

# **Profiler24x :: 802.11 Channel Analyzer For the 2.4x GHz Band**

## Introduction

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# Welcome to Profiler24x Channel Analyzer -- A Member of the Family of WifiBuilder Diagnostic Software...

Profiler24x is a Wi-Fi diagnostic tool used for installing, troubleshooting and monitoring 802.11 wireless networks in the 2.4x GHz band. It is unique in its use of an access point -- WifiBuilder -- in performing channel analysis. Employing [IMMI technology](#), Profiler24x provides unprecedented visibility into the performance of a wireless network. The information collected and displayed by Profiler24x helps to simplify troubleshooting of interference-related problems and predicts bandwidth performance for each 802.11 channel.

Profiler24x employs IMMI technology with an 802.11 access point to perform data acquisition -- hence, the results truly reflect how RF interference in the local environment affects bandwidth performance of 802.11 channels, which is not possible using an RF spectrum analyzer. IMMI technology and Profiler24x are the only solution on the market today that allows both experts and non-experts to quantify and predict bandwidth performance of each 802.11 channel. By virtue of the fact that Profiler24x views the RF world through the eyes of an 802.11 access point, then the diagnostic information it provides more closely mirrors the performance you can expect from your own 802.11 hardware. This makes it easier to troubleshoot and fix problems and allows you to make better-informed decisions regarding how best to configure your wireless network for optimal bandwidth performance. IMMI technology and Profiler24x represent a true breakthrough in the area of Wi-Fi diagnostics -- not only because they predict bandwidth performance but also from a cost standpoint.

Profiler24x has a variety of features including the following:

- Support for the 2.4x GHz ISM band
- Easy-to-use, graphical UI with multiple diagnostic views and charts
- Built-in module for performing channel analysis
- Data recording and playback
- PDF report generation

Applications for a Profiler24x analyzer include the following:

- Detect potential sources of RF interference that could affect an 802.11 wireless network
- Determine whether or not the throughput performance of an 802.11 wireless can be improved by using a different 802.11 channel
- Quantify the expected change in throughput performance that would result from using a different 802.11 channel
- Optimally configure 802.11 wireless networks with the goal of improving throughput performance
- As an aid in properly locating 802.11 wireless devices so as to maximize range and throughput and minimize interference from competing wireless devices

Profiler24x operates in the 2.4x GHz ISM band and performs channel analysis on 802.11 b/g channels 1-13. It offers 7 real-time diagnostic views of the channel performance data it captures -- including a statistical grid, Channel Heatmap/Waterfall Timecourse chart, Channel Timecourses chart, Differential Channel chart, Channel Spectrogram chart, Channel Statistics chart, and Topographic Channel chart. Displaying multiple diagnostic views of the data, Profiler24x provides a user with a better picture of their wireless environment. Armed with this knowledge you can then make better decisions as to how best to setup and maintain your wireless network so it operates at optimal bandwidth. Also, if a wireless network is performing poorly then Profiler24x can aid in determining whether this is caused by other wireless devices in the neighborhood that introduce RF interference. Accompanying real-time display of performance data is a powerful and innovative logging and playback capability that allows you to save the data for future analysis. Also, Profiler24x can generate reports in Adobe PDF format.



# Installation Guide

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This section provides basic instructions for installing and using Profiler24x. Figaro runs on the following Windows operating systems: WinXP (SP3), Vista and Windows 7 (32-bit and 64-bit).

## System Requirements for Installing and Using Profiler24x

- PC running Windows XP Professional (SP3), Windows Vista, Windows 7 (32- or 64-bit)
- Microsoft .NET Framework version 3.0 (or later)
- A minimum of 300 MB available hard disk space (for data recording)
- Connection to one or more WifiBuilder APs

## Installing and Launching the Profiler24x Application

1) Before beginning the installation it will be necessary to download the latest version of Profiler24x from [here](#). Also, if you have not already done so, it will be necessary to install one or more WifiBuilder APs -- [here](#) is a link to those instructions. Alternatively, if you do not have a WifiBuilder AP it is still possible to run Profiler24x in a fully-functional 'Demo Mode' using simulated data.


2) You will need administrative privileges in order to install the application software on your computer. Please login to an account on your computer that includes 'Administrator' rights before proceeding with the installation.

3) Run the Profiler24x setup program and follow the prompts for installing the application. Be sure to review the License Agreement as you progress through the installation procedure. When the Setup Wizard has completed then click the 'Finish' button. Please note the installation program does **NOT** install any driver software. All communication between between the Profiler24x and WifiBuilder AP is accomplished using TCP/IP. By default the application is installed under in the folder '\Program Files\NutsAboutNets\WifiBuilder\Profiler24x' and a desktop icon is created (labeled 'WifiBuilder Profiler24x').



4) The first time the application is launched you will be prompted to register the application. If you have not yet purchased an Activation Code you can still launch the application a maximum of 10 times during the evaluation period. Thereafter an Activation Code will be required. If you do have an Activation Code then you can enter it at this time by selecting 'I've Purchased an Activation Code'. The Activation Code is 21-characters long and begins with 'PROF24X...'.

Profiler24x

**Please register this program...**

**Evaluation period is measured by the number of times the program is launched.**


**Evaluation Period:** 10 program launches  
**Launches Remaining:** 10 launches


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☒ **Continue with Evaluation mode**  
☐ **I've purchased an Activation Code**

**User name**   
**Registration Code**

**Status:** Select one of the two options above and press 'Next'

 **Next**

 **Cancel**

[Purchase Online](#)  
[Visit Our Website](#)  
**Powered by SoftLox**

5) After the application launches you will be asked to enter a password in order to access the diagnostic capabilities of the WifiBuilder AP. The default password is 'hello'. Press 'OK' and you are then ready to begin using Profiler24x. Also, the Profiler24x application needs to know the IP address of the WifiBuilder AP -- this is the Default gateway address for the LAN adapter used to connect to the WifiBuilder AP. The default IP address for the WifiBuilder AP is 192.168.1.2. Alternatively, if you do not have a WifiBuilder AP installed but would still like to evaluate the application then press the 'Demo Mode' button. In 'Demo Mode' the application is fully functional but uses simulated data.

**WifiBuilder Access Point**

Enter password to access the WifiBuilder AP.

.....

Enter the IP address of a WifiBuilder access point:  
(e.g. the default IP address is 192.168.1.2)

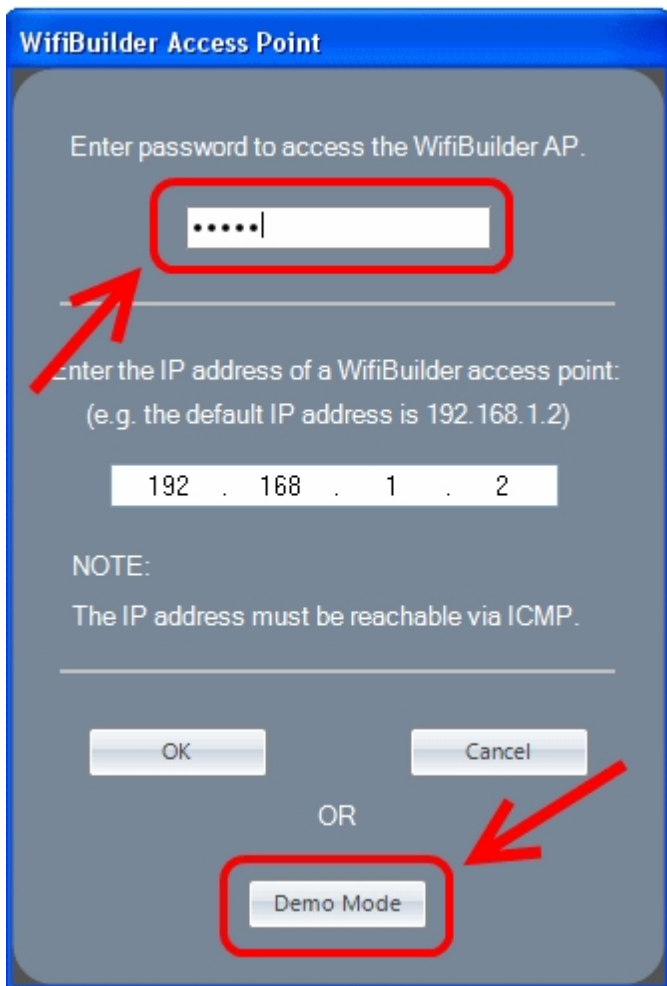
192 . 168 . 1 . 2

NOTE:  
The IP address must be reachable via ICMP.

