" EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE "

GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Balewadi, Pune- 411 045.

Department of Electronics and Telecommunications

Experiment No. _

Subject: - Mobile Computing

Name of the Student:_____Roll No._____

Date: _____ Marks & Signature:

Subject Teacher

Aim: To understand the handover mechanism.

Objectives:

To study the effect of handover threshold and margin on SINR and call drop probability and handover probability

Prerequisite:

Operating System: Windows 7

Java Version: 6 only

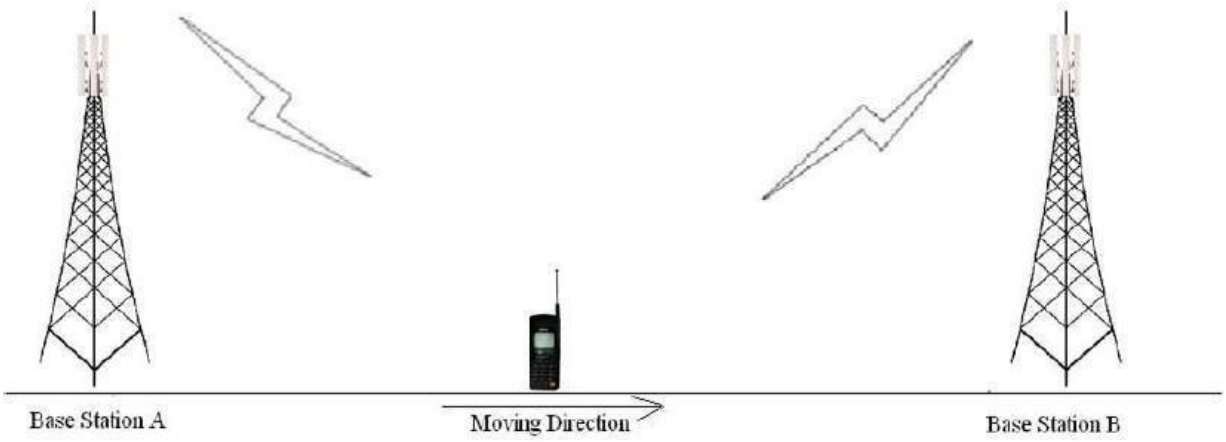
Mozilla Firefox: version: 47.0.1 Link

to download software:

https://drive.google.com/uc?id=0B9mNeu43jUidckFYVTlnenpJRGs&export=download

Theory: Handoff

Consider the figure below Initially say the mobile M is quite close to the base station A and hence receives signal strength from A PArx>PBrx . As the mobile moves away from the base station. A and goes towards B then the signal strength from A keeps falling (pathloss increases).Let there be a minimum sensibility level P0rx0 for the mobile, i.e. if the signal from the B.S.to which the mobile is connected falls below P0rx0 then the call drops. In order to prevent call drop the mobile monitors receive signal strength from the neighboring 3-6 B.S.. These neighboring 3-6 B.S. also monitor Rx signal strength from the M.S.



The mobile should get connected to B.S. which has the highest signal strength. However, if the M.S. continuously attaches itself to the B.S. with instantaneous height signal strength then the h/o rate may very high in server condition.

Thus, some hysten's condition is used for h. If PTrx (T= target B.S.) > Phrx*h* higher h/o threshold and ¯¯¯¯Pcrx¯ (c=current B.S.) < Phrx*h* minimum h/o threshold the execute h/o to B.ST from B.Sc.

Thus, it is threshold impeditive to study in part of the handoff process.

$$\Delta\gamma=\text{Phrx}-\text{Plrx}\Delta=h\text{-}$$

A successful handoff is one where the call gets from and continuous without call or in other words the h occurs before h/o Pcrx becomes <P0rx<0. If Pcrx<P0rx0 then call drop event occurs.

One would like to minimize the no of handoff events as well as minimize call drop probability. The experiment provides opportunity to study the inherent of these three parameters on h/o.

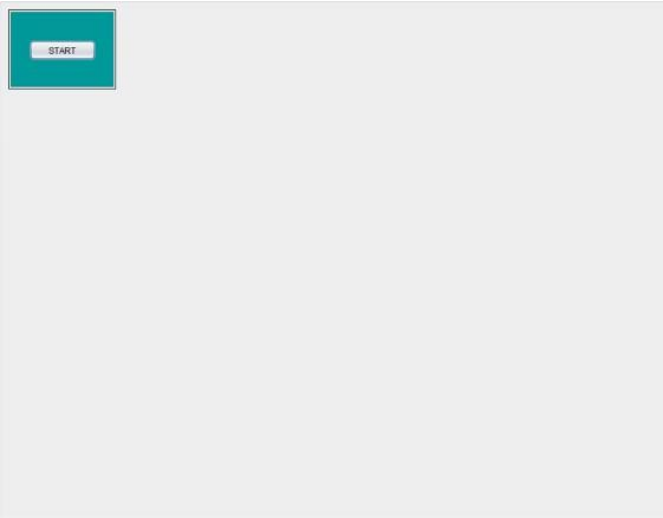
Further the averaging window for calculating PTrx and Pcrx also plays a role in the process. In the experiment small scale fading is not considered and hence the averaging considered only shadowing.

