802.11a is another early Wi-Fi standard, ratified by the IEEE in 1999 along with 802.11b. It operates in the 5 GHz frequency band and offers higher data rates compared to 802.11b, with a maximum theoretical data rate of up to 54 Mbps.

Here are some key features of 802.11a:

- **Frequency Band**: Unlike 802.11b, which operates in the 2.4 GHz ISM band, 802.11a operates in the 5 GHz UNII (Unlicensed National Information Infrastructure) band. This band offers more channels and typically experiences less interference from other devices like Bluetooth and microwave ovens.
- **Modulation Technique**: 802.11a also uses orthogonal frequency-division multiplexing (OFDM) modulation for data transmission, which is more resilient to multipath interference compared to the direct-sequence spread spectrum (DSSS) modulation used in 802.11b.
- **Data Rate**: With a maximum theoretical data rate of 54 Mbps, 802.11a offers significantly faster speeds than 802.11b. This made it suitable for applications requiring high throughput, such as multimedia streaming and large file transfers.
- **Backward Compatibility**: 802.11a is not backward compatible with 802.11b due to differences in the frequency band and modulation scheme. However, dual-band devices that support both 802.11a and 802.11b/g became common, allowing them to connect to networks using either standard.
- **Range and Coverage**: While 802.11a offers higher data rates, its range is generally shorter compared to 802.11b, especially indoors, due to the higher frequency and greater susceptibility to attenuation by walls and other obstacles.

802.11a was widely used in certain niche applications and environments where high data rates and immunity to interference were critical. However, it was eventually surpassed in popularity by standards like 802.11g and later iterations, which offered a balance of speed, range, and compatibility.