

TSG-RAN Meeting #19
Birmingham, UK, 11 - 14 March 2003

RP-030118

Title: CRs (R'99 and Rel-4/Rel-5 Category A) on TS 25.306, TS 25.331 and TS 25.101 (RAN WG4)

Source: TSG-RAN WG2 and TSG-RAN WG4

Agenda item: 8.2.6

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem	Working Group originator
25.306	058	1	R99	Variable Tx/Rx frequency separation in 1800 and 1900 band	F	3.7.0	3.8.0	R2-030563	TEI	TSG-RAN WG2
25.306	059	1	Rel-4	Variable Tx/Rx frequency separation in 1800 and 1900 band	A	4.6.0	4.7.0	R2-030564	TEI	TSG-RAN WG2
25.306	060	1	Rel-5	Variable Tx/Rx frequency separation in 1800 and 1900 band	A	5.3.0	5.4.0	R2-030565	TEI	TSG-RAN WG2
25.331	1826	-	R99	Variable Tx/Rx frequency separation in 1800 and 1900 band	F	3.13.0	3.14.0	R2-030449	TEI	TSG-RAN WG2
25.331	1827	-	Rel-4	Variable Tx/Rx frequency separation in 1800 and 1900 band	A	4.8.0	4.9.0	R2-030450	TEI	TSG-RAN WG2
25.331	1828	-	Rel-5	Variable Tx/Rx frequency separation in 1800 and 1900 band	A	5.3.0	5.4.0	R2-030451	TEI	TSG-RAN WG2
25.101	207	1	R99	Tx/Rx frequency separation	F	3.12.0	3.13.0	R4-030286	TEI	TSG-RAN WG4
25.101	208	1	Rel-4	Tx/Rx frequency separation	A	4.6.0	4.7.0	R4-030287	TEI	TSG-RAN WG4
25.101	209	1	Rel-5	Tx/Rx frequency separation	A	5.5.0	5.6.0	R4-030288	TEI	TSG-RAN WG4

CHANGE REQUEST

⌘ **25.101 CR 207** ⌘ rev **1** ⌘ Current version: **3.12.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Tx/Rx frequency separation		
Source:	⌘ RAN WG4		
Work item code:	⌘ TEI	Date:	⌘ 04/03/2003
Category:	⌘ F	Release:	⌘ R99
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ In TS 25.331 the duplex distance has been signalled as 190 MHz, 174.8-205.2 MHz and 134.8-245.2 MHz. Now when several bands are specified with different duplex distances these values are wrong for the other frequency bands. Instead they have changed the signalling to "Default", "Medium Range" and "Full Range" and refer to TS 25.101. This must be reflected in 25.101 for the reference.
Summary of change:	⌘ The current specified Tx/Rx frequency separation is referred as DEFAULT .
Consequences if not approved:	⌘ The reference in TS 25.331 would be wrong
	Isolated Impact Analysis: No Isolated Impact

Clauses affected:	⌘ 2, 5.3										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications Test specifications O&M Specifications	⌘ 25.331
Y	N										
X											
	X										
	X										
Other comments:	⌘ Equivalent CRs in other Releases: CR208r1 cat. A to 25.101 v4.6.0, CR209r1 cat. A to 25.101 v5.5.0										

5.3 TX–RX frequency separation

(a) UTRA/FDD is designed to operate with the following [DEFAULT](#) TX-RX frequency separation

Table 5.0: TX-RX frequency separation

Frequency Band	DEFAULT TX-RX frequency separation
For operation in frequency band as defined in subclause 5.2 (a)	190 MHz
For operation in frequency band as defined in subclause 5.2 (b)	80 MHz.

(b) UTRA/FDD can support both fixed and variable transmit to receive frequency separation.

(c) The use of other transmit to receive frequency separations in existing or other frequency bands shall not be precluded.

CHANGE REQUEST

⌘ **25.101 CR 208** ⌘ rev **1** ⌘ Current version: **4.6.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Tx/Rx frequency separation		
Source:	⌘ RAN WG4		
Work item code:	⌘ TEI	Date:	⌘ 04/03/2003
Category:	⌘ A	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> 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 can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ In TS 25.331 the duplex distance has been signalled as 190 MHz, 174.8-205.2 MHz and 134.8-245.2 MHz. Now when several bands are specified with different duplex distances these values are wrong for the other frequency bands. Instead they have changed the signalling to "Default", "Medium Range" and "Full Range" and refer to TS 25.101. This must be reflected in 25.101 for the reference.
Summary of change:	⌘ The current specified Tx/Rx frequency separation is referred as DEFAULT .
Consequences if not approved:	⌘ The reference in TS 25.331 would be wrong
	Isolated Impact Analysis: No Isolated Impact

Clauses affected:	⌘ 2, 5.3										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 25.331
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR207r1 cat. F to 25.101 v3.12.0, CR209r1 cat. A to 25.101 v5.5.0										

5.3 TX–RX frequency separation

- (a) UTRA/FDD is designed to operate with the following [DEFAULT](#) TX-RX frequency separation

Table 5.0: TX-RX frequency separation

Frequency Band	DEFAULT TX-RX frequency separation
For operation in frequency band as defined in subclause 5.2 (a)	190 MHz
For operation in frequency band as defined in subclause 5.2 (b)	80 MHz.

- (b) UTRA/FDD can support both fixed and variable transmit to receive frequency separation.
- (c) The use of other transmit to receive frequency separations in existing or other frequency bands shall not be precluded.

CHANGE REQUEST

⌘ **25.101 CR 209** ⌘ rev **1** ⌘ Current version: **5.5.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Tx/Rx frequency separation		
Source:	⌘ RAN WG4		
Work item code:	⌘ TEI	Date:	⌘ 04/03/2003
Category:	⌘ A	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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 can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ In TS 25.331 the duplex distance has been signalled as 190 MHz, 174.8-205.2 MHz and 134.8-245.2 MHz. Now when several bands are specified with different duplex distances these values are wrong for the other frequency bands. Instead they have changed the signalling to "Default", "Medium Range" and "Full Range" and refer to TS 25.101. This must be reflected in 25.101 for the reference.
Summary of change:	⌘ The current specified Tx/Rx frequency separation is referred as DEFAULT .
Consequences if not approved:	⌘ The reference in TS 25.331 would be wrong
	Isolated Impact Analysis: No Isolated Impact

Clauses affected:	⌘ 2, 5.3										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 25.331
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR207r1 cat. F to 25.101 v3.12.0, CR208r1 cat. A to 25.101 v4.6.0										

5.3 TX–RX frequency separation

- a) UTRA/FDD is designed to operate with the following [DEFAULT](#) TX-RX frequency separation

Table 5.0A: TX-RX frequency separation

Operating Band	DEFAULT TX-RX frequency separation
I	190 MHz
II	80 MHz.
III	95 MHz.

- b) UTRA/FDD can support both fixed and variable transmit to receive frequency separation.
- c) The use of other transmit to receive frequency separations in existing or other frequency bands shall not be precluded.

CHANGE REQUEST

⌘ **25.306 CR 058** ⌘ rev **1** ⌘ Current version: **3.7.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Variable Tx/Rx frequency separation in 1800 and 1900 band		
Source:	⌘ TSG-RAN WG2		
Work item code:	⌘ TEI	Date:	⌘ Feb 2003
Category:	⌘ F	Release:	⌘ R99
	<p>Use <u>one</u> of the following categories:</p> <p>F (correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (addition of feature),</p> <p>C (functional modification of feature)</p> <p>D (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>Rel-4 (Release 4)</p> <p>Rel-5 (Release 5)</p> <p>Rel-6 (Release 6)</p>

Reason for change:	⌘ Variable duplex is signalled with the IE "Tx/Rx frequency separation". However, the value range for this IE is only done taken the 2100 MHz band into account. This means that the current values for of Tx/Rx frequency separation has no meaning for the 1800 MHz or 1900 MHz band.
Summary of change:	<p>⌘ 1. The value range of the IE "Tx/Rx frequency separation" is changed to "default", "medium variable" and "full variable".</p> <p>2. An extra sentence is added to parameter "Tx/Rx frequency separation" and "UE power class" to reflect that this is per frequency band. This is aligning with current signalling in 25.331.</p> <p>Isolated impact analysis: The CR is a clarification on a function that is ambiguous and incomplete in the current specification. For a 2100 MHz UE there is no difference if this CR is implemented or not. The behaviour will also be the same independent if UTRAN have implemented the CR or not. For a 1800 MHz or 1900 MHz UE this CR should be implemented in order for correct understanding of the signalled UE capability. This is independent if the UE is capable of variable duplex or not. In addition a UTRAN supporting 1800 MHz or 1900 MHz UEs should implement this CR in order to correctly understand what variable duplex capability the UE is signalling.</p>
Consequences if not approved:	⌘ Signaling of the UE capability Tx/Rx frequency separation for 1800 MHz and 1900 MHz is not possible and has no clear meaning.

Clauses affected:	⌘	4.5.7, 5.1, 5.2.1										
Other specs affected:	⌘	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ CR 207 to 25.101 CR 1826 to 25.331
		Y	N									
		X										
	X											
	X											
		Test specifications										
		O&M Specifications										
Other comments:	⌘											

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. 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 <ftp://ftp.3gpp.org/specs/> 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.

4.5.7 RF parameters

UE power class

Indicates the UE power class as defined in [4] for FDD and [5] for TDD. [There are separate parameters for each frequency band.](#)

Radio frequency bands

This parameter is only applicable for TDD. It defines the uplink and downlink frequency bands supported by the UE as defined in [5].

Tx/Rx frequency separation

This parameter is only applicable for FDD and only if the UE is operating in frequency band a as defined in [4]. It defines the uplink/downlink frequency separations supported by the UE. [There are separate parameters for each frequency band.](#)

Chip rate capability

This parameter is only applicable for TDD. It defines the chip rates supported by the UE.

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression 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
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
		Transport channel parameters in	Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant

		UE radio access capability parameter	Value range
	uplink	Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	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 channel parameters in downlink	Maximum number of DPCH/PDSCH codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
		Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Simultaneous reception of SCCPCH and DPCH	Yes/No
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No
		Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes/No
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
		Support of PCPCH	Yes/No
	TDD physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
		Maximum number of physical channels per frame	1, 2, 3..224
		Minimum SF	16, 1
Support of PDSCH		Yes/No	
Maximum number of physical channels per timeslot		1..16	
TDD physical channel parameters in uplink		Maximum Number of timeslots per frame	1..14
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
	Support of PUSCH	Yes/No	

		UE radio access capability parameter	Value range
RF parameters	FDD RF parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz default 174.8 MHz to 205.2 MHz medium variable 134.8 MHz to 245.2 MHz full variable
RF parameters	TDD RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), a+b+c)
		Chip rate capability	3.84, 1.28
Multi-mode related parameters		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
Security parameters		Support of ciphering algorithm UEA0	Yes
		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning related parameters		Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both / None
		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
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		Access Stratum release indicator	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 Access capability parameters common for UL and DL	32kbps class	64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters						
Support for RFC 2507	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for loss-less SRNS relocation	No/Yes NOTE 1					
Maximum header compression context space	Not applicable for conformance testing					
RLC parameters						

Reference combination of UE Radio Access capability parameters common for UL and DL	32kbps class	64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500
Maximum number of AM entities	4	4	5	6	8	8
Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
Multi-mode related parameters						
Support of UTRA FDD/TDD	FDD / FDD+TDD / TDD NOTE 1					
Multi-RAT related parameters						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
Security parameters						
Support of ciphering algorithm UEA0	Yes					
Support of ciphering algorithm UEA1	Yes					
Support of integrity protection algorithm UIA1	Yes					
UE positioning related parameters						
Standalone location method(s) supported	Yes/No NOTE 1					
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1					
GPS reference time capable	Yes/No NOTE 1					
Support for IPDL	Yes/No NOTE 1					
Support for OTDOA UE based method	Yes/No NOTE 1					
Support for Rx-Tx time difference type 2 measurement	Yes/No NOTE 1					
Support for UE Positioning measurement validity in CELL_PCH and URA_PCH RRC states	Yes/No NOTE 1					
RF parameters for FDD						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190 MHz default					
RF parameters for TDD						
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1					
Chip rate capability	1.28 / 3.84 Mchip/s NOTE 1					
UE power class	2 / 3 NOTE 1					

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

CHANGE REQUEST

25.306 CR 059 # rev **1** # Current version: **4.6.0**

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps# ME Radio Access Network Core Network

Title:	# Variable Tx/Rx frequency separation in 1800 and 1900 band		
Source:	# TSG-RAN WG2		
Work item code:	# TEI	Date:	# Feb 2003
Category:	# A	Release:	# Rel-4
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	# Variable duplex is signalled with the IE "Tx/Rx frequency separation". However, the value range for this IE is only done taken the 2100 MHz band into account. This means that the current values for of Tx/Rx frequency separation has no meaning for the 1800 MHz or 1900 MHz band.
Summary of change:	# 1. The value range of the IE "Tx/Rx frequency separation" is changed to "default", "medium variable" and "full variable". # 2. An extra sentence is added to parameter "Tx/Rx frequency separation" and "UE power class" to reflect that this is per frequency band. This is aligning with current signalling in 25.331. Isolated impact analysis: The CR is a clarification on a function that is ambiguous and incomplete in the current specification. For a 2100 MHz UE there is no difference if this CR is implemented or not. The behaviour will also be the same independent if UTRAN have implemented the CR or not. For a 1800 MHz or 1900 MHz UE this CR should be implemented in order for correct understanding of the signalled UE capability. This is independent if the UE is capable of variable duplex or not. In addition a UTRAN supporting 1800 MHz or 1900 MHz UEs should implement this CR in order to correctly understand what variable duplex capability the UE is signalling.
Consequences if not approved:	# Signaling of the UE capability Tx/Rx frequency separation for 1800 MHz and 1900 MHz is not possible and has no clear meaning.

Clauses affected:	⌘	4.5.7, 5.1, 5.2.1										
Other specs affected:	⌘	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ CR 208 to 25.101 CR 1827 to 25.331
		Y	N									
		X										
	X											
	X											
		Test specifications										
		O&M Specifications										
Other comments:	⌘											

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. 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 <ftp://ftp.3gpp.org/specs/> 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.

4.5.7 RF parameters

UE power class

Indicates the UE power class as defined in [4] for FDD and [5] for TDD. [There are separate parameters for each frequency band.](#)

Radio frequency bands

This parameter is only applicable for TDD. It defines the uplink and downlink frequency bands supported by the UE as defined in [5].

Tx/Rx frequency separation

This parameter is only applicable for FDD and only if the UE is operating in frequency band a as defined in [4]. It defines the uplink/downlink frequency separations supported by the UE. [There are separate parameters for each frequency band.](#)

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability 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 context space	512, 1024, 2048, 4096, 8192 bytes
		Maximum number of ROHC context sessions	2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384
		Support for Reverse Decompression	Not supported, 1..65535
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
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport channel 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, 7680, 8960, 10240, 20480, 40960, 81920, 163840

		UE radio access capability parameter	Value range	
	uplink	Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840	
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840	
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32	
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8	
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512	
		Maximum number of TFC	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 channel parameters in downlink	FDD Physical channel parameters in downlink	Maximum number of DPCH/PDSCH codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8	
		Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800	
		Support for SF 512	Yes/No	
		Support of PDSCH	Yes/No	
		Simultaneous reception of SCCPCH and DPCH	Yes/No	
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No	
		Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification	
		Support of dedicated pilots for channel estimation	Yes/No	
	FDD Physical channel parameters in uplink	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
			Support of PCPCH	Yes/No
	TDD 3.84 Mcps physical channel parameters in downlink	TDD 3.84 Mcps physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
			Maximum number of physical channels per frame	1, 2, 3..224
			Minimum SF	16, 1
			Support of PDSCH	Yes/No
			Maximum number of physical channels per timeslot	1..16
	TDD 3.84 Mcps physical channel parameters in uplink	TDD 3.84 Mcps physical channel parameters in uplink	Maximum Number of timeslots per frame	1..14
			Maximum number of physical channels per timeslot	1, 2
			Minimum SF	16, 8, 4, 2, 1
			Support of PUSCH	Yes/No
	TDD 1.28 Mcps physical channel parameters in downlink	TDD 1.28 Mcps physical channel parameters in downlink	Maximum number of timeslots per subframe	1..6
			Maximum number of physical channels per subframe	1, 2, 3, ..., 96
			Minimum SF	16, 1
			Support of PDSCH	Yes/No
			Maximum number of physical channels per timeslot	1..16
			Support 8PSK	Yes/No
	TDD 1.28 Mcps physical channel	TDD 1.28 Mcps physical channel	Maximum number of timeslots per subframe	1..6

		UE radio access capability parameter	Value range
	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 parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz default 174.8 MHz to 205.2 MHz medium variable 134.8 MHz to 245.2 MHz full variable
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
	TDD 1.28 Mcps RF parameters	UE power class	2, 3
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
Multi-mode related 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
Security parameters		Support of ciphering algorithm UEA0	Yes
		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning related parameters		Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		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 UE Positioning measurement validity in CELL_PCH and 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		Access Stratum release indicator	R99, REL-4

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 Access capability parameters common for UL and DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters						

Reference combination of UE Radio Access capability parameters common for UL and DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Support for RFC 2507	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for loss-less SRNS relocation	No/Yes NOTE 1					
Maximum header compression context space	Not applicable for conformance testing					
Maximum number of ROHC context sessions	Not applicable for conformance testing					
Support for Reverse Decompression	No/Yes NOTE 1					
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
Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
Multi-mode related parameters						
Support of UTRA FDD	Yes/No NOTE 1					
Support of UTRA TDD 3.84 Mcps	Yes/No NOTE 1					
Support of UTRA TDD 1.28 Mcps	Yes/No NOTE 1					
Multi-RAT related parameters						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
Security parameters						
Support of ciphering algorithm UEA0	Yes					
Support of ciphering algorithm UEA1	Yes					
Support of integrity protection algorithm UIA1	Yes					
UE positioning related parameters						
Standalone location method(s) supported	Yes/No NOTE 1					
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1					
GPS reference time capable	Yes/No NOTE 1					
Support for IPDL	Yes/No NOTE 1					
Support for OTDOA UE based method	Yes/No NOTE 1					
Support for Rx-Tx time difference type 2 measurement	Yes/No NOTE 1					
Support for UE Positioning measurement validity in CELL_PCH and URA_PCH RRC states	Yes/No NOTE 1					
RF parameters for FDD						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190-MHzdefault					
RF parameters for TDD 3.84 Mcps						
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1					
UE power class	2 / 3 NOTE 1					
RF parameters for TDD 1.28 Mcps						
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1					

Reference combination of UE Radio Access capability parameters common for UL and DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
UE power class	2 / 3 NOTE 1					

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

CHANGE REQUEST

25.306 CR 060 # rev **1** # Current version: **5.3.0**

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps# ME Radio Access Network Core Network

Title:	# Variable Tx/Rx frequency separation in 1800 and 1900 band		
Source:	# TSG-RAN WG2		
Work item code:	# TEI	Date:	# Feb 2003
Category:	# A	Release:	# Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	# Variable duplex is signalled with the IE "Tx/Rx frequency separation". However, the value range for this IE is only done taken the 2100 MHz band into account. This means that the current values for of Tx/Rx frequency separation has no meaning for the 1800 MHz or 1900 MHz band.
Summary of change:	# 1. The value range of the IE "Tx/Rx frequency separation" is changed to "default", "medium variable" and "full variable". # 2. An extra sentence is added to parameter "Tx/Rx frequency separation" and "UE power class" to reflect that this is per frequency band. This is aligning with current signalling in 25.331. Isolated impact analysis: The CR is a clarification on a function that is ambiguous and incomplete in the current specification. For a 2100 MHz UE there is no difference if this CR is implemented or not. The behaviour will also be the same independent if UTRAN have implemented the CR or not. For a 1800 MHz or 1900 MHz UE this CR should be implemented in order for correct understanding of the signalled UE capability. This is independent if the UE is capable of variable duplex or not. In addition a UTRAN supporting 1800 MHz or 1900 MHz UEs should implement this CR in order to correctly understand what variable duplex capability the UE is signalling.
Consequences if not approved:	# Signaling of the UE capability Tx/Rx frequency separation for 1800 MHz and 1900 MHz is not possible and has no clear meaning.

