

## **SGW2828-EVK Evaluation Kit**

### **PC Software User Manual**

*October 2020 V1.0*

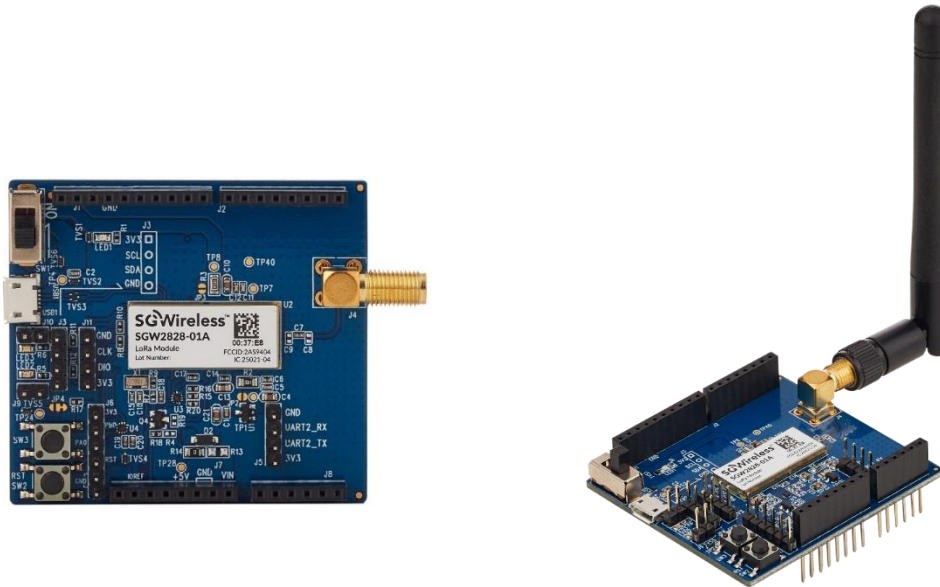
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# 1. Introduction

The SGW2828-EVK is a evaluation kit designed for the development and PoC testing of applications based on the SGW2828-01A LoRa Module. With the associated PC software, testing is easily enabled when two or more users are connected and using the same frequency channel. The PC software is supposed by Windows operating systems (Windows 10).



*Figure 1: SGW2828-EVK LoRa Evaluation Kit*

## 2. Required Tools

The SGW2828 Module's long-range and wall-penetrating capabilities are best demonstrated when testing is conducted with at least two individual users.

Each user should be equipped with the following:

- SGW2828-EVK LoRa Evaluation Kit
- +2dBm SMA antenna
- Micro-USB cable
- PC with Windows 10 or above
- SGW2828-EVK PC Tool program

## 3. Operation Guide

### a. Preparation

1. Download the SGW2828-EVK PC software file at <https://sgwireless.com/static/tools/SGW2828-PC-Tool.7z>. Extract the file for the SGW2828-PC-Tool program (SGW2828-PC-Tool.exe).
2. Prepare the SGW2828-EVK by screwing on the antenna, then connect the SGW2828-EVK to the PC with the micro USB cable (Figure 2). Toggle the power switch to ON.
3. Run the SGW2828-PC-Tool program.



Figure 2: SGW2828-EVK to PC Connection

### b. Configuration of PC Software

1. Select the COM port number assigned for the connected SGW2828-EVK, then click 'Connect'. The COM port number may be different for each user, and can be found through Device Manager > Ports (COM & LPT) (Figure 3).

Remarks: If the desired COM port number is not showing in the drop-down menu, click 'Refresh'.

