BLE 5.3 Modules with nRF21540 PA, BT840N/NE **Draft Ver 0.90, Aug. 2023**

BluNor BT840N and BT840NE are powerful, highly flexible, ultra long range Bluetooth Low Energy (BLE) modules using Nordic nRF52840 SoC and nRF21540 power amplifier. With 64 MHz ARM Cortex™ M4F MCU, embedded 2.4GHz multi-protocol transceiver, and various antenna solution. It allows faster time to market with reduced development cost.

No external component needed to minimize host PCB area: Both 32 MHz and 32.768 KHz, -40°C to +105°C, 20 PPM crystals are integrated.

The **N** (BT840**N**) series module is footprint compatible with the Fanstel **X** series module (BT840**X**) using a Skyworks PA. The nRF21540 PA can be controlled using commands through SPI interface. BT840NE has both a PCB antenna and an u.FL connector.

BT840N, BT840NE, BT840NEE

- nRF52840 QIAA, 64 MHz Cortex M4F
- 1MB flash, 256 KB RAM
- 39 GPIO pins
- BT840N: a high performance PCB antenna
- BT840NE: a high performance PCB antenna + an u.FL connector.

Common Specifications

- QDID: 119517, 182626

Application Examples

- BLE-LTE M.2 module
- BLE to LTE gateways

Model Summaries

module	BT840N	BT840NE
SoC	nRF52840	nRF52840
Size, mm	15x29.9x2.0	15x29.9x2.0
32M,32.768kHz crystals	Integrated	Integrated
DCDC inductors,VDD,VDDH	Integrated	Integrated
BT Antenna	PA+PCB	PA+PCB+u.FL
Max TX, conducted		
Max TX, radiated		
Operating temp.	-40°C to +85°C	-40°C to +85°C
FCC ID		
ISED ID		
CE, RCM		
TELEC		
Evaluation board	EV-BT840NE	EV-BT840NE
Availability		

Table Of Contents

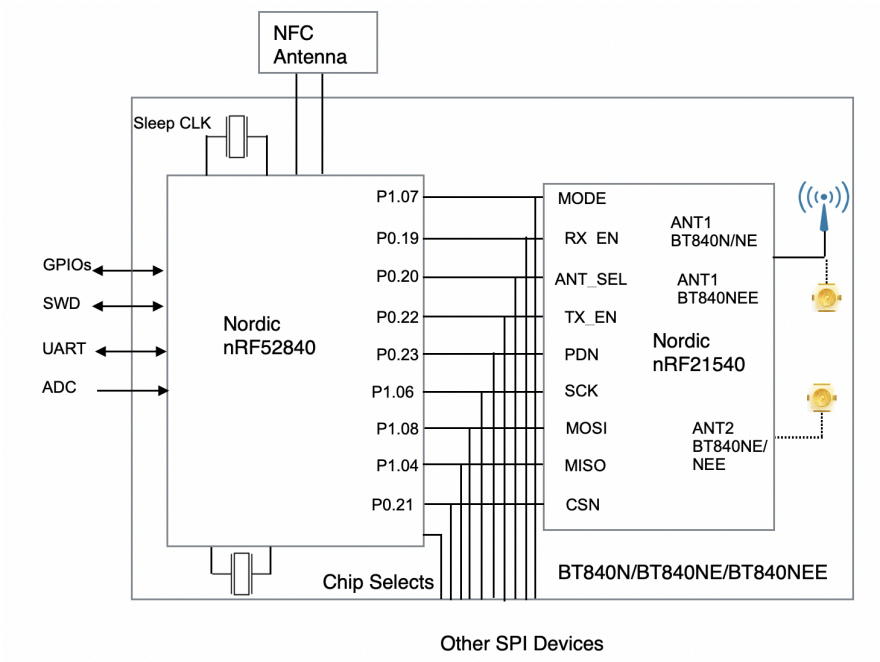
1. Introduction

A Nordic nRF21540 provide amplification for the transmitter and the receiver of nRF52840.

BT840N, BT840NE Block Diagram

A Nordic nRF21540 is integrated with an nRF52840 in BT840N, BT840NE, and BT840NEE.This series of modules is referred as BT840N. Three antenna options are available.

- BT840N with a high performance PCB antenna.
- BT840NE with a high performance PCB antenna and an u.FL connector for external connector.



Specifications:

- nRF52840 QIAA, ARM Cortex M4F, 64 MHz
- ARM® TrustZone® Cryptocell-310 co-processor
- nRF21540 power amplifier.
- Complete RF solution with integrated antenna
- BLE 5 data rate: 2Mbps, 1Mbps, 500kbps, 125kbps.
- IEEE 802.15.4 data rate: 250 Kbps
- 2.4 GHz proprietary data rate: 2 Mbps, 1 Mbps
- DC-DC converter, inductors on board.
- Serial Wire Debug (SWD)
- Nordic SoftDevice Ready
- Over-the-Air (OTA) firmware update
- Flash/RAM: 1MB/256KB.
- 39 General purpose I/O pins
- USB 2.0 full speed (12 Mbps) controller
- QSPI 32 MHz interface
- High speed 32 MHz SPI
- Type 2 NFC-A tag with wake-on field, Touch-to-pair support

- Programmable peripheral interconnect (PPI)
- 12 bit/200 Ksps ADC, 8 configurable channels with programmable gain
- 64 level comparator
- 15 level comparator with wake-up from OFF.
- 4x4-channel pulse width modulator (PWM)
- Audio peripherals: I2S, digital microphone interface (PDM)
- 5 x 32 bit timers with counter mode
- Up to 4x SPI masters/3x SPI slaves
- Up to 2x I2C compatible 2-wire masters/slaves
- 2x UART (CTS/RTS)
- Quadrature Demodulator (QDEC)
- 3x real time counters (RTC)
- 128-bit AES HW encryption
- SoC Receiver Sensitivity: -96 dBm at 1Mbps
- SoC TX power: programmable +8dBm to -20dBm.
- Hybrid pins: 16 castellated and 45 LGA.
- Operation voltage: 3.3V, regulated.
- Current consumption: to be measured.
- Operation temperature: -40°C to +85°C
- QDID: 108621,182626

2. Codes Development Using Nordic Tools

Development tools from Nordic and other third party development tools recommended by Nordic should be used.

Over-The-Air DFU

All modules are supported by an Over-The-Air Device Firmware Upgrade (OTA DFU) feature. This allows for in the field updates of application software and SoftDevice.

nRF Connect SDK

nRF Connect SDK is a scalable and unified software development kit for building products based on all our nRF52, nRF53 and nRF91 Series wireless devices. It offers developers an extensible framework for building size-optimized software for memory-constrained devices as well as powerful and complex software for more advanced devices and applications. It integrates the Zephyr RTOS and a wide range of samples, application protocols, protocol stacks, libraries and hardware drivers.

