TSG-RAN Meeting #27 **RP-050087**
Tokyo, Japan, 09-11 March 2005 **Agenda items 9.1.1.3/5**

Source: TSG-RAN WG2

Title: CR to 25.331 on additional frequency bands

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.331	2532	-	Rel-6	Additional Frequency Bands	C	6.4.0	6.5.0	R2-050691	UMTS900, UMTS2600

3GPP TSG-RAN2 Meeting #46
Scottsdale, U.S.A, 14-18 February

Tdoc ⌘ R2-050691

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.331** **CR** **2532** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Additional Frequency Bands
Source:	⌘	RAN WG2
Work item code:	⌘	UMTS900, UMTS2600.
Date:	⌘	2/19/2005
Category:	⌘	**C**
Release:	⌘	Rel-6

Use one 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 one of the following releases:
Ph2 (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)
Rel-7 (Release 7)

Reason for change:	⌘	There are two more spare values left in existing IE "UE radio access capability extension" for indicating the supported frequency bands, and addition of two more frequency bands is already foreseen (UMTS900 and UMTS2600). New mechanism is needed to introduce more frequency bands in the future.
Summary of change:	⌘	1. New IE "Frequency Band 2" is added to the IE "UE radio access capability extension", to allow the additional 15 frequency bands. 2. "Frequency Band Indicator 2" is added to SIB5, SIB6, and SIB5bis. All the spare values are replaced with "virtual" value, because the UE ignores the spare value in the IE sent on BCCH. 3. The very last spare value of the IE "Frequency Band Indicator" is changed to "extension indicator", so the UEs that supports Band I-VII, but not beyond Band VIII, can understand that it is not allowed to camp on the cell in the frequency band beyond Band VIII. The UE behaviour regarding the IE "Frequency Band Indicator" is changed to take this into account.
Consequences if not approved:	⌘	It becomes impossible to add any more frequency band after Band VIII is added.

Clauses affected:	⌘	8.1.1.6.5, 8.1.1.6.6, 10.2.48.8.8, 10.2.48.8.9, 10.3.3.21a, 10.3.3.42a, 10.3.6.35b, 10.3.6.x, 11.2, 11.3, 11.5

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			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.

8.1.1.6.5 System Information Block type 5 and 5bis

The UE should store all relevant IEs included in this system information block. The UE shall:

1> if the IE "Frequency band indicator" is included and if the frequency band indicated in the IE is not part of the frequency bands supported in the UE radio access capability; or

1> if the IE "Frequency band indicator2" is included and if the frequency band indicated in the IE is not part of the frequency bands supported in the UE radio access capability; or

1> if the IE "Frequency band indicator" is included and set to “extension indicator”, and the UE do not support any frequency bands beyond Band VIII; or

1> if the IE "Frequency band indicator" is not included in System Information Block type 5, the DL frequency is on the 2.1 GHz band, and Band I is not part of the frequency bands supported by the UE in the UE radio access capability, or

1> if the IE "Frequency band indicator" is not included in System Information Block type 5bis, the DL frequency is on the 2.1 GHz band, and Band IV is not part of the frequency bands supported by the UE in the UE radio access capability:

2> consider the cell to be barred according to [4]; and

2> consider the barred cell as using the value "not allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:

2> read and act on information sent in System Information Block type 6.

1> replace the TFS of the RACH with the one stored in the UE if any;

1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL_FACH state;

1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;

1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;

1> replace the TFS of the FACH/PCH with the one stored in the UE if any;

1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL_PCH or URA_PCH state;

1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL_PCH or URA_PCH state;

1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL_FACH state;

1> in 3.84 Mcps TDD:

2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used.

1> in TDD:

2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:

3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

The UE shall:

1> if the IE "Secondary CCPCH system information MBMS" is included:

2> apply the Secondary CCPCH and FACH indicated by the IE "FACH carrying MCCH" for receiving MCCH.

