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# REALTEK MCU Config Tool Software Development User Guide

**REALTEK MCU Config Tool Software Development**
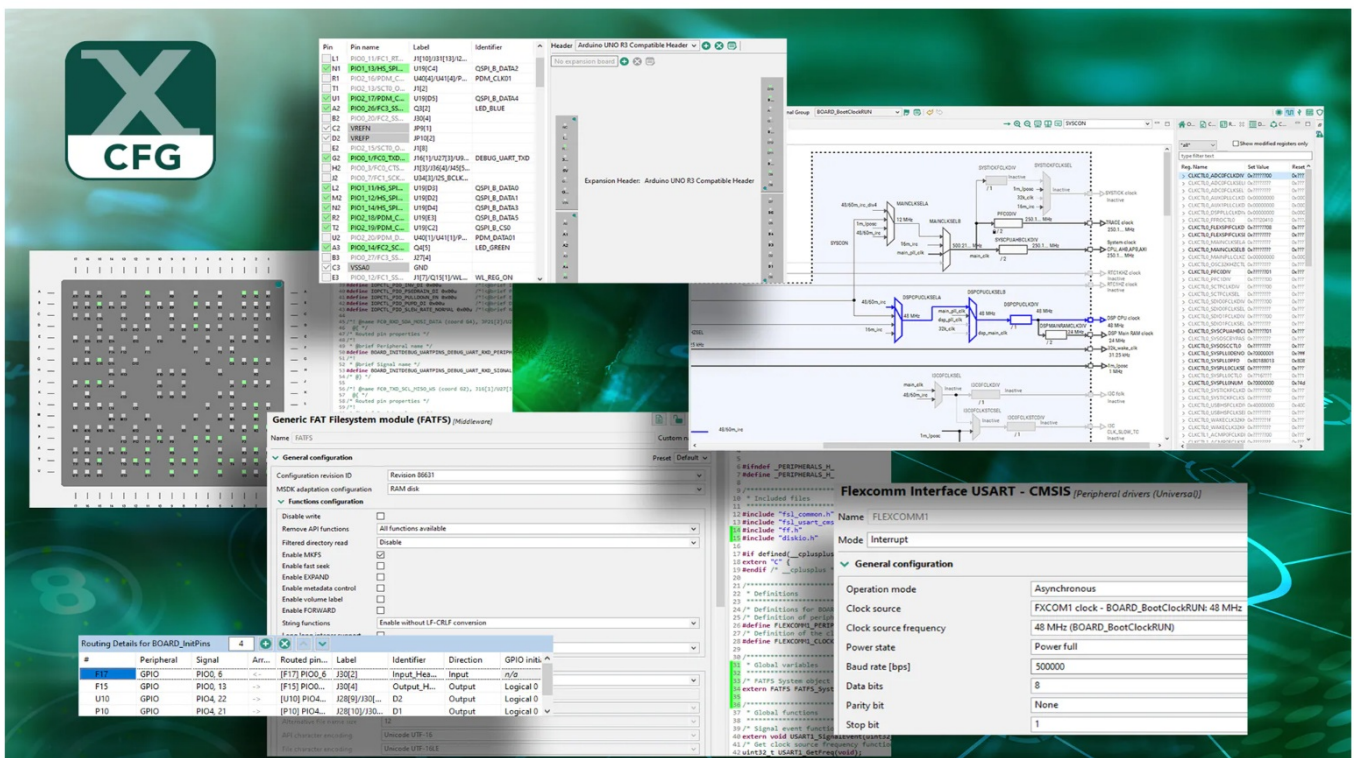
**Contents**

## Revision History

| Date | Version | Comments | Author | Reviewer |
|------|---------|----------|--------|----------|
| **2019/08/01** | V 1.0 | First Release version | Qinghu | Ranhui |
| **2021/09/28** | V3.0 | | Julie | |
| **2022/01/14** | V3.1 | | Julie | |
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| **2022/09/05** | V3.3 | | Julie | |
| **2022/11/22** | V3.4 | English version | Annie | |
| **2022/12/15** | V3.5 | English version | Dan | |
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## Overview

This article explains the functions, usage and settings of MCU Config Tool for Realtek Bluetooth Audio Chip (8763ESE/RTL8763EAU/RTL8763EFL IC).
Configurable BT settings and peripheral control are offered by REALTEK Bluetooth MCU. By using MCU Config Tool during the development stage, the user can easily configure a number of MCU parameters.
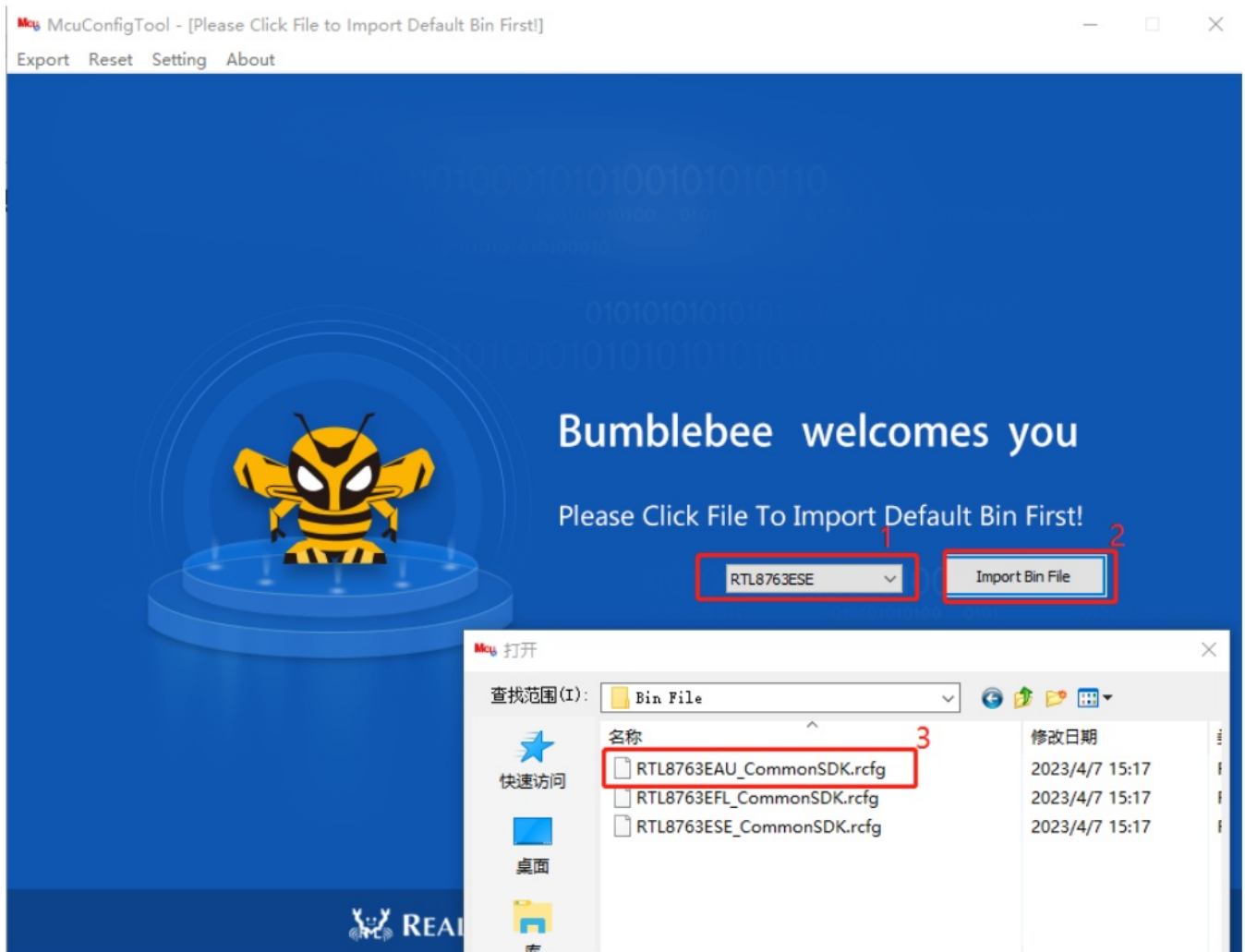
## Basic Usage

