

802.11 Wireless Standards

IEEE Standard	802.11a	802.11b	802.11g	802.11n WiFi 4	802.11ac WiFi 5	802.11ax WiFi 6	802.11axe WiFi 6E
Year Adopted	1999	1999	2003	2009	2014	2019	2020
Frequency	5 GHz	2.4 GHz	2.4 GHz	2.4/5 GHz	5 GHz	2.4/5 GHz	2.4/5/6 GHz
Max. Data Rate	54 Mbps	11 Mbps	54 Mbps	600 Mbps	1 Gbps	1.2 Gbps per stream	1.2 Gbps per stream
Typical Range Indoors*	100 ft	100 ft	125ft	225ft	90ft	50 ft. (5 GHz)	50 ft. (5 GHz)
Typical Range Outdoors*	400 ft	450 ft	450 ft	825 ft	1,000 ft	900 ft. (5 GHz)	900 ft. (5 GHz)

*Range estimates are typical and require line of sight. Basically that means you will need a clear unobstructed view of the antenna from the remote point in the link. Keep in mind that walls and obstacles will limit your operating range and could even prevent you from establishing a link. Signals generally will not penetrate metal or concrete walls. Trees and leaves are obstructions to 802.11 frequencies so they will partially or entirely block the signal.

Other factors that will reduce range and affect coverage area include metal studs in walls, concrete fiberboard walls, aluminum siding, foil-backed insulation in the walls or under the siding, pipes and electrical wiring, furniture and sources of interference. The primary source of interference in the home will be the microwave oven. Other sources include other wireless equipment, cordless phones, radio transmitters and other electrical equipment.