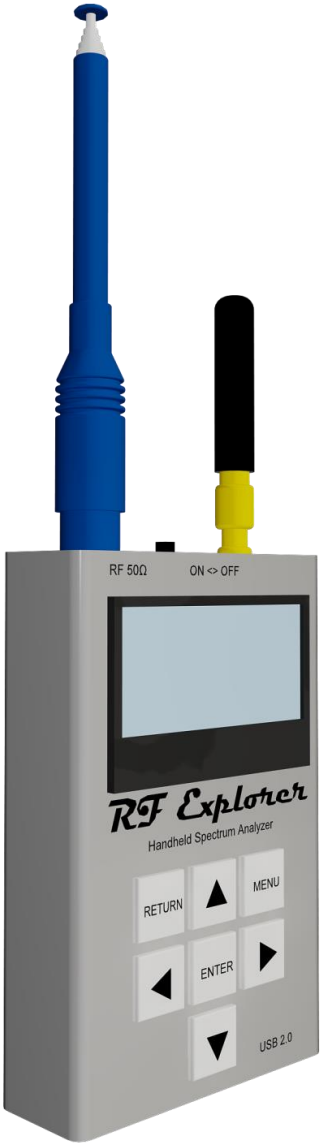
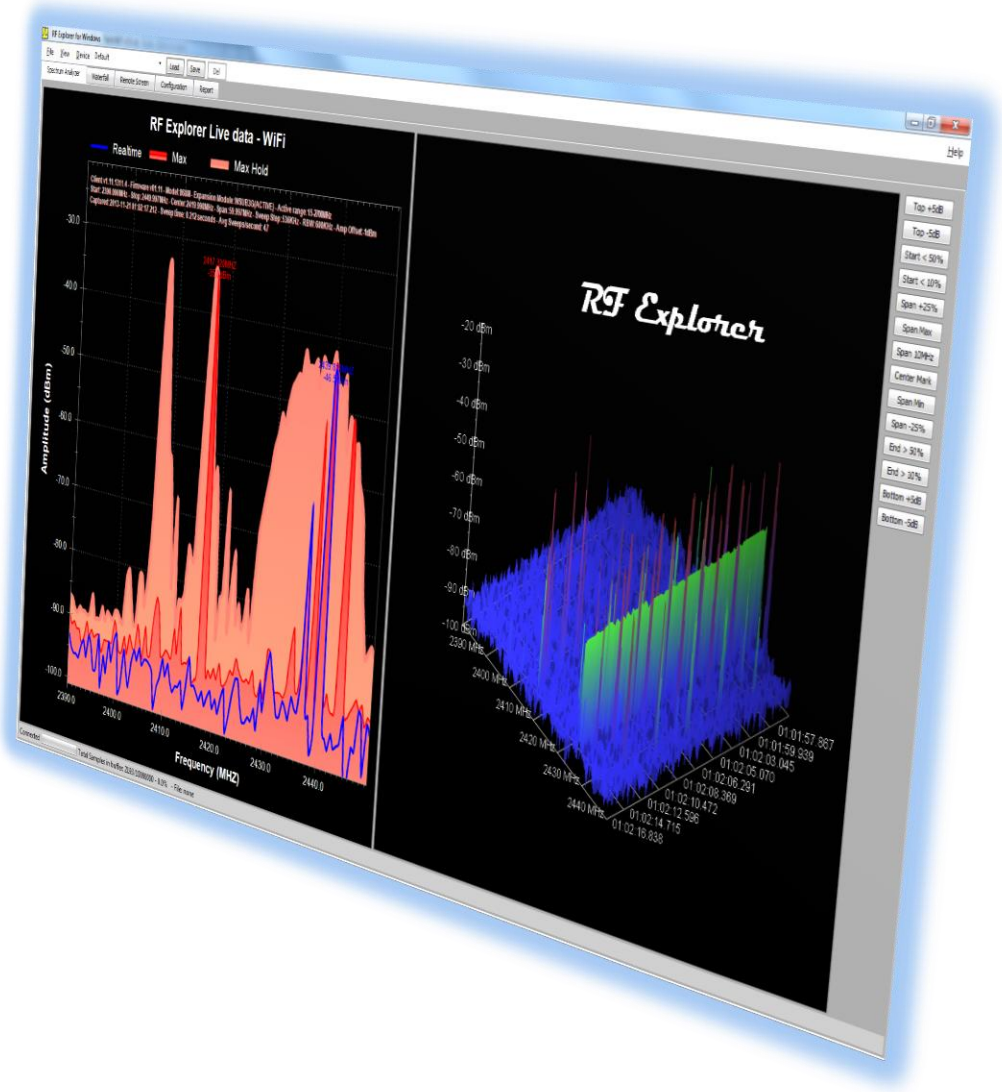




RF Explorer®

RF Explorer for Windows Release Notes v1.26.1805

Updated to Spectrum Analyzer Standard Firmware Version 1.26
Spectrum Analyzer Plus Firmware Version 3.06
Signal Generator Firmware Version 1.19

Includes RF Sniffer Beta

RF Explorer®

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.

Updates of the RF Explorer User Manual are available online.

Please consider the environment before printing this document.

Version 1.26.1805.2

- *Recommended RF Explorer Spectrum Analyzer Standard firmware: v1.26*
- *Recommended RF Explorer Spectrum Analyzer Plus firmware: v3.06*
- *Recommended RF Explorer Signal Generator firmware: v1.19*
- *Note: WindowsXP computers may need to apply a Microsoft Hotfix to properly install this version. Please install software from WindowsXP_MSI45_Hotfix.zip if normal install fails in WindowsXP.*

Enhancements:

- Integrated Spectrum Analyzer device Preset Manager option, please visit www.rf-explorer.com/preset for more details.
- Enhancements in Radio Standard display options.

Bug Fixes:

- *Automatic Update Remote Amplitude* in *Device* menu includes several fixes. Before this fix, the device may sometimes fail to update amplitude when required.

Version 1.23.1711.1

- *Recommended RF Explorer Spectrum Analyzer Standard firmware: v1.23*
- *Recommended RF Explorer Spectrum Analyzer Plus firmware: v3.03*
- *Recommended RF Explorer Signal Generator firmware: v1.17*
- *Note: WindowsXP computers may need to apply a Microsoft Hotfix to properly install this version. Please install software from WindowsXP_MSI45_Hotfix.zip if normal install fails in WindowsXP.*

Enhancements:

- **High Resolution sweep for WSUB1G+ model**: Use the menu *Device -> Define Sweep Points* to select 512, 1024, 2048 or 4096 sweep data points. The higher the resolution the longer the sweep scan time. To get back to standard resolution select 112 sweep data points.
  Note: This new feature is currently in BETA and may not work correctly with all functional modes of the analyzer.
  Note: The analyzer LCD screen is disabled in high resolution mode.

Bug Fixes:

- **Axis marks in low frequency**: low frequency ranges, supported by WSUB1G+, are now correctly labelled in the frequency axis. Before this fix, frequencies in range lower than 10MHz could sometimes incorrectly display 0MHz.
- **Undo All Zoom**: this feature now works correctly in all scenarios. Before this fix, changes in device configuration after doing a zoom or pan could prevent the Undo All Zoom to correctly restore initial zoom settings.
- **Waterfall disabled in WiFi Analyzer mode**: The waterfall modes are now disabled when WiFi analyzer mode is selected. In previous versions the waterfall may display confusing data when the WiFi analyzer was enabled.
- **Amplitude offset corrections**: Several improvements were added to correct scenarios where a combination of Offset dB, amplitude correction files and WSUB1G+ Input Stage LNA or Attenuator may incorrectly display data on screen.
- **Reset Tracking SNA normalization data**: additional scenarios added to properly reset invalid normalization data when it is no longer reliable. The application will now correctly ask for new normalization step every time is required. Before this fix, situations such as disconnecting and reconnecting the Signal Generator may not reset the normalization data and may lead to incorrect tracking if a different device was connected.

Version 1.17.1710.3

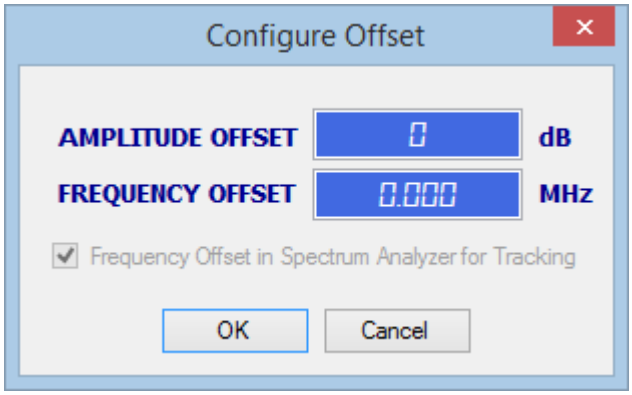
- *Recommended RF Explorer Spectrum Analyzer Standard firmware: v1.23*
- *Recommended RF Explorer Spectrum Analyzer Plus firmware: v3.02*
- *Recommended RF Explorer Signal Generator firmware: v1.17*
- *Note: WindowsXP computers may need to apply a Microsoft Hotfix to properly install this version. Please install software from WindowsXP_MSI45_Hotfix.zip if normal install fails in WindowsXP.*

Enhancements:

- **Support for new RF Explorer WSUB1G PLUS** spectrum analyzer. The implemented support is basic but expanded features will be added in an upcoming release, such as Preset load/save to computer, etc.

- **Culture neutral files**: the data files read and stored by this new version, are all compatible with any region of the world. This include RFE data files, CSV files, Normalization, Limit lines, Radio Standards, etc.
  The files no longer depend on local cultural computer configuration, which in previous versions prevented comma "," as decimal separator to be incorrectly interpreted if the file was shared with computers where dot "." is decimal separator.
  As result of this change, you may need to recreate Normalization files if you try to reuse from older versions and are working with a computer where comma and not dot is decimal separator.

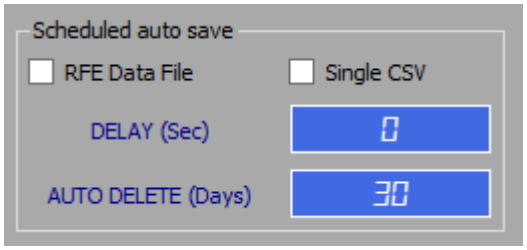
- **Frequency Offset is now available in Tracking SNA**. This advanced feature enables sophisticated tracking such as required by Upconverter and Downconverter mixers, frequency multipliers, etc.



  The additional checkbox allows selecting where the visual frequency offset is being applied: to the Spectrum Analyzer (checked) or the Signal Generator (unchecked)

- **Auto-collapse COM connection ToolGroup**: After a spectrum analyzer or signal generator is connected to USB COM port in the corresponding ToolGroup, it will collapse to automatically free screen area to the other ToolGroups. It can be easily expanded clicking on the ToolGroup text (such as "Analyzer ON")

- **Automatic data file save and recycle**: A new feature allows data files (either binary or CSV) to be automatically saved at certain intervals. This is a feature requested by many customers in need of periodically storing RF activity for review or export to external systems.
  The configuration of this new feature is available in the Configuration tab:



  By activating the *RFE Data File* option and defining a valid number of seconds in *DELAY*, files will be generated with compact binary format in the <My Documents>\RFExplorer folder using standard file name format RFExplorer_SweepData_YYYY_MM_DD_HH_mm_ss.rfe.
  Files automatically generated with this name format will be automatically deleted by the application if files older than *AUTO DELETE* are found. This new feature helps to keep the number of obsolete data files under control with no effort.
  Activating the *Single CSV* option works exactly the same as *RFE Data File*, with the difference of text comma delimited files being saved. Same normal restrictions for Single CSV files apply as when saving a file manually: only one trace can be active on screen for the Single CSV file feature being able to work.

Bug Fixes:

- **Fixed WiFi analyzer mode**: Changes implemented in firmware and software recently worked incorrectly in previous versions and may not correctly represent WiFi channels on screen. This new version corrects the problem for 2.4Ghz and 5Ghz bands.

- **Adapted to firmware v1.23 data points fix**: New Spectrum Analyzer firmware v1.23 correctly calculates sweep steps (111) and data points (112) and therefore requires this matched RF Explorer for Windows version to correctly display accurate information on screen. Upcoming versions will enable configurations with much higher number of data points (up to 4096) stay tuned!

- **Named Settings configurations fix for delta markers**: the updated code now correctly save and restore delta markers frequency offset locked option. Before this fix, the frequency offset locked may be ignored when changing to a different configuration.

- **Power Channel fix for data files**: the Power Channel feature now correctly updates and recalculate power correctly when sweep data comes from a loaded data file. Before this fix, the channel power may not be correctly updated and calculated with correct power levels.

- **Improved Radio Standard rename and delete options**: New functionality correctly rename and delete a Radio Standard from all associated Named Settings configurations where it may be used. Before this fix, only current Named Settings configuration was updated.

