



Realtek Ameba1 DEV01 User Manual

This document define pin out of Ameba DEV.

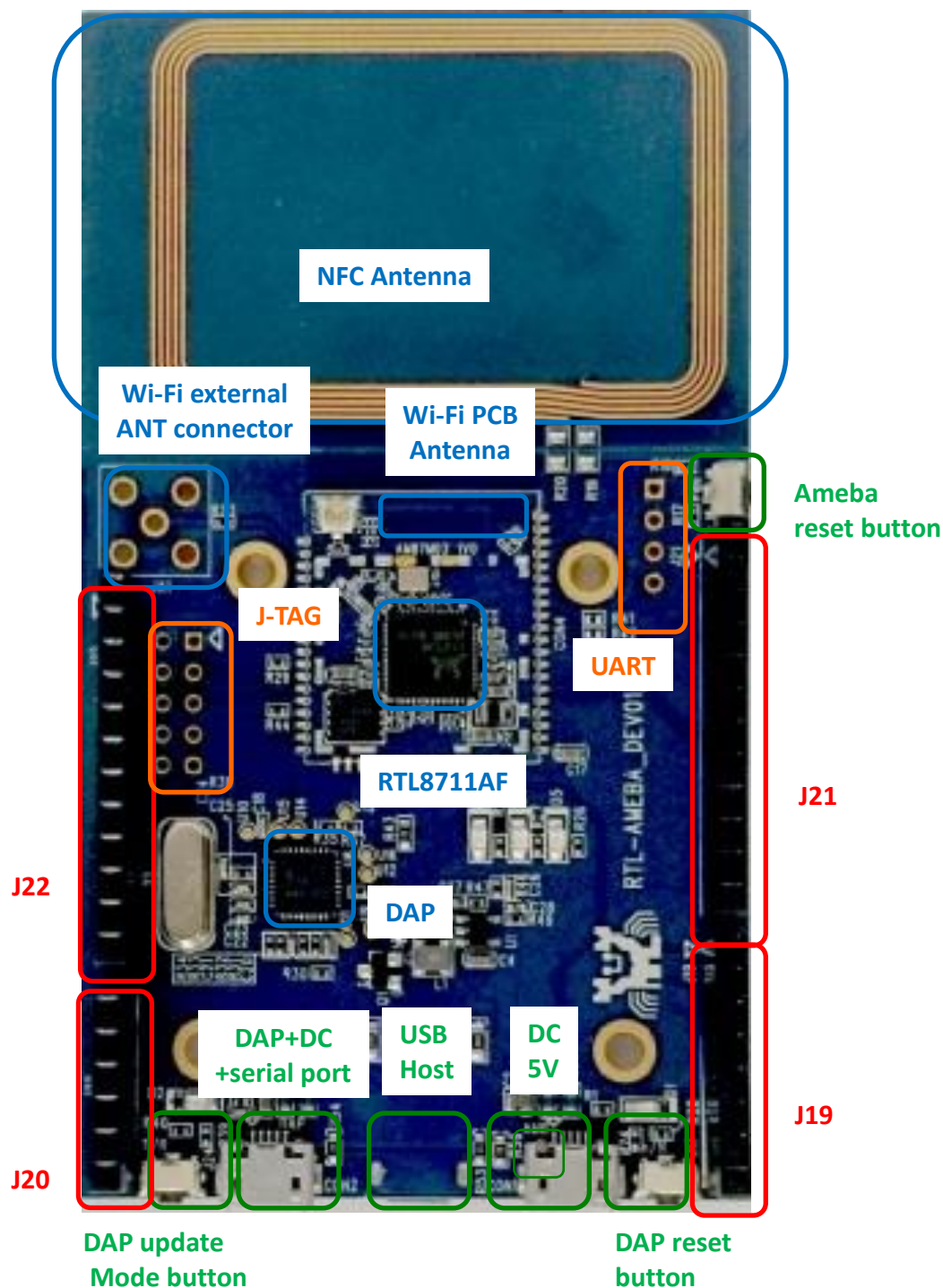
Version 1.5

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1 Hardware block diagram

- IC: RTL8195AM
- DEV HDK version: RTL-AMEBA_DEV01_1v1



2 System requirements

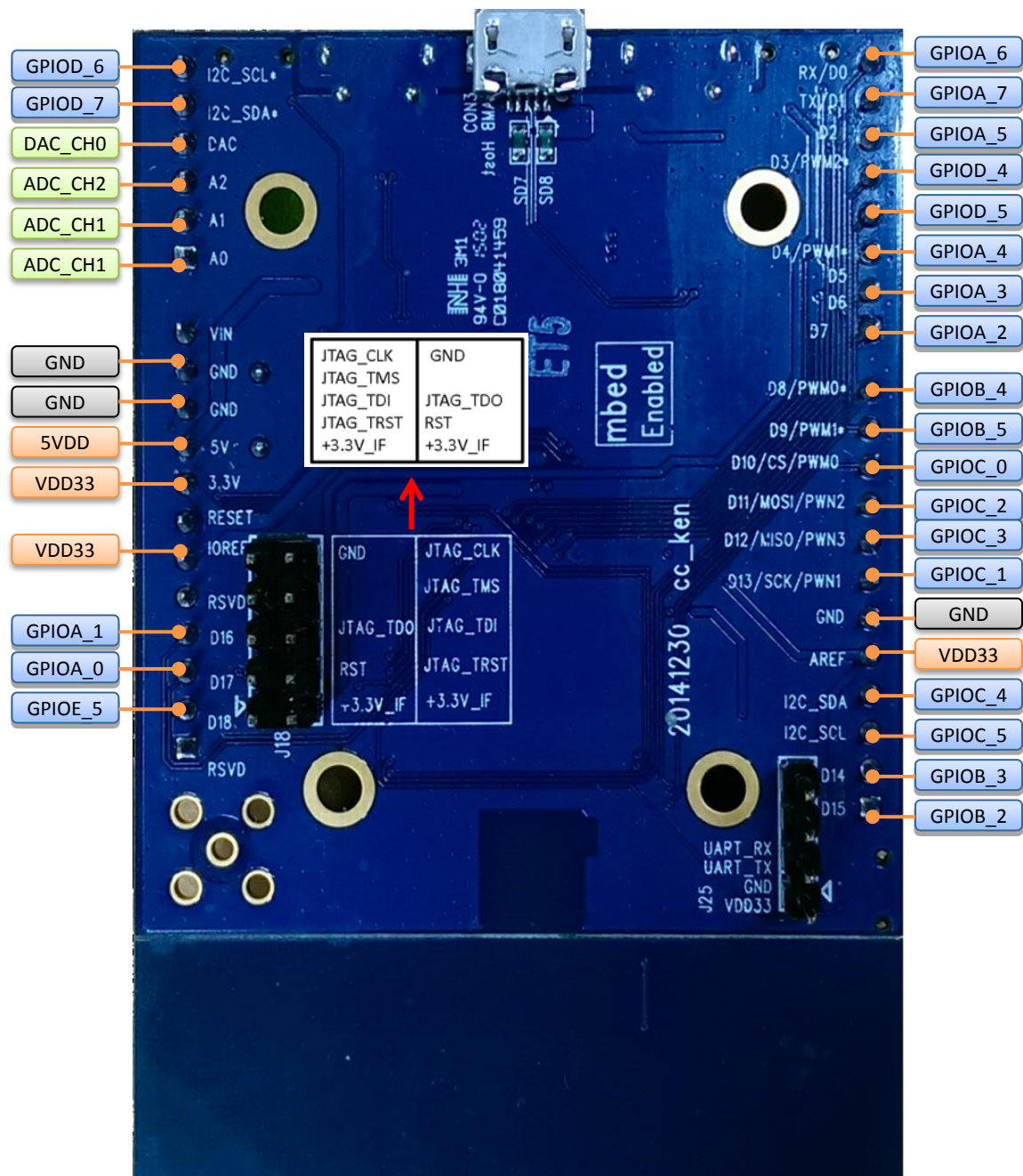
- Windows PC (XP, Vista, 7)
- USB type A to Micro-B USB cable x 1
- RS-232 to UART board(debug) x 1, JTAG cable x1 (option)

