Radiocrafts
Embedded Wireless Solutions
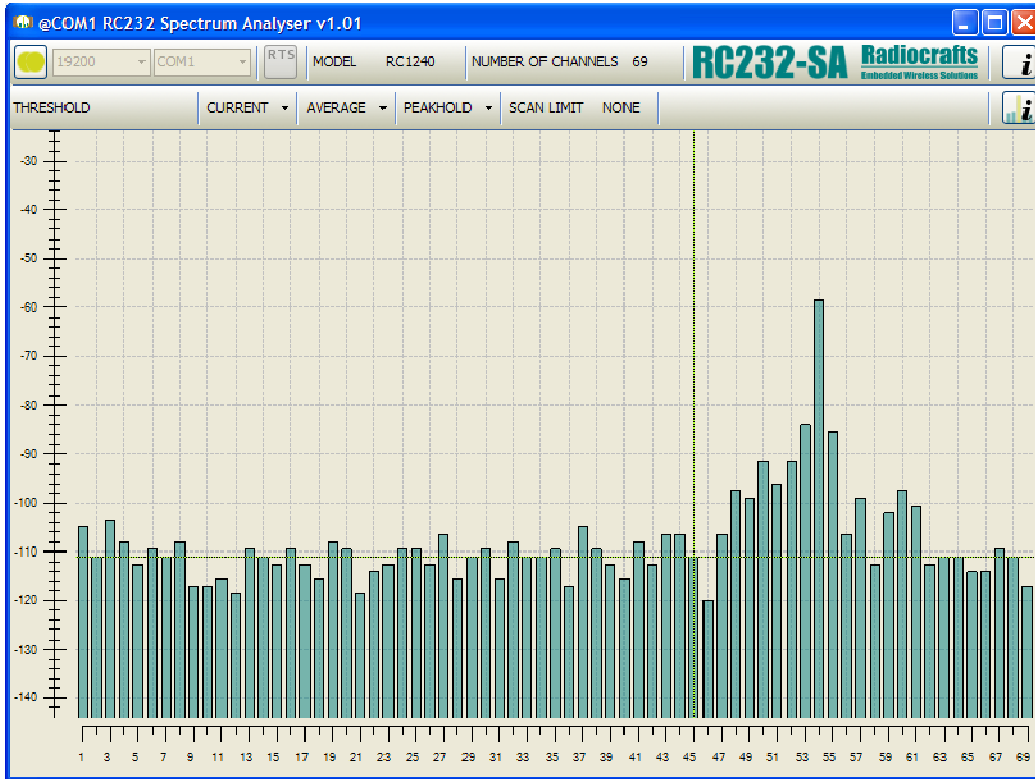
RC232-SA

RC232 Spectrum Analyzer (SA)
User Manual

Table of Contents

Installation Guide

RC232-SA Spectrum Analyzer (SA) is a part of Radiocrafts' RCTools PC suite tailored for use with Radiocrafts' RF Modules. For full installation procedure please read the RCTools Installation Guide available at www.radiocrafts.com.

The SA requires access to the modules UART via an available COM-port together with access to the modules CONFIG-pin. Typically UART-access is obtained via an UART-to-RS232 or UART-to-USB converter. The Demo Boards (DB) from Radiocrafts contains onboard level shifter for direct plug-in to a PC and further access to the related COM-port.

Screen Settings

It is recommended to run the application with screen size at least 1024x768 and font resolution 96dpi.

Introduction

RC232 Spectrum Analyzer Tool, SA, enables you to easily scan all or a subset of channels the module can operate on. For configuring, controlling test modes and sending messages, please check the Configuration and Communication Tool, CCT.
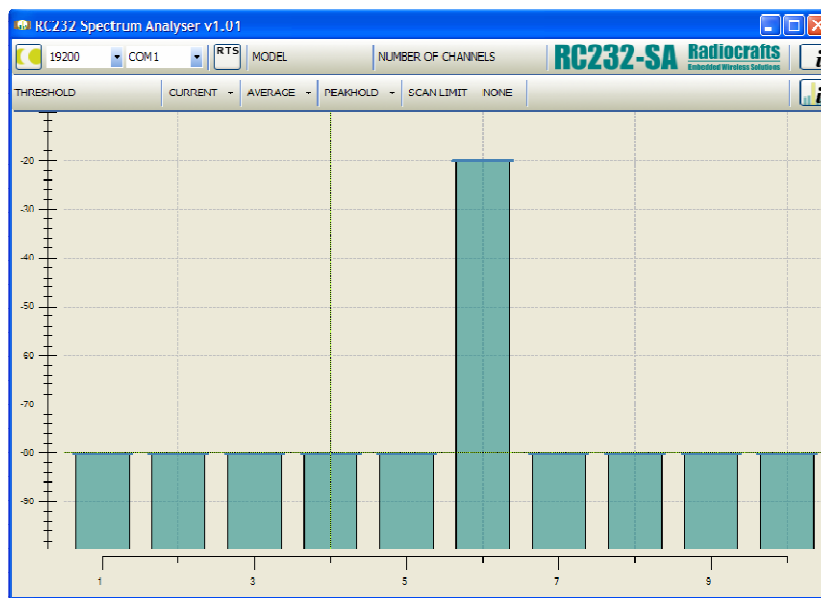

