Grove – NFC v2.0
User Instruction

Release date： 2018/06/05

Version： 0.1

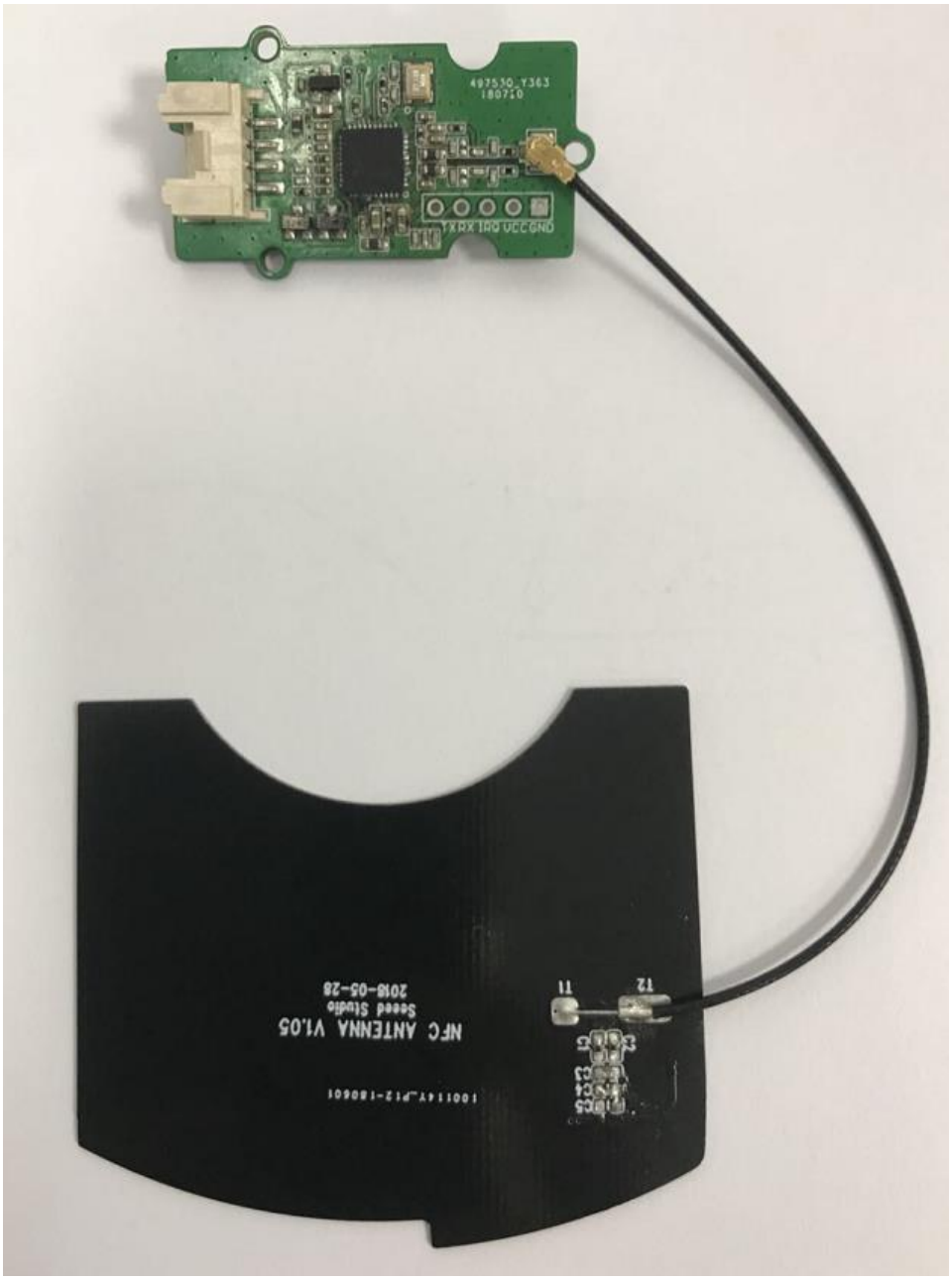
Document Revision History

Revision	Date	Author	Description
0.1	Jun 05, 2018	Jeremy	Create file

Description

Near Field Communication (NFC) is a set of short-range wireless technologies. It's behind daily applications such as access control system and mobile payment system.

