VACANCY NOTICE

Ph.D. POSITION

ECLEXYS SAGL is a Swiss privately owned company founded in 2005, active in the fields of data communication and security, whose core business is the development and sales of solutions and services addressing specific technology-demanding, requirements. ECLEXYS combines hardware and software expertise while keeping a strong focus on innovation, performance, optimization and integration aspects. The know-how level is the result of long lasting experiences in research, development and industrialization activities in the frame of technological work on industrial and research projects.

About the role:

Enrolment in Doctoral degree(s): Universidad Carlos III de Madrid

Fellow: ESR12

Host Institution: ECLEXYS SAGL

Duration: 36 months

Main (host) supervisor/Contact: Dr. Jaouhar Ayadi (ECLEXYS SAGL)

Objectives:

Massive MIMO and mmW communications are key ingredients of the evolution of mobile communications. The use of a large number of antennas allows combating the high path loss at these frequencies while the small wavelength facilitates the use of nay antennas with a reduced form factor. The objective of this ESR work plan is to study and propose signal processing techniques for Massive MIMO enabled mmW communication including sparse MIMO channel estimation, energy efficient power control of multiuser massive MIMO, and hybrid analogue/digital precoding strategies that allow a feasible implementation of mmW massive MIMO while ensuring a high spectral efficiency. Performance and security of such techniques will be evaluated and the most interesting ones that will fit the 5G communications requirements will be validated through prototyping, testing and real-field measurements.

Results expected from the candidate:

The following results will be obtained: at least one efficient scheme that is dedicated to the use of massive MIMO enabled mmWave communication systems for the 5G wireless networks; an optimized technique that satisfies the identified “performance –processing complexity” trade-offs and then that represent good candidates for the 5G wireless networks; proof-of-concept of the investigated approaches through prototyping, testing and real-field measurements.