



Remote Graphical User Interface (GUI) User Guide v2.9.7 and greater

WARNING – THE ANALYZER’S ETHERNET CONTROLLER IS FUNCTIONALLY A ETHERNET-TO-SERIAL ADAPTER AND THE BAUD RATE IS FOR THE SERIAL SIDE. DO NOT CHANGE THE BAUD RATE FROM THE FACTORY SETTING. IF YOU DO THE GUI WILL DISPLAY A “FAIL:GET START PACKET ERROR.” MOST ANALYZERS REQUIRE A 115,200 BAUD RATE EXCEPT FOR THE –SBS, -CLM, TRSA, AND –DRSA ANALYZERS WHICH REQUIRE 230,400 BAUD RATE.

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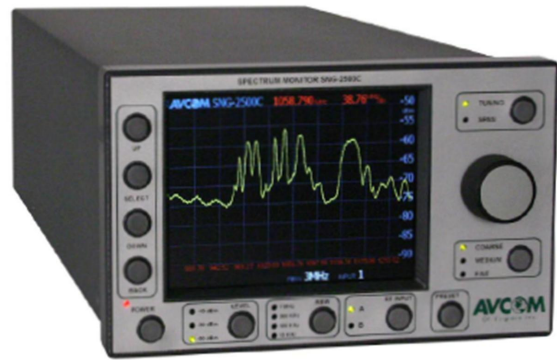
1. NEW FEATURES (GUI RELEASE 2.9.6 AND GREATER)

- **Window Resize** – The GUI can now dynamically resize to fit most monitor resolutions.
- **Master GUI Mode** – Connect and control up to 12 spectrum analyzers by going to Configure>Miscellaneous and changing the Windows to Show value.
- **Data Acquisition (DAQ)** - used for general data collection or for automated signal analysis and email alarming if a carrier has been lost. DAQ requires more user thought and input than the Alarm but can do much more than Alarms. The original Alarm feature only applies to a signal that is on-screen and does not change, but DAQ allows alarming to cover the entire spectrum range of the analyzer and any RF Inputs available. See the included DAQ.xls spreadsheet for a template of the DAQ script. There are many cell comments that describe the valid inputs and applications.

Memory Waveform Downloads – GUI v2.9.4 and above supports remote control and memory waveform downloads from the new LCD color display Portable Spectrum Analyzer PSA-2500C and Rack Mount Spectrum Analyzer SNG-2500C.



PSA-2500C



SNG-2500C

- **NEW!** Adjust the Preset name and Peak Level indicator font sizes with the Presets>Adjust Font Size feature.

2. GENERAL OVERVIEW

This manual provides general information on the installation, setup, and use of the GUI software. The GUI can connect and remotely control analyzers in one of three ways:

1. Directly to a PC via serial cable, USB, or ethernet crossover cable depending on analyzer model.
2. In an internal network
3. Across networks through the internet.

3. ANALYZER NOTES

- **WARNING – THE ANALYZER’S ETHERNET CONTROLLER IS FUNCTIONALLY A ETHERNET-TO-SERIAL ADAPTER AND THE BAUD RATE IS FOR THE SERIAL SIDE. DO NOT CHANGE THE BAUD RATE FROM THE FACTORY SETTING. IF YOU DO THE GUI WILL DISPLAY A “FAIL:GET START PACKET ERROR.” MOST ANALYZERS REQUIRE A 115,200 BAUD RATE EXCEPT FOR THE –SBS, -CLM, TRSA, AND –DRSA ANALYZERS WHICH REQUIRE 230,400 BAUD RATE.**
- Before the GUI can be used to remotely control **PSA** and **MSA** series spectrum analyzers you must go into Menu 5 on the analyzer and either turn **SCOM ON** or **REMOTE ON**.
- If you see **SCOM** then you have the new ethernet hardware and will use the “LAN” connection type discussed in **Section 6.2**.
- If you see **REMOTE ON** then you have what is known as a “SitePlayer” ethernet device discussed in **Section 6.3**. SitePlayer devices were used in **RSA** and **most PSA** models until June 2007, in the **MSA-4570** until March 2008, and in the **PSA-37XP** until April 2008. The networking capabilities of the SitePlayer are limited to direct ethernet connection with a crossover cable and in small networks. Larger networks with more data traffic tend to cause the SitePlayer to lockup. If you have a SitePlayer model, please call AVCOM to get your analyzer upgraded to the new ethernet hardware.
**** AVCOM GUI v2.8.5 and greater does not support SitePlayer type connections.**
- **A 9-wire serial cable is required if you are using serial connection type.**

4. GUI INSTALLATION

4.1 INSTALLATION. The Avcom GUI should begin to install automatically from the installation disc provided with the spectrum analyzer. If not, install the GUI from the “Run” command on your Start menu; the install file is named “AvcomStdGuiXXXFull.exe” where “XXX” denotes the GUI version. The GUI will install by default to the user’s folder.

****NOTE**** Some operating system’s security policies will change the GUI’s support file attributes to **READ ONLY**. One possible solution is to install and run the GUI as a user with administrator privileges. Another is to set the /Program Files/Avcom of Virginia/ folder permission for all users to “Full Control” in the Security tab. If you experience problems installing the GUI or modifying GUI menus, or contact your IT department.

If you have problems saving Spectrum Analyzer List profiles or other GUI parameters then you need to run the GUI as a user with administrator privileges. Alternatively, if there are problems with the GUI storing SA List or other parameters then Windows users can set the /Program Files/Avcom of Virginia/ folder permission for all users to Full Control in the Security tab.

USB: If you use an analyzer with a USB port you will need to install either the FTDI USB Virtual COM Port (VCP) or D2XX(dll library) driver from <http://www.ftdichip.com/FTDrivers.htm>. Both now install what is called a CDM driver that supports both VCP and DLL methods.

