SWDTool User Guide

V1.0.8

2016/06/30

Revision History

Date	Version	Update
2016/07/01	V1.0.8	Release version
2015/11/16	V1.0.4-alpha	Release version
2015/11/04	V1.0.3	Release version
2015/10/15	V1.0.2	Release version
2015/09/15	V1.0.1	Release version

Contents

Illustration List

Table List

1 Overview

This document introduces how to use SWDTool.

2 Functions Description

SWDTool presents two major functions: parameter configuration and image downloading.

2.1 Parameter Configuration

Open SWDTool, and select Config Setting area, as shown in Diagram 2-1. Config Setting area provides configurable parameters, among which you can check one to modify it and set it to a proper value as required. Config file will be saved to ConfigFile.bin before downloading. When SWDTool is closed, the configuration in Config Setting area will be saved to SWDToolConfigStatus.ini, and will be loaded automatically next time when SWDTool is opened. Users can save the configuration to a specified file by clicking on "Save" button, and load it by clicking on "Load" button. Click on "Read back" button to obtain configuration information in RTL8762A internal Flash. Click on "Reset" button to reset all configuration to the default value.

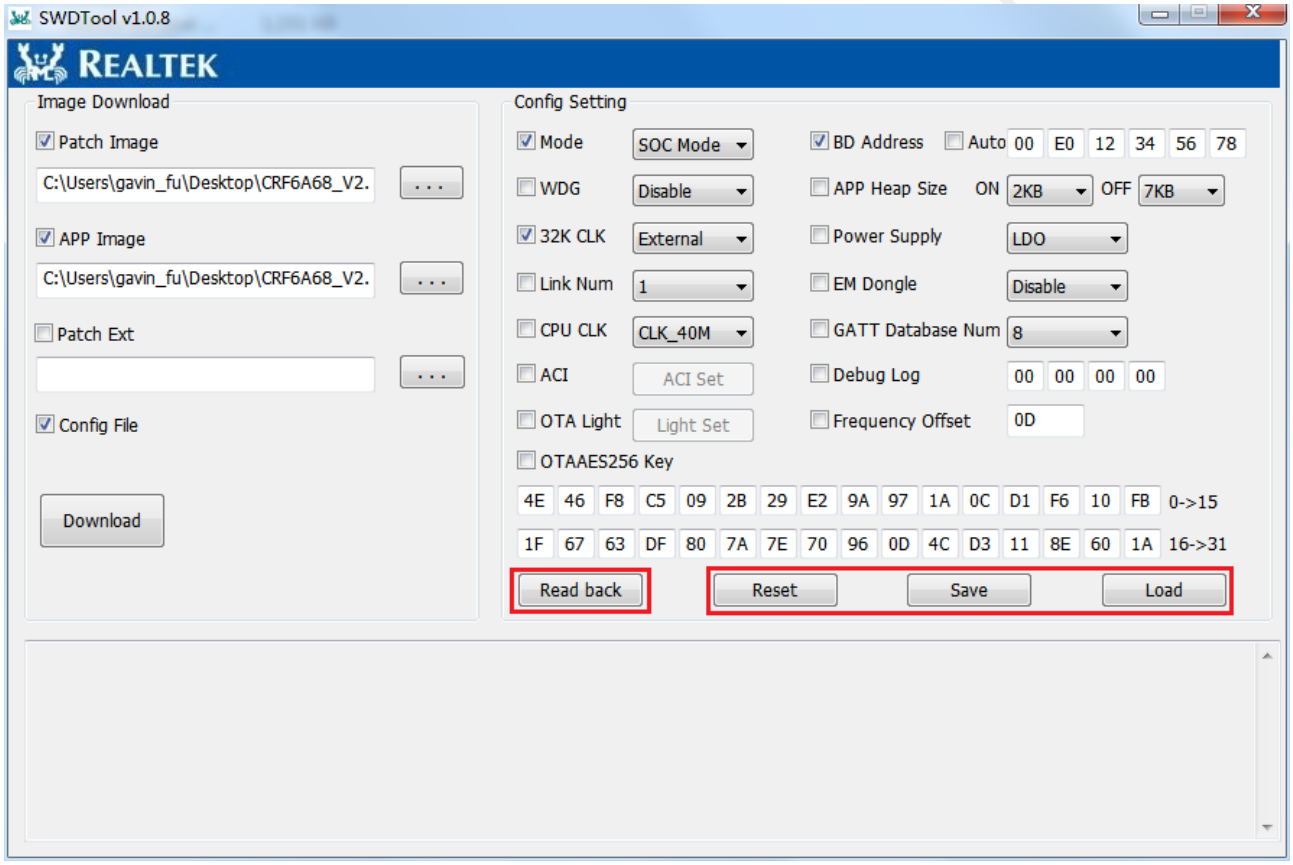

Diagram 2-1 Parameter Configuration

2.1.1 Parameter Description:

(1) Mode

i. SOC Mode: Normal usage mode for application running. If MCU runs in this mode, it cannot be programmed again.

ii. HCI Mode (Default): HCI mode is used for downloading image in mass production procedure. Chip is in factory default mode.

(2) WDG

i. Disable (Default): Watch Dog Timer is disabled when the chip is powered on.

ii. Enable: Enable Watch Dog Timer is enabled automatically when the chip is powered on.

(3) 32K CLK

i. External (Default): This item can only be set to External. It means an external 32.768kHz crystal must be used for Low Frequency Clock.

(4) Link Num: Default value is 1. Available values can be 1, 2, 3 and 4. The value of this item is the max number of Bluetooth links supported for master role. It is invalid for slave role.

