5 EASY STEPS TO GREAT Wi-Fi EVERY DAY

ekahau

WIRELESS DESIGN

TABLE OF CONTENTS

Business Runs on Wi-Fi

In the last 20 years, Wi-Fi has exploded from an ancillary add-on to standard issue on just about every network-connected device. From self-driving forklifts in warehouses to medication delivery service bots in hospitals to the fleet of laptops and phones deployed throughout your organization, business runs on Wi-Fi (and cables are just tripping hazards).

And yet, every day we see companies continue to struggle with Wi-Fi networks that simply can't keep up with the demands thrown at them. The out of the box, plug-and-play approach to Wi-Fi doesn't work at the small to midsize business level and is laughable at the enterprise level. A simple coverage gap in a warehouse can delay shipping routes costing thousands recouping lost time. Mission-critical Wi-Fi networks — the ones your employees rely on every day to do their jobs — need to be properly designed and maintained.

That's where this guide comes in, to help you:

- Establish accurate Wi-Fi requirements that will lead to a high performing and reliable Wi-Fi network for your business
- Better understand the functions of professional Wi-Fi design and diagnostic tools
- Recognize the day-to-day changes that can impact your Wi-Fi signal and how you can stay optimized to account for changes over time

Unfortunately, you can't lick your finger and stick it out the window and see how hard the Wi-Fi is blowing. But what you *can* do is follow this guide to great Wi-Fi every day. We've demystified the invisible spectrum that Wi-Fi operates in and broken the key to great Wi-Fi down to 3 Easy Steps:

Step 1

A Great Network Starts with a Great **DESIGN**

Step 2

VALIDATE with Super Accurate Sidekick Measurements

Step 3

Maintain Great Wi-Fi with Regular **HEALTH CHECKS**

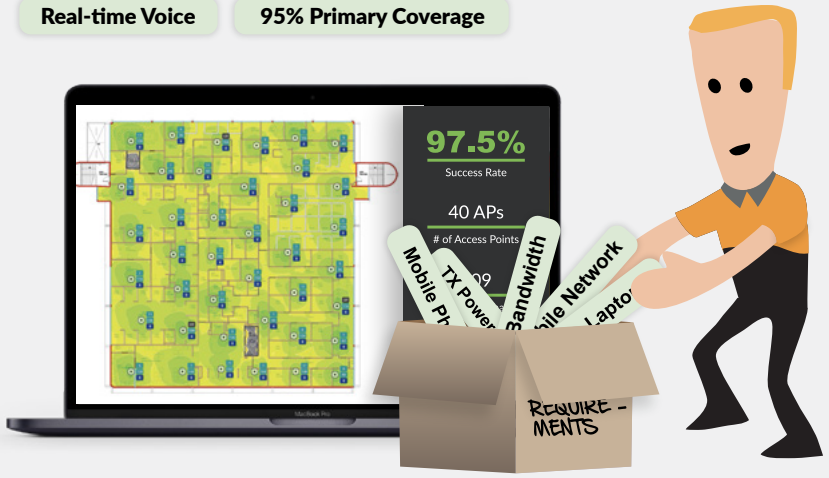
Step 1

A Great Network Starts with a **Great Design**

A Wi-Fi design serves as a blueprint for your wireless network. Ultimately, Wi-Fi design is the process of taking your business's requirements for Wi-Fi connectivity and turning them into a plan for a high-performing and reliable network. It's the translation of your business needs — how many devices need Wi-Fi (capacity) and where they need it (coverage) — into a deployment plan detailing how many access points (APs) you'll need, where they need to be installed, and how they should be configured in order to satisfy the demands of your users.

INPUT | Connectivity requirements

Concrete & Steel Exterior | Glass Conference Rooms | Streaming 4K Video | Email | 4,000 Employees | Real-time Voice | 95% Primary Coverage



OUTPUT | Perfectly designed Wi-Fi

The RIGHT number of APs
Get awesome Wi-Fi performance and reliability without overspending on unnecessary infrastructure.

In the RIGHT locations
Using thousands of automated iterations, Ekahau Pro helps you identify the exact right locations to mount your wireless access points.

With the RIGHT configurations
Skip the guesswork with automatic channel plans and AP settings perfectly tuned to your requirements and layout.

Understanding and clearly defining the input side is critical for outputting a great design. As the saying goes, "garbage in, garbage out" so let's take a few minutes and dive into the most impactful Wi-Fi requirements that you'll need to know.

6 Key Business and Environmental Wi-Fi Design Requirements

Business Requirements

Understanding how a network will be used makes it easy to translate business needs into the specific inputs for your design software.

> What are the different types of devices that will need to connect to Wi-Fi? How many of those devices need concurrent access? What is the least capable, most important device for your business?

The answers to these questions will help you translate your business needs into Wi-Fi Design requirements for:

1. Coverage »
2. Capacity »
3. Least Capable, Most Important Device »

Environmental RF Requirements

The physical environment plays a big role in how a network performs. Turn to the site floor plan and walk the site to gather information to help you identify the radio frequency (RF) behavior in your environment.

> How high are ceilings in the coverage area? Is there sufficient access to mount access points? What are the walls made of? How noisy are the neighboring networks?

