Technical Specification Group Services and System Aspects   **TSGS#26(04)0842**
Meeting #26, Athens, Greece
13-16 December 2004

Source: **TSG-SA WG4**

Title: CRs TS 26.111 on 3G-324M Improvements (Release 6)

Document for: **Approval**

Agenda Item: **7.4.3**

The following CRs, agreed at the TSG-SA WG4 meeting #33, are presented to TSG SA #26 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.111	012	1	Rel-6	Addition of the missing signalling of H.264 decoder capabilities	B	6.0.0	S4	TSG-SA WG4#33	S4-040786
26.111	013	1	Rel-6	Reference Corrections	F	6.0.0	S4	TSG-SA WG4#33	S4-040817

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **26.111** CR **12** | ⌘**rev** **1** ⌘ | Current version: | **6.0.0** ⌘ |

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

**Proposed change affects:** | UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Addition of the missing signalling of H.264 decoder capabilities	
Source: ⌘	TSG-SA WG4	
Work item code: ⌘	3G-324MI	*Date:* ⌘ 14/12/2004
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:
   Ph2   *(GSM Phase 2)*
   R96   *(Release 1996)*
   R97   *(Release 1997)*
   R98   *(Release 1998)*
   R99   *(Release 1999)*
   Rel-4   *(Release 4)*
   Rel-5   *(Release 5)*
   Rel-6   *(Release 6)*
   Rel-7   *(Release 7)*

Reason for change: ⌘	It was agreed at SA4#32 to add signalling capabilities for the support of FMO/ASO features.
Summary of change: ⌘	The signalling of FMO/ASO support in the decoder can be made by signalling the appropriate constraint_set_flag value. This is already done in PSC (via SDP). In order to have a 3G-324M implementation mirror the PSC (SDP) implementation, we suggest a booleanArray ParameterValue in a GenericParameter definition with a bit allocation following the "profile-iop" (mid) byte in the SDP profile-level-id (see http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-h264-11.txt).
Consequences if not approved: ⌘	The agreed signalling capabilities are not in place. Decoders without FMO/ASO support are not able to signal it and there is a high risk of interoperability problems.

Clauses affected: ⌘	6.6

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

--- start of modification ---

6.6 Video channels

Support for H.261 [9] is optional.

Support for MPEG-4 Visual is optional. When supported, MPEG-4 Visual codecs shall support Simple Profile @ Level 0. The FLC code 0000 1000 in Table G-1 ñ "FLC table for profile_and_level_indication" in ISO/IEC 14496-2 [14] is assigned to it. Additional information can be found in [14].

MPEG-4 Visual Simple Profile @ level 0 provides error concealment as part of the simple profile through Data Partitioning (DP), Reversible Variable Length Coding (RVLC), Resynchronization Marker (RM) and header extension code. MPEG-4 Visual is baseline compatible with H.263 [8].

When opening a logical channel for MPEG-4 Visual, configuration information (Visual Object Sequence Header, Visual Object Header, and Video Object Layer Header) shall be sent in the decoderConfigurationInformation parameter. The same information shall also be sent in the MPEG-4 video bitstream. If the operational mode of MPEG-4 Visual encoder needs to be changed, the existing MPEG-4 video logical channel shall be closed and H.245 [6] procedures for opening a new MPEG-4 video logical channel shall be started. The new operational mode shall be indicated in the parameters of the new logical channel.

Support for H.264 (MPEG-4 AVC) [19] is optional. When supported, H.264 codecs shall support Baseline level 1, without requirements on output timing conformance (Annex C of [19]).

Support for H.264 [19] shall be signalled according to H.241 chapter 8 "Capability Exchange signalling" [20].

When opening a logical channel for H.264 [19], initial sequence parameter set(s) and picture parameter set(s) should be sent in a H.264 DecoderConfigurationInformation (DCI) defined in Table 1 below, amending H.241 parameters [20]. Additionnally, decoder capabilities may be sent in a H.264 AcceptRedundantSlices and a H.264 ProfileIOP defined in Table 2 -and 3 below, amending H.241 parameters [20].

