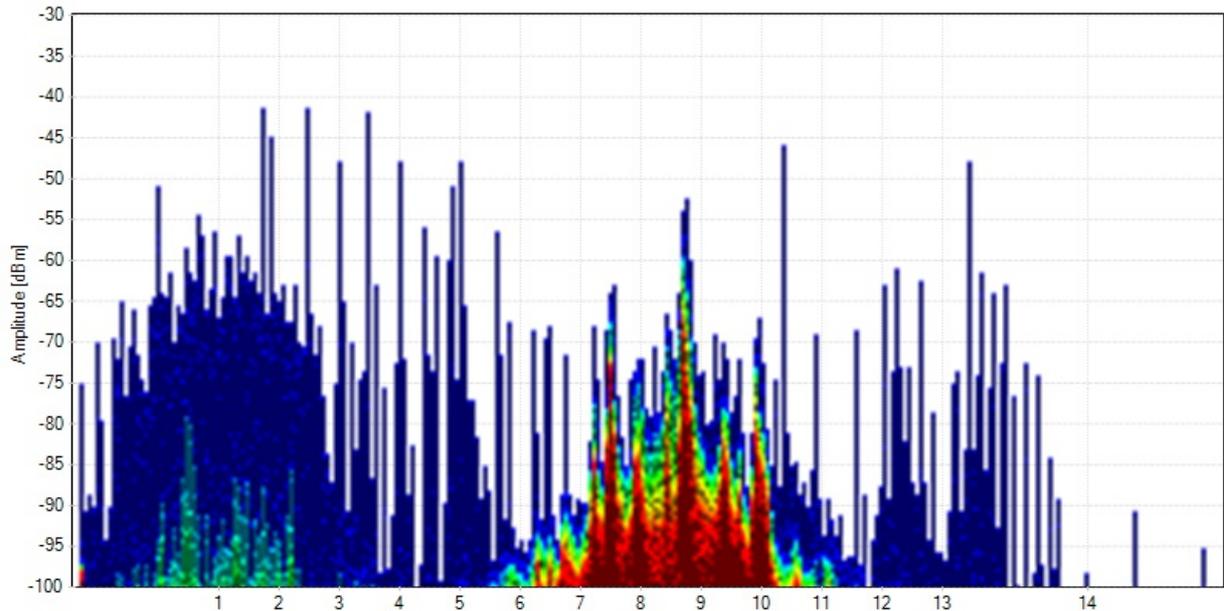# Sample Report

Date: **12/15/2014 12:39:00 PM**

Example: How to Read the Overview Pane

The **Overview Pane** shows you what is currently happening in the spectrum around you. With **Color by Utilization** enabled, the intensity of the color shows how often a signal occurs. The more intense the color, the more often the spectrum is in use. This is called utilization, duty cycle, or airtime usage.

A blue spike is a short transmission, like a clap. A red spike is a long, continuous signal, like an air horn.

Blue - Less than 10 percent utilization

Green - 20 percent utilization

Yellow - 40 percent utilization

Red - Over 50 percent utilization

The height of each shape shows how loud it is.

In this example, we can see a non-Wi-Fi device near Wi-Fi channel 9 that is using at least 50 percent of the airtime. While this device (the known signature of a wireless video camera) is powered on, it's using up so much time on the air that Wi-Fi devices most likely won't get a chance to talk.

