# SPKCommandSetTool User Guide **v1.41**

# Contents

# 1. Introduction

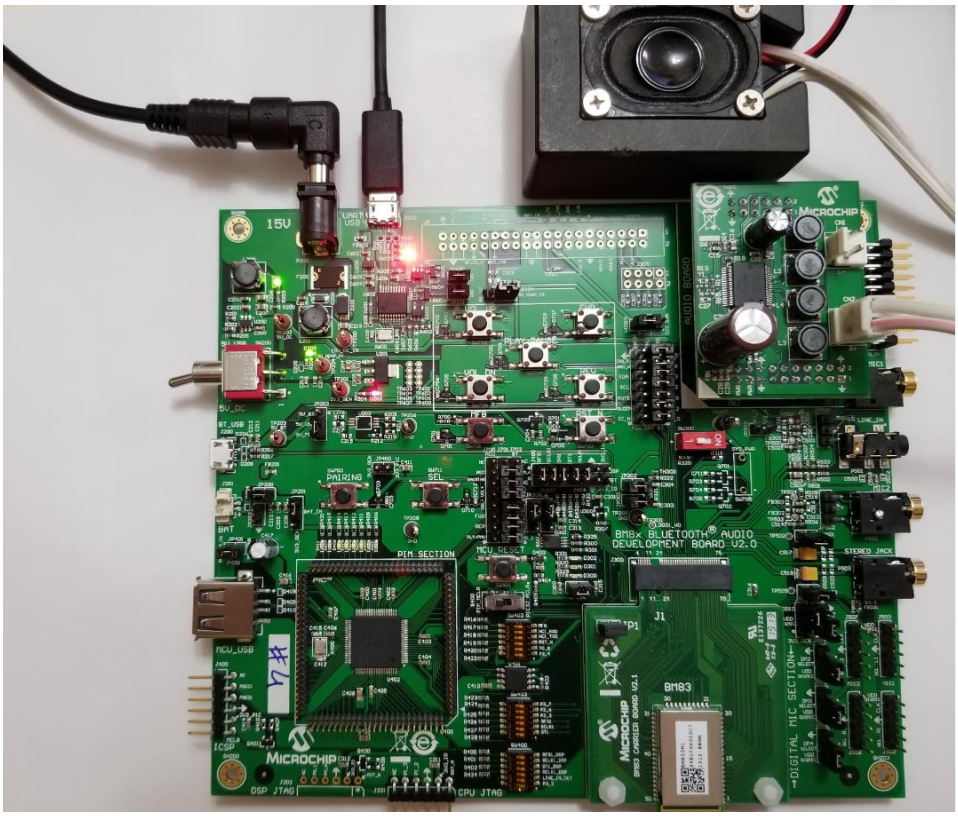
For SPK solutions, Host MCU is the commander and defines most behaviors of a product. How external MCU cooperates with these solutions well will determine the product is good or not. In order to speed up development processing and reduce debugging time, MCHP provides a windows Host MCU emulator tool, SPKCommandSetTool, to simulate MCU's operation. The emulator provides interfaces to send pre-defined commands and indicate status. Developers may understand commands and behaviors easily and have a comparison for debugging problems.

## 2. Hardware Environment

Firstly, please follow the “BM83 EVB User Guide” to set to your desired mode. SPKCommandSet tool require UART communication, please ensure you enable “UART port” in the Config GUI Tools and then load into BM83. Simply way is to load the “Host mode demo package” so it already enable BM83’s UART port. Please plug the USB cable to “UART USB” to connect to your PC and so SPKCommandSet tool can communicate to BM83.

### 2.1 Connections:

If you require external codec, please provide 15V to the EVB and so SW200 to go to “5V DC” ( same as the below connection).




On the other hand, if you don’t require external codec, remove the 15V input, set SW200 to “5V USB” and so the USB cable will supply voltage and provide UART communication.

