RF Explorer® SERIES

Spectrum Analyzer Standard Firmware Version 1.34

Cumulative Release Notes

RF Explorer is an affordable Handheld Spectrum Analyzer with a growing list of features.

This little powerful unit is the tool you need

to reduce the implementation time and cost

of your next wireless project.

This Release Notes document is complementary to the RF Explorer User Manual, available online.

Please consider the environment before printing this document.

Firmware Upgrade Instructions

--------- DO NOT USE THIS FIRMWARE IN A SIGNAL GENERATOR ---------

To upload this firmware, you must use the Uploader tool included in this software package. Firmware upgrade is a safe, simple process that can be repeated many times if something goes wrong. You can update firmware using Windows, Linux or MacOS X operating systems.

For more details on how to upload firmware into your device, please visit online guide:

>   www.rf-explorer.com/upgrade

License and registration

This firmware upgrade tool requires registration and internet connection.

You must provide a valid registration email to receive an activation code for your computer. If you do not receive a valid email, check your spam folder. Privacy policy is available online at www.rf-explorer.com/privacy

Backup your presets

If your device has stored Presets please use the Preset Tool to save them to a computer, and restore them after the upgrade in case any preset is lost.

For more details visit: http://www.rf-explorer.com/preset

Firmware upgrade S/N troubleshooting

The S/N upgrade is a required step for units coming from older firmware versions (prior to v1.12) which had no visible Serial Number on screen. This is completed automatically and has been tested in thousands of units with success, but some may not complete correctly in first try.

Note: If the unit completes upgrade and remains on screen with "S/N Init..." message, please wait a few seconds to complete the upgrade.

If S/N upgrade fails for any reason to complete this step in the first try, please repeat the upgrade process once again.

Check in the CONFIG MENU of the RF Explorer device it is configured for 500Kbps or 2400bps same as you select in Firmware Update tool.

If fails after a couple of attempts, then please contact us at support@rf-explorer.com and provide us with:

- File RFExplorer_Uploader.log available in the <My Documents> folder of your computer.
- Operating System version and confirmation you are connecting directly to USB port on your computer, not an intermediate USB hub.

If the problem persist, you can overcome this step by pressing ENTER when a small message shows up with <Press ENTER to Stop> next to "S/N Init..." on screen.

Version 1.34

Release date: CEST November 02, 2022

- This is a maintenance release

Version 1.33

Release date: CEST April 13, 2021

<u>Fixes</u>:

- A correction in battery configuration calculation in the Battery screen. Before this fix, the battery screen may produce a device restart in certain misconfiguration cases.

Version 1.32

Release date: CEST January 28, 2021

<u>Fixes</u>:

- An updated battery calibration code to increase accuracy on low battery conditions.

Version 1.31

Release date: CEST June 25, 2020

<ins>Enhancements:</ins>

- WiFi for 5GHz band now offers all channels.

  o To see them on the LCD screen, use the LEFT-RIGHT buttons to iterate through the different channels, it will show 13 channels at a time from a total of 28 available channels.

  o To see them on a computer, use latest versions of RF Explorer Touch and RF Explorer for Windows

Version 1.28

Release date: CEST April 5, 2019

Enhancements:

- Tracking SNA speed improved, in most scenarios the tracking is now 300% faster than in previous version. The faster speed is a great improvement to get a closer to real-time tracking SNA response.

- Improved battery level charge and calibration algorithm

- Internal USB communication buffer is now reset when using RETURN button in the Spectrum Analyzer screen. If the unit becomes unresponsive when connected to a computer, you can try using the RETURN button rather than disconnect/reconnect step.

Version 1.26

Release date: CET May 8, 2018

Enhancements:

- Enabled PRESET menu, including compatibility with RF Explorer Preset Manager - see description below. This is only enabled on models with Expansion board attached – you can add an expansion board to your RF Explorer if required.
- Fixed problem where large OffsetDB value could distort Top/Bottom dBm readings on device screen.
- Fixed problem where Frequency Menu could incorrectly locate cursor in certain models.
- Fixed problem where Start/Stop frequency could go out of range in certain models

Using PRESET

A new menu is available with PRESET functionality.

- **Identifier**: Numerical index of the preset valid from 1-30
- **Description**: Descriptive text up to 12 characters long. An asterisk at the end is automatically added when the preset has actually some data stored. This description cannot be changed in the device, but RF Explorer Preset Manager application can do that from a Windows computer. More details in next page.
- **Load**: Action option to load stored preset values into current configuration, the menu screen is automatically closed
- **Save**: Action option to save current configuration into the selected preset – this option cannot be undone, care should be taken to not overwrite another valid preset
- **Reset**: Action option to remove all values from selected preset and reset to unused state - this option cannot be undone, care should be taken to not reset a valid preset
- **Frequency range**: when an active preset with data stored is selected, the last line of the screen shows the Start/Stop frequency range of the preset, to help on determining the specific preset configuration before using it. This line will be blank when an empty preset is selected.

