

SDR Sharp Frequency Manager + Scanner Scanner Metrics v1.0

User's Guide

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Introduction

The SDR Sharp Frequency Manager + Scanner's **Scanner Metrics** application (called SM in the rest of this guide) is a free plugin designed for use within the SDR Sharp software application, as an accessory to the Frequency Manager + Scanner plugin. It provides a means of recording scanner frequency activity to a database and later performing analysis on that information; the goal being to make it easier for you to determine which of the millions of frequencies you can receive actually are worth spending time on.

Features Summary

SM adds the following features to SDR Sharp:

- A collapsible panel containing the recording and reporting controls.
- Reports that analyze the recorded metrics and produce charts about frequency activity.
- A small dedicated database for the collection of metrics.

System Requirements

Basically if you can run SDR Sharp, you can use the Scanner Metrics plugin. As with any software, the more capable your hardware the better the software will run.

- OS: Windows XP Pro, Windows 7, or Windows 8. The binaries are compiled for a 32-bit environment for the broadest compatibility but run equally well in an x64 environment.
- Processor: 1-gigahertz processor or faster; 2 or more cores is recommended for suitable performance.
- Memory: 1 gigabyte or more total in the computer.
- Hard Disk: The software requires less than 50KB; the frequency database size is dependent on the number of records, which in turn is based on how active frequencies are. 8000 records will fit in a 600KB database.
- .NET: Version 3.5 runtime as required by SDR Sharp.
- Microsoft Chart Controls for Microsoft .NET Framework 3.5, available from <http://www.microsoft.com/en-us/download/details.aspx?id=14422>.
- SDR Sharp: Revision 937 or newer.
- SDR Sharp Frequency Manager + Scanner version 1.2.4785.25638 or newer.

Installation

Installing the software

Installation is extremely easy, but you may be required to run the setup program as Administrator.

PluginsSetup.exe is a typical software installer; use the Next and Back buttons to walk through the setup wizard.

Just follow these steps:

1. Download and install the Microsoft Chart Controls as described above.
2. Unzip the freqmgr.zip file to a convenient folder. Do not unzip it to the SDR# folder for this will cause the plugin installation to fail.
3. Run installer program PluginsSetup.exe. Click Next.
4. Select the plugins and tools that you wish to install. Click Next.
5. Define the folders into which the software will be installed. Click Next.
6. View the installation summary page and confirm your choices. Click Next.
7. Click Next as needed to complete the installation.

PluginsSetup will copy the required files into the targeted folders, alter the SDR# configuration to run the plugins, and create an "SDR# Plugins" folder in your Start Menu.

Uninstalling the software

Run PluginsSetup.exe again, and clear the checkboxes for the software you want to uninstall.

Modifying/Repairing the software

Run PluginsSetup.exe again. To modify, check or un-check the software you want to add or remove. To repair, leave the checkboxes alone; it remembers your last choices and will re-install them as previously selected.

Hint

Two things to remember:

1. You may be required to run the setup program as Administrator.
2. You may be required to run SDR# as Administrator.

Using Scanner Metrics

After installing the plugin, and the first time you run SDR Sharp, a Success popup message will appear stating “*The Scanner Metrics database was created successfully.*” Click the OK button and SDR Sharp will be displayed with the new collapsible panel containing the Scanner Metrics panel.

If you do not see the popup Success message or the SM panel, please see the section on Troubleshooting.

The Scanner Metrics Panel

The SM collapsible panel displays three group boxes, each containing a functional group of controls.

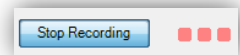
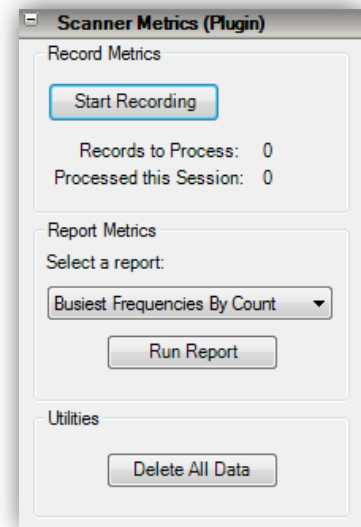
Functions in the Record Metrics Group

Info

This “hidden” function displays information about SM: the version, the date and time it was last modified, the path to the frequency database, and a copyright notice. Access this function by clicking your mouse anywhere in SM and then pressing the three keys Ctrl + Alt + I simultaneously. In a few seconds a popup will display the application information.

