LITE-ON WCBN3610L Wireless IOT Module User Manual

Contents

LITE-ON WCBN3610L Wireless IOT Module

Product Information

- **Specifications**
  - **Model Name:** WCBN3610L
  - **Wireless Standard:** 802.11 b/g/n
  - **Frequency Range:** 2.412 ~ 2.462 GHz
  - **Operating Temperature:** -20 to 85°C
  - **Operating Humidity:** 5-90% (non-condensing)
  - **Storage Temperature:** -40 to 85°C
  - **Storage Humidity:** 5-95% (non-condensing)
- **Product Features**
  - The WCBN3610L is a wireless IOT module that supports the 802.11 b/g/n standard.
  - It operates in the 2.4GHz frequency range and has a maximum peak gain of 0.5.
  - The module is designed for OEM integrators and complies with relevant regulations to ensure safe and reliable operation.
- **Warnings**
  - **ISED Statement:**
    - This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada’s license-exempt RSS(s). Operation is subject to the following two conditions:
    - This device may not cause interference.
    - This device must accept any interference, including interference that may cause undesired operation of the device.
- **ISED Radiation Exposure Statement:**
  - This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. It should be installed and operated with a minimum distance of 20cm between the radiator

and the user's body.

- **OEM Integrator Conditions:**
  - Ensure that the end user has no manual instructions to remove or install the module.
  - This module is certified under Part 15 rules section 15.247 and RSS-247.
- **Supported Antenna**
  - **Antenna Number: Antenna 1**
    - **Brand Name:** LITEON
    - **Model Name:** WCBN3610L
    - **Antenna Type:** Printed Ant Murata
    - **Support:** 2.4G
    - **Max Peak Gain:** 0.5

Product Usage Instructions

- **Installation**
  - Ensure that the device is powered off and disconnected from any power source.
  - Locate an appropriate location for the module installation.
  - Connect the antenna to the designated connector on the module.
  - Carefully insert the module into the compatible slot or interface of your target device.
- **Operation**
  - Ensure that the device is powered on and connected to a power source.
  - Follow the instructions provided by your target device to configure the wireless settings.
  - The WCBN3610L module will establish a wireless connection in the 2.4GHz frequency range.
  - You can now use the wireless capabilities of your target device as intended.
- **Maintenance**
  - To ensure optimal performance and longevity of the WCBN3610L module, follow these maintenance guidelines:
  - Keep the module clean and free from dust or debris.
  - Avoid exposing the module to extreme temperatures or humidity.
  - Regularly check for any loose connections and reattach if necessary.
  - Refer to the user manual of your target device for any specific maintenance instructions.

FAQs

- **Q: What is the frequency range of the WCBN3610L module?**
  - **A:** The WCBN3610L module operates in the 2.4GHz frequency range.
- **Q: Can I install the module myself?**
  - **A:** The module is intended for OEM integrators and should be installed by professionals or individuals with proper knowledge and experience.
- **Q: What is the maximum peak gain of the supported antenna?**
  - **A:** The supported antenna has a maximum peak gain of 0.5.

PRODUCT FEATURES

- WiFi operates at ISM frequency bands (2.4GHz)
- Compact Form Factor: 18 x 20.5 x 3.2 mm ±0.1mm
- A bunch of UART/ SPI/ I2C interfaces for peripheral controllers
- Standards support: 802.11b, 802.11g, 802.11n, 802.11d, 802.11e, 802.11i
- Enterprise-level security complying with WPA/WPA2 certification
- Lightweight TCP/IP protocol suite
- One transmitter and one receiver 802.11n WLAN transceiver supports up to 150 Mbps downstream and 150 Mbps upstream PHY rates
- ARM Cortex-M development environment for customer applications
- HF/RoHS compliance

PRODUCT SPECIFICATIONS

MAIN CHIPSET

- **MAC/ Baseband/ RF:** RTL8720CM

FUNCTIONAL SPECIFICATIONS

WiFi Function	
Standard	IEEE802.11b; IEEE 802.11g; IEEE 802.11n
Bus Interface	UART/SPI/ I2C
Data Rate	*802.11b:* 11, 5.5, 2, 1 Mbps *802.11g:* 54, 48, 36, 24, 18, 12, 9, 6 Mbps *802.11n:* MCS 0 to 7
Media Access Control	CSMA/CA with ACK
Modulation Techniques	*802.11b*: CCK, DQPSK, DBPSK *802.11g*: 64QAM, 16QAM, QPSK, BPSK *802.11n*: BPSK, QPSK, 16QAM, 64QAM
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode
Operation Channel	*2.4GHz* 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Frequency Range	*802.11bg* 2.412 ~ 2.462 GHz