3 Pin out reference

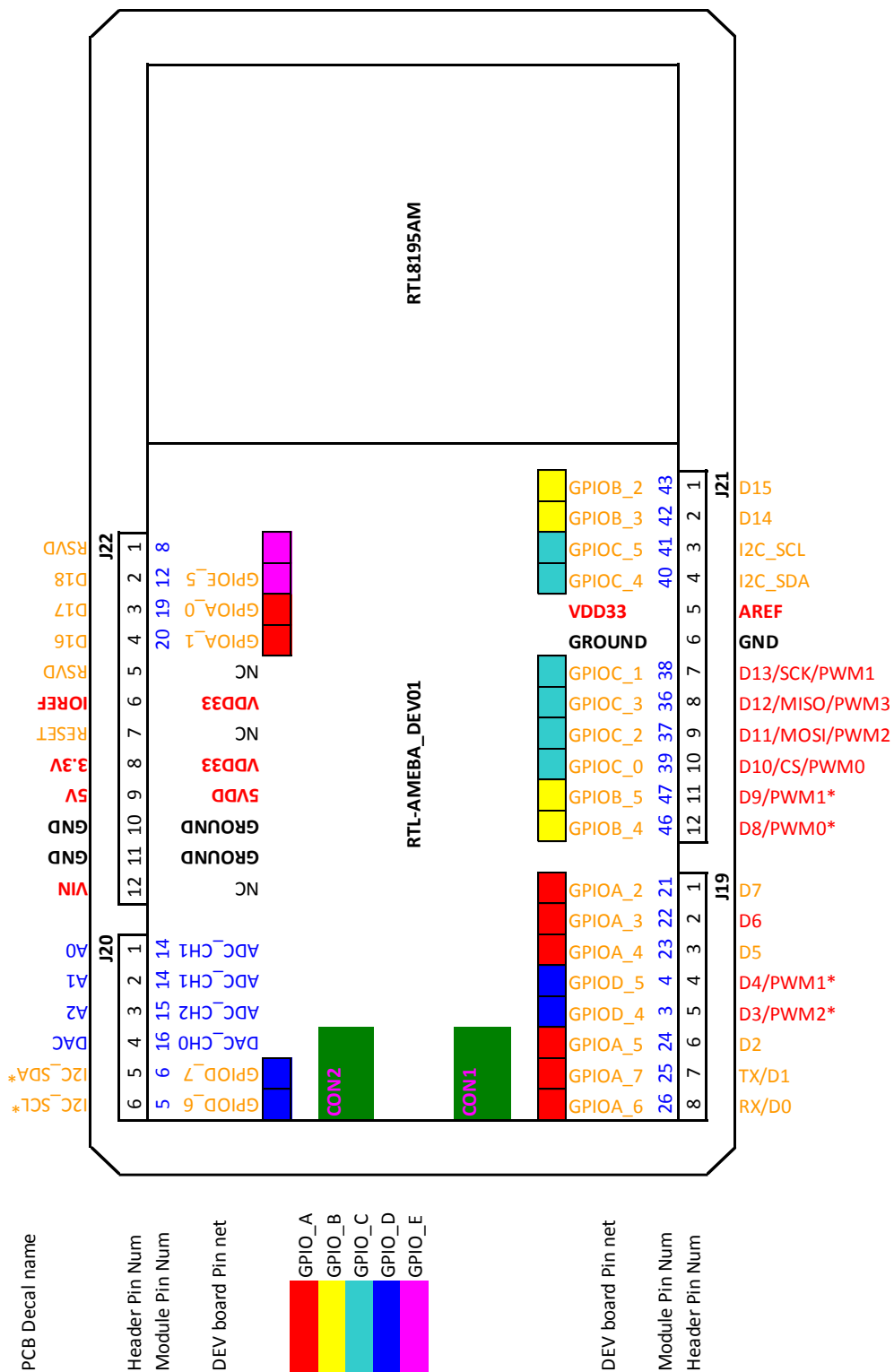
3.1 Pin out table

Con	DEV name	Pin	Net name	Con	DEV name	Pin	Net name
J20	I2C_SCL*	6	GPIOD_6	J19	RX/D0	8	GPIOA_6
	I2C_SDA*	5	GPIOD_7		TX/D1	7	GPIOA_7
	DAC	4	DAC_CH0		D2	6	GPIOA_5
	A2	3	ADC_CH2		D3/PWM2*	5	GPIOD_4
	A1	2	ADC_CH1		D4/PWM1*	4	GPIOD_5
	A0	1	ADC_CH1		D5	3	GPIOA_4
					D6	2	GPIOA_3
					D7	1	GPIOA_2
Con	DEV name	Pin	Net name	Con	DEV name	Pin	Net name
SJ22	VIN	12	NC	J21	D8/PWM0*	12	GPIOB_4
	GND	11	GROUND		D9/PWM1*	11	GPIOB_5
	GND	10	GROUND		D10/CS/PWM0	10	GPIOC_0
