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3GPP RAN S1.25 V0.0.1 1999-2

Measurements (TDD)

Contents

1 Intellectual Property Rights

<editor's note : this section will be completed when an official format for the document is agreed>

2 Foreword

This Technical Specification (TS) has been produced by the 3G Partnership Project (3GPP) of the European Telecommunications Standards Institute (ETSI).
The contents of this TS are subject to change as the work continues
<Editor's note : this version is the very first version produced in the merging phase between the ETSI and ARIB reference documents. The document does not incorporate yet any of the preferred choices from the ad-hocs, in particular ad-hoc on Handover. The document will be updated as decision is made by WG1 as a whole.
The text was edited with the following rules :

- *the text restricted to layer 1 issues. However in order not to loose material regarding other layers that was present in the XX.xy documents or ARIB vol 3 and not yet incorporated in the documentation of WG2 and WG3, , annexes were created to cover Handover execution aspects.*
- *When for a particular subjects, both ETSI and ARIB schemes were documented if different with explicit note.*
- *When only one proposal from either ETSI or ARIB was available for a particular subject then it was documented again with explicit indication, in an editor's note.*
- *Text from ETSI and ARIB sometimes required some change either due to terminology or to consistency with other documents from WG1 or WG2. Modifications appear in the form of change bars.*
- *Editor's notes were incorporated in order to seek progress on some particular areas and to provide a description of the scope of each section of the document*

>

3 Scope

This 3GPP Telecommunication Specification TS and the TS S1.25 contains the description of the measurements done at the UE and network in order to support operation in idle mode and connected mode.
As far as the measurements in idle mode are concerned, this TS described the following :

- measurements for the cell selection for a UE supporting TDD
- measurements for cell reselection for a UE camping on an TDD cell

As far as the measurements in connected mode are concerned, this TS describes measurements when the UE is connected to an TDD cell or cells (in Soft handover) for the cell connected state (see reference [8]), or camping on an TDD cell for the URA connected state. S1.15 provide an equivalent description for the FDD cells.
This TS provides the minimum requirements for the UE and networks. Some explanatory text is also contained in the TS but it is more of a descriptive nature than normative.
As far as the measurements for the handover preparation, this specification defines the requirements to the UE and network. This specification should also describe how idle periods in the uplink or downlink transmission are created under the control of the network, if found applicable (indeed for some mobiles/service would rely only on time between transmit/receive and may not require idle periods).
<Editor's note : Two specifications S1.15 and S1.25 are indicated in the WG1 documentation structure as FDD and TDD measurements respectively. Interpretation of title could lead potentially to three different interpretations

1) the separation between S1.15 and S1.25 applies to the FDD mobile and the TDD mobiles respectively
2) the separation between S1.15 and S1.25 applies to the mode of the cell that the UE is connected to or camped on,
3) the separation between S1.15 and S1.25 applies to the cell that is to be monitored independently of the mode the UE is operated in.

- *The choice made here correspond to the second listed alternative. Indeed we have to consider multi-mode UE that would need to monitor different type of cells in the same time, so case 1 is irrelevant, as well as case 3) is not appropriate since a multi-modeUE whatever mode it is operating in would need to monitor different type of cells.*
- *At some point S1.15 and S1.25 may need to be merged. Indeed separating leads to duplication of some text >*

4 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 3GPP RAN S1.11 Transport channels and physical channels (FDD)
[2] 3GPP RAN S1.12 Multiplexing and channel coding (FDD)
[3] 3GPP RAN S1.13 Spreading and modulation (FDD)
[4] 3GPP RAN S1.14 Physical layer procedures (FDD)
[5] 3GPP RAN S1.21 Transport channels and physical channels (TDD)
[6] 3GPP RAN S1.22 Multiplexing and channel coding (TDD)
[7] 3GPP RAN S1.23 Spreading and modulation (TDD)
[8] 3GPP RAN S1.24 Physical layer procedures (TDD)
[9] 3GPP RAN S2.02 Services provided by the Physical layer
[10] 3GPP RAN S2.03 UE functions and interlayer procedures in connected mode
[11] 3GPP RAN S2.04 UE procedures in idle mode
[12] XX.15, version 1.0.0 UTRA Handover
[13] XX.07, version 1.0.0 UTRA FDD, Physical layer procedures
[14] XX.13, version 1.0.0 UTRA TDD, Physical layer procedures
[15] ARIB, Vol 3

5 Measurements in idle mode

5.1 Measurements for cell selection

<Editor's note : In both ETSI and ARIB measurements for cell selection are not described apart from the initial cell search. Measurement to support Cell selection and cell reselection rely on synchronisation acquisition procedures currently described in section related to the Initial cell search procedures in [4] and Physical layer procedures (FDD) and Physical layer procedures (TDD) [8] for FDD cells and TDD cells respectively.