Grove NFC features a highly integrated transceiver module PN532 which handles contactless communication at 13.56MHz. You can read and write a 13.56MHz tag with this module or implement point to point data exchange with two NFCs. Grove NFC is designed to use I2C or UART communication protocols, and UART is the default mode. In addition, we assign an independent PCB antenna which can easily stretch out of any enclosure you use, leaving more room for you to design the exterior of your project.



Partlist

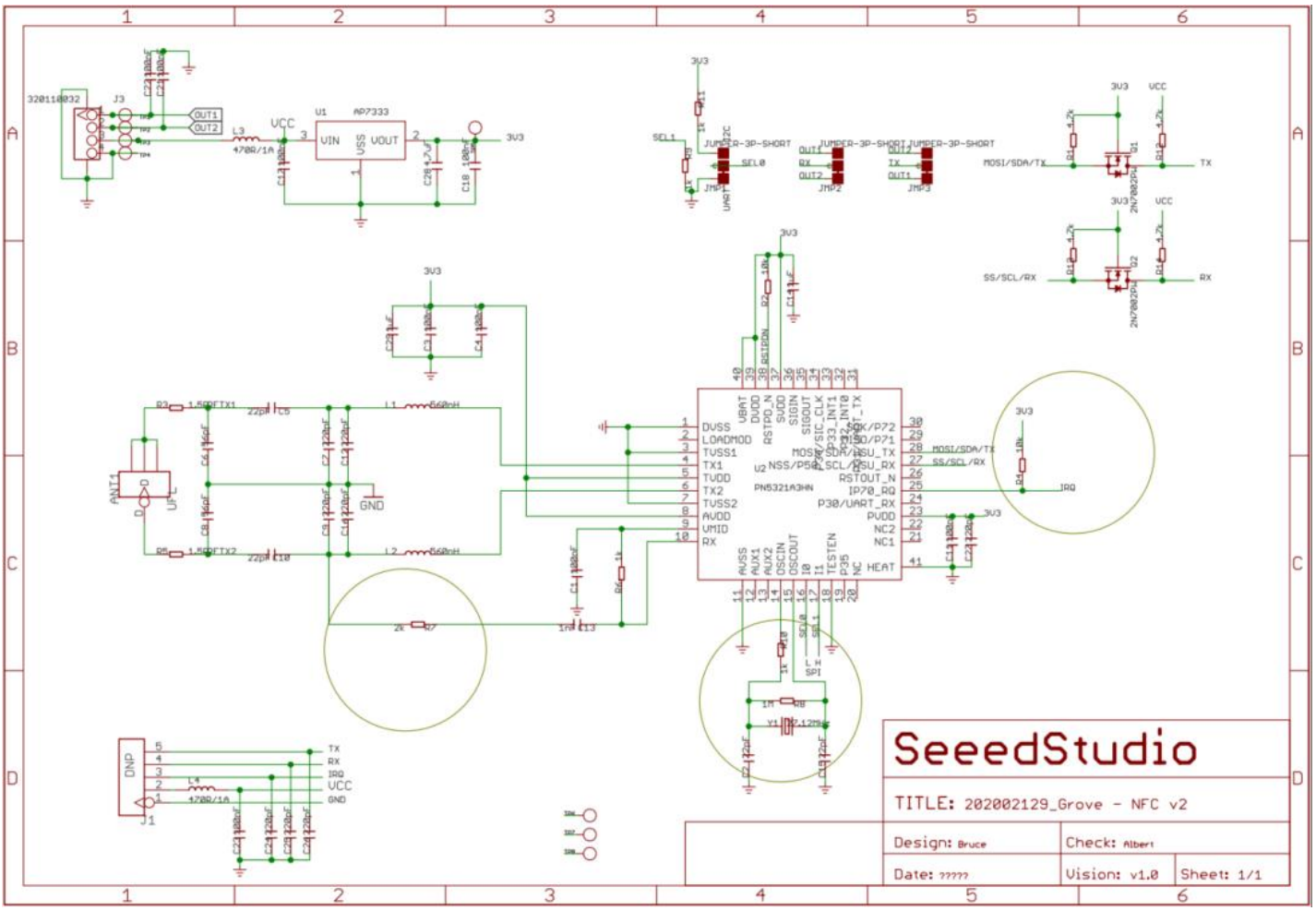
Table 0-1 Part list

NO.	Name	Qty	Note.
1	Grove – NFC v2.0	1	
2	NFC Antenna	1	
3	IPX connect wire - 120mm	1	
4	24AWG Grove Cable - 4P-4P-2.0-200mm	1	

