

Using inSSIDer to be a good wireless neighbor

Have you ever noticed that the wireless neighborhood is seemingly always located in the bad part of town? This is especially true in the crowded wasteland of the 2400 block of Megahertz Ave. Where might you find this undesirable neighborhood? Unfortunately, the answer is found in most of the finest office buildings and residential areas around the world. So then, the real question becomes how does someone navigate these areas – or more importantly, establish any type of residency. In this post I want to introduce you to [inSSIDer](#), a free wireless scanning tool for Windows from [MetaGeek](#). Armed with this tool, a basic knowledge about wireless network infrastructure and a commitment to proactive monitoring, you can setup a wireless network that does not invite trouble even as the neighborhood changes around you.

Head over to [MetaGeek](#) and download your free copy of [inSSIDer](#), run through the straight forward installation process and launch the application. inSSIDer uses your wireless card to generate a display of the wireless networks in range of your computer.

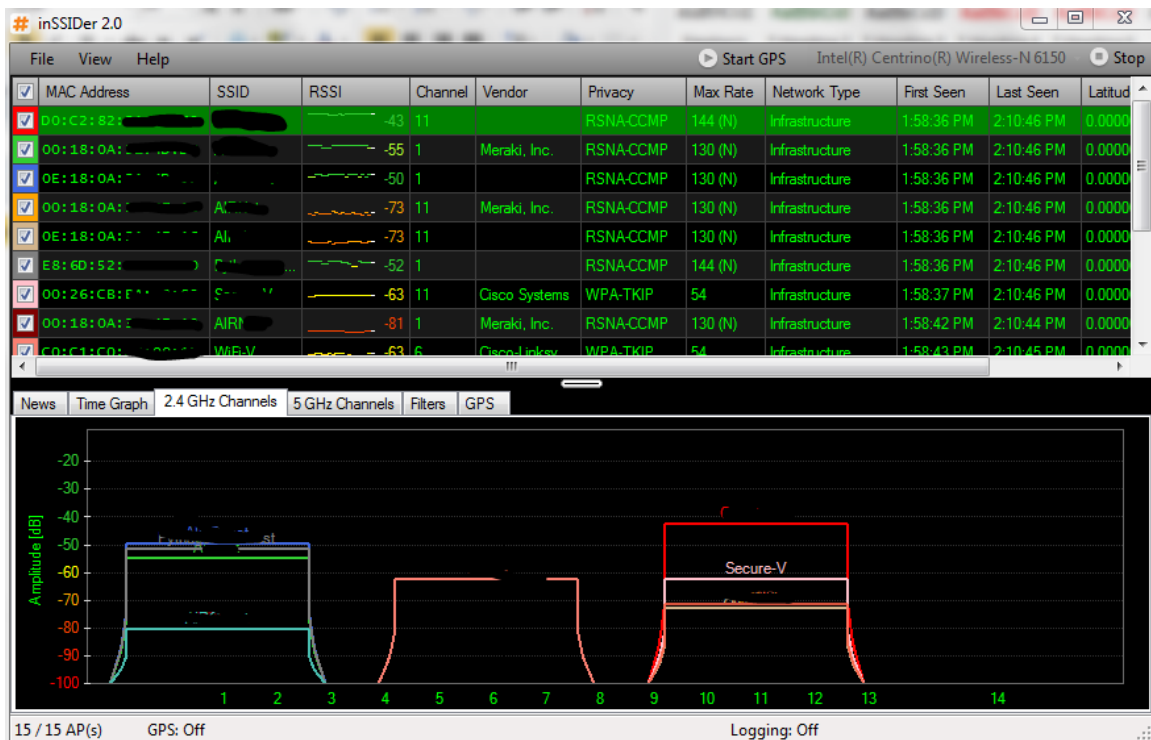


Figure 1 - inSSIDer application window showing the 2.4GHz channels tab

For the purposes of this article I am going to focus on the 2.4GHz radio frequency spectrum as this is typically the most crowded and causes the most problems. This 2.4GHz frequency range carries the 802.11b/g/n signals that are still the most popular and most prevalent in the much of the business and consumer world. Additionally, I am going to gear this article to relatively small installations of wireless access points (AP's) – those being situations where one or two AP's would provide effective wireless coverage.

After you have launched inSSIDer, you will notice in the middle of the application window, tabs that change what is displayed on the bottom half of the screen. The most used of these will be the 2.4GHz and 5GHz channels tabs. Be aware that if your computer only has a 2.4GHz wireless card, you will not see anything displayed on the 5GHz tab. After you have explored the software a bit, head over to the 2.4 GHz Channels tab. This readout will display every wireless network in which your computer is currently in range. You might be surprised at what you see presented. If you are using a laptop, be sure to walk around your office or building to see what you discover.

Before I go too much further, I wanted to insert a non-technical point about wireless networking. Much like that FCC sticker that is affixed to any electronic device you own, your wireless signal can have an impact on your neighbors. Stated directly – your wireless network could adversely impact your neighbors' wireless network just as theirs can adversely impact yours. In a perfect world, where everyone deploys wireless networks based on solid best practices, this would not be a problem. Unfortunately, here in the real world, the best thing we can do is try to minimize the impact of adjacent wireless networks.

Once you have familiarized yourself with the readout, now we need to apply some basic wireless network building principles to your network. As a network designer and engineer, I cannot express enough how important my first point is. You will notice that on the bottom of the chart you see channels 1 – 13 listed. You will also likely notice that the spread of each observed SSID's wireless signal is larger than a single channel. This is really a fallacy as far as I am concerned. There may be 13 channels available in the 2.4GHz spectrum, but there are only 3 non-overlapping channels in which you can choose. These non-overlapping channels are 1, 6, and 11. The first step in being a good wireless neighbor (and preventing several headaches for yourself) is to make sure that your SSID is using one of those 3 non-overlapping channels. Of special note to any of you that have a Cisco Aironet AP's and have never changed its default values, you are likely using an overlapping channel. If you are the only wireless network in range, having your SSID on a non-overlapping channel will not

cause any ill effects. However, if you are in a high density location with a lot of installed AP's, you are not only making your life more stressful and troubled than it need be, you are likely not making any friends with your neighbors.

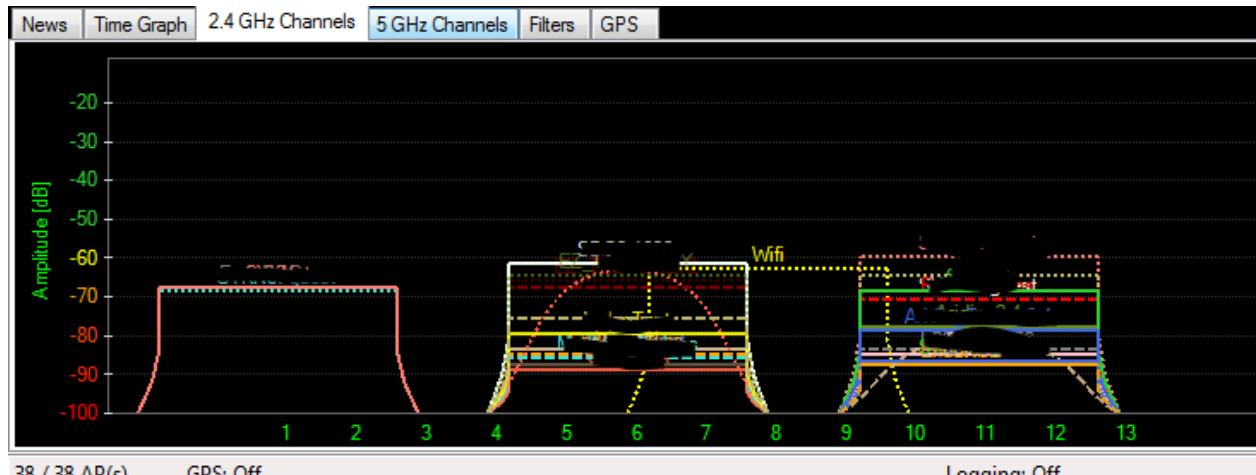


Figure 2 – Notice that the SSID Wifi is on channel 8. The signal on channel 8 is adversely impacting both non-overlapping channels 6 and 11.

Secondly, notice the amplitude (RSSI) graph on the left hand side of the display. It is important to remember that, as a good rule of thumb, any signal you receive that is lower than -70dB is practically unusable to you. More importantly, anything you see on your graph at the level and below can, in many cases, be ignored. This might be a good time to check out the Time Graph tab. As you walk around your facility, this tab is helpful in allowing you to keep an eye on the strength of your SSID in differing locations around your office.

Third, use the information you learned in the first two steps to determine if you should move your AP's to a different non-overlapping operating channel. If there are very few visible networks, choose the least busy channel. However, when making that decision in more densely populated areas, do not be as concerned about how many existing SSID's are on a particular channel, rather concern yourself with how many visible networks show up above the -70dB threshold over an observed period of time. Again, this is an excellent use of the Time Graph tab. Use the charts in inSSIDer to determine if you should relocate your wireless AP to a different location or add another to your environment. Something to keep in mind in installations that have multiple AP's – don't place overlapping coverage areas on the same channel. Use a combination of channels 1, 6 and 11 to fill out the coverage.

Finally, after you have found a good operating channel and location for your AP, if you have



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found that your wireless signal is very good throughout your office or facility, you might consider lowering your power output and try your tests again. While it may have never crossed your mind to lower your AP's power level, there are some very good reasons why you may want to consider doing this. First, from a security standpoint, this is a good move because it decreases the footprint of your wireless signal. This requires would-be intruders to come within an uncomfortably close range of your AP in order for them to more effectively target your network for penetration. Secondly, if every network manager lowered the power output of their AP's to only effectively cover the area that they needed covered; the interference you and your neighbors caused each other would be greatly diminished. In multiple AP installations where the second may be providing supplemental coverage, it is likely helpful to greatly lower the power level of the second AP.

With inSSIDer in your networking administration toolbox, be sure to pull it out every so often and re-evaluate your wireless network for changes in your neighbors' wireless networks. Remaining aware of what is going on around your environment is the best way to ensure your continued use of the freedom that wireless networking brings to you and your company.

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