This section, measurements for cell selection, of this specification could contained the following sub-sections with scopes as provided in each section. This is not to be found in any of the reference documents and is only a suggestion for progress by the editor>

5.1.1 Cell selection monitoring frequency or cell set

<Editor's note : this section should define how the frequencies or cells to measure for the cell selection process are determined. This set should be provided by higher layers in the primitive that triggers the measurement process. Two following two cases might be considered and would lead to two different cell selection monitoring, defined in section 6.1.1, as in GSM. This is to be discussed with WG2.

- *Normal cell selection : the UE has no information at switch on. It would perform measurements on frequencies/cell that correspond to the mode it support and that was manually selected if applicable.*
- *Cell selection from stored list. The UE stored some information at switch off. At switch on cell selection is performed based on this stored information.*

>

5.1.2 Measurement from the cell selection monitoring set and reporting to higher layers

<Editor's note : requirements need to be defined based on collaborative work with other WGs>

5.2 Measurements for cell reselection

5.2.1 Cell reselection monitoring frequency or cell set

<Editor's note : this section should define how the frequencies or cells to measure for the cell reselection process are passed to the physical layer of the UE by higher layers and what information is passed in terms of cell mode, frequency, synchronisation information, in form of scrambling codes…. This set should be provided by the MAC layer in the

primitive that triggers the measurement process. This is referred to as the priority list in ETSI as far as the FDD and TDD cell/frequencies are concerned>.

<Editor's note : the content of this section was extracted from reference [14] XX.13, UTRA TDD Physical layer procedures and modified so that is applies to both FDD and TDD when there is no principle difference. There is not equivalent section in reference [15], ARIB volume 3>

From a very general descriptive point of view, w~~W~~hen in idle mode, the UE continuously searches for new cells on the current and other carrier frequencies. The measurement for the cell reselection ~~cell search~~ are~~is~~ performed ~~done~~ in basically the same way as the cell selection~~initial cell search~~. The main difference compared to the cell selection~~initial cell search~~ is that a UE has received a priority list from the network, called the cell reselection monitoring set, which provides information relative to the cells to monitor.~~.~~
The priority list is continuously updated to reflect the changing neighbourhood of the moving UE. (ETSI).
Content of the cell reselection monitoring set is further discussed in the following sections for FDD, TDD and GSM cells respectively.

5.2.1.1 Content of the cell reselection monitoring set for FDD cells

<Editor's note : the text contained here comes from section 5.2 in [13] (UTRA FDD , Physical layer procedures>)

The content of the cell reselection monitoring set as far as FDD cells are concerned~~is priority list describes~~ provides the list of FDD cells/frequencies ~~in which order the~~ including the downlink scrambling codes and the order in which they should be searched for~~. and~~

5.2.1.2 Content of the cell reselection monitoring set for TDD cells

<Editor's note : the text contained here comes from section 6.6.2 in [14] (UTRA TDD , Physical layer procedures>)

~~When in idle mode, the UE continuously searches for new cells on the current and other carrier frequencies. The cell search is done in basically the same way as the initial cell search. The main difference compared to the initial cell search is that an idle UE has received a priority list from the network.~~ The~~is~~ cell reselection monitoring set priority list describes in which order to search for TDD~~other~~ cells.

5.2.1.3 Content of the cell reselection monitoring set for GSM cells

To be added

5.2.2 Measurements for cell reselection and reporting to higher layers

<Editor's note : requirements need to be defined based on collaborative work with other WGs>

6 Measurements in connected mode

6.1 Measurements for the handover preparation

6.1.1 Cell sets for the handover preparation

<editor's note : A cell set corresponds a list of cells that the UE needs to monitors for a given period of time, with associated requirements, as seen from the physical layer. Several sets are defined since different requirements might be defined, e.g. some cells might need to be monitored more often than others…It is not clear at this stage how such sets will be provided by the MAC layer. The primitives that allow the MAC layer to control the measurement process in the layer 1 are under definition by the RAN WG2. Several cases might be considered :

