# **RP-020113**

|                        | CHANGE REQUEST   |
|------------------------|--|
| ж <mark>г</mark>       | 25.306 CR 38 <b># rev</b> - <sup># Current version:</sup> 3.4.0 <sup>#</sup>   |
| Spe                    | ec Title: UE Radio Access Capabilities #   |
| For <b>HELP</b> on usi | ng this form, see bottom of this page or look at the pop-up text over the $\Re$ symbols.   |
|                        |  |
| Proposed change af     | fects: % (U)SIM ME/UE X Radio Access Network X Core Network  |
| Title: ೫               | Support of UP measurement reporting in CELL_PCH/URA_PCH  |
| Source: #              | Nortel Networks, Qualcomm, CPS, Ericsson   |
| Work item code: #      | Date: # 5 <sup>th</sup> March 2002   |
|                        |  |
| Category: ೫            | F   Release: % R99     Jse one of the following categories:   Use one of the following releases:                                 |
|                        | F (correction) 2 (GSM Phase 2)   |
|                        | A (corresponds to a correction in an earlier release)R96(Release 1996)B (addition of feature),R97(Release 1997)                  |
|                        | C (functional modification of feature) R98 (Release 1998)  |
|                        | D (editorial modification)R99 (Release 1999)Detailed explanations of the above categories canREL-4 (Release 4)                   |
|                        | e found in 3GPP <u>TR 21.900</u> . <i>REL-5 (Release 5)</i>  |
|                        |  |
| Reason for change:     | In R99 the measurement performance requirements for UP measurements in<br>CELL_PCH/URA_PCH are missing from RAN4 specifications. |
| Summary of change      | : # UE positioning reporting in CELL_PCH and URA_PCH is made an UE capability.   |
| Summary of change      | If the UE supports this capability it will comply to the measurement performance   |
|                        | requirements that will be defined in Release 5 RAN4 specifications.  |
|                        | Isolated impact analysis:  |
|                        | Impacted function is UE Positioning reporting in CELL_PCH and URA_PCH  |
|                        | states.  |
|                        | The proposed changes are isolated impact to the impacted functionality.  |
| Consequences if        | <b># UP measurement reporting in CELL_PCH, URA_PCH is misaligned between</b>   |
| not approved:          | RAN2 and RAN4 specifications in R99.   |
| Clauses affected:      | <b>#</b> 4.8, 5.1, 5.2.1   |
| Chauses aneolea.       |  |
| Other specs            | <b>X</b> Other core specifications <b>%</b> 25.331   |
| affected:              | Test specifications   O&M Specifications   |
|                        |  |
| Other comments:        | ж  |

How to create CRs using this form: Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. Below is a brief summary:

1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 4.8 UE positioning related parameters

#### Standalone location method(s) supported

Defines if a UE can measure its location by some means unrelated to UTRAN (e.g. if the UE has access to a standalone GPS receiver).

## OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

#### Network Assisted GPS support

Defines if a UE supports either of the two types of assisted GPS schemes, namely "Network based", "UE based", "Both", or "none".

### GPS reference time capable

Defines if a UE has the capability to measure GPS reference time as defined in [6].

Support for IPDL

Defines if a UE has the capability to use IPDL to enhance its "SFN-SFN observed time difference –type 2" measurement.

### Support for Rx-Tx time difference type 2

Defines if a UE has the capability to perform the Rx-Tx time difference type 2 measurement.

Support for UP measurement reportingvalidity in CELL PCH and URA PCH RRC states

Defines if a <u>UE has the capability to report</u> the UP measurement results are valid in CELL\_PCH and URA\_PCH RRC states.