OK Cancel

OR

Demo Mode



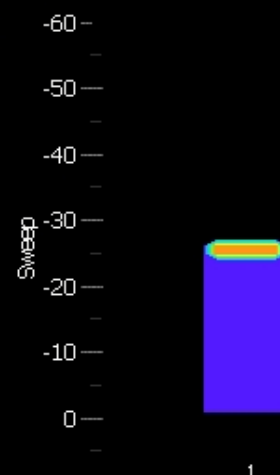
6) To begin scanning channels and collecting data, press the 'Start' button. You can also pause data collection by pressing the 'Stop' button. The 'Reset' button resets all charts to their initial state (before data collection started).

# Profiler24x :: 802.11 Channel Analyzer For The 2.4 GHz Band

File | Logging | Help | Reset Stop Start WifiBuilder IP Address: 192.168.1.2

Channel Analysis View Recording

Channel	Current	Average	High	Low	Std. Dev.	Elapsed Time
1	8%	14%	37%	0%	23.18	631 secs
2	8%	16%	39%	0%	23.87	631 secs
3	100%	98%	100%	97%	1.47	631 secs
4	97%	98%	99%	96%	1.76	631 secs
5	97%	98%	99%	97%	1.25	631 secs
6	98%	97%	99%	96%	1.47	631 secs
7	97%	98%	99%	97%	1.01	631 secs
8	100%	98%	99%	96%	1.56	631 secs
9	100%	96%	100%	90%	6.15	631 secs
10	100%	99%	100%	99%	.65	631 secs
11	100%	99%	100%	98%	.62	631 secs
12	100%	99%	100%	98%	.8	631 secs
13	100%	99%	100%	98%	.62	631 secs



## 2.4x Channel Timecourse View

% Maximal Bandwidth

◆ Ch 1 ▲ Ch 2 ■ Ch 3 ▼ Ch 4 × Ch 5 + Ch 6 ◇ Ch 7 □ Ch 8 ▲ Ch 9 ▼ Ch 10 ◆ Ch 11 ◇ Ch 12

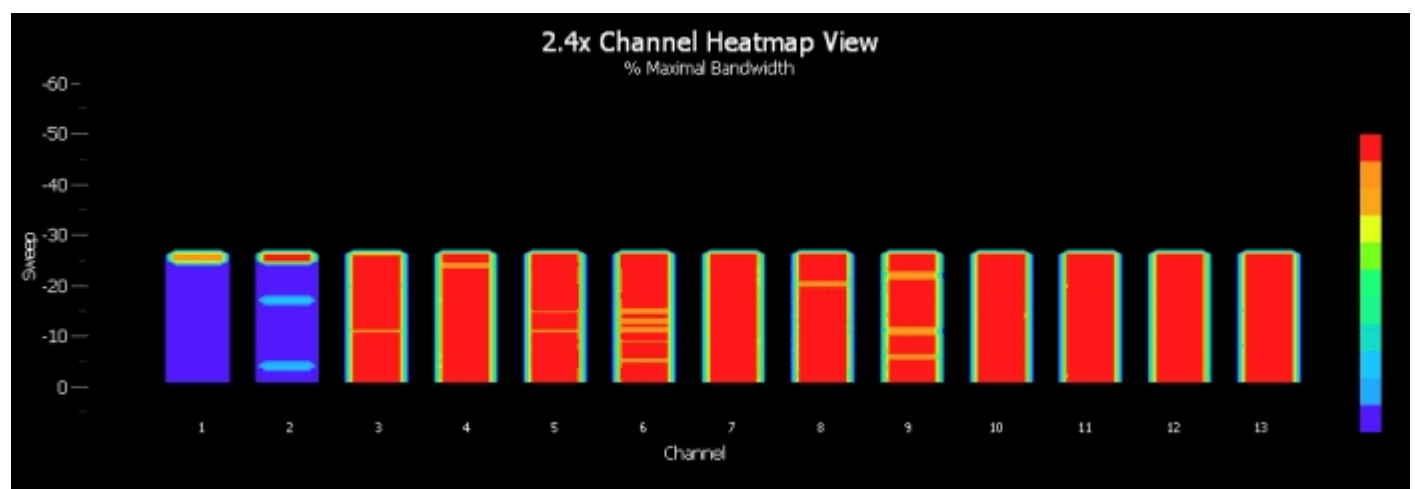
# Overview of Diagnostic Charts

Below are sample screenshots from Profiler24x. Profiler24x employs IMMI technology to perform channel analysis and measure the throughput performance of each 802.11 channel. Comparing the result with a reference, a performance metric is calculated for each channel and presented in terms of '% Maximal Bandwidth'. A value of 100% suggests the throughput performance of the channel is its expected maximum -- anything less than 100% suggests that throughput performance has been degraded to some degree, most likely due to RF interference from other wireless devices (either 802.11 or non-802.11).

## 1. Statistical Grid

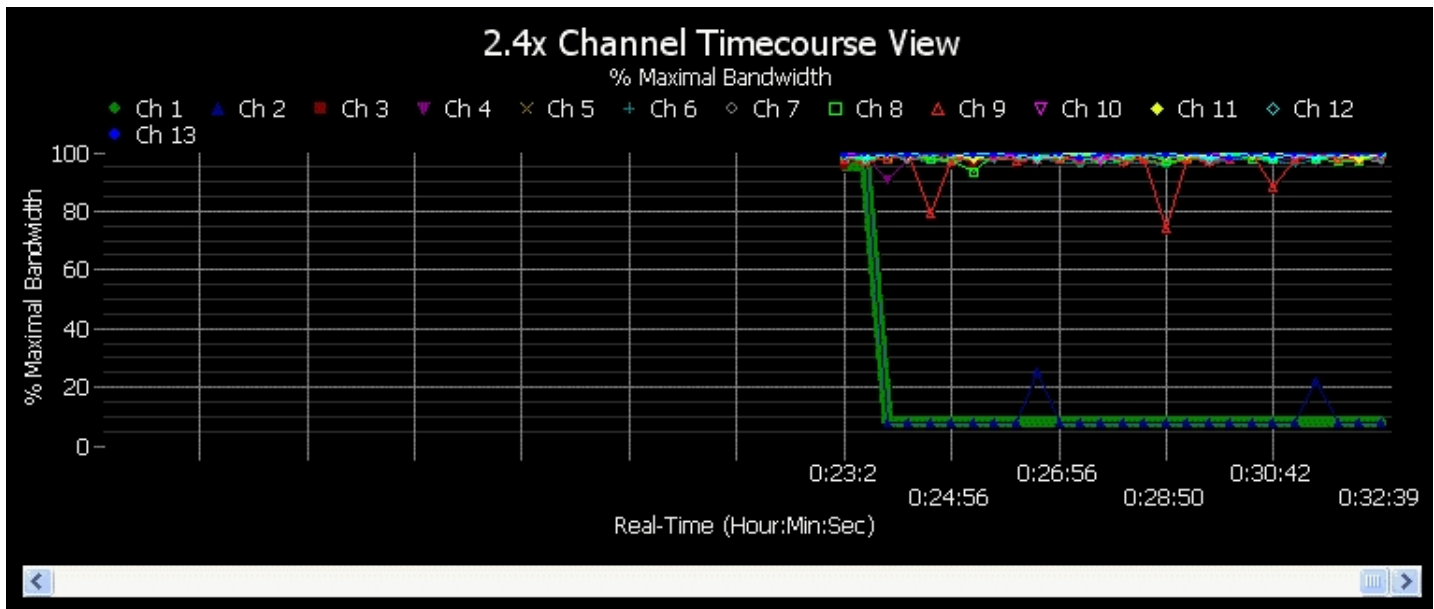
Channel	Current	Average	High	Low	Std. Dev.	Elapsed Time
1	8%	14%	37%	0%	23.18	631 secs
2	8%	16%	39%	0%	23.87	631 secs
3	100%	98%	100%	97%	1.47	631 secs
4	97%	98%	99%	96%	1.76	631 secs
5	97%	98%	99%	97%	1.25	631 secs
6	98%	97%	99%	96%	1.47	631 secs
7	97%	98%	99%	97%	1.01	631 secs
8	100%	98%	99%	96%	1.56	631 secs
9	100%	96%	100%	90%	6.15	631 secs
10	100%	99%	100%	99%	.65	631 secs
11	100%	99%	100%	98%	.62	631 secs
12	100%	99%	100%	98%	.8	631 secs
13	100%	99%	100%	98%	.62	631 secs

