





RF MICROTECH ELECTRONICS

USER MANUAL

For the

Broadband Signal Source

RFSSV236-608 Frequency Range: 23 – 6000 MHz

RFSSV356-448 Frequency Range: 35 – 4400 MHz

RFDDV010-107 Frequency Range: 1Hz– 100 MHz





Figure 1(Top Panel)



Figure 2(Front Panel)



RFSS Components

Top Panel:

RFSS Top panel consists of:



9. SMA – 50Ω Output

Front Panel:

RFSS Front panel consists of:

1. Power LED – LED indicates power status.

Red LED indicates Low Battery / Power Off

Green LED indicates Power On

- 2. ON/OFF Switch Switch to on/off unit.
- 3. RF On/Off LED LED indicates RF output status.

Illumination of Green LED indicates RF ON.

- 4. External Trigger(SMB) Connector for external trigger during RF Sweep (TTL Logic)
- 5. Charging LED LED indicates charging status.
- 6. USB Port Type-B USB port for charging and GUI operation(optional).



Top Panel Operating Procedures:

- 1. Turn on the Power switch (2 of Figure 1) and POWER LED (1 from Figure 1) turns green.
- 2. After switching ON, the device performs self-test while displaying following parameters:
 - Company Logo as RFME: RF Microtech Electronics.



• **Battery:** Current battery percentage.



• Model Number: RFSSV236-608 indicates Broadband Signal source's model number.



• Frequency Range: Displays the frequency range of the unit.



• **SINGLE:** Displays the current as well as default operational mode.





• Device displays the last saved parameters after self-test process.



NOTE:

- 1. During the self-test mode, RF will be off.
- 2. Model Number, Start Frequency and Stop Frequency values changes from device to device.



Battery Management:

- a) Battery Display:
- Device display shows the remaining battery percentage, to inform the user.



- b) Behaviour with Low Battery (<25%):
 - **Below 25% battery:** The LED turns red as an immediate indication of low battery status, signalling limited operating time.
 - **RF Operation:** RF can remain on for up to 30 minutes after reaching this state, serving as a warning.



c) Behaviour with Battery at OFF state :



- d) Recharge Cycle:
 - Charge Time: Once connected to a charger, the battery will take approximately 4 hours to reach full charge.



Modes of Operation:

- Three different modes of operation, designed to provide several features useful for many testing purposes.
 - 1. Single Mode
 - 2. Sweep Mode
 - 3. Pulse Mode
- Press MODE button (1 of Figure 1) to switch to different modes. Single Mode is the default mode.

1. Single Mode Operation:

• Device loads the last saved settings, including the last operated parameters, from the previous session after switching on.



• Frequency Adjustment:

i. Cursor Navigation: Use the **FREQ** Hz button to move the cursor from left to right, allowing you to select the desired decimal place for frequency adjustment.



- ii. Increment and Decrement:
 - a. **INCR** Subutton increases the selected frequency to the highest allowable limit.
 - b. **DECR** button decreases the frequency to the lowest allowable limit.
 - c. The device will stop further adjustment if either frequency limit (highest or lowest) is reached.





- iii. Confirming Frequency:
 - a. Press **SET SET** to confirm the selection.
 - b. The cursor will be disabled automatically if no selection is made by the user, after that selected parameters will be displayed on the screen.



- Amplitude settings:
- i. Positioning the cursor: Press the **AMPL** ^{dB} button (6 in Figure 1) to move the cursor horizontally and select the desired decimal place.



- ii. Changing Amplitude: After positioning the cursor, use the following buttons to adjust the amplitude
 - a. **INCR** (3 in Figure 1): Increases the current value to the maximum allowable amplitude for that unit.
 - b. **DECR v** button (5 in Figure 1): Decreases the current value to the minimum allowable amplitude for that unit.
 - **Note**: If the amplitude reaches its maximum or minimum limit, the device will automatically set it to the closest valid value





- iii. Confirming the Selection:
 - a. Once the desired amplitude is selected, press the **SET SET** button (4 in Figure 1) to confirm.
 - b. After pressing **SET**, the cursor will automatically disable, and the selected amplitude parameters will display on the screen.



