23/03/2021 Meeting

Meeting Room: Room 6 EPS

Meeting date: 23/03/21

Meeting time: 12:31-13:32

Meeting attendees: Kevin Taylor (sponsor), Bill Liu, Laurence Prins, Aryan Srivastava, Tobey Bourke, Shayne Crimp, Diego Ramirez.

Agenda:

# Questions

Mesh Network: Incorrect term, there isn’t a mesh communication network required specifically by the distance measurement device. The devices communicate to local PCs and then send the data up to a server. They utilise installed software which communicates with this server. The software is used to decide/set when to measure distances, for how long and frequency etc.

Budget: The limpets provided are free.

Schematics and Datasheets: The projects focus is not upon the hardware model, but more on the signal processing element of sound communication. But some info of the Microphone, speaker and they’re relative positioning is required. Initial testing for communications already completed in house.

# Challenges

Distance to Map conversion: A minimum number of nodes required to successfully map out a given area.

Interference: Sound is dependant on frequency and power and such cannot travel through many materials without huge investment in these categories.

Orientation and positioning: The positioning of the actual limpet can affect the strength of signal received and can affect the distance measured.

Environment: Heat (temperature), ambient noise, object attenuation can all affect the distance measured by the sound.

RF range vs sound range

Multipath error: Sound can be received from many directions resulting in inaccurate readings.

Next steps are to quantify problems and see what happens in different scenarios.

# Microphones and Speakers

Microphones and speaker are both directional, and as such need to be positioned correctly to receive signals. The microphone can be omni directional, and the reception an also be improved via casing. Frequency of emission is very important, as high frequencies are more directional, but low frequencies attenuate less to the environment, so through testing we have to determine the right balance.

