



## AW7698 Lab Test Tool Users Guide

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## Document revision history

Revision	Date	Description
1.0	20 Jun 2019	Initial version

## Table of contents

<b>1. Overview .....</b>	<b>1</b>
1.1. Supported chips .....	1
<b>2. Preparation .....</b>	<b>2</b>
2.1. Quick start .....	2
<b>3. Fixed Frequency Test Environment Setup .....</b>	<b>3</b>
3.1. Hardware setup .....	3
3.2. Connection process .....	4
<b>4. Tx Test .....</b>	<b>6</b>
4.1. Single tone transmission .....	6
4.2. LE burst data transmission .....	7
<b>5. Rx Test .....</b>	<b>8</b>
5.1. LE receiver test .....	8

### Lists of tables and figures

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Table 1. GC1 and GC2 mapping table .....	6
Figure 1-1. Connection block diagram .....	1
Figure 1-2. AW7698 EVK top view .....	1
Figure 2-1. Software path .....	2
Figure 2-2. Tool selection window .....	2
Figure 3-1. Hardware setup .....	3
Figure 3-2. Start Lab Test Tool .....	4
Figure 3-3. ATED.bin write success window .....	4
Figure 3-4. Setting success .....	5
Figure 4-1. Single tone transmission settings .....	6
Figure 4-2. LE burst data transmission settings .....	7
Figure 5-1. LE receiver test settings .....	8

## 1. Overview

The Airoha AW7698 Lab Test Tool provides a firmware (FW) and a convenient test suite for easily tuning the frequency on AW7698 devices. Two basic test functions (i.e. transmit (Tx) and receive (Rx)) are included in this utility. You can use this tool to perform continuous Tx, Burst Tx, and Rx Bit Error Rate (BER) tests on Airoha AW7698 products.

Before using the AW7698 Lab Test Tool, the hardware must be correctly set up as shown in the following image.