MCU Config Tool divides the setting elements into various tabs, such as HW Feature, Audio Route, General, System Configuration, Charger, Ringtone, RF TX and so forth. These configurations will be described in the following sections.

### Import

MCU Config Tool stores settings in *. rcfg files. There are four steps to load a rcfg file:
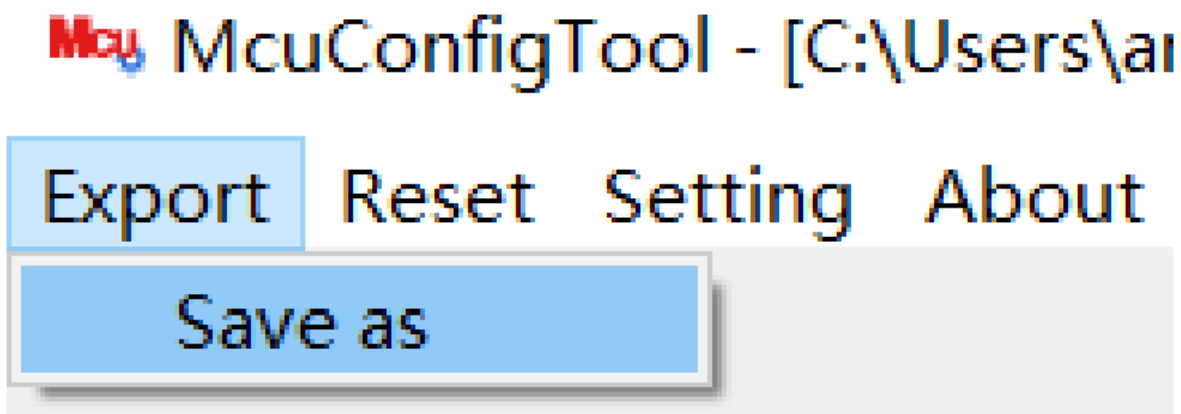
**Figure 1 2-1 Import**

1. Select IC part number from the drop-down list;
2. Click "Import Bin File" button;
3. Choose the rcfg file. The rcfg file will be loaded if it matches the IC part number chosen in step 1; else, it will be denied.

**Export**

The user can export this setting by clicking "Export" and then "Save as" after the configuration is finished.

**Figure 2 2-2 Save as**

Three files will be produced, and their names and locations will be shown in a pop-up box:

1. RCFG file: The rcfg file will keep track of all changes made to the tool's current parameters and can be utilized for the subsequent import. It is advised to include the IC part number in the rcfg name so that other users can identify it.
2. APP Parameter bin: This bin needs to be downloaded to the Bluetooth SOC.
3. SYS CFG Parameter Bin: This bin needs to be downloaded to the Bluetooth SOC.
4. VP Data Parameter Bin: This bin needs to be downloaded to the Bluetooth SOC.
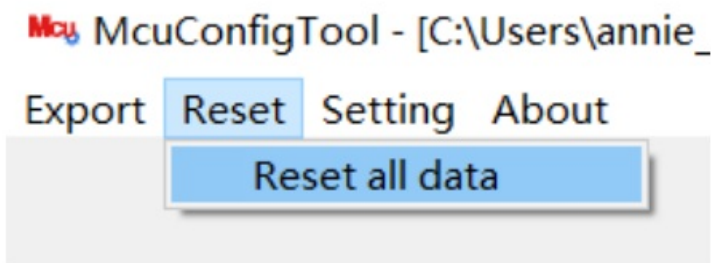
**Figure 3 2-2 Export**
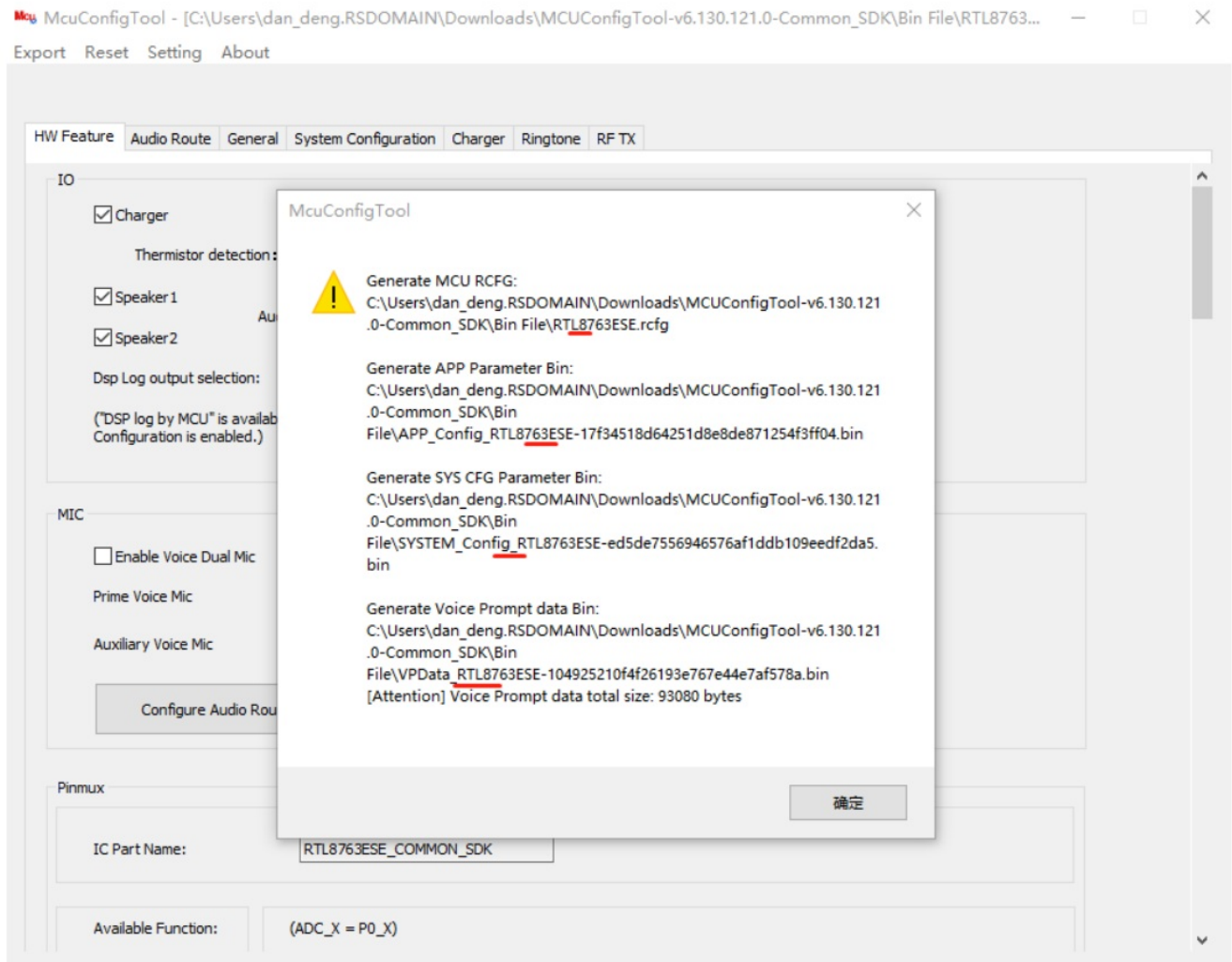


