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**COMP9336 – Mobile Data Networking**

**Lab 2**

**T2 2022**

**Assignment 1**

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**Task 1 a: Wireshark apply filtering that only display of all beacon frames from SSID=COMP4336 (Include Signal Strength, Noise level and SNR columns)**

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The lab2.pcapng is downloaded from the following link:

* <https://cloudstor.aarnet.edu.au/plus/s/wVjxpWUJaEsgUgj>

Opened the pcapng file by using Wireshark and applied a filter to only display the SSID = COMP4336 beacon frames. The above screenshot only shows part of the SSID beacon frames as there is a total of 177 which is not feasible to put all within this report.

**Task 1 b & c: Provide Signal Strength Graph, Noise level graph and SNR Graph and provide commentary to the graphs.**

From the Signal Strength Diagram shown above, the Receiver’s to the beacon AP distance increase and after package 101 then the receiver is getting closer to the AP. Basically, we can use the Signal Strength to detect or guess the distance between receiver and the AP distance. But the signal strength could be affected by obstacle and the obstacle’s material such as Wall, glass and doors and so on. (To Generate the Diagram, we will need to convert the value from string to integers)

The Noise level is affected by the environment. There could be some other 2.4 GHz and 5GHz Signals that depends on the which frequency of the WIFI in use and etc. But we can see that the average Noise level is relatively low that won’t affect the WIFI too much. (To Generate the Diagram, we will need to convert the value from string to integers)

The SNR is calculated based on the Signal Strength and the Noise level. Due to the Noise level being relatively stable, we will not see too much difference between the SNR diagram to the Signal Strength diagram. But they do have some minor differences. (To Generate the Diagram, we will need to convert the value from string to integers)

**Task 2 a: Provide the Screenshot of the Wireshark to show the filtering expression**

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As discussed, the Microsoft Network Monitor cannot read the SSID of my phone’s hotspot, so I use the filtering to display the end device that connect to my phone’s hotspot.

The default gateway: 172.20.10.1 is my phone

The IPv4 address: 172.20.10.10 is the end device (My PC).

**Task 2 b: Provide Signal Strength Graph, Noise level graph and SNR Graph and provide commentary to the graphs.**

Due to the limitation of my WIFI receiver, the signal Strength that is read by using **Microsoft Network Monitor** is a positive value. But we can still see that as I move further from the end Device (Holding my Phone), the signal strength drops, and the time I walk closer than the signal strength increases.

You may see that the signal is not constantly increasing or decreasing due to obstacles existing that block the signal, signal reflection, Diffraction, and Scattering involved, you may not see the result as very obvious. But overall, the signal strength Decreases and then increases as I walk further and back

Due to the limitation of the WIFI receiver (Technical Issue), the Noise level, and SNR cannot be obtained by the Software. But we can assume that the result would be similar to Task 1. But I can imagine that the Noise level will be higher than the provided packet capture due to there are numbers of WIFI SSID around my area that will affect the SNR result, but the overall pattern is the same.