## 2. Channel Heatmap / Waterfall Timecourse Chart

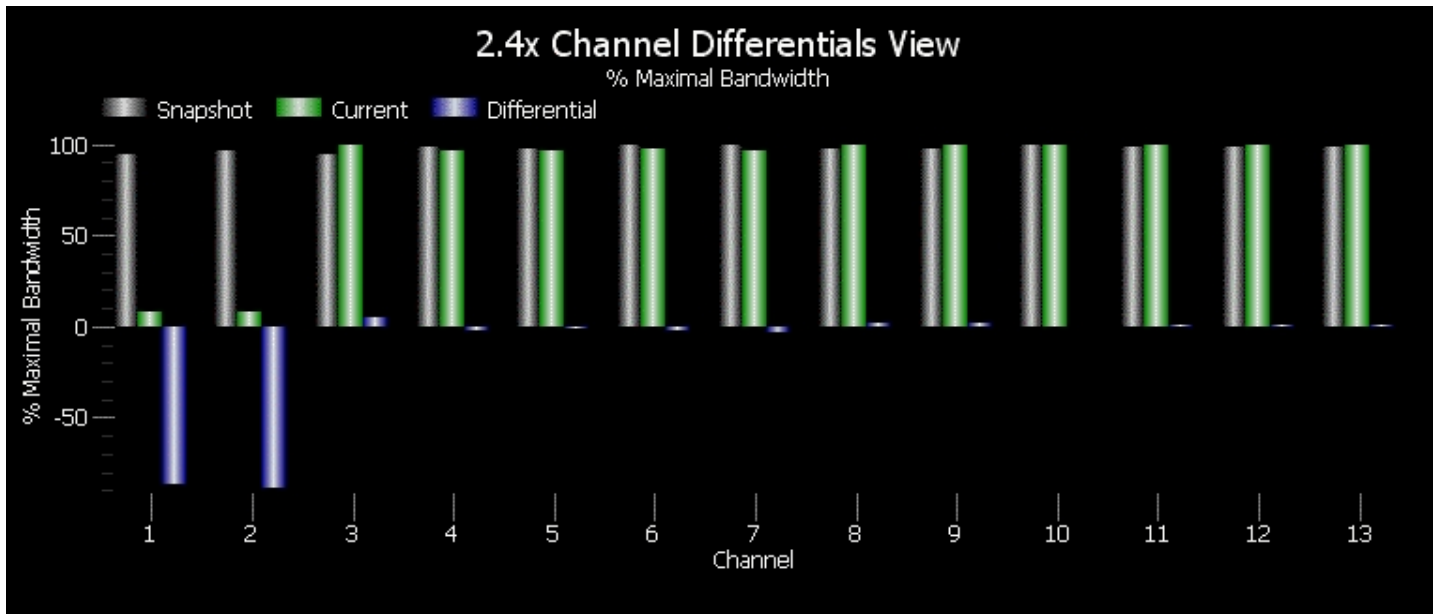


## 3. Channel Timecourses Chart

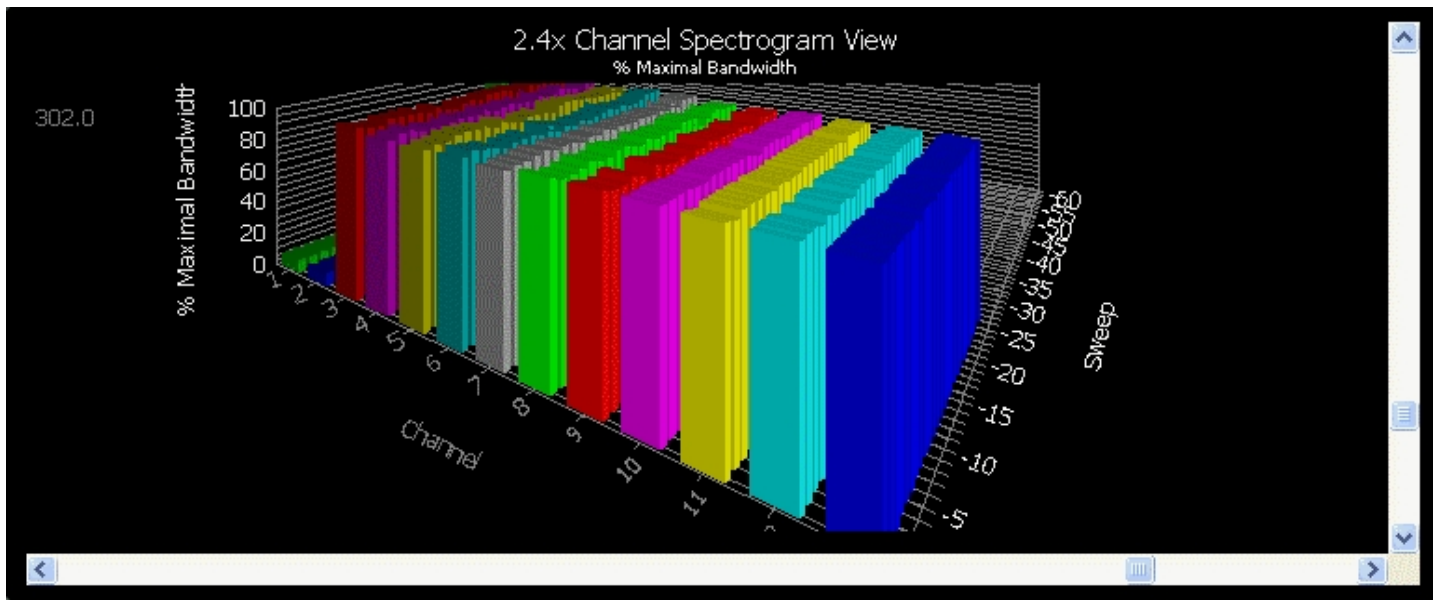




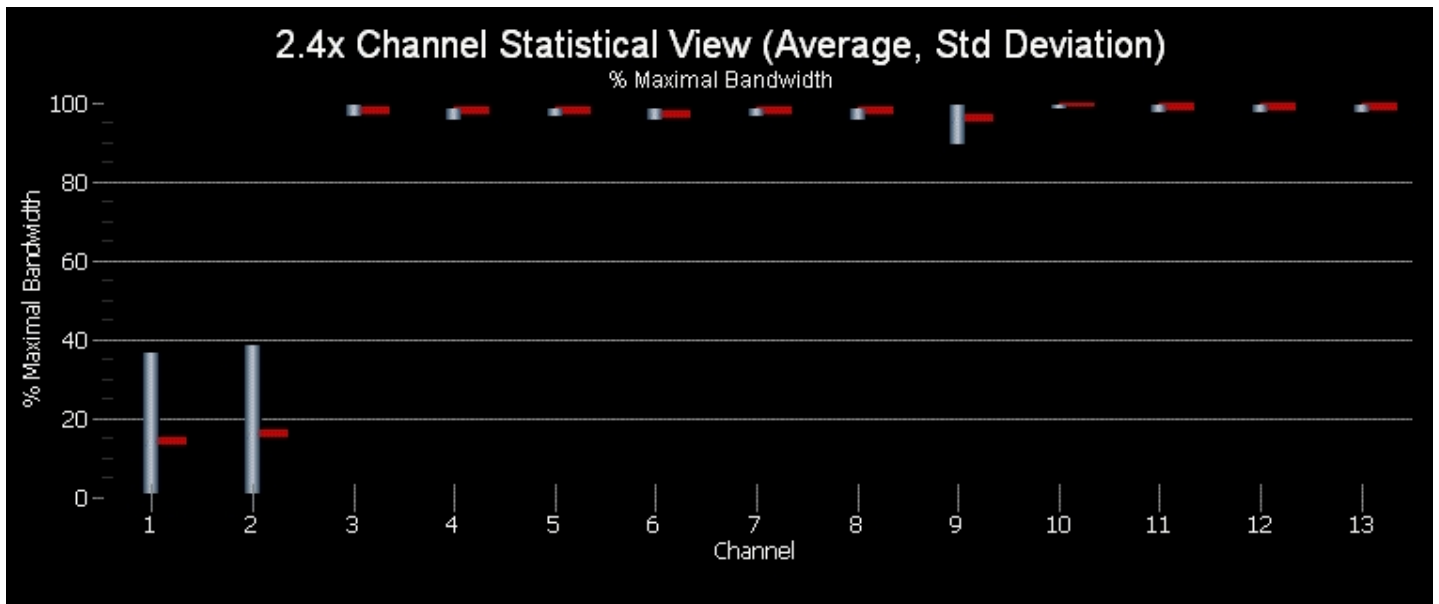
4. Differential Channel Chart



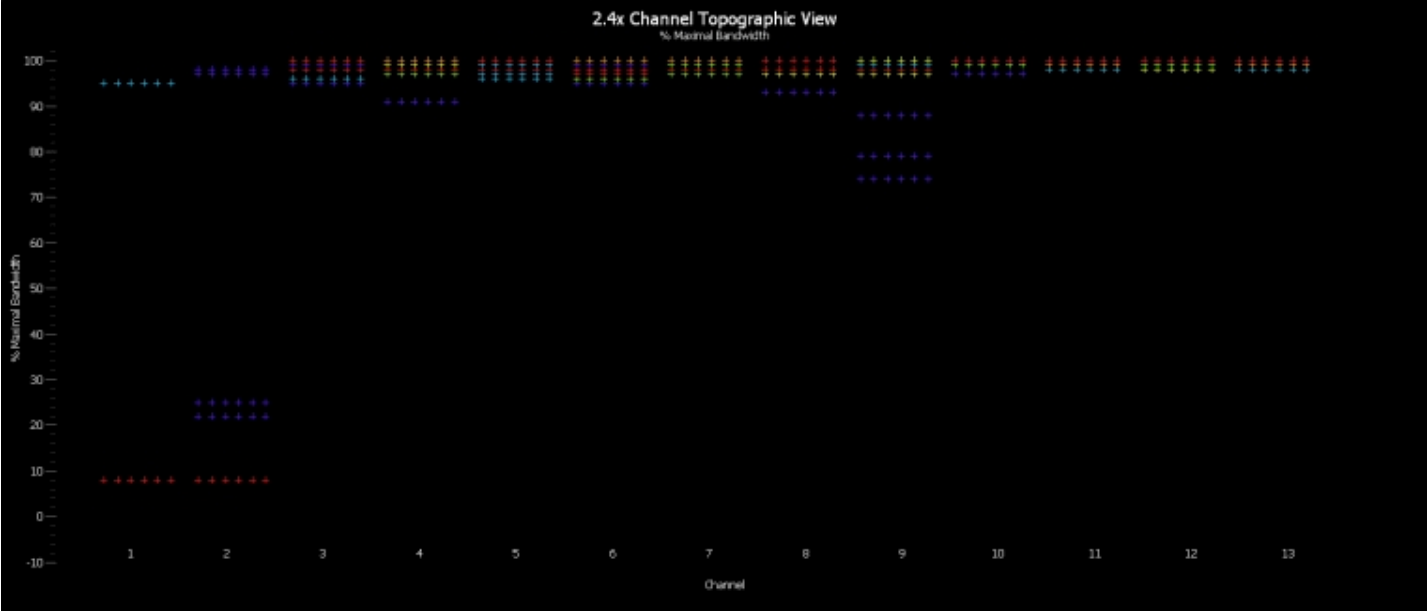
5. Channel Spectrogram Chart



6. Channel Statistics Chart (Average, Std. Deviation)



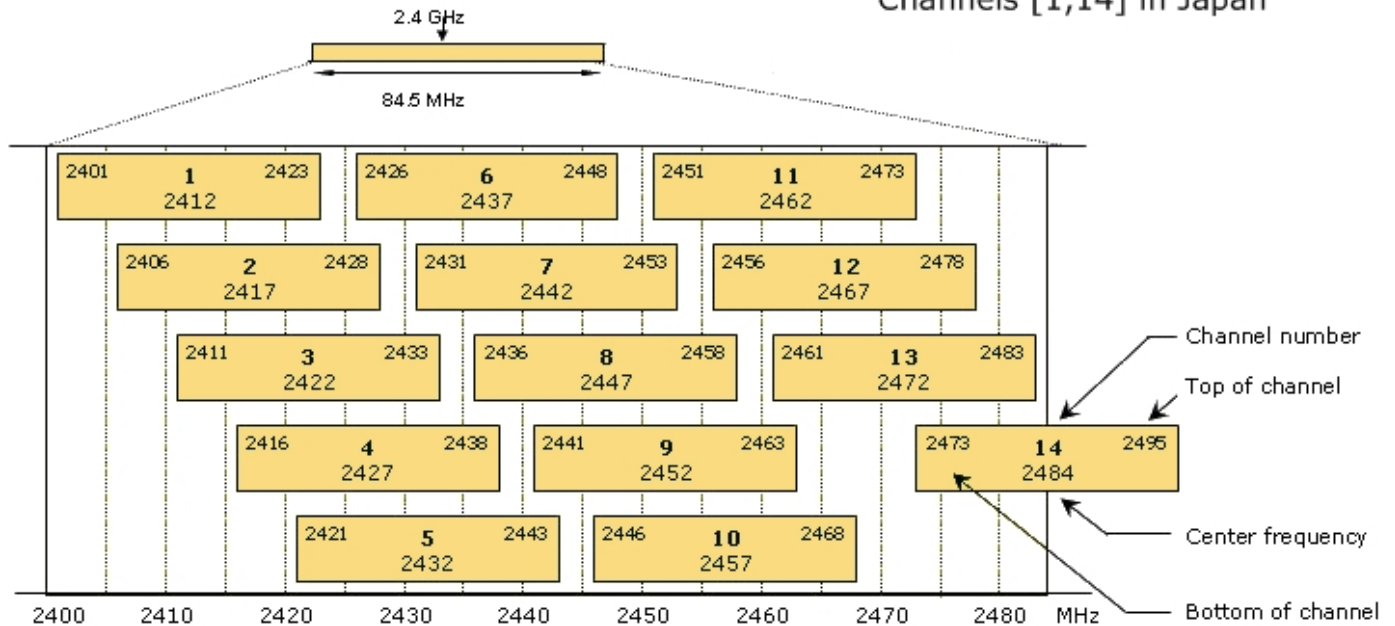
7. Topographic Channel Chart



## Interpreting the Diagnostic Charts

Profiler24x continuously scans and samples the throughput rate of 802.11 b/g channels in the 2.4 GHz Industry, Scientific and Medical (ISM) unlicensed band. It is helpful to keep in mind that in the Wi-Fi world 802.11 devices operate on 'channels', rather than a particular frequency. An 802.11 channel is a range of frequencies. The diagram below shows that 802.11 b/g channels span 22 MHz. Furthermore there is tremendous overlap between adjacent channels. Adjacent channels are offset by 5 MHz and overlap by 17 MHz -- more than 75% of their channel width. As a result, when a peak of RF interference from a 2.4 GHz cordless phone appears in the middle of channel 1 it will not only interfere with channel 1 but also the adjacent channels.

2.4 GHz ISM Band: Channels [1,11] in North America; Channels [1,13] in Europe  
Channels [1,14] in Japan



### Example -- Interpreting the Diagnostic Charts

The diagnostic charts are easy to use and interpret, and to illustrate this we've chosen as an example to perform an analysis in the presence of an active 2.4 GHz cordless phone. For all charts the results are presented for each channel in terms of % Maximal Bandwidth. % Maximal Bandwidth is a performance metric. The WifiBuilder AP has an optimal throughput capability (measured in bytes / sec) that was calibrated and is subsequently used by the application as a reference. The % Maximal Bandwidth reported by Profiler24x can be used as a predictor of how well each channel can be expected to perform (relative to its optimal throughput capability) in the current RF environment.