	5V	9	5VDD		D11/MOSI/PWM2	9	GPIOC_2
	3.3V	8	VDD33		D12/MISO/PWM3	8	GPIOC_3
	RESET	7	NC		D13/SCK/PWM1	7	GPIOC_1
	IOREF	6	VDD33		GND	6	GND
	RSVD	5	NC		AREF	5	VDD33
	D16	4	GPIOA_1		I2C_SDA	4	GPIOC_4
	D17	3	GPIOA_0		I2C_SCL	3	GPIOC_5
	D18	2	GPIOE_5		D14	2	GPIOB_3
	RSVD	1	NC		D15	1	GPIOB_2

3.2 Pin out reference

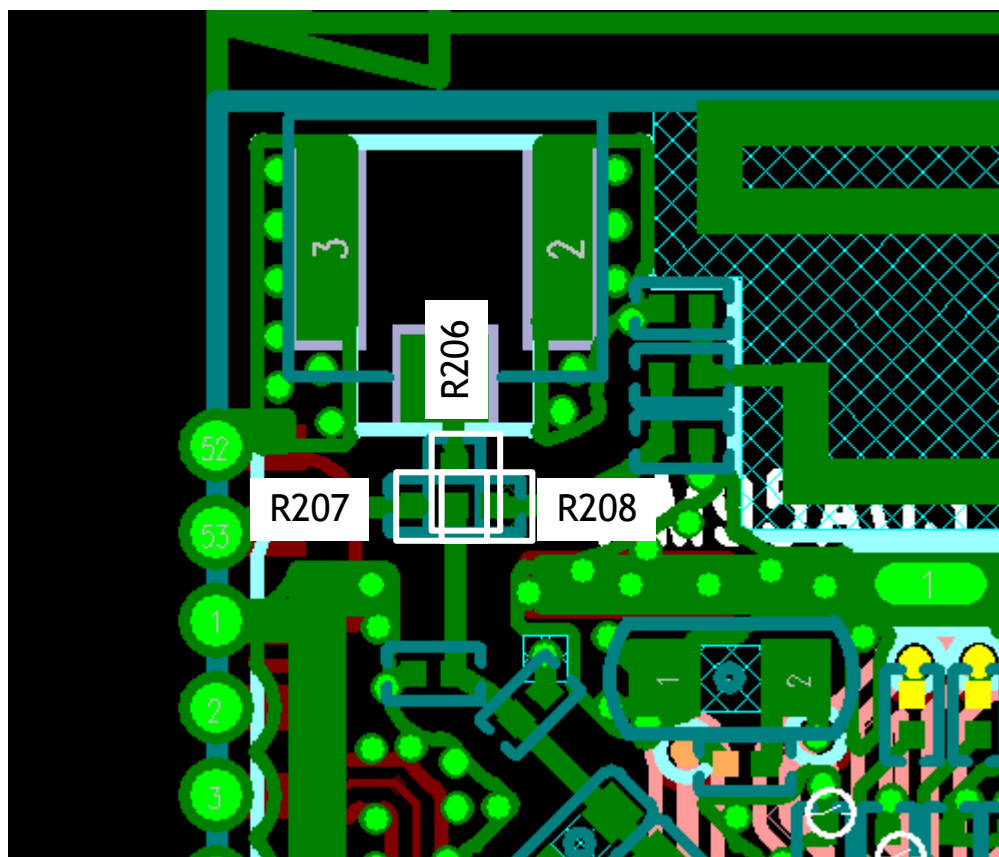


3.3 Pin connection table



4 Antenna hardware setup

- I-PEX/U.FL connector: R206
- External antenna: R207
- PCB antenna: R208



5 Peripherals support

- Debug UART: GPIOB_[0..1]