Once you have installed the driver and plugged the analyzer to a USB port on the PC, find the Com port the USB is emulating by going to My Computer>Properties>Hardware>Device Manager>Ports and finding the “USB SERIAL DEVICE” and the COM# assigned to it. The COM# will be the value used in CFG>Spectrum Analyzer List for your USB connected analyzer.

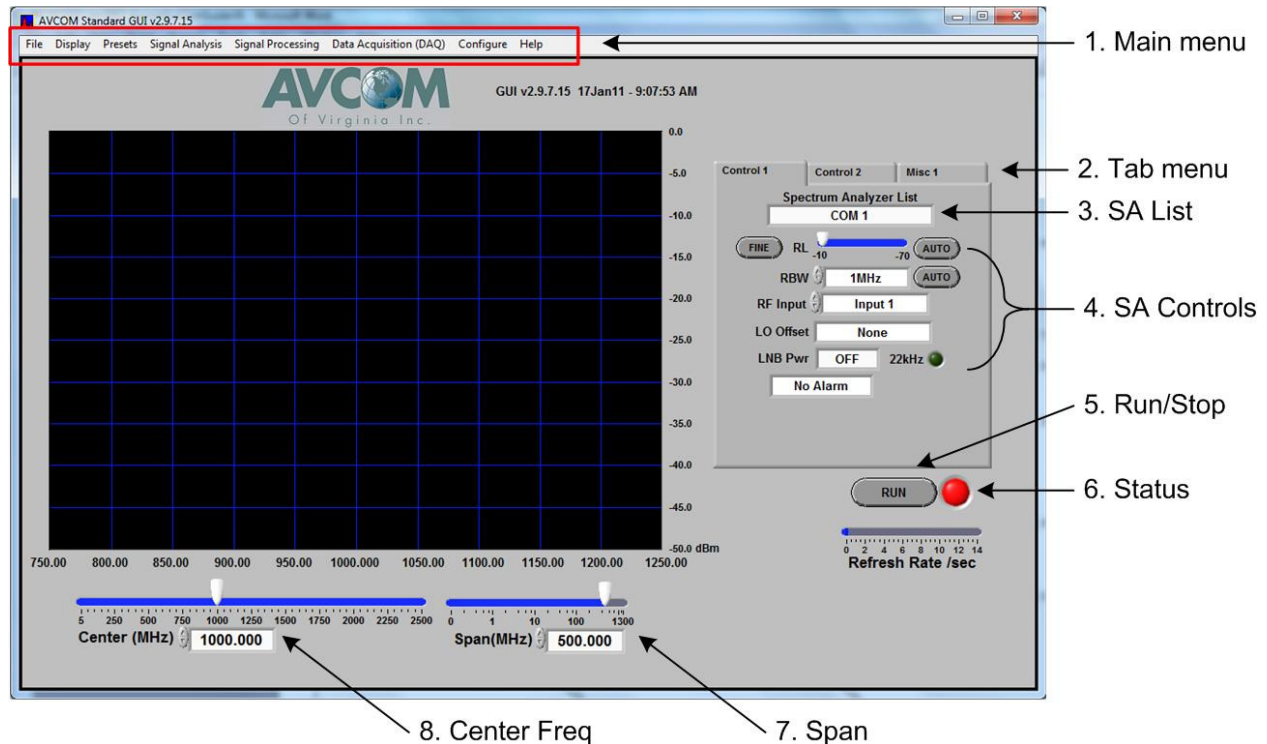
4.2 GUI START-UP. Run GUI by going to Start>Programs>AVCOM>AVCOM GUI vX.X.

4.3 RUNNING THE GUI

- If the SA is connected to the PC serial port 1 then select “COM1” in the Spectrum Analyzer List and then select Run to connect.
- If using a direct ethernet connection via crossover cable AND you have just received the SA from AVCOM then the SA’s IP is **192.168.118.242** and port is **26482**. Set the PC’s network adapter’s IP to **192.168.118.xxx (anything other than 242)** and select “LAN Default” in the SA List, then select Run to connect.
- If you are unsure of the SA’s IP and/or port parameters then see section 5 for configuring the analyzer’s ethernet connection and section 6 for creating a new item for the analyzer in the SA List.

