

正基科技股份有限公司



AP6275P User Manual

Address:

3F, No.15-1, Zhonghua Road, Hsinchu Industril Park, Hukou, Hsinchu,
Taiwan, 30352

Website: <http://www.ampak.com.tw/>

Revision

Revision	Date	Description	Revised By
1.0	2020/ 08 / 11	Initial released	Jason
1.1	2020/ 11 / 11	Add Bluetooth Interface	Jason
1.2	2023 / 11 / 1	Modify EVB Type	Jason

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1.1 Hardware Setup

- ❖ Refer to Figure2 PCIe pin definition connects the J4 interface of AP6275P/PR3 evaluation board to Host PCIe control interface.
- ❖ 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.

1.2 WiFi Software Setup

     Please follow up software guideline of Ampak official released

2.1 Hardware Setup

- ❖ Refer to Figure4 UART pin definition connects the J16 interface of AP6275P/PR3 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.
(AP6275P/PR3 only be used in 1.8V)

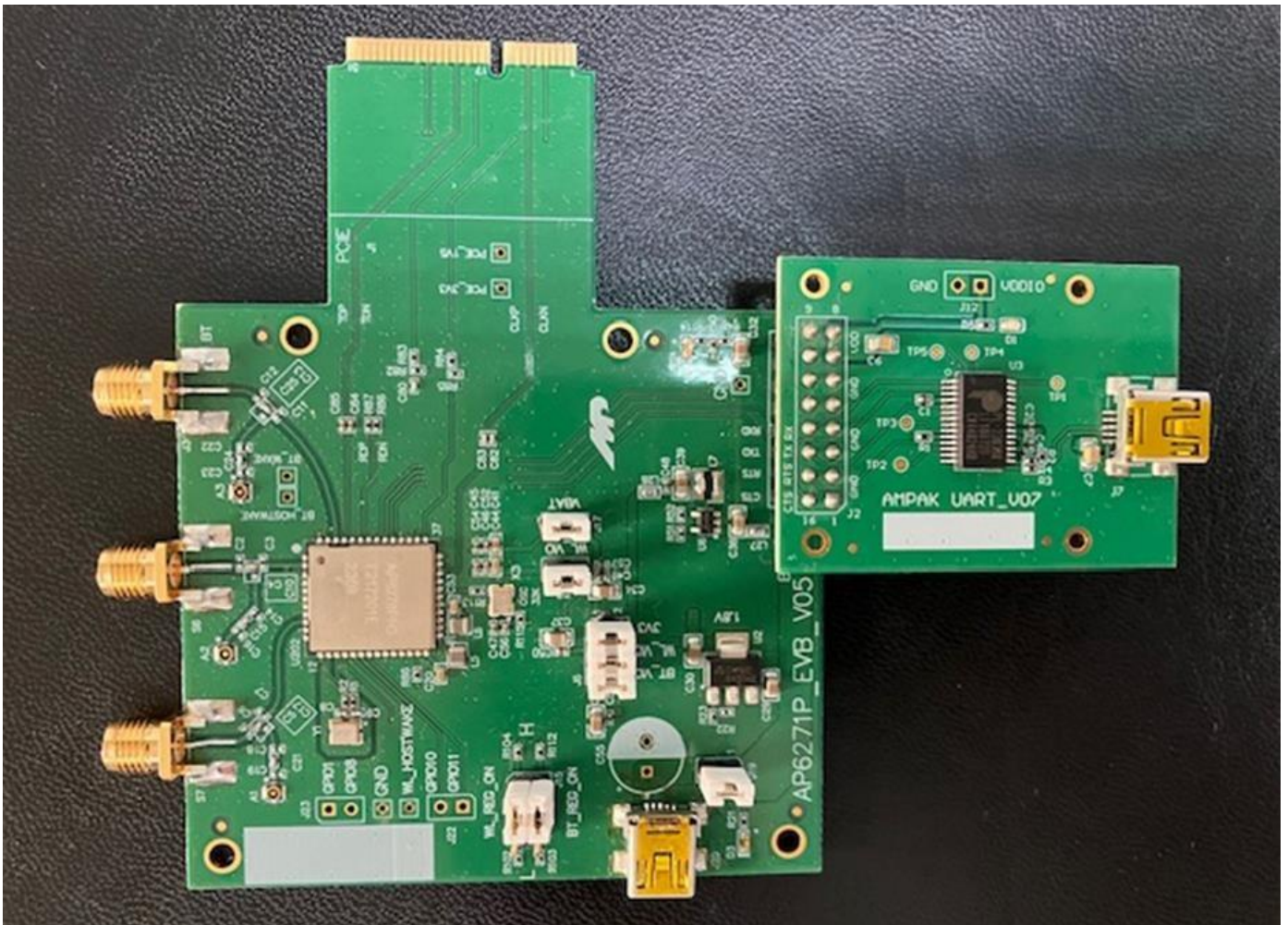
2.2 Bluetooth Software Setup



Please follow up software guideline of Ampak official released.



