AB156x Series Logging Tool Users Guide

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Document revision history

Revision	Date	Description
1.0	6 March 2020	Initial version
1.1	6 April 2020	Added the FrontLine online HCI log setting section
1.2	21 July 2021	Update sections about Raw Command, AT Command, and USB-HID.
1.3	7 March 2022	Add USB-HID reference
1.4	19 May 2022	Modify Chapter 1.1
1.5	25 July 2022	Modify description

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1. Quick Start

1.1. Required software

The following software must be set up for the Airoha logging tool to operate correctly.

1) Microsoft Visual C++ 2012 Update 4 Redistributable Package (x86)
2) Microsoft Visual C++ 2013 Redistributable Package (x86)
3) Microsoft Visual C++ 2015/2017/2019 Redistributable Package(x86)
4) .Net Framework 3.5
5) .Net Framework 4.5

Click the following link to download Microsoft .NET Framework 3.5:
https://www.microsoft.com/en-US/download/details.aspx?id=21

Click the following link to download Microsoft .NET Framework 4.5:
https://www.microsoft.com/en-US/download/details.aspx?id=30653

Click the following link to download Microsoft Visual C++ 2012 Update 4 Redistributable Package (x86):
https://www.microsoft.com/en-US/download/details.aspx?id=30679

Click the following link to download Microsoft Visual C++ 2013 Redistributable Package (x86):
https://www.microsoft.com/en-us/download/details.aspx?id=40784

Click the following link to download Microsoft Visual C++ 2015/2017/2019 Redistributable Package(x86):
https://aka.ms/vs/17/release/vc_redist.x86.exe

You may be asked to restart your computer when you complete the installation process. Please make sure to do so before running the Airoha logging tool.

1.2. Quick start

Install the Configure Tool software if it is the first time to use this tool on your PC.
You must prepare the following items to start the Configure Tool:

1) An AB156x EVK
2) A message Id (MsgId) binary file matched with AB156x EVK firmware

Double-click the Airoha.Tool.Kit.exe file to start the logging tool.

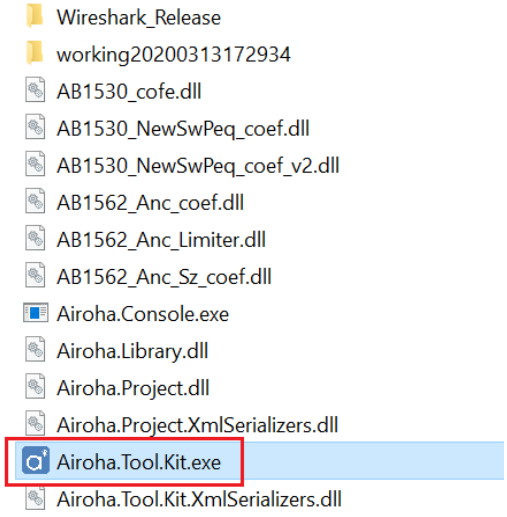

Figure 1-1 Software path

The Logging Tool window is divided into four sections as shown in Figure 1-2.

1) **Tool Bar** – Icons graphically represent the functions, such as enable/disable COM port, start/stop pipe log to Wireshark, set the MsgId log bin file, and trigger device assert.
2) **Function Tabs** – Set the configuration parameters.
3) **Output Window** – Show the message when processes occur.
4) **Workspace** – Main section for showing the configuration parameters.

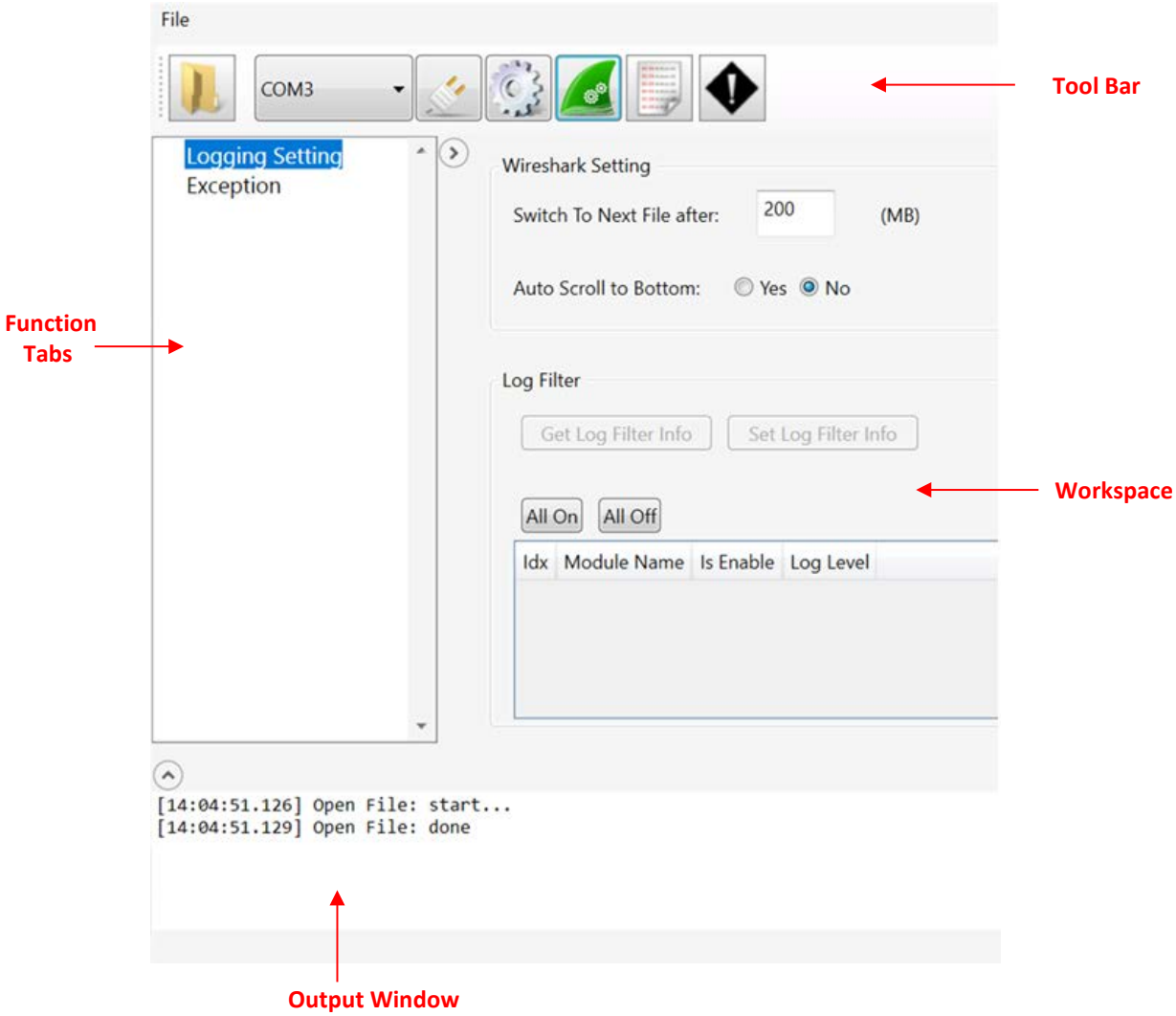

Figure 1-2 Tool window

You usually perform the following actions when you start the logging tool:

1) Setting the MsgId binary file (Ex: cm4_log_str.bin).
2) Pipe log to Wireshark.
3) Modify the device log filter.