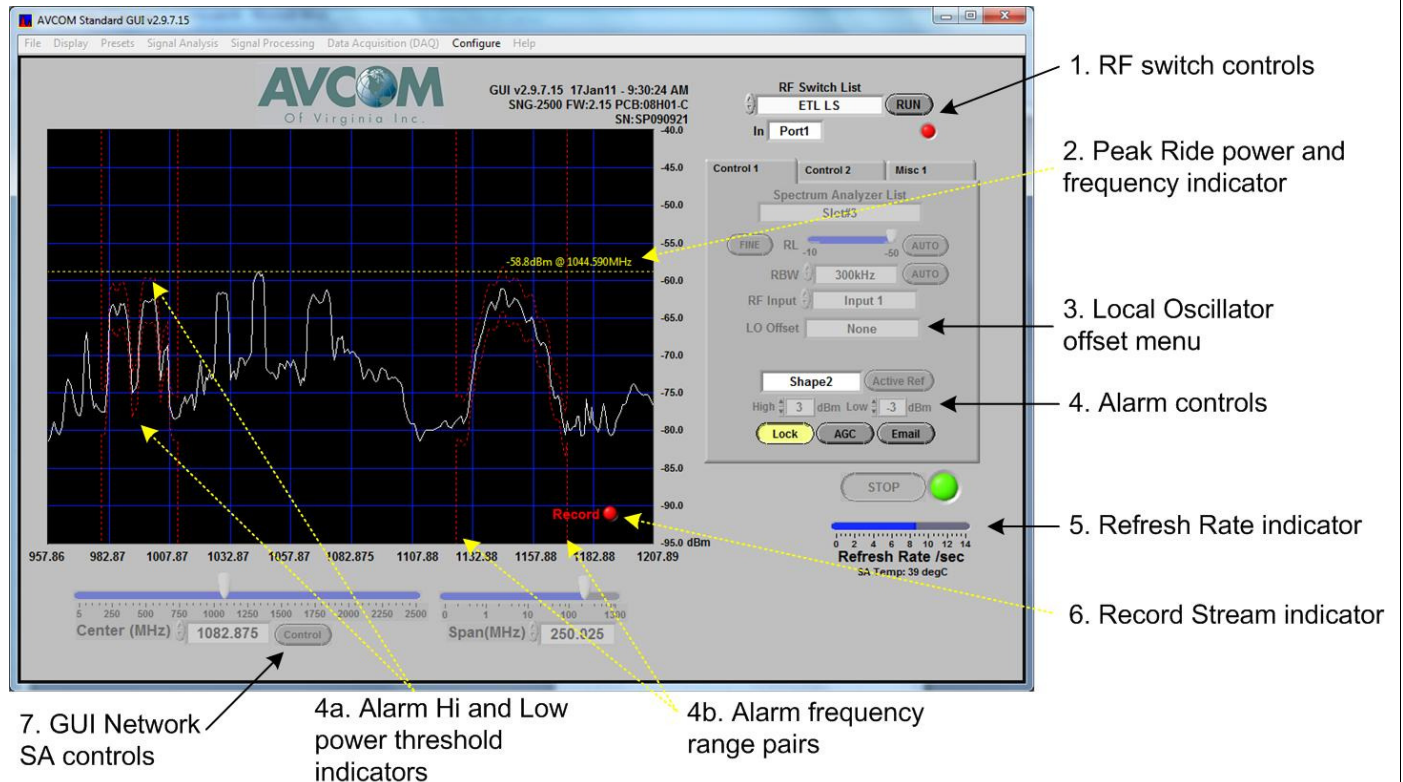
5. GUI CONTROLS

5.1 PRIMARY CONTROLS



1. **Main Menu** - Used to access most functions. See Section 5.2.1 for more information.
2. **Tab Menu** - Used to access many primary controls.
3. **Spectrum Analyzer List** - Menu of spectrum analyzers to connect to. Add, Modify, and Delete items in the SA List from Configure>SA List in the Main Menu.
4. **SA Controls:**
 - a. **RL** – Analog slider for selecting reference level. FINE button selects between 5dB/div and 1dB/div. AUTO button enables the GUI to automatically adjust RL to peak the signal.
 - b. **RBW** - Menu for selecting resolution bandwidth. AUTO button enables GUI to automatically select the best RBW depending on Span to minimize scan losses.
 - c. **RF Input** – Menu that allows user to select the RF input for multiple input units. Only shown at startup and when connected to a Remote Spectrum Analyzer (RSA) with that option.
 - d. **LNB Power** – Voltage and 22kHz controls. Only shown at startup and when connected to a Remote Spectrum Analyzer (RSA) with that option.
5. **Run/Stop** - Used to initiate or stop communications with the analyzer.
6. **Connection Status** - Red = not connected, Yellow = attempting to connect, Green = connected.
7. **Span Slider and Numeric Controls** - Used to set the desired span. Span is measured across the entire graph.
8. **Center Frequency (CF) Slider and Numeric Controls** - Used to set the desired CF.