1> otherwise, if the IE "Secondary CCPCH system information" includes the IE "MCCH configuration information":

2> apply the Secondary CCPCH and FACH indicated by the IE “MCCH configuration information” for receiving MCCH.

8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

1> if the IE "Frequency band indicator" is included:

2> if the frequency band indicated in the IE is not part of the frequency bands supported in the UE radio access capability; or~~:~~

2> if the IE "Frequency band indicator2" is included and if the frequency band indicated in the IE is not part of the frequency bands supported in the UE radio access capability; or

2> if the IE "Frequency band indicator" is included and set to “extension indicator”, and the UE does not support any frequency bands beyond Band VIII:

3> consider the cell to be barred according to [4]; and

3> consider the barred cell as using the value "not allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

1> replace the TFS of the RACH with the one stored in the UE if any;

1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;

1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);

1> replace the TFS of the FACH/PCH with the one stored in the UE if any;

1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL_PCH or URA_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;

1> start to monitor its paging occasions on the selected PICH if the UE is in CELL_PCH or URA_PCH state;

1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;

1> in 3.84 Mcps TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;

1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

10.2.48.8.8 System Information Block type 5 and 5bis

The system information block type 5 contains parameters for the configuration of the common physical channels in the cell. System information block type 5bis uses the same structure as System information block type 5. System information block type 5bis is sent instead of system information block type 5 in networks that use Band IV.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
SIB6 Indicator	MP		Boolean	TRUE indicates that SIB6 is broadcast in the cell.	
PhyCH information elements					
PICH Power offset	MP		PICH Power offset 10.3.6.50		
CHOICE *mode*	MP				
>FDD					
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	This AICH Power offset also indicates the power offset for AP-AICH and for CD/CA-ICH.	
>TDD					
>>PUSCH system information	OP		PUSCH system information 10.3.6.66		
>>PDSCH system information	OP		PDSCH system information 10.3.6.46		
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79		
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1	
PRACH system information list	MP		PRACH system		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			information list 10.3.6.55		
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.72	Note 2	
CBS DRX Level 1 information	CV-*CTCH*		CBS DRX Level 1 information 10.3.8.3		
Frequency band indicator	OP		Frequency band indicator 10.3.6.35b		REL-6
Frequency band indicator 2	OP		Frequency band indicator 2 10.3.6.x		REL-6
Secondary CCPCH system information MBMS	OP		Secondary CCPCH system information MBMS 10.3.6.72a	S-CCPCH dedicated to MBMS. Note 2	REL-6

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

NOTE 2: There is only one MCCH in a cell, which may either be mapped on to an S-CCPCH also used for non-MBMS purposes or to an S-CCPCH dedicated to MBMS. In the first case the MCCH configuration is specified within the IE "Secondary CCPCH system information", in the latter case the MCCH configuration is provided within the IE "Secondary CCPCH system information MBMS".

Condition	Explanation
CTCH	The IE is mandatory present if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed in the message

10.2.48.8.9 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
PhyCH information elements					
PICH Power offset	MP		PICH Power offset 10.3.6.50		
CHOICE *mode*	MP				
>FDD					
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	This AICH Power offset also indicates the power offset for AP-AICH and for CD/CA-ICH.	
>TDD					

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>PUSCH system information	OP		PUSCH system information 10.3.6.66		
>>PDSCH system information	OP		PDSCH system information 10.3.6.46		
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79		
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1	
PRACH system information list	OP		PRACH system information list 10.3.6.55		
Secondary CCPCH system information	OP		Secondary CCPCH system information 10.3.6.72		
CBS DRX Level 1 information	CV-*CTCH*		CBS DRX Level 1 information 10.3.8.3		
Frequency band indicator	OP		Frequency band indicator 10.3.6.35b		REL-6
Frequency band indicator 2	OP		Frequency band indicator 2 10.3.6.x		REL-6

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory present if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

10.3.3.21a Measurement capability extension

This IE may be used to replace the measurement capability information provided within IE "Measurement capability".