# 5 Possible UE radio access capability parameter settings

# 5.1 Value ranges

## Table 5.1: UE radio access capability parameter value ranges

|                  |                                       | UE radio access capability   | Value range   |
|------------------|---------------------------------------|--|---|
| PDCP parameters  |                                       | parameter<br>Support for RFC 2507  | Yes/No  |
| i DCi parameters |                                       | Support for loss-less SRNS relocation  | Yes/No  |
|                  |                                       | Maximum header compression<br>context space  | 512, 1024, 2048, 4096, 8192 bytes   |
| RLC parameters   |                                       | Total RLC AM buffer size   | 2,10,50,100,150,500,1000 kBytes   |
|                  |                                       | Maximum number of AM entities  | 3,4,5,6,8,16,30   |
| PHY parameters   | Transport<br>channel<br>parameters in | Maximum sum of number of bits of all<br>transport blocks being received at an<br>arbitrary time instant  | 640, 1280, 2560, 3840, 5120, 6400,<br>7680, 8960, 10240, 20480, 40960,<br>81920, 163840                         |
|                  | downlink                              | arbitrary time instant<br>Maximum sum of number of bits of all<br>convolutionally coded transport blocks<br>being received at an arbitrary time<br>instant | 640, 1280, 2560, 3840, 5120, 6400,<br>7680, 8960, 10240, 20480, 40960,<br>81920, 163840                         |
|                  |                                       | Maximum sum of number of bits of all<br>turbo coded transport blocks being<br>received at an arbitrary time instant  | 640, 1280, 2560, 3840, 5120, 6400,<br>7680, 8960, 10240, 20480, 40960,<br>81920, 163840                         |
|                  |                                       | Maximum number of simultaneous transport channels  | 4, 8, 16, 32  |
|                  |                                       | Maximum number of simultaneous<br>CCTrCH   | 1, 2, 3, 4, 5, 6, 7, 8  |
|                  |                                       | Maximum total number of transport<br>blocks received within TTIs that end<br>within the same 10 ms interval  | 4, 8, 16, 32, 48, 64, 96, 128, 256, 512   |
|                  |                                       | Maximum number of TFC in the TFCS  | 16, 32, 48, 64, 96, 128, 256, 512,<br>1024  |
|                  |                                       | Maximum number of TF   | 32, 64, 128, 256, 512, 1024   |
|                  |                                       | Support for turbo decoding   | Yes/No  |
|                  | Transport<br>channel<br>parameters in | Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant   | 640, 1280, 2560, 3840, 5120, 6400,<br>7680, 8960, 10240, 20480, 40960,<br>81920, 163840                         |
|                  | uplink                                | Maximum sum of number of bits of all<br>convolutionally coded transport blocks<br>being transmitted at an arbitrary time<br>instant                        | 640, 1280, 2560, 3840, 5120, 6400,<br>7680, 8960, 10240, 20480, 40960,<br>81920, 163840                         |
|                  |                                       | Maximum sum of number of bits of all<br>turbo coded transport blocks being<br>transmitted at an arbitrary time instant                                     | 640, 1280, 2560, 3840, 5120, 6400,<br>7680, 8960, 10240, 20480, 40960,<br>81920, 163840                         |
|                  |                                       | Maximum number of simultaneous transport channels  | 2, 4, 8, 16, 32   |
|                  |                                       | Maximum number of simultaneous<br>CCTrCH of DCH type (TDD only)  | 1, 2, 3, 4, 5, 6, 7, 8  |
|                  |                                       | Maximum total number of transport<br>blocks transmitted within TTIs that<br>start at the same time   | 2, 4, 8, 16, 32, 48, 64, 96, 128, 256,<br>512   |
|                  |                                       | Maximum number of TFC in the TFCS  | 4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   |
|                  |                                       | Maximum number of TF   | 32, 64, 128, 256, 512, 1024   |
|                  |                                       | Support for turbo encoding   | Yes/No  |
|                  | FDD Physical<br>channel               | Maximum number of DPCH/PDSCH<br>codes to be simultaneously received  | 1, 2, 3, 4, 5, 6, 7, 8  |
|                  | parameters in<br>downlink             | Maximum number of physical channel<br>bits received in any 10 ms interval<br>(DPCH, PDSCH, S-CCPCH)<br>Support for SF 512                                  | 600, 1200, 2400, 3600, 4800, 7200,<br>9600, 14400, 19200, 28800, 38400,<br>48000, 57600, 67200, 76800<br>Yes/No |