**Reset**

If you need to import the rcfg file again while configuring, click "Reset" and then "Reset all data" in the menu bar. Then, return to the main UI and select the desired rcfg file once more.

**Figure 4 2-3 Reset**

## Detail Description

### HW Feature

The tool's first tab, HW Feature, provides a comprehensive overview of hardware switches and PinMux options. Some functionalities may be disabled or forbidden from configuration depending on the chip series or IC type.

### IO Charger

Charger: SoC has an integrated charger and a battery detecting feature. On the majority of mobile phones, you can immediately check the power of the device after connecting to the device.
Thermistor detection: Check the temperature of the battery. "None" is the default selection. An external thermistor is necessary if "One Thermal Detection" is used. Two external thermistors are needed if "Dual Thermal Detection" is chosen.
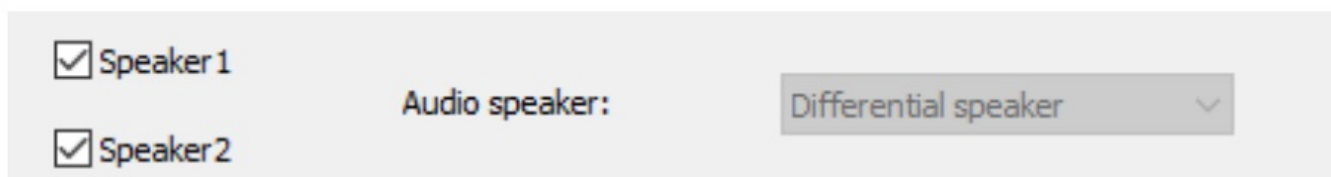
**Figure 5 3-1-1 Thermistor detection**
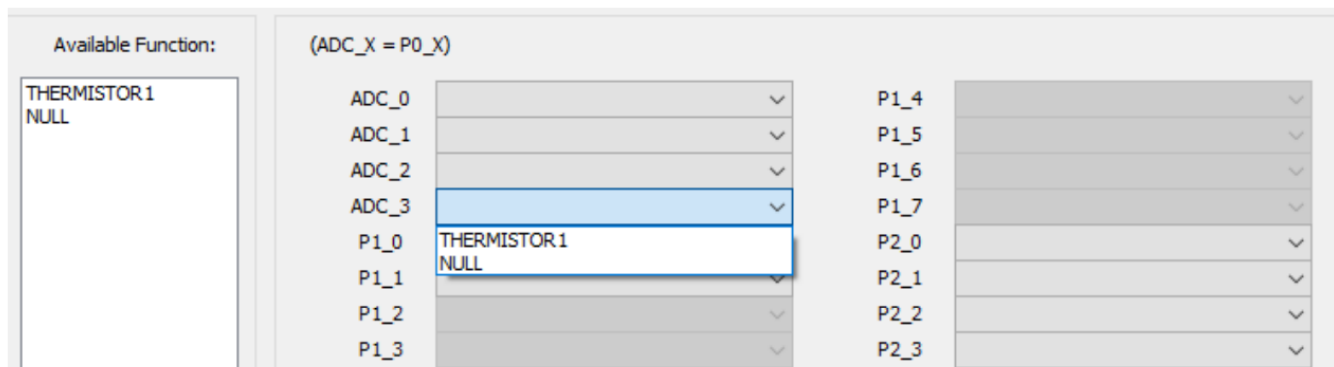


### Speaker

Set the speaker type with this option. Differential mode and Single-end mode are the default configurations.
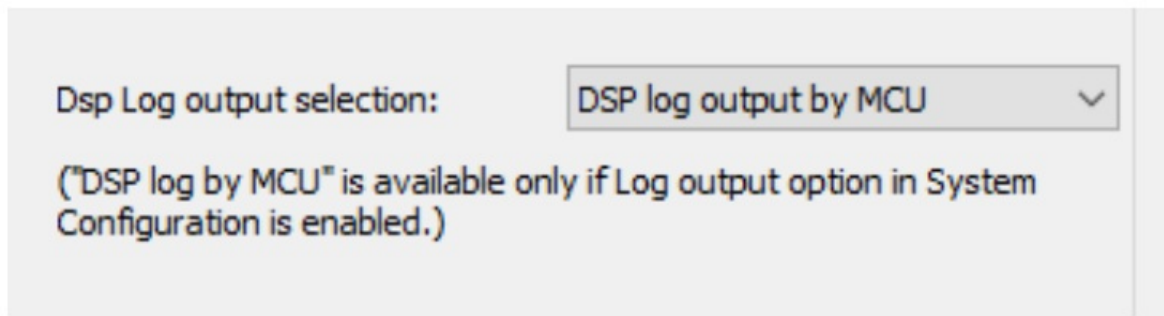
**Figure 6 3-1-1 Speaker**



### DSP log output selection

Select the DSP debug log's output mode and decide whether to open it.

**Figure 7 3-1-1 Dsp log output selection**



| Value | Description |
|---|---|
| NO DSP log output | DSP log is not enabled |
| DSP raw data output by UART | DSP log is output via a special DSP UART pin, which the user must specify in PinMux. |
| DSP log output by MCU | Along with the MCU log, the DSP log is output (provided that the MCU Log is turned on) |

**MIC**

The SoC's microphone can be set up to fit particular design specifications.

1. Auxiliary Voice Mic options will be shown when "Enable Voice Dual Mic" is enabled. Depending on their needs, users can choose between analog and digital microphones.
2. Users can configure the required microphone in accordance with the ANC situation.
3. Depending on their preferences, users can choose between Low Latency APTs and Normal APTs.