Clauses affected:	⌘	4.5.7, 5.1, 5.2.1										
Other specs affected:	⌘	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ CR 209 to 25.101 CR 1828 to 25.331
		Y	N									
		X										
	X											
	X											
		Test specifications										
		O&M Specifications										
Other comments:	⌘											

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. 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 <ftp://ftp.3gpp.org/specs/> 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.

4.5.7 RF parameters

UE power class

Indicates the UE power class as defined in [4] for FDD and [5] for TDD. [There are separate parameters for each frequency band.](#)

Radio frequency bands

This parameter is only applicable for TDD. It defines the uplink and downlink frequency bands supported by the UE as defined in [5].

Tx/Rx frequency separation

This parameter is only applicable for FDD and only if the UE is operating in frequency band a as defined in [4]. It defines the uplink/downlink frequency separations supported by the UE. [There are separate parameters for each frequency band.](#)

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
		Support for RFC 3095	Yes/No
		Support for RFC 3095 context relocation	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression context space	512, 1024, 2048, 4096, 8192 bytes
		Maximum number of ROHC context sessions	2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384
		Support for Reverse Decompression	Not supported, 1..65535
RLC and MAC-hs parameters		Total RLC AM and MAC-hs buffer size	2, 10, 50, 100, 150, 200, 300, 400, 500, 750, 1000 kBytes
		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport channel 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, 7680, 8960, 10240, 20480, 40960, 81920, 163840

		UE radio access capability parameter	Value range
	uplink	Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	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 channel parameters in downlink	Maximum number of DPCH/PDSCH codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8	
	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800	
	Support for SF 512	Yes/No	
	Support of PDSCH	Yes/No	
	Support of HS-PDSCH	Yes/No	
	Simultaneous reception of SCCPCH and DPCH	Yes/No	
	Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No	
	Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification	
	Support of dedicated pilots for channel estimation	Yes	
	Support of dedicated pilots for channel estimation of HS-DSCH	Yes/No	
FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600	
	Support of PCPCH	Yes/No	
TDD 3.84 Mcps physical channel parameters in downlink	Maximum number of timeslots per frame	1..14	
	Maximum number of physical channels per frame	1, 2, 3..224	
	Minimum SF	16, 1	
	Support of PDSCH	Yes/No	
	Support of HS-PDSCH	Yes/No	
TDD 3.84 Mcps physical channel parameters in uplink	Maximum number of physical channels per timeslot	1..16	
	Maximum Number of timeslots per frame	1..14	
	Maximum number of physical channels per timeslot	1, 2	
	Minimum SF	16, 8, 4, 2, 1	
	Support of PUSCH	Yes/No	
TDD 1.28 Mcps physical channel parameters in downlink	Maximum number of timeslots per subframe	1..6	
	Maximum number of physical channels per subframe	1, 2, 3, ..., 96	
	Minimum SF	16, 1	
	Support of PDSCH	Yes/No	
	Support of HS-PDSCH	Yes/No	

		UE radio access capability parameter	Value range	
		Maximum number of physical channels per timeslot	1..16	
		Support 8PSK	Yes/No	
		TDD 1.28 Mcps physical channel parameters in uplink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per timeslot	1, 2	
		Minimum SF	16, 8, 4, 2, 1	
		Support of 8PSK	Yes/No	
RF parameters	FDD RF parameters	Support of PUSCH	Yes/No	
		UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification	
		Tx/Rx frequency separation	190 MHz default 174.8 MHz to 205.2 MHz medium variable 134.8 MHz to 245.2 MHz full variable	
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification	
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)	
	TDD 1.28 Mcps RF parameters	UE power class	2, 3	
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)	
Multi-mode related 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	
Security parameters		Support of ciphering algorithm UEA0	Yes	
		Support of ciphering algorithm UEA1	Yes	
		Support of integrity protection algorithm UIA1	Yes	
UE positioning related parameters		Standalone location method(s) supported	Yes/No	
		Network assisted GPS support	Network based / UE based / Both/ None	
		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 UE Positioning measurement validity in CELL_PCH and 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		Access Stratum release indicator	R99, REL-4, REL-5	
DL capabilities with simultaneous HS-DSCH		DL capability with simultaneous HS-DSCH configuration	32 kbps, 64 kbps, 128 kbps, 384 kbps	

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 Access capability parameters common for UL and DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters						
Support for RFC 2507	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095 context relocation	No/Yes NOTE 1					
Support for loss-less SRNS relocation	No/Yes NOTE 1					
Maximum header compression context space	Not applicable for conformance testing					
Maximum number of ROHC context sessions	Not applicable for conformance testing					
Support for Reverse decompression	No/Yes NOTE 1					
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
Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
Multi-mode related parameters						
Support of UTRA FDD	Yes/No NOTE 1					
Support of UTRA TDD 3.84 Mcps	Yes/No NOTE 1					
Support of UTRA TDD 1.28 Mcps	Yes/No NOTE 1					
Multi-RAT related parameters						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
Security parameters						
Support of ciphering algorithm UEA0	Yes					
Support of ciphering algorithm UEA1	Yes					
Support of integrity protection algorithm UIA1	Yes					
UE positioning related parameters						
Standalone location method(s) supported	Yes/No NOTE 1					
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1					
GPS reference time capable	Yes/No NOTE 1					
Support for IPDL	Yes/No NOTE 1					
Support for OTDOA UE based method	Yes/No NOTE 1					
Support for Rx-Tx time difference type 2 measurement	Yes/No NOTE 1					
Support for UE Positioning measurement validity in CELL_PCH and URA_PCH RRC states	Yes/No NOTE 1					
RF parameters for FDD						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190-MHz default					
RF parameters for TDD 3.84 Mcps						

Reference combination of UE Radio Access capability parameters common for UL and DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1					
UE power class	2 / 3 NOTE 1					
RF parameters for TDD 1.28 Mcps						
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1					
UE power class	2 / 3 NOTE 1					

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

CHANGE REQUEST

25.331 CR 1826 # rev - # Current version: 3.13.0

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps# ME Radio Access Network Core Network

Title:	# Variable Tx/Rx frequency separation in 1800 and 1900 band		
Source:	# TSG-RAN WG2		
Work item code:	# TEI	Date:	# Feb 2003
Category:	# F	Release:	# R99
	Use <u>one</u> of the following categories:		Use <u>one</u> 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 can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	# Variable duplex is signalled with the IE "Tx/Rx frequency separation". However, the value range for this IE is only done taken the 2100 MHz band into account. This means that the current values for of Tx/Rx frequency separation has no meaning for the 1800 MHz or 1900 MHz band.
Summary of change:	# <ol style="list-style-type: none"> 1. The value range of the IE "Tx/Rx frequency separation" is changed to "default", "medium variable" and "full variable". 2. Everything except the reference to 25.101 is removed from the semantics description. Only in 25.101 the explanation of what "default", "medium variable" and "full variable" means for the different bands. <p>Isolated impact analysis: The CR is a clarification on a function that is ambiguous and incomplete in the current specification. For a 2100 MHz UE there is no difference if this CR is implemented or not. The behaviour will also be the same independent if UTRAN have implemented the CR or not. For a 1800 MHz or 1900 MHz UE this CR should be implemented in order for correct understanding of the signalled UE capability. This is independent if the UE is capable of variable duplex or not. In addition a UTRAN supporting 1800 MHz or 1900 MHz UEs should implement this CR in order to correctly understand what variable duplex capability the UE is signalling.</p>
Consequences if not approved:	# Signaling of the UE capability Tx/Rx frequency separation for 1800 MHz and 1900 MHz is not possible and has no clear meaning.

Clauses affected:	# 10.3.3.33, 10.3.3.33a, 11.3
--------------------------	-------------------------------

Other specs	⌘	Y	N	Other core specifications	⌘	CR 207 to 25.101 CR 058 to 25.306
		X				
			X			
affected:			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. 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 <ftp://ftp.3gpp.org/specs/> 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.

10.3.3.33 RF capability FDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class	MP		Enumerated(1..4)	as defined in [21]
Tx/Rx frequency separation	MP		Enumerated(190 default, 174.8 , 205.2 medium variable, 134.8 , 245.2 full variable)	In-MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band-a (as defined in [21]).

10.3.3.33a RF capability FDD extension

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class extension	MP		Enumerated(1..4)	as defined in [21]. Four spare values are needed
Tx/Rx frequency separation	MP		Enumerated(190 default, 174.8 , 205.2 medium variable, 134.8 , 245.2 full variable)	In-MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band-a (as defined in [21]).

11.3 Information element definitions

```

-- *****
--
--     USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- *****

-- TABULAR : for ActivationTime, value 'now' always appears as default, and is encoded
-- by absence of the field
ActivationTime ::=
    INTEGER (0..255)

BackoffControlParams ::=
    SEQUENCE {
        n-AP-RetransMax          N-AP-RetransMax,
        n-AccessFails           N-AccessFails,
        nf-BO-NoAICH             NF-BO-NoAICH,
        ns-BO-Busy               NS-BO-Busy,
        nf-BO-AllBusy           NF-BO-AllBusy,
        nf-BO-Mismatch          NF-BO-Mismatch,
        t-CPCH                   T-CPCH
    }

C-RNTI ::=
    BIT STRING (SIZE (16))

CapabilityUpdateRequirement ::=
    SEQUENCE {
        ue-RadioCapabilityFDDUpdateRequirement    BOOLEAN,
        ue-RadioCapabilityTDDUpdateRequirement    BOOLEAN,
        systemSpecificCapUpdateReqList           SystemSpecificCapUpdateReqList    OPTIONAL
    }

CellUpdateCause ::=
    ENUMERATED {
        cellReselection,
        periodicalCellUpdate,
        uplinkDataTransmission,
        utran-pagingResponse,
        re-enteredServiceArea,
    }

```

```

        radiolinkFailure,
        rlc-unrecoverableError,
        spare1 }

ChipRateCapability ::=
    ENUMERATED {
        mcps3-84, mcps1-28 }

CipheringAlgorithm ::=
    ENUMERATED {
        uea0, uea1 }

CipheringModeCommand ::=
    CHOICE {
        startRestart
            CipheringAlgorithm,
        dummy
            NULL
    }

CipheringModeInfo ::=
    SEQUENCE {
        -- TABULAR: The ciphering algorithm is included in the CipheringModeCommand.
        cipheringModeCommand
            CipheringModeCommand,
        activationTimeForDPCH
            ActivationTime
            OPTIONAL,
        rb-DL-CiphActivationTimeInfo
            RB-ActivationTimeInfoList
            OPTIONAL
    }

CN-DRX-CycleLengthCoefficient ::=
    INTEGER (6..9)

CN-PagedUE-Identity ::=
    CHOICE {
        imsi-GSM-MAP
            IMSI-GSM-MAP,
        tmsi-GSM-MAP
            TMSI-GSM-MAP,
        p-TMSI-GSM-MAP
            P-TMSI-GSM-MAP,
        imsi-DS-41
            IMSI-DS-41,
        tmsi-DS-41
            TMSI-DS-41,
        spare3
            NULL,
        spare2
            NULL,
        spare1
            NULL
    }

CompressedModeMeasCapability ::=
    SEQUENCE {
        fdd-Measurements
            BOOLEAN,
        -- TABULAR: The IEs tdd-Measurements, gsm-Measurements and multiCarrierMeasurements
        -- are made optional since they are conditional based on another information element.
        -- Their absence corresponds to the case where the condition is not true.
        tdd-Measurements
            BOOLEAN
            OPTIONAL,
        gsm-Measurements
            GSM-Measurements
            OPTIONAL,
        multiCarrierMeasurements
            BOOLEAN
            OPTIONAL
    }

CompressedModeMeasCapabFDDList ::=
    SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
        CompressedModeMeasCapabFDD

CompressedModeMeasCapabFDD ::=
    SEQUENCE {
        radioFrequencyBandFDD
            RadioFrequencyBandFDD
            OPTIONAL,
        dl-MeasurementsFDD
            BOOLEAN,
        ul-MeasurementsFDD
            BOOLEAN
    }

CompressedModeMeasCapabTDDList ::=
    SEQUENCE (SIZE (1..maxFreqBandsTDD)) OF
        CompressedModeMeasCapabTDD

CompressedModeMeasCapabTDD ::=
    SEQUENCE {
        radioFrequencyBandTDD
            RadioFrequencyBandTDD,
        dl-MeasurementsTDD
            BOOLEAN,
        ul-MeasurementsTDD
            BOOLEAN
    }

CompressedModeMeasCapabGSMList ::=
    SEQUENCE (SIZE (1..maxFreqBandsGSM)) OF
        CompressedModeMeasCapabGSM

CompressedModeMeasCapabGSM ::=
    SEQUENCE {
        radioFrequencyBandGSM
            RadioFrequencyBandGSM,
        dl-MeasurementsGSM
            BOOLEAN,
        ul-MeasurementsGSM
            BOOLEAN
    }

CompressedModeMeasCapabMC ::=
    SEQUENCE {
        dl-MeasurementsMC
            BOOLEAN,
        ul-MeasurementsMC
            BOOLEAN
    }

CPCH-Parameters ::=
    SEQUENCE {

```



```

    initialPriorityDelayList          InitialPriorityDelayList          OPTIONAL,
    backoffControlParams              BackoffControlParams,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    powerControlAlgorithm             PowerControlAlgorithm,
    dl-DPCCH-BER                     DL-DPCCH-BER
}

DL-DPCCH-BER ::=                    INTEGER (0..63)

DL-PhysChCapabilityFDD ::=          SEQUENCE {
    maxNoDPCH-PDSCH-Codes            INTEGER (1..8),
    maxNoPhysChBitsReceived          MaxNoPhysChBitsReceived,
    supportForSF-512                 BOOLEAN,
    supportOfPDSCH                   BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception SimultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityFDD-v380ext ::=  SEQUENCE {
    supportOfDedicatedPilotsForChEstimation SupportOfDedicatedPilotsForChEstimation  OPTIONAL
}

SupportOfDedicatedPilotsForChEstimation ::=  ENUMERATED { true }

DL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxTS-PerFrame                   MaxTS-PerFrame,
    maxPhysChPerFrame                 MaxPhysChPerFrame,
    minimumSF                          MinimumSF-DL,
    supportOfPDSCH                     BOOLEAN,
    maxPhysChPerTS                     MaxPhysChPerTS
}

DL-TransChCapability ::=            SEQUENCE {
    maxNoBitsReceived                 MaxNoBits,
    maxConvCodeBitsReceived           MaxNoBits,
    turboDecodingSupport               TurboSupport,
    maxSimultaneousTransChsDL         MaxSimultaneousTransChsDL,
    maxSimultaneousCCTrCH-Count       MaxSimultaneousCCTrCH-Count,
    maxReceivedTransportBlocksDL      MaxTransportBlocksDL,
    maxNumberOfTFC                     MaxNumberOfTFC-DL,
    maxNumberOfTF                      MaxNumberOfTF
}

DRAC-SysInfo ::=                   SEQUENCE {
    transmissionProbability            TransmissionProbability,
    maximumBitRate                     MaximumBitRate
}

DRAC-SysInfoList ::=               SEQUENCE (SIZE (1..maxDRACclasses)) OF
    DRAC-SysInfo

DSCH-RNTI ::=                       BIT STRING (SIZE (16))

ESN-DS-41 ::=                       BIT STRING (SIZE (32))

EstablishmentCause ::=             ENUMERATED {
    originatingConversationalCall,
    originatingStreamingCall,
    originatingInteractiveCall,
    originatingBackgroundCall,
    originatingSubscribedTrafficCall,
    terminatingConversationalCall,
    terminatingStreamingCall,
    terminatingInteractiveCall,
    terminatingBackgroundCall,
    emergencyCall,
    interRAT-CellReselection,
    interRAT-CellChangeOrder,
    registration,
    detach,
    originatingHighPrioritySignalling,
    originatingLowPrioritySignalling,
    callRe-establishment,
    terminatingHighPrioritySignalling,
    terminatingLowPrioritySignalling,
    terminatingCauseUnknown,
    spare12,
    spare11,
    spare10,
}