|                     |   | UE radio access capability<br>parameter  | Value range  |
|---------------------|---|--|--|
|                     |   | Support of PDSCH   | Yes/No   |
|                     |   | Simultaneous reception of SCCPCH and DPCH                                      | Yes/No   |
|                     |   | Simultaneous reception of SCCPCH,<br>DPCH and PDSCH                            | Yes/No   |
|                     |   | Maximum number of simultaneous S-<br>CCPCH radio links                         | 1<br>NOTE: Only the value 1 is part of<br>this release of the<br>specification               |
|                     |   | Support of dedicated pilots for<br>channel estimation                          | Yes/No   |
|                     | FDD Physical<br>channel                 | Maximum number of DPDCH bits transmitted per 10 ms                             | 600, 1200, 2400, 4800, 9600, 19200,<br>28800, 38400, 48000, 57600                            |
|                     | parameters in<br>uplink<br>TDD physical | Support of PCPCH<br>Maximum number of timeslots per                            | Yes/No<br>114  |
|                     | channel<br>parameters in                | frame<br>Maximum number of physical  | 1,2,3224   |
|                     | downlink                                | channels per frame<br>Minimum SF   | 16, 1  |
|                     |   | Support of PDSCH   | Yes/No   |
|                     |   | Maximum number of physical channels per timeslot                               | 116  |
|                     | TDD physical<br>channel                 | Maximum Number of timeslots per<br>frame                                       | 114  |
|                     | parameters in uplink                    | Maximum number of physical<br>channels per timeslot                            | 1, 2   |
|                     |   | Minimum SF   | 16,8,4,2,1   |
|                     |   | Support of PUSCH   | Yes/No   |
| RF parameters       | FDD RF<br>parameters                    | UE power class   | 3, 4<br>NOTE: Only power classes 3 and<br>4 are part of this release of<br>the specification |
|                     |   | Tx/Rx frequency separation   | 190 MHz<br>174.8-205.2 MHz<br>134.8-245.2 MHz  |
| RF parameters       | TDD RF<br>parameters                    | UE power class   | 2,3<br>NOTE: Only power classes 2 and<br>3 are part of this release of<br>the specification  |
|                     |   | Radio frequency bands  | a), b), c), a+b), a+c), a+b+c)   |
| Multi-mode related  | d parameters                            | Chip rate capability<br>Support of UTRA FDD/TDD                                | 3.84,1.28<br>FDD, TDD, FDD+TDD   |
| Multi-RAT related   |   | Support of GSM   | Yes/No (per GSM frequency band)  |
|                     | 1                                       | Support of multi-carrier   | Yes/No   |
| UE positioning rel  | ated parameters                         | Standalone location method(s) supported  | Yes/No   |
|                     |   | Network assisted GPS support   | Network based / UE based / Both/<br>None   |
|                     |   | GPS reference time capable   | Yes/No   |
|                     |   | Support for IPDL   | Yes/No   |
|                     |   | Support for OTDOA UE based<br>method<br>Support for Rx-Tx time difference type | Yes/No<br>Yes/No   |
|                     |   | 2 measurement<br>Support for UP measurement                                    | Yes/No   |
|                     |   | reportingvalidity in CELL_PCH and<br>URA_PCH RRC states                        |  |
| Measurement rela    | ated capabilities                       | Need for downlink compressed mode  | Yes/No (per frequency band, UTRA mode and RAT)   |
| -                   |   | Need for uplink compressed mode  | Yes/No (per frequency band, UTRA mode and RAT)   |
| General capabilitie | es                                      | ICS version  | R99  |

# 5.2.1 Combinations of common UE Radio Access Parameters for UL and DL

NOTE: Measurement-related capabilities are not included in the combinations. These capabilities are independent from the supported RABs.

# Table 5.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL

| Reference combination of UE Radio<br>Access capability parameters common<br>for UL and DL | 32kbps<br>class                                 | 64kbps<br>class  | 128kbps<br>class    | 384kbps<br>class | 768kbps<br>class | 2048kbps<br>class |
