

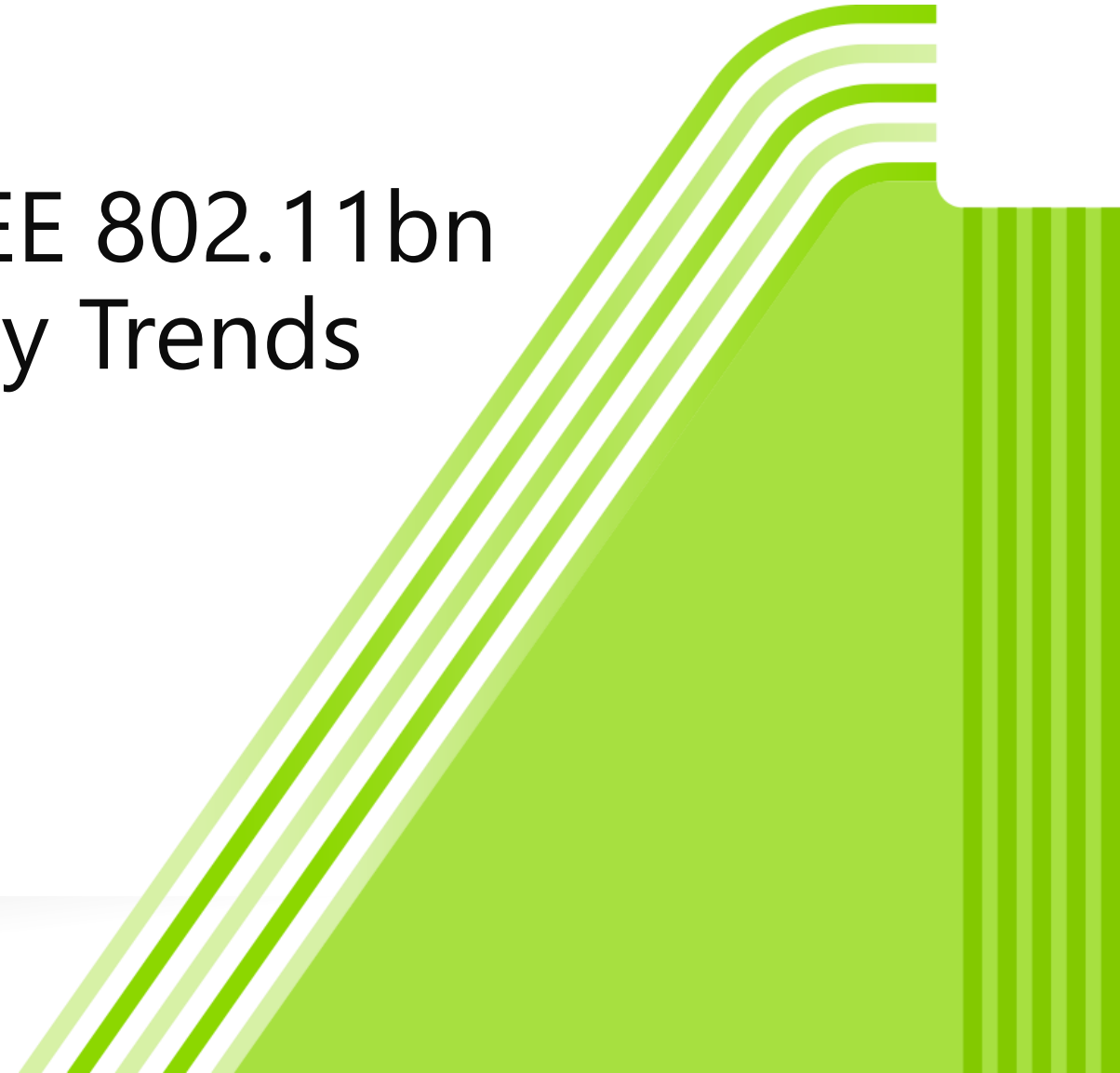
Anritsu Corporation Webinar

Wireless LAN Standard IEEE 802.11bn (Wi-Fi 8) Latest Technology Trends

Raghul Premkumar

Business Development Manager
Anritsu

09/21/2026



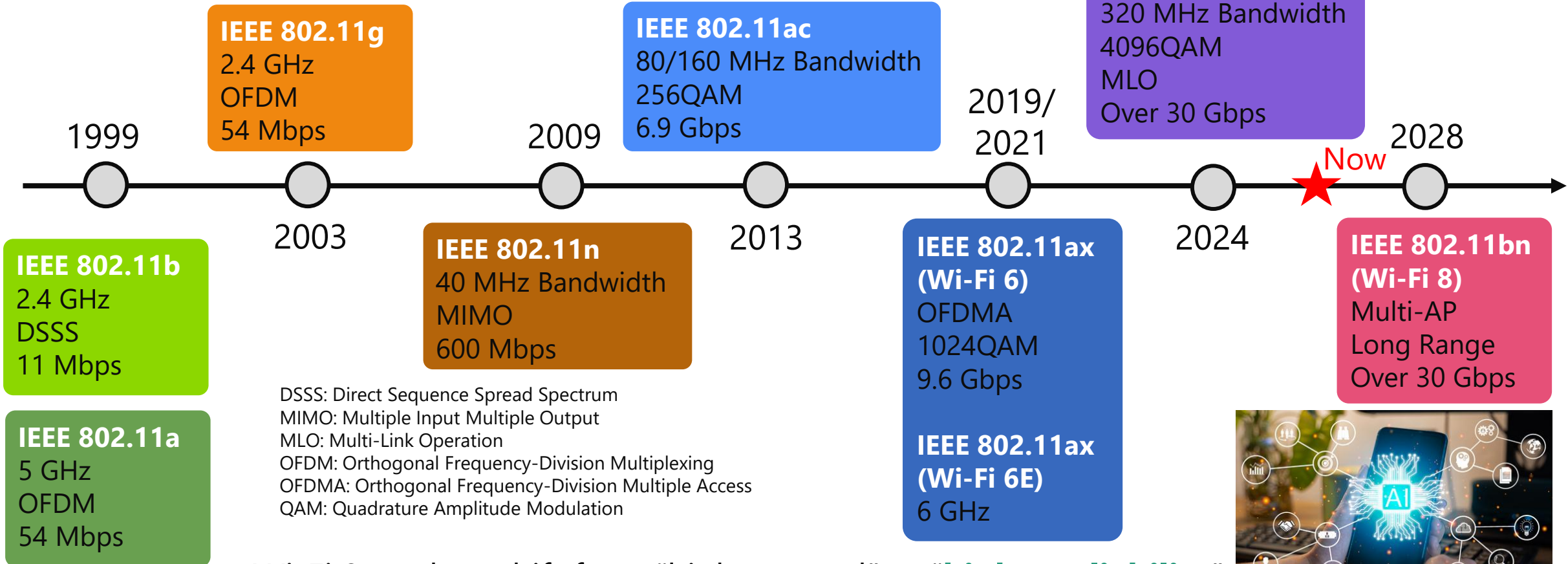
Agenda

1. Trends and Timeline of Wi-Fi 8 Standards
2. New Technologies Expected to be Adopted in Wi-Fi 8
3. RF Performance Evaluation Challenges for Wi-Fi 8 Products
4. Related Product Overview
5. Summary

