



WLT3266C

Module Specification

M3_12

Document Version|V1.4

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Revision History

Version	Date	Update Record	Editor
Rev1.0	2024-05-28	Initial version	Zhang Wei
Rev1.1	2024-07-11	1. Add production, design, storage, and repair precautions; 2. Optimize some parameters such as voltage range, reference schematic, etc.	Zhang Wei
Rev1.2	2024-09-30	Add power supply current recommendation for external module power supply	Zhang Wei
Rev1.3	2024-11-01	Supplement module IO application notes and fix some editing issues	Zhang Wei
Rev1.4	2025-05-09	Improve document information and layout	Zhang Wei

Table of Contents

Important Notice and Disclaimer

Revision History

Table of Contents

1. Overview

- 1.1. Features
- 1.2. Application Fields

2. Pin Description

- 2.1. Pin Definition
- 2.2. Pin Description

3. Electrical Characteristics

- 3.1. Absolute Maximum Ratings
- 3.2. Recommended Operating Conditions
- 3.3. IO DC Characteristics
- 3.4. IO Drive Characteristics
- 3.5. RF Characteristics
- 3.6. Audio Characteristics

4. Hardware Introduction

- 4.1. Typical Application Schematic
- 4.2. Common Interface Description
- 4.3. Hardware Design Notes
 - 4.3.1. Antenna Position Handling:
 - 4.3.2. Module Ground Handling:
 - 4.3.3. Module Power and Signal Line Handling:
- 4.4. Common Application Issues
 - 4.4.1. Poor Transmission Distance
 - 4.4.2. Abnormal Damage
 - 4.4.3. High Bit Error Rate

5. Dimensions and Package

- 5.1. Module Dimensions
- 5.2. Module Package
- 5.3. Stencil Fabrication Requirements

6. Reflow Soldering Parameter Recommendations

- 6.1. Reflow Soldering Conditions
- 6.2. Second Reflow Temperature Curve
- 6.3. SMT Placement Notes

7. Storage and Packaging

- 7.1. Moisture Sensitivity Level and Moisture-proof Requirements



7.2.Storage

7.3.Floor Life and Temperature/Humidity Control

8.Repair, Desoldering and Soldering

8.1.Desoldering

8.2.Recommended Module Re-soldering Steps

9.ESD Protection Measures

10.Regulatory Statements

1. Overview

This module is a dual-mode Bluetooth module developed by Wi-Linktech. It integrates dual-mode Bluetooth protocol stack and various application profiles, supports BLE Audio, and enables high-fidelity low-latency bidirectional transmission of 2.4G wireless audio, allowing easy implementation of Bluetooth device interconnection, data transmission, voice, music, and other applications.

1.1. Features



Figure 1-2. Module Appearance

- Dual-mode Bluetooth V5.3, supporting Bluetooth BR, EDR, BLE
- Supports BLE Audio, including CIS and BIS
- Software configurable maximum transmit power up to 8dBm, supports Class1, Class2, Class3
- Receiver sensitivity: -95dBm@1Mbps
- Supports A2DP/AVRCP/HFP/HSP/OPP/HID/SPP/PBAP/GATT/SM protocols
- High-performance 32-bit RISC core, up to 240MHz, supports DSP instructions
- Integrated 256KB SRAM
- Built-in 16Mbit FLASH for code and data storage
- Supports 3 channels of 24-bit Audio-ADC, SNR≥94dB
- Supports 1 analog microphone, single-ended or differential input with AGC, or 2 digital microphones
- Supports 1 analog LINE-IN input
- 2 channels of 24-bit DAC, SNR≥105dB
- Supports direct drive of 16Ω or 32Ω headphones, maximum output power 40mW
- 1 full-duplex I2S, 8~192KHz sampling rate, maximum effective bit width 32bits
- Up to 16 GPIOs
- Supports USB 2.0 Full Speed (OTG) controller
- 1 CAN bus interface, supports CAN 2.0A/B
- 1 standard SPI Master @max.30M, 1 SDIO @max.30M, 1 full-duplex UART1 @max.3Mbps, 1 transmit-only UART0 @max.3Mbps
- Supports MP2, MP3, WMA, APE, FLAC, AAC, MP4, M4A, WAV (IMA-ADPCM & PCM), AIF, AIFC audio decoding

- Supports Karaoke effects and algorithms, supports "autotune/pitch change/voice change"
- Supports 3D surround, virtual bass, parametric equalizer (EQ), dynamic range compression (DRC), echo cancellation (AEC)
- Supports 24-bit high-precision DSP audio processing
- Supports 2.4G wireless audio high-fidelity low-latency bidirectional transmission, latency as low as 10ms
- Onboard high-performance PCB antenna
- DC 3.3V~5.5V power supply @VCC
- ESD resistance: HBM 2KV
- Module dimensions: 13x27.2mm

1.2.Application Fields

- Bluetooth speakers, musical instruments
- Music treadmills, music massage chairs, music sofas
- Bluetooth audio converters
- Somatosensory music mattresses
- Smart home audio systems

