# WLT8266BM module manual

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.

## SPEC

# Index

# 1. Summary

WLT8266BM is a Bluetooth LE module designed by Wi-linktech. It is based on telink TLS8266 which is a BLE single chip solution.

WLT8266BM has a built-in BLE stack, support for all BLE profiles. It is suitable for low power applications.

## 1.1 Functions

In system programmable 128KB Flash
8KB RAM with retention in all power modes
Support 250-kbps,500-kbps,1-Mbps,2-Mbps Data Rates
Programmable output power up to 8 dBm
Excellent receiver sensitivity,-94Bm at 1Mbps
I2C interface
Two powerful USARTs.
12-Bit ADC with eight channels
On board 2.4GHz PCB antenna

## 1.2 Application

Fitness
Wearable products
Smart home

# 2. Electrical characters

Table 1 Supply voltage

| Symbol | Typical | Minimum | Maximum | Units |
|---|---|---|---|---|
| VDD | 3.3V | 2.7 | 3.6 | V |

Table 2 Digital IO specifications

| Symbol | Minimum | Normal | Maximum | Units |
|---|---|---|---|---|
| $V_{IH}$ | 0.7VDD | - | VDD | V |
| $V_{IL}$ | VSS | - | 0.3VDD | V |
| $V_{OH}$ | VDD-0.3 | - | VDD | V |
| $V_{OL}$ | VSS | - | 0.3 | V |

Table 3 Temperature specifications

| Item | Minimum | Maximum | Units |
|---|---|---|---|
| Storage | -65 | +150 | ℃ |
| Soldering | - | +260 | ℃ |

Table 4 DC characteristics

| Item | Minimum | Normal | Maximum | Units |
|---|---|---|---|---|
| Tx current (1KB/s) | - | 10.8 | - | mA |
| Rx current (1KB/s) | - | 9.8 | - | mA |
| Sleep current | - | 900 | - | uA |
| Suspend current | - | 10 | - | uA |

# 2. RF performance

Table 5 RF section

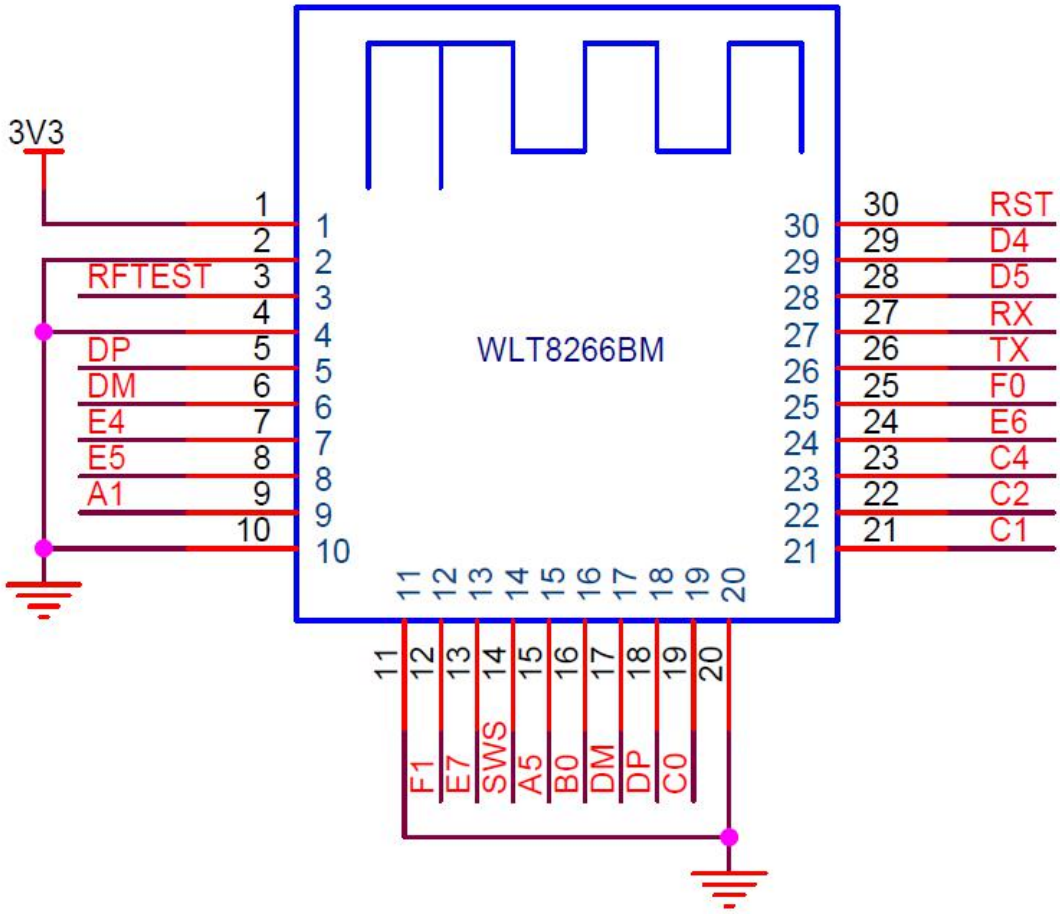
| Item | Symbol | Minimum | Normal | Maximum | Units |
|---|---|---|---|---|---|
| Sensitivity | 1Mbps | -93 | -92 | -90 | dBm |
| Frequency offset tolerance | - | -300 | - | +300 | KHz |
| Co-channel rejection | - | - | -7 | - | dB |
| In-band blocking rejection | ±1 MHz offset | - | 12 | - | dB |
| | -2 MHz offset | - | 47 | - | dB |
| | -3 MHz offset | - | 48 | - | dB |
| | +3 MHz offset | - | 50 | - | dB |
| | >4 MHz offset | - | 52 | - | dB |
| Image rejection | - | - | 44 | - | dB |

