** to load the dual-mode PIC18 code, and then click **Program** to program it.

| e View Settings Help | | |
|----------------------|--|--|
| | Select Device and Tool | Results |
| 😂 Operate | Family: All Families 🔹 | CP=OFF Checksum: 7ABE |
| | Device: PIC18F85J10 - Apply | Pass Count: 4 |
| • Power | Tool: ICD 3 S.No : IIT153110575 | Fail Count: 1 2 Total Count: 5 |
| Memory | 4 Program Z Erace Reed | Venty Elank Check |
| | Source: Please click on browse button to import a hex file | 3 Browse |
| • Environment | SQTP: Please click on browse button to import SQTP file | Browse |
| | | |
| • SQTP | Output | |
| | 2016-01-14T12:24:51+0800- Completed loading IPE. | |
| • Production Mode | | |
| | | |
| Settings | | |
| | | |
| | | |
| Taxant | | |

FIGURE 3-44: DEVICE AND TOOL SETTING

NOTES:



BM63 EVB USER'S GUIDE

Appendix A. Schematics

A.1 REFERENCE SCHEMATICS





















Schematics



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FIGURE A-11: DSP/MCU INTERFACE

| TP6 | DSP_IC_N | ->>DSP IC N |
|------|------------|-------------|
| TP7 | DSP_SLEEP | |
| TP8 | DSP_MUTE | |
| TP9 | DSP_IRQ_N | |
| TP10 | DSP_PRUI_N | |
| TP11 | DSP_P1_3 | SDSP P1 3 |
| TP12 | USP_P1_2 | Spep pt 2 |







FIGURE A-13: SPEAKER OUTPUT





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Schematics



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NOTES:

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