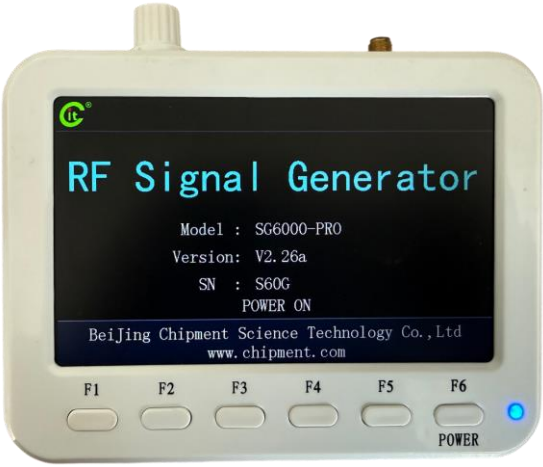
SG Series Portable RF Signal Generator

——User's Manual



(For reference only)

Beijing Chipment Technology Co.Ltd.

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一. Overview

1.1. Main Features

- Frequency range: 18 MHz to 3.2 GHz / 6 GHz / 7.2 GHz;
- Power range: -45 dBm to +13 dBm; (Settings beyond this range are possible but with reduced accuracy)
- Power step: 0.1 dBm
- Compact size, lightweight, and portable;
- Large-capacity lithium battery, supports 5V power bank external power supply;
- PRO version supports: frequency scanning, power scanning, frequency hopping output, pulse output;
- Optional serial communication function;
- Full-frequency power high-precision calibration (automatically calibrated at factory).

1.2. Functional Characteristics

This RF signal source supports full-band frequency adjustment with a minimum step of 1Hz and adjustable power with a minimum step of 0.1dBm.

1.3. Technical Parameters

Table 1-1 Technical Parameter List

parameter		description					
Model		SG3200	SG3200PRO	SG6000	SG6000PRO	SG7200	SG7200PRO
Function	Pulse freq output	√	√	√	√	√	√
	Freq scanning	-	√	-	√	-	√
	Power scanning	-	√	-	√	-	√
	Freq hopping output	-	√	-	√	-	√
	Pulse output	-	√	-	√	-	√
	Serial port communication	optional	√	optional	√	optional	√
Freq	Freq range	18 MHz ~ 3.2GHz		18 MHz ~ 6 GHz		18 MHz ~ 7.2 GHz	
	Resolution	1 Hz (typical value)					
	Precision	<0.5 ppm					
Interference		-102.3dBc/Hz@1kHz					
Harmonic		-20dBc Typ					
Power	Power range Resolution	-45dBm ~ + 13dBm					
	Resolution	0.1 dBm					
	Precision	Guaranteed accuracy: ±1 dBm (typical value for 10 MHz to 3 GHz is ±0.3 dBm, typical value for above 3 GHz is ±0.5 dBm)					

Display	Type	TFT LCD
	Resolution	800×480px
	Size	5 寸
Power supply	Battery capacity	4800mAh (typical value)
	Battery type	2170 lithium battery
	Charging time	2 to 3 hours
	Battery life	4 to 5 hours
	Charging voltage and current	Voltage: 5V; Current: 2A (Please use the adapter correctly to prevent damage to the instrument)
Size	Dimensions	135mm*101mm*30mm
Environment	Operating temperature	-20 ~ 45℃
	Storage temperature	-20 ~ 70℃
Interface	RF interface	SMA-K type (outer thread, inner hole)
		Input impedance: 50 ohms
	Charging interface	Micro USB interface
Accessories	2.4 G omnidirectional antenna	One (frequency range: 2.4 - 2.5 GHz) A
	5V power adapter	A copy
	User Manual	A set
	Paper Box	A set
	Charging Cord	A micro-usb charging cable one piece

1.4. Application Areas

This portable radio frequency signal source is applicable to:

- System integration

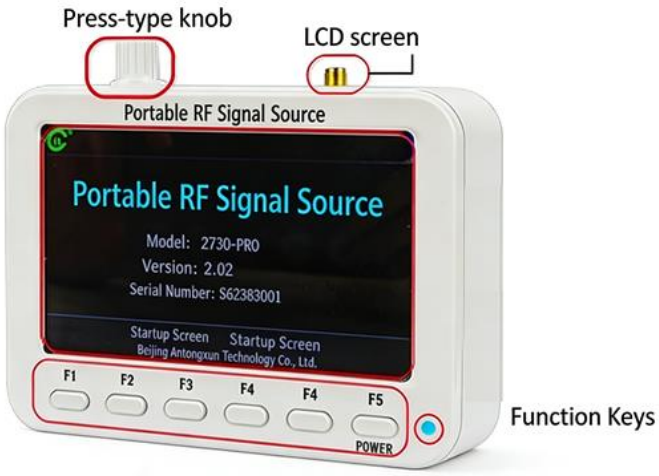
- Production line testing
- Laboratory radio frequency signal generation
- Automatic test systems, etc.

