TinyRFSG

User Manual and Programming Guide

TerryAndJin (Tianjin) Technology Co., Ltd

V2.1

TerryAndJin (Tianjin) Technology Co., Ltd

2026-07-09

Notes:

This product does not contain a lithium battery inside, so it can be used in all transportation environments.

Each product has a unique product serial number. Due to the imitation of this product by a small number of unscrupulous merchants, these merchants exaggerate their reputation while not optimizing the radio frequency performance at all. Therefore, our company will not maintenance and training services for products that are not from our company.

When using the host computer, it will automatically identify whether it is a genuine product from our company. Please obtain the official host computer program from our official website, Google Drive, or Baidu Cloud Disk.

Legal content:

TinyRFSG is our registered trademark. Without written permission, others are not allowed to use the name TinyRFSG for signal generator products.

Version information:

Version Information	Author	Update content	Update Date
V1.0	Terry Kong	Initial version	2025-05-08
V1.1	Terry Kong	Updated the VISA command content	2025-05-12
V1.2	Terry Kong	The VISA command content has been updated	2025-05-19
V1.3	Terry Kong	Updated product parameter specifications	2025-05-26
V1.4	Terry Kong	Updated product dimensions	2025-06-06
V1.5	Wang	The usage method of the host computer has been updated	2025-06-10
V1.6	Terry Kong	The usage method of the host computer has been updated	2025-07-23
V1.7	Terry Kong	Add control signal source and operation method for mobile terminal	2025-11-11
V1.8	Terry Kong	Updated RF amplitude performance parameters for the new version of Plus	2025-11-21

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V1.9	Terry Kong	The updated device manager displays after device connection	2025-12-25
V2.0	Terry Kong	The updated scipi command for pulse setting	2026-04-16
V2.1	Terry Kong	Add graphic and textual explanations for TinyRFSG Pro	2026-07-09

Manual publisher:
TerryAndJin (Tianjin) Technology Co., Ltd,
Business address: 6-2-1108, Tianjin Science and Technology Plaza, West Side of Keyan East Road, Nankai District, Tianjin (Tiankai Park)
Phone number: +86-13920616671
Email: 14025259@qq.com

Company homepage: https://www.tinyrfequip.com/
The company's main business is:
We provide customized, miniature, and efficient RF and microwave test equipment, RF modules, as well as firmware and software for testing. These RF products are primarily designed to meet the basic testing needs of factories, research institutions, radio enthusiasts, and students. Our company adheres to the principle of free and open cooperation, aiming for mutual benefit, learning, and progress. We hope to engage in more professional and efficient communication with our customers, addressing practical issues in the RF field. We strive to achieve the greatest economic input-output ratio for our customers.
For online training consultation, please contact Taobao or email directly for more information.

The main hardware products are:

TinySA, TinySA Ultra, LiteVNA, LibreVNA2025, NanoVNA-F V2, NanoVNA-F V3, RF DetectorV2, Near Field RF Probe, TinyRFSG, TinyTracker directional antenna

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The main software products are:

Customized development of TinySA and Ultra host computer apps. Customized development of TinyRFSG host computer apps.

Video teaching:

Chinese video: You can search for the TinyRFEquip account on Bilibili, also known as Bilibili website, to find videos introducing the main functions of TinyRFSG, TinySA Ultra, and other TinyRFEquip instruments.

For example:

TinySA Ultra frequency characteristic verification measurement for wireless microphones bilibilihttps://www.bilibili.com/video/BV1yt421u7Y2/?vd_source=8d60a323bdde2d574cb0a85c07cb3212

English video: You can search for TinyRFEquip on YouTube, or directly visit: https://www.youtube.com/@TinyRFEquip-Terry

Chinese manual:

There are relevant apps and the Chinese user manual I wrote in Baidu Net Disk, which can help you achieve the maximum performance of the machine Link:

https://pan.baidu.com/s/1tPY1LlOzZ3m6y7eBUuKlbQ?pwd=478q?Extraction code: 478q

English manual:

Google Drive contains relevant apps and the Chinese user manual I wrote, which can help you achieve the maximum performance of your machine Link:

https://drive.google.com/open?id=10qXdJuuauvQ2YOl4B5PY-jpgxzzTbRUY&usp=drive_fs

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1.Introduction

TinyRFSG is a tiny radio frequency signal generator.