```

```

        spare9,
        spare8,
        spare7,
        spare6,
        spare5,
        spare4,
        spare3,
        spare2,
        spare1 }

FailureCauseWithProtErr ::= CHOICE {
    configurationUnsupported          NULL,
    physicalChannelFailure            NULL,
    incompatibleSimultaneousReconfiguration
        NULL,
    compressedModeRuntimeError        TGPSI,
    protocolError                     ProtocolErrorInformation,
    cellUpdateOccurred               NULL,
    invalidConfiguration              NULL,
    configurationIncomplete            NULL,
    unsupportedMeasurement            NULL,
    spare7                            NULL,
    spare6                            NULL,
    spare5                            NULL,
    spare4                            NULL,
    spare3                            NULL,
    spare2                            NULL,
    spare1                            NULL
}

FailureCauseWithProtErrTrId ::= SEQUENCE {
    rrc-TransactionIdentifier          RRC-TransactionIdentifier,
    failureCause                      FailureCauseWithProtErr
}

GSM-Measurements ::= SEQUENCE {
    gsm900                            BOOLEAN,
    dcs1800                           BOOLEAN,
    gsm1900                           BOOLEAN
}

AccessStratumReleaseIndicator ::= ENUMERATED {
    r99 }

UESpecificBehaviourInformationIdle ::= BIT STRING (SIZE (4))

UESpecificBehaviourInformationInterRAT ::= BIT STRING (SIZE (8))

IMSI-and-ESN-DS-41 ::= SEQUENCE {
    imsi-DS-41                        IMSI-DS-41,
    esn-DS-41                         ESN-DS-41
}

IMSI-DS-41 ::= OCTET STRING (SIZE (5..7))

InitialPriorityDelayList ::= SEQUENCE (SIZE (1..maxASC)) OF
    NS-IP

InitialUE-Identity ::= CHOICE {
    imsi                              IMSI-GSM-MAP,
    tmsi-and-LAI                      TMSI-and-LAI-GSM-MAP,
    p-TMSI-and-RAI                   P-TMSI-and-RAI-GSM-MAP,
    imei                              IMEI,
    esn-DS-41                        ESN-DS-41,
    imsi-DS-41                       IMSI-DS-41,
    imsi-and-ESN-DS-41               IMSI-and-ESN-DS-41,
    tmsi-DS-41                       TMSI-DS-41
}

IntegrityCheckInfo ::= SEQUENCE {
    messageAuthenticationCode         MessageAuthenticationCode,
    rrc-MessageSequenceNumber         RRC-MessageSequenceNumber
}

IntegrityProtActivationInfo ::= SEQUENCE {
    rrc-MessageSequenceNumberList     RRC-MessageSequenceNumberList
}

```

```

IntegrityProtectionAlgorithm ::= ENUMERATED {
    uia1 }

IntegrityProtectionModeCommand ::= CHOICE {
    startIntegrityProtection SEQUENCE {
        integrityProtInitNumber IntegrityProtInitNumber
    },
    modify SEQUENCE {
        dl-IntegrityProtActivationInfo IntegrityProtActivationInfo
    }
}

IntegrityProtectionModeInfo ::= SEQUENCE {
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionModeCommand IntegrityProtectionModeCommand,
    integrityProtectionAlgorithm IntegrityProtectionAlgorithm OPTIONAL
}

IntegrityProtInitNumber ::= BIT STRING (SIZE (32))

MaxHcContextSpace ::= ENUMERATED {
    by512, by1024, by2048, by4096,
    by8192 }

MaximumAM-EntityNumberRLC-Cap ::= ENUMERATED {
    am3, am4, am5, am6,
    am8, am16, am30 }

-- Actual value MaximumBitRate = IE value * 16
MaximumBitRate ::= INTEGER (0..32)

MaximumRLC-WindowSize ::= ENUMERATED { mws2047, mws4095 }

MaxNoDPDCH-BitsTransmitted ::= ENUMERATED {
    b600, b1200, b2400, b4800,
    b9600, b19200, b28800, b38400,
    b48000, b57600 }

MaxNoBits ::= ENUMERATED {
    b640, b1280, b2560, b3840, b5120,
    b6400, b7680, b8960, b10240,
    b20480, b40960, b81920, b163840 }

MaxNoPhysChBitsReceived ::= ENUMERATED {
    b600, b1200, b2400, b3600,
    b4800, b7200, b9600, b14400,
    b19200, b28800, b38400, b48000,
    b57600, b67200, b76800 }

MaxNoSCCPCH-RL ::= ENUMERATED {
    r11 }

MaxNumberOfTF ::= ENUMERATED {
    tf32, tf64, tf128, tf256,
    tf512, tf1024 }

MaxNumberOfTFC-DL ::= ENUMERATED {
    tfc16, tfc32, tfc48, tfc64, tfc96,
    tfc128, tfc256, tfc512, tfc1024 }

MaxNumberOfTFC-UL ::= ENUMERATED {
    tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
    tfc96, tfc128, tfc256, tfc512, tfc1024 }

MaxPhysChPerFrame ::= INTEGER (1..224)

MaxPhysChPerTimeslot ::= ENUMERATED {
    ts1, ts2 }

MaxPhysChPerTS ::= INTEGER (1..16)

MaxSimultaneousCCTrCH-Count ::= INTEGER (1..8)

```

```

MaxSimultaneousTransChsDL ::=      ENUMERATED {
                                        e4, e8, e16, e32 }

MaxSimultaneousTransChsUL ::=      ENUMERATED {
                                        e2, e4, e8, e16, e32 }

MaxTransportBlocksDL ::=           ENUMERATED {
                                        tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512 }

MaxTransportBlocksUL ::=           ENUMERATED {
                                        tb2, tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512 }

MaxTS-PerFrame ::=                 INTEGER (1..14)

-- TABULAR: MeasurementCapability contains dependencies to UE-MultiModeRAT-Capability,
-- the conditional fields have been left mandatory for now.
MeasurementCapability ::=          SEQUENCE {
    downlinkCompressedMode          CompressedModeMeasCapability,
    uplinkCompressedMode            CompressedModeMeasCapability
}

MeasurementCapabilityExt ::=       SEQUENCE{
    compressedModeMeasCapabFDDList  CompressedModeMeasCapabFDDList,
    compressedModeMeasCapabTDDList  CompressedModeMeasCapabTDDList  OPTIONAL,
    compressedModeMeasCapabGSMList  CompressedModeMeasCapabGSMList  OPTIONAL,
    compressedModeMeasCapabMC       CompressedModeMeasCapabMC       OPTIONAL
}

MessageAuthenticationCode ::=     BIT STRING (SIZE (32))

MinimumSF-DL ::=                   ENUMERATED {
                                        sf1, sf16 }

MinimumSF-UL ::=                   ENUMERATED {
                                        sf1, sf2, sf4, sf8, sf16 }

MultiModeCapability ::=            ENUMERATED {
                                        tdd, fdd, fdd-tdd }

MultiRAT-Capability ::=            SEQUENCE {
    supportOfGSM                    BOOLEAN,
    supportOfMulticarrier            BOOLEAN
}

N-300 ::=                           INTEGER (0..7)
N-301 ::=                           INTEGER (0..7)
N-302 ::=                           INTEGER (0..7)
N-304 ::=                           INTEGER (0..7)
N-308 ::=                           INTEGER (1..8)
N-310 ::=                           INTEGER (0..7)
N-312 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }

N-312ext ::=                        ENUMERATED {
                                        s2, s4, s10, s20 }

N-313 ::=                           ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                        s50, s100, s200 }

N-315 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }

N-315ext ::=                        ENUMERATED {
                                        s2, s4, s10, s20 }

N-AccessFails ::=                 INTEGER (1..64)

```

```

N-AP-RetransMax ::= INTEGER (1..64)

NetworkAssistedGPS-Supported ::= ENUMERATED {
    networkBased,
    ue-Based,
    bothNetworkAndUE-Based,
    noNetworkAssistedGPS }

NF-BO-AllBusy ::= INTEGER (0..31)

NF-BO-NoAICH ::= INTEGER (0..31)

NF-BO-Mismatch ::= INTEGER (0..127)

NS-BO-Busy ::= INTEGER (0..63)

NS-IP ::= INTEGER (0..28)

P-TMSI-and-RAI-GSM-MAP ::= SEQUENCE {
    p-TMSI P-TMSI-GSM-MAP,
    rai RAI
}

PagingCause ::= ENUMERATED {
    terminatingConversationalCall,
    terminatingStreamingCall,
    terminatingInteractiveCall,
    terminatingBackgroundCall,
    terminatingHighPrioritySignalling,
    terminatingLowPrioritySignalling,
    terminatingCauseUnknown,
    spare
}

PagingRecord ::= CHOICE {
    cn-Identity SEQUENCE {
        pagingCause PagingCause,
        cn-DomainIdentity CN-DomainIdentity,
        cn-pagedUE-Identity CN-PagedUE-Identity
    },
    utran-Identity SEQUENCE {
        u-RNTI U-RNTI,
        cn-OriginatedPage-connectedMode-UE SEQUENCE {
            pagingCause PagingCause,
            cn-DomainIdentity CN-DomainIdentity,
            pagingRecordTypeID PagingRecordTypeID
        }
    }
} OPTIONAL

PagingRecordList ::= SEQUENCE (SIZE (1..maxPage1)) OF
    PagingRecord

PDCP-Capability ::= SEQUENCE {
    losslessSRNS-RelocationSupport BOOLEAN,
    supportForRfc2507 CHOICE {
        notSupported NULL,
        supported MaxHcContextSpace
    }
}

PhysicalChannelCapability ::= SEQUENCE {
    fddPhysChCapability SEQUENCE {
        downlinkPhysChCapability DL-PhysChCapabilityFDD,
        uplinkPhysChCapability UL-PhysChCapabilityFDD
    } OPTIONAL,
    tddPhysChCapability SEQUENCE {
        downlinkPhysChCapability DL-PhysChCapabilityTDD,
        uplinkPhysChCapability UL-PhysChCapabilityTDD
    } OPTIONAL
}

ProtocolErrorCause ::= ENUMERATED {
    asn1-ViolationOrEncodingError,
    messageTypeNonexistent,
    messageNotCompatibleWithReceiverState,
    ie-ValueNotComprehended,
    informationElementMissing,
}

```

```

        messageExtensionNotComprehended,
        spare2, spare1 }

ProtocolErrorIndicator ::=          ENUMERATED {
        noError, errorOccurred }

ProtocolErrorIndicatorWithMoreInfo ::=
        CHOICE {
        noError                      NULL,
        errorOccurred                SEQUENCE {
            rrc-TransactionIdentifier RRC-TransactionIdentifier,
            protocolErrorInformation ProtocolErrorInformation
        }
    }

ProtocolErrorMoreInformation ::=    SEQUENCE {
        diagnosticsType              CHOICE {
            type1                     CHOICE {
                asn1-ViolationOrEncodingError NULL,
                messageTypeNonexistent        NULL,
                messageNotCompatibleWithReceiverState
                    IdentificationOfReceivedMessage,
                ie-ValueNotComprehended      IdentificationOfReceivedMessage,
                conditionalInformationElementError IdentificationOfReceivedMessage,
                messageExtensionNotComprehended IdentificationOfReceivedMessage,
                spare1                      NULL,
                spare2                      NULL
            },
            spare                      NULL
        }
    }

RadioFrequencyBandFDD ::=          ENUMERATED {
        fdd2100,
        fdd1900,
        spare6, spare5, spare4, spare3, spare2, spare1}

RadioFrequencyBandTDDList ::=     ENUMERATED {
        a, b, c, ab, ac, bc, abc, spare }

RadioFrequencyBandTDD ::=         ENUMERATED {a, b, c, spare}

RadioFrequencyBandGSM ::=         ENUMERATED {
        gsm450,
        gsm480,
        gsm850,
        gsm900P,
        gsm900E,
        gsm1800,
        gsm1900,
        spare9, spare8, spare7, spare6, spare5,
        spare4, spare3, spare2, spare1}

Rb-timer-indicator ::=            SEQUENCE {
        t314-expired                 BOOLEAN,
        t315-expired                 BOOLEAN }

Re-EstablishmentTimer ::=         ENUMERATED {
        useT314, useT315
    }

RedirectionInfo ::=               CHOICE {
        frequencyInfo                FrequencyInfo,
        interRATInfo                 InterRATInfo
    }

RejectionCause ::=                ENUMERATED {
        congestion,
        unspecified }

ReleaseCause ::=                  ENUMERATED {
        normalEvent,
        unspecified,
        pre-emptiveRelease,
        congestion,
        re-establishmentReject,
        directedsignallingconnectionre-establishment,
        userInactivity,

```

```

        spare }

RF-Capability ::=
    fddRF-Capability          SEQUENCE {
        ue-PowerClass          UE-PowerClass,
        txRxFrequencySeparation TxRxFrequencySeparation
    }
    tddRF-Capability          SEQUENCE {
        ue-PowerClass          UE-PowerClass,
        radioFrequencyTDDBandList RadioFrequencyBandTDDList,
        chipRateCapability      ChipRateCapability
    }
}

RLC-Capability ::=
    totalRLC-AM-BufferSize    TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize     MaximumRLC-WindowSize,
    maximumAM-EntityNumber    MaximumAM-EntityNumberRLC-Cap
}

RRC-MessageSequenceNumber ::= INTEGER (0..15)

RRC-MessageSequenceNumberList ::= SEQUENCE (SIZE (4..5)) OF
    RRC-MessageSequenceNumber

RRC-StateIndicator ::= ENUMERATED {
    cell-DCH, cell-FACH, cell-PCH, ura-PCH }

RRC-TransactionIdentifier ::= INTEGER (0..3)

S-RNTI ::= BIT STRING (SIZE (20))

S-RNTI-2 ::= BIT STRING (SIZE (10))

SecurityCapability ::=
    cipheringAlgorithmCap     BIT STRING {
        spare15(0),
        spare14(1),
        spare13(2),
        spare12(3),
        spare11(4),
        spare10(5),
        spare9(6),
        spare8(7),
        spare7(8),
        spare6(9),
        spare5(10),
        spare4(11),
        spare3(12),
        spare2(13),
        ueal(14),
        uea0(15)
    } (SIZE (16)),
    integrityProtectionAlgorithmCap BIT STRING {
        spare15(0),
        spare14(1),
        spare13(2),
        spare12(3),
        spare11(4),
        spare10(5),
        spare9(6),
        spare8(7),
        spare7(8),
        spare6(9),
        spare5(10),
        spare4(11),
        spare3(12),
        spare2(13),
        uial(14),
        spare0(15)
    } (SIZE (16))
}

SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported             NULL,
    supported                 SEQUENCE {

```

```

        maxNoSCCPCH-RL                      MaxNoSCCPCH-RL,
        -- simultaneousSCCPCH-DPCH-DPDCH-Reception is applicable only if
        -- the IE Support of PDSCH = TRUE
        simultaneousSCCPCH-DPCH-DPDCH-Reception
        BOOLEAN
    }
}

SRNC-Identity ::= BIT STRING (SIZE (12))

START-Value ::= BIT STRING (SIZE (20))

STARTList ::= SEQUENCE (SIZE (1..maxCNdomains)) OF
    STARTSingle

STARTSingle ::= SEQUENCE {
    cn-DomainIdentity CN-DomainIdentity,
    start-Value START-Value
}

SystemSpecificCapUpdateReq ::= ENUMERATED {
    gsm }

SystemSpecificCapUpdateReqList ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
    SystemSpecificCapUpdateReq

T-300 ::= ENUMERATED {
    ms100, ms200, ms400, ms600, ms800,
    ms1000, ms1200, ms1400, ms1600,
    ms1800, ms2000, ms3000, ms4000,
    ms6000, ms8000 }

T-301 ::= ENUMERATED {
    ms100, ms200, ms400, ms600, ms800,
    ms1000, ms1200, ms1400, ms1600,
    ms1800, ms2000, ms3000, ms4000,
    ms6000, ms8000, spare }

T-302 ::= ENUMERATED {
    ms100, ms200, ms400, ms600, ms800,
    ms1000, ms1200, ms1400, ms1600,
    ms1800, ms2000, ms3000, ms4000,
    ms6000, ms8000, spare }

T-304 ::= ENUMERATED {
    ms100, ms200, ms400,
    ms1000, ms2000, spare3, spare2, spare1 }

T-305 ::= ENUMERATED {
    noUpdate, m5, m10, m30,
    m60, m120, m360, m720 }

T-307 ::= ENUMERATED {
    s5, s10, s15, s20,
    s30, s40, s50, spare }

T-308 ::= ENUMERATED {
    ms40, ms80, ms160, ms320 }

T-309 ::= INTEGER (1..8)

T-310 ::= ENUMERATED {
    ms40, ms80, ms120, ms160,
    ms200, ms240, ms280, ms320 }

T-311 ::= ENUMERATED {
    ms250, ms500, ms750, ms1000,
    ms1250, ms1500, ms1750, ms2000 }

-- The value 0 for T-312 is not used in this version of the specification
T-312 ::= INTEGER (0..15)

T-313 ::= INTEGER (0..15)

T-314 ::= ENUMERATED {
    s0, s2, s4, s6, s8,

