



5G Rollout to Lift Most Boats

February 25, 2020

Key Takeaways

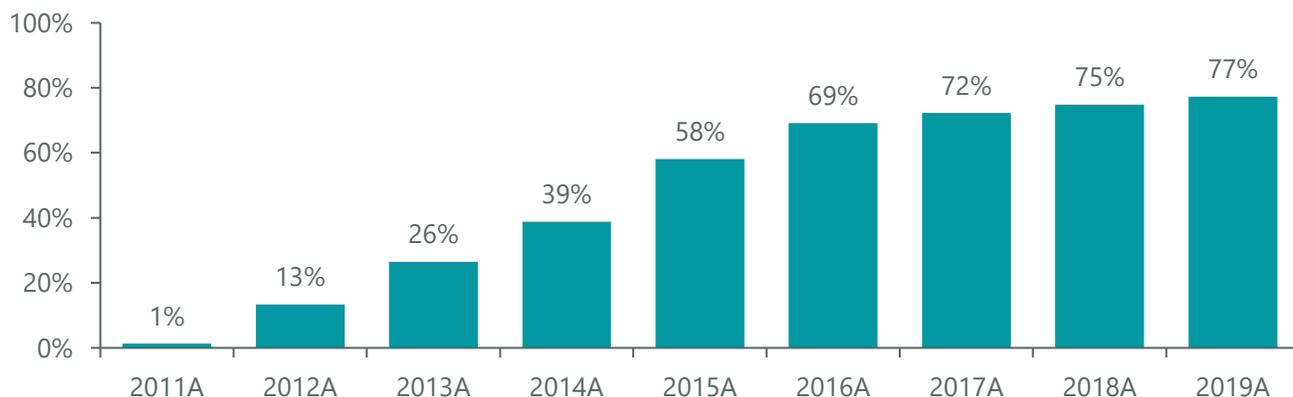
- ▶ Widespread launch of 5G services should commence this fall, sparking a smartphone upgrade cycle and development of new applications made possible by higher speed, lower latency networks.
- ▶ To leverage faster and higher capacity 5G wireless spectrum will require upgrades of everything from base stations and antennas on cell phone towers to chipsets that power smartphones.
- ▶ Handset makers and their suppliers should be immediate beneficiaries of the move to 5G, followed closely by telecom providers and tower operators.

Launch of 5G iPhone Should Spark Upgrade Cycle

The race for 5G leadership is on among wireless service providers, with the expected launch of widespread 5G services in the fall of 2020. Mobile data consumption is growing at a 40% compound annual growth rate, which requires constant investment in cellular infrastructure to keep up. While we expect that trend to continue, the introduction of 5G will also enable many new use cases, not just for phones but also new areas like autonomous driving and connectivity to support the Internet of Things (IoT).

A broad ecosystem of companies will participate in the move to 5G. While the deployment of 3G and 4G wireless networks (Exhibit 1) was staggered across different geographies and utilized different standards, 5G will roll out across the world at roughly the same time, which means penetration of 5G services should be much faster (Exhibit 2). The upgrade to 5G will also require the enablement of new technologies, primarily higher frequency band spectrum than is currently being utilized.

