

Telecommunication and networks training period in the Széchenyi István University in Győr, Hungary

Thanks to a bridge between the ENIC and the Széchenyi István university, I had the opportunity to study many wireless communications included GSM technologies and RFID equipment in Győr.

The Hungary, Győr and the university and its anechoic chamber

Győr, city of Hungary

With its 93 000 square kilometers, Hungary counts 10 millions of inhabitants. An important date is 1990 when it became independent. I discovered new habits and a different culture.

Győr is half-way situated between Budapest and Vienna. This colourful town is one of the most dynamical developing cities of Hungary.

The university and its laboratories

The university was created in 1968 and since, has got a good reputation in Hungary as a teaching and research center.

I am proud to say that I was one of the first students to make measurements in the anechoic chamber. This is a 10-meter length RF shielded room working for a frequency range from 30 MHz to 1 GHz. It is used to verify the electromagnetic compatibility of the tested equipments.

Manipulations on GSM and networks equipments

The first activity I did is the commissioning of the Nokia Metrohopper and Flexihopper. These are radio relay links presenting a great capacity and using high frequencies in order to avoid interferences with the mobile network.

Then, I learned to simulate GSM bursts with the WinQSim software by composing frames and by adding noise and others effects.

A simple but interesting practical work was to find the bandwidth of a BTS duplex filter for the uplink and the downlink. The found results were which I expected to find.

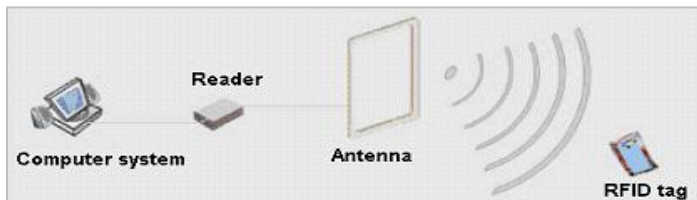
I also make netmonitoring on Nokia phone in Győr. My aim was to find the nearest BTS station, what I almost succeed to do but considering I lot of hypothesis.

At the end, I implicate myself in the remote measurements through the LAN network by using an Agilent gateway. To my mind, it is impressive to be able to control laboratory equipments such as voltmeter or oscilloscope.

The Radio Frequency Identification

What is RFID?

This auto-ID technology is a method to identify unique items using radio waves. Typically, a reader communicates with a tag (active or passive) by the intermediate of an antenna. RFID has a brilliant future as a commercial application for anti-theft systems.



Measurement test procedure on a model

The model I tested uses the 13,56 MHz frequency and has got a passive tag.

In the anechoic chamber, I evaluated the spurious radiations (unwanted signals) and try to find the ERP for one of them.

In free space, the goal was to measure the magnetic field of the carrier and to find the bandwidth.

Finally, I found that the model was in accordance with the appropriate ETSI standard.

To sum up, I would say that I am grateful to have acquired a practical knowledge in GSM technologies and to have led a complete test survey concerning the RFID system EMC. I would like to add that this training period was different to the precedent ones, considering the fact I was completely immersed in a new culture.

Domain: telecommunications and computer systems networks

Sector: GSM and Electromagnetic Compatibility.

Keywords: telecommunication, networks, GSM, Hungary, equipments, filter, remote measurements, netmonitoring, RFID survey, auto-ID, magnetic field, carrier, bandwidth.