5.2 ADVANCED CONTROLS

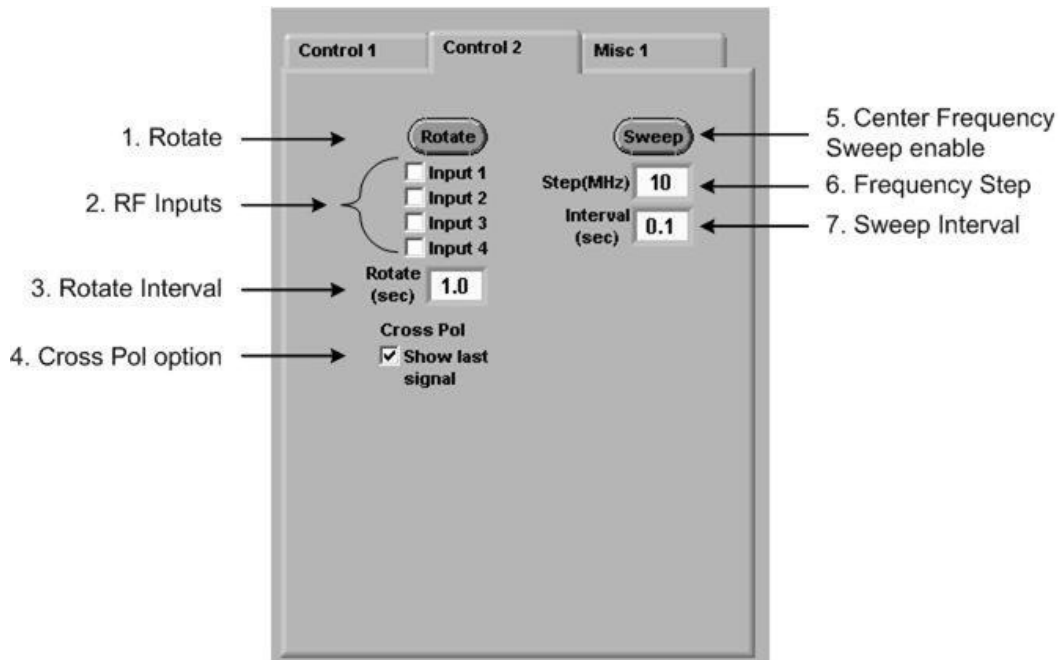


1. **Quintech and ETL Switch controls** – The AVCOM GUI supports controlling several ETL and Quintech RF switch models. Go to Configure>RF Switched to configure the List for your devices and to opt to display these controls.
2. **Peak Ride indicator** – Turn on or off in Signal Analysis>Peak in the Main Menu. Choose from “None”, “Ride”, or “Hold”
3. **Local Oscillator Offset menu** – Used to display all of the frequencies in the actual frequency seen at the antenna or any intermediate stage of the RF path. Customize the menu for your needs in Configure> LO Offset in the Main Menu.
4. **Alarm controls** – Used to select from one to four shape alarms when running.
 1. If you want to use a saved signal as the alarm reference then call up that signal with Display Single or Play Stream first then select Alarm Ref. Otherwise the average of the active signal will be used as the reference. The process to use a Saved Signal or a Recorded Stream as the Alarm Reference is as follows:
 - a. Turn on the Shape Alarm to the # you need (1...4) and select Stored Ref. (when Stored Ref is first selected no tolerances will appear until you select the Display Single or Play Stream file you want to use as the reference)
 - b. Go to Display>Display Single or Display>Play Stream and select the file you want.
 - c. Connect to the analyzer and acquire the signal
 - d. The tolerances are now based on the saved waveform and you will not see the message that normally shows describing the saved waveform.

2. Adjust the Hi and Lo Threshold controls and if necessary signal filtering (found under Signal Processing>Filter) to prevent false alarms. The Alarm Hi and Lo Power Threshold Indicators (**4a**) will move as these values are adjusted.
 3. Drag the Alarm Frequency Range Pairs (**4b**) to cover the range desired and ignore unwanted spectrum.
 4. Select Lock Shape to lock the alarm tolerances and prevent them from changing. A wizard will appear to prompt you for recording and email and SNMP alerts.
5. **Refresh Rate indicator** – Displays the “waveforms per second” received from the SA. This rate will vary depending on the network connection, PC CPU and the Desired Refresh Rate set in Configure>Miscellaneous. The Desired Rate can be reduced from the default of 12 (per second) to conserve CPU resources or limit network data traffic. Refresh rates as low as 1 every 20 seconds is allowed.
6. **Record Stream indicator** – blinking if turned on.
7. **GUI Network Spectrum Analyzer control** – If the GUI Network feature in Configure > Miscellaneous is turned On then this control will appear in the Listen state. This control is for multiple GUIs to view the same analyzer simultaneously. When a GUI wants to change the SA then this button is selected and depending on the Lead GUI settings in Configure > Miscellaneous the GUI will either get control immediately or have to wait for the Lead GUI to grant control permission. When gray, the GUI is in “Listen” mode and the SA parameters get pushed into the GUI controls, so the GUI controls are now indicators. See Section 7 of this document for more details.

CONTROL 2

The Control 2 tab has several advanced control features.



- 1. Rotate** - Shown at GUI startup and when connected to a SA with multiple inputs. Automatically scrolls through the RF inputs that are selected.
- 2. RF Inputs** - Select which RF Inputs you want to rotate through.
- 3. Rotate Interval** - Sets how often the GUI will change the RF Input to the next RF Input selected.
- 4. Cross Polarization** – Used to show the last RF Input signal (red waveform) along with the current RF Input signal (white waveform) such as when tuning an antenna’s horizontal and vertical feeds. May be used in conjunction with the 2dB Zoom option described below.
- 5. Center Frequency Sweep** – When selected will automatically sweep the CF throughout its range. When unselected will return the CF to the original point before Sweep started.
- 6. Frequency Step** – Sets the CF step size taken during Sweep.
- 7. Sweep Interval** – Sets how often the CF step is taken.

GUI MAIN MENU

5.2.1 FILE

- There are shortcuts available for **Run/Stop**, **Mute**, and **Exit**.
- When **Tips** are turned on a message will appear when Span exceeds the linear RBW range.
- **Import** allow the user to copy a previous GUI's support files and reuse that GUI's configuration files for the SA List and LO Offset Menu.
- **Create JPG** and **HTML** are two options for capturing a screen shot of the GUI and saving it to a file or printing.

5.2.2 DISPLAY

- **Video color flip** changes the graph colors for low or high lighting conditions.
- **Spectrum flip** is used for when a signal from a low-side injection LNB is monitored.
- **Clear active signal** removes the active (white) waveform from the graph if not running.
- **Clear stored signal** removes the red waveform from the graph.
- **Download memory** downloads traces saved in the spectrum analyzer. This item is only enabled when connected to a new PSA-2500C, SNG-2500C, or LAN default connection type PSA or MSA series analyzer, but not a SitePlayer type.
- **Save Single** stores the active (white) waveform to a .SIN file. Older GUIs saved a single to a .AVC file but the waveform data was in raw 8-bit format. The new format is semicolon-delimited and the waveform data has been converted to dB.
- **Display Single** recalls a saved .SIN file and displays it in a red waveform.
- **Record Stream** stores the active (white) waveform to a .REC file. It is disabled when not running. Older GUIs recorded to a .STR file but the waveform data was in raw 8-bit format. The new format is semicolon-delimited and the waveform data has been converted to dB.
- **Play Stream** recalls a saved .REC file and displays it in a red waveform.
- **Zoom In/Out** allows the CF and Span to be quickly changed by left-clicking the mouse cursor within the graph area. If the cursor is left-clicked and released *without moving the cursor* between click and release then the GUI zooms *out* by doubling the Span and changing the CF to the frequency where you clicked. If the cursor is *clicked and dragged then released* the Span is zoomed *in* and the CF is the center of the drag range. The zoom is disabled when Delta, Pointers, or Alarm is on.

