



CAMPUS
DE EXCELENCIA
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Radio Communications Research Group
Grupo de Radiocomunicación (GRC)



The Radio Communications Research Group (GRC) of the Technical University of Madrid is research group expert on Wireless Communications and sensors with a long experience of more than 20 years working on the design, development and testing of RF and microwave prototypes for critical applications.

In particular, we have experience in the development of systems and platforms for wireless communications, telemetry, radar and sensing , where we have worked with military radars, SAR satellite and other advanced platforms.

We have a long experience in the use of (IoT) sensor using WiFi, LoRa, 5G and satellite communications for security applications like: fire , impact , vibrations, temperature, gas, and others

We are also experts in the use of Software Defined Radio (SDR) systems, we have developed high TRL (6-8) prototypes for communications, radar sensors, railway beacon modem and object tracking.

At applicative level we have experience on the design of devices for identification (RFID, Radio-Frequency Identification) and geo-localization (GNSS, Global Navigation Satellite System, GPS and Galileo) and inertial systems that combined with communications WiFi, LoRa, 5G and satellite can be use on UAVs , UGVs , person and objects tracking for surveillance applications

The last years we have started a promising research line of inside objects detection using high frequency signals and radar, radar SAR, georadar and specific microwave sensors . On this area we can integrate the complete prototype: Microwave sensor (up to 40 Ghz), baseband processor, final application.

Particular important is our experience in critical communications for transportation systems. On this environment we have work many years with communications for High Speed trains, UAVs communications, vehicular to vehicle communications for safety and protection of trains and cars .

Furthermore, we range from modeling and simulation of propagation on outdoor and indoor environments and all the facilities for the design of RF and microwave circuits and systems, up to the testing through dedicated RF instrumentation. The group has two full anechoic cameras for radio and EMC testing, both shielded.

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