(5) CPU CLK: Support 6 clock frequencies. The default is 40MHz.

(6) ACI: Use only for ACI project.

(7) OTA Light: LED indicator on OTA update. Only Patch 11815 and above version supports this function.

(8) OTA AES256 Key: OTA encryption key provided by User.

(9) BD Address: Bluetooth MAC address. **If Auto check box is selected, Bluetooth MAC Address will automatically accumulate every time after downloading; if Auto check box is not selected, Bluetooth MAC Address will always be the same one.**

(10) APP Heap Size

i. ON: Default is 2KB. Set the heap size of Retention RAM for User.

ii. OFF: Default is 7KB. Set the heap size of Non-Retention RAM for User.

(11) Power Supply

i. BUCK (Default). This item can only be set to BUCK.

(12) EM Dongle: It needs to set to enable when the peer test equipment is EM Dongle.

i. Disable (Default).

ii. Enable.

(13) GATT Database Num: Set the max number of GATT Service Databases that can be registered. The default value is 8. Only Patch 11446 and above version supports this function.

(14) Debug Log: Whether to print Upper stack log. The default value is 0x00 0x00 0x00 0x00.

(15) Frequency Offset: Set internal adjustment capacitance register value to calibrate 40MHz crystal frequency offset. This value should be set according to Realtek's advice.

2.1.2 OTA Light parameters setting

OTA light setting is used to set led indicator when OTA is updating. On the OTA Light Set page, there are four items can be configuration. "Confirm" and "Cancel" buttons are used to confirm or cancel the settings. It is shown in Diagram 2-2.

1) OTA Indicator: Control to open or close the led indicator.

i. Disable (Default).

ii. Enable.

2) LED Pin Polarity: Control the led polarity. Set according to the actual hardware design.

i. High (Default).

ii. Low.

3) Working Mode:

i. Normal (Default): The LED always on.

ii. Blink: The LED blinks when transmits data.

4) LED Pin: Led pin.

Set according to the actual hardware design.

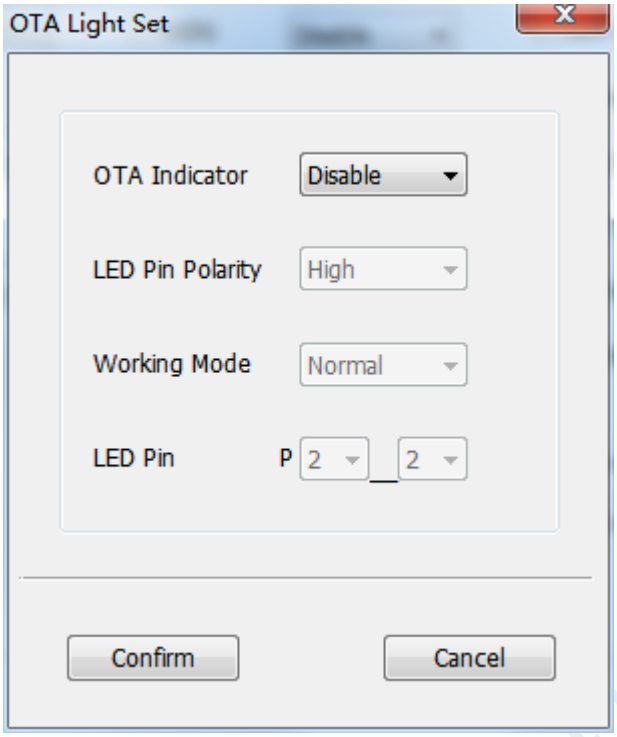

Diagram 2-2 OTA Light Set

Note 1:

1. "APP Heap Size" must be changed with much caution, and the default value is 2KB for ON area and 7KB for OFF area. To modify "APP Heap Size", you have to also modify the scatter file (located at RTL8762\Board\EVB\XXX\App.sct as shown in Diagram 2-3). To resize ON Area, RAM_ON_ADR and RAM_ON_SIZE in the scatter file must be set to the values shown in Table 2.1. To resize OFF Area, RAM_OFF_ADR and RAM_OFF_SIZE in the scatter file must be set to the values shown in Table 2.2.

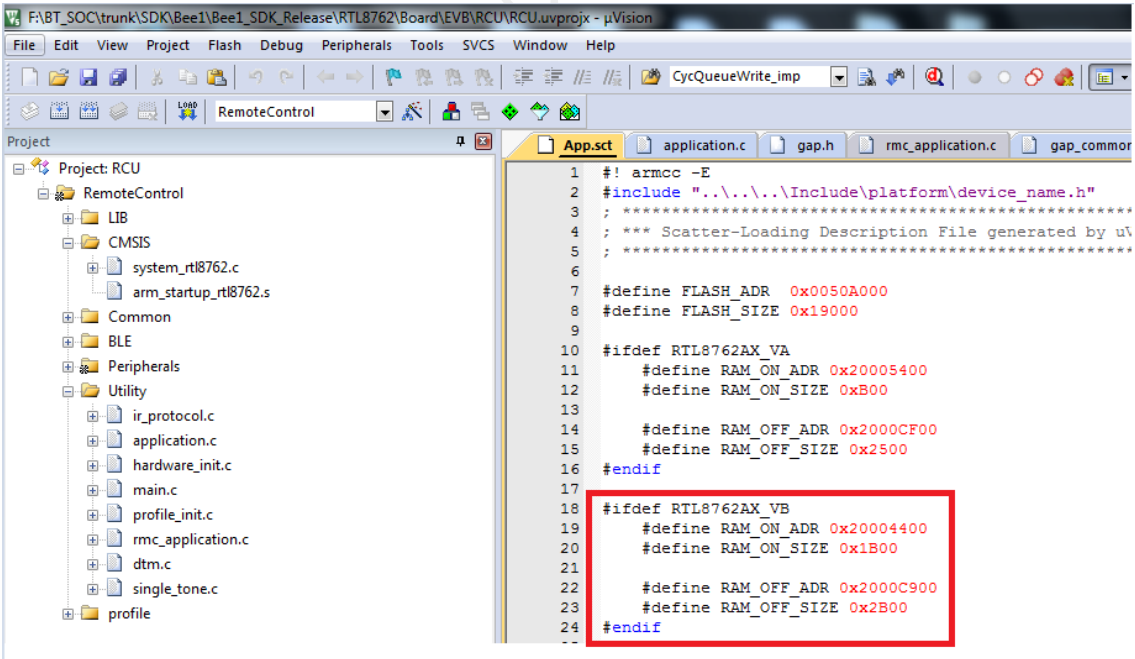

Diagram 2-3 APP Project RAM Address Setting

Table 2.1 Dynamic and Static Address Mapping Table for App ON Area

APP Heap Size ON (KB)	RAM_ON_ADR(Start Address)	RAM_ON_SIZE(size)

0	0x20003C00	0x2300
0.5	0x20003E00	0x2100
1	0x20004000	0x1F00
1.5	0x20004200	0x1D00
2(Default)	**0x20004400**	**0x1B00**
2.5	0x20004600	0x1900
3	0x20004800	0x1700
3.5	0x20004A00	0x1500
4	0x20004C00	0x1300
4.5	0x20004E00	0x1100
5	0x20005000	0xF00
5.5	0x20005200	0xD00

