



WLT8266BM module manual

SPEC



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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	°C
Soldering	-	+260	°C

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

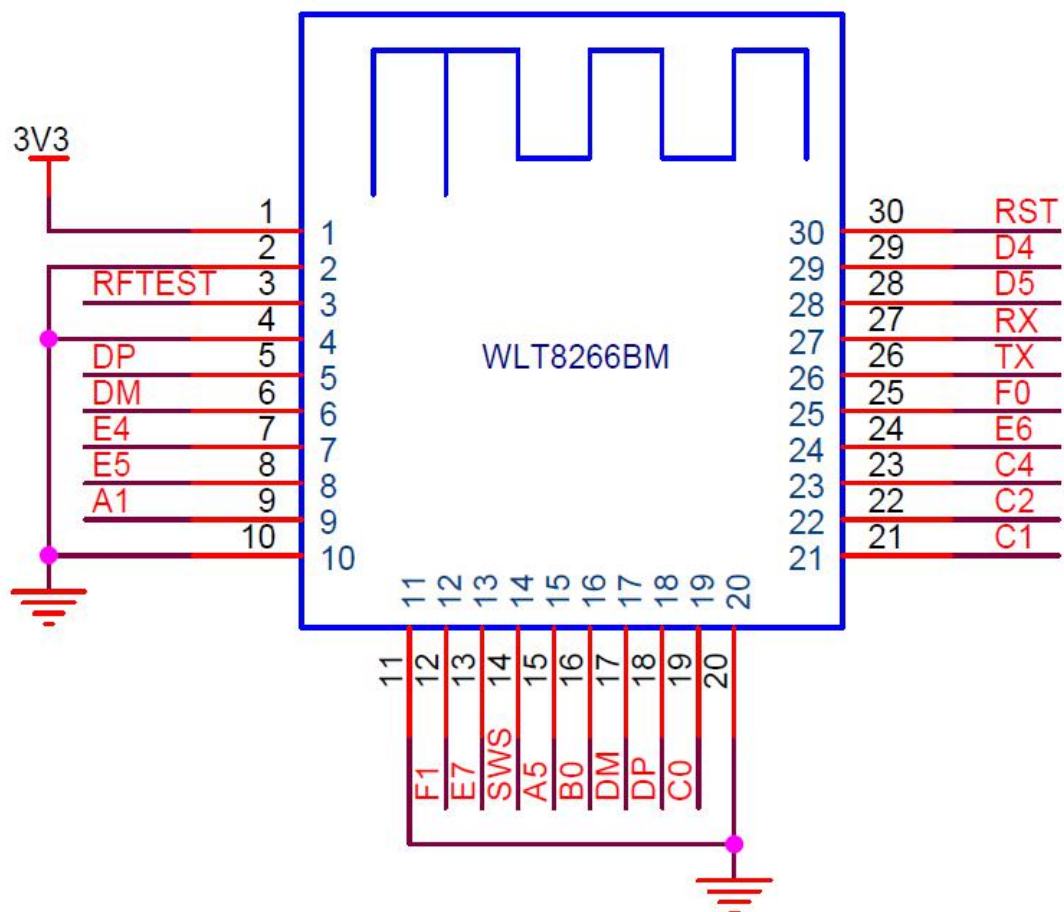
Table 6 BT section

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 microphone 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.