- Enabling/Disabling the RF Output:
 - i. Toggling the RF Output: To enable or disable the RF output, press the ON/OFF

RF button (7 in Figure 1).

- ii. Indication of RF Status:
- a. When RF output is enabled, the **RF LED** (3 in Figure 2) will illuminate green to indicate that the RF is ON.
- b. Additionally, the RF symbol on the display will update to reflect the RF output status.



NOTE: While changing the Frequency or amplitude, display parameters will be set automatically after 10 seconds of inactive condition.



2. Sweep Mode Operation:

• Pressing **MODE** button changes Sweep by indicating below display.



• Default display of the Sweep Mode:



- Start Frequency Setting: By default, 23 MHz is the start frequency.
 - User can set the start frequency by following the procedure explained in single Mode(frequency Adjustment).
 - ii. Press the **SET SET** button to confirm the start frequency.
- **Stop Frequency Setting:** By default, **6000 MHz** is the **stop frequency**.
 - User can set the stop frequency, after confirming the start frequency by pressing SET button.
 - ii. Press the **SET SET** button to confirm the stop frequency.



- **Amplitude Setting:** Amplitude setting appears after confirming the stop frequency.
 - i. By default, it shows the last operated Amplitude value.





ii. User can change the amplitude value by following the procedure described in single mode (amplitude settings).



iii. Confirm the Amplitude by pressing **SET** button.



- Sweep Time Setting:
 - i. Use **FREQ** button (2 of **Figure 1**) to change the sweep time.
 - ii. Sweep time changing procedure is same as frequency changing procedure(explained in the single mode)



iii. Now press the **SET** button to confirm the Sweep time.

NOTE: Sweep time increments/decrements in step of **± 0.25 only**.

- Sweeping start/stop procedure:
 - i. Sweeping starts by pressing **SET button** after confirming the sweep time parameter.





- ii. Here 23 6000 MHz is the frequency range of sweeping. And -6 dBm is the amplitude.
- iii. Device shows two different displays in sweep mode. "SCAN..." represents that sweeping process is activated.
- iv. To stop Scanning, press **SET** button, and the **Start Frequency** will be displayed again.



NOTE: In Sweep Mode, Amplitude cannot be changed. It will display the amplitude which is set in single mode only.

- 3. Pulse Mode Operation:
 - Press **MODE** button to change the mode from sweep to pulse.



• Default display of the Pulse Mode:



- **Center Frequency Set:** By default, it shows the last operated frequency.
 - i. Press **FREQ (2** of **Figure 1)** button to change the Center frequency. Procedure is similar to the single mode frequency setting.
 - ii. Press the **SET** button to confirm the Center frequency.



• **Amplitude Set:** After confirming the center frequency, display shows the last operated Amplitude value.



- i. Amplitude can be changed by **INCR/DECR** button.
- ii. Press the **SET** button to confirm the Amplitude.



- Pulse On/Off time:
 - i. Set the On time by pressing **FREQ** button. **Pulsating Process** is active during On time.



ii. Press **SET** button to confirm pulse On time.



iii. Set the Off time by pressing FREQ button again. Pulsating Process is inactive during Off time.



iv. Press **SET** button to confirm pulse Off time.



NOTE: ON and OFF time can be changed in step of **± 0.25 only**.

- Pulsating Start/Stop:
 - Press SET button to start the pulsating process. SET button toggles the Pulsating process.







RF MICROTECH ELECTRONICS

USER MANUAL

For the

RF Signal Navigator 6S

RF Signal Navigator 4S

RF Signal Navigator 01S v1.01



Table of Contents	Page No.
Introduction to RF Signal Navigator 6S	17
Installation Process	17
Home Page	19
Operation Procedure	20
RFME Components	20
Single mode Operation	23
Sweep Mode Operation	25
Pulse Mode Operation	28



Introduction to RF Signal Navigator 6S:

- The RF Signal Navigator 6S enhances the functionality of the Broadband Signal Source, providing an intuitive user interface with multiple operational modes.
- It includes automatic device recognition and supports various operational modes for versatile functionality.

