

# **AW-CU300** series

# IEEE 802.11 1X1 b/g/n Wireless LAN

# WLAN Microcontroller LGA Module

# **User Guide**

Rev. 01

(For Standard)



### **Revision History**

Version	Revision Date	Description	Initials	Approved
01	2020/04/23	Initial Version	Renton Tao	N.C. Chen



This document is used for AW-CU300 and AW-CU300 V2.

### 1. System Setup

#### 1-1. Hardware Requirements

- AW-CU300 Module test board(EVB)
- Windows system(OS later than Windows XP) for Labtool.
- Vector Signal Analyzer/WLAN analyzer for transmit measurements.
- WLAN signal generator for receiver measurements.
- RF isolation chamber for receive measurements.
- RF attenuators
- RF cable





#### 1-2. Environment set up

#### 1-2-1. Download and Install FTDI VCP Drivers (FT2232D)

## Install the driver manually. You can get the driver from FTDI's web site. <u>http://www.ftdichip.com/Drivers/VCP.htm</u>

**Currently Supported VCP Drivers:** 

				Proces					
Operating System	Release Date	x86 (32- bit)	x64 (64- bit)	PPC	ARM	MIPSII	MIPSIV	SH4	Comments
Windows	2014-02-21	<u>2.10.00</u>	<u>2.10.00</u>						2.10.00 WHQL Certified Available as setup executable <u>Release Notes</u>

#### Verifying Driver Installation:

To verify that driver installation has completed successfully, you can open the "Device Manager" (right-click My Computer, select Properties). In the System Properties windows, select Hardware, Device Manager. Two "USB Serial Port" should be listed under MY-PC\Ports (COM & LPT)

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□  ● 音效, 視訊及遊戲控制器	
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■ ● 軟碟機控制卡	
田 🚭 通用序列匯流排控制器	
□ 》 連接埠 (COM 和 LPT)	
USB Serial Port (COM3)	
9 印表機連接埠 (LPT1)	
通訊連接埠 (COM1)	
》通訊連接項 (COM2) 一、 滑鼠及其他指種裝置	
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#### You can get the driver from libusb-win32's web site. http://sourceforge.net/projects/libusb-win32

Home / Browse / Software Development / libusb-win32 /

## libusb-win32

Brought to you by: ste\_meyer, trobinso, xiaofanc



#### Install Libusb-win32

USB Serial Converter A (Interface 0)

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1		0x0403 0x6010	USB Serial Converter A (Interface 0)
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<ul> <li>☐ libusb-win32-bin-1.2.6.0</li> <li>☐ 我的文件</li> <li>☑ 我的電腦</li> </ul>	inf-wizard exe ibush-win32 Inf-Wizard http://libush-win32.courceforge.net	<u>&lt;</u>	
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Verifying Driver Installation:

To verify that driver installation has completed successfully, you can open the "Device Manager" (right-click My Computer, select Properties). In the System Properties windows, select Hardware, Device Manager. One "USB Serial Converter A" should be listed under MY-PC\Ports (lib usb-win32 devices)

libusb-win32 Inf-Wizard		- 电描音理		
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1-2-3. Download and Install Cygwin

**Install Cygwin:** 

- 1. Download Cygwin from: http://www.cygwin.com/setup-x86.exe (for x86 32-bit systems) or http://www.cygwin.com/setup-x86\_64.exe (for x86 64-bit systems)
- 2. Select the option Install from Internet

- 3. Use default installation path: c:\cygwin. If you chose an alternate installation directory, please make sure that there are no spaces in the path.
- 4. Pick the Local Package Directory (this is the download cache directory)
- 5. Select the option Direct Connection
- 6. Select any mirror you want to use
- 7. Add additional packages to the default selection:

Click "Next". The Cygwin Setup window will show the progress as each package gets installed. Note:

If you are not familiar with cygwin, please visit http://cygwin.com/ for additional

information and details. In particular, the Cygwin User Guide

(http://cygwin.com/cygwin-ug-net/) is a good resource for new users.



1-2-4 Insert file "OpenOCD.zip" for FW burn in.

Unzip "CU300\_OpenOCD.zip" and put "readelf.exe" to C:\cygwin\bin

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Unzip "CU300\_OpenOCD.zip" and put them to C:\cygwin\

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#### Execute Cygwin,bat

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#### 1-2-5 Burn in Normal/MFG FW for RF testing

#### 1-2-5-1 Normal FW:



#### Check config\_normal\_RTC.txt, layout.txt ... 6 files in the OpenOCD folder

#### Key in cmd to burn in normal FW.



#### Check if all files are burn in correctly



Now you can perform normal link testing. (Needs to re-boot the EVB after burning in)

#### 1-2-5-1 MFG FW:

For RF testing with MFG FW, you needs to re-burn in the FW as below. Check config\_mfg.txt, layout.txt ... 5files in OpenOCD folder

