

Dell SonicWALL Wireless (Secure Wireless Access) Mini Peak – Portugal

Hotel Palacio do Estoril

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CEO MMV



Dell SonicWALL Wireless (Secure Wireless Access)

What is a Secure Wireless Access

Dell SonicWALL wireless network security

- Simplified deployment

- Integrated wireless controller up to 96AP

- Auto-detection and auto-provisioning

- Comprehensive security

- DPI security for wired and wireless traffic

- Application control, SSL decryption/inspection

- Intrusion prevention, content filtering

- Wireless security features

- Virtual access points

- Wireless guest services

- External guest authentication (LHM)

- Captive portal

- Wireless intrusion detection/prevention



Dell SonicWALL wireless network security

- Central management
 - Single pane of glass
 - Wireless and security
- Low TCO
 - No wireless controller
 - Simplified deployment
 - Central management



Dell SonicWALL Wireless (Secure Wireless Access)

What you should know – (most of it)

Wireless – o espectro electromagnético

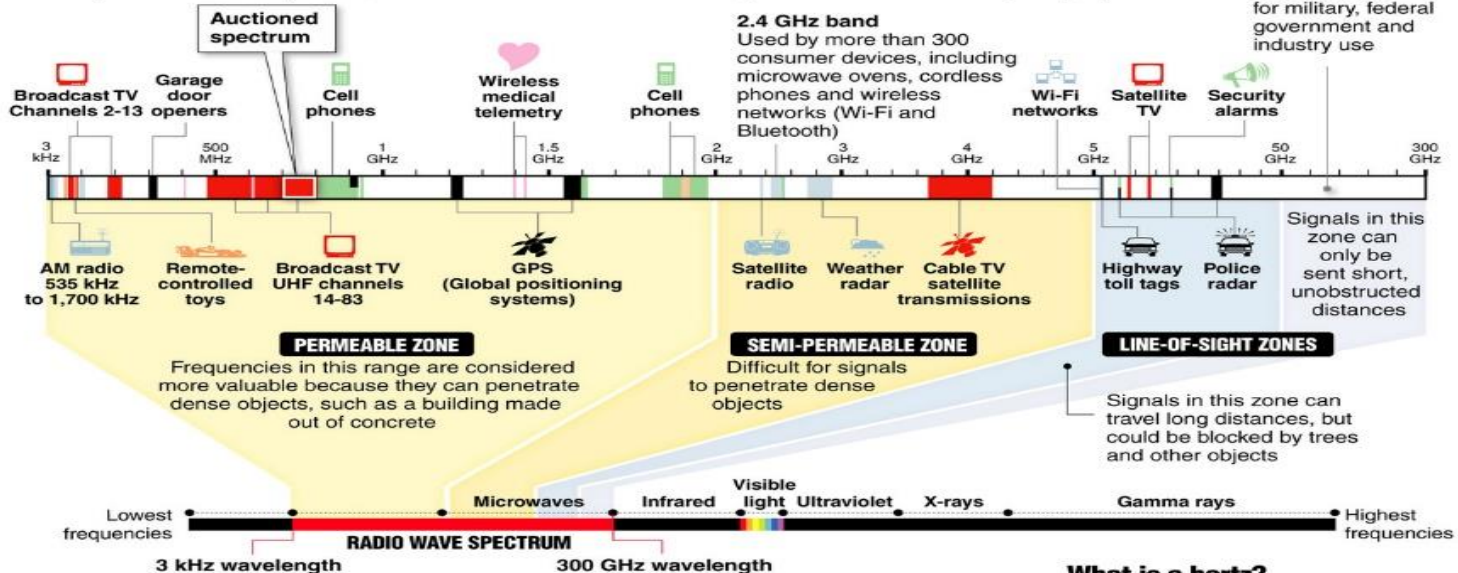


Wireless – o espectro electromagnético

- onde estão os devices dos vossos clientes

Inside the radio wave spectrum

Almost every wireless technology – from cell phones to garage door openers – uses radio waves to communicate. Some services, such as TV and radio broadcasts, have exclusive use of their frequency within a geographic area. But many devices share frequencies, which can cause interference. Examples of radio waves used by everyday devices:



The electromagnetic spectrum

Radio waves occupy part of the electromagnetic spectrum, a range of electric and magnetic waves of different lengths that travel at the speed of light; other parts of the spectrum include visible light and x-rays; the shortest wavelengths have the highest frequency, measured in hertz

Source: New America Foundation, MCT, Howstuffworks.com
Graphic: Nathaniel Levine, Sacramento Bee



What is a hertz?