Table 6 BT section

| Item | Symbol | Minimum | Normal | Maximum | Units |
|---|---|---|---|---|---|
| Output | - | 3.8 | 7 | - | dBm |
| Modulation 20dB bandwidth | - | - | 1000 | - | KHz |

# 3. Pin assignment

Figure 3. Pin assignment



# 4. Pin definition

## 4.1 Pin definition

Table 7 .WLT8266BM pin definition

| PIN # | Name | Type | Description |
|---|---|---|---|
| 1 | 3V3 | POWER | 3.3V power |
| 2、4、10、11、20 | GND | POWER | grond |
| 3 | RF_TEST | ANALOG | external antenna pin |
| 5、18 | DP | I/O | USB data Positive/GPIO/ANA_B<6> |
| 6、17 | DM | I/O | USB data Minus/GPIO/ANA_B<5> |
| 7 | E4 | I/O | GPIO16/ANA_E<4> |
| 8 | E5 | I/O | GPIO17/ANA_E<5> |
| 9 | A1 | I/O | PWM3 output/GPIO/ ANA_A<1> |
| 12 | F1 | I/O | SPI clock/I2C_SCK/GPIO/ ANA_F<1> |
| 13 | E7 | I/O | SPI data input/I2C_SDA/GPIO/ ANA_E<7> |
| 14 | SWS | I/O | Single wire slave/GPIO/ANA_A<0> |
| 15 | A5 | I/O | PWM4 output/GPIO/ ANA_A<5> |
| 16 | B0 | I/O | PWM5 output/GPIO/ ANA_B<0> |
| 19 | C0 | I/O | PWM0 output/GPIO/ANA_C<0>/ Analog mcrophone Bias |
| 21 | C1 | I/O | GPIO/PWM1 inverting output/ANA_C<1>/ Analog microphone input |
| 22 | C2 | I/O | PWM1 inverting output/GPIO/ANA_C<2> |
| 23 | C4 | I/O | PWM2 output/GPIO/ ANA_C<4> |
| 24 | E6 | I/O | SPI chip select. Active low/ UART_RTS /GPIO/ANA_E<6> |
| 25 | F0 | I/O | SPI data output/ UART_CTS /GPIO/ ANA_F<0> |
| 26 | TX | I/O | GPIO4/UART_TX/ ANA_C<6> |
| 27 | RX | I/O | GPIO5/UART_RX/ ANA_C<7> |

| | | | |
|---|---|---|---|
| 28 | D5 | I/O | GPIO11/ ANA_D<5>/ (optional) 32KHz crystal output |
| 29 | D4 | I/O | GPIO10/ ANA_D<4>/(optional) 32KHz crystal input |
| 30 | RST | I/O | Power on reset, active low |

## 4.2 UART interface

The UART of WLT8266BM uses four wire interface consisting of RX and TX, and hardware flow control RTS and CTS. Below is an example connection of UART between WLT8266BM and host MCU.

