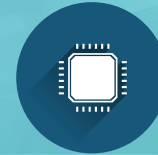


Fraunhofer  
ENAS  
ANDE-02 - 60 L/cm  
[20100325] LASERGRAVUR

## Components

# Printed Antennas



## Fast Facts

- Development service provider for printed antennas (WLAN, Bluetooth, RFID, 5G, ...)
- Design, simulation, manufacturing and characterization

## General description

Printed antennas are thin, planar or non-planar metallic pattern which can be used for different kind of applications like WLAN, Bluetooth, 5G, RFID, .... They can be printed on nearly every rigid and flexible, 3D- as well as planar objects.

One major competence of the Fraunhofer ENAS is design, simulation, printing/manufacturing and characterization of the adapted and customized RF antennas. The antennas can be manufactured by employing traditional printing (screen, gravure) as well as digital manufacturing equipment based on inkjet technology. These digital fabrication systems facilitate highly flexible and economic optimized antenna manufacturing processes for large-scale production down to batch size of 1 antenna.

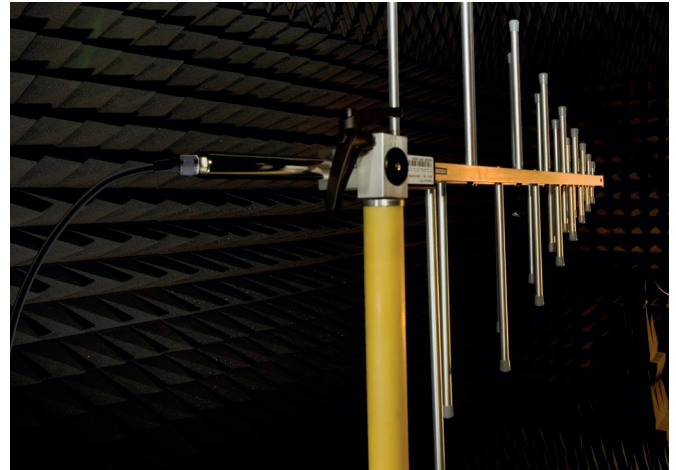
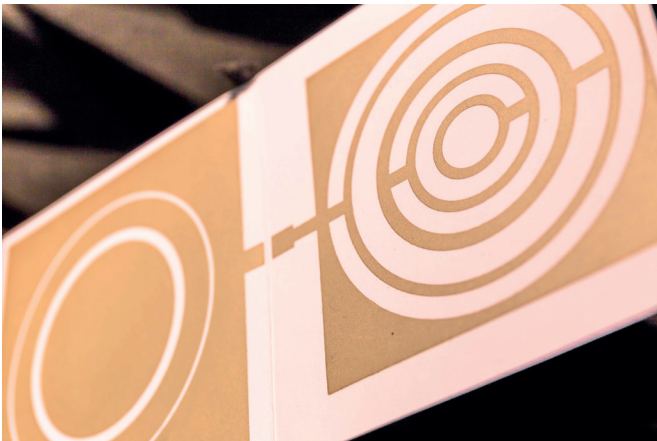
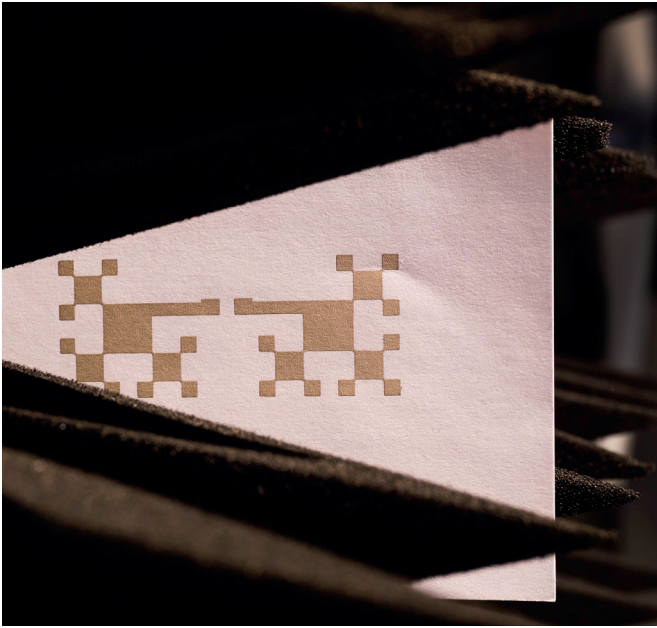
## Design

Design of application oriented antenna (monopoles, dipoles, patches, arrays, ...)

## Simulation

- Employing simulation tools: CST Studio Suite™ [Microwave Studio]
- True-to-scale representation of complex antennas and its application environment
- Simulation of the antenna properties (scattering parameters, VSWR, wave impedance, 3D-directivity, ...)





### Manufacturing

- R2R screen and gravure printing, sheet-to-sheet and R2R inkjet printing
- Printing on different rigid and flexible substrates; polymers [PET, PEN, ...], papers, textiles, sheet metal

### Characterization

- Measurement of the antenna properties (scattering parameter, VSWR, wave impedance, 3D directivity, ...)
- Measurement range: 9 kHz – 30 GHz

### More about Printed Functionalities



Fraunhofer ENAS is part of



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Fraunhofer ENAS  
All information contained  
in this datasheet is prelimi-  
nary and subject to change.  
Furthermore, the described  
system is not a commercial  
product.