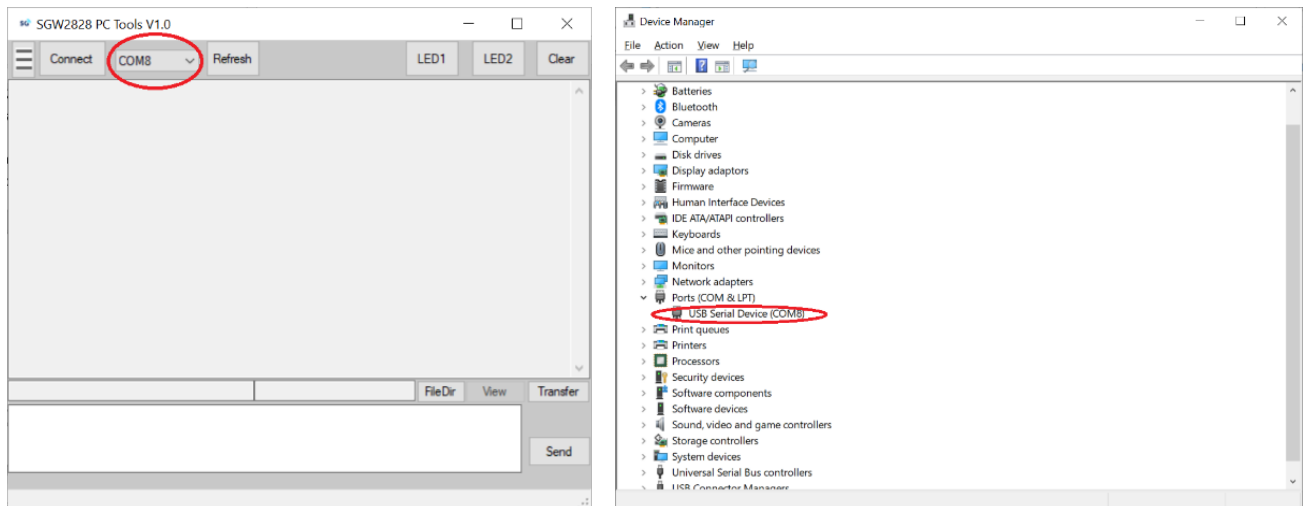
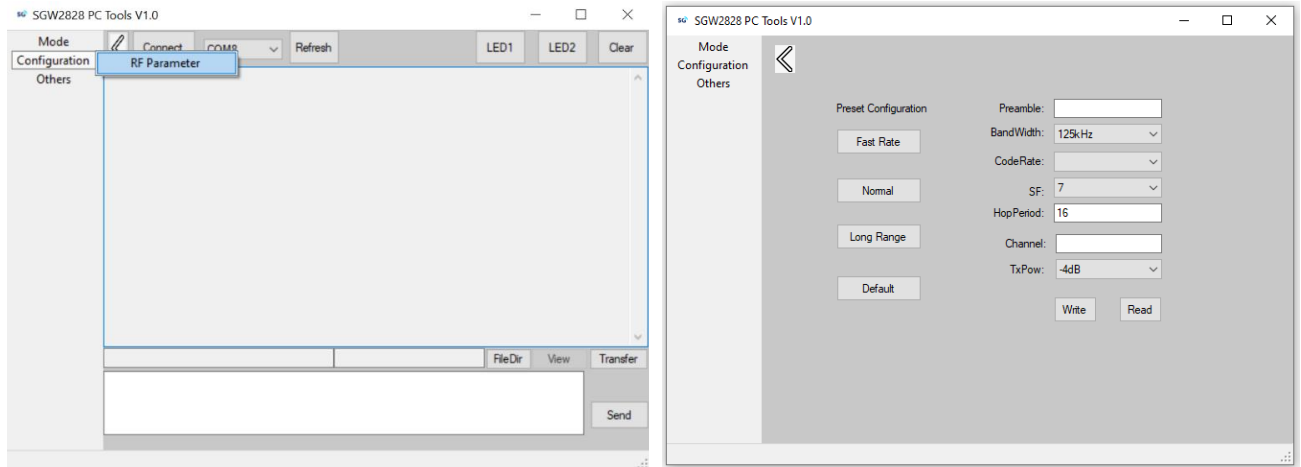


Figure 3: SGW2828-EVK PC Tool COM Port Selection

2. Configure the RF Parameter, if needed. Users can use the default parameter settings or configure their own at Menu > Configuration > RF Parameter (Figure 4). Data transmission is enabled when **users use the same parameter settings**.

- 'Read': Read current parameter settings of connected SGW2828-EVK
- 'Write': Save customized settings
- 'Fast Rate'/'Normal'/'Long Range': Use pre-configured settings
- 'Default': Reset to default settings



**Figure 4:** RF Parameter Configuration

**Table 1:** Preset Parameters

Pre-configured Parameters	Fast Rate	Normal	Long Range	Default
Preamble	16	16	16	16
Bandwidth	500kHz	250kHz	125kHz	250kHz
Code Rate	1	1	4	1
SF	7	9	12	7
Hop Period	0	0	0	0
Channel	0	0	0	0
TxPow	-4dB	4dB	4dB	4dB

c. User Application Mode

User Application mode enables several tests for the SGW2828-EVK capabilities and PoC development:

- i. LED
- ii. Text
- iii. File transfer

The PC Tool is set to User Application mode by default, and can be accessed in Engineering mode by Menu > Mode > Application Mode (Figure 5).