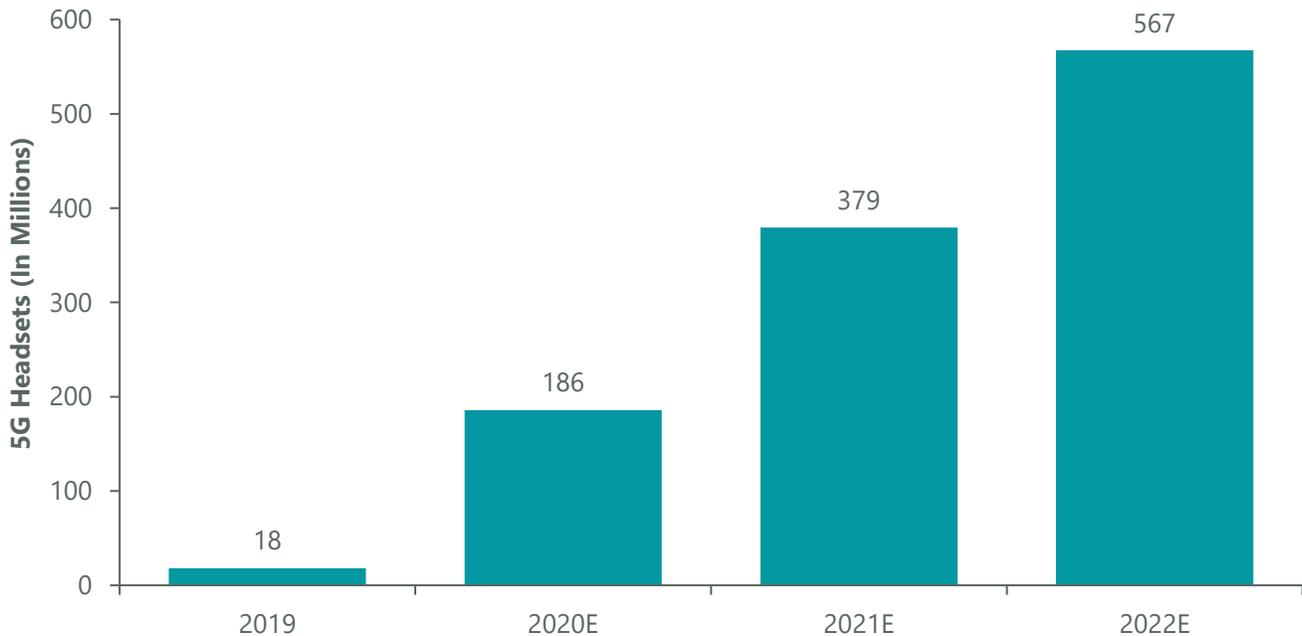
Exhibit 1: 4G Accounted for 26% of All Smartphone Shipments by 2013



Data as of Dec. 31, 2019. Source: Gartner.

To take advantage of that new spectrum will require upgrades of everything from base stations and antennas on cell phone towers to chipsets that power smartphones. Over time, the core networks of wireless carriers will also require upgrades, and new endpoint devices that utilize 5G should proliferate.

Exhibit 2: Assuming Similar 5G Adoption Rates, Shipments Should Ramp Quickly



Estimates as of Feb. 20, 2020. Source: ClearBridge Investments.

Consumers are already accessing 5G networks on their smartphones in some U.S. markets and we expect more broad availability in the fall. While AT&T's broader spectrum positioning for 5G was expected to give it a network advantage for the first few years of the rollout, that advantage could be fleeting. The acquisition of Sprint by T-Mobile should allow it to deploy large swaths of previously unused mid-band spectrum over the next couple of years, and the FCC's decision to release "C-Band" spectrum via auction in 2021 should also allow Verizon to purchase and deploy spectrum sometime in 2022. This may affect competition in the wireless market.

A major catalyst for 5G will be the rollout of the first 5G compatible iPhones, expected in September. While the initial experience of a 5G phone will not be that different from existing phones, we believe there are significant cost benefits for wireless carriers that will cause them to drive adoption of 5G handsets into the hands of customers. We expect global 5G smartphone shipments will accelerate late in 2020 as Android handset prices fall and the new 5G iPhone begins to ramp. We believe Qualcomm, a leading supplier of chipsets to Apple, as well as Taiwan Semiconductor, a key supplier to the Chinese market, are well positioned to benefit from the 5G upgrade cycle.

Cell phone tower companies should also see a boost from the deployment of new spectrum. The accelerated auction of C-band spectrum should lead to a healthy leasing environment for the next several years for SBA Communications and American Tower.

One area where we are more cautious is the network equipment providers. There has been a 5G premium built into the stocks in anticipation of a 5G capital spending boom. The reality is that capex should remain mostly stable for the next several years as wireless carriers move their 4G spending over to 5G. We will see pockets of growth but do not expect 5G to expand the overall market for equipment spending.

Looking out several years, cloud gaming could see a major step up in performance from 5G. The low latency of the network will open up a host of applications like virtual reality, augmented reality and other forms of gaming that are very immersive. The technology is not there yet from a chipset perspective but companies like Nvidia will be soon launching a new line of chips that will get us closer to a whole new level of gaming experience.

About the Author



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- 10 years of investment industry experience
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