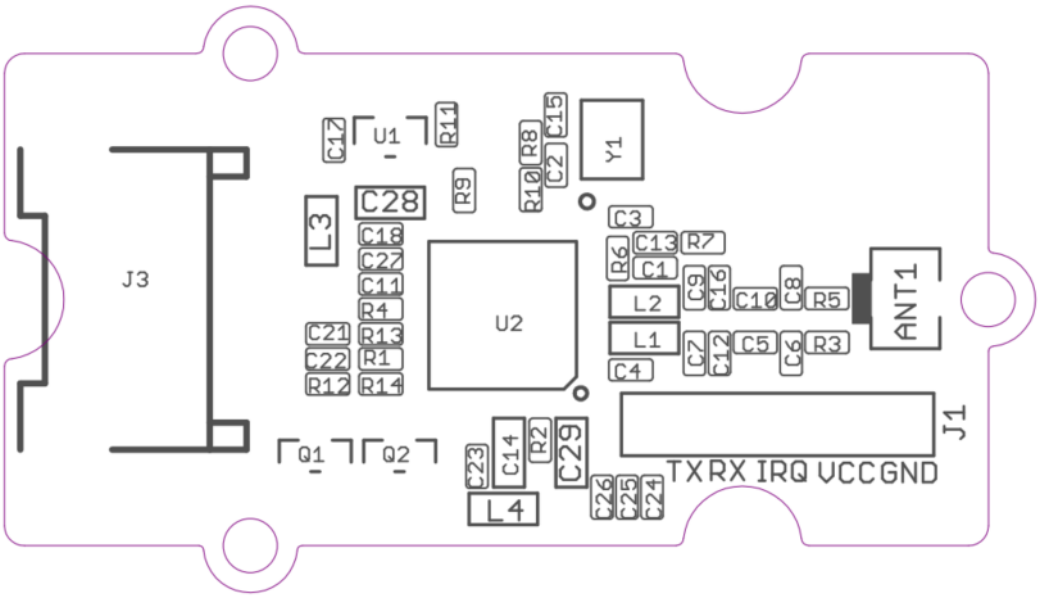
Technical Details

- Working Voltage: 3.3V
- Working Current:
  - Static Mode: 73mA
  - Write/Read Mode: 83mA
- Support host interface: I2C, UART(default).
- Serve for contactless communication at 13.56MHz.
- Support ISO14443 Type A and Type B protocols.
- Max operating distance for detecting NFC tags is 28mm depending on current antenna size.
- Support P2P communication.
- Dimensions: 25.43mm x 20.35mm

Schematic Diagram



Component Location



Interface

- Gorve Connector
    - **pin 1** - Yellow (TX on I2C Grove Connectors)
    - **pin 2** - White (RX on I2C Grove Connectors)
    - **pin 3** - Red - VCC on Grove Connectors
    - **pin 4** - Black - GND on Grove Connectors
- RF Connector
    - **pin 1** - NFC Antenna Connector
- J1 Connector
    - **pin 1** - GND
    - **pin 2** - VCC
    - **pin 3** - IRQ
    - **pin 4** - RX
    - **pin 5** - TX

Programing Instruction

Before start

The default setting is UART, if you need to change it into I2C, then you should do some soldering at first.

Cut following connections:

- TP1 to UART
- TP2 to RX

- TP3 to TX

Solder following connections:

- TP1 to I2C
- TP2 to SCL
- TP3 to SDA

Getting Started

Note

If this is the first time you work with Arduino, we strongly recommend you to see Getting Started with Arduino before the start.

The Grove - NFC supports I2C and UART, if you use Seeeduino V4.2 or(Arduino UNO), we suggest you to use I2C. If you use Seeeduino Lite(Arduino Leonardo) or Seeeduino Mega(Arduino Mega) we suggest you to use UART.