For example：

- R&D debugging - as the local oscillator;
- Receiver in-band test - receiver sensitivity;
- Receiver out-of-band test - channel selectivity;
- Receiver out-of-band test - IMD;
- Amplifier non-linearity test;
- Excitation - response test;
- EMI test;
- RF amplifier;
- RF gain module;
- RF switch;
- RF filter;
- Frequency Mixer ;

- Attenuator ;
- Duplexer ;
- Lineral attenuation ;
- Antenna measurement ;
- And interference test and other related tests.

二. Functions and Usage



pic 2-1 Signal Source Structure Descripti

2.1. Ports and Indicators

1) 1) The indicator light is blue when the device is powered on normally, red during charging, and green after charging is complete.

2) The USB interface is Micro USB, and the power supply is 5V/2A.

3) RF output interface: This instrument has a standard SMA

female connector (SMA-K external screw inner hole), which should be used in conjunction with a standard SMA male connector (SMA-J internal screw inner pin). Note that the normal service life of the SMA interface is approximately 1,000 times (after exceeding the service life, signal contact loss increases or contact becomes unstable). Frequent replacement of antennas or use of RF cables should use SMA adapters to extend the lifespan of the original interface.

2.2. Function and Usage Instructions

Overview of Button Functions:

1) The function keys (F1 to F6) correspond one-to-one with the menu labels. Select and press each key to enter the corresponding function.

2) The (F6) key serves as both the power on/off key and the menu key. Long-press the POWER (F6) key on the menu page to shut down the device (Note: The power-off operation is effective when returning to the main menu; in other interfaces, it is the operation to return to the main menu).



PIC 2-2 Signal Source System Menu

2.2.1. Pulsed Frequency Output

On the main menu page, click F1 to enter the frequency output



mode.

PIC 2-3 Pulse frequency output interface view

Table 2-1 Point Frequency Output Operation Instructions

Button	Function	Operation Instruction
F1	Output on/off	Click F1 to turn on or off the RF output.
F2	Frequency setting	Click F2 to adjust the frequency size by rotating the knob.
F3	Power setting	Click F3 to adjust the power size by rotating the knob.
F4	Left shift	Adjust the step to the left to enable frequency setting or power setting selection.
F5	Right shift	Adjust the step to the right to enable frequency setting or power setting selection.
F6	Main menu	Click F6 to return to the main menu page.
Rotary knob	Left rotation	Increment the current option.
	Right rotation	Decrement the current option.

2.2.2. Frequency Scanning

On the main menu page, click F2 to enter frequency scanning.。



Figure 24: View of frequency scanning interface

Table 2-2 Operating Instructions for Frequency Scanning

Button	Function	Operation Instruction
F1	Run/Stop	Click F1 to start or stop the frequency scanning
F2	Start	Click F2 to enter the starting frequency adjustment menu, adjust the size with the knob, F4 and F5 adjust the frequency step size, and click F6 to return to the previous page
F3	Stop	Click F3 to enter the ending frequency adjustment menu, adjust the size with the knob, F4 and F5 adjust the frequency step size, and click F6 to return to the previous page
F4	Step	Click F4 to enter the scanning frequency step size adjustment menu, adjust the size with the knob, F4 and F5 adjust the frequency step size, and click F6 to return

		to the previous page
F5	Stay	Click F5 to enter the dwell time adjustment menu, adjust the size with the knob, F4 and F5 adjust the time step size
F6	Power	Click F6 to return to the previous page. Press and hold to return to the main menu page.
Rotary knob	Left rotation	Increment the current option
	Right rotation	Decrement the current option

2.2.3. Power Scanning

On the main menu page, click F3 to enter the power scan mode.



pic 2-4 Power Scan Interface View

Table 2-3 Power Scanning Operation Instructions

Button	Function	Operation Instruction
F1	Run/Stop	Click F1 to start or stop the power scan.
F2	Start	Click F2 to enter the initial power adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the power increment, and click F6 to return to the previous page.
F3	Stop	Click F3 to enter the termination power adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the power increment, and click F6 to return to the previous page.
F4	Step	Click F4 to enter the scan power increment adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the power increment, and click F6 to return to the previous page.
F5	Stay	Click F5 to enter the dwell time adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the time increment, and click F6 to return to the previous page. Press and hold to return to the main menu page.
F6	Power	Click F6 to enter the frequency adjustment menu. Use the knob to adjust the size. Press F4 and F5 to adjust the power step by step. Click F6 to return to the previous page. Long press to return to the main menu page.
Rotary knob	Left rotation	Increment the current option
	Right rotation	Decrement the current option

2.2.4. Frequency Hopping Output

On the main menu page, click F4 to enter the frequency hopping output mode.