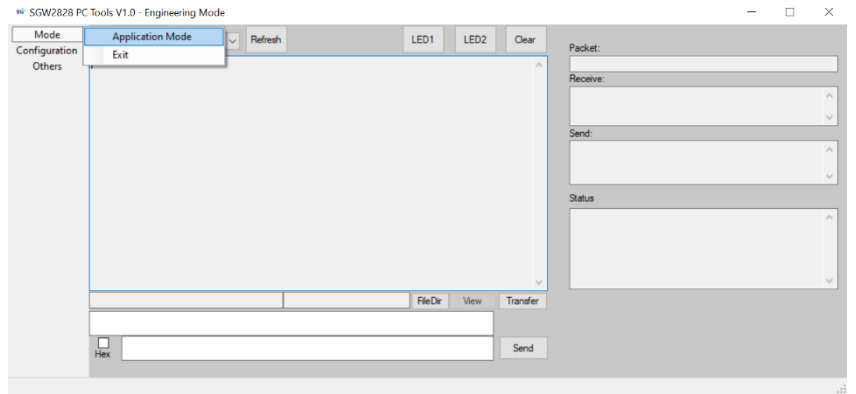


Figure 5: Toggle to Application Mode

i. LED (Figure 6)

Click 'LED1' and 'LED2' to toggle the LEDs on or off on remote users' SGW2828-EVK. Messages will show up in the message boxes of both local and remote users' PC Tool.

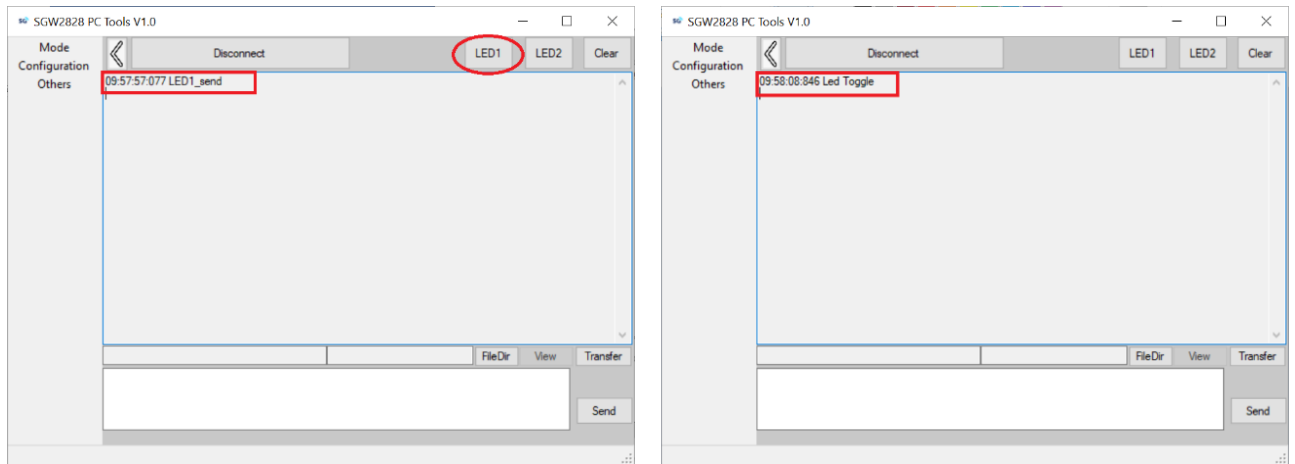


Figure 6: LED Testing on Local (left) and Remote (right) PC Tool

ii. Text (Figure 7)

Input messages in the message box and click 'Send'. Messages will show up in the message boxes of both local and remote users' PC Tool.