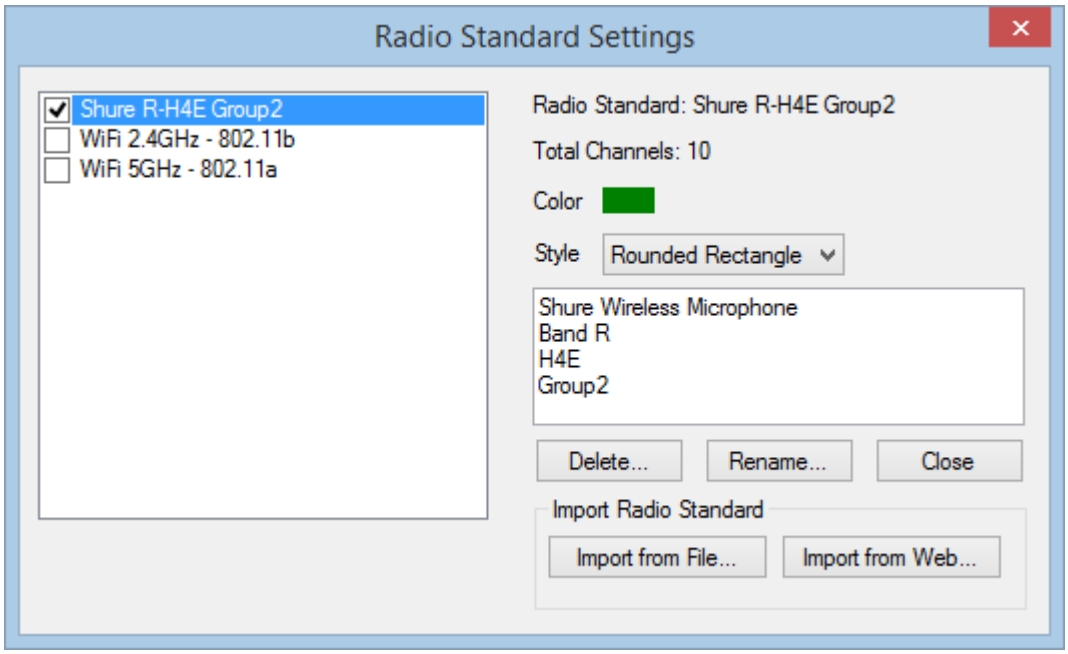
Version 1.17.1703.8

- *Recommended RF Explorer Spectrum Analyzer firmware: v1.17*
- *Recommended RF Explorer Signal Generator firmware: v1.17*
- *Note: WindowsXP computers may need to apply a Microsoft Hotfix to properly install this version. Please install software from WindowsXP_MSI45_Hotfix.zip if normal install fails in WindowsXP.*

Enhancements:

- Radio Standards: New feature custom definition of Radio Standard channels. You can now import standards or define your own channels to be included in the Spectrum Analyzer graph of RF Explorer for Windows. Each channel in a Radio Standard will display:
    - Channel name
    - Visual shape of the actual bandwidth and channel position
    - Computed individual power channel

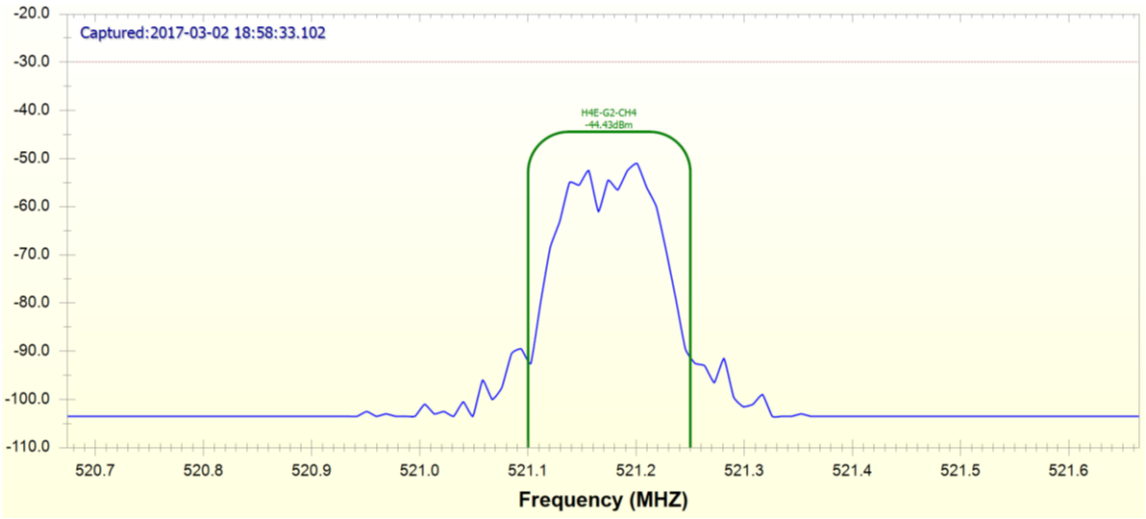
  All parameters of a Radio Standard can be configured in the menu option *View -> Radio Standards -> Configure Radio Standards*. This will open a configuration dialog to setup parameters, select which Radio Standards are visible (up to 10 at any given time), import new Radio Standard definitions, etc.



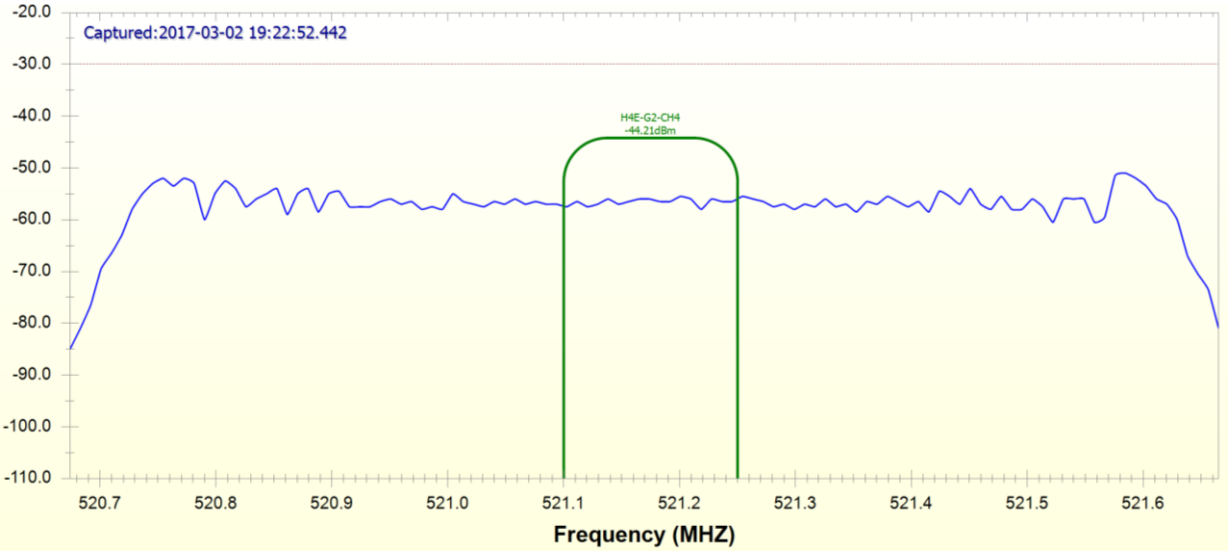
An example of active Shure H4E band active, with channel 4 in clear use, with total channel power of -44.39dBm.

For simpler display, channels which are not fully inside the span are excluded from the view. Only fully covered channels are displayed as otherwise power channel calculation would be incorrect.
This effect may be more evident in overlapping channel configurations such as WiFi 802-11b.

By centering at 521.175Mhz (Channel 4 center frequency) and reducing the span to better shape the channel 4 only, we can monitor activity to identify if it is coming from expected source (shown below)



In addition, we can easily identify if some sort of unintended signal is occupying our channel. An example shown below is a wideband interferer, not the mic transmission we expected.



This release includes 3 examples you can use for Radio Standards:

- RadioStandard_WiFi-2.4GHz-802-11b-g.rfers
- RadioStandard_WiFi-5GHz-802-11a.rfers
- RadioStandard_UHF-Shure_Wireless-UHFR_Band-H4E_Group2.rfers

These files are text files you can edit with the tool of your choice (e.g. notepad – although we recommend a better tool such as Notepad++) using the ones provided as examples.

To load any of these Radio Standard files, or the ones you defined:

1. Open the Radio Standards Settings dialog
2. Click on [Import from File…]
3. Navigate and select the intended *.rfers file
4. You can now include a suitable description, change color and channel shape, rename it, etc.
5. To make a Radio Standard visible, check it on the list. Note: a maximum of 10 Radio Standards can be selected as visible at any given time.

Note: Radio Standards feature is a work in progress, you can expect additional functionality and extensions in upcoming releases. An upcoming feature will allow you to download standards defined in a global repository from the web.

Current limitations:

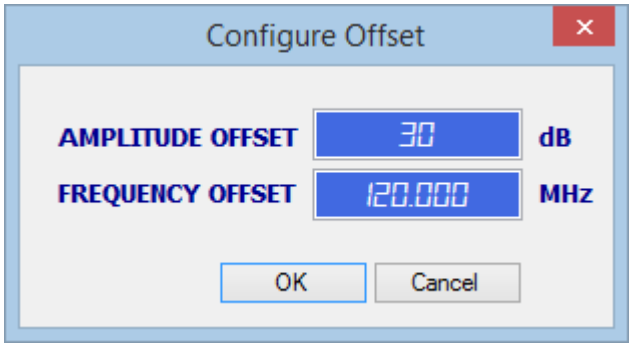
- Channel power is calculated on Realtime trace. This is the most convenient option for most users. On future release additional traces such as Average and Max will be included for selection.

- With limited number of sweep scan points in current firmware (112 points) narrow band channels cannot be correctly calculated and displayed in a wideband span. For better

accurate display, select narrow span so each channel includes at least 10% of span. A future firmware will enable selectable higher resolution sweep points to make wideband scan feasible for narrowband channels.
In the meantime, you can selectively navigate through the span using [Start <50%] and [End >50%] for easily traversing a wideband range piece by piece.
You can also select and save different configuration names for each frequency range and use the Name Settings combo box to quickly restore any required configuration.

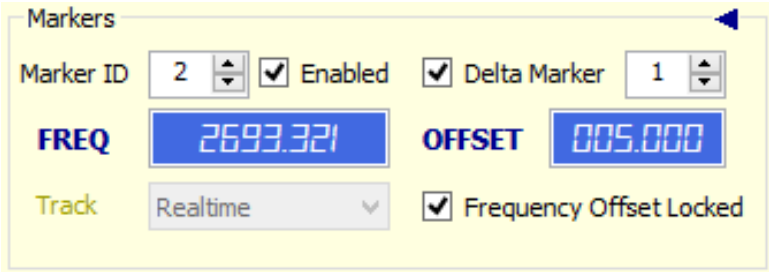
  - [Import from Web…] is under development.

- Added Frequency and Amplitude Offset control from the Windows application. This feature allows easy control of external amplitude changes (such as amplifier or attenuator) as well as frequency up-conversion or down-conversion (such as RF mixer).
  To change offset, use the new menu option "Device -> Configure Offset…"



  By changing the Amplitude Offset, both device and Windows application will display same adjusted amplitude on screen. This is the same as using the actual device ATTENUATOR MENU and setting a specific offset value in OffsetDB parameter. The device will be updated after clicking OK button.
  By changing the Frequency Offset, only Windows application is adjusted, the device will automatically switch LCD screen OFF (if it was ON) to avoid confusion. A future firmware will enable device Frequency Offset too.

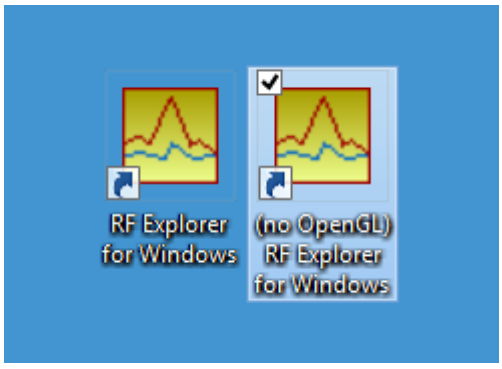
- Several enhancements in Markers:
    - New "Frequency Offset Locked" feature (FOL). This new option enhance the standard Delta Markers by enabling a dynamic follow-up of the Delta ID to the Delta Marker.



      When the FOL feature is enabled in above example, the Marker [2] will always be at 5MHz higher than Marker [1]. As the Marker [1] changes frequency to track the Peak, the Marker [2] will calculate absolute and delta amplitude on every new position. This is an extremely useful functionality to measure side-bands, noise or image frequency of a CW or modulated channel shape.
      When FOL is not enabled, the Offset defined for the Delta Marker is static and used only at the marker definition time. It will not follow the reference Marker if it changes position.

    - A marker can be now enabled and located on a particular position by double-click. In previous release, the double click would be ignored if the marker was not already enabled. To automatically locate a marker on any position by double-click: select the Marker ID you want to locate, double-click on any signal trace position, the marker will be located there and enabled if it was not.

