Technical Specification Group Services and System Aspects **TSGS#26(04)0847**
Meeting #26, Athens, Greece
13-16 December 2004

Source: TSG-SA WG4

Title: CRs TS 26.103 on Clarifications on AMR (Releases 4, 5 and 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
26.103	033	1	Rel-4	Clarifications for AMR	F	4.3.0	S4	TSG-SA WG4#33	S4-040842
26.103	035	1	Rel-5	Clarifications for AMR	A	5.5.0	S4	TSG-SA WG4#33	S4-040843
26.103	036	1	Rel-6	Clarifications for AMR	A	6.0.0	S4	TSG-SA WG4#33	S4-040844

3GPP TSG-SA WG4 Meeting #33 ***S4-040842***

Helsinki, FINLAND. 22nd to 26th November 2004.

CR-Form-v7

CHANGE REQUEST

⌘ **TS 26.103 CR 033** ⌘**rev 1** ⌘ Current version: **4.3.0** ⌘

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

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

Title:	⌘	Clarifications for AMR
Source:	⌘	TSG-SA WG4
Work item code:	⌘	TrFO ***Date:*** ⌘ 2004-12-14
Category:	⌘	**F** ***Release:*** ⌘ REL-4

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:	⌘	Essential **Correction** due to proposed Changes in TS 23.153. In CR 23.153 077 several Defintions and Procedure Specifications are proposed to be added from REL-4 onwards. These changes should be reflected in TS 26.103 to avoid duplication and potential misalignment or misunderstanding. For the AMR Codec Types several parameters may be specified in the Single Codec IE, but these are partly optional. Some clarification is added for the default meaning of these parameters, when they are omitted.
Summary of change:	⌘	i) Clarifications on the default meaning of omitted AMR parameters. ii) Reference to definitions for ìSupported Codec Listî, ìAvailable Codec Listî, ìSelected Codecî, etc. as proposed for inclusion in TS 23.153. iii) remove of procedural descriptions, because they are proposed for inclusion in TS 23.153.
Consequences if not approved:	⌘	A risk remains that different implementations are not fully compatible. Definitions and procedure Specifications in TS 26.103 and TS 23.153 may be contradicting.

Clauses affected:	⌘	3 (definitions) and 5.4 (AMR)			
Other specs affected:	⌘	**Y** X **N**	Other core specifications Test specifications O&M Specifications	⌘	TS 23.153

Other comments:	⌘	This changes and clarifications are backward compatible. Corresponding CRs for REL-5 and REL-6 exist.

How to create CRs using this form:
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Below is a brief summary:

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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 CHANGE

3 Definitions and Abbreviations

3.1 Definitions

Codec Type: defines a specific type of speech Coding algorithms (e.g. GSM FR, GSM FR AMR).

Codec Mode:defines a specific mode of a Codec Type (e.g. 12,2 kBit/s Mode of the GSM FR AMR).

Organisation Identifier (OID): Identifies the standard organisation (e.g. 3GPP) producing a specification for a Codec List. ITU-T is responsible for maintaining the list of Organisation Identifiers.

System Identifier (SysID): Identifies the radio access technology (e.g. GSM or UMTS) for which the supported Codec List is defined.

Other definitions are given in TS 23.153 [8].

NEXT CHANGE

5.4 Four Adaptive Multi-Rate Codec Types (FR AMR, HR AMR, UMTS AMR, UMTS AMR2)

The Adaptive Multi-Rate Codec algorithm is applied in GSM and UMTS in four different Codec Types.
The Codec IDentification (CoID) codes are defined to be:
FR_AMR_CoID := 0x0000.0011.
HR_AMR_CoID := 0x0000.0100.
UMTS_AMR_CoID := 0x0000.0101.
UMTS_AMR_2_CoID := 0x0000.0110.