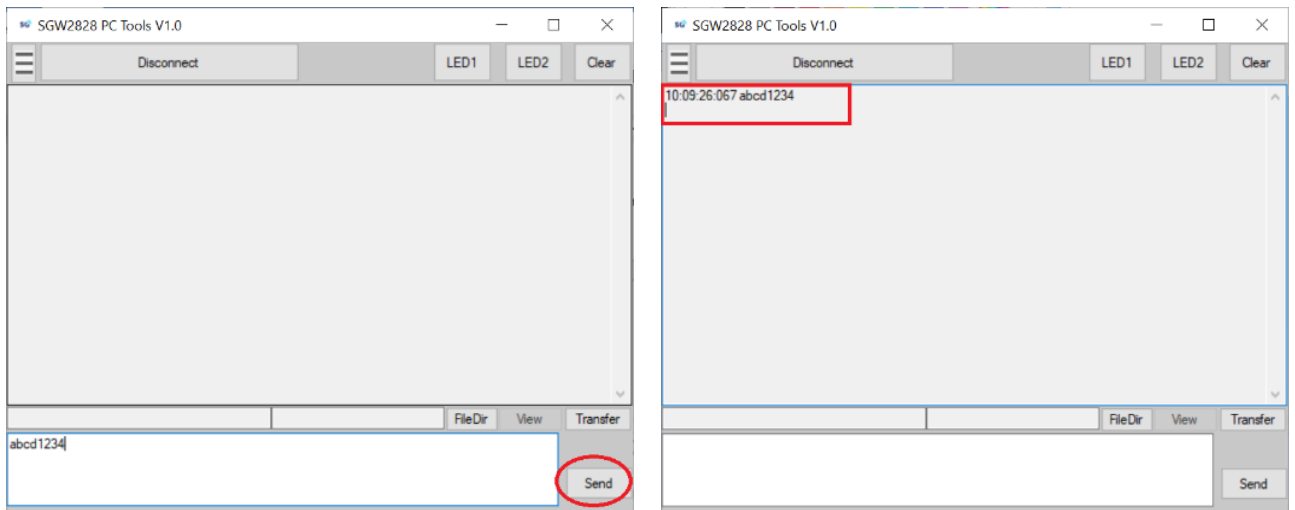


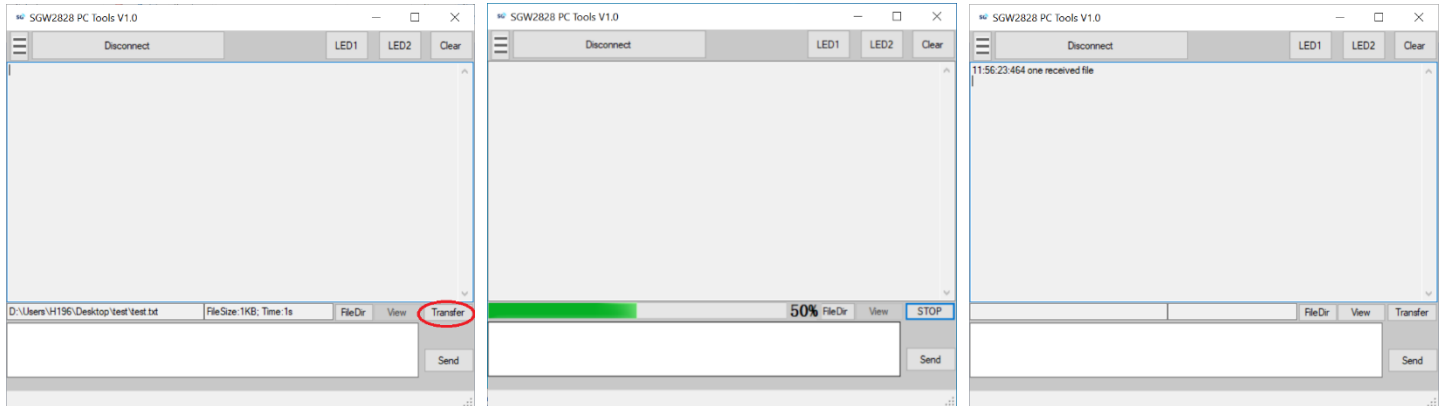
Figure 7: Text Testing on Local (left) and Remote (right) PC Tool

iii. *File Transfer (Figure 8)*

Click 'FileDir' and select your desired file. The file size and estimated transfer time based on the selected RF parameter settings will be shown. Click 'Transfer' to send the file to remote users' PC Tool.

Once successfully transferred, remote users can click 'View' to view the transferred file.

