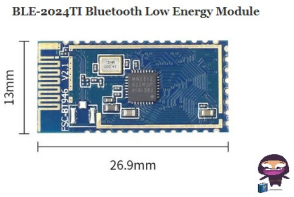
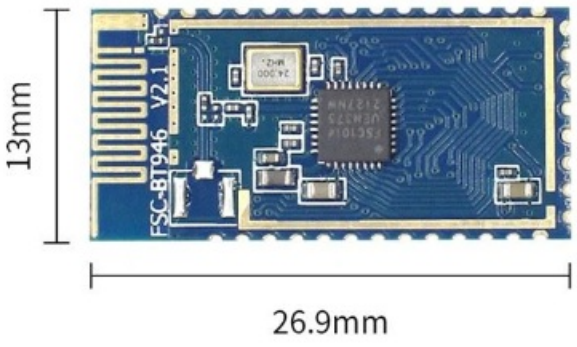


Fortinet FBLE-2024TI Bluetooth Low Energy Module Installation Guide

Contents

BLE-2024TI Bluetooth Low Energy Module



Product Specifications

- Model Name: FBLE-2024TI
- RF Interface: Single-ended or differential
- Antenna Type: Monopole
- Peak Gain: 1.53 dBi
- Connector Type: iPex MHF1

End Product Labeling
When installing the module in a host device, ensure the FCC/IC ID label is visible through a window on the final device or easily accessible when removing an access panel. If not visible, a second label containing FCC ID: TVE-110T17 and IC: 7280B-110T17 must be placed on the outside of the device.

Antenna Installation
Use only the specified antenna type – Monopole with a peak gain of 1.53 dBi and iPex MHF1 connector type. Using different antennas may require additional authorization.

Frequently Asked Questions (FAQ)
Q: Can I use a different type of antenna with the module?
A: Only antennas of the same type as specified (Monopole with iPex MHF1 connector) should be used to ensure compliance and optimal performance.

OEM/Integrators Installation Manual Model name: FBLE-2024TI

Features

- 2.4GHz RF transceiver compatible with Bluetooth® Low Energy and earlier LE Specifications
- Single-ended or differential RF interface

Description

The device is a 2.4GHz wireless microcontroller (MCU) supporting Bluetooth® 5.3 Low Energy and Proprietary 2.4GHz applications. Bluetooth basic rate use GFSK modulation, where an instantaneous data rate of 125Kbps and 500Kbps,1 and 2 Mbit/s are possible.

Important Notice to OEM integrators

1. This module is approved for OEM installation only.
2. This module is approved for operation in FORTINET Network Security Gateway, models as described in this filing.
3. Additional testing and re-certification will be necessary when the conditions outlined in this OEM installation manual are not fully satisfied.
4. The host manufacturer is responsible for additional EMI/EMC testing to verify compliance as a composite system. When testing the host device for compliance with FCC Part 15 Subpart B/ISED ICES-003, the host manufacturer is required to show compliance while all the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module’s intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in the rule(s) or emissions are compliant with the

transmitter(s) rule(s).

5. For RF Exposure requirement: The host manufacturer must verify that the module continues to comply with the RF exposure limits for each host device. The preliminary assessment is normally required to determine if additional certification for RF Exposure is needed.

End Product Labeling
When the module is installed in the host device, the FCC/IC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily removed. If not, a second label must be placed on the outside of the final device that contains the following text: “Contains FCC ID: TVE-110T17”

“Contains IC: 7280B-110T17 “
The FCC ID/IC ID can be used only when all FCC/IC compliance requirements are met.

Antenna Installation

Only the same or equivalent type as shown below may be used with this module. Other un-equivalent types of antennas may require additional authorization for operation. The equivalent type means the same type that results in similar in-band and out-of-band radiation patterns.

Antenna type	Monopole
2.4GHz Peak Gain	1.53 dBi
connector type	iPex MHF1

Manual Information to the End User

The end user manual shall include all required regulatory notices as shown in the following section.

Federal Communication Commission regulatory notice:
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 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with

any other antenna or transmitter.
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment for operation in qualified FORTINET Network Security Gateway device only.

Industry Canada regulatory notice:
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.

CAN ICES-3(B)/ NMB-3(B)
This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment for operation in qualified FORTINET Network Security Gateway device only.

