

# Emerging 5G

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# SUMMARY

Here is a quick, concise summary about 5G at the present time (June 2020):

# US 5G Bands (by carrier)

CARRIER		FREQUENCIES
AT&T		850MHz, 39GHz
VERIZON		28GH, 39GHz
T-MOBILE		600MHz
		2.5GHz

# COMPARISON OF CARRIERS (continued)

- <https://www.droid-life.com/2020/05/19/us-wireless-carrier-bands-gsm-cdma-wcdma-lte-verizon-att-sprint-tmobile/>  
but this article is full of typographical errors

## COMPARISON OF CARRIERS (continued)

- Verizon calls their two millimeter Wave bands "Ultra Wideband"
- The 2.5 Gigahertz frequency that T-Mobile acquired by buying Spring is referred to as "mid-band" by the 5G folks

## COMPARISON OF CARRIERS (continued)

- The 600 and 850 megahertz bands are referred to as "low-band" by the 5G folks
- The 600 and 850 megahertz bands are the former UHF TV frequencies that formerly belonged to the television broadcasters

# COMPARISON OF CARRIERS (continued)

- The 28 and 39 Gigahertz bands are referred to as "millimeter wave" or "high-band" by the 5G folks
- The mid-band and low-band frequencies are called "Sub-6" by the 5G folks



# COMPARISON OF CARRIERS (continued)

- <https://en.wikipedia.org/wiki/5G>:  
<Start of quote:>  
Low-band 5G uses a similar frequency range as current 4G cellphones, 600-700 MHz, giving download speeds a little higher than 4G:  
30-250 megabits per second (Mbit/s)...  
Low-band cell towers will have a similar range and coverage area to current 4G towers.

# COMPARISON OF CARRIERS (continued)

- <Continuation of quote:>  
Mid-band 5G uses microwaves of 2.5-3.7 GHz, currently allowing speeds of 100-900 Mbit/s, with each cell tower providing service up to several miles in radius.  
This level of service is the most widely deployed, and should be available in most metropolitan areas in 2020.

## COMPARISON OF CARRIERS (continued)

- <Continuation of quote:>  
High-band 5G currently uses frequencies of 25-39 GHz, near the bottom of the millimeter wave band, although higher frequencies may be used in the future. It often achieves download speeds of a gigabit per second (Gbit/s), comparable to cable internet.

## COMPARISON OF CARRIERS (continued)

- <Continuation of quote:>

However, millimeter waves (mmWave or mmW) have a more limited range, requiring many small cells. They have trouble passing through some types of walls and windows.

<End of quote>

In addition to the above uses, high band/millimeter wave will be used for fixed wireless access to compete with Internet and television providers.

# ADDITIONAL INFORMATION ABOUT 5G

- <https://www.whistleout.com/CellPhones/Guides/5g-cell-phone-plans>
- <https://www.androidcentral.com/best-5g-network>
- <https://www.tomsguide.com/us/5g-release-date,review-5063.html>