

Investigation into NRL-ARCH versus RCS for absorber reflectivity measurements

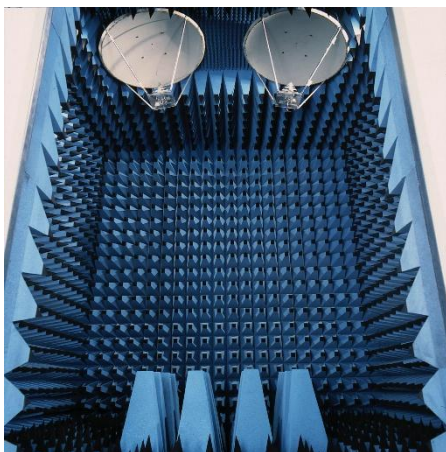
Master Thesis

Motivation:

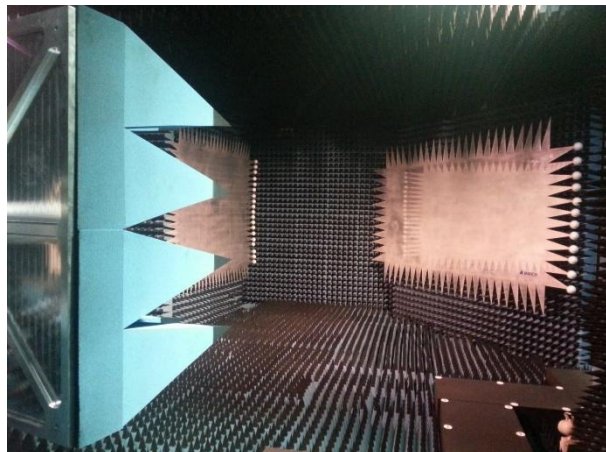
While the NRL-ARCH method [IEEE 1128] has been accepted as the method of choice for the measurement of absorber reflectivity, the method seems difficult to maintain for increasingly high frequency measurements. The radar cross section (RCS) method in conjunction with a compact antenna test range (CATR) seems to be better suited for future measurement demands, however recent reports have suggested that the RCS method overestimates the absorber performance (e.g. lower reflectivity) by as much as 10 dBs. While comparing both methods under the hood, one notices that the NRL-ARCH method is very similar to the RCS method, one could say it is a poor-man's RCS measurement with the main differences being the illumination of the absorber surface as well as the calibration methods.

Tasks:

1. Literature research on both the NRL-ARCH and absorber RCS measurements
2. Theoretical comparison of measurement setup, providing one or preferably several hypotheses on where the differences in measurement results can originate
3. Setup simulations to investigate the different hypotheses
4. Perform measurements to prove the simulation results



NRL-ARCH Method



RCS Method