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FAKULTA ELEKTROTECHNIKY A KOMUNIKAČNÍCH TECHNOLOGIÍ

Mobile Network Communication Systems

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1 Assignment

ZADÁNÍ						
Parametr	Aktivní buňka		Sousední buňka 1		Sousední buňka 2	
	S		N1		N2	
MCC	230		230		230	
MNC	2		2		2	
LAC	324		324		324	
RAC	147		167		167	
CI	4343		876		129	
PBCCH	ano		ano		ano	
PCCCH	ano		ano		ano	
network_control_order	1		0		0	
gprs_rx_lev_access_min	-63	dBm	-98	dBm	-86	dBm
gprs_ms_txpwr_max_cch	22	dBm	30	dBm	30	dBm
priority_class	4		4		4	
hcs_thr	-110	dB	-108	dB	-110	dB
gprs_temporary_offset	20	dB	0	dB	60	dB
gprs_penalty_time	270	s	290	s	250	s
gprs_cell_reselect_hysteresis	6	dB	4	dB	0	dB
c31_hyst	0		0		0	
gprs_reselect_offset	16	dB	-20	dB	-36	dB
C32_qual	1		0		1	
ra_reselect_hysteresis	8	dB	8	dB	6	dB
rxlev_average_P	-54	dBm	-98	dBm	-90	dBm
Doba existence na seznamu nejlepších 6 buněk	364	s	25	s	83	s
Doba poslední reselekce	8					s
MS GMM stav	READY					
Doba trvání poměrů parametrů	6		6		5	s
Výkonová třída mobilní stanice (P)	31					dBm

Figure 1: My laboratory assignment - group 6

2 Calculations - Solution

In this section I will calculate the parameters C1', C31 and C32. Based on the results I will decide whether the reselection will occur or not.

2.1 Calculation of C1'

$$C1' = (A - Max(B, 0)) \tag{1}$$

From the equation 1 we know that:
$A = RxLevAvg\_P - GPRS\_RxLev\_Access\_Min$
$B = GPRS\_Ms\_TxPwr\_Max\_Cch - MS\_Max\_TxPwr\_Class$
therefore:

$C1'(S) = -54 - (-63) - MAX(22 - 31), 0) =$ **9 dB**
$C1'(N1) = -98 - (-98) - MAX(30 - 31), 0) =$ **0 dB**

$C1'(N2) = -90 - (-86) - MAX(30 - 31), 0) =$ **-4 dB**
The parameter **C31(N2)** will not be calculated due to the fact that the cell **N2** has $\mathbf{C1' \leq 0}$

2.2 Calculation of C31

$$C31(S) = RxLev\_Average\_P(S) - HCS\_Thr(S) \tag{2}$$

$$\begin{aligned} C31(N) = {} & RxLev\_Average(N) - HCS\_Thr(N) - GPRS\_Temporary\_Offset(N) * (T \\ & \leq GPRS\_Penalty\_Time(N)) * (Priority\_Class(N) \\ & \neq Priority\_Class(S)) \end{aligned} \tag{3}$$

To calculate **C31(S)** we will use the equation 2 and to calculate the **C31(N1)** we will use the equation 3.
$C31(S) = -54 - (-110) =$ **56 dB**
$C31(N1) = -98 - (-108) - 0 * (8 \leq 290) * (4 \neq 4) =$ **10 dB**
C31_Hyst = 0, therefore **10 dB** is the final value.

2.3 Calculation of C32

We must calculate the parameter **C32** because the active cell and the neighboring cell have the **same** priority (4) and $\mathbf{C31(N1) > 0}$.

$$C32(S) = C1'(S) \tag{4}$$

$$\begin{aligned} C32(N) = {} & C1'(N) + GPRS\_Reselect\_Offset(N) - GPRS\_Temporary\_Offset(N) * (T \\ & \leq GPRS\_Penalty\_Time(N)) * (Priority\_Class(N) \\ & = Priority\_Class(S)) \end{aligned} \tag{5}$$

To calculate **C32(S)** we will use equation 4 and to calculate the parameter **C32(N1)** we will use equation 5.
$C32(S) = C1'(S) =$ **9 dB**
$C32(N1) = 0 + (-20) - 0 * (8 \leq 290) * (4 = 4) =$ **-20 dB**
We must consider that the parameter **C32_Qual(S) = 1** therefore **GPRS_Reselect_Offset = -20 dB** is added. Also the **UE** state is **READY** and the cell **N1** is in different RA so the parameter **RA_Reselect_Hysteresis = 8 dB** is subtracted. Also the last reselection occured before **6s** which is **less than 15s**. Therefore, another **5 dB** is subtracted.
$C32(N1) =$ **-20 dB** $+ (-20dB) - 8dB - 5dB =$ **-53 dB**

3 Conclusion

- the parameter **C1'(S)** $>$ **0** and **C31(N1)** $>$ **0**,
- priority class between **S** and **N2** is the same (4),
- statement **C32(N1)** $>$ **C32(S)** is **false** because **-53 dB** is not greater than **9 dB**

The only correct answer is that: **the reselection will not occur**.