TSG RAN Meeting #20 **RP-030223**
Hämeenlinna, Finland, 3 - 6 June, 2003

Title **CRs (Rel-6) to TS 25.123, TS 25.225, TS 25.423 & TS25.433 on "Interference measurement in UpPTS for 1.28Mcps TDD"**
Source **3GPP Support**
Agenda Item **8.9**

WG Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item	WG Status
R4-030413	25.123	303		B	Rel-6	5.4.0	Interference measurement in UpPTS for 1.28Mcps TDD	TEI6	WG4: Agreed
R1-030418	25.225	069		B	Rel-6	5.4.0	Interference measurement in UpPTS for 1.28Mcps TDD	TEI6	WG1: Agreed in principle. To be approved when Rel6 specifications are created
R3-030654	25.423	828		B	Rel-6	5.5.0	Interference measurement in UpPTS for 1.28Mcps TDD	TEI6	WG3: Not treated
R3-030655	25.433	846		B	Rel-6	5.4.0	Interference measurement in UpPTS for 1.28Mcps TDD	TEI6	WG3: Not treated

3GPP TSG RAN WG4 (Radio) Meeting #27 **R4-030413**

Paris, France 19 - 23 May, 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.123** **CR** **303** ⌘ **rev** ⌘ Current version: **5.4.0** ⌘

*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 ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Interference measurement in UpPTS for 1.28Mcps TDD
Source:	⌘	RAN WG4
Work item code:	⌘	TEI6
Date:	⌘	27/05/2003
Category:	⌘	**B**
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:

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:	⌘	The currently defined timeslot ISCP measurement does not include the UpPTS (since the UpPTS does not contain data bursts with midambles), hence there exists no means for the RNC to relate the broadcast target UpPCH receive power to the interference level in the UpPTS. This addition of a UpPTS interference measurement corrects the situation
Summary of change:	⌘	An additional UpPTS interference measurement accuracy and reporting range, applicable in 1.28Mcps TDD only, has been added.
Consequences if not approved:	⌘	There will be no means for the RNC to relate the broadcast target UpPCH receive power level to the amount of interference in the UpPTS.

Clauses affected:	⌘	9.2.14.2			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	25.433, 25.302, 25.331,25.423
		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.

9.2.1.13 AOA measurement for UE positioning for 1.28Mcps TDD option

AOA defines the angle of arrival of the signals from a user at the antenna. The reference direction for this measurement shall be the North. The measurement period shall be 200ms.

9.2.1.13.1 Accuracy requirements

Eight accuracy classes are defined for UTRAN AOA measurement, i.e. accuracy class A to H.

Table 9.44M

Parameter	Unit	Accuracy [degree]	Conditions
UTRAN AOA measurement for UE positioning	degree	Accuracy Class A: +/- 180 degree Accuracy Class B: +/- 90 degree Accuracy Class C: +/- 60 degree Accuracy Class D: +/- 20 degree Accuracy Class E: +/- 10 degree Accuracy Class F: +/- 5 degree Accuracy Class G: +/- 2 degree Accuracy Class H: +/- 1 degree	Over the full range

9.2.1.13.2 Range/mapping

The reporting range for AOA measurement is from 0 ... 360 degree.

The mapping of the measured quantity is defined in table 9.44N.

Table 9.44N

Reported value	Measured quantity value	Unit
AOA_ANGLE _000	0 ≤ AOA_ANGLE < 0,5	degree
AOA_ANGLE _001	0,5 ≤ AOA_ANGLE < 1	degree
AOA_ANGLE _002	1 ≤ AOA_ANGLE < 1,5	degree
…	…	…
AOA_ANGLE _717	358,5 ≤ AOA_ANGLE < 359	degree
AOA_ANGLE _718	359 ≤ AOA_ANGLE < 359,5	degree
AOA_ANGLE _719	359,5 ≤ AOA_ANGLE < 360	degree

9.2.1.14~~.2~~ UpPTS interference (1.28Mcps TDD)

The measurement period shall be 100 ms.

9.2.1.14~~.2~~.1 Absolute accuracy requirements

Table 9.44O: UpPTS interference Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
UpPTS interference	dB	± 6	± 9	-105..-74

Table 9.44P: UpPTS interference Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/1.28 MHz]
UpPTS interference	dB	± 6	± 9	-91..-60

9.2.1.14~~.2~~.2 Range/mapping

The reporting range for UpPTS interference is from -120...-57 dBm.

In table 9.44Q mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44Q

Reported value	Measured quantity value	Unit
UTRAN_UPPTS_LEV_00	UpPTS interference < –120,0	dBm
UTRAN_UPPTS_LEV_01	-120,0 ≤ UpPTS interference < –119,5	dBm
UTRAN_UPPTS_LEV_02	-119,5 ≤ UpPTS interference < –119,0	dBm
…	…	…
UTRAN_UPPTS_LEV_125	-58,0 ≤ UpPTS interference < -57,5	dBm
UTRAN_UPPTS_LEV_126	-57,5 ≤ UpPTS interference < -57,0	dBm
UTRAN_UPPTS_LEV_127	-57,0 ≤ UpPTS interference	dBm

3GPP TSG-RAN1 Meeting #32
Paris, France, 19 – 23 May 2003

Tdoc ⌘R1-030418

CR-Form-v7

CHANGE REQUEST

⌘ **25.225** **CR** **069** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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

Title:	⌘	Interference measurement in UpPTS for 1.28Mcps TDD
Source:	⌘	RAN WG1 (Siemens)
Work item code:	⌘	TEI6
Date:	⌘	19/05/2003
Category:	⌘	**B**
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:

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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:	⌘	The currently defined timeslot ISCP measurement does not include the UpPTS (since the UpPTS does not contain data bursts with midambles), hence there exists no means for the RNC to relate the broadcast target UpPCH receive power to the interference level in the UpPTS. This addition of a UpPTS interference measurement corrects the situation.
Summary of change:	⌘	An additional UpPTS interference measurement, applicable in 1.28Mcps TDD only, has been added.
Consequences if not approved:	⌘	There will be no means for the RNC to relate the broadcast target UpPCH receive power level to the amount of interference in the UpPTS.

Clauses affected:	⌘	5.2.17

Other specs affected: ⌘	Y	N		⌘
	X		Other core specifications	25.433, 25.302, 25.123, 25.423
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

5.2.17 UpPTS interference (1.28Mcps TDD)

Definition	The level of interference in the UpPTS, defined as the difference between the mean received power in the UpPTS and the sum of the estimated mean power levels of all detected UpPCH transmissions. In the case of antenna diversity, the linear average of the UpPTS interference levels calculated for each antenna branch shall be calculated. The reference point for the UpPTS interference measurement shall be the Rx antenna connector.

3GPP TSG-RAN3 Meeting #36
Marne la Vallée, Paris, France, 19th – 23rd May 2003

Tdoc ⌘R3-030654

CR-Form-v7

CHANGE REQUEST

⌘ **25.423** **CR** **828** ⌘ **rev** ⌘ 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:	⌘	Interference measurement in UpPTS for 1.28Mcps TDD
Source:	⌘	Siemens
Work item code:	⌘	TEI6
Date:	⌘	19-23/05/2003
Category:	⌘	**B**
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:

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:	⌘	The currently defined timeslot ISCP measurement does not include the UpPTS (since the UpPTS does not contain data bursts with midambles), hence there exists no means for the RNC to relate the broadcast target UpPCH receive power to the interference level in the UpPTS. This addition of a UpPTS interference measurement corrects the situation.
Summary of change:	⌘	An additional UpPTS interference measurement, applicable in 1.28Mcps TDD only, has been added in the Common Measurement Type IE, Common Measurement Value IE, Measurement Increase/Decrease Threshold IE, and Measurement Threshold IE.
Consequences if not approved:	⌘	There will be no means for the RNC to relate the broadcast target UpPCH receive power level to the amount of interference in the UpPTS.

Clauses affected:	⌘	8.5.2.4, 9.2.1.12C, 9.2.1.12D, 9.2.1.38, 9.2.1.39, 9.3.4, 9.3.6			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 25.123 CR 303 25.225 CR 069 25.302 25.331 25.433 CR 846
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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8.5.2 Common Measurement Initiation

/* partly omitted */

8.5.2.4 Abnormal Conditions

If the COMMON MEASUREMENT INITIATION REQUEST message contains the *SFN-SFN Measurement Threshold Information* IE (in the *Measurement Threshold* IE contained in the *Report Characteristics* IE) and it does not contain at least one IE, the RNC_2 shall reject the procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

If the COMMON MEASUREMENT INITIATION REQUEST message contains the $T_{UTRAN-GPS}$ *Measurement Threshold Information* IE (in the *Measurement Threshold* IE contained in the *Report Characteristics* IE) and it does not contain at least one IE, the RNC_2 shall reject the procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

If the *Common Measurement Type* IE is set to "UTRAN GPS Timing of Cell Frame for UE positioning ", but the $T_{UTRAN-GPS}$ *Measurement Minimum Accuracy Class* IE in the *Common Measurement Accuracy* IE is not received in the COMMON MEASUREMENT INITIATION REQUEST message, the RNC_2 shall reject the Common Measurement Initiation procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

If the Common Measurement Type received in the *Common Measurement Type* IE is not "load", "RT load" or "NRT load Information", and if the Common Measurement Type received in the *Common Measurement Type* IE is not defined in ref. [11] or [15] to be measured on the Common Measurement Object Type indicated in the COMMON MEASUREMENT INITIATION REQUEST message the RNC_2 shall reject the Common Measurement Initiation procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

If the *Common Measurement Type* IE is set to "SFN-SFN Observed Time Difference", but the *Neighbouring Cell Measurement Information* IE is not received in the COMMON MEASUREMENT INITIATION REQUEST message, the RNC_2 shall reject the Common Measurement Initiation procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

The allowed combinations of the Common Measurement Type and Report Characteristics Type are shown in the table below marked with "X". For not allowed combinations, the RNC_2 shall reject the Common Measurement Initiation procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

Table 5: Allowed Common Measurement Type and Report Characteristics Type Combinations

Common measurement type	Report characteristics type								
	On Demand	Periodic	Event A	Event B	Event C	Event D	Event E	Event F	On Modification
Received total wide band power	X	X	X	X	X	X	X	X	
Transmitted Carrier Power	X	X	X	X	X	X	X	X	
UL Timeslot ISCP	X	X	X	X	X	X	X	X	
Load	X	X	X	X	X	X	X	X	
UTRAN GPS Timing of Cell Frames for UE Positioning	X	X							X
SFN-SFN Observed Time Difference	X	X							X
RT load	X	X	X	X	X	X	X	X	
NRT load Information	X	X	X	X	X	X	X	X	
UpPTS interference	X	X	X	X	X	X	X	X	

[TDD - If the Common Measurement Type requires the Time Slot Information but the [3.84Mcps TDD - *Time Slot* IE] [1.28Mcps TDD – *Time Slot LCR* IE] is not provided in the COMMON MEASUREMENT INITIATION REQUEST

message the RNS_2 shall reject the Common Measurement Initiation procedure using the COMMON MEASUREMENT INITIATION FAILURE message.]

