

# TM Wi-Fi 7 CERTIFIED



Pongpipat Thunyawiraphap

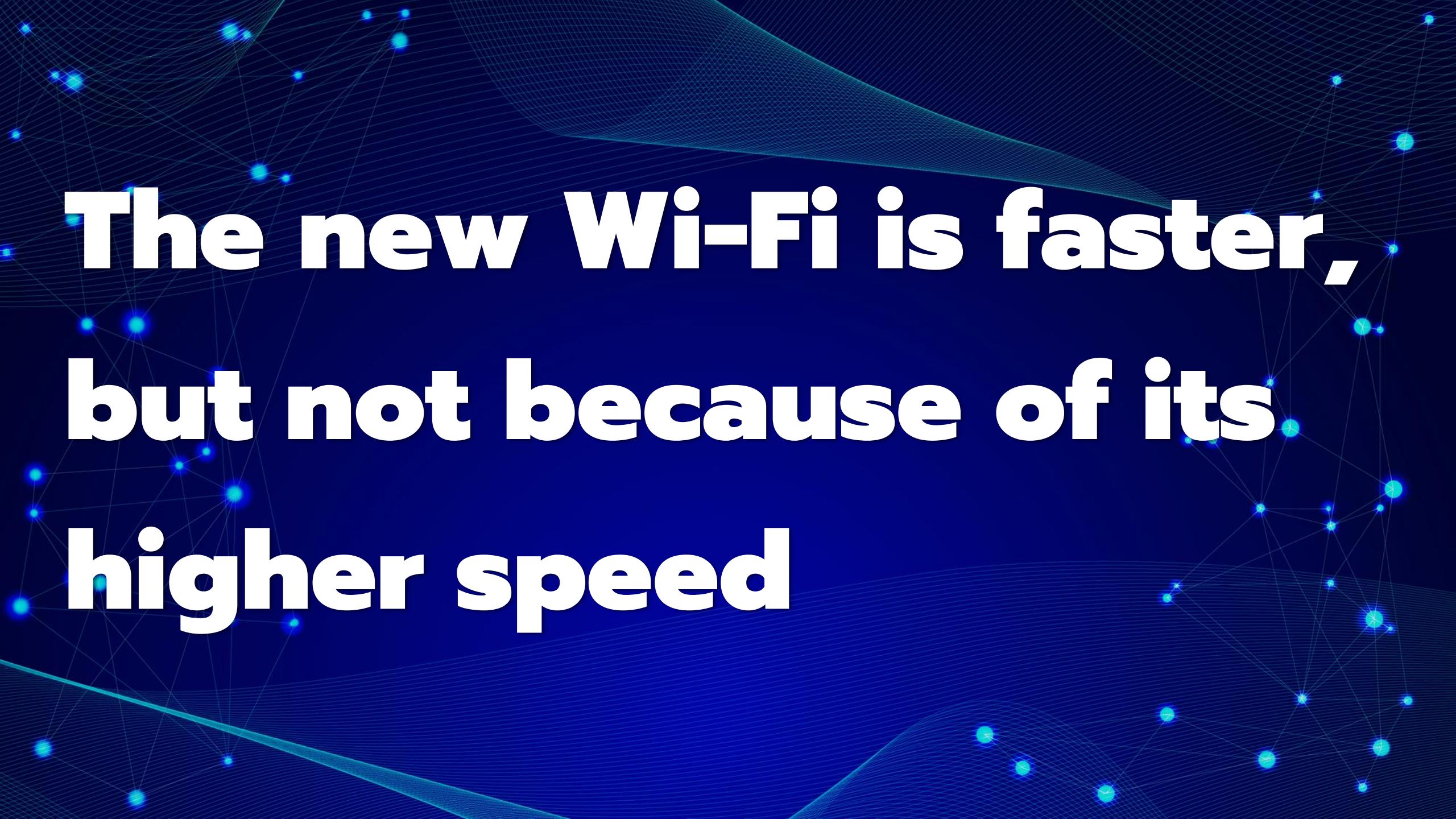
<https://mikrotiktutorial.com/>

# Why WIFI7 is the new world.



Supadej Suthiphongkanasai

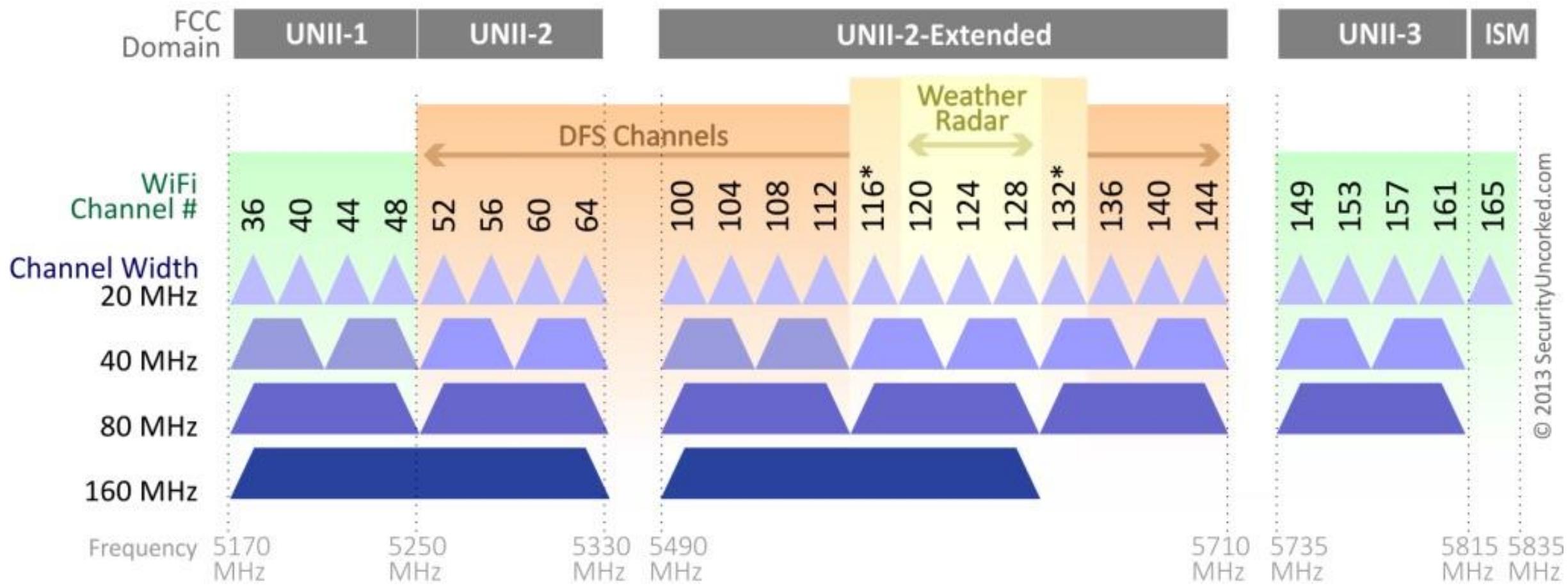
<https://packethunter.net/>



**The new Wi-Fi is faster,  
but not because of its  