For developing Bluetooth Low Energy, Thread and Zigbee products, the nRF Connect SDK contains all needed software, including protocol stacks. For developing cellular IoT products it contains everything except the LTE modem firmware that must be downloaded separately from the nRF9160 SiP product page. See the cellular IoT software for more details.

nRF Connect SDK also offers an unique integration of HomeKit Accessory Development Kit for developing products using both HomeKit over Thread and HomeKit over Bluetooth Low Energy. It is a highly optimized solution that enables battery-powered products with both the HomeKit Accessory Protocol (HAP) and application firmware running on a single chip. MFi licensees can get access to the HomeKit repository by contacting us via Nordic DevZone private ticket.

nRF Connect SDK offers a single code base for all our devices and software components. It simplifies porting modules, libraries and drivers from one application to another, thus reducing development time. By enabling developers to pick and choose the essential software components for their application, high memory efficiency is guaranteed.

nRF Connect SDK is publicly hosted on GitHub, offers source code management with Git and has free SEGGER Embedded Studio IDE support. Nordic runs continuous integration tests on the nRF Connect SDK code to ensure robust and secure production quality code.

Development Tools

Nordic Semiconductor provides a complete range of hardware and software development tools for the nRF53 Series devices. nRF53 DK board is recommended for firmware development.

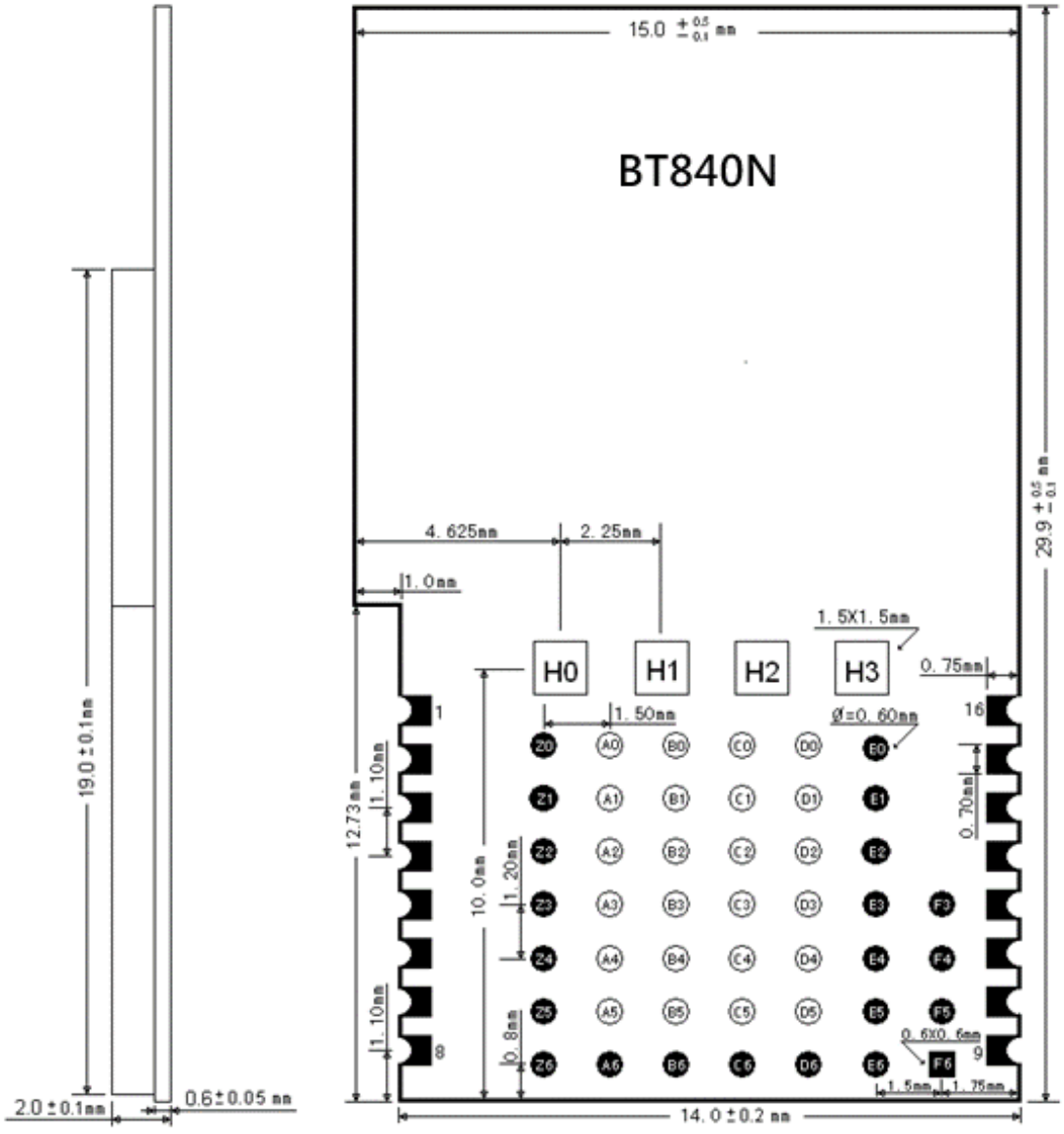
Nordic software development tools can be downloaded.