*Remarks: File types .jpg, .png, .bmp, .txt, .pdf and .bin are all supported, and it is recommended to keep the file size under 64KB. Pre-configured 'Fast Rate' and 'Normal' settings generally produce a faster transfer time.*



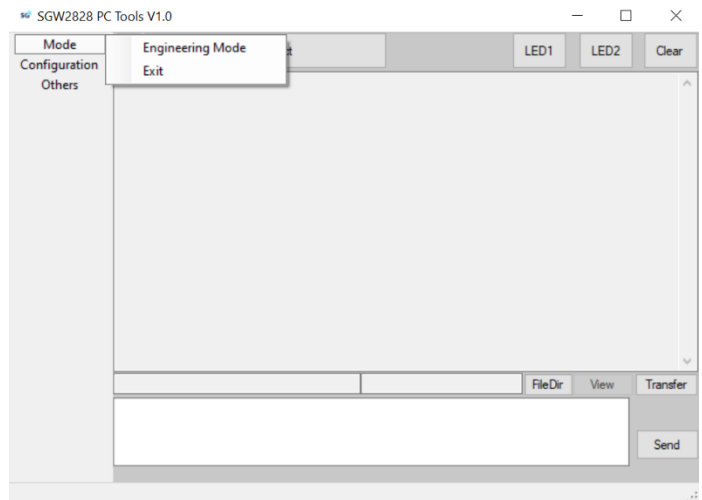
**Figure 8:** File Transfer Testing from Local PC Tool (left two) to Remote PC Tool (right)

d. Engineering Mode

Engineering mode is designed for AT command testing:

- i. Get firmware version
- ii. Send text thru AT command

The PC Tool is set to User Application mode by default, and Engineering mode can be accessed by Menu > Mode > Engineering Mode (Figure 9).



**Figure 9** Toggle to Engineering Mode

i. *Get Firmware Version (Figure 10)*

Type command **AT+VERSION=?** In the command input box and click 'Send'. The firmware name and version number will be shown in message box.

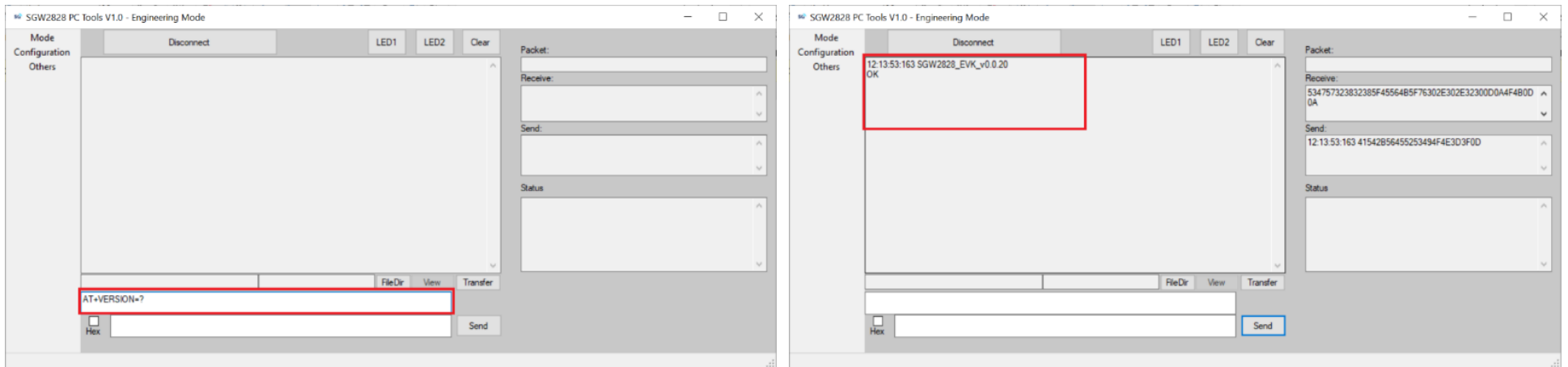


Figure 10: AT Command for Firmware Version

ii. *Send Text Thru AT Command*

Type **AT+RF\_SEND=1,0,4** in command input box for 1 send time, 0 sec interval and 4 send bytes. Type text (e.g. abcd) in the message input box and click 'Send' (Figure 11). Tick the Hex box if the message is in Hex format data.

