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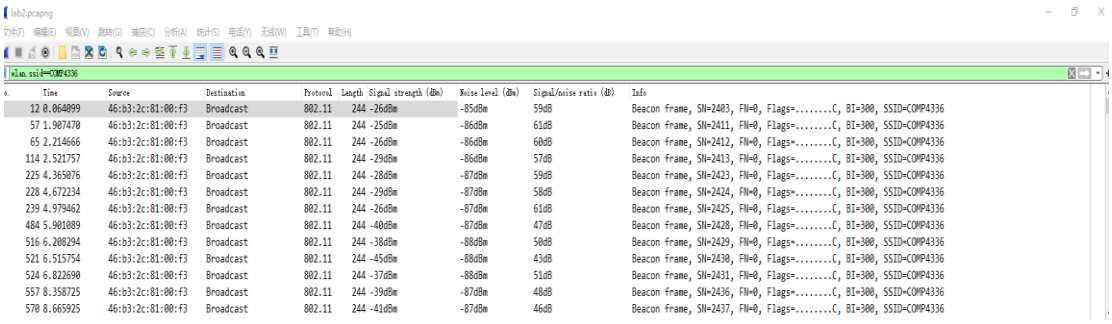
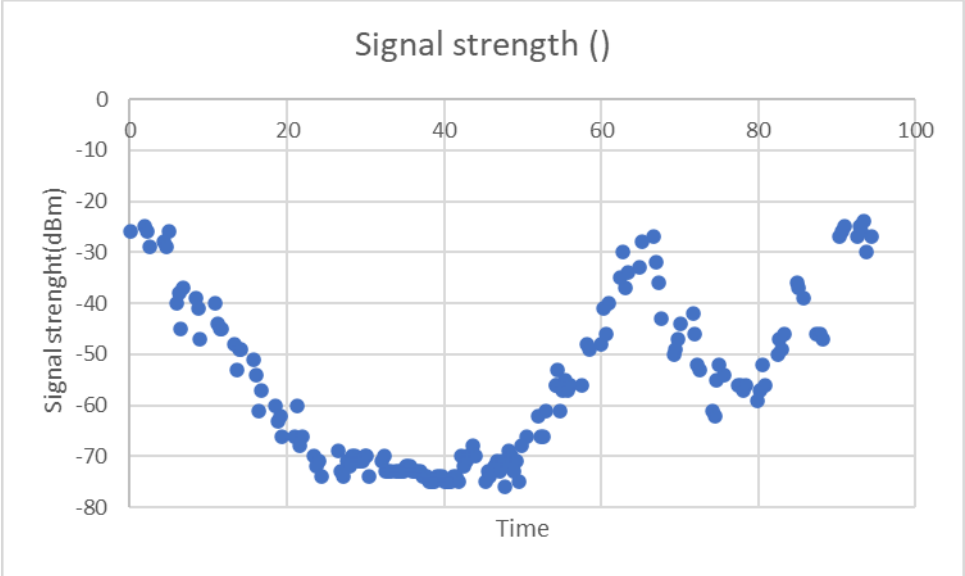
Lab 1