One hertz is one cycle per second. For radio waves, a cycle is the distance from wave crest to crest

1 kilohertz (kHz) = 1,000 hertz

1 megahertz (MHz) = 1 million hertz

1 gigahertz (GHz) = 1 billion hertz

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Wireless auditing — Things to know and understand

- Wireless audits should be performed by those who understand wireless **completely**.
- Wireless audits have three phases that should be followed:
 - Phase 1: **Predictive survey** — Using software and scaled plans, predict the approximate amount of access points that will be needed for the deployment
 - Phase 2: **Pre-deployment survey** — Survey on site using one access point or more
 - Phase 3: **Post-deployment survey** — Used for fine-tuning the access points once they have been purchased and installed
- **Spectrum analysers** — A tool that can listen to wireless radio frequencies and provide you with a graph showing the signal and noises that are detected in the area. These tools are used to help troubleshoot and fine-tune wireless deployments. This tool should be used pre- and post-deployment.
- **Heat map** — A diagram used as a visual aid for the predictive and pre-deployment survey. By using a scaled diagram of the building, you can map out the placement locations of access points using radiation pattern information supplied by the vendor or by using a wireless device (such as a laptop) to map out the distance of the wireless signal.



Heat mapping software

- Heat mapping software was designed to provide a visual prospective of wireless radio waves
- Available for purchase and for free, there are many different types of heat mapping software.
- Some of the more popular versions are from MetaGeek, Fluke and Xirrus. While each has its own proprietary method, any can be used for the audit.
- Heat mapping is as good as the wireless device it runs on, meaning if you have a \$3,000 laptop with the latest bells and whistles and it has a superb wireless access card, the heat map you create with that laptop will be very different than the one created with a \$200 laptop using the standard-grade wireless card. Heat mapping software relies on your hardware in order to record the signal strength at each marked location.
- Some heat mapping software, such as Fluke's AirMagnet, can use a vendor's published antenna radiation pattern in order to do a heat map without having to physically go on site. However, the accuracy of this type of audit is limited to your input of the material type, density of the walls and so on.



Tools — ekahau HeatMapper



ekahau HeatMapper
Powered by Ekahau Site Survey technology

Check out these Ekahau products also:

- ekahau Mobile Survey**
Professional Wi-Fi analysis and monitoring on your Android based mobile phone
- ekahau Site Survey**
Wi-Fi planning, site survey and troubleshooting tool
Chosen by thousands of IT administrators and Wi-Fi pros
- ekahau Real-Time Location System**
The leading Wi-Fi location tracking solution
Track people and assets over any Wi-Fi network