3. Product Descriptions

Mechanical Drawings

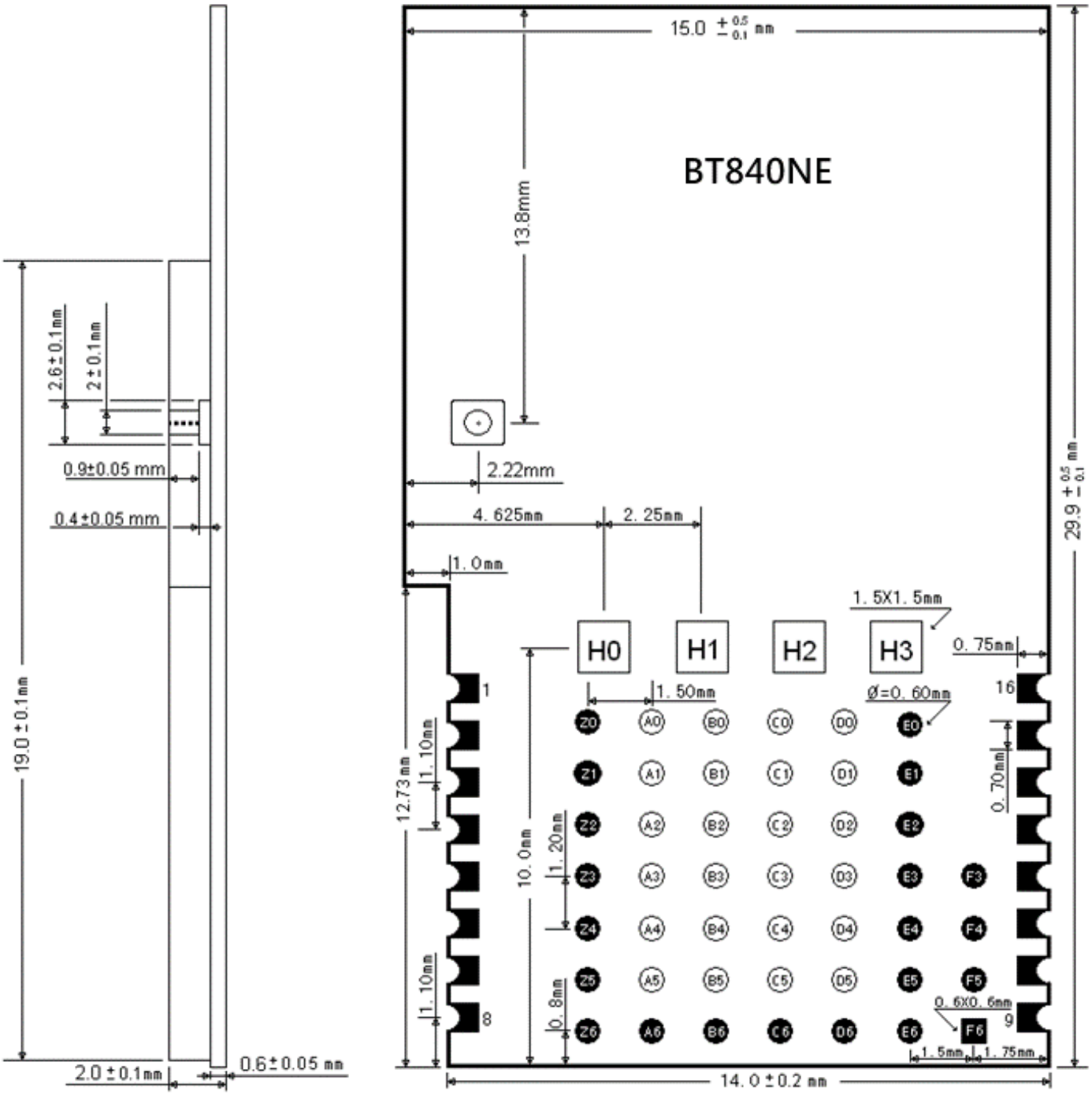
Two types of pins are available to meet different application requirements.

- 16 castellated pins for application needing limited number of IOs. SMT equipment is not required for soldering castellated pins.
- 45 LGA (Land Grid Array) pins to access all 48 GPIOs of nRF52840 when needed.



The following is BT840N mechanical drawings, top view.

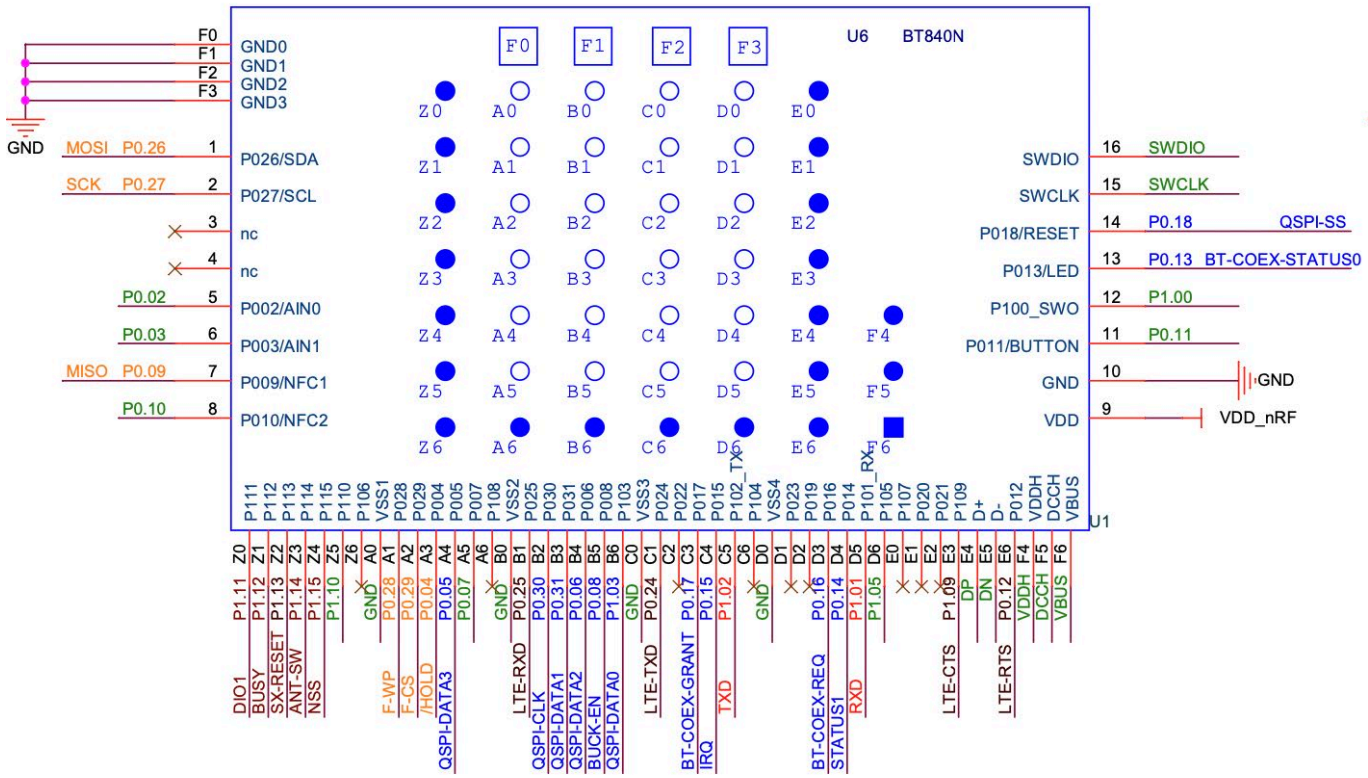
The following is BT840NE mechanical drawing, top view.



Pin Assignments of BT840N

The followings are pin assignment of BT840N. Pin functions are in a table in next section. Please refer to Nordic **nRF5340 Product Specifications** for detailed descriptions and features supported.

Pin assignments are below. Firmware configuration is required to upgrade module on the PCB.



Pin Functions

BT840N/NE uses 9 GPIO pins to control the power amplifier, nRF21540. These 9 pins in red color are also available for external connection. Please avoid possible signal conflict if you use them for other IO functions.