Task1

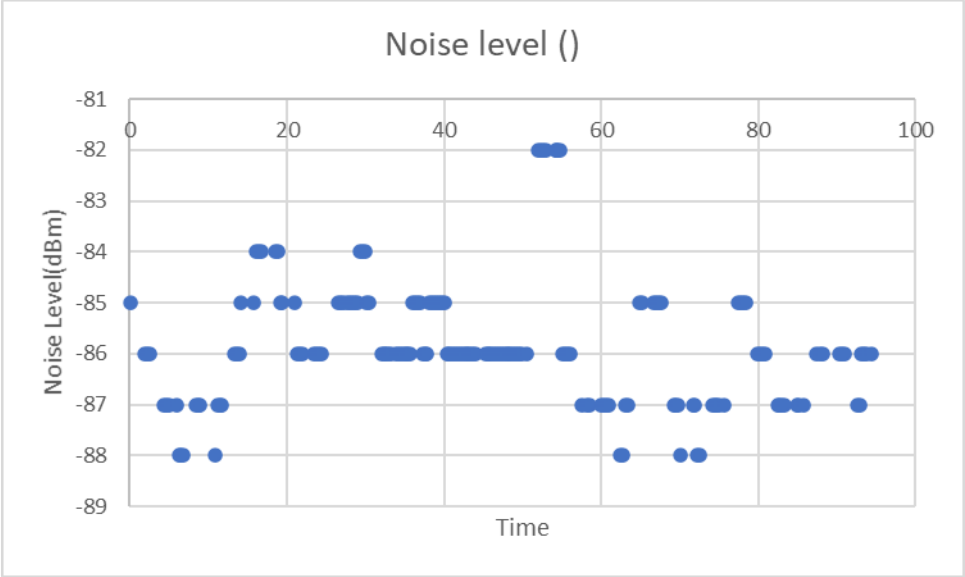


No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Noise level (dBm)	Signal/noise ratio (dB)	Info
12	0.064099	46:b3:2c:81:00:f3	Broadcast	802.11	244	-26dBm	-85dBm	59dB	Beacon frame, SN=2403, FN=0, Flags=.....C, BI=300, SSID=COMP4336
57	1.907470	46:b3:2c:81:00:f3	Broadcast	802.11	244	-25dBm	-86dBm	61dB	Beacon frame, SN=2411, FN=0, Flags=.....C, BI=300, SSID=COMP4336
65	2.214666	46:b3:2c:81:00:f3	Broadcast	802.11	244	-26dBm	-86dBm	60dB	Beacon frame, SN=2412, FN=0, Flags=.....C, BI=300, SSID=COMP4336
114	2.521757	46:b3:2c:81:00:f3	Broadcast	802.11	244	-29dBm	-86dBm	57dB	Beacon frame, SN=2413, FN=0, Flags=.....C, BI=300, SSID=COMP4336
225	4.365076	46:b3:2c:81:00:f3	Broadcast	802.11	244	-28dBm	-87dBm	59dB	Beacon frame, SN=2423, FN=0, Flags=.....C, BI=300, SSID=COMP4336
228	4.672234	46:b3:2c:81:00:f3	Broadcast	802.11	244	-29dBm	-87dBm	58dB	Beacon frame, SN=2424, FN=0, Flags=.....C, BI=300, SSID=COMP4336
239	4.979462	46:b3:2c:81:00:f3	Broadcast	802.11	244	-26dBm	-87dBm	61dB	Beacon frame, SN=2425, FN=0, Flags=.....C, BI=300, SSID=COMP4336
484	5.901089	46:b3:2c:81:00:f3	Broadcast	802.11	244	-40dBm	-87dBm	47dB	Beacon frame, SN=2428, FN=0, Flags=.....C, BI=300, SSID=COMP4336
516	6.208294	46:b3:2c:81:00:f3	Broadcast	802.11	244	-38dBm	-88dBm	50dB	Beacon frame, SN=2429, FN=0, Flags=.....C, BI=300, SSID=COMP4336
521	6.515754	46:b3:2c:81:00:f3	Broadcast	802.11	244	-45dBm	-88dBm	43dB	Beacon frame, SN=2430, FN=0, Flags=.....C, BI=300, SSID=COMP4336
524	6.822690	46:b3:2c:81:00:f3	Broadcast	802.11	244	-37dBm	-88dBm	51dB	Beacon frame, SN=2431, FN=0, Flags=.....C, BI=300, SSID=COMP4336
557	8.358725	46:b3:2c:81:00:f3	Broadcast	802.11	244	-39dBm	-87dBm	48dB	Beacon frame, SN=2436, FN=0, Flags=.....C, BI=300, SSID=COMP4336
570	8.665925	46:b3:2c:81:00:f3	Broadcast	802.11	244	-41dBm	-87dBm	46dB	Beacon frame, SN=2437, FN=0, Flags=.....C, BI=300, SSID=COMP4336