The answers to these questions will help you translate environmental factors into RF requirements for:

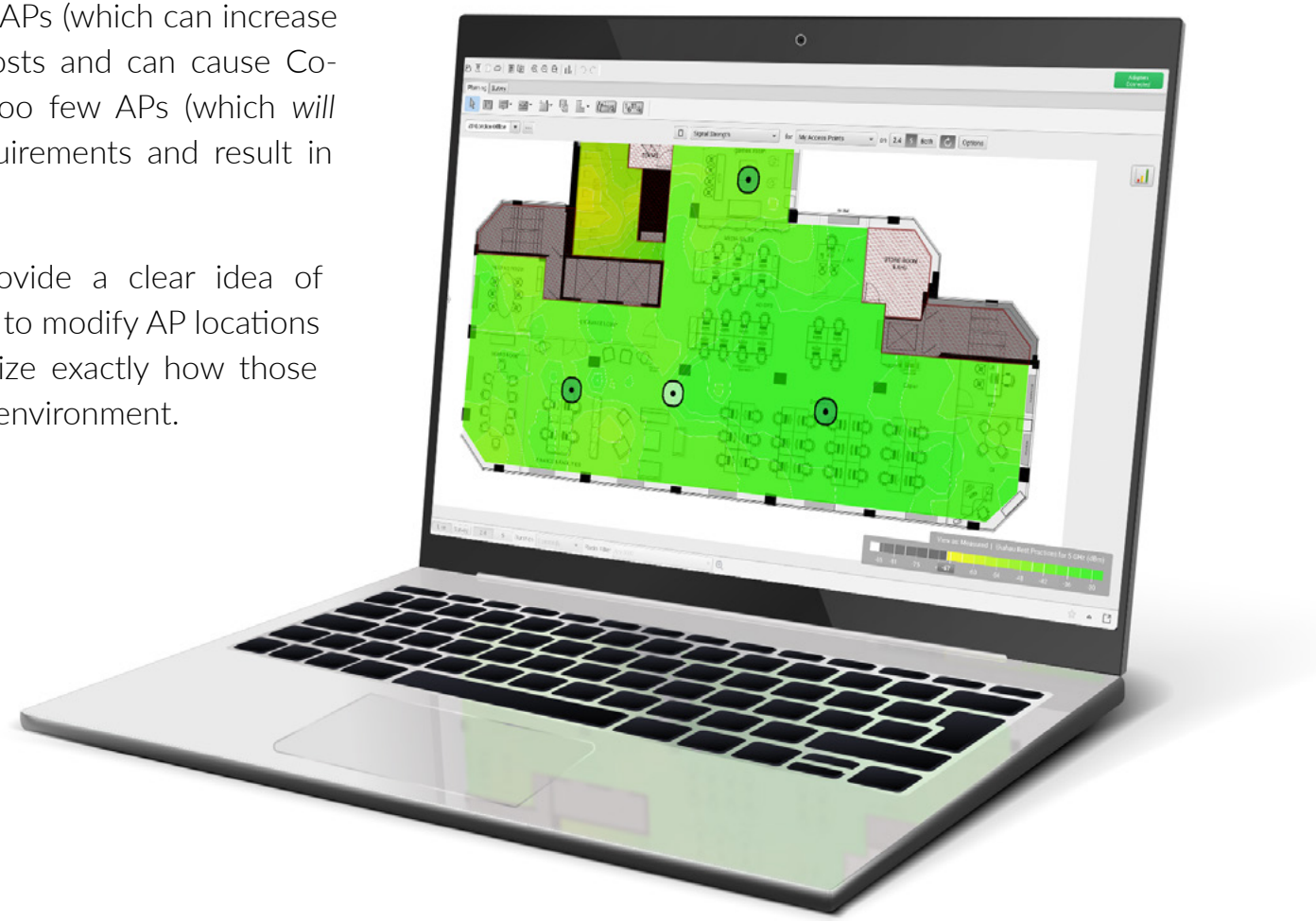
4. Obstacles in the Physical Environment »
5. Wall Material Attenuation »
6. RF Spectrum Activity »

Coverage

One of the most fundamental Wi-Fi design considerations is coverage planning. **Primary coverage is all about area** and optimizing the distance around your wireless transmitters to ensure there is sufficient signal strength for Wi-Fi-enabled devices to connect. Layering in effective secondary coverage ensures you have the right amount of overlap to ease device roaming and provide redundancy for your business-critical Wi-Fi needs.

Poor design can result in either too many APs (which can increase your overall hardware and installation costs and can cause Co-Channel Contention / Interference) or too few APs (which *will not* provide the necessary coverage requirements and result in coverage gaps).

Wi-Fi design tools like Ekahau Pro provide a clear idea of coverage and signal strength allowing you to modify AP locations and configurations on the fly and visualize exactly how those modifications can impact coverage in the environment.



Capacity

Capacity planning goes a step beyond coverage and takes into account the different types and number of devices and applications that will connect to the network. Wireless network capacity is a measurement of the amount of traffic supported concurrently on a wireless network based on the bandwidth being consumed.

Poorly planned capacity requirements can be devastating for users. Slow speeds and intermittent connectivity drops can be the result of not identifying proper requirements for usage. It can also be a symptom of growing pains as more users are added and new devices become introduced over time without adjusting for the increased capacity demand.

Capacity needs can also vary for different areas of a site, depending on your use case. Let's take hotels, for example. The guest rooms, lobby, outdoor pool, and conference center may each have unique capacity requirements — and Wi-Fi design software like Ekahau Pro makes it easy to design different capacity areas for the unique needs of each area.

> *We did the Mobile World Congress Wi-Fi network that served 22,000 simultaneous users. Ekahau Pro was my Wi-Fi planning tool of choice there, as it always is. It's the quickest to use and provides superior 3D planning accuracy.*

Jim Florwick
Enterprise TME, Cisco

Identifying the **Least Capable, Most Important Device**

While reviewing the various types of devices that will be connecting to your network, it's key to identify which devices are the most critical, and which of those devices is the least technologically advanced — these are known as the Least Capable, Most Important devices (LCMID).

Believe it or not, designing Wi-Fi for the latest devices to hit the market is usually quite straightforward, it's identifying the one device that if it were to suddenly go offline would grind business to a halt — that's the tricky part.

Here are some of the usual suspects for your network's LCMID:

- A 10-year-old warehouse scanner used 12 hours per day to scan barcodes for inventory management
- The point-of-sale registers used to facilitate retail transactions
- Your CEO's laptop (simply refuses to get a new one)

For these types of devices, you need to research the manufacturer's posted specifications to ensure they will perform reliably on the network. Your predictive design is only as good as the inputs you define, and determining your LCMID is critical for the design of your Wi-Fi network.