Important: This menu has a very convenient shortcut: by clicking ENTER button on *Desc:* line, the menu will iteratively switch over the different presets with actual data stored, ignoring the

unconfigured blank ones. This shortcut is faster than manually changing *Identifier* numbers one by one when you are looking to load a preset.

Using RF Explorer Preset Manager

This is an included convenient tool to easily create and edit Presets from a Windows computer. It also includes the ability to define custom Description text for each preset.

Presets can be uploaded to / downloaded from the RF Explorer device using USB standard connection.
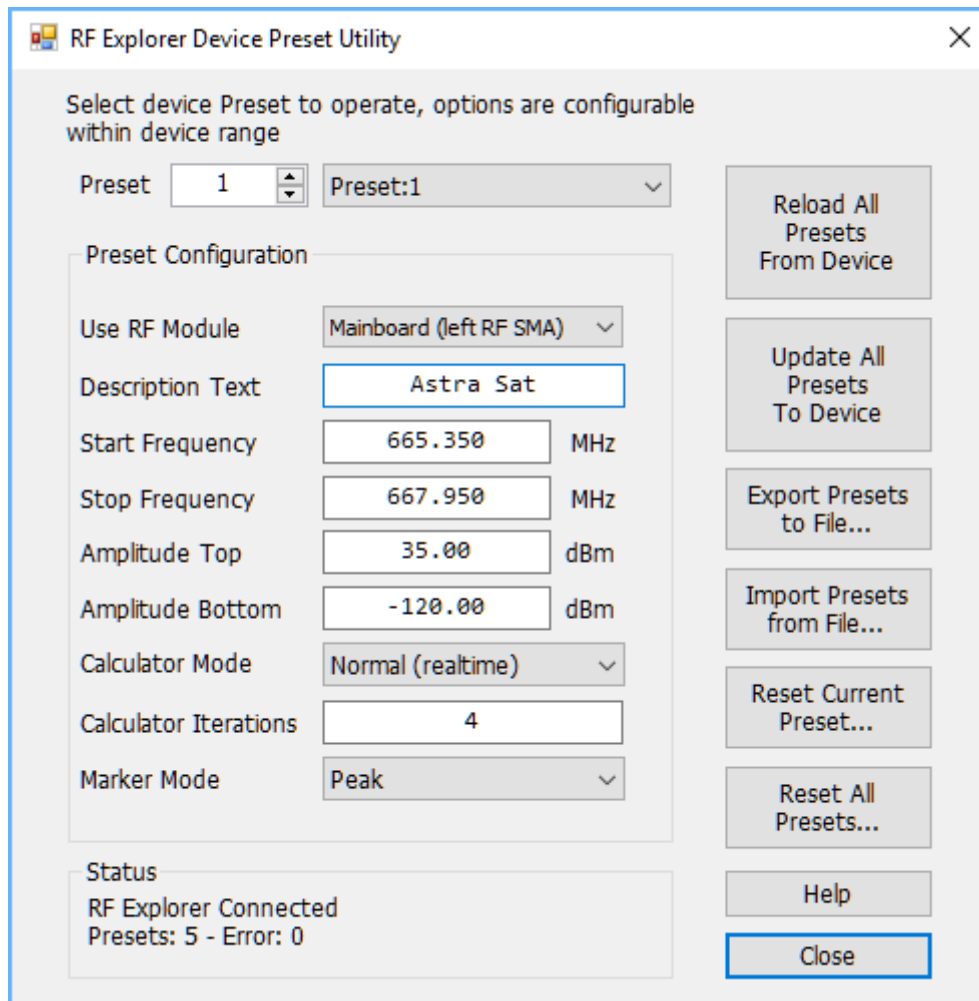
For more details please visit online help: http://www.rf-explorer.com/preset

Version 1.23

Release date: CET Sep 20, 2017

<u>Fixes</u>:

- Fixed problems when connecting to WiFi analyzer mode in RF Explorer for Windows.
- Internal sweep data points are correctly processed as 112 points by default. Before this fix, some interface functions may incorrectly report 112 sweep steps which would lead to 113 points which is incorrect. All functions are now adjusted for 112 points / 111 steps.

Version 1.20

Release date: CET June 19, 2017

<u>Fixes</u>:

- Resolved a problem where WiFi Analyzer in 2.4GHz may show incorrect channel numbers.
- Fixed a cursor position issue in FREQUENCY MENU affecting WSUB1G module (240-960MHz) while editing values.

Version 1.18

Release date: CET March 10, 2017

Fixes:

- Resolved a problem where certain frequency setup combinations may lead to stability problems in SNA Tracking with RF Explorer Spectrum Analyzer.