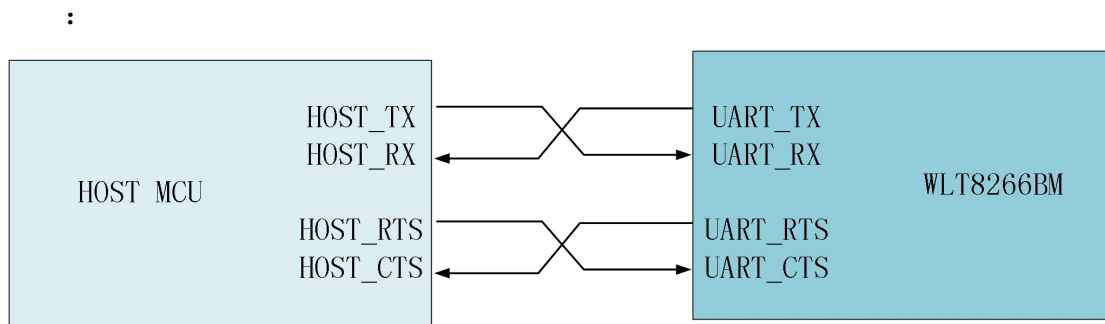


Figure 4. UART connection between WLT8266BM and Host MCU



5. Reference Design

5.1 Reference schematic

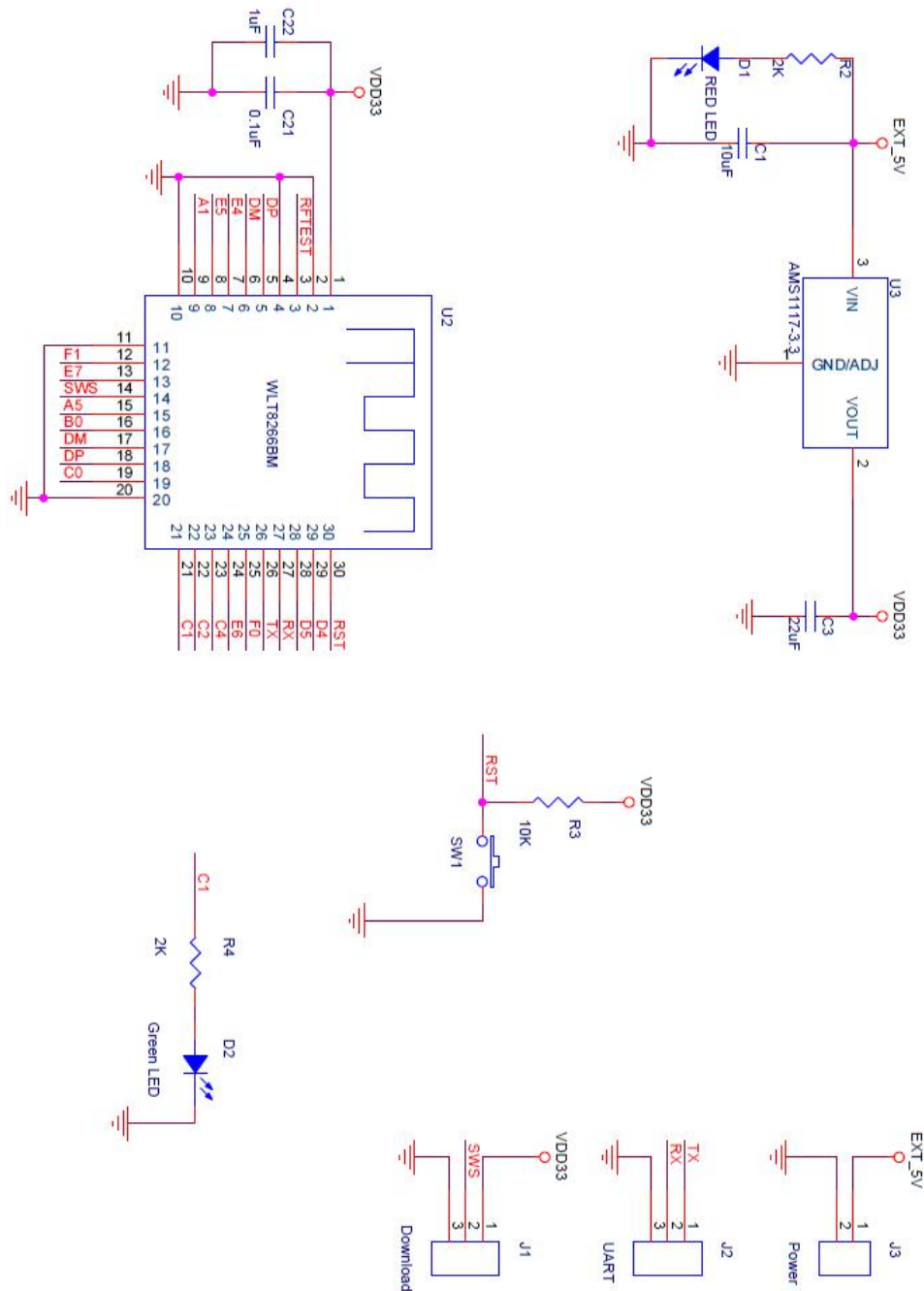


Figure 5. WLT8266BM typical application schematic



5.2 Module size

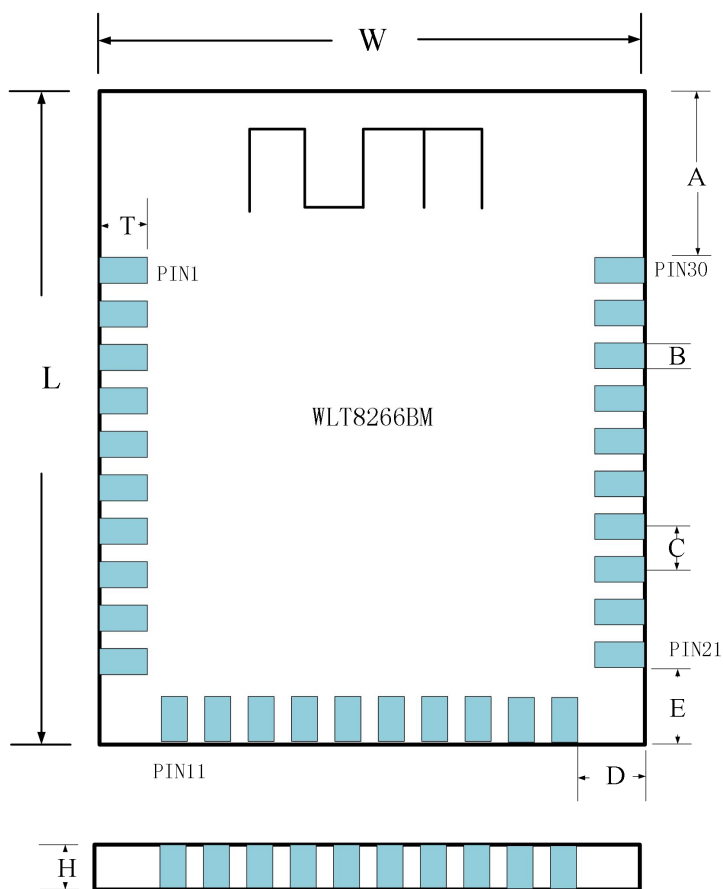


Figure6. WLT2541 module size (Top view)

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.

If there are some customization requirements, please contact our company.

Federal Communication Commission Statement (FCC, U.S.)

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.

RF warning statement:

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

IMPORTANT NOTES

Co-location warning:

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

OEM integration instructions:

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

- 1) The transmitter module may not be co-located with any other transmitter or antenna.
- 2) The module shall be only used with the integrated PCB antenna that has been originally tested and certified with this module. The antenna must either be permanently attached or employ a 'unique' antenna coupler.

As long as the 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 (for example, digital device emissions, PC peripheral requirements, etc.).

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot 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.

The modular type for this device is LMA (Limited Modular Approval), the end-product into which the module will be installed should be maintained the full compliance of the end-product when used.

End product labeling:

The final end product must be labeled in a visible area with the following: "Contains Transmitter Module FCC ID: 2A006-WLT8266BM."

Information that must be placed in the end user manual:

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.