Obstacles in the **Physical Environment**

High ceilings, exposed metal ductwork, inventory fluctuations, living atriums and modern art installations may not be documented in a simple building floor plan, but obstacles like these should be taken into account with your Wi-Fi requirements.

Floor plans only tell part of a story. Whenever possible, you should walk the site and gather information to help you identify the RF behavior in your environment.

Doing a pre-design floor walk survey will help you get the correct information to plug into your predictive design software. Make sure you document any potential concerns for RF: exposed ceilings with ductwork, columns, signage, large pieces of furniture, areas off limits, etc. These walk-throughs may also illuminate previously unconsidered limitations to wireless infrastructure placement — where you are unable to place APs, or where you are unable to run cables.

Wall Material Attenuation

The size, shape, and types of wall materials in your network's environment all need to be accounted for when designing for WiFi. That's because the environment's physical characteristics impact RF coverage.

Every wall attenuates Wi-Fi signals. That means the RF strength gets partially or fully absorbed by the material. Drywall typically reduces the signal strength by 3dB. Large concrete pillars can stop a Wi-Fi signal in its tracks! Understanding the different materials in your environment and their attenuation values is key for designing a great wireless network.

Common Wall Materials and their ***Average Attenuations****

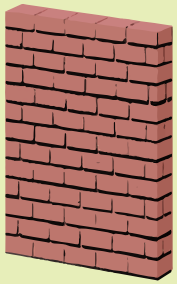
Drywall
3dB

Bookshelf
2dB

Exterior Glass
3dB

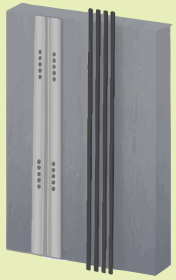
Solid Wood Door
6dB

Marble
6dB



Brick
10dB

Concrete
10dB



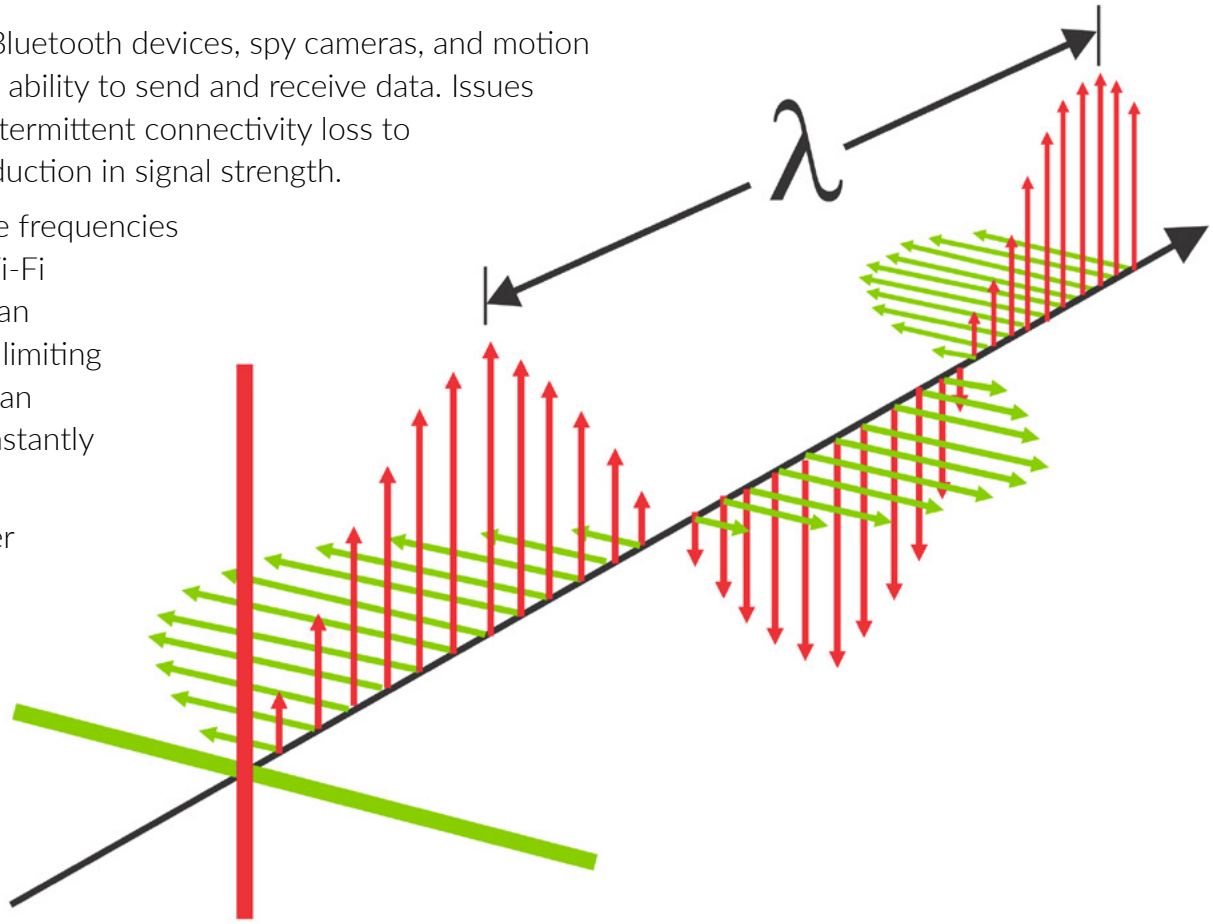
Elevator Shaft
30dB

***For accurate measurements, use an Ekahau Sidekick!**

RF Spectrum Activity

Your Wi-Fi network lives in a world of electromagnetic spectrum. Understanding the spectrum activity around you leads you toward an effective channel plan for your project. Here are some things to consider:

- **Channel Contention:** Access points, whether on your neighbor's network or your own, need to be spaced properly with proper channel plans or risk suffering channel contention.
- **Non-Wi-Fi Interference:** Things like microwaves, Bluetooth devices, spy cameras, and motion sensors can all interfere with your Wi-Fi network's ability to send and receive data. Issues caused by Wi-Fi interference can range from an intermittent connectivity loss to reduced data transfer and network speeds to a reduction in signal strength.
- **DFS Checks and Radar Activity:** Depending on the frequencies being used, radar equipment may interfere with Wi-Fi network data transmission and vice-versa. Radar can impact the performance of your Wi-Fi network by limiting the amount of 5 GHz channels you can use, or it can cause a decline in performance if your APs are constantly changing channels to avoid DFS events.
- **Channel Widths:** The wider the channel, the higher the potential throughput. Depending on the current RF environment and density of Wi-Fi radios, you'll be able to determine the preferred channel width for your project. Always use the widest channel width you can without causing excessive channel contention issues.



Translating Requirements into Designs

A great Wi-Fi network starts with a great design, and a great design starts with accurate Wi-Fi requirements. By asking the right questions and identifying the six requirements presented in this guide, you'll be able to develop a predictive design perfectly tuned to your business needs. Here is a quick breakdown of how the business requirements translate to design software inputs:

Coverage	APs placed and coverage visualized on a scaled floor plan with accurate walls
Capacity	Usage and device profiles identified listing applications and client models in use
Least Capable, Most Important Device	Device profile created for the LCMID
Obstacles in the Physical Environment	Ceiling heights set & deployment notes cited to account for obstacles
Wall Material Attenuation	Appropriate wall types used throughout the floor plan including custom created wall types
RF Spectrum Activity	A channel plan that reduces co-channel interference and optimizes client performance

Ekahau Pro

Having the right tools for proper design is fundamental for deploying and maintaining today's business-critical wireless networks. Network owners responsible for Wi-Fi reliability and performance at businesses of every size—including the world's biggest brands and events—use Ekahau Pro as the Wi-Fi design software of choice to complete the first step to great Wi-Fi.

Step 2

Validate Your Design with Super Accurate Sidekick Measurements

At its simplest, validation is the second set of eyes hyper-focused on making sure the network you designed works how it's supposed to in the real world. It's the scientific method come to life for your wireless network — a time to test your design hypothesis against real-world data using the tools and techniques available to make data-driven Wi-Fi choices.

As the "measure twice, cut once" step to great Wi-Fi, validation is cheap insurance and smart risk mitigation against costly and time-consuming redesign processes that would follow a failed deployment. Remember, a predictive design isn't final and ready for deployment until you have validated your design.

When it Comes to Wi-Fi, Accuracy Matters

Your design relies on the accuracy of your floor plan, your inputs and your measurements to perform like you intended. Without taking empirical measurements, you're not able to account for small variants that can stack up into something more serious. In this section, we'll cover how to validate your predictive design and how to validate after the deployment.

Wi-Fi Design Validation Best Practices

Validating Your Design with Real-World Measurements

Conducting a survey of where the wireless network will be installed can generate visual heatmaps to easily reveal any potential fine-tuning needed for your design before running the final cabling and installing the APs. It also gives you the opportunity to account for potential interferences or additional requirements you might not have known without stepping foot on site.

Luckily, with the right tools, it's easy to validate your predictive design in the live environment. Let's walk through a few key validation data points you can only get on-site:

1. Verified Floor Plan Accuracy »
2. Wall Types and Expected Signal Attenuation »
3. Access to Predictive Design AP Locations »
4. Noisy Neighbors and non-Wi-Fi Interference »

Verified Floor Plan Accuracy

Your predictive design places a lot of trust in the accuracy of the floor plan CAD or other image files. Going onsite lets you validate that distances are accurate and walls are where you expect them to be.

It wouldn't be a true "measure twice, cut once" without bringing out the tape. Verify that the map you've based your predictive design on is as accurate as possible by double-checking the scale. For the most accurate results, validate the scale over the longest possible distance. Being an inch or two off on a 50-foot (15 meter) length of wall is a much more reliable measurement than being an inch or two off on a 3-foot (1 meter) door jam.

In addition to scale, make sure you take pictures and document anything that doesn't meet your expectations. Ekahau Survey makes it easy by allowing you to add images and notes right into the .esx project file while on the go.

For me it's been amazing to be able to cut down the time to plan the RF environment for a 25-floor reconstruction project from 2 days to a half a day per floor...It's certainly helped me move fast and be quick.

Doug Wylie
Network Architect, Enterprise Products

Wall Types and Expected Signal Attenuation

Every wall attenuates Wi-Fi signals. That means the RF strength gets partially or fully absorbed by the material. By validating wall types, you'll either confirm your predictive design is correctly modeling Wi-Fi behavior or you'll have a chance to adjust based on the empirical data you've collected.