3.1 UART to USB Daughter Board



4.1 General Specification

Model Name	AP6275P
Product Description	2T2R 802.11 a/b/g/n/ac/ax Wi-Fi + Bluetooth 5.3 Module
Dimension	L x W: 15 x 13(typical) mm H: 1.55(Maximum) mm
Wi-Fi Interface	Support PCIe v3.0 compliant and runs at Gen1 speeds.
Bluetooth Interface	UART / PCM
Operating temperature	-30°C to 85°C
Storage temperature	-40°C to 125°C
Humidity	Operating Humidity 10% to 95% Non-Condensing

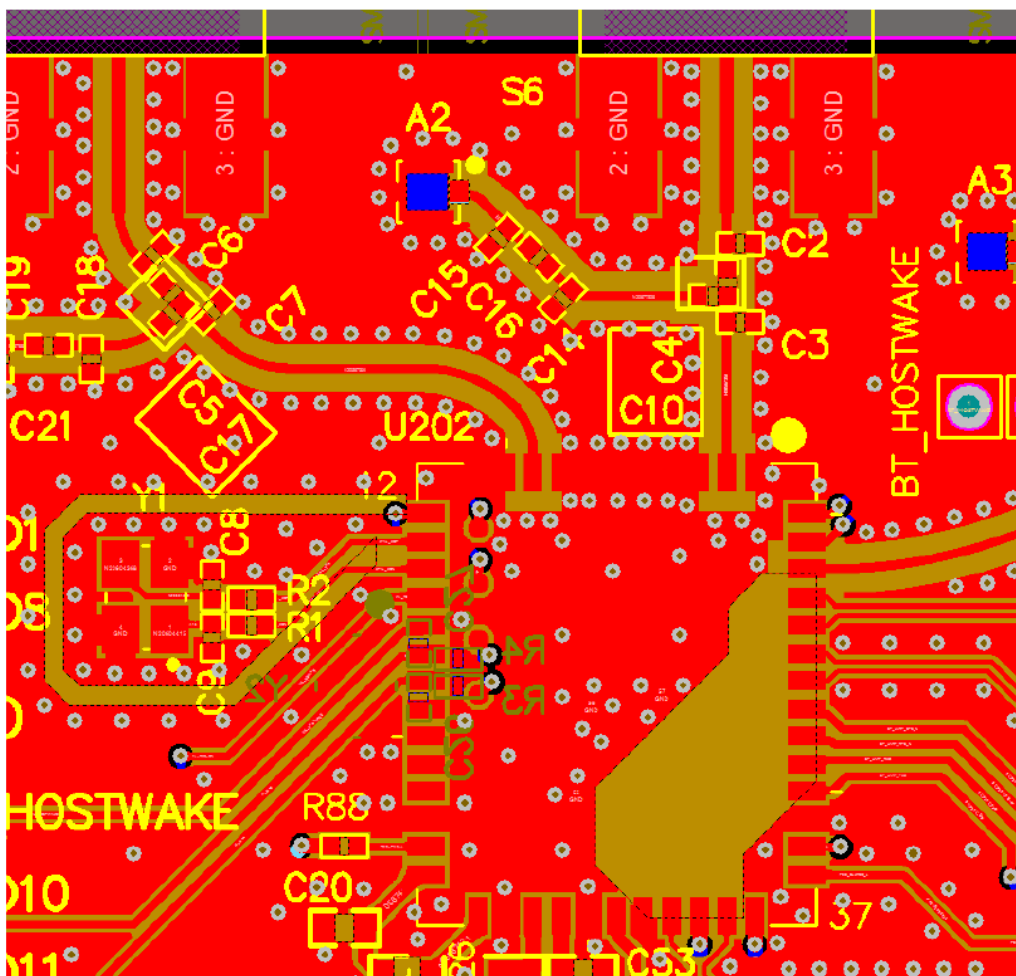
4.2 DC Characteristics

Symbol	Description	Min.	Max.	Unit
VBAT	Input supply Voltage	-0.5	4.5	V
VDDIO	Digital/ Bluetooth/ I/O Voltage	-0.5	2.07	V