Play with Seeedunio V4.2

Hardware

Materials required

Seeeduino V4.2	Base Shield	Grove - NFC	NFC Tags
			
Get One Now	Get One Now	Get One Now	Please Prepare yourself

Note

1 Please choose 13.5MHZ, ISO14443 NFC Tags, or the Grove - NFC module may can not read the tag.

2 Please plug the USB cable gently, otherwise you may damage the port. Please use the USB cable with 4 wires inside, the 2 wires cable can't transfer data. If you are not sure about the wire you have, you can click here to buy

3 Each Grove module comes with a Grove cable when you buy. In case you lose the Grove cable, you can click here to buy.

4 For this demo, you can work without the baseshild, for the Seeeduino V4.2 has a on-board Grove I2C connector.

- **Step 1.** Connect Grove - NFC to port **I2C** of Grove-Base Shield.
- **Step 2.** Plug Grove - Base Shield into Seeeduino V4.2.
- **Step 3.** Connect Seeeduino V4.2 to PC via a USB cable

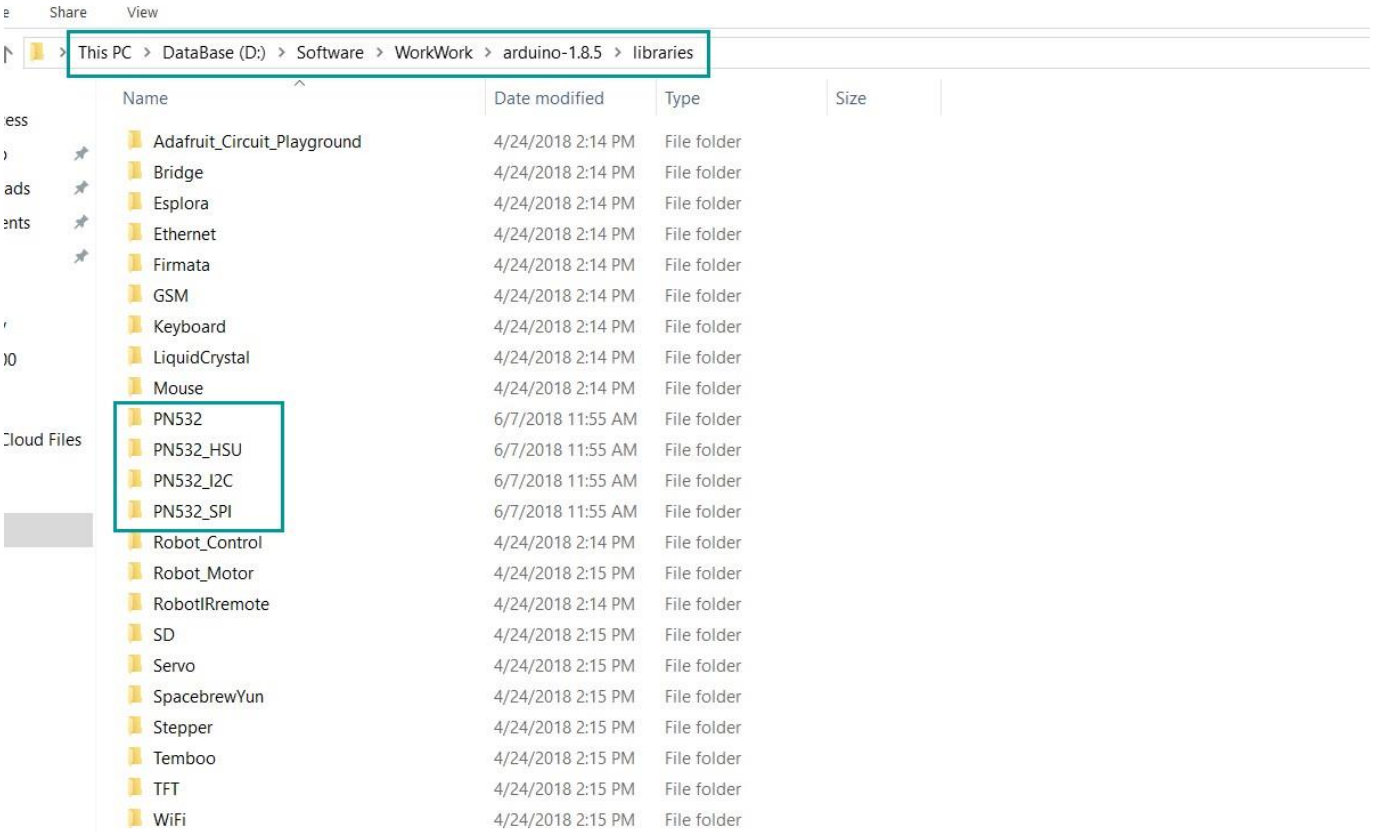
If you are using Arduino UNO you can connect the signal as below.