5.2.3 PRESETS

Presets – The GUI supports up to 15 user-defined presets that are assigned to **each** analyzer in the SA List.

Each preset stores:

- a. Center Frequency
- b. Span
- c. Reference Level
- d. RBW
- e. RF Input
- f. Start and End frequency markers
- g. LO Offset
- h. LNB Power voltage
- i. LNB Power 22kHz signal
- j. **New!** Show/Hide Quintech controls
- k. **New!** Spectrum Flip

5.2.4 SIGNAL ANALYSIS

• **Measurements:**

- **Show Delta** – Green Delta measurement points can be dragged to the location of your choice on the waveform and the power and frequency difference is calculated. Delta markers are reset if reference level is changed.
 - **Show Pointer** – When selected and the mouse is left-clicked within the graph, the frequency and power at the pointer is shown.
 - **SNR (Peak – Min)** – Calculates the “Signal to Noise” difference between the displayed signal peak and minimum values.
 - **Integrated BW Power** – Also known as Total Power.
 - **Show -3dB** – The GUI determines the signal peak and then the difference between the -3dB down frequency points on each side of that peak and shows them with dotted yellow lines. The peak is not shown unless you select Peak Ride as well.
- **Peak – Ride** continuously calculates the peak power level of the waveform and the frequency at that point. *Hold* maintains the peak level measured. Selecting “None” clears the indicator.
 - **Carrier ID** – Compares the active signal to all stored Save Single (.SIN) and Record Stream (.REC) files in the selected folder and calculates a Percent Match. The GUI will attempt to tune the active signal to the same parameters as the saved signal.
 - **Waterfall** – Displays a histogram of previous signals behind the current signal.

5.2.5 SIGNAL PROCESSING

- **RL Zoom** – Used for selecting from 5dBm/Div to 2dBm/Div and adjusting the signal up or down for better resolution
- **Filter** – Averages the displayed waveform over the last 4, 8 or 16 waveforms
- **Persistence** – Calls up a popup to select between None, Peak, Minimum, and Envelope Persistence. Finds and holds the maximum or minimum amplitude for each point on the graph for the selected period of time. Envelope Persistence shows both the maximum and minimum amplitude for each point with a dotted yellow line.

5.2.6 DATA ACQUISITION (DAQ)

DAQ is an automated signal analysis feature that allows data logging and alarming and to cover the entire spectrum range of the analyzer and any RF Inputs available. Inputs from a comma or semi-colon delimited (.CSV) spreadsheet controls automated measurements, waits for trigger events, and can repeat the process on a programmable interval. If tolerances are included in the script then the GUI can generate e-mail and/or SNMP alerts, too. Look in the EXAMPLE_DAQ_TEST_SCRIPT.CSV in the GUI's installation folder for an example test script. Below the test script rows are details of available measurements. Because the analyzer can return 2-4 times/second the DAQ is capable of monitoring, data logging, and alarming many signals even on different RF Inputs at a high rate.

- **Start DAQ** – Starts running the DAQ file selected in Configure DAQ. Disabled if SA not running.
- **Configure DAQ** – Selects the DAQ file and data-logging options.

5.2.7 CONFIGURE

- **Spectrum Analyzer List** – Lets you Add, Modify, or Delete spectrum analyzers and their connection parameters from the SA List. See Section 5 for more details.
- **Ethernet Connection** – Finds spectrum analyzers on your network and configures their ethernet parameters. See Section 4 for more details.
- **LO Offset** – Customize the LO Offset menu.
- **Miscellaneous** –

Windows to Show
Window Maximize Time (min)
Start Polling after Close? YES
Poll Time (sec)
AVCOM GUI network? YES
User Name
Control Permissions Mode

This is Lead GUI? YES
Control Time (sec)
Desired waveforms per second
GUI Administrator? YES
password
AVCOM Password
Start Running automatically at next GUI startup? YES
Close

- # Windows to Show – selections of more than 1 put the GUI into Master GUI mode for monitoring multiple analyzers simultaneously.

- **Start Polling after Close** – Enabled when more than one Window is shown. Polling allows signals on different RF Inputs of the same analyzer to be updated and displayed in separate Windows of the same GUI. Polling can also be used to monitor signals that are widely separated in the spectrum on the same RF Input. Any tuning parameter is allowed to be changed and multiple analyzers are allowed to be polled. Prior to selecting Start Polling after Close
 1. Go to the Window #1 and Run the analyzer.
 2. Tune the analyzer and select the RF Input you want to get the signal of interest displayed. If Shape Alarms are needed set them up now and Lock the tolerances.
 3. Stop that window, go to the next window and repeat step #1.
 4. When all windows are showing the signal to your satisfaction go into CFG>Misc and select Start Polling after Close. This enables Poll Time and you can change this timer. Startup time delays limits how fast the Polling currently can Run and update the signal so the Poll Time may not be able to be set much lower than 3-5 seconds depending on how you are connected to the analyzer and network delays, etc.
 5. After Closing CFG>Misc the GUI will automatically Run and update the signal on each window one by one.

- GUI Network – Allows multiple GUIs to view and control the same spectrum analyzer. See Section 7 for more details.
- Desired Refresh Rate - can be reduced to conserve CPU or network traffic if necessary
- GUI Administrator – Used to prevent unauthorized changes. If selected and a password entered, the next time the GUI opens up and the correct password is *not* entered, then the entire Configure menu is disabled.
- Engineering Password – Enables functions for engineering use.
- Start Running Automatically – If selected the GUI will automatically run on the last spectrum analyzer at the next GUI startup

- **RF Switches** – Lets you configure and control other manufacturers such as Quintech SRR/MRF and ETL LS series models. License. Contact AVCOM if you need us to support other devices.
- **Admin Password** – Will be enabled if GUI Administrator and password in CFG>Miscellaneous are turned On and a password is entered. If selected, or when the GUI is next opened up, and the correct Admin password is not entered, the Configure menu items will be disabled to prevent unauthorized changes.
- **Reflash Firmware** – Enabled with GUI is connected a new generation PSA or SNG analyzer.

