CR-Form-v3

CHANGE REQUEST

| ⌘ | **23.153** CR **025** | ⌘ | rev **01** | ⌘ | Current version: | **4.1.0** | ⌘ |

for

Proposed change affects: ⌘   (U)SIM ☐   ME/UE **X**   Radio Access Network ☐   Core Network **X**

Title: ⌘	Default Codec Types For "UMTS only" and "UMTS & GSM dual system" UEs	
Source: ⌘	Ericsson L.M.	
Work item code: ⌘	OoBTC	*Date:* ⌘ 2001-08-28
Category: ⌘ **F**		*Release:* ⌘ REL-4

Use <u>one</u> of the following categories:
F (essential correction)
A (corresponds to a correction in an earlier release)
B (Addition of feature),
C (Functional modification of feature)
D (Editorial modification)
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
REL-4   (Release 4)
REL-5   (Release 5)

Reason for change: ⌘	SA4 approved a new codec type UMTS_AMR2, a superset of UMTS_AMR, to be used as default for dual system Ues in R99 and all Ues from REL4 onwards.
Summary of change: ⌘	Introduce text to describe the new default codec type and requirement for its selection by the Core Network
Consequences if not approved: ⌘	Interworking between TrFO and TFO will be hindered and unnecessary codec modifications may occur at inter-system handover.

Clauses affected: ⌘	5.6
Other specs affected: ⌘ **X** Other core specifications ⌘	Impacts to 24.008 where Default AMR codec is specified
	☐ Test specifications
	☐ O&M Specifications
Other comments: ⌘	Revision 1 of this CR is the additional proposed changes by CN1#19.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

****First Modified Section ****

5.6 CN Node handling of Codec Types & Codec Modes

The supported codec list received by the MSC in DTAP protocol [2] has no priority, whereas the list sent in the OoBTC procedures is sent with a level of preference.

The default Codec Type for "R99 UMTS only" terminals is UMTS_AMR, the default Codec Type for "R99 dual system" (supporting GSM & UMTS radio accesses) and for all terminals from Release 4 onwards is UMTS_AMR_2, see [5] for the detailed description. The UMTS_AMR_2 is a superset of the UMTS_AMR. It behaves as a FR_AMR codec in the UL and as a UMTS_AMR codec in the DL. This allows UMTS terminals to operate in TFO with GSM terminals. The UMTS_AMR_2 is fully compatible with UMTS_AMR in TFO and TrFO and fully compatible with R99 CN nodes (TC in MGW).

If the UE supports both Codec Types (UMTS_AMR and UMTS_AMR_2), then the MSC shall indicate only the UMTS_AMR_2 in the OoBTC codec negotiation. If no Codec List IE is received and the UE is"UMTS only", then the MSC shall assume UMTS_AMR as supported Codec Type. If no Codec List IE is received, but the UE is "dual system", then the MSC shall assume UMTS_AMR_2 as the supported codec type. The MSC shall assume "dual system" support only if the UE indicates at least one GSM speech version in Octet 3a etc. of the Bearer Capability.

~~The codec type UMTS_AMR2, see [5] for detailed description, shall always be given highest priority by the MSC. Dual system UEs (supporting GSM & UMTS radio accesses) shall support UMTS_AMR2 as their default; only for 'UMTS only' terminals may the MSC assume UMTS_AMR (R99 UMTS default codec) as their default. If no Codec List IE is received but the UE is dual system, the MSC shall assume UMTS_AMR2 as the supported codec type and shall signal this in the OoBTC codec negotiation. The UMTS_AMR2 codec type behaves as a FR_AMR codec in the UL and as a UMTS_AMR codec in the DL; this allows UMTS terminals to operate in TFO with a GSM terminal.~~

 In order to support interworking with 2G systems it is recommended that MGWs support 2G EFR codecs (GSM_EFR, PDC_EFR, TDMA_EFR) ~~and for GSM the FR_AMR codec~~. In order to avoid modifications during handover between 2G and 3G systems the MSC nodes may give preference to a suitable 2G codec.

The originating CN node, while performing speech service negotiation with a terminating CN node, shall indicate the maximum number of codec modes that shall be selected during speech codec negotiation. This maximum number of supported codec modes may depend on optimisation strategies applied by the originating CN node. The recommended value is "four" (see [10]).

The terminating CN node receiving this information compares the maximum number of codec modes received by the originating CN with its own one and shall decide on the minimum of both numbers to be applied as result of the negotiation.

The decision about the actual codec modes to be selected as the Active Codec Set (ACS) shall be left to the terminating CN node. In order to provide harmonisation of out of band codec negotiation (TrFO) and inband codec negotiation (TFO) very similar codec selection mechanisms as those being defined for TFO shall be applied for TrFO, see [10]. These rules shall be taken into account when forwarding a codec list from the originating node to proceeding node, both for TrFO and TFO.

Whenever one or several TrFO links have been already established and initialised, the CN node (e.g. the serving CN in case of Call Hold scenarios, the visited CN node in case of Call Forwarding scenarios, etc.) initiating a subsequent codec negotiation, shall give the already negotiated codec type, including its ACS, highest preference to reduce the possibility of performing bearer re-establishment or UP re-initialisation of the already established and initialised TrFO links.

When the MSC node requests a RAB assignment the Subflow Combinations provided shall either all be initialised by the RNC or all rejected with appropriate cause code.

The MSC shall always ~~define~~ assume "Discontinuous Transmission (DTX)" as mandatory and shall define "SID" and "No Data" SDUs in addition to the negotiated speech codec modes. This is because for TrFO the RAB requested by one RNC must match that requested by the peer RNC – they are effectively the same RAB. If one MSC requires DTX support then the RAB requested by the far end MSC must also support DTX (even if it is not desired by that MSC). As no Out Of Band negotiation for DTX is supported nor DTX control to the UE, DTX shall be mandatory for TrFO connections.

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