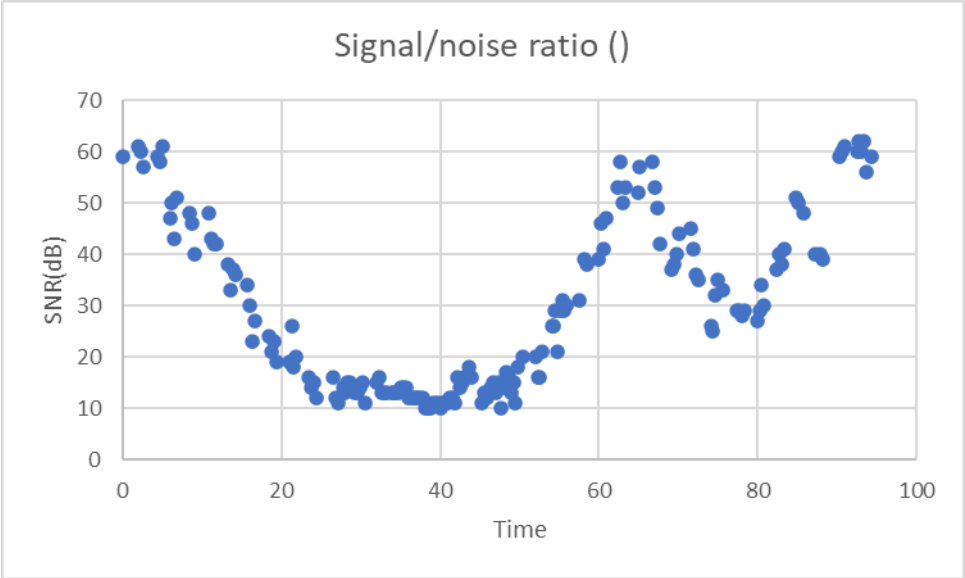
Graph1.1(screenshot of filter and data)



Graph1.2(graph for signal strength)



Graph1.3(graph for noise level)

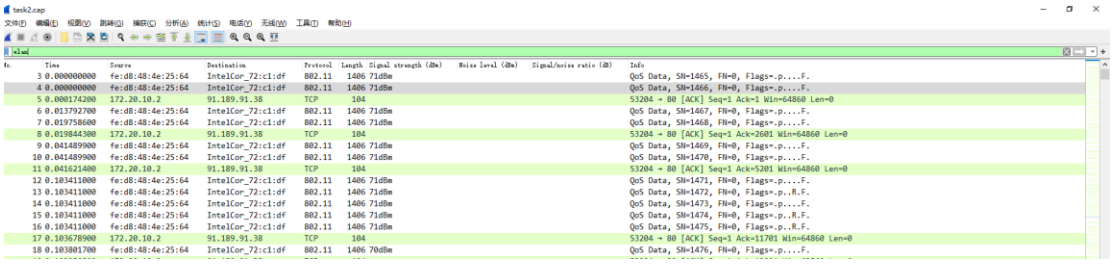


Graph1.4(graph for SNR)

According to above graphs, we can find that the signal strength and the SNR ratio are highest at beginning, and slowly reduce until lowest, then slowly return to highest. The noise level seems not have a clear trend. Since the mobile phone was moved away from the laptop and then moved back to it again and move away once again, we can say that the signal strength and the SNR ratio will become lower while the distance increase, and become higher as the distance decrease.Since there is not a clear trend for noise level, I would say the noise level will not be significantly influenced by the distance.