# 3. GUI Operate Description

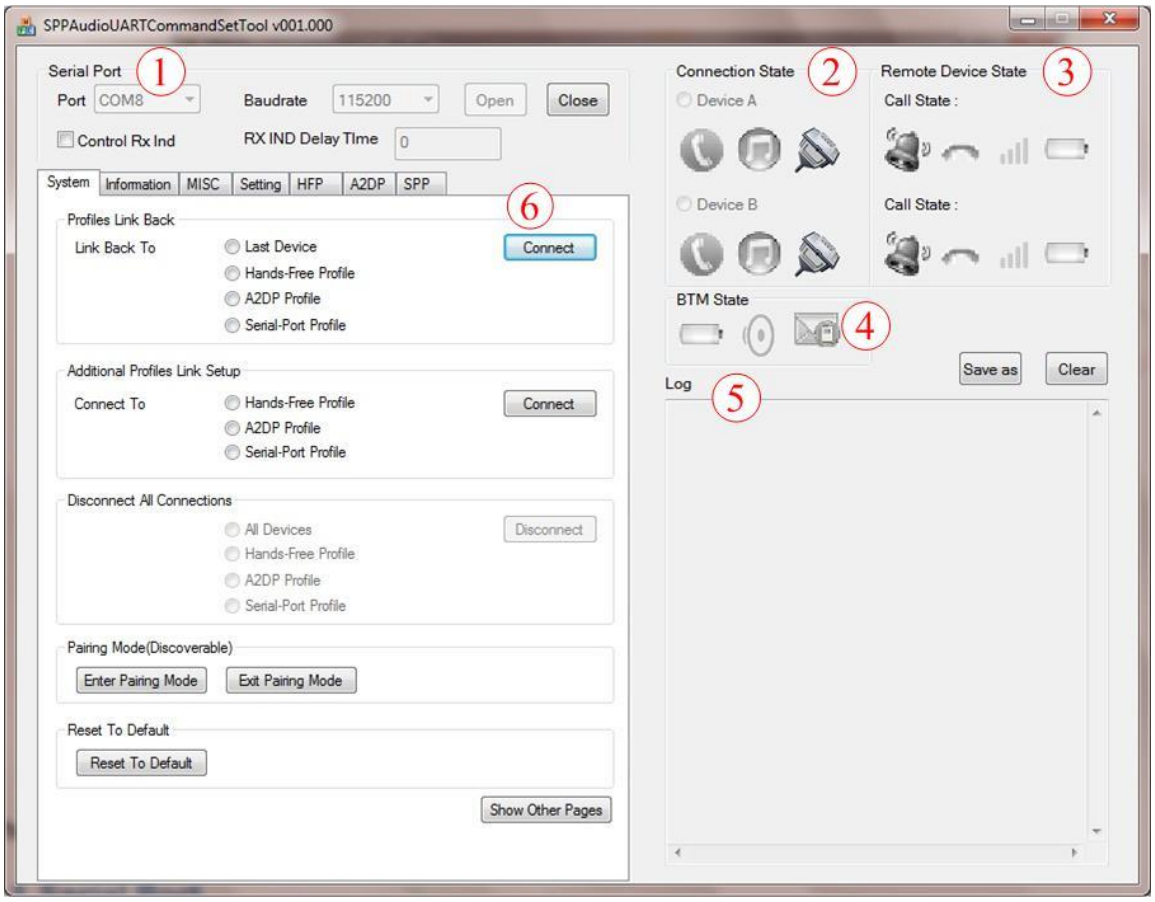



Fig. 3-1

The items in Fig. 3-1 are corresponding to the following sections.

## 3.1 Serial Port

Before communicating with BTM, users must establish a channel. For this case, the channel is UART connection. It describes how to open and close UART connection as below.

### 3.1.1 Open UART connection

① Select the specific **COM Port**
② Select the specific **BaudRate**
③ Click **"Open"** to create the UART connection.

If the UART connection was connected successfully, this emulator will try to get the version of firmware and UART, and show the information in the **Serial Port** group.

### 3.1.2 Close UART connection

① Click "**Close**" to disconnect the UART connection with the BTM.

## 3.2 Connection State

The emulator parses the received events to indicate connection state by icons.

① Hands-Free status: Indicate whether the Hands-Free connection exists between the BTM and the remote devices or not.

-  : Hands-free connection exists.
-  : Hands-free connection doesn't exist.

② A2DP status: Indicate whether the A2DP connection exists between the BTM and the remote devices or not.

-  : A2DP connection exists.
-  : A2DP connection doesn't exist.

③ SPP status: Display whether the SPP connection exists between BTM and the remote devices or not.

-  : SPP connection exists.
-  : SPP connection doesn't exist.

## 3.3 Remote Device State

The emulator parses the received events to indicate the state of remote device by icons.

① Call Status: Indicate the call status from remote device by icons and text.

-  (No call): There is no call on the remote device.
-  (Incoming call): The remote device has an incoming call.
-  (Outgoing call): The remote device has an outgoing call.
-  (Call active): The remote device has an ongoing call (talking).
-  (Voice dial): The voice dial function is triggered on the remote device.

② Missed call status: The missed call means an incoming call was missed or rejected.

-  : There is no missed call on the remote device.
-  : The remote device has the missed calls.

③ GSM signal strength: Display the current signal strength of GSM base station.

-  : There is no hands-free connection between the remote device and the BTM. Therefore, BTM can't update signal strength.
-  : The service is not available on the remote device. It means the remote device can't get any service from base station.
-  : The signal strength is low on the remote device.
-  : The signal strength is normal on the remote device.

-  : The signal strength is high on the remote device.
-  : The signal strength is full on the remote device.

④ Battery level of the remote device: Indicate the current battery level of remote device. Below are icons of battery level for remote device:

-  : There is no hands-free connection between the remote device and the BTM. Therefore, BTM can't update battery level on the remote device.
-  : The battery level of the remote device is too low.
-  : The battery level of the remote device is low.
-  : The battery level of the remote device is normal.
-  : The battery level of the remote device is high.
-  : The battery level of the remote device is full.

## 3.4 BTM State

The emulator parses the received events to indicate BTM state by icons.

① Battery level: Indicate the current battery level of BTM. Below are icons of battery level for BTM:

-  : The initial icon of battery level for the BTM. When the emulator doesn't get any battery level from the BTM, this icon was displayed.
-  : The battery level of the BTM is too low.
-  : The battery level of the BTM is low.
-  : The battery level of the BTM is normal.
-  : The battery level of the BTM is high.
-  : The battery level of the BTM is full.

If the BTM supports charger function and the adapter is plugged-in, the BTM will notify charging state to the emulator. Below are icons of charge state for BTM:

-  : Charging error.
-  : The BTM is in charging state.
-  : Charging complete.

② State of SMS (Short message service): Indicate whether the remote device has new SMS or not:

-  : There is no new SMS on the remote device.
-  : The remote device has new SMS.

③ Volume level: Indicate the volume level of the BTM. There is sixteen levels that from 0 to 15. Below is the icon:

-  : The number of volume level is displayed in the lower right.

## 3.5 Log Window

All of commands and events are displayed in Log Window and saved as a log file automatically. The "**Clear**" button clears all contents of Log Window and the "Save" button saves all contents..

## 3.6 Function Pages

### 3.6.1 System Page

Manipulate important connection and system function.