- *the MAC has a very fine control of the measurement, upto the frame level, decides on the measurement of particular cells at particular instant and the physical layer report measurement back to the MAC layer e.g. after a slotted frame, some processing being possibly needed by the MAC*
- *The MAC provides sets of cells to monitor and monitoring periods in the form of e.g. slotted frame or DTX period and it is up to the physical layer to organise the monitoring*
- *In the following we consider the second case, because it is more in line with the available documentation from . It the first case of some intermediate case was to be considered in the future then some material of the section would need to be move to the relevant RAN WG2 documentation.*
- *The text provided here is extracted from reference [12], XX15, UTRA Handover. There is no equivalent section in reference [13].>*

6.1.1.1 Overview of the different sets

The physical layer of the UE should be provided~~maintain~~ by higher layers the following lists of cells :

- *Handover Monitoring set* : All cells (UTRA or from other systems like GSM) that the UE has been tasked by the UTRAN to monitor when in active mode.
- *Active Set*: The UTRA cells currently assigning a downlink DPCH to the mobile station, which corresponds to the cell between which the UE in a soft handover~~or softer handover~~ with. The active set may only correspond to UTRA cells.
- *Handover candidate Set*: The cells that are not currently in the Active Set but have been received by the UE with sufficient strength to indicate that the associated DPCHs could be successfully demodulated. These correspond to the cells that are effectively reported by the UE to the UTRAN. These cells may be on the same or different frequencies from the current frequency assignment. Cells in the handover candidate set may be UTRA or GSM cells.

~~tbc~~

<Editor's note : these different sets were defined in XX.15 for the definition of requirements for the measurements for handover preparation as well as for the reporting or handover triggering. Since the approach now is to reduced the scope of this specification to the measurement only, there might not be a need to make define the same sets. Only set that would lead to different requirements or process for the measurement need to be defined. Here it is anticipated that cells in the active set, which are the serving cell are measure for each frame, whereas cell which are not part of the active set are not measured as often as every frame. Cells which have been identified by the MAC as candidate cell may need to be measured more often than other cell, since they are among the x strongest. >

6.1.1.2 Content of the sets

6.1.1.2.1 handover monitoring set

The handover monitoring set contains the cells to be monitored by the UE in active mode. It is provided to the physical layer by higher layers, as part of the primitives (see [8]). ~~It may be provided by the UTRAN via the BCCH of the serving cell(s) or via UE specific signalling on the DCH.~~

The handover monitoring set may contain cells on the same frequency and/or cells on different frequencies. The following sections indicate which information are included in the handover monitoring set for cell on the same frequency and cells on different frequencies.

6.1.1.2.1.1 TDD cells on the same frequency

<editor's note : no text in XX.15>

6.1.1.2.1.2 TDD cells on different frequencies

<editor's note : no text in XX.15>

6.1.1.2.1.3 FDD cells

<editor's note : no text in XX.15>

6.1.1.2.1.4 GSM cells

<editor's note : no text in XX.15>

6.1.1.2.2 active set

<editor's note : no text in XX.15>

6.1.1.2.3 candidate set

<editor's note : no text in XX.15>

6.1.2 Measurement triggering criteria

<Editor's note : >

6.1.3 Measurements for the handover preparation from UTRA TDD to UTRA TDD at the UE

6.1.3.1 In general

6.1.3.2 monitoring of TDD cells on the same frequency

<Editor's note : no requirement has been defined yet, in terms e.g. of number of cells to be able to monitor in a given time, precision of individual measurements>

6.1.3.3 Monitoring of TDD cells on different frequencies

6.1.3.3.1 Parametrisation/introduction of idle periods

<Editor's note : there is no text in the equivalent section of reference [12]XX.15, UTRA Handover. This section will be needed if there is a need to introduce additional idle periods in either up or dl if idle periods between Tx and Rx are not sufficient>

6.1.3.3.2 Measurement requirements

<Editor's note : there is no requirement specified in either of the reference documents (XX.15 or Vol 3 of ARIB). The reported value itself is not specified but is expected to correspond to a useful received power level, and potentially some relative timing information. The requirements could also be expressed minimum of samples for the monitoring time assigned by higher layers, precision of the relative received power, taking into account to structure of the monitoring set….>

6.1.4 Measurements for the handover preparation from UTRA TDD to UTRA FDD at the UE

<Editor's note : there is no text in the equivalent section of reference [12]XX.15, UTRA Handover, neither in reference [15], ARIB volume 3>