The following sections show how to perform these actions.

1.3. Setting the Message ID (MsgId) binary file

You must set the MsgId binary file before receiving and processing the message ID log.

Action:

1) Click the **Set MsgId Bin File** button on the Tool Bar.
2) Select a specific *.bin file and click **Open** (e.g.: cm4_log_str.bin)

Figure 1-3 Open file button

1.4. Pipe log to Wireshark

The following section shows how to display the log in Wireshark.

Action:

3) Select the COM port to which the device is connected.

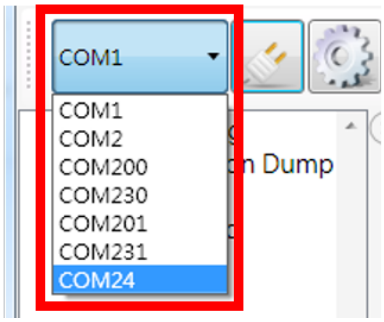

Figure 1-4 COM Port List

4) Click the **Enable COM port** button in the Tool Bar to connect to the AB156x Series module.

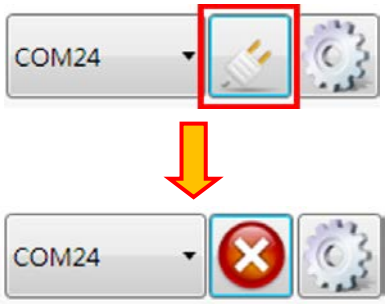

Figure 1-5 Connect To COM Port

5) Click the **Wireshark** button in the Tool Bar to launch Wireshark and display the log.

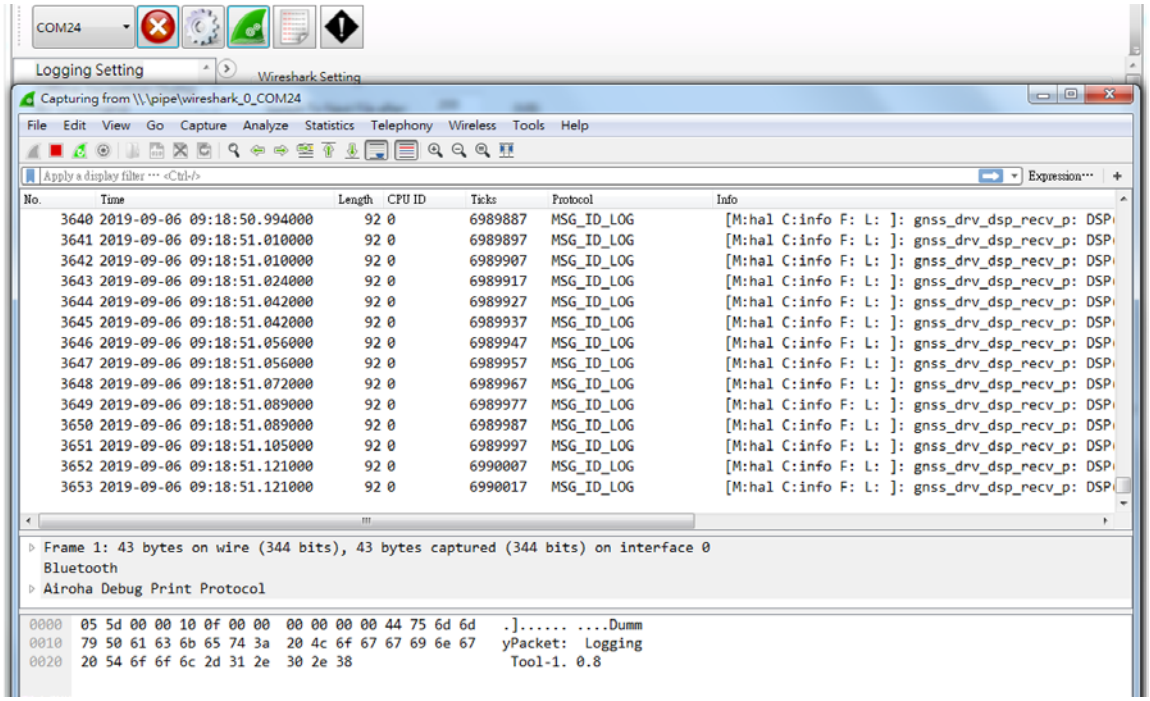

Figure 1-6 Launch Wireshark

Wireshark log - pcapng file is automatically saved in the tool\log folder.

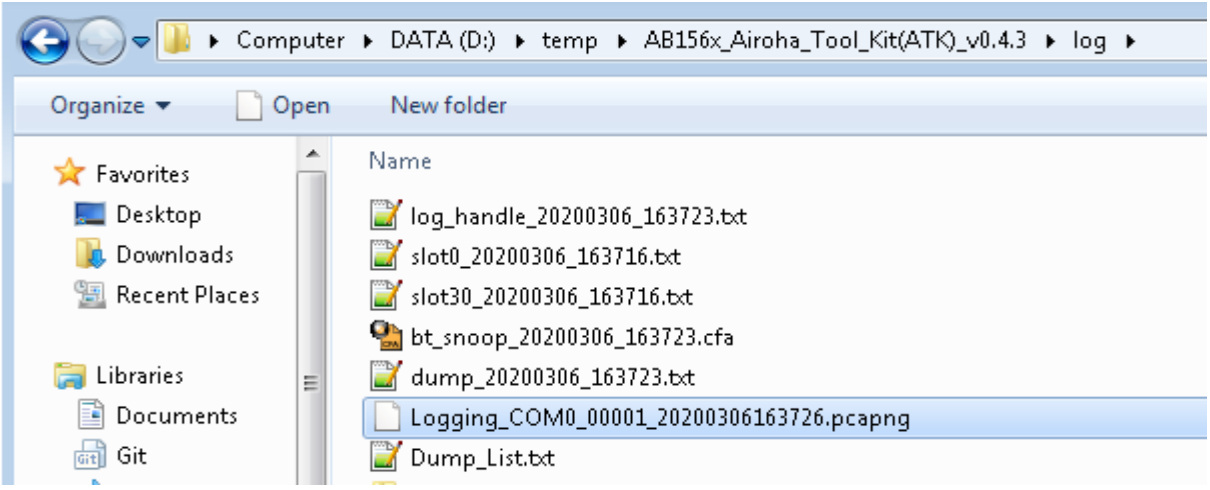

Figure 1-7 Wireshark log path

1.5. Modify the log filter setting

Action:

1. Open the COM port that is connected to the module as shown in Section 1.4, “Pipe log to Wireshark”.
2. Click the **Get Log Filter Info** button to get the current device settings. The set save log filter buttons are enabled when the device settings load.