Example: How to Read the Waterfall View
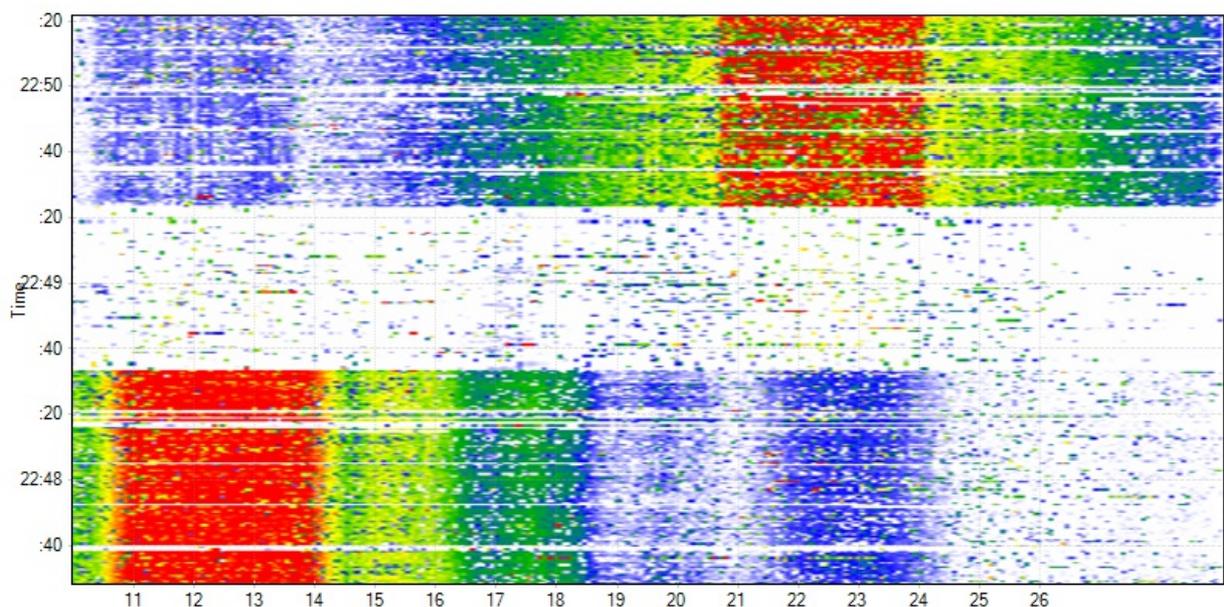
The Waterfall Graph shows amplitude over time for each frequency in the in the band, much like a seismometer graphs earthquakes over time. The colors represent power levels in the spectrum with dark blue as low, and bright red as higher amplitude levels - much like a Doppler radar weather map.

In this example, a device started talking on Wi-Fi channel 1, and then stopped. After a pause, another device started talking on channel 11.

Example: 802.11b Signature
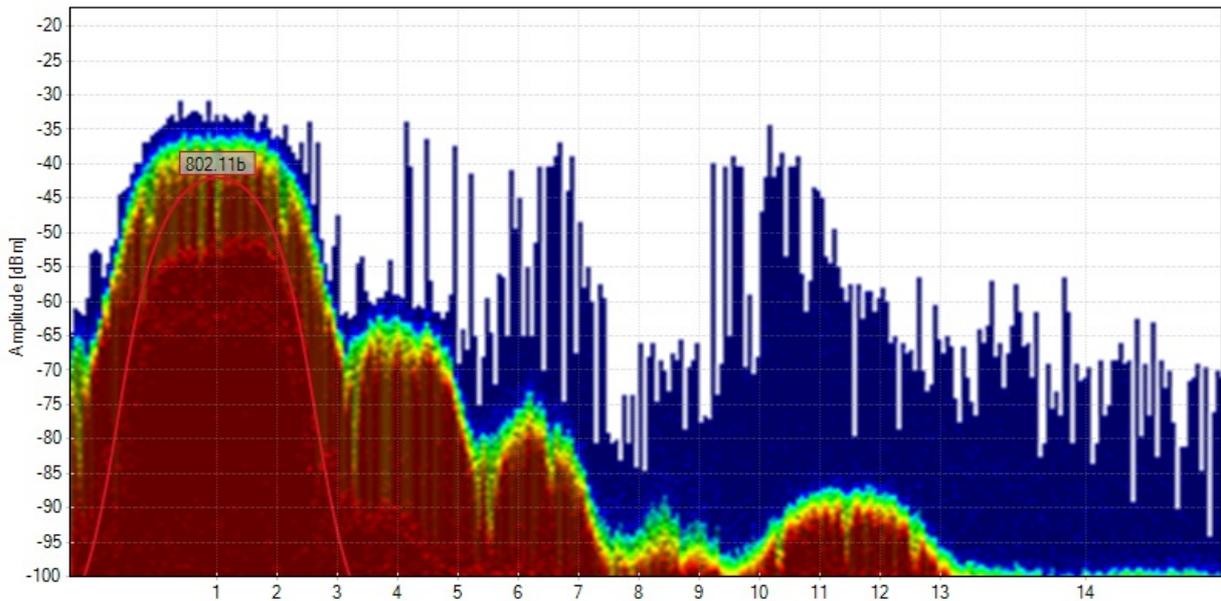
As 802.11b becomes less popular, this signature is becoming less common, but it's good to be familiar with it. This **curve shape with lobes on each side** is made by an **802.11b** network, or any 802.11g/n network running at legacy data rates like 1, 5.5, or 11 mbps. An 802.11g or 802.11n network will fall back to this shape from time to time, or when idling. To prevent this, legacy data rates can be disabled, which will improve network performance.

