



EM759X Series

Windows User Guide

4134931
Rev. 2



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Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless product are used in a normal manner with a well-constructed network, the Sierra Wireless product should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless product, or for failure of the Sierra Wireless product to transmit or receive such data.

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Revision History

Revision number	Release date	Changes
1	2022	Document creation
2	September 2023	Added EM7595 General update

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>> 1: General

1.1 Purpose

This document provides guidance for installing the EM759x Driver package on Windows platforms (Windows 10, Windows 11) and using optional tools with EM759x modules (Qualcomm SDX12 chipset-based).

Note: In this document, EM759x refers to EM7590 and EM7595 modules.

The EM759x driver package includes:

- EM75 drivers
- MBIMAT tool
- Modem logger tool
- WIN logger tool
- FDTW tool
- One Click tool
- RAM dump tool

>> 2: EM759x Driver Package

The EM759x driver package includes Windows drivers for the EM759x, and several additional tools.

By default, all the tools will be installed during the driver package installation.

2.1 EM759x Driver Package

2.1.1 Installing the Driver Package

To install the EM759x driver package (all or only specific parts):

1. Extract the EM759x driver package to a working folder.

Name	Date modified	Type	Size
 Configuration	2023-02-02 1:29 PM	Configuration settings	6 KB
 GenericInstaller	2023-02-02 1:30 PM	Application	16,067 KB

2. By default, the entire package will be installed (EM7590 driver and all tools).

Optionally, before installing the package, change any configuration items::

- a. In a text editor, open the Configuration.ini file.

For example:

```

9
10 [Install Option]
11 ;;;;;;;;;;;;;;
12 ; "Y" means the software will be installed.
13 ; "N" means the software will not be installed.
14 ;;;;;;;;;;;;;;
15 EM7590_Driver=Y
16 SWI_Service=Y
17 MBIMAT=Y
18 ModemLogger=Y
19 WinLogger=Y
20
21 ;;;;;;;;;;;;;;
22 ; "Y" means silent install
23 ; "N" means normal install
24 ;;;;;;;;;;;;;;
25 SilentInstall=N
26

```

Set Install options for the EM759x driver and each tool—'Y' to install or 'N' to not install.

Set to 'N' to install normally, or 'Y' to install silently (i.e., in the background)

Note—The file includes comments describing available options for all fields.

- b. In the “[Install Option]” section, choose the package components to install and the installation progress display method:

Table 2-1: [Install Option] configuration variables

Variable	Purpose	Type	Default
EM759x_Driver	Install the EM759x Windows driver	Boolean (Y/N)	Y
SWI_Service	Install the Windows background service that deals with automatic firmware updates, automatic SIM matching, etc. Configuration options for this service are described in step c , below.	Boolean (Y/N)	Y
MBIMAT	Install the AT command interface tool	Boolean (Y/N)	Y
ModemLogger	Install the Modem logger tool	Boolean (Y/N)	Y
WinLogger	Install the Windows logger tool	Boolean (Y/N)	Y
SilentInstall	Set the installation progress display method (Y—install in the background, N—Install normally)	Boolean (Y/N)	N

- c. In the “[SWI service Option]” section, configure features of the SWI_Service Windows background service:

Table 2-2: [SWI service Option] configuration variables

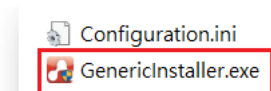
Variable	Purpose	Type	Default
ImgLocation	Path where firmware image will be placed	String	blank (default path)
DownGrade	Allow updates to older firmware versions	0 (No) 1 (Yes)	0
USBComp	Set the USB interface composition	Hexadecimal	100D
AutoSimMatched	Automatically update the firmware for the installed SIM's carrier	0 (Disable) 1 (Enable)	1
AutoFwUpdated	Perform automatic firmware update	0 (Disable) 1 (Enable)	1

- d. Also in the “[SWI service Option]” section, indicate the carrier firmware version to update:

Table 2-3: [SWI service Option] Carrier F/W configuration variables

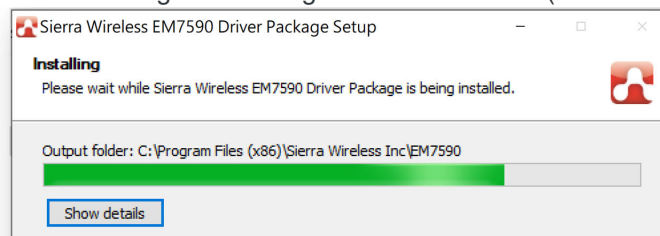
Variable	Purpose	Type	Default
GENERIC	Automatically download the specified firmware/PRI version if AutoFwUpdated is enabled and the carrier (e.g., AT&T, Telstra, etc.) is active.	0 (Do not update) String (firmware/PRI version)	not specified
ATT		0 (Do not update) String (firmware/PRI version)	not specified
TMO		0 (Do not update) String (firmware/PRI version)	not specified
VERIZON		0 (Do not update) String (firmware/PRI version)	not specified
PTCRB		0 (Do not update) String (firmware/PRI version)	not specified
TELSTRA		0 (Do not update) String (firmware/PRI version)	not specified
DOCOMO		0 (Do not update) String (firmware/PRI version)	not specified
ORANGE		0 (Do not update) String (firmware/PRI version)	not specified

- e. Save the file and exit.
3. Install the package:
- a. Run the GenericInstaller.exe.

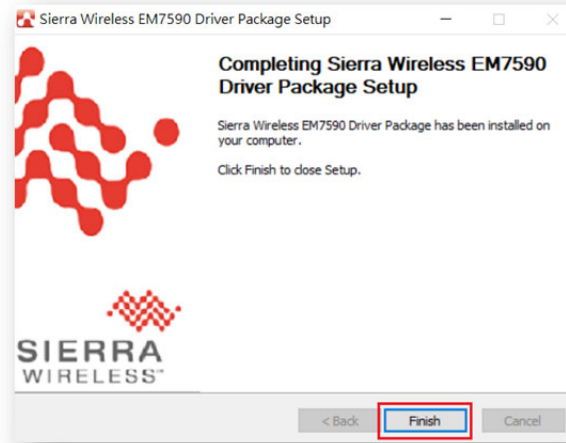


- b. In the Installer Language window, select the language to display for the installation instructions.
- c. In the Welcome window, click Next to continue.
- d. In the License Agreement window, review the agreement and click I Agree to continue the installation.

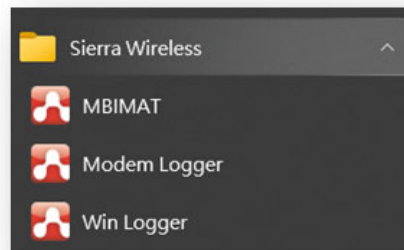
The Installer begins installing the selected items (EM759x driver, tools).



- e. After the installation finishes, click Finish.



- f. Optionally, confirm the tools that were installed—In the Start menu, select the Sierra Wireless folder.



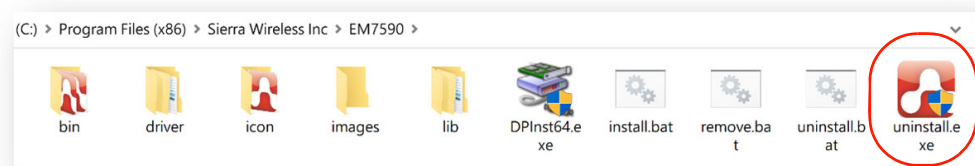
Note: Installed package/tools configuration can be updated at any time after installing the package—repeat this procedure with appropriate options set in the Configuration.ini file.

2.1.2 Uninstalling the Driver Package

Optionally, the EM759x driver package can be uninstalled.

To uninstall the package, use either of the following methods:

- Uninstall the program in Windows (e.g., Add/Remove Programs)
- Run the uninstall.exe, which is in the Windows Program Files folder path:



>> 3: MBIMAT

3.1 Introduction

The MBIMAT tool provides an interface for entering AT commands over the MBIM interface even whether or not an AT command port is available.

MBIMAT is installed as part of the EM759X driver package (see [Installing the Driver Package on page 6](#)).

3.2 Using MBIMAT

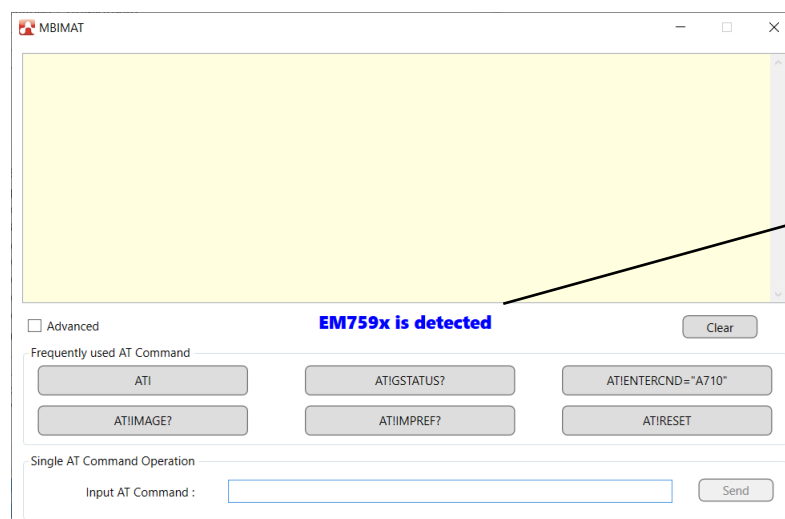
To use MBIMAT:

1. Launch MBIMAT from the Start menu.



The MBIMAT window appears.

2. Check the connection status:
 - If the status is “EM759x is detected”, the interface is working. Continue to the next step.
 - If the status is “No EM759x detected”, MBIMAT cannot be used until the issue is resolved.



3. Begin using MBIMAT—options include:

- Enable advanced interface options—Below the Log window, select Advanced.

Display advanced interface options

☒ Advanced **EM759x is detected** Clear

Frequently used AT Command

ATI AT+STATUS? AT+ENTERCND="A710"

AT+IMAGE? AT+IMPREF? AT+RESET

Single AT Command Operation

Input AT Command : Send

Log Save Location

Browse...

Multiple AT Command Operation

☒ Send Interval ms/time

Import Command File Execute Pause Stop

- Run AT commands:

- Type an AT command in the “Input AT Command” field.
- Press Send to run the command.

The command and response appear in the log window (and the command is removed from the Input AT Command field).

MBIMAT

>>
AT<<

Manufacturer: Sierra Wireless
Model: EM7595
Revision: SWIX12C_02.02.01.08 2023/08/04 01:41:07
SVN: 04
IMEI: 350226390000112
FSN: EW3312021004GC
TS.25: 2023.6.19
+GCAP: +CGSM
OK

☐ Advanced **EM759x is detected** Clear

Frequently used AT Command

ATI AT+STATUS? AT+ENTERCND="A710"

AT+IMAGE? AT+IMPREF? AT+RESET

Single AT Command Operation

Input AT Command : Send

- Clear commands/responses from the Log window—Click Clear.

TS.25: 2023.6.19
+GCAP: +CGSM
OK

☐ Advanced **EM759x is detected** Clear

Frequently used AT Command

ATI AT+STATUS? AT+ENTERCND="A710"

- Synchronously display and save the log window commands/responses to a log file—In the Log Save Location field, enter (or click Browse to select) a folder where the AT commands/responses will automatically be copied to a log file.

- Use shortcut keys to send your commonly-used AT commands:
 - Click one of the six 'Frequently used AT Command' buttons to run the linked command.

- Optionally modify or change the command linked to one of the buttons—Right-click the button, select Edit, and edit the linked command.

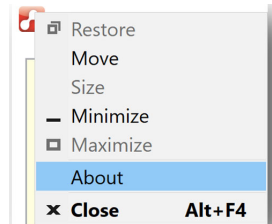
Right-click, Edit, and modify the command ('AT!') linked to the button

New command linked to the button

- Use AT command scripts to run multiple AT commands in sequence:
 - Click Import Command File and select a .txt file that contains a list of AT commands to run in sequence.


```
at!entercnd="A710"
at!usbcomp=1,1,100F
at+cfun=1,1
```
 - Optionally, select Send interval and set a time interval (in ms) to wait between running each command.
 - Run the command script:
 - Click Execute to start (or continue) running the script.
 - Click Pause to temporarily pause the script.
 - Click Stop to stop the script.

- Display the MBIMAT version information—Click the MBIMAT icon in the top left corner and select About:



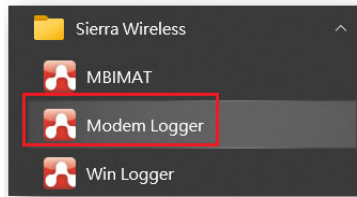
>> 4: Modem Logger

The Modem Logger tool collects modem logs for EM759x modules on Windows systems. Modem Logger is installed as part of the EM7590 driver package (see [Installing the Driver Package on page 6](#)).