The Single Codec Information Element for AMR Codec Types may have several additional parameters. These parameters are optional in the Supported Codec List (BICC) and in the Available Codec List (BICC)~~at originating side~~, but these parameters shall specify exactly one AMR Configuration for the Selected Codec (BICC), see [8]. ~~mandatory for the terminating side:~~

~~**Active Codec Set, ACS:** eight bits.~~
~~For the FR AMR and the HR AMR up to four modes may be selected by setting the corresponding bits to "1";~~

~~In HR AMR only four out of the lower six modes can be selected;~~
~~For the UMTS AMR2 up to all eight modes may be selected.~~
~~If the ACS is not specified at originating side, then all modes are supported there.~~
~~If ACS is not provided, then SCS and MACS cannot be provided as well.~~

Active Codec Set, ACS: eight bits.
Each bit corresponds to one AMR Mode. Setting the bit to ì1î means the mode is included, setting the bit to ì0î means the mode is not included in the ACS.
Note: Except for HR_AMR all eight AMR modes may be selected, for the HR_AMR only the six lower modes.

~~**Supported Codec Set, SCS:** eight bits.~~
~~In FR AMR and UMTS AMR2 up to eight modes may be selected by setting the corresponding bits to "1".~~
~~In HR AMR only the lower six modes may be selected.~~
~~If the SCS is not specified at originating side, then all modes are supported there.~~
~~If SCS is not provided, then MACS cannot be provided as well.~~

Supported Codec Set, SCS: eight bits.
Each bit corresponds to one AMR Mode, as in the ACS. Setting the bit to ì1î means the mode is supported, setting the bit to ì0î means the mode is not supported. The SCS shall at least contain all modes of the ACS.

~~**Maximal number of Codec Modes, MACS:** three bits.~~
~~For the FR AMR and the HR AMR one to four Codec Modes are allowed within the ACS.~~
~~Coding: "001: one, "010": two, "011": three, "100": four Codec modes allowed.~~
~~For the UMTS AMR2 one up to eight Codec Modes are allowed within the ACS.~~
~~Coding: "001: one, "010": two, Ö "111": seven, "000" eight Codec modes allowed.~~
~~If MACS is not specified at originating side, then the maximum of modes is supported there.~~

Maximal number of codec modes in the ACS, MACS: three bits.
MACS shall be used in the Supported Codec List (BICC) and the Available Codec List (BICC), when it is necessary to restrict the maximum number of modes for the (future) Selected Codec (BICC).
For FR AMR, HR AMR and OHR AMR one up to four, for the UMTS AMR and UMTS AMR2 one up to eight Codec Modes are allowed.
Coding: ì001î: one, ì010î: two, Ö ì111î: seven, ì000î: eight Codec Modes allowed.

~~**Optimisation Mode for ACS , OM:** one bit.~~
~~Coding: "0": Optimisation of the ACS not supported, "1": Optimisation of the ACS supported.~~
~~The Optimisation Mode indicates in TFO, whether the sending side supports the modification (optimisation) of its ACS for the needs of the distant side. This parameter is necessary in UMTS OoBTC to support TFO in "transcoders at the edge" scenarios. In case the OM is set to "not supported" the offered ACS cannot be altered.~~
~~Only Rate Control can then be used to restrict the modes within the ACS.~~
~~The use of the Optimisation Mode parameter for TrFO is defined in 3GPP TS 23.153 [9].~~

Optimisation Mode for ACS, OM: one bit.
OM indicates, whether the sending side supports the modification (optimisation) of its offered ACS for the needs of the distant side.
Coding: "0": Optimisation of the ACS not supported, "1": Optimisation of the ACS supported.
If OM is specified as îOptimisation of the ACS not supportedî, then SCS and MACS have no meaning for this Single Codec Information Element; then the SCS shall at least contain all modes of the offered ACS; MACS shall be equal to or larger than the number of modes in the offered ACS.