2.Pin Description

2.1.Pin Definition

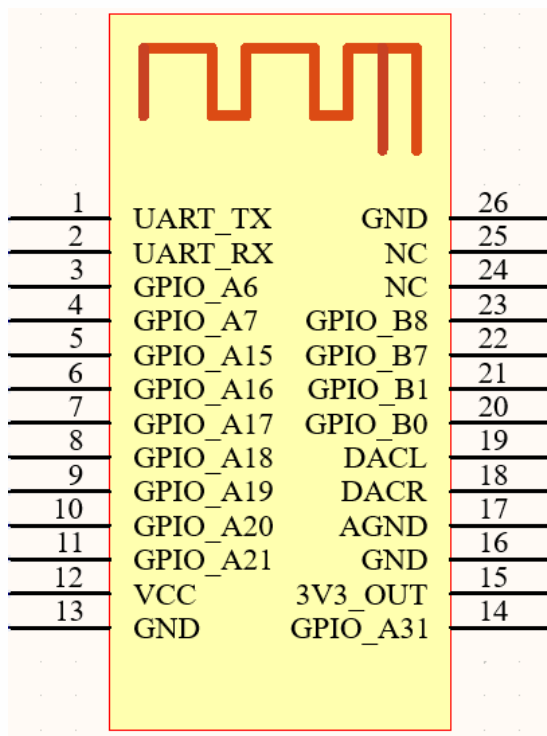


Figure 2-1. Module Pin Diagram

2.2.Pin Description

Table 2-1. Module Pin Definition Table

Pin #	Name	Type	Description
1	UART_TX	I/O	AD0 / CAN_RXD / UART1_TXD / I2S1_DO / I2S1_DI / TIM5_PWM / TIM6_PWM
2	UART_RX	I/O	AD0 / SPIM_CS / CAN_TXD / UART1_RXD / I2S1_BCLK / TIM6_PWM
3	GPIO_A6	I/O	AD0 / SPIM_CLK / UART0_TXD / I2C_SCL / MCLK1_OUT / MCLK1_IN / TIM8_PWM
4	GPIO_A7	I/O	AD0 / SPIM_MISO / UART0_CTS / UART0_RTS / I2S1_LRCK / MCLK1_OUT / MCLK1_IN / TIM5_PWM
5	GPIO_A15	I/O	AD0 / SD_DAT
6	GPIO_A16	I/O	AD0 / SD_CLK
7	GPIO_A17	I/O	AD0 / SD_CMD



Pin #	Name	Type	Description
8	GPIO_A18	I/O	OTG_DM / UART1_RXD / UART1_TXD
9	GPIO_A19	I/O	OTG_DP / UART1_TXD / UART1_RXD
10	GPIO_A20	I/O	AD0 / SD_DAT / SPIM_MOSI / UART1_TXD / I2S1_LRCK / TIM7_PWM
11	GPIO_A21	I/O	AD0 / SD_CLK / SPIM_CLK / UART1_TXD / I2S1_BCLK / TIM8_PWM / AD3 / SPDIF_A1 / SPIM_CS / UART1_TXD / I2C_SDA / I2S1_LRCK / SPDIF0_DI / SPDIF0_DO / DMIC_DAT / SPDIF1_DI / SPDIF0_DO / TIM6_PWM
12	VCC	POWER	Module power input, input range: 3.3~5.5V
13	GND	POWER	Digital Ground
14	GPIO_A31	I/O	AD6 / SPDIF_A1 / FUSE_VDD25 / UART1_TXD / I2C_SCL / I2S1_DI / I2S1_DO / SPDIF0_DI / SPDIF0_DO / DMIC_CLK / SPDIF1_DI / SPDIF1_DO / IR_IN
15	3V3_OUT	POWER	The 3.3V digital power output is only for pull-up applications and should not be used to drive high-power loads.
16	GND	POWER	Digital Ground
17	AGND	POWER	Analog Ground
18	DACR	I/O	Audio R-channel output
19	DACL	I/O	Audio L-channel output
20	GPIO_B0	I/O	ADC7 / LINEIN2_R / TIM5_PWM / TIM6_PWM
21	GPIO_B1	I/O	ADC7 / LINEIN2_L / TIM5_PWM / TIM6_PWM / SW_DATA
22	GPIO_B7	I/O	MICIN_P
23	GPIO_B8	I/O	MICIN_N
24	NC	-	-
25	NC	-	-
26	GND	POWER	RF Ground

3. Electrical Characteristics

3.1. Absolute Maximum Ratings

Table 3-1. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	VCC	3.3	4.0	5.5	V
Storage Temperature Range	TSTR	-65	-	150	°C
Soldering Temperature	Tsld	-	-	260	°C

Notes:

1. The listed electrical characteristics are target specifications for reference only. Some data may be updated based on actual test results.
2. The voltage values shown are referenced to GND inside the module. Any voltage exceeding the "maximum rated value" may cause permanent damage to the device.

3.2. Recommended Operating Conditions

Table 3-2. Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Ambient Operating Temperature	Tamb	-40	25	85	°C
Chip Power Supply Input Range	VCC	3.3	4.0	5.5	V
Built-in LDO Digital Module Power	3V3_OUT	-	3.3	-	V
External Power Supply Current	IVDD	250	-	-	mA

3.3. IO DC Characteristics

Table 3-3. IO DC Characteristics

Item	Description	Min	Typ.	Max	Unit	Condition
VIH	Input High Level	2.2	-	3.6	V	Digital Power 3.3V
VIL	Input Low Level	-0.3	-	1.0	V	Digital Power 3.3V
IL	Input Leakage Current	-10	-	10	μA	

Item	Description	Min	Typ.	Max	Unit	Condition
VOH	Output High Level	3.0	-	-	V	@IOH=8mA
VOL	Output Low Level	-	-	0.3	V	@IOL=8mA

3.4.IO Drive Characteristics

Table 3-4. Digital IO Drive Characteristics and Pull-up/Pull-down Characteristics

Name	Corresponding Port	Level	Unit	Test Condition
Drive Capability	All GPIO	4/8/12/24	mA	Digital Power 3.3V, Typical
Pull-up	All GPIO	10/100	KΩ	Digital Power 3.3V, Typical
Pull-down	All GPIO	20	μA	Digital Power 3.3V, Typical
Pull-down Current Source	All GPIO	1.6/3.2/4.8	mA	Digital Power 3.3V, Typical

3.5.RF Characteristics

Table 3-5. Module Transmit Characteristics

Wireless Standard	Bluetooth BR/EDR/LE
Frequency Range	2.402GHz~2.480GHz
Transmit Power	Software configurable up to 8dBm, but EMC testing balance required
Antenna	Onboard: PCB antenna, high gain (3dBi)