Start Recording

This button displays starts and stops the activity recording function. When the recording function is active, an animated dotted line displays to help remind you that recording is active. The button’s caption also changes to *Stop Recording*. The button’s state latches to pressed or released.



Hint

Scanner Metrics gets its data from the scanner in the Frequency Manager + Scanner plugin. The scanner detects a frequency is in use by asking SDR# if the squelch is open on that frequency. *If the squelch does not open, Scanner Metrics will never get a record to process.* Therefore scanning without squelch enabled will never send records to Scanner Metrics.

There are two lines of information in this group:

- *Records to Process* displays the number of records waiting in a queue to be written to the database. This indicator exists because the database is updated on 5-second intervals in order to reduce the performance impact on SDR Sharp; we want you to be aware of records not yet written to the database.
- *Processed this Session* displays the number of records written to the database in this recording session.

Functions in the Report Metrics Group

Select a Report

This dropdown contains the list of available reports. In this first release there are three:

- *Busiest Frequencies by Count* produces a bar chart of the most active frequencies in the database for a specified period of time, giving a total count of transmissions in the period for each frequency.
- *Busiest Frequencies by Duration* produces a bar chart of the most active frequencies in the database for a specified period of time, giving a total number of seconds transmitted in the period for each frequency.

- Busiest Times for A Frequency produces a line chart that shows activity for a specific frequency over a period of time. This permits you to visualize that (for example) a given frequency is busiest on weekday nights at 11PM; so you may not want to spend a lot of time scanning it at 6 in the evening.

Run Report

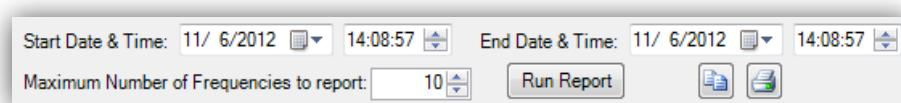
This button launches the selected report in a standalone window. Each report can be run and displayed while SDR Sharp, the Frequency Manager + Scanner, and the Scanner Metrics recording function are all active.

Each report has a parameter pane that allows you to define the parameters of the report. Be aware that there is no validation for reasonableness on your parameters; if you define parameters that are illogical or which don't have corresponding metrics in the database, your report will be empty (no data found).

Following are details on each report, how to execute it, and what you can expect as results.

Busiest Frequencies by Count

This report describes which are the busiest frequencies based on how many transmissions there were in a given period. It has a parameter pane into which you define the period of time to examine, the number of frequencies to report, and buttons to copy the report and print the report.



Start Date and *End Date* are calendar dropdowns. *Start Time* and *End Time* are time up/down controls. You can type directly into these four controls, use the dropdown and the spinners, or select a value and use the keyboard up and down cursors to change the values. These controls default to the current date and time.

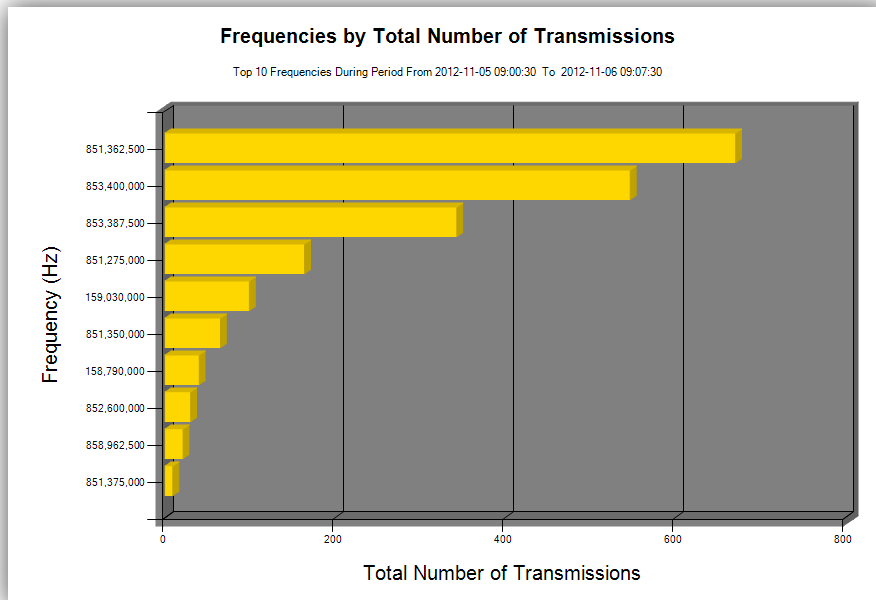
Maximum Number of Frequencies to Report limits the scope of the report to the top *N* records, and defaults to 10.