- Added an option to start RF Explorer for Windows without OpenGL 3D graphics enabled. In some computers, old video drivers or insufficient CPU speed may cause problems. The new shortcut (No OpenGL) will start RF Explorer for Windows without 3D acceleration requirements. The Waterfall screen will not be available in this mode.



- WiFi Analyzer screen mode in RF Explorer for Windows is now available for 5GHz band. Note this is limited to the same 13 channels displayed on the device and, therefore, will show a large empty gap between low number channels and high number channels.

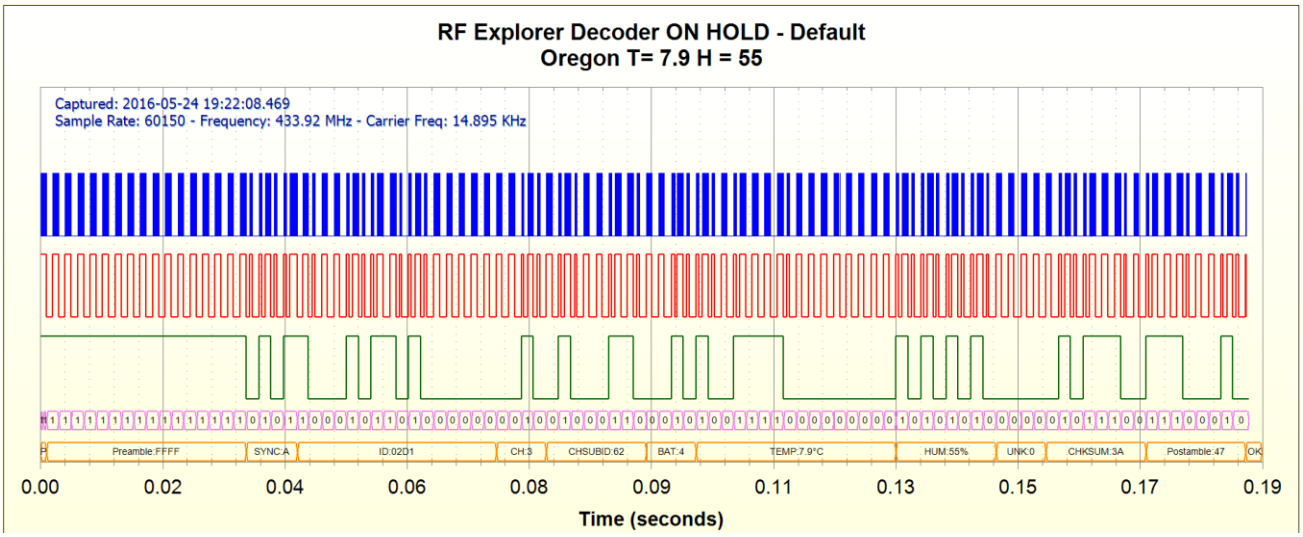
If you need to inspect other 5GHz WiFi channels, you can use the new RadioStandard feature and load the WiFi defined configuration.

Version 1.15.1610.4

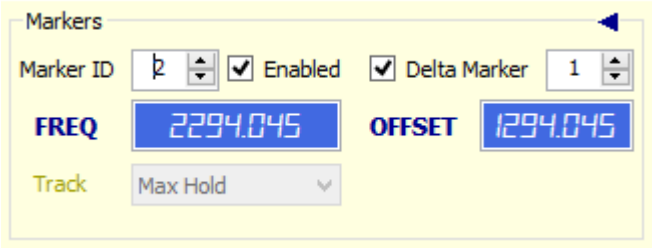
- *Recommended RF Explorer Spectrum Analyzer firmware: v1.16B03 or v1.15*
- *Recommended RF Explorer Signal Generator firmware: v1.15*
- *Note: WindowsXP computers may need to apply a Microsoft Hotfix to properly install this version. Please install software from WindowsXP_MSI45_Hotfix.zip if normal install fails in WindowsXP.*

Enhancements:

- This version introduces RF Data Sniffer capabilities as Beta feature. In order to use Sniffer features, please read the document "RF Explorer for Windows DRAFT Documentation - sniffer.pdf" included in this release package.



- To enable Sniffer data you need to upgrade RF Explorer Spectrum Analyzer to firmware v1.16B03 – you can easily downgrade it to v1.15 anytime.
- Several enhancements in Markers:
  - Markers allow now Delta value reading – you can display difference between two markers as delta in dB. This is useful to measure harmonic, noise levels, carrier dBc, etc.



  - Markers can be allocated on screen at any arbitrary frequency with a double-click mouse (not available for auto-peak Marker 1)
  - Marker display is now better organized, display is now bold for marker label in the right marker data control area.
- Display grid now include a continuous line trace for major grid ticks. In earlier versions this was presented with dotted lines which made it hard to read at certain wide zoom configurations.
- Updated to latest OpenGL libraries to enable maximum compatibility with video card drivers.

Bug Fixes:

- Fixed problem with Windows Text Scale different than 100% in Windows Vista and Windows 7. Before this fix, some Text Scale OS settings such as 125% or 150% may lead to inconsistent Zoom selection inside Spectrum Analyzer or RF Sniffer data graphs.
- Fixed a performance problem when displaying Spectrum Analyzer graphs with a very narrow span (<1MHz) in some configurations. After this fix the display performance is independent of selected span.

Version 1.15.1607.6

- *Recommended RF Explorer Spectrum Analyzer firmware: v1.15*
- *Recommended RF Explorer Signal Generator firmware: v1.15*

Release date: CET July 31st , 2016

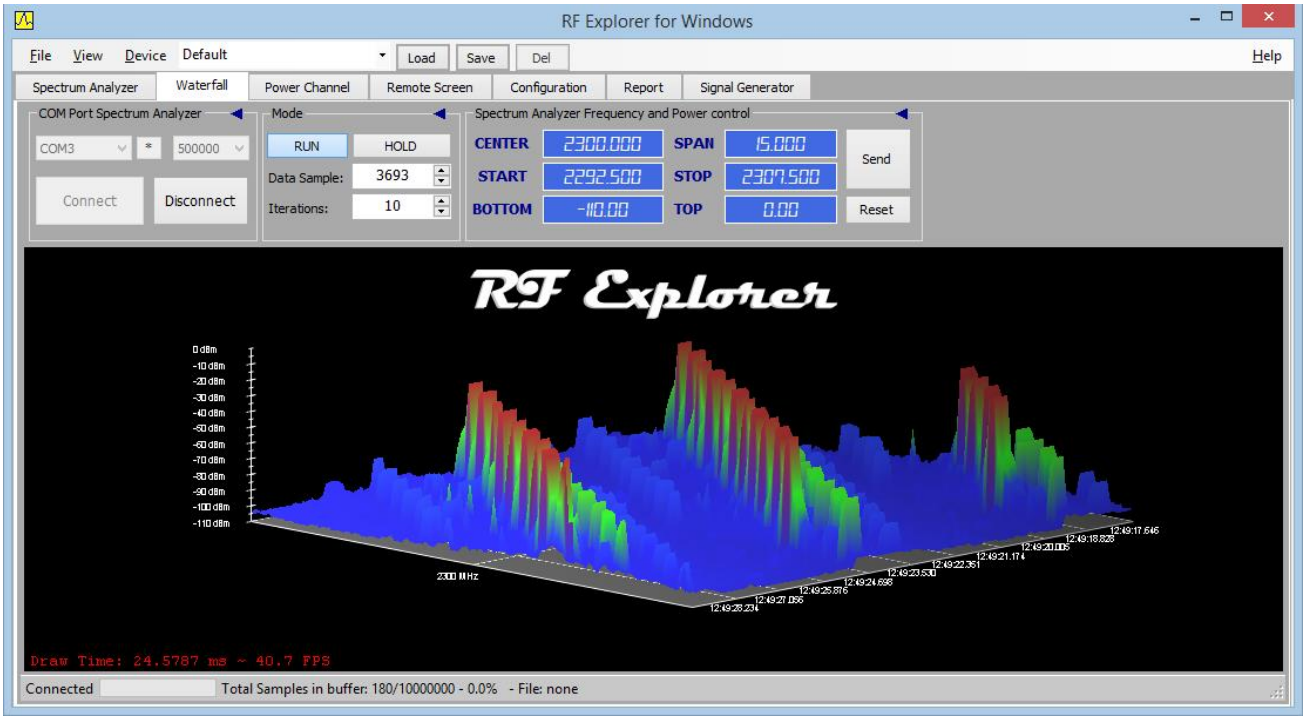
Bug fixes

- Fixed a problem where Frequency Calibration (from Configuration screen tab) would not correctly calibrate 3G Combo model.
- Improved numeric check in several Analyzer and Generator edit boxes.

Version 1.15.1607.5

- *Recommended RF Explorer Spectrum Analyzer firmware: v1.15*
- *Recommended RF Explorer Signal Generator firmware: v1.15*

Release date: CET July 8th, 2016



Enhancements:

- Included full support for Frequency and Amplitude Sweep using RF Explorer Signal Generator v1.15 – for more details check Signal Generator user manual
- Added ToolGroups for Amplitude Sweep and Frequency Sweep in Signal Generator tab screen

- RF Explorer Signal Generator now disables LCD backlight and announce TRACKING + POWER ON to alert on current functionality when working in SNA mode.
- Finished final release for Signal Generator features with production quality, no software stage is in beta level beyond this point.

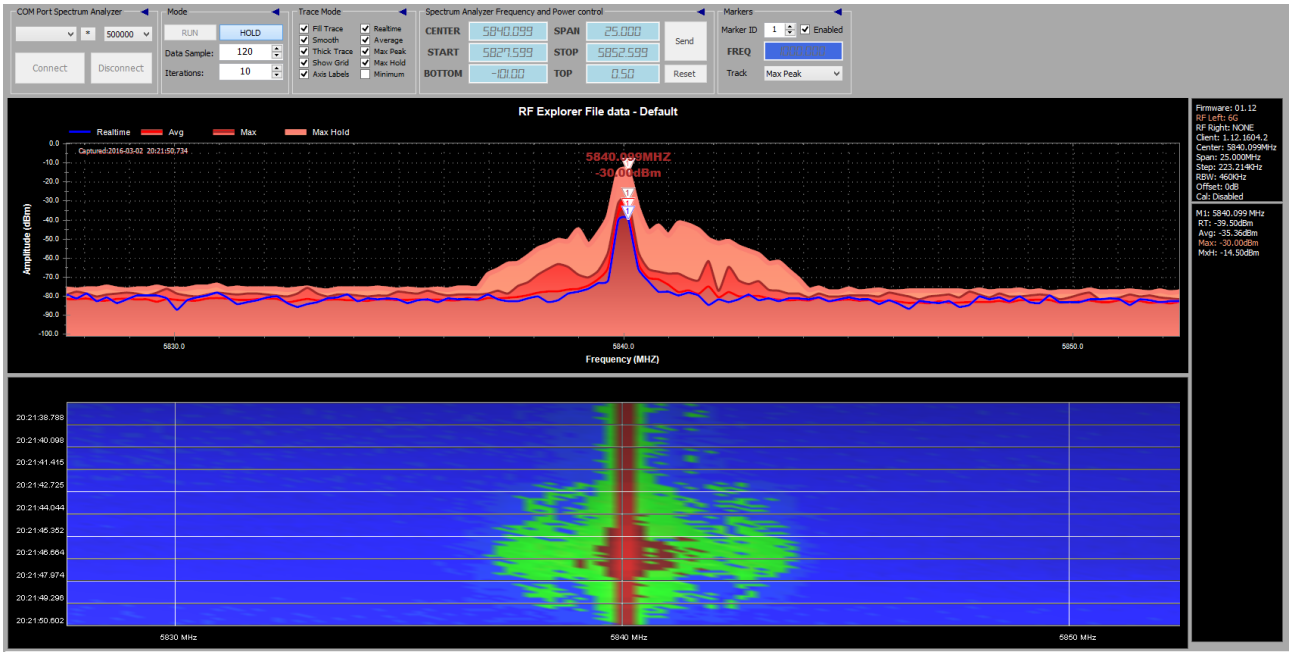
Bug fixes

- RF Explorer for Windows now remembers last computer folder used to read and write files. Before this fix, default location in My Documents was always suggested for file location, this was inconvenient when a different folder was intended to be used.
- The Report tab now correctly dump screen contents from Signal Generator or Spectrum Analyzer. Note: to capture Signal Generator screen, make sure a Spectrum Analyzer is not connected at the same time.
- The Spectrum Analyzer tab now correctly adjust Top amplitude when an external attenuator or amplifier is being used, and OffsetDB was specified in the unit. Before this fix, the Top amplitude may not be enabled to increase in a way that correctly display high power levels.