- JTAG: GPIOE_[0..4]

5.1 Pin function table setup

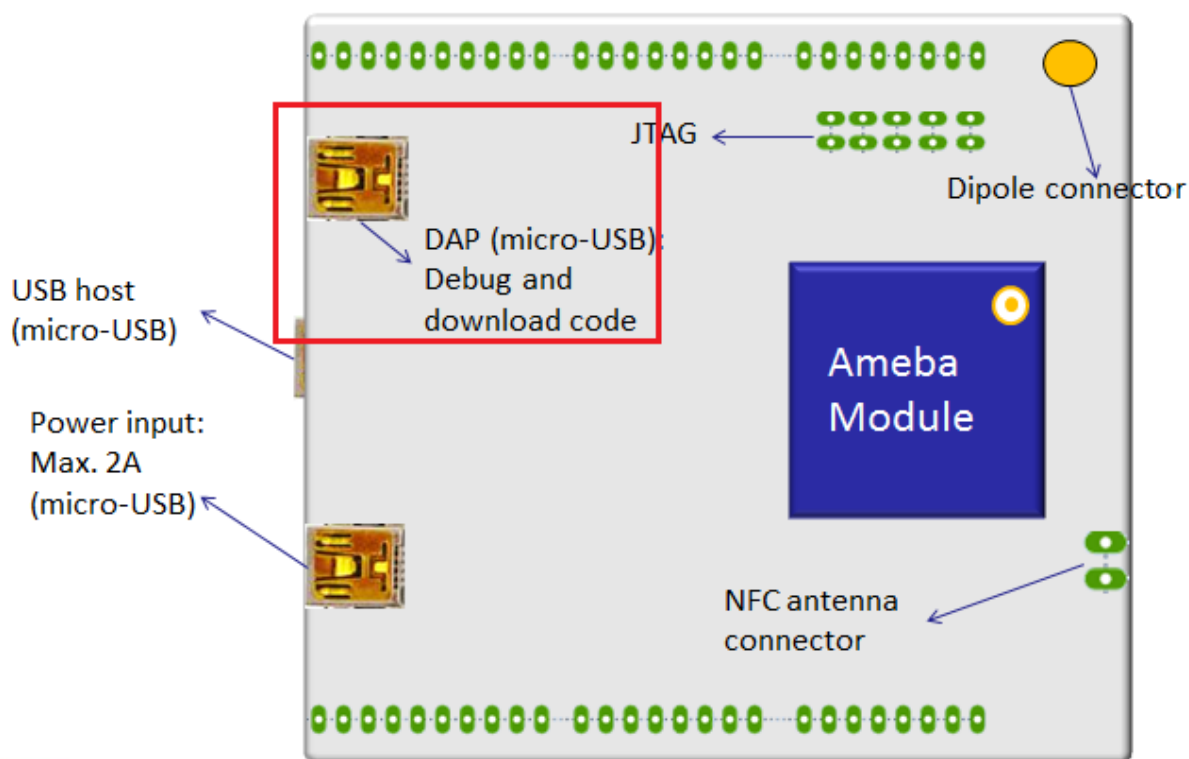
- Multiple functions are supported by group setup.
- For example: GPIOA_6(Rx), GPIOA_7(Tx), GPIOA_3(RTS) and GPIOA_5(CTS) are used if UART0 function. GPIOA_3(RTS) and GPIOA_5(CTS) can not be used as other functions.
- For example: GPIOC_0, GPIOC_1, GPIOC_2, GPIOC_2, GPIOC_3 are used if PWM is occupied. GPIOC_1(PWM1) and GPIOC_2(PWM2) can not be used as other functions.