3.6.Audio Characteristics

Table 3-6. Audio DAC Performance @48KHz

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Bit Width		16	24	24	bits
Sampling Rate		8	-	192	KHz
THD+N	@Fin=1kHz, -6dBFS, A-Weighted	-	-85	-	dB
Maximum Output Swing	@Fin=1kHz, 0dBFS	-	1.07	-	Vrms
Internal Channel Gain Mismatch	@Fin=1kHz, 0dBFS	-	0.021	-	dB
Group Delay		-	2.17	-	ms
Phase Deviation		-	0.105	-	degree
Crosstalk (L/R)	@Fin=1kHz, 0dBFS	-	-109.3	-	dB

Table 3-7. Audio ADC (LINEIN2 Channel) Performance @48KHz

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Bit Width		16	24	24	bits
Maximum Input Range	AVDD=3.3V	-	1	-	Vrms
Sampling Rate		8	-	48	KHz
THD+N	@ 700mVrms, Fin=1kHz	-	-84	-	dB
Internal Channel Gain Mismatch	@Fin=1kHz, 0dBFS	-	0.035	-	dB
Group Delay		-	570	-	us
Crosstalk (L/R)	@Fin=1kHz, 0dBFS	-	-98	-	dB

Table 3-8. Audio ADC (MIC Single-ended Input) Performance @48KHz

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Bit Width		16	24	24	bits
Maximum Input Range	AVDD=3.3V	-	1.0	-	Vrms
Sampling Rate		8	-	48	KHz
Analog Gain Control Range		-11	-	33	dB
Input Impedance		3	-	30	KΩ
Dynamic Range	No Filter	-	96	-	dB
Dynamic Range	A-Weighted	-	100	-	dB
SNR	No Filter @850mVrms, Fin=1kHz	-	94	-	dB
SNR	A-Weighted @700mVrms, Fin=1kHz	-	97	-	dB
THD+N	Input 700mVrms	-	-85	-	dB

Table 3-9. Audio ADC (MIC Differential Input) Performance @48KHz

Parameter	Test Condition	Min	Typ	Max	Unit
Bit Width		16	24	24	bits
Maximum Input Range	AVDD=3.3V	-	1.0	-	Vrms
Sampling Rate		8	-	48	KHz
Analog Gain Control Range		-11	-	33	dB
Input Impedance		3	-	30	KΩ
Dynamic Range	No Filter	-	97.5	-	dB
Dynamic Range	A-Weighted	-	100.4	-	dB
SNR	No Filter @850mVrms, Fin=1kHz	-	96.4	-	dB
SNR	A-Weighted @850mVrms, Fin=1kHz	-	98.7	-	dB
THD+N	Input 700mVrms	-	-87	-	dB
Group Delay		-	584	-	us

Note: Audio parameters are based on samples and measured under normal temperature, normal pressure, and development board 5V power supply conditions.

4.Hardware Introduction

4.1.Typeical Application Schematic

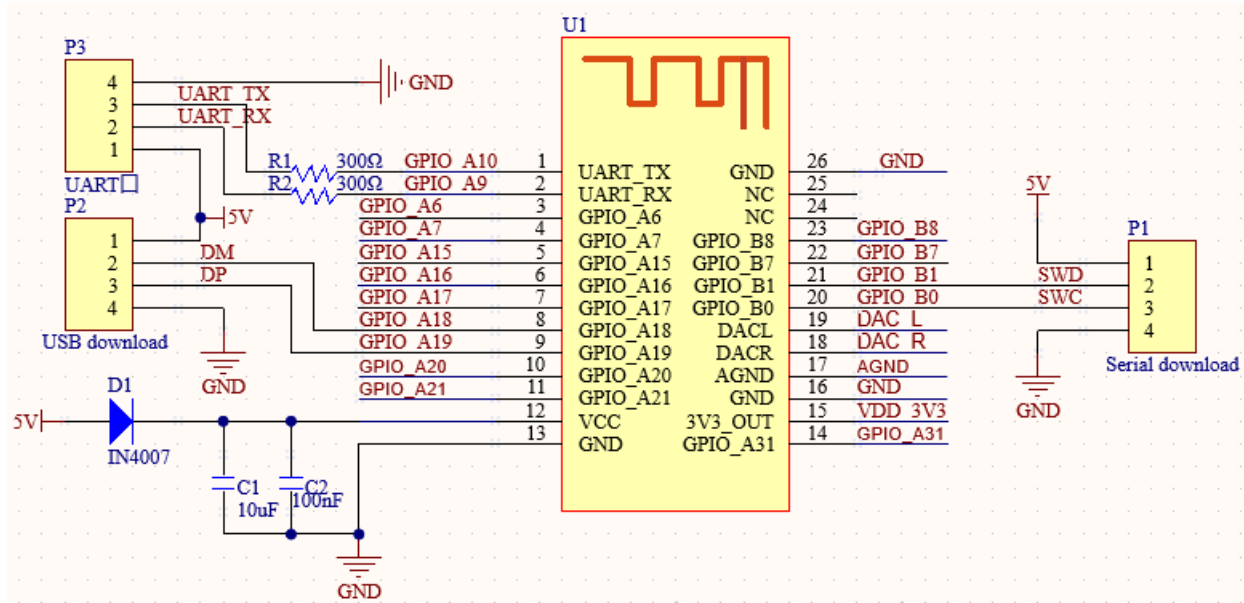


Figure 4-1. Typical Application Schematic

Application Notes:

1. 3V3_OUT is the module's internal digital power output, only for external pull-up applications, cannot drive high-power loads or other applications.
2. For power supply processing, if the input power is clean, refer to the reference schematic. If the power is poor, additional filtering measures are needed, such as adding magnetic beads for π -type filtering, and increasing the module's filter capacitors.
3. The module can also be powered by 3.3V. When using 3.3V, connect directly and remove the diode.
4. The external power supply for the module must reserve at least 250mA current for the module.
5. Module IO pins cannot be directly connected to ground.
6. When serial ports or programming ports need to be made as external interfaces, ESD diodes must be added to signal lines and power lines for electrostatic protection.