Figure 1. Main window

Physically connect the DB, or your own hardware with the Radiocrafts module, to the COM-port. If you are using the module on your own hardware, make sure to include the UART to RS232 or UART to USB converter.

RC232-SA

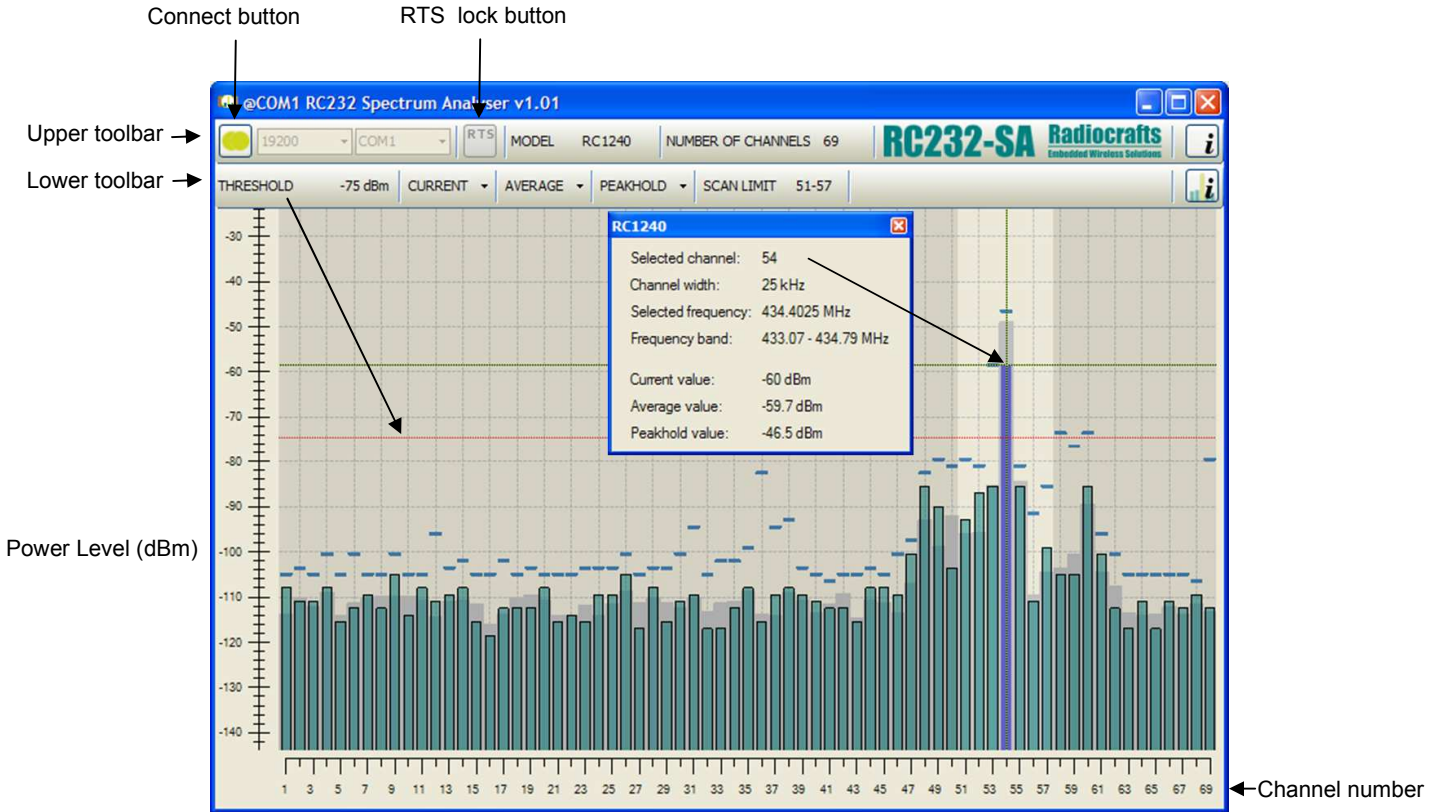Start the program and the main window will look similar to what is shown in Figure 1.