|---|---|------------------|---------------------|------------------|------------------|-------------------|
| PDCP parameters   |   |                  |                     |                  |                  |                   |
| Support for RFC 2507  | No  | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1    | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1  |
| Support for loss-less SRNS relocation   |   |                  | No/\<br>NOT         |                  |                  |                   |
| Maximum header compression context space  |   | Not a            | applicable for co   | onformance te    | sting            |                   |
| RLC parameters  |   |                  |                     |                  |                  |                   |
| Total RLC AM buffer size (kbytes)   | 10  | 10               | 50                  | 50               | 100              | 500               |
| Maximum number of AM entities   | 4   | 4                | 5                   | 6                | 8                | 8                 |
| Multi-mode related parameters   |   |                  |                     |                  |                  |                   |
| Support of UTRA FDD/TDD   |   |                  | FDD / FDD+<br>NOT   |                  |                  |                   |
| Multi-RAT related parameters  |   |                  |                     |                  |                  |                   |
| Support of GSM  |   |                  | Yes/<br>NOT         |                  |                  |                   |
| Support of multi-carrier  | Yes/No<br>NOTE 1                                |                  |                     |                  |                  |                   |
| UE positioning related parameters   |   |                  |                     |                  |                  |                   |
| Standalone location method(s) supported   | d Yes/No<br>NOTE 1                              |                  |                     |                  |                  |                   |
| Network assisted GPS support  | Network based / UE based / Both/ None<br>NOTE 1 |                  |                     |                  |                  |                   |
| GPS reference time capable  |   |                  | Yes/<br>NOT         | ΊNo              |                  |                   |
| Support for IPDL  |   |                  | Yes/<br>NOT         | 'No              |                  |                   |
| Support for OTDOA UE based method   |   |                  | Yes/<br>NOT         | ΊNo              |                  |                   |
| Support for Rx-Tx time difference type 2  | Yes/No  |                  |                     |                  |                  |                   |
| measurement   |   |                  | NOT                 | E 1              |                  |                   |
| Support for UP measurement<br>reportingvalidity in CELL_PCH and                           |   |                  | <u>Yes</u> /<br>NOT |                  |                  |                   |
| URA_PCH RRC states  |   |                  |                     |                  |                  |                   |
| RF parameters for FDD   |   |                  |                     |                  |                  |                   |
| UE power class  |   |                  | 3 /<br>NOT          |                  |                  |                   |
| Tx/Rx frequency separation  |   |                  | 190                 | MHz              |                  |                   |
| RF parameters for TDD   |   |                  |                     |                  |                  |                   |
| Radio frequency bands   |   | A                | /b/c/a+b/a/<br>NOT  |                  | +c               |                   |
| Chip rate capability  |   |                  | 1.28 / 3.84<br>NOT  |                  |                  |                   |
| UE power class  |   |                  | 2 /<br>NOT          | 3                |                  |                   |