4.2.Common Interface Description

Table 4-1. Common Interface Description Table

Pin #	Name	Type	Description
12	POWER	VCC	Main power input, optimal input range 3.5V~4.5V
1, 2	UART	GPIO_A9/GPIO_A10	UART port, high level 3.3V, pay attention to level matching when using

Pin #	Name	Type	Description
3, 4	I2C	GPIO_A6/GPIO_A7	I2C interface, pay attention to adding pull-up resistors when using
10, 11, 14	I2S	GPIO_A20/GPIO_A21/GPIO_A31	Digital audio output
8, 9	USB	GPIO_A18/GPIO_A19	USB interface

4.3. Hardware Design Notes

4.3.1. Antenna Position Handling:

1. The module is recommended to be placed at the edge of the baseboard, with the antenna area exposed outward. The module GND should be flush with the baseboard GND and fully connected. The area below the antenna region (including the module antenna clearance area) should be kept clear, no routing is allowed, and no structure should interfere with the antenna.

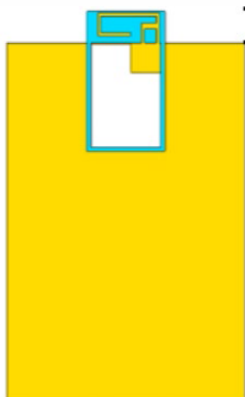


Figure 4-2. Module Placement Example

2. If the module must be embedded in the baseboard due to structural reasons, slots can be made on the baseboard below the antenna. The slot should be evaluated according to actual conditions, and the slots on both sides should be at least 5mm away from the module antenna.

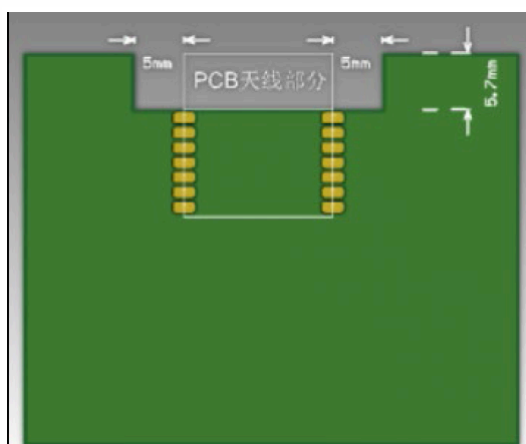


Figure 4-3. Antenna Position Handling Diagram

3. Taking the module placed flat as an example, the closer the antenna is to the housing, the lower the resonant frequency. A large change in resonant frequency can easily exceed the 2.4G operating frequency band. Generally, we recommend that the distance from the plastic housing to the front of the antenna should be $\geq 1\text{cm}$; the distance from the plastic housing to the top, bottom, left and right of the antenna should be $\geq 2\text{cm}$.
4. Metal materials cannot be used for the antenna radiation direction housing, nor can paint or plating containing metal components be used on the surface of the plastic housing.
5. Avoid using metal screws, metal rivets or other metal parts near the antenna that may affect antenna radiation. If unavoidable, the metal should be at least 3cm away from the antenna.
6. The antenna area should be at least 3cm away from speakers, batteries, power switches, cameras, LCDs, network ports, HDMI, USB or other high-speed signal transmission ports to avoid interference.
7. Other signals of the same or similar frequencies are prohibited within 3cm near the antenna.

4.3.2. Module Ground Handling:

1. The ground plane under the module should be complete, reducing unnecessary division. Drill more GND vias to connect all layers. The recommended size of the ground plane is $W \geq 30\text{mm}$, $L \geq 40\text{mm}$. The larger the area of the RF ground layer, the lower the resonant frequency and the smaller the return loss, which will improve the overall performance of the module.

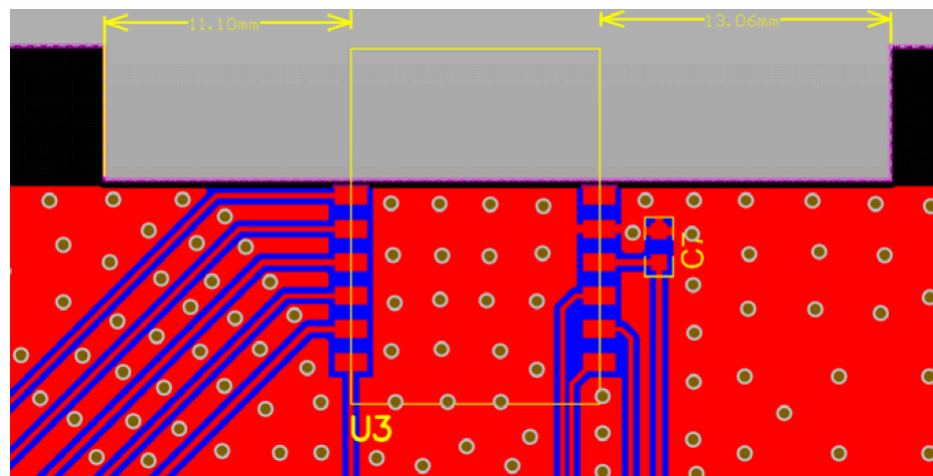


Figure 4-4. Module Layout Example

2. This module is a dual-mode Bluetooth module. The baseboard design is recommended to isolate digital ground and analog ground with a single-point ground connection. The analog ground should also have a dedicated area for copper filling in the routing design.

4.3.3. Module Power and Signal Line Handling:

1. Module power supply ripple $\leq 100\text{mV}$
2. The capacitor on the module power pin must be placed close to the pin, with a recommended value of $2.2\mu\text{F} \sim 4.7\mu\text{F}$
3. The UART communication level must be matched. Our module IO is 3.3V high level, and cannot be directly connected to 5V level IO. If the level is not matched, a level conversion circuit is required. In terms of solution selection, ranked by performance: dedicated level conversion chip > triode solution > resistor divider solution; ranked by cost: resistor divider solution > triode solution > dedicated level conversion chip. Generally, it is not recommended to use the resistor divider solution due to its weak driving capability and low supported speed.

4. When using IO pins for functional applications, a current-limiting resistor should be connected in series to protect the IO. The recommended resistance value is 22R~1K, selected according to the length of the trace. The longer the trace, the smaller the resistance value.