> NOTE: The H.264 DCI parameter can also be used when either party signals a H.245 [6] MasterSlaveDetermination terminalType parameter greater than 128, such as e.g. a Multipoint Conference Unit (MCU).

A sequence parameter set or a picture parameter set with a particular value of seq_parameter_set_id or pic_parameter_set_id, respectively, sent in the H.264 [19] DCI shall be identical to the earliest occurrence of the sequence parameter set or picture parameter set with the same value of seq_parameter_set_id or pic_parameter_set_id, respectively, sent in the H.264 bitstream.

If DCI was used when a H.264 [19] logical channel was opened and H.264 sequence parameter sets need to be changed or new sets need to be added during the session, the existing H.264 logical channel shall be closed and H.245 [6] procedures for opening a new H.264 logical channel shall be started, in which sequence parameter set(s) and picture parameter set(s) shall be sent in a DCI. Each sequence parameter set of H.264 [19] shall contain the vui_parameters syntax structure including the num_reorder_frames syntax element set equal to 0.

If H.264 picture parameter sets need to be changed or new sets need to be added during a session, it may be done either by opening a new logical channel using the same procedure as described above or within the current channel, by including picture parameter set NAL units directly in the bitstream.

Table 1 / TS 26.111 ñ H.264 Capability Parameter ñ DecoderConfigurationInformation (DCI)

Parameter name	DecoderConfigurationInformation
Parameter description	This is a nonCollapsing GenericParameter. DecoderConfigurationInformation indicates how to configure the decoder for a particular H.264 video sequence [19]. It contains sequence parameter set NAL units, picture parameter set NAL units, or both, using the byte stream format specified in Annex B/H.264, separating NAL units with a start code. The use of a start code before the first parameter set NAL unit is optional.
Parameter identifier value	43

Parameter status	Optional. Shall not be present for Capability Exchange and Mode Request. May be present exactly once for Logical Channel Signalling.
Parameter type	OctetString
Supersedes	-

A decoder may indicate itsí capability to make use of H.264 redundant slices by the following parameter.

Table 2 / TS 26.111 ñ H.264 Capability Parameter ñ AcceptRedundantSlices

Parameter name	AcceptRedundantSlices
Parameter description	This is a collapsing GenericParameter. AcceptRedundantSlices indicates the capability to use H.264 redundant slices and corresponds to the MIME video/H264 parameter ì redundant-pic-capî . When False or when the parameter is not present, it indicates that the receiver makes no attempt to use redundant coded pictures to correct incorrectly decoded primary coded pictures and a sender should not send redundant slices. When True, it indicates that the receiver is capable of decoding any such redundant slice that covers a corrupted area in a primary decoded picture (at least partly), and a sender may send redundant slices. When using a H.264 profile (or subset of a profile as indicated by the H.264 ProfileIOP parameter defined in Table 3) and level that disallows the use of redundant slices, this parameter shall be ignored.
Parameter identifier value	44
Parameter status	Optional. May be present exactly once for Capability Exchange Signalling.
Parameter type	Logical
Supersedes	-

NOTE: An encoder should only code redundant slices if it knows that the far-end decoder makes use of this feature. Encoders should also pay attention to potential implications on end-to-end delay.

A decoder may indicate additional limitations that only the common subset of the algorithmic features and limitations of the Baseline level 1 are supported by the following parameter.