Chanalyzer draws a "curve" network shape (just like it's spectrum signature counterpart) to indicate that your wireless card has detected an 802.11b network, or a network using legacy data rates.

802.11g/n Signature
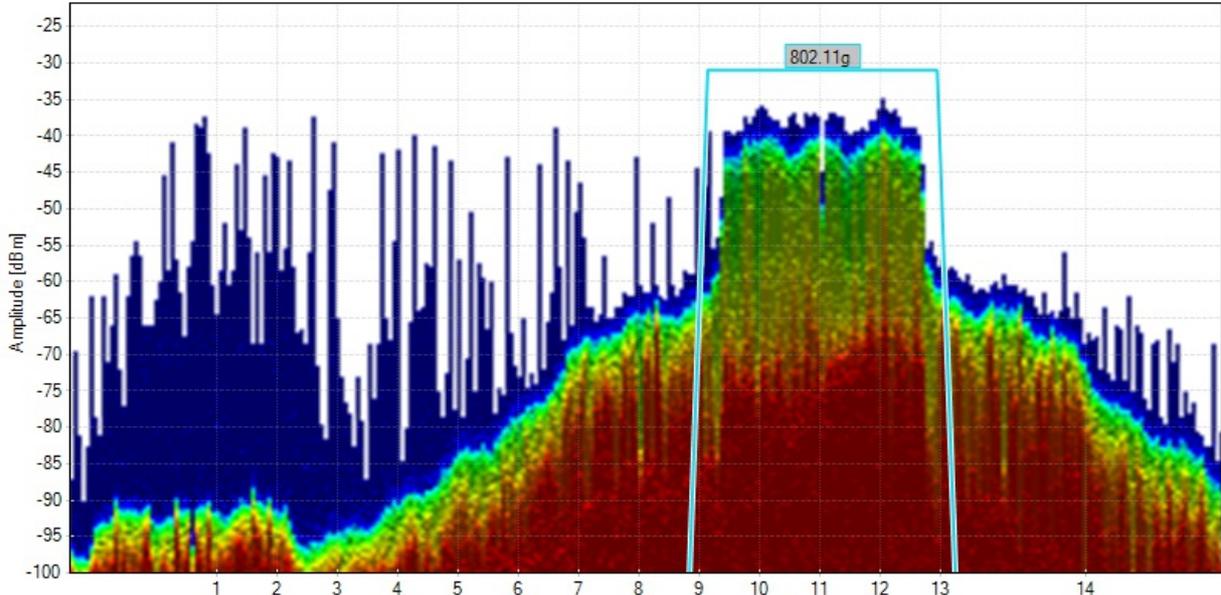
This flat table-top shape with shoulders on each side is the signature of an 802.11g or 802.11n network. This means that the network is running at faster data rates such as 12, 24, 54 mbps, and beyond.

When Chanalyzer detects an 802.11g or 802.11n network with your wireless card, it will draw a flat network shape over the density view to represent it.