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Evolution of Wireless LAN

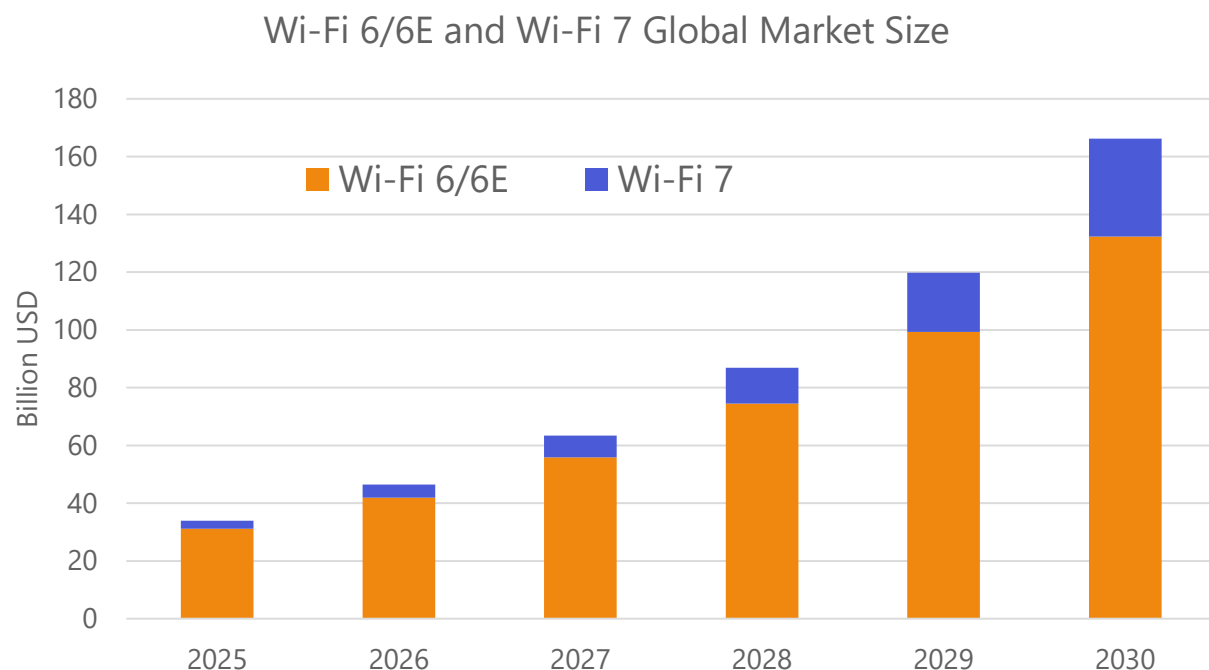


Wi-Fi 8 marks a shift from “higher speed” to “**higher reliability**”



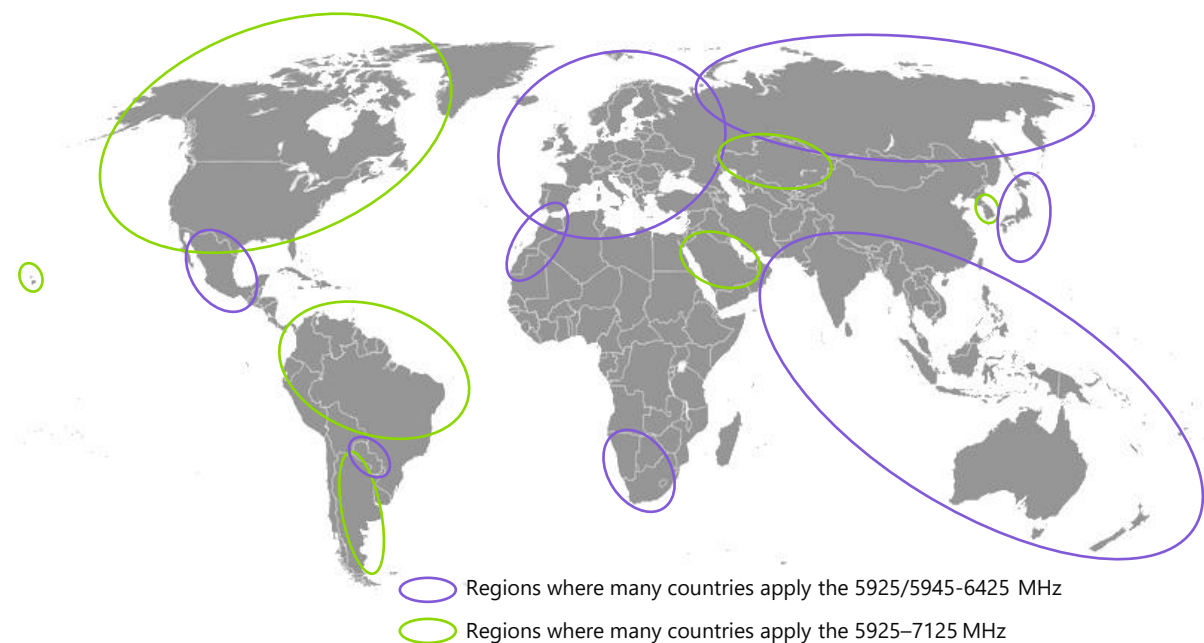
Wi-Fi Market Trends

The Wi-Fi 6 market size will grow to \$132.28 billion in 2030 at a compound annual growth rate (CAGR) of 33.3%. In comparison, the Wi-Fi 7 market size is projected to reach \$33.96 billion in 2030 at a CAGR of 65.4%.



Created by Anritsu based on the following sources:
Global Information, Inc., [Wi-Fi 6 Global Market Report 2026](#)
Global Information, Inc., [Wi-Fi 7 Global Market Report 2026](#)

With the global expansion of 6 GHz band availability, the adoption of Wi-Fi 6, 6E, and 7 devices is accelerating.



For detailed information, see "[Regulations Enabling 6 GHz Wi-Fi | Wi-Fi Alliance](#)" by the Wi-Fi Alliance®.

Wi-Fi 7: Achieving Extremely High Throughput (EHT)

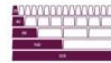
Representative technologies: **320 MHz** channel bandwidth, **MLO** (Multi-Link Operation), **4096QAM**.

Typical use cases include high-definition video streaming and multi-user AR/VR.