4.4.Common Application Issues

4.4.1. Poor Transmission Distance

1. When there are line-of-sight communication obstacles, the communication distance will be correspondingly reduced; temperature, humidity, and co-channel interference will cause the communication packet loss rate to increase; the ground absorbs and reflects radio waves, resulting in poor test results near the ground.
2. Seawater has a strong ability to absorb radio waves, so the test results near the sea are poor.
3. If there are metal objects near the antenna or it is placed in a metal shell, the signal attenuation will be very serious.
4. Incorrect power register settings, or too high air rate (the higher the air rate, the shorter the distance).
5. The low voltage of the power supply is lower than the recommended value at room temperature. The lower the voltage, the smaller the transmit power.
6. The antenna used has poor matching with the module or the antenna itself has quality problems.

4.4.2. Abnormal Damage

1. Please check the power supply to ensure it is within the recommended supply voltage range. Exceeding the maximum value will cause permanent damage to the module; please check the power supply stability, and the voltage should not fluctuate significantly and frequently.
2. Please ensure anti-static operations during installation and use. High-frequency devices are electrostatic sensitive.
3. Please ensure that the humidity is not too high during installation and use. Some components are humidity-sensitive devices; if there are no special requirements, it is not recommended to use them at too high or too low temperatures.

4.4.3. High Bit Error Rate

1. There are co-channel signal interference nearby. Keep away from the interference source or modify the frequency/channel to avoid interference.
2. An unsatisfactory power supply may also cause garbled characters. Be sure to ensure the reliability of the power supply.
3. Poor quality or too long extension cables/feeders may also cause high bit error rates.

5.Dimensions and Package

5.1.Module Dimensions

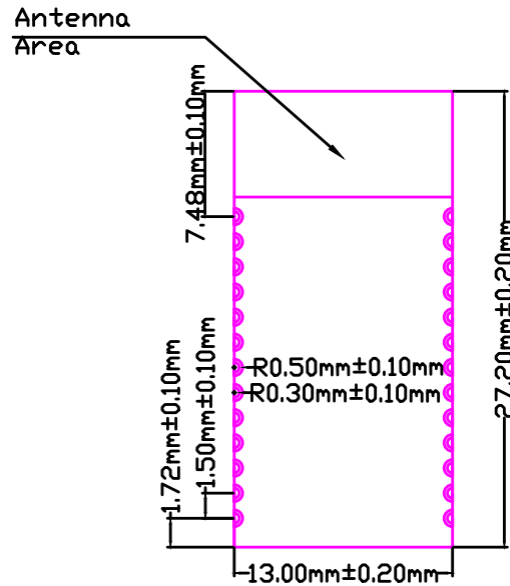


Figure 5-1. Module Dimension Diagram

Table 5-1. Module Dimension Information

Module Overall Dimensions (including process edge)	Length (X)	27.20 ± 0.2 mm
	Width (Y)	13.00±0.2mm
Antenna Position Dimensions	Length (X)	12±0.15mm
	Width (Y)	5.9±0.15mm
PCB Thickness	Height (H)	0.80±0.05mm
Module Total Thickness (including shield)	Height (H)	2.60±0.1mm
Shield Thickness	Height (H)	1.8±0.05mm

5.2.Module Package

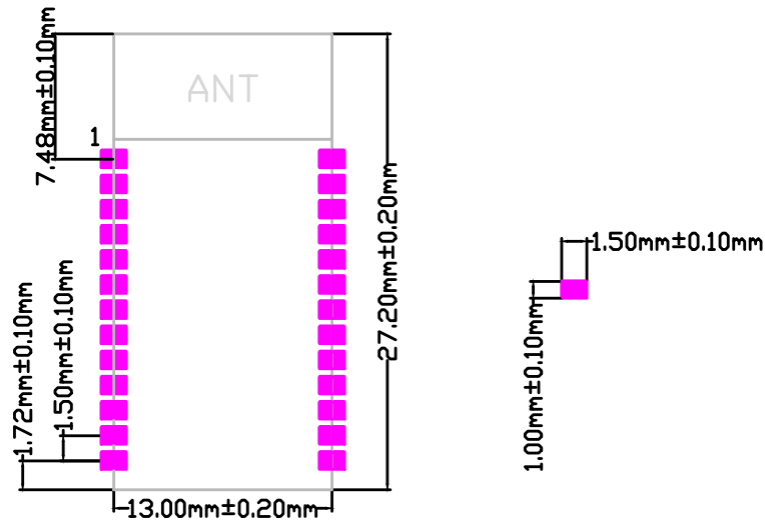


Figure 5-2. Module PCB Package Diagram

Table 5-2. Module PCB Package Dimensions

Item	Dimension
Package Total Width	13.00mm±0.20mm
Package Total Length	27.20mm±0.20mm
ANT Area Length	7.00mm±0.10mm
PIN Width	1.50mm±0.10mm
PIN Length	1.00mm±0.10mm
PIN Pitch	1.50mm±0.10mm

5.3.Stencil Fabrication Requirements

To ensure sufficient solder paste and reliable soldering during module soldering, the stencil needs to be locally thickened (Step-up) at the module position, using a positive-side (printing side) thickening method. The recommended stencil opening is as follows:

1. The module PIN area is recommended to be thickened. For modules with different PCB thicknesses, the thickened stencils are shown in the following table:

Table 5-3. Stencil Thickness Requirements

No.	Module PCB Thickness	Stencil Thickness (Step)	Note
1	0.8mm	0.15mm	If there are precision IC pads around the module, it is not recommended to exceed 0.15mm step thickness. An extended stencil can be used to increase the solder paste amount.
2	1.0mm	0.18mm	(same as above)
3	1.2mm	0.25mm	(same as above)
4	1.6mm	0.3mm	(same as above)

- The opening width should be 55%~80% of the PCB pin pad Pitch (center distance) (since the actual width of the motherboard pad is uncertain, the opening width is determined by Pitch).
- The opening length should be inwardly cut by 0.1-0.2mm from the PCB pin length, plus an extension of 0.5-0.8mm. The extended pad should maintain a 0.25mm safety distance from other components. If there is insufficient space, cut the module pad opening. Note to round the opening corners.

