This thesis was written to promote awareness of wireless network security to the ICT industry and the general public. It gives an overview of the current security state in Oslo, Bergen, Kristiansand, Tromsø and Flekkefjord. The data was gathered through war-walking and war-driving in the mentioned cities, and the results were deduced from an analysis of 35 194 wireless networks. The findings showed that 36 % was either unencrypted or encrypted with the deprecated WEP protocol. Through the analysis of these and other findings, this thesis discusses the role of parties influencing wireless network security. It also provides a description of potential consequences, followed by counter-measures and recommendations. The magnitude of insecure wireless networks is a major risk to Norwegian citizens and to the society itself.
The 802.11 standards codify improvements that boost wireless throughput and range as well as the use of new frequencies as they become available. They also address new technologies that reduce power consumption. The purpose of 802.11ah is to create extended-range Wi-Fi networks that go beyond typical networks in the 2.4GHz and 5GHz space (remember, lower frequency means longer range), with data speeds up to 347Mbps. Known as High Efficiency WLAN, 802.11ax aims to improve the performance in WLAN deployments in dense scenarios, such as sports stadiums and airports, while still operating in the 2.4GHz and 5GHz spectrum. 802.11az. Called Next Generation Positioning (NGP), a study group was formed in January 2015 to Remember, 802.11 wireless standards use the CSMA/CA access method. The 802.11 wireless standards can differ in terms of speed, transmission ranges, and frequency used, but in terms of actual implementation they are similar. All standards can use either an infrastructure or ad hoc network design, and each can use the same security protocols. Ad hoc and infrastructure wireless topologies were discussed in Chapter 1. IEEE 802.11: There were actually two variations on the initial 802.11 wireless standard. Both offered 1 or 2Mbps transmission speeds and the same RF of 2.4GHz. 802.11 is a family of IEEE standards for wireless local area networking including 802.11b/g/n/ac. The first of these standards was ratified in 1997. 802.11 established wireless local network communication as a mainstream alternative to Ethernet. Being first generation technology, 802.11 had serious limitations that prevented it from appearing in commercial products - data rates, for example, 1-2 Mbps. 802.11 was quickly improved on and made obsolete within two years by both 802.11a and 802.11b. Evolution of 802.11. 802.11i - security improvements for the 802.11 family (2004). 802.11j - enhancements to 5 GHz signaling to support Japan regulatory requirements (2004). 802.11k - WLAN system management. 802.11l - skipped to avoid confusion with 802.11i.