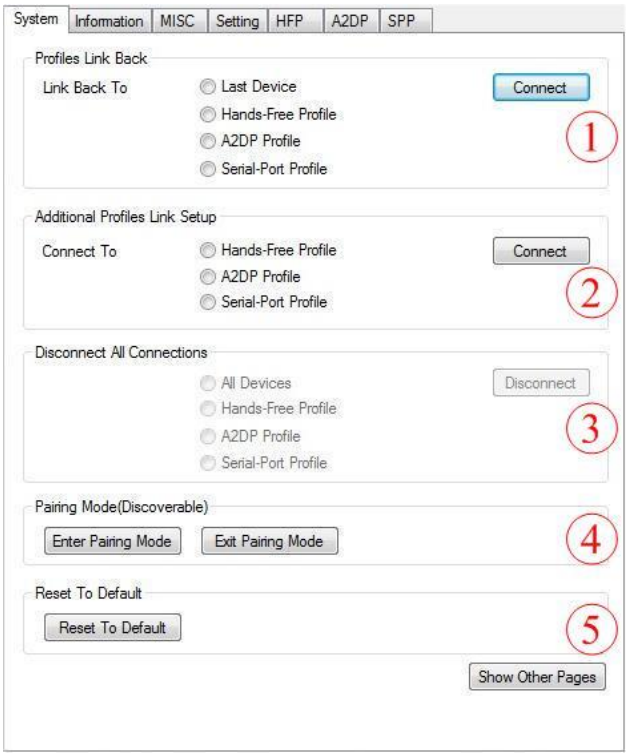



Fig. 3-2-1

- *Profiles Link Back*

  Link back the specific profile connection in the standby state.

  - Choose the specific connection. The items are “Last Device” 、 ”Hands-Free Profile” 、 ”A2DP” and ”Serial-Port Profile”. If choosing “Last Device”, the last device supported hands-free profile then established hands-free profile connection, otherwise establish A2DP connection
  - Press “Connect” to create the profile connection.

- *Additional Profiles Link Setup*

  Establish the specific profile connection in state of connections existed.

  - Choose the specific profiles: ”Hands-Free Profile” 、 ”A2DP” and ”Serial-Port Profile”.
  - Press “Connect” to create the profile connection.

- *Disconnect All Connection*

  Disconnect all existed profile connections or a specific profile connection.

  - Choose the specific connection. The items are “All Devices” 、 ”Hands-Free Profile” 、 ”A2DP Profile” and ”Serial-Port Profile”.
  - Press “Disconnect” to disconnect the profile connections.

- *Pairing Mode (Discoverable)*
  - Enter Pairing Mode: Make BTM enter pairing state.
  - Exit Pairing Mode: Make BTM exit pairing state to standby mode.

- *Reset To Default*

  Make BTM clear record of paired devices.

### 3.6.2 Information Page

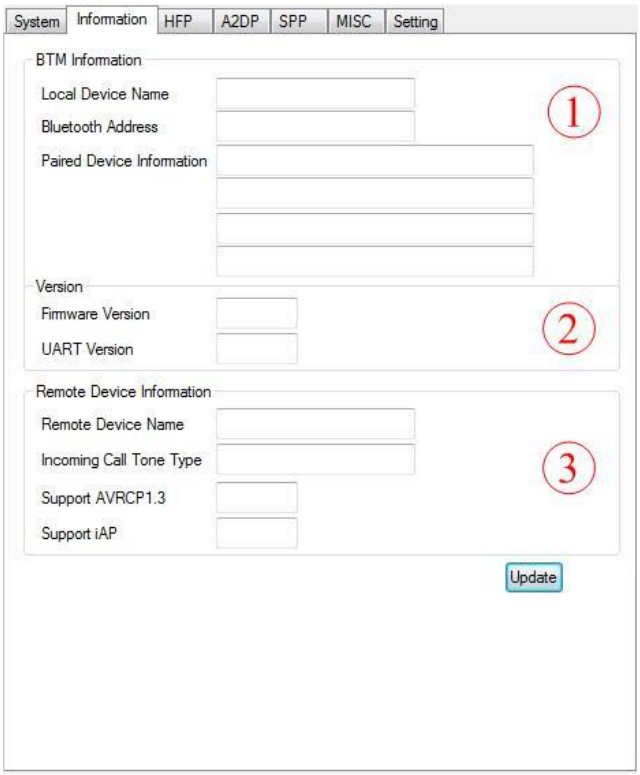



Fig. 3-2-2

The items in figure 3-2-2 are corresponding to the following sub-sections.

- *Local Device Name*

  Query the friendly name of BTM.

- *Bluetooth Address*

  Query the Bluetooth address of BTM.

- *Paired Record Information*

  Query the paired devices of BTM.

- *Firmware Version*

  Query the version of firmware of BTM.

- *UART Version*

Query the version of command set of BTM

- *Remote Device Information*

The information of remote device is displayed. .

- *Remote Device Name*

Query the friendly name of remote device.

- *Incoming Call Tone Type*

The incoming call tone type of remote device, in-band and out-band ring tone.

- *Support AVRCP1.3*

Check if the remote device supports AVRCP 1.3.

- *Support iAP*

Check if the remote device supports iAP protocol.

### 3.6.3 HFP Page

Provide hands-free profile control.

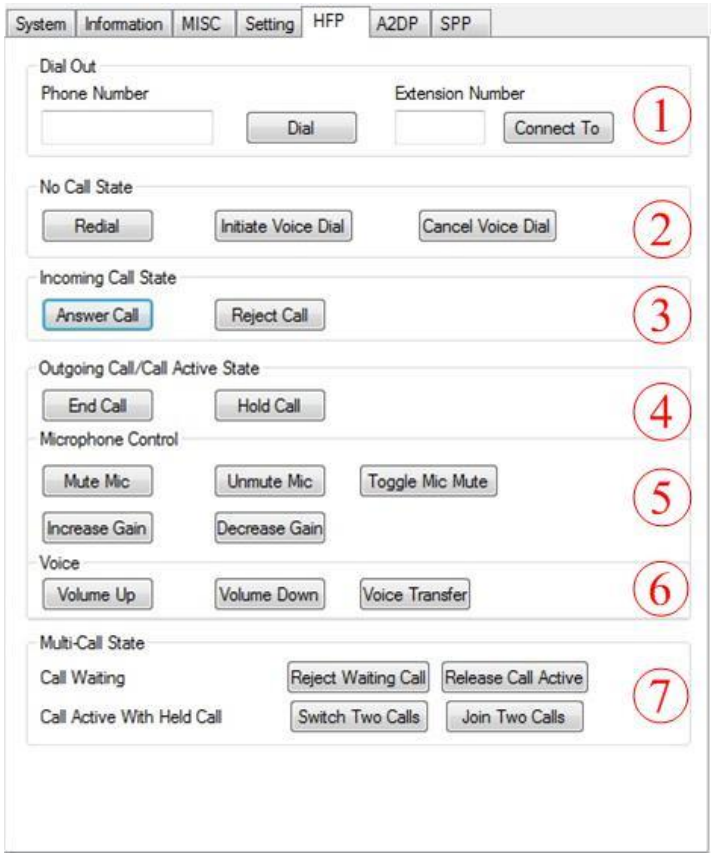



Fig. 3-2-3

The items in Fig. 3-2-3 are corresponding to the following sub-sections.