Version 1.12.1604.3

- *Recommended RF Explorer Spectrum Analyzer firmware: v1.12 Beta 31*
- *Recommended RF Explorer Signal Generator firmware: v1.12 Beta 15*

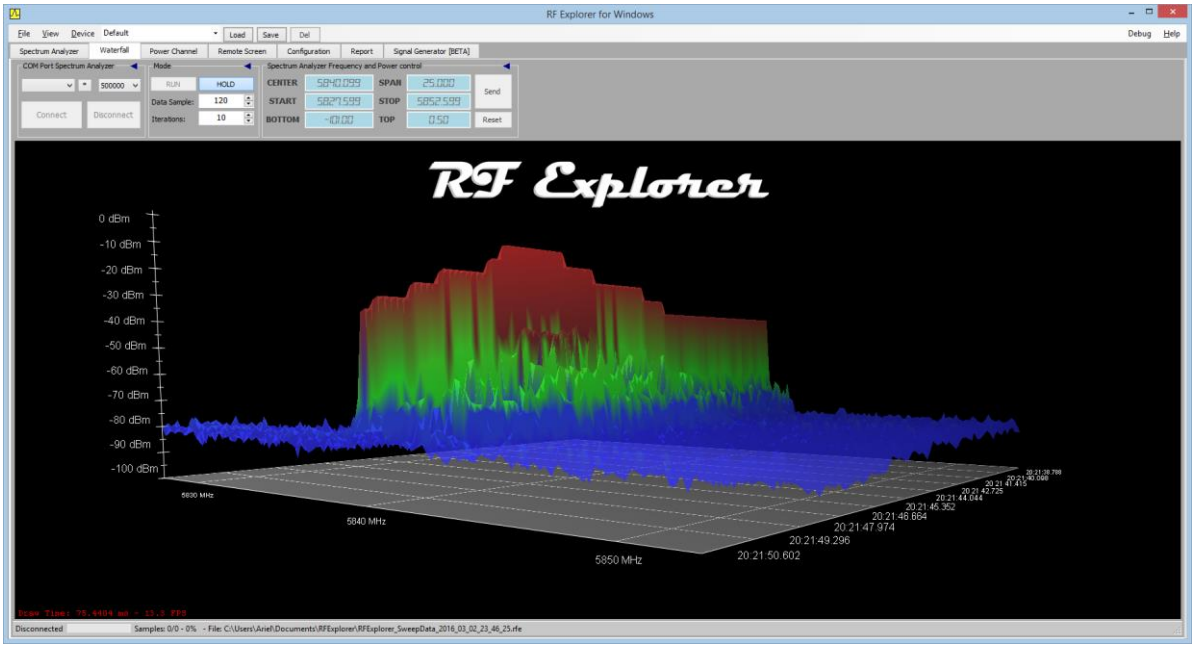
Release date: CET Apr 13th, 2016



Enhancements:

- Automatic connection of Spectrum Analyzer and Signal Generator device. This is a major improvement to allow transparent operation of connected devices in any configuration. If you are using a RF Explorer Spectrum Analyzer and a Signal Generator together for SNA or other purposes, the easiest way to work with them now is as follows:
  - Connect Spectrum Analyzer to USB
  - Connect Signal Generator to USB
  - Start RF Explorer for Windows application.
  - Both devices will be automatically connected to correct ports and enable SNA display automatically.
- Manual connection of devices is still available as usual, in all cases the application will try to connect the right device to the right port as soon as the connection is made.
- Aligned waterfall 2D view on main Spectrum Analyzer screen. Now is possible to have a fully aligned frequency view on both displays.
- Waterfall dedicated tab view is now independently configured from that of Spectrum Analyzer tab view. This is best fit for a convenient 2D waterfall on Spectrum Analyzer and a full featured

3D view on Waterfall view. Configuration settings such as transparency and Realtime/MaxHold settings for waterfall are also independent in both views.



- Default settings are now Dark Mode and Spectrum Analyzer view configured to include waterfall 2D. This setting can be reconfigured by user anytime. If you do not need or like the Waterfall view, use menu *View->Include Waterfall in Main Screen->None*.
- Configuration device icon is now disabled by default, to allow waterfall alignment. You can enable the device icon again using menu *Device->Show RF Explorer icon*…

Bug fixes

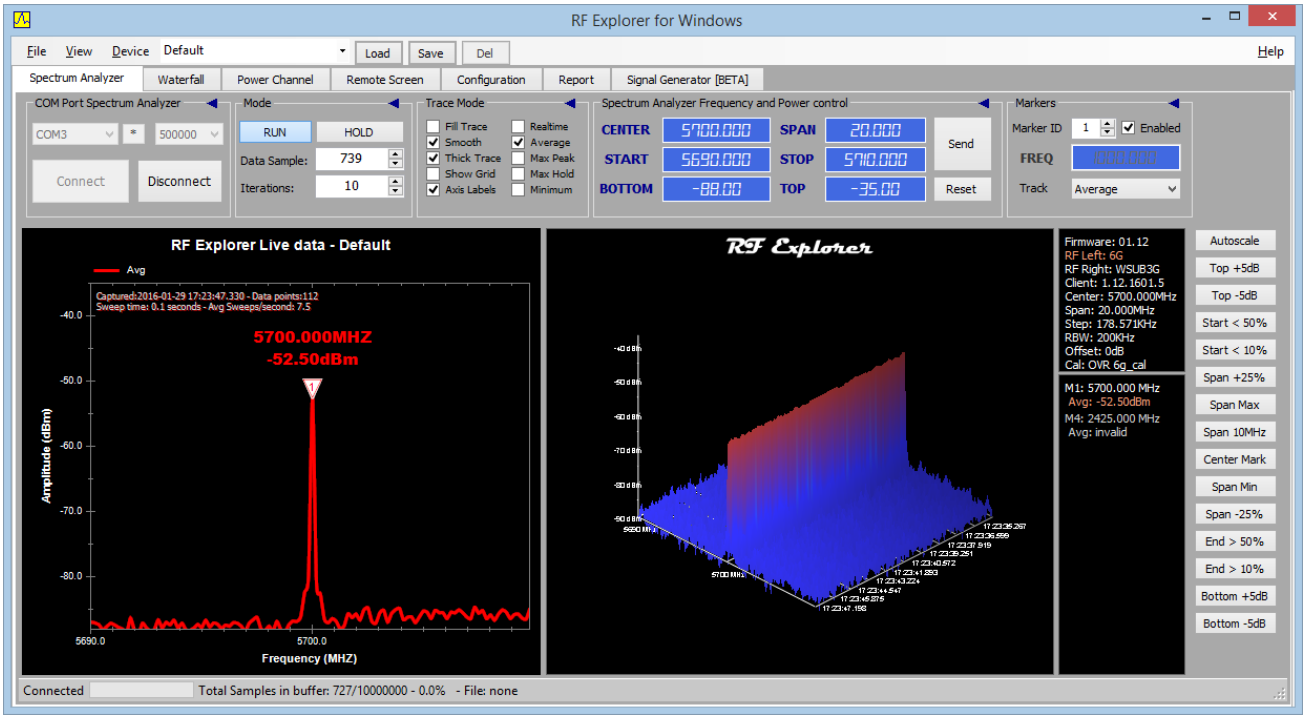
- Waterfall screen display is now properly updated when "Data Sample" index is manually modified while Hold mode is enabled. Before this fix, waterfall display may not update with correct data when Data Sample was manually modified.
- Frequency Markers are invalidated in Wifi Mode if they are out of range. Before this change, some markers could read incorrect values while Wifi Analyzer mode was enabled.
- Frequency Markers no longer get out of screen if too many are enabled. Before this fix, a long list of markers on screen may actually go beyond application markers area.

Version 1.12.1601.5

- *Recommended RF Explorer Spectrum Analyzer firmware: v1.12 Beta 26*
- *Recommended RF Explorer Signal Generator firmware: v1.12 Beta 15*

Release date: CET Jan 29th, 2016

Release notes for this version accumulate a number of improvements and bug fixes, including details from earlier versions v1.12.x not fully documented in this document before.

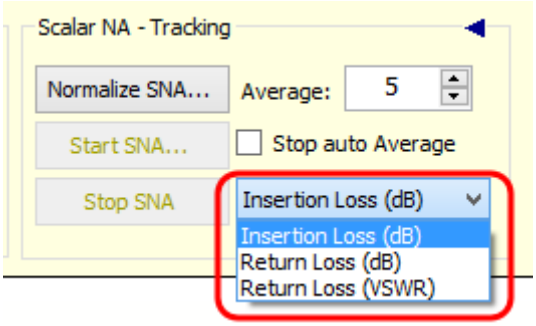


Enhancements:

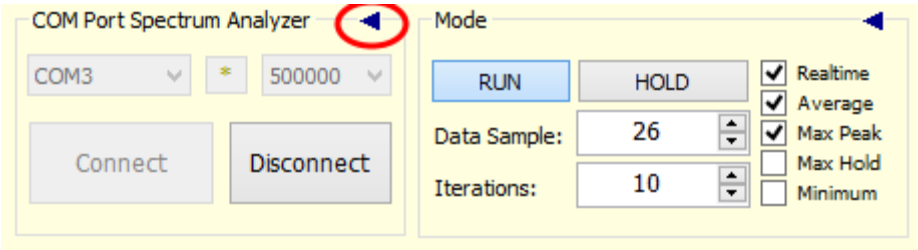
- Fully supported SNA tracking for all RF Explorer models except 2.4G. This model will be supported in the near future.
- Added median average to improve noise rejection in SNA tracking display.
- Software is fully integrated with internal calibration available in RF Explorer Spectrum Analyzer and RF Explorer Signal Generator. Please upgrade your unit to latest firmware versions available at www.rf-explorer.com/downloads
- RF Explorer firmware uploader tool is now supported in Linux, Windows and MacOS X. For more details please visit www.rf-explorer.com/upgrade . This tool now also support command line mode for easy use in headless devices such as Raspberry Pi and remote servers – you can now virtually upgrade your RF Explorer firmware from any system!
- Support for configurable and auto-generated Limit Lines, including optional sound alarm when signal does not fit inside limit lines.
- Normalization data can be fully stored in separated files for easy reuse later.
- Signal Generator tracking results can be saved as CSV and standard S1P files. Note: files are considered S1P because only one parameter can be saved at a time, regardless if it is S11 or S21. If it is a 2-port S21 measurement, rename the file manually. Future enhancements will

allow combination of multiple readings, such as S11 and S21 to be displayed together and saved to a S2P file.

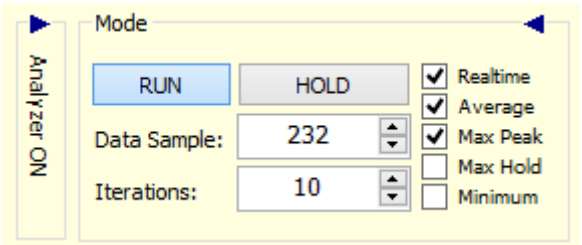
- User can select "Insertion Loss" or "Return Loss" graphical Y axis label for Signal Generator trace. This include "Linear VSWR" correctly calculated for easy VSWR display. Note: you need an external directional coupler to measure return loss and VSWR as described in this online tutorial: link.



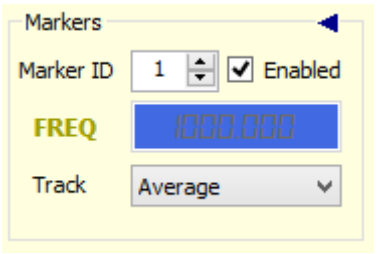
- All Tool Groups in control area are now collapsible to make it easier fit in small screens. This feature is developed from ground up specifically for RF Explorer for Windows. As depicted in the image, circled in red, there is a new arrow button available on each toolset group and located top-right; by clicking on it you can collapse the toolset so no longer takes screen space and makes room available for other controls.



Once collapsed, the toolset group will display a brief informative text. In this case to show the Analyzer is connected (Analyzer ON). By clicking again on the arrow button the toolset group gets expanded back.

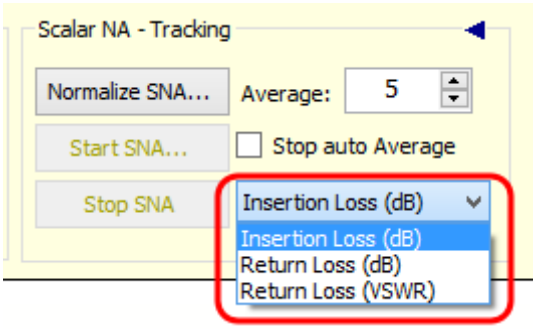


- This version adds Tool Group for Markers, so it is now easier than ever to set a marker quickly on screen (optionally you can use Markers menu as in earlier versions)

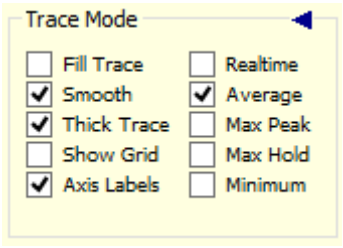


- Markers are available for SNA Tracking as well as Spectrum Analyzer. They work virtually the same in Spectrum Analyzer and SNA, with the important difference in marker 1: while it detects Peak value in Insertion Loss mode, it will automatically change to negative Peak in Return Loss mode.