Arduino/Arduino Mega	Grove - NFC
SCL	RX
SDA	TX
GND	GND
5V	VCC

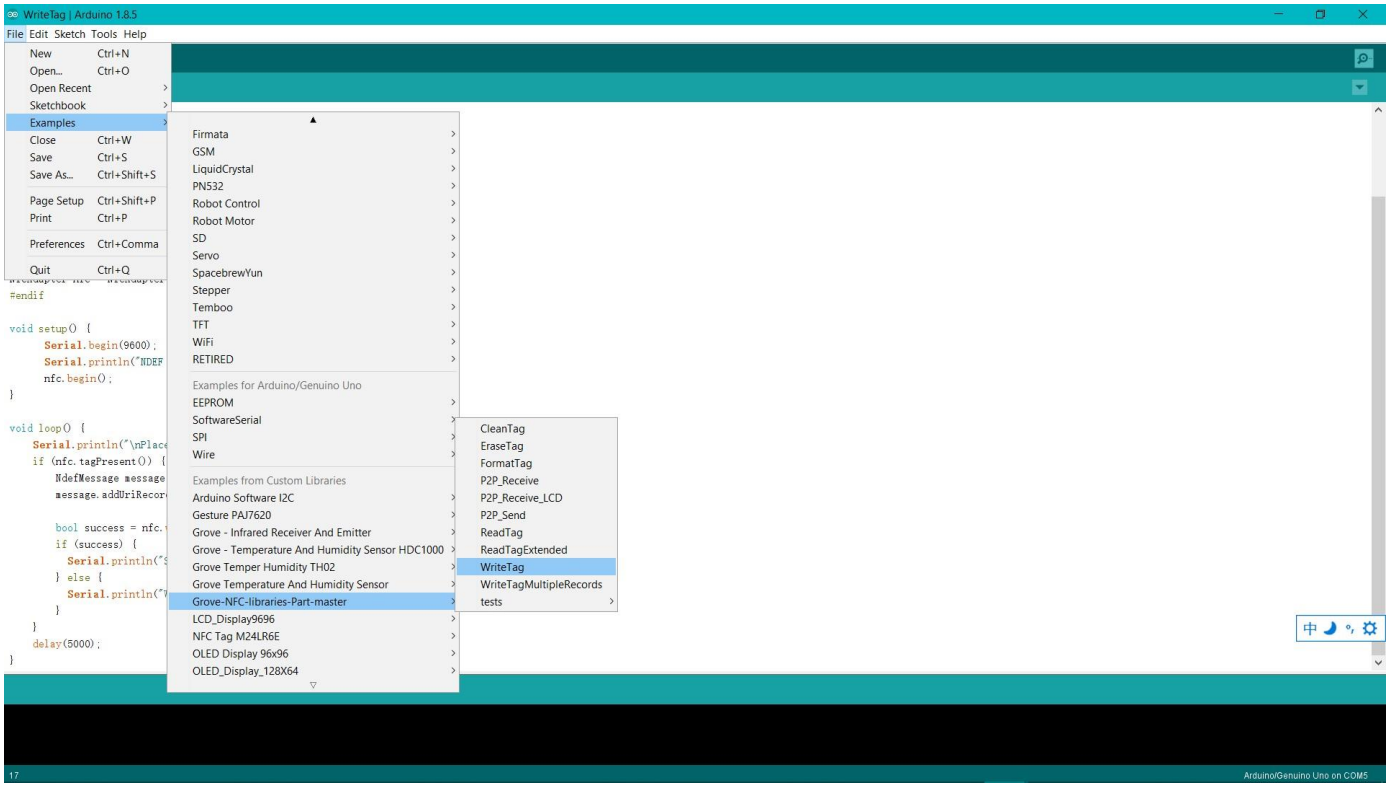
Software

Write the Tag

- **Step 1.** Download PN532 library. Extract the PN532.ZIP file and copy the 4 folders(PN532, PN532_SPI, PN532_I2C and PN532_HSU) into Arduino's libraries folder.(For example in my computer the library is located in *D:\Software\WorkWork\arduino-1.8.5\libraries*)