- *Connection*

Disconnect hands-free profile (HFP) connection.

① **Disconnect**: Ask BTM release the HFP connection.

- *Dial Out*

The emulator provides the dial-out feature with optional extension number. Users can call out the phone number which they want.

- *Make an outgoing call Command*

① Fill in "**Phone Number**" that you are going to dial.
② Click "**Dial**" to dial this number.

- *Make an extension call Command*

Before the extension call is connected to, the previous call status should be an active call on remote device.

① Fill in "**Extension number**" that you are going to connect to.
② Click "**Connect to**" to connect the user to this number.

- *No Call State*

In no call state, users can do below actions:

① **Redial**: Redial last dial-out number. Be used in standby mode**.**
② **Initial Voice Dial**: Initial voice dial function. Be used in standby mode.
③ **Cancel Voice Dial**: Cancel voice dial. Be used in voice dial mode.

- *Incoming Call State*

In incoming call state, users can do below actions:

① **Answer Call**: Answer an incoming call. Be used in incoming call mode.
② **Reject Call**: Reject an incoming call. Be used in incoming call and outgoing call mode.

- *Outgoing Call / Call Active State*

In outgoing call state or call active state, users can do below actions:

① **End Call**: End current active call. Be used in call active and multiple calls mode
② **Hold Call:** Hold current active call. Be used in call active.

- *Microphone Control*

In call active state, users can make microphone control as below:

① **Mute Mic**: Mute microphone. Be used in call active and multiple calls mode.
② **Unmute Mic**: Un-mute microphone. Be used in call active and multiple calls mode.
③ **Toggle Mic Mute**: If the microphone is mute, un-mute it. Otherwise mute it. Be used in call active and multiple calls mode**.**
④ **Increase Gain**: Increase microphone gain.
⑤ **Decrease Gain**: Decrease microphone gain.

- *Voice*

In call active state, users can do below actions regarding of voice control:

① **Voice Transfer**: Switch voice between BTM and remote device. Be used in call active mode.
② **Volume Up**: Increase one voice gain level.
③ **Volume Down**: Decrease one voice gain level.

- *Multi Call State*

In multiple call state, users can do below actions:

① **Switch Two Calls**: Hold active call and answer second incoming call or switch to held call. Be used in call active and multiple calls mode.
② **Join Two Calls**: Conference call. Be used in call active and multiple calls mode.
③ **Release Held or Waiting Call**: Reject second incoming call or end the held call.
④ **Release Active Call**: End the active call and answer second incoming call.

### 3.6.4 A2DP Page

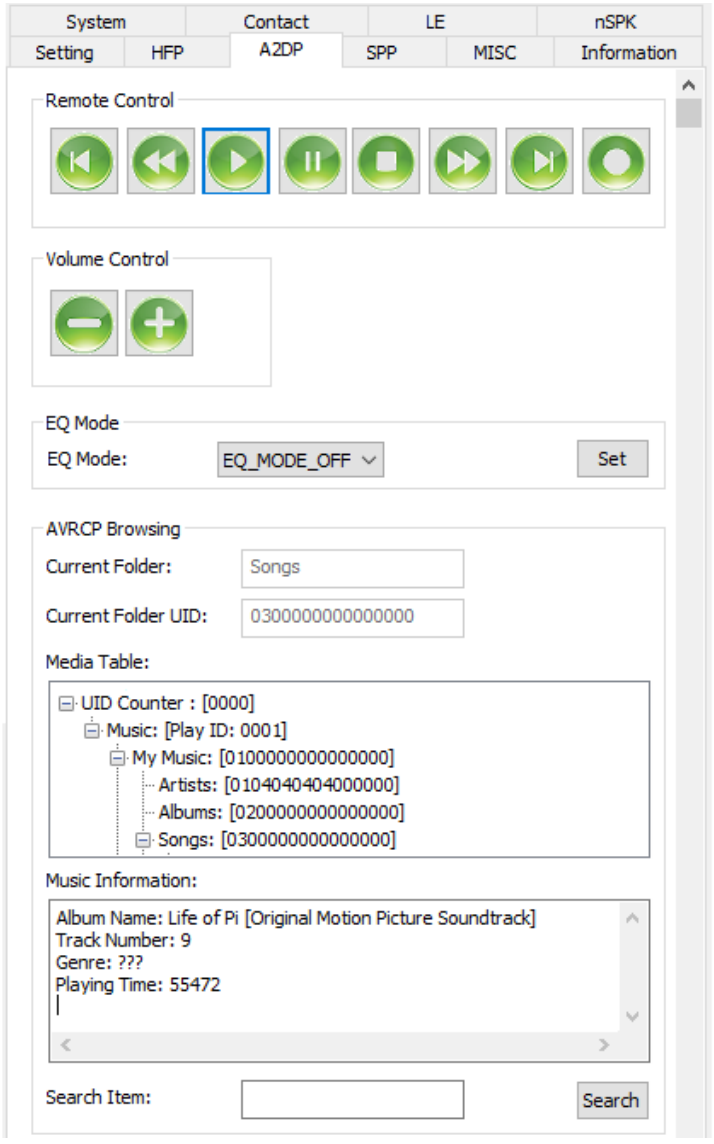



Fig. 3-2-4

The items in Fig. 3-2-4 are corresponding to the following sub-sections.