4.1 Using Modem Logger

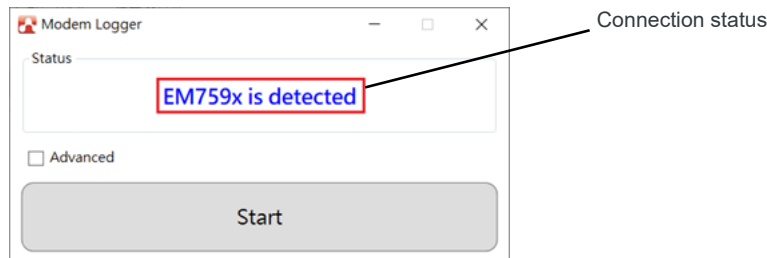
To use Modem Logger:

1. Launch Modem Logger from the Start menu.



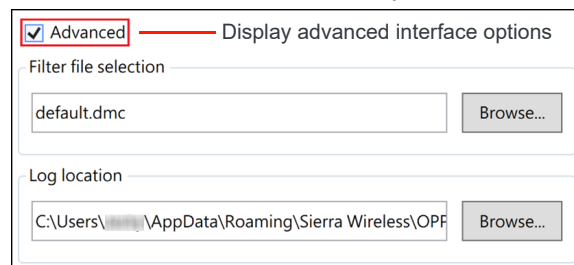
The Modem Logger window appears.

2. Check the connection status:
 - If the status is “EM759x is detected”, the interface is working. Continue to the next step.
 - If the status is “no EM759x detected”, Modem Logger cannot be used until the issue is resolved.



Note: By default, logs are stored in "...AppData\Roaming\Sierra Wireless\OPPT\Logs". The storage location can be changed by enabling Advanced options.

3. Begin using Modem Logger—options include:
 - Change the filter file and the log storage location from default values:
 - i. Enable advanced interface options—Select Advanced.



- ii. Optionally, in the Filter File selection field, select the log filter file to use (the default is default.dmc).

Advanced

Filter file selection

default.dmc Browse...

Log location

C:\Users\... \AppData\Roaming\Sierra Wireless\OPF Browse...

- iii. Optionally, in the Log location field, select the path where logs will be stored (the default is C:\Users\<username>\AppData\Roaming\Sierra Wireless\OPPT\Logs).

Advanced

Filter file selection

default.dmc Browse...

Log location

C:\Users\Jacky\AppData\Roaming\Sierra Wireless\OPF Browse...

- Start and stop recording logs:

- i. Press Start to begin recording the modem log.

The status window shows the log is being recorded.

Modem Logger

Status

RECORDING

Advanced

Filter file selection

default.dmc Browse...

Log location

C:\Users\USER\AppData\Roaming\Sierra Wireless\OPF Browse...

Start

- ii. Press Stop to finish recording the modem log.

The status window shows the log has stopped recording.

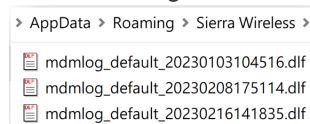
Modem Logger

Status

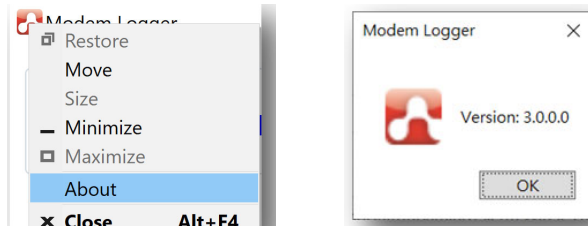
STOPPED

Advanced

Note—The log is saved to the folder indicated in the Log location field.



- Display the Modem Logger version information—Click the Modem Logger icon in the top left corner and select About:



>> 5: Win Logger

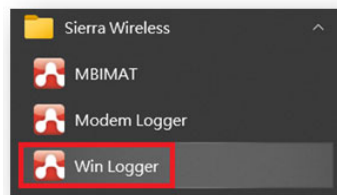
The Win Logger tool is a network trace tool that collects runtime logs for EM759x modules on Windows systems.

Win Logger is installed as part of the EM759X driver package (see [Installing the Driver Package on page 6](#)).

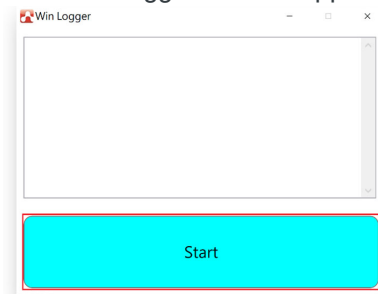
5.1 Using Win Logger

To use Win Logger to record net trace logs:

1. Launch Win Logger from the Start menu.

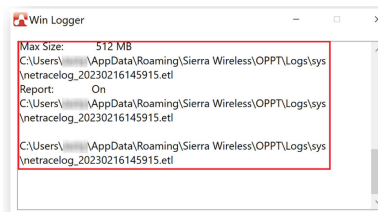


The Win Logger window appears.