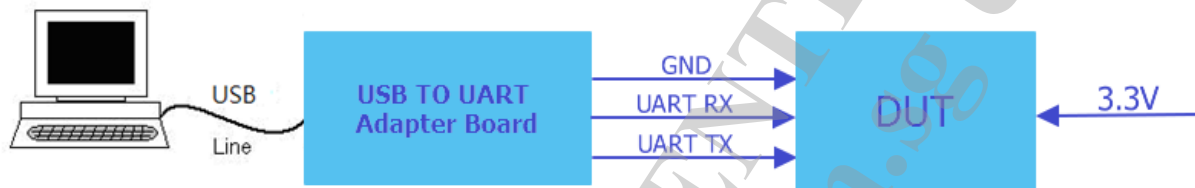


Figure 1-1. Connection block diagram

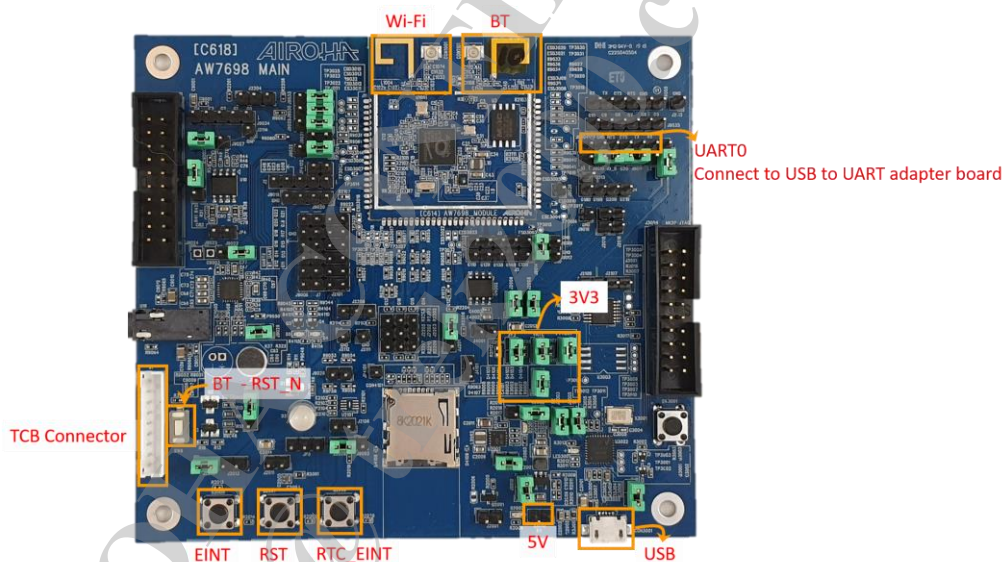


Figure 1-2. AW7698 EVK top view

### 1.1. Supported chips

The Airoha AW7698 Lab Test Tool is compatible with all AW7698 chipsets.

## 2. Preparation

### 2.1. Quick start

You must prepare the following items to start the Lab Test tool:

- 1) An AW7698 Series module
- 2) An AW7698 Series EVK

Double-click the Airoha.Tool.Kit.exe file to start the Lab Test Tool, as shown in Figure 2-1. A window opens so you can select the tool, as shown in Figure 2-2.



Figure 2-1. Software path

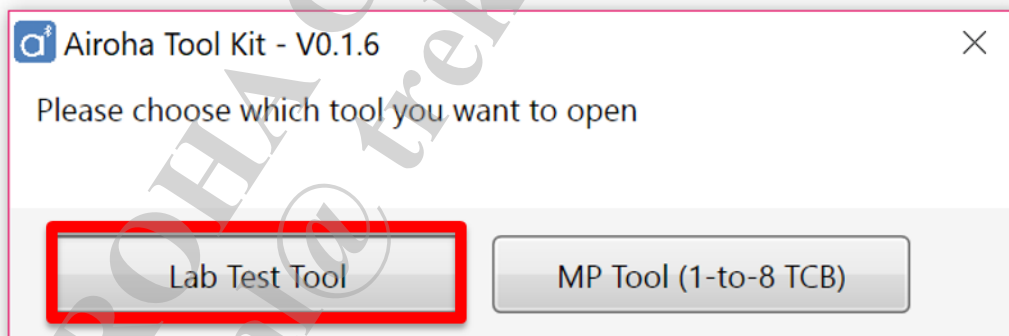
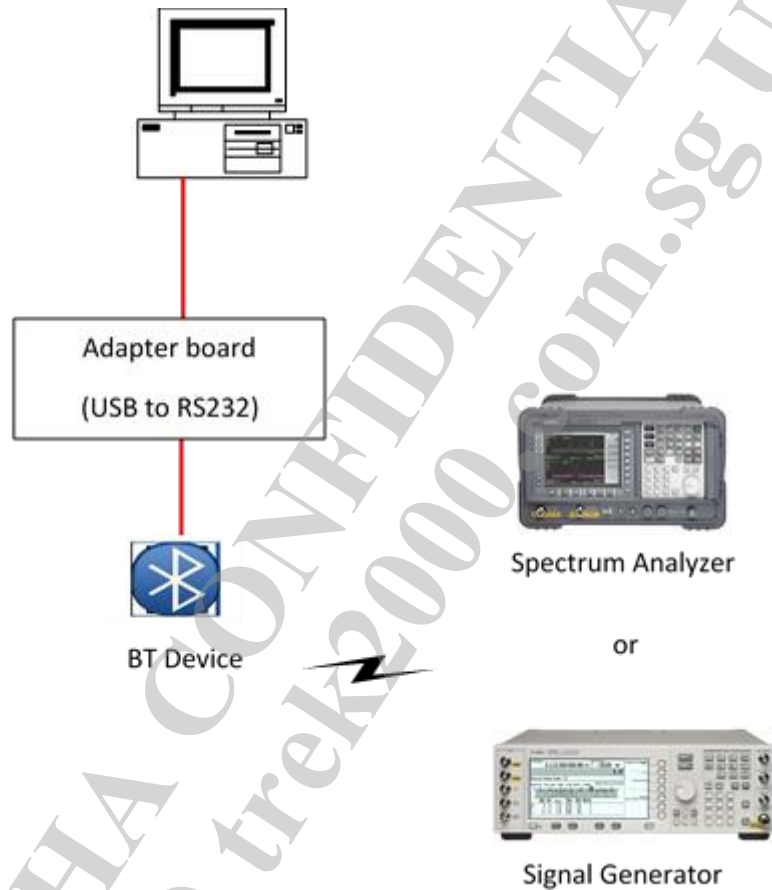


