



# AMPAK

## AP6356SDXX

Evaluation Kits

User manual

Version 1.0

### Revision History

Date	Revision Content	Revised By	Version
2015/12/28	Initial released	Aron	1.0



## **Federal Communication Commission Interference 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.

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**Radiation Exposure Statement:**

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

**This device is intended only for OEM integrators under the following conditions:**

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as **2** conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**IMPORTANT NOTE:** In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

**End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID:ZQ6-AP6356SDXX". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

**Manual Information To the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

# 1. AP6356SDXX Evaluation Board Introduction

AP6356SDXX Evaluation board (EVB) likes as figure1. That is designed for IEEE802.11 a/b/g/n/ac 2x2 WLAN with integrated Bluetooth. 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.

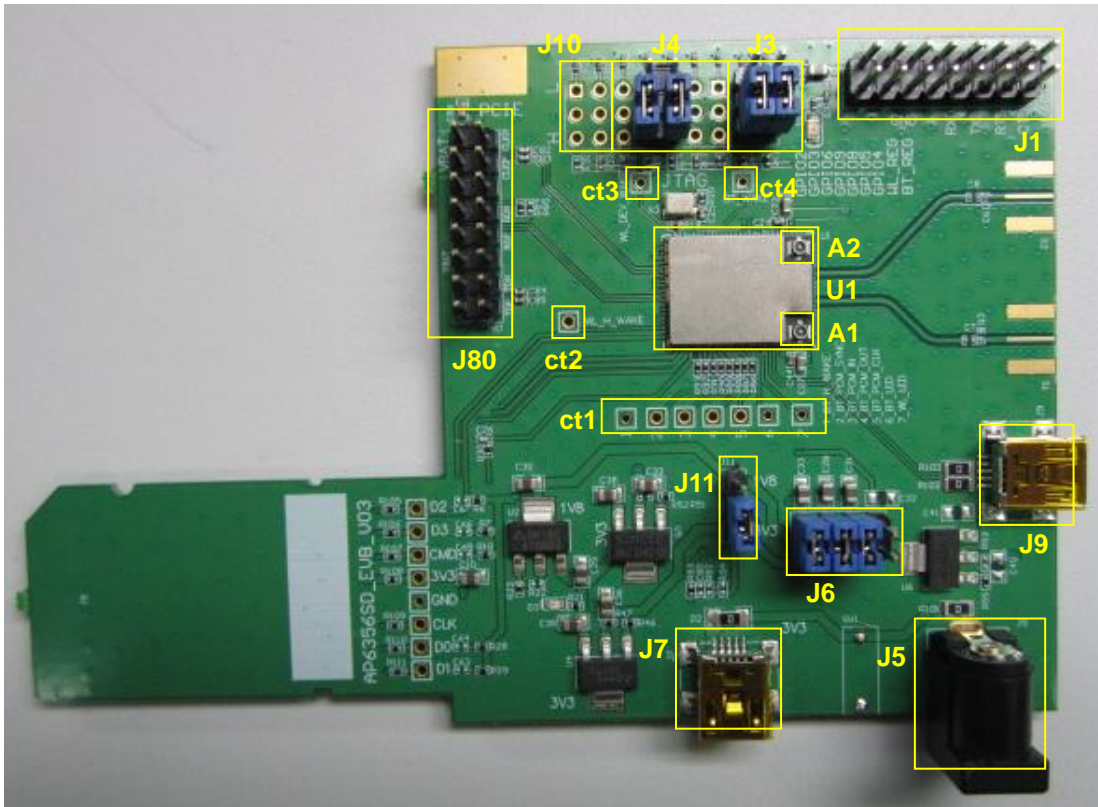


Figure1. Top view of AP6356SDXX EVB

## Interface highlights:

1. U1: AP6356SDXX SIP module.
2. J1: UART interface connects with UART transport board for BT.
3. J80: PCIE interface connects with PCIE transport board for WIFI.
4. J3: Enable(H) or disable(L) Bluetooth and WiFi function.
5. J4: PCIE interface strapping option
6. J5: 5V DC adaptor input connector.
7. J6: 3V3 RF/ VBAT / WL\_VIO / BT\_VIO for main system I/O power path.
8. J7/J9: 5V DC mini USB input connector.
9. J10: GPIO\_2 (input/output) and GPIO\_3 (input/output)
10. J11: WL\_VIO power path for 1V8 or 3V3 selection.
11. A1: I-PEX connector let RF signal in/out path, you could connect with RF cable or

Dipole antenna.

12. A2: I-PEX connector let RF signal in/out path, you could connect with RF cable or Dipole antenna.

13. Ct1-Ct4: WLAN and BT control pins, strongly recommended WL\_H\_WAKE(IRQ) connected to MCU.

## 2. WiFi function verification step

WiFi PCIe: PCIe interface definition as below J80 dip connector and this should be used 3.3V for PCIe voltage.