Wi-Fi CERTIFIED 7™: Advanced performance for next generation Wi-Fi®

Features



320 MHz channels



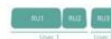
Multi-link Operation (MLO)



4K QAM



512 Compressed Block Ack



Multiple RUs to a single STA

Benefits

2X higher throughput

Deterministic latency, increased efficiency, greater reliability

20% higher transmission rates

Reduced transmission overhead

Enhanced spectral efficiency



Wi-Fi 7 is a standard for "**Higher Speed**"

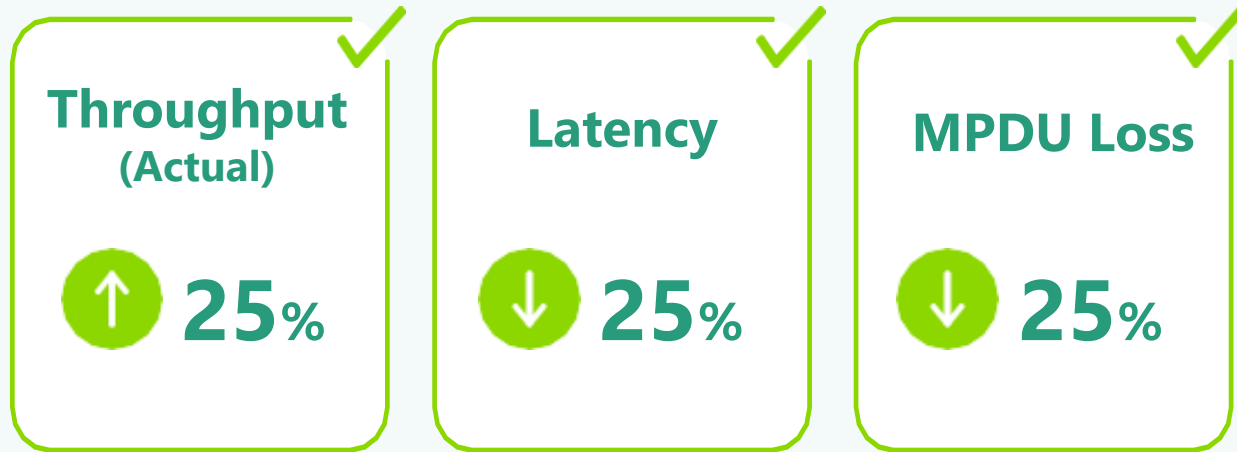
Reference: [Wi-Fi CERTIFIED 7 | Wi-Fi Alliance](#)

Wi-Fi® and Wi-Fi CERTIFIED 7™ are registered trademarks of the Wi-Fi Alliance®.

Wi-Fi 8: Achieving Ultra High Reliability

- Focus: enhanced reliability and improved actual performance
- “Wi-Fi 8” is the anticipated certification name to be used by the Wi-Fi Alliance for IEEE 802.11bn.

IEEE 802.11bn Ultra High Reliability (UHR)



MPDU: MAC Protocol Data Unit

Improvement targets (vs. Wi-Fi 7) are:

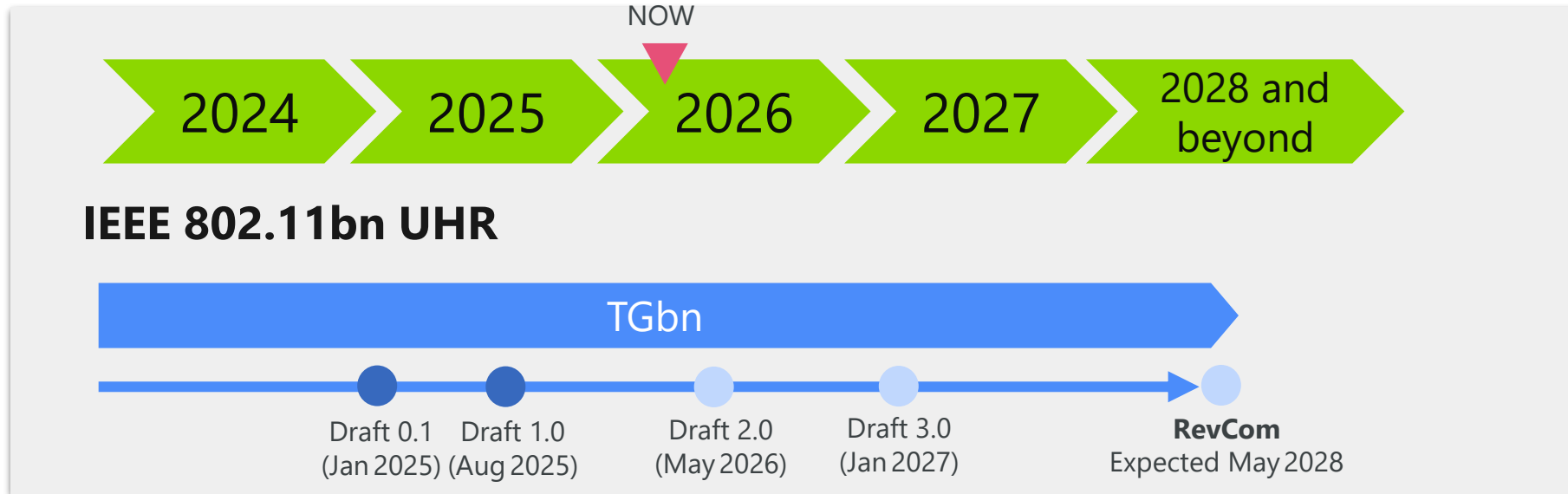
- **25% better actual throughput** in at least one SINR point
- **25% lower latency** at the 95th percentile (tail latency)
- **25% lower MAC frame loss rate** during BSS transitions

SINR: Signal-to-Interference-plus-Noise Ratio
MAC: Medium Access Control
BSS: Basic Service Set

Wi-Fi 8 is a standard for "**Higher Reliability**"

Wi-Fi 8 Timeline and Trends

Standardization Timeline



Market Trends

- Sample shipments by chipset vendors have **begun in Oct 2025**.
- Additional Wi-Fi 8-capable chipsets and concept routers were **announced around Jan 2026** at the Consumer Electronics Show (CES) 2026 in Las Vegas.
- Commercial Wi-Fi 8 products often appear before final ratification, as seen in previous generations.