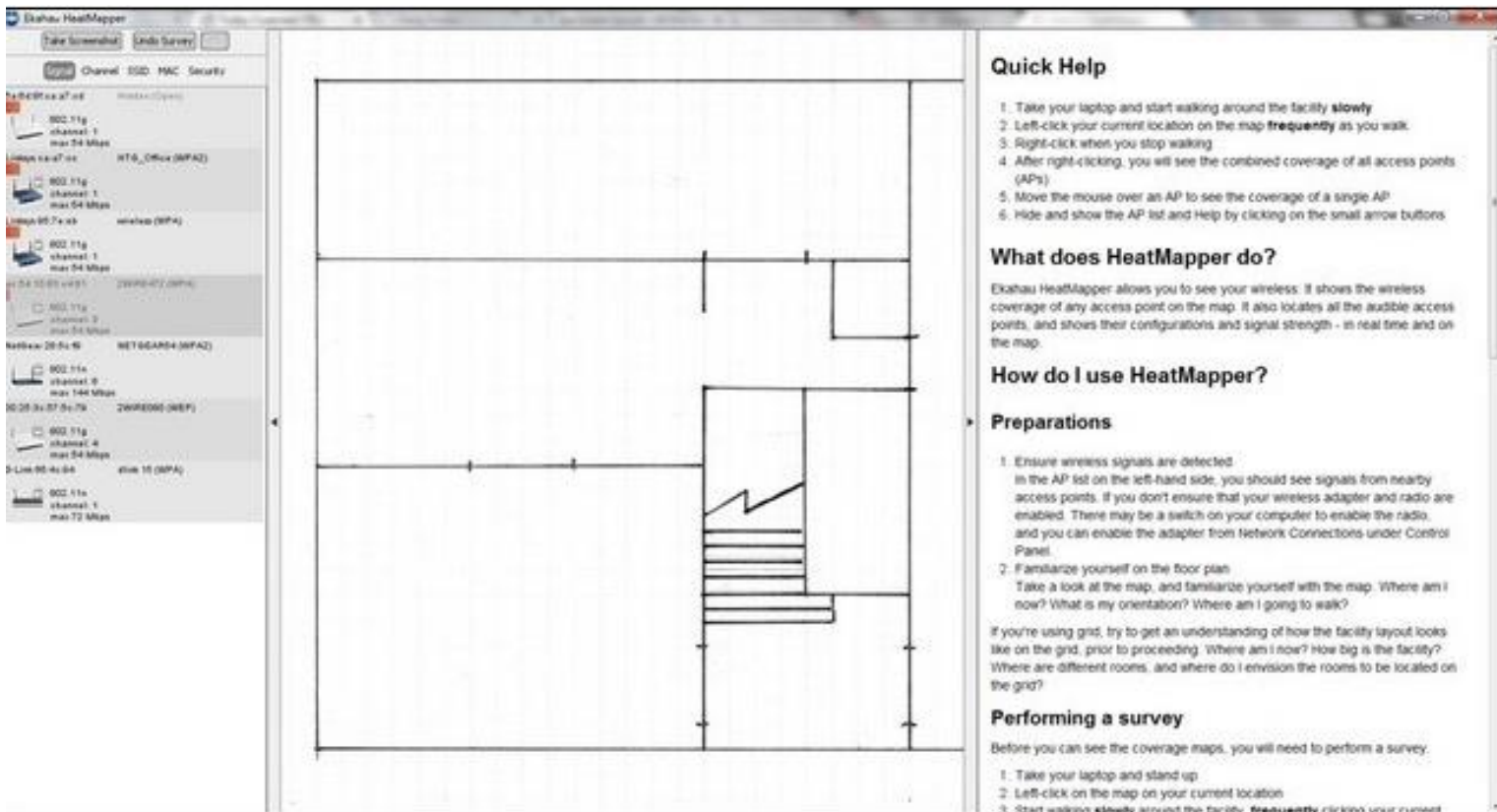
Do you have a map?


