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Sem/Year: VII/4	Batch: 1
Date of Experiment: 27/08/2022	Date of Submission: 27/08/2022
Grade --	

Aim

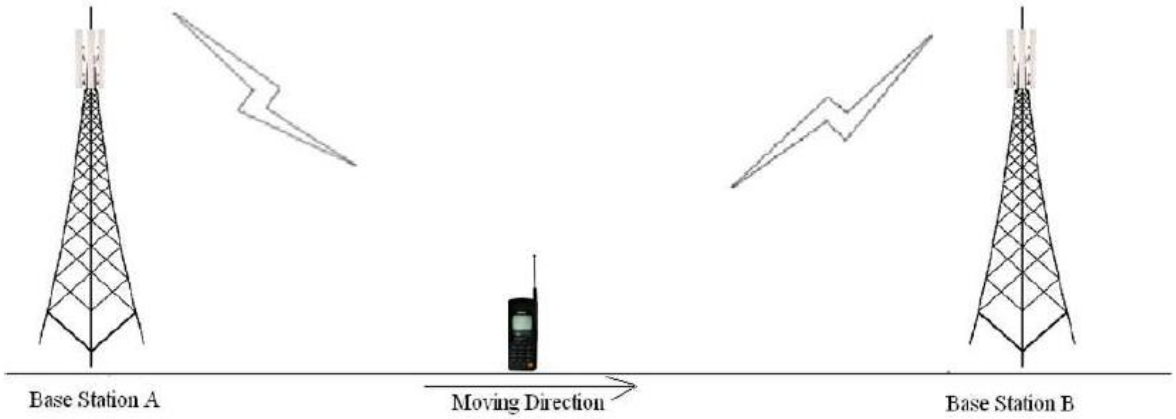
To understand the handoff mechanism.

Objectives

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

Theory

Consider the figure below Initially say the mobile M is quite close to the base station A and hence receives signal strength from A $P_{Arx} > P_{Brx}$.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 P_{0rx}Prx0 for the mobile, i.e., if the signal from the B.S.to which the mobile is connected falls below P_{0rx}Prx0 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 P_{Trx} (T= target B.S.) > P_{hrx} higher h/o threshold and $\bar{P}_{crx}$ (c=current B.S.) < P_{hrx} minimum h/o threshold the execute h/o to $B{\cdot}S_T$ from $B{\cdot}S_c$ Thus, it is threshold impeditive to study in part of the handoff process.

$$\Delta\gamma = P_{hrx} - P_{lrx}$$

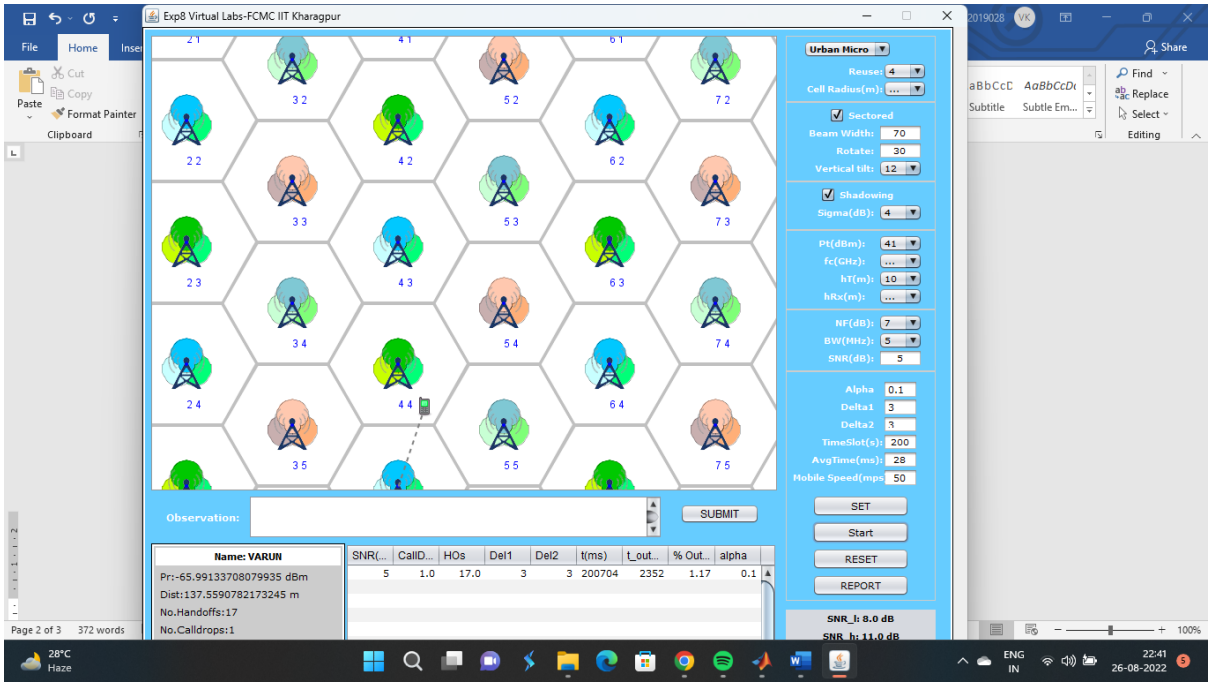
A successful handoff is one where the call gets from and continuous without call or in other words the h occurs before h/o P_{crx} becomes $<P_{0rx}$. If $P_{crx}<P_{0rx}$ then call drop event occurs.