- *Connection*

Disconnect A2DP connection.
① **Disconnect**: Ask BTM release the A2DP connection.

- *Remote Control*

The audio remote control is supported as below:

①  : Play music.
②  : Pause music.
③  : Stop music.
④  : Fast Forward the song repetitively until the user click "  ".
⑤  : Rewind the song repetitively until the user click "  ".
⑥  : Next song.
⑦  : Previous song.
⑧  : Stop the actions of  and  .

- *Volume Control*

In playing music state, users can adjust volume level.

①  : Increase one audio gain level.
②  : Decrease one audio gain level.

- *EQ Mode*

In playing music state, users can adjust EQ mode.

- *AVRCP Browsing*

When the AVRCP connection is established, the user can ask the media information from the remote device.
① Current Folder: Display current folder name.
② Current Folder UID: Display current folder UID.

- *Media Table*

Trigger AVRCP Browsing command to the remote device by right click, and the media information of remote device will show in this section.

- Get Media List: To retrieve a listing of the contents of a folder with media player list scope type.
- Get Total Number of Media Player List: To retrieve the number of items in a folder with media player list scope type.
- Set Browsed Player: To control to which player browsing commands should be routed.
- Set Addressed Player: To inform the remote device of which media player the controller wishes to control.
- Get Folder List: To retrieve a listing of the contents of a folder with media player virtual filesystem scope type.
- Get Total Number of File System: To retrieve the number of items in a folder with media player virtual filesystem scope type.
- Get Total Number of Search: To retrieve the number of items in a folder with search scope type.

- Get Total Number of Now Playing: To retrieve the number of items in a folder with now playing scope type.
- Folder Up: To navigate the virtual filesystem. Allows the controller to navigate one level up in the virtual filesystem.
- Enter Folder: To navigate the virtual filesystem. Allows the controller to navigate one level down in the virtual filesystem.
- Get Folder List (Filesystem): To retrieve a listing of the contents of a folder with media player virtual filesystem scope type.
- Get Folder List (search): To retrieve a listing of the contents of a folder with search scope type.
- Get Folder List (NowPlayingList): To retrieve a listing of the contents of a folder with now playing scope type.
- Add to Now Playing (Filesystem): To retrieve a listing of the contents of a folder with media player virtual filesystem scope type.
- Add to Now Playing (Search): To retrieve a listing of the contents of a folder with search scope type.
- Add to Now Playing (NowPlaying): To retrieve a listing of the contents of a folder with now playing scope type.
- Play (Filesystem): To start playing an item indicated by the UID with media player virtual filesystem scope type.
- Play (Search): To start playing an item indicated by the UID with search scope type.
- Play (NowPlaying): To start playing an item indicated by the UID with now playing scope type.
- Get Media Info. (Filesystem): To retrieve the metadata attributes for a particular media element item or folder item with media player virtual filesystem scope type.
- Get Media Info. (Search): To retrieve the metadata attributes for a particular media element item or folder item with search scope type.
- Get Media Info. (NowPlaying): To retrieve the metadata attributes for a particular media element item or folder item with now playing scope type.

- ***Music Information***

Show the information of song.

- ***Search***

① Type the search string in the text field.
② Click "**Search**" to perform search functionality.

### 3.6.5 SPP Page

When iAP/SPP connection exists, the data can be transmitted through it.

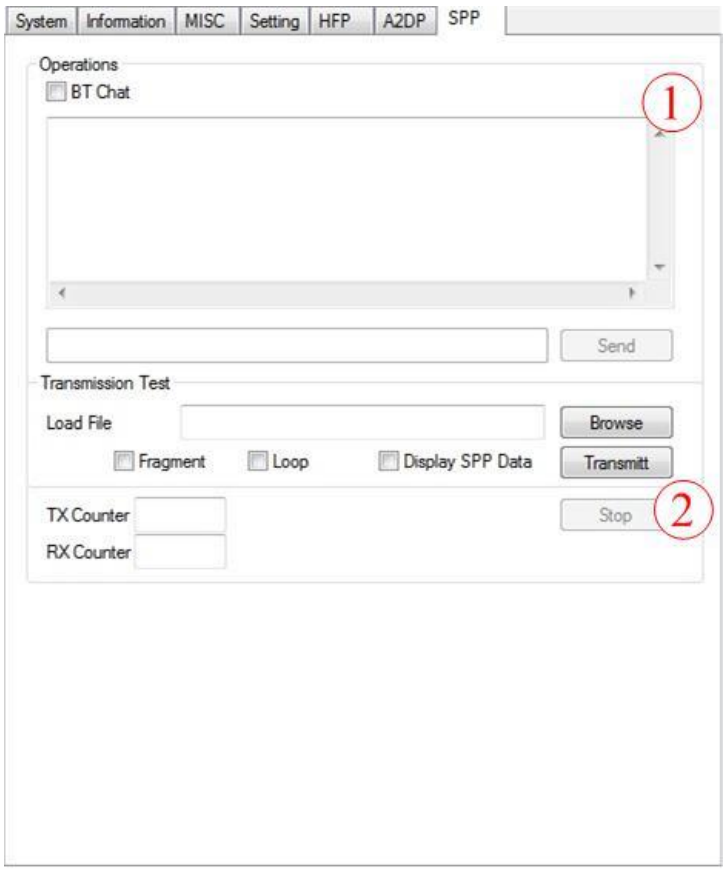



Fig. 3-2-5

The items in Fig. 3-2-5 are corresponding to the following sub-sections.

- *Connection*

Disconnect SPP/iAP connection.

① **Disconnect**: Ask BTM release the SPP/iAP connection.

- *Operations*

Take a chat with remote device which the App was installed.