Operational Modes:

- Single Mode
- Sweep Mode
- Pulse Mode

Installation Process:

A. Run the RF_KIT.msi file and click **NEXT** to begin.

🔁 RF Signal Navigator 6S	_		×
Welcome to the RF Signal Navigator 6S Se Wizard	etup	(
The installer will guide you through the steps required to install RF Signal computer.	Navigator 6	S on you	r
WARNING: This computer program is protected by copyright law and inte Unauthorized duplication or distribution of this program, or any portion of i or criminal penalties, and will be prosecuted to the maximum extent possi	ernational tr t, may resul ble under th	eaties. t in seven e law.	e civil
< Back Nex	•>	Cano	el

B. Next window asks for the path of installation. Choose the installation path and click Next.



RF Signal Navigator 6S	_		×
Select Installation Folder		(
The installer will install RF Signal Navigator 6S to the following folder.			
To install in this folder, click "Next". To install to a different folder, enter it be	low or	click "Brow	vse".
Eolder: C:\Program Files (x86)\RF Microtech Electronics\RF Signal Navigator		Browse	
		Disk Cost	
Install RF Signal Navigator 6S for yourself, or for anyone who uses this co C Everyone Just me	mputer	".	
< Back Next >		Cano	el

C. Next window shows the confirmation of installation. Click **Close**.





RF Signal Navigator 6S Home Page:



Upon opening the software, the Home Page interface displays:

- A. Environment Details: Enter the temperature and humidity of the testing lab/Environment.
- B. Device Specifications: Define the name and serial number of the test equipment.
- C. Equipments Utilized: Mention other equipments used (if used) to test the device.
- D. Organization name: Enter the Organization Name.
- E. **Connection Status:** Displays the Connection status of the Device. Once the connection is made, USB Symbol turns blue. By default, it is grey. Click **NEXT** button for further Operations.
- F. **Technical Support:** This Section displays the websites and other Social Medial links to connect with **RF Microtech Electronics for new updates**.
- G. User Manual: This section shows the User Manual of the software and buttons for navigation.

[Note: The fields for temperature and humidity, as well as equipment name and serial number, are mandatory shown by the "*" symbol]



Operation Procedure:

- 1. Power on the device. After device completes the self-test, connect it to your PC via USB.
- 2. Open the software. A notification confirms when the device is recognized, and user can begin its operations.

Connection Status	×
Device recognized successfully	<i>ı</i> .
ОК	

RFME Components:

- Main interface appears after clicking the NEXT button (shown in below diagram). By default, Single Mode is the active mode.
- The main interface allows user to switch between different operational modes by selecting Single Mode, Sweep Mode or Pulse Mode. Each mode offers specific functionality as described below.

	RF Signal Navigator 6S	- O X
	Signal Source - RFSSV236-608	
c —	File View Help	Operational Modes : Single Mode O Sweep Mode O Pulse Mode
		Single Mode
		Center Freq.: 23.00 + MHz +
		Attenuation(dB): 0.00
	BROADBAND SIGNAL SOURCE	Step Size : 1.000 🗘 MHz 🔹
	((((((((((((((((((((((((((((((((((((RF ON RF OFF
	MARCA REPORTED AND THE REPORT OF THE REPORT	
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A. Top Panel of the Broadband Signal Source



- I. Displays the device Name.
- II. RF signals are directed outwards from this SMA Connector.
- III. Two buttons with different functionalities explained in the Single Mode.

B. Front Panel of the device.



- I. **Power status:** LED indicates the power status of the device. For more information, refer instruction manual(Page No. 3) of the device.
- II. **Switch** to turn the device ON/OFF.
- III. **RF Operation Status:** LED indicates RF activation/deactivation. LED turns green when RF is ON and turns black when RF is OFF.
- IV. **SMB connector**. For more information, refer instruction manual(Page No. 3) of the device.



- V. **Battery Charging Status:** LED shows the charging status of the unit. LED turns blue when the device is in charging mode.
- VI. **USB** connector.
- C. **Menu** Options, each adding different features to user's experience.
- **File Menu:** This menu provides options for managing operational parameters such as frequency, amplitude and mode. It includes the following options:



I. **Exit**: Closes the Software.

Parameters:

- II. **Import Parameter:** Loads a file with the extention <u>".rfme"</u>, which restores previously saved parameters.
- III. **Export Parameters:** Saves the current parameters in an <u>".rfme"</u> file.
- View Menu: Provides access to helpful documents.