6 Hardware configuration

6.1 CMSIS-DAP

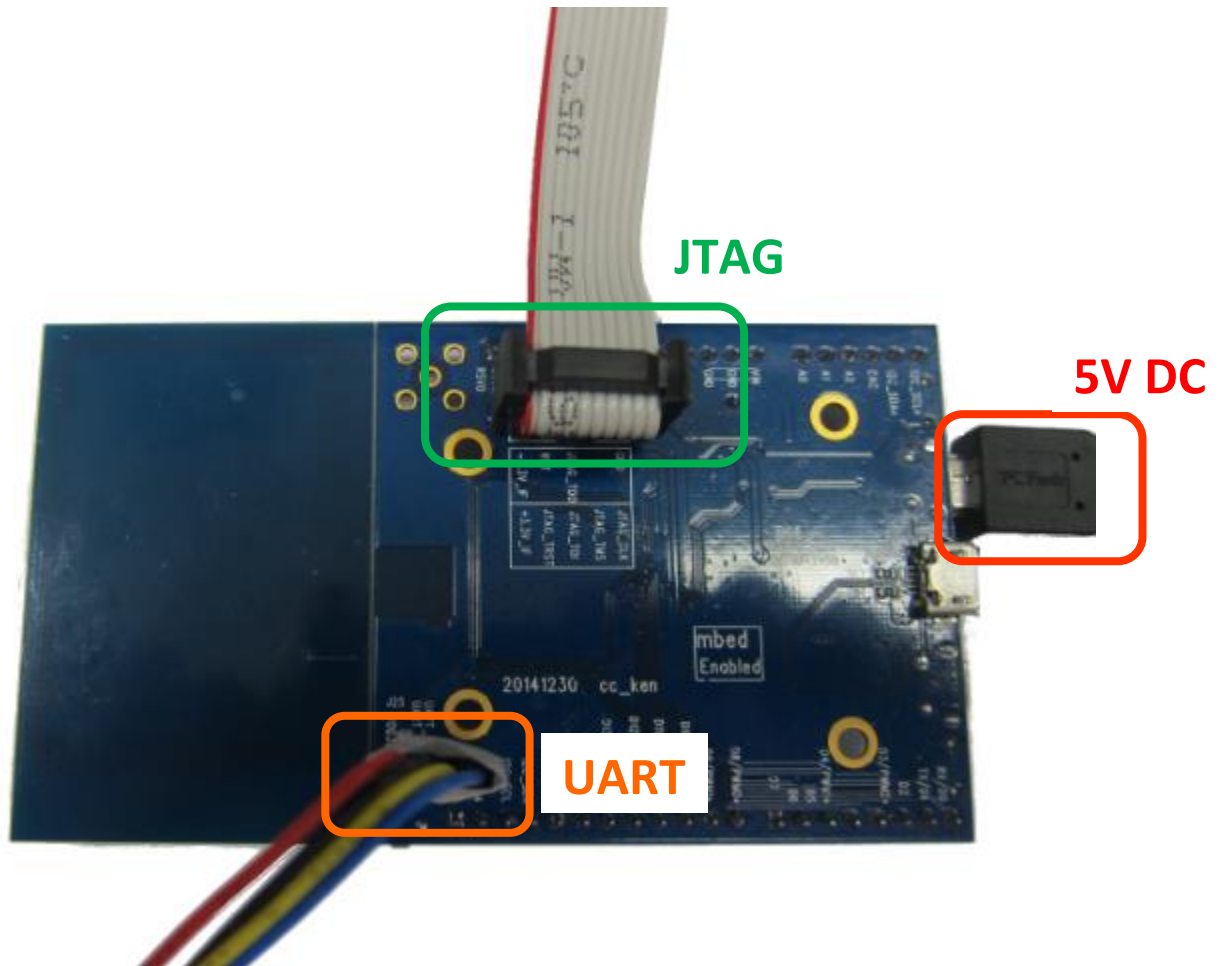
RTL-AMEBA_DEV01 supports CMSIS-DAP debugger. It requires installing “serial to USB driver” at first. Serial to USB driver can be found in tools\serial_to_usb\mbedWinSerial_16466.

Connect board to the PC with micro-USB cable.



6.2 J-Link/JTAG

Weld JTAG and log UART connectors to HDK board and connect with pitch 2.54mm 2x5pins connector. It is recommended to weld the connector on the bottom side. Users can connect extension boards from top side.