5.2.8 HELP

- **Open User Guide**
- **Help Wizard** – Runs the wizard to help you connect to your SA and configure your SA List.
- **AVCOM Home page** – If connected to the internet, opens the AVCOM home page for product information.
- **About** – Displays GUI version and AVCOM contact information.

6. SPECTRUM ANALYZER ETHERNET SETUP

6.1 SERIAL CONNECTION

Connect the spectrum analyzer directly to the user's PC using the straight female-female DB-9 serial cable provided. **A 9-wire serial cable is required for operation.** Under the "Control 1" tab of the GUI, select "COM 1" from the "Spectrum Analyzer List" then Run to establish connection.

If a port other than COM 1 is being used, a new Serial Connection Profile will need to be added (see section 7.1).

6.2 ETHERNET CONNECTION

Connect the spectrum analyzer directly to the PC's ethernet port using a crossover ethernet cable or through a switch or router with straight cables. The GUI contains a configuration tool for configuring the spectrum analyzer's ethernet settings under Configure>Ethernet Connection on the Main Menu. It allows ethernet configuration directly or from within your LAN.

Ethernet configuration changes via both serial and ethernet are supported. **A 9-wire serial cable is required for operation.**

6.2.1 ETHERNET CONFIGURATION

Use Configure>Ethernet Connection to open the ConfigTool and adjust the spectrum analyzer's ethernet controller's parameters. **Note that when ConfigTool first opens up the parameters shown are only the default parameters and are not for any analyzer that you may be connected to! It is recommended that you always do a Query and Import Current Settings before you make any changes!**

To configure the spectrum analyzer via COM Port connection:

1. Select **COM Port** in Connection Type and input the applicable **COM Port #**. **A 9-wire serial cable is required for operation.**
2. Select **Query and Import Current Settings** to pull in the parameters that are currently loaded in the spectrum analyzer. Power cycle the SA when prompted to do so in the "Status" box.
3. Under **Connection Settings**, enter the new IP address and Port. Do not change the Baud Rate or Serial Settings.
4. Select **Save Settings to Analyzer**. Power cycle the SA when prompted to do so in the "Status" box.

To configure the spectrum analyzer via ethernet connection:

1. Select **Ethernet** in Connection Type.
2. If known, enter the IP of the SA you want to configure. Otherwise, select the network adapter from

Avcom of Virginia – 7729 Pocoshock Way – Richmond – Virginia - 23235 – USA

www.avcomofva.com – PHONE 1.804.794.2500 – FAX 1.804.794.8284

the pull-down menu and click on **Scan For Devices**. After finding all analyzers on the selected Network Adapter, highlight the IP of the SA you want to configure and then enter the new IP in **Change IP Address To:** field. Then click **Change IP Address**. Select **Close** to return to the ConfigTool.

3. Select **Query and Import Current Settings** to read the parameters that are currently loaded in the spectrum analyzer that was selected in Scan for Devices.
4. Under **Connection Settings**, enter the new IP address and Port. Do not change the Baud Rate or Serial Settings.
5. Select **Save Settings to Analyzer**.

CAUTION: If the Spectrum Analyzer and PC TCP IP and/or Gateway parameters are not compatible, a serial cable must be used to configure the spectrum analyzer.

NOTE1: Advanced settings are available for setting the Gateway and changing the HTTP Port. However, most networks will not require changing either of these settings. Please contact your network administrator for support with these functions.

NOTE2: Internet Security software may significantly impact the user's ability to use the web configuration. The user may first need to disable or grant full permissions to any installed internet security or firewall software and may also need to "unblock" the Window's built-in firewall when using Window's XP SP2 or later.

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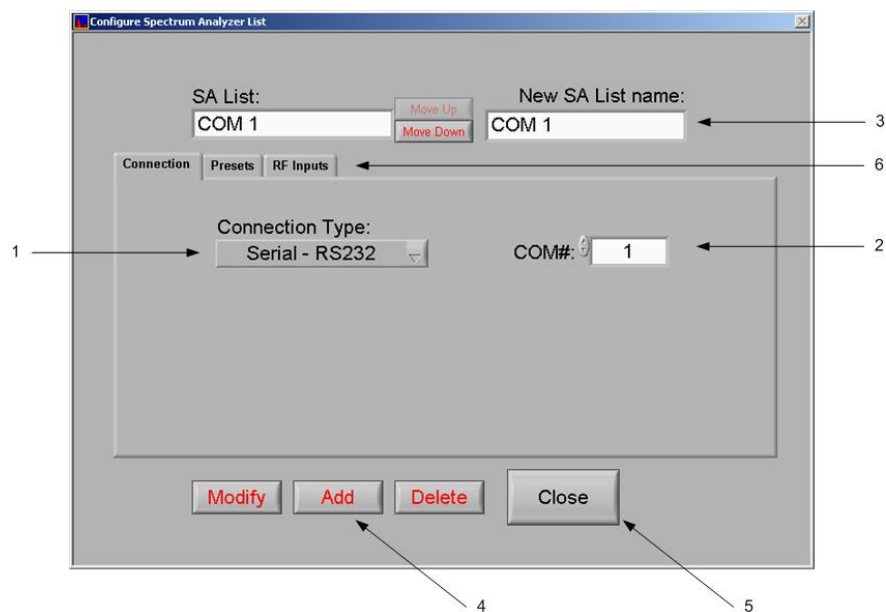
7. MANAGING SPECTRUM ANALYZER LIST PROFILES

To add additional spectrum analyzer profiles, select Configure>Spectrum Analyzer List from the Main Menu.

