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What Makes a Good RF Survey? A Practical Guide for Engineers and Project Leads

By RAN Wireless

SUMMARY

The RF survey is the foundation of every great wireless network design — yet it's one of the most misunderstood and inconsistently executed stages in the process. Too often, it's treated as a box to check, not a strategic asset.

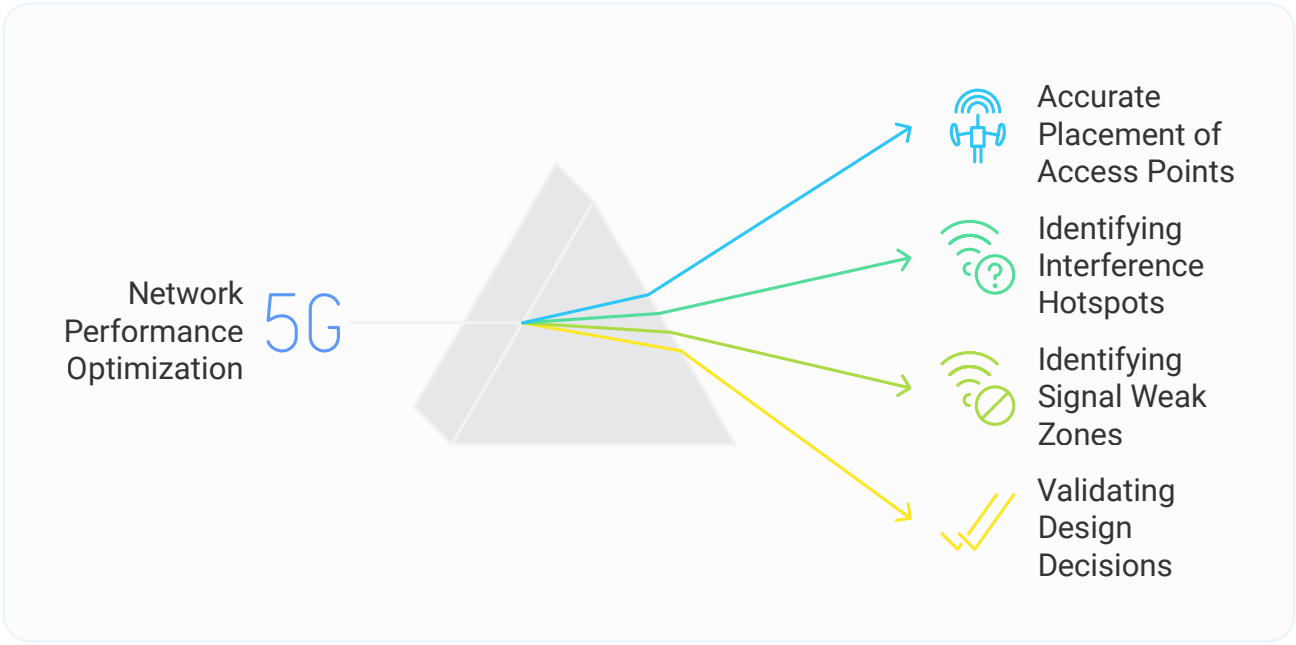
A good RF survey helps eliminate guesswork, reduce interference, and lay the groundwork for a high-performance, scalable wireless infrastructure. In this guide, we break down what makes an RF survey successful — from methodology and tools to interpretation and documentation.

Whether you're designing DAS, Wi-Fi, or private 5G, this guide is a must-read for engineers, project managers, and stakeholders who want more than coverage — they want performance certainty.

Why RF Surveys Matter

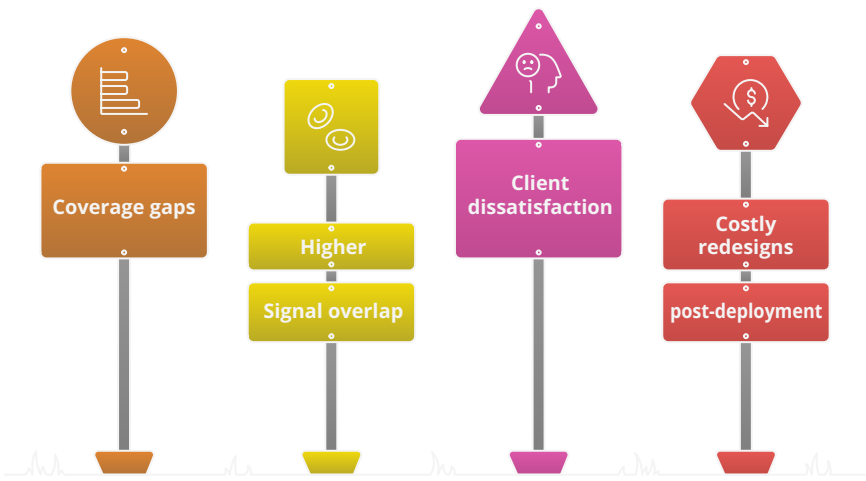
In wireless design, assumptions cost money. An RF survey provides the real-world data you need to:

- Accurately place access points or antennas
- Identify interference hotspots and signal weak zones
- Validate design decisions before hardware is installed



Skipping or rushing a survey often results in:

- Coverage gaps
- High signal overlap
- Client dissatisfaction
- Costly redesigns post-deployment



Types of RF Surveys (and When to Use Them)

A strong survey plan includes the right mix of techniques for your environment and application.