```



```

        s12, s16, s20 }

T-315 ::=
    ENUMERATED {
        s0, s10, s30, s60, s180,
        s600, s1200, s1800 }

T-316 ::=
    ENUMERATED {
        s0, s10, s20, s30, s40,
        s50, s-inf, spare }

T-317 ::=
    ENUMERATED {
        s0, s10, s30, s60, s180,
        s600, s1200, s1800 }

T-CPCH ::=
    ENUMERATED {
        ct0, ct1 }

TMSI-and-LAI-GSM-MAP ::=
    SEQUENCE {
        tmsi
        lai
    }

TMSI-DS-41 ::=
    OCTET STRING (SIZE (2..17))

TotalRLC-AM-BufferSize ::=
    ENUMERATED {
        kb2, kb10, kb50, kb100,
        kb150, kb500, kb1000, spare }

-- Actual value TransmissionProbability = IE value * 0.125
TransmissionProbability ::=
    INTEGER (1..8)

TransportChannelCapability ::=
    SEQUENCE {
        dl-TransChCapability
        ul-TransChCapability
    }

TurboSupport ::=
    CHOICE {
        notSupported
        supported
    }

TxRxFrequencySeparation ::=
    ENUMERATED {
        mhzi190default, mhzi174-8-205-2medium-variable,
        mhzi134-8-245-2full-variable }

U-RNTI ::=
    SEQUENCE {
        srnc-Identity
        s-RNTI
    }

U-RNTI-Short ::=
    SEQUENCE {
        srnc-Identity
        s-RNTI-2
    }

UE-ConnTimersAndConstants ::=
    SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
-- t-301 and n-301 should not be used by the UE in this version of the specification
        t-301          T-301          DEFAULT ms2000,
        n-301          N-301          DEFAULT 2,
        t-302          T-302          DEFAULT ms4000,
        n-302          N-302          DEFAULT 3,
        t-304          T-304          DEFAULT ms2000,
        n-304          N-304          DEFAULT 2,
        t-305          T-305          DEFAULT m30,
        t-307          T-307          DEFAULT s30,
        t-308          T-308          DEFAULT ms160,
        t-309          T-309          DEFAULT 5,
        t-310          T-310          DEFAULT ms160,
        n-310          N-310          DEFAULT 4,
        t-311          T-311          DEFAULT ms2000,
        t-312          T-312          DEFAULT 1,
        -- n-312 shall be ignored if n-312 in UE-ConnTimersAndConstants-v3a0ext is present, and the
        -- value of that element shall be used instead.
        n-312          N-312          DEFAULT s1,
        t-313          T-313          DEFAULT 3,
        n-313          N-313          DEFAULT s20,
        t-314          T-314          DEFAULT s12,

```

```

t-315                T-315                DEFAULT s180,
-- n-315 shall be ignored if n-315 in UE-ConnTimersAndConstants-v3a0ext is present, and the
-- value of that element shall be used instead.
n-315                N-315                DEFAULT s1,
t-316                T-316                DEFAULT s30,
t-317                T-317                DEFAULT s180
}

UE-ConnTimersAndConstants-v3a0ext ::= SEQUENCE {
    n-312                N-312ext                OPTIONAL,
    n-315                N-315ext                OPTIONAL
}

UE-IdleTimersAndConstants ::= SEQUENCE {
    t-300                T-300,
    n-300                N-300,
    t-312                T-312,
    -- n-312 shall be ignored if n-312 in UE-IdleTimersAndConstants-v3a0ext is present, and the
    -- value of that element shall be used instead.
    n-312                N-312
}

UE-IdleTimersAndConstants-v3a0ext ::= SEQUENCE {
    n-312                N-312ext                OPTIONAL
}

UE-MultiModeRAT-Capability ::= SEQUENCE {
    multiRAT-CapabilityList    MultiRAT-Capability,
    multiModeCapability        MultiModeCapability
}

UE-PowerClass ::= INTEGER (1..4)

UE-PowerClassExt ::= ENUMERATED {class1, class2, class3, class4, spare4, spare3,
    spare2, spare1}

UE-RadioAccessCapability ::= SEQUENCE {
    accessStratumReleaseIndicator    AccessStratumReleaseIndicator,
    pdcp-Capability                  PDCP-Capability,
    rlc-Capability                    RLC-Capability,
    transportChannelCapability        TransportChannelCapability,
    rf-Capability                     RF-Capability,
    physicalChannelCapability         PhysicalChannelCapability,
    ue-MultiModeRAT-Capability        UE-MultiModeRAT-Capability,
    securityCapability                SecurityCapability,
    ue-positioning-Capability         UE-Positioning-Capability,
    measurementCapability             MeasurementCapability    OPTIONAL
}

UE-RadioAccessCapabilityInfo ::= SEQUENCE {
    ue-RadioAccessCapability        UE-RadioAccessCapability,
    ue-RadioAccessCapability-v370ext UE-RadioAccessCapability-v370ext
}

UE-RadioAccessCapability-v370ext ::= SEQUENCE {
    ue-RadioAccessCapabBandFDDList UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext ::= SEQUENCE {
    ue-PositioningCapabilityExt-v380 UE-PositioningCapabilityExt-v380
}

UE-RadioAccessCapability-v3a0ext ::= SEQUENCE {
    ue-PositioningCapabilityExt-v3a0 UE-PositioningCapabilityExt-v3a0
}

UE-PositioningCapabilityExt-v380 ::= SEQUENCE {
    rx-tx-TimeDifferenceType2Capable BOOLEAN
}

UE-PositioningCapabilityExt-v3a0 ::= SEQUENCE {
    validity-CellPCH-UraPCH        ENUMERATED { true }
}

UE-RadioAccessCapabBandFDDList ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
    UE-RadioAccessCapabBandFDD

UE-RadioAccessCapabBandFDD ::= SEQUENCE{

```

```

radioFrequencyBandFDD                RadioFrequencyBandFDD,
fddRF-Capability                      SEQUENCE {
    ue-PowerClass                      UE-PowerClassExt,
    txRxFrequencySeparation            TxRxFrequencySeparation
}                                       OPTIONAL,
measurementCapability                  MeasurementCapabilityExt
}

UL-PhysChCapabilityFDD ::=             SEQUENCE {
    maxNoDPDCH-BitsTransmitted          MaxNoDPDCH-BitsTransmitted,
    supportOfPCPCH                      BOOLEAN
}

UL-PhysChCapabilityTDD ::=            SEQUENCE {
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerTimeslot                MaxPhysChPerTimeslot,
    minimumSF                           MinimumSF-UL,
    supportOfPUSCH                      BOOLEAN
}

UL-TransChCapability ::=              SEQUENCE {
    maxNoBitsTransmitted                 MaxNoBits,
    maxConvCodeBitsTransmitted           MaxNoBits,
    turboEncodingSupport                 TurboSupport,
    maxSimultaneousTransChs              MaxSimultaneousTransChsUL,
    modeSpecificInfo                     CHOICE {
        fdd                               NULL,
        tdd                               SEQUENCE {
            maxSimultaneousCCTrCH-Count    MaxSimultaneousCCTrCH-Count
        }
    },
    maxTransmittedBlocks                 MaxTransportBlocksUL,
    maxNumberOfTFC                       MaxNumberOfTFC-UL,
    maxNumberOfTF                         MaxNumberOfTF
}

UE-Positioning-Capability ::=         SEQUENCE {
    standaloneLocMethodsSupported        BOOLEAN,
    ue-BasedOTDOA-Supported              BOOLEAN,
    networkAssistedGPS-Supported         NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames  BOOLEAN,
    supportForIPDL                       BOOLEAN
}

UE-SecurityInformation ::=            SEQUENCE {
    start-CS                              START-Value
}

URA-UpdateCause ::=                 ENUMERATED {
    changeOfURA,
    periodicURAUpdate,
    dummy,
    spare1 }

UTRAN-DRX-CycleLengthCoefficient ::=  INTEGER (3..9)

WaitTime ::=                          INTEGER (0..15)

```

CHANGE REQUEST

25.331 CR 1827 # rev - # Current version: 4.8.0

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	# Variable Tx/Rx frequency separation in 1800 and 1900 band		
Source:	# TSG-RAN WG2		
Work item code:	# TEI	Date:	# Feb 2003
Category:	# A	Release:	# Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> 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 can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	# Variable duplex is signalled with the IE "Tx/Rx frequency separation". However, the value range for this IE is only done taken the 2100 MHz band into account. This means that the current values for of Tx/Rx frequency separation has no meaning for the 1800 MHz or 1900 MHz band.
Summary of change:	# <ol style="list-style-type: none"> 1. The value range of the IE "Tx/Rx frequency separation" is changed to "default", "medium variable" and "full variable". 2. Everything except the reference to 25.101 is removed from the semantics description. Only in 25.101 the explanation of what "default", "medium variable" and "full variable" means for the different bands. <p>Isolated impact analysis: The CR is a clarification on a function that is ambiguous and incomplete in the current specification. For a 2100 MHz UE there is no difference if this CR is implemented or not. The behaviour will also be the same independent if UTRAN have implemented the CR or not. For a 1800 MHz or 1900 MHz UE this CR should be implemented in order for correct understanding of the signalled UE capability. This is independent if the UE is capable of variable duplex or not. In addition a UTRAN supporting 1800 MHz or 1900 MHz UEs should implement this CR in order to correctly understand what variable duplex capability the UE is signalling.</p>
Consequences if not approved:	# Signaling of the UE capability Tx/Rx frequency separation for 1800 MHz and 1900 MHz is not possible and has no clear meaning.

Clauses affected:	# 10.3.3.33, 10.3.3.33a, 11.3
--------------------------	-------------------------------

Other specs	⌘	Y	N	Other core specifications	⌘	CR 208 to 25.101 CR 059 to 25.306
		X				
			X			
affected:			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. 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 <ftp://ftp.3gpp.org/specs/> 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.

10.3.3.33 RF capability FDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
UE power class	MP		Enumerated(1..4)	as defined in [21]	
Tx/Rx frequency separation	MP		Enumerated(190 default, 174.8 , 205.2 medium variable, 134.8 , 245.2 full variable)	In-MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).	

10.3.3.33a RF capability FDD extension

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class extension	MP		Enumerated(1..4)	as defined in [21]. Four spare values are needed
Tx/Rx frequency separation	MP		Enumerated(190 default, 174.8 , 205.2 medium variable, 134.8 , 245.2 full variable)	In-MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).

11.3 Information element definitions

```

-- *****
--
-- USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- *****

AccessStratumReleaseIndicator ::= ENUMERATED {
    rel-4, spare15, spare14, spare13,
    spare12, spare11, spare10, spare9, spare8,
    spare7, spare6, spare5, spare4, spare3,
    spare2, spare1 }

-- TABULAR : for ActivationTime, value 'now' always appear as default, and is encoded
-- by absence of the field
ActivationTime ::= INTEGER (0..255)

BackoffControlParams ::= SEQUENCE {
    n-AP-RetransMax N-AP-RetransMax,
    n-AccessFails N-AccessFails,
    nf-BO-NoAICH NF-BO-NoAICH,
    ns-BO-Busy NS-BO-Busy,
    nf-BO-AllBusy NF-BO-AllBusy,
    nf-BO-Mismatch NF-BO-Mismatch,
    t-CPCH T-CPCH
}

C-RNTI ::= BIT STRING (SIZE (16))
    
```

```

CapabilityUpdateRequirement ::= SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD BOOLEAN,
    -- ue-RadioCapabilityTDDUpdateRequirement-TDD is for 3.84Mcps TDD update requirement
    ue-RadioCapabilityTDDUpdateRequirement-TDD BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CapabilityUpdateRequirement-r4-ext ::= SEQUENCE {
}

CapabilityUpdateRequirement-r4 ::= SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD384 BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128 BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CellUpdateCause ::= ENUMERATED {
    cellReselection,
    periodicalCellUpdate,
    uplinkDataTransmission,
    utran-pagingResponse,
    re-enteredServiceArea,
    radiolinkFailure,
    rlc-unrecoverableError,
    spare1 }

ChipRateCapability ::= ENUMERATED {
    mcps3-84, mcps1-28 }

CipheringAlgorithm ::= ENUMERATED {
    uea0, uea1 }

CipheringModeCommand ::= CHOICE {
    startRestart          CipheringAlgorithm,
    dummy                 NULL
}

CipheringModeInfo ::= SEQUENCE {
    -- TABULAR: The ciphering algorithm is included in the CipheringModeCommand.
    cipheringModeCommand      CipheringModeCommand,
    activationTimeForDPCH      ActivationTime                OPTIONAL,
    rb-DL-CiphActivationTimeInfo  RB-ActivationTimeInfoList    OPTIONAL
}

CN-DRX-CycleLengthCoefficient ::= INTEGER (6..9)

CN-PagedUE-Identity ::= CHOICE {
    imsi-GSM-MAP              IMSI-GSM-MAP,
    tmsi-GSM-MAP              TMSI-GSM-MAP,
    p-TMSI-GSM-MAP           P-TMSI-GSM-MAP,
    imsi-DS-41               IMSI-DS-41,
    tmsi-DS-41               TMSI-DS-41,
    spare3                   NULL,
    spare2                   NULL,
    spare1                   NULL
}

CompressedModeMeasCapability ::= SEQUENCE {
    fdd-Measurements          BOOLEAN,
    -- TABULAR: The IEs tdd-Measurements, gsm-Measurements and multiCarrierMeasurements
    -- are made optional since they are conditional based on another information element.
    -- Their absence corresponds to the case where the condition is not true.
    tdd-Measurements          BOOLEAN                OPTIONAL,
    gsm-Measurements          GSM-Measurements        OPTIONAL,
    multiCarrierMeasurements  BOOLEAN                OPTIONAL
}

CompressedModeMeasCapability-LCR-r4 ::= SEQUENCE {
    tdd128-Measurements        BOOLEAN                OPTIONAL
}

CompressedModeMeasCapabFDDList ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
    CompressedModeMeasCapabFDD

CompressedModeMeasCapabFDD ::= SEQUENCE {
    radioFrequencyBandFDD      RadioFrequencyBandFDD    OPTIONAL,

```

```

    dl-MeasurementsFDD          BOOLEAN,
    ul-MeasurementsFDD          BOOLEAN
}

CompressedModeMeasCapabTDDList ::= SEQUENCE (SIZE (1..maxFreqBandsTDD)) OF
    CompressedModeMeasCapabTDD

CompressedModeMeasCapabTDD ::= SEQUENCE {
    radioFrequencyBandTDD      RadioFrequencyBandTDD,
    dl-MeasurementsTDD          BOOLEAN,
    ul-MeasurementsTDD          BOOLEAN
}

CompressedModeMeasCapabGSMList ::= SEQUENCE (SIZE (1..maxFreqBandsGSM)) OF
    CompressedModeMeasCapabGSM

CompressedModeMeasCapabGSM ::= SEQUENCE {
    radioFrequencyBandGSM      RadioFrequencyBandGSM,
    dl-MeasurementsGSM         BOOLEAN,
    ul-MeasurementsGSM         BOOLEAN
}

CompressedModeMeasCapabMC ::= SEQUENCE {
    dl-MeasurementsMC          BOOLEAN,
    ul-MeasurementsMC          BOOLEAN
}

CPCH-Parameters ::= SEQUENCE {
    initialPriorityDelayList    InitialPriorityDelayList          OPTIONAL,
    backoffControlParams        BackoffControlParams,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    powerControlAlgorithm       PowerControlAlgorithm,
    dl-DPCCH-BER                DL-DPCCH-BER
}

DL-DPCCH-BER ::= INTEGER (0..63)

DL-PhysChCapabilityFDD ::= SEQUENCE {
    maxNoDPCH-PDSCH-Codes      INTEGER (1..8),
    maxNoPhysChBitsReceived    MaxNoPhysChBitsReceived,
    supportForSF-512            BOOLEAN,
    supportOfPDSCH              BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception SimultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityFDD-v380ext ::= SEQUENCE {
    supportOfDedicatedPilotsForChEstimation SupportOfDedicatedPilotsForChEstimation OPTIONAL
}

SupportOfDedicatedPilotsForChEstimation ::= ENUMERATED { true }

DL-PhysChCapabilityTDD ::= SEQUENCE {
    maxTS-PerFrame             MaxTS-PerFrame,
    maxPhysChPerFrame          MaxPhysChPerFrame,
    minimumSF                   MinimumSF-DL,
    supportOfPDSCH              BOOLEAN,
    maxPhysChPerTS              MaxPhysChPerTS
}

DL-PhysChCapabilityTDD-LCR-r4 ::= SEQUENCE {
    maxTS-PerSubFrame           MaxTS-PerSubFrame-r4,
    maxPhysChPerSubFrame-r4    MaxPhysChPerSubFrame-r4,
    minimumSF                   MinimumSF-DL,
    supportOfPDSCH              BOOLEAN,
    maxPhysChPerTS              MaxPhysChPerTS,
    supportOf8PSK               BOOLEAN
}

DL-TransChCapability ::= SEQUENCE {
    maxNoBitsReceived           MaxNoBits,
    maxConvCodeBitsReceived     MaxNoBits,
    turboDecodingSupport        TurboSupport,
    maxSimultaneousTransChs     MaxSimultaneousTransChsDL,
    maxSimultaneousCCTrCH-Count MaxSimultaneousCCTrCH-Count,
    maxReceivedTransportBlocks  MaxTransportBlocksDL,
    maxNumberOfTFC               MaxNumberOfTFC-DL,
    maxNumberOfTF                MaxNumberOfTF
}