  All other markers from 2-9 can be defined at any arbitrary frequency, same as with Spectrum Analyzer. Values of markers defined for SNA and Spectrum Analyzer are independent and stored in configuration settings, so you can define markers for a particular configuration and restore them easily anytime.



- Added Tool Group for most usual visual settings including different trace modes as well as signal thickness, grid, etc.



- Added on-screen tooltips for most controls and functions. To use them and get sensitive help, just place the mouse cursor over any control and will display informative text.
- Remote Screen tab is now available for Signal Generator too. In order to use it, the only device connected must be the Signal Generator, otherwise the Spectrum Analyzer takes precedence.
- Waterfall screen supports now arbitrary data points. This enable data from RF Explorer RackPRO and other future models and firmware revisions to properly display large datasets in the Waterfall screen.

- Optimized internal data calculation and RAM storage for Waterfall screen. This may be noticeable for a better performance and lower memory footprint in small systems such as Windows tablets and netbooks.
- Sweep frequency and power settings are now stored with named configuration settings
- User configurable title text graph added to both spectrum analyzer and SNA graph
- Support for external amplitude correction files in Spectrum Analyzer.
- Support for amplitude in dBm, dBuV and Watt.
- Channel power meter
- Additional remote device control modes
- Auto-scale amplitude function using right-side accelerator buttons
- Added all models correction files *.RFA so they are installed automatically, no need to manually handle them.
- Updated power channel to adjust for OffsetDB from the device
- Updated power channel to follow max/min range values from analyzer settings
- Updated power channel context menu for correct option handling
- Updated dark color mode to correctly read legends
- WiFi Analyzer graph mode enabled. You can now use the WiFi analyzer mode on your PC as soon as it is enabled on the RF Explorer device.

Fixes:

- Fixed a problem where data files folder could not reliably use a network shared folder by default.
- Corrected a scale fit problem in the RF Explorer device icon image in the Configuration Tab screen.
- The configuration settings and user preferences configured in the RF Explorer for Windows application are now reused from version to version.
- The application setup has been migrated to a different package. This should be transparent to all users and OS configurations but if you experience any problem in the setup process please contact us.
- Corrected measurement data point on Signal Generator screen to be dB (as opposed to incorrect dBm reading earlier version)
- Corrected Spectrum Analyzer trace color mismatch in MaxHold and Min.
- Optimized communication response between device and USB connection to minimize configuration screen retries. Before this improvement, the device may resend configuration screen 2 or even 3 times to the Windows application, resulting in flashing and unnecessary refresh.
- Fixes in markers under SNA on several cases where lost or changed unexpectedly
- COM port larger to accommodate comfortably up to COM999 values
- Fixed crash when editing dB value in Limit Lines dialog box
- Automatic and resilient detection of any USB combination. Prior to this fix, the application may confuse ports and not complete connection if the device was plugged on a different USB port in the computer than last time used.
- Typo in several message text and menus (thanks users Shaun O'Sullivan and Stewart Andreason)

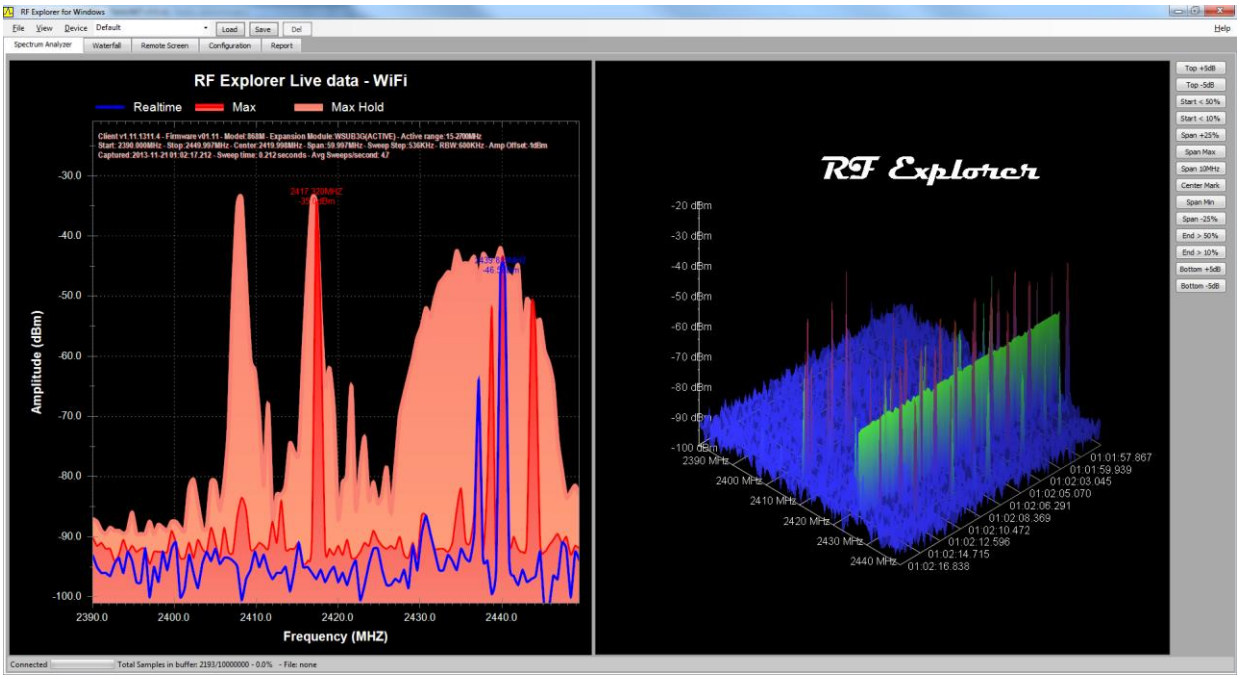
- Sometimes SNA normalization or tracking could not start if frequency was right on module frequency boundary (e.g. starting right at 15MHz in a 3G Combo model may have not worked successfully in some cases)

Version 1.11.1311

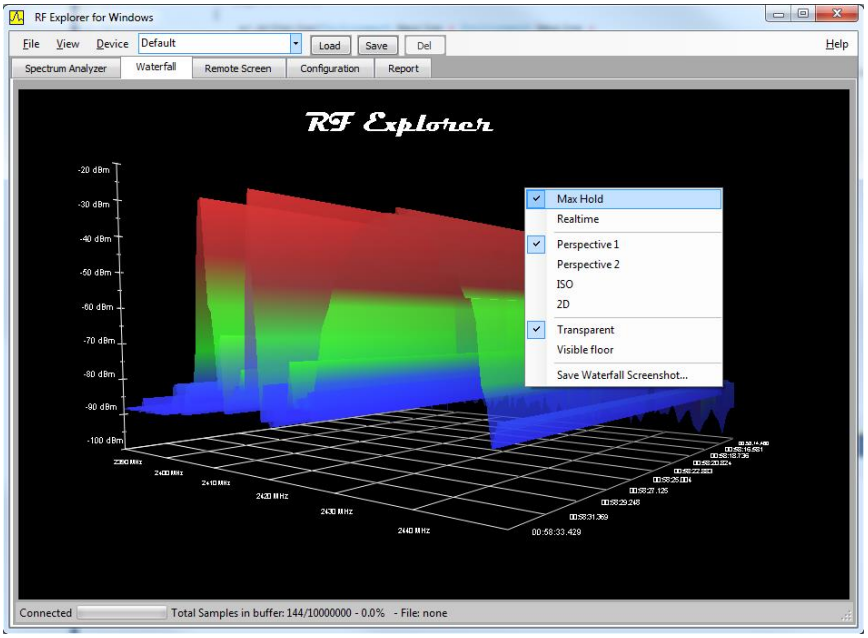
Release date: CET Nov 22nd, 2013

This version includes important enhancements and features:

- Waterfall 3D and 2D using high performance, high quality OpenGL graphics library.



- Waterfall can display on dedicated tab as well as in the main Spectrum Analyzer screen, and options for display different perspective views and waterfall options are available on a right-click, context sensitive menu.



- Signal shape in Spectrum Analyzer screen can be optionally filled with solid colors for easier visualization
- Signal shape can optionally remove smoothing and use straight segments
- Clean buffer option will now clean the internal RF Explorer device buffer as well to remove any old signal cached in MaxHold mode
- Controls and Text in the Graphical Interface is adapted to resize correctly under text size scaled in Windows and has been thoroughly tested with different setups including 125% and 150% text scale.
- List of last data files .RFE opened are now available for easy access in the file menu.

For more details, check the RF Explorer for Windows user manual online.

Version 1.11.1307

Release date: CET Jul 24th, 2013

This release includes full support for RF Explorer firmware v1.11, as well as new important capabilities:

- Full compliance with firmware v1.11 – note some features will not be available if you do not upgrade your firmware to the latest version.
- New *Device* menu with selection of active RF module if a 2-port RF Explorer model is connected.
- Graphic, quality 3D representation of the connected RF Explorer model to better understand the active RF connector. It also includes an antenna representation but take the antenna shape as an indication only, the software has no way to know the actual antenna connected, or if there is an external RF source being used instead of an antenna.
- The *Spectrum Analyzer* screen adds the currently selected Configuration Setting text as part of the title of the graph. This helps to reference the meaning of the captured signal in a print or a bitmap file.
- *Max Hold* mode is available now in the *View* menu, in addition to the pre-existing *Max Peak* mode.
- The *Automatic LCD OFF* option has been moved to the new *Device* menu. This is for consistency but functionality does not change.
- The *Spectrum Analyzer* includes now timestamp. This feature allows knowing with millisecond precision the exact time data was captured, so it can be joined with GPS position data or other events.
- The *Remote Screen* includes now timestamp. In addition to that, finer control were added to allow for B/W or color capture, as well as a text header with indication of capture time and model used on screen for reference.
- A more advanced print facility, available from the *File* menu, allows now to print the *Dark Mode* configuration in white background to save toner and make prints easier to read.
- The internal *Spectrum Analyzer* capture buffer is now able to store 10 million sweeps, thanks to new advanced memory management.
- The internal *Remote Screen* capture buffer is now able to store 64K screens.
- The buffer for *Spectrum Analyzer* and *Remote Screen* can be independently cleared from the *File* menu, *Reinitialize Data Buffer* command. It will ask for confirmation and will clear the buffer based on the current screen on focus.
- RF Explorer data files include timestamp of each capture, so the persisted data is smarter and able to display capture time when restored. This include these file formats:
    - .RFE – standard RFE data files.
    - .RFS – standard RFS screen capture files.
    - .CSV – Cumulative CSV files include date and time on each sweep row. Simple CSV files remain with old format and no timestamp as they are compatible with 3rd party coordination software tools.
- As result of these improvements, the file format is now v002 and therefore not readable from older versions of the RF Explorer for Windows. However, this new version of the

software can read older v001 format as well as new v002 format. If you deliver files to other users, make sure they work with the latest version of the software.

- There are new sample files available in the Examples folder in the RF Explorer installation program group.
- A new Help menu is available at the right of the menu bar. It includes direct access to online information, manuals and the About box. We are working on a much improved and updated version of the RF Explorer User Manual so all the information you may need will be just a click away.
- A large number of workflows have been improved and bugs fixed based on user feedback and reports from different computer configurations. The continuous support of the RF Explorer community makes all these improvements possible, and we keep investing on making this software better and more capable based on feedback.
- The underlying software SDK is now revamped in reusable components to make 3rd party integrations much easier. The foundation of all this functionality is the new RFECommunicator component, which encapsulates all the complexity of dealing with USB protocol for you. We will dedicate a full section in the documentation for reference of this powerful component which makes it possible to create your very own application in a few minutes, as well as integrate it with pre-existing software tools. As this is a layer on top of the standard USB communication protocol, you create applications and tools based on the low level documented protocol or with this new advanced control, your choice, both options are available. If you are interested on developing software for RF Explorer, place your questions and comments at www.rf-explorer.com/forum

Version 1.09.06

Release date: CET Mar 21st, 2013

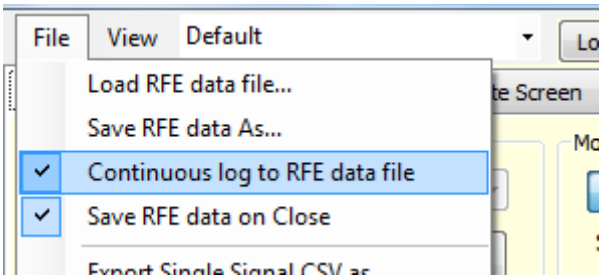
This is a bug fixing release. It resolves a problem experienced by some users where the application will fail to load name settings from disk, and sometimes even crash.

Version 1.09.05

Release date: CET Dec 14th, 2012

This version includes a number of enhancements:

- Internal memory buffer size increased to 30000 samples, previous versions limited it to 10240 samples. Assuming an average of 10 samples/sec, you can get about an hour worth of data in the memory buffer.
- New Continuous data log feature implemented, it is active by default in menu ***File-> Continuous Log to RFE data file*** – When this new feature is enabled, it will store information forever as long as there is enough HD space, creating successive .rfe data files automatically everytime the buffer gets filled and starting all over again.

