Terna Engineering College
Computer Engineering Department

Program: Sem VII

Course: MOBILE COMMUNICATION & COMPUTING AND MOBILE APPLICATION DEVELOPMENT LAB (MCC & MAD Lab)

Experiment No. 02

## PART B

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per the following segments within two hours of the practical. The soft copy must be uploaded on the Blackboard or emailed to the concerned lab in charge faculties at the end of the practical in case there is no Blackboard access available)

Roll No. 50	Name: AMEY THAKUR
Class: BE-COMPS-50	Batch: B3
Date of Experiment: 29-07-2021	Date of Submission: 29-07-2021
Grade :	

Aim: To understand the concept of co-channel interference and hence SINR (full-frame).

B.1 Input and Output:

Experiment 5A: SINR (Downlink)
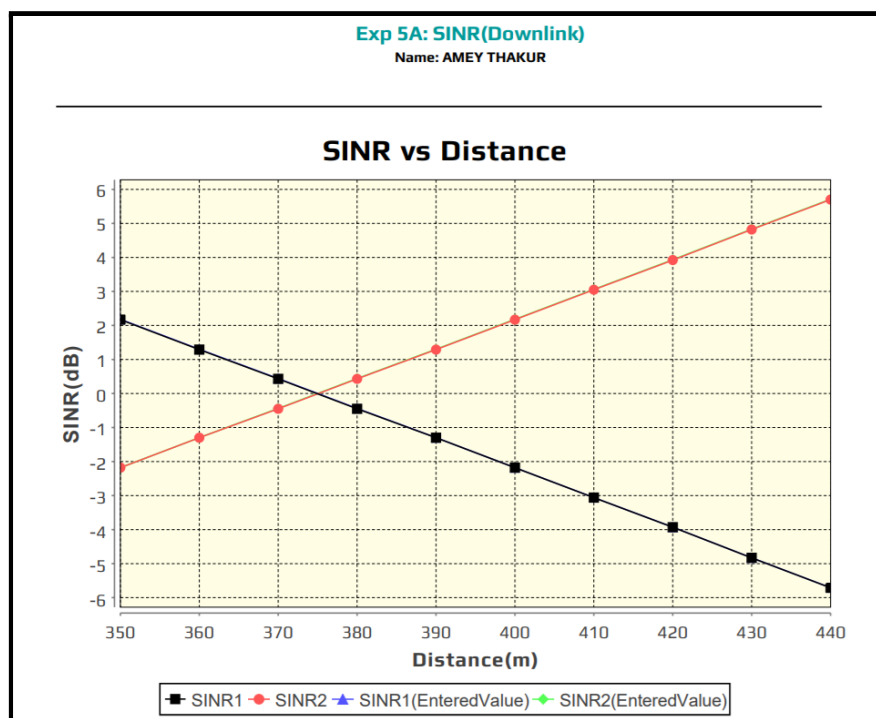
Exp 5A: SINR(Downlink)
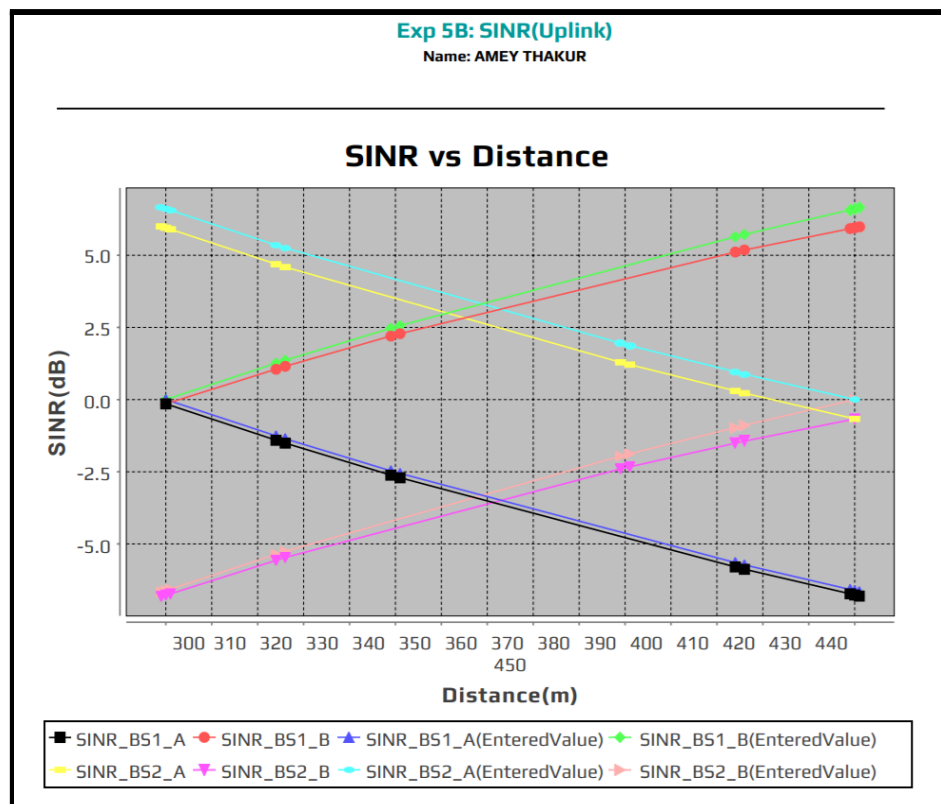Name: AMEY THAKUR

SINR vs Distance

Discussion:

Co-channel interference or CCI is crosstalk from two different radio transmitters using the same channel. Co-channel interference can be caused by many factors from weather conditions to administrative and design issues. Co-channel interference may be controlled by various radio resource management schemes.