C:\cygwin\OpenOCD		
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	🤜 🧰 bin	
的文件	interface	
的電腦	🛅 target	
xp1_wiced (C:)		
B8MW300_MFG_labtool	🖬 boot2.bin	
🛙 🫅 cygwin	config_mfg.txt	
🛅 amd64	config_normal_RTC.txt	
🗉 🫅 bin	🖬 flashprog.axf	Check path name
🛅 cygdrive	🖬 flashprog.config	
🗉 🧰 dev	🖬 flashprog.layout	📮 config_mfg.txt - 記事本 🛛 📮 🗖 💟
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kalekal=0 \$ cd /cygdrive/c/cygwin/OpenOCD kai@kai=0 /cygdrive/c/cygwin/OpenOCD \$ ./flashprog.sh -1 layout.txt -b config\_mfg.txt

Check if all files are burn in correctly



Now you can perform MFG RF testing. (Needs to re-boot the EVB after burning in)

### 2.Normal link Test(w/ normal FW)

Open OS terminal and set USB comport (reference to the page9), set baud-rate as 115200

Enter cmd "help" on the screen to see a full list of commands available for use



wlan-scan

🏶 test - 超最終端機

wlan-scan\_

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#### That will scan around AP (1948) \$5 \$64.00 檔案(F) 新聞車員(E) 检测(V) 呼叫(C) 轉送(T) 說明(H) -D 29 m 3 channel: 4 rssi: -78 檔案(E) 編輯(E) 檢視(Y) 呼叫(C) 轉送(D) 説明(E) channel: 4 rssi: -78 c security: k WMS: VES EC:17:2F:DF:76:86 channel: 6 rssi: -81 c security: k WMM: YES WMM: YES WMM: YES 00:13:F7:2D:AB:FC dBm WPA2 0 🗃 🗃 🖏 🖬 🗃 1 "lester\_can\_888" Infra dBm WPA/WPA2 Mixed "ACCTON123" Infra 00:13:F7:20:AB.FC "ACCTON123" Infra channel: 6 rssi: -75 dBm security: WPA WMM: N0 WPS: N0 00:50:43:99:71:88 "Mrvl-uAP-X-7188" Infra channel: 7 rssi: -82 dBm security: WPA/WPA2 Mixed WMM: YES F8:1E:DF:F9:D3:E3 "Azurewave WiFi" Infra channel: 11 rssi: -81 dBm security: WPA2 WPA: WPA2 WPA: N0 1C:E6:C7:F0:F1:A0 "MRVLSecureWiFi" Infra channel: 11 rssi: -82 dBm security: WPA2 WPA: N0 1C:E6:C7:F0:F1:A0 "MRVLSecureWiFi" Infra "Mrvl-uAP-X-7188" Infra

### 3.RF Test(w/MFG FW)

### Run Lab tool in Windows OS.



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### 3-1 Generate 802.11b/g/n Packet commands

a. Tx on CH 6 at 10 dBm with a CCK-11Mbps data rate in 20 MHz BW mode on WiFi

25	// Stop Tx
112 0	// Set to 20 MHz BW
12 6	// Set to CH 6
22 6 10 0	// Set to CH 6 at 10 dBm Output Power with CCK/BPSK Data Rate on WiFi
25 1 4	// Tx at 11 Mbps

b. Tx on CH 100 at 8 dBm with a MCS7 Data rate in 20 MHz BW Mode on WiFi

25 112 0	// Stop Tx // Sot to 20 MHz BW
12 13	// Set to CH 13
22 13 8 1	// Set to CH 13 at 8 dBm Output Power with OFDM Data Rate on WiFi
20   22	

### Data rate set up

#### B mode & G mode:

1Mbps	5.5Mbps	11Mbps	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps
1	3	4	6	7	8	9	10
36Mbps	48Mbps	54Mbps					
11	12	13					

#### N mode:

MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
15	16	17	18	19	20	21	22	

After you type above command, you can measure the 802.11b/g/n packet by your RF test instrument (exp: Agilent 4010, IQview...).

#### 3-2 Generate 802.11 b/g/n continuous symbol Commands

a. Cont. Tx on CH 7 at 8 dBm with a MCS7 Data rate in 20 MHz BW Mode on WiFi

17	// Stop Cont. Tx
25	// Stop Tx
112 0	// Set to 20 MHz BW
12 7	// Set to CH 36
22 7 8 1	// Set to CH 36 at 8 dBm Output Power with MCS Data Rate on WiFi
25 1 22	// Tx at MCS 7
25	// Stop Tx
17 1 22	// Cont. Tx at MCS7
17	// Stop Cont. Tx



#### 3-3 Test RX sensitivity Commands

a. Rx on CH 7 in 20 MHz BW Mode on WiFi

- 25
   // Stop Tx

   112 0
   // Set to 20 MHz BW

   12 7
   // Set to CH 7
- 31 // Clear all the received packets
- 32 // Get Rx Packet Count and then clear the Rx packet counter

#### **3-4 Others Commands**

- (1) Command 45→ Check the MAC
- (2) **Command 99** $\rightarrow$  Quit the test mode/ Quit the MFG tool