NOTE 1: Options represent different combinations that should be supported with Conformance Tests.

# **RP-020113**

|                               |                  |  |                               |                |                      |                    |        | ст     |              |                    |                 |                        | CR-        | Form-v6.1 |
|-------------------------------|------------------|--|-------------------------------|----------------|----------------------|--------------------|--------|--------|--------------|--------------------|-----------------|------------------------|------------|-----------|
|                               |                  |  | CH                            | ANGE           |                      | - Q1               | UE     | 21     |              |                    |                 |                        |            |           |
| ж                             | 25               | .306   | CR 39                         | )              | жre                  | ٧                  | -      | ж      | Currer       | nt vers            | sion:           | 4.3.0                  | )          | ж         |
| Sp                            | bec <sup>-</sup> | Fitle:   | UE Radio                      | Access         | Capab                | oilitie            | es     |        |              |                    |                 |                        |            | ж         |
| For <u>HELP</u> on us         | sina i           | his for  | m see ho                      | ttom of thi    | s nade               | e or l             | ook a  | at the | e non-u      | ın text            | over            | the ¥ s                | /mh        | ols       |
|                               | •                |  |                               |                |                      |                    |        |        |              |                    |                 | -                      |            |           |
| Proposed change a             | affec            | ts:  | (U)SIM                        | ME             | E/UE                 | X                  | Radi   | o Ac   | cess N       | etwor              | k X             | Core N                 | letw       | /ork      |
| Title: ೫                      | Sup              | oport o  | f UP meas                     | surement       | <mark>reporti</mark> | <mark>ng ir</mark> | I CEL  | _L_P   | CH/UF        | RA_PC              | СН              |                        |            |           |
| Source: #                     | No               | tel Net  | works, Qu                     | ualcomm,       | CPS, I               | Erics              | son    |        |              |                    |                 |                        |            |           |
| Work item code: #             |                  |  |                               |                |                      |                    |        |        | Da           | ate <sup>.</sup> X | 5 <sup>th</sup> | March 20               | 02         |           |
|                               |                  |  |                               |                |                      |                    |        |        |              |                    |                 |                        |            |           |
| Category: #                   |                  | one of t   | he followin                   | a categorie    | s:                   |                    |        |        | Relea<br>Use |                    |                 | L-4<br>llowing re      | leas       | ses:      |
|                               |                  | F (corr  | ection)                       |                |                      |                    |        |        | 2            |                    |                 | 1 Phase 2              |            |           |
|                               |                  |  | responds to                   |                | on in ar             | n earl             | ier re | lease  |              | 96                 |                 | ase 1996               |            |           |
|                               |                  |  | lition of feat<br>ctional mod |                | feature              | e)                 |        |        |              | 97<br>98           |                 | ease 1997<br>ease 1998 |            |           |
|                               |                  | <b>D</b> (edit   | orial modifi                  | cation)        |                      | ,                  |        |        |              | 99                 | (Rele           | ase 1999               |            |           |
|                               |                  |  | lanations of                  |                | e categ              | ories              | can    |        |              | EL-4               |                 | ease 4)                |            |           |
|                               | be to            | una in .   | 3GPP <u>TR 2</u>              | <u>1.900</u> . |                      |                    |        |        | R            | EL-5               | (Rele           | ease 5)                |            |           |
| Decess for change             | مە               |  |                               |                |                      |                    |        | ***    |              | to for             |                 |                        |            | to in     |
| Reason for change             | : ж              |  | L4 the mo<br>PCH/UF           |                |                      |                    |        |        |              |                    |                 | neasuren               | nen        | ts in     |
| Summary of chang              | a. #             | LIE n  | ositioning                    | reporting      | in CEI               | I P                | CH     | and I  |              | CH is              | made            | anliF                  | can        | ability   |
| Summary or chang              | <b>с.</b> т      |  | UE suppo                      |                |                      |                    |        |        |              |                    |                 |                        |            |           |
|                               |                  |  | rements t                     |                |                      |                    |        |        |              |                    |                 |                        |            |           |
|                               |                  | Isola  | ted impa                      | rt analysi     | c.                   |                    |        |        |              |                    |                 |                        |            |           |
|                               |                  |  |                               |                |                      | onina              | repo   | orting | a in CE      | LL PO              | CH ar           | nd URA                 | PCI        | -         |
|                               |                  | Impacted function is UE Positioning reporting in CELL_PCH and URA_PCH<br>states. |                               |                |                      |                    |        |        |              |                    |                 |                        |            |           |
|                               |                  | The p  | proposed                      | changes a      | are isol             | lated              | impa   | act to | o the im     | npacte             | ed fun          | ctionality             | <i>'</i> . |           |
|                               |                  |  |                               |                |                      |                    |        |        |              | ~ • • •            |                 |                        |            |           |
| Consequences if not approved: | ж                |  | easurem                       |                |                      |                    |        |        | RA_P         | CH IS I            | misali          | gned be                | twe        | en        |
| not approvou.                 |                  | 10.00  |                               |                |                      | ,                  |        | •      |              |                    |                 |                        |            |           |
| Clauses affected:             | ж                | 4.8, 5   | 5.1, 5.2.1                    |                |                      |                    |        |        |              |                    |                 |                        |            |           |
| Other specs                   | ж                | X Ot   | her core s                    | pecificatio    | ons                  | ж                  | 25.    | 331    |              |                    |                 |                        |            |           |
| affected:                     |                  |  | st specific                   |                |                      |                    |        |        |              |                    |                 |                        |            |           |
|                               |                  |  | &M Specif                     |                |                      |                    |        |        |              |                    |                 |                        |            |           |
| 0//                           |                  |  |                               |                |                      |                    |        |        |              |                    |                 |                        |            |           |
| Other comments:               | ж                |  |                               |                |                      |                    |        |        |              |                    |                 |                        |            |           |