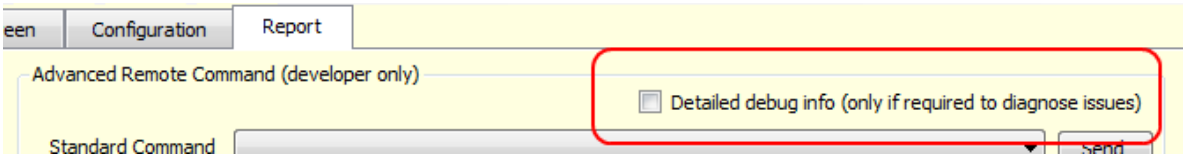


- If continuous data log is not active, the application won't store data automatically in files, but it will keep receiving signal data forever and won't stop when the buffer is full: it will just clear it and start all over again. Previous versions set the application On Hold and stopped capturing more data to protect the buffer from being overwritten.
- Signal graph uses smoothed curves (splines) now in the Spectrum Analyzer screen, for a softer, more pleasant display. The splines have very little tension to avoid any distortion to the real signal data.

Bug fixes included:

- When connecting a RF Explorer with an old firmware version, it will show now a single popup with firmware version alert. Previous to this fix, there may be 2 or more popups with the same information displayed.
- Named Settings file has been moved to a new location, in the AppData global folder where there is no access right restrictions to store application data. Previous to this fix, Windows Vista / Win7 and Win8 users with UAC enabled may experience problems storing named settings. When the new application version is loaded for the first time, it will import old named settings from the previous location, if it exists. In that way you do not lose the old settings when upgrading to the new application.
- Named settings work fine now in both scenarios: RF Explorer unit connected and disconnected. Previous to this fix, certain combination of settings with the unit connected may not really honor the values on screen and will display bogus frequency information, as the RF Explorer unit and the Windows software may be not in sync.

- Performance improved when loading very large .RFE files. Previous to this fix, the tool may take several minutes to load a RFE file with thousands of samples.
- Reduced verbosity of the report tab window, to keep only meaningful information to the average user by default. If you need to enable detailed information, check the new *Detailed Debug Info* checkbox in the Report tab window anytime. Note detailed information is still persisted to Report log file, so it is available for client support and detail research in case of troubleshooting is required.

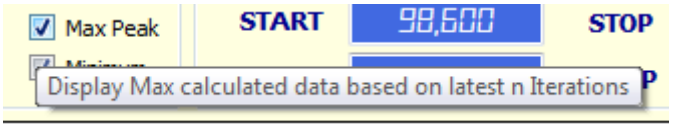


Version 1.09.04

Release date: CET Oct 10th, 2012

This version includes a number of enhancement and bug fixes:

- There is a powerful facility to persist configuration settings with descriptive names, so they can easily be restored on demand. You can use this powerful feature to easily setup the RF Explorer to configurations you commonly use. More information on this feature in the online manual at www.rf-explorer.com/windows in the "Configuration named settings" section.
- The RF Explorer for Windows now exports a simplified CSV file format as required by IAS and other Frequency Coordination applications. For more information, please check details online here. You can also select the CSV delimiter (comma by default, but can be tabulator and other symbols).
- There are now tooltips to help on understanding what the different functions and commands are for.



- The user can now select the default location for data files (auto RFE file, bitmaps, CSV, etc) in the Configuration tab screen. By default it will go to My Documents\RFExplorer folder.
- A bug that prevented the Peak values on screen to be exported the bitmap or being visible when the RF Explorer device was on hold has been resolved. This issue was introduced in previous version v1.09.03.
- An internal adjustment on scale is now done automatically when a RFE file is loaded. This guarantee too low or too high amplitude signals will remain on screen after the file is loaded.
- An optimization on the way the Remote Screen works is now in place, so the Auto LCD OFF feature disables the Remote Screen controls to make it more obvious to the user the fact that a remote screen is not available when the RF Explorer device doesn't actually draw information on screen.

Version 1.09.03

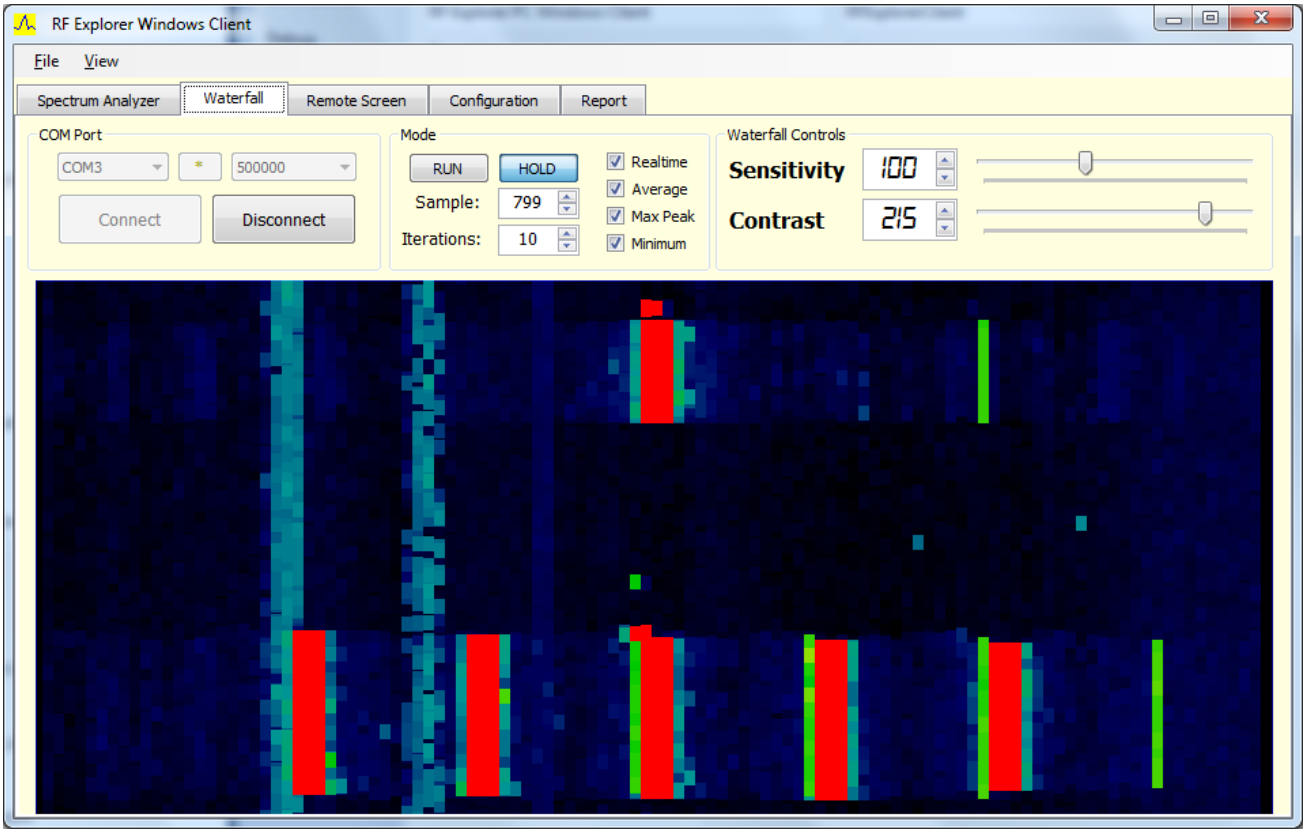
Release date: CET Aug 10th, 2012

This version introduces the first contribution for an external developer; I want to thank *Josef Jahn* for implementing this nice first version of a Waterfall display on the RF Explorer Windows Client. If you have questions, suggestions you can contact him directly or put your question in the forum www.rf-explorer.com/forum .

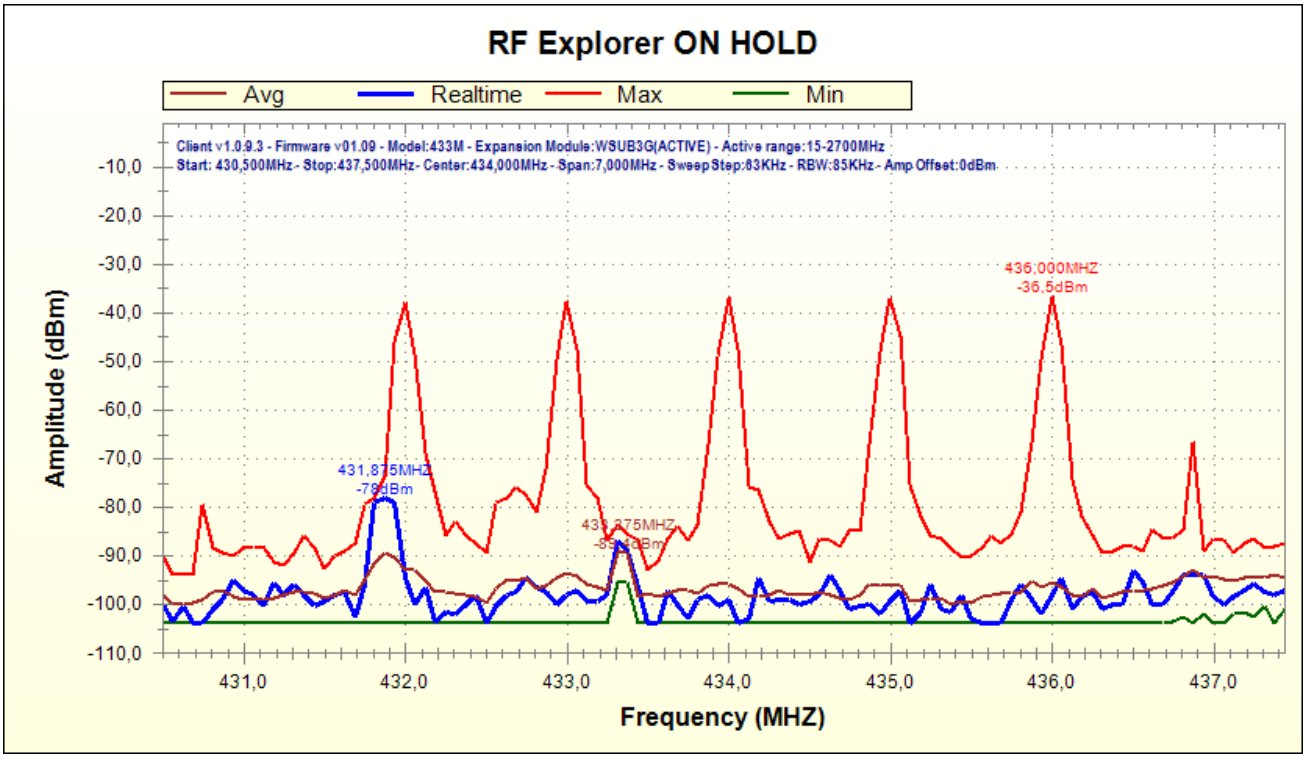
Josef developed a functional waterfall tab view and provided the following description:

> *The waterfall view displays signal intensity across the scanned frequency range over time. This is different from the normal Spectrum Analyzer graph in that it allows the visualization of spread spectrum transmissions. Signal intensity is displayed via varying colors: Black and blue equal low signal strength, yellow and red are used for strong signal levels. The waterfall display scrolls up, with the latest data displayed at the bottom.*
>
> *Two sliders for "contrast" and "intensity" control how the data is displayed. These controls can be used to adjust the image for optimal visibility of the desired signal. The "intensity" slider controls the basic sensitivity, it's a constant multiplication factor that is best used to compensate for environments where the general signal noise level is high. The "contrast" slider controls the sensitivity of the waterfall diagram, and is typically used to emphasize low signal levels. For example, a weak signal can be made more visible by increasing the contrast.*
> *Manipulating both sliders allows for all kinds of signals to be displayed in the best possible and most visually apparent way.*
>
> *The waterfall display uses the maximum received values for the signal intensity. This means that changing the "Iterations" value on the "Spectrum Analyzer" tab will affect the data of the waterfall view. Small values for "Iterations" mean that short signal spikes are displayed as thin dots or horizontal lines, while larger values cause these lines to expand horizontally.*
>
> *The frequency range of the waterfall display is identical to the frequency range currently set on the "Spectrum Analyzer" tab. To examine narrow-band signals in more detail, set the frequency range accordingly on the Spectrum Analyzer tab - the waterfall view will reflect these changes.*
>
> *NOTE: Disable the RF-Explorer's LCD via settings for optimum performance and time resolution. This is particularly important for examining frequency hopping transmissions.*

This is an example of the waterfall view in action: First red bar is a 433Mhz single transmission, whereas the 5 bars at the bottom are sweep transmissions 1MHz apart.



