SMART ANTENNA SYSTEMS
MINIMUM SIZE – MAXIMUM PERFORMANCE

Antennas are an essential component of any wireless communication system. They meet demanding requirements, are small and powerful, and ensure first-class reception and efficient, non-interfering radio communication.

Whether single antennas or multi-antenna systems, we step up to the challenges of a connected world and offer a broad range of smart antenna systems with minimum form factors, designed for your specific requirements.

AUTOMOTIVE

Connected, safe, and informed

As the vision of self-driving cars becomes reality, the requirements on automotive antenna systems will become more demanding. The interaction of car networking, localization, and navigation demands top performance from antenna design, measurement technology and integration.

Each application uses different frequency bands and requires smart antenna solutions with reduced complexity while providing higher performance. Even today, tailored antenna design is crucial for innovative vehicle communication.

Our antenna systems are optimized for use in the smallest spaces, support international radio standards, are broadband-capable and interference-proof. They make future communication and navigation systems possible.

INTERNET OF THINGS

Intelligent connection of people, data, and processes

Digitization is progressing in every area of life, and with the Internet of Things it is creating the ability to connect people, processes, data, and objects. Flawless networking requires powerful, compact, and flexible antenna systems.

The Fraunhofer IIS Multibeam Antenna is the answer to the logistical and technological challenge of optimizing entire process chains. This powerful, smart RFID antenna ensures a larger field of view, higher reading rates, and more accurate positioning than conventional antennas.

Our intelligent antenna solutions are ideal for IoT-based scenarios. With their efficient data capture and signal processing, they form the basis for communication between a large number of objects. The targeted control of antennas enables precise localization of objects. Our antenna systems also have the ideal properties for healthcare and wearable applications.

Radiation Pattern of the Fraunhofer IIS Multibeam Antenna (Linear Scaling)
**SATELLITE COMMUNICATION**

**High-precision satellite navigation**

Positioning and navigation by satellite technology is highly desirable in many applications because of its global availability and high bandwidth. Navigation antennas are responsible for the reliable reception of satellite signals, even under challenging conditions. Urban and indoor navigation in particular requires novel antenna concepts that can recognize and suppress interferences.

With our extremely small GNSS antenna we have developed a solution that meets all requirements of the global navigation satellite systems (GNSS) for precise positioning and interference-free navigation. We’ve even developed an antenna for the extreme conditions in space.

**SAFETY**

**Absolute reliability in any situation**

In critical situations, interference-free, full-coverage, high-performance communication is essential for public and individual safety. Antennas for safety applications must accordingly meet very high standards and work with precision and absolute reliability in any situation, because exact localization can save lives in an emergency.

Our focus is on the development of reliable directional antennas for radio signal monitoring and disaster management. We offer customised antenna solutions that can cope with demanding challenges and are configured for their specific operational conditions.

**FROM THE IDEA TO THE ANTENNA SOLUTION**

Whether development, independent measuring services, licensable technologies or assistance in making your product idea a reality, we have the ideal solution to any need.

**Consulting and evaluation**

In antenna development, compatibility with other system components is important. Therefore, the first step toward successful implementation is an exact analysis of the technical requirements. For this purpose we offer comprehensive consulting and evaluation of existing systems’ functionality and efficiency.

**Development and implementation**

Antenna development is our strength. We implement and verify antenna concepts to fit specific application scenarios and help you bring them to maturity.

**Measurement and testing services**

As an independent research institute, in addition to consulting and development we also offer measurement and testing services in which we verify and run measurements on your antennas.

**Licensing**

We can add customer-specific features to our antenna solutions at any time. Generally, licensing scales with the type of application and the adaptation effort.
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