**Figure 8 3-1-1 MIC**
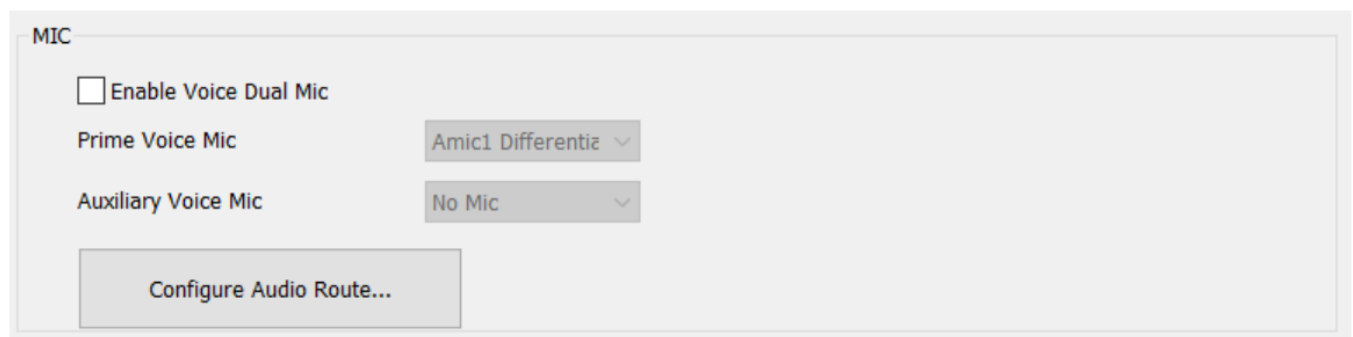


**Pinmux**

Here is a list of all configurable pins and pads. The available pins vary amongst SoCs, and the available pad functions are associated with DSP and peripheral capabilities. The related configuration item and APP variable table is as follows:

| | | |
|---|---|---|
| ☑ Charger<br>　Thermistor detection：<br>　　None ∨<br>　　None<br>　　One thermal detection<br>　　Dual thermal detection | charger_support | Setting the power supply's functions (can turn on charging and battery detection functions) |

**Audio Route**

Audio Route is mainly used to configure the SPORT (Serial Port) parameters and the logical IO attributes of the underlying physical data path.

**SPORTs**

**Figure 9 3-2-1 SPORTs**



1. SPORT 0/1/2/3: Check this option to indicate that enabling the corresponding SPORT.
2. Codec: Configure the Codec as Internal routing or External routing. Note that when this option is configured as External, you need to configure the corresponding pinmux in the HW Feature tab.

   **Figure 10 3-2-1 Pinmux**

3. Role: Configure the SPORT role. The optional values are Master and Slave.

4. Bridge Configure whether you want to connect the TX/RX direction of SPORT to an external device. If it is set to "External", the SPORT is connected to the external device. If it is set to "Internal", the SPORT is connected to the hardware CODEC inside the IC.

    **Note**: When it is set to "External", you need to configure the corresponding pinmux in the "HW Feature" tab.

5. RX/TX Mode: Configure the transmission mode in the TX and RX directions of the SPORT. The optional values are TDM 2/4/6/8.

6. RX/ TX Format: Configure the data format of the TX and RX directions of the SPORT. The optional values are I2S /Left Justified/PCM_A/PCM_B.

7. RX /TX Data Length: Configure the data length in the TX and RX directions of the SPORT. The optional values are 8/1 6/20/24/32 BIT.

8. RX /TX Channel Length: Configure the channel length in the RX and TX directions of the sport. The optional value is 1 6/20/24/32 BIT.

9. RX /TX Sample Rate: Configure the sample rate in the TX and RX directions of the SPORT. The optional values are 8 /16/32/44.1/48/88.2/96/192/12/24/ 11.025/22.05 KHZ.

**Audio Logic Device**

Audio Logic Device supports the IO attributes configurations for Audio, Voice, Record, Line-in, Ringtone, VP, APT, LLAPT, ANC and VAD data streams.

**Audio Playback Category**

**Figure 11 3-2-2 Audio Logic Device**

Audio Playback Category supports Audio Primary SPK, Audio Secondary SPK, Audio Primary Reference SPK and Audio Secondary Reference SPK:

1. Audio Primary SPK is used to set the Audio Physical Route path of the primary SPK
2. Audio Secondary SPK is used to set the Audio Physical Route path of the secondary SPK
3. The Audio Primary Reference SPK is used to set the Audio physical AEC loopback path of the main SPK

   **Note**: When the Record Primary Reference MIC corresponding to the Record Category are also configured, the AEC loopback path between Audio and Record will be opened.

**Voice Category**

**Figure 12 3-2-2 Voice Category**



Voice Category supports Voice Primary Reference SPK, Voice Primary Reference MIC, Voice Primary MIC, Voice Secondary MIC, Voice Fusion MIC and Voice Bone MIC:

1. Voice Primary Reference SPK is used to set the voice physical AEC loopback path of the primary SPK
2. Voice Primary Reference MIC is used to set the Voice physical AEC loopback path of the primary MIC
3. Voice Primary MIC is used to set the voice physical route of the primary MIC
4. Voice Secondary MIC is used to set the Voice physical route of the secondary MIC
5. The Voice Fusion MIC is used to set the Voice physical route of the Fusion MIC  Fusion Mic boosts the NR effect while using more energy. If "Fusion Mic" is enabled in McuConfig Tool, make sure "NR function" is turned on in DspConfig Tool.
6. The Voice Bone MIC is used to set the Voice physical route of the Bonse Sensor MIC

**Note:**

1. Voice Secondary MIC can be configured only when Enable Voice Dual Mic in the HW Feature tab is checked. This linkage configuration will be removed in future versions and will be opened directly on AudioRoute.

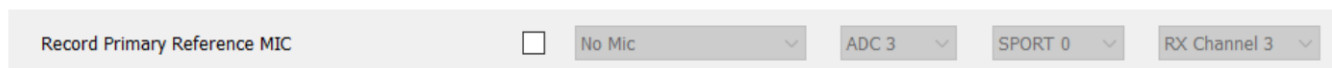**Figure 13 3-2-2 Enable Voice Dual Mic**
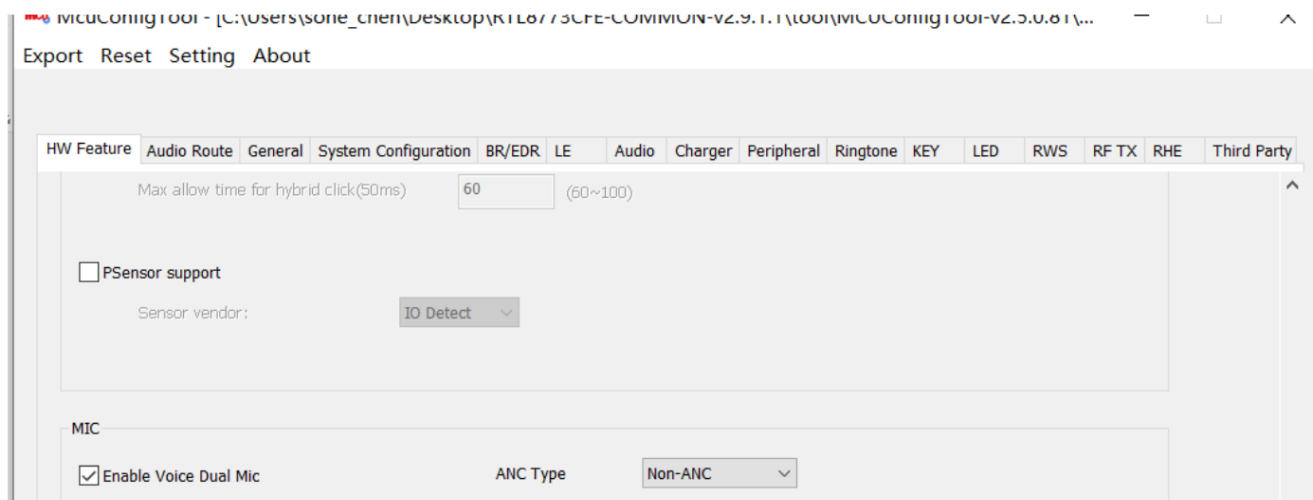


2. When the Voice Primary Reference SPK and Voice Primary Reference MIC corresponding to the Voice Category are configured, the AEC loopback path will be opened.

