

IEEE 802.11 Standards

802.11 protocol	Release	Freq. (GHz)	Bandwidth (MHz)	Data rate per stream (Mbit/s)	Allowable MIMO streams	Approximate indoor range		Approximate outdoor range	
						(m)	(ft)	(m)	(ft)
-	Jun 1997	2.4	22	1, 2	N/A	20	66	100	330
a	Sep 1999	5	20	6, 9, 12, 18, 24, 36, 48, 54	N/A	35	115	120	390
		3.7				—	—	5,000	16,000
b	Sep 1999	2.4	22	1, 2, 5.5, 11	N/A	35	115	140	460
g	Jun 2003	2.4	20	6, 9, 12, 18, 24, 36, 48, 54	N/A	38	125	140	460
n	Oct 2009	2.4/5	20	7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2	4	70	230	250	820
			40	15, 30, 45, 60, 90, 120, 135, 150		70	230	250	820
ac	Dec 2013	5	20	up to 87.6	8				
			40	up to 200					
			80	up to 433.3					
			160	up to 866.7					