AMPAK

AP6398XU

(Wi-Fi and Bluetooth module)

Evaluation Kits

User manual

Version 1.0

Revision History

Date	Revision Content	Revised By	Version
2019/10/16	Modify figure1	Ali	1.0

1. AP6398XU Evaluation Board Introduction

AP6398XU Evaluation board (EVB) likes as figure1. That is designed for IEEE802.11 a/b/g/n 2x2 WLAN with integrated Bluetooth and FM application. It is subject to provide a convenient environment for customer's verification on WiFi or Bluetooth function. There are many controller pins and reserved GPIO on Evaluation board which describes as below.

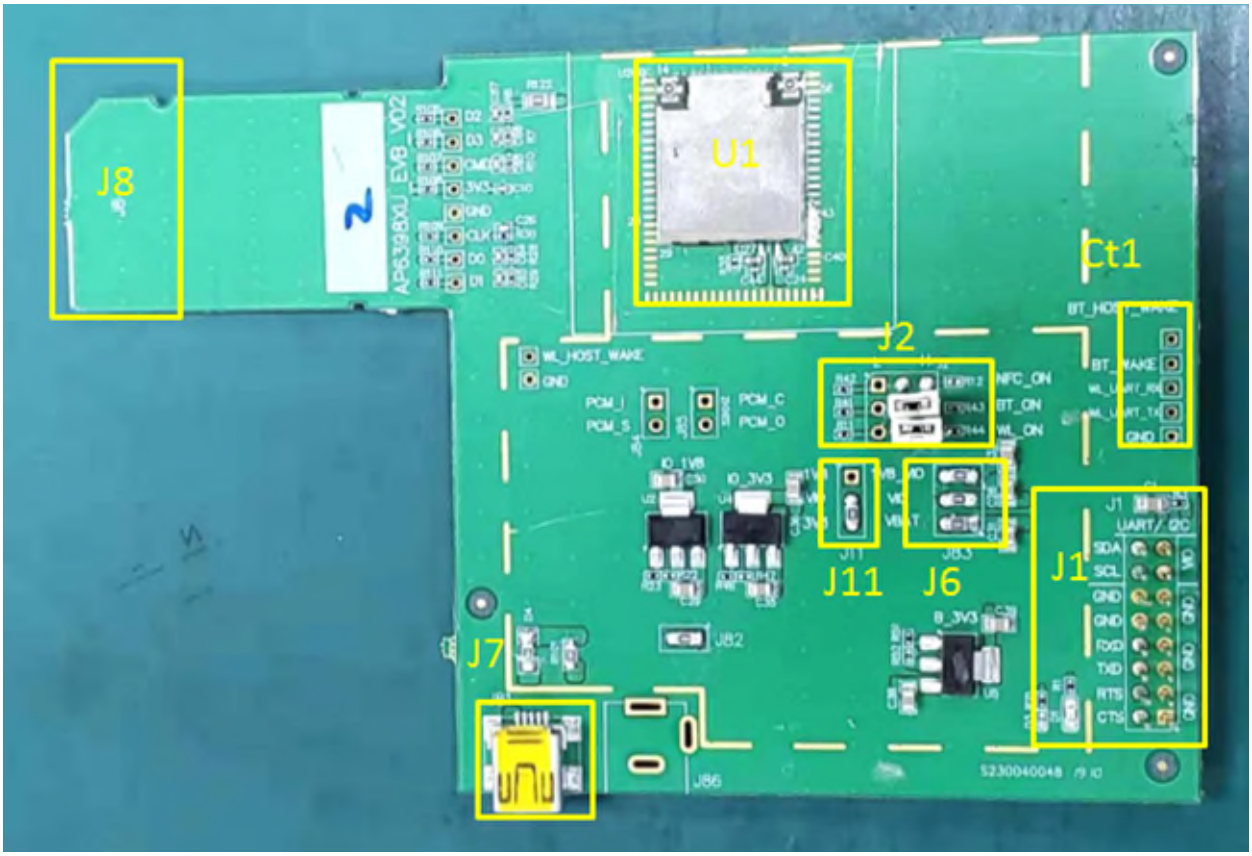

Figure1. Top view of AP6398XU EVB

Interface highlights:

1. U1: AP6398XU SIP module.
2. J1: UART interface connects with UART transport board for BT measuring.
3. J2: Enable(H) or disable(L) Bluetooth and WiFi function.
4. J6: VBAT / WL_VIO / BT_VIO for main system I/O power path.
5. J7: 5V DC mini USB input connector.
6. J8: Standard SDIO interfaces for Wi-Fi performance measured.
7. J11: WL_VIO power path for 1V8 or 3V3 selection.
8. Ct1: WLAN and BT control pins, strongly recommended WL_HWAKE(IRQ) connected to MCU...