PIC 2-5 FM Output Interface View

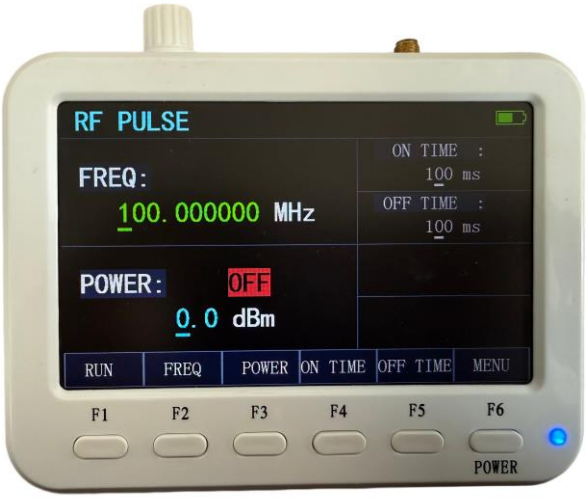
Table 2-4 Frequency Hopping Output Operation Instructions

Button	Function	Operation Instruction
F1	RUN/STOP	Click F1 to start or stop the frequency hopping output.
F2	START	Click F2 to enter the start frequency adjustment menu,

		adjust the size with the knob, F4 and F5 adjust the power step, and click F6 to return to the previous page
F3	STOP	Click F3 to enter the end frequency adjustment menu, adjust the size with the knob, F4 and F5 adjust the power step, and click F6 to return to the previous page
F4	STEP	Click F4 to enter the scan power step adjustment menu, adjust the size with the knob, F4 and F5 adjust the power step, and click F6 to return to the previous page
F5	STAY	Click F5 to enter the dwell time adjustment menu, adjust the size with the knob, F4 and F5 adjust the time step, and click F6 to return to the previous page
F6	MENU	Click F6 to enter the main menu.
Rotary knob	LEFT ROTATION	Increment the current option
	RIGHT ROTATION	Decrement the current option

2.2.5. RF Pulse Output

On the main menu page, click F5 to enter the pulse output mode.



PIC 2-6 Pulse output interface view

Table 2-5 Pulse Output Operation Instructions

Button	Function	Operation Instruction
F1	RUN/STOP	Click F1 to start or stop the pulse output.
F2	FREQ	Click F2 to enter the frequency adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the power step, and click F6 to return to the previous page
F3	POWER	Click F3 to enter the scan power step adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the power step, and click F6 to return to the previous page
F4	ON TIME	Click F4 to enter the output pulse width adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the power step, and click F6 to return to the previous page.

F5	OFF TIME	Click F5 to enter the off pulse width adjustment menu, use the knob to adjust the size, F4 and F5 to adjust the time step, and click F6 to return to the previous page
F6	MENU	Click F6 to enter the main menu
Rotary knob	LEFT ROTATION	Increment the current option
	RIGHT ROTATION	Decrement the current option

2.2.6. System Settings

On the main menu page, click F6 to enter the system settings.



Figure 2-8 System Settings Interface View

Table 2: Operating Instructions for System Settings

Button	Function	Operation Instruction
F1	POWER OFF	Click F1 to adjust the shutdown time, rotate the knob to select the shutdown time or "Never Shutdown"
F2	LIGHT	Click F2 to adjust the screen brightness, rotate the knob to select the brightness percentage.
F3	LANGUAGE	Click F3 to select the language, rotate the knob to choose Chinese or English
F4	RF PARAM	Click F4 to enter the parameter setting page. Click F2 to save all parameters of the current radio frequency settings, click F3 to restore factory settings parameters. If no parameters are saved, the settings will be factory defaults after the shutdown.
F6	MENU	Click F6 to enter the main menu
Rotary knob	LEFT ROTATION	Increment the current option
	RIGHT ROTATION	Decrement the current option

*Note: After setting the parameters, there is no need to confirm. Simply return to the main menu and set again to complete the process.