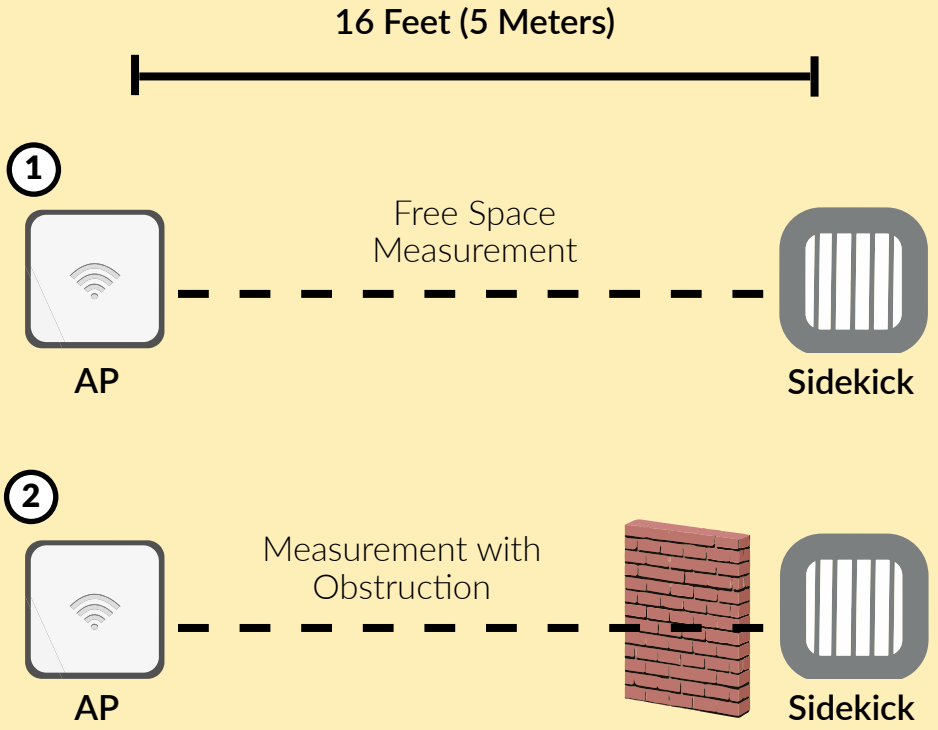
Don't judge a wall by its outermost cover! It's not uncommon for masonry walls to be covered in drywall or for lead sheeting to exist in the wall cavities of old x-ray imaging rooms. New construction will generally be well documented, but retrofits can be full of mysteries from building codes long forgotten.

Video

Check out our video, "Measuring Wall Attenuation with Ekahau Sidekick" for a full step-by-step walkthrough.

Measuring Wall Attenuation with the Sidekick

The accuracy of the Ekahau Sidekick is your best friend for verifying wall types. To measure wall attenuation, take a signal strength reading with the Sidekick in front of the wall at least 16 feet (5 meters) away from an access point, and then again directly on the other side of the wall. The difference represents the wall attenuation in dBm. Be sure to position the Sidekick in the same direction in both readings to avoid introducing your body's attenuation into the reading.



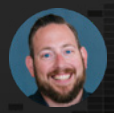
Access to Predictive Design AP Locations

Site walkthroughs are your chance to verify the AP locations you've identified in your predictive design are appropriate in the live environment. Obstacles like exposed HVAC ducting too close to your planned AP location may require you to modify the design.

Mounting an AP in a spaghetti bowl of HVAC ducting will instantly reduce the signal's ability to be sent and received. A simple solution is to drop the height of the AP just below the metal ducting with a drop mount. That way the signal below and beside the AP won't be impacted and the industrial-chic architecture can still be enjoyed. Just make sure to reflect the change in height in your design!

Additionally, your AP locations need to account for cable runs. That's right! The magic of wireless; brought to you by wires — every AP needs to be connected via ethernet, and if you cannot get a cable to your predictive design's AP Location, it's time to modify your design accordingly. Within Ekahau Pro, you can draw the cabling to ensure you don't exceed the industry-standard 100-meter threshold.

> *It's not just a design tool. It is a tool to help you visualize and provide better Wi-Fi. The Sidekick in itself has been the game changer. I don't think wireless surveys can be done without it anymore.*



Robert Boardman
Senior Systems Engineer, Mist Systems

VALIDATING YOUR NETWORK DESIGN

Noisy Neighbors and non-Wi-Fi Interference

Predictive designs can't foresee the nearby RF noise produced by neighboring networks. Your onsite evaluation is the perfect chance to observe the spectrum and capture the channel of measured energy, allowing you to optimize your network channels for peak performance while avoiding nearby interference.

Until you get onsite, you won't be able to account for what your neighbors are doing in the electromagnetic spectrum. All too often, tenants will compete for airspace with other tenants' Wi-Fi in a large office space. And if everyone is using the same part of the spectrum, your network is going to suffer. If you see interference in the spectrum analyzer, you will need to try to determine the cause, and help mitigate its impact within your channel plan.

> *The power of the Sidekick as a spectrum analyzer has been huge. I've been testing and analyzing Wi-Fi 6 access points for quite a while now, and being able to use the Sidekick to reliably look for OFDMA in all sorts of platforms has been invaluable.*

John Kilpatrick
Senior Network Architect, Nvidia

The Sidekick is Accuracy Defined

Wi-Fi professionals have a critical job to do and the last thing they need is their network performance (and their reputations) to take a hit due to inaccurate measurement data. The Ekahau Sidekick is the premier Wi-Fi measurement device, providing highly accurate data for Wi-Fi surveys and spectrum analysis. The advanced precision of the Sidekick mitigates risk by producing a narrow variation in measurements versus the wide variation of a legacy Wi-Fi adapter.

The truth is, USB-based Wi-Fi adapters (dongles) provide inconsistent and inaccurate measurements. This leaves you with an incomplete and often false picture of network performance. Inaccurate readings can result in additional hours, or even days, of re-work that may result in a larger hardware investment that not only doesn't improve performance but may diminish it even further.

Wi-Fi pros can trust the Sidekick's signal strength reading in all conditions, regardless of the direction the surveyor walks, or where the APs are physically located. And not only is the Sidekick accurate, it also is unmatched in speed: what used to take days now takes only hours. And, with the Sidekick you get it right the first time.

