

February 29 - March 03, 2000

Source: RAN WG1
To: RAN WG2
Title: LS on use of Compressed Mode for Seamless Hard Handover

RAN WG1 has investigated, how seamless handover without loss of data frames can be realised for hard handover to/from FDD. One obvious prerequisite for seamless handover is of course that the UE has already acquired synchronisation with the target cell, e.g. by use of measurements during compressed mode. Even then seamless handover will not be possible without special provisions, because synthesiser switching time, uplink-downlink transmission offset, and the fact that the CFN in source and target cell are only synchronised with a granularity of ± 256 chips will make it impossible for the UE to be ready for the first TTI in the target cell after having finished the last TTI in the source cell. This is illustrated in the attached figure 1.

This situation can be improved, if compressed mode is set up in the old and/or new cell (preferably in both). In this way, compressed mode can create an idle time which can be used to cover the above mentioned times, see figure 2. WG1 is of the opinion that the necessary tools are already available in the WG1 specifications but WG1 is not sure whether they can be utilised under higher layer control for this particular purpose. In particular, it would have to be assured that both uplink and downlink compressed mode can be configured in conjunction with the setup of the new radio link. It was further noted, that while providing more time for the handover execution itself, this method will on the other hand cause an additional delay until the execution can be started, because the UE has to wait for a frame with suitable compressed mode. Depending on the context of the handover, this may or may not be desirable, so it may be necessary to inform Layer 1 whether to execute the handover immediately or aligned with the next compressed mode.

Similar procedures could also speed up FDD-TDD, FDD-GSM, TDD-FDD and GSM-FDD handover, but no specific investigations have been performed yet.

WG1 would like to ask WG2 to check whether the above mentioned functionality is included in their specifications, especially 25.331 and including possibly an explicit mentioning of this application of compressed mode for seamless handover in 3GPP TS 25.302: "Services provided by the physical layer".

WG1 thanks WG2 in advance for their kind consideration of this subject.

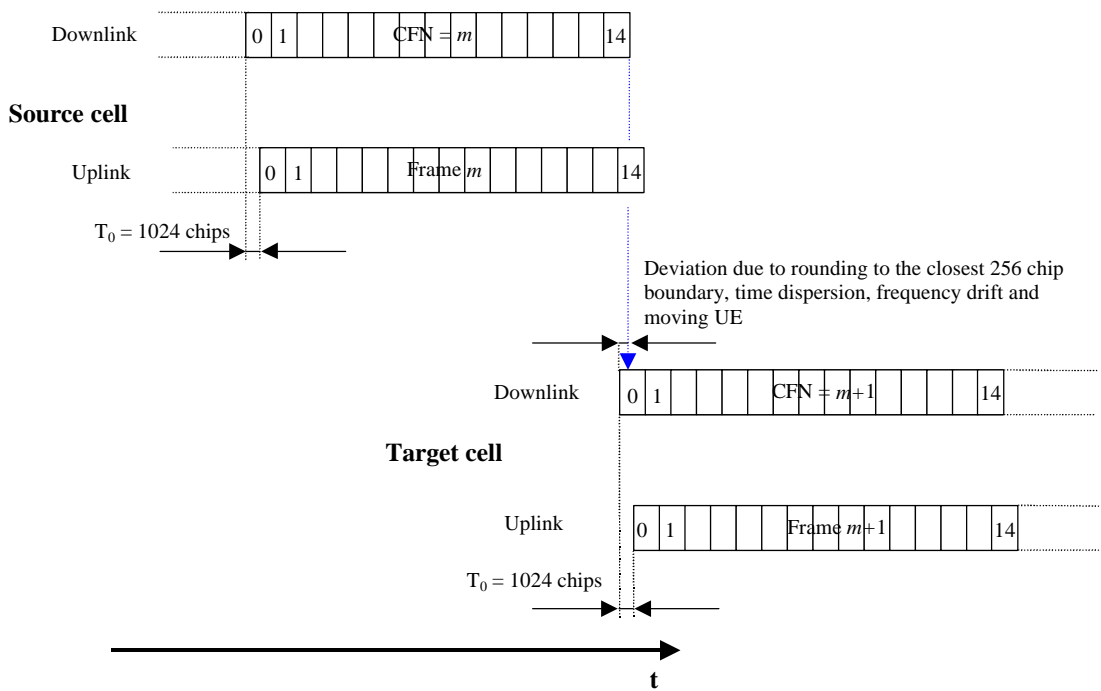


Figure 1: Timing Diagram of Hard Handover without use of compressed mode. UE is not able to capture the first TTI on the new cell.

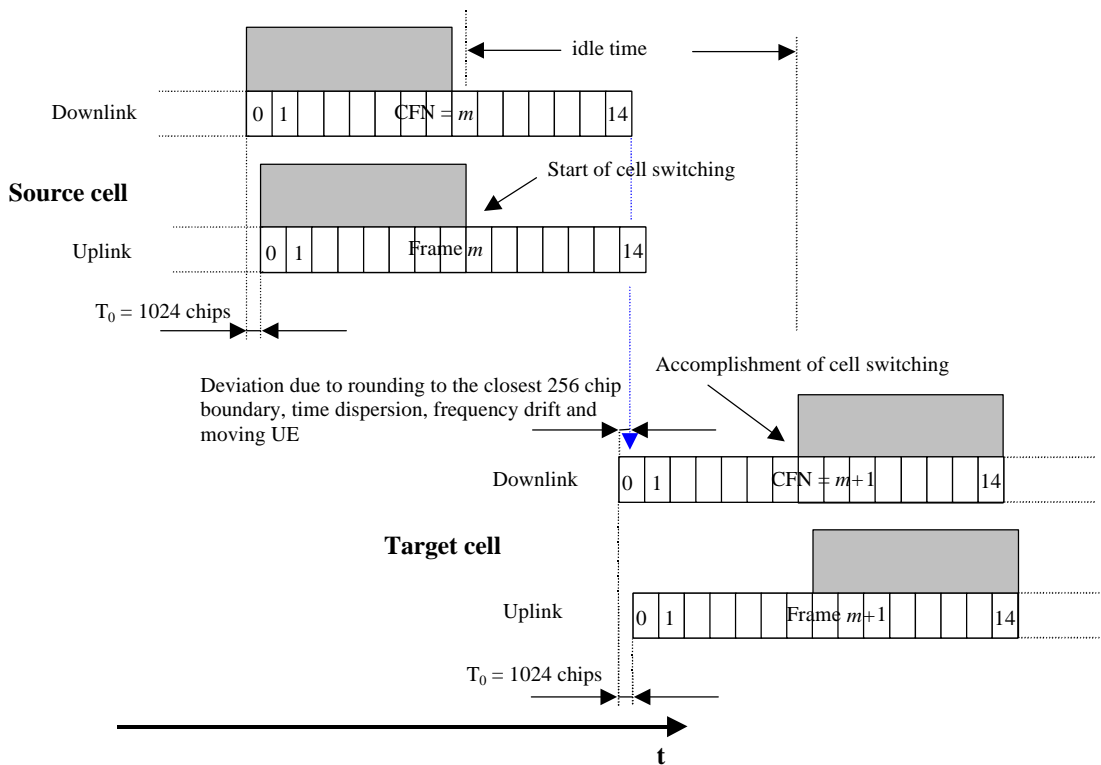


Figure 2: Hard Handover by using compressed mode provides time for the UE to switch to the new cell before of the actual start of the new TTI.