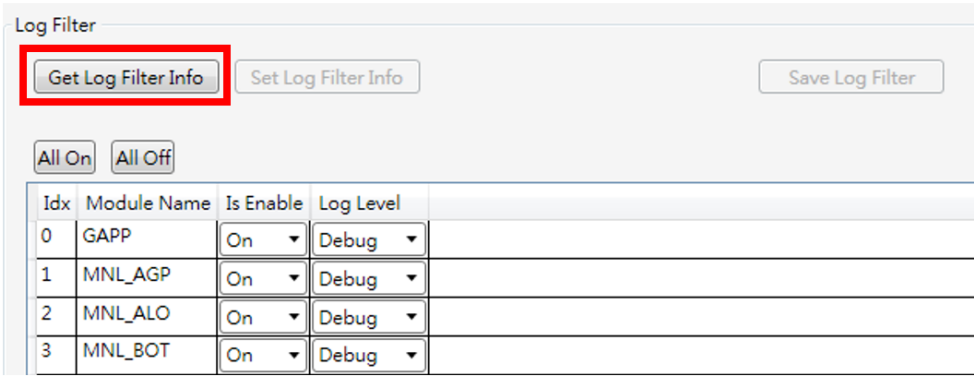

Figure 1-8 Get log filter info. button

3. Turn the log modules on or off and make any necessary changes to the log levels (i.e. Debug/Info/Warning/Error).

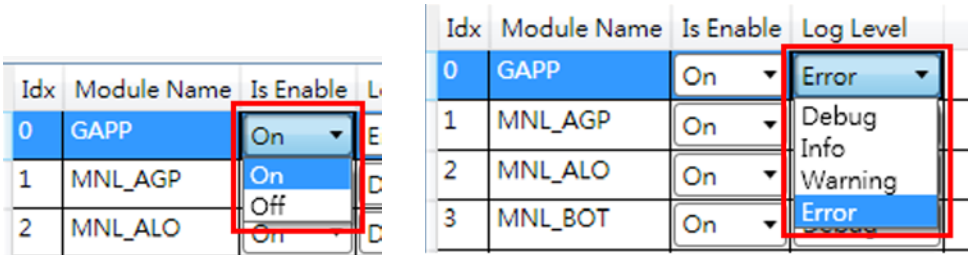

Figure 1-9 Modify log setting

4. Click the **Set Log Filter Info** button to change log status on the device, or click the **Save Log Filter** button save the new log setting on the device.

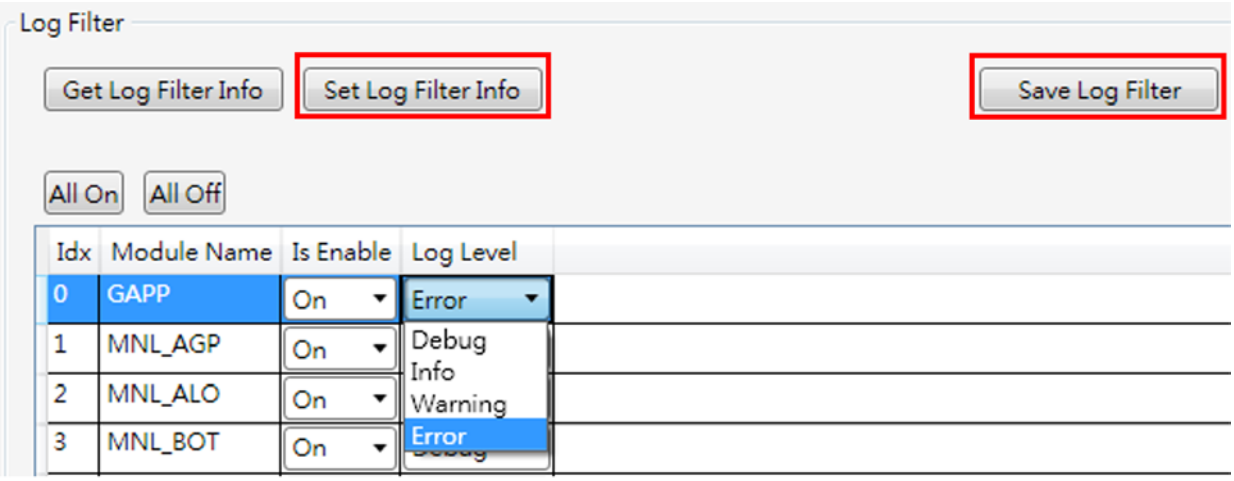

Figure 1-10 Set/Save Log Filter

1.6. Pcapng log file transfer

The user can send MS-DOS command to dump the desired data in pcapng log file to txt file as shown in Figure 1-1-11 MS-DOS command for capturing desired data. It will search the string with all matches of a pattern “airo_debug_print.string” data and save these data to “Logging_COM100_00001_20200316130407.txt”.

MS-DOS command example:
D:\ab156x-atk\log\Logging_20200316_130403_COM100>..\..\Wireshark_Release\tshark.exe -r Logging_COM100_00001_20200316130407.pcapng -T fields -e airoha_debug_print.string > Logging_COM100_00001_20200316130407.txt
Figure 1-10 Set/Save Log Filter

```
Microsoft Windows [Version 10.0.16299.611]
(c) 2017 Microsoft Corporation. All rights reserved.

D:\ab156x-atk\log\Logging_20200316_130403_COM100>..\..\Wireshark_Release\tshark.exe -r Logging_COM100_00001_202003161304
07.pcapng -T fields -e airoha_debug_print.string > Logging_COM100_00001_20200316130407.txt
```

Figure 1-1-11 MS-DOS command for capturing desired data

1.7. FrontLine online HCI log setting

The user can use logging tool with HCI handle to connect FrontLine online. FrontLine must be at least version 15 and there must be three specific files (i.e. liveimport.ini, LiveImportAPI.dll, and LiveImportAPI_x64.dll) in the tool\log_handler folder as shown in Figure 1-1-12 Including FrontLine files in log_handler folder. The user can open log_handle_xxx.txt file to check if FrontLine connected as shown in Figure 1-1-13 HCI handler log with FrontLine connection