Referring to the figure above...

**Channel Timecourse Chart** (Arrow #1): The Channel Timecourse view is useful for monitoring channels as a function of time. Each channel is represented by a different line -- the x-axis is time and the y-axis is % Maximal Bandwidth. In this way one can clearly follow how RF interference affects different channels over time. You can see that for channels 1 and 2 their % Maximal Bandwidth values began to drop the moment the phone is turned on.

**Channel Spectrogram Chart** (Arrow #2): Shows a similar result as the Channel Timecourse chart, but in 3-dimensions. The Channel Spectrogram view is a 3D plot of 802.11 channels as a function of time. Each channel is represented by its own set of bar graphs -- the Z-axis is time and the Y-axis is % Maximal Bandwidth. As with the Channel Timecourse chart, this view makes it easy to visualize how RF interference affects different 802.11 channels over time.

**Channel Heatmap Chart** (Arrow #3): Also known as a "waterfall" graph. It is a 3-dimensional representation of the data, where channels are marked along the X-axis, the Y-axis is a time scale and indicates the last 60 scans or sweeps, and the "Z-axis" is the color scale. Each horizontal line in the Heatmap chart displays the % Maximal Bandwidth (as a color) for each channel measured over the time period of one scan. That is, with each scan or sweep a new row is added at the bottom of the Heatmap chart and it continues to scroll upward. The color legend to the right shows that larger values for % Maximal Bandwidth will appear red and smaller values will appear blue. In this example, we see that for channels 1 and 2 that shortly after the cordless phone was turned on then the color changed from red, to orange, to light blue and then dark blue, again indicating a drop in % Maximal Bandwidth.