The last waterfall entries correspond to this Spectrum Analyzer view



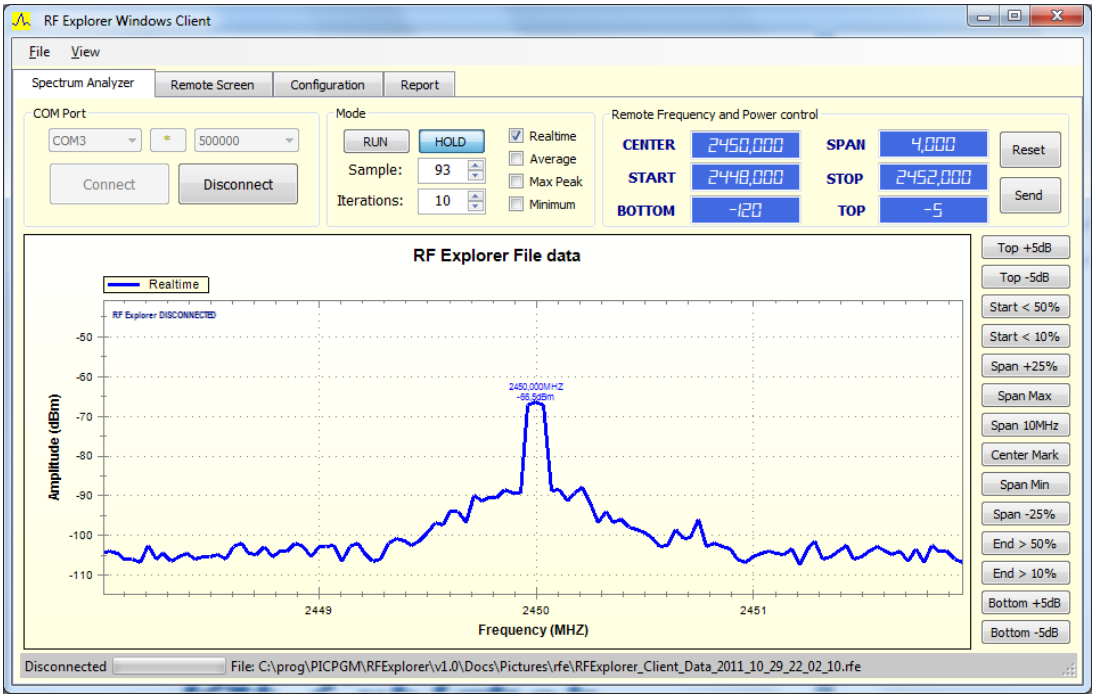
You can get more detailed activity with low Iteration number count in the analyzer view.

Version 1.09.02

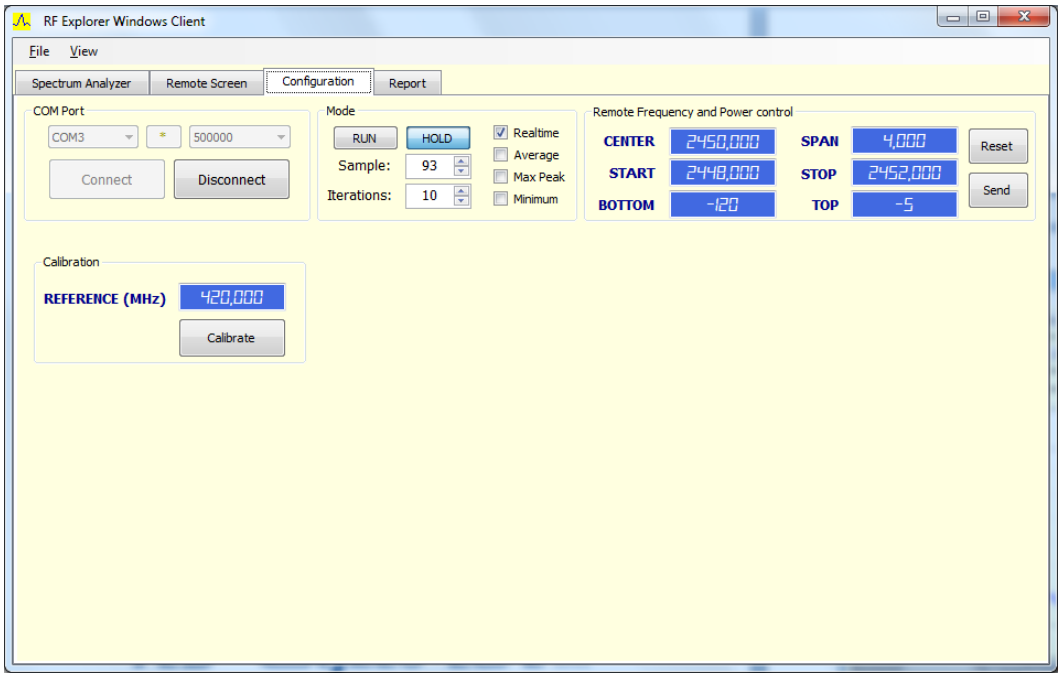
Release date: CET Jul 3rd, 2012

This version introduces the following enhancements:

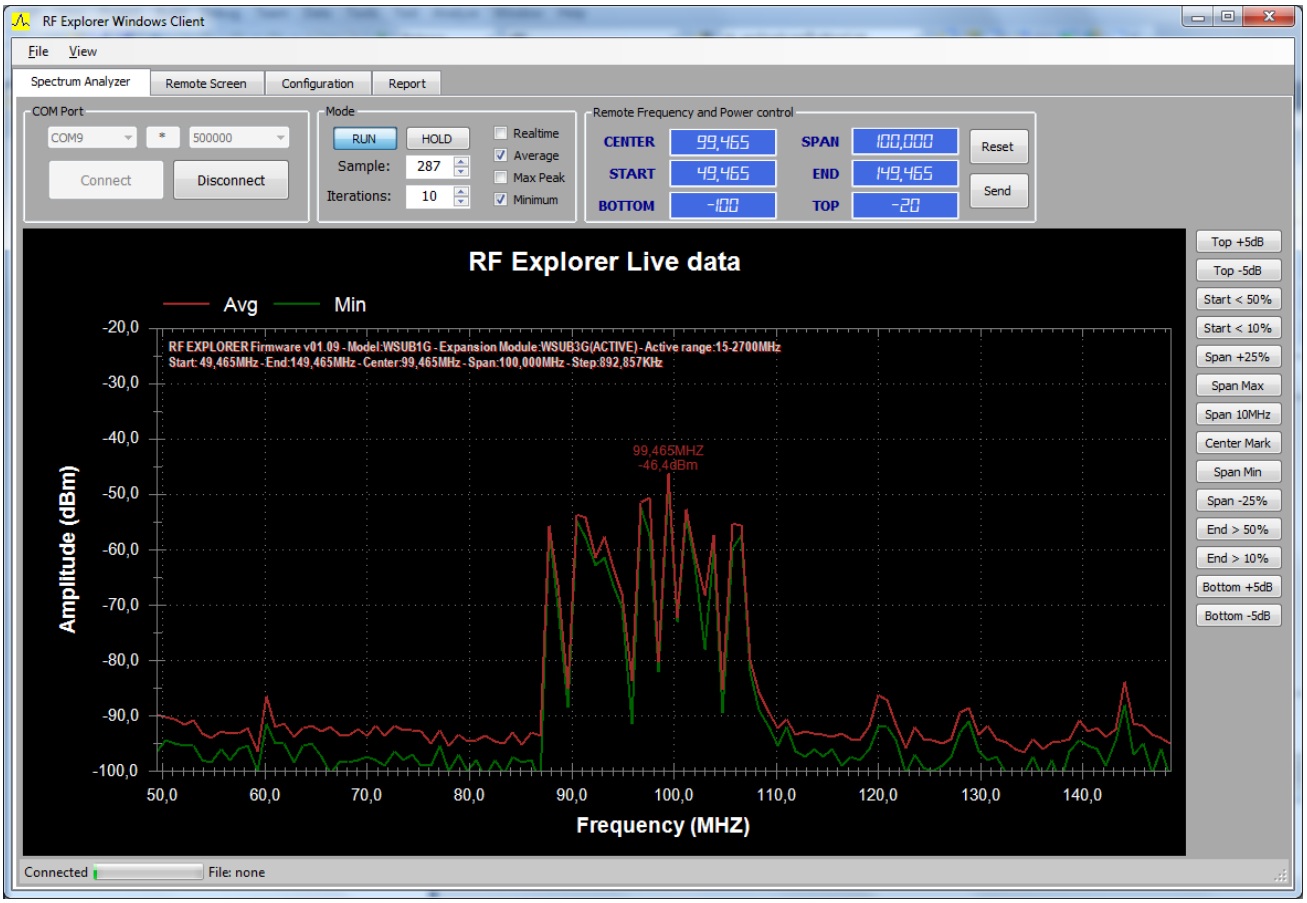
- Quick toolbar access to a number of advanced functions on the right of the Spectrum Analyzer screen tab.



- The configuration tab includes a frequency calibration functionality, see more info on the RF Explorer firmware v1.09 Beta 05 release notes, as well as this online demo video.



- Support for the new WSUB3G model, covering frequencies from 15 to 2700MHz. See below an example of the WSUB3G model capturing commercial FM radio activity (88-108MHz)



- Model and mode text is now embedded in the drawing area for easier reading and reference.

Version 1.06.09

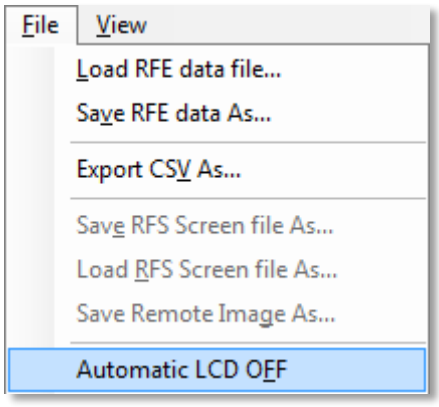
Release date: CET Nov 27th, 2011

This version introduces the following enhancements:

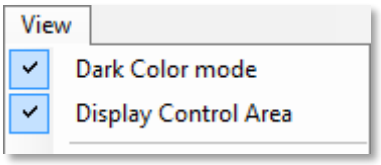
- Updated to get benefit of new features available in firmware v1.08 Beta 03. We strongly suggest upgrading your device.
- New WiFi Analyzer screen. To use it, select WiFi Analyzer in your RF Explorer and a new graph mode bar will be displayed on the PC screen.

- The application will select Max Peak mode automatically when switching to WiFi Analyzer, as this is the only real useful mode for WiFi analysis.

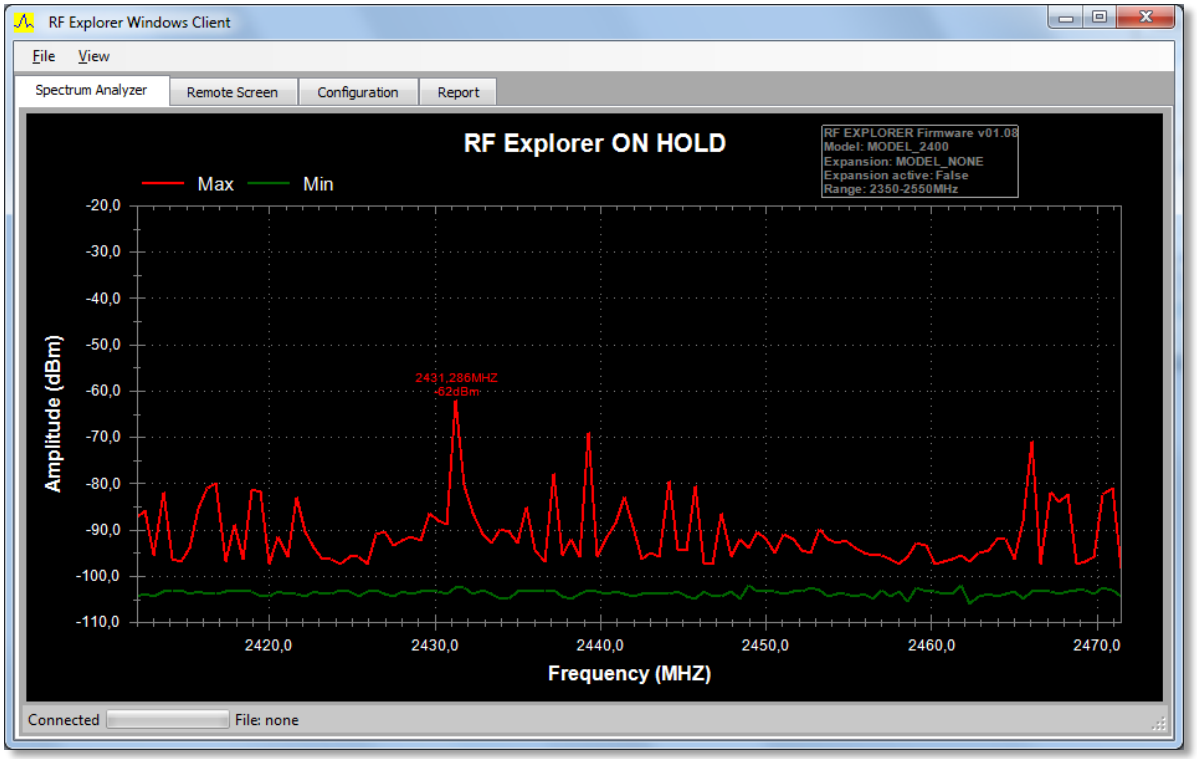
- New option to automatically switch the RF Explorer unit LCD OFF/ON using the new menu option shown below. This will work with firmware v1.08 beta 03 and newer only.