Figure 2-2. Tool selection window

### 3. Fixed Frequency Test Environment Setup

#### 3.1. Hardware setup



A UART interface is used for the PC-to-DUT connection. You can also use a USB-to-UART adaptor on the PC side to connect to the DUT side. A reference connection diagram is shown in Figure 3-1.

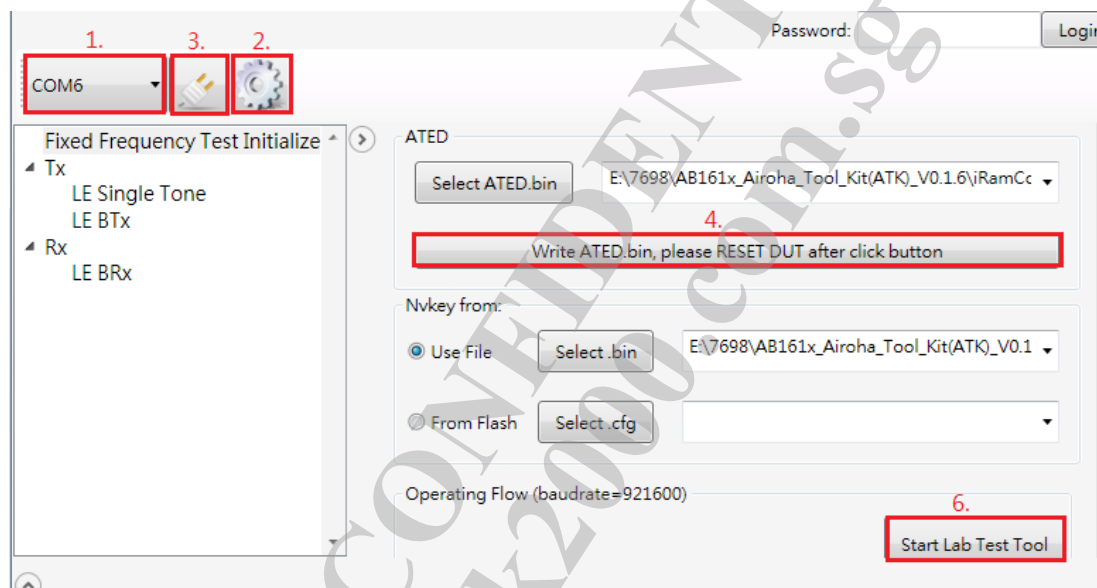


**Figure 3-1. Hardware setup**

### 3.2. Connection process

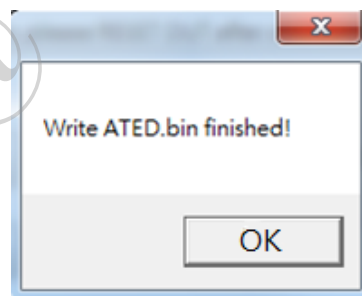
To connect the

- 1) Select a COM port for a specific device, as shown in Figure 3-2.
- 2) Click the  button to open the “Serial Port Settings” window, set the baud rate to 921600, and then close the windows, as shown in Figure 3-2.
- 3) Click the  button to enable the COM port and connect to the AW7698, as shown in Figure 3-2.
- 4) Click the ‘Write ATED.bin, please RESET DUT after click button’ button, as shown in Figure 3-2.



**Figure 3-2. Start Lab Test Tool**

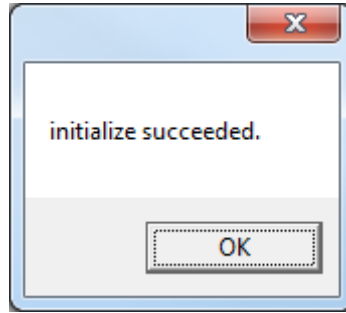
- 5) Reset the DUT. The tool shows that programming the ATED.bin was successful, as shown in Figure 3-3.



