TSG-RAN Meeting #8 ***RP-000201***
Düsseldorf, Germany, 21 - 23 June 2000

(2-00-955, copy TSG-RAN) LS on GSM to UMTS cell re-selection and handover solution

Subject: **LS on GSM to UMTS cell re-selection and handover solution**

To: **3GPP TSG RAN WG2, 3GPP TSG RAN WG4**

CC: **3GPP TSG RAN**

Source: **SMG2**

SMG2 would like to thank 3GPP TSG RAN and its working groups for the continued co-operation on the important issue of inter-RAT cell re-selection and handovers. After the RRM ad hoc in Turin on 9 – 11 February 2000, SMG2 held an ad hoc meeting in Copenhagen on 6 – 8 March 2000. In that meeting the outline of the solution for cell re-selection and handovers were agreed upon and work continued up to the SMG2 #35 meeting in Schaumburg on 3 – 7 April 2000, where the CRs were presented for approval.

It is the opinion of SMG2 that for idle mode cell re-selection the principles of the solution should be common for re-selection from GSM to UTRA and vice versa. This is in order to limit unnecessary Ping-Pong effects between the two RATs.

The following provides an outline of the solution agreed in SMG2. The relevant CRs are attached for information.

Cell re-selection

The search for UTRA cells (both FDD and TDD) shall be triggered if the GSM Receive Level Average (RLA) drops below or above a threshold defined by parameter Q_SEARCH_I.

The dual mode MS will then search for UTRA cells and be able to decode the parameters of a cell within 30 seconds.

If the broadcast neighbour cell list includes UTRAN cells, the MS shall, at least every 5 s calculate the value C2 for the serving cell and re-calculate C2 values for each of the 6 strongest non serving GSM cells (if necessary) and the S value for the non serving UTRAN cells.

The MS shall then reselect a non-serving suitable UTRAN cell if its calculated value S > 0 and its measured value Qmeas exceeds the value of C2 for the GSM serving cell and all of the non-serving GSM cells by the value Qoffset for a period of 5 seconds.

In the case of the new cell being in a different location area or, for a GPRS MS, in a different routing area or always for a GPRS MS in ready state, Qoffset is increased by CELL_RESELECT_HYSTERESIS dB as defined by the BCCH data from the current serving cell.

In case of a cell reselection occurring within the previous 15 seconds, serving cell. Qoffset is increased by 5 dB.

S is defined in TS 25.304. The MS shall read the parameters required to calculate S from BCCH of the UTRAN cell. Qmeas is the measured quantity, Qoffset is broadcast on BCCH of the serving cell.

For UTRAN FDD cells, the measurement quantity to be used is CPICH Ec/Io and CPICH RSCP. The measurement requirements are defined in TS 25.133. Ec/Io shall be used for the minimum quality criterion S. RSCP shall be used for the cell ranking criteria C2, C31 and C32. The same principles apply for packet services.

For UTRAN TDD cells, the measurement quantity to be used is PCCPCH RSCP. The measurement requirements are defined in TS 123.

Cell reselection to UTRAN shall not occur within 5 seconds after the MS has reselected a GSM from an UTRAN cell if a suitable GSM cell can be found. If more than one UTRAN cell fulfils the above criteria, the MS shall select between those cells using the UTRAN cell selection criteria defined in TS 25.304.

Please note that the reason for using the best cell within the UTRAN for the comparison purpose is to prevent Ping-Pong effects between RATs (e.g. due to SoLSA). This means that the solution is based on re-selection between RATs as opposed to pure cell re-selection.

UTRA to GSM re-selection

As was stated before, SMG2 is of the opinion that the principles of the cell re-selection between RATs should be similar. While acknowledging that the work for UTRA to GSM cell re-selection resides within 3GPP TSG RAN and its working groups, SMG2 would strongly recommend the adoption of Ec/Io for determining suitability of the cells and using CPICH RSCP for cell C2 and cell re-selection. SMG2 would also like to make the comment that should the principle be acceptable to RAN then we would like to point out that a dual mode UE shall be capable of computing C2, C31 and C32 according to GSM 05.08 and that the UE shall either need to read the parameters involved in calculating these criteria from either the GSM cell or be broadcast on the BCCH of the serving UTRAN cell. The latter is the preferred solution

Handover

The same philosophy applies for handover in which the search will be triggered by passing a threshold Q_SEARCH_C. UTRA cells will be synchronised to, measured and reported back together with GSM cells according to procedures defined in GSM 05.08 and GSM 04.18.

For UTRAN FDD cells, the measurement quantity to be used is CPICH RSCP. The measurement requirements are defined in TS 25.133 and shall be used for measurement reporting. The measured value Qmeas shall replace RXLEV in the measurement reports.

For UTRAN TDD cells, the measurement quantity to be used is PCCPCH RSCP. The measurement requirements are defined in TS 25.123. The measured value Qmeas shall replace RXLEV in the measurement reports.

SMG2 would like to kindly remind 3GPP TSG RAN WG2 that there may be an issue to be resolved with the ARFCN numbering for GSM 1800 and GSM 1900 where the numbers overlap.

LIST OF ATTACHED DOCUMENTS
NOTE: In the original LS, a large number of documents was attached. For the PDF version, it was impossible to provide all these attachments which would have resulted in a PDF document of several thousands of pages. For the interested reader, you can obtain the following documents from the server, from the SMG2 secretary (Paolo.Usai@etsi.fr) or from the ZIP file. The list was as follows:

2-00-640
2-00-644
2-00-792
2-00-836
2-00-837
2-00-848
2-00-849
2-00-852
2-00-906
2-00-907
2-00-925
2-00-934
2-00-938
2-00-945
2-00-950
2-00-951
2-00-952
2-00-953