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
FDD measurements	MP	1 to <maxFreqBandsFDD>			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>FDD Frequency band	MD		Enumerated(Band I, Band II,	The default value is the same as indicated in the IE "Frequency band" included in the IE " UE radio access capability extension". Band numbering is defined in [21]. ~~Two~~ One spare value~~s are~~ is needed	
			Band III,		REL-5
			Band VI, Band IV, Band V)	The default value is the same as R99, if the IE "FDD Frequency band 2" below is not included. The default value is the same as the IE "FDD Frequency band 2", if the IE "FDD Frequency band 2" is included.	REL-6
>FDD Frequency band 2	MD		Enumerated(Extension Indicator)	The default value is the same as indicated in the IE "Frequency band 2" included in the IE " UE radio access capability extension"., if the IE "FDD Frequency band" above is not included. The default value is the same as the IE "FDD Frequency band", if the IE "FDD Frequency band" is included. Fifteen spare values are needed	REL-6
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"	
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"	
TDD measurements	CV-*tdd_sup*	1 to <maxFreqBands TDD>			
>TDD Frequency band	MP		Enumerated(a, b, c)		
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"	
GSM measurements	CV-*gsm_sup*	1 to <maxFreqBands GSM>			
>GSM Frequency band	MP		Enumerated(GSM450, GSM480, GSM850, GSM900P, GSM900E, GSM1800, GSM1900)	as defined in [45]. Nine spare values are needed.	
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"	
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"	
Multi-carrier measurement	CV-*mc_sup*				
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on multi-carrier	
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on multi-carrier	

Condition	Explanation
tdd_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "TDD" or "FDD/TDD". Otherwise this field is not needed in the message.
gsm_sup	The IE is mandatory present if the IE "Support of GSM" has the value TRUE. Otherwise this field is not needed in the message.
mc_sup	The IE is mandatory present if the IE "Support of multi-carrier" has the value TRUE. Otherwise this field is not needed in the message.

10.3.3.42a UE radio access capability extension

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Frequency band specific capability list	MP	1 to <maxFreqbandsFDD>			
>Frequency band	MP		Enumerated(Band I, Band II,	~~Two~~ One spare value~~s~~ is ~~are~~ needed	
			Band III,		REL-5
			Band VI, Band IV, Band V)		REL-6
>Frequency band 2	OP		Enumerated(Extension Indicator)	This IE indicates the supported frequency bands beyond Band VIII (yet to be defined) Fifteen spare values are needed	REL-6
>RF capability FDD extension	MD		RF capability FDD extension 10.3.3.33a	the default values are the same values as in the immediately preceding IE "RF capability FDD extension"; the first occurrence is MP	
>Measurement capability extension	MP		Measurement capability extension 10.3.3.21a		

10.3.6.35b Frequency band indicator

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Frequency band indicator	MP		Enumerated(Band I, Band II, Band III, Band VI, Band IV, Band V, Band VII, extension indicator)	~~Two spare values are needed~~Band VII is yet to be defined in this version of the specification	REL-6

10.3.6.x Frequency band indicator 2

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Frequency band indicator 2	MP		Enumerated(Band VIII, Band IX, Band X, Band XI, Band XII, Band XIII, Band XIV, Band XV, Band XVI, Band XVII, Band XVIII, Band XIX, Band XX, Band XXI, Band XXII, extension indicator)	Band VIII-Band XXII is yet to be defined in this version of the specification	REL-6