6.1.5 Measurements for the handover preparation from UTRA TDD to GSM at the UE

<editor's note : The content of this section has been extracted from reference [12], XX.15, UTRA Handover>

6.1.5.1 Introduction

The handover between UTRA and GSM system offering world-wide coverage already today has been one of the main design criteria taken into account in the UTRA frame timing definition. The GSM compatible multi-frame structure, with the super-frame being multiple of 120 ms, allows similar timing for inter-system measurements as in the GSM system itself. The compatibility in timing is important, that when operating in UTRA mode, a multi-mode UE is able to catch the desired information from the synchronisation bursts in the synchronisation frame on a GSM carrier with the aid of the frequency correction burst. This way the relative timing between a GSM and UTRA carriers is maintained similar to the timing between two asynchronous GSM carriers.

UTRA/TDD-GSM dual mode terminals can be implemented without simultaneous use of two receiver chains. Although the frame length is different from GSM frame length, the GSM traffic channel and UTRA TDD channels rely on similar 120 ms multi-frame structure.

A UE~~n UTRA terminal~~ can do the measurements either by efficiently using idle slots or by requesting free continuous periods in the downlink part obtained by reducing the spreading factor and compressing in time TS occupation in a form similar to the FDD slotted mode. The low-cost constraint excludes the dual receiver approach.

For smooth inter-operation, inter-system information exchanges are needed in order to allow ~~UTRA base station~~ The UTRAN to notify the UE~~terminal~~ of the existing GSM frequencies in the area and vice versa. Further more integrated operation is needed for the actual handover where the current service is maintained, taking naturally into account the lower data rate capabilities in GSM when compared to UMTS maximum data rates reaching all the way to 2 Mbits/s.

Basic requirements to correctly perform a handover in GSM are described in GSM 05.08 "Radio subsystem link control".

6.1.5.2 Low data rate traffic : use of TDD idle slots to monitor GSM

<Editor's note from XX.15 but still valid: the section evaluates the time to acquire the FCCH is all idle slots are devoted to the tracking of a FCCH burst, meaning that no power measurements is done concurrently. The derived figures are better than those for GSM. The section does not derive though any conclusion. A conclusion may be that the use of the idle slots is a valid option. An alternative conclusion may be that this is the only mode to be used, removing hence the use of the slotted frames for low data traffic or the need for a dual receiver, if we were to considering the monitoring of GSM cells only, rather than GSM, TDD and FDD. A more explicit conclusion could be agreed by the SMG2 UMTS-L1 before releasing this document >

In low data rate traffic case, only a few time slots are busy and idle slots may be used for monitoring purpose.
As an example, a simple speech communication is considered. Only two time slots by frame are used, one for uplink and one for downlink. The mobile station is not in transmit or receive state during 8,75 ms in each frame. According to the TS numbers allocated to the traffic, this period can be split into two continuous intervals A and B as shown in figure 3.

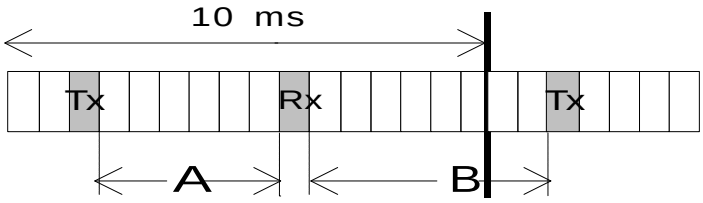

Figure 1: possible idle periods in a 16 TS frame with two busy TS.

A is defined as the number of idle slots between the Tx and Rx slots and B the number of idle slots between the Rx and Tx slots. It is clear that A+B=14 time slots.
In the scope of low cost terminals, a [0.8] ms period is supposed to be required to perform a frequency jump from UMTS to GSM. As detailed in table 1, this will let free periods of A*0,625-1.6 ms and B*0,625-1.6 ms during which the mobile station can monitor GSM. In this table, the UL traffic is assumed to occupy TS0, and the duration of monitoring periods are indicated for each possible location of the DL TS.
Table 1 evaluates the average synchronisation time and maximum synchronisation time, where the announced synchronisation time corresponds to the time needed to find the FCCH. The FCCH is supposed to be perfectly detected meaning that the FCCH is found if it is entirely present in the monitoring window. The FCCH being found the SCH location is unambiguously known from that point.