```



```

DRAC-SysInfo ::=
    transmissionProbability
    maximumBitRate
}

DRAC-SysInfoList ::=
    SEQUENCE (SIZE (1..maxDRACclasses)) OF
        DRAC-SysInfo

DSCH-RNTI ::=
    BIT STRING (SIZE (16))

ESN-DS-41 ::=
    BIT STRING (SIZE (32))

EstablishmentCause ::=
    ENUMERATED {
        originatingConversationalCall,
        originatingStreamingCall,
        originatingInteractiveCall,
        originatingBackgroundCall,
        originatingSubscribedTrafficCall,
        terminatingConversationalCall,
        terminatingStreamingCall,
        terminatingInteractiveCall,
        terminatingBackgroundCall,
        emergencyCall,
        interRAT-CellReselection,
        interRAT-CellChangeOrder,
        registration,
        detach,
        originatingHighPrioritySignalling,
        originatingLowPrioritySignalling,
        callRe-establishment,
        terminatingHighPrioritySignalling,
        terminatingLowPrioritySignalling,
        terminatingCauseUnknown,
        spare12,
        spare11,
        spare10,
        spare9,
        spare8,
        spare7,
        spare6,
        spare5,
        spare4,
        spare3,
        spare2,
        spare1 }

FailureCauseWithProtErr ::=
    CHOICE {
        configurationUnsupported          NULL,
        physicalChannelFailure           NULL,
        incompatibleSimultaneousReconfiguration
                                         NULL,
        compressedModeRuntimeError      TGPSI,
        protocolError                   ProtocolErrorInformation,
        cellUpdateOccurred              NULL,
        invalidConfiguration            NULL,
        configurationIncomplete          NULL,
        unsupportedMeasurement           NULL,
        spare7                           NULL,
        spare6                           NULL,
        spare5                           NULL,
        spare4                           NULL,
        spare3                           NULL,
        spare2                           NULL,
        spare1                           NULL
    }

FailureCauseWithProtErrTrId ::=
    rrc-TransactionIdentifier
    failureCause
}

GSM-Measurements ::=
    gsm900
    dcs1800
    gsm1900
}
SEQUENCE {
    TransmissionProbability,
    MaximumBitRate
}
SEQUENCE (SIZE (1..maxDRACclasses)) OF
    DRAC-SysInfo
BIT STRING (SIZE (16))
BIT STRING (SIZE (32))
ENUMERATED {
    originatingConversationalCall,
    originatingStreamingCall,
    originatingInteractiveCall,
    originatingBackgroundCall,
    originatingSubscribedTrafficCall,
    terminatingConversationalCall,
    terminatingStreamingCall,
    terminatingInteractiveCall,
    terminatingBackgroundCall,
    emergencyCall,
    interRAT-CellReselection,
    interRAT-CellChangeOrder,
    registration,
    detach,
    originatingHighPrioritySignalling,
    originatingLowPrioritySignalling,
    callRe-establishment,
    terminatingHighPrioritySignalling,
    terminatingLowPrioritySignalling,
    terminatingCauseUnknown,
    spare12,
    spare11,
    spare10,
    spare9,
    spare8,
    spare7,
    spare6,
    spare5,
    spare4,
    spare3,
    spare2,
    spare1 }
CHOICE {
    configurationUnsupported          NULL,
    physicalChannelFailure           NULL,
    incompatibleSimultaneousReconfiguration
                                     NULL,
    compressedModeRuntimeError      TGPSI,
    protocolError                   ProtocolErrorInformation,
    cellUpdateOccurred              NULL,
    invalidConfiguration            NULL,
    configurationIncomplete          NULL,
    unsupportedMeasurement           NULL,
    spare7                           NULL,
    spare6                           NULL,
    spare5                           NULL,
    spare4                           NULL,
    spare3                           NULL,
    spare2                           NULL,
    spare1                           NULL
}
SEQUENCE {
    RRC-TransactionIdentifier,
    FailureCauseWithProtErr
}
SEQUENCE {
    BOOLEAN,
    BOOLEAN,
    BOOLEAN
}

```

```

UESpecificBehaviourInformationIdle ::= BIT STRING (SIZE (4))
UESpecificBehaviourInformationInterRAT ::= BIT STRING (SIZE (8))

IMSI-and-ESN-DS-41 ::= SEQUENCE {
    imsi-DS-41          IMSI-DS-41,
    esn-DS-41          ESN-DS-41
}

IMSI-DS-41 ::= OCTET STRING (SIZE (5..7))

InitialPriorityDelayList ::= SEQUENCE (SIZE (1..maxASC)) OF
    NS-IP

InitialUE-Identity ::= CHOICE {
    imsi                IMSI-GSM-MAP,
    tmsi-and-LAI        TMSI-and-LAI-GSM-MAP,
    p-TMSI-and-RAI      P-TMSI-and-RAI-GSM-MAP,
    imei                IMEI,
    esn-DS-41          ESN-DS-41,
    imsi-DS-41          IMSI-DS-41,
    imsi-and-ESN-DS-41  IMSI-and-ESN-DS-41,
    tmsi-DS-41          TMSI-DS-41
}

IntegrityCheckInfo ::= SEQUENCE {
    messageAuthenticationCode  MessageAuthenticationCode,
    rrc-MessageSequenceNumber  RRC-MessageSequenceNumber
}

IntegrityProtActivationInfo ::= SEQUENCE {
    rrc-MessageSequenceNumberList  RRC-MessageSequenceNumberList
}

IntegrityProtectionAlgorithm ::= ENUMERATED {
    uial }

IntegrityProtectionModeCommand ::= CHOICE {
    startIntegrityProtection SEQUENCE {
        integrityProtInitNumber  IntegrityProtInitNumber
    },
    modify                     SEQUENCE {
        dl-IntegrityProtActivationInfo  IntegrityProtActivationInfo
    }
}

IntegrityProtectionModeInfo ::= SEQUENCE {
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionModeCommand  IntegrityProtectionModeCommand,
    integrityProtectionAlgorithm     IntegrityProtectionAlgorithm     OPTIONAL
}

IntegrityProtInitNumber ::= BIT STRING (SIZE (32))

MaxHcContextSpace ::= ENUMERATED {
    by512, by1024, by2048, by4096,
    by8192 }

MaxROHC-ContextSessions-r4 ::= ENUMERATED {
    s2, s4, s8, s12, s16, s24, s32, s48,
    s64, s128, s256, s512, s1024, s16384 }

MaximumAM-EntityNumberRLC-Cap ::= ENUMERATED {
    am3, am4, am5, am6,
    am8, am16, am30 }

-- Actual value MaximumBitRate = IE value * 16
MaximumBitRate ::= INTEGER (0..32)

MaximumRLC-WindowSize ::= ENUMERATED { mws2047, mws4095 }

MaxNoDPDCH-BitsTransmitted ::= ENUMERATED {
    b600, b1200, b2400, b4800,
    b9600, b19200, b28800, b38400,

```

```

        b48000, b57600 }

MaxNoBits ::= ENUMERATED {
    b640, b1280, b2560, b3840, b5120,
    b6400, b7680, b8960, b10240,
    b20480, b40960, b81920, b163840 }

MaxNoPhysChBitsReceived ::= ENUMERATED {
    b600, b1200, b2400, b3600,
    b4800, b7200, b9600, b14400,
    b19200, b28800, b38400, b48000,
    b57600, b67200, b76800 }

MaxNoSCCPCH-RL ::= ENUMERATED {
    r11 }

MaxNumberOfTF ::= ENUMERATED {
    tf32, tf64, tf128, tf256,
    tf512, tf1024 }

MaxNumberOfTFC-DL ::= ENUMERATED {
    tfc16, tfc32, tfc48, tfc64, tfc96,
    tfc128, tfc256, tfc512, tfc1024 }

MaxNumberOfTFC-UL ::= ENUMERATED {
    tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
    tfc96, tfc128, tfc256, tfc512, tfc1024 }

MaxPhysChPerFrame ::= INTEGER (1..224)

MaxPhysChPerSubFrame-r4 ::= INTEGER (1..96)

MaxPhysChPerTimeslot ::= ENUMERATED {
    ts1, ts2 }

MaxPhysChPerTS ::= INTEGER (1..16)

MaxSimultaneousCCTrCH-Count ::= INTEGER (1..8)

MaxSimultaneousTransChsDL ::= ENUMERATED {
    e4, e8, e16, e32 }

MaxSimultaneousTransChsUL ::= ENUMERATED {
    e2, e4, e8, e16, e32 }

MaxTransportBlocksDL ::= ENUMERATED {
    tb4, tb8, tb16, tb32, tb48,
    tb64, tb96, tb128, tb256, tb512 }

MaxTransportBlocksUL ::= ENUMERATED {
    tb2, tb4, tb8, tb16, tb32, tb48,
    tb64, tb96, tb128, tb256, tb512 }

MaxTS-PerFrame ::= INTEGER (1..14)

MaxTS-PerSubFrame-r4 ::= INTEGER (1..6)

-- TABULAR: MeasurementCapability contains dependencies to UE-MultiModeRAT-Capability,
-- the conditional fields have been left mandatory for now.
MeasurementCapability ::= SEQUENCE {
    downlinkCompressedMode    CompressedModeMeasCapability,
    uplinkCompressedMode      CompressedModeMeasCapability
}

MeasurementCapability-v370 ::= SEQUENCE{
    compressedModeMeasCapabFDDList    CompressedModeMeasCapabFDDList,
    compressedModeMeasCapabTDDList    CompressedModeMeasCapabTDDList  OPTIONAL,
    compressedModeMeasCapabGSMLList   CompressedModeMeasCapabGSMLList  OPTIONAL,
    compressedModeMeasCapabMC         CompressedModeMeasCapabMC        OPTIONAL
}

MeasurementCapability-r4-ext ::= SEQUENCE {
    downlinkCompressedMode-LCR    CompressedModeMeasCapability-LCR-r4,
    uplinkCompressedMode-LCR      CompressedModeMeasCapability-LCR-r4
}

MessageAuthenticationCode ::= BIT STRING (SIZE (32))

```

```

MinimumSF-DL ::=
    ENUMERATED {
        sf1, sf16 }

MinimumSF-UL ::=
    ENUMERATED {
        sf1, sf2, sf4, sf8, sf16 }

MultiModeCapability ::=
    ENUMERATED {
        tdd, fdd, fdd-tdd }

MultiRAT-Capability ::=
    supportOfGSM
    supportOfMulticarrier
    }
    SEQUENCE {
        BOOLEAN,
        BOOLEAN
    }

N-300 ::=
    INTEGER (0..7)

N-301 ::=
    INTEGER (0..7)

N-302 ::=
    INTEGER (0..7)

N-304 ::=
    INTEGER (0..7)

N-308 ::=
    INTEGER (1..8)

N-310 ::=
    INTEGER (0..7)

N-312 ::=
    ENUMERATED {
        s1, s50, s100, s200, s400,
        s600, s800, s1000 }

N-312ext ::=
    ENUMERATED {
        s2, s4, s10, s20 }

N-313 ::=
    ENUMERATED {
        s1, s2, s4, s10, s20,
        s50, s100, s200 }

N-315 ::=
    ENUMERATED {
        s1, s50, s100, s200, s400,
        s600, s800, s1000 }

N-315ext ::=
    ENUMERATED {
        s2, s4, s10, s20 }

N-AccessFails ::=
    INTEGER (1..64)

N-AP-RetransMax ::=
    INTEGER (1..64)

NetworkAssistedGPS-Supported ::=
    ENUMERATED {
        networkBased,
        ue-Based,
        bothNetworkAndUE-Based,
        noNetworkAssistedGPS }

NF-BO-AllBusy ::=
    INTEGER (0..31)

NF-BO-NoAICH ::=
    INTEGER (0..31)

NF-BO-Mismatch ::=
    INTEGER (0..127)

NS-BO-Busy ::=
    INTEGER (0..63)

NS-IP ::=
    INTEGER (0..28)

P-TMSI-and-RAI-GSM-MAP ::=
    p-TMSI
    rai
    }
    SEQUENCE {
        P-TMSI-GSM-MAP,
        RAI
    }

PagingCause ::=
    ENUMERATED {
        terminatingConversationalCall,
        terminatingStreamingCall,
        terminatingInteractiveCall,
        terminatingBackgroundCall,
        terminatingHighPrioritySignalling,
        terminatingLowPrioritySignalling,
        terminatingCauseUnknown,
        spare
    }

```

```

}
PagingRecord ::=
    CHOICE {
        cn-Identity
            SEQUENCE {
                pagingCause
                cn-DomainIdentity
                cn-pagedUE-Identity
            },
        utran-Identity
            SEQUENCE {
                u-RNTI
                cn-OriginatedPage-connectedMode-UE
                pagingCause
                cn-DomainIdentity
                pagingRecordTypeID
            }
    }
    OPTIONAL
}

PagingRecordList ::=
    SEQUENCE (SIZE (1..maxPage1)) OF
        PagingRecord

PDCP-Capability ::=
    SEQUENCE {
        losslessSRNS-RelocationSupport
        supportForRfc2507
        notSupported
        supported
    }

PDCP-Capability-r4-ext ::=
    SEQUENCE {
        supportForRfc3095
        notSupported
        supported
        maxROHC-ContextSessions
        reverseCompressionDepth
    }
    CHOICE {
        NULL,
        SEQUENCE {
            MaxROHC-ContextSessions-r4
            INTEGER (0..65535)
        }
    }
    DEFAULT s16,
    DEFAULT 0

PhysicalChannelCapability ::=
    SEQUENCE {
        fddPhysChCapability
            SEQUENCE {
                downlinkPhysChCapability
                uplinkPhysChCapability
            }
            DL-PhysChCapabilityFDD,
            UL-PhysChCapabilityFDD
            OPTIONAL,
        -- tddPhysChCapability describes the 3.84Mcps TDD physical channel capability
        tddPhysChCapability
            SEQUENCE {
                downlinkPhysChCapability
                uplinkPhysChCapability
            }
            DL-PhysChCapabilityTDD,
            UL-PhysChCapabilityTDD
            OPTIONAL
    }

-- PhysicalChannelCapability-LCR-r4 describes the 1.28Mcps TDD physical channel capability
PhysicalChannelCapability-LCR-r4 ::=
    SEQUENCE {
        tdd128-PhysChCapability
            SEQUENCE {
                downlinkPhysChCapability
                uplinkPhysChCapability
            }
            DL-PhysChCapabilityTDD-LCR-r4,
            UL-PhysChCapabilityTDD-LCR-r4
            OPTIONAL
    }

PNBSCH-Allocation-r4 ::=
    SEQUENCE {
        numberOfRepetitionsPerSFNPeriod
    }
    ENUMERATED {
        c2, c3, c4, c5, c6, c7, c8, c9, c10,
        c12, c14, c16, c18, c20, c24, c28, c32,
        c36, c40, c48, c56, c64, c72, c80
    }

ProtocolErrorCause ::=
    ENUMERATED {
        asnl-ViolationOrEncodingError,
        messageTypeNonexistent,
        messageNotCompatibleWithReceiverState,
        ie-ValueNotComprehended,
        informationElementMissing,
        messageExtensionNotComprehended,
        spare2, spare1
    }

ProtocolErrorIndicator ::=
    ENUMERATED {
        noError, errorOccurred
    }

```

```

ProtocolErrorIndicatorWithMoreInfo ::=
    CHOICE {
        noError                NULL,
        errorOccurred          SEQUENCE {
            rrc-TransactionIdentifier  RRC-TransactionIdentifier,
            protocolErrorInformation    ProtocolErrorInformation
        }
    }

ProtocolErrorMoreInformation ::= SEQUENCE {
    diagnosticsType          CHOICE {
        type1                CHOICE {
            asn1-ViolationOrEncodingError    NULL,
            messageTypeNonexistent          NULL,
            messageNotCompatibleWithReceiverState
                IdentificationOfReceivedMessage,
            ie-ValueNotComprehended          IdentificationOfReceivedMessage,
            conditionalInformationElementError IdentificationOfReceivedMessage,
            messageExtensionNotComprehended  IdentificationOfReceivedMessage,
            spare1                          NULL,
            spare2                          NULL
        },
        spare                  NULL
    }
}

RadioFrequencyBandFDD ::= ENUMERATED {
    fdd2100,
    fdd1900,
    spare6, spare5, spare4, spare3, spare2, spare1 }

RadioFrequencyBandTDDList ::= ENUMERATED {
    a, b, c, ab, ac, bc, abc, spare }

RadioFrequencyBandTDD ::= ENUMERATED {a, b, c, spare}

RadioFrequencyBandGSM ::= ENUMERATED {
    gsm450,
    gsm480,
    gsm850,
    gsm900P,
    gsm900E,
    gsm1800,
    gsm1900,
    spare9, spare8, spare7, spare6, spare5,
    spare4, spare3, spare2, spare1}

Rb-timer-indicator ::= SEQUENCE {
    t314-expired          BOOLEAN,
    t315-expired          BOOLEAN }

Re-EstablishmentTimer ::= ENUMERATED {
    useT314, useT315
}

RedirectionInfo ::= CHOICE {
    frequencyInfo          FrequencyInfo,
    interRATInfo           InterRATInfo
}

RejectionCause ::= ENUMERATED {
    congestion,
    unspecified }

ReleaseCause ::= ENUMERATED {
    normalEvent,
    unspecified,
    pre-emptiveRelease,
    congestion,
    re-establishmentReject,
    directedsignallingconnectionre-establishment,
    userInactivity,
    spare }

RF-Capability ::= SEQUENCE {
    fddRF-Capability      SEQUENCE {
        ue-PowerClass          UE-PowerClass,
        txRxFrequencySeparation TxRxFrequencySeparation
    }
}

```

```

    }
    tddRF-Capability                               OPTIONAL,
    ue-PowerClass                                 SEQUENCE {
    radioFrequencyBandTDDList                     UE-PowerClass,
    chipRateCapability                             RadioFrequencyBandTDDList,
                                                    ChipRateCapability
    }
    }
    }
    }
    RF-Capability-r4-ext ::=                       SEQUENCE {
    tddRF-Capability                               SEQUENCE {
    ue-PowerClass                                 UE-PowerClass,
    radioFrequencyBandTDDList                     RadioFrequencyBandTDDList,
    chipRateCapability                             ChipRateCapability
    }
    }
    }
    RLC-Capability ::=                            SEQUENCE {
    totalRLC-AM-BufferSize                         TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize                         MaximumRLC-WindowSize,
    maximumAM-EntityNumber                         MaximumAM-EntityNumberRLC-Cap
    }
    }
    RRC-MessageSequenceNumber ::=                 INTEGER (0..15)
    RRC-MessageSequenceNumberList ::=             SEQUENCE (SIZE (4..5)) OF
    RRC-MessageSequenceNumber
    RRC-StateIndicator ::=                       ENUMERATED {
    cell-DCH, cell-FACH, cell-PCH, ura-PCH }
    RRC-TransactionIdentifier ::=                 INTEGER (0..3)
    S-RNTI ::=                                   BIT STRING (SIZE (20))
    S-RNTI-2 ::=                                  BIT STRING (SIZE (10))
    SecurityCapability ::=                       SEQUENCE {
    cipheringAlgorithmCap                          BIT STRING {
    spare15(0),
    spare14(1),
    spare13(2),
    spare12(3),
    spare11(4),
    spare10(5),
    spare9(6),
    spare8(7),
    spare7(8),
    spare6(9),
    spare5(10),
    spare4(11),
    spare3(12),
    spare2(13),
    ueal(14),
    uea0(15)
    } (SIZE (16)),
    integrityProtectionAlgorithmCap                BIT STRING {
    spare15(0),
    spare14(1),
    spare13(2),
    spare12(3),
    spare11(4),
    spare10(5),
    spare9(6),
    spare8(7),
    spare7(8),
    spare6(9),
    spare5(10),
    spare4(11),
    spare3(12),
    spare2(13),
    uial(14),
    spare0(15)
    } (SIZE (16))
    }
    }
    SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {

```

```

notSupported          NULL,
supported             SEQUENCE {
  maxNoSCCPCH-RL      MaxNoSCCPCH-RL,
  -- simultaneousSCCPCH-DPCH-DPDCH-Reception is applicable only if
  -- the IE Support of PDSCH = TRUE
  simultaneousSCCPCH-DPCH-DPDCH-Reception  BOOLEAN
}
}

SRNC-Identity ::=          BIT STRING (SIZE (12))

START-Value ::=          BIT STRING (SIZE (20))

STARTList ::=           SEQUENCE (SIZE (1..maxCNdomains)) OF
                        STARTSingle

STARTSingle ::=         SEQUENCE {
  cn-DomainIdentity     CN-DomainIdentity,
  start-Value           START-Value
}

SystemSpecificCapUpdateReq ::=  ENUMERATED {
  gsm }

SystemSpecificCapUpdateReqList ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                   SystemSpecificCapUpdateReq

T-300 ::=              ENUMERATED {
  ms100, ms200, ms400, ms600, ms800,
  ms1000, ms1200, ms1400, ms1600,
  ms1800, ms2000, ms3000, ms4000,
  ms6000, ms8000 }

T-301 ::=              ENUMERATED {
  ms100, ms200, ms400, ms600, ms800,
  ms1000, ms1200, ms1400, ms1600,
  ms1800, ms2000, ms3000, ms4000,
  ms6000, ms8000, spare }

T-302 ::=              ENUMERATED {
  ms100, ms200, ms400, ms600, ms800,
  ms1000, ms1200, ms1400, ms1600,
  ms1800, ms2000, ms3000, ms4000,
  ms6000, ms8000, spare }

T-304 ::=              ENUMERATED {
  ms100, ms200, ms400,
  ms1000, ms2000, spare3, spare2, spare1 }

T-305 ::=              ENUMERATED {
  noUpdate, m5, m10, m30,
  m60, m120, m360, m720 }

T-307 ::=              ENUMERATED {
  s5, s10, s15, s20,
  s30, s40, s50, spare }

T-308 ::=              ENUMERATED {
  ms40, ms80, ms160, ms320 }

T-309 ::=              INTEGER (1..8)

T-310 ::=              ENUMERATED {
  ms40, ms80, ms120, ms160,
  ms200, ms240, ms280, ms320 }

T-311 ::=              ENUMERATED {
  ms250, ms500, ms750, ms1000,
  ms1250, ms1500, ms1750, ms2000 }

-- The value 0 for T-312 is not used in this version of the specification
T-312 ::=              INTEGER (0..15)

T-313 ::=              INTEGER (0..15)

T-314 ::=              ENUMERATED {

```



```

        s0, s2, s4, s6, s8,
        s12, s16, s20 }

T-315 ::= ENUMERATED {
        s0, s10, s30, s60, s180,
        s600, s1200, s1800 }

T-316 ::= ENUMERATED {
        s0, s10, s20, s30, s40,
        s50, s-inf, spare }

T-317 ::= ENUMERATED {
        s0, s10, s30, s60, s180,
        s600, s1200, s1800 }

T-CPCH ::= ENUMERATED {
        ct0, ct1 }

TMSI-and-LAI-GSM-MAP ::= SEQUENCE {
        tmsi      TMSI-GSM-MAP,
        lai       LAI
}

TMSI-DS-41 ::= OCTET STRING (SIZE (2..17))

TotalRLC-AM-BufferSize ::= ENUMERATED {
        kb2, kb10, kb50, kb100,
        kb150, kb500, kb1000, spare }

-- Actual value TransmissionProbability = IE value * 0.125
TransmissionProbability ::= INTEGER (1..8)

TransportChannelCapability ::= SEQUENCE {
        dl-TransChCapability  DL-TransChCapability,
        ul-TransChCapability  UL-TransChCapability
}

TurboSupport ::= CHOICE {
        notSupported      NULL,
        supported         MaxNoBits
}

TxRxFrequencySeparation ::= ENUMERATED {
        mhzi190default, mhzi174-8-205-2medium-variable,
        mhzi134-8-245-2full-variable }

U-RNTI ::= SEQUENCE {
        srnc-Identity  SRNC-Identity,
        s-RNTI        S-RNTI
}

U-RNTI-Short ::= SEQUENCE {
        srnc-Identity  SRNC-Identity,
        s-RNTI-2      S-RNTI-2
}

UE-ConnTimersAndConstants ::= SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
-- t-301 and n-301 should not be used by the UE in this version of the specification
        t-301          T-301          DEFAULT ms2000,
        n-301          N-301          DEFAULT 2,
        t-302          T-302          DEFAULT ms4000,
        n-302          N-302          DEFAULT 3,
        t-304          T-304          DEFAULT ms2000,
        n-304          N-304          DEFAULT 2,
        t-305          T-305          DEFAULT m30,
        t-307          T-307          DEFAULT s30,
        t-308          T-308          DEFAULT ms160,
        t-309          T-309          DEFAULT 5,
        t-310          T-310          DEFAULT ms160,
        n-310          N-310          DEFAULT 4,
        t-311          T-311          DEFAULT ms2000,
        t-312          T-312          DEFAULT 1,
        -- n-312 shall be ignored if n-312 in UE-ConnTimersAndConstants-v3a0ext is present, and the
        -- value of that element shall be used instead.
        n-312          N-312          DEFAULT s1,
        t-313          T-313          DEFAULT 3,
        n-313          N-313          DEFAULT s20,

```

```

t-314                T-314                DEFAULT s12,
t-315                T-315                DEFAULT s180,
-- n-315 shall be ignored if n-315 in UE-ConnTimersAndConstants-v3a0ext is present, and the
-- value of that element shall be used instead.
n-315                N-315                DEFAULT s1,
t-316                T-316                DEFAULT s30,
t-317                T-317                DEFAULT s180
}

UE-ConnTimersAndConstants-v3a0ext ::= SEQUENCE {
  n-312                N-312ext           OPTIONAL,
  n-315                N-315ext           OPTIONAL
}

UE-IdleTimersAndConstants ::= SEQUENCE {
  t-300                T-300,
  n-300                N-300,
  t-312                T-312,
  -- n-312 shall be ignored if n-312 in UE-IdleTimersAndConstants-v3a0ext is present, and the
  -- value of that element shall be used instead.
  n-312                N-312
}

UE-IdleTimersAndConstants-v3a0ext ::= SEQUENCE {
  n-312                N-312ext           OPTIONAL
}

UE-MultiModeRAT-Capability ::= SEQUENCE {
  multiRAT-CapabilityList MultiRAT-Capability,
  multiModeCapability      MultiModeCapability
}

UE-PowerClass ::= INTEGER (1..4)

UE-PowerClass-v370 ::= ENUMERATED {class1, class2, class3, class4,
  spare4, spare3, spare2, spare1 }

UE-RadioAccessCapability ::= SEQUENCE {
  pdcp-Capability        PDCP-Capability,
  rlc-Capability          RLC-Capability,
  transportChannelCapability TransportChannelCapability,
  rf-Capability           RF-Capability,
  physicalChannelCapability PhysicalChannelCapability,
  ue-MultiModeRAT-Capability UE-MultiModeRAT-Capability,
  securityCapability      SecurityCapability,
  ue-positioning-Capability UE-Positioning-Capability,
  measurementCapability   MeasurementCapability OPTIONAL
}

UE-RadioAccessCapabilityInfo ::= SEQUENCE {
  ue-RadioAccessCapability UE-RadioAccessCapability,
  ue-RadioAccessCapability-v370ext UE-RadioAccessCapability-v370ext
}

UE-RadioAccessCapability-v370ext ::= SEQUENCE {
  ue-RadioAccessCapabBandFDDList UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext ::= SEQUENCE {
  ue-PositioningCapabilityExt-v380 UE-PositioningCapabilityExt-v380
}

UE-RadioAccessCapability-v3a0ext ::= SEQUENCE {
  ue-PositioningCapabilityExt-v3a0 UE-PositioningCapabilityExt-v3a0
}

UE-PositioningCapabilityExt-v380 ::= SEQUENCE {
  rx-tx-TimeDifferenceType2Capable BOOLEAN
}

UE-PositioningCapabilityExt-v3a0 ::= SEQUENCE {
  validity-CellPCH-UraPCH ENUMERATED { true }
}

UE-RadioAccessCapabBandFDDList ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
  UE-RadioAccessCapabBandFDD

UE-RadioAccessCapabBandFDD ::= SEQUENCE{

```

```

radioFrequencyBandFDD          RadioFrequencyBandFDD,
fddRF-Capability                SEQUENCE {
    ue-PowerClass                UE-PowerClass-v370,
    txRxFrequencySeparation      TxRxFrequencySeparation
}                                OPTIONAL,
measurementCapability           MeasurementCapability-v370
}

UE-RadioAccessCapability-r4-ext ::= SEQUENCE {
    pdcp-Capability-r4-ext       PDCP-Capability-r4-ext,
    rf-Capability                RF-Capability-r4-ext,
    physicalChannelCapability-LCR PhysicalChannelCapability-LCR-r4,
    measurementCapability-r4-ext  MeasurementCapability-r4-ext  OPTIONAL
}

UE-RadioAccessCapability-v4xyext ::= SEQUENCE {
    -- R99 UEs shall include IE "ue-TestLevelIndicator"
    accessStratumReleaseIndicator AccessStratumReleaseIndicator
}

UL-PhysChCapabilityFDD ::= SEQUENCE {
    maxNoDPDCH-BitsTransmitted    MaxNoDPDCH-BitsTransmitted,
    supportOfPCPCH                BOOLEAN
}

UL-PhysChCapabilityTDD ::= SEQUENCE {
    maxTS-PerFrame                MaxTS-PerFrame,
    maxPhysChPerTimeslot          MaxPhysChPerTimeslot,
    minimumSF                      MinimumSF-UL,
    supportOfPUSCH                BOOLEAN
}

UL-PhysChCapabilityTDD-LCR-r4 ::= SEQUENCE {
    maxTS-PerSubFrame             MaxTS-PerSubFrame-r4,
    maxPhysChPerTimeslot          MaxPhysChPerTimeslot,
    minimumSF                      MinimumSF-UL,
    supportOfPUSCH                BOOLEAN,
    supportOf8PSK                 BOOLEAN
}

UL-TransChCapability ::= SEQUENCE {
    maxNoBitsTransmitted           MaxNoBits,
    maxConvCodeBitsTransmitted     MaxNoBits,
    turboEncodingSupport           TurboSupport,
    maxSimultaneousTransChs        MaxSimultaneousTransChsUL,
    modeSpecificInfo               CHOICE {
        fdd                        NULL,
        tdd                        SEQUENCE {
            maxSimultaneousCCTrCH-Count  MaxSimultaneousCCTrCH-Count
        }
    },
    maxTransmittedBlocks           MaxTransportBlocksUL,
    maxNumberOfTFC                 MaxNumberOfTFC-UL,
    maxNumberOfTF                  MaxNumberOfTF
}

UE-Positioning-Capability ::= SEQUENCE {
    standaloneLocMethodsSupported  BOOLEAN,
    ue-BasedOTDOA-Supported        BOOLEAN,
    networkAssistedGPS-Supported   NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames  BOOLEAN,
    supportForIPDL                 BOOLEAN
}

UE-SecurityInformation ::= SEQUENCE {
    start-CS                        START-Value
}

URA-UpdateCause ::= ENUMERATED {
    changeOfURA,
    periodicURAUpdate,
    dummy,
    spare1 }

UTRAN-DRX-CycleLengthCoefficient ::= INTEGER (3..9)

WaitTime ::= INTEGER (0..15)

```

CHANGE REQUEST

25.331 CR 1828 # rev - # Current version: 5.3.0

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	# Variable Tx/Rx frequency separation in 1800 and 1900 band		
Source:	# TSG-RAN WG2		
Work item code:	# TEI	Date:	# Feb 2003
Category:	# A	Release:	# Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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 can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	# Variable duplex is signalled with the IE "Tx/Rx frequency separation". However, the value range for this IE is only done taken the 2100 MHz band into account. This means that the current values for of Tx/Rx frequency separation has no meaning for the 1800 MHz or 1900 MHz band.
Summary of change:	# <ol style="list-style-type: none"> 1. The value range of the IE "Tx/Rx frequency separation" is changed to "default", "medium variable" and "full variable". 2. Everything except the reference to 25.101 is removed from the semantics description. Only in 25.101 the explanation of what "default", "medium variable" and "full variable" means for the different bands. <p>Isolated impact analysis: The CR is a clarification on a function that is ambiguous and incomplete in the current specification. For a 2100 MHz UE there is no difference if this CR is implemented or not. The behaviour will also be the same independent if UTRAN have implemented the CR or not. For a 1800 MHz or 1900 MHz UE this CR should be implemented in order for correct understanding of the signalled UE capability. This is independent if the UE is capable of variable duplex or not. In addition a UTRAN supporting 1800 MHz or 1900 MHz UEs should implement this CR in order to correctly understand what variable duplex capability the UE is signalling.</p>
Consequences if not approved:	# Signaling of the UE capability Tx/Rx frequency separation for 1800 MHz and 1900 MHz is not possible and has no clear meaning.

Clauses affected:	# 10.3.3.33, 10.3.3.33a, 11.3
--------------------------	-------------------------------

Other specs	⌘	Y	N	Other core specifications	⌘	CR 209 to 25.101 CR 060 to 25.306
		X				
			X			
affected:			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. 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 <ftp://ftp.3gpp.org/specs/> 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.

10.3.3.33 RF capability FDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
UE power class	MP		Enumerated(1..4)	as defined in [21]	
Tx/Rx frequency separation	MP		Enumerated(190 default, 174.8 , 205.2 medium variable, 134.8 , 245.2 full variable)	In-MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).	

10.3.3.33a RF capability FDD extension

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class extension	MP		Enumerated(1..4)	as defined in [21]. Four spare values are needed
Tx/Rx frequency separation	MP		Enumerated(190 default, 174.8 , 205.2 medium variable, 134.8 , 245.2 full variable)	In-MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).

11.3 Information element definitions

```

-- *****
--
-- USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- *****

AccessStratumReleaseIndicator ::= ENUMERATED {
    rel-4, rel-5, spare14, spare13,
    spare12, spare11, spare10, spare9, spare8,
    spare7, spare6, spare5, spare4, spare3,
    spare2, spare1 }

-- TABULAR : for ActivationTime, value 'now' always appear as default, and is encoded
-- by absence of the field
ActivationTime ::= INTEGER (0..255)

BackoffControlParams ::= SEQUENCE {
    n-AP-RetransMax N-AP-RetransMax,
    n-AccessFails N-AccessFails,
    nf-BO-NoAICH NF-BO-NoAICH,
    ns-BO-Busy NS-BO-Busy,
    nf-BO-AllBusy NF-BO-AllBusy,
    nf-BO-Mismatch NF-BO-Mismatch,
    t-CPCH T-CPCH
}

C-RNTI ::= BIT STRING (SIZE (16))

```

```

CapabilityUpdateRequirement ::= SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD BOOLEAN,
    -- ue-RadioCapabilityTDDUpdateRequirement-TDD is for 3.84Mcps TDD update requirement
    ue-RadioCapabilityTDDUpdateRequirement-TDD BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CapabilityUpdateRequirement-r4-ext ::= SEQUENCE {
}

CapabilityUpdateRequirement-r4 ::= SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD384 BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128 BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CellUpdateCause ::= ENUMERATED {
    cellReselection,
    periodicalCellUpdate,
    uplinkDataTransmission,
    utran-pagingResponse,
    re-enteredServiceArea,
    radiolinkFailure,
    rlc-unrecoverableError,
    spare1 }

ChipRateCapability ::= ENUMERATED {
    mcps3-84, mcps1-28 }

CipheringAlgorithm ::= ENUMERATED {
    uea0, uea1 }

CipheringModeCommand ::= CHOICE {
    startRestart          CipheringAlgorithm,
    dummy                 NULL
}

CipheringModeInfo ::= SEQUENCE {
    -- TABULAR: The ciphering algorithm is included in the CipheringModeCommand.
    cipheringModeCommand      CipheringModeCommand,
    activationTimeForDPCH     ActivationTime                OPTIONAL,
    rb-DL-CiphActivationTimeInfo RB-ActivationTimeInfoList        OPTIONAL
}

CN-DRX-CycleLengthCoefficient ::= INTEGER (6..9)

CN-PagedUE-Identity ::= CHOICE {
    imsi-GSM-MAP             IMSI-GSM-MAP,
    tmsi-GSM-MAP             TMSI-GSM-MAP,
    p-TMSI-GSM-MAP          P-TMSI-GSM-MAP,
    imsi-DS-41              IMSI-DS-41,
    tmsi-DS-41              TMSI-DS-41,
    spare3                   NULL,
    spare2                   NULL,
    spare1                   NULL
}

CompressedModeMeasCapability ::= SEQUENCE {
    fdd-Measurements         BOOLEAN,
    -- TABULAR: The IEs tdd-Measurements, gsm-Measurements and multiCarrierMeasurements
    -- are made optional since they are conditional based on another information element.
    -- Their absence corresponds to the case where the condition is not true.
    tdd-Measurements         BOOLEAN                OPTIONAL,
    gsm-Measurements         GSM-Measurements        OPTIONAL,
    multiCarrierMeasurements BOOLEAN                OPTIONAL
}

CompressedModeMeasCapability-LCR-r4 ::= SEQUENCE {
    tdd128-Measurements      BOOLEAN                OPTIONAL
}

CompressedModeMeasCapabFDDList ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
    CompressedModeMeasCapabFDD

CompressedModeMeasCapabFDD ::= SEQUENCE {
    radioFrequencyBandFDD    RadioFrequencyBandFDD    OPTIONAL,