Figure 2. Main window with toolbars

Upper Toolbar Description

To connect to the module you need to press the **connect** button.
Before connecting, select the proper settings for your serial port:

- name of an available communication port (COMx)
- baud rate used to communicate with the module

After pressing connect button, the following message appears;

Figure 3. Waiting for prompt

The CONFIG pin on the module must then be pulled low. On Radiocrafts DB this is done by pressing the CONFIG button. Program will wait 15 seconds for a prompt sign, which is sent from the module when configuration mode is entered.

If you use an RTS-line to control the CONFIG line into the module, the program asserts RTS low automatically. If you use RTS line for some other purpose, you can disable this feature with the RTS Lock button.

When the configuration is loaded, you can see the modules name and number of available channels.

Lower Toolbar Description

Threshold: By right-click and drag a threshold level will be visible on the screen (as a red line) and the value of the threshold in dBm will be displayed in the toolbar. All RSSI-readings above the threshold value will be marked dark blue for increased visibility.

Current: Current value. Show or hide latest scan and enables or disables smoothing on last scan. The smoothing means reading RSSI and displaying average value of 3 or 5 readings while remaining on the same channel (reduces the effect of rapid changes in the RSSI-value). An RSSI reading is fast while changing channel takes longer time.

Average: Enables or disables displaying of the average value for last n scans, Average values are shown in grey in the background and n can be selected and changed by the user, default setting is 10.

Peakhold: Enables or disables view of peak value on each scanned channel.

Scan Limit: CTRL, left-click and drag over the bars for scanning only a selection of the channels. It can be limited to one channel only for high-speed RSSI-readings during for instance antenna tuning. The selected channel numbers are shown right to the Scan Limit and whit white background behind the bars while the non-scanned bars have gets grey background. The selected channels are reset to include all channels when right-clicking the SCAN LIMIT button.

Information Box: Left-click on or above any bar will display a green cross. By opening/clicking the Information Box to the right of the Lower Toolbar, all essential information on this channel, regardless of the selection of buttons on the Toolbar, is displayed in a pop-up window.

Miscellaneous

F9: Halt the scan. On some computers the graphics on the screen lag the RSSI-reading, especially for RC2000 (83 channels). If so, halt the scan and release when the graphical display of the bars on the screen has updated.

RC1040: No digital RSSI available, thus no valid information to be displayed with the SA tool.
RC2100: The digital reading reports RSSI of last received data package. As the SA tool requires the modules to remain in configuration mode during the channel scan where no reception of RF data packages is valid, the RC2100 provides no valid information for the SA tool. Use the CCT program for monitoring RSSI on RC2100 for each selected channel and read back RSSI when a valid data packet has been received.

Proximity effects: When monitoring an RF link between two modules in close range using the SA Tool, you might observe increased RSSI-level on the neighboring channels to the actual transmitting channel. This is due to RSSI detector saturation combined with adjacent power always present in the neighboring channels.

Document Revision History

Document Revision	Changes
1.0	New Revision
1.1	Changed chapter "Installation Guide" to match new installation procedure

Disclaimer

Radiocrafts AS believes the information contained herein is correct and accurate at the time of this printing. However, Radiocrafts AS reserves the right to make changes to this product without notice. Radiocrafts AS does not assume any responsibility for the use of the described product; neither does it convey any license under its patent rights, or the rights of others. The latest updates are available at the Radiocrafts website or by contacting Radiocrafts directly.

As far as possible, major changes of product specifications and functionality, will be stated in product specific Errata Notes published at the Radiocrafts website. Customers are encouraged to check regularly for the most recent updates on products and support tools.

Trademarks

RC232™ is a trademark of Radiocrafts AS. The RC232™ Embedded RF Protocol is used in a range of products from Radiocrafts. The protocol handles host communication, data buffering, error check, addressing and broadcasting. It supports point-to-point, point-to-multipoint and peer-to-peer network topologies.

All other trademarks, registered trademarks and product names are the sole property of their respective owners.

Life Support Policy

This Radiocrafts product is not designed for use in life support appliances, devices, or other systems where malfunction can reasonably be expected to result in significant personal injury to the user, or as a critical component in any life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness. Radiocrafts AS customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Radiocrafts AS for any damages resulting from any improper use or sale.

Contact Information
Web site: www.radiocrafts.com

Address:
Radiocrafts AS
Sandakerveien 64
NO-0484 OSLO
NORWAY

Tel: +47 4000 5195
Fax: +47 22 71 29 15
E-mails: radiocrafts@radiocrafts.com
sales@radiocrafts.com
support@radiocrafts.com