If the *SFN* IE is included in the COMMON MEASUREMENT INITIATION REQUEST message and the *Report Characteristics* IE is other than "Periodic", "On Demand" or "On Modification", the RNS_2 shall reject the Common Measurement Initiation procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

8.5.2.4.1 Abnormal Conditions for Iur-g

/* partly omitted */

9.2.1.12C Common Measurement Type

The Common Measurement Type identifies which measurement that shall be performed.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Common Measurement Type			ENUMERATED (UTRAN GPS Timing of Cell Frames for UE Positioning , SFN-SFN Observed Time Difference, load, transmitted carrier power, received total wide band power, UL timeslot ISCP, …, RT Load, NRT Load Information, UpPTS interference)	UL timeslot ISCP shall only be used by TDD. For measurements, which are requested on the Iur-g interface, only load, RT Load and NRT Load information are used. "UpPTS interference" is used by 1.28Mcps TDD only

9.2.1.12D Common Measurement Value

The Common Measurement Value shall be the most recent value for this measurement, for which the reporting criteria were met.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE *Common Measurement Value*				
> $T_{UTRAN-GPS}$ Measurement Value Information				UTRAN only
>>$T_{UTRAN-GPS}$ Measurement Value Information	M		9.2.1.59D	
> SFN-SFN Measurement Value Information				UTRAN only
>>SFN-SFN Measurement Value Information	M		9.2.1.52C	
>Load Value				
>>Load Value	M		9.2.1.33A	
>Transmitted Carrier Power Value				UTRAN only
>>Transmitted Carrier Power Value	M		Transmitted Carrier Power 9.2.1.59A	
>Received Total Wide Band Power Value				UTRAN only
>>Received Total Wide Band Power Value	M		Received Total Wide Band Power 9.2.2.35A	
>UL Timeslot ISCP Value				TDD Only
>>UL Timeslot ISCP Value	M		UL Timeslot ISCP 9.2.3.13A	
>RT Load Value				
>>RT Load Value	M		9.2.1.50B	
>NRT Load Information Value				
>>NRT Load Information Value	M		9.2.1.41I	
>UpPTS interference				1.28Mcps TDD Only
>>UpPTS interference Value	M		INTEGER (0..127)	According to mapping in [24]

/* partly omitted */

9.2.1.38 Measurement Increase/Decrease Threshold

The Measurement Increase/Decrease Threshold defines the threshold that shall trigger Event C or D.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Increase/Decrease Threshold*					-	
>SIR					-	
>>SIR	M		INTEGER(0..62)	0: 0 dB 1: 0.5 dB 2: 1 dB … 62: 31dB	-	
>SIR Error				FDD Only	-	
>>SIR Error	M		INTEGER(0..124)	0: 0 dB 1: 0.5 dB 2: 1 dB … 124: 62 dB	-	
>Transmitted Code Power					-	
>>Transmitted Code Power	M		INTEGER(0..112,...)	0: 0 dB 1: 0.5 dB 2: 1 dB … 112: 56 dB	-	
>RSCP				TDD Only	-	
>>RSCP	M		INTEGER(0..126)	0: 0 dB 1: 0.5 dB 2: 1 dB … 126: 63 dB	-	
>Round Trip Time				FDD Only	-	
>>Round Trip Time	M		INTEGER(0..32766)	0: 0 chips 1: 0.0625 chips 2: 0.1250 chips … 32766: 2047.875 chips	-	
>Load					-	
>>Load	M		INTEGER(0..100)	Units are the same as for the Uplink *Load Value* IE and *Dowlink Load Value* IE.	-	
>Transmitted Carrier Power					-	
>>Transmitted Carrier Power	M		INTEGER(0..100)	According to mapping in [23] and [24].	YES	reject
>Received Total Wide Band Power					-	
>>Received Total Wide Band Power	M		INTEGER(0..620)	0: 0dB 1: 0.1dB 2: 0.2dB ... 620: 62dB	YES	reject
>UL Timeslot ISCP				TDD Only	-	
>>UL Timeslot ISCP			INTEGER(0..126)	0: 0dB 1: 0.5dB 2: 1dB ... 126: 63dB	YES	reject
>RT Load					-	
>>RT Load	M		INTEGER(0..100)	Units are the same as for the *Uplink RT Load Value* IE and *Downlink RT Load Value* IE.	YES	reject

> NRT Load Information					-	
>>NRT Load Information	M		INTEGER(0..3)		YES	reject
>UL Timeslot ISCP				TDD Only	-	
>>UL Timeslot ISCP	M		INTEGER(0..127)	According to mapping in [24]	YES	reject
>RT Load					-	
>>RT Load	M		INTEGER(0..100)	Units are the same as for the *Uplink RT Load Value* IE and *Downlink RT Load Value* IE.	YES	reject
> NRT Load Information					-	
>>NRT Load Information	M		INTEGER(0..3)		YES	~~R~~reject
>UpPTS interference				1.28Mcps TDD Only	–	
>>UpPTS interference Value	M		INTEGER (0..127)	According to mapping in [24]	YES	reject

9.2.1.39 Measurement Threshold

The Measurement Threshold defines which threshold that shall trigger Event A, B, E, F or On Modification.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Threshold*					-	
>SIR					-	
>>SIR	M		INTEGER(0..63)	According to mapping in ref. [23] and [24].	-	
>SIR Error				FDD Only	-	
>>SIR Error	M		INTEGER(0..125)	According to mapping in [23]	-	
>Transmitted Carrier Power					-	
>>Transmitted Code Power	M		INTEGER(0..127)	According to mapping in ref. [23] and [24].	-	
>RSCP				TDD Only	-	
>>RSCP	M		INTEGER(0..127)	According to mapping in ref. [24]	-	
>Rx Timing Deviation				Applicable to 3.84Mcps TDD Only	-	
>>Rx Timing Deviation	M		INTEGER(0..8191)	According to mapping in [24]	-	
>Round Trip Time				FDD Only	-	
>>Round Trip Time	M		INTEGER(0..32767)	According to mapping in [23]	-	
> $T_{UTRAN-GPS}$ Measurement Threshold Information					-	
>>$T_{UTRAN-GPS}$ Measurement Threshold Information	M		9.2.1.59C		YES	reject
> SFN-SFN Measurement Threshold Information					-	
>>SFN-SFN Measurement Threshold Information	M		9.2.1.52B		YES	reject
>Load					-	
>>Load	M		INTEGER(0..100)	0 is the minimum indicated load, and 100 is the maximum indicated load.	YES	reject
>Transmitted Carrier Power					-	
>>Transmitted Carrier Power	M		INTEGER(0..100)	According to mapping in [23] and [24].	YES	reject
>Received Total Wide Band Power					-	
>>Received Total Wide Band Power	M		INTEGER(0..621)	According to mapping in [23] and [24].	YES	reject
>UL Timeslot ISCP				TDD Only	-	
>>UL Timeslot ISCP	M		INTEGER(0..127)	According to mapping in [24]	YES	reject
>RT Load					-	
>>RT Load	M		INTEGER(0..100)		YES	reject
>NRT Load Information					-	
>>NRT Load Information	M		INTEGER(0..3)		YES	reject
>Rx Timing				Applicable to		

Deviation LCR				1.28Mcps TDD Only		
>>Rx Timing Deviation LCR	M		INTEGER(0..255)	According to mapping in [24]	YES	reject
>HS-SICH reception quality				Applicable to TDD Only	–	
>>HS-SICH reception quality	M		INTEGER (0..20)	According to mapping in [23]	YES	~~R~~reject
>UpPTS interference				1.28Mcps TDD Only	–	
>>UpPTS interference Value	M		INTEGER (0..127)	According to mapping in [24]	YES	reject

/* partly omitted */

9.3.4 Information Element Definitions

/* partly omitted */

```
    id-TransportLayerAddress,
    id-TypeOfError,
    id-Angle-Of-Arrival-Value-LCR,
    id-IPDL-TDD-ParametersLCR,
    id-DSCH-InitialWindowSize,
    id-Maximum-DL-Power-TimeslotLCR-InformationItem,
    id-Minimum-DL-Power-TimeslotLCR-InformationItem,
    id-HS-SICH-Reception-Quality,
    id-HS-SICH-Reception-Quality-Measurement-Value,
    id-ExtendedGSMCellIndividualOffset,
    id-UpPTSInterferenceValue

FROM RNSAP-Constants
```