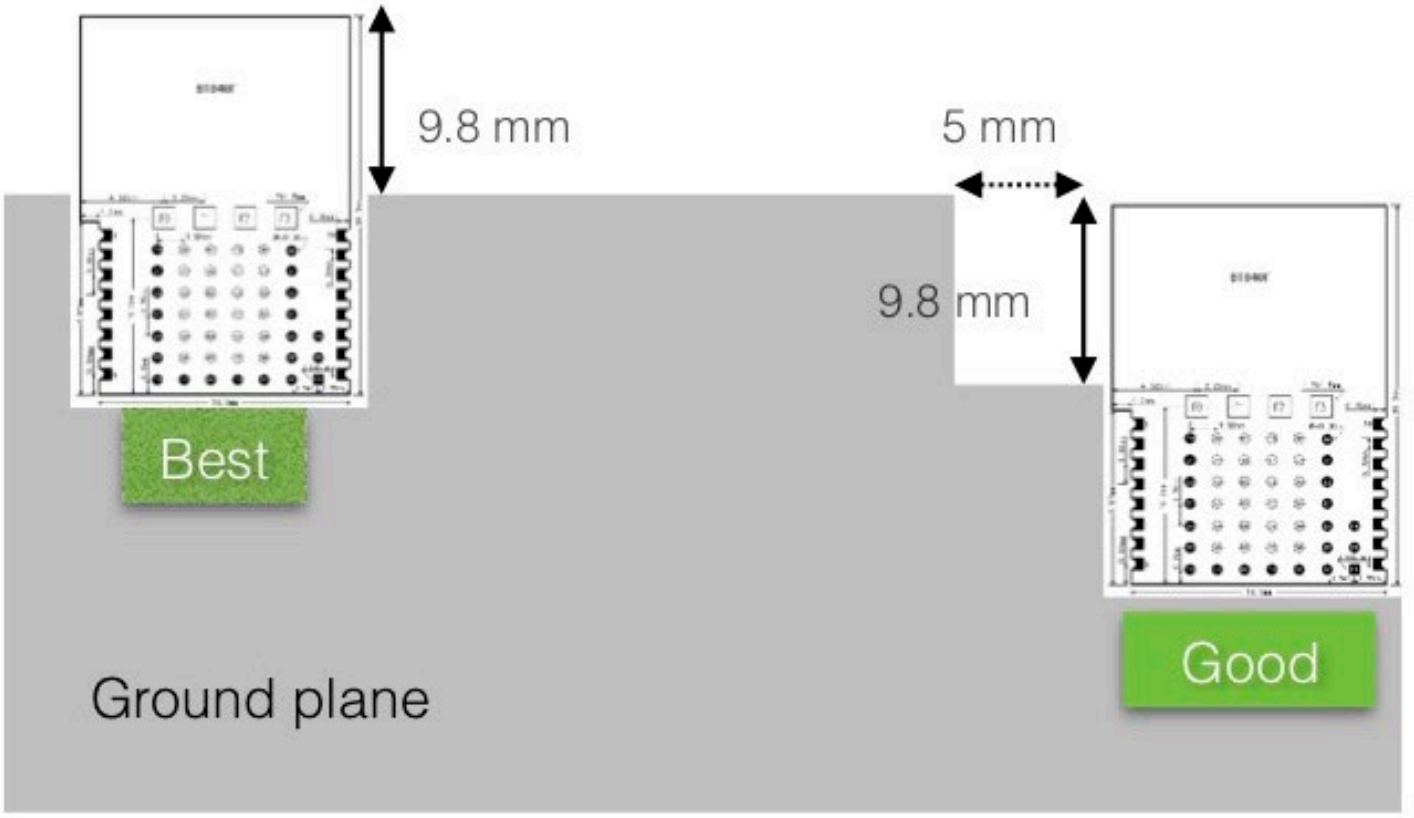
BT840N	52840		
pin#	pin#	pin name	Descriptions
1	G1	P0.26/SDA	GPIO, configured as I2C SDA on EV board
2	H2	P0.27/SCL	GPIO, configured as I2C SCL on EV board
3	D2	NC	NC, 32.768 KHz crystal embedded.
4	F2	NC	NC, 32.768 KHz crystal embedded.
5	A12	P0.02/AIN0	GPIO, Analog input
6	B13	P0.03/AIN1	GPIO, Analog input
7	L24	P0.09/NFC1	GPIO, NFC antenna connection
8	J24	P0.10/NFC2	GPIO, NFC antenna connection
9	B1	VDD	DC supply 1.7V to 3.6V
10	B7	GND	Ground
11	T2	P0.11	GPIO
12	AD22	P1.00	GPIO
13	AD8	P0.13	GPIO; BT40N, BT-COEX-SATUS0
14	AC13	P0.18/RESET	GPIO, reset with internal pull up, active low.
15	AA24	SWDCLK	Serial Wire Debug clock input
16	AC24	SWDIO	Serial Wire Debug I/O
Z0	B19	P1.11	GPIO, LTE-RXD for BT840N in Fanstel app.
Z1	B17	P1.12	GPIO, LTE-TXD for BT840N in Fanstel app.
Z2	A16	P1.13	GPIO, LTE-CTS for BT840N in Fanstel app.
Z3	B15	P1.14	GPIO, LTE-RTS for BT840N in Fanstel app.
Z4	A14	P1.15	GPIO.
Z5	A20	P1.10	GPIO
Z6	R24	P1.06	Connected to nRF21540 SCK pin internally.
A0		GND	Ground
A1	B11	P0.28/AIN4	GPIO, Analog input; Flash-WP in Fanstel app.
A2	A10	P0.29/AIN5	GPIO, Analog input; Flash-CS in Fanstel app.
A3	J1	P0.04/AIN2	GPIO, BT840N analog input; Flash- /HOLD in Fanstel app.
A4	K2	P0.05/AIN3	GPIO, BT840N, analog input; QSPI Data3 in Fanstel app.
A5	M2	P0.07	GPIO, DIO1 in Fanstel LoRa app.
A6	P2	P1.08	Connected to nRF21540 MOSI pin internally.
B0		GND	Ground
B1	AC21	P0.25	GPIO; BUSY in Fanstel LoRa app.
B2	B9	P0.30/AIN6	GPIO, BT840N, analog input; QSPI clock in Fanstel app.