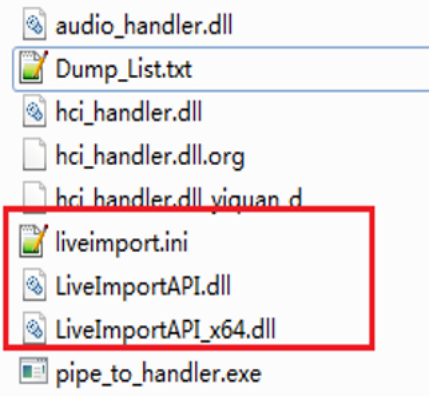

Figure 1-1-12 Including FrontLine files in log_handler folder

18:43:34.192 Succeed to load dll and succeed to resolve the API function pointers
18:43:34.192 [HCI_hdlr] init
18:43:34.227 [HCI_hdlr] **FrontLine LiveImport Connected**

18:43:34.227 [HCI_hdlr] start
18:43:34.233 [HCI_hdlr] open dump file success...

Figure 1-1-13 HCI handler log with FrontLine connection

2. Exception Dump

2.1. Real-time Exception Dump

When Logging Tool is receiving the exception data from the device, there are four steps to complete the exception log dump process.

1. Logging Tool shows a popup dialog to tell the user that an exception occurred.

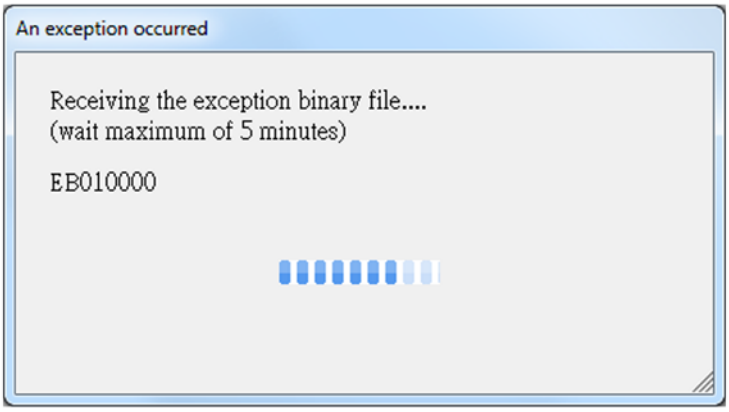

Figure 2-1 Exception occurred dialog

2. Choose the .elf binary file for the exception dump tool.

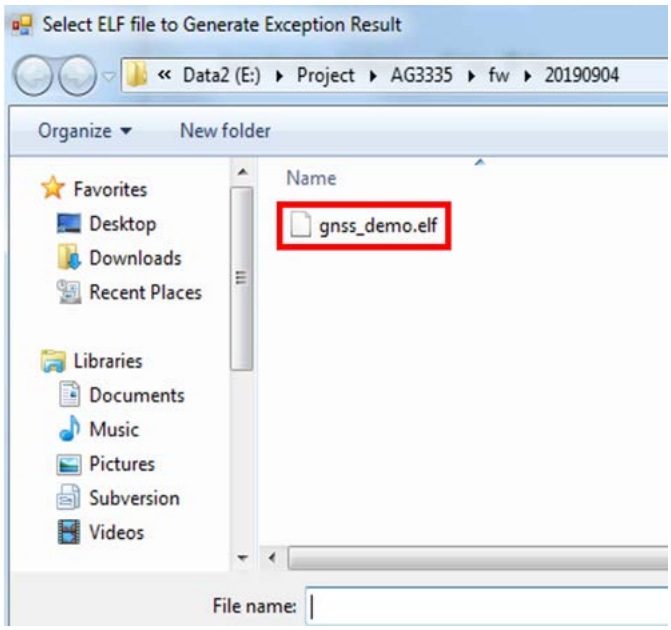

Figure 2-2 Choos elf binary file for exception dump

3. Logging Tool shows a popup dialog during when the exception dump tool is running.

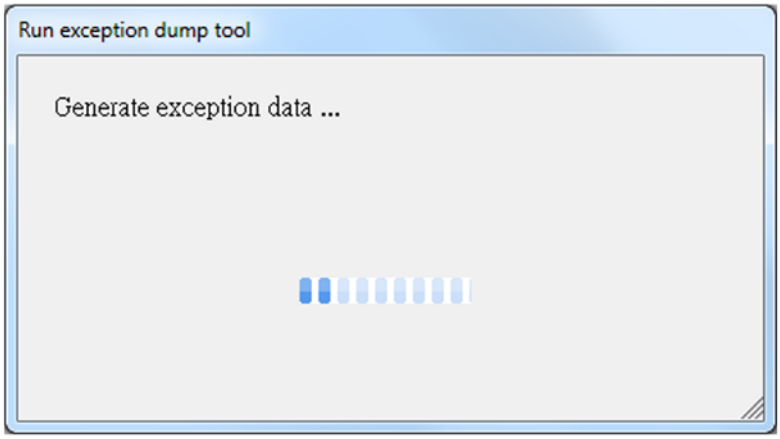

Figure 2-3 Running exception dump tool

4. When the exception dump process is complete, Logging Tool opens a popup window to show the result and the output path for the folder location.

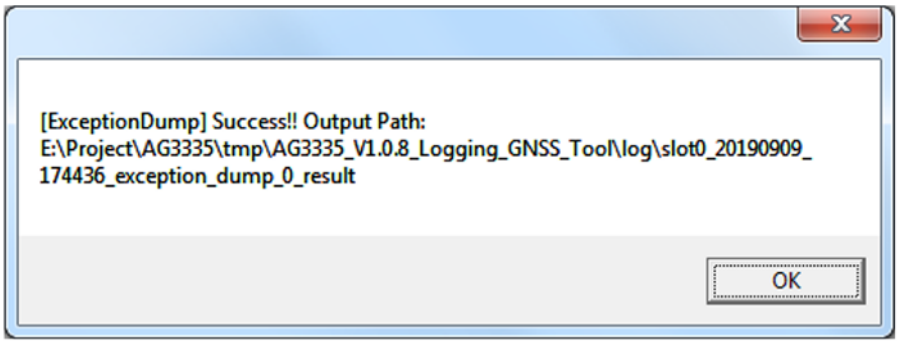

Figure 2-4 Real-time exception dump tool

2.2. Assertion

Logging Tool provides support for sending a command to a device to trigger assertion. Assertion is used to check the current memory status of the device. The **Assert** button is only available when the logging tool is connected with the device.