Table 2.2 Dynamic and Static Address Mapping Table for App OFF Area

APP Heap Size OFF(KB)	RAM_OFF_ADR(Start Address)	RAM_OFF_SIZE(size)
5	0x2000C100	0x3300
6	0x2000C500	0x2F00
7(Default)	**0x2000C900**	**0x2B00**
8	0x2000CD00	0x2700
9	0x2000D100	0x2300
10	0x2000D500	0x1F00
11	0x2000D900	0x1B00
12	0x2000DD00	0x1700
13	0x2000E100	0x1300
14	0x2000E500	0xF00
15	0x2000E900	0xB00
16	0x2000ED00	0x700
17	0x2000F100	0x300

2.2 Image Downloading

Choose the image types that need to be downloaded by checking corresponding check boxes, then click on the "…" button to choose corresponding image files, and then click "Download" button to download the image files. It's shown in Diagram 2-4. There are four types of image: Patch Image, APP Image, Patch Extension Image and Config File. Config File is generated based on the configuration in Config Setting area.

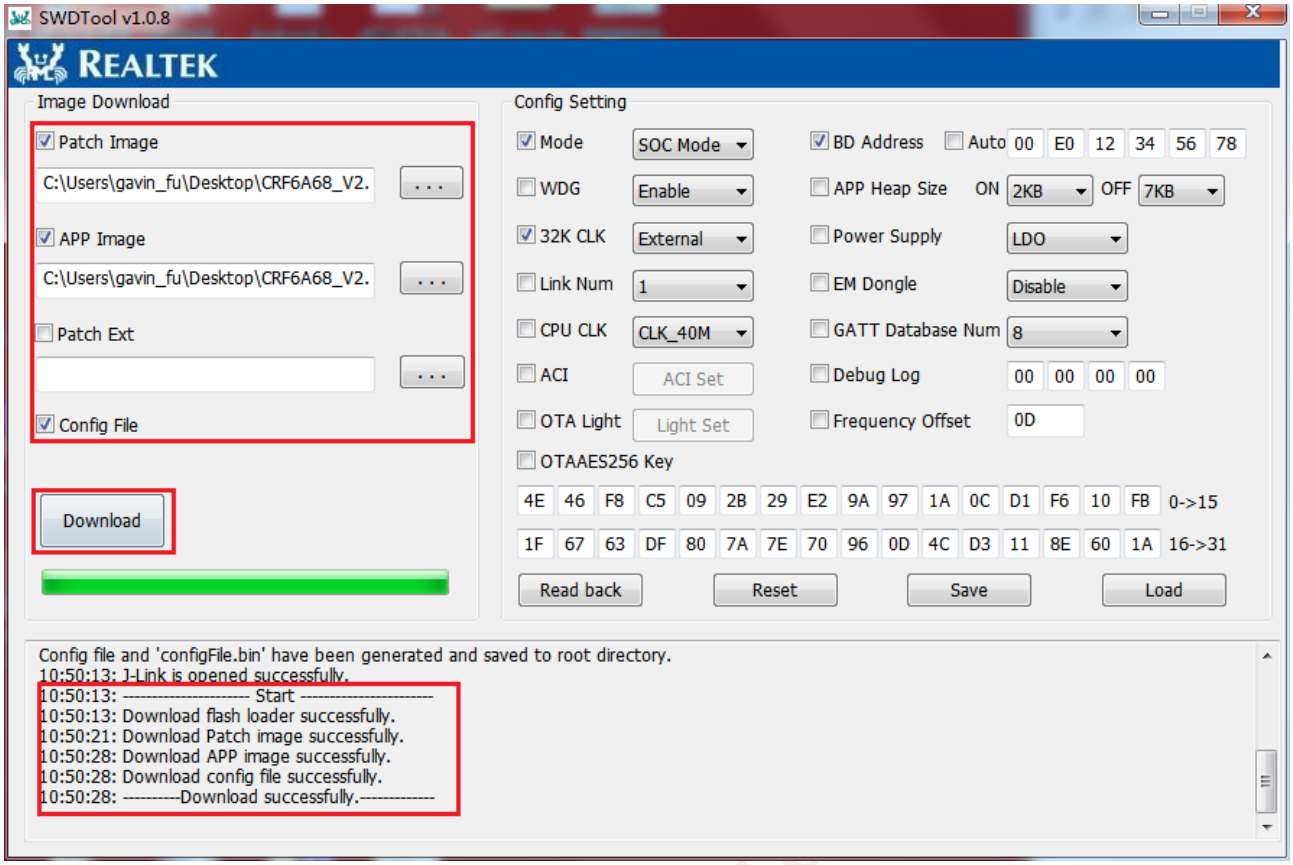

Diagram 2-4 Image Downloading

Procedure:

a) Choose the image types that need to be downloaded and choose corresponding image files.
Before downloading, the flash space corresponding to the chosen image types will be erased. For example, if Patch Image, APP Image and Config File are chosen, the flash spaces for them will be erased before downloading. If only APP Image is chosen, then only the flash space for APP Image will be erased.

b) Click on Download button to start downloading. The downloading status will be displayed on status bar and MessageBox.
When users choose Config File and perform downloading, a Notice dialog will pop up as shown in Diagram 2-5. User can disable this dialog by checking "Do not remind again".

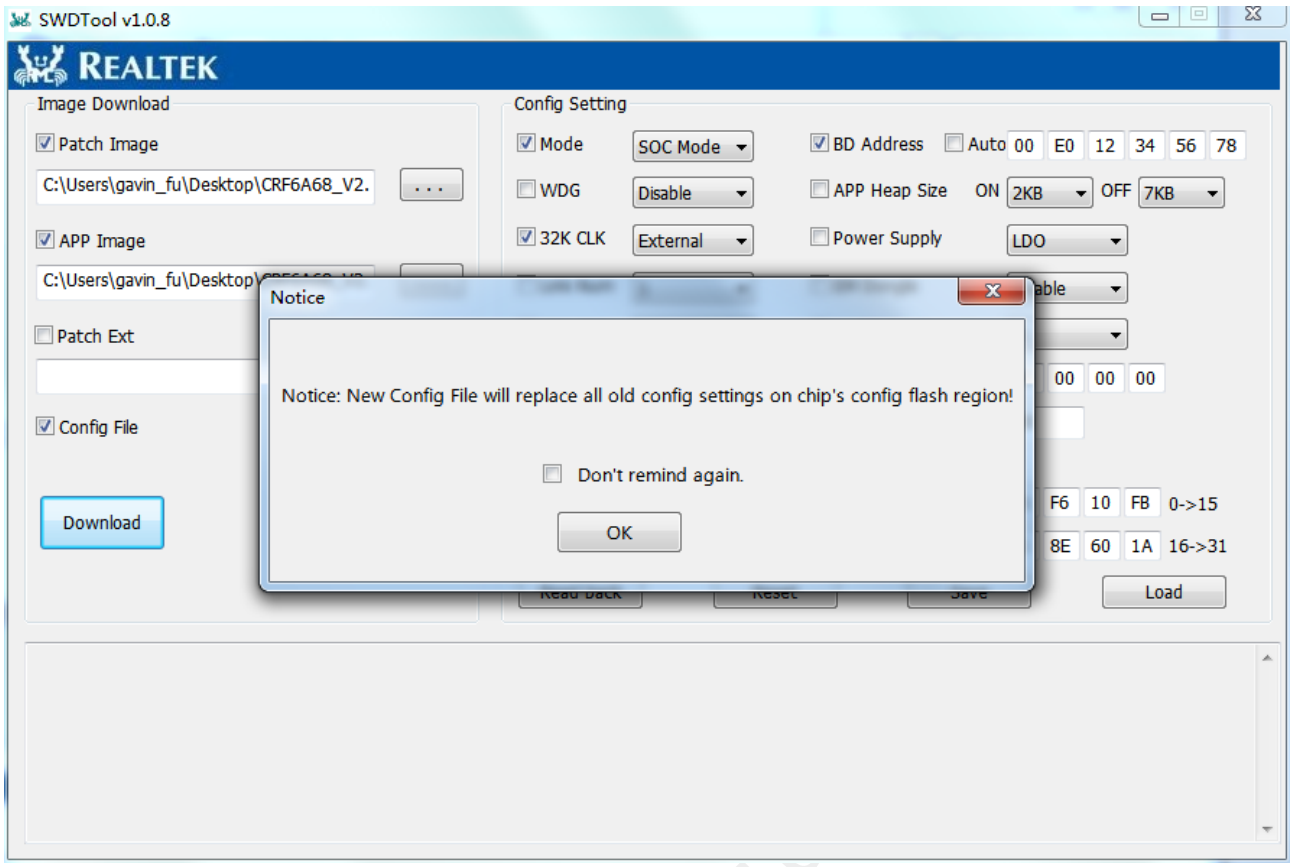

Diagram 2-5 Config Notice

3 Connection

SWDTool uses a SWD interface and fulfills downloading through J-Link. A wire connection diagram is shown in Diagram 3-1.