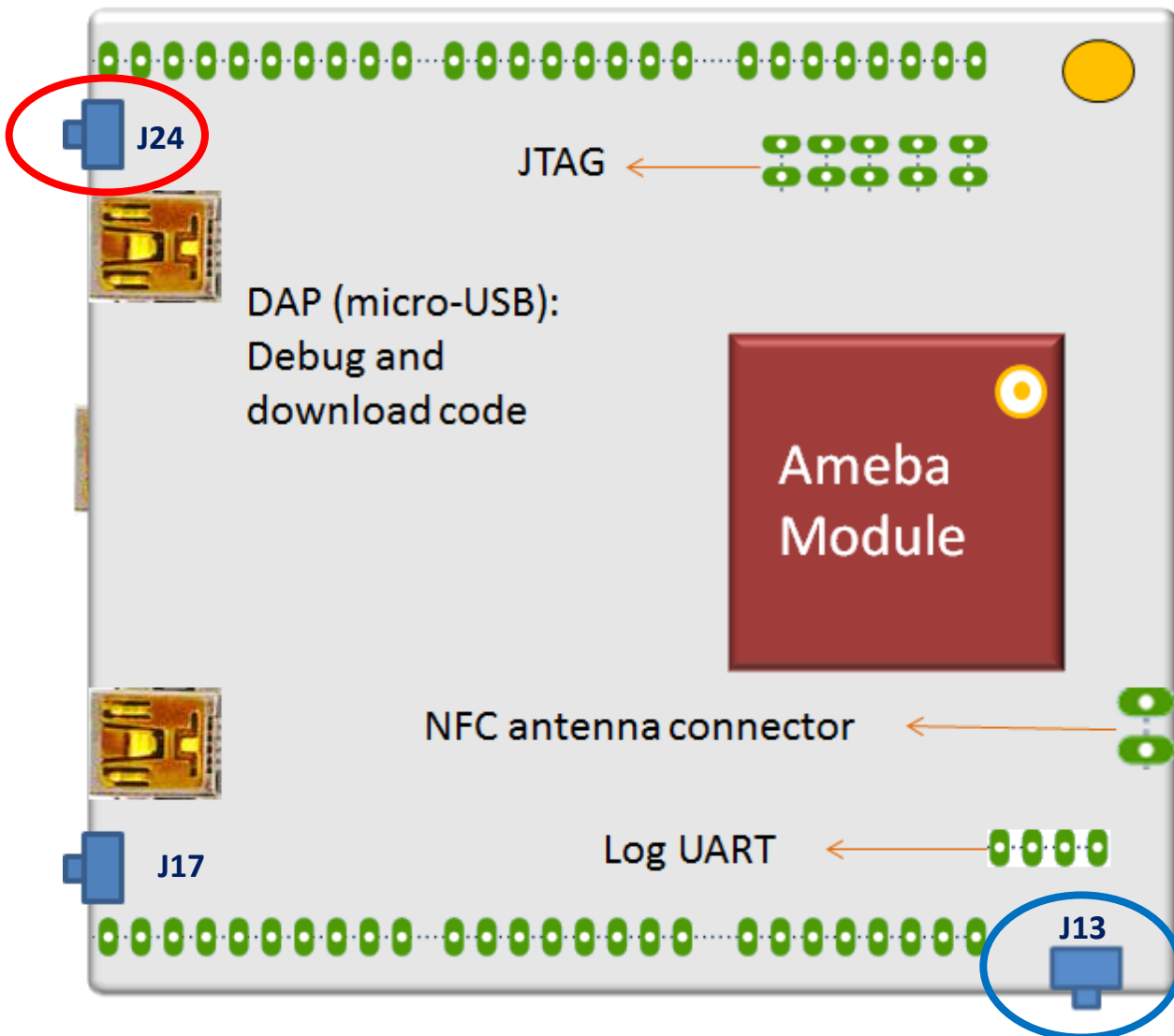


Dupont Line or 2.54mm 2x5 pins connector.



Power On(Disable DAP mode)

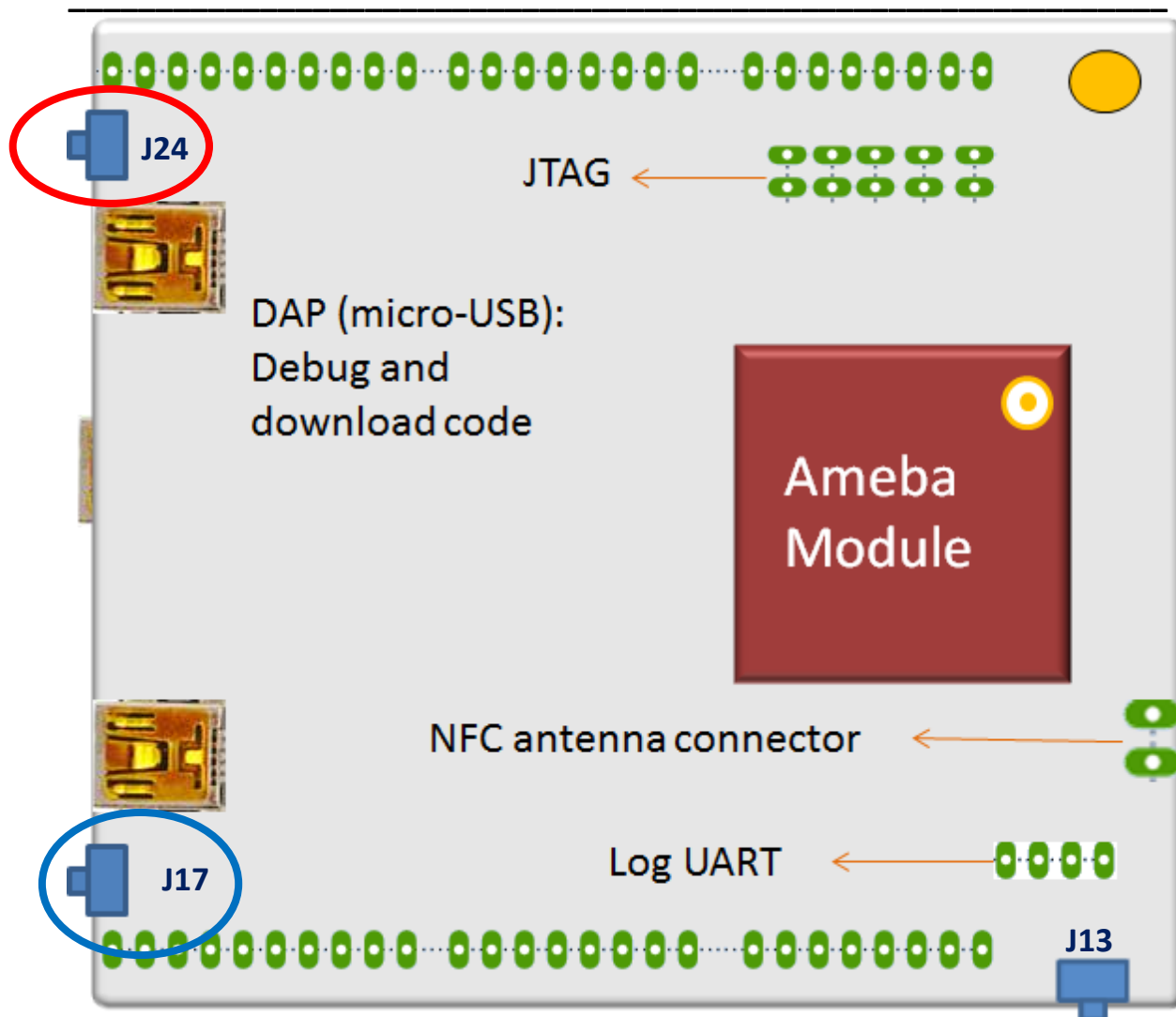
Holding TGT_NRESET button (J24, red-circled) then press Pdn button (J13, blur-circled). Release the button after power on.