- **Step 2.** Download Grove-NFC-libraries-Part.
- **Step 3.** Refer to How to install library to install **Grove-NFC-libraries-Part** library for Arduino.
- **Step 4.** Open “WriteTag” code via the path: **File → Examples → Grove-NFC-libraries-Part-master → WriteTag**.



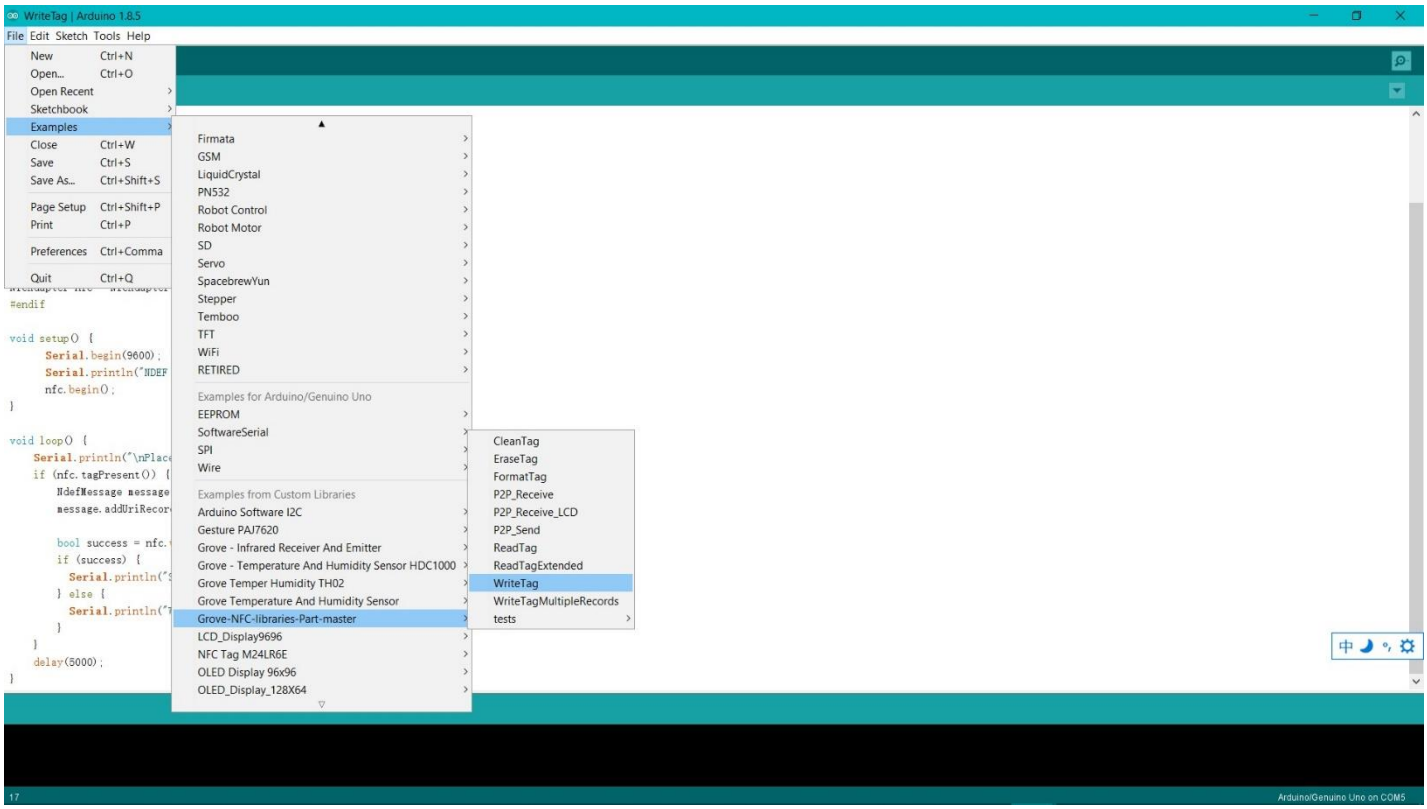
- **Step 5.** Upload the code. If you do not know how to upload the code, please check How to upload code.
- **Step 6.** Open the **Serial Monitor** of Arduino IDE by click **Tool-> Serial Monitor**. Or tap the `Ctrl`+`Shift`+`M` key at the same time. Set the baud Rate **9600**
- **Step 7.** Use the Grove - NFC to get close to an NFC Tag. If everything goes well, you will get the following information.

```
NDENDEF Writer
Scan NFC tag

Write successfully
```