Usage of this Single Codec Information Element in OoBTC.
In the Single Codec Information Element for the Selected Codec (BICC) the ACS shall be specified exactly.
For FR AMR, HR AMR and OHR AMR at least one, but not more than four modes shall be included.
For UMTS AMR and UMTS AMR2 at least one, but not more than four modes should be included.
OM shall be set to ìOptimisation of the ACS not supportedî.

In the Single Codec Information Element for the Supported Codec List (BICC) and the Available Codec List (BICC) one of the following codings shall be used

- either all parameters (ACS, SCS, MACS and OM) are omitted.
  Then per default all possible AMR modes shall be treated as included in ACS and SCS, MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or only the ACS is specified:
  Then per default all possible AMR modes shall be treated as included in the SCS, MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or ACS and SCS are specified.
  Then per default MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or all parameters (ACS, SCS, MACS and OM) are specified.

Procedures in OoBTC

The procedures for handling of these Single Codec Information Element in the originating, intermediate and terminating nodes are specified in TS 23.153 [8].

~~The Length Indicator field (LI) is set to 3, 4, 5 or 6 at originating side, depending on how many parameters are specified. The terminating side shall return the selected Codec with a full set of parameters. Hence LI shall be set to 6 always by the terminating side. If any node in the path from originating side to terminating side does not support the parameter set offered by the originating side, it may restrict it. If necessary the missing, optional parameter octets may have to be inserted then.~~

The "Single Codec" information element consists of 5 to 8 octets in case of the AMR Codec Types (table 5.4):

Table 5.4: Coding of "Single Codec" for the Adaptive Multi-Rate Codec Types

Octet	Parameter	MSB 8	7	6	5	4	3	2	1 LSB
1 m	Single Codec	Single Codec (see ITU-T Q.765.5 [6])							
2 m	Length Indication	3, 4, 5, 6							
3 m	Compat. Info	Compatibility Information							
4 m	OID	ETSI OID (See ITU-T Q.765.5 [6])							
5 m	CoID	FR_AMR_CoID, HR_AMR_CoID, UMTS_AMR_CoID or UMTS_AMR_2_CoID							
6 o	ACS	12.2	10.2	7.95	7.40	6.70	5.90	5.15	4.75
7 o	SCS	12.2	10.2	7.95	7.40	6.70	5.90	5.15	4.75
8 o	OM, MACS	(spare)	(spare)	(spare)	(spare)	OM	MACS		

with "m" = mandatory and "o" = optional

END OF CHANGES

3GPP TSG-SA WG4 Meeting #33 ***S4-040843***

Helsinki, FINLAND. 22nd to 26th November 2004.

CR-Form-v7

CHANGE REQUEST

⌘ **TS 26.103 CR 035** ⌘ **rev 1** ⌘ Current version: **5.5.0** ⌘

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

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

Title:	⌘	Clarifications for AMR
Source:	⌘	TSG-SA WG4
Work item code:	⌘	TrFO
Date:	⌘	2004-12-14
Category:	⌘	**A**
Release:	⌘	REL-5

Use one of the following categories:
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A *(corresponds to a correction in an earlier release)*
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Rel-6	*(Release 6)*

Reason for change:	⌘	Essential **Correction** due to proposed Changes in TS 23.153. In CR 23.153 077 several Defintions and Procedure Specifications are proposed to be added from REL-4 onwards. These changes should be reflected in TS 26.103 to avoid duplication and potential misalignment or misunderstanding. For the AMR Codec Types several parameters may be specified in the Single Codec IE, but these are partly optional. Some clarification is added for the default meaning of these parameters, when they are omitted.
Summary of change:	⌘	i) Clarifications on the default meaning of omitted AMR parameters. ii) Reference to definitions for ìSupported Codec Listî, ìAvailable Codec Listî, ìSelected Codecî, etc. as proposed for inclusion in TS 23.153. iii) remove of procedural descriptions, because they are proposed for inclusion in TS 23.153.
Consequences if not approved:	⌘	A risk remains that different implementations are not fully compatible. Definitions and procedure Specifications in TS 26.103 and TS 23.153 may be contradicting.