I have a map image
Recommended


I don't have a map image
Work with a grid

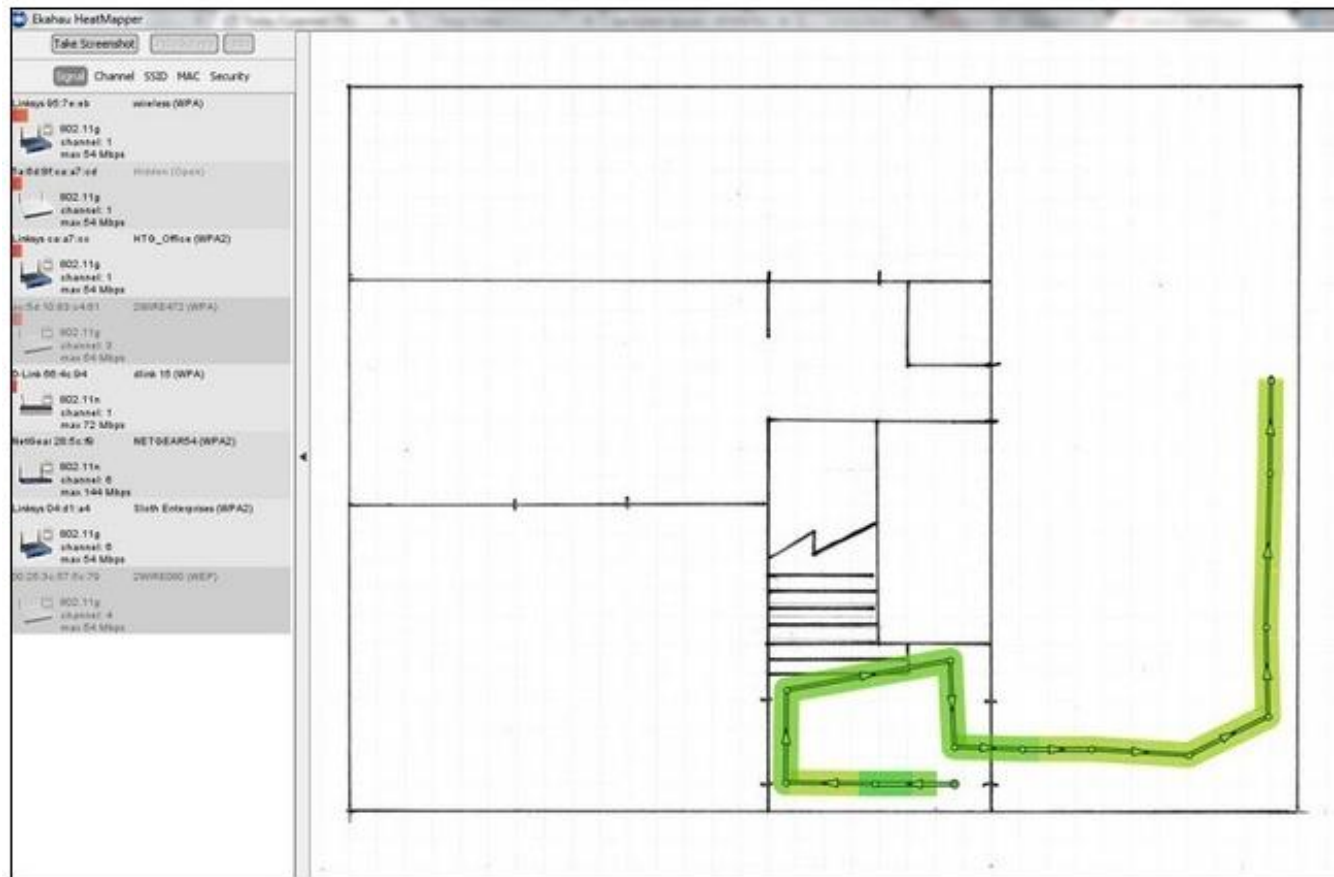
Tools — ekahau HeatMapper

Having a scaled drawing is critical to this effort, otherwise you have to manually draw a scaled model. You also need to select the access point you will connect to. Ignore the other detected access points.