Adjacent-Channel Interference
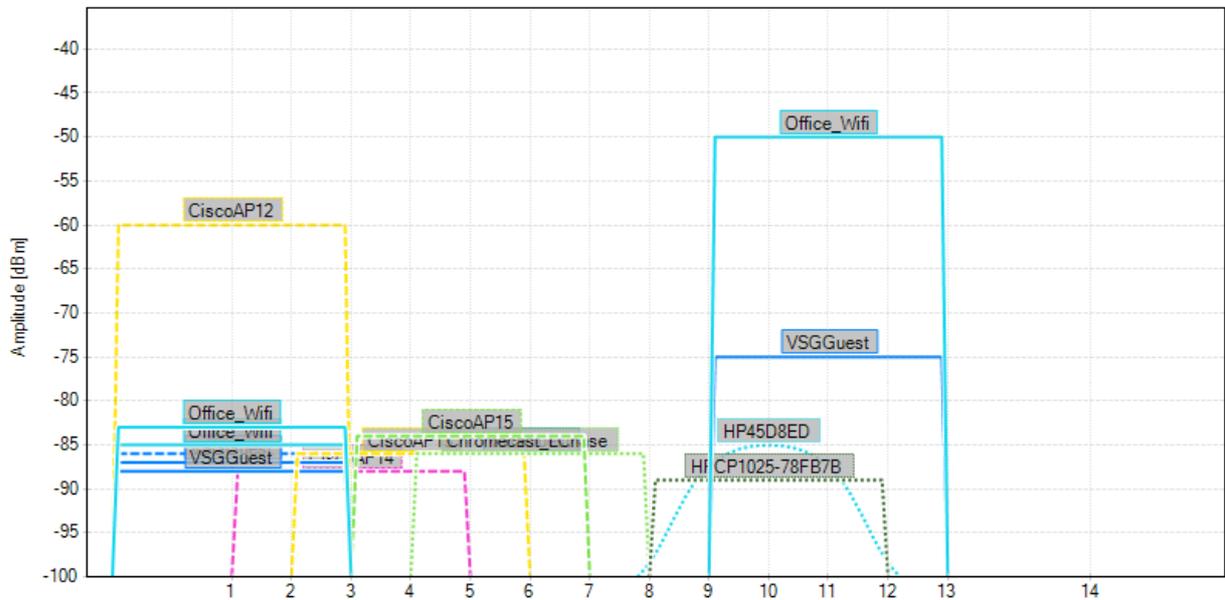
When networks partially overlap, they just scream over each other. Sharing channels is always better than partially overlapping. If these AP's are under your control, get them on channels 1, 6, and 11 to eliminate adjacent-channel interference.

802.11b Management Overhead
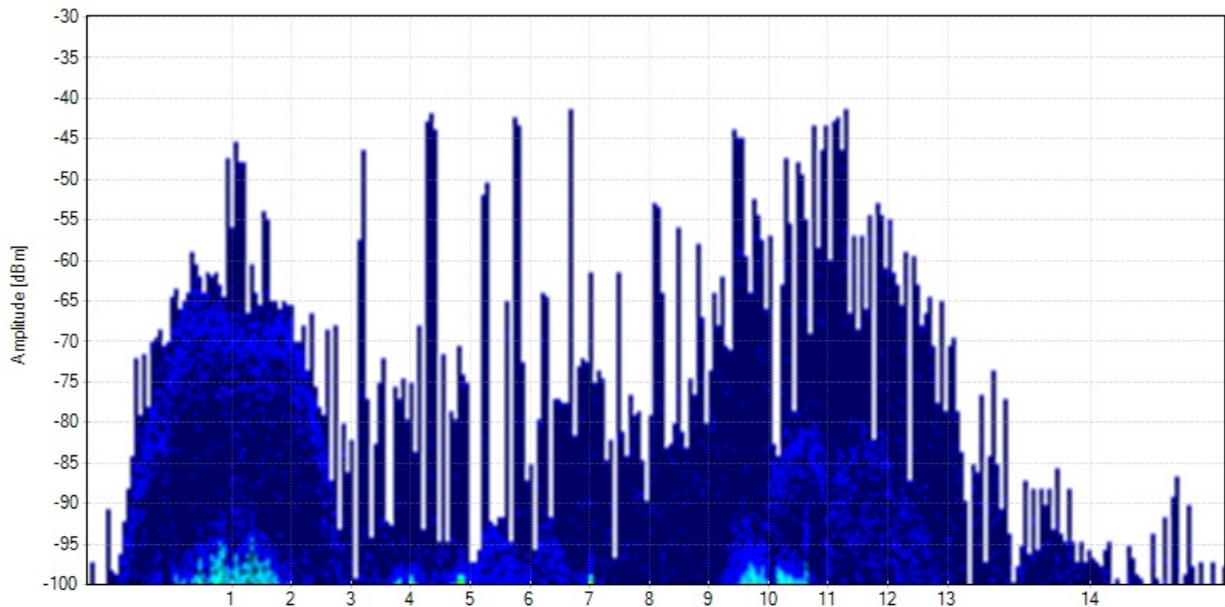
Two HR-DSSS 802.11b signatures are visible. They are utilizing their respective channels less than 10 percent of the time. This is probably management overhead being sent at legacy data rates.