B3	A8	P0.31/AIN7	GPIO, BT840N, analog input; QSPI Data1 in Fanstel app.
B4	L1	P0.06	GPIO,
B5	N1	P0.08	GPIO,
B6	V23	P1.03	GPIO
C0		GND	Ground
C1	AD20	P0.24	GPIO
C2	AD18	P0.22	Connected to nRF21540 TX_EN pin internally.
C3	AD12	P0.17	GPIO
C4	AD10	P0.15	GPIO
C5	W24	P1.02	GPIO
C6	U24	P1.04	Connected to nRF21540 MISO pin internally
D0		GND	Ground
D1	AC19	P0.23	Connected to nRF21540 PDN pin internally.
D2	AC15	P0.19	Connected to nRF21540 RX_EN pin internally.
D3	AC11	P0.16	GPIO
D4	AC9	P0.14	GPIO
D5	Y23	P1.01	GPIO
D6	T23	P1.05	GPIO
E0	P23	P1.07	Connected to nRF21540 MODE internally.
E1	AD16	P0.20	Connected to nRF21540 ANT-SEL internally.
E2	AC17	P0.21	Connected to nRF21540 CSN pin internally.
E3	R1	P1.09	GPIO
E4	AD6	D+	USB D+
E5	AD4	D-	USB D-
E6	U1	P0.12	GPIO
F0			Ground pad
F1			Ground pad
F2			Ground pad
F3			Ground pad
			GPIO
F4	Y2	VDDH	High Voltage Power Supply, 2.5V to 5.5V
F5	AB2	DCCH	BT840F, DCDC converter output; BT40F, No connect, L,C circuit embedded.
F6	AD2	VBUS	5V DC power for USB 3.3V regulator

Mounting BT840N on the Host PCB

The following figure shows recommended mounting of BT840N module on the host PCB.

- For the best Bluetooth range performance, the antenna area of module shall extend 9.8 mm outside the edge of host PCB board, or 9.8 mm outside the edge of a ground plane.
- The next choice is to place a module on a corner of host PCB, the antenna area shall extend 9.8 mm from the edge of ground plane. Ground plane shall be at least 5 mm from the edge of the antenna area of module.



- We don’t recommend mounting BT840N module in the middle of a host PCB.

For the best Bluetooth range performance, keep all external metal at least 30mm from the antenna area.

Host Board Design for Low Cost or Long Range

A host board can be designed to accommodate these modules with nRF21540 PA. They are referred as BT840N. Our suggestions for host PCB design:

- Use a 4 or more layers PCB.
- Use library component from EV-BT840NE Gerber files. They can be downloaded from http://www.fanstel.com/download-document/. It has 16 castellated pins plus 45 LGA pins.
- As much ground plane under BT40N, on top side of host PCB as possible. Use EV-BT40F Gerber files as an example.

Control Nordic nRF21540 Power Amplifier

BT840N and BT840NE uses nRF21540 power amplifier.

Nordic online document
https://developer.nordicsemi.com/nRF_Connect_SDK/doc/latest/nrf/ug_radio_fem.html?highlight=sky66112#ug-radio-fem-skyworks
https://infocenter.nordicsemi.com/pdf/nRF21540_PS_v1.2.pdf

The nRF21540 device is a range extender that you can use with nRF52 Series devices. For more information about nRF21540, see the nRF21540 documentation.

Setting for BT833N and BT840N

Set up the FCC IC TX power for BT833N, BT840N
SDK V.2.0.0
prj.conf

#TX POWER For BT833N(nrf52833+nrf21540) FCC IC
CONFIG_BT_CTLR_TX_PWR_DYNAMIC_CONTROL=y
CONFIG_BT_CTLR_TX_PWR_PLUS_3=y

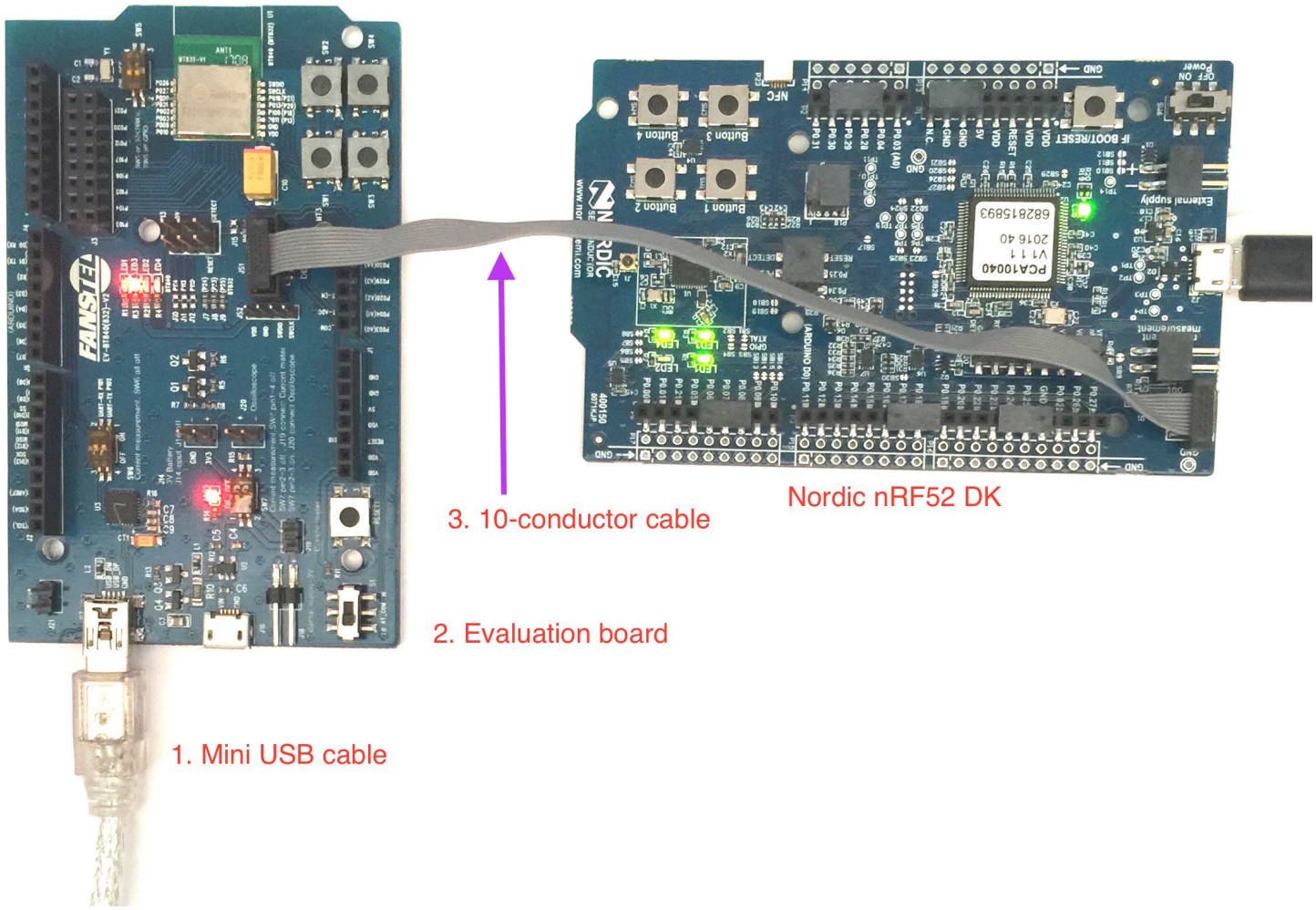
#TX POWER For BT840N(nrf52840+nrf21540) FCC IC
CONFIG_BT_CTLR_TX_PWR_DYNAMIC_CONTROL=y
CONFIG_BT_CTLR_TX_PWR_PLUS_4=y

4. BT40F Evaluation Board

An evaluation board consists of the followings:

- Mini USB cable
- Evaluation board
- 10-conductor cable for connection to Nordic nRF53 DK (DK is not included)

The EV board can be programmed by using a Nordic nRF53 DK board, connected as below. (Photo to be updated)



Nordic Development Tools

A Nordic nRF5340 DK is recommended for programming this evaluation board. Visit Nordic website for **nRR5340 DK description and product brief**.