① Check "**BT Chat**" to enable chat function.
② Type a message in the text field.
③ Click "**Send**" to transmit the message to the remote device.

- *Transmission Test*

① Click "**Browse**" to select a .txt file
② Click "**Transmit**" to transmit the content.

- **Tx**: Count the byte number of transmitted data to BTM.
- **Rx**: Count the byte number of received data from BTM.
- **Display SPP Data:** Display SPP data transmission on a log window.
- **Loop:** Transmit SPP data continuously.
- **Fragment:** Split a SPP packet as many SPP packets

### 3.6.6 MISC Page

The emulator provides some system functions in this page.

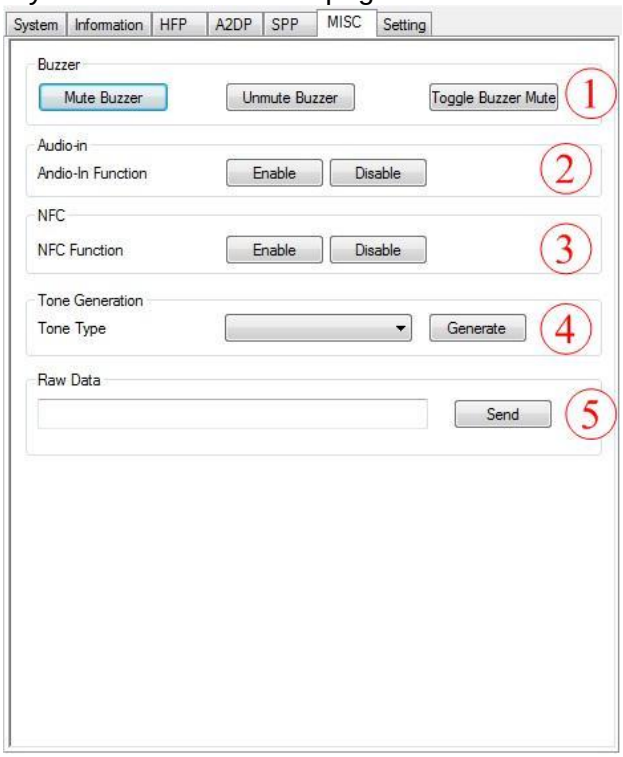



Fig. 3-2-6

The items in Fig. 3-2-6 are corresponding to the following sub-sections.

- *Buzzer*

① **Mute Buzzer**: Buzzer OFF.
② **Un-mute Buzzer**: Buzzer ON.
③ **Toggle Buzzer Mute**: Buzzer ON/OFF toggle.

- *Audio-In Function*

Notify BTM that MCU detect the external audio AUX is plugged-in.

① Click "**Enable**" or "**Disable**" to control audio-in function ON/OFF.

- *NFC Function*

Notify BTM that MCU detect the NFC trigger event.

① Click "**Enable**" or "**Disable**" to control NFC function is triggered.

- *Tone Generation Function*

Ask BTM to generate the specific tone.

① Select an item in the "**Tone Type**" list.
② Click "**Send**" to let the BTM generate the selected tone.

- *Raw Data Function*

Send Raw-Data.

① Type the data in the text field.
② Click “**Send**” to transmit specific data.

### 3.6.7 Setting Page

Set basic configurations of BTM.

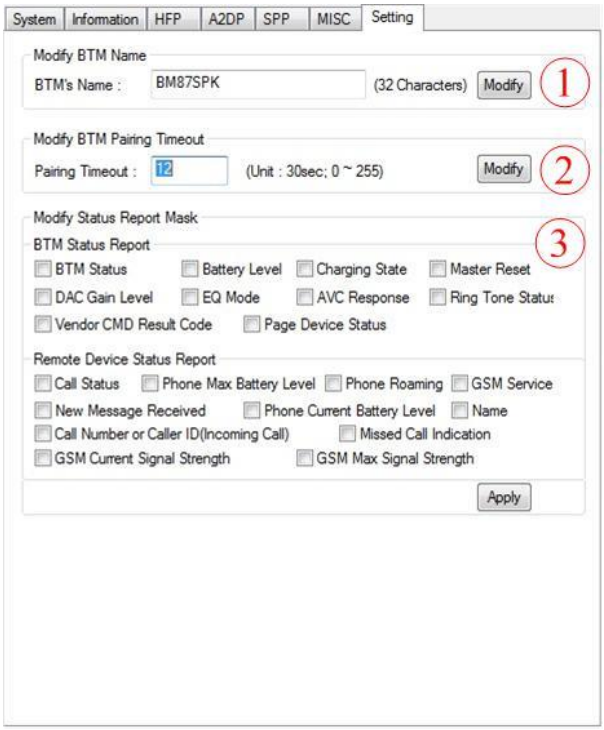



Fig. 3-2-7

The items in Fig. 3-2-7 are corresponding to the following sub-sections.

- *Modify BTM Name*

① Fill in the BTM’s name.
② Click “**Modify**” to modify the BTM’s name

- *Modify BTM Pairing Timeout*

Pairing timeout is a timer to exit pairing mode for BTM if no remote device connect to it

① Fill in the value of pairing timeout.
② Click “**Modify**” to change the value of pairing timeout.

- *Modify Status Report Mask*

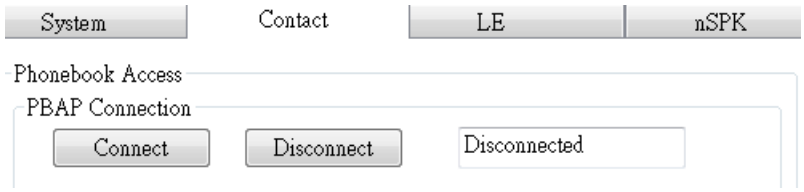
To mask some status report events that MCU doesn’t care.

① Check the status report event that would like to filter out.
② Click “**Modify**” to let the BTM filter these selected status report event.