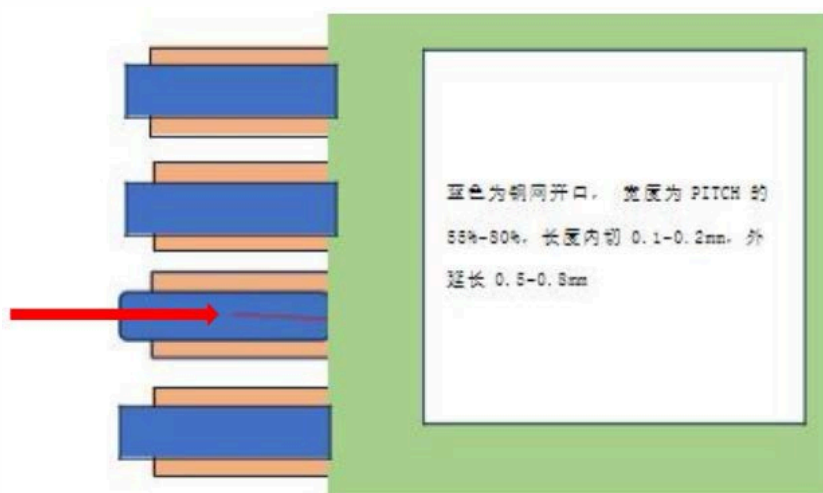


Figure 5-4. Stencil Opening Diagram

6.Reflow Soldering Parameter Recommendations

6.1.Reflow Soldering Conditions

1. Heating method: Conventional convection or IR convection.
2. Allowable reflow times: 2 times, based on the following reflow conditions.
3. Temperature curve: Reflow soldering should follow the temperature curve below.
4. Maximum temperature: 250°C.

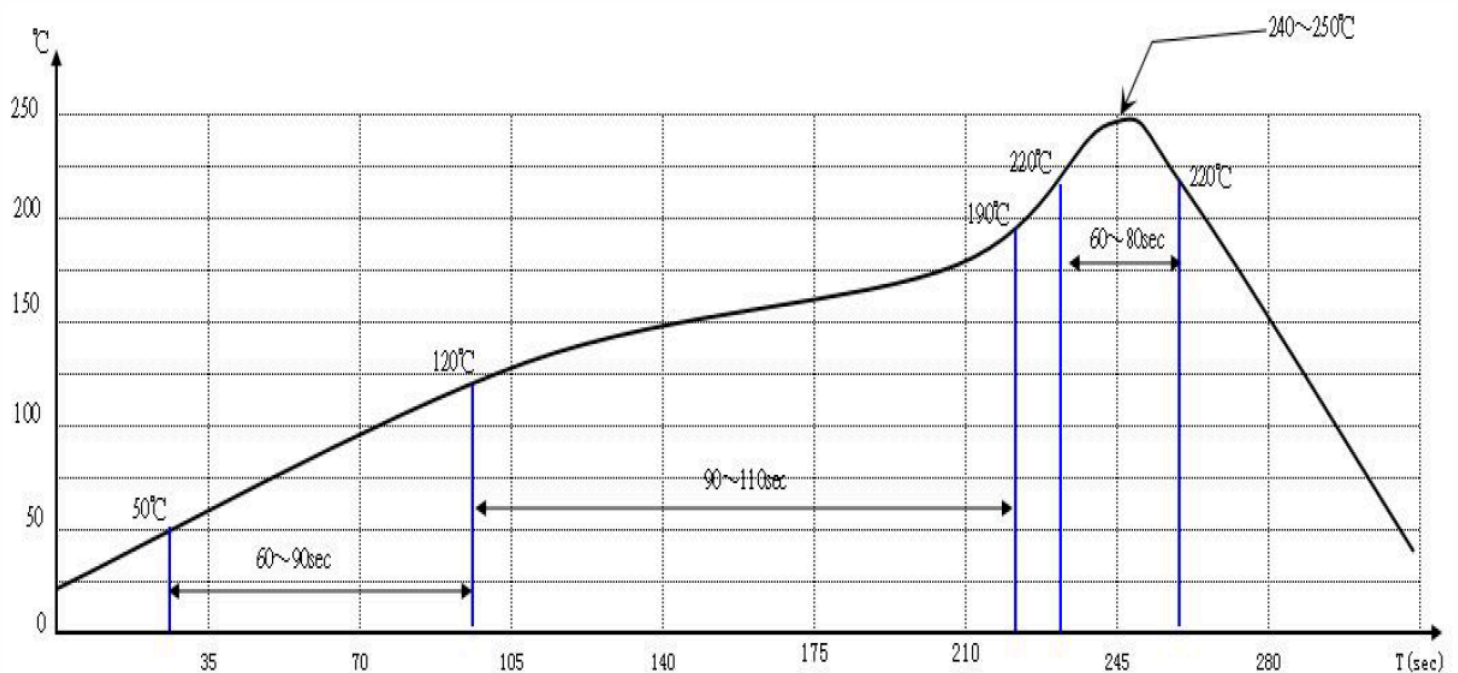


Figure 6-1. Recommended Reflow Curve

- a. Preheat zone: Temperature: 50-120°C, duration 60-90S, heating slope 1.0-2.0°C/S.
- b. Soaking zone: Temperature: 120-190°C, duration 90-120S, heating slope 0.5-0.8°C/S.
- c. Reflow preheat zone: Temperature: 190-220°C, duration: 30-40S, heating slope 0.8-1.2°C/S.
- d. Reflow zone: Solder paste melting temperature: >220°C, duration: 60-90S, heating slope 0.8-1.2°C/S.
- e. Peak temperature: 240-250°C.
- f. Cooling zone: Cooling slope: 1-3°C/S.
- g. Conveyor speed: 70-85cm/min.