```

```

    dl-MeasurementsFDD          BOOLEAN,
    ul-MeasurementsFDD          BOOLEAN
}

CompressedModeMeasCapabTDDList ::= SEQUENCE (SIZE (1..maxFreqBandsTDD)) OF
    CompressedModeMeasCapabTDD

CompressedModeMeasCapabTDD ::= SEQUENCE {
    radioFrequencyBandTDD      RadioFrequencyBandTDD,
    dl-MeasurementsTDD          BOOLEAN,
    ul-MeasurementsTDD          BOOLEAN
}

CompressedModeMeasCapabGSMList ::= SEQUENCE (SIZE (1..maxFreqBandsGSM)) OF
    CompressedModeMeasCapabGSM

CompressedModeMeasCapabGSM ::= SEQUENCE {
    radioFrequencyBandGSM      RadioFrequencyBandGSM,
    dl-MeasurementsGSM          BOOLEAN,
    ul-MeasurementsGSM          BOOLEAN
}

CompressedModeMeasCapabMC ::= SEQUENCE {
    dl-MeasurementsMC           BOOLEAN,
    ul-MeasurementsMC           BOOLEAN
}

CPCH-Parameters ::= SEQUENCE {
    initialPriorityDelayList     InitialPriorityDelayList          OPTIONAL,
    backoffControlParams         BackoffControlParams,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    powerControlAlgorithm        PowerControlAlgorithm,
    dl-DPCCH-BER                 DL-DPCCH-BER
}

DL-CapabilityWithSimultaneousHS-DSCHConfig ::= ENUMERATED{kbps32, kbps64, kbps128, kbps384}

DL-DPCCH-BER ::= INTEGER (0..63)

DL-PhysChCapabilityFDD ::= SEQUENCE {
    maxNoDPCH-PDSCH-Codes        INTEGER (1..8),
    maxNoPhysChBitsReceived       MaxNoPhysChBitsReceived,
    supportForSF-512              BOOLEAN,
    supportOfPDSCH                BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception SimultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityFDD-v380ext ::= SEQUENCE {
    supportOfDedicatedPilotsForChEstimation SupportOfDedicatedPilotsForChEstimation OPTIONAL
}

SupportOfDedicatedPilotsForChEstimation ::= ENUMERATED { true }

DL-PhysChCapabilityTDD ::= SEQUENCE {
    maxTS-PerFrame                MaxTS-PerFrame,
    maxPhysChPerFrame              MaxPhysChPerFrame,
    minimumSF                      MinimumSF-DL,
    supportOfPDSCH                 BOOLEAN,
    maxPhysChPerTS                 MaxPhysChPerTS
}

DL-PhysChCapabilityTDD-LCR-r4 ::= SEQUENCE {
    maxTS-PerSubFrame              MaxTS-PerSubFrame-r4,
    maxPhysChPerSubFrame           MaxPhysChPerSubFrame-r4,
    minimumSF                      MinimumSF-DL,
    supportOfPDSCH                 BOOLEAN,
    maxPhysChPerTS                 MaxPhysChPerTS,
    supportOf8PSK                  BOOLEAN
}

DL-TransChCapability ::= SEQUENCE {
    maxNoBitsReceived              MaxNoBits,
    maxConvCodeBitsReceived         MaxNoBits,
    turboDecodingSupport            TurboSupport,
    maxSimultaneousTransChs         MaxSimultaneousTransChsDL,
    maxSimultaneousCCTrCH-Count     MaxSimultaneousCCTrCH-Count,
    maxReceivedTransportBlocks      MaxTransportBlocksDL,
    maxNumberOfTFC                  MaxNumberOfTFC-DL,

```



```

    maxNumberOfTF                MaxNumberOfTF
}

DRAC-SysInfo ::=
    transmissionProbability
    maximumBitRate
}

DRAC-SysInfoList ::=
    SEQUENCE (SIZE (1..maxDRACclasses)) OF
        DRAC-SysInfo

DSCH-RNTI ::=
    BIT STRING (SIZE (16))

ESN-DS-41 ::=
    BIT STRING (SIZE (32))

EstablishmentCause ::=
    ENUMERATED {
        originatingConversationalCall,
        originatingStreamingCall,
        originatingInteractiveCall,
        originatingBackgroundCall,
        originatingSubscribedTrafficCall,
        terminatingConversationalCall,
        terminatingStreamingCall,
        terminatingInteractiveCall,
        terminatingBackgroundCall,
        emergencyCall,
        interRAT-CellReselection,
        interRAT-CellChangeOrder,
        registration,
        detach,
        originatingHighPrioritySignalling,
        originatingLowPrioritySignalling,
        callRe-establishment,
        terminatingHighPrioritySignalling,
        terminatingLowPrioritySignalling,
        terminatingCauseUnknown,
        spare12,
        spare11,
        spare10,
        spare9,
        spare8,
        spare7,
        spare6,
        spare5,
        spare4,
        spare3,
        spare2,
        spare1 }

FailureCauseWithProtErr ::=
    CHOICE {
        configurationUnsupported          NULL,
        physicalChannelFailure           NULL,
        incompatibleSimultaneousReconfiguration
                                         NULL,
        compressedModeRuntimeError      TGPSI,
        protocolError                    ProtocolErrorInformation,
        cellUpdateOccurred               NULL,
        invalidConfiguration             NULL,
        configurationIncomplete          NULL,
        unsupportedMeasurement           NULL,
        spare7                           NULL,
        spare6                           NULL,
        spare5                           NULL,
        spare4                           NULL,
        spare3                           NULL,
        spare2                           NULL,
        spare1                           NULL
    }

FailureCauseWithProtErrTrId ::=
    SEQUENCE {
        rrc-TransactionIdentifier        RRC-TransactionIdentifier,
        failureCause                     FailureCauseWithProtErr
    }

GSM-Measurements ::=
    SEQUENCE {
        gsm900                           BOOLEAN,
        dcs1800                           BOOLEAN,
        gsm1900                           BOOLEAN
    }

```

```

}
H-RNTI ::= BIT STRING (SIZE (16))
HSDSCH-capability-class ::= INTEGER (0..63)
UESpecificBehaviourInformationIdle ::= BIT STRING (SIZE (4))
UESpecificBehaviourInformationInterRAT ::= BIT STRING (SIZE (8))

IMSI-and-ESN-DS-41 ::= SEQUENCE {
    imsi-DS-41          IMSI-DS-41,
    esn-DS-41          ESN-DS-41
}
IMSI-DS-41 ::= OCTET STRING (SIZE (5..7))
InitialPriorityDelayList ::= SEQUENCE (SIZE (1..maxASC)) OF
    NS-IP
InitialUE-Identity ::= CHOICE {
    imsi                IMSI-GSM-MAP,
    tmsi-and-LAI        TMSI-and-LAI-GSM-MAP,
    p-TMSI-and-RAI      P-TMSI-and-RAI-GSM-MAP,
    imei                IMEI,
    esn-DS-41           ESN-DS-41,
    imsi-DS-41          IMSI-DS-41,
    imsi-and-ESN-DS-41  IMSI-and-ESN-DS-41,
    tmsi-DS-41          TMSI-DS-41
}
IntegrityCheckInfo ::= SEQUENCE {
    messageAuthenticationCode    MessageAuthenticationCode,
    rrc-MessageSequenceNumber    RRC-MessageSequenceNumber
}
IntegrityProtActivationInfo ::= SEQUENCE {
    rrc-MessageSequenceNumberList RRC-MessageSequenceNumberList
}
IntegrityProtectionAlgorithm ::= ENUMERATED {
    uial }
IntegrityProtectionModeCommand ::= CHOICE {
    startIntegrityProtection SEQUENCE {
        integrityProtInitNumber    IntegrityProtInitNumber
    },
    modify                     SEQUENCE {
        dl-IntegrityProtActivationInfo IntegrityProtActivationInfo
    }
}
IntegrityProtectionModeInfo ::= SEQUENCE {
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionModeCommand    IntegrityProtectionModeCommand,
    integrityProtectionAlgorithm      IntegrityProtectionAlgorithm    OPTIONAL
}
IntegrityProtInitNumber ::= BIT STRING (SIZE (32))
MaxHcContextSpace ::= ENUMERATED {
    by512, by1024, by2048, by4096,
    by8192 }
MaxROHC-ContextSessions-r4 ::= ENUMERATED {
    s2, s4, s8, s12, s16, s24, s32, s48,
    s64, s128, s256, s512, s1024, s16384 }
MaximumAM-EntityNumberRLC-Cap ::= ENUMERATED {
    am3, am4, am5, am6,
    am8, am16, am30 }
-- Actual value MaximumBitRate = IE value * 16

```

```

MaximumBitRate ::= INTEGER (0..32)
MaximumRLC-WindowSize ::= ENUMERATED { mws2047, mws4095 }
MaxNoDPDCH-BitsTransmitted ::= ENUMERATED {
    b600, b1200, b2400, b4800,
    b9600, b19200, b28800, b38400,
    b48000, b57600 }
MaxNoBits ::= ENUMERATED {
    b640, b1280, b2560, b3840, b5120,
    b6400, b7680, b8960, b10240,
    b20480, b40960, b81920, b163840 }
MaxNoPhysChBitsReceived ::= ENUMERATED {
    b600, b1200, b2400, b3600,
    b4800, b7200, b9600, b14400,
    b19200, b28800, b38400, b48000,
    b57600, b67200, b76800 }
MaxNoSCCPCH-RL ::= ENUMERATED {
    r11 }
MaxNumberOfTF ::= ENUMERATED {
    tf32, tf64, tf128, tf256,
    tf512, tf1024 }
MaxNumberOfTFC-DL ::= ENUMERATED {
    tfc16, tfc32, tfc48, tfc64, tfc96,
    tfc128, tfc256, tfc512, tfc1024 }
MaxNumberOfTFC-UL ::= ENUMERATED {
    tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
    tfc96, tfc128, tfc256, tfc512, tfc1024 }
MaxPhysChPerFrame ::= INTEGER (1..224)
MaxPhysChPerSubFrame-r4 ::= INTEGER (1..96)
MaxPhysChPerTimeslot ::= ENUMERATED {
    ts1, ts2 }
MaxPhysChPerTS ::= INTEGER (1..16)
MaxSimultaneousCCTrCH-Count ::= INTEGER (1..8)
MaxSimultaneousTransChsDL ::= ENUMERATED {
    e4, e8, e16, e32 }
MaxSimultaneousTransChsUL ::= ENUMERATED {
    e2, e4, e8, e16, e32 }
MaxTransportBlocksDL ::= ENUMERATED {
    tb4, tb8, tb16, tb32, tb48,
    tb64, tb96, tb128, tb256, tb512 }
MaxTransportBlocksUL ::= ENUMERATED {
    tb2, tb4, tb8, tb16, tb32, tb48,
    tb64, tb96, tb128, tb256, tb512 }
MaxTS-PerFrame ::= INTEGER (1..14)
MaxTS-PerSubFrame-r4 ::= INTEGER (1..6)
-- TABULAR: MeasurementCapability contains dependencies to UE-MultiModeRAT-Capability,
-- the conditional fields have been left mandatory for now.
MeasurementCapability ::= SEQUENCE {
    downlinkCompressedMode          CompressedModeMeasCapability,
    uplinkCompressedMode            CompressedModeMeasCapability
}
MeasurementCapability-v370 ::= SEQUENCE {
    compressedModeMeasCapabFDDList  CompressedModeMeasCapabFDDList,
    compressedModeMeasCapabTDDList  CompressedModeMeasCapabTDDList OPTIONAL,
    compressedModeMeasCapabGSMList  CompressedModeMeasCapabGSMList OPTIONAL,
    compressedModeMeasCapabMC       CompressedModeMeasCapabMC       OPTIONAL
}

```

```

MeasurementCapability-r4-ext ::= SEQUENCE {
    downlinkCompressedMode-LCR          CompressedModeMeasCapability-LCR-r4,
    uplinkCompressedMode-LCR           CompressedModeMeasCapability-LCR-r4
}

MessageAuthenticationCode ::= BIT STRING (SIZE (32))

MinimumSF-DL ::= ENUMERATED {
    sf1, sf16 }

MinimumSF-UL ::= ENUMERATED {
    sf1, sf2, sf4, sf8, sf16 }

MultiModeCapability ::= ENUMERATED {
    tdd, fdd, fdd-tdd }

MultiRAT-Capability ::= SEQUENCE {
    supportOfGSM          BOOLEAN,
    supportOfMulticarrier  BOOLEAN
}

N-300 ::= INTEGER (0..7)

N-301 ::= INTEGER (0..7)

N-302 ::= INTEGER (0..7)

N-304 ::= INTEGER (0..7)

N-308 ::= INTEGER (1..8)

N-310 ::= INTEGER (0..7)

N-312 ::= ENUMERATED {
    s1, s50, s100, s200, s400,
    s600, s800, s1000 }

N-312ext ::= ENUMERATED {
    s2, s4, s10, s20 }

N-312-r5 ::= ENUMERATED {
    s1, s2, s4, s10, s20,
    s50, s100, s200, s400,
    s600, s800, s1000 }

N-313 ::= ENUMERATED {
    s1, s2, s4, s10, s20,
    s50, s100, s200 }

N-315 ::= ENUMERATED {
    s1, s50, s100, s200, s400,
    s600, s800, s1000 }

N-315ext ::= ENUMERATED {
    s2, s4, s10, s20 }

N-315-r5 ::= ENUMERATED {
    s1, s2, s4, s10, s20,
    s50, s100, s200, s400,
    s600, s800, s1000 }

N-AccessFails ::= INTEGER (1..64)

N-AP-RetransMax ::= INTEGER (1..64)

NetworkAssistedGPS-Supported ::= ENUMERATED {
    networkBased,
    ue-Based,
    bothNetworkAndUE-Based,
    noNetworkAssistedGPS }

NF-BO-AllBusy ::= INTEGER (0..31)

NF-BO-NoAICH ::= INTEGER (0..31)

NF-BO-Mismatch ::= INTEGER (0..127)

```

```

NS-BO-Busy ::= INTEGER (0..63)

NS-IP ::= INTEGER (0..28)

P-TMSI-and-RAI-GSM-MAP ::= SEQUENCE {
    p-TMSI P-TMSI-GSM-MAP,
    rai RAI
}

PagingCause ::= ENUMERATED {
    terminatingConversationalCall,
    terminatingStreamingCall,
    terminatingInteractiveCall,
    terminatingBackgroundCall,
    terminatingHighPrioritySignalling,
    terminatingLowPrioritySignalling,
    terminatingCauseUnknown,
    spare
}

PagingRecord ::= CHOICE {
    cn-Identity SEQUENCE {
        pagingCause PagingCause,
        cn-DomainIdentity CN-DomainIdentity,
        cn-pagedUE-Identity CN-PagedUE-Identity
    },
    utran-Identity SEQUENCE {
        u-RNTI U-RNTI,
        cn-OriginatedPage-connectedMode-UE SEQUENCE {
            pagingCause PagingCause,
            cn-DomainIdentity CN-DomainIdentity,
            pagingRecordTypeID PagingRecordTypeID
        }
    }
} OPTIONAL

PagingRecordList ::= SEQUENCE (SIZE (1..maxPage1)) OF
    PagingRecord

PDCP-Capability ::= SEQUENCE {
    losslessSRNS-RelocationSupport BOOLEAN,
    supportForRfc2507 CHOICE {
        notSupported NULL,
        supported MaxHcContextSpace
    }
}

PDCP-Capability-r4-ext ::= SEQUENCE {
    supportForRfc3095 CHOICE {
        notSupported NULL,
        supported SEQUENCE {
            maxROHC-ContextSessions MaxROHC-ContextSessions-r4 DEFAULT s16,
            reverseCompressionDepth INTEGER (0..65535) DEFAULT 0
        }
    }
}

PDCP-Capability-r5-ext ::= SEQUENCE {
    supportForRfc3095ContextRelocation BOOLEAN
}

PhysicalChannelCapability ::= SEQUENCE {
    fddPhysChCapability SEQUENCE {
        downlinkPhysChCapability DL-PhysChCapabilityFDD,
        uplinkPhysChCapability UL-PhysChCapabilityFDD
    }
    -- tddPhysChCapability describes the 3.84Mcps TDD physical channel capability
    tddPhysChCapability SEQUENCE {
        downlinkPhysChCapability DL-PhysChCapabilityTDD,
        uplinkPhysChCapability UL-PhysChCapabilityTDD
    }
}

-- PhysicalChannelCapability-LCR-r4 describes the 1.28Mcps TDD physical channel capability
PhysicalChannelCapability-LCR-r4 ::= SEQUENCE {
    tdd128-PhysChCapability SEQUENCE {
        downlinkPhysChCapability DL-PhysChCapabilityTDD-LCR-r4,
        uplinkPhysChCapability UL-PhysChCapabilityTDD-LCR-r4
    }
}

```

```

    }
    } OPTIONAL
}
-- PhysicalChannelCapability-hspdsch-r5 describes the HS-PDSCH physical channel capability
PhysicalChannelCapability-hspdsch-r5 ::= SEQUENCE {
    supportOfDedicatedPilotsForChannelEstimationOfHSDSCH BOOLEAN,
    modeSpecificInfo CHOICE {
        fdd SEQUENCE {
            hspdsch-supported CHOICE {
                supported HSDSCH-capability-class,
                notsupported NULL
            }
        },
        tdd384 SEQUENCE {
            hspdsch-supported CHOICE {
                supported HSDSCH-capability-class,
                notsupported NULL
            }
        },
        tdd128 SEQUENCE {
            hspdsch-supported CHOICE {
                supported HSDSCH-capability-class,
                notsupported NULL
            }
        }
    }
} OPTIONAL

PNBSCH-Allocation-r4 ::= SEQUENCE {
    numberOfRepetitionsPerSFNPeriod ENUMERATED {
        c2, c3, c4, c5, c6, c7, c8, c9, c10,
        c12, c14, c16, c18, c20, c24, c28, c32,
        c36, c40, c48, c56, c64, c72, c80 }
}

ProtocolErrorCause ::= ENUMERATED {
    asn1-ViolationOrEncodingError,
    messageTypeNonexistent,
    messageNotCompatibleWithReceiverState,
    ie-ValueNotComprehended,
    informationElementMissing,
    messageExtensionNotComprehended,
    spare2, spare1 }

ProtocolErrorIndicator ::= ENUMERATED {
    noError, errorOccurred }

ProtocolErrorIndicatorWithMoreInfo ::= CHOICE {
    noError NULL,
    errorOccurred SEQUENCE {
        rrc-TransactionIdentifier RRC-TransactionIdentifier,
        protocolErrorInformation ProtocolErrorInformation
    }
}

ProtocolErrorMoreInformation ::= SEQUENCE {
    diagnosticsType CHOICE {
        type1 CHOICE {
            asn1-ViolationOrEncodingError NULL,
            messageTypeNonexistent NULL,
            messageNotCompatibleWithReceiverState
                IdentificationOfReceivedMessage,
            ie-ValueNotComprehended IdentificationOfReceivedMessage,
            conditionalInformationElementError IdentificationOfReceivedMessage,
            messageExtensionNotComprehended IdentificationOfReceivedMessage,
            spare1 NULL,
            spare2 NULL
        },
        spare NULL
    }
}

RadioFrequencyBandFDD ::= ENUMERATED {
    fdd2100,
    fdd1900,
    spare6, spare5, spare4, spare3, spare2, spare1 }

