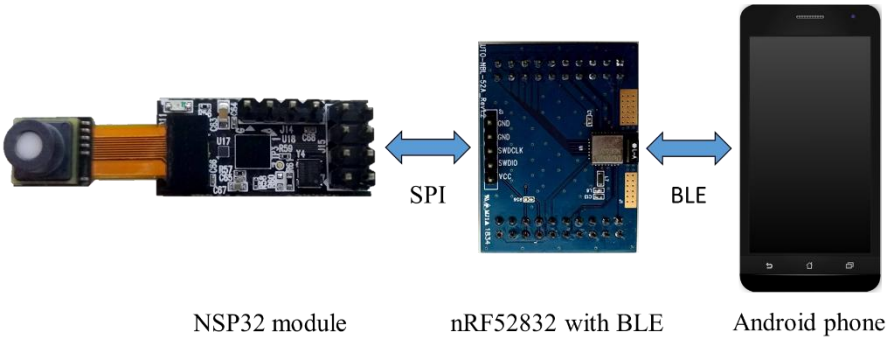
Introduction

The example runs on Nordic nRF52832 SoC. The block diagram of this example is as follows:



In this example, nRF52832 acts as a forwarder, to forward command packets and return packets between the NSP32 module and the Android phone. The Android app can wirelessly (through bluetooth) control NSP32 module and get the spectrum data.

Note: This example must run in conjunction with the "Android SpectrumMeter" APK installed on an Android phone. Please check "NSP32 Java API for Android / desktop" for getting this Android project and APK.

API Source File Location

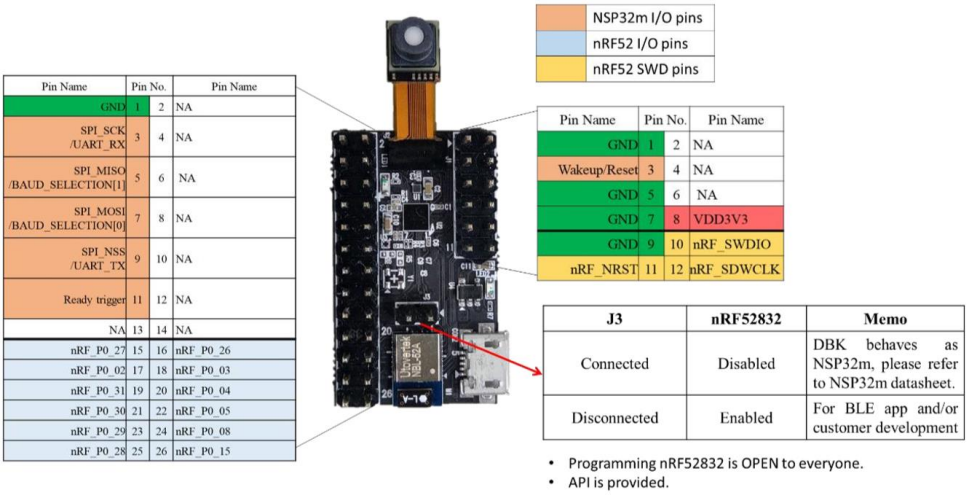
1) The API source files are located under [/examples/nRF52/SpectrumMeter/NanoLambdaNSP32/], along with nRF52Adaptor.h and nRF52Adaptor.cpp tailored for nRF52.
2) NSP32CWrapper.h and NSP32CWrapper.c are also provided under the same folder, to enable NSP32 API being called from C source code (i.e. main.c).

Hardware Setup

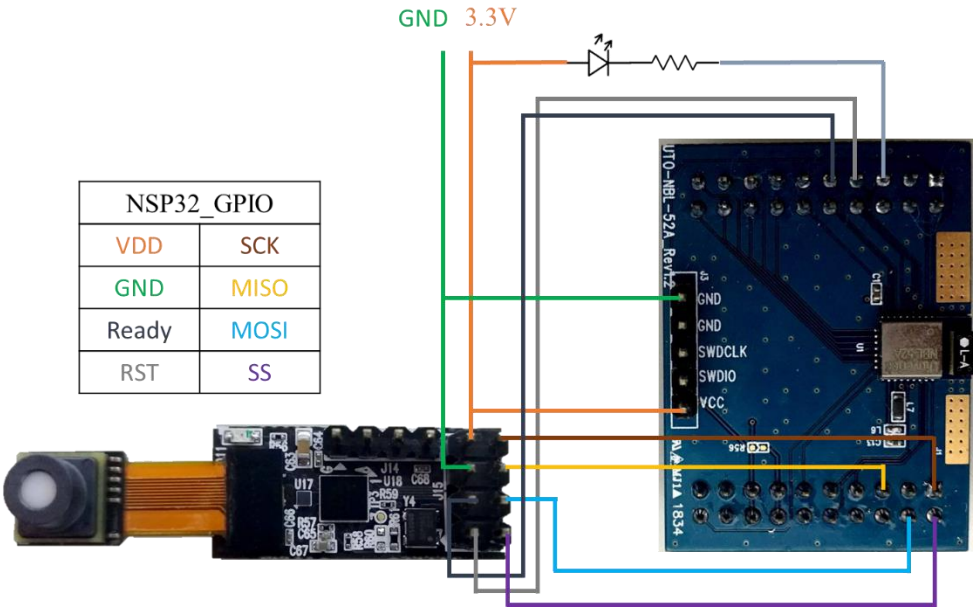
1) Tested on
   - nRF52832

2) Setup

(a) using NSP32m DBK Development Board Kit with J3 disconnected.