3.1 SOC Mode

As shown in Figure 3.2, connect J-Link pins SWCLK, SWDIO, and GND respectively to RTL8762A's corresponding pins P1_1(SWDCLK), P1_0(SWDIO) and GND. For example, connect J-Links pins to the CLK, IO, and GND pins on the EVB board.

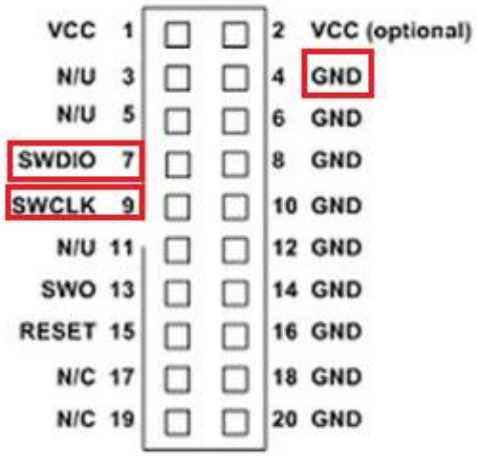

Diagram 3-1 J-Link SWD Connections

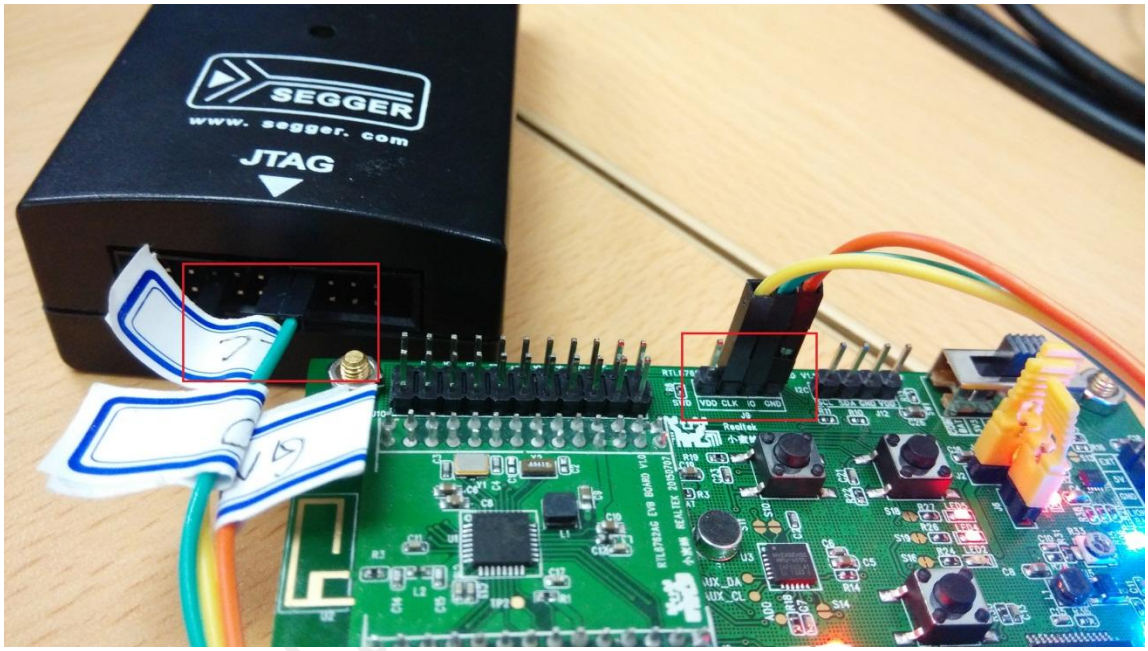

Diagram 3-2 Connection of J-Link to SWD interface on RTL8762A