11.2 PDU definitions

```
PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
IMPORTS

-- User Equipment IEs :
UE-RadioAccessCapabBandFDDList2,
UE-RadioAccessCapabBandFDDList-ext,



-- **************************************************
--
-- RRC CONNECTION SETUP COMPLETE
--
-- **************************************************

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            rrcConnectionSetupComplete-v370ext  RRCConnectionSetupComplete-v370ext,
            v380NonCriticalExtensions           SEQUENCE {
                rrcConnectionSetupComplete-v380ext  RRCConnectionSetupComplete-v380ext-IEs,
                -- Reserved for future non critical extension
                v3a0NonCriticalExtensions           SEQUENCE {
                    rrcConnectionSetupComplete-v3a0ext  RRCConnectionSetupComplete-v3a0ext-IEs,
                    laterNonCriticalExtensions          SEQUENCE {
                        -- Container for additional R99 extensions
                        rrcConnectionSetupComplete-r3-add-ext       BIT STRING
                                        (CONTAINING RRCConnectionSetupComplete-r3-add-ext-IEs)
    OPTIONAL,
                        v3g0NonCriticalExtensions           SEQUENCE {
                            rrcConnectionSetupComplete-v3g0ext  RRCConnectionSetupComplete-v3g0ext-
IEs,
                            v4b0NonCriticalExtensions           SEQUENCE {
                                rrcConnectionSetupComplete-v4b0ext
                                                                RRCConnectionSetupComplete-v4b0ext-
IEs,
                                v590NonCriticalExtensions           SEQUENCE {
```

```
                                    rrcConnectionSetupComplete-v590ext
                                                                RRCConnectionSetupComplete-v590ext-
IEs,
                                    nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                                }       OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

RRCConnectionSetupComplete-r3-add-ext-IEs ::= SEQUENCE {
        rrcConnectionSetupComplete-v6xyext      RRCConnectionSetupComplete-v6xyext-IEs  OPTIONAL,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

RRCConnectionSetupComplete-v6xyext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v6xyext        UE-RadioAccessCapability-v6xyext
}

UE-RadioAccessCapability-v6xyext ::=    SEQUENCE {
    ue-RadioAccessCapabBandFDDList2     UE-RadioAccessCapabBandFDDList2,
    -- This IE shall be included if the UE also supports Band I-VII
    ue-RadioAccessCapabBandFDDList-ext  UE-RadioAccessCapabBandFDDList-ext OPTIONAL
}


-- **************************************************
--
-- UE CAPABILITY INFORMATION
--
-- **************************************************

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList
    OPTIONAL,
        v370NonCriticalExtensions           SEQUENCE {
            ueCapabilityInformation-v370ext UECapabilityInformation-v370ext,
            v380NonCriticalExtensions           SEQUENCE {
                ueCapabilityInformation-v380ext     UECapabilityInformation-v380ext-IEs,
                v3a0NonCriticalExtensions           SEQUENCE {
                    ueCapabilityInformation-v3a0ext     UECapabilityInformation-v3a0ext-IEs,
                    laterNonCriticalExtensions          SEQUENCE {
                        -- Container for additional R99 extensions
                        ueCapabilityInformation-r3-add-ext      BIT STRING      (CONTAINING
UECapabilityInformation-r3-add-ext-IEs) OPTIONAL,
                        -- Reserved for future non critical extension
                        v4b0NonCriticalExtensions           SEQUENCE {
                            ueCapabilityInformation-v4b0ext     UECapabilityInformation-v4b0ext,
                            v590NonCriticalExtensions           SEQUENCE {
                                ueCapabilityInformation-v590ext     UECapabilityInformation-v590ext,
                                nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

UECapabilityInformation-r3-add-ext-IEs ::= SEQUENCE {
        ueCapabilityInformation-v6xyext     UECapabilityInformation-v6xyext-IEs     OPTIONAL,
        nonCriticalExtensions               SEQUENCE {}     OPTIONAL
}

UECapabilityInformation-v6xyext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v6xyext        UE-RadioAccessCapability-v6xyext
}
```

11.3 Information element definitions

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

RadioFrequencyBandFDD ::=           ENUMERATED {
    -- fdd2100, fdd1900, fdd1800 correspond to Band I, Band II and Band III respectively
                                        fdd2100,
                                        fdd1900,
                                        fdd1800,
                                        bandVI,
                                        bandIV,
                                        bandV,
                                        spare2, spare1bandVII, extension-indicator }