(b) or manually configure your NSP32m with your nRF52 in the following way:



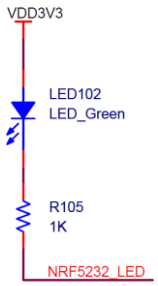
■ Table below is the pin connections between NSP32 and nRF52832 (on PCA10040 Development Kit board).

GPIO \ Hardware		NSP32 Pin	nRF52832
Power	VDD	VDD3V3	VDD
	GND	GND	GND

SPI Signal	Wakeup/Reset	RST	P0.16
	SPI SSEL	SS	P0.22
	SPI MOSI	MOSI	P0.23
	SPI MISO	MISO	P0.24
	SPI SCK	SCK	P0.25
	Ready	Ready	P0.14

- Status LED

  Connect nRF52832 P0.18 to a resistor and a LED as follows.



Pre-built hex

1) A pre-built hex file is located at [/examples/nRF52/SpectrumMeter/pca10040/s132/arm5_no_packs/_build/nrf52832_xxaa.hex].
2) You can program the hex to nRF52832 by flashers (e.g. nRFgo or J-Flash).
3) The example requires Nordic SoftDevice present on nRF52832. Make sure you program the "S132 v6.1.0 SoftDevice (provided with nRF SDK 15.2.0)" before hand.

Software Setup

1) Runs on

   Keil uVision5

2) Setup

   If you need to rebuild the hex file, or want to modify the example code, you can follow these steps:

   1. Install Keil5 IDE.
   2. Download "nRF SDK 15.2.0" and extract it to your hard drive. Say the extracted path is {SDK}.
   3. Put the [/examples/nRF52/SpectrumMeter] folder under [{SDK}/examples/ble_peripheral/].
   4. Open [{SDK}/examples/ble_peripheral/SpectrumMeter/pca10040/s132/arm5_no_p

acks/image_transfer_demo_pca10040_s132.uvprojx] in Keil5.

5. Build the project, and you will get the hex file at [{SDK}/examples/ble_peripheral/SpectrumMeter/pca10040/s132/arm5_no_packs/_build/nrf52832_xxaa.hex].

Project Disclamation

This example is modified from a demo project from Nordic, which could be found at [https://github.com/NordicPlayground/nrf52-ble-image-transfer-demo]. We try to do minimum modifications and keep the original codes as much as possible.

Run the Example

To run the example, program the hex file and Nordic SoftDevice to nRF52832. Then power on.

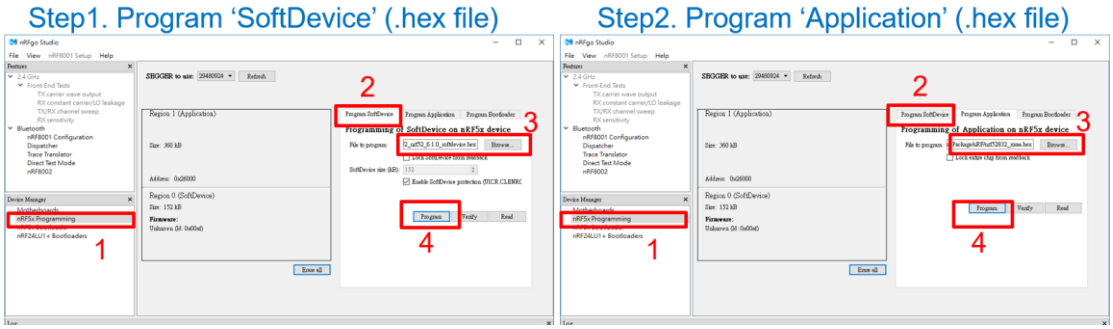
- When BLE is advertising, you shall see the nRF status LED blinking.
- After Android app connects nRF, the nRF status LED will keep lighting.
- If the advertising times out (i.e., Android app does not connect within 180 seconds), nRF will go system-off.
  Note: Users need to wake it up through the reset pin or use "power-off → power-on" procedure.

Appendix

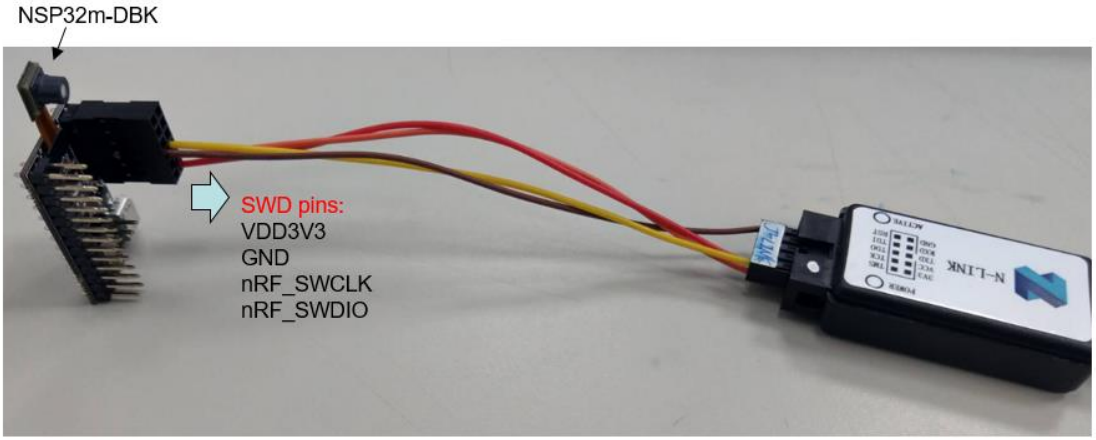
nRF52832 programming guide (using nRFgo studio)

Hardware interface: SEGGER J-LINK SWD

Software: nRFgo studio



Programming nRF52832 via J-LINK



Android API example