**Record Category**

Figure 14 3-2-2 Record Category



Record Category supports Record Primary Reference MIC:

1. Record Primary Reference MIC is used to set the Record physical AEC loopback path of the primary MIC
   **Note**: When the Primary Reference SPK corresponding to the Audio Category, Ringtone Category or Voice Prompt Category are also configured, the AEC loopback paths between Audio and Record, Ringtone and Record, or Voice Prompt and Record will be opened.

**IC variance**

**AEC Loopback**

1. On RTL87X3C, DAC0 can only loopback back to ADC2, and DAC1 can only loopback back to ADC3
2. On RTL87X3G, DAC0 can only loopback back to ADC2, and DAC1 can only loopback back to ADC3
3. On RTL87X3E, DAC0 can loopback back to ADCn (n = 0, 2, 4), and DAC1 can loopback back to ADCm (m = 1, 3, 5)
4. On RTL87X3D DAC0 can loopback back to ADCn (n = 0, 2, 4), DAC1 can loopback back to ADCm (m = 1, 3, 5)

**General**

BT chip supports Audio product functions. The configurations are listed in this tab.

**DMIC Clock**

DMIC 1/2: When digital microphone is chosen in Audio Route, set the clock rate of DMIC 1/2, which can be configured as 312.5KHz/625KHz/1.25MHz/2.5MHz/5MHz clock rate.

**Voltage/Current**

MICBIAS voltage: Adjust the MICBIAS output voltage according to the specifications of the MIC, it can be configured as 1.44V/1.62V/1.8V, and the default is 1.44V

**System Configuration**

The System configuration tab contains the Bluetooth stack, profiles, OTA and platform configuration, etc.

**Bluetooth stack**

1. BD Address: The Bluetooth address of the device. The bluetooth address setting is only available when "Export BD Address to System Config bin" is checked and then address will be in the exported System Config bin.

**Figure 15 3-4-1 Bluetooth Stack**
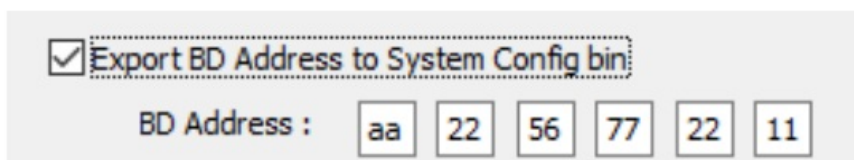


2. Mode: The operation mode of the Bluetooth stack in the BT chip.

| Value | Description |
|---|---|
| HCI Mode | Only controller is workable in BT chip |
| SOC Mode | All functions of Bluetooth are workable |

3. BR/EDR link number: The maximum simultaneous number of BR/EDR links. If you select the maximum of three devices for Multi-link support, the first device will be disconnected in order to make room for the third device. If not, one of the initial two connected devices must be disconnected before the third device can be connected.
4. L2CAP channel number: The maximum number of L2CAP channels that can be created simultaneously. Valid numbers are 0~24.
5. BR/EDR bond device number: The number of BR/EDR devices that will store bond information in flash. This number shall not be less than the BR/EDR link number and shall be less than or equal to 8.
6. LE link number: The maximum number of LE links that can be established simultaneously.
7. LE master link number: This value determines the maximum number of le master links that can exist at the same time
8. LE slave link number: This value determines the maximum number of le slave links that can exist at the same time
9. CCCD count: The maximum number of CCCDs that can be stored in flash
10. CCCD per link count: Set the number of CCCDs supported by each BLE link, ranging from 0 to 50
11. LE privacy mode

| Value | Description |
|---|---|
| Device privacy | device is in device privacy mode |
| Network privacy | device is in network privacy mode |

12. CCCD not check

| Value | Description |
|---|---|
| Disable | Before notifying or indicating data, server will check CCCD value. |
| Enable | Server notify or indicate data without check CCCD value. |

13. LE bond device number: the quantity of LE devices that will be saved in flash. This number cannot be less than the LE link number or more than 4.

**Clock configuration**

For system 32K related settings, please refer to the following descriptions for the details of the fields (the setting interface of different Chip Series or IC models is different):

1. AON 32K CLK SRC: 32k clock source of AON FSM. Optional external 32k XTAL, internal RCOSC SDM, external GPIO IN. Different SoCs may have different options available.
2. RTC 32K CLK SRC: 32k clock source of User RTC. Optional external 32k XTAL, internal RCOSC SDM, external GPIO IN. Different SoCs may have different options available.
3. BTMAC, SysTick 32K CLK SRC: 32k clock source of BTMAC/SysTick. Choice of external 32k XTAL or internal RCOSC SDM
4. EXT32K Frequency: The frequency of the external 32k clock source. 32.768KHz or 32k Hz selectable
5. Enable P2_1 GPIO 32K Input: Indicates whether to pour 32K from P2_1 to SOC. When AON, BTMAC, RTC clock source is selected to 1 (external 32K XTAL), it means to apply GPIO IN 32k; when AON, BTMAC, RTC clock source is selected to 0 (external 32K XTAL), it means to apply external 32K XTAL
6. RTC 32K OUT PIN: 32k GPIO output pin selection. Can choose Disable, P1_2, P2_0

**Voltage Setting**

**Figure 16 3-4-3 Voltage Setting**

LDOAUXx setting: Used to set the voltage. If you need to have different voltage settings according to different power modes, the voltage setting fields of different power modes will be displayed as shown in the figure above.

For example: the fields of active/dlps mode and power down mode in LDOAUX setting Whether LDOAUXx is enabled according to IO. If it is set to "Enable", it will open LDO_AUX2 to the specified voltage (1.8V or 3.3V). If there is no such field, it means that this LDO cannot be closed.

AVCCDRV always on: Used to set whether AVCCDRV needs to be always on, or only open when there is an audio behavior.

Voltage of AVCCDRV/ AVCC: AVCC_DRV/AVCC voltage setting, which can be set to 1.8V/1.8V or 2.1V/2.0V according to the usage of peripherals

**Platform Configuration**

1. Log output: Whether to output logs to the Log UART. The default selection is on.

| Value | Description |
| --- | --- |
| Disable | Log printing is disabled |
| Enable | Log printing is enabled |

2. Log output pinmux: configure the pin for log output.

3. Log uart hw flow ctrl: The default log uart hardware flow control is disabled. To enable log uart hardware flow control, you must select the available log uart cts pinmux, connect the log uart cts pinmux to the FT232 log uart RTS pin, and set the Flow Control in the log setting of the Debug Analyzer to RequestToSend.