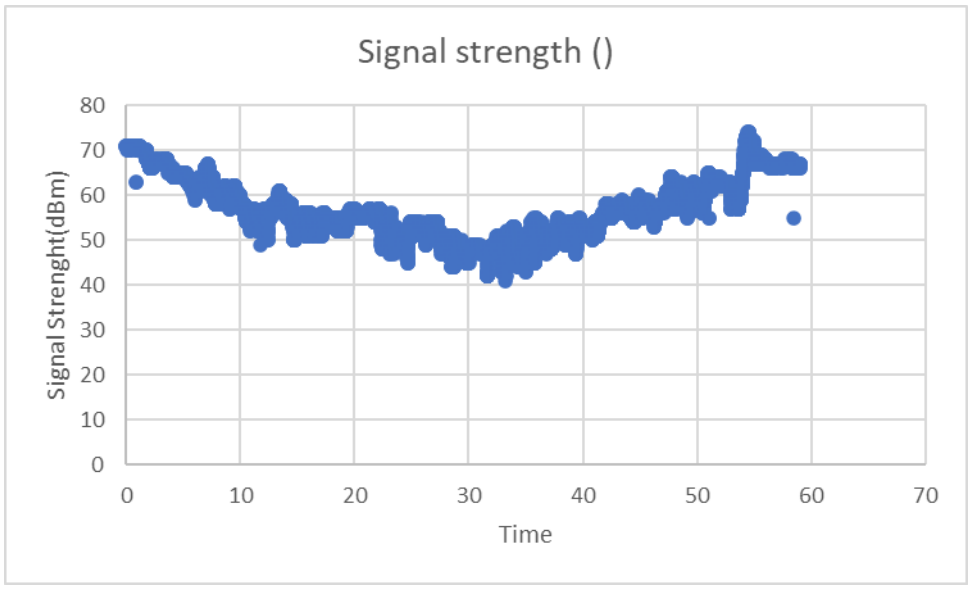
Task2

Cannot read SSID from the trace file produced by Microsoft Network Monitor, using the data with filter “wlan” to create the following graph.



No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Noise level (dBm)	Signal/noise ratio (dB)	Info
3	0.000000000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1465, FN=0, Flags=.p....F.
4	0.000000000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1466, FN=0, Flags=.p....F.
5	0.000174200	172.20.10.2	91.189.91.38	TCP	104				53204 → 80 [ACK] Seq=1 Ack=1 Win=64860 Len=0
6	0.013792700	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1467, FN=0, Flags=.p....F.
7	0.019758600	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1468, FN=0, Flags=.p....F.
8	0.019844300	172.20.10.2	91.189.91.38	TCP	104				53204 → 80 [ACK] Seq=1 Ack=2601 Win=64860 Len=0
9	0.041489900	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1469, FN=0, Flags=.p....F.
10	0.041489900	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1470, FN=0, Flags=.p....F.
11	0.041621400	172.20.10.2	91.189.91.38	TCP	104				53204 → 80 [ACK] Seq=1 Ack=5201 Win=64860 Len=0
12	0.103411000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1471, FN=0, Flags=.p....F.
13	0.103411000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1472, FN=0, Flags=.p..R.F.
14	0.103411000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1473, FN=0, Flags=.p....F.
15	0.103411000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1474, FN=0, Flags=.p..R.F.
16	0.103411000	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	71dBm			QoS Data, SN=1475, FN=0, Flags=.p..R.F.
17	0.103678900	172.20.10.2	91.189.91.38	TCP	104				53204 → 80 [ACK] Seq=1 Ack=11701 Win=64860 Len=0
18	0.103801700	fe:d8:48:4e:25:64	IntelCor_72:c1:df	802.11	1406	70dBm			QoS Data, SN=1476, FN=0, Flags=.p....F.

Graph2.1(screenshot of filter and data)



Graph2.2(graph for signal strength)

As shown in graph 2.1, I can only get data of signal strength by using Microsoft Network Monitor, so there is just one graph here.

According to the above graph, although it’s not perfect, we can still see that the signal strength is around 70 at the beginning, and slowly decrease until about 30 seconds. After that, the signal strength starts to slowly increase, and it return to 70 again at about 57 seconds.

Therefore, it is reasonable to say that the signal strength will become lower while the distance increase, and become higher as the distance decrease.