higher speed**

# Current WIFI Problem

# 802.11ac Channel Allocation (N America)



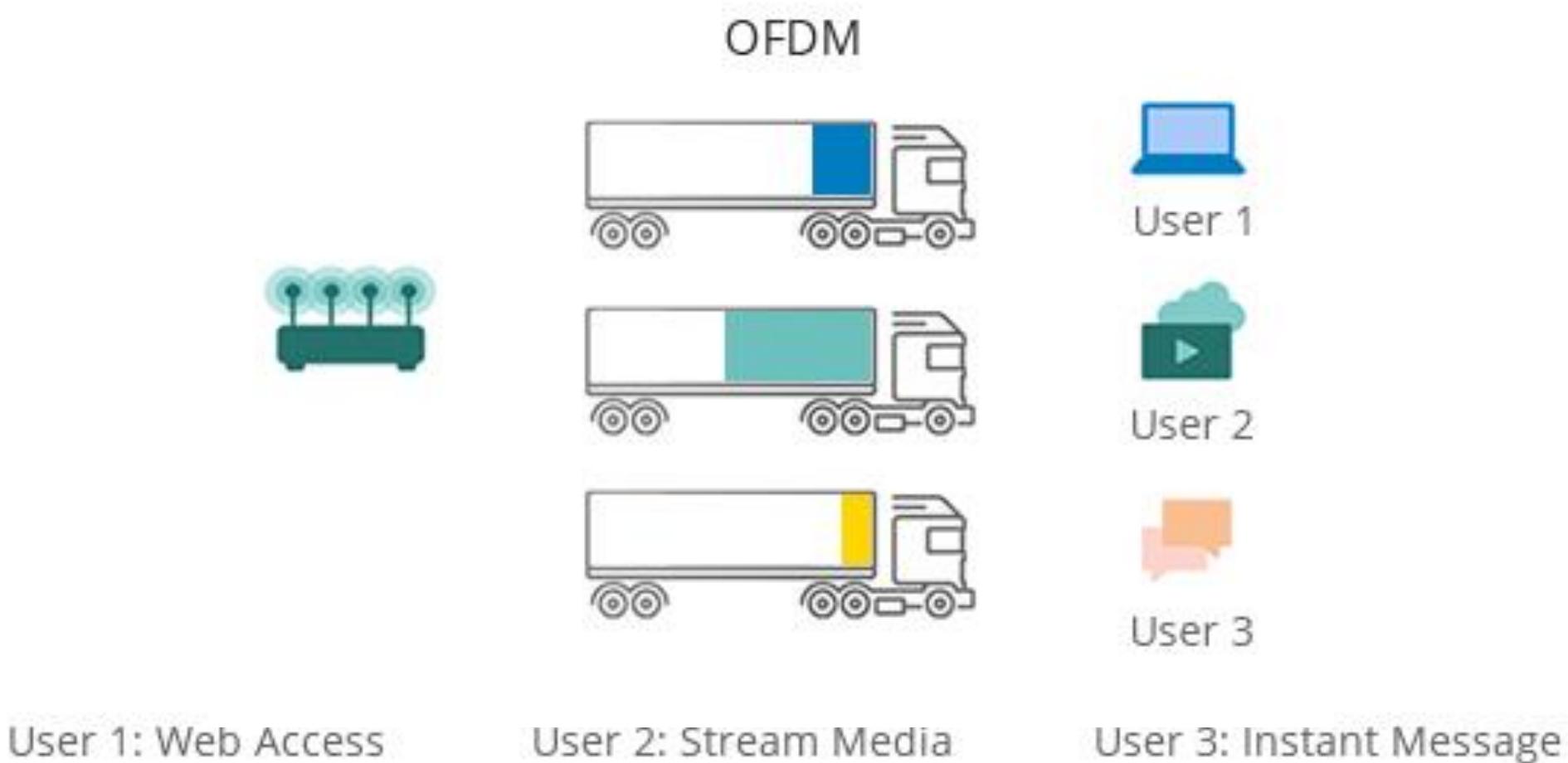
Not enough Spectrum

# Half Duplex Transmission



credit : <https://www.metageek.com/blog/why-in-tarnation-is-my-wifi-so-slow-part-3-top-10-reasons-why-your-wifi-has-low-throughput/>