### 3.6.8 Contact Page

Fetch the contact from smart phones.

- *PBAP Connection*

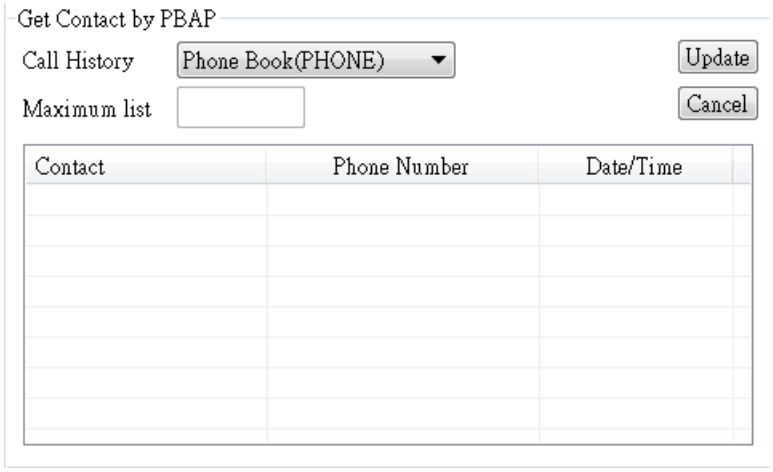



To establish or terminate PBAP connection.

① **Connect:** Establish the PBAP connection
② **Disconnect:** Terminate PBAP connection

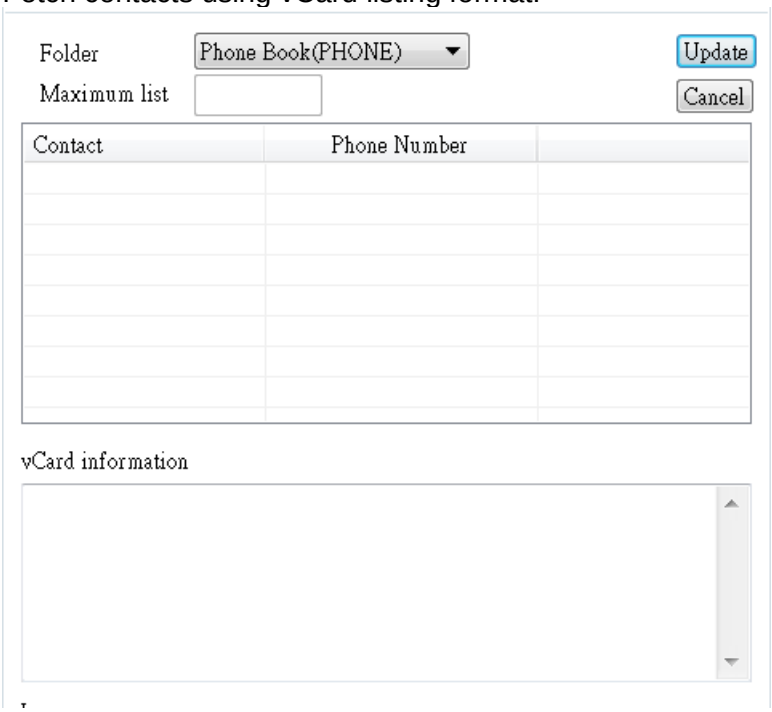
- *Get Contact by PBAP*

Fetch contacts using vCard format.




① Select one of call types in **Call History** list
② Click **Update** to fetch the selected call type.
Wait for all the contacts are fetched and shown within the contact list below.
The total number of contacts will be shown within the **Maximum List.**
③ Click **Cancel** to abort this fetch during the contact fetching process.
④ Dial-out directly to someone when focus and double click on one item of the contact list.

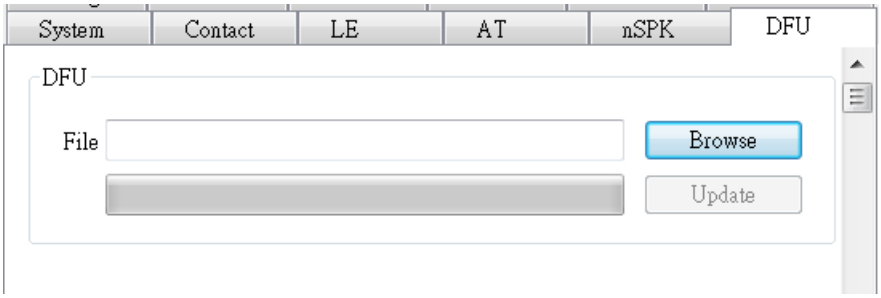
Fetch contacts using vCard listing format.



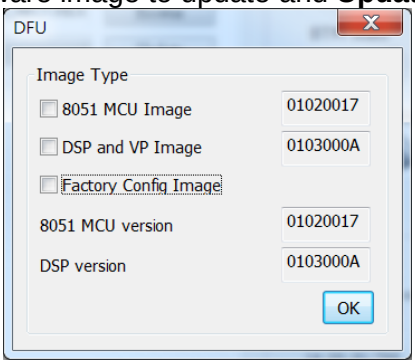

① Select one of call types in **Folder** list
② Click **Update** to fetch the selected call type.
Wait for all the contacts are fetched and shown within the contact list below.
The total number of contacts will be shown within the **Maximum List.**
③ Click **Cancel** to abort this fetch during the contact fetching process.
④ Focus on one item of this contact list for more details and information is shown within the vCard information field.

### 3.6.9 DFU Page

Perform the device firmware update.



