



### ECSE413B: COMMUNICATIONS SYSTEMS II

Instructor: Tho Le-Ngoc, Off.:MC815, Tel.: 398-5252, fax: 398-4470, e-mail: tho.le-ngoc@mcgill.ca

#### Assignment 3: Cellular Systems, due date: Tuesday, April 8/2008

Consider a system bandwidth of  $B$  and an effective individual channel rate of  $f_b$  so that the total *number of channels* is  $Be_M/f_b=1281$ . Following discussions in Lecture Notes E1, derive, calculate and plot

1. the Erlang load  $\rho_{TDMA}$  versus the blocking probability from 0.001 to 0.01 for a TDMA cellular system with a frequency re-use factor of 7, and
2. the Erlang load  $\rho_{CDMA}$  versus the blocking probability from 0.001 to 0.01 for a CDMA system with spreading factor equivalent to  $Be_M/f_b=1281$ ,  $a_{int}\approx 0.55$ , and  $10\log_{10}(Z_{i0})$  assumed as a Gaussian random variable with mean  $m=7$ dB and standard deviation  $\sigma$  dB where

Name:	Values for Prob. 2:
Benboubker, Halima	$\sigma=2.5$ dB, $\eta=0.1$ , $A_v=0.4$
Canonne-Velasquez, Loic J.	$\sigma=5$ dB, $\eta=0.1$ , $A_v=0.4$
Carrier, Mark	$\sigma=2.5$ dB, $\eta=0.01$ , $A_v=0.4$
Mohajerani, Reza	$\sigma=5$ dB, $\eta=0.01$ , $A_v=0.4$
Muwaddat, Syed Muhammad	$\sigma=2.5$ dB, $\eta=0.1$ , $A_v=0.5$
Sikander, Mueid	$\sigma=2.5$ dB, $\eta=0.2$ , $A_v=0.5$