7.1 SERIAL CONNECTION PROFILE

1. Select “Serial” from the Connection Type drop down menu.
2. Enter the appropriate COM port.
3. Type in a name for the new serial profile.
4. Click “Add” to add the new profile name to the saved profiles list.
5. Click “Close” to return to the Main GUI.
6. Presets and RF Inputs may be be customized in those tabs if desired.

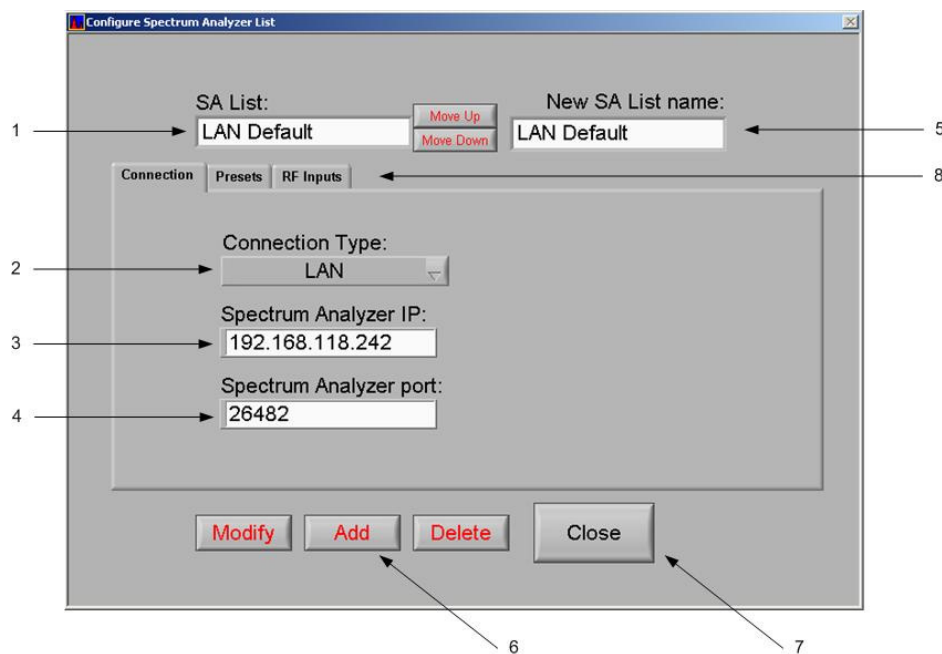
NOTE – “Modify” can be used to change an existing profile



7.2 ETHERNET CONNECTION PROFILE

1. Select “LAN Default” from the SA List menu.
2. Select “LAN” in the Connection Type menu.
3. Enter the IP address for the spectrum analyzer. Shown below is the default IP as shipped from the factory.
4. Enter the port for the spectrum analyzer. Shown below is the default port as shipped from the factory.
5. Type in a name for the new ethernet profile.
6. Click “Add” to add the new profile name to the saved profiles list.
7. Click “Close” to return to the Main GUI.
8. Presets and RF Inputs may be be customized in those tabs if desired

NOTE – “Modify” can be used to change an existing profile.



Before the GUI can connect and control a portable spectrum analyzer (PSA and MSA models) go to the analyzer's Menu 5 and set **SCOM ON**. RSA models require no local setup besides applying power.

8. GUI Network

AVCOM GUI v2.8.1 and greater has a feature that allows multiple GUIs to connect to the same AVCOM spectrum analyzer (SA) simultaneously through a central GUI acting as the waveform server as shown in Figure 1. The arrowed lines indicate the direct lines of communication.

This multi-user feature only requires that all users have at least GUI v2.8.1 or greater. Currently up to (10) Remote GUIs are supported. Contact AVCOM for more information.