Clauses affected:	⌘	3 (definitions) and 5.4 (AMR)			
Other specs affected:	⌘	Y: X / N:	Other core specifications	⌘	TS 23.153
			Test specifications		
			O&M Specifications		

Other comments: ⌘ Corresponding CRs for REL-4 and REL-6 exist.

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FIRST CHANGE

3 Definitions and Abbreviations

3.1 Definitions

Codec Type: defines a specific type of speech Coding algorithms (e.g. GSM FR, GSM FR AMR).

Codec Mode:defines a specific mode of a Codec Type (e.g. 12,2 kBit/s Mode of the GSM FR AMR).

Organisation Identifier (OID): Identifies the standard organisation (e.g. 3GPP) producing a specification for a Codec List. ITU-T is responsible for maintaining the list of Organisation Identifiers.

System Identifier (SysID): Identifies the radio access technology (e.g. GSM or UMTS) for which the supported Codec List is defined.

Other definitions are given in TS 23.153 [8].

NEXT CHANGE

5.4 Five Adaptive Multi-Rate Codec Types (FR AMR, HR AMR, UMTS AMR, UMTS AMR2, OHR AMR)

The Adaptive Multi-Rate Codec algorithm is applied in GERAN-GMSK, GERAN-8PSK and UTRAN in five different Codec Types.
The Codec IDentification (CoID) codes are defined to be:
FR_AMR_CoID := 0x0000.0011.
HR_AMR_CoID := 0x0000.0100.
UMTS_AMR_CoID := 0x0000.0101.
UMTS_AMR_2_CoID := 0x0000.0110.
OHR_AMR_CoID := 0x0000.1011.

The Single Codec Information Element for AMR Codec Types may have several additional parameters. These parameters are optional in the Supported Codec List (BICC) and in the Available Codec List (BICC)~~at originating side~~, but these parameters shall specify exactly one AMR Configuration for the Selected Codec (BICC), see [8]. ~~mandatory for the terminating side:~~

~~**Active Codec Set, ACS:** eight bits.~~

~~For the FR AMR and the HR AMR up to four modes may be selected by setting the corresponding bits to "1";~~
~~In HR AMR only four out of the lower six modes can be selected;~~
~~For the UMTS AMR2 up to all eight modes may be selected.~~
~~If the ACS is not specified at originating side, then all modes are supported there.~~
~~If ACS is not provided, then SCS and MACS cannot be provided as well.~~

Active Codec Set, ACS: eight bits.
Each bit corresponds to one AMR Mode. Setting the bit to ì1î means the mode is included, setting the bit to ì0î means the mode is not included in the ACS.
Note: Except for HR AMR all eight AMR modes may be selected, for the HR AMR only the six lower modes.

~~**Supported Codec Set, SCS:** eight bits.~~
~~In FR AMR and UMTS AMR2 up to eight modes may be selected by setting the corresponding bits to "1".~~
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~~**Maximal number of Codec Modes, MACS:** three bits.~~
~~For the FR AMR and the HR AMR one to four Codec Modes are allowed within the ACS.~~
~~Coding: "001: one, "010": two, "011": three, "100": four Codec modes allowed.~~
~~For the UMTS AMR2 one up to eight Codec Modes are allowed within the ACS.~~
~~Coding: "001: one, "010": two, Ö "111": seven, "000" eight Codec modes allowed.~~
~~If MACS is not specified at originating side, then the maximum of modes is supported there.~~

Maximal number of codec modes in the ACS, MACS: three bits.
MACS shall be used in the Supported Codec List (BICC) and the Available Codec List (BICC), when it is necessary to restrict the maximum number of modes for the (future) Selected Codec (BICC).
For FR AMR, HR AMR and OHR AMR one up to four, for the UMTS AMR and UMTS AMR2 one up to eight Codec Modes are allowed.
Coding: ì001î: one, ì010î: two, Ö ì111î: seven, ì000î: eight Codec Modes allowed.