/* partly omitted */

```
-- C

Cause ::= CHOICE {
    radioNetwork        CauseRadioNetwork,
    transport           CauseTransport,
    protocol            CauseProtocol,
    misc                CauseMisc,
    ...
}

CauseMisc ::= ENUMERATED {
    control-processing-overload,
    hardware-failure,
    om-intervention,
    not-enough-user-plane-processing-resources,
    unspecified,
    ...
}

CauseProtocol ::= ENUMERATED {
    transfer-syntax-error,
    abstract-syntax-error-reject,
    abstract-syntax-error-ignore-and-notify,
    message-not-compatible-with-receiver-state,
    semantic-error,
    unspecified,
    abstract-syntax-error-falsely-constructed-message,
    ...
}

CauseRadioNetwork ::= ENUMERATED {
```

```
    unknown-C-ID,
    cell-not-available,
    power-level-not-supported,
    ul-scrambling-code-already-in-use,
    dl-radio-resources-not-available,
    ul-radio-resources-not-available,
    measurement-not-supported-for-the-object,
    combining-resources-not-available,
    combining-not-supported,
    reconfiguration-not-allowed,
    requested-configuration-not-supported,
    synchronisation-failure,
    requested-tx-diversity-mode-not-supported,
    measurement-temporaily-not-available,
    unspecified,
    invalid-CM-settings,
    reconfiguration-CFN-not-elapsed,
    number-of-DL-codes-not-supported,
    dedicated-transport-channel-type-not-supported,
    dl-shared-channel-type-not-supported,
    ul-shared-channel-type-not-supported,
    common-transport-channel-type-not-supported,
    ul-spreading-factor-not-supported,
    dl-spreading-factor-not-supported,
    cm-not-supported,
    transaction-not-supported-by-destination-node-b,
    rl-already-activated-or-alocated,
    ...,
    number-of-UL-codes-not-supported,
    cell-reserved-for-operator-use,
    dpc-mode-change-not-supported,
    information-temporarily-not-available,
    information-provision-not-supported-for-the-object,
    power-balancing-status-not-compatible,
    delayed-activation-not-supported,
    rl-timing-adjustment-not-supported,
    unknown-RNTI
}

CauseTransport ::= ENUMERATED {
    transport-resource-unavailable,
    unspecified,
    ...
}

CellCapabilityContainer-FDD ::= BIT STRING (SIZE (32))
-- First bit: Flexible Hard Split Support Indicator
-- Second bit: Delayed Activation Support Indicator
-- Third bit: HS-DSCH Support Indicator
-- Fourth bit: DSCH Support Indicator
-- Note that undefined bits are considered as a spare bit and spare bits shall be set to 0 by the transmitter and shall be ignored by the
receiver.
```

```
CellCapabilityContainer-TDD ::= BIT STRING (SIZE (32))
-- First bit: Delayed Activation Support Indicator
-- Second bit: HS-DSCH Support Indicator
-- Third bit: DSCH Support Indicator
-- Note that undefined bits are considered as a spare bit and spare bits shall be set to 0 by the transmitter and shall be ignored by the
receiver.

CellCapabilityContainer-TDD-LCR ::= BIT STRING (SIZE (32))
-- First bit: Delayed Activation Support Indicator
-- Second bit: HS-DSCH Support Indicator
-- Third bit: DSCH Support Indicator
-- Note that undefined bits are considered as a spare bit and spare bits shall be set to 0 by the transmitter and shall be ignored by the
receiver.

C-ID                    ::= INTEGER (0..65535)

CCTrCH-ID               ::= INTEGER (0..15)

Cell-Capacity-Class-Value ::= SEQUENCE {
        uplinkCellCapacityClassValue        INTEGER(1..100,...),
        downlinkCellCapacityClassValue      INTEGER(1..100,...)
}


CellIndividualOffset    ::= INTEGER (-20..20)

CellParameterID             ::= INTEGER (0..127,...)

CFN                 ::= INTEGER (0..255)

CGI ::= SEQUENCE {
    lAI         SEQUENCE {
        pLMN-Identity   PLMN-Identity,
        lAC             LAC,
        iE-Extensions           ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL,
        ...
    },
    cI              CI,
    iE-Extensions           ProtocolExtensionContainer { {CGI-ExtIEs} } OPTIONAL
}

LAI-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CGI-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

ChannelCodingType ::= ENUMERATED {
    no-codingTDD,
    convolutional-coding,
    turbo-coding,
```

```
    ...
}

ChipOffset              ::= INTEGER (0..38399)

CI                  ::= OCTET STRING (SIZE (2))

ClosedLoopMode1-SupportIndicator    ::= ENUMERATED {
    closedLoop-Mode1-Supported,
    closedLoop-Mode1-not-Supported
}

ClosedLoopMode2-SupportIndicator    ::= ENUMERATED {
    closedLoop-Mode2-Supported,
    closedLoop-Mode2-not-Supported
}

Closedlooptimingadjustmentmode  ::= ENUMERATED {
    adj-1-slot,
    adj-2-slot,
    ...
}

CodeNumber ::= INTEGER (0..maxCodeNumComp-1)

CodingRate ::= ENUMERATED {
    half,
    third,
    ...
}

CommonMeasurementAccuracy ::= CHOICE {
    tUTRANGPSMeasurementAccuracyClass       TUTRANGPSAccuracyClass,
    ...
}

CommonMeasurementType ::= ENUMERATED {
    uTRAN-GPS-timing-of-cell-frames-for-UE-Positioning,
    sFN-SFN-observerd-time-difference,
    load,
    transmitted-carrier-power,
    received-total-wide-band-power,
    uplink-timeslot-iscp,
    ...,
    rT-load,
    nRT-load-Information,
    upPTSInterference
}
-- For measurements on the Iur-g interface, only load, RT Load and NRT Load information are requested.

CommonMeasurementValue ::= CHOICE {
    tUTRANGPSMeasurementValueInformation    TUTRANGPSMeasurementValueInformation,
    sFNSFNMeasurementValueInformation       SFNSFNMeasurementValueInformation,
```

```
    loadValue                           LoadValue,
    transmittedCarrierPowerValue        INTEGER(0..100),
    receivedTotalWideBandPowerValue     INTEGER(0..621),
    uplinkTimeslotISCPValue             UL-TimeslotISCP,
    ...,
    rTLoadValue                         RTLoadValue,
    nRTLoadInformationValue             NRTLoadInformationValue,
    upPTSInterferenceValue              UpPTSInterferenceValue
}
-- For measurements on the Iur-g interface, only load, RT Load and NRT Load values are reported.

CommonMeasurementValueInformation ::= CHOICE {
    measurementAvailable        CommonMeasurementAvailable,
    measurementnotAvailable     NULL
}

CommonMeasurementAvailable::= SEQUENCE {
    commonMeasurementValue      CommonMeasurementValue,
    iE-Extensions                   ProtocolExtensionContainer { { CommonMeasurementAvailableItem-ExtIEs} }     OPTIONAL,
    ...
}

CommonMeasurementAvailableItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CongestionCause ::= ENUMERATED {
    uTRAN-dynamic-resources,
    uTRAN-semistatic-resources,
    ...
}

CommonTransportChannelResourcesInitialisationNotRequired ::= ENUMERATED {
    not-Required
}

CoverageIndicator ::= ENUMERATED {
    overlap,
    covers,
    containedIn,
    ...
}

CRC-Size                ::= ENUMERATED {
    v0,
    v8,
    v12,
    v16,
    v24,
    ...
}

CriticalityDiagnostics ::= SEQUENCE {
```

```
    procedureID                 ProcedureID         OPTIONAL,
    triggeringMessage           TriggeringMessage       OPTIONAL,
    procedureCriticality        Criticality             OPTIONAL,
    transactionID               TransactionID           OPTIONAL,
    iEsCriticalityDiagnostics       CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

CriticalityDiagnostics-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality           Criticality,
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber0       OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
{   ID id-MessageStructure      CRITICALITY ignore      EXTENSION MessageStructure      PRESENCE optional }|
{   ID id-TypeOfError           CRITICALITY ignore      EXTENSION TypeOfError           PRESENCE mandatory },
    ...
}

MessageStructure ::= SEQUENCE (SIZE (1..maxNrOfLevels)) OF
    SEQUENCE {
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber1       OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {MessageStructure-ExtIEs} } OPTIONAL,
        ...
    }


MessageStructure-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-CS-DomainIdentifier ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
    lAC                 LAC,
    iE-Extensions       ProtocolExtensionContainer { {CN-CS-DomainIdentifier-ExtIEs} } OPTIONAL
}

CN-CS-DomainIdentifier-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-PS-DomainIdentifier ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
```

```
    lAC                 LAC,
    rAC                 RAC,
    iE-Extensions       ProtocolExtensionContainer { {CN-PS-DomainIdentifier-ExtIEs} } OPTIONAL
}

CN-PS-DomainIdentifier-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CNDomainType    ::= ENUMERATED {
    cs-domain,
    ps-domain,
    dont-care,
    ...
}
-- See in [16]

CQI-Feedback-Cycle ::= ENUMERATED {v0, v1, v5, v10, v20, v40, v80,...}

CQI-Power-Offset ::= INTEGER (0..8,...)
-- According to mapping in ref. [21] subclause 4.2.1

CQI-RepetitionFactor ::= INTEGER (1..4,...)
-- Step: 1

C-RNTI                  ::= INTEGER (0..65535)
```

/* partly omitted */

```
-- M

MaxNrOfUL-DPCHs             ::= INTEGER (1..6)

MAC-c-sh-SDU-Length         ::= INTEGER (1..5000)

MAC-c-sh-SDU-LengthList ::= SEQUENCE(SIZE(1..maxNrOfMACcshSDU-Length)) OF MAC-c-sh-SDU-Length

MACdPDU-Size ::= INTEGER (1..5000,...)

MACdPDU-Size-IndexList ::= SEQUENCE (SIZE (1..maxNrOfPDUIndexes)) OF MACdPDU-Size-IndexItem

MACdPDU-Size-IndexItem ::= SEQUENCE {
    sID                                 SID,
    mACdPDU-Size                        MACdPDU-Size,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-ExtIEs } }        OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
MACdPDU-Size-IndexList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfPDUIndexes)) OF MACdPDU-Size-IndexItem-to-Modify

MACdPDU-Size-IndexItem-to-Modify ::= SEQUENCE {
    sID                                 SID,
    mACdPDU-Size                        MACdPDU-Size                                OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-to-Modify-ExtIEs } }       OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MAChsGuaranteedBitRate ::= INTEGER (0..16777215,...)

MAC-hsWindowSize        ::= ENUMERATED {v4, v6, v8, v12, v16, v24, v32,...}

MaximumAllowedULTxPower     ::= INTEGER (-50..33)

MaxNrDLPhysicalchannels     ::= INTEGER (1..224)
-- 1.28Mcps TDD 97 – 224 are unused

MaxNrDLPhysicalchannelsTS   ::= INTEGER (1..16)

MaxNrTimeslots              ::= INTEGER (1..14)
-- 1.28Mcps values 7-14 are unused

MaxNrULPhysicalchannels     ::= INTEGER (1..2)

MaxTFCIvalue                ::= INTEGER (1..1023)

MeasurementFilterCoefficient ::=  ENUMERATED{k0, k1, k2, k3, k4, k5, k6, k7, k8, k9, k11, k13, k15, k17, k19,...}
-- Measurement Filter Coefficient to be used for measurement

MeasurementID               ::= INTEGER (0..1048575)

Measurement-Power-Offset ::= INTEGER(-12 .. 26)
-- Actual value = IE value * 0.5

MinimumSpreadingFactor      ::= INTEGER (1..16)

Multi-code-info             ::= INTEGER (1..16)

MultipleURAsIndicator ::= ENUMERATED {
    multiple-URAs-exist,
    single-URA-exists
}

MaxAdjustmentStep           ::= INTEGER(1..10)
-- Unit Slot

MeasurementChangeTime       ::= INTEGER (1..6000,...)
```

```
-- The MeasurementChangeTime  gives the MeasurementChangeTime
-- in number of 10 ms periods.
-- E.g. Value 6000 means 60000ms(1min)
-- Unit is ms, Step is 10 ms

Measurement-Feedback-Offset ::= INTEGER (0..79,...)

MeasurementHysteresisTime       ::= INTEGER (1..6000,...)
-- The MeasurementHysteresisTime  gives the
-- MeasurementHysteresisTime in number of 10 ms periods.
-- E.g. Value 6000 means 60000ms(1min)
-- Unit is ms, Step is 10ms

MeasurementIncreaseDecreaseThreshold        ::= CHOICE {
    sir                             SIR-Value-IncrDecrThres,
    sir-error                       SIR-Error-Value-IncrDecrThres,
    transmitted-code-power          Transmitted-Code-Power-Value-IncrDecrThres,
    rscp                            RSCP-Value-IncrDecrThres,
    round-trip-time                 Round-Trip-Time-IncrDecrThres,
    ...,
    extension-MeasurementIncreaseDecreaseThreshold      Extension-MeasurementIncreaseDecreaseThreshold
}

Extension-MeasurementIncreaseDecreaseThreshold  ::= ProtocolIE-Single-Container {{ Extension-MeasurementIncreaseDecreaseThresholdIE }}

Extension-MeasurementIncreaseDecreaseThresholdIE RNSAP-PROTOCOL-IES ::= {
    { ID id-Load-Value-IncrDecrThres    CRITICALITY reject  TYPE Load-Value-IncrDecrThres   PRESENCE mandatory }|
    { ID id-Transmitted-Carrier-Power-Value-IncrDecrThres   CRITICALITY reject  TYPE Transmitted-Carrier-Power-Value-IncrDecrThres   PRESENCE
mandatory }|
    { ID id-Received-Total-Wideband-Power-Value-IncrDecrThres   CRITICALITY reject  TYPE Received-Total-Wideband-Power-Value-IncrDecrThres
    PRESENCE mandatory }|
    { ID id-UL-Timeslot-ISCP-Value-IncrDecrThres    CRITICALITY reject  TYPE UL-Timeslot-ISCP-Value-IncrDecrThres  PRESENCE mandatory }|
    { ID id-RT-Load-Value-IncrDecrThres CRITICALITY reject  TYPE RT-Load-Value-IncrDecrThres    PRESENCE mandatory }|
    { ID id-NRT-Load-Information-Value-IncrDecrThres    CRITICALITY reject  TYPE NRT-Load-Information-Value-IncrDecrThres PRESENCE mandatory
}|
    { ID id-UpPTSInterferenceValue      CRITICALITY reject  TYPE    UpPTSInterferenceValue      PRESENCE mandatory }
}

MeasurementThreshold            ::= CHOICE {
    sir                             SIR-Value,
    sir-error                       SIR-Error-Value,
    transmitted-code-power          Transmitted-Code-Power-Value,
    rscp                            RSCP-Value,
    rx-timing-deviation             Rx-Timing-Deviation-Value,
    round-trip-time                 Round-Trip-Time-Value,
    ...,
    extension-MeasurementThreshold  Extension-MeasurementThreshold
}

Extension-MeasurementThreshold  ::= ProtocolIE-Single-Container {{ Extension-MeasurementThresholdIE }}

Extension-MeasurementThresholdIE RNSAP-PROTOCOL-IES ::= {
```

```
    { ID id-TUTRANGPSMeasurementThresholdInformation    CRITICALITY reject  TYPE TUTRANGPSMeasurementThresholdInformation   PRESENCE
mandatory }|
    { ID id-SFNSFNMeasurementThresholdInformation       CRITICALITY reject  TYPE SFNSFNMeasurementThresholdInformation      PRESENCE
mandatory }|
    { ID id-Load-Value                                  CRITICALITY reject  TYPE Load-Value                                PRESENCE
mandatory }|
    { ID id-Transmitted-Carrier-Power-Value             CRITICALITY reject  TYPE Transmitted-Carrier-Power-Value            PRESENCE
mandatory }|
    { ID id-Received-Total-Wideband-Power-Value         CRITICALITY reject  TYPE Received-Total-Wideband-Power-Value        PRESENCE
mandatory }|
    { ID id-UL-Timeslot-ISCP-Value                      CRITICALITY reject  TYPE UL-Timeslot-ISCP-Value                     PRESENCE
mandatory }|
    { ID id-RT-Load-Value                               CRITICALITY reject  TYPE RT-Load-Value                             PRESENCE
mandatory }|
    { ID id-NRT-Load-Information-Value                  CRITICALITY reject  TYPE NRT-Load-Information-Value                PRESENCE
mandatory }|
    { ID id-Rx-Timing-Deviation-Value-LCR               CRITICALITY reject  TYPE Rx-Timing-Deviation-Value-LCR              PRESENCE
mandatory}|
    { ID id-HS-SICH-Reception-Quality-Measurement-Value CRITICALITY reject  TYPE HS-SICH-Reception-Quality-Measurement-Value PRESENCE
mandatory}|
    { ID id-UpPTSInterferenceValue                      CRITICALITY reject  TYPE UpPTSInterferenceValue                    PRESENCE
mandatory }
}

MidambleConfigurationBurstType1And3 ::=     ENUMERATED {v4, v8, v16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {v3, v6}

MidambleConfigurationLCR ::=    ENUMERATED {v2, v4, v6, v8, v10, v12, v14, v16, ...}

MidambleShiftAndBurstType ::=       CHOICE {
    type1                               SEQUENCE {
        midambleConfigurationBurstType1And3     MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
        ...
    },
    type2                               SEQUENCE {
        midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftShort,
            ...
        },
        ...
    },
    type3                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
```

```
        midambleAllocationMode          CHOICE {
            defaultMidamble                     NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
        ...
    },
    ...
}

MidambleShiftLong ::=               INTEGER (0..15)

MidambleShiftShort ::=              INTEGER (0..5)

MidambleShiftLCR ::= SEQUENCE {
    midambleAllocationMode      MidambleAllocationMode,
    midambleShift               MidambleShiftLong       OPTIONAL,
        -- The IE shall be present if the Midamble Allocation Mode IE is set to "UE specific midamble".
    midambleConfigurationLCR    MidambleConfigurationLCR,
    iE-Extensions               ProtocolExtensionContainer { {MidambleShiftLCR-ExtIEs} }        OPTIONAL,
    ...
    }

MidambleAllocationMode ::= ENUMERATED {
    defaultMidamble,
    commonMidamble,
    uESpecificMidamble,
    ...
    }

MidambleShiftLCR-ExtIEs  RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MinUL-ChannelisationCodeLength      ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    v64,
    v128,
    v256
}

Modulation ::= ENUMERATED {
    qPSK,
    eightPSK,
    ...
}

MultiplexingPosition ::= ENUMERATED {
    fixed,
    flexible
```

```
}

MAChs-ResetIndicator ::= ENUMERATED{
    mAChs-NotReset
}
```