The Host Information for FCC

Module Model Name: FBLE-2024TI	
SKU 1	FWF-50G-5G, FWF-51G-5G
SKU 2	FG-50G-5G, FG-51G-5G
Installed into the Host	Equipment Name: Network Security Gateway Brand Name: FORTINET Model Name: FortiGate 50G-5Gxxxxxxxxxx, FORTIGATE-50G-5Gxxxxxxxxxx, FG-50G-5Gxxxxxxxxxx, FortiGate 51G-5Gxxxxxxxxxx, FORTIGATE-51G-5Gxxxxxxxxxx, FG-51G-5Gxxxxxxxxxx, FortiWiFi 50G-5Gxxxxxxxxxx, FORTIWIFI-50G-5Gxxxxxxxxxx, FWF-50G-5Gxxxxxxxxxx, FortiWiFi 51G-5Gxxxxxxxxxx, FORTIWIFI-51G-5Gxxxxxxxxxx, FWF-51G-5Gxxxxxxxxxx (where "x" can be used as "A-Z", or "0-9", or "-", or blank for software purposes or marketing purposes only) Marketing Name: FortiGate 50G-5G, FortiGate 51G-5G, FortiWiFi 50G-5G, FortiWiFi 51G-5G
General Specs	Bluetooth-LE
Antenna Type	Monopole

The Host Information for ISED

Module Model Name: FBLE-2024TI	
SKU 1	FWF-50G-5G, FWF-51G-5G
SKU 2	FG-50G-5G, FG-51G-5G
Installed into the Host	Equipment Name: Network Security Gateway Brand Name: FORTINET Model Name: FG-50G-5G, FG-51G-5G, FWF-50G-5G, FWF-51G-5G Marketing Name FortiGate 50G-5G, FortiGate 51G-5G, FortiWiFi 50G-5G, FortiWiFi 51G-5G
General Specs	Bluetooth-LE
Antenna Type	Monopole

Information on test modes and additional testing requirements
This module does not contain shielding, and each host integration is required to comply with a Class II Permissive Change. In addition to RF exposure evaluation based on the exposure conditions and the co-located transmitters, RF/EMC evaluation needs to be performed as detailed in the table below.

	FCC Rule Part	**EUT TX configuration**	**Remark**
AC conducted emission	15.207	Bluetooth-LE Link, with AC Adapter	
Conducted Power	15.247(b)	BLE Tx CH00 (low channel)_2402 MHz BLE Tx CH19 (middle channel)_2440 MHz BLE Tx CH39 (high channel)_2480 MHz	In addition to comply with 15.247(b), the result should be also within 7.8 dBm which is listed on the original grant
Conducted out-of-band (Band-edge)	15.247(d)	BLE Tx CH00 (low channel)_2402 MHz_500 Kbps BLE Tx CH39 (high channel)_2480 MHz_500 Kbps	
Radiated out-of-band (Band-edge)	15.205 15.209	BLE Tx CH00 (low channel)_2402 MHz_500 Kbps BLE Tx CH39 (high channel)_2480 MHz_500 Kbps	
Radiated unwanted emission	15.205 15.209	BLE Tx CH39 (high channel)_2480 MHz_500 Kbps	

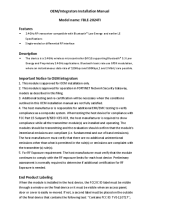
Additional Test when there is other co-located transmitter which can transmit simultaneously

	FCC Rule Part	EUT TX configuration	Remark
Radiated unwanted emission	15.205 15.209	• This module: Bluetooth Tx CH39 (high channel)_2480 MHz_500 Kbps • Other transmitters:the mode which results in the worst emission, from the test reports of FCC equipment authorization	Radiated spurious emission (RSE) test should also investigate the FCC rule parts applicable to the other co-located transmitter(s)

How to make changes
Only Grantees are permitted to make permissive changes. Please contact us if the host integrator expects the module to be used differently than as granted:

- Company Name: Fortinet, Inc.
- Company Address: 899 KIFER RD
- SUNNYVALE CA 94086 UNITED STATES
- Tel. no.: 408-235-7700

Documents / Resources

	Fortinet FBLE-2024TI Bluetooth Low Energy Module [pdf] Installation Guide TVE-110T17, TVE110T17, 110t17, FBLE-2024TI Bluetooth Low Energy Module, FBLE-2024TI, Bluetooth Low Energy Module, Low Energy Module, Energy Module, Module

References

- User Manual