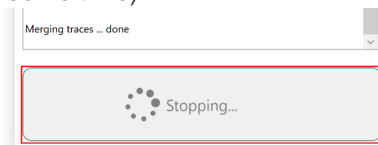
2. Click Start to begin recording the net trace log.

The status window shows that the log is being collected.

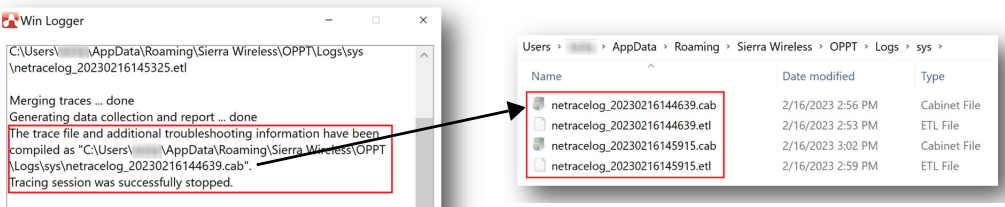


3. Click Stop to finish recording the log.

The button changes to a “Stopping” notice while the log is being stored (this may take some time).

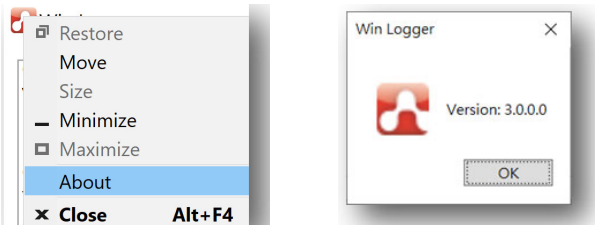


When the process has stopped, the status window shows the location of the stored log file.



To display the Modem Logger version information:

- Click the Modem Logger icon in the top left corner and select About:



>> 6: Module Firmware Download (FDTW)

6.1 Introduction

Module firmware is downloaded to a Windows system using the FDTW (Firmware Download Tool for Windows) application for EM759x modules.

6.2 Firmware Download Procedure

Use the procedure described below to download EM759x firmware to EM759x modules on a Windows host platform. Note—FDTW automatically detects all EM759x modules connected to the Windows system and performs the download to all modules.

1. Copy the FDTW file (fdtw.exe) to a working folder.



2. Open a command prompt window, then go to the working folder and start the firmware download:

- a. Run FDTW using the appropriate command arguments:

FDTW command usage:

```
fdtw [-f <1st image file> <2nd image file> ...] [-impref <version>] [-dfb] [-a] [-h]
```

where:

- -f: Specify one or multiple image files to download.
- -impref: Specify the preferred firmware version.
- -dfb: Download image while the module stays in fastboot mode.
- -a: Close the download progress window automatically on completion
- -h: Show option usage.

e.g.:

Example 1: Download a single SOP image (.sop):

```
• fdtw -f 02.02.01.06.sop
```

Example 2: Download a firmware image (.fwi) and a carrier PRI (.mcf):

```
• fdtw -f 02.02.01.06.fwi 02.02.01.06_GENER-  
IC_002.000.001.mcf
```

Example 3: Download a SOP image (.sop) and an additional carrier PRI (.mcf), and close the download window on completion:

```
• fdtw -f 02.02.01.06.sop 02.02.01.06_AT-  
T_002.000.001.mcf -a
```

Example 5: Download a SOP image (.sop) while the module stays in fastboot mode:

```
• fdtw -f 02.02.01.06.sop -dfb
```

A console window opens to display the download progress, starting with identifying the detected modules. (**Note**—The example shown in this procedure is a Windows system with two modules installed—one EM7590 and one EM7595.)

```
FDTW Version: 4.0.0.1
```

```
Module Information      ← i. First module detected
```

```
Model: EM7590
```

```
Revision: SWIX12C_02.02.01.08 2023/08/04 01:41:07
```

```
FSN: DX2324000604G1
```

```
Module Information      ← i. Second module detected
```

```
Model: EM7595
```

```
Revision: SWIX12C_02.02.01.08 2023/08/04 01:41:07
```

```
FSN: EW3305002204GC
```

b. Wait for FDTW to download and install the firmware.