Basic characteristics of TinyRFSG:

- A signal generator with one output port, capable of transmitting signals within a frequency range of 20MHz to 6.3GHz, with a minimum power of around -60dBm. Taking the TinyRFSG Plus as an example: the maximum power is +15dBm when the signal frequency is between 20MHz and 3GHz; the maximum power is +15dBm when the signal frequency is between 3GHz and 5GHz; and the maximum power is +10dBm when the signal frequency exceeds 5GHz.
- TinyRFSG supports three modulation methods: continuous wave.
  single-tone modulation, frequency-sweep modulation, and pulse modulation.
- The signal source lacks a display screen and relies on the PC host computer to set RF parameters and control signal source output. However, we offer two operating modes: normal mode and programming mode. The transmission program can be set on the host computer, enabling the output of preset signals with just power supply, truly achieving excellent portability. Currently series port commands on mobile devices with OTG and give the power to TinyRFSG.
- After a 2-hour factory calibration control, the error of RF power accuracy can reach 0.5dbm.
- With a frequency resolution of up to 1Hz, its excellent performance makes it suitable for use as a calibration source, while also supporting customer application software for self-calibration of frequency offset.
- Connect to a PC via USB, identify with Keysight IO Library or NI MAX, and pair with the host computer software, making it very convenient to use a PC-controlled signal source; alternatively, connect to a mobile phone via a Type-C data cable and control the TinyRFSG using a serial port assistant. At the same time, SCPI control command sets are provided, allowing customers to program in any language to easily control TinyRFSG and achieve automation.
- There are two versions to choose from: TinyRFSG Smart and Plus. The performance of the devices in the two versions is not exactly the same. Compared to the Smart version, the TinyRFSG Plus has an output power increase of about 6dB in the range of 3G-6.3G, which is four-fold power output. Additionally, it has added a power supply indicator

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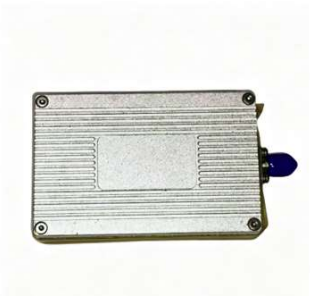
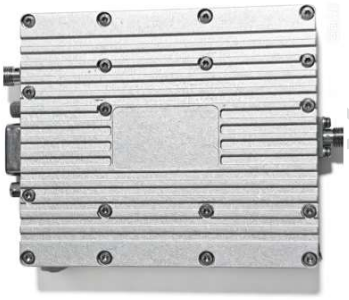
light, an output indicator light, and a separate power supply interface. Both interfaces can directly supply power to TinyRFSG Plus. Currently, both TinyRFSG Plus and Smart support mobile phone control.

TinyRFSG Smart



TinyRFSG Plus



TinyRFSG Pro

2. TinyRFSG parameter table

Frequency characteristics:				
frequency range	20MHz~6.3GHz			
Theoretical frequency resolution	1Hz			
Frequency switching time	≤200μs（Typical）			
Frequency accuracy (frequency offset)	1ppm Max			
Temperature stability	±0.5ppm			
Time base aging rate (typical value)	5e-7/year			
Power characteristics:				
Minimum power (25±10° C)	-55dBm			
Maximum power (25±10° C)		TinyRFSG Smart	TinyRFSG Plus	TinyRFSG Pro
	20MHz~3GHz	+15dBm	+15dBm	+15dBm
	3GHz~5GHz	+10dBm	+15dBm	+15dBm

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	5GHz~6GHz	+7dBm	+11dBm	+11dBm
	6GHz~6.3GHz	+4dBm	+10dBm	+10dBm
Support external reference sources		No	No	Yes
indicator light		none	electric light and emission light	electric light and emission light
External second power supply		none	Additional DC power supply port	Additional DC power supply port
Serial hardware		Virtual serial port	Virtual serial port	Virtual serial port, DB9 physical serial port
Power accuracy	±0.5dB			
Power resolution	0.01dB			
output impedance	50Ω			
Maximum reverse power	0.2W（16V DC）（rated value）			
Spectrum purity:				
Harmonic (at 0 dBm)	20MHz≤f≤500MHz	<-20dBc		
	500MHz<f≤2GHz	<-40dBc		
	2GHz<f≤6GHz	<-40dBc		
Non harmonic (outside of 10kHz frequency offset at 0dBm)	20MHz≤f<500MHz	<-55dBc		
	500MHz≤f≤3GHz	<-60dBc		