Figure 2-5 Assert button

Click the Assert button to send the command to the device. The device should then trigger an exception. The logging tool then executes the real-time exception dump flow. Please refer to Section 2.1, “Real-time Exception Dump” for more information.

3. Wireshark Settings

3.1. Log file size

Before launching Wireshark, you can adjust the maximum size of Wireshark log file in single file. When the log file size reaches the size of this setting, Wireshark creates a new log file. We strongly suggest that this value should not be greater than 200 MB, because it could occupy too many RAM space and have a negative effect on the PC's performance.

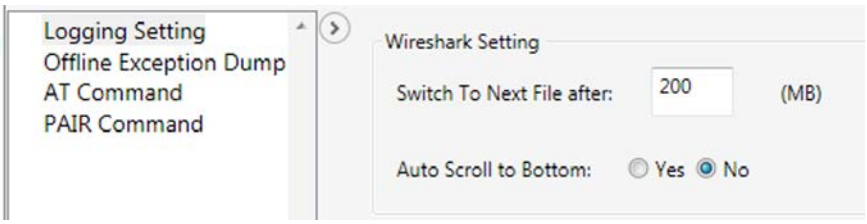

Figure 3-1 Wireshark log file size setting

3.2. Open previously saved log file

You can launch Wireshark directly from tool/Wireshark_Release/Wireshark.exe.

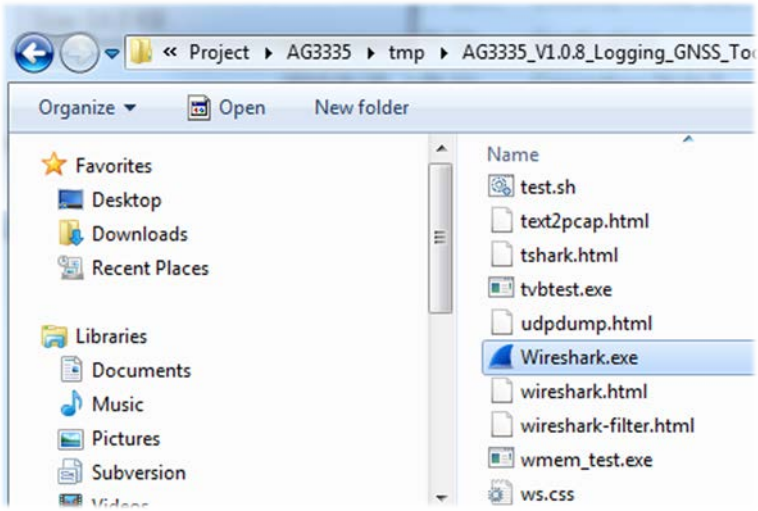

Figure 3-2 Wireshark folder

When Wireshark has started, you can choose the pcapng log file by selecting File > Open on the tool bar, or drag and drop the pcapng file onto the main window of the Wireshark application.

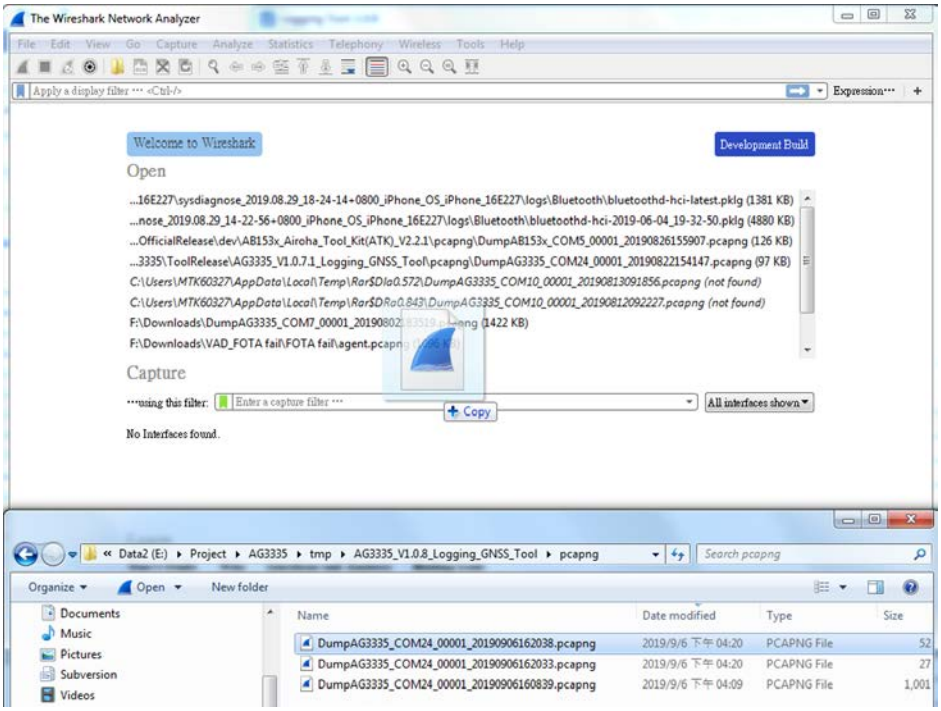

Figure 3-3 Drag and drop the log file to Wireshark

3.3. Search and filter keywords

You can easily search packets when you have already captured packets or read them in a previously saved log file.

3.3.1. Searching for keywords

Please press **CTRL+F** and key into the textbox the string of text you want to find (as shown in Figure 3-4). Then click the **Find** button. Wireshark jumps to the line if it finds a packet including the text string.

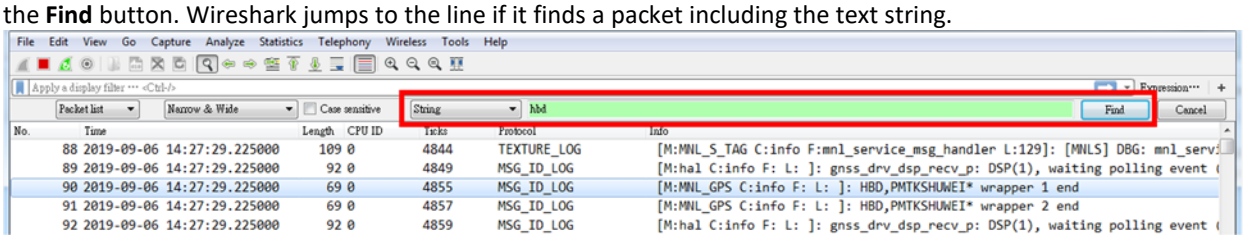

Figure 3-4 Search keyword

3.3.2. Filtering keywords

If you want to focus only on a specific packet, you can use the filter function. There are two common expression commands that you can use to filter packets:

1. **frame contains "string"** – Filter the string by case sensitive.
2. **frame matches "(?i)string"** – Filter the string by case insensitive.