For example, when downloading a single SOP image (using the '-f' option):

i. FDTW detects the module version.

ii. FDTW sets the download port and begins downloading the firmware.

iii. After the firmware is downloaded, FDTW begins updating the firmware on the module.

```
FSN: EW3305002204GC
```

```
[DX2324000604G1] Start flashing
```

```
[EW3305002204GC] Start flashing
```

```
[EW3305002204GC] Flash done
```

```
[DX2324000604G1] Flash done
```

```
finish.
```

```
Updating the firmware...
```

```
The update process takes up to 3 minutes, please wait.
```

```
.....
```

← ii. Download ports set for both modules, FW download begins

← iii. Firmware update begins

iv. If the installed file is:

- Firmware only (no OEM PRI)—The new installed firmware version is displayed and the download process ends.

```
The update process takes up to 3 minutes, please wait.
```

```
.....
```

```
[EW3305002204GC] Error 0 : Upgrade Successful
```

```
[DX2324000604G1] Error 0 : Upgrade Successful
```

↑ iv. Firmware updates completed

```
Elapsed Time: 00h:02m:26s:526ms
```

```
Module Information
```

← iv. First module detected, new revision displayed

```
Model: EM7590
```

```
Revision: SWIX12C_02.02.01.10 2023/08/30 21:37:37
```

```
FSN: DX2324000604G1
```

```
Module Information
```

← iv. Second module detected, new revision displayed

```
Model: EM7595
```

```
Revision: SWIX12C_02.02.01.10 2023/08/30 21:37:37
```

```
FSN: EW3305002204GC
```

```
Press Enter to continue ...
```

- **Firmware plus OEM PRI**—The module reboots and initializes, then the new installed firmware version is displayed and the download process ends.

```

The update process takes up to 3 minutes, please wait.
.....

Waiting for module initialization          ← iv. Modules reboot and
                                         initialize %%multiple?

Module Rebooting .....
[EW3305002204GC] Error 0 : Upgrade Successful
[DX2324000604G1] Error 0 : Upgrade Successful
                                         ↑ iv. Firmware updates completed
Elapsed Time: 00h:02m:26s:526ms

Module Information          ← iv. First module detected, new revision displayed
Model: EM7590
Revision: SWIX12C_02.02.01.10 2023/08/30 21:37:37
FSN: DX2324000604G1

Module Information          ← iv. Second module detected, new revision displayed
Model: EM7595
Revision: SWIX12C_02.02.01.10 2023/08/30 21:37:37
FSN: EW3305002204GC

Press Enter to continue ...

```

- Press Enter to close the window.
(Note—If the ‘-a’ command line argument was used, the window closes automatically when the download process ends.)

>> 7: Module Firmware Download (OneClick)

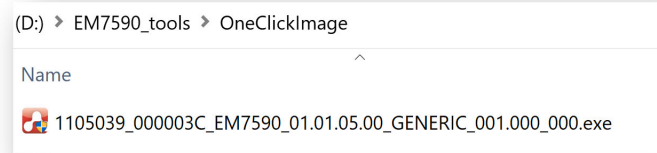
7.1 Introduction

The EM759X Driver package includes a 'one click' tool to automatically install the Generic firmware release to the EM759X module on a Windows system.

7.2 One Click Firmware Download Procedure

To install the Generic firmware to an EM759X module on a Windows host platform:

1. Copy the one click file (example shown below) to a working folder.



2. In File Explorer, go to the working folder and double-click the one click file to do download and install the firmware.

A console window opens to display the download progress.

```
FDTW Version: 4.0.0.0

Module Information
Model: EM7590
Revision: SWIX12C_02.02.01.04 2023/07/07 00:41:41
FSN: DX2324001406G1
```

A console window opens to display the download progress:

- i. The module version is detected.
- ii. The download port is set and the firmware download begins.
- iii. After the firmware is downloaded, the firmware update begins.

```
FDTW Version: 4.0.0.0

Module Information
Model: EM7590
Revision: SWIX12C_01.01.07.00 2022/11/14 16:14:31
FSN: DX2324001406G1

[DX2324001406G1] Start flashing
[DX2324001406G1] Flash done
finish.
Updating the firmware...
The update process takes up to 3 minutes, please wait.
```

i. Module version detected.

ii. Download port set. FW download begins.

iii. Firmware update begins.

iv. After the firmware is downloaded, the firmware update begins.

```
FDTW Version: 4.0.0.0
Module Information
Model: EM7590
Revision: SWIX12C_01.01.07.00 2022/11/14 16:14:31
FSN: DX2324001406G1
[DX2324001406G1] Start flashing
[DX2324001406G1] Flash done
finish.
Updating the firmware...
The update process takes up to 3 minutes, please wait.
.....
```

For example, when downloading a single SOP image (using the '-f' option):

- i. FDTW detects the module version.
- ii. FDTW sets the download port and begins downloading the firmware.
- iii. After the firmware is downloaded, FDTW begins updating the firmware on the module.

```
FDTW Version: 4.0.0.0
Module Information
Model: EM7590
Revision: SWIX12C_01.01.07.00 2022/11/14 16:14:31
FSN: DX2324001406G1
[DX2324001406G1] Start flashing
[DX2324001406G1] Flash done
finish.
Updating the firmware...
The update process takes up to 3 minutes, please wait.
.....
```

iv. When the update is finished, the console window closes automatically.

