

Scanner Metrics

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.

- **Operating Systems:** Windows 7, Windows 8.x, and Windows 10. 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.** Hyper-threading/Multi-threading should be enabled for the best performance. **NOTE:** SDR# and my plugins are multi-threaded applications, which means they perform multiple tasks simultaneously. As a result you may have performance problems if your processor cannot execute at least 4 threads simultaneously.
- **Memory:** 1 gigabyte or more total in the computer.
- **Hard Disk:** The software requires about 13KB.
- **.NET:** Version 4.6 runtime as required by SDR Sharp.
- **SDR Sharp:** Revision 1408 or newer.
- **Frequency Manager + Scanner** from the Frequency Manager Suite.

 **Important Note**

SDR# is a hobby project created by other people and I am not involved in it. I have no control over changes made to SDR#. I am completely at their mercy as to how their changes affect SM. They are under no obligation to inform me of changes; I won't know if their changes will break my plugins until the plugins are run with the new version of SDR# and you tell me there is a problem. As a result there will be a period after they make a breaking change in which my plugins may not work. Please be assured I will make any necessary changes, and release updates, as soon as practical after SDR# is changed and I have identified the issue.

Using Scanner Metrics

Important Note

In previous versions it was possible to alter the SDR# configuration file to state an alternate location and filename for the Scanner Metrics database. Starting with this version that is no longer the case; the Scanner Metrics database will be in the same location as your Frequency Manager + Scanner databases. If this is a fresh installation of FM Suite the installer would have prompted you for the location where you wish to store your databases. If this was an upgrade installation, an existing Scanner Metrics database will have been moved to the same location you specified.

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

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.

There are two lines of information in this group:

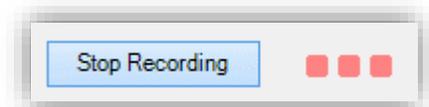
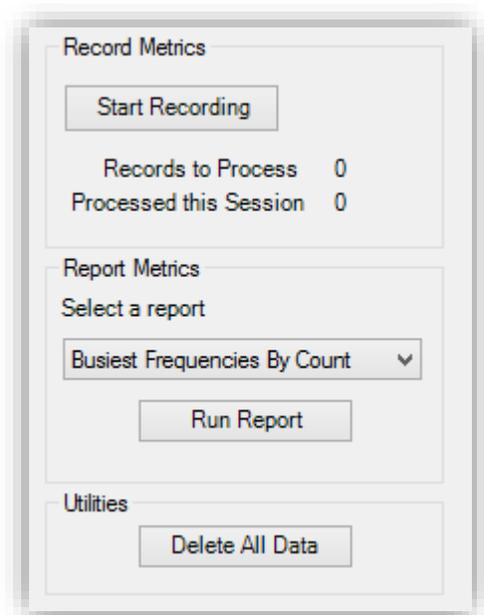
- *Records to Process* displays the number of records waiting in a queue to be written to the database. This indicator exists because the database is updated on 5-second intervals in order to reduce the performance impact on SDR Sharp; we want you to be aware of records not yet written to the database.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

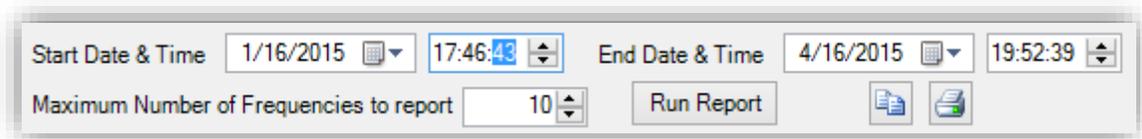


Run Report

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).

Each report has start and end dates and times. These default to the current date and time, so you must enter at least the starting date and time for all reports.



The image shows a parameter pane for a report. It contains the following elements:

- Start Date & Time:** A date dropdown set to 1/16/2015 and a time spinner set to 17:46:43.
- End Date & Time:** A date dropdown set to 4/16/2015 and a time spinner set to 19:52:39.
- Maximum Number of Frequencies to report:** A spinner set to 10.
- Run Report:** A button with a document icon and a printer icon.

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.

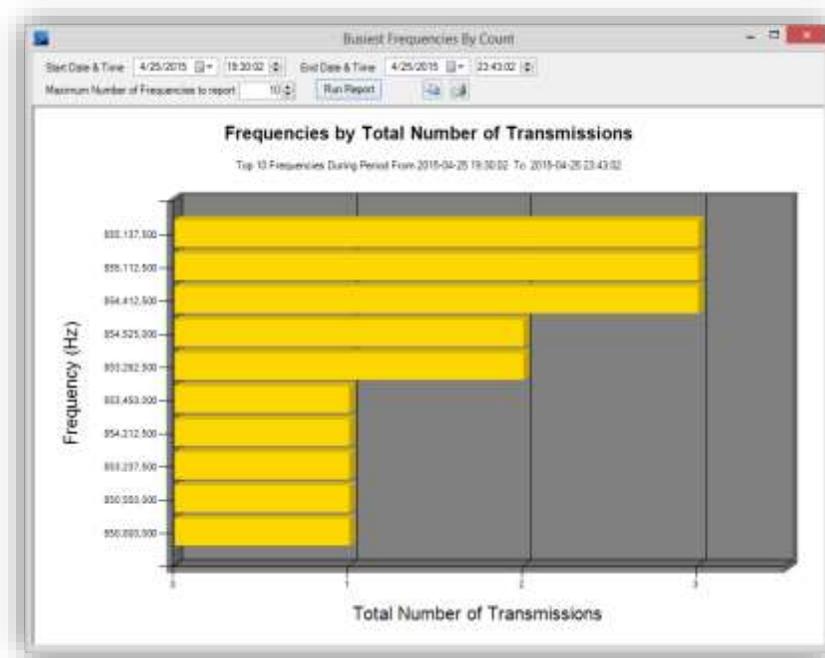
Maximum Number of Frequencies to Report limits the scope of the report to the top *N* records, and defaults to 10.

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 a similar report.

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:

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 thousands separators where appropriate.

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 it 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.

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)
In Scanner Metrics the text “Chart controls are not installed. See User’s Guide for instructions.” appears.	You have not installed the required Microsoft Chart Controls. See the Systems Requirements section of this document for the download link of the Chart Controls.
A popup appears with the message “An error occurred. The error was:” 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 its 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 “The Scanner Metrics database exists but it is damaged. Do you want to delete it and create a new database?”	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 2012-2015.
- “FreqMgr”, “Frequency Manager + Scanner”, “Frequency Manager Suite” and software distributed with the Frequency Manager Suite are Copyright © 2013-2015 Jeff Knapp.