4. Enable SWD: Open the SWD debug interface.

5. Reset When Hardfaut: When the platform Hardfaut appears, the platform will automatically restart.

6. Watchdog Timeout: Configure watchdog timeout.

7. WDG Enable in ROM: Allow WDG to be enabled in rom.

8. WDG Auto feed in ROM: Automatically feed the dog in the rom.

9. Max SW Timer Number: The maximum number of software timers.

10. Watchdog mode: the mode after wdg timeout (reset or enter irq to print out the current status)

**OEM Header Setting**

Flash map layout information. The layout can be adjusted via the "Import flash map.ini "button.

**Figure 17 3-4-7 OEM Header setting**



**Charger**

The "Charger" check box on the HW Feature page needs to be selected in order to enable the charger.

**Figure 18 3-5-1 Charger**



1. Charger auto enable To decide the device will go into chrger mode automatically or not when adapter in, the default is "YES", please do not modify it unless you have already contacted with the FAE and fully understand how to enable the charger with "NO" setting.
2. Set Charger config to APP config If the check box is set, all the charger configuration parameters will be added to the APP config bin. And the charger firmware will apply the params in the APP config bin instead of the SYS config bin. So that the charger parameters could be updated through OTA.
3. Pre-Charge Timeout(min) Battery pre-charge mode time out parameter, the range is 1-65535min
4. Fast-charger state timeout(min) Battery fast charge mode (CC+CV mode) time out parameter, the range is 3-65535min
5. Charge current of pre-charge state(mA) Pre-charge mode current setting
6. Charge current of Fast-charge state(mA) charge mode (CC mode) current setting

7. Re-Charge Voltage(mV) Re-charge mode voltage threshold
8. Voltage limit of battery(mV) The CV mode target
9. Charge finish current(mA) Charge finish, charge current setting in CV mode
10. Charger thermal protection Battery temperature protection in fast charge mode, there are four state according to the ADC valued read. The thermistor detection must be selected in HW feature page.

Figure 19 3-5-1 Charger thermal detection
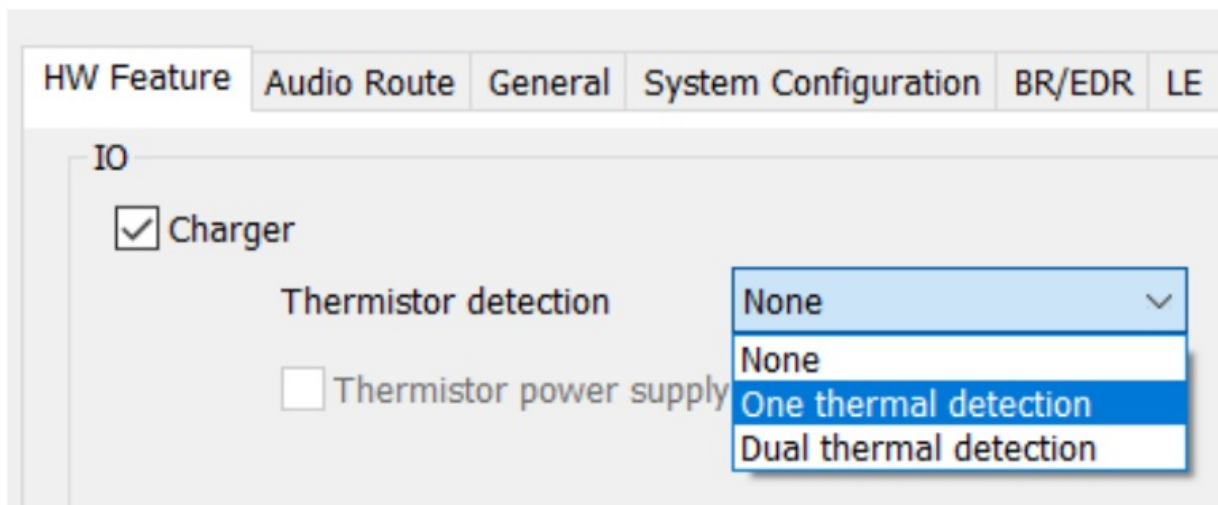


i) Warn Region Voltage of Battery High Temperature (mV): Charger current will drop to (I/X2) once this ADC voltage is read. "I" is the charger current before high temperature is reached. X2 is defined in item19.

ii) Warn Region Voltage of Battery Low Temperature (mV): Charger current will drop to (I/X3) once this ADC voltage is read. "I" is the charger current before low temperature is reached. X3 is defined in item20.

iii) Error Region Voltage of Battery High Temperature (mV): Charger current stop once this ADC voltage is read.

iv) Error Region Voltage of Battery Low Temperature (mV): Charger current stop once this ADC voltage is read.

11. Reference Battery Voltage (mV) To define the reference voltage for 0% to 90% to show battery remains for the smartphone display, low battery warning and power off. Please get the ten levels according to the battery discharge curve with constant loading and divide into ten levels.

12. Effective Resistance of Battery (mOhm) The reference battery effective resistance including battery internal resistance, PCB trace and battery wire. It is used to compensate the IR voltage drop due to the additional effective resistance.

13. Disable Charger after charging finish 1 min(Allow low power mode)
   - Yes: The device will go into power down mode 1min after charger finish (CV mode reach charger finish current), the charger will restart only when adapter out and adapter in again.
   - No: The device will stop charging after charger finish but will not go into power down mode, under this condition if the battery drops due to loading and reach Re-Charge Voltag, the charger will restart. **Note** the adapter 5V behavior in charge box
   - If the 5V will not drop even when charger finish, please set "Disable Charger after charging finish 1 min(Allow low power mode)" as "Yes" so the system could go into power down mode to save the current consumption.
   - If the 5V will drop after charger finish, the headset will judge it as out of box and power on, connect to

smart phone. To avoid this wrong state, please add a 3rd pin as box detect (0= in box) or smart charger box command

14. Rapid charge support If Enable the CC mode charger current will follow the fast charge current setting (defined as 2C) and slow to to (2C/X1, X1 define in item 19) when VBAT reach 4V. e.g, if battery capacity is 50mA, please set 100mA for rapid charge application.

    Note: If customer modify the charger behavior or use external charger IC, please set rapid charge as disable.

15. Rapid charge current divisor Set the parameter "X1" when enable rapid charge, the charge current will drop to (2C/X1, 2C is fast charge current setting) when battery voltage reach 4V.

16. High temp warning current divisor Set the parameter "X2" when the thermal ADC reading reach high temperature threshold.

17. Low temp warning current divisor Set the parameter "X3" when the thermal ADC reading reach low temperature threshold.

## Adapter

Low to High Detection Threshold Adapter in voltage threshold
High to Low Detection Threshold Adapter out voltage threshold
Low to High Debounce Time (ms): When adapter in, it will be recognized as adapter in state after voltage level high than the threshold and keep more than this timer.
High to Low Debounce Time (ms): When adapter out, it will be recognized as adapter out state after voltage level lower than the threshold and keep more than this timer.
Adaptor IO support If Yes, 1-wire uart function re-use adapter pin is enabled.
ADP IO Low to High Debounce Time (ms) Adapter IO low to high, and keep high for a certain time, the system will judge as leave 1-wire mode, if "0ms" default debounce time is 10ms
ADP IO High to Low Debounce Time (ms) Adapter IO high to low, and keep low for a certain time, the system will judge as enter 1-wire mode, if "0ms" default debounce time is 10ms

## Configuration item and APP variable correspondence table

| Charger | | |
|---|---|---|
| Battery detection support<br>Battery warning percent: 20%<br>Timer low battery warning tone (s): 10 (1-255) Timer low battery warning LED (s): 10 | discharger_support battery_warning_percent timer_low_bat_warning timer_low_bat_led | Low battery alarm settings |

## Ringtone

Ringtone tab provides ringtone and voice prompt configuration. Here, users can personalize ringtones and import voice prompts.

