RFID READER/WRITER and nReader tool Instructions

These brief instructions explain how the wireless RFID reader/writer and the nReader tool are used to read and write an NFC compliant RFID tag content.

RFID reader/writer features

- Supports reading and writing NFC compliant Mifare ISO14443A Classic (1K byte) and UltraLight (512 bits) tags
- Fast reader-tag communication speed (106 Kbit/s)
- Operating distance to a tag circa 4 cm
- 802.15.4 radio communication distance to Micro module up to 8-10 meters
- 6LoWPAN protocol for short range, power efficient wireless transmission

Initial preparations

1. First, make sure that the Sensinode's Micro.2420 U100 module is connected to the PC's USB port with the Micro.USB U600 adapter.
2. Place the nReader directory under `/Tools` directory and compile the nRoute software with `make` command (in `/Tools/nRoute` directory).
3. Start the nRoute daemon with `./nRouted -m` command (in `/Tools/nRoute` directory).
4. When the nRoute is properly running, start the nReader application with `./nReader` command (in `/Tools/nReader` directory).

To read or write an RFID tag

1. Press the power button (on the right side) once to turn the power on. The led lights up for a second and then turns off. The RFID reader is now successfully initialized.

2. By using the nReader tool, set the RFID reader to either reader or writer mode. To read: press R key and <Enter>. To write: press W key and <Enter>. The command is now sent to the RFID reader. The RFID reader's led flashes once as an indicator that the command has been successfully received.

3. If the RFID reader was set to reader mode, skip this point. If the RFID reader was set to writer mode, user is now asked to enter data that has a maximum length of 37 characters. After this is done, the data is sent to the RFID reader.

4. Press the action button (on the left side) once to start the reading/writing procedure. The led lights up and stays on. The reader is now ready to operate an RFID tag.

5. Touch a tag with the RFID reader, or place it near to the tag (< 4 cm). The tag is now being operated. This takes usually 1-2 seconds, but can sometimes take a little longer. The led flickers while the tag is being operated and finally goes off when the tag is successfully read/written.

6. If the tag was read, the contents of the tag were sent to Micro module and are displayed on the screen of nReader application.

7. To read/write a tag again, proceed from step 2. There's no need to turn power on/off between multiple operations.

8. When the reader is not used, turn off the power to save battery's operating time. To exit nReader application, press Q key and <Enter>. Also pressing Ctrl + C exits the application at any time.

In case of an error situation, the cause may be one of the following:

- There is another tag too close to the tag you're trying to operate. The reader senses multiple tags and refuses to operate a tag until only one tag is inside the operating distance.

- Battery is running on low power (led starts to dim). This can prevent the data to be sent to Micro module, since the radio communication requires a lot of power.

- The RFID tag has corrupted data content and can't be operated.