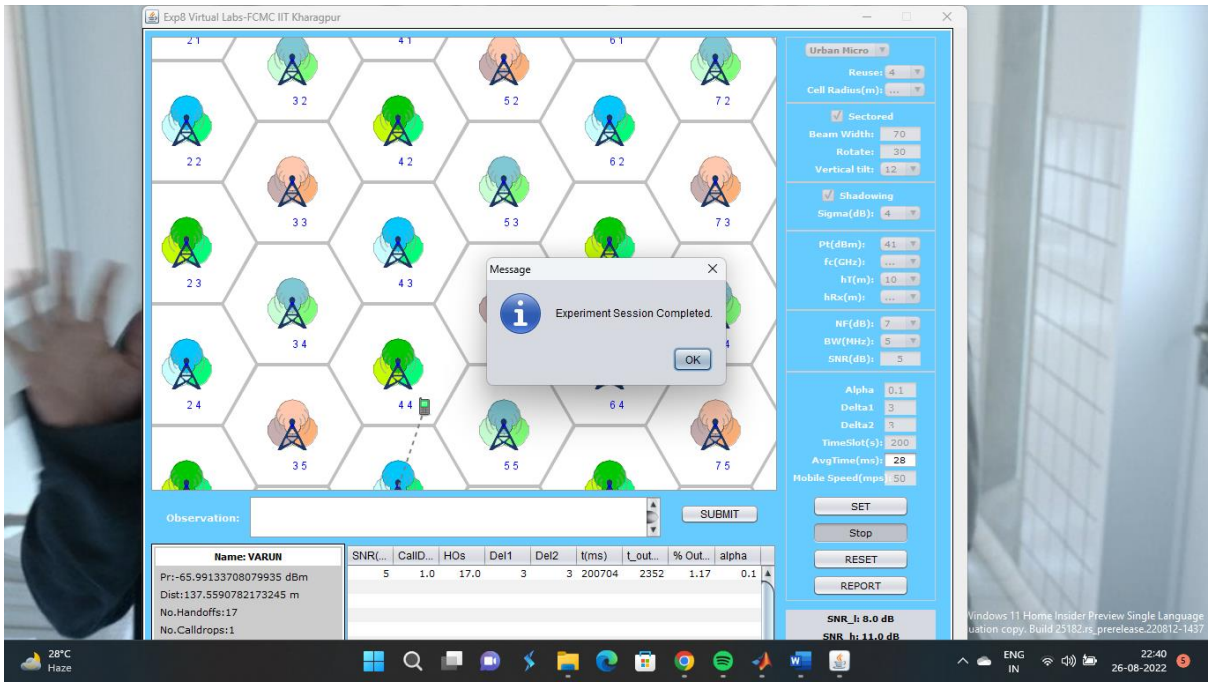
One would like to minimize the no of handoff events as well as minimize call drop probability. The experiment provides opportunity to study the inherent of these three parameter on h/o .

Further the averaging window for calculating P_{Trx} and P_{crx} also plays a role in the process. In the experiment small scale fading is not considered and hence the averaging taken into account only shadowing.

The person 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.

Experiment


Exp8 Virtual Labs-FCMC IIT Kharagpur
Urban Micro
Reuse: 4
Cell Radius(m):
Sectored
Beam Width: 70
Rotate: 30
Vertical tilt: 12
Shadowing
Sigma(dB): 4
Pt(dBm): 41
fc(GHz):
hT(m): 10
hRx(m):
NF(dB): 7
BW(MHz): 5
SNR(dB): 5
Alpha 0.1
Delta1 3
Delta2 3
TimeSlot(s): 200
AvgTime(ms): 28
Mobile Speed(mps 50
SET
Start
RESET
REPORT
Observation:
SUBMIT
Name: VARUN
Pr:-65.99133708079935 dBm
Dist:137.5590782173245 m
No.Handoffs:17
No.Calldrops:1
SNR(... CallD... HOs Del1 Del2 t(ms) t_out... % Out... alpha
5 1.0 17.0 3 3 200704 2352 1.17 0.1
SNR_l: 8.0 dB
28°C
Haze
ENG
IN
22:41
26-08-2022