~~**Optimisation Mode for ACS , OM:** one bit.~~
~~Coding: "0": Optimisation of the ACS not supported, "1": Optimisation of the ACS supported.~~
~~The Optimisation Mode indicates in TFO, whether the sending side supports the modification (optimisation) of its ACS for the needs of the distant side. This parameter is necessary in UMTS OoBTC to support TFO in "transcoders at the edge" scenarios. In case the OM is set to "not supported" the offered ACS cannot be altered.~~
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~~The use of the Optimisation Mode parameter for TrFO is defined in 3GPP TS 23.153 [9].~~

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Usage of this Single Codec Information Element in OoBTC.
In the Single Codec Information Element for the Selected Codec (BICC) the ACS shall be specified exactly.
For FR AMR, HR_AMR and OHR AMR at least one, but not more than four modes shall be included.
For UMTS AMR and UMTS AMR2 at least one, but not more than four modes should be included.
OM shall be set to ìOptimisation of the ACS not supportedî.

In the Single Codec Information Element for the Supported Codec List (BICC) and the Available Codec List (BICC) one of the following codings shall be used

- either all parameters (ACS, SCS, MACS and OM) are omitted.
  Then per default all possible AMR modes shall be treated as included in ACS and SCS, MACS shall be treated

as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or only the ACS is specified:
  Then per default all possible AMR modes shall be treated as included in the SCS, MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or ACS and SCS are specified.
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Procedures in OoBTC

The procedures for handling of these Single Codec Information Element in the originating, intermediate and terminating nodes are specified in TS 23.153 [8].

~~The Length Indicator field (LI) is set to 3, 4, 5 or 6 at originating side, depending on how many parameters are specified. The terminating side shall return the selected Codec with a full set of parameters. HEnce LI shall be set to 6 always by the terminating side. If any node in the path from originating side to terminating side does not support the parameter set offered by the originating side, it may restrict it. If necessary the missing, optional parameter octets may have to be inserted then.~~

The "Single Codec" information element consists of 5 to 8 octets in case of the AMR Codec Types (table 5.4):

Table 5.4: Coding of "Single Codec" for the Adaptive Multi-Rate Codec Types

Octet	Parameter	MSB 8	7	6	5	4	3	2	1 LSB
1 m	Single Codec	Single Codec (see ITU-T Q.765.5 [6])							
2 m	Length Indication	3, 4, 5, 6							
3 m	Compat. Info	Compatibility Information							
4 m	OID	ETSI OID (See ITU-T Q.765.5 [6])							
5 m	CoID	FR_AMR_CoID, HR_AMR_CoID, UMTS_AMR_CoID or UMTS_AMR_2_CoID							
6 o	ACS	12.2	10.2	7.95	7.40	6.70	5.90	5.15	4.75
7 o	SCS	12.2	10.2	7.95	7.40	6.70	5.90	5.15	4.75
8 o	OM, MACS	(spare)	(spare)	(spare)	(spare)	OM	MACS		

with "m" = mandatory and "o" = optional

END OF CHANGES

3GPP TSG-SA WG4 Meeting #33 ***S4-040844***

Helsinki, FINLAND. 22nd to 26th November 2004.

CR-Form-v7

CHANGE REQUEST

⌘ **TS 26.103 CR 036** ⌘**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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Clarifications for AMR
Source:	⌘	TSG-SA WG4
Work item code:	⌘	TrFO
Date:	⌘	2004-12-14
Category:	⌘	**A**
Release:	⌘	REL-6

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Summary of change:	⌘	i) Clarifications on the default meaning of omitted AMR parameters. ii) Reference to definitions for ìSupported Codec Listî, ìAvailable Codec Listî, ìSelected Codecî, etc. as proposed for inclusion in TS 23.153. iii) remove of procedural descriptions, because they are proposed for inclusion in TS 23.153.
Consequences if not approved:	⌘	A risk remains that different implementations are not fully compatible. Definitions and procedure Specifications in TS 26.103 and TS 23.153 may be contradicting.