三. Performance Verification

3.1. Pulsed Output

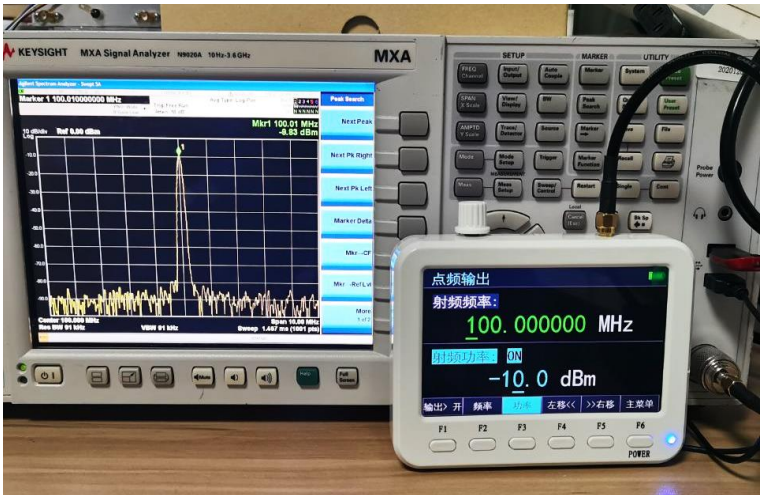
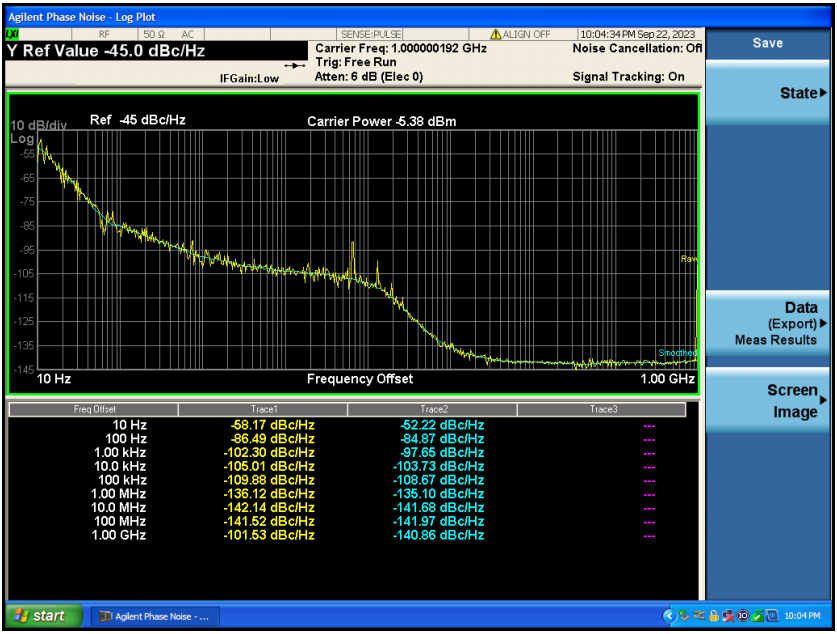


图 3-1 Frequency sweep output test chart

3.2. Crosstalk Test

-102.3dBc/Hz@1kHz，(1GHz,-5dBm)



PIC 3-2 Noise correlation test plot

四. Maintenance and Care

1) For long-distance transportation, items should be placed in packaging or carry cases to avoid dropping or colliding. Do not mix them with construction tools or other hard objects. When transporting or carrying, remove all cables and do not use test cables as handles.

2) When testing heavy components or connecting thick feeder lines, use flexible cable adapters and calibrate to eliminate the

influence of the adapter cables.

3) When installing connectors, position them properly, insert carefully, gently shake and slowly turn, and tighten the threads after feeling that the core pins have inserted into the core holes. When tightening the threads, operate with both hands, holding the main body to avoid rotation, and rotate the sleeve with the other hand. Do not allow the entire plug to rotate. For unfamiliar connectors, be sure to check if the core pins are too long or tilted, and repair them before connecting.

4) Waterproof and moisture-proof. In case of rain, immediately turn the instrument face up and quickly seek shelter. If water accidentally enters, immediately turn off the power. If it is frequently used in the field, it is recommended to equip a waterproof carry case.

5) When entering a warm indoor space from outdoors in winter, seal the instrument with a plastic bag until the temperature is balanced before taking it out. If there is condensation on the instrument, dry it before turning it on.

6) To protect the battery, frequently charge the instrument. Do not

wait until the power warning occurs to charge. Do not perform long-term float charging. If you need to connect the charger for long-term operation, remove the battery.

7) If the instrument is not used for a long time, charge (discharge) it to 3.7V and store it. During storage, charge to 4.2V at least once a year. It is recommended to remove the battery before long-term storage.

8) The USB socket is fragile. Use a soft data cable and avoid lateral force.

9) Do not disassemble the casing at will. Slight carelessness during disassembly may damage the circuit, and such damage is not covered by the warranty. Disassembling the RF components will lose all warranty rights.