/* partly omitted */

```
-- U

UARFCN                  ::= INTEGER (0..16383,...)
-- Corresponds to: 0.0Hz..3276.6Mhz. See 25.101, 25.105

UDRE ::= ENUMERATED {
    lessThan1,
    between1-and-4,
    between4-and-8,
    over8,
    ...
}

UE-Capabilities-InfoFDD ::= SEQUENCE {
    hSDSCH-TrCH-Bits-Per-HSDSCH-TTI         ENUMERATED {v7300, v14600, v20456, v28800,...},
    hSDSCH-Multi-Code-Capability            ENUMERATED {v5, v10, v15,...},
    min-Inter-TTI-Interval                  INTEGER (1..3,...),
    mAChs-Reordering-Buffer-Size            INTEGER (1..300,...),
    iE-Extensions                       ProtocolExtensionContainer { { UE-Capabilities-InfoFDD-ExtIEs } }       OPTIONAL,
    ...
}

UE-Capabilities-InfoFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-Capabilities-InfoTDD ::= SEQUENCE {
    hSDSCH-TrCH-Bits-Per-HSDSCH-TTI         ENUMERATED {v7040, v10228, v14080,...},
    hSDSCH-Multi-Code-Capability            ENUMERATED {v8, v12, v16,...},
    mAChs-Reordering-Buffer-Size            INTEGER (1..300,...),
    iE-Extensions                       ProtocolExtensionContainer { { UE-Capabilities-InfoTDD-ExtIEs } }       OPTIONAL,
    ...
}

UE-Capabilities-InfoTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DL-mode ::= ENUMERATED {
    ul-only,
    dl-only,
    both-ul-and-dl
}
```

```
UL-Timeslot-Information::= SEQUENCE ( SIZE (1..maxNrOfTS)) OF UL-Timeslot-InformationItem

UL-Timeslot-InformationItem ::= SEQUENCE {
    timeSlot                        TimeSlot,
    midambleShiftAndBurstType       MidambleShiftAndBurstType,
    tFCI-Presence                   TFCI-Presence,
    uL-Code-Information             TDD-UL-Code-Information,
    iE-Extensions                   ProtocolExtensionContainer { {UL-Timeslot-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

UL-Timeslot-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotLCR-Information ::= SEQUENCE (SIZE (1..maxNrOfULTsLCR)) OF UL-TimeslotLCR-InformationItem

UL-TimeslotLCR-InformationItem ::= SEQUENCE {
    timeSlotLCR                             TimeSlotLCR,
    midambleShiftLCR                        MidambleShiftLCR,
    tFCI-Presence                           TFCI-Presence,
    uL-Code-LCR-InformationList         TDD-UL-Code-LCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-TimeslotLCR-InformationItem-ExtIEs} }   OPTIONAL,
    ...
}

UL-TimeslotLCR-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeSlot-ISCP-Info ::= SEQUENCE (SIZE (1..maxNrOfULTs)) OF UL-TimeSlot-ISCP-InfoItem

UL-TimeSlot-ISCP-InfoItem ::= SEQUENCE {
    timeSlot                    TimeSlot,
    uL-TimeslotISCP             UL-TimeslotISCP,
    iE-Extensions               ProtocolExtensionContainer { { UL-TimeSlot-ISCP-InfoItem-ExtIEs} } OPTIONAL,
    ...
}

UL-TimeSlot-ISCP-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeSlot-ISCP-LCR-Info ::= SEQUENCE (SIZE (1..maxNrOfULTsLCR)) OF    UL-TimeSlot-ISCP-LCR-InfoItem

UL-TimeSlot-ISCP-LCR-InfoItem ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    iSCP                            UL-Timeslot-ISCP-Value,
    iE-Extensions                   ProtocolExtensionContainer { { UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs} }   OPTIONAL,
    ...
 }

UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

UL-Timeslot-ISCP-Value ::= UL-TimeslotISCP

UL-Timeslot-ISCP-Value-IncrDecrThres ::= INTEGER(0..126)
-- Unit dB. Step 0.5dB
-- e.g. Value 100 means 50dB

UL-TimingAdvanceCtrl-LCR ::= SEQUENCE {
    sync-UL-codes-bitmap                        BIT STRING (SIZE(8)),
    fPACH-info                                  FPACH-Information,
    prxUpPCHdes                                 INTEGER (-120 .. –58, ...),
    syncUL-procParameter                        SYNC-UL-ProcParameters,
    mMax                                        INTEGER (1..32),
    ...
    }

Uplink-Compressed-Mode-Method   ::= ENUMERATED {
    sFdiv2,
    higher-layer-scheduling,
    ...
}

UL-SIR                  ::= INTEGER (-82..173)
-- The UL-SIR gives the UL-SIR in number of 0.1 dB steps.
-- E.g. Value 173 means 17.3 dB
-- Unit dB. Step 0.1 dB.

UC-ID ::= SEQUENCE {
    rNC-ID              RNC-ID,
    c-ID                C-ID,
    iE-Extensions           ProtocolExtensionContainer { {UC-ID-ExtIEs} } OPTIONAL,
    ...
}

UC-ID-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCCH-SlotFormat         ::= INTEGER (0..5,...)

UL-FP-Mode ::= ENUMERATED {
    normal,
    silent,
    ...
}

UL-PhysCH-SF-Variation ::= ENUMERATED {
    sf-variation-supported,
    sf-variation-not-supported
}
```

```
UL-ScramblingCode ::= SEQUENCE {
    ul-ScramblingCodeNumber     UL-ScramblingCodeNumber,
    ul-ScramblingCodeLength     UL-ScramblingCodeLength,
    iE-Extensions           ProtocolExtensionContainer { {UL-ScramblingCode-ExtIEs} } OPTIONAL
}

UL-ScramblingCode-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-ScramblingCodeLength ::= ENUMERATED {
    short,
    long
}

UL-ScramblingCodeNumber         ::= INTEGER (0..16777215)

UL-Synchronisation-Parameters-LCR ::= SEQUENCE {
    uL-Synchronisation-StepSize         UL-Synchronisation-StepSize,
    uL-Synchronisation-Frequency            UL-Synchronisation-Frequency,
    iE-Extensions                   ProtocolExtensionContainer { { UL-Synchronisation-Parameters-LCR-ExtIEs } }       OPTIONAL,
    ...
}

UL-Synchronisation-Parameters-LCR-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-Synchronisation-StepSize ::= INTEGER (1..8)

UL-Synchronisation-Frequency ::= INTEGER (1..8)

UL-TimeslotISCP         ::= INTEGER (0..127)
-- According to mapping in [14]

UpPTSInterferenceValue  ::= INTEGER (0..127)

URA-ID                  ::= INTEGER (0..65535)

URA-Information ::= SEQUENCE {
    uRA-ID                              URA-ID,
    multipleURAsIndicator               MultipleURAsIndicator,
    rNCsWithCellsInTheAccessedURA-List  RNCsWithCellsInTheAccessedURA-List  OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {URA-Information-ExtIEs} } OPTIONAL,
    ...
}

URA-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RNCsWithCellsInTheAccessedURA-List ::= SEQUENCE (SIZE (1..maxRNCinURA-1)) OF RNCsWithCellsInTheAccessedURA-Item
```

```
RNCsWithCellsInTheAccessedURA-Item ::= SEQUENCE {
    rNC-ID                          RNC-ID,
    iE-Extensions                   ProtocolExtensionContainer { {RNCsWithCellsInTheAccessedURA-Item-ExtIEs} } OPTIONAL,
    ...
}

RNCsWithCellsInTheAccessedURA-Item-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

USCH-ID                ::= INTEGER (0..255)

USCH-Information ::=  SEQUENCE (SIZE (1..maxNoOfUSCHs)) OF USCH-InformationItem

USCH-InformationItem ::= SEQUENCE {
    uSCH-ID                             USCH-ID,
    ul-CCTrCH-ID                        CCTrCH-ID,
    trChSourceStatisticsDescriptor      TrCH-SrcStatisticsDescr,
    transportFormatSet                  TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    rb-Info                             RB-Info,
    iE-Extensions                       ProtocolExtensionContainer { {USCH-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

USCH-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-TrafficClass        CRITICALITY ignore  EXTENSION TrafficClass      PRESENCE mandatory   }|
    { ID id-BindingID                       CRITICALITY ignore      EXTENSION   BindingID   PRESENCE               optional }|
    -- Shall be ignored if bearer establishment with ALCAP.
    { ID id-TransportLayerAddress           CRITICALITY ignore      EXTENSION   TransportLayerAddress     PRESENCE    optional },
    -- Shall be ignored if bearer establishment with ALCAP.
    ...
}
```