Many application examples can be downloaded from Nordic website.

Some firmware, Android OS, and iOS app codes can be downloaded from **Bluetooth 5 Codes section** of this Fanstel webpage.

http://www.fanstel.com/download-document/

BT40 firmware can be used in all nRF5340 modules without power amplifier, e.g., BT40F and BT40E.

Android OS Apps

The following Android OS apps are available for download from Google Play Store:
BlueNor nrf5x: to use with Bluetooth 5 stacks, AT commands, or Slave firmware. Master firmware does not connect to a smartphone. Source codes can be downloaded from http://www.fanstel.com/download-document/

BlueNor Mesh: to use with BlueNor mesh firmware to send command to any node in a mesh. Node number is displayed when acknowledgement is received. Source codes will be uploaded to Fanstel website when supporting Bluetooth 5.

iOS Apps

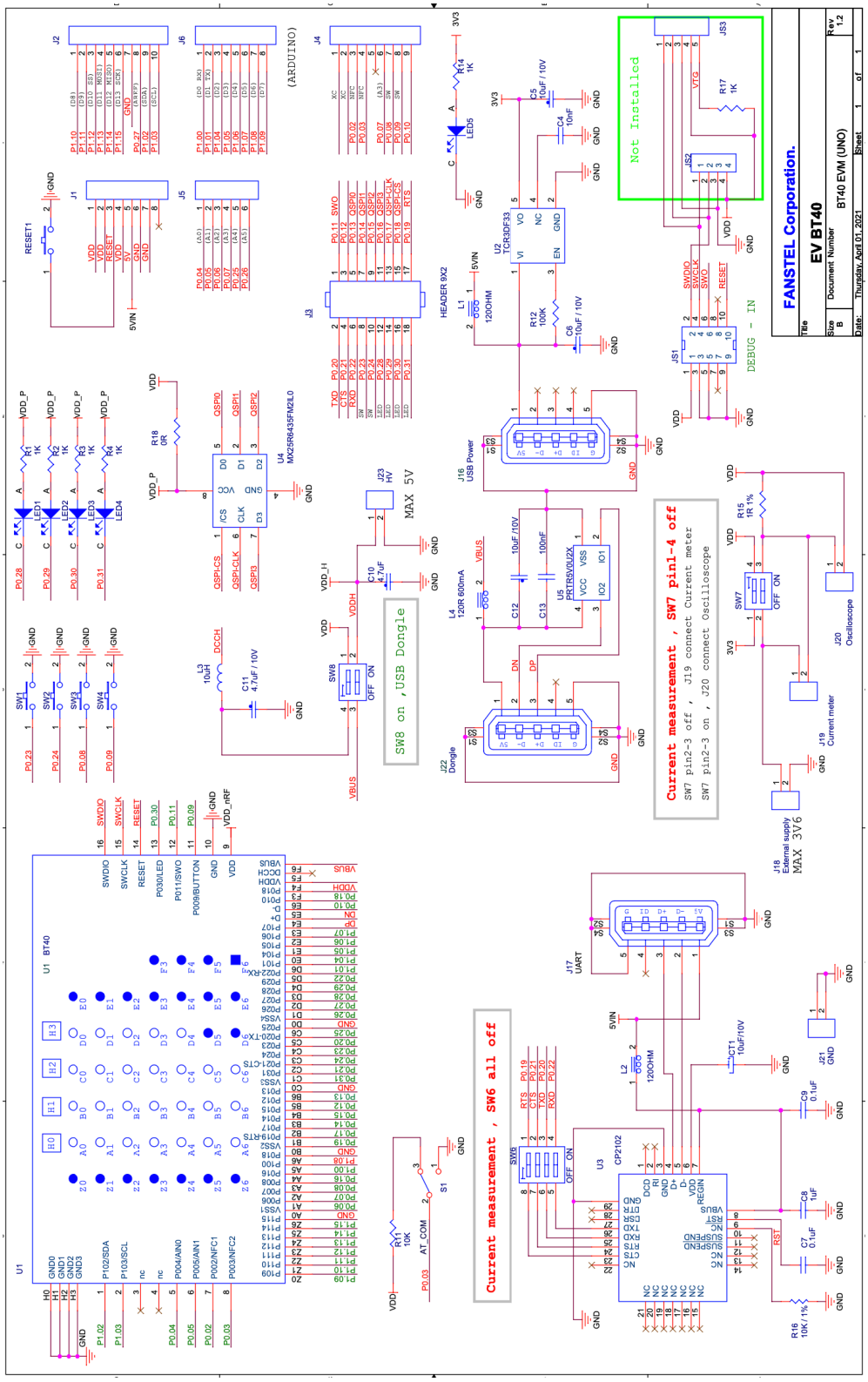
The following iOS apps can be downloaded from Apple APP Store.

BlueNor Mesh: to use with BlueNor mesh firmware to send command to any node in a mesh. Node number is displayed when acknowledgement is received.
BlueNor nrf5x firmware, apps, and source codes will be uploaded when ready.

EV-BT40NE EvaluationBoard Schematics

Evaluation board **EV-BT840F schematics and Gerber files** is available at Fanstel website.

Evaluation board can be used as a reference design for using modules. EV-BT40F is designed for the BT40F with 61 pins. soldering pads This EV board can also be used for BT40, BT40E, and BT40X modules.