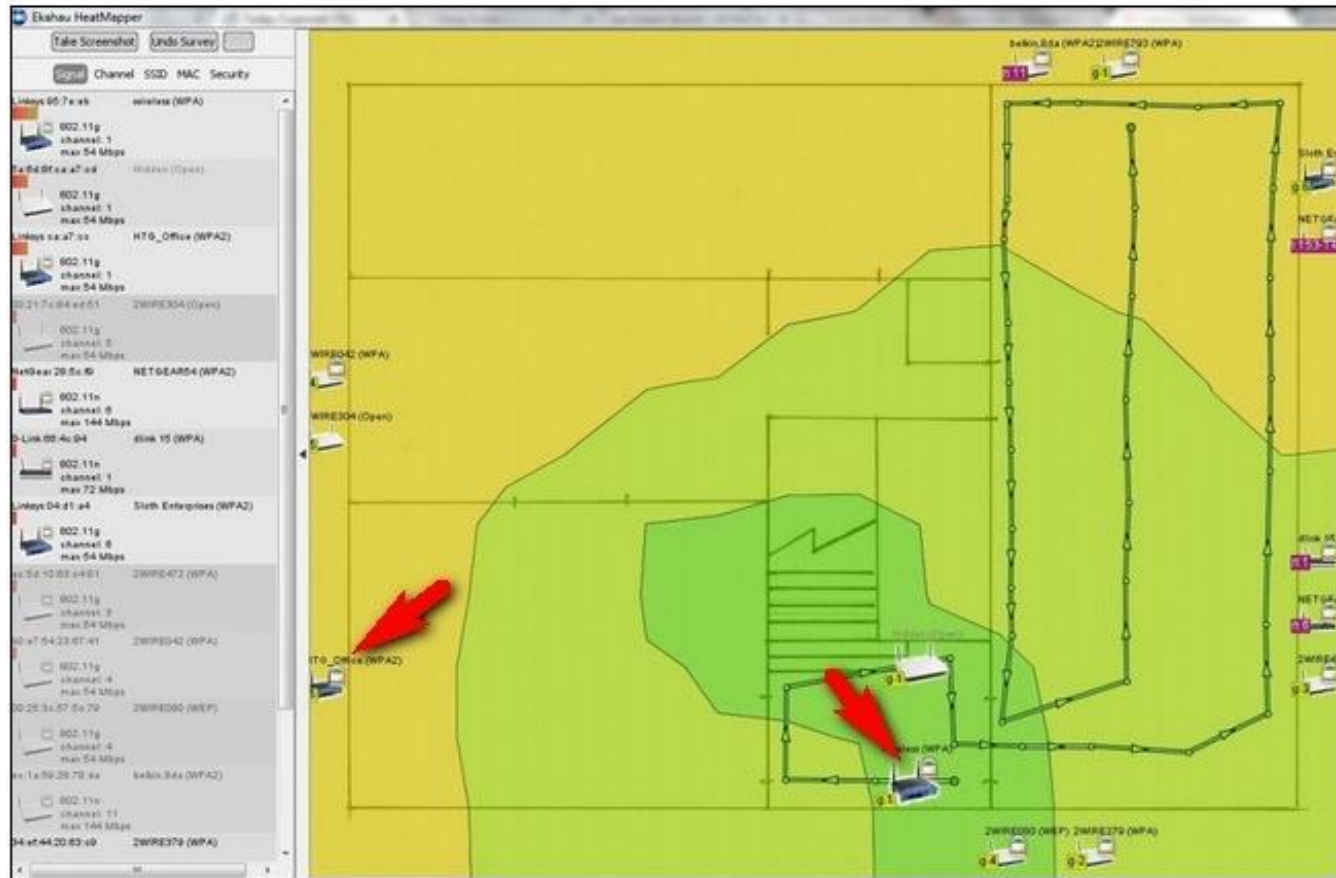
Tools — ekahau HeatMapper

You walk this path with your laptop in hand, marking the locations. The software looks at your wireless signal to determine the range and throughput of the AP.



Tools — ekahau HeatMapper

Once you have completed your walk-through, you can overlay the heat map



Spectrum analyser

- Most spectrum analyser products will include their own wireless sniffing device.
- Spectrum analyser software can be very expensive.
- The most popular free software is NetStumbler. However, it has not been updated since 2004, only works with certain wireless cards and also requires additional software for a windows PC.
- However, it is one of the only free analysers that can detect the amount of noise in the environment.
- <http://www.windowsnetworking.com/articles-tutorials/trouble/free-network-sniffers-analyzersand-stumblers.html>
- Spectrum analyser software has the ability to see other signals and identify them by their wave pattern:
- Bluetooth, microwaves, mobile phones and any other device that uses the same spectrum



Devices and what channel width and MIMO type they support — remember: Not all products are created equal

