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V2X RF Propagation on POWDER Mobile Endpoints
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With the initial development of mobile nodes on POWDER starting on August 2020, and projected to finish by February 2021. POWDER will be home to a general deployment of mobile endpoints that have been attached to most campus shuttle buses operating at the University of Utah. The edition of new endpoints poses research questions related to vehicle-to-everything (V2X) communications [1]. One such research question is the radio frequency (RF) propagation and connectivity between mobile nodes.

We introduce two such communications: vehicle-to-vehicle (V2V) and vehicle-to-pedestrian (V2P). V2V acts as situations where in our case two busses will interact with one another. While V2P acts as a situation where a bus will interact with mobile user equipment (UE).

The goal of this project is to take RF propagation measurements amongst busses (V2V) and amongst busses to people on mobile UEs (V2P) and compare the results with the $GEMV^2$ [2] propagation model. This propagation model acts as a geometry-based propagation model for V2V communications.

In order to collect RF measurements on the POWDER platform, we propose the use of Shout, a measurements framework developed by the POWDER team. One could also use SPLAT! or CloudRF (modeling tools) to produce overall propagation heat maps of the routes taken by the mobile endpoints at the University of Utah.

References and Pointers:
[1] https://www.mdpi.com/2224-2708/9/2/24
[2] https://ieeexplore.ieee.org/document/7108160
- https://www.powderwireless.net/
- https://gitlab.flux.utah.edu/powderrenewpublic/shout
- http://vehicle2x.net/
- https://www.qsl.net/kd2bd/splat.html
- https://cloudrf.com/

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