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Technical Specification

**3rd Generation Partnership Project (3GPP);
TSG-SA Codec Working Group;
Codec for Circuit Switched Multimedia Telephony Service;
Modifications to H.324**

3GPP

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Intellectual Property Rights

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project, Technical Specification Group Services and System Aspects, CODEC Working Group (TSG-S4).

The contents of this TS may be subject to continuing work within the 3GPP and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released with an identifying change of release date and an increase in version number as follows:

Version m.t.e

where:

- m indicates [major version number]
- x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- y the third digit is incremented when editorial only changes have been incorporated into the specification.

1 Introduction

In this technical specification is described additions, deletions, and changes made to ITU-T H.324 with Annex C for the purpose of using that recommendation as a basis for the technical specification for circuit switched multimedia service in 3GPP networks. This document does not address call setup procedures, which are described in TS 26.112.

2 Scope

In ITU-T recommendation H.324 with Annex C describes a generic multimedia codec for use in error-prone, wireless networks. The scope of this document are the changes, deletions, and additions to those texts necessary to fully specify a multimedia codec for use in 3GPP networks. Note that this implicitly excludes the network interface and call setup procedures. Also excluded are any general introductions to the system components.

3 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU-T Recommendation H.223 : "Multiplexing protocol for low bitrate multimedia communication"

- [2] ITU-T Recommendation H.223 — Annex A : "Multiplexing protocol for low bitrate multimedia communication over low error-prone channels"
- [3] ITU-T Recommendation H.223 — Annex B : "Multiplexing protocol for low bitrate multimedia communication over moderate error-prone channels"
- [4] ITU-T Recommendation H.223 — Annex C : "Multiplexing protocol for low bitrate multimedia communication over highly error-prone channels"
- [5] ITU-T Recommendation H.223 — Annex D : "Optional multiplexing protocol for low bitrate multimedia communication over highly error-prone channels"
- [6] ITU-T Recommendation H.245 : "Control protocol for multimedia communication"
- [7] ITU-T Recommendation G.723.1 : "Dual rate speech coder for multimedia communication transmitting at 5.3 & 6.3 kbit/s"
- [8] ITU-T Recommendation H.263 : "Video coding for low bitrate communication"
- [9] ITU-T Recommendation H.261 : "Video CODEC for audiovisual services at p X 64 kbit/s"
- [10] ITU-T Recommendation H.324 : "Terminal for low bitrate multimedia communication"
- [11] 3GPP Technical Specification 26.111 : "Modifications to H.324"
- [12] 3GPP Technical Specification 26.112 : "Call Set Up Requirements"
- [13] 3GPP Technical Reference 26.115 : "Terminal Implementor's Guide"
- [14] ITU-T Recommendation X.691 : "Information Technology - ASN.1 Encoding Rules - Specification of Packed Encoding Rules (PER)"
- [15] International Standard ISO/IEC 14494-2: "Information technology — Generic coding of audio-visual object — Part 2: Visual, 1999"
- [16] 3GPP Technical Specification 26.010 : "Mandatory Speech Codec; General Description"
- [17] 3GPP Technical Specification 26.011 : "Mandatory Speech Codec; Speech Transcoding Functions"
- [18] 3GPP Technical Specification 26.012 : "Mandatory Speech Codec; ANSI C-Code"

4 Definitions and abbreviations

4.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

H.324: ITU-T H.324 with Annex C.

3G H.324 terminal: Based on ITU-T H.324 recommendation modified by 3GPP for purposes of 3GPP circuit switched network based video telephony.

4.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

RVLC Reverse Variable Length Code

DP	Data Partitioning
RM	Resynchronization Marker
MCU	Multipoint Control Unit

5 General

This document contains any deviations to ITU-T H.324 required for the specification of 3G H.324 Terminals.

6 Document structure

The structure of H.324 is followed in this document. Where there are no differences in a specific section, that section is skipped. Where differences are minor, only the differences are described. Where major differences exist, the section is rewritten in this document. It is important to note that for wireless terminals, Annex C of H.324 supersedes respective portions of the main body of H.324. For this document, these modifications are treated as if they are part of the main body of H.324. Therefore, a reader must keep in mind both the main body and Annex C of H.324 when reading this document.

7 Functional requirements

7.1 Required elements

3G H.324 implementations are not required to have each functional element except a wireless interface, H.223 with Annex A and B multiplex, and H.245 version 3 or later versions for system control protocol.

3G H.324 terminals offering audio communication shall support the 3GPP AMR audio codec. Support for G.723.1 is not mandatory, but recommended.

3G H.324 terminals offering video communication shall support the H.263 video codec. Support for MPEG-4 simple profile and H.261 is optional.

3G H.324 terminals shall support H.223 with Annex A and B.

3G H.324 terminals shall support at least 32 kbit/s minimum bit rate at the mux to wireless network interface.

7.2 Information streams

V.25ter discussion does not apply.

7.3 Modem

Does not apply.

7.4 Multiplex

3G H.324 terminals shall support H.223 with Annex A & B. All other aspects shall follow H.324 with Annex C. H.223 Annex C and D are optional.

7.5 Control channel

No differences with H.324.

Should it not be possible to signal an element of the 3G H.324 terminal using a published version of H.245, a procedure will be defined here.

[CURRENTLY, THERE IS NOT A CODEPOINT IN H.245 FOR THE 3GPP AMR SPEECH CODEC. THIS WILL BE RESOLVED WITH EITHER AN H.245 CODEPOINT OR A 3GPP SPECIFIC CODEPOINT IN H.245 BEFORE THE FINAL VERSION OF THIS SPECIFICATION.]

7.6 Video channels

Support for H.261 is optional. Support for MPEG-4 is optional. MPEG-4 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 is baseline compatible with H.263.

[CURRENTLY, THERE IS NOT A CODEPOINT IN H.245 FOR THE MPEG-4 VIDEO CODEC. THIS WILL BE RESOLVED WITH EITHER AN H.245 CODEPOINT OR A 3GPP SPECIFIC CODEPOINT IN H.245 BEFORE THE FINAL VERSION OF THIS SPECIFICATION.]

7.7 Audio channels

3GPP AMR is the mandatory speech codec. Support for G.723.1 is not mandatory, but recommended. If both the receiving and transmitting terminals support 3GPP AMR and G.723.1, then 3GPP-AMR shall be used. This applies to connections without an Multipoint Control Unit (MCU).

7.8 Data channels

No differences with H.324.

8 Terminal procedures

See TS 26.112.

9 Optional enhancements

No differences with H.324.

10 Interoperation with other terminals

For further study.

11 Multipoint considerations

For further study.

12 Maintenance

No differences with H.324.

13 History

Document history		
0.1.0	April 20, 1999	Initial draft
0.2.0	April 21, 1999	Revised per TSG SA S4#4 discussion
1.0.0	April 22, 1999	Version presented for information to TSG-SA