Broadcom announces first Wi-Fi 8 chip, sample shipments began (Oct. 2025)

Reference : [Broadcom B-Connected Blog](#)

MediaTek announces their Wi-Fi 8-compatible chipset (Jan. 2026)

Reference : [MediaTek Filogic Wi-Fi 8 | Next Gen Wireless Performance](#)

ASUS unveils concept Wi-Fi 8 router (Jan. 2026)

Reference : [ASUS Debuts ROG WiFi 8 Router and First Real-World WiFi 8 Performance Test](#)

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Wi-Fi7 vs Wi-Fi8 Feature Comparison

Technical Feature	Wi-Fi 7 (802.11be – EHT)	Wi-Fi 8 (802.11bn – UHR)	What Changed / Benefit
Primary Objective	Peak throughput & low latency	Ultra-High Reliability (UHR)	Strategic shift from speed to determinism
Peak PHY Data Rate	Up to ~23–46 Gbps	~40 Gbps	Wi-Fi 8 holds PHY data rate ceiling
Real-World Throughput	High but variable	+25% at poor SNR	Edge & congestion optimized
Latency (95th percentile)	Low average latency (~2–5 ms)	~25% lower tail latency	Critical for XR & control applications
Packet Loss (MPDU)	Baseline (Wi-Fi 7)	~25% lower packet loss	Reliability & roaming gains
Frequency Bands	2.4 / 5 / 6 GHz	2.4 / 5 / 6 GHz	No change
Max Channel Width	320 MHz	320 MHz	No change
Modulation	4096-QAM (12 bits/symbol)	4096-QAM (12 bits/symbol)	No change
Spatial Streams	Up to 8	Up to 8	No change
Multi-Link Operation (MLO)	Parallel links for speed/latency	MLO for resilience & failover	Operational behavior changes
Multi-AP Coordination	Limited / optional	Core feature	Major architectural shift
Roaming Performance	Improved vs Wi-Fi 6	Seamless, low-loss roaming	Enterprise & mobility benefit
Interference Management	Preamble puncturing	Coordinated spatial reuse	Network-wide intelligence
MAC Layer Focus	MRU, enhanced OFDMA	DRU, NPCA, DSO	MAC redesigned for reliability
Power Efficiency	Improved	Further AP & client savings	Better efficiency for dense deployments
Primary Use Cases	AR/VR, 8K, gaming	XR, industrial, mission-critical	“Wire-like” wireless
Standard Status	Final (2025)	Draft → Final ~2028	Wi-Fi 8 still evolving

Expected New Features in Wi-Fi 8

PHY

Enhanced long range (ELR)

Distributed-tone RU (DRU)

Unequal modulation (UEQM)

Additional MCS options

Low-Density Parity-Check
(LDPC) enhancement

Interference mitigation

PHY/MAC

Coordinated beamforming
(Co-BF)

Coordinated spatial reuse
(Co-SR)

MAC

Coordinated TDMA
(Co-TDMA)

Seamless roaming

Dynamic power save

Non-primary channel access
(NPCA)

Prioritized EDCA

Low Latency Indication

Dynamic subband operation
(DSO)

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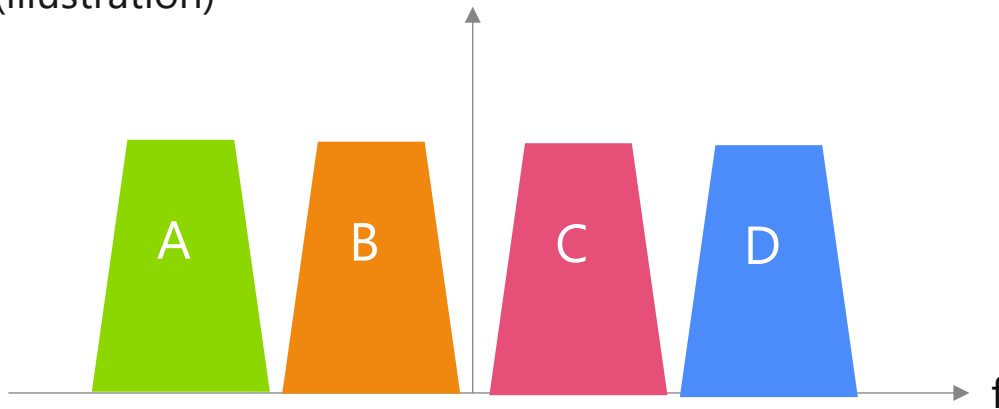
Enhanced Long Range (ELR)

Objective: **Extend communication range** and robustness in low SNR conditions.

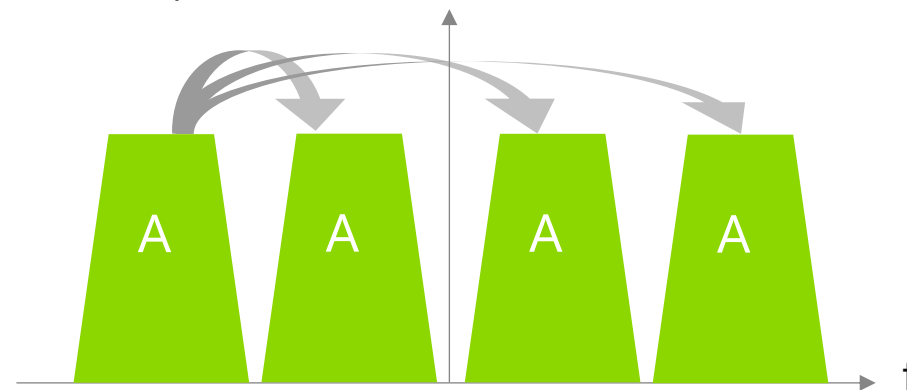
Approach:

- Define a new packet format with a **more robust header** under low SNR conditions.
- **Repetition mapping:** the same data **may be repeated across multiple subcarriers** (e.g., four) to improve resilience; even if some are corrupted, the receiver can still recover the payload.

General example of data allocation to subcarriers (illustration)



Example of ELR data allocation to subcarriers (illustration)



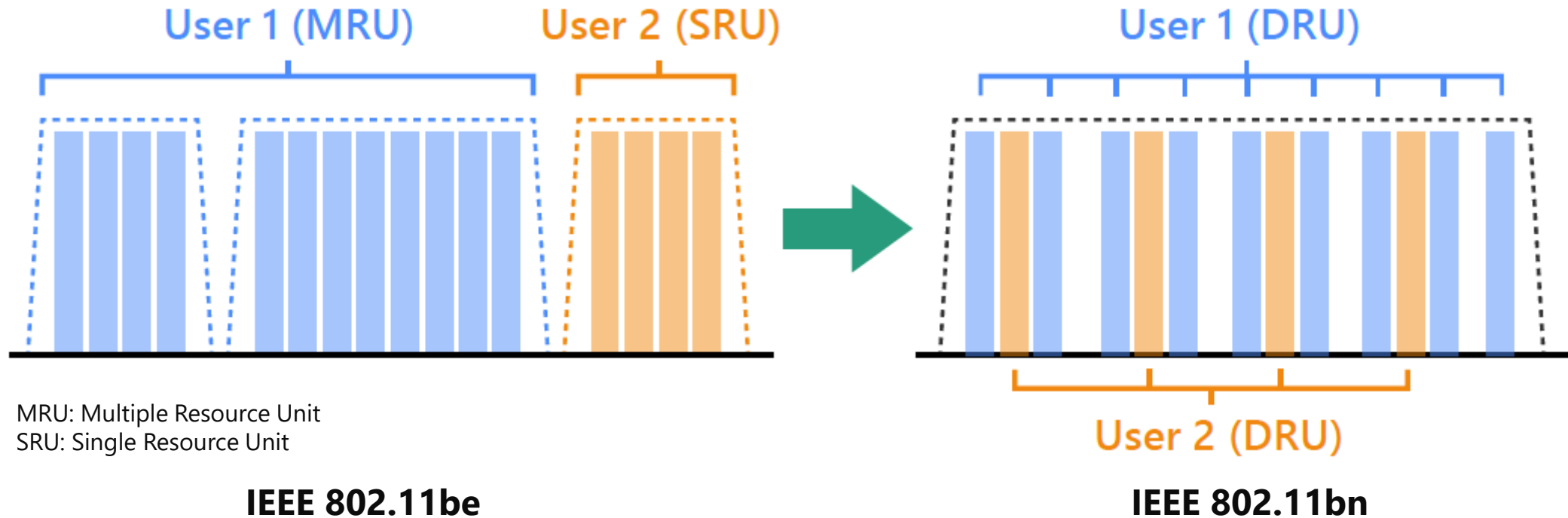
The same data is redundantly assigned to four subcarriers.