Heightened Noise Floor
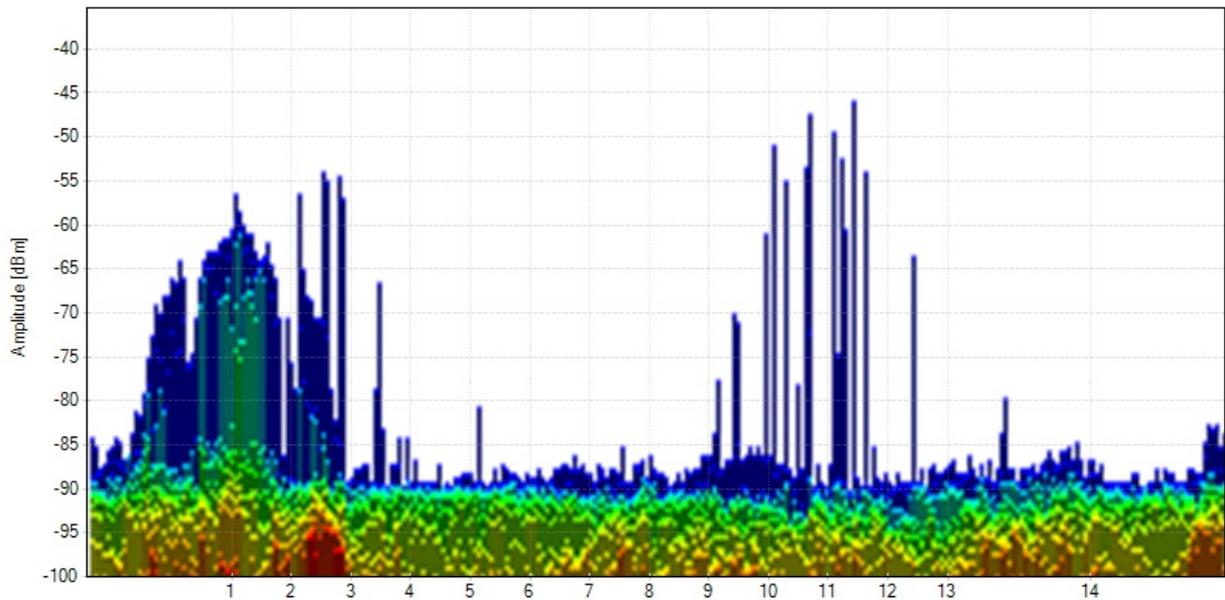
This 10-second timespan shows a heightened noise floor. The burst of activity only lasted about 8 seconds, but it did occur earlier and once later in this session. The noise floor is at -90 dBm, which could cause problems.

Heightened noise floors like this are usually caused by out-of-band interference from cell towers of heavy electric motors switching on. Look for loud radio transmitters and heavy electrical equipment nearby.