RF Trace and Layout Reference

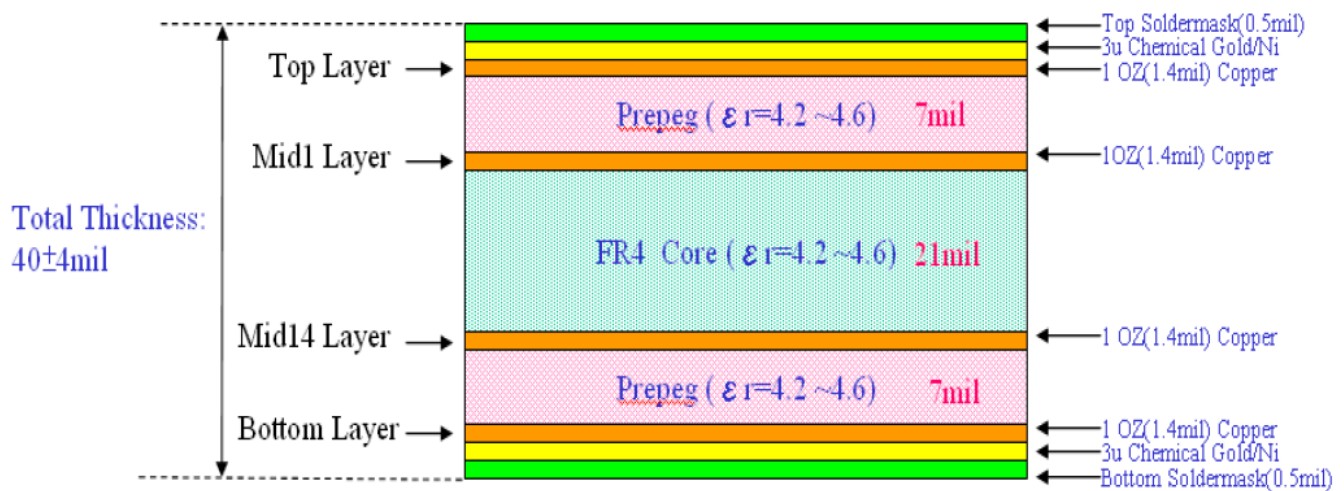
The fundamental design concepts are as follows with regarding to placement of antenna parts:

- Make sure the RF PAD impedance is 50 ohm $\pm$ 10%.
- Place the antenna parts near the RF output port of wireless module as close as possible to avoid more insertion loss of RF transmission line on main board.
- Keep antenna parts away any metal materials. The clearance is 4cm or above in order to guarantee radiation performance.
- Metal housing or metal-plated housing can influence antenna performance seriously.
- Keep antenna parts away any noise sources, for instance, HDMI or high speed data buses, DDR, PMU, SSD...etc.
- Ensure the isolation between Wi-Fi and Bluetooth antenna, 25 dB or above, for ideal Wi-Fi / BT co-existence.



The essential design rules of RF transmission lines are as follows:

- The characteristic impedance of RF transmission line is 50 Ohm +/- 10%.
- Keep the RF transmission lines on the same layer as module and RF connector mounted in order to guarantee 50 Ohm characteristic impedance and optimal matching.
- Put some ground through holes properly to guarantee the ideal grounding effects.



Antenna information as below.

Ant.	Port			Brand	Model Name	Antenna Type	Connector	Gain (dBi)
	2.4GHz	5GHz	Bluetooth					
1	1	1	1	PULSE ELECTRONICS PTE LTD	TZ2412W	Dipole	Reversed-SMA	Note1
2	2	2	-	PULSE ELECTRONICS PTE LTD	TZ2412W	Dipole	Reversed-SMA	

Note1:

Ant.	Antenna Gain (dBi)		
	WLAN 2.4GHz	WLAN 5GHz UNII 1~3	Bluetooth
1	3.68	4.65	3.68
2	3.68	4.65	-

FCC Compliance Statement:

Federal Communication Commission Interference Statement

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.

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.

IMPORTANT NOTE:

This module is intended for OEM integrator. This module is only FCC authorized for the specific rule parts listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Additional testing and certification may be necessary when multiple modules are used. OEM integrators that they must use the equivalent antennas or C2PC will be required.

This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

The host manufacturer should reference KDB Publication 996369 D04 Module Integration Guide.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

This device complies with Part 15 of 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.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: ZQ6-AP6275P ".

This device complies with Part 15 of 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.

5GHz band (W52, W53): Indoor use only (except communicate to high power radio)