/* partly omitted */

9.3.6 Constant Definitions

/* partly omitted */

```
id-CCTrCH-Maximum-DL-Power-RL-ReconfReadyTDD                                ProtocolIE-ID ::= 504
id-CCTrCH-Minimum-DL-Power-RL-ReconfReadyTDD                                ProtocolIE-ID ::= 505
id-Maximum-DL-Power-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD     ProtocolIE-ID ::= 506
id-Minimum-DL-Power-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD     ProtocolIE-ID ::= 507
id-DL-CCTrCH-InformationList-RL-ReconfRspTDD                                ProtocolIE-ID ::= 508
id-DL-DPCH-InformationModifyItem-LCR-RL-ReconfRspTDD                        ProtocolIE-ID ::= 509
id-Maximum-DL-Power-TimeslotLCR-InformationItem                             ProtocolIE-ID ::= 510
id-Minimum-DL-Power-TimeslotLCR-InformationItem                             ProtocolIE-ID ::= 511
id-TDD-Support-8PSK                                                         ProtocolIE-ID ::= 512
```

```
id-TDD-maxNrDLPhysicalchannels                                  ProtocolIE-ID ::= 513
id-ExtendedGSMCellIndividualOffset                              ProtocolIE-ID ::= 514
id-UpPTSInterferenceValue                                       ProtocolIE-ID ::= xxx


END
```

3GPP TSG-RAN3 Meeting #36
Marne la Vallée, Paris, France, 19th – 23rd May 2003

Tdoc ⌘R3-030655

CR-Form-v7

CHANGE REQUEST

⌘ **25.433** **CR** **846** ⌘ **rev** ⌘ Current version: **5.4.0** ⌘

*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 ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Interference measurement in UpPTS for 1.28Mcps TDD
Source:	⌘	Siemens
Work item code:	⌘	TEI6
Date:	⌘	19-23/05/2003
Category:	⌘	**B**
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:

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:	⌘	The currently defined timeslot ISCP measurement does not include the UpPTS (since the UpPTS does not contain data bursts with midambles), hence there exists no means for the RNC to relate the broadcast target UpPCH receive power to the interference level in the UpPTS. This addition of a UpPTS interference measurement corrects the situation.
Summary of change:	⌘	An additional UpPTS interference measurement, applicable in 1.28Mcps TDD only, has been added in the Common Measurement Type IE, Common Measurement Value IE, Measurement Increase/Decrease Threshold IE, and Measurement Threshold IE.
Consequences if not approved:	⌘	There will be no means for the RNC to relate the broadcast target UpPCH receive power level to the amount of interference in the UpPTS.

Clauses affected:	⌘	8.2.8.4, 9.2.1.11, 9.2.1.12, 9.2.1.43, 9.2.1.44, 9.3.4, 9.3.6			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 25.123 CR 303 25.225 CR 069 25.302 25.331 25.423 CR 828
			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.

8.2.8 Common Measurement Initiation

/* partly omitted */

8.2.8.4 Abnormal Conditions

If the Common Measurement Type received in the *Common Measurement Type* IE is not defined in ref. [4] or [5] to be measured on the Common Measurement Object Type received in the COMMON MEASUREMENT INITIATION REQUEST message, the Node B shall regard the Common Measurement Initiation procedure as failed.

[TDD - If the Common Measurement Type requires the Time Slot Information but the [3.84Mcps TDD - *Time Slot* IE] [1.28Mcps TDD - *Time Slot LCR* IE] is not present in the COMMON MEASUREMENT INITIATION REQUEST message, the Node B shall regard the Common Measurement Initiation procedure as failed.]

If the COMMON MEASUREMENT INITIATION REQUEST message contains the *SFN-SFN Measurement Threshold Information* IE (in the *Measurement Threshold* IE contained in the *Report Characteristics* IE) and it does not contain at least one IE, the Node B shall reject the procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

If the COMMON MEASUREMENT INITIATION REQUEST message contains the $T_{UTRAN-GPS}$ *Measurement Threshold Information* IE (in the *Measurement Threshold* IE contained in the *Report Characteristics* IE) and it does not contain at least one IE, the Node B shall reject the procedure using the COMMON MEASUREMENT INITIATION FAILURE message.

If the *Common Measurement Type* IE is set to "SFN-SFN Observed Time Difference", but the *Neighbouring Cell Measurement Information* IE is not received in the COMMON MEASUREMENT INITIATION REQUEST message, the Node B shall regard the Common Measurement Initiation procedure as failed.

If the *Common Measurement Type* IE is set to "UTRAN GPS Timing of Cell Frames for UE Positioning", but the $T_{UTRAN-GPS}$ *Measurement Accuracy Class* IE in the *Common Measurement Accuracy* IE is not received in the COMMON MEASUREMENT INITIATION REQUEST message, the Node B shall regard the Common Measurement Initiation procedure as failed.

The allowed combinations of the Common Measurement Type and Report Characteristics Type are shown in the table below marked with "X". For not allowed combinations, the Node B shall regard the Common Measurement Initiation procedure as failed.

Table 4: Allowed Common Measurement Type and Report Characteristics Type combinations

Common Measurement Type	Report Characteristics Type								
	On Demand	Periodic	Event A	Event B	Event C	Event D	Event E	Event F	On Modification
Received Total Wide Band Power	X	X	X	X	X	X	X	X	
Transmitted Carrier Power	X	X	X	X	X	X	X	X	
Acknowledged PRACH Preambles	X	X	X	X	X	X	X	X	
UL Timeslot ISCP	X	X	X	X	X	X	X	X	
Acknowledged PCPCH Access Preambles	X	X	X	X	X	X	X	X	
Detected PCPCH Access Preambles	X	X	X	X	X	X	X	X	
UTRAN GPS Timing of Cell Frames for UE Positioning	X	X							X
SFN-SFN Observed Time Difference	X	X							X
Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	X	X	X	X	X	X	X	X	
UpPTS interference	X	X	X	X	X	X	X	X	

If the *SFN* IE is included in the COMMON MEASUREMENT INITIATION REQUEST message and the *Report Characteristics* IE is other than "Periodic", "On Demand" or "On Modification", the Node B shall regard the Common Measurement Initiation procedure as failed.

/* partly omitted */

9.2.1.11 Common Measurement Type

The Common Measurement Type identifies which measurement that shall be performed.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Common Measurement Type			ENUMERATED (Received Total Wide Band Power, Transmitted Carrier Power, Acknowledged PRACH Preambles, UL Timeslot ISCP, Acknowledged PCPCH Access Preambles, Detected PCPCH Access Preambles, …, UTRAN GPS Timing of Cell Frames for UE Positioning, SFN-SFN Observed Time Difference, Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission, UpPTS Interference)	"UL Timeslot ISCP" is used by TDD only, "Acknowledged PRACH Preambles", 'Acknowledged PCPCH Access Preambles', 'Detected PCPCH Access Preambles', 'Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission' are used by FDD only, "UpPTS interference" is used by 1.28Mcps TDD only

9.2.1.12 Common Measurement Value

The Common Measurement Value shall be the most recent value for this measurement, for which the reporting criteria were met.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Common Measurement Value*					–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power Value	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power Value	M		INTEGER (0..621)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD Only	–	
>>Acknowledged PRACH Preamble Value	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD Only	–	
>>UL Timeslot ISCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>Acknowledged PCPCH Access Preambles				FDD Only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD Only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Common Measurement Values					–	
>>UTRAN GPS Timing of Cell Frames for UE Positioning					–	
>>>$T_{UTRAN-GPS}$ Measurement Value Information	M		9.2.1.64A		YES	ignore
>>SFN-SFN Observed Time Difference					–	
>>>SFN-SFN Measurement Value Information	M		9.2.1.53E		YES	ignore
>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission				FDD Only	–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission Value	M		INTEGER (0..100)	According to mapping in [22]	YES	ignore
>>UpPTS Interference				1.28Mcps TDD Only	–	
>>>UpPTS Interference Value	M		INTEGER (0..127)	According to mapping in [23]	YES	ignore

/* partly omitted */

9.2.1.43 Measurement Increase/Decrease Threshold

The Measurement Increase/Decrease Threshold defines the threshold that shall trigger Event C or D.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Increase/Decrease Threshold*					–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power	M		INTEGER (0..620)	Unit: dB Range: 0..62 dB Step: 0.1 dB	–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD only	–	
>>Acknowledged PRACH Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD only	–	
>>UL Timeslot ISCP	M		INTEGER (0..126)	Unit: dB Range: 0..63 dB Step: 0.5 dB	–	
>SIR					–	
>>SIR	M		INTEGER (0..62)	Unit: dB Range: 0..31 dB Step: 0.5 dB	–	
>SIR Error				FDD only	–	
>>SIR Error	M		INTEGER (0..124)	Unit: dB Range: 0..62 dB Step: 0.5 dB	–	
>Transmitted Code Power					–	
>>Transmitted Code Power	M		INTEGER (0..112,…)	Unit: dB Range: 0..56 dB Step: 0.5 dB	–	
>RSCP				TDD only	–	
>>RSCP	M		INTEGER (0..126)	Unit: dB Range: 0..63 dB Step: 0.5 dB	–	
>Round Trip Time				FDD only	–	
>>Round Trip Time	M		INTEGER (0..32766)	Unit: chips Range: 0 .. 2047.875 chips Step: 0.625 chips	–	
>Acknowledged PCPCH Access Preambles				FDD only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Measurement Thresholds					–	
>> Transmitted carrier power of all codes not				FDD only	–	

used for HS-PDSCH or HS-SCCH transmission						
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	M		INTEGER (0..100)	According to mapping in [22]	YES	~~R~~reject
>>UpPTS interference				1.28Mcps TDD Only	–	
>>>UpPTS interference Value	M		INTEGER (0..127)	According to mapping in [23]	YES	reject