802.11g/n Signature
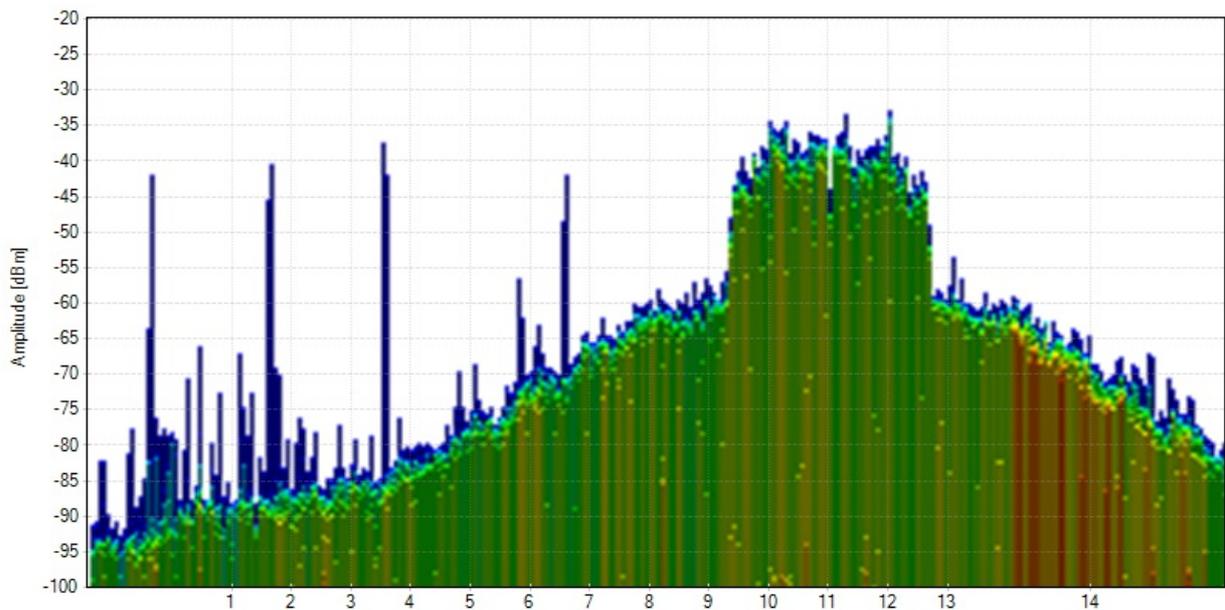
This is a very nice example of an ERP-OFDM 802.11g/n signature. The flat table-top shape with the shoulders down each side is very distinct. This was most likely a burst of Wi-Fi traffic, and nothing to worry about.

802.11b Signature
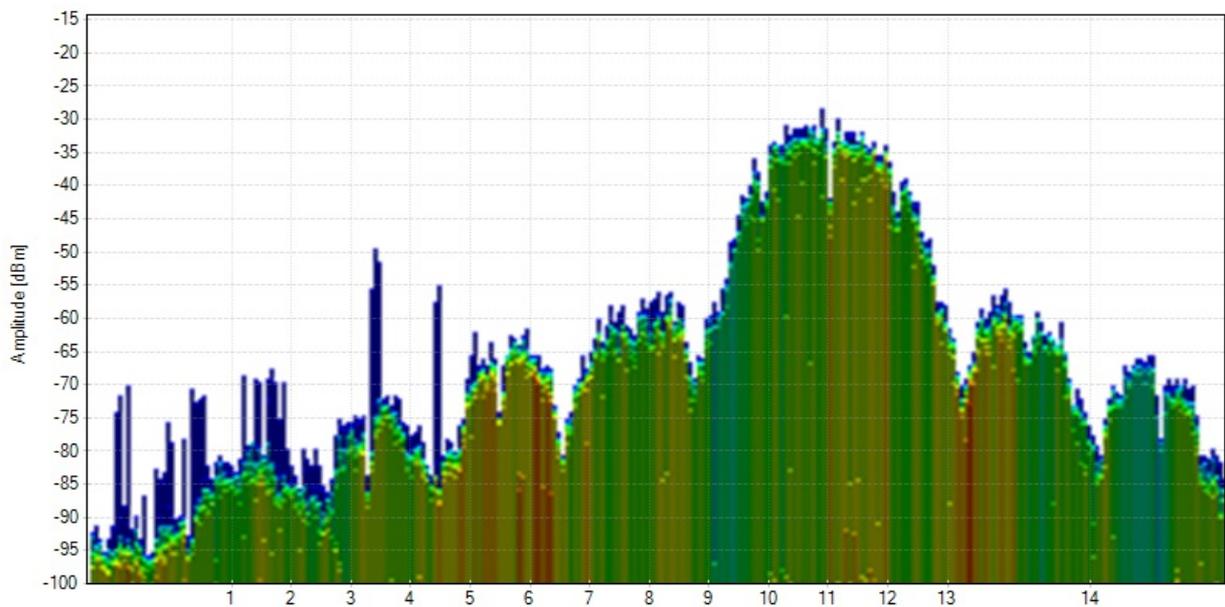
This is also a nice example of an 802.11b HR-DSSS signature. The utilization is about the same (20 percent), but we do know that for whatever reason the same conversation has slowed down to a legacy data rate like 1, 2, 5.5 or 11 mbps.