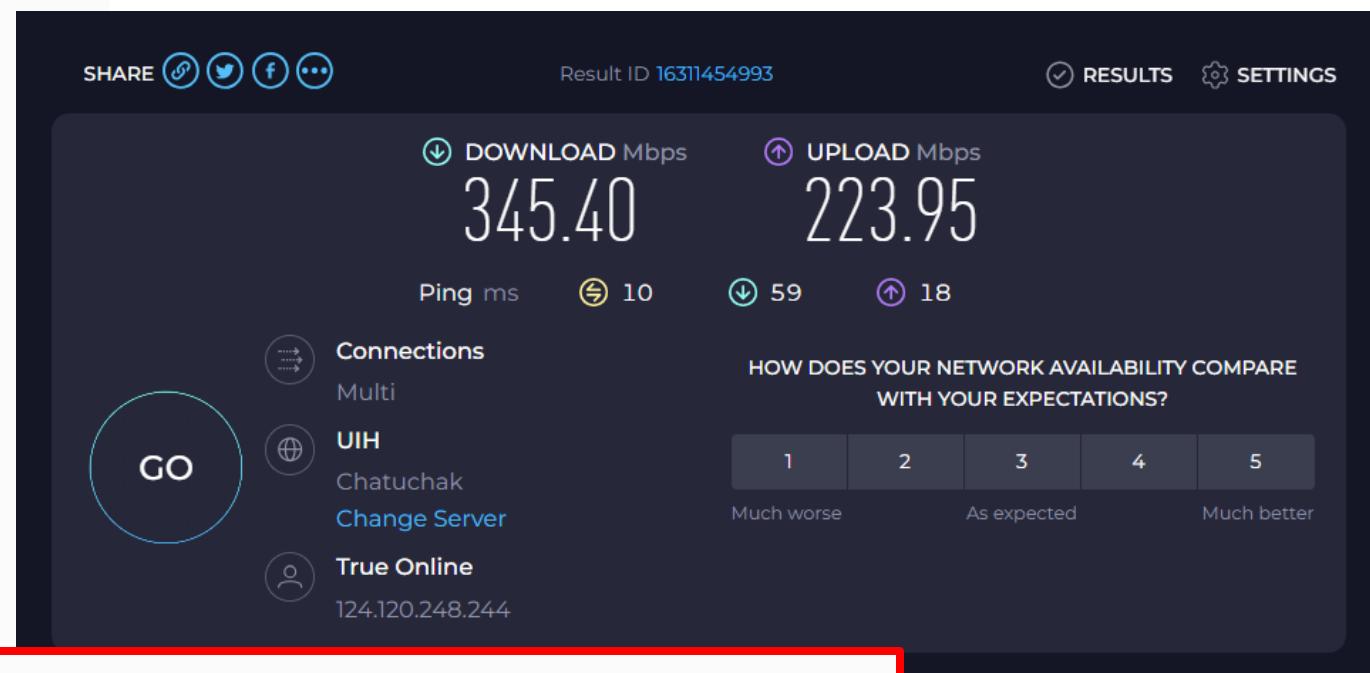
# OFDM



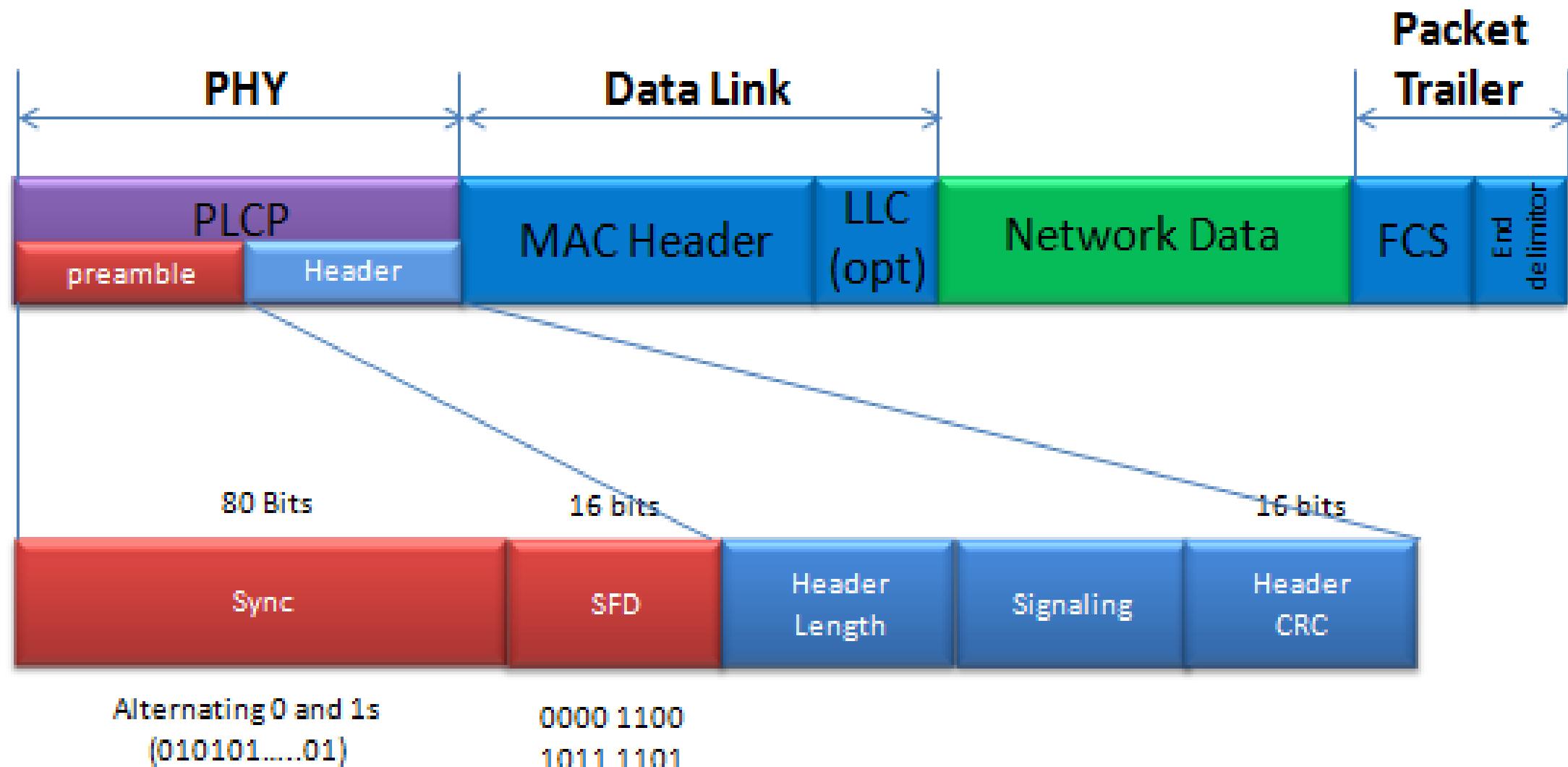
credit : <https://community.fs.com/article/wifi-6-technology-introduction-and-application.html>

# WIFI Overhead

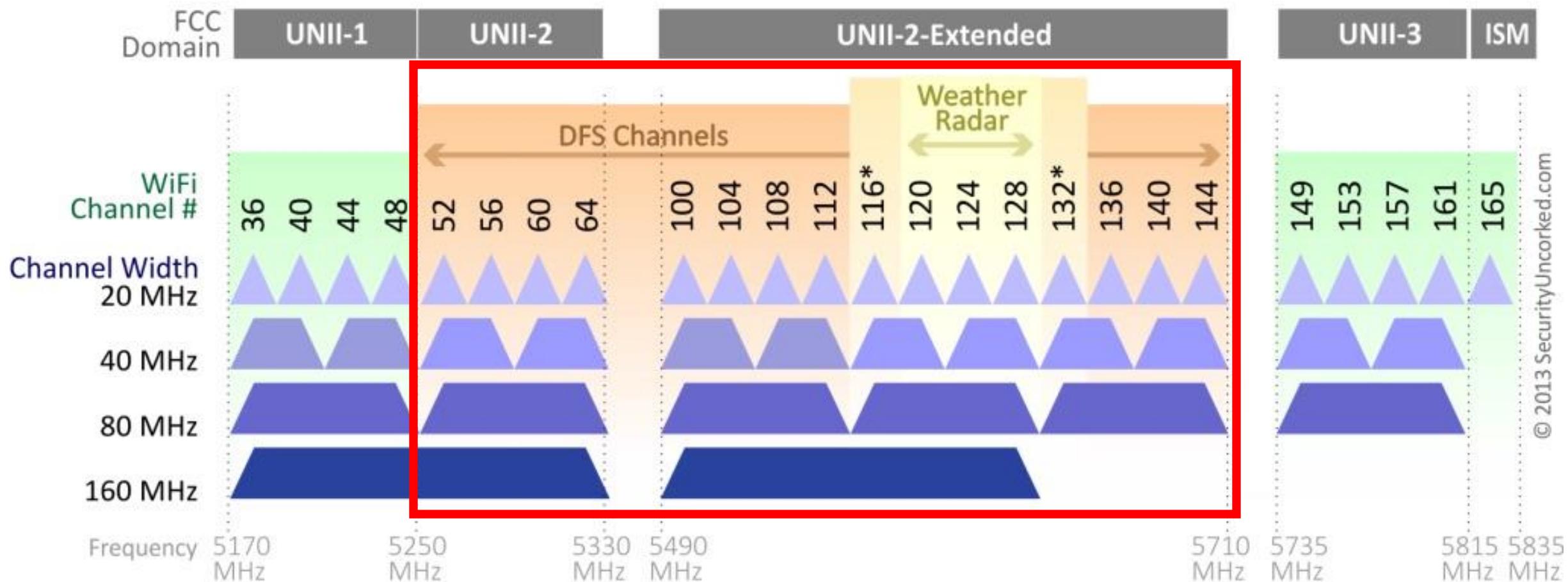
SSID:	ABC
Protocol:	Wi-Fi 6 (802.11ax)
Security type:	WPA2-Personal
Manufacturer:	Intel Corporation
Description:	Intel(R) Wi-Fi 6E AX211 160MHz
Driver version:	22.190.0.4
Network band:	5 GHz
Network channel:	161
Link speed (Receive/Transmit):	574/516 (Mbps)
Link-local IPv6 address:	fe80::5917:1bfa:9ae5:4ace%10
IPv4 address:	192.168.28.107
IPv4 D	
Physical	



# WIFI Overhead



# 802.11ac Channel Allocation (N America)



\*Channels 116 and 132 are Doppler Radar channels that may be used in some cases.