:

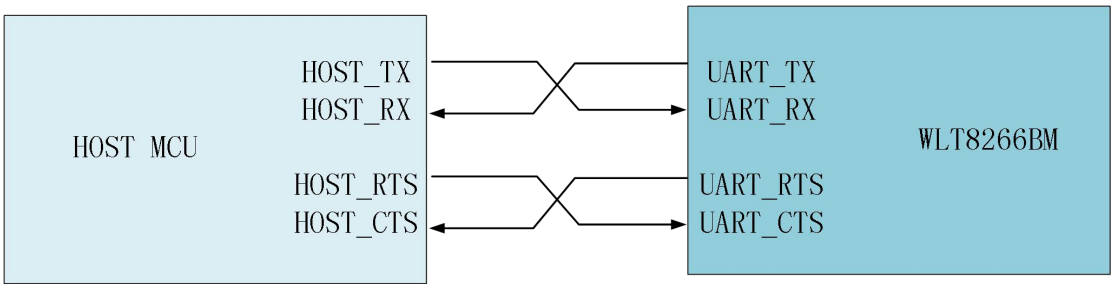



Figure 4. UART connection between WLT8266BM and Host MCU

# 5. Reference Design

## 5.1 Reference schematic

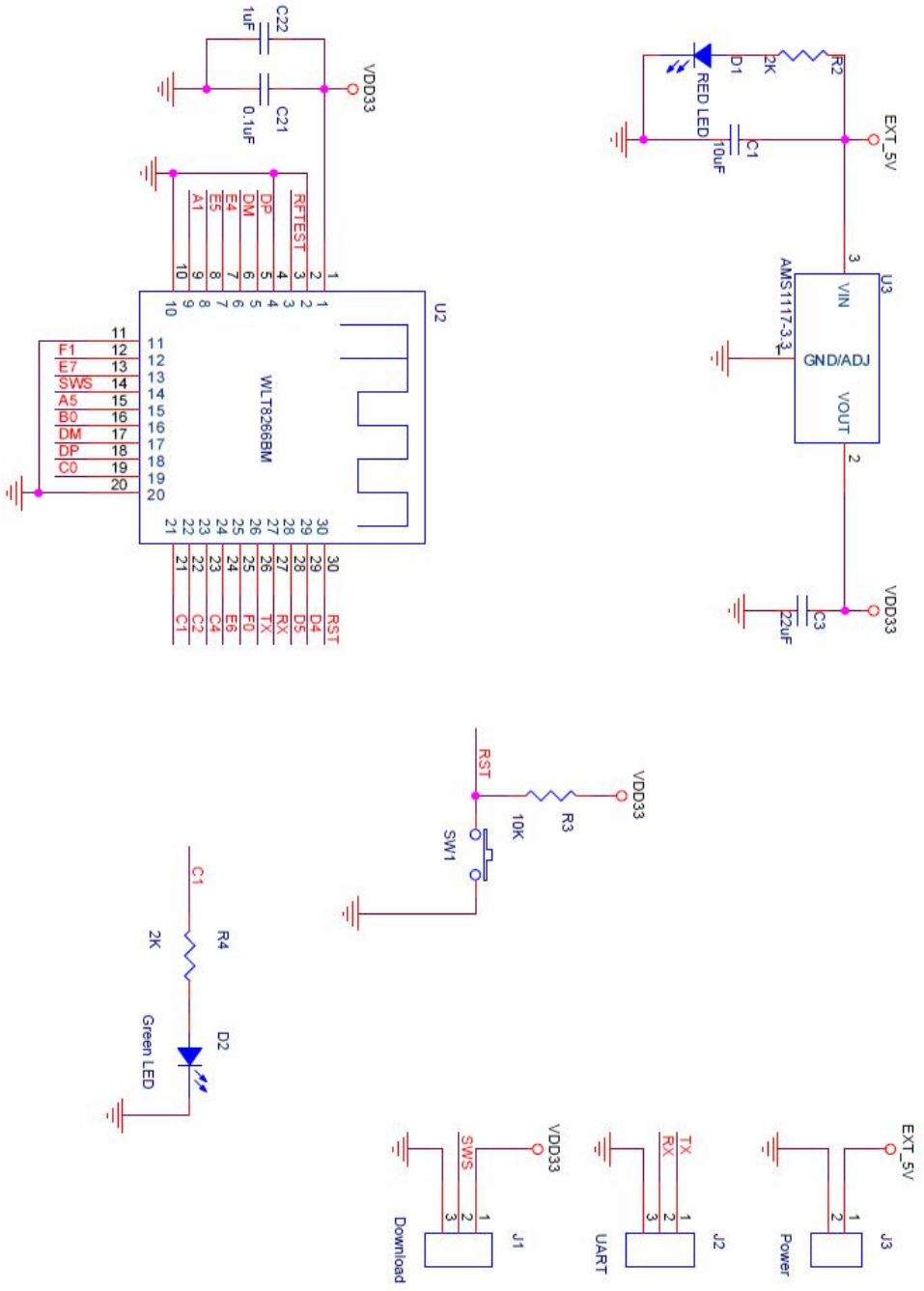



Figure 5. WLT8266BM typical application schematic

## 5.2 Module size

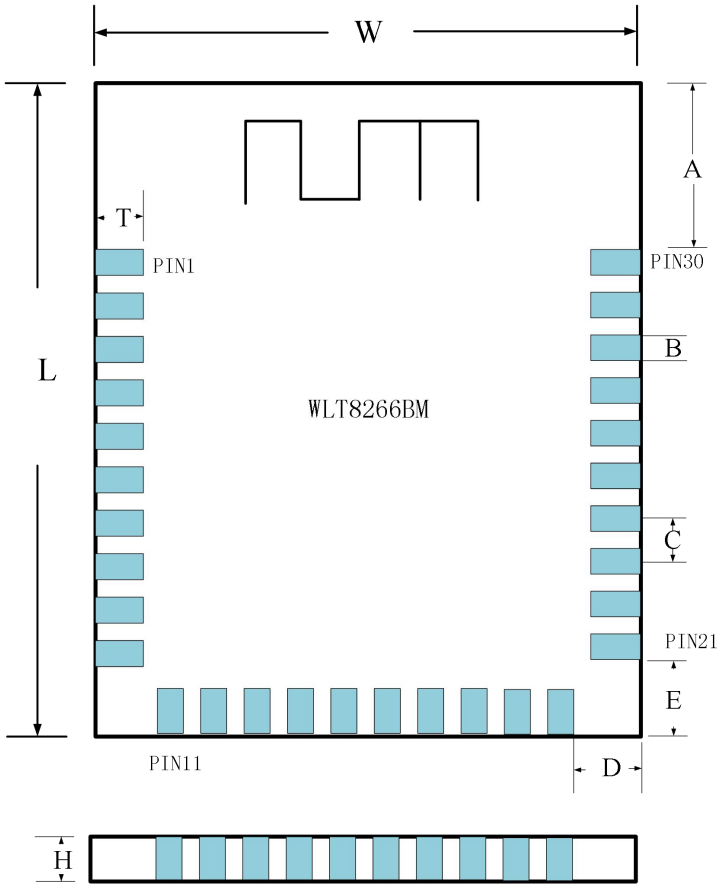



Figure6. WLT2541 module size（Top view）

| Symbol | Min. | Typ. | Max. |
|---|---|---|---|
| W | 14.96 | 15.00 | 15.04 |
| L | 16.96 | 17.00 | 17.04 |
| T | 0.73 | 0.75 | 0.77 |
| A | 4.55 | 4.60 | 4.65 |
| B | - | 0.80 | - |
| C | - | 1.10 | - |
| D | 2.10 | 2.15 | 2.20 |
| E | 1.65 | 1.7 | 1.75 |
| H | 1.5 | 1.55 | 1.60 |

## 5.3 PCB layout guide

Bluetooth works in a frequency of 2.4GHz, the design of PCB and Mechanical should be careful to avoid the impact of various factors on the RF performance. Please note the following:

1. Outer casing surrounding WLT8266BM module should avoid using metal materials. If the casing is metal, it is recommended to use an external 2.4GHz antenna.
2. Metal screws should be far away from RF part of module.
3. Module should be placed on the edge of motherboard, ensure the antenna towards outside.

Please make sure that all layers have no trace or copper under the Antenna region.

# 6. Software introduction

WLT8266BM is a BLE module for data exchange, support transparent transmission and AT commands.

For detail commands please refer to WLT8266BM module SW application documents.

User manual: a) page 2, a format error exist, please delete the line 1; b) please add below indication to the user manual.

If the FCC identification number is not visible when the module installed in the host, then the outside of the device into which the module was installed in must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2AOO6WWLT8266BM” or “Contains FCC ID: 2AOO6WWLT8266BM”}

FCC 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 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.

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.

RF warning statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in public exposure condition without restriction.