Exp8 Virtual Labs-FCMC IIT Kharagpur
Message
Experiment Session Completed.
OK
Urban Micro
Reuse: 4
Cell Radius(m):
Sectored
Beam Width: 70
Rotate: 30
Vertical tilt: 12
Shadowing
Sigma(dB): 4
Pt(dBm): 41
fc(GHz):
hT(m): 10
hRx(m):
NF(dB): 7
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Alpha 0.1
Delta1 3
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SET
Stop
RESET
REPORT
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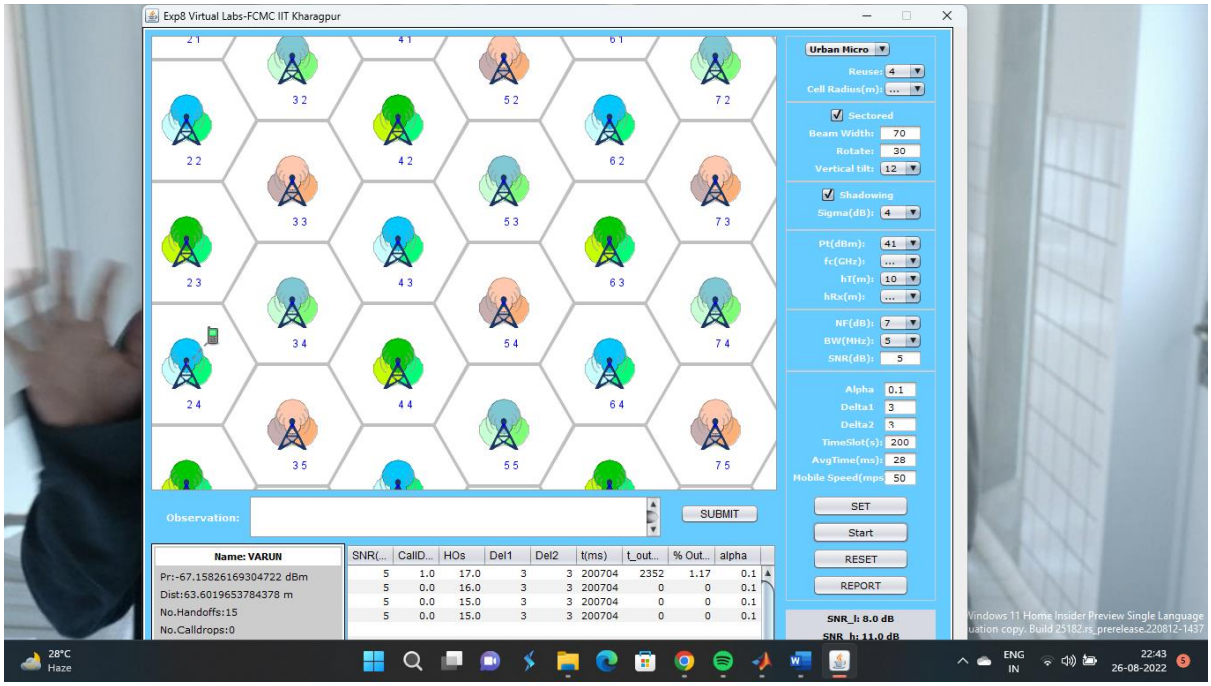
SUBMIT
Name: VARUN
Pr:-65.99133708079935 dBm
Dist:137.5590782173245 m
No.Handoffs:17
No.Calldrops:1
SNR(... CallD... HOs Del1 Del2 t(ms) t_out... % Out... alpha
5 1.0 17.0 3 3 200704 2352 1.17 0.1
SNR_l: 8.0 dB
Windows 11 Home Insider Preview Single Language
uation copy. Build 25182.rs_prerelease.220812-1437
28°C
Haze
ENG
IN
22:40
26-08-2022



Report

Input Parameters	
Reuse: 4 ,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): 5	Band Width(MHz): 5
Noise Figure(dB): 7	Noise Power(dBm): -100.01
Pr0(dBm): -95.01	Time Slot(s): 200

Exp. Results								
SNR	No.Calldrops	No.Handoffs	Delta1	Delta2	Reading Time(ms)	Outage Time(ms)	% Outage	Alpha
5.0	0.0	16.0	3.0	3.0	200704.0	1568.0	0.78	0.1
5.0	0.0	15.0	3.0	3.0	200704.0	0.0	0.0	0.1
5.0	0.0	16.0	3.0	3.0	200704.0	0.0	0.0	0.1

Conclusion

Hence, we were able to study the effect of handover threshold and margin on SINR and call drop probability and handoff probability.