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	3GHz＜f≤6GHz	＜-55dBc
SSB Phase Noise	1GHz	＜-110dBc/Hz@10kHz
	3GHz	＜-100dBc/Hz@10kHz
	6GHz	＜-95dBc/Hz@10kHz
Modulation function:		
Narrow pulse modulation	pulse width：50us—100s，pulse period：100us—100s，Off ratio>50db	
Frequency scanning mode	Minimum accuracy: 1Hz; minimum sweep dwell time of 500us, maximum 60s; minimum resolution: 1us (the device needs about 200us to stabilize at one frequency point, so if set to 500us, theoretically only 300us of transmission time)	
Featured features:：		
memory ability	After the program mode and power on output enable mode are set on the host side, they can be written into the signal source, and the next time they are used, they only need to be powered to transmit the set signal.	
Automated control capability	Provide a standard SCPI command set, allowing customers to directly program and control the instrument themselves.	
Mobile control capability	It is easy to connect to a mobile phone to control the signal source, and you only need to send a serial port command to fully control the signal source.	
serial port control	TinyRFSG Plus and Smart use virtual serial ports and can be connected using USB; TinyRFSG Pro uses both virtual and hardware serial ports simultaneously. After opening any port on the upper computer, the same set of ASCII text commands can be used for control	

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External reference (TinyRFSG Pro)	TinyRFSG Pro supports external reference to significantly improve frequency accuracy and stability, while maintaining consistency with the external reference clock. The reference clock frequency ranges from 5MHz-104MHz with an amplitude of -5dBm-10dBm
Environmental characteristics:	
Working temperature/humidity	0~40℃/≤80%
Appearance characteristics:	
Overall dimensions	Smart version: 83x29x7mm Plus version: 83x47x9mm Pro version: 94x76x18mm
weight	Smart version: 62g Plus version: 100g Pro version: 253.42g
product casing	Aluminum alloy CNC machining surface enhanced heat dissipation fins

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3. Instructions for using the TinyRFSG host computer

3.1 Connect to the computer

You need to use Windows 10 or Windows 11. Connect the TinyRFSG to the computer via a USB to Type-C data cable (the Plus version will light up the green power indicator). and open the Device Manager to see the device as shown in the following picture. A new virtual series COM Port will appear like below diagram, in the diagram COM23 is the series port of TinyRFSG.

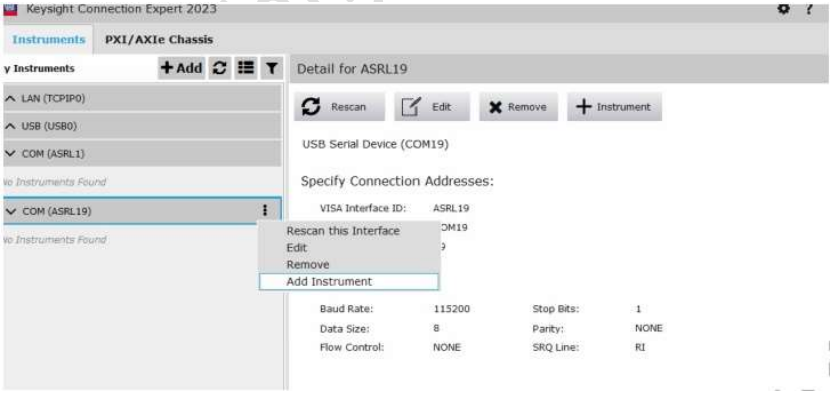
Before using it, please install Keysight IO library (recommended, installation files are available on Baidu or Google Cloud Disk) or NI MAX.

You will find the TinyRFSG device in NI MAX. Select the corresponding serial port number and click Connect. When the connection is successful, the host computer's VISA will display "Connected", and you can enter RF parameters.

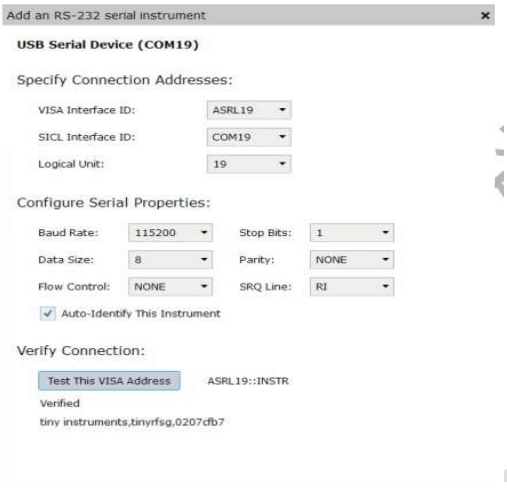
NI MAX display device diagram

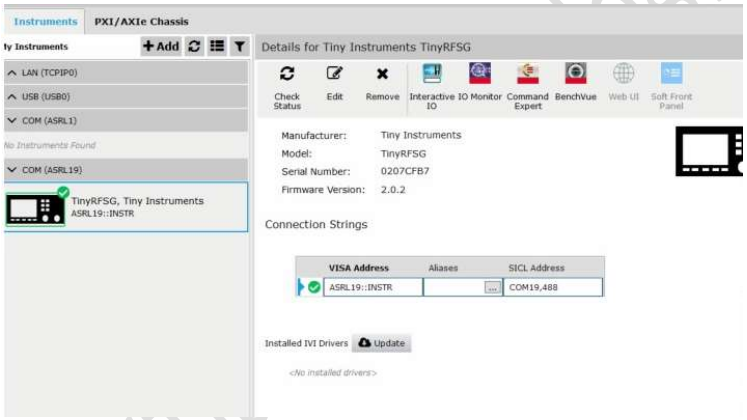
Connect the host to the TinyRFSG using Keysight Connection Expert software:

Open the Keysight Connection Expert software and click the refresh icon next to the"+Add" button. The device with the corresponding series port number will appear. Select the "Add Instrument" option as shown in the figure below:



In the configuration interface, set the Baud Rate to 115200. Remember to check "Auto-Identify This Instrument". After configuration, click "Test This VISA Address" to test. Once the test is complete, click "ok" to indicate successful connection, as shown in the figure below:





At this point, you will see corresponding information such as Manufacture, Model, Serial Number, Firmware Version, etc. Click on "Interactive *IO''* on the interface to enter the commandsending interface where you can send serial commands. Remember not to open another serial port toolduring connection, otherwise the connection will fail, as shown in the figure below:

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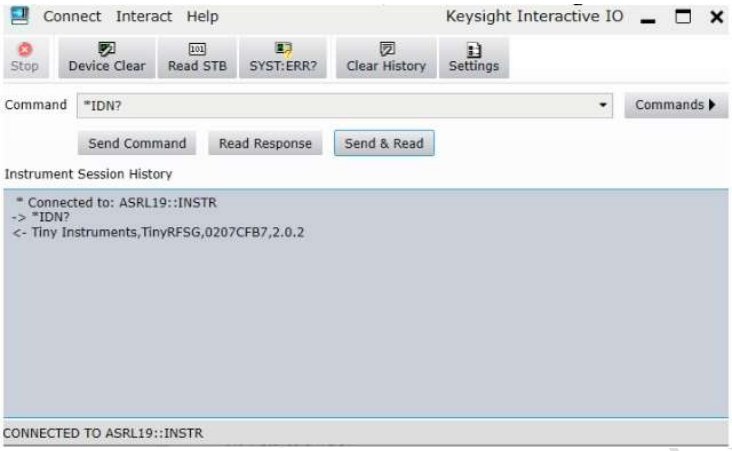

If you are unable to connect to TinyRFSG, please open the Windows Device Manager and try plugging in and unplugging the USB port again, observing whether a new COM port can be found. To run the TinyRFSG Controller (VISA), please note that the software is currently under continuous updates. The latest version can be obtained from Baidu Cloud Disk.

Select the correct TinyRFSG VISA address and click "Connect". The successful connection is shown in the following figure. At this time, the working mode is set to Normal mode by default and displays the program that has been written into the signal source. The RF switch is turned off at fault and does not transmit signals. The input box is white, and the parameters are set to default values, without retaining the previous parameter settings. "Temperature" indicates the internal temperature of the signal source, which is automatically displayed when the device is turned on.

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3.2 Working mode

The TinyRFSG signal source offers two operating modes: Normal mode and Program mode. In Normal mode, the signal source is controlled by the host computer software and cannot transmit signals independently. In Program mode, it can either be controlled by connecting to the host computer or, after programming and writing to the device through the host computer, enter a normal transmission state. After that, it can be powered off directly, and the next time it is used, it will automatically transmit signals according to the written programming upon connecting to power.

Switch between normal mode and program mode in the working mode column located in the upper left area of the host computer. When switching to one of these modes, for the sake of protecting the device, the operation interface of the other mode will display a white screen, and the input area will be locked, preventing any input.

In the "Help" section, you can find our company's contact information, as well as the user manual and host computer software for TinyRFSG, which are constantly being updated. If you encounter any issues during use, please contact us.

3.2.1 Normal mode

The signal source offers three modulation modes: CW (continuous wave), Sweep mode, and Pulse modulation. The modulation mode can be switched in the modulation area on the left. When one modulation mode is selected, the parameter interfaces for the other two modes become locked and cannot be accessed for input.

After connecting the signal source, you should first select the modulation method and then enter the signal parameters.

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Continuous wave and pulse modulation parameters:

- Freq: The transmission frequency of continuous wave and pulse signals, measured in MHz.
- Amplitude: The emission amplitude of continuous wave and pulse signals, measured in dBm.Sweep frequency mode parameters:
- LowFreq: The starting frequency of the frequency scanning mode, in MHz.
- HighFreq: The termination frequency of the frequency sweeping mode, measured in MHz.
- StepFreq: The step frequency in the frequency scanning mode, which controls the frequency interval between two adjacent signals, measured in MHz.
- Dwell Time: The dwell time in frequency scanning mode, which controls the time interval between two adjacent signals, measured in milliseconds.
- Up, Down, Bidirection: Up, Down, Bidirectional. Control the direction of signal travel. Pulse modulation parameters:
- Pulse Width: Pulse width refers to the time for signal transmission, measured in milliseconds. Pulse Cycle: Pulse cycle refers to the time from the start of signal transmission at one instance
- to the start of signal transmission at the next instance, measured in milliseconds.
- Duty Cycle: The ratio of pulse width to pulse period.