REPORT							
Pr1(dBm)	d1(m)	Pr2(dBm)	d2(m)	SINR1(dB)	SINR2(dB)	Entered SINR1(dB)	Entered SINR2(dB)
-72.14	400.0	-69.96	350.0	-2.18	2.17	-2.18	2.18
-71.72	390.0	-70.42	360.0	-1.3	1.29	-1.3	1.3
-72.54	410.0	-69.48	340.0	-3.06	3.05	-3.06	3.06
-71.3	380.0	-70.86	370.0	-0.45	0.43	-0.44	0.44
-72.93	420.0	-69.0	330.0	-3.93	3.92	-3.93	3.93
-70.86	370.0	-71.3	380.0	0.43	-0.45	0.44	-0.44
-73.32	430.0	-68.49	320.0	-4.83	4.82	-4.83	4.83
-70.42	360.0	-71.72	390.0	1.29	-1.3	1.3	-1.3
-73.69	440.0	-67.98	310.0	-5.71	5.7	-5.71	5.71
-69.96	350.0	-72.14	400.0	2.17	-2.18	2.18	-2.18

Experiment 5B: SINR (Uplink)

Discussion:

Co-channel interference or CCI is crosstalk from two different radio transmitters using the same channel. Co-channel interference can be caused by many factors from weather conditions to administrative and design issues. Co-channel interference may be controlled by various radio resource management schemes.

Base Station 1							
Pr1_A(dBm)	d1_A(m)	Pr1_B(dBm)	d1_B(m)	SINR_A(dB)	SINR_B(dB)	Entered SINR_A(dB)	Entered SINR_B(dB)
-92.06	450.0	-85.44	300.0	-6.77	5.95	-6.62	6.61
-85.44	300.0	-85.44	300.0	-0.15	-0.15	0.0	0.0
-86.8	326.0	-85.44	300.0	-1.51	1.15	-1.36	1.36
-86.7	324.0	-85.44	300.0	-1.41	1.05	-1.26	1.26
-88.0	351.0	-85.44	300.0	-2.71	2.28	-2.56	2.56
-87.91	349.0	-85.44	300.0	-2.62	2.2	-2.47	2.47
-92.1	451.0	-85.44	300.0	-6.81	5.98	-6.66	6.65
-92.02	449.0	-85.44	300.0	-6.73	5.92	-6.58	6.57
-91.17	426.0	-85.44	300.0	-5.88	5.18	-5.73	5.72
-91.09	424.0	-85.44	300.0	-5.8	5.11	-5.65	5.64
Base Station 2							
Pr2_A(dBm)	d2_A(m)	Pr2_B(dBm)	d2_B(m)	SINR_A(dB)	SINR_B(dB)	Entered SINR_A(dB)	Entered SINR_B(dB)
-85.44	300.0	-92.06	450.0	5.95	-6.77	6.61	-6.62
-92.06	450.0	-92.06	450.0	-0.67	-0.67	-0.0	-0.0
-91.09	424.0	-92.06	450.0	0.3	-1.51	0.96	-0.97
-91.17	426.0	-92.06	450.0	0.22	-1.44	0.88	-0.89
-90.1	399.0	-92.06	450.0	1.29	-2.4	1.95	-1.96
-90.18	401.0	-92.06	450.0	1.21	-2.33	1.87	-1.88
-85.39	299.0	-92.06	450.0	6.0	-6.82	6.66	-6.67
-85.49	301.0	-92.06	450.0	5.9	-6.73	6.56	-6.57
-86.7	324.0	-92.06	450.0	4.69	-5.57	5.35	-5.36
-86.8	326.0	-92.06	450.0	4.59	-5.47	5.25	-5.26

B.2 Conclusion

Hence we've successfully performed and understood the concepts of co-channel interference and SINR(Signal to Noise Ratio) through Uplink and Downlink-the two-way communication between a cell tower and user phone.

B.3 Question of Curiosity

1. Solve the quiz given in the virtual lab related to this experiment and attached screenshots of the same.

Ans:

Quiz

Test Your Knowledge!!

You have scored 3 out of 3.
Your level is: Jeopardy Ready
1. **For downlink**: if $P_{rx1} = -88.56dBm$, $P_{rx2} = -83.45dBm$, $P_{n1} = -100.01dBm$, find SINR for MS.
(a) −5.2 dB
(b) −3.75 dB
(c) −4.81 dB
(d) −4.6 dB
You have choosen option (d). The answer is correct.
That's right! The letter A is the first letter in the alphabet!
2. **Let for downlink, the MS is connected to BS_1. If**
$P_{tx1} = 37.33dBm$, $P_{tx2} = 33.38dBm$, $d_1 = 261m$, $d_2 = 297m$, $n = 4.89$, **find whether hand–off $(P_{rx1} < P_{rx2})$ is required or not?**
(a) Yes
(b) No
You have choosen option (b). The answer is correct.
Nice! Your cholestoral level is probably doing alright.
3. **For uplink, if** $P_{Rx1A} = -79.52dBm$, $P_{Rx1B} = -85.83dBm$, $P_{Rx2A} = -83.19dBm$, $P_{Rx2B} = -76.92dBm$. **Tell whether MS_A should have the logical link with:**
(a) BS_2
(b) BS_1
You have choosen option (b). The answer is correct.
Brilliant! You're seriously a genius, (wo)man.

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2. What is uplink and what is downlink in mobile communication? Explain.

Ans:

Uplink and downlink, also called upload and download, refers to the two-way communication between a cell tower and your phone. Downlink definition – signal coming from a cell tower to your cellular device Uplink definition – signal leaving your cellular device and going back to a cell tower Most of us have experienced cell phone conversations when you can hear the other person but they can't hear you or vice versa. A disruption in downlink or uplink in cellular communication causes this issue.