Please key in the text string in the expression textbox as shown in Figure 3-5, and press the Enter key. Wireshark shows the packets that including the text string.

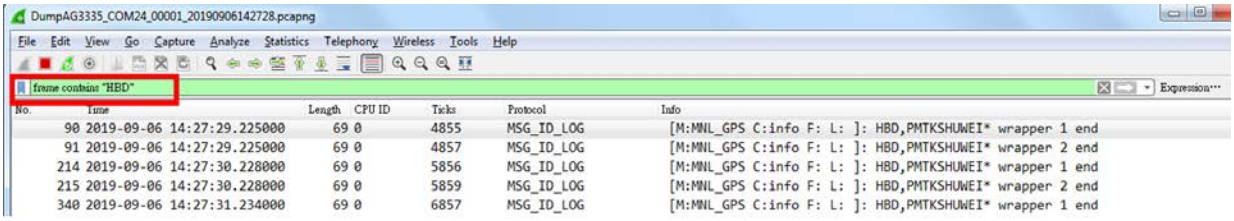

Figure 3-5 Filter keyword

3.4. Changing Time display formats

You can adjust the time display formats by selecting View > Time Display Format on the tool bar as shown in Figure 3-2.

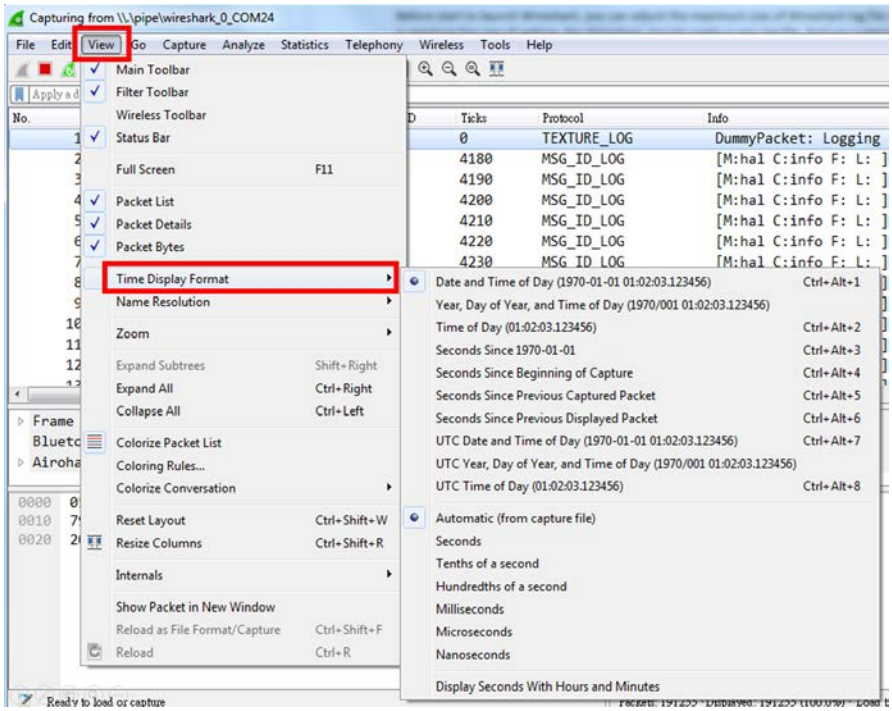

Figure 3-6 Time display formats

4. Raw Command

You can input RACE command in HEX format, and check Listen RACE response for getting the response in RACE format.

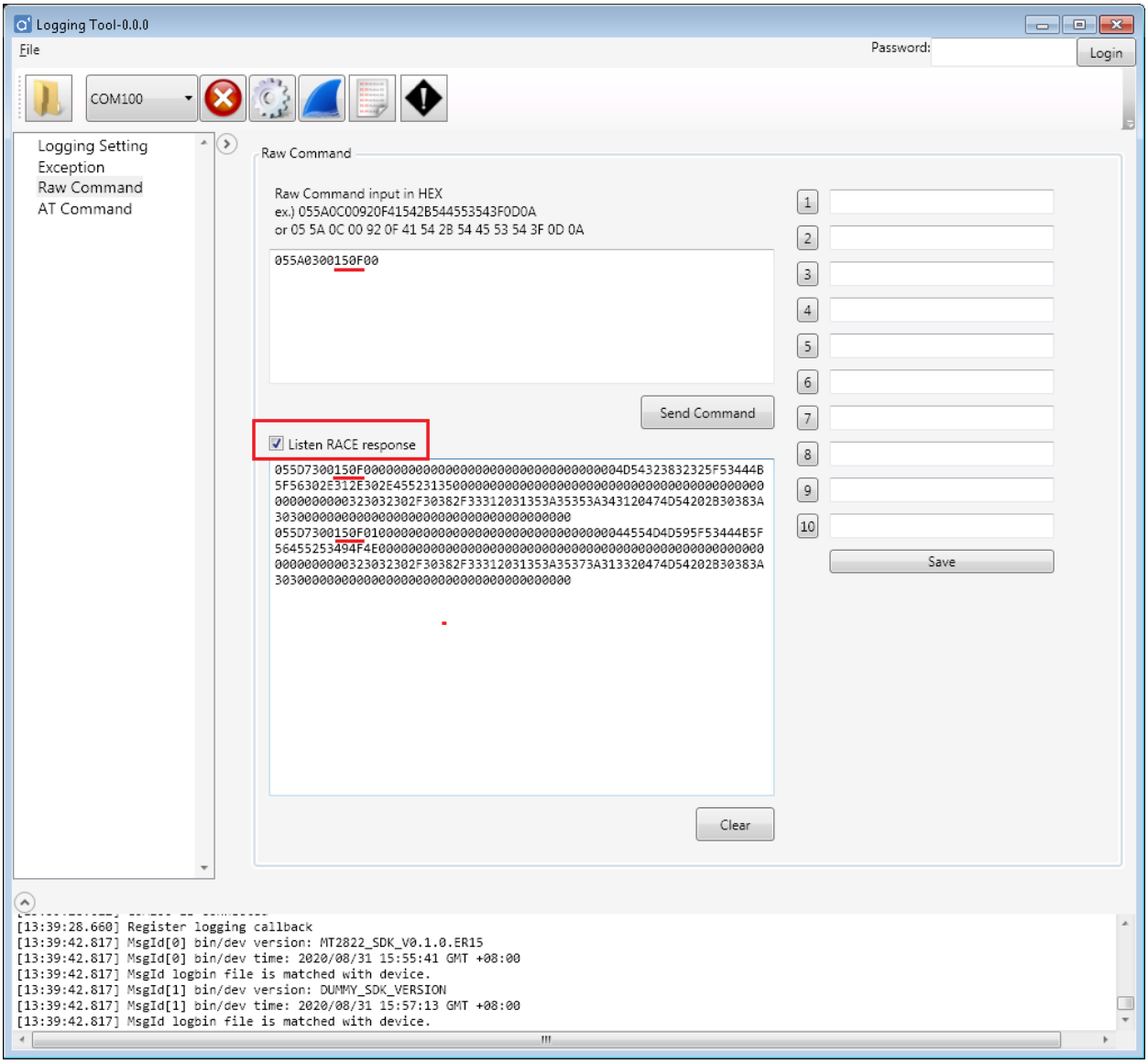

Figure 4-1 Raw Command

5. AT Command (AB1565/AB1568)

If firmware support RACE AT command, you can input the AT command and check the Listen AT Command response for getting the AT command response.