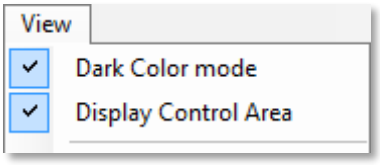
- New Dark Mode skin, some users prefer graphs to be displayed over a black screen to better simulate a real instrument. You can switch it from normal to dark skin anytime with this menu option (Dark Color Mode):



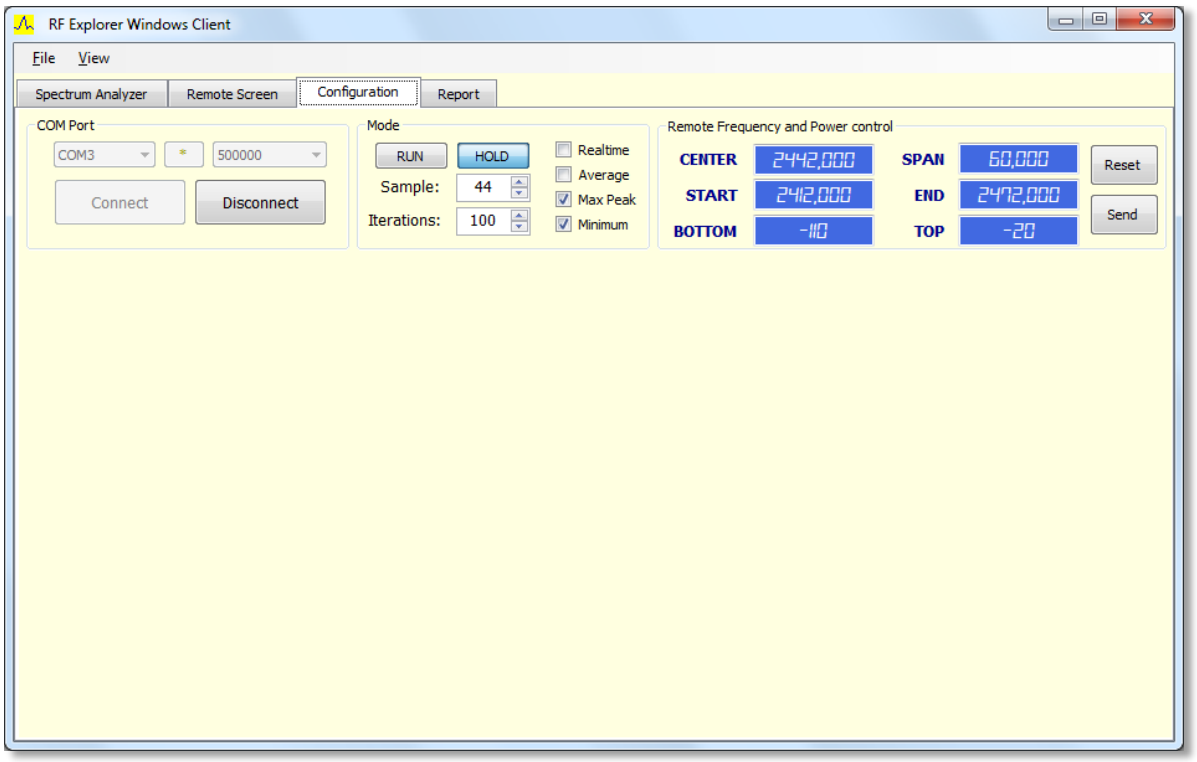
- RF Explorer Windows Client GUI now works on Tablet PCs with resolutions as low as 1024x600. This feature was suggested by user *Manuel Castro* (Thanks!).



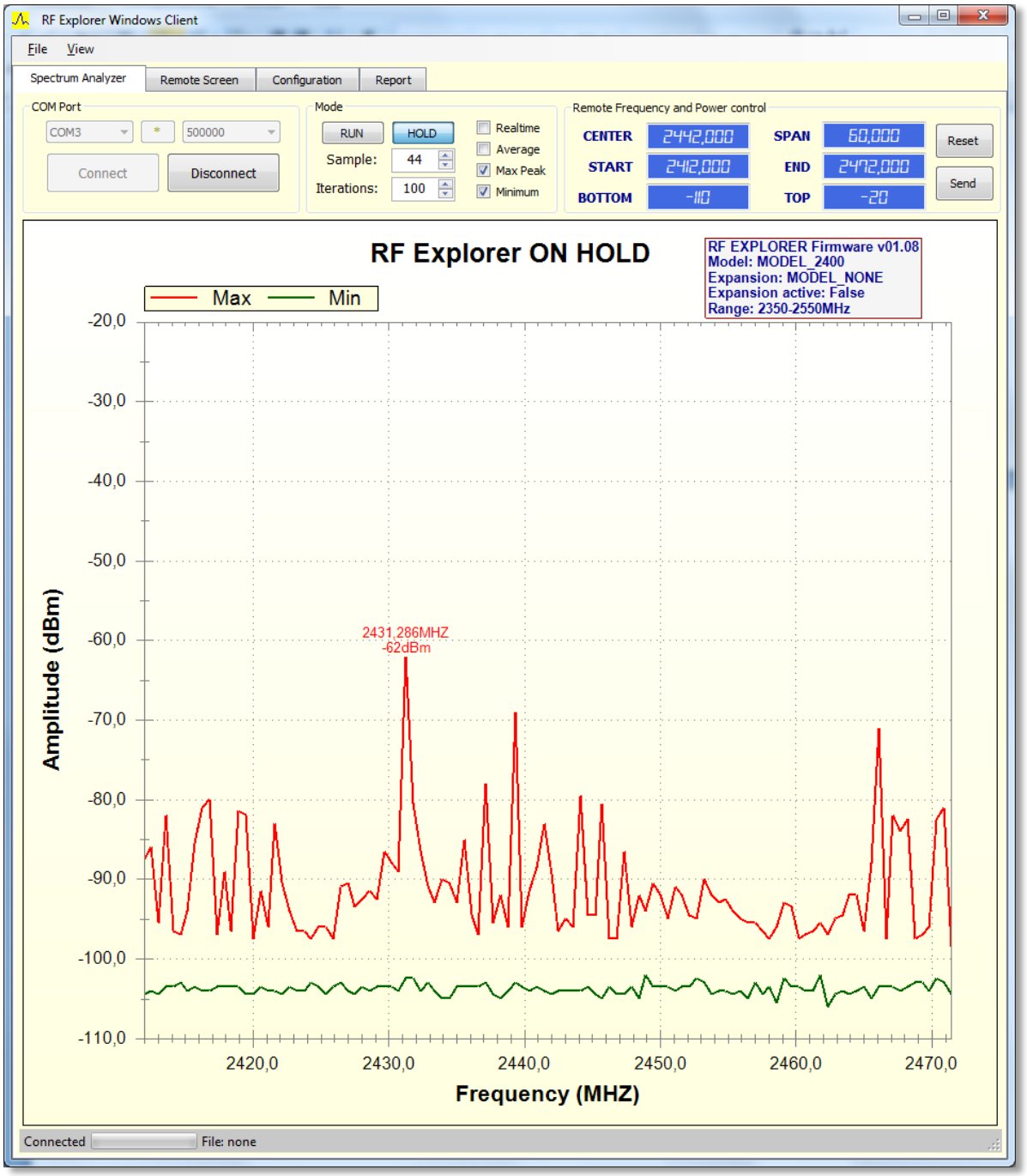
- To make it easier to display the graph in small screen resolutions, you can now disable the large *control area* (also known as ribbon in some applications) using menu option (Display Control Area):



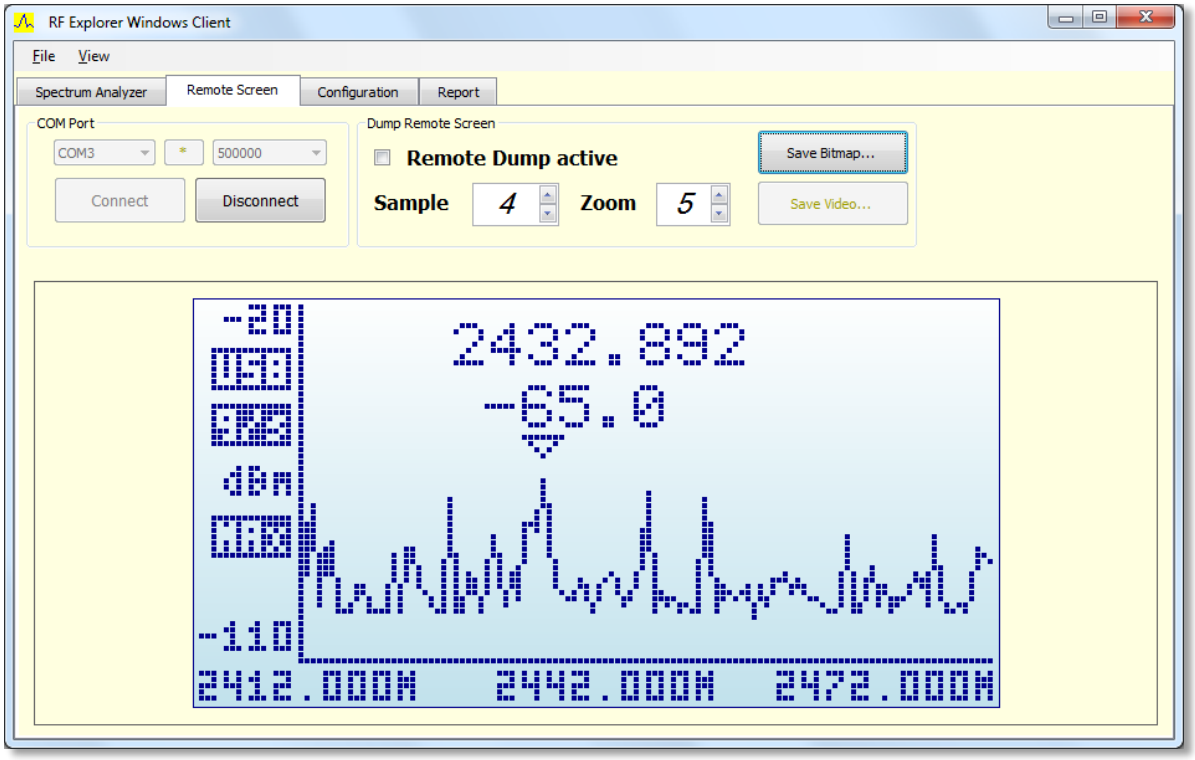
- There is a new Configuration window tab, where you should go when the Control Area has been disabled and you want to select different configuration options. This screen will be populated with future configuration options that may not be available in other screens.



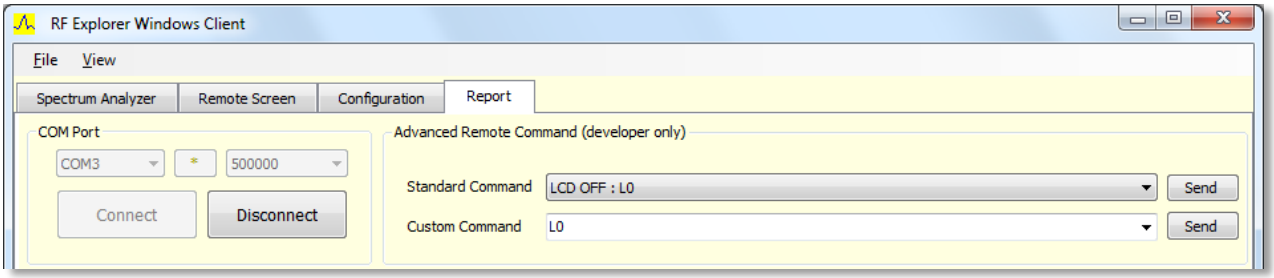
- The application now can be also resized and maximized on screen to any resolution to make better use of large screens.



- The Remote Screen has now additional Zoom values to make better use of larger screens, and includes a button to save a bitmap directly (same option as using the file menu but easier to use in a Tablet):



- There is a feature under development to directly save screen images as video to share, but it is not finished and the "Save Video…" button will remain disabled in this version.
- The Report window tab has been enhanced with a direct command feature to be used by developers and advanced users. The list of available commands is that published on the wiki, and can be pre-selected from a standard command list or sent from a custom combobox for those commands such as C2-F which need a set of custom values. This list will grow as we keep adding new features to remote control more functionality, and this Developer section is what you can use when the Arduino expansion board becomes available.



License

Disclaimer

This application is Open Source and available under GPL v3 license by Ariel Rocholl. The source code is available at http://github.com/arocholl/rfexplorer and can be modified, updated and redistributed under GPL license.

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