2. WiFi function verification step (Dipole antenna)

WIFI SDIO: Using external pull up resistors depends on the SDIO supply voltage. For 1.8V, the resistance range is 30KΩ~82KΩ. For 3.3V, its range from 21 KΩ~41 KΩ on the four data lines and the CMD line as the following circuitry.

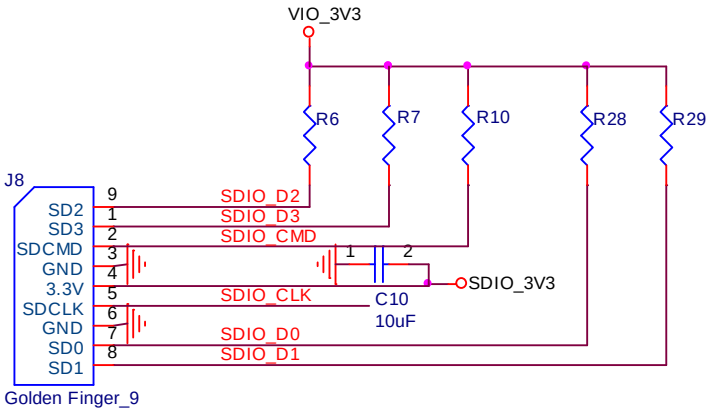

Figure2. WiFi verification connection interface to Host SDIO

Hardware Setup:

- ❖ Refer to Figure2 SDIO pin definition connects the J8 interface of AP6XXX evaluation board to Host SDIO control interface.
- ❖ Using pull high resistors (R6, R7, R10, R28, R29) that resistance is 30Kohm for 1.8V or 3.3V VDDIO pull up voltage. (Pull high resistors are un-necessary if at verification phase.)
- ❖ Connects an external antenna at SMA connector on the evaluation board.
- ❖ Note to the VDDIO voltage level should be the same with GPIO voltage level of Host CPU. (VDDIO 3.3V or 1.8V selection by jump J11)

WiFi software setup:

Please follow up software guideline of Ampak official released.

3. Bluetooth function verification step

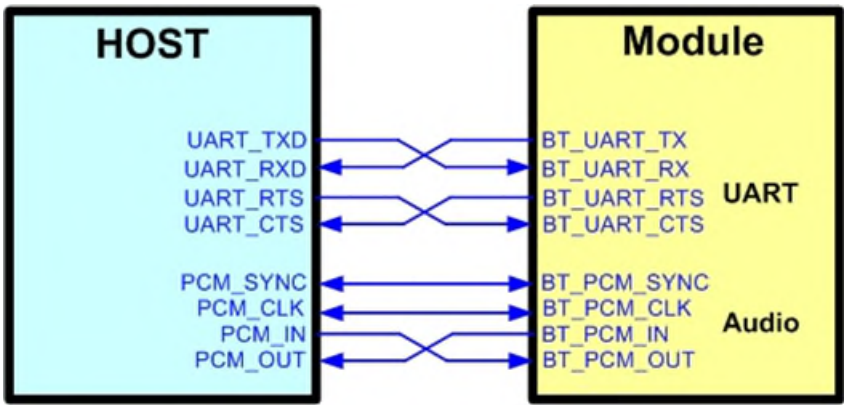

Figure3. Bluetooth verification connection interface to Host UART

Hardware Setup:

- ❖ Refer to Figure3 UART pin definition connects the J1 interface of AP6359S evaluation board to Host UART control interface.
- ❖ Connects an external antenna at SMA connector on the evaluation board.
- ❖ Note to the VDDIO voltage level should be the same as GPIO voltage level of Host CPU.

WiFi and Bluetooth software setup:

Please follow up software guideline of Ampak official released.

FCC Statement:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and a human body.

ISED Statement:

For Canada, the "compliance statement and unlicensed device usage conditions" which must be shown in the user manual has changed.

It should now read like this:
This device contains licence-exempt transmitter(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) this device may not cause interference,
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1) L’appareil ne doit pas produire de brouillage;

2) L’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

Label requirements (Module)

If the identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module, Contains FCC ID: ZQ6-AP6398XU, Contains ISED ID: 11956A-AP6398XU.

Other

Co-location of this module with other transmitters that operate simultaneously are required to be evaluated using the multi-transmitter procedures.

The host integrator must follow the integration instructions provided in this document and ensure that the composite-system end product complies with the requirements by a technical assessment or evaluation to the rules and to KDB Publication 996369.

The host integrator installing this module into their product must ensure that the final composite product complies with the requirements by a technical assessment or evaluation to the rules, including the transmitter operation and should refer to guidance in KDB 996369.

NCC Statement:

低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

此模組於取得認證後將依規定於模組本體標示審驗合格標籤，並要求平台廠商於平台上標示本產品內含發射器模組 CCXXxxLPyyyZzW