Common Client Device Categories and Capabilities

Device Category	Wi-Fi Radio Type	Channel Support*	Channel Width	Transmit Power Output	Maximum Data Rate 20 MHz/40 MHz
Feature Phones	802.11b/g	1-11	20 MHz Only	11 dBm	54 Mbps
Smart Phones	802.11n 1x1:1	1-11	20 MHz Only	11 dBm	65-72 Mbps
Tablets	802.11n 1x1:1	1-11, 36-48, 149-161	20 MHz Only	11-14 dBm	65-72 Mbps
Netbooks	802.11n 1x2:2	1-11, 36-48, 149-161	20/40 MHz	11-17 dBm	72 Mbps (Up) 144/300 Mbps (Down)
Low-End Laptops	802.11n 2x2:2	1-11	20 MHz Only	17-20 dBm	144 Mbps
Mid-Range Laptops	802.11n 2x3:2	1-11, 36-48, 149-161	20/40 MHz	17-20 dBm	144/300 Mbps
High-End Laptops	802.11n 3x3:3	1-11, 36-48, 52-64, 100-140, 149-161	20/40 MHz	17-20 dBm	216/450 Mbps
VoIP Handsets	802.11a/b/g	1-11, 36-48, 149-161	20 MHz Only	11-16 dBm	54 Mbps



Attenuation is the gradual loss in intensity of any kind of flux through a medium

Think of the numbers listed in terms of “feet thick” to a wireless signal.

The table below [2] the difference in attenuation between 2.4 GHz and 5GHz signals.

	2.4 GHz	5 GHz
Interior Drywall	3-4	3-5
Cubicle wall	2-5	4-9
Wood Door (Hollow-Solid)	3-4	6-7
Brick/Concrete wall	6-18	10-30
Glass/Window (not tinted)	2-3	6-8
Double-pane coated glass	13	20
Bullet-proof glass	10	20
Steel/Fire exit door	13-19	25-32



Testing your skills

A customer wants you to place access points in their warehouse. What will be some of the challenges in doing this?



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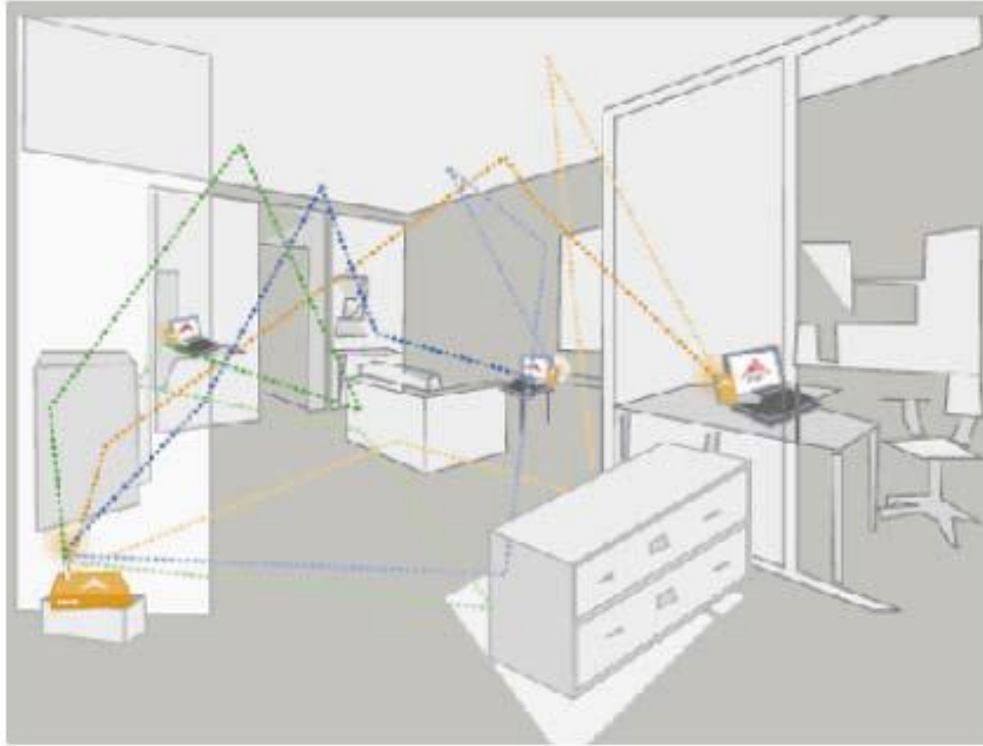
Warehouses have many challenges for wireless