Set the parameters such as signal amplitude and frequency in the RF parameter control area. After inputting, click Enter, and the corresponding parameter column will turn green, indicating successful setting. The frequency input supports up to six decimal places; the amplitude input supports up to two decimal places. The maximum frequency input is 6300MHz; the maximum amplitude input is+15dBm (the maximum transmission power varies with different frequency ranges). After setting up, click RF OFF to send the signal. When the transmission is successful, the input boxes for frequency, amplitude, and other parameters, as well as the RF OFF column, will turn green to indicate RF ON, and the output indicator light of the Plus version will illuminate green.

Please note!! When setting the amplitude, be careful not to set it too high. The maximum transmitting power of the signal source is +15dBm. Inputting a higher amplitude will result in the maximum amplitude that the machine can achieve, and it will be displayed in orange on the software.

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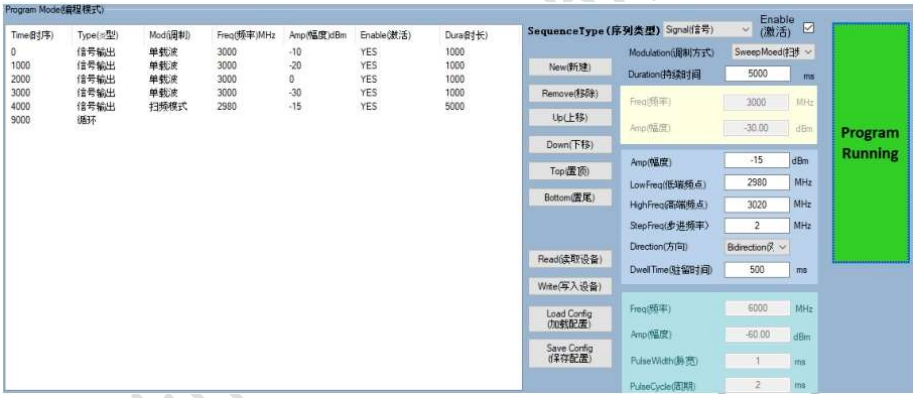
3.2.2 Program mode

The program mode supports the same signal settings as the normal mode. The left area displays signal programs written into the signal source, and any program can be selected for modification or adjustment of the program's emission sequence. The right area is for signal program settings, where the amplitude, frequency, emission time, signal format, and other parameters of the signal can be set.

The Program Standby button on the far right serves as the master switch for the program. Once the program settings are complete and the "Write" button is clicked to program the device, the Program Standby button must be activated to enable independent power supply and output the preset signal. At this point, the status changes to Program Running, and the preset signal output can be observed on the spectrum analyzer, with the output indicator light turning green. Otherwise, no signal will be transmitted when powered on, a measure taken to protect the receiving device.



- New: Create a new signal program, and set the signal type, modulation method, frequency, amplitude, activation output, duration, etc. on the right side.
- Remove: delete the selected signal program.
- Up, Down, Top, Bottom: Adjust the order of the selected signal programs and emit the output signals in chronological order.
- Read: Read the program stored inside the write signal source.
- Write: Write the edited program into the signal source and overwrite the original program. A pop-up prompt will appear when the writing is successful.
- Load Config: You can import the previously edited txt file into the list on the left for easy subsequent writing to the device.

- Save Config: You can save the compiled frequency output commands on an external hard drive in a txt file format.
- Program Standby: This setting determines whether the programmed instructions will run upon power-on. When enabled, this item turns green, and the set signal is output when the signal source is powered alone; when disabled, it turns gray, and no signal is output even when powered.

There are three types of programming signals: End marker, Loop marker, and Signal.

- End: When the program reaches this line, it ends and stops outputting. If the program does not have an End statement, it will automatically execute in a loop.
- Loop: When running to this instruction, start to cycle all the previous signals in chronological order.
- Signal: Signal program, used to edit the parameters of the signal.

Enable indicates whether this signal is activated or not. YES, means the signal is emitted when activated, while NO means it is not emitted when not activated. Only one signal program can be controlled.

When the sequence type is Signal, it represents an output table signal program, allowing adjustments to modulation methods and setting of radio frequency parameters. The other two sequence types do not support parameter adjustments.