How to create CRs using this form: Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. Below is a brief summary:

1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 4.8 UE positioning related parameters

#### Standalone location method(s) supported

Defines if a UE can measure its location by some means unrelated to UTRAN (e.g. if the UE has access to a standalone GPS receiver).

## OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

#### Network Assisted GPS support

Defines if a UE supports either of the two types of assisted GPS schemes, namely "Network based", "UE based", "Both", or "none".

### GPS reference time capable

Defines if a UE has the capability to measure GPS reference time as defined in [6].

Support for IPDL

Defines if a UE has the capability to use IPDL to enhance its "SFN-SFN observed time difference –type 2" measurement.

### Support for Rx-Tx time difference type 2

Defines if a UE has the capability to perform the Rx-Tx time difference type 2 measurement.

Support for UP measurement reportingvalidity in CELL PCH and URA PCH RRC states

Defines if a <u>UE has the capability to report</u> the UP measurement results are valid in CELL\_PCH and URA\_PCH RRC states.

# 5.1 Value ranges

| Table 5.1: UE radio access capability parameter value ranges |  |
|--|--|
|--|--|

|                 |                           | UE radio access capability<br>parameter  | Value range                            |
|-----------------|---------------------------|--|--|
| PDCP parameters |                           | Support for RFC 2507                     | Yes/No                                 |
|                 |                           | Support for RFC 3095                     | Yes/No                                 |
|                 |                           | Support for loss-less SRNS relocation    | Yes/No                                 |
|                 |                           | Maximum header compression               | 512, 1024, 2048, 4096, 8192 bytes      |
|                 |                           | context space                            | 512, 1024, 2040, 4000, 0102 bytes      |
| RLC parameters  |                           | Total RLC AM buffer size                 | 2,10,50,100,150,500,1000 kBytes        |
|                 |                           | Maximum number of AM entities            | 3,4,5,6,8,16,30                        |
|                 | Transport                 | Maximum sum of number of bits of all     | 640, 1280, 2560, 3840, 5120, 6400,     |
| PHY parameters  | Transport<br>channel      |  | 7680, 8960, 10240, 20480, 40960,       |
|                 |                           | transport blocks being received at an    | 81920, 163840                          |
|                 | parameters in<br>downlink | arbitrary time instant                   | ,                                      |
|                 | downink                   | Maximum sum of number of bits of all     | 640, 1280, 2560, 3840, 5120, 6400,     |
|                 |                           | convolutionally coded transport blocks   | 7680, 8960, 10240, 20480, 40960,       |
|                 |                           | being received at an arbitrary time      | 81920, 163840                          |
|                 |                           | instant                                  |  |
|                 |                           | Maximum sum of number of bits of all     | 640, 1280, 2560, 3840, 5120, 6400,     |
|                 |                           | turbo coded transport blocks being       | 7680, 8960, 10240, 20480, 40960,       |
|                 |                           | received at an arbitrary time instant    | 81920, 163840                          |
|                 |                           | Maximum number of simultaneous           | 4, 8, 16, 32                           |
|                 |                           | transport channels                       |  |
|                 |                           | Maximum number of simultaneous           | 1, 2, 3, 4, 5, 6, 7, 8                 |
|                 |                           | CCTrCH                                   |  |
|                 |                           | Maximum total number of transport        | 4, 8, 16, 32, 48, 64, 96, 128, 256, 51 |
|                 |                           | blocks received within TTIs that end     |  |
|                 |                           | within the same 10 ms interval           |  |
|                 |                           | Maximum number of TFC in the             | 16, 32, 48, 64, 96, 128, 256, 512,     |
|                 |                           | TFCS                                     | 1024                                   |
|                 |                           | Maximum number of TF                     | 32, 64, 128, 256, 512, 1024            |
|                 |                           | Support for turbo decoding               | Yes/No                                 |
|                 | Transport                 | Maximum sum of number of bits of all     | 640, 1280, 2560, 3840, 5120, 6400,     |
|                 | channel parameters in     | transport blocks being transmitted at    | 7680, 8960, 10240, 20480, 40960,       |
|                 |                           | an arbitrary time instant                | 81920, 163840                          |
|                 | uplink                    | Maximum sum of number of bits of all     | 640, 1280, 2560, 3840, 5120, 6400,     |
|                 |                           | convolutionally coded transport blocks   | 7680, 8960, 10240, 20480, 40960,       |
|                 |                           | being transmitted at an arbitrary time   | 81920, 163840                          |
|                 |                           | instant                                  |  |
|                 |                           | Maximum sum of number of bits of all     | 640, 1280, 2560, 3840, 5120, 6400,     |
|                 |                           | turbo coded transport blocks being       | 7680, 8960, 10240, 20480, 40960,       |
|                 |                           | transmitted at an arbitrary time instant | 81920, 163840                          |
|                 |                           | Maximum number of simultaneous           | 2, 4, 8, 16, 32                        |
|                 |                           | transport channels                       |  |
|                 |                           | Maximum number of simultaneous           | 1, 2, 3, 4, 5, 6, 7, 8                 |
|                 |                           | CCTrCH of DCH type (TDD only)            |  |
|                 |                           | Maximum total number of transport        | 2, 4, 8, 16, 32, 48, 64, 96, 128, 256, |
|                 |                           | blocks transmitted within TTIs that      | 512                                    |
|                 |                           | start at the same time                   |  |
|                 |                           | Maximum number of TFC in the             | 4, 8, 16, 32, 48, 64, 96, 128, 256,    |
|                 |                           | TFCS                                     | 512, 1024                              |
|                 |                           | Maximum number of TF                     | 32, 64, 128, 256, 512, 1024            |
|                 |                           | Support for turbo encoding               | Yes/No                                 |
|                 | FDD Physical              | Maximum number of DPCH/PDSCH             | 1, 2, 3, 4, 5, 6, 7, 8                 |
|                 | channel                   | codes to be simultaneously received      |  |
|                 | parameters in             | Maximum number of physical channel       | 600, 1200, 2400, 3600, 4800, 7200,     |
|                 | downlink                  | bits received in any 10 ms interval      | 9600, 14400, 19200, 28800, 38400,      |
|                 |                           | (DPCH, PDSCH, Ś-CCPCH)                   | 48000, 57600, 67200, 76800             |
|                 |                           | Support for SF 512                       | Yes/No                                 |
|                 |                           | Support of PDSCH                         | Yes/No                                 |
|                 |                           | Simultaneous reception of SCCPCH         | Yes/No                                 |
|                 |                           | and DPCH                                 |  |
|                 |                           | Simultaneous reception of SCCPCH,        | Yes/No                                 |
|                 | 1                         |  |  |