Height of the ceiling (one of the biggest challenges)

- Metal studs
- Metal racks
- Stocked shelves (cardboard boxes, products, parts)
- Florescent lights (bet you didn't know they cause problems?)
- Distance of the warehouse



Visualise the signal — understand what happens



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The models

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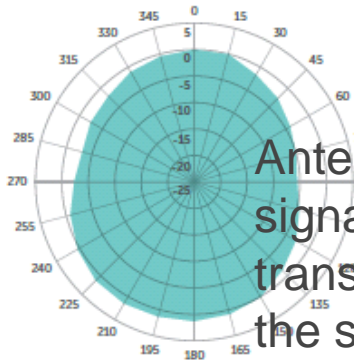
Dell Sonicwall – The models Wireless



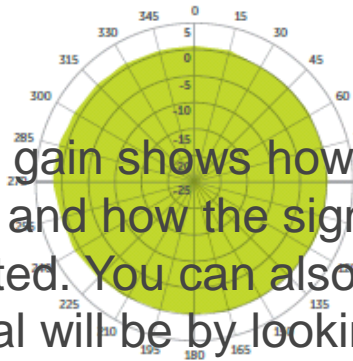
Antenna gain pattern — SonicPoint ACe

Radio frequency coverage maps

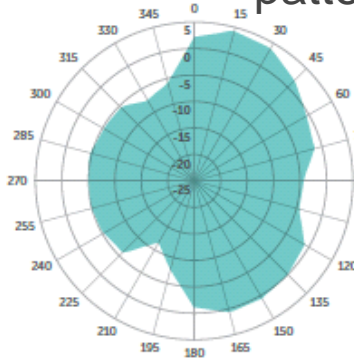
2.4 GHz Vertical



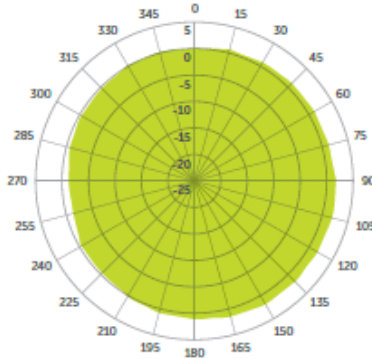
2.4 GHz Horizontal



5 GHz Vertical



5 GHz Horizontal



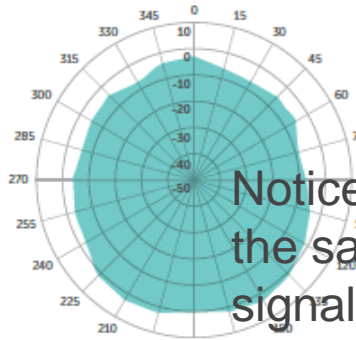
Antenna gain shows how strong the signal is and how the signal is being transmitted. You can also tell how clean the signal will be by looking at the pattern.