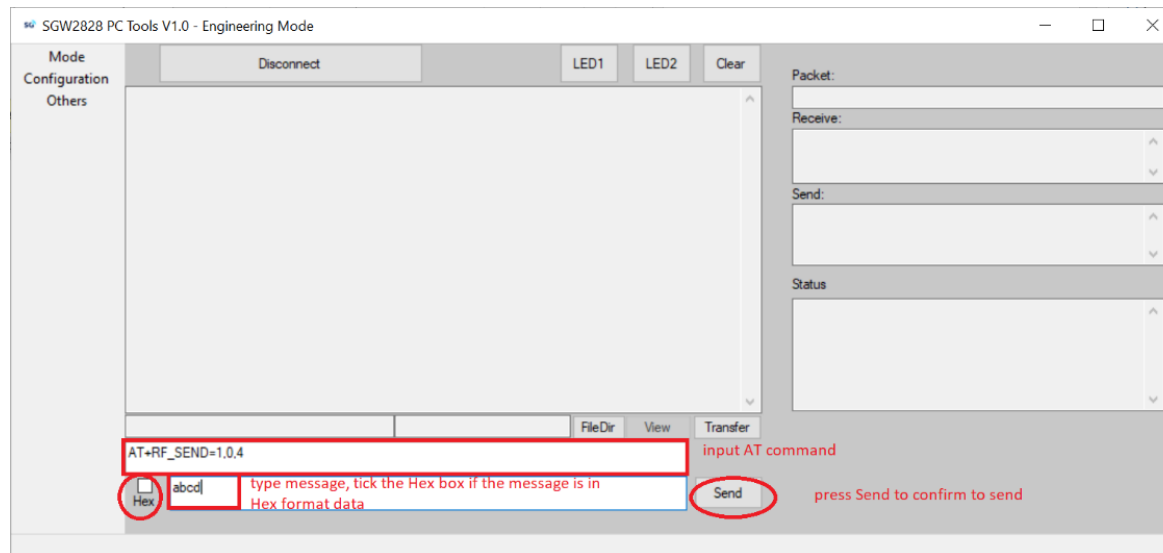


Figure 11: AT+RF\_SEND Command



On the local PC Tool, the sent message will be shown in Hex format in the message box on the left, while details of data received and sent will be shown in the message box to the right (Figure 12).

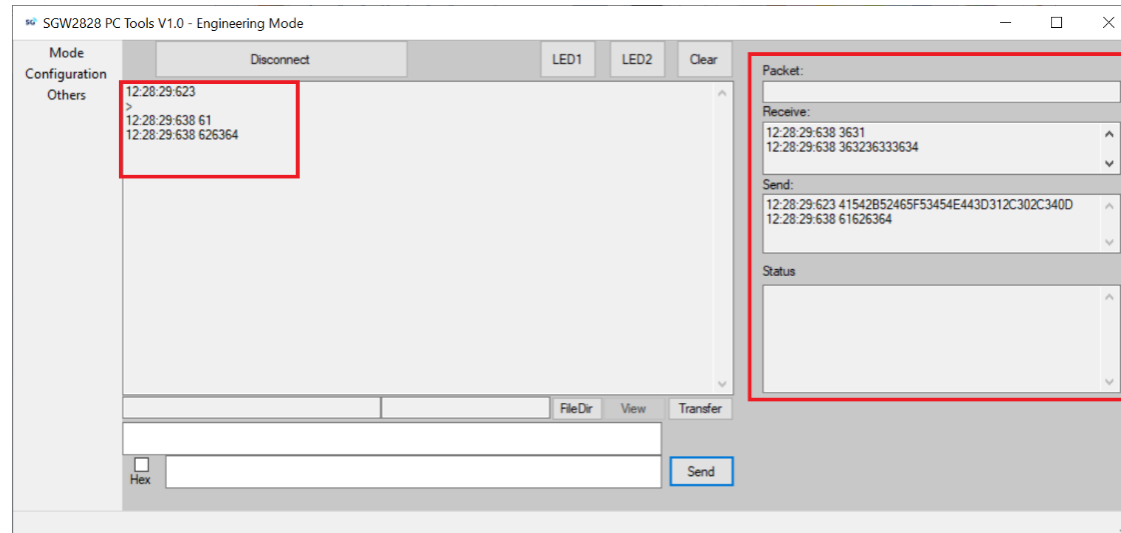


Figure 12 AT+RF\_SEND Command Sent Message on Local PC Tool

On the remote PC Tool, the received message will be shown in the message box to the left, with details in the message box to the right (Figure 13). Non-printable characters will only be shown in the message box to the right.