Students conducting the experiment is expected to study the impact of these on h/0. He/She is encouraged to respect the experiment for several sets of values of these parameters these draw conclusion.

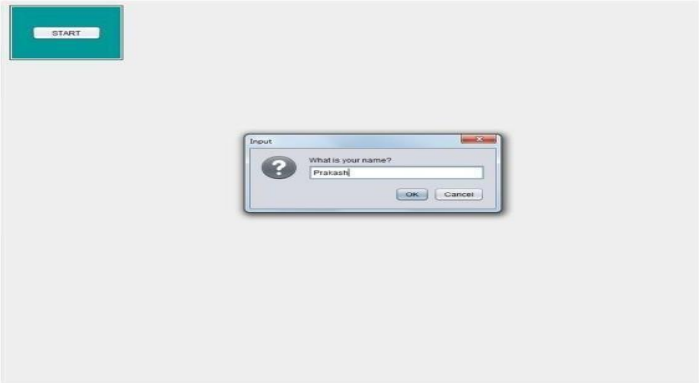
Instruction Follow the instructions given below to perform the experiments.

1.1 Starting the Experiments: -

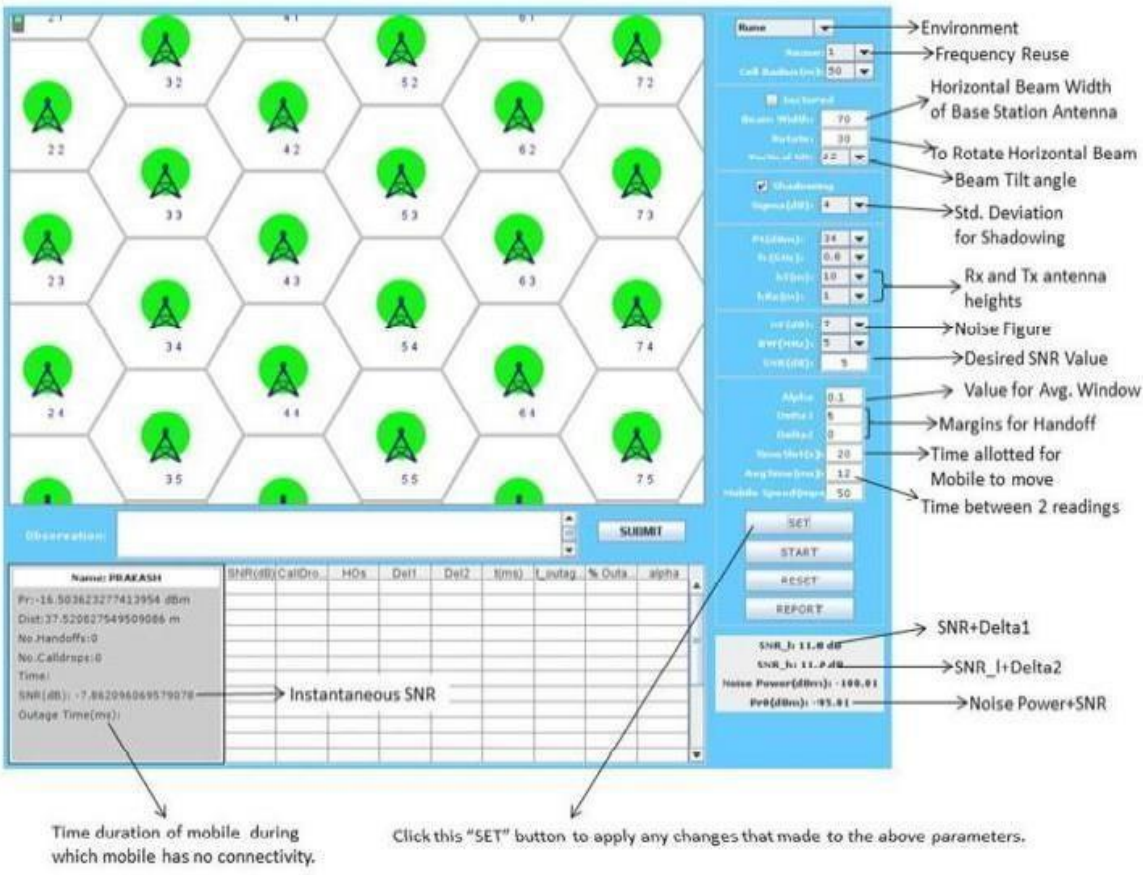
- . Step1: Click on START button to start experiment.



- Step2: Enter your name then click OK button.