9.2.1.44 Measurement Threshold

The Measurement Threshold defines which threshold that shall trigger Event A, B, E, F or On Modification.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Threshold*					–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power	M		INTEGER (0..621)	According to mapping in [22] and [23]	–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD only	–	
>>Acknowledged PRACH Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD only	–	
>>UL Timeslot ISCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>SIR					–	
>>SIR	M		INTEGER (0..63)	According to mapping in [22] and [23]	–	
>SIR Error				FDD only	–	
>>SIR Error	M		INTEGER (0..125)	According to mapping in [22]	–	
>Transmitted Code Power					–	
>>Transmitted Code Power	M		INTEGER (0..127)	According to mapping in [22] and [23]	–	
>RSCP				TDD only	–	
>>RSCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>Rx Timing Deviation				Applicable to 3.84Mcps TDD only	–	
>>Rx Timing Deviation	M		INTEGER (0..8191)	According to mapping in [23]	–	
>Round Trip Time				FDD only	–	
>>Round Trip Time	M		INTEGER (0..32767)	According to mapping in [22]	–	
>Acknowledged PCPCH Access Preambles				FDD only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Measurement Thresholds					–	
>>UTRAN GPS Timing of Cell Frames for UE Positioning					–	
>>>$T_{UTRAN-GPS}$ Measurement Threshold Information	M		9.2.1.64B		YES	reject
>>SFN-SFN Observed Time Difference					–	
>>>SFN-SFN Measurement Threshold	M		9.2.1.53C		YES	reject

Information						
>>Rx Timing Deviation LCR				Applicable to 1.28Mcps TDD Only	–	
>>>Rx Timing Deviation LCR	M		INTEGER (0..255)	According to mapping in [23]	YES	reject
>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission				FDD only	–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	M		INTEGER (0..100)	According to mapping in [22]	YES	reject
>>HS-SICH reception quality				Applicable to TDD Only	–	
>>>HS-SICH reception quality	M		INTEGER (0..20)	According to mapping in [23]	YES	~~R~~reject
>>UpPTS interference				1.28Mcps TDD Only	–	
>>>UpPTS interference Value	M		INTEGER (0..127)	According to mapping in [23]	YES	reject

/* partly omitted */

9.3.4 Information Elements Definitions

/* partly omitted */

```
    id-transportlayeraddress,
    id-bindingID,
    id-Angle-Of-Arrival-Value-LCR,
    id-SyncDLCodeIdThreInfoLCR,
    id-neighbouringTDDCellMeasurementInformationLCR,
    id-HS-SICH-Reception-Quality,
    id-HS-SICH-Reception-Quality-Measurement-Value,
    id-Initial-DL-Power-TimeslotLCR-InformationItem,
    id-Maximum-DL-Power-TimeslotLCR-InformationItem,
    id-Minimum-DL-Power-TimeslotLCR-InformationItem,
    id-TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmission,
    id-UpPTSInterferenceValue
FROM NBAP-Constants
```

/* partly omitted */

```
-- ==========================================
--  C
-- ==========================================

Cause ::= CHOICE {
    radioNetwork            CauseRadioNetwork,
    transport           CauseTransport,
    protocol                CauseProtocol,
    misc                    CauseMisc,
    ...
}

CauseMisc ::= ENUMERATED {
    control-processing-overload,
    hardware-failure,
    oam-intervention,
    not-enough-user-plane-processing-resources,
    unspecified,
    ...
}

CauseProtocol ::= ENUMERATED {
    transfer-syntax-error,
    abstract-syntax-error-reject,
    abstract-syntax-error-ignore-and-notify,
    message-not-compatible-with-receiver-state,
    semantic-error,
    unspecified,
    abstract-syntax-error-falsely-constructed-message,
    ...
```

```
}

CauseRadioNetwork ::= ENUMERATED {
    unknown-C-ID,
    cell-not-available,
    power-level-not-supported,
    dl-radio-resources-not-available,
    ul-radio-resources-not-available,
    rl-already-ActivatedOrAllocated,
    nodeB-Resources-unavailable,
    measurement-not-supported-for-the-object,
    combining-resources-not-available,
    requested-configuration-not-supported,
    synchronisation-failure,
    priority-transport-channel-established,
    sIB-Origination-in-Node-B-not-Supported,
    requested-tx-diversity-mode-not-supported,
    unspecified,
    bCCH-scheduling-error,
    measurement-temporarily-not-available,
    invalid-CM-settings,
    reconfiguration-CFN-not-elapsed,
    number-of-DL-codes-not-supported,
    s-cipch-not-supported,
    combining-not-supported,
    ul-sf—not-supported,
    dl-SF-not-supported,
    common-transport-channel-type-not-supported,
    dedicated-transport-channel-type-not-supported,
    downlink-shared-channel-type-not-supported,
    uplink-shared-channel-type-not-supported,
    cm-not-supported,
    tx-diversity-no-longer-supported,
    unknown-Local-Cell-ID,
    ...,
    number-of-UL-codes-not-supported,
    information-temporarily-not-available,
    information-provision-not-supported-for-the-object,
    cell-synchronisation-not-supported,
    cell-synchronisation-adjustment-not-supported,
    dpc-mode-change-not-supported,
    iPDL-already-activated,
    iPDL-not-supported,
    iPDL-parameters-not-available,
    frequency-acquisition-not-supported,
    power-balancing-status-not-compatible,
    requested-typeofbearer-re-arrangement-not-supported,
    signalling-Bearer-Re-arrangement-not-supported,
    bearer-Re-arrangement-needed,
    delayed-activation-not-supported,
    rl-timing-adjustment-not-supported
}
```

```
CauseTransport ::= ENUMERATED {
    transport-resource-unavailable,
    unspecified,
    ...
}

CCTrCH-ID ::= INTEGER (0..15)

CDSubChannelNumbers ::= BIT STRING {
                                        subCh11(0),
                                        subCh10(1),
                                        subCh9(2),
                                        subCh8(3),
                                        subCh7(4),
                                        subCh6(5),
                                        subCh5(6),
                                        subCh4(7),
                                        subCh3(8),
                                        subCh2(9),
                                        subCh1(10),
                                        subCh0(11)
                                        } (SIZE (12))

CellParameterID ::= INTEGER (0..127,...)

CellSyncBurstCode ::= INTEGER(0..7, ...)

CellSyncBurstCodeShift ::= INTEGER(0..7)

CellSyncBurstRepetitionPeriod ::= INTEGER (0..4095)

CellSyncBurstSIR ::= INTEGER (0..31)

CellSyncBurstTiming ::= CHOICE {
    initialPhase        INTEGER (0..1048575),
    steadyStatePhase        INTEGER (0..255)
}

CellSyncBurstTimingThreshold ::= INTEGER(0..254)

CFN ::= INTEGER (0..255)

Channel-Assignment-Indication ::= ENUMERATED {
    cA-Active,
    cA-Inactive
}

ChipOffset ::= INTEGER (0..38399)
-- Unit Chip

C-ID ::= INTEGER (0..65535)

Closedlooptimingadjustmentmode  ::= ENUMERATED {
```

```
    adj-1-slot,
    adj-2-slot,
    ...
}

CommonChannelsCapacityConsumptionLaw ::= SEQUENCE (SIZE(1..maxNrOfSF)) OF
    SEQUENCE {
        dl-Cost     INTEGER (0..65535),
        ul-Cost     INTEGER (0..65535),
        iE-Extensions       ProtocolExtensionContainer { { CommonChannelsCapacityConsumptionLaw-ExtIEs } }            OPTIONAL,
        ...
}

CommonChannelsCapacityConsumptionLaw-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CommonMeasurementAccuracy ::= CHOICE {
    tUTRANGPSMeasurementAccuracyClass       TUTRANGPSAccuracyClass,
    ...
}

CommonMeasurementType ::= ENUMERATED  {
    received-total-wide-band-power,
    transmitted-carrier-power,
    acknowledged-prach-preambles,
    ul-timeslot-iscp,
    acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles,
    ...,
    uTRAN-GPS-Timing-of-Cell-Frames-for-UE-Positioning,
    sFN-SFN-Observed-Time-Difference,
    transmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmission,
    upPTS-Interference
}

CommonMeasurementValue ::= CHOICE {
    transmitted-carrier-power               Transmitted-Carrier-Power-Value,
    received-total-wide-band-power          Received-total-wide-band-power-Value,
    acknowledged-prach-preambles            Acknowledged-PRACH-preambles-Value,
    uL-TimeslotISCP                         UL-TimeslotISCP-Value,
    acknowledged-PCPCH-access-preambles     Acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles         Detected-PCPCH-access-preambles,
    ...,
    extension-CommonMeasurementValue        Extension-CommonMeasurementValue
}

Extension-CommonMeasurementValue    ::= ProtocolIE-Single-Container {{ Extension-CommonMeasurementValueIE }}

Extension-CommonMeasurementValueIE NBAP-PROTOCOL-IES ::= {
    { ID id-TUTRANGPSMeasurementValueInformation    CRITICALITY ignore  TYPE TUTRANGPSMeasurementValueInformation  PRESENCE mandatory }|
    { ID id-SFNSFNMeasurementValueInformation   CRITICALITY ignore  TYPE SFNSFNMeasurementValueInformation    PRESENCE mandatory }|
```

```
    { ID id-TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmission    CRITICALITY ignore TYPE
TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmissionValue       PRESENCE mandatory }|
    { ID id-UpPTSInterferenceValue      CRITICALITY ignore  TYPE    UpPTSInterferenceValue      PRESENCE mandatory }
}

CommonMeasurementValueInformation ::= CHOICE {
    measurementAvailable        CommonMeasurementAvailable,
    measurementnotAvailable     CommonMeasurementnotAvailable
}


CommonMeasurementAvailable::= SEQUENCE {
    commonmeasurementValue      CommonMeasurementValue,
    ie-Extensions                   ProtocolExtensionContainer { { CommonMeasurementAvailableItem-ExtIEs} }           OPTIONAL,
    ...
}


CommonMeasurementAvailableItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
CommonMeasurementnotAvailable ::= NULL

CommonPhysicalChannelID ::= INTEGER (0..255)

Common-PhysicalChannel-Status-Information ::= SEQUENCE {
    commonPhysicalChannelID         CommonPhysicalChannelID,
    resourceOperationalState            ResourceOperationalState,
    availabilityStatus                  AvailabilityStatus,
    iE-Extensions                       ProtocolExtensionContainer  { { Common-PhysicalChannel-Status-Information-ExtIEs} }    OPTIONAL,
    ...
}

Common-PhysicalChannel-Status-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CommonTransportChannelID ::= INTEGER (0..255)

CommonTransportChannel-InformationResponse ::= SEQUENCE {
    commonTransportChannelID            CommonTransportChannelID,
    bindingID                           BindingID               OPTIONAL,
    transportLayerAddress               TransportLayerAddress   OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer  { { CommonTransportChannel-InformationResponse-ExtIEs} }   OPTIONAL,
    ...
}

CommonTransportChannel-InformationResponse-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
Common-TransportChannel-Status-Information ::= SEQUENCE {
    commonTransportChannelID           CommonTransportChannelID,
    resourceOperationalState           ResourceOperationalState,
    availabilityStatus                 AvailabilityStatus,
    iE-Extensions                      ProtocolExtensionContainer  { { Common-TransportChannel-Status-Information-ExtIEs} }   OPTIONAL,
    ...
}

Common-TransportChannel-Status-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CommunicationControlPortID ::= INTEGER (0..65535)

Compressed-Mode-Deactivation-Flag::= ENUMERATED {
    deactivate,
    maintain-Active
}

ConfigurationGenerationID ::= INTEGER (0..255)
-- Value '0' means "No configuration"

ConstantValue ::= INTEGER (-10..10,...)
-- -10 dB - +10 dB
-- unit dB
-- step 1 dB

CPCH-Allowed-Total-Rate ::= ENUMERATED {
    v15,
    v30,
    v60,
    v120,
    v240,
    v480,
    v960,
    v1920,
    v2880,
    v3840,
    v4800,
    v5760,
    ...
}

CPCHScramblingCodeNumber ::= INTEGER (0..79)

CPCH-UL-DPCCH-SlotFormat ::= INTEGER (0..2,...)

CQI-Feedback-Cycle ::= ENUMERATED {v0, v1, v5, v10, v20, v40, v80,...}

CQI-Power-Offset ::= INTEGER (0..8,...)
```

```
-- According to mapping in ref. [9] subclause 4.2.1

CQI-RepetitionFactor ::= INTEGER (1..4,...)
-- Step: 1

CriticalityDiagnostics ::= SEQUENCE {
    procedureID                 ProcedureID             OPTIONAL,
    triggeringMessage           TriggeringMessage           OPTIONAL,
    procedureCriticality        Criticality             OPTIONAL,
    transactionID               TransactionID               OPTIONAL,
    iEsCriticalityDiagnostics   CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} }                      OPTIONAL,
    ...
}

CriticalityDiagnostics-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality       Criticality,
        iE-ID               ProtocolIE-ID,
        repetitionNumber    RepetitionNumber0       OPTIONAL,
        iE-Extensions       ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} }                   OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    {   ID id-MessageStructure      CRITICALITY ignore      EXTENSION MessageStructure      PRESENCE optional       }|
    {   ID id-TypeOfError           CRITICALITY ignore      EXTENSION TypeOfError           PRESENCE mandatory      },
    ...
}

CRNC-CommunicationContextID ::= INTEGER (0..1048575)

CSBMeasurementID ::= INTEGER (0..65535)

CSBTransmissionID ::= INTEGER (0..65535)
```