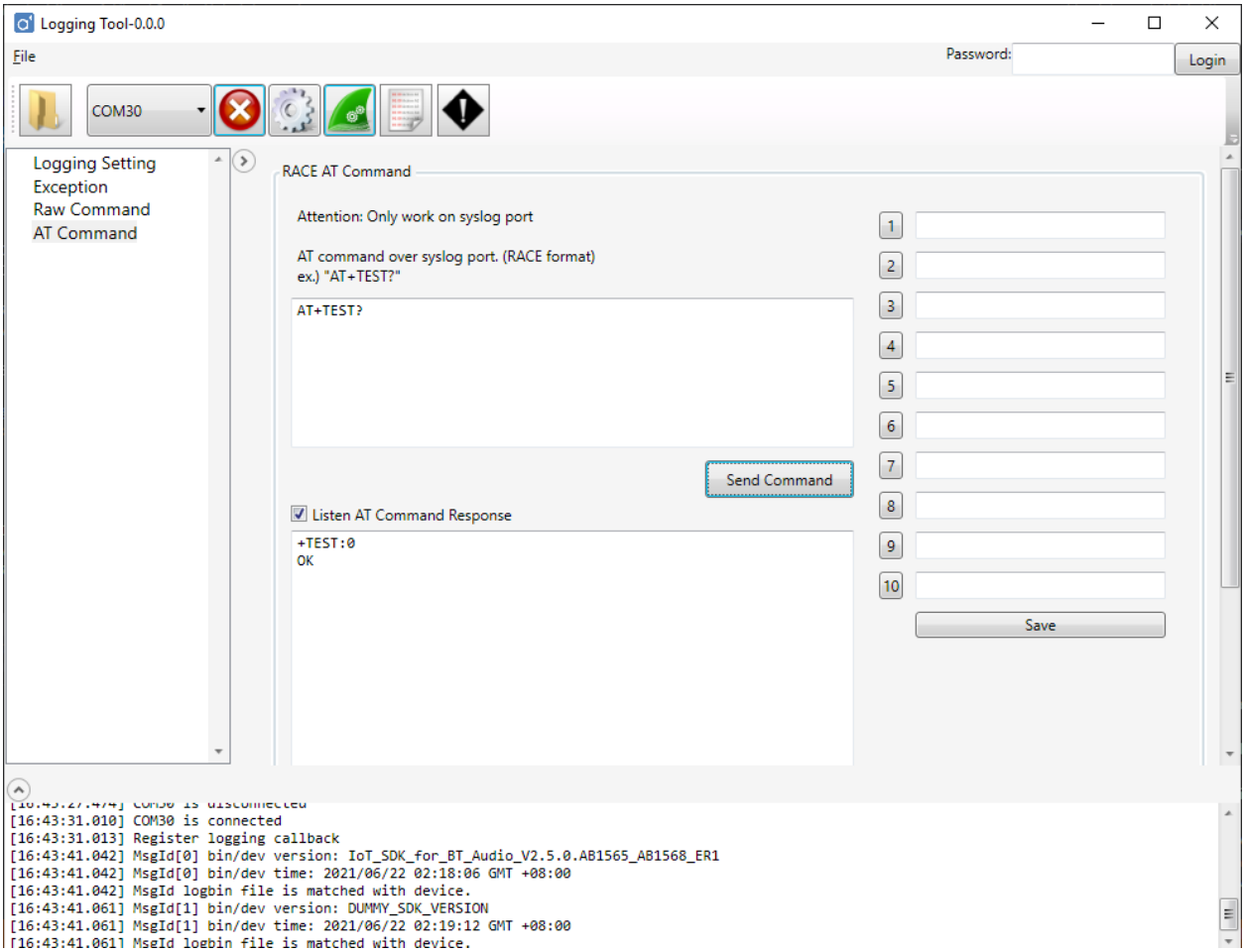

Figure 5-1 AT Command

6. Logging over USB-HID (AB1565/AB1568)

6.1. Modify firmware, config system log output port to USB-HID

Please refer to document “AB1565_AB1568_Config_Tool_Users_Guide” for details about the “System log setting”. To modify the firmware:

6) Modify “System Log Port” to USB
7) Save the settings
8) Update firmware to device

6.2. Modify setting to USB-HID

To change the setting for US-HID:

9) Press the **Settings** button. The **Uart Comport Setting** window appears
10) Select the USB-HID radio button
11) Complete the **Product_ID** field for your specific application, i.e. 0x0808 for a dongle design or 0x0809 for a headset design