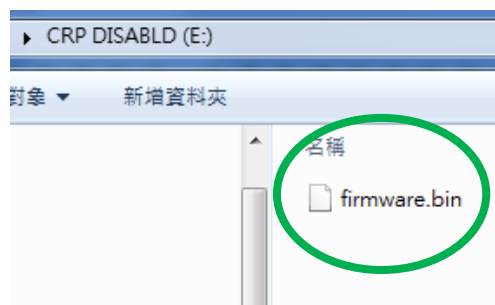
6.3 DAP mode

In DAP mode, the DAP firmware can be updated.

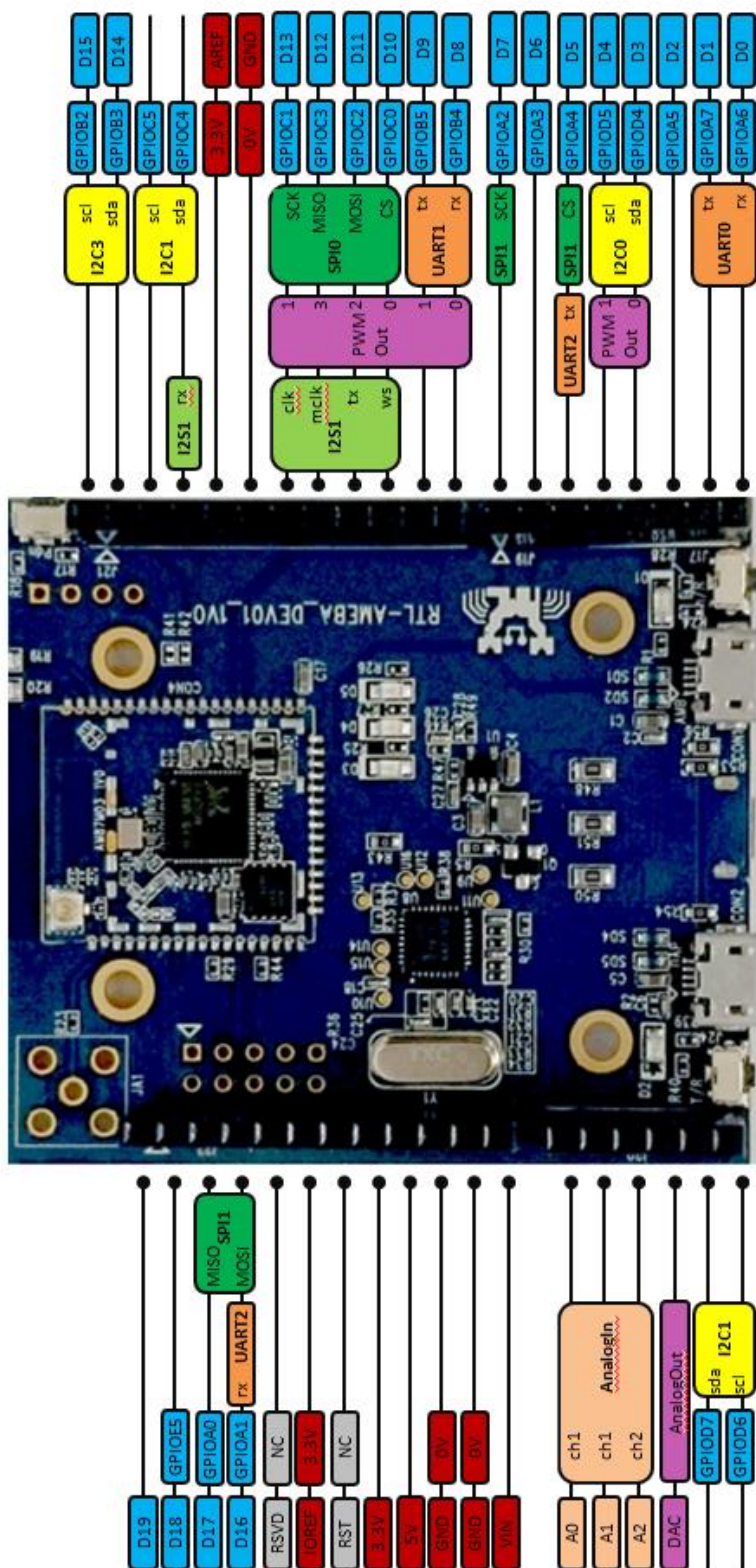
Holding TGT_NRESET button (J24, red-circled) then press nRESET button (J17, blur-circled). Then the DAP mode window will show up.



DAP window will show up when entering DAP mode.