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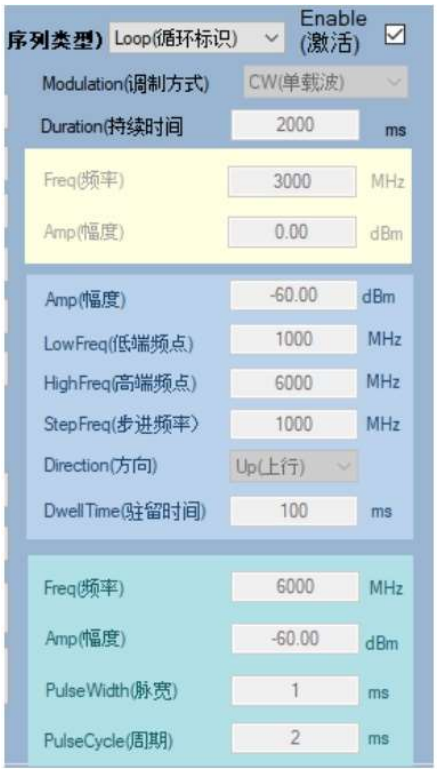

Modulation refers to the setting of signal modulation methods, supporting three types: CW single carrier, Sweep, and Pulse modulation. The corresponding parameters are divided into three input areas with different backgrounds. When a modulation method is selected, the corresponding parameter area allows for the setting of RF parameters, while the parameter areas for the other two methods are locked and do not support input.

Duration refers to the emission duration of a single signal, and when the duration is exhausted, the next signal output will be switched. The duration can be set for all three modulation modes. It is particularly important to ensure sufficient duration when the signal is set to frequency scanning mode, so as to enable the complete output of the frequency scanning signal.

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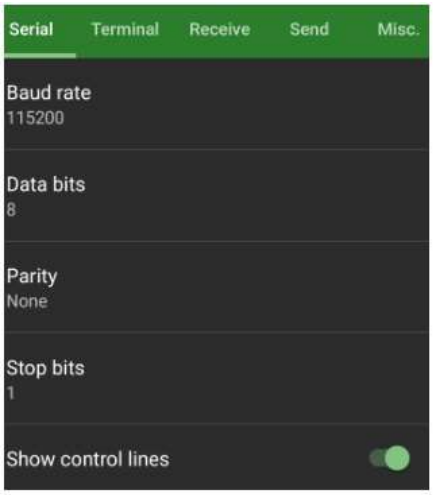
4. Instructions for using TinyRFSG mobile phone control

The TinyRFSG signal source is primarily controlled through the mobile phone serial port-assistant software by sending serial port commands. Before using mobile phone control, please ensure that your phone has reverse charging capability. After testing, phones without reverse charging capability cannot establish communication with the signal source.

Before use, you need to install the serial-usb-terminal-1-56.apk provided by our cloud drive on your phone, then configure the serial port assistant. Click the menu in the upper left corner to select the settings. The Serial configuration is shown below.



Taking the serial port assistant, we provide as an example, connect the signal source and the phone with a data cable. Click the connection option in the top right corner of the serial port assistant. After a prompt pop up, click OK. The device will return "Connected to CDC device", indicating successful connection.

After connecting the signal source, you can input commands to control it. Please note that RF transmission is disabled by default. To transmit signals, you need to enable RF

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transmission after setting the signal parameters. The basic control flow is shown in the figure below, where blue indicates input commands and green indicates device return messages:

5. VISA command set

command	Instructions	illustration
OUT:RF ON	RF on (Note: Keep "ON" in uppercase, as lowercase cannot activate the radiofrequency)	Return "Succeed" for success, "Defeated" for failure, and "Syntactic Error" for unrecognized input
OUT:RF OFF	RF is turned off, stop signal transmission	Succeed is returned for success, Defeated for failure,

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		and Syntactic Error for unrecognized input
OUT: FREQ Freq	Set the frequency of the transmitted signal (Freq: frequency value, measured in MHz, with a maximum support of six decimal places)	OUT:FREQ 2500.553876\n successful, return “Succeed"; if failed, return “Defeated"; if unrecognized, return “Syntactic Error"
OUT: AMPL Ampl	Set the amplitude of the continuous wave tone (Ampl: amplitude, measured in dBm, with a maximum support of two decimal places)	OUT: AMPL -20.31\nSucceed is returned for success, Defeated for failure, and Syntactic Error for unrecognized input
OUT:RF?	Determine whether the RF of the current device is turned on (outputting ON when turned on, outputting RFOFF when turned off)	RF ON for turning on, RFOFF for turning off, Syntactic Error for unrecognized input
OUT:FREQ?	Get the currently set signal frequency (unit: MHz)	Successfully returned the current frequency value: Freq 2500.5538760. Unable to recognize the returned Syntactic Error
OUT: AMPL?	Get the current signal amplitude (unit: dBm)	Successfully returned the current amplitude value: Amp -20.31. Unable to recognize the