Passive Survey:

Captures signal strength and noise levels from existing infrastructure (e.g., Wi-Fi APs). Used to validate existing deployments or as a baseline.

Active Survey:

Simulates real-world client behavior by actively connecting to the network and capturing throughput, packet loss, and roaming performance.

Spectrum Analysis:

Identifies non-Wi-Fi interference (e.g., microwaves, Bluetooth, power equipment). Crucial for industrial sites.

Predictive (Desktop) Survey:

Uses building blueprints and modeling software to simulate RF propagation. Ideal for pre-deployment planning.

Each method offers a different layer of insight — and often, they work best together.

Tools That Deliver Real Value

The right tools provide detailed, visual feedback to make better decisions.

Recommended Platforms:

- Ekahau Pro or iBwave for Wi-Fi/DAS predictive and validation surveys
- Spectrum Analyzer Tools for identifying interference sources (e.g., Metageek, NetAlly)
- Survey Tablets with GPS for outdoor environments

Great tools don't just show heatmaps — they provide actionable data like channel overlap, SNR levels, and client performance projections.

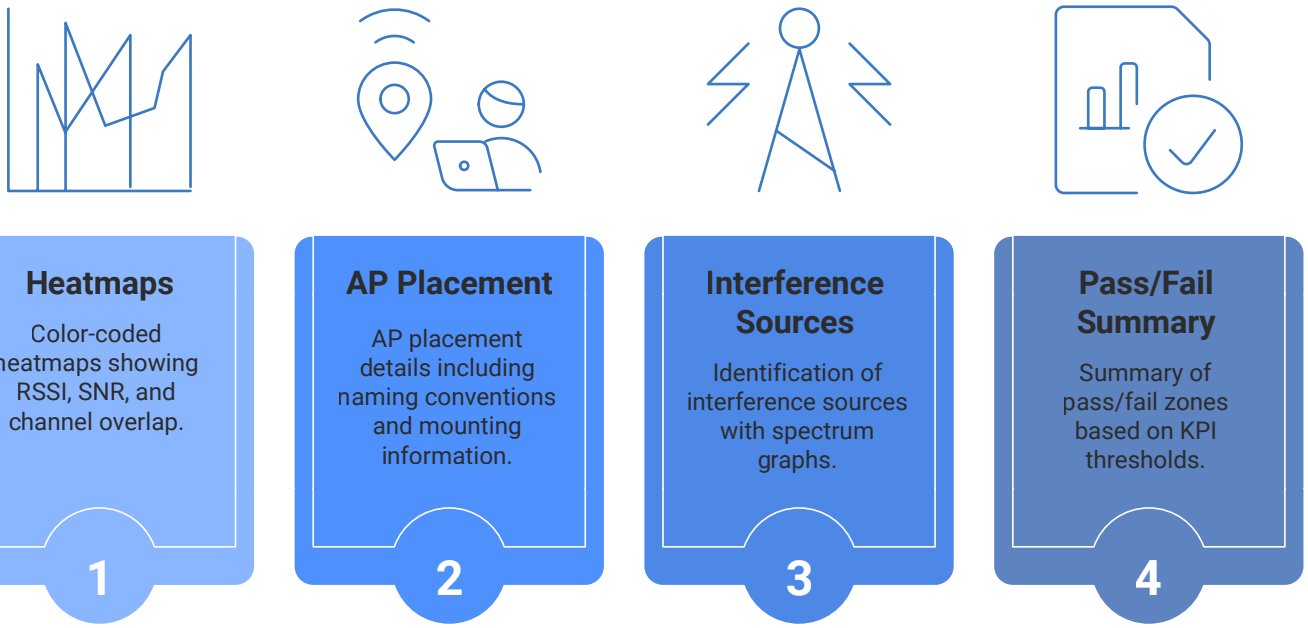
Interpreting and Documenting Results

A survey is only useful if you can extract insights. Here's what great survey documentation should include:

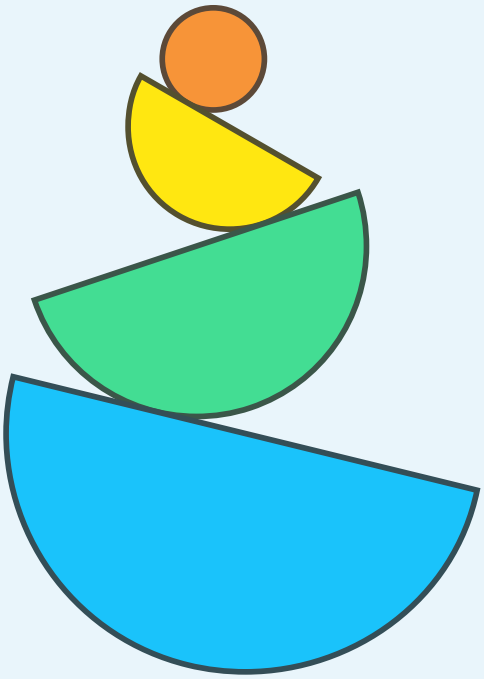
- Color-coded heatmaps of RSSI, SNR, and channel overlap
- AP placement with naming conventions and mounting details
- Interference sources noted with spectrum graphs
- Summary of pass/fail zones based on KPI thresholds (e.g., -67 dBm minimum for voice)

Clear documentation saves time in client approvals, procurement, and post-deployment validation.

Network Survey Deliverables



Common Mistakes to Avoid



Rushed/Skipped Areas

Incomplete data collection impacts accuracy

Outdated Building Plans

Inaccurate blueprints lead to errors

Single Survey Type

Limited data skews survey results

Ignoring Device Behavior

Disconnect between survey, real-world usage

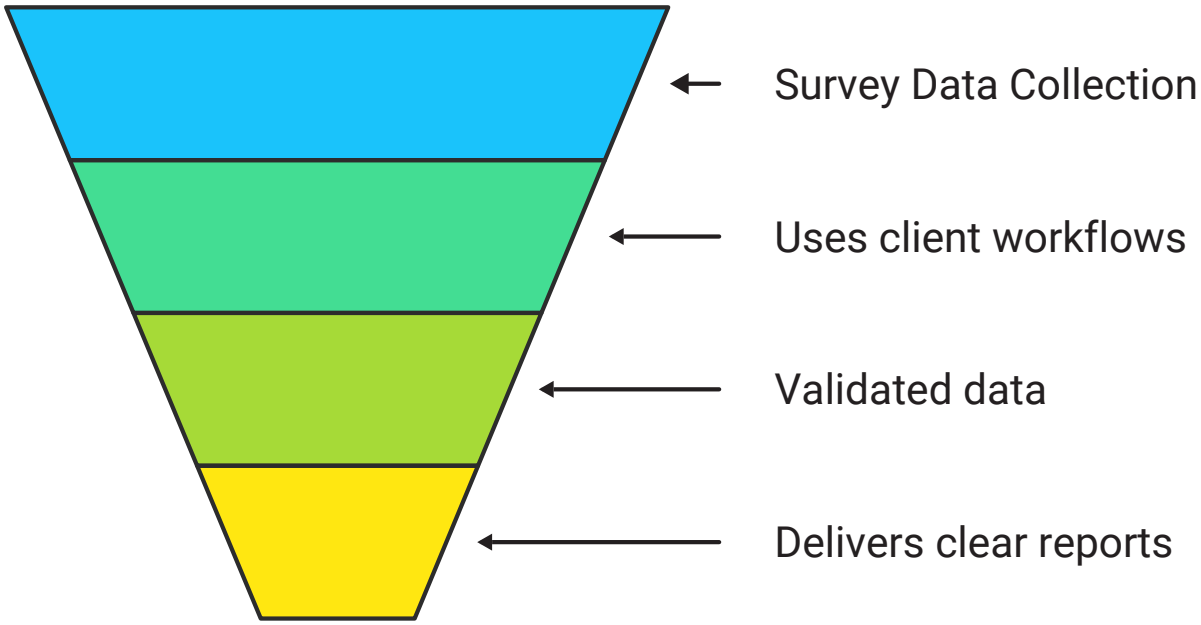
- Rushing the survey or skipping areas like stairwells, mechanical rooms, or outdoor zones
- Using outdated building plans or ignoring recent renovations
- Relying on only one survey type (e.g., predictive only)
- ot correlating survey results with end-user device behavior

Proactive surveying = fewer surprises later.

The RAN Wireless Approach

We treat the RF survey as the most critical input in our design process. Our team:

- Conducts multi-layered surveys using both predictive modeling and physical site assessments
- Uses client workflows to determine where survey focus should be intensified
- Ensures every design output is backed by validated data, not assumptions
- Delivers clear reports for both technical and non-technical stakeholders



Conclusion

In RF design, what you measure matters. A well-executed survey saves time, money, and frustration — and sets your network up for long-term success.

At RAN Wireless, we combine experience, precision, and top-tier tools to ensure our surveys go beyond the basics. Let's build your network with data — not guesswork.

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