/* partly omitted */

```
-- ==========================================
--  R
-- ==========================================

RACH-SlotFormat ::= ENUMERATED {
    v0,
    v1,
    v2,
    v3,
    ...
```

```
}

RACH-SubChannelNumbers ::= BIT STRING {
                                        subCh11(0),
                                        subCh10(1),
                                        subCh9(2),
                                        subCh8(3),
                                        subCh7(4),
                                        subCh6(5),
                                        subCh5(6),
                                        subCh4(7),
                                        subCh3(8),
                                        subCh2(9),
                                        subCh1(10),
                                        subCh0(11)
                                        } (SIZE (12))

RL-Specific-DCH-Info ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF RL-Specific-DCH-Info-Item

RL-Specific-DCH-Info-Item ::= SEQUENCE {
    dCH-id                  DCH-ID,
    bindingID               BindingID                                                   OPTIONAL,
    transportlayeraddress   TransportLayerAddress                                       OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { RL-Specific-DCH-Info-Item-ExtIEs} }  OPTIONAL,
    ...
}

RL-Specific-DCH-Info-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

Range-Correction-Rate ::= INTEGER (-127..127)
-- scaling factor 0.032 m/s

ReferenceClockAvailability ::= ENUMERATED {
    available,
    notAvailable
}

ReferenceSFNoffset ::= INTEGER (0..255)

RepetitionLength ::= INTEGER (1..63)

RepetitionPeriod ::= ENUMERATED {
    v1,
    v2,
    v4,
    v8,
    v16,
    v32,
    v64,
    ...
}
```

```
RepetitionNumber0 ::= INTEGER (0..255)

RepetitionNumber1 ::= INTEGER (1..256)

RefTFCNumber ::= INTEGER (0..3)

ReportCharacteristics ::= CHOICE {
    onDemand                NULL,
    periodic                ReportCharacteristicsType-ReportPeriodicity,
    event-a             ReportCharacteristicsType-EventA,
    event-b             ReportCharacteristicsType-EventB,
    event-c             ReportCharacteristicsType-EventC,
    event-d             ReportCharacteristicsType-EventD,
    event-e             ReportCharacteristicsType-EventE,
    event-f             ReportCharacteristicsType-EventF,
    ...,
    extension-ReportCharacteristics     Extension-ReportCharacteristics
}

Extension-ReportCharacteristics ::= ProtocolIE-Single-Container {{ Extension-ReportCharacteristicsIE }}

Extension-ReportCharacteristicsIE NBAP-PROTOCOL-IES ::= {
    { ID id-ReportCharacteristicsType-OnModification    CRITICALITY reject  TYPE ReportCharacteristicsType-OnModification   PRESENCE
mandatory }
}

ReportCharacteristicsType-EventA ::= SEQUENCE {
    measurementThreshold            ReportCharacteristicsType-MeasurementThreshold,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime                       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventA-ExtIEs} }       OPTIONAL,
    ...
    }

ReportCharacteristicsType-EventA-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventB ::= SEQUENCE {
    measurementThreshold            ReportCharacteristicsType-MeasurementThreshold,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime                       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventB-ExtIEs} }       OPTIONAL,
    ...
    }

ReportCharacteristicsType-EventB-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventC ::= SEQUENCE {
    measurementIncreaseThreshold    ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold,
    measurementChangeTime           ReportCharacteristicsType-ScaledMeasurementChangeTime,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventC-ExtIEs} }       OPTIONAL,
```

```
    ...
    }

ReportCharacteristicsType-EventC-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventD ::= SEQUENCE {
    measurementDecreaseThreshold    ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold,
    measurementChangeTime           ReportCharacteristicsType-ScaledMeasurementChangeTime,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventD-ExtIEs} }         OPTIONAL,
    ...
    }

ReportCharacteristicsType-EventD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventE ::= SEQUENCE {
    measurementThreshold1           ReportCharacteristicsType-MeasurementThreshold,
    measurementThreshold2           ReportCharacteristicsType-MeasurementThreshold             OPTIONAL,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime   OPTIONAL,
    reportPeriodicity               ReportCharacteristicsType-ReportPeriodicity                OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventE-ExtIEs} }         OPTIONAL,
    ...
    }

ReportCharacteristicsType-EventE-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventF ::= SEQUENCE {
    measurementThreshold1           ReportCharacteristicsType-MeasurementThreshold,
    measurementThreshold2           ReportCharacteristicsType-MeasurementThreshold             OPTIONAL,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime   OPTIONAL,
    reportPeriodicity               ReportCharacteristicsType-ReportPeriodicity                OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventF-ExtIEs} }         OPTIONAL,
    ...
    }

ReportCharacteristicsType-EventF-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-OnModification ::= SEQUENCE {
    measurementThreshold            ReportCharacteristicsType-MeasurementThreshold,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-OnModification-ExtIEs} }    OPTIONAL,
        ...
    }

ReportCharacteristicsType-OnModification-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold ::= CHOICE {
    received-total-wide-band-power                          Received-total-wide-band-power-Value-IncrDecrThres,
    transmitted-carrier-power       Transmitted-Carrier-Power-Value,
    acknowledged-prach-preambles            Acknowledged-PRACH-preambles-Value,
    uL-TimeslotISCP                 UL-TimeslotISCP-Value-IncrDecrThres,
    sir                         SIR-Value-IncrDecrThres,
    sir-error                   SIR-Error-Value-IncrDecrThres,
    transmitted-code-power          Transmitted-Code-Power-Value-IncrDecrThres,
    rscp                            RSCP-Value-IncrDecrThres,
    round-trip-time                 Round-Trip-Time-IncrDecrThres,
    acknowledged-PCPCH-access-preambles     Acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles         Detected-PCPCH-access-preambles,
    ...,
    extension-ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold        Extension-ReportCharacteristicsType-
MeasurementIncreaseDecreaseThreshold
}

Extension-ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold    ::= ProtocolIE-Single-Container {{ Extension-
ReportCharacteristicsType-MeasurementIncreaseDecreaseThresholdIE }}

Extension-ReportCharacteristicsType-MeasurementIncreaseDecreaseThresholdIE NBAP-PROTOCOL-IES ::= {
{ ID id-TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmission CRITICALITY reject                TYPE
TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmissionValue PRESENCE mandatory}|
{ ID id-UpPTSInterferenceValue      CRITICALITY reject  TYPE    UpPTSInterferenceValue      PRESENCE mandatory }
}

ReportCharacteristicsType-MeasurementThreshold ::= CHOICE {
    received-total-wide-band-power                          Received-total-wide-band-power-Value,
    transmitted-carrier-power       Transmitted-Carrier-Power-Value,
    acknowledged-prach-preambles            Acknowledged-PRACH-preambles-Value,
    uL-TimeslotISCP                 UL-TimeslotISCP-Value,
    sir                         SIR-Value,
    sir-error                   SIR-Error-Value,
    transmitted-code-power          Transmitted-Code-Power-Value,
    rscp                            RSCP-Value,
    rx-timing-deviation             Rx-Timing-Deviation-Value,
    round-trip-time                 Round-Trip-Time-Value,
    acknowledged-PCPCH-access-preambles     Acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles         Detected-PCPCH-access-preambles,
    ...,
    extension-ReportCharacteristicsType-MeasurementThreshold        Extension-ReportCharacteristicsType-MeasurementThreshold
}

Extension-ReportCharacteristicsType-MeasurementThreshold    ::= ProtocolIE-Single-Container {{ Extension-ReportCharacteristicsType-
MeasurementThresholdIE }}

Extension-ReportCharacteristicsType-MeasurementThresholdIE NBAP-PROTOCOL-IES ::= {
    { ID id-TUTRANGPSMeasurementThresholdInformation    CRITICALITY reject  TYPE TUTRANGPSMeasurementThresholdInformation   PRESENCE
mandatory }|
    { ID id-SFNSFNMeasurementThresholdInformation   CRITICALITY reject  TYPE SFNSFNMeasurementThresholdInformation    PRESENCE mandatory }|
    { ID id-Rx-Timing-Deviation-Value-LCR   CRITICALITY reject  TYPE Rx-Timing-Deviation-Value-LCR                  PRESENCE mandatory}|
```

```
    { ID id-HS-SICH-Reception-Quality-Measurement-Value CRITICALITY reject  TYPE HS-SICH-Reception-Quality-Measurement-Value PRESENCE
mandatory}|
    { ID id-TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmission CRITICALITY reject            TYPE
TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmissionValue PRESENCE mandatory}|
    { ID id-UpPTSInterferenceValue      CRITICALITY reject  TYPE    UpPTSInterferenceValue      PRESENCE mandatory }|
}

ReportCharacteristicsType-ScaledMeasurementChangeTime ::= CHOICE {
    msec                MeasurementChangeTime-Scaledmsec,
    ...
}

MeasurementChangeTime-Scaledmsec ::= INTEGER (1..6000,...)
-- MeasurementChangeTime-Scaledmsec = Time * 10
-- Unit ms, Range 10ms .. 60000ms(1min), Step 10ms

ReportCharacteristicsType-ScaledMeasurementHysteresisTime ::= CHOICE {
    msec                MeasurementHysteresisTime-Scaledmsec,
    ...
}

MeasurementHysteresisTime-Scaledmsec ::= INTEGER (1..6000,...)
-- MeasurementHysteresisTime-Scaledmsec = Time * 10
-- Unit ms, Range 10ms .. 60000ms(1min), Step 10ms

ReportCharacteristicsType-ReportPeriodicity ::= CHOICE {
    msec                ReportPeriodicity-Scaledmsec,
    min                 ReportPeriodicity-Scaledmin,
    ...
}

ReportPeriodicity-Scaledmsec ::= INTEGER (1..6000,...)
-- ReportPeriodicity-msec = ReportPeriodicity * 10
-- Unit ms, Range 10ms .. 60000ms(1min), Step 10ms

ReportPeriodicity-Scaledmin ::= INTEGER (1..60,...)
-- Unit min, Range 1min .. 60min(hour), Step 1min

ReportPeriodicity-Scaledhour ::= INTEGER (1..24,...)
-- Unit hour, Range 1hour .. 24hours(day), Step 1hour

ResourceOperationalState ::= ENUMERATED {
    enabled,
    disabled
}

RL-ID ::= INTEGER (0..31)

RL-Set-ID               ::= INTEGER (0..31)

Round-Trip-Time-IncrDecrThres ::= INTEGER(0..32766)

RNC-ID                  ::= INTEGER (0..4095)
```

```
Round-Trip-Time-Value ::= INTEGER(0..32767)
-- According to mapping in [22]

RSCP-Value ::= INTEGER (0..127)
-- According to mapping in [23]

RSCP-Value-IncrDecrThres ::= INTEGER (0..126)

Received-total-wide-band-power-Value ::= INTEGER(0..621)
-- According to mapping in [22]/[23]

Received-total-wide-band-power-Value-IncrDecrThres ::= INTEGER (0..620)

RequestedDataValueInformation ::= CHOICE {
    informationAvailable        InformationAvailable,
    informationnotAvailable     InformationnotAvailable
}

InformationAvailable::= SEQUENCE {
    requesteddataValue      RequestedDataValue,
    ie-Extensions           ProtocolExtensionContainer { { InformationAvailableItem-ExtIEs} }                       OPTIONAL,
    ...
}


InformationAvailableItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

InformationnotAvailable ::= NULL

RequestedDataValue ::= SEQUENCE {
    dgps-corrections     DGPSCorrections  OPTIONAL,
    gps-navandrecovery   GPS-NavigationModel-and-TimeRecovery   OPTIONAL,
    gps-ionos-model      GPS-Ionospheric-Model  OPTIONAL,
    gps-utc-model        GPS-UTC-Model          OPTIONAL,
    gps-almanac          GPS-Almanac            OPTIONAL,
    gps-rt-integrity     GPS-RealTime-Integrity  OPTIONAL,
    gpsrxpos             GPS-RX-POS              OPTIONAL,
    ...
}

Rx-Timing-Deviation-Value ::= INTEGER (0..8191)
-- According to mapping in [23]

Rx-Timing-Deviation-Value-LCR ::= INTEGER (0..511)
-- According to mapping in [23]
```