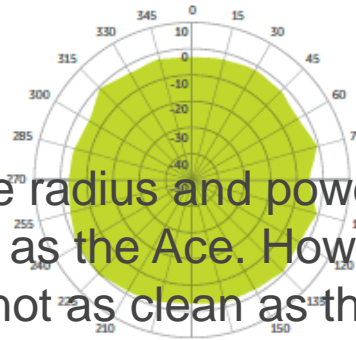
Antenna gain pattern — SonicPoint ACi

Radio frequency coverage maps

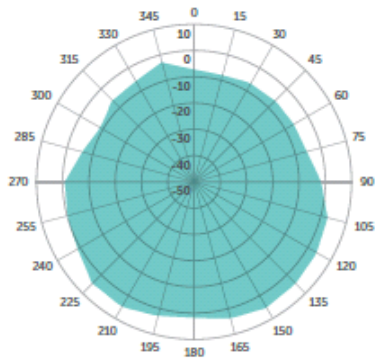
2.4 GHz Vertical



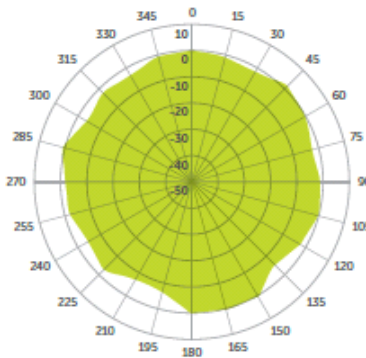
2.4 GHz Horizontal



5 GHz Vertical



5 GHz Horizontal



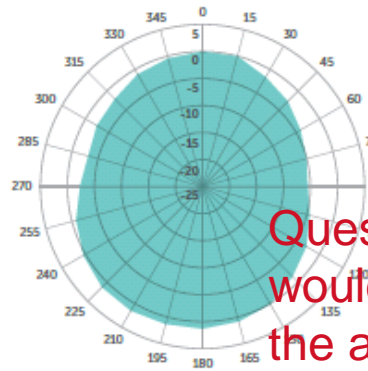
Notice the radius and power are near the same as the Ace. However, the signal is not as clean as the access point with external antennas.



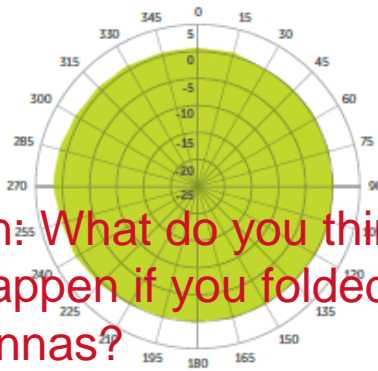
Antenna gain pattern — SonicPoint N2

Radio frequency coverage maps

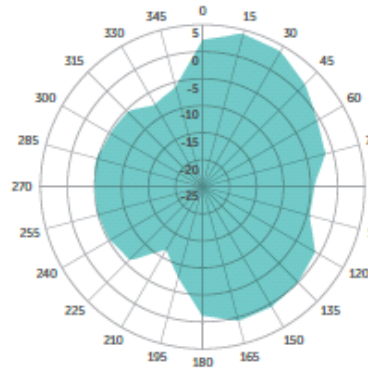
2.4 GHz Vertical



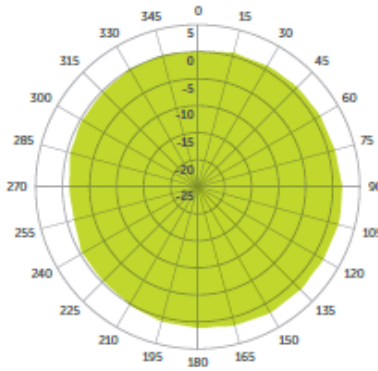
2.4 GHz Horizontal



5 GHz Vertical



5 GHz Horizontal



Question: What do you think would happen if you folded out the antennas?



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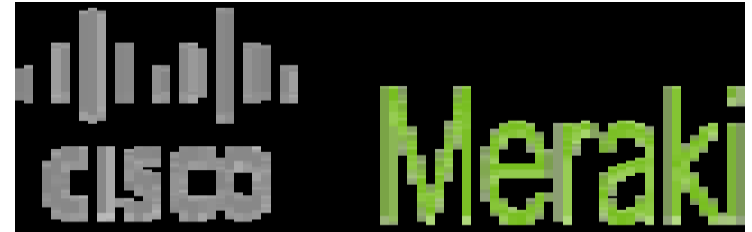
Why Wireless Dell Sonicwall



Why Dell SonicPoints?

Why Dell SonicPoints?

- Dell SonicWALL firewalls integrate a wireless access controller, which can be the most expensive piece in the wireless solution.
- Low TCO — Dell firewalls have an integrated wireless controller, which eases deployment. Also, management is done through the firewall.
- Dell offers a single management console for wireless and security.
- Dell provides security for network traffic between endpoints connected to same access point



Why Dell SonicPoints?

- Dell offers 802.11ac access points. Some vendors only offer 802.11n access points.
- Scalability —Dell SonicWALL DPI scanning scales to keep up with 802.11ac performance. DPI engines from some other vendors may not.
- More complete wireless feature set.
- Simplified setup of the wireless access points

