

# Study of the Influence of Dogs in Radio Propagation Considering Domestic Environments

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With the arrival of the concept of Internet of Things(IoT) new applications are being developed and unknown scenarios from the point of view of electromagnetic propagation are emerging. Thus, high variety of studies of monitoring systems for objects or living beings can be found in the bibliography. In this sense, animal monitoring systems have been developed for years to watch over livestock in farms or wildlife habits, however, pet monitoring systems are less usual but they are expanding thanks to the new wireless systems. The use of location systems as GPS together with ZigBee, WiFi or mobile communication technologies can determine in a precise way the place of a pet. The behavior or biological parameter of the animal can also be remotely monitored through sensors.

In this work the electromagnetic propagation inside a home is studied comparing both, theoretical data obtained from an in-house developed 3D Ray Launching method and measurements carried out with XBee devices. Simulation tool has been configured considering the properties of transmitter. Besides, a dog is included in the scenario equipping it with the device and implementing a simplified pooch model in the simulator. This model has been programmed taking under consideration not only the morphological properties of dogs, but also the dielectric characteristics of their biological tissues. It has been placed in the living room and several measurement points have been considered all over the house. Starting from these results, power distribution, BER results and comparisons of received power vs simulation results have been obtained.

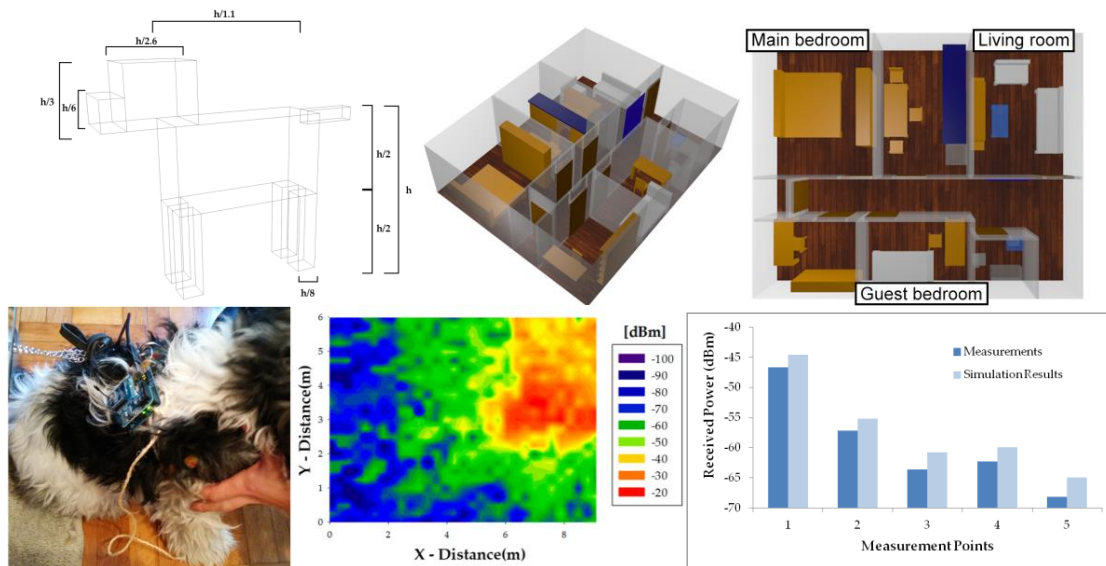


Figure 1. (Up) Simplified dog model; 3D representation of scenario.(Down) Dog with the device attached; Power distribution results; Comparison between measurements and simulation results.