UE-RadioAccessCapabBandFDDList2 ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        UE-RadioAccessCapabBandFDD2

UE-RadioAccessCapabBandFDD2 ::= SEQUENCE{
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2,
    fddRF-Capability                    SEQUENCE {
        ue-PowerClass                       UE-PowerClassExt,
        txRxFrequencySeparation             TxRxFrequencySeparation
    }                                                                   OPTIONAL,
    measurementCapability2              MeasurementCapabilityExt2
}

RadioFrequencyBandFDD2 ::=          ENUMERATED {
                                        bandVIII,
                                        bandIX,
                                        bandX,
                                        bandXI,
                                        bandXII,
                                        bandXIII,
                                        bandXIV,
                                        bandXV,
                                        bandXVI,
                                        bandXVII,
                                        bandXVIII,
                                        bandXIX,
                                        bandXX,
                                        bandXXI,
                                        bandXXII,
                                        extension-indicator
}

MeasurementCapabilityExt2 ::=       SEQUENCE{
    compressedModeMeasCapabFDDList      CompressedModeMeasCapabFDDList2,
    compressedModeMeasCapabTDDList      CompressedModeMeasCapabTDDList  OPTIONAL,
    compressedModeMeasCapabGSMList      CompressedModeMeasCapabGSMList  OPTIONAL,
    compressedModeMeasCapabMC           CompressedModeMeasCapabMC       OPTIONAL
}

CompressedModeMeasCapabFDDList2 ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD2

CompressedModeMeasCapabFDD2 ::=     SEQUENCE {
--UE may omit both IEs if this IE indicates the compressed mode capability within
--the same frequency band.  Otherwise, the UE shall include either one of the following OPTIONAL IEs.
    radioFrequencyBandFDD               RadioFrequencyBandFDD   OPTIONAL,
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2  OPTIONAL,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

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

UE-RadioAccessCapabBandFDD-ext ::= SEQUENCE {
    radioFrequencyBandFDD               RadioFrequencyBandFDD,
    compressedModeMeasCapabFDDList-ext  CompressedModeMeasCapabFDDList-ext
}
```

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

CompressedModeMeasCapabFDD-ext ::=      SEQUENCE {
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

-- ************************************************
--
--     OTHER INFORMATION ELEMENTS (10.3.8)
--
-- ************************************************

SysInfoType5 ::=                    SEQUENCE {
        sib6indicator                   BOOLEAN,
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
    -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, the following IEs should be absent
    --   and the info included in the tdd128SpecificInfo instead.
    -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should also be
    -- included.
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        -- cbs-DRX-Level1Information is conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType5-v4b0ext            SysInfoType5-v4b0ext-IEs        OPTIONAL,
        -- Extension mechanism for non- rel-4 information
            v590NonCriticalExtensions       SEQUENCE {
                sysInfoType5-v590ext            SysInfoType5-v590ext-IEs        OPTIONAL,
                v6xzNonCriticalExtensions       SEQUENCE {
                    sysInfoType5-v6xzext            SysInfoType5-v6xzext-IEs        OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        sysInfoType5-v6xyext            SysInfoType5-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

SysInfoType5-v6xzext-IEs ::= SEQUENCE {
--Note to the editor: Following IE is added for Release independent feature,
-- therefore shall not be mixed with other REL-6 non-critical extensions
    frequencyBandIndicator2         RadioFrequencyBandFDD2
}

-- SysInfoType5bis uses the same structure as SysInfoType5
SysInfoType5bis ::= SysInfoType5

SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,
                -- dummy is not used in this version of specification, it should
                -- not be sent and if received it should be ignored.
                dummy                           CSICH-PowerOffset           OPTIONAL
            },
            tdd                             SEQUENCE {
                -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, pusch-SysInfoList-SFN,
                -- pdsch-SysInfoList-SFN and openLoopPowerControl-TDD should be absent
```

```
                -- and the info included in the tdd128SpecificInfo instead.
                -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should
                -- also be included.
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList         OPTIONAL,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList        OPTIONAL,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType6-v4b0ext            SysInfoType6-v4b0ext-IEs        OPTIONAL,
        -- Extension mechanism for non- rel-4 information
            v590NonCriticalExtensions   SEQUENCE {
                sysInfoType6-v590ext            SysInfoType6-v590ext-IEs        OPTIONAL,
                v6xynonCriticalExtensions       SEQUENCE {
                    sysInfoType6-v6xyext            SysInfoType6-v6xyext-IEs        OPTIONAL,
                    nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                }                           OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType6-v6xyext-IEs ::= SEQUENCE {
-- Note to the editor: Following IE is added for Release independent feature,
-- therefore shall not be mixed with other REL-6 non-critical extensions
    frequencyBandIndicator2         RadioFrequencyBandFDD2
}
```

