

13 Wireless Networks

13.1 Wireless Access Networks

The table below provides a summary of some basic technical details, and uses, of the different wireless access technologies currently available. The information in Table 27 is taken from current information and is for guidance purposes only.

Table 27 – Wireless access networks

Technology	Standards	Frequency	Data rate	Maximum Range	Typical usage
WiMAX	IEEE 802.16 IEEE 802.16-2 IEEE 802.16e (mobile)	2.4, 2.5, 3.5 and 5.5GHz	Base station up to 75Mbit/s in a 20MHz wide channel User: 15Mbit/s max.52kbit/s to 5Mbit/s typ.	max 30..50km to next base station	voice, data, multimedia services
HSDPA(3.5G)	3GPP	see GSM (other frequencies are also in use in some countries)	Base station: 8 to 10Mbit/s in a 5MHz wide channel User: 3.6Mbit/s max.400 to 700kbit/s typ.	max 30..50km to next base station Depends on the number of users in a cell.	voice, data, multimedia services
DECT	ETSI EP DECT	1,9GHz	552kbit/s, up to 2Mbit/s	300m	cordless phones, local loop
GSM (2G)	ETSI SMG	0.9 / 1.8 (0.85/ 1.9 in the USA) GHz	13kbit/s for voice, 9.6 kbit/s for data	max 30..50km to next base station	voice and data, WAP
GPRS (2G)	ETSI SMG	see GSM	171kbit/s	See GSM, less for max. data rates	data services, WAP
EDGE (3G)	3GPP GERAN	see GSM	384kbit/s	See GSM, Note: less at max. data rates	data services, 3G systems in the U.S.
UMTS (3G) (WCDMA, TD-CDMA)	3GPP	1.90..1.98,	144, 384kbit/s, 2Mbit/s (max)	depending on number of users in cell	voice, data, multimedia services
802.11a	IEEE	5.15GHz	54Mbit/s	50m	WLAN – see also table 8
802.11b	IEEE	2.4GHz	11Mbit/s	100m	WLAN – see also Table 28
802.11g	IEEE	2.4GHz	54Mbit/s	100m	WLAN – see also Table 28
Hiperlan/2	ETSI BRAN	5.2GHz (in 4 and 5GHz band licensed)	54Mbit/s	30..200m	WLAN, local access to ATM
Bluetooth	Bluetooth SIG	2.4GHz	721kbit/s	0.1,10..100m	periphery devices
Hiperaccess	ETSI BRAN	40.5 / 43.5GHz	25Mbit/s	5km	Point to point remote access to IP / ATM

13.2 Summary of the Different Versions of IEEE 802.11x (WiFi)

Table 28 provides current details of IEEE 802.11x (WiFi) variants.

Table 28 - IEEE 802.11 versions

Protocol	Release Date	Operating Frequency	Data Rate (Typical)	Data Rate (Maximum)	Range (Indoor)
Legacy 802.11	1997	2.4 -2.5GHz	1Mbit/s	2Mbit/s	?
802.11a	1999	5.15-5.35/5.47-5.725/5.725-5.875GHz	25Mbit/s	54Mbit/s	~50 metres
802.11b	1999	2.4-2.5GHz	6.5Mbit/s	11Mbit/s	~100 metres
802.11g	2003	2.4-2.5GHz	11Mbit/s	54Mbit/s	~100 metres
802.11n	2006 (still in draft)	2.4GHz or 5GHz bands	200Mbit/s	540Mbit/s	~50 metres (~160 feet)

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