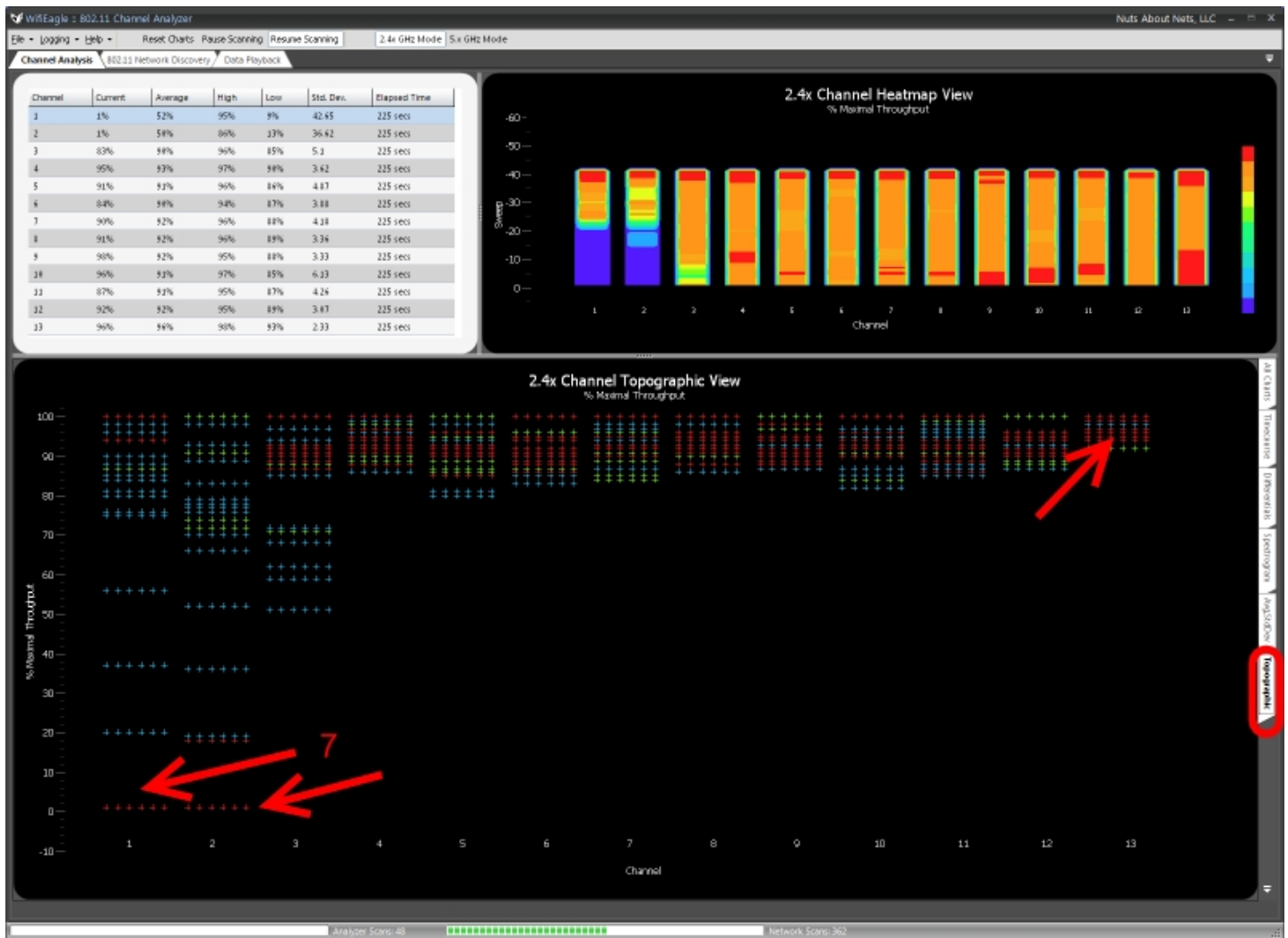
**Channel Differentials Chart** (Arrow #4): The gray bars are a snapshot of the % Maximal Bandwidth values when the program was first launched, the green bars are the current values, and the blue bars represent the difference. For channels 1 and 2 you can see a big difference between the snapshot (taken when the program was launched) and the current values (since the cordless phone was turned on). This display can be used to view small (or large) changes in the RF landscape over time. Here's how

it works... When the application is first launched then a scan is performed and stored as a 'snapshot' (the gray bars) -- these are static and do not change. A real-time measurement for each 802.11 channel is then displayed using green bars, and the differences between the 'snapshot' and current displayed using blue bars. Plotting the data in this way makes it easy to detect changes that occurred since the last 'snapshot'.

**Channel Statistical Chart** (Arrow #5): Shows an averaged value of % Maximal Bandwidth for each channel since the program was first launched (the horizontal red bar), along with its associated standard deviation. Again, you can see that for channels 1 and 2 their % Maximal Bandwidth values have dropped. Also, the large spread in standard deviation indicates the throughput values for these two channels have not been stable and have been subject to a lot of variation.

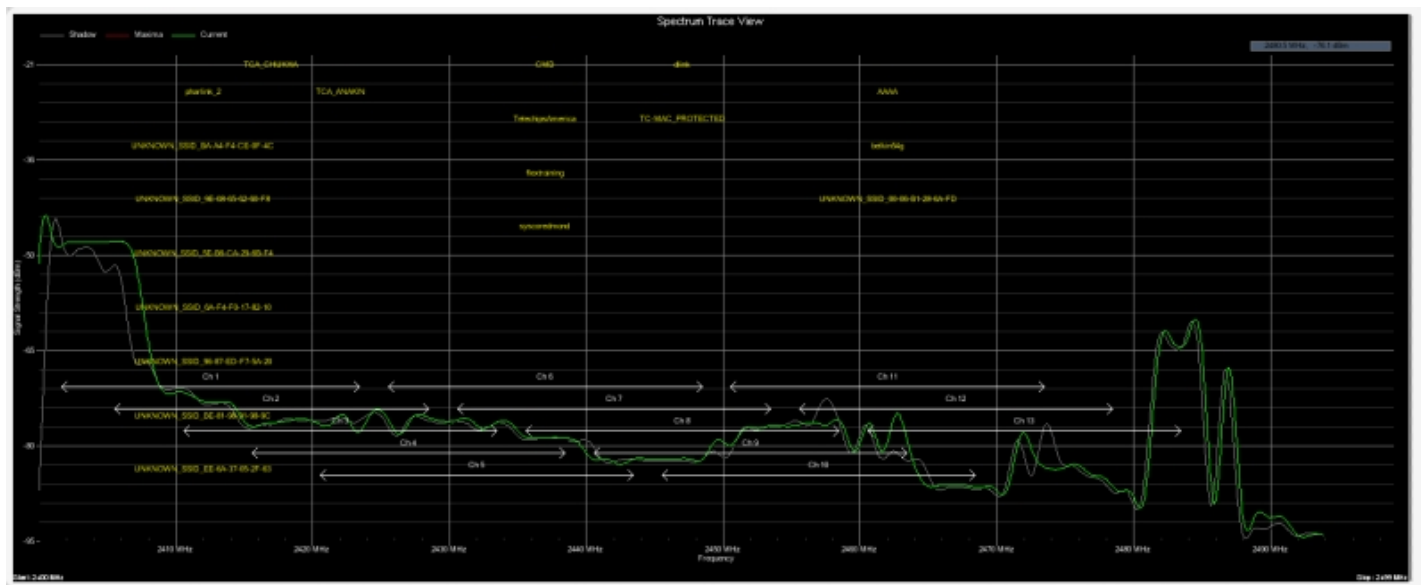
**Statistics Grid** (Arrow #6): For each channel, reports several properties of the % Maximal Bandwidth -- the current value, an averaged value, a high and low value (obtained from the average and standard deviation), the standard deviation, and the elapsed time since this session began. For channels 1 and 2 their current values are very small (e.g. around 1%) indicating interference from the cordless phone is nearly complete and throughput for these two channels can be expected to be almost zero. The corresponding average % Maximal Bandwidth for these two channels takes into account measurements prior to when the phone was activated -- hence the average is still around 70%, though lower than the other channels. The High and Low values are roughly the Average +/- the standard deviation. A larger and more readable version of the grid is shown below...

