

Millimeter Wave Wireless

Emerging millimeter wave (mmWave) wireless communication systems represent more than a century of evolution in modern communications. Since the early 1900s, when Guglielmo Marconi developed and commercialized the first wireless telegraph communication systems, the wireless industry has expanded from point-to-point technologies, to radio broadcast systems, and finally to wireless networks. As the technology has advanced, wireless communication has become pervasive in our world. Modern society finds itself immersed in wireless networking, as most of us routinely use cellular networks, wireless local area networks, and personal area networks, all which have been developed extensively over the past twenty years. The remarkable popularity of these technologies causes device makers, infrastructure developers, and manufacturers to continually seek greater radio spectrum for more advanced product offerings.

Wireless communication is a transformative medium that allows our work, education, and entertainment to be transported without any physical connection. The capabilities of wireless communications continue to drive human productivity and innovation in many areas. Communication at mmWave operating frequencies represents the most recent game-changing development for wireless systems. Interest in mmWave is in its infancy and will be driven by consumers who continue to desire higher data rates for the consumption of media while demanding lower delays and constant connectivity on wireless devices. At mmWaves, available spectrum is unparalleled compared to cellular and wireless local area network (WLAN) microwave systems that operate at frequencies below 10 GHz.