DFS channel

Enable Wireless Radio

Network Name (SSID):   Hide SSID

Security:

Version:  Auto  WPA-PSK  WPA2-PSK

Encryption:  Auto  TKIP  AES

Password:

Mode:

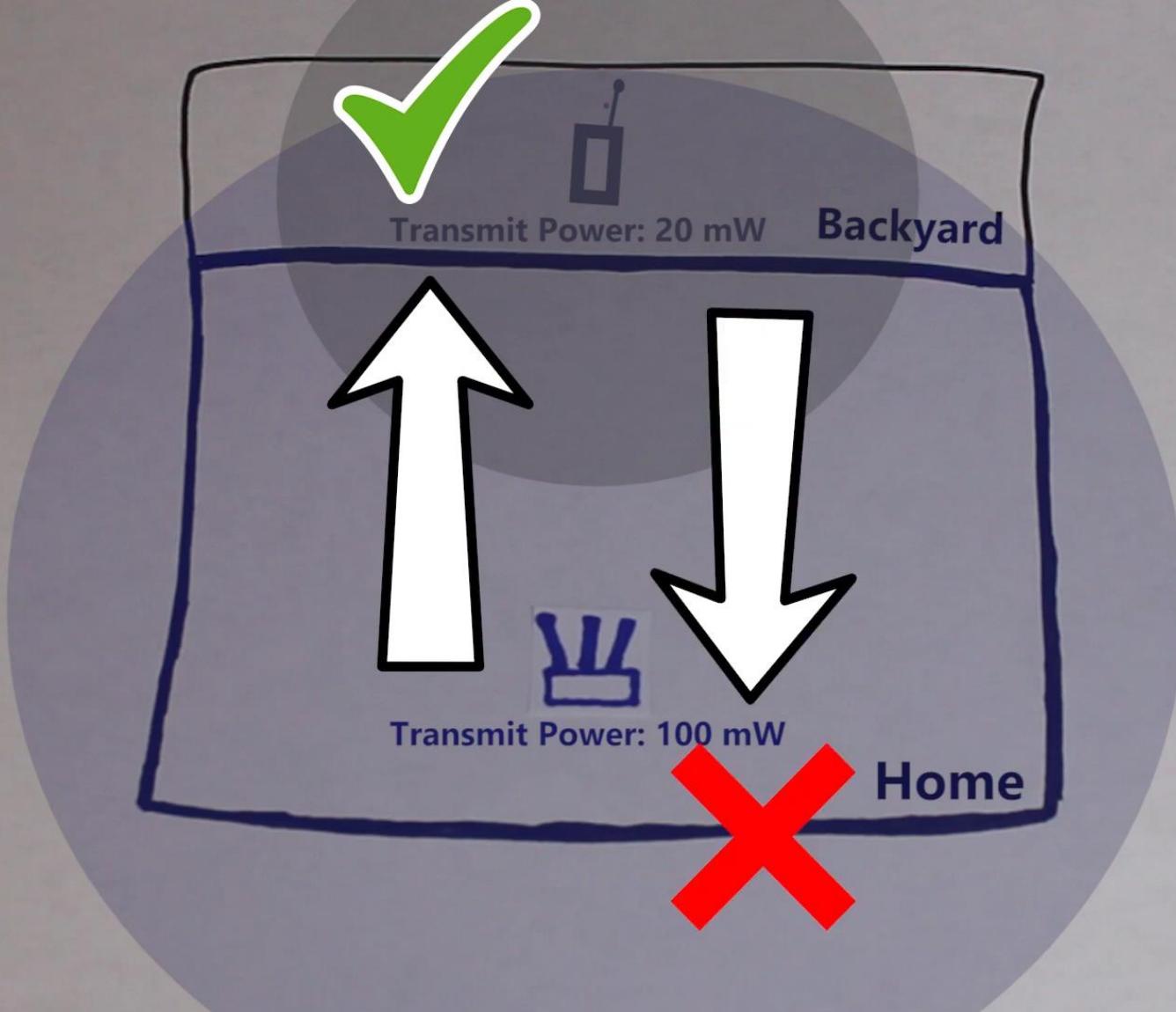
Channel Width:

Channel:

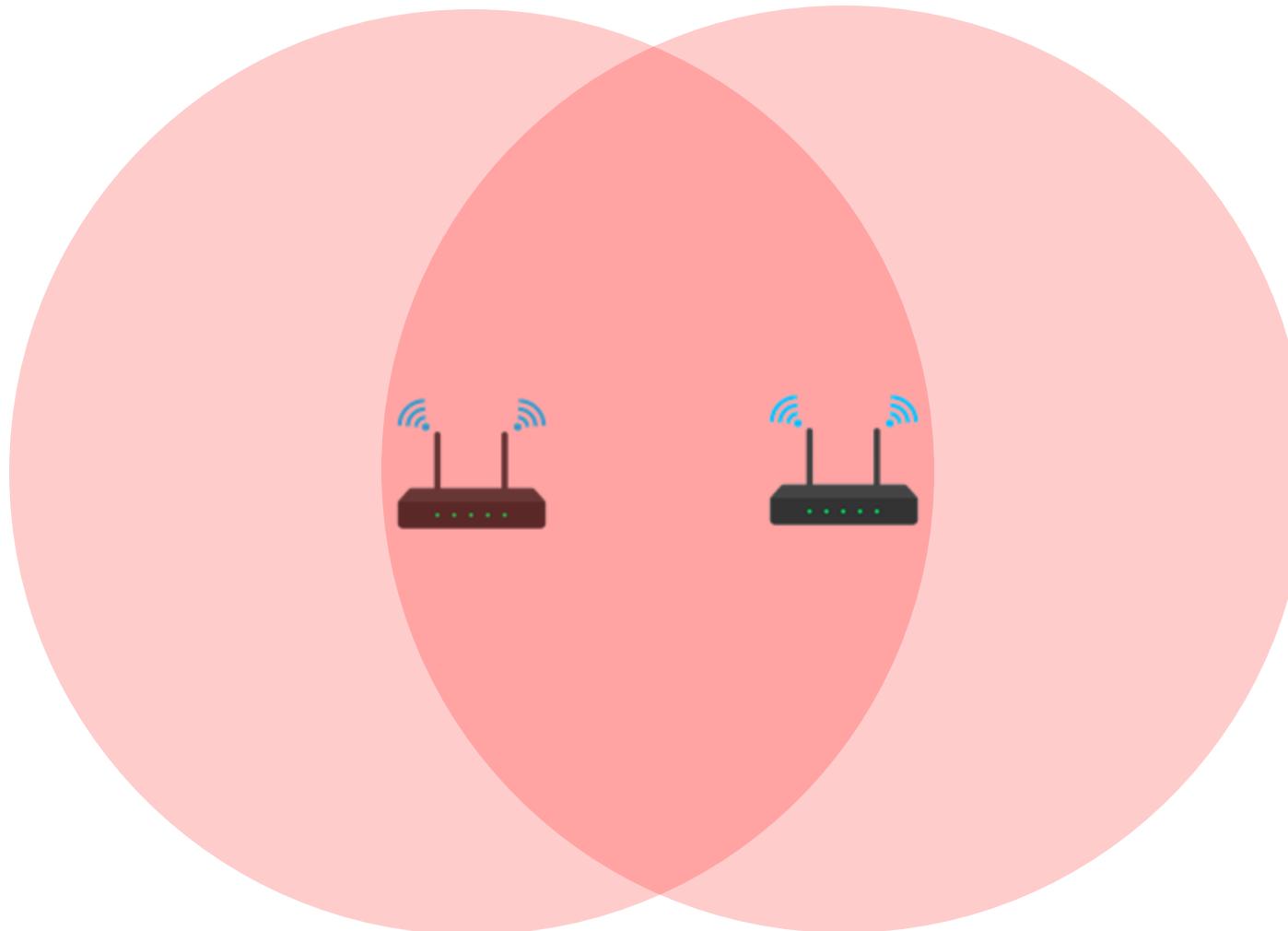
Transmit Power:  Low  Middle  High

Airtime Fairness Feature:  Enable Airtime Fairness

# Why High Power Cause Problem



## Why High Power Cause Problem



Why High Power Cause Problem



WiFi 6

vs



WiFi 6E

vs



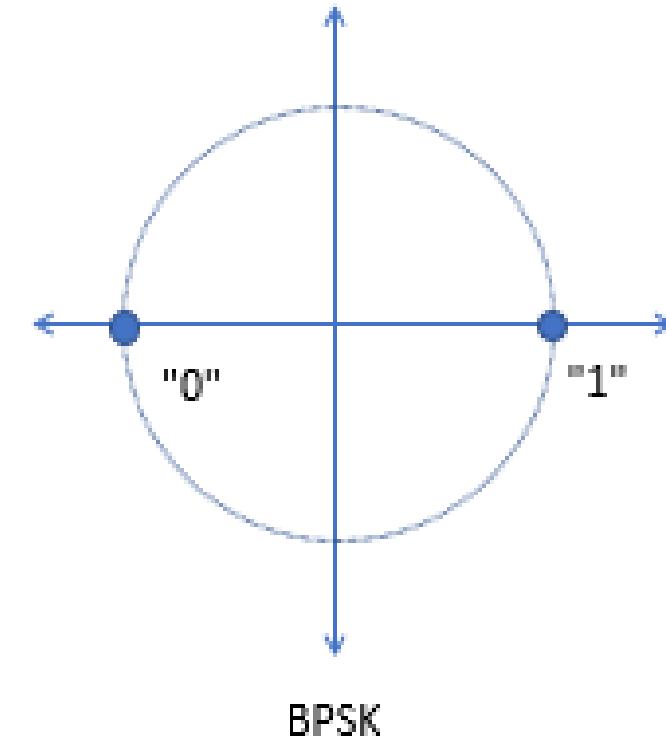
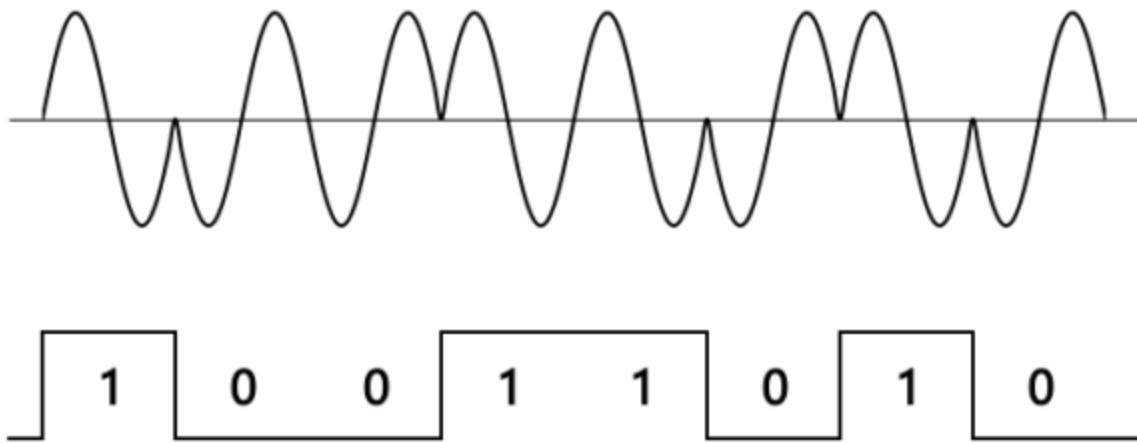
WiFi 7