## Notification mixing Setting

1. Notification mixing setting: If the value is enable, the notification will be played in the audio scene, and the two will be mixed; if the value is disabled, the notification will be played in the audio scene, and the notification will be played separately. After the notification is played, the audio will resume playing.

2. Audio Playback Suppressed Gain (dB): When the Notification mixing setting is enabled, in the audio scene, if a notification comes in, the audio volume will be lowered to highlight the notification effect. You can control how much to suppress the effect by adjusting the suppress gain.
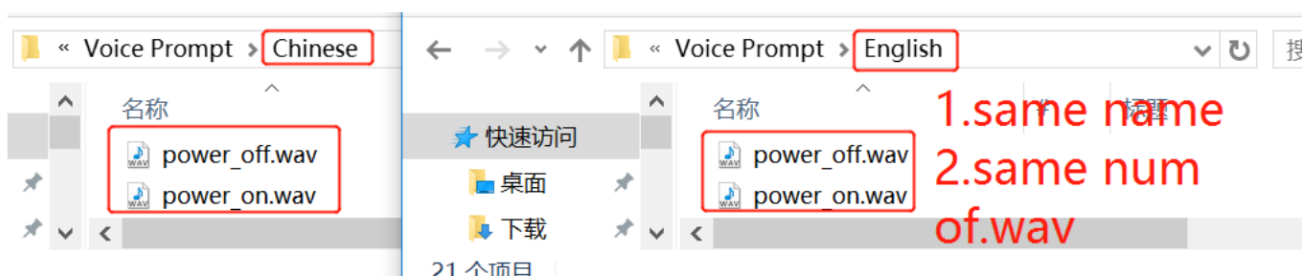
**Voice prompt**

**Figure 20 3-6-2 Voice Prompt**



1. Voice prompt support language: Supports built-in voice prompts in up to 4 languages. The user chooses which languages this product supports.
2. Voice prompt default language: The user selects a language as the default prompt language.

**Update Voice Prompt**

To update the Voice Prompts that the tool identified, follow the instructions below.

1. Choose the voice prompt supported languages according your needs (Voice prompt support language)
2. Update the wav file in the folder ". \Voice Prompt ". Wav files must meet the following requirements:
   i. Mono or Stereo audio
   ii. Following sampling rates are allowed: 8KHz, 16KHz, 44.1KHz, 48KHz. File name is written as *.wav. Be aware that if multiple languages are selected, the wav files in the respective language folder must have the same name. Tool won't recognize files with inconsistent file names in the language folder when multi-language is chosen. For instance, suppose SOC use both English and Chinese voice prompt. If you want to update "power_on.wav" and "power_off.wav", put them in the folders as shown.



3. Click the "Refresh" button to trigger the tool search and obtain the wav files on the hard drive.
4. Click the "Update" button to check the required size of the Voice prompt exporting to Bin. Please make ensure the generated Voice Prompt's overall size does not exceed the SOC Flash layout's maximum allowed size. The

wav files will be converted to voice prompt in AAC format. By adjusting the "voice prompt parameter of file size" parameter, whose valid range is 10–90, you can customize the VP sound quality. Larger parameter values will result in better VP sound quality, but more flash space will be needed. The voice prompt file name and content will be recorded after the configuration is finished and the rcfg file is exported. The VP information can be used if rcfg is imported the next time.

**Voice Prompt export logic**

Which Voice Prompts are exported to Bin is described in this section.

1. If option "Save all of the voice prompts on disk whether or not to be choose in Tone Selection" is chosen: All VP files that Tool presently recognizes will be imported into Bin.
2. If option "Save all of the voice prompts on disk whether or not to be choose in Tone Selection" is not chosen: Only the voice prompt chosen by the tone scenario in "Tone Selection" is collected by the tool. In other words, it won't be written to Bin if the VP identified by Tool is not selected in "Tone Selection."
3. If " Enable TTS only report number " is checked, some VPs will automatically be exported to Bin for TTS function (Tool recognizes the VP names as "0", "1", "2", "3", "4", "5", "6", "7" ", "8", "9").

**Configure Ringtone**

**Figure 22 3-6-5 Configure Ringtone**
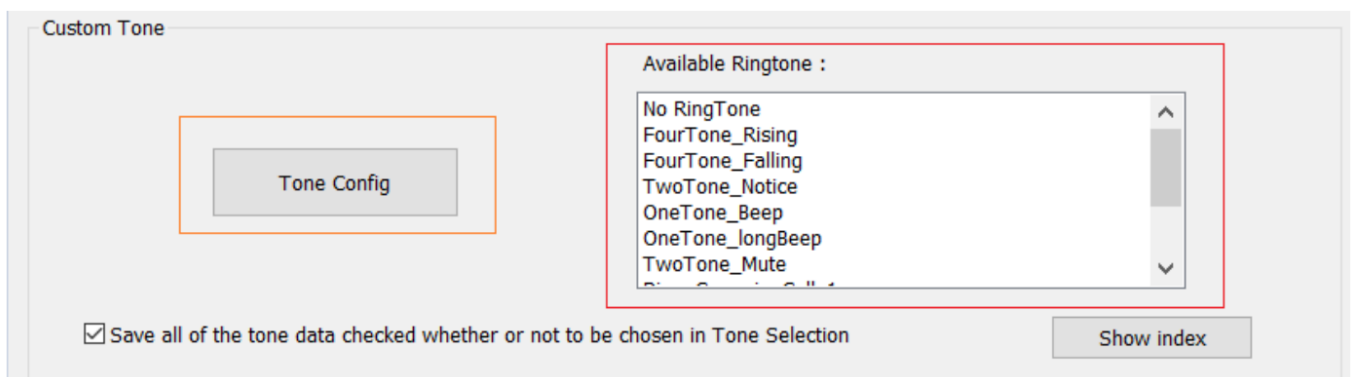


"Available Ringtones" lists the ringtones that can be chosen for export to bin file. Click the "Tone Config" button to modify the "Available Ringtone."

Tool offers 45 non-editable Ringtones. Ringtone customization is also supported.

1. When a ringtone is selected, it will appear in the list of "Available Ringtones".
2. Click the " Play " button to hear the Ringtone effect.
3. Click the " Value " button to examine Ringtone data.

**Add a customized Ringtone:**

**Step1**: Click button " Add more by customer" to add a new ringtone.
**Step2**: Give the custome ringtone a name in the editbox. Make sure this name is different from the existing "non-editable Ringtone" name.
**Step3**: Click the "Value" button to fill in the tone data, then save it. Click the "Play" button to hear the Ringtone

effect.

**Note**: Select the checkbox to display this custom Ringtone in " Available Ringtones " list.

**Figure 23 3-6-5 Configuration**



**Ringtone export logic**

This section describes which ringtones are exported to Bin.