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		returned Syntactic Error
SG:FAST ON	Quick lock-on, increased switching frequency, but poorer spurious suppression	Return "Succeed" for success, "Defeated" for failure, and "Syntactic Error" for unrecognized input
SG:FAST OFF	Quickly lock and close	If successful, return "Succeed"; if failed, return "Defeated"; if unrecognized, return "Syntactic Error"
SG:FAST?	Read quick lock status (When activated, output "FastLock ON"; when deactivated, output "FastLock OFF")	When opened, it returns "FastLock ON"; when closed, it returns "FastLock OFF"; if unrecognized, it returns "Syntactic Error"
SG:CFG:SAVE	Save all parameter settings except for program mode, including continuous wave mode, sweep mode, and pulse modulation mode.	Succeed is returned for success, Defeated for failure, and Syntactic Error for unrecognized input
SG:TEMP?	Read the temperature	When successful, the temperature is obtained: Temp 28.59. When unrecognized, a Syntactic Error is

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		returned
SG:MODE m	Set the signal source operating mode (0: Normal mode, 1: Program mode,2: Power-on output enable)	SG:MODE 1\n Succeed is returned for success, Defeated for failure, and Syntactic Error for unrecognized input

SG:MODE?	Obtain the current signal source operating mode (operating modes 0, 1, 2)	Upon success, return to work mode: Work Mode 0. If unrecognized, return Syntactic Error
MOD: TYPE t	Set modulation mode. Continuous wave 0, sweep mode 1, pulse modulation 2,	Return "Succeed" for success, "Defeated" for failure, and "Syntactic Error" for unrecognized input
MOD:TYPE?	Get the current modulation method	Upon success, the modulation mode is returned as "Puls Mode"; if unrecognized, it returns “Syntactic Error"
MOD:PGM:GET?	Get the program list, which is universal in all working modes.	
MOD:PGM:CLR	Clear program list	If successful, return “Succeed"; if failed, return “Defeated"; if unrecognized, return “Syntactic Error"

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MOD: SWEP?	Obtain sweep modulation parameter settings. (Low end frequency, high end frequency, step frequency, direction, dwell time)	-> MOD:SWEP?<- Sweep500.000000,520.0000000,1.0000000, Up&Down,500
MOD: SWEP: STEP freq	Set the minimum accuracy of the step frequency (freq: unit MHz) for the frequency scanning mode to 1Hz	MOD: SWEP: STEP 20\n Return "Succeed" when successful, "Defeated" when failed, and "Syntactic Error" when unrecognized
MOD: SWEP: LOF freq\n	Set the low-end frequency (freq: unit MHz) of the sweep mode to a minimum accuracy of 1Hz	MOD:SWEP:LOF 1000\n When successful, return as Succeed; when failed, return as Defeated; when unrecognized, return as Syntactic Error

MOD: SWEP: HIF freq	The minimum accuracy for setting the high-end frequency (freq: unit MHz) in sweep mode is 1Hz	MOD: SWEP: HIF 1500\n Return "Succeed" for success, "Defeated" for failure, and "Syntactic Error" for unrecognizable input

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MOD: SWEP: STAY stay	Set the minimum dwell time (stay: milliseconds) for sweep modulation to 500us, the maximum to 60s, and the minimum resolution to 1us	MOD: SWEP:STAY 500\n When successful, return “Succeed"; when failed, return "Defeated"; when unrecognized, return “Syntactic Error"
MOD: SWEP:DIRE d	Set the scanning direction for frequency-sweep modulation (uplink, downlink, bidirectional)	When successful, return “Succeed"; when failed, return "Defeated"; when unrecognized, return “Syntactic Error"
MOD:PULS?	Obtain pulse modulation parameter settings. (Pulse width, period)	When successful, the return parameter settings are Puls 100, 200. If unrecognized, a Syntactic Error is returned
MOD: PULS: WIDTH t	Set pulse modulation width The minimum accuracy (t: microseconds) is 1us with a pulse width of 50us-100s,	MOD:PULS:WIDTH200\n When successful, return "Succeed"; when failed, return "Defeated"; when unrecognized, return “Syntactic Error"
MOD:PULS:CYCLE t	Set pulse modulation period (t: microseconds) The minimum accuracy is 1us, pulse period: 100us-100s	MOD:PULS:CYCLE 400\n When successful, return as Succeed; when failed, return as Defeated; when unrecognized, return as Syntactic Error

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SG:REF INTE	Set signal source reference to internal reference.	Returns Succeed on success, Defeated on failure, and Syntactic Error if unrecognized.
SG:REF EXTE	Set signal source reference to external reference.	Returns Succeed on success, Defeated on failure, and Syntactic Error if unrecognized.
SG:REF?	Query the current reference source.	Returns Ref INTE or Ref EXTE on success, and Syntactic Error if unrecognized.