The *Run Report* button performs the analysis and displays the chart under the parameter pane.

To the right of the *Run Report* button are two more buttons:

- Copy the report to the clipboard
- Print the report

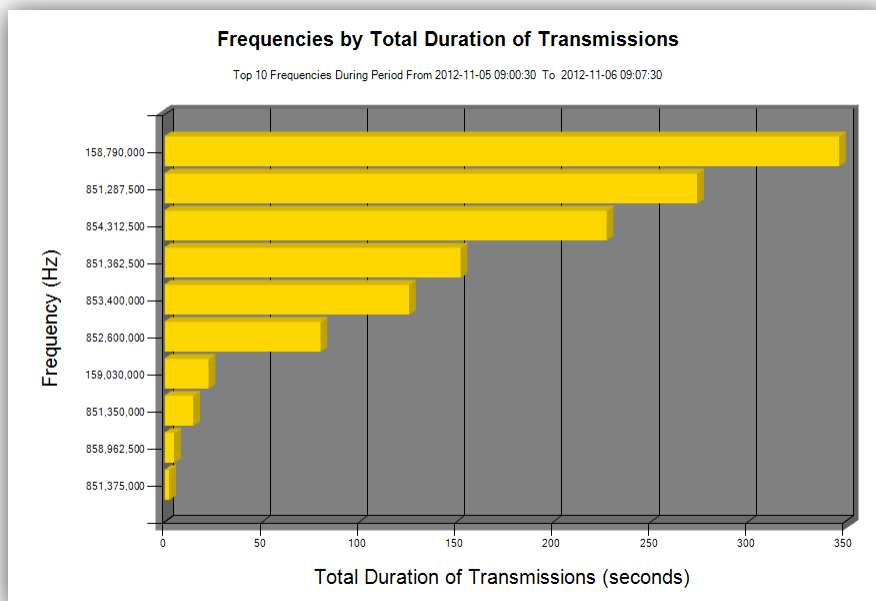
Running this report produces a bar chart as follows:



The top N frequencies are shown in descending order of activity.

Busiest Frequencies by Duration

This report describes which are the busiest frequencies based on how many total seconds the frequencies were transmitting in a given period. It has a parameter pane which behaves just like the previous report's parameter pane, and it produces the following report. Compare the results of this report example with the previous one; in the first one frequency came out on top due to the number of transmissions, but in this example another came out on top because it was on the air more time. You need to select the report that gives you the most pertinent information to your needs.



Busiest Times For A Frequency

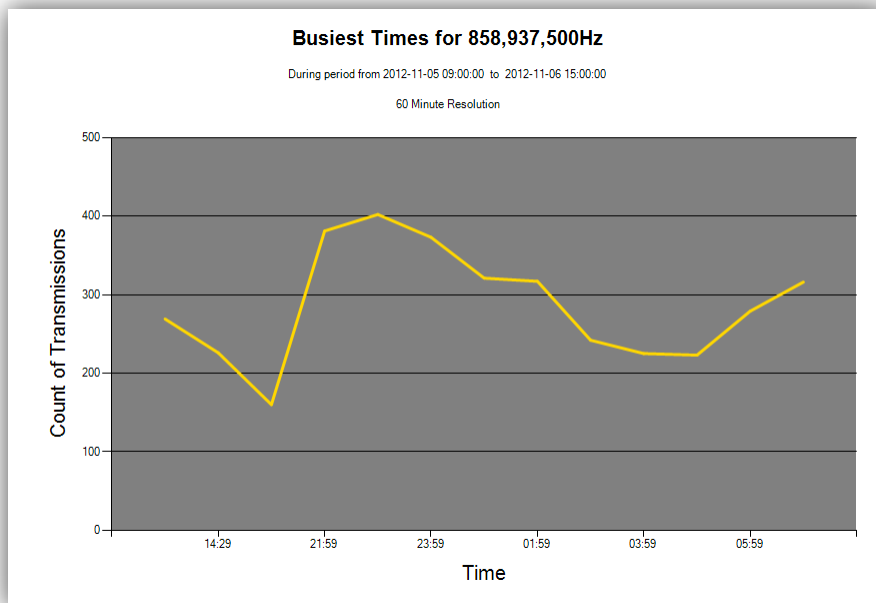
This report produces a line graph that shows the ups and downs of activity for a specific frequency, in the specified period. Its parameter pane is a little different:

Start Date & Time: 11/ 6/2012 14:20:53 End Date & Time: 11/ 6/2012 14:20:53
Minutes of Resolution: 60 Frequency to report: Run Report

The *Date* and *Time* controls, the *Run Report* button, and the *Clipboard* and *Print* buttons behave as with the other reports. The two remaining controls are as follows:

- *Minutes of Resolution* defines the major X-axis divisions and controls how much detail is displayed. At the default of 60 minutes, the total number of transmissions in each 60-minute block is reported. A lower number will result in more data points being displayed. The minimum value is 1 minute, the maximum is 60 minutes.
- *Frequency to report* defines the one frequency that will be analyzed. The frequency must have commas where appropriate.

This report produces the following line chart:



In this example the frequency was most active in the hour ending at about 23:00 local time.

Because of the way Microsoft calculates X-Axis major tick marks in the chart control, you will see times ending with “:14”, “:29”, “:59”, or other values rather than at exact 5, 10, 15, 60-minute, or other intervals. This is because it is reporting the totals at the *end* of a period, not the start of the next one. It looks odd but is correct.

Functions in the Utilities Group

In this version there’s only one function – Delete All Data, which does exactly what it says. Clicking this button will display a confirmation prompt; if you agree to the prompt all metrics data in the database will be deleted. This does not shrink the database file; it only deletes the records.

Customization

Scanner Metrics borrows some settings from the Frequency Manager + Scanner plugin but has one of its own.

You may customize the name and location of the Scanner Metrics database as follows:

1. Open file SDRSharp.exe.config which is found in the SDR# folder.
2. Find the line that says `<add key="smAlternateDb" value="" />`.
3. Between the double quotes after `value=` enter the path and filename of the desired SM database.
4. Save and close the file.
5. Restart SDR# with the SM plugin. If you are creating a new database you will receive a message stating the database was created successfully; if you are referencing an existing database there will be no message.

You can confirm the database by clicking in the SM panel and then pressing Ctrl + Alt + I simultaneously. The popup will display the database path and name.

Troubleshooting

I wish I could say that there will never be any challenges, but in reality stuff happens. Please try the following remedies if you have problems.

Problem	Potential Solution(s)
A popup appears with the message <i>"An error occurred. The error was:"</i> followed by some technical information.	<ol style="list-style-type: none">1. This is rare and usually happens when there is a problem with the database. Stop and close SDR Sharp. Make sure no other processes are using the database – for example a backup or database editor. Restart your computer if necessary to be sure. If that doesn't fix the problem, ensure that you have sufficient Windows permissions to alter the database and the folder that contains it. If the problem continues please send an email which includes all of the text in the popup plus the steps you took to get to this point, to the address on the 1st page of this document.2. SM unavoidably must access the internals of SDR Sharp and the Frequency Manager + Scanner. It is possible that a new release of SDR Sharp has changed the architecture to a point where SM cannot access the internals. SM may appear to load correctly but may not work correctly. In this situation please send an email which includes all of the text in the popup to the address on the 1st page of this document. Include the Revision number of SDR Sharp that you are using, and I will make changes and publish a new version as soon as possible.
A popup appears with the message <i>"The Scanner Metrics database exists but it is damaged. Do you want to delete it and create a new database?"</i>	During startup SM detected that the database exists but appears to be corrupt. Your options: <ol style="list-style-type: none">1. Click Yes to continue and replace the damaged database with an empty one. You will have to rebuild your data.2. Click No, exit SDR Sharp, and restore the database from a backup.
Some other popup or error appears.	Uninstall SM and restart SDR Sharp. If the problem continues it must then exist only in SDR Sharp and its related software, and not in SM.

Notices

- "SDR Sharp", "SDR#", and the SDR# software are Copyright © Youssef TOUIL 2012.

- “FreqMgr”, “Frequency Manager + Scanner”, the Frequency Manager + Scanner software, “Scanner Metrics”, and the Scanner Metrics software are Copyright © 2012 Jeff Knapp