Clauses affected:	⌘	3 (definitions) and 5.4 (AMR)			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	TS 23.153
		X	Test specifications		
			O&M Specifications		

Other comments:	⌘ Corresponding CRs for REL-4 and REL-5 exist.

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FIRST CHANGE

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3.1 Definitions

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Other definitions are given in TS 23.153 [8].

NEXT CHANGE

5.4 Five Adaptive Multi-Rate Codec Types (FR AMR, HR AMR, UMTS AMR, UMTS AMR2, OHR AMR)

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HR_AMR_CoID := 0x0000.0100.
UMTS_AMR_CoID := 0x0000.0101.
UMTS_AMR_2_CoID := 0x0000.0110.
OHR_AMR_CoID := 0x0000.1011.

The AMR Codec Types can be used in conversational speech telephony services in a number of different configurations. The set of preferred configurations is defined in TS 28.062, Table 7.11.3.1.3-2. One of these preferred configurations, Config-NB-Code 1, is recommended for TFO-TrFO harmonisation between GSM and UMTS networks.

The Single Codec Information Element for AMR Codec Types may have several additional parameters. These parameters are optional in the Supported Codec List (BICC) and in the Available Codec List (BICC)~~at originating side~~,

but these parameters shall specify exactly one AMR Configuration for the Selected Codec (BICC), see [8]. ~~mandatory for the terminating side:~~

~~**Active Codec Set, ACS:** eight bits.~~
~~For the FR AMR and the HR AMR up to four modes may be selected by setting the corresponding bits to "1";~~
~~In HR AMR only four out of the lower six modes can be selected;~~
~~For the UMTS AMR2 up to all eight modes may be selected.~~
~~If the ACS is not specified at originating side, then all modes are supported there.~~
~~If ACS is not provided, then SCS and MACS cannot be provided as well.~~

Active Codec Set, ACS: eight bits.
Each bit corresponds to one AMR Mode. Setting the bit to ì1î means the mode is included, setting the bit to ì0î means the mode is not included in the ACS.
Note: Except for HR_AMR all eight AMR modes may be selected, for the HR_AMR only the six lower modes.

~~**Supported Codec Set, SCS:** eight bits.~~
~~In FR AMR and UMTS AMR2 up to eight modes may be selected by setting the corresponding bits to "1".~~
~~In HR AMR only the lower six modes may be selected.~~
~~If the SCS is not specified at originating side, then all modes are supported there.~~
~~If SCS is not provided, then MACS cannot be provided as well.~~

Supported Codec Set, SCS: eight bits.
Each bit corresponds to one AMR Mode, as in the ACS. Setting the bit to ì1î means the mode is supported, setting the bit to ì0î means the mode is not supported. The SCS shall at least contain all modes of the ACS.

~~**Maximal number of Codec Modes, MACS:** three bits.~~
~~For the FR AMR and the HR AMR one to four Codec Modes are allowed within the ACS.~~
~~Coding: "001: one, "010": two, "011": three, "100": four Codec modes allowed.~~
~~For the UMTS AMR2 one up to eight Codec Modes are allowed within the ACS.~~
~~Coding: "001: one, "010": two, Ö "111": seven, "000" eight Codec modes allowed.~~
~~If MACS is not specified at originating side, then the maximum of modes is supported there.~~

Maximal number of codec modes in the ACS, MACS: three bits.
MACS shall be used in the Supported Codec List (BICC) and the Available Codec List (BICC), when it is necessary to restrict the maximum number of modes for the (future) Selected Codec (BICC).
For FR AMR, HR AMR and OHR AMR one up to four, for the UMTS AMR and UMTS AMR2 one up to eight Codec Modes are allowed.
Coding: ì001î: one, ì010î: two, Ö ì111î: seven, ì000î: eight Codec Modes allowed.