Version 1.17

Release date: CET Feb 27, 2017

Enhancements:

- Added dedicated charge and calibration Battery screen
- Enabled ASK/OOK Sniffer capabilities. This feature is only available from the RF Explorer for Windows application. Please check www.rf-explorer.com/sniffer for more details.
- Added an improvement to DSP algorithm for WSUB1G and 3G modules, it now correctly removes the potential spurs in some units at 30MHz multiple frequencies (leakage from LO crystal). With this fix, using DSP:Auto and DSP:Filter correctly removes these spurs if present.
- Improved RBW automatic filter selection, it has additional finer grade filter options to adjust better on some boundary conditions.
- Internal code refactoring to make room for additional capabilities coming un next releases
- Improved OPERATIONAL MODE menu to only show options relevant to the RF Explorer model, to avoid confusion. In earlier versions, all options (such as RF Generator or WiFi Analyzer) would be listed even if not available.

Fixes:

- Added code to ignore keypress when the unit is in Tracking SNA, Sniffer or Calibration mode. Before this fix, an accidental key press may stop the current workflow with unknown results.

Version 1.15

Release date: CET July 8th, 2016

This is recommended release for all users of RF Explorer Spectrum Analyzer.

Fixes:

- Added dynamic support for automatic data cache in MaxHold mode. With this new feature, the MaxHold cache will refresh after a number of sweeps defined in Iterations parameter in ATTENUATOR MENU. Using this feature is convenient to prioritize fast signal capture (Iterations:16) or clean spur free capture for constant signals (Iterations:1)

Version 1.12B32

Release date: CET June 3rd, 2016

This is recommended release for all users of RF Explorer Spectrum Analyzer.

Enhancements:

- Added support for Wifi Channels in 5GHz band:

Channel number	Center frequency
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz
52	5260 MHz
56	5280 MHz
60	5300 MHz
64	5320 MHz
149	5745 MHz
153	5765 MHz
157	5785 MHz
161	5805 MHz
165	5825 MHz

- Support firmware upgrade in MacOS X and Linux using Mono libraries.
- Included protocol support for external calibration data
- Added support for RFEMWSUB3G internal calibration table - details on how to use this will come in future RF Explorer for Windows release
- Added option to overcome "S/N Init" screen with a ENTER key press if does not complete for any reason (see troubleshooting at the end of this note).
- Unified firmware with support for all RF Explorer Spectrum Analyzer models, pending final test for release
- Support for 300MHz span in RF Explorer 6G and 600MHz span in RF Explorer 6G Combo.

Fixes:

- Resolved a problem with RF module switch power. Before this fix, the Combo units with two modules may not always power off the unused module correctly, leading to higher power consumption and RF false readings.
- Resolved a problem with WiFi Analyzer in 5GHz, when returning to Spectrum Analyzer mode may keep "Re-calibrating" on screen hang.

- Resolved a problem where upgrades from older firmware versions than v1.10 may misconfigure the device model.
- Fixed amplitude connection refresh from Windows application to device. Before this fix was in place, amplitude top/bottom change from RF Explorer for Windows application was ignored by the device.
- Added extra delay to try to resolve lock frequency issues in user reported 6G unit
- Fix for certain WSUB3G calibration tables not working properly after upgrade
- Workaround for internal tolerance failure found in certain FLASH memory chips
- Fixes a screen lock problem sometimes in Analyzer mode when the Top dBm setting is very low and a high peak signal is detected
- Allow first digit of span to be edited
- Power on unit with RETURN button pressed will enable the main board module
- Added extra reset time for internal mixer in order to improve clean startup and avoid reported tuning issues
- Added asterisk (*) symbol on Spectrum Analyzer screen as an signal if tuning issues are being detected by the unit
- Added check for RF Generator screen in 6G units to make sure it is not made available

This is stable and robust release, but still tagged as beta due to some ongoing development not yet made available. In a future final GA release you will get:

- Wifi Analyzer mode for 5GHz band (supported by 6G, 6G Combo and Wifi Combo units).
- Better noise floor flatness in 3G and 6G modules using a newly defined internal mixer frequency plan

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6. **Modify the Device.** Modify the Firmware, the Apps or the chip on the Device on which they are running.

Disclaimer

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For more info on RF Explorer, please visit www.rf-explorer.com

For instructions to upload this new firmware in your RF Explorer unit, please visit online documentation at www.rf-explorer.com/upgrade .

Some of these new features documented below may not be available in the user manual until a final release is published. For questions, please go to RF Explorer forum at www.rf-explorer.com/forum .

Some of these notes may refer to beta versions. They have been thoroughly tested, but they may not pass all formal review and regression test of a final version. You should not install a beta firmware if you are not comfortable with occasional bugs or risk of losing data.

Final release versions pass a full set of test cases and formal review process to minimize the risk of any issue.

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