



# MAGICA

## Multi-frequency Automotive GNSS Integrated Antenna

### Key facts

**Full name**

Multi-frequency Automotive GNSS Integrated Cost-effective Antenna

**Project call number**

GSA/GRANT/01/2018

**Project call**

Multi-frequency Multipurpose Antenna for Galileo

**Funding**

1 987 883,08 EUR

**EU contribution**

1 391 518,15 EUR

**Topic**

Transversal

**Market segment**

Automotive

**Project start/end**

01/08/2020 – 31/03/2023

**Galileo differentiators**

Multi-frequency GNSS

### Context and motivation

Automated vehicles are becoming a reality, with the promise of safer and more efficient roads. GNSS plays a large role in providing accurate information for automated vehicles. In this context, the automotive market demands make the implementation of high-performance GNSS receivers very difficult. On the one hand, the size and silicon consumption must be significantly reduced while, on the other, the cost of the devices must be limited.

**The need of cost-effective solutions maintaining high standards of technical performance** is the main driver leading to

the MAGICA – “Multi-frequency Automotive GNSS Integrated Cost-effective Antenna” project.

The **new antenna** built within the frame of the project is meant to **increase the frequency bands that are offered to the vehicles’ GNSS receivers and to lead to a greater balance between performance and cost** of the GNSS high-accuracy systems.

The target application is autonomous driving where centimetre-level accuracy is a mandatory requirement to meet safety and reliability requirements.



### Targeted GNSS innovation

Multi-frequency GNSS



### Targeted Product

Multi-frequency GNSS antenna

### Scope

The MAGICA project outcomes include a new antenna that is intended to go beyond the state of the art: the development of a **cost-effective, high precision positioning antenna**, capable to provide multi-frequency characteristics and phase stability as the most relevant performance features. The resulting product aims to be **commercially ready**, in order to be integrated on a vehicle for Autonomous Driving operation.

### Challenge & technical solution

The development of the new antenna posed several challenges such as design definition, electrical performance and reliability, the Radio frequency amplification scheme and components definition. In this context, different scenarios were considered “**antenna on free-space**”, “**antenna integrated on a vehicle**” and “**antenna connected to high precision GNSS receivers**” to test different operational environments for the component.