Channel	Current	Average	High	Low	Std. Dev.	Elapsed Time
1	1%	76%	100%	46%	29.75	129 secs
2	1%	70%	96%	43%	26.11	129 secs
3	87%	92%	96%	88%	3.96	129 secs
4	98%	93%	97%	89%	3.82	129 secs
5	95%	90%	95%	84%	5.36	129 secs
6	86%	91%	95%	87%	4.21	129 secs
7	84%	93%	96%	89%	3.43	129 secs
8	93%	93%	97%	89%	4	129 secs
9	91%	93%	96%	89%	3.4	129 secs
10	92%	91%	98%	85%	6.82	129 secs
11	93%	90%	95%	85%	4.7	129 secs
12	91%	92%	95%	88%	3.45	129 secs
13	97%	95%	98%	93%	2.48	129 secs



**Channel Topographic Chart (Arrow #7):** Similar to a 3-D histogram, the topographic chart (above) shows how frequently certain % Maximal Bandwidth values occur for each channel. The more frequently a particular value is measured for a channel, then the color gradually changes from blue, to green, to yellow and ultimately red. Red values are ones that occur frequently, whereas blue values occur least frequently. In this case, we see for channels 1 and 2 an preponderance of frequently occurring, low values -- again, consistent with the other charts. Furthermore, we see that for channel 13 there is a preponderance of frequently occurring high values of % Maximal Throughput. This, along with the data as presented by the other charts, indicates the RF transmissions from the 2.4 GHz cordless phone does not impact channel 13.

And, finally -- below is an RF spectrum trace of the same cordless phone taken using the AirSleuth-Pro spectrum analyzer. Though the data is very useful and certainly compliments Profiler24x, when you are working in 802.11's world of channels then it becomes more difficult to visualize how the RF data might impact 802.11 channels. And even if you could, because the 802.11 standard is composed of numerous protocols that dictate how an 802.11 device behaves, there is no way to be certain how, or even if, the RF peaks you see in a spectrum trace will affect an 802.11 device.

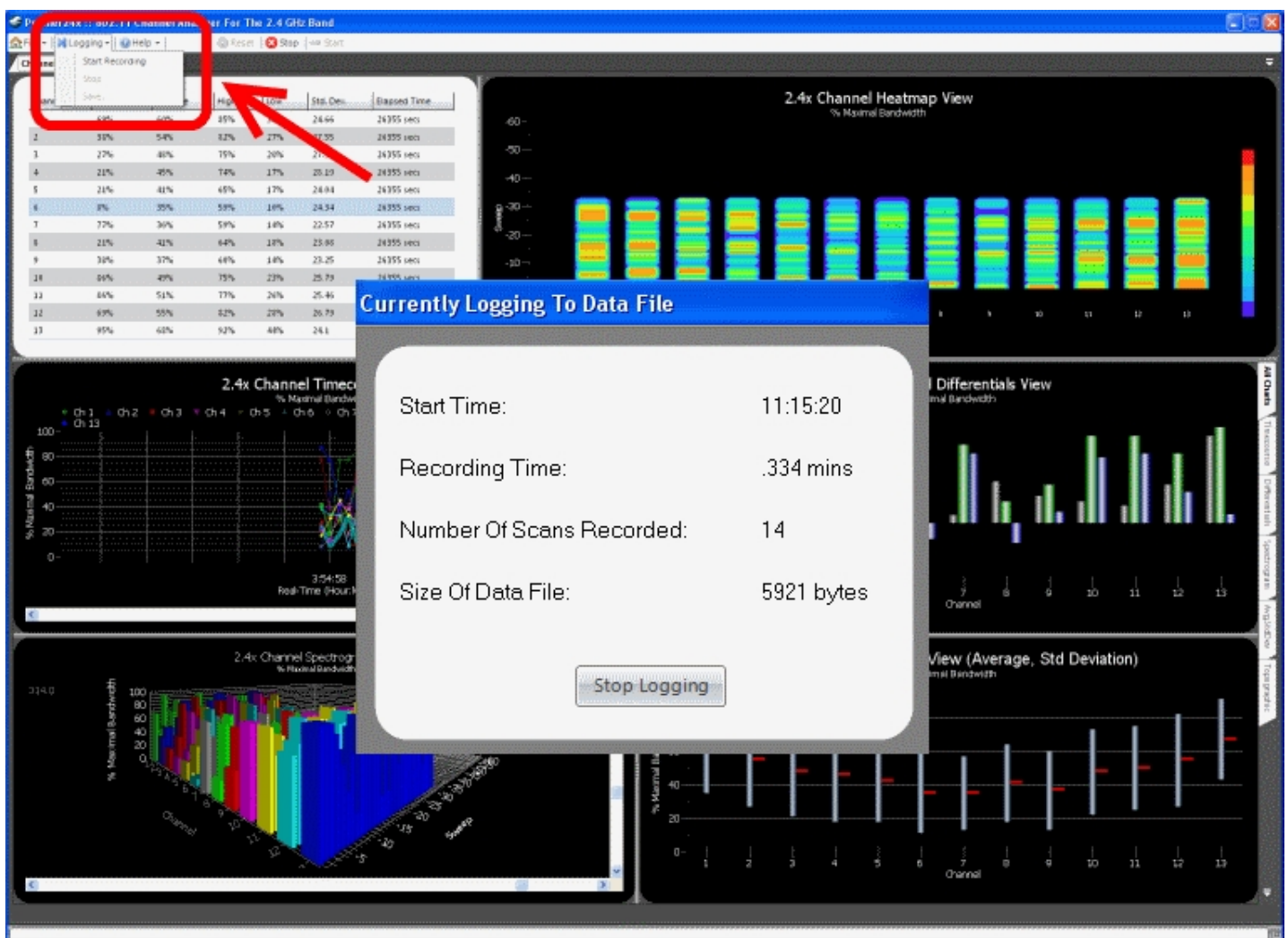




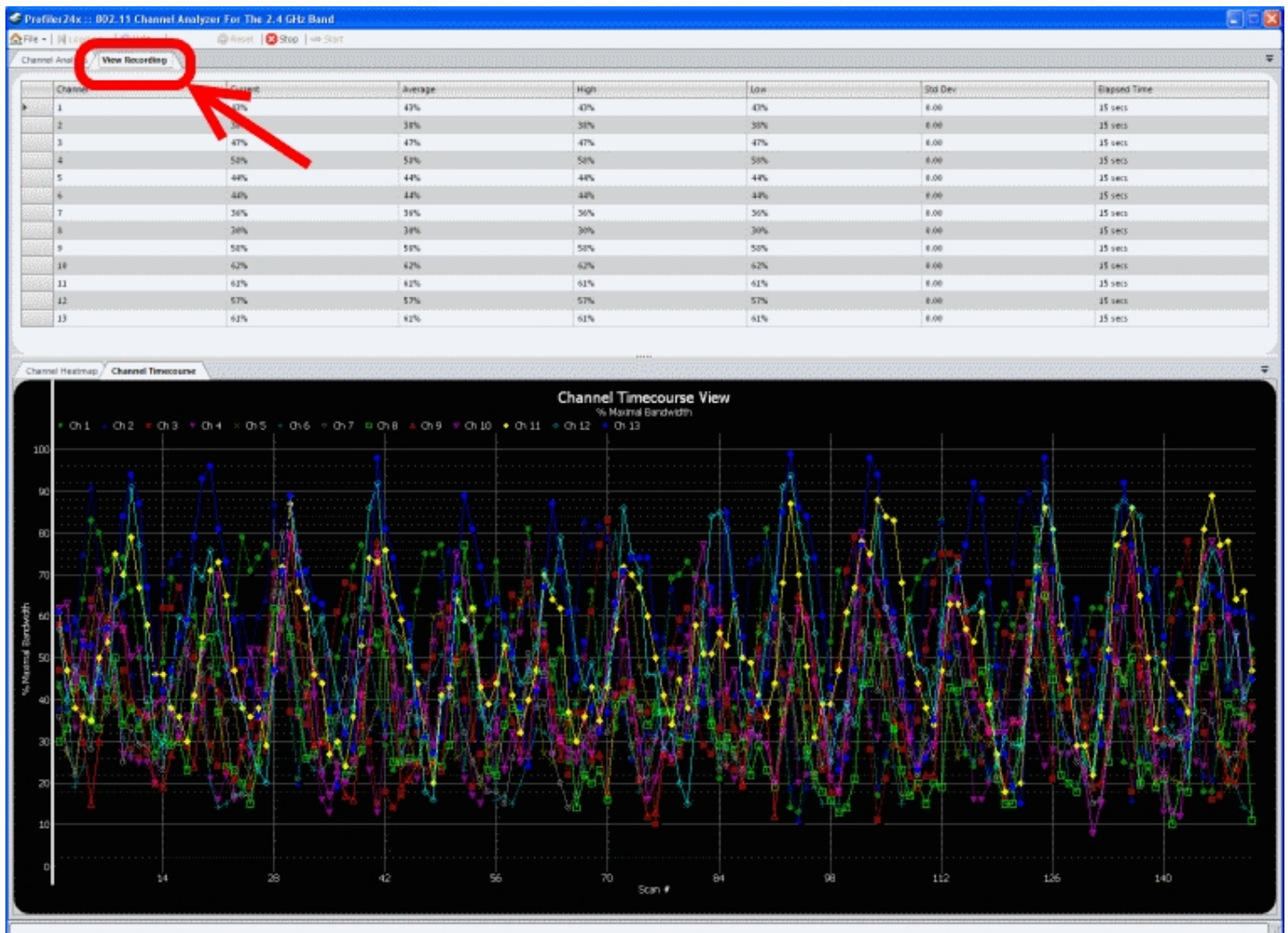
## Data Logging and Playback

Profiler24x features a simple, yet powerful, data logging capability. Data files that are recorded can later be viewed using a built-in playback feature. To begin recording select **Logging -> Start Recording** from the main menu (see figure below). A dialog box titled 'Currently Logging To Data File' appears to remind you that recording has been enabled. When done recording you can either select **Logging -> Stop** or **Logging -> Save**, which will allow you to save the recorded data to a file. The recorded data is saved in XML format -- not only is it human-readable but, also, the format of the data is clearly laid out and accessible if you wish to write additional scripts to manipulate the results or search for patterns in the data.

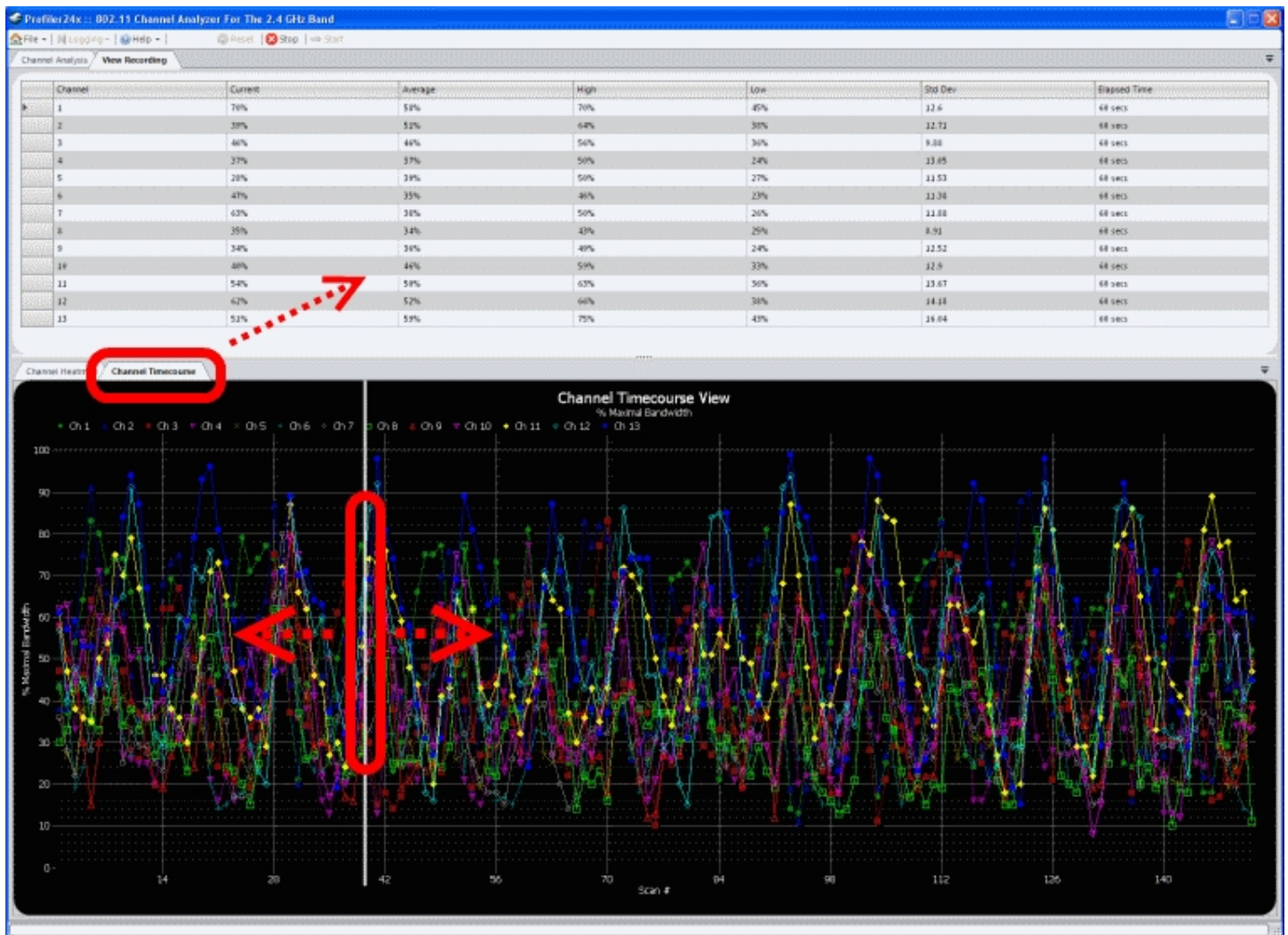
NOTE: When **Logging -> Start Recording** is selected (and before recording actually begins) the application first checks for a minimum of 300 MB of free disk space on the drive on which the Profiler24x application was installed. This would allow for over 24 hours of continuous recording. If sufficient disk space is not available then a warning message is displayed.



Playback mode is accessed by selecting the 'View Recording' tab (as shown below). In Playback mode the background color of the application changes to silver and certain features along the main menu bar are disabled.

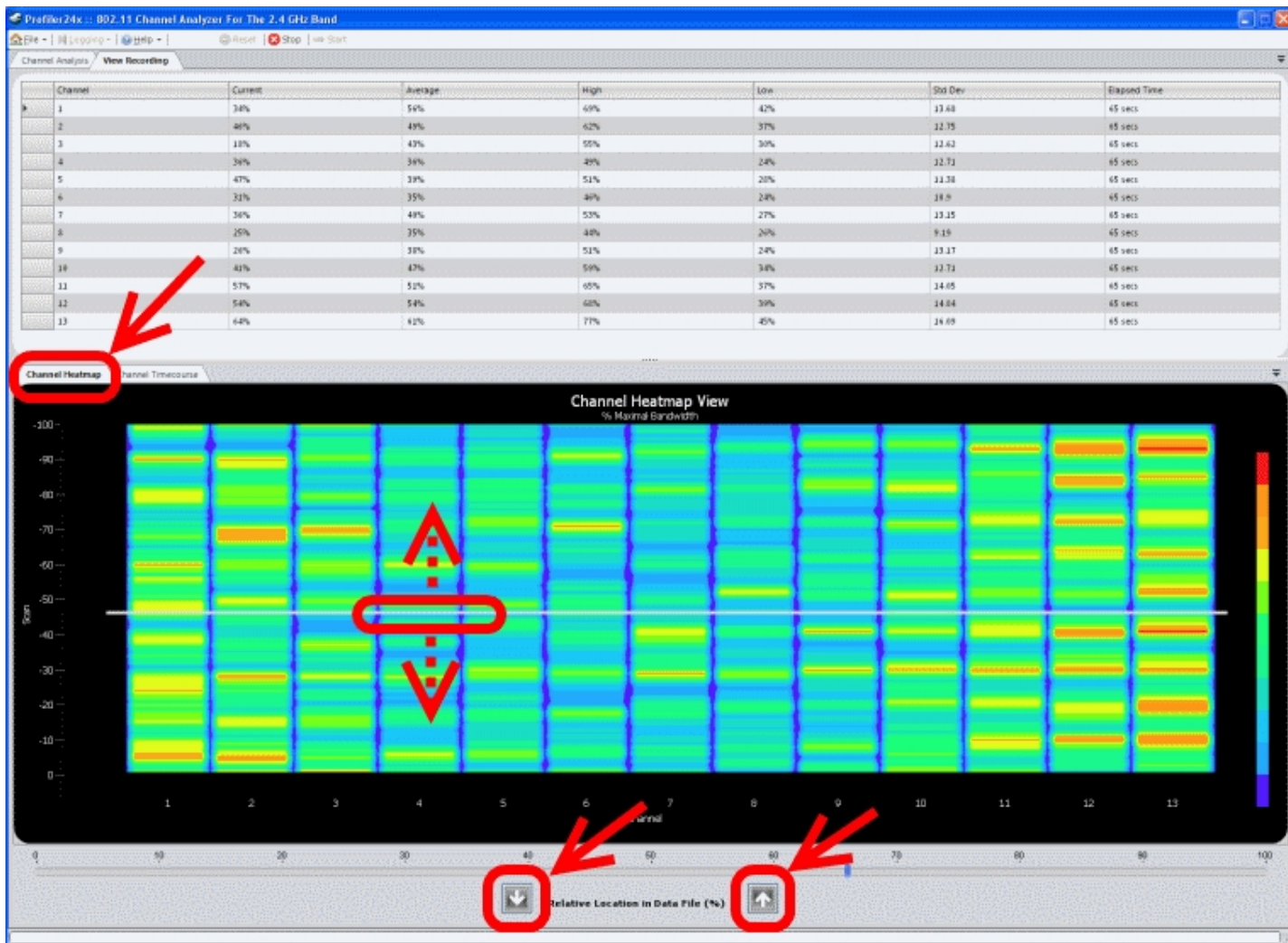


To open and view a recorded data file, select **File -> Open Recording File...** from the main menu. Once the data has been read by the application then the upper Statistics grid and lower Channel Heatmap and Channel Timecourse charts will be updated. Other record/playback programs follow a tape-recorder model, requiring the user to press a Play button and then sit and watch while data scrolls by. This can be tedious and time-consuming, especially if you simply want to scan through the data and look for interesting events. Profiler24x implements a different approach which we refer to as **'History Tracking'**. From the Channel Timecourse chart, using the left-mouse button to drag the tracking line left or right will cause the statistical data displayed in the grid to be updated. Similarly, from the Channel Heatmap chart, dragging the tracking line up or down will update the statistical grid. The data reported in the statistical grid corresponds with that point in time indicated by the tracking line.



At the bottom of the Channel Heatmap chart are two buttons with up and down arrows. The Heatmap chart displays 100 scans at a time -- if your recorded data is larger then the *Up* and *Down* buttons provide a means to scroll through the data to view the next or previous 100 scans.





# Creating Reports

Profiler24x has an easy-to-use report generation capability. Select **File -> Create Report...** from the main menu and you will be prompted for a folder and filename in which to save a report file. An Adobe PDF-formatted file will be created that includes all charts. At the same time, Adobe Reader will be launched so you can verify the contents of the report you just created. Also, by selecting **File -> Open Report...** from the main menu you can open and view Adobe PDF formatted reports you've created (or any other PDF file).



## Contact Us

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You acknowledge that the SOFTWARE PRODUCT is subject to United States export jurisdiction. You agree to comply with all applicable international and national laws that apply to the Software Product and/or to the export of technical data, including the United States Export Administration Regulations, as well as end-user, end-use, and destination restrictions issued by the United States and other governments. You agree that you will not export or re-export the SOFTWARE PRODUCT (or portions thereof) to any country, person or entity subject to U.S. export restrictions. You specifically agree not to export or re-export the SOFTWARE PRODUCT (or portions thereof): (i) to any country subject to a U.S. embargo or trade restriction; (ii) to any person or entity who you know or have reason to know will utilize the SOFTWARE PRODUCT (or portion thereof) in the production of nuclear, chemical or biological weapons; or (iii) to any person or entity who has been denied export privileges by the U.S. government.

### 5. DISCLAIMER OF WARRANTIES.

To the maximum extent permitted by applicable law, Nuts About Nets, LLC and its suppliers provide the SOFTWARE PRODUCT and any (if any) Support Services "AS IS AND WITH ALL FAULTS", and hereby disclaim all warranties and conditions, either express, implied or statutory, including, but not limited to, any (if any) implied warranties or conditions of merchantability, of fitness for a particular purpose, of non-infringement, of lack of viruses, of accuracy or completeness of responses, of results, of ability to achieve a particular result, of ability to execute uninterrupted or error-free, and of lack of negligence or lack of workmanlike effort, all with regard to the SOFTWARE PRODUCT, and the provision of or failure to provide Support Services. THE ENTIRE RISK AS TO THE QUALITY OF OR ARISING OUT OF USE OR PERFORMANCE OF THE SOFTWARE PRODUCT AND SUPPORT SERVICES, IF ANY, REMAINS WITH YOU.

Specifically, and without limiting the foregoing, you acknowledge that Nuts About Nets, LLC has not made any representations or warranties with respect to the SOFTWARE PRODUCT or the functionality thereof and has made no representations or warranties with respect thereto. In addition, you acknowledge that you have selected the SOFTWARE PRODUCT, and that Nuts About Nets, LLC makes no representations or warranties with respect to the fitness of the SOFTWARE PRODUCT for any purpose.

### 6. NO SUPPORT

Nothing in this EULA shall obligate Nuts About Nets, LLC to provide any support for the SOFTWARE PRODUCT. Nuts About Nets, LLC may, but shall be under no obligation to, correct any defects in the SOFTWARE PRODUCT and/or provide updates to You of the SOFTWARE PRODUCT. You shall promptly



report to Nuts About Nets, LLC any defects You find in the SOFTWARE PRODUCT to aid Nuts About Nets, LLC in creating improved revisions of such items.

## 7. EXCLUSION OF INCIDENTAL, CONSEQUENTIAL AND CERTAIN OTHER DAMAGES.

To the maximum extent permitted by applicable law, in no event shall Nuts About Nets, LLC or its suppliers be liable under any theory of liability for any special, incidental, indirect, or consequential damages whatsoever (including, but not limited to, damages for loss of profits or confidential or other information, for business interruption, for personal injury, for loss of privacy, for failure to meet any duty including of good faith or of reasonable care, for negligence, and for any other pecuniary or other loss whatsoever) arising out of or in any way related to the use of or inability to use the SOFTWARE PRODUCT, the provision of or failure to provide support services, or otherwise under or in connection with any provision of this EULA, even in the event of the fault, tort (including negligence), strict liability, breach of contract or breach of warranty of Nuts About Nets, LLC or any supplier, and even if Nuts About Nets, LLC or any supplier has been advised or should know of the possibility of such damages.

## 8. LIMITATION OF LIABILITY AND REMEDIES.

Notwithstanding anything to the contrary contained in this EULA, and without limiting any other rights, remedies, limitations, or restrictions in this EULA or under law, Nuts About Nets, LLC will not be liable with respect to any subject matter of this EULA under any contract, negligence, strict liability, or other theory, at law or in equity, for any amounts aggregating in excess of amounts paid to it under this agreement in the twelve (12) month period before the cause of action arose.

## 9. INDEMNITY

You hereby agree to indemnify, protect, defend and hold Nuts About Nets, LLC harmless from and against any and all claims, losses and damages, including without limitation, reasonable attorneys' and experts' fees and disbursements, (a) which may at any time be asserted against Nuts About Nets, LLC by any party for Your failure to perform any of the covenants, agreements, terms, provisions or conditions contained in this EULA, (b) by any party by reason of Your use or misuse of the SOFTWARE PRODUCT, or (c) resulting from any failure by You to comply with any term or condition of this EULA. The provisions of this Section 10 shall survive the expiration or earlier termination of the EULA.

## 10. ENTIRE AGREEMENT.

This EULA (including any addendum or amendment to this EULA which is included with the SOFTWARE PRODUCT) is the entire agreement between you and Nuts About Nets, LLC relating to the SOFTWARE PRODUCT and the Support Services (if any or many) and it supersedes all prior or contemporaneous oral or written communications, proposals and representations with respect to the SOFTWARE PRODUCT or any other subject matter covered by this EULA. To the extent the terms of any Nuts About Nets, LLC policies or programs for Support Services conflict with the terms of this EULA, the terms of this EULA shall control.

If any provision of this EULA shall be or become invalid, illegal, or unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions contained herein shall not be affected thereby. No failure or delay in exercising any right or remedy shall operate as a waiver of any such (or any other) right or remedy. Any modification or waiver to this EULA must be in writing and signed by both parties. The language of this EULA shall be construed as a whole, according to its fair meaning and intent, and not strictly for or against either party, regardless of who drafted or was principally responsible for drafting this EULA or any specific term or conditions hereof.

Nothing in this EULA shall be deemed to create any type of agency, joint venture, or partnership relationship between the parties. Neither party shall have any right or authority to bind or obligate the other in any manner to any third party. In the event of any legal proceeding between the parties arising out of or related to this EULA, the prevailing party shall be entitled to recover, in addition to any other relief awarded or granted, its costs and expenses (including reasonable attorneys' and expert witness' fees) incurred in any such proceeding.

## 11. QUESTIONS?

Should you have any questions concerning this EULA please contact Nuts About Nets, LLC via email at [support@NutsAboutNets.com](mailto:support@NutsAboutNets.com) or by phone at 425.881.6506.