Transmit Output Power – 1x1 (Tolerance: ± 1.5dBm)	*802.11b:* 18dBm *802.11g:* 16dBm *802.11n:* 15dBm
Receive Sensitivity	*802.11b: (*IEEE Standard <-76dBm*)* typical: -87dBM(1M) *802.11g: (*IEEE Standard <-65dBm) Typical: -73dBm(54M) *802.11n:* **20MHz** (IEEE Standard <-64dBm) Typical : -70dBm
Security	WPA, WPA2, WPS, WEP 64/128, IEEE 802.11x, IEEE 802.11i
Operating Voltage	3.3V ±10% I/O supply voltage
Power Consumption (Average)	

No.	Mode	MCU State	Description	Ameba ZII LDO	Ameba ZII DC/DC
1	Deep Sleep			50 uA	30 uA
2	Standby(Sleep PG)			355 uA	195 uA
3	Sleep(Sleep CG)			810 uA	403 uA
4	MCU Active			18mA	8.7mA
5	Wlan beacon only mode	MCU Sleep		95mA	43mA
6	Wlan asoc Idle (2.4G), RF ON	MCU Sleep	DTIM=1	4.36mA	2.38mA
7	Wlan asoc Idle (2.4G), RF ON	MCU Sleep	DTIM=3	1.98mA	1.06mA

Antenna Type	Printed Antenna
Frequency Range	*802.11bg* 2.412 ~ 2.462 GHz

ENVIRONMENTAL

- **Operating**
  - **Operating Temperature:** -20 to 85 C Relevant Humidity: 5-90% (non-condensing)
- **Storage**
  - **Temperature:** -40 to 85 C
  - **Relevant Humidity:** 5-95% (non-condensing)

FCC

WARNINGS

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device, under 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 by 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 the receiver.
- Connect the equipment to 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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter. For products available in the USA/Canada market, only channels 1~11 can be operated. Selection of other channels is not possible.

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 a minimum distance of 20cm between the radiator & your body.

ISED Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

ISED Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body.

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

This module is intended for OEM integrators under the following conditions:

1. Ensure that the end user has no manual instructions to remove or install the module.
2. This module is certified under Part 15 rules section 15.247 and RSS-247.
3. This module has been approved to operate with the antenna types listed below, with the maximum permissible gain indicated.

Antenna Number	Brand Name	Model Name	Ant. Type	Connector	Support	Max Peak Gain
Antenna 1	LITEON	WCBN3610L	Printed Ant	Murata	2.4G	0.5

4 Label and compliance information

Label of the end product: FCC

- The host product must be labeled in a visible area with the following ” Contains FCC ID: PPQ-WCBN3610L”.
- The end product shall bear the following 15.19 statement: This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

USED

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The end product must be labeled in a visible area with the following: “Contains transmitter module IC: 4491A-WCBN3610L” or “Contains IC: 4491A-WCBN3610L”

Information on test modes and additional testing requirements
This module has been approved under stand-alone configuration. OEM integrator has limited the operation channels in channels 1-11 for the 2.4GHz band. Separate approval is required for all other operating configurations, including portable configurations concerning Part 2.1093/RSS-102 and different antenna configurations The information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host can be found at KDB Publication 996369 D04. 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.).
IMPORTANT NOTE: If these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC/ISED authorization is no longer considered valid, and the FCC/IC No. 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/ISED authorization.

Additional testing, Part 15 Subpart B and ICES-003 disclaimer
Appropriate measurements (e.g. Part 15 Subpart B compliance) and if applicable additional equipment authorizations (e.g. SDoC) of the host product to be addressed by the integrator/manufacturer. This module is only FCC/ISED authorized for the specific rule parts 15.247, and RSS-247 listed on the grant, and the host product manufacturer is responsible for compliance with any other FCC/ISED rules that apply to the host product as being Part 15 Subpart B/ICES-003 compliant

The user manual of the end product should include: the FCC

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.
- The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.
- 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.

The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.

ISED: This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

ISED Radiation Exposure Statement:
This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. For products available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

Documents / Resources

	LITE-ON WCBN3610L Wireless IOT Module [pdf] User Manual WCBN3610L Wireless IOT Module, WCBN3610L, Wireless IOT Module, IOT Module, Module

References

- User Manual