Distributed-tone Resource Unit (DRU)

Objective: **Improve stability and range** especially under PSD (power spectral density) limited conditions.

Approach:

Instead of concentrating subcarriers within a single RU (SRU) or clustered MRUs, DRU disperses tones across the full channel.

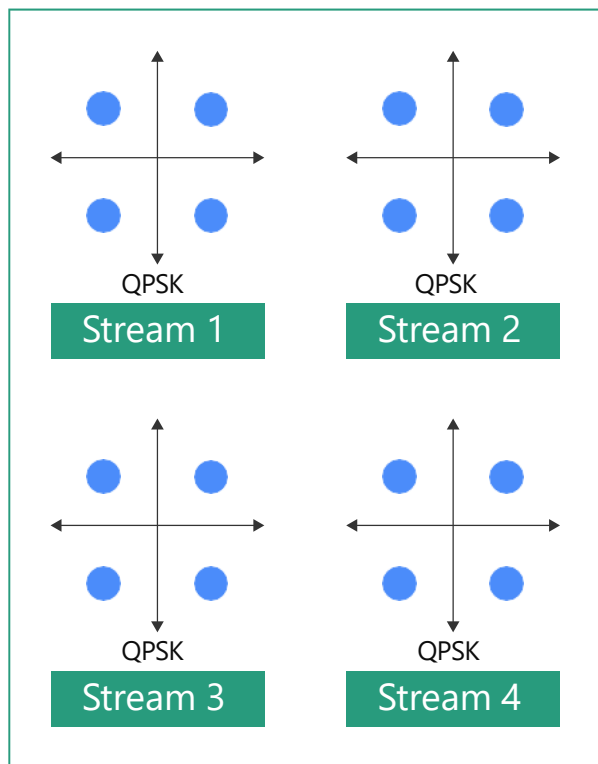


Unequal Modulation (UEQM)

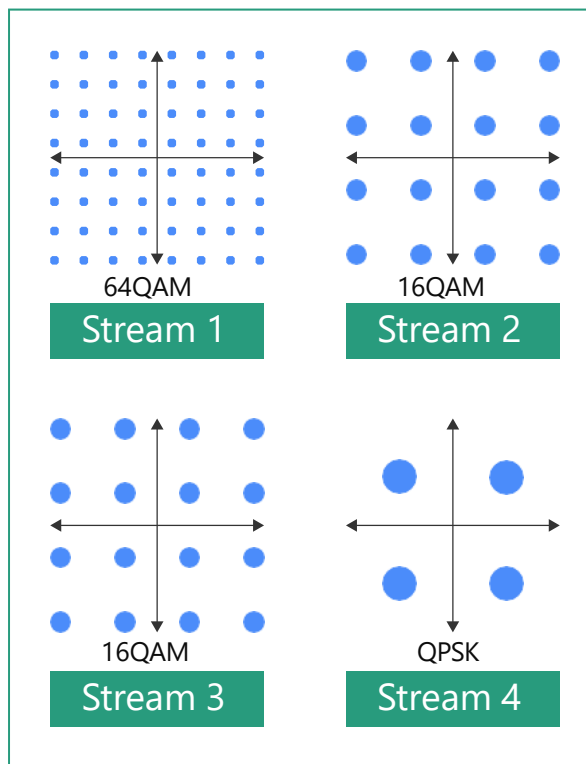
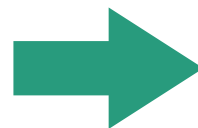
Objective: Improve **actual throughput** in MIMO transmissions.

Approach:

Allow **per-stream modulation** instead of the traditional **EQM** requirement that all spatial streams use the same order.



Equal Modulation (EQM)



Unequal Modulation (UEQM)

(e.g., Stream 1 with 64 QAM,
Streams 2/3 with 16 QAM,
Stream 4 with QPSK)

Additional Modulation and Coding Scheme (MCS) Options

Objective: Improve **actual throughput** by enabling finer grained rate adaptation.

Approach:

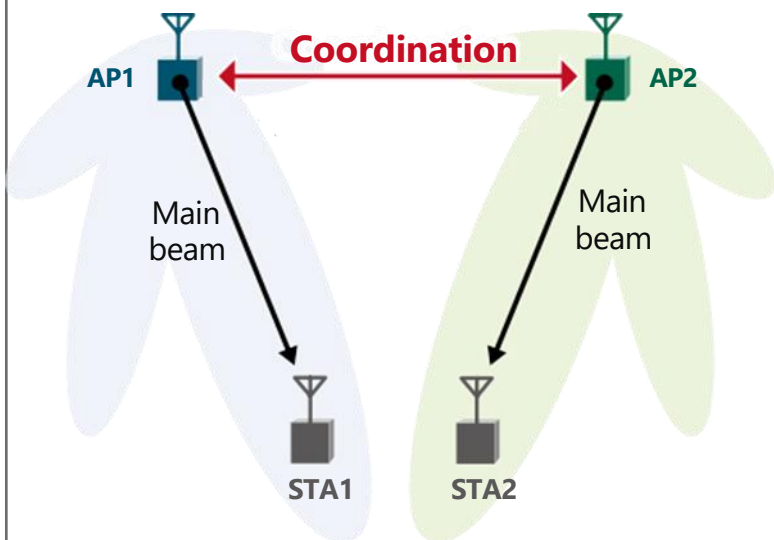
Add intermediate MCS options so that the transmitter can select an optimal mode for given SNR and channel conditions.