Heightened Noise Floor
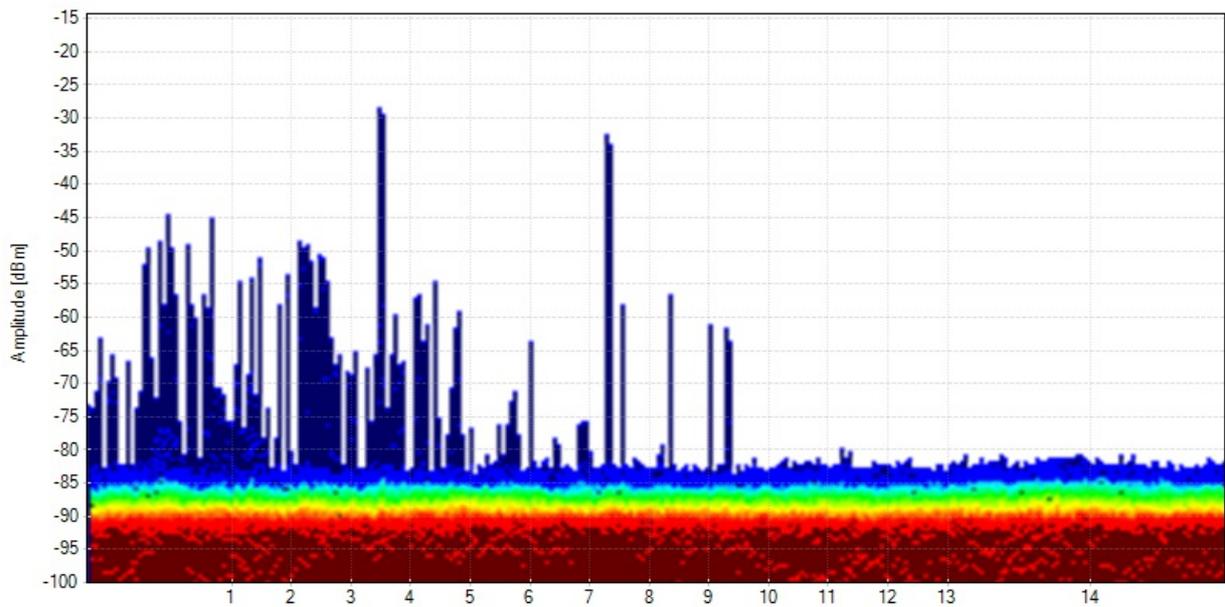
This density graph shows an elevated noise floor, hitting -82 dBm in some places. As described earlier, this is out-of-band interference from a loud radio transmitter in another band (like a cell phone tower), or heavy electrical equipment. This could be very problematic for a Wi-Fi network.

## Heightened Noise Floor (Waterfall)
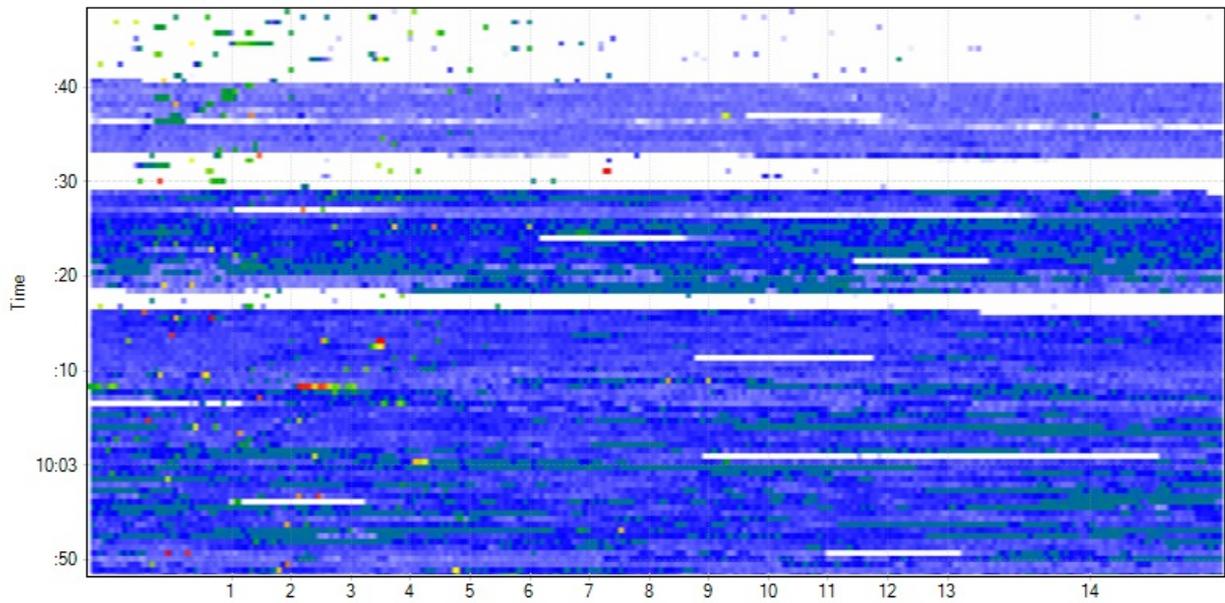
The **Waterfall View** graphs amplitude over time for all frequencies in the selected band, much like a seismometer graphs earthquakes. This view is useful for watching the spectrum over time.

