

WHAT WI-FI 8 MEANS FOR RF TESTING



From peak speed to reliable, predictable wireless performance

Wi-Fi 8 / IEEE 802.11bn

RF validation must increasingly measure robustness, latency, packet reliability, uplink behavior and performance under interference not only maximum throughput.

ROBUSTNESS

RELIABILITY

RANGE

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Wi-Fi 8: A Shift in the RF Test Objective

The target is consistent performance in difficult real-world RF conditions.

Peak Throughput

Still important, but no longer the only headline metric.

Ultra High Reliability

Stable links, fewer failures and more predictable behavior.

Low & Predictable Latency

Measure delay and variation under load and interference.

Coverage & Uplink

Validate client-to-AP performance at weak signal levels.



6 GHz Changes the Test Matrix

More spectrum creates opportunity and more regional and validation complexity.

Wi-Fi spectrum evolution

2.4 GHz



5 GHz



6 GHz



6 GHz enables wider channels and additional capacity, but usable channels and power rules vary by regulatory domain.

RF TEST IMPACT

- Channel coverage
- TX power limits
- Regional SKUs
- Certification matrix
- Interference / coexistence



The Wi-Fi 8 RF Validation Stack

A complete test plan should combine PHY measurements with system-level performance.

1

TX QUALITY

Power • EVM • Spectrum mask • Frequency error

2

RX PERFORMANCE

Sensitivity • PER • Throughput vs attenuation

3

RELIABILITY

Packet loss • Retries • Rate adaptation

4

SYSTEM BEHAVIOR

Latency • Multi-client • Interference • Coexistence

5

OTA / ANTENNA

MIMO • Radiation • Range • Orientation • 6 GHz efficiency



Key Performance Tests for Wi-Fi 8

Move beyond a single 'maximum Mbps' result.

PER

Packet Error Rate

Reliability at defined signal levels

LATENCY

Delay & jitter

Real-time experience under load

GOODPUT

Useful data rate

Application-level performance

ATTENUATION

Throughput vs path loss

Coverage and edge behavior

MCS

Rate adaptation

How quickly the link reacts to channel changes

UPLINK

STA → AP

Client performance with limited TX power



Test Under Real RF Stress

Wi-Fi 8 reliability must be verified when the environment is not ideal.

Interference

Adjacent / co-channel RF activity

Dense Networks

Multiple APs and many clients

Weak Signal

Edge-of-coverage operation

Dynamic Channel

Changing attenuation and link quality

PASS / FAIL IS NOT ENOUGH

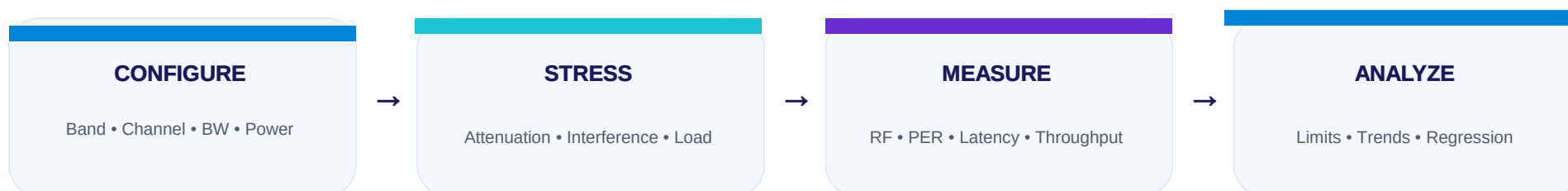
Characterize how performance degrades.

- When does MCS step down?
- When does latency increase?
- When do retries accelerate?
- What happens to uplink?
- Is recovery fast and stable?



What This Means for Test Automation

More conditions × more metrics × more regional configurations = automation becomes essential.



AUTOMATION VALUE

Repeatability • Faster regression • Automated reporting • Multi-band coverage • Reduced operator variation • Scalable DVT/PVT validation



NEKANTRONIC RF Testing Services

Helping engineering teams prepare for Wi-Fi 7, Wi-Fi 8 and 6 GHz validation.

RF TEST PLAN

Define test coverage, limits, metrics and acceptance criteria.

TEST BENCH AUTOMATION

Automate instruments, DUT control, attenuation and reporting.

WI-FI PERFORMANCE

Throughput, PER, latency, MLO/MIMO and range-oriented validation.

6 GHz ANTENNA

Antenna efficiency, matching, OTA behavior and integration support.

EQUIPMENT SELECTION

Guidance for RF instruments, chambers, attenuators and accessories.

ENGINEERING SUPPORT

Debug, optimization, DVT/PVT support and technical consulting.

From requirements to reliable wireless products.



Key Takeaway

Wi-Fi 8 changes the question RF engineers need to answer.

Not only: “How fast can the device go?”

But: “How reliably does it perform when RF conditions become difficult?”

ROBUST

RELIABLE

PREDICTABLE

NEKANTRONIC can support the RF test strategy, automation and validation needed to prove that performance.



READY FOR THE NEXT GENERATION OF WI-FI?

RF Testing • Wi-Fi Performance • 6 GHz • Test Automation • Antenna Validation

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