- Collect 2x as many data points in a single pass
- 7 Omnidirectional antennas enabling precise readings, regardless of AP direction
- High Resolution Spectrum Analyzer to diagnose your network faster
- Cut onsite time by 50% with all day battery life (Adapters drain your battery)
- No bulky equipment to carry (You don't need a laptop to survey or troubleshoot)
- Get it right the first time with accurate and precise measurements
- Complete more projects in up to half the time

> *We don't have to rely on flaky USB dongles. The Sidekick streamlined things so that we can create consistent output... There's really nothing like it.*

Jennifer Huber
Mobility Solutions Architect, WWT

Step 3

Maintain Great Wi-Fi with Easy Performance **Health Checks**

The final step to great Wi-Fi is performing periodic health checks to ensure your network stays high-performing. Wi-Fi isn't a "set-it-and-forget-it" technology. Changes in the RF environment and changes in user demand for Wi-Fi can have a serious impact on how your Wi-Fi performs.

By surveying your network on a regular basis, you're able to account for all the little changes that get made day-to-day. Because changes like adding new employees in times of growth, adopting more bandwidth-hungry applications, or even just rearranging the office layout can all negatively affect the Wi-Fi design you've worked so hard to perfect.

The Sidekick and Survey Mobile App make periodic health checks easy. Anyone can be taught to walk the floor while the Sidekick collects all the necessary data. In this final chapter, we'll cover the seemingly small changes that can have a big impact on your network over time and teach you how to troubleshoot proactively to spot interference issues before they become major outages.

Identifying Changes to Requirements Over Time

Maintaining Your Design with Regular Health Checks

Businesses typically put a lot of time and effort into researching and documenting Wi-Fi requirements for a new deployment but fail to continuously adapt to changes over time. By keeping an open eye on the factors that can impact your network over time, you'll be better equipped to maintain great Wi-Fi for years to come. Let's take a closer look at 4 key changes to requirements over time:

1. Introduction of New Client Devices »
2. Evolution of Application Usage »
3. Physical Changes to the Coverage Area »
4. Infiltration of RF Interference »

Introduction of New Client Devices

Whether you're enjoying consistent company growth or you experience seasonality of increased usage for short periods of time, the number of users and types of devices connecting to your Wi-Fi has a major impact on performance.

Wi-Fi requirements designed for the new employee laptops deployed 4 years ago aren't optimized for the chipsets of today. By periodically updating your device profiles, you'll be able to make the small changes that keep your design optimized for your users' latest and greatest devices.

And if you work in education or healthcare, you know how much bandwidth requirements have ballooned with the introduction of Chromebooks in classrooms or wireless workstations on wheels (WOWs) in hospitals. As new clients get added to networks, you'll need to make sure your network can handle the additional application bandwidth required.

> *Maintaining with periodic health checks is really important to be able to go back and make sure the fan experience stays where it's supposed to be … Large Public Venues are living, breathing networks. They literally change as they grow older and you have to test and make adjustments to grow with the fan base.*

Dennis Holmes
Senior Technology Advisor, Director Mobility and IoT Solutions

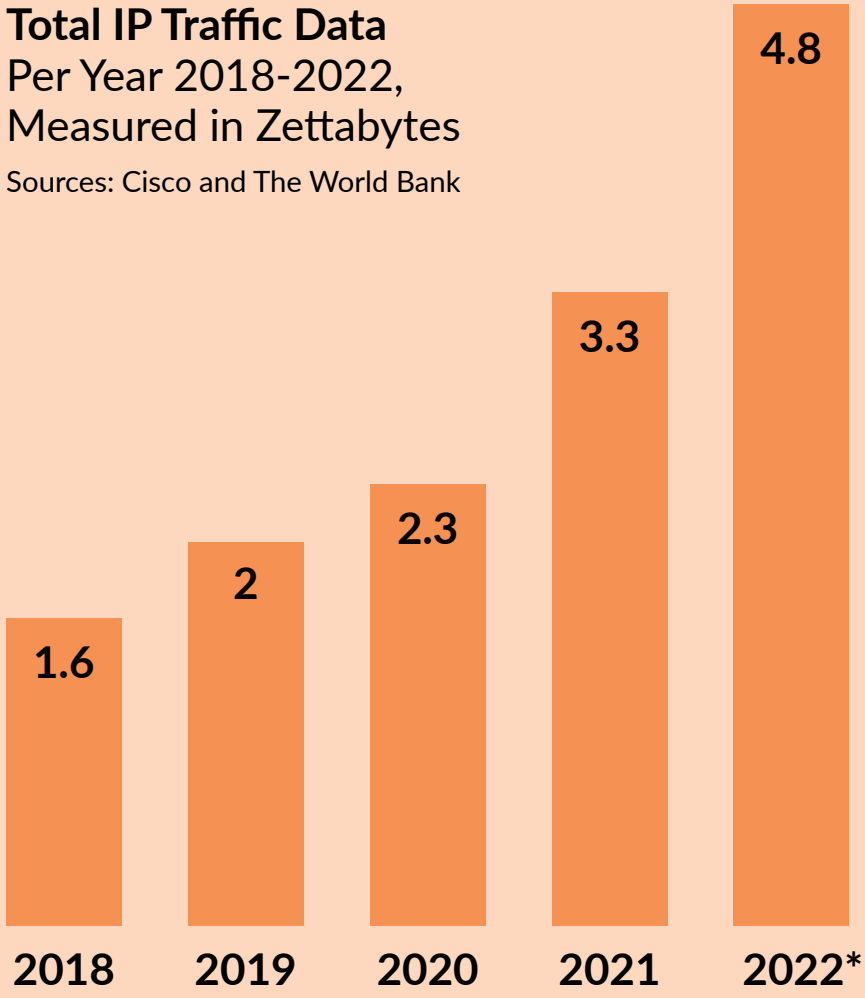
Evolution in Application Usage

When phone manufacturers moved toward cloud storage years ago, demands in capacity skyrocketed overnight. Every picture backed up to the cloud—on you guessed it—the local Wi-Fi network. As applications continue to evolve, your requirements may change and you may need to modify your wireless network design accordingly.

When was the last time an application update took less space on your computer or required less data to be transmitted? As applications continue to transfer more data, and as we move to wireless-first (and often wireless-only), the evolution in application usage is something to monitor with periodic health checks.