1. If the option "Save all of the tone data checked whether or not to be chosen in Tone Selection" is chosen: All ringtones in " Available Ringtone" will be exported to Bin.
2. If the option "Save all of the tone data checked whether or not to be chosen in Tone Selection" is not chosen: The tool only collects the ringtones selected by the tone scenario in "Tone Selection". In other words, if the ringtone in "Available Ringtone" is not chosen in "Tone Selection", it will not be written to Bin.

**View Ringtone /Voice Prompt index and length**

Click " Show index" button to view following information of Ringtone and VP:

1. The Ringtone/VP index in the exported Bin.
2. The data size of Ringtone/VP.

**Figure 24 3-6-7 Ringtone/VP index and length**

## RF TX

### RF TX Power

These RF parameters will be exported to the new generated System Config Bin only if "Export RF TX Power to System Config Bin"is enabled. Otherwise, it will not export to bin file.
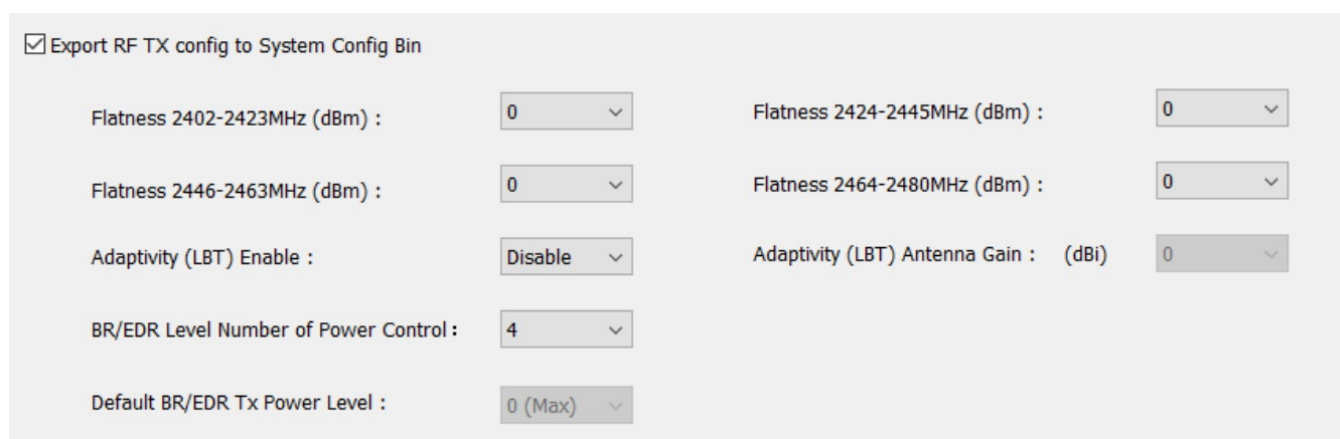


1. Max Tx power of legacy Legacy BDR/EDR TX power setting

2. Tx power of LE: LE TX power setting

3. Tx Power of LE 1M/2M 2402MHz/2480MHz individually fine tune 2402Hz (CH0) and 2480MHz (CH39) TX power setting for certification purpose, this is specially for band edge test item requirement.
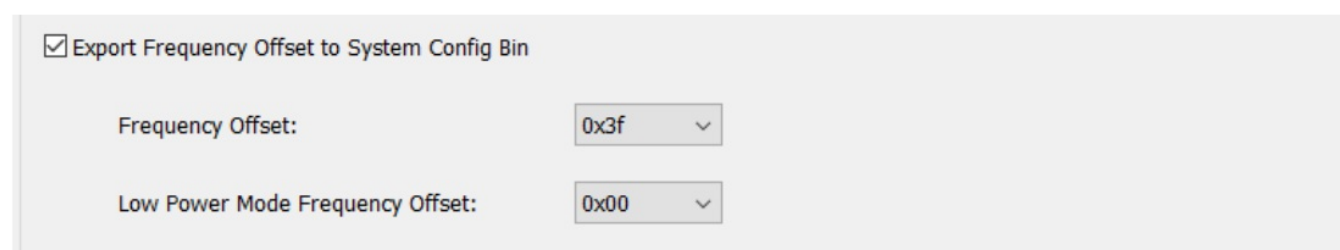
### RF TX Config

Figure 25 3-7-2 RF TX Config



These RF parameters will be exported to the new generated System Config Bin only if "Export RF TX Config to System Config Bin"is enabled. Otherwise, it will not export to bin file.

1. Flatness 2402-2423MHz/2424-2445MHz/2446-2463MHz/2464-2480MHz(dBm) The RF channels are divided into low/mid1/mid2/high groups through the 79 channels, due to the PCB thickness, impedance control and component variance, the RF TX performance may be varied among different groups, this parameter is use to do compensation in the four groups to keep better flatness for the BT channels.
2. Adaptivity (LBT) Enable Enable Adaptivity for CE Directive
3. Adaptivity (LBT) Antenna Gain Fill in the antenna peak gain for adaptivity parameter
4. BR/EDR Level Number of Power Control define the TX power control level, 3 (0,1,2) or 4 (0,1,2,3), 0 is the the max level defined in RF TX Config above. The default TX power level is 0 and could be config by Default BR/EDR Tx Power Level
5. Default BR/EDR Tx Power Level  0(MAX)~4(MIN)

**Frequency Offset**

Figure 26 3-7-3 Frequency



These RF parameters will be exported to the new generated System Config Bin only if "Export Frequency Offset to System Config Bin"is enabled. Otherwise, it will not export to bin file.

1. Frequency offset Tune the IC internal compensation capacitor value (XI/XO) the tunable range is 0x00~0x7f, with 0.3pF change per step. The default 0x3F
2. Low Power Mode Frequency offset  Tune the IC internal compensation capacitor value (XI/XO) in DLPS mode, this wrong parameter will cause disconnect issue.

**Other setting**

1. External PA Set Enable for using external PA, otherwise for using internal PA.

## Appendix

1. The system config bin file contains the configuration for the "System Configuration," "Charger," and "RF TX" tabs. However, some of the fields on the Charger tab are kept in the app configuration bin, as seen in the following figure:
2. Configuration in the Audio Route tab have an impact on the framework block. These setting is stored in the app config bin file
3. RingTone/Voice Prompt and LED information are stored in separate blocks in the app config bin file. In some IC part number, RingTone/VP may be saved in a separate VP bin file.

## References

1. Bluetooth Class of device definition
2. https://www.bluetooth.com/specifications/assigned-numbers/baseband
3. Realtek Bluetooth chip SDK document
4. Bluetooth SIG, Specification of the Bluetooth System, Profiles, Advanced Audio Distribution Profile version 1.3 .1
5. **https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=303201**

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## Documents / Resources

| | |
|---|---|
| MCU Config Tool User Guide<br><br>V1.1<br>2022/06/08 | **REALTEK MCU Config Tool Software Development** [pdf] User Guide<br>MCU Config Tool Software Development, MCU, Config Tool Software Development, Tool Software Development, Software Development |

## References

- ⌘ **Assigned Numbers | Bluetooth® Technology Website**
- 🌐 **bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=303201**
- **User Manual**