Read the Tag

- **Step 1.** Open “ReadTag” code via the path: **File → Examples → Grove-NFC-libraries Part master → ReadTag**



- **Step 2.** Upload the code. If you do not know how to upload the code, please check How to upload code.
- **Step 3.** Open the **Serial Monitor** of Arduino IDE by click **Tool-> Serial Monitor**. Or tap the `Ctrl`+`Shift`+`M` key at the same time. Set the baud Rate **9600**
- **Step 4.** Use the Grove - NFC to get close to an NFC Tag. If everything goes well, you will get the NFC Tag information in the Serial Monitor.

Play with Seeeduino Lite

Hardware

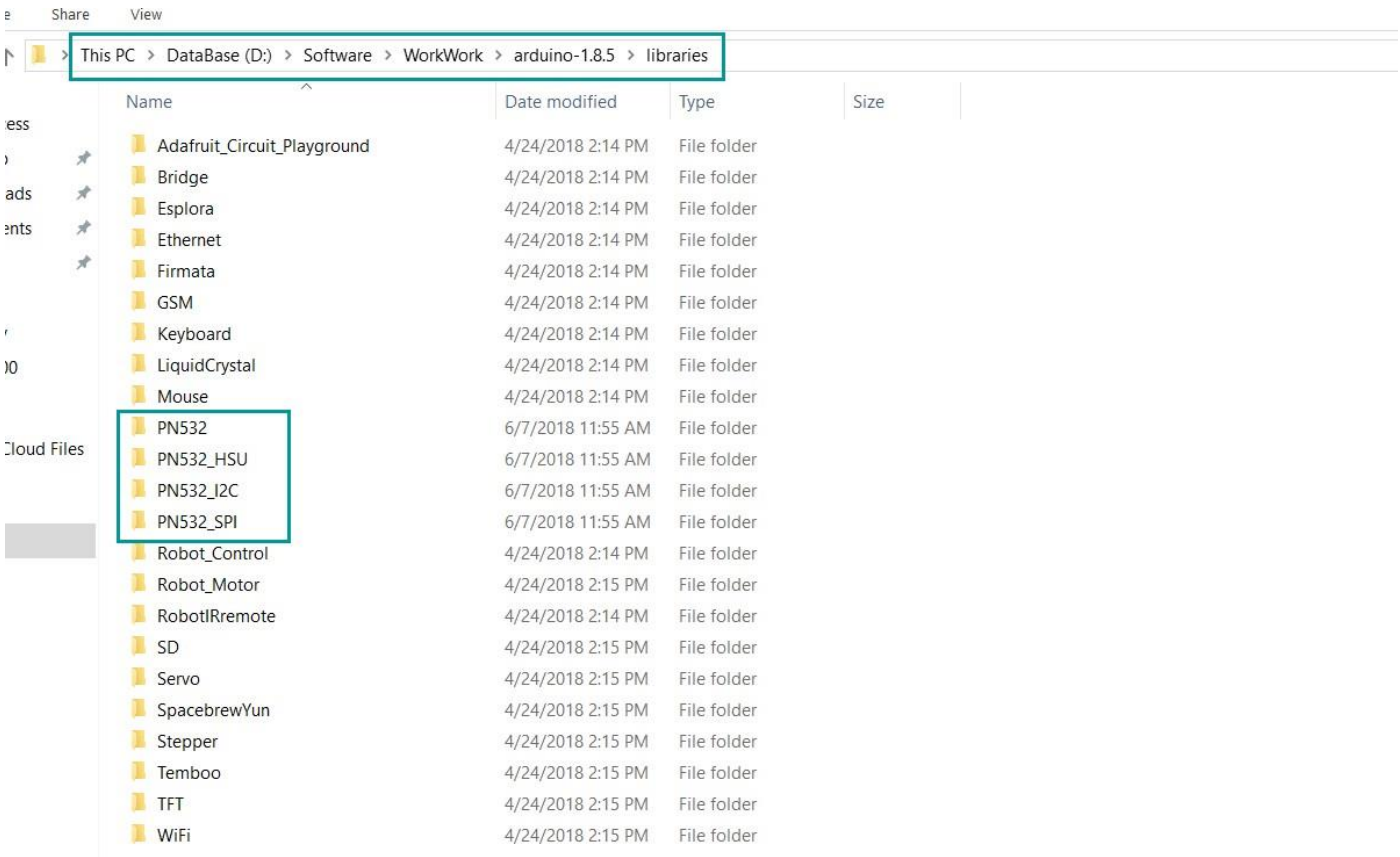
Materials required

Seeeduino Lite	Base Shield	Grove - NFC	NFC Tags
			
Get One Now	Get One Now	Get One Now	Prepare yourself

- **Step 1.** Connect Grove - NFC to port **UART** of Grove-Base Shield.
- **Step 2.** Plug Grove - Base Shield into Seeeduino Lite.
- **Step 3.** Connect Seeeduino Lite to PC via a USB cable

Software

- **Step 1.** Download PN532 library. Extract the PN532.ZIP file and copy the 4 folders(PN532, PN532_SPI, PN532_I2C and PN532_HSU) into Arduino's libraries folder.(For example in my computer the library located in *D:\Software\WorkWork\arduino-1.8.5\libraries*)



- **Step 2.** Download Grove-NFC-libraries-Part.
- **Step 3.** Refer to How to install library to install **Grove-NFC-libraries-Part** library for Arduino.

- **Step 4.** Restart Arduino IDE , Copy the following code into your Arduino IDE

```
#include "PN532_HSU.h"
#include "PN532 h"
#include "NfcAdapter.h"

PN532_HSU interface(Serial1);
NfcAdapter nfc =  NfcAdapter(interface);

void setup(void)
    { Serial.begin(115200);
    Serial.println("NDEF Reader");
    nfc.begin();
}

void loop(void) {
    Serial.println("\nScan a NFC tag\n");
    if (nfc.tagPresent())
    {
        NfcTag tag = nfc.read();
        tag.print();
    }
```

- **Step 5.** Upload the demo. If you do not know how to upload the code, please check How to upload code.
