Dr. Christoph Lauter   El Paso, 12/03/2024
529 Moondale Dr.
El Paso, TX, 79912

To
Federal Communications Commission

*Purpose of Intent for an Experimental Licence*

Madam, Sir,

The purpose of the research for which the license under the FRN 0033977257 is to enhance and develop my current educational methods in Computer Science. I, Christoph Lauter, am an Associate Professor of Computer Science and I am required to teach Software Defined Radio and GSM technology to Undergraduate and Graduate Students. In order to allow me to get up to speed with modern technology of this type, I would like to install an experimental GSM network for my own training purposes.

The specific objectives to be completed are the following:

- Having a tangible example of a functioning BTS
- Enhancing the quality of the knowledge transmitted to students

    The technology on which this research relies was brought to us from the hardware company Sysmocom along with the software provided by Osmocom company. The concept of this research is to set up a functioning GSM BTS, the components along with the communication protocols to be used are shown in the figure below:

Source: https://osmocom.org/projects/osmobts/wiki
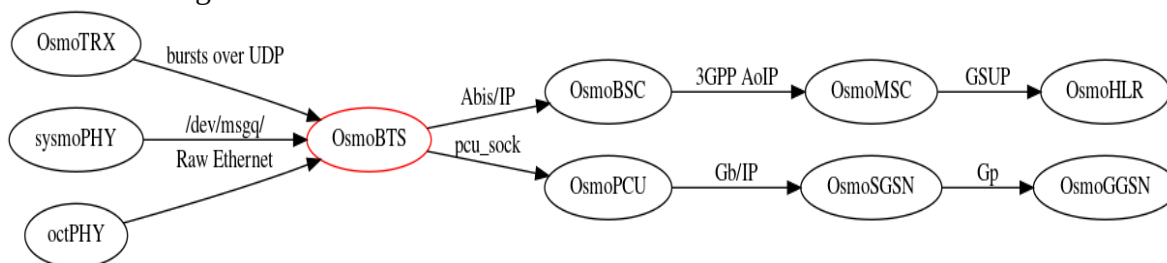
The only piece that has the capability of emitting radio frequencies is the so-called OsmoBTS device, which, as their official webpage lists, has the following description:

OsmoBTS is a software implementation of a GSM BTS.
It implements the following protocols/interfaces:
    • LAPDm (GSM 04.06)
    • RTP
    • A-bis/IP in IPA multiplex
    • OML (GSM TS 12.21)
    • RSL (GSM TS 08.58)

OsmoBTS is building up on work done previously for OpenBSC (e.g. RSL, OML, RTP) and OsmocomBB (e.g. LAPDm). The Abis/IP protocol staking is inspired by IP access A-bis/IP, sometimes called IPA multiplex.

The relevant predeterminate US-regulated bands this equipment works under are 850 MHz, 900 MHz, 1800 MHz, and 1900 MHz, this device is going to be used to establish a connection through radio frequencies with different mobile stations for it to enable MS to MS data exchange; further adjustments to the equipment can be performed if working under these frequencies represent an issue. Any frequency used for this project is going to be GSM modulated, for which power will not exceed 22 dBm. For a more in-deep reference of the system infrastructure as well as user manuals visit the webpage https://osmocom.org/projects/osmobts/wiki.

As emitting radio frequencies on campus is not recommended because of other users on campus, I would like to use the equipment for a first evaluation the following address:

529 Moondale Dr
El Paso, TX, 79912
31.83634478955026, -106.51486329349423

As emissions will stay below 22dBm, the expected radius of transmission is expected to be 200m around this address. The BTS to mobile transmission frequency is inside the ISM band at 903MHz (center frequency, bandwidth 200kHz), the mobile to BTS transmission will be outside the ISM band at 948MHz (center frequency, bandwidth 200kHz). There is no commercial use of the transmission possible and the purpose of this experiment is to solely enable myself and students to gain hands-on experience on this type of digital transmission.

Yours sincerely,

Christoph Lauter
Associate Professor