

## 1.1 General Description

Panlink II module consists of a BT module, crystal and antenna connector. This module can change UART signal to wireless signal using Bluetooth low energy technology. This module uses external antenna via a Antenna connector.

Panlink II communication type is piconet, which means Panlink II transfers data to another Panlink II (one is master, the other one is slave).

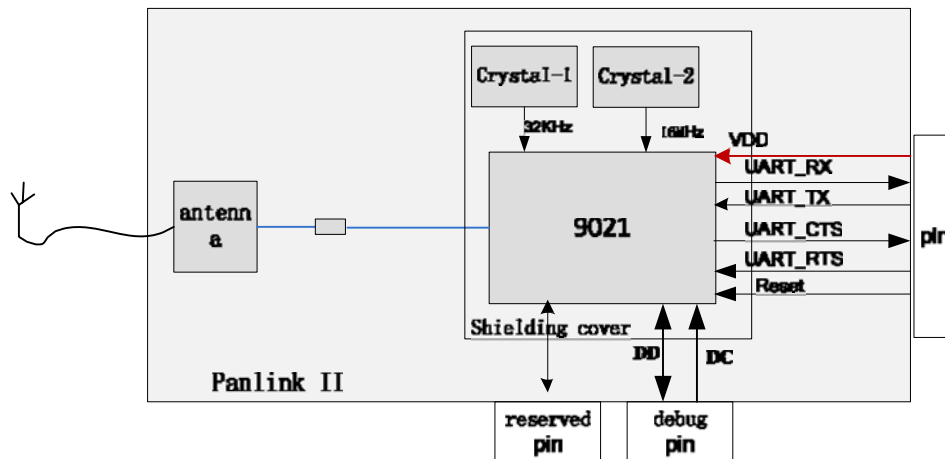
When transferring data from master to slave, data was given to master by UART. Then master Panlink II controls signal, frames, radiation power and transmits them via the antenna to slave Panlink II. Slave Panlink II get RF signal via the antenna and resolve it to data.

When transferring data from slave to master, data was given to master by UART. Then slave Panlink II controls signal, frames, radiation power and transmits them via the antenna to master Panlink II. Master Panlink II get RF signal via the antenna and resolve it to data.

And there are some requisition for end-user as below,

- The module is limited to OEM installation ONLY;
- The OEM integrators is responsible for ensuring that end-user has no manual instructions to remove or install module;
- The module is limited to installation in mobile or fixed application
- The separate approval is required for all other operating configurations, including portable configuration with respect to Part 2.1093 and different antenna configurations;
- The host manufacturer is responsible for ensuring that after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements

## 1.2 Block diagram



## 1.3 Interface and pin definition

No.	Pin name	Type	description
1 to 8	NC	/	No use
9	DC	I	Debug clock
10	DD	O	Debug data
11	SLEEP_OUT/P3_0	O	Wakeup out
12	VDD	Power	Power in
13	GND	Power	ground
14	Reset	RSTN	Reset in
15	Wake/P0_3	I	Wake up input
16	UART_RXD0	I	Uart in, baud rate is 115200
17	UART_TXD0	O	Uart out, baud rate is 115200
18	nCS1/CTS <sub>n1</sub> /P1_2	I/O	Reserved
19	CLK1/RTS <sub>n1</sub> /P1_3	I/O	Reserved
20	MOSI1/TXD1/P1_1	I/O	Reserved
21	MISO1/RXD1/P1_0	I/O	Reserved
22	CD	O	Module detect pin

23	RF Connector	RF	Connect to external antenna
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## 1.4 Operation specification

### ABSOLUTE MAXIMUM RATINGS

Over operating room temperature range (unless otherwise noted)

Item	VALUE	UNIT
Supply voltage range	-0.3 to 3.9	V
Voltage range to any of digital pins	-0.3 to VDD + 0.3, <3.9	V
Storage temperature range	-40 to +85	°C

### RECOMMENDED OPERATING CONDITIONS

Over operating room temperature range (unless otherwise noted)

Item	MIN	NOM	MAX	UNIT
Supply voltage range	2.4		3.6	V
Operational temperature range	-20		+70	°C

## 1.5 Wireless specifications

Protocol: Bluetooth low energy 4.0

Modulation mode: GFSK

Operating frequency: 2402 ~ 2480MHz(40 channels)

