SAVONIA

OTHER REPORT – BACHELOR'S DEGREE
TECHNOLOGY, COMMUNICATION AND TRANSPORT

Wireless Technology & Manufacturer Landscape

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1 INTRODUCTION AND DEVICES

This report identifies key Original Equipment Manufacturers (OEMs) for various wireless communication technologies, focusing on technical specifications and industrial applications.

1.1 LoRaWan Gateway

(https://tektelic.com/products/gateways/)

The LoRaWan gateway is a device used as a bridge between IoT devices and the internet. It tunes in to LoRaWan signals and then transmits them to a server via the internet. Tektelic has a variety of different gateways including enterprise grade, solar powered, and mobile ones.

1.2 NB-IoT module

(https://www.st.com/en/wireless-connectivity/nb-iot-products.html)

Uses LTE technology for connections to IoT devices. These are useful in indoors due to their extreme signal penetration. STMicroelectronics has a variety of options with different features including: gnss, WiFi positioning, SIM card, etc.

1.3 Sigfox Device

(https://www.st.com/en/wireless-connectivity/balf-spi2-01d3.html)

Sigfox is a low power WAN that is used when the data volume is low and the operating range is very large. It is a simple sensor that is built for efficiency meaning low costs.

1.4 Zigbee Module

(https://www.st.com/en/wireless-connectivity/zigbee-products.html)

A low-power, short-range radio chip creates mesh networks where devices pass data to each other. It’s the industry standard for home automation and industrial sensor networks where reliability and low latency are important.

1.5 Bluetooth Low Energy (BLE) Beacon

(https://www.st.com/en/applications/connectivity/bluetooth-low-energy.html)

A small transmitter that repeatedly broadcasts a unique ID signal to nearby smartphones.It acts like a lighthouse so an app can tell exactly where you are standing in a store or museum.

1.6 Ultra-Wideband (UWB) Transceiver

(https://www.st.com/en/wireless-connectivity/b-uwb-mod1.html)

A radio chip that sends short pulses over a wide frequency range to measure distance with centimeter-level precision. It is the tech behind digital car keys and precision tracking tags because it can calculate exactly how far away a device is by measuring the Time of Flight of the signal.

1.7 Wi-Fi 6 Chipset

(https://www.intel.com/content/www/us/en/products/details/wireless/wi-fi-6-series/products.html)

The silicon heart of modern routers and laptops, designed to handle high-density environments efficiently. It uses tech like OFDMA to let a router talk to multiple devices at the exact same time, reducing lag and increasing total speed.

1.8 Wi-Fi 6E Access Point

(https://www.alliedtelesis.com/fi/en/products/wireless/access-points)

An enterprise-grade wireless hub that adds access to the brand-new 6GHz band. This eliminates interference from older devices and neighbors.

1.9 5G IoT Module

(https://iot.onesimcard.com/iot-sim-card/?utm_source=bing&utm_medium=cpc&utm_campaign=M2M%2520IoT%2520SIM%2520Card&utm_term=best%2520iot%2520sim%2520card&utm_content=IoT%2520SIM%2520Card)

A high-performance cellular module that brings fiber-optic speeds to machines. It’s used in advanced applications like self-driving cars, remote surgery robots, or industrial 4K cameras that need to move massive amounts of data with almost zero delay.