```

```

RadioFrequencyBandTDDList ::=      ENUMERATED {
                                     a, b, c, ab, ac, bc, abc, spare }

RadioFrequencyBandTDD ::=          ENUMERATED {a, b, c, spare}

RadioFrequencyBandGSM ::=          ENUMERATED {
                                     gsm450,
                                     gsm480,
                                     gsm850,
                                     gsm900P,
                                     gsm900E,
                                     gsm1800,
                                     gsm1900,
                                     spare9, spare8, spare7, spare6, spare5,
                                     spare4, spare3, spare2, spare1}

Rb-timer-indicator ::=            SEQUENCE {
    t314-expired                    BOOLEAN,
    t315-expired                    BOOLEAN }

Re-EstablishmentTimer ::=         ENUMERATED {
    useT314, useT315
}

RedirectionInfo ::=              CHOICE {
    frequencyInfo                   FrequencyInfo,
    interRATInfo                    InterRATInfo
}

RejectionCause ::=               ENUMERATED {
    congestion,
    unspecified }

ReleaseCause ::=                 ENUMERATED {
    normalEvent,
    unspecified,
    pre-emptiveRelease,
    congestion,
    re-establishmentReject,
    directedsignallingconnectionre-establishment,
    userInactivity,
    spare }

RF-Capability ::=                SEQUENCE {
    fddRF-Capability                SEQUENCE {
        ue-PowerClass              UE-PowerClass,
        txRxFrequencySeparation    TxRxFrequencySeparation
    }
    tddRF-Capability                SEQUENCE {
        ue-PowerClass              UE-PowerClass,
        radioFrequencyBandTDDList  RadioFrequencyBandTDDList,
        chipRateCapability          ChipRateCapability
    }
}

RF-Capability-r4-ext ::=          SEQUENCE {
    tddRF-Capability                SEQUENCE {
        ue-PowerClass              UE-PowerClass,
        radioFrequencyBandTDDList  RadioFrequencyBandTDDList,
        chipRateCapability          ChipRateCapability
    }
}

RLC-Capability ::=               SEQUENCE {
    totalRLC-AM-BufferSize          TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize           MaximumRLC-WindowSize,
    maximumAM-EntityNumber          MaximumAM-EntityNumberRLC-Cap
}

RLC-Capability-r5-ext ::=         SEQUENCE {
    totalRLC-AM-BufferSize          TotalRLC-AM-BufferSize-r5-ext
}

RRC-MessageSequenceNumber ::=    INTEGER (0..15)

RRC-MessageSequenceNumberList ::= SEQUENCE (SIZE (4..5)) OF

```

```

RRC-MessageSequenceNumber
RRC-StateIndicator ::= ENUMERATED {
    cell-DCH, cell-FACH, cell-PCH, ura-PCH }
RRC-TransactionIdentifier ::= INTEGER (0..3)
S-RNTI ::= BIT STRING (SIZE (20))
S-RNTI-2 ::= BIT STRING (SIZE (10))
SecurityCapability ::= SEQUENCE {
    cipheringAlgorithmCap BIT STRING {
        spare15(0),
        spare14(1),
        spare13(2),
        spare12(3),
        spare11(4),
        spare10(5),
        spare9(6),
        spare8(7),
        spare7(8),
        spare6(9),
        spare5(10),
        spare4(11),
        spare3(12),
        spare2(13),
        uea1(14),
        uea0(15)
    } (SIZE (16)),
    integrityProtectionAlgorithmCap BIT STRING {
        spare15(0),
        spare14(1),
        spare13(2),
        spare12(3),
        spare11(4),
        spare10(5),
        spare9(6),
        spare8(7),
        spare7(8),
        spare6(9),
        spare5(10),
        spare4(11),
        spare3(12),
        spare2(13),
        uia1(14),
        spare0(15)
    } (SIZE (16))
}
SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported NULL,
    supported SEQUENCE {
        maxNoSCCPCH-RL MaxNoSCCPCH-RL,
        -- simultaneousSCCPCH-DPCH-DPDCH-Reception is applicable only if
        -- the IE Support of PDSCH = TRUE
        simultaneousSCCPCH-DPCH-DPDCH-Reception BOOLEAN
    }
}
SRNC-Identity ::= BIT STRING (SIZE (12))
START-Value ::= BIT STRING (SIZE (20))
STARTList ::= SEQUENCE (SIZE (1..maxCNdomains)) OF
    STARTSingle
STARTSingle ::= SEQUENCE {
    cn-DomainIdentity CN-DomainIdentity,
    start-Value START-Value
}
SystemSpecificCapUpdateReq ::= ENUMERATED {
    gsm }
SystemSpecificCapUpdateReqList ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
    SystemSpecificCapUpdateReq

```



```

T-300 ::=
    ENUMERATED {
        ms100, ms200, ms400, ms600, ms800,
        ms1000, ms1200, ms1400, ms1600,
        ms1800, ms2000, ms3000, ms4000,
        ms6000, ms8000 }

T-301 ::=
    ENUMERATED {
        ms100, ms200, ms400, ms600, ms800,
        ms1000, ms1200, ms1400, ms1600,
        ms1800, ms2000, ms3000, ms4000,
        ms6000, ms8000, spare }

T-302 ::=
    ENUMERATED {
        ms100, ms200, ms400, ms600, ms800,
        ms1000, ms1200, ms1400, ms1600,
        ms1800, ms2000, ms3000, ms4000,
        ms6000, ms8000, spare }

T-304 ::=
    ENUMERATED {
        ms100, ms200, ms400,
        ms1000, ms2000, spare3, spare2, spare1 }

T-305 ::=
    ENUMERATED {
        noUpdate, m5, m10, m30,
        m60, m120, m360, m720 }

T-307 ::=
    ENUMERATED {
        s5, s10, s15, s20,
        s30, s40, s50, spare }

T-308 ::=
    ENUMERATED {
        ms40, ms80, ms160, ms320 }

T-309 ::=
    INTEGER (1..8)

T-310 ::=
    ENUMERATED {
        ms40, ms80, ms120, ms160,
        ms200, ms240, ms280, ms320 }

T-311 ::=
    ENUMERATED {
        ms250, ms500, ms750, ms1000,
        ms1250, ms1500, ms1750, ms2000 }

-- The value 0 for T-312 is not used in this version of the specification
T-312 ::=
    INTEGER (0..15)

T-313 ::=
    INTEGER (0..15)

T-314 ::=
    ENUMERATED {
        s0, s2, s4, s6, s8,
        s12, s16, s20 }

T-315 ::=
    ENUMERATED {
        s0, s10, s30, s60, s180,
        s600, s1200, s1800 }

T-316 ::=
    ENUMERATED {
        s0, s10, s20, s30, s40,
        s50, s-inf, spare }

T-317 ::=
    ENUMERATED {
        s0, s10, s30, s60, s180,
        s600, s1200, s1800 }

T-CPCH ::=
    ENUMERATED {
        ct0, ct1 }

TMSI-and-LAI-GSM-MAP ::=
    SEQUENCE {
        tmsi
        lai
    }

TMSI-DS-41 ::=
    OCTET STRING (SIZE (2..17))

TotalRLC-AM-BufferSize ::=
    ENUMERATED {
        kb2, kb10, kb50, kb100,

```

```

        kb150, kb500, kb1000, spare }

TotalRLC-AM-BufferSize-r5-ext ::= ENUMERATED {
        kb200, kb300, kb400, kb750}

TotalBufferSize ::= ENUMERATED {
        kb50, kb100, kb150, kb200,
        kb300, spare3, spare2, spare1 }

-- Actual value TransmissionProbability = IE value * 0.125
TransmissionProbability ::= INTEGER (1..8)

TransportChannelCapability ::= SEQUENCE {
        dl-TransChCapability    DL-TransChCapability,
        ul-TransChCapability    UL-TransChCapability
}

TurboSupport ::= CHOICE {
        notSupported           NULL,
        supported              MaxNoBits
}

TxRxFrequencySeparation ::= ENUMERATED {
        mhz190default, mhz174-8-205-2medium-variable,
        mhz134-8-245-2full-variable }

U-RNTI ::= SEQUENCE {
        srnc-Identity          SRNC-Identity,
        s-RNTI                 S-RNTI
}

U-RNTI-Short ::= SEQUENCE {
        srnc-Identity          SRNC-Identity,
        s-RNTI-2              S-RNTI-2
}

UE-ConnTimersAndConstants ::= SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
-- t-301 and n-301 should not be used by the UE in this version of the specification
        t-301                  T-301                DEFAULT ms2000,
        n-301                  N-301                DEFAULT 2,
        t-302                  T-302                DEFAULT ms4000,
        n-302                  N-302                DEFAULT 3,
        t-304                  T-304                DEFAULT ms2000,
        n-304                  N-304                DEFAULT 2,
        t-305                  T-305                DEFAULT m30,
        t-307                  T-307                DEFAULT s30,
        t-308                  T-308                DEFAULT ms160,
        t-309                  T-309                DEFAULT 5,
        t-310                  T-310                DEFAULT ms160,
        n-310                  N-310                DEFAULT 4,
        t-311                  T-311                DEFAULT ms2000,
        t-312                  T-312                DEFAULT 1,
        -- n-312 shall be ignored if n-312 in UE-ConnTimersAndConstants-v3a0ext is present, and the
        -- value of that element shall be used instead.
        n-312                  N-312                DEFAULT s1,
        t-313                  T-313                DEFAULT 3,
        n-313                  N-313                DEFAULT s20,
        t-314                  T-314                DEFAULT s12,
        t-315                  T-315                DEFAULT s180,
        -- n-315 shall be ignored if n-315 in UE-ConnTimersAndConstants-v3a0ext is present, and the
        -- value of that element shall be used instead.
        n-315                  N-315                DEFAULT s1,
        t-316                  T-316                DEFAULT s30,
        t-317                  T-317                DEFAULT s180
}

UE-ConnTimersAndConstants-v3a0ext ::= SEQUENCE {
        n-312                  N-312ext            OPTIONAL,
        n-315                  N-315ext            OPTIONAL
}

UE-ConnTimersAndConstants-r5 ::= SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
-- t-301 and n-301 should not be used by the UE in this version of the specification

```

```

t-301          T-301          DEFAULT ms2000,
n-301          N-301          DEFAULT 2,
t-302          T-302          DEFAULT ms4000,
n-302          N-302          DEFAULT 3,
t-304          T-304          DEFAULT ms2000,
n-304          N-304          DEFAULT 2,
t-305          T-305          DEFAULT ms30,
t-307          T-307          DEFAULT s30,
t-308          T-308          DEFAULT ms160,
t-309          T-309          DEFAULT 5,
t-310          T-310          DEFAULT ms160,
n-310          N-310          DEFAULT 4,
t-311          T-311          DEFAULT ms2000,
t-312          T-312          DEFAULT 1,
n-312          N-312-r5      DEFAULT s1,
t-313          T-313          DEFAULT 3,
n-313          N-313          DEFAULT s20,
t-314          T-314          DEFAULT s12,
t-315          T-315          DEFAULT s180,
n-315          N-315-r5      DEFAULT s1,
t-316          T-316          DEFAULT s30,
t-317          T-317          DEFAULT s180
}

UE-IdleTimersAndConstants ::= SEQUENCE {
  t-300          T-300,
  n-300          N-300,
  t-312          T-312,
  -- n-312 shall be ignored if n-312 in UE-IdleTimersAndConstants-v3a0ext is present, and the
  -- value of that element shall be used instead.
  n-312          N-312
}

UE-IdleTimersAndConstants-v3a0ext ::= SEQUENCE {
  n-312          N-312ext          OPTIONAL
}

UE-MultiModeRAT-Capability ::= SEQUENCE {
  multiRAT-CapabilityList      MultiRAT-Capability,
  multiModeCapability          MultiModeCapability
}

UE-PowerClass ::= INTEGER (1..4)

UE-PowerClass-v370 ::= ENUMERATED {class1, class2, class3, class4,
  spare4, spare3, spare2, spare1 }

UE-RadioAccessCapability ::= SEQUENCE {
  pdcp-Capability          PDCP-Capability,
  rlc-Capability           RLC-Capability,
  transportChannelCapability TransportChannelCapability,
  rf-Capability            RF-Capability,
  physicalChannelCapability PhysicalChannelCapability,
  ue-MultiModeRAT-Capability UE-MultiModeRAT-Capability,
  securityCapability       SecurityCapability,
  ue-positioning-Capability UE-Positioning-Capability,
  measurementCapability    MeasurementCapability          OPTIONAL
}

UE-RadioAccessCapabilityInfo ::= SEQUENCE {
  ue-RadioAccessCapability      UE-RadioAccessCapability,
  ue-RadioAccessCapability-v370ext UE-RadioAccessCapability-v370ext
}

UE-RadioAccessCapability-v370ext ::= SEQUENCE {
  ue-RadioAccessCapabBandFDDList UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext ::= SEQUENCE {
  ue-PositioningCapabilityExt-v380 UE-PositioningCapabilityExt-v380
}

UE-RadioAccessCapability-v3a0ext ::= SEQUENCE {
  ue-PositioningCapabilityExt-v3a0 UE-PositioningCapabilityExt-v3a0
}

UE-PositioningCapabilityExt-v380 ::= SEQUENCE {
  rx-tx-TimeDifferenceType2Capable BOOLEAN
}

```

```

}

UE-PositioningCapabilityExt-v3a0 ::= SEQUENCE {
    validity-CellPCH-UraPCH      ENUMERATED { true }
}

UE-RadioAccessCapabBandFDDList ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
    UE-RadioAccessCapabBandFDD

UE-RadioAccessCapabBandFDD ::= SEQUENCE{
    radioFrequencyBandFDD      RadioFrequencyBandFDD,
    fddRF-Capability           SEQUENCE {
        ue-PowerClass          UE-PowerClass-v370,
        txRxFrequencySeparation TxRxFrequencySeparation
    } OPTIONAL,
    measurementCapability      MeasurementCapability-v370
}

UE-RadioAccessCapability-r4-ext ::= SEQUENCE {
    pdcp-Capability-r4-ext     PDCP-Capability-r4-ext,
    rf-Capability              RF-Capability-r4-ext,
    physicalChannelCapability-LCR PhysicalChannelCapability-LCR-r4,
    measurementCapability-r4-ext MeasurementCapability-r4-ext OPTIONAL
}

UE-RadioAccessCapability-v4xyext ::= SEQUENCE {
    -- R99 UEs shall include IE "ue-TestLevelIndicator"
    accessStratumReleaseIndicator AccessStratumReleaseIndicator
}

UE-RadioAccessCapability-r5-ext ::= SEQUENCE {
    dl-CapabilityWithSimultaneousHS-DSCHConfig DL-CapabilityWithSimultaneousHS-DSCHConfig
    OPTIONAL,
    pdcp-Capability-r5-ext           PDCP-Capability-r5-ext,
    rlc-Capability-r5-ext            RLC-Capability-r5-ext,
    physicalChannelCapability        PhysicalChannelCapability-hspdsch-r5
}

UL-PhysChCapabilityFDD ::= SEQUENCE {
    maxNoDPDCH-BitsTransmitted      MaxNoDPDCH-BitsTransmitted,
    supportOfPCPCH                   BOOLEAN
}

UL-PhysChCapabilityTDD ::= SEQUENCE {
    maxTS-PerFrame                   MaxTS-PerFrame,
    maxPhysChPerTimeslot             MaxPhysChPerTimeslot,
    minimumSF                         MinimumSF-UL,
    supportOfPUSCH                   BOOLEAN
}

UL-PhysChCapabilityTDD-LCR-r4 ::= SEQUENCE {
    maxTS-PerSubFrame                MaxTS-PerSubFrame-r4,
    maxPhysChPerTimeslot             MaxPhysChPerTimeslot,
    minimumSF                         MinimumSF-UL,
    supportOfPUSCH                   BOOLEAN,
    supportOf8PSK                    BOOLEAN
}

UL-TransChCapability ::= SEQUENCE {
    maxNoBitsTransmitted              MaxNoBits,
    maxConvCodeBitsTransmitted        MaxNoBits,
    turboEncodingSupport              TurboSupport,
    maxSimultaneousTransChs           MaxSimultaneousTransChsUL,
    modeSpecificInfo                  CHOICE {
        fdd                            NULL,
        tdd                            SEQUENCE {
            maxSimultaneousCCTrCH-Count MaxSimultaneousCCTrCH-Count
        }
    },
    maxTransmittedBlocks              MaxTransportBlocksUL,
    maxNumberOfTFC                    MaxNumberOfTFC-UL,
    maxNumberOfTF                      MaxNumberOfTF
}

UE-Positioning-Capability ::= SEQUENCE {
    standaloneLocMethodsSupported     BOOLEAN,
    ue-BasedOTDOA-Supported           BOOLEAN,
    networkAssistedGPS-Supported      NetworkAssistedGPS-Supported,
}

```

```
    supportForUE-GPS-TimingOfCellFrames    BOOLEAN,
    supportForIPDL                          BOOLEAN
}

UE-SecurityInformation ::=          SEQUENCE {
    start-CS                               START-Value
}

URA-UpdateCause ::=              ENUMERATED {
    changeOfURA,
    periodicURAUpdate,
    dummy,
    spare1 }

UTRAN-DRX-CycleLengthCoefficient ::= INTEGER (3..9)

WaitTime ::=                       INTEGER (0..15)
```