Using BlueNor EV BT832/BT832F Evaluation Boards

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Introduction

EV BT832 V2 has the same footprint as that of Arduino UNO R3. It is not an UNO R3 compatible board. Many UNO R3 shields can be used with EV BT832.

- It is preloaded with firmware for evaluating transmission performance of Bluetooth module.
- Firmware can be developed for other applications. You need development environment as recommended by Nordic for nRF52. A Nordic nRF52 DK is recommended for programming this evaluation board.
- If not used on board, all GPIO pins are available at connectors. Whenever possible, with firmware configuration, pin function can be compatible with that of Arduino UNO R3.

Hardware Description

EV-BT840F V3 schematics can be downloaded from http://www.fanstel.com/download-document/. The same main board is used for BT832 and BT840F. Pins in solid dots are not used in EV-BT832. Descriptions of hardware:

1. J17, mini USB connector. The first DC power input and USB connection.

   Portable smartphone charger with auto powering down feature can be used. It has circuitry to generate periodic load to prevent auto powering down of some portable smartphone chargers.

2. J16, micro USB connector. The second DC power input.
3. J18, up to 3.6V DC input to module directly, no voltage regulator on board. Module power consumption can be measured using a current meter (on J19) or an oscilloscope (on J20) across an 1 ohm resistor. SW6 must be OFF to disconnect UART pins for current measurement.
4. Set S1 to High for AT command mode, to Low for Data mode. AT command firmware is required, not preloaded.
5. Reset button
6. J1. Power, ground and reset connection to Arduino UNO R3 shields or Fanstel shields.
7. J5 GPIO pins
8. 4 buttons for testing
9. J3. Not used for BT832. Break-out pins for additional nRF52840 GPIO pins.
10. J4, J5, J2. Connectors for GPIO pins
11. J21. Ground connection
12. JS1. 10-pin debug-in connection to Nordic nRF52 DK.
13. JS2. 4-pin SWD connector
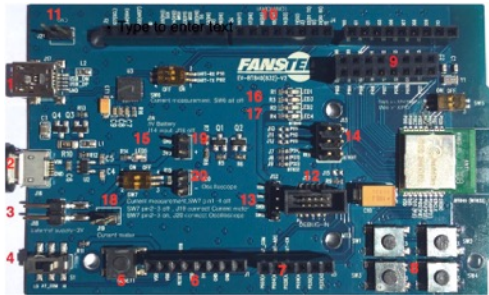
14. J13 for use with shields
15. LED 5. Power-on indicator
16. LED 2.
17. LED 4.
18. J19 for power consumption measurement. Set SW7 pin 2/3 to OFF and connect a current meter.
19. J14, 3V battery input
20. J20, use an oscilloscope for current measurement across an 1-ohm resistor.

Testing Mesh Stacks

Up to 65536 nodes are supported in a mesh network. Each node can be addressed and controlled by the controller, a smart phone in this demo.

1. Search for and download *BlueNor Mesh* from Google Play or Apple APP store.
2. Powering up only one evaluation board to find 5-digit ID for the node.
3. Open *BlueNor Mesh* and touch *Scan*.
4. Write down the 5-digit node ID number. In this example, **57054**.
5. Touch to select the BLE device, in this example **rbc_mesh #57054**.
6. Powering up all nodes. They are connected automatically.
7. Enter the node ID number **57054** and press *Send*.
8. When node **57054** receives this command, it toggles LED indicator ON/OFF, and sends an ACK message to the smartphone.
9. When smartphone receives the ACK message, it displays the node ID number and ACK sequence number. In this example, **57054ack4** is the 4th ACK message received from node **57054**.
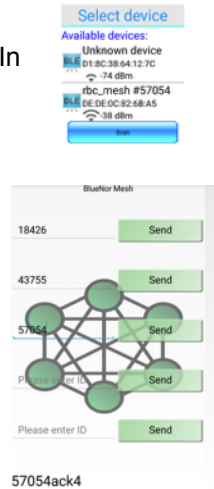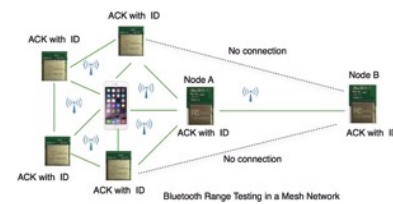
Bluetooth Range with a Smartphone

To measure Bluetooth line of sight range with a smartphone

1. Follow **Procedures to Send Message in Mesh Network**.
2. Test for the maximum range to receive ACK message from the node.
3. Measuring Bluetooth range between 2 EV BT832 is not recommended using this method. Range with a smartphone is longer than range between 2 EV BT832.