>> 8: RAM Dump Tool

8.1 Introduction

The RamdumpTool application is a tool for Windows systems that extracts (dumps) logs from the EM759x module's RAM.

This tool is typically installed, under the guidance of Sierra Wireless, after a suspected or confirmed firmware crash. Logs are collected after reproducing the issue causing the firmware crash, for analysis by Sierra Wireless.

8.2 Use the RAM dump tool

If instructed by Sierra Wireless to use the RAM dump tool on a Windows system with an embedded EM759x module that is experiencing issues:

1. Enable secure debug mode on the EM759x module (the Ramdump Tool requires secure debug mode):
 - a. Use the !CHKSB AT command to check if Secure debug is already enabled or not (Note—Enabling secure debug blows a security fuse. Secure debug cannot be disabled after this.):

```
AT!CHKSB
Secure boot: Enabled
Secure debug: Disabled
```

- b. If Secure boot is "Enabled" and Secure debug is "Disabled", use the !CPUID AT command to get the CPU ID:

```
AT!CPUID
3886445027
```

- c. Sierra Wireless will generate an APDP image specifically for the indicated device (i.e., based on the CPU ID).

- d. After receiving the APDP image from Sierra Wireless, use the following command to flash it to the APDP image:

```
fdtw -f apdp.mcf
```

```
FDTW Version: 3.0.1.1

Module Information
Model: EM7590
Revision: SWIX12C_01.01.07.00 2022/11/14 16:14:31
FSN: DX2324001406G1

[DX2324001406G1] Start flashing
[DX2324001406G1] Flash done
finish.
Updating the firmware...
The update process takes up to 3 minutes, please wait.
....
Upgrade Successful

Elapsed Time: 00h:00m:33s:502ms

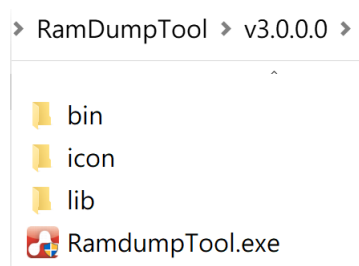
Module Information
Model: EM7590
Revision: SWIX12C_01.01.07.00 2022/11/14 16:14:31
FSN: DX2324001406G1
```

- e. Use the !CHKSB AT command to confirm that secure debug is enabled.

```
AT!CHKSB
Secure boot: Enabled
Secure debug: Enabled
```

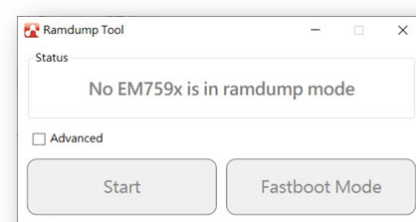
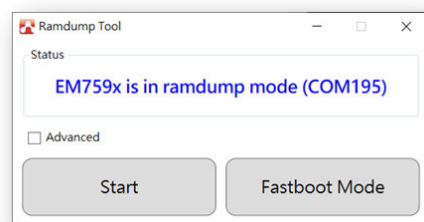
- If Secure debug is “Enabled”, continue to [step 2](#).
- If Secure debug is “Disabled”, the Ramdump Tool cannot be used.

2. Copy the RamDumpTool files to a working folder.
(e.g., The files shown in the example below are for RamDumpTool_v3.0.0.0.)