- I. View User Manual: Opens a link to the user Manual.
- II. View Application Notes: opens a link to additional application Notes.
- **Updates Menu**: This menu handles firmware updates for the device.





- I. **Check for Updates:** Displays a list of available updates (if available) with their version details and feature descriptions.
- II. **About Us:** Opens "RF Microtech Electronics" website.

Single Mode Operation:

Single mode is useful for **precise selection of frequency** and amplitude. Operational parameters are shown in the below diagram.

Center Freq.	: 23.00	•	MHz •
Attenuation(dB): 0.00	•	Amplitude(dBm): -3.10
ep Size :	1.000	•	MHz •
[RF ON		RF OFF
Scheduled F	RF on / off	•	•

- A. **Frequency Adjustment:** Set frequency and unit, with increments/decrements based on the step size. The maximum operating frequency is 5999 MHz, and the minimum operating frequency is 23 MHz.
- B. **Attenuation Adjustment**: Set the attenuation value in dB. Maximum attenuation is "**0** dB" and minimum attenuation is "**-30** dB". Respective amplitude is displayed in the amplitude field.
- C. **Step Size:** Define the increment/decrement step size for frequency adjustments. Minimum allowed step size is 100 KHz and Maximum allowed step size 500 MHz.
 - \blacktriangleright Above parameters can also be incremented/decremented by clicking \heartsuit or \bigotimes Buttons.
- D. **RF ON/RF OFF:** Once all the above parameters are set properly, click the **RF ON button** for RF activation and **RF OFF button** for RF deactivation.



- E. **RF On/Off Scheduling:** Schedules RF activation at a specified time.
 - > A new window appears (shown below) after checking this checkbox.
 - All the buttons (Incr/Decr and RF ON/RF OFF) are disabled once "Scheduled RF on/off "is checked.

Scheduled Pulse Start		[а
Start time : 0 🗧 0 🖨 0 🖨 🚺	↓		b
Time Left: 00 : 00 : 00	Set 🔁 🗲	*•	d
• • • • • • • • • • • • • • • • • • •		.	с

- a. Scheduled Time: Define desired time in 24 hours (HH:MM:SS) format for RF activation.
- b. **Set:** Sets RF on after the scheduled time passes.
- c. **Remaining Time:** Displays the remaining time of RF activation.
- d. **Reset:** Resets all the parameters.

NOTE: Parameters setting will have immediate effect on the RF output. User needs to be careful while setting the parameters. When RF is ON & frequency is changed, RF will be OFF.



Sweep Mode Operation:

Sweep mode enables **frequency variation over a specified range within a specified time period in a controlled manner**.

Sweep Mode settings:

Sv	veep Mode ——									Δ
	 Continu 	ious Cycles	5	⊖ Fi	nite C	ycles	←		-	
	Sweep Range :			Single Rar	nge 🔹		•		-	В
	Frequency range :	23.000	•	5999.000	•	MHz	•	•		c
	Current Freq.:						•		-	D
	Amplitude:	-3.00	•	dBm			•			E
	Step Size :	5.976	×	MHz			4		-	F
	Number of Steps :	1000.00	*				•			G
	Sweep Time :	1000.000	•	ms 🔹			•			н
	No. Of Cycles :	0	×.				•		-	- 1
	Swe	ep Start		Sweep Stop	0	←			-	J
	Scheduled Swe	ep start		•						к

- A. **Sweep Cycle Type:** Choose between Continuous and Finite Cycle for sweep Operation.
 - > Continuous Cycle: Sweep cycles are repeated continuously until manually stopped
 - Finite Cycle: Sweep cycles are repeated for specified numbers and then stops automatically.
 - > By default, Continuous Cycle is selected.
- B. Sweep Range Selection: Choose between Single Range and Multi Range options.
 - Select the number of ranges from the drop-down menu, and corresponding input fields will appear.
 - User can set up to five frequency ranges (Shown in below Diagram).
 - Appropriate Frequency ranges will be added as per the number of frequency range selection (shown in the below image).
 - > By default, single frequency range is selected.