Existing MCS from Wi-Fi 7			Additional MCS options		
MCS Index	Modulation	Code Rate	MCS Index	Modulation	Code Rate
0	BPSK	1/2			
1	QPSK	1/2	17	QPSK	2/3
2		3/4			
3	16-QAM	1/2	19	16-QAM	2/3
4		3/4			
5	64-QAM	2/3	20	16-QAM	5/6
6		3/4			
7		5/6			
8	256-QAM	3/4	23	256-QAM	2/3
9		5/6			
10	1024-QAM	3/4			
11		5/6			
12	4096-QAM	3/4			
13		5/6			
15	BPSK-DCM	1/2			

Multi-AP Coordination (Co-BF / Co-SR / Co-TDMA)

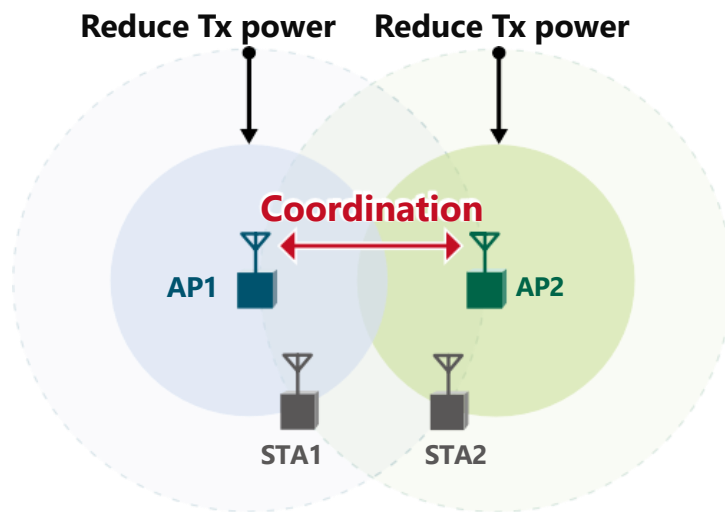
Objective: Increase **actual throughput** and **reduce latency** by **coordinating neighboring APs**.

Coordinated Beamforming (Co-BF)



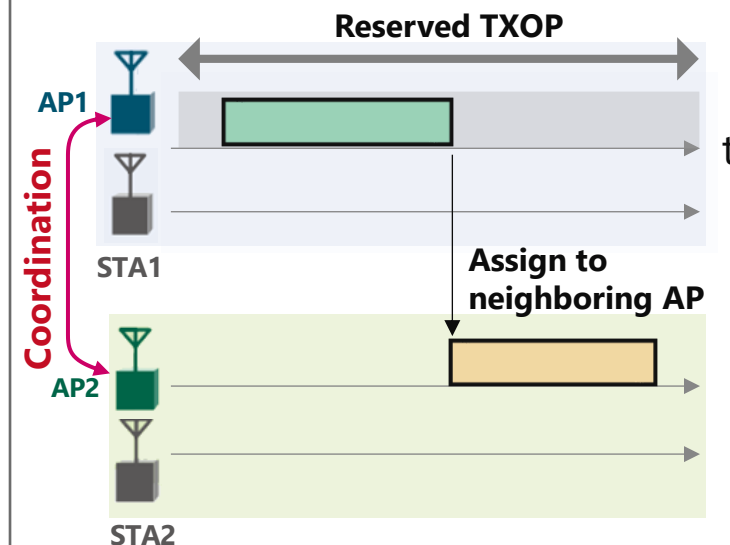
APs exchange channel information and coordinate beam directions to maximize desired signal and place nulls toward interferers, improving **SINR** and spatial reuse.

Coordinated Spatial Reuse (Co-SR)



APs adjust **Tx power** cooperatively so that more links can transmit in parallel with bounded interference, increasing concurrency.

Coordinated TDMA (Co-TDMA)



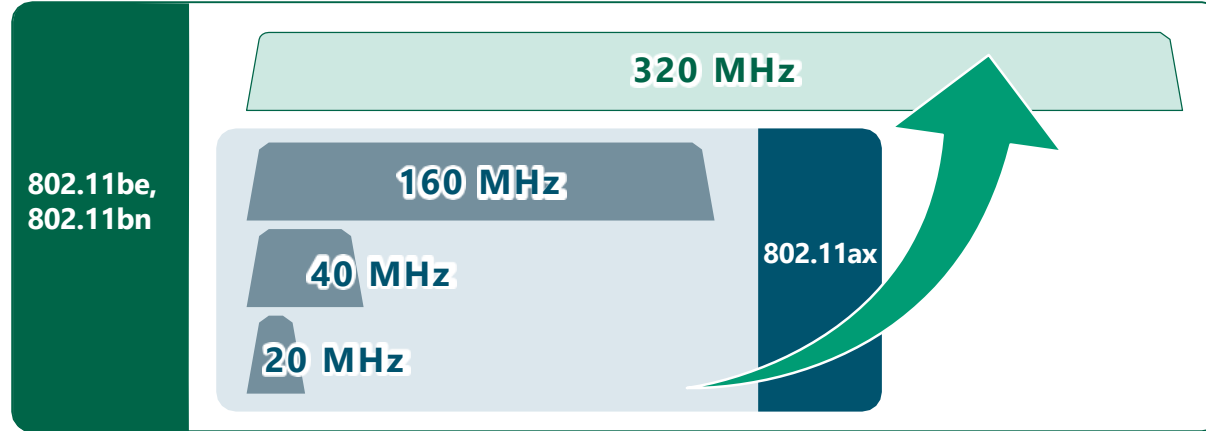
APs share or schedule transmission opportunities (**TXOPs**) to avoid collisions and reduce queueing delay, thereby lowering latency.

Agenda

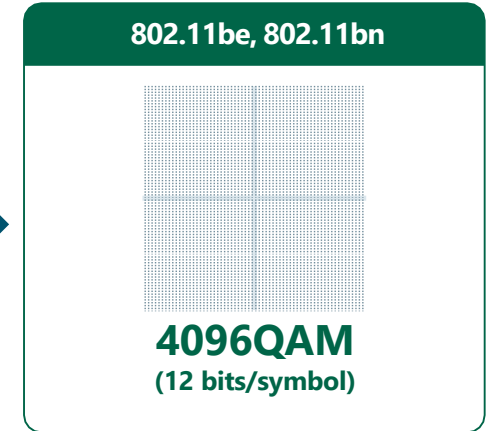
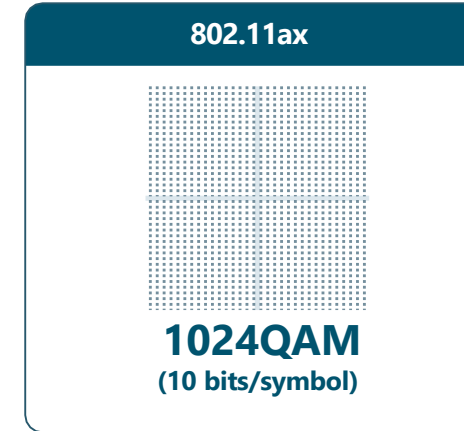
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Carry-Over of PHY Stringency from Wi-Fi 7

