**Lab 1a: Analyzing GSM Signals**

**Objective:** Provide analysis of GSM signals used to communicate to a cell tower

**References:** <http://www.techort.com/analysis-of-traffic-of-gsm-networks-in-wireshark-habrahabr/>  
<https://www.youtube.com/watch?v=j4VY9JxTJbw>

**Due Date:**

**TASKS**

1. **Using Wireshark, open the packet capture included in the Lab #1 folder.**
2. **Analyze the packets.**

**Write-up (limit 2 sheets)**

1. In the Wireshark GUI, perform the following analysis. You can sort packets by their type by clicking on the Info header in the Wireshark GUI.
   1. Look for a “**System Information Type 1**” packet.
      1. Document the List of ARFCNs in the Cell Channel Description – List of ARFCNs.
      2. Using this website, https://www.cellmapper.net/arfcn, for each ARFCN identified, list the Uplink Frequency (phone to base station) and the Downlink Frequency (base station to phone) for a GSM network.
      3. What is the maximum number of retransmissions on the RACH?
      4. How many slots are used to spread the transmissions?
   2. Look for a “**System Information Type 3**” packet.
      1. Document the Cell Identity.
      2. Document the Mobile Country Code.
      3. Document the Mobile Network Code.
      4. Document the Location Area Code.
   3. Look for an “**Immediate Assignment**” packet.
      1. Which Timeslot is assigned to this device?
      2. Is the channel a Hopping channel?
      3. What is the Single channel identifier?
   4. Look for the “**Paging Request Type 2**” packets.
      1. Find a packet that has both TMSIs and IMSIs in it.
      2. List the TMSIs and their Mobile Identity.
      3. List the IMSIs and their Mobile Identity.
      4. What is the Mobile Country Code (MCC)?
         1. What is the Mobile Network Code (MNC)?
         2. What is the Mobile Subscription Identification Number (MSIN)?