Suggestion for Battery Power Application

Standby current consumption is important for battery-powered product. To reduce host board area, the followings are embedded in modules:

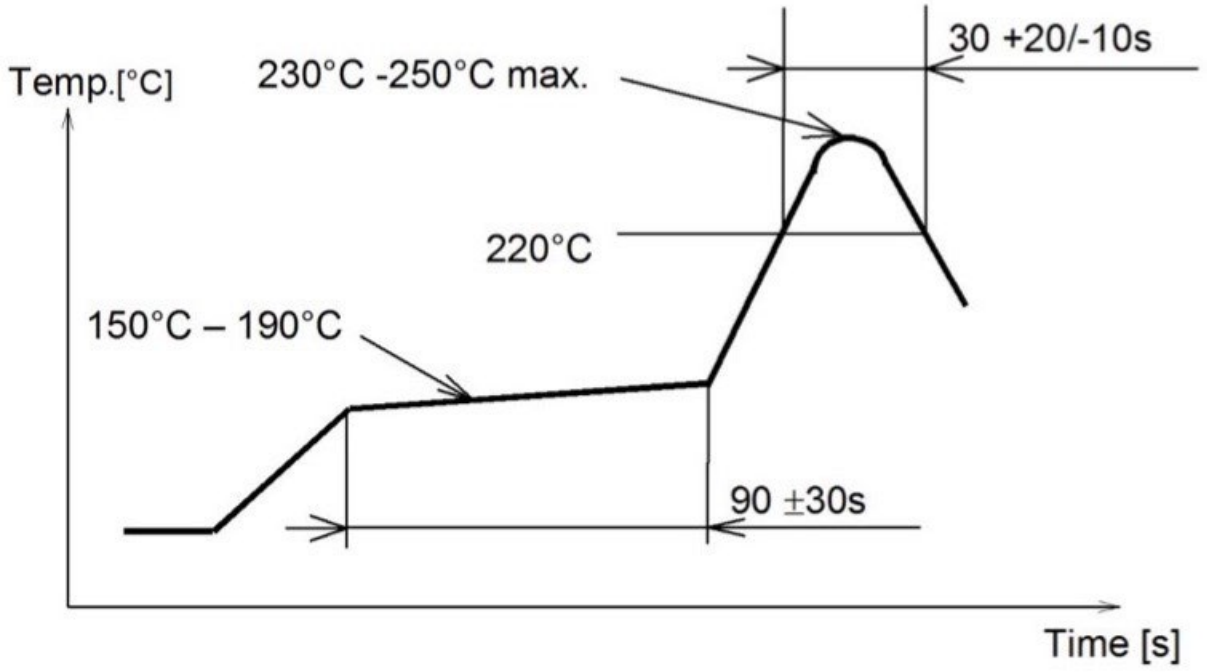
- 32 MHz, 20PPM main crystal and load capacitors.
- 32.768 KHz, 20PPM sleep crystal and load capacitors.
- Inductors and capacitors required for VDD power supply DC to DC converter.
- Inductors and capacitors required for VDDH power supply DC to DC converter.

The external sleep crystal shall be used for a precise sleep clock frequency. DCDC converter shall be enabled to reduce power consumption.

5. Miscellaneous

Soldering Temperature-Time Profile for Re-Flow Soldering

Maximum number of cycles for re-flow is 2. No opposite side re-flow is allowed due to module weight.



Cautions, Design Notes, and Installation Notes

Failure to follow the guidelines set forth in this document may result in degrading of the product's functions and damage to the product.

Design Notes

(1) Follow the conditions written in this specification, especially the control signals of this module.

(2) The supply voltage has to be free of AC ripple voltage (for example from a battery or a low noise regulator output). For noisy supply voltages, provide a decoupling circuit (for example a ferrite in series connection and a bypass capacitor to ground of at least 47uF directly at the module).

(3) This product should not be mechanically stressed when installed.

(4) Keep this product away from heat. Heat is the major cause of decreasing the life of these products.

(5) Avoid assembly and use of the target equipment in conditions where the products' temperature may exceed the maximum tolerance.

(6) The supply voltage should not be exceedingly high or reversed. It should not carry noise and/or spikes.

(7) this product away from other high frequency circuits.

Notes on Antenna and PCB Layout

(1) Don't use a module with internal antenna inside a metal case.

(2) For PCB layout:

- Avoid running any signal line below module whenever possible,
- No ground plane below antenna,
- If possible, cut-off the portion of main board PCB below antenna.

Installation Notes

(1) Reflow soldering is possible twice based on the time-temperature profile in this data sheets. Set up the temperature at the soldering portion of this product according to this reflow profile.

(2) Carefully position the products so that their heat will not burn into printed circuit boards or affect the other components that are susceptible to heat.

(3) Carefully locate these products so that their temperatures will not increase due to the effects of heat generated by neighboring components.

(4) If a vinyl-covered wire comes into contact with the products, then the cover will melt and generate toxic gas, damaging the insulation. Never allow contact between the cover and these products to occur.

(5) This product should not be mechanically stressed or vibrated when reflowed.

(6) If you want to repair your board by hand soldering, please keep the conditions of this chapter.

(7) Do not wash this product.

(8) Refer to the recommended pattern when designing a board.

(9) Pressing on parts of the metal cover or fastening objects to the metal will cause damage to the unit.

Usage Condition Notes

(1) Take measures to protect the unit against static electricity. If pulses or other transient loads (a large load applied in a short time) are applied to the products, check and evaluate their operation before assembly on the final products.

(2) Do not use dropped products.

(3) Do not touch, damage or soil the pins.

(4) Follow the recommended condition ratings about the power supply applied to this product.

(5) Electrode peeling strength: Do not add pressure of more than 4.9N when soldered on PCB

(6) Pressing on parts of the metal cover or fastening objects to the metal cover will cause damage.

(7) These products are intended for general purpose and standard use in general electronic equipment, such as home appliances, office equipment, information and communication equipment.

Storage Notes

(1)The module should not be stressed mechanically during storage.

(2)Do not store these products in the following conditions or the performance characteristics of the product, such as RF performance will be adversely affected:

- Storage in salty air or in an environment with a high concentration of corrosive gas.
- Storage in direct sunlight
- Storage in an environment where the temperature may be outside the range specified.
- Storage of the products for more than one year after the date of delivery storage period.

(3) Keep this product away from water, poisonous gas and corrosive gas.

(4) This product should not be stressed or shocked when transported.

(5) Follow the specification when stacking packed crates (max. 10).

Safety Conditions

These specifications are intended to preserve the quality assurance of products and individual components. Before use, check and evaluate the operation when mounted on your products. Abide by these specifications, without deviation when using the products. These products may short-circuit. If electrical shocks, smoke, fire, and/or accidents involving human life are anticipated when a short circuit occurs, then provide the following failsafe functions, as a minimum.

(1)Ensure the safety of the whole system by installing a protection circuit and a protection device.

(2)Ensure the safety of the whole system by installing a redundant circuit or another system to prevent a dual fault causing an unsafe status.

Other Cautions

(1)This specification sheet is copyrighted. Reproduction of this data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices.

(2)Do not use the products for other purposes than those listed.

(3)Be sure to provide an appropriate failsafe function on your product to prevent an additional damage that may be caused by the abnormal function or the failure of the product.

(4)This product has been manufactured without any ozone chemical controlled under the Montreal Protocol.

(5)These products are not intended for other uses, other than under the special conditions shown below. Before using these products under such special conditions, check their performance and

reliability under the said special conditions carefully to determine whether or not they can be used in such a manner.