- **Step 6.** Open the **Serial Monitor** of Arduino IDE by click **Tool-> Serial Monitor**. Or tap the `Ctrl`+`Shift`+`M` key at the same time. Set the baud Rate **9600**
- **Step 7.** Use the Grove - NFC to get close to an NFC Tag. If everything goes well, you will get the NFC Tag information in the Serial Monitor.

Resources

- **[Zip]** Grove - NFC v1.0 EAGLE (schematic and board) files
- **[Zip]** Grove - NFC v1.1 EAGLE (schematic and board) files
- **[PDF]** PN532 Datasheet PDF

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.
Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Labeling Instruction for End User Device Integrator

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: Z4T-GROVENFCV2" any similar wording that expresses the same meaning may be used.

§ 15.19 Labelling requirements shall be complied on end user device.
Labelling rules for special device, please refer to §2.925, § 15.19 (a)(5) and relevant KDB publications. For E-label, please refer to §2.935.

Installation Notice

The module is limited to OEM installation ONLY.
The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.
The module is limited to installation in mobile application, a separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

FCC Part 15B Compliance Requirements for End User Device

The OEM integrator is responsible for ensuring that the host product which is installed and operating with the module is in compliant with Part 15B requirements.
Please note that For a Class B digital device or peripheral, the instructions furnished the user manual of the end-user product shall include statement set out in *§15.105 Information to the user* or such similar statement and place it in a prominent location in the text of the manual.

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information
Unique Identifier: NFC module, Grove – NFC v2.0
Responsible Party – U.S. Contact Information
Company Name: Seeed Inc
Company Address: The Gate, Suite 266, 1933 Davis Street, San Leandro, California，USA
Contact Person: Erin Linke Telephone number: 1.408.887.0729