Total IP Traffic Data
Per Year 2018-2022,
Measured in Zettabytes

Sources: Cisco and The World Bank



Wi-Fi will impact almost $5 trillion of global GDP by 2025. And that's driven by a whole range of applications. If one thing is clear, it's that demand is insatiable for data transportation and that we are irrevocably in a wireless world.

Chuck Lukaszewski
VP & Chief Wireless Technologist, Aruba

Physical Changes in the Coverage Area

Did your company scrap individual offices for a more open floor plan? The way your APs perform in the office space is going to change: RF will travel further and won't be attenuated by the interior walls, which could increase co-channel contention and adjacent channel interference.

Did your storage space get turned into a brand new manufacturing operation? You're going to have major changes in capacity and coverage requirements.

Changes in the physical environment need to be continuously monitored during Wi-Fi health checks so that you can reoptimize your design and account for change over time.

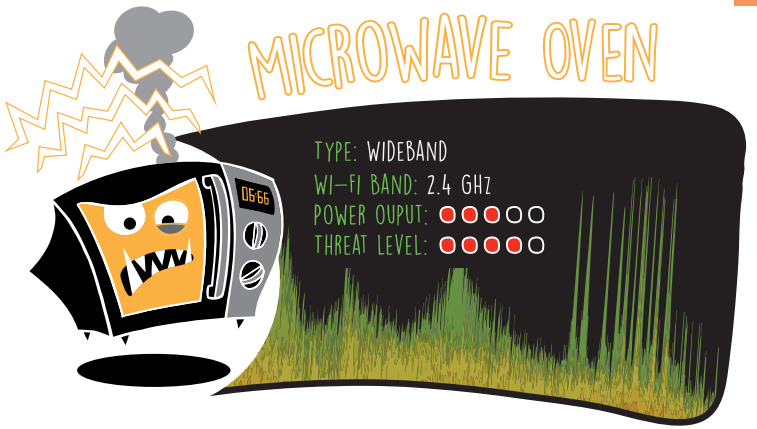
Identifying Common RF Interference

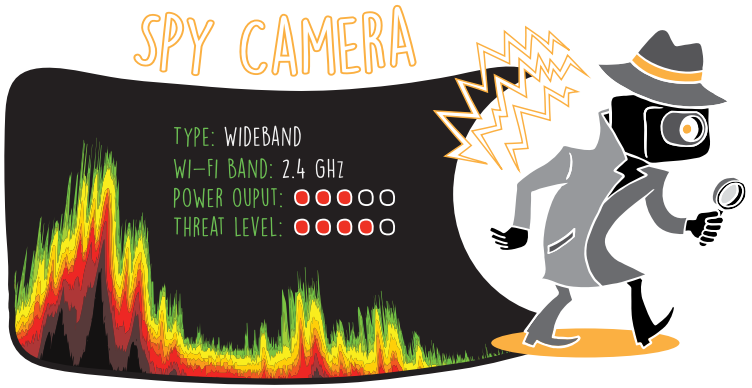
Wi-Fi communications are continuously at risk of RF interference. Remember those noisy neighbors from earlier? If they crank their AP power levels up to max, you're going to have additional RF interference. Don't worry, connected to the high-resolution spectrum analyzer built into the Sidekick, the Ekahau Analyzer app transforms your phone or tablet into specialized Wi-Fi-vision goggles that let you see the invisible spectrum that Wi-Fi operates on.

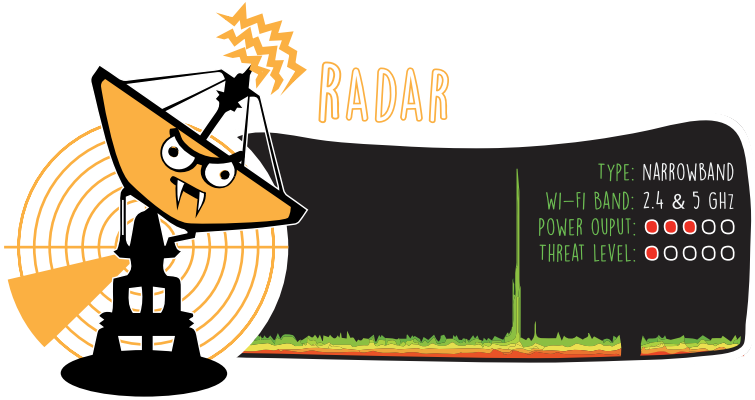
Here are 2 common types of interference you're likely to run into:

Wi-Fi Interference: When APs operate on the same or adjacent frequencies, you can get what is called Co-Channel Interference / Contention, Adjacent Channel Interference, or Primary/Secondary overlapping basic service set (OBSS). All three reduce or disable your ability to send and receive data wirelessly.

External non-Wi-Fi Interference: These are the interference effects from unrelated radio networks operating on the unlicensed band, such as microwave ovens, baby monitors, Bluetooth, etc.







Common External non-Wi-Fi Interferers

Here is a helpful **quick reference guide on Wi-Fi interference detection** that you can use to compare your spectrum analyzer readings against to track down your problem spots.

Don't Let Good Networks Go Bad

Even great networks can begin to degrade over time. And not only are good networks prone to going bad, but the rate of performance decline is speeding up. Devices are being replaced for new models faster than ever before and businesses continue to deploy new digital transformation initiatives critically dependent on the reliability of the Wi-Fi network.

Network health is just like your physical health—finding a small problem early can prevent a bigger problem down the line. Without regular health checks, you risk developing a Wi-Fi capacity issue that could continue to go unnoticed until the help desk tickets start rolling in revealing an inventory scanning and tracking system failure that's going to cost you weeks in lost revenue.

A customer of ours purchased a Sidekick and Connect subscription and, with a little bit of instruction from myself, we were able to perform data collection remotely. The customer walked the floor successfully, was able to provide spectrum analysis data and was able to sync that information back to me to analyze and make recommendations.