11.5 RRC information between network nodes

```
Internode-definitions DEFINITIONS AUTOMATIC TAGS ::=
BEGIN

IMPORTS

UE-RadioAccessCapabBandFDDList2,
UE-RadioAccessCapabBandFDDList-ext,


-- **************************************************
--
-- SRNC Relocation information
--
-- **************************************************
SRNC-RelocationInfo-r3 ::= CHOICE {
    r3                              SEQUENCE {
        sRNC-RelocationInfo-r3          SRNC-RelocationInfo-r3-IEs,
        v380NonCriticalExtensions           SEQUENCE {
            sRNC-RelocationInfo-v380ext SRNC-RelocationInfo-v380ext-IEs,
            -- Reserved for future non critical extension
            v390NonCriticalExtensions           SEQUENCE {
                sRNC-RelocationInfo-v390ext         SRNC-RelocationInfo-v390ext-IEs,
                v3a0NonCriticalExtensions           SEQUENCE {
                    sRNC-RelocationInfo-v3a0ext         SRNC-RelocationInfo-v3a0ext-IEs,
                    v3b0NonCriticalExtensions           SEQUENCE {
                        sRNC-RelocationInfo-v3b0ext         SRNC-RelocationInfo-v3b0ext-IEs,
                        v3c0NonCriticalExtensions           SEQUENCE {
                            sRNC-RelocationInfo-v3c0ext         SRNC-RelocationInfo-v3c0ext-IEs,
                            laterNonCriticalExtensions          SEQUENCE {
                                sRNC-RelocationInfo-v3d0ext         SRNC-RelocationInfo-v3d0ext-IEs,
                                -- Container for additional R99 extensions
                                sRNC-RelocationInfo-r3-add-ext      BIT STRING
                                                    (CONTAINING SRNC-RelocationInfo-v3h0ext-IEs)     OPTIONAL,
                                v3g0NonCriticalExtensions           SEQUENCE {
                                    sRNC-RelocationInfo-v3g0ext         SRNC-RelocationInfo-v3g0ext-IEs,
                                    v4b0NonCriticalExtensions           SEQUENCE {
                                        sRNC-RelocationInfo-v4b0ext         SRNC-RelocationInfo-v4b0ext-IEs,
                                        v590NonCriticalExtensions           SEQUENCE {
                                            sRNC-RelocationInfo-v590ext
                                                                                SRNC-RelocationInfo-v590ext-IEs,
```

```
                                        v5a0NonCriticalExtensions           SEQUENCE {
                                            sRNC-RelocationInfo-v5a0ext
                                                                                SRNC-RelocationInfo-v5a0ext-IEs,
                                            v5b0NonCriticalExtensions           SEQUENCE {
                                                sRNC-RelocationInfo-v5b0ext
                                                                                SRNC-RelocationInfo-v5b0ext-IEs,
                                                v6xyNonCriticalExtensions       SEQUENCE {
                                                    sRNC-RelocationInfo-v6xyext
                                                                                SRNC-RelocationInfo-v6xyext-IEs,
                                                        -- Reserved for future non critical extension
                                                    nonCriticalExtensions           SEQUENCE {}  OPTIONAL
                                                }       OPTIONAL
                                            }       OPTIONAL
                                        }       OPTIONAL