**Figure 3-3. ATED.bin write success window**

- 6) Click the ‘Start Lab Test Tool’ button, as shown in Figure 3-2.
- 7) Click the ‘OK’ button to complete making changes to the setting. The tool shows the settings are successfully initialized, as shown in Figure 3-4.





**Figure 3-4. Setting success**

- 8) You can now start the Fixed Frequency test.

## 4. Tx Test

There are two modes supported in the Tx test functions: Single-tone Tx and Burst Tx.

### 4.1. Single tone transmission

When Single Tone is selected for Tx, a continuous single-tone signal without any modulation (i.e. Carrier Only) is sent from the RF port. You can set a different RF frequency and Tx power setting on the parameter block and then click the 'Execute' button to start the single tone transmission. The RF frequency range is between 2402 and 2480MHz, and the Tx GC1 range is between 0 and 7. The Tx GC2 range is between 0 and 15

Notes:

- Tx GC1 is used for RF power less than 0 dBm.
- Tx GC2 is used for RF power more than 0~9dBm.
- You can reference the Table 1 for GC1 and GC2 mapping.

**Figure 4-1. Single tone transmission settings**

**Table 1. GC1 and GC2 mapping table**

GC	Pout (dBm)	GC1	GC2
9	9.9	6	15
8	8.9	6	13
7	8.1	6	12
6	7.2	6	11
5	6.4	6	10
4	5.5	6	9
3	4.1	6	7
2	3.4	6	6
1	2.2	6	4
0	1.1	6	2

## 4.2. LE burst data transmission

When LE BTx is selected for Tx, a burst-type modulated signal with PDU header/PDU length is sent from the RF port. You can select an RF frequency to transmit, then set a Tx GC value, modulation type (e.g., 1Mbps for BT4.0, and 2Mbps for BT5.0), and pattern type (e.g., all 0, all 1, 10101010, 11110000, and PRBS-9). Then click the 'Execute' button to start transmitting the packet.

To hop within specific channels, select the 'Enable Hopping' checkbox and set the channel information in 'From Channel \_\_ to \_\_' fields. The tool automatically ignores the RF frequency value in the 'RF Freq.(MHz)' textbox. When the channels are set, click the 'Execute' button to start hopping through the selected channels.

You can click the 'Stop' button to stop this function when it is executed.

Figure 4-2. LE burst data transmission settings

## 5. Rx Test

Burst Receiving is used for CE/FCC tests. Packet Receiving is used for bit error rate (BER) calculation.

### 5.1. LE receiver test

When Rx: LE BRx is selected, you can select a RF frequency for receiving LE packets, set a modulation type (i.e. 1Mbps for BT4.0, and 2Mbps for BT5.0), and then click the 'Execute' button to start receiving LE packet data.

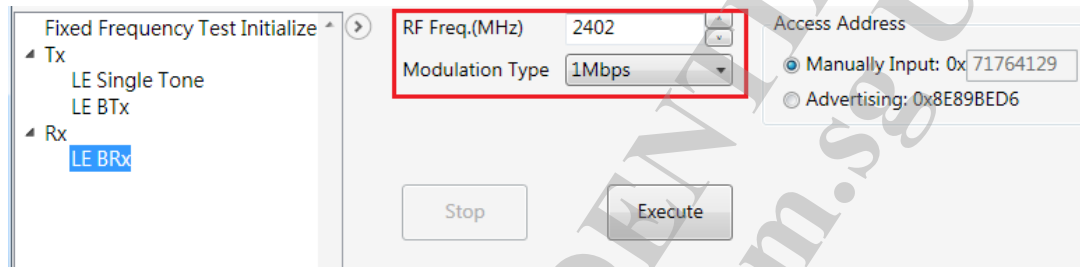


Figure 5-1. LE receiver test settings