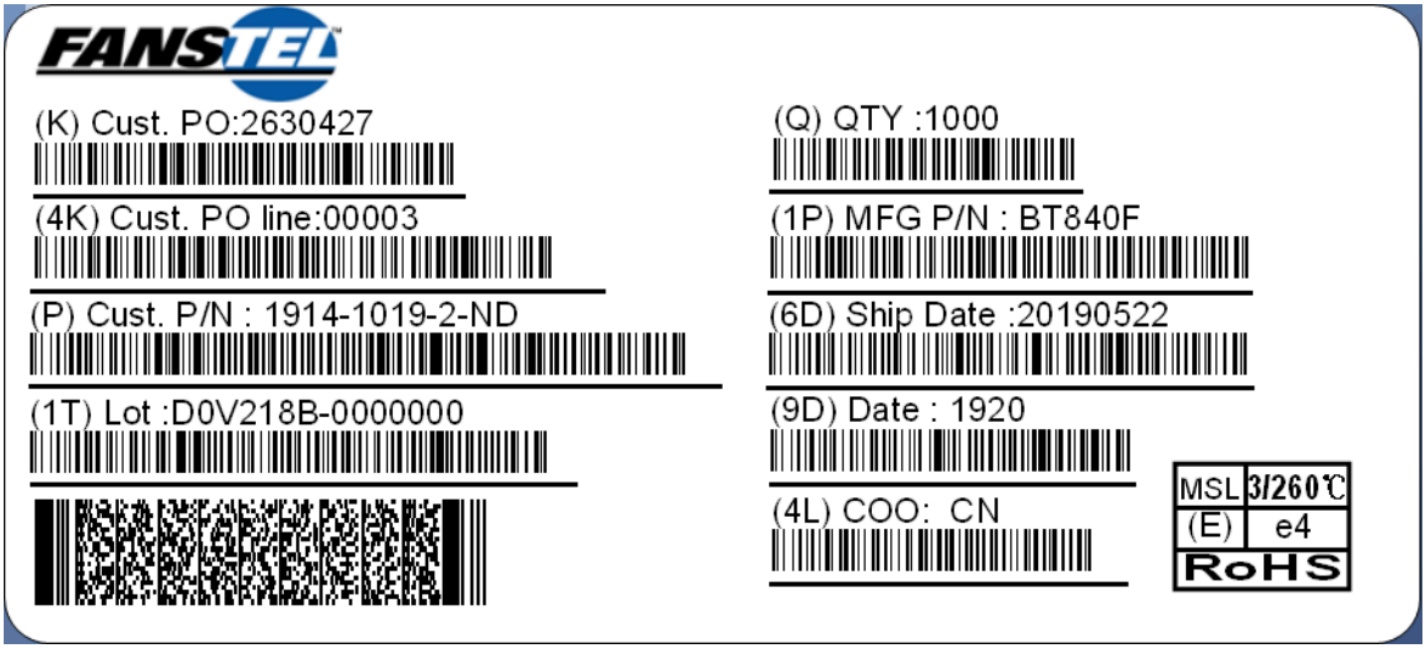
- In liquid, such as water, salt water, oil, alkali, or organic solvent, or in places where liquid may splash.
- In direct sunlight, outdoors, or in a dusty environment
- In an environment where condensation occurs.
- In an environment with a high concentration of harmful gas.

(6) If an abnormal voltage is applied due to a problem occurring in other components or circuits, replace these products with new products because they may not be able to provide normal performance even if their electronic characteristics and appearances appear satisfactory.

(7) When you have any question or uncertainty, contact Fanstel.

Packaging and Lot Number

Production modules are delivered in reel, 1000 modules in each reel. Lot number for modules made after May 2019, can be used to track silicon version of SoC, module PCB version, and production test



Lot: **D0 V2 18B - 00 00 000**

D0: 2 digits, version number of SoC.
V2: 2 digits, version number of module PCB.
18B: the first 2 digits for production test codes released year and the last digit for month in hex format. A=October, B=November, C=December. 18B was released in November 2018.
00 00 000, 7 digits, reserved for 2nd SoC for modules with 2 SoCs.

code version.

FCC Label

The Original Equipment Manufacturer (OEM) must ensure that the OEM modular transmitter must be labeled with its own FCC ID number. This includes a clearly visible label on the outside of the final product enclosure that displays the contents shown below. If the FCC ID is not visible when the equipment is installed inside another device, then the outside of the device into which the equipment is installed must also display a label referring to the enclosed equipment

The end product with this module may subject to perform FCC part 15 unintentional emission test requirement and be properly authorized.

This device is intended for OEM integrator only.

Revision History

- Aug. 2023, Ver. 0.90: Initial draft release.

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Federal Communications Commission (FCC) Statement

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

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 of the device.

FCC RF Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

RF exposure warning
This equipment must be installed and operated in accordance with provided instructions and the antenna(s) usedfor this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and mustnot be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers mustbe provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposurecompliance.

Industry Canada (IC) Statement

This device complies with Industry Canada license-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.

RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) usedfor this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and mustnot be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers mustbe provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposurecompliance.

Canada, avis d'Industry Canada (IC)

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.

Informations concernant l'exposition aux fréquences radio (RF)

Cet équipement est conforme avec l'exposition aux radiations IC définies pour un environnement noncontrôlé. Cet équipement doit être installé et utilisé à une distance minimum de 20 cm entre le radiateuret votre corps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec une autreantenne ou transmetteur. Les utilisateurs finaux et les installateurs doivent être informés des instructions d'installation de l'antenne et des conditions de fonctionnement de l'émetteur afin de satisfaire à la conformité d'exposition RF.

Note: The end product shall has the words "Contains Transmitter Module FCC ID: X8WBT840N，contient IC: 4100A-BT840N

"

Information for the OEM and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

(1) This device is intended for OEM integrators only.

(2) Please see the full Grant of Equipment document for other restrictions.

BT840N: PCB Antenna, 0.88 dBi ; BT840NE: Dipole Antenna, 6dBi

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20cm from persons.
The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as show in this manual.
Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B, ICES 003.
Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.
Must have on the host device a label showing Contains FCC ID: X8WBT840N，contient IC: 4100A-BT840N
The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual.

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

l'hôte doit utiliser l'instrument uniquement dans des dispositifs qui répondent à la fcc / (catégorie d'exposition rf mobile, ce qui signifie le dispositif est installé et utilisé à une distance d'au moins 20 cm de personnes.
le manuel de l'utilisateur final doit inclure la partie 15 / (fac rss gen déclarations de conformité relatives à l'émetteur que de montrer dans ce manuel.
le fabricant est responsable de la conformité de l'hôte, le système d'accueil avec le module installé avec toutes les autres exigences applicables du système comme la partie 15 b, ices - 003.

accueillir le fabricant est fortement recommandé de confirmer la conformité avec les exigences de la fcc / (émetteur lorsque le module est installé dans l'hôte. le dispositif d'accueil doivent avoir une étiquette indiquant contient FCC ID: X8WBT840N，contient IC: 4100A-BT840N