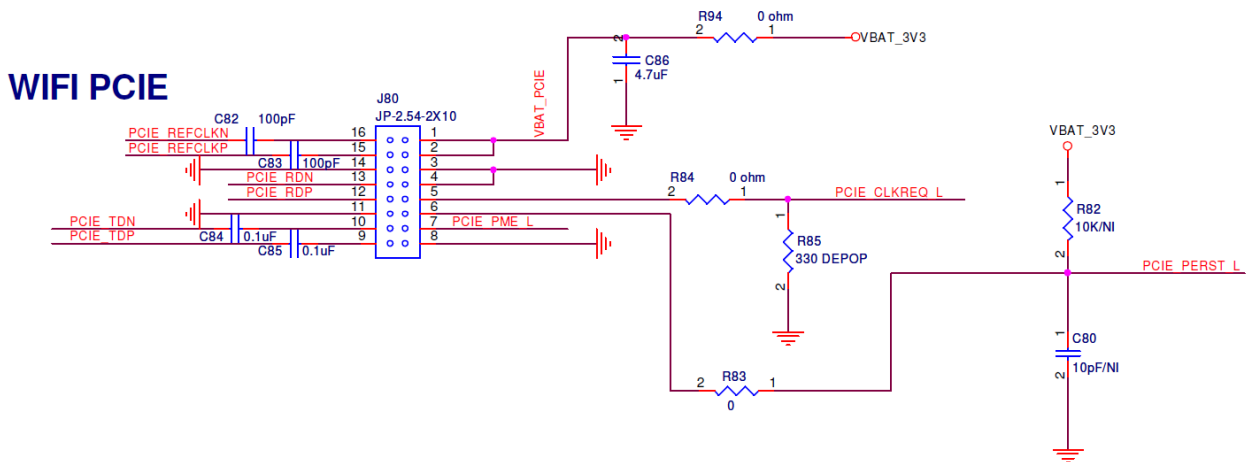


Figure3. WiFi verification connection interface to Host PCIe

### Hardware Setup:

- ❖ Refer to Figure3 PCIe pin definition connects the J80 interface of AP6356SDXX evaluation board to Host PCIe control interface.
- ❖ Connects an external antenna at I-PEX 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)
- ❖ Pull High J4 are necessary .

### WiFi software setup:

Please follow up software guideline of Ampak official released.

### 3. Bluetooth function verification step

UART :

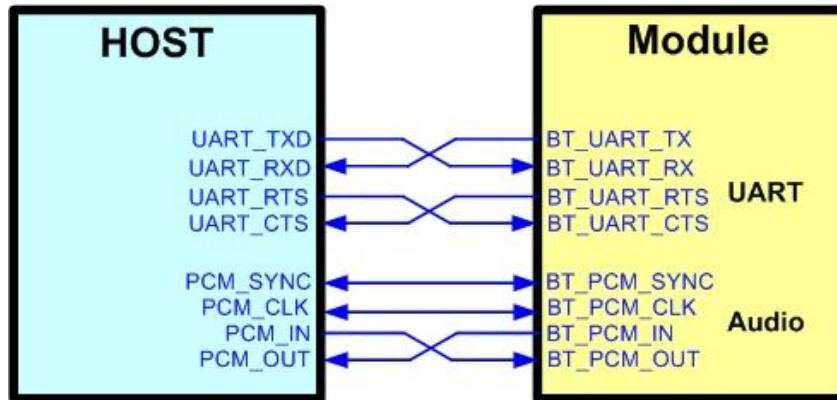


Figure4. Bluetooth verification connection interface to Host UART

Hardware Setup:

- ❖ Refer to Figure4 UART pin definition connects the J1 interface of AP6356SDXX evaluation board to Host UART control interface.
- ❖ Connects an external antenna at I-PEX connector on the evaluation board.
- ❖ Note to the VDDIO voltage level should be the same as GPIO voltage level of Host CPU.

USB :

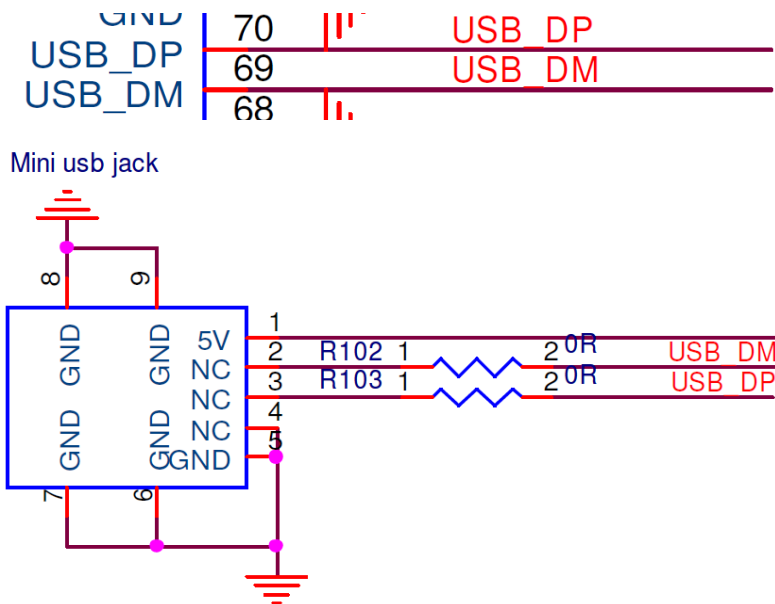


Figure5. Bluetooth verification connection interface to Host USB



Hardware Setup:

- ❖ Refer to Figure5 USB pin definition connects the J9 interface of AP6356SDXX evaluation board to Host USB control interface.
- ❖ Connects an external antenna at I-PEX connector on the evaluation board.

WiFi and Bluetooth software setup:

Please follow up software guideline of Ampak official released.