Channel spacing: 2MHz

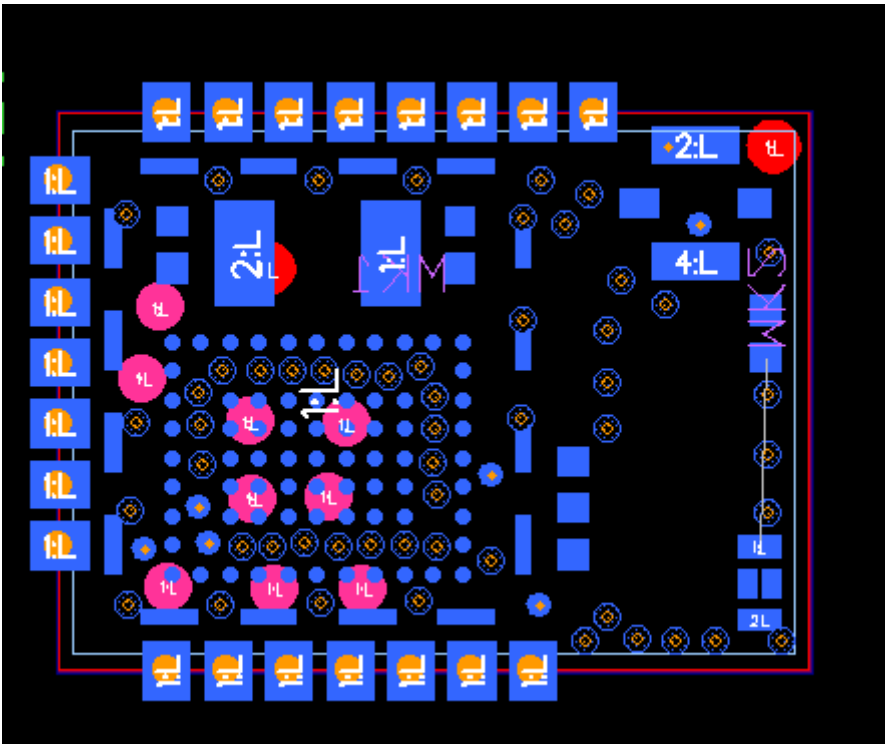
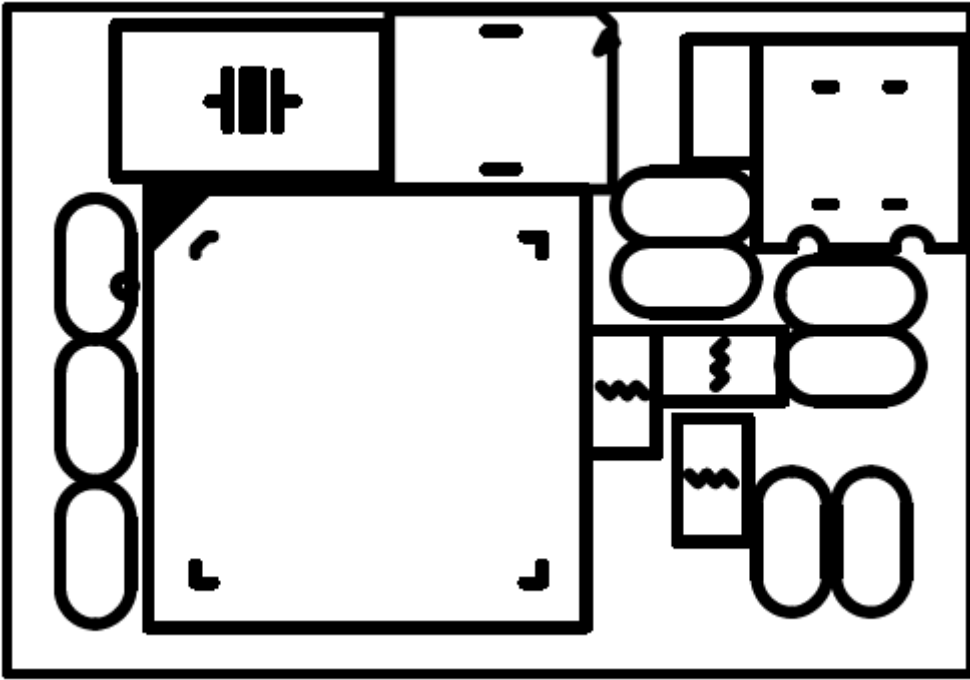
Wireless baud rate(data rate): 1Mbps

Output power (transfer power):  $\leq 2.5\text{mW}$

Data security : 128bit AES

## 1.6 Mechanical and package description

Dimension is 9.6mm\*13.9mm\*2.3mm, and package type is SMT.



This device and its antenna must not be located or operating in conjunction with any other antenna and transmitter.

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 important announcement

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following" Contains FCC ID: ZLZTDBTSE " and Contains IC: 9726A-TDBTSE. The FCC part 15.19 statement below 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. A user manual with the end product must clearly indicate the operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines. The end product with an embedded Panlink II Module may also need to pass the FCC Part 15 unintentional emission testing requirements and be properly authorized per FCC Part 15.

To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in general exposure condition must not exceed 3.5dBi.

The modular used RP-SMA antenna connector and tested 3 antennas,

Antenna	Antenna Type	Maximum Antenna Gain
Antenna 1	FPC	2dBi
Antenna 2	Dipole	3.5dBi
Antenna 3	FPC	1dBi

If end users use others antennas except stated, end-users need test radiated emission, RF exposure refer to FCC C2PC rules.

New antenna information:

Antenna installation: ANT1 FPC PIFA Antenna  
ANT2 PCB PIFA Antenna

Antenna Gain: ANT1: 0.64dBi  
ANT2: 1.0dBi

Caution:

This device complies with Part 15 of the FCC rules and Industry Canada license-exempt RSS standard(s). 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.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or change to this equipment. Such modifications or change could void the user's authority to operate the equipment.

This radio transmitter (identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain 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.

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.

The device has been evaluated to meet general RF exposure requirement.

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with a minimum distance of 5mm between the radiator and your body.