                                    }       OPTIONAL
                                }       OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        },
        later-than-r3                   CHOICE {
            r4                              SEQUENCE {
                sRNC-RelocationInfo-r4          SRNC-RelocationInfo-r4-IEs,
                v4d0NonCriticalExtensions       SEQUENCE {
                    sRNC-RelocationInfo-v4d0ext     SRNC-RelocationInfo-v4d0ext-IEs,
                    -- Container for adding non critical extensions after freezing REL-5
                    sRNC-RelocationInfo-r4-add-ext      BIT STRING          (CONTAINING SRNC-
RelocationInfo-v6xaext-IEs)     OPTIONAL,
                    v590NonCriticalExtensions           SEQUENCE {
                        sRNC-RelocationInfo-v590ext         SRNC-RelocationInfo-v590ext-IEs,
                        v5a0NonCriticalExtensions           SEQUENCE {
                            sRNC-RelocationInfo-v5a0ext         SRNC-RelocationInfo-v5a0ext-IEs,
                            v5b0NonCriticalExtensions           SEQUENCE {
                                sRNC-RelocationInfo-v5b0ext         SRNC-RelocationInfo-v5b0ext-IEs,
                                v6xyNonCriticalExtensions           SEQUENCE {
                                    sRNC-RelocationInfo-v6xyext         SRNC-RelocationInfo-v6xyext-IEs,
                                    nonCriticalExtensions               SEQUENCE {} OPTIONAL
                                }   OPTIONAL
                            }   OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    sRNC-RelocationInfo-r5          SRNC-RelocationInfo-r5-IEs,
                    sRNC-RelocationInfo-r5-add-ext  BIT STRING      OPTIONAL,
                    v5a0NonCriticalExtensions       SEQUENCE {
                        sRNC-RelocationInfo-v5a0ext     SRNC-RelocationInfo-v5a0ext-IEs,
                        v5b0NonCriticalExtensions       SEQUENCE {
                            sRNC-RelocationInfo-v5b0ext     SRNC-RelocationInfo-v5b0ext-IEs,
                            v6xz0NonCriticalExtensions      SEQEUNCE {
                                sRNC-RelocationExtensions-v6xzext   SRNC-RelocationInfo-v6xzext-IEs,
                                v6xyNonCriticalExtensions       SEQUENCE {
                                    sRNC-RelocationInfo-v6xyext     SRNC-RelocationInfo-v6xyext-IEs,
                                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                                }   OPTIONAL
                            }   OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions                  SEQUENCE {}
            }
        }
    }

    SRNC-RelocationInfo-v3h0ext-IEs ::= SEQUENCE {
      tpc-CombinationInfoList     TPC-CombinationInfoList   OPTIONAL,
        v3xy0NonCriticalExtensions  SEQUENCE {
            ue-RadioAccessCapability-v6xyext    UE-RadioAccessCapability-v6yxext    OPTIONAL,
            nonCriticalExtension      SEQUENCE {}         OPTIONAL
        }
    }
```

```
SRNC-RelocationInfo-v6xaext-IEs ::= SEQUENCE {
    ue-RadioAccessCapability-v6xyext    UE-RadioAccessCapability-v6yxext    OPTIONAL,
    nonCriticalExtension                SEQUENCE {}     OPTIONAL
}
```

```
SRNC-RelocationInfo-v6xzext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v6xyext        UE-RadioAccessCapability-v6xyext
}

UE-RadioAccessCapability-v6xyext ::=    SEQUENCE {
    ue-RadioAccessCapabBandFDDList2     UE-RadioAccessCapabBandFDDList2,
-- This IE shall be included if the UE supports Band I-VII
    ue-RadioAccessCapabBandFDDList-ext  UE-RadioAccessCapabBandFDDList-ext OPTIONAL
}
```