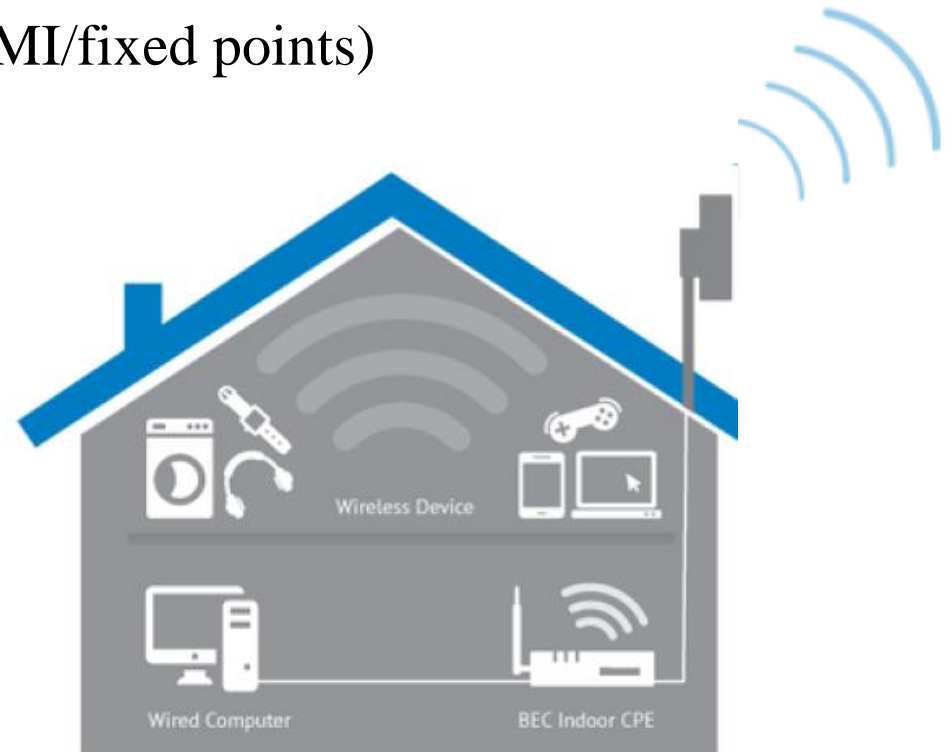


VTel Wireless

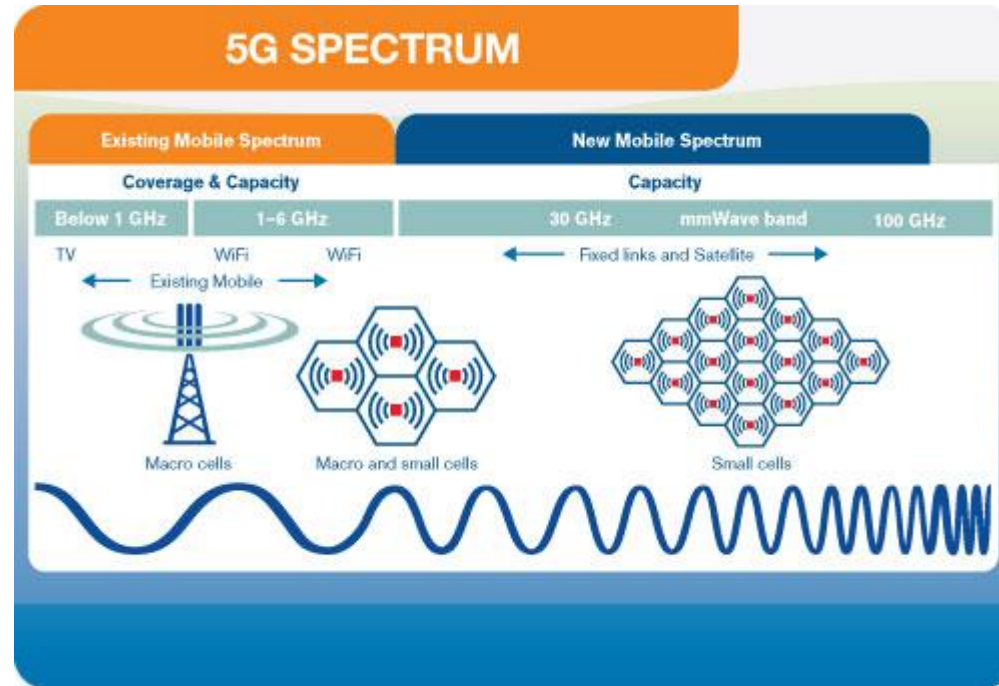
Current Wireless Services:

- Fixed wireless broadband
- Mobile voice (VoLTE, integrated w/E911) and broadband
- Wireless connectivity to GMP Smart Grid (AMI/fixed points) and fleet (mobile)



5G

- 5th generation of mobile networks, standards set by International Telecommunications Union
- Designed to meet the growth in data and connectivity demands of today's society and the internet of things with connected devices
- 5G will initially operate in conjunction with existing 4G networks before evolving to fully standalone networks in subsequent standards/equipment releases and coverage expansions
- Three primary use case categories for 5G:
 - **Enhanced broadband** – providing significantly faster data rates and greater capacity for fixed wireless internet access for homes and enhanced mobile connectivity
 - **Massive machine to machine communications** –Internet of Things (IoT) connecting billions of devices, to revolutionize modern industrial processes and applications including agriculture, manufacturing and business communications
 - **Low latency, ultra-reliable communications** – mission critical including real-time control of devices, industrial robotics, vehicle to vehicle communications and safety systems, remote medical care, autonomous driving and safer transport networks



- VTel Wireless currently utilizing 700 MHz and AWS (1 FCC spectrum
- Early equipment deployment to utilize 2.6 GHz spectrum (VTel holds 72.5 MHz in VT)

VTel Network/Infrastructure Upgrades and Testing to Support 5G

- Core software/hardware upgrade to virtual core to support 5G software loads
- Testing/analysis of propagation/speeds/overall performance of 2.6 GHz spectrum to enhance existing fixed wireless and mobile services with 5G
- Carrier aggregation
- Exterior high-gain antennas for fixed wireless
- Fiber deployment for small cell connectivity
- 5G mobile device/CPE availability (Ericsson Mobility Report 2018)