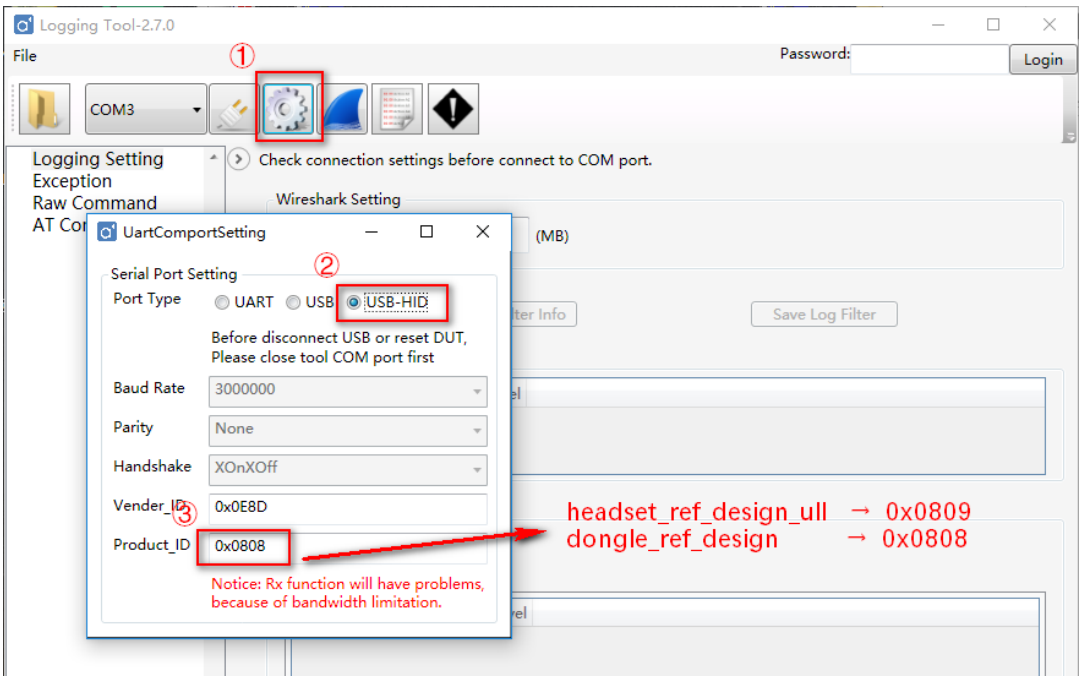

Figure 6-1 Modify setting

6.3. Select USB-HID item

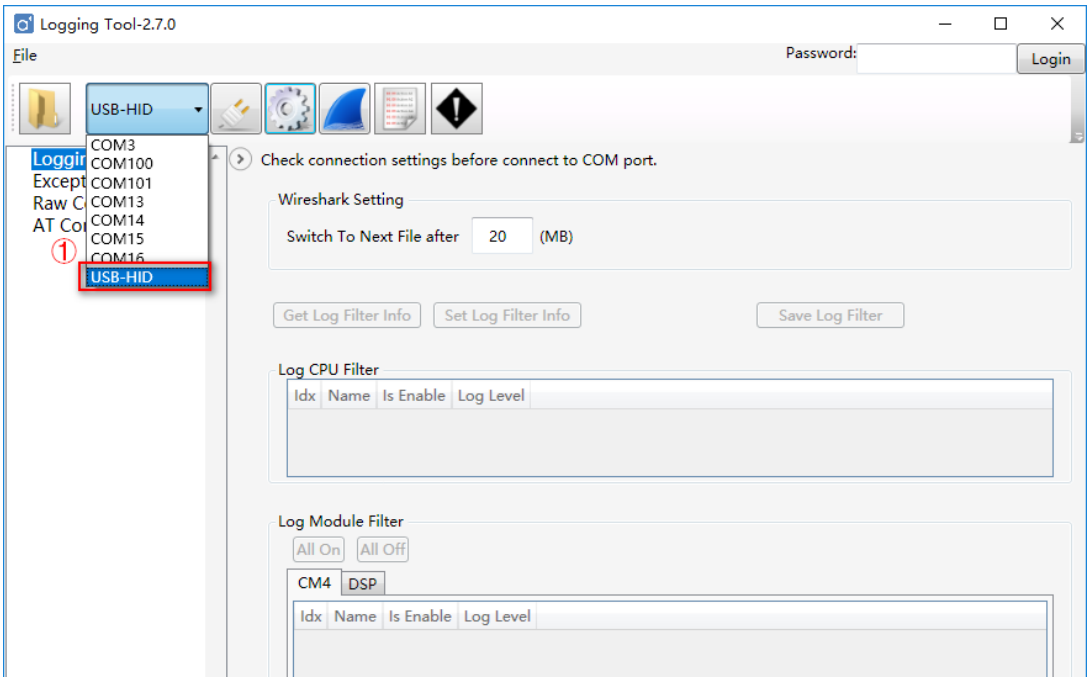

Figure 6-2 Select USB-HID item

6.4. Bootup device and connect to getting log

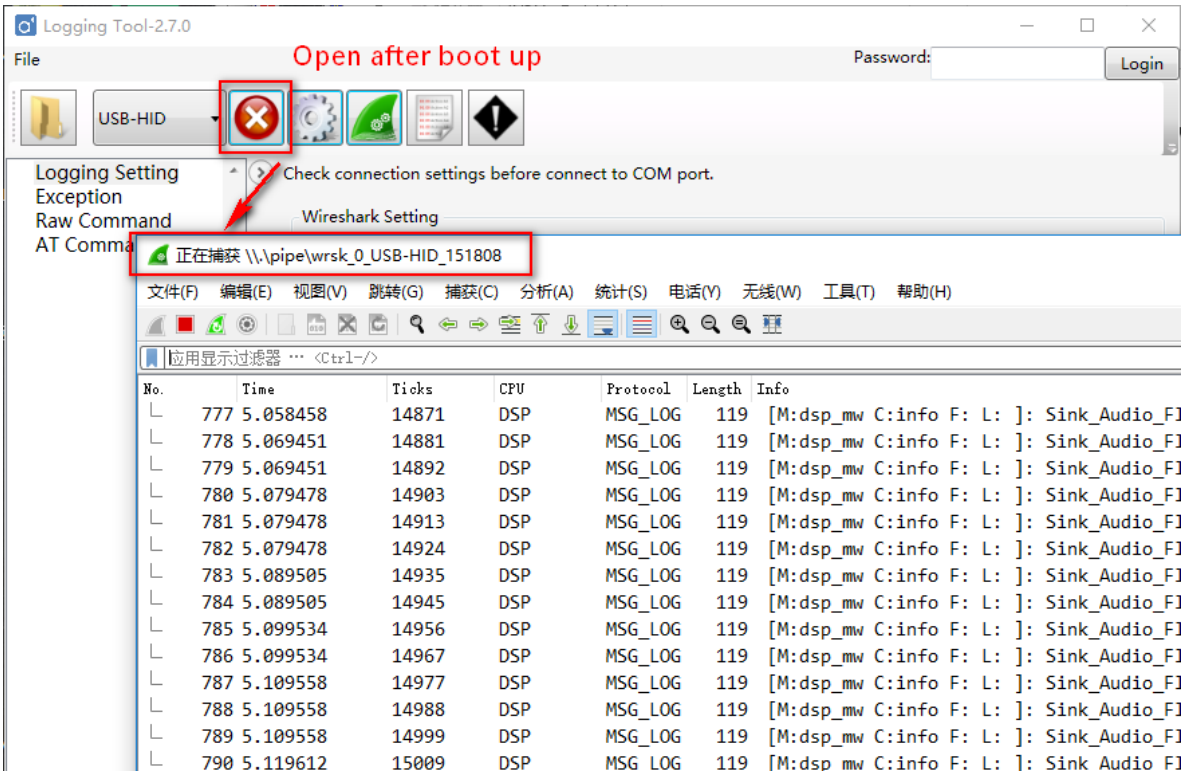

Figure 6-3 Getting log