Attachment

Attachment 1: Parameters for adapting to 10W PA:

Technical specifications: 502, 25C					
parameter		minimum	Typical value	maximum	unit
PA material		gallium nitride			
PA type		Class AB amplifier			
Product Features		Built-in protection circuit, high reliability design, capable of long-term operation			
operating frequency		0.02		6	GHz
RF output power (continuous wave)		39	40		dBm
gain		37	40		dB
gain flatness			±3		dB
Gain fluctuation (-30C to +65C)			±4		dB
Input standing wave			2		
harmonic			-10		dBc

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Third-order intermodulation, dual tone@27dBm/Tone, 1MHz spacing			-20		dBc
stray				-60	dBc
isolation			-45		dB
power supply voltage			28		V
power supply current			0.5	1.5	A
Maximum input power against burnout				5	dBm
Working temperature of the shell		-30C-60C			
Storage temperature		-50C-105C			
Outline dimensions (excluding connectors)		100x86x40mm			
RF connector		SMA female connector			
DC power supply connector		J30J-9			
weight		380g			
heat dissipation performance		It comes with a built-in heat sink, but please install a fan yourself if it is to be operated for extended periods			

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Attachment 2: Comparison between TinyRFSG and N5182B

	TinyRFSG	N5182B
price	2500RMB	280000RMB
Frequency characteristics:		

frequency range	20MHz~6.3GHz		9kHz (5 MHz I/Q mode)-6GHz
Theoretical frequency resolution	1Hz		0.001Hz
Frequency switching time	<200us (typical value)		≤800 us
Temperature stability	±0.5ppm		<±2 e-10, nominal
Time-based aging rate (typical value)	5e-7 per year		<±1e-7/year< 5e-10/day after 30 days
Power characteristics:			
Minimum power (25+10°C)	-60dBm		-144dBm
Maximum power (25±10°°C)	20MHz~3GHz	+15dBm	18dBm
	3GHz~5GHz	+10dBm	16dBm
	5GHz~6GHz	+7dBm	16dBm
	6GHz~6.3GHz	+4dBm	NA
Power accuracy	-60 to 15dBm		-60 to Max
	±0.5dB		±0.3dB
Power resolution	0.25dB		0.01dB
output impedance	50		50
Maximum reverse power	0.2W (0V DC) (rated value)		20W
Spectral purity:			
Harmonic (at 0dBm)	20MHz<f<500MHz	<-20dBc	<-35dBc
	500MHz<f<2GHz	<-40dBc	<-35dBc
	2GHz<f<6GHz	<-40dBc	<-53dBc
Non-harmonic (at 0dBm, outside of	20MHz<f<500MHz	<-55dBc	<-75dBc

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10kHzfrequency deviation)	500MHz<f<3GH	<-60dBc	<-81dBc
	3GHz<f<6GHz	<-55dBc	<-75dBc

Single sideband phase noise	1GHz	<-110dBc/Hz@10kHz	<-131dBc/Hz@20kHz
	3GHz	<-100dBc/Hz@10kHz	<-123dBc/Hz@20kHz
	6GHz	<-95dBc/Hz@10kHz	<-116dBc/Hz@20kHz
Modulation function:			
Narrow pulse modulation	Pulse width: 50us-100s, pulse period:100us-100s, turn-off ratio >50db		
Frequency scanning mode	The minimum accuracy is 1Hz, the minimum setting for frequency sweep dwell time is 500us, the maximum setting is 60s, and the minimum resolution is Lus (the device needs about 200us to stabilize at a frequency point, so if set to 500us, theoretically only 300us is available for transmission)		The minimum setting for frequency sweep dwell time is 100us, the maximum setting is 100s, and the minimum resolution is 1us.
Feature:			
memory ability	After the program mode and power-on output enable mode are set on the host side, the signal source can be programmed. The next time it is used, simply power it on to transmit the set signal.		It has program storage capability
Automated control capability	Providing a standard SCPI command set allows customers		Supports SCPI command set

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	to directly program and control instruments themselves.	
Environmental characteristics:		
Operating temperature/relative humidity	0~40℃/<80%	0~55℃
Outline characteristics:		
Overall dimensions	Smart version: 83x29x7mm Plus version: 83x47x9mm	489x426x88mm
weight		15.9kg
product casing	Aluminum alloy CNC machining +surface-enhanced heat dissipation fins	NA

Attachment 3.: Installation package for mobile phone serial port assistant

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