Sweep Range :		Multi Rang	ge 🔻
Select No. of Frequency Ran	ge :	5	•
Frequency range 1: 23.000	-	1199.000	•
Frequency range 2: 1200.000	-	2399.000	•
Frequency range 3: 2400.000	- -	3599.000	MHz •
Frequency range 4: 3600.000	- -	4799.000	•
Frequency range 5: 4800.000	-	6000.000	•

- C. **Frequency Range:** For single range, the default start and stop frequencies are 23 MHz and 6000 MHz respectively. User can modify these values as needed.
 - > By default, start and stop frequencies are 23 MHz and 6000 MHz respectively.
- D. Current Frequency Display: Shows the current frequency during sweep process.
- E. Amplitude Set: Set the amplitude in dBm.
- F. **Step Size setting:** Shows the step size at which the frequencies keep incrementing during sweep process.
- G. Number of Steps: Shows the No. of frequency steps (number of frequencies between start and stop frequency).
- H. Sweep Time: Define the sweep time in seconds or milliseconds.
- I. No. of Cycles: Displays the number of sweep repetitions or sweep cycles.
 - In Finite cycle, an additional input box appears to define desired numbers of cycles of sweep.



- J. Sweep Start/Stop Controls: Starts or stops the sweeping operations with these buttons.
- K. Scheduled Sweep Start: Starts the sweeping at desired time.
 - ➤ A new window appears (shown below) after checking this checkbox.



~	Scheduled Sweep Start	 а
	Start time: 0 🖨 0 🖨 ()	 b
	Time Left : 00: 00: 00 Set	 С
		d

- a. Scheduled Time: Define desired time in 24 hours (HH:MM:SS) format for start sweeping.
- b. Set: Initiate sweeping of frequencies after the scheduled time passes.
- c. **Reset:** resets all the parameters.
- d. **Remaining Time:** Displays the remaining time.
 - Time taken between sweep cycle in Multi-Range will be around 1 second. After completion of every sweep, software will reinitiate its process with appropriate range given by the user.



Pulse Mode Operation:

Pulse mode generates **pulses at specified intervals for specific frequency**.

Pulse mode Settings:

se mode								
⊙ Continuo	us Cycles		С	Finite	Cycles	•		
Center Frequency :	23.00	•	MHz	•			•	
「(On):	1000.000	•	ms	•			•	
(Off) :	1000.000	•	ms	•				
Attenuation(dB):	0.00	•	Amp	litude(:lBm): -3	.10 🔹		
No. Of Cycles :	0	*					•	
Pul	se Start		Pulse S	top	←			
Scheduled Pulse	e Start		←					

- A. **Pulse Cycle Type:** Select Continuous or Finite Cycle.
 - > Continuous Cycle: Pulses are repeated continuously until stopped manually.
 - > Finite Cycles: Pulses are repeated for specified numbers and then stops automatically.
 - > By default, Continuous cycle is selected.
- B. Frequency Set: Set the Centre Frequency for the Pulses.
- C. **On Time:** Specify pulse on-time(RF enabled)
- **D. Off-Time:** Specify Off-Time (RF disabled) of the pulsated output.
- E. **Attenuation Set:** Set the attenuation in dB and respective amplitude is displayed in amplitude field. . Maximum attenuation is "**0 dB**" and minimum attenuation is "**-30 dB**"
- F. No. of Cycles: Shows the number of cycles completed.



- > When Finite cycle is selected, a new textbox appears (as shown below).
- > Pulses are generated for the number of cycles entered by the user in this textbox.



- G. **Pulse Start/Stop:** Starts or stops the pulsating process with these buttons.
- H. **Scheduled Pulse Start:** Starts the pulsating process at desired time.
 - A new window appears (shown below) after checking this checkbox.

Scheduled Pulse Start		а
Start time : 0 🖨 0 🖨 0 🖨 🎧		b
Time Left: 00 : 00 : 00	Set 🛃 🗲	с
	*9	d

- a. Scheduled Time: Define desired time in 24 hours (HH:MM:SS) format for start pulsating.
- b. **Set:** Starts pulsating of frequencies after the scheduled time passes.
- c. **Reset:** Resets all the parameters.
- d. **Remaining Time:** Displays the remaining time to start pulse operations.