Jason Beshara
Mobility Solutions Architect, Velaspan

Now Go Unleash Great Wi-Fi on Your Business!

By establishing accurate Wi-Fi requirements, utilizing the right tools to create great designs, and recognizing day-to-day changes that can impact how wireless networks operate, you're well on your way to always-awesome Wi-Fi. So what's next?

Some of the topics presented in this guide are a high-level look at deeper concepts. A truly invaluable next step for anyone interested in learning more about Wi-Fi is getting ECSE (Ekahau Certified Survey Engineer) certified. We offer 4-day deep dive courses covering Wi-Fi fundamentals and design best practices.

And if training and certification isn't in the cards for this year, we host incredible webinars every other week featuring Wi-Fi professionals from around the world sharing their knowledge and best practices. Register for an upcoming webinar or view a complete archive of webinars on demand on our website.

The RF spectrum may be invisible, but after 27 pages of Wi-Fi whispering instruction, you may just be able to feel a little activity the next time you lick your finger and test how hard the Wi-Fi is blowing.

ECSE

Our world-renowned ECSE Training and Certification programs help you design, deploy and troubleshoot better Wi-Fi.

Get Started »

Webinars

Register for upcoming webinars and catch up on recordings for anything you've missed.

Watch Now »

About Ekahau: Ridding the World of Bad Wi-Fi — One Business Network at a Time

Ekahau helps businesses build and maintain high-performing Wi-Fi networks. Businesses of every size—including the world's biggest brands and events—use our software and hardware products to design, validate, optimize and troubleshoot their Wi-Fi.

We're the industry standard for Wi-Fi design because we follow through with easy-to-use tools that you'll love using throughout the lifecycle of your wireless network. From design and validation to ongoing health checks and troubleshooting, we've got you covered.

Request a Demo

Industry-defining Innovation
From the world's most accurate measurement device to AI-assisted design algorithms, we continuously push what's possible in Wi-Fi design.

World-class Training and Certification
Our global ECSE instructors have taught thousands of Wi-Fi professionals everything from the basics of Wi-Fi design to troubleshooting the most cryptic issues.

Thriving Partner Ecosystem
We partner with the biggest distributors, the most knowledgeable resellers, and every major AP manufacturer to give our customers the best results.

Network Requirements Worksheet

Identifying the business requirements for how a network will be used makes it easier to translate business needs into the specific inputs for your design software. All too often, networks fail to meet requirements due to an incomplete discovery process. Here is a quick guide on some key questions you will want to ask:

Category	Question	Answer
Business Requirements To be defined by the customers key stakeholders.	Site Contact	
	Site Address	
	Business Objectives for the Wi-Fi Network Define the desired outcome for the Wi-Fi	
	Wi-Fi Issues Have you experienced any Wi-Fi-related issues? What have been the main reported problems from users?	
	Floors in Scope List all the floors in scope	
	Floor Plans Provided Preferably PDF or CAD	

Network Requirements Worksheet (Cont.)

Category	Question	Answer
Business Requirements To be defined by the customers key stakeholders	How Many Users Per Floor Please specify max expected headcount per floor / site	
	Areas in Scope Specify areas like open office space, meeting rooms, corridors, outdoor spaces, etc. where coverage is needed	
	Areas Out of Scope Specify areas like staircases, toilets, storage, etc. where coverage is not needed	
	AP Mounting Restrictions or Aesthetic Concerns Specify preferred mounting areas like false ceilings, cable trays, etc.; Also specify mounting restrictions if any	
	Ceiling Height(s) Are there varying heights?	

Network Requirements Worksheet (Cont.)

Category	Question	Answer
Technical Requirements To be defined with customer & Wi-Fi Engineer	AP Vendor & Model Type	
	Antenna Vendor & Model Type	
	Device Types in Use Laptops, tablets, smartphones, scanners, etc. Planning on connecting devices older than 10 years?	
	Devices Per User How many? Typically, 2-3 in enterprise	
	Applications Voice / Video / Basic Data / Heavy Data	
	Special High Density Areas Specify areas like huge meeting rooms, town halls, etc.	
	AP Redundancy If an AP goes down, do you still expect full coverage?	

RF Requirements Worksheet

To be defined by the Wi-Fi engineer based on the above requirements. These requirements should be defined per specific area type, for example office vs warehouse.

Area Type:		Minimum Target Value	
Specification		**2.4 GHz**	**5 GHz**
Primary Coverage			
Secondary Coverage (Roaming & Redundancy)			
Signal to Noise Ratio (SNR)			
Co Channel Interference (CCI)			
Minimum Basic Data Rate (MBR)			
Device Types Wi-Fi Standard & number of supported spatial streams			
Device Count How many per floor / area			
SLA Bandwidth per device			

ekahau
WIRELESS DESIGN

EKAHAU CONNECT

Ekahau Sidekick®
Precise, plug-and-play Wi-Fi diagnostic and measurement device for professional results.

Ekahau Pro™
The industry-standard tool for designing, analyzing, optimizing, and troubleshooting Wi-Fi networks.

Ekahau Survey™
Professional Wi-Fi site survey app for iPhone & iPad optimized for use with Ekahau Sidekick

Ekahau Analyzer™
Powerful Wi-Fi health validation and troubleshooting app for Android and iOS, optimized for use with Sidekick.

Ekahau Capture™
Easy-to-use packet capture tool for advanced troubleshooting and in-depth analysis.

Ekahau Cloud™
Collaborate across teams and work on the same project to leverage onsite staff and remote Wi-Fi experts.

Ekahau Insights™
Wi-Fi performance analytics with automatic issue identification to improve network quality and minimize downtime.

Americas:
salesamericas@ekahau.com
Tel: 1-866-435-2428

EMEA / APAC:
sales@ekahau.com
Tel: +358-20-743 5910