|                     |                                   | UE radio access capability<br>parameter                           | Value range  |
|---------------------|-----------------------------------|---|--|
|                     |                                   | Support for RFC 2507  | Yes/No   |
|                     |                                   | Maximum number of simultaneous S-<br>CCPCH radio links            | 1<br>NOTE: Only the value 1 is part of<br>this release of the<br>specification               |
|                     |                                   | Support of dedicated pilots for<br>channel estimation             | Yes/No   |
|                     | FDD Physical<br>channel           | Maximum number of DPDCH bits transmitted per 10 ms                | 600, 1200, 2400, 4800, 9600, 19200,<br>28800, 38400, 48000, 57600                            |
|                     | parameters in uplink              | Support of PCPCH  | Yes/No   |
|                     | TDD 3.84 Mcps physical channel    | Maximum number of timeslots per frame                             | 114  |
|                     | parameters in<br>downlink         | Maximum number of physical channels per frame                     | 1,2,3224   |
|                     |                                   | Minimum SF  | 16, 1  |
|                     |                                   | Support of PDSCH  | Yes/No   |
|                     |                                   | Maximum number of physical channels per timeslot                  | 116  |
|                     | TDD 3.84 Mcps<br>physical channel | Maximum Number of timeslots per frame                             | 114  |
|                     | parameters in<br>uplink           | Maximum number of physical<br>channels per timeslot<br>Minimum SF | 1, 2   |
|                     |                                   | Support of PUSCH  | 16,8,4,2,1<br>Yes/No   |
|                     | TDD 1.28 Mcps<br>physical channel | Maximum number of timeslots per subframe                          | 16   |
|                     | parameters in<br>downlink         | Maximum number of physical<br>channels per subframe               | 1,2,3,,96  |
|                     |                                   | Minimum SF  | 16, 1  |
|                     |                                   | Support of PDSCH  | Yes/No   |
|                     |                                   | Maximum number of physical channels per timeslot                  | 116  |
|                     |                                   | Support 8PSK  | Yes/No   |
|                     | TDD 1.28 Mcps<br>physical channel | Maximum number of timeslots per subframe                          | 16   |
|                     | parameters in uplink              | Maximum number of physical channels per timeslot                  | 1,2  |
|                     |                                   | Minimum SF  | 16,8,4,2,1   |
|                     |                                   | Support of 8PSK   | Yes/No   |
|                     |                                   | Support of PUSCH  | Yes/No   |
| RF parameters       | FDD RF<br>parameters              | UE power class  | 3, 4<br>NOTE: Only power classes 3 and<br>4 are part of this release of<br>the specification |
|                     |                                   | Tx/Rx frequency separation  | 190 MHz<br>174.8-205.2 MHz<br>134.8-245.2 MHz  |
| RF parameters       | TDD 3.84 Mcps<br>RF parameters    | UE power class  | 2,3<br>NOTE: Only power classes 2 and<br>3 are part of this release of<br>the specification  |
|                     |                                   | Radio frequency bands   | a), b), c), a+b), a+c), b+c), a+b+c)   |
|                     | TDD 1.28 Mcps                     | UE power class  | 2,3  |
|                     | RF parameters                     | Radio frequency bands   | a), b), c), a+b), a+c), b+c), a+b+c)   |
| Multi-mode related  | d parameters                      | Support of UTRA FDD   | Yes/No   |
|                     |                                   | Support of UTRA TDD 3.84 Mcps                                     | Yes/No   |
|                     |                                   | Support of UTRA TDD 1.28 Mcps                                     | Yes/No   |
| Multi-RAT related   | parameters                        | Support of GSM  | Yes/No (per GSM frequency band)  |
|                     |                                   | Support of multi-carrier  | Yes/No   |
| UE positioning rela | ated parameters                   | Standalone location method(s)<br>supported                        | Yes/No   |
|                     |                                   | Network assisted GPS support                                      | Network based / UE based / Both/<br>None   |

|                                  | UE radio access capability<br>parameter   | Value range                                    |
|----------------------------------|---|--|
|                                  | Support for RFC 2507  | Yes/No   |
|                                  | GPS reference time capable  | Yes/No   |
|                                  | Support for IPDL  | Yes/No   |
|                                  | Support for OTDOA UE based method   | Yes/No   |
|                                  | Support for Rx-Tx time difference type 2 measurement                                  | Yes/No   |
|                                  | Support for UP measurement<br>reportingvalidity in CELL PCH and<br>URA PCH RRC states | Yes/No   |
| Measurement related capabilities | Need for downlink compressed mode   | Yes/No (per frequency band, UTRA mode and RAT) |
|                                  | Need for uplink compressed mode   | Yes/No (per frequency band, UTRA mode and RAT) |
| General capabilities             | ICS version   | R99  |

# 5.2.1 Combinations of common UE Radio Access Parameters for UL and DL

NOTE: Measurement-related capabilities are not included in the combinations. These capabilities are independent from the supported RABs.