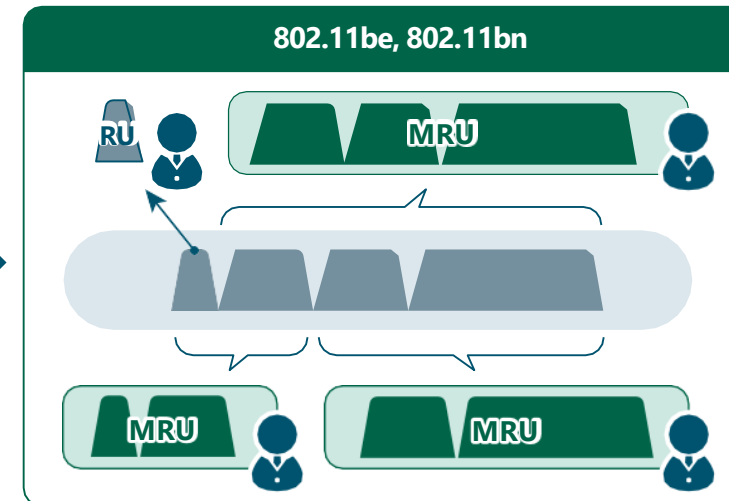
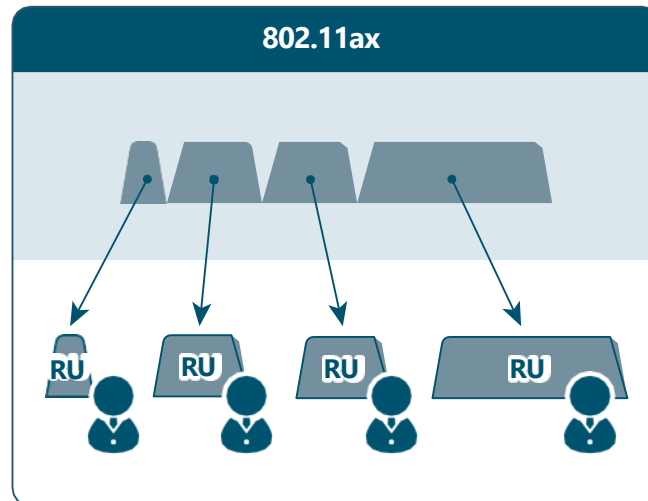
Even with Wi-Fi 8, products must continue to **meet stringent PHY requirements** comparable to Wi-Fi 7:



320 MHz channel bandwidth in the 6 GHz band



4096QAM modulation accuracy



OFDMA multi-user transmission (including **MRU**)

Added Features Increase Test Combinations

- Packet formats: MU, TB, plus **ELR**
- **MCS options**: four additional combinations
- OFDMA: adds **DRU** to SRU and MRU
- MIMO: **UEQM** introduces per-stream permutations absent in EQM

Parameter Comparison

PHY Key Parameter	802.11be (Wi-Fi 7)	802.11bn (Wi-Fi 8)
Frequency Band	2.4 GHz, 5 GHz, 6 GHz	2.4 GHz, 5 GHz, 6 GHz
Bandwidth (MHz)	20, 40, 80, 160, 320	20, 40, 80, 160, 320
Packet format	MU, TB	MU, TB, ELR
MCS	0 to 13, 15	0 to 13, 15, 17, 19, 20, 23
OFDMA	SRU, MRU	SRU, MRU, DRU
MIMO	EQM	EQM, UEQM

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Wireless Connectivity Test Set (WLAN Tester)

Wireless Connectivity Test Set **MT8862A** measures RF TRx characteristics of WLAN **IEEE 802.11a/b/g/n/ac/ax/be** in the 2.4/5/6 GHz bands.



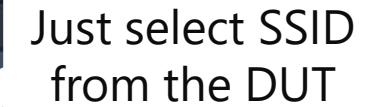
Track Record of MT8862A Complying with Standards

Over many years, the platform has kept up with the latest standards.



- Supports up to IEEE 802.11**ac**
- Supports IEEE 802.11**ax**
- Supports **6 GHz**
- Supports IEEE 802.11**be**

- ## Easy WLAN Connection



Measurement Mode Transmitter Test

Analysis Mode WLAN Analysis

View All

Wireless Settings

PPDU Format	EHT MU
PPDU Type	80 MHz
MCS Index	7
When changed	Disconnect DUT
GI + LTF Size	0.8us GI, 2xEHT-LTF
Coding Type	LDPC
Channel Band	2.4G / 5G Band
Primary Channel	36 (5180 MHz)
Channel Switch	On

Ru Allocation Setting

Single-Multiple RU Select

160 MHz EHT PPDU

26-tone RU

52-tone RU

106-tone RU

242-tone RU

484-tone RU

996-tone RU

2x996-tone RU

RU Type: 484+242-tone

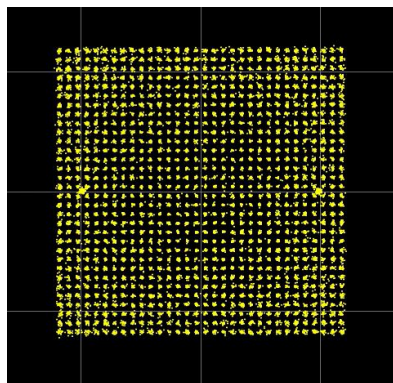
RU Index: 2

Multiple RU settings

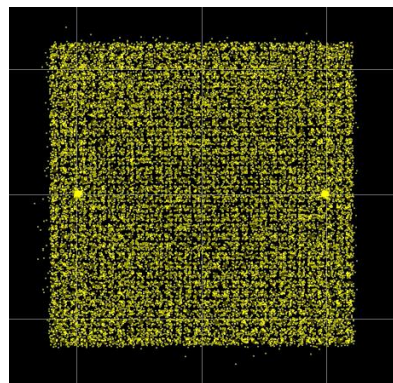
High-Performance Measurements

MT8862A's performance supports **320 MHz bandwidth** and **4096QAM**.