/* partly omitted */

```
-- ==========================================
--  U
-- ==========================================

UARFCN ::= INTEGER (0..16383, ...)
-- corresponds to 1885.2MHz .. 2024.8MHz

UC-Id ::= SEQUENCE {
    rNC-ID              RNC-ID,
    c-ID                C-ID,
    iE-Extensions           ProtocolExtensionContainer { {UC-Id-ExtIEs} } OPTIONAL,
    ...
}
UC-Id-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UDRE ::= ENUMERATED {
    udre-minusequal-one-m,
    udre-betweenoneandfour-m,
    udre-betweenfourandeight-m,
    udre-greaterequaleight-m
}

UE-Capability-InformationFDD ::= SEQUENCE {
    hSDSCH-TrCH-Bits-Per-HSDSCH-TTI         ENUMERATED {v7300, v14600, v20456, v28800,...},
    hSDSCH-Multi-Code-Capability            ENUMERATED {v5, v10, v15,...},
    min-Inter-TTI-Interval                  INTEGER (1..3,...),
    mAChs-Reordering-Buffer-Size            INTEGER (1..300,...),
    iE-Extensions                       ProtocolExtensionContainer { { UE-Capability-InformationFDD-ExtIEs } }        OPTIONAL,
    ...
}

UE-Capability-InformationFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-Capability-InformationTDD ::= SEQUENCE {
    hsDSCHTrCHBitsPerTTI                    ENUMERATED { v7040, v10228, v14080, ... },
    hSDSCH-Multi-Code-Capability            ENUMERATED {v8, v12, v16,...},
    mAChs-Reordering-Buffer-Size            INTEGER (1..300,...),
    iE-Extensions                       ProtocolExtensionContainer { { UE-Capability-InformationTDD-ExtIEs } }        OPTIONAL,
    ...
}

UE-Capability-InformationTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CapacityCredit ::= INTEGER (0..65535)
```

```
UL-DL-mode ::= ENUMERATED {
    ul-only,
    dl-only,
    both-ul-and-dl
}

Uplink-Compressed-Mode-Method   ::= ENUMERATED {
    sFdiv2,
    higher-layer-scheduling,
    ...
}

UL-Timeslot-Information ::= SEQUENCE (SIZE (1..maxNrOfULTSs)) OF UL-Timeslot-InformationItem

UL-Timeslot-InformationItem ::= SEQUENCE {
    timeSlot                                TimeSlot,
    midambleShiftAndBurstType               MidambleShiftAndBurstType,
    tFCI-Presence                           TFCI-Presence,
    uL-Code-InformationList                 TDD-UL-Code-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-Timeslot-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

UL-Timeslot-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotLCR-Information ::= SEQUENCE (SIZE (1..maxNrOfULTSLCRs)) OF UL-TimeslotLCR-InformationItem

UL-TimeslotLCR-InformationItem ::= SEQUENCE {
    timeSlotLCR                             TimeSlotLCR,
    midambleShiftLCR                        MidambleShiftLCR,
    tFCI-Presence                           TFCI-Presence,
    uL-Code-InformationList                 TDD-UL-Code-LCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-TimeslotLCR-InformationItem-ExtIEs} }   OPTIONAL,
    ...
}

UL-TimeslotLCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCCH-SlotFormat ::= INTEGER (0..5,...)

UL-SIR ::= INTEGER (-82..173)
-- According to mapping in [16]

UL-FP-Mode ::= ENUMERATED {
    normal,
```

```
    silent,
    ...
}

UL-PhysCH-SF-Variation ::= ENUMERATED {
    sf-variation-supported,
    sf-variation-not-supported
}

UL-ScramblingCode ::= SEQUENCE {
    uL-ScramblingCodeNumber         UL-ScramblingCodeNumber,
    uL-ScramblingCodeLength         UL-ScramblingCodeLength,
    iE-Extensions                   ProtocolExtensionContainer { { UL-ScramblingCode-ExtIEs } }                     OPTIONAL,
    ...
}

UL-ScramblingCode-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-ScramblingCodeNumber ::= INTEGER (0..16777215)

UL-ScramblingCodeLength ::= ENUMERATED {
    short,
    long
}

UL-Synchronisation-Parameters-LCR ::= SEQUENCE {
    uL-Synchronisation-StepSize         UL-Synchronisation-StepSize,
    uL-Synchronisation-Frequency        UL-Synchronisation-Frequency,
    iE-Extensions                       ProtocolExtensionContainer { { UL-Synchronisation-Parameters-LCR-ExtIEs } }   OPTIONAL,
    ...
}

UL-Synchronisation-Parameters-LCR-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-Synchronisation-StepSize ::= INTEGER (1..8)

UL-Synchronisation-Frequency ::= INTEGER (1..8)

UL-TimeSlot-ISCP-Info ::= SEQUENCE (SIZE (1..maxNrOfULTSs)) OF  UL-TimeSlot-ISCP-InfoItem

UL-TimeSlot-ISCP-InfoItem ::= SEQUENCE {
    timeSlot                        TimeSlot,
    iSCP                            UL-TimeslotISCP-Value,
    iE-Extensions                   ProtocolExtensionContainer { { UL-TimeSlot-ISCP-InfoItem-ExtIEs} }              OPTIONAL,
    ...
 }

UL-TimeSlot-ISCP-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

UL-TimeSlot-ISCP-LCR-Info ::= SEQUENCE (SIZE (1..maxNrOfULTSLCRs)) OF   UL-TimeSlot-ISCP-LCR-InfoItem

UL-TimeSlot-ISCP-LCR-InfoItem ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    iSCP                            UL-TimeslotISCP-Value,
    iE-Extensions                   ProtocolExtensionContainer { { UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs} }            OPTIONAL,
    ...
 }

UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UpPTSInterferenceValue ::= INTEGER (0..127)

USCH-Information ::= SEQUENCE (SIZE (1..maxNrOfUSCHs)) OF USCH-InformationItem

USCH-InformationItem ::= SEQUENCE {
    uSCH-ID                                 USCH-ID,
    cCTrCH-ID                               CCTrCH-ID,
    transportFormatSet                      TransportFormatSet,
    allocationRetentionPriority             AllocationRetentionPriority,
    iE-Extensions                           ProtocolExtensionContainer { { USCH-InformationItem-ExtIEs} }            OPTIONAL,
    ...
}

USCH-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-bindingID                       CRITICALITY ignore      EXTENSION   BindingID                           PRESENCE    optional }|
    { ID id-transportlayeraddress           CRITICALITY ignore      EXTENSION   TransportLayerAddress               PRESENCE    optional },
    ...
}

USCH-InformationResponse ::= SEQUENCE (SIZE (1..maxNrOfUSCHs)) OF USCH-InformationResponseItem

USCH-InformationResponseItem ::= SEQUENCE {
    uSCH-ID                                     USCH-ID,
    bindingID                                   BindingID               OPTIONAL,
    transportLayerAddress                       TransportLayerAddress   OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { USCH-InformationResponseItem-ExtIEs} }    OPTIONAL,
    ...
}

USCH-InformationResponseItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotISCP-Value ::= INTEGER (0..127)
-- According to mapping in [23]

UL-TimeslotISCP-Value-IncrDecrThres ::= INTEGER (0..126)
```

```
USCH-ID ::= INTEGER (0..255)
```

/* partly omitted */

9.3.6 Constant Definitions

/* partly omitted */

```
id-CCTrCH-Minimum-DL-Power-InformationModify-RL-ReconfRqstTDD       ProtocolIE-ID ::= 579
id-Initial-DL-Power-TimeslotLCR-InformationItem                    ProtocolIE-ID ::= 580
id-Maximum-DL-Power-TimeslotLCR-InformationItem                    ProtocolIE-ID ::= 581
id-Minimum-DL-Power-TimeslotLCR-InformationItem                    ProtocolIE-ID ::= 582
id-TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmission ProtocolIE-ID ::= 587
id-HS-SICH-Reception-Quality                                       ProtocolIE-ID ::= 588
id-HS-SICH-Reception-Quality-Measurement-Value                     ProtocolIE-ID ::= 589
id-HSSICH-Info-DM-Rprt                                             ProtocolIE-ID ::= 590
id-HSSICH-Info-DM-Rqst                                             ProtocolIE-ID ::= 591
id-HSSICH-Info-DM-Rsp                                 ProtocolIE-ID ::= 592
id-UpPTSInterferenceValue                                          ProtocolIE-ID ::= xxx
```