



## Information about 2.4 GHz and 5 GHz wireless network

Use of the wireless UvA network has greatly intensified over the recent period. In addition to the number of access points and users, network interface cards in mobile devices also affect the availability of the wireless network.

Wireless networks use 2.4 and 5 GigaHertz (GHz) frequencies to transfer network data.

### **2.4 GHz band (802.11b/g/n)**

Wireless Internet generally uses the 2.4 GHz frequency band (b/g band). However, this band has an increasing number of limitations, with a large number of wireless devices using the frequency to transfer data. Examples of devices that use the 2.4 GHz frequency band are Bluetooth, burglar alarms, microwave ovens, headphones and wireless network transmitters. The number of channels within this 2.4 GHz band is limited to three – analogous to a three-lane motorway; there are only ever three lanes available and they cannot be expanded. If there are too many interfering transmitters in the vicinity or a large number of users, the band will become jammed. Access to and connections with the wireless network may become unstable as a result.

### **5 GHz band (802.11a)**

A 5 GHz band (a-band) is also available. The 5 GHz band has more channels (19) than the 2.4 GHz band (3) and is used by a far smaller number of devices. As a result, there is little interference from other transmitters, making the 5 GHz band faster and more stable. The only drawback is that some mobile devices do not have a WiFi adaptor (wireless network interface card in the mobile device) capable of using this band.

### **Recommendation**

Central Computer Services (IC) recommends that users check the network interface card when purchasing a laptop, tablet or smartphone. We recommend that you make sure your purchase has a network interface card that meets the following specifications: network interface card suitable for 802.11a (5 GHz band).

### **Situation at the UvA**

The UvA uses two wireless networks: 'uva' and 'eduroam'. The wireless 'uva' network exclusively uses the 5 GHz band. Employees and students with a network interface card suited to 5 GHz (a-band) can connect to this network.

The wireless 'eduroam' network uses both the 2.4 GHz and 5 GHz bands and will automatically configure devices to the appropriate setting. Employees and students with a network interface card that can only connect to 2.4 GHz (network interface cards with 802.11b/g/n), can use the 'eduroam' network. Users connected to the 2.4 GHz network may experience unstable connections or connection failures in locations that are extremely busy or in the vicinity of interfering transmitters.