DL TS n°	Number of free TS in A	Number of free TS in B	Monitoring period within A (ms)	Monitoring period within B (ms)	Synchronisation average time (ms)	Maximum synchronisation time (ms)
1	0	14	Not Used	7,15	43	140
2	1	13	NU	6,525	48	187
3	2	12	NU	5,900	56	188
4	3	11	NU	5,275	63	188
5	4	10	0.9	4,65	68	189
6	5	9	1,525	4,025	75	233
7	6	8	2,15	3,4	74	189
8	7	7	2,775	2,775	48	189
9	8	6	3,4	2,15	73	189
10	9	5	4,025	1,525	73	235
11	10	4	4,65	0.9	66	186
12	11	3	5,275	NU	61	186
13	12	2	5,900	NU	54	186
14	13	1	6,525	NU	47	186
15	14	0	7,15	NU	43	139

Table1: example-monitoring periods and associated synchronisation time in a 16 TS frame with two busy TS and with 0.8 ms switching time (*).

(*) All simulations have been performed with a random initial delay between GSM frames and UMTS frames
Each configuration of TS allocation described above allows a monitoring period sufficient to acquire synchronisation.

6.1.5.3 High data rate traffic.

6.1.5.3.1 High-end dual synthesisers terminals

In case of high data traffic, a monitoring period of at least two slots is desirable as shown by the simulation results appearing on the table 2 below.

Number of consecutive TS per frame available for monitoring	Average synchronisation time (s)	Maximum synchronisation time (s)
3	0,23	0,65
2	0,4	1,9
1	7,2	23,2

Table 2: synchronisation time for a monitoring period of one, two or three consecutive time slot per frame.

The number of consecutive Time Slots needed to obtain an effective monitoring period of two Time Slots depends on the synthesiser characteristics that can be better for the high-end high-date rate capable terminal than for the low cost terminal considered in section 9.2.2.2. The switching time could for instance be considered as being one or one half of a TS for one-way, resulting in the effective monitoring period indicated in the table 3 below.
For even better performance, a dual synthesiser terminal could be considered: this would allow a negligible switching time between UMTS and GSM frequencies. When the first synthesiser is used, the frequency jump for monitoring is performed by the second synthesiser.

One-way switching time for the synthesiser	Number of free consecutive TSs needed in the frame for an effective monitoring period of 2 TSs
1 TS (= 625µs)	4
0.5 TS (=312µs)	3
0 (dual synthesiser)	2

Table3: link between the synthesiser performance and the number of free consecutive TSs for a monitoring period of two TSs, needed for GSM monitoring.

6.1.5.3.2 Use of TDD TSs release to accommodate monitoring windows

In high data-rate, when it is not possible to free the number of TS needed for an effective monitoring to prepare a handover from UMTS to GSM, the data rate can be slightly reduced for the duration of the monitoring. This should be acceptable as in any case, the data rate needs to be adapted to the available resource in GSM before the handover can be performed.

6.1.6 Mesurements for the Handover preparation in TDD at the UTRAN side

<editor's note : this is not described in either of the documents. However the handover triggering might not be due only to conditions on the downlink. Measurements performed by the cells in the active set might be needed as in GSM. This section has been created for that purpose >

6.1.7 Overall handover preparation

This section should explain how the inter-frequency handover preparation from UTRA TDD to UTRA (either FDD or TDD) and from UTRA to GSM are co-ordinated in terms of measurement and reporting. This section provides the overall requirement and measurement procedure.
<Editor's note : no text is available is either of the reference documents, XX.15 or ARIB volume 3>

6.1.8 Measurement reporting to the higher layers

6.1.8.1 Reporting scheme

The UE sends regular (or event driven) measurement reports to the UTRAN. The level of filtering done by the physical layer vs. the filtering done by higher layers needs to be further discussed.

6.1.8.2 Measurement report content for cells on the same frequency

6.1.8.3 Measurement report content for TDD cells

6.1.8.4 Measurement report content for GSM cells

6.2 Measurements for the cell reselection in active mode

<Editor's note : Depending on state the UE is in while in connected mode, the cell change operation can be performed using various procedures, such handover or cell reselection. Cell reselection might be appropriate for packet transmission. As an example this is what is done in GSM GPRS. The text included in this section is copied from reference [13], but is of a descriptive nature. Requirements will need to be defined as soon as the procedure is clarified by WG2>

When in active mode, the UE continuously searches for new base stations on the current carrier frequency. This cell search is carried out in basically the same way as the idle mode cell search.

