

## Using the nRF24L01+ Library

nRF24L01+ Demo makes use of a compiled library that will allow you to send/receive wireless data using the Nordic nRF24L01+. Be sure to read the wireless.h header file to find more information the parameters to pass to wireless\_get\_32[] and wireless\_send\_32[].

The demo has been set up so that a single board will transmit data and the other will receive data. In the project, you will be able to transmit and receive from both boards.

## Demo Requirements:

You will need two boards to run the demo. The demo expects that you have your UART, GPIO, SPI, and serial debug code fully functional.

1. Copy the nRF24L01P demo into your ICE Distribution.
2. Compile the DEMO with the TX\_MODE macro in main.c set to **true**.
3. Plug in the 1<sup>st</sup> board to the PC and turn the board on.
4. Program the 1<sup>st</sup> board.
5. After programming the board, turn the board off.
6. Compile the DEMO with the TX\_MODE macro in main.c set to **false**.
7. Plug in the 2<sup>nd</sup> board to the PC and turn the board on.
8. Program the 2<sup>nd</sup> board.
9. After programming the board, turn the board off.
10. Turn both boards on.
11. Open putty terminals to both boards.
12. You should observe data being transmitted between the two boards.

## Things to consider

1. The nRF24L01+ shares the SPI bus with the accelerometer. In order to share the SPI bus, you need to direct the CS signal to the correct device. You can do this using the `spi_select()` function.

```
// Send SPI packets to ACCEL
```

```
spi_select(MODULE_1);
```

```
// Read ACCEL DATA
```

```
// Send SPI packets to the nRF24L01+
```

```
spi_select(NORDIC);
```

```
// Read [or write] to nRF24L01+
```

2. You will need to modify the device IDs from those used in the demo. If everyone used the IDs in the demo, then groups are going to be sending data to other groups and things will not go well.
3. The local and remote IDs need to be swapped on each of the 2 boards.
4. Wireless packets do get dropped from time to time, so make sure that you are checking the return status. You may need to re-send data if it has been dropped
5. The nRF24L01+ uses SPI mode 0. You will need to change the accelerometers SPI mode to 0. The accelerometer supports multiple SPI modes, so this will not cause a problem.

## Adding the nRF24L01+ library to your project files.

1. Copy `ece353_nrf24l01p.lib` into your project directory
2. Right Click on 'src' group in the Project pane.
3. Select Adding Existing to Group from the menu.
4. Change the file filter so that you can select .Lib files.
5. Choose `ece353_nrf24l01p.lib`.