Table 6-1. Recommended Reflow Parameters

Item	Temperature Range (°C)	Duration (sec)	Heating Slope (°C/sec)
Preheat Zone	50~120	60~90	1.0~2.0
Soaking Zone	120~190	90~120	0.5~0.8
Rapid Heat Zone	190~220	30~40	0.8~1.2
Reflow Zone	>220	60~90	0.8~1.2
Peak Temperature	240~250°C		
Cooling Zone	Cooling slope 1~3°C		
Conveyor Speed	70~85cm/min		

6.2.Second Reflow Temperature Curve

Recommended solder paste type: SAC305, lead-free. The number of reflow cycles for Bluetooth modules should not exceed 2 times. The peak temperature should not exceed 245°C. The following is a typical second reflow oven temperature curve setting.

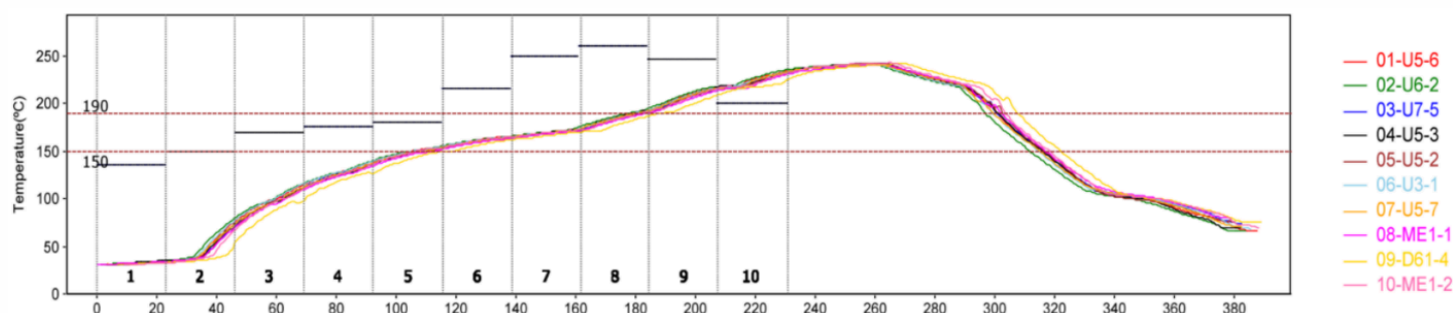


Figure 6-2. Typical Second Reflow Temperature Curve

a. 30°C ~ 150°C Preheat and heat up: 0-3°C/s, typical value: 1.2°C/s.

b. 150°C ~ 190°C Soaking time: 60-100 seconds, typical value: 72 seconds.

c. Peak temperature: 245°C, typical value: 242°C.

d. Time above 220°C: 50 seconds ~ 90 seconds, typical value: 70 seconds.

e. Cooling speed from 217°C: -3 ~ 0°C/s, typical value: -2.0°C/s.

6.3.SMT Placement Notes

1. No red glue or other fixing adhesive is required under the module. The recommended pad design for the module can ensure good soldering of the module pin feet. Even if the module is designed on the first side and needs to go through the reflow oven twice for special reasons.
2. If the PCBA with the module needs to be wave soldered due to process requirements, special protection should be applied to the module to prevent solder splashing or other unexpected problems during wave soldering that may cause short circuits or other unpredictable issues.

7.Storage and Packaging

7.1.Moisture Sensitivity Level and Moisture-proof Requirements

Wi-Linktech SMD modules are moisture-sensitive products. Referring to IPC-JEDEC standards, the MSL (Moisture Sensitivity Level) is defined as Level 3. Before using the module, please confirm whether the packaging is intact; after opening the package, please check the status of the humidity indicator card inside the vacuum packaging bag. If the following conditions occur, the module needs to be baked before use:

Humidity indicator card: The 5% indicator circle is pink and the 10% indicator circle is no longer blue, as shown in the figure below.

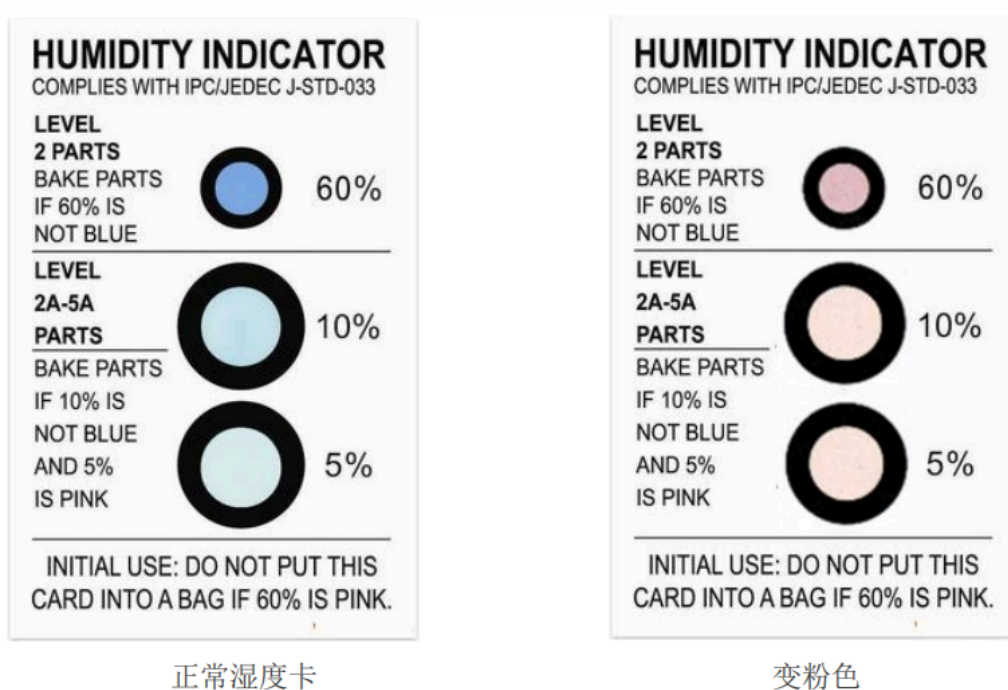


Figure 7-1. Humidity Indicator Card

7.2.Storage

1. Recommended storage conditions: Temperature $23^{\circ}\text{C}\pm 5^{\circ}\text{C}$, relative humidity 30%~60%.
2. Storage period (under sealed vacuum packaging conditions): 12 months under recommended storage conditions.