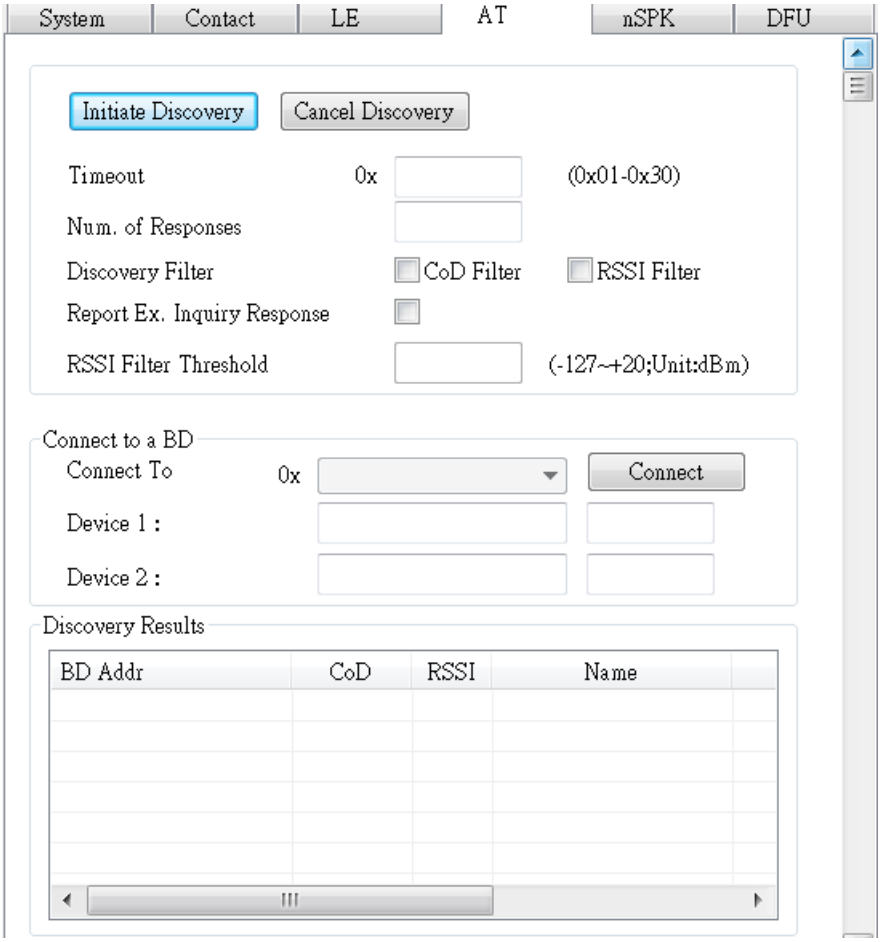

① Click **Browse** to choose one *.HEX firmware image to update and **Update** button will be active.




② Click **Update** and pop-up DFU dialogue.
③ Check one or multiple types of image and click **OK** in DFU dialogue.
④ DFU progress bar shows the percentage of progress and wait for the DFU process completed.

### 3.6.10 AT Page

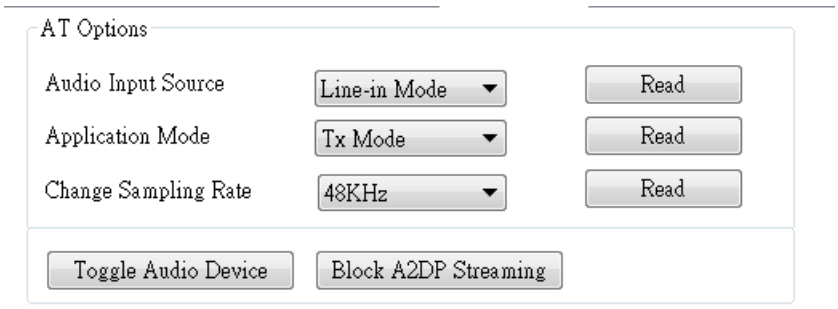
Be the audio transceiver, it can discover and connects to other speakers and headsets.




To discover the other speakers,

① Type a number in **Timeout** field.
Stop discovering once the period of discovery reaches this setting.
② Type a number in **Num. of Responses** field.
Stop discovering once the quantity of devices reaches this setting.
③ Check or not to check **Cod Filter** and **RSSI Filter** in **Discovery Filter**.
**Cod Filter**: Only discover devices with the specific class of device.
**RSSI Filter**: Only discover devices which is higher than setting value of **RSSI Filter Threshold**
④ Check or not to check **Report Ex. Inquiry Response** to get the device with name.
⑤ Type a number in **RSSI Filter Threshold** if check **RSSI Filter**
⑥ Click **Initiate Discovery** to discover the other speakers/headsets
Speakers/headsets are shown within **Discovery Results** list below and wait for the timeouts or the quantity of devices reaches.
⑦ Focus on one item in **Discovery Results** list and click **Connect** to or Double click on one item in **Discovery Results** list to establish the audio connection to the target speakers/headsets.
⑧ Click **Cancel Discovery** once users want to abort the discovery procedure.

To related AT operations,




① **Audio Input Source**

Select to change the input audio source in **Audio Input Source** menu

Click **Read** to read the current input audio source and shown in **Audio Input Source** menu.

② **Application Mode**

Select to Change audio transceiver application mode in **Application Mode** menu.

Click **Read** to get the current audio transceiver application mode and shown in **Application Mode** menu.

③ **Change Sampling Rate**

Select to Change the sampling rate of input audio source in **Change Sampling Rate** menu.

Click **Read** to get the current sampling rate of input audio source and shown in **Change Sampling Rate** menu.

④ Click **Toggle Audio Device** to switch the audio between devices while has two connections.

⑤ Click **Block A2DP Streaming** or **Permit A2DP Streaming** to block out or permit the A2DP streaming.

## 4. Revision History

| Version | Date | History |
|---|---|---|
| V0.7 R7 | 2013/05/06 | First version |
| V1.0 R0 | 2013/07/15 | Modify some figures and description |
| V1.30 | 2019/12/23 | Remove the Hardware Environment chapter<br>Add the description of Contact page<br>Modify the description on Setting page<br>Modify the description on System page |
| V1.31 | 2020/05/28 | Add the description for AVRCP Browsing in A2DP Page. |
| V1.41 | 2020/06/09 | Add DFU Page and AT Page |