

SNT

User Guide

Revision history:

Rev.	Date	Author	Change description
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I. Introduction

SNT, for Sigfox Network Tester, is an SIGFOX demonstration transceivers provided exclusively for technology evaluation and network coverage reference measurements. Their primary functionality consists in periodic emission of SIGFOX radio messages meant for reception at any SIGFOX Access Points. Each SNT bears a unique network identity, printed on a package sticker and stored into its memory. With this ID, full retrieval of the device activity is possible through the Backend interface.

II. Requirements

1. Radio considerations

SNT serve as reference device. It is equipped with a $\frac{1}{2}$ wave antenna. For reference performance level, classical radio precautions are to be observed during operation: antenna vicinity ($3\lambda=1\text{m}$ @ 1GHz) has to be clear of any metallic object, and antenna shall be kept in vertical position. Note that SIGFOX Network optimal performance is obtained in stationary operation.

2. Hardware requirements

SNT can also be used controlled by computer. In this case, you need :

- ⑩ Micro USB cable
- ⑩ Software requirements (bellow)

3. Software requirements

SNT is controlled by AT commands (describe bellow) and works with Windows, Linux and Mac. Just assure you to have :

- ⑩ FTDI drivers installed on your computer
- ⑩ Any soft to open serial port like Putty for windows, Screen or Cútecom on Linux

III. SNT manual operation

SNT have two operation mode : standalone mode and serial communication.

1. Standalone mode

Pressing the button for a few seconds will activate the device. Then the device will execute the sequence described below. SNT have two mains option : uplink only and bidirectional sequences. These mode can be set by AT commands (see after)
By default, this sequence is looped 10 times, and device shuts down automatically.

Uplink sequence

Just after power up, SNT send a SIGFOX frame every 10 minutes by default. This option can be set by AT commands. This frame contains GPS informations if available.
When SNT is sending, green led blinding.

Between two sent, SNT led can be of one of these two colours :

- ⑩ Green if internal GPS is fixed
- ⑩ Orange in other case

Bidirectional sequence

This sequence is :

1. **TX** : device sending an uplink message.
2. **IDLE** : device in waitstate (20 seconds)
3. **RX** : device in receive mode (timeout after 25 seconds)

Depending on the reception result, there are two possible branches :

> branch 1: sequence completion by **successful** downlink frame reception

4. Led blinding in green ,indicating successful message reception and send an OOB message
5. **Link quality indication** is displayed for 10sec (details below)

or

> branch 2: sequence completion by 25 sec timeout (NO frame received)

4. LED blinking in red at the same time 3 times (~6seconds)

Link quality indication :

Provided the Backend direct callback is used and includes uplink RSSI (*), the link quality is flashed using a LED code (sequence step 4)

- ⑩ LINK QUALITY = VERY GOOD → Blinks 3 times (WHITE)
- ⑩ LINK QUALITY = GOOD → Blinks 2 times (WHITE)
- ⑩ LINK QUALITY = AVERAGE → Blinks 1 times (WHITE)
- ⑩ LINK QUALITY = LIMIT → Blinks 3 times (RED)

2. Serial AT commands operation

AT commands can be sent to the modem by connecting the USB cable to a computer and opening a serial interface.

All commands available are listed here:

Command	Response	Description and comments
AT	OK	Attention command
AT?	<cmdlist> OK	Requests summary of available AT commands
AT&V	<device info>	Display device version information
AT\$SF=<value>,<ack>	OK	Send a SIGFOX Frame
AT\$NC=<value>	OK	Change number cycle before shutdown. Value > 0. Or 0 for infinite
AT\$NC?		Current value
AT\$BI=<value>	OK	Enable (1) or disable (0) acknowledge
AT\$BI?		Current value
AT\$ID=<value>	OK	Change interframe delay in seconds. 0 < Value < 65536
AT\$ID?		Current value
AT\$GPS=<value>	OK	Enable (1) or disable (0) GPS
AT\$GPS ?		Current value
AT\$FSD=<value>	OK	Set Delay before first frame 0 < Value < 65536
AT\$FSD ?		Current value

IV. WARNING STATEMENTS

1. FCC:

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.

- This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 15mm between the radiator and your body.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

2. IC

English

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s).

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.

French

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 15mm de distance entre la source de rayonnement et votre corps.

Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.