6.3 measurements for power control ?

<Editor's note : there is presently no measurement defined for the support of power control that is reported over the radio. There might be however layer some measurements exchanged between the different UTRAN entities and that will need to be standardised in relation with power control. This is to be clarified with WG2 and WG3>

6.4 Measurement to support DCA

6.5 Measurements for adjacent protection rule

<Editor's note : some additional measurement might be needed in order to provide the network with information on adjacent channel interference. The text in this section is copied from reference [15], section 3.2.6.11.5). There is no equivalent text in ETSI documents. The text copied referred to FDD in [15. It should be checked whether there is a fundamental difference between the requirements when operating in TDD or in FDD.]>

6.5.1.1 Frequencies to measure

On the BCH, UTRAN~~BTS~~ transmits frequency information of candidate frequencies and neighbouring frequencies. A candidate frequency is defined as a frequency that can be used by the own network, and a neighbouring frequency is defined as a frequency that is adjacent to a candidate frequency and cannot be used by the own network. Candidate frequencies are classified into adjacent frequencies and non-adjacent frequencies. An adjacent frequency is defined as a candidate frequency that is adjacent to a neighbouring frequency, and a non-adjacent frequency is defined as a candidate frequency that is not adjacent to a neighbouring frequency. A pair of dl~~forward~~-link and up~~reverse~~-link non-adjacent frequencies may be allocated to all UE~~MS~~.

6.5.1.2 Measurement to perform

To support adjacent channel protection rule, an MS measures Q_1 and Q_2 , where Q_1 is the received power in dBm of the down~~forward~~-link adjacent frequency, and Q_2 is the received power in dBm of the down~~forward~~-link neighbouring frequency that is adjacent to the downlink~~forward link~~ adjacent frequency.

6.5.1.3 Frequency allocation rule

A pair of forward-link and reverse-link adjacent frequencies may be allocated to the MS if Q_2 - Q_1 is less than R_{ACP} dB. During communication using a pair of down~~forward~~-link and up~~reverse~~-link adjacent frequencies, the MS measures Q_1 and Q_2 by the same means with the power measurement for inter-frequency handover described in 3.2.6.6.3. *This measurement is conducted at least once in T_{INT} second, and the MS starts inter-frequency handover to a pair of down~~forward~~-link and up~~reverse~~-link non-adjacent frequencies if Q_2 - Q_1 is larger than R_{ACP} dB.*
<Editor's note : the rule in itself is outside the scope of this document. Only the measurement aspects should remain>

(Note: If the separation of some pairs of a forward-link frequency and a reverse-link frequency is not a pre-determined constant in some networks, the following adjacent channel protection rule shall be applied. The italic part may be moved to a higher layer.)

6.6 Measurements for radio-link time-out (or sync loss) ?

7 Radio link measurements

<editor's note : this section should described the measurements that are performed either at the UE or UTRAN side and that are

- *either reported and can be checked on the interfaces*
- *or lead to some procedures in the mobile, leading to an expected behaviour of the said UE.*

This section can provide some requirements on the measurement in terms of precision for various conditions, although some of this might be more applicable to the WG4 documentation. The mapping of the raw values onto reported values with a limited range, where such reported values transit between layers or across the interface should be also given. Only the acronyms are provide here>

RSSI : Received signal strength for useful part
ISSI : Interference signal strength
SIR : Signal to interference ratio
Relative signal strength (for Handover)

Relative timing difference between cells = for FDD this corresponds to the phase difference between the scrambling codes

8 Annex 1 : Handover scenarios (Informative)

<Editor's note : This whole section is based on section 7 in XX15 version 1.0.0 from ETSI>

8.1 Introduction

This section studies the handover scenarios from the deployment point of view. It should in particular provide the rules for setting the handover monitoring set (see section), in particular the number of GSM, FDD and TDD cells to monitor. Based on deployment scenarios and UE's speed, it should also set the requirement in terms of detection time and reporting time of a strong cell.
As far as the handover between UTRA and GSM, the handover scenario will be based on interoperability aspects described in XX.16, which among other things will indicate when a handover is needed between UTRA and GSM from the service availability point of view.

8.2 UTRA-UTRA handover scenarios

8.3 UTRA-GSM handover scenarios

9 History

V.0.0.1	10-12-1998	First version created by the editor on the basis of XX.15 and the Volume 3 of the ARIB specification.
V.0.0.2		
V.0.0.3		

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