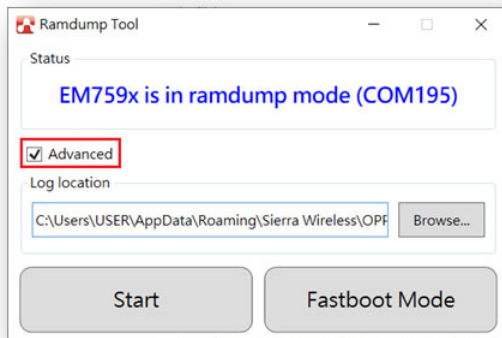


3. From the working folder, run RamdumpTool.exe, which will place the EM795X module in RAM dump mode.

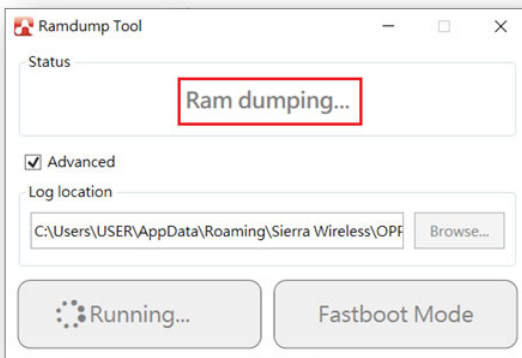
The Ramdump Tool window appears, showing the detected mode:



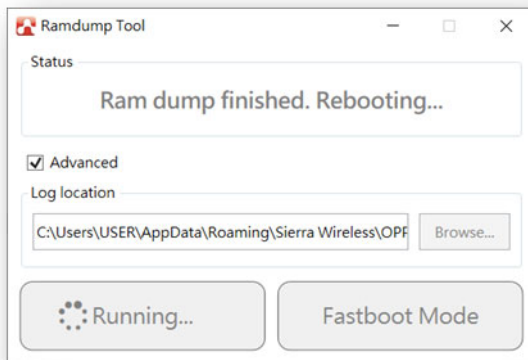
4. Check the detected mode:
 - If the status is message is “EM759x is in ramdump mode ...”, continue to [step 5](#).
 - If the status is “No EM759x is in ramdump mode’, Ramdump Tool cannot be used until the issue is resolved.
5. Begin using the Ramdump Tool to either dump RAM data, or put the module into Fastboot Mode (for firmware downloading):
 - Dump RAM data:
 - i. Select Advanced to display the Log location (i.e., where the logs will be stored).



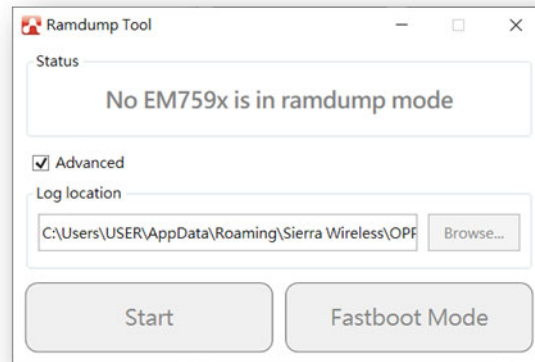
- ii. Optionally, enter a new log location or click Browse to set a new location.
- iii. Reproduce the issue.
- iv. In the Ramdump tool, click Start to dump the RAM data into the log location. The Start button changes to display “Ram dumping...”:



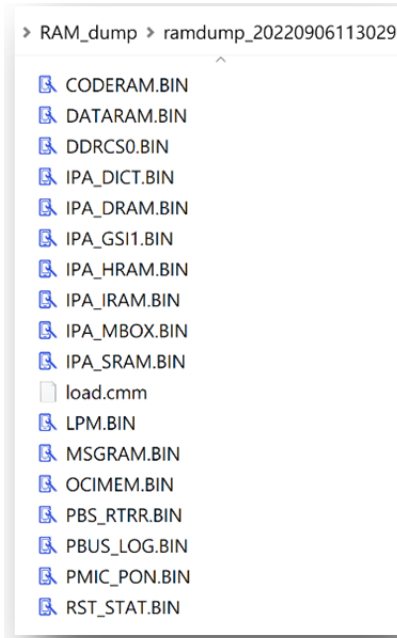
When the RAM dump is finished, the tool triggers a module reboot:



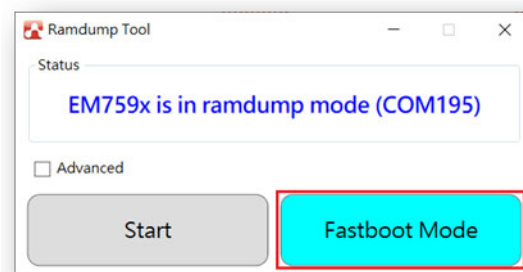
After the module reboots, Ramdump Tool shows that the module is no longer in ramdump mode:



- v. To check the RAM dump files, look in the log folder—the files will be in a time-stamped subfolder:



- Switch to Fastboot Mode for firmware downloading:
 - i. Click Fastboot Mode.



The Status message changes to “Entering fastboot mode...” and then stays in Fastboot Mode.

