UMR CNRS 9007

Master Internship

4 to 6 months starting March/April 2020

Embedded Antenna Efficiency Measurement In Reverberation Chamber

Context

The integration of antenna solutions within a complex environment, as for embedded antennas (concrete, bitumen…), on-body and intra-body antennas, modifies the antenna characteristics and make their evaluation very sensitive. In particular, the antenna radiation efficiency evaluation becomes very tricky using classical anechoic chamber measurements due to alignment issues when the antenna location is unknown within a concrete block for example. Alternative approaches based on Reverberation Chamber (RC) measurement are currently investigated, especially at the ESYCOM laboratory [1], in order to overcome current limitations.

Objectives

This internship aims at evaluating the radiation efficiency of embedded antennas in L, S and C frequency bands (1-8 GHz). After a state of the art on embedded antenna efficiency evaluation, the intern will perform measurements within the ESYCOM RC (Figure 1) to validate the procedure. Then, measurements of several antennas embedded in various media will be made in order to compare their behavior while embedded in lossy media.

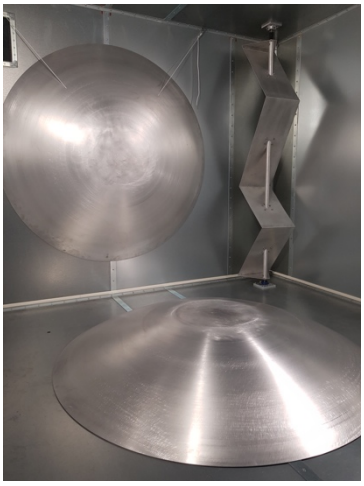

Figure 1 – ESYCOM Reverberation Chamber.

Profile

- Enrolled in a Master degree or equivalent
- Background in electromagnetics and antennas
- Interested for high frequency measurement
- Autonomous and highly motivated

Application deadline: ***March 30, 2020***

Resume, cover letter and last transcripts of grades to be sent at

- Élodie RICHALOT (Full Professor) : elodie.richalot@u-pem.fr
- François SARRAZIN (Associate Professor) : francois.sarrazin@u-pem.fr

Work environment

This internship will take place at the ESYCOM laboratory, Unité Mixte de Recherche CNRS (UMR 9007), on the University Gustave Eiffel campus. The ESYCOM laboratory owns a great expertise both in RC measurement and statistical properties evaluation [1]-[3]. the laboratory owns numerous measurement platforms and tools including three anechoic chambers and an RC.

References

[1] W. Krouka, F. Sarrazin and E. Richalot, "Influence of the reverberation chamber on antenna characterization performances," Int. Symp. and Workshops Electromagn. Compat. (EMC Europe), Amsterdam, 2018.

[2] F. Sarrazin and E. Richalot, "Accurate Characterization of Reverberation Chamber Resonant Modes From Scattering Parameters Measurement," IEEE Trans. Electromagn. Compat., 2019.

[3] K. Selemani, J.-B. Gros, E. Richalot, O. Legrand, O. Picon and F. Mortessagne, "Comparison of Reverberation Chamber Shapes Inspired From Chaotic Cavities", IEEE Trans. Electromagn. Compat., 2014.