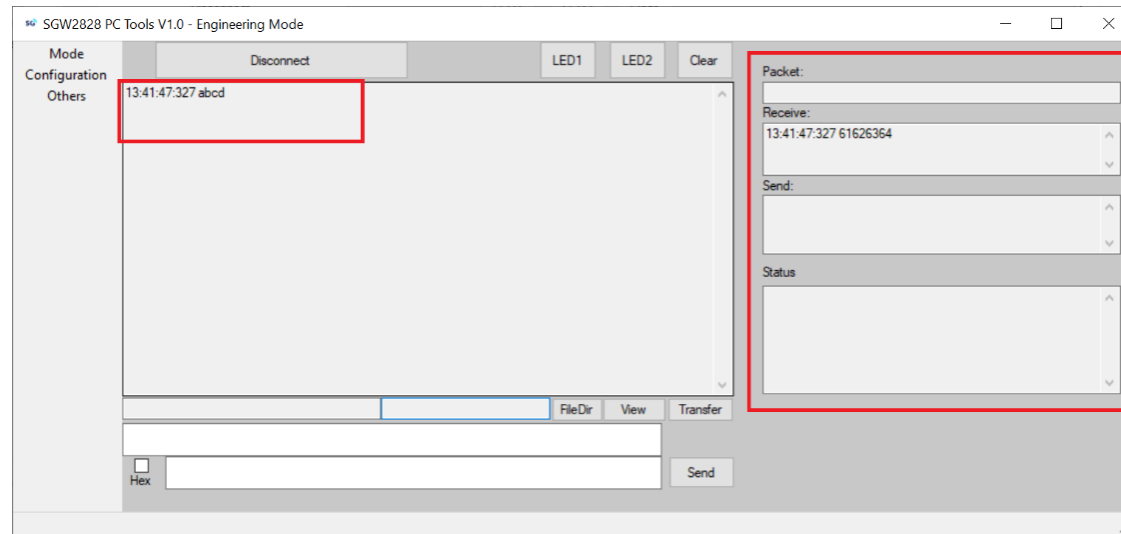
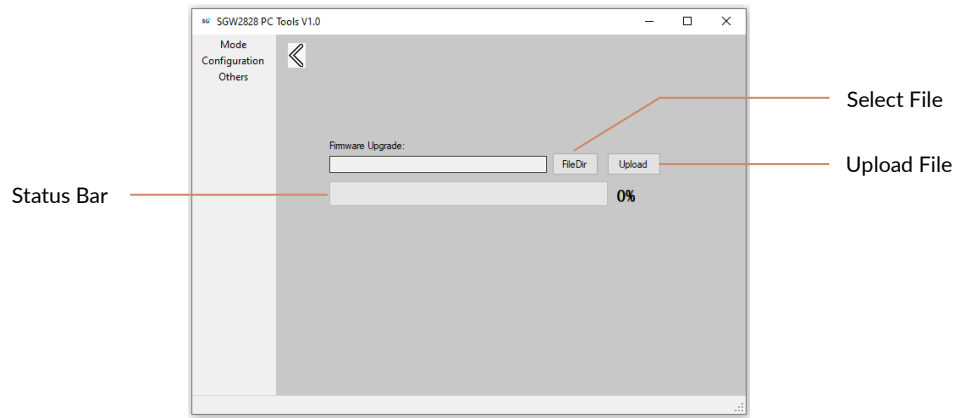


Figure 13: AT+RF\_SEND Command Sent Message on Remote PC Tool

### e. Firmware Update

When available, firmware updates can be made at Menu > Others > Firmware Upgrade. Click 'FileDir' to select the firmware file, then click 'Upload' to start the upgrade (Figure 14). A progress bar will appear – please stay on the page until the upgrade procedure is complete.



*Figure 14: Firmware Upgrade*

## 4. Related Documents and Useful Links

1. PC Software Download: <https://sgwireless.com/static/tools/SGW2828-PC-Tool.7z>.
2. SG Wireless SGW2828-01A LoRa Module: <https://sgwireless.com/product/SGW2828>.
3. SG Wireless SGW2828 LoRa Module AT Command User Manual: <https://sgwireless.com/uploads/ueditor/upload/file/20201013/USGA5.03-V1.0%20SGW2828%20LoRa%20Module%20AT%20Command%20User%20Manual.pdf>.
4. Semtech SX1276 Documentation: <https://www.semtech.com/products/wireless-rf/lora-transceivers/sx1276>.
5. Segger J-Link Download: <https://www.segger.com/downloads/jlink/>.

**Revision History**

Revised	Version	Description
13-Oct-2020	1.0	Initial document release

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