7.3.Floor Life and Temperature/Humidity Control

The floor life of products with moisture sensitivity level 3 is 168 hours. In a workshop environment with temperature $23^{\circ}\text{C}\pm 5^{\circ}\text{C}$ and relative humidity below 60%, the module needs to be reflowed or subjected to other high-temperature operations within 168 hours after unpacking. Otherwise, the module needs to be stored in an environment with relative humidity less than 10% (e.g., a moisture-proof cabinet) to maintain the dryness of the product. We provide the following suggestions for module usage control:

1. Wi-Linktech Bluetooth modules have a moisture sensitivity level of 3 and a floor life of 168 hours. Please complete SMT placement and reflow within 168 hours after unpacking.

2. This applies only when the workshop environment with low relative humidity complies with the IPC/JEDEC J-STD-033 specification; if the workshop temperature and humidity environment is uncertain or the relative humidity is greater than 60%, please complete SMT placement and reflow within 24 hours after unpacking. Do not unpack a large number of packages in advance.
3. To prevent and reduce blistering, delamination, and other soldering defects caused by moisture absorption in the module, strict control should be implemented. It is not recommended to leave the vacuum package open for a long time exposed to the air.
4. If the sealed vacuum package is leaking, not following moisture-sensitive control requirements after opening, the materials are unpacked, or the validity period exceeds 1 year, the module must be pre-baked before SMT placement or repair. The baking should be performed at $120^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 24 hours to prevent blistering, cracking, and delamination caused by moisture absorption during high-temperature soldering.
5. Before baking, remove the module from the packaging and place the bare module on a high-temperature resistant container (do not directly bake the plastic tray or packaging reel); the module that has been baked twice must be soldered within 24 hours after baking, otherwise it should be stored in a dry cabinet. Pay attention to ESD protection when handling the module, and wear anti-static gloves.
6. After baking, when placing the bare module on the SMT machine, the placement machine needs to have a tray. The methods are as follows:
 - **Method 1:** Use a dedicated, size-matched tray to place the module before placing it on the SMT machine.
 - **Method 2:** If there is no dedicated tray, you can use the black electrostatic tape of the packaged module, cut multiple strips of the same length, and neatly paste them vertically and horizontally on the placement machine tray as a simple tray.

8.Repair, Desoldering and Soldering

8.1.Desoldering

1. If the module needs to be removed from the motherboard, use an upper and lower heating method. Use a hot air gun (with a large air outlet) to heat the module. Be sure to take anti-static measures during operation, and the equipment needs to be grounded.
2. Set the hot air gun temperature to about 320°C~365°C, and adjust the air speed and distance according to actual conditions.
3. If the motherboard has been placed in the air for more than 48 hours, it needs to be baked before repair.
4. When heating, place and fix the motherboard flat. Keep the distance between the motherboard and the hot air gun at 2.0~3.5cm, adjusted according to experience.
5. Rotate the hot air outlet evenly along the edge of the module. After the solder paste melts, quickly remove the module with tweezers diagonally and place it on a flat cooling platform to cool down quickly.

8.2.Recommended Module Re-soldering Steps

1. Use a soldering iron to remove excess solder from the motherboard PCB pads and keep the pad surface flat.
2. Use a soldering iron to pre-tin the module pin pads, making the solder amount moderate and evenly distributed.
3. Apply solder paste evenly on the pads, not too much.
4. Place the module accurately on the motherboard PCB (pay attention to the module directionality), and heat from the bottom of the motherboard PCB and the module position using hot air from above and below. The heating should be uniform, and the area should be large enough to cover the module area. After the solder paste at the bottom of the module melts, the soldering is completed. Use a hot air gun (with a large air outlet) combined with a workbench or BGA repair station, and select an appropriate nozzle.
5. After soldering, use a fan to cool the module quickly.
6. After the temperature drops to room temperature, check the soldering effect around the module for solder bridges, insufficient solder, or other defects.

9.ESD Protection Measures

The module can be damaged by electrostatic discharge. Wi-Linktech recommends that all modules be handled under the following 5 preventive measures:

1. ESD protection measures must be followed. Do not touch the module with bare hands, especially the pin positions and antenna area.
2. Operators must wear human body ESD wristbands with good grounding (cordless ESD wristbands are not recommended; ESD gloves are recommended).
3. The module must be placed in an ESD-protected area.
4. SMT placement machines, workbenches, soldering irons and other equipment must be grounded.
5. Packaging and PCBs must be made of qualified anti-static materials.

10.Regulatory Statements

For USA

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.

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

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

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not 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.

End Product Labelling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users.

The final end product must be labelled in a visible area with the following:

“ Contains FCC ID:2A006-WLT3266C ” .

Manual Information to the End User

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.

For Canada

Canada Statement

This device complies with Industry Canada licence-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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution Exposure:

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS102 and users can obtain Canadian information on RF exposure and compliance. Le dispositif répond à l'exemption des limites d'évaluation de routine dans la section 2.5 de RSS102 et les utilisateurs peuvent obtenir des renseignements canadiens sur l'exposition aux RF et le respect .

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. Cet équipement doit être installé et utilisé avec une distance minimale de 20 centimètres entre le radiateur et votre corps.

The final end product must be labeled in a visible area with the following:

The Industry Canada certification label of a module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the Industry Canada certification number of the module, preceded by the words “ Contains transmitter module ” , or the word “ Contains ” , or similar wording expressing the same meaning, as follows:

Contains transmitter module IC: 26141-WLT3266C

Where 26141-WLT3266C is the module 's certification number.

This device has been designed to operate with the antenna listed below, and having a peak gain of 3 dBi @ 2.4GHz,, Antennas not of the same type and having a higher gain specified above are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Model: WLT3266C, PCB Antenna, Vendor: Wi-linktech