~~**Optimisation Mode for ACS , OM:** one bit.~~
~~Coding: "0": Optimisation of the ACS not supported, "1": Optimisation of the ACS supported.~~
~~The Optimisation Mode indicates in TFO, whether the sending side supports the modification (optimisation) of its ACS for the needs of the distant side. This parameter is necessary in UMTS OoBTC to support TFO in "transcoders at the edge" scenarios. In case the OM is set to "not supported" the offered ACS cannot be altered.~~
~~Only Rate Control can then be used to restrict the modes within the ACS.~~
~~The use of the Optimisation Mode parameter for TrFO is defined in 3GPP TS 23.153 [9].~~

Optimisation Mode for ACS, OM: one bit.
OM indicates, whether the sending side supports the modification (optimisation) of its offered ACS for the needs of the distant side.
Coding: "0": Optimisation of the ACS not supported, "1": Optimisation of the ACS supported.
If OM is specified as îOptimisation of the ACS not supportedî, then SCS and MACS have no meaning for this Single Codec Information Element; then the SCS shall at least contain all modes of the offered ACS; MACS shall be equal to or larger than the number of modes in the offered ACS.

Usage of this Single Codec Information Element in OoBTC.
In the Single Codec Information Element for the Selected Codec (BICC) the ACS shall be specified exactly.
For FR AMR, HR_AMR and OHR AMR at least one, but not more than four modes shall be included.
For UMTS AMR and UMTS AMR2 at least one, but not more than four modes should be included.
OM shall be set to ìOptimisation of the ACS not supportedî.

In the Single Codec Information Element for the Supported Codec List (BICC) and the Available Codec List (BICC) one of the following codings shall be used

- either all parameters (ACS, SCS, MACS and OM) are omitted.
  Then per default all possible AMR modes shall be treated as included in ACS and SCS, MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or only the ACS is specified:
  Then per default all possible AMR modes shall be treated as included in the SCS, MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or ACS and SCS are specified.
  Then per default MACS shall be treated as set to its allowed maximum and OM shall be treated as set to îOptimisation of the ACS supportedî.

- or all parameters (ACS, SCS, MACS and OM) are specified.

Procedures in OoBTC

The procedures for handling of these Single Codec Information Element in the originating, intermediate and terminating nodes are specified in TS 23.153 [8].

~~The Length Indicator field (LI) is set to 3, 4, 5 or 6 at originating side, depending on how many parameters are specified. The terminating side shall return the selected Codec with a full set of parameters. Hence LI shall be set to 6 always by the terminating side. If any node in the path from originating side to terminating side does not support the parameter set offered by the originating side, it may restrict it. If necessary the missing, optional parameter octets may have to be inserted then.~~

The "Single Codec" information element consists of 5 to 8 octets in case of the AMR Codec Types (table 5.4):

Table 5.4: Coding of "Single Codec" for the Adaptive Multi-Rate Codec Types

Octet	Parameter	MSB 8	7	6	5	4	3	2	1 LSB
1 m	Single Codec	Single Codec (see ITU-T Q.765.5 [6])							
2 m	Length Indication	3, 4, 5, 6							
3 m	Compat. Info	Compatibility Information							
4 m	OID	ETSI OID (See ITU-T Q.765.5 [6])							
5 m	CoID	FR_AMR_CoID, HR_AMR_CoID, UMTS_AMR_CoID or UMTS_AMR_2_CoID							
6 o	ACS	12.2	10.2	7.95	7.40	6.70	5.90	5.15	4.75
7 o	SCS	12.2	10.2	7.95	7.40	6.70	5.90	5.15	4.75
8 o	OM, MACS	(spare)	(spare)	(spare)	(spare)	OM	MACS		

with "m" = mandatory and "o" = optional

END OF CHANGES