802.11be MCS13 4096QAM Test

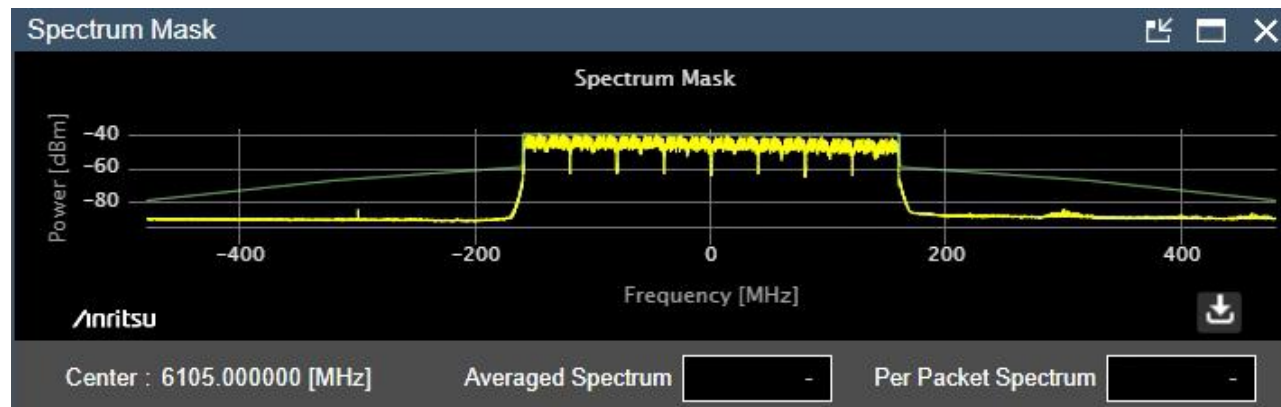


MCS11 1024QAM

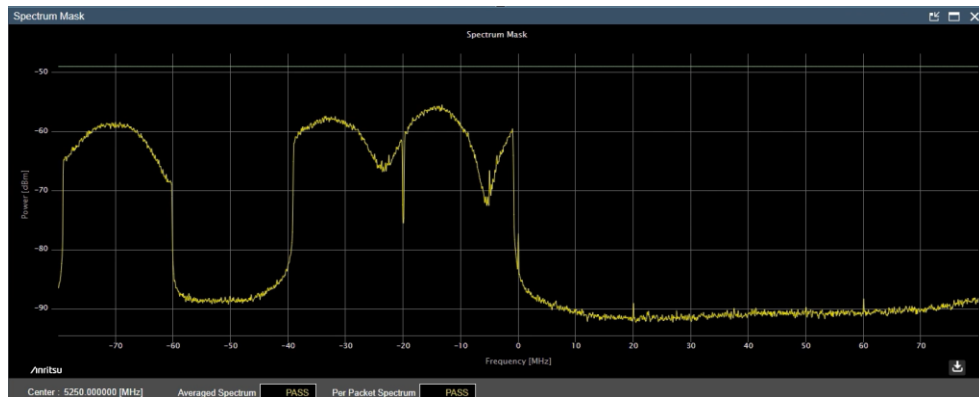


MCS13 4096QAM

6 GHz Band with 320 MHz Bandwidth Test

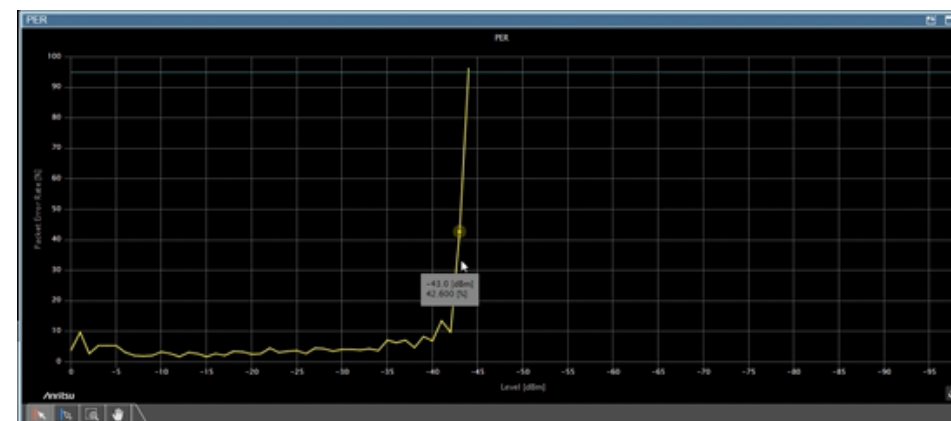


OFDMA Multi-User Test



Spectrum of Allocated Multiple RUs

Receiver Sensitivity Test



Received Power vs. Packet Error Rate (PER)

Wi-Fi 7/8 Device & Chipset R&D (802.11be/11bn)



Semiconductor / Device Manufacturers

Bluetooth Classic / LE / Audio Testing



Consumer Electronics / Wearables / Audio

In-Vehicle Connectivity Test



Automotive / Telematics / SDV

OTA TRP/TIS Testing



Smartphones / Tablets / PCs / IoT

WLAN + Bluetooth Coexistence



Consumer Electronics / Home Appliances /
Automotive

AP / Router / CPE / Enterprise Equipment



Networking / Enterprise / Service Providers

Manufacturing Test (High Throughput)



EMS / ODM / OEM

Multi-Device / Multi-Technology Test



Consumer / Wearables / XR / IoT

Automation & Regression Test



R&D / Validation / Manufacturing

PH3 / Python API

Multi-DUT Control

PER / Throughput

Audio / A2DP / HFP

Production & R&D

MT8862A Use Cases

Anritsu and MVG collaborate to support IEEE 802.11be (Wi-Fi 7) OTA measurement solution

23/04/2025



<https://www.anritsu.com/en-gb/test-measurement/news/news-releases/2025/2025-04-24-us01>

Anritsu Collaborates with ASUS to Validate IEEE 802.11be (Wi-Fi 7) 320 MHz RF Performance Testing

12/01/2024

Wireless Connectivity Test Set MT8862A Enables Flexible and Fast Advanced RF Measurement for Wi-Fi 7 320 MHz



<https://www.anritsu.com/en-au/test-measurement/news/news-releases/2024/2024-01-12-au01>

[Case Study] Sunnyverse Selects Anritsu WLAN and BLUETOOTH® Technology Measurement Products to Evaluate RF Performance of XR Devices

18/10/2024

Sunnyverse

Anritsu
Advancing beyond



<https://www.anritsu.com/en-au/test-measurement/news/news-releases/2024/2024-10-18-au03>

A background image for the Aillis, Inc. case study featuring a network of glowing blue nodes and lines, representing a complex system or data network. In the foreground, there is a small inset image showing a person using a medical device, with the text 'nodoca' and 'nodoca AI' visible. To the right of the inset is the Anritsu MT8862A test set.

Aillis, Inc.

nodoca™

Wireless Connectivity Test Set MT8862A

Aillis, Inc., Challenging to Realize the Reliable "AI Medical Device" by Wireless Connectivity Collaborating with Anritsu to Evaluate the Telecommunications Performance of Devices in Usage Environment.

<https://www.anritsu.com/en-gb/test-measurement/support/downloads/brochures-datasheets-and-catalogs/dwl20884>

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Wi-Fi 8 focuses on Ultra High Reliability, increasing **actual throughput** and reducing **tail latency** and **frame loss**.

PHY baselines are similar to Wi-Fi 7, but **feature additions** (ELR, DRU, UEQM, new MCS, Multi-AP Coordination) make **evaluation significantly more complex**.

High performance, high efficiency test environment becomes a key differentiator in Wi-Fi 8 development and validation.

Thank You!



Q&A



Question:

What should chipset and device manufacturers start preparing for today to support Wi-Fi 8 validation?

Question:

For engineers preparing for Wi-Fi 8, how much of an existing Wi-Fi 7 test setup can be reused, where are upgrades likely to be needed, and what key measurement capabilities should a Wi-Fi 8 lab have?

Question:

Wi-Fi 8 focuses on improving actual throughput, tail latency, and frame loss rather than simply increasing peak speed. Does that change the way engineers should evaluate Wi-Fi performance?

Q&A Session

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Raghul Premkumar

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Anritsu

09/21/2026