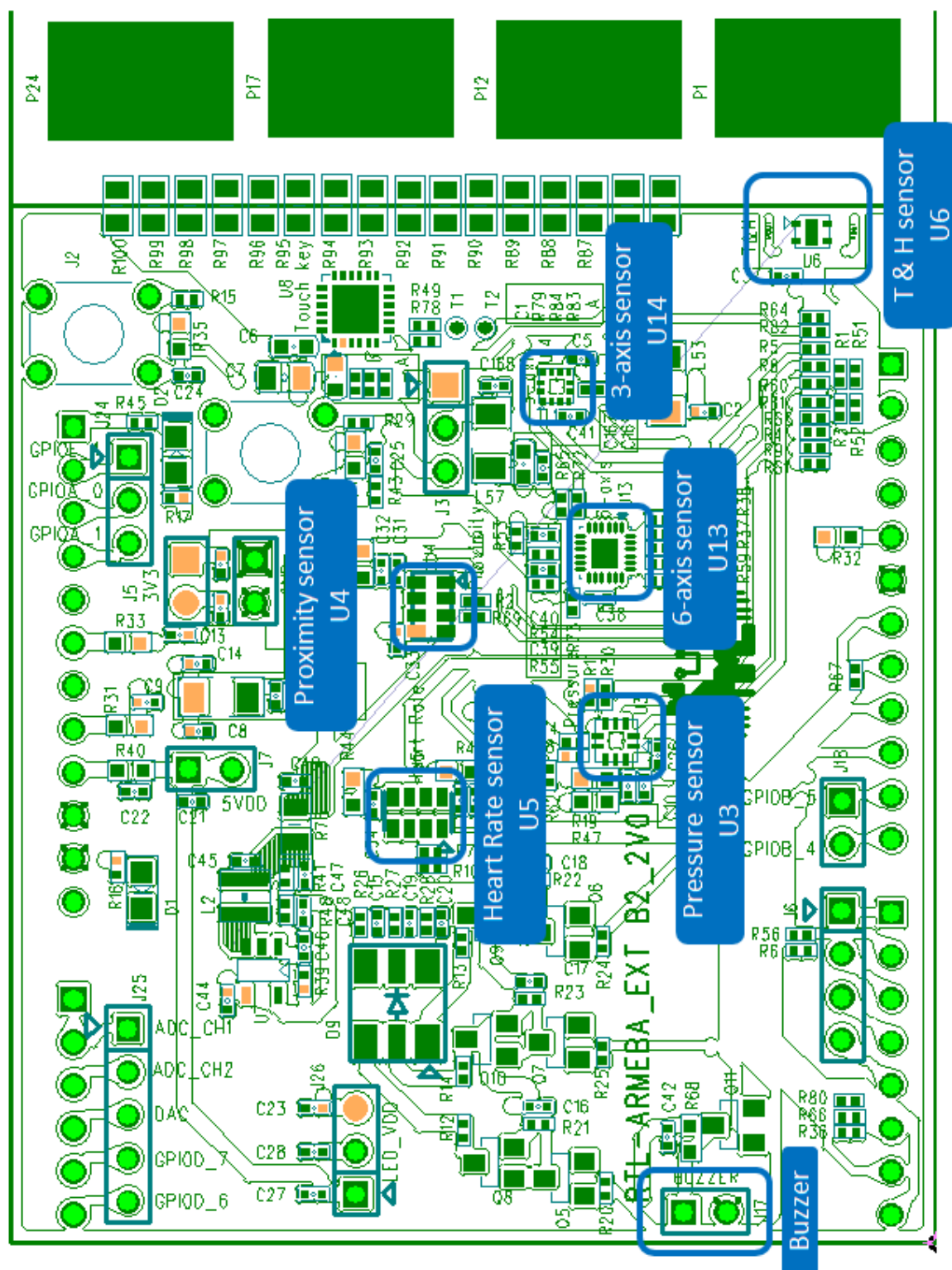


7 Ameba1 DEV01 pin out



8 Sensor board

- Extension board: RTL-AMEBA_EXT B2_2V0



9 Warning

10.1 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.

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.

IMPORTANT NOTE:

FCC 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.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 13.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with FCC multi-transmitter product procedures.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without C2PC.

This module is intended for OEM integrator. The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated.

Additional testing and certification may be necessary when multiple modules are used.

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. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: 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: TX2-RTL8195AM ". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: 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.

10.2 Industry Canada Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device

French translation:

Ce dispositif est conforme aux CNR d'IndustrieCanada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

This device has been designed to operate with an antenna having a maximum gain of 3.5dBi.

Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

This module is intended for OEM integrator. The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated.

Additional testing and certification may be necessary when multiple modules are used.

French translation:

Ce dispositif a été conçu pour fonctionner avec une antenne ayant un gain maximum de 3.5 dBi. Une antenne à gain plus élevé est strictement interdite par les règlements d'Industrie Canada. L'impédance d'antenne requise est de 50 ohms.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC 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.

French translation:

NOTE IMPORTANTE: (Pour l'utilisation de dispositifs mobiles)

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

For product available in the Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

French translation:

Pour les produits disponibles aux Canada du marché, seul le canal 1 à 11 peuvent être exploités. Sélection d'autres canaux n'est pas possible.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with IC multi-transmitter product procedures.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without reassessment permissive change.

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmetteur.

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 IC 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. 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 IC : 6317A-RTL8195AM ".

This radio transmitter (IC: 6317A-RTL8195AM) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

French translation:

Le présent émetteur radio (IC: 6317A-RTL8195AM) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types

d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

The following antenna type and max. gain be used and approved for the module:

- 1) Dipole antenna, max. gain: 3dBi
- 2) PIFA antenna, max. gain: 3.5dBi
- 3) Printed antenna, max. gain: 2dBi
- 4) PIFA antenna, max. gain: 2.89dBi

10.3 NCC 警語

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。

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。

本模組於取得認證後將依規定於模組本體標示審合格籤。

系統廠商應於平台上標示「本產品內含射頻模組： XXXyyyLPDzzzz-x (NCC ID) 」字樣。

10.4 Japan Statement

Host system must be labeled with "Contains MIC ID:xxxx", MIC ID displayed on label