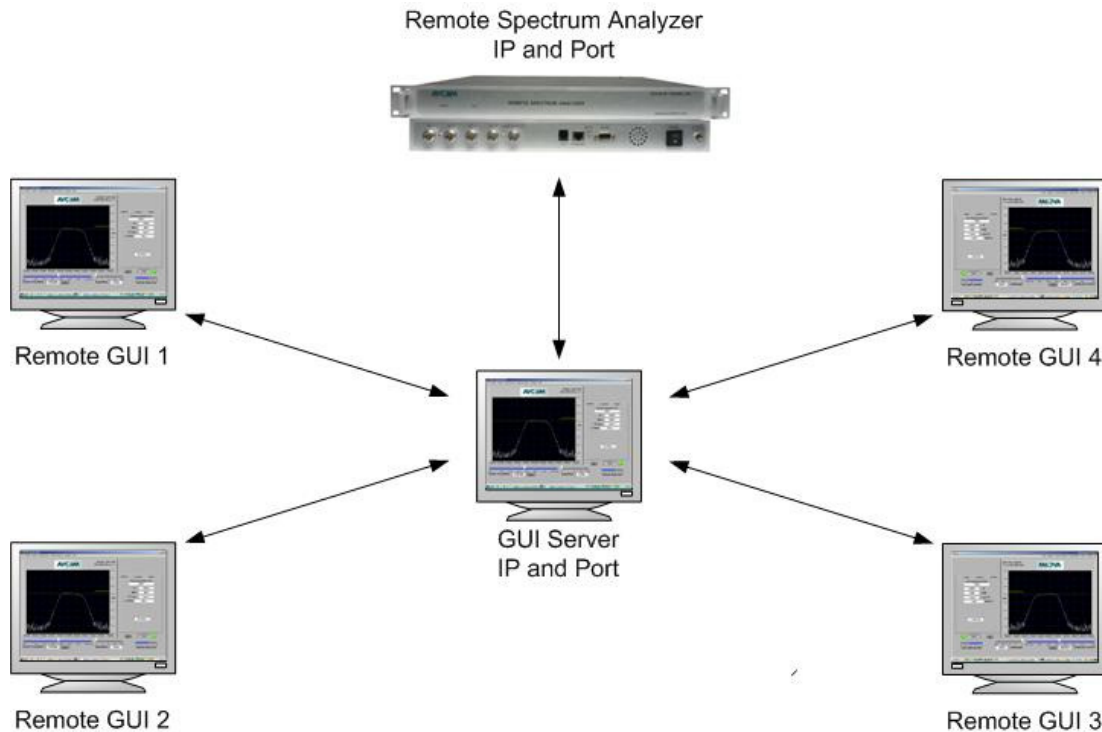


Figure 1

GUI Network Instructions

1. Install AVCOM GUI v2.8.1 or greater on the Remote GUI and GUI Server computers. Note that the GUI Server computer does not require any special server software installed on it other than the AVCOM GUI.
2. In all of the Server and Remote GUIs, go into `Configure>Miscellaneous` and select GUI network.
 - a. You must enter a User Name to make changes to the other parameters.
 - b. Control Permissions: If "None" is selected, then each GUI can take SA control immediately without any permissions from other GUIs. "Lead GUI grants" is a mode where only one of the GUIs should have the Lead GUI check box selected. In this mode, whenever a GUI that is not the Lead GUI wants to change the SA parameters they must request control permission from the Lead GUI. These request messages are sent automatically from the requesting GUI to the Lead GUI. If "Lead GUI grants" is selected then "This is Lead GUI?" is enabled and only one GUI may have this selected.

- c. “Control Time” is the period that SA control is given before automatically turning off. “Control Time” can be left at the default value or your organization may decide on a different time period from 15 – 120 seconds.
 - d. Close the Configure Miscellaneous window.
3. When you return to the main GUI window, a Control button will have appeared beside the Center Frequency control.
4. The GUI Server has to create a Spectrum Analyzer List profile for the SA by going into Configure>Spectrum Analyzer List on the Main Menu.
5. To create a Spectrum Analyzer List profile for the Remote GUIs first determine the IP of the GUI Server computer.
6. Determine the GUI Server port for each of the SAs by the following: The GUI Server listens for Remote GUIs on a port relative to the how the GUI Server is connected to the SA.
 - a. If the GUI Server is connected to the SA by ethernet then it will listen on a port equal to the SA’s ethernet port minus 100. For example, if the SA’s port is 26482, then the GUI Server listens on port 26382 for all Remote Client connections.
 - b. If the GUI Server is connected to the SA by serial connection then the GUI Server will listen on an ethernet port equal to 26400 plus the Com port #. For example, if the SA is on COM1 then the GUI Server listens on port 26401 for Remote Client connections. If the SA is on COM2 then the GUI Server listens on port 26402.
7. Now that you have determined the GUI Server’s IP and Port for each SA, the **Remote GUIs** need to create a Spectrum Analyzer List profile for the GUI Server and the particular SA using the GUI Server’s IP and Port. **The Remote GUIs will use the “LAN – GUI Server” Connection Type in the CFG>SA LIST, the IP will be the GUI Server’s computer IP, and the port will be the # that the GUI Server is listening to for that analyzer.**
8. You are now ready to run. Power on the SA and open the GUI in the Remote and Server PCs. In the GUI Server select the new SA List item for the SA and watch it run. In the Remote GUIs select the SA List item for the GUI Server and the Remote GUI should display the signal as if it were connected directly to the SA.

9. Tuning the analyzer:

- If “Lead GUI grants” is *not* selected: click on the “Control” button then it will immediately change to a green “Listen”. Only one GUI should have Listen on at a time. If more than one has it on then the SA waveform will jump around as the conflicting commands are sent to it.
- If “Lead GUI grants” *is* selected and your GUI *is not* the Lead GUI then the “Control” button will change to a yellow “Request” state indicating a control request has been sent to the Lead GUI. The Lead GUI can either grant or deny control. If control is granted then your “Request” button will change to a green “Listen” button. If the Lead GUI denies control then your “Request” button will immediately revert back to “Control” and a denied message will be displayed. When the Control Time elapses, “Listen” will turn off automatically.

****Important Note**** If any of the Remote GUIs *do not* have the Multi-GUI sharing turned on, they *will still be able to connect to the server and will* cause SA Control conflicts when another GUI turns on Control since more than one GUI has control.

9. TERMS AND CONDITIONS

Only the following terms and conditions apply to the sale and delivery of the goods reflected herein. The products manufactured by AVCOM OF VIRGINIA INC., (hereafter referred to as AVCOM) are subject to the following conditions and are subject to change without prior written notice at AVCOMS' sole discretion. All implied warranties, if any, terminate 1 year from the date of the original purchase.

10.LIMITED WARRANTY POLICY

AVCOM warrants to the original purchaser that this product shall be free from defects in materials and workmanship upon delivery. AVCOM additionally warrants that product, used under normal service conditions, shall be free from defects in materials and workmanship for a period of 1 year**. The warranty policy includes:

- Labor cost and replacement of original parts and components.
- Repair cycle time of 21 business days upon return of unit to the factory Customer Service Center.

AVCOM shall not be liable for cost of repairs or replacement of parts or components due to physical damage, product misuse or abuse and unauthorized modifications or repair.

To receive In-Warranty service, the defective product must be received no later than the specified warranty period by contacting AVCOM's Customer Service center for a Return Material Authorization (RMA) number. Information needed to process the RMA includes the Model number, Serial number, date and place of purchase. For an RMA number contact AVCOM Service Center at PHONE: (804)-794-2500 or FAX (804) 794-8284. No product will be accepted by AVCOM that does not have an RMA number.

** Extended warranty terms are available. Please contact Avcom of Virginia for details.