# Table 5.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL

| Reference combination of UE Radio<br>Access capability parameters common<br>for UL and DL | 32kbps<br>class  | 64kbps<br>class  | 128kbps<br>class          | 384kbps<br>class | 768kbps<br>class | 2048kbps<br>class |
|---|------------------|------------------|---------------------------|------------------|------------------|-------------------|
| PDCP parameters   |                  |                  |                           |                  |                  |                   |
| Support for RFC 2507  | Nia              | Nali             | Nali                      | Nalla            | NaVaa            | Nella             |
| Support for RFC 2507  | No               | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1          | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1  |
| Support for RFC 3095  | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1          | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1 | No/Yes<br>NOTE 1  |
| Support for loss-less SRNS relocation   |                  |                  | No/\<br>NOT               |                  |                  |                   |
| Maximum header compression context space  |                  | Not a            | pplicable for co          | onformance te    | sting            |                   |
| RLC parameters  |                  |                  |                           |                  |                  |                   |
| Total RLC AM buffer size (kbytes)   | 10               | 10               | 50                        | 50               | 100              | 500               |
| Maximum number of AM entities   | 4                | 4                | 5                         | 6                | 8                | 8                 |
| Multi-mode related parameters   |                  |                  |                           |                  |                  |                   |
| Support of UTRA FDD   |                  |                  | Yes                       | /No              |                  |                   |
|   |                  |                  | NOT                       |                  |                  |                   |
| Support of UTRA TDD 3.84 Mcps   |                  |                  | Yes/<br>NOT               |                  |                  |                   |
| Support of UTRA TDD 1.28 Mcps   |                  |                  | Yes/<br>NOT               |                  |                  |                   |
| Multi-RAT related parameters  |                  |                  |                           |                  |                  |                   |
| Support of GSM  |                  |                  | Yes/<br>NOT               |                  |                  |                   |
| Support of multi-carrier  |                  |                  | Yes/<br>NOT               | /No              |                  |                   |
| UE positioning related parameters   |                  |                  |                           |                  |                  |                   |
| Standalone location method(s) supported   |                  |                  | Yes/<br>NOT               |                  |                  |                   |
| Network assisted GPS support  |                  | Netwo            | ork based / UE<br>NOT     |                  | None             |                   |
| GPS reference time capable  |                  |                  | Yes/<br>NOT               |                  |                  |                   |
| Support for IPDL  |                  |                  | Yes/<br>NOT               | ′No              |                  |                   |
| Support for OTDOA UE based method   |                  |                  | Yes/<br>NOT               | ′No              |                  |                   |
| Support for Rx-Tx time difference type 2 measurement                                      |                  |                  | Yes/<br>NOT               | /No              |                  |                   |
| Support for UP measurement  |                  |                  | Yes/                      |                  |                  |                   |
| reportingvalidity in CELL_PCH and<br>URA_PCH RRC states                                   |                  |                  | NOT                       |                  |                  |                   |
| RF parameters for FDD   |                  |                  |                           |                  |                  |                   |
| UE power class  |                  |                  | 3 /<br>NOT                |                  |                  |                   |
| Tx/Rx frequency separation  |                  |                  | 190 1                     |                  |                  |                   |
| RF parameters for TDD 3.84 Mcps   |                  |                  | 1001                      |                  |                  |                   |
| Radio frequency bands   |                  | A                | / b / c / a+b / a·<br>NOT |                  | +C               |                   |
| UE power class  |                  |                  | 2 /<br>NOT                | 3                |                  |                   |
| RF parameters for TDD 1.28 Mcps   |                  |                  | IUI                       |                  |                  |                   |
| Radio frequency bands   |                  | A                | /b/c/a+b/a<br>NOT         |                  | C                |                   |
| UE power class  |                  |                  | 2 /<br>NOT                | 3                |                  |                   |

NOTE 1: Options represent different combinations that should be supported with Conformance Tests.