How WiFi6 and WiFi7 Help Solving the Problem



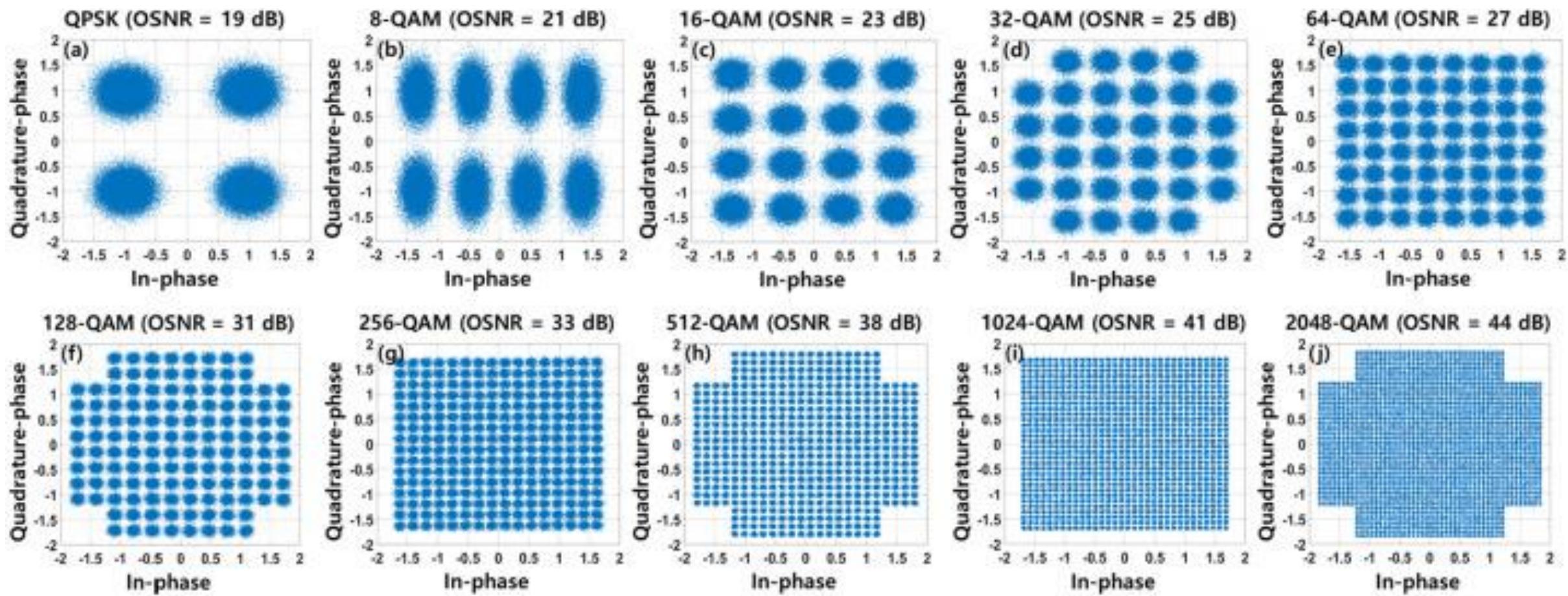
OFDM -> OFDMA

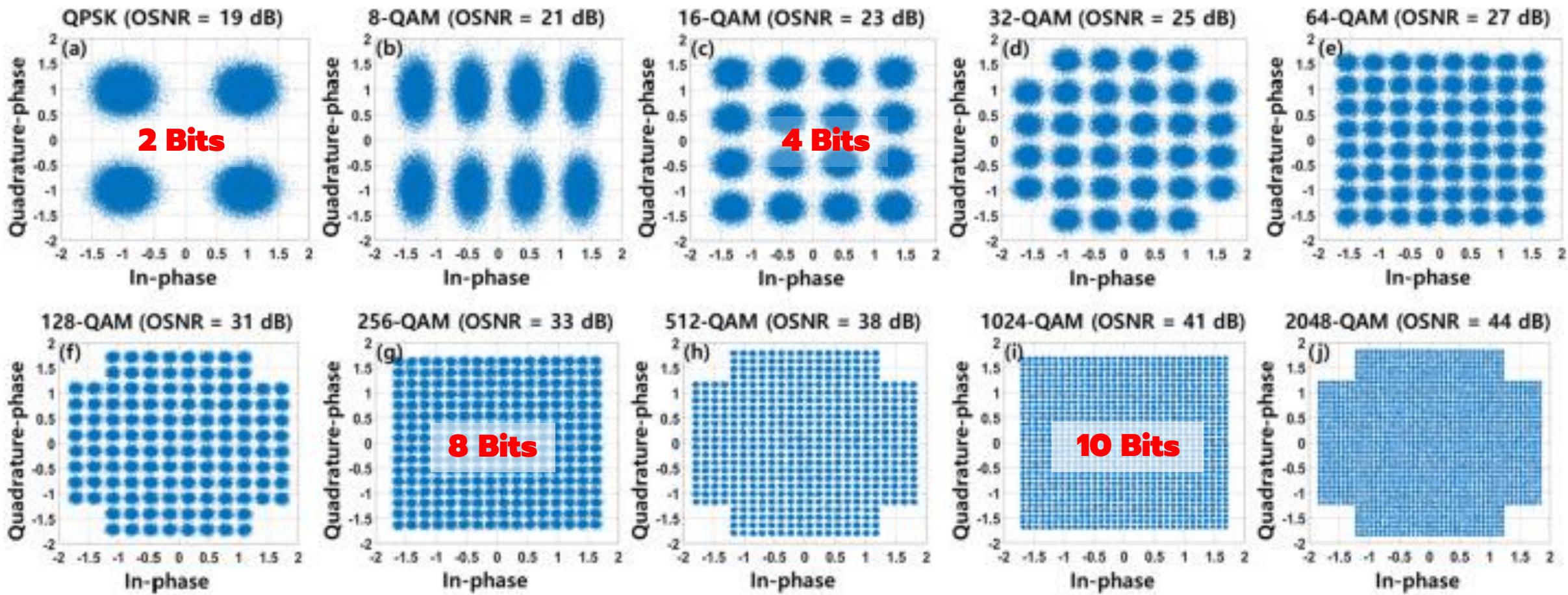
credit : <https://community.fs.com/article/wifi-6-technology-introduction-and-application.html>



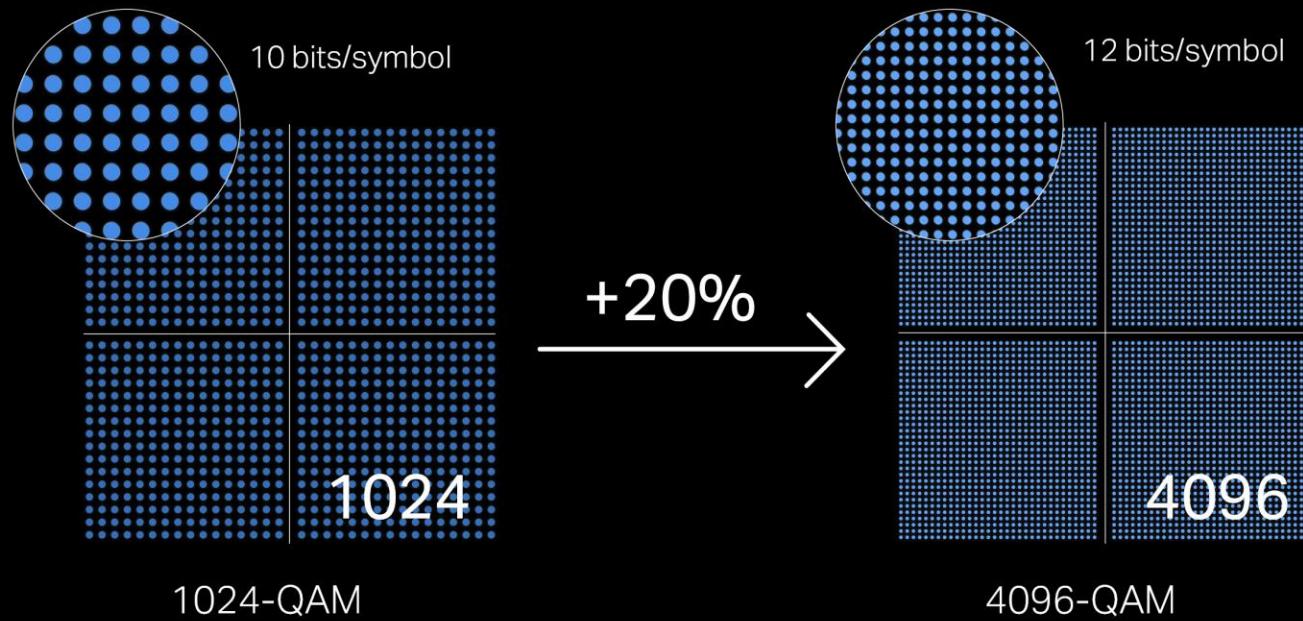
**1 Bits**

QAM – BPSK (Binary Phase-shift keying)





QAM

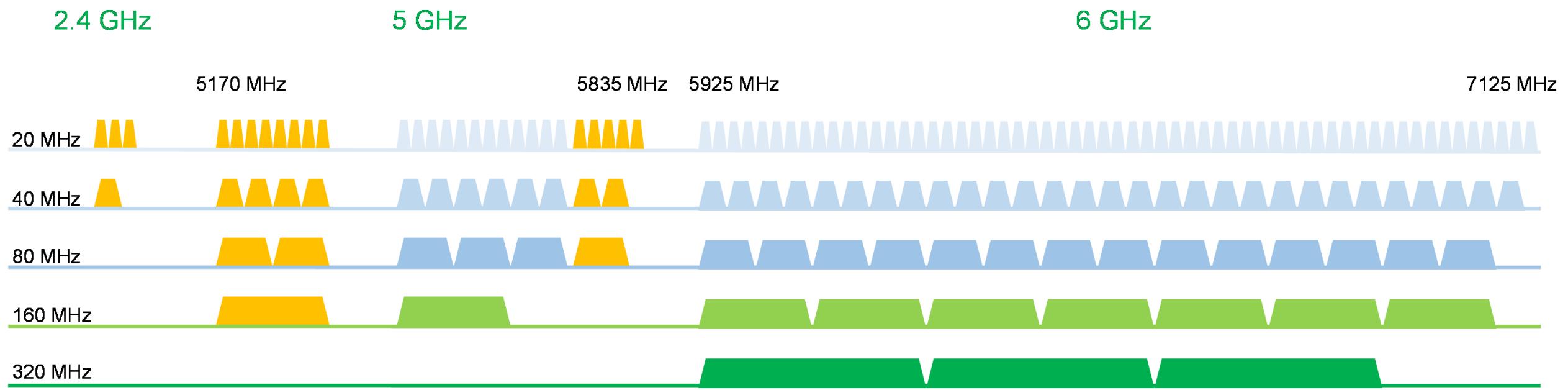


## 4K-QAM

Packs 120% Data for Higher Speeds

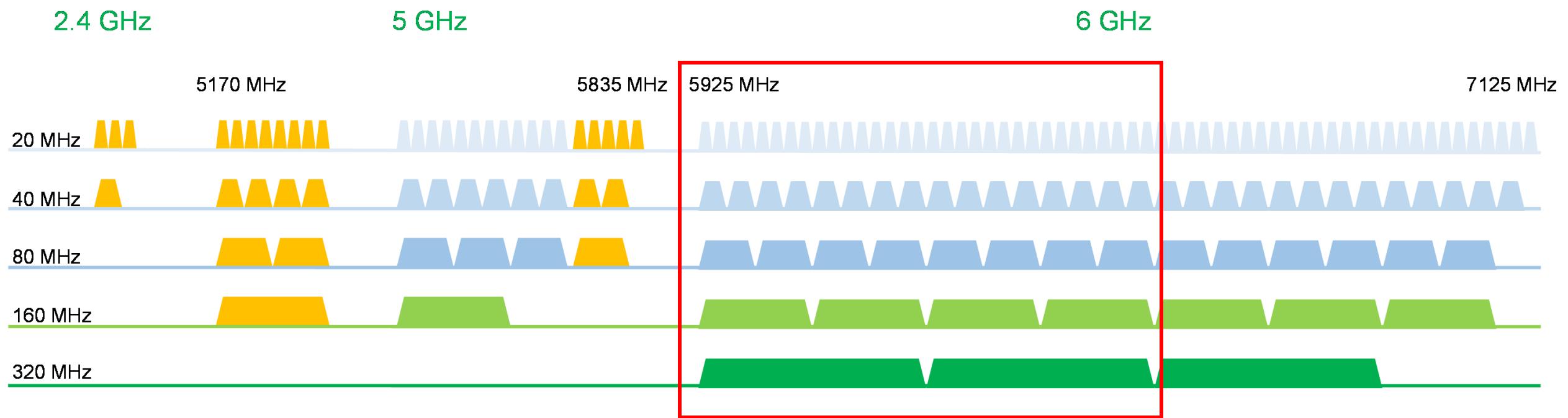
# 4096 QAM

credit : <https://x.com/TPLINK/status/1568585079756144640/photo/1>



Channel Width Support up to 320Mhz

[https://www.futureelectronics.cn/medias/sys\\_master/images/images/10287284092958/IMAGE-CNL20220801Fig1.png](https://www.futureelectronics.cn/medias/sys_master/images/images/10287284092958/IMAGE-CNL20220801Fig1.png)



6Ghz in Thailand (5925 – 6425 Mhz)

[https://www.futureelectronics.cn/medias/sys\\_master/images/images/10287284092958/IMAGE-CNL20220801Fig1.png](https://www.futureelectronics.cn/medias/sys_master/images/images/10287284092958/IMAGE-CNL20220801Fig1.png)

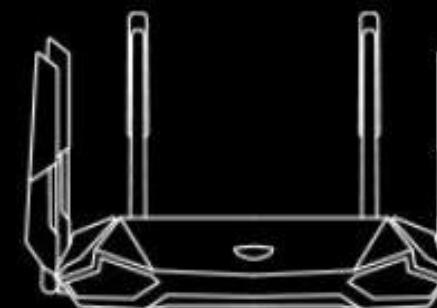
# WiFi 6



5 GHz  
or  
2.4 GHz

Single Link

# WiFi 7



6 GHz  
5 GHz  
2.4 GHz

Multi-Link

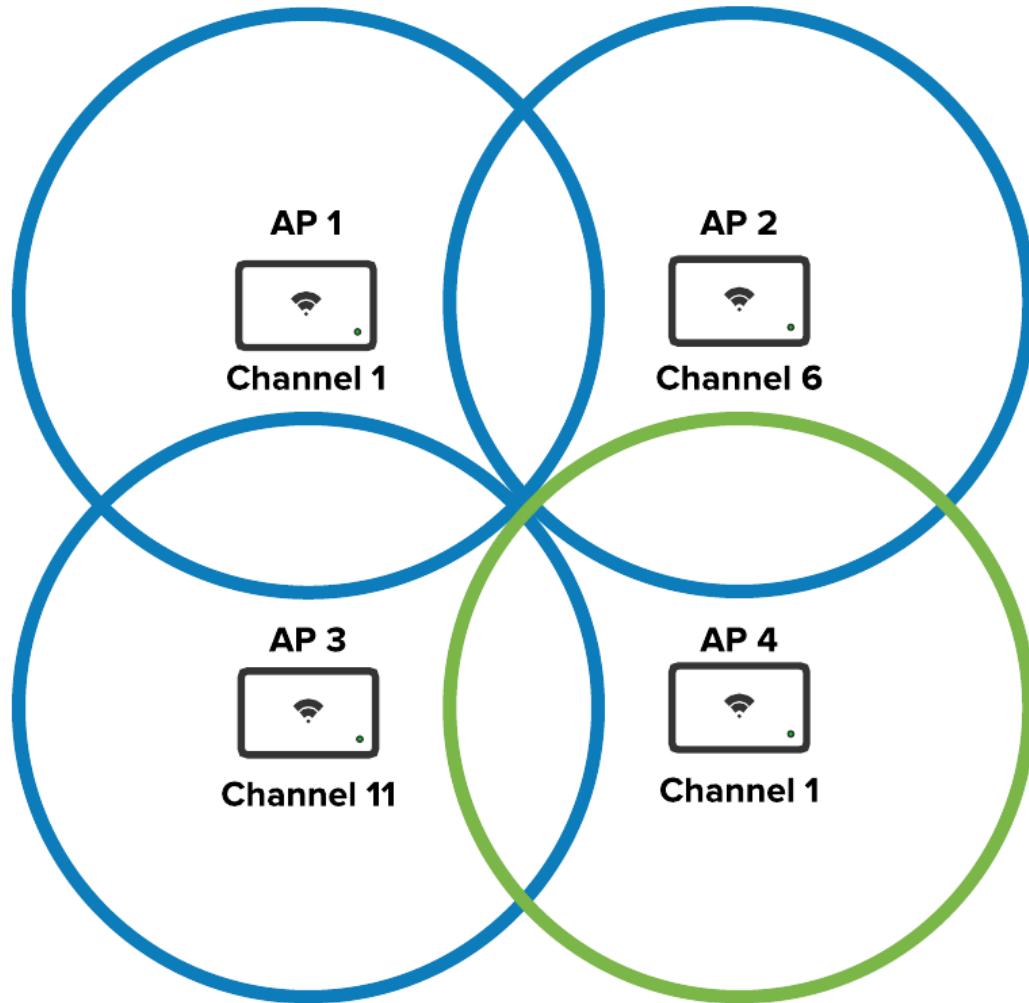
## MLO (Multi-Link Operation)

<https://www.telecomhall.net/t/what-is-multi-link-operation-mlo/22989>



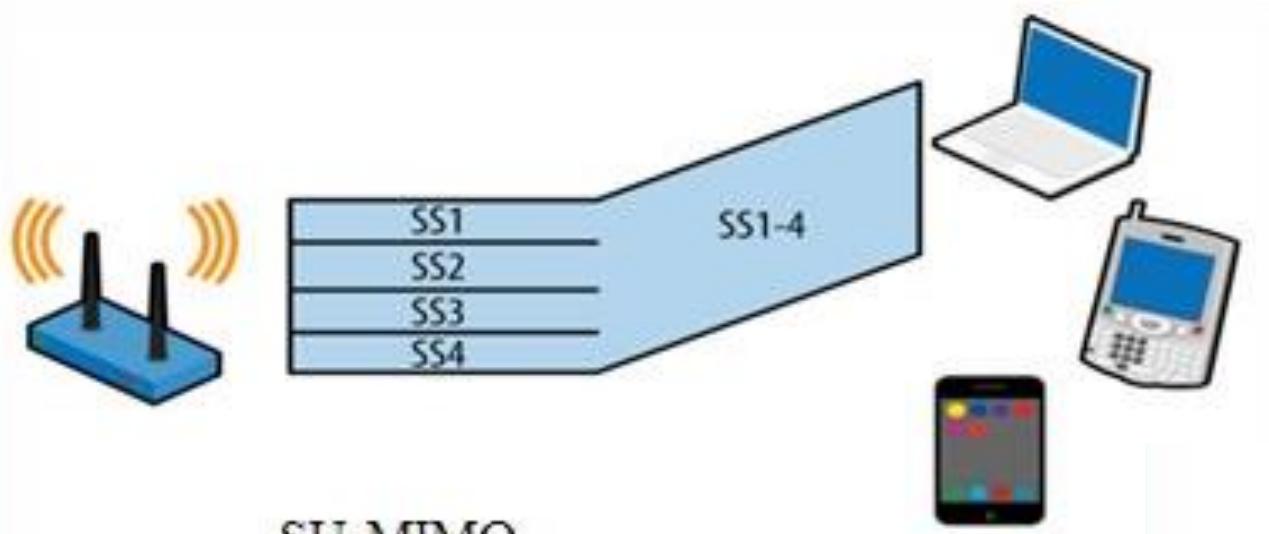
## Adaptive Interference Puncturing

<https://devopedia.org/images/article/484/5144.1716275306.png>

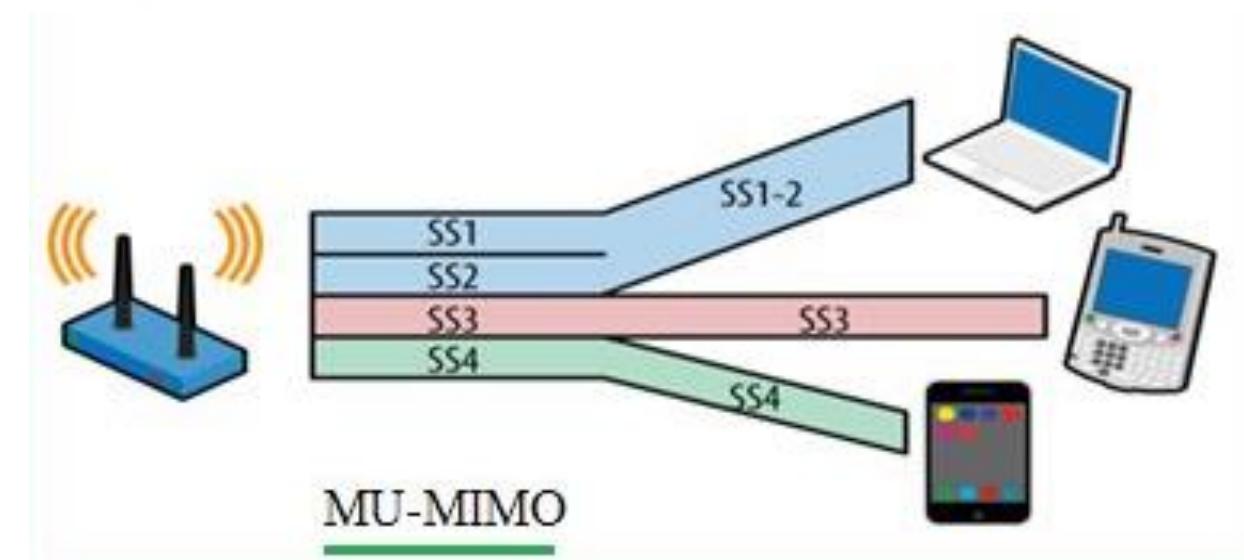


# BSS Coloring

[https://documentation.meraki.com/MR/Wi-Fi\\_Basics\\_and\\_Best\\_Practices/Wi-Fi\\_6\\_%28802.11ax%29\\_Technical\\_Guide](https://documentation.meraki.com/MR/Wi-Fi_Basics_and_Best_Practices/Wi-Fi_6_%28802.11ax%29_Technical_Guide)



SU-MIMO



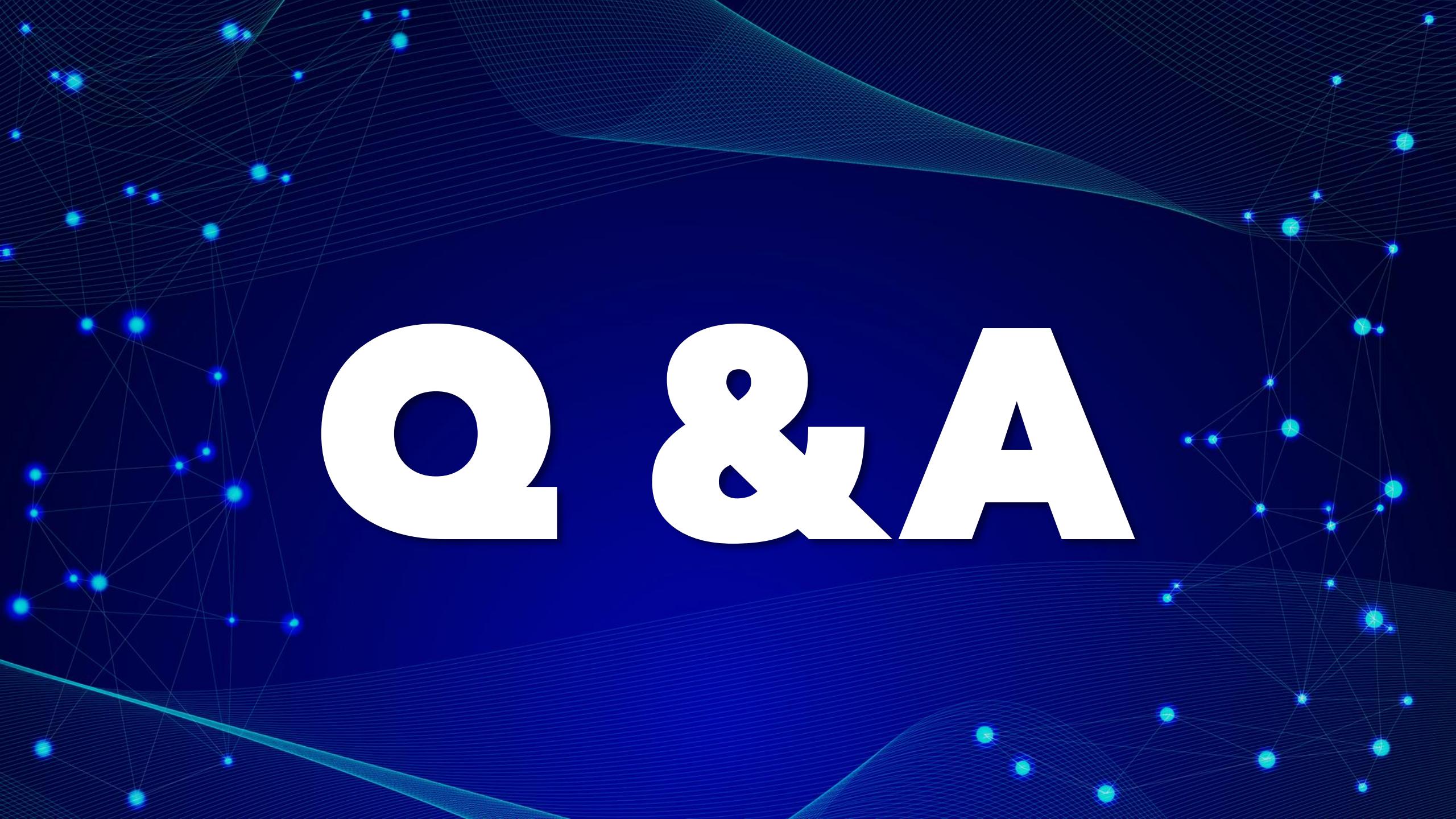
MU-MIMO

# MU-MIMO

<https://ytd2525.wordpress.com/2020/06/13/su-mimo-vs-mu-mimo-difference-between-su-mimo-and-mu-mimo/>

# Best Practice

- 1.Tx Power should not be set to Max.
- 2.In congested areas, avoid using channel widths over 80 MHz.
- 3.If the coverage area is insufficient, reduce the transmit power, add more access points, and then consider using a channel pattern.
- 4.Newer Wi-Fi standards can significantly improve performance, even with default settings.
- 5.If you find this difficult, consider hiring a Wi-Fi specialist.



# **Q&A**



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