Table 3 / TS 26.111 ñ H.264 Capability Parameter ñ ProfileIOP

Parameter name	ProfileIOP
Parameter description	ProfileIOP indicates that the capability to decode H.264 streams is limited to a common subset of the algorithmic features included in the indicated profile and level. This parameter is a Boolean array. bit 1 (value 128) is constraint_set0_flag. bit 2 (value 64) is constraint_set1_flag. bit 3 (value 32) is constraint_set2_flag. All other bits are reserved, shall be set to 0, and shall be ignored by receivers. constraint_set0_flag, constraint_set1_flag and constraint_set2_flag are defined in [18]. As an example, a receiver indicating decoding support of the intersection of the baseline and main profile will signal value 11000000 (constraint_set0_flag = 1, constraint_set1_flag = 1, constraint_set2_flag = 0).
Parameter identifier value	46
Parameter status	Optional. May be present exactly once for Capability Exchange Signalling.
Parameter type	BooleanArray
Supersedes	-

A terminal supporting H.264 encoding should respond to all videoFastUpdatePicture commands received via the H.245 control channel. If an H.264 encoder responds to videoFastUpdatePicture, it shall use the procedure specified in subclause 6.2.2 of H.241.

A terminal supporting H.264 shall start decoding immediately when it receives data (even if the stream does not start with an IDR access unit) or alternatively no later than it receives the next IDR access unit or the next recovery point SEI message, whichever is earlier in decoding order. The decoding process for a stream not starting with an IDR access unit shall be the same as for a valid H.264 bitstream. However, the client shall be aware that such a stream may contain references to picture not available in the decoded picture buffer. The display behaviour of the client is out of scope of this specification.

　　NOTE:　　Terminals may use full-frame freeze and full-frame freeze release SEI messages of H.264 to control the display process.

--- End of modification ---

CR-Form-v7

CHANGE REQUEST

| ⌘ | **26.111 CR 013** | ⌘**rev** | **1** | ⌘ | Current version: | **6.0.0** | ⌘ |

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Proposed change affects: | UICC apps⌘ ☐   ME **X**   Radio Access Network ☐   Core Network ☐

Title:	⌘	Reference Corrections
Source:	⌘	TSG-SA WG4
Work item code:⌘	3G-324MI	*Date:* ⌘ 14/12/2004

Category:	⌘	**F**	*Release:* ⌘ Rel-6

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  R99 *(Release 1999)*
  Rel-4 *(Release 4)*
  Rel-5 *(Release 5)*
  Rel-6 *(Release 6)*

Reason for change:	⌘	There are erroneous references.
Summary of change:⌘		Correction of erroneous references in the reference list and also to a table.
Consequences if not approved:	⌘	Erroneous references will make text interpretation and implementation difficult.

Clauses affected:	⌘	2, 6.6.2

		Y	**N**
Other specs affected:	⌘		**X** Other core specifications ⌘
			X Test specifications
			X O&M Specifications

Other comments:	⌘	

 (cut text)

2　　　References

(cut text)

[17]　　　　　3GPP TS 26.073: "Adaptive Multi-Rate (AMR); ANSI C source code".

[18]　　　　　3GPP TS 26.171: "AMR Wideband Speech codec; General Description".

[19̶8̶]　　　　　ITU-T Recommendation H.264 (2003): "Advanced video coding for generic audiovisual services" | ISO/IEC 14496-10:2003: "Information technology ñ Coding of audio-visual objects ñ Part 10: Advanced Video Coding".

[1̶9̶20]　　　　ITU-T Recommendation H.241 (2003): "Extended video procedures and control signals for H.300 series terminals".

[20]　　　　~~3GPP TS 26.171: "AMR Wideband Speech codec; General Description".~~

[21]　　　　　ITU-T Recommendation G.722.2 Annex F (2002): "AMR-WB usage in H.245".

(cut text)

6.6.2　　　H.264 (MPEG-4 AVC) interface to multiplex

Shall conform to the byte stream format according to H.241 chapter 7.1.5 "Transport of H.264 streams in H.324 systems" [20].

More strict alignment of AL-SDU and NAL units may optionally be used. To signal capability for and use of this mode, the generic parameter described in Table 3̶2̶ shall be used, amending the H.264 Generic Capability in H.241 [20].

(cut text)