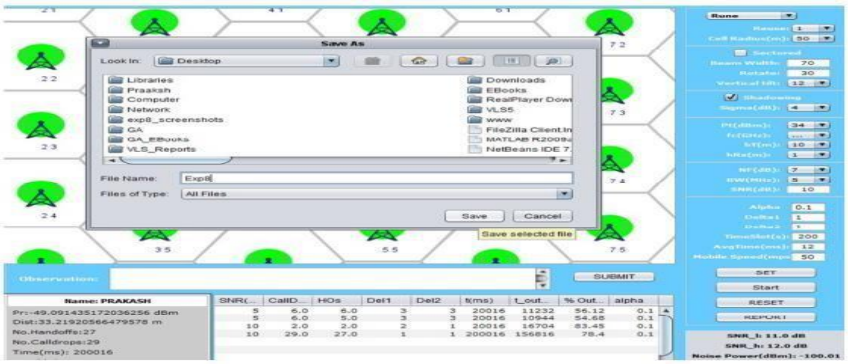
- Step3: Select the parameters (e.g.: Reuse, Environment, Beamwidth, Carrier frequency etc.)



- Step4: Click on START button and observe No. of Call Drops and No. of Handoffs.

- Step5: Enter your observation in the OBSERVATION box and Click on SUBMIT button.

Step6: Finally, click on REPORT to generate PDF report of the experiment.



- Step7: After PDF report generation you will get following message.

- Step8: PDF report will appear like this.

Input Parameters	
Reuse: 1 ,Model: Rune	Pt(dBm): 34
fc(GHz): 0.8	Beam Width(deg): 70
Rotate(deg): 30	Cell Radius(m): 50
hT(m): 10	hM(m): 1
Sigma(dB): 4	Vertical Tilt(deg): 12
SNR(dB): 10	Band Width(MHz): 5
Noise Figure(dB): 7	Noise Power(dBm): -100.01
Pr0(dBm): -90.01	Time Slot(s): 200

Exp. Results							
SNR	No.Calldr ops	No.Hand offs	Delta1	Delta2	Reading Time(ms)	Outage Time(ms)	% Outage	Alpha
5.0	6.0	6.0	3.0	3.0	20016.0	11232.0	56.12	0.1
5.0	6.0	5.0	3.0	3.0	20016.0	10944.0	54.68	0.1
10.0	2.0	2.0	2.0	1.0	20016.0	16704.0	83.45	0.1
10.0	29.0	27.0	1.0	1.0	200016.0	156816.0	78.4	0.1

Observation
Observation not entered

- Step9: To redo experiment click on RESET button.

Observation Table:

Reuse	No of Hand Off	Mobile Speed	Outage	Outage Percentage
1				
3				

Keep reuse ratio 3 and set mobile speed to 50 mps and 100 mps and record the below data. What do we observe after increasing the speed of the mobile station?

Reuse	Mobile Speed	No of Hand off	Outage	Outage Percentage
3	**50**			
3	**100**			

FAQ:

1. What is handoff?
2. What is the condition for handoff?
3. Explain Handoff and its types.

Fading Channels & Mobile Communications
IIT Kharagpur
Date: April/8/2024

Exp : Handoff

Name: EXP 6

Input Parameters	
Reuse: 3 ,Model: Urban Micro	Pt(dBm): 41
fc(GHz): 2.5	Beam Width(deg): 70
Rotate(deg): 30	Cell Radius(m): 116
hT(m): 10	hM(m): 1.5
Sigma(dB): 4	Vertical Tilt(deg): 12
SNR(dB): 30	Band Width(MHz): 5
Noise Figure(dB): 7	Noise Power(dBm): -100.01
Pr0(dBm): -70.01	Time Slot(s): 20

Exp. Results

SNR	No.Calldrops	No.Handoffs	Delta1	Delta2	Reading Time(ms)	Outage Time(ms)	% Outage	Alpha
5.0	0.0	3.0	3.0	3.0	20384.0	2352.0	11.54	0.1
10.0	0.0	1.0	3.0	3.0	20384.0	0.0	0.0	0.1
15.0	4.0	5.0	3.0	3.0	20088.0	2916.0	14.52	0.1
15.0	1.0	3.0	3.0	3.0	20400.0	1200.0	5.88	0.1
20.0	1.0	1.0	3.0	3.0	20088.0	11988.0	59.68	0.1
25.0	2.0	2.0	3.0	3.0	20088.0	18144.0	90.32	0.1
30.0	0.0	0.0	3.0	3.0	20088.0	20088.0	100.0	0.1
30.0	0.0	0.0	3.0	3.0	19600.0	19600.0	100.0	0.1
30.0	0.0	0.0	3.0	3.0	11956.0	11956.0	100.0	0.1
30.0	0.0	1.0	3.0	3.0	22743.0	12996.0	57.14	0.1

Observation
Enter observation

(Signature of EXP 6)

(Signature of Faculty)