Unlike the Density View which uses Color by Utilization, the intensity of the color in the Waterfall View indicates amplitude. Blue indicates low-amplitude signals, while red indicates high-amplitude signals.

We can see the noise floor activity over time with this graph. Blue shows where the noise floor was heightened over this one-minute timespan.

Microwave
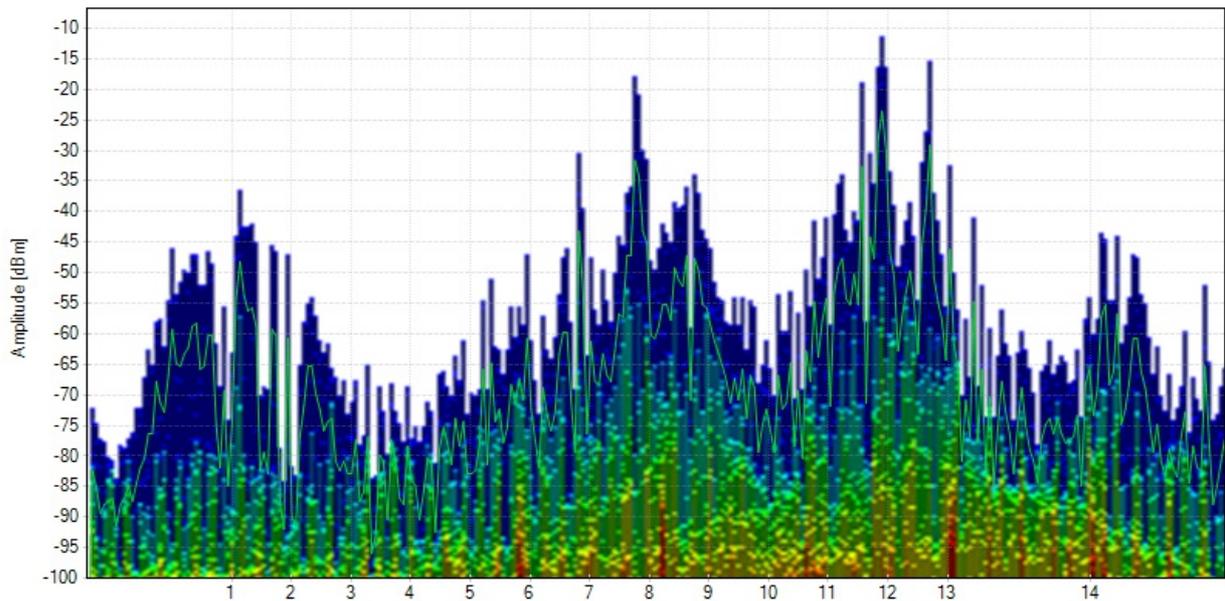
This microwave oven is pretty noisy. The green line shows the average trace for this 15-second timespan.

Some microwaves are noisier than others. Consider buying a new one if this one is problematic.