



### Super Radio AS

Super Radio AS, a high-tech startup founded in 2014 in Oslo, is the maritime 5G pioneer for ocean digitalization and autonomous ship. It provides professional maritime land-based broadband solutions, radio channel measurement/channel sounding solutions and related consultant services.

Since 2016, Super Radio AS is leading the world's first 5G Maritime communication project "LTE, WIFI and 5G Massive MIMO Communications in Maritime Propagation Environments (MAMIME)" funded by the Norwegian Research council. In this project, a dedicated maritime massive MIMO solution (See figure 1) has been proposed, which shows great potential of increasing the system performance in terms of coverage, throughput and stability. A massive MIMO channel sounder has been developed, measurements have been performed and a large amount of radio channel data has been acquired. The MAMIME project was using a 128-antenna horizontal array, which was regarded as the largest in the world at that time. The proposed massive MIMO concept has been validated by analysing the large amount of radio channel sounder measurement data, and large extra signal processing gain has been achieved compared with the conventional selection combining technology.

In 2017, the world's first maritime 5G massive MIMO channel measurement campaign with a research vessel for autonomous operations was successfully performed in the MAMIME project in Trondheimfjord (See the video link: <https://youtu.be/xKCWIK4GYhc>). In 2019, Super Radio AS became the pre-5G test solution provider for the small-version yara birkeland, which is the world's first fully electric and autonomous container ship. Our solutions have the potential of covering up to 50-70 km from coastline stably with up to 200 Mbps.

Our project and company have been widely promoted globally by Nasdaq, Bloomberg, Futureiot, DigitalNorway, Massive MIMO blog, etc and invited for presentations in 5G world submit, Asia Pacific